ICOM

SERVICE MANUAL

UHF TRANSCEIVER

IC-F4029SDR

S-14228MZ-C1
Apr. 2006

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **IC-F4029SDR** UHF TRANSCEIVER at the time of publication.

MODEL	VERSION	SYMBOL	Channel Spacing
IC-F4029SDR	EURO	[EUR-02]	6.25 kHz/12.5 kHz
	U.K	[UK-02]	

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

CAUTION

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 8 V. This will ruin the transceiver.

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 Icom parts numbers
2. Component name and informations
3. Equipment model name and unit name
4. Quantity required

<**SAMPLE ORDER**>

1110001811	S.IC TA7368FG	IC-F4029SDR	Main unit	5 pieces
8930068440	2927 Keyboard	IC-F4029SDR	Chassis	10 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 turning 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 to 50 dB attenuator between the transceiver and a deviation meter or spectrum analyzer 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

GENERAL	• Frequency coverage			446.00625–446.09375 MHz (Analog) 446.103125–446.196875 MHz (Digital)
	• Type of emission	Wide		16K0F3E (25.0 kHz)
		Middle		14K0F3E (20.0 kHz)
		Narrow		8K50F3E (12.5 kHz)
		Digital		4K00F1D (6.25 kHz)
	• Number of programable channels			64 channels (4 zones)
	• Antenna impedance			50 Ω (nominal)
	• Operating temperature range			–25˚C to 55˚C
	• Power supply requirement			Specified Icom's battery packs only (Operatable voltage; 7.2 V DC negative ground)
	• Current drain (approx.)	RX	Stand-by	80 mA (Analog), 115 mA (Digital)
			Max. audio	350 mA
		TX	High power	0.5 A
	• Dimensions (projections not included)			53.0 (W) × 195.0 (H) × 32.5 (D) mm
	• Weight (with BP-231, approx.)			280 g
TRANSMITTER	• Transmit output power			0.5 W ERP
	• Modulation			Variable reactance frequency modulation
	• Max. permissible deviation			±2.5 kHz
	• Frequency error			±0.5 kHz
	• Spurious emission			0.25 μW (≤1 GHz), 1.00 μW (>1 GHz)
	• Adjacent channel power			60 dB
	• Audio harmonic distortion			5% typ. (with 1 kHz at AF 60% deviation)
	• Residual modulation (with CCITT filter)			43 dB typ.
	• Limiting charact of modulation			70–100% of max. deviation
	• Microphone impedance			2.2 kΩ
RECEIVER	• Receive system			Double conversion superheterodyne
	• Intermediate frequencies			1st IF; 46.35 MHz, 2nd IF; 450 kHz
	• Sensitivity			26.5 dBμV/m at 20 dB SINAD
	• Squelch sensitivity (at threshold)			26.5 dBμV/m
	• Adjacent channel selectivity			81.29 dBμV/m
	• Spurious response			91.29 dBμV/m
	• Intermodulation			86.29 dBμV/m
	• FM Hum and Noise (without CCITT filter)			43 dB typ.
	• Audio output power			0.5 W typ. at 5% distortion with an 8 Ω load 0.6 W typ. at 5% distortion with a 6 Ω load
	• Audio output impedance			8 Ω

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

Measurements made in accordance with ETS 300 296.

• Channel frequency lists (default setting)

Channel	Zone 1 (Analog mode)		Zone 2 (Analog mode)	
	Frequency (MHz)*1	Tone (Hz)*2	Frequency (MHz)*1	Tone (Hz)*2
1	446.006250	No setting	446.006250	94.8
2	446.018750	No setting	446.093750	88.5
3	446.031250	No setting	446.031250	103.5
4	446.043750	107.2	446.068750	79.7
5	446.056250	110.9	446.043750	118.8
6	446.068750	114.8	446.018750	123.0
7	446.081250	118.8	446.081250	127.3
8	446.093750	123.0	446.056250	85.4
9	446.006250	127.3	446.006250	107.2
10	446.018750	131.8	446.093750	110.9
11	446.031250	136.5	446.031250	114.8
12	446.043750	141.3	446.068750	82.5
13	446.056250	146.2	446.043750	132N
14	446.068750	151.4	446.018750	155N
15	446.081250	156.7	446.056250	134N
16	—	—	446.081250	243N

Channel	Zone 3 (Analog mode)		Zone 4 (Digital mode)	
	Frequency (MHz)*1	Tone (Hz)*2	Frequency (MHz)*1	Common ID*3
1	446.006250	67.0	446.103125	85
2	446.018750	71.9	446.109375	87
3	446.031250	74.4	446.115625	93
4	446.043750	77.0	446.121875	95
5	446.056250	79.7	446.128125	117
6	446.068750	82.5	446.134375	119
7	446.081250	85.4	446.140625	125
8	446.093750	88.5	446.146875	127
9	—	—	446.153125	213
10	—	—	446.159375	215
11	—	—	446.165625	221
12	—	—	446.171875	223
13	—	—	446.178125	245
14	—	—	446.184375	247
15	—	—	446.190625	253
16	—	—	446.196875	254

*1 All operating channel frequencies are fixed. *2 CTCSS tone frequencies can be programmed by manually.

• CTCSS tone frequency list (Hz)

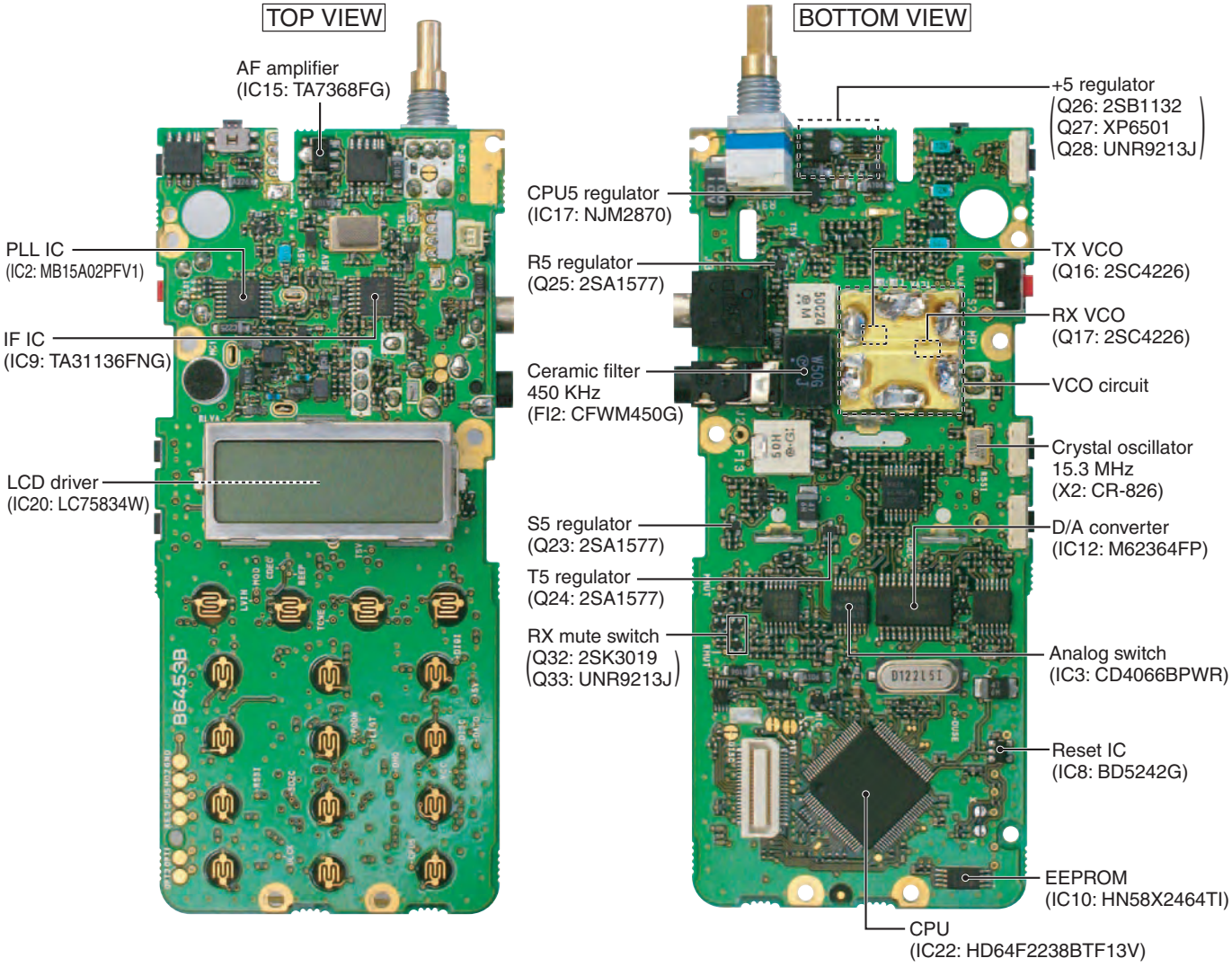
No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.
01	67.0	11	94.8	21	131.8	31	171.3	41	203.5
02	69.3	12	97.4	22	136.5	32	173.8	42	206.5
03	71.9	13	100.0	23	141.3	33	177.3	43	210.7
04	74.4	14	103.5	24	146.2	34	179.9	44	218.1
05	77.0	15	107.2	25	151.4	35	183.5	45	225.7
06	79.7	16	110.9	26	156.7	36	186.2	46	229.1
07	82.5	17	114.8	27	159.8	37	189.9	47	233.6
08	85.4	18	118.8	28	162.2	38	192.8	48	241.8
09	88.5	19	123.0	29	165.5	39	196.6	49	250.3
10	91.5	20	127.3	30	167.9	40	199.5	50	254.1

• DTCS code list

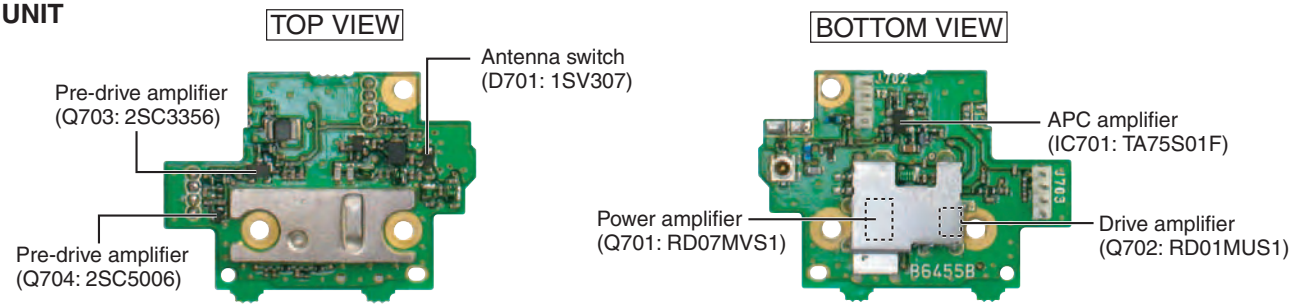
No.	Code	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.
A0	023	B0	065	C0	132	D0	205	E0	271
A1	025	B1	071	C1	134	D1	223	E1	306
A2	026	B2	072	C2	143	D2	226	E2	311
A3	031	B3	073	C3	152	D3	243	E3	315
A4	032	B4	074	C4	155	D4	244	E4	331
A5	036	B5	114	C5	156	D5	245	E5	343
A6	043	B6	115	C6	162	D6	251	E6	346
A7	047	B7	116	C7	165	D7	261	E7	351
A8	051	B8	125	C8	172	D8	263	E8	364
A9	054	B9	131	C9	174	D9	265	E9	365
F0	371	G0	466	H0	627	I0	732		
F1	411	G1	503	H1	631	I1	734		
F2	412	G2	506	H2	632	I2	743		
F3	413	G3	516	H3	654	I3	754		
F4	423	G4	532	H4	662				
F5	431	G5	546	H5	664				
F6	432	G6	565	H6	703				
F7	445	G7	606	H7	712				
F8	464	G8	612	H8	723				
F9	465	G9	624	H9	731				

SECTION 2 INSIDE VIEWS

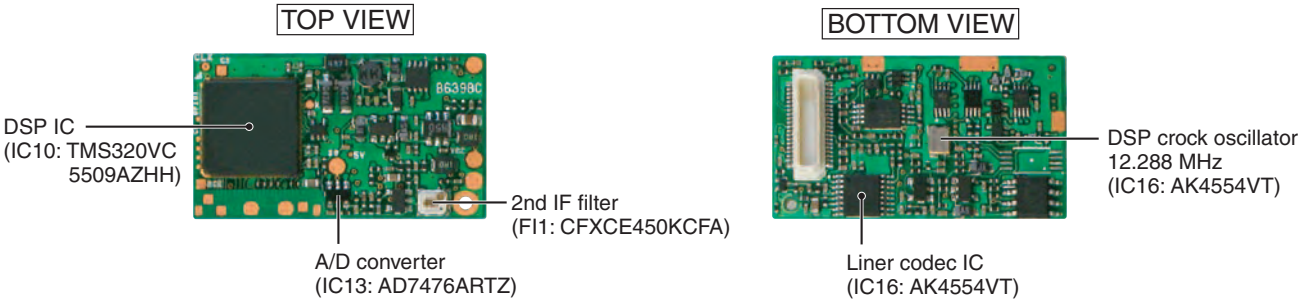
MAIN-C UNIT



PA-C UNIT



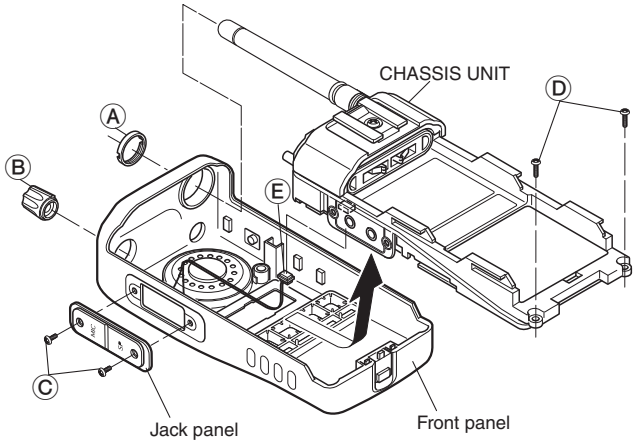
DSP UNIT



SECTION 3 DISASSEMBLY INSTRUCTIONS

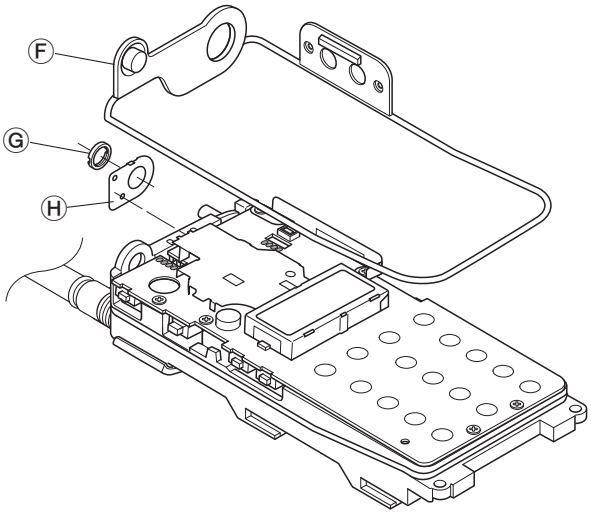
1 REMOVING THE CHASSIS UNIT

① Unscrew ANT nut Ⓐ, and remove knob Ⓑ.
② Unscrew 2 screws Ⓒ, and remove the jack panel.
③ Unscrew 2 screws Ⓓ, and unplug the connector Ⓔ from the chassis unit.
④ Take off the chassis unit in the direction of the arrow from the front panel.



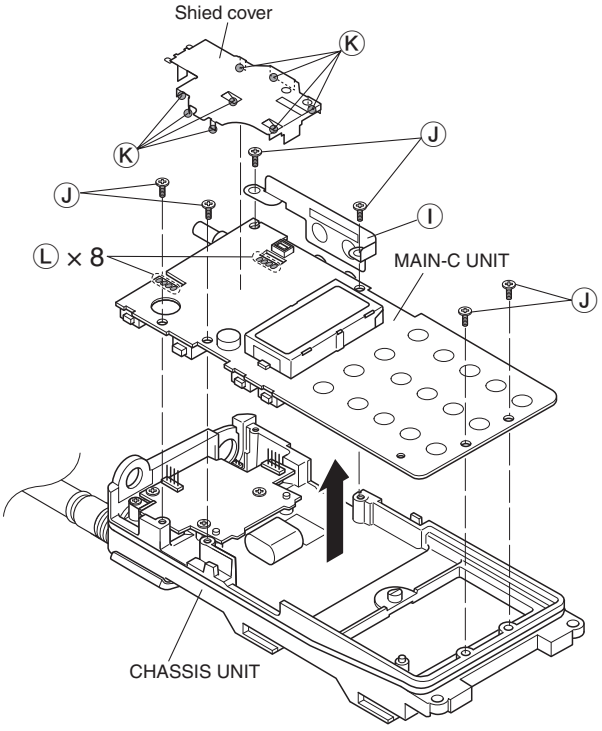
2 REMOVING THE MAIN-C UNIT

① Remove the main seal Ⓕ.
② Unscrew VR nut Ⓖ, and remove the top plate Ⓗ.



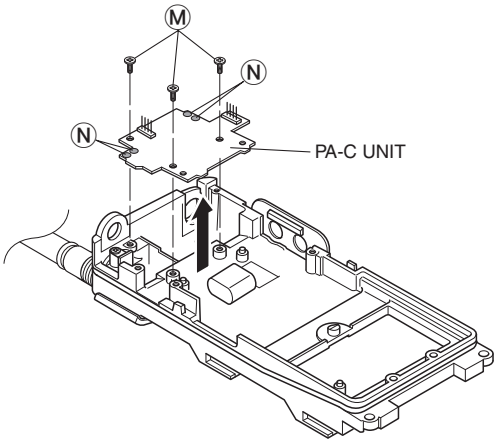
(Continued to right above)

③ Unscrew 6 screws Ⓙ.
④ Remove the side plate Ⓘ.
⑤ Unsolder 8 points Ⓚ, and remove the shield cover.
⑥ Unsolder 8 points Ⓛ, and take off the MAIN-C UNIT in the direction of the arrow.



3 REMOVING THE PA-C UNIT

① Unscrew 3 screws Ⓜ.
② Unsolder 4 points Ⓝ, and take off the PA-C UNIT in the direction of the arrow.



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 ANTENNA SWITCHING CIRCUIT (PA-C UNIT)

The antenna switching circuit toggles the receive (RX) line and transmit (TX) line.

The received signals from the antenna are passed through the low-pass filter (LPF; L709, L710, C742, C744–C748) and antenna switch (D701, D704).

While transmitting, the voltage on the T5V line is applied to D701 and D704, and these are ON. Thus the TX line is connected to the antenna. Simultaneously, the RX line is connected to the GND to prevent transmit signal entering.

While receiving, no voltage is applied to the D701 and D704, and these are OFF. Thus the TX line and the antenna is disconnected to prevent received signals entering. Simultaneously, the RX line is disconnected from the GND and the received signals are passed through the LPF (L712, C750–C752). The filtered signals are applied to the RF circuits.

4-1-2 RF CIRCUITS (MAIN-C UNIT)

RF circuits filter and amplify the received signals within the frequency coverage.

The received signals from the PA-C UNIT are passed though the two-staged bandpass filter (BPF; D19, D25, L7, L8, C21 –C23, C25, C27–C29) to filter-out unwanted signals, and the filtered signals are applied to the RF amplifier (Q5). The amplified received signals are then applied to the 1st mixer (Q6) via another two-staged BPF (D14, D15, L9, L11, C19, C36, C39–C41, C44, C45).

4-1-3 1st IF CIRCUITS (MAIN-C UNIT)

The received signals are converted into the 1st IF signal, filtered and amplified at the 1st IF circuits.

The received signals from the two-staged BPF (D14, D15, L9, L11, C19, C36, C39–C41, C44, C45) are applied to the 1st mixer (Q6) and converted into the 46.35 MHz 1st IF signal by being mixed with the local oscillator (LO) signal from the RX VCO (Q17, D9, D11).

The converted 1st IF signal is passed through the 1st IF filter (FI1) to filter-out adjacent signals, then applied to the 1st IF amplifier (Q7). The amplified 1st IF signal is then applied to the FM IF IC (IC9, pin 16).

4-1-4 2nd IF AND DEMODULATOR CIRCUITS (MAIN-C UNIT)

The 1st IF signal is converted into the 2nd IF signal, and demodulated.

The 1st IF signal from the 1st IF amplifier is applied to the 2nd mixer in the FM IF IC (IC9, pin 16), and converted into the 450 kHz 2nd IF signal by being mixed with the 45.9 MHz 2nd LO signal from the reference frequency oscillator (X2) via the tripler (Q22) and BPF (L33, C163, C164, C166). The converted 2nd IF signal is output from pin 3, and passed through the 2nd IF filters to remove sideband noise.

In analog mode, the 2nd IF signal is passed through the 2nd IF filter (FI2) and applied to the FM IF IC (IC9, pin 5) again via A/D switches (D2, D3).

In digital mode, the 2nd IF signal is passed through two 2nd IF filters (FI2 and FI3) via A/D switches (D2, D3) and applied to the FM IF IC (IC9, pin 5) again.

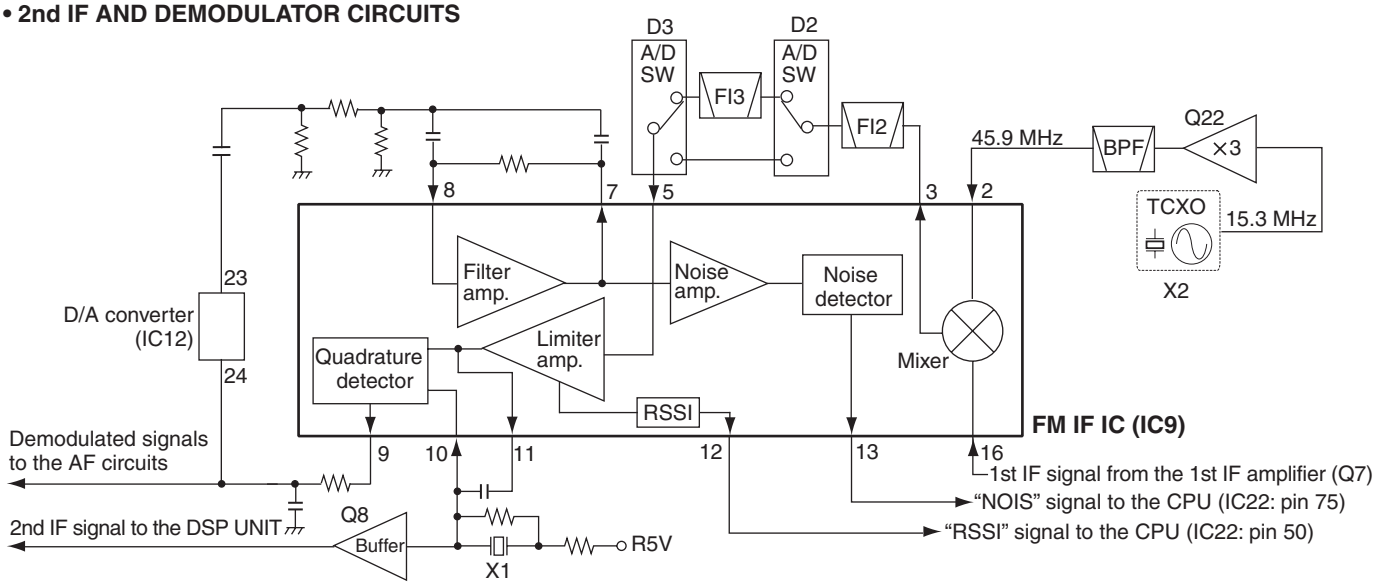
The filtered 2nd IF signal is amplified at the limiter amplifier, and FM-demodulated by the quadrature detector (IC9, pins 10, 11, X1). The demodulated AF signals are output from pin 9, then applied to the AF amplifier circuits.

