

SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

IC-T7H

INTRODUCTION

This service manual describes the latest service information for the **IC-T7H** DUAL BAND FM TRANSCEIVER at the time of publication.

4 version of the **IC-T7H** have been designed. This serves manual cover each versions.

MODEL	VERSION	SYMBOL
IC-T7H	Europe	EUR
	Italy	ITA
	SE Asia	SEA
	U.S.A.	USA-3

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

DANGER

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. 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 (100mW) to the antenna connector. This could damage the transceiver's front end.

ORDERING PARTS

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

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

<SAMPLE ORDER>

1110002700	S.IC	NJM2904M-T1	IC-T7H 1F UNIT	5pieces
8810008750	Screw	PH BO 2 x 15 ZK	IC-T7H Chassis	10pieces

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.

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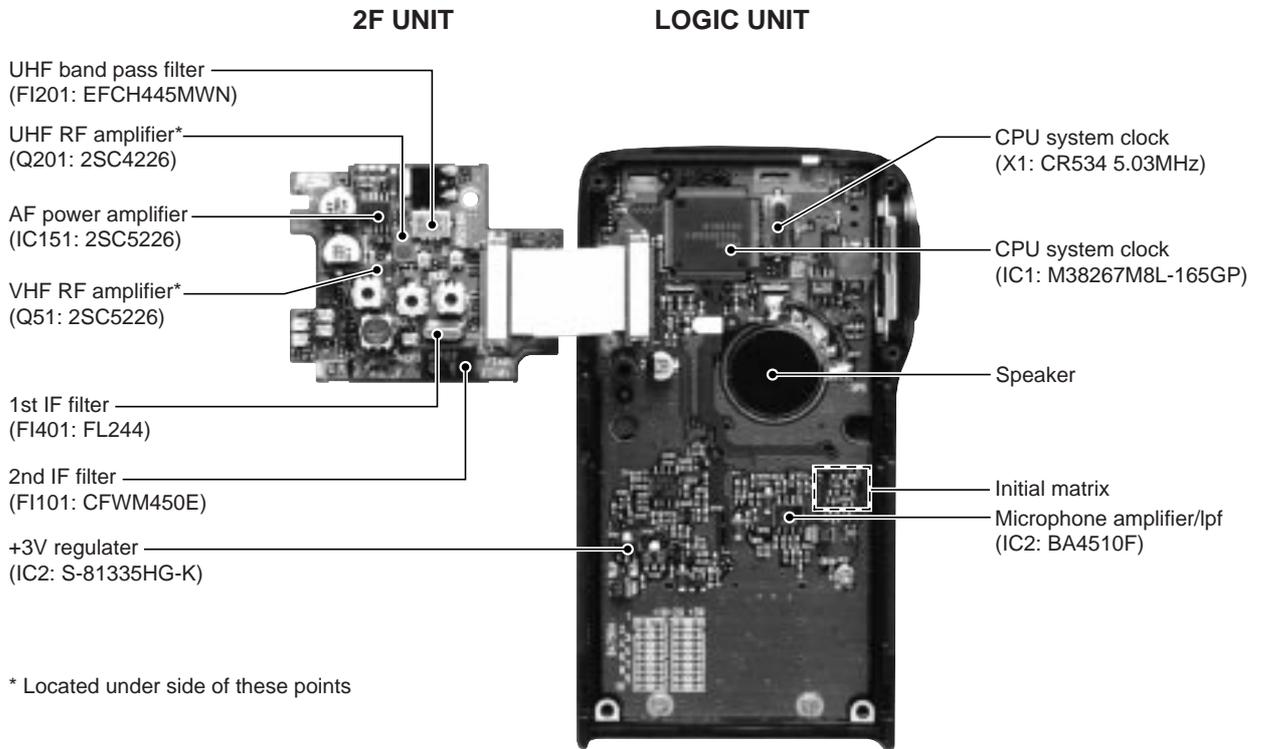
SECTION 1 SPECIFICATIONS

		144 MHz band	430 MHz band		
GENERAL	Frequency coverage	USA-3	Tx: 144 MHz–148 MHz Rx: 118 MHz–174 MHz* ¹	Tx: 430 MHz–450 MHz* ² Rx: 400 MHz–470 MHz* ²	
		Europe	144 MHz–146 MHz	430 MHz–440 MHz	
		SE Asia	Tx: 140 MHz–148 MHz* ¹ Rx: 118 MHz–174 MHz* ¹	430 MHz–440 MHz	
		Italy	136 MHz–174 MHz* ¹	400 MHz–470 MHz* ³	
		Guaranteed frequency range: * ¹ 144 MHz–148 MHz, * ² 440 MHz–450 MHz, * ³ 430 MHz–440 MHz			
	Mode		F3 / F2		
	Frequency stability (–30 °C to +50 °C; +32 °F to +122 °F)		± 5 ppm		
	Tuning steps		5, 10, 12.5, 15, 20, 25, 30 or 50 kHz		
	Antenna connector		BNC (50 Ω)		
	External DC power		4.5 to 16 V DC		
Current drain (at 13.5 V)	Tx	High power	1.6 A (typical)	1.6 A (typical)	
		Low power	0.6 A (typical)	0.7 A (typical)	
	Rx	Rated audio	180 mA (typical)	190 mA (typical)	
		Power saved (at 9.6 V)	16 mA (typical)	18 mA (typical)	
Usable temperature range		–10 °C to +60 °C (+14°F to +140°F)			
Dimensions (Projections not included)		57(W) × 110(H) × 27(D) mm; 2 ¹ / ₄ (W) × 4 ⁵ / ₁₆ (H) × 1 ¹ / ₁₆ (D) inch (with BP-170) 57(W) × 122(H) × 29(D) mm; 2 ¹ / ₄ (W) × 4 ¹³ / ₁₆ (H) × 1 ⁵ / ₃₂ (D) inch (with BP-173/180)			
Weight		285 g; 10.1 oz (with BP-170 and dry cell batteries) 320 g; 10.8 oz (with BP-180) 405 g; 10.8 oz (with BP-173)			
TRANSMITTER	RF output power (at 13.5 V DC)		High: 6.0 W Low: 0.5 W	High: 6.0 W Low: 0.5 W	
	Modulation system		Variable reactance frequency modulation		
	Max. frequency deviation		± 5.0 kHz		
	External mic.connector		3-conductor 2.5 mm (1/10 in) (2 kΩ)		
	Spurious emissions		Less than 60 dB		
RECEIVER	Receive system		Double-conversion super heterodyne		
	Intermediate frequencies		1st: 45.150 MHz, 2nd 450 kHz		
	Sensitivity		Less than 0.16 μV (typical) for 12 dB SINAD		
	Squelch sensitivity		Less than 0.18 μV		
	Selectivity		More than 7.5 kHz / –60 dB, Less then 15 kHz / –6 dB		
	Spurious and image rejection ratio		More than 60 dB (More than 50 dB at 1/2 IF)	More than 50 dB	
	Audio output power (at 13.5 V)		More than 500 mW at 10 % distortion with an 8 Ω load		
	External speaker connector		3-conductor 3.5 mm (1/8 in) (8 Ω)		

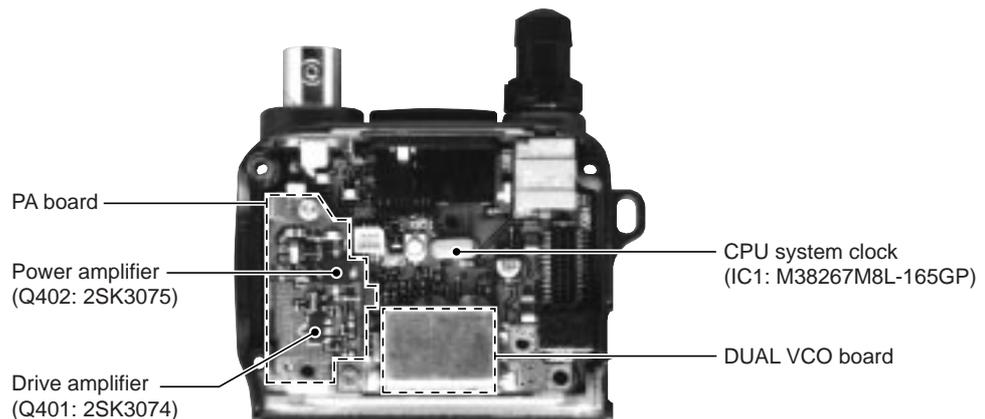
All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

