AM/FM SIGNAL GENERATORS

2040 SERIES

2040 10 kHz to 1.35 GHz
2041 10 kHz to 2.7 GHz
2042 10 kHz to 5.4 GHz

Printed in the UK

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PREFACE

WARNINGS, CAUTIONS AND NOTES

These terms have specific meanings in this manual:-

WARNINGS contain information to prevent personal injury.
CAUTIONS contain information to prevent damage to the equipment.
Notes contain important general information.

HAZARD SYMBOLS

The meaning of hazard symbols appearing on the equipment is as follows:

Symbol	Nature of hazard	Reference in manual
	Dangerous voltages	Page iv
	Static sensitive components	Page v
	Beryllium	Page vi
	Fire hazard	Page iv
	Lithium batteries are used in this equipment. Appropriate caution should be exercised when handling these items.	Page vi

MANUAL AMENDMENT STATUS

Each page in this manual bears the date of its original issue or, if it has been amended, the date and status number of the amendment. Any changes subsequent to the latest amendment state of the manual are included on inserted sheets coded C1, C2 etc.

SAFETY

This product has been designed and tested in accordance with BS4743 'Specification for safety requirements for electronic measuring apparatus' and IEC Publication 348 'Safety requirements for electronic measuring apparatus'.

SERVICING PRECAUTIONS

ELECTRICAL SAFETY PRECAUTIONS

This product has been designed and tested in accordance with IEC Publication 348 - 'Safety Requirements for Electronic Measuring Apparatus'. To keep it in a safe condition and to avoid risk of injury, observe the following WARNING notices. To avoid damage to the equipment observe the CAUTION notices.

Defects and abnormal stresses

Whenever it is likely that protection has been impaired, for example as a result of damage caused by severe conditions of transport or storage, the equipment shall be made inoperative and be secured against any unintended operation.

Removal of covers

Removal of the covers is likely to expose live parts although reasonable precautions have been taken in the design of the equipment to shield such parts. The equipment shall be disconnected from the supply before carrying out any adjustment, replacement or maintenance and repair during which the equipment shall be opened. If any adjustment, maintenance or repair under voltage is inevitable it shall only be carried out by a skilled person who is aware of the hazard involved.

The LCD Invertor fitted to the rear of the front panel has a high voltage output. Care should be taken when handling the Invertor which provides approx. 1 kV to drive the LCD backlight.

Note that capacitors inside the equipment may still be charged when the equipment has been disconnected from the supply. Before carrying out any work inside the equipment, capacitors connected to high voltage points should be allowed to discharge through the bleed resistors fitted for the purpose; do not attempt to remove the safety covers from the power supply until the lamp under the top cover stops blinking. Should the unit be reconnected to the supply with the safety covers removed then disconnected, do not attempt to discharge the power supply unit's main reservoir capacitors using a shorting link as the equipment may be damaged. Discharge should always be allowed to occur gradually.

WARNING - FIRE HAZARD

Make sure that only fuses of the correct rating and type are used for replacement.

If an integrally fused plug is used on the supply lead, ensure that the fuse rating is commensurate with the current requirements of this equipment. See under 'Performance Data' in Chapter 1 for power requirements.

AC supply plug

The supply plug shall only be inserted in a socket outlet provided with a protective earth contact. The protective action shall not be negated by the use of an extension lead without protective conductor. Any interruption of the protective conductor inside or outside the equipment is likely to make the equipment dangerous.

Fuses - primary

Note that there is a supply fuse in both the line and neutral wires of the supply lead. If only one of these fuses should rupture, certain parts of the equipment could remain at supply potential.

To provide protection against breakdown of the supply lead, its connectors, and filter where fitted, an external supply fuse (e.g. fitted in the connecting plug) should be used in the line lead, The fuse should have a continuous rating not exceeding 6 A.

Make sure that only fuses with the required rated current and of the specified type are used for replacement. The use of mended fuses and the short-circuiting of fuse holders shall be avoided. For details of primary fuses, refer to Chap. 2 in the Operating Manual.

CAUTION - STATIC SENSITIVE COMPONENTS

Components identified with the symbol ⚠ on the circuit diagrams and/or parts lists are static sensitive devices. The presence of such devices is also indicated in the equipment by flags or labels bearing the ⚠ symbol. Certain handling precautions must be observed to prevent these components being permanently damaged by static charges or fast surges.

(1) If a printed board containing static sensitive components (as indicated by a warning disc or flag) is removed, it must be temporarily stored in a conductive plastic bag.

(2) If a static sensitive component is to be removed or replaced the following anti-static equipment must be used.

A work bench with an earthed conductive surface.

Metallic tools earthed either permanently or by repeated discharges.

A low-voltage earthed soldering iron.

An earthed wrist strap and a conductive earthed seat cover for the operator, whose outer clothing must not be of man-made fibre.

(3) If using a freezer aerosol in fault finding, take care not to spray programmable ICs as this may affect their contents.

CAUTION - IC REMOVAL

Damage can be caused if an IC mounted in a PLCC (Plastic Leaded Chip Carrier) is removed without the use of a special tool, Part Number WP02, available from Marconi Instruments Service Division (address on rear cover).

WARNING - TOXIC HAZARD

Many of the electronic components used in this instrument employ resins and other chemicals which give off toxic fumes on incineration. Appropriate precautions should therefore be taken in the disposal of these items.

WARNING - TOXIC HAZARD

Beryllia (beryllium oxide) is used in the construction of the following components in this equipment:

Board AB3/5 (2041): TR2 & TR3
Board AB3/4 (2042): TR111, TR206 to TR209, TR402, D405 & D406
Board AB2/2 (2040,2041,2042): TR315
Board AB3/3 (2040 fitted with Option 003): TR5 & TR7

This material, when in the form of fine dust or vapour and inhaled into the lungs, can cause a respiratory disease. In its solid form, as used here, it can be handled quite safely although it is prudent to avoid handling conditions which promote dust formation by surface abrasion.

Because of this hazard you are advised to be very careful in removing and disposing of this component, Do not put it in the general industrial or domestic waste or dispatch it by post. It must be separately and securely packed and clearly identified to show the nature of the hazard and then disposed of in a safe manner by an authorised toxic waste contractor.

WARNING - TOXIC HAZARD

A lithium battery is used in this equipment. This presents two hazards:-

(1) As lithium is a toxic substance the battery should in no circumstances be crushed, incinerated or disposed of in normal waste.

(2) If the battery is rapidly charged or discharged there is a risk of explosion. Take care therefore to avoid short-circuiting it.

Chapter 4-2
TECHNICAL DESCRIPTION

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INTRODUCTION

The 2040 series signal generators are based on the 2030 series but have the capability of generating signals of very low phase noise. The frequency ranges covered are: 10 kHz to 1.35 GHz (2040), 10 kHz to 2.7 GHz (2041) and 10 kHz to 5.4 GHz (2042). Output levels from -144 or -138 dBm to 13 dBm are available. A factory fitted option is available to extend the output level to +19 dBm on the 2040 model. Fig. 4-2-1 is a block diagram of the frequency synthesis and signal processing circuits.

Synthesizer

The VCXO operating at 104.8576 MHz is phase locked to the internal (or external) frequency standard using a phase comparator at 1 MHz on AA1/2. The VCXO signal is divided by 62.5 to give a 1.6777216 MHz (0.1 Hz x 2^{24}) reference frequency for the output loop phase comparator. Synthesizer operation in normal noise mode follows. Operation in the two low noise modes is described under 'Low-noise tray'.

A fractional-N loop in the RF tray is used to lock a VCO, one of four oscillators covering a range of 675 MHz - 1350 MHz, to the reference with a resolution of less than 0.1 Hz. A high speed programmable divider is used to divide the VCO frequency down to 1.6777216 MHz and a phase comparator compares this signal with the reference derived from the VCXO. The output from the phase comparator corrects the VCO frequency. In order to provide the required division ratio, the programmable divider is required to act as Fractional Divider. The fractional-N gate array controls the division ratio of the programmable divider. The variation of this division ratio by the controller enables the loop to lock, with non-integer division ratios, to the reference with the resolution of less than 0.1 Hz without introducing spurious signals.

FM is produced using a two point modulation scheme. The FM signal is inserted into the loop by summing the FM signal with the VCO tune line (on AB2/2) to modulate the VCOs directly. Simultaneously, the FM signal is fed to the fractional-N Controller via a 1-bit over sampled A-D converter which converts an analogue input into a bit stream of '1's and '0's. The controller uses this input to modulate the division ratio in sympathy with the modulation. This allows frequencies less than the loop bandwidth, including DC, to modulate the output frequency.

In order to maintain good FM performance of the two point modulation system, the VCO FM tracking characteristics are required to be known. The sensitivity of the FM system via the 1-bit over sampled A-D converter is VCO independent and accurately calibrated by a DC calibration system. The VCO tracking is derived by an automatic FM SELFCAL routine during calibration. During an FM SELFCAL, the error signal on the tune line, for a frequency near the loop bandwidth, is monitored while varying the FM calibration numbers, allowing the variation in VCO sensitivities to be calibrated out. This will remove any perturbation of FM flatness near the loop bandwidth due to mismatch of two modulation paths.

The fractional-N output loop has three available bandwidths which are used according to the instrument state:

3 kHz for CW mode 300 Hz for FM mode	Controlled on AA1/2 by changing phase comparator gain and the loop filter values on AB2/2.
10 kHz for sweep mode	Controlled by changing loop filter values on AB2/2.

Low-noise tray

The low-noise characteristics are achieved by the addition of an extra circuit module to the synthesizer in the RF tray, referred to as the low-noise tray (see Fig. 4-2-2 below). As for normal noise mode the VCO is still used to provide the output signal, but is locked to a combination of low-noise signals generated within the low-noise tray. The fractional-N synthesizer in the RF tray still meters the VCO output, but controls the frequency of one of these low-noise signals, in turn controlling the VCO. Output frequency is still determined by the fractional-N and its associated reference, and not by any individual frequency in the low-noise tray. This combination of output VCO and low-noise tray is best visualised as behaving as a composite VCO of low noise and low tuning sensitivity, still embedded within the same fractional-N control loop.

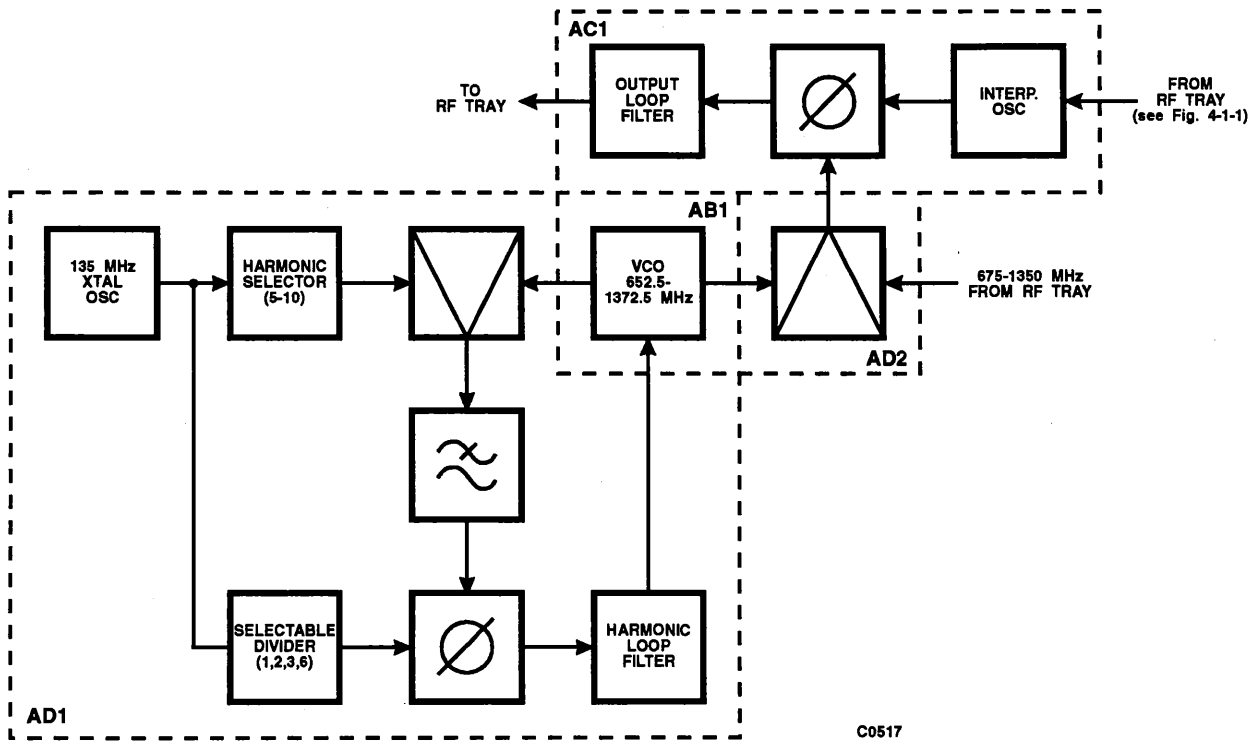

Fig. 4-2-2 Low noise tray block schematic

Two phase-locked loops are contained in the low-noise tray. The first generates a UHF signal which is harmonically related to a low-noise crystal oscillator. Frequencies are available in multiples of 22.5 MHz from 652.5 to 1372.5 MHz. The second loop contains an interpolation oscillator, tuneable from 22.5 MHz to 33.75 MHz. This frequency is added to or subtracted from that of the harmonic loop, locking the output VCO (in the RF tray) accordingly.

The output VCO is now fully controllable by selecting the appropriate multiple from the harmonic loop and by adjustment of the interpolation oscillator, and now has the low noise provided by these signals. The fractional-N synthesizer adjusts the output frequency by controlling the interpolation oscillator.

Harmonic loop

Low-noise performance is derived primarily from a VHF crystal oscillator operating at 135 MHz on board AD1. This oscillator is not locked to the main reference because any error is corrected by the fractional-N loop, but the frequency is accurate enough for calculation of oscillator control, ranges, etc.

A harmonic generator and tuneable band-pass filter select one specific harmonic in the range 5 to 10. The crystal oscillator also drives a divider, dividing by 1, 2, 3 or 6. The loop also contains a UHF oscillator on board AB1 similar to the one used in the RF tray. This oscillator output is mixed with the harmonic signal, and the difference frequency drives one input of a phase detector. The divided signal drives the other input. The output is used to lock the VCO. By selection of harmonic and division ratios, the VCO can be locked in multiples of 135/6 MHz (22.5 MHz), over the range 652.5 to 1372.5 MHz. Because of the very wide loop bandwidth, the noise of the resultant signal is similar to that of the multiplied crystal oscillator.

Output loop

This loop combines the frequencies of the harmonic loop and the interpolation oscillator on board AC1. A signal from the output VCO is routed to the low-noise tray, and drives one input of the mixer on board AD2. Output from the harmonic loop drives the other input. The difference frequency drives one input of a phase detector. The output of the interpolation oscillator drives the other input. Phase detector output is used to lock the output VCO.

The output VCO can now be coarse-tuned by choosing the harmonic loop frequency, and fine-tuned with the interpolation oscillator. Again, the resultant noise is similar to the noise of the harmonic loop output, with some additional degradation from the interpolation oscillator.

RF processing

The four quarter octave VCOs on AB1 provide a frequency in the range 675 MHz to 1350 MHz. This is passed onto AB2/2 where the signal is divided by factors of 2 to give frequencies in the range 21.09375 MHz to 1350 MHz.

This signal passes through the amplitude modulator where the output level envelope is controlled. After passing through a bank of switched half octave harmonic filters and, optionally, the pulse modulator, the signal passes to the output amplifier. This provides, at the output of AB2/2, signals in the range 21.09375 MHz to 1350 MHz at a level sufficient to give an output of between 0 dBm and 13 dBm at the front panel. The signal level at the output of AB2/2 is peak to peak detected.

The ALC system on AB2/2 compares the detected signal with the ALC reference voltage and controls the amplitude modulator. The ALC reference is varied to compensate for insertion losses between AB2/2 and the front panel (including variation in attenuator pad values). The

ALC reference voltage also has the AM envelope superimposed on it and the modulation waveform is corrected for the diode law of the detectors.

When pulse modulation is selected, the amplitude modulator is controlled by the Direct Drive. This DC voltage from a D-A converter on AA1/2 is set whenever the pulse modulation is selected or any RF parameter is varied while in pulse mode. The Direct Drive voltage is set to be the same as the voltage drive to the modulator when the ALC is operating. The pulse modulation signal is fed through a filter (to prevent RF radiation at the PULSE INPUT socket) and amplitude limited on AB2/2 before being used to drive the pulse modulator module.

The signal from AB2/2 passes onto an AB3 board (in 2040, AB3/1; in 2041, AB3/5 and in 2042, AB3/4). If the requested output frequency is in the range 21.09375 MHz to 1350 MHz the relays route the signal out of the RF box to the step attenuator.

Beat frequency oscillator (BFO)

For frequencies less than 21.09375 MHz, an AB3 board routes the signal from AB2/2 to AB4/1 where it is mixed with a 104.8576 MHz local oscillator, (driven from the VCXO on AA1/2), filtered, amplified and routed out to the attenuator via an AB3 board. The BFO system output level is controlled by using the normal ALC system to control the level of the 104.8676 MHz to 125.95135 MHz signal from AB2/2. The gain of the BFO system is well controlled by using negative feedback around the BFO amplifier. The remaining small errors in BFO gain are calibrated out during routine calibration.

Frequency doubler AB3/5

In the 2041, when frequencies greater than 1350 MHz are requested, the AB2/2 board generates a signal in its top octave and the AB3/5 board routes the signal through a doubler, third octave filters and an amplifier. This output is peak detected and routed to the attenuator. The detected voltage is now used instead of the detected voltage on AB2/2 as the feedback in the ALC control loop.

Frequency quadrupler AB3/4

In the 2042, board AB3/4 operates similarly to AB3/5 in the 2041, except that it has two doublers, the second of which produces quadrupled frequencies in the range 2.7 to 5.4 GHz.

Attenuator

Attenuator AT10 provides attenuation in 6 dB steps controlled by relays. Correction numbers for the individual pads are stored along with the attenuator serial number and other details on an EEROM (Electrically Erasable Read Only Memory) situated on the attenuator control board AT11. This complete module communicates with the main processor via the nibble bus. The attenuator also includes an RPP (Reverse Power Protection) system to protect the instrument from accidental application of reverse power.

LF processing

The LF processing all takes place on the control board, AA1/2, and may be conveniently subdivided into the following major functional elements.

LF synthesizer(s)

The internal LF synthesizer and the optional second internal LF synthesizer are both direct digital synthesizers using PROM look up tables and are driven by a 1.6777216 MHz clock from the reference divider of the RF synthesizer. The PROM contains both sine and triangular waveforms, (and the avionics waveforms if Option 006 is fitted).

LF switch matrix

Each external modulation input may be AC or DC coupled and has its own associated ALC using JFETs to level the applied signal to give calibrated modulation. The switch matrix allows any of the four modulation channels to use any of the sources available. It also allows the LF output to be used as a LF generator with variable output level, using an internal LF synthesizer or to monitor points through the modulation paths with fixed output level.

AM and level control

The amplitude modulation signal is formed by summing the two AM channels, the AM depth being determined by the amplitude of these signals, and a DC reference. This signal passes through a 12-bit D-A converter, which controls the RF output level, and a law correction circuit to produce the ALC reference for the AB2/2 board.

FM

The FM drive is the sum of the two FM channels whose amplitude controls the FM deviation over a 3 dB range. For phase modulation this signal passes through a passive high-pass network to give the equivalent FM drive signal.

This signal is used as the input to the 1-bit over sampled A-D converter to inject the FM into the digital path and as the drive for the VCOs directly via the 50 Ω step attenuator. The step attenuator allows the FM deviation to be varied over the range of the instrument with attenuation available up to 93 dB in 3.02 dB steps. The fractional-N controller scales the A-D converter input internally by digital means.

Wideband FM

The Wide Band FM input allows an external signal to be injected at the input to the FM step attenuator to enable the signal to be used on both modulation paths. This gives high bandwidth by virtue of the passive step attenuator and DC coupling via the 1-bit over sampled A-D converter. The sensitivity of this FM port can only be controlled in 3.01 dB steps and is frequency dependent.

CONTROL BOARD - AA1/2

Circuit diagrams: Figs. 7-6 to 7-12.

This board contains the main processor and memory, as well as the carrier and audio frequency synthesizers. It also controls the audio, frequency and phase modulation operations.

CONTROL: PROCESSOR AND INTERFACE (AA1/2 sheet 1)

Circuit diagram: Fig. 7-6.

Microprocessor

Microprocessor IC101 is an Intel 80188 and is the main processor (there is another in the Display Unit). It contains the CPU (Central Processor Unit) and several peripheral devices including an interrupt controller, DMA (Direct Memory Access) controller, timers and programmable chip select outputs. The microprocessor uses an 8-bit data and a 20-bit address bus to address 1 Mbyte of memory. The data bus is multiplexed to provide either 8 bits of data or the lower 8 bits of the address.

Control signals TI0 and TI1 for the internal programmable timer and ARDY and SRDY for asynchronous/synchronous data transfer are tied high, the functions unused. TEST is held low, also unused. NMI, HOLD and DRQ1 are disabled by being held low. The clock input on X1 is from 16 MHz crystal XL101, the frequency of which is divided by 2 internally to generate the 8 MHz clock signal. At the RES input (protected by D101) a reset is generated by R103 and C130 whenever the power is switched on. This signal is inverted and, at the RESET output, is used as the system reset. WR (write) and RD (read) asserted low enable the memory or I/O device selected by the address bus to be written into or read out from respectively. DT/R (Data Transmit/Receive) is used to control the direction of data flow through the data bus buffer; this line is taken low for a data read operation and high for a write operation. Also associated with this signal is DEN, the data enable for buffer IC118. This signal is active low but is taken high to disable the buffer whenever DT/R changes state. PCS0 to PCS5 provide active-low Peripheral Chip Select signals. Similarly LCS, MCS and UCS provide Lower, Middle and Upper Chip Select signals for the memory bank. Output TO0 provides a timing signal for ULAs IC201 and IC209 (sheet 2).

The processor uses a multiplexed data bus to accommodate the 20-bit address. Output lines A8 to A19 carry the high order memory address. Input/output lines AD0 to AD7 carry the low order memory address during the first clock cycle and then carry data during the second and third machine state clock cycles. ALE (Address Latch Enable) is used to differentiate between data and address; when it is taken high the contents of the data bus are treated as part of the address and latched into IC103. ALE also latches A16-A19 into IC102 in order to complete the 20-bit address. When ALE is taken low lines AD0 to AD7 carry data. Only 17 address bits are in fact used as 128 kbyte is the largest number of bytes addressed in any single device.

Interrupts

The 80188 has four interrupt request inputs, INT0 to INT3. Interrupt INT0, the highest priority interrupt, is supplied by GPIB INT from GPIB controller IC113. INT1 operates in conjunction with DRQ0 (DMA channel 0) to perform data transfers between this board and front panel control board AF2/1. INT2 is from status interrupt detector IC108. The interrupt is applied via a deglitcher formed by IC121b and R109 and C134. It ensures that only if the interrupt has been asserted for long enough for the capacitor to charge through the resistor, and thus produce a high output from the AND-gate, will the interrupt be accepted as valid. INT3 from EXT TRIG INT is requested when an external trigger signal is applied to the SWEEP TRIG socket on the rear panel. R107 and C131 filter out glitches. R108 permits operation by the closing of a simple external switch. IC121c converts to TTL while IC122f inverts the signal to form the high EXT TRIG INT signal.

Memory bank

The operating program is contained in up to three EPROMs (ultra-violet Erasable Programmable Read Only Memories) IC109, IC111 and IC112 which together provide 384 kbytes of memory. IC20 is a 32 kbyte RAM (Random Access Memory) used for scratch-pad read write operations. Unlike the other memory ICs which are non-volatile, the contents of the RAM are lost when the instrument is switched off. EAROM (Electrically Alterable ROM) IC114 provides 8 kbytes of non-volatile storage for calibration data, user stores, etc. These five ICs are connected to programmable chip select lines LCS, MCS and UCS from the processor. By this means, the exact locations in the address space are determined by the initialisation software which is executed at switch-on. When the onset of a power failure (a brown-out) is detected by AR1 it pulls PLAA to +26 V which, via IC127, prevents any further write operations until after the EAROM is disabled.

Communication interface

The main microprocessor communicates with the front panel microprocessor on AF2/1 via a serial link. Data input consists of information relating to key presses, knob rotation, faults etc. Data output is mostly display information.

Data in

Data input is accomplished on this board using SIPO (serial-in, parallel-out converter) IC126, decoder IC123 and an R-S bistable used for interrupt request formed by NAND-gates IC124c and d. The SIPO is an 8-bit serial-in, parallel-out shift register with internal latches and tri-state outputs.

The data transfer process starts with the front panel processor taking TX/RX high to enable the AF2/1 send buffers. It then uses SCL to serially clock 8 bits of data into the shift register of the SIPO.

When the complete data byte has been transmitted, the front panel processor pulses BTF low. BTF is inverted by IC122d then ANDed with TX/RX by IC121d. This provides an enable signal for the SIPO's internal latches which then accept the data. BTF pulsed low with TX/RX low sets the R-S bistable and a main processor interrupt is requested on INT1.

When it services the INT1 interrupt, the main processor reads the data latched in the SIPO. The I/O address formed by A5, A6 and PCS5 causes pin 5 of decoder IC123 to pulse pin 5 low, this is gated with RD by OR-gate IC127b to provide output enable EN3 for the SIPO.

This action has two further effects: the decoder output resets the bistable, removing the interrupt; and the output enable provides RACK (Receipt ACKnowledge) for the front panel processor. RACK tells the front panel that it is free to send another byte by repeating the data input process.

Data out

Data output is accomplished on this board using PISO (parallel-in, serial-out converter) IC125, decoder IC123 and an R-S bistable used for DMA request formed by NAND gates IC124a and b.

The process starts with the main processor writing the first byte of the message into PISO IC125. The I/O address formed by A5, A6 and PCS5 causes pin 4 of the decoder to pulse low. This is gated with WR by OR-gate IC27a to latch the data into the PISO by taking its pin 1 low. At the same time, the DMA request bistable is cleared and RRQST (Receipt ReQueST) informs the front panel processor that data is available to be read.

The front panel processor responds by sending TX/RX low, enabling the PISO clock on pin 15. The parallel data is then serially shifted out onto the TX data line by the serial clock SCL to pin 2, and sent to board AF2/1.

When the byte has been received, the front panel processor pulses BTF low which enables the decoder. With TX/RX also low, pin 12 is taken low which sets the bistable output high to request DMA on the main processor DRQ0 input.

The DMA channel uses its source pointer to address the memory to obtain the next byte of data, and its destination pointer to select the PISO for storing the obtained byte. Data transfer continues using the DMA process until the required number of bytes has been sent.

Status interrupts

IC108 is a magnitude comparator that detects any change in the status of certain control lines. These lines, there are 8 of them, monitor fault conditions such as ALC high or low, VCO out of lock etc. The states of these lines are held latched in IC107 and applied to one half of the comparator. The same lines in a 'live' condition, i.e. able to indicate a change of state, are applied to the other half of the comparator. The comparator compares the two sets of lines for equality; when they are the same output pin 19 is low. But if a change of state is detected, e.g. a VCO goes out of lock, comparator pin 19 is taken high to cause a status interrupt at the processor INT2 input. Interrupts thus occur not only when an error is caused but also when an error is rectified.

To service the interrupt the processor addresses buffer IC110 with PCS1 then pulses RD low. This enables the buffer's tristate outputs and the processor reads the status byte. The processor writes this data into D-type bistable IC107. With both sets of inputs again the same, comparator output returns low and the interrupt request is removed ready for the next change in the status line.

Nibble bus

The nibble bus circuit performs two functions. For the first function, tristate buffer IC104a is disabled by IC105 pin 9 being taken high. This allows comparator IC106, D-type bistable IC105 and buffer IC104b together to perform a similar function to the status interrupts circuit. In this case however, the lower 4-bits of data on AD0 to AD3 are compared for equality and IC106 output pin 6 is taken high if true. This output is fed to pin 18 of the status comparator. IC108 thus uses one input to check the states of four lines. When an interrupt is serviced, and the processor finds bit 7 of the status byte changed, it uses PCS2 and RD to read the nibble then pulses WR to relatch IC105.

For the second function, the circuit performs as an interface to devices outside the RF box assembly; these being attenuator assembly AT1 containing board AT11, the low noise tray containing boards AC1, AD1 and AD2, and an optional second RF box assembly. The interface functions using 4 quasi-bidirectional data/address lines, AD0 to AD3 and the STROBE line. But first, to disable the status interrupts function, IC106 pin 3 is taken low.

To send data the 4-bit address is placed on the nibble bus and STROBE taken high, latching this address at the destination. The data is then put on the bus and the STROBE taken low latching the data at the address previously selected.

The nibble bus is also used to receive data. A nibble of data at the remote node is connected to the bus via resistors of suitable value (a few kilohms). While the main processor is sending, the low output impedance of the driver controls the bus, but if the tristate sender is sent open circuit the remote data is seen on the bus via the resistors which are now of small impedance compared to the input. When needed, one of a number of remote drivers is selected by writing to a suitable latch. In this condition, the bus lines are connected to an interrupt line so as to monitor external events such as a reverse power protection trip.

Quasi-static bus

Both address and data buses are buffered so as to free the I/O bus wiring from the normally continuous trains of pulses from the processor area. The I/O address is buffered by octal latch IC117 while the two-way data is buffered by octal transceiver IC118. For the latter, data direction is determined by pin 1. When this is taken low data is received onto the processor bus, and when taken high data is sent out on the I/O bus. When IC121a pin 19 is taken high both buffers are disabled and the two buses are isolated.

GPIB interface

The function of IC113 is to provide communication between the instrument and the General Purpose Interface Bus (GPIB). The IC is a talker/listener which, in conjunction with transceivers IC115 and IC116, implements all the necessary GPIB functions for the instrument. (Details of the functions are given in Chap. 3-2 of the Operating Manual.) It is processor controlled and has capabilities which include data transfer, handshake protocol, talker/listener address recognition, service request and serial poll.

The interface takes care of data transfer as well as decoding control messages. Control messages and addresses are passed on the data bus by means of the handshaking process with ATN (attention) asserted to differentiate them from data. The IC also performs address recognition. When its own address is recognised (set from the front panel and then via the RS0 to RS2 inputs), the data on DIO lines 6 and 7 is decoded to determine whether the instrument is being addressed as a talker or a listener. When designated a talker, the interface transfers data from the processor by means of a talk handshake to listeners via an internal register to the transceivers configured to send. When designated a listener, data is received via the transceivers by means of the listen handshake and stored in an internal data register.

Data outputs and inputs are via transceivers IC115 and IC116 with the direction of data transfer controlled by the T/R1 line being taken high for outputs and low for inputs. The sole function of T/R2 is to set the bus management EOI line low for reception or high for transmission. The GPIB clock for the interface is supplied by inverter IC129a, R124 and C137. The CR time constant sets the frequency to 1 MHz while the on/off thresholds of the Schmitt provide a square wave which is further shaped by IC129b.

CONTROL: AUDIO SYNTHESIZER (AA1/2 sheet 2)

Circuit diagram: Fig. 7-7.

The instrument is provided with the facility to generate a single tone (two tones if the second LF oscillator option is fitted) at any frequency from 0.1 Hz up to the band limit of 500 kHz in 0.1 Hz increments.

Two different normalised waveforms are stored in an EPROM look-up table which, under the control of a custom ASIC, is periodically addressed to regenerate the waveform in discrete steps via a D-A converter. Simple interpolation between the quantized levels is done by a low-pass filter which also helps to reject high order harmonics. The block diagram of the audio synthesizer is shown in Fig. 4-2-3.

Controller and waveform store

The internal audio source is controlled by ASIC IC201 (IC209 for osc 2). This co-ordinates the addressing of the waveform store EPROM with the generation of the required waveform and frequency. IC202 is a 64 kbyte 16-bit EPROM which holds digitised complete cycles of two normalised periodic waveforms. The 3 sections of multiplexer IC208 are each 1 of 2 channel selectors. Channel selection is by the logic levels on pins 9, 10 and 11 which, when taken high, select the channels connected to pins 3, 1 and 13 respectively. One section selects which waveform is obtained from the EPROM by modifying the most significant bit of the address. (The remaining sections are reserved for future use.) By using the 1.6777216 MHz REF clock normally to IC209 and inverted to IC201 there are no conflicts in waveform selection (see Table 4-2-11).

Because the technique is totally digital and is clocked synchronously from the 104.8576 MHz on-board reference, the audio frequency generated has the same frequency stability as the selected standard.

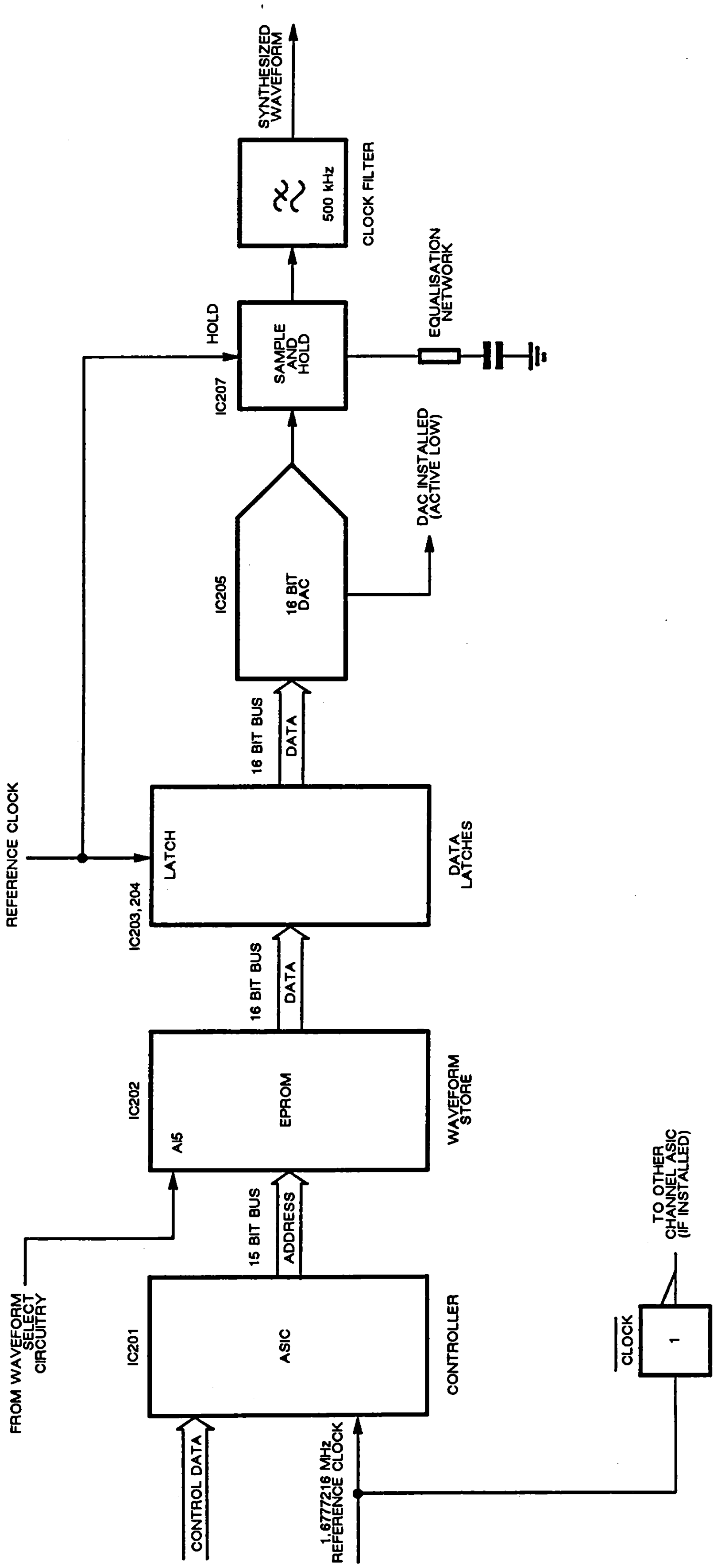

Fig. 4-2-3 Audio synthesizer

TABLE 4-2-1 WAVEFORM ADDRESS SELECTION - AA1/2

IC208 pin 1	IC208 pin 2	Effect
0	-	Waveform 1 on internal audio osc 1
1	-	Waveform 2 on internal audio osc 1
-	0	(Waveform 1 on internal audio osc 2)
-	1	(Waveform 2 on internal audio osc 2)

Note...

Internal audio osc 2 is only available when the correct components e.g. IC209, IC212, have been loaded into the sockets on the boards.

Audio D-As and clock filter

The data from the EPROM is held for one clock cycle by latches IC203 and IC204 (IC210 and IC211 for osc 2) to allow the 16-bit D-A converter IC205 (IC212) to operate. Holding the data presented to each D-A converter in turn enables the ASICs to work on the opposite edges of the REF clock. This therefore enables the simultaneous generation of two independent frequencies and waveforms. Buffer IC206 (IC213) feeds to the output de-glitcher.

A sample and hold gate IC207 (IC214) is used to de-glitch the output from the D-A converter which is prone to generating glitches as the data patterns change on its inputs. R220, R223 and C243 (R221, R222 and C244) provide a degree of equalization at the top frequency which otherwise falls off due to the limited bandwidth of IC205 (IC212). R217 and R218 limit the device dissipation of IC207 (IC214).

The following 500 kHz low-pass clock filter is provided to remove the clock frequency and its harmonics from the final signal. The filter is designed to be -80 dBc down on the audio frequency above 1.6 MHz. R204 and R205 (R209 and R210) terminate the filter in the required load impedances. Filter output is fed to the audio multiplexers (sheet 3).

CONTROL: EXT MOD AND AUDIO OUTPUT (AA1/2 sheet 3)

Circuit diagram: Fig. 7-8.

Two external inputs, EXT MOD 1 and EXT MOD 2 are provided which, together with the two internal sources, allow up to four independent tones to be superimposed on the carrier. This facility is made use of in the dual composite modulation mode. The two direct paths are user-selectable. Choosing the AC route allows operation down to 10 Hz while the DC route enables operation to DC. The ALC (Automatic Levelling Control) enables the instrument to accept a wide range of input modulating waveform amplitudes without losing calibration. The block diagram for the EXT MOD 1 conditioning circuit is shown in Fig. 4-2-4. EXT MOD 2 is similar.

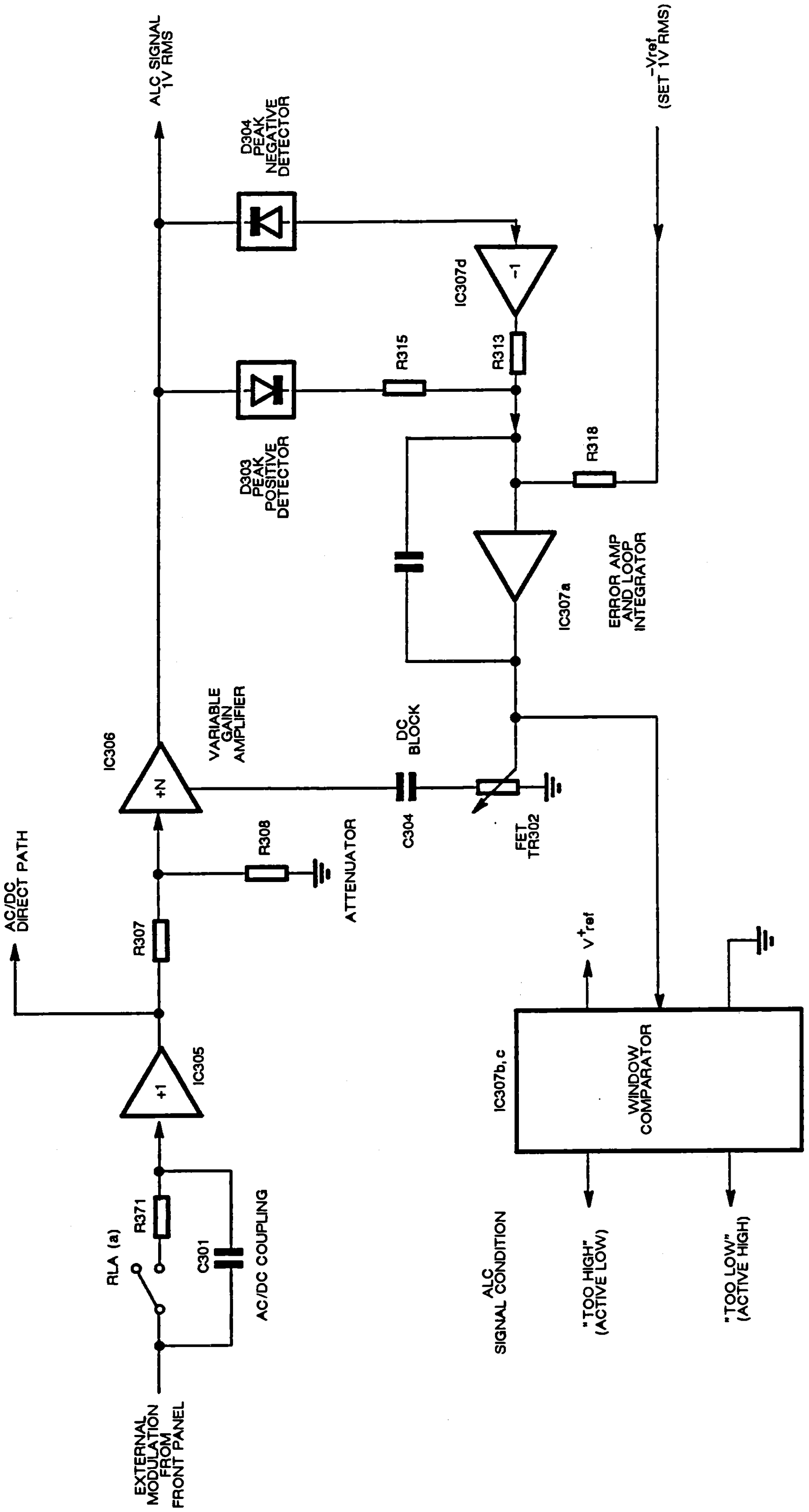

Fig. 4-2-4 EXT MOD 1 conditioning circuit

Modulation channels

As the two modulation channels are identical in operation, only one is described below in detail, that connected to the EXT MOD 1 INPUT. The only difference between the two channels is in component numbering.

External modulation enters board AA1/2 on contact 2 of PLAJ. With RLA(a) contact open the AC path through C301 is selected, when closed the capacitor is by-passed and operation down to DC is enabled. R371 prevents contact failure during the switching operations. Relay selection is shown in Table 4-2-5.

The DIRECT 1 PATH is buffered by IC305 to provide a low drive impedance for the ALC and the analogue multiplexer array IC311 to IC315. Diodes D317 and D318 protect the input of the multiplexers from excessive voltage excursions above +5 V or below -5 V.

For an AC coupled signal, automatic levelling to 1 V RMS is achieved by modifying the gain around non-inverting amplifier IC306 by using FET TR302. The buffered signal is attenuated by R307 and R308 to bring it within the operating range of the ALC.

The output is then sampled by peak-positive (D303 and C305) and peak-negative (D304 and C306) detectors. A measure of the peak-to-peak level is obtained by inverting the voltage from peak-negative detector IC307d and summing this with the peak-positive voltage at pin 2 of IC307a which also acts as the error amplifier/integrator for the levelling loop. D301 prevents error integration in the wrong direction.

The voltage from the error amplifier is used to drive the gate of FET TR302 to a point where the current flowing through diode D302 equals the sum of the currents through R313 and R315 which correspond to the peak detected levels. D319 and D320 on the ALC 1 PATH protect the inputs of the analogue multiplexers against excessive signal levels which may be generated while the loop is settling.

R373 and R310 provide a common AC signal between the gate and the drain to linearise the FET characteristics at high drain-source resistance. R312 prevents the loop from becoming unstable for closed loop gains of less than 10. C304 acts as a DC block to suppress any unwanted DC offset injection into the loop.

IC307b and c form a window comparator which detects when the error amplifier output exceeds the boundary set by the maximum pinch-off voltage of the FET. R321 and R322 provide hysteresis around the comparator to prevent multiple-edge generation. The outputs from detectors D305 and D306 on the ALC HIGH and ALC LOW lines are attenuated to logic levels by R323, R324 and R325, R326 respectively to provide status interrupts to the main processor via IC108 and IC110 (sheet 1).

LF multiplexers

LF multiplexers IC311 to IC315 allow each of the FM, AM and audio output chains to connect to one of many user-selectable internal sources. This gives the user maximum flexibility in configuring and monitoring the sources of modulation within the instrument.

The analogue multiplexers are controlled by D-type latches IC302, IC303 and IC304. The latch decoding is shown in Table 4-2-2 together with the source selection decoding shown in Tables 4-2-3 and 4-2-4. IC316, IC317 and IC318 buffer the signals from multiplexers IC311 to IC315 and provide a low drive impedance to IC402 (sheet 4) and IC502 (sheet 5).

TABLE 4-2-2 LATCH DECODING - AA1/2

Destination	Select table	IC and control lines used
Audio output	3	IC304 D0 > D2
FM1	4	IC302 D0 > D2
FM2	4	IC302 D3 > D5
AM1	4	IC303 D0 > D2
AM2	4	IC303 D3 > D5

TABLE 4-2-3 SOURCE SELECTION DECODING - AA1/2

IC304			
D2	D1	D0	Source selected
0	0	0	Int audio gen 1
0	0	1	Int audio gen 2
0	1	0	Ext 1 ALC coupled
0	1	1	Ext 2 ALC coupled
1	0	0	FM composite
1	0	1	AM composite
1	1	0	Earth
1	1	1	Earth

TABLE 4-2-4 SOURCE SELECTION DECODING - AA1/2

IC302 and IC303			
D2/D5	D1/D4	D0/D3	Source selected
0	0	0	Int audio gen 1
0	0	1	Int audio gen 2
0	1	0	Ext 1 ALC coupled
0	1	1	Ext 2 ALC coupled
1	0	0	FM composite
1	0	1	AM composite
1	1	0	Earth
1	1	1	Earth

TABLE 4-2-5 RELAY CONTROL - AA1/2

IC number and data line	Relay operated	Function when contact closed
IC303 D6	RLA	Ext 1 DC coupling
IC303 D7	RLB	Ext 2 DC coupling
IC304 D5	RLC	Inserts 48 dB into LFoutput circuit

LF output

The audio to the LF OUTPUT socket is provided to enable the state of the modulation within the instrument be monitored. When in LF generator mode, this output is adjustable from 5 V down to 100 µV into a nominal 600 Ω load impedance (less into 50 Ω). A floating earth is provided to break up any hum loop which may be present between the instrument and any external measuring devices. The block diagram for the audio output stage is shown in Fig. 4-2-55.

IC319 is a 12-bit multiplying D-A converter which together with IC320 gives fine adjustment for the eventual audio output from the front panel. R354 and C313 form a lead network to improve high frequency stability. R335, R356, R357 and R358 form a coarse attenuator network which is tapped at 0, 12, 24 and 36 dB attenuations by IC321 pins 13, 14, 15, and 12 respectively. The audio signal is then buffered by IC322 and fed into the low impedance driver.

IC324 is a current buffer which boosts the output drive capabilities of IC323. The DC offset and gain variations of IC324 are corrected by enclosing the device within the feedback loop of IC323. R361 sets the output characteristics of the device.

R365 and R366 form a 48 dB L-pad which is used together with the fixed 12, 24 and 36 dB pads to set coarse attenuation of the eventual output level. R362 and R363 form a floating earth guard (PLAP contact 9) to facilitate the reduction of earth loop generated signals that may be present between the instrument and external measuring devices. Note that this works in conjunction with a 1 Ω resistor positioned on the earth of the LF OUTPUT socket on the front panel.

Sweep functions

The sweep facility of the instrument allows discrete increments of the RF frequency, RF level or audio level over user-specified limits and time. The block diagram of the sweep function is shown in Fig. 4-2-6.

All sweeps are digitally based and therefore each selected parameter changes in a discrete step for a unit length of time. The greater the number of steps over the preset limits, the smoother the sweep becomes.

Sweep ramp and markers are provided to give a degree of synchronisation to an external measuring device such as an XY display or plotter. Again the ramp is digitally generated, each step corresponding to an increment of a parameter.

The rear panel SWEEP TRIGGER input is used as a general 'start event' input. This facility allows the start of the sweep to be synchronised with an external device. The default is SINGLE SWEEP triggered from a screen menu soft key.

The sweep ramp is generated by IC319 to IC318b pin 6. As the requested sweep parameter is changed internally the D-A converter is updated to the next appropriate value to maintain synchronisation. The sweep is complete when the ramp output reaches +10 V. The magnitude of the steps in the ramp is governed by the number of steps requested by the user. R549 protects the SWEEP RAMP output against excessive input voltages and sets an output impedance of 600 Ω.

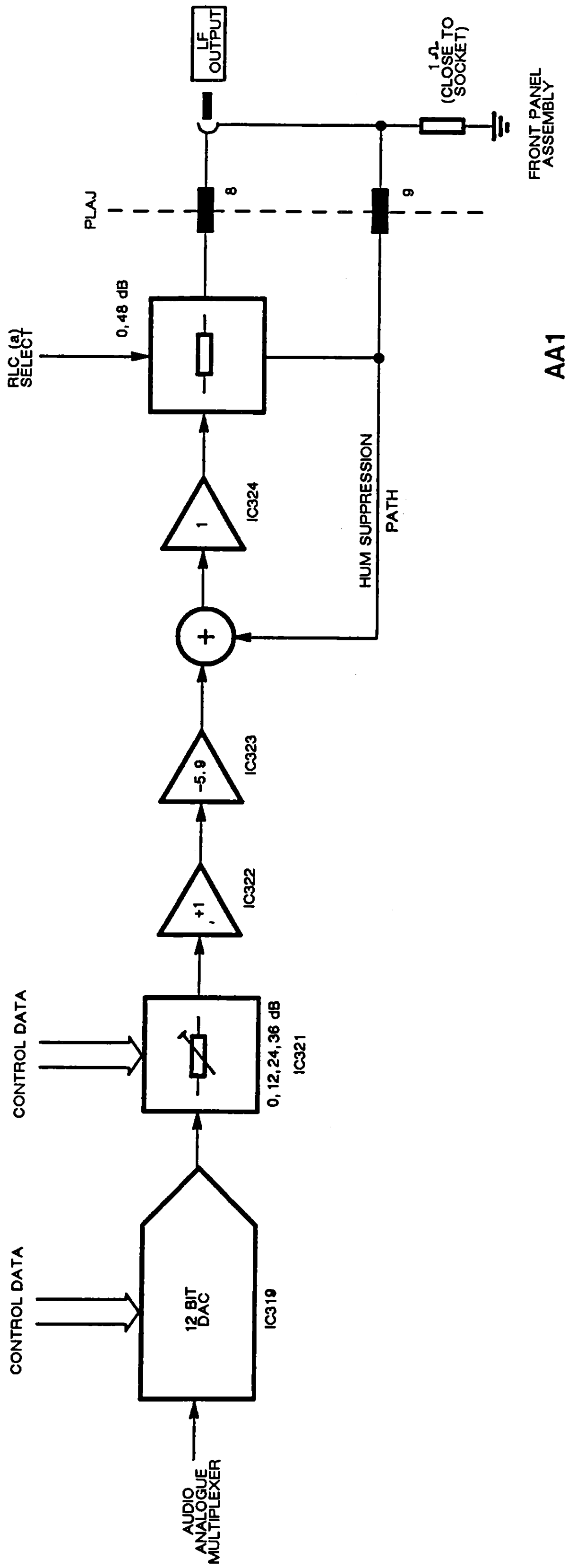

Fig. 4-2-5 LF output stage

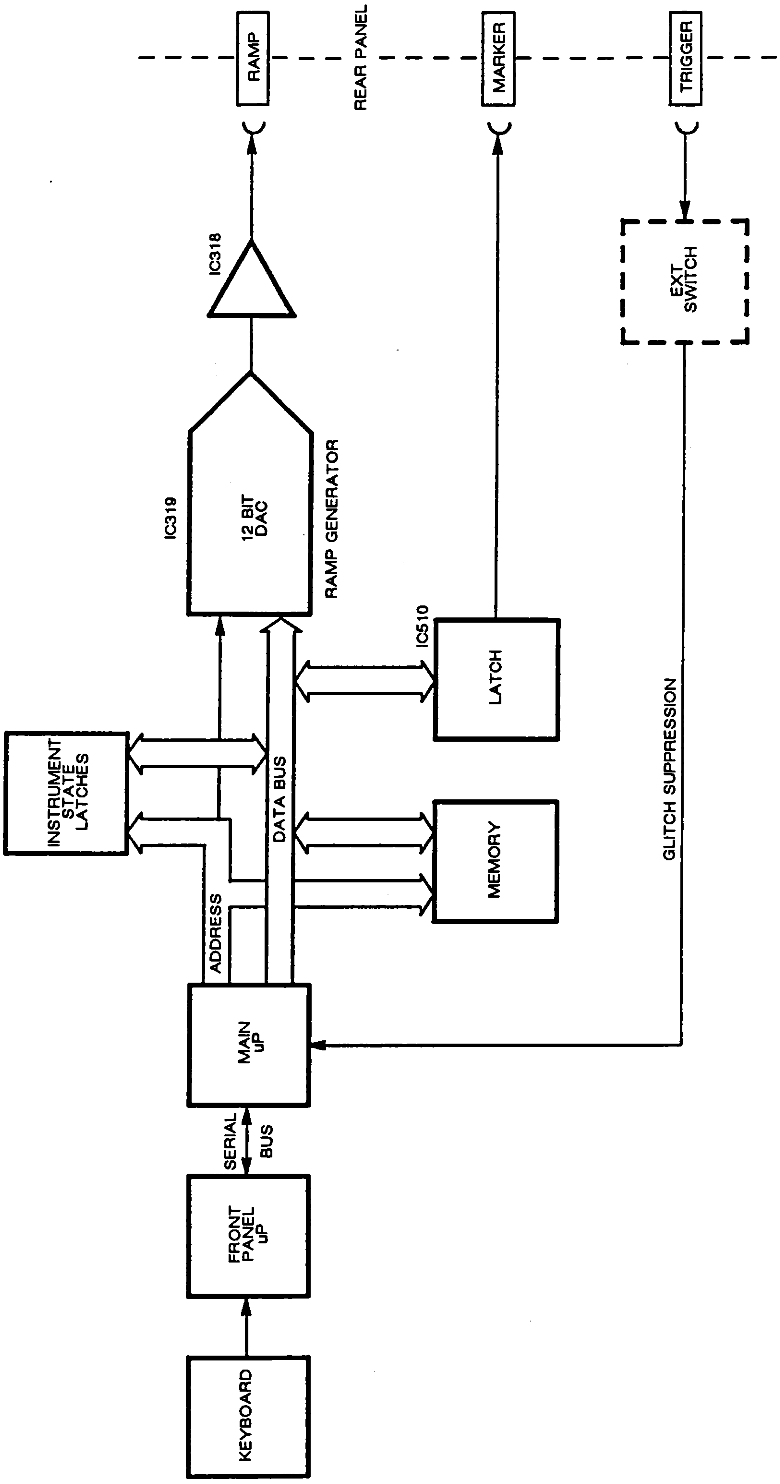

Fig. 4-2-6 Sweep function

The sweep marker is generated by IC510 pin 6 (sheet 6). This line pulses high as the sweep passes through the selected marker point set up by the user. R550 protects the output against incorrect connection to other devices.

External sweep trigger (sheet 1) interrupts main processor IC101 (via INT3) which then takes the necessary action to initiate the requested function. When selected, a logical low triggers the instrument. R107 and C131 prevent spurious triggering due to glitches and noise. R108 permits operation by the closing of a simple external switch (e.g. a footswitch).

CONTROL: FM AND ΦM DRIVE (AA1/2 sheet 4)

Circuit diagram: Fig. 7-9.

FM adjusts the instantaneous RF frequency in direct sympathy with the modulating signal. The amount of frequency deviation is directly proportional to the magnitude of the modulation source. With phase modulation the frequency deviation is also proportional to the frequency of modulation. The block diagram of the FM and ΦM drive is shown in Fig. 4-2-7.

For moderate modulation rates the signal is injected straight onto the VCO tune line after suitable scaling by D-A converters (giving fine control) and fixed attenuators (giving coarse control).

Inside the loop bandwidth this method is not valid as the loop cannot distinguish between FM and other VCO frequency errors. It would therefore try to compensate for the modulation tone by returning the carrier back to the original requested frequency. A digital system is used to overcome this effect which also has the benefit of extending the modulation range down to DC.

The modulation is sampled by a 1-bit over sampling A-D converter whose output controls the synthesizer gate array controller ASIC in such a way as to offset the carrier frequency in proportion to the magnitude of the modulation. The speed at which the ASIC can perform this function sets a limit to the overall bandwidth of the system. At frequencies above the loop bandwidth the analogue system dominates, see Fig. 4-2-8.

In both systems phase modulation is provided by a passive high-pass integration network which effectively increases the drive to the varactor with increasing modulation frequency.

Operation

Outputs from analogue multiplexers IC312 for the FM1 signal and IC313 for the FM2 signal (sheet 3) are fed to IC402, a dual 12-bit multiplying D-A converter, which together with IC403 and IC404 acts as a fine level control. Coarse setting is achieved by a group of fixed passive pads giving attenuation on this board of up to a maximum of 45 dB. R463 and C455 act as a local supply line filter which is also used by IC319 (sheet 3).

Composite FM (the algebraic sum of FM1 and FM2) is derived by the addition of the two signals, at pin 2 of IC405, by resistors R424 and R425. Since these resistors are of equal value, each channel has an equal weighting on the eventual FM output. R426 and C433 are used to

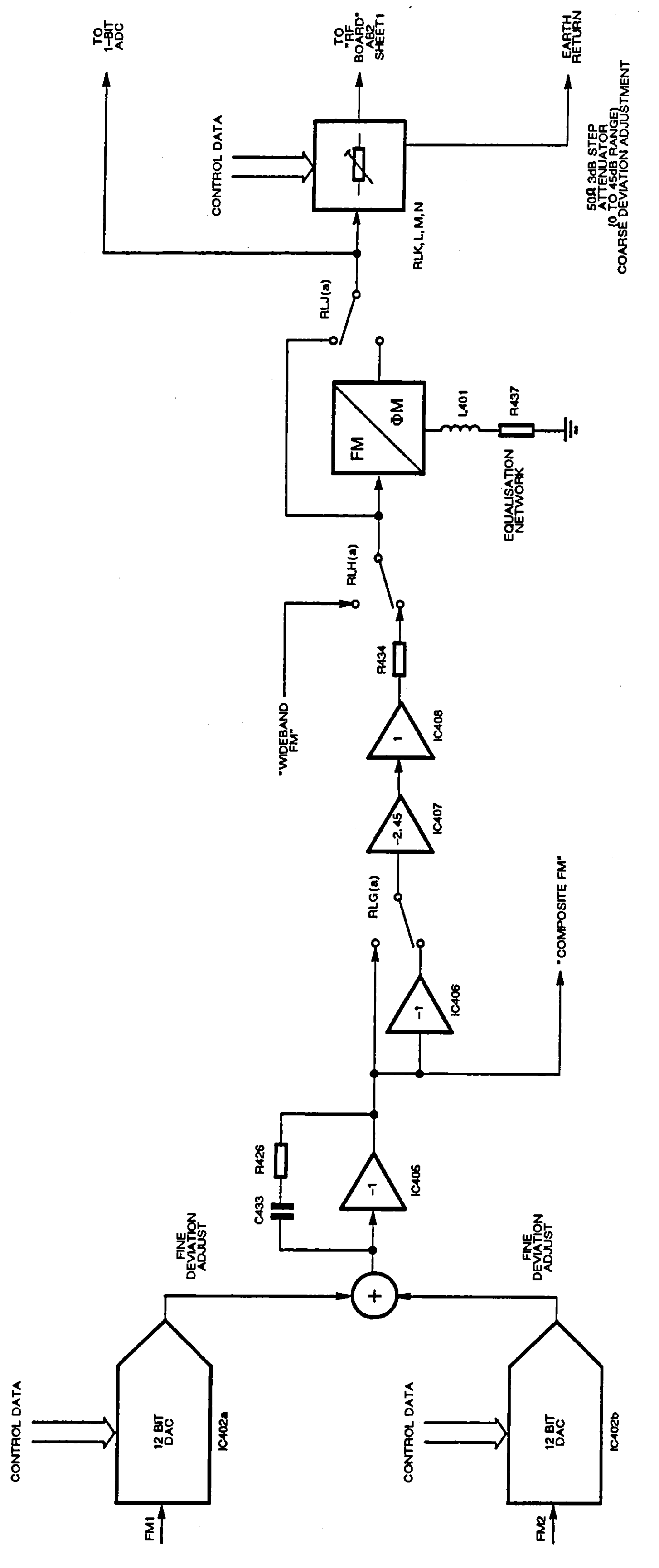

Fig. 4-2-7 FM and ΦM drive chain

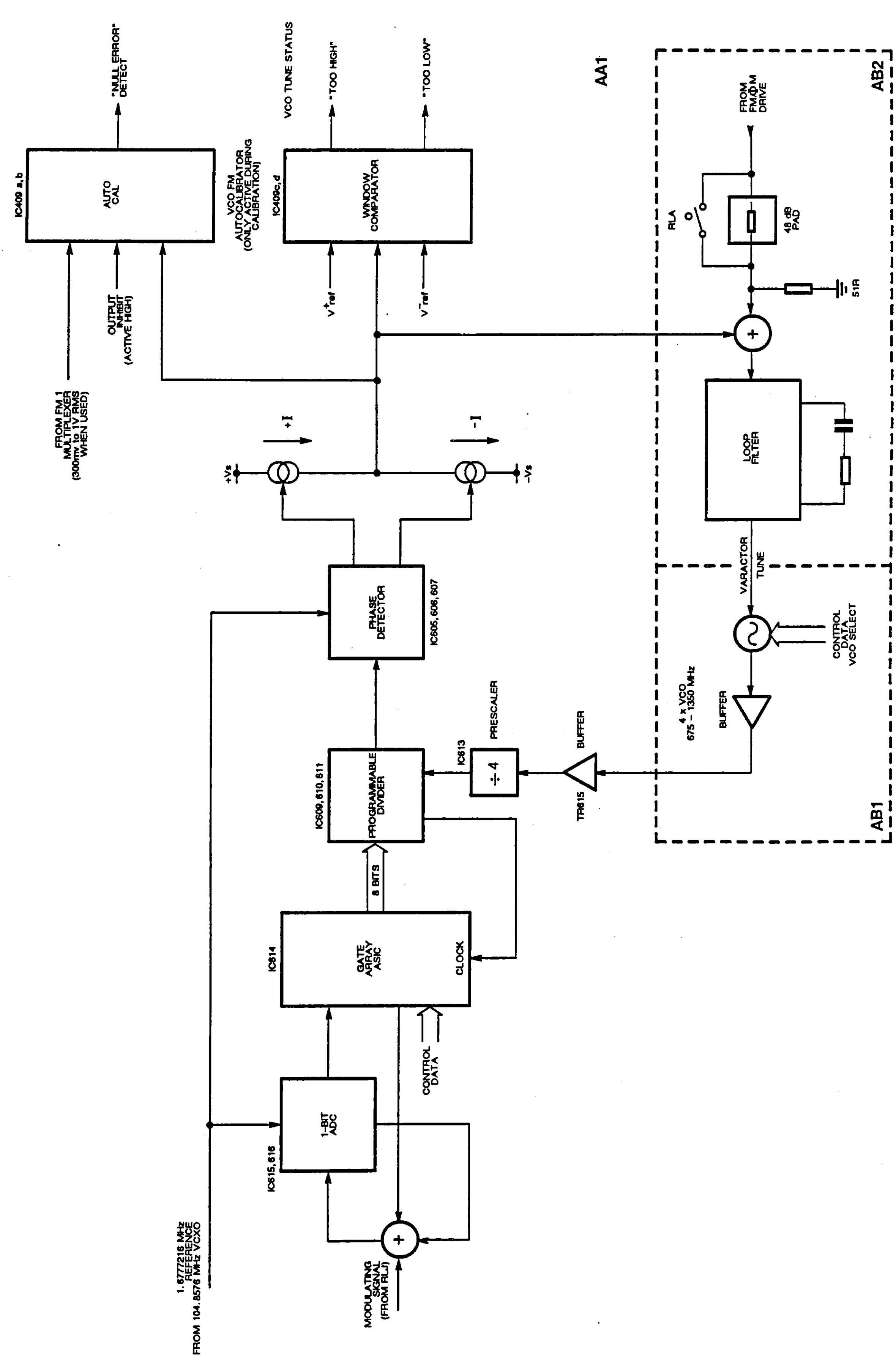

Fig. 4-2-8 Frequency synthesis with FM/ΦM and autocalibrator

improve the HF stability. IC406 is a signal inverter which corrects the phase relationship between the incoming modulating signal and the eventual output. Relay contact RLG(a) selects the appropriate path. C434 reduces the noise bandwidth of the drive chain by dropping the gain at high frequencies.

Conversion to a low impedance (to drive into the 50 Ω coarse step attenuator) is achieved by IC407 and IC408. IC407 is a current buffer and is used to boost the output drive to IC408. Any errors due to DC offset and gain variations within IC408 are accommodated by enclosing it within the feedback loop of IC407. R431 and C435 improve HF stability within the loop.

Coarse attenuation is set in 3 dB steps by R438 to R449 (and R34 to R36 on AB2/2, sheet 1). Relays RLK to RLN (and RLA on AB2/2) are used to select the appropriate values. Each pad is a pi-configuration which maintains a 50 Ω impedance to ensure wide band operation into many megahertz. R436 and R437 form a pseudo-floating earth to reduce any hum-related signals which may be present on the earth of the attenuator on the board. It operates by feeding a common mode signal back onto the output of IC408 to cancel that present on the floating earth. IC411 controls the relays by means of data from latch IC412. R450 limits the current flowing through the coils. The earth for the 24 dB pad is split between the AA1/2 and AB2/2 boards to reduce effects of hum loops within the instrument chassis. C446 helps to linearise the 24 dB pad at HF by compensating for the inductance incurred by the cable length between PLAN contact 33 and PLBJ contact 15 (AB2/2).

Wideband FM comes onto AA1/2 on PLAR contact 2 and is selected by operation of relay contact RLH(a). Since the passive attenuator can only be adjusted in 3.01 dB steps, the requested WBFM deviation is adjustable in equivalent steps.

FM to ΦM conversion is achieved by C436 and R437 which form a high-pass 6 dB/octave equalization network. L401 extends the linearity of the converter by peaking the response close to 20 kHz. Using a totally passive network helps to reduce any distortion products which may be generated by an equivalent active network.

VCO FM tracking autocalibration is performed by IC409a and b and associated circuitry (see 'Synthesizer operation' for details). Forward biasing D409 suppresses the operation of the autocalibrator and prevents unnecessary interruption of the main processor.

Digital FM and ΦM at low modulation frequencies is achieved by the combination of the 1-bit over sampled A-D converter formed by IC615, IC616 (sheet 7) and the synthesizer ASIC IC614. The A-D converter samples the modulation source at a high rate and passes the information to the gate array controller in a high speed serial data stream. The ASIC then modifies the ECL counters to change the instantaneous frequency of the carrier.

CONTROL: AM DRIVE AND RF LEVEL (AA1/2 sheet 5)

Circuit diagram: Fig. 7-10.

The amplitude modulator adjusts the magnitude of the RF carrier in direct sympathy with a modulating signal. The block diagram of the RF level setting is shown in Fig. 4-2-9. It is also used to provide electronic attenuation of the RF output of the generator.

The AM drive therefore provides a DC level corresponding to the average RF level with the AC modulation superimposed. The AM drive circuit produces a waveform with independent control of both parameters. The block diagram of the AM control is shown in Fig. 4-2-10.

Modulation depth

Outputs from the analogue multiplexers IC314 for the AM1 signal (sheet 3) and IC315 for the AM2 signal are directed to IC502, a dual 12-bit multiplying D-A converter which controls the depth of modulation imparted to the RF carrier. AM composite (the algebraic sum of AM1 and AM2) is generated by adding the two signals from IC503a and b using resistors R501 and R502. Since these resistors are of equal value each channel is given equal weighting. IC503d sums and inverts the signals to maintain the correct phase relationship between the envelope on the carrier and the selected modulation source.

Overmodulation, i.e. depth in excess of 100%, is suppressed in normal operation by software limiting. However, this does not protect against over-modulation due to overloading the drive chain. It is important to bear this in mind when using composite or quadruple modulation where the indexes and depths can easily exceed the capabilities of the measuring receiver, if due care is not taken. Maximum depth of modulation for each type is shown in Table 4-2-6.

The RF level is set by a DC level from 12-bit D-A converter IC505 which eventually controls the amount to attenuation set within the AM modulator, which also acts as the electronic attenuator for the RF carrier on the AB2/2 board.

TABLE 4-2-6 MODULATION TYPE VERSUS MAXIMUM DEPTH - AA1/2

Modulation scheme	Normal maximum depth of modulation	
	AM1	AM2
Single	0 - 99.9%	Not used
Dual	0 - 99.9%	Not used
Composite	0 - 99.9%	99.9 - 0%
Quad	0 - 99.9%	99.9 - 0%

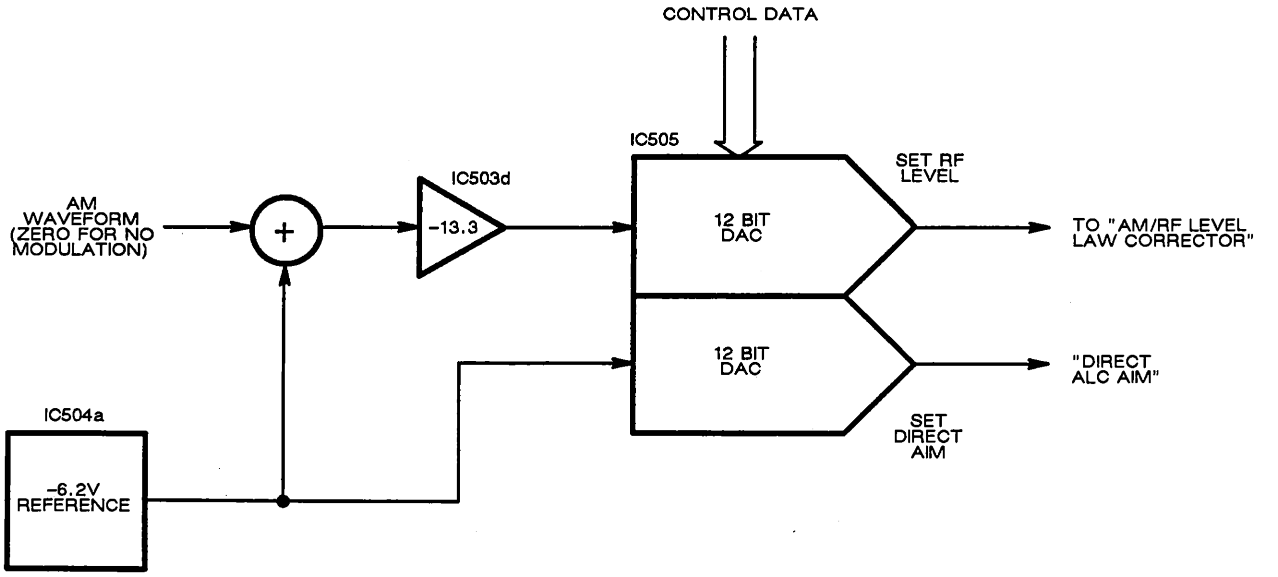

Fig. 4-2-9 RF level setting

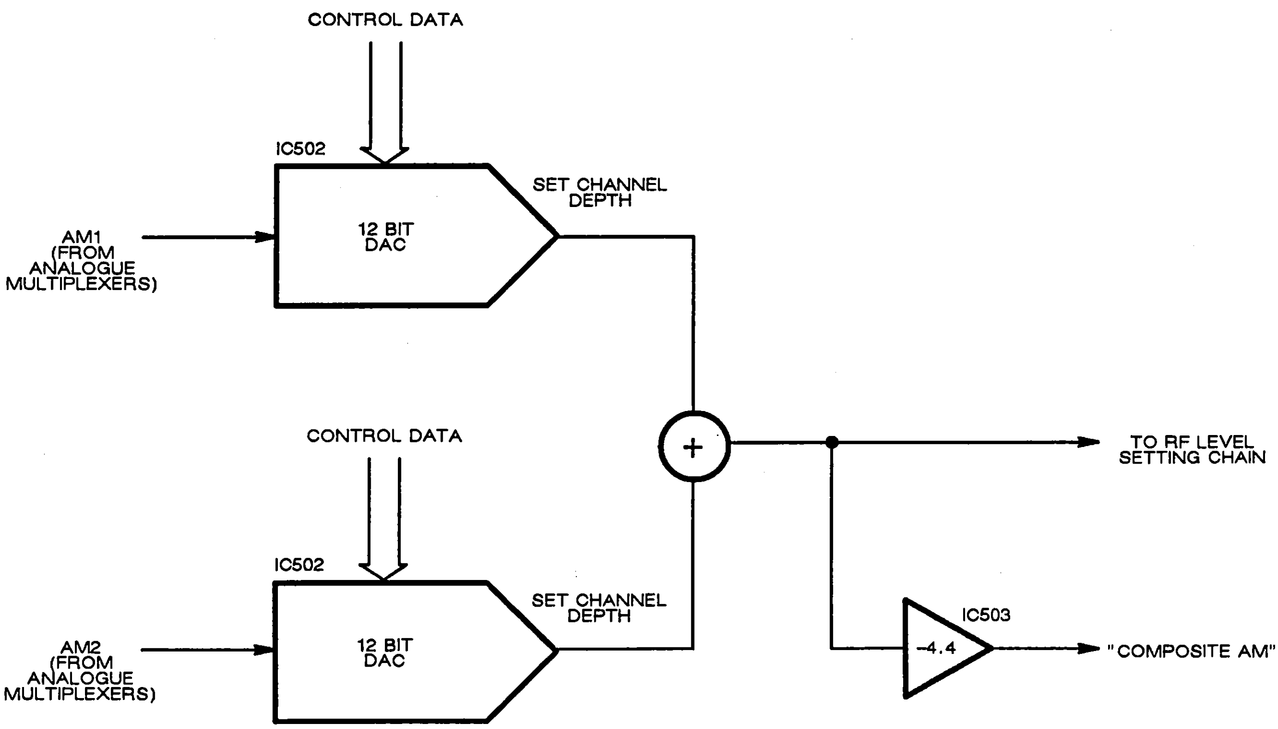

Fig. 4-2-10 AM control

A -6.2 V reference voltage is derived from IC504a. This IC is configured to provide a fixed amount of current flowing through Zener diode D502 thus reducing the influences of Zener voltage drift with temperature. Working from this reference, the AM signal is mixed with the DC reference (which governs the average RF level) at pin 13 of IC503d.

Programming D-A converter IC505 enables attenuation of both the AM and DC simultaneously, keeping the ratio between the two constant. This is important as the depth of modulation is defined as:

$$\text{AM depth} = \frac{\text{Peak to peak of RF envelope}}{\text{Trough to trough of RF envelope}} \times 100\%$$

$$= \frac{\text{Magnitude of modulation of the RF envelope}}{\text{Trough to trough of RF envelope}} \times 100\%$$

By using two separate D-A converters, IC502 and IC505, control of the depth of modulation can be performed independently of the requested RF level. By injecting a fixed current from IC507 pin 23, any accumulated offset voltages can be cancelled at the input of IC506b pin 6. This therefore corrects the denominator term in the above equations for the depth of modulation. R515 provides a negative bias to IC506b to allow for bipolar correction from IC507 pin 23.

IC505 pin 22 also produces a direct ALC aim signal, from the same voltage reference, which is used to hold the RF ALC loop. This facility is only used when the pulse modulator is operating as otherwise the loop would try to compensate for the lack of RF level during the off period.

CONTROL: AM AND RF LAW CORRECTION (AA1/2 sheet 5)

Circuit diagram: Fig. 7-10.

The generation of a perfectly undistorted AM carrier requires a perfectly linear detector which detects the magnitude of the carrier. In practice no such device exists and all schemes are prone to becoming non-linear at some operating level. The purpose of this circuit is to predistort the ALC REF signal to compensate for the diode law of the detector at low RF levels. The transfer function is shown in Fig. 4-2-11.

Normal carrier levels can be considered to be an AM envelope which is controlled by a DC modulating voltage. Therefore the corrector is also used when setting a carrier level but without any set amplitude modulation. Fig. 4-2-12 shows the block diagram of the law correction.

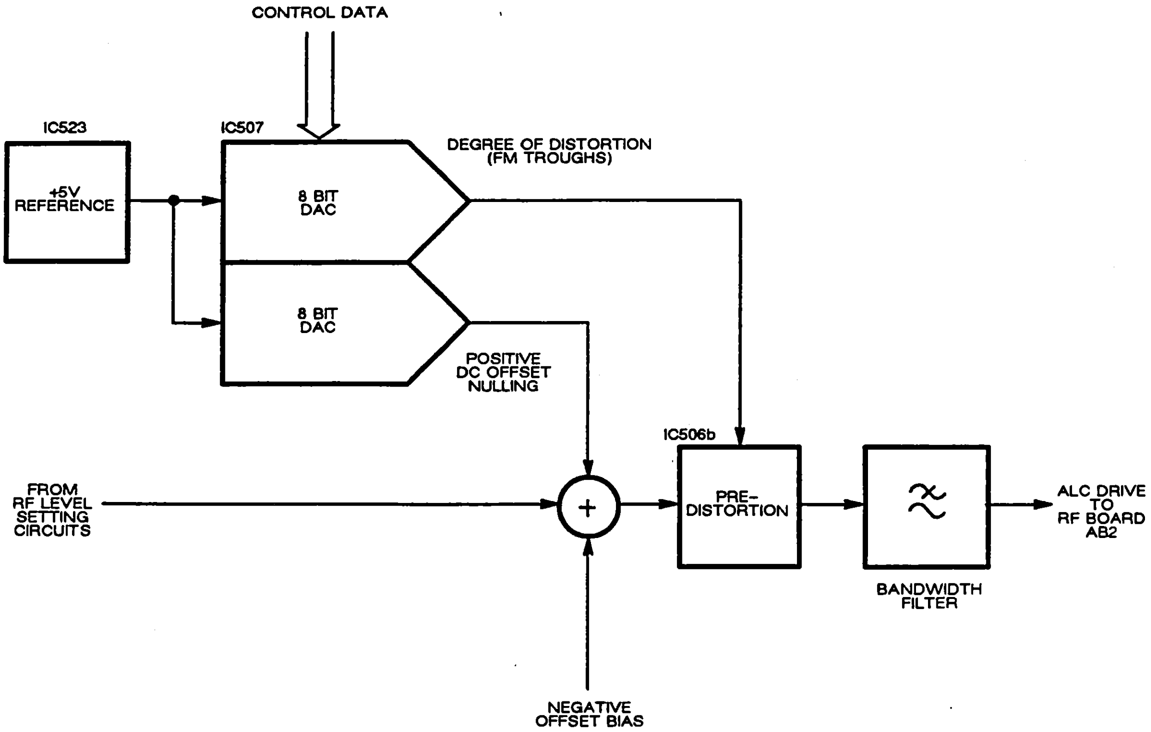

Fig. 4-2-11 Amplitude modulator/electronic attenuator transfer function

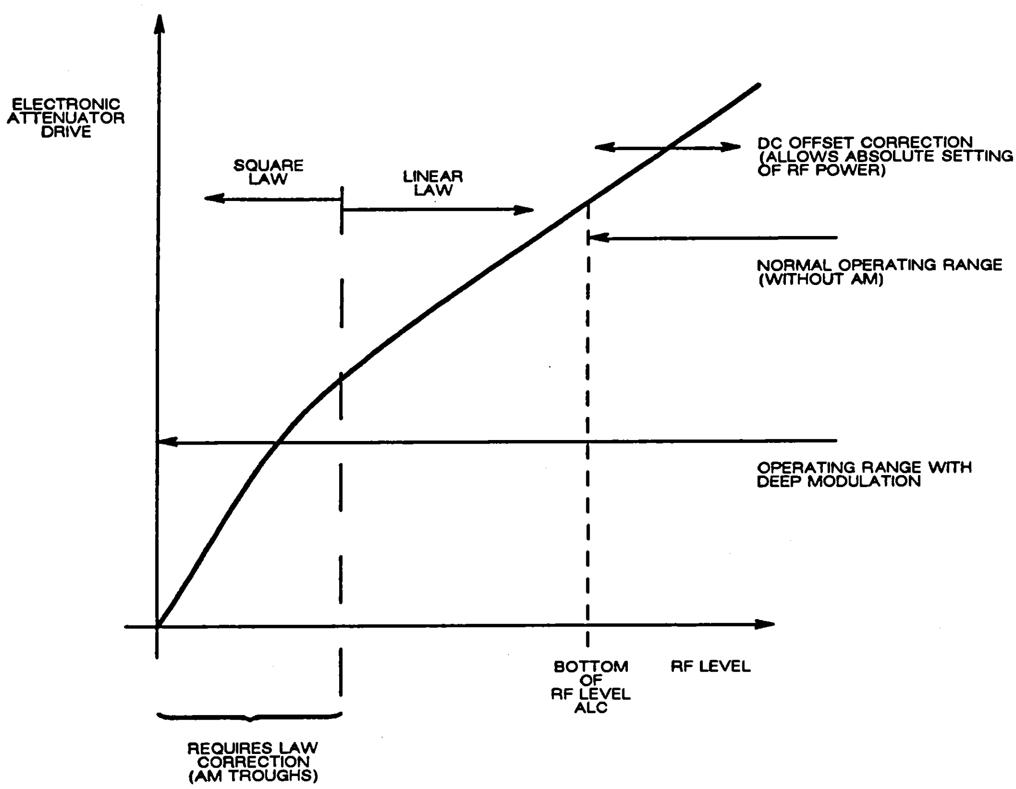

Fig. 4-2-12 Law correction

Operation

The drive waveform for the amplitude modulator is pre-distorted by IC506b, IC507 and IC508. The circuit compensates for the square law characteristics of the diode detector scheme at low RF levels. This results in a slightly distorted envelope at the troughs of the AM carrier which corresponds to the points of minimum RF level.

The transistor in IC508 shown at the right-hand side (pins 6, 7 and 8) provides the required pre-distortion by injecting additional drive current to the AM drive at low levels. At higher levels this current (set by R519 and pin 24 IC507) is swamped by the natural action of the transistors. The left-hand transistor (pins 1, 2 and 3) compensates for temperature effects within the base-emitter junctions of the transistors. Since both devices are fabricated within a single package, good temperature tracking is assured.

Envelope feedback is through R516 and R517. The ratio of these resistors ensures that the average envelope is sampled from both transistors. IC506b is the error amplifier which closes the pre-distortion loop. C561, in conjunction with R516, provides an improvement in HF stability. R520 and R518 provide the necessary bias conditions for correct operation of the transistors within IC508.

The RF/AM drive signal is bandwidth limited by L506 and C423 before being sent via contact 28 of PLAN as the ALC reference signal to RF board AB2/2.

Latch IC509 provides signals on pins 2, 6 and 19 which are used for low noise mode operation. The remaining outputs are reserved for future use.

CONTROL: REFERENCE PLL (AA1/2 sheet 6)

Circuit diagram: Fig. 7-11.

The frequency standard provides an accurate and stable frequency reference for the instrument. This is used to phase lock the internal 104.8576 MHz VCXO from which all internal clock signals and the RF output frequency are derived.

The internal oven-controlled crystal standard is factory set to 10 MHz which is divided to 1 MHz and used to lock the 104.8576 MHz VCXO. The FREQ STD IN/OUT socket on the rear panel then operates as an output port providing a user-selectable 1, 5 or 10 MHz to synchronize any external measuring equipment. The block diagram of internal standard operation is shown in Fig. 4-2-13.

The instrument can accept a user-selectable 1, 5 or 10 MHz external signal as a frequency standard. Each frequency is divided to the required 1 MHz necessary to lock the VCXO. In this mode the FREQ STD IN/OUT socket on the rear panel becomes an input port accepting a waveform of suitable drive levels. The internal standard is also switched off in this mode to prevent any unnecessary crosstalk or beating occurring which would otherwise impair the short term stability of the standard signal. The block diagram of external standard operation is shown in Fig. 4-2-14.

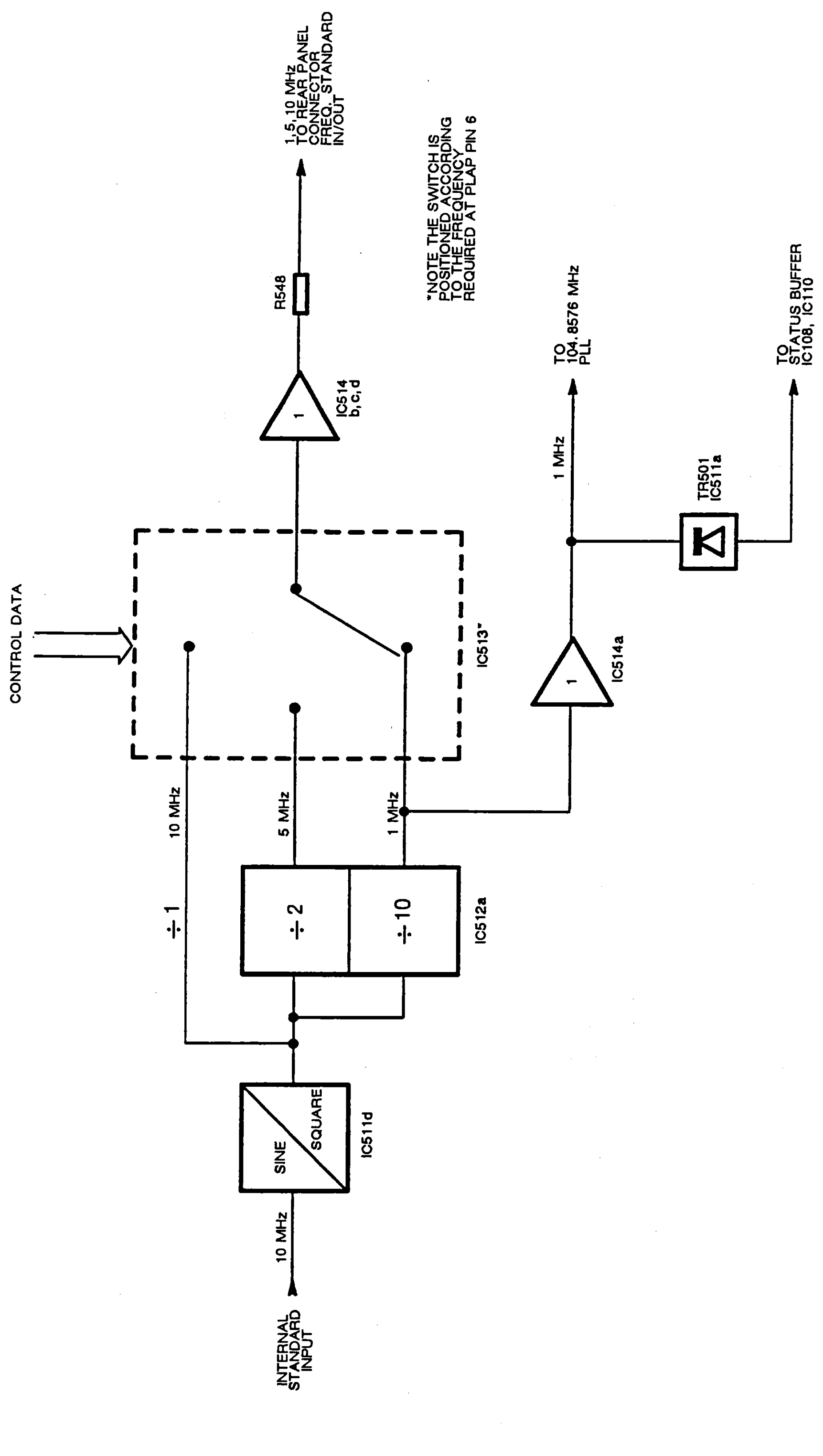

Fig. 4-2-13 Internal standard operation

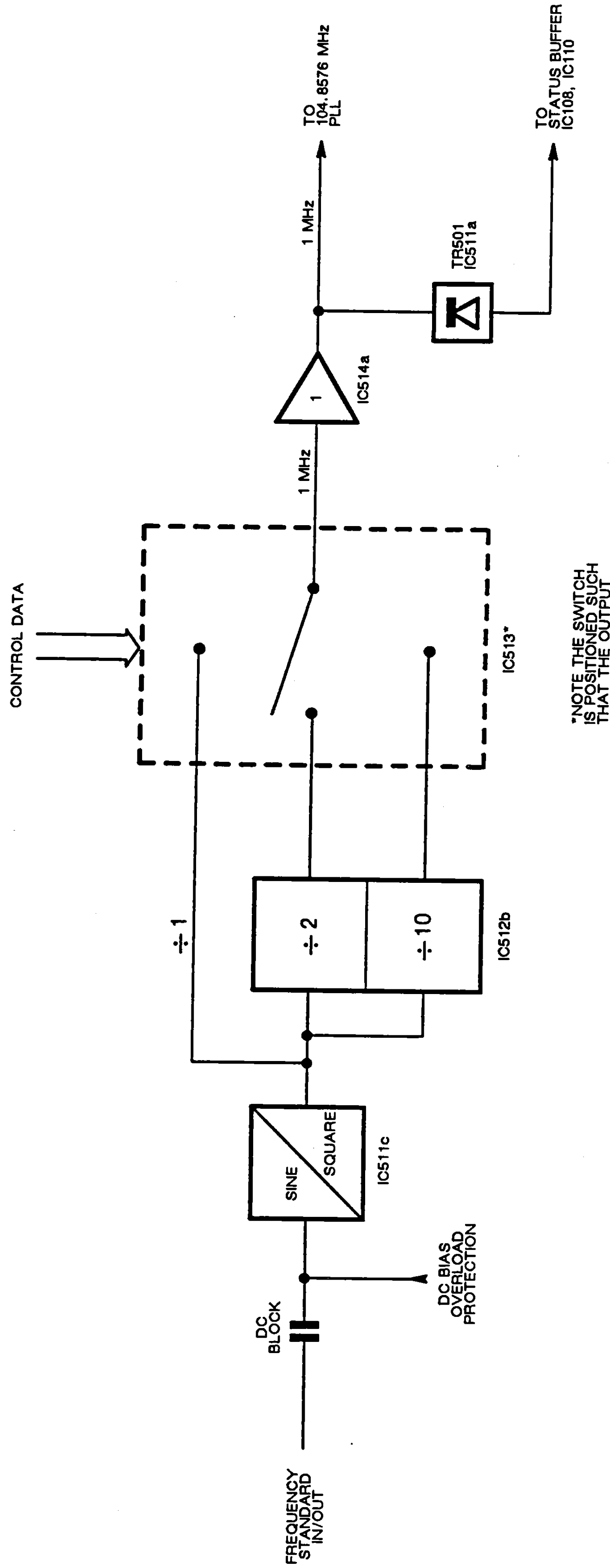

Fig. 4-2-14 External standard operation

Operation

The external standard is fed in on the EXT STD line from PLAP contact 6 and is squared to logic levels by IC511c. Resistors R521 and R522 provide DC bias to the AC coupled signal to ensure efficient switching at moderate input levels. Diodes D510 and D511 protect the input against adverse signal levels.

The internal standard is fed in on the INT STD line from PLAP contact 8. No DC biasing is required for this signal as the waveform from the OCXO (located on AR2) swings about TTL levels. This frequency is divided by IC512a to 5 MHz at pin 3 and to 1 MHz at pin 7. IC513 selects which of the divided frequencies is sent to the rear panel via PLAP contact 6. IC514 provides output buffering while R548 limits the current flow.

The presence of either an internal or external standard is reported on the STD SENSE line to the main processor as a status interrupt. The 1 MHz signal is buffered by TR501, smoothed by C542 and detected by IC511a. A logical high on the STD SENSE line indicates the presence of a signal but does not indicate whether it is the correct frequency. This is done later by the VCXO out of tune indicators.

Fine tuning of the internal reference (an oven controlled crystal oscillator) is achieved electronically by two separate 8-bit D-A converters in IC507 (AA1/2 sheet 5). Coarse control is provided from pin 2 via R511 and fine from pin 1 via R512. Due to the ratio of the resistors the effect of the fine control is 100 times less than that of the coarse tuning.

IC523 (AA1/2 sheet 5) provides a very stable +5 V reference for the D-A converters within IC507 and IC509.

The OCXO is switched off by taking the OCXO POWER ON line high from IC510 pin 15 which turns off the +5 V power to the oscillator. This does not suppress the operation of the heater circuits as this could cause large frequency transients due to the thermal inertia of the oven as it heats and cools when the standard is switched between internal and external.

CONTROL: RF PROCESSING (AA1/2 sheet 6)

Circuit diagram: Fig. 7-11.

104.8576 MHz phase locked loop

The VCXO must be locked to the frequency standard selected by the user to guarantee its frequency stability. This is achieved by a phase locked loop (PLL) running at a reference frequency of 1 MHz. Additional loop filtering is provided by an active 60 Hz low-pass filter which ensures the removal of the reference from the VCXO tune line. A window comparator monitors the VCXO tune line to detect when the oscillator is outside its normal operating range. The block diagram of the phase locked loop is shown in Fig. 4-2-15.

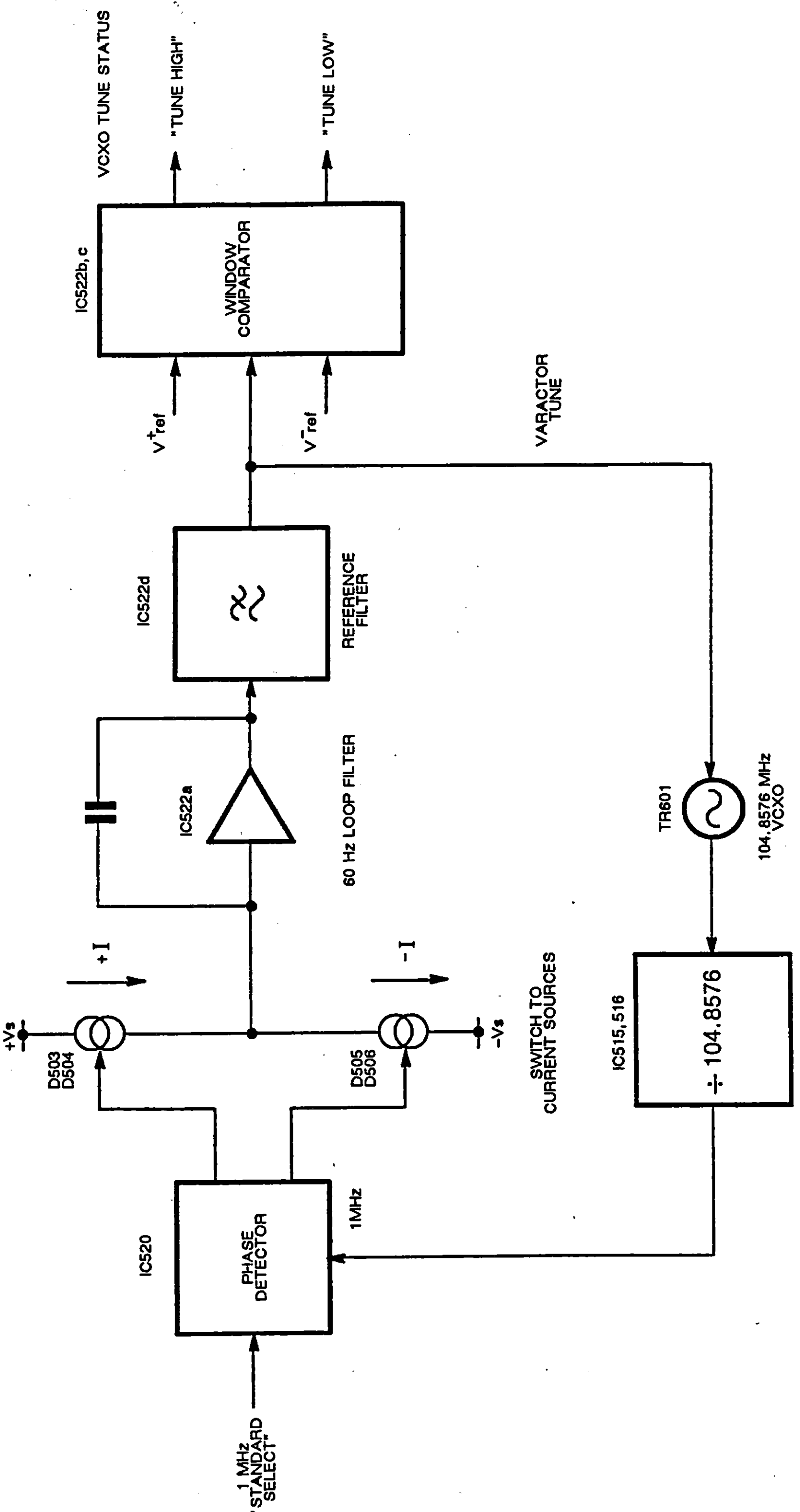

Fig. 4-2-15 104.8576 MHz phase locked loop

Loop operation

The 104.8576 MHz from the VCXO is fed to dual modulus prescaler IC515 and divider IC516. IC516 is a PLA (Programmable Logic Array) which has a controller function to enable it to set the pre-scaler's division ratios of either 20 or 21 when appropriate to divide the input from the VCXO by 104.8576 so as to produce a 1 MHz output at its pin 21. The divided reference frequency is fed together with the selected internal or external frequency standard to the PLL phase comparator, IC520a and b.

The reference frequency of 1 MHz, in conjunction with a narrow loop bandwidth, optimises the noise suppression and settling time of the loop. It allows the use of an active loop filter to set the narrow loop bandwidth.

Phase comparator IC520 is in a tristate dual D-type bistable configuration. IC521c generates the reset signals for the bistables at the appropriate times, while R525 and C507 extend the reset pulse to ensure that the bistables reset.

Diode bridge D503, D504, D505 and D506 sinks and sources current into loop filter IC522a depending on the drive waveforms from the phase comparator. Current is sourced into the loop filter when D503 is reverse-biased and sunk when D503 is forward-biased.

Components C512, C511 and R530 determine the main loop characteristics. The 60 Hz low-pass filter formed by R545, R533, R534, C543, C514, C550 and IC522d has some additional effects due to phase shifts within the filter response but these are minimal. D509 prevents varactor diode D601 (sheet 7) from being forward biased, while R547 (sheet 6) provides a discharge path for the varactor filter network R601 and C601 (sheet 7). R552 prevents instability by adding an additional break point at 160 kHz well outside the operating loop bandwidth.

IC522b and c form a window comparator which detects when the VCXO tuning voltage is exceeded. The outputs from detectors D507 and D508 on the VCXO TUNE HIGH & LOW lines are attenuated to logic levels by R538, R539 and R540, R541 to provide status interrupts to the main processor via IC414 (sheet 4) and IC108 and IC110 (sheet 1).

CONTROL: 104.8576 MHz VCXO & 62.5 DIVIDER (AA1/2 sheet 7)

Circuit diagram: Fig. 7-12.

The 104.8576 MHz VCXO is used to derive all of the clock signals necessary to drive the ASICs (Application Specific Integrated Circuits) on the control board. Using a high operating frequency eliminates the need for a second phase locked oscillator to generate the necessary local oscillator frequency for BFO board AB4/1. The 62.5 divider provides the 1.6777216 MHz drive signals for the RF synthesizer, the FM A-D converter and the audio synthesizer.

VCXO operation

The 104.8576 MHz oscillator is built around TR601. Crystal XL601 together with L601 and D601 provide a series resonant circuit in the emitter circuit of TR601. At resonance it increases the gain of the common emitter stage and together with 180 degree phase shift network L604, C603, C604 and L602 connected between the base and collector of TR601 provides the necessary conditions for oscillation. L603 tunes out the parasitic capacitance of the crystal package and prevents other spurious oscillations from occurring.

A facility to fine tune the phase shift network is provided by C604. At the resonant frequency the circuit operates at maximum power levels when the correct phase shift is achieved around the transistor.

TR602 buffers the signal. Local oscillator drive (at typically +6 dBm) to the BFO is derived from the collector, and a suitable drive level for limiter/level translator TR603 and TR604 from the emitter.