4-1-5 AF AMPLIFIER CIRCUITS (MAIN-C UNIT)

The demodulated AF signals from the FM IF IC are amplified and filtered at AF circuits.

The demodulated AF signals from the FM IF IC (pin 9) are passed through HPF (IC5, pins 1, 2) to remove tone signals. The filtered AF signals are passed through the de-emphasis circuit (R142, C249) to obtain the –6 dB/oct of frequency characteristic. The de-emphasized AF signals are passed through the RX mute switch (Q32, Q33), AF switch (Q36, Q37), HPF (IC5, pins 13, 14), analog switch (IC3, pins 1, 2), AF mixer (IC5, pins 6, 7) and analog switch (IC3, pins 10, 11) in sequence.

• 2nd IF AND DEMODULATOR CIRCUITS



The AF signal from the analog switch (IC3, pin 11) are applied to the volume buffer amplifier (IC6, pin 9). The buffer-amplified AF signals are adjusted its level (=audio level) by volume control pot (R315), then applied to the AF power amplifier (IC15, pin 4) and amplified to the 0.5 W of audio output power (max., at 8 Ω load).

The power-amplified AF signals are output from pin 10, then applied to the speaker (CHASSIS UNIT; SP1) or an external speaker via [SP] jack (J2).

4-1-6 SQUELCH CIRCUITS

4-1-6-1 NOISE SQUELCH

The squelch mutes the AF output signals when no RF signals are received. By detecting noise components (around 30 kHz signals) in the demodulated AF signals, the squelch circuit toggles the mute switch and AF power amplifier ON and OFF.

A portion of the demodulated AF signals from the FM IF IC (IC9, pin 9) are applied to the D/A converter (IC12, pin 24) for level (=squelch threshold) adjustment. The level-adjusted AF signals are output from pin 23 and passed through the noise filter (IC9, pins 7, 8, R42, R44–R46, C69, C70, C413). The filtered noise signals are amplified the noise components only at the noise amplifier.

The amplified noise components are converted into the pulse-type signal at the noise detector section, and output from pin 13 as the “NOIS” signal. The converted signal is applied to the CPU (IC22, pin 75). Then the “RMUTE” signal from the CPU (IC22, pin 96) to the RX mute switch (Q32, Q33) and analog switch (IC3, pins 12, 13) becomes “Low” according to the “NOIS” signal level to cut off the AF line.

At the same time, the “AFON” signal from the CPU (IC22, pin 70) to the AF amplifier controller (Q41, Q42, D21, D23) becomes “Low”, and the controller turns the AF power amplifier (IC15) OFF.

4-1-6-2 TONE SQUELCH

• CTCSS/DTCS

The tone squelch circuit detects tone signals and opens the squelch only when receiving a signal containing a matched sub audible tone. When the tone squelch is in use, and a signal with a mismatched or no sub audible tone is received, the tone squelch circuit mutes the AF signals even when the noise squelch is open.

A portion of the demodulated AF signals are passed through the active LPF (Q39) to filters CTCSS/DTCS signal. The filtered signal is applied to the CPU (IC22, pin 46). The CPU compares the applied signal and the set CTCSS/DTCS, then the CPU controls the status (“Low” or “High") of “RMUTE” and “AFON” signals as same as “NOISE SQUELCH."

• DTMF

DTMF signals in the demodulated AF signals are passed through the LPF (IC6, pins 5, 7) to remove unwanted components (voice signals), then applied to the CPU (IC22, pin 45) and decoded.

4-2 TRANSMITTER CIRCUITS

4-2-1 MICROPHONE AMPLIFIER CIRCUITS (MAIN-C UNIT)

The AF signals from the microphone (MIC signals) are filtered and level-adjusted at microphone amplifier circuits.

• MIC SIGNALS

MIC signals from the microphone are applied to or bypassed the ALC (Automtic Level Control) circuit (IC24, pins 3, 5) and the A/D switch (IC25, pins 1, 7), then applied to the D/A converter (IC12, pin 1).

In digital mode, the MIC signals are applied to the ALC circuit which keeps the level of MIC signals constant.

The level-adjusted MIC signals are output from pin 2, and passed through the MIC mute switch (Q31), HPF (IC5, pins 13, 14) and gain switch (Q34, Q35) which controls the gain of MIC amplifier (IC5) according to the Analog/Digital mode, then applied to the MIC amplifier (IC5, pin 9). The amplified MIC signals are output from pin 8, and passed through the analog switch (IC3, pins 3, 4), AF mixer (IC5, pins 6, 7) where the MIC signals and tone signals are mixed with.

• TONE SIGNALS

The CTCSS/DTCS signals are generated by the CPU (IC22) and output from pins 19–21. The output signals are passed through the 3 registers (R222–R224) to change its wave form. The wave form changed CTCSS/DTCS signals are passed through the LPF (IC7, pins 8, 10), tone filter switch (Q40) and D/A converter (IC12, pins 11, 12) for level adjustment. The level adjusted CTCSS/DTCS signals are then applied to the AF mixer (IC5, pin 6).

DTMF signals are generated by the CPU (IC22) and output from pin 43. The output DTMF signals are passed through two LPF’s (IC6, pins 1, 3 and pins 12, 14), then applied to the AF mixer (IC5, pin 6).

The mixed AF signals are output from pin 7 of the AF mixer (IC5) and passed through the analog switch (IC3, pins 8, 9), then applied to another AF amplifier (IC7, pin 6). The amplified AF signals are output from pin 7, and applied to the D/A converter (IC12, pin 9) to be adjusted its level (=deviation). The level-adjusted MIC signals are then applied to the modulation circuits as the modulation signals.

4-2-2 MODULATION CIRCUITS

The modulation circuits modulates the VCO oscillating signal using the modulation signals.

The modulation signals from the D/A converter (IC12, pin 10) are applied to the D12 at the TX VCO (Q16, D10, D13) to modulate the VCO oscillating signal by changing the reactance of D12.

The modulation signals are also applied to the reference frequency oscillator (X2) via D/A converter (IC12, pins 15, 16) and the buffer (IC7, pins 12, 14), to ensure the modulation of low frequency components of the modulation signals.

The modulated VCO output is buffer-amplified by Q15 and Q29, then applied to the transmit amplifiers as the transmit signal via TX/RX switch (D16=ON, D17=OFF).

4-2-3 TRANSMIT AMPLIFIERS (PA-C UNIT)

The transmit signal from the VCO is amplified to the transmit output level by the transmit amplifiers.

The transmit signal from the TX/RX switch (D16=ON, D17=OFF) is amplified by two pre-drive amplifiers (Q703, Q704), drive amplifier (Q702) and power amplifier (Q701) in sequence to obtain 0.5 W (aprrox.) of transmit output power.

The power-amplified transmit signal is passed through the antenna switch (D701) and LPF (as a harmonic filter; L709, L710, C742, C744–C748), then applied to the antenna via the ANT UNIT.

4-2-4 APC CIRCUIT (PA-C UNIT)

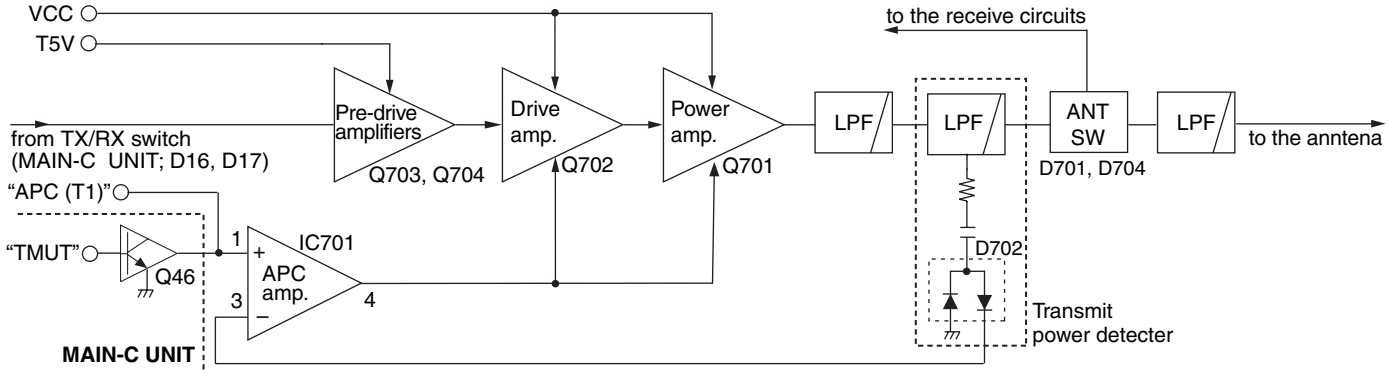
The APC (Automatic Power Control) circuit prevents the transition of the transmit output power level which is caused by load mismatching or heat effect, etc.

A portion of transmit signal is detected by the transmit power detector (D702) to produce a DC voltage corresponding to the transmit output power level. The detected voltage is applied to the APC amplifier (IC701, pin 3). The transmit power setting voltage “APC (T1)” from the D/A converter (MAIN-C UNIT; IC23, pin 1) is applied to another input terminal (pin 1) as the reference voltage.

The APC amplifier compares the detected voltage and reference voltage, and the difference of the voltage “APCV” is output from pin 4. The voltage “APCV” controls the bias of the drive (Q702) and power (Q701) amplifiers to reduce/increase the gain of these amplifiers for stable transmit output power.

The transmit power muting is carried out by the TX mute switch (MAIN-C UNIT; Q46), using the “TMUT” signal from the CPU (IC22, pin 35).

• APC CIRCUIT



4-3 PLL CIRCUITS

4-3-1 VCO

VCO is a oscillator whose oscillating frequency is controlled by adding voltage (lock voltage).

This transceiver has 2 VCO's; RX VCO (Q17, D9, D11) and TX VCO (Q16, D10, D13). The RX VCO oscillates the 1st LO signals, and the TX VCO oscillates the transmit signal.

• RX VCO

The output signals are amplified by the buffer amplifiers (Q15, Q29), and applied to the 1st mixer (Q6) via TX/RX switch (D16 is OFF, D17 is ON) and LPF (L12, L46, C46, C47, C396, C397), to be mixed with the received signals to produce the 46.35 MHz 1st IF signal.

• TX VCO

The output signal is applied to the transmit amplifiers via the buffer amplifiers (Q15, Q29) and TX/RX switch (D16 is ON, D17 is OFF).

A portion of each VCO output is applied to the PLL IC (IC2, pin 8) via the buffer amplifier (Q15), doubler (Q14) and the BPF (L32, L34, C196, C197, C205).

4-3-2 PLL IC

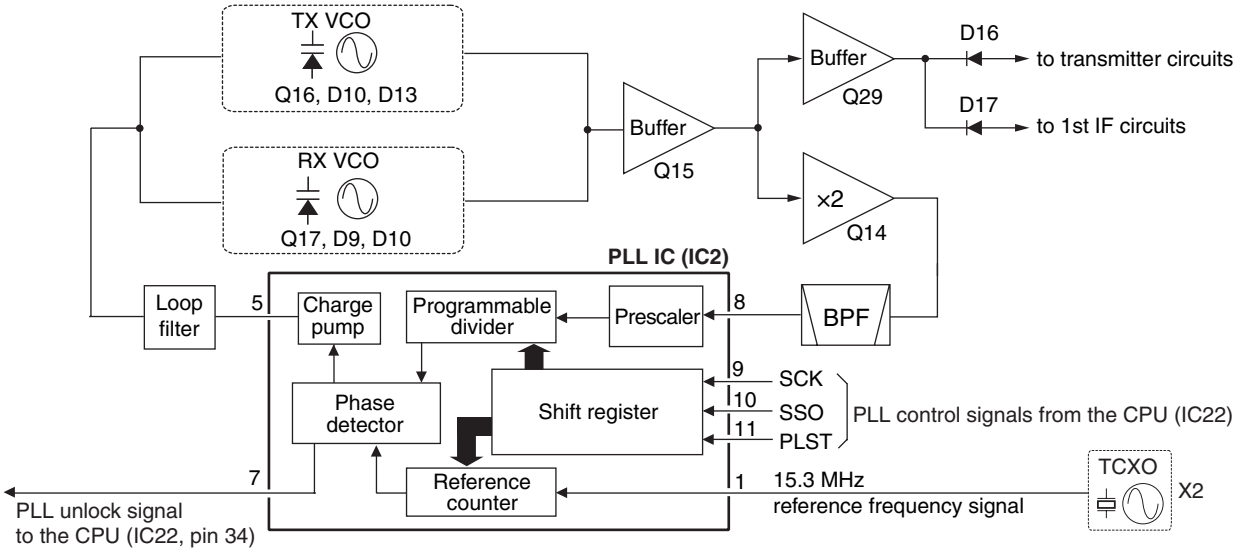
The PLL circuit provides stable oscillation of the transmit frequency and receive 1st LO frequency. The PLL output frequency is controlled by the divided ratio (N-data) from the CPU.

The VCO output signals from the BPF (L32, L34, C196, C197, C205) are applied to the PLL IC (IC2, pin 8). The applied signals are divided at the prescaler and programmable counter according to the "SSO" signal from the CPU (IC22, pin 99). The divided signal is phase-compared with the reference frequency signal from the reference frequency oscillator (X2), at the phase detector.

The phase difference is output from pin 5 as a pulse type signal after being passed through the internal charge pump. The output signal is converted into the DC voltage (lock voltage) by passing through the loop filter (R94–R96, C16, C17, C146). The lock voltage is applied to the varactors (D9 and D11 of RX VCO, D10 and D13 of TX VCO) and locked to keep the VCO frequency constant.

If the oscillated signal drifts, its phase changes from that of the reference frequency, causing a lock voltage change to compensate for the drift in the VCO oscillating frequency.

• PLL CIRCUIT



4-4 DIGITAL CIRCUITS (DSP UNIT)

4-4-1 RECEIVING

The 450 kHz 2nd IF signal from the IF IC (MAIN-C UNIT; IC9, pin 11) is applied to the DSP unit via the buffer (MAIN-C UNIT; Q8). The applied 2nd IF signal is passed through the anti-aliasing filter (FI1) to remove unwanted components. The filtered 2nd IF signal is amplified at the IF amplifier (IC7, pins 1, 3), and applied to the A/D converter (IC13, pin 3) and converted into the digital IF data. The converted digital IF data is applied to the DSP IC (IC10) as a clock synchronizer digital signal.

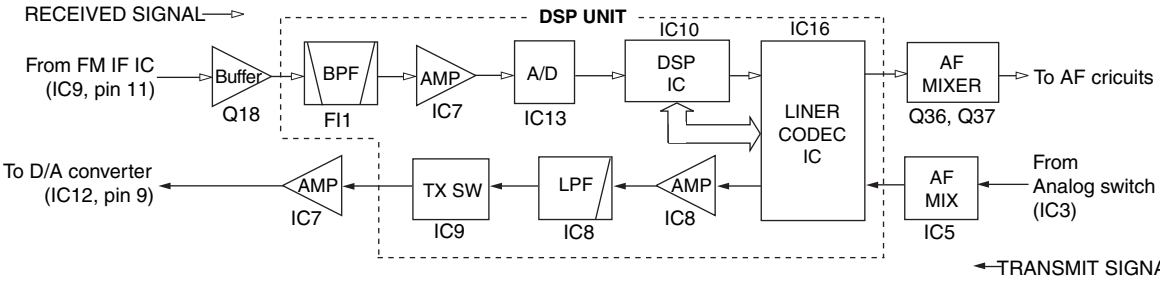
The digital-processed digital audio signal from the DSP IC (IC10) is applied to the linear codec (IC16) and converted into the analog audio signals, then applied to the AF mixer (MAIN-C UNIT; Q36, Q37).

4-4-2 TRANSMITTING

The MIC signals from the AF mixer (MAIN-C UNIT; IC5, pin 7) are applied to the linear codec (IC16, pin 2) and converted into the digital audio data. The converted digital audio data is applied to the DSP IC (IC10).

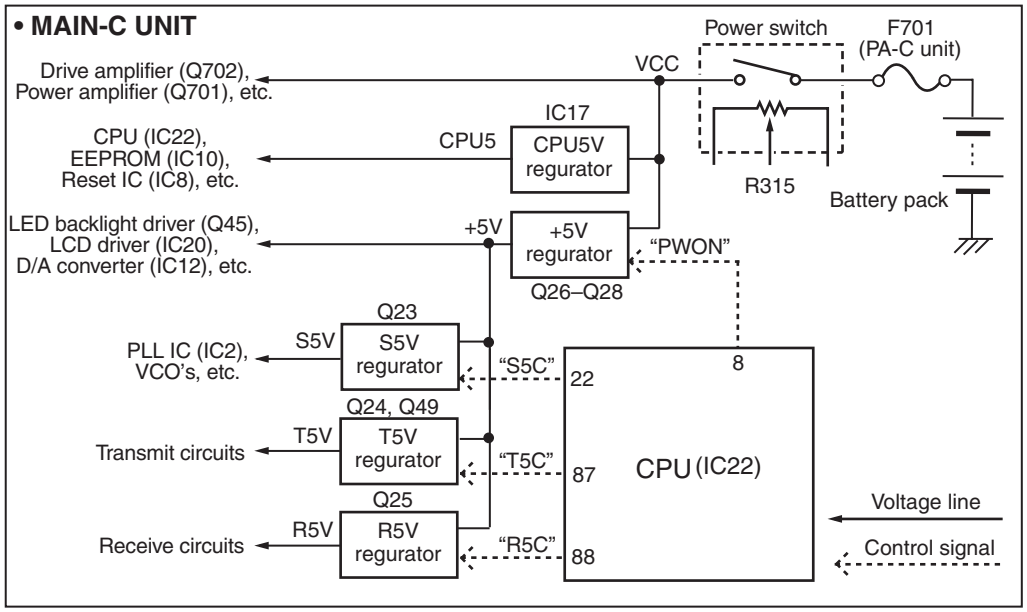
The processed digital audio signal from the DSP IC (IC10) is applied to the linear codec (IC16) again, then converted into the GMSK base band signal. The converted base band signal is passed through the two-staged LPF (IC8, pins 6, 7 and pins 1, 3) and TX switch (IC9, pins 1, 2), then applied to the D/A converter (MAIN-C UNIT; IC12, pin 9) via the buffer amplifier (MAIN-C UNIT; IC7, pins 6, 7).

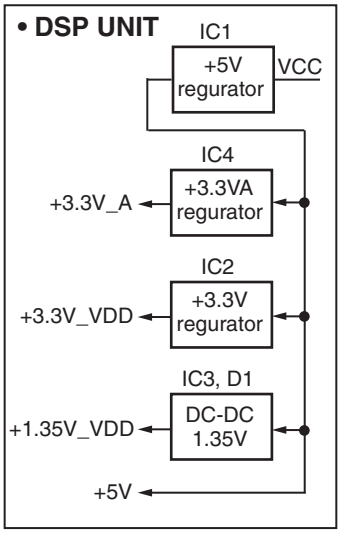
• DIGITAL CIRCUITS BLOCK DIAGRAM



4-5 POWER SUPPLY CIRCUITS

Voltage from the attached battery pack is routed to whole of the circuit in the transceiver via a switch and regulators.





4-6 PORT ALLOCATIONS

4-6-1 CPU (IC22)

Pin No.	Port Name	Description
1–3	KR1–KR3	Input ports for dealer-programmable keys.
4–8	KS0–KS4	Output ports for dealer-programmable keys.
9	BUSY	Outputs “BUSY” signal to the DSP UNIT.
10	CCS	Outputs chip-select signal to the DSP UNIT.
11	SCK	Outputs serial clock signal to the PLL IC (IC2, pin 9) and D/A converter (IC12, pin 7/IC23, pin 7).
19–21	CENC0–CENC2	Output ports for CTCSS/DTCS signal.
22	S5C	Outputs S5V line control signal to the S5V regurator (Q23). “Low”=While power save mode.
26	T5C	Outputs T5V line control signal to the T5V line regurator (Q24, Q49). “Low”=While transmitting.
27	R5C	Outputs R5V line control signal to the R5V line regurator (Q25). “Low”=While receiving.
31	PLST	Outputs PLL strobe signal to the PLL IC (IC2, pin 11).
34	ULCK	Input port for PLL unlock detect signal from the PLL IC (IC2, pin 7). “Low”=While the PLL circuit is unlocked.
35	TMUT	Outputs transmit mute signal to the transmit mute switch (Q46). “High”=Transmitting is muted.
36	MONI	Input port for [SIDE1] key (S5). “Low”=While the key is pushed.
37	EMER	Input port for top switch (S1). “Low”=While the switch is pushed.
39	DSDA	Outputs serial data to the D/A converter (IC23, pin 6).
43	SENC	Outputs DTMF signals to the LPF (IC6, pin 3).
44	BEEP	Outputs beep sounds to the D/A converter (IC12, pin 21).
45	SDEC	Input port for DTMF signals.
46	CDEC	Input port for CTCSS/DTCS signals.
48	BATV	Input port for remaining battery power.
49	LVIN	Input port for VCO lock voltage.
50	RSSI	Input port for receive signal strength level signal from the FM IF IC (IC9, pin 12).
59	RES	Input port for CPU reset signal from the reset IC (IC8, pin 1). “Low”=When the CPU is reset.
69	CSFT	Outputs CPU clock shift signal to the clock shift switch (D6).
70	AFON	Outputs AF power amplifier (IC15) control signal to the AF power amplifier controller (Q41, Q42, D21, D23). “High”=The AF power amplifier is ON.
71	DAST	Outputs strobe signal to the D/A converter (IC12, pin 6).
72	DUSE	Outputs CTCSS/DTCS select signal to the tone filter switch (Q40). “High”=While DTCS is in use.
75	NOIS	Input port for noise signal from the FM IF IC (IC9, pin 13).
82	ESDA	Outputs serial data to the EEPROM (IC10, pin 5).
85	ESCL	Outputs clock signal to the EEPROM (IC10, pin 6).
89	DIGI	Outputs Analog/Digital select signal to the A/D switch (D2, D3). “High”=Digital mode is selected.
91	LSO	Outputs serial data to the LCD driver (IC20, pin 48).
92	LSCK	Outputs clock signal to the LCD driver (IC20, pin 47).
93	LCS	Outputs chip-enable signal to the LCD driver (IC20, pin 46).
94	LINH	Outputs display inhibit signal to the LCD driver (IC20, pin 45).
95	LIGT	Outputs LCD backlight control signal to the backlight LED’s (DS1, DS2) driver (Q45). “Low”=While the backlight is ON.
96	RMUTE	Outputs AF mute signal to the analog switch (IC3, pins 12, 13). “Low”=While the squelch is close or transmitting.
97	MMUTE	Outputs MIC signals mute signal to the analog switch (IC3, pin 5) and MIC mute switch (Q31). “Low”=While receiving.
99	SSO	Outputs serial data to the PLL IC (IC2, 10) and D/A converter (IC12, pin 8).
100	KR0	Input ports for dealer-programmable keys.

4-6-2 D/A CONVERTER (IC12)

Pin No.	Port Name	Description
2	MCGO	Outputs level-adjusted MIC signals to the MIC mute switch (Q31).
10, 16	MOD	Outputs modulation signal to the modulation circuits (D2).
14	REF	Outputs reference frequency control voltage to the reference frequency oscillator buffer (IC7, pin 13).
15	BAL	Outputs modulation balance control signal to the reference frequency oscillator buffer (IC7, pin 12).
22	BEEPO	Outputs beep sounds to the AF volume buffer (IC6, pin 9).
23	SQLC	Outputs level-adjusted AF signals to the noise filter (IC9, pins 7, 8, R42, R44–R46, C69, C70, C413).

4-6-3 D/A CONVERTER (IC23)

Pin No.	Port Name	Description
1	T1	• **While receiving** Outputs BPF tuning voltage to the tunable BPF (D19, D25, L7, L8, C21–C23, C25, C27–C29). • **While transmitting (as “APC” signal)** Outputs transmit mute signal to the transmit mute switch (Q46).
2	T2	Outputs BPF tuning voltage to the tunable BPF (D14, D15, L9, L11, C19, C36, C39–C41, C44, C45).
3	TXLVA	Outputs oscillating frequency adjust voltage to the TX VCO (Q16, D10, D13).
4	RXLVA	Outputs oscillating frequency adjust voltage to the RX VCO (Q17, D9, D11).