• LOGIC UNIT AND 2F UNIT



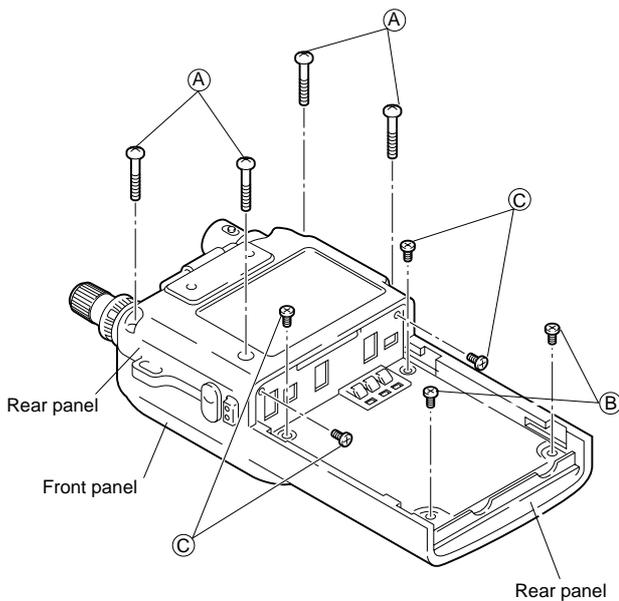
• 1F UNIT



SECTION 3 DISASSEMBLY INSTRUCTIONS

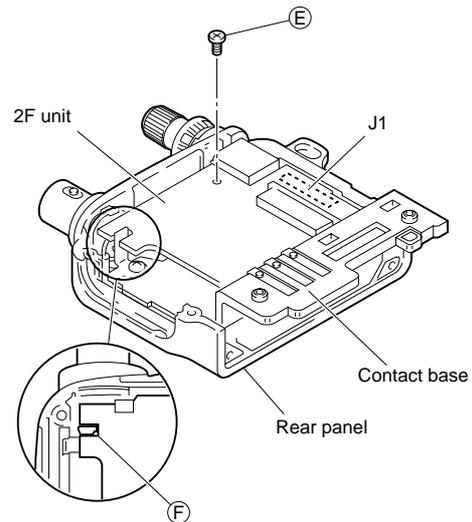
● DISASSEMBLING PANELS

- 1 Unscrew 4 screws, **A** from the rear panel and 2 screws, **B** from the rear plate to separate front and rear panels.
- 2 Unscrew 4 screws, **C** from the rear plate to remove it.



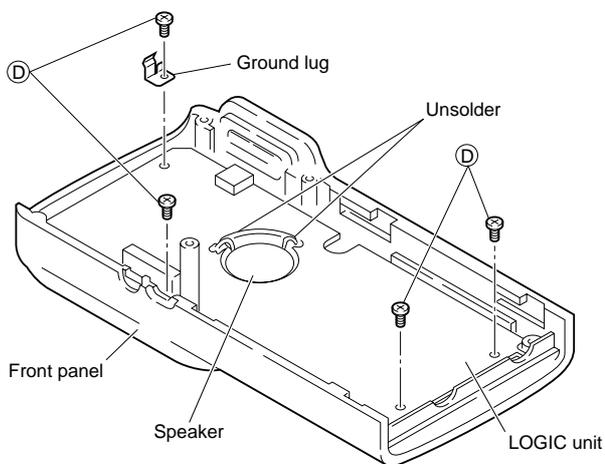
● REMOVING 2F UNIT

- 1 Unscrew 1 screw, **E** from the 2F unit.
- 2 Unsolder the point, **F**, then remove the 2F unit with the contact base.
(Disconnect J1 on reverse side of the 2F unit to remove).



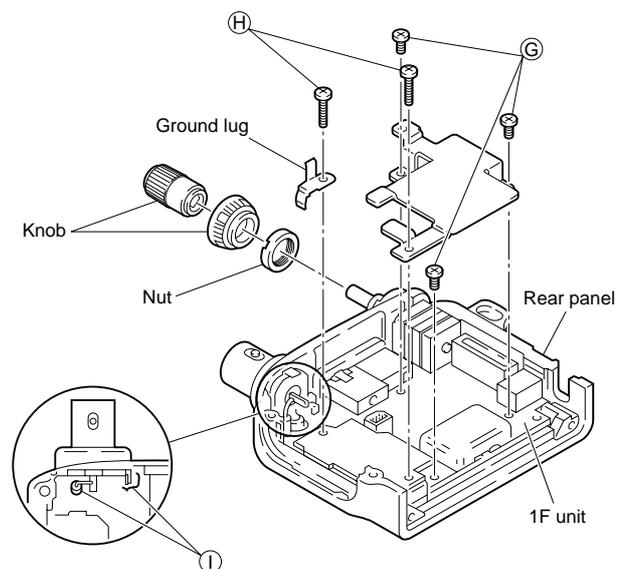
● REMOVING LOGIC UNIT

- 1 Unscrew 4 screws, **D** from the LOGIC Unit.
- 2 Unsolder jumper wires from the speaker as shown below.



● REMOVING 1F UNIT

- 1 Pull the 2 knobs off and then unscrew the nut.
- 2 Unscrew 3 screws, **G** and 2 screws, **H** from the 1F unit.
- 3 Unsolder 2 points, **I** then remove the 1F unit.



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 DUPLEXER CIRCUIT (1F UNIT)

The transceiver has a duplexer (low-pass and high-pass filters) on the first stage from the antenna connector to separate the signals into VHF and UHF signals. The low-pass filter (L10–L12, C16–C22) for VHF signals and high-pass filter (L1–L3, C1–C5) for UHF signals. The separated signals are applied to each RF circuit.

4-1-2 VHF ANTENNA SWITCHING CIRCUIT (1F UNIT)

The antenna switching circuit functions as a low-pass filter while receiving. However, its impedance becomes very high while transmitting by applying a current to D51 and D52. Thus, transmit signals are blocked from entering the receiver circuits. The antenna switching circuit employs a $1/4 \lambda$ type diode switching system. The passed signals are then applied to the RF amplifier circuit on the 2F unit.

4-1-3 VHF RF CIRCUIT (2F UNIT)

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

The signals from the antenna switching circuit are applied to the limiter (D55), and are then passed through the band-pass filter (D52, L53). The filtered signal is applied to the RF amplifiers (Q51, Q52). The amplifier consists of a cascade circuit. The amplified signals are passed through the next stage band-pass filter (D53, D54, L54, L55) to suppress unwanted signals. The filtered signals are then applied to the mixer circuit (Q401).

D53 and D54 track the band-pass filters and are controlled by the PLL lock voltage. These diodes tune the center frequency to obtain good image response rejection.

4-1-4 UHF RF CIRCUIT (2F UNIT)

The signals from the antenna switching circuit (1F unit; D551, D552, D722–D724 and Q204) are applied to the limiter (D201), and are then amplified at the the RF amplifier (Q201). The amplified signals are passed through the band-pass filter (FI201), and are then applied to another RF amplifier (Q202). The amplified signals are applied to the 1st mixer circuit (Q401).

Common circuits with VHF band are used later stage from the 1st mixer.

4-1-5 1ST MIXER AND 1ST IF CIRCUITS (2F UNIT)

The mixer circuit converts the received signal to a fixed frequency of the 1st IF signal with a 1st LO (VCO output) frequency. By changing the PLL frequency, only the desired frequency will be passed through a crystal filter at the next stage of the mixer.

The received signals from the VHF or UHF RF circuit are mixed with the 1st LO signal (VCO output signal) at the 1st mixer (Q401) to produce a 45.15 MHz 1st IF signal.