Divider operation

The 1.6777216 MHz clock signal is produced by dividing the 104.8576 MHz output from the VCXO by 62.5. This is done by the fractional divider formed by ICs 601 to 604 and IC617. Dual modulus prescaler IC601 is controlled by the gates of IC602 and IC604 so that it divides by either 10 or 11 at the appropriate phases. It divides in the sequence 10,10,11,10,10,11 for 62 cycles, and 10,10,11,10,11,11 for 63 cycles. A period of 6 cycles is counted by the divide-by-6 section of IC603, and alternate 62 and 63 cycles are counted by the divide-by-2 section.

CONTROL: CARRIER FREQUENCY SYNTHESIS (AA1/2 sheet 7)

Circuit diagram: Fig. 7-12.

The RF carrier of the instrument should be as clean in frequency (and level) as possible. To achieve this goal the instrument relies on a single loop synthesizer scheme based on four UHF oscillators covering the fundamental range from 675 to 1350 MHz. Utilising such high frequencies minimises the RF processing circuitry normally associated with conventional frequency doubling or mixing schemes. Four UHF oscillators (in quarter octave bands) are used for good FM linearity.

A carrier frequency resolution of 0.1 Hz cannot be achieved easily without the use of non-integer division. In this instrument this operation is controlled by a dedicated ASIC which modifies the division ratio of a programmable divider so that the average frequency is a non-integer division of the input.

The RF carrier can operate in one of three modes of operation which effects the instantaneous frequency. These are CW, FM/ΦM and SWEEP. Each mode puts different requirements on the loop characteristics which must be modified accordingly to suit.

The sweep mode forces rapid re-programming of the controller IC providing discrete steps in the carrier frequency and is therefore not truly continuous. The block diagram of the synthesizer is shown in Fig. 4-2-16.

Note...

The synthesizer is split over the three boards AA1/2, AB1 and AB2/2 to provide signal isolation and ease of maintenance.

Synthesizer operation

Frequency synthesis control is performed by a dedicated ASIC, IC614. This generates all of the necessary signal division ratios for the ECL counter chain formed by IC608 to IC612 to eventually synthesize any frequency within the range of just over 675 to 1350 MHz.

The incoming signal on the 1350-675 MHz RF SYNC line from the main VCOs on AB1 is buffered by TR615 to prevent divider backfire (from IC613) onto the VCO board which could otherwise be superimposed on the eventual RF carrier. TR616 and associated circuitry provide active bias for TR615 to ensure correct operation over the whole temperature range of the instrument.

The incoming signal is first pre-scaled by divide-by-four divider IC613 to bring the frequency down to the operating range of the programmable divider. IC612 is a dual modulus divider (divide by 8/9) which together with the programmable divider (IC608 to IC611) provides an integer division ratio in the range from 100 to 202. This ratio ensures that the ASIC always receives an acceptable clock frequency to work from. Fractional division is achieved by the modification of the integer division ratios, under the control of the ASIC, in such a way that the average frequency over time is not an integer division ratio of the original. The divider is made from ECL components due to the required speed of operation.

TTL to ECL conversion is provided by a resistor network. Resistor packages R684 and R685 set up the initial DC offset condition which is then modified by IC614 through R692 to R699 and R701 to R708. The impedance of the network is such that the 5 V from the ASIC is not seen by the ECL counters. ECL to TTL voltage translation is performed by TR611 to TR614. This cannot be done by a passive network since voltage swing needs to be increased.

The divided frequency is compared with a reference frequency of 1.6777216 MHz, derived from the 104.8576 MHz on-board VCXO, by four-state phase comparator IC605b, IC606 and IC607a which has the property of being extremely linear with minimal dead zone. This prevents the loop from 'hunting' within the lock range of the PLL.

The output waveforms are voltage translated by TR605 to TR610 and filtered by C615 and L605 plus C420 (sheet 4) and C616 and L606 plus C421 before being converted to current to drive into the loop filter by TR401 and TR402. TR403 to TR406 modify the current transfer function of the voltage to current converter which together with a change in the integration capacitor (C31 and C32 on AB2/2) provides the necessary changes to the loop characteristics for the three operating modes of the carrier. (For RF loop filters see under 'VCO drive, loop filter & FM' below.) Output is on the VCO TUNE line to AB2/2.

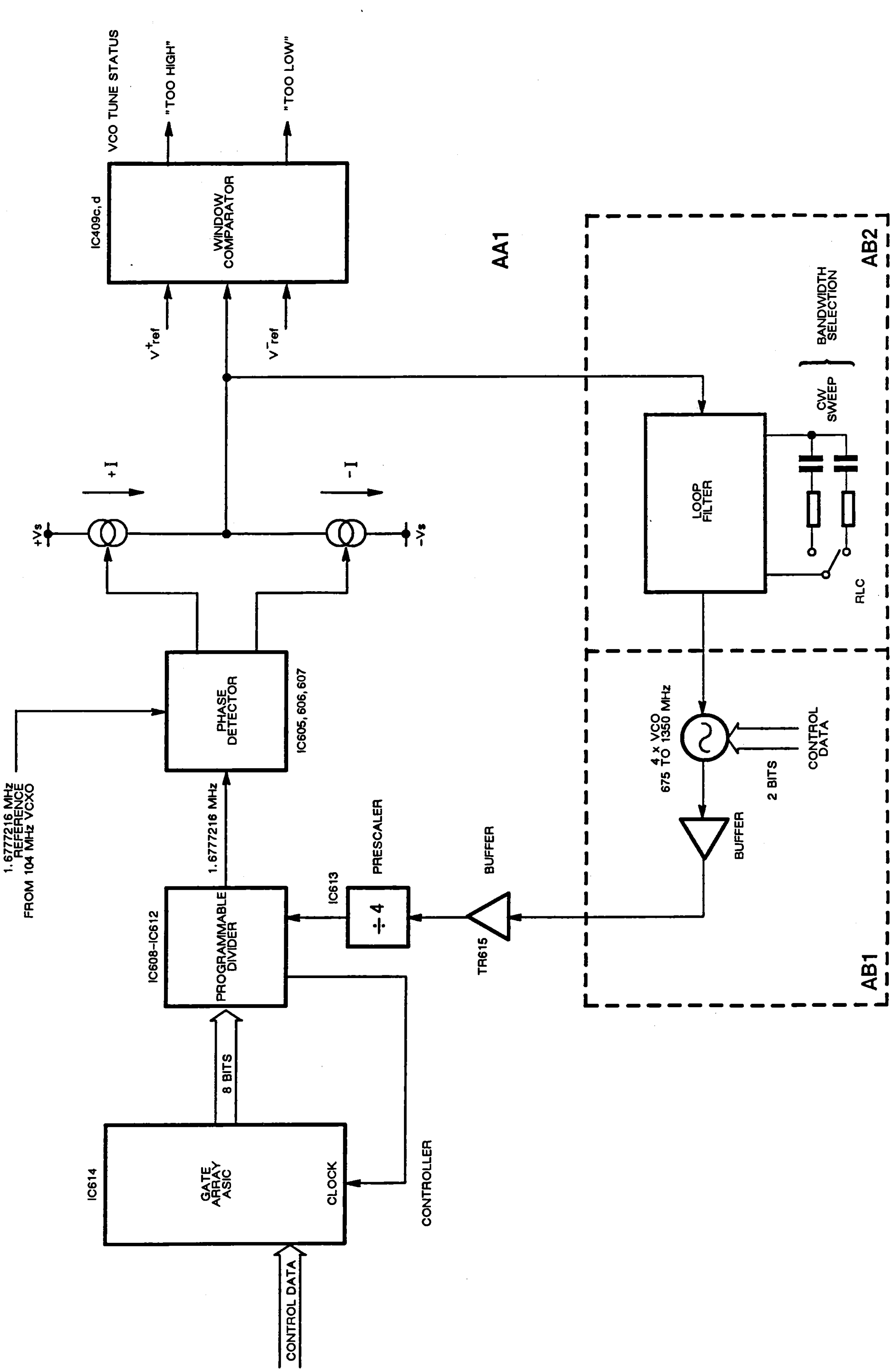

Fig. 4-2-16 Carrier frequency synthesizer

The main PLL is continuously monitored by IC409c and d which detects when the varactor tune range is exceeded. In normal mode TR408 is switched off. But whenever either of the low noise modes is selected, TR408 base is taken high by latch IC509 (sheet 5). This switches the transistor on causing the TUNE HIGH window threshold to change from +19 V to +10 V. D407, D406 and R456 prevent the varactor from being forward biased when the loop loses lock temporarily during changes in the requested frequency. The detected outputs from D405 and D408 on the VCO TUNE HIGH & LOW lines are attenuated to logic levels by R454, R455 and R457. From IC414 they cause a status interrupt to the main processor on the VCO OUT OF LOCK line via IC108 and IC110 (sheet 1).

1-bit A-D converter

The DC input path to the synthesizer consists of a third order, single bit, over sampling A-D converter, whose bit stream output is used to dynamically control the synthesizer frequency via the synthesizer ASIC.

Pin 6 of IC615b is used as the summing junction for four currents. These are: the input current via R671; a bipolar offset current via R670; the bit stream feedback via R674; and the DC nulling offset current via R672. IC615b integrates the sum of these currents, and its output is further integrated by broken integrators IC615c and d. In these, when the frequency rises to a point where C629 and C630 are at low impedance, the ICs act as unity-gain amplifiers. Diodes D605 and D606, D613 and D614 are used to enable the converter to recover from overload cleanly.

The output from the last integrator is fed via comparator TR617, which converts the input to TTL levels, to D-latch IC616a, which is clocked at the same rate as the synthesizer ASIC. NOR-gate IC618a is used to produce a uniform length output pulse from the D-latch, this is fed back into the summing junction to close the converter control loop. The digital input to IC614 pin 54 is a bit stream whose logic levels are determined by the state of the output from IC618a at the instant that the ASIC is clocked.

The DC nulling offset current is supplied from a 1-bit over sampling D-A converter in the synthesizer ASIC. This balances the input current to make the converter read zero when DC nulling and when in AC coupled FM mode.

VCO BOARD - AB1

Circuit diagram: Fig. 7-14.

There are two boards AB1: they are in the RF and low noise trays. The VCO in the RF tray supplies the RF output, but during low-noise operation the second VCO board is switched in by AB2/2. Then the output VCO is locked to, but offset from, the VCO in the low-noise tray.

Four oscillators are used to cover the basic frequency range, each VCO covering one quarter octave. Selection of the oscillators is carried out by IC1 and switches TR5 to TR8. These switch the oscillator currents allowing only one to operate at any one time. Binary decoder IC1 is controlled by the two control lines FC1 and FC2 from AB2/2 (see Table 4-2-7 below).

TABLE 4-2-7 IC1 VCO SELECTION LOGIC - AB1

FC2	FC1	VCO selected	Frequency range (MHz)
0	0	0	675 to 803
0	1	1	803 to 955
1	0	2	955 to 1135
1	1	3	1135 to 1350

Each VCO operates in a similar manner, with the tuning voltage from the VARACTOR TUNE line on AB2/2 varying the four varactor diodes, D1 to D4, in parallel. The nominal range for all four oscillators is 3 V to 13 V giving the required FM linearity. Taking VCO 0 as an example, the lowest quarter octave is generated by the tuned circuit formed by D1 and C4 and the two inductors formed by lengths of PCB track. The necessary positive feedback is provided by TR1 whose base is driven from a tap on one inductor and whose collector is connected via R8 and C5 to the other inductor. The damped emitter decoupling is arranged to give correct flat oscillation over the required range.

Pairs of oscillators VCO0, VCO1 and VCO2, VCO3 are connected via quarter wavelength lines to ensure that one oscillator does not load the other. The two half octaves are combined by D5 whose control current is sourced either from D6 for the lower half octave or from D7 for the upper half. This operation is controlled by IC1.

The selected signal is buffered by IC2 and then split into three parallel paths which are further buffered by ICs 3 to 5. In the RF tray, one output is linked to the RF board AB2/2 RF INPUT line while a second is routed via PLBA to the synthesizer on AA1/2 on its 1350 - 675 MHz RF SYNC line. The third output is routed via PLBB to the AD2 board in the low noise tray. In the low noise tray, one output is linked to AD1 while the second is routed via PLBB to the AD2 board.

RF BOARD - AB2/2

Circuit diagrams: Figs. 7-16 to 7-19.

This board processes the signal from the VCOs on board AB1. The signal is divided to the required frequency, then filtered and amplified. The amplified signal is detected and then level corrected by the ALC to provide the correct voltage behind a 50 Ω sourcing resistor. All input to the RF deck comes via PLBK and PLBJ from board AA1/2. AB2/2 routes control and power to the other boards on the RF deck, AB1, AB3/1 and AB4/1.

RF BOARD: DIVIDERS AND FM DRIVE (AB2/2 sheet 1)

Circuit diagram: Fig. 7-16.

Decoding

Two latches control operation of the RF deck while a shift register is used to read RF board status information back to the processor.

IC7 latches the frequency word used by the VCOs, divider and filters using BD7 to BD3. BD7 and BD6 are used to select the VCO to be used (see Table 4-2-8 below), and BD5 to BD3 select the division ratio (see Table 4-2-9 below). BD6 to BD3 are also used to select the required low-pass filter. IC7 uses the LOOP SWITCHING lines to select the ALC mode (see Table 4-2-10 below).

TABLE 4-2-8 IC7 VCO SELECTION LOGIC - AB2/2

BD7	BD6	VCO frequency
0	0	675 - 803 MHz
0	1	803 - 955 MHz
1	0	955 - 1135 MHz
1	1	1135 - 1350 MHz

IC9 latches selection data for AB3/4 or AB3/5 using BD1 to BD5. BD7 supplies the logic for the AB3 DETECTOR line to relay RLB which is used to select the required detector from AB2/2, AB3/4 or AB3/5. BD0 supplies the logic for the SWEEP BANDWIDTH CONTROL line to RLC which is used to select the appropriate filter path for the VCO tuning voltage.

TABLE 4-2-9 IC7 VCO DIVISION LOGIC - AB2/2

BD5	BD4	BD3	Division ratio
1	1	1	No division
0	0	0	2
1	0	0	4
0	1	0	8
1	1	0	16
0	0	1	32

TABLE 4-2-10 ALC MODE LOGIC - AB2/2

BD2	BD1	ALC mode
0	0	Normal ALC
0	1	Levelling phase
1	0	Frozen loop
1	1	Pulse enabled

Shift register IC8 is used to report the board status on the RF STATUS line to the Readback Status Buffer on AA1/2. PULSE MOD SENSE checks for the presence of the pulse modulator option. When the option is fitted, the status line is pulled high by a pull-up resistor. When not fitted, a 1.8 dB pad is inserted in its place and the line is earthed. BOARD SENSE is used to check that the board +5 V logic supply is present. ALC STATUS, used in pulse levelling phase mode only, reports ALC high or low and is supplied by IC10 (sheet 2).

Dividers and straight-through path

For frequencies above 675 MHz the signal on the RF INPUT line from AB1 is routed directly through diodes D2 to D5. This route is selected by switching off TR10 thereby reverse biasing D1 and D11 so that the divider and level restoring amplifier are switched out of circuit. Bias, supplied by IC1a, is also removed from IC2 to prevent it from oscillating.

For frequencies below 675 MHz TR10 is switched on, diodes D2 to D5 are reverse biased, and the signal is routed to programmable divider IC2. Control bits FC3 to FC5 from IC7 determine whether a division ratio of 2, 4, 8, 16 or 32 (see Table 4-2-9) is selected by IC2. Levelling amplifier TR1 compensates for the slope of the divider frequency response, restoring the signal to a nominal 0 dBm.

VCO drive, loop filter & FM

Four relays are used in this area of the circuit whose uses are as follows:

RLA Used to switch the 48 dB pad in for FM. Unlike the other FM attenuator pads, which are located on the AA1/2 board, this one is placed as close to the VCO TUNE line as possible to minimise noise due to the very low signal level when the pad is switched in.

RLC Used during the SWEEP function to switch the sweep filter in. Note that the low noise modes do not have a sweep facility.

RLD & RLE Used to switch between normal mode and the low noise modes.

Normal mode

In normal noise mode the VCO TUNE line from AA1/2 is connected to the VARACTOR TUNE line to VCO board AB1. During CW operation the tuning voltage is fed in via RLC contacts 6 and 3 with the loop filter provided by R31 and C32. For sweep operation the SWEEP BANDWIDTH CONTROL line from IC9 is taken high which switches on driver TR12. This energises RLC which causes the tuning voltage to be routed via contacts 5 and 4, with the loop filter now provided by R96, C85, C86 and R95.

For FM the audio drive is fed in on the FM line from AA1/2 via RLA contacts 5 and 4. If the signal is to be attenuated, the 48dB PAD line is taken low to energise RLA which then selects the route via contacts 6 and 3 and the pad formed by R34, C88, R35 and R36. For FM operation the BW CONTROL line is also taken high which switches on FET TR2. This modifies the CW filter and applies the modulating signal via C31 to the VARACTOR TUNE line.

L11, L12 and C58 provide some high frequency filtering outside the loop bandwidth.

Low noise modes

In both low noise modes driver TR13 is switched on which energises RLD and RLE. RLD connects the VCO TUNE line from AA1/2 via contacts 2 and 4 so as to drive the IF VCO TUNE line to board AC1. And contacts 7 and 5 connect the loop filter comprising C72, C73 and R78 into circuit with the other end connected to the FM line to allow the FM signal to be injected as required. At the same time RLE contacts 2 and 4 connect the LOCK line from AC1 to the VARACTOR TUNE line to AB1 so as to phase lock the instrument. D18, C176 and R115 provide temperature compensation for the output VCO on AB1.

RF BOARD: MODULATOR AND DECODING (AB2/2 sheet 2)

Circuit diagram: Fig. 7-17.

Amplitude modulator

The amplitude modulator acts both as the variable gain element of the ALC and to provide the amplitude modulation of the carrier. It comprises two similar RF attenuators R21 with R23 and R26 with R28 each followed by a buffer, IC6 and IC100 (sheet 3). High-pass filter C21, L7 and C22 removes audio. Modulator drive is described below.

Automatic level control (ALC)

Two distinct methods of level control are used. For normal operation an ALC circuit is used. However, for pulse modulation, the ALC loop is broken and the drive level is frozen.

With ALC the output level is detected by positive- and negative-peak detectors and compared with a reference signal (which includes any AM required). The error is integrated to provide a current drive for the amplitude modulator.

For pulse modulation, the ALC error output is mimicked by a D-A converter driven voltage source. This is then used to provide current drive into the amplitude modulator.

ALC operation

For signals up to 1350 MHz the ALC REF input from AA1/2, comprising DC plus AM, is low-pass filtered by L21 and C99 and fed to non-inverting amplifier IC3a. The signal is then AC-coupled by C40 (after inversion by IC3b) to the positive peak detector path, and by C39 to the negative peak detector path. At these points the positive and negative detected outputs from the output amplifier are fed in via D306 (sheet 4). The signals then provide offsets against the positive and negative voltages produced by R49 with R50, and R52 with R53 respectively. Temperature compensation is provided by D305 which produces an offset to the negative voltage produced by R59 and R60 which is then applied to the non-inverting input of IC3d. IC3d and IC4a are output buffers which respectively feed out the negative and positive peak detected signals. When selected by RLB these signals are summed with the ALC REF signal from the input by integrator IC5c. If the result of the summation is not zero pin 8 will ramp up or down charging or discharging C41 until level is correct.

For operation above 1350 MHz where either the frequency doubler or frequency quadrupler board is involved, RLB breaks the ALC loop and the inputs to be summed by IC5c are ALC REF from AA1/2, and COMP DIODE and -DET from the levelling detector on either AB3/5 or AB3/4. Since these inputs are from a single (negative) detector, summing resistors R81 and R82 are half the value of the Detector Summing resistors R54 and R62.

Output from the integrator is then used to provide a current input to the Modulator Drive circuit.

Modulator drive

There are two modes of modulator operation, normal and pulsed.

Normal operation

During normal operation, i.e. pulse modulation is not enabled, the error voltage to integrator IC5c controls the voltage to IC5d. IC5d and TR6 act as a voltage to current converter which controls the attenuation of the Amplitude Modulator diodes and hence the signal level of the RF chain. The voltage to current converter has a standing current drawn through R71 to allow charge to be drawn quickly from the modulator diodes to ensure deep amplitude modulation performance. Also during normal operation, the OPEN LOOP REF line is held at earth potential to prevent false triggering of ALC status comparator IC10.

Pulse operation

For pulse modulation the above levelling system cannot be used since the integrator output would be uncontrolled when the RF was switched off by the pulse. To overcome this the integrator output is replaced by a DC voltage.

Whenever pulse mode is selected, or when in pulse mode the ALC REF is changed, the instrument goes through a levelling phase in which the voltage on the OPEN LOOP REF line is set so that the output from IC5b is the same as the output from integrator IC5c. The modulator drive is then switched from the integrator to the OPEN LOOP REF line which now holds the frozen ALC reference, and pulse modulation can be enabled.

For pulse mode the standing current to TR6 is not required so R71 is switched out of circuit. The voltage on the OPEN LOOP REF line is scaled and referenced to the +15 V rail by IC5a and TR4. This ensures that the output from voltage follower IC5b will track any fluctuations in the +15 V rail.

The levelling phase consists of removing R71 using switch IC11d and then adjusting the open loop reference D-A converter on AA1/2. A successive approximation process is used in which the output from IC5b is continually monitored until it is the same as the output from IC5c. Monitoring is by comparator IC10; any detected output from D19 on the ALC STATUS line is attenuated to logic levels by R48 and R51 and sent by IC8 (sheet 1) as part of the status word. Once both outputs are the same, the input to IC5d is switched from the integrator to the OPEN LOOP REF line.

Since the current drive is required to vary over a wide dynamic range, the open loop reference scaling has a range switch TR5 which has a ratio of 5:1. It ensures that the resolution of the 12-bit D-A converter on AA1/2 maintains the output level in pulse mode accurately over the full range of the instrument. The power range is selected during the successive approximation routine. To increase the range the OPEN LOOP POWER RANGE line is taken high which switches on TR5 to connect R72 in parallel with R73.

Loop switching

Selection logic (see Table 4-2-10) for control lines LOOP SWITCHING A and LOOP SWITCHING B is supplied by latch IC7 (sheet 1). The logic controls four switching diodes D22 to D25 and four inverting switches forming IC11, with IC11c ensuring that IC11b operates in the opposite manner to IC11a. In normal operation both lines are low, IC11a is switched on, and the integrator supplies the modulator drive. Only in this mode are both diodes D22 and D23 reverse biased enabling R71 to be in circuit. In levelling mode the LOOP SWITCHING B line is taken high which causes IC11d to switch on to remove R71. For pulse mode but with pulse modulation off, LOOP SWITCHING A is taken high with LOOP SWITCHING B low and the output level is determined by the OPEN LOOP REF line. For pulse modulation both LOOP SWITCHING lines are taken high which reverse biases D24 and D25 allowing pull-up resistor R66 to take the PULSE ENABLE line high to open the gate to the PULSE MOD INPUT line (sheet 4).

During low noise mode 1 operation, the ALC SLUG line is taken high by latch IC509 (AA1/2, sheet 5). This switches on FET TR401 so reducing the AC impedance, and hence the noise voltage, of the amplitude modulator. Reducing the noise contributed by the modulator in this way also restricts the AM bandwidth.

RF BOARD: HARMONIC FILTERS (AB2/2 sheet 3)

Circuit diagram: Fig. 7-18.

These filters are arranged in three banks. Each bank has four low-pass filters set at half octave intervals. They are selected by diode switches so that any filter in the selected bank with cut-off above the desired frequency is switched in and the remainder bypassed.

Operation

Filter selection is controlled by decoders IC101 and IC102 which decode the FC2 to FC5 and FC5(L) lines from IC7 (sheet 1). The low-pass filters are arranged in three banks, with the bank and filter being selected by the decoders taking the appropriate line low. This forward biases the selection diodes for one bank while taking the other lines high to reverse bias the remaining selection diodes. When for example, IC102 pin 9 is taken low it forward biases D100, D140 and D141 at the input and D110, D142 and D143 at the output and the low-pass filter selected is the 1350 MHz printed filter. If instead, IC101 pin 6 is taken low to select the 169 MHz filter, input diodes D113 and D144 at the input and D123, D145 and D146 at the output are forward biased so that the 239 MHz and 169 MHz filters are enabled. Pull-up resistors R111 to R113 ensure that each filter bank is securely shut off when not required.

RF BOARD: PULSE MOD AND O/P AMP (AB2/2 sheet 4)

Circuit diagram: Fig. 7-19.

Pulse modulator option

The pulse modulator receives a digital modulating signal from PLBP on the PULSE MOD I/P line. The signal is high-pass filtered by C309, L301, C308, L300 and C307, limited by D302 and D303 and squared by Schmitt gates IC300a and c. When PULSE ENABLE is taken high by the Modulator Drive circuit (sheet 2) it opens gate IC300c allowing IC302 to be switched by the modulating signal. IC302 is configured as a 2-channel switch which alternately switches between its channel 0 and channel 1 inputs. When pin 10 is taken low, channel 0 inputs are selected and output pins 3 and 13 are taken high and low respectively. And when pin 10 is taken high, channel 1 inputs are selected and the output logic levels are reversed. These outputs control pulse modulator IC301 (fitted in place of the 1.8 dB pad).

Output amplifier

This is a three stage wide-band amplifier based on TR311, TR313 and TR315 with TR310, TR312 and TR314 respectively controlling the bias. The latter sense the collector currents through R326, R337 and R349. 20 dB of gain is provided to a maximum of +19 dBm after a 50 Ω sourcing resistor. Output level is positive- and negative-peak detected by D306 with a dummy detector giving a thermal reference.

Switched attenuator driver

During low noise mode 1 operation for RF outputs up to +7 dBm, a 6 dB attenuator is switched into circuit. To switch in the attenuator, latch IC509 (AA1/2, sheet 5) takes the EXTRA 6dB line low causing IC401 output to go low, so switching into circuit the 6 dB pin diode attenuator formed by D401, D402. This enables the signal entering the amplifier to be 6 dB higher thereby improving the signal to noise ratio.

BFO SWITCH AND RPP BOARD - AB3/1

Circuit diagram: Fig. 7-21.

Board AB3/1 is used for the 2040 instrument in place of Doubler AB3/5 or Quadrupler AB3/4. Its purpose is the selection of either Beat Frequency Oscillator board AB4/1 for frequencies from 10 kHz to 21.09375 MHz, or a straight through path to the output attenuators for frequencies from 21.09375 to 1350 MHz.

Signal routeing

Signal routeing is carried out by two relays RLA and RLB. The relays operate in conjunction with, and are controlled by, the BFO line from AB2/2. With the relay solenoids unenergized the RF INPUT line from AB2/2 is connected directly to the RF OUTPUT line. But when the BFO line is taken low, TR1 switches on. This causes RLA to connect the RF INPUT line to the BFO OUTPUT line to AB4/1 while simultaneously RLB connects the BFO INPUT line from AB4/1 via low-pass filter C10, L3 and C11 to the RF OUTPUT line.

Reverse power protection

Signal level on the RF OUTPUT line is monitored by a reverse power protection circuit. This has both positive and negative arms with the stand-off voltages set by Zener diodes D3 and D2 respectively. When the output voltage swing rises sufficiently to cause either D4 or D5 to be forward biased it conducts and so limits that voltage peak.

HIGH POWER AMPLIFIER BOARD AB3/3

Circuit diagram: Fig. 7-23.

This board is an option (Option 003) used to provide an RF signal output at a level of up to +19 dBm across the frequency range 10 kHz to 1.35 GHz. Board AB3/3 is used only in the 2040 instrument where it replaces BFO switch and RPP board AB3/1.

The overall operation of the board is to amplify the RF signal from AB2/2 and direct it either straight to the output attenuator for the range 21.09375 to 1350 MHz, or to BFO board AB4/1 for the range 10 kHz to 21.09375 MHz.

Attenuator and amplifier

The signal from AB2/2 on the RF INPUT line is first of all fed to a pin diode attenuator based on D6 which varies the overall gain of the board. Bias is controlled by TR3 driven by attenuator driver IC2c and d whose output is a DC offset added to the ALC reference. The purpose of this is to maintain the RF signal at a high level on RF board AB2/2 when lower output levels are required. This is accomplished by increasing the attenuation at low ALC requests and thus reducing the overall gain of the board. Consistent high levels on board AB2/2 help to maintain the noise performance of the instrument and the dynamic range of the modulator.

The high power amplifier which follows has a typical gain of 10 dB and consists of two stages; a medium power driver stage based around TR5 and a high power output stage based around TR7. Both stages employ resistive feedback and have active bias controlled by TR4 on the driver stage and TR6 on the output stage. The active bias circuits sense the collector currents in the transistors and guarantee the stability of their operating points with temperature.

Levelling detector

Board AB3/3 provides all the RF levelling for the signal generator and overrides the detector on board AB2/2. Levelling is accomplished by having negative detectors (D8 and D9) each side of a 25.5 Ω sourcing resistance (R58 and R27). The detected levels are then controlled using IC1 and its associated components. This makes the detected voltage at pin 8 of IC1c the same level as if it were the voltage obtained from a single negative detector behind a 50 Ω sourcing resistor. This voltage is then fed back to the ALC on board AB2/2 through R4 which forms part of a summing junction on AB2/2. Temperature compensation for the detector diodes is also fed back to the ALC on AB2/2. The compensation is provided by D10 and IC2b.

When the instrument is generating AM the detector is aided by AM bootstrap IC2a which uses the AM request on the ALC REF line to drive the detected voltages at pin 3 of IC1a and at pin 5 of IC1b.

Signal routeing

Signal routeing is carried out by two relays, RLB and RLC. These select the path to either the output attenuators or BFO board AB4/1. To select the BFO route the BFO SELECT line from AB2/2 is taken low which switches on driver TR1 to energize the relays. This connects the signal from the levelling detector to the BFO BAND RF OUTPUT line to AB4/1, and from AB4/1 on the BFO BAND LF INPUT line via low-pass filter C7, L7 and C8 to the output attenuators on AT1.

Reverse power protection

Signal level on the RF output line is monitored by a reverse power protection (RPP) circuit. This has both positive and negative arms with the stand-off voltages set by Zener diodes D2 and D1 respectively. When the RF level rises sufficiently to cause either D4 or D5 to be forward biased it conducts and so limits that voltage peak.

QUADRUPLER BOARD - AB3/4

Circuit diagrams: Figs. 7-25 to 7-28.

Board AB3/4 is used for the 2042 instrument in place of AB3/1 for the 2040, or AB3/5 for the 2041. The purpose of the quadrupler board is to take the top octave from RF board AB2/2 in the range 675 to 1350 MHz and double it to produce an output at 1350 to 2700 MHz, or double it again to produce a quadrupled output at 2700 to 5400 MHz. When the doubler/quadrupler path is selected, the signal is applied to the first doubler which produces the desired doubled signal at 2f plus unwanted harmonics. The doubler output is then amplified, amplitude modulated, amplified again and then passed through one of three band pass filters (BPF), at between 1.35 and 2.7 GHz. A much cleaner 2f signal is then switched either to go through the second doubler stage or to bypass it and go directly to the output stages. Note that for these higher frequencies this board supplies modulation in addition to that provided by RF board AB2/2.

If signal quadrupling is selected the signal is amplified and fed into the second doubler. The doubler output, as before, is rich in harmonics and is therefore amplified and passed through the second set of BPF, between 2.7 and 5.4 GHz. The doubler/quadrupler outputs are then combined, power amplified, switched and passed through a 5.5 GHz low-pass filter. The output is finally passed through step attenuator AT10 and then to the output connector. The output stages also incorporate level detection circuitry and reverse power protection (RPP) of up to 50 W.

A secondary function, for frequencies from 10 kHz to 21.09375 MHz, is the selection of the path to BFO board AB4/1. For frequencies from 21.09375 to 1350 MHz the doubler/quadrupler path is bypassed. Fig. 4-2-17 summarises board AB3/4 operation where it can be seen that the physical layout of the board is divided into four areas which are screened to reduce sub-harmonic levels. These areas are numbered in sequence to the RF signal flow.

Signal routeing

RF signal routeing is carried out by four relays, RLA and RLB in board area 1 and RLC and RLD in board area 4. The two outer relays RLA and RLD select either the straight through or the frequency doubler/quadrupler path. Relays RLB and RLC are used to switch in/out the BFO (Beat Frequency Oscillator). Dual relays are used for RLB in the input and RLC at the output in order to achieve sufficient isolation in the unwanted signal path. The relays are controlled by TR101 and TR104. To select the straight through, unmultiplied, route the relays connect the RF input from AB2/2 via a 1.38 GHz low-pass filter directly to the output. To select the BFO route the BFO SELECT line from AB2/2 is taken low which switches on BFO driver TR104 to energize relays RLB and RLC. IC101a pin 7 is also taken low which switches on TR102 to energize RLD. This connects the RF input line to AB4/1, and then from AB4/1 via low-pass filter C432, L401 and C433 to the output. To select the frequency multiplied route decoder IC101 switches driver TR103 off and driver TR102 on which control RLA and RLD. Relay operation is summarized in Table 4-2-11.

TABLE 4–2-11 RELAY CONTACTS MADE - AB3/4

Selection	RLA	RLB	RLC	RLD
Straight through	7-5	1-3 7-5	7-5 1-3	8-7*
Doubler	7-6*	7-6* 1-2	7-6* 1-2	8-6
Quadrupler	7-6*	7-6* 1-2	7-6* 1-2	8-6
BFO band	7-5	7-6 1-2	1-2 7-6	8-7*

* energized position

QUADRUPLER: FIRST DOUBLER & MODULATOR (AB3/4 sheet 1)

Circuit diagram: Fig. 7-25.

The frequency doubler/quadrupler path is selected by relays RLA and RLD which are controlled by decoder IC101a. When IC101a pin 7 is taken high, complementary solenoid drivers TR102 and TR103 are switched off and on respectively. Relay contacts are then as shown in Table 4-2-11 above and the signal from AB2/2 enters via the 1.38 GHz low-pass filter to the doubler/quadrupler and then out to step attenuator AT10. The incoming signal is fed in via transformer T101 which provides a balanced signal for the following frequency doubler. Frequency doubling is achieved by full-wave rectification by diode bridge D103. To increase conversion efficiency the diode bridge is biased to bring the operating point closer to the 'knee' and this is provided by the temperature compensated DC bias network of D102 and IC102a. A fixed current is passed through D102 (which is physically close to D103) and the corresponding voltage across it is measured by IC102a. Small value resistor R113 is placed in series with D102 to allow for small variations in diode current so as to compensate for small differences in temperature coefficient between D102 and D103. The resulting voltage is applied to D103 bridge via a quarter-wave stub which provides high impedance to RF signals. The quarter-wave stub isolation technique is used extensively in other parts of the circuitry for applying DC biasing.

The doubled signal is then fed into the recovery amplifier based around TR105. Transistor TR105 has active DC biasing provided by IC102b. The potential divider network of resistors R124 and R125 sets the voltage on pin 5 of IC102b to 0.59 V, which in turn controls the emitter voltage of TR105 via R122. Assuming initially TR105 is switched off, the voltage on pin 6 will be 0 V, causing IC102b output to go high and thereby switch TR105 on. At equilibrium IC102b pin 6 voltage is also at 0.59 V which in turn sets TR105 emitter voltage to 0.59 V and current to 35 mA. Resistor R118 and C106 network has the effect of flattening the frequency response.

The amplified output is then amplitude modulated by diodes D105 and D106 which are biased to the 'knee' points by the R126 and R127 combination. The modulating currents return to earth via D107 and R129; the series R128 and diode network biases the D107 series diode to its knee point. Modulation drive is applied to IC102d, with offset generated by the R132 and R133 network, followed by the class-AB power amplifier formed by TR108 and TR109. The output is then applied to modulating diodes D105 and D106. Whenever the doubler/quadrupler path is selected, IC101a pin 7 goes high switching TR101 on which has the effect of attenuating the high frequency signals to earth; R102, R103 and C101 act as a lead-lag network. Similarly, when low noise mode is selected transistor TR107 is switched on, which reduces the amplitude modulation bandwidth (and modulator noise) by attenuating higher frequencies to earth via the R130, C120 and C121 network. The modulated signal is then further amplified by TR106 and TR111. Transistor TR106 has a similar biasing arrangement to TR105. Transistor TR111 is biased by the current source arrangement based on TR110. Resistors R150 and R151 set the TR110 base voltage, which in turn sets the emitter voltage to 11 V. The current is set to 60 mA by resistor R152.

All external AB3/4 board connections are made via the SKBR connector. IC101a decodes the BPF and or doubler/quadrupler path switching logic, with TR104 switching the BFO in/out.

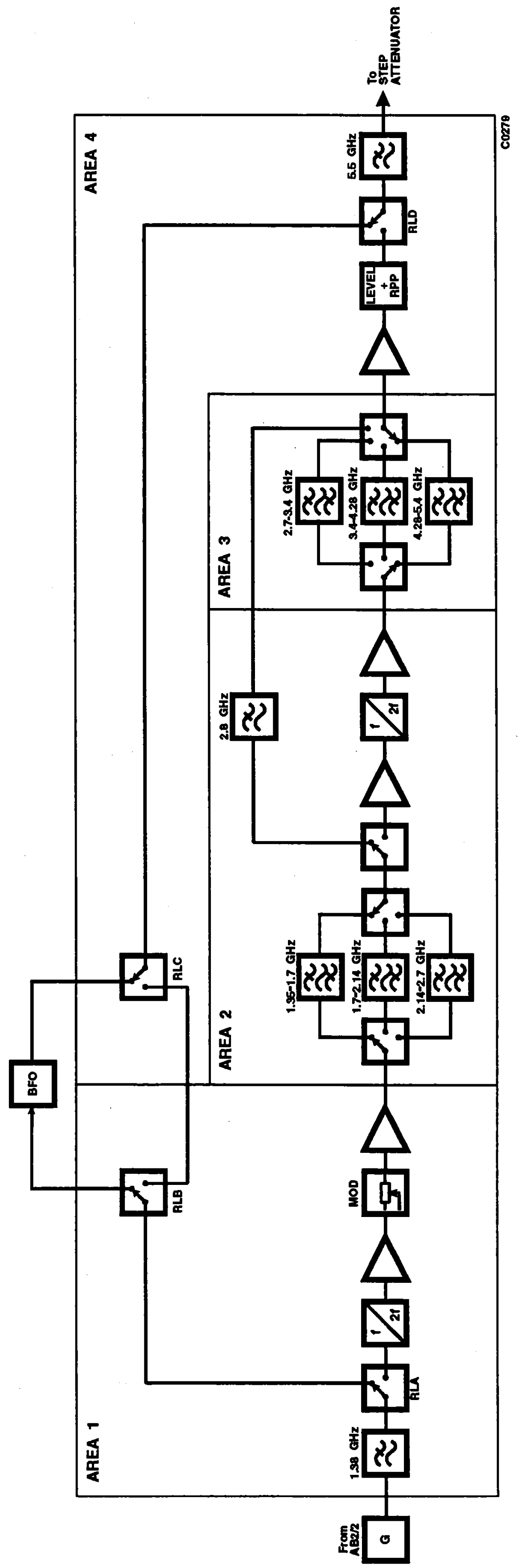

Fig. 4-2-17 Quadrupler board operating summary - AB3/4

QUADRUPLER: BPF & SECOND DOUBLER (AB3/4 sheet 2)

Circuit diagram: Fig. 7-26.

The doubled signal, from area 1, contains harmonics due to the very nature of the full-wave rectification technique. To remove these unwanted harmonics, the signal is passed through one of three third octave BP filters. The switching of these filters is achieved by using pin diode switches (which are also extensively used elsewhere on the board). Filter pin diode pairs D201 with D204, D202 with D205 and D203 with D206 are switched by transistors TR201, TR202 and TR203 respectively. When the input logic is low (0 V) the associated transistor is switched on, forward biasing the series diode and reverse biasing the two shunt diodes, allowing RF power to pass through. With input logic high (+5 V) the transistor is switched off and the series diode is now reverse biased by -15 V and the shunt diodes are now forward biased shunting the RF signal to earth.

The filtered output at 1.35 to 2.7 GHz is then either taken straight to the output stages or passed on to the second doubling section for quadrupled output. Doubler/quadrupler selection is by pin diodes D207, D208 and D209 which are switched by TR204. When the input logic on the D2 line is low, the transistor switches on, biasing the diodes so as to select the quadrupler path. When the logic is high, the transistor is switched off and bias is applied to the diodes so that the doubler path is selected. When quadrupling is selected the signal is amplified by TR206 and then applied to a similar balanced doubler, formed by D211, to the one used in the first doubling stage. Note that the transistor TR206 is biased by a current source based around TR205.

The quadrupled output at 2.7 to 5.4 GHz is amplified by TR207 and then split by the first Wilkinson divider. The two halves are then applied to transistors TR208 and TR209. The outputs from the two transistors are then recombined by the second Wilkinson divider. This technique of signal splitting, amplifying and recombining gives 3 dB higher maximum output power. The input path lengths are adjusted such that any reflected signals, due to mismatch, are 180 degrees out of phase and therefore cancel, resulting in better input matching. A similar arrangement is also used on the outputs of TR208 and TR209 to the same effect, resulting in good output match.

Transistor amplifying stages TR207, TR208 and TR209 are all active DC biased, similar to the configuration used for TR105. The TR210, TR211 and D212 network prevents +5 V from being applied before the -15 V rail becomes active, in order to avoid damage to the RF transistors. Zener diodes D213 and D214 limit the FET transistor gate voltage to 3.3 V, and thereby prevent gate-source breakdown damage. The divider network of R235 and R236 also provides protection for TR207 by limiting the base voltage to +3.2 V.

QUADRUPLER: BAND-PASS FILTERS (AB3/4 sheet 3)

Circuit diagram: Fig. 7-27.

The amplified quadrupled signal in the range 2.7 to 5.4 GHz coming from area 2 is rich in harmonics, as before. To eliminate these unwanted harmonics the signal is passed through one of the three third octave BP filters, similar to the ones used in the first doubling stage (see sheet 2). Transistors TR302, TR303 and TR304 are used to switch in/out each filter band, which are in turn controlled by TR301. Transistor TR301 selects either the doubler band or the quadrupler band signal to pass through to the next stage. When line D2 is taken low, TR301 switches on and the quadrupler path is enabled. When D2 is taken high, TR301 switches off enabling TR305 to switch on. This forward biases the series diode and reverse biases the shunt diodes in D307 and the doubler path via the 2.8 GHz LP filter is selected for output instead.

The DC bias current setting for pin diodes D304 and D305 is provided by R318 and R319 plus the resistor combinations of R401 to R404 (sheet 4), which add up to about 120 Ω. Diode D306 has a high forward biasing current in order to compensate for higher insertion loss at that frequency band. The doubled and quadrupled outputs are then combined by D308 and D309 and passed onto the output power amplification stages. Diodes D308 and D309 are used to combine signals, instead of a star connection, to achieve higher isolation in the off state; but this also increases the insertion loss.

QUADRUPLER: OUTPUT AMP, LEVELLING & RPP (AB3/4 sheet 4)

Circuit diagram: Fig. 7-28.

Output amplifier

The combined doubled/quadrupled signal passes through the attenuator network of R401 to R404 and into first amplifying stage TR402. The R401 to R404 network plus quarter wave stubs on R401 and R404 reduce attenuation at higher frequencies (4 dB at 1.35 GHz and 2 dB at 5.4 GHz) to compensate for top end frequency losses. Transistor TR403 with R415, R416 and D402 sets the TR402 DC bias source voltage to 0.27 V, which in turn sets the drain current to approx. 50 mA. The combination of TR401 and D401 prevents the connection of the +5 V supply before the -15 V one becomes active which would otherwise damage TR402.

The output power stages based around TR406 and TR410, both have identical biasing networks. Transistors TR405 and TR409 are connected in a 'current mirror' configuration, acting as current sources for TR406 and TR410 respectively. Resistors R423 to R424, R426 and D404 form a potential divider network which sets the base and hence the emitter voltage of TR405 and TR409. The current is set by resistors R422 and R433. The base voltage of transistors TR404 and TR408 is set to approx. 7 V via R425. When TR409 collector potential is less than 7.5 V, TR408 is off and TR410 gate potential is set to -6 V by R427 and R428, turning TR410 off. But when TR409 collector voltage rises above 7.5 V TR408 starts conducting thereby raising the gate potential of TR410, which then starts conducting. When equilibrium is reached, TR410 drain is at approx. 8 V with 350 mA flowing through it. Similarly, TR406 drain is set to 8 V and current to 250 mA. The output signal is passed through a 5.5 GHz LP filter to attenuate the higher harmonics.

Levelling detector

For operations above 1350 MHz where frequency multiplication takes place, the levelling detector on this board replaces that on AB2/2. This is a negative detector and comprises D407 and IC402b. The output power level is detected by detector diode D407, which is biased to its knee point by R443 and R440, with R439 added to flatten the frequency response. Resistor R445 is used to rapidly discharge C426. Op-amp IC402b is configured as a unity gain follower.

The output from IC402b is fed out on the DETECTOR line to RF board AB2/2. Temperature compensation for this levelling path is provided by diode D408 and IC402a whose output, on the DETECTOR TEMP COMPENSATE line, is also fed to AB2/2. Output from IC402b is also used to trip the reverse power protection (RPP) circuit.

Reverse power protection

Comparator IC401 non-inverting input (pin 2) is initially set to -3.65 V by resistor chain R435 to R438. When the detected level exceeds -4.8 V, the comparator inverting input (pin 3) is less negative than -3.65 V, and the output goes high (+0.5 V) which reverse biases D405 and D406 and switches off TR407. But when IC401 pin 3 becomes more negative than -3.65 V comparator output goes low (-2 V) thereby forward biasing D405 and D406 which then shunt the RF power to earth. TR407 also is switched on, earthing TR410 gate and thereby turning the transistor 'hard-on', shorting RF power to earth. This action protects the output transistor from high level reverse power damage. The increased current flowing through R437 to R438 has the effect of increasing the potential at pin 3 of IC401 so that the comparator output will now switch back to high level at a higher voltage (on pin 3) than before, i.e. hysteresis effect. The circuit trips after 5 microseconds of reverse power, and remains so until 35 ms after it is removed by the step attenuator RPP trip.

FREQUENCY DOUBLER BOARD - AB3/5

Circuit diagram: Fig. 7-30.

Board AB3/5 is used for the 2041 instrument in place of AB3/1 for the 2040, or AB3/4 for the 2042. The purpose of the doubler board is to take the top octave from RF board AB2/2 in the range 675 to 1350 MHz and double this frequency to produce an output at 1350 to 2700 MHz. Whilst doing this it must preserve any modulation, both in frequency and amplitude, that may be present on the signal. A secondary function, for frequencies from 10 kHz to 21.09375 MHz, is the selection of the path to BFO board AB4/1. For frequencies from 21.09375 to 1350 MHz the doubler path is bypassed. The output stages also incorporate level detection and reverse power protection circuitry.

Signal routeing

The signal routeing is carried out by four relays. Two relays, RLA and RLD, select either the straight through or the doubled frequency path while RLB and RLC are used by the BFO. Two relays are used for each of the functions in order to achieve sufficient isolation in the unwanted signal path. The relays are controlled by TR4, TR5 and TR6. The doubler selection via TR5 and TR6 is an intrinsic part of the decoding logic which provides filter selection. To select the straight through, undoubled, route the relays connect the RF I/P line directly to the output. To select the BFO route the BFO SELECT line from AB2/2 is taken low which switches on BFO Switch Driver TR4 to energize relays RLB and RLC. This connects the RF I/P line via the BFO BAND O/P line to AB4/1, and then from AB4/1 on the BFO BAND I/P line via low-pass filter C44, L14 and C45 to the output. To select the frequency doubled route Doubler Switch Driver TR5 controls relays RLA and RLD. During doubler operation, RLB and RLC are set to the BFO position to isolate the fundamental. Relay operation is summarised in Table 4-2-12.

TABLE 4-2-12 RELAY CONTACTS MADE - AB3/5

Selection	RLA	RLB	RLC	RLD
Straight through	7-5 1-3	7-5 1-3	7-5 1-3	7-5 1-3
Doubler	7-6* 1-2`	7-6* 1-2	7-6* 1-2	7-6* 1-2
BFO band	7-5 1-3	7-6* 1-2	7-6* 1-2	7-5 1-3

*energized position

Doubler

The frequency doubler path is selected by relays RLA and RLD which are controlled by decoder IC3a. When IC3 pin 7 is taken high, TR6 is switched on which switches solenoid driver TR5 on. RLA and RLD are then energized as shown in Table 4-2-12 above and the signal on the RF I/P line from AB2/2 is fed into the doubler and then out to step attenuator AT10. The incoming signal is fed in via transformer T1 which provides a balanced signal for the following frequency doubler. Frequency doubling is achieved by full-wave rectification by diode bridge D5. To increase conversion efficiency the diode bridge is biased to bring the operating point closer to the 'knee' and this is provided by the temperature compensated DC bias network of D6 and IC1a. A fixed current is passed through D6 (which is physically close to D5) and the corresponding voltage across it is measured by IC1a. Small value resistor R20 is placed in series with D6 to allow for small variations in diode current so as to compensate for small differences in temperature coefficient between D6 and D5. The resulting voltage is applied to D5 bridge via a quarter-wave stub which provides high impedance to RF signals. The quarter-wave stub isolation technique is used extensively in other parts of the circuitry for applying DC biasing. To counter any instability, TR8 switches on the bandwidth modifying network formed by C62 and R81 whenever the doubler is selected. TR7 provides gain to overcome the 11 dB loss of the doubler. The resulting doubled frequency is fed to the following third-octave filters.

Third-octave filters

Frequency doubling at these frequencies results in considerable amounts of RF power remaining at f/2 (the undoubled frequency) and at 3f/2. To remove these unwanted products, the signal is routed through one of three third-octave filters. Frequency coverage of the filters is: 1.35 - 1.7 GHz; 1.7 - 2.1 GHz; 2.1 - 2.7 GHz.

Filters are selected by PIN diode switches D7 to D12 which are controlled by Filter Switch Drivers IC2 and IC4. These drivers are comparators whose reference thresholds are set by components of R41. Decoder IC3a drives the comparators. To select, for example, the lowest range filter path, IC3 pin 4 is taken low causing IC4c and IC2c outputs in turn to go low. This forward biases the diodes on pins 1 and 2 of D7 and D10 while reverse biasing the diodes on pins 4. This causes the incoming signal to be routed via the 1.35 to 1.7 GHz band-pass filter to the output amplifier.

Output amplifier

TR1 to TR3 provide the power amplification needed to give the 13 dBm output level demanded by the specification. Active DC bias is used on these transistors to guarantee stability of their operating point and hence of linearity. DC bias is supplied by a feedback system based on IC1b, c and d. R40, R42 and R48 are the current sensing resistors for the system. A constant voltage is maintained across each of them by the feedback loop. Because of the power output of the final transistor TR3 it is flange mounted and bolted to the floor of the RF casing for heat dissipation.

Signal levelling

For operation above 1350 MHz where frequency doubling takes place, the Levelling Detector circuit on this board replaces that on board AB2/2. This is a negative detector and comprises D19 and source follower IC5b. The output from IC5b is fed out on the DETECT line to RF board AB2/2. Temperature compensation for this levelling path is supplied by D17 and IC5a, whose output is also fed to AB2/2.

Non-doubled protection

For frequencies below 1350 MHz the signal output level is monitored by the non-doubled RPP (Reverse Power Protection) circuit. This has both positive and negative arms with the stand-off voltages set by Zener diodes D3 and D4 respectively. When the output voltage swing rises sufficiently to cause either D1 or D2 to be forward biased it conducts and so limits that voltage peak.

BEAT FREQUENCY OSCILLATOR BOARD - AB4/1

Circuit diagram: Fig. 7-32.

Board AB4/1 generates the signal generator low frequency band in the range 10 kHz to 21.09375 MHz. It does this by mixing a reference local oscillator (LO) signal at 104.8576 MHz with an RF signal in the range 104.8676 to 125.96135 MHz.

The reference signal on the LO IN line from control board AA1/2 is fed from PLBM to the tuned LO amplifier. This is based upon TR1 with tuning elements L10 and C14. The amplifier delivers the LO signal at around 17 dBm to the LO port of mixer X1.

The RF signal from one of the AB3 boards (AB3/1, AB3/4 or AB3/5) on the BFO BAND RF IN line is passed through the 135 MHz elliptic low-pass filter formed by C1 to C5 and L1 to L4. This reduces the input harmonic content to the RF port of the mixer. The signal is then attenuated by R1, R2, R3, R26 and R27 to reduce the RF drive level to mixer X1 and thereby reduce the output intermodulation products. Thermal compensation is included in the attenuator using thermistor R27 to counteract drift in RF output level.

Mixer output is low-pass filtered at 35 MHz to reduce harmonic content and is diplexed to absorb the intermodulation products generated by the mixer. The low-pass arm is formed by

L5 to L8 and C6 to C8 while the high-pass arm formed by C9, L9 and C10 is terminated in the characteristic impedance of the system to absorb maximum high frequency power.

The low frequency signal is then fed to the 28 dB output amplifier formed by TR2 and TR4. TR4 is a medium power device capable of delivering up to 19 dBm and has active bias using TR3. Output on the BFO BAND OUT line is back to one of the AB3 boards.

The +15 V supply is taken from RF processing board AB2/2 at PLBV and is supplied via the low-pass filter formed by L11, C11 and C12.

OUTPUT LOOP BOARD - AC1 (LN TRAY)

Circuit diagrams: Figs. 7-34 to 7-36.

Board AC1 in the low noise tray forms part of the phase locked loop containing the interpolation oscillator. An output from the oscillator in the range 22.5 to 33.7 MHz is added to or subtracted from the harmonic loop frequency and used to lock the output VCO on board AB1. The interpolation oscillator is tuneable to allow the fractional-N loop to control it so as to make up for any frequency error of the free-running crystal oscillator on board AD1. AC1 also contains the nibble bus interface used for controlling the crystal oscillator on AD1 and for interpolation oscillator frequency range control. The interface is also used to read back housekeeping and calibration data for the tray.

OUTPUT LOOP - CONTROL INTERFACE (AC1 sheet 1)

Circuit diagram: Fig. 7-34.

Nibble bus interface

The nibble bus from AA1/2 comprises four data lines, D0 to D3, and a STROBE line. During data reception D0 to D3 carry address information on the negative transition of the strobe, followed by data pertinent to that address on the positive transition of the strobe.

Both STROBE and data lines have been filtered and so have slow edges which are restored by Schmidt inverter IC1. IC2 which follows, provides address decoding. When STROBE goes low, the address on D0 to D3 is latched into IC2, then decoded to cause one of its outputs on Q0 to Q15 to go low. Data is next presented on D0 to D3 and routed in parallel to ICs 3, 4, 7, 8 and 9. STROBE now goes high, providing a positive transition on the previously selected Q output, and the data is clocked into the selected address.

To provide 8-bit data for ICs 8 and 9, and 10-bit data for IC7 (whose A0 and A1 inputs are used for data), data is pipelined into IC3 first, once to provide extension to 8-bits, twice to provide 10-bits. The 'current' data provides the last four bits.

IC7 is double-buffered internally, and contains four 8-bit D-A converters selected by A0 and A1. The sequence for loading IC7 is:-

(i) Address Q4 (to IC3), data D0 - D1 (values for A0 & A1).

(ii) Address Q4, data D0 - D3 (values for D4 - D7).

(iii) Address Q1 (to IC7, LDAC), data D0 - D3 (values for D0 - D3).

(iv) Repeat above steps as necessary for other values of A0 & A1 to update other D-A converters.

(v) Address Q0 (IC7, WRITE) data to update outputs.

IC7 provides four analogue outputs. Two are amplified by IC12c and d to provide 0 to 25 V tune voltages for the harmonic selector on AD1. The other two provide 0 to 5 V voltages on the PRE-STEER lines for the harmonic and output phase-locked loops.

A-D converter IC8 produces outputs on the LSB to MSB lines to switch the interpolation oscillator over its five ranges. The OSCILLATOR DISABLE and LOOP GAIN lines control the output loop (sheet 3). LOOP POLARITY controls the direction of the effect of the interpolation oscillator on the output VCO frequency.

Readbacks

Calibration or fault data can be read back by the main processor on AA1/2 by means of IC10. This is a tristate data selector. When the STROBE input is taken low, the decoded address on the A, B and C inputs selects one of the D0 to D7 inputs for connecting to nibble bus line D2.

TV (Tune Voltage) MONITOR lines from the interpolation oscillator on this board and the crystal oscillator on AD1 are fed to the two voltage window comparators formed by quad op-amp IC13. One threshold is set by quad input NAND-gate IC11a (whose output is normally high) while the other is set by potential divider R26 and R27. The windows are therefore at ±5 V. Outputs from the window detectors can be checked by IC10 on lines D0, D7 and D1, D3.

The LOCK INDICATOR lines from the interpolation oscillator on this board and the crystal oscillator on AD1 can be checked by IC10 on lines D2 and D4 respectively.

EEPROM IC5 is a 64 by 16-bit memory which stores the calibration data for the functional control of the low-noise tray. Calibration data includes 32 pre-steer values for the VCO on AB1 (in the low-noise tray), 6 pairs of data for harmonic selection, and band break data for interpolation oscillator range switching. The data is read back on power-up via IC10 input D5, with the first byte identifying the low-noise tray. During re-calibration the data is latched in via IC4.

Normally IC10 reads input line D6 from fault monitor IC11b. This is a quad input NAND-gate which continually monitors input lines D0, D1, D2 and D4. When a fault is detected by D6 going logically high, these lines are polled in turn by the processor to identify the fault. If the problem is with a voltage window, sections c and d of IC13 can be made to function as zero crossing detectors. This is done by reading D3 or D7. The address lines to IC10 also automatically set IC11a output low, changing the function of IC13 from a window detector to a zero-crossing detector. The error voltage can now be recalibrated and set as near as possible to zero.

OUTPUT LOOP - INTERPOLATION OSCILLATOR (AC1 sheet 2)

Circuit diagram: Fig. 7-35.

Interpolation oscillator

The interpolation oscillator has a tuning range of 22.5 to 33.75 MHz. To achieve this range, but maintain low-noise characteristics, range switching is employed. The circuit is a Colpitts oscillator with FET TR101 as the active element. The tuning inductor is a double-sided printed coil, clamped rigidly by a metal cover to ensure low microphony. Five capacitors can be switched into circuit by means of diodes D102 to D111 arranged in pairs. The diode currents are controlled by analogue switches IC101 to IC103. When not selected, the diode pairs are reverse biased by the pull-up and pull-down resistors forming R110. When switched on, each pair is forward biased between +5 V and earth.

To maintain a sensibly constant amplitude of oscillation the current in TR101 is boosted as more capacitors are switched in. This loss occurs partly as a result of lowering the L/C ratio and partly as a consequence of diode resistance. R118 and R119 are switched in parallel with R117 by IC104 to achieve this end.

The frequency is fine tuned by a voltage on the IF TUNE line from AB2/2 applied via D101, a variable capacitance diode. C103 and C104 are placed in series with the diode to restrict its tuning range, and to restrict the RF voltage swing across the diode.

As further capacitors are switched in they tend to swamp the effect of the varactor. To achieve near constant FM sensitivity, additional capacitors are connected between C104 and the switched end of the three most significant switched capacitors. These enhance the coupling of the varactor when the appropriate switches are on, but further bypass the varactor when the switches are off.

VCO polarity switch

The interpolation oscillator is controlled by a phase-frequency comparator, forming part of a fractional-N synthesizer on AA1/2, which is polarity conscious. The interpolation oscillator has either a positive or negative effect on output frequency, depending on whether the harmonic loop is below or above the output frequency respectively. A reversing switch is thus used to detect the correct polarity.

Two bias chokes, L101 and L102, are positioned at the ends of varactor D101 to provide hum cancellation. Polarity switching is performed by IC14. In positive polarity, R102 is earthed and R101 is connected to the IF TUNE input. In negative polarity, R101 is connected to +11 V and R102 is connected to the IF TUNE input. To avoid hum loops, both the +11 V and earth potentials are finally earthed to the top RF box, and routed via a dedicated cable running parallel with the IF tune cable.

OUTPUT LOOP - PHASE LOCKED LOOP (AC1 sheet 3)

Circuit diagram: Fig. 7-36.

Phase detector

Phase detector X201 compares the interpolation oscillator output for phase with the IF output from mixer board AD2. Output from AD2 is fed in on the IF I/P line via the 100 MHz low-pass filter formed by C204, L202 and C205. TR202 receives the input from AD2 at approx. -15 dBm, provides about 20 dB of gain in 50 Ω, then feeds the signal at +5 dBm to drive one input of the phase detector. The interpolation oscillator output has low impedance which is raised to 50 Ω by R201. TR201 provides 10 dB of gain and so supplies a +10 dBm signal to drive the other input of X201.

Low-pass filter

Phase detector output feeds to an elliptic low-pass filter which cuts off to provide a first attenuation maximum at 22.5 MHz, set by C12. The impedance is 50 Ω. Links LK1 and LK2 are provided to enable alignment of the filter. The LP filter is terminated by R37, R38 and R39.

Output loop filter

Output from the LP filter drives pin 3 of IC15 which is configured as a 'broken integrator'. Gain is set by C21 and R44 (TR1 normally earths R44) and damping is by R46. C22 provides extra gain roll-off at high frequencies. IC15 output is added to a pre-steer voltage from IC12b with R48 and R47 setting the ratio. To eliminate phase lag due to the bandwidth limitation of IC15, a high frequency path is provided via C23. This is taken from the output of Loop Gain Switch TR2, which provides more loss when either of the top two VCOs are in use, compensating for their higher tuning sensitivity. In conjunction with the VCO and phase detector, a loop bandwidth of 3 MHz is achieved.

Lock detector and search control

Since the loop filter can provide up to ±10 MHz of tuning at the oscillator, the frequency error could be greater than the loop bandwidth. The low-pass filter will however pass the resultant beat note, and this is detected by D15, switching off TR1 via comparator IC12a. This enables DC feedback around IC15 via R40 etc., but due to the effect of capacitors C18 to C20 it results in low frequency oscillation. This provides the search signal which is quenched the moment that lock is found. Beat note detector D15 now switches TR1 on, shorting out the additional feedback and causing IC15 to behave as an integrator once more. Search oscillation is about 200 Hz, but is not normally seen, because it only persists for less than one cycle.

The LOCK INDICATOR and TV MONITOR outputs are fed to IC10 (sheet 1) for calibration and housekeeping purposes. The combined PRE-STEER and loop filter signals feed the VCO TUNE O/P line to board AB2/2.

HARMONIC LOOP BOARD - AD1 (LN TRAY)

Circuit diagrams: Figs. 7-38 & 7-39.

Board AD1 in the low noise tray contains a low noise 135 MHz crystal oscillator whose output is harmonically multiplied in 135 MHz steps from 675 to 1350 MHz. Free-running oscillators operating at 67.5, 45 and 22.5 MHz, and locked to the crystal oscillator, provide divided outputs. By mixing the (low-noise) AB1 signal with both the harmonic and the divided signal, frequencies are obtained from 652.5 MHz (i.e. 675 - 22.5 MHz) to 1372.5 MHz (i.e. 1350 + 22.5 MHz) in 22.5 MHz steps. Any frequency error in this, harmonic, loop is compensated for by the output loop.

HARMONIC LOOP - HARMONIC GENERATOR (AD1 sheet 1)

Circuit diagram: Fig. 7-38.

135 MHz crystal oscillator

Oscillator TR1 uses an overtone crystal, XL1, operating at series resonance to determine the frequency. The crystal can be visualised as providing a low impedance path to earth at resonance, providing a bypass for TR1 emitter. TR1 therefore has high gain only at the crystal frequency. The feedback path from collector to base of TR1 provides low loss and 180^0 phase shift at the required 135 MHz. The feedback also provides impedance transformation, so that the voltage at the base of TR1 is lower than that at the collector, but the current in load resistor R10 is greater than the collector current. Current gain is roughly three-fold and is determined by the ratio of C103 to C33 and C34 combined. L28, C102 and R99 form a network that has negligible impedance at 135 MHz, but becomes resistive at UHF to prevent instability. R11 damps the effects of parasitic capacitance.

The RF power developed in R10 is almost +10 dBm and this is used to drive amplifier TR2. TR2 provides about 30 mA of current at its collector. R16 is used to give some control over the input impedance of TR2, not to control its gain.

Harmonic multiplier

Diode D1 is operated as a step-recovery diode, providing low-loss harmonic generation in multiples of 135 MHz. RF from the oscillator is applied via C37 and is partially rectified by D1, causing a small bias current to flow through R19. A large RF current flows in D1, due to charge storage. Some charge recombines during each RF cycle, so that the diode cuts off abruptly during the period of reverse bias. The RF current also flows through the printed inductor in parallel with R21, and at cut-off the stored energy is diverted into the harmonic selector.

C39 tunes with C37 and L29 to offer a high impedance at 135 MHz, but has a low impedance at UHF, preventing the reflection of harmonic energy into the oscillator. Multiplier input and output are loaded with R17 and R21 respectively to prevent parasitic oscillations. R17 also provides an output for driving the divider circuits. C38 prevents unwanted phase noise modulation in D1. R20 prevents low-frequency squegging of the bias current under RF drive.

Harmonic selector

The harmonic selector is basically a double-tuned band-pass filter, the tuning elements being the capacitance of diodes D2 to D5 plus their self-inductances. Input, coupling and output characteristics are determined by the three printed inductors. Filter response is slightly under-coupled (i.e. it does not exhibit a double-peak) and can be tuned over an octave by means of tuning voltages on the HARM SELECT 1 and 2 lines from board AC1. These select the upper and lower band-pass limits for the 5th to the 10th harmonic. Selectivity is adequate to provide 20 dB rejection of adjacent harmonics.

C40 and C41 are essential to provide AF bypassing of the tune lines to avoid phase modulation. L25 and L26 are bias chokes used to avoid adding noise to the tuning voltages. The harmonic selector is followed by amplifier IC1. This has 10 dB of gain and raises the signal level to 7 dBm to drive the following mixer. TP1 is used for monitoring purposes when setting the tune voltages.

Dividers

Because fixed frequencies only are involved, injection-locked oscillators are used for the division operation. The locking signal is injected into the base of the selected common-base Colpitts oscillator. The oscillator is tuned to free-run at either a half or a third of the input frequency, and that signal is developed at the transistor emitter. The emitter-base voltage is thus the algebraic sum of two signals. The transistor operates in class C and only conducts when the composite signal reaches a peak.

Division ratios are 1, 2, 3 or 6. For division by 1 the dividers are bypassed while for division by 6 two of the circuits are cascaded. The circuit based on TR6 can be re-tuned to divide by either 2 or 3. With TR5 switched on, D8 is reverse-biased and only L12 is in circuit. The circuit free-runs at 45 MHz, dividing the output by 3. With TR5 off, D8 conducts, placing L11 in parallel with L12. The circuit now free-runs at 67.5 MHz, dividing by 2. The circuit based on TR8 divides by 2 only, with the preceding stage set to divide by 3, causing the circuit to free-run at 22.5 MHz.

Division ratios are selected by the two control lines DIV SELECT 1 and DIV SELECT 2. With both lines logically high, TR7 and TR4 are off, and TR3 is on. TR6 and TR8 are turned off, disabling the dividers, D9 and D14 are off and D10 is on. The undivided signal is therefore routed via C58 and D10 to TR9 and out to phase detector X2. Division operation is summarized in Table 4-2-13.

TABLE 4-2-13 DIVISION OPERATION - AD1

Division	Select 1	Select 2	TR4	TR3 D10	TR6	TR5, D8	TR7, TR8, D14	D9
6	0	0	ON	OFF	ON	ON	ON	OFF
3	0	1	ON	OFF	ON	ON	OFF	ON
2	1	0	ON	OFF	ON	OFF	OFF	ON
1	1	1	OFF	ON	OFF	OFF	OFF	OFF

With line 1 high and line 2 low, TR4 is now on, turning TR3 off. TR7 is still off. The first divider is enabled, and since TR5 is off, this divides by 2. D9 is on, D10 and D14 off, routeing the divided signal to TR9. Setting line 2 high and line 1 low provides similar signal routeing, but turns TR5 on, so TR6 now divides by 3.

With both lines low, TR7 is now on, enabling TR8. This in turn causes D14 to conduct, turning off D9 (D10 is also off). TR6 now divides by 3, and this output drives TR8, which divides by 2. The output passes via D14 to TR9, being divided by 6 in total.

TR9 provides a buffered output of roughly +7 dBm to drive one input to X2. R63 is returned to -15 V via R68 to prevent excessive current changes in TR9 when TR8 (and D14) are turned on.

Isolating amplifier

The isolating amplifier provides reverse isolation to prevent signals from the harmonic loop from entering the VCO circuits on the VCO INPUT line from AB1. It consists of two 6 dB pads, each followed by an amplifier stage (IC2 and IC3).

Mixer and phase detector

All signals on this board are harmonically related, being multiples of 22.5 MHz, which frequency is removed by the loop filter. Intermodulation in the mixer is therefore not a problem and both inputs are driven at +7 dBm. The output is filtered (by L9, L10, R26 etc.) to remove and terminate the sum frequency, while IC4 compensates for the conversion loss by providing +7 dBm for the phase detector. This is driven into compression to provide a stable gain.

HARMONIC LOOP - PHASE LOCKED LOOP (AD1 sheet 2)

Circuit diagram: Fig. 7-39.

Low-pass filter

The frequencies to be rejected are 22.5, 45 and 67.5 MHz etc. Ignoring the branches containing L16, L18 and L20, the filter is of the elliptic low-pass type. The first zero is placed at 45 MHz, and can be adjusted with C75. The three extra branches provide a deep trap at 22.5 MHz; C72, C80 and C84 all being adjusted for maximum depth at 22.5 MHz. The purpose of this arrangement is to provide maximum attenuation at the required frequencies without incurring excessive group delay. This allows for a high loop bandwidth in the harmonic loop. LK2 and LK3 are provided to allow for alignment of the filter. The impedance is 50 Ω. The LP filter is terminated by R86, R87 and R88.

Loop filter

Output from the LP filter drives pin 3 of IC6 which is configured as a 'broken integrator'. Gain is set by C90 and R77 (TR11 normally earths R77) and damping is by R82. C94 provides extra gain roll-off at high frequencies. IC6 output is added to a pre-steer voltage from IC5a with R89 and R84 setting the ratio. To eliminate phase lag due to the bandwidth limitation of IC6, a high frequency path is provided via C93. This is taken from the output of Loop Gain Switch TR12, which provides more loss when either of the top two VCOs are in use, compensating for their higher tuning sensitivity. In conjunction with the VCO and phase detector, a loop bandwidth of 3 MHz is achieved.

Lock detector and search control

Since the loop filter can provide up to ±10 MHz of tuning at the oscillator, the frequency error could be greater than the loop bandwidth. The low-pass filter will however pass the resultant beat note, and this is detected by D13, switching off TR11 via comparator IC5a. This enables DC feedback around IC6 via R79 etc., but due to the effect of capacitors C87 to C89 it results in low frequency oscillation. This provides the search signal which is quenched the moment that lock is found. Beat note detector D13 now switches TR11 on, shorting out the additional feedback and causing IC6 to behave as an integrator once more. Search oscillation is about 200 Hz, but is not normally seen, because it only persists for less than one cycle.

The LOCK INDICATOR and ERROR VOLTAGE MONITOR outputs are fed to board AC1 for calibration and housekeeping purposes. The combined PRE-STEER and loop filter signals feed the VCO TUNE O/P line to board AB1.

MIXER BOARD - AD2 (LN TRAY)

Circuit diagram: Fig. 7-41

Board AD2 mixes the outputs from two VCO's, one in the RF tray and one in the low noise tray, and feeds the result to the phase detector on AC1. Since the output loop uses frequencies that are not rationally related, intermodulation products must be kept low. For this reason, a high performance mixer is used requiring a high level of LO drive.

The harmonic loop VCO signal from the AB1 board in the low noise tray is fed into AD2 on the LO INPUT line. Two 6 dB pads and two buffer amplifiers, IC1 and IC2, follow which provide the necessary isolation. Amplifier IC3 raises the drive to +17 dBm to drive mixer X1. The output VCO signal from the AB1 board in the RF tray is fed into AD2 on the RF INPUT line. This input is similarly buffered and the signal is fed at a lower level to X1 via a printed harmonic suppression filter. This provides attenuation of the high-order harmonics (10 GHz and above) that could cause in-band intermodulation products at the IF. The output is terminated at the sum frequency, and the IF fed to AC1 on the IF OUTPUT line.

FRONT PANEL CONTROL BOARD - AF2/1 & KEY MATRIX BOARD - AF1

Circuit diagram: Figs. 7-43 and 7-45 & 7-46

Front Panel Control board AF2/1 contains its own microprocessor (a second, main processor is on board AA1/2) plus memory, as well as interface circuitry which controls the front panel functions of display and data entry. Data entry is via keyboard AF1.

FRONT PANEL CONTROL: PROCESSOR AND MEMORY (AF2/1 sheet 1)

Circuit diagram: Fig. 7-45.

Microprocessor and memory

Front panel microprocessor IC2 is an 80C31 which uses an 8-bit data bus and a 16-bit address bus to address its memory and to control the output latch. It derives its clock from 12 MHz crystal XL1. At power on, a reset pulse is provided by R1 and C3. This is inverted by IC10a to provide a reset pulse for LCD controller IC13 (sheet 2).

The processor executes code contained in IC12, a 64 kbyte EPROM containing the operating program. PSEN provides the active low read strobe for IC12, and is equivalent to RD for the screen memory. The 128 bytes of RAM contained within the 80C31 (giving fast access) and used for scratch-pad purposes are supplemented by 8 kbytes in RAM IC15.

The processor uses a multiplexed data bus to accommodate the 16-bit address. Output lines A8 to A15 on port P2 carry the high order memory address. Input/output lines D0 to D7 on port P0 carry either the low order memory address or the data. ALE (Address Latch Enable) is used to differentiate between data and address; when it is taken high the contents of the data bus are treated as part of the address and latched in IC4. The high order address bits on port P2 are decoded by IC3 to provide chip select signals for the RAM and for the various peripheral devices on the board. WR (write) and RD (read) come from two lines of Port 3.

Key matrix AF1 is an 8x5 matrix of 40 keys connected to the Keyboard Column Driver latch IC1 (AF2/1 sheet 2) and 5 lines of Port P1 on the microprocessor configured as inputs. When no key is pressed, all latch outputs are low and P1.2 to P1.6 are pulled high by internal pull-up resistors. Any key press will cause one of these inputs to be taken low. This is detected by software which initiates a scan of the keyboard to determine which key has been pressed.

Ports P1.0 and P1.1 form a two-line interface to the real time clock on power supply board AR1. When not in use, both ports are held logically high.

The control knob is connected to a shaft encoder which generates two trains of pulses, X and Y, which are interfaced with the microprocessor at Port P3. As the shaft is rotated the pulses generated are decoded by the processor to determine the direction and rate of movement of the control. P3.4 is an input from the X train, while the Y train is an input which generates interrupt signal INT1. IC9a is an XOR gate which is used to invert the interrupt signal under the control of output P3.5. When the knob is not being turned, the INT1 input will be logically high.

Communication interface

The overall operation of the communication interface is covered in the description for AA1/2 sheet 1. The following describes the operation of the interface performed by the front panel processor.

The front panel microprocessor communicates with the main microprocessor via a serial link. The serial interface in IC2 is used in shift register mode. In this mode, RX/TX on pin 10 is used to transmit or receive data, while SERIAL CLOCK on pin 11 is the clocking output. The bidirectional data is split onto separately buffered transmit (TX) and receive (RX) lines by IC10b and IC9b. The direction is controlled by port P1.7 (pin 8). This control line is buffered by IC9d and sent to the main processor together with a serial clock on the SCL line, buffered by IC9c.

Three further lines are concerned with synchronization. Two inputs, RRQST (Receipt ReQueST) and RACK (Receipt ACKnowledge) are used to set and reset two R-S bistables formed from the gates of IC7. The RRQST bistable output generates interrupt INT0 to the microprocessor. When required, the states of the outputs are read using the Interrupt Readback Buffers IC10c and d to produce data bits D0 and D1. A write to the same address generates the BTF (Byte To Follow) pulse. The bistables are cleared by the processor using IC8a and b.

FRONT PANEL CONTROL: LCD CONTROLLER (AF2/1 sheet 2)

Circuit diagram: Fig. 7-46.

Contrast and brightness control

The data written to Contrast Control latch IC5 is used to control the LCD contrast and backlight brightness. The three least significant bits control the current supplied to the display backlighting inverter at PLFM contact 2. Current from the +24 V rail of the power supply passes through interference filter L1, C19 and C20 to the current inverter and then to earth via Brightness Control IC19. When bit 2 of the data to IC5 is set, the resistors on the outputs of IC19 are by-passed and full brightness is obtained. When bit 2 is low, bits 0 and 1 are used to enable two sets of series resistors, R16 to R19 and R20 to R23 to be interposed either singly or in parallel giving three lesser stages of brightness. If all three bits are low, the backlight is turned off. The remaining data bits to IC5 control a 5-bit D-A converter formed by R9 to R13 and IC6. This provides a voltage, of approximately -11 V to the LCD, which is adjusted to set the contrast and viewing angle. This output may be disabled by TR2 (see below). Thermistor R3 provides temperature compensation to match the LCD characteristics over the temperature range of the instrument.

LCD controller and screen memory

The LCD (Liquid Crystal Display) unit is driven by LCD Controller IC13 which provides the necessary signals on connector PLFG to the LCD unit. The controller has a 10 MHz clock derived from crystal oscillator XL2. At power-on the RST input is supplied with an active-low reset pulse from IC10a (sheet 1). Inputs SEL1 and SEL2 are tied low to select operation under control of the 8031 microprocessor. Lines D0 to D7 convey data to and from the front panel processor when addressed on chip select line CS3. A0 operates in conjunction with the active-low RD and WR signals. For a read, either data or the status flag is read from Screen Memory IC14. For a write, either commands or data are strobed into memory.

The controller is connected to IC14, a 32 kbyte RAM which stores the screen data. Outputs A0 to A14 convey the 15-bit address which is latched into the memory on the trailing edge of the pulse from VCE. VD0 to VD7 are tristate outputs connected to the 8-bit bi-directional data bus. The data is controlled by VR/W which is taken high or low respectively to indicate when the read or write data is settled and valid.

XD0 to XD4 supplies the 4-bit data word for the display module. The trailing edge of the XSCL signal causes the pixel data to be stored in the display. LP supplies the line synch pulse while YD supplies the frame synch pulse. WF is active high for the duration of a frame which has a frequency of 70 Hz.

Were the LCD controller to become disabled, output YD15 would go low which would switch off TR1 supplying base current to TR2. This in turn would switch off to remove the VLCD signal so as to disable the display.

LCD column corrector

The circuitry comprising IC16, IC17, IC18 and IC11 inhibits 12 pulses of the XSCL control line to match the controller to the LCD unit. IC16 is configured as an 8-bit binary counter which counts the XSCL pulses from the LCD controller. The ongoing count is supplied in parallel to comparators IC17 and IC18. IC18 compares this data with 100 while IC17 compares it with 112. When no match is found both output pins 19 are logically high. But when a count of 100 is reached, IC18 outputs a low pulse. This takes IC11 pin 2 high and, with pin 1 already high, a low is output to pin 9 which gates off the XSCL pulses. Not until a count of 112 is reached, when IC17 pin 19 goes low, is the gate reopened. By this means only 400 pixels are displayed per line as required.

PSU BOARD - AR1

Circuit diagram: Fig. 7-48.

Board AR1 provides the power supply voltages of +5 V, +15 V, -15 V, +24 V and +26 V for the instrument, the edgeline attenuator coil drive, the real time clock and the brown-out circuitry. The unit has current limiting on the voltage rails and thermal shutdown in case of overheating. TR1, TR2, TR3, IC2, IC3 and thermistor R12 are all mounted on an aluminium heatsink which is cooled by a fan on the rear panel assembly. The power supply voltage rails are derived from the mains transformer four secondary voltages which are connected to the board at PLRB and PLRR. This board also contains the real time clock and the internal standard disable switch.

Power supplies

The +24 V secondary on PLRB contacts 1 and 2 is rectified by D1 and smoothed by C3. This voltage is then used to supply the instrument's +24 V and +26 V voltage rails.

The +24 V rail supply is generated by a specific monolithic regulator, IC2, and is used to drive the inverter on the front panel from PLRG.

The +26 V rail supply is generated using a standard monolithic regulator, IC3. It is obtained using a feedback loop where the rail voltage is potentially divided by R6 and R7 and is compared on pins 2 and 3 of IC4a with the precision +5 V reference from IC5. Op-amp output is then used to drive adjustment pin 1 of IC3 and so regulate the rail.

The -15 V secondary is connected to contacts 3 and 5 of PLRB and is rectified by D4 and smoothed by C8. The -15 V rail voltage is potentially divided with the precision +5 V reference from IC5 by R18 and R19. The divided voltage on pin 3 of IC6 is compared with 0 V on pin 2 and the difference is amplified and used to drive the gate of the regulating MOSFET TR1. R13 is the current sensing resistor which, when the current limit is exceeded, turns on TR5 to reduce the TR1 gate-source voltage and so turn it off.

The rectified +15 V secondary is connected to contacts 1 and 2 of PLRR and is smoothed by C12. This voltage is used for the regulated +15 V rail, the edgeline attenuator coil drive and the fan.

The regulated +15 V rail is obtained using a feedback loop where the rail voltage is potentially divided by R30 and R31 and is compared by IC9b pin 6 with the precision +5 V reference on pin 5 from IC5. The difference is then amplified and used to drive the gate of the regulating MOSFET TR2. R25 is the current sensing resistor which, when the current limit is exceeded, causes the output of IC9a to go low turning off TR2 and hence limiting the current.

The rectified +5 V secondary connected to contacts 3 and 5 of PLRR is smoothed by C17. This voltage is used for the +5 V regulated supply and to provide an input to the brown-out circuitry. The +5 V regulated supply is obtained by using a feedback loop where the rail voltage is compared by IC9d pin 13 directly with the +5 V reference on pin 12 from IC5. The difference is amplified and used to drive the gate of TR3. R36 is the current sensing resistor which, when the current limit is exceeded, causes the output of IC9c to go low turning off TR3 and so limiting the current.

IC5 supplies the +5 V reference for the board and is driven by IC4b. The thermal shutdown of the PSU is controlled by this IC. When the difference in sensed temperature between the ambient thermistor, R10, and the heatsink-mounted thermistor, R12, causes the output of IC4b to go low, it turns off the +5 V reference and thus all of the power supply voltage rails.

IC7, IC8 and IC10 are run off the unregulated +15 V supply. IC10 is used as a current source to drive the edgeline attenuator reverse power protection (RPP) relay while ICs 7 and 8 are used to provide a +5 V supply to the relays on the edgeline attenuator.

When the +5 V unregulated supply falls below the +5 V reference, the output of IC4c goes high and this is taken off the board at PLRD and PLRE to indicate a brown-out (incipient power supply failure). When this happens a pulse is generated by the timing components C22 and R44 causing IC4d to transmit this pulse to the edgeline attenuator to trip the RPP relay.

The fan is driven by the unregulated +15 V rail and this is taken from the board at PLRC.

Real time clock

Real time clock IC1 is located on this board and its output is taken to the front panel at PLRG. The timing is derived from 32.768 kHz crystal XL1. The operation of the IC is maintained by a battery mounted on the rear panel and connected to PLRH.

Internal standard disable switch

Transistor switch TR4 supplies +5 V power to the internal standard OCXO on board AR2. TR4 is used to disable the internal standard when the external standard is selected. Control is exercised by AA1/2 which takes PLRD contact 4 high to switch off the transistor.

INTERNAL FREQUENCY STANDARD BOARD - AR2

Circuit diagram: Fig. 7-50.

Board AR2 contains the 10 MHz OCXO (oven controlled crystal oscillator) which provides the internal frequency standard for the instrument. Overall operation of the frequency standard (both internal and external) is explained under AA1/2 sheet 6.

The +15 V power for the OCXO heater is supplied from PSU board AR1 to PLRL contact 1 with additional smoothing provided by C1. The +5 V power is also supplied by AR1, this is fed in from PLRL contact 2 via a low-pass filter formed by C2, L1 and C3. This power is switched off during external standard operation in order to prevent crosstalk or beating occurring. The switching signal is OCXO POWER ON from board AA1/2 which controls switching transistor TR4 on board AR1. PLRL contact 9 carries the OCXO TUNE signal from AA1/2 via AR1. Output at TTL levels to PLRM supplies the internal standard to AA1/2.

EDGELINE CONTROLLER BOARD - AT11 & ATTENUATOR UNIT - AT10

Circuit diagram: Fig. 7-51.

Edgeline controller board AT11 performs three basic functions. It enables any desired attenuator pad configuration to be set, it holds on-board calibration data for each pad in an EEPROM, and it provides the detection and tripping circuits for the reverse power protection facility for the RF output of the instrument.

Communication with the main processor on AA1/2 is via PLTC which is connected to the 4-bit nibble bus to AA1/2. It uses front panel control board AF2/1 as a mini-motherboard to establish this link. Address information from buffer IC2 is latched into IC9 before being decoded by IC10. IC10 is used to clock valid data into the appropriate latches.

Attenuator operation

The pad selection data is expanded to an 8-bit byte to reduce circuit complexity as the attenuator contains 12 pad-driving solenoids (one each for inserting and removing a pad). This expansion is done by using IC5 to hold one 4-bit nibble (the least significant) and using the current valid data as the most significant nibble. The full 8-bit byte is then loaded into either Pad Insert Latch IC6 or Pad Removal Latch IC7. These devices control the switching of the pads by means of TR1 to TR12. Resistor packs R6 and R7 set the base current for the transistor switches, while R22a and b pull the latches' tristated outputs down to earth when they are in the high impedance state.

To reduce power consumption the solenoids are pulsed. The pulses are provided by Timing Monostables built around IC11a and IC12a, b and c. Three pulses are generated, one to activate the insertion of the pads, one for the removal and then a gap between these to ensure that they are inserted before any are removed. This ensures that there is always a drop in the output RF level whenever the attenuation is changed. Schmitt inverter IC12a with timing components C1 and R3 generates the first 20 ms pulse for Pad Insert Latch IC6. IC12c with C3 and R5 generates the final 20 ms pulse to Pad Removal Latch IC7 while IC12b with C2 and R4 generates a 10 ms delay between these two events.

Calibration data for each pad is held on-board in serial input EEPROM IC4. Information is written to this device during the factory calibration of the attenuator unit. However, the device is addressed each time the instrument is switched on to transfer the data to the more local, high speed, memory on processor board AA1/2. The EEPROM is under the control of latch IC3.

Reverse power protection

The RPP (Reverse Power Protection) trip facility is provided by IC14. The signal level at the output of the attenuator is sensed by two diodes within the attenuator assembly which make contact with PLTE contacts 1 and 2. If this level exceeds the predefined level set by R16, R18, R19 and R21 the window comparator formed by IC14a and b trips. Schmitt inverter IC12e, using timing components C6 and R10, then generates a 20 ms pulse via IC12f and D11 which turns on TR13. This transistor drives solenoid RLG2 so disconnecting the damaging signal from the rest of the instrument. To restore the RPP, the appropriate address is selected by IC10 which resets IC13a. This causes IC12d with C4 and R8 to generate another 20 ms pulse, switching on TR14 which energizes relay RLG1, so restoring normal operation.

IC1c prevents this relay stage from resetting should a request to reset the RPP be received while the overload condition persists. To ensure that the RPP relay is forced open when the instrument is powered down, a SHUTDOWN signal (PLTD contact 3) from PSU board AR1 is wire OR-ed by D11 with the existing on-board signal.

The pad relays are driven from the +5V(H) rail (PLTD contact 8) while the RPP stage is driven from a separate rail which is current limited to 0.5 A (PLTD contact 6). The latter rail runs from the +15 V reservoir capacitor on the PSU board to ensure that a pulse of duration greater than 20 ms is delivered to the RPP relay during the power down of the instrument.

The 4-bit nibble bus is bi-directional so allowing the microprocessor on AA1/2 to read back the data from cal EEPROM IC4 as well the current status of the RPP circuit from IC13a. This function is selected by enabling either IC1a or IC1b which then presents the data on nibble bus line D1 or D0 respectively. Resistors R1 and R2 prevent bus contention should the board be addressed while IC1a or IC1b is still active.

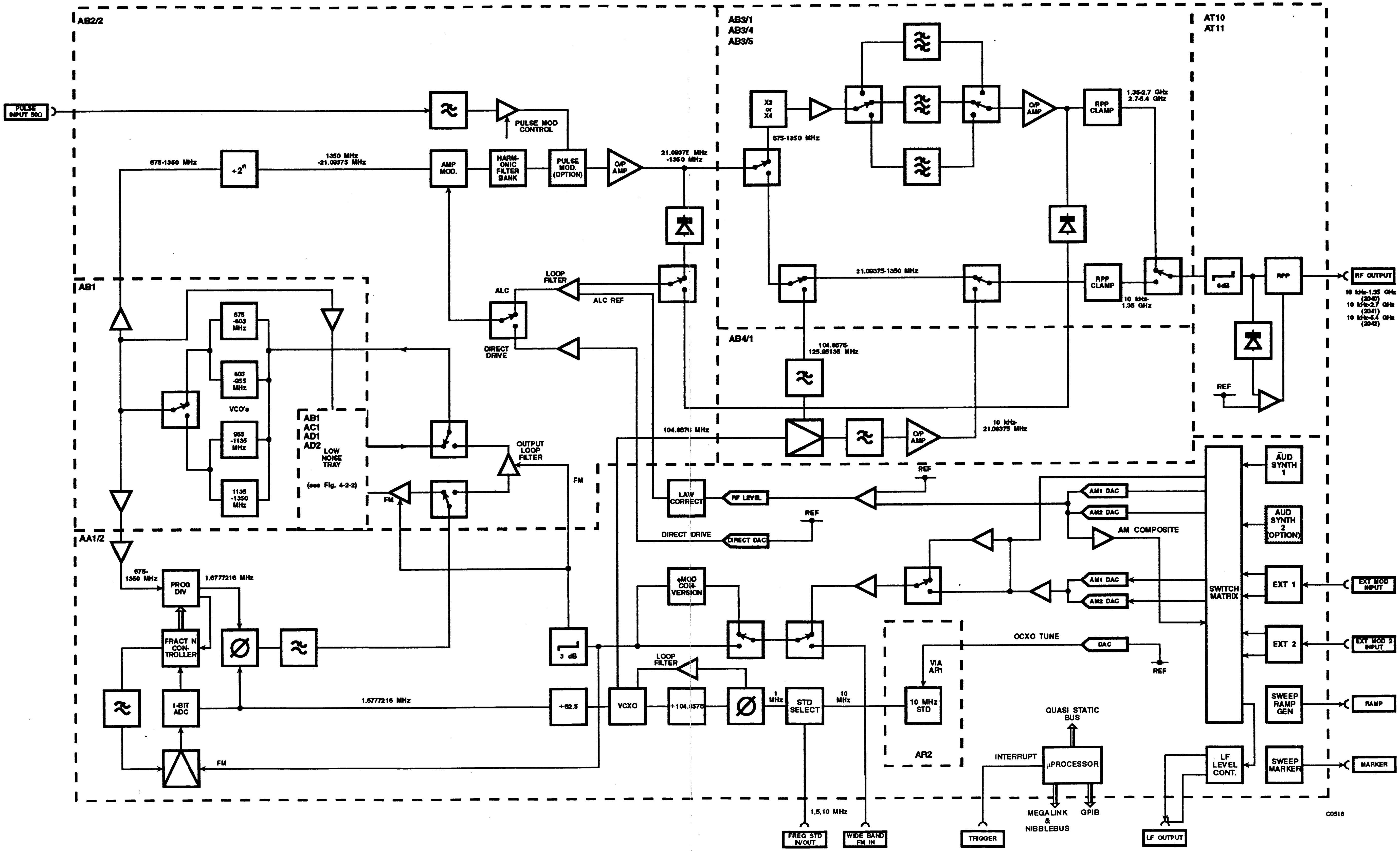

Fig. 4-2-1 Signal generator block schematic

Chapter 5-0
MAINTENANCE

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INTRODUCTION

This chapter provides servicing support information for the three chapters which follow:

5-1: PERFORMANCE TESTING - procedures for verifying that the equipment complies with the Performance Data in Chap. 1.

5-2: ADJUSTMENT AND CALIBRATION - tests and adjustments for restoring the equipment to peak performance.

5-3: FAULT DIAGNOSIS - procedures for localizing faults to at least sub-assembly level (normally a printed circuit board), together with information on repair and replacement.

In case of difficulties which cannot be resolved with the aid of this manual, please contact our Service Division at the address at the rear of the manual for your nearest Marconi Instruments representative. Always quote the type number and serial number found on the instrument data plate.

SAFETY PRECAUTIONS

Although this equipment has been designed and constructed in accordance with international safety standards, it is important that the advice given under 'Servicing Precautions' at the front of this manual should be observed in all maintenance procedures to ensure safe working practices. In addition to these precautions, special handling techniques are required for certain items, as below.

General precautions

Chip components. Numerous chip capacitors and resistors are fitted in this instrument. These have silver palladium end cap terminations with nickel barriers. When soldering these devices the following precautions should be observed.

(i) Use a low melting point solder, and a soldering iron set to 315°C (600°F). The use of a high wattage soldering iron will minimize the time taken to solder the device.

(ii) Take care to avoid mechanical damage from flexing the PCB.

Static sensitive components. The CMOS integrated circuits used in this instrument have extremely high input resistance and can be damaged by accumulation of static charges (see preliminary pages, 'Servicing Precautions'). Boards that have such integrated circuits all carry warning notices against damage by static discharge. Take care also when using freezer sprays to aid fault finding. These can create a static charge likely to change the programmed memory of (E)PROMS.

Bulkhead connectors and gaskets. To ensure that no RF leakage occurs all bulkhead connectors and lid sealing gaskets must be securely fitted. It is essential that the unit lids are correctly relocated in their slotted recesses after removal and all the screw type connectors are tightened up to their specified torque (see 'Torque setting' below).

Torque settings. When replacing semi-rigid pipe connections it is imperative that the following torque settings are used:-

SMA : 99 to 106 N-cm
SMC : 42 to 49 N-cm

TEST EQUIPMENT

The test equipment for use in Chaps. 5-1 and 5-2 is shown in Table 5-0-1. Alternative equipment may be used provided it complies with the stated minimum specification.

TABLE 5-0-1 TEST EQUIPMENT

Description	Minimum specification	Example	Use@
Power meter and Sensor	±0.1 dB from 10 kHz to 5.4 GHz	Marconi 6960A and 6910 or 6912 sensor	PA
Measuring receiver	0 dBm to -127 dBm; 2.5 MHz to 1300 MHz	HP8902A and 11722A sensor and 11793A down converter	P
Signal generator	8 dBm from 1.3 to 5.4 GHz	Marconi 2032	P
Frequency counter	10 Hz to 2.7 GHz	Marconi 2440	P
Audio analyzer	Capable of measuring THD below 0.03% from 100 Hz to 20 kHz. Capable of measuring 0.5 mV ±3% and levels at 10 Hz	HP8903B Rhode & Schwarz UPA3	P
Digital multimeter	DC to 500 kHz, 1 mV to 5 V	Datron 1061A	P
Digital voltmeter (DVM)	DC to 100 kHz	Solatron 7150+	A
Modulation meter	AM, FM and ΦM. 1.5 MHz to 1 GHz. Accuracy better than 1.1%. Modulation freqs from 30 Hz to 50 kHz	Marconi 2305 plus distortion option*	PA
Spectrum analyzers	10 kHz to 8 GHz	Marconi 2386	P
	10 kHz to 1.35 GHz	Marconi 2383	A
Function generator	DC to 500 kHz sine ±0.6 dB flatness	HP3325B	PA
DC source	-1.5 V DC ±0.1 V	Marconi 2155	A

@ P = Performance testing A = Adjustment and calibration

* The distortion option of the 2305 Modulation Meter allows modulation distortion tests to be carried out with greater ease. If a 2305 with a distortion option is not available, the Audio Analyzer may be connected to the Modulation Meter LF output and set to measure distortion.

ACCESS TO UNITS AND BOARDS

The procedures below follow the order of access for servicing, removal of units and boards, and operation with either or both RF tray and low noise tray removed.

ACCESS FOR SERVICING

Removal of outer covers

To remove either the top or bottom outer cover it is first of all necessary to remove the 2 rear support feet. This involves prising off the 2 plastic plugs in each of the feet and removing the screws and feet. Next remove the single retaining screw at the centre rear of the cover. Slide the cover slightly to the rear then lift off.

Servicing of the RF tray, the attenuator and the power supply is performed commencing with removal of the top outer cover. Servicing of the low noise tray, as well as removal the power supply board or attenuator unit commences with removal of the bottom outer cover.

Access to board AA1/2 in RF tray

Remove the top outer cover which reveals the top of the RF tray. Remove the top tray cover after removal of 33 M4 and 4 M3 screws to gain access to the board (see Fig. 5-0-1).

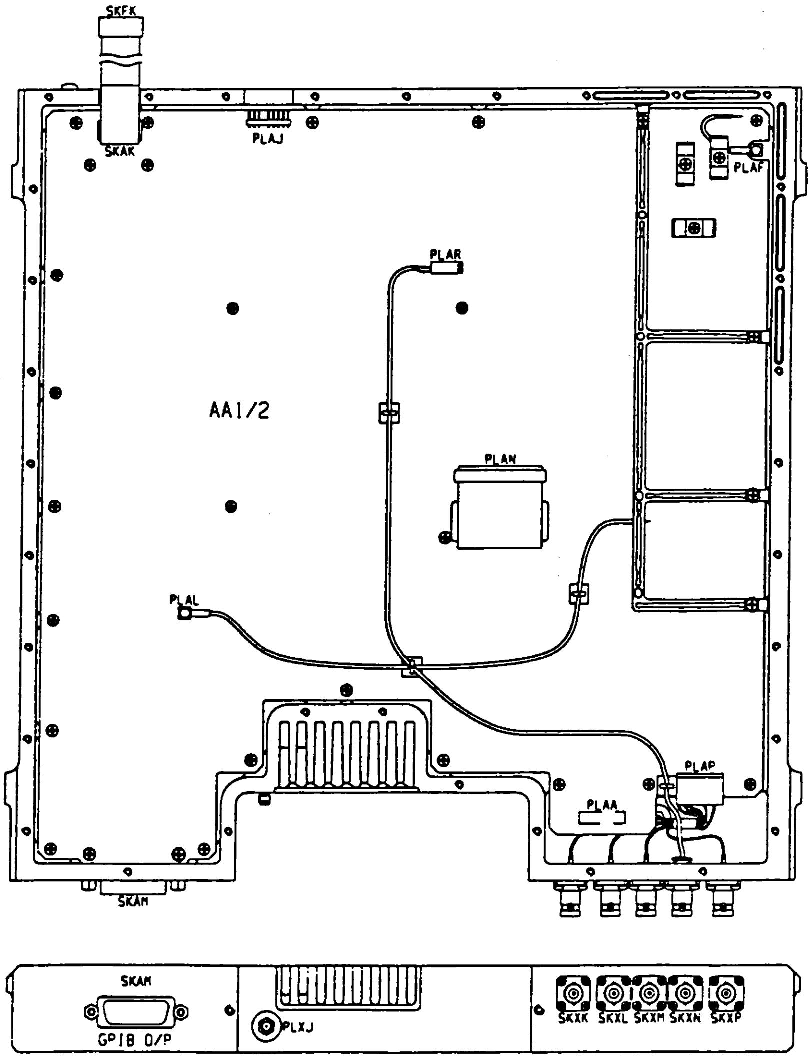

Fig. 5-0-1 RF tray from above and rear with tray cover removed showing board and locations of connectors

Access to boards AB1, AB2/2, AB3/x and AB4/1 in RF tray

Remove the top outer cover and the RF tray (see 'Removal of RF tray' below). Turn the tray upside down to gain access to the underside. Remove the bottom tray cover after removal of up to 35 M4 and up to 19 M3 screws (depending on version of instrument) to gain access to the boards. Note that any screws which are blue varnished are not to be removed. Only one of boards AB3/1, AB3/3, AB3/4, AB3/5 is fitted depending on version of instrument. An internal view of the RF tray from below for the standard version is shown in Fig. 5-0-2 and for the pulse mod version in Fig. 5-0-3.

