



SERVICE MANUAL

FM TRANSCEIVER

IC-T8A

IC-T8E

INTRODUCTION

This service manual describes the latest service information for the IC-T8A/E FM TRANSCEIVER at the time of publication.

MODEL	VERSION	SYMBOL
IC-T8A	U.S.A.	USA
	Asia	SEA
IC-T8E	Europe	EUR
	U.K.	UK
	Italy	ITA
	Thailand	THA
	Taiwan	TPE

To upgrade quality, all electrical or mechanical parts and internal circuits are subject to change without notice or obligation.

DANGER

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. Such a connection could cause a fire hazard and/or electric shock.

DO NOT expose the transceiver to rain, snow or any liquids.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front end.

ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit order numbers
2. Component part number and name
3. Equipment model name and unit name
4. Quantity required

<SAMPLE ORDER>

1110003490 S.I.C TA31136FN IC-T8A/E RF UNIT 1 piece
8810008990 Screw B0 2 x 10 ZK IC-T8A/E CHASSIS 6 pieces

Addresses are provided on the inside back cover for your convenience.



REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 40 dB or 50 dB attenuator between the transceiver and a deviation meter or spectrum analyser when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

TABLE OF CONTENTS

SECTION 1	SPECIFICATIONS	
SECTION 2	INSIDE VIEWS	
SECTION 3	DISASSEMBLY INSTRUCTIONS	
SECTION 4	CIRCUIT DESCRIPTION	
4-1	RECEIVER CIRCUITS	4-1
4-2	TRANSMITTER CIRCUITS	4-2
4-3	PLL CIRCUIT	4-3
4-4	POWER SUPPLY CIRCUITS	4-4
4-5	CPU PORT ALLOCATIONS	4-5
SECTION 5	ADJUSTMENT PROCEDURES	
5-1	PREPARATION	5-1
5-2	PLL ADJUSTMENT	5-2
5-3	TRIMMER ADJUSTMENT	5-3
5-4	RECEIVER ADJUSTMENT	5-7
SECTION 6	PARTS LIST	
SECTION 7	MECHANICAL PARTS AND DISASSEMBLY	
SECTION 8	SEMI-CONDUCTOR INFORMATION	
SECTION 9	BOARD LAYOUTS	
9-1	LOGIC UNIT	9-1
9-2	RF UNIT	9-3
9-3	VCO BOARD	9-3
SECTION 10	BLOCK DIAGRAM	
SECTION 11	VOLTAGE DIAGRAM	

SECTION 1 SPECIFICATIONS

■ GENERAL

- Frequency coverage (MHz):

	50 MHz	VHF	UHF
USA	50-54	Tx: 144-148	Tx: 440-450* ³
		Rx: 118-174* ¹	Rx: 440-470* ³
Europe, UK	50-52 (Rx only)	144-146	430-440
Italy	50-52	Tx: 144-148	Tx: 430-440
		Rx: 136-174* ¹	Rx: 400-470* ²
Asia	50-54	Tx: 144-148	430-440
		Rx: 118-174* ¹	
THA	50-54	144-146	430-440
TPE	Not available	144-146	430-440

Guaranteed range (MHz): *¹ 144-148, *² 430-440, *³ 440-450

- Mode : FM (F3E), WFM (Rx only), AM (118-135.995 MHz; Rx only)
- Frequency stability : ±5 ppm (0°C to +50°C; 32°F to 122°F)
- No. of memory channels : 123 (incl. 10 scan edges + 1 call channel for each band)
- Antenna connector : SMA (50 Ω)
- Usable battery pack/case : BP-198-BP-200/BP-197
- Power supply requirement : 4.5-16 V DC (negative ground)
- Current drain (at 13.5 V DC) : Transmit high at 5 W 1.4 A (typical)
low at 0.5 W 0.6 A (typical)
Receive max. audio 200 mA (typical)
standby 70 mA (typical)
- Usable temperature range : -10°C to 60°C; 14°F to 140°F
- Dimensions (Projections not included) : 106(W) × 58(H) × 28.5(D) mm; 4³/₁₆(W) × 2⁵/₁₆(H) × 1¹/₈(D) in
- Weight (with BP-199) : 280 g; 9.9 oz

■ TRANSMITTER

- Output power (13.5 V DC) : 5 W (high) 0.5 W (low)
- Modulation system : Variable reactance frequency modulation
- Spurious emissions : Less than -60 dB
- Max. frequency deviation : ±5 kHz
- External microphone connector : 3-conductor 2.5 (d) mm (1/10") / 2 kΩ

■ RECEIVER

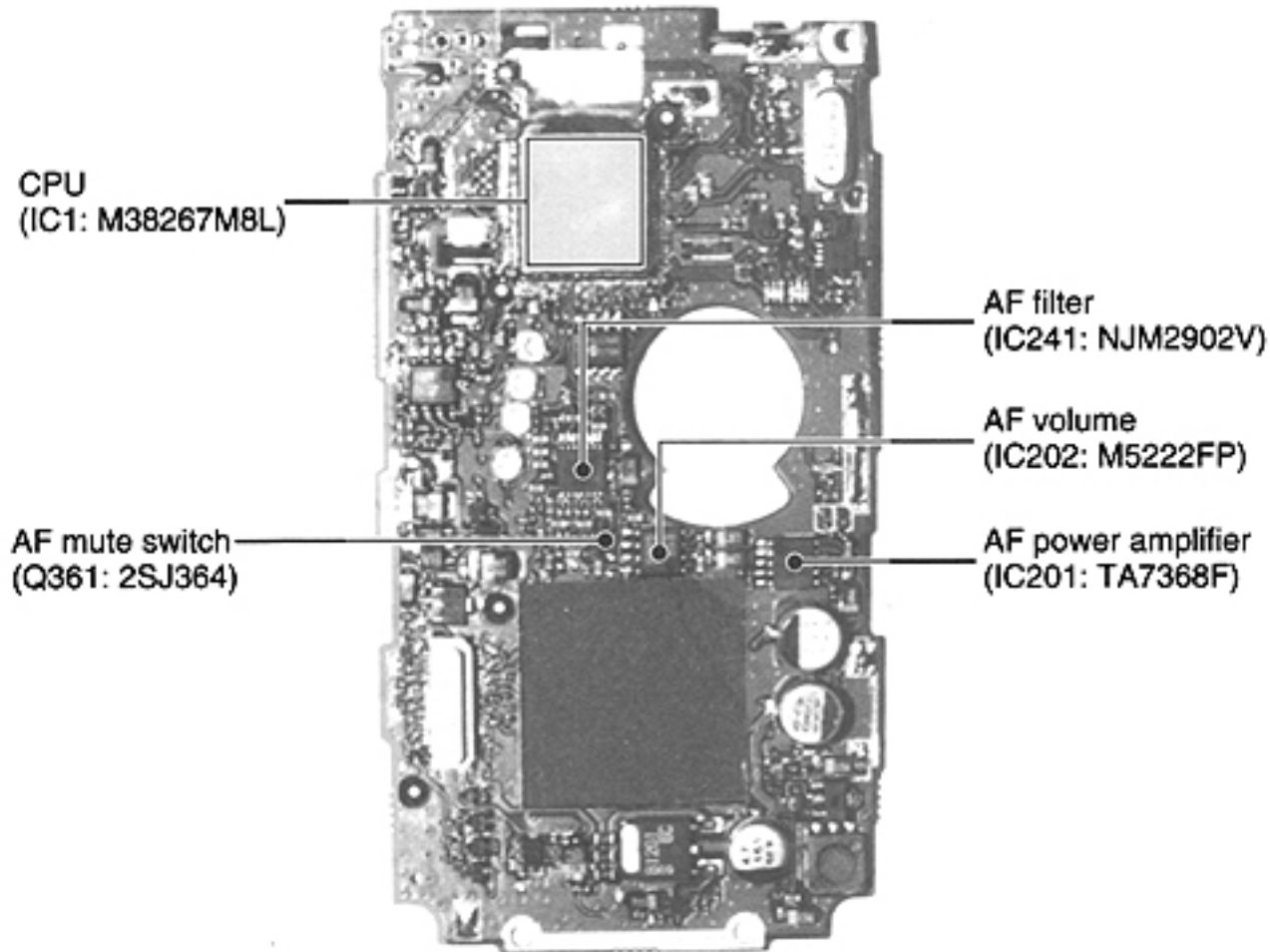
- Receive system : Double conversion superheterodyne
- Intermediate frequencies : 1st 41.85 MHz
13.35 MHz WFM
2nd 450 kHz (except WFM)
- Sensitivity (12 dB SINAD) : Less than 0.18 μV (-122 dBm)
Less than 1.99 μV (WFM) (-101.5 dBm)
- Squelch sensitivity (threshold) : Less than 0.18 μV (-122 dBm)
Less than 5.6 μV (WFM) (-92 dBm)
- Selectivity : Less than 15 kHz/-6 dB
More than 30 kHz/-60 dB
- Spurious and image refection ratio (except 2nd IF image frequency) : 50/144 MHz band -60 dB (typical)
440 MHz band -50 dB (typical)
- Audio output power (at 13.5 V DC) : 250 mW (typical with an 8 Ω load)
- External speaker connector : 3-conductor 3.5 (d) mm (1/8") / 8 Ω

All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

• LOGIC UNIT

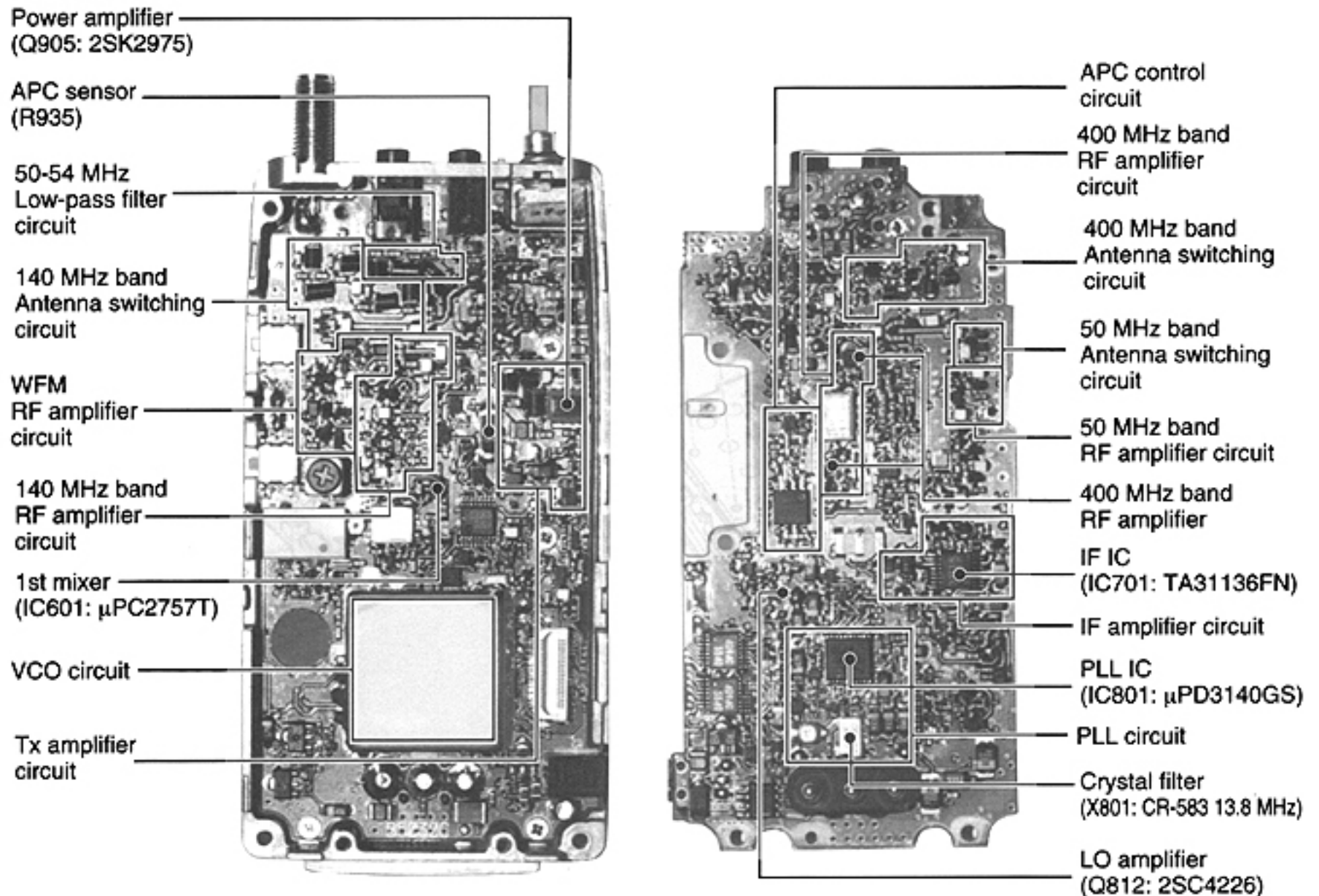
BOTTOM VIEW



• RF UNIT

TOP VIEW

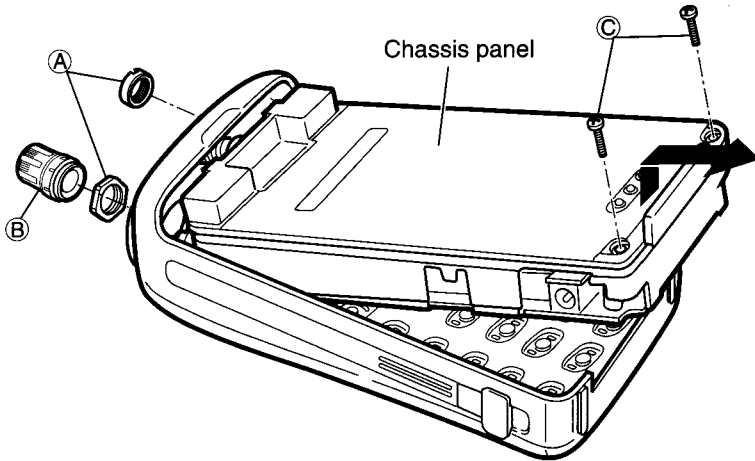
BOTTOM VIEW



SECTION 3 DISASSEMBLY INSTRUCTIONS

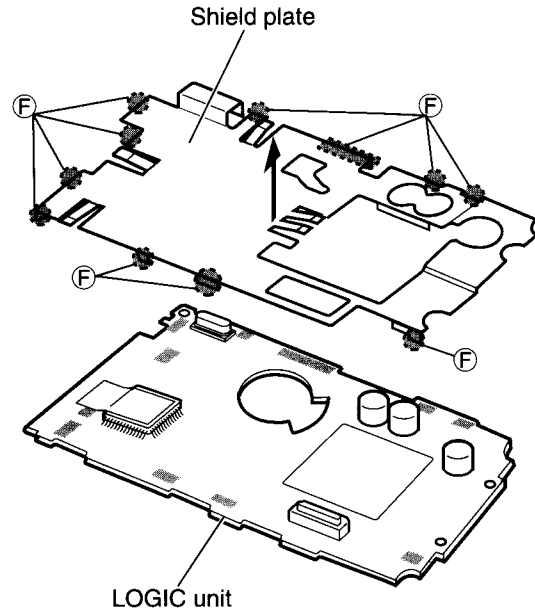
1 Removing the chassis panel

- ① Remove 1 knob, (B), and unscrew 2 nuts, (A).
- ② Unscrew 2 screws, (C).
- ③ Remove the chassis panel in the direction of the arrow.



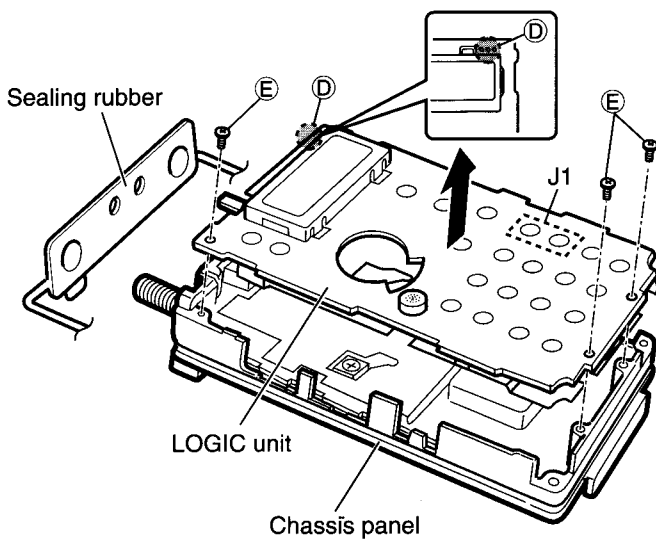
3 Removing the shield plate

- ① Unsolder 11 points, (F), to separate the shield plate and LOGIC unit.



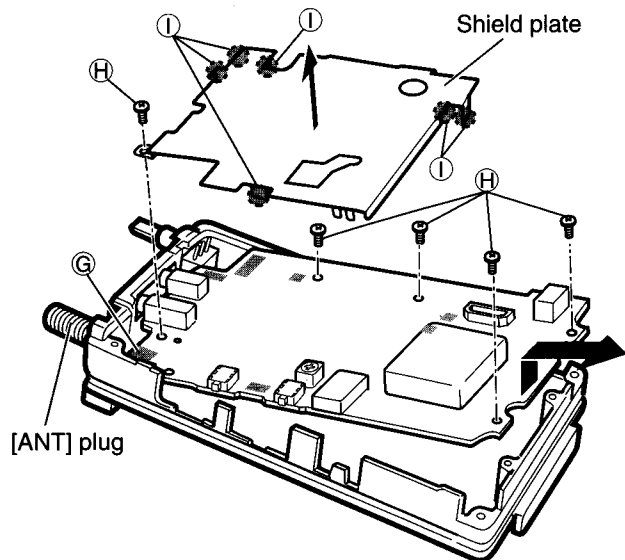
2 Removing the LOGIC unit

- ① Remove the sealing rubber.
- ② Unsolder 1 point, (D), to separate a SENSOR control.
- ③ Unscrew 3 screws, (E).
- ④ Unplug J1 to separate LOGIC unit and RF unit.
- ⑤ Remove the LOGIC unit in the direction of the arrow.



4 Removing the RF unit

- ① Unsolder 1 point, (G), to separate [ANT] plug.
- ② Unscrew 5 screws, (H), to separate the RF unit.
- ③ Remove the RF unit in the direction of the thick arrow.
- ④ Unsolder 6 points (I) to separate the shield plate, then remove it in the direction of the thin arrow.



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 DUPLEXER CIRCUITS (RF UNIT)

The transceiver has two duplexers (low-pass and high-pass filters) on the first stage from the antenna connector to separate the RF signals into VHF and UHF signals. The low-pass filter (L10–L12, C15–C20) is for VHF (50 and 144 MHz) signals and the high-pass filter (L5, L6, C4–C8) is for UHF (440 MHz) signals.

The VHF signals are applied to the 2nd duplexer circuit for separation into 50 and 144 MHz band signals. The low-pass filter (L16–L18, C27–C32) is for 50 MHz band signals and the high-pass filter (L13–L15, C21–C24, C84) is for 144 MHz band signals.

The separated signals are applied to each RF circuit.

4-1-2 144 MHz BAND ANTENNA SWITCHING CIRCUIT (RF UNIT)

The antenna switching circuit functions as a low-pass filter while receiving. However, its impedance becomes very high while transmitting by applying a current to D302 and D303.

Thus, transmit signals are blocked from entering the receiver circuits. The antenna switching circuit employs a $1/4 \lambda$ type diode switching system. The passed signals then applied to the RF amplifier circuit.

4-1-3 50 MHz BAND RF CIRCUIT (RF UNIT)

The RF circuit amplifies signals within the range of frequency coverage and filters out-of-band signals.

The signals from the antenna switching circuit (D101, D102) are applied to the tunable bandpass filter (D104) to suppress out-of-band signals. The filtered signals are amplified at the RF amplifier (Q101) and are then applied to the 1st mixer circuit (IC601) via the tunable bandpass filter (D105–D107).

4-1-4 144 MHz BAND RF CIRCUIT (RF UNIT)

The signals from the antenna switching circuit (D302, D303) are applied to the RF amplifier (Q301) via the tunable bandpass filter (D305, D306). The amplified signals are applied to the 1st mixer circuit (IC601) after out-of-band signals are suppressed at the tunable bandpass filter (D307–D310).

Varactor diodes (D305–D310) are employed by the tunable bandpass filters to tune the center frequency of the bandpass filter. These diodes are controlled by the PLL lock voltage and obtain good image response rejection.

4-1-5 UHF RF CIRCUIT (RF UNIT)

The signals from the antenna switching circuit (D402, D403) are amplified at the RF amplifier (Q401). The amplified signals are passed through the bandpass filter (FI401) then applied to the 1st mixer circuit (IC601) after being amplified at another RF amplifier (Q402).

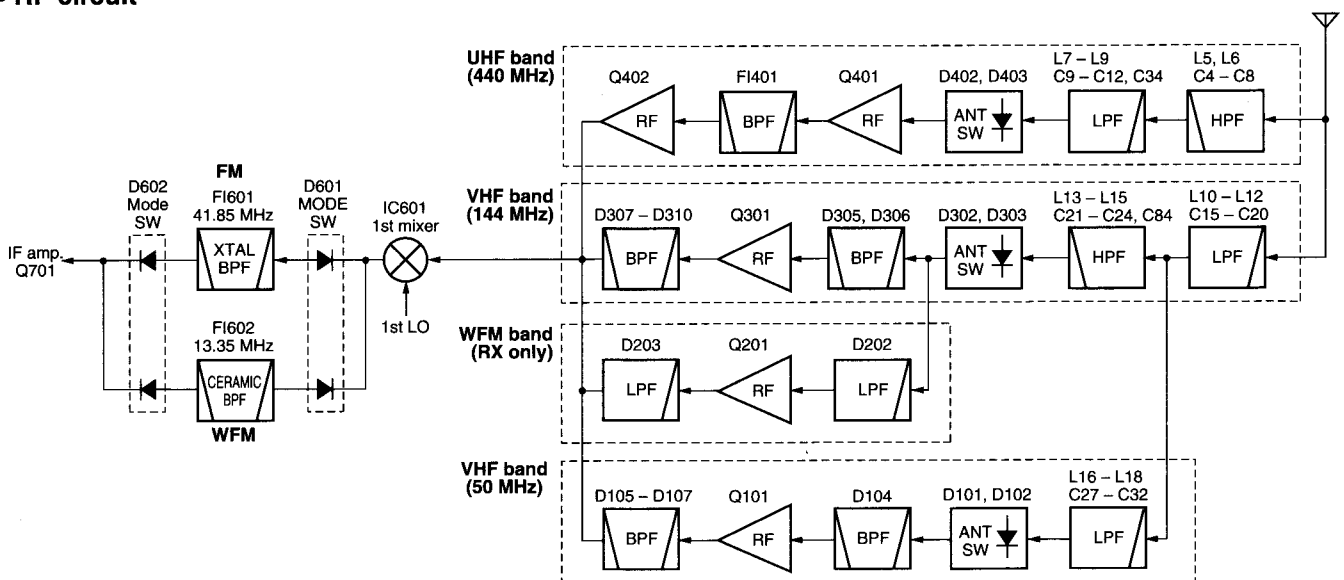
4-1-6 1st MIXER CIRCUIT (RF UNIT)

The mixer circuit converts the received signal to a fixed frequency of the 1st IF signal with a 1st LO (VCO output) frequency. By changing the PLL frequency, only the desired frequency will pass through a crystal filter at the next stage of the mixer. From this stage, the following circuits are used for all bands.