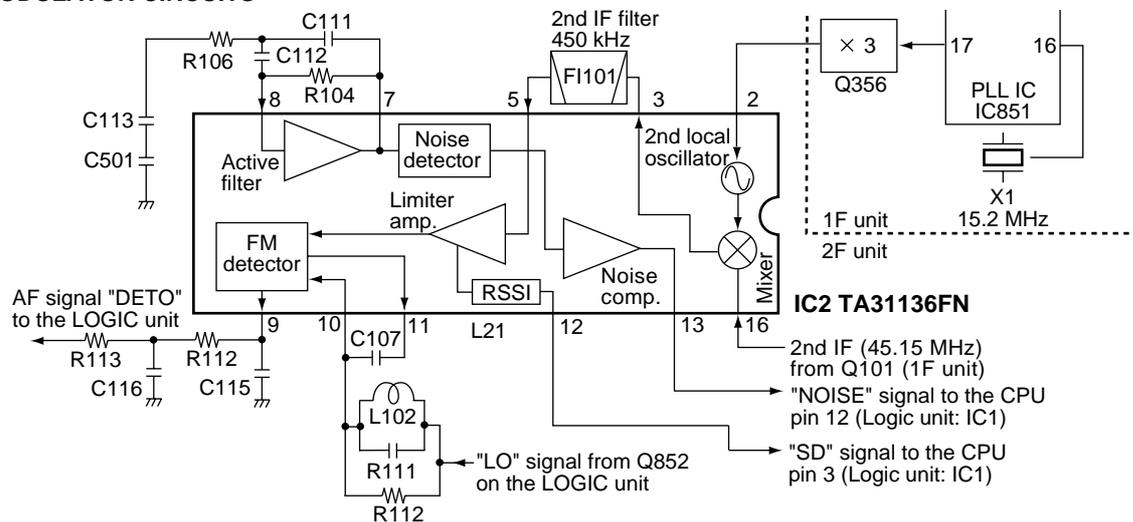
The 1st IF signal is applied to a crystal filter (FI401) to suppress out-of-band signals. The filtered 1st IF signal is amplified at the IF amplifier (Q101) and is then applied to the 2nd mixer circuit (IC101, pin 16).

4-1-6 2ND IF AND DEMODULATOR CIRCUITS (2F UNIT)

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

The FM IF IC (IC101) contains the 2nd mixer, 2nd local oscillator, limiter amplifier, S-meter detector and quadrature detector circuits.

• 2nd IF AND DEMODULATOR CIRCUITS



The 1st IF signal (45.15 MHz) from the IF amplifier (Q101) is applied to the 2nd mixer section of IC101 (pin 16), and is mixed with the 2nd LO signal (45.6 MHz) for conversion to a 450 kHz 2nd IF signal at the 2nd mixer section.

The 2nd IF signal (450 kHz) from the 2nd mixer section (IC101, pin 3) passes through the ceramic filter (F1101) where unwanted signals are suppressed. It is then amplified at the limiter amplifier section (IC101, pin 5) and applied to the quadrature detector section to demodulate the 2nd IF signal into AF signals.

AF signals output from IC101 (pin 9) are applied to the AF drive amplifier (Q12) on the LOGIC unit. The S-meter output "SD" signal from IC101 (pin 12) is applied to the CPU (LOGIC unit; IC1, pin 3).

4-1-7 AF AMPLIFIER CIRCUIT (LOGIC UNIT)

The AF amplifier circuit, including an AF mute switch, amplifies the demodulated signals to drive a speaker.

The demodulated AF signals ("DETO" signals) from the FM IF IC (IC101) on the 2F unit are applied to the drive amplifier (Q12, pin 3) via the band-pass filter (C44, C45). The band-pass filter suppresses subaudible tones and higher noise signal components.

The amplified signals from Q12 (pin 1) pass through the AF mute switch (Q10) and are then applied to the AF volume control on the 1F unit via the "AF" signal line.

4-1-8 AF POWER AMPLIFIER CIRCUIT (2F UNIT)

The AF signals from the AF volume control ("AFV" signals) are amplified at the AF power amplifier IC (IC151, pin 4). The amplified AF signals are applied to the loud speaker via the external speaker jack (1F unit; J902).

4-1-9 NOISE SQUELCH UNIT (2F UNIT)

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

Some of the noise components in the AF signals from the FM IF IC (IC101, pin 9) are applied to the active filter section (IC101, pins 7 and 8). The variable register (R504) adjusts the active filter input level.

The active filter section amplifies noise components with frequencies of 20 kHz and above. The filtered signals are rectified at the noise detector section and converted into "NOISE" (pulse type) signals at the noise comparator section. The "NOISE" signal is applied to the CPU (LOGIC unit; IC1, pin 12).

The CPU (LOGIC unit; IC1) detects the signal level from the number of the pulses, and outputs an "MM/RM" signal from IC1 pin 44 on LOGIC unit. This signal controls the AF mute switch (LOGIC unit; Q10) to cut the AF signal line.

4-2 TRANSMITTER CIRCUITS

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

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

The AF signals from the built-in condenser microphone (LOGIC unit; MC1), or from the [MIC] Jack (1F unit; J901) via the "EXT MIC" line are applied to the limiter amplifier (LOGIC unit; IC12, pin 3) which has +6 dB/octave pre-emphasis characteristics.

The amplified AF signals pass through the splatter filter (IC12, pins 5–7). The filtered signals are applied to frequency deviation pots (2F unit; R308 for VHF, R314 for UHF) and are then applied to the modulation circuit on the DUAL VCO board.

Q32 on the LOGIC unit is the PTT control circuit and outputs a "High" signal to the CPU when transmitting.

4-2-2 MODULATION CIRCUIT (DUAL VCO BOARD)

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

The "VMOD" signals change the reactance of a diode (D304) to modulate the oscillated signal at the VHF-VCO circuit (Q304, Q305 and D303).

The "UMOD" signals are applied to the UHF-VCO circuit via the "USHIFT" line. The applied signals change the reactance of a diode (D302) to modulate the oscillated signal at the UHF-VCO circuit (Q301, Q302 and D301).

The VCO output is buffer-amplified at Q306 and then applied to the band switch (D351 and D352) via the LO amplifiers (Q852 and Q351).

4-2-3 POWER AMPLIFIER CIRCUIT (1F UNIT)

Q401 is a drive and Q402 is a power amplifier. They are designed to use both VHF and UHF commonly. They provide more than 6 W for VHF and 6 W for UHF with a 13.5 V DC power source via one power amplifier system.

An RF signal from the band switch (D351 and D352) is buffer-amplified at Q201 (for VHF) or Q701 (for UHF) and then applied to the drive amplifier (PA board; Q401) via the other band switch (D201 and D701). The applied RF signal from the band switch is amplified at a drive amplifier (Q401) and then amplified again at the power amplifier (Q402).

The amplified RF signal is passed through the low-pass filter (VHF) or high-pass filter (UHF), and then applied to the antenna connector via the transmit/receive switching circuit (Q51, D52 and Q202 are for VHF, D551, D552, D722–D724 and Q204 are for UHF).

4-2-4 APC CIRCUIT (1F AND 2F UNITS)

The APC circuit stabilizes transmit output power and selects HIGH and LOW output power. The APC circuit consists of APC sensor, APC control (1F unit) and APC set (2F unit) circuits.

The APC sensor circuit (1F unit; R250) detects a driving current from a drive voltage at the PA board. The detected current is applied to the op-amp IC (1F unit; IC250, pin 2) in the APC control circuit, and compared with a "PSET" voltage which is supplied from the APC set circuit (2F unit; IC301). The output voltage from pin 1 of IC250 is applied to the APC control circuit (1F unit; Q255 base) to control "VGGC" voltage.

The "VGGC" APC control signal is separated for VHF (VGG1) and UHF (VGG2) by resistors. The VGG1 line is for the APC control signal for the drive amplifier and the VGG2 line is for the power amplifier.

Low output power is obtained by changing the "PSET" voltage coming from pin 1 of IC301 on the 2F unit. The "PSET" voltage is controlled by power set pots (2F unit; R302 for VHF, 2F unit; R304 for UHF) and an "H/L" signal via the CPU (LOGIC unit; IC1, pin 56). A thermistor (R266) controls APC reference voltage ("PREF" voltage) to reduce the output power when the temperature is increased.

4-2-5 ANTENNA SWITCHING CIRCUIT (1F UNIT)

The antenna switching circuit applies receive signals to the receiver circuit and transmit signals to the antenna connector.

(1) VHF ANTENNA SWITCHING CIRCUIT

When transmitting, D51 D52 and D202 are turned ON. The signal passes through the low-pass filter (L10-L12, C16-C22) and is then applied to the antenna connector. The low-pass filter suppresses high harmonic components.