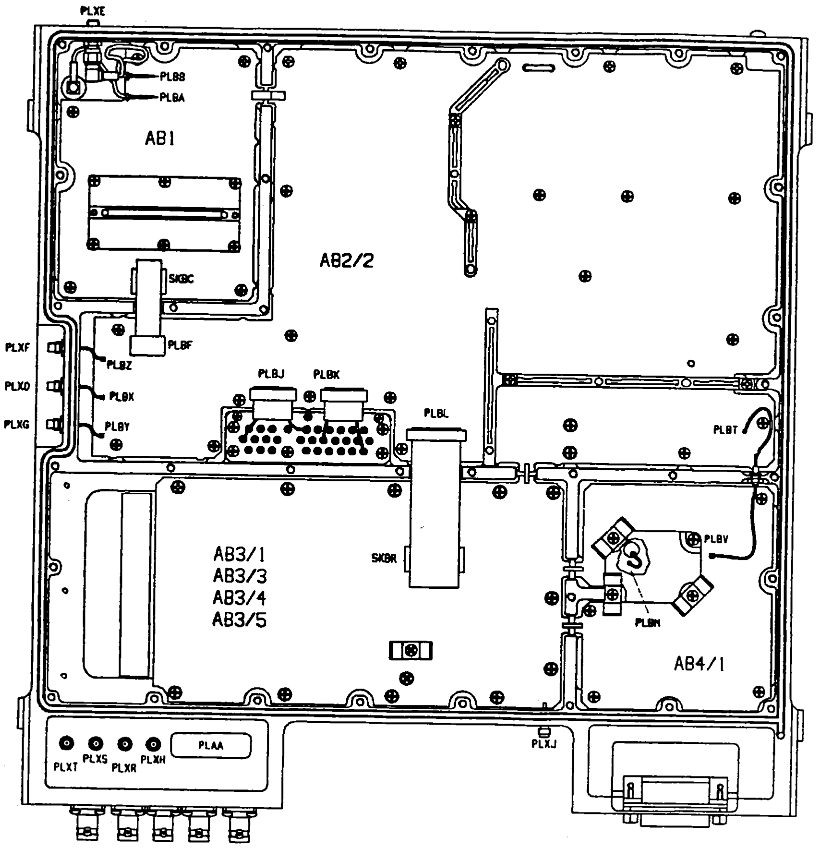

Fig. 5-0-2 RF tray from below with tray cover removed showing locations of boards and connectors for standard version

Access to boards AB1, AD1 and AD2 in low noise tray

Turn the instrument upside down and remove the bottom outer cover. This reveals the bottom of the low noise tray. Remove the bottom tray cover after removal of 19 M4 and 11 M3 screws to gain access to the boards (see Fig. 5-0-5).

Access to board AC1 in low noise tray

Turn the instrument upside down and remove the bottom outer cover. Remove the low noise tray (see 'Removal of low noise tray' below). Turn the tray right way up and remove the top tray cover after removal of 18 M4 and 3 M3 screws to gain access to the board (see Fig. 5-0-4).

Access to boards AF1 and AF2/1

To access these boards the complete front panel assembly containing the boards must be removed (see 'Removal of front panel assembly' below). Having done this, further disassembly is necessary (see 'Removal of boards AF1 and AF2/1 from front panel assembly' below).

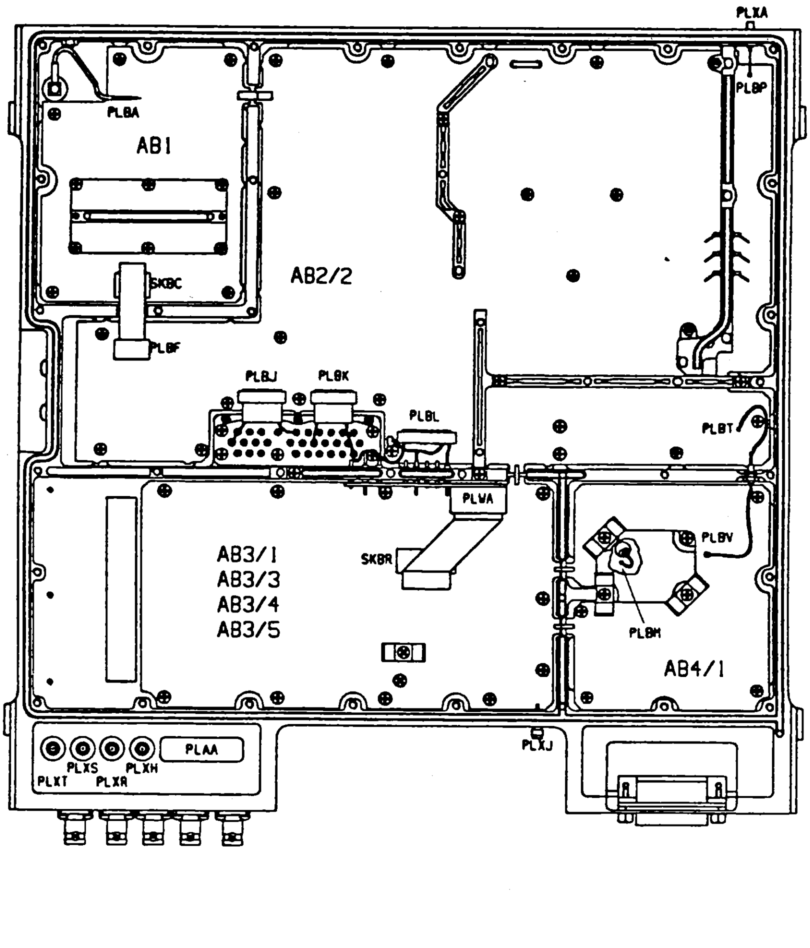

Fig. 5-0-3 RF tray from below with tray cover removed showing locations of boards and connectors for pulse mod version

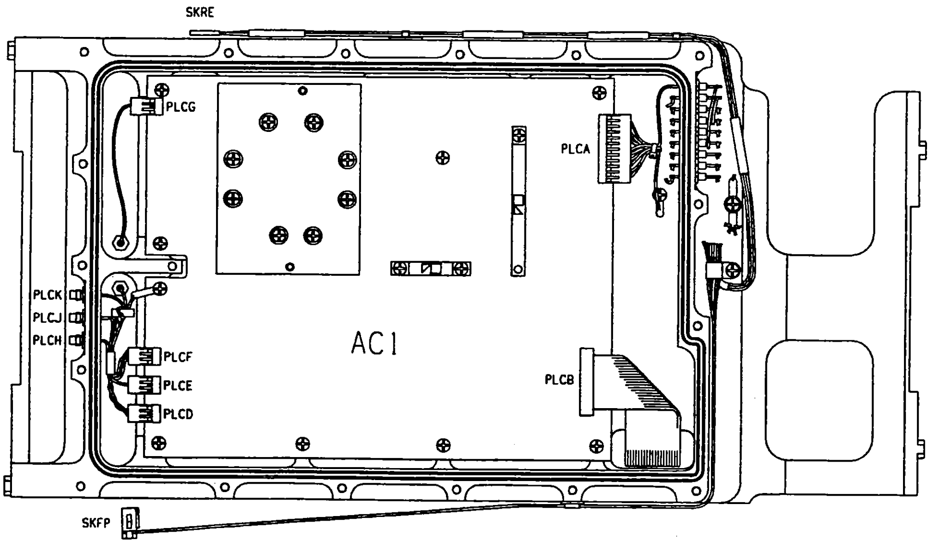

Fig. 5-0-4 Low noise tray from above with tray cover removed showing board and locations of connectors

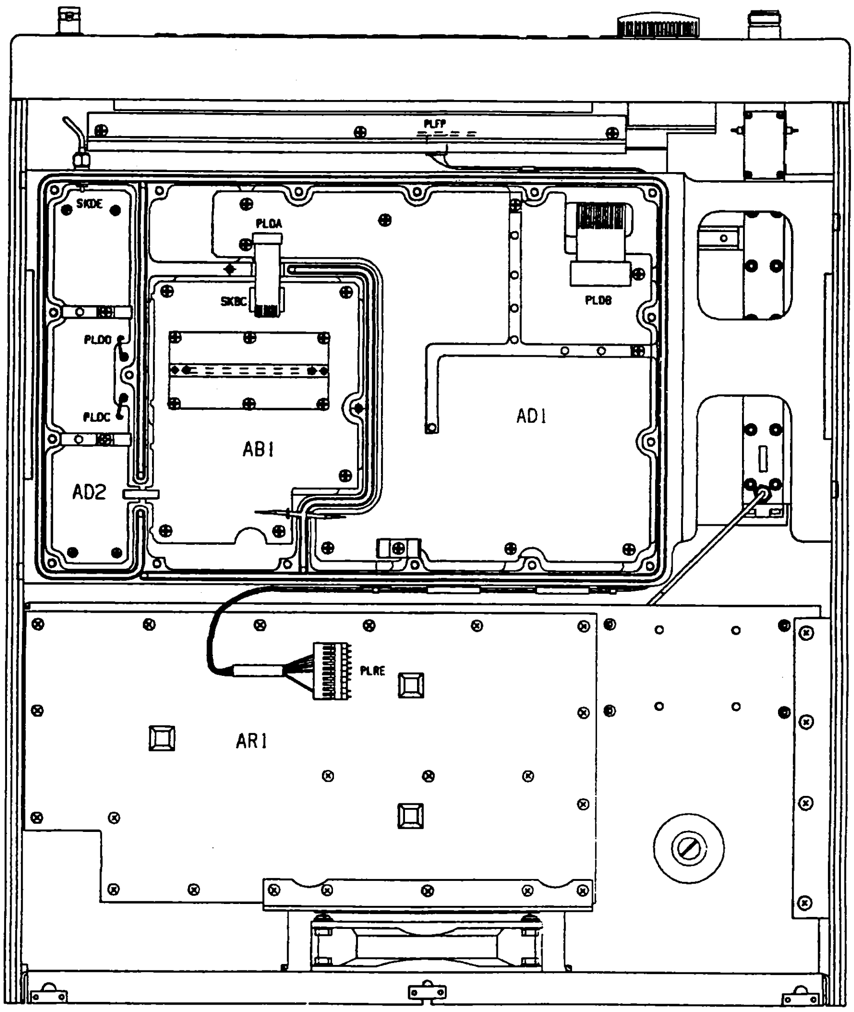

Fig. 5-0-5 Instrument from below with outer and low noise tray covers removed showing boards and locations of connectors

Access to power supply and boards AR1 and AR2

Remove the top outer cover and the RF tray (see 'Removal of RF tray' below). This gives access to the power supply unit and boards, which are mounted at the rear of the instrument, from above. If required, the power supply board may be removed (see 'Removal of power supply board AR1' below).

Access to board AT11

Remove the top outer cover and the RF tray (see 'Removal of RF tray' below). Remove the low noise tray (see 'Removal of low noise tray' below). This gives access to the board, which is mounted on the attenuator, from above. For greater access the complete attenuator must be removed (see 'Removal of attenuator unit' below).

REMOVAL OF UNITS AND BOARDS

Removal of RF tray

The RF tray is is a machining which rests on lugs at the sides and is held in place by 8 M4 panhead screws. Proceed as follows:

(1) Unscrew semi-rigid SMA output cable to the right of the fan.

(2) Pull off the connector containing 3 coaxial cables in a black housing at the front right (viewed from the front) of the tray.

(3) Disconnect 3 cables (method depends on version of instrument) to low noise tray. These are shown as PLXF, PLXD and PLXG in Fig. 5-0-2.

(4) If pulse modulation (Option 002) is fitted pull off flexible SMB cable to front right bottom corner of the tray.

(5) Remove 3 screws each side (2 at front, 1 at rear) and 2 on the back panel (mid-upper of panel at sides of fan).

(6) Lift front of RF tray just enough to gain access to the connectors at the rear left of the underside of the tray. Pull off a flexible coaxial cable and an 11-way multiple cable.

(7) Lift the RF tray directly upwards and remove.

Replacement is generally a reversal of the above removal procedure. Ensure that the correct torque setting is used when replacing the semi-rigid cable connection (see 'Torque settings' above). An internal view from above with the RF tray (as well as the low noise tray) removed is shown in Fig. 5-0-6.

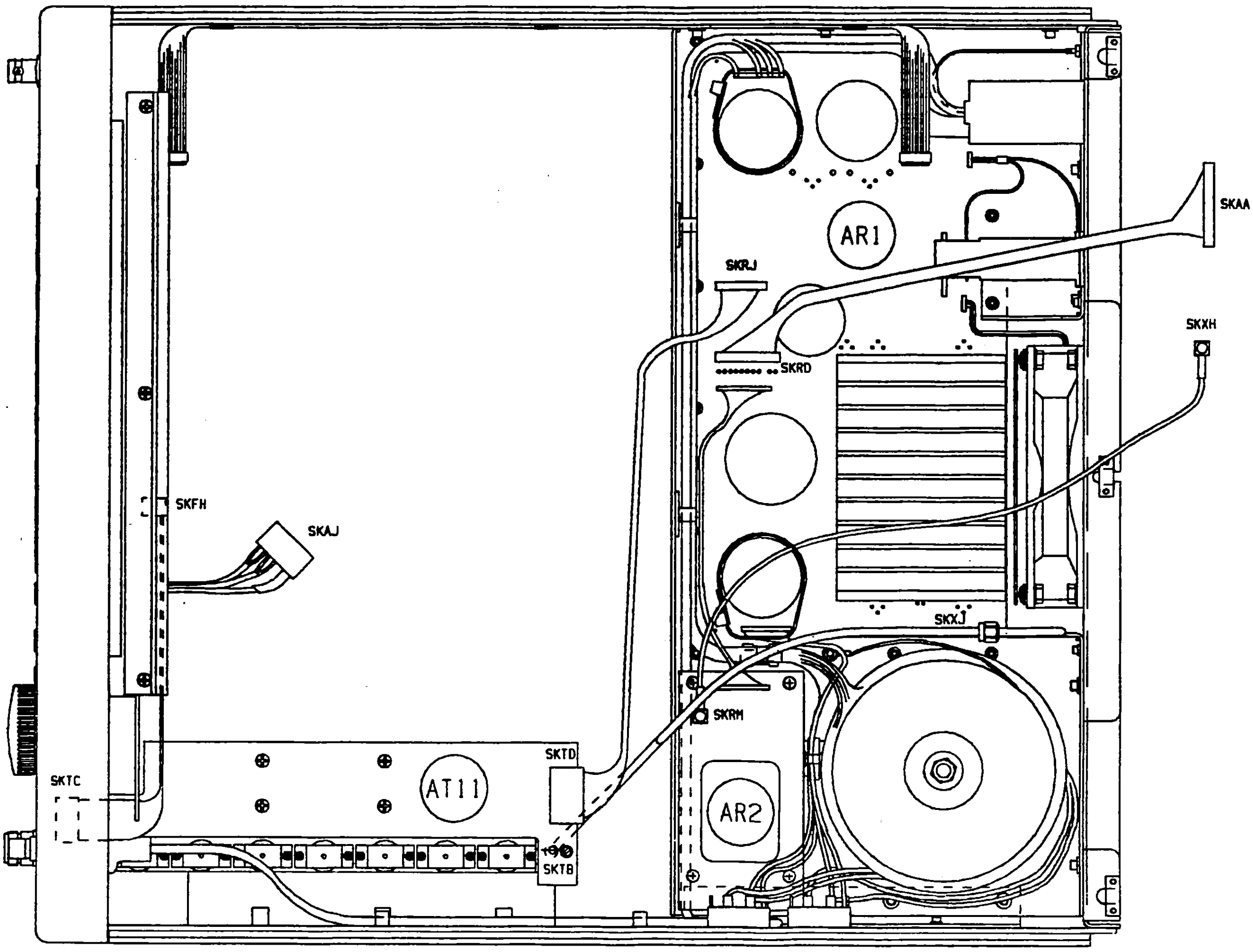

Fig. 5-0-6 Instrument from above with the RF and low noise trays removed showing locations of boards and connectors

Removal of low noise tray

The low noise tray is is a machining which rests on lugs at the sides and is held in place by 8 M4 panhead screws. Proceed as follows:

(1) Turn the instrument upside down and remove the bottom outer cover.

(2) Disconnect the SMA connector at right-hand side (viewed from the front) of the tray.

(3) Disconnect the power supply cable from the central power supply board.

(4) Remove 8 screws from the side frames.

(5) Lift right-hand side of tray just enough to gain access to the connectors to the 3 cables underneath. Disconnect these cables (method depends on version of instrument).

(6) Disconnect control cable from centre of board AF2/1.

(7) Lift the low noise tray directly upwards and remove.

Replacement is generally a reversal of the above removal procedure. Ensure that the correct torque setting is used when replacing the semi-rigid cable connection (see 'Torque settings' above).

Removal of front panel assembly

Proceed as follows:

(1) Using a screwdriver blade prise off the plastic infills in each of the front panel handles. Remove the 2 M4 panhead screws securing each handle and remove the handles.

(2) Remove the 2 M4 countersunk screws holding the front panel assembly to the mainframe.

(3) Pull off the front panel power supply cable at left-hand rear (viewed from the front) of the panel.

(4) Gently pull the front panel unit away from the mainframe whilst easing the RF OUTPUT socket through the plastic grommet. When able to do so, pull off the remaining connectors. Note the positions of these connectors for later reconnection.

(5) Undo the 2 screws at the right-hand rear of the panel to release the SUPPLY switch.

Replacement is generally a reversal of the above removal procedure. For the locations of the connectors refer to the component layout for AF2/1 in Chap. 7.

Removal of attenuator unit

Proceed as follows:

(1) Turn the instrument upside down and remove the bottom outer cover.

(2) Unscrew the SMA cable facing upwards (viewed from underside of instrument) at the rear of the attenuator.

(3) Remove 2 countersunk M4 screws from the right sidewall of the mainframe. These are at either end of the cut-out in the frame.

(4) Pull off backwards the 8-way supply connector from the rear of board AT11.

(5) While supporting the attenuator, push against the front of the RF OUTPUT socket so that it is eased through the plastic grommet.

(6) Pull down and off the 10-way ribbon cable from the front of board AT11. Remove the attenuator unit.

Replacement is generally a reversal of the above removal procedure. Ensure that the correct torque setting is used when replacing the semi-rigid cable connection (see 'Torque settings' above).

Removal of board AA1/2

Remove the RF tray and gain access to the board. Then proceed as follows:

(1) Pull off the following connectors:-

9-way connector PLAP,
SMB connector PLAF,
SMB connector PLAL,
34-way ribbon connector PLAN,
3-way coaxial connector PLAR and disengage from cable clips.

(2) Remove the 2 fixing studs on rear face of tray for GPIB connector SKAM.

(3) Unscrew and remove the spring finger and round spacer adjacent to SMB connector PLAF.

(4) Remove all M3 recessed panhead screws (24 peripheral - including 4 in the screen - and 4 inboard). Leave the 2 screws fixing the spring fingers, front left.

(6) Lift the board up by the plastic loop at the front, just enough to clear the side wall, and pull the board out forwards to disengage the GPIB connector from the rear wall opening. Remove the board.

Removal of board AB1 in RF tray

The two AB1 boards (there is another in the low noise tray) are the only double-sided boards in the instrument. Having gained access to the board proceed as follows:-

(1) Pull off the following connectors:-

SMB connector PLBB,
10-way ribbon connector PLBC.

(2) Unsolder the board link to AB2/2.

(3) Remove all M3 screws, take away cover, and remove the board.

Removal of board AB1 in low noise tray

The two AB1 boards (there is another in the RF tray) are the only double-sided boards in the instrument. Having gained access to the board proceed as follows:-

(1) Unsolder link to AD2.

(2) Unsolder cable link to AD1.

(3) Pull off 10-way ribbon cable to PLDA on AD1.

(4) Remove all M3 screws, take away cover and remove board.

Removal of board AB2/2

Having gained access to the board proceed as follows:-

(1) Pull off the following connectors:-

10-way ribbon connector PLBF,
20-way ribbon cable PLBL,
two 16-way ribbon cable PLBJ, PLBK.

(2) Unsolder PLBT. Unsolder links to AB1 and to AB3/x. If pulse mod is fitted unsolder PLPB.

(3) Remove all M3 screws and take away 2 screens.

(4) Remove 2 M2.5 screws adjacent to R/F OUTPUT and remove the board. Note that on the rear of the board, under IC2, there is a 2-leaf spring which must be protected following board removal.

Removal of boards AB3/1, AB3/3, AB3/4 and AB3/5

Having gained access to the board proceed as follows:-

(1) Pull off 20-way ribbon connector from board AB2/2. If the pulse mod option is fitted in 2031 or 2032, disconnect the ribbon cable from the PCB on side wall.

(2) Unsolder 2 links to AB4/1. Unsolder link to AB2/2.

(3) Remove peripheral M3 screws. Remove M2.5 screws.

(4) Unsolder RF output connection and unscrew SMA connector PLXJ from the RF tray. For AB3/4 the SMA connector is fitted in a square brass bush which is to be unscrewed complete.

(5) Remove the board whilst protecting relays on the back of board.

Removal of board AB4/1

Having gained access to the board proceed as follows:-

(1) Unsolder 2 links to AB3/x. Unsolder PLBV.

(2) Remove 4 cover fixing screws and remove cover.

(3) Unsolder PLBM.

(4) Remove M3 screws and remove board.

Removal of board AC1

Having gained access to the board proceed as follows:-

(1) Remove all connectors.

(2) Remove all M3 screws, take away cover and two screens and remove board.

Removal of board AD1

Having gained access to the board proceed as follows:-

(1) Pull off 10-way ribbon cable from AB1 to PLDA.

(2) Pull off 20-way ribbon cable from AC1 to PLDB.

(3) Unsolder cable to AB1.

(4) Remove all screws and take away screen. Remove earth spring and pillar and remove board.

Note...

For some instruments it will be necessary to access AC1 to disconnect 20-way ribbon cable to PLCA on AC1.

Removal of board AD2

Having gained access to the board proceed as follows:-

(1) Unsolder link to AB1.

(2) Unsolder wire links to feed-through capacitors.

(3) Unsolder connection to SMA connector.

(4) Remove all screws and the SMA connector.

(5) Remove screens and lift board out vertically whilst protecting mixer on back of board.

Removal of boards AF1 and AF2/1 from front panel assembly

Proceed as follows:

(1) Unplug PLFF from board AF1. Unplug PLFL, PLFM and PLFG from AF2/1.

(2) Undo the 6 screws holding the rear cover and remove. This enables the rear of board AF2/1 to be accessed.

(3) Undo 2 screws from the inverter box and pull the box aside.

(4) Remove 6 screws from the support plate to remove AF2/1.

Further disassembly is inadvisable due to the likelihood of dust contamination. If necessary, continue as follows:

(5) Undo 4 screws from the support plate and remove.

(6) Undo 4 screws at the corners of the display unit and remove. This gives access to the rear of keyboard AF1.

(7) Pull off the control knob. Remove the block after loosening the self-tapping screw and remove washer.

(8) Unscrew all hexagonal pillars, remove 3 slotted panhead screws and 4 recessed panhead screws. Board AF1 may now be removed.

Replacement is generally a reversal of the above removal procedure. But note that the screen glass window and the face of the display must be cleaned by an anti-static cleaner before reassembly.

Removal of board AR1

Proceed as follows:

(1) Turn the instrument upside down and remove the bottom outer cover.

(2) Remove 15 M3 screws from the board (do not disturb the remaining 6 screws which are for the heatsink). Gently lift the board from the mainframe while pulling off 8 connectors. Note the positions of these connectors for later reconnection.

(3) Left within the mainframe are the mains transformer, rectifiers, battery holder, mains inlet and cooling fan.

Replacement is a reversal of the above removal procedure. For the locations of the connectors refer to the component layout for AR1 in Chap. 7.

Removal of board AR2

Having gained access to the board proceed as follows:-

(1) Pull off the following connectors:-

10-way ribbon connector PLRL,
SMB connector PLRM.

(2) Remove M3 screws and remove board.

Removal of board AT11

Having gained access to the board proceed as follows:-

(1) Pull off 3-way connector PLTE.

(2) Unsolder 3 solder joints for each solenoid.

(3) Remove all board screws and remove board.

RF TRAY OPERATION REMOVED FROM MAIN UNIT

For servicing purposes the RF tray may be removed and operated, connected to the instrument by a number of cables. Lay the RF tray to either side of the instrument and facing the same way. Note that cables numbered in brackets below are supplied in the optional Maintenance Kit, 46884-444G.

The following cables are required between the named connectors:-

(1) SKTB on attenuator to SKXJ on the RF tray:
SMA-SMA flexible coax, 0.8 m (43137-785T).

(2) PLRM on frequency standard AR2 to PLXH on the RF tray:
SMB-SMB flexible coax, 0.75 m (43137-786P).

(3) PLRD on power supply AR1 to PLAA on AA1/2:
Female-female 11-way individual wires, 0.65 m (43137-787X).

(4) SKAJ to PLAJ on AA1/2:
Three coax extension cable, male to female, 9-way housings, 0.8 m (43137-788M).

(5) PLFK front panel AF2/1 to SKAK on AA1/2:
Female-male 16-way extension cable, 0.5 m (43137-789C).

(6) If pulse option fitted, PLXA to SKXA:
SMB-SMB, female to male flexible coax extension cable, 0.5 m (43137-790X).

LOW NOISE TRAY OPERATION REMOVED FROM MAIN UNIT

For servicing purposes the low noise tray may be removed and operated, connected to the instrument by a number of cables. Stand instrument on its left-hand side (as seen from the front) with low noise tray to the right. The 3 linking cables between the RF tray and the low noise tray are to remain connected. Note that cables numbered in brackets below are supplied in the optional Maintenance Kit, 46884-444G.

The following cables are required between the named connectors:-

(1) SKXE on RF tray to SKDE on low noise tray:
SMA-SMA flexible coax cable, 0.8 m (43137-785T).

(2) PLRE on power supply board AR1 to SKRE on low noise tray:
Female-male extension 11-way individual wires, 0.65 m (43137-997R).

(3) PLFP on front panel board AF2/1 to SKFP on low noise tray:
Female-male 10-way extension cable, 0.5m (43137-998B).

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ADJUSTMENT

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INTRODUCTION

This chapter describes adjustments which will restore the instrument to its peak operating condition. Test equipment recommended for this purpose is listed in Chap. 5-0 and summarized for each test procedure. All of the routine adjustments for the instrument can be carried out from the front panel.

The hardware adjustment procedures are only required in the event of a failure or a major overhaul being carried out, and should be completed before the software adjustment procedures.

Test equipment

During the adjustment of the instrument ensure that all the test equipment used is calibrated. Correction figures should be applied where necessary and instruments zeroed if required.

Warm-up time

Allow the instrument to warm-up for at least 15 minutes before calibration.

Key symbols

Note that the **[HARD]** keys are shown in capitals in square brackets and the *[soft]* keys in italics with square brackets.

Unlocking procedure

In order to access the adjustment routines it is necessary to unlock the instrument to level 2. First obtain the Function Unlocking Facility menu by entering the following:-

[UTIL] *[Utils. Menu 2] [Lock & Unlock]*

Then press *[Unlock Level 2]*. Check that the display confirms that the instrument has been unlocked to Level 2, key in the password (the default password to unlock to Level 2 is 123456) and terminate by [enter].

Resetting the password

To reset the password unlock the instrument, then press *[Set Lvl2 Password]* followed by the 6 digit password, and terminate by [enter].

Ensure that a record of the modified password is kept.

For this purpose it is recommended that the adjustment form at the end of this Chapter is duplicated and the modified password recorded on the duplicate.

ADJUSTMENT AREAS

There are 4 areas of the instrument that require adjustment using the software adjustment procedures:

(1) Source and path
(2) RF level
(3) Modulation
(4) Frequency standard

To ensure that the adjustment remains in specification over the calibration period it is advisable to ensure that the figures remain within the +5% and +95% limits stated at the beginning of each section.

Where the instrument is fitted with an option, the procedures described in the appropriate Appendix to this Chapter may add to, or replace, the procedures described below.

Date stamping of adjustments

After each adjustment has been carried out, the new values are saved and the date of adjustment is recorded on the Calibration Utilities Menu. For this reason it is important that the time and date is correct before undertaking adjustments. Time and date can be checked by selecting the Utilities Selection Menu 2 and pressing the *[Set Time & Date]* key. If incorrect, the date can be reset using the *[Set Time]* and *[Set Date]* keys.

Last complete check date

On completion of the adjustment routine or of a calibration check, the date can be recorded. To do this, unlock the instrument to level 2, select the Calibration Utilities Menu, then press the *[Checks Complete]* key. This will result in the *Last Complete Check* date being updated to the current date.

Calibration due date

The date of the next calibration check can be entered from the Calibration Utilities Menu by pressing the *[Set Next Cal Date]* key. On reaching the calibration date, the instrument will display an error message indicating that it should be returned for a calibration check. The recommended calibration interval is 2 years.

Real time clock battery

The real time clock uses a lithium battery to provide uninterrupted power regardless of whether the instrument is switched on or off. Although the estimated life of this battery is 4 years, customers may wish to replace it every 2 years.

PROTECTED USER DATA

The Protected User Data function allows the user to store and retrieve, via the GPIB, up to 64 bytes of data in non-volatile memory. A typical use might be tagging an instrument with an inventory number.

The IEEE 488.2 common command *PUD is used to store data which may be read by the Common Command query *PUD? Stored data is protected against inadvertent change by a simple locking mechanism. The command UNLOCK allows data to be stored, LOCK prevents data from being stored. At power-on the function is locked.

Stored bytes may have any 8-bit value, so the Arbitrary Block Program Data format must be used:-

#<bytecountsize><bytecount...><databytes....>

The data element starts with #, followed by a single decimal digit which specifies the number of decimal digits in the following byte count. Then follow the data bytes as specified in the byte count.

An alternative format is:-

#0<databytes....><Newline+EOI>

The number of data bytes need not be specified but must be terminated by Newline with EOI asserted. This is the only valid termination, Newline is not stored as part of the data, this will also terminate the Program Message.

The response to the *PUD? query is Definite Length Arbitrary Block Response Data which is the same as the first data format described above.

Example:
To store the text 'Signal Generator' (16 characters) send:

```
UNLOCK;*PUD #216Signal Generator;LOCK
```

The response to *PUD? would be:-

```
#216Signal Generator
```

- SOFTWARE ADJUSTMENT PROCEDURES -

1 SOURCE AND PATH ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Digital volt meter (DVM)		Solatron 7150+
AF source	1 kHz sine wave	HP 3325B

ADJUSTMENT

Source path/calibration

Source	Path
External Mod 1 (reference)	AM 1
External Mod 1 ALC	AM 2
External Mod 2	FM 1
External Mod 2 ALC	FM 2
Internal Source 1	LF
Internal Source 1	
Internal Source 2	
Full calibration figure range:	0 to 65535
5% to 95% calibration figure range:	1638 to 63898

Setting the reference voltage

(1) Connect the AF source output and the DVM input via a T-connector to the EXT MOD 1 INPUT on the UUT. Equipment configuration is shown Fig. 5-2-1.

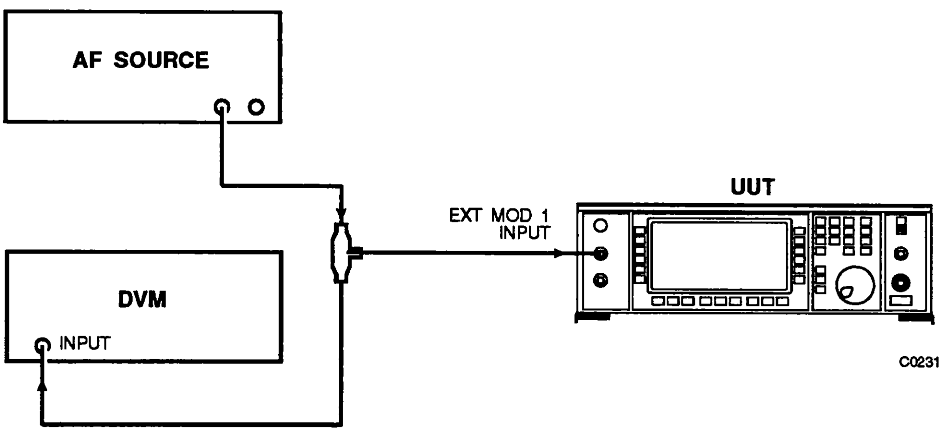

Fig. 5-2-1 Equipment configuration to set the reference voltage.

(2) Unlock the instrument to level 2 then select source/path cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Source/Path]*

(3) Set the AF source to 1 kHz and adjust the output level until the DVM reads 1 V ±0.08 V RMS.

Measuring the LF output level

(1) Connect the AF source to the EXT MOD 1 INPUT on the UUT. Connect the LF OUTPUT on the UUT to the DVM input. Equipment configuration is shown in Fig. 5-2-2.

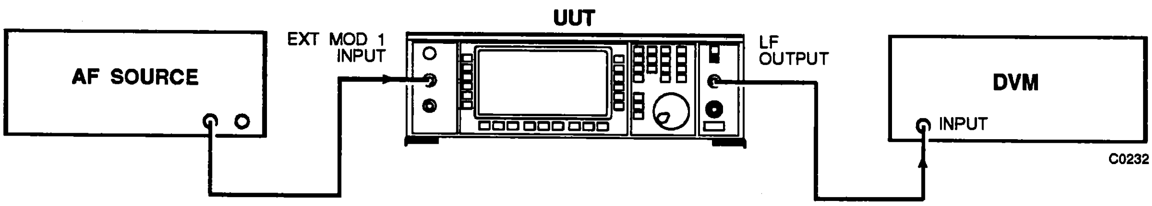

Fig. 5-2-2 Equipment configuration to measure the LF output level

(2) Measure the voltage at the UUT's LF OUTPUT socket on the DVM (and note it as V1).

The EXT 1 source calibration screen should be shown together with the reference calibration figure of 32768.

(3) On the UUT select the *[Next Source] - External1 ALC.*

(4) Adjust the correction figure (using either the keyboard or the knob) until the signal at the LF OUTPUT socket is equal to V1 ±0.02 V.

(5) Connect the AF source to the UUT's EXT MOD 2 INPUT socket.

(6) Repeat steps (2) and (3) for the remaining sources *(External2, External2 ALC, Internal1, Internal2)* by selecting *[Next Source].*

(7) When each of the sources has been calibrated, select *[Path Calib.]* and measure the LF output on the DVM (and note it as V1).

The AM 1 path calibration screen should be shown. This sets a reference calibration figure of 32768.

(8) On the UUT select the *[Next Path]* - AM 2.

(9) Adjust the correction figure (using either the keyboard or the knob) until the LF output is the same as V1.

(10) Repeat steps (2) and (3) for the remaining paths AM 2, FM 1 and FM 2.

(11) Select *[Next Path].* Adjust the output for the LF path to 1 V RMS ±0.02 V.

(12) Save the calibration figures by using *[EXIT] [Save Calib.].*

2 RF LEVEL ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Modulation meter	AM accuracy ±1%	Marconi 2305
Digital volt-meter (DVM)	DC to 50 kHz	Solatron 7150+
Power meter and Sensor	300 kHz to 4.2 GHz	Marconi 6960A & 6912
Power meter and Sensor	10 MHz to 5.4 GHz	Marconi 6960A & 6910
Spectrum analyzer	Frequency to 1.35 GHz	Marconi 2383
DC source	-1.5 V DC	Marconi 2155

ADJUSTMENT

RF Level calibration

(a) **21 MHz to 1350 MHz** (2040, 2041 & 2042)

Process 0 - AM trough nulling
Process 1 - DC offset

Process 2 - RF level calibration 0 dBm and 10 dBm

Cal point 0 - 30 MHz
Cal point 1 -150 MHz
Cal point 2 -300 MHz
Cal point 3 -450 MHz
Cal point 4 -600 MHz
Cal point 5 - 750 MHz
Cal point 6 - 900 MHz
Cal point 7 -1050 MHz
Cal point 8 - 1200 MHz
Cal point 9 -1350 MHz

(b) **1350 MHz - 2700 MHz** (2041 & 2042 only)

Process 0 - AM trough nulling
Process 1 - DC offset

Process 2 - RF level calibration 0 dBm and 10 dBm

Cal point 0 - 1350 MHz
Cal point 1 - 1500 MHz
Cal point 2 - 1650 MHz
Cal point 3 - 1800 MHz
Cal point 4 - 1950 MHz
Cal point 5 - 2100 MHz
Cal point 6 - 2245 MHz
Cal point 7 - 2400 MHz
Cal point 8 - 2500 MHz
Cal point 9 - 2700 MHz

ADJUSTMENT (contd.)

c) **2700 MHz - 4050 MHz** (2042 only)

Process 0 - AM trough nulling
Process 1 - DC offset

Process 2 - RF level calibration 0 dBm and 10 dBm

Cal point 0 - 2700 MHz	Cal point 5 - 3450 MHz
Cal point 1 - 2850 MHz	Cal point 6 - 3600 MHz
Cal point 2 - 3000 MHz	Cal point 7 - 3750 MHz
Cal point 3 - 3150 MHz	Cal point 8 - 3900 MHz
Cal point 4 - 3300 MHz	Cal point 9 - 4050 MHz

(d) **4050 MHz - 5400 MHz** (2042 only)

Process 0 - AM trough nulling
Process 1 - DC offset

Process 2 - RF level calibration 0 dBm and 10 dBm

Cal point 0 - 4050 MHz	Cal point 5 - 4800 MHz
Cal point 1 - 4200 MHz	Cal point 6 - 4950 MHz
Cal point 2 - 4350 MHz	Cal point 7 - 5100 MHz
Cal point 3 - 4580 MHz	Cal point 8 - 5250 MHz
Cal point 4 - 4650 MHz	Cal point 9 - 5400 MHz

(e) **10 kHz - 21 MHz** (2040, 2041 & 2042)

Process 2 - RF level calibration 10 dBm

Cal point 0 - 10 kHz
Cal point 1 -100 kHz
Cal point 2 - 1 MHz
Cal point 3 - 10.546875 MHz
Cal point 4 - 15 MHz
Cal point 5 - 21.0937 MHz

21 MHz to 1350 MHz (2040, 2041 & 2042)

(1) **AM trough nulling** (Process 0) is performed as follows:

(a) Connect the DC source to the EXT MOD 1 INPUT on the UUT. Connect the RF OUTPUT on the UUT to the spectrum analyzer RF input. Equipment configuration is shown in Fig. 5-2-3.

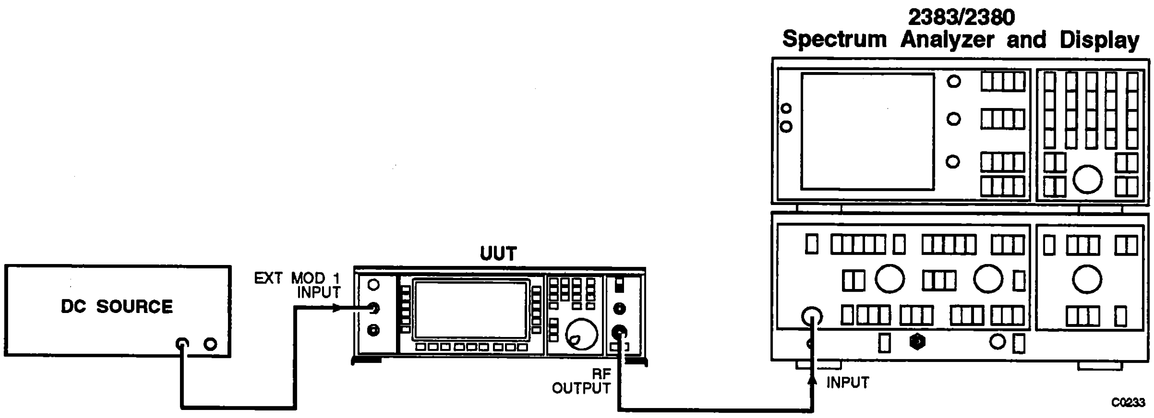

Fig. 5-2-3 Equipment configuration for AM trough nulling

(b) Set up the equipment as follows:

(i) Unlock the UUT to level 2 then select RF level cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [RF Level] [21 MHz - 1.35 GHz] [Start RF Calib.]*

(ii) Tune the spectrum analyzer to 30 MHz, span 1 MHz.

(c) Apply -1.5 V ±0.08 V DC to the EXT MOD 1 INPUT.

(d) Adjust the correction figure until the carrier signal just reaches a minimum.

(e) Press *[Data Entry]* then *[Next Process]*.

(2) **AM DC offset** (Process 1) is performed as follows:

(a) Connect the RF OUTPUT on the UUT to the RF input on the modulation meter. Equipment configuration is shown in Fig. 5-2-4.

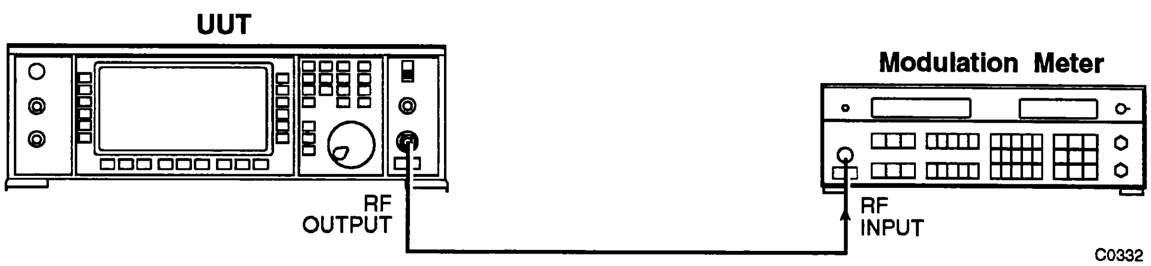

Fig. 5-2-4 Equipment configuration for AM DC offset

(b) Set up the modulation meter as follows:

Autotune
AM measurement
300 Hz to 3.4 kHz filter

(c) Select in turn *[0 dBm Level]* and *[10 dBm Level]* and adjust the correction figure until they give equal AM readings on the 2305.

(d) Press *[Next Process].*

(3) **RF level check** is performed as follows:

(a) Connect a suitable power meter to the RF OUTPUT socket of the UUT.

(b) Adjust the correction figures so that the power meter reads 0 dBm ±0.01 dB.

(c) Select *[10 dBm Level].*

(d) Adjust the calibration figure so that the power meter reads 10 dBm ±0.01 dB.

(e) Select in turn 0 dBm and 10 dBm adjusting for correct RF power at both levels.

(f) Select *[Next Cal Point].* Repeat steps (a) to (e) until the menu returns to cal point 0.

(g) Press *[EXIT]*, *[EXIT]* and *[Save Calib.]*

1350 MHz to 2700 MHz (2041 & 2042)

(1) **AM Trough Nulling** (Process 0) is performed as follows:

(a) Connect the DC source output to the EXT MOD 1 INPUT on the UUT. Connect the RF OUTPUT on the UUT to the spectrum analyzer RF input. Equipment configuration is shown in Fig. 5-2-5.

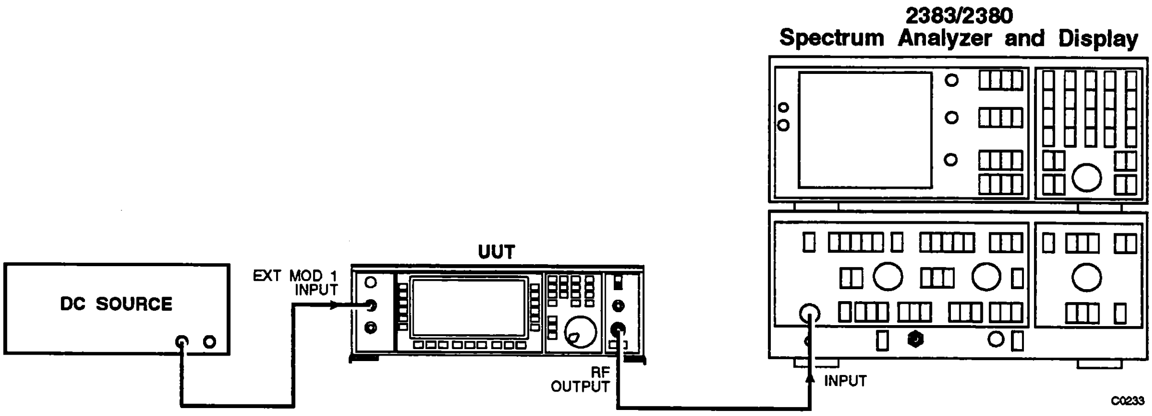

Fig. 5-2-5 Equipment configuration for AM trough nulling

(b) Set up the equipment as follows:

(i) Unlock the UUT to level 2 then select RF level cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [RF Level] [1.35 GHz - 2.7 GHz] [Start RF Calib.]*

(ii) Tune the spectrum analyzer to 1.35 GHz, span 1 MHz.

(c) Apply -1.5 V ±0.08 V DC to the EXT MOD 1 INPUT.

(d) Adjust the correction figure until the carrier signal is at a minimum.

(e) Note the correction figure:-

AM trough nulling correction figure ....

(f) Press *[Data Entry]* then *[Next Process]*.

(2) **AM DC offset** (Process 1) is performed as follows:

(a) Connect the RF OUTPUT on the UUT to the RF input on the modulation meter. Equipment configuration is shown in Fig. 5-2-6.

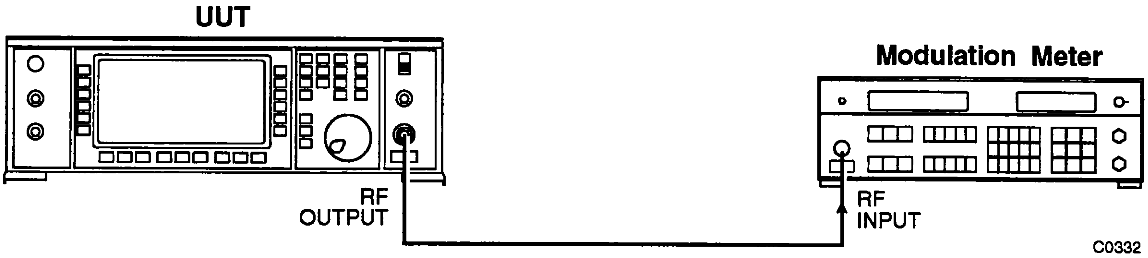

Fig. 5-2-6 Equipment configuration for AM DC offset

(b) Set up the modulation meter as follows:

Autotune
AM Measurement
300 Hz to 3.4 kHz filter

(c) Select in turn *[0 dBm Level]* and *[10 dBm Level]* and adjust the correction figure until they both give equal AM readings on the 2305.

(d) Note the correction figure:-

AM DC offset correction figure ....

(e) Press *[Data Entry]* then *[Next Process].*

(3) **RF level check** is performed as follows:

(a) Connect a suitable power meter to the RF OUTPUT of the UUT.

(b) Adjust the correction figure so that the power meter reads 0 dBm ±0.01 dB.

(c) Select *[10 dBm Level].*

(d) Adjust the calibration figure so that the power meter reads 10 dBm ±0.01 dB.

(e) Select in turn 0 dBm and 10 dBm adjusting for correct RF power at both levels.

(f) Select *[Next Cal Point].* Repeat steps (a) to (e) until the menu returns to cal point 0.

(g) Select *[EXIT]*, *[EXIT]* and *[Save Calib.].*

2700 MHz to 4005 MHz (2042 only)

(1) **AM Trough Nulling** (Process 0) is performed as follows:

(a) Set the correction figure to that recorded for the AM trough nulling in the 1350 to 2700 MHz calibration.

(2) **AM DC offset** (Process 1) is performed as follows:

(a) Set the correction figure to that recorded for the AM DC offset in the 1350 to 2700 MHz calibration.

(3) **RF level check** is performed as follows:

(a) Connect a suitable power meter to the RF OUTPUT of the UUT.

(b) Adjust the correction figure so that the power meter reads 0 dBm ±0.01 dB.

(c) Select *[10 dBm Level]*.

(d) Adjust the calibration figure so that the power meter reads 10 dBm ±0.01 dB.

(e) Select in turn 0 dBm and 10 dBm adjusting for correct RF power at both levels.

(f) Select *[Next Cal Point]*. Repeat steps (a) to (e) until the menu returns to cal point 0.

(g) Select *[EXIT]*, *[EXIT]* and *[Save Calib.]*.

4005 MHz to 5400 MHz (2042 only)

(1) **AM Trough Nulling** (Process 0) is performed as follows:

(a) Set the correction figure to that recorded for the AM trough nulling in the 1350 to 2700 MHz calibration.

(2) **AM DC offset** (Process 1) is performed as follows:

(a) Set the correction figure to that recorded for the AM DC offset in the 1350 to 2700 MHz calibration.

(3) **RF level check** is performed as follows:

(a) Connect a suitable power meter to the RF OUTPUT of the UUT.

(b) Adjust the correction figure so that the power meter reads 0 dBm ±0.01 dB.

(c) Select *[10 dBm Level]*.

(d) Adjust the calibration figure so that the power meter reads 10 dBm ±0.01 dB.

(e) Select in turn 0 dBm and 10 dBm adjusting for correct RF power.

(f) Select *[Next Cal Point].* Repeat steps (a) to (e) until the menu returns to cal point 0.

(g) Select *[EXIT], [EXIT]* and *[Save Calib.].*

BFO band 10 kHz to 21 MHz (2040, 2041 & 2042)

(1) Unlock the instrument to level 2 then select RF level cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [RF Level] [BFO Band] [Start RF Calib.]*

(2) **RF level check** is performed as follows:

(a) Connect a suitable power meter to the RF OUTPUT of the UUT.

Note...

It will be necessary to use the DVM and a 50 Ω load for the 10 kHz reading. Adjust the calibration figure until the DVM reads 0.7071 V ±1 mV.

(b) For each of the calibration points it is necessary to adjust the correction figures so that the power meter reads 10 dBm ±0.01 dB.

(c) Select *[Next Cal Point].* Repeat until the menu returns to cal point 0.

(d) Select *[EXIT], [EXIT]* and *[Save Calib.]*

3 MODULATION ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Modulation meter	AM accuracy ±1% FM accuracy ±0.5% Carrier freq capability	Marconi 2305
Digital volt meter (DVM)		Solatron 7150+

ADJUSTMENT

Modulation calibration	
Frequency modulation	
Amplitude modulation	
Phase modulation	
Wide band FM	
Full calibration figure range:	0 to 65535
5% to 95% calibration figure range:	1638 to 63898

Frequency modulation adjustment

(1) Connect the UUT rear panel SWEEP RAMP output via a T-connector to the DVM input and to the EXT MOD 1 INPUT on the UUT. Connect the RF OUTPUT on the UUT to the modulation meter RF input. Connect an external standard to the modulation meter. Equipment configuration is shown in Fig. 5-2-6.

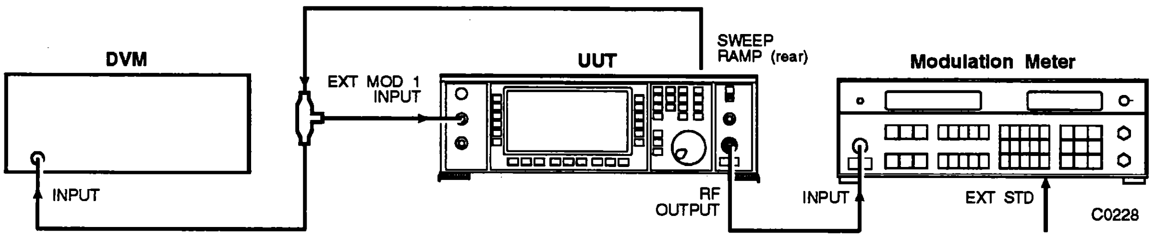

Fig. 5-2-7 Equipment configuration for the FM tests

(2) Set up the equipment as follows:

(a) Unlock the UUT to level 2 then select FM cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Mod'n.] [FM Calib.] [Select Mod. Cal.]*

(b) Set the modulation meter as follows:-

Autotune
Carrier frequency
Carrier error

(c) Set the DVM as follows:-

DC measurement

(3) Press *[Continue FM Cal].*

(4) Measure the DC voltage at the EXT MOD 1 INPUT (and note as V0).

(5) Press *[Continue FM Cal].*

(6) Enter the voltage measured on the DVM into the UUT (V0).

(7) Press *[Continue FM Cal].*

(8) Enter the frequency error in kHz (minimum delta frequency 100 kHz, maximum 500 kHz). Press *[Continue FM Cal].* The new correction figure is calculated and displayed.

(9) Press *[EXIT].* This returns to the modulation calibration menu. Press *[EXIT]* then *[Save Cal.].* The main calibration menu is displayed.

(10) The FM self cal must be carried out for each VCO. Press *[FM Selfcal],* select *[VCO 0], [VCO 1], [VCO 2]* and *[VCO 3]* in sequence each followed by the *[Start Calib.]* key. (Each VCO takes about 1 minute to calibrate.)

(11) Press *[EXIT]* and *[Save Calib.]*

Amplitude modulation adjustment

(1) Connect the RF OUTPUT on the UUT to the RF input on the modulation meter. Equipment configuration is shown in Fig. 5-2-8.

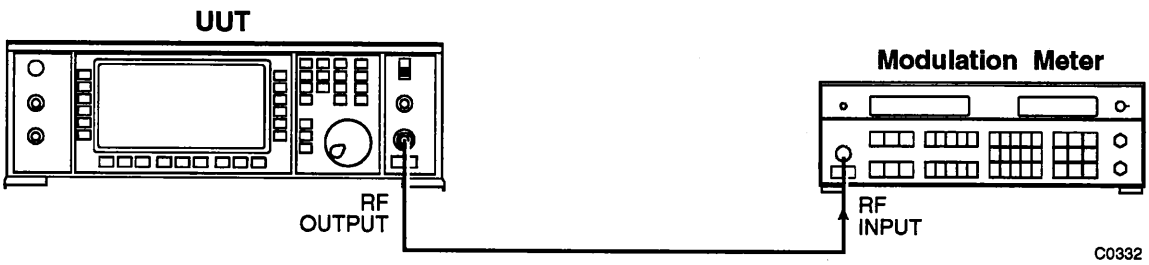

Fig. 5-2-8 Equipment configuration for the AM tests

(2) Unlock the UUT to level 2 then select AM cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Mod'n.] [AM Calib.] [Select Mod. Cal.]*

(3) Set up the modulation meter as follows:-

Autotune
AM measurement
300 Hz to 3.4 kHz filter

(4) In the AM calibration mode the UUT's output is set to about 600 MHz and AM is applied with a nominal 50% depth and a modulation frequency of 1 kHz. Adjust the calibration figure until the modulation depth measured on the modulation meter reads 50% ±0.15%.

Phase modulation adjustment

(1) Connect the RF OUTPUT on the UUT to the RF input on the modulation meter. Connect an external standard to the modulation meter. Equipment configuration is shown in Fig. 5-2-9.

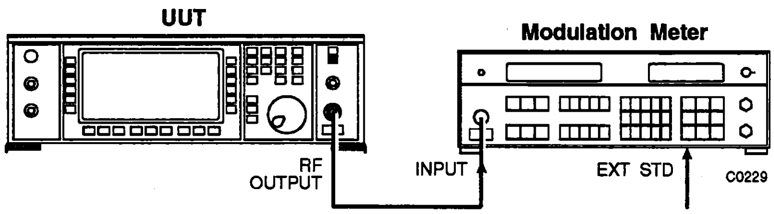

Fig. 5-2-9 Equipment configuration for the phase mod tests

(2) Set up the equipment as follows:

(a) Unlock the UUT to level 2 then select phase mod cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Mod'n.] [ΦM Calib.] [Select Mod. Cal.]*

(b) Set the modulation meter as follows:

Autotune
FM measurement
300 Hz to 3.4 kHz filter
P-P/2

(3) Adjust the calibration figure until the deviation on the modulation meter is 5 kHz ±0.05 kHz. Press *[EXIT] [EXIT] and [Save Calib.].*

Wide band frequency modulation adjustment

(1) Connect the AF source via a T-connector to the WIDE BAND FM IN on the UUT and to the DVM. Connect the RF OUTPUT on the UUT to the modulation meter. Equipment configuration is shown in Fig. 5-2-10.

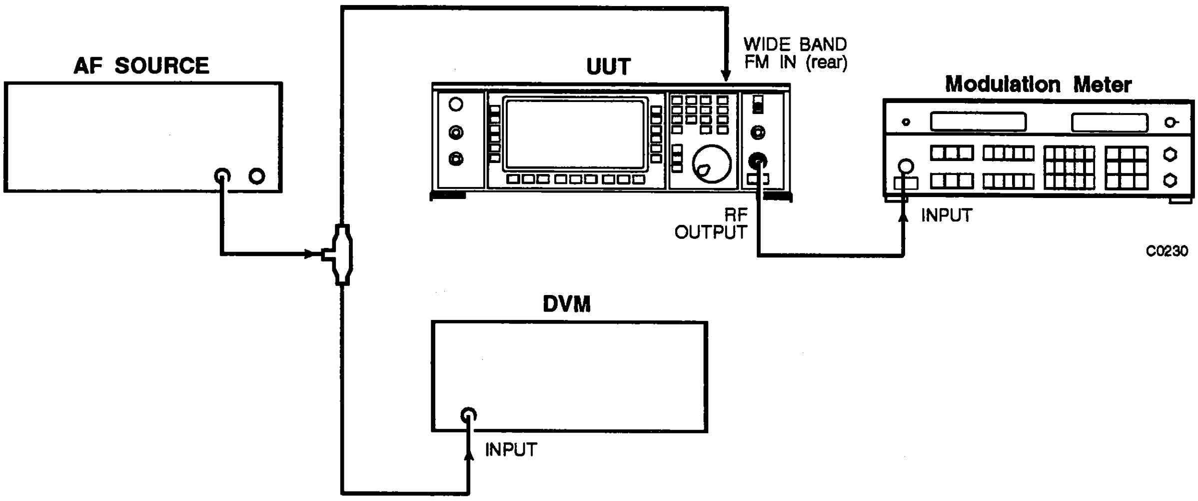

Fig. 5-2-10 Equipment configuration for the WBFM tests

(2) Set the AF source to 1 kHz and adjust the output level to 1 V RMS (and note as V1).

(3) Set up the equipment as follows:

(a) Unlock the UUT to level 2 then select WBFM cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Mod'n.] [WBFM Calib.]*
[Select Mod. Cal.]

(b) Set the modulation meter as follows:

Autotune
FM measurement
300 Hz to 3.4 kHz filter
P-P/2

(4) Set the AF source as follows:

1 kHz
1 V RMS

(5) Enter the voltage measured on the DVM. Press *[Cont WBFM cal.]*.

(6) Measure the deviation and enter the value in kHz (minimum 100 kHz, maximum 500 kHz). Press *[Cont WBFM cal]*.

(7) The new WBFM correction figure should be displayed. Press [EXIT] and *[Save Calib.]*.

4 FREQUENCY STANDARD ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Modulation meter	Carrier freq capability	Marconi 2305

ADJUSTMENT

Frequency standard calibration

Coarse tune
Fine tune

Full calibration figure range: 0 to 255
5% to 95% calibration figure range: 13 to 243

(1) Connect the RF OUTPUT on the UUT to the RF input on the modulation meter. Connect an external standard to the modulation meter. Equipment configuration is shown in Fig. 5-2-11.

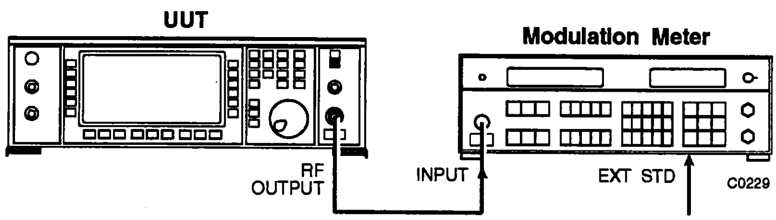

Fig. 5-2-11 Equipment configuration for the frequency standard

(2) Set up the equipment as follows:

(a) Set the frequency and level as follows:

[SIG GEN] *[Carrier Freq.]* 1 GHz *[RF Level]* 0 dBm

(b) Unlock the instrument to level 2 then select freq std cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Int. Freq. Standard]*

(c) Set the modulation meter to the following:-

Auto tune
Carrier frequency

(3) Adjust the coarse frequency standard until the frequency measured on the modulation meter is 1000 MHz ±10 Hz.

(4) Adjust the fine tune until the modulation meter reads 1000 MHz ±1 Hz.

(5) Select *[EXIT]* then *[Save Calib].*

(6) Select *[Checks Complete]* and set *[Set Next Cal Date]* for 2 years time.

5 LOW NOISE ADJUSTMENT

Note...

The harmonic multiplier DAC adjustment and the harmonic presteer adjustment should only be carried out after a repair has been carried out to the low noise tray.

Bandbreaks self-calibration

(1) Unlock the instrument to level 2 then select bandbreaks selfcal as follows:

[UTIL] *[Utils. Menu 2] [Cal .Value] [Low Noise] [Bandbreaks] [Start Cal.] [Start Self Cal.]*

(2) The self-test takes about 15 minutes to complete. When complete press *[EXIT], [EXIT] and [Save Calib.].*

Output loop presteer self-calibration

(1) Select output loop selfcal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Low Noise] [O/P Loop Presteer] [Start Cal.]*

(2) Select *[VCO 0], [VCO 1], [VCO 2]* and *[VCO 3]* in sequence each followed by *[Start Selfcal.].*

(3) Each VCO takes about 1 minute to calibrate. When all the VCOs are calibrated, press *[EXIT], [EXIT]* and *[Save Calib.].*

Tracking self-calibration

(1) Select tracking selfcal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Low Noise] [Tracking Selfcal] [Start Cal.] [Start Selfcal.]*

(2) Self-calibration takes about 30 minutes. When complete press *[EXIT] [EXIT] [Save Calib.].*

(3) Select *[Checks Complete]* and set *[Set Next Cal Date]* for 2 years time.

- HARDWARE ADJUSTMENT PROCEDURES -

The following adjustment procedures should only be undertaken in the event of a major fault in the low noise tray. After carrying out these procedures the software adjustment procedures should be carried out.

1 LOW NOISE TRAY ADJUSTMENT

Output loop - PLL filter adjustment

ADJUSTMENT

C12 AC1 - Output loop, phase locked loop filter
Minimum level at 22.5 MHz

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chap. 5-0).

(2) Remove the low noise tray.

(3) Remove the top cover from the low noise tray.

(4) Remove link LK1 on board AC1. Connect the spectrum analyzer tracking generator output to LK1 on AC1 using a test lead. Ensure that the signal wire on the test lead is connected to pin 2 and the ground (braid wire) is connected to pin 3.

Note...

The low noise tray does not need to be powered up.

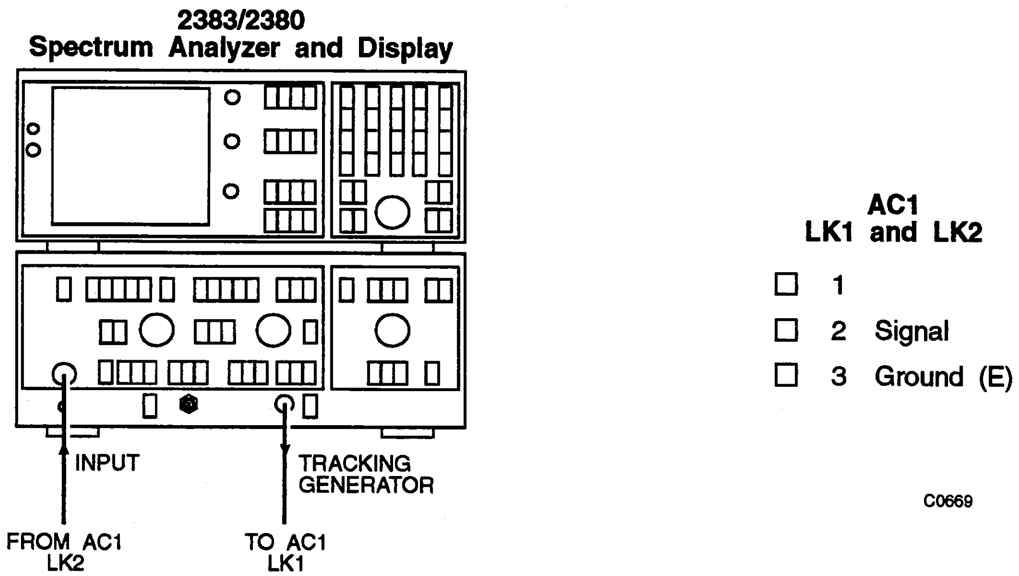

Fig. 5-2-12 Interconnection diagram for PLL filter adjustment.

(5) Remove link LK2 on AC1. Connect the spectrum analyzer RF input to LK2 on AC1 using a test lead. Ensure that the signal wire on the test lead is connected to pin 2 and the ground (braid wire) is connected to pin 3. The interconnection diagram is shown in Fig. 5-2-12.

(6) Configure the test equipment as follows:-

Spectrum analyzer

Ref freq	22.5 MHz
Span/div	1 MHz
Ref level	-10 dBm
dB/division	10 dB
Tracking generator	On
Tracking generator level	-10 dBm

Calibrate the spectrum analyzer.

(7) If the signal level at 22.5 MHz is greater than -70 dBm:-

Adjust C12 until a minimum level is achieved at 22.5 MHz (approximately -75 dBm). A typical response is shown in Fig. 5-2-13.

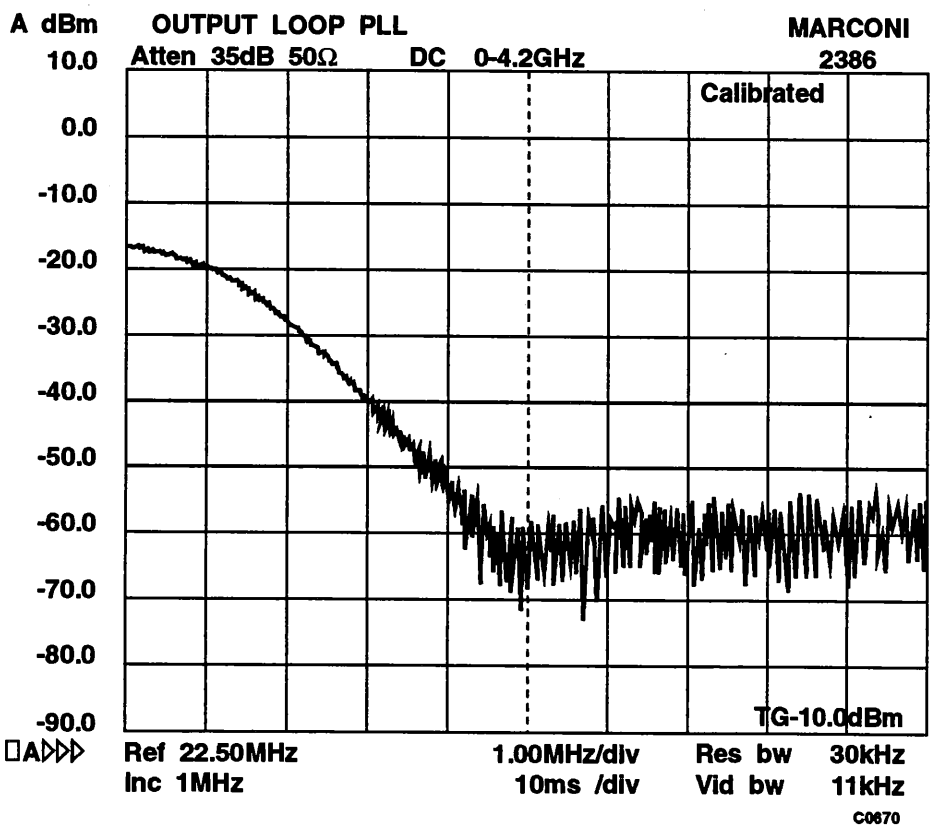

Fig. 5-2-13 Typical response when C12 is correctly adjusted

(8) Remove the test leads and replace the links between pins 1 and 2 of LK1 and LK2.

(9) Replace the cover on the bottom of the top noise tray and replace the low noise tray in the instrument.

Harmonic loop - Filter adjustment

ADJUSTMENT

C72 AD1 - Harmonic loop filter C80 AD1 - Harmonic loop filter C84 AD1 - Harmonic loop filter Minimum level at 22.5 MHz
C75 AD1 - Harmonic loop filter Minimum level at 45 MHz

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chapter 5-0).

(2) Remove the bottom cover from the low noise tray.

(3) Remove link LK2 on AD1. Connect the spectrum analyzer tracking generator output to LK2 on AD1 using the test lead. Ensure that the signal wire on the test lead is connected to pin 2 and the ground (braid wire) is connected to pin 3.

Note...

The low noise tray does not need to be powered up.

(4) Remove link LK3 on AD1. Connect the spectrum analyzer RF input to LK3 on AD1 using a test lead. Ensure that the signal wire on the test lead is connected to pin 2 and the ground (braid wire) is connected to pin 3. The interconnection diagram is shown in Fig. 5-2-14.

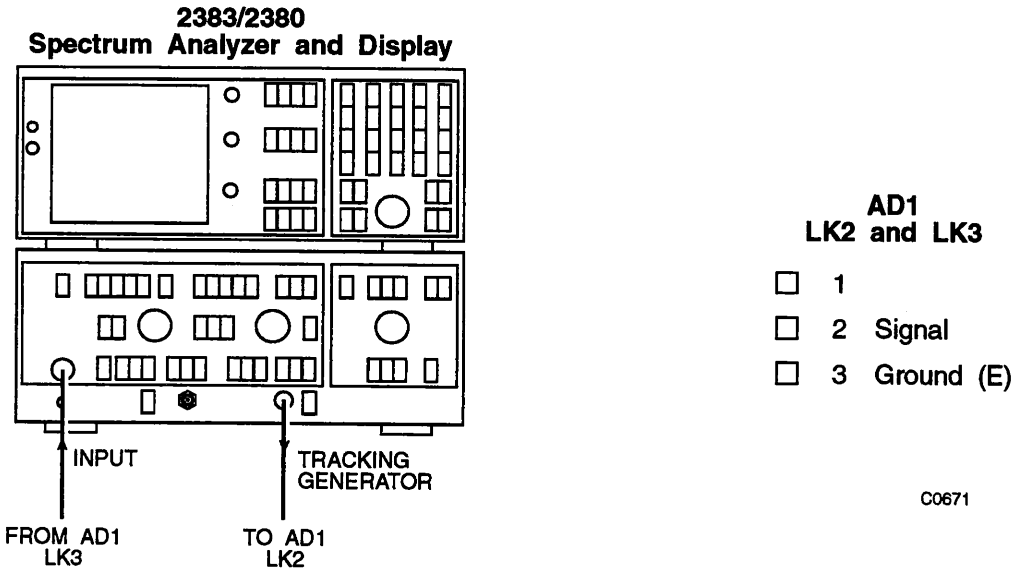

Fig. 5-2-14 Interconnection diagram for harmonic loop filter adjustment

(5) Configure the test equipment as follows:-

Spectrum analyzer

Ref freq	22.5 MHz
Span/div	1 MHz
Ref level	-10 dBm
dB/division	10 dB
Tracking generator	On
Tracking generator level	-10 dBm

Calibrate the spectrum analyzer.

(6) If the signal level at 22.5 MHz is greater than -65 dBm:-

Adjust C72, C80 and C84 until the minimum level is achieved at 22.5 MHz (approximately -70 dBm). A typical response is shown in Fig. 5-2-15.

(7) Set the spectrum analyzer reference frequency to 45 MHz.

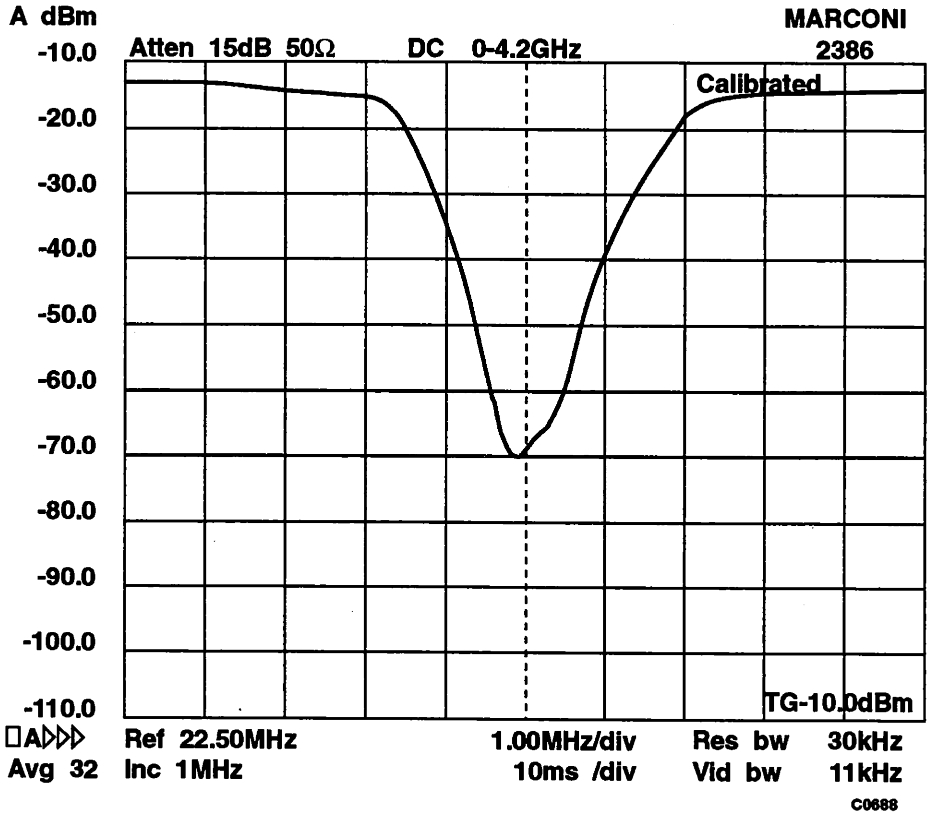

Fig. 5-2-15 Typical response when C72, C80 and C84 are correctly adjusted

(8) If the signal level at 45 MHz is greater than -75 dBm:-

Adjust C75 until the minimum level is achieved at 45 MHz (approximately -80 dBm). A typical response is shown in Fig. 5-2-16.

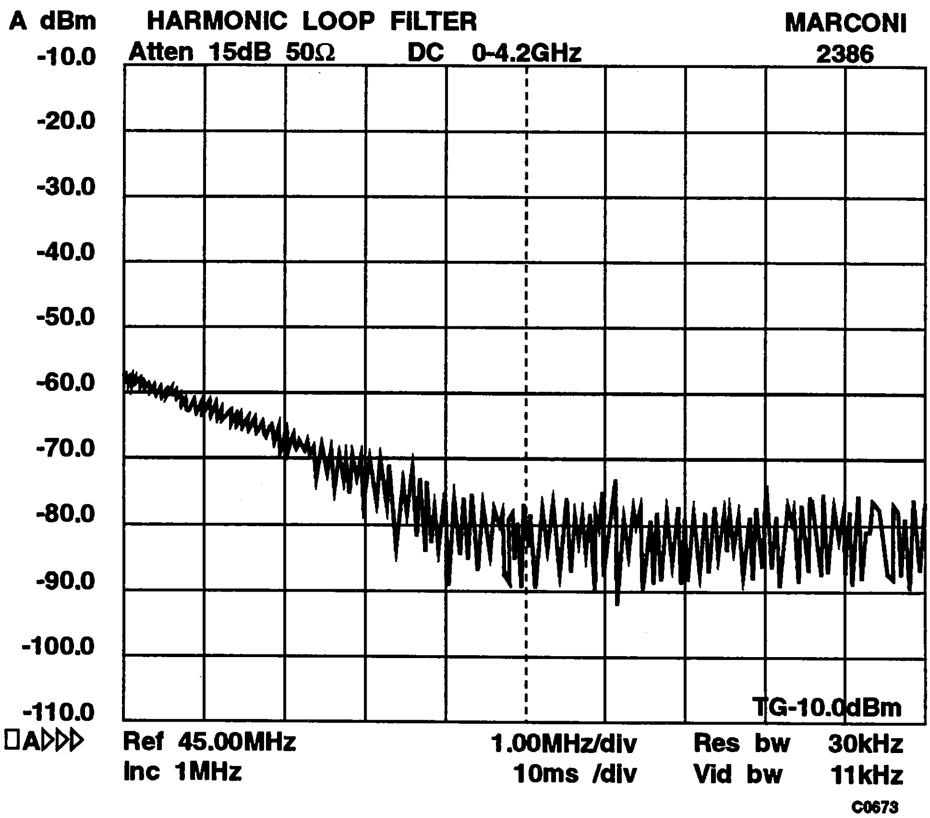

Fig. 5-2-16 Typical response when C75 is correctly adjusted

(9) Remove the test leads and replace the links between pins 1 and 2 of LK1 and LK2.

(10) Replace the covers if no more adjustments are to be made.

Harmonic loop - Low noise crystal peaking

ADJUSTMENT

C34 AD1 - Crystal oscillator adjustment
Maximum signal level at 135 MHz

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chap. 5-0).

(2) Remove the bottom cover from the low noise tray.

(3) Switch the UUT on.

(4) Connect the spectrum analyzer RF input to TP2 on AD1 using a test lead. Ensure that the ground of the test lead (braided wire) is connected to the ground of TP2 (identified by the letter 'E'). The interconnection diagram is shown in Fig. 5-2-17.

Ignore any error codes that may be displayed on the UUT.

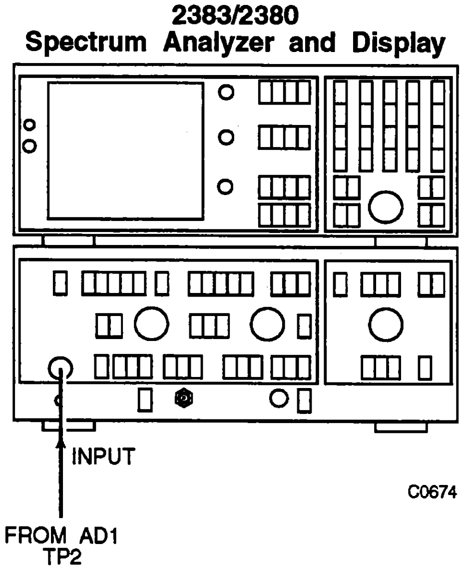

Fig. 5-2-17 Interconnection diagram for harmonic loop crystal peaking adjustment

(5) Configure the test gear as follows:-

UUT

[UTIL] *[Noise Mode] [Noise Mode 1]*

Carrier frequency	970 MHz

Spectrum analyzer

Ref freq	135 MHz
Span/div	500 kHz
Ref level	10 dBm
dB/division	10 dB

Calibrate the spectrum analyzer.

(6) Adjust C34 for a maximum level of approximately +2 dBm. A typical response is shown in Fig. 5-2-18. After adjusting C34 the tracking self-cal must be run (for method see 'Bandbreaks self-calibration' above).

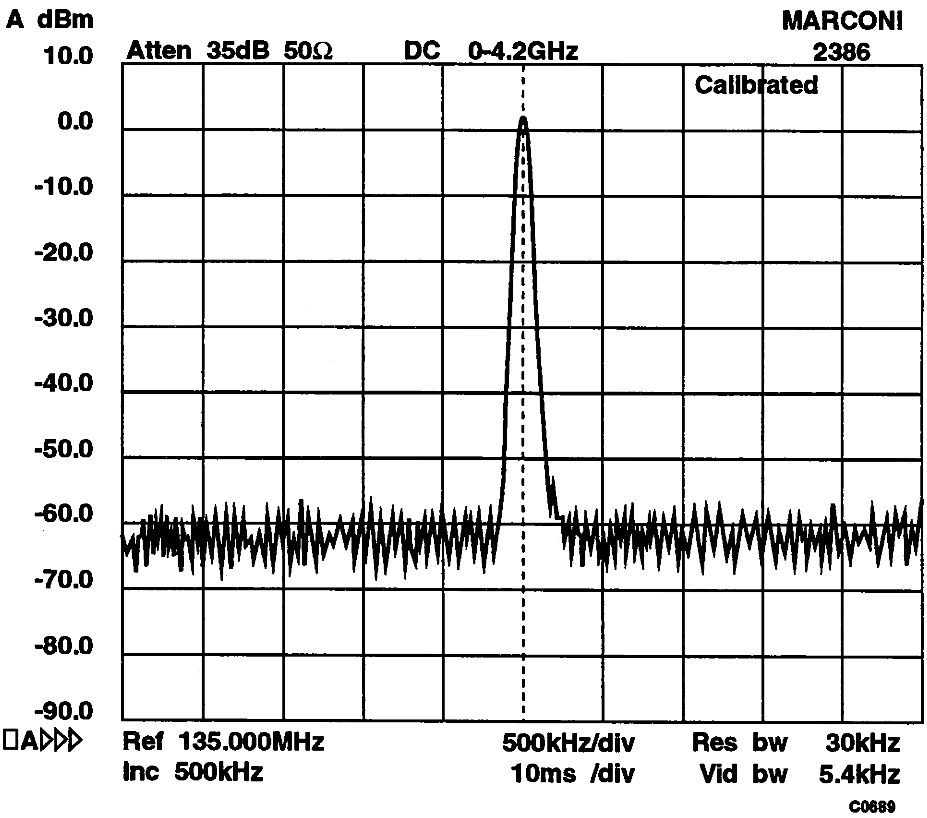

Fig. 5-2-18 Typical response when C34 is correctly adjusted

(7) Replace the covers if no more adjustments are to be made.

Harmonic loop - Injection locking adjustments

ADJUSTMENT

C60 AD1 - Injection locking Signal at 45 ±0.5 MHz
L11 AD1 - Injection locking Signal at 67.5 ±0.5 MHz

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chap. 5-0).

(2) Remove the bottom cover from the low noise tray.

(3) Switch the UUT on.

(4) Remove link LK1.

Ignore any errors that may be displayed on the UUT.

(5) Connect the RF input of the spectrum analyzer to TP1 on AD1 using a test lead. Ensure that the braid of the test lead is connected to the ground of TP1 (identified by the letter 'E'). The interconnection diagram is shown in Fig. 5-2-19.

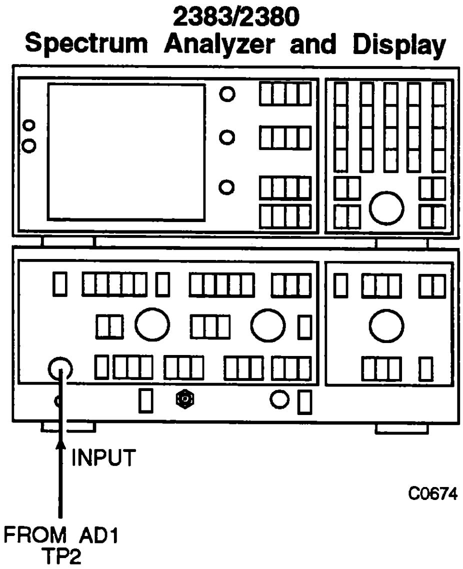

Fig. 5-2-19 Interconnection diagram for harmonic loop injection locking adjustment

(6) Configure the test gear as follows:-

UUT

[UTIL] *[Utils. Menu 1] [Noise Mode] [Low Noise 1]*

Carrier frequency	930 MHz

Spectrum analyzer

Ref freq	45 MHz
Span/div	500 kHz
Ref level	10 dBm
dB/division	2 dB

Calibrate the spectrum analyzer.

(7) If the signal is out of the range 45 ±0.5 MHz:-

Adjust C60 until the frequency of the signal is 45 ±0.5 MHz.

(8) Change the test gear settings as follows:-

UUT

Carrier frequency	910 MHz

Spectrum analyzer

Ref freq	67.5 MHz

(9) If the signal is out of the range 67.5 ±0.5 MHz:-

Adjust L11 until the frequency of the signal is 67.5 ±0.5 MHz.

(10) Change the test equipment settings as follows:-

UUT

Carrier frequency	940 MHz

Spectrum analyzer

Ref freq	22.5 MHz

(11) Check that the signal is at 22.5 ±1.0 MHz. Replace link LK1. The frequency should shift closer to 22.5 MHz if not already at 22.5 MHz. If the frequency is not in this range repeat steps (6) to (10).

(12) Replace the covers if no more adjustments are to be made.

Harmonic loop - Harmonic multiplier DAC adjustment

ADJUSTMENT

Harmonic number	Carrier freq MHz	Default DAC B	Default DAC C
5	675	25	28
6	810	48	48
7	945	72	75
8	1080	98	94
9	1215	125	121
10	1350	161	152

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chap. 5-0).

(2) Remove the top cover from the low noise tray.

(3) Switch the UUT on.

(3) Switch the UUT on.

Ignore any errors that may occur on the UUT.

(4) Connect the RF input of the spectrum analyzer to TP1 on AD1 using a test lead. Ensure that the braid of the test lead is connected to the ground of TP1 (identified by the letter 'E'). The interconnection diagram is shown in Fig. 5-2-20.

(5) Configure the test gear as follows:-

UUT

Unlock to second level then:

[UTILS] *[Utils. Menu 2] [Cal. Value] [Low Noise] [Harmonic Select] [Start Cal.]*

Spectrum analyzer

Ref freq	675 MHz
Span/div	500 kHz
Ref level	10 dBm
dB/division	2 dB
Frequency increment	135 MHz

Calibrate the spectrum analyzer.

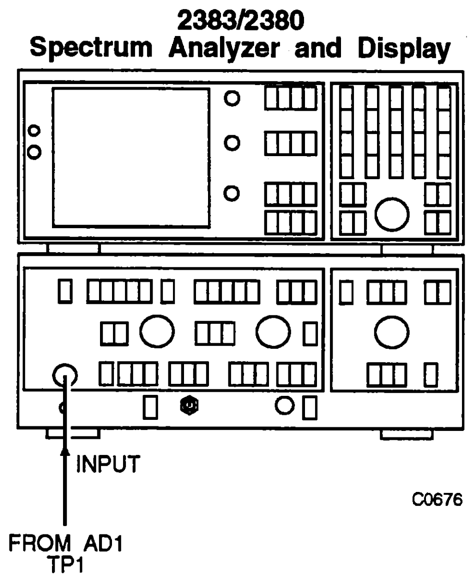

Fig. 5-2-20 Interconnection diagram for harmonic multiplier DAC adjustment

(6) Make fine adjustments to the DAC B and DAC C values until a maximum signal level is achieved at the specified frequency.

The max and min limits in Table 5-2-1 are intended as a guide to the DAC ranges for each harmonic. If in doubt about the adjustment, set the DAC value back to the default value and repeat the adjustment.

TABLE 5-2-1 DAC B AND C MAX, MIN AND DEFAULT LIMITS

Harmonic number	Ref freq (MHz)	DAC B Min	DAC B Def	DAC B Max	DAC C Min	DAC C Def	DAC C Max
5	675	14	25	36	17	28	37
6	810	37	48	59	38	48	61
7	945	60	72	84	62	75	84
8	1080	85	98	111	85	94	107
9	1215	112	125	143	108	121	136
10	1350	144	161	178	137	152	167

(7) On the UUT select *[Next Cal. Pt.]* this will go to the next harmonic.

(8) On the spectrum analyzer increment the carrier frequency by 135 MHz.

(9) Repeat steps (5) to (8) until all the harmonics have been tested. Select *[EXIT]* on the UUT. Then select *[EXIT] [Save Calib.]*.

(10) Remove the test lead from TP1 on AD1.

(11) Replace the covers if no more adjustments are to be made.

Harmonic VCO presteer

ADJUSTMENT

Cal point	Default DAC value	Ref freq (MHz)	Cal point	Default DAC value	Ref freq (MHz)
0	37	652.5	16	75	1012.5
1	56	675.0	17	91	1035.0
2	75	697.5	18	106	1057.5
3	94	720.0	19	120	1080.0
4	112	742.5	20	134	1102.5
5	128	765.0	21	148	1125.0
6	147	787.5	22	75	1147.5
7	80	810.0	23	88	1170.0
8	98	832.5	24	101	1192.5
9	115	855.0	25	113	1215.0
10	131	877.5	26	126	1237.5
11	147	900.0	27	137	1260.0
12	164	922.5	28	149	1282.5
13	181	945.0	29	160	1305.0
14	44	967.5	30	172	1327.5
15	59	990.0	31	184	1350.0
			32	196	1372.5

(1) Remove the bottom cover from the UUT (for method of removing covers and trays see Chap. 5-0).

(2) Remove the bottom cover from the low noise tray.

(3) Switch the UUT on.

(4) Connect the zero loss probe to the spectrum analyzer RF input and place on the coupler between AB1 and AD2. The interconnection diagram is shown in Fig. 5-2-21.

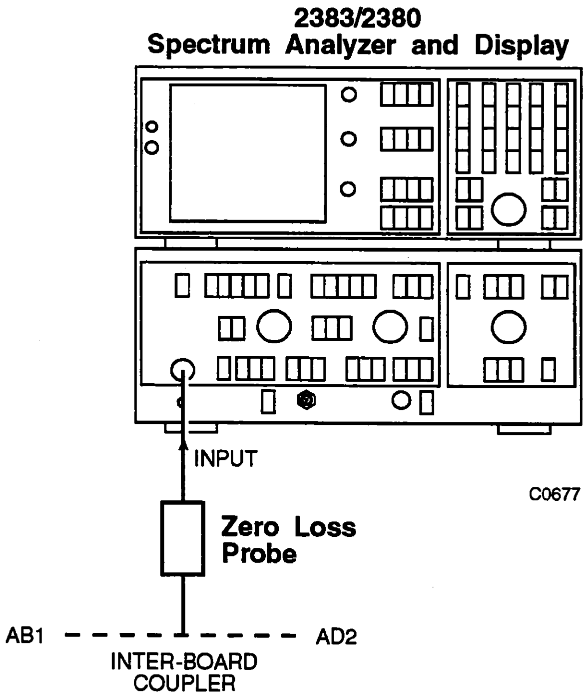

Fig. 5-2-21 Interconnection diagram for harmonic VCO presteer adjustment

(5) Configure the test equipment as follows:-

UUT

Unlock to second level:

[UTILS] *[Utils. Menu 2] [Cal.Value] [Low Noise] [Harmonic Pre-steer] [Start Cal.]*

Spectrum analyzer

Ref freq	as shown in above table
Span/div	10 MHz
Ref level	0 dBm
dB/division	10 dB
Frequency increment	22.5 MHz

Calibrate the spectrum analyzer.

(6) Starting at calibration point 0, enter the corresponding spectrum analyzer reference frequency.

(7) A carrier signal should be seen on the spectrum analyzer. If not, adjust the calibration figure until a locked signal is obtained at the reference frequency. An example of a locked signal is shown in Fig. 5-2-22.

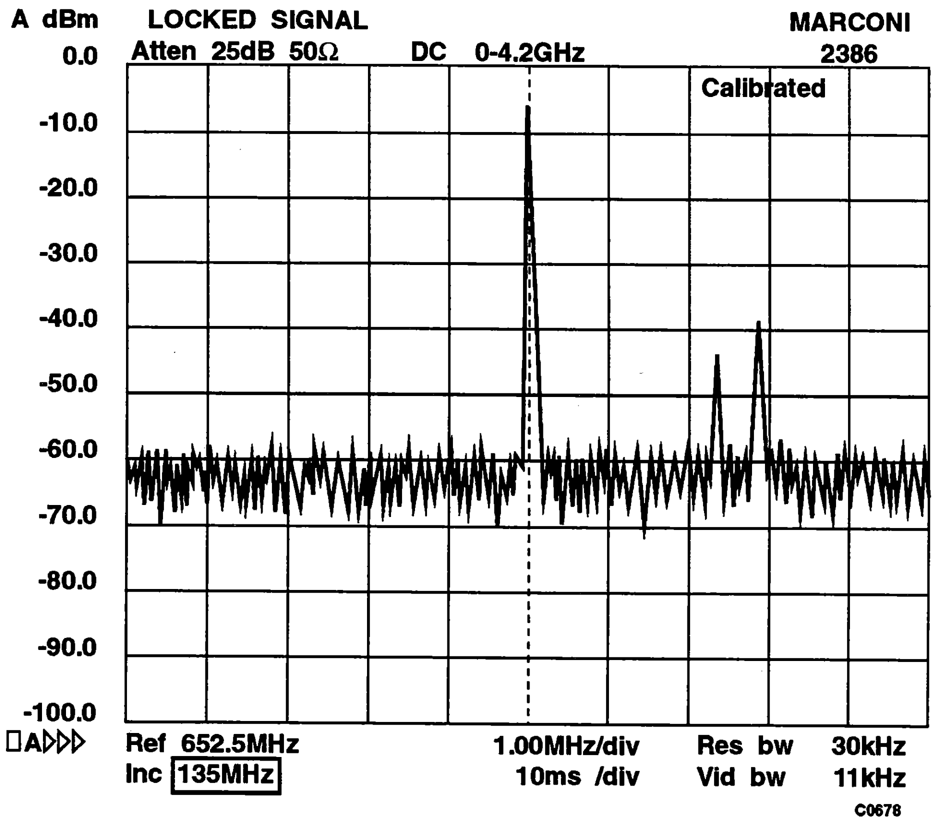

Fig. 5-2-22 An example of a locked signal

(8) Slowly rotate the knob clockwise until the signal begins to unlock. At this point the HI\LO indicator on the UUT display should change state.

(9) Slowly rotate the knob anti-clockwise and the signal will lock and then unlock again, the HI/LO indicator will also change state again. Midway between two unlocked conditions the HI\LO indicator changes state. Adjust the calibration figure until this point is found.

(10) Select *[Next Cal. Pt.]* and incrementing the spectrum analyzer ref frequency by 22.5 MHz, repeat steps (6) to (8) for the remaining 32 calibration points.

(11) Select *[EXIT] [EXIT] [Save Calib.]*.

(12) Replace the covers on the low noise tray and the instrument.

Automatic self-calibration

(1) **Bandbreaks self-calibration**

Select the selftests as follows:-

UUT

Unlock to second level:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Low Noise] [Bandbreaks] [Start Cal.] [Start Selfcal.]*

The self test takes about 15 minutes to complete

When complete press *[EXIT] [EXIT]* and *[Save Calib.*]

(2) **Output loop presteer self-calibration**

UUT

Enter the following:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Low Noise] [O/P Loop Presteer] [Start Cal.]*

Select *[VCO0], [VCO1], [VCO2]* and *[VCO3]* in turn each followed by *[Start Selfcal.]*

When all the VCO's are calibrated select *[EXIT] [EXIT]* and *[Save Calib.].*

(3) **Tracking self-calibration**

Enter the following:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Low Noise] [Tracking Selfcal] [Start Cal.] [Start Selfcal.].*

The self calibration takes about 30 minutes.

When complete press *[EXIT] [EXIT] [Save Calib.]*

- ADJUSTMENT FORM -

TABLE 5-2-2 ADJUSTMENT FORM

Adjustment figures for Serial No. ____________________

Date	------------------------------
Instrument type	------------------------------
Options fitted	------------------------------
Software passwords	
Level 1	------------------------------
Level 2	------------------------------

(1) Source/Path calibration

	Source calibration		Path calibration
External 1	____________	AM 1	____________
External 1 ALC	____________	AM 2	____________
External 2	____________	FM 1	____________
External 2 ALC	____________	FM 2	____________
Internal 1 (Option001)	____________	LF	____________
Internal 2 (Option001)	____________		

(2) RF calibration

(a) **21 MHz to 1.35 GHz (2040, 2041 & 2042)**

AM trough	____________
DC offset	____________

RF level Cal point	0 dBm 6 dBm (OPTION 003)	10 dBm 16 dBm (Option 003)
0	____________	____________
1	____________	____________
2	____________	____________
3	____________	____________
5	____________	____________
7	____________	____________
8	____________	____________
9	____________	____________

(b) **1.35 GHz to 2.7 GHz (2040 & 2041)**

AM trough	____________
DC offset	____________

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TABLE 5-2-2 ADJUSTMENT FORM (contd.)

RF level Cal point	0 dBm	10 dBm
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		

(c) **2.7 GHz to 4.050 GHz (2042 only)**

AM trough	
DC offset	

RF level Cal point	0 dBm	10 dBm
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		

(d) **4.050 GHz to 5.4 GHz (2042 only)**

AM trough	
DC offset	

RF level Cal point	0 dBm	10 dBm
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		

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TABLE 5-2-2 ADJUSTMENT FORM (contd.)

(e) 10 kHz to 21 MHz (2040, 2041 & 2042)

RF level

Cal point	10 dBm 16 dBm (Option 003)
0	________
1	________
2	________
3	________
4	________
5	________
6	________
7	________
8	________
9	________

(3) Modulation calibration

AM	________
FM1	________
ΦM	________
WBFM	________
Pulse (Option 002 (see Appendix B)	________

(4) Frequency standard calibration

Coarse	________
Fine	________

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TABLE 5-2-2 ADJUSTMENT FORM (contd.)

Harmonic loop - Harmonic multiplier DAC settings

Harmonic number	DAC B	DAC C
5	________	________
6	________	________
7	________	________
8	________	________
9	________	________
10	________	________

Harmonic VCO presteer - Harmonic multiplier DAC settings

Calibration point		Calibration point	
0	________	16	________
1	________	17	________
2	________	18	________
3	________	19	________
5	________	21	________
6	________	22	________
7	________	23	________
8	________	24	________
10	________	26	________
11	________	27	________
12	________	28	________
13	________	29	________
14	________	30	________
15	________	31	________
		32	________

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-ADJUSTMENT FORM-

Appendix A

ADJUSTMENT
- +19 dBm HIGH POWER OPTION -

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Fig. A-24 Equipment configuration for AM DC offset A-4

+19 dB HIGH POWER (Option 003)

The following adjustment procedure is for an instrument with the +19 dBm high power option fitted, and is used in place of the RF level adjustment procedure given in Chap. 5-2.

1 RF LEVEL ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Modulation meter	AM accuracy ±1%	Marconi 2305
Digital volt-meter (DVM)	DC to 50 kHz	Solatron 7150+
Power meter and Sensor	300 kHz to 4.2 GHz	Marconi 6960A & 6912
Spectrum analyzer	Frequency to 1.35 GHz	Marconi 2383

ADJUSTMENT

RF Level calibration

(a) **21 MHz to 1350 MHz**

Process 0 - AM trough nulling
Process 1 - DC offset

Process 2 - RF level calibration 6 dBm and 16 dBm

Cal point 0 - 30 MHz
Cal point 1 - 150 MHz
Cal point 2 - 300 MHz
Cal point 3 - 450 MHz
Cal point 4 - 600 MHz
Cal point 5 - 750 MHz
Cal point 6 - 900 MHz
Cal point 7 - 1050 MHz
Cal point 8 - 1200 MHz
Cal point 9 - 1350 MHz

(b) **10 kHz - 21 MHz**

Process 2 - RF level calibration 16 dBm

Cal point 0 - 10 kHz
Cal point 1 - 100 kHz
Cal point 2 - 1 MHz
Cal point 3 - 10.546875 MHz
Cal point 4 - 15 MHz
Cal point 5 - 21.0937 MHz

21 MHz to 1350 MHz

(1) **AM trough nulling** (Process 0) is performed as follows:

(a) Connect the DC source to the EXT MOD 1 INPUT socket on the UUT. Connect the RF OUTPUT socket on the UUT to the spectrum analyzer RF input. Equipment configuration is shown in Fig. A-23.

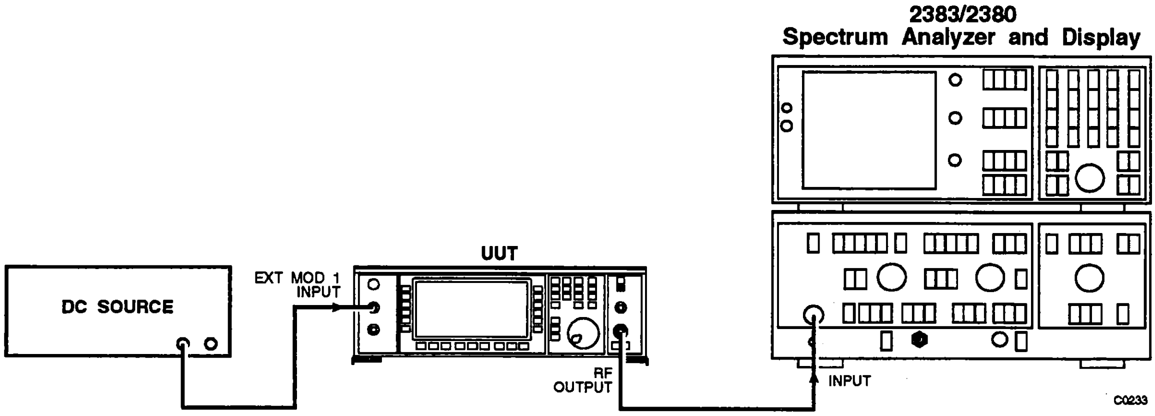

Fig. A-23 Equipment configuration for AM trough nulling

(b) Set up the equipment as follows:

(i) Unlock the UUT to level 2 then select RF level cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [RF Level] [21 MHz - 1.35 GHz] [Start RF Calib.]*

(ii) Tune the spectrum analyzer to 30 MHz, span 1 MHz.