The receive signals from the 50, 144 MHz band RF or UHF RF circuit are mixed with the 1st LO signals (VCO output signals) at the 1st mixer circuit (IC601) to produce a 41.85 MHz 1st IF signal.

The 1st IF signal is applied to a crystal filter (FI601) to suppress out-of-band signals. The filtered signal is amplified at the IF amplifier (Q701) and is applied to the 2nd mixer circuit (IC701).

• RF circuit



4-1-7 2nd IF AND DEMODULATOR CIRCUITS (RF UNIT)

The 2nd mixer circuit converts the 1st IF signal to a 2nd IF signal. A double conversion superheterodyne system (which converts receive signals twice) improves the image rejection ratio and obtains stable receiver gain.

The FM IF IC (IC701) contains 2nd local oscillator, 2nd mixer, limiter amplifier, quadrature detector and S-meter detector circuits.

The 1st IF signal (41.85 MHz) from the 1st IF amplifier (Q701) is applied to the 2nd mixer section in the FM IF IC (IC701, pin 16), and is mixed with the 2nd LO signal (41.4 MHz) for conversion to a 450 kHz 2nd IF signal at the 2nd mixer section.

The 2nd IF signal (450 kHz) from the 2nd mixer section (IC701, pin 3) passes through the ceramic filter (F1701) where unwanted heterodyne signals are suppressed. It is then amplified at the limiter amplifier section (IC701, pin 5) and applied to the quadrature detector section to demodulate the 2nd IF signal into AF signals.

The demodulated AF signals are output from pin 9 of the IC and are applied to the AF circuit in the LOGIC unit.

4-1-8 AF AMPLIFIER CIRCUIT (LOGIC UNIT)

The AF circuit, including an AF filter, AF mute switch and volume controller, amplifies the demodulated signals to drive a speaker.

The demodulated AF signals (DETO signal) from the FM IF IC (RF unit; IC701, pin 9) are applied to the AF mute switch (Q361) after passing through the AF filter circuit (IC241). The switched signals are applied to the volume controller (IC202, IC203) to adjust the input level of the AF power amplifier (IC201). The level controlled AF signals are power amplified at the AF power amplifier (IC201), then applied to the internal speaker (SP1) via the [EXT SP] jack (RF unit; J2) when no plug is connected to the jack.

The AF filter circuit (IC241) removes AF signals below 300 Hz (CTCSS signals) for clear AF output and these are applied to the CPU (IC1, pin 4) for CTCSS squelch detection.

4-1-9 NOISE SQUELCH CIRCUIT (RF AND LOGIC UNITS)

A noise squelch circuit cuts out AF signals when no RF signals are received. By detecting noise components in the AF signals, the squelch circuit switches the AF mute switch.

Some of the noise components in the AF signals from the FM IF IC (RF unit; IC701, pin 9) are amplified and filtered at the active filter section (pins 7, 8). The filtered signals are rectified at the noise detector section and converted into pulse-type signals (NOISE signal) at the noise comparator section. The NOISE signal is applied to the CPU (LOGIC unit; IC1, pin 12).

The CPU detects the receive signal level from the number of the pulses, and outputs an RM/MM signal from pin 44. This signal controls the AF mute switch (LOGIC unit; Q361) to cut the AF signal line. The variable resistor (R733) adjusts the active filter input level.

4-2 TRANSMITTER CIRCUITS

4-2-1 MICROPHONE AMPLIFIER CIRCUIT (LOGIC UNIT)

The microphone amplifier circuit amplifies audio signals with +6 dB/octave pre-emphasis from the microphone to a level needed for the modulation circuit.

The AF signals from the internal microphone (MC1) or the [MIC] jack (RF unit; J1) are applied to the limiter amplifier (IC301, pin 3) which has +6 dB/octave pre-emphasis characteristics. The amplified AF signals are passed through the low-pass filter (IC301, pins 6, 7). The filtered signals are applied to the modulation circuit for each band in the RF unit via the band switch (Q304: for 144 MHz band, Q305: for UHF band, Q306: for 50 MHz band) as the MOD signal.

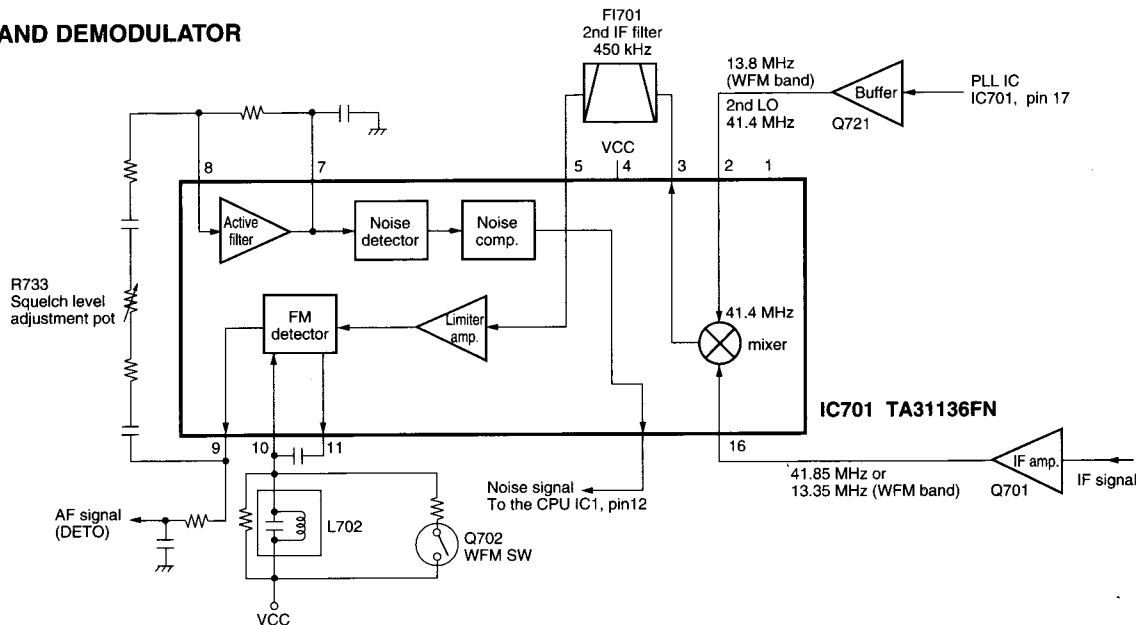
4-2-2 MODULATION CIRCUIT (VCO BOARD)

The modulation circuit modulates the VCO oscillating signal (RF signal) using the microphone audio signals.

(1) 50 MHz band

The microphone audio signals (MOD) change the reactance

• 2nd IF AND DEMODULATOR



of a diode (D341) via the 6MOD line to modulate the oscillating signal at the 50-VCO (Q341, Q342, D341).

(2) 144 MHz band

The microphone audio signals change the reactance of a diode (D302) to modulate the oscillating signal at the 144-VCO circuit (Q301, Q302, D301, D302).

(3) UHF band

The microphone audio signals change the reactance of a diode (D321) via the USHIFT line to modulate the oscillating signal at the UHF-VCO (Q321, Q322, D321, D322).

Each VCO output is amplified at the buffer amplifier (Q303) and then applied to the TX/RX switch (RF unit; D802) via the LO amplifier (RF unit; Q812).

4-2-3 POWER AMPLIFIER CIRCUIT (RF UNIT)

Q904 is a drive and Q905 is a power amplifier. They are designed to use all 50, 144 and 440 MHz bands commonly. They provides more than 5 W for all 50, 144 and 440 MHz bands with a 13.5 V DC power source via one power amplifier system.

An RF signal from the TX/RX switch (D802) is amplified at the buffer (Q901) and YGR (Q902: for 50 and 144 MHz band bands, Q903: for 440 MHz band) amplifiers. The amplified RF signal is applied to the drive amplifier (Q904) via the band switch (D917, D918). The amplified signal at the drive amplifier is again amplified at the power amplifier (Q905).

The power amplified signal is passed through either the high-pass (L915, L916, C928–C931 for 144 MHz band, L912, C923, C924 for 440 MHz band) or low-pass (L919, L920, C938–C940 for 50 MHz band) filter, and then applied to the antenna connector via the antenna switching and RF circuits for each band.

4-2-4 APC CIRCUIT (RF UNIT)

The APC (Automatic Power Control) circuit stabilizes transmit output power and selects HIGH and LOW power. The APC circuit consists of an APC sensor and APC control circuits.

The APC sensor (R935) detects driving current from drive voltage at the drive (Q904) and power (Q905) amplifiers. The detected current is converted into DC voltage at Q915, then applied to the APC control circuit (IC901, pin 2). The applied voltage is compared with a PSET voltage from the CPU via the D/A converter (IC4), and the APC control circuit outputs VGGC voltage from pin 1 to control the drive and power amplifiers.

When the driving current is increased, input voltage of the differential amplifier (IC901, pin 2) will be increased. In such cases, the differential amplifier output voltage (pin 1) is decreased to reduce the driving current.

4-3 PLL CIRCUITS

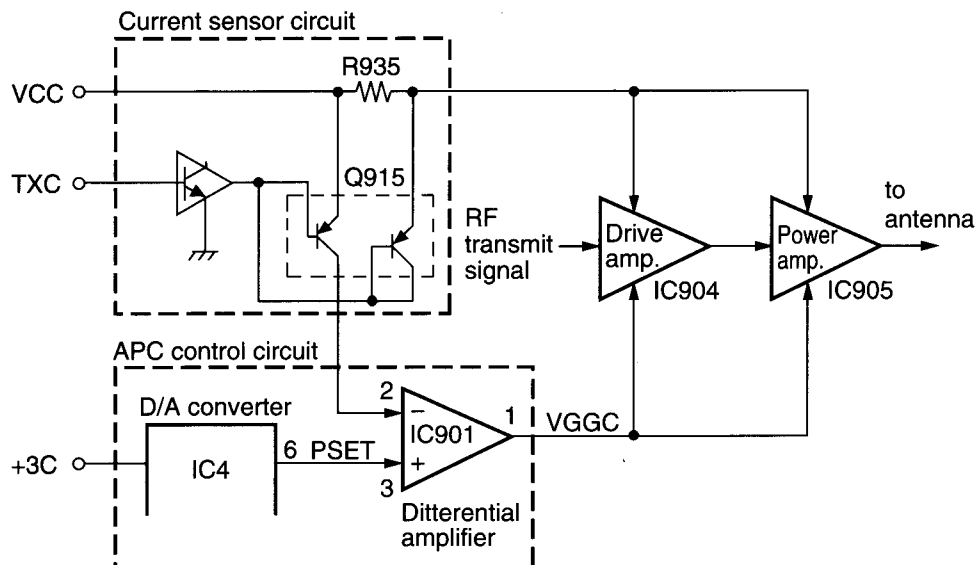
4-3-1 144 MHz BAND AND UHF BAND PLL CIRCUITS (RF UNIT)

The oscillated signal at the 144-VCO circuit (VCO board, Q301, Q302, D301, D302) or UHF-VCO (VCO board, Q321, Q322, D321, D322) is amplified at the buffer amplifiers (VCO board, Q303, Q323). The amplified signal is applied to the PLL IC (IC801, pin 19) via a buffer amplifier (Q806).

The applied signal is divided by serial data from the CPU (N-data) and phase-detected with the divided reference frequency (5 kHz) at the phase detector section in the PLL IC. The phase-detected signal is output from pin 13 and converted into DC voltage at the active filter (Q801, Q802). The converted DC voltage is fed back to the VCO board as the lock voltage (LV).

While operating in the 144 MHz band, the lock voltage is applied to the CPU (LOGIC unit; IC1) via the tune control circuit (Q803) and band switch (IC802) to track the center frequency of the tunable bandpass filters (D305–D310) as the VTUNE signal.

• APC control circuit



4-3-2 50 MHz BAND PLL CIRCUIT (RF UNIT)

The oscillated signal at the 6MVCO (VCO board, Q341, D341) is amplified at the buffer amplifiers (VCO board, Q303, Q323). The amplified signal is applied to the PLL IC (IC801, pin 2) via the buffer amplifier (Q807).

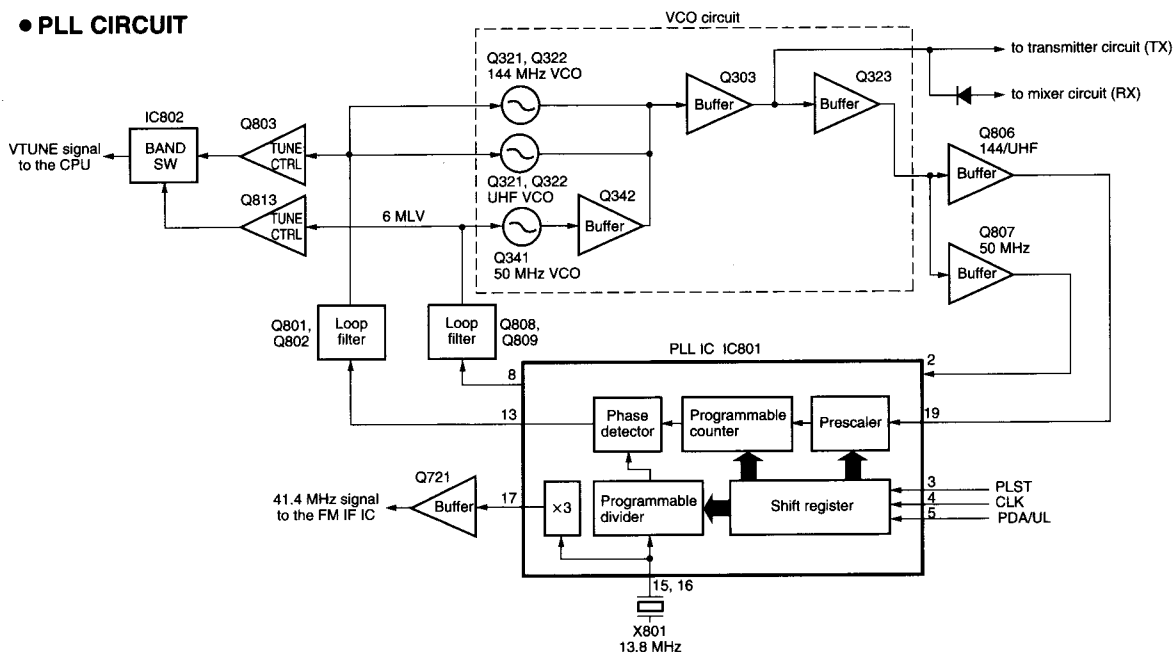
The applied signal is divided by N-data from the CPU and phase-detected with the divided reference frequency (5 kHz) then output from pin 8. The output signal is converted into DC voltage at the active filter (Q808, Q809) and is fed back to the VCO board as the lock voltage (6MLV).

While operating in the 50 MHz band, the lock voltage is applied to the CPU (LOGIC unit; IC1) via the tune control circuit (Q813) and band switch (IC802) to track the center frequency of the tunable bandpass filters (D104–D107) as the VTUNE signal.

4-4 POWER SUPPLY CIRCUITS

Line	Description
HV	The voltage from the external power supply or attached battery pack.
VCC	The same voltage as the HV line (external power supply) passed through a diode (RF unit; D1).
+3CPU	Common 3 V converted from the VCC line by the +3 CPU regulator IC (LOGIC unit; IC141). The output voltage is supplied to the +3C regulator circuits, etc.
+3C	Common 3V converted from the VCC line by the +3C regulator circuit (LOGIC unit; Q142, Q143, Q145) using the +3CPU regulator (LOGIC unit, IC141)
+3	Common 3V converted from the VCC line by the +3 regulator circuit (RF unit; IC5, Q2, Q3) using the +3C regulator (LOGIC unit; Q142, Q143, Q145).
R3	3 V for receiver circuit converted from the VCC line by the R3 regulator circuit (RF unit; Q7, Q8).
T4	4V for transmitter circuit converted from the VCC line by the T4 regulator circuit (RF unit; Q906–Q908). The T4 regulator circuit is controlled by the CPU (LOGIC unit; IC1 pin 45).

• PLL CIRCUIT



4-5 CPU PORT ALLOCATIONS

4-5-1 CPU (IC1): LOGIC UNIT

Pin number	Port name	Description
1	VIN	Input port for the over-voltage detection from connected battery pack or external power supply.
2	REMOTE	Input port for remote control signals from an optional HM-75A microphone via the [MIC] jack.
3	SD	Input port for the S-meter voltage.
4	CTCIN	Input port for CTCSS decoded signals.
5	VTUNE	Input port for the tune voltage.
6	THERMC	Input port for the transceiver's internal temperature.
7	SBATT	Input port for the VCC voltage (connected battery voltage).
8	PDA/UL	Outputs data signals to the PLL IC. Input port for PLL unlock signal from the PLL IC (RF unit; IC801).
9	CTCOUT	Outputs CTCSS signals while transmitting.
10	BEEP	Output port for: •Beep audio signals while receiving. •DTMF signals or 1750 Hz Europe tone signal while transmitting. (according to versions)
11	PTT	Input ports for the [PTT] switch. High: While [PTT] switch is pushed.
12	NOISE	Input port for noise signal (pulse-type) from the IF IC (RF unit; IC701).
13	PLST	Outputs strobe signals to the PLL IC (RF unit; IC801).
14	DAST	Outputs strobe signals to the D/A IC (RF unit; IC4).
15	IOST	Outputs strobe signals to the I/O IC (RF unit; IC2, IC3).
16	DATA	Data bus line for the D/A IC (IC4) and I/O IC (IC2, IC3).
17	CLK	Outputs clock signal to the PLL IC (IC801), D/A IC (IC4) and I/O IC (IC2, IC3), etc. on the RF unit.
18	ESIO	Data bus line for the EEPROM (LOGIC unit; IC2).
19	CLONEOUT	Output port for the cloning signal.
20	CLONEIN	Input port for the cloning signal.
21, 22	DIUD, DICK	Input port for the up/down signal from main dial.
23	POWER	Input port for the [POWER] switch.
24	EURDEV	Outputs deviation switching signal for deviation switch (Q307).
25	H/L	Inputs TX output power control signal from [H/L] switch.
28–31	KR3–KR0	Input ports for key matrix.
32	CPUHV	Input port for the reset signal from Q151 (LOGIC unit).

Pin number	Port name	Description
33	RESET	Input port for the reset signal from IC142 (LOGIC unit).
36, 37	CPU CLOCK	Input port for clock signal.
39	PCON	Outputs +3C control signal.
40	AFON	Outputs the AF amplifier control signal for the regulator circuit.
41	BLED	Outputs BUSY LED control signal.
42	LIGHT	Outputs LCD backlight control signal.
43	MICC	Outputs the control signal for the regulator section of the mic amp (LOGIC unit; IC301).
44	RM/MM	Outputs RX mute/Mic. mute control signals.
45	BPCPI	Outputs the bias control signal for a type of battery.
47	R3C	Outputs R3 regulator control signal. High: While receiving.
48	CHGC	Outputs control signal for charger circuit (RF unit; Q4).
49–54	KS0–KS5	Output ports for key matrix.
55	CONT	Outputs LCD contrast control signal.
56	TXC	Outputs T4 regulator control signal. High: While transmitting.

4-5-2 I/O EXPANDER IC (IC2: RF UNIT)

Pin number	Port name	Description
4	Q1	Outputs VVCO3 regulator control signal (140 MHz band).
5	Q2	Outputs UVCO3 regulator control signal (UHF band).
6	Q3	Outputs 6MVCO3 regulator control signal (50 MHz band).
7	Q4	Outputs VCO shift signal for UHF, 140 MHz and 50 MHz bands.
14	Q5	Outputs transmitting control signal for a 50 MHz band.
13	Q6	Outputs the switching signal to select U-V bands when transmitting.

4-5-3 I/O EXPANDER IC (IC3: RF UNIT)

- Outputs power source ON–OFF signal while receiving.

Pin number	Port name	Description
4	Q1	Receiving 300 MHz band.
6	Q3	Receiving UHF band.
7	Q4	Receiving WFM band.
14	Q5	Receiving 440 MHz band.
13	Q6	Receiving 144 MHz band.
12	Q7	Receiving 50 MHz band.
11	Q8	Receiving WFM band.