SECTION 5 ADJUSTMENT PROCEDURES

5-1 PREPARATION

When adjusting IC-F4029SDR, CS-F4029DR CLONING SOFTWARE, CS-F4029 ADJ ADJUSTMENT SOFTWARE (Rev. 1.0 or later), OPC-478/U JIG CABLE (modified OPC-478/U CLONING CABLE; see the page 5-2) and the following test equipments are required.

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 7.2 V DC Current capacity : More than 1 A	External speaker	Input impedance : 8 Ω Capacity : 1 W or more
FM deviation meter	Frequency range : DC–600 MHz Measuring range : 0 to ±10 kHz	Attenuator	Power attenuation : 20 or 30 dB Capacity : 10 W
Frequency counter	Frequency range : 0.1–300 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	Standard signal generator (SSG)	Frequency range : 0.1–600 MHz Output level : 0.1 µV to 32 mV (–127 to –17 dBm)
RF power meter	Measuring range : 0.1–1 W Frequency range : 100–600 MHz Impedance : 50 Ω SWR : Better than 1.2 : 1	Oscilloscope	Frequency rang : DC–20 MHz Measuring range : 0.01–20 V

■ SYSTEM REQUIREMENTS (for the ADJUSTMENT SOFTWARE)

• Microsoft® Windows® 98/98SE/Me/2000/XP • RS-232C serial port (D-sub 9 pin) or USB port

■ ADJUSTMENT SOFTWARE INSTALLATION

① Quit all applications when Windows is running.
② Insert the CD into the appropriate CD drive.
③ Double-click the “Setup.exe” contained in the ‘CS-F4029 ADJ’ folder in the CD drive.
④ The “Welcome to the InstallShield Wizard for CS-F4029 ADJ” will appear. Click [Next>].
⑤ The “Choose Destination Location” will appear. Then click [Next>] to install the software to the destination folder. (e.g. C:\Program Files\Icom\CS-F4029 ADJ)
⑥ After the installation is completed, the “InstallShield Wizard Complete” will appear. Then click [Finish].
⑦ Eject the CD.
⑧ Program group ‘CS-F4029 ADJ’ appears in the ‘Programs’ folder of the start menu, and ‘CS-F4029 ADJ’ icon appears on the desk top screen.

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■ BEFORE STARTING SOFTWARE ADJUSTMENT

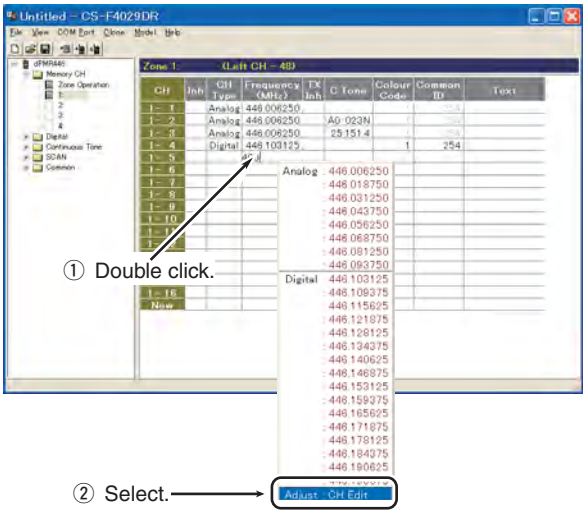
Clone the adjustment frequencies and settings into the transceiver, and set the configuration using the CS-F4029DR CLONING SOFTWARE before starting the software adjustment. Otherwise, the software adjustment can not be started.

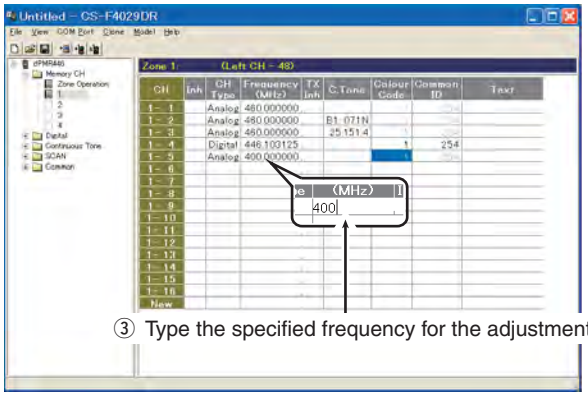
CAUTION!: BACK UP the originally programmed memory data in the transceiver before programming the adjustment frequencies. When program the adjustment frequencies into the transceiver, the transceiver’s memory data will be overwritten and lose original memory data at the same time.

• ADJUSTMENT FREQUENCY LIST

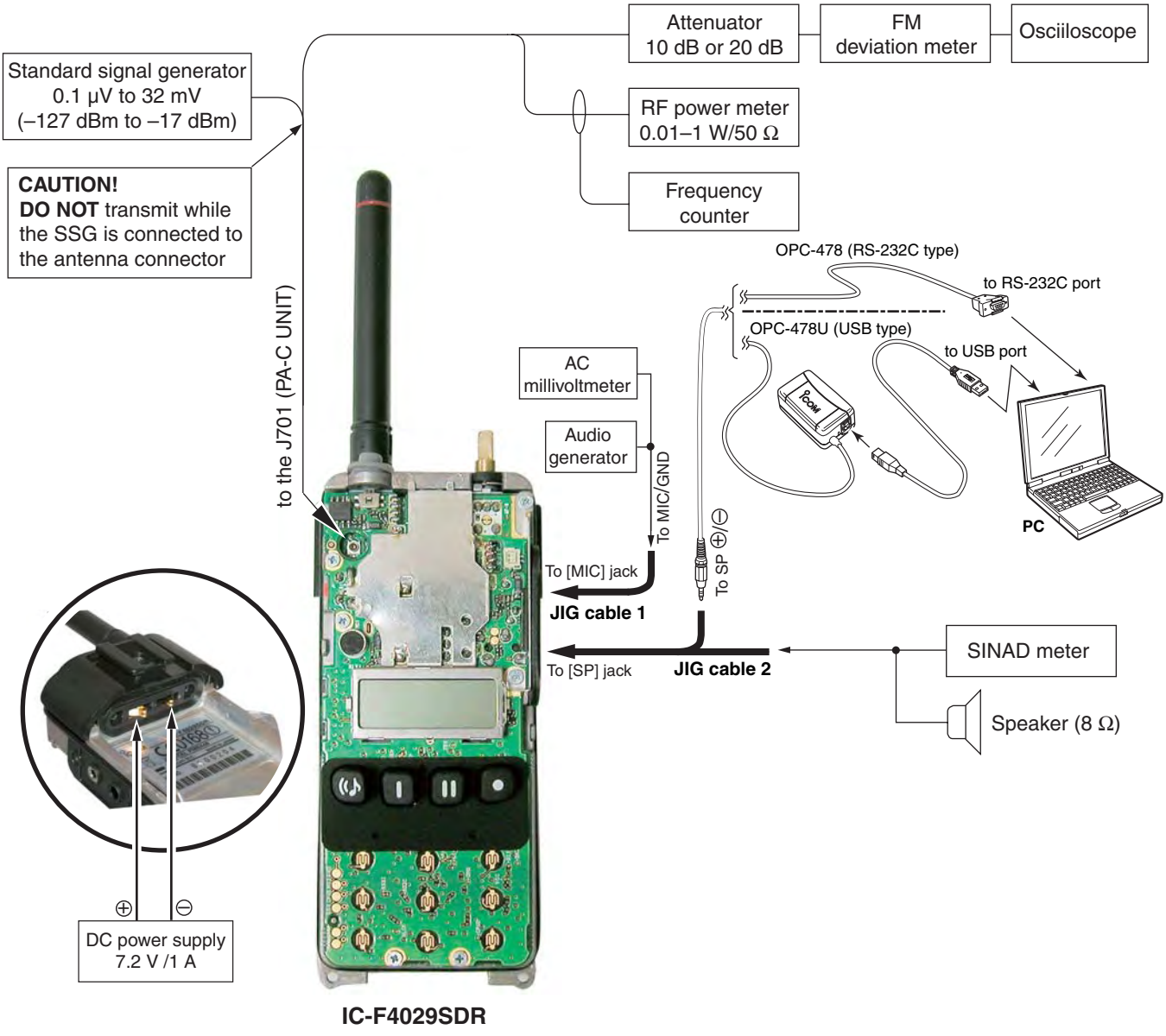
CHANNEL	FREQUENCY	SETTING	CHANNEL	FREQUENCY	SETTING
1-1	446.006250 MHz	None	1-4	446.103125 MHz	None
1-2	446.006250 MHz	• DTCS code : 071	1-5	400.000000 MHz*	None
1-3	446.006250 MHz	• CTCSS frequency : 151.4 Hz			

*; The frequency can be input directly as below.



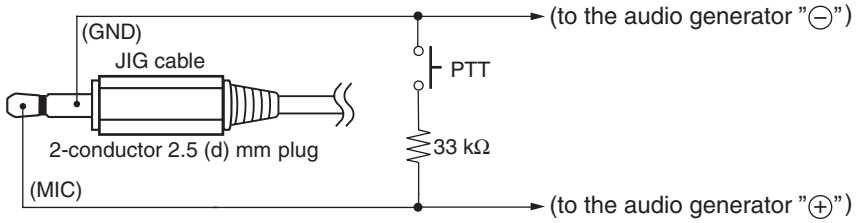


• CONNECTION

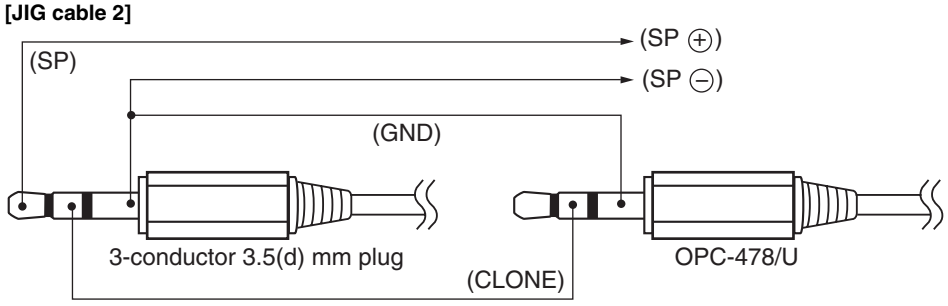


• JIG CABLES

[JIG cable 1]



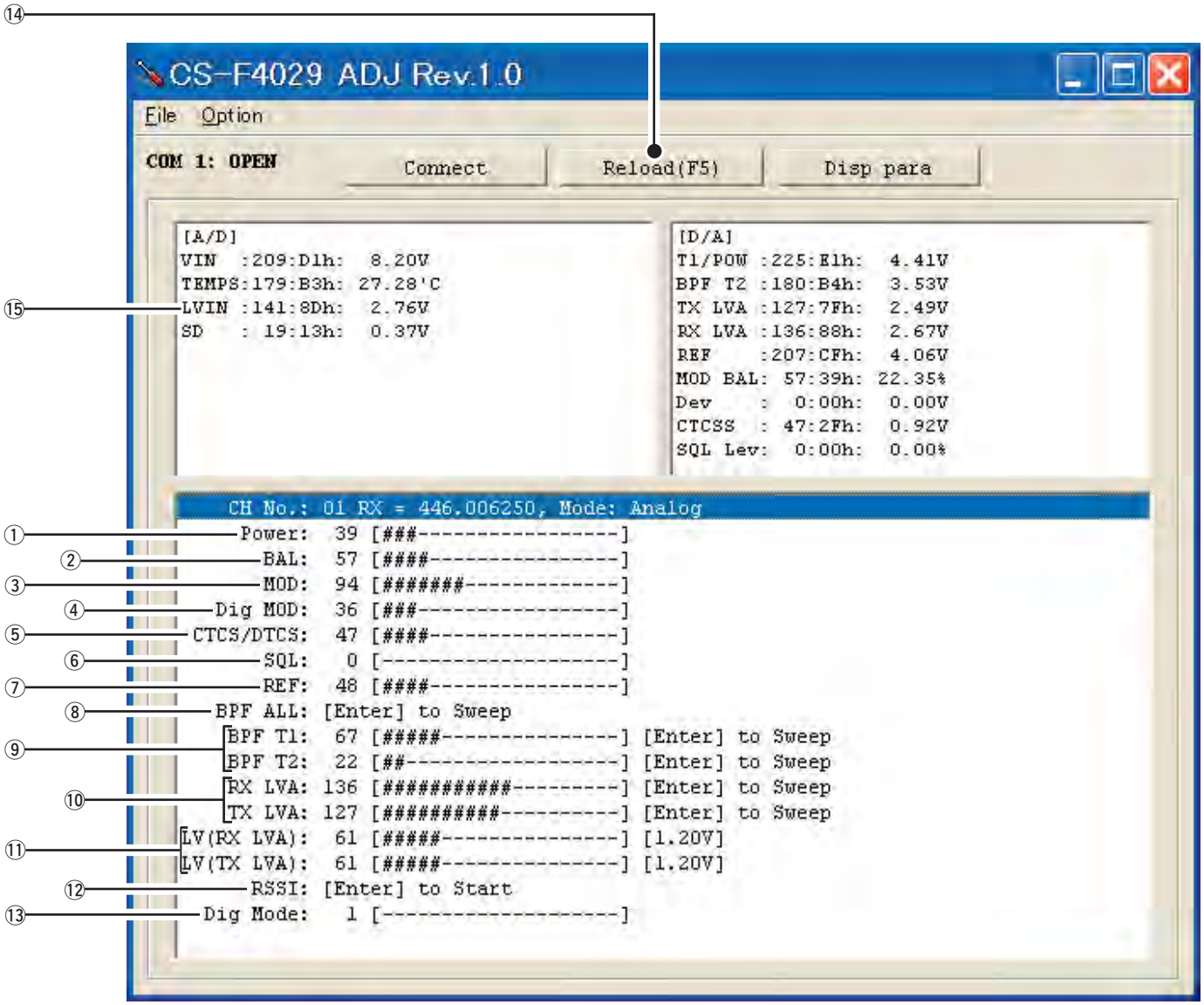
[JIG cable 2]



■ STARTING SOFTWARE ADJUSTMENT

① Connect the transceiver and PC with OPC-478/U JIG CABLE.
② Turn the transceiver power ON.
③ Boot up Windows, and click the program group 'CS-F4029 ADJ' in the 'Programs' folder of the [Start] menu, then CS-F4029 ADJ's window appears.
④ Click 'Connect' on the CS-F4029 ADJ's window, then the window shows transceiver's condition and adjustment items as below.
⑤ Set or modify adjustment data as specified.

• PC SCREEN EXSAMPLE



NOTE: The above values for settings are example only.
Each transceiver has its own specific values for each setting.

① Transmit output power
② Modulation balance
③ FM deviation
④ Digital deviation
⑤ CTCSS/DTCS deviation
⑥ Squelch
⑦ Reference frequency
⑧ Receive sensitivity (Automatically)
⑨ Receive sensitivity (Manually)
⑩ PLL lock voltage
⑪ PLL lock voltage preset
⑫ S-meter
⑬ Mode preset
⑭ Reload data
⑮ PLL lock voltage (verify)

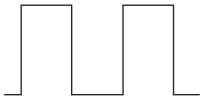
5-2 FREQUENCY ADJUSTMENT

Select an adjustment item using [↑] / [↓] keys, then set to the specified value using [←] / [→] keys on the connected PC's keyboard.

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE
			UNIT	OPERATION	
PLL LOCK VOLTAGE [RX LVA]	1	• Channel : 1-1 • Lock voltage preset [LV (RX LVA)] : 138 [2.71 V] • Receiving	PC screen	Click [Reload (F5)] button, then check the "LVIN" item on the ADJ' s screen.	Push [Enter] key (Automatic adjustment)
[TX LVA]	3	• Channel : 1-1 • Lock voltage preset [LV (TX LVA)] : 148 [2.90 V] • Connect an RF power meter to the RF connector (PA-C UNIT; J701). • Transmitting			
REFERENCE FREQUENCY [REF]		• Channel : 1-1 • Connect an RF power meter to the RF connector (PA-C UNIT; J701). • Transmitting	PA-C UNIT	Loosely couple a frequency counter to the antenna.	446.006250 MHz

5-3 TRANSMIT ADJUSTMENT

Select an adjustment item using [↑] / [↓] keys, then set to the specified value using [←] / [→] keys on the connected PC's keyboard.

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE
			UNIT	OPERATION	
TRANSMIT OUTPUT POWER [Power (Hi)]	1	• Channel : 1-1 • Transmitting	PA-C UNIT	Connect an RF power meter to the RF connector (PA-C UNIT; J701).	0.50 W
FM DEVIATION [MOD]	1	• Channel : 1-1 • Connect an audio generator to the JIG cable and set as; Frequency : 1.0 kHz Level : 150 mV rms • Transmitting	PA-C UNIT	Connect the FM deviation meter to RF connector (PA-C UNIT; J701) through an attenuator.	±2.05 to ±2.15 kHz
MODULATION BALANCE [BAL]	1	• Channel : 1-2 • No audio applied to the JIG cable. • Set an FM deviation meter same as; HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P–P)/2 • Set the FM deviation meter to same condition as “FM DEVIATION." • Transmitting	PA-C UNIT	Connect the FM deviation meter to the RF connector (PA-C UNIT; J701) through an attenuator.	Set to square wave form 
DIGITAL DEVIATION [Dig MOD]	1	• Mode preset [Digital Mode] : 7	PA-C UNIT	Connect an FM deviation meter to RF connector (PA-C UNIT; J701) through an attenuator.	±1.39 to ±1.43 kHz
	2	• Channel : 1-4 • Set the FM deviation meter to same condition as “FM DEVIATION." • Transmitting			
CTCSS/DTCS DEVIATION [CTCSS/DTCS]	1	• Channel : 1-3 • No audio applied to the JIG cable. • Set the FM deviation meter to same condition as FM DEVIATION." • Transmitting	PA-C UNIT	Connect an FM deviation meter to RF connector (PA-C UNIT; J701) through an attenuator.	±0.33 to ±0.37 kHz

5-4 RECEIVE ADJUSTMENT

Select an adjustment item using [↑] / [↓] keys, then set to the specified value using [←] / [→] keys on the connected PC's keyboard.

ADJUSTMENT		ADJUSTMENT CONDITION	MEASUREMENT		VALUE
			UNIT	LOCATION	
RECEIVE SENSITIVITY [BPF (T1)] [BPF (T2)]	**NOTE:** "RECEIVE SENSITIVITY" must be adjusted before "S-METER." Otherwise, "S-METER" will not be adjusted properly.				
	1	• Channel : 1-5 • Connect the SSG to RF connector (PA-C UNIT; J701) and set as; Frequency : 400.000 MHz Level : +20 dBμ† (–87 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	[MIC/SP] jack	Connect the SINAD meter with an 8 Ω load to the JIG cable.	Minimum distortion level
		CONVENIENT: The "RECEIVE SENSITIVITY" can be adjusted automatically. 1: Put the cursor on "BPF ALL," then push [Enter] key. 2: The connected PC tunes BPF's to peak levels automatically.			
S-METER [RSSI]	1	• Channel : 1-1 • Connect the SSG to RF connector (PA-C UNIT; J701) and set as; Frequency : 466.006250 MHz Level : +23 dBμ† (–84 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	Push the [Enter] key on the connected PC's keyboard to set "S3" level.		
	2	• Set the SSG as; Level : –7dBμ† (–114 dBm) • Receiving	Push the [Enter] key on the connected PC's keyboard to set "S1" level.		
SQUELCH [SQL]	1	• Channel : 1-1 • Close the squelch by adjusting the value of [SQL] item on the CS-F4029 ADJ's screen. • Connect the SSG to RF connector (PA-C UNIT; J701) and set as; Frequency : 466.006250 MHz Level : –14 dBμ† (–121 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	[MIC/SP] jack	Connect an 8 Ω speaker to the JIG cable.	Set the [SQL] to the value that the audio signals just appears.

†: The output level of the standard signal generator (SSG) is indicated as the SSG's open circuit.

SECTION 6 PARTS LIST

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
IC2	1140005991	S.IC	MB15A02PFV1-G-BND-ERE1	T	81.2/34.5
IC3	1130011770	S.IC	CD4066BPWR	B	40.4/22
IC5	1110005320	S.IC	NJM13403V-TE1	B	40.4/12.8
IC6	1110006350	S.IC	LM2902PWR	B	55.4/28.7
IC7	1110005340	S.IC	NJM12902V-TE1	B	40.4/40.8
IC8	1110006260	S.IC	BD5242G-TR	B	21.3/42
IC9	1110003201	S.IC	TA31136FNG (EL)	T	81.6/17
IC10	1140008650	S.IC	HN58X2464TI	B	4.4/37.1
IC12	1190001350	S.IC	M62364FP 600D	B	40.4/30.6
IC15	1110001811	S.IC	TA7368FG (5,ER)	T	98.9/18.3
IC17	1110005350	S.IC	NJM2870F05-TE1	B	95.2/17
IC20	1130009090	S.IC	LC75834W-TLM-E	T	57.3/20.3
IC22	1140011511	S.IC	HD64F2238BTF13V	B	16.4/24.4
IC23	1190001340	S.IC	M62334FP 600C	T	99.9/42.5
IC24	1110005310	S.IC	AN6123MS	B	30/12.4
IC25	1130009981	S.IC	TC7W53FK (TE85L F)	B	28.4/4.8
Q4	1560000841	S.FET	2SK1829 (TE85R F)	B	73.1/29.9
Q5	1580000731	S.FET	3SK293 (TE85L F)	B	91/33.2
Q6	1580000800	S.FET	3SK324UG-TL-E	B	88.6/22.4
Q7	1530002601	S.TR	2SC4215-O (TE85R F)	T	88.2/12.5
Q8	1530002601	S.TR	2SC4215-O (TE85R F)	T	76/11.5
Q9	1590001330	S.TR	DTA114EUA T106	B	60.2/20.4
Q14	1530003980	S.TR	2SC5700WB-TR-E	B	79.9/31.3
Q15	1530003260	S.TR	2SC5006-T1	B	73.1/29.9
Q16	1530002920	S.TR	2SC4226-T1 R25	B	75.7/25.5
Q17	1530002920	S.TR	2SC4226-T1 R25	B	74.8/32.3
Q18	1590001400	S.TR	XP1214 (TX)	T	71.3/31.4
Q19	1590003290	S.TR	UNR9213J-(TX)	T	71.6/29
Q20	1530002851	S.TR	2SC4116-BL (TE85R F)	B	98.6/25.3
Q21	1560000541	S.FET	2SK880-Y (T5RICOM,F)	T	76.5/26.8
Q22	1530003260	S.TR	2SC5006-T1	T	80.7/24
Q23	1510001110	S.TR	2SA1577T106R	B	51/6.3
Q24	1510001110	S.TR	2SA1577T106R	B	50.4/19.3
Q25	1510001110	S.TR	2SA1577T106R	B	85.7/12.3
Q26	1520000460	S.TR	2SB1132 T100 R	B	101.6/17.9
Q27	1590001190	S.TR	XP6501-(TX) AB	B	101.7/22.7
Q28	1590003290	S.TR	UNR9213J-(TX)	B	99.4/20.6
Q29	1530003980	S.TR	2SC5700WB-TR-E	B	78.2/25.1
Q31	1560001360	S.FET	2SK3019 TL	B	41.9/6.8
Q32	1560001360	S.FET	2SK3019 TL	B	37.7/6.8
Q33	1590003290	S.TR	UNR9213J-(TX)	B	35.1/6.8
Q34	1560001360	S.FET	2SK3019 TL	B	46.6/12.8
Q35	1590003290	S.TR	UNR9213J-(TX)	B	46.6/15.2
Q36	1560001360	S.FET	2SK3019 TL	B	37.7/4.6
Q37	1590003290	S.TR	UNR9213J-(TX)	B	40/4.6
Q39	1590001650	S.TR	XP4601 (TX)	B	55.2/10.4
Q40	1590003290	S.TR	UNR9213J-(TX)	B	40.5/37
Q41	1590001190	S.TR	XP6501-(TX) AB	T	96.4/24.6
Q42	1520000460	S.TR	2SB1132 T100 R	T	100.4/24.4
Q43	1590003380	S.TR	UNR9111J-(TX)	T	78.4/7.2
Q44	1590003270	S.TR	UNR9210J-(TX)	B	28.3/20
Q45	1590003230	S.TR	UNR9113J-(TX)	T	53.9/4.8
Q46	1590003290	S.TR	UNR9213J-(TX)	T	99/32.9
D2	1750000520	S.DIO	DAN222TL	T	69.3/16.8
D3	1750000520	S.DIO	DAN222TL	T	72.2/16.8
D4	1790001250	S.DIO	MA2S111-(TX)	T	84/28.9
D6	1790001260	S.DIO	MA2S077-(TX)	B	27.7/29.2
D8	1790001250	S.DIO	MA2S111-(TX)	B	98.6/23.3
D9	1750000711	S.VCP	HVC350BTRF-E	B	69.2/30
D10	1750000711	S.VCP	HVC350BTRF-E	B	70.1/27.6
D11	1750000711	S.VCP	HVC350BTRF-E	B	68.3/31.8
D12	1720000570	S.VCP	MA368 (TX)	B	68.5/26.4
D13	1750000711	S.VCP	HVC350BTRF-E	B	71.5/25.2
D14	1750000711	S.VCP	HVC350BTRF-E	B	85.3/28.4
D15	1750000711	S.VCP	HVC350BTRF-E	B	85.3/31.4
D16	1750000581	S.DIO	1SV307 (TPH3 F)	B	88.6/14.3
D17	1790001260	S.DIO	MA2S077-(TX)	B	87.8/17.5
D19	1750000711	S.VCP	HVC350BTRF-E	B	97.1/36.1
D21	1750000520	S.DIO	DAN222TL	B	31.9/21.3
D23	1790001250	S.DIO	MA2S111-(TX)	B	31.8/23
D25	1750000711	S.VCP	HVC350BTRF-E	B	99.8/35.9
D28	1790001670	S.DIO	RB706F-40T106	B	28/17.7
FI1	2030000150	S.MLH	FL-335 (46.350 MHz)	T	89.9/19.9
FI2	2020001410	CER	CFWLB450KGFA-B0		
FI3	2020002220	S.CER	SFPKA450KH1A-R1	B	61.3/13.7
X1	6070000190	S.DCR	CDBCB450KCAY24-R0	B	80/16.9
X2	6050012380	S.XTL	CR-826 (15.3 MHz)	B	61.6/38.9
X6	6050011830	S.XTL	CR-774 (12.288 MHz)	B	31.2/31
L7	6200010020	S.COL	C2012C-12NG-A	B	101.5/33.9
L8	6200010020	S.COL	C2012C-12NG-A	B	95.5/33.9