(c) Apply -1.5 V ±0.08 V DC to the EXT MOD 1 INPUT.

(d) Adjust the correction figure until the carrier signal just reaches a minimum.

(e) Press *[Data Entry]* then *[Next Process].*

(2) **AM DC offset** (Process 1) is performed as follows:

(a) Connect the RF OUTPUT socket on the UUT to the modulation meter RF input. Equipment configuration is shown in Fig. A-24.

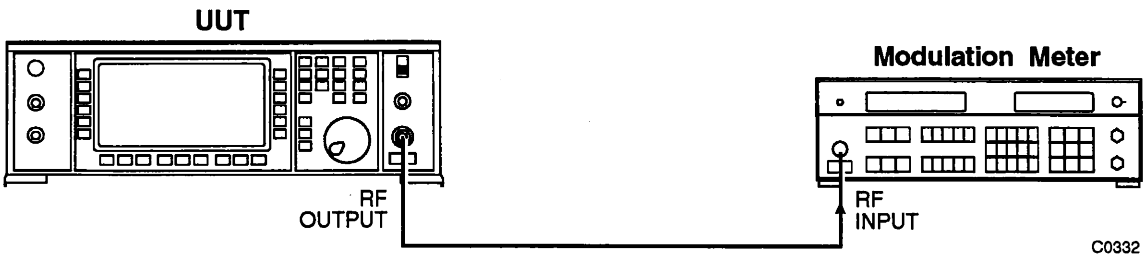

Fig. A-24 Equipment configuration for AM DC offset

(b) Set up the modulation meter as follows:

Autotune
AM measurement
300 Hz to 3.4 kHz filter

(c) Select in turn *[6 dBm Level]* and *[16 dBm Level]* and adjust the correction figure until they both give equal AM readings on the 2305.

(d) Press *[Next Process]*.

(3) **RF level check** is performed as follows:

(a) Connect the power meter to the RF OUTPUT socket of the UUT.

(b) Adjust the correction figure so that the power meter reads 6 dBm ±0.01 dB.

(c) Select *[16 dBm Level]*.

(d) Adjust the calibration figure so that the power meter reads 16 dBm ±0.01 dB.

(e) Select in turn 6 dBm and 16 dBm adjusting for correct RF power.

(f) Select *[Next Cal Point]*. Repeat until the menu returns to cal point 0.

(g) Press *[EXIT]*, *[EXIT]* and *[Save Calib.]*

BFO band 10 kHz to 21 MHz

(1) Unlock the instrument to level 2 then select RF level cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [RF Level] [BFO Band] [Start RF Calib.]*

(2) **RF level check** is performed as follows:

(a) Connect the power meter to the RF OUTPUT socket of the UUT.

Note...

It will be necessary to use the DVM and a 50 Ω load for the 10 kHz reading. Adjust the calibration figure until the DVM reads 0.7071 V ±1 mV.

(b) For each of the calibration points it is necessary to adjust the correction figures so that the power meter reads 16 dBm ±0.01 dB.

(c) Select *[Next Cal Point]*. Repeat until the menu returns to cal point 0.

(d) Select *[EXIT]*, *[EXIT]* and *[Save Calib.]*

Appendix B
ADJUSTMENT
- PULSE MODULATION OPTION -

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1 PULSE MODULATION ADJUSTMENT	B-2
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Fig. B-1 Equipment configuration for pulse modulation calibration B-2

PULSE MODULATION (Option 002)

The following adjustment procedure is for an instrument with the pulse modulation option fitted. This procedure is in addition to the adjustment procedures given in Chap. 5-2.

1 PULSE MODULATION ADJUSTMENT

TEST EQUIPMENT

Description	Minimum specification	Example
Power meter and Sensor	300 kHz to 4.2 GHz	Marconi 6960A & 6912

ADJUSTMENT

Pulse modulation calibration
Relative RF level adjustment between pulse modulation disabled and pulse modulation enabled.

Adjustment

(1) Connect the RF OUTPUT socket on the UUT to the sensor input. Connect the sensor output to the power meter input. Equipment configuration is shown in Fig. B-25.

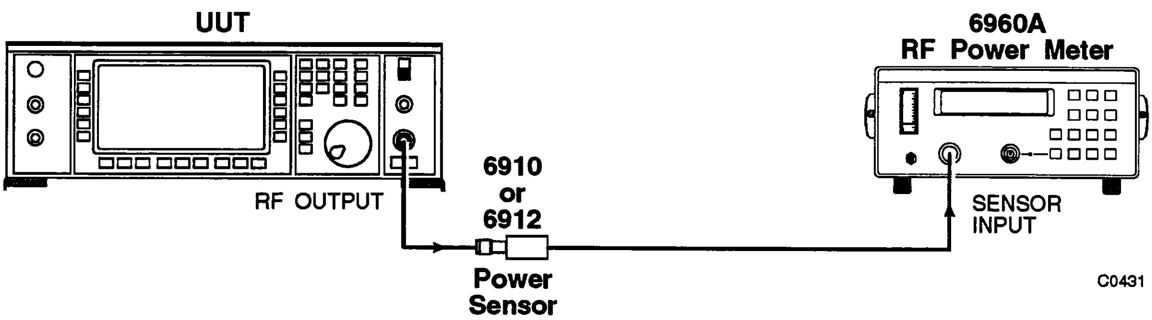

Fig. B-1 Equipment configuration for pulse modulation calibration

(2) Set up the equipment as follows:

(a) Unlock the UUT to level 2 then select pulse mod cal as follows:

[UTIL] *[Utils. Menu 2] [Cal. Value] [Mod'n.] [Pulse Mod. Cal.] [Select Mod. Cal.]*

(3) Measure the RF level on the power meter (and note as L1). This should be nominally 0 dBm.

(4) Press *[Continue Calib.]*

(5) Adjust the correction figure until the RF OUTPUT equals L1 as measured in step (3) above.

(6) Press *[EXIT]*, *[EXIT]* and *[Save Calib.]*.

Chapter 5-3
FAULT DIAGNOSIS

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GENERAL PROCEDURE

If an error message is displayed, first of all check for additional information in Tables 5-3-1 and 5-3-2. Then, or if a fault is otherwise suspected, go to the top level Fault Symptom Key Chart. This will indicate, by reference to the symptoms, which function is suspect. This will lead you to one or more lower level flow charts which will enable the fault to be located in a relatively small group of components or functional area. Note that where board AA1 is mentioned, it applies to all versions.

For a complete understanding of the fault you should read the relevant part of the Technical Description in Chap. 4-2 in conjunction with the Servicing Diagrams in Chap. 7.

A further guide to detailed fault location is provided by the component layout drawings shown opposite the circuit diagrams in Chap. 7.

Note that performance limits quoted in this chapter are for guidance only and should not be taken as guaranteed performance specifications unless they also appear in the Performance Data in Chap. 1 of the Operating Manual.

FUSE REPLACEMENT

Either one or two cartridge-types fuses are located on the signal generator rear panel. These main supply fuses are double time lag, 1.6 A for 90 to 123 V AC and 1 A for 188 to 242 V AC. Always switch off the power supply when replacing a fuse.

ERROR MESSAGES ON 2040 SERIES INSTRUMENTS

Hints on methods of rectifying faults in response to displayed error messages are given in Tables 5-3-1 and 5-3-2.

Note that the instrument will not power up on detecting one of the fatal errors shown in Table 5-3-2.

TABLE 5-3-1 BACKGROUND ERROR MESSAGES

No.	Message	Helpful hint
1	RPP Tripped	Remove reverse power and press *[reset]* key.
2	Fractional N Out of Lock	VCO tune volts are outside normal range of operation, indicating that synthesizer is faulty. Refer to fault finding flow chart for Frequency Error Fault.
3	Int. Standard Failure	No standard signal passing to VCXO phase comparator. Check connector PLAP is fitted and trace standard signal through to TR501. If no 10 MHz on connector, check power to AR2 (note that oscillator power is switched on AR1).
4	Ext. Standard Failure	As for int. Check signal voltage is 2 V pk-pk on ext. standard. Check operation with int. standard selected.
5	Incorrect Ext. Standard	Check ext. standard frequency. Check no errors using int. standard before tracing signal from PLAP to output IC514.
6	VCXO Out of Lock	104.8576 MHz VCXO tune volts is outside normal range. Check that output on flying lead to PLAL is adjusted for maximum using C604. Trace operation of reference loop on AA1.
11 12	Harmonic Loop Volts Low Harmonic Loop Volts High	Harmonic VCO tune volts are outside normal range of operation. If output frequency is correct suspect harmonic loop calibration, otherwise refer to fault finding flow chart for Harmonic Loop Fault.
13	Harmonic Loop Unlocked	Harmonic VCO is not phased locked to its reference. Refer to fault finding flow chart for Harmonic Loop Fault.
14 15	Output Loop Volts Low Output Loop Volts High	Output VCO tune volts are outside normal range of operation. If output frequency is correct suspect output loop calibration, otherwise refer to fault finding flow chart for Output Loop Fault.
16	Output Loop Unlocked	Output VCO is not phased locked to its reference. Refer to fault finding flow chart for Output Loop Fault.

continued/...

TABLE 5-3-1 BACKGROUND ERROR MESSAGES (contd.)

No.	Message	Helpful hint
24	FM Selfcal Error	During the FM selfcal an extreme correction number was required. Check frequency synthesis on VCO in question and deal with frequency errors. Look at FM path if frequency OK.
26	Real Time Clock Problem	Either power for clock was interrupted or processor cannot talk to clock. Reset time and, if required, date; if cannot, check battery connected and battery voltage. Check operation of Real Time Clock on AR1.
27	Calibration Date Expired	First check that time and date are correct, then recalibrate as detailed in Chap. 5-2.
28	Pad Calibration Checksum	Calibration numbers for attenuator stored on EAROM on attenuator assembly AT10 require recalibration. Recalibrate as detailed in Chap. 5-2.
29 30 31 32 33 34 35 36 37 38	RF Calibration Checksum FM Calibration Checksum Path/Source Calibration Absolute Mod. Calibration Freq. Std. Calibration Harm. Select Calibration Harm. Tune Calibration O/P Loop Tune Calibration Band Break Calibration Tracking Calibration	Data in EAROMs corrupted and requires recalibration. If *[Continue]* pressed, instrument will operate but parameters covered by checksum in question will not be calibrated.

TABLE 5-3-2 FATAL ERROR MESSAGES

No.	Message	Helpful hint
171 172	Main RAM Faulty Main PROM Faulty	Ensure device is correctly fitted. Try another chip, then check address decoding and data bus on AA1.
173	Microwave Board Error	Cannot read back a recognised board type. Check data bus working.
174	Attenuator Type Unknown	Does not read back correct attenuator type. Switch off, disconnect attenuator and power up again to see if nibble bus or attenuator module is at fault.

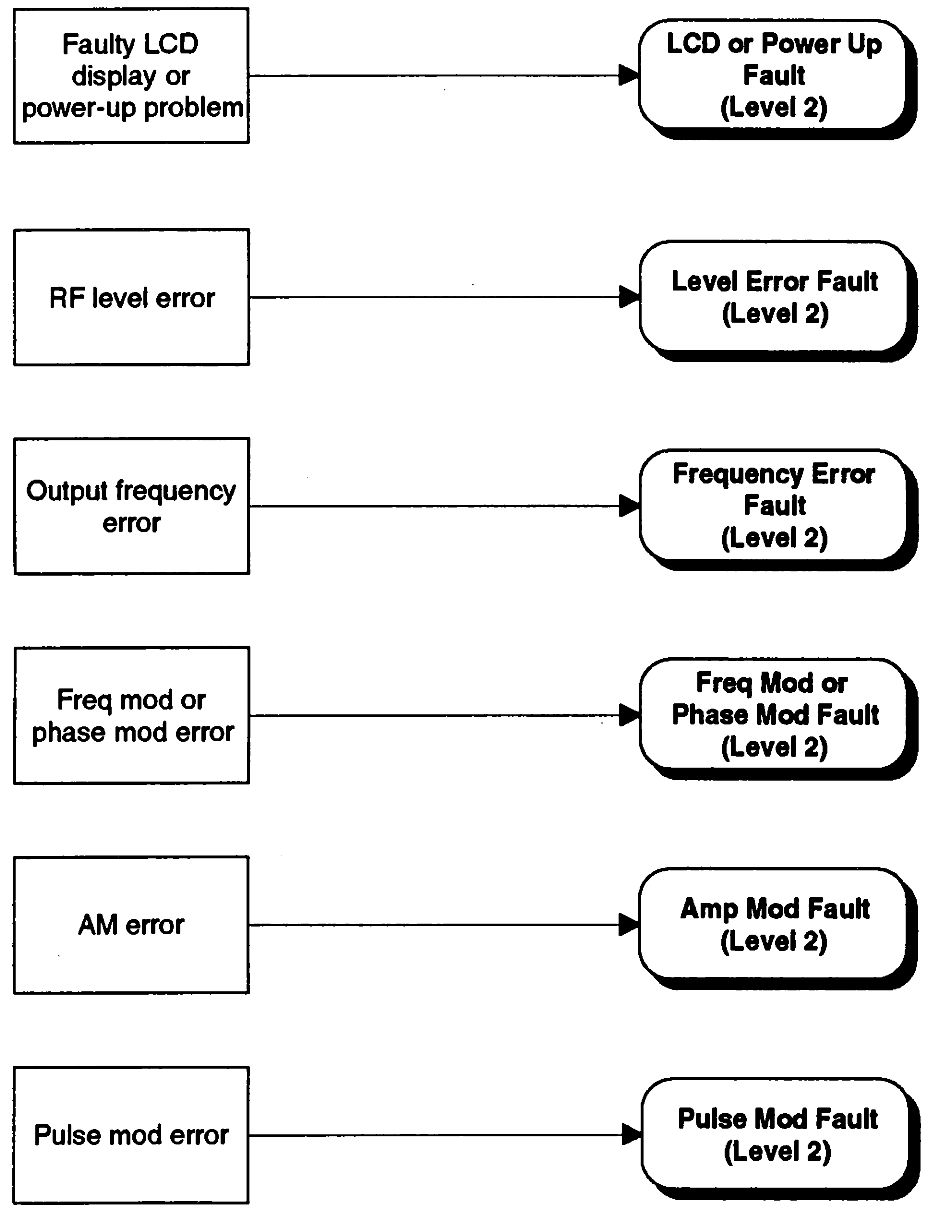
FAULT FINDING FLOW CHARTS

Blank Page

Fault Symptom Key (Level 1)

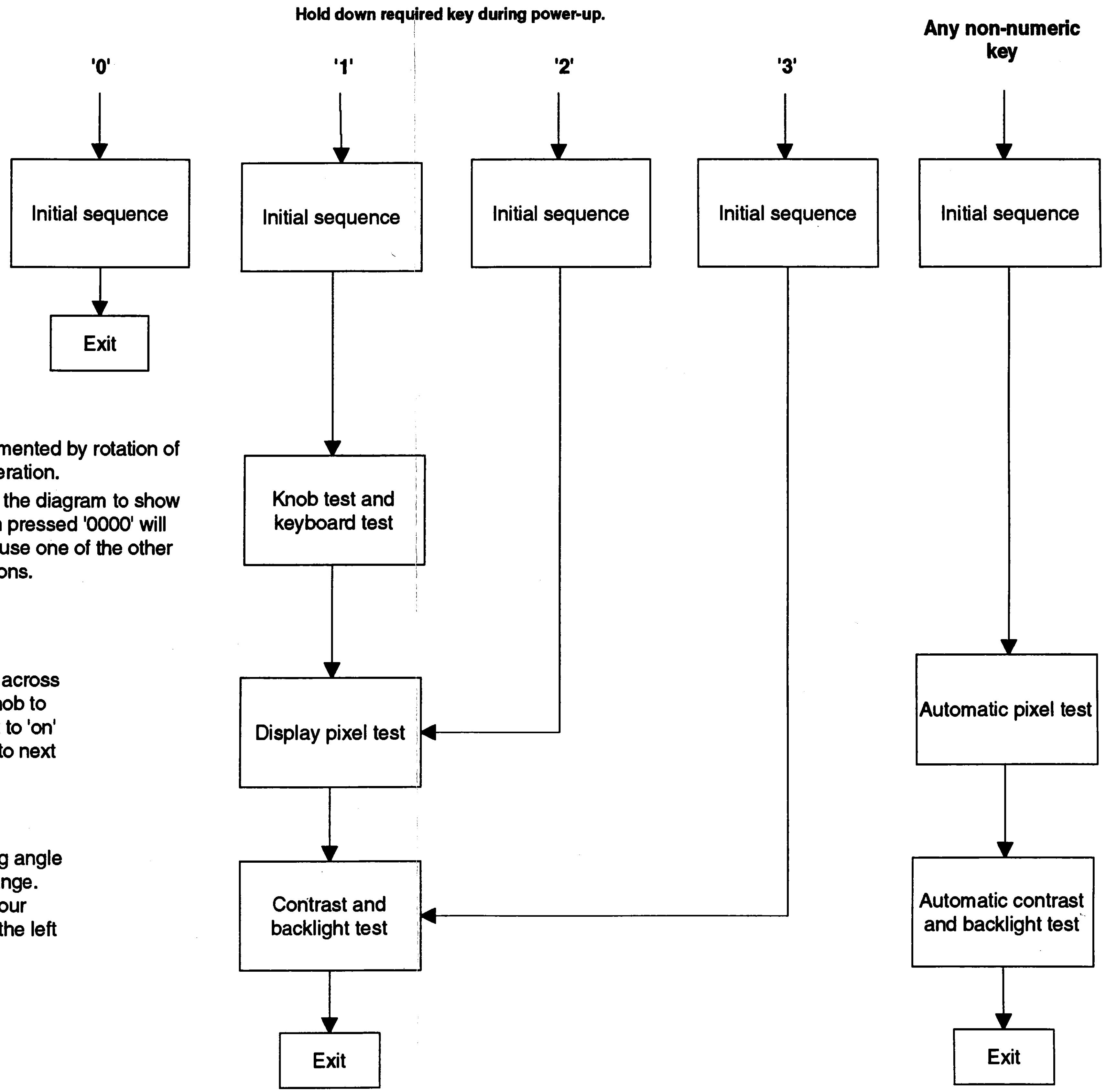
IDENTIFY FAULT SYMPTOM AND PROCEED TO FAULT FINDING CHART

With instrument switched into Normal mode



With instrument switched into Low Noise mode

Front Panel Processor Tests
(use in conjunction with next page)



Notes:

For all of the initial sequences the contrast is set to a nominal value and the backlight turned on. The screen is cleared and then a "walking man" appears.

A 3-digit number may be incremented/decremented by rotation of the knob to confirm correct operation.

As each key is pressed, it is highlighted on the diagram to show it has been pressed. If all keys have been pressed '0000' will move to next test. If one or more are faulty use one of the other tests to check other functions.

A vertical stripe may be moved across the display using the rotary knob to check that all pixels may be set to 'on' and 'off'. Press '00' to proceed to next test

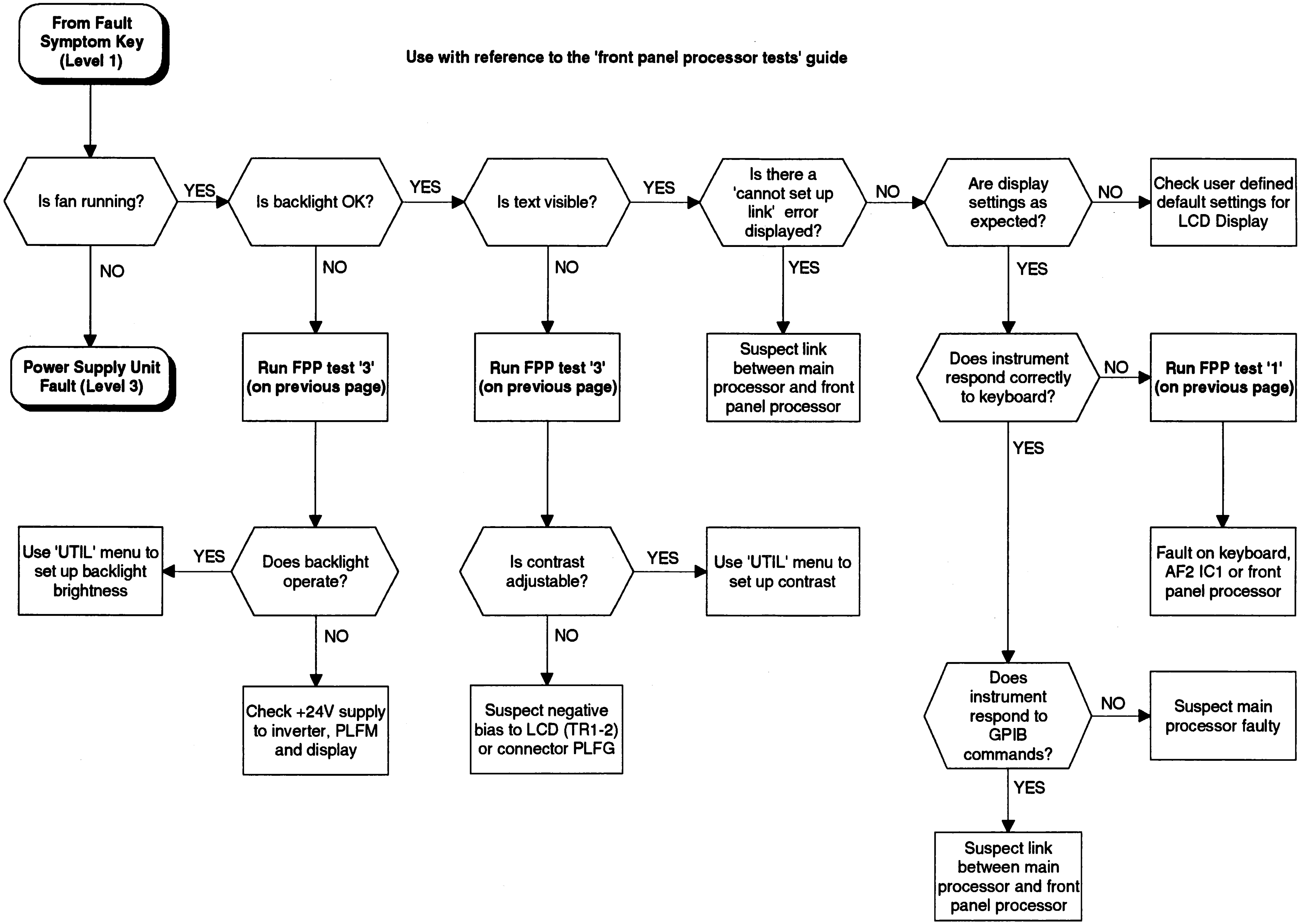
The knob allows contrast/viewing angle setting to be run over its full range. The backlight can be set to four brightness levels and 'off' using the left hand side soft keys.

In auto mode the bar does one screen and then moves onto the next test.

In auto mode the brightness is cycled through its four possible levels several times.

LCD or Power Up Fault (Level 2)

Use with reference to the 'front panel processor tests' guide



LCD or Power Up Fault (Level 2)

Level Error Fault (Level 2)

A level error fault is where (with the RF offset facility disabled) the RF level is out of specification while the carrier frequency is correct and the output is not unduly distorted. It is assumed that the error is such that the instrument does not just require recalibrating.

If an attempt at RF level calibration is successful but then the instrument displays an RF level Checksum error this implies a fault in reading or writing to the EAROM on AA1. If the RF level calibration fails only on process 0 or 1 while the remainder of the calibration routine is successful, it implies an error with the detector diodes or with the law correct circuits on AA1. (Note that these two processes are repeated for the detector diodes on AB3/5 in the case of the 2041, and on AB3/4 in the case of the 2042).

To help locate a fault on AB2 use the sweep facility with the RF output connected to a spectrum analyzer on max hold. This will identify the frequency range where level faults occur and hence locate the RF path giving rise to the level errors.

Note 1

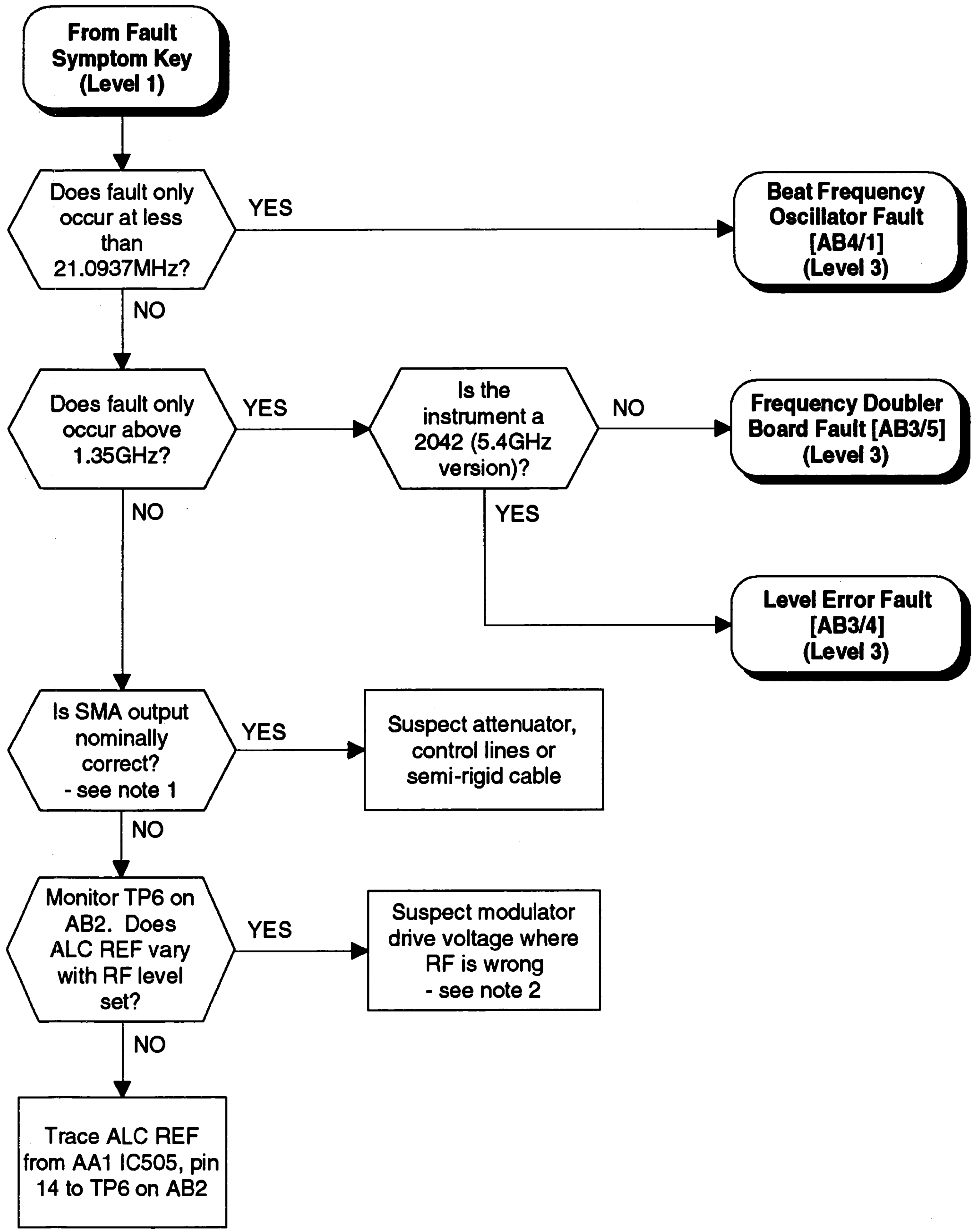
SMA output SKXJ on AB3/*x* should be 1 dBm ±0.5 dB.

Note 2

Modulator drive:

Monitor the modulator drive voltage at TP3 on AB2. The nominal range for the drive voltage is between 0.7 and 2 V.

Modulator voltage	Instrument state
Less than 0.7 V	Modulator fully off. Fault in ALC circuits or maybe RF oscillation in RF path.
Between 0.7 and 2 V	Normal state for ALC drive voltage.
Between 2 and 5 V	Modulator being driven hard, probably excess loss through the RF path.
Greater than 5 V	Modulator fully on. Excess loss through RF path or, if RF level much too high, a fault in the ALC circuits.



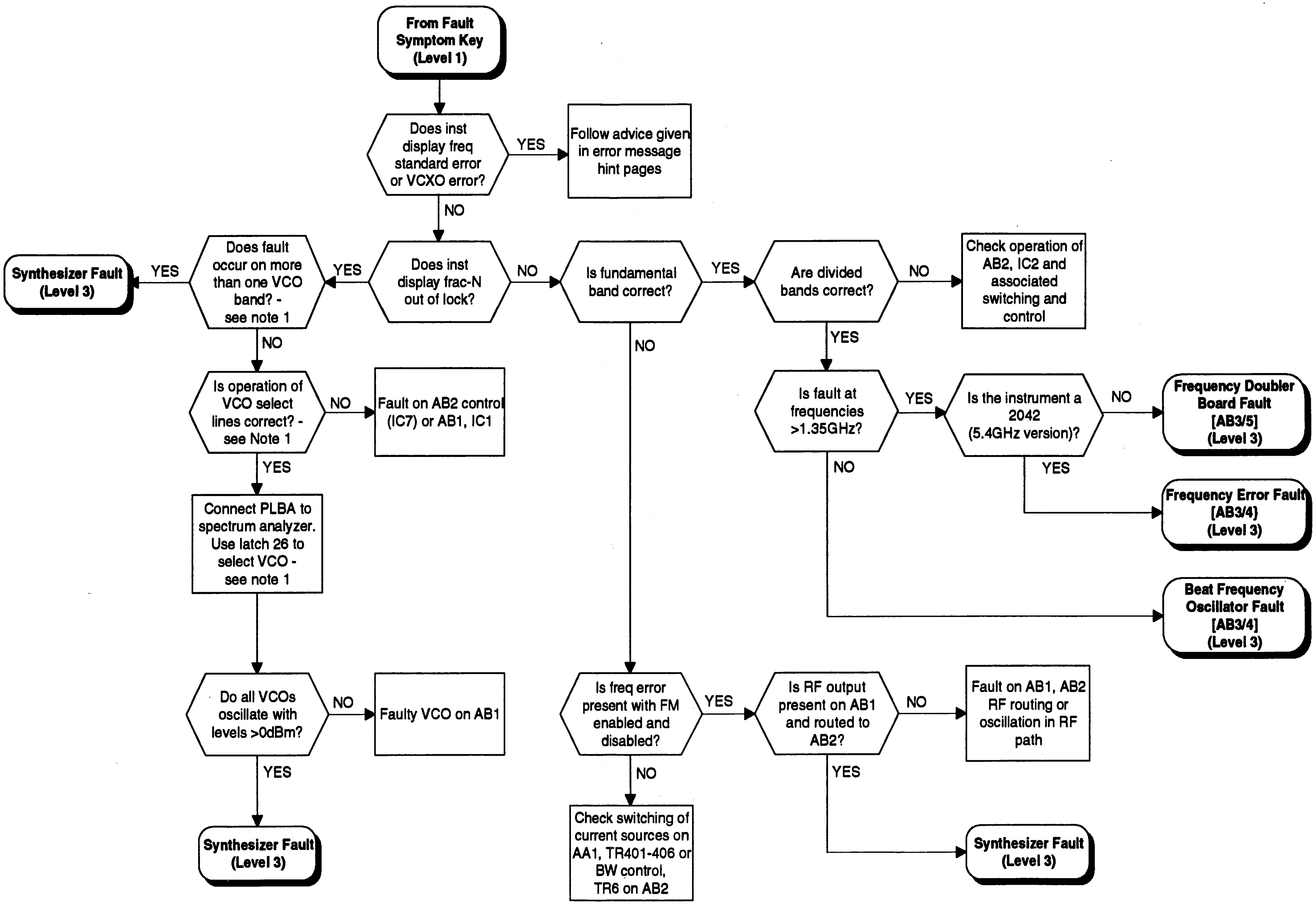
Level Error Fault (Level 2)

Note 1

	VCO band and Range	Latch 26 B7	B6	B5	B4	B3	B2	B1	B0	AB1 collectors at -3 V (others > 0 V)
0	675 - 803 MHz	0	0	X	X	X	X	X	X	TR5
1	803 - 955 MHz	1	0	X	X	X	X	X	X	TR6
2	955 - 1135 MHz	0	1	X	X	X	X	X	X	TR7
3	1135 - 1350 MHz	1	1	X	X	X	X	X	X	TR8

where: X = don't care

Frequency Error Fault (Level 2)



Frequency Error Fault (Level 2)

It is assumed here that the fault occurs on internal mod. source, if not the audio multiplexers and the LF input circuits should be inspected for faults. Also assumed is that a recalibration of the FM (both DC cal and selfcal) will not cure the problem. For faults only on Wideband FM, trace the signal path through to the VCOs.

Note 1

Testing the 3 dB Step Attenuator: Set the instrument to a carrier frequency of 1 GHz with 100 kHz deviation using the internal modulation oscillator set to 10 kHz. The mod rate must be high to be outside the loop bandwidth of the synthesizer. Monitor the FM on a modulation meter set to relative mode. Use latch poke in binary format to alter contents of the FM control latch (latch 24). A '0' inserts the pad in question increasing the attenuation in the analogue path and so reducing the FM deviation.

	B7	B6	B5	B4	B3	B2	B1	B0
Latch 24:	P	P	P	P	P	0	0	1
Pad value (dB):	48	24	12	6	3			

where: P=0 to insert pad and 1 to remove it.

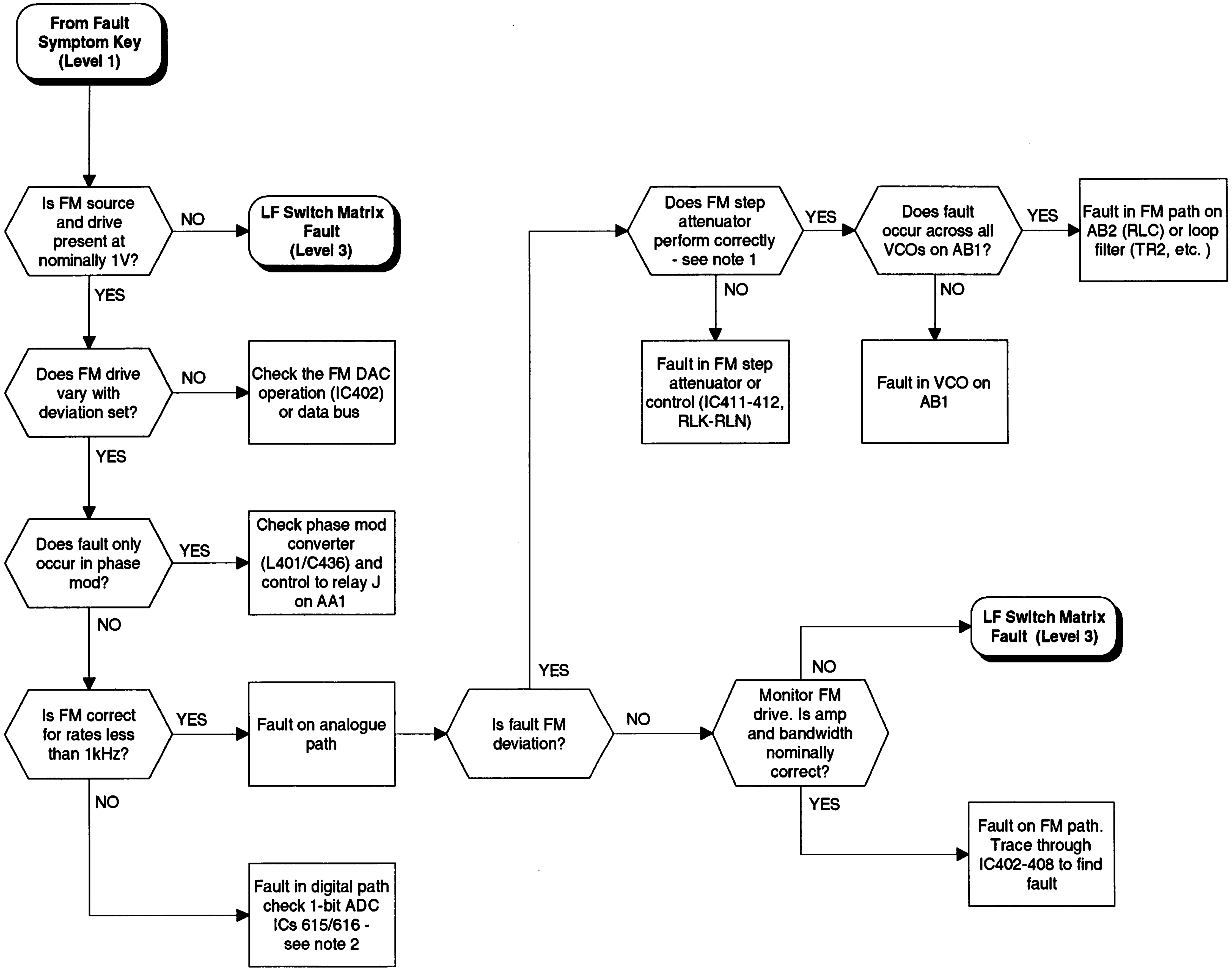
Alter the pad combinations to ensure the modulation changes in multiples of 3 dB. The 48 dB pad will need to be tested in combination with other pads to overcome the dynamic range required in the mod meter (i.e. measure the change in deviation switching between 48 dB and 36 dB of attenuation).

Note 2

Testing the 1-bit ADC: To confirm normal operation is very difficult since the ADC output is chaotic. To test, overload the converter by selecting external DC coupled FM and apply ±2 V while monitoring the output at IC614 pin 54 for the following:

Applied voltage	Expected 1-bit ADC
+2 V	Output mainly high
0 V	Output equally in high and low state
-2 V	Output mainly low

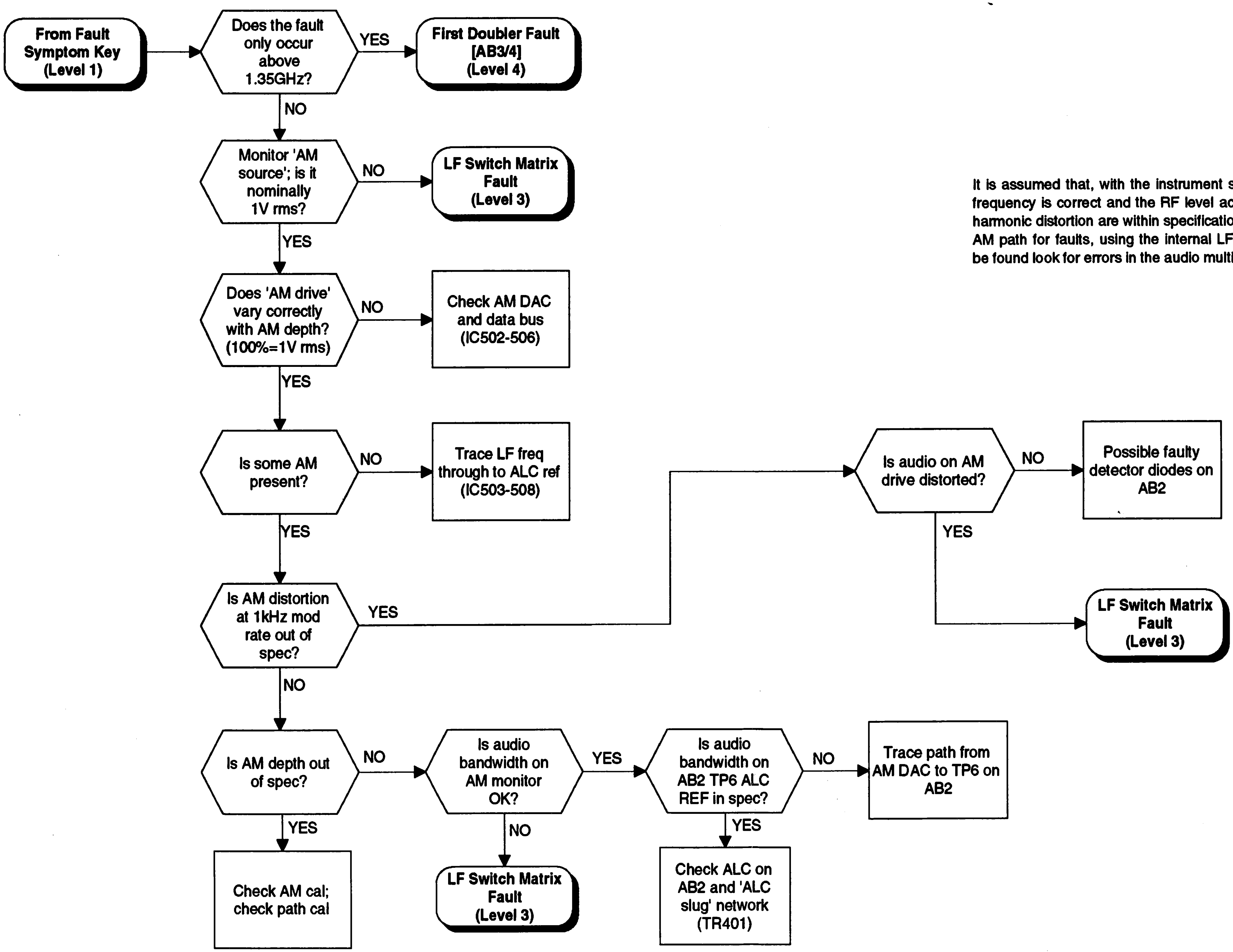
Freq Mod or Phase Mod Fault (Level 2)



Freq Mod or Phase Mod Fault (Level 2)

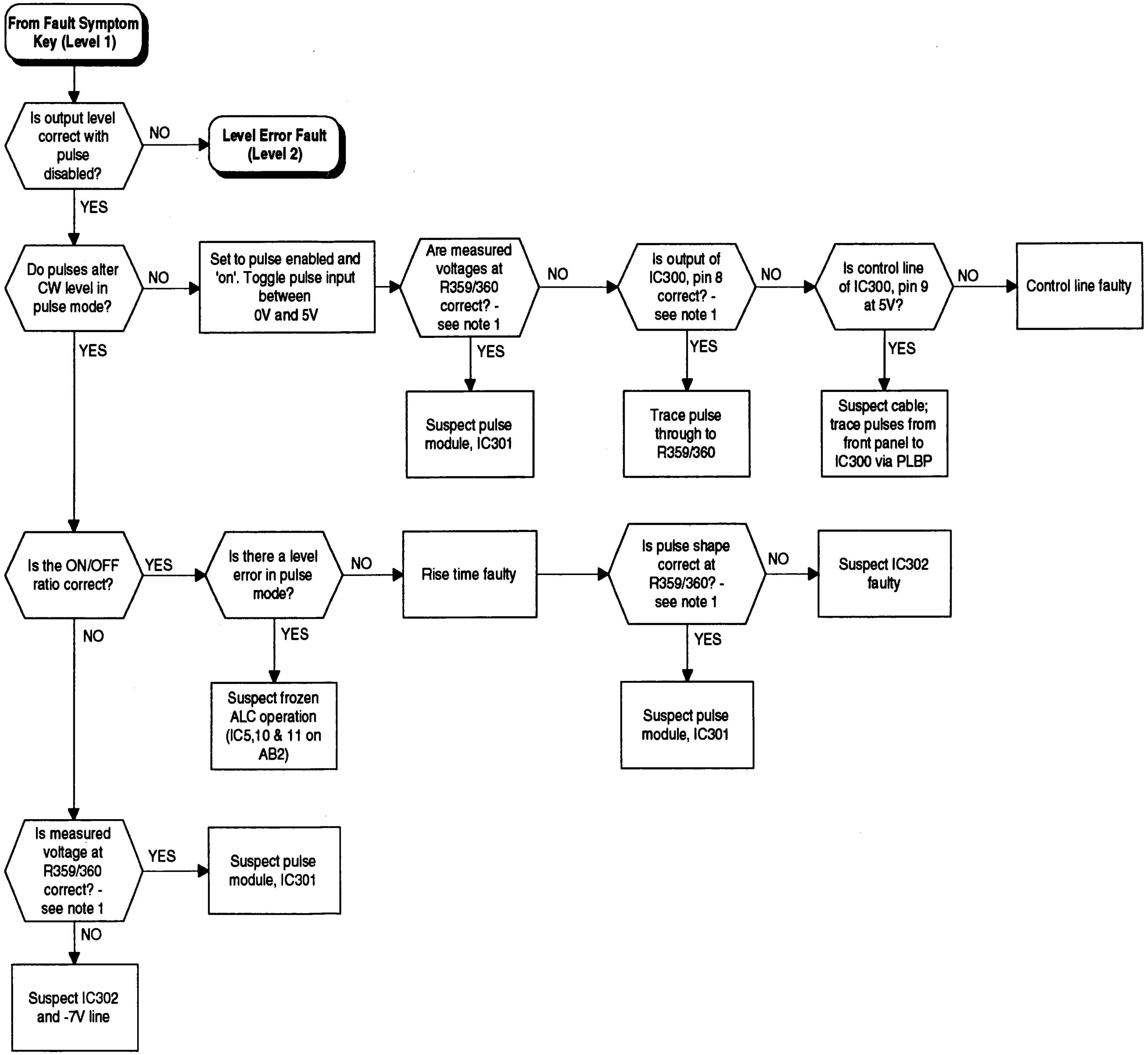
Amp Mod Fault (Level 2)

It is assumed that, with the instrument set to internal AM, the output frequency is correct and the RF level accuracy (without AM) and the harmonic distortion are within specification. The algorith m checks the AM path for faults, using the internal LF synthesizer; if no faults can be found look for errors in the audio multiplexers on AA1.



Amp Mod Fault
(Level 2)

Pulse Mod Fault (Level 2)

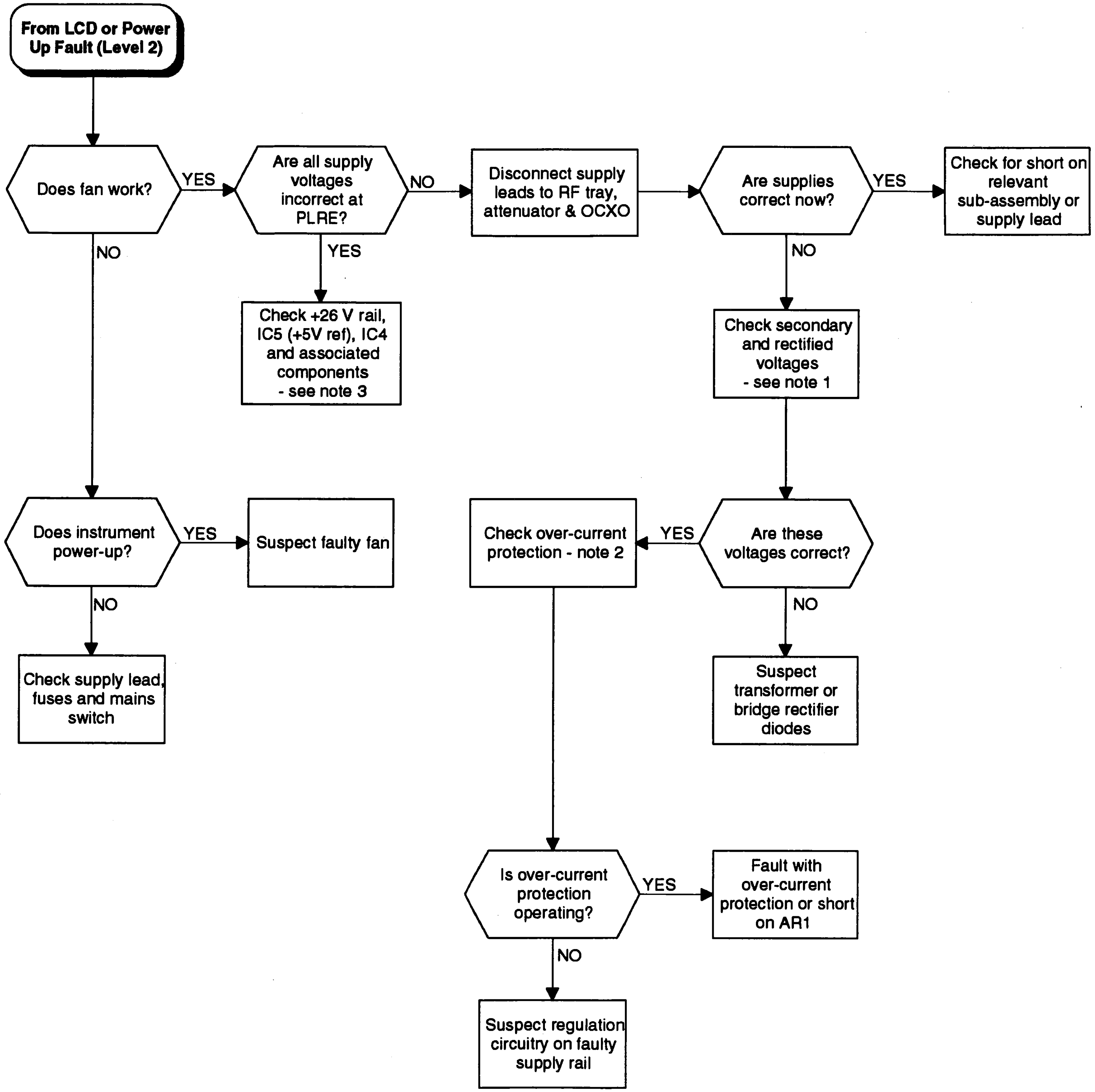


Note 1

Pulse enabled	Input (BNC)	Nominal volts (V) R359	R360	IC300, pin 8
Pulse on	5	0	–7	5
Pulse off	0	–7	0	0

Pulse Mod Fault (Level 2)

Power Supply Unit Fault (Level 3)



Note 1

Supply rail (VDC)	+26/24	-15	+15	+5
Secondary voltage (VAC)	30	19	19	8
Rectified voltage (VDC)	+38	-24	+24	+9

Note 2

Supply rail	Over-current protection operating if:
+5 V	IC9, pin 8 at 0 V
+15 V	IC9, pin 1 at 0 V
-15 V	TR5c at-24 V
+24 V	IC2, pin 3 at 0 V
+26 V	IC3, pin 2 at 0 V

Note 3

IC4, pin 7	Supply condition
+24 V	PSU operating
0 V	Thermal shutdown

Power Supply Unit Fault (Level 3)

Beat Frequency Oscillator Fault (Level 3)

Note 1

Bias volts on TR1:

collector	13 V
base	5.3 V

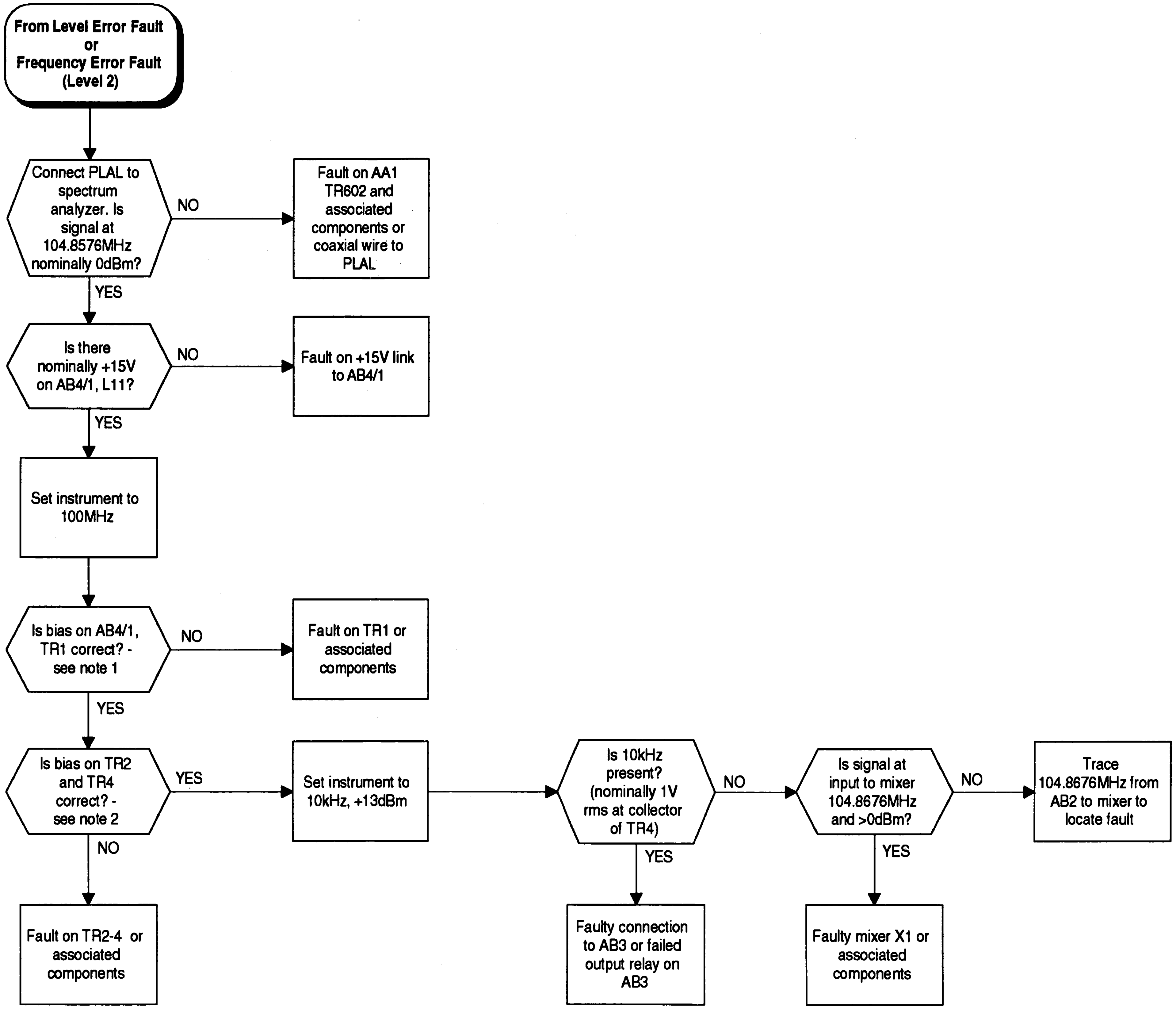
Note 2

Bias volts on TR2:

collector	10 V
base	3.3 V

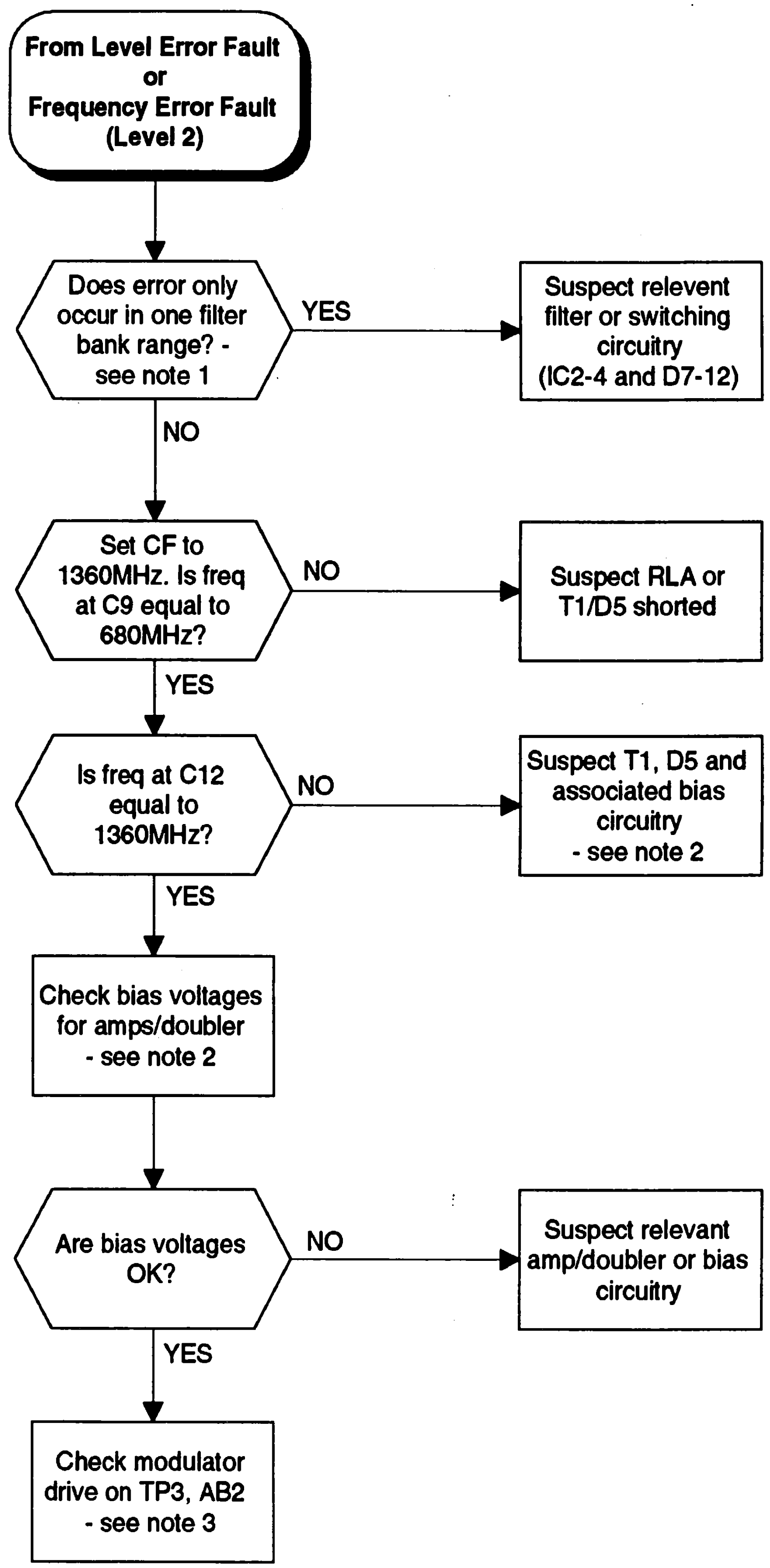
Bias volts on TR4:

collector	10 V
base	0.9 V



Beat Frequency Oscillator Fault (Level 3)

Frequency Doubler Board Fault [AB3/5] (Level 3)



Note 1

AB3 filter bands (GHz):

1.35 - 1.70
1.70 - 2.10
2.10 - 2.70

Note 2

DC bias for amps/doubler:

	VB (volts DC)	VC (volts DC)	VE(volts DC)
TR1	1.2 V	5.8 V	0.6 V
TR2	2.0 V	8.0 V	1.4 V
TR3	0.6 V	13.5 V	0 V
TR7	0.9 V	5.8 V	0.3 V

Doubler bias 1.2 V

Note 3

Modulator drive: Monitor the modulator drive voltage at TP3 on AB2. The nominal range for the drive voltage is between 0.7 and 2 V.

Modulator voltage	Instrument state
Less than 0.7 V	Modulator fully off. Fault in ALC circuits or maybe RF oscillation in RF path.
Between 0.7 and 2 V	Normal state for ALC drive voltage.
Between 2 and 5 V	Modulator being driven hard, probably excess loss through the RF path.

Frequency Doubler Board Fault [AB3/5] (Level 3)

A synthesizer fault is where the output frequency measured by a counter using the same frequency standard indicates that the output frequency differs from the set value.

Synthesizer: Errors within the synthesizer require breaking the loop to trace the error. Break the loop by disconnecting PLAE, the RF input to the synthesizer, and connecting an external synthesizer covering the fundamental range of the sig gen (675 MHz - 1350 MHz). Set external synthesizer to a nominal 2 dBm.

Note 1

Set the instrument to a carrier frequency in the fundamental range with the modulation disabled. Monitor the voltage on cathode D406 (tune volts) and the waveform on TP5 (phase comparator output). Set the external synthesizer to the set frequency plus 10 MHz and minus 10 MHz and check for the following:

Frequency	TP5 waveform	D406 Voltage
f + 10 MHz	mainly high	approx. 1 V
f - 10 MHz	mainly low	>20 V

The points should monitor the same with FM enabled but off. If the waveform at TP5 is incorrect check the operation of the programmable divider and its control lines. If TP5 is correct but the tune volts are not, look at the current sources (AA1 sheets 4 & 7).

Synthesizer Fault (Level 3)

Note 2

Programmable divider: Connect PLAE to an external synthesizer set to 1 GHz with a nominal 2 dBm output. Use latch poke to set latch 76 to 128, which sets the output of the ULA to request the maximum division ratio (all control lines high). Monitor the collector of TR614 with a counter. If all operating correctly should measure 950.574 kHz i.e 1 GHz / (4 × 263).

Note 3

To check the correct action of the control lines to the programmable divider set the carrier frequency to 675 MHz, and to 675 MHz plus 1 Hz. With the FM disabled, monitor the control lines on IC609 to IC611 using an oscilloscope and check for the following:

Carrier Frequency	Control Line Number							
	17	13	11	9	7	5	3	1
675 MHz	±ve	±ve	±ve	±ve	±ve	±ve	±ve	L
675.000 001 MHz	±ve	±ve	±ve	L	±ve	±ve	±ve	H

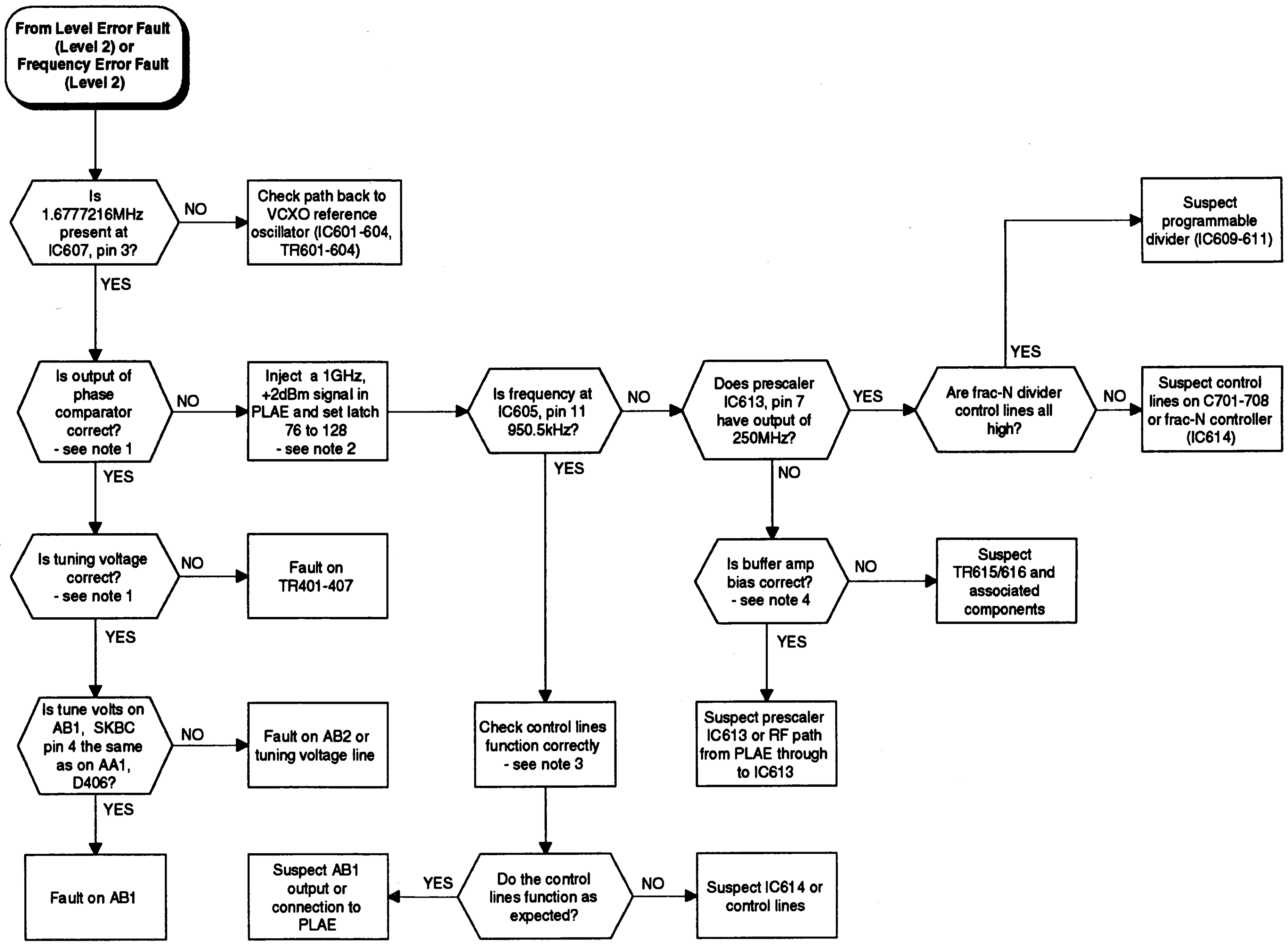
where:
L = low (3.2 V)
H = high (4.2 V)
±ve = pos/neg transitions

Current Sources:

Nominal voltages	TR401 base	23 V
	TR402 base	-12 V

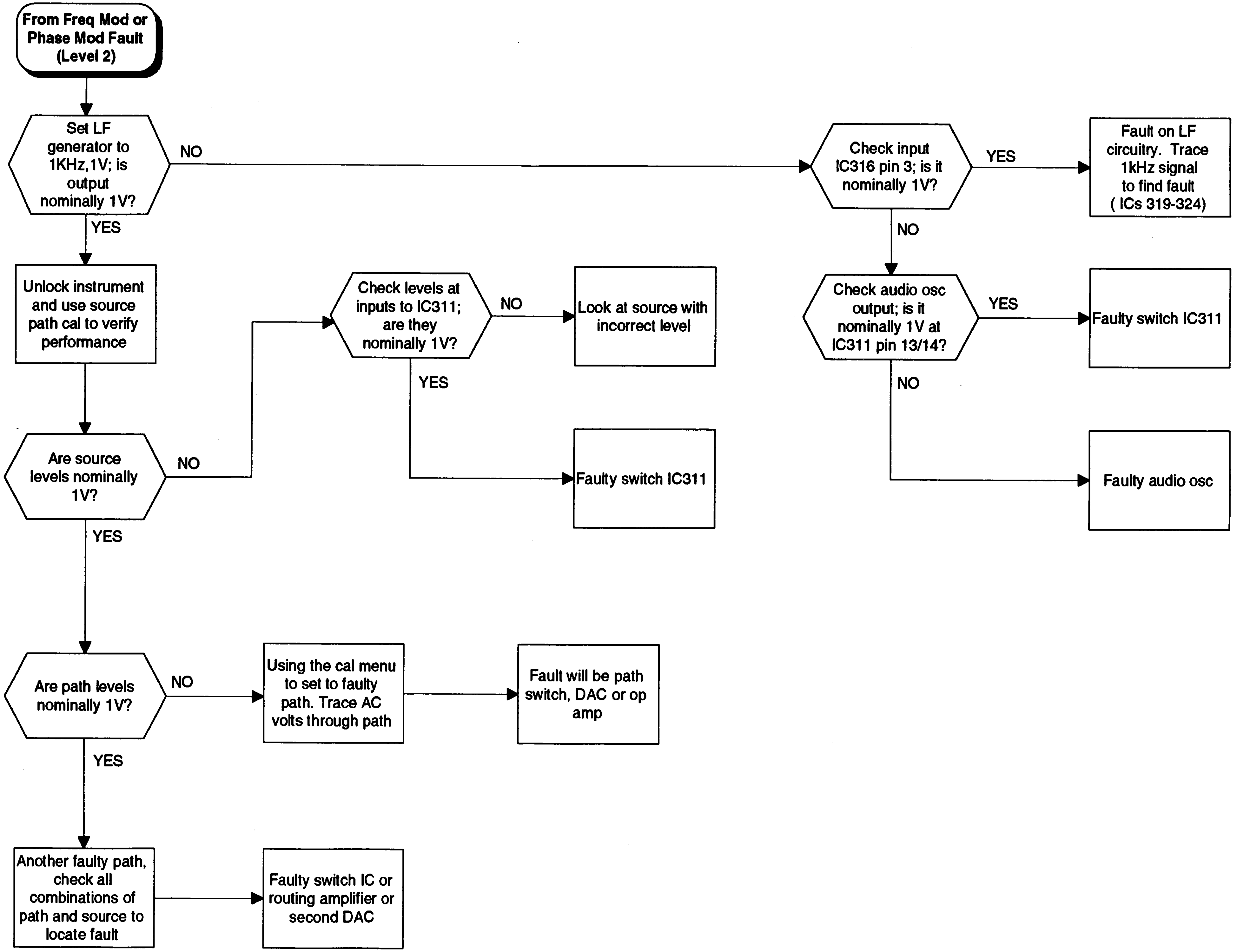
Note 4

TR615	base	= 0.7 V
	collector	= 4 V



Synthesizer Fault (Level 3)

LF Switch Matrix Fault (Level 3)



LF Switch Matrix Fault (Level 3)

Level Error Fault [AB3/4] (Level 3)

NOTE 1

The comparator (IC401) is used to bias the reverse power protection (RPP) diodes. Normally the RPP diodes are reverse biased by a potential of +0.5 V on the cathode. But if TR410 produces unusually high RF power it could trip IC401 output and forward bias the RPP diodes, shunting RF power to ground. With RF shunted to ground the RPP circuit resets and reverse biases the RPP diodes again. This results in RF being switched ON and OFF periodically.

NOTE 2

The voltages on either side of the first set of three filters should be the same. The actual values depend on whether a filter is selected or deselected. The values are given below.

Filter Selected	+0.9 V (±0.1 V)
Filter Deselected	–0.7 V (±0.1 V)

NOTE 3

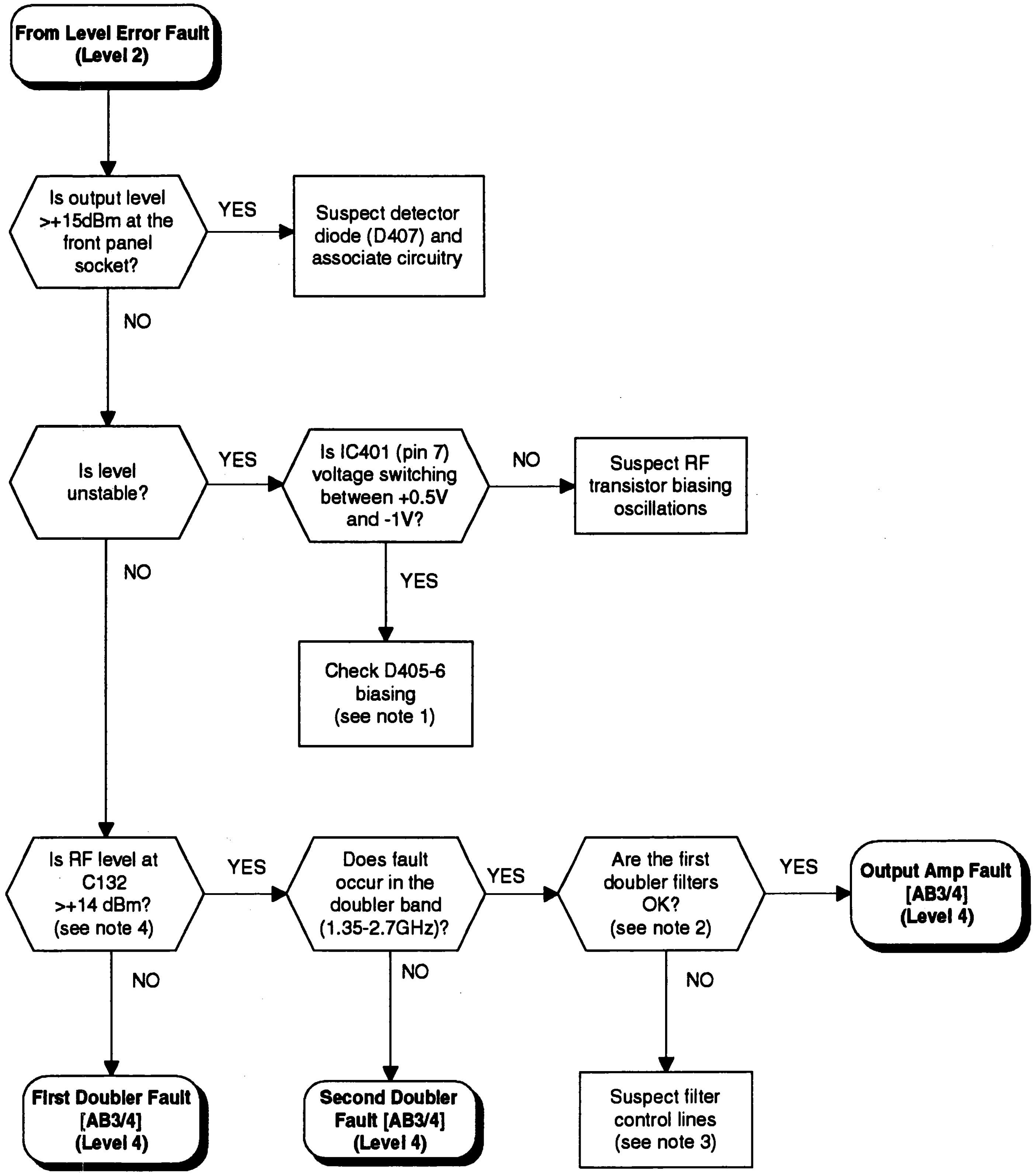
Check the filter control line (LO/MID/HI) voltages on the output side of the IC101(a) and trace them through to the filters. The filter switching table is given below.

Control Line (Input)		**Switching Line (output)**		
µW–CTL1	µW–CTL2	LO	MID	HI
0	0	0	1	1
1	0	1	0	1
0	1	1	1	0
1	1	1	1	1

where: 1 is high logic (+5 V)
0 is low logic (0 V)

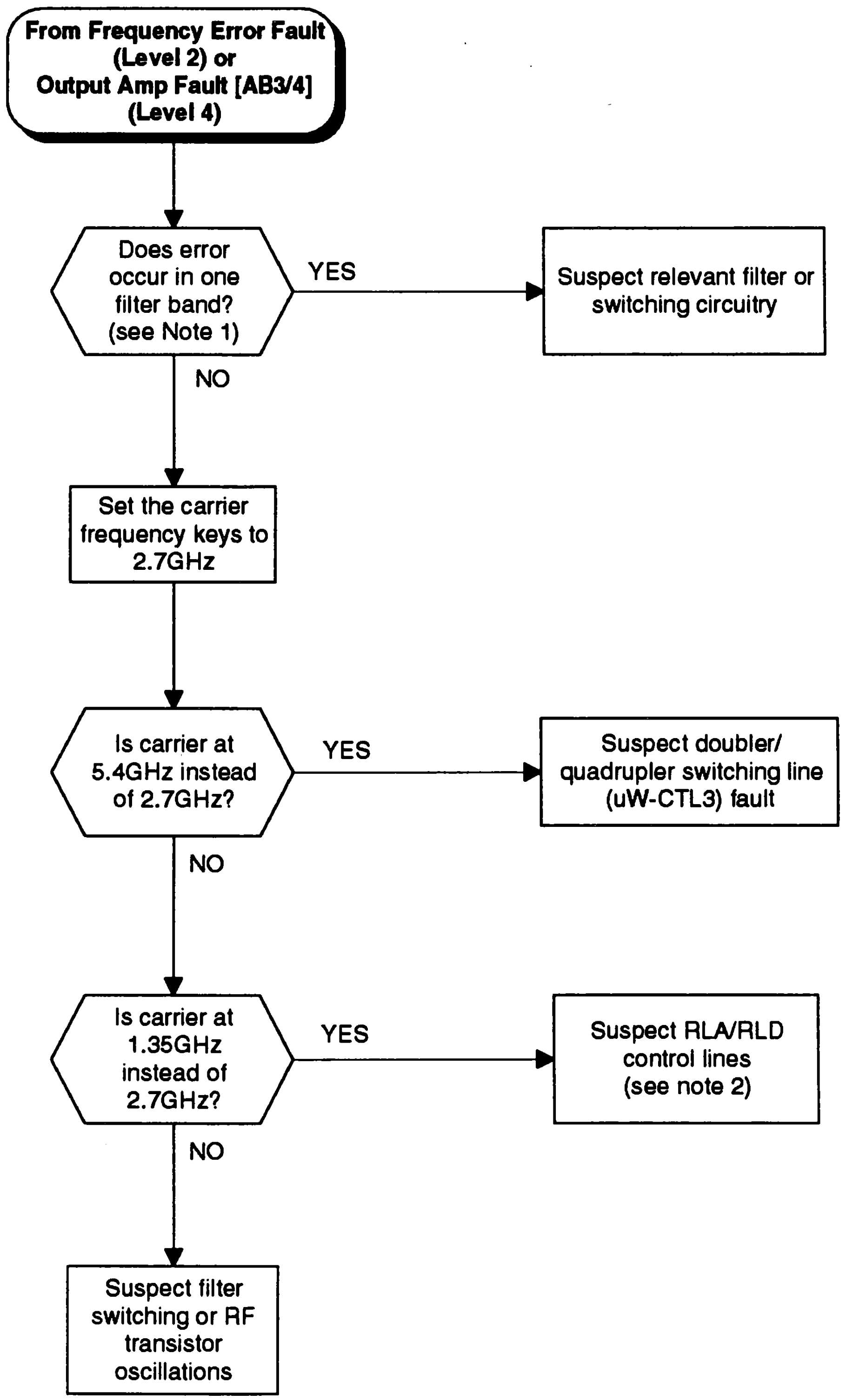
NOTE 4

Solder 50 Ω semi-rigid cable between output side of C132 and the provided ground pad. Then measure the signal level with a power meter.



Level Error Fault [AB3/4]
(Level 3)

Frequency Error Fault [AB3/4] (Level 3)



NOTE 1

The following table details the filter band frequencies:

Filter Band	Doubler Section (GHz)	Quadrupler Section (GHz)
1	1.35 - 1.70	2.70 - 3.40
2	1.70 - 2.10	3.40 - 4.20
3	2.10 - 2.70	4.20 - 5.40

NOTE 2

The relay RLA and RLD switching action is controlled by IC101(a) pin(7), which is set by control lines µW–CTL1 and µW–CTL2. The table below gives the switching combinations:

µW–CTL		IC101(a)	Relay	
1	2	Pin(7)	RLA	RLD
1	1	0	OFF	ON
X	X	1	ON	OFF

where X Don't care states
ON Relay energised
OFF Relay unenergised

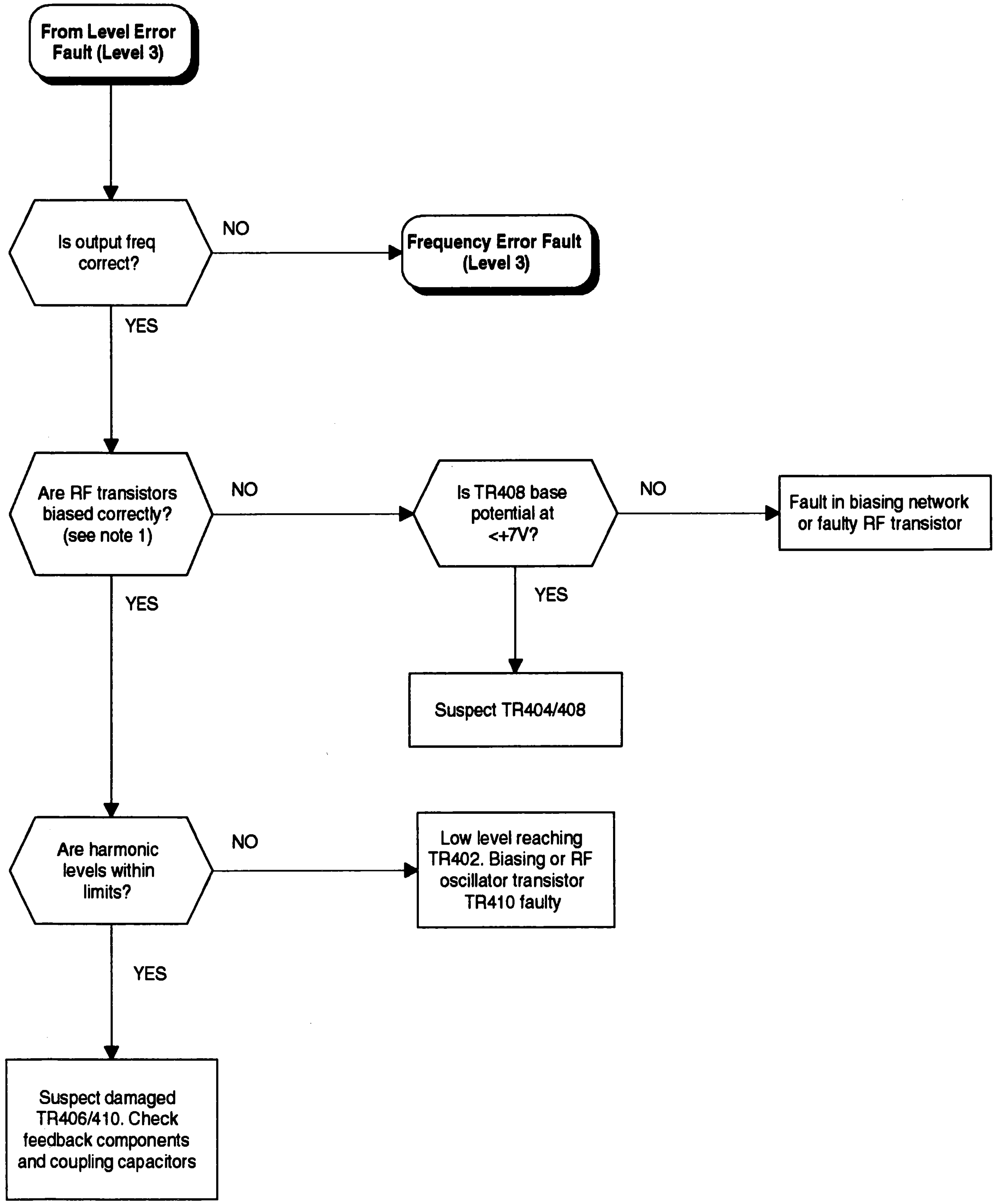
Frequency Error Fault [AB3/4] (Level 3)

Output Amp Fault [AB3/4] (Level 4)

NOTE 1

The RF transistors TR402, TR406 and TR410 should be biased according to the following table.

Device	Voltage (V)			Emitter Resistance (Ohms)
	Vd	Vs	Vg	
TR402	4.6	0.5	–0.2	8.2
TR406	8.6	0	–2.0	0
TR410	8.6	0	–2.0	0



Output Amp Fault [AB3/4] (Level 4)

First Doubler Fault [AB3/4] (Level 4)

NOTE 1

The RF transistor stages in the first doubler section, TR105-106 & TR111, should be biased as shown below.

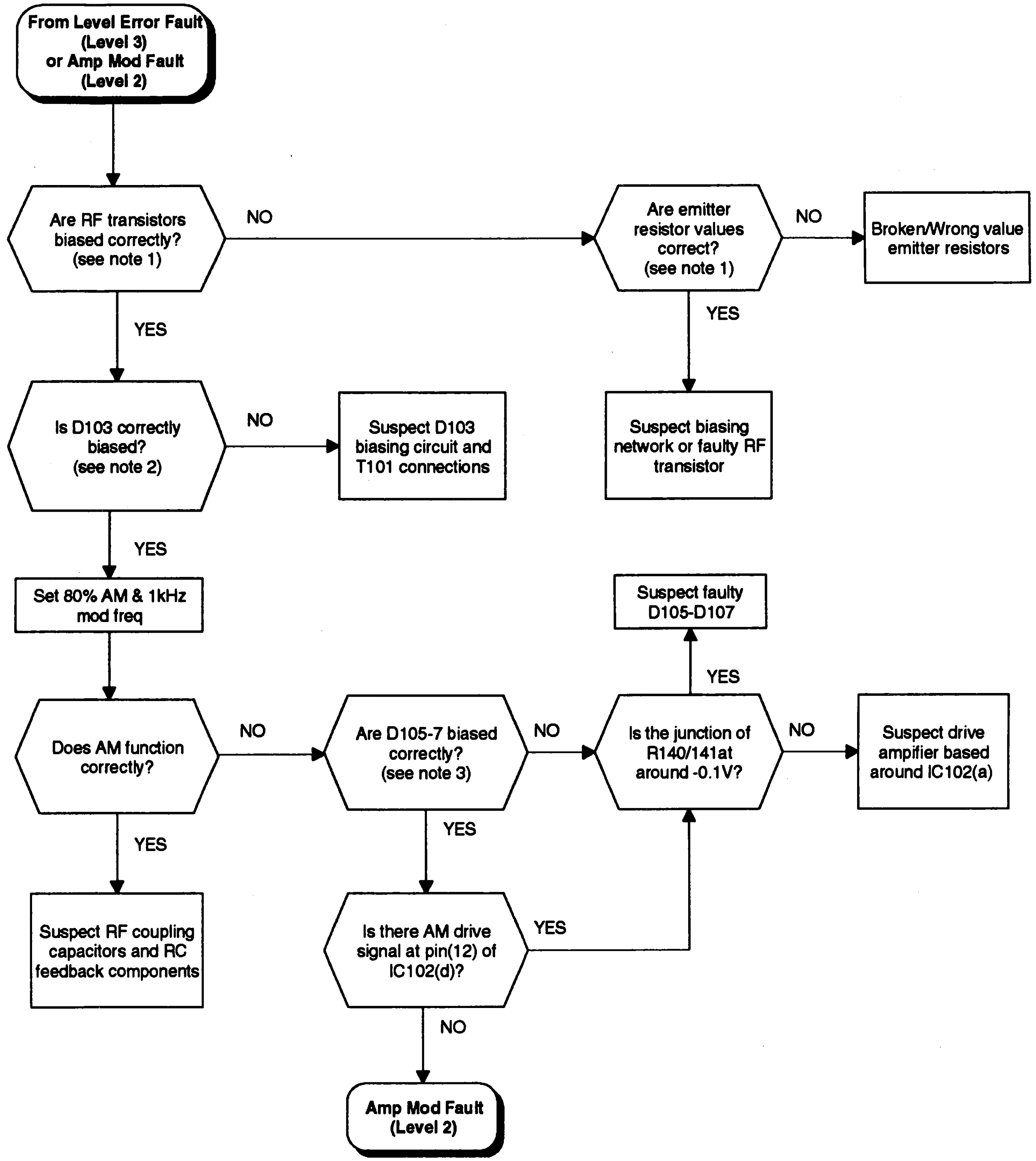
Device	Voltage (V)			Emitter Resistance (Ohms)
	Vc	Ve	Vb	
TR105	4.7	0.6	1.3	17
TR106	4.7	0.6	1.3	17.5
TR111	10	0.5	1.3	8

NOTE 2

The cathode terminal of D103 should be at ground potential and the anode terminal should be between –0.1 V and +0.5 V.

NOTE 3

The AM modulating diodes (D105/106) are biased to their "knee" point by R126/127. The common anode and cathode terminals of D105/106 should be at –0.7 V and –1.4 V respectively. Also pin 2 & 3 of D107 should be –1 V and –1.7 V respectively.



First Doubler Fault [AB3/4] (Level 4)

Second Doubler Fault [AB3/4] (Level 4)

NOTE 1

The second doubler section RF transistors (TR206-209) should be biased as shown in the table below:

Device	Voltage (V)			Emitter Resistance (Ohms)
	Vd	Vs	Vg	
TR206	10.6	0.6	1.4	11
TR207	4.6	0.8	0.2	16.5
TR208	4.6	0.4	<0	5
TR209	4.6	0.4	<0	5

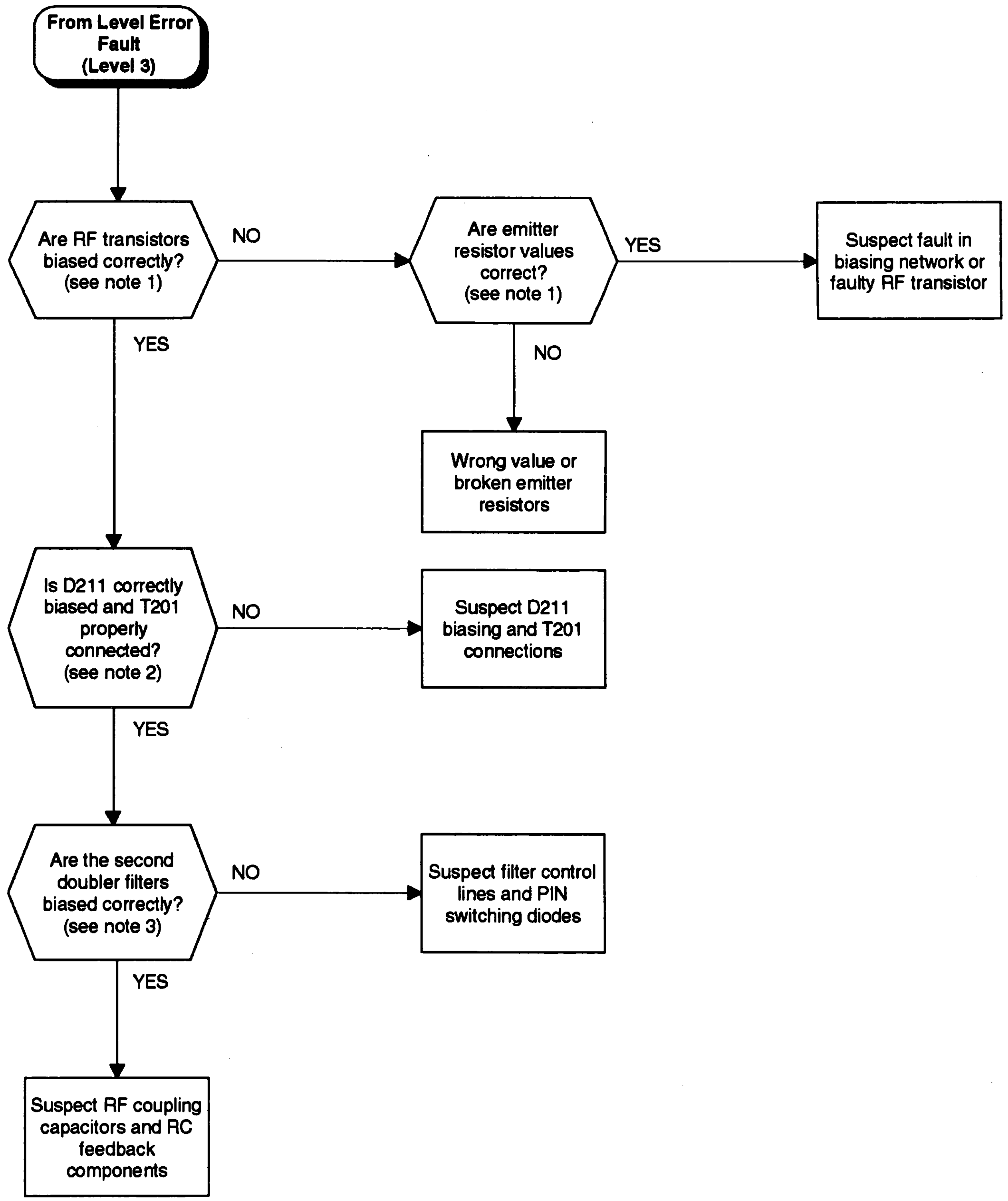
NOTE 2

The cathode terminal of D211 should be at ground potential and the anode should be between –0.1 V and +0.5 V.

NOTE 3

The voltages on either side of the second set of three filters, after the second doubler, should be as given below. Note filter input/output side is a reference to the direction of RF signal flow.

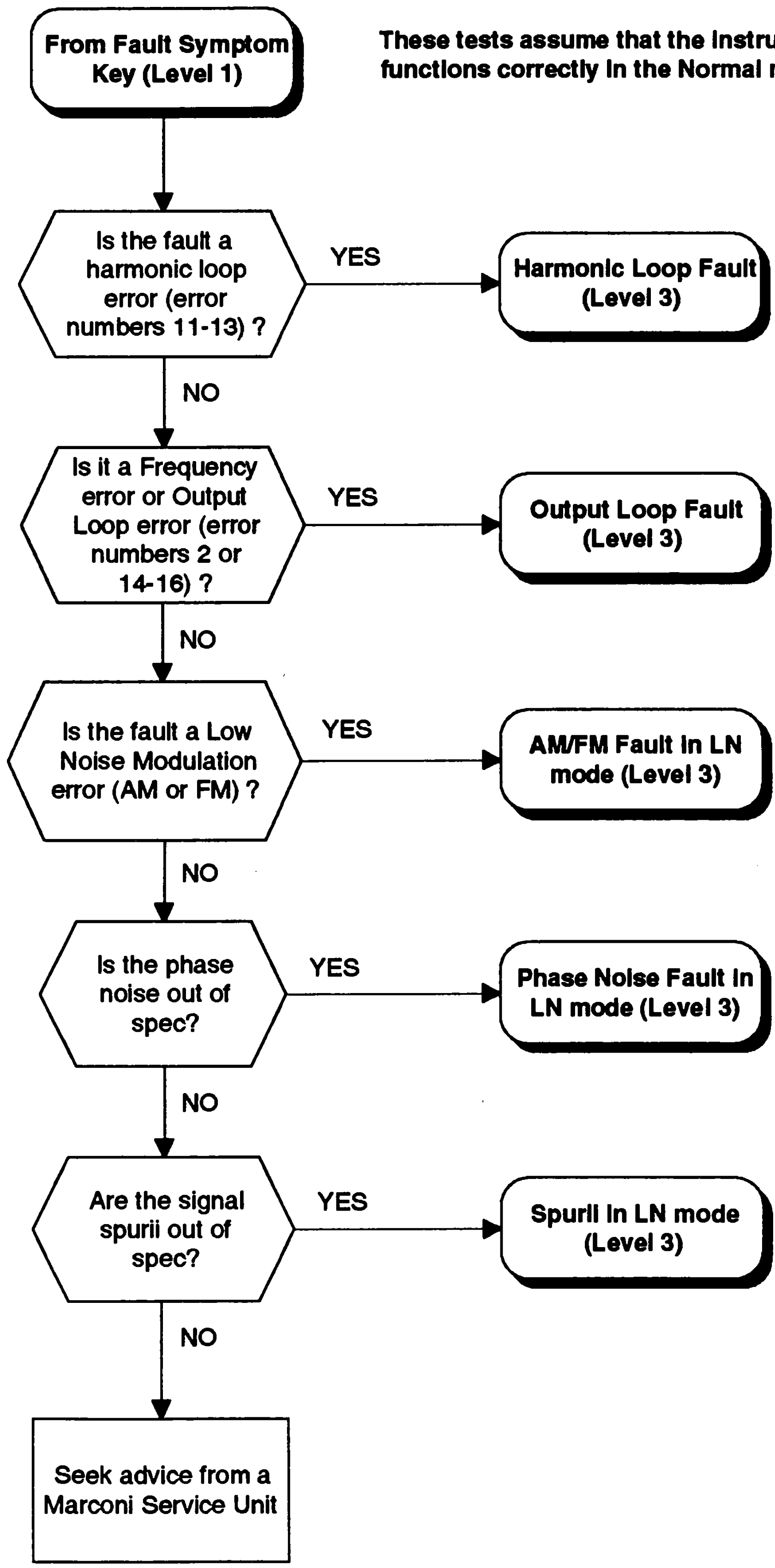
Side	Filter Selected (V)	Filter Deselected (V)
Input side	1 ±0.2	–0.75 ±0.1
Output side	3 ±0.3	–0.75 ±0.1



Second Doubler Fault [AB3/4]
(Level 4)

Low Noise Fault (Level 2)

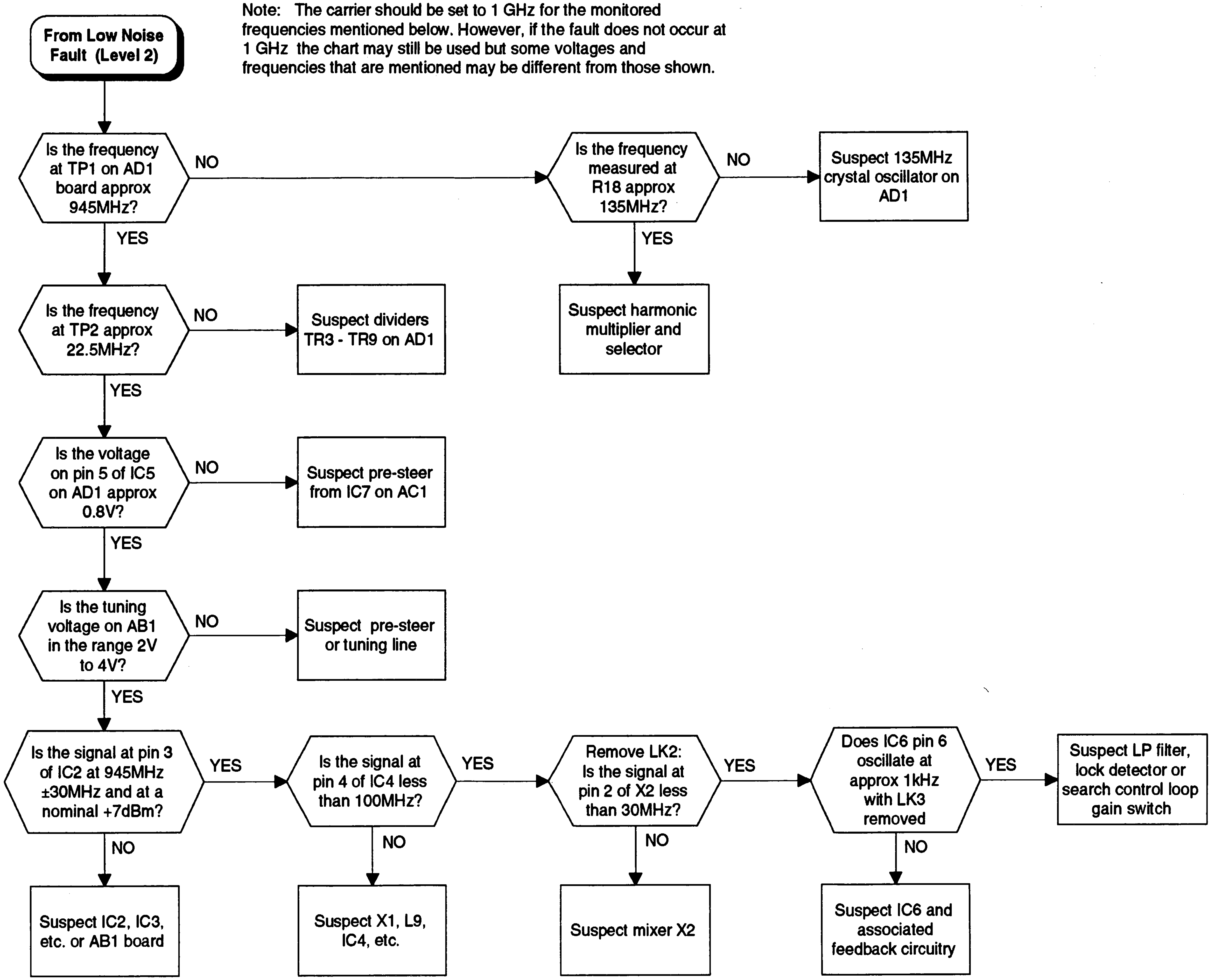
These tests assume that the instrument functions correctly in the Normal mode



Low Noise Fault (Level 2)

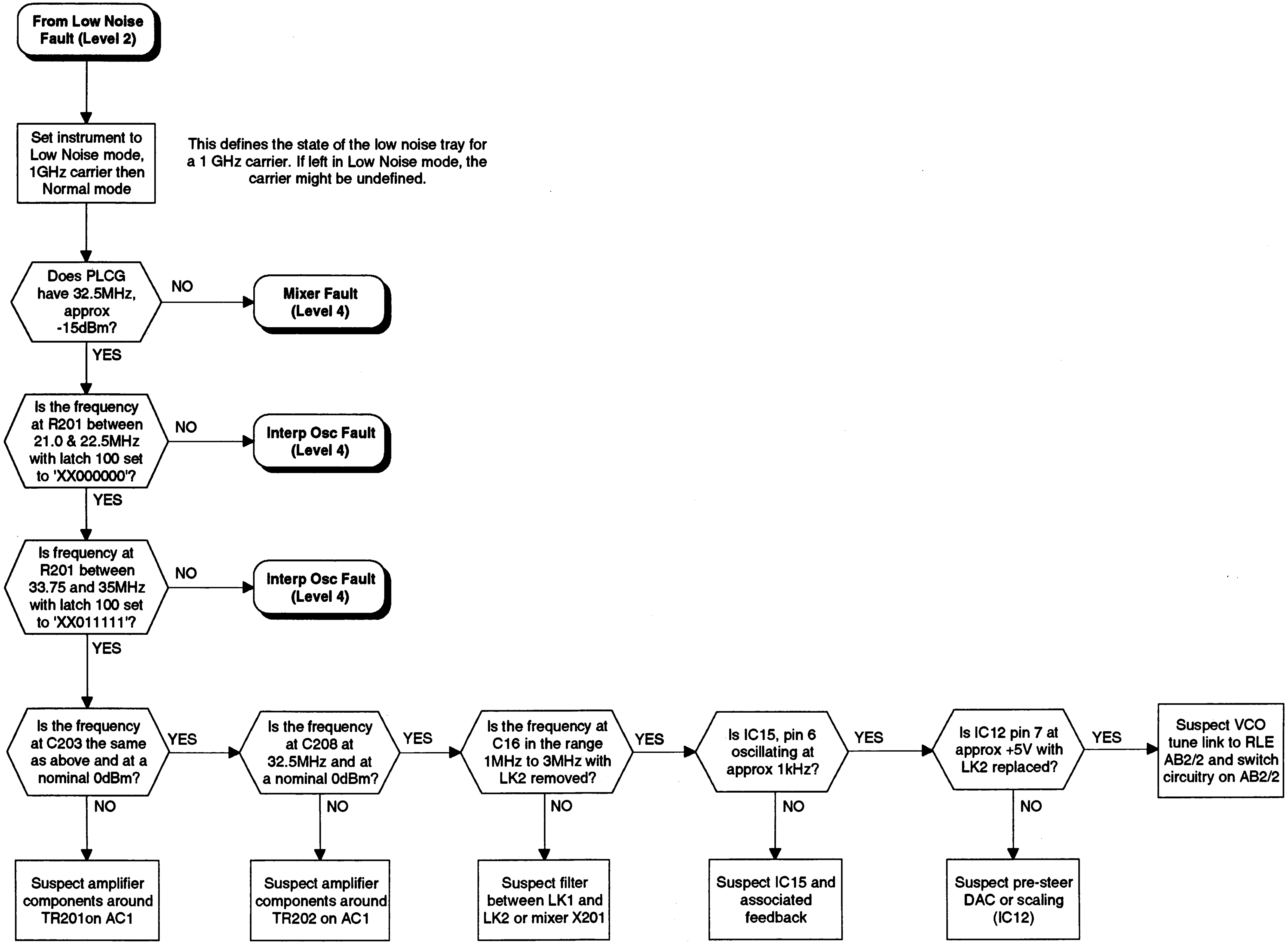
Harmonic Loop Fault (Level 3)

Note: The carrier should be set to 1 GHz for the monitored frequencies mentioned below. However, if the fault does not occur at 1 GHz the chart may still be used but some voltages and frequencies that are mentioned may be different from those shown.