SECTION 5 ADJUSTMENT PROCEDURES

5-1 PREPARATION

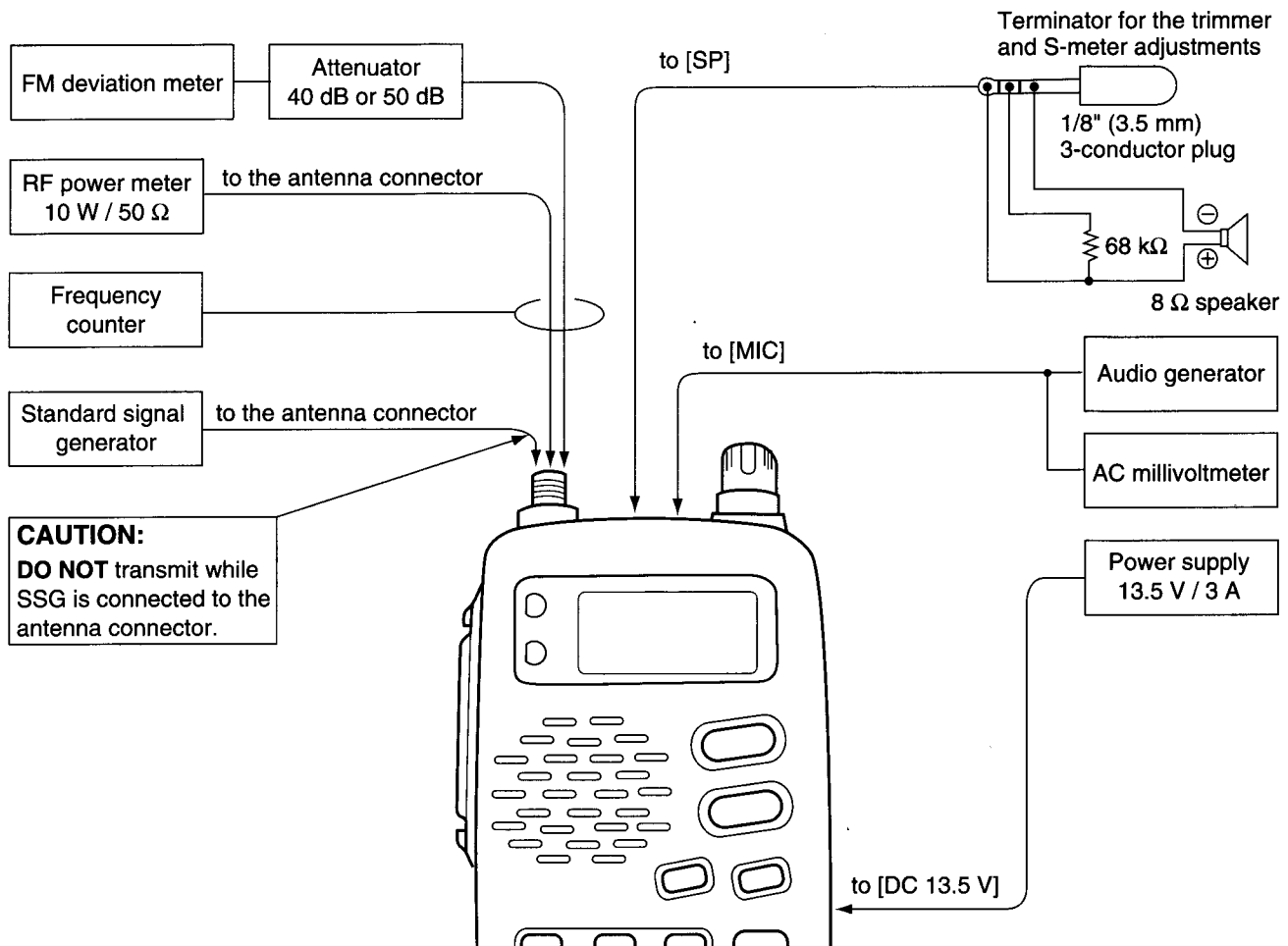
■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.5 V DC Current capacity : 3 A or more	Audio generator	Frequency range : 300–3000 Hz Output level : 1–500 mV
RF power meter (terminated type)	Measuring range : 1–10 W Frequency range : 28–500 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1	Attenuator	Power attenuation : 40 or 50 dB Capacity : 10 W or more
Frequency counter	Frequency range : 28–500 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	Standard signal generator (SSG)	Frequency range : 28–500 MHz Output level : 0.1 μV–32 mV (–127 to –17 dBm)
FM deviation meter	Frequency range : 28–500 MHz Measuring range : 0 to ±5 kHz	DC voltmeter	Input impedance : 50 kΩ/V DC or better
Digital multimeter	Input impedance : 10 MΩ/V DC or better	Oscilloscope	Frequency range : DC–20 MHz Measuring range : 0.01–20 V
		AC millivoltmeter	Measuring range : 10 mV–10 V

■ ENTERING ADJUSTMENT MODE

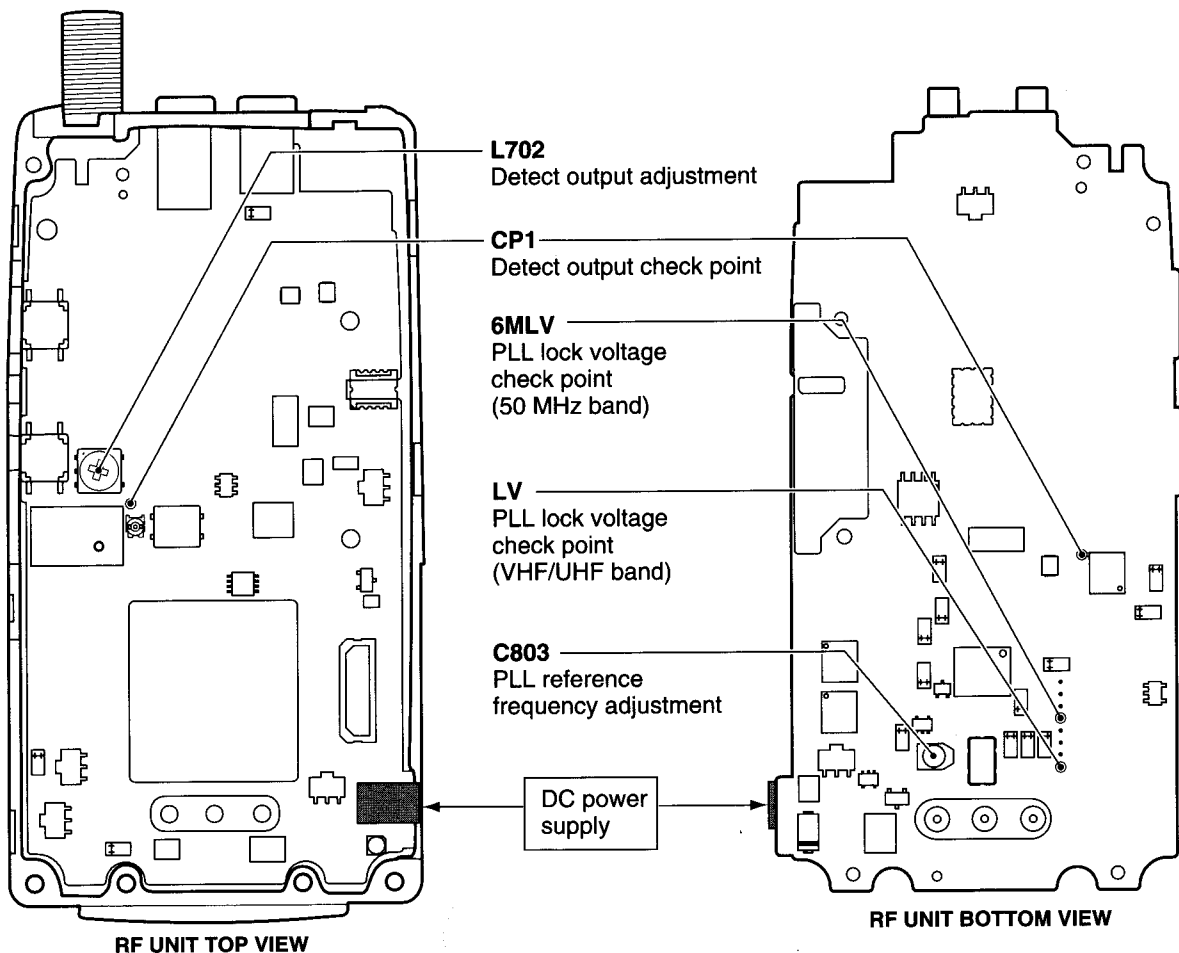
- ① Connect a 68 kΩ terminator to the [SP] jack.
 - ② Push and hold the [H/L] key, then turn power ON.
- Note: The frequency of the wide range appears at the display using this operation.

■ CONNECTION



5-2 PLL ADJUSTMENT

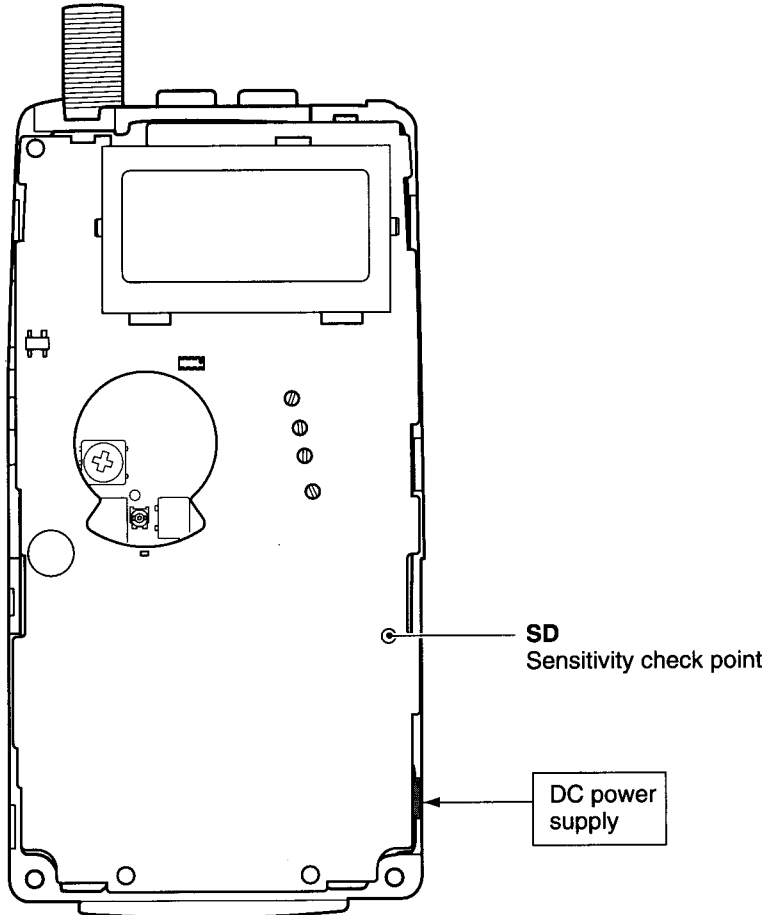
ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT	
		UNIT	LOCATION		UNIT	ADJUST
PLL LOCK VOLTAGE	1 • Operating Frequency : 51.000 MHz • Receiving	RF	Connect a digital multimeter or an oscilloscope to 6MLV.	0.8 V–1.8 V		Verify
	2 • Transmitting			1.8 V–2.8 V		
	3 • Operating Frequency : 145.000 MHz • Receiving		Connect a digital multimeter or an oscilloscope to LV.	0.6 V–1.2 V		
	4 • Transmitting			1 V–1.6 V		
	5 • Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] • Receiving • Transmittig			2.7 V–3.7 V [USA] 2.2 V–3.2 V [Other]		
				2.6 V–3.6 V [USA] 2.2 V–3.2 V [Other]		
PLL REFERENCE FREQUENCY	1 • Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] • Transmitting	Top panel	Loosely couple a frequency counter to the antenna connector.	[USA] 445.000000 MHz [Other] 435.000000 MHz	RF	C803
DETECT OUTPUT	1 • Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] • Connect an SSG to the [ANT] connector and set as: Level : 1.0 mV (–47 dBm) Modulation : OFF • Receiving	RF	Connect a digital multimeter or an oscilloscope to check point CP1 (IC701 pin 9).	1.0 V	RF	L702



5-3 TRIMMER ADJUSTMENT

The following adjustment must be performed at "ADJUSTMENT MODE."

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT
			UNIT	LOCATION		
50 MHz SENSITIVITY	1	<ul style="list-style-type: none"> • Operating Frequency: 50.000 MHz • Connect an SSG to the [ANT] connector and a SINAD meter with an 8 Ω load to the [SP] jack. • Set an SSG as: <ul style="list-style-type: none"> Level : 1 μV* (-107 dBm) Modulation : 1 kHz Deviation : 3.5 kHz • Receiving 	LOGIC	Connect a multimeter to check point SD.	Maximum voltage	While receiving, turn [DIAL] to set maximum voltage and push [D] key to program into memory.
	2	<ul style="list-style-type: none"> • Operating Frequency: 52.000 MHz [EUR], [UK] 53.000 MHz [Other] • Receiving 				
WFM SENSITIVITY	1	<ul style="list-style-type: none"> • Operating Frequency: 76.000 MHz • Set an SSG as: <ul style="list-style-type: none"> Level : 3.2 μV* (-97 dBm) Modulation : 1 kHz Deviation : 52.5 kHz • Receiving 	LOGIC	Connect a multimeter to check point SD.	Maximum voltage	
	2	<ul style="list-style-type: none"> • Operating Frequency: 107.000 MHz • Receiving 				
VHF SENSITIVITY	1	<ul style="list-style-type: none"> • Operating Frequency: 136.000 MHz • Set an SSG as: <ul style="list-style-type: none"> Level : 1 μV* (-107 dBm) Modulation : 1 kHz Deviation : 3.5 kHz • Receiving 	LOGIC	Connect a multimeter to check point SD.	Maximum voltage	
OUTPUT POWER	1	<ul style="list-style-type: none"> • Operating Frequency: <ul style="list-style-type: none"> 50 MHz band : 52.000 MHz [Other] 51.000 MHz [Italy] 144 MHz band : 145.000 MHz UHF band : 445.000 MHz [USA] 435.000 MHz [Other] • Output power : High • Transmitting 	Top panel	Connect an RF power meter to the [ANT] connector.	5 W	While transmitting, turn [DIAL] to set power and push [D] key to program into memory.
	2	<ul style="list-style-type: none"> • Output power : Low • Transmitting 			0.5 W	

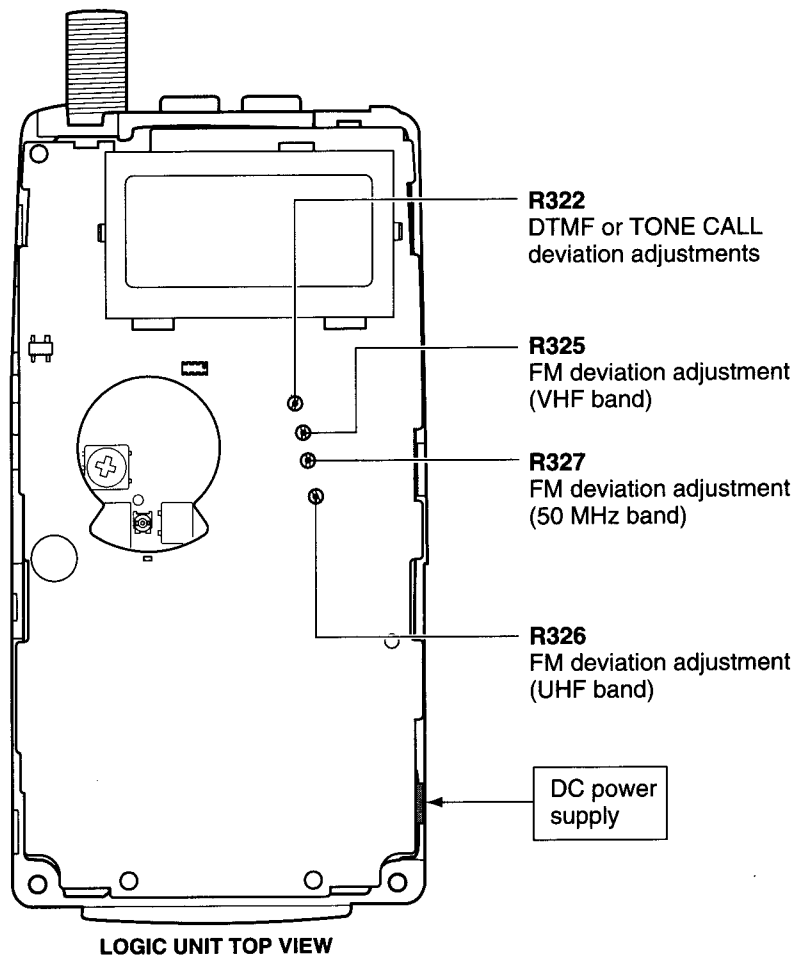


LOGIC UNIT TOP VIEW

TRIMMER ADJUSTMENT (Continued)

The following adjustment must be performed after "PLL REFERENCE FREQUENCY ADJUSTMENT" in section 5-2.

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT			
		UNIT	LOCATION		UNIT	ADJUST		
FM DEVIATION	1	<ul style="list-style-type: none"> Operating Frequency : 52.000 MHz [Other] 51.000 MHz [Italy] Connect an audio generator to the [MIC] connector and set as: 1 kHz/95 mV Set an FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 Output power : High Push [H/L] key while transmitting. Transmitting 	Top panel	Connect an FM deviation meter to the [ANT] connector through an attenuator.	±4.5 kHz	LOGIC	R327	
	2	<ul style="list-style-type: none"> Operating Frequency : 145.000 MHz Push [H/L] key while transmitting. Transmitting 					±4.5 kHz	R325
	3	<ul style="list-style-type: none"> Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] Transmitting 					±4.5 kHz	R326
DTMF DEVIATION	1	<ul style="list-style-type: none"> Operating Frequency : (except Europe, UK and Italy versions.) 445.000 MHz [USA] 435.000 MHz [Other] Push [D] key while transmitting. Transmitting. 	Top panel	Connect an FM deviation meter to the [ANT] connector through an attenuator.	±3.5 kHz	LOGIC	R322	
TONE CALL DEVIATION	1	<ul style="list-style-type: none"> Operating Frequency : 435.000 MHz (Europe, UK and Italy versions only) Set an FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 Output power : High Push [TONE] key while transmitting. Transmitting. 	Top panel	Connect an FM deviation meter to the [ANT] connector through an attenuator.	±3.5 kHz	LOGIC	R322	
CTCSS DEVIATION	1	<ul style="list-style-type: none"> Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] TONE frequency: 88.5 MHz [SQELCH] key: ON Set an FM deviation meter as: HPF : OFF LPF : 3 kHz De-emphasis : OFF Detector : (P-P)/2 No audio applied to the [MIC] jack. Transmitting 	Top panel	Connect an FM deviation meter to the [ANT] connector through an attenuator.	0.5-1.0 kHz		Verify	



5-4 RECEIVER ADJUSTMENT

The following adjustment must be performed after "SENSITIVITY ADJUSTMENT."

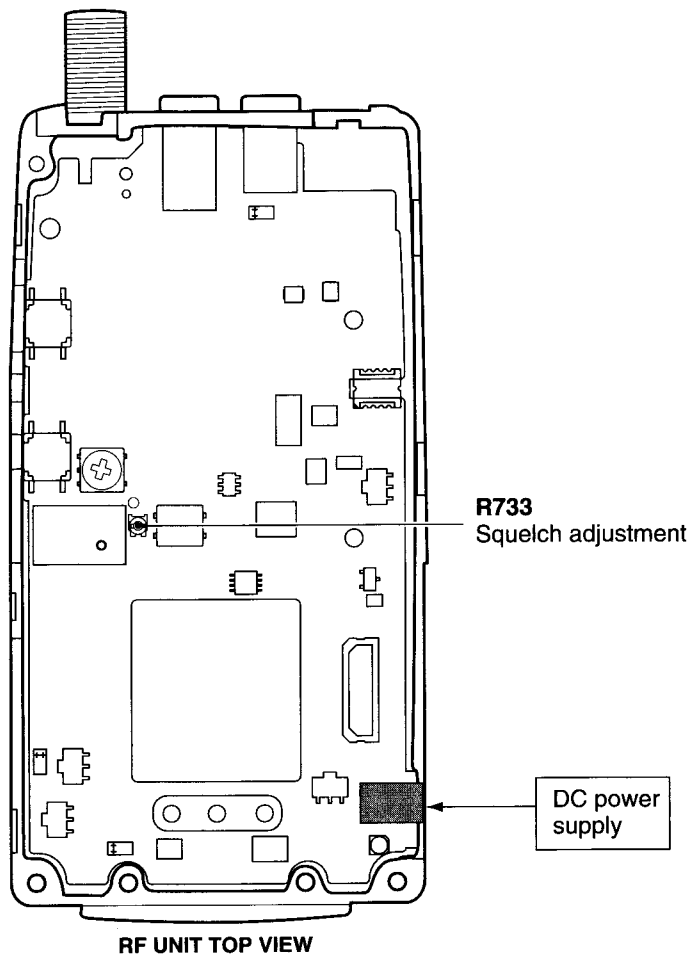
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT	
			UNIT	LOCATION		UNIT	ADJUST
SQUELCH LEVEL	1	<ul style="list-style-type: none"> Operating Frequency: 445.000 MHz [USA] 435.000 MHz [Other] Connect an SSG to the [ANT] connector and set as: Level : 0.1 μV^* (-127 dBm) Modulation : 1 kHz Deviation : ± 3.5 kHz Pre-set the R733 to maximum clockwise. Receiving 	Speaker		At the point where the AF signal just disappears	RF	R733
S-METER (50 MHz band)	1	<ul style="list-style-type: none"> Operating Frequency : 52.000 MHz [USA] 51.000 MHz [Italy] Connect an SSG to the [ANT] connector and set as: Level : 1 μV^* (-106 dBm) Modulation : 1 kHz Deviation : ± 3.5 kHz Connect a terminator to the [SP] jack. Receiving 	Top panel				Push and hold the [SQL] key
	2	<ul style="list-style-type: none"> Set an SSG output level for the S-meter to S3. Receiving 	SSG	Output level	0.56 to 1.8 μV (-112 to -102 dBm)		Verify
	3	<ul style="list-style-type: none"> Increase an SSG output level. Receiving 	Front panel	S-meter	Full scale		Verify
(WFM band)	4	<ul style="list-style-type: none"> Operating Frequency : 91.0000 MHz (WFM) Connect an SSG to the [ANT] connector and set as: Level : 2 μV^* (-101 dBm) Modulation : 1 kHz Deviation : ± 52.5 kHz Connect a terminator to the [SP] jack. Receiving 	Top panel				Push and hold the [SQL] key
	5	<ul style="list-style-type: none"> Increase an SSG output level. Receiving 		S-meter	Full scale		Verify
(VHF band)	6	<ul style="list-style-type: none"> Operating Frequency : 145.000 MHz Connect an SSG to the [ANT] connector and set as: Level : 0.5 μV^* (-113 dBm) Modulation : 1 kHz Deviation : ± 3.5 kHz Connect a terminator to the [SP] jack. Receiving 	Top panel				Push and hold the [SQL] key
	7	<ul style="list-style-type: none"> Set an SSG output level for the S-meter to S4. Receiving 	SSG	Output level	0.28 to 0.89 μV (-118 to -108dBm)		Verify
	8	<ul style="list-style-type: none"> Increase an SSG output level. Receiving 	Front panel	S-meter			Verify

*This output level of a standard signal generator (SSG) is indicated as the SSG's open circuit.

RECEIVER ADJUSTMENT (Continued)

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT
		UNIT	LOCATION		
(UHF band)	9	<ul style="list-style-type: none"> Operating Frequency : 445.000 MHz [USA] 435.000 MHz [Other] Connect an SSG to the [ANT] connector and set as: Level : 0.63 μV* (-111 dBm) Modulation : 1 kHz Deviation : \pm3.5 kHz Connect a terminator to the [SP] jack. Receiving 	Top panel		Push and hold the [SQL] key
	10		SSG	Output level	0.28 to 0.89 μ V (-118 to -108dBm)

*This output level of a standard signal generator (SSG) is indicated as the SSG's open circuit.