(2) UHF ANTENNA SWITCHING CIRCUIT

When transmitting, D722-D724, D551, D552 and Q204 are turned ON. The signal passes through the low-pass (L7-L9, C9-C15) and high-pass (L1-L3, C1-C5) filters and is then applied to the antenna connector. The high-pass filter suppresses low harmonic components.

4-3 PLL CIRCUITS

4-3-1 VHF PLL CIRCUIT (1F UNIT)

The oscillated signal at the VCO circuit (DUAL VCO board; Q304, Q305 and D303) is amplified at a buffer-amplifier (Q306) and is again amplified at another buffer-amplifier (Q352). The amplified signal is applied to the PLL IC (IC851, pin 2), and then divided by serial data from the CPU and phase-detected with the divided reference frequency. The phase difference is output as pulses.

The output signals from IC851 (pin 8) are converted to DC voltages (lock voltage) by the loop filter (R366-R368, C362, and C364) and are then fed back to the VHF VCO circuit to stabilize the VCO frequency.

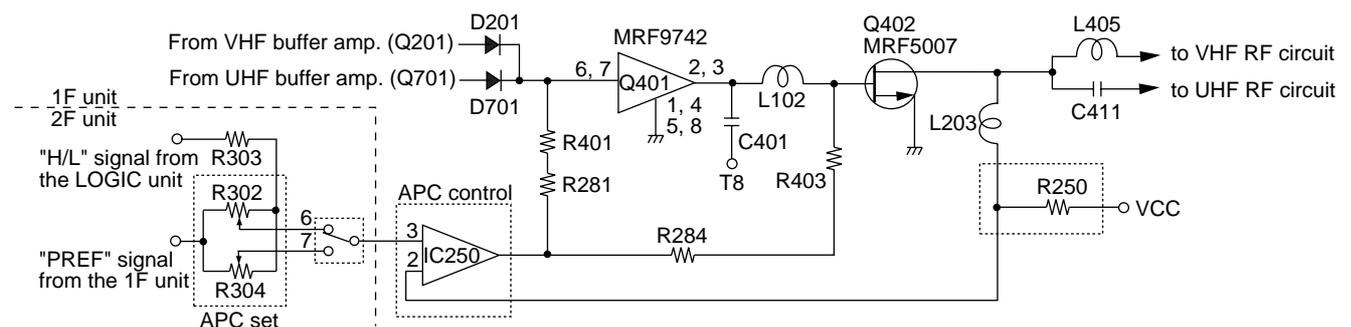
The DC voltage is also applied to the receiver tuned band-pass filters as a "VTUNE" signal.

4-3-2 UHF PLL CIRCUIT (1F UNIT)

The oscillated signal at the VCO circuit (DUAL VCO board; Q301, Q302, D301 and D302) is amplified at a buffer-amplifier (Q306) and is again amplified at another buffer-amplifier (Q352). The amplified signal is applied to the PLL IC (IC851, pin 19), and then divided by serial data from the CPU. It is the phase-detected with the divided reference frequency and the phase difference is output as pulses.

The output signals from IC851 (pin 13) are converted to DC voltages (lock voltage) by the loop filter (R866-R868, C862 and C864) and are then fed back to the UHF VCO circuit to stabilize the VCO frequency.

• APC CIRCUIT



4-4 POWER SUPPLY CIRCUITS

VOLTAGE LINE

LINE	DESCRIPTION
HV	The voltage from the external power supply or attached battery pack.
VCC	The same voltage as the HV line (external power supply or battery pack) which is controlled by the power switch ([POWER] control).
VHT2V	Common 3 V converted from the VCC line by the +3CPU regulator IC (LOGIC unit; IC2). The output voltage is supplied to the +3C, R3 and T4 regulator circuits, etc.
UHT2V	Common 3 V converted from the VCC line by the +3C regulator circuit (LOGIC unit; Q4, Q5, Q40 and D3) using the +3CPU regulator (LOGIC unit; IC2).
R3V	3 V for receiver circuit converted from the VCC line by the R3 regulator circuit (2F unit; Q4, Q5 and D402).
+3S	4 V for transmitter circuit converted from the VCC line by the T4 regulator circuit (1F unit; Q702, Q703 and D702). The T4 regulator circuit is controlled by the CPU (LOGIC unit; IC1, pin 45) via T4 control regulator circuit (1F unit; Q704).

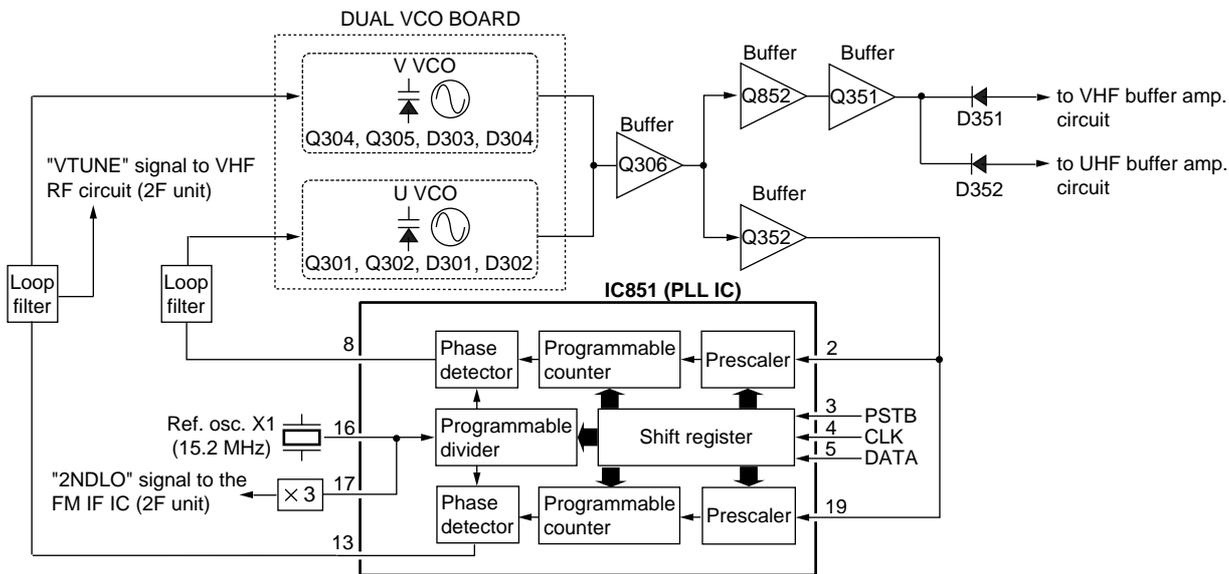
4-5 OTHER CIRCUITS

4-5-1 TONE SQUELCH CIRCUIT (LOGIC UNIT)

A portion of the detected audio signals from the "DETO" line are passed through the low-pass filter (IC13). The filtered signal is then applied to the CPU (IC1, pin 4), and is compared with the programmed tone signal. The CPU (IC1) outputs control signals to the AF mute and AF regulator circuits to open the squelch when a matched tone signal is received.

The programmed subaudible tone signal is output from the CPU (LOGIC unit; IC1, pin 9) directly when transmitting with a tone.

• PLL circuit



4-5 PORT ALLOCATIONS

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

Pin number	Port name	Description
2	REMOTE	Input port for remote control signal from an optional HM-75A microphone via the [EXT MIC] jack.
3	SD	Input port for detected S-meter signals from the IC101 (pin 12) on the 2F unit.
4	CTCIN	Input port for received CTCSS tone signals.
5	PCON	Output port for +3C regulator circuit control signals. "HIGH" : Power ON.
6	PLST	Output PLL strobe signals.
7	PLCK/ECK	Output port for clock signals to PLL and EEPROM ICs.
8	PDA/UL	DATA bus line for PLL. • Outputs PLL DATA when PLL is locked. • When PLL is unlocked, PLL IC releases the port being pulled up, therefore, the CPU receives "HIGH" level signal.
9	CTCSS	Output port for CTCSS tone signals.
10	DTMF	Output port for: • Beep audio signals while receiving. • DTMF signals or 1,750 Hz tone signal while transmitting. (According to versions)
12	NOISE	Input pulse signals for noise squelch from the IC101 (pin 13) on the 2F unit.
17	LOCK	Input port for the [LOCK] switch. "LOW" : [LOCK] switch is ON.
21	DIUD	Inputs up/down signals from the [DIAL] control.
22	DICK	Input port for dial clock signals.
23	POWER	Input port for the [POWER] switch. "Low" : [POWER] switch is pushed.
24	CONT	Outputs LCD contrast control signals.
28–31	KR3–KR0	Input port for key matrix.
32	PTT	Input port for the PTT control circuit. "HIGH" : When transmitting.
33	RESET	Input port for reset circuit (LOGIC unit; IC3, pin 1).
39	CFC	Outputs control signals to the power supply of the CTCSS band-pass filter (LOGIC unit; Q45). "LOW" : Activates the BPF.
40	ESIO	DATA bus line for the EEPROM (LOGIC unit; IC15) data signals.
41	BLED	Outputs [BUSY] LED control signals. "HIGH" : The [BUSY] LED lights.