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
L9	6200010030	S.COL	C2012C-15NG-A [UK-02] only	B	88.4/33.5
L11	6200010030	S.COL	C2012C-15NG-A10 [UK-02] only	T	87/29.1
L12	6200011001	S.COL	ELJRF 56NJFB	B	86.4/21.4
L13	6200005510	S.COL	ELJND R27J-F	T	89.2/25.7
L21	6200007901	S.COL	ELJRF 22NJFB	B	80.1/24
L22	6200007901	S.COL	ELJRF 22NJFB	B	75.1/30.3
L25	6200008490	S.COL	0.30-0.9-3TR 7.5N	B	71.4/22.8
L27	6200004951	S.COL	NLV25T-1R8J	T	69.4/24.3
L28	6200002790	S.COL	ELJFC R82M-F	T	69/27.4
L32	6200007931	S.COL	ELJRF 12NJFB	B	78.6/32.9
L33	6200004480	S.COL	MLF1608D R82K-T	T	80.6/22.4
L34	6200007931	S.COL	ELJRF 12NJFB	B	78/34.7
L35	6200003540	S.COL	MLF1608D R22K-T	T	84.6/25.4
L37	6200009710	S.COL	0.30-0.9-4TL 10.5N	B	69.8/34
L41	6200007921	S.COL	ELJRF 15NJFB	B	80.5/29.5
L42	6200009290	S.COL	LQW18AN47NG00D	T	68.4/30.5
L43	6200011860	S.COL	LQW18ANR47G00D	T	70.9/26.7
L46	6200005731	S.COL	ELJRE 39NGFA	B	89.3/19.3
L47	6200002790	S.COL	ELJFC R82M-F	T	71/34
L48	6200002431	S.COL	NLV25T-082J	T	73.8/30.6
R6	7030005110	S.RES	ERJ2GEJ 224 X (220 k)	T	99.7/34.8
R8	7030005090	S.RES	ERJ2GEJ 104 X (100 k)	B	98.4/33.6
R9	7030005600	S.RES	ERJ2GEJ 273 X (27 k)	B	98.9/37.6
R10	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	98.4/35.4
R12	7030005530	S.RES	ERJ2GEJ 100 X (10)	B	91.1/31.4
R13	7030005090	S.RES	ERJ2GEJ 104 X (100 k)	B	98.4/34.5
R15	7030005240	S.RES	ERJ2GEJ 473 X (47 k)	B	93.5/31.4
R16	7030004980	S.RES	ERJ2GEJ 101 X (100)	B	92/35.2
R17	7030004970	S.RES	ERJ2GEJ 470 X (47)	B	85.9/33.7
R18	7030005120	S.RES	ERJ2GEJ 102 X (1 k)	B	86.8/33.7
R19	7030005080	S.RES	ERJ2GEJ 823 X (82 k)	B	93/33.6
R20	7030005090	S.RES	ERJ2GEJ 104 X (100 k)	B	84/29.9
R21	7030005110	S.RES	ERJ2GEJ 224 X (220 k)	B	87/29.9
R22	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	91/29.9
R23	7030005110	S.RES	ERJ2GEJ 224 X (220 k)	B	86/29.9
R24	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	85.3/16.7
R25	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	86.4/26.1
R26	7030008010	S.RES	ERJ2GEJ 123 X (12 k)	B	87/24.4
R27	7030005310	S.RES	ERJ2GEJ 124 X (120 k)	B	86.4/22.4
R28	7030005080	S.RES	ERJ2GEJ 823 X (82 k)	B	84.7/23.4
R29	7030004980	S.RES	ERJ2GEJ 101 X (100)	B	90.9/22.4
R31	7030004980	S.RES	ERJ2GEJ 101 X (100)	B	86.4/23.4
R32	7030010040	S.RES	ERJ2GEJ-JPW	T	91.4/25.7
R33	7030007280	S.RES	ERJ2GEJ 331 X (330)	T	89.2/14.6
R34	7030008300	S.RES	ERJ2GEJ 184 X (180 k)	T	87.2/14.6
R35	7030007290	S.RES	ERJ2GEJ 222 X (2.2 k)	T	85.2/14.6
R36	7030007300	S.RES	ERJ2GEJ 332 X (3.3 k)	B	81.4/12.6
R38	7030005090	S.RES	ERJ2GEJ 104 X (100 k)	T	81.7/12.2
R39	7030004970	S.RES	ERJ2GEJ 470 X (47)	B	81.4/11.6
R40	7030005030	S.RES	ERJ2GEJ 152 X (1.5 k)	T	82.2/21.3
R42	7030005120	S.RES	ERJ2GEJ 102 X (1 k)	T	74.4/20.7
R43	7030005000	S.RES	ERJ2GEJ 471 X (470)	T	78/14.6
R44	7030005090	S.RES	ERJ2GEJ 104 X (100 k)	T	78/20.7
R45	7030005070	S.RES	ERJ2GEJ 683 X (68 k)	T	76.3/20.7
R46	7030009140	S.RES	ERJ2GEJ 272 X (2.7 k)	T	76.3/21.6
R48	7030005010	S.RES	ERJ2GEJ 681 X (680)	T	86.2/12.9
R50	7030004990	S.RES	ERJ2GEJ 221 X (220)	B	85.3/18.4
R51	7030007290	S.RES	ERJ2GEJ 222 X (2.2 k)	T	70.6/14.2
R52	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	T	67.7/16.9
R53	7030008290	S.RES	ERJ2GEJ 183 X (18 k)	B	65.8/16.4
R54	7030008290	S.RES	ERJ2GEJ 183 X (18 k)	B	65.8/18.2
R55	7030005040	S.RES	ERJ2GEJ 472 X (4.7 k)	T	78/17.8
R61	7030005040	S.RES	ERJ2GEJ 472 X (4.7 k)	T	78/12.6
R62	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	T	74/12.6
R68	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	89.9/10.9
R69	7030005040	S.RES	ERJ2GEJ 472 X (4.7 k)	B	86.3/16.7
R70	7030005530	S.RES	ERJ2GEJ 100 X (10)	B	80.2/24.9
R71	7030007340	S.RES	ERJ2GEJ 153 X (15 k)	B	78/23.1
R72	7030005600	S.RES	ERJ2GEJ 273 X (27 k)	B	48.7/24.4
R75	7030005220	S.RES	ERJ2GEJ 223 X (22 k)	B	78.6/29.5
R76	7030005530	S.RES	ERJ2GEJ 100 X (10)	B	78.6/27.9
R77	7030004980	S.RES	ERJ2GEJ 101 X (100)	B	76.5/29.1
R78	7030005310	S.RES	ERJ2GEJ 124 X (120 k)	B	74.9/29.1
R79	7030006020	S.RES	RR0510P-682-D (6.8 k)	B	74.7/34.3
R80	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	T	75.5/28.7
R82	7030010040	S.RES	ERJ2GEJ-JPW	B	74.3/23.7
R83	7030006020	S.RES	RR0510P-682-D (6.8 k)	B	74.3/22.7
R84	7030006020	S.RES	RR0510P-682-D (6.8 k)	B	72.8/24.9
R85	7030006020	S.RES	RR0510P-682-D (6.8 k)	B	72.2/34.3
R86	7030005110	S.RES	ERJ2GEJ 224 X (220 k)	T	69.3/22.5
R87	7030005000	S.RES	ERJ2GEJ 471 X (470)	T	69.5/32
R88	7030009280	S.RES	ERJ2GEJ 391 X	T	73.3/32.7
R89	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	T	77.5/30.1
R90	7030005170	S.RES	ERJ2GEJ 474 X (470 k)	T	71/22.5
R91	7030005240	S.RES	ERJ2GEJ 473 X (47 k)	T	72.7/20.7
R92	7030005310	S.RES	ERJ2GEJ 124 X (120 k)	T	72.7/22.5
R94	7030005030	S.RES	ERJ2GEJ 152 X (1.5 k)	T	77.1/33.1
R95	7030008400	S.RES	ERJ2GEJ 182 X (1.8 k)	T	76/30.1
R96	7030007290	S.RES	ERJ2GEJ 222 X (2.2 k)	T	77.1/32.2

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R98	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	99/22.1
R100	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	74.4/22.5
R101	7030004990	S.RES ERJ2GEJ 221 X (220)	T	77.1/28.7
R103	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	46.2/38.1
R104	7030005700	S.RES ERJ2GEJ 274 X (270 k)	B	47.2/38.1
R105	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	46.2/39.7
R106	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	47.2/39.7
R108	7030010040	S.RES ERJ2GEJ-JPW	B	65.2/37.7
R109	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	63.2/35.3
R110	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	69.3/20.7
R111	7030006610	S.RES ERJ2GEJ 394 X (390 k)	T	66.6/35.2
R115	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	83.4/25.9
R116	7030007060	S.RES ERJ2GEJ 684X (680 k)	T	80.7/25.5
R121	7030005060	S.RES ERJ2GEJ 333 X (33 k)	B	68.9/41.3
R122	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	101.1/40.3
R123	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	99.5/41.3
R125	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	39.8/6.2
R126	7030004980	S.RES ERJ2GEJ 101 X (100)	B	23.2/4.5
R127	7030009140	S.RES ERJ2GEJ 272 X (2.7 k)	B	33.7/10.9
R128	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	B	33.7/9.2
R129	7030005720	S.RES ERJ2GEJ 563 X (56 k)	B	35.7/9.2
R133	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	35.4/5.3
R134	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	43.9/8.5
R135	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	B	43.9/9.5
R136	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	40.7/9.5
R137	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	45/12.8
R138	7030005000	S.RES ERJ2GEJ 471 X (470)	B	45/14.5
R139	7030008310	S.RES ERJ2GEJ 564 X (560 k)	B	43.8/16.6
R140	7030005700	S.RES ERJ2GEJ 274 X (270 k)	B	42.1/16.6
R141	7030010040	S.RES ERJ2GEJ-JPW	B	37.4/18.6
R142	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	B	36.7/9.2
R143	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	33.7/16
R144	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	37.4/17.5
R145	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	34.7/17.7
R146	7030005060	S.RES ERJ2GEJ 333 X (33 k)	B	34.7/16
R147	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	35.7/17.7
R148	7030005000	S.RES ERJ2GEJ 471 X (470)	B	37.4/16.3
R149	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	33.7/17.7
R150	7030007060	S.RES ERJ2GEJ 684X (680 k)	B	43.8/15.7
R151	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	35/38.5
R152	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	34.1/42.9
R153	7030005310	S.RES ERJ2GEJ 124 X (120 k)	B	35.9/42.9
R154	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	35.9/41.3
R155	7030005720	S.RES ERJ2GEJ 563 X (56 k)	B	35.9/37.1
R156	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	48.1/16.4
R157	7030004980	S.RES ERJ2GEJ 101 X (100)	B	30.1/8
R158	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	37.9/37.1
R159	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	35.9/39.7
R160	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	35/39.7
R161	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	48/19.3
R162	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	48/18.4
R163	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	87.6/11.9
R164	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	85.7/10.5
R165	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	102.6/14.7
R166	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	101.2/24.6
R167	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	48.2/6.3
R168	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	49.1/6.3
R169	7030004980	S.RES ERJ2GEJ 101 X (100)	B	101.2/25.5
R172	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	87.6/30.8
R181	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	57/6.3
R182	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	57/8
R183	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	55.2/8
R184	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	53.4/10
R185	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	B	52.4/10
R186	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	57/10
R187	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	55.2/12.8
R188	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	53.4/8
R190	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	B	54.3/12.8
R194	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	58.4/22.5
R195	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	60.2/23.5
R196	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	60.2/24.4
R197	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	60.2/26.7
R198	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	56.6/24.4
R199	7030006610	S.RES ERJ2GEJ 394 X (390 k)	B	58.4/24.4
R200	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	B	58.4/25.4
R201	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	97/39.1
R202	7030005000	S.RES ERJ2GEJ 471 X (470)	T	97/38.1
R209	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	47.2/41.3
R210	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	46.2/42.9
R211	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	46.2/41.3
R213	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	42.2/37
R214	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	44.2/37
R215	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	54.8/32
R216	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	56.6/32
R217	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	60.2/30
R218	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	60.2/32
R219	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	58.4/33
R220	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	60.2/34
R221	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	48.2/39.7
R222	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	7/19.3
R223	7030005720	S.RES ERJ2GEJ 563 X (56 k)	B	7/20.3
R224	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	7/21.3
R225	7030007260	S.RES ERJ2GEJ 330 X (33)	T	94.4/20.7
R226	7030005300	S.RES ERJ2GEJ 150 X (15)	T	94.5/16
R227	7030009140	S.RES ERJ2GEJ 272 X (2.7 k)	T	97.4/22.5
R228	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	95.6/22.5

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R229	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	95.4/26.7
R230	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	33.9/22.6
R231	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	33.9/21.6
R233	7030004980	S.RES ERJ2GEJ 101 X (100)	T	98.7/12.1
R234	7030005530	S.RES ERJ2GEJ 100 X (10)	T	103.3/16.8
R235	7030005000	S.RES ERJ2GEJ 471 X (470)	T	80.5/8
R236	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	77.2/8.5
R237	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	78.8/5.5
R238	7030005000	S.RES ERJ2GEJ 471 X (470)	B	85.7/5.4
R239	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	26.3/19.5
R240	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	50.4/26.4
R241	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	50.4/28.6
R242	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	50.4/27.6
R244	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	53/24.4
R245	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	50.4/25.4
R246	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	45.8/32.1
R247	7030005000	S.RES ERJ2GEJ 471 X (470)	B	45.8/35.1
R248	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	43.9/5.3
R249	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	45.2/21.2
R254	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	58.4/34
R255	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	56.6/33
R256	7510001730	S.TMR ERTJOEP 473J	B	18.7/39.4
R257	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	18.7/37.4
R258	7030005530	S.RES ERJ2GEJ 100 X (10)	B	26.3/31.4
R259	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	26.3/32.4
R260	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	27.7/31.3
R261	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	26.3/29.4
R262	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	26.3/28.4
R263	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	16.8/41.4
R264	7030005820	S.RES RR0510P-103-D (10 k)	B	10.7/4.7
R265	7030005820	S.RES RR0510P-103-D (10 k)	B	8.8/4.7
R272	7030004980	S.RES ERJ2GEJ 101 X (100)	T	55.5/4.8
R273	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	7.3/10.5
R274	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	7.3/11.6
R275	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	7.4/14
R276	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	7.4/16.2
R277	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	10.1/36.7
R278	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	11.1/36.7
R279	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	12.8/4.7
R280	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	14.2/4.7
R281	7030009270	S.RES ERJ2GEJ 821 X (820)	B	20.5/4
R288	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	6.6/18
R291	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	9.9/15.4
R292	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	5.5/31.5
R293	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	5.5/32.5
R295	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	62.1/14.1
R300	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	61.7/16.4
R302	7030006610	S.RES ERJ2GEJ 394 X (390 k)	T	73.5/26.8
R303	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	73.6/25.6
R304	7030010040	S.RES ERJ2GEJ-JPW	B	72.5/31.8
R305	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	68.3/32.6
R306	7030005530	S.RES ERJ2GEJ 100 X (10)	B	68.5/24.3
R307	7030005580	S.RES ERJ2GEJ 560 X (56)	T	84.5/35.2
R308	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	69.3/21.6
R309	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	48.2/41.3
R315	7210003061	VAR TP76N00N-15F-A103-2251A		
R321	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	14.5/41.4
R345	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	81.9/39.3
R346	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	82.8/39.3
R347	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	83.7/39.3
R348	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	84/30.1
R349	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	26.3/23
R350	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	8.5/29.1
R351	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	26.3/21.6
R352	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	7.6/27.6
R353	7410001130	S.ARY EXB28V102JX	B	12.1/15.7
R354	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	11.9/34.3
R361	7030008370	S.RES ERJ2GEJ 561 X (560)	B	88.6/24.4
R363	7030005100	S.RES ERJ2GEJ 154 X (150 k)	T	84/27.7
R364	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	29.4/14.9
R367	7030004980	S.RES ERJ2GEJ 101 X (100)	B	23.7/9.9
R368	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	42.2/5.3
R369	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	35.4/4.4
R370	7030010040	S.RES ERJ2GEJ-JPW	B	10.2/17
R371	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	B	27.3/11.4
R372	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	27.3/14.4
R375	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	35.7/12.6
R377	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	47.2/23.6
R378	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	48.8/28.6
R379	7030004980	S.RES ERJ2GEJ 101 X (100)	T	68.2/7.5
C16	4550007120	S.TAN F92 1D 224MPA	T	75.3/33.6
C17	4550002980	S.TAN TEESVA 1C 225M8R	T	77.3/36.1
C19	4030017520	S.CER ECJ0EC1H0R3B [UK-02] only	B	86.5/32.5
C21	4030017530	S.CER ECJ0EC1H0R5B	B	99.8/32.2
C22	4030017540	S.CER ECJ0EC1HR75B	B	98.4/32.7
C23	4030017630	S.CER ECJ0EC1H120J	B	97.1/33.8
C24	4030017460	S.CER ECJ0EB1E102K	B	98.4/36.4
C25	4030017360	S.CER ECJ0EC1H030B	B	98.4/31.8
C26	4030017460	S.CER ECJ0EB1E102K	B	50.4/24.4
C27	4030017630	S.CER ECJ0EC1H120J	B	99.8/33.8
C28	4030017530	S.CER ECJ0EC1H0R5B	B	93.9/33.6
C29	4030017570	S.CER ECJ0EC1H040B	B	93.5/32.4
C30	4030017460	S.CER ECJ0EB1E102K	B	90/29.9
C31	4030017420	S.CER ECJ0EC1H470J	B	98/37.6