[RF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C28	4030012070	S.CERAMIC	GRM39 CH 680J 50PT
C29	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C30	4030009280	S.CERAMIC	GRM39 CH 820J 50PT
C31	4030011990	S.CERAMIC	GRM39 CH 120J 50PT
C32	4030012050	S.CERAMIC	GRM39 CH 560J 50PT
C34	4030009560	S.CERAMIC	C1608 CH 1H R75B-T-A
C35	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C36	4550006300	S.TANTALUM	ECST1AY475R
C37	4030013850	S.CERAMIC	ECUE1E102KBQ
C38	4030013850	S.CERAMIC	ECUE1E102KBQ
C39	4030013850	S.CERAMIC	ECUE1E102KBQ
C40	4030013850	S.CERAMIC	ECUE1E102KBQ
C50	4030013850	S.CERAMIC	ECUE1E102KBQ
C51	4030013850	S.CERAMIC	ECUE1E102KBQ
C53	4030013850	S.CERAMIC	ECUE1E102KBQ
C54	4030013850	S.CERAMIC	ECUE1E102KBQ
C56	4030013850	S.CERAMIC	ECUE1E102KBQ
C57	4030013850	S.CERAMIC	ECUE1E102KBQ
C58	4510005600	S.ELECTROLITIC	ECEV1CS100SR
C60	4550006710	S.TANTALUM	ECST1AX226R
C61	4030013850	S.CERAMIC	ECUE1E102KBQ
C62	4550006630	S.TANTALUM	ECST0GY226R
C63	4030013850	S.CERAMIC	ECUE1E102KBQ
C64	4030013850	S.CERAMIC	ECUE1E102KBQ
C65	4030013850	S.CERAMIC	ECUE1E102KBQ
C66	4030013850	S.CERAMIC	ECUE1E102KBQ
C67	4030013850	S.CERAMIC	ECUE1E102KBQ
C68	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C69	4030013850	S.CERAMIC	ECUE1E102KBQ
C70	4030013850	S.CERAMIC	ECUE1E102KBQ
C71	4030013850	S.CERAMIC	ECUE1E102KBQ
C72	4030013850	S.CERAMIC	ECUE1E102KBQ
C73	4030013850	S.CERAMIC	ECUE1E102KBQ
C74	4030013850	S.CERAMIC	ECUE1E102KBQ
C75	4550006170	S.TANTALUM	ECST1AY225R
C76	4030013850	S.CERAMIC	ECUE1E102KBQ
C77	4030013850	S.CERAMIC	ECUE1E102KBQ
C78	4030013850	S.CERAMIC	ECUE1E102KBQ
C79	4030013850	S.CERAMIC	ECUE1E102KBQ
C80	4030013850	S.CERAMIC	ECUE1E102KBQ
C81	4030013850	S.CERAMIC	ECUE1E102KBQ
C82	4030013850	S.CERAMIC	ECUE1E102KBQ
C83	4550006710	S.TANTALUM	ECST1AX226R
C84	4030009160	S.CERAMIC	GRM39 CH 470J 50PT
C85	4030013850	S.CERAMIC	ECUE1E102KBQ
C86	4030013850	S.CERAMIC	ECUE1E102KBQ
C87	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C88	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C89	4030012010	S.CERAMIC	GRM39 CH 220J 50PT
C90	4030012010	S.CERAMIC	GRM39 CH 220J 50PT
C91	4030013850	S.CERAMIC	ECUE1E102KBQ
C93	4030013850	S.CERAMIC	ECUE1E102KBQ
C94	4030013850	S.CERAMIC	ECUE1E102KBQ
C101	4030012050	S.CERAMIC	GRM39 CH 560J 50PT
C102	4030012120	S.CERAMIC	GRM39 CH 121J 50PT
C103	4030012050	S.CERAMIC	GRM39 CH 560J 50PT
C107	4030012030	S.CERAMIC	GRM39 CH 330J 50PT
C108	4030009160	S.CERAMIC	GRM39 CH 470J 50PT
C109	4030013850	S.CERAMIC	ECUE1E102KBQ
C110	4030008810	S.CERAMIC	GRM39 CH 150J 50PT
C114	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C115	4030012020	S.CERAMIC	GRM39 CH 270J 50PT
C116	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C117	4030011930	S.CERAMIC	GRM39 CH 060D 50PT
C118	4030012020	S.CERAMIC	GRM39 CH 270J 50PT
C119	4030013850	S.CERAMIC	ECUE1E102KBQ
C120	4030011930	S.CERAMIC	GRM39 CH 060D 50PT
C121	4030013850	S.CERAMIC	ECUE1E102KBQ
C122	4030011990	S.CERAMIC	GRM39 CH 120J 50PT
C123	4030009160	S.CERAMIC	GRM39 CH 470J 50PT
C124	4030013850	S.CERAMIC	ECUE1E102KBQ
C201	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C202	4030013850	S.CERAMIC	ECUE1E102KBQ
C203	4030013850	S.CERAMIC	ECUE1E102KBQ
C204	4030013850	S.CERAMIC	ECUE1E102KBQ
C205	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C206	4030013850	S.CERAMIC	ECUE1E102KBQ
C207	4030013850	S.CERAMIC	ECUE1E102KBQ
C208	4030013850	S.CERAMIC	ECUE1E102KBQ
C209	4030013850	S.CERAMIC	ECUE1E102KBQ
C210	4030013850	S.CERAMIC	ECUE1E102KBQ

[RF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C211	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C212	4030013850	S.CERAMIC	ECUE1E102KBQ
C213	4030013850	S.CERAMIC	ECUE1E102KBQ
C301	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C302	4030012020	S.CERAMIC	GRM39 CH 270J 50PT
C303	4030011990	S.CERAMIC	GRM39 CH 120J 50PT
C304	4030013850	S.CERAMIC	ECUE1E102KBQ
C305	4030008810	S.CERAMIC	GRM39 CH 150J 50PT
C306	4030011990	S.CERAMIC	GRM39 CH 120J 50PT
C307	4030013850	S.CERAMIC	ECUE1E102KBQ
C308	4030013850	S.CERAMIC	ECUE1E102KBQ
C309	4030011930	S.CERAMIC	GRM39 CH 060D 50PT
C310	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C311	4030013850	S.CERAMIC	ECUE1E102KBQ
C312	4030013850	S.CERAMIC	ECUE1E102KBQ
C313	4030013850	S.CERAMIC	ECUE1E102KBQ
C314	4030013850	S.CERAMIC	ECUE1E102KBQ
C315	4030013850	S.CERAMIC	ECUE1E102KBQ
C316	4030012440	S.CERAMIC	GRM39 CH 040B 50PT
C317	4030012440	S.CERAMIC	GRM39 CH 040B 50PT
C318	4030013780	S.CERAMIC	GRM39 CH 0R3B 50PT
C319	4030012550	S.CERAMIC	GRM39 CH 010B 50PT
C320	4030011980	S.CERAMIC	GRM39 CH 100D 50PT
C321	4030011980	S.CERAMIC	GRM39 CH 100D 50PT
C322	4030013850	S.CERAMIC	ECUE1E102KBQ
C323	4030012440	S.CERAMIC	GRM39 CH 040B 50PT
C324	4030013850	S.CERAMIC	ECUE1E102KBQ
C325	4030012570	S.CERAMIC	GRM39 CH 020B 50PT
C326	4030012430	S.CERAMIC	GRM39 CH 050B 50PT
C327	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C401	4030011930	S.CERAMIC	GRM39 CH 060D 50PT
C402	4030011980	S.CERAMIC	GRM39 CH 100D 50PT
C403	4030012440	S.CERAMIC	GRM39 CH 040B 50PT
C404	4030013850	S.CERAMIC	ECUE1E102KBQ
C405	4030013850	S.CERAMIC	ECUE1E102KBQ
C409	4030011950	S.CERAMIC	GRM39 CH 080D 50PT
C410	4030012120	S.CERAMIC	GRM39 CH 121J 50PT
C411	4030013850	S.CERAMIC	ECUE1E102KBQ
C412	4030013850	S.CERAMIC	ECUE1E102KBQ
C413	4030012030	S.CERAMIC	GRM39 CH 330J 50PT
C414	4030013850	S.CERAMIC	ECUE1E102KBQ
C415	4030013850	S.CERAMIC	ECUE1E102KBQ
C416	4030013850	S.CERAMIC	ECUE1E102KBQ
C501	4030013850	S.CERAMIC	ECUE1E102KBQ
C502	4030013850	S.CERAMIC	ECUE1E102KBQ
C503	4030013850	S.CERAMIC	ECUE1E102KBQ
C504	4030013850	S.CERAMIC	ECUE1E102KBQ
C505	4030012570	S.CERAMIC	GRM39 CH 020B 50PT
C506	4030012550	S.CERAMIC	GRM39 CH 010B 50PT
C507	4030012570	S.CERAMIC	GRM39 CH 020B 50PT
C508	4030011950	S.CERAMIC	GRM39 CH 080D 50PT
C509	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C510	4030012430	S.CERAMIC	GRM39 CH 050B 50PT
C511	4030013850	S.CERAMIC	ECUE1E102KBQ
C512	4030013850	S.CERAMIC	ECUE1E102KBQ
C513	4030013850	S.CERAMIC	ECUE1E102KBQ
C514	4030013850	S.CERAMIC	ECUE1E102KBQ
C515	4030013850	S.CERAMIC	ECUE1E102KBQ
C516	4030009150	S.CERAMIC	GRM39 CH 101J 50PT
C517	4030013850	S.CERAMIC	ECUE1E102KBQ
C518	4030013850	S.CERAMIC	ECUE1E102KBQ
C519	4030013850	S.CERAMIC	ECUE1E102KBQ
C520	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C600	4030013850	S.CERAMIC	ECUE1E102KBQ
C601	4030012430	S.CERAMIC	GRM39 CH 050B 50PT
C602	4030012430	S.CERAMIC	GRM39 CH 050B 50PT
C604	4030012010	S.CERAMIC	GRM39 CH 220J 50PT
C605	4030013850	S.CERAMIC	ECUE1E102KBQ
C606	4030013850	S.CERAMIC	ECUE1E102KBQ
C607	4030013850	S.CERAMIC	ECUE1E102KBQ
C608	4030012570	S.CERAMIC	GRM39 CH 020B 50PT
C609	4030013850	S.CERAMIC	ECUE1E102KBQ
C610	4030013850	S.CERAMIC	ECUE1E102KBQ
C612	4030013850	S.CERAMIC	ECUE1E102KBQ
C613	4030013850	S.CERAMIC	ECUE1E102KBQ
C614	4030013850	S.CERAMIC	ECUE1E102KBQ
C615	4030013850	S.CERAMIC	ECUE1E102KBQ
C616	4030013850	S.CERAMIC	ECUE1E102KBQ
C700	4030012390	S.CERAMIC	GRM39 B 104K 16PT
C701	4030013850	S.CERAMIC	ECUE1E102KBQ
C702	4030013850	S.CERAMIC	ECUE1E102KBQ

S.=Surface mount

[RF UNIT]

REF NO.	ORDER NO.	DESCRIPTION
C703	4030013850	S.CERAMIC ECUE1E102KBQ
C706	4030004310	S.CERAMIC GRM39 B 103K 50PT
C707	4030012390	S.CERAMIC GRM39 B 104K 16PT
C708	4030012390	S.CERAMIC GRM39 B 104K 16PT
C709	4550006680	S.TANTALUM ECST0JY156R
C712	4030012030	S.CERAMIC GRM39 CH 330J 50PT
C713	4030013850	S.CERAMIC ECUE1E102KBQ
C714	4030012390	S.CERAMIC GRM39 B 104K 16PT
C715	4030012390	S.CERAMIC GRM39 B 104K 16PT
C716	4030012390	S.CERAMIC GRM39 B 104K 16PT
C717	4030012390	S.CERAMIC GRM39 B 104K 16PT
C719	4030012390	S.CERAMIC GRM39 B 104K 16PT
C720	4030012380	S.CERAMIC GRM39 B 473K 16PT
C721	4030012580	S.CERAMIC GRM39 CH 030B 50PT
C722	4030013850	S.CERAMIC ECUE1E102KBQ
C724	4030009150	S.CERAMIC GRM39 CH 101J 50PT
C725	4030009150	S.CERAMIC GRM39 CH 101J 50PT
C726	4030012070	S.CERAMIC GRM39 CH 680J 50PT
C727	4030013850	S.CERAMIC ECUE1E102KBQ
C729	4030012010	S.CERAMIC GRM39 CH 220J 50PT
C730	4030012180	S.CERAMIC GRM39 CH 221J 50PT
C731	4030009150	S.CERAMIC GRM39 CH 101J 50PT
C732	4030012050	S.CERAMIC GRM39 CH 560J 50PT
C733	4030013850	S.CERAMIC ECUE1E102KBQ
C734	4030013850	S.CERAMIC ECUE1E102KBQ
C735	4030012390	S.CERAMIC GRM39 B 104K 16PT
C736	4030013850	S.CERAMIC ECUE1E102KBQ
C737	4030004310	S.CERAMIC GRM39 B 103K 50PT
C751	4030012390	S.CERAMIC GRM39 B 104K 16PT
C752	4030012010	S.CERAMIC GRM39 CH 220J 50PT
C753	4030004310	S.CERAMIC GRM39 B 103K 50PT
C754	4030012390	S.CERAMIC GRM39 B 104K 16PT
C755	4030012380	S.CERAMIC GRM39 B 473K 16PT
C756	4030004310	S.CERAMIC GRM39 B 103K 50PT
C757	4030013770	S.CERAMIC GRM40 B 224K 16PT
C758	4550006180	S.TANTALUM ECST0GY475R
C759	4030013850	S.CERAMIC ECUE1E102KBQ
C801	4030008820	S.CERAMIC GRM39 CH 390J 50PT
C802	4030012000	S.CERAMIC GRM39 CH 180J 50PT
C803	4610002140	S.TRIMMER CTZ3S-20C-WI-PF
C804	4030013850	S.CERAMIC ECUE1E102KBQ
C805	4030013850	S.CERAMIC ECUE1E102KBQ
C806	4030012390	S.CERAMIC GRM39 B 104K 16PT
C807	4030013850	S.CERAMIC ECUE1E102KBQ
C808	4030009170	S.CERAMIC GRM40 F 105Z 16PT
C809	4030009160	S.CERAMIC GRM39 CH 470J 50PT
C810	4030009160	S.CERAMIC GRM39 CH 470J 50PT
C811	4030009160	S.CERAMIC GRM39 CH 470J 50PT
C812	4030004310	S.CERAMIC GRM39 B 103K 50PT
C813	4550006160	S.TANTALUM ECST1CY155R
C814	4550006160	S.TANTALUM ECST1CY155R
C815	4030013850	S.CERAMIC ECUE1E102KBQ
C816	4030013850	S.CERAMIC ECUE1E102KBQ
C817	4030013850	S.CERAMIC ECUE1E102KBQ
C818	4550006170	S.TANTALUM ECST1AY225R
C819	4030013850	S.CERAMIC ECUE1E102KBQ
C820	4550006630	S.TANTALUM ECST0GY226R
C821	4030013850	S.CERAMIC ECUE1E102KBQ
C822	4550006630	S.TANTALUM ECST0GY226R
C823	4030013850	S.CERAMIC ECUE1E102KBQ
C824	4550006630	S.TANTALUM ECST0GY226R
C825	4030013850	S.CERAMIC ECUE1E102KBQ
C826	4030013850	S.CERAMIC ECUE1E102KBQ
C827	4030013850	S.CERAMIC ECUE1E102KBQ
C828	4030013850	S.CERAMIC ECUE1E102KBQ
C829	4030013850	S.CERAMIC ECUE1E102KBQ
C830	4030013850	S.CERAMIC ECUE1E102KBQ
C831	4030013850	S.CERAMIC ECUE1E102KBQ
C832	4030013850	S.CERAMIC ECUE1E102KBQ
C833	4030004310	S.CERAMIC GRM39 B 103K 50PT
C834	4550006150	S.TANTALUM ECST1CY105R
C835	4550006150	S.TANTALUM ECST1CY105R
C836	4550006360	S.TANTALUM ECST1VY104R
C837	4030013850	S.CERAMIC ECUE1E102KBQ
C838	4030013850	S.CERAMIC ECUE1E102KBQ
C839	4030012390	S.CERAMIC GRM39 B 104K 16PT
C841	4030013850	S.CERAMIC ECUE1E102KBQ
C842	4030012390	S.CERAMIC GRM39 B 104K 16PT
C843	4030013850	S.CERAMIC ECUE1E102KBQ
C844	4030012390	S.CERAMIC GRM39 B 104K 16PT
C845	4030013850	S.CERAMIC ECUE1E102KBQ

[RF UNIT]

REF NO.	ORDER NO.	DESCRIPTION
C846	4030013850	S.CERAMIC ECUE1E102KBQ
C847	4030013850	S.CERAMIC ECUE1E102KBQ
C848	4550006360	S.TANTALUM ECST1VY104R
C849	4030013850	S.CERAMIC ECUE1E102KBQ
C850	4030013850	S.CERAMIC ECUE1E102KBQ
C851	4030013850	S.CERAMIC ECUE1E102KBQ
C853	4030013850	S.CERAMIC ECUE1E102KBQ
C854	4030012390	S.CERAMIC GRM39 B 104K 16PT
C856	4030011990	S.CERAMIC GRM39 CH 120J 50PT
C900	4030013850	S.CERAMIC ECUE1E102KBQ
C901	4030011990	S.CERAMIC GRM39 CH 120J 50PT
C902	4030013850	S.CERAMIC ECUE1E102KBQ
C903	4030011930	S.CERAMIC GRM39 CH 060D 50PT
C904	4030013850	S.CERAMIC ECUE1E102KBQ
C905	4030013850	S.CERAMIC ECUE1E102KBQ
C906	4030013850	S.CERAMIC ECUE1E102KBQ
C907	4030013850	S.CERAMIC ECUE1E102KBQ
C909	4030012500	S.CERAMIC GRM39 CH 300J 50PT
C910	4030013850	S.CERAMIC ECUE1E102KBQ
C911	4030012390	S.CERAMIC GRM39 B 104K 16PT
	4030013850	S.CERAMIC ECUE1E102KBQ
C912	4030013850	S.CERAMIC ECUE1E102KBQ
C913	4030013850	S.CERAMIC ECUE1E102KBQ
C914	4030012390	S.CERAMIC GRM39 B 104K 16PT
C915	4030013850	S.CERAMIC ECUE1E102KBQ
C916	4030008820	S.CERAMIC GRM39 CH 390J 50PT
C917	4030013850	S.CERAMIC ECUE1E102KBQ
C919	4030012010	S.CERAMIC GRM39 CH 220J 50PT
C920	4030013850	S.CERAMIC ECUE1E102KBQ
C921	4030013850	S.CERAMIC ECUE1E102KBQ
C923	4030012650	S.CERAMIC GRH708 CH 220J 200PT
C924	4030001100	S.CERAMIC GRM40 B 102K 50PT
C926	4030001100	S.CERAMIC GRM40 B 102K 50PT
C927	4030013850	S.CERAMIC ECUE1E102KBQ
C928	4030000960	S.CERAMIC GRM40 CH 390J 50PT
C929	4030000960	S.CERAMIC GRM40 CH 390J 50PT
C930	4030001020	S.CERAMIC GRM40 CH 121J 50PT
C931	4030000980	S.CERAMIC GRM40 CH 560J 50PT
C932	4030000900	S.CERAMIC GRM40 CH 100D 50PT
C934	4030013850	S.CERAMIC ECUE1E102KBQ
C935	4030001100	S.CERAMIC GRM40 B 102K 50PT
C936	4030013850	S.CERAMIC ECUE1E102KBQ
C937	4030013850	S.CERAMIC ECUE1E102KBQ
C938	4030009610	S.CERAMIC GRM40 CH 271J 50PT
C939	4030001000	S.CERAMIC GRM40 CH 820J 50PT
C940	4030001100	S.CERAMIC GRM40 B 102K 50PT
C941	4030013850	S.CERAMIC ECUE1E102KBQ
C942	4550006170	S.TANTALUM ECST1AY225R
C943	4030013850	S.CERAMIC ECUE1E102KBQ
C944	4030012390	S.CERAMIC GRM39 B 104K 16PT
C945	4030013850	S.CERAMIC ECUE1E102KBQ
C946	4030013850	S.CERAMIC ECUE1E102KBQ
C947	4030013850	S.CERAMIC ECUE1E102KBQ
C948	4030013850	S.CERAMIC ECUE1E102KBQ
C949	4030012390	S.CERAMIC GRM39 B 104K 16PT
C950	4030013850	S.CERAMIC ECUE1E102KBQ
C951	4030013850	S.CERAMIC ECUE1E102KBQ
C953	4030013850	S.CERAMIC ECUE1E102KBQ
C955	4030012140	S.CERAMIC GRM39 CH 151J 50PT
C956	4030012010	S.CERAMIC GRM39 CH 220J 50PT
C957	4030004310	S.CERAMIC GRM39 B 103K 50PT
C958	4030013850	S.CERAMIC ECUE1E102KBQ
C959	4030013850	S.CERAMIC ECUE1E102KBQ
C960	4030013850	S.CERAMIC ECUE1E102KBQ
C961	4030013850	S.CERAMIC ECUE1E102KBQ
C962	4030013850	S.CERAMIC ECUE1E102KBQ
C963	4030013850	S.CERAMIC ECUE1E102KBQ
C964	4030013850	S.CERAMIC ECUE1E102KBQ
C965	4030013850	S.CERAMIC ECUE1E102KBQ
C966	4030013850	S.CERAMIC ECUE1E102KBQ
C967	4030013850	S.CERAMIC ECUE1E102KBQ
C968	4030013850	S.CERAMIC ECUE1E102KBQ
C969	4030013850	S.CERAMIC ECUE1E102KBQ
C970	4030013850	S.CERAMIC ECUE1E102KBQ
C971	4030004310	S.CERAMIC GRM39 B 103K 50PT
C972	4030012100	S.CERAMIC GRM39 CH 240J 50PT
C973	4030013850	S.CERAMIC ECUE1E102KBQ
C974	4030013850	S.CERAMIC ECUE1E102KBQ
C975	4030012390	S.CERAMIC GRM39 B 104K 16PT
	4030013850	S.CERAMIC ECUE1E102KBQ
C976	4030013850	S.CERAMIC ECUE1E102KBQ

[TPE]
[Other][ITA]
[Other]

S.=Surface mount

[RF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C977	4030013850	S.CERAMIC	ECUE1E102KBQ
C978	4030000890	S.CERAMIC	GRM40 CH 080D 50PT
C979	4030000900	S.CERAMIC	GRM40 CH 100D 50PT
C980	4030013850	S.CERAMIC	ECUE1E102KBQ
C981	4030012390	S.CERAMIC	GRM39 B 104K 16PT
J1	6450001680	CONNECTOR	HSJ1122-010010
J2	6450001690	CONNECTOR	HSJ1456-01-220
J3	6450000870	CONNECTOR	HEC2711-01-020
J4	6510019870	S.CONNECTOR	AXK5S40045P
S1	2230000900	S.SWITCH	JPM1990-2013R
S2	2230000900	S.SWITCH	JPM1990-2013R
EP1	910049687	PCB	B 5030G

[VCO BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
Q301	1530003560	S.TRANSISTOR	2SC5195-T1
Q302	1530003560	S.TRANSISTOR	2SC5195-T1
Q303	1530003560	S.TRANSISTOR	2SC5195-T1
Q321	1530003560	S.TRANSISTOR	2SC5195-T1
Q322	1530003560	S.TRANSISTOR	2SC5195-T1
Q323	1530003560	S.TRANSISTOR	2SC5195-T1
Q341	1530003640	S.TRANSISTOR	2SC4215-O
Q342	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q343	1530002920	S.TRANSISTOR	2SC4226-T2 R25
D301	1790001260	S.DIODE	MA2S077-(TX)
D302	1720000700	S.VARICAP	1SV305 (TPL3)
D321	1790001260	S.DIODE	MA2S077-(TX)
D322	1790001310	S.VARICAP	1SV270(TPH3)
D323	1790001260	S.DIODE	MA2S077-(TX)
D324	1790001260	S.DIODE	MA2S077-(TX)
D341	1720000660	S.VARICAP	1SV288 (TPH2)
D350	1750000360	S.DIODE	1SS364(TE85L)
D351	1790001260	S.DIODE	MA2S077-(TX)
L301	6200004480	S.COIL	MLF1608D R82K-T
L302	6200008260	S.COIL	0.30-1.7-8TL 60N
L321	6200004480	S.COIL	MLF1608D R82K-T
L322	6200008330	S.COIL	0.45-1.4-4TL 15N
L341	6200004920	S.COIL	MLF1608A 2R2K-T
L342	6200007670	S.COIL	LQN21A 10NJ04
L343	6200008410	S.COIL	LQN 1H R21J04
L344	6200006980	S.COIL	ELJRE R10G-F
L345	6200007000	S.COIL	ELJRE 82NG-F
L346	6200006670	S.COIL	ELJRE 68NG-F
L347	6200006990	S.COIL	ELJRE 56NG-F
L348	6200007000	S.COIL	ELJRE 82NG-F
J301	6910011530	CONNECTOR	IMSA-9230B-1-08Z057-T
J302	6910011530	CONNECTOR	IMSA-9230B-1-08Z057-T
R301	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R302	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R303	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R305	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R306	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R307	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R308	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R311	7030005060	S.RESISTOR	ERJ2GEJ 333 X (33 kΩ)
R313	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R314	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R315	7030005700	S.RESISTOR	ERJ2GEJ 274 X (270 kΩ)
R321	7030009140	S.RESISTOR	ERJ2GEJ 272 X (2.7 kΩ)
R322	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R323	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R324	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R325	7030005710	S.RESISTOR	ERJ2GEJ 121 X (120 Ω)
R328	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R329	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)