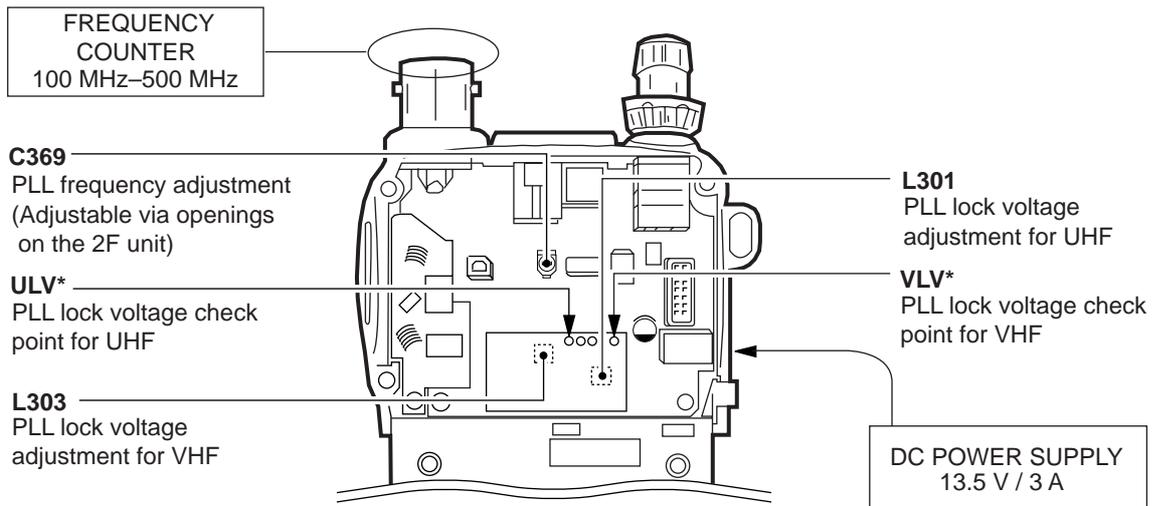
Pin number	Port name	Description
42	LIGHT	Outputs LCD backlight control signals. "High" : The backlight lights.
43	MICC	Output port for the microphone amplifier (LOGIC unit; IC12). "LOW" : Activates the mic. amplifier.
44	MM/RM	Output a mute signal. [MM] : Microphone mute for DTMF or 1,750 Hz tone while transmitting. [RM] : Audio mute for squelch circuit while receiving. "HIGH" : To mute one of above.
46	TXSEL	Outputs transmit frequency band control signals. "HIGH" : UHF band. "LOW" : VHF band.
47	HVCO	Output port for the UHF band VCO (DUAL-VCO board; Q301, Q302 and D301) control signals. "HIGH" : Activates the UHF-VCO.
48	LVCO	Output port for the VHF band VCO (DUAL-VCO board; Q304, Q305 and D303) control signals. "HIGH" : Activates the VHF-VCO.
49	SHIFT	Output port for SHIFT signals to the shift switches (1F unit; Q354, Q854). "HIGH" : Transmit on VHF. "LOW" : Transmit on UHF.
55	AFON	Outputs control signals to the AF regulator circuit (2F unit; Q151, Q152). "HIGH" : Activates the AF amplifier.
56	H/L	Output port for the TX output power (HIGH or LOW) select signals. "LOW" : HIGH power is selected.

SECTION 5 ADJUSTMENT PROCEDURES

5-1 PLL AND TRANSMITTER ADJUSTMENT

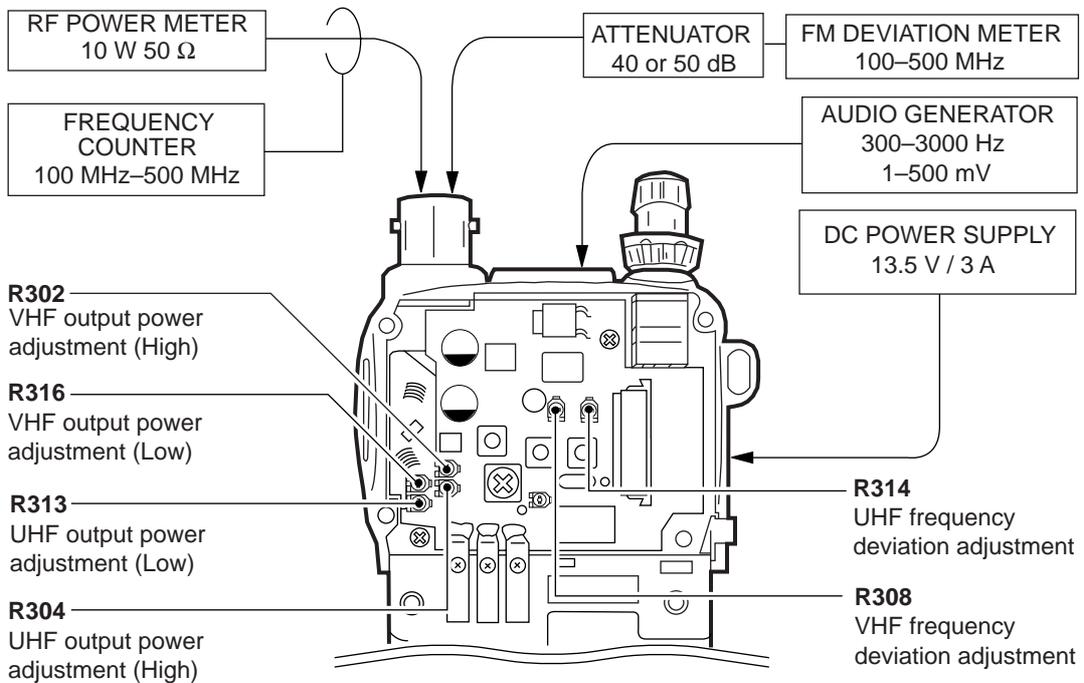
ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT				
		UNIT	LOCATION		UNIT	ADJUST			
PLL LOCK VOLTAGE (VHF)	1	<ul style="list-style-type: none"> Displayed frequency : 145.000 MHz Receiving 	1F	Connect a digital multimeter or an oscilloscope to the "VLV".	1.3 V	DUAL-VCO	L303		
	2	<ul style="list-style-type: none"> Transmitting 			0.9 V – 1.7 V		Verify		
	(UHF)	1		<ul style="list-style-type: none"> Displayed frequency : 440.000 MHz [USA-3] 430.000 MHz [Other] Receiving 	Connect a digital multimeter or an oscilloscope to the "ULV".		2.2 V		L301
		2		<ul style="list-style-type: none"> Transmitting 			1.9 – 2.5 V		Verify
PLL REFERENCE FREQUENCY	1	<ul style="list-style-type: none"> Displayed frequency : 445.000 MHz [USA-3] 435.000 MHz [Other] Transmitting 	Top panel	Loosely couple a frequency counter to the antenna connector.	445.0000 MHz [USA-3] 435.0000 MHz [Other]	1F	C369		
OUTPUT POWER	1	<ul style="list-style-type: none"> Displayed frequency : 145.000 MHz Output power: High Transmitting 	Top panel	Connect an RF power meter to the antenna connector.	5.5 W	2F	R302		
	2	<ul style="list-style-type: none"> Output power: Low Transmitting 			0.5 W		R316		
	3	<ul style="list-style-type: none"> Displayed frequency : 445.000 MHz [USA-3] 435.000 MHz [Other] Output power: High Transmitting 			5.5 – 6.0 W		R304		
	4	<ul style="list-style-type: none"> Output power: Low Transmitting 			0.5 W		R313		
FM DEVIATION	1	<ul style="list-style-type: none"> Displayed frequency : 145.000 MHz Connect an audio generator to the [MIC] connector and set as: 1 kHz/95 mV Set the FM deviation meter as : HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 Output power: High Transmitting 	Top panel	Connect an FM deviation meter to the antenna connector through an attenuator.	± 4.3 kHz	2F	R308		
	2	<ul style="list-style-type: none"> Displayed frequency : 445.000 MHz [USA-3] 435.000 MHz [Other] Output power: High Transmitting 			± 4.3 kHz		R314		
DTMF DEVIATION (USA-3, SEA only)	1	<ul style="list-style-type: none"> Displayed frequency : 445.000 MHz [USA-3] 435.000 MHz [SEA] Push [D] key while transmitting 	Top panel	Connect an FM deviation meter to the antenna connector through an attenuator.	± 3.5 kHz	LOGIC	R147		
TONE CALL DEVIATION (EUR, ITA only)	1	<ul style="list-style-type: none"> Displayed frequency: 435.000 MHz Push [TONE] key while transmitting 	Top panel	Connect an FM deviation meter to the antenna connector through an attenuator.	± 3.5 kHz	LOGIC	R147		