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C32	4030017460	S.CER ECJ0EB1E102K	B	91/35.2
C33	4030017420	S.CER ECJ0EC1H470J	B	90/35.2
C36	4030017460	S.CER ECJ0EB1E102K	B	86.8/35.3
C39	4030017600	S.CER ECJ0EC1H080C [UK-02] only	B	87.5/31.4
C40	4030017520	S.CER ECJ0EC1H0R3B	B	88/29.9
C41	4030017640	S.CER ECJ0EC1H150J	B	87.7/26.6
C42	4030017460	S.CER ECJ0EB1E102K	B	92/29.9
C43	4030017460	S.CER ECJ0EB1E102K	B	85/29.9
C44	4030017520	S.CER ECJ0EC1H0R3B [UK-02] only	B	86.4/27.1
C45	4030017600	S.CER ECJ0EC1H080C [UK-02] only	B	87.5/28.4
C46	4030017420	S.CER ECJ0EC1H470J	B	84.7/21.4
C47	4030017460	S.CER ECJ0EB1E102K	B	84.7/22.4
C48	4030017420	S.CER ECJ0EC1H470J	B	90.9/20.4
C49	4030017350	S.CER ECJ0EC1H020B	B	87.8/20.4
C50	4030017460	S.CER ECJ0EB1E102K	B	90.9/21.4
C51	4030017460	S.CER ECJ0EB1E102K	T	91/26.9
C52	4030017660	S.CER ECJ0EC1H330J	B	90.9/25.5
C53	4030016790	S.CER ECJ0EB1C103K	B	90.9/23.4
C54	4030017460	S.CER ECJ0EB1E102K	B	90.9/24.4
C56	4030017390	S.CER ECJ0EC1H180J	T	86.1/18.3
C57	4030017460	S.CER ECJ0EB1E102K	B	84.7/24.4
C58	4030017460	S.CER ECJ0EB1E102K	T	88.2/14.6
C59	4030017460	S.CER ECJ0EB1E102K	T	85.2/16.3
C60	4030016790	S.CER ECJ0EB1C103K	T	86.2/14.6
C61	4030017430	S.CER ECJ0EC1H101J	T	85.2/12.9
C62	4030017680	S.CER ECJ0EC1H820J	T	79.6/12.6
C63	4030017420	S.CER ECJ0EC1H470J	T	83.5/12.2
C65	4030016930	S.CER ECJ0EB1A104K	B	15.1/34.4
C66	4030017460	S.CER ECJ0EB1E102K	T	78/13.6
C67	4030017460	S.CER ECJ0EB1E102K	B	79.3/12.7
C69	4030017720	S.CER ECJ0EB1H331K	T	78/21.6
C70	4030017720	S.CER ECJ0EB1H331K	T	78/19.8
C71	4030016930	S.CER ECJ0EB1A104K	T	80.6/21.3
C72	4030017420	S.CER ECJ0EC1H470J	T	98.7/34.8
C73	4030017460	S.CER ECJ0EB1E102K	T	82.6/12.2
C74	4030016930	S.CER ECJ0EB1A104K	T	80.8/12.2
C75	4550006250	S.TAN TEESVA 1A 106M8R	B	75.6/12.2
C77	4030016930	S.CER ECJ0EB1A104K	B	80.2/12.7
C78	4030016930	S.CER ECJ0EB1A104K	T	74/11.5
C79	4030016930	S.CER ECJ0EB1A104K	T	98.6/37.2
C80	4550007090	S.TAN TEESVA 1A 226M8R	T	96.6/35.1
C81	4030017420	S.CER ECJ0EC1H470J	T	98.6/38.1
C82	4030017420	S.CER ECJ0EC1H470J	B	101.6/31.2
C100	4030017590	S.CER ECJ0EC1H070C	B	86.3/18.4
C101	4030017340	S.CER ECJ0EC1H010B	B	80.2/32.9
C102	4030017570	S.CER ECJ0EC1H040B	B	77.7/27.9
C103	4030017620	S.CER ECJ0EC1H100C	B	77.4/30
C104	4030017460	S.CER ECJ0EB1E102K	B	75.8/27.9
C105	4030017460	S.CER ECJ0EB1E102K	B	79.5/29.5
C107	4030017460	S.CER ECJ0EB1E102K	B	80.2/25.8
C108	4030017420	S.CER ECJ0EC1H470J	B	89.9/11.8
C109	4030017460	S.CER ECJ0EB1E102K	B	80.2/26.7
C110	4030017420	S.CER ECJ0EC1H470J	B	76.8/27.9
C111	4030017420	S.CER ECJ0EC1H470J	T	68.4/35.2
C113	4030017540	S.CER ECJ0EC1HR75B	B	71.6/30.4
C114	4030017570	S.CER ECJ0EC1H040B	B	72.5/32.9
C115	4030017630	S.CER ECJ0EC1H120J	B	73.8/34.3
C116	4030016790	S.CER ECJ0EB1C103K	B	75.6/34.3
C117	4030017730	S.CER ECJ0EB1E471K	B	77/32.9
C118	4030017530	S.CER ECJ0EC1H0R5B	B	73.5/27.9
C119	4030017460	S.CER ECJ0EB1E102K	B	75.9/22.7
C120	4030017730	S.CER ECJ0EB1E471K	B	75.9/23.7
C121	4030017630	S.CER ECJ0EC1H120J	B	73.8/25.3
C122	4030017640	S.CER ECJ0EC1H150J	B	73.4/26.6
C123	4030017620	S.CER ECJ0EC1H100C	B	73/22.9
C126	4030017630	S.CER ECJ0EC1H120J	B	71.3/32.8
C129	4030017530	S.CER ECJ0EC1H0R5B	B	69.5/23.4
C132	4030017460	S.CER ECJ0EB1E102K	T	72.7/21.6
C133	4030017640	S.CER ECJ0EC1H150J	B	70.1/24.3
C134	4030017640	S.CER ECJ0EC1H150J	B	69.5/31.9
C135	4030017460	S.CER ECJ0EB1E102K	T	74.6/25.6
C137	4030016790	S.CER ECJ0EB1C103K	T	98.1/26.7
C138	4030017460	S.CER ECJ0EB1E102K	T	73.2/28
C139	4030016930	S.CER ECJ0EB1A104K	B	79.5/27.9
C141	4030017460	S.CER ECJ0EB1E102K	T	74.4/21.6
C143	4030017460	S.CER ECJ0EB1E102K	T	77.4/24.5
C144	4030017420	S.CER ECJ0EC1H470J	T	72/27.1
C145	4030017420	S.CER ECJ0EC1H470J	T	71/20.7
C146	4550006910	S.TAN TEESVP 1C 334M8R	T	72.9/23.9
C148	4550006250	S.TAN TEESVA 1A 106M8R	B	96.1/25.1
C149	4030017460	S.CER ECJ0EB1E102K	B	65.8/12.1
C150	4030018860	S.CER ECJ0EB0J105K	T	71/21.6
C151	4030017460	S.CER ECJ0EB1E102K	B	6.9/29.1
C152	4030017420	S.CER ECJ0EC1H470J	B	83.6/39.2
C153	4030017420	S.CER ECJ0EC1H470J	B	82.6/39.2
C154	4030017420	S.CER ECJ0EC1H470J	B	81.6/39.2
C155	4030017420	S.CER ECJ0EC1H470J	T	80/26.6
C156	4030017460	S.CER ECJ0EB1E102K	B	66.2/37.7
C157	4030017620	S.CER ECJ0EC1H100C	B	63.2/36.3
C158	4030016930	S.CER ECJ0EB1A104K	B	60.2/36.3
C159	4030017460	S.CER ECJ0EB1E102K	B	58.4/35.3
C160	4030017460	S.CER ECJ0EB1E102K	T	72.3/13.7
C161	4030017620	S.CER ECJ0EC1H100C	T	78.7/28.2
C162	4030017500	S.CER ECJ0EC1H560J	T	82.4/23.3
C163	4030017570	S.CER ECJ0EC1H040B	T	84.4/23.3
C164	4030017590	S.CER ECJ0EC1H070C	T	83.4/23.3

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C165	4030016790	S.CER ECJ0EB1C103K	T	82.4/25.1
C166	4030017360	S.CER ECJ0EC1H030B	T	83.4/21.7
C167	4030016930	S.CER ECJ0EB1A104K	B	82.7/11.9
C168	4030017460	S.CER ECJ0EB1E102K	T	80.5/5.5
C170	4030018910	S.CER C1608 JB 0J 475K-T	B	33.9/40.5
C171	4030017420	S.CER ECJ0EC1H470J [UK-02] only	B	69.8/41.3
C172	4030017460	S.CER ECJ0EB1E102K	B	68/41.3
C174	4030017710	S.CER ECJ0EC1H181J	B	35/42.9
C175	4030017420	S.CER ECJ0EC1H470J	B	70.7/41.3
C176	4030016930	S.CER ECJ0EB1A104K	B	101.1/39.4
C177	4030016930	S.CER ECJ0EB1A104K	B	97.9/41.3
C182	4030017460	S.CER ECJ0EB1E102K	B	84.3/18.4
C183	4030017420	S.CER ECJ0EC1H470J	B	87.8/19.3
C184	4030017460	S.CER ECJ0EB1E102K	B	93/35.2
C185	4030017460	S.CER ECJ0EB1E102K	B	84.9/33.7
C186	4030016930	S.CER ECJ0EB1A104K	T	87.6/31.7
C191	4030017620	S.CER ECJ0EC1H100C	B	70.4/31.9
C192	4030017580	S.CER ECJ0EC1H060C	B	70.2/25.5
C193	4030017420	S.CER ECJ0EC1H470J	T	68.3/34
C196	4030017350	S.CER ECJ0EC1H020B	B	78/33.8
C197	4030017350	S.CER ECJ0EC1H020B	B	79.6/34.7
C198	4030017460	S.CER ECJ0EB1E102K	T	84.5/33.5
C201	4030017420	S.CER ECJ0EC1H470J	B	78.6/26.7
C205	4030017340	S.CER ECJ0EC1H010B	B	79.6/33.8
C206	4030017460	S.CER ECJ0EB1E102K	T	86.3/31.3
C210	4030017420	S.CER ECJ0EC1H470J	B	30.1/9.8
C211	4030016970	S.CER ECJ0EB1C223K	B	58.4/23.5
C212	4030017740	S.CER ECJ0EB1E821K	B	60.2/25.4
C213	4030017740	S.CER ECJ0EB1E821K	B	60.2/27.7
C214	4030016930	S.CER ECJ0EB1A104K	B	54.8/25.4
C215	4030016950	S.CER ECJ0EB1A473K	B	56.6/25.4
C221	4030016940	S.CER ECJ0EB1A393K	B	56.1/6.3
C222	4030016790	S.CER ECJ0EB1C103K	B	54.3/8
C223	4030016930	S.CER ECJ0EB1A104K	B	56.1/8
C224	4030016970	S.CER ECJ0EB1C223K	B	52.4/8
C230	4030016790	S.CER ECJ0EB1C103K	B	48.7/5
C231	4030016790	S.CER ECJ0EB1C103K	B	48/20.2
C232	4030016790	S.CER ECJ0EB1C103K	B	85.6/9.2
C233	4550007090	S.TAN TEESVA 1A 226M8R	B	98/16.8
C234	4030016790	S.CER ECJ0EB1C103K	B	102.4/25.5
C235	4030016790	S.CER ECJ0EB1C103K	B	97.8/21.3
C236	4030018560	S.CER C2012 JB 1A 475K-T	B	96.3/20.8
C237	4030016790	S.CER ECJ0EB1C103K	B	94.7/14.7
C238	4550007070	S.TAN TEESVP 1A 475M8R	B	94.2/20.8
C239	4030016930	S.CER ECJ0EB1A104K	B	93/17.1
C240	4030017460	S.CER ECJ0EB1E102K	B	49.2/38.8
C241	4030017460	S.CER ECJ0EB1E102K	B	50.5/21.1
C242	4030017460	S.CER ECJ0EB1E102K	B	83.6/11.9
C247	4030018860	S.CER ECJ0EB0J105K	B	34.7/12.6
C248	4030016930	S.CER ECJ0EB1A104K	B	48.1/14.6
C249	4030016930	S.CER ECJ0EB1A104K	B	37.7/9.2
C250	4030016930	S.CER ECJ0EB1A104K	B	43.9/6.8
C251	4030016950	S.CER ECJ0EB1A473K	B	34.7/10.9
C252	4030016950	S.CER ECJ0EB1A473K	B	34.7/9.2
C253	4030016950	S.CER ECJ0EB1A473K	B	35.7/10.9
C254	4030016950	S.CER ECJ0EB1A473K	B	42.3/8.5
C255	4030016950	S.CER ECJ0EB1A473K	B	40.7/8.5
C256	4030016970	S.CER ECJ0EB1C223K	B	42.3/9.5
C257	4030016930	S.CER ECJ0EB1A104K	B	33.7/12.6
C259	4030016930	S.CER ECJ0EB1A104K	B	35/41.3
C260	4030016930	S.CER ECJ0EB1A104K	B	45/11.2
C261	4030017430	S.CER ECJ0EC1H101J	B	43.8/17.5
C262	4030016930	S.CER ECJ0EB1A104K	B	39.3/17.5
C263	4030016930	S.CER ECJ0EB1A104K	B	33.7/14.3
C264	4030018910	S.CER C1608 JB 0J 475K-T	B	33.7/19.3
C265	4030018920	S.CER ECJ0EB1H392K	B	32.7/17.7
C266	4030017710	S.CER ECJ0EC1H181J	B	35.7/16
C267	4030016930	S.CER ECJ0EB1A104K	B	39.3/16.3
C268	4030016930	S.CER ECJ0EB1A104K	B	36.9/37.1
C269	4030016930	S.CER ECJ0EB1A104K	B	45.2/20.2
C271	4030017420	S.CER ECJ0EC1H470J	B	45.8/31.2
C272	4030016930	S.CER ECJ0EB1A104K	B	35.7/19.3
C297	4030017510	S.CER ECJ0EC1H680J	B	45.2/38.1
C298	4030017420	S.CER ECJ0EC1H470J	B	45.2/39.7
C301	4030016930	S.CER ECJ0EB1A104K	B	84/33.7
C302	4030017420	S.CER ECJ0EC1H470J	T	80/29.2
C303	4030018860	S.CER ECJ0EB0J105K	T	80/30.2
C312	4030017900	S.CER ECJ0EB1C123K	B	47.2/42.9
C314	4030017740	S.CER ECJ0EB1E821K	B	45.2/41.3
C315	4030016930	S.CER ECJ0EB1A104K	B	43.2/37
C316	4030017420	S.CER ECJ0EC1H470J	B	53/32
C317	4030017770	S.CER ECJ0EB1E332K	B	54.8/33
C318	4030017690	S.CER ECJ0EC1H121J	B	60.2/31
C319	4030017760	S.CER ECJ0EB1H222K	B	58.4/32
C320	4030017460	S.CER ECJ0EB1E102K	B	60.2/33
C321	4030017460	S.CER ECJ0EB1E102K	T	85.8/4.6
C322	4030017420	S.CER ECJ0EC1H470J	T	94.4/19.1
C323	4030016950	S.CER ECJ0EB1A473K	T	94.5/14.3
C324	4550007110	S.TAN SY6-1A107M-RC	B	96.3/4.1
C325	4550006250	S.TAN TEESVA 1A 106M8R	T	93.9/24.1
C326	4550007080	S.TAN TEESVA 1C 106M8R	T	98.5/14.3
C327	4030016930	S.CER ECJ0EB1A104K	T	102.2/14.8
C328	4030017460	S.CER ECJ0EB1E102K	T	102.2/13.8
C329	4030017460	S.CER ECJ0EB1E102K	T	96.5/22.5
C330	4030016930	S.CER ECJ0EB1A104K	T	96.3/26.7
C331	4030017460	S.CER ECJ0EB1E102K	T	103.3/19.3

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
C332	4030017460	S.CER	ECJ0EB1E102K	T	80.5/4.6
C333	4550006250	S.TAN	TEESVA 1A 106M8R	T	83.1/3.4
C334	4030016930	S.CER	ECJ0EB1A104K	T	76.3/8.5
C335	4030018860	S.CER	ECJ0EB0J105K	B	54.8/24.4
C338	4030016930	S.CER	ECJ0EB1A104K	B	45.8/34.1
C339	4030016790	S.CER	ECJ0EB1C103K	B	45.8/30.2
C340	4030016930	S.CER	ECJ0EB1A104K	B	10.2/17.9
C345	4030016930	S.CER	ECJ0EB1A104K	B	18.7/38.4
C346	4030017600	S.CER	ECJ0EC1H080C	B	27.7/32.9
C347	4030017640	S.CER	ECJ0EC1H150J	B	26.3/33.4
C348	4030017400	S.CER	ECJ0EC1H220J	B	26.3/30.4
C349	4030016930	S.CER	ECJ0EB1A104K	B	25.1/29.4
C350	4030016930	S.CER	ECJ0EB1A104K	B	27.7/27.1
C351	4030016930	S.CER	ECJ0EB1A104K	B	26.6/27.1
C352	4030017030	S.CER	ECJ0EB1A273K	B	23.5/41.4
C353	4030016930	S.CER	ECJ0EB1A104K	B	9.7/4.7
C354	4030016790	S.CER	ECJ0EB1C103K	B	5.5/30.5
C355	4030017460	S.CER	ECJ0EB1E102K	B	52.7/5
C357	4030018910	S.CER	C1608 JB 0J 475K-T	B	29.1/23
C359	4030016930	S.CER	ECJ0EB1A104K	B	21.7/38.4
C360	4030017420	S.CER	ECJ0EC1H470J	B	20.2/34.4
C361	4030016930	S.CER	ECJ0EB1A104K	B	20.2/33.4
C368	4030017730	S.CER	ECJ0EB1E471K	B	53/25.4
C369	4030016930	S.CER	ECJ0EB1A104K	B	48.8/27.6
C370	4030016930	S.CER	ECJ0EB1A104K	B	48.7/25.4
C371	4030016930	S.CER	ECJ0EB1A104K	B	50.4/29.6
C372	4030018860	S.CER	ECJ0EB0J105K	B	48.7/26.4
C373	4030018860	S.CER	ECJ0EB0J105K	B	47.4/32.1
C375	4030017460	S.CER	ECJ0EB1E102K	B	100/14.7
C376	4030017420	S.CER	ECJ0EC1H470J	T	95.5/14.3
C377	4030017460	S.CER	ECJ0EB1E102K	B	26.6/24.2
C379	4030017460	S.CER	ECJ0EB1E102K	B	87.3/5.4
C384	4030018100	S.CER	ECJ0EB1H681K	T	61.7/15.5
C386	4030016930	S.CER	ECJ0EB1A104K	T	58.6/13.3
C387	4030016930	S.CER	ECJ0EB1A104K	T	60.9/14.6
C388	4030016930	S.CER	ECJ0EB1A104K	T	60.9/13.7
C390	4030016930	S.CER	ECJ0EB1A104K	T	78/18.8
C391	4030016930	S.CER	ECJ0EB1A104K	B	65/19.1
C392	4030016930	S.CER	ECJ0EB1A104K	B	65.8/15
C393	4030016930	S.CER	ECJ0EB1A104K	T	78/15.6
C394	4030016930	S.CER	ECJ0EB1A104K	T	70.6/15.2
C395	4030017420	S.CER	ECJ0EC1H470J	B	89/29.9
C396	4030017350	S.CER	ECJ0EC1H020B	B	90.9/18.2
C397	4030017350	S.CER	ECJ0EC1H020B	B	90.9/19.3
C398	4030017460	S.CER	ECJ0EB1E102K	B	68.3/34.4
C399	4550007120	S.TAN	F92 1D 224MPA	T	66.6/33
C400	4030017460	S.CER	ECJ0EB1E102K	B	72.2/27.2
C401	4030018860	S.CER	ECJ0EB0J105K	B	71.2/27.3
C402	4030017460	S.CER	ECJ0EB1E102K	T	97.2/26.7
C406	4030016930	S.CER	ECJ0EB1A104K	B	45.2/42.9
C409	4030016930	S.CER	ECJ0EB1A104K	B	14.1/34.4
C410	4030016930	S.CER	ECJ0EB1A104K	B	11.9/33.4
C412	4030017420	S.CER	ECJ0EC1H470J	T	80.5/6.4
C413	4030017780	S.CER	ECJ0EB1E472K	T	76.3/19.8
C420	4030017380	S.CER	ECJ0EC1H050B	T	86.1/20.7
C421	4550006780	S.TAN	TEESVB2 0J 476M8R	B	29.7/41.3
C422	4550006780	S.TAN	TEESVB2 0J 476M8R	B	53.5/16.4
C423	4030017730	S.CER	ECJ0EB1E471K	B	94.5/25.3
C424	4030016790	S.CER	ECJ0EB1C103K	B	60.2/22.5
C425	4030016790	S.CER	ECJ0EB1C103K	T	66.8/16.9
C426	4030016790	S.CER	ECJ0EB1C103K	B	65.8/17.3
C427	4030016930	S.CER	ECJ0EB1A104K	B	27.3/13.4
C428	4550006250	S.TAN	TEESVA 1A 106M8R	B	31/16.9
C429	4550006250	S.TAN	TEESVA 1A 106M8R	B	31.7/7.5
C430	4030016930	S.CER	ECJ0EB1A104K	B	28.3/8
C432	4030016930	S.CER	ECJ0EB1A104K	B	60.2/28.7
C433	4030016930	S.CER	ECJ0EB1A104K	B	27.3/12.4
C434	4030017420	S.CER	ECJ0EC1H470J	B	31.3/3.5
C435	4030018920	S.CER	ECJ0EB1H392K	T	67.6/20.7
C437	4030017460	S.CER	ECJ0EB1E102K	T	67.2/5.4
J2	6450002250	CNR	HSJ1456-010320		
J3	6450000131	CNR	HSJ1102-018540 [UK-02] only		
J4	6510021900	S.CNR	BM02B-ASRS-TF	T	89.4/4.5
J5	6510025220	S.CNR	AXK540145J	B	16.3/10.3
J7	6510024740	S.CNR	IPS-4039T-02B (4039T-01Y901)	B	92.6/25.7
DS1	5010000160	S.LED	LNJ310M6URA	T	57.3/5.9
DS2	5010000160	S.LED	LNJ310M6URA	T	57.3/40.3
DS3	5030002760	LCD	L3-0200HAY-3 (-4)		
MC1	7700002480	MIC	SKB-2746 LPC		
S1	2230001060	S.SW	EVQ-PUL 02K	T	102.2/36.1
S2	2260002840	SW	SKHLLFA010		
S3	2260002800	S.SW	SW-167 (SKQTLAE010)	B	61.1/44.2
S4	2260002800	S.SW	SW-167 (SKQTLAE010)	B	51.6/44.2
S5	2260002800	S.SW	SW-167 (SKQTLAE010)	B	99.6/44.2
EP1	6910015370	S.BEA	ACZ1005Y-102-T	B	76.2/30.3
EP3	6910015370	S.BEA	ACZ1005Y-102-T	B	58.4/36.3

[MAIN-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
EP6	6910015370	S.BEA	ACZ1005Y-102-T	T	80/28.2
EP7	8930063020	LCT	SRCN-2721-SP-N-W		
EP11	6910015370	S.BEA	ACZ1005Y-102-T	T	75.7/3.1
EP12	6910015370	S.BEA	ACZ1005Y-102-T	T	69.1/7.5
EP13	0880001930	UBD	EX-2887		

[PA-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
IC701	1110002751	S.IC	TA75S01F (TE85R F)	B	20.3/19.8
Q701	1560001231	S.FET	RD07MVS1-T112	B	22.6/8.3
Q702	1560001241	S.FET	RD01MUS1-T113	B	16/8.2
Q703	1530000371	S.TR	2SC3356-T1B S (R25)	T	11.4/14.2
Q704	1530003260	S.TR	2SC5006-T1	T	6.6/8.9
D701	1750000581	S.DIO	1SV307 (TPH3 F)	T	31.5/15.4
D702	1790001670	S.DIO	RB706F-40T106	T	23.2/17.5
D704	1790001260	S.DIO	MA2S077-(TX)	B	28.6/16
D705	1790001240	S.DIO	MA2S728-(TX)	T	26.8/20.3
L701	6200002431	S.COL	NLV25T-082J	T	27.8/16.4
L703	6200009470	S.COL	0.40-0.9-2TL	T	28.1/13.5
L704	6200009470	S.COL	0.40-0.9-2TL	T	24.1/14.1
L705	6200008240	S.COL	0.30-0.9-5TL 14N	B	19.4/13.6
L706	6200003590	S.COL	EXCCL3225U1	T	14.3/19.1
L707	6200005691	S.COL	ELJRE 18NGFA	T	12.2/16.8
L708	6200005741	S.COL	ELJRE 47NGFA	T	6.7/13.1
L709	6200008430	S.COL	0.20-1.0-4TL 15N	T	31.4/11.7
L710	6200008430	S.COL	0.20-1.0-4TL 15N	T	34.4/11.4
L712	6200009070	S.COL	LQW18AN18NG00D	B	31.3/16.1
L713	6200010910	S.COL	LQW18AN56NG00D	B	28.3/20.1
R701	7030008280	S.RES	ERJ2GEJ 271 X (270)	T	27.6/18.9
R702	7030008280	S.RES	ERJ2GEJ 271 X (270)	T	28.5/18.9
R703	7030005080	S.RES	ERJ2GEJ 823 X (82 k)	B	34.4/16.9
R704	7030005530	S.RES	ERJ2GEJ 100 X (10)	T	18.4/2.6
R705	7030005220	S.RES	ERJ2GEJ 223 X (22 k)	T	16.9/2.1
R706	7030005040	S.RES	ERJ2GEJ 472 X (4.7 k)	T	14.5/2.6
R707	7030010040	S.RES	ERJ2GEJ-JPW	B	19/11.1
R708	7030004990	S.RES	ERJ2GEJ 221 X (220)	B	11.4/11.7
R710	7030005040	S.RES	ERJ2GEJ 472 X (4.7 k)	B	9.8/11.7
R712	7030005220	S.RES	ERJ2GEJ 223 X (22 k)	T	13.6/14.5
R715	7030005220	S.RES	ERJ2GEJ 223 X (22 k)	T	6.8/11.7
R719	7030005030	S.RES	ERJ2GEJ 152 X (1.5 k)	T	26/17.3
R720	7030005120	S.RES	ERJ2GEJ 102 X (1 k)	T	22.7/15.7
R721	7030008280	S.RES	ERJ2GEJ 271 X (270)	B	22.5/19.1
R722	7030005600	S.RES	ERJ2GEJ 273 X (27 k)	B	21.9/17.7
R724	7030005080	S.RES	ERJ2GEJ 823 X (82 k)	B	21/22.1
R725	7030006610	S.RES	ERJ2GEJ 394 X (390 k)	B	19.2/17.6
R726	7030005120	S.RES	ERJ2GEJ 102 X (1 k)	B	17.7/18.8
R727	7030005050	S.RES	ERJ2GEJ 103 X (10 k)	B	16.4/18.4
R728	7030004970	S.RES	ERJ2GEJ 470 X (47)	B	19.2/22.3
C701	4030017460	S.CER	ECJ0EB1E102K	T	29.5/15.4
C702	4030017420	S.CER	ECJ0EC1H470J	T	30.5/18.2
C703	4030017460	S.CER	ECJ0EB1E102K	T	29.5/18.2
C705	4030017380	S.CER	ECJ0EC1H050B	T	29.5/13.6
C707	4030017460	S.CER	ECJ0EB1E102K	T	21.3/17.2
C708	4030017460	S.CER	ECJ0EB1E102K	T	25.1/17.3
C709	4030017370	S.CER	ECJ0EC1H3R5B	T	26.7/13.8
C710	4030007030	S.CER	C1608 CH 1H 150J-T	T	20.8/13.8
C711	4030017570	S.CER	ECJ0EC1H040B	T	25.8/13.8
C712	4030007040	S.CER	C1608 CH 1H 180J-T	T	22.3/13.8
C715	4030017460	S.CER	ECJ0EB1E102K	B	15.4/13.1
C716	4030017460	S.CER	ECJ0EB1E102K	B	14.4/13.1
C718	4030017460	S.CER	ECJ0EB1E102K	T	15.9/2.1
C719	4030016790	S.CER	ECJ0EB1C103K	B	13.4/13.1
C720	4030017420	S.CER	ECJ0EC1H470J	B	19/8.4
C722	4030017420	S.CER	ECJ0EC1H470J	B	16.4/13.1
C723	4030017460	S.CER	ECJ0EB1E102K	B	9.8/10.7
C724	4030017460	S.CER	ECJ0EB1E102K	B	6.9/14.1
C725	4030017420	S.CER	ECJ0EC1H470J	T	14.5/13.7
C726	4030017460	S.CER	ECJ0EB1E102K	T	15.5/13.7
C727	4030017460	S.CER	ECJ0EB1E102K	T	16.5/13.7
C729	4030017580	S.CER	ECJ0EC1H060C	B	10.6/13.1
C731	4030017360	S.CER	ECJ0EC1H030B	T	7.8/14.2
C732	4030017460	S.CER	ECJ0EB1E102K	T	5/11.7
C733	4030017360	S.CER	ECJ0EC1H030B	T	5.4/10.5
C734	4030017420	S.CER	ECJ0EC1H470J	B	5.7/11.1
C735	4030017360	S.CER	ECJ0EC1H030B	T	6.2/14.2
C736	4030017530	S.CER	ECJ0EC1H0R5B	T	7/10.5
C737	4030017530	S.CER	ECJ0EC1H0R5B	T	9.2/13.7
C738	4030017420	S.CER	ECJ0EC1H470J	T	14.1/15.9
C742	4030017460	S.CER	ECJ0EB1E102K	T	31.6/13.4
C744	4030017580	S.CER	ECJ0EC1H060C	T	30.4/13.5
C745	4030017360	S.CER	ECJ0EC1H030B	T	32.9/11.8
C746	4030017610	S.CER	ECJ0EC1H090C	T	31.5/10.2