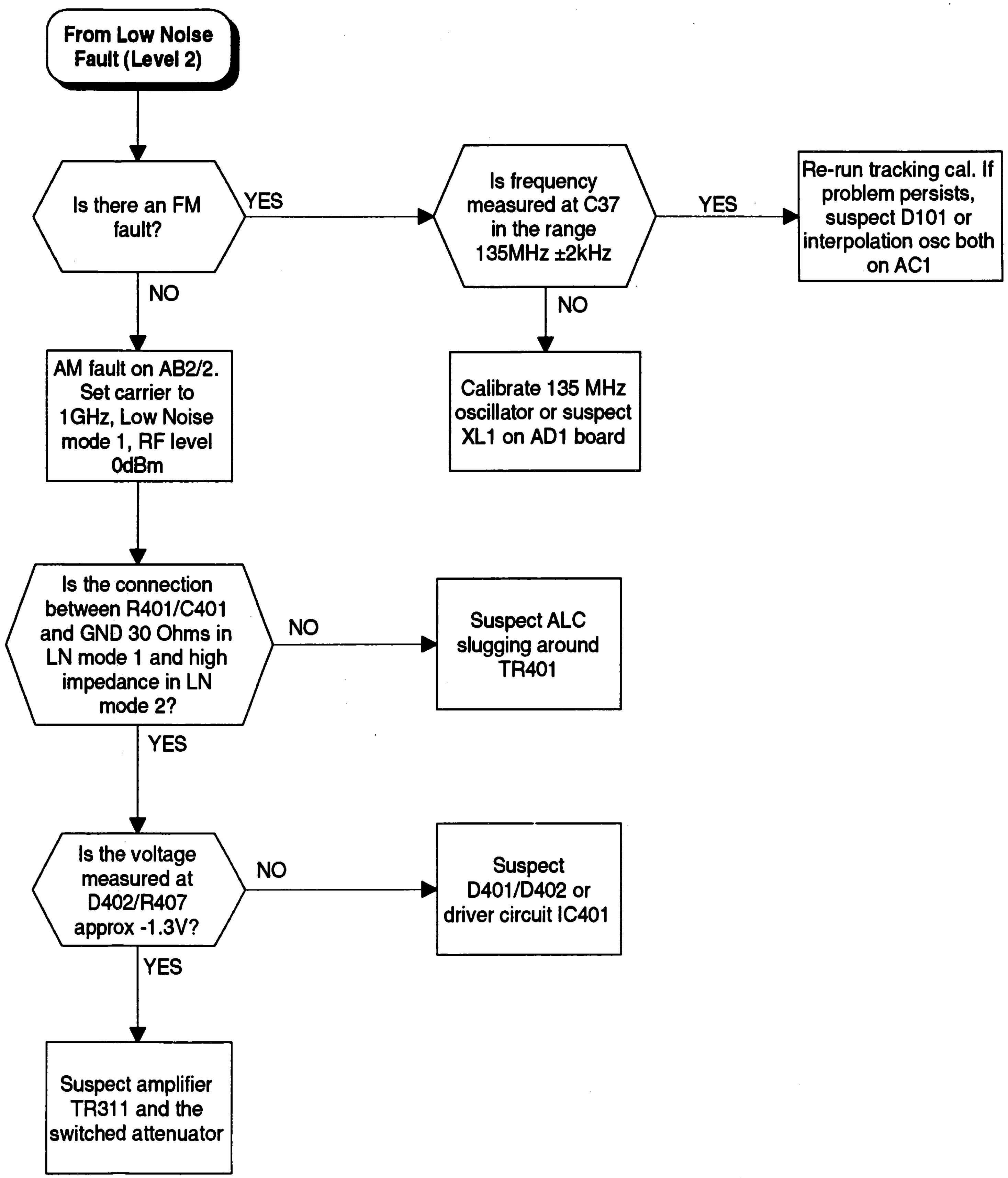
Harmonic Loop Fault
(Level 3)

Output Loop Fault (Level 3)



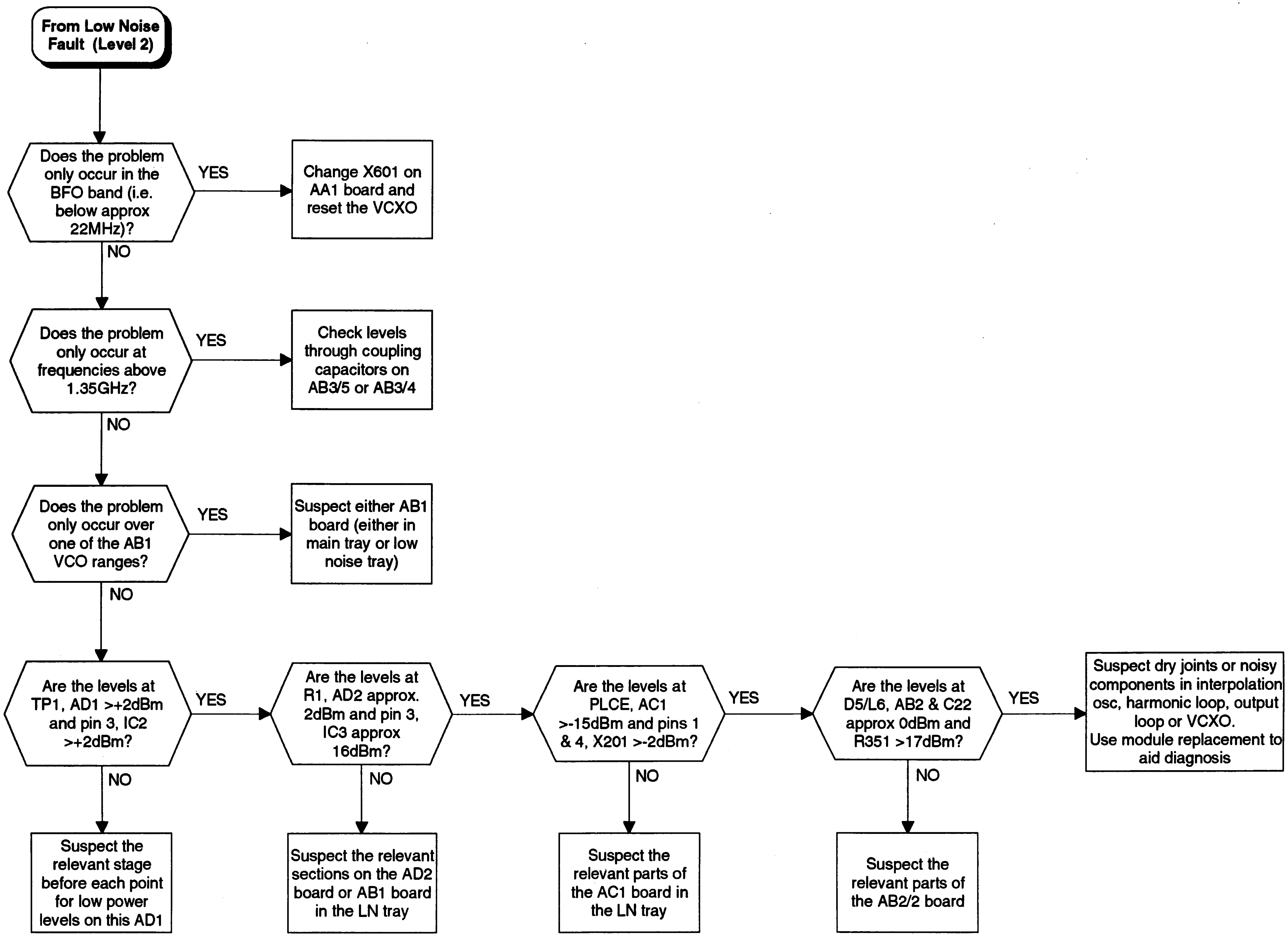
Output Loop Fault
(Level 3)

AM/FM Fault in LN mode (Level 3)



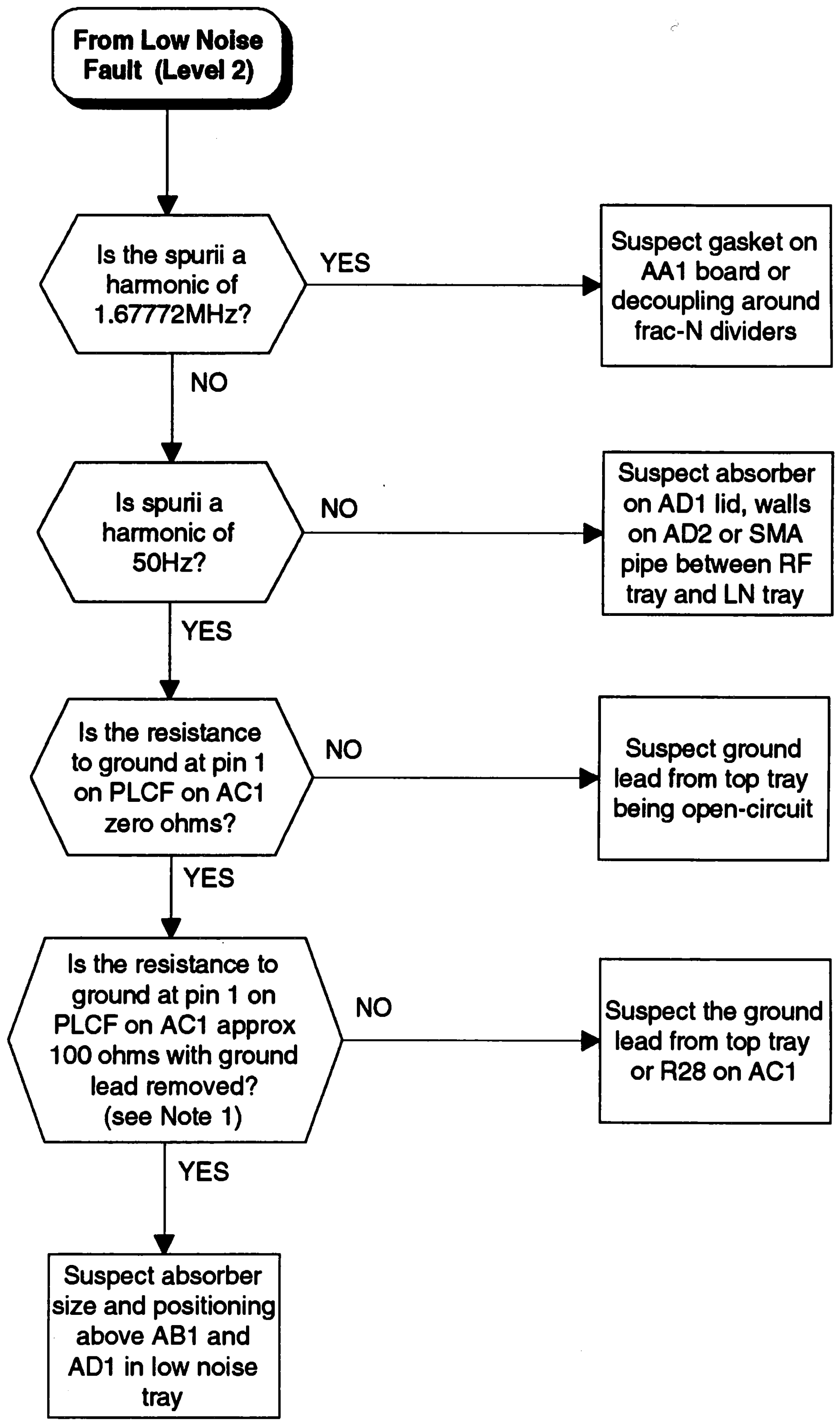
AM/FM Fault in LN mode (Level 3)

Phase Noise Fault in LN mode (Level 3)



Phase Noise Fault in LN Mode (Level 3)

Spurii in LN mode (Level 3)



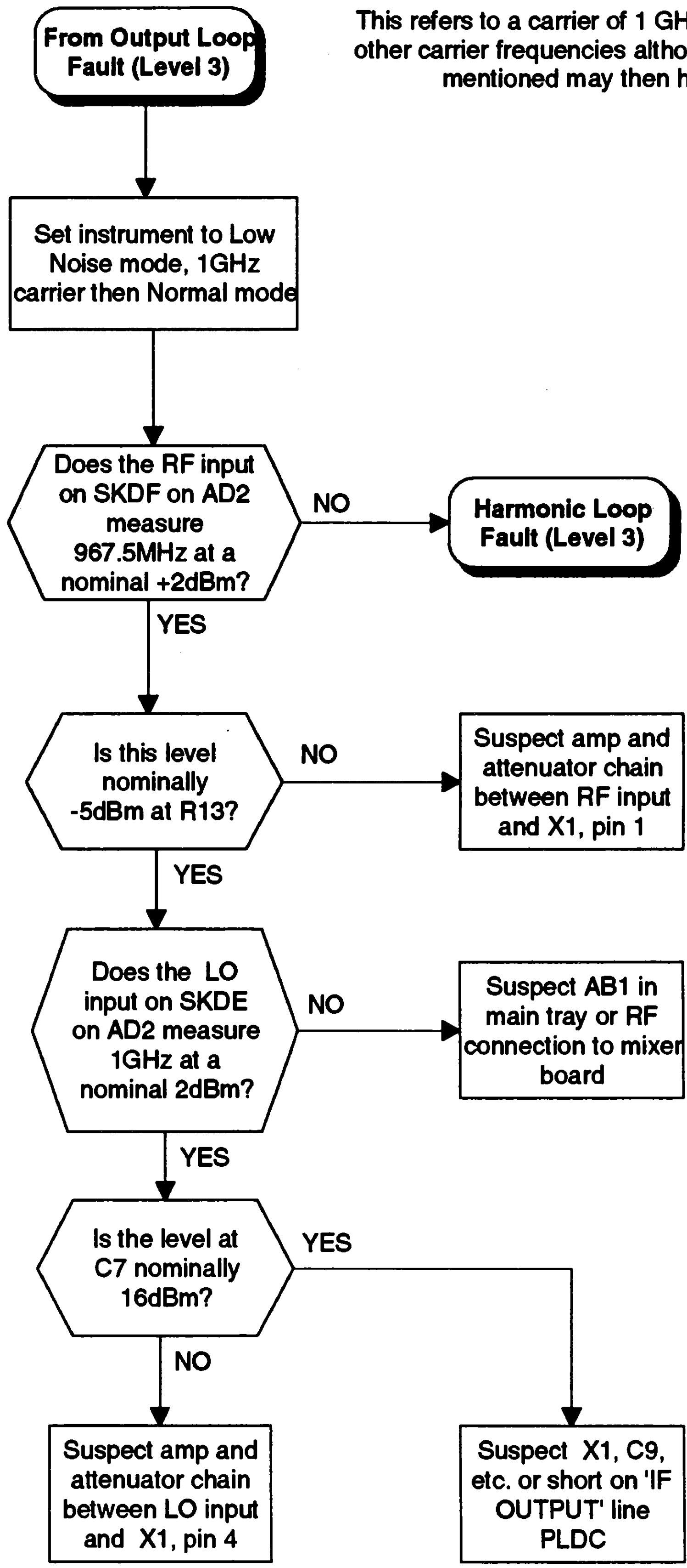
NOTE 1

Disconnect purple ground lead (early units) or the SMC co-axial lead number 2 (later units).

Spurii in LN mode
(Level 3)

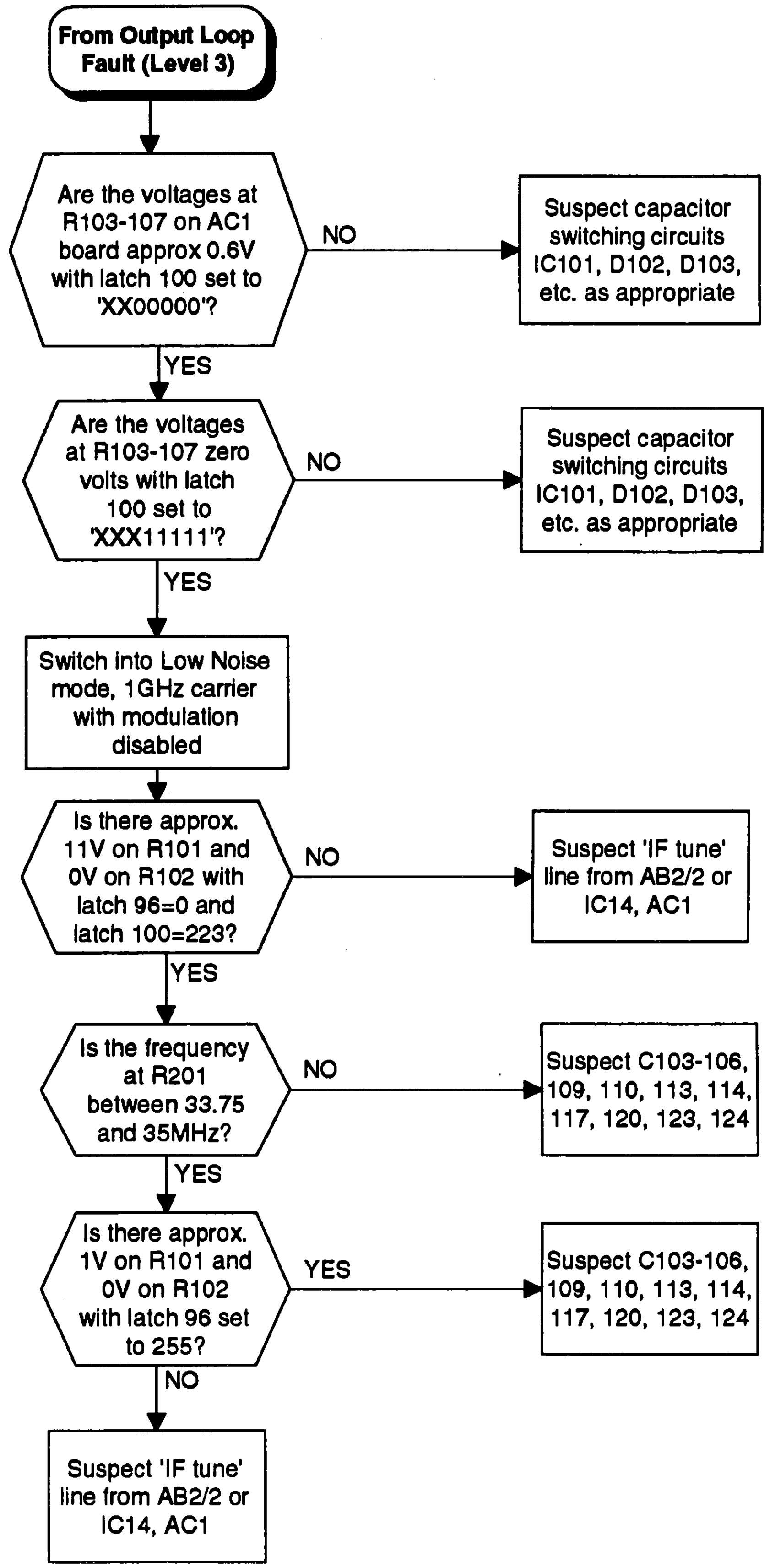
Mixer Fault (Level 4)

This refers to a carrier of 1 GHz but may be used at other carrier frequencies although some frequencies mentioned may then have changed.



Mixer Fault
(Level 4)

Interp Osc Fault (Level 4)



Interp Osc Fault
(Level 4)

RESIDUAL FM PROBLEMS

Residual FM problems are due to the spurious modulation of the VCOs on AB1. These VCOs are very sensitive with a varactor diode sensitivity of about 20 MHz/V, hence very low level signals may give rise to spurious modulation of the carrier frequency.

If the fault only arises on one of the VCOs on AB1, the fault can be located on that VCO on AB1. Monitoring the LF output using a modulation monitor (e.g. a Marconi Instrument's 2305) with a loudspeaker output will help locate faulty components within the oscillator.

If the residual FM only occurs when FM is enabled (even if off), the current sources on AA1 should be checked along with the bandwidth selection on AB2 (refer to the fault finding flow chart for Frequency Error Fault).

Residual FM which is dependant on the deviation set implies a fault either in the analogue path (check the FM drive and the FM signal passed to AB2), or the digital path (check the 1-bit ADC and synthesizer control lines).

Instability in the synthesizer loop may give rise to coherent spurious modulation. Monitoring the TUNE line for coherent signals will detect this. This form of residual FM may give rise to large excursions while the average frequency is maintained at that requested. Similar residual FM arises if the programmable divider control lines are not all operating correctly (refer to the fault finding flow chart for Frequency Error Fault).

LATCH DATA UTILITY

The Latch Data Utility provides a means of inspecting the data that has been sent to the various latches within the instrument and allows the user to send alternative data to specified latches. This is primarily intended as a diagnostic aid to assist in fault identification.

Operation

Operation is as follows:

Press **[UTIL]** , *[Utils. Menu 2]*. Press *[Latch Data]* to bring up the Latch Data Menu.

[Restore ON/OFF] selects Restoring or Non-Restoring Mode. Restoring/Non-Restoring Status is displayed on the upper right of the menu screen.

In Restoring mode latches whose values have been changed by the user are restored to their previous value when ANY latch is updated outside the utility (i.e. by changing any parameter). This allows the user to select for example the Sig Gen menu to inspect the settings and return to the Latch Data utility without restoring, but ensures that the instrument will operate in the correct manner after using this utility.

In Non-Restoring mode the modified latch will not be restored until that particular latch requires updating because of a changed parameter. The user should be aware that changing a parameter may affect latches associated with other functions, in particular changing the carrier frequency is likely to update latches associated with modulation and RF level as well as the ones associated with frequency.

[Latch Number] is a function to specify the index number of the latch to be inspected or set. Press numeric keys and terminate with [Enter]. Information about the selected latch is displayed on the screen, this includes the board designation, the IC designation and a brief description of the function of the latch e.g. Latch 0 - *AA1 IC402 12 bit FM CH1 DAC (low byte)*. Latch numbers are indicated in a box adjacent to the appropriate IC on the circuit diagrams.

[1,2,3,5 Latches] allows groups of consecutive latches to be treated as a single number. The 2 latches setting is useful for the various 12-bit DACS, the 3 latches setting for the 24-bit numbers used for the modulation oscillators and the 5 latches setting for the 40-bit numbers used in the fractional-N controller. Each press of this key advances the selection in the sequence 1-2-3-5-1... Information about the selected number of latches (starting at the chosen Latch Number) is displayed.

[Decimal/Binary] selects whether latch data is displayed or entered in decimal or binary format. Binary is only available when the number of latches selected is 1 or 2.

In Decimal Mode:-

[Latch Data] is a function key that allows decimal data to be written to the selected latch or latches. When this key is highlighted the user may enter a number in the ranges 0 to 255, 0 to 65535, 0 to 16777215 or 0 to 1099511627775 (for 1, 2, 3 or 5 latches) terminated with *[Enter]*, at which time the data is written to the latch.

In Binary Mode:-

[Cursor Left], [Cursor Right] moves the cursor (underscore) left or right along the 8 or 16 displayed bits.

[Toggle Bit] changes the state of the bit at the cursor from 1 to 0, or 0 to 1, the new 8- or 16-bit value is written to the latch/latches immediately.

[Next Latch], [Previous Latch] increments/decrements the Latch Number by 1, 2, 3 or 5 (as selected by *[1,2,3,5 Latches]*).

A list of hardware latches is given in Table 5-3-3.

Notes...

Certain latches are read-only, this is usually obvious from the latch description. If this is the case entered data has no effect and the old value is redisplayed.

Changes to the GPIB write latches (112 to 119) can only be restored by switching the instrument Off and On again, so should be used with caution.

The Nibble Bus Protocol Latch (111) is always restored.

TABLE 5-3-3 HARDWARE LATCHES

Latch	Board	IC	Bits	Description
00	AA1	IC402	12	FM CH1 DAC (low byte)
01	AA1	IC402	12	FM CH1 DAC (high nibble)
02	AA1	IC402	12	FM CH2 DAC (low byte)
03	AA1	IC402	12	FM CH1 DAC (high nibble)
04	AA1	IC319	12	SWEEP DAC (low byte)
05	AA1	IC319	12	SWEEP DAC (high nibble)
06	AA1	IC319	12	AUDIO DAC (low byte)
07	AA1	IC319	12	AUDIO DAC (high nibble)
08	AA1	IC507	8	FREQ. STD. FINE DAC
09	AA1	IC507	8	FREQ. STD. COARSE DAC
10	AA1	IC507	8	LAW CORR DAC (AM TROUGHS)
11	AA1	IC507	8	LAW CORR DAC (DC OFFSETS)
12	AA1	IC502	12	AM CH1 DAC (low byte)
13	AA1	IC502	12	AM CH1 DAC (high nibble)
14	AA1	IC502	12	AM CH2 DAC (low byte)
15	AA1	IC502	12	AM CH1 DAC (high nibble)
16	AA1	IC505	12	RFLEVEL DAC (low byte)
17	AA1	IC505	12	RFLEVEL DAC (high nibble)
18	AA1	IC505	12	DIR AIM DAC (low byte)
19	AA1	IC505	12	AIM DAC (high nibble)
23	AA1	IC509	8	Auxiliary control latch
24	AA1	IC412	8	FM controlling latch
25	AB2	IC009	8	RF controlling latch
26	AB2	IC007	8	RF controlling latch
27	AA1	IC303	8	AM controlling latch
28	AA1	IC302	8	FM controlling latch
29	AA1	IC304	8	AF controlling latch
30	AA1	IC510	8	Misc. controlling latch
96	AC1	IC007	8	LNB O/P loop presteer DAC
97	AC1	IC007	8	LNB Harmonic select DAC
98	AC1	IC007	8	LNB Harmonic select DAC
99	AC1	IC007	8	LNB Harmonic presteer DAC
100	AC1	IC008	8	LNB O/P loop control latch
101	AC1	IC009	8	LNB Harmonic control latch
132	AC1	IC010	8	LNB STATUS READ BACK

GPIB Operation

The following commands are used for the Latch Data Utility:

PORT

:ADDR — Set Latch Number
Data type: Decimal Numeric Program Data
Suffix: None

:ONE — Write 1 byte data to selected Latch - N
:TWO — Write 2 bytes to Selected Latches N, N+1
:THREE — Write 3 bytes to Selected Latches N,

:FIVE — Write 5 bytes to Selected Latches N...N+4
Data type: Decimal Numeric Program Data
Suffix: None

Examples:

```
PORT:ADDR 8;ONE 17
PORT:FIVE 1.2e10
```

PORT

:ONE?
:TWO?
:THREE?
:FIVE?

Prepares message containing information on Latch data in the format:

:PORT:ADDR <nr1>;<latches> <nr1>
where: <latches> is ONE or TWO or THREE or FIVE

Examples:

```
PORT:TWO?
:PORT:ADDR 24;TWO 3147
```

Chapter 6
REPLACEABLE PARTS

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LIST OF FIGURES

Fig. 6-1 Boards and units fitted to the 2040 series Signal Generators 6-3
Fig. 6-2 Miscellaneous mechanical parts 6-155

INTRODUCTION

Each sub-assembly or printed circuit board in this equipment has been allocated a reference designator code, e.g. A0, A1, A2 etc.

The complete component reference includes its reference designator as a prefix e.g. A2C1 (capacitor C1 on sub-assembly A2) but for convenience in the text and diagrams the prefix is omitted unless it is needed to avoid confusion. However when ordering replacements or in correspondence the complete component reference must be quoted.

PARTS LISTS

The replaceable parts lists for the 2040 series of signal generators are arranged in the following order:

(a) A top level parts list, A0, showing parts common to all instruments in the series.

(b) A list of parts, A1, specific to the low-noise tray.

(c) Three lists of parts, A2, used to make the three different versions of the instrument, i.e. the 2040, 2041 and 2042.

(d) Lists of parts, A3 to A6, providing the various options, e.g. A3 is the 2nd modulation oscillator option.

(e) Lists of components used on individual boards AA1/2 onwards in alphanumerical order.

BOARDS AND UNITS

To find out which boards and units are fitted in your instrument refer to Fig. 6-1 which shows the various versions and options for the 2040 Signal Generator series.

COMPONENT VALUES

One or more of the components fitted in the equipment may differ from those listed in this chapter for any of the following reasons:-

(a) Components indicated by a * have their values selected during test to achieve particular performance limits.

(b) Owing to supply difficulties, components of different value or type may be substituted provided the overall performance of the equipment is maintained.

(c) As part of a policy of continuous development, components may be changed in value or type to obtain detail improvements in performance.

When there is a difference between the component fitted and the one listed, always use as a replacement the same type and value as found in the equipment.

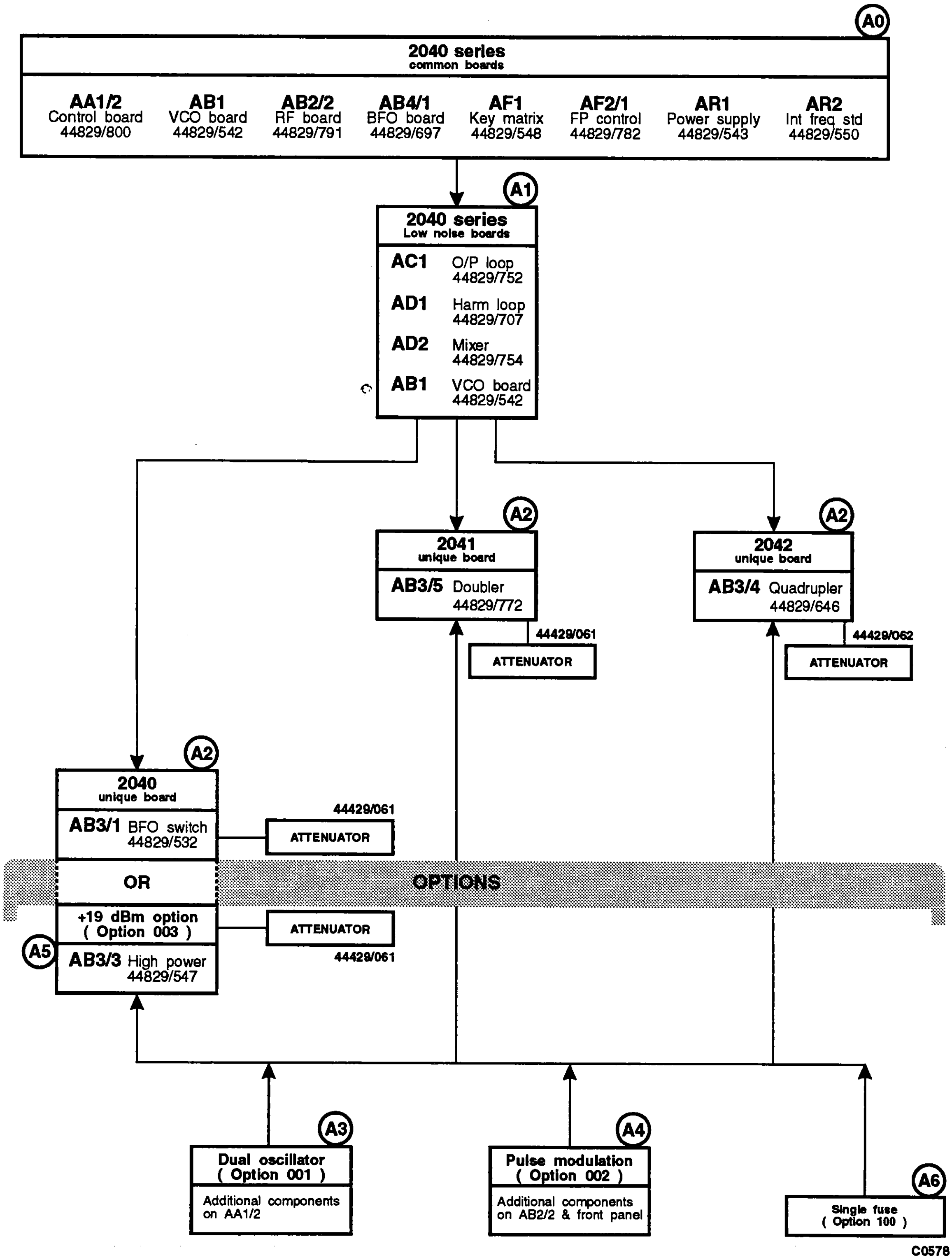

Fig. 6-1 Boards and units fitted to the 2040 series Signal Generators

ORDERING

When ordering replacements, address the order to our Service Division (address on rear cover) or nearest agent and specify the following for each component required:-

(1) Type# and serial number of equipment.

(2) Complete circuit reference.

(3) Description.

(4) Part number.

#As given on the serial number label at the rear of the equipment; if this is superseded by a model number label, quote the model number instead of the type number.

ELECTRICAL COMPONENTS

Cir. Ref.	MI part number	Description

A0 2040 series common parts

Issue 55

Refer to Fig. 7-1, 2040 Series Interconnections.

C31	26373/714	CAPACITOR FIXED CERAMIC 1nF -20/+80% 500V K2600 FEED-THROUGH, SCREW-IN MOUNTING, 2BA THREAD
C32	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP
C33	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP
C34	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP
D1	28359/191	DIODE RECTIFIER, BY261-200... BRIDGE, 200V 25A 2.3Vf @ 12A, ENCAPSULATED, 29mm SQUARE.
D2	28359/191	DIODE RECTIFIER, BY261-200... BRIDGE, 200V 25A 2.3Vf @ 12A, ENCAPSULATED, 29mm SQUARE.
PLAF	23444/302	CONNECTOR-RF ADAPTOR 50 OHMS, SMB MALE TO MALE,
PLAL	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS,
PLXH	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, BULKHEAD, SOLDER-BUCKET, FRONT MOUNTING, NICKEL
PLXJ	23444/512	CONNECTOR-RF SMA-TYPE FEMALE, JACK, 50 OHMS, BULKHEAD, SOLDER-BUCKET, REAR MOUNTING, STAINLESS
R1	24773/201	RESISTOR FIXED METAL-FILM 1R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
SKXL	23443/406	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, FLANGED, SOLDER-BUCKET, 17.5mm SQUARE FLANGE, **RAMP**
SKXM	23443/406	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, FLANGED, SOLDER-BUCKET, 17.5mm SQUARE FLANGE, **TRIGGER**
SKXP	23443/406	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, FLANGED, SOLDER-BUCKET, 17.5mm SQUARE FLANGE, **FREQ STD IN/OUT**
SKXK	23443/406	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, FLANGED, SOLDER-BUCKET, 17.5mm SQUARE FLANGE, **MARKER**

Cir. Ref.	MI part number	Description

A0 2040 series common parts (contd.)

23423/171	CONNECTOR MAINS, PLUG, 3 WAY, RF FILTER, DUAL (REPLACED BY 23423/174 WHEN OPTION 100 FITTED)
23443/442	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, **EXT MOD INPUT**
23443/449	CONNECTOR-RF BNC-TYPE FEMALE, RECEPTACLE, 50 OHMS, **LF OUTPUT**

43137/303	WIRE-LEAD-CRIMPED 4 WIRE, 7/0.2mm, CRIMP HOUSING 5 SHAFT ENCODER TO PLFL, AF2/X
43137/305	WIRE-LEAD-CRIMPED 5 WIRE, 7/0.2mm, CRIMP HOUSING PLRL, AR2 TO PLRK, AR1
43137/340	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE FLYING LEAD FROM PLBA, AB1
43137/345	WIRE-LEAD-CRIMPED 5 WIRE, 7/0.2mm, CRIMP HOUSING 9 PLAP, AA1/X TO VARIOUS
43137/348	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, BNC FEMALE WIDE BAND FM IN, SKXN TO PLAR, AA1/X
43137/375	WIRE-LEAD-CRIMPED 9 WIRE, 7 & 16/0.2mm, CRIMP PLRD, AR1 TO PLAA, AA1/X
43137/377	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE SKRM, AR2 TO SKXH, AA1/X
43137/379	RIBBON-LEAD 10 WAY, SOCKET 10 WAY, - SOCKET 10 PLFJ, AF2/X TO PLRG, AR1
43137/380	WIRE-LEAD-CRIMPED 9 WIRE, 7 & 16/0.2mm, CRIMP PLRJ, AR1 TO PLTD, AT11
43137/382	RIBBON-LEAD 10 WAY, SOCKET 10 WAY, - SOCKET 10 PLTC, AT11 TO PLFH, AF2/X
43137/519	WIRE-LEAD-CRIMPED 2 WIRE, 7/0.2mm, CRIMP HOUSING 3 BATTERY HOLDER TO PLRH, AR1
43137/989	WIRE-LEAD-CRIMPED 4 WIRE, 24/0.2mm, CRIMP HOUSING RECTIFIERS TO PLRA, AR1
43137/524	WIRE-LEAD-SOLDERED 4 WIRE, 16/0.2mm, ROCKER SWITCH
43137/531	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, CRIMP SKT EXT MOD 1, EXT MOD 2, LF OUTPUT TO PKAJ, AA1/X
43137/653	RIBBON-LEAD 34 WAY, SOCKET 34 WAY, KEY POS 16, - PLAN, AA1/X TO CAPACITOR FIELD
43137/654	RIBBON-LEAD 32 WAY, SOCKET 16 WAY, 2-OFF, 1-KEY PLBJ AND PLBK, AB2/X TO FILTER ASSEMBLY
43137/847	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE PULSE INPUT (WHEN OPTION 002 FITTED)

44990/971	FILTER ASSY BETWEEN PLAN, AA1/2 AND PLBJ, PLBK ON AB2/2

23411/066	FUSE TIME-LAG 1A RATING, 20mm LONG x 5mm DIA 220 - 240 V

Cir. Ref.	MI part number	Description

A0 2040 series common parts (contd.)

Cir. Ref.	MI part number	Description
	23411/072	FUSE TIME-LAG 1.6A RATING, 20mm LONG x 5mm DIA 110 - 120 V
	23467/260	MODULE OPTO SHAFT ENCODER, 64 CYCLES/REV, 5V 26mA
X13	23711/106	BATTERY PRIMARY 1 CELL, 3.5V LITHIUM-THIONYLCHLR,
X14	23711/194	BATTERY HOLDER 1 CELL, SIZE-AA, PANEL MOUNTING,
	28624/307	DISPLAY LIQUID CRYSTAL, BLUE, 400 x 200 DOT
	43137/520	FAN AXIAL-FLOW, BRUSHLESS, ASSEMBLY, 24V DC, WITH
	43137/608	TRANSFORMER MAINS, TOROIDAL TYPE, 2x 120V PRIMARY,
	44829/542	PCB ASSEMBLY MIXED TECHNOLOGY, AB1, VCO
	44829/543	PCB ASSEMBLY CONVENTIONAL, AR1, PSU
	44829/800	PCB ASSEMBLY MIXED TECHNOLOGY, AA1/2, CONTROL
	44829/791	PCB ASSEMBLY MIXED TECHNOLOGY, AB2/2, RF
	44829/548	PCB ASSEMBLY CONVENTIONAL, AF1, KEY MATRIX
	44829/782	PCB ASSEMBLY MIXED TECHNOLOGY, AF2/1, FRONT PANEL
	44829/550	PCB ASSEMBLY CONVENTIONAL, AR2, INT FREQ STANDARD
	44829/697	PCB ASSEMBLY CONVENTIONAL, AB4/1, BFO

A1 Low noise tray specific components

Issue 17

Cir. Ref.	MI part number	Description
	43137/833	WIRE-LEAD-CRIMPED 5 WIRE, 7/0.2mm, CRIMP HOUSING TO AR1, PLRE
	43137/834	RIBBON-LEAD 10 WAY, SOCKET 10 WAY, - UNTERMINATED, TO AF2/1, PLFP
	43137/835	WIRE-LEAD-CRIMPED 10 WIRE, 7/0.2mm, CRIMP HOUSING PLCA TO SIDEWALL
	43137/837	RF-CABLE SEMI-RIGID UT85, 50 OHMS, SMA MALE RF TRAY, SKXE TO LN TRAY, SKDE
	43137/865	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMA MALE FROM SKXE, RF TRAY TO PLBB, AB1 IN RF TRAY
	43137/867	WIRE-LEAD-CRIMPED 5 WIRE, 7/0.2mm, CRIMP HOUSING 3 AC1, PLCD, PLCE, PLCF TO SIDEWALL AND FLOOR
	43137/868	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, UNTERMINATED VCO INPUT AB1 TO AD1
	43137/870	WIRE-LEAD-CRIMPED 1 WIRE, 7/0.2mm, CRIMP HOUSING 3 AC1, PLCG TO FLOOR
	43137/983	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, - SOCKET 20 AC1, PLCB TO PLDB, AD1
	43138/096	RF-CABLE FLEXIBLE RD316, 50 OHMS, SMC FEMALE ELBOW LN TRAY TO RF TRAY
	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, RIGHT PLRE
	23443/843	CONNECTOR-RF ADAPTOR 50 OHMS, SMA FEMALE TO FEMALE SKXE ON RF TRAY
	23444/382	CONNECTOR-RF SMC-TYPE MALE, RECEPTACLE, 50 OHMS, LN TRAY ON SIDEWALL, 3 OFF TO RF TRAY, 3 OFF
	23444/512	CONNECTOR-RF SMA-TYPE FEMALE, JACK, 50 OHMS, FROM SKDE
	26373/714	CAPACITOR FIXED CERAMIC 1nF -20/+80% 500V K2600 FEED-THROUGH, 9 IN TRAY SIDE WALL, 1 IN TRAY FLOOR
	26373/855	CAPACITOR FIXED CERAMIC 56pF +/-20% 500V N1500 FEED-THROUGH, IN TRAY FLOOR
	44829/542	PCB ASSEMBLY MIXED TECHNOLOGY, AB1, VCO
	44829/707	PCB ASSEMBLY MIXED TECHNOLOGY, AD1, HARMONIC LOOP
	44829/752	PCB ASSEMBLY MIXED TECHNOLOGY, AC1, OUTPUT LOOP
	44829/754	PCB ASSEMBLY SURFACE MOUNT, AD2, MIXER

Cir. Ref.	MI part number	Description

A2 2040 version additional components — Issue 3

	43137/634	RF-CABLE SEMI-RIGID UT141, 50 OHMS, SMA MALE PLXJ ON RF TRAY TO PLTB ON ATTENUATOR
	44429/061	ATTENUATOR ASSY - SEVEN STAGE EDGELINE, AT10
	44829/532	PCB ASSEMBLY SURFACE MOUNT, AB3/1, BFO SWITCH AND RPP

A2 2041 version additional components — Issue 5

	43137/634	RF-CABLE SEMI-RIGID UT141, 50 OHMS, SMA MALE PLXJ ON RF TRAY TO PLTB ON ATTENUATOR
	44429/061	ATTENUATOR ASSY - SEVEN STAGE EDGELINE, AT10
	44829/772	PCB ASSEMBLY SURFACE MOUNT, AB3/5, FREQUENCY DOUBLER

A2 2042 version additional components — Issue 5

	43137/879	RF OUTPUT RF-CABLE SEMI-RIGID UT85, 50 OHMS, SMA FEMALE TO PLXJ
	43137/974	RF-CABLE SEMI-RIGID UT141, 50 OHMS, SMA MALE PLXJ ON RF TRAY TO PLTB ON ATTENUATOR
	43137/848	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 16, - PLBL ON AB2/2 TO FILTER WALL
	44429/062	ATTENUATOR ASSY 7-STAGE EDGELINE, 2042, AT10
	44829/646	PCB ASSEMBLY SURFACE MOUNT, AB3/4, QUADRUPLER

Cir. Ref.	MI part number	Description

A3 Option 001, 2nd mod osc

Issue 1

IC209	28469/508	IC DIGITAL ARRAY-LOGIC L5A0586.. AUDIO SYNTHESIZER TO MI CUSTOM SPEC, CMOS, 68 PIN, PLCC.
IC212	28461/981	IC ANALOGUE D/A-CONVERTER PCM54... 16 BIT, BIPOLAR, MONOLITHIC, 28 PIN, DUAL-IN-LINE.
IC213	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC214	28461/424	IC ANALOGUE SAMPLE/HOLD AMP HA5330... 2 INPUT, SINGLE, 20V PRECISION, VERY HIGH SPEED,

A4 Option 002, pulse mod

Issue 4

C303	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C310	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
R359	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R360	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
	43137/848	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 16, - PLBL ON AB2/2 TO FILTER WALL
	46884/600	PULSE SCREEN ASSEMBLY
	23444/331	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PLXA TO PLBP
	43137/847	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE PULSE INPUT

Cir. Ref.	MI part number	Description

A5 Option 003, 19 dBm RF output

Issue 2

43137/634	RF-CABLE SEMI-RIGID UT141, 50 OHMS, SMA MALE PLXJ ON RF TRAY TO PLTB ON ATTENUATOR
44429/061	ATTENUATOR ASSY - SEVEN STAGE EDGELINE.
44829/547	PCB ASSEMBLY SURFACE MOUNT, AB3/3, HIGH POWER AMP

A6 Option 100, single fuse

Issue 3

23423/174	44991/001 CONNECTOR MAINS, PLUG, 3 WAY, RF FILTER, SINGLE (FITTED IN PLACE OF 23423/171 ON UNIT A0)

Cir. Ref.	MI part number	Description

AA1/2 Control board

Issue 10

When ordering, prefix circuit reference with AA1/2

Cir. Ref.	MI part number	Description
	44829-800M	Complete unit
C101	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C102	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C103	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C104	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C105	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C106	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C107	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C108	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C109	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C110	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C111	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C112	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C113	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C114	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C115	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C116	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C117	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C118	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C119	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C120	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C121	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C122	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C123	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C124	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C125	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C126	26383/007	CAPACITOR FIXED CERAMIC 22nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C127	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C130	26486/219	CAPACITOR FIXED TANTALUM 4.7uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C131	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C132	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C133	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C134	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C135	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C136	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C137	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C138	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C201	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C204	26538/827	CAPACITOR FIXED POLYSTYRENE 220pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C205	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C206	26538/530	CAPACITOR FIXED POLYSTYRENE 33pF +/-1pF 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C207	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C208	26538/531	CAPACITOR FIXED POLYSTYRENE 62pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C209	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C210	26538/530	CAPACITOR FIXED POLYSTYRENE 33pF +/-1pF 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C211	26538/827	CAPACITOR FIXED POLYSTYRENE 220pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C212	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C215	26538/827	CAPACITOR FIXED POLYSTYRENE 220pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C216	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C217	26538/530	CAPACITOR FIXED POLYSTYRENE 33pF +/-1pF 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
C218	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C219	26538/531	CAPACITOR FIXED POLYSTYRENE 62pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C220	26538/635	CAPACITOR FIXED POLYSTYRENE 470pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C221	26538/530	CAPACITOR FIXED POLYSTYRENE 33pF +/-1pF 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C222	26538/827	CAPACITOR FIXED POLYSTYRENE 220pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C223	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C224	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C226	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C227	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C228	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C230	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C231	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C232	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C233	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C234	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C235	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C236	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C237	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C238	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C239	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C240	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C241	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C242	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C243	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C244	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C301	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C302	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C304	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C305	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C306	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C307	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C308	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C310	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C311	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C312	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C313	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C314	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C315	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C316	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C317	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C318	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C319	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C320	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C321	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C322	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C323	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C324	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C325	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C326	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C327	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C328	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C329	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C330	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C331	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C332	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C333	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C334	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C335	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C336	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C337	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C338	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C339	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C340	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C341	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C342	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C343	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C344	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C345	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C346	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C347	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C348	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C349	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C350	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C351	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C352	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C353	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C354	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C355	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
C356	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C357	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C358	26582/430	CAPACITOR FIXED POLYESTER 220nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C359	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C360	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C363	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C364	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C401	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C402	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C403	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C404	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C405	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C406	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C407	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C408	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C409	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C410	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C411	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C412	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C413	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C414	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C415	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C416	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C417	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C420	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C421	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
C422	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C423	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C428	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C429	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C430	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C431	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C432	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C433	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C434	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C435	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C436	26582/437	CAPACITOR FIXED POLYESTER 150nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C437	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C438	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C439	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C440	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C441	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C442	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C443	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C445	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C446	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C447	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C448	26582/438	CAPACITOR FIXED POLYESTER 330nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C501	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C502	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C503	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C504	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C505	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C506	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C507	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C508	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C509	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C510	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C511	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C512	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C513	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C514	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C515	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C516	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C517	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C518	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C519	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C520	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C521	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C522	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C523	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C524	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C525	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C526	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C528	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C529	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C530	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C531	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C532	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C533	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C534	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C537	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C538	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C539	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C540	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C541	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C542	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C543	26582/437	CAPACITOR FIXED POLYESTER 150nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C544	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C545	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C546	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C547	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C548	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C549	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C550	26383/590	CAPACITOR FIXED CERAMIC 3.9nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C552	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C553	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C554	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C555	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C556	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C557	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C558	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C559	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C560	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
C561	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C562	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C563	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C564	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C565	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C601	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C602	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C603	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C604	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C605	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C606	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C607	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C608	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C609	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C610	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C611	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C612	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C613	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C615	26582/436	CAPACITOR FIXED POLYESTER 68nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C616	26582/436	CAPACITOR FIXED POLYESTER 68nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C617	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C618	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C619	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C620	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C621	26343/484	CAPACITOR FIXED CERAMIC 2.7pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C622	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
C623	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C624	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C625	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C626	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C627	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C628	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C629	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C630	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C631	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C632	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C633	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C634	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C635	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C636	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C637	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C638	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C639	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C640	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C641	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C643	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C644	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C645	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C646	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C647	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C649	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C650	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C651	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C652	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C653	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C654	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C655	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C656	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C657	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C658	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C659	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C660	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C661	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C662	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C663	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C664	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C665	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C666	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C667	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C668	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C669	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C670	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C671	26421/109	CAPACITOR FIXED ALUMINIUM 3.3uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C672	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C673	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C674	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C675	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C676	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

C677	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C678	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C679	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C680	26386/803	CAPACITOR FIXED CERAMIC 1.8pF +/-0.5pF 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C701	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C702	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C703	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C704	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C705	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C706	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C707	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C708	26333/229	CAPACITOR FIXED CERAMIC 50pF +/-10% 300V N1500 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
C709	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.9mm MOUNTING
D101	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D301	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D302	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D303	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D304	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D305	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D306	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D307	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D308	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D309	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D310	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

D311	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D312	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D313	28371/844	DIODE ZENER, BZX79-C10... 500mW 10V 5% 250mA AXIAL, DO-35, (TAPED).
D314	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D315	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D316	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D317	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D318	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D319	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D320	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D321	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D322	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D323	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D324	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D401	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D402	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D403	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D404	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D405	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D406	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D407	28371/224	DIODE ZENER, BZX79-C3V6... 500mW 3.6V 5% 250mA AXIAL, DO-35, (TAPED).
D408	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D409	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D502	28371/494	DIODE VOLTAGE REFERENCE, 1N825... 250mW 6.2V 5% 50mA 20ppm/DEG.C, AXIAL, DO-35, (TAPED).
D503	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D504	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

D505	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D506	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D507	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D508	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D509	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D510	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D511	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D601	28381/101	DIODE VARIABLE CAPACITNCE, BB405B... 30V 20mA 11.5pF @ 3V, CAPAC RATIO 4.8 MIN, AXIAL, DO-34,
D602	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D603	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D604	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D605	28371/401	DIODE ZENER, BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D606	28371/401	DIODE ZENER, BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D613	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D614	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D615	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D616	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D617	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

- Note that programmed EPROMs are to be found at the end of this IC section -

IC101	28467/041	IC MICRO PROCESSOR, 8 BIT, 80188... 8MHz, HIGH INTEGRATION, 68 PIN, JEDEC-TYPE-A-LCC.
	28488/484	HT/SINK FOR IC101 HEATSINK EXTRUSION 30.5mm LONG, 28mm WIDE,
IC102	28462/422	IC DIGITAL LATCH 74HCT573.. OCTAL, TRI-STATE, NON-INVERTING, TRANSPARENT, D-TYPE,
IC103	28462/422	IC DIGITAL LATCH 74HCT573.. OCTAL, TRI-STATE, NON-INVERTING, TRANSPARENT, D-TYPE,
IC104	28469/128	IC DIGITAL BUFFER/LINE-DRIVER 74HC244.. 1 INPUT, OCTAL, NON-INVERTING, TRI-STATE BUS, CMOS-H/SPEED,

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

IC105	28462/139	IC DIGITAL FLIP-FLOP/D-TYPE 74HCT377... OCTAL, DATA-ENABLE, POS EDGE TRIGGER, CMOS-H/SPEED+TTL,
IC106	28461/689	IC DIGITAL COMPARATOR 74HC85... 4 BIT, MAGNITUDE, CMOS-H/SPEED, 16 PIN, DUAL-IN-LINE.
IC107	28462/139	IC DIGITAL FLIP-FLOP/D-TYPE 74HCT377... OCTAL, DATA-ENABLE, POS EDGE TRIGGER, CMOS-H/SPEED+TTL,
IC108	28461/672	IC DIGITAL COMPARATOR 74HC688... SINGLE, 2 x 8 BIT WORDS, CMOS-H/SPEED, 20 PIN, DUAL-IN-LINE.
IC110	28469/143	IC DIGITAL BUFFER/LINE-DRIVER 74HCT541.. OCTAL, TRI-STATE, NON-INVERTING, CMOS-H/SPEED+TTL, 20
IC113	28467/025	IC MICRO CONTROLLER, 7210... INTERFACE BUS TALK/LISTEN/CONTROL, NMOS, 40 PIN, DUAL-IN-LINE.
IC115	28469/114	IC DIGITAL TRANSCEIVER 75160... OCTAL, GPIB DATA, TTL-SCHOTTKY-L/PWR, 20 PIN, DUAL-IN-LINE.
IC116	28469/115	IC DIGITAL TRANSCEIVER 75161... OCTAL, GPIB-CONTROLLER, TTL-SCHOTTKY-L/PWR, 20 PIN,
IC117	28462/422	IC DIGITAL LATCH 74HCT573.. OCTAL, TRI-STATE, NON-INVERTING, TRANSPARENT, D-TYPE,
IC118	28469/141	IC DIGITAL TRANSCEIVER 74HCT245.. OCTAL, TRI-STATE, NON-INVERTING, BI-DIRECTIONAL,
IC119	28466/113	IC DIGITAL OR-GATE 74HCT32.. 2 INPUT, QUAD, CMOS-H/SPEED+TTL, 14 PIN, DUAL-IN-LINE.
IC120	28469/323	IC MICRO STATIC-RAM, 32K x 8 BIT, 43256-12.. 120nS ACCESS TIME, +5V, NO CLOCK OR TIMING STROBE
IC121	28466/020	IC DIGITAL AND-GATE 74HC08.. 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC122	28469/137	IC DIGITAL INVERTER 74HC04.. HEX, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC123	28465/041	IC DIGITAL DECODER/DEMULTIPLEX 74HC139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC124	28466/365	IC DIGITAL NAND-GATE 74HC00... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC125	28467/546	IC DIGITAL SHIFT-REGISTER 74HCT165... 8 BIT, PARALLEL-IN SERIAL-OUT, CMOS-H/SPEED+TTL, 16 PIN,
IC126	28467/547	IC DIGITAL SHIFT-REGISTER 74HC595... 8 BIT, SINGLE, TRI-STATE, CMOS-H/SPEED, 16 PIN,
IC127	28466/113	IC DIGITAL OR-GATE 74HCT32.. 2 INPUT, QUAD, CMOS-H/SPEED+TTL, 14 PIN, DUAL-IN-LINE.
IC129	28469/176	IC DIGITAL INVERTER 74LS14.. HEX, SCHMITT-TRIGGER OPERATION, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC201	28469/508	IC DIGITAL ARRAY-LOGIC L5A0586.. AUDIO SYNTHESIZER TO MI CUSTOM SPEC, CMOS, 68 PIN, PLCC.
IC203	28462/138	IC DIGITAL FLIP-FLOP/D-TYPE 74HC574.. OCTAL, TRI-STATE, NON-INVERTING, POS EDGE TRIGGER,
IC204	28462/138	IC DIGITAL FLIP-FLOP/D-TYPE 74HC574.. OCTAL, TRI-STATE, NON-INVERTING, POS EDGE TRIGGER,
IC205	28461/981	IC ANALOGUE D/A-CONVERTER PCM54... 16 BIT, BIPOLAR, MONOLITHIC, 28 PIN, DUAL-IN-LINE.
IC206	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC207	28461/424	IC ANALOGUE SAMPLE/HOLD AMP HA5330... 2 INPUT, SINGLE, 20V PRECISION, VERY HIGH SPEED,

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

IC208	28469/739	IC ANALOGUE MULTIPLEXER 74HC4053.. TRIPLE, 2 CHANNEL, 1 SELECT INPUT PLUS ENABLE, CMOS-H/SPEED,
IC209	28469/508	IC DIGITAL ARRAY-LOGIC L5A0586.. AUDIO SYNTHESIZER TO MI CUSTOM SPEC, CMOS, 68 PIN, PLCC (ONLY OF OPTION 001 FITTED)
IC210	28462/138	IC DIGITAL FLIP-FLOP/D-TYPE 74HC574.. OCTAL, TRI-STATE, NON-INVERTING, POS EDGE TRIGGER,
IC211	28462/138	IC DIGITAL FLIP-FLOP/D-TYPE 74HC574.. OCTAL, TRI-STATE, NON-INVERTING, POS EDGE TRIGGER,
IC212	28461/981	IC ANALOGUE D/A-CONVERTER PCM54... 16 BIT, BIPOLAR, MONOLITHIC, 28 PIN, DUAL-IN-LINE (ONLY OF OPTION 001 FITTED)
IC213	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE (ONLY OF OPTION 001 FITTED)
IC214	28461/424	IC ANALOGUE SAMPLE/HOLD AMP HA5330... 2 INPUT, (ONLY OF OPTION 001 FITTED)
IC301	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC302	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC303	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC304	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC305	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC306	28461/423	IC ANALOGUE OPERATIONAL AMP HA5147... 2 INPUT, SINGLE, 22V ULTRA LOW NOISE, HIGH SLEW RATE,
IC307	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC308	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC309	28461/423	IC ANALOGUE OPERATIONAL AMP HA5147... 2 INPUT, SINGLE, 22V ULTRA LOW NOISE, HIGH SLEW RATE,
IC310	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC311	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC312	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC313	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC314	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC315	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC316	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC317	28461/407	IC ANALOGUE OPERATIONAL AMP AD712JN.. DUAL, 15V PWR BANDWDTH 200kHz, SLEW-RATE 16V/uS, I/P OFFSET
IC318	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

IC319	28461/976	IC ANALOGUE D/A-CONVERTER 7537.. DUAL, 15V 12BIT, 8+4 LOADING, REL-ACC +/-1/2 LSB, CMOS, 24 PIN,
IC320	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC321	28469/737	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC322	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC323	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC324	28461/494	IC ANALOGUE BUFFER-AMPLIFIER LT1010... 18V 200MHz BANDWIDTH, SLEW RATE 75V/uS, BIPOLAR, 5 PIN,
IC325	28461/736	IC ANALOGUE VOLTAGE-REGULATOR 79L05AC... 5V 100mA NEGATIVE, LINEAR, MONOLITHIC, 3 PIN, TO-92.
IC401	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC402	28461/976	IC ANALOGUE D/A-CONVERTER 7537.. DUAL, 15V 12BIT, 8+4 LOADING, REL-ACC +/-1/2 LSB, CMOS, 24 PIN,
IC403	28461/442	IC ANALOGUE OPERATIONAL AMP AD845-KN.. SINGLE, 18V SLEW RATE 100V/uS, HIGH SPEED, PRECISION, JFET, 8
IC404	28461/442	IC ANALOGUE OPERATIONAL AMP AD845-KN.. SINGLE, 18V SLEW RATE 100V/uS, HIGH SPEED, PRECISION, JFET, 8
IC405	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC406	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC407	28461/399	IC ANALOGUE OPERATIONAL AMP OP42FZ... HIGH SPEED, FAST SETTLING 1uS, 8 PIN, DUAL-IN-LINE.
IC408	28461/494	IC ANALOGUE BUFFER-AMPLIFIER LT1010... 18V 200MHz BANDWIDTH, SLEW RATE 75V/uS, BIPOLAR, 5 PIN,
IC409	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC411	28469/447	IC DIGITAL DRIVER ULN2803... 8 DARLINGTON ARRAYS, 50V, 500mA, TTL OR CMOS, 18 PIN, DUAL-IN-LINE.
IC412	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC413	28469/132	IC DIGITAL BUFFER/LINE-DRIVER 74HC541.. OCTAL, TRI-STATE, NON-INVERTING, CMOS-H/SPEED, 20 PIN,
IC414	28466/227	IC DIGITAL NOR-GATE 74HC02... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC501	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC502	28461/976	IC ANALOGUE D/A-CONVERTER 7537.. DUAL, 15V 12BIT, 8+4 LOADING, REL-ACC +/-1/2 LSB, CMOS, 24 PIN,
IC503	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC504	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC505	28461/976	IC ANALOGUE D/A-CONVERTER 7537.. DUAL, 15V 12BIT, 8+4 LOADING, REL-ACC +/-1/2 LSB, CMOS, 24 PIN,
IC506	28461/407	IC ANALOGUE OPERATIONAL AMP AD712JN.. DUAL, 15V PWR BANDWDTH 200kHz, SLEW-RATE 16V/uS, I/P OFFSET

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
IC507	28461/984	IC ANALOGUE D/A-CONVERTER AD7225... QUAD, 8 BIT, SEPERATE REFERENCE INPUTS, CMOS, 24 PIN,
IC508	28452/869	TRANSISTOR NPN BIPOLAR LM394CN.. MONOLITHIC PAIR, 20V 200MHz 500mW 20mA MATCHED, PLUS BASE/EMITTER
IC509	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC510	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC511	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC512	28464/127	IC DIGITAL COUNTER 74LS390.. 4 BIT, DUAL, DECADE RIPPLE, TTL-SCHOTTKY-L/PWR, 16 PIN, DUAL-IN-LINE.
IC513	28469/719	IC DIGITAL MULTIPLEXER 74LS253... 4 INPUT, DUAL, TRI-STATE, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC514	28469/031	IC DIGITAL BUFFER/LINE-DRIVER 74HC126... QUAD, TRI-STATE, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC515	28464/034	IC DIGITAL DIVIDER SP8789DP... DIVIDE BY 20/21, 225MHz, TWO MODULUS, ECL, 8 PIN, DUAL-IN-LINE.
IC516	44535/191	IC PROGRAMMED PAL, SET OF 1, 2031, 104.8576MHz DIVIDER.
IC520	28462/611	IC DIGITAL FLIP-FLOP/D-TYPE 74LS74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC521	28469/205	IC DIGITAL NAND-GATE 74LS132.. 2 INPUT, QUAD, SCHMITT TRIGGER, TTL-SCHOTTKY-L/PWR, 14 PIN,
IC522	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC523	28461/757	IC ANALOGUE VOLTAGE-REFERENCE AD586... 5V PRECISION, 25ppm/DEG.C, 8 PIN, DUAL-IN-LINE.
IC601	28464/015	IC DIGITAL DIVIDER SP8647B... DIVIDE BY 10/11, 200MHZ, ECL, 16 PIN, DUAL-IN-LINE.
IC602	28466/214	IC DIGITAL NOR-GATE 74LS02.. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC603	28464/125	IC DIGITAL COUNTER 74LS92.. 4 BIT, RIPPLE, DIVIDE BY 12, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC604	28466/012	IC DIGITAL AND-GATE 74LS08.. 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC605	28462/113	IC DIGITAL FLIP-FLOP/D-TYPE 74F74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC606	28466/345	IC DIGITAL NAND-GATE 74LS00... 2 INPUT, QUAD, TTL-SCHOTTKY-L/PWR, 14 PIN, DUAL-IN-LINE.
IC607	28462/113	IC DIGITAL FLIP-FLOP/D-TYPE 74F74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR,
IC608	28466/219	IC DIGITAL NOR-GATE 10102... 2 INPUT, QUAD, ECL, 16 PIN, DUAL-IN-LINE.
IC609	28464/159	IC DIGITAL COUNTER MC10H016... 4 BIT, BINARY, ECL, 16 PIN, DUAL-IN-LINE.
IC610	28464/159	IC DIGITAL COUNTER MC10H016... 4 BIT, BINARY, ECL, 16 PIN, DUAL-IN-LINE.
IC611	28464/159	IC DIGITAL COUNTER MC10H016... 4 BIT, BINARY, ECL, 16 PIN, DUAL-IN-LINE.
IC612	28464/035	IC DIGITAL DIVIDER SP8743BDG... DIVIDE BY 8/9, 500MHz ECL, 16 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

IC613	28469/521	IC DIGITAL DIVIDER SP4904.... DIVIDE BY 4, 2.54GHz, PRESCALER, ECL, 8 PIN, DUAL-IN-LINE.
IC614	28469/507	IC DIGITAL ARRAY-LOGIC L5A0704... FRACTIONAL N CONTROL CHIP TO MI CUSTOM, CMOS, 68 PIN, PLCC.
IC615	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC616	28462/622	IC DIGITAL FLIP-FLOP/D-TYPE 74HC74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR, CMOS-H/SPEED,
IC617	28466/020	IC DIGITAL AND-GATE 74HC08.. 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC618	28466/227	IC DIGITAL NOR-GATE 74HC02... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.

IC109	44533/366	IC PROGRAMMED EPROM (A), 1 OF SET OF 4
IC111	44533/366	IC PROGRAMMED EPROM (B), 1 OF SET OF 4
IC112	44533/366	IC PROGRAMMED EPROM (C), 1 OF SET OF 4
IC114	44533/367	INITIALISED EEPROM
IC202	44533/368	WAVEFORM GENERATOR

L101	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L201	23642/050	INDUCTOR FIXED 360uH +/- 5% COATED-EPOXY, 108mA 15R5 MAX, 65 Q @ 0.79 MHz, 4.8 MHz SRF, AXIAL,
L202	23642/051	INDUCTOR FIXED 430uH +/- 5% COATED-EPOXY, 102mA 17R1 MAX, 65 Q @ 0.79 MHz, 4.2 MHz SRF, AXIAL,
L203	23642/051	INDUCTOR FIXED 430uH +/- 5% COATED-EPOXY, 102mA 17R1 MAX, 65 Q @ 0.79 MHz, 4.2 MHz SRF, AXIAL,
L204	23642/050	INDUCTOR FIXED 360uH +/- 5% COATED-EPOXY, 108mA 15R5 MAX, 65 Q @ 0.79 MHz, 4.8 MHz SRF, AXIAL,
L205	23642/050	INDUCTOR FIXED 360uH +/- 5% COATED-EPOXY, 108mA 15R5 MAX, 65 Q @ 0.79 MHz, 4.8 MHz SRF, AXIAL,
L206	23642/051	INDUCTOR FIXED 430uH +/- 5% COATED-EPOXY, 102mA 17R1 MAX, 65 Q @ 0.79 MHz, 4.2 MHz SRF, AXIAL,
L207	23642/051	INDUCTOR FIXED 430uH +/- 5% COATED-EPOXY, 102mA 17R1 MAX, 65 Q @ 0.79 MHz, 4.2 MHz SRF, AXIAL,
L208	23642/050	INDUCTOR FIXED 360uH +/- 5% COATED-EPOXY, 108mA 15R5 MAX, 65 Q @ 0.79 MHz, 4.8 MHz SRF, AXIAL,
L401	23642/565	INDUCTOR FIXED 470uH +/- 10% COATED-LACQUER, MINIATURE, 87mA 26R5 MAX, 45 Q @ 0.79 MHz, 2.9 MHz
L501	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L502	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L503	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L504	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

L505	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
L506	23642/566	INDUCTOR FIXED 680uH +/- 10% COATED-LACQUER, MINIATURE, 78mA 33R MAX, 45 Q @ 0.79 MHz, 2.5 MHz
L601	23642/481	INDUCTOR FIXED 0.15uH +/- 10% MOULDED-EPOXY, 2.45A 0R3 MAX, 50 Q @ 25 MHz, 525 MHz SRF, AXIAL,
L603	23642/492	INDUCTOR FIXED 0.47uH +/- 5% MOULDED-EPOXY, 1.225A 0R12 MAX, 45 Q @ 25 MHz, 310 MHz SRF, AXIAL,
L605	23642/362	INDUCTOR FIXED 10mH +/- 10% SCREENED, MOULDED-EPOXY, 69mA 75R MAX, 70 Q @ 0.25 MHz, 0.7
L606	23642/362	INDUCTOR FIXED 10mH +/- 10% SCREENED, MOULDED-EPOXY, 69mA 75R MAX, 70 Q @ 0.25 MHz, 0.7
L607	23642/543	INDUCTOR FIXED 0.1uH +/- 20% COATED-LACQUER, MINIATURE, 2.8A 0R03 MAX, 50 Q @ 25 MHz, 500 MHz
L608	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L609	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L610	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L611	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L612	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE, 4B1 GRADE MATERIAL, 2.5 TURNS, TINNED COPPER WIRE.
R101	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R102	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R103	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R104	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R105	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R106	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R107	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R108	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R109	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R110	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R111	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R112	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R113	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R114	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R115	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R116	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R118	24681/655	RESISTOR NETWORK BUSSED, THICK-FILM, 2K2 2% 1W 50V 100 ppm/DEG.C, 9 RESISTORS, LOW PROFILE, 10 PIN,
R119	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R120	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R121	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R122	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R123	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R124	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R125	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R201	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R204	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R205	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R206	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R209	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R210	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R211	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R212	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R213	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R214	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R217	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R218	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R219	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R220	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
R221	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R222	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R223	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R224	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R301	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R302	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R303	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R304	24772/122	RESISTOR FIXED METAL-FILM 110K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R307	24724/001	RESISTOR FIXED METAL-FILM 1K2 +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R308	24724/004	RESISTOR FIXED METAL-FILM 68R +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R309	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R310	24724/002	RESISTOR FIXED METAL-FILM 910R +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R312	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R313	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R314	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R315	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R316	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R317	24772/135	RESISTOR FIXED METAL-FILM 390K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R318	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R319	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R321	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R322	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R323	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R324	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R325	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R326	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R327	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R328	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R329	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R330	24772/122	RESISTOR FIXED METAL-FILM 110K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R333	24724/001	RESISTOR FIXED METAL-FILM 1K2 +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R334	24724/004	RESISTOR FIXED METAL-FILM 68R +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R335	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R336	24724/002	RESISTOR FIXED METAL-FILM 910R +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R338	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R339	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R340	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R341	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R342	24772/134	RESISTOR FIXED METAL-FILM 360K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R343	24772/135	RESISTOR FIXED METAL-FILM 390K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R344	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R345	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R347	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R348	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R349	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R350	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R351	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R352	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R353	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R354	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R355	24723/334	RESISTOR FIXED METAL-FILM 1K18 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R356	24723/452	RESISTOR FIXED METAL-FILM 298R +/- 0.1% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R357	24723/390	RESISTOR FIXED METAL-FILM 75R +/- 0.1% 250mW 200V 15 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R358	24723/453	RESISTOR FIXED METAL-FILM 25R2 +/- 0.1% 250mW 200V 25 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R359	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R360	24772/078	RESISTOR FIXED METAL-FILM 1K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R361	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R362	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R363	24772/052	RESISTOR FIXED METAL-FILM 130R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R364	24772/019	RESISTOR FIXED METAL-FILM 5R6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R365	24753/334	RESISTOR FIXED METAL-FILM 1K4 +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R366	24772/019	RESISTOR FIXED METAL-FILM 5R6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R367	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R368	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R369	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R371	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R372	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R373	24724/003	RESISTOR FIXED METAL-FILM 33K +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R375	24724/003	RESISTOR FIXED METAL-FILM 33K +/- 0.1% 100mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R377	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R378	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R401	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R402	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R403	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R404	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R405	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R406	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R407	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R408	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R409	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R410	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R411	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R412	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R413	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R414	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R415	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R416	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R417	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R418	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R419	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R420	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R421	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R422	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R423	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R424	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R425	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R426	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R427	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R428	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R429	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R430	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R431	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R432	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R433	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
R434	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R435	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R437	24772/035	RESISTOR FIXED METAL-FILM 27R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R438	24723/485	RESISTOR FIXED METAL-FILM 291R +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R439	24723/485	RESISTOR FIXED METAL-FILM 291R +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R440	24723/479	RESISTOR FIXED METAL-FILM 17R7 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R441	24723/488	RESISTOR FIXED METAL-FILM 150R +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R442	24723/488	RESISTOR FIXED METAL-FILM 150R +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R443	24723/480	RESISTOR FIXED METAL-FILM 37R5 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R444	24723/483	RESISTOR FIXED METAL-FILM 83R3 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R445	24723/483	RESISTOR FIXED METAL-FILM 83R3 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R446	24723/484	RESISTOR FIXED METAL-FILM 93R8 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R447	24723/482	RESISTOR FIXED METAL-FILM 56R7 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R448	24723/482	RESISTOR FIXED METAL-FILM 56R7 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R449	24723/486	RESISTOR FIXED METAL-FILM 398R4 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R450	24681/645	RESISTOR NETWORK BUSSED, THICK-FILM, 100R 5% 1.6W 50V 100 ppm/DEG.C, 8 RESISTORS, LOW PROFILE, 9
R451	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R452	24772/122	RESISTOR FIXED METAL-FILM 110K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R453	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R454	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R455	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R456	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R457	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R458	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R459	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R461	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R462	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R463	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R464	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R465	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R470	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R471	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R472	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R501	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R502	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R503	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R504	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R505	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R506	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R507	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R508	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R509	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R511	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R512	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R513	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R514	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R515	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R516	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R517	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R518	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R519	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R520	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R521	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R522	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R523	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R524	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R525	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R526	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R527	24772/123	RESISTOR FIXED METAL-FILM 120K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R528	24772/125	RESISTOR FIXED METAL-FILM 150K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R529	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R530	24772/117	RESISTOR FIXED METAL-FILM 68K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R531	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R532	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R533	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R534	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R535	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R536	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R537	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R538	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R539	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R540	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R541	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R542	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R543	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R544	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R545	24772/107	RESISTOR FIXED METAL-FILM 27K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R546	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

AA1/2 Control board (contd.)

Cir. Ref.	MI part number	Description
R547	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R548	24772/036	RESISTOR FIXED METAL-FILM 30R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R549	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R550	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R551	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R552	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R601	24773/297	RESISTOR FIXED METAL-FILM 10K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R603	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R604	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R605	24773/245	RESISTOR FIXED METAL-FILM 68R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R606	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R607	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R608	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R609	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R610	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R611	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R612	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R613	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R614	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R615	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R616	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R617	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R618	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R619	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R620	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R621	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R622	24772/078	RESISTOR FIXED METAL-FILM 1K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R623	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R624	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R625	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R626	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R627	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R628	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R629	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R630	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R631	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R632	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R636	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R637	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R638	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R639	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R640	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R641	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R643	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R645	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R646	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R647	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R648	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R649	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R650	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R651	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R652	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R653	24772/036	RESISTOR FIXED METAL-FILM 30R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R655	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R657	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R658	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R659	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R660	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R661	24772/078	RESISTOR FIXED METAL-FILM 1K6 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R662	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R663	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R664	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R665	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R666	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R668	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R669	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R670	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R671	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R672	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R673	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R674	24772/082	RESISTOR FIXED METAL-FILM 2K4 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R679	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R680	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R681	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R682	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R684	24681/624	RESISTOR NETWORK BUSSED, THICK-FILM, 680R 5% 750mW 50V 500 ppm/DEG.C, 9 RESISTORS, LOW PROFILE, 10
R685	24681/691	RESISTOR NETWORK BUSSED, THICK-FILM, 3K9 2% 1W 100V 200 ppm/DEG.C, 9 RESISTORS, LOW PROFILE, 10
R686	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R688	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R689	24772/048	RESISTOR FIXED METAL-FILM 91R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R690	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R691	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R692	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R693	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R694	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R695	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R696	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R697	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R698	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R699	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R701	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R702	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R703	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R704	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R705	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R706	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R707	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R708	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R709	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R710	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R721	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R722	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R723	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R724	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

R725	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R726	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R727	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R728	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLB	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLC	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLG	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLH	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLJ	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLK	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLL	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLM	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLN	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
TR301	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR302	28459/071	TRANSISTOR N-CHANNEL-DEPLETION JFET VCR4N.... 15V 300mW VOLTAGE CONTROLLED RESISTOR, TO-18.
TR303	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR304	28459/071	TRANSISTOR N-CHANNEL-DEPLETION JFET VCR4N.... 15V 300mW VOLTAGE CONTROLLED RESISTOR, TO-18.
TR305	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR401	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR402	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR403	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR404	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

TR405	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR406	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR407	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR408	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR501	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR601	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR602	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR603	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR604	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR605	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR606	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR607	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR608	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
TR609	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR610	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR611	28431/767	TRANSISTOR PNP BIPOLAR MPS4258.... 12V 700MHz 1W 80mA 30hFE @ 50mA, TO-92, (LOOSE).
TR612	28431/767	TRANSISTOR PNP BIPOLAR MPS4258.... 12V 700MHz 1W 80mA 30hFE @ 50mA, TO-92, (LOOSE).
TR613	28431/767	TRANSISTOR PNP BIPOLAR MPS4258.... 12V 700MHz 1W 80mA 30hFE @ 50mA, TO-92, (LOOSE).
TR614	28431/767	TRANSISTOR PNP BIPOLAR MPS4258.... 12V 700MHz 1W 80mA 30hFE @ 50mA, TO-92, (LOOSE).
TR615	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR616	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR617	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
X1	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X2	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.

Cir. Ref.	MI part number	Description

AA1/2 Control board (contd.)

X3	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X4	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X5	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X6	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X7	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.
X8	23635/833	CORE BEAD, 4.2mm DIA, 5.5mm LONG, 1.8mm I/DIA, FERRITE, GRADE 3B, SINGLE HOLE.

XL101	28312/100	CRYSTAL 16 MHz +/- 20 ppm, 30pF PARALLEL RESONANCE, 25R ESR MAX, MICROPROCESSOR
XL601	44520/002	(ONLY USED ON 2030)CRYSTAL 104.857 MHz +/-10 ppm, SPECIAL-SELECTED,

	43137/339	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE PLAL 104.8576 MHz to PLBM, AB4/1
	43137/996	RF-CABLE FLEXIBLE RG178B/U, 50 OHMS, SMB FEMALE SKAF to AB1
	43137/341	RIBBON-LEAD 16 WAY, SOCKET 16 WAY, - DIL PLUG 16 SKAK to AF2/x

	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT PLAJ
	23435/121	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, STRAIGHT, PLAA
	23435/529	CONNECTOR TYPE-57, SOCKET, 24 WAY, RIGHT ANGLED, SKAM

Cir. Ref.	MI part number	Description

AB1 VCO board

Issue 5

When ordering, prefix circuit reference with AB1

Cir. Ref.	MI part number	Description
	44829-542J	Complete unit
C1	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C2	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C3	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C4	26386/898	CAPACITOR FIXED CERAMIC 5.6pF +/-0.1pF 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C5	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C6	26386/814	CAPACITOR FIXED CERAMIC 15pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C7	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C8	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C9	26386/898	CAPACITOR FIXED CERAMIC 5.6pF +/-0.1pF 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C10	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C11	26386/814	CAPACITOR FIXED CERAMIC 15pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C12	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C13	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C14	26386/897	CAPACITOR FIXED CERAMIC 4.7pF +/-0.1pF 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C15	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C16	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C17	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C18	26386/808	CAPACITOR FIXED CERAMIC 4.7pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C19	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C20	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C21	26386/897	CAPACITOR FIXED CERAMIC 4.7pF +/-0.1pF 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C22	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C23	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB1 VCO board (contd.)

C24	26343/753	CAPACITOR FIXED CERAMIC 6.8pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C25	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C26	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C27	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C28	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C29	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C30	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C31	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C32	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C33	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C34	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C35	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C36	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C37	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C38	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C39	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C40	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C42	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C43	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C44	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C45	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C46	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C47	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C48	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C49	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C50	26386/828	CAPACITOR FIXED CERAMIC 220pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB1 VCO board (contd.)

D1	28381/133	DIODE VARIABLE CAPACITNCE, BB515... 30V 11.5pF @ 3V, CAPAC RATIO 8.0 MIN, SURFACE MOUNTED, SOD-123,
D2	28381/133	DIODE VARIABLE CAPACITNCE, BB515... 30V 11.5pF @ 3V, CAPAC RATIO 8.0 MIN, SURFACE MOUNTED, SOD-123,
D3	28381/133	DIODE VARIABLE CAPACITNCE, BB515... 30V 11.5pF @ 3V, CAPAC RATIO 8.0 MIN, SURFACE MOUNTED, SOD-123,
D4	28381/133	DIODE VARIABLE CAPACITNCE, BB515... 30V 11.5pF @ 3V, CAPAC RATIO 8.0 MIN, SURFACE MOUNTED, SOD-123,
D5	28383/961	DIODE PIN, BAR16-1... DUAL, 140mW 100V 100mA 0.5pF 1.25Vf @ 100mA, COMMON ANODE, MARKING CODE L9,
D6	28383/910	DIODE SMALL-SIGNAL, BAS28... DUAL, 330mW 75V 250mA ELECTRICALLY ISOLATED, MARKING CODE A61 OR JT,
D7	28383/910	DIODE SMALL-SIGNAL, BAS28... DUAL, 330mW 75V 250mA ELECTRICALLY ISOLATED, MARKING CODE A61 OR JT,
IC1	28469/756	IC ANALOGUE MULTIPLEXER 74HC4051.. SINGLE, 8 CHANNEL, 3 SELECT INPUTS PLUS ENABLE,
IC2	28461/419	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0285.. SINGLE, 5V 25mA CASCADABLE, 3dB BANDWIDTH DC-2.6GHz,
IC3	28461/419	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0285.. SINGLE, 5V 25mA CASCADABLE, 3dB BANDWIDTH DC-2.6GHz,
IC4	28461/419	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0285.. SINGLE, 5V 25mA CASCADABLE, 3dB BANDWIDTH DC-2.6GHz,
IC5	28461/419	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0285.. SINGLE, 5V 25mA CASCADABLE, 3dB BANDWIDTH DC-2.6GHz,
L1	44291/017	WOUND-PART INDUCTOR, BEAD-CORE, 7 TURNS, UNMOUNTED, VARNISHED.
L2	44291/017	WOUND-PART INDUCTOR, BEAD-CORE, 7 TURNS, UNMOUNTED, VARNISHED.
L3	44291/017	WOUND-PART INDUCTOR, BEAD-CORE, 7 TURNS, UNMOUNTED, VARNISHED.
L4	44291/017	WOUND-PART INDUCTOR, BEAD-CORE, 7 TURNS, UNMOUNTED, VARNISHED.
R1	24321/804	RESISTOR FIXED METAL-GLAZE 20K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-20K0-ACCEPTABLE, SURFACE
R2	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R3	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R4	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R5	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB1 VCO board (contd.)

R6	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R7	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R8	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R9	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R10	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R11	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R12	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R13	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R14	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R15	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R16	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R17	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R18	24321/606	RESISTOR FIXED METAL-GLAZE 20R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R19	24321/604	RESISTOR FIXED METAL-GLAZE 10R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R20	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R21	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R22	24321/605	RESISTOR FIXED METAL-GLAZE 15R +/- 5% 60mW 100V 200 ppm/DEG.C, SURFACE MOUNTED, SIZE 0805, (LOOSE
R23	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R24	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R25	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R26	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R27	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R28	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R29	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R30	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R31	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB1 VCO board (contd.)

Cir. Ref.	MI part number	Description
R32	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R33	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R34	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R35	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R36	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R37	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R38	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R39	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R40	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R41	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R42	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
TR1	28487/809	TRANSISTOR NPN BIPOLAR BFR93A... 12V 5GHz 250mW 35mA MARKING CODE R2, SURFACE MOUNTED, SOT-23,
TR2	28487/809	TRANSISTOR NPN BIPOLAR BFR93A... 12V 5GHz 250mW 35mA MARKING CODE R2, SURFACE MOUNTED, SOT-23,
TR3	28487/809	TRANSISTOR NPN BIPOLAR BFR93A... 12V 5GHz 250mW 35mA MARKING CODE R2, SURFACE MOUNTED, SOT-23,
TR4	28487/809	TRANSISTOR NPN BIPOLAR BFR93A... 12V 5GHz 250mW 35mA MARKING CODE R2, SURFACE MOUNTED, SOT-23,
TR5	28487/810	TRANSISTOR NPN BIPOLAR BSV52... 12V 400MHz 250mW 100mA MARKING CODE B2, SURFACE MOUNTED, SOT-23,
TR6	28487/810	TRANSISTOR NPN BIPOLAR BSV52... 12V 400MHz 250mW 100mA MARKING CODE B2, SURFACE MOUNTED, SOT-23,
TR7	28487/810	TRANSISTOR NPN BIPOLAR BSV52... 12V 400MHz 250mW 100mA MARKING CODE B2, SURFACE MOUNTED, SOT-23,
TR8	28487/810	TRANSISTOR NPN BIPOLAR BSV52... 12V 400MHz 250mW 100mA MARKING CODE B2, SURFACE MOUNTED, SOT-23,
	43137/344	RIBBON-LEAD 10 WAY, SOCKET 10 WAY, KEY POS 5, - SKBC to PLBF, AB2/2

Cir. Ref.	MI part number	Description

AB2/2 RF board

Issue 16

When ordering, prefix circuit reference with AB2/2

Cir. Ref.	MI part number	Description
	44829-791T	Complete unit
C1	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C13	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C14	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C16	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C18	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C19	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C20	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C21	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C22	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C23	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description
AB2/2	**RF board (contd.)**	
C24	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C25	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C26	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C27	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C28	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C29	26421/116	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C30	26421/116	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C31	26486/225	CAPACITOR FIXED TANTALUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C32	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C34	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C35	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C36	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C37	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C38	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C39	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C41	26538/912	CAPACITOR FIXED POLYSTYRENE 2.7nF +/-1% 63V 125 ppm/DEG.C, RADIAL, 5.08mm PWP, SQUARE, WIRES ON
C42	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C43	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C44	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C45	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C46	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C47	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C48	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C49	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C50	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

C51	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C52	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C53	26421/116	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C55	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C56	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C57	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C60	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C62	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C64	26582/439	CAPACITOR FIXED POLYESTER 680nF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C65	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C66	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C67	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C68	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C69	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C70	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C71	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C72	26486/214	CAPACITOR FIXED TANTALUM 2.2uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C73	26486/225	CAPACITOR FIXED TANTALUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C74	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C81	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C84	26582/439	CAPACITOR FIXED POLYESTER 680nF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C85	26582/439	CAPACITOR FIXED POLYESTER 680nF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C86	26582/439	CAPACITOR FIXED POLYESTER 680nF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

C88	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C89	26343/487	CAPACITOR FIXED CERAMIC 6.8pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C91	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C97	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C99	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C100	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C101	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C102	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C103	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C104	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C105	26343/491	CAPACITOR FIXED CERAMIC 2.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C106	26386/804	CAPACITOR FIXED CERAMIC 2.2pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C107	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C108	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C109	26343/753	CAPACITOR FIXED CERAMIC 6.8pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C110	26343/757	CAPACITOR FIXED CERAMIC 3.3pF +/-0.5pF 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C111	26383/581	CAPACITOR FIXED CERAMIC 560pF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C112	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C113	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C114	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C115	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C116	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C117	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C118	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C119	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C120	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
C121	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C122	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C123	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C124	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C125	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C126	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C127	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C128	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C129	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C130	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C131	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C132	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C133	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C134	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C135	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C136	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C137	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C138	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C139	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C140	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C141	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C142	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C143	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C144	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C153	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C154	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

C155	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C160	26343/502	CAPACITOR FIXED CERAMIC 1pF +/-0.5pF 63V P100 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C163	26343/502	CAPACITOR FIXED CERAMIC 1pF +/-0.5pF 63V P100 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C168	26383/587	CAPACITOR FIXED CERAMIC 2.2nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C169	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C174	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C175	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C176	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C201	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C301	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C302	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C303	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C304	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C306	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C307	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C308	26343/444	CAPACITOR FIXED CERAMIC 56pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C309	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C310	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C311	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C312	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C313	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C314	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C320	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C321	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C322	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C324	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

C325	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C326	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C327	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C328	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C329	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C330	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C331	26383/017	CAPACITOR FIXED CERAMIC 47nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C332	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C334	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C335	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C336	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C337	26386/819	CAPACITOR FIXED CERAMIC 39pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C338	26386/819	CAPACITOR FIXED CERAMIC 39pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C339	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C340	26386/819	CAPACITOR FIXED CERAMIC 39pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C341	26386/814	CAPACITOR FIXED CERAMIC 15pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C342	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C343	26386/814	CAPACITOR FIXED CERAMIC 15pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C344	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C345	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C346	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C347	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C401	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C402	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C403	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C404	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
C405	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C407	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C408	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C409	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C410	26386/800	CAPACITOR FIXED CERAMIC 1pF +/-0.5pF 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C420	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C421	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
D1	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D2	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D3	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D4	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D5	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D6	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D7	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D8	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D9	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D10	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D11	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D12	28383/963	DIODE PIN, 1N5719... 250mW 150V 0.3pF AXIAL, HP-OUTLINE-15, (LOOSE).
D13	28383/963	DIODE PIN, 1N5719... 250mW 150V 0.3pF AXIAL, HP-OUTLINE-15, (LOOSE).
D14	28383/963	DIODE PIN, 1N5719... 250mW 150V 0.3pF AXIAL, HP-OUTLINE-15, (LOOSE).
D15	28383/963	DIODE PIN, 1N5719... 250mW 150V 0.3pF AXIAL, HP-OUTLINE-15, (LOOSE).
D17	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D18	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

D19	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D20	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D21	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D22	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D23	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D24	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D25	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D26	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D27	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D28	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D29	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D100	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D101	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D102	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D103	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D104	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D105	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D106	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D107	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D108	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D109	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D110	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D113	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D114	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D115	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D116	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

D117	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D118	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D119	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D120	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D121	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D122	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D123	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D124	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D125	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D126	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D127	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D128	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D129	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D130	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D131	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D132	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D133	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D134	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D140	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D141	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D142	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D143	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D144	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D145	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D146	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D148	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

D153	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D154	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D300	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D301	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D302	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D303	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D304	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D305	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D306	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D307	28371/371	DIODE ZENER, BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D308	28371/371	DIODE ZENER, BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D309	28371/371	DIODE ZENER, BZX79-C4V7... 500mW 4.7V 5% 250mA AXIAL, DO-35, (TAPED).
D401	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
D402	28383/997	DIODE PIN, 5082-3379... 250mW 50V 0.4pF VHF/UHF SWITCHING, AXIAL, HP-OUTLINE-15, (TAPED).
IC1	28466/378	IC DIGITAL NAND-BUFFER 74F38... 2 INPUT, QUAD, OPEN-COLLECTOR, TTL-SCHOTTKY-FAST, 14 PIN,
IC2	44529/115	IC DIGITAL DIVIDER MARKED 44529/115, 5 STAGE BINARY, PROGRAMMABLE, 1.5GHz, PACKED IN BOXES OF
IC3	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC4	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC5	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC6	28461/410	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0485.. SINGLE, 5.25V 50mA CASCADABLE, 3dB BANDWIDTH DC-3.6GHz,
IC7	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC8	28467/536	IC DIGITAL SHIFT-REGISTER 74HC166... 8 BIT, PARALLEL-IN SERIAL-OUT, CMOS-H/SPEED, 16 PIN,
IC9	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC10	28461/310	IC ANALOGUE OPERATIONAL AMP 748... GENERAL-PURPOSE, LINEAR, 8 PIN, DUAL-IN-LINE.

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
IC11	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC100	28461/410	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0485.. SINGLE, 5.25V 50mA CASCADABLE, 3dB BANDWIDTH DC-3.6GHz,
IC101	28465/050	IC DIGITAL DECODER 74LS145... BCD TO DECIMAL, OPEN-COLLECTOR, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC102	28465/050	IC DIGITAL DECODER 74LS145... BCD TO DECIMAL, OPEN-COLLECTOR, TTL-SCHOTTKY-L/PWR, 16 PIN,
IC300	28466/364	IC DIGITAL NAND-GATE 74HC132.. 2 INPUT, QUAD, SCHMITT TRIGGER, CMOS-H/SPEED, 14 PIN,
IC301	28531/034	MODULE SWITCH, MICROWAVE, DC - 1.5GHz, UNDRIVEN SPST, ISOLATION 80dB @ 1.5GHz, ABSORPTIVE,
IC302	28469/738	IC ANALOGUE MULTIPLEXER 74HC4052.. DUAL, 4 CHANNEL, 2 SELECT INPUTS PLUS ENABLE,
IC401	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
L1	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L2	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L3	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L5	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L6	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L7	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L8	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L10	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L11	23642/481	INDUCTOR FIXED 0.15uH +/- 10% MOULDED-EPOXY, 2.45A 0R3 MAX, 50 Q @ 25 MHz, 525 MHz SRF, AXIAL,
L12	23642/481	INDUCTOR FIXED 0.15uH +/- 10% MOULDED-EPOXY, 2.45A 0R3 MAX, 50 Q @ 25 MHz, 525 MHz SRF, AXIAL,
L13	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L15	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,
L16	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,
L17	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,
L18	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,
L20	23642/426	INDUCTOR FIXED 0.33uH +/- 10% MOULDED-EPOXY, MINIATURE, 750mA 0R22 MAX, 30 Q @ 25 MHz, 380 MHz
L21	23642/566	INDUCTOR FIXED 680uH +/- 10% COATED-LACQUER, MINIATURE, 78mA 33R MAX, 45 Q @ 0.79 MHz, 2.5 MHz
L100	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

L101	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L103	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L104	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L107	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L108	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L111	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L112	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L114	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L117	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L119	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L122	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L124	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L127	23642/556	INDUCTOR FIXED 15uH +/- 10% COATED-LACQUER, MINIATURE, 370mA 1R5 MAX, 55 Q @ 2.5 MHz, 30 MHz
L132	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L134	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L137	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L138	23642/481	INDUCTOR FIXED 0.15uH +/- 10% MOULDED-EPOXY, 2.45A 0R3 MAX, 50 Q @ 25 MHz, 525 MHz SRF, AXIAL,
L139	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L142	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L143	23642/424	INDUCTOR FIXED 0.22uH +/- 10% MOULDED-EPOXY, MINIATURE, 940mA 0R14 MAX, 33 Q @ 25 MHz, 470 MHz
L144	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L147	23642/559	INDUCTOR FIXED 47uH +/- 10% COATED-LACQUER, MINIATURE, 140mA 9R6 MAX, 55 Q @ 2.5 MHz, 15 MHz
L301	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L310	23642/423	INDUCTOR FIXED 10uH +/- 10% MOULDED-EPOXY, MINIATURE, 180mA 3R7 MAX, 55 Q @ 7.9 MHz, 46 MHz
L312	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L313	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,
L314	23642/909	WOUND-PART INDUCTOR, WIDEBAND HF CHOKE, BEAD-CORE,

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
L315	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L401	23642/423	INDUCTOR FIXED 10uH +/- 10% MOULDED-EPOXY, MINIATURE, 180mA 3R7 MAX, 55 Q @ 7.9 MHz, 46 MHz
R1	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/090	RESISTOR FIXED METAL-FILM 5K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24321/731	RESISTOR FIXED METAL-GLAZE 18R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18R2-ACCEPTABLE, SURFACE
R18	24772/059	RESISTOR FIXED METAL-FILM 270R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24773/273	RESISTOR FIXED METAL-FILM 1K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

R23	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24573/056	RESISTOR FIXED METAL-OXIDE 200R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24773/263	RESISTOR FIXED METAL-FILM 390R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24773/251	RESISTOR FIXED METAL-FILM 120R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/034	RESISTOR FIXED METAL-FILM 24R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24753/653	RESISTOR FIXED METAL-FILM 50R +/- 0.5% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R34	24723/481	RESISTOR FIXED METAL-FILM 50R39 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R35	24723/481	RESISTOR FIXED METAL-FILM 50R39 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (TAPED).
R36	24723/487	RESISTOR FIXED METAL-FILM 6K4 +/- 0.1% 250mW 200V 50 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R37	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/108	RESISTOR FIXED METAL-FILM 30K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/098	RESISTOR FIXED METAL-FILM 11K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/098	RESISTOR FIXED METAL-FILM 11K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
R49	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/116	RESISTOR FIXED METAL-FILM 62K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/116	RESISTOR FIXED METAL-FILM 62K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R56	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	24772/116	RESISTOR FIXED METAL-FILM 62K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R60	24772/137	RESISTOR FIXED METAL-FILM 470K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R61	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R62	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R63	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R64	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R65	24772/056	RESISTOR FIXED METAL-FILM 200R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R66	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R67	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R69	24773/263	RESISTOR FIXED METAL-FILM 390R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R70	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R71	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R72	24772/092	RESISTOR FIXED METAL-FILM 6K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R73	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R75	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
R76	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R77	24773/246	RESISTOR FIXED METAL-FILM 75R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R78	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R79	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R80	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R81	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R82	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R83	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R84	24772/063	RESISTOR FIXED METAL-FILM 390R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R85	24681/521	RESISTOR NETWORK ISOLATED, THICK-FILM, 1K 2% 1.5W 500 ppm/DEG.C, 8 RESISTORS, LOW PROFILE, 16 PIN,
R86	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R87	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R88	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R89	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R90	24772/056	RESISTOR FIXED METAL-FILM 200R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R91	24681/521	RESISTOR NETWORK ISOLATED, THICK-FILM, 1K 2% 1.5W 500 ppm/DEG.C, 8 RESISTORS, LOW PROFILE, 16 PIN,
R92	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R93	24321/730	RESISTOR FIXED METAL-GLAZE 16R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-16R2-ACCEPTABLE, SURFACE
R94	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R95	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R96	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R97	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R98	24772/084	RESISTOR FIXED METAL-FILM 3K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R99	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R100	24573/055	RESISTOR FIXED METAL-OXIDE 180R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R101	24773/273	RESISTOR FIXED METAL-FILM 1K +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

R102	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R103	24772/026	RESISTOR FIXED METAL-FILM 11R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R104	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R105	24772/026	RESISTOR FIXED METAL-FILM 11R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R107	24772/050	RESISTOR FIXED METAL-FILM 110R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R111	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R112	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R113	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R114	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R115	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R116	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R200	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R206	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R207	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R208	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R209	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R210	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R265	24773/265	RESISTOR FIXED METAL-FILM 470R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R300	24773/265	RESISTOR FIXED METAL-FILM 470R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R301	24773/225	RESISTOR FIXED METAL-FILM 10R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R306	24772/075	RESISTOR FIXED METAL-FILM 1K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R308	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R309	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R310	24773/249	RESISTOR FIXED METAL-FILM 100R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R311	24773/249	RESISTOR FIXED METAL-FILM 100R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R312	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

R320	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R321	24772/094	RESISTOR FIXED METAL-FILM 7K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R322	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R324	24321/780	RESISTOR FIXED METAL-GLAZE 2K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K00-ACCEPTABLE, SURFACE
R325	24772/055	RESISTOR FIXED METAL-FILM 180R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R326	24772/039	RESISTOR FIXED METAL-FILM 39R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R327	24773/253	RESISTOR FIXED METAL-FILM 150R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R328	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R329	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R330	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R331	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R332	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R333	24772/094	RESISTOR FIXED METAL-FILM 7K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R334	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R335	24321/780	RESISTOR FIXED METAL-GLAZE 2K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K00-ACCEPTABLE, SURFACE
R336	24772/055	RESISTOR FIXED METAL-FILM 180R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R337	24772/039	RESISTOR FIXED METAL-FILM 39R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R338	24773/253	RESISTOR FIXED METAL-FILM 150R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R339	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R340	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R341	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R342	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R343	24772/062	RESISTOR FIXED METAL-FILM 360R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R344	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R345	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R346	24321/780	RESISTOR FIXED METAL-GLAZE 2K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K00-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

R347	24321/727	RESISTOR FIXED METAL-GLAZE 12R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-12R1-ACCEPTABLE, SURFACE
R348	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R349	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R350	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R351	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R352	24772/074	RESISTOR FIXED METAL-FILM 1K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R353	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R354	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R355	24321/766	RESISTOR FIXED METAL-GLAZE 510R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-511R-ACCEPTABLE, SURFACE
R356	24321/766	RESISTOR FIXED METAL-GLAZE 510R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-511R-ACCEPTABLE, SURFACE
R357	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R358	24772/066	RESISTOR FIXED METAL-FILM 510R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R359	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R360	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R361	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R362	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R363	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R364	24772/116	RESISTOR FIXED METAL-FILM 62K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R401	24772/035	RESISTOR FIXED METAL-FILM 27R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R402	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R403	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R404	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R405	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R406	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R407	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R410	24321/731	RESISTOR FIXED METAL-GLAZE 18R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18R2-ACCEPTABLE, SURFACE

AB2/2 RF board (contd.)