• 1F UNIT

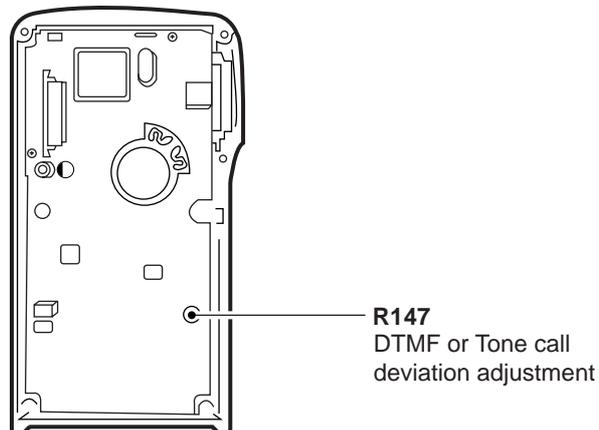


*Located on the underside of the 1F unit.

• 2F UNIT



• LOGIC UNIT

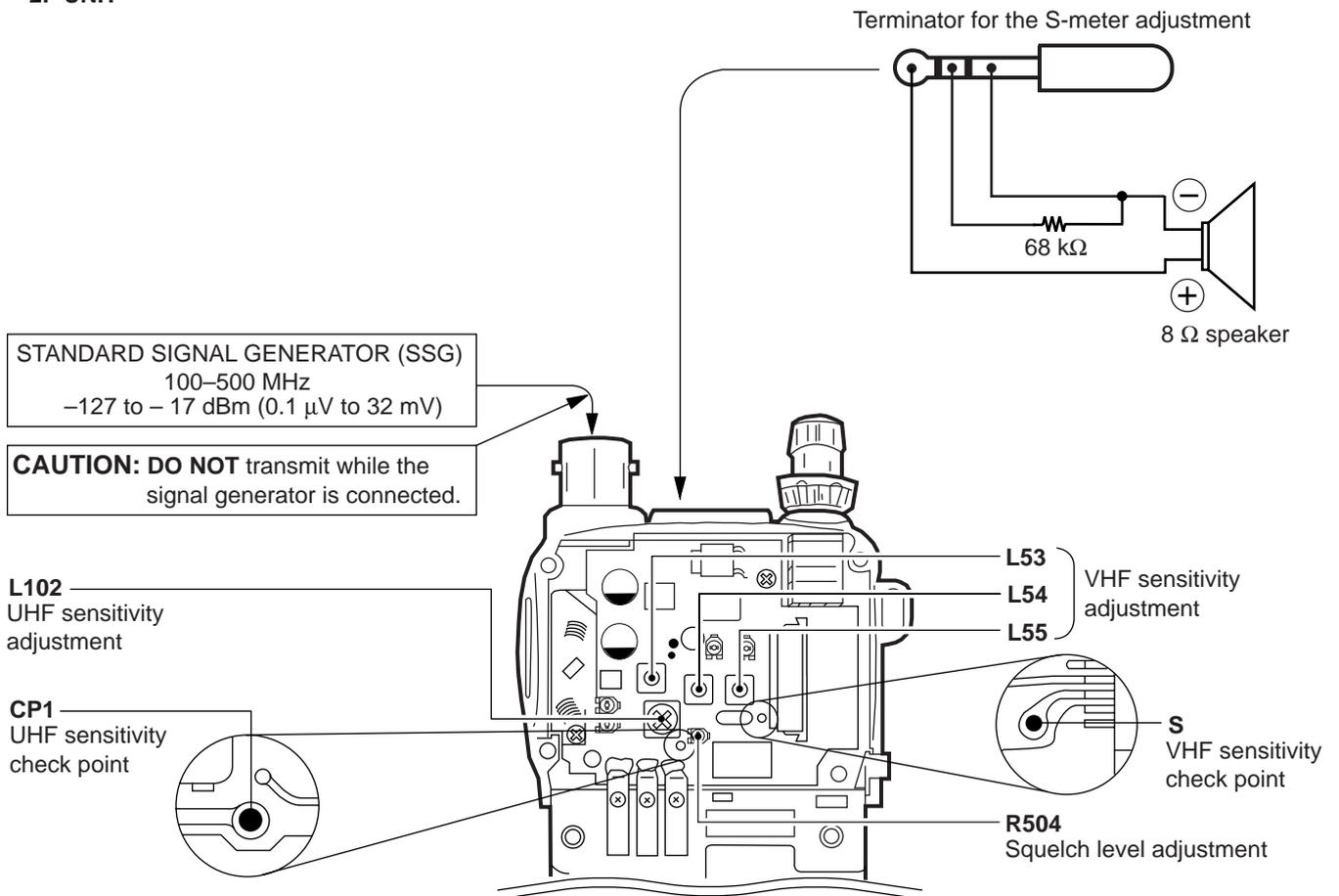


5-2 RECEIVER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
VHF SENSITIVITY	1 <ul style="list-style-type: none"> • Displayed frequency : 145.000 MHz [EUR] 146.000 MHz [Other] • Connect an SSG to the antenna connector and set as : Level : 1.0 mV* (-47 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving 	2F	Connect a digital multimeter or oscilloscope to the check point "S".	Maximum DC voltage	2F	Adjust in sequence L53, L54, L55
UHF SENSITIVITY	1 <ul style="list-style-type: none"> • Displayed frequency : 445.000 MHz [USA-3] 435.000 MHz [Other] • Connect an SSG to the antenna connector and set as : Level : 1.0 mV* (-47 dBm) Modulation : OFF • Receiving 	2F	Connect a digital multimeter or oscilloscope to the check point "CP1".	1.0 V		L102
SQUELCH LEVEL	1 <ul style="list-style-type: none"> • Displayed frequency : any • Connect an SSG to the antenna connector and set as : Level : 0.089 μV* (- 128 dBm) Modulation : 1 kHz Deviation : ± 3.5 kHz • Pre-set the R504 to maximum CW. • Receiving 	Seaker		At the point where the AF signal just disappears.	2F	R504
S-METER	1 <ul style="list-style-type: none"> • Displayed frequency : 443.000 MHz [USA-3] 433.000 MHz [Other] • Connect an SSG to the antenna connector and set as : Level : 0.5 μV* (- 113 dBm) Modulation : 1 kHz Deviation : ± 3.5 kHz • Connect a terminator to the [EXT SP] jack. • Receiving 	Front panel				Push and hold the [CALL] key.
	2 <ul style="list-style-type: none"> • Set an SSG output level for the S-meter to S3 (4 dots). 	SSG	Output level	0.28 to 0.89 μV (- 118 to - 108 dBm)		Verify