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[PA-C UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C747	4030017530	S.CER ECJ0EC1H0R5B	T	34.4/12.9
C748	4030017360	S.CER ECJ0EC1H030B	T	34.5/10
C750	4030006990	S.CER C1608 CH 1H 080D-T	B	30.4/14
C751	4030017380	S.CER ECJ0EC1H050B	B	29.6/16.4
C752	4030017600	S.CER ECJ0EC1H080C	B	27.3/17.2
C753	4030017420	S.CER ECJ0EC1H470J	T	26.4/18.9
C754	4030017460	S.CER ECJ0EB1E102K	B	26.1/17.5
C755	4030017420	S.CER ECJ0EC1H470J	B	25.2/17.5
C756	4030017460	S.CER ECJ0EB1E102K	B	17.5/13.1
C757	4030017460	S.CER ECJ0EB1E102K	B	17.5/14.9
C758	4030018860	S.CER ECJ0EB0J105K	T	12.1/2.2
C759	4030018860	S.CER ECJ0EB0J105K	B	8.2/11.7
C760	4030017730	S.CER ECJ0EB1E471K	T	13.1/2.2
C761	4030017460	S.CER ECJ0EB1E102K	B	15.5/18.4
C762	4030018860	S.CER ECJ0EB0J105K	B	17.3/17.6
C763	4030017460	S.CER ECJ0EB1E102K	B	17.9/22.7
C764	4030016790	S.CER ECJ0EB1C103K	B	17.8/20.8
C765	4030006860	S.CER C1608 JB 1H 102K-T	B	19.2/16.6
C766	4030016790	S.CER ECJ0EB1C103K	B	21/23
C781	4030017460	S.CER ECJ0EB1E102K	T	12.7/21.1
C782	4030017420	S.CER ECJ0EC1H470J	T	12.7/22.1
C783	4030017360	S.CER ECJ0EC1H030B [EUR-02]	B	26.5/19.7
	4030017370	S.CER ECJ0EC1H3R5B [UK-02]	B	26.5/19.7
J701	6510023350	S.CNR MM8430-2600RA1	B	34.1/14.3
J702	6910017680	CNR IMSA-9230B-1-04Z140-PT1		
J703	6910017680	CNR IMSA-9230B-1-04Z140-PT1		
F701	5210000901	S.FUS 0467003.NR (0434003)	B	12.6/20.6
EP701	6910015370	S.BEA ACZ1005Y-102-T	T	15/15
EP702	6910015370	S.BEA ACZ1005Y-102-T	B	5.7/12.7

[CONNECT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
L901	6200006190	S.COL BLM21PG300SN1D	T	8.7/6
C901	4030017460	S.CER ECJ0EB1E102K	T	5.6/6
C902	4030017420	S.CER ECJ0EC1H470J	T	5.6/7
C905	4030017420	S.CER ECJ0EC1H470J	B	9/6.2
C906	4030017460	S.CER ECJ0EB1E102K	B	9/7.2
J901	6910015881	CNR 9230B-1-02Z141-PT1		

[DSP UNIT] (UT-119S)

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1180002271	S.REG TK11250CMCL-G	T	29.2/10.9
IC2	1180002590	S.REG XC6204B332MR	B	12/3.7
IC3	1110006700	S.IC TB7100F (TE85L F)	T	26.9/17.1
IC4	1180002590	S.REG XC6204B332MR	T	22.7/10.9
IC7	1110006230	S.IC NJM2711F-TE1	T	24.6/2.3
IC8	1110005290	S.IC NJM2115V-TE1	B	21.6/12.7
IC9	1130007021	S.IC TC7S66FU (TE85L F)	B	22.8/16.3
IC10	1140013280	S.IC TMS320VC5507ZHH	T	7.2/11.1
IC11	1130006891	S.IC TC7S04FU (TE85R F)	B	8.2/10.5
IC12	1130007281	S.IC TC7S32FU (TE85R F)	B	8.2/13.4
IC13	1190002080	S.IC AD7476ARTZ-500RL7	T	17.4/3
IC16	1130012910	S.IC AK4554VTP-E2/P	B	24/3
IC17	1110006230	S.IC NJM2711F-TE1	B	17.2/3.7
IC18	1140008650	S.IC HN58X2464TI	B	4.2/7.2
IC20	1130012820	S.IC AT25F1024AN-10SU-2.7SL383	B	4.1/2.6
IC22	1130006891	S.IC TC7S04FU (TE85R F)	T	15.1/10.8
IC23	1130013040	S.IC TC7WBD125AFK (T5L F)	B	5.3/14.5
IC24	1130013040	S.IC TC7WBD125AFK (T5L F)	B	14.6/14.5
IC26	1130013050	S.IC HD74LV2GT125AUSE-E	B	11/14.5
Q1	1590003550	S.TR XP4313 (TX)	B	19.8/17
Q2	1590003230	S.TR UNR9113J-(TX)	T	23.8/8
Q3	1530003190	S.TR 2SC4617 TLQ	B	33.5/4.4
D1	1750001280	S.DIO CUS02 (TE85L Q)	T	24.4/14.4
D2	1790001240	S.DIO MA2S728-(TX)	B	8.3/16.6
D3	1790001240	S.DIO MA2S728-(TX)	B	5.1/17.6
D4	1790001240	S.DIO MA2S728-(TX)	B	6.9/17.5
D5	1790001240	S.DIO MA2S728-(TX)	B	4/9.9
FI1	2020002210	S.CER CFXCE450KCFA-R1	T	28.7/2.1
X1	6050012350	S.XTL CR-817 (12.288 MHz)	B	14.9/9.5

[DSP UNIT] (UT-119S)

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
L1	6200001620	S.COL ELJFC 1R0K-F	T	32.9/9.8
L2	6200012090	S.COL CDRH2D18HP-150NC	T	21.4/17.5
L3	6200007830	S.COL ELJFC 4R7K-F	T	17.3/18.8
L4	6200001620	S.COL ELJFC 1R0K-F	T	30/6.5
R1	7030004980	S.RES ERJ2GEJ 101 X (100)	B	26.3/14.6
R2	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	25.1/16.1
R3	7030004980	S.RES ERJ2GEJ 101 X (100)	B	26.3/13.7
R4	7030004980	S.RES ERJ2GEJ 101 X (100)	B	26.3/9
R5	7030004980	S.RES ERJ2GEJ 101 X (100)	B	26.2/9.9
R9	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	T	25.8/6.4
R10	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	T	27.6/6.4
R11	7030004980	S.RES ERJ2GEJ 101 X (100)	T	24.9/6.4
R12	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	T	25.8/4.8
R13	7030004980	S.RES ERJ2GEJ 101 X (100)	T	22.3/2.8
R14	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	T	21.4/1.2
R15	7030004970	S.RES ERJ2GEJ 470 X (47)	T	20.5/1.2
R16	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	T	30/4.6
R18	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	15.1/18.3
R19	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	3.5/15.4
R20	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	7.1/15.4
R22	7030004980	S.RES ERJ2GEJ 101 X (100)	B	27.6/18.1
R23	7030004980	S.RES ERJ2GEJ 101 X (100)	B	27.1/17.2
R24	7030004980	S.RES ERJ2GEJ 101 X (100)	B	29.2/18.9
R25	7030004980	S.RES ERJ2GEJ 101 X (100)	B	33.4/18.9
R26	7030004980	S.RES ERJ2GEJ 101 X (100)	B	33.4/17.8
R27	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	31.2/13.7
R28	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	T	32.2/13.7
R32	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	B	19.6/7
R33	7030005600	S.RES ERJ2GEJ 273 X (27 k)	B	19.6/8.6
R34	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	17.3/11.8
R35	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	19.8/10.1
R36	7030009710	S.RES ERJ2GEJ 203 X (20 k)	B	21.4/10.1
R37	7030009710	S.RES ERJ2GEJ 203 X (20 k)	B	24.6/10.1
R38	7030009710	S.RES ERJ2GEJ 203 X (20 k)	B	26.3/11.9
R39	7030004980	S.RES ERJ2GEJ 101 X (100)	B	20.1/15.2
R41	7030004970	S.RES ERJ2GEJ 470 X (47)	B	12.6/6.8
R42	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	12.6/7.7
R43	7030004970	S.RES ERJ2GEJ 470 X (47)	B	17.8/6.8
R44	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	17.8/5.9
R45	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	16.3/6.6
R46	7030004980	S.RES ERJ2GEJ 101 X (100)	B	18.5/1.2
R47	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	17.6/1.2
R48	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	14.6/4.7
R49	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	14.6/1.8
R50	7030010040	S.RES ERJ2GEJ-JPW	B	14.6/3.8
R51	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	29.5/19.2
R52	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	29.5/18.2
R53	7030011060	S.RES RR0510P-273-D (27 k)	T	21/14.3
R54	7030008260	S.RES RR0510R-393-D (39 k)	T	22/14.3
R55	7030010040	S.RES ERJ2GEJ-JPW	B	12.6/5.9
R56	7030005170	S.RES ERJ2GEJ 474 X (470 k)	T	23/14.3
R62	7030007250	S.RES ERJ2GEJ 220 X (22)	T	15.8/6.8
R63	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	T	18.3/.8
R64	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	T	19.6/2.8
R69	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	20.5/8.6
R70	7030004980	S.RES ERJ2GEJ 101 X (100)	B	26.3/7.2
R71	7030004980	S.RES ERJ2GEJ 101 X (100)	B	29.3/3.9
R72	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	28.4/2.3
R73	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	34.2/1.6
R74	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	31.9/3.9
R75	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	33.8/5.9
R81	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	9.9/4.3
R82	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	8.3/4.3
R83	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	12.3/4.3
R84	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	2.3/9.9
R85	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	15.5/5.6
R86	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	21.4/4.8
R87	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	21.8/6.1
R91	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	10.5/8.9
R92	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	11.4/8.9
R93	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	8.6/1.3
R94	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	8.6/2.9
R95	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	8.6/3.8
R96	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	10.5/10.8
R97	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	11.4/10.8
C1	4030018560	S.CER C2012 JB 1A 475K-T	T	32.9/12
C2	4030016930	S.CER ECJ0EB1A104K	T	26.7/11.8
C3	4030016930	S.CER ECJ0EB1A104K	T	29.9/8.3
C4	4030016930	S.CER ECJ0EB1A104K	T	26.7/10
C5	4550007070	S.TAN TEESVP 0J 475M8R	T	25.3/10.9
C6	4030018860	S.CER ECJ0EB0J105K	T	26.7/8.4
C7	4030016930	S.CER ECJ0EB1A104K	T	25.8/8.4
C9	4030016930	S.CER ECJ0EB1A104K	T	18.4/9.9
C10	4550007030	S.TAN TEESVP 0J 106M8R	T	20.1/10.9
C11	4550007070	S.TAN TEESVP 1A 475M8R	B	12/1
C12	4030016930	S.CER ECJ0EB1A104K	B	14.6/8
C13	4030016930	S.CER ECJ0EB1A104K	B	9.8/4.1
C14	4550007030	S.TAN TEESVP 0J 106M8R	B	10.1/6.3
C21	4030016930	S.CER ECJ0EB1A104K	T	31.6/4.6
C22	4030018910	S.CER C1608 JB 0J 475K-T	T	24.1/5
C23	4030016930	S.CER ECJ0EB1A104K	T	23.6/6.1
C24	4030016930	S.CER ECJ0EB1A104K	T	26.7/6.4
C25	4030016930	S.CER ECJ0EB1A104K	T	26.7/4.8
C26	4030016930	S.CER ECJ0EB1A104K	T	21.4/2.8
C27	4030017590	S.CER ECJ0EC1H070C	T	22.3/1.2
C28	4030017730	S.CER ECJ0EB1E471K	T	20.5/2.8
C31	4030016930	S.CER ECJ0EB1A104K	B	18.2/15
C32	4030017460	S.CER ECJ0EB1E102K	B	17.9/17.2
C33	4030016790	S.CER ECJ0EB1C103K	B	17.3/13.4
C34	4030016930	S.CER ECJ0EB1A104K	B	17.8/10
C35	4030017460	S.CER ECJ0EB1E102K	B	23/10.1
C36	4030017450	S.CER ECJ0EB1E271K	B	24.8/11

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[DSP UNIT] (UT-119S)

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
C37	4030017750	S.CER	ECJ0EB1E122K	B	26.3/12.8
C40	4030017420	S.CER	ECJ0EC1H470J	B	26.2/19.2
C41	4030017420	S.CER	ECJ0EC1H470J	B	25.4/18.3
C42	4030017420	S.CER	ECJ0EC1H470J	B	24.9/17.4
C43	4030017420	S.CER	ECJ0EC1H470J	T	31.2/18.2
C44	4030017420	S.CER	ECJ0EC1H470J	B	31.7/18.9
C45	4030017420	S.CER	ECJ0EC1H470J	B	26.3/15.6
C46	4030017420	S.CER	ECJ0EC1H470J	B	24.1/8.6
C47	4030017420	S.CER	ECJ0EC1H470J	B	25/8.6
C48	4030017420	S.CER	ECJ0EC1H470J	T	33.2/13.7
C51	4550007030	S.TAN	TEESVP 0J 106M8R	T	24.3/17.9
C52	4030016930	S.CER	ECJ0EB1A104K	T	26.2/14.2
C53	4030017770	S.CER	ECJ0EB1E332K	T	31.2/19.2
C54	4550006970	S.TAN	TEESVA0G476M8R	T	18.4/15.1
C55	4030016930	S.CER	ECJ0EB1A104K	T	20/14.3
C56	4550006970	S.TAN	TEESVA0G476M8R	T	16.2/15.1
C57	4030016790	S.CER	ECJ0EB1C103K	B	17.8/7.7
C61	4030016790	S.CER	ECJ0EB1C103K	B	13.9/17.6
C62	4030017460	S.CER	ECJ0EB1E102K	B	19.4/2.9
C63	4030016930	S.CER	ECJ0EB1A104K	B	12.6/8.6
C64	4030017430	S.CER	ECJ0EC1H101J	B	14.8/6.8
C65	4030016930	S.CER	ECJ0EB1A104K	B	14.8/5.9
C66	4030016930	S.CER	ECJ0EB1A104K	B	19.4/1.2
C67	4030017380	S.CER	ECJ0EC1H050B	B	16.7/1.2
C68	4030016930	S.CER	ECJ0EB1A104K	B	15.8/1.2
C71	4030016930	S.CER	ECJ0EB1A104K	B	33.8/7.1
C72	4030017460	S.CER	ECJ0EB1E102K	T	18.4/8.7
C73	4030018910	S.CER	C1608 JB 0J 475K-T	T	14.4/4.5
C74	4030016930	S.CER	ECJ0EB1A104K	T	16.5/8
C81	4030018860	S.CER	ECJ0EB0J105K	B	34.2/9.6
C82	4030018860	S.CER	ECJ0EB0J105K	B	23.2/8.6
C83	4030017460	S.CER	ECJ0EB1E102K	B	22.3/8.6
C84	4030018860	S.CER	ECJ0EB0J105K	B	20.5/7
C85	4030016930	S.CER	ECJ0EB1A104K	T	19.6/1.2
C86	4030018860	S.CER	ECJ0EB0J105K	B	26.3/8.1
C87	4030016950	S.CER	ECJ0EB1A473K	B	26.3/6.3
C88	4030016950	S.CER	ECJ0EB1A473K	B	28.4/3.9
C89	4030016930	S.CER	ECJ0EB1A104K	B	25/6.6
C90	4030018860	S.CER	ECJ0EB0J105K	B	24.1/6.6
C91	4030016930	S.CER	ECJ0EB1A104K	B	30.7/1.5
C92	4030018910	S.CER	C1608 JB 0J 475K-T	B	29.5/1.8
C93	4030018860	S.CER	ECJ0EB0J105K	B	30.3/3.9
C100	4030016790	S.CER	ECJ0EB1C103K	T	14.9/8.4
C101	4030018910	S.CER	C1608 JB 0J 475K-T	T	14.1/16.7
C102	4030016930	S.CER	ECJ0EB1A104K	B	17.3/15
C103	4030016790	S.CER	ECJ0EB1C103K	T	11.6/18.2
C104	4030018860	S.CER	ECJ0EB0J105K	T	14/8.4
C105	4030016790	S.CER	ECJ0EB1C103K	T	14.9/6.8
C106	4030016930	S.CER	ECJ0EB1A104K	T	14.4/12.7
C107	4030016790	S.CER	ECJ0EB1C103K	T	14/6.8
C108	4030016790	S.CER	ECJ0EB1C103K	B	3.2/11.2
C109	4030018860	S.CER	ECJ0EB0J105K	T	13.1/18.2
C110	4030016930	S.CER	ECJ0EB1A104K	B	3.5/13.8
C111	4030016930	S.CER	ECJ0EB1A104K	B	10.4/7.7
C112	4030016930	S.CER	ECJ0EB1A104K	B	9.8/1.2
C113	4030016930	S.CER	ECJ0EB1A104K	B	5.7/9.9
J1	6510025230	S.CNR	AXK640345J	B	30.3/11.5
EP2	6910016330	BEA	MMZ1005S 601CT-S	B	30.9/2.7
EP3	6910016330	BEA	MMZ1005S 601CT-S	T	34.2/13.7
EP4	6910016330	BEA	MMZ1005S 601CT-S	B	8.6/4.7

• BC-160

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
IC1	1110006480	S.IC	NJM2801U1-0543-TE1	B	10.2/62.3
IC2	1110003071	S.IC	uPC494GS-E1-A	B	13/36.7
IC3	1140012301	S.IC	uPD789112AMC-534-5A4-A	B	19.1/19.6
IC4	1110002700	S.IC	NJM2904M-TE1	B	35.1/13.8
Q1	1530002060	S.TR	2SC4081 T106 R	B	37.3/63.9
Q2	1550000090	S.FET	RSQ035P03TR	B	37.3/60.9
Q3	1530002060	S.TR	2SC4081 T106 R	B	35.8/19.3
Q4	1530002060	S.TR	2SC4081 T106 R	B	41.6/18.3
Q5	1590000430	S.TR	DTC144EUA T106	B	23.7/26.6
Q6	1530002060	S.TR	2SC4081 T106 R	B	22.5/58.2
D1	1730002350	S.ZEN	MA8110-M (TX)	B	17.6/60.5
D2	1750000550	S.DIO	1SS355 TE-17	B	34.8/64.4
D3	1750001110	S.DIO	SM240A-T	B	44.4/56
D4	1160000070	S.DIO	DAN202K T146	B	26.9/20.6
D5	1750000550	S.DIO	1SS355 TE-17	B	27.2/15
X1	6060000790	S.CER	CSTCR4M91G	B	10.3/17.7
L1	6190001640	S.COL	SLF12555T-101M1R1	B	35.3/52.7
L2	6200002611	S.COL	NLV25T-R47J	B	20.8/28.2
R2	7030000460	S.RES	MCR10EZHJ 4.7 k	B	20.3/58.6
R3	7030003410	S.RES	ERJ3GEYJ 561 V (560)	B	37.3/65.8
R4	7030003200	S.RES	ERJ3GEYJ 100 V (10)	B	34.6/61.1