[VCO BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
R330	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R331	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R332	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R333	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
R334	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
R337	7030005720	S.RESISTOR	ERJ2GEJ 563 X (56 kΩ)
R338	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R339	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R340	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R341	7030006610	S.RESISTOR	ERJ2GEJ 394 X (390 kΩ)
R342	7030009140	S.RESISTOR	ERJ2GEJ 272 X (2.7 kΩ)
R343	7030005600	S.RESISTOR	ERJ2GEJ 273 X (27 kΩ)
R344	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R345	7030005080	S.RESISTOR	ERJ2GEJ 823 X (82 kΩ)
R346	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R347	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R348	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R349	7030005080	S.RESISTOR	ERJ2GEJ 823 X (82 kΩ)
R350	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R351	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R353	7030005710	S.RESISTOR	ERJ2GEJ 121 X (120 Ω)
R354	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
R355	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R356	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
C301	4030013850	S.CERAMIC	ECUE1E102KBQ
C302	4030013850	S.CERAMIC	ECUE1E102KBQ
C303	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C304	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C305	4030013850	S.CERAMIC	ECUE1E102KBQ
C306	4030013780	S.CERAMIC	GRM39 CH 0R3B 50PT
C307	4030013850	S.CERAMIC	ECUE1E102KBQ
C308	4030013850	S.CERAMIC	ECUE1E102KBQ
C309	4030013850	S.CERAMIC	ECUE1E102KBQ
C310	4030013850	S.CERAMIC	ECUE1E102KBQ
C311	4030013850	S.CERAMIC	ECUE1E102KBQ
C312	4030013850	S.CERAMIC	ECUE1E102KBQ
C313	4030013850	S.CERAMIC	ECUE1E102KBQ
C314	4030012580	S.CERAMIC	GRM39 CH 030B 50PT
C315	4030012100	S.CERAMIC	GRM39 CH 240J 50PT
C321	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C323	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C324	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C325	4030013850	S.CERAMIC	ECUE1E102KBQ
C326	4030013850	S.CERAMIC	ECUE1E102KBQ
C327	4030012550	S.CERAMIC	GRM39 CH 010B 50PT
C328	4030012560	S.CERAMIC	GRM39 CH 1R5B 50PT
C329	4030013850	S.CERAMIC	ECUE1E102KBQ
C330	4030013850	S.CERAMIC	ECUE1E102KBQ
C331	4030013850	S.CERAMIC	ECUE1E102KBQ
C332	4030013850	S.CERAMIC	ECUE1E102KBQ
C333	4030013850	S.CERAMIC	ECUE1E102KBQ
C334	4030013850	S.CERAMIC	ECUE1E102KBQ
C335	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C336	4030012580	S.CERAMIC	GRM39 CH 030B 50PT
C337	4030013850	S.CERAMIC	ECUE1E102KBQ
C341	4030013850	S.CERAMIC	ECUE1E102KBQ
C342	4030012180	S.CERAMIC	GRM39 CH 221J 50PT
C343	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C344	4030012580	S.CERAMIC	GRM39 CH 030B 50PT
C345	4030012180	S.CERAMIC	GRM39 CH 221J 50PT
C346	4030013780	S.CERAMIC	GRM39 CH 0R3B 50PT
C347	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C348	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C349	4030004310	S.CERAMIC	GRM39 B 103K 50PT
C350	4030013850	S.CERAMIC	ECUE1E102KBQ
C351	4030013850	S.CERAMIC	ECUE1E102KBQ
C352	4030009160	S.CERAMIC	GRM39 CH 470J 50PT
C353	4030012070	S.CERAMIC	GRM39 CH 680J 50PT
C354	4030012010	S.CERAMIC	GRM39 CH 220J 50PT
C356	4030008820	S.CERAMIC	GRM39 CH 390J 50PT
C357	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C358	4030012000	S.CERAMIC	GRM39 CH 180J 50PT
C359	4030008820	S.CERAMIC	GRM39 CH 390J 50PT
C360	4030013760	S.CERAMIC	GRM39 CH 3R5B 50PT
C361	4030012010	S.CERAMIC	GRM39 CH 220J 50PT
C362	4030013850	S.CERAMIC	ECUE1E102KBQ
C363	4030013850	S.CERAMIC	ECUE1E102KBQ
EP1	910049707	PCB	B 5032G

S.=Surface mount

SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

7-1 CABINET PARTS

[CHASSIS PARTS]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510020650	Antenna connector SMA-R224	1
S1	7600000210	Sensor TP70N00E20-15F-1903	1
MP1	8210015120	1903 Front panel (A) [EUR, UK, ITA, THA, TPE]	1
	8210015130	1903 Front panel (B) [USA, SEA]	1
MP2	8010017150	1903 Chassis	1
MP3	8930044580	1903 Rubber seal	1
MP4	8930044550	1903 10-Key	1
MP5	8930044490	1903 Microphone cap	1
MP6	8930044510	1903 PTT button	1
MP7	8930015050	1903 PTT panel	1
MP8	8930044560	1903 2-Key	1
MP9	8830001220	Nut (F)	1
MP10	8930018220	870 net	1
MP11	8930046020	1123 Sheet (A)-1	1
MP12	8930044460	1903 Contact rubber	1
MP13	8930044470	1903 DC cap	1
MP14	8930044480	1903 Lens	1
MP15	8830001340	1903 Hex nut	1
MP16	8930044970	1903 Rear sheet (A) [USA]	1
	8930044980	1903 Rear sheet (B) [SEA]	1
	8930044990	1903 Rear sheet (C) [EUR, UK, ITA]	1
	8930045000	1903 Rear sheet (D) [THA, TPE]	1
MP17	8930044530	1903 Rubber sheet	1
MP18	8950004810	1903 SP spring	2
MP19	8610010530	Knob N263	1
MP20	8810008990	Screw PH BT M2×10 ZK	2
MP21	8810008970	Screw FH BT No.0 M2×3.5 NI-ZU	9
MP22	8810009630	Screw FH No.0 M2×4.5 NI B	2
MP25	8310041950	1903 Window plate w/sheet	1
MP27	8930046000	1903 Microphone sponge	1
MP28	8930045940	1903 Bottom sheet	1
MP29	8930040410	Isolating sheet EO	2
SP1	2510000840	Speaker CS028014-12	1
MP1*	8210015400	1903 Front panel (A) assembly (incl. MP1, MP6, MP7 and MP10)	1
	8210015410	1903 Front panel (B) assembly (incl. MP1, MP6, MP7 and MP10)	1

ΩScrew abbreviations: PH: Pan head NI: Nickel ZK: Black

7-2 ACCESSORIES

REF NO.	ORDER NO.	DESCRIPTION	QTY.
EP1	Optional product	Antenna FA-S6270B	1
EP2	Optional product	Battery BP-200 [USA only]	1
EP3	Optional product	Battery BP-199 [other]	1
	Optional product	Charger BC-110A [USA]	1
MP1	Optional product	Charger BC-110D [EUR, ITA]	1
	8930044450	1903 Belt clip	1
MP2	8010011960	Strap belt HK-005	1

[RF UNIT]

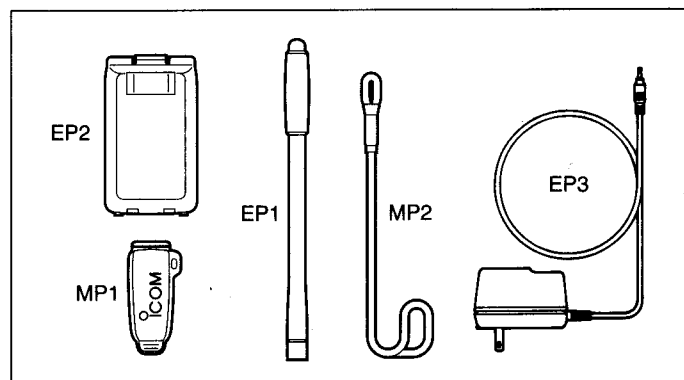
REF NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8510002162	1903 PA heatsink-2	1
MP2	8950004800	1903 Contact spring	1
MP3	8510011630	1903 RF shield	1
MP4	8930045990	1903 RF sheet	1

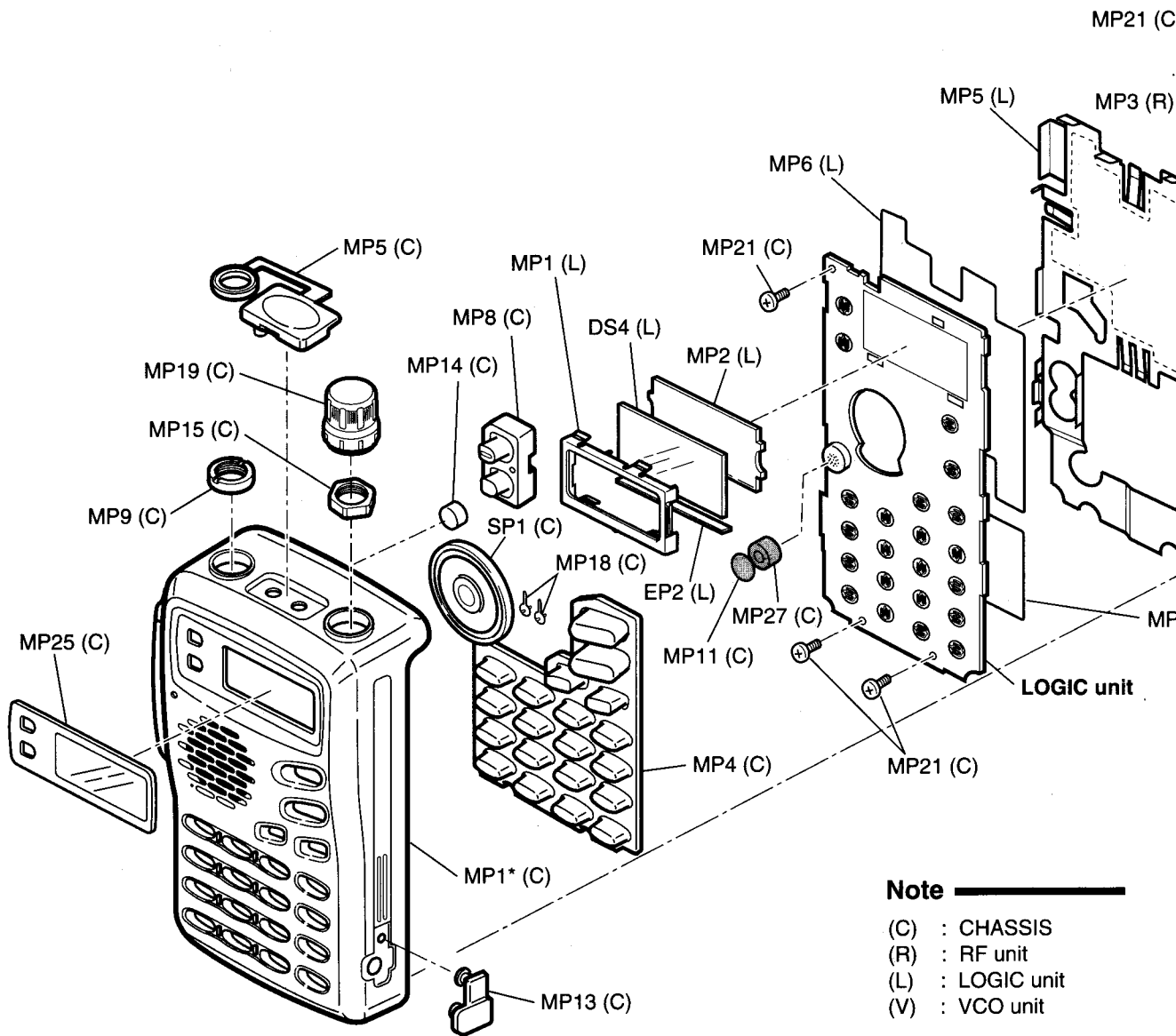
[LOGIC UNIT]

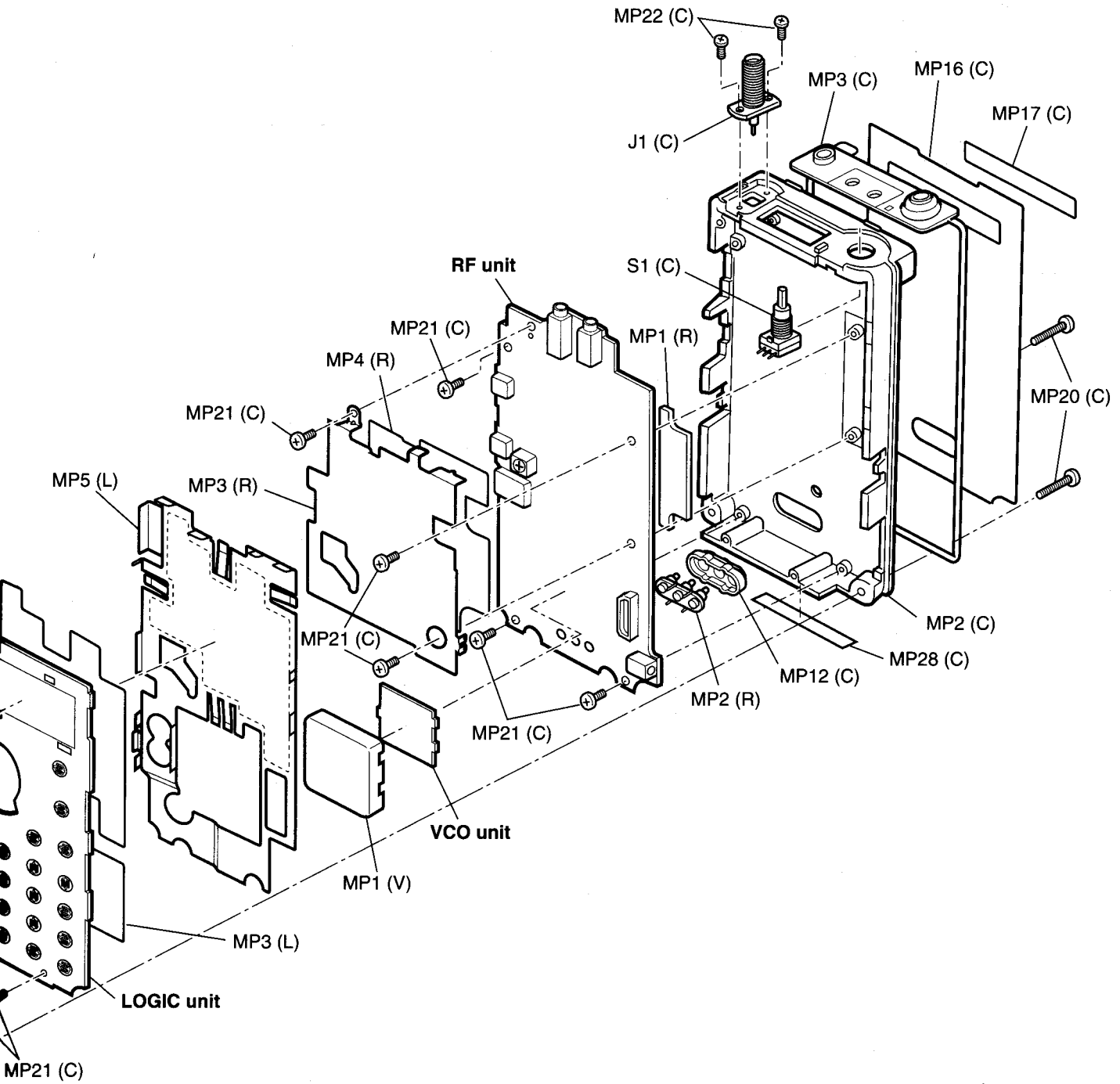
REF NO.	ORDER NO.	DESCRIPTION	QTY.
DS4	5030001550	LCD LM-1526B	1
EP2	8930046030	Contact screen SRCN-1903-SP-N-W	1
MP1	8930044570	1903 LCD holder	1
MP2	8210015060	1903 Reflector	1
MP3	8930045910	Himeron sheet	1
MP5	8510011621	1903 LOGIC shield	1
MP6	8930045980	1903 LOGIC sheet	1

[VCO BOARD]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8510011430	1903 VCO case	1







Note _____

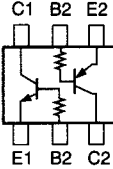
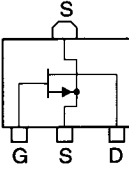
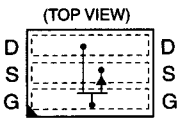
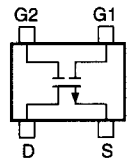
- (C) : CHASSIS
- (R) : RF unit
- (L) : LOGIC unit
- (V) : VCO unit

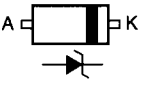
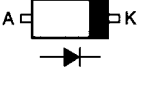
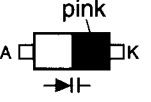
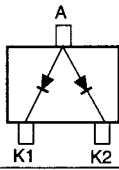

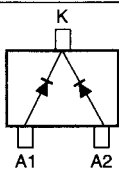
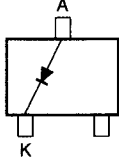
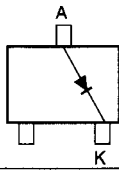
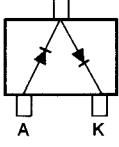

SECTION 8 SEMI-CONDUCTOR INFORMATION

8 - 1 TRANSISTORS

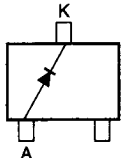
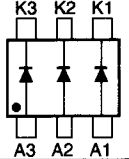


NAME	SYMBOL	INSIDE VIEW
2SB1201-S	2M	
2SC3356-R25 2SC4117-BL 2SC4215-O 2SC4226-R25 2SC4228-R45 2SC4403-3 2SC5107-O 2SC5195 2SD2216-S	R25 CL QO R25 R44 LY3 MFO 88 YS	
2SA1588-GR-ZG 2SB1462-R	A6	
UN9210 UN9213	8L 8C	
UN9211 UN9215	8A 8E	
UN9115	H	
2SB1132-R	BAR	
XP1501-AB	5R	

NAME	SYMBOL	INSIDE VIEW
XP1210	AC	
XP4601	5C	
XP5601-AB	4N	
XP6401	5O	
2SJ364-Q	4M	
2SK880-Y	XY	
UN9214	8A	
XP1115	7M	
XP1201	AI	

NAME	SYMBOL	INSIDE VIEW
XP4315	CB	
2SK2973	K1	
2SK2975	K2975	
3SK291 3SK292	UF UK	

NAME	SYMBOL	INSIDE VIEW
MA8051-H	5-1	
RB060L-40 1SV307	No symbol TX	
1SV271 1SV288	TG TJ	
DAP202U T107	P	
MA8100-M	10-	
1SS364 MA132WK	BF MU	
DA112 T107	AZ	
DA113W T107	AY	
MA133	MP	
HVU131TRF	P1	