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

• 2F UNIT



SECTION 6 PARTS LIST

[1F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC250	1110002700	S.IC	NJM2904M-T1
IC851	1130007610	S.IC	μPD3140GS-E1 (DS8)
Q201	1530000371	S.TRANSISTOR	2SC3356 R25-T2B
Q202	1510000670	S.TRANSISTOR	2SA1588-GR (TE85R)
Q203	1590001140	S.TRANSISTOR	UN9210 (TX)
Q204	1590002730	S.TRANSISTOR	UN921L (TX)
Q250	1530002280	S.TRANSISTOR	2SC4081 T107 S
Q253	1590001050	S.TRANSISTOR	DTC114TUA T106
Q255	1520000430	S.TRANSISTOR	2SB1462-R (TX)
Q351	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q352	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q353	1590001690	S.TRANSISTOR	UN9115 (TX)
Q354	1590001140	S.TRANSISTOR	UN9210 (TX)
Q355	1560000540	S.FET	2SK880-Y (TE85R)
Q356	1530002280	S.TRANSISTOR	2SC4081 T107 S
Q357	1590001690	S.TRANSISTOR	UN9115 (TX)
Q701	1530000371	S.TRANSISTOR	2SC3356 R25-T2B
Q702	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q703	1540000350	S.TRANSISTOR	2SD2216-S (TX)
Q704	1590001150	S.TRANSISTOR	UN9211 (TX)
Q705	1510000670	S.TRANSISTOR	2SA1588-GR (TE85R)
Q852	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q853	1590001690	S.TRANSISTOR	UN9115 (TX)
Q854	1590001140	S.TRANSISTOR	UN9210 (TX)
D1	1790001260	S.DIODE	MA2S077-(TX)
D2	1790001260	S.DIODE	MA2S077-(TX)
D51	1790001260	S.DIODE	MA2S077-(TX)
D52	1790001260	S.DIODE	MA2S077-(TX)
D201	1790001260	S.DIODE	MA2S077-(TX)
D202	1790001260	S.DIODE	MA2S077-(TX)
D250	1730002260	S.ZENER	MA8030-H (TX)
D251	1790001010	S.ZENER	MA8043-L (TX)
D351	1790001260	S.DIODE	MA2S077-(TX)
D352	1790001260	S.DIODE	MA2S077-(TX)
D353	1790001260	S.DIODE	MA2S077-(TX)
D354	1790000840	S.DIODE	MA132WA (TX)
D551	1790001260	S.DIODE	MA2S077-(TX)
D552	1790001260	S.DIODE	MA2S077-(TX)
D701	1790001260	S.DIODE	MA2S077-(TX)
D702	1790000860	S.DIODE	MA133 (TX)
D703	1790001250	S.DIODE	MA2S111-(TX)
D722	1750000530	S.DIODE	1SV271 (TPH3)
D723	1790001260	S.DIODE	MA2S077
D724	1790001260	S.DIODE	MA2S077
D725	1750000530	S.DIODE	1SV271 (TPH3)
D901	1750000540	S.DIODE	RB060L-40 TE-25
X851	6050009430	XTAL	CR-515 (15.200000 MHz)
L1	6200007790	S.COIL	LQN21A R15J04
L2	6200008250	S.COIL	0.30-0.9-7TL 21N
L3	6200008760	S.COIL	0.26-0.9-9TR 30N
L5	6200004350	S.COIL	LL1608-F10NK
L6	6200004350	S.COIL	LL1608-F10NK
L7	6200008240	S.COIL	0.30-0.9-5TL 14N
L8	6200008850	S.COIL	0.40-1.1-6TR
L9	6200008770	S.COIL	0.28-1.0-5TR 16N
L10	6200005890	S.COIL	NLH252018T-039J 39N
L11	6200008830	S.COIL	0.20-1.0-12TL 60N
L12	6200005900	S.COIL	NLH252018T-047J 47N
L13	6200004480	S.COIL	MLF1608D R82K-T
L51	6200005910	S.COIL	NLH252018T-056J 56N
L52	6200005910	S.COIL	NLH252018T-056J 56N
L201	6200004480	S.COIL	MLF1608D R82K-T
L202	6200005930	S.COIL	NLH252018T-082J 82N
L203	6200003590	S.COIL	EXCCL3225U1
L204	6200003590	S.COIL	EXCCL3225U1
L205	6200004480	S.COIL	MLF1608D R82K-T
L206	6200005690	S.COIL	ELJRE 18NG-F

[1F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
L352	6200003550	S.COIL	MLF1608A 4R7K-T
L353	6200003550	S.COIL	MLF1608A 4R7K-T
L354	6200004480	S.COIL	MLF1608D R82K-T
L355	6200004480	S.COIL	MLF1608D R82K-T
L551	6200008530	S.COIL	0.30-1.0-4TR 12N
L552	6200008530	S.COIL	0.30-1.0-4TR 12N
L701	6200004370	S.COIL	LL1608-F15NK
L702	6200005830	S.COIL	NLH252018T-012J 12N
L703	6200004380	S.COIL	LL1608-F18NK
L723	6200008080	S.COIL	LQN21A R22J04
L724	6200008080	S.COIL	LQN21A R22J04
L725	6200008080	S.COIL	LQN21A R22J04
L801	6200006980	S.COIL	ELJRE R10G-F
L900	6200003590	S.COIL	EXCCL3225U1
L901	6200003590	S.COIL	EXCCL3225U1
R1	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R201	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R202	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R203	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R204	7030005530	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R205	7030007340	S.RESISTOR	ERJ2GEJ 153 X (15 kΩ)
R207	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R208	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R209	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R210	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R250	7030007330	S.RESISTOR	ERJ1WRSJR15U (0.15 Ω)
R251	7030005070	S.RESISTOR	ERJ2GEJ 683 X (68 kΩ)
R252	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R258	7030007340	S.RESISTOR	ERJ2GEJ 153 X (15 kΩ)
R259	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R260	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R261	7030005160	S.RESISTOR	ERJ2GEJ 105 X (1 MΩ)
R262	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R263	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R264	7030007290	S.RESISTOR	ERJ2GEJ 222 X (2.2 kΩ)
R265	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R266	7510001000	S.THERMISTOR	TBPS1R154K475H5Q
R267	7030007340	S.RESISTOR	ERJ2GEJ 153 X (15 kΩ)
R278	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R281	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R282	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R283	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R284	7030007260	S.RESISTOR	ERJ2GEJ 330 X (33 Ω)
R285	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R350	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R351	7030009200	S.RESISTOR	ERJ2GEJ 390 X (39 Ω)
R352	7030005030	S.RESISTOR	ERJ2GEJ 152 X (1.5 kΩ)
R354	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R355	7030007260	S.RESISTOR	ERJ2GEJ 330 X (33 Ω)
R356	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
R357	7030005300	S.RESISTOR	ERJ2GEJ 150 X (15 Ω)
R358	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R359	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R360	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R361	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R362	7030005100	S.RESISTOR	ERJ2GEJ 154 X (15.4 kΩ)
R363	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R364	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R365	7030007280	S.RESISTOR	ERJ2GEJ 331 X (330 Ω)
R366	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R367	7030005030	S.RESISTOR	ERJ2GEJ 152 X (1.5 kΩ)
R368	7030005010	S.RESISTOR	ERJ2GEJ 681 X (680 Ω)
R369	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R370	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R371	7030007280	S.RESISTOR	ERJ2GEJ 331 X (330 Ω)
R372	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R373	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R374	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R701	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R702	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R704	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R705	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R706	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)