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION		M.	H/V LOCATION
R5	7030009580	S.RES	ERJ8RSJ R12V	B	31.8/73
R6	7030000540	S.RES	MCR10EZHJ 22 k	B	30.1/26.8
R7	7030000380	S.RES	MCR10EZHJ 1 k	B	30.1/29.6
R8	7030003520	S.RES	ERJ3GEYJ 472 V (4.7 k)	B	39.5/18.4
R9	7030003600	S.RES	ERJ3GEYJ 223 V (22 k)	B	13.8/30.5
R10	7030000740	S.RES	MCR10EZHJ 1 M	B	25.8/34.9
R11	7030000540	S.RES	MCR10EZHJ 22 k	B	24.8/37.8
R12	7030003560	S.RES	ERJ3GEYJ 103 V (10 k)	B	10.8/30.5
R13	7030003600	S.RES	ERJ3GEYJ 223 V (22 k)	B	19.3/34.5
R14	7030003770	S.RES	ERJ3GEYJ 564 V (560 k)	B	21/34.5
R15	7030003650	S.RES	ERJ3GEYJ 563 V (56 k)	B	21/40.3
R16	7030003770	S.RES	ERJ3GEYJ 564 V (560 k)	B	19.3/40.3
R17	7030003560	S.RES	ERJ3GEYJ 103 V (10 k)	B	22.7/40.3
R18	7030003410	S.RES	ERJ3GEYJ 561 V (560)	B	8.6/43.5
R19	7030003620	S.RES	ERJ3GEYJ 333 V (33 k)	B	16.7/42.1
R20	7030000560	S.RES	MCR10EZHJ 33 k	B	28.1/40.4
R21	7030000380	S.RES	MCR10EZHJ 1 k	B	26.3/28.6
R22	7030000440	S.RES	MCR10EZHJ 3.3 k	B	24/11.4
R23	7030000460	S.RES	MCR10EZHJ 4.7 k	B	24/8.8
R24	7030000260	S.RES	MCR10EZHJ 101 (100)	B	20.3/11.4
R25	7030000260	S.RES	MCR10EZHJ 101 (100)	B	20.3/8.8
R26	7030000500	S.RES	MCR10EZHJ 10 k	B	30.5/22
R27	7030007220	S.RES	ERA3YED 202V (2 k)	B	30.2/19.6
R28	7030011200	S.RES	ERA3YEB 303V (30 k)	B	30/18.1
R29	7030011190	S.RES	ERA3YEB 103V (10 k)	B	26.9/16.6
R30	7030005871	S.RES	ERA3YKD 104V (100 k)	B	40.4/15.1
R31	7030003560	S.RES	ERJ3GEYJ 103 V (10 k)	B	29.8/15.9
R32	7030005341	S.RES	ERA3YED 332V (3.3 k)	B	43.4/11.1
R33	7030000500	S.RES	MCR10EZHJ 10 k	B	31.7/9.8
R34	7030000740	S.RES	MCR10EZHJ 1 M	B	42.1/14.4
R35	7030003440	S.RES	ERJ3GEYJ 102 V (1 k)	B	40.4/12.2
R36	7030000460	S.RES	MCR10EZHJ 4.7 k	B	34.7/23.8
R37	7030005501	S.RES	ERA3YKD 124V (120 k)	B	33.6/21.3
R38	7030005671	S.RES	ERA3YKD 393V (39 k)	B	30.1/25.1
R39	7030000010	S.RES	MCR10EZHJ JPW	B	28.1/42.2
R40	7030000010	S.RES	MCR10EZHJ JPW	B	27.7/8.4
R41	7030000010	S.RES	MCR10EZHJ JPW	B	34.6/9.2
R42	7030008240	S.RES	ERJ12YJ0R00U	B	38.9/7.4
R43	7030000010	S.RES	MCR10EZHJ JPW	B	30.1/33.3
R44	7030000010	S.RES	MCR10EZHJ JPW	B	28.1/33.3
R45	7030000010	S.RES	MCR10EZHJ JPW	B	29.1/38
R46	7030000010	S.RES	MCR10EZHJ JPW	B	29.1/36.1
R47	7030000010	S.RES	MCR10EZHJ JPW	B	43.9/18.3
R48	7030008240	S.RES	ERJ12YJ0R00U	B	43/28.9
R49	7030000010	S.RES	MCR10EZHJ JPW	B	23.5/5.7
R50	7030008240	S.RES	ERJ12YJ0R00U	B	34.1/38.2
R51	7030000010	S.RES	MCR10EZHJ JPW	B	23.9/34.9
R52	7030000010	S.RES	MCR10EZHJ JPW	B	24.7/32
R53	7030008240	S.RES	ERJ12YJ0R00U	B	38.6/33.1
R54	7030000010	S.RES	MCR10EZHJ JPW	B	34.4/33
R55	7030000010	S.RES	MCR10EZHJ JPW	B	32/60.1
R56	7030000010	S.RES	MCR10EZHJ JPW	B	42.1/41.5
R57	7030000010	S.RES	MCR10EZHJ JPW	B	37.2/41.5
R58	7030000010	S.RES	MCR10EZHJ JPW	B	24.9/57
R59	7030000010	S.RES	MCR10EZHJ JPW	B	27.6/49.3
R60	7030000010	S.RES	MCR10EZHJ JPW	B	16.3/58.3
R61	7030000010	S.RES	MCR10EZHJ JPW	B	4.9/31.7
R62	7030000010	S.RES	MCR10EZHJ JPW	B	39.1/41.5
R63	7030000010	S.RES	MCR10EZHJ JPW	B	31.4/43.6
R64	7030000010	S.RES	MCR10EZHJ JPW	B	40.1/38.7
R65	7030000010	S.RES	MCR10EZHJ JPW	B	4.9/49.5
R66	7030003560	S.RES	ERJ3GEYJ 103 V (10 k)	B	8.2/13.6
R67	7030000100	S.RES	MCR10EZHJ 4R7 (4.7)	B	10.2/45.1
C1	4030006900	S.CER	C1608 JB 1H 103K-T	B	44.5/70.7
C2	4030006900	S.CER	C1608 JB 1H 103K-T	B	48.2/73.5
C3	4030006860	S.CER	C1608 JB 1H 102K-T	B	44.5/67.8
C4	4030006900	S.CER	C1608 JB 1H 103K-T	B	32.9/69.7
C5	4030006900	S.CER	C1608 JB 1H 103K-T	B	32.9/71.1
C6	4510008540	S.ELE	EEE1CA100SR	B	17.5/63.8
C7	4030011600	S.CER	C1608 JB 1E 104K-T	B	13.4/60.8
C8	4030006900	S.CER	C1608 JB 1H 103K-T	B	9.2/58.7
C9	4030011600	S.CER	C1608 JB 1E 104K-T	B	13.4/63.8
C10	4510009150	S.ELE	EEE1EA470WP	B	43.6/62.8
C11	4030006900	S.CER	C1608 JB 1H 103K-T	B	35.8/67.9
C12	4030006900	S.CER	C1608 JB 1H 103K-T	B	32.4/67.9
C13	4510009150	S.ELE	EEE1EA470WP	B	26.5/62.8
C14	4510008660	S.ELE	EEE0JA220SR	B	34.3/28
C15	4510008660	S.ELE	EEE0JA220SR	B	40.8/23.8
C16	4030006860	S.CER	C1608 JB 1H 102K-T	B	12.3/30.5
C17	4030011600	S.CER	C1608 JB 1E 104K-T	B	19.3/37.4
C18	4030006900	S.CER	C1608 JB 1H 103K-T	B	21/37.4
C19	4030006900	S.CER	C1608 JB 1H 103K-T	B	13.1/42.2
C20	4030009980	S.CER	C1608 JB 1H 152K-T	B	8.6/42.1
C21	4030011600	S.CER	C1608 JB 1E 104K-T	B	9.5/21.9
C22	4030006900	S.CER	C1608 JB 1H 103K-T	B	19/25.5
C23	4030006900	S.CER	C1608 JB 1H 103K-T	B	26.9/23.2
C24	4030006900	S.CER	C1608 JB 1H 103K-T	B	26.9/18
C25	4030004760	S.CER	C2012 JF 1H 104Z-T	B	33.2/17.5
C26	4030006900	S.CER	C1608 JB 1H 103K-T	B	41.9/11.1
C27	4030006900	S.CER	C1608 JB 1H 103K-T	B	29.5/12.6
C28	4030006900	S.CER	C1608 JB 1H 103K-T	B	30.1/23.7
J1	6510024940	CNR	HEC2305-016250		
DS1	5040002740	LED	RT3-03HRYG		

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

[CHASSIS PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J2	6910015860	IMSA-6277S-O2A-G	1
SP1	2510001060	K036NA500-47	1
W1	8900009640	OPC-963	1
EP1	3310003640	2927 ANT	1
MP1	8010020410	2927 chassis	1
MP2	8210022980	2927 S-front panel (Including MP21, MP22, MP23)	1
MP3	8210022790	2927 PTT panel	1
MP4	8930069520	2927 PTT button	1
MP5	8930069530	2927 PTT rubber	1
MP6	8930040390	SP Net (B)	1
MP7	8930046050	SP Net (C)	1
MP8	8210020550	2721 rear panel	1
MP9	8310066450	2927 window plate	1
MP10	8930069510	2927 window sheet	1
MP12	8930069880	2927 keyboard 4-key (A)	1
MP13	8930070100	2927 main seal (A)	1
MP14	8930063060	2721 T-rubber	1
MP16	8930069460	2927 side plate	1
MP17	8930069470	2927 top plate	1
MP20	8930061880	2721 MIC sponge	1
MP24	8610012970	Knob N-350	1
MP25	8830002900	2927 ANT NUT	1
MP26	8810009561	Screw B0 2×6 NI-ZK3 (BT)	2
MP27	8810009221	Screw B0 2×8 NI-ZK3 (BT)	2
MP28	8810008641	Screw B0 2×4 NI-ZC3 (BT)	11
MP31	8810010430	Screw M3×5 SUS SSBC	1
MP32	8310066810	2927 option plate	1
MP33	8930046020	1123 sheet (A)-1	1
MP35	8830001700	VR nut (Q)	1
MP36	8930048870	2056 A-sponge	1
MP37	8930070010	2893 VOL rubber	1
MP38	6910018220	2927 ANT cap	1

[MAIN-C UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J2	6450002250	HSJ1456-010320	1
J3	6450000131	HSJ1102-018540	1
R315	7210003061	TP76N00N-15F-A103-2251A	1
DS3	5030002760	FX-2721 LCD-1	1
MC1	7700002480	SKB-2746 LPC	1
S2	2260002840	SKHLLFA010	1
EP7	8930063020	LCD contact SRCN-2721-SP-N-W	2
MP2	8510016120	2721 VCO cover	1
MP3	8930069480	2927 LCD holder	1
MP4	8210020570	2721 reflector	1
MP5	8930070080	White sheet (V)	1
MP6	8510017720	2927 main shield	1
MP8	8930070270	Shield sponge (AZ)	1

[DSP UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
EP13	Optional product	UT-119S (Including MP7)	1

[CONNECT UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J901	6910015881	9230B-1-02Z141-PT1	1

[PA-C UNIT]

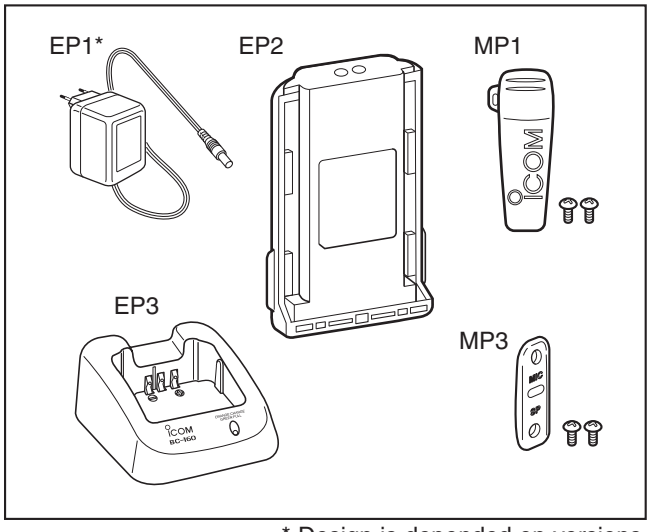
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J702	6910017680	9230B-1-04Z140-PT1	1
J703	6910017680	9230B-1-04Z140-PT1	1

Screw abbreviations

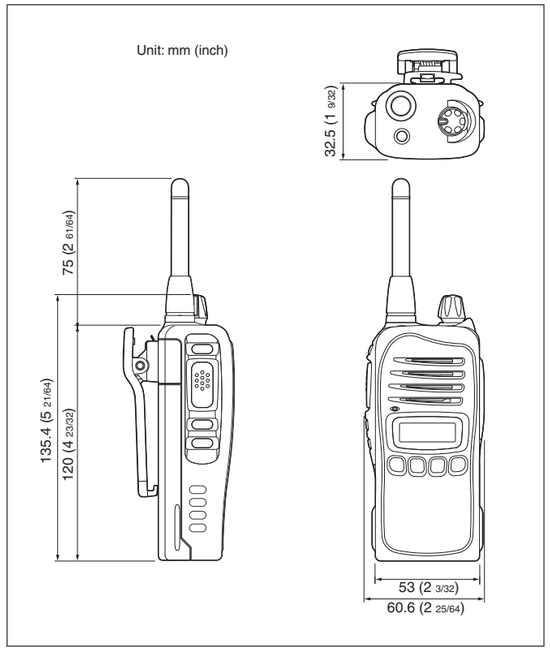
B0, BT: Self-tapping PH: Pan head
NI-ZU: Nickel-Zinc ZK: Black

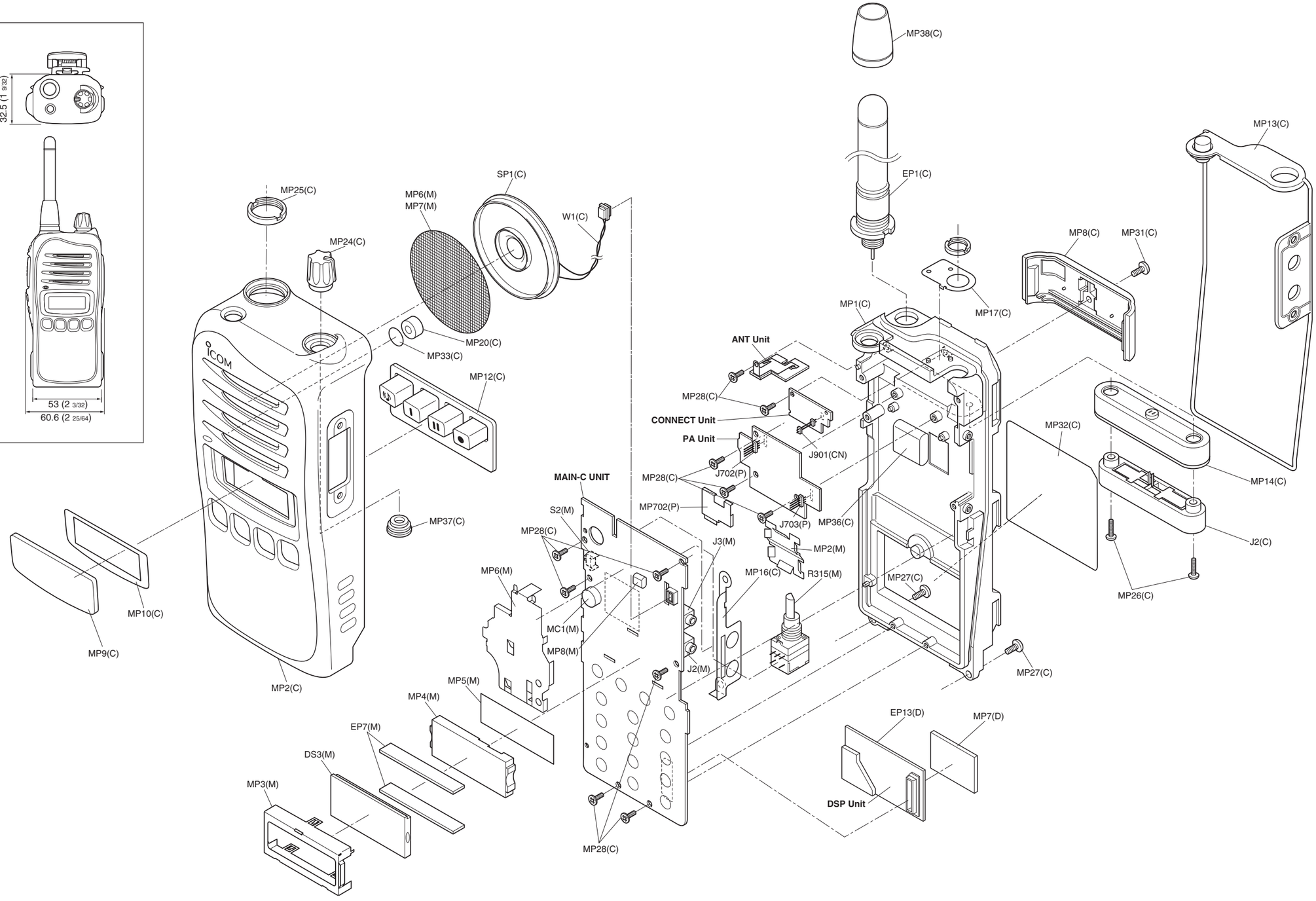
[ACCESSORIES]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
EP1	Optional product	AC adapter BC-147E	1
EP2	Optional product	Li-Ion battery pack BP-231	1
EP3	Optional product	Battery charger BC-160	1
MP1	Optional product	Belt clip MB-94 (Including two screws)	1
MP3	8210022780	2927 Jack panel (Including two screws)	1



* Design is depended on versions.

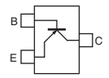
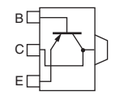
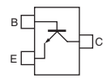
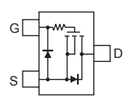
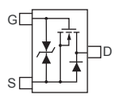
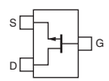
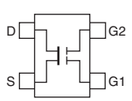


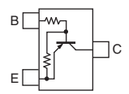
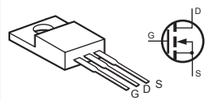
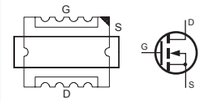
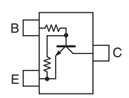
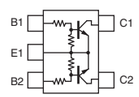
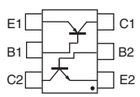
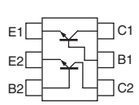


UNIT abbreviations (C): CHASSIS PARTS, (M): MAIN-C UNIT, (P): PA-C UNIT, (CN): CONNECT UNIT, (D): DSP UNIT

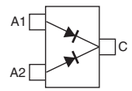
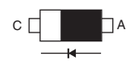
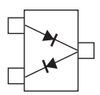
SECTION 8 SEMICONDUCTOR INFORMATION

• TRANSISTORS AND FET'S

NAME	SYMBOL	INSIDE VIEW
2SA1577 R	HR	
2SB1132 R	BARB	
2SC3356 R25 2SC4116 BL 2SC4215 O 2SC4226 R25 2SC5006 2SC5700	R25 LL QO R25 24 WB	
2SK1829 F	KI	
2SK3019	KN	
2SK880 Y F	XY	
3SK293 F 3SK324	UF UG	

NAME	SYMBOL	INSIDE VIEW
DTA114EU UNR9111J UNR9113J	16 6A 6C	
RD01MUS1	K2	
RD07MVS1	RD07MVS1	
UNR9213J	8C	
XP1214	9H	
XP4601	5C	
XP6501 AB	5N	

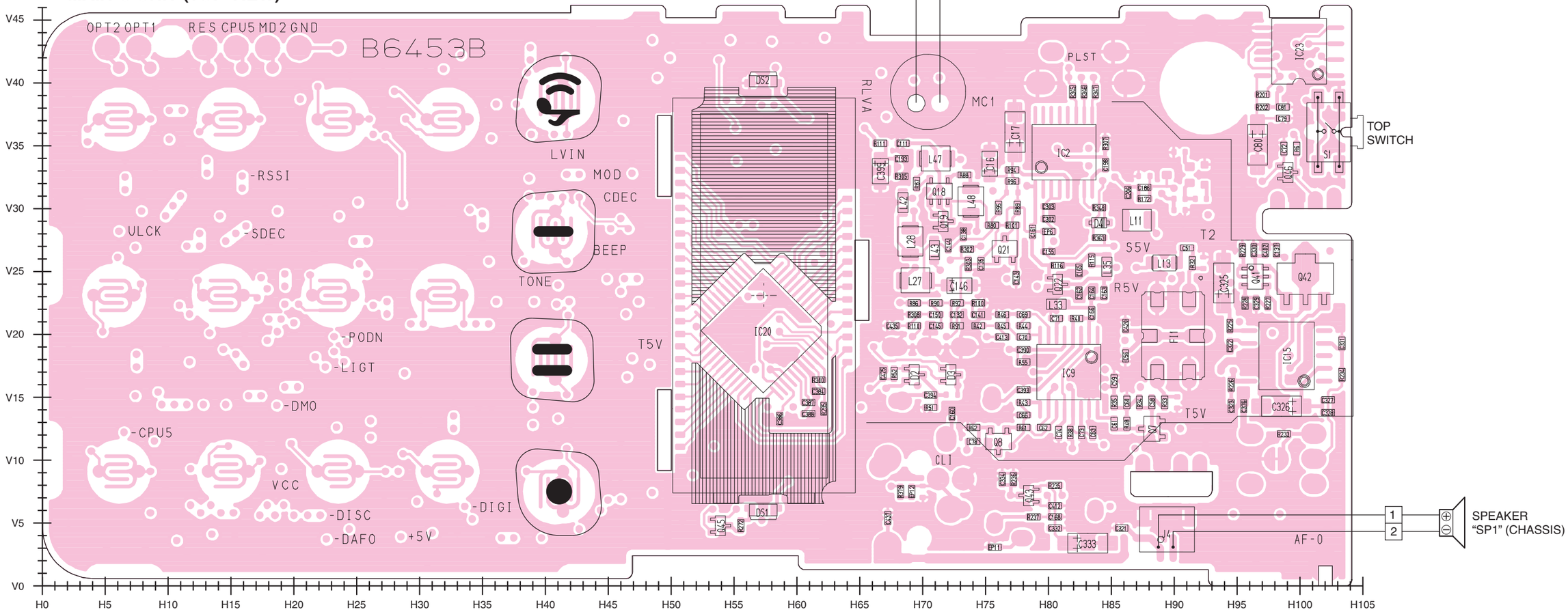
• DIODES

NAME	SYMBOL	INSIDE VIEW
1SV307	TX	
DAN222	N	
HVC350B-E	B0	
MA2S077 MA2S111 MA2S728	S A B	
MA368	6L	
RB706F-40	3J	

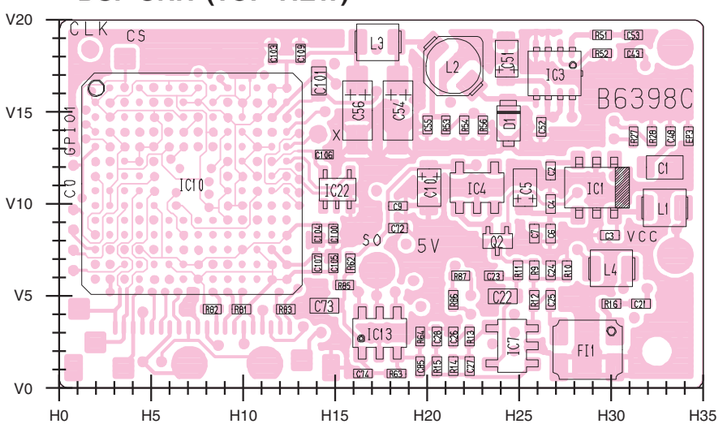
SECTION 9 BOARD LAYOUTS

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

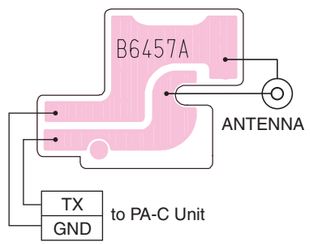
• MAIN-C UNIT (TOP VIEW)



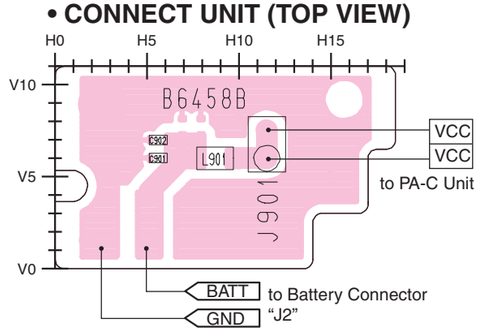
• DSP UNIT (TOP VIEW)



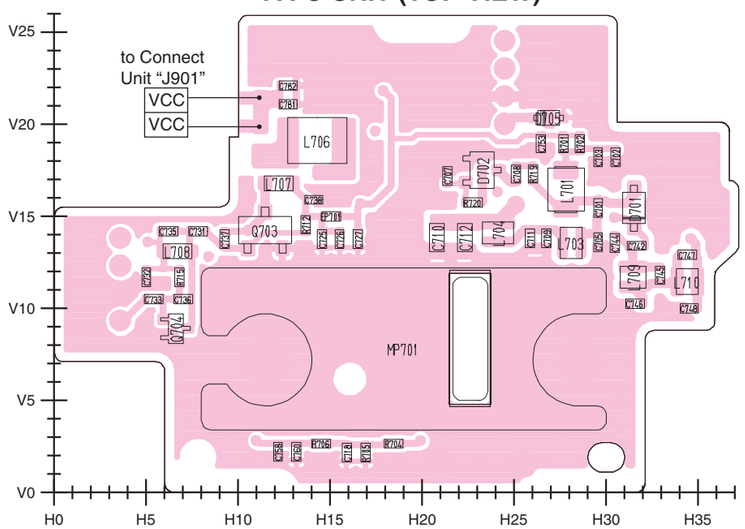
• ANT UNIT (TOP VIEW)