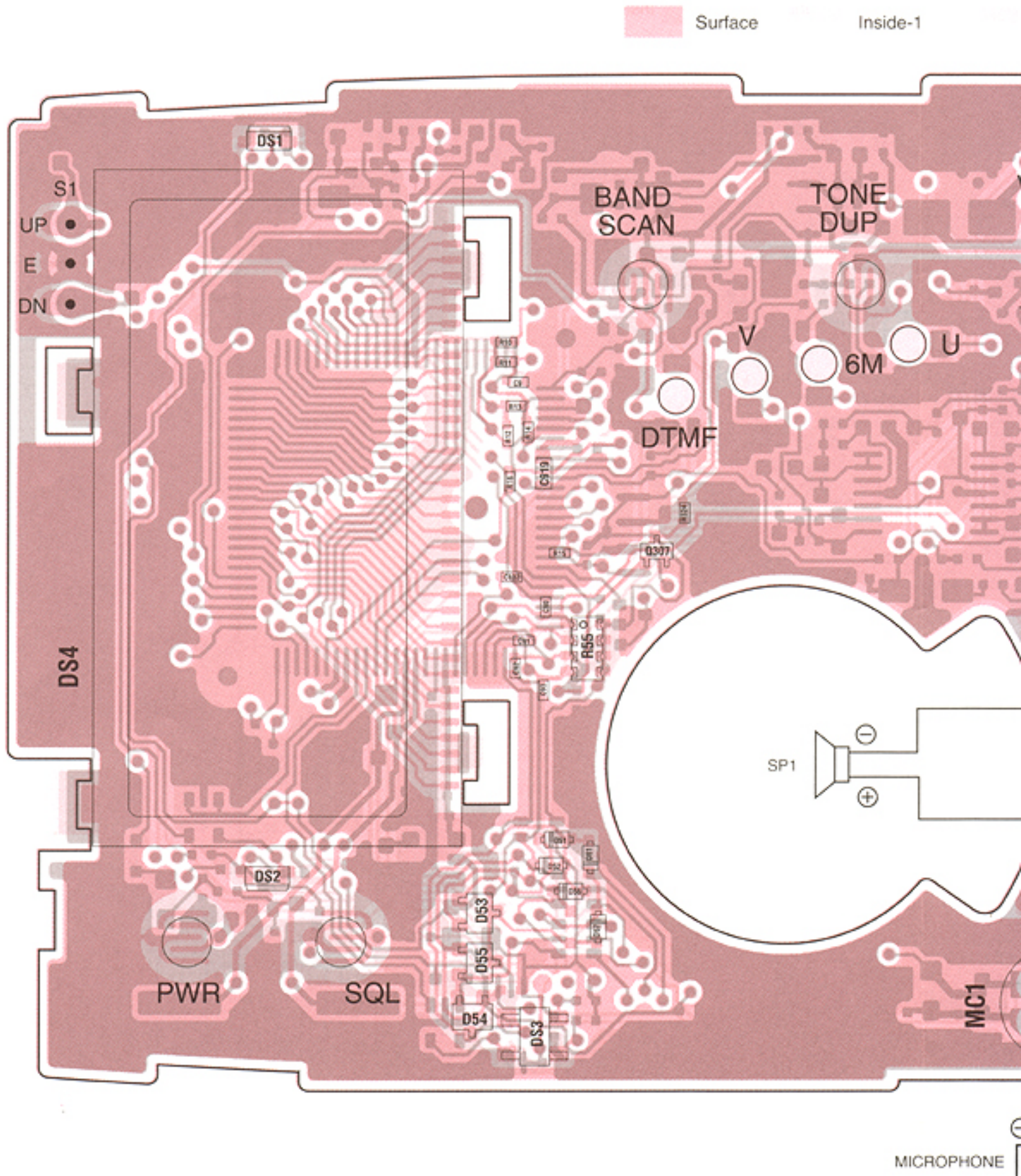
8 - 2 DIODES

NAME	SYMBOL	INSIDE VIEW
SB07-03C-TB	J	
MA6S121	M2D	
1SV270 HVU350TRF 1SV305	TF 4 TV	
MA2S077 MA2S111 MA2S728	S A B	

SECTION 9 BOARD LAYOUTS

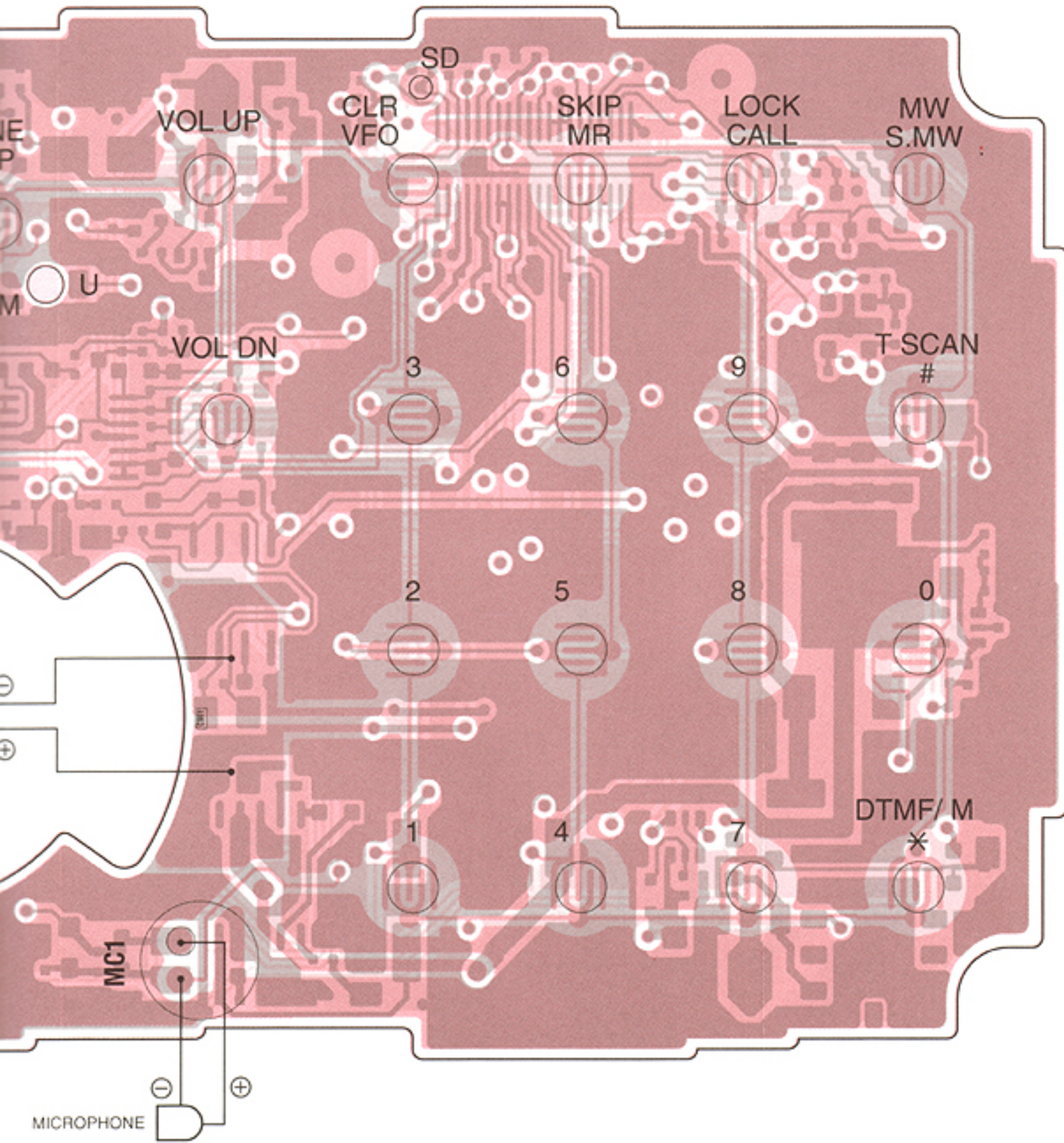
9 - 1 LOGIC UNIT

• TOP VIEW



The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

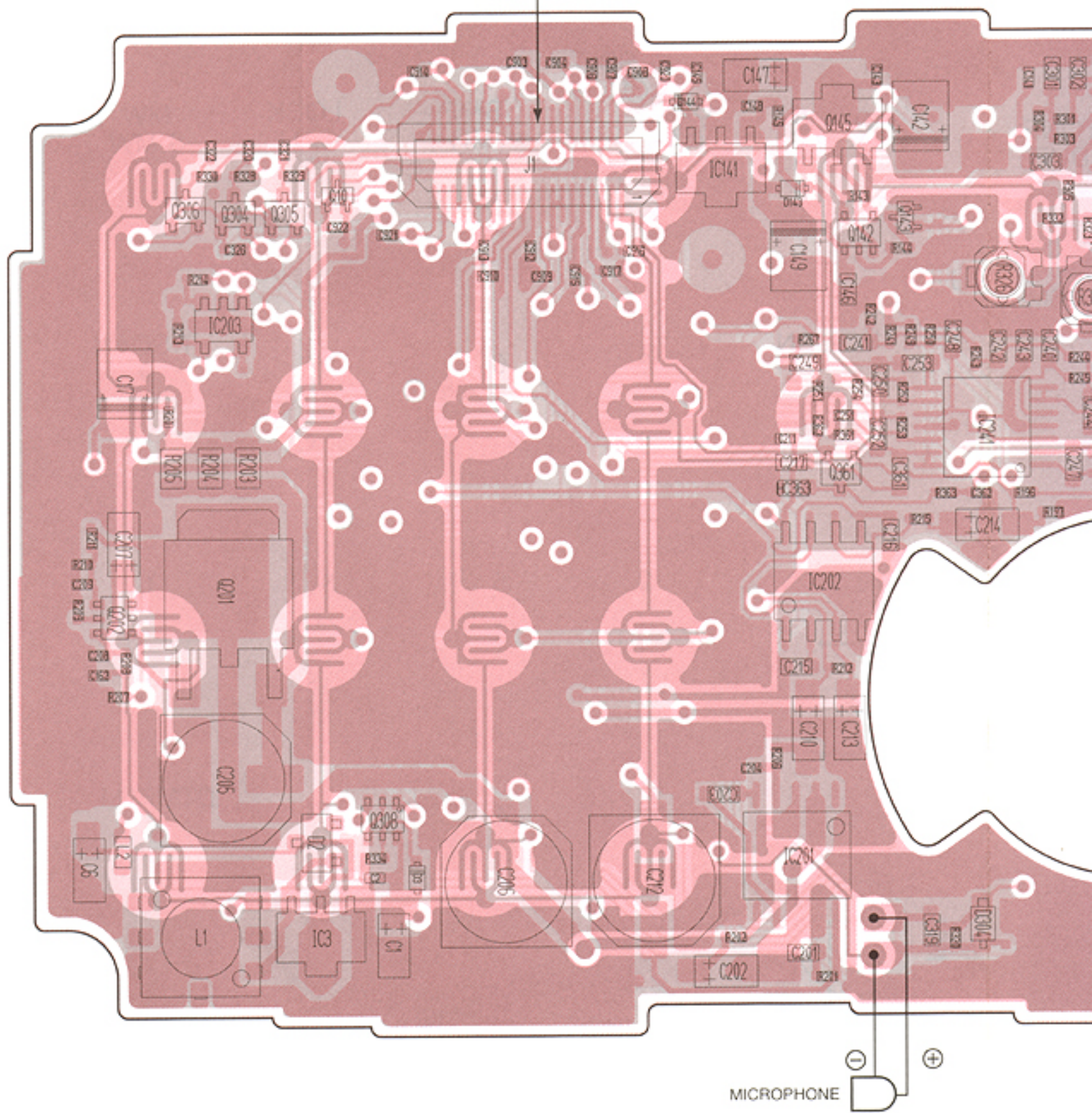
Inside-1 Inside-2 Underside



• BOTTOM VIEW

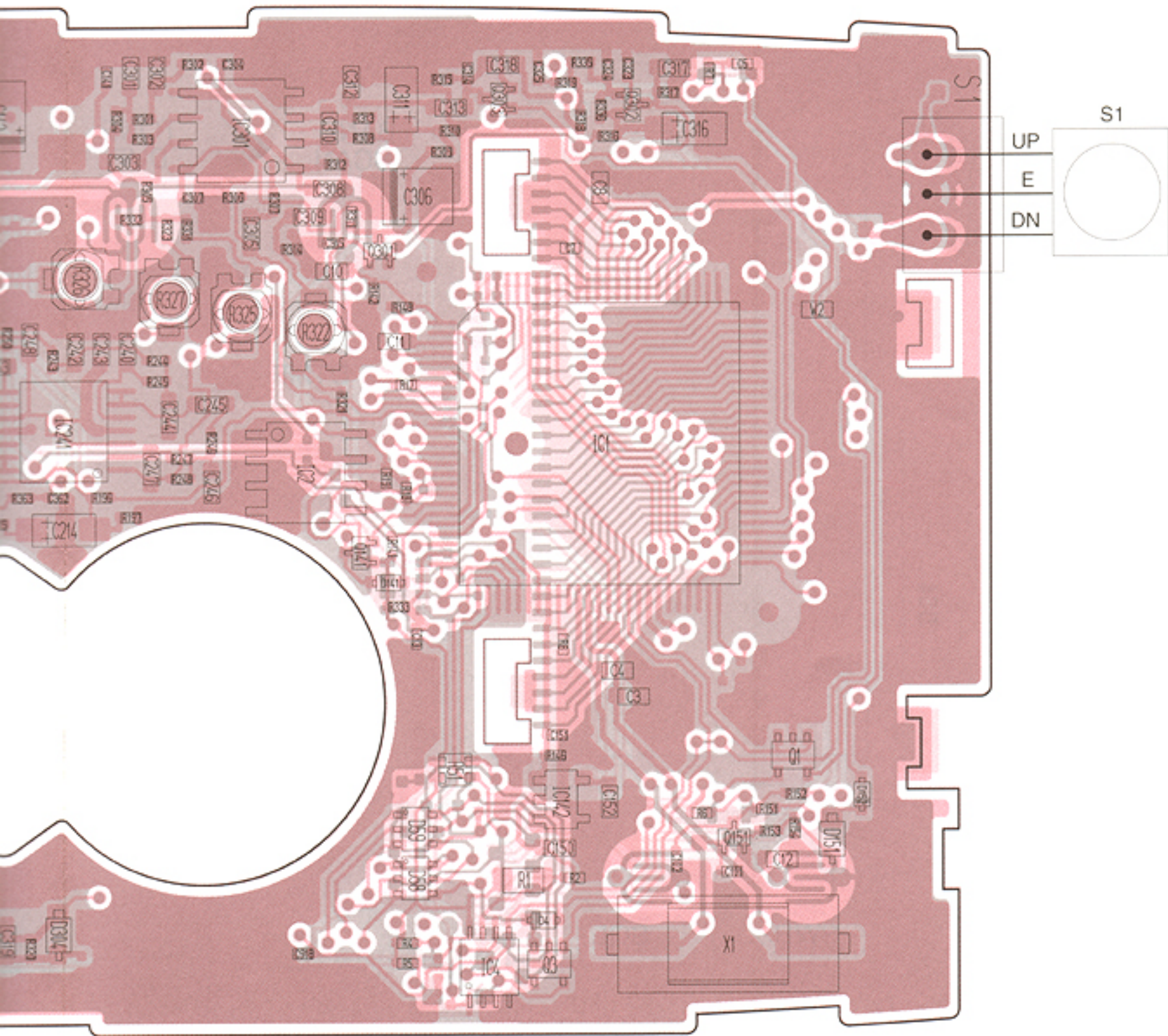
J1		to RF UNIT J4	
21	GND		40
	DC-DC		
	6MVCO		
	CHGC		
	R3C		
	VOL		
	GND		
	MOD		
	GND		
	BDET		
	PDAUL		
	TXC		
	UHF		
	VHF		
	DAST		
	NOISE		
	CK		
	REMOTE		
	INTSP		
	AFO		
	SPE		
	EXTMIC		
	SD		
20	+3C		1

Surface



The combination of this page and the previous page shows the unit layout in the same configuration as the actual P.C. Board.