Cir. Ref.	MI part number	Description
R413	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R420	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R421	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R422	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R423	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R424	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R425	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R426	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLB	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLC	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLD	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
RLE	23486/166	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 12V COIL, 720R - CONTACTS 1A, 125V, MAX LOAD 30W, PCB
TR1	28451/694	TRANSISTOR NPN BIPOLAR BFR91A.... 12V 6GHz 300mW 35mA 40hFE @ 30mA, SURFACE MOUNTED, SOT-37.
TR2	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).
TR3	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR4	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR5	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR6	28435/868	TRANSISTOR PNP BIPOLAR 2N2905A.... 60V 200MHz 600mW 600mA 100hFE @ 150mA, TO-39.
TR10	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR11	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR12	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR13	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).

Cir. Ref.	MI part number	Description

AB2/2 RF board (contd.)

TR310	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR311	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR312	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR313	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR314	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR315	28452/210	TRANSISTOR NPN BIPOLAR LTE21009R.. 16V 4W 250mA GAIN 8.5dB @ 2.1GHz, SURFACE MOUNTED, CASE-FO-41B.
TR401	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).

Cir. Ref.	MI part number	Description

AB3/1 BFO switch and RPP board

Issue 4

When ordering, prefix circuit reference with AB3/1

Cir. Ref.	MI part number	Description
	44829-532Z	Complete unit
C1	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C3	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C4	26386/777	CAPACITOR FIXED CERAMIC 47nF +/-20% 63V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C5	26386/865	CAPACITOR FIXED CERAMIC 1.5nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C6	26386/851	CAPACITOR FIXED CERAMIC 100pF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C7	26386/851	CAPACITOR FIXED CERAMIC 100pF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C8	26386/865	CAPACITOR FIXED CERAMIC 1.5nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C9	26386/777	CAPACITOR FIXED CERAMIC 47nF +/-20% 63V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C10	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C11	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
D1	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D2	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D3	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D4	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D5	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
L1	23642/555	INDUCTOR FIXED 10uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 45 Q @ 7.9 MHz, 45 MHz
L2	23642/555	INDUCTOR FIXED 10uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 45 Q @ 7.9 MHz, 45 MHz
L3	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE

Cir. Ref.	MI part number	Description

AB3/1 BFO switch and RPP board (contd.)

Cir. Ref.	MI part number	Description
R1	24773/265	RESISTOR FIXED METAL-FILM 470R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24773/289	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24773/289	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLB	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
TR1	28434/827	TRANSISTOR PNP BIPOLAR MPS6534.... 40V 250MHz 625mW 600mA 90hFE @ 100mA, TO-92, (LOOSE).
	43137/318	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 5, - PLBR to SKBL, AB2/2

AB3/3 High power amplifier board

Issue 5

When ordering, prefix circuit reference with AB3/3

Cir. Ref.	MI part number	Description
	44829-547W	Complete unit
C1	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C2	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C3	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C4	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C5	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C6	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C7	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C8	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C9	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C10	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C11	26386/865	CAPACITOR FIXED CERAMIC 1.5nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C12	26386/865	CAPACITOR FIXED CERAMIC 1.5nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C13	26386/777	CAPACITOR FIXED CERAMIC 47nF +/-20% 63V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C14	26386/777	CAPACITOR FIXED CERAMIC 47nF +/-20% 63V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C15	26458/065	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 16V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C16	26458/065	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 16V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C17	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C18	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C19	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C20	26458/065	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 16V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C21	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C22	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C23	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL

AB3/3 High power amplifier board (contd.)

Cir. Ref.	MI part number	Description
C24	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C25	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C26	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C27	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C28	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C31	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C34	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C35	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C36	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C37	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C38	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C39	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C40	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C41	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C42	26386/754	CAPACITOR FIXED CERAMIC 10nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C43	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
D1	28371/735	DIODE ZENER, BZX84-C8V2... 350mW 8.2V 5% 250mA MARKING CODE Z7, SURFACE MOUNTED, SOT-23, (TAPED).
D2	28371/735	DIODE ZENER, BZX84-C8V2... 350mW 8.2V 5% 250mA MARKING CODE Z7, SURFACE MOUNTED, SOT-23, (TAPED).
D3	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D4	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D5	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D6	28383/916	DIODE PIN, BAR61... TRIPLE, 100V 1A 0.25pF 1Vf @ 100mA, PI-CIRCUIT, MARKING CODE 61, SURFACE
D7	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D8	28349/029	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2810... 250mW 20V 1.2pF 1Vf @ 35mA, 1A/uS PULSE, MARKING CODE

Cir. Ref.	MI part number	Description

AB3/3 High power amplifier board (contd.)

D9	28349/029	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2810... 250mW 20V 1.2pF 1Vf @ 35mA, 1A/uS PULSE, MARKING CODE
D10	28349/029	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2810... 250mW 20V 1.2pF 1Vf @ 35mA, 1A/uS PULSE, MARKING CODE
IC1	28461/413	IC ANALOGUE OPERATIONAL AMP TL074... QUAD, JFET INPUT, LOW NOISE, 14 PIN, SMALL-OUTLINE.
IC2	28461/413	IC ANALOGUE OPERATIONAL AMP TL074... QUAD, JFET INPUT, LOW NOISE, 14 PIN, SMALL-OUTLINE.
L1	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L2	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L3	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L4	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L5	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L6	23642/419	INDUCTOR FIXED 1uH +/- 10% MOULDED-EPOXY, MINIATURE, 350mA 1R MAX, 25 Q @ 25 MHz, 210 MHz
L7	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE
R1	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R2	24321/775	RESISTOR FIXED METAL-GLAZE 1K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K21-ACCEPTABLE, SURFACE
R3	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R4	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R5	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24321/779	RESISTOR FIXED METAL-GLAZE 1K8 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K82-ACCEPTABLE, SURFACE
R8	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R9	24321/791	RESISTOR FIXED METAL-GLAZE 5K6 +/- 2% 125mW 200V
R10	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K62-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/3 High power amplifier board (contd.)

R11	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R12	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R13	24321/793	RESISTOR FIXED METAL-GLAZE 6K8 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-6K81-ACCEPTABLE, SURFACE
R14	24321/794	RESISTOR FIXED METAL-GLAZE 7K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-7K50-ACCEPTABLE, SURFACE
R15	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R16	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R17	24573/053	RESISTOR FIXED METAL-OXIDE 150R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R18	24573/053	RESISTOR FIXED METAL-OXIDE 150R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R19	24321/736	RESISTOR FIXED METAL-GLAZE 30R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-30R1-ACCEPTABLE, SURFACE
R20	24321/736	RESISTOR FIXED METAL-GLAZE 30R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-30R1-ACCEPTABLE, SURFACE
R21	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R22	24321/800	RESISTOR FIXED METAL-GLAZE 13K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-13K0-ACCEPTABLE, SURFACE
R23	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R24	24331/997	RESISTOR FIXED CARBON-COMPOSITION 100R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R25	24321/758	RESISTOR FIXED METAL-GLAZE 240R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-243R-ACCEPTABLE, SURFACE
R26	24552/014	RESISTOR FIXED METAL-OXIDE 5R6 +/- 5% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R27	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V
R28	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V
R29	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R30	24321/837	RESISTOR FIXED METAL-GLAZE 470K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475K-ACCEPTABLE, SURFACE
R31	24321/837	RESISTOR FIXED METAL-GLAZE 470K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475K-ACCEPTABLE, SURFACE
R32	24321/816	RESISTOR FIXED METAL-GLAZE 62K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-61K9-ACCEPTABLE, SURFACE
R33	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R34	24321/816	RESISTOR FIXED METAL-GLAZE 62K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-61K9-ACCEPTABLE, SURFACE
R35	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R36	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R37	24321/790	RESISTOR FIXED METAL-GLAZE 5K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K11-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description
AB3/3	**High power amplifier board (contd.)**	
R38	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V
R39	24321/790	RESISTOR FIXED METAL-GLAZE 5K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K11-ACCEPTABLE, SURFACE
R40	24321/837	RESISTOR FIXED METAL-GLAZE 470K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475K-ACCEPTABLE, SURFACE
R41	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V
R42	24321/814	RESISTOR FIXED METAL-GLAZE 51K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51K1-ACCEPTABLE, SURFACE
R43	24321/804	RESISTOR FIXED METAL-GLAZE 20K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-20K0-ACCEPTABLE, SURFACE
R44	24321/804	RESISTOR FIXED METAL-GLAZE 20K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-20K0-ACCEPTABLE, SURFACE
R45	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V
R46	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R47	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R48	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R49	24321/821	RESISTOR FIXED METAL-GLAZE 100K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100K-ACCEPTABLE, SURFACE
R50	24321/804	RESISTOR FIXED METAL-GLAZE 20K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-20K0-ACCEPTABLE, SURFACE
R51	24321/821	RESISTOR FIXED METAL-GLAZE 100K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100K-ACCEPTABLE, SURFACE
R52	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V
R53	24321/804	RESISTOR FIXED METAL-GLAZE 20K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-20K0-ACCEPTABLE, SURFACE
R54	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V
R55	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R56	24321/816	RESISTOR FIXED METAL-GLAZE 62K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-61K9-ACCEPTABLE, SURFACE
R57	24321/756	RESISTOR FIXED METAL-GLAZE 200R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-200R-ACCEPTABLE, SURFACE
R58	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
RLB	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLC	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
TR1	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR3	28453/829	TRANSISTOR NPN BIPOLAR BC848B.... 30V 200MHz 200mW 100mA 520hFE @ 2mA, MARKING CODE 1K, SURFACE

Cir. Ref.	MI part number	Description

AB3/3 High power amplifier board (contd.)

TR4	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR5	28487/823	TRANSISTOR NPN BIPOLAR AT-64020.. 20V 4.0GHz 200mA GAIN 10dB @ 2GHz, 28dBm O/P POWR, SURFACE MOUNTED,
TR6	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR7	28487/821	TRANSISTOR NPN BIPOLAR LTE21015R.. 20V 2.1GHz 1.6W 450mA GAIN 8dB @ 2.1GHz, SURFACE MOUNTED,
	43137/318	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 5, - PLBR to SKBL, AB2/2

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board

Issue 11

When ordering, prefix circuit reference with AB3/4. This board must only be transported when enclosed within Packing Box 37136-647F.

Cir. Ref.	MI part number	Description
	44829-646G	Complete unit
C1	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C2	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C3	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C4	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C5	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C6	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C7	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C8	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C9	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C10	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C11	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C12	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C13	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C14	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C15	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C16	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C17	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C18	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C19	26373/733	CAPACITOR FIXED CERAMIC 1nF -20/+80% 300V K3000 FEED-THROUGH, SOLDER-IN MOUNTING, 3.99 mm MOUNTING
C101	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C102	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C103	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C104	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

C105	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C106	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C107	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C108	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C109	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C110	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C111	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C112	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C113	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C114	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C115	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C116	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C117	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C118	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C119	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C120	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C121	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C122	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C123	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C124	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C125	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C126	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C127	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C128	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C129	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C130	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

AB3/4 Quadrupler board (contd.)

Cir. Ref.	MI part number	Description
C131	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C132	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C201	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C202	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C203	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C204	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C205	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C206	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C207	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C208	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C209	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C210	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C211	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C212	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C213	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C214	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C216	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C217	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C218	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C219	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C220	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C221	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C222	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C223	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C224	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C225	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

AB3/4 Quadrupler board (contd.)

Cir. Ref.	MI part number	Description
C226	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C227	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C228	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C229	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C230	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C231	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C232	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C233	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C234	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C235	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C236	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C237	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C238	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C239	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C240	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C241	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C242	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C301	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C302	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C303	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C304	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C305	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C306	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C307	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C308	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C309	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

C310	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C311	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C312	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C313	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C314	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C315	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C316	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C317	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C318	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C401	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C402	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C403	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C404	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C405	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C406	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C407	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C408	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C409	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C410	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C411	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C412	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C413	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C414	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C415	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C416	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C417	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

C418	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C419	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C420	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C421	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C422	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C423	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C424	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C425	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C426	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C427	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C428	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C429	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C430	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C431	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C432	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C433	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C435	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C436	26386/830	CAPACITOR FIXED CERAMIC 330pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C437	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C438	26386/951	CAPACITOR FIXED CERAMIC 47nF -20/+80% 50V Z5U/2F4 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

D101	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D102	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D103	28349/024	DIODE MIXER/DETECTOR, SCHOTTKY, DME3040... QUAD, 0.5pF 0.4Vf @ 1mA, S-BAND, MEDIUM-DRIVE, RING CCT,
D104	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

D105	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D106	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D107	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D108	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D109	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D201	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D202	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D203	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D204	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D205	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D206	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D207	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D208	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D209	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D210	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D211	28349/024	DIODE MIXER/DETECTOR, SCHOTTKY, DME3040... QUAD, 0.5pF 0.4Vf @ 1mA, S-BAND, MEDIUM-DRIVE, RING CCT,
D212	28372/471	DIODE ZENER, BZX84-C15... 350mW 15V 5% 250mA MARKING CODE Y4, SURFACE MOUNTED, SOT-23, (TAPED).
D213	28371/216	DIODE ZENER, BZX84-C3V3... 350mW 3.3V 5% 250mA MARKING CODE Z14/W6, SURFACE MOUNTED, SOT-23,
D214	28371/216	DIODE ZENER, BZX84-C3V3... 350mW 3.3V 5% 250mA MARKING CODE Z14/W6, SURFACE MOUNTED, SOT-23,
D301	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D302	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D303	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D304	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D305	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D306	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D307	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

D308	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D309	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D401	28372/471	DIODE ZENER, BZX84-C15... 350mW 15V 5% 250mA MARKING CODE Y4, SURFACE MOUNTED, SOT-23, (TAPED).
D402	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D403	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D404	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D405	28383/917	DIODE PIN, CSB7003-01... 200V 100mA 0.05pF @ -50V, SUBSTRATE MOUNTED, 1.35mm DIA, CASE-96, (BOXED).
D406	28383/917	DIODE PIN, CSB7003-01... 200V 100mA 0.05pF @ -50V, SUBSTRATE MOUNTED, 1.35mm DIA, CASE-96, (BOXED).
D407	28349/025	DIODE MIXER/DETECTOR, SCHOTTKY, 5082-2209... 125mW 4V MEDIUM BARRIER, STRIPLINE TYPE, SUBSTRATE
D408	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D409	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D410	28371/216	DIODE ZENER, BZX84-C3V3... 350mW 3.3V 5% 250mA MARKING CODE Z14/W6, SURFACE MOUNTED, SOT-23,
IC101	28465/056	IC DIGITAL DECODER/DEMULTIPLEX 74HC139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC102	28461/413	IC ANALOGUE OPERATIONAL AMP TL074... QUAD, JFET INPUT, LOW NOISE, 14 PIN, SMALL-OUTLINE.
IC201	28461/413	IC ANALOGUE OPERATIONAL AMP TL074... QUAD, JFET INPUT, LOW NOISE, 14 PIN, SMALL-OUTLINE.
IC401	28461/676	IC ANALOGUE COMPARATOR 311.. 2 INPUT, SINGLE, 15V 500mW, LINEAR, MONOLITHIC, 8 PIN, SMALL-OUTLINE.
IC402	28461/412	IC ANALOGUE OPERATIONAL AMP TL072... DUAL, JFET INPUT, LOW NOISE, 8 PIN, SMALL-OUTLINE.
L101	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE
L102	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE
L103	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE
L401	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE
L402	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R101	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R102	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R103	24321/769	RESISTOR FIXED METAL-GLAZE 680R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-681R-ACCEPTABLE, SURFACE
R104	24321/815	RESISTOR FIXED METAL-GLAZE 56K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-56K2-ACCEPTABLE, SURFACE
R105	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R106	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R107	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R108	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R109	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R110	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R111	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R112	24321/815	RESISTOR FIXED METAL-GLAZE 56K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-56K2-ACCEPTABLE, SURFACE
R113	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R114	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R115	24321/731	RESISTOR FIXED METAL-GLAZE 18R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18R2-ACCEPTABLE, SURFACE
R116	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R117	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R118	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R119	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R120	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R121	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R122	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R123	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R124	24321/801	RESISTOR FIXED METAL-GLAZE 15K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-15K0-ACCEPTABLE, SURFACE
R125	24321/780	RESISTOR FIXED METAL-GLAZE 2K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K00-ACCEPTABLE, SURFACE
R126	24321/803	RESISTOR FIXED METAL-GLAZE 18K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18K2-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R127	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R128	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R129	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R130	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R131	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R132	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R133	24321/767	RESISTOR FIXED METAL-GLAZE 560R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-562R-ACCEPTABLE, SURFACE
R134	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R135	24321/811	RESISTOR FIXED METAL-GLAZE 39K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-39K2-ACCEPTABLE, SURFACE
R136	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R137	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R138	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R139	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R140	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R141	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R142	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R143	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R144	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R145	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R146	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R147	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R148	24321/803	RESISTOR FIXED METAL-GLAZE 18K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18K2-ACCEPTABLE, SURFACE
R149	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R150	24321/790	RESISTOR FIXED METAL-GLAZE 5K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K11-ACCEPTABLE, SURFACE
R151	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R152	24681/085	RESISTOR FIXED METAL-GLAZE 68R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE).

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R153	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R154	24331/998	RESISTOR FIXED CARBON-COMPOSITION 120R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R155	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R156	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R157	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R158	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R159	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R160	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R161	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R162	24321/765	RESISTOR FIXED METAL-GLAZE 470R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475R-ACCEPTABLE, SURFACE
R201	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R202	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R203	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R204	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R205	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R206	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R207	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R208	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R209	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R210	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R211	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R212	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R213	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R214	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R215	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R216	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R217	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R218	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R219	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R220	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R221	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R222	24681/085	RESISTOR FIXED METAL-GLAZE 68R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE).
R223	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R224	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R225	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R226	24321/815	RESISTOR FIXED METAL-GLAZE 56K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-56K2-ACCEPTABLE, SURFACE
R227	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R228	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R229	24321/731	RESISTOR FIXED METAL-GLAZE 18R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18R2-ACCEPTABLE, SURFACE
R230	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R231	24321/761	RESISTOR FIXED METAL-GLAZE 330R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-332R-ACCEPTABLE, SURFACE
R232	24321/725	RESISTOR FIXED METAL-GLAZE 10R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10R0-ACCEPTABLE, SURFACE
R233	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R234	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R235	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R236	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R237	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R238	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R239	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R240	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R241	24321/805	RESISTOR FIXED METAL-GLAZE 22K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-22K1-ACCEPTABLE, SURFACE
R242	24321/790	RESISTOR FIXED METAL-GLAZE 5K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K11-ACCEPTABLE, SURFACE

AB3/4 Quadrupler board (contd.)

Cir. Ref.	MI part number	Description
R243	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R244	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R245	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R246	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R247	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R248	24321/813	RESISTOR FIXED METAL-GLAZE 47K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47K5-ACCEPTABLE, SURFACE
R249	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R250	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R251	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R252	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R253	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R254	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R255	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R256	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R257	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R258	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R259	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R260	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R261	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R262	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R263	24321/813	RESISTOR FIXED METAL-GLAZE 47K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47K5-ACCEPTABLE, SURFACE
R264	24321/789	RESISTOR FIXED METAL-GLAZE 4K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-4K75-ACCEPTABLE, SURFACE
R265	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R301	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R302	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R303	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R304	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R305	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R306	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R307	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R308	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R309	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R310	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R311	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R312	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R313	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R314	24321/730	RESISTOR FIXED METAL-GLAZE 16R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-16R2-ACCEPTABLE, SURFACE
R315	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R316	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R317	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R318	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R319	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R401	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R402	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R403	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R404	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R405	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R406	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R407	24321/730	RESISTOR FIXED METAL-GLAZE 16R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-16R2-ACCEPTABLE, SURFACE
R408	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R409	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R410	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

R412	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R413	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R415	24321/763	RESISTOR FIXED METAL-GLAZE 390R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-392R-ACCEPTABLE, SURFACE
R416	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R417	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R418	24321/787	RESISTOR FIXED METAL-GLAZE 3K9 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-3K92-ACCEPTABLE, SURFACE
R419	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R420	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R421	24321/755	RESISTOR FIXED METAL-GLAZE 180R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-182R-ACCEPTABLE, SURFACE
R422	24681/086	RESISTOR FIXED METAL-GLAZE 8R2 +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE).
R423	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R424	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R425	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R426	24321/757	RESISTOR FIXED METAL-GLAZE 220R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-221R-ACCEPTABLE, SURFACE
R427	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R428	24321/787	RESISTOR FIXED METAL-GLAZE 3K9 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-3K92-ACCEPTABLE, SURFACE
R429	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R430	24321/790	RESISTOR FIXED METAL-GLAZE 5K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-5K11-ACCEPTABLE, SURFACE
R431	24321/755	RESISTOR FIXED METAL-GLAZE 180R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-182R-ACCEPTABLE, SURFACE
R432	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R433	24681/087	RESISTOR FIXED METAL-GLAZE 5R6 +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE).
R434	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
R435	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R436	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R437	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R438	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE

AB3/4 Quadrupler board (contd.)

Cir. Ref.	MI part number	Description
R439	24321/751	RESISTOR FIXED METAL-GLAZE 120R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121R-ACCEPTABLE, SURFACE
R440	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
R441	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R442	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R443	24321/833	RESISTOR FIXED METAL-GLAZE 330K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-332K-ACCEPTABLE, SURFACE
R444	24321/741	RESISTOR FIXED METAL-GLAZE 47R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-47R5-ACCEPTABLE, SURFACE
R445	24321/809	RESISTOR FIXED METAL-GLAZE 33K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33K2-ACCEPTABLE, SURFACE
R446	24321/608	RESISTOR FIXED METAL-GLAZE 10M +/- 10% 125mW 200V 500 ppm/DEG.C, SURFACE MOUNTED, SIZE 1206, (LOOSE
R447	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R448	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R449	24321/809	RESISTOR FIXED METAL-GLAZE 33K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33K2-ACCEPTABLE, SURFACE
R450	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R451	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R452	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R453	24321/815	RESISTOR FIXED METAL-GLAZE 56K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-56K2-ACCEPTABLE, SURFACE
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLB	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLC	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLD	23486/156	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 100R - CONTACTS 1A @ 28VDC, 200mA @ 115VAC, PCB
T101	43590/209	WOUND-PART TRANSFORMER, RING-CORE, 12:12 TURNS, TWISTED BIFILAR WOUND, UNMOUNTED.
T201	43590/228	WOUND-PART TRANSFORMER, RING-CORE, 7:7 TURNS, TWISTED BIFILAR WOUND, UNMOUNTED.

AB3/4 Quadrupler board (contd.)

Cir. Ref.	MI part number	Description
TR101	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR102	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR103	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR104	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR105	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR106	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR107	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR108	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR109	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR110	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR111	28487/823	TRANSISTOR NPN BIPOLAR AT-64020.. 20V 4.0GHz 200mA GAIN 10dB @ 2GHz, 28dBm O/P POWR, SURFACE MOUNTED,
TR201	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR202	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR203	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR204	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR205	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR206	28487/823	TRANSISTOR NPN BIPOLAR AT-64020.. 20V 4.0GHz 200mA GAIN 10dB @ 2GHz, 28dBm O/P POWR, SURFACE MOUNTED,
TR207	28459/211	TRANSISTOR GALLIUM-ARSENIDE MESFET ATF10736.. 5V 0.5-12GHz, 100mW 130mA 12.5dB GAIN,
TR208	28459/211	TRANSISTOR GALLIUM-ARSENIDE MESFET ATF10736.. 5V 0.5-12GHz, 100mW 130mA 12.5dB GAIN,
TR209	28459/211	TRANSISTOR GALLIUM-ARSENIDE MESFET ATF10736.. 5V 0.5-12GHz, 100mW 130mA 12.5dB GAIN,
TR210	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR211	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR301	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR302	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR303	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR304	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE

Cir. Ref.	MI part number	Description

AB3/4 Quadrupler board (contd.)

TR305	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR401	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR402	28459/211	TRANSISTOR GALLIUM-ARSENIDE MESFET ATF10736.. 5V 0.5-12GHz, 100mW 130mA 12.5dB GAIN,
TR403	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR404	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR405	28435/238	TRANSISTOR PNP BIPOLAR BD136.... 45V 75MHz 8W 1.5A 25hFE @ 5mA, TO-126.
TR406	28459/207	TRANSISTOR GALLIUM-ARSENIDE FET ATF-45101... 3V 2-10GHz 500mW SURFACE MOUNTED, CASE-AVANTEK-100.
TR407	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR408	28433/828	TRANSISTOR PNP BIPOLAR BC858B.... 30V 150MHz 200mW 100mA 220hFE @ 2mA, MARKING CODE 3K, SURFACE
TR409	28435/238	TRANSISTOR PNP BIPOLAR BD136.... 45V 75MHz 8W 1.5A 25hFE @ 5mA, TO-126.
TR410	28459/206	TRANSISTOR GALLIUM-ARSENIDE FET STF 91-3078.. 3V 2-8GHz 1W SPECIAL-MI SELECTED WAFER, SURFACE
	43137/318	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 5, - SKXJ to AT10
	43137/962	RF-CABLE SEMI-RIGID UT85, 50 OHMS, UNTERMINATED - PLBR to SKBL, AB2/2

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board

Issue 7

When ordering, prefix circuit reference with AB3/5

Cir. Ref.	MI part number	Description
	44829-772H	Complete unit
C1	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C2	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C3	26386/838	CAPACITOR FIXED CERAMIC 1.5nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C4	26386/838	CAPACITOR FIXED CERAMIC 1.5nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C5	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C6	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C7	26458/065	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 16V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C8	26458/065	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 16V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C9	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C10	26386/950	CAPACITOR FIXED CERAMIC 1nF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 1206, NICKEL
C11	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C12	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C13	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C14	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C15	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C16	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C17	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C18	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C19	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C20	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C21	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C24	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C25	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board (contd.)

C26	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C27	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C28	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C29	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C30	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C31	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C32	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C33	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C34	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C35	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C36	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C37	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C38	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C39	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C41	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C44	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C45	26343/784	CAPACITOR FIXED CERAMIC 68pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C46	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C47	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C50	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C51	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C53	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C54	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C55	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C56	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C57	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board (contd.)

C58	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C59	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C61	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C62	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C63	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C64	26386/875	CAPACITOR FIXED CERAMIC 10nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C65	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C66	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
D1	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D2	28335/670	DIODE BAND SWITCHING, BAT18... 35V 100mA 1.2Vf @ 100mA, MARKING CODE A2, SURFACE MOUNTED, SOT-23,
D3	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D4	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D5	28349/024	DIODE MIXER/DETECTOR, SCHOTTKY, DME3040... QUAD, 0.5pF 0.4Vf @ 1mA, S-BAND, MEDIUM-DRIVE, RING CCT,
D6	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D7	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D8	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D9	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D10	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D11	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D12	28383/962	DIODE PIN, BAR60... TRIPLE, 100V 0.25pF 1.05Vf @ 100mA, T-CIRCUIT, MARKING CODE 60, SURFACE
D16	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf
D17	28349/022	DIODE SMALL-SIGNAL, SCHOTTKY, HSMS-2812... DUAL, 20V 1A 0.41Vf @ 1mA, IN SERIES, MARKING CODE B2,
D19	28349/025	DIODE MIXER/DETECTOR, SCHOTTKY, 5082-2209... 125mW 4V MEDIUM BARRIER, STRIPLINE TYPE, SUBSTRATE
IC1	28461/388	IC ANALOGUE OPERATIONAL AMP LM324D... QUAD, GENERAL PURPOSE, LINEAR, BIPOLAR, 14 PIN,

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board (contd.)

IC2	28461/388	IC ANALOGUE OPERATIONAL AMP LM324D... QUAD, GENERAL PURPOSE, LINEAR, BIPOLAR, 14 PIN,
IC3	28465/056	IC DIGITAL DECODER/DEMULTIPLEX 74HC139.. 2 INPUT, 4 BIT, DUAL, INVERTING, 1 BIT ADDRESS,
IC4	28461/388	IC ANALOGUE OPERATIONAL AMP LM324D... QUAD, GENERAL PURPOSE, LINEAR, BIPOLAR, 14 PIN,
IC5	28461/412	IC ANALOGUE OPERATIONAL AMP TL072... DUAL, JFET INPUT, LOW NOISE, 8 PIN, SMALL-OUTLINE.

L10	23642/423	INDUCTOR FIXED 10uH +/- 10% MOULDED-EPOXY, MINIATURE, 180mA 3R7 MAX, 55 Q @ 7.9 MHz, 46 MHz
L11	23642/423	INDUCTOR FIXED 10uH +/- 10% MOULDED-EPOXY, MINIATURE, 180mA 3R7 MAX, 55 Q @ 7.9 MHz, 46 MHz
L12	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz
L13	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz
L14	23642/500	INDUCTOR FIXED 0.22uH +/- 20% MOULDED-EPOXY, 710mA 0R1 MAX, 40 Q @ 25.2 MHz, 150 MHz SRF, SURFACE

R1	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R2	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R3	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R4	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R5	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R6	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R7	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R8	24338/006	RESISTOR FIXED METAL-GLAZE 220R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (TAPED).
R9	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R10	24321/805	RESISTOR FIXED METAL-GLAZE 22K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-22K1-ACCEPTABLE, SURFACE
R11	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R12	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R13	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R14	24321/731	RESISTOR FIXED METAL-GLAZE 18R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-18R2-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board (contd.)

R15	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R16	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R17	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R18	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R19	24321/815	RESISTOR FIXED METAL-GLAZE 56K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-56K2-ACCEPTABLE, SURFACE
R20	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R21	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R22	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R23	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R24	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R25	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R26	24338/002	RESISTOR FIXED METAL-GLAZE 100R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (TAPED).
R27	24331/961	RESISTOR FIXED CARBON-COMPOSITION 180R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R28	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R29	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R30	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R31	24321/805	RESISTOR FIXED METAL-GLAZE 22K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-22K1-ACCEPTABLE, SURFACE
R32	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R33	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R34	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R35	24321/796	RESISTOR FIXED METAL-GLAZE 9K1 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-9K09-ACCEPTABLE, SURFACE
R36	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R37	24321/809	RESISTOR FIXED METAL-GLAZE 33K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33K2-ACCEPTABLE, SURFACE
R38	24321/837	RESISTOR FIXED METAL-GLAZE 470K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-475K-ACCEPTABLE, SURFACE
R39	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R40	24321/740	RESISTOR FIXED METAL-GLAZE 43R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-43R2-ACCEPTABLE, SURFACE

AB3/5 Frequency doubler board (contd.)

Cir. Ref.	MI part number	Description
R41	24681/528	RESISTOR NETWORK ISOLATED, THICK-FILM, 10K 2% 480mW 50V 200 ppm/DEG.C, 8 RESISTORS, SURFACE
R42	24321/735	RESISTOR FIXED METAL-GLAZE 27R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-27R4-ACCEPTABLE, SURFACE
R43	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R44	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R45	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R46	24681/526	RESISTOR NETWORK ISOLATED, THICK-FILM, 100R 2% 500mW 25V 200 ppm/DEG.C, 7 RESISTORS, SURFACE
R48	24321/726	RESISTOR FIXED METAL-GLAZE 11R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-11R0-ACCEPTABLE, SURFACE
R49	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R52	24321/740	RESISTOR FIXED METAL-GLAZE 43R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-43R2-ACCEPTABLE, SURFACE
R53	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R54	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R55	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R56	24321/750	RESISTOR FIXED METAL-GLAZE 110R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-110R-ACCEPTABLE, SURFACE
R57	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R58	24321/745	RESISTOR FIXED METAL-GLAZE 68R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-68R1-ACCEPTABLE, SURFACE
R61	24321/749	RESISTOR FIXED METAL-GLAZE 100R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-100R-ACCEPTABLE, SURFACE
R63	24331/976	RESISTOR FIXED CARBON-COMPOSITION 220R +/- 5% 125mW 150V AXIAL, (LOOSE OR TAPED).
R64	24338/006	RESISTOR FIXED METAL-GLAZE 220R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (TAPED).
R65	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R66	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R67	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R68	24321/737	RESISTOR FIXED METAL-GLAZE 33R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-33R2-ACCEPTABLE, SURFACE
R72	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE
R73	24321/773	RESISTOR FIXED METAL-GLAZE 1K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K00-ACCEPTABLE, SURFACE

Cir. Ref.	MI part number	Description

AB3/5 Frequency doubler board (contd.)

Cir. Ref.	MI part number	Description
R76	24321/760	RESISTOR FIXED METAL-GLAZE 300R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-301R-ACCEPTABLE, SURFACE
R77	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R78	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R79	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R80	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R81	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R82	24321/735	RESISTOR FIXED METAL-GLAZE 27R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-27R4-ACCEPTABLE, SURFACE
RLA	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLB	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLC	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
RLD	23486/101	RELAY MAGNETIC, DOUBLE-POLE CHANGEOVER, 5V COIL, 62R - CONTACTS 1A @ 28VDC, 9.5mmSQ, 9.6mm HIGH,
TR1	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR2	28487/823	TRANSISTOR NPN BIPOLAR AT-64020.. 20V 4.0GHz 200mA GAIN 10dB @ 2GHz, 28dBm O/P POWR, SURFACE MOUNTED,
TR3	28487/822	TRANSISTOR NPN BIPOLAR LTE42005S.. 18V 4.2GHz 550mW 110mA 7.2dB, SURFACE MOUNTED,CASE-FO-41B
TR4	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR5	28435/241	TRANSISTOR PNP BIPOLAR BCX17... 45V 100MHz 425mW 500mA MARKING CODE T1, SURFACE MOUNTED, SOT-23,
TR6	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR7	28487/807	TRANSISTOR NPN BIPOLAR 42085.... 12V 6GHz 500mW 80mA 30hFE @ 35mA, 20dBm, SURFACE MOUNTED,
TR8	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
	43590/209	WOUND-PART TRANSFORMER, RING-CORE, 12:12 TURNS,
	43137/318	RIBBON-LEAD 20 WAY, SOCKET 20 WAY, KEY POS 5, - PLBR to SKBL, AB2/2

Cir. Ref.	MI part number	Description

AB4/1 Beat frequency oscillator board

Issue 3

When ordering, prefix circuit reference with AB4/1

Cir. Ref.	MI part number	Description
	44829-697A	Complete unit
C1	26343/486	CAPACITOR FIXED CERAMIC 5.6pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26343/577	CAPACITOR FIXED CERAMIC 39pF +/-5% 100V COG/NP0 MULTILAYER, RADIAL, 2.5mm PWP, (LOOSE OR TAPED).
C3	26343/578	CAPACITOR FIXED CERAMIC 47pF +/-5% 100V COG, MULTILAYER, RADIAL, 2.5mm PWP, (LOOSE OR TAPED).
C4	26343/576	CAPACITOR FIXED CERAMIC 27pF +/-5% 100V NP0 MULTILAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26343/486	CAPACITOR FIXED CERAMIC 5.6pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26343/433	CAPACITOR FIXED CERAMIC 47pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26343/431	CAPACITOR FIXED CERAMIC 82pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C13	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C14	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C16	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C17	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C18	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C19	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C20	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C22	26486/233	CAPACITOR FIXED TANTALUM 47uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C23	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AB4/1 Beat frequency oscillator board (contd.)

Cir. Ref.	MI part number	Description
C24	26421/122	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C25	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C26	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C27	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C28	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C29	26421/115	CAPACITOR FIXED ALUMINIUM 33uF +/-20% 25V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C30	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
L1	23642/045	INDUCTOR FIXED 0.056uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.08A 0R048 MAX, 33 Q @ 25 MHz, 990 MHz
L2	23642/046	INDUCTOR FIXED 0.068uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.94A 0R055 MAX, 33 Q @ 25 MHz, 900 MHz
L3	23642/045	INDUCTOR FIXED 0.056uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.08A 0R048 MAX, 33 Q @ 25 MHz, 990 MHz
L4	23642/042	INDUCTOR FIXED 0.033uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.8A 0R0255 MAX, 33 Q @ 30 MHz, 1.175K
L11	23642/552	INDUCTOR FIXED 3.3uH +/- 10% COATED-LACQUER, MINIATURE, 350mA 1R6 MAX, 32 Q @ 7.9 MHz, 115 MHz
L12	44291/019	WOUND-PART INDUCTOR, 6.5mH, POT-CORE, RM6, 200 TURNS, LABELLED.
L15	23642/422	INDUCTOR FIXED 0.68uH +/- 10% MOULDED-EPOXY, MINIATURE, 450mA 0R6 MAX, 28 Q @ 25 MHz, 250 MHz
R1	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/043	RESISTOR FIXED METAL-FILM 56R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/079	RESISTOR FIXED METAL-FILM 1K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AB4/1 Beat frequency oscillator board (contd.)

Cir. Ref.	MI part number	Description
R7	24772/037	RESISTOR FIXED METAL-FILM 33R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/054	RESISTOR FIXED METAL-FILM 160R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/054	RESISTOR FIXED METAL-FILM 160R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/062	RESISTOR FIXED METAL-FILM 360R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24573/047	RESISTOR FIXED METAL-OXIDE 82R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24773/239	RESISTOR FIXED METAL-FILM 39R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/070	RESISTOR FIXED METAL-FILM 750R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/061	RESISTOR FIXED METAL-FILM 330R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/017	RESISTOR FIXED METAL-FILM 4R7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/017	RESISTOR FIXED METAL-FILM 4R7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	25685/403	THERMISTOR NEGATIVE-TC DISC, 10mm 33R @ 25 DEG.C, 10% RADIAL.
R28	24573/032	RESISTOR FIXED METAL-OXIDE 20R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R29	24573/032	RESISTOR FIXED METAL-OXIDE 20R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).

Cir. Ref.	MI part number	Description

AB4/1 Beat frequency oscillator board (contd.)

Cir. Ref.	MI part number	Description
TR1	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR2	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR3	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR4	28452/248	TRANSISTOR NPN BIPOLAR BFQ34T.... 18V 3GHz 1W 150mA 25hFE @ 100mA, SURFACE MOUNTED, SOT-37.
X1	28531/008	RF-MIXER DOUBLE-BALANCED, DIODE RING, TAK-1H.. 2-500MHz, 50R 15 dBm RF-1dB COMPRESS, 6 dB LOSS,

AC1 Output loop board

Issue 10

When ordering, prefix circuit reference with AC1

Cir. Ref.	MI part number	Description
	44828-752V	Complete board
C1	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C2	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C3	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C4	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C7	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C8	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C9	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C11	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2
C12	26878/408	CAPACITOR VARIABLE POLYPROPYLENE 5.5pF to 65pF 100V VERTICAL-PCB MOUNT, 10mm DIA, 10mm LONG, 3
C13	26538/565	CAPACITOR FIXED POLYSTYRENE 120pF +/-2% 63V 150 ppm/DEG.C, RADIAL, 7.6mm PWP, (TAPED).
C14	26383/582	CAPACITOR FIXED CERAMIC 470pF +/-10% 63V 2C2
C15	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C16	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C18	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C19	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C20	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C24	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
C25	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C26	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C30	26421/121	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 63V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C31	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C32	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C33	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C34	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C35	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C36	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C37	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C38	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C39	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C40	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C41	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C42	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C101	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C102	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C103	26386/981	CAPACITOR FIXED CERAMIC 82pF +/-2% 50V 60 ppm/DEG.C, HIGH Q, MULTILAYER, SURFACE-MOUNTED,
C104	26386/963	CAPACITOR FIXED CERAMIC 100pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C105	26386/961	CAPACITOR FIXED CERAMIC 39pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C106	26386/962	CAPACITOR FIXED CERAMIC 68pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C107	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C108	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C109	26386/962	CAPACITOR FIXED CERAMIC 68pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C110	26386/960	CAPACITOR FIXED CERAMIC 27pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C111	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
C112	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C113	26386/958	CAPACITOR FIXED CERAMIC 18pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C114	26386/961	CAPACITOR FIXED CERAMIC 39pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C115	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C116	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C117	26386/959	CAPACITOR FIXED CERAMIC 22pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C118	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C119	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C120	26386/957	CAPACITOR FIXED CERAMIC 12pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C121	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C122	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C123	26386/963	CAPACITOR FIXED CERAMIC 100pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C124	26386/963	CAPACITOR FIXED CERAMIC 100pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C125	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C126	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C127	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C128	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C129	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C130	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C131	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C132	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C133	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C134	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C135	26386/974	CAPACITOR FIXED CERAMIC 27pF 5% 50V 750 ppm/DEG.C, MULTILAYER, SURFACE-MOUNTED, SIZE 1206, (TAPED).
C136	26386/963	CAPACITOR FIXED CERAMIC 100pF +/-2% 50V 60 ppm/DEG.C, HIGH-Q, MULTILAYER, SURFACE-MOUNTED,
C137	26386/981	CAPACITOR FIXED CERAMIC 82pF +/-2% 50V 60 ppm/DEG.C, HIGH Q, MULTILAYER, SURFACE-MOUNTED,

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
C138	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C139	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C201	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C202	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C203	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C204	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C205	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C206	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C207	26421/118	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C208	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C209	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C210	26343/432	CAPACITOR FIXED CERAMIC 150pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C211	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
D1	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D2	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D3	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D4	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D5	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D6	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D7	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D8	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D9	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D10	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D11	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

D12	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D13	28371/844	DIODE ZENER, BZX79-C10... 500mW 10V 5% 250mA AXIAL, DO-35, (TAPED).
D14	28349/011	DIODE SMALL-SIGNAL, SCHOTTKY, 5082-2826... 250mW 15V 1.2pF 1Vf @ 20mA, BATCH MATCHED TO WITHIN 10mV
D15	28349/011	DIODE SMALL-SIGNAL, SCHOTTKY, 5082-2826... 250mW 15V 1.2pF 1Vf @ 20mA, BATCH MATCHED TO WITHIN 10mV
D16	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D17	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D18	28371/417	DIODE ZENER, BZX79-C5V6... 500mW 5.6V 5% 250mA AXIAL, DO-35, (TAPED).
D19	28357/028	DIODE RECTIFIER, 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D101	28381/340	DIODE VARIABLE CAPACITNCE, MVAM125... 280mW 28V 50mA 500pF @ 1V, CAPAC RATIO 15 MIN, PLASTIC
D102	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D103	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D104	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D105	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D106	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D107	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D108	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D109	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D110	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D111	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).

IC1	28469/119	IC DIGITAL INVERTER 74HC14.. HEX, SCHMITT-TRIGGER OPERATION, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC2	28465/060	IC DIGITAL DECODER/DEMULTIPLEX 74HC4515.. SINGLE, 4 TO 16 LINE, INVERTING, 0.3" LEAD SPACING,
IC3	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC4	28462/623	IC DIGITAL FLIP-FLOP/D-TYPE 74HC175... QUAD, POS EDGE TRIGGER, SET/RESET, CMOS-H/SPEED, 16 PIN,
IC5	28471/037	IC MICRO EEPROM, 64 x 16 BIT, 93C46... 5V SUPPLY, CMOS, 8 PIN, DUAL-IN-LINE.

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

IC6	28461/757	IC ANALOGUE VOLTAGE-REFERENCE AD586... 5V PRECISION, 25ppm/DEG.C, 8 PIN, DUAL-IN-LINE.
IC7	28461/984	IC ANALOGUE D/A-CONVERTER AD7225... QUAD, 8 BIT, SEPERATE REFERENCE INPUTS, CMOS, 24 PIN,
IC8	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC9	28462/627	IC DIGITAL FLIP-FLOP/D-TYPE 74HC273.... OCTAL, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 20 PIN,
IC10	28469/766	IC DIGITAL MULTIPLEXER 74HCT251.. 8 INPUT, 1 BIT, SINGLE, TRI-STATE, CMOS-H/SPEED+TTL, 16 PIN,
IC11	28466/367	IC DIGITAL NAND-GATE 74HC20.. 4 INPUT, DUAL, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC12	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC13	28461/349	IC ANALOGUE OPERATIONAL AMP TL074CN... QUAD, JFET-INPUT, LINEAR, 14 PIN, DUAL-IN-LINE.
IC14	28461/869	IC ANALOGUE SWITCH DG413DJ... QUAD, 5V SPST, 2 N/O & 2 N/C, CMOS, 16 PIN, DUAL-IN-LINE.
IC15	28461/436	IC ANALOGUE OPERATIONAL AMP LT1028.. SINGLE, 18V NOISE VOLTAGE DENSITY 1.9nV, SLEW-RATE 11V/uS, I/P
IC101	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC102	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC103	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
IC104	28461/978	IC ANALOGUE SWITCH DG411... QUAD, 5V SPST, CMOS, 16 PIN, DUAL-IN-LINE.
L1	23642/547	INDUCTOR FIXED 0.47uH +/- 10% COATED-LACQUER, MINIATURE, 1.41A 0R1 MAX, 50 Q @ 25 MHz, 300 MHz
L2	23642/546	INDUCTOR FIXED 0.33uH +/- 10% COATED-LACQUER, MINIATURE, 1.91A 0R06 MAX, 50 Q @ 25 MHz, 360 MHz
L3	23642/546	INDUCTOR FIXED 0.33uH +/- 10% COATED-LACQUER, MINIATURE, 1.91A 0R06 MAX, 50 Q @ 25 MHz, 360 MHz
L101	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L102	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L103	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L201	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L202	23642/042	INDUCTOR FIXED 0.033uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.8A 0R0255 MAX, 33 Q @ 30 MHz, 1.175K
L203	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
L204	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
L205	23642/557	INDUCTOR FIXED 22uH +/- 10% COATED-LACQUER, MINIATURE, 260mA 3R MAX, 55 Q @ 2.5 MHz, 25 MHz
LK1	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ
LK2	23435/990	CONNECTOR SHORTING, SOCKET, 2 WAY, FOR 0.64mm SQ
PLD	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLE	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLF	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLG	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLCA	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLCB	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
R1	24772/077	RESISTOR FIXED METAL-FILM 1K5 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/106	RESISTOR FIXED METAL-FILM 24K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/106	RESISTOR FIXED METAL-FILM 24K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
R14	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/101	RESISTOR FIXED METAL-FILM 15K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R37	24772/034	RESISTOR FIXED METAL-FILM 24R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/045	RESISTOR FIXED METAL-FILM 68R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

R41	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R101	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R102	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R103	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R104	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R105	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R106	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R107	24772/141	RESISTOR FIXED METAL-FILM 1M +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R108	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R109	24773/241	RESISTOR FIXED METAL-FILM 47R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R110	24681/512	RESISTOR NETWORK ISOLATED, THICK-FILM, 100K 2% 1.5W 500 ppm/DEG.C, 8 RESISTORS, LOW PROFILE, 16
R111	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R112	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R113	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

R114	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R115	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R116	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R117	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R118	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R119	24772/099	RESISTOR FIXED METAL-FILM 12K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R120	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R121	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R122	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R123	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R124	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R125	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R126	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R127	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R128	24772/037	RESISTOR FIXED METAL-FILM 33R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R201	24772/037	RESISTOR FIXED METAL-FILM 33R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R202	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R203	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R204	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R205	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R206	24772/067	RESISTOR FIXED METAL-FILM 560R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R207	24772/068	RESISTOR FIXED METAL-FILM 620R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R208	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R209	24772/013	RESISTOR FIXED METAL-FILM 3R3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R210	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AC1 Output loop board (contd.)

Cir. Ref.	MI part number	Description
TR1	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).
TR2	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).
TR101	28459/028	TRANSISTOR N-CHANNEL-DEPLETION JFET J310.... 25V 350mW 24mA TO-92, (LOOSE).
TR102	28455/438	TRANSISTOR NPN BIPOLAR BD135.... 45V 50MHz 8W 1A 25hFE @ 5mA, TO-126.
TR201	28451/694	TRANSISTOR NPN BIPOLAR BFR91A.... 12V 6GHz 300mW 35mA 40hFE @ 30mA, SURFACE MOUNTED, SOT-37.
TR202	28451/694	TRANSISTOR NPN BIPOLAR BFR91A.... 12V 6GHz 300mW 35mA 40hFE @ 30mA, SURFACE MOUNTED, SOT-37.
X201	28531/003	RF-MIXER DOUBLE-BALANCED, DIODE RING, TFM-2.. 1-1000MHz, 50R 1 dBm RF-1dB COMPRESS, 6 dB LOSS,

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board

Issue 8

When ordering, prefix circuit reference with AD1

Cir. Ref.	MI part number	Description
	44829-707U	Complete unit
C1	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C4	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C5	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C6	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C9	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C10	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C11	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C12	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C13	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C14	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C15	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C16	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C17	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C18	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C19	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C20	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C21	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C22	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C23	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

C24	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C25	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C26	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C27	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C28	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C29	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C30	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C31	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C32	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C33	26343/489	CAPACITOR FIXED CERAMIC 22pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C34	26878/406	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 10pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C35	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C36	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C37	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C38	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C39	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C40	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C41	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C42	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C43	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C44	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C45	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C46	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C47	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C48	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C49	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

C50	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C52	26386/818	CAPACITOR FIXED CERAMIC 33pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C53	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C54	26343/488	CAPACITOR FIXED CERAMIC 8.2pF +/-0.25pF 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C55	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C56	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C57	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C58	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C59	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C60	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C61	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C62	26343/498	CAPACITOR FIXED CERAMIC 18pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C63	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C66	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C67	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C68	26383/591	CAPACITOR FIXED CERAMIC 4.7nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C69	26343/438	CAPACITOR FIXED CERAMIC 120pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C70	26343/434	CAPACITOR FIXED CERAMIC 68pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C71	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C72	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C73	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C74	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C75	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C76	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C77	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C78	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

C79	26343/447	CAPACITOR FIXED CERAMIC 330pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C80	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C81	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C82	26343/435	CAPACITOR FIXED CERAMIC 220pF +/-2% 63V N750 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C83	26343/430	CAPACITOR FIXED CERAMIC 39pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C84	26878/407	CAPACITOR VARIABLE POLYPROPYLENE 2pF to 22pF 100V VERTICAL-PCB MOUNT, 7.5mm DIA, 10mm LONG, 3 PIN,
C85	26343/494	CAPACITOR FIXED CERAMIC 33pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C86	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C87	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C88	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C89	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C90	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C91	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C92	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C93	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C94	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C95	26582/426	CAPACITOR FIXED POLYESTER 10nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C96	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C97	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C98	26421/126	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C99	26421/124	CAPACITOR FIXED ALUMINIUM 220uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, 13mm HIGH MAX,
C100	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C101	26383/585	CAPACITOR FIXED CERAMIC 1nF +/-10% 63V 2C2 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C102	26343/493	CAPACITOR FIXED CERAMIC 15pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C103	26343/437	CAPACITOR FIXED CERAMIC 100pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C104	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

Cir. Ref.	MI part number	Description
D1	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D2	28381/101	DIODE VARIABLE CAPACITNCE, BB405B... 30V 20mA 11.5pF @ 3V, CAPAC RATIO 4.8 MIN, AXIAL, DO-34,
D3	28381/101	DIODE VARIABLE CAPACITNCE, BB405B... 30V 20mA 11.5pF @ 3V, CAPAC RATIO 4.8 MIN, AXIAL, DO-34,
D4	28381/101	DIODE VARIABLE CAPACITNCE, BB405B... 30V 20mA 11.5pF @ 3V, CAPAC RATIO 4.8 MIN, AXIAL, DO-34,
D5	28381/101	DIODE VARIABLE CAPACITNCE, BB405B... 30V 20mA 11.5pF @ 3V, CAPAC RATIO 4.8 MIN, AXIAL, DO-34,
D6	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D7	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
D8	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D9	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D10	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D11	28371/401	DIODE ZENER, BZX79-C5V1... 500mW 5.1V 5% 250mA AXIAL, DO-35, (TAPED).
D12	28349/011	DIODE SMALL-SIGNAL, SCHOTTKY, 5082-2826... 250mW 15V 1.2pF 1Vf @ 20mA, BATCH MATCHED TO WITHIN 10mV
D14	28335/675	DIODE BAND SWITCHING, BA482... 35V 100mA 1.2Vf @ 100mA, AXIAL, DO-34, (TAPED).
D15	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
IC1	28461/448	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0386... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC2	28461/448	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0386... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC3	28461/448	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0386... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC4	28461/448	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0386... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC5	28461/348	IC ANALOGUE OPERATIONAL AMP TL072CP... DUAL, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC6	28461/436	IC ANALOGUE OPERATIONAL AMP LT1028.. SINGLE, 18V NOISE VOLTAGE DENSITY 1.9nV, SLEW-RATE 11V/uS, I/P
L1	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L2	23642/563	INDUCTOR FIXED 220uH +/- 10% COATED-LACQUER, MINIATURE, 110mA 17R MAX, 45 Q @ 0.79 MHz, 4.2 MHz
L3	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

L4	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L5	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L6	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L7	23642/546	INDUCTOR FIXED 0.33uH +/- 10% COATED-LACQUER, MINIATURE, 1.91A 0R06 MAX, 50 Q @ 25 MHz, 360 MHz
L8	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L9	23642/042	INDUCTOR FIXED 0.033uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.8A 0R0255 MAX, 33 Q @ 30 MHz, 1.175K
L10	23642/042	INDUCTOR FIXED 0.033uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.8A 0R0255 MAX, 33 Q @ 30 MHz, 1.175K
L11	23642/936	INDUCTOR VARIABLE 0.24uH NOM, UNSCREENED, 2 PIN, 10mm SQUARE PCB MOUNT BASE, Q>92 @ 40MHz, (LOOSE).
L12	23642/547	INDUCTOR FIXED 0.47uH +/- 10% COATED-LACQUER, MINIATURE, 1.41A 0R1 MAX, 50 Q @ 25 MHz, 300 MHz
L13	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L14	23642/481	INDUCTOR FIXED 0.15uH +/- 10% MOULDED-EPOXY, 2.45A 0R3 MAX, 50 Q @ 25 MHz, 525 MHz SRF, AXIAL,
L15	23642/546	INDUCTOR FIXED 0.33uH +/- 10% COATED-LACQUER, MINIATURE, 1.91A 0R06 MAX, 50 Q @ 25 MHz, 360 MHz
L16	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L17	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz
L18	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L19	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz
L20	23642/549	INDUCTOR FIXED 1uH +/- 10% COATED-LACQUER, MINIATURE, 820mA 0R3 MAX, 45 Q @ 25 MHz, 210 MHz
L21	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L22	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L23	23642/551	INDUCTOR FIXED 2.2uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 32 Q @ 7.9 MHz, 140 MHz
L24	23642/042	INDUCTOR FIXED 0.033uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.8A 0R0255 MAX, 33 Q @ 30 MHz, 1.175K
L25	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz
L26	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz
L27	23642/045	INDUCTOR FIXED 0.056uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.08A 0R048 MAX, 33 Q @ 25 MHz, 990 MHz
L28	23642/418	INDUCTOR FIXED 0.1uH +/- 10% MOULDED-EPOXY, MINIATURE, 1.24A 0R08 MAX, 35 Q @ 25 MHz, 625 MHz
L29	23642/045	INDUCTOR FIXED 0.056uH +/- 10% MOULDED-EPOXY, MINIATURE, 2.08A 0R048 MAX, 33 Q @ 25 MHz, 990 MHz

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

R1	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24773/248	RESISTOR FIXED METAL-FILM 91R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R16	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/104	RESISTOR FIXED METAL-FILM 20K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	24573/061	RESISTOR FIXED METAL-OXIDE 330R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R25	24773/242	RESISTOR FIXED METAL-FILM 51R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24773/257	RESISTOR FIXED METAL-FILM 220R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R29	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE

AD1 Harmonic loop board (contd.)

Cir. Ref.	MI part number	Description
R30	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R31	24338/006	RESISTOR FIXED METAL-GLAZE 220R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (TAPED).
R32	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R33	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R34	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R35	24573/061	RESISTOR FIXED METAL-OXIDE 330R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R40	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R46	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R48	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R50	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R51	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R52	24772/017	RESISTOR FIXED METAL-FILM 4R7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R53	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R54	24772/065	RESISTOR FIXED METAL-FILM 470R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R55	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R56	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R57	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R58	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R59	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

R60	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R61	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R62	24772/029	RESISTOR FIXED METAL-FILM 15R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R63	24772/069	RESISTOR FIXED METAL-FILM 680R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R64	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R65	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R66	24772/033	RESISTOR FIXED METAL-FILM 22R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R67	24772/037	RESISTOR FIXED METAL-FILM 33R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R68	24573/049	RESISTOR FIXED METAL-OXIDE 100R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R69	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R70	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R71	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R72	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R73	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R74	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R75	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R76	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R77	24772/025	RESISTOR FIXED METAL-FILM 10R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R78	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R79	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R80	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R81	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R82	24772/053	RESISTOR FIXED METAL-FILM 150R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R83	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R84	24772/081	RESISTOR FIXED METAL-FILM 2K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R85	24773/251	RESISTOR FIXED METAL-FILM 120R +/- 2% 250mW 250V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

R86	24772/034	RESISTOR FIXED METAL-FILM 24R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R87	24772/051	RESISTOR FIXED METAL-FILM 120R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R88	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R89	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R90	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R91	24772/085	RESISTOR FIXED METAL-FILM 3K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R92	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R93	24772/042	RESISTOR FIXED METAL-FILM 51R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R94	24772/087	RESISTOR FIXED METAL-FILM 3K9 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R95	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R96	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R97	24772/113	RESISTOR FIXED METAL-FILM 47K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R98	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R99	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R100	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

TR1	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR2	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR3	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR4	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR5	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR6	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR7	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR8	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.
TR9	28452/172	TRANSISTOR NPN BIPOLAR BFR96S.... 15V 5GHz 700mW 100mA 25hFE @ 70mA, SURFACE MOUNTED, SOT-37.

Cir. Ref.	MI part number	Description

AD1 Harmonic loop board (contd.)

TR10	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR11	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).
TR12	28459/068	TRANSISTOR N-CHANNEL-ENHANCE MOSFET BST70A... 80V 1W 500mA 2R TO-92, (LOOSE).
X1	28531/014	RF-MIXER DOUBLE-BALANCED, DIODE RING, TFM-5.. 5-1500MHz, 1 dBm RF-1dB COMPRESS, 6.5 dB LOSS, 35
X2	28531/003	RF-MIXER DOUBLE-BALANCED, DIODE RING, TFM-2.. 1-1000MHz, 50R 1 dBm RF-1dB COMPRESS, 6 dB LOSS,
XL1	44520/001	CRYSTAL 135 MHz +/- 10 ppm, SPECIAL-SELECTED, SERIES RESONANCE, 60R ESR MAX, STABILITY +/-30ppm

Cir. Ref.	MI part number	Description

AD2 Mixer board

Issue 3

When ordering, prefix circuit reference with AD2

Cir. Ref.	MI part number	Description
	44829-754W	Complete unit
C1	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C2	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C3	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C4	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C5	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C6	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C7	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C8	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C9	26386/816	CAPACITOR FIXED CERAMIC 22pF +/-5% 50V NPO MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C10	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C11	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C12	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C13	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C14	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C15	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C16	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C17	26386/863	CAPACITOR FIXED CERAMIC 1nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C18	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
IC1	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC2	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
IC3	28461/440	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-1104.. 5.5V 60mA GAIN 10.5dB @ 1.0GHz, 3dB BANDWIDTH 50MHz -
IC4	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -

Cir. Ref.	MI part number	Description

AD2 Mixer board (contd.)

IC5	28461/415	IC ANALOGUE MICROWAVE-AMPLIFIER MSA-0385... 5V 35mA GAIN 12dB @ 1.0GHz, 3dB BANDWIDTH DC -
R1	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R2	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R3	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R4	24338/007	RESISTOR FIXED METAL-GLAZE 270R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE OR
R5	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R6	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R7	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R8	24338/007	RESISTOR FIXED METAL-GLAZE 270R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE OR
R9	24338/005	RESISTOR FIXED METAL-GLAZE 180R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE OR
R10	24321/742	RESISTOR FIXED METAL-GLAZE 51R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-51R1-ACCEPTABLE, SURFACE
R11	24321/747	RESISTOR FIXED METAL-GLAZE 82R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-82R5-ACCEPTABLE, SURFACE
R12	24321/748	RESISTOR FIXED METAL-GLAZE 91R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-90R9-ACCEPTABLE, SURFACE
R13	24321/747	RESISTOR FIXED METAL-GLAZE 82R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-82R5-ACCEPTABLE, SURFACE
R14	24338/007	RESISTOR FIXED METAL-GLAZE 270R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE OR
R15	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R16	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R17	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R18	24338/007	RESISTOR FIXED METAL-GLAZE 270R +/- 5% 1W 100V 300 ppm/DEG.C, SURFACE MOUNTED, SIZE 2512, (LOOSE OR
R19	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
R20	24321/738	RESISTOR FIXED METAL-GLAZE 36R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-36R5-ACCEPTABLE, SURFACE
R21	24321/753	RESISTOR FIXED METAL-GLAZE 150R +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150R-ACCEPTABLE, SURFACE
X1	28531/013	RF-MIXER DOUBLE-BALANCED, DIODE RING, TFM-4H.. 5-1200MHz, 15 dBm RF-1dB COMPRESS, 6.5 dB LOSS, 35

Cir. Ref.	MI part number	Description

AF1 Key matrix board

Issue 3

When ordering, prefix circuit reference with AF1

Cir. Ref.	MI part number	Description
	44829-548D	Complete unit
SA	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SB	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SC	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SD	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SE	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SF	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SG	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SH	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SJ	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SK	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SL	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SM	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SN	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SP	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SR	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SS	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
ST	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SU	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SV	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SW	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SX	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SY	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SZ	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.

Cir. Ref.	MI part number	Description

AF1 Key matrix board (contd.)

SAA	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAB	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAC	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAD	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAE	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAF	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAG	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAH	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAJ	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAK	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAL	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAM	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAN	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAP	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAR	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAS	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
SAT	23465/211	SWITCH-PART CONTACT-DOME, ELASTOMERIC, WITH CARBON CENTRE, 9.9mm LONG, 9.9mm WIDE, RUBBER.
	37591/358	MOULDED-PART ABS, SWITCH CAP SMALL, MID-GREY,
	37591/359	SWITCH-CAP-MARKED "1", DARK-GREY ON LIGHT-GREY,
	37591/360	SWITCH-CAP-MARKED "2", DARK-GREY ON LIGHT-GREY,
	37591/361	SWITCH-CAP-MARKED "3", DARK-GREY ON LIGHT-GREY,
	37591/362	SWITCH-CAP-MARKED "4", DARK-GREY ON LIGHT-GREY,
	37591/363	SWITCH-CAP-MARKED "5", DARK-GREY ON LIGHT-GREY,
	37591/364	SWITCH-CAP-MARKED "6" OR "9", DARK-GREY ON
	37591/365	SWITCH-CAP-MARKED "7", DARK-GREY ON LIGHT-GREY,
	37591/366	SWITCH-CAP-MARKED "8", DARK-GREY ON LIGHT-GREY,
	37591/367	SWITCH-CAP-MARKED "0", DARK-GREY ON LIGHT-GREY,
	37591/368	SWITCH-CAP-MARKED ".", DARK-GREY ON LIGHT-GREY,
	37591/369	SWITCH-CAP-MARKED "-", DARK-GREY ON LIGHT-GREY,
	37591/370	SWITCH-CAP-MARKED "GHz V", DARK-GREY ON
	37591/371	SWITCH-CAP-MARKED "MHz mV", DARK-GREY ON

Cir. Ref.	MI part number	Description

AF1 Key matrix board (contd.)

	37591/372	SWITCH-CAP-MARKED "kHz uV", DARK-GREY ON
	37591/373	SWITCH-CAP-MARKED "Hz dB", DARK-GREY ON
	37591/374	SWITCH-CAP-MARKED WITH UP OR DOWN ARROW SYMBOL,
	37591/375	SWITCH-CAP-MARKED "KNOB UP-DN", DARK-GREY ON
	37591/377	SWITCH-CAP-MARKED "CARR ON-OFF", DARK-GREY ON
	37591/378	SWITCH-CAP-MARKED "MOD ON-OFF", DARK-GREY ON
	37591/381	SWITCH-CAP-MARKED "SWEEP", DARK-GREY ON
	37591/382	SWITCH-CAP-MARKED "MEM", DARK-GREY ON LIGHT-GREY,
	37591/383	SWITCH-CAP-MARKED "UTIL", DARK-GREY ON LIGHT-GREY,
	37591/384	SWITCH-CAP-MARKED WITH A TRIANGLE SYMBOL,
	37591/448	SWITCH-CAP-MARKED "LF", DARK-GREY ON LIGHT-GREY,
	37591/449	SWITCH-CAP-MARKED "LF ON-OFF", DARK-GREY ON
	37591/468	SWITCH-CAP-MARKED "SIG GEN", DARK-GREY ON
	37591/560	MOULDED-PART NYLON, KEYCAP HOUSING, LOW PROFILE,

Cir. Ref.	MI part number	Description

AF2/1 Front panel control board

Issue 3

When ordering, prefix circuit reference with AF2/1

Cir. Ref.	MI part number	Description
	44829/782	Complete unit
C1	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C2	26343/499	CAPACITOR FIXED CERAMIC 27pF +/-2% 63V N150 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C4	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C5	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C6	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C7	26343/492	CAPACITOR FIXED CERAMIC 10pF +/-2% 63V NPO SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C8	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C9	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C11	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C12	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C14	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C15	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C16	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C17	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C18	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C19	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C20	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C21	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C22	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C23	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AF2/1 Front panel control board (contd.)

- Note that programmed EPROMs are to be found at the end of this IC section -

Cir. Ref.	MI part number	Description
IC1	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC2	28467/080	IC MICRO CONTROLLER, 8 BIT, 80C31... 3.5-12MHz, CMOS, 40 PIN, DUAL-IN-LINE.
IC3	28465/040	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC4	28462/428	IC DIGITAL LATCH 74HC573.. OCTAL, TRI-STATE, NON-INVERTING, TRANSPARENT, D-TYPE, CMOS-H/SPEED,
IC5	28462/625	IC DIGITAL FLIP-FLOP/D-TYPE 74HC377.... OCTAL, POS EDGE TRIGGER, CLOCK-ENABLE, CMOS-H/SPEED, 20 PIN,
IC6	28461/347	IC ANALOGUE OPERATIONAL AMP TL071CP... SINGLE, JFET-INPUT, LINEAR, 8 PIN, DUAL-IN-LINE.
IC7	28466/365	IC DIGITAL NAND-GATE 74HC00... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC8	28466/112	IC DIGITAL OR-GATE 74HC32.. 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC9	28466/408	IC DIGITAL EXCLUSIVE-OR 74HC86... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC10	28469/035	IC DIGITAL BUFFER/LINE-DRIVER 74HC125.. QUAD, TRI-STATE, LOW ENABLE, CMOS-H/SPEED, 14 PIN,
IC11	28466/365	IC DIGITAL NAND-GATE 74HC00... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC12	44533/366	IC PROGRAMMED EPROM, SET OF 4, 2030.
IC13	28467/081	IC MICRO GRAPHICS, 1330..... LCD CONTROLLER, CMOS, 60 PIN, FLAT-PACK.
IC14	28469/323	IC MICRO STATIC-RAM, 32K x 8 BIT, 43256-12.. 120nS ACCESS TIME, +5V, NO CLOCK OR TIMING STROBE
IC15	28469/312	IC MICRO STATIC-RAM, 8K x 8 BIT, HM6264P... 150nS, CMOS, 28 PIN, DUAL-IN-LINE.
IC16	28464/143	IC DIGITAL COUNTER 74HC393.. 4 BIT, DUAL, BINARY RIPPLE, CMOS-H/SPEED, 14 PIN, DUAL-IN-LINE.
IC17	28461/672	IC DIGITAL COMPARATOR 74HC688... SINGLE, 2 x 8 BIT WORDS, CMOS-H/SPEED, 20 PIN, DUAL-IN-LINE.
IC18	28461/672	IC DIGITAL COMPARATOR 74HC688... SINGLE, 2 x 8 BIT WORDS, CMOS-H/SPEED, 20 PIN, DUAL-IN-LINE.
IC19	28461/921	TRANSISTOR NPN BIPOLAR ULN2001... ARRAY, 50V 500mA 7-DARLINGTON PAIRS, MONOLITHIC, 16 PIN,
IC12	44533/366	IC PROGRAMMED EPROM (D), 1 OF SET OF 4
L1	23642/558	INDUCTOR FIXED 33uH +/- 10% COATED-LACQUER, MINIATURE, 210mA 5R2 MAX, 55 Q @ 2.5 MHz, 20 MHz
L2	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz
L3	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz
L4	23642/545	INDUCTOR FIXED 0.22uH +/- 10% COATED-LACQUER, MINIATURE, 2.24A 0R04 MAX, 50 Q @ 25 MHz, 400 MHz

Cir. Ref.	MI part number	Description

AF2/1 Front panel control board (contd.)

Cir. Ref.	MI part number	Description
PLFG	23436/708	CONNECTOR FLEXIBLE CIRCUIT, SOCKET, 14 WAY, RIGHT ANGLED, 1.25mm PITCH, PCB MOUNTING, 2 ROWS OF
PLFH	23436/779	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN
PLFJ	23436/779	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN
PLFK	23436/780	CONNECTOR MULTIWAY, PCB HEADER, 16 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN
PLFL	23435/188	TERMINAL CONNECTOR-PIN, 0.64mm SQUARE, 5.97mm HIGH, PCB-MOUNTING, SINGLE-ENDED, 0.75um GOLD OVER
PLFM	23436/764	CONNECTOR MULTIWAY, PCB HEADER, 2 WAY, STRAIGHT, 2mm PITCH, NYLON BODY, LIGHT BROWN.
PLFP	23436/779	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN
R1	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	25685/408	THERMISTOR NEGATIVE-TC DISC, 5mm 15K @ 25 DEG.C, 4.7 %/DEG.C +/- 10% 500mW 2.54mm PWP, RADIAL.
R4	24772/095	RESISTOR FIXED METAL-FILM 8K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/096	RESISTOR FIXED METAL-FILM 9K1 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/083	RESISTOR FIXED METAL-FILM 2K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/140	RESISTOR FIXED METAL-FILM 820K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	24772/136	RESISTOR FIXED METAL-FILM 430K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R11	24772/129	RESISTOR FIXED METAL-FILM 220K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	24772/122	RESISTOR FIXED METAL-FILM 110K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R13	24772/115	RESISTOR FIXED METAL-FILM 56K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R14	24772/093	RESISTOR FIXED METAL-FILM 6K8 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R17	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AF2/1 Front panel control board (contd.)

Cir. Ref.	MI part number	Description
R18	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R19	24573/067	RESISTOR FIXED METAL-OXIDE 560R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R20	24573/059	RESISTOR FIXED METAL-OXIDE 270R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R21	24573/059	RESISTOR FIXED METAL-OXIDE 270R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R22	24573/059	RESISTOR FIXED METAL-OXIDE 270R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R23	24573/059	RESISTOR FIXED METAL-OXIDE 270R +/- 2% 500mW 350V 250 ppm/DEG.C, AXIAL, (TAPED).
R24	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R25	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R26	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R27	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/057	RESISTOR FIXED METAL-FILM 220R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
TR1	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR2	28452/781	TRANSISTOR NPN BIPOLAR BC208B.... 20V 150MHz 200mW 100mA 290hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
X1	28312/087	CRYSTAL 12 MHz +/- 20 ppm, 20pF PARALLEL RESONANCE, 25R ESR MAX, MICROPROCESSOR
X2	28312/047	CRYSTAL 10 MHz +/- 20 ppm, 30pF PARALLEL RESONANCE, 20R ESR MAX, METAL HOLDER, HC-49/U,
	43137/381	RIBBON-LEAD 14 WAY, SOCKET 14 WAY, KEY POS 11, - PLFF to AF1

Cir. Ref.	MI part number	Description

AR1 PSU board

Issue 10

When ordering, prefix circuit reference with AR1

Cir. Ref.	MI part number	Description
	44829/543	Complete unit
C1	26421/019	CAPACITOR FIXED ALUMINIUM 100uF +/-20% 10V ELECTROLYTIC, RADIAL, 3.5mm PWP, LOW LEAKAGE WITH
C2	26343/497	CAPACITOR FIXED CERAMIC 12pF +/-2% 63V NP0 SINGLELAYER, RADIAL, 2.5mm PWP, (TAPED).
C3	26422/343	CAPACITOR FIXED ALUMINIUM 10000uF +/-20% 63V ELECTROLYTIC, PCB PIN TERMINATION, 4 RADIAL PINS.
C4	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C5	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C6	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C7	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C8	26422/342	CAPACITOR FIXED ALUMINIUM 15000uF +/-20% 40V ELECTROLYTIC, PCB PIN TERMINATION, 4 RADIAL PINS.
C9	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C10	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C11	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C12	26422/342	CAPACITOR FIXED ALUMINIUM 15000uF +/-20% 40V ELECTROLYTIC, PCB PIN TERMINATION, 4 RADIAL PINS.
C13	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C14	26422/341	CAPACITOR FIXED ALUMINIUM 6800uF +/-20% 40V ELECTROLYTIC, PCB PIN TERMINATION, 4 RADIAL PINS.
C16	26421/127	CAPACITOR FIXED ALUMINIUM 470uF +/-20% 16V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C17	26422/340	CAPACITOR FIXED ALUMINIUM 47000uF +/-20% 16V ELECTROLYTIC, PCB PIN TERMINATION, 5 RADIAL PINS.
C18	26383/006	CAPACITOR FIXED CERAMIC 10nF -20/+80% 25V K7004 SINGLELAYER, RADIAL, 5mm PWP, (TAPED).
C19	26421/131	CAPACITOR FIXED ALUMINIUM 2200uF +/-20% 6.3V ELECTROLYTIC, RADIAL, 5mm PWP, (LOOSE OR TAPED).
C20	26582/432	CAPACITOR FIXED POLYESTER 1uF +/-10% 50V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C21	26582/427	CAPACITOR FIXED POLYESTER 470nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C22	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C23	26582/429	CAPACITOR FIXED POLYESTER 100nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C24	26421/112	CAPACITOR FIXED ALUMINIUM 10uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).

Cir. Ref.	MI part number	Description

AR1 PSU board (contd.)

Cir. Ref.	MI part number	Description
D1	28359/189	DIODE RECTIFIER, 2KBB20R... BRIDGE, 200V 1.9A 80Vrms @ 1.9A, LEADS ON 5mm PITCH, ENCAPSULATED,
D2	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D3	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D4	28359/189	DIODE RECTIFIER, 2KBB20R... BRIDGE, 200V 1.9A 80Vrms @ 1.9A, LEADS ON 5mm PITCH, ENCAPSULATED,
D5	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D6	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D7	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D8	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D9	28357/028	DIODE RECTIFIER, 1N4004... 400V 1A 1.1Vf @ 1A, AXIAL, SOD-81, (TAPED).
D10	28336/246	DIODE SMALL-SIGNAL, 1N4448... 75V 150mA 1Vf @ 100mA, AXIAL, DO-35, (TAPED).
D11	28336/676	DIODE SMALL-SIGNAL, 1N4148... 75V 110mA 1Vf @ 10mA, AXIAL, DO-35, (TAPED).
IC1	28467/062	IC MICRO REAL-TIME-CLOCK, PCF8573P... SERIAL INPUT/OUTPUT, CMOS, 16 PIN, DUAL-IN-LINE.
IC2	28461/710	IC ANALOGUE VOLTAGE-REGULATOR 7824... 24V 1A POSITIVE, LINEAR, MONOLITHIC, 3 PIN, TO-220.
IC3	28461/726	IC ANALOGUE VOLTAGE-REGULATOR LM317T... 37V 1.5A POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC4	28461/322	IC ANALOGUE OPERATIONAL AMP LM324N... QUAD, LINEAR, MONOLITHIC, 14 PIN, DUAL-IN-LINE.
IC5	28461/757	IC ANALOGUE VOLTAGE-REFERENCE AD586... 5V PRECISION, 25ppm/DEG.C, 8 PIN, DUAL-IN-LINE.
IC6	28461/384	IC ANALOGUE OPERATIONAL AMP LF356N... LINEAR, JFET, 8 PIN, DUAL-IN-LINE.
IC7	28461/726	IC ANALOGUE VOLTAGE-REGULATOR LM317T... 37V 1.5A POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC8	28461/726	IC ANALOGUE VOLTAGE-REGULATOR LM317T... 37V 1.5A POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
IC9	28461/322	IC ANALOGUE OPERATIONAL AMP LM324N... QUAD, LINEAR, MONOLITHIC, 14 PIN, DUAL-IN-LINE.
IC10	28461/726	IC ANALOGUE VOLTAGE-REGULATOR LM317T... 37V 1.5A POSITIVE ADJUSTABLE, LINEAR, MONOLITHIC, 3 PIN,
PLRG	23436/779	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN

Cir. Ref.	MI part number	Description

AR1 PSU board (contd.)

R1	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R2	24772/092	RESISTOR FIXED METAL-FILM 6K2 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R3	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R4	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R5	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R6	24772/088	RESISTOR FIXED METAL-FILM 4K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R7	24772/103	RESISTOR FIXED METAL-FILM 18K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R8	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R9	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R10	25683/406	THERMISTOR NEGATIVE-TC DISC, 4.6mm 12K @ 25 DEG.C, 4.2 %/DEG.C +/- 7% 250mW 2.5mm PWP, RADIAL.
R11	24772/121	RESISTOR FIXED METAL-FILM 100K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R12	25683/407	THERMISTOR NEGATIVE-TC DISC, 18.2mm 12K @ 25 DEG.C, 4.2 %/DEG.C +/- 7% 250mW 2.5mm PWP, WITH
R13	25133/033	RESISTOR FIXED WIREWOUND 0R33 +/- 10% 1.5W 100V 200 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R14	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R15	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R16	24772/089	RESISTOR FIXED METAL-FILM 4K7 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R17	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R18	24772/108	RESISTOR FIXED METAL-FILM 30K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R19	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R20	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R21	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R22	24772/058	RESISTOR FIXED METAL-FILM 240R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R23	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R24	25123/020	RESISTOR FIXED WIREWOUND 10R +/- 5% 1.5W 100V 200 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R25	24784/002	RESISTOR FIXED METAL-TAPE 0R047 +/- 5% 3W 60V 600 ppm/DEG.C, LOW-INDUCTANCE, AXIAL, (LOOSE OR
R26	24772/034	RESISTOR FIXED METAL-FILM 24R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).

Cir. Ref.	MI part number	Description

AR1 PSU board (contd.)

Cir. Ref.	MI part number	Description
R27	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R28	24772/044	RESISTOR FIXED METAL-FILM 62R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R29	24772/055	RESISTOR FIXED METAL-FILM 180R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R30	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R31	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R32	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R33	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R34	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R35	24772/071	RESISTOR FIXED METAL-FILM 820R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R36	24784/002	RESISTOR FIXED METAL-TAPE 0R047 +/- 5% 3W 60V 600 ppm/DEG.C, LOW-INDUCTANCE, AXIAL, (LOOSE OR
R37	24772/049	RESISTOR FIXED METAL-FILM 100R +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R38	24772/105	RESISTOR FIXED METAL-FILM 22K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R39	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R40	24772/097	RESISTOR FIXED METAL-FILM 10K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R41	24772/088	RESISTOR FIXED METAL-FILM 4K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R42	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R43	24772/080	RESISTOR FIXED METAL-FILM 2K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R44	24772/128	RESISTOR FIXED METAL-FILM 200K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R45	24552/006	RESISTOR FIXED METAL-OXIDE 2R7 +/- 5% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R46	24772/073	RESISTOR FIXED METAL-FILM 1K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R47	24582/555	RESISTOR FIXED METAL-OXIDE 1R +/- 10% 500mW 350V 250 ppm/DEG.C, AXIAL, (LOOSE OR TAPED).
R48	24772/088	RESISTOR FIXED METAL-FILM 4K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
R49	24772/088	RESISTOR FIXED METAL-FILM 4K3 +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
TR1	28459/070	TRANSISTOR N-CHANNEL-ENHANCE MOSFET SMP60N05.... 50V 125W 60A 0R023 TO-220.
TR2	28459/070	TRANSISTOR N-CHANNEL-ENHANCE MOSFET SMP60N05.... 50V 125W 60A 0R023 TO-220.

Cir. Ref.	MI part number	Description

AR1 PSU board (contd.)

TR3	28459/070	TRANSISTOR N-CHANNEL-ENHANCE MOSFET SMP60N05.... 50V 125W 60A 0R023 TO-220.
TR4	28433/455	TRANSISTOR PNP BIPOLAR BC308B.... 20V 130MHz 200mW 100mA 200hFE @ 2mA, TO-92, (TAPED EMITR FIRST).
TR5	28452/197	TRANSISTOR NPN BIPOLAR 2N2369.... 15V 500MHz 360mW 500mA 40hFE @ 10mA, TO-18.
XL1	28312/050	CRYSTAL 0.032768 MHz +/- 15 ppm, 12pF PARALLEL RESONANCE, 35K ESR MAX, MAX DIMS - 3mm DIA, 8.2mm
	23435/736	CONNECTOR MULTIWAY, PCB HEADER, 16 WAY, STRAIGHT, PLRA, PLRB SECONDARIES FROM TRANSFORMER

Cir. Ref.	MI part number	Description

AR2 Internal frequency standard board

Issue 2

When ordering, prefix circuit reference with AR2

	44829-550W	Complete unit
C1	26421/108	CAPACITOR FIXED ALUMINIUM 4.7uF +/-20% 35V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
C2	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C3	26582/428	CAPACITOR FIXED POLYESTER 47nF +/-10% 63V 330 ppm/DEG.C, RADIAL, 5mm PWP, (TAPED).
C4	26421/106	CAPACITOR FIXED ALUMINIUM 1uF +/-20% 50V ELECTROLYTIC, RADIAL, 5mm PWP, (TAPED).
L1	23642/555	INDUCTOR FIXED 10uH +/- 10% COATED-LACQUER, MINIATURE, 470mA 0R9 MAX, 45 Q @ 7.9 MHz, 45 MHz
PLRM	23444/334	CONNECTOR-RF SMB-TYPE MALE, RECEPTACLE, 50 OHMS, PCB-MOUNTING, NICKEL PLATED BODY.
R1	24772/109	RESISTOR FIXED METAL-FILM 33K +/- 2% 125mW 150V 100 ppm/DEG.C, AXIAL, (TAPED).
X1	44990/377	OCXO OSCILLATOR UNIT

AT10 Attenuator assembly (for 2040 & 2041)

Issue 9

When ordering, prefix circuit reference with AT10.

44429/061 Complete assembly

AT10 Attenuator assembly (for 2042)

Issue 8

When ordering, prefix circuit reference with AT10.

44429/062 Complete assembly

AT11 Edgline controller board

Issue 5

Cannot be ordered separately, part of AT10

Cir. Ref.	MI part number	Description
C1	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C2	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C3	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C4	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C5	26386/883	CAPACITOR FIXED CERAMIC 47nF +/-10% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C6	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C7	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C8	26386/751	CAPACITOR FIXED CERAMIC 1nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C9	26386/758	CAPACITOR FIXED CERAMIC 100nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 1210, NICKEL
C10	26386/751	CAPACITOR FIXED CERAMIC 1nF +/-20% 50V X7R/2C1, MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
C12	26458/064	CAPACITOR FIXED ALUMINIUM 47uF +/-20% 6.3V ELECTROLYTIC, SURFACE-MOUNTED, SIZE 6.7 x 7.9mm,
C13	26386/824	CAPACITOR FIXED CERAMIC 100pF +/-5% 50V NP0 MULTILAYER, SURFACE-MOUNTED, SIZE 0805, NICKEL
D1	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D2	28383/902	DIODE SMALL-SIGNAL, BAW56... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON ANODE, MARKING CODE A1, SURFACE
D3	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D4	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D5	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D6	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D7	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D8	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D9	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE
D10	28383/910	DIODE SMALL-SIGNAL, BAS28... DUAL, 330mW 75V 250mA ELECTRICALLY ISOLATED, MARKING CODE A61 OR JT,
D11	28383/901	DIODE SMALL-SIGNAL, BAV70... DUAL, 70V 100mA 1.1Vf @ 50mA, COMMON CATHODE, MARKING CODE A4, SURFACE

Cir. Ref.	MI part number	Description

AT11 Edgline controller board (contd.)

Cir. Ref.	MI part number	Description
IC1	28469/033	IC DIGITAL BUFFER/LINE-DRIVER 74HCT126... QUAD, TRI-STATE, CMOS-H/SPEED+TTL, 14 PIN,
IC2	28469/032	IC DIGITAL INVERTER 74HC14.. HEX, SCHMITT-TRIGGER OPERATION, CMOS-H/SPEED, 14 PIN, SMALL-OUTLINE.
IC3	28462/640	IC DIGITAL FLIP-FLOP/D-TYPE 74HC175... QUAD, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 16 PIN,
IC4	28471/036	IC MICRO EEPROM, 64 x 16 BIT, 93C46... 5V SUPPLY, CMOS, 8 PIN, SMALL-OUTLINE.
IC5	28462/640	IC DIGITAL FLIP-FLOP/D-TYPE 74HC175... QUAD, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 16 PIN,
IC6	28462/639	IC DIGITAL FLIP-FLOP/D-TYPE 74AC374.. 1 INPUT, OCTAL, NON-INVERTING, POS EDGE TRIGGER, TRI-STATE,
IC7	28462/639	IC DIGITAL FLIP-FLOP/D-TYPE 74AC374.. 1 INPUT, OCTAL, NON-INVERTING, POS EDGE TRIGGER, TRI-STATE,
IC9	28462/640	IC DIGITAL FLIP-FLOP/D-TYPE 74HC175... QUAD, POS EDGE TRIGGER, RESET, CMOS-H/SPEED, 16 PIN,
IC10	28465/055	IC DIGITAL DECODER/DEMULTIPLEX 74HC138.. 3 INPUT, 8 BIT, SINGLE, INVERTING, 3 BIT ADDRESS,
IC11	28466/390	IC DIGITAL NAND-GATE 74HC00... 2 INPUT, QUAD, CMOS-H/SPEED, 14 PIN, SMALL-OUTLINE.
IC12	28469/032	IC DIGITAL INVERTER 74HC14.. HEX, SCHMITT-TRIGGER OPERATION, CMOS-H/SPEED, 14 PIN, SMALL-OUTLINE.
IC13	28462/638	IC DIGITAL FLIP-FLOP/D-TYPE 74HC74.. 2 BIT, DUAL, POS EDGE TRIGGER, PLUS SET & CLEAR, CMOS-H/SPEED,
IC14	28461/673	IC ANALOGUE COMPARATOR LM339... QUAD, SINGLE SUPPLY, BIPOLAR, 14 PIN, SMALL-OUTLINE.
PLTC	23436/779	CONNECTOR MULTIWAY, PCB HEADER, 10 WAY, STRAIGHT, 2-ROW, 2.54mm GRID, PCB MOUNTING, SOLDER PIN
PLTD	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
PLTE	23435/120	CONNECTOR MULTIWAY, PCB HEADER, 36 WAY, RIGHT ANGLED, 2.54mm PITCH, STACKABLE, GOLD PLATED POSTS
R1	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R2	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R3	24321/825	RESISTOR FIXED METAL-GLAZE 150K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150K-ACCEPTABLE, SURFACE
R4	24321/825	RESISTOR FIXED METAL-GLAZE 150K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150K-ACCEPTABLE, SURFACE
R5	24321/825	RESISTOR FIXED METAL-GLAZE 150K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150K-ACCEPTABLE, SURFACE
R6	24681/526	RESISTOR NETWORK ISOLATED, THICK-FILM, 100R 2% 500mW 25V 200 ppm/DEG.C, 7 RESISTORS, SURFACE
R7	24681/526	RESISTOR NETWORK ISOLATED, THICK-FILM, 100R 2% 500mW 25V 200 ppm/DEG.C, 7 RESISTORS, SURFACE

Cir. Ref.	MI part number	Description

AT11 Edgline controller board (contd.)

R8	24321/825	RESISTOR FIXED METAL-GLAZE 150K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150K-ACCEPTABLE, SURFACE
R9	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R10	24321/825	RESISTOR FIXED METAL-GLAZE 150K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-150K-ACCEPTABLE, SURFACE
R11	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R14	24321/795	RESISTOR FIXED METAL-GLAZE 8K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-8K25-ACCEPTABLE, SURFACE
R15	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
R16	24321/823	RESISTOR FIXED METAL-GLAZE 120K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121K-ACCEPTABLE, SURFACE
R17	24321/839	RESISTOR FIXED METAL-GLAZE 680K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-681K-ACCEPTABLE, SURFACE
R18	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R19	24321/783	RESISTOR FIXED METAL-GLAZE 2K7 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K74-ACCEPTABLE, SURFACE
R20	24321/839	RESISTOR FIXED METAL-GLAZE 680K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-681K-ACCEPTABLE, SURFACE
R21	24321/823	RESISTOR FIXED METAL-GLAZE 120K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-121K-ACCEPTABLE, SURFACE
R22	24681/527	RESISTOR NETWORK BUSSED, THICK-FILM, 4K7 2% 600mW 25V 200 ppm/DEG.C, 15 RESISTORS, SURFACE MOUNTED,
R23	24321/797	RESISTOR FIXED METAL-GLAZE 10K +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-10K0-ACCEPTABLE, SURFACE
R24	24321/777	RESISTOR FIXED METAL-GLAZE 1K5 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-1K50-ACCEPTABLE, SURFACE
R25	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
R26	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
R28	24321/781	RESISTOR FIXED METAL-GLAZE 2K2 +/- 2% 125mW 200V 200 ppm/DEG.C, 1%-2K21-ACCEPTABLE, SURFACE
TR1	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR2	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR3	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR4	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR5	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR6	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR7	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,

Cir. Ref.	MI part number	Description

AT11 Edgline controller board (contd.)

TR8	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR9	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR10	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR11	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR12	28487/811	TRANSISTOR NPN BIPOLAR BC818-40.... 25V 170MHz 330mW 500mA MARKING CODE 6G, SURFACE MOUNTED,
TR13	28487/812	TRANSISTOR NPN BIPOLAR BST50.... DARLINGTON, 60V 1W 500mA MARKING CODE AS1, SURFACE MOUNTED,
TR14	28487/812	TRANSISTOR NPN BIPOLAR BST50.... DARLINGTON, 60V 1W 500mA MARKING CODE AS1, SURFACE MOUNTED,

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MISCELLANEOUS MECHANICAL PARTS

Fig. 6-2 Ref.	Description	Part Number
1	Top cover	35906/561
2	Bottom cover	35906/562
3	Retainer moulding, 1 of 2	37591/453
4	Front panel, marked	35906/904
5	Identity strip, 2040	31739/700
	Identity strip, 2041	31739/701
	Identity strip, 2042	31739/702
6	Rear panel, marked	41590/185
7	Knob, control	37591/397
8	Front panel handle, 1 of 2	37591/350
9	Infill, 1 of 2	37591/356
10	Side handle, 1 of 2	41700/734
11	Cover, 1 of 4	35890/229
12	Foot, right-hand lower, 1 of 2	37591/354
13	Foot, left-hand lower, 1 of 2	37591/355
14	Retaining grommet, 1 of 8	23187/104
15	Rear foot,1 of 2	37591/352
16	Plug, 1 of 4	37591/389
17	Foot, tilt, 1 of 2	37591/439
18	Bezel rim	37591/597
19	Glass window	37441/310
20	Blind grommet	22315/809
21	Plug cap & chain, FREQ STD IN/OUT	23433/592
22	Fan finger guard	23535/115

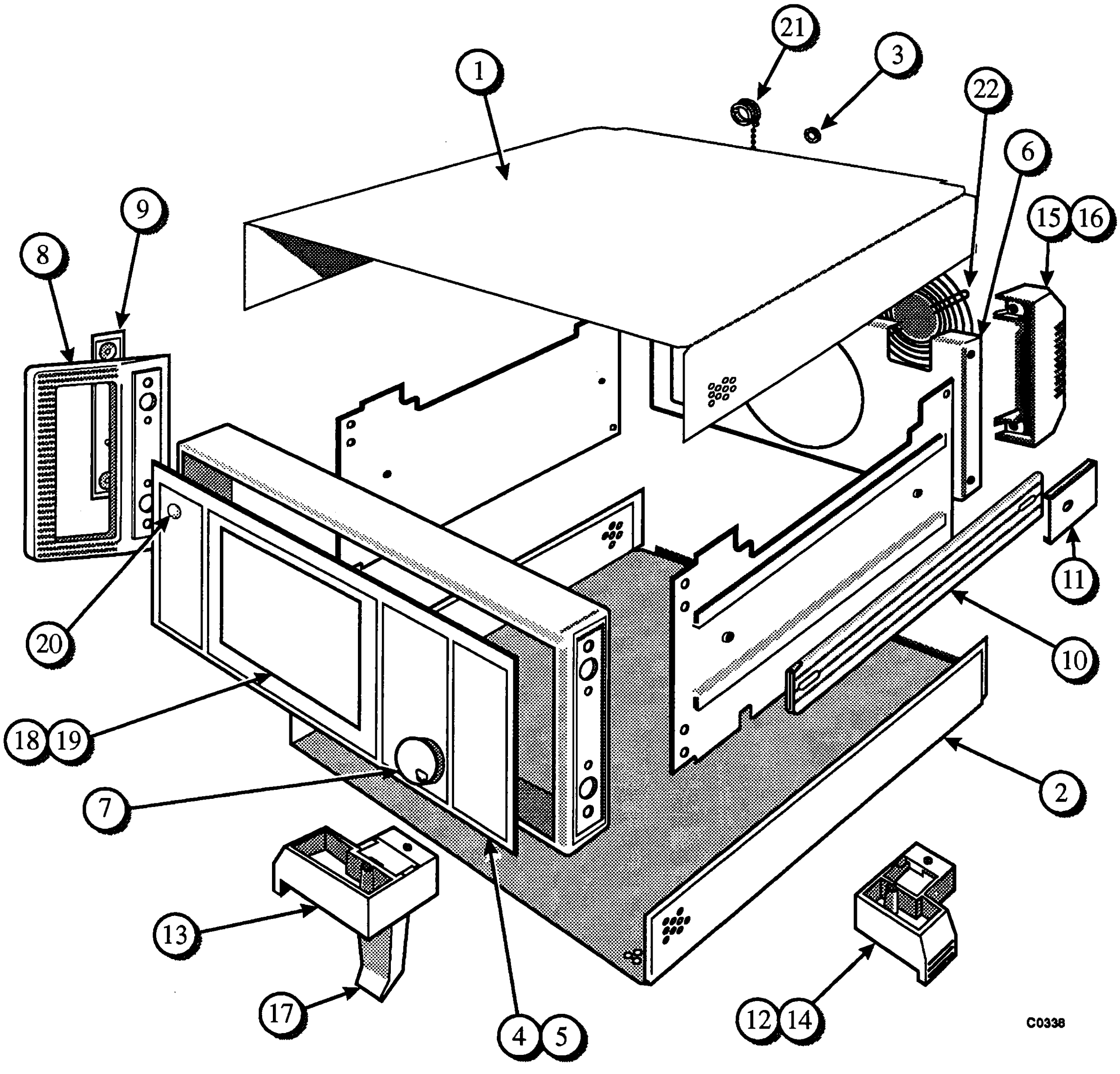

Fig. 6-2 Miscellaneous mechanical parts

Chapter 7
SERVICING DIAGRAMS

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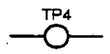
Symbols

Symbols are to BS 3939 with the following additions :

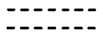

Static sensitive component - see Notes and Cautions, Page iv.


Tag



Test point


Edge connector


Ferrite bead

Unit identification

PCB layouts

PCB layout are shown as viewed from the Component side.