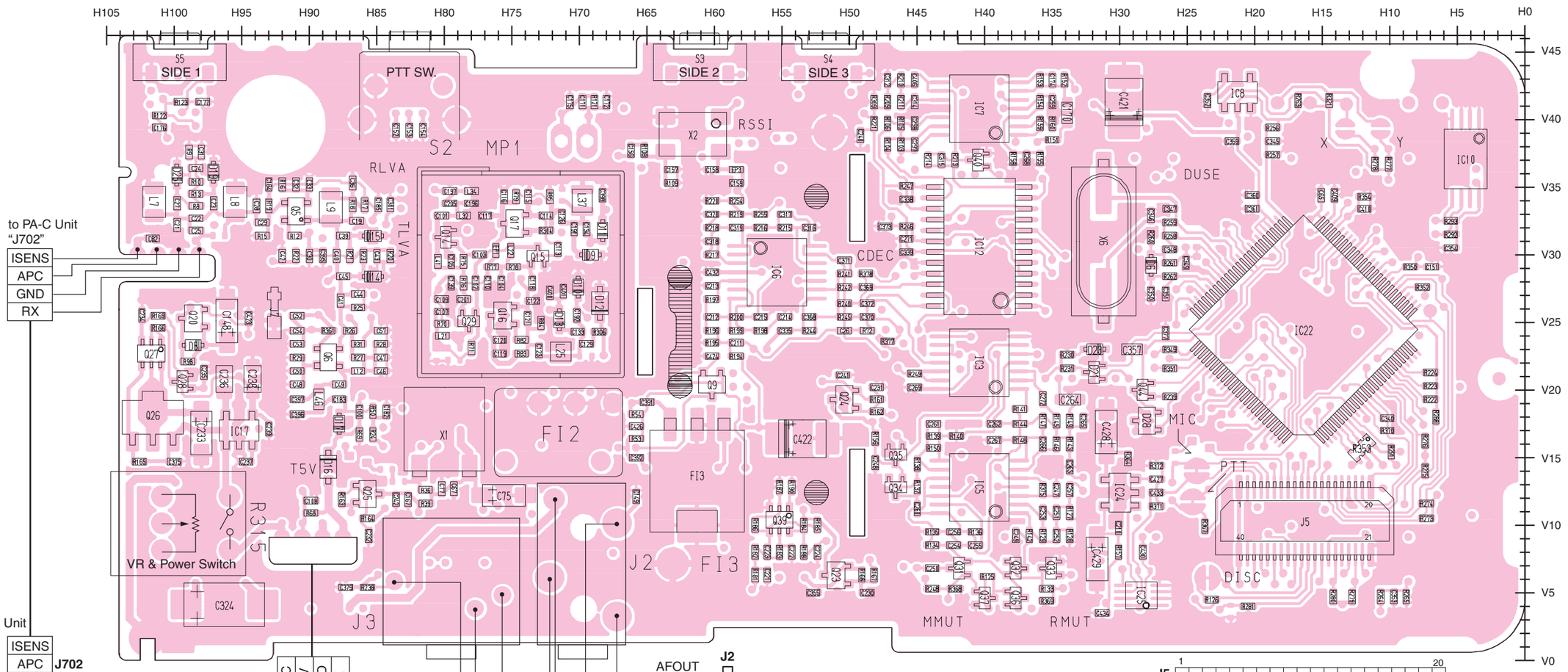
• CONNECT UNIT (TOP VIEW)



• PA-C UNIT (TOP VIEW)

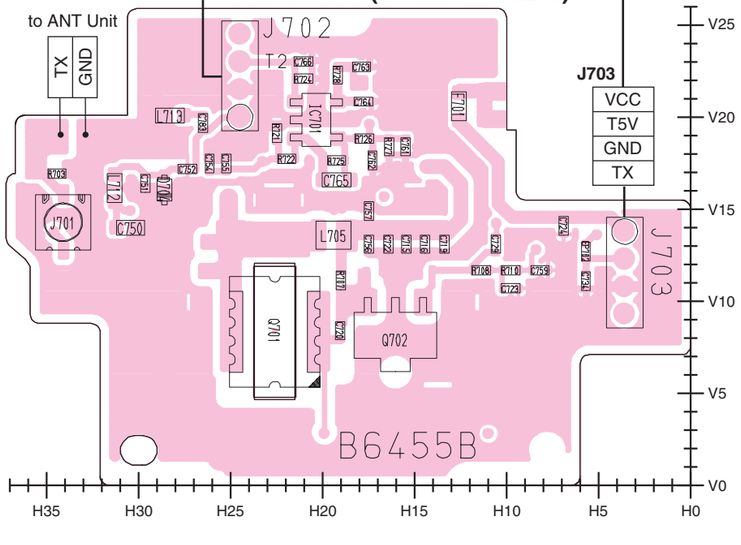


• MAIN-C UNIT (BOTTOM VIEW)

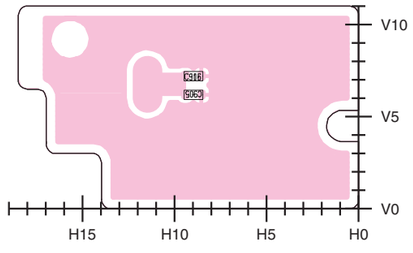


J5																				
1	D_IF	GND	PTTI	PTTO	MCOT	DMO	MCIN	DMI	NC	VREF	NC	BUSY	SIGO	OPT1	OPT2	OPT3	NC	OPV3	OPV2	OPV1	20
40	D_IF	GND	+5V	VCC	DVCC	MMUT	AFON	BEPO	RMUT	DISC	AFOUT	DAFO	REM	CCS	CIRQ	NC	CSO	CSI	CCK	GND	21

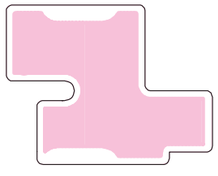
• PA-C UNIT (BOTTOM VIEW)



• CONNECT UNIT (BOTTOM VIEW)



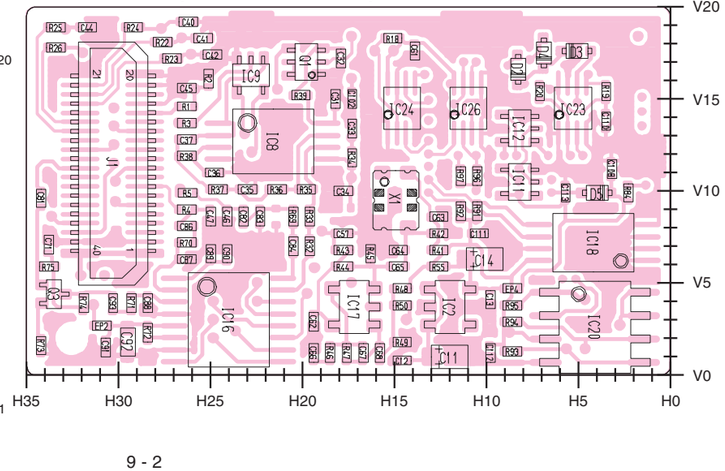
• ANT UNIT (BOTTOM VIEW)



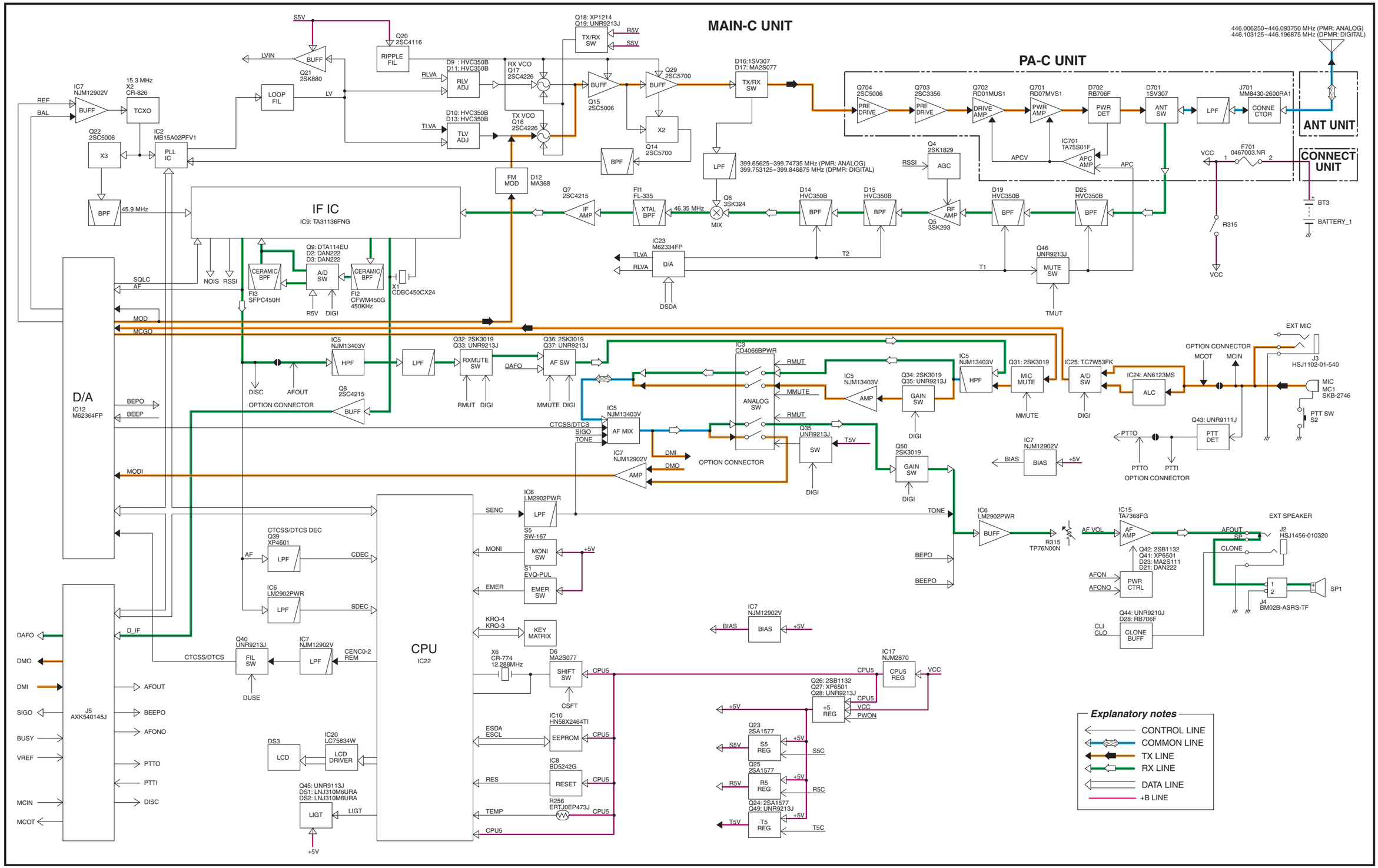
to MAIN-C Unit "J5"

J1			
21	GND	OPV1	20
	CCK	OPV2	
	CSI	OPV3	
	CSO	NC	
	NC	OPT3	
	CIRQ	OPT2	
	CCS	OPT1	
	REM	SIGO	
	DAFO	BUSY	
	AFOUT	NC	
	DISC	VREF	
	RMUT	NC	
	BEPO	DMI	
	AFON	MCIN	
	MMUT	DMO	
	DVCC	MCOT	
	VCC	PTTO	
	+5V	PTTI	
	GND	GND	
40	D_IF	D_IF	1

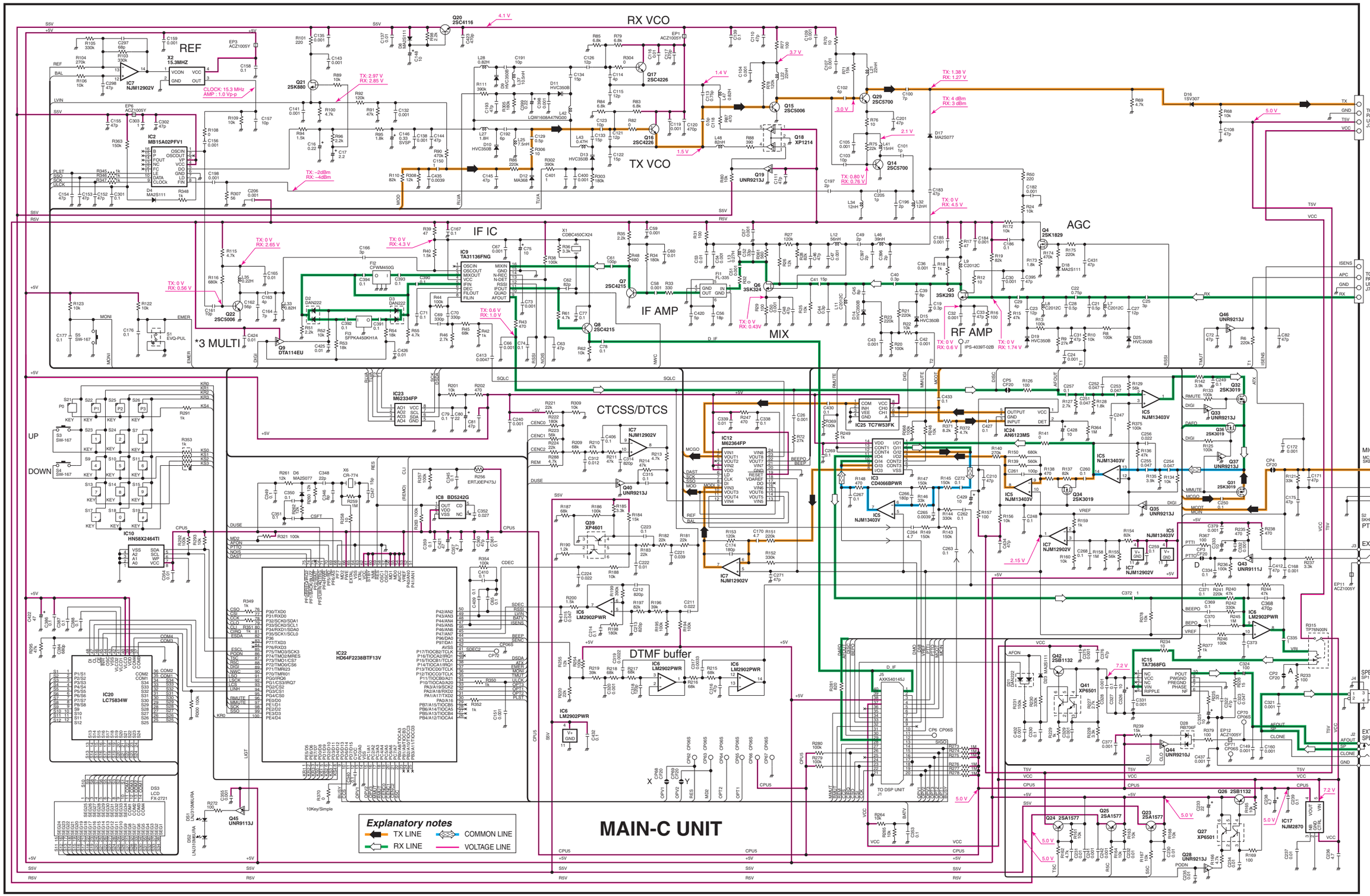
• DSP UNIT (BOTTOM VIEW)



SECTION 10 BLOCK DIAGRAM



SECTION 11 VOLTAGE DIAGRAM



CONNECT UNIT

J901 · L901 BLM21P300S · HV · BAT · GND · BATTERY CONNECTOR J2

C905 47p · C906 0.001 · C901 0.001 · C902 47p

PA-C UNIT

TO CONNECT UNIT J901 · VCC · F701 · L706 EXCCL3225U

T5V · EP701 ACZ1005Y-102 · EP702 ACZ1005Y-102

TO MAIN UNIT · J703 · TX · GND · T5V · VCC

TX: 0.76V RX: 0V · Q704 2SC5006 · TX: 0.76V RX: 0V · Q703 2SC3356 R25

Q702 RD01MUS1 · Q701 RD07MVS1 · 7.2V

MP701 PA heat sink

APCV

TX: 2.25V RX: 0V

IC701 TA75S01F F

TX: 0.08V RX: 0V

TX: 0.86V RX: 0.25V

TX: 0.2V RX: 0V

J702 · RX · GND · APC · TO MAIN UNIT

TO ANT UNIT · J701 · GND GND · OUT IN · GND GND

LPF

MEASUREMENT FREQUENCY: 446.00625 MHz

TX

MP801

ANT UNIT

J1 (CHASSIS) · GND

Explanatory notes

- TX LINE
- RX LINE
- COMMON LINE
- VOLTAGE LINE

DSP UNIT

IC2 XC6204B332M · 5V_VDD · 3.3V_VDD · 3.3V

IC3 TB7100F · 1.32V · CVDD_1.35V

IC1 TK11250CM G · 7.2V

IC4 XC6204B332M · 5.0V · 3.3V · +3.3V_A

EP4 MMZ1005S601CT

DRESET · DVDD_3.3V · CVDD_1.35V

AGND · +3.3V_A

R55 JPW

DSP

IC10 TMS320VC5509AZHH

EMU1 · TRST · EMU0

DSP FLASH

IC20 AT25F2048N · BCLKX0 · BDX0 · GPIO4

CIN · CIRQ · SI · CIRQO

IC26 HD74LV2GT125A

IC23 TC7WBD125AFK · CCS · SO · COUT · CCSI · CCLK

D2 MA2S728 · D3 MA2S728 · D4 MA2S728 · D5 MA2S728

IC24 TC7WBD125AFK · SCK · RESET

IC22 TC7S04FU

IC11 TC7S04FU

IC12 TC7S32FU

IC18 HN58X2464TI

PDC

BDR1 · BDX1 · BFSX1 · BFSR0 · BDR0 · BCLKR0

IC13 AD7476ARTZ

A/D

IC9 TC7S66FU

Q1 XP4313

IC8 NJM2115V

DBIAS

2.15V · 2.13V · 1.6V

TX: 2.25V RX: 2.13V

TX: 1.6V RX: 0V

EP3 MMZ1005S601CT · EP2 MMZ1005S601CT

Q3 2SC4617

LINEAR CODEC

IC16 AK4554VT

GPIO2 · GPIO3 · BCLKX1 · BFSX1 · BDX1 · BDR1

X1 CR-817 12.288MHZ

IC17 NJM2711F

CLOCK

clock: 12.288 MHz amplitude: 0.58 Vp-p

Q2 UNR9113J

IF-FILTER

FI1 CFXCE450KCFA-R1

IC7 NJM2711F

D_IF

to MAIN-C UNIT J5

J1 · OPT1(PD) · VREF · DMI · DMO · OPT3(RES)

Explanatory notes

- TX LINE
- RX LINE
- COMMON LINE
- VOLTAGE LINE

SECTION 12 BC-160

[CHASSIS PARTS]

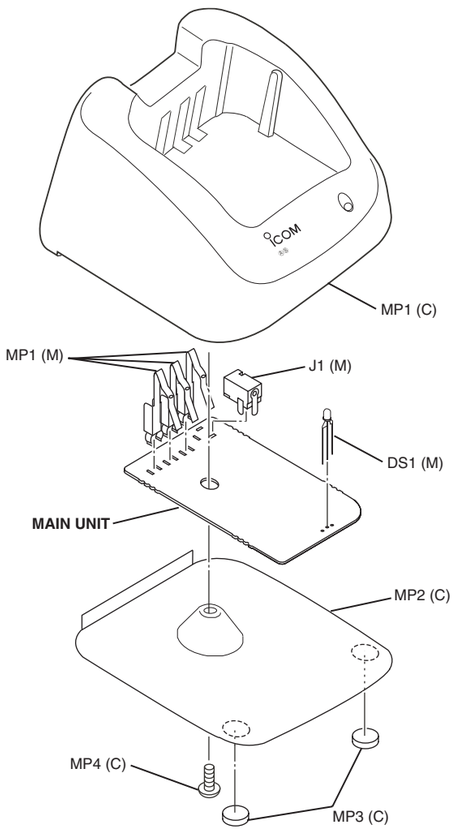
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8010019750	2830 case	1
MP2	8110008220	2830 cover	1
MP3	8930039620	Leg cushion (A)	2
MP4	8810008630	Screw PH BT M3 × 6 NI-ZU	1

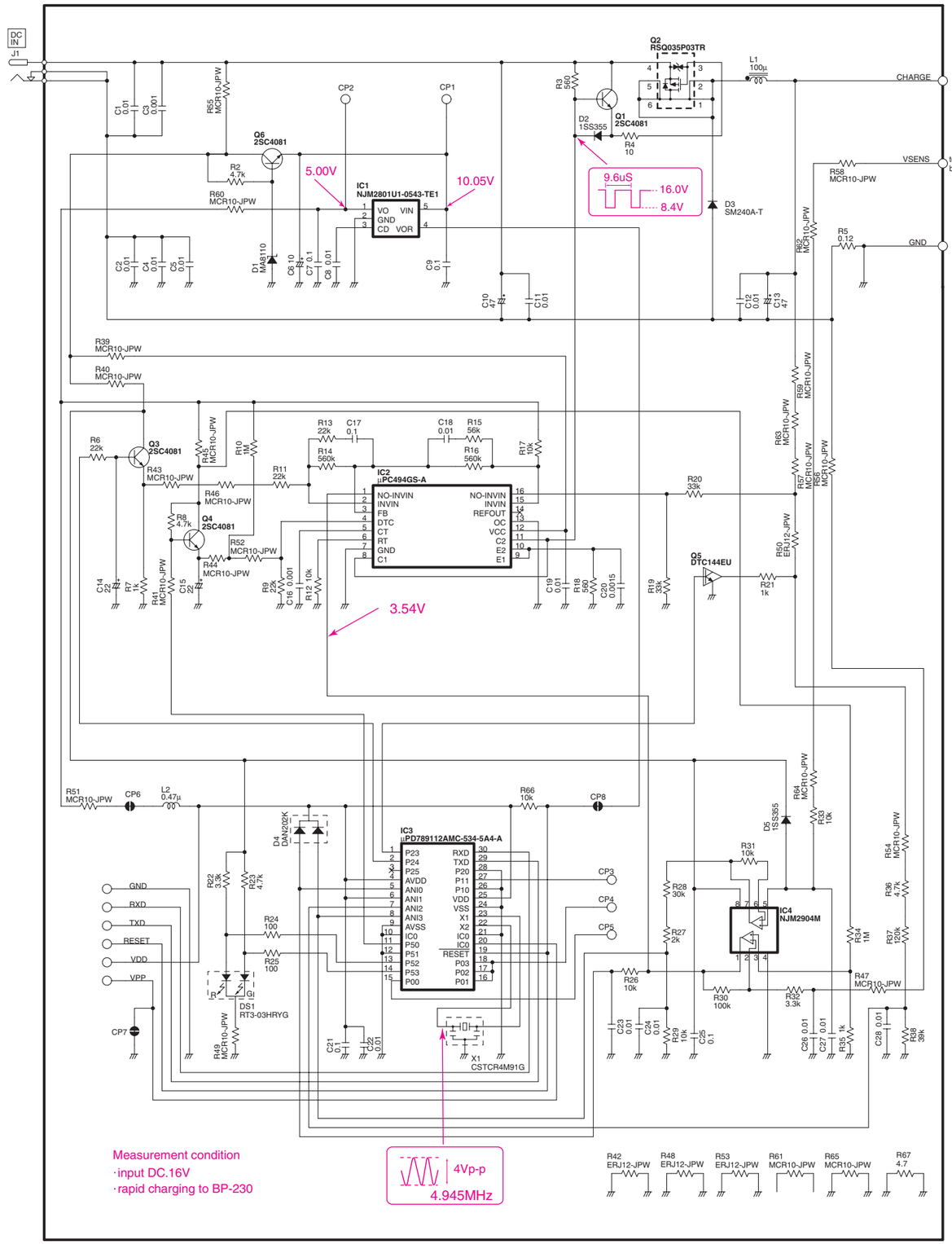
[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510023070	Connector HEC2305-01-250	1
DS1	5040002740	LED RT3-03HRYG	1
MP1	8930064410	2830 TERMINAL	3

[ACCESSORIES]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
EP1	Optional product	Charger BC-145E [EUR-02]	1
	Optional product	Charger BC-145UK [UK-02]	1





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