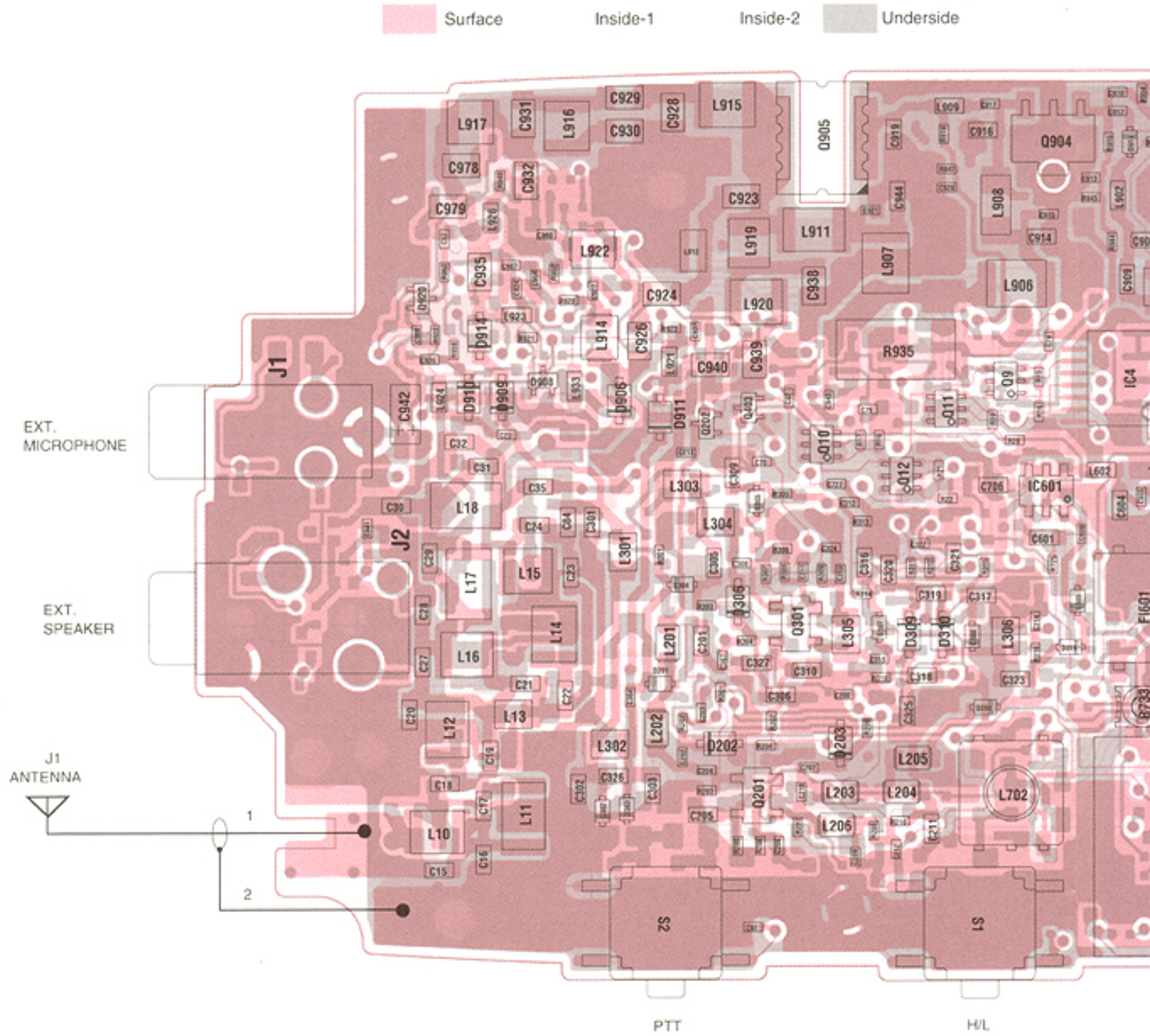
Surface Inside-1 Inside-2 Underside



+

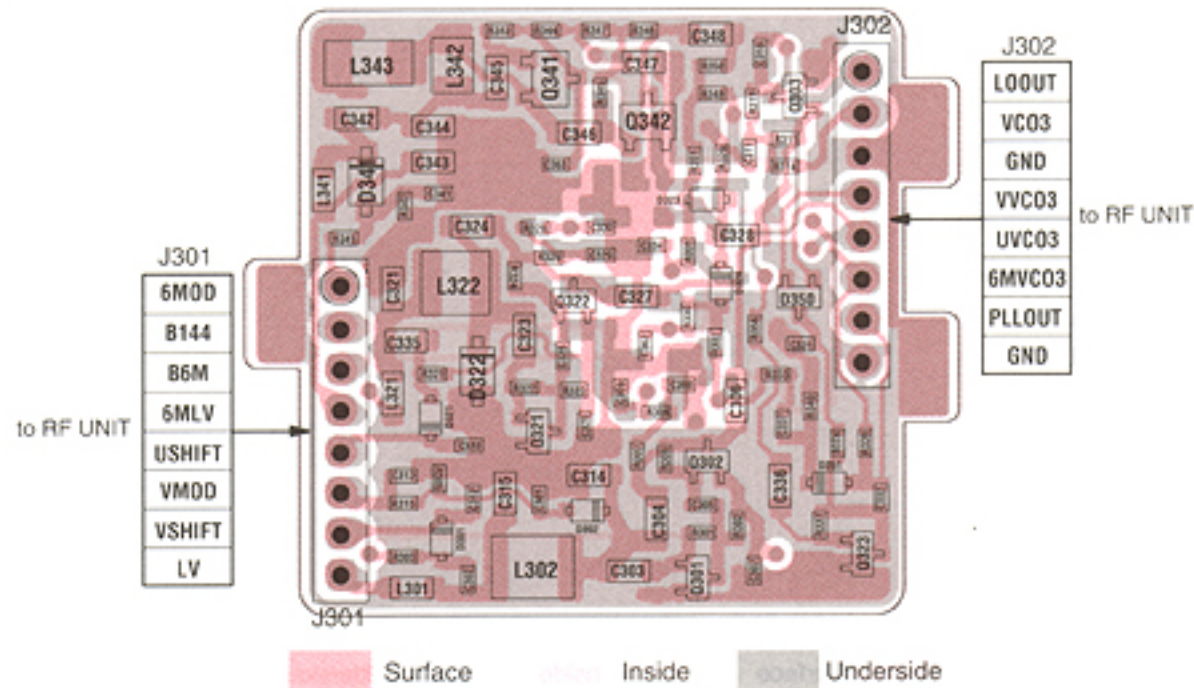
9 - 2 RF UNIT

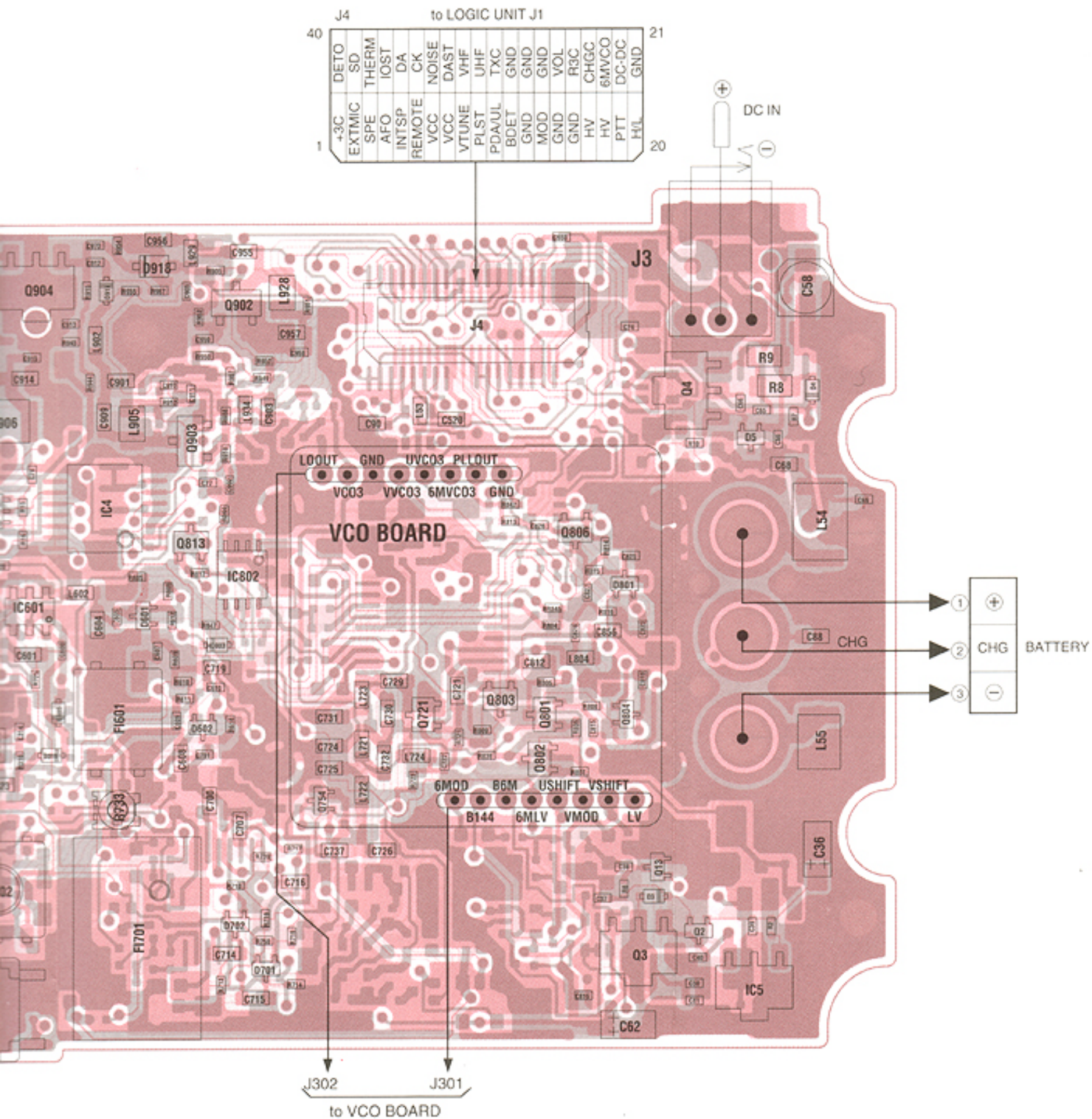
• TOP VIEW



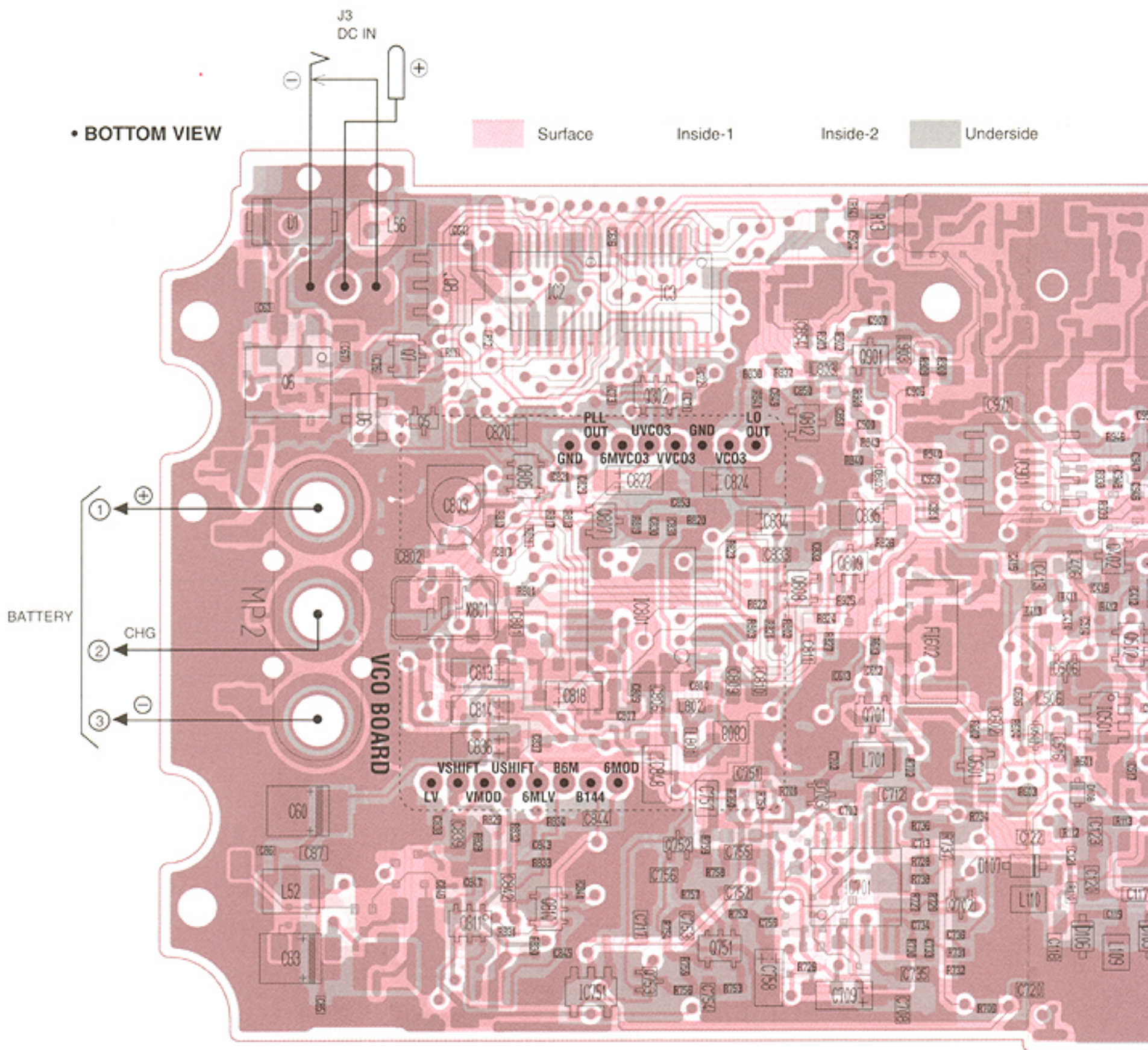
9 - 3 VCO BOARD

• TOP VIEW



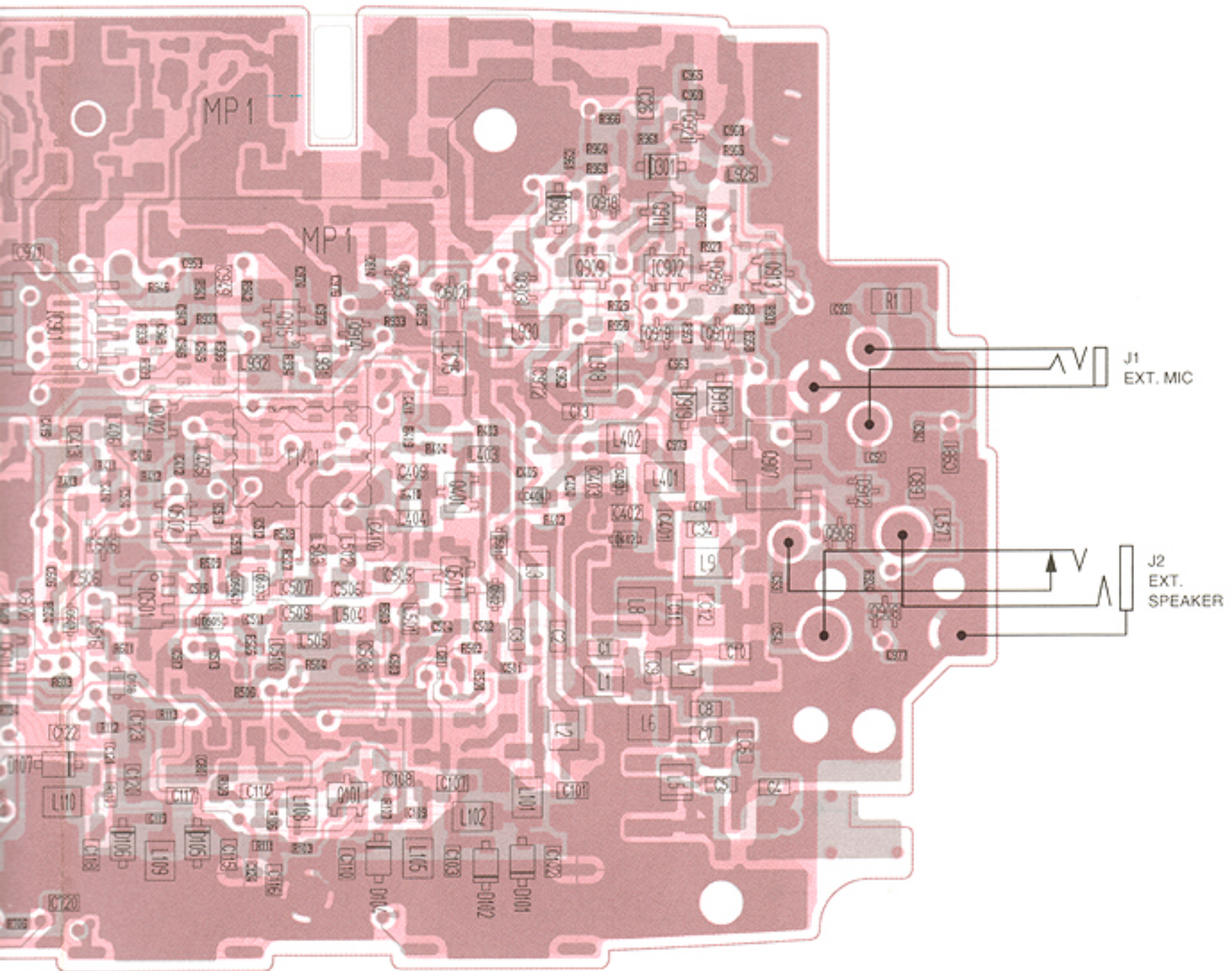


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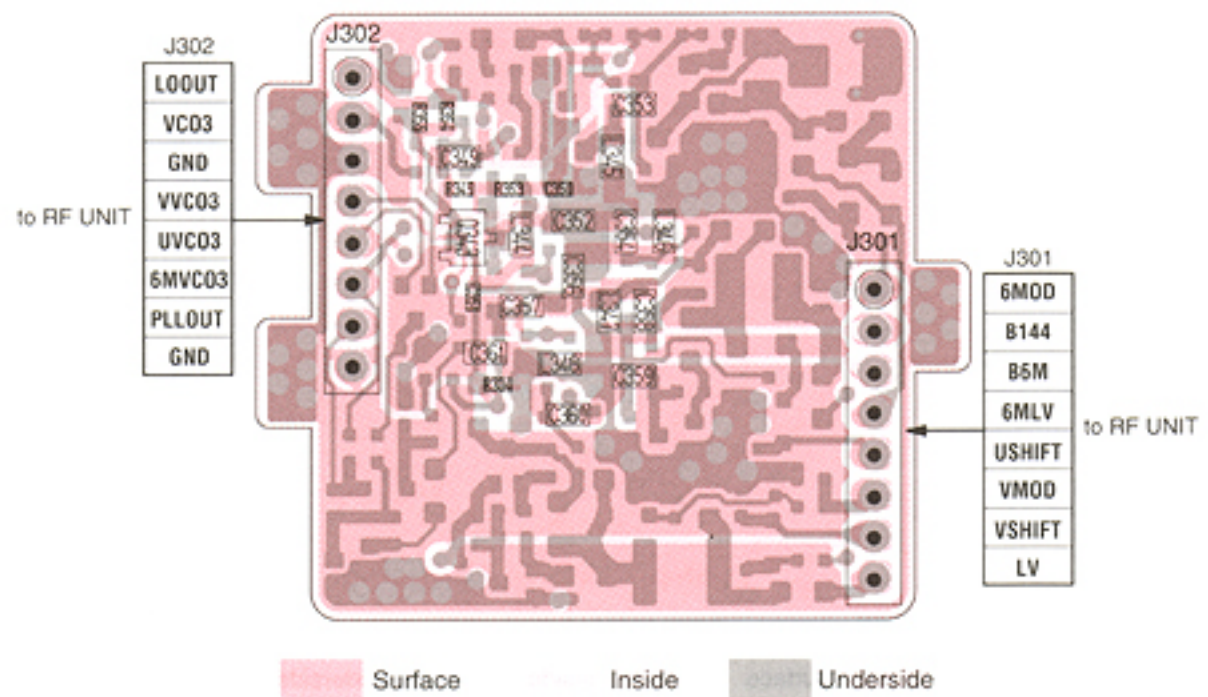


The combination of this page and the previous page shows the unit layout in the same configuration as the actual P.C. Board.