2040 series interconnections A0

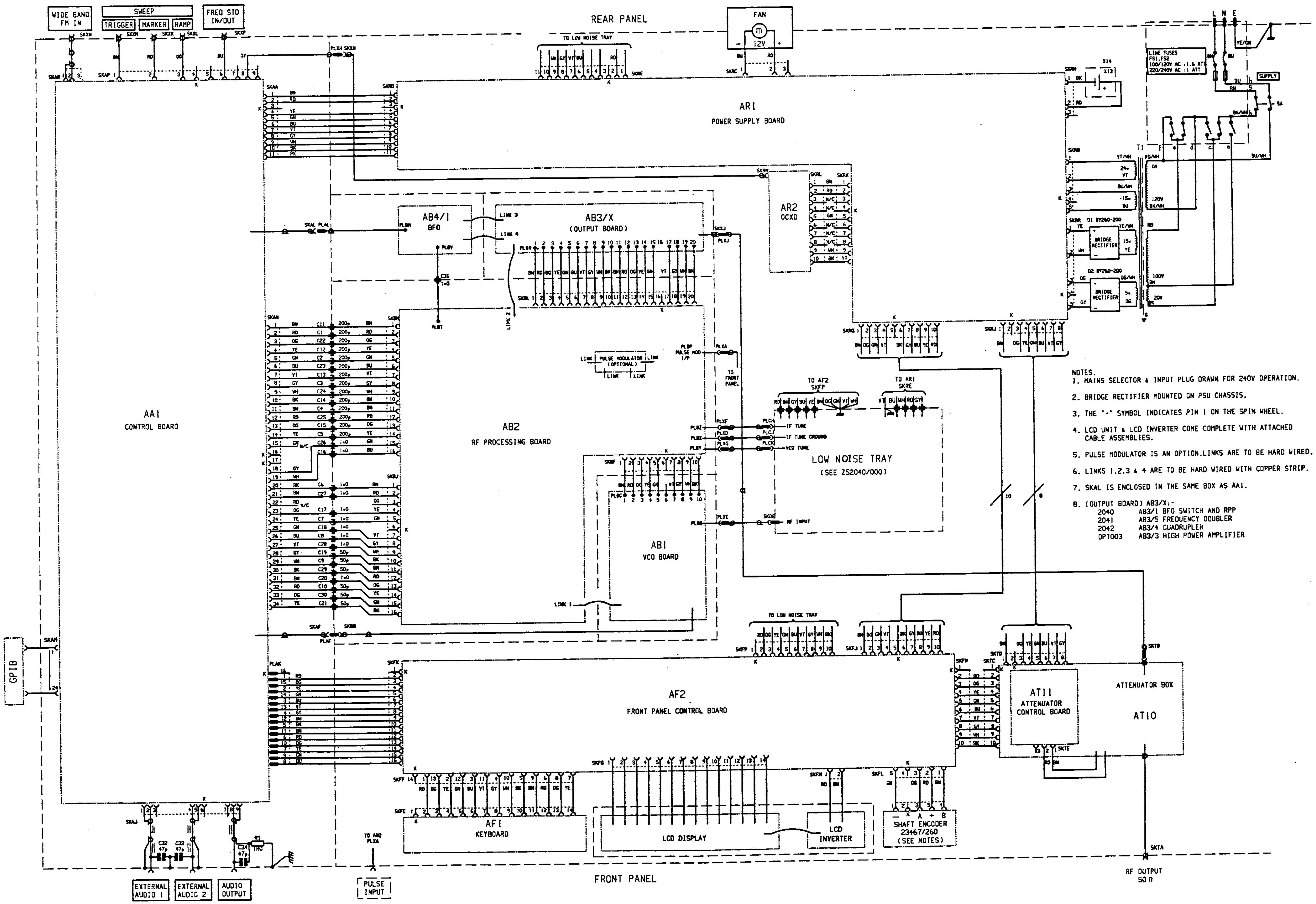


Fig. 7-1 2040 series interconnections

Drg. No. Z 52031/000 Sheet 2 (Issue 1)

Interconnections 2040 series

Low noise system block diagram A1

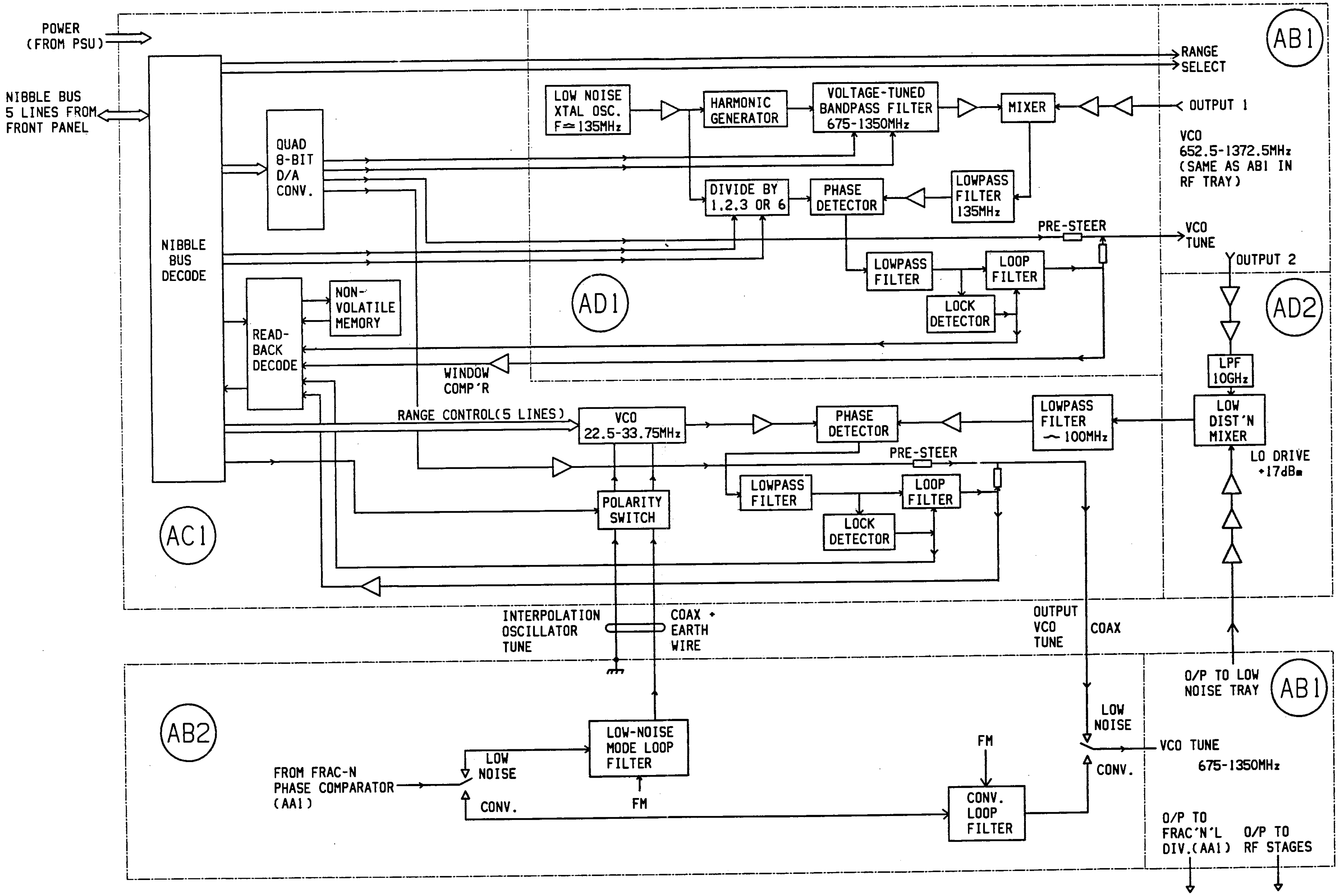
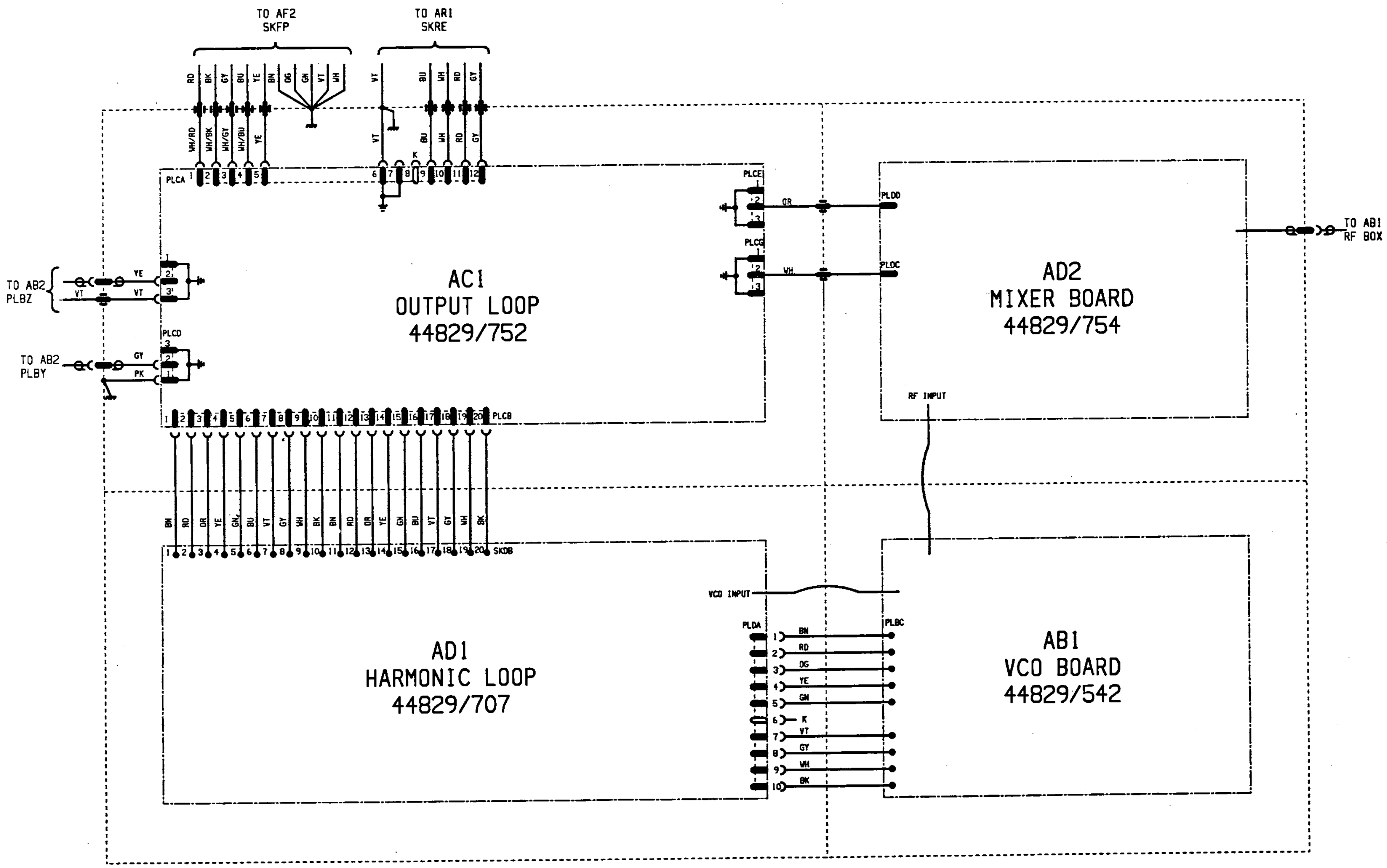


Fig. 7-2 Low noise system block diagram

Drg. No. Y 52040/000C Sheet 1 of 1 (Issue 1)

Low noise system block diagram

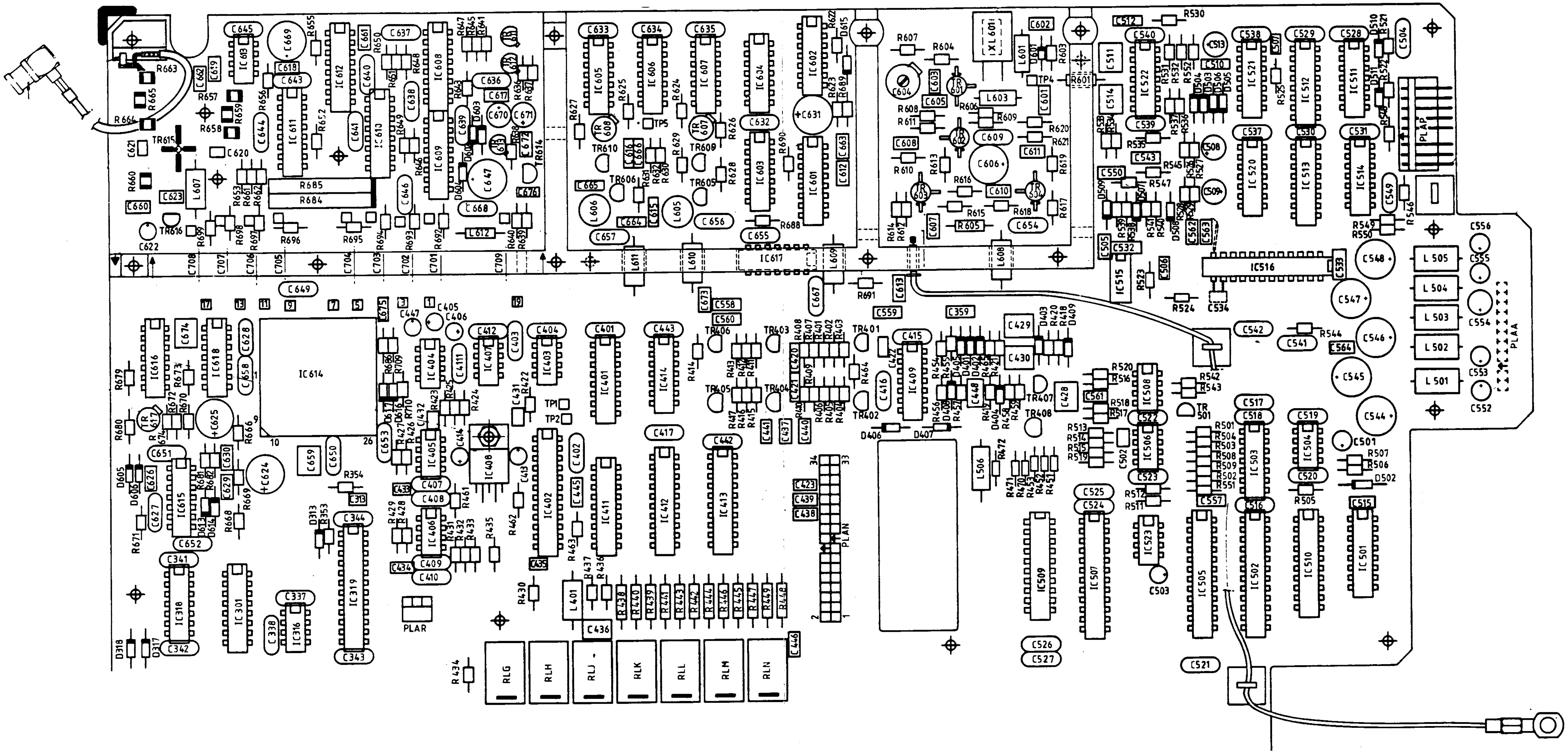
Low noise tray interconnections A2



Drg. No. Z 52040/000 Sheet 1 of 1 (Issue 1)

Fig. 7-3 Low noise tray interconnections

Component layout AA1/2

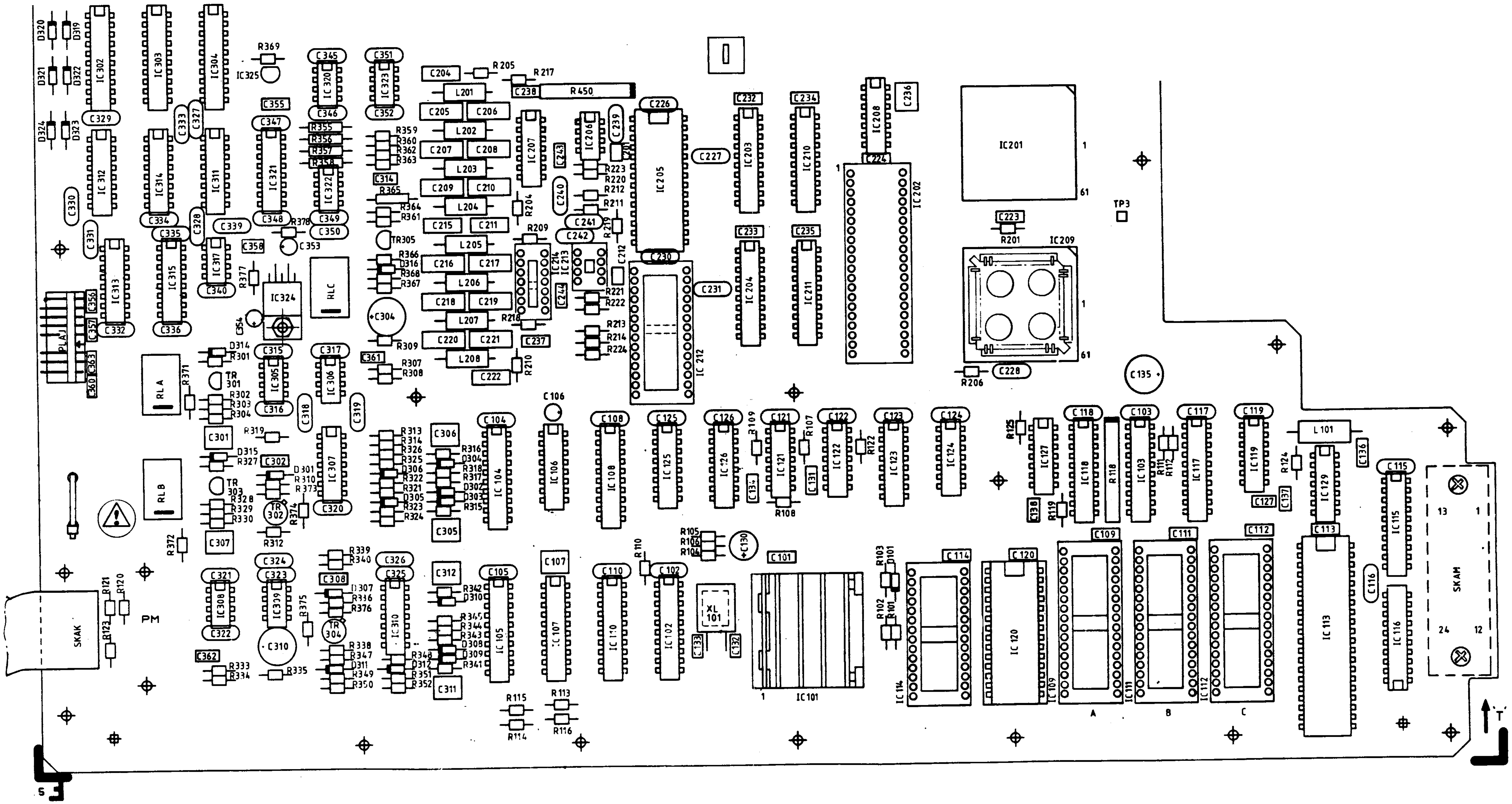


Low noise tray interconnections

Fig. 7-4 Control board component layout (top half)

Drg. No. 44829/800

Component layout **AA1/2**

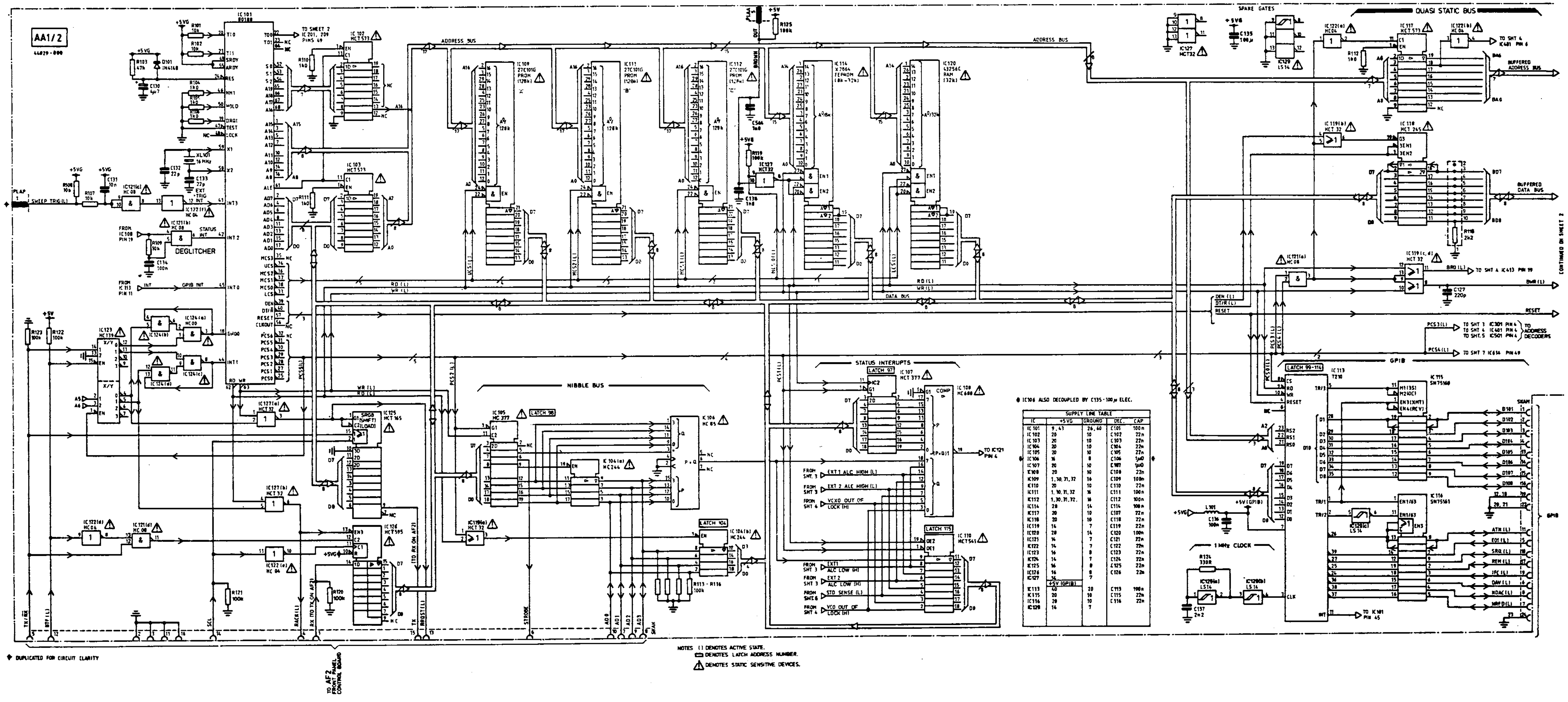


Drg. No. 44829/800

Fig. 7-5 Control board component layout (bottom half)

Component layout AA1/2

Processor **AA1/2**



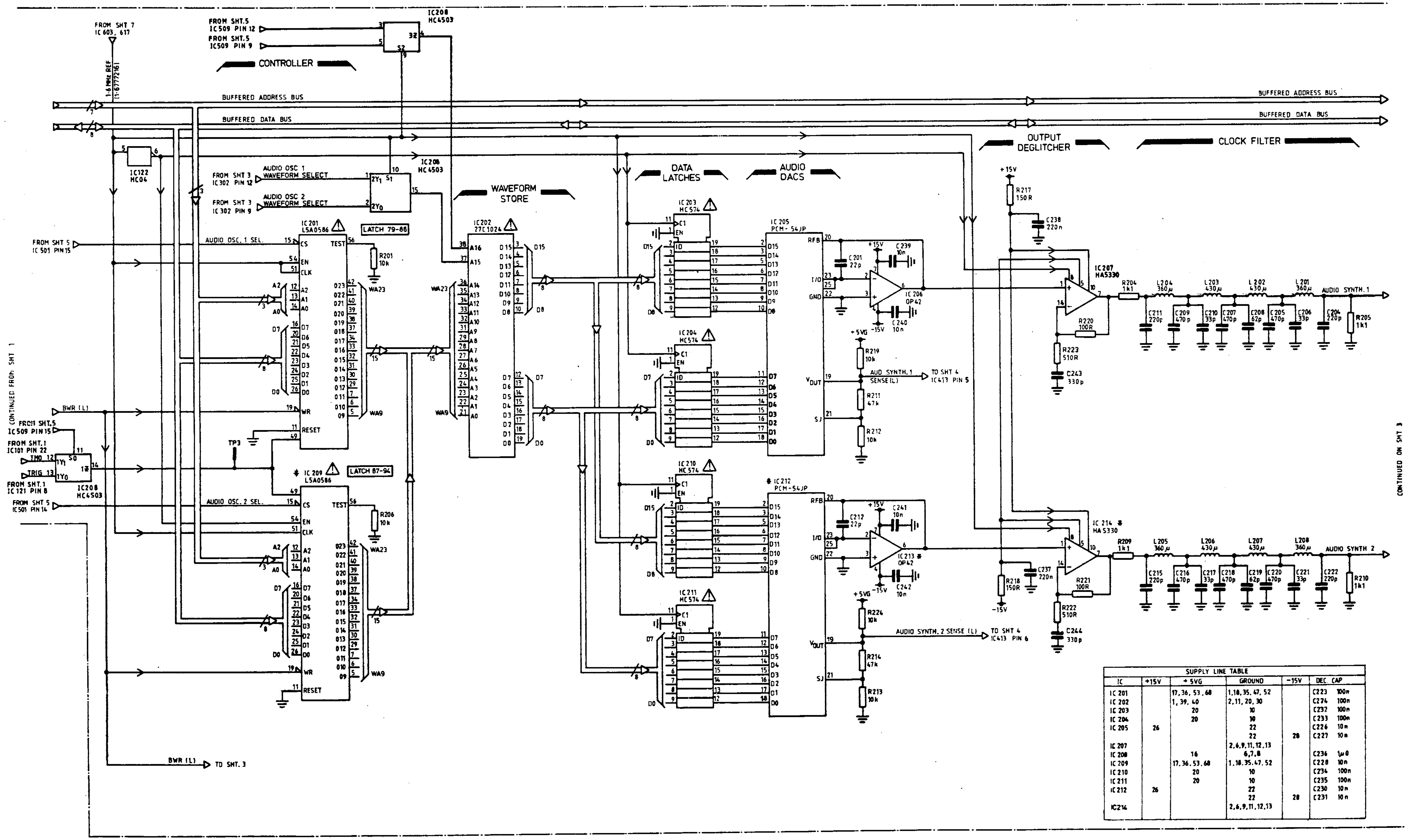
Drg. No. Z 44829/800 Sheet 1 of 7 (Issue 1)

Fig. 7-6 Control board :Processor and interface circuit diagram

Processor AA1/2

NOTE: COMPONENTS MARKED * NOT FITTED WHEN 2nd SYNTHESIZER NOT REQUIRED.
( ) DENOTE THE ACTIVE STATE.
▭ DENOTES LATCH ADDRESS NUMBER.
⚠ DENOTES STATIC SENSITIVE DEVICES.

Audio synthesizer AA1/2



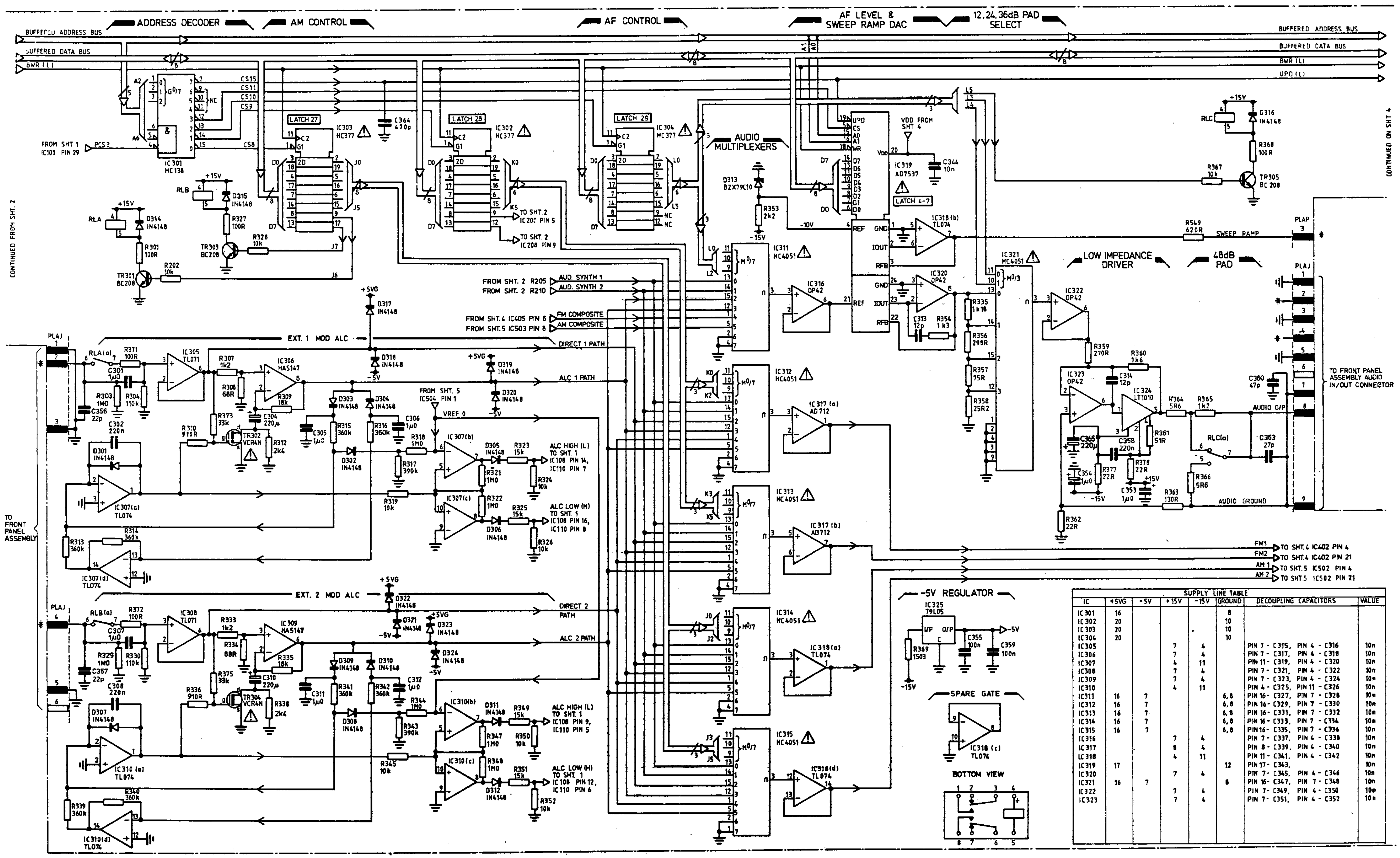
SUPPLY LINE TABLE					
IC	+15V	+ 5VG	GROUND	−15V	DEC. CAP
IC 201		17, 36, 53, 68	1, 18, 35, 47, 52		C223 100n
IC 202		1, 39, 40	2, 11, 20, 30		C274 100n
IC 203		20	10		C232 100n
IC 204		20	10		C233 100n
IC 205	26		22		C226 10n
			22	28	C227 10n
IC 207			2, 6, 9, 11, 12, 13		
IC 208		16	6, 7, 8		C236 1µ0
IC 209		17, 36, 53, 68	1, 18, 35, 47, 52		C228 10n
IC 210		20	10		C234 100n
IC 211		20	10		C235 100n
IC 212	26		22		C230 10n
			22	28	C231 10n
IC214			2, 6, 9, 11, 12, 13		

Fig. 7-7 Control board : Audio synthesizer circuit diagram

Drg. No. Z 44829/800 Sheet 2 of 7 (Issue 1)

Audio synthesizer AA1/2

Audio output AA1/2



SUPPLY LINE TABLE

IC	+5VG	-5V	+15V	-15V	GROUND	DECOUPLING CAPACITORS	VALUE
IC301	16				8		
IC302	20				10		
IC303	20				10		
IC304	20				10		
IC305			7	4		PIN 7 - C315, PIN 4 - C316	10n
IC306			7	4		PIN 7 - C317, PIN 4 - C318	10n
IC307			4	11		PIN 11 - C319, PIN 4 - C320	10n
IC308			7	4		PIN 7 - C321, PIN 4 - C322	10n
IC309			7	4		PIN 7 - C323, PIN 4 - C324	10n
IC310			4	11		PIN 4 - C325, PIN 11 - C326	10n
IC311	16	7			6, 8	PIN 16 - C327, PIN 7 - C328	10n
IC312	16	7			6, 8	PIN 16 - C329, PIN 7 - C330	10n
IC313	16	7			6, 8	PIN 16 - C331, PIN 7 - C332	10n
IC314	16	7			6, 8	PIN 16 - C333, PIN 7 - C334	10n
IC315	16	7			6, 8	PIN 16 - C335, PIN 7 - C336	10n
IC316			7	4		PIN 7 - C337, PIN 4 - C338	10n
IC317			8	4		PIN 8 - C339, PIN 4 - C340	10n
IC318			4	11		PIN 11 - C341, PIN 4 - C342	10n
IC319	17				12	PIN 17 - C343,	10n
IC320			7	4		PIN 7 - C345, PIN 4 - C346	10n
IC321	16	7			8	PIN 16 - C347, PIN 7 - C348	10n
IC322			7	4		PIN 7 - C349, PIN 4 - C350	10n
IC323			7	4		PIN 7 - C351, PIN 4 - C352	10n

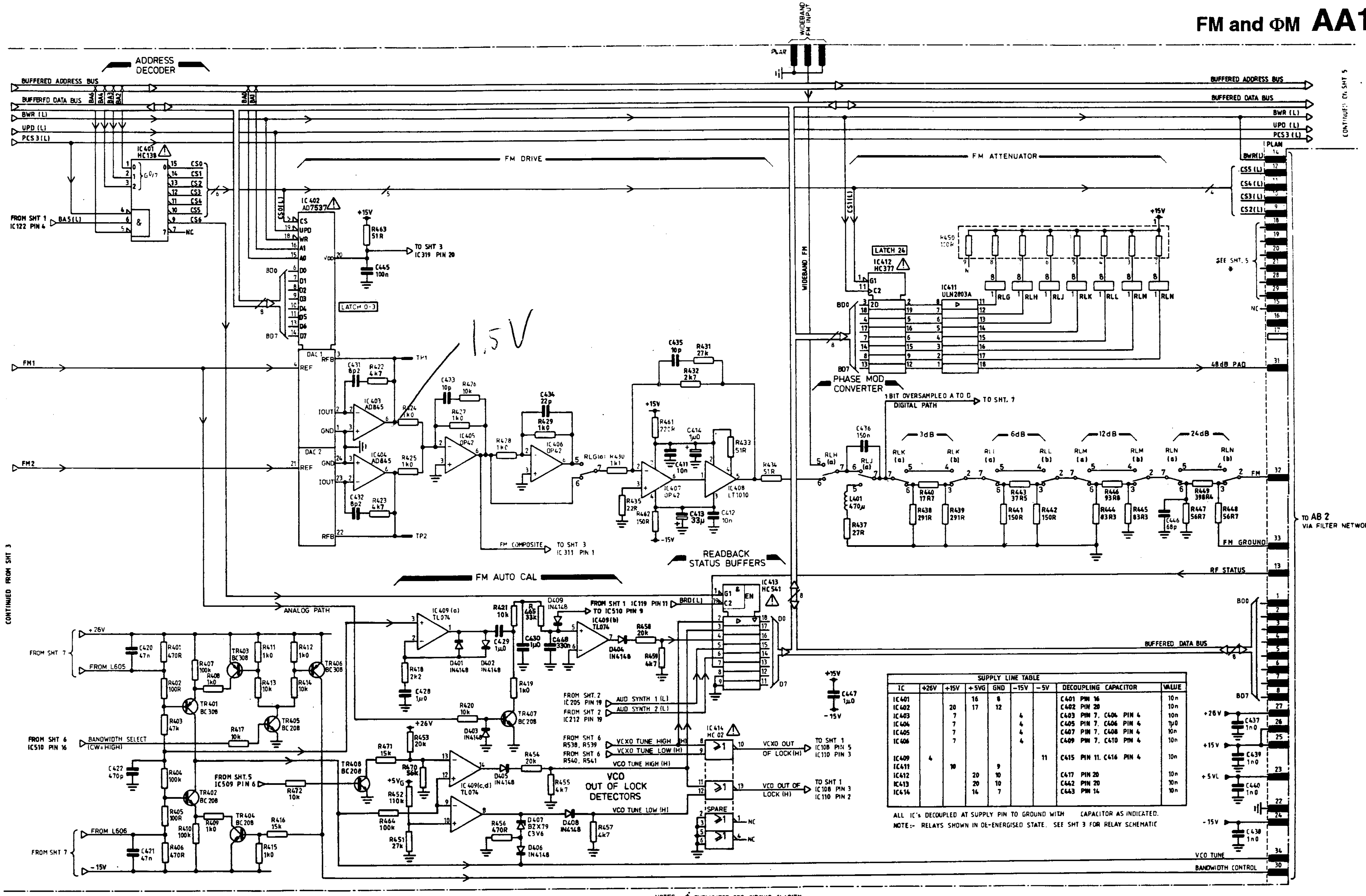
NOTES ‡ DUPLICATED ON THIS SHEET FOR CLARITY.
( ) DENOTES ACTIVE STATE.
▭ DENOTES LATCH ADDRESS NUMBER.
⚠ DENOTES STATIC SENSITIVE DEVICES.

Drg. No. Z 44829/800 Sheet 3 of 7 (Issue 2)

Fig. 7-8 Control board : Ext mod and audio output circuit diagram

Audio output AA1/2

FM and ΦM AA1/2



SUPPLY LINE TABLE								
IC	+26V	+15V	+5VG	GND	−15V	−5V	DECOUPLING CAPACITOR	VALUE
IC401			16	8			C401 PIN 16	10n
IC402		20	17	12			C402 PIN 20	10n
IC403		7			4		C403 PIN 7. C404 PIN 4	10n
IC404		7			4		C405 PIN 7. C406 PIN 4	1μ0
IC405		7			4		C407 PIN 7. C408 PIN 4	10n
IC406		7			4		C409 PIN 7. C410 PIN 4	10n
IC409	4					11	C415 PIN 11. C416 PIN 4	10n
IC411		10		9				
IC412			20	10			C417 PIN 20	10n
IC413			20	10			C442 PIN 20	10n
IC414			14	7			C443 PIN 14	10n

ALL IC's DECOUPLED AT SUPPLY PIN TO GROUND WITH CAPACITOR AS INDICATED.
NOTE:- RELAYS SHOWN IN DE-ENERGISED STATE. SEE SHT 3 FOR RELAY SCHEMATIC

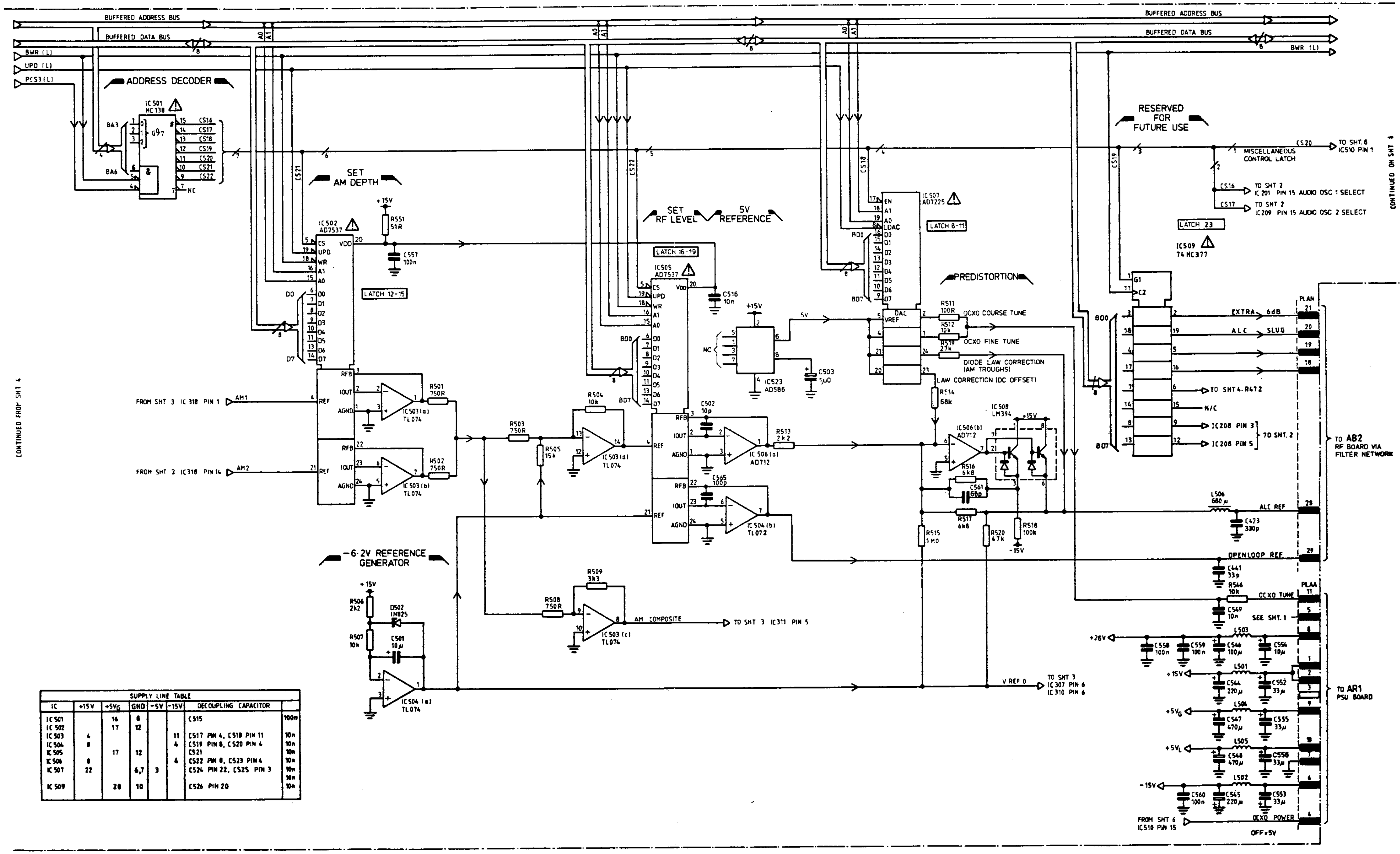
NOTES ✱ DUPLICATED FOR CIRCUIT CLARITY
( ) DENOTES ACTIVE STATE.
▭ DENOTES LATCH ADDRESS NUMBERS
⚠ DENOTES STATIC SENSITIVE DEVICES.

Drg. No. Z 44829/800 Sheet 4 of 7 (Issue 4)

Fig. 7-9 Control board : FM and ΦM drive circuit diagram

FM and ØM AA1/2

AM drive & RF level AA1/2



SUPPLY LINE TABLE							
IC	+15V	$+5V_G$	GND	-5V	-15V	DECOUPLING CAPACITOR	
IC501		16	8			C515	100n
IC502		17	12				
IC503	4				11	C517 PIN 4, C518 PIN 11	10n
IC504	8				4	C519 PIN 8, C520 PIN 4	10n
IC505		17	12			C521	10n
IC506	8				4	C522 PIN 8, C523 PIN 4	10n
IC507	22		6,7	3		C524 PIN 22, C525 PIN 3	10n
							10n
IC509		20	10			C526 PIN 20	10n

NOTES: # INDICATES COMPONENT ONLY LOADED WHEN REQUIRED.
DENOTES LATCH ADDRESS NUMBER.
DENOTES STATIC SENSITIVE DEVICES.

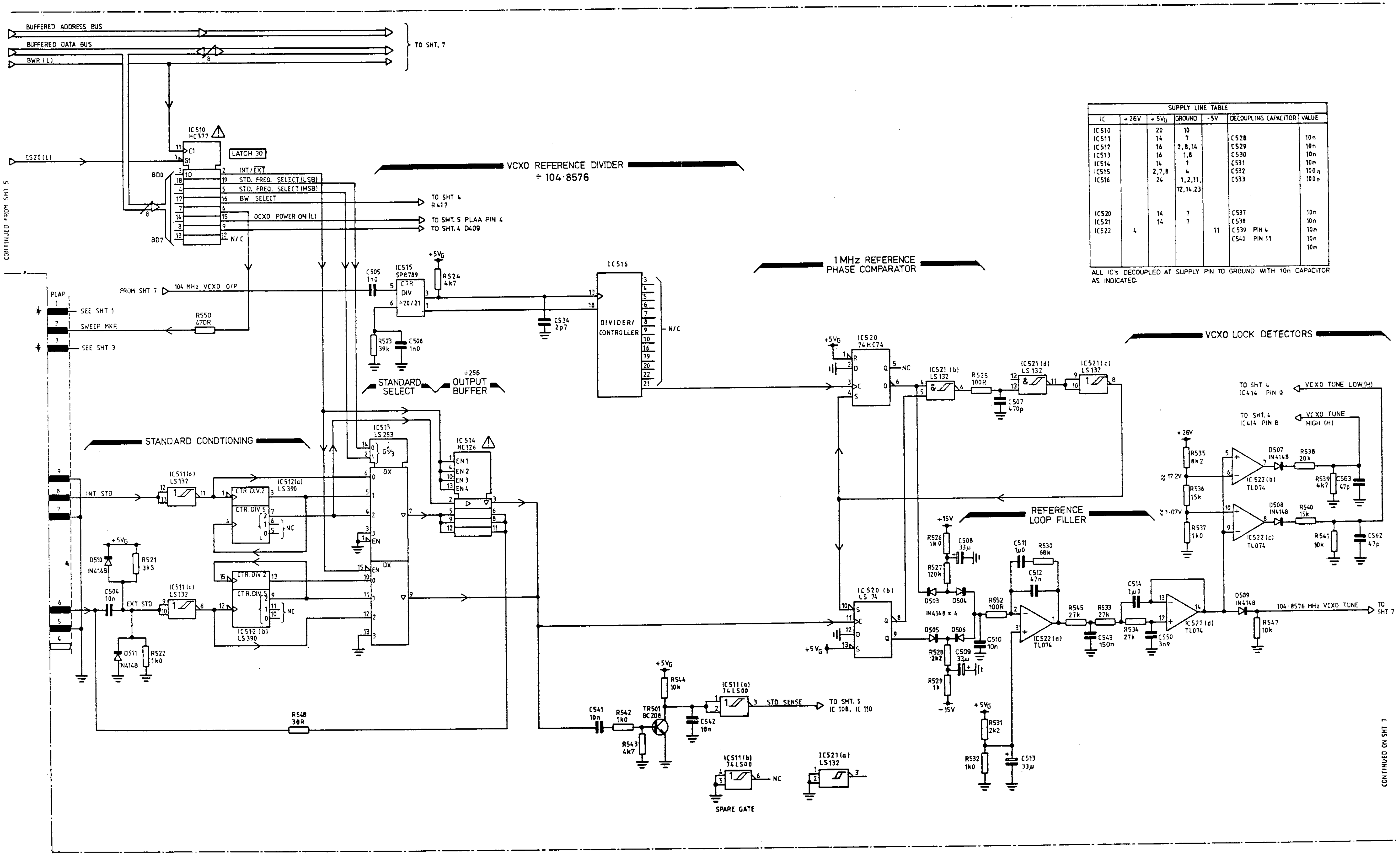
Drg. No. Z 44829/800 Sheet 5 of 7 (Issue 1)

Fig. 7-10 Control board : AM drive and RF level cicuit diagram

AM drive & RF level AA1/2

NOTES ( ) DENOTES ACTIVE STATE.
▭ DENOTES LATCH ADDRESS NUMBER.
⚠ DENOTES STATIC SENSITIVE DEVICES.
* DUPLICATED FOR CIRCUIT CLARITY

Reference PLL AA1/2



SUPPLY LINE TABLE						
IC	+26V	+5V G	GROUND	-5V	DECOUPLING CAPACITOR	VALUE
IC510		20	10			
IC511		14	7		C528	10n
IC512		16	2,8,14		C529	10n
IC513		16	1,8		C530	10n
IC514		14	7		C531	10n
IC515		2,7,8	4		C532	100n
IC516		24	1,2,11, 12,14,23		C533	100n
IC520		14	7		C537	10n
IC521		14	7		C538	10n
IC522	4			11	C539 PIN 4	10n
					C540 PIN 11	10n
						10n

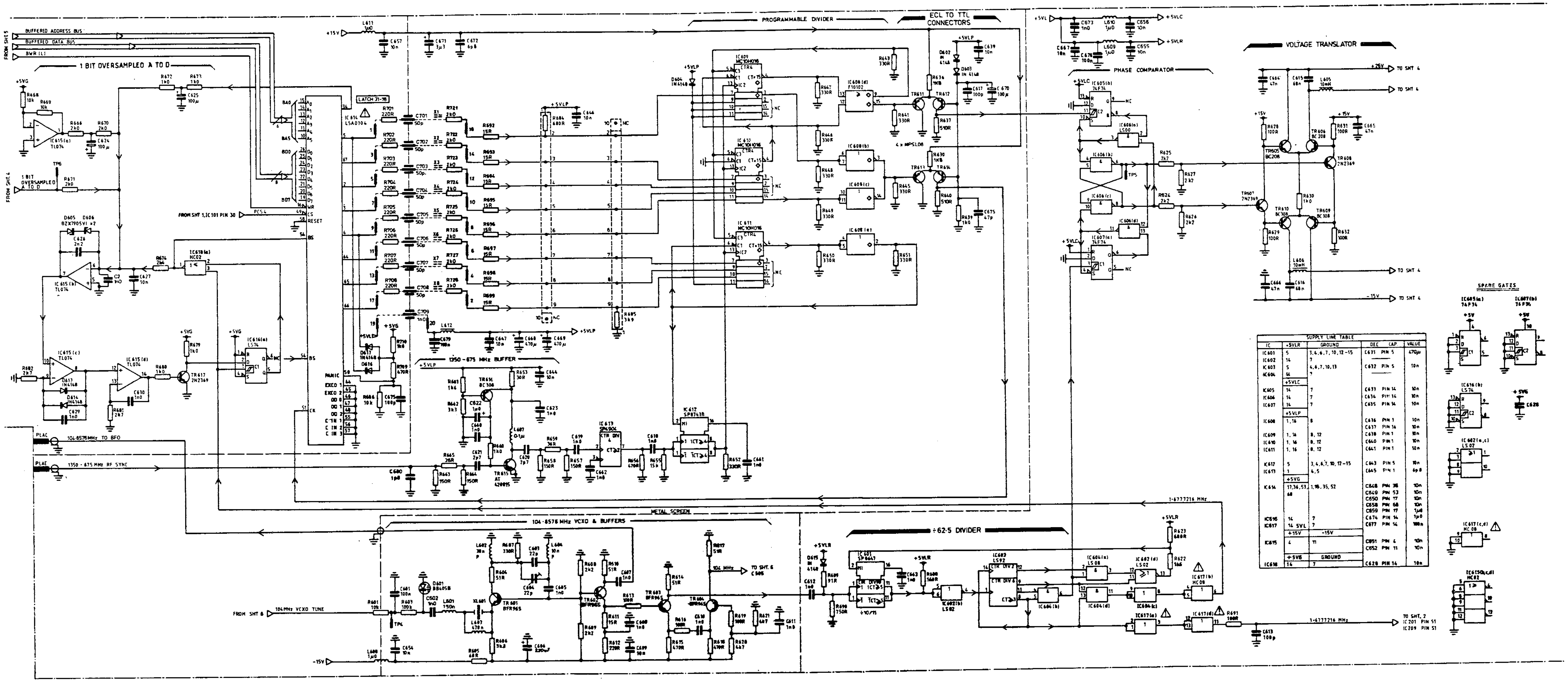
ALL IC's DECOUPLED AT SUPPLY PIN TO GROUND WITH 10n CAPACITOR AS INDICATED.

Drg. No. Z 44829/800 Sheet 6 of 7 (Issue 3)

Fig. 7-11 Control board : Reference PLL circuit diagram

Reference PLL AA1/2

RF processing AA1/2

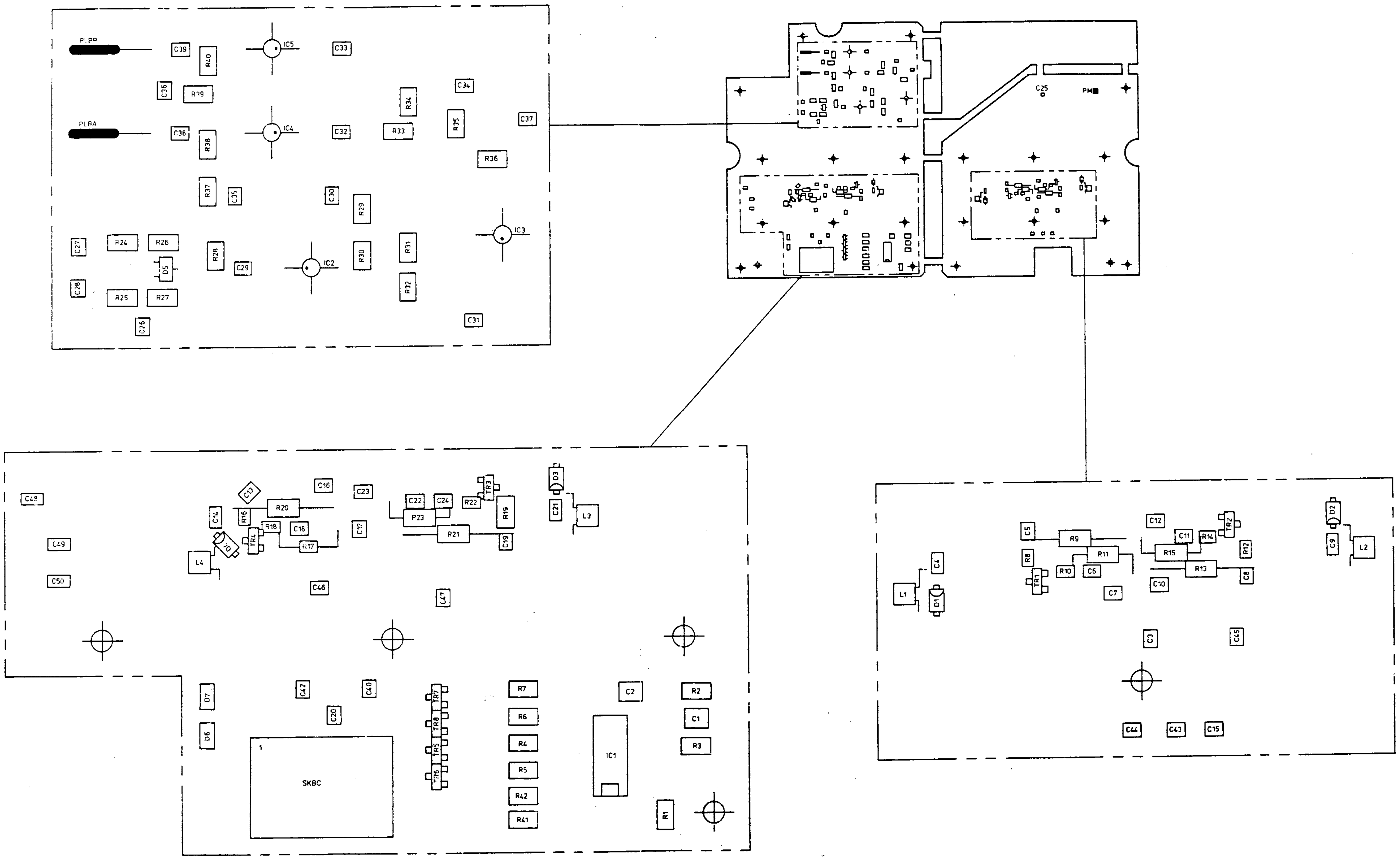


NOTES ( ) DENOTES ACTIVE STATE.
DENOTES LATCH ADDRESS NUMBERS.
DENOTES STATIC SENSITIVE DEVICES.

Fig. 7-12 Control board : RF processing circuit diagram

Drg. No. Z 44829/800 Sheet 7 of 7 (Issue 4)

Component layout AB1

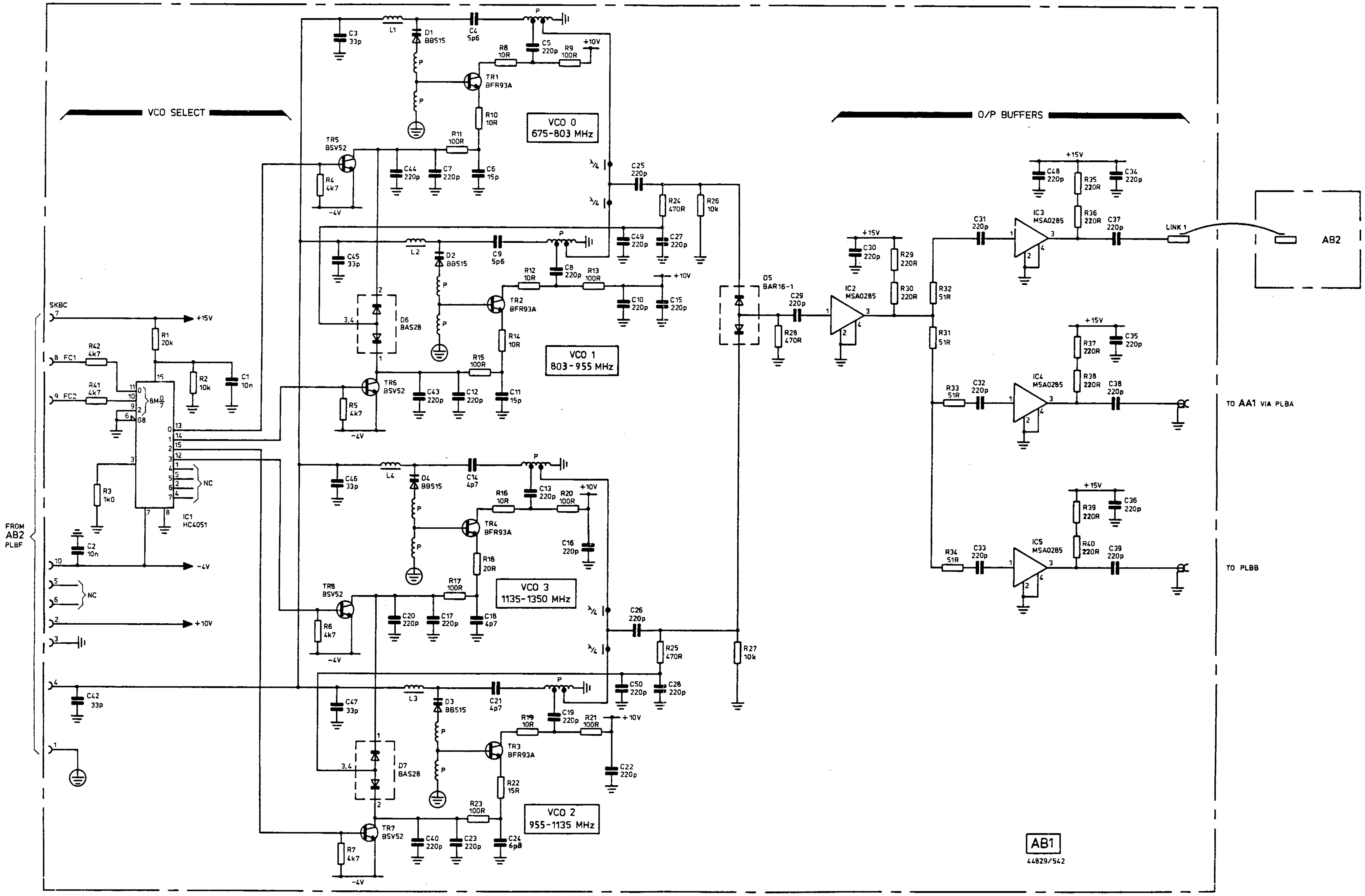


RF processing AA1/2

Fig. 7-13 VCO board component layout

Drg. No. 44829/542

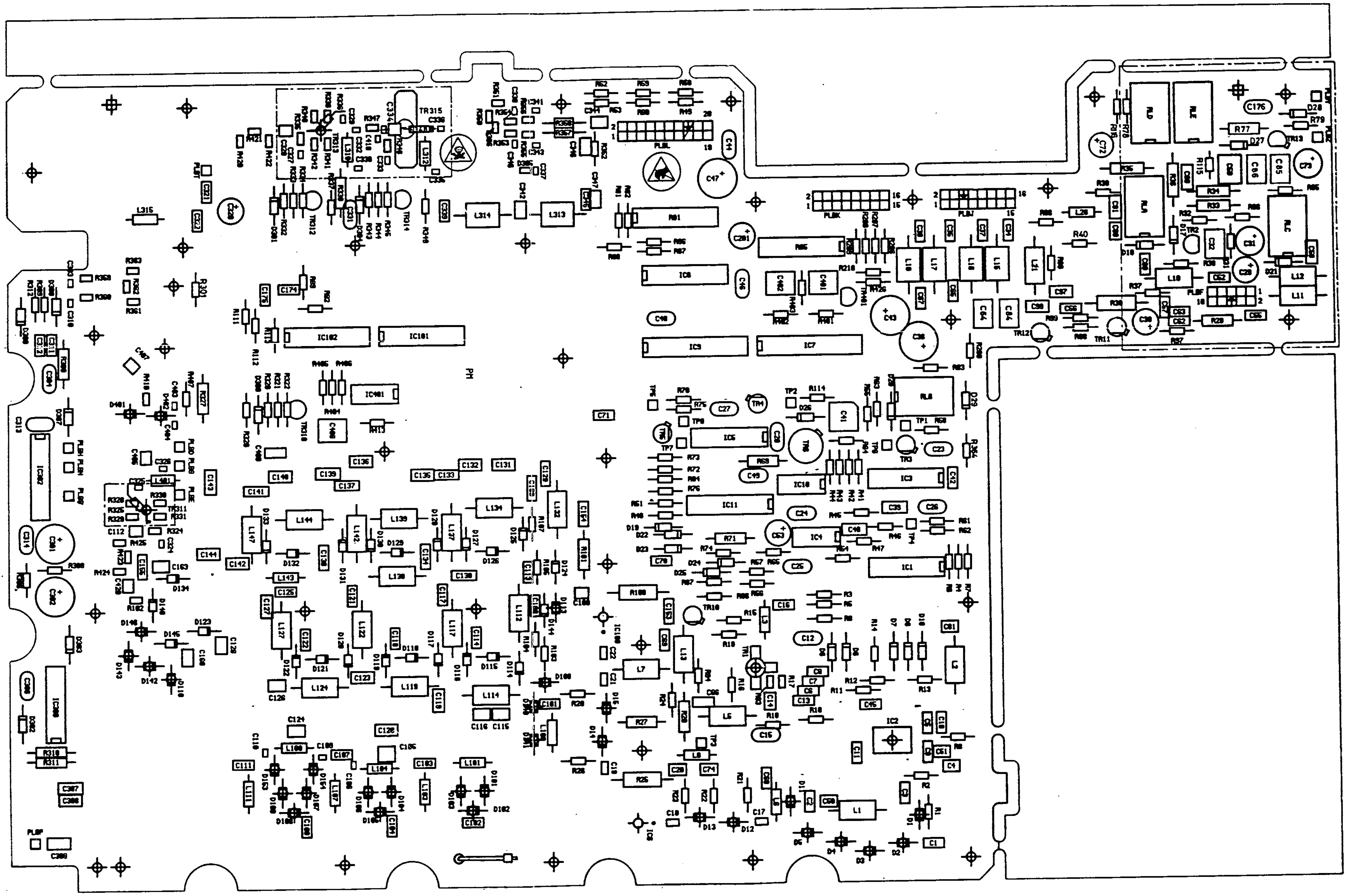
VCO board AB1



Drg. No. Z 44829/542 Sheet 1 of 1 (Issue 6)

Fig. 7-14 VCO board cicuit diagram

Component layout AB2/2

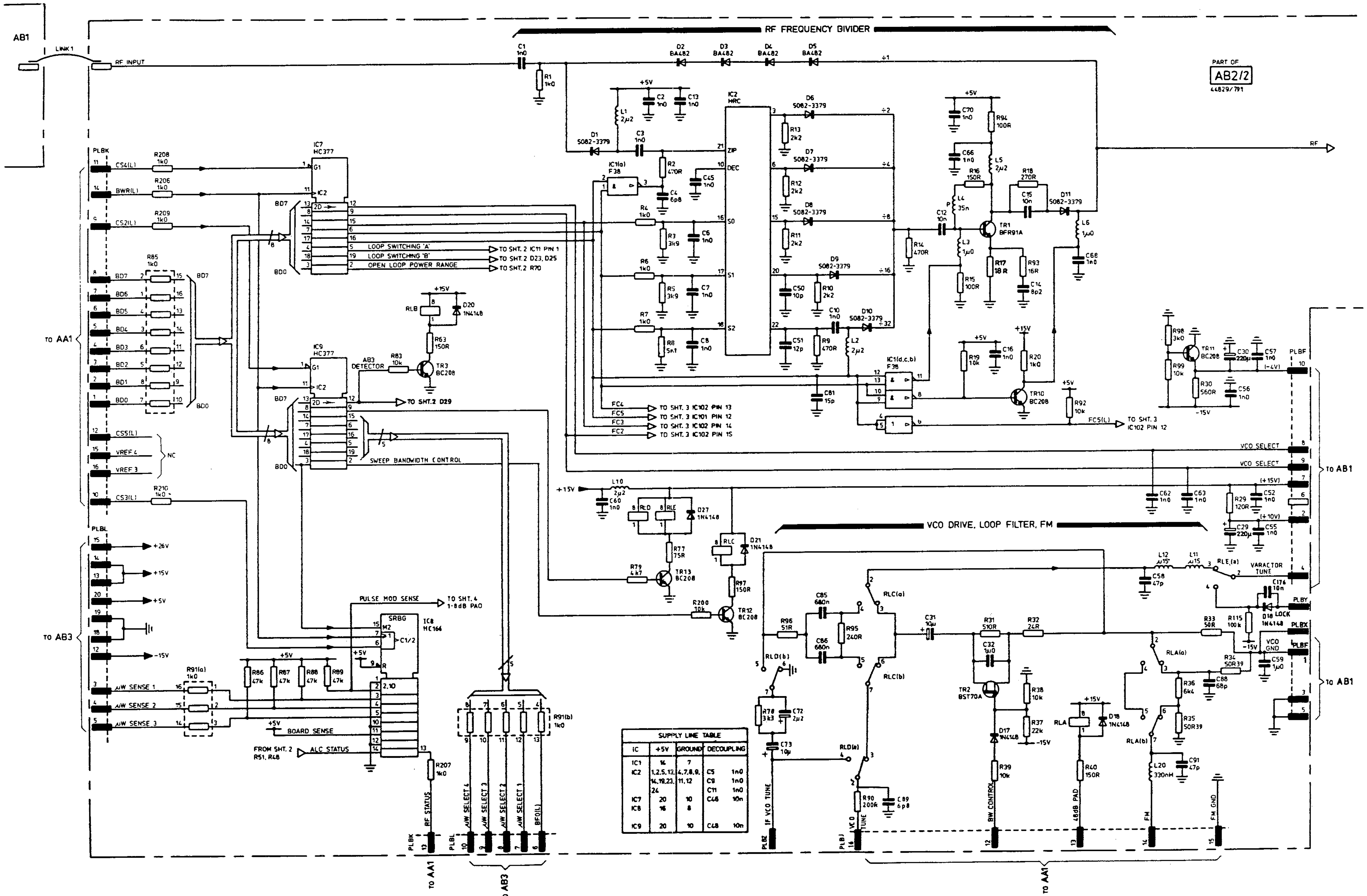


VCO board AB1

Fig. 7-15 RF board component layout

Drg. No. 44829/791

Dividers & FM drive **AB2/2**



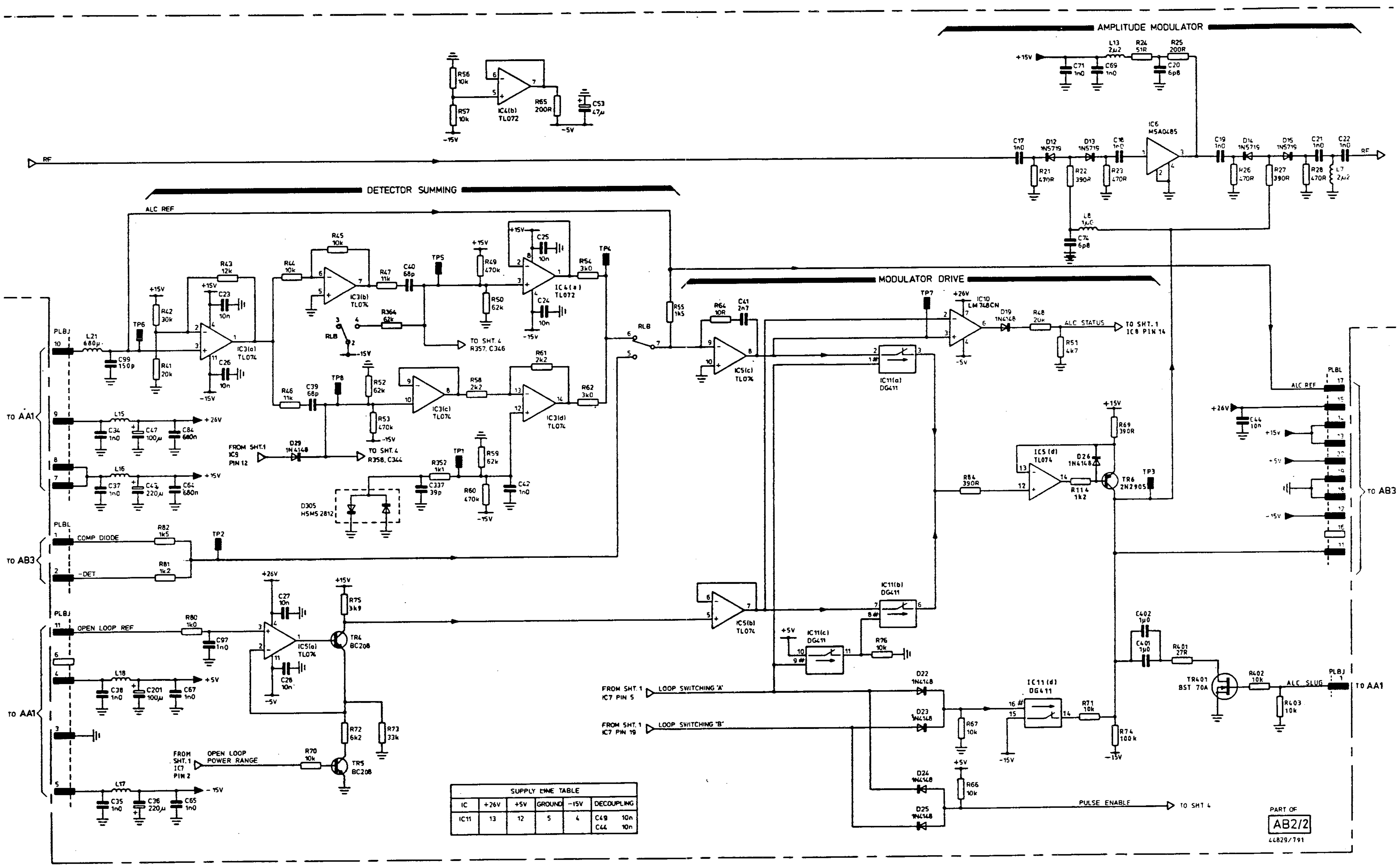
SUPPLY LINE TABLE				
IC	+5V	GROUND	DECOUPLING	
IC1	16	7		
IC2	1,2,5,13,14,19,23,24	4,7,8,9,11,12	C5	1n0
			C9	1n0
			C11	1n0
IC7	20	10	C46	10n
IC8	16	8		
IC9	20	10	C48	10n

Drg. No. Z 44829/791 Sheet 1 of 4 (Issue 3)

Fig. 7-16 RF board : Dividers and FM drive circuit diagram

Dividers & FM drive AB2/2

Modulator & decoding AB2/2



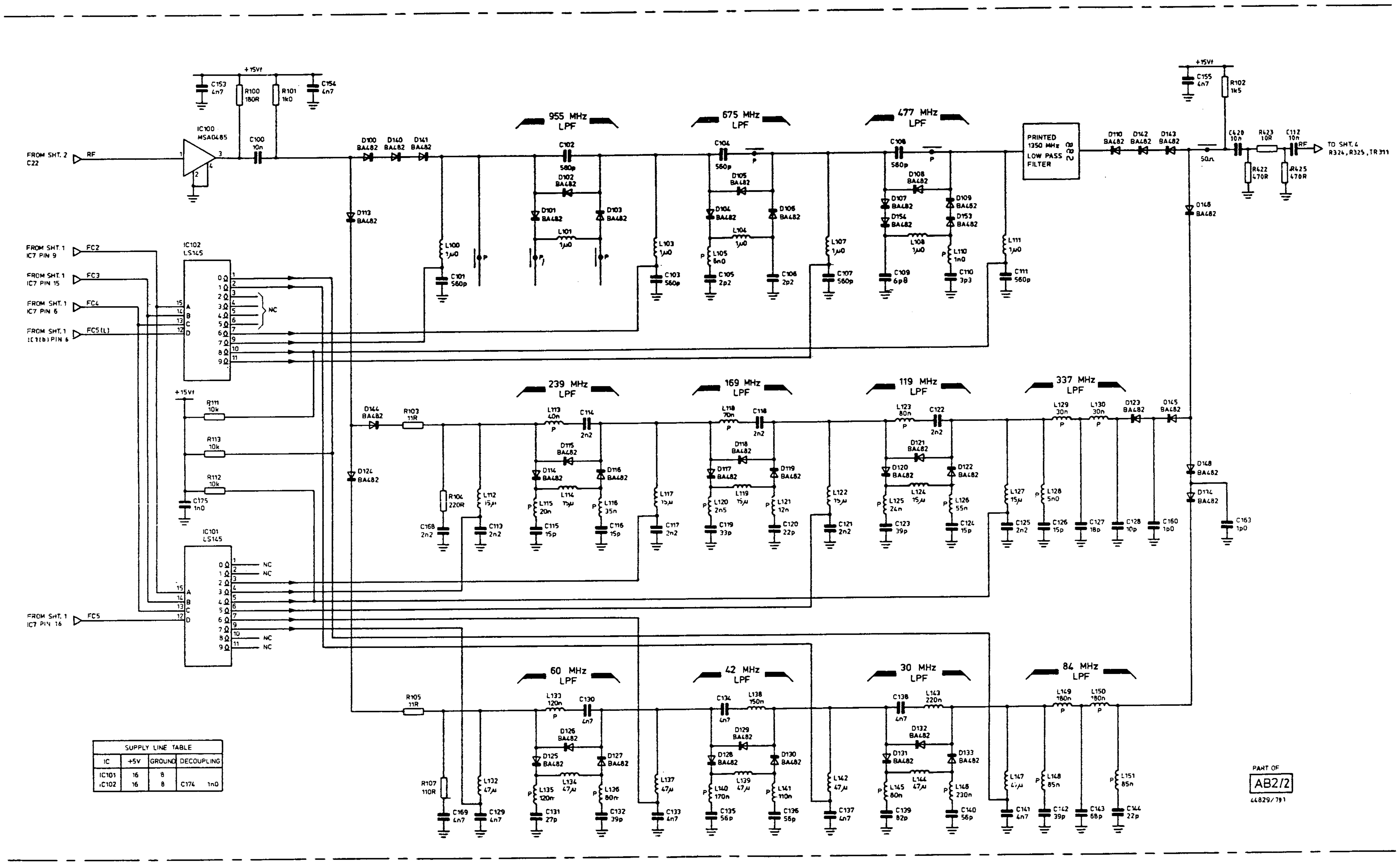
SUPPLY LINE TABLE					
IC	+26V	+5V	GROUND	-15V	DECOUPLING
IC11	13	12	5	4	C49 10n C44 10n

Drg. No. Z 44829/791 Sheet 2 of 4 (Issue 1)

Fig. 7-17 RF board : Modulator and decoding circuit diagram

Modulator & decoding AB2/2

Harmonic filters AB2/2



Drg. No. Z 44829/791 Sheet 3 of 4 (Issue 2)

Fig. 7-18 RF board : Harmonic filters circuit diagram

Harmonic filters AB2/2

Pulse mod & o/p amp AB2/2

NOTES
✦ OPTION FOR PULSE MODULATOR
IC301 FITTED FOR PULSE
MODULATION.

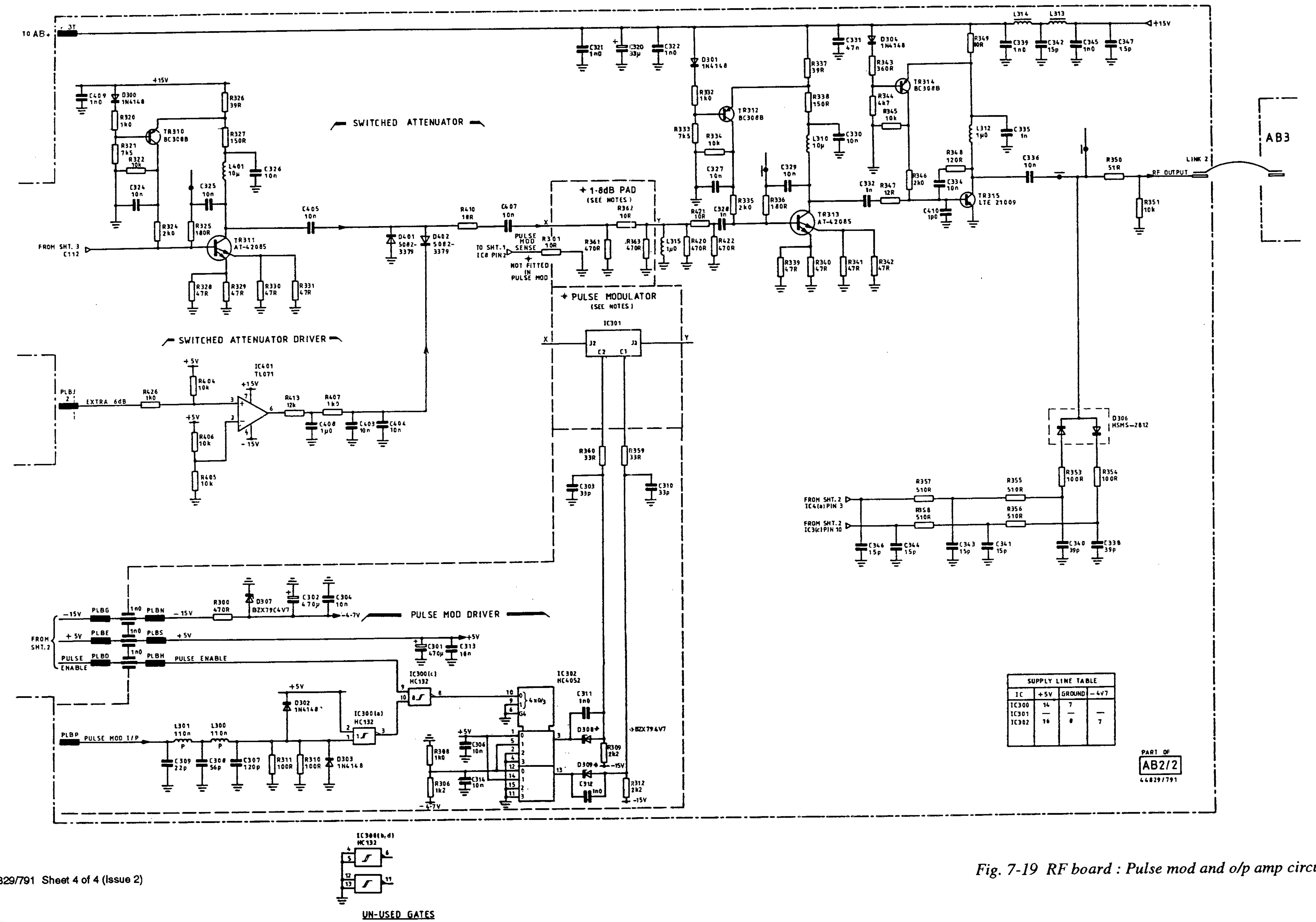


Fig. 7-19 RF board : Pulse mod and o/p amp circuit diagram

Drg. No. Z 44829/791 Sheet 4 of 4 (Issue 2)

Component layout **AB3/1**

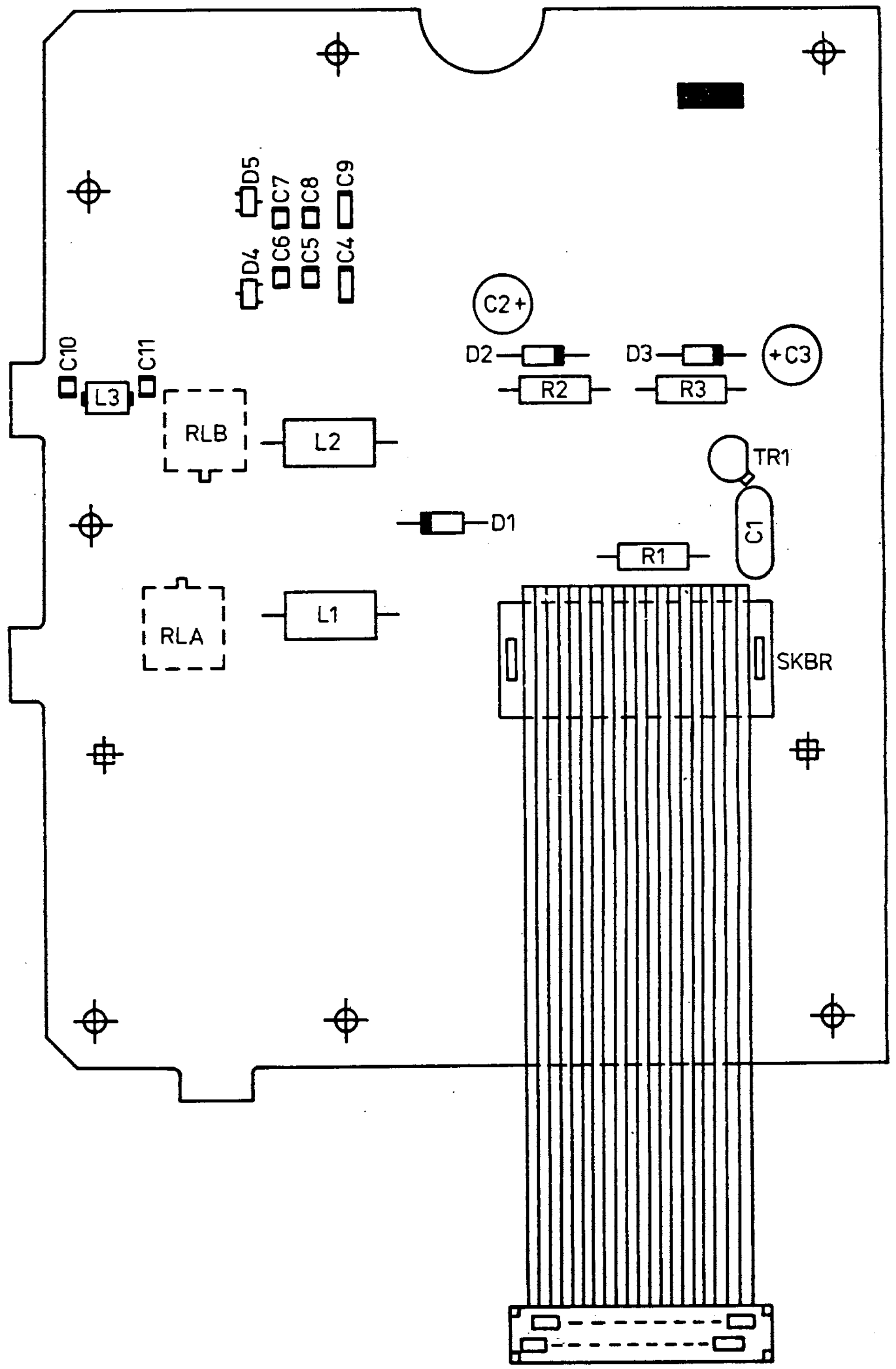


Fig. 7-20 BFO switch and RPP board component layout

Pulse mod & o/p amp AB2/2

Drg. No. 44829/532

BFO switch & RPP **AB3/1**

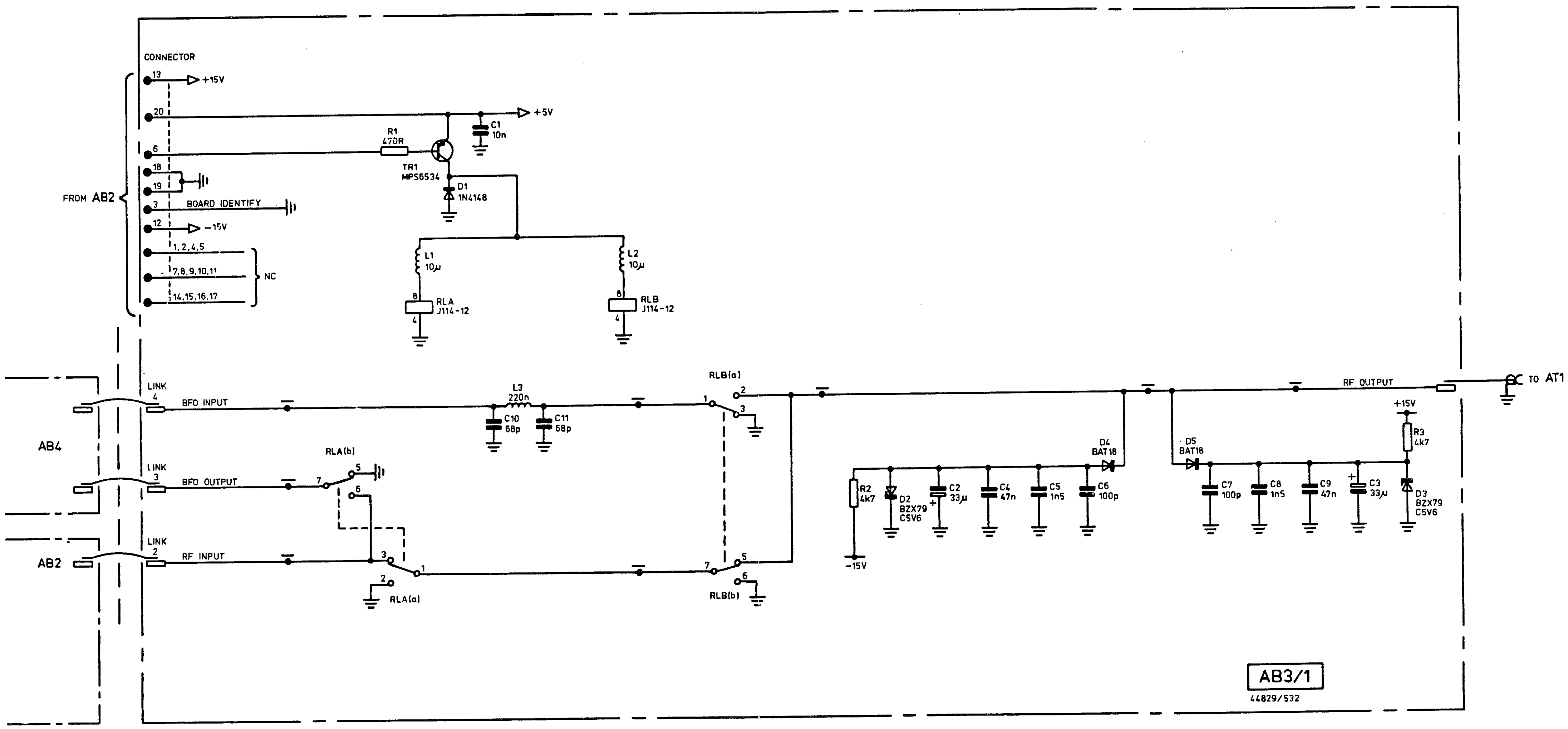


Fig. 7-21 BFO switch and RPP board circuit diagram

Drg. No. Z 44829/532 Sheet 1 of 1 (Issue 2)

Component layout AB3/3

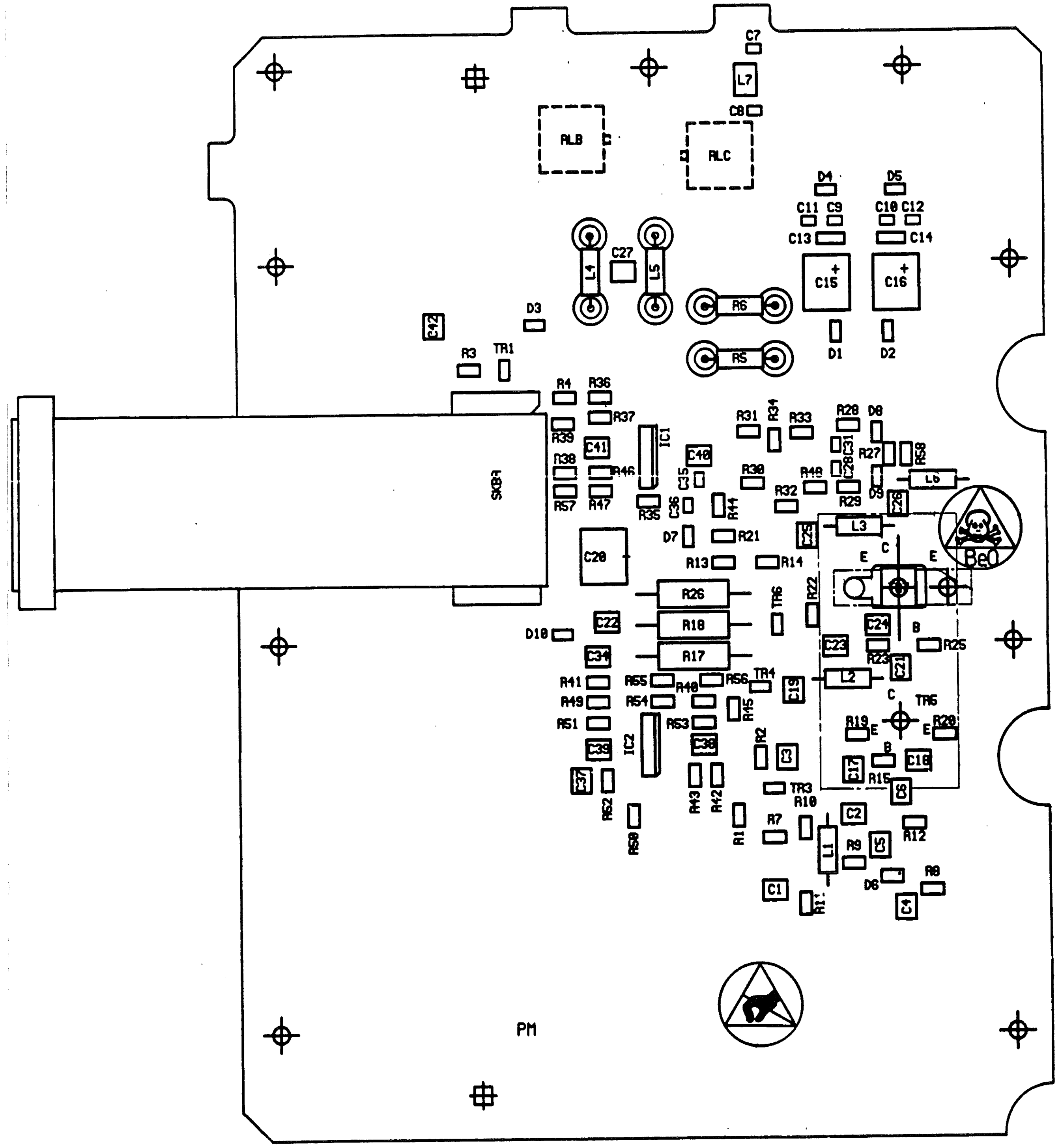


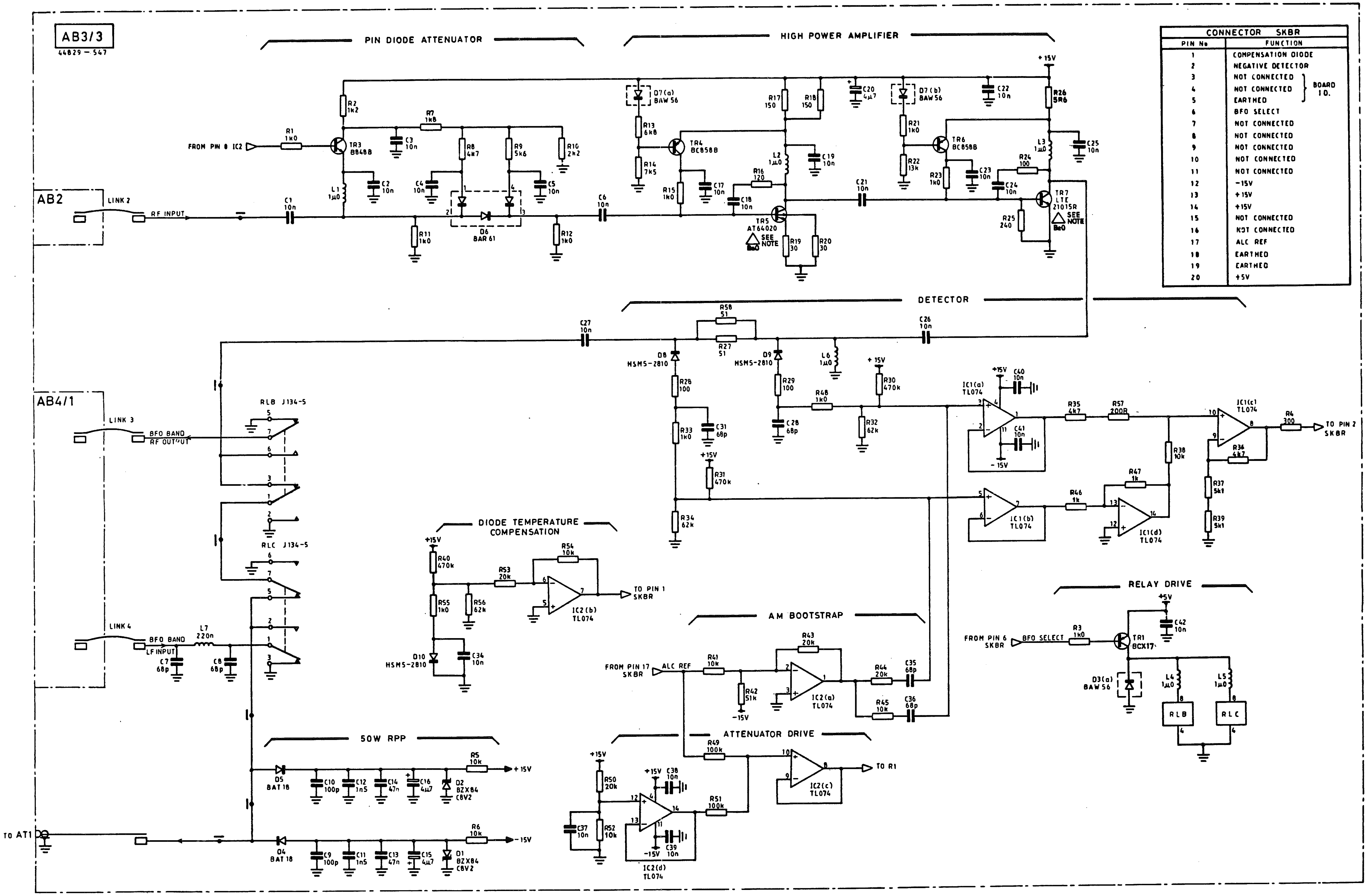
Fig. 7-22 High power amplifier board component layout

BFO switch & RPP AB3/1

Drg. No. 44829/547

WARNING! TR5 & TR7 CONTAIN BERYLLIA, THE DUST OF WHICH IS TOXIC.

High power amp AB3/3

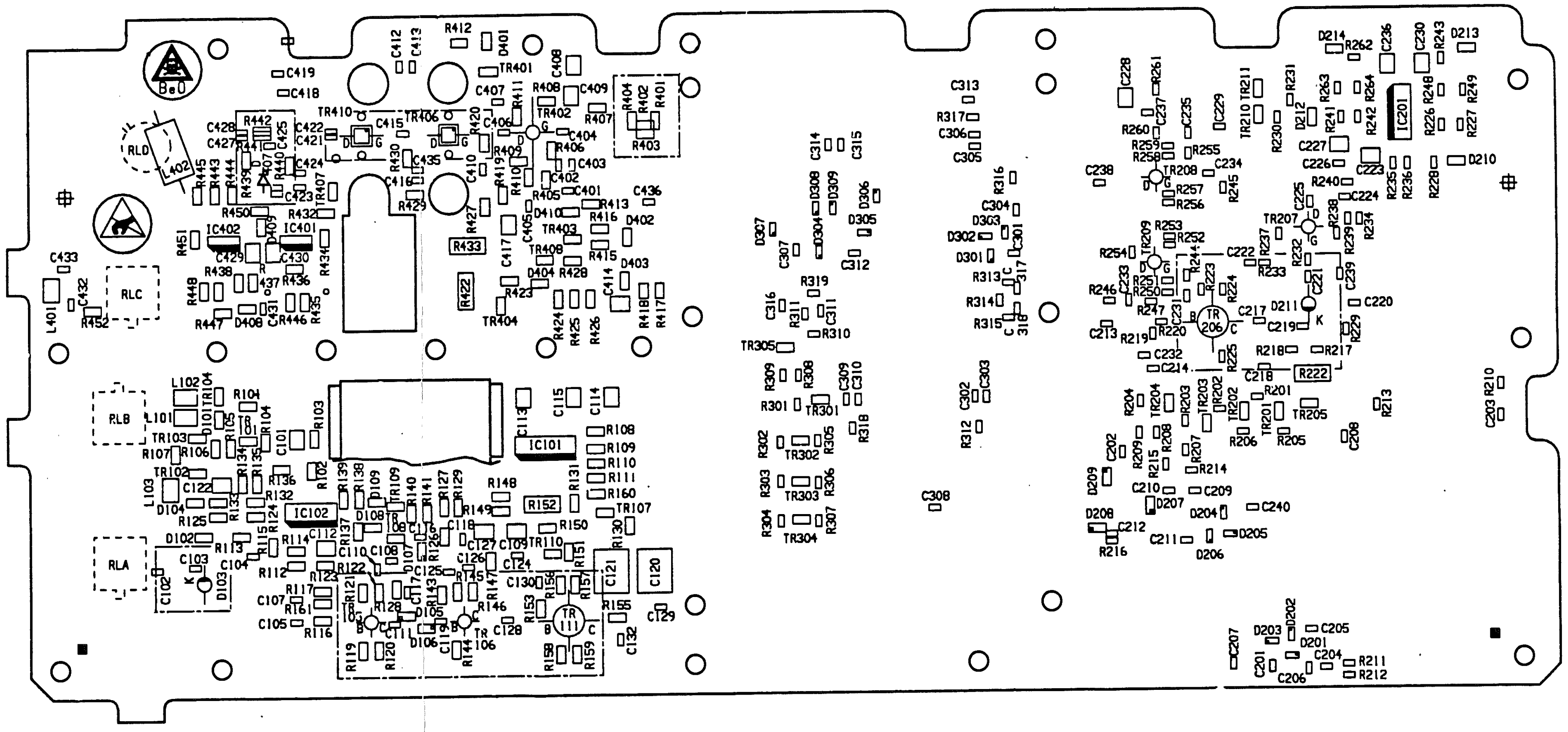


CONNECTOR SKBR	
PIN No	FUNCTION
1	COMPENSATION DIODE
2	NEGATIVE DETECTOR
3	NOT CONNECTED } BOARD I.D.
4	NOT CONNECTED } BOARD I.D.
5	EARTHED } BOARD I.D.
6	BFO SELECT
7	NOT CONNECTED
8	NOT CONNECTED
9	NOT CONNECTED
10	NOT CONNECTED
11	NOT CONNECTED
12	−15V
13	+15V
14	+15V
15	NOT CONNECTED
16	NOT CONNECTED
17	ALC REF
18	EARTHED
19	EARTHED
20	+5V

Drg. No. Z 44829/547 Sheet 1 of 1 (Issue 3)

Fig. 7-23 High power amplifier board circuit diagram

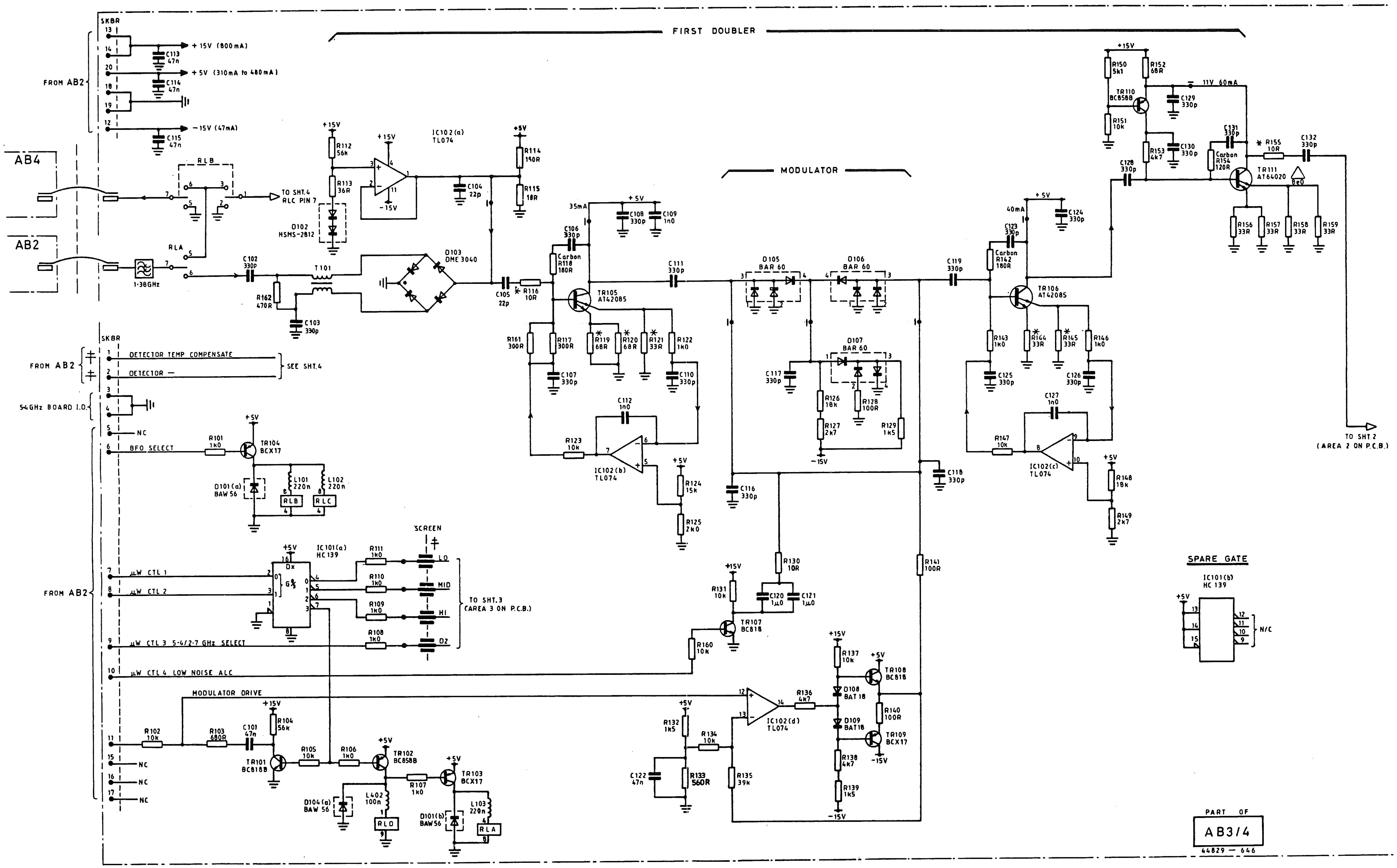
Component layout AB3/4



High power amp AB3/3

Fig. 7-24 Quadrupler board component layout

1st doubler & modulator AB3/4



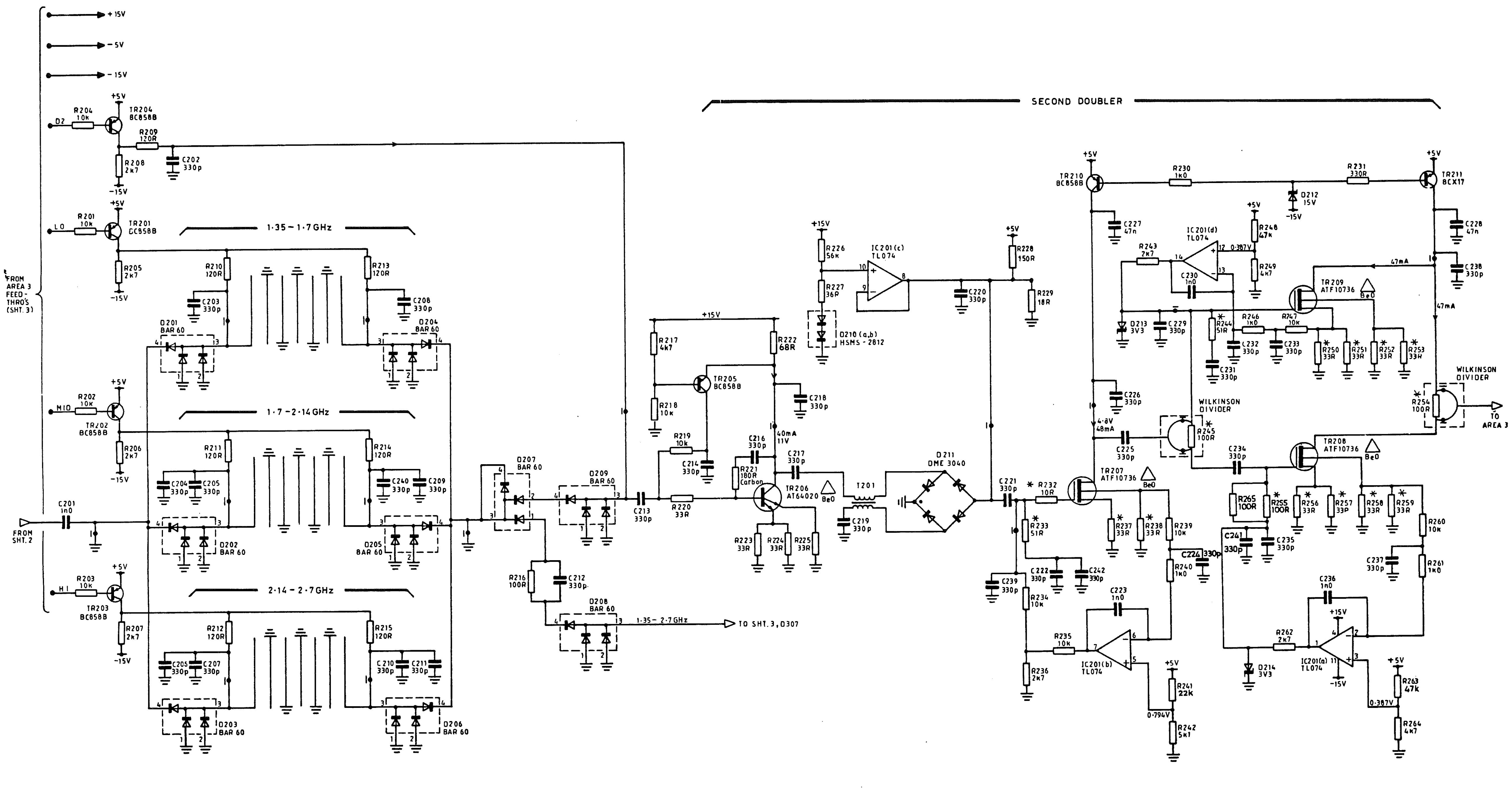
Drg. No. 44829/646 Sheet 1 of 4 (Issue 6)

╪ DUPLICATED FOR CIRCUIT CLARITY
* CHIP RESISTOR MOUNTED WITH RESISTIVE SURFACE FACE DOWN FOR MINIMUM INDUCTANCE.
△ WARNING! TR111 CONTAINS BERYLLIA OXIDE, THE DUST OF BeO WHICH IS TOXIC.

Fig. 7-25 Quadrupler board : First doubler & modulator circuit diagram

1st doubler & modulator AB3/4

BPF & 2nd doubler AB3/4



PART OF
AB3/4
44829 — 646

Drg. No. Z 44829/646 Sheet 2 of 4 (Issue 3)

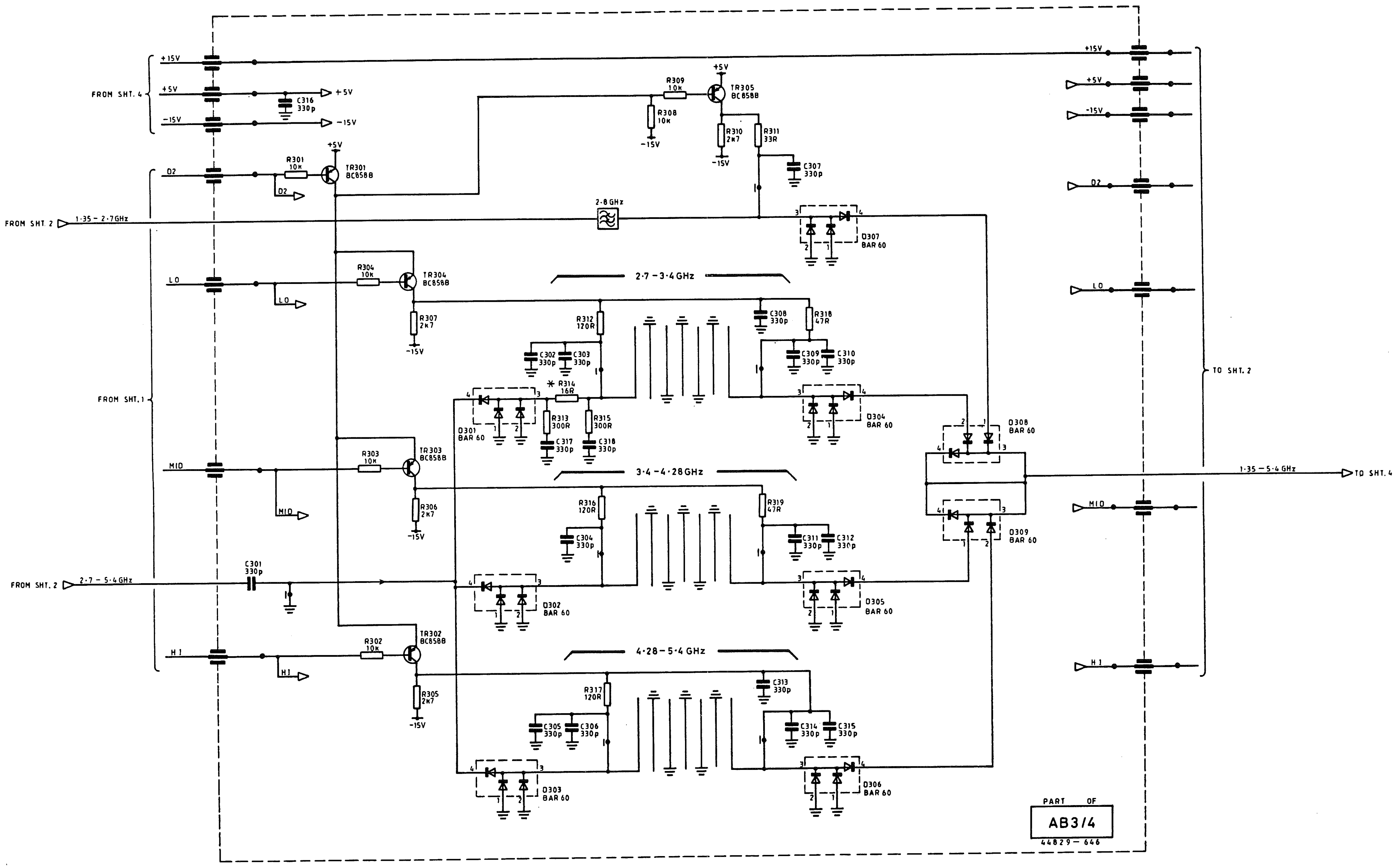
✱ CHIP RESISTOR MOUNTED WITH RESISTIVE SURFACE FACE DOWN FOR MINIMUM INDUCTANCE.

BeO WARNING! TR206 TO 209 CONTAIN BERYLLIA OXIDE, THE DUST OF WHICH IS TOXIC.

Fig. 7-26 Quadrupler board : BPF & second doubler circuit diagram

BPF & 2nd doubler AB3/4

Band-pass filters AB3/4



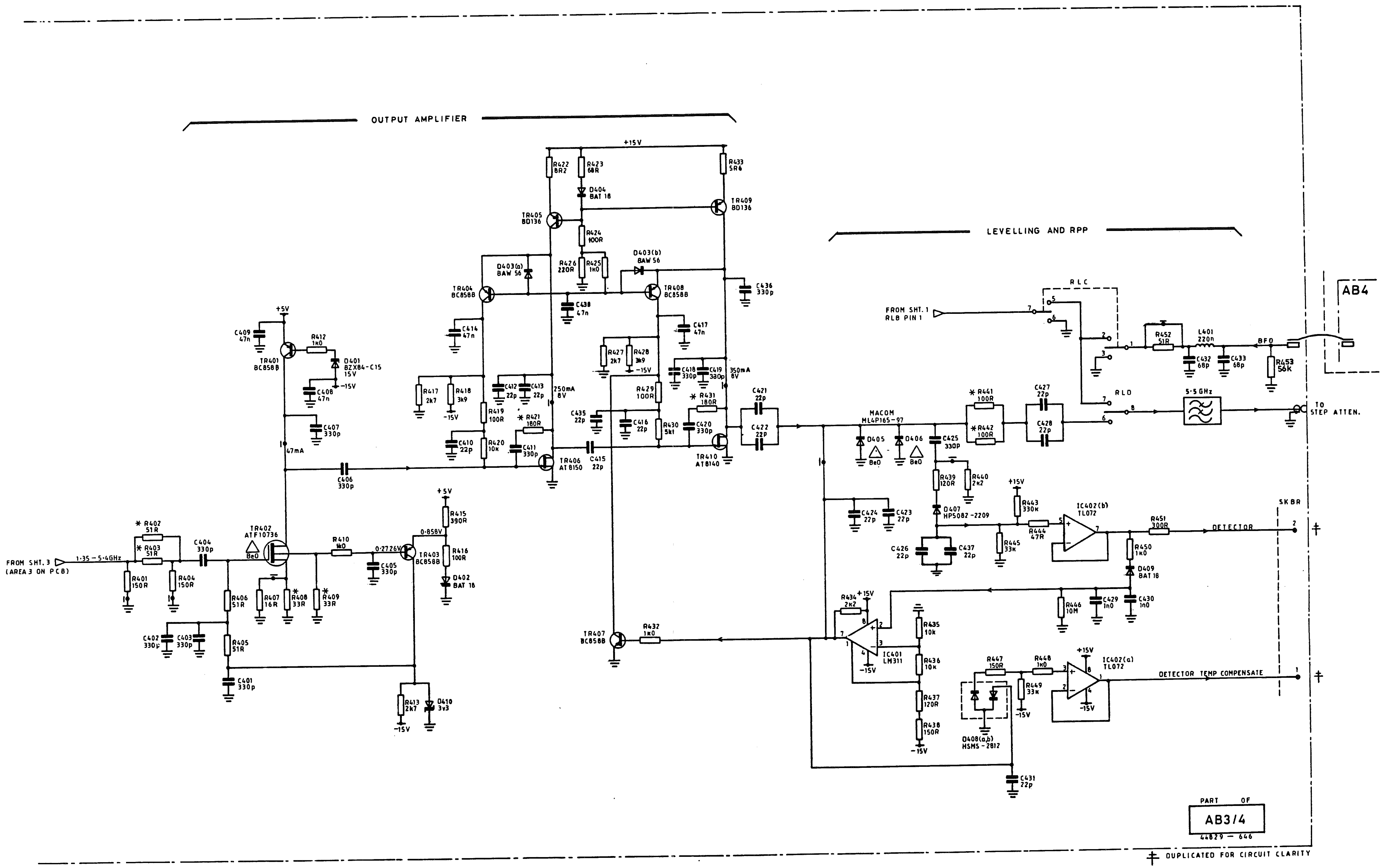
* CHIP RESISTOR MOUNTED WITH RESISTIVE SURFACE FACE DOWN FOR MINIMUM INDUCTANCE.

Drg. No. Z 44829/646 Sheet 3 of 4 (Issue 2)

Fig. 7-27 Quadrupler board : Band-pass filters circuit diagram

Band-pass filters AB3/4

Output amp, levelling & RPP AB3/4



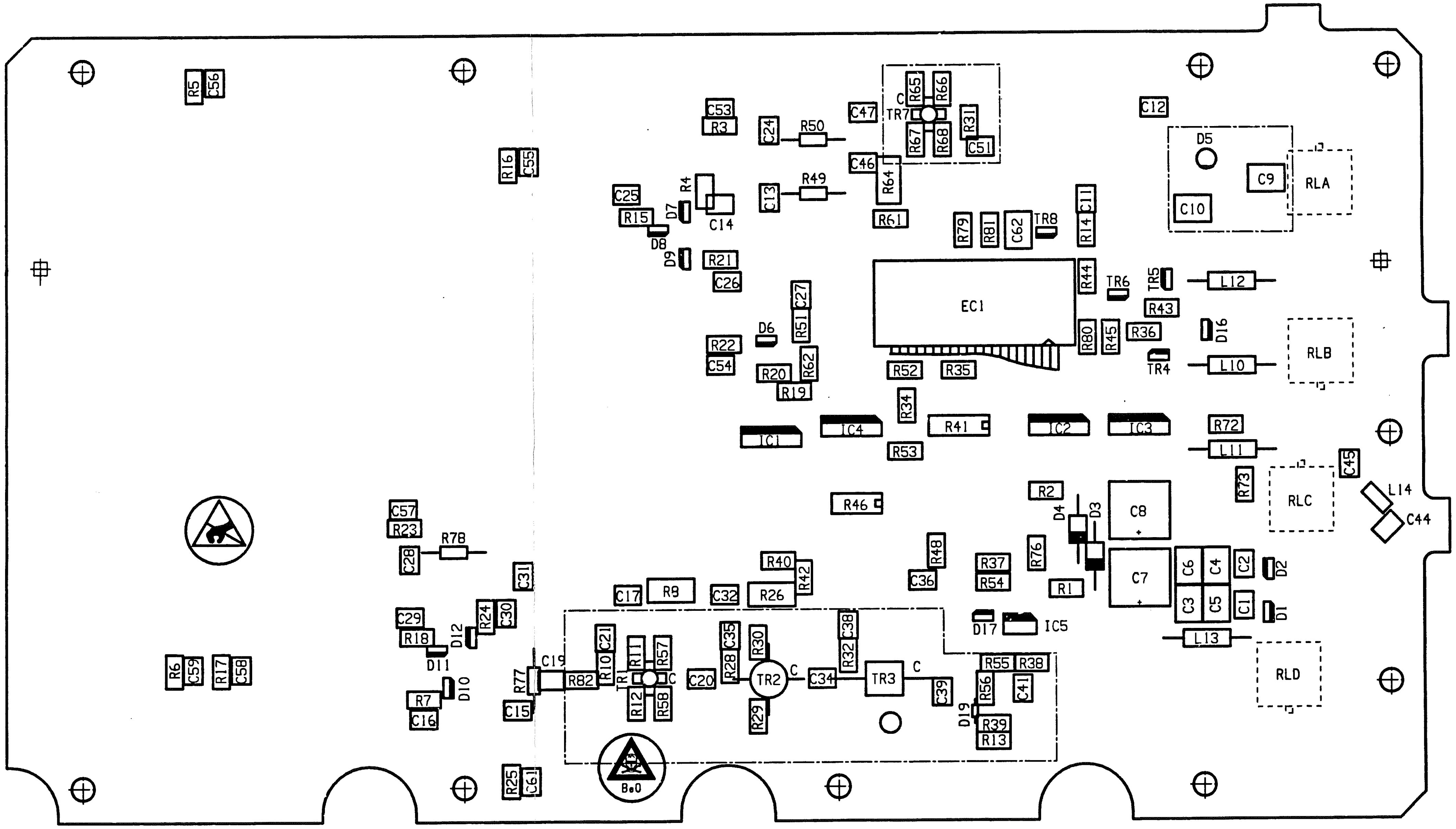
* CHIP RESISTOR MOUNTED WITH RESISTIVE SURFACE FACE DOWN FOR MINIMUM INDUCTANCE

WARNING! TR402, D405, D406 CONTAIN BERYLLIA OXIDE, THE DUST OF WHICH IS TOXIC.

Drg. No. Z 44829/646 Sheet 4 of 4 (Issue 4)

Fig. 7-28 Quadrupler board : Output amp, levelling & RPP circuit diagram

Component layout AB3/5

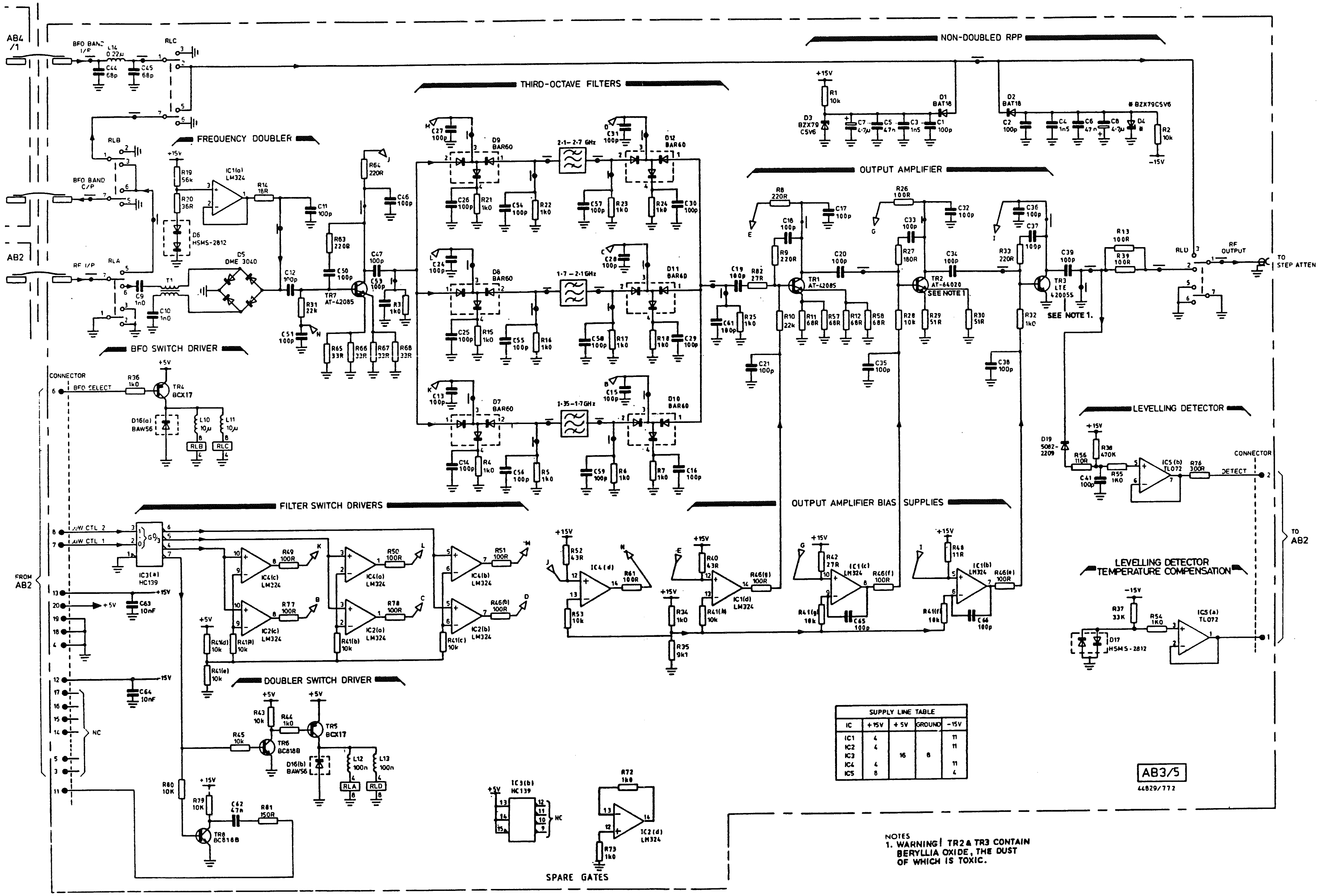


Output amp, levelling & RPP AB3/4

Drg. No. 44829/772

Fig. 7-29 Frequency doubler board component layout

Frequency doubler AB3/5

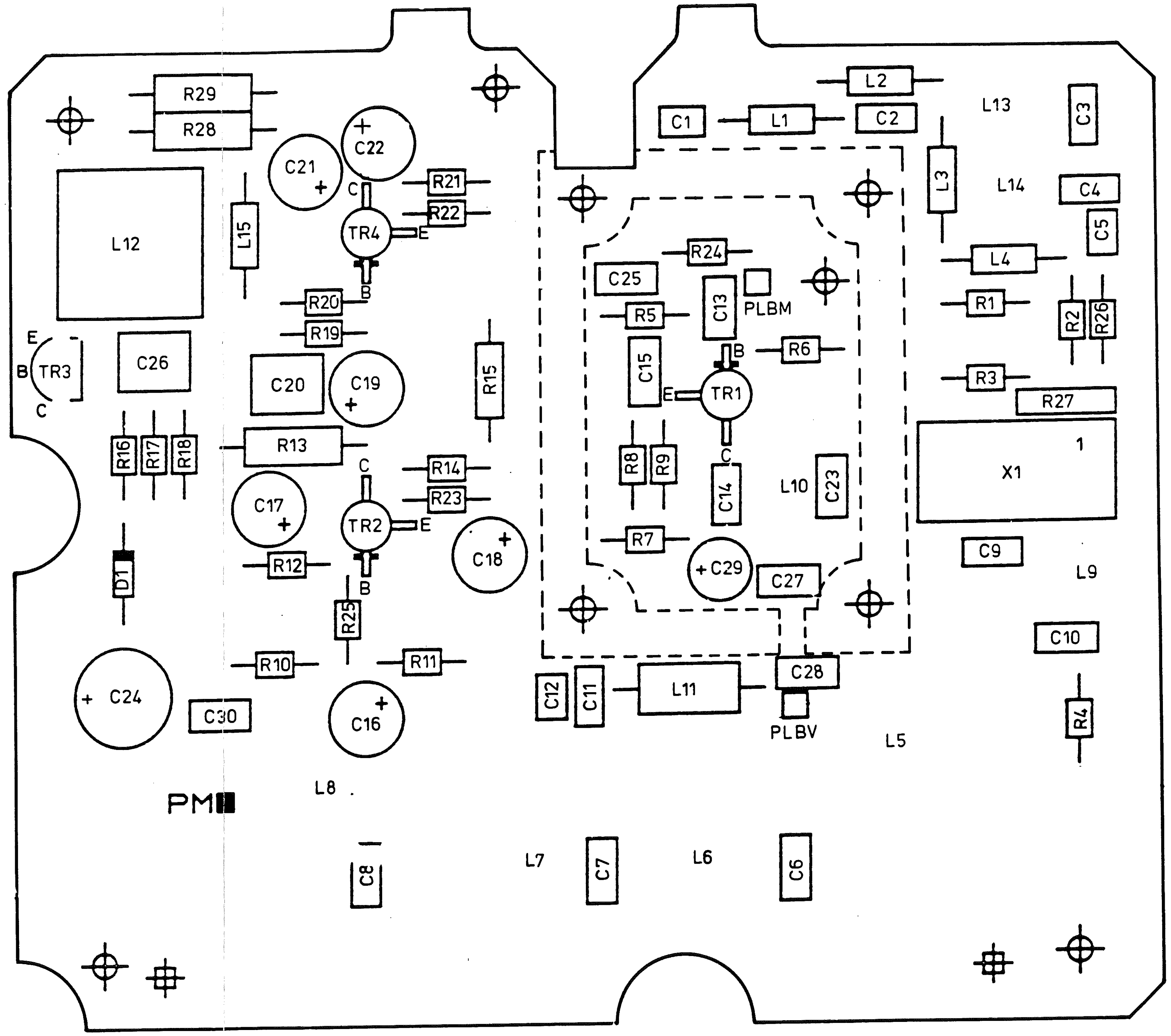


SUPPLY LINE TABLE				
IC	+15V	+5V	GROUND	-15V
IC1	4			11
IC2	4			11
IC3		16	8	
IC4	4			11
IC5	8			4

Fig. 7-30 Frequency doubler board circuit diagram

Drg. No. Z 44829/772 Sheet 1 of 1 (Issue 6)

Component layout **AB4/1**



Frequency doubler AB3/5

Fig. 7-31 Beat frequency oscillator board component layout

Drg. No. 44829/697

Beat frequency oscillator AB4/1

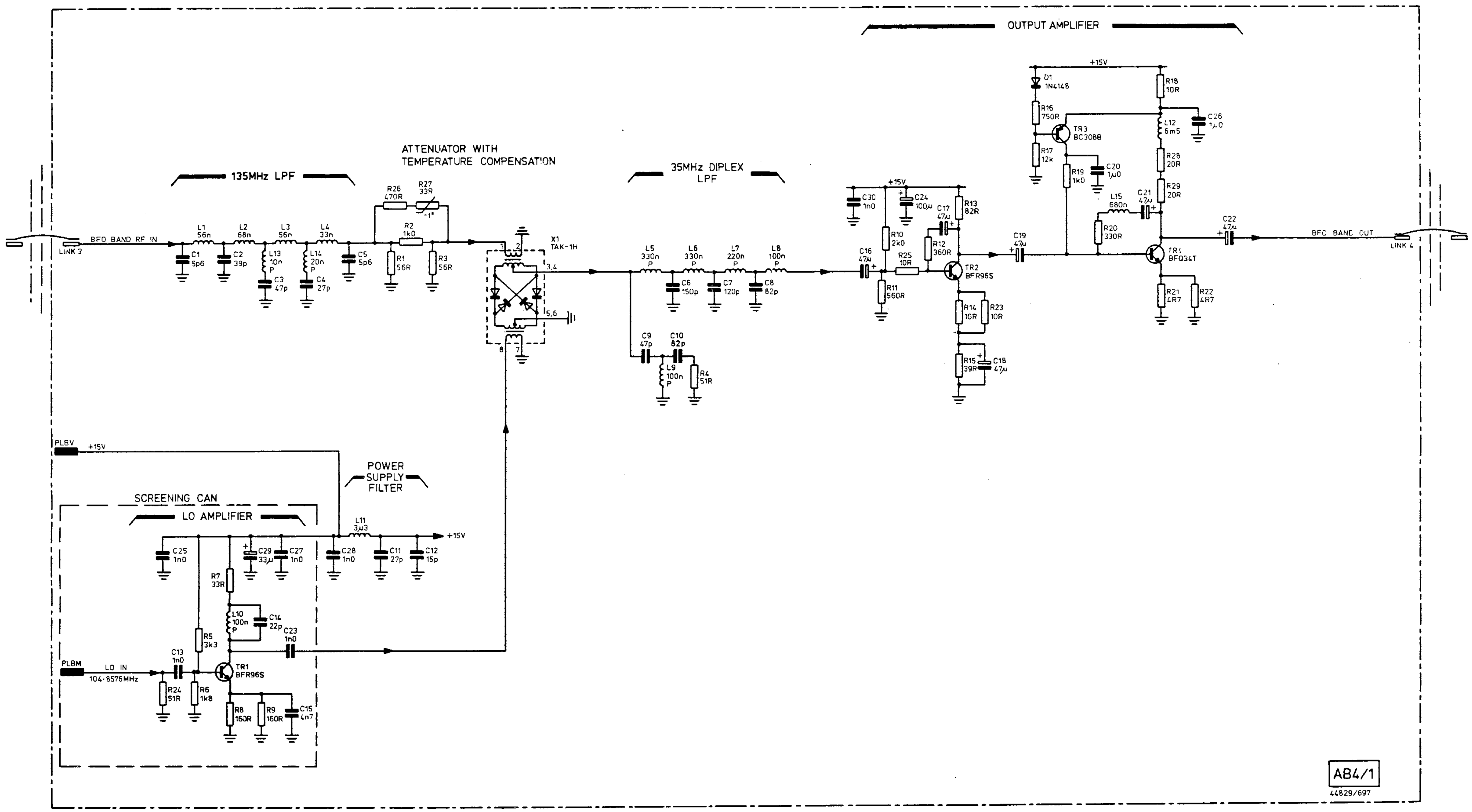
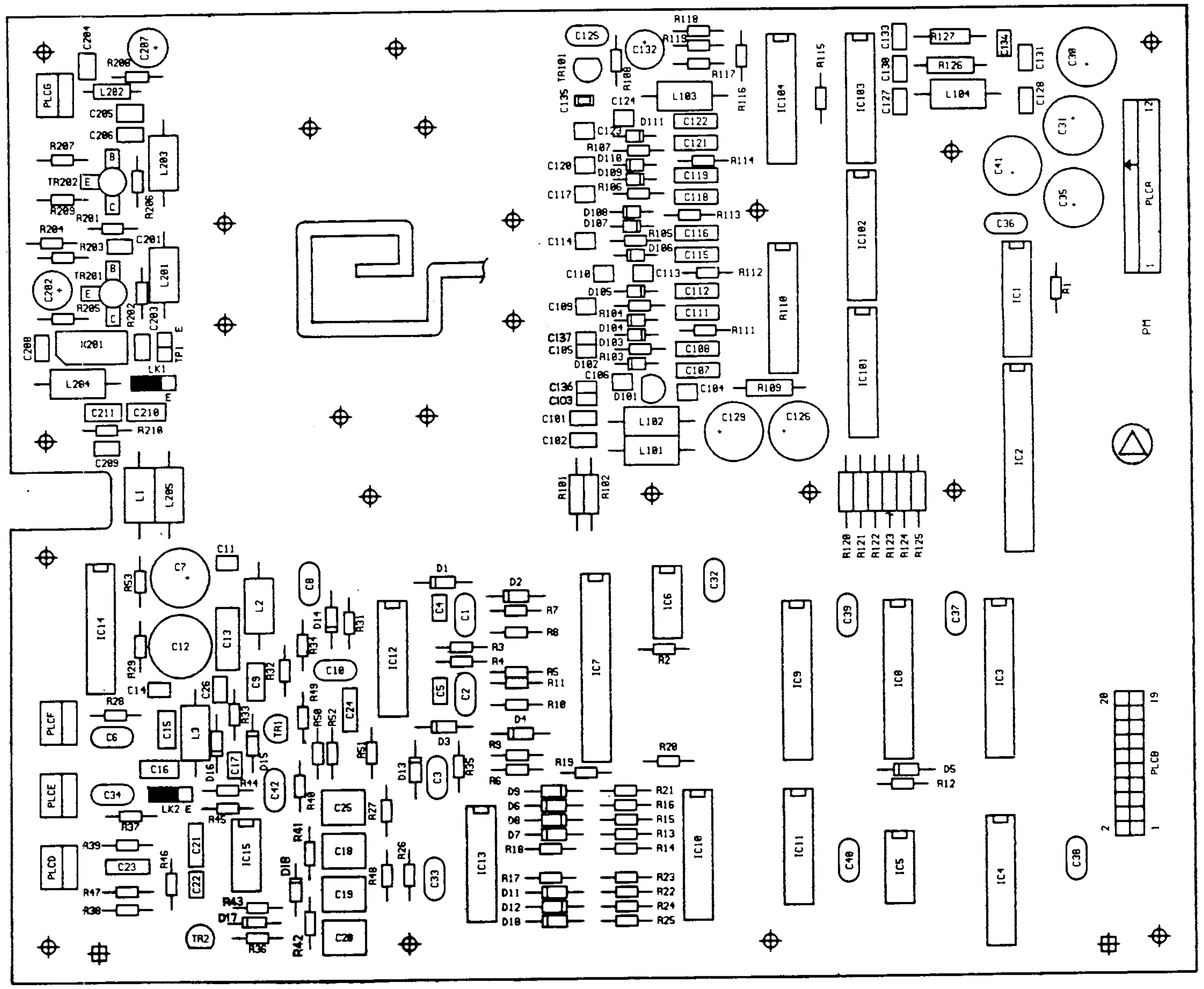


Fig. 7-32 Beat frequency oscillator board circuit diagram

Drg. No. Z 44829/697 Sheet 1 of 1 (Issue 1)

Component layout AC1

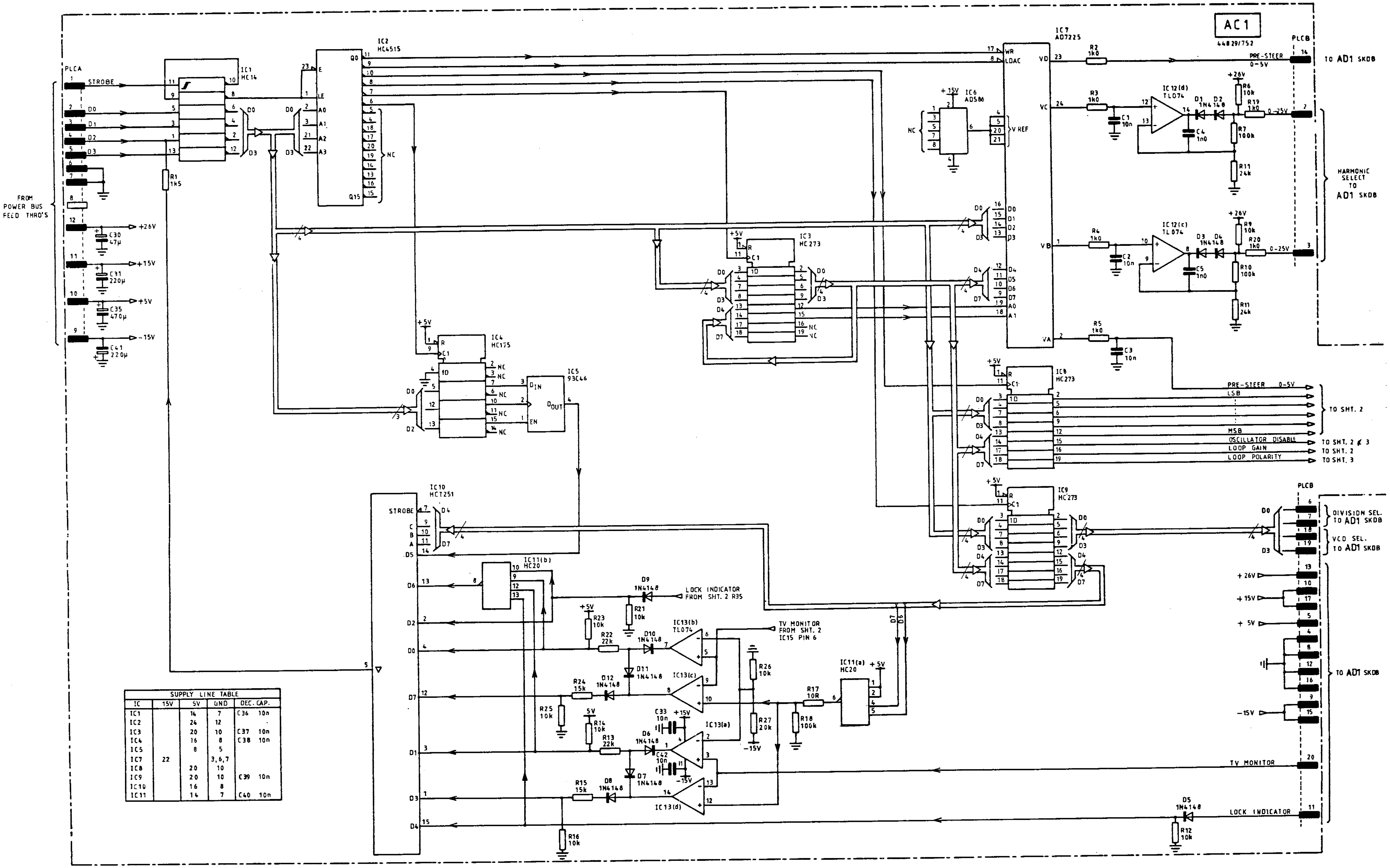


Beat frequency oscillator AB4/1

Fig. 7-33 Output loop board component layout

Drg. No. 44829/752

Control interface AC1



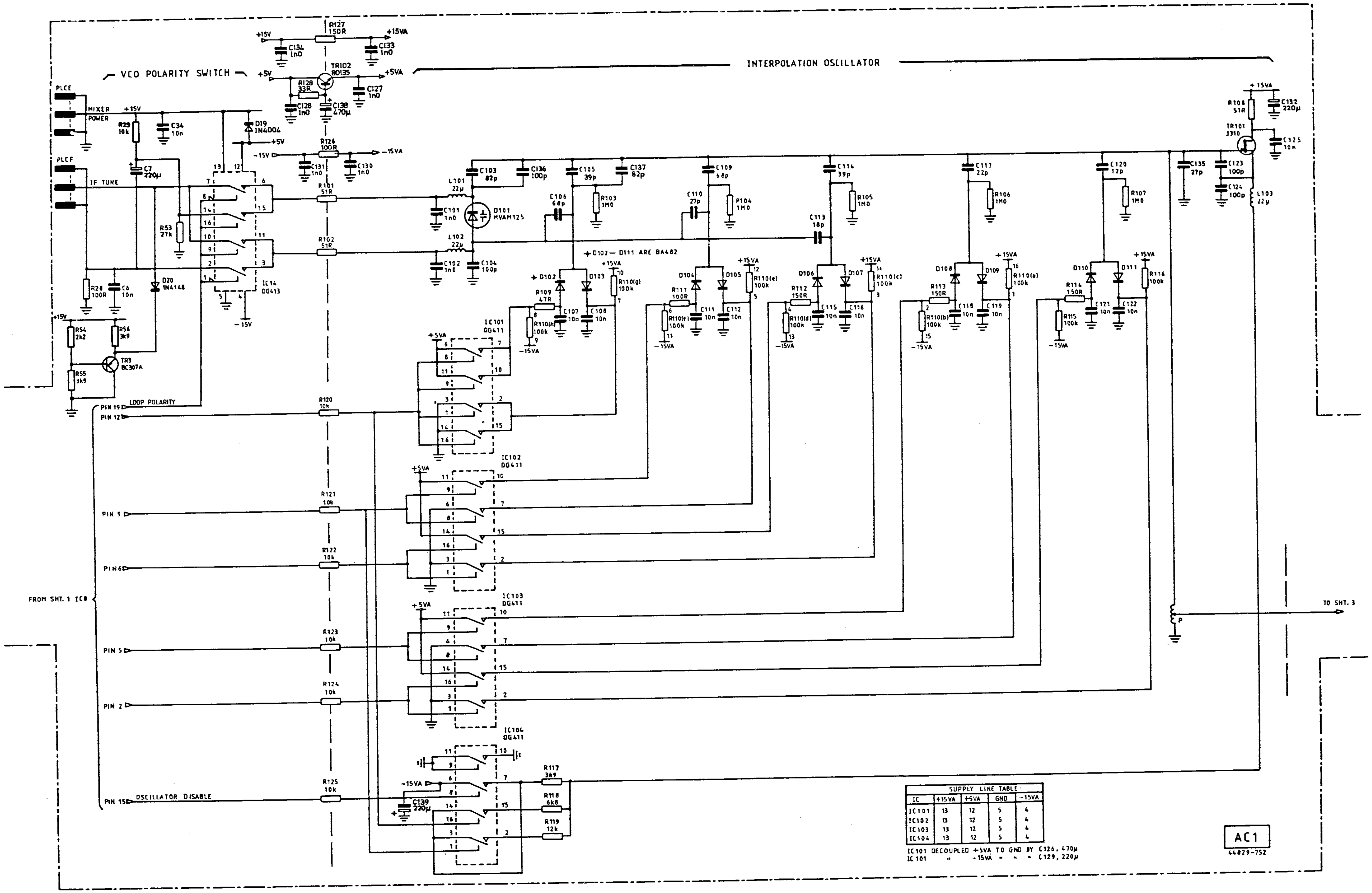
SUPPLY LINE TABLE				
IC	15V	5V	GND	DEC. CAP.
IC1		14	7	C36 10n
IC2		24	12	
IC3		20	10	C37 10n
IC4		16	8	C38 10n
IC5		8	5	
IC7	22		3,6,7	
IC8		20	10	
IC9		20	10	C39 10n
IC10		16	8	
IC11		14	7	C40 10n

Drg. No. Z 44829/752 Sheet 1 of 3 (Issue 1)

Fig. 7-34 Output loop board : Control interface cicuit diagram

Control interface AC1

Interpolation oscillator AC1



SUPPLY LINE TABLE				
IC	+15VA	+5VA	GND	-15VA
IC101	13	12	5	4
IC102	13	12	5	4
IC103	13	12	5	4
IC104	13	12	5	4

IC101 DECOUPLED +5VA TO GND BY C126, 470µ
IC 101 " -15VA " " " C129, 220µ

Drg. No. Z 44829/752 Sheet 2 of 3 (Issue 2)

Fig. 7-35 Output loop board : Interpolation oscillator cicuit diagram

Interpolation oscillator AC1

Phase locked loop AC1

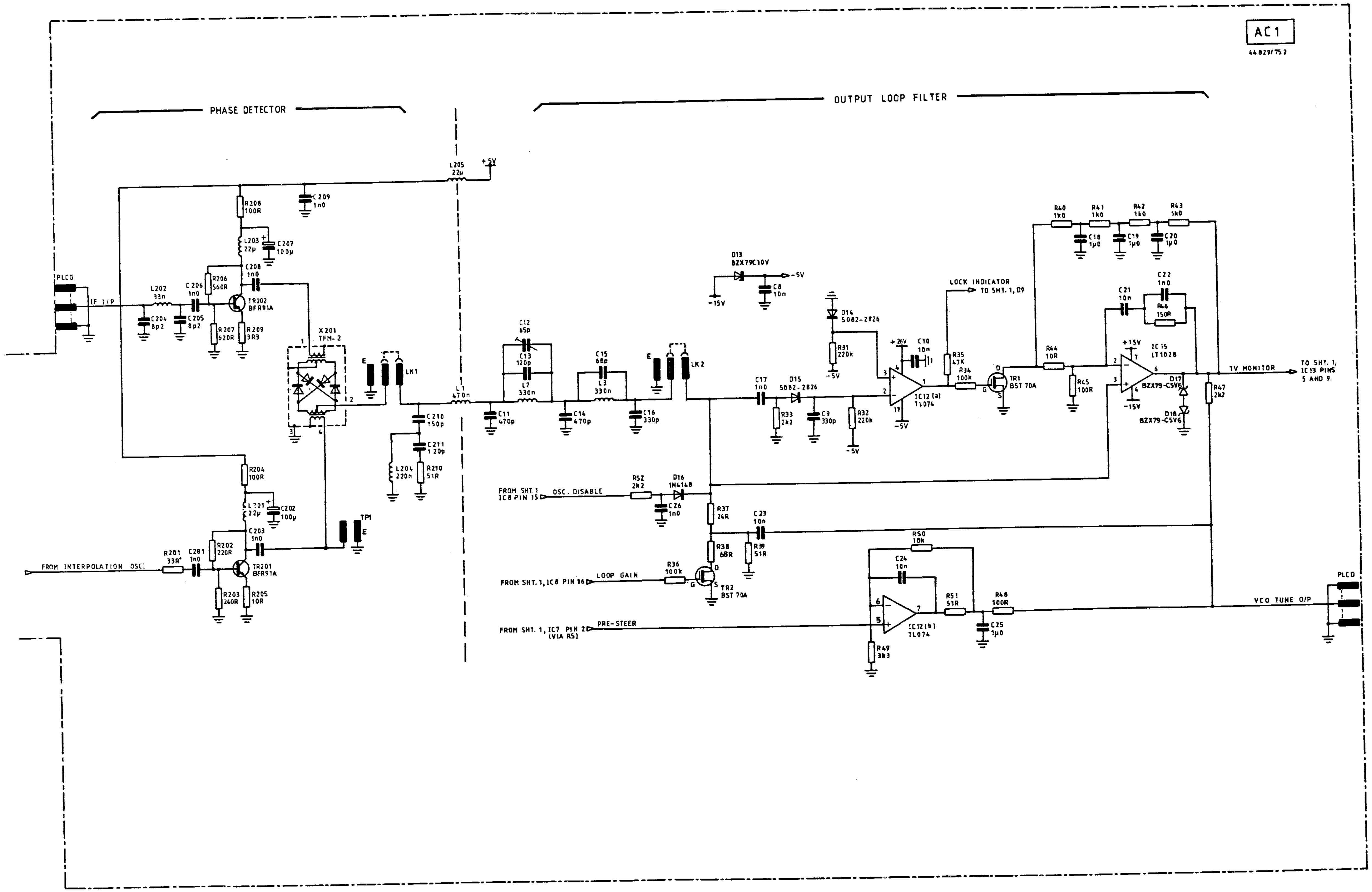
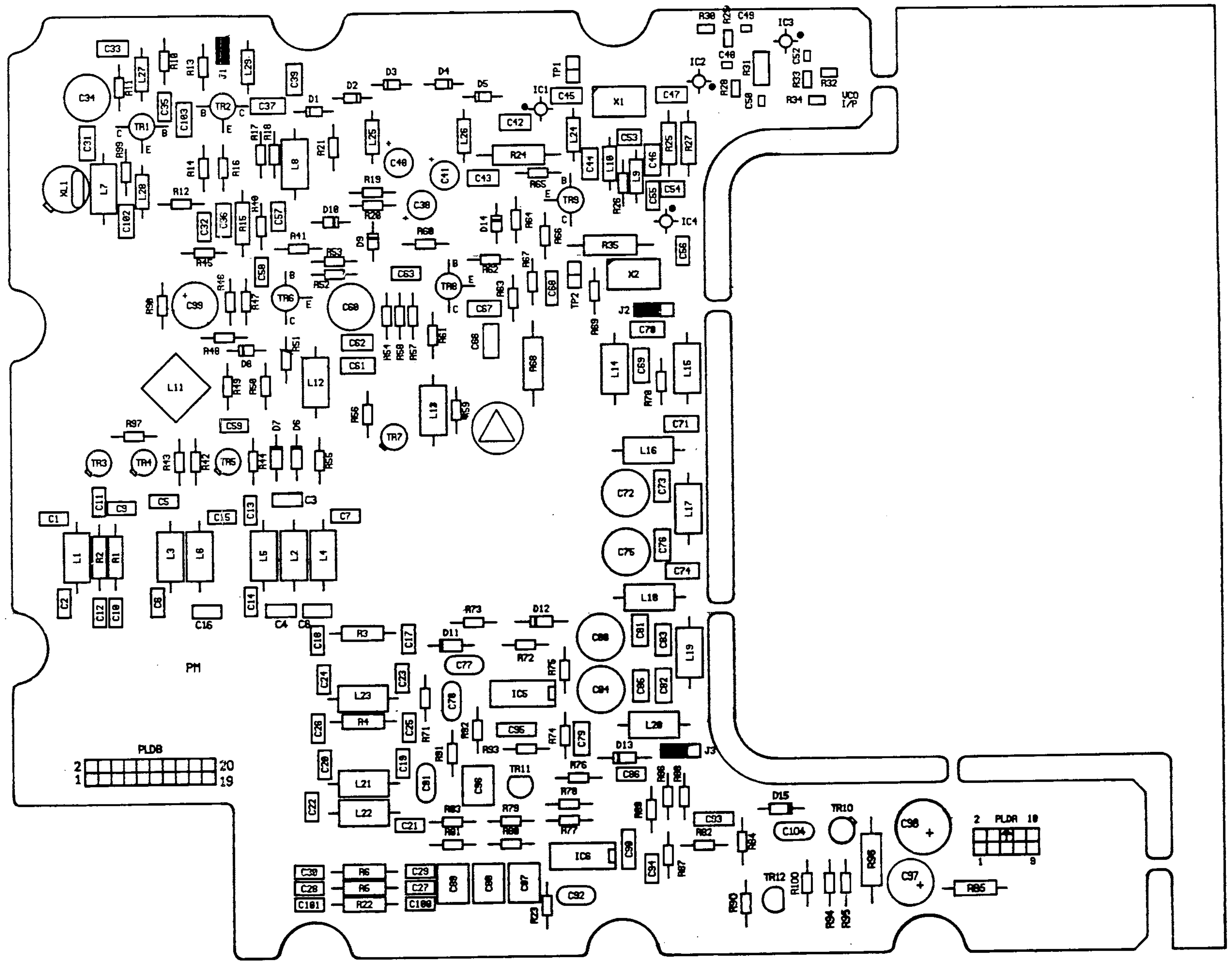


Fig. 7-36 Output loop board : Phase locked loop cicuit diagram

Drg. No. Z 44829/752 Sheet 3 of 3 (Issue 2)

Component layout AD1

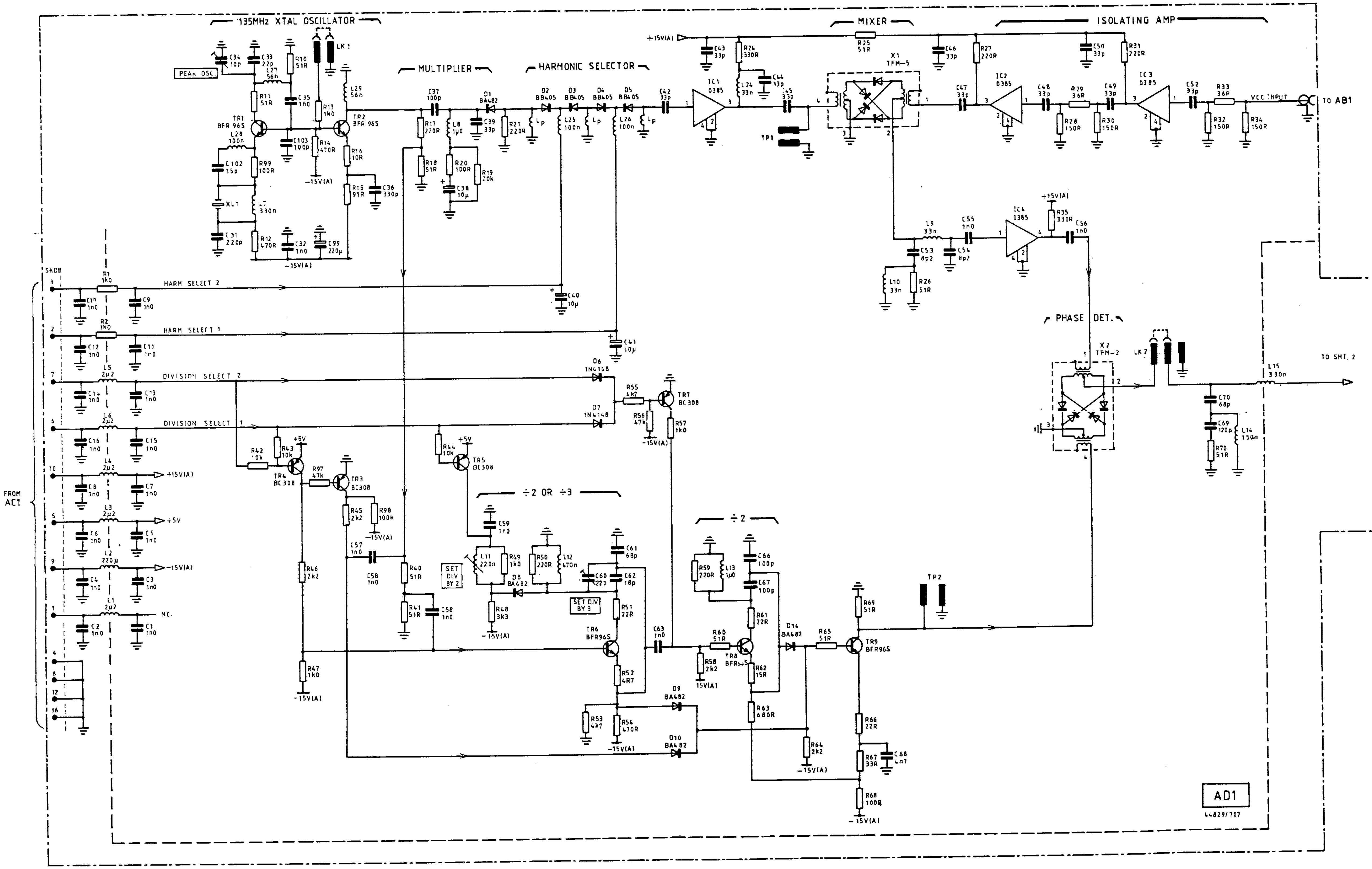


Phase locked loop AC1

Drg. No. 44829/707

Fig. 7-37 Harmonic loop board component layout

Harmonic generator AD1

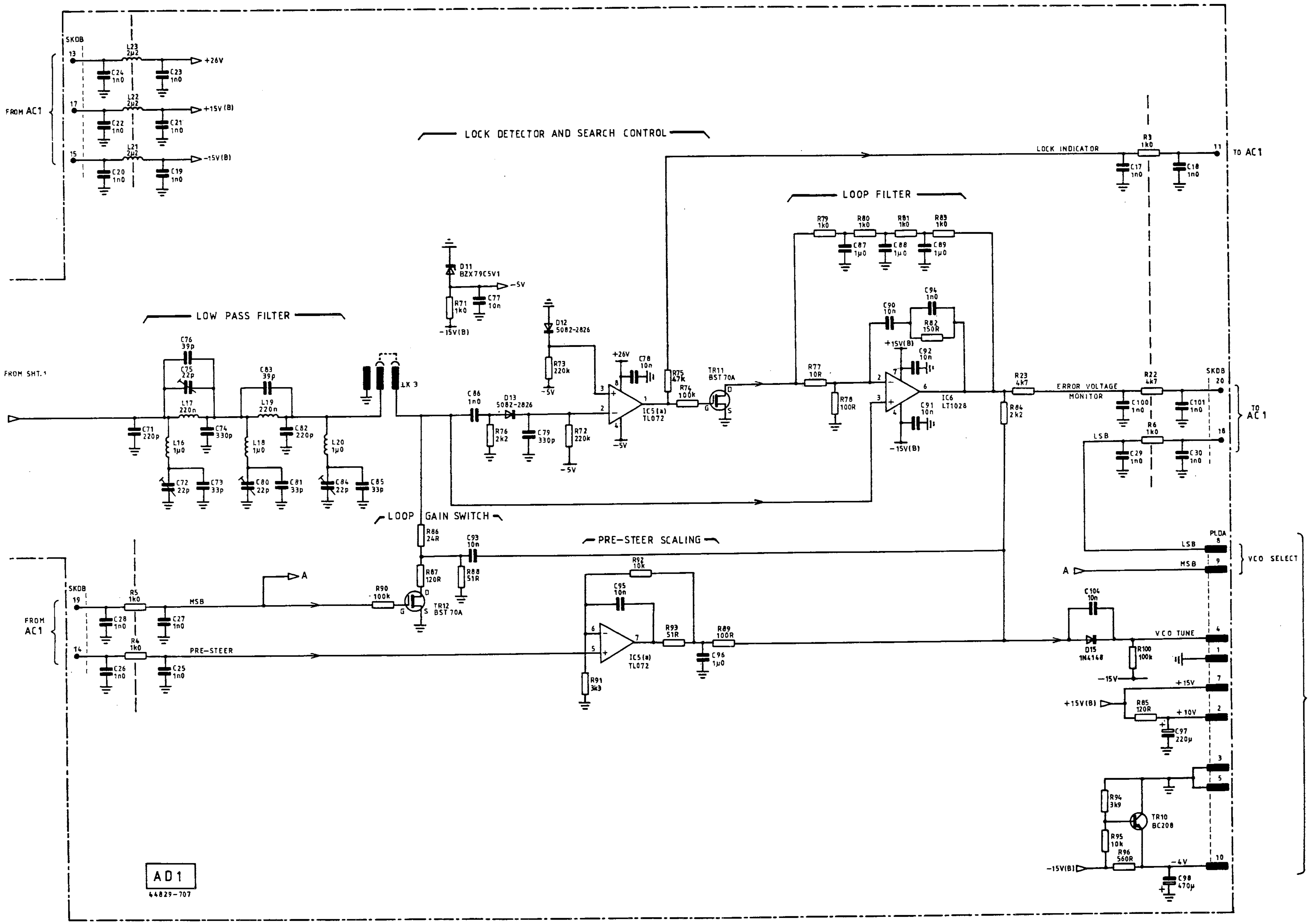


Drg. No. Z 44829/707 Sheet 1 of 2 (Issue 1)

Fig. 7-38 Harmonic loop board : Harmonic generator cicuit diagram

Harmonic generator AD1

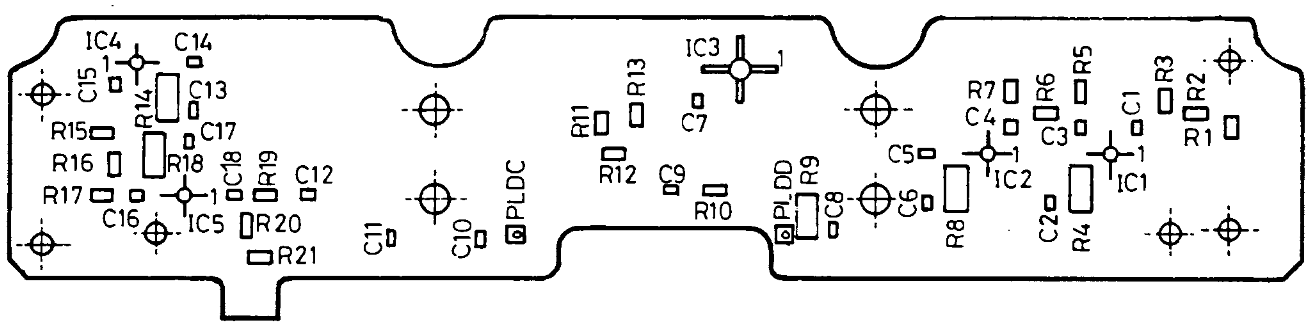
Phase locked loop AD1



Drg. No. Z 44829/707 Sheet 2 of 2 (Issue 3)

Fig. 7-39 Harmonic loop board : Phase locked loop circuit diagram

Component layout AD2



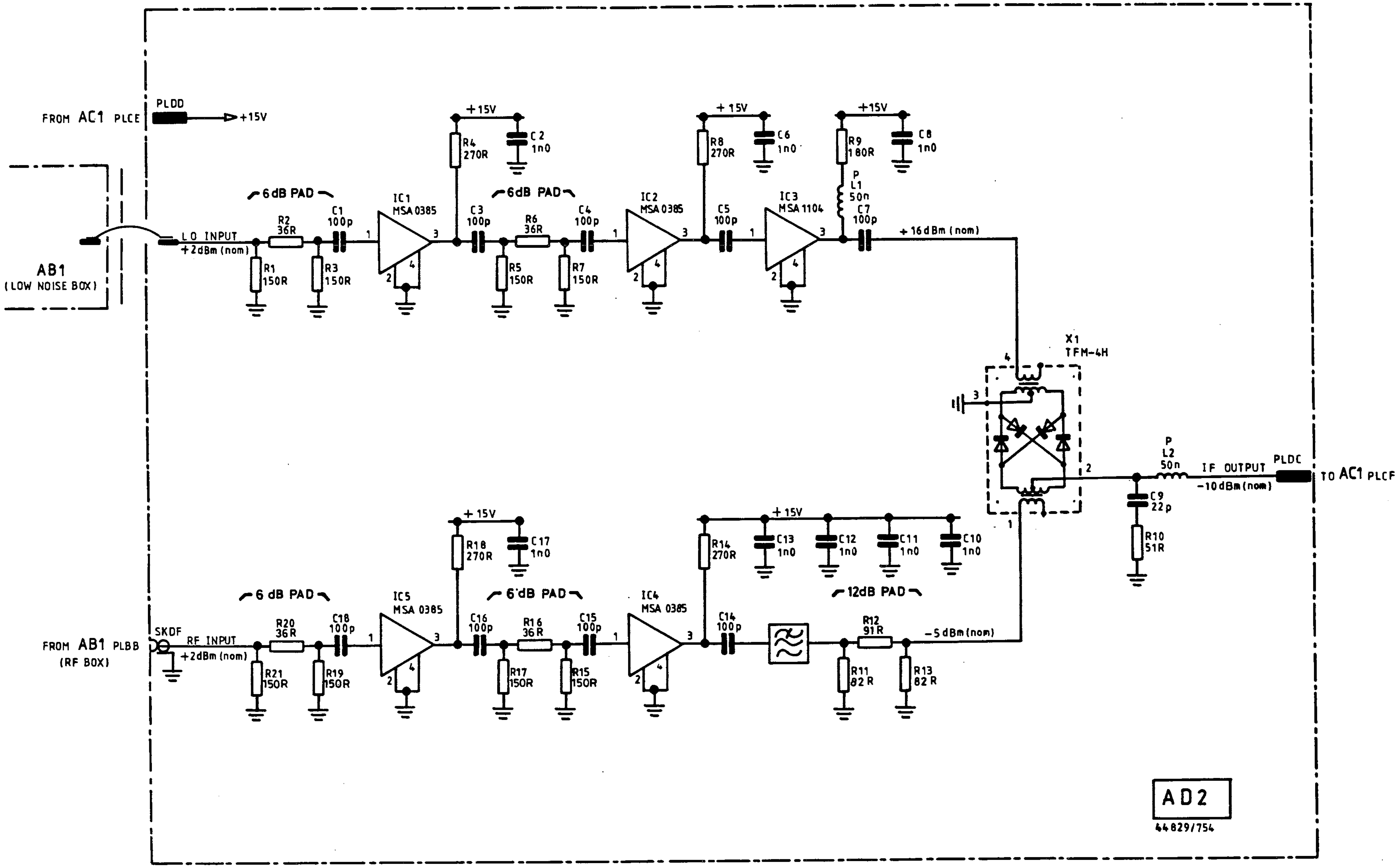
Phase locked loop AD1

Drg. No. 44829/754

Fig. 7-40 Mixer board component layout

46882-075R
Apr. 92

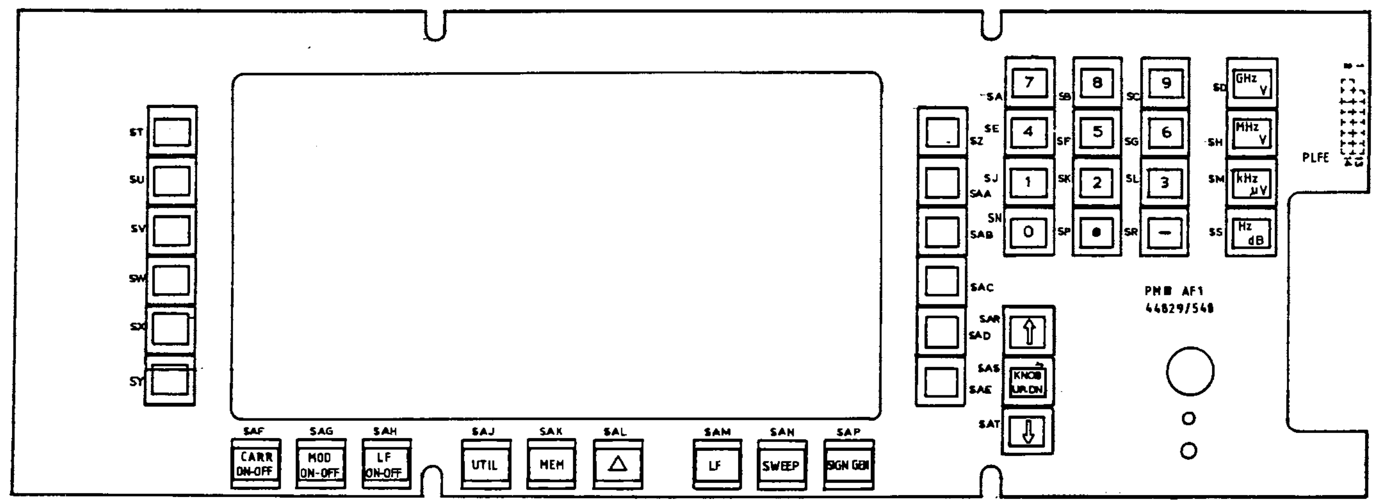
Mixer AD2



Drg. No. Z 44829/754 Sheet 1 of 1 (Issue 2)

Fig. 7-41 Mixer board cicuit diagram

Component layout **AF1**



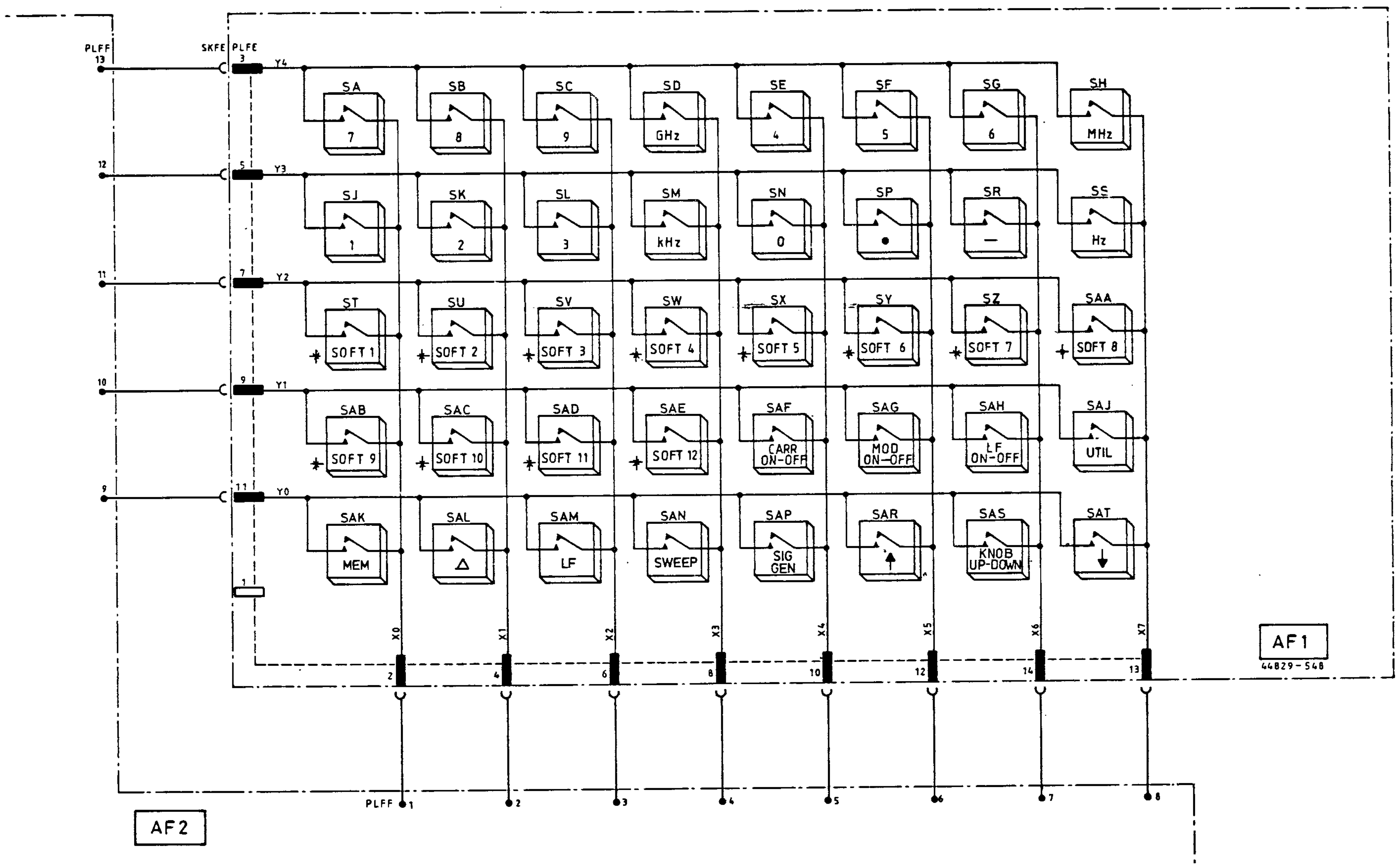
Mixer AD2

Drg. No. 44829/548

Fig. 7-42 Key matrix board component layout

Key matrix AF1

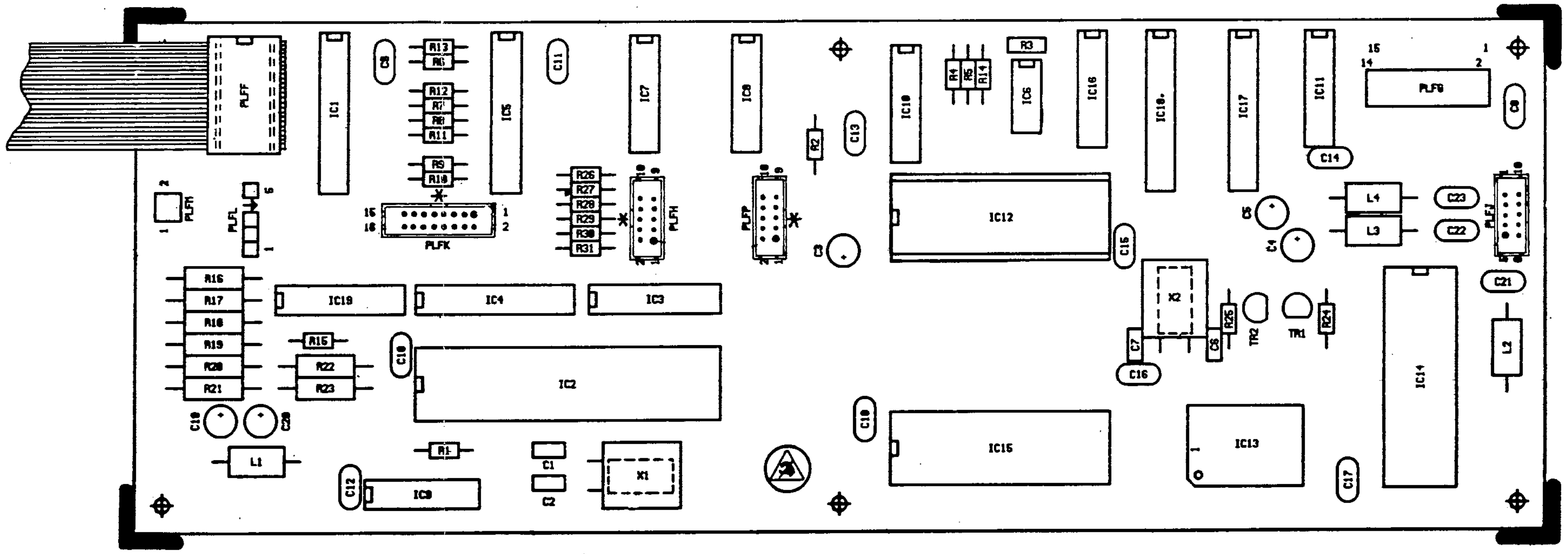
NOTE.
+ IDENTIFIED FOR CIRCUIT CLARITY ONLY.
KEYS LEFT BLANK.



Drg. No. Z 44829/548 Sheet 1 of 1 (Issue 2)

Fig. 7-43 Key matrix board circuit diagram

Component layout AF2/1



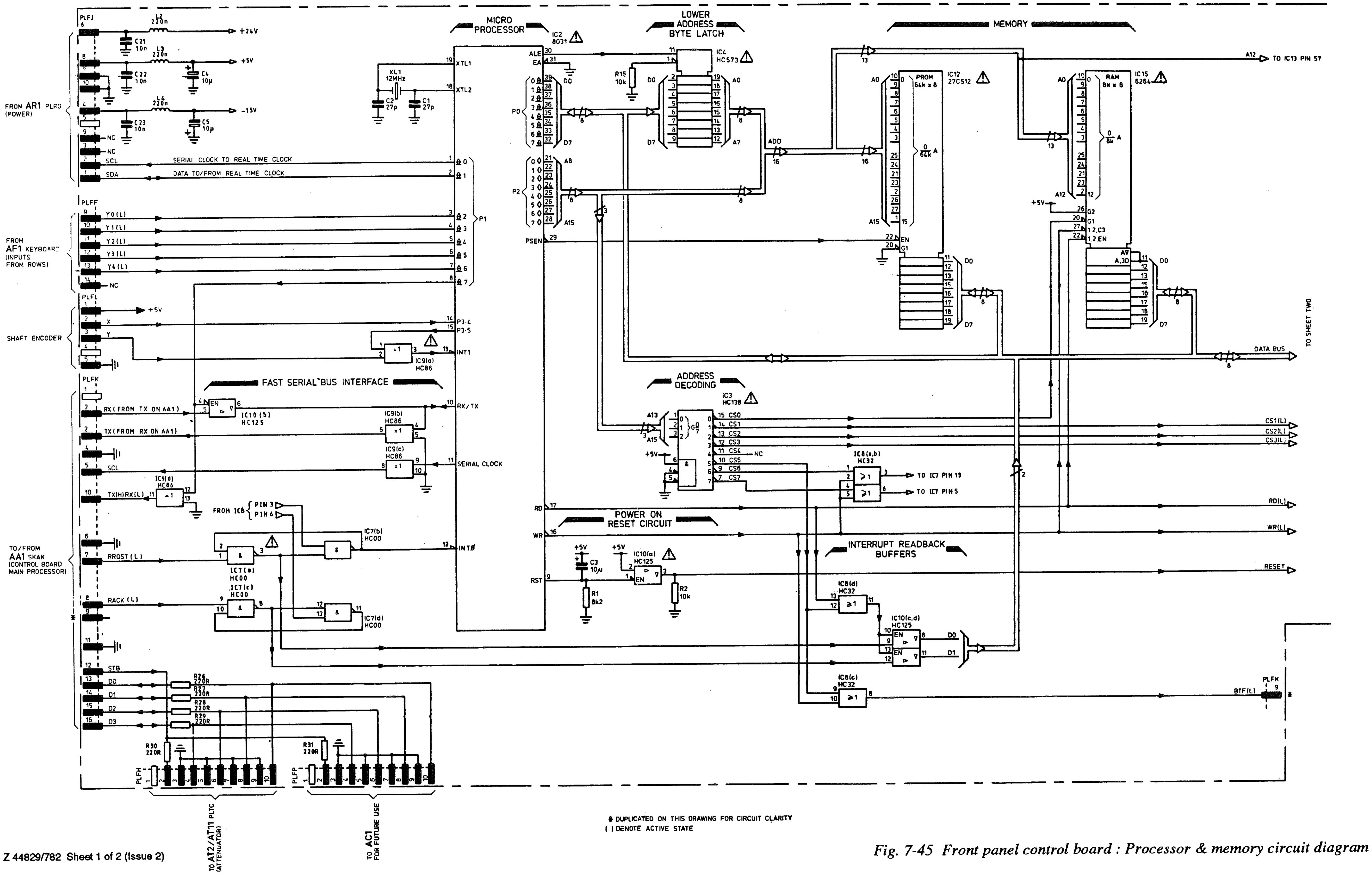
Key matrix AF1

Fig. 7-44 Front panel control board component layout

Drg. No. 44829/782

46882-075R
Apr. 92

Processor & memory AF2/1



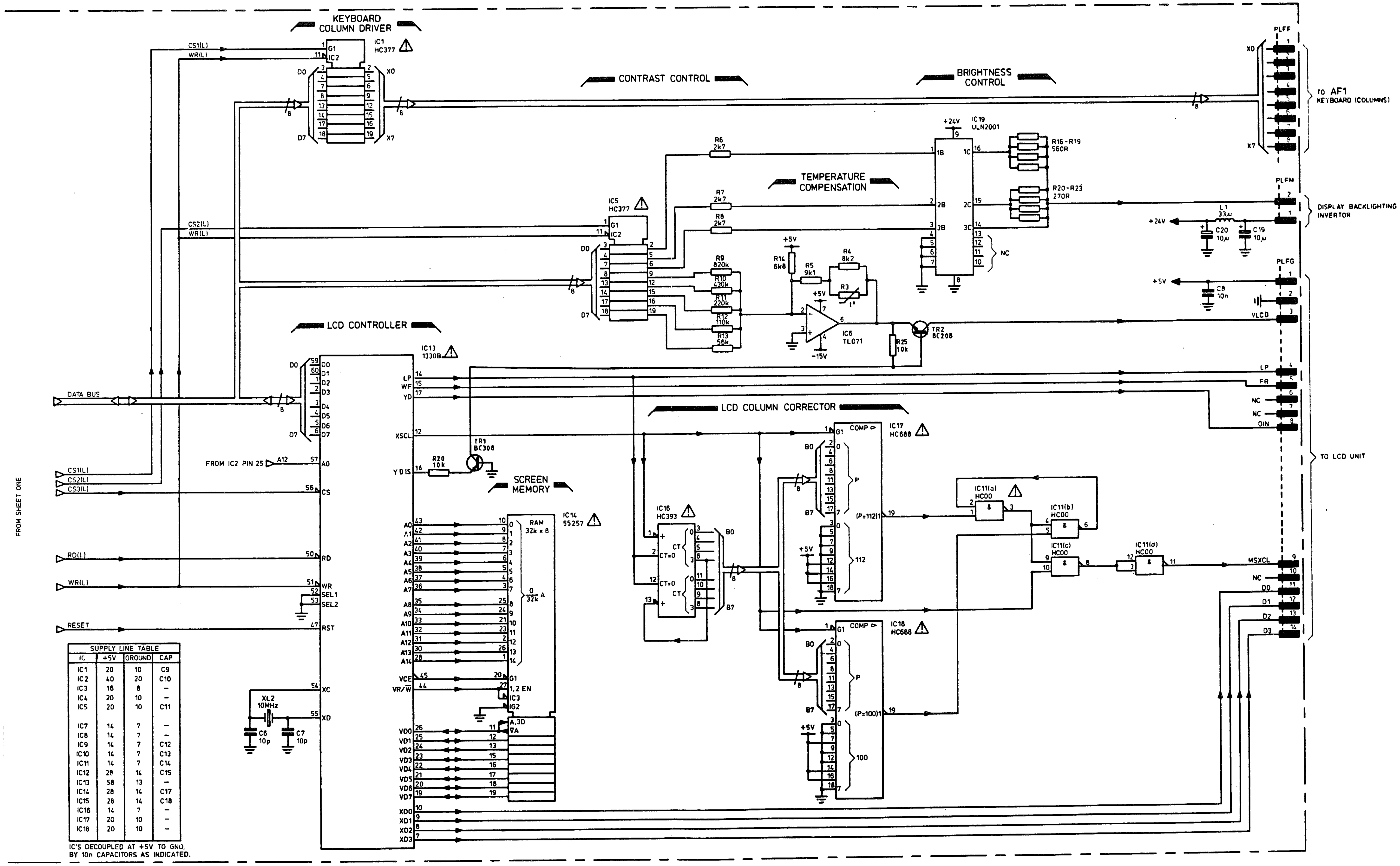
Drg. No. Z 44829/782 Sheet 1 of 2 (Issue 2)

* DUPLICATED ON THIS DRAWING FOR CIRCUIT CLARITY
( ) DENOTE ACTIVE STATE

Fig. 7-45 Front panel control board : Processor & memory circuit diagram

Processor & memory AF2/1

LCD controller AF2/1



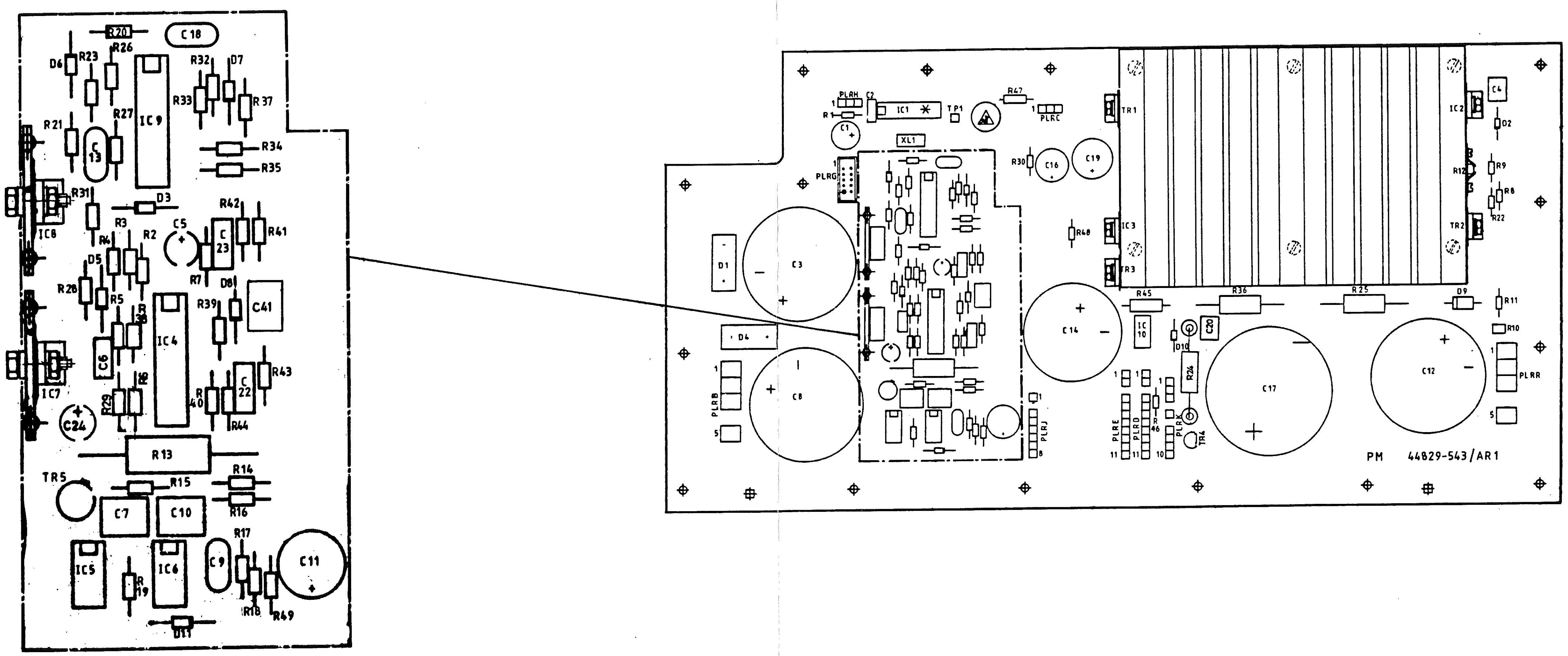
SUPPLY LINE TABLE			
IC	+5V	GROUND	CAP
IC1	20	10	C9
IC2	40	20	C10
IC3	16	8	–
IC4	20	10	–
IC5	20	10	C11
IC7	14	7	–
IC8	14	7	–
IC9	14	7	C12
IC10	14	7	C13
IC11	14	7	C14
IC12	28	14	C15
IC13	58	13	–
IC14	28	14	C17
IC15	28	14	C18
IC16	14	7	–
IC17	20	10	–
IC18	20	10	–

IC'S DECOUPLED AT +5V TO GND. BY 10n CAPACITORS AS INDICATED.

Drg. No. Z 44829/782 Sheet 2 of 2 (Issue 1)

Fig. 7-46 Front panel control board : LCD controller circuit diagram

Component layout AR1

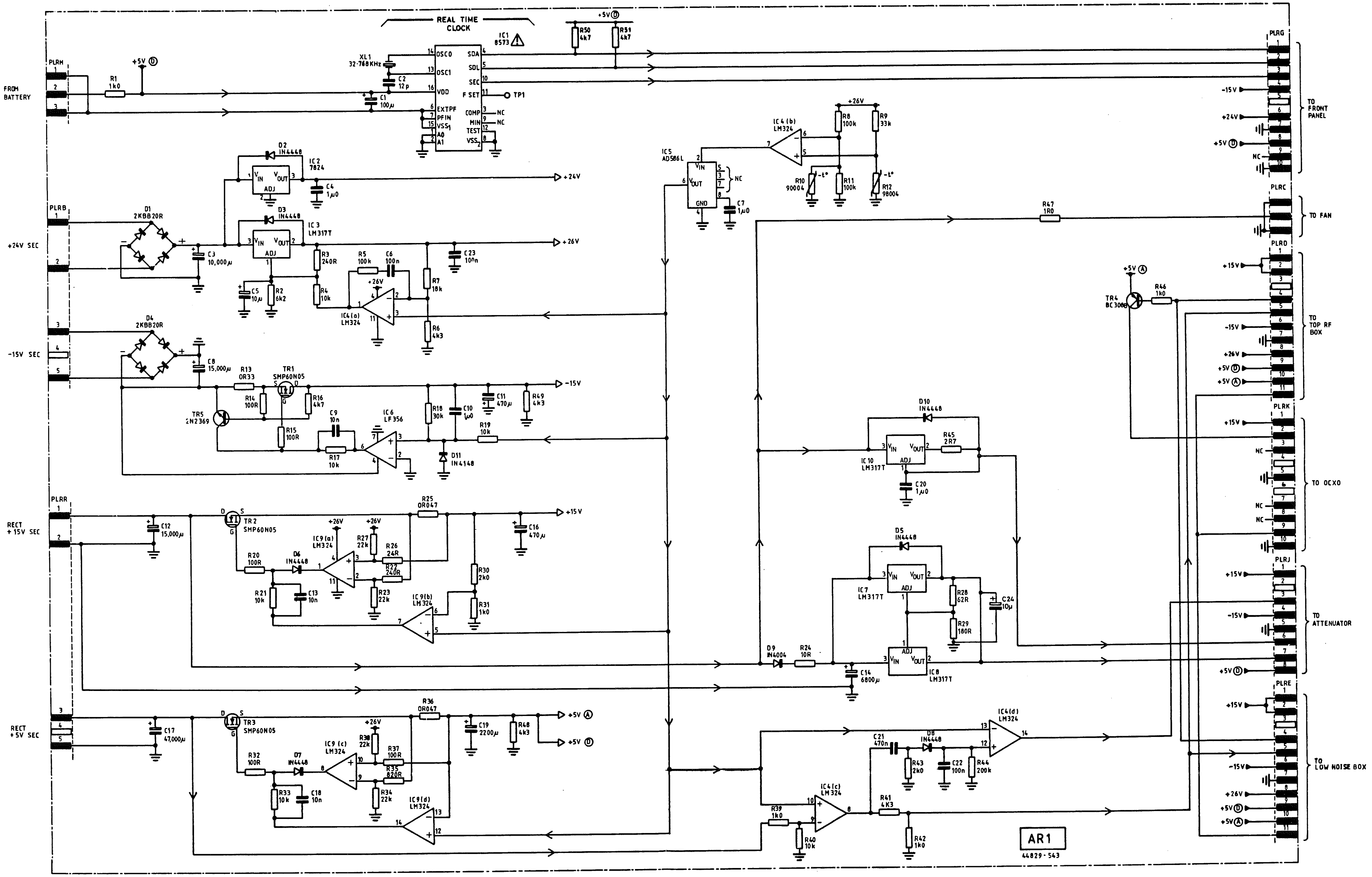


LCD controller AF2/1

Fig. 7-47 PSU board component layout

Drg. No. 44829/543

PSU AR1



NOTE:-
1. PLRB & PLRR ARE ·045" SQ BERG POSTS.
ALL OTHERS ARE ·025" SQ POSTS.
2. R12, IC2,3 TR1, 2 & TR3 ARE MOUNTED ON THE MACHINED HEATSINK, Pt No 34901/743
3. IC7, 8 ARE MOUNTED ON SEPARATE HEATSINKS. Pt No 28400/496
4. Ⓐ = ANALOGUE Ⓓ = DIGITAL

Drg. No. Z 44829/543 Sheet 1 of 1 (Issue 4)

Fig. 7-48 PSU board circuit diagram

PSU AR1

Drg. No. 44829/550

Component layout **AR2**

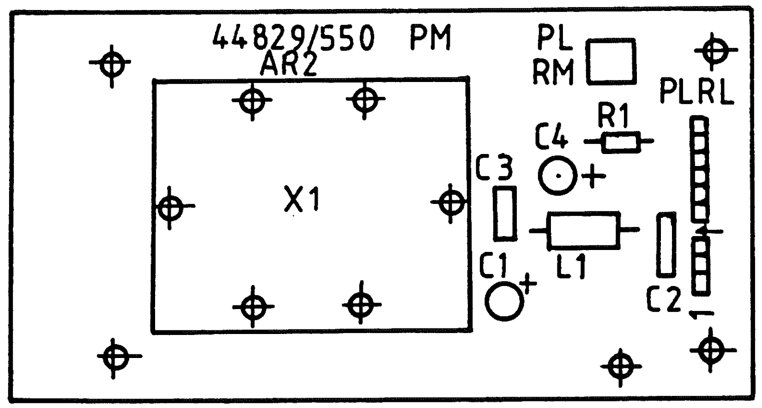


Fig. 7-49 Internal frequency standard board component layout

Internal frequency standard **AR2**

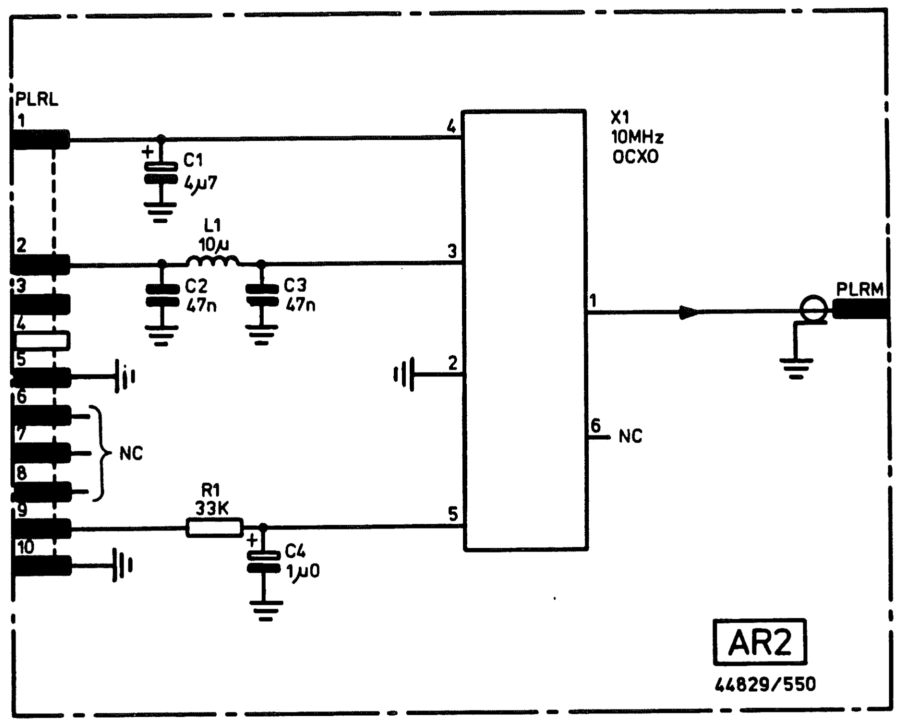
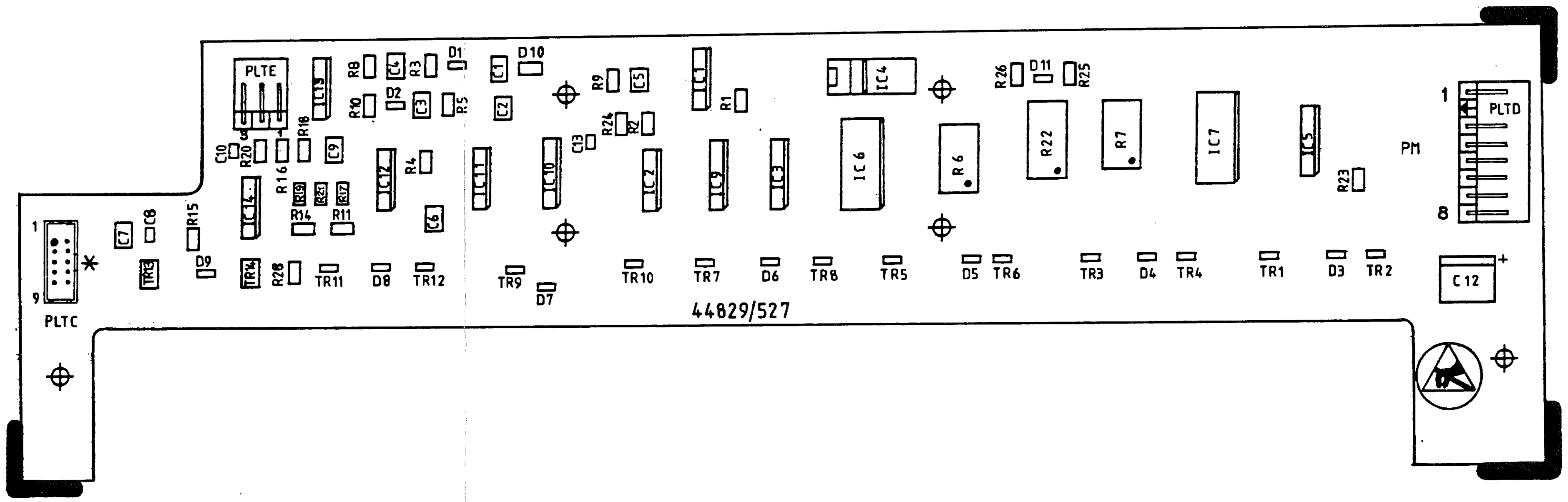


Fig. 7-50 Internal frequency standard board circuit diagram

Drg. No. Z 44829/550 Sheet 1 of 1 (Issue 1)

Component layout AT11



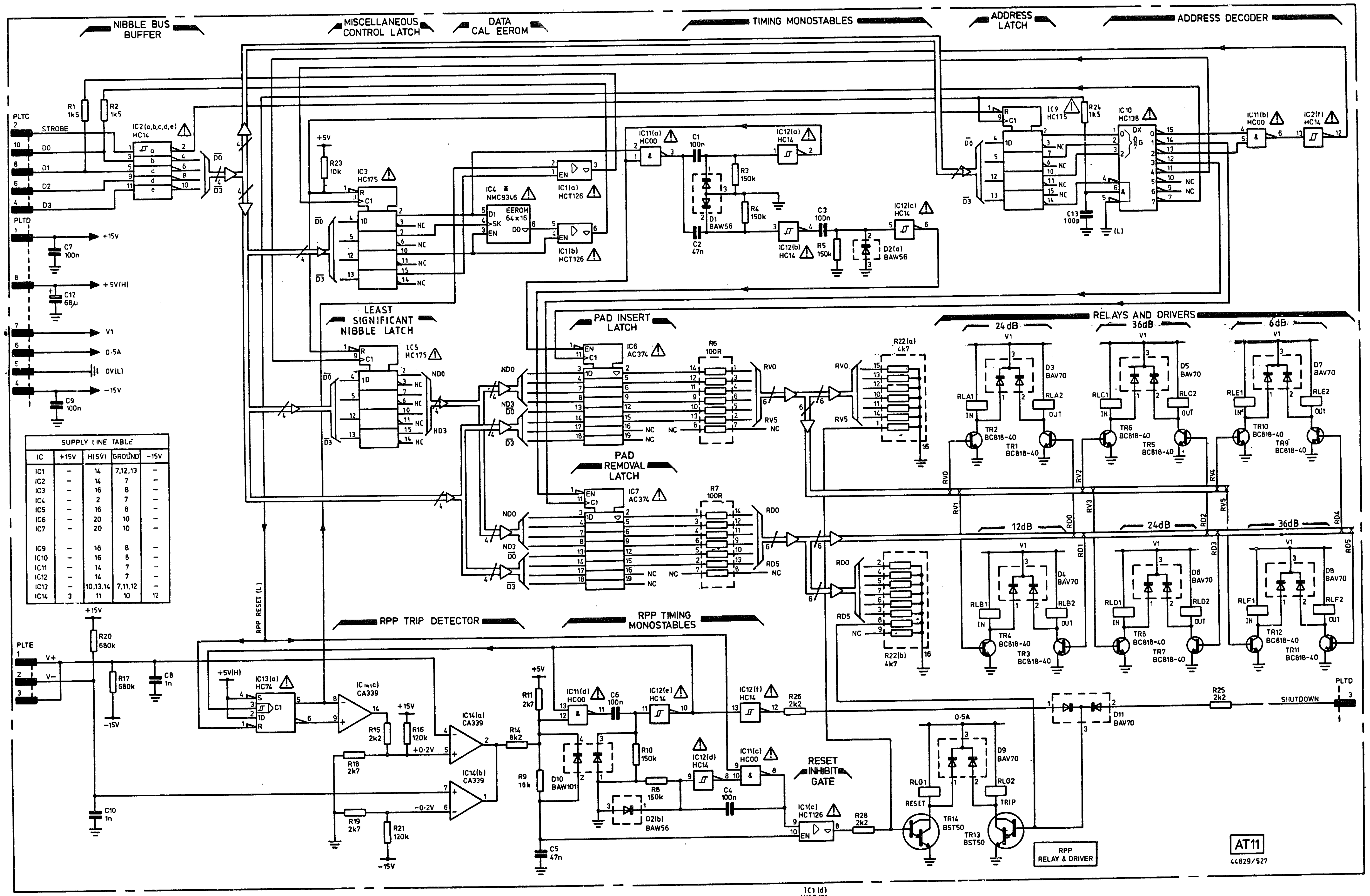
Internal frequency standard AR2

Drg. No. 44829/527

Fig. 7-51 Edgeline controller board component layout

NOTES
1. PLTC 10 WAY DIL WITH KEY IN POSITION 1.
2. PLTE 3 WAY SIL.
3. PLTD 8 WAY SIL WITH KEY IN POSITION 2.

Edgeline controller AT11



SUPPLY LINE TABLE				
IC	+15V	H(5V)	GROUND	-15V
IC1	-	14	7,12,13	-
IC2	-	14	7	-
IC3	-	16	8	-
IC4	-	2	7	-
IC5	-	16	8	-
IC6	-	20	10	-
IC7	-	20	10	-
IC9	-	16	8	-
IC10	-	16	8	-
IC11	-	14	7	-
IC12	-	14	7	-
IC13	-	10,13,14	7,11,12	-
IC14	3	11	10	12

Drg. No. Z 44829/527 Sheet 1 of 1 (Issue 5)

* = PIN OUT FOR SURFACE MOUNT VERSION OF IC4
PIN OUT FOR DIL VERSION = +5V 8
0V 5
D0 4
D1 3
SK 2
EN 1

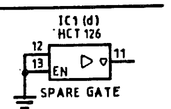


Fig. 7-52 Edgeline controller board circuit diagram

Edgeline controller AT11