Underside

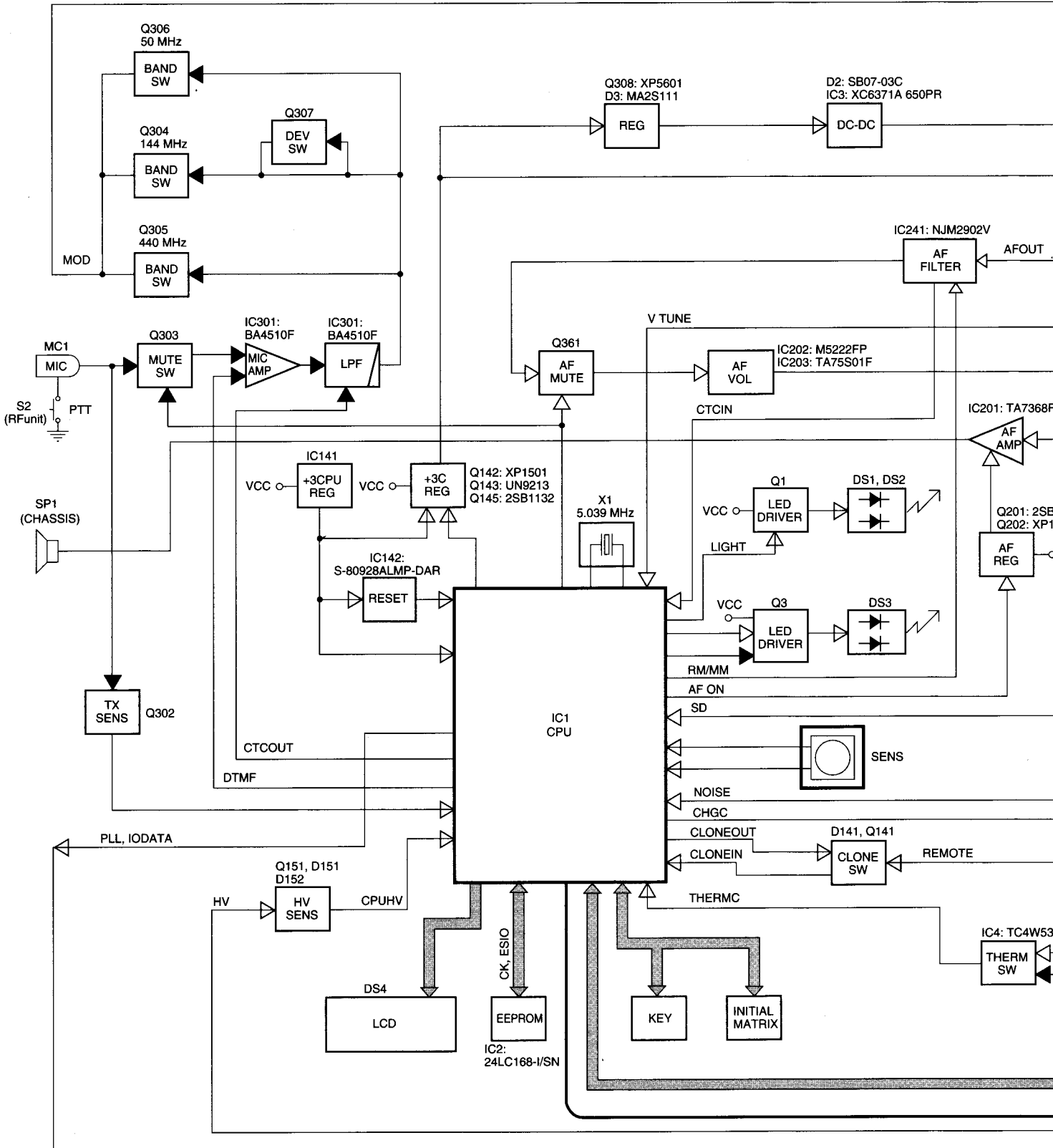


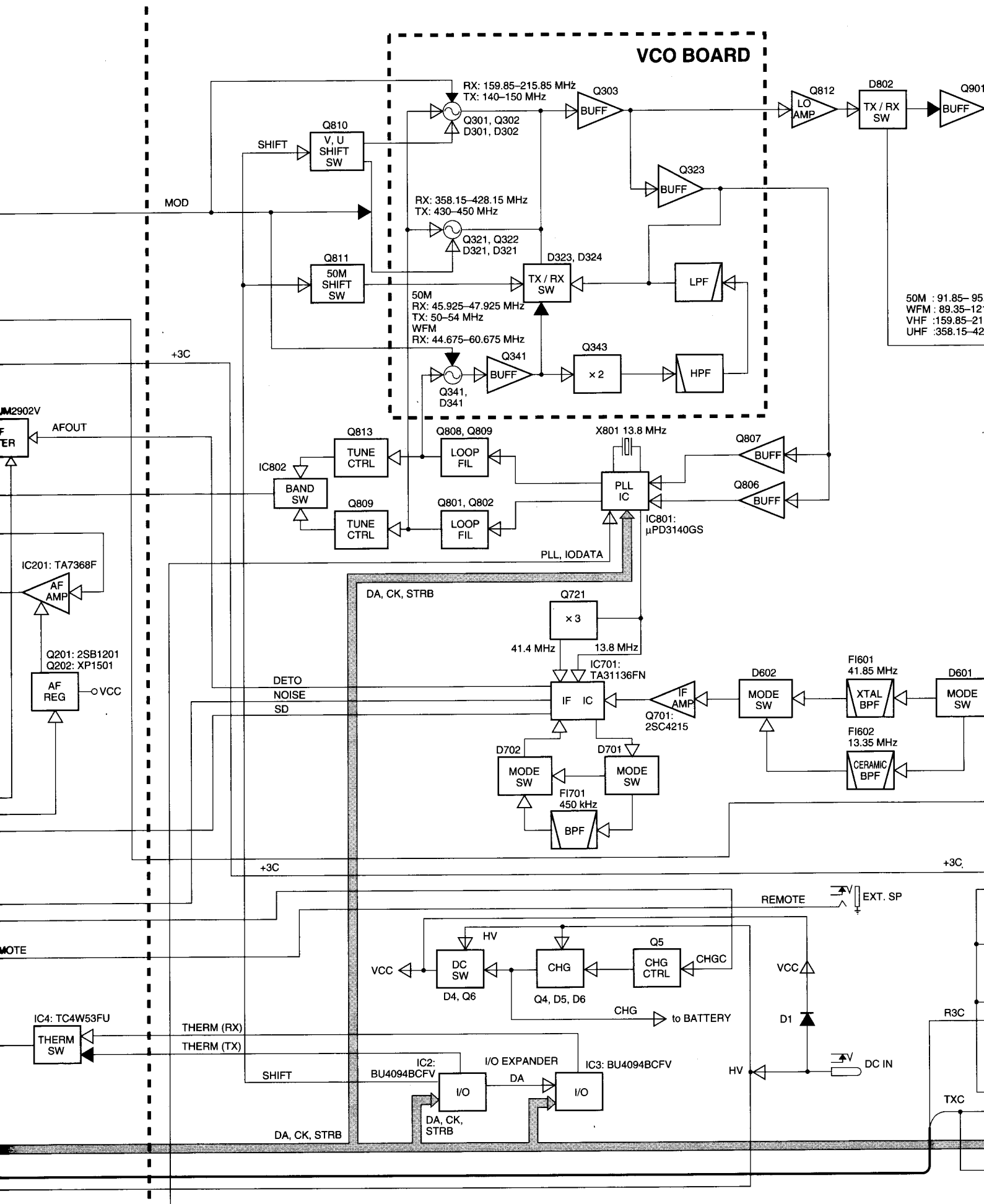
• BOTTOM VIEW

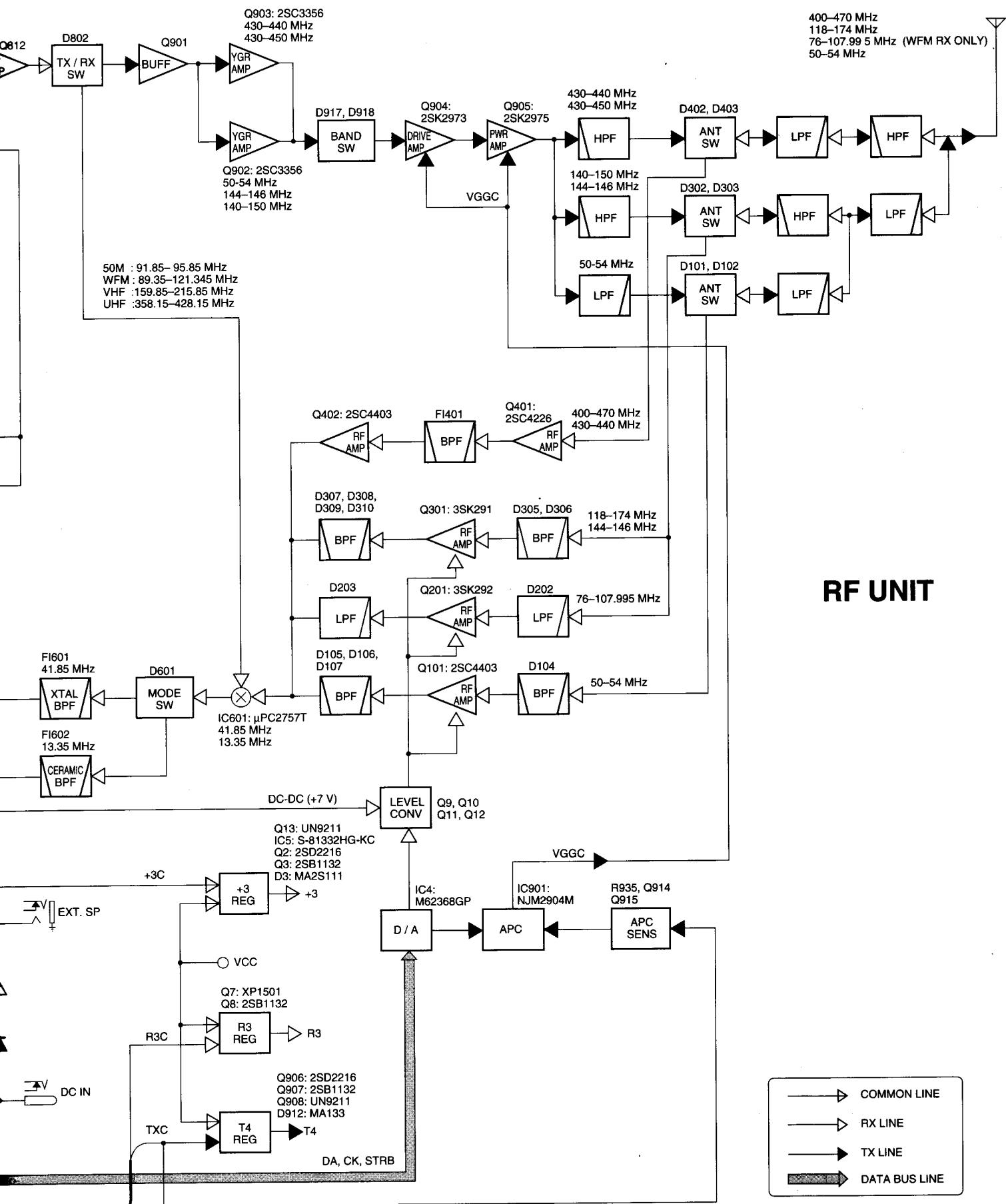


SECTION 10 BLOCK DIAGRAM

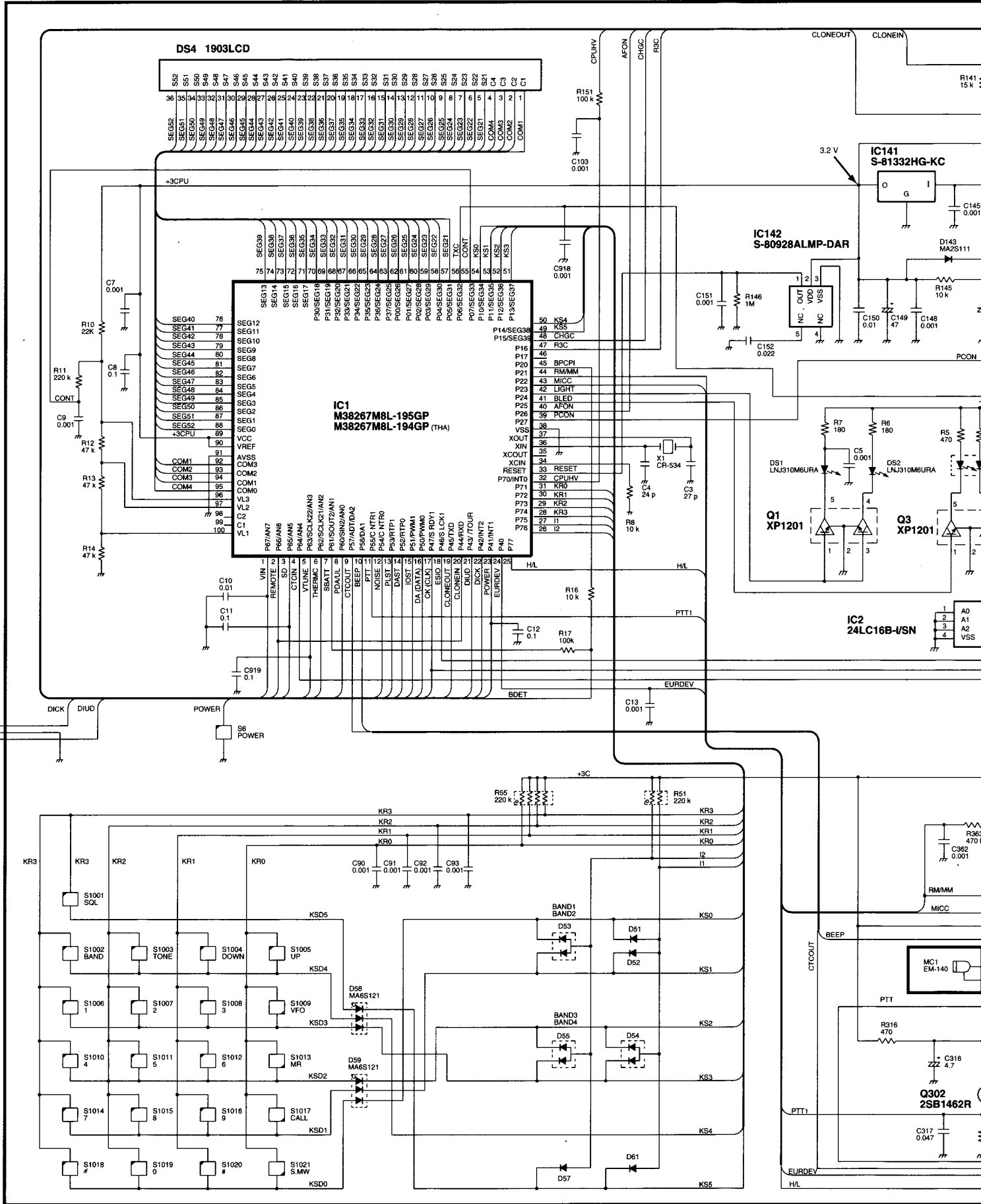
LOGIC UNIT

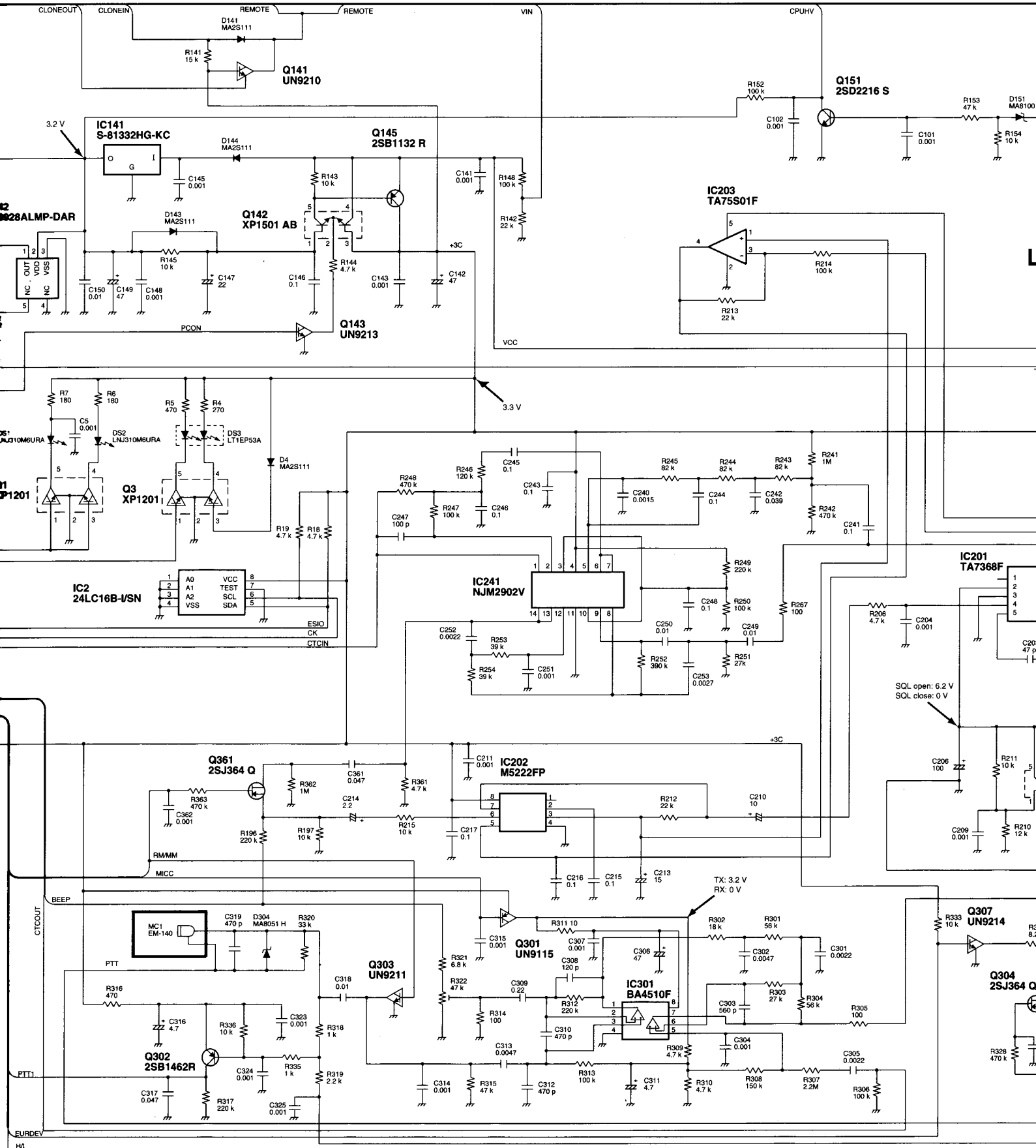


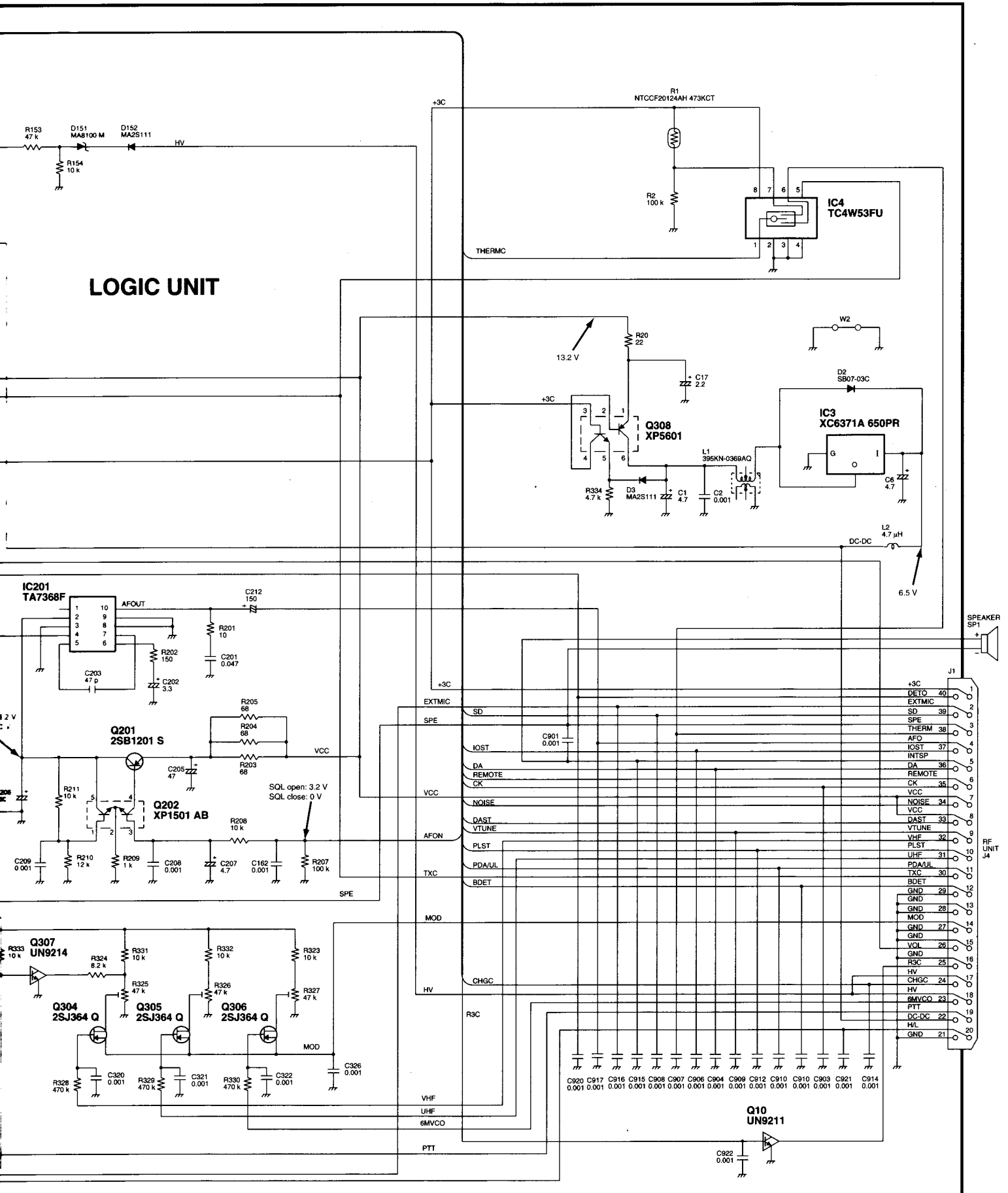




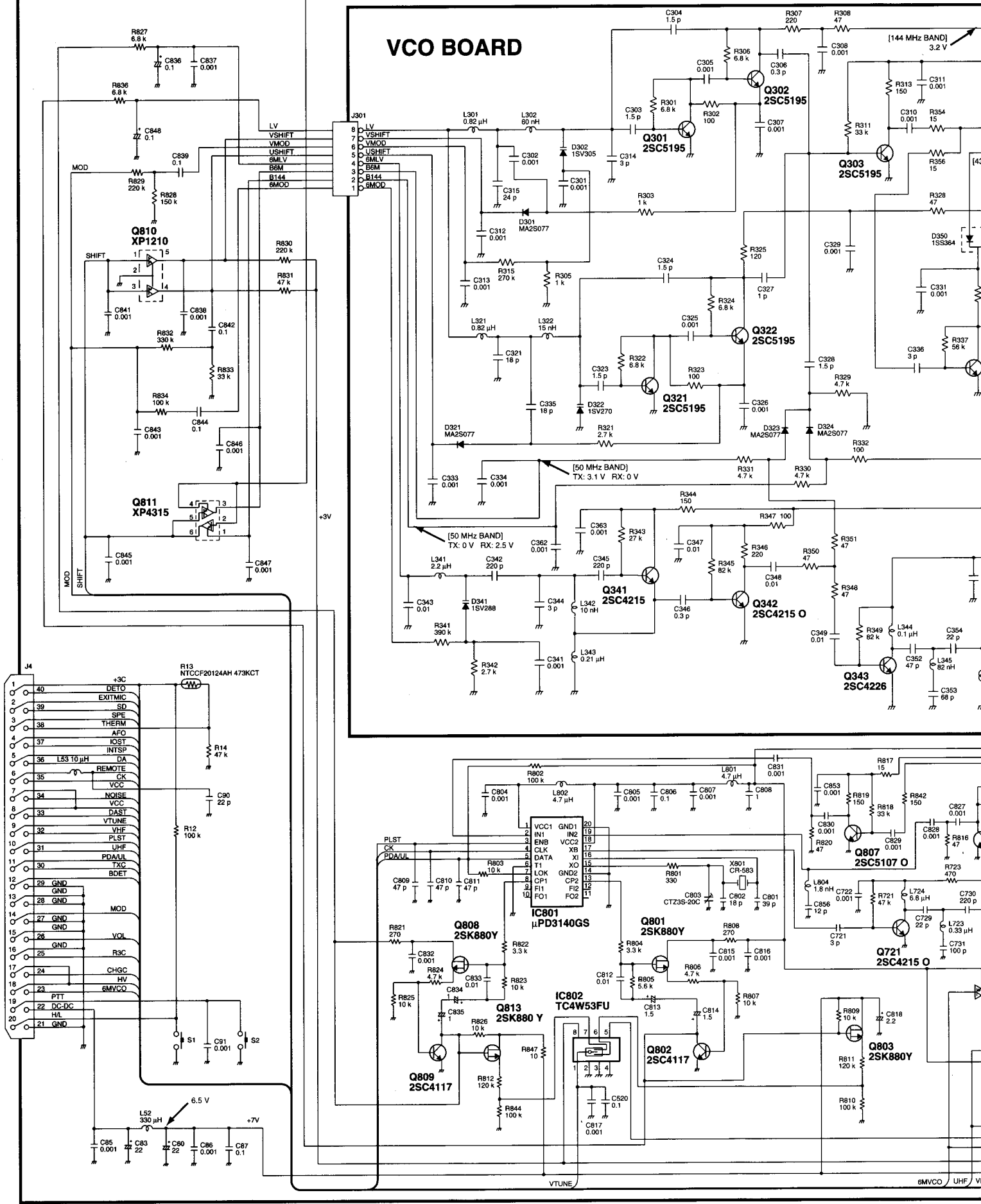
SECTION 11 VOLTAGE DIAGRAM

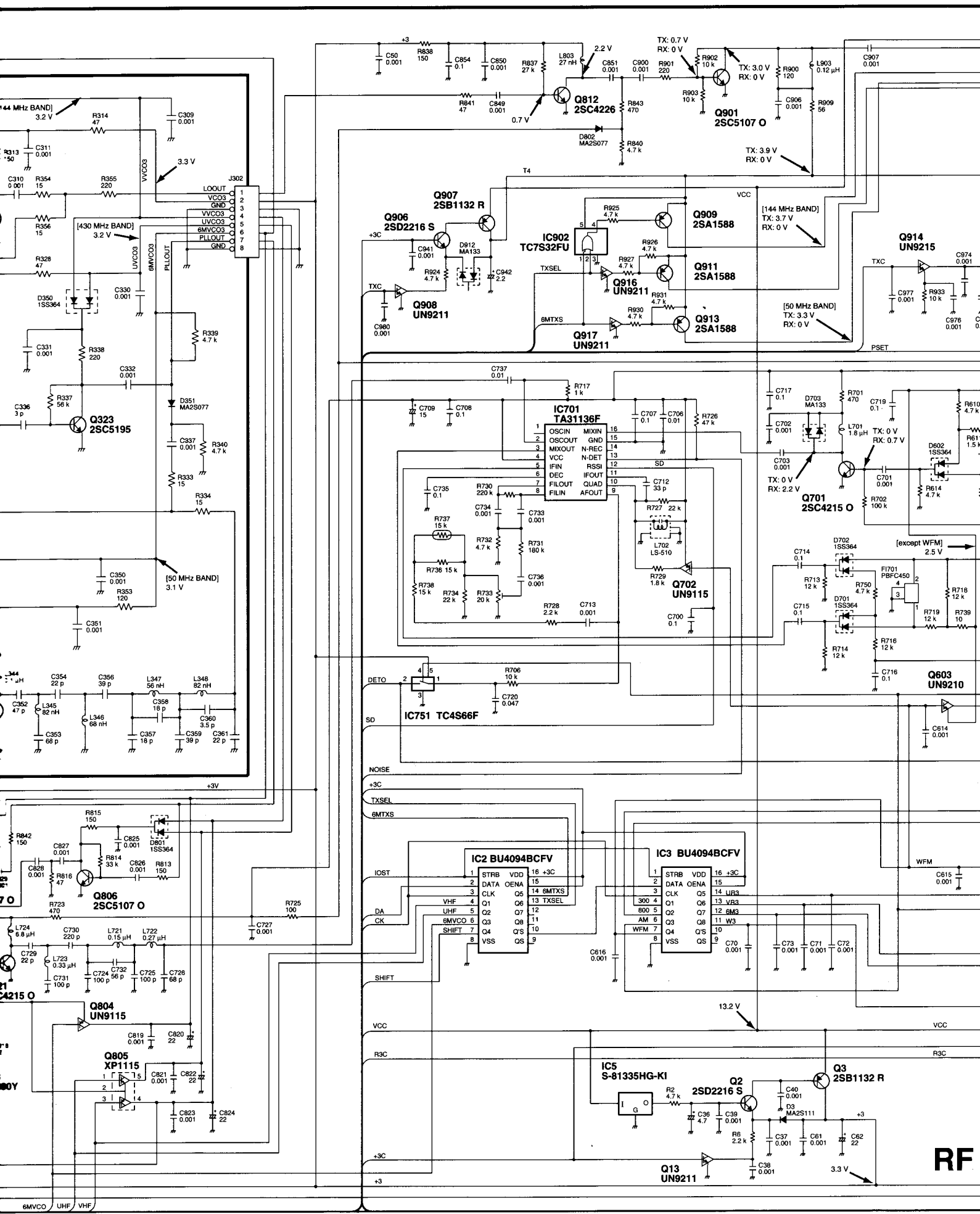




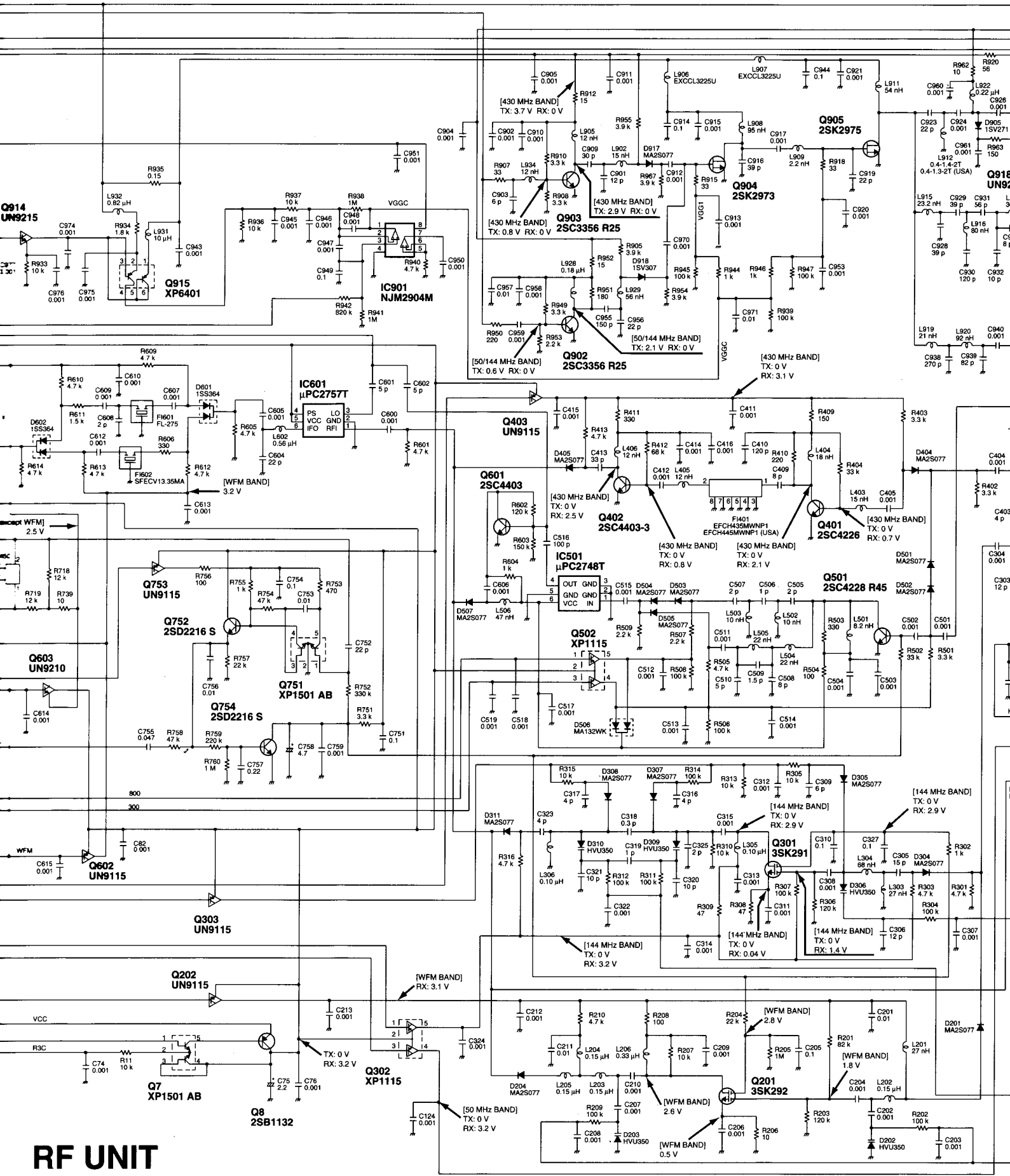


VCO BOARD

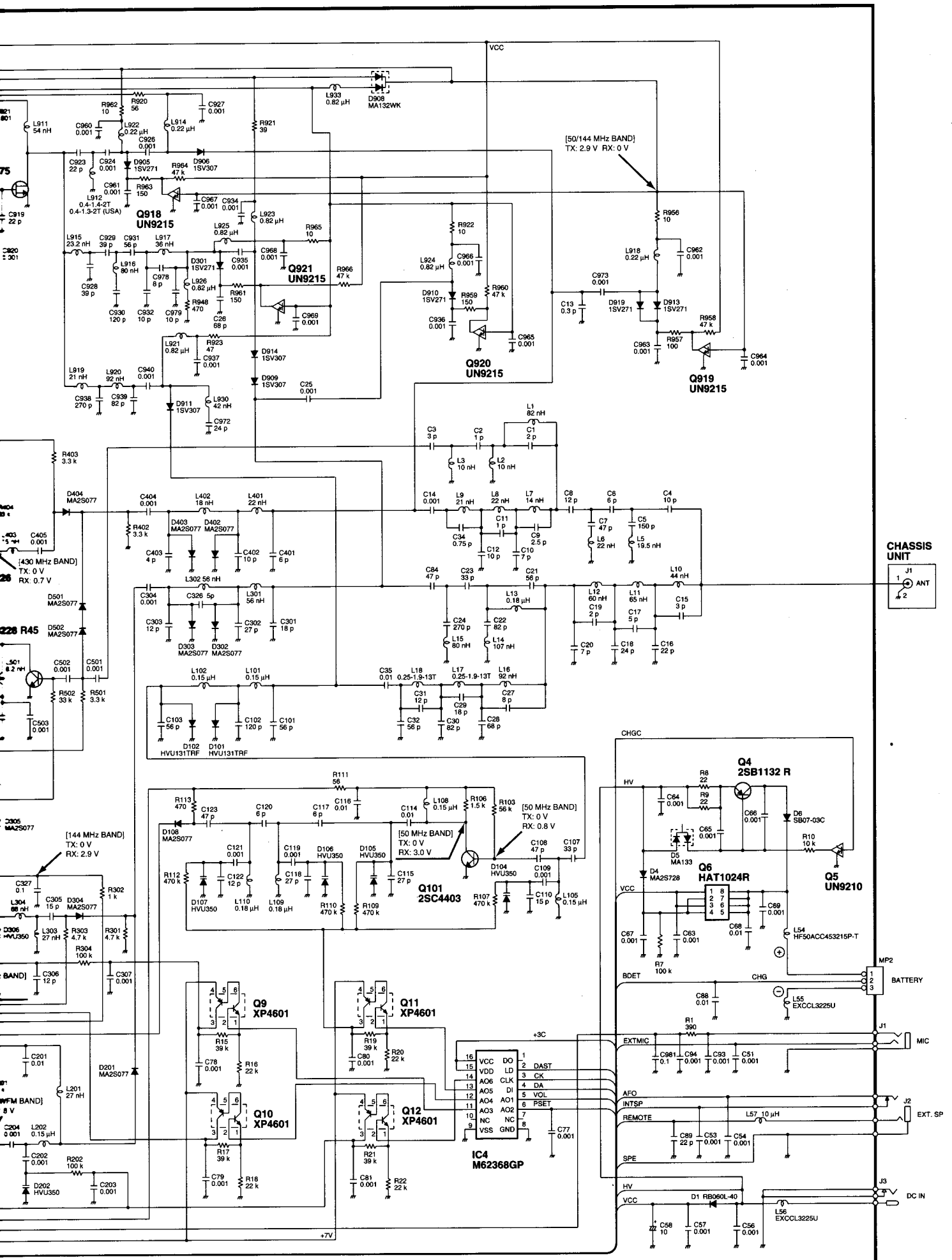




RF



RF UNIT



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