S.=Surface mount

[1F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R708	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R709	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R710	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R721	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R724	7030007260	S.RESISTOR	ERJ2GEJ 330 X (33 Ω)
R726	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R727	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R728	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R730	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R731	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R732	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R858	7030005710	S.RESISTOR	ERJ2GEJ 121 X (120 Ω)
R859	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R861	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R862	7030005060	S.RESISTOR	ERJ2GEJ 333 X (33 kΩ)
R863	7030005230	S.RESISTOR	ERJ2GEJ 334 X (330 kΩ)
R864	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R866	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R867	7030007300	S.RESISTOR	ERJ2GEJ 332 X (3.3 kΩ)
R868	7030005010	S.RESISTOR	ERJ2GEJ 681 X (680 Ω)
R902	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
C1	4030009720	S.CERAMIC	C1005 CH 1E 080D-T-A
C2	4030010250	S.CERAMIC	C1005 CH 1E 101J-T-A
C3	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C4	4030010280	S.CERAMIC	C1005 CH 1E 390J-T-A
C5	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C6	4030011640	S.CERAMIC	C1005 CH 1E 010B-T-A
C7	4030011640	S.CERAMIC	C1005 CH 1E 010B-T-A
C8	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C9	4030011640	S.CERAMIC	C1005 CH 1E 010B-T-A
C10	4030009720	S.CERAMIC	C1005 CH 1E 080D-T-A
C11	4030011630	S.CERAMIC	C1005 CH 1E 0R5B-T-A
C12	4030009730	S.CERAMIC	C1005 CH 1E 090D-T-A
C13	4030011650	S.CERAMIC	C1005 CH 1E 1R5B-T-A
C14	4030011700	S.CERAMIC	C1005 CH 1E 040B-T-A
C15	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C16	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C17	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C18	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C19	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C20	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C21	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C22	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C23	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C24	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C51	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C52	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C53	4030009750	S.CERAMIC	C1005 CH 1E 120J-T-A
C101	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C102	4550006470	S.TANTALUM	TEMSVB2 1D 106M-8L
C206	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C207	4030009830	S.CERAMIC	C1005 CH 1E 180J-T-A
C209	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C210	4550006470	S.TANTALUM	TEMSVB2 1D 106M-8L
C211	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C212	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C213	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C214	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C215	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C216	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C231	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C232	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C233	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C234	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C235	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C236	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C254	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C267	4550006050	S.TANTALUM	TEMSVA 0J 106M8L
C268	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C270	4550006050	S.TANTALUM	TEMSVA 0J 106M8L
C301	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C350	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C351	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C354	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C355	4550006120	S.TANTALUM	TEMSVA 0G 226M-8L
C356	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C357	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C358	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C359	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A

[1F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C360	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C361	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C362	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C364	4550003080	S.TANTALUM	TEMSVA 1A 335M-8L
C365	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C366	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C367	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C368	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C369	4610002140	S.TRIMMER	CTZ3S-20C-WI-PF
C370	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C371	4030010280	S.CERAMIC	C1005 CH 1E 390J-T-A
C372	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C373	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C374	4030009730	S.CERAMIC	C1005 CH 1E 090D-T-A
C375	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C376	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C377	4030011680	S.CERAMIC	C1005 CH 1E 030B-T-A
C378	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C379	4030011700	S.CERAMIC	C1005 CH 1E 040B-T-A
C380	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C551	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C552	4030009740	S.CERAMIC	C1005 CH 1E 100D-T-A
C553	4030009720	S.CERAMIC	C1005 CH 1E 080D-T-A
C554	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C701	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C707	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C709	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C711	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C713	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C714	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C715	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C716	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C717	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C724	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C727	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C728	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C730	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C732	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C733	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C734	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C735	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C736	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C851	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C852	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C855	4550006120	S.TANTALUM	TEMSVA 0G 226M-8L
C856	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C857	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C858	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C859	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C860	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C861	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C862	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C863	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C864	4550002960	S.TANTALUM	TESVA 1C 155M1-8L
C865	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C901	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C903	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C904	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C905	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C906	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C907	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C908	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C909	4550006050	S.TANTALUM	TEMSVA 0J 106M8L
C910	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C911	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C912	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C913	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C914	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J201	6910003840	CONNECTOR	IMSA-9230B-1-05Z003-T
J202	6910003840	CONNECTOR	IMSA-9230B-1-05Z003-T
J901	6450000130	CONNECTOR	HSJ1102-01-540
J902	6450001060	CONNECTOR	HSJ1493-01-010
J903	6450000070	CONNECTOR	HEC2711-01-020
J904	6510018470	S.CONNECTOR	IL-WX-30PB-VF84-B-E900
J905	6510017630	S.CONNECTOR	53264-0690
S1	7600000190	ENCODER	TP96D96E20-15F-10KA-1810

S.=Surface mount

[1F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
W1	7120000470	JUMPER	ERDS2T0
W2	7030003860	S.JUMPER	ERJ3GE JPW V
W5	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
EP1	0910051202	PCB	B 5215C

[DUAL-VCO BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
R313	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R314	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)
R315	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R316	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R317	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R318	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R319	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R320	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R321	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
C301	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C302	4030010080	S.CERAMIC	C1005 CH 1E 240J-T-A
C303	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C304	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C305	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C306	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C307	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C308	4030011720	S.CERAMIC	C1005 CH 1E R75B T000P
C311	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C312	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C313	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C314	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C315	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C316	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C317	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C318	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C319	4030011720	S.CERAMIC	C1005 CH 1E R75B T000P
C320	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C321	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C322	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C323	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C324	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C325	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J301	6510018640	CONNECTOR	IMSA-9230B-1-05Z064-T
J302	6510018640	CONNECTOR	IMSA-9230B-1-05Z064-T
EP301	0910051194	PCB	B 4731D

[PA BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
Q401	1560001100	S.FET	2SK3074 (TE12L)
Q402	1560001060	S.FET	2SK3075 (TE12L)
L401	6200005670	S.COIL	ELJRE 12NG-F
L402	6200008830	S.COIL	0.20-1.0-12TL 60N
L403	6200005600	S.COIL	ELJRE 3N3Z-F
L404	6200008480	S.COIL	0.30-1.4-5TR 25N
L405	6200008220	S.COIL	0.40-1.4-5TR 21N
L406	6200008870	S.COIL	0.40-1.1-3TL
R401	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R402	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R403	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
C401	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C402	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C403	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C404	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C405	4030009780	S.CERAMIC	C1005 CH 1E 270J-T-A
C406	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C407	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C409	4030014520	S.CERAMIC	GRH708 CH 200J 200PT
C410	4030016720	S.CERAMIC	GRH708 CH 560J 100PT
C411	4030004720	S.CERAMIC	C2012 JB 1H 102K-T-A
C412	4030007010	S.CERAMIC	C1608 CH 1H 102K-T-A
EP401	0910051222	PCB	B 5218B

[2F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC101	1110003490	S.IC	TA31136FN (D,EL)
IC102	1130004200	S.IC	TC4S66F (TE85R)
IC151	1110001810	S.IC	TA7368F (TP1)
IC301	1130006220	S.IC	TC4W53FU (TE12L)
IC601	1110003370	S.IC	μPC2748T-E3
Q4	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q5	1510000670	S.TRANSISTOR	2SA1588-GR (TE85R)
Q51	1530003430	S.TRANSISTOR	2SC5226-4-TL
Q52	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q53	1590001690	S.TRANSISTOR	UN9115 (TX)
Q101	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q102	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q103	1540000350	S.TRANSISTOR	2SD2216-S (TX)
Q104	1540000350	S.TRANSISTOR	2SD2216-S (TX)
Q105	1590001690	S.TRANSISTOR	UN9115 (TX)
Q151	1520000650	S.TRANSISTOR	2SB1201-S-TL
Q152	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q201	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q202	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q305	1590001140	S.TRANSISTOR	UN9210 (TX)
Q306	1590001470	S.TRANSISTOR	UN9213 (TX)
Q307	1590002010	S.TRANSISTOR	XP1114 (TX)
Q308	1590001770	S.TRANSISTOR	XP1213 (TX)
Q309	1590001430	S.TRANSISTOR	UN9114 (TX)
Q310	1590001140	S.TRANSISTOR	UN9210 (TX)
Q400	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q401	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q403	1590001690	S.TRANSISTOR	UN9115 (TX)
Q404	1590001690	S.TRANSISTOR	UN9115 (TX)
Q601	1530002900	S.TRANSISTOR	2SC4228-T2 R45

[DUAL-VCO BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
Q301	1530003260	S.TRANSISTOR	2SC5006-T1
Q302	1530003260	S.TRANSISTOR	2SC5006-T1
Q304	1530003320	S.TRANSISTOR	2SC5108-Y (TE85R)
Q305	1530003320	S.TRANSISTOR	2SC5108-Y (TE85R)
Q306	1530003320	S.TRANSISTOR	2SC5108-Y (TE85R)
D301	1720000370	S.VARICAP	HVU350TRF
D302	1790001260	S.DIODE	MA2S077-(TX)
D303	1790001290	S.VARICAP	MA304 (TX)
D304	1790001260	S.DIODE	MA2S077-(TX)
L301	6110003180	COIL	LA-508
L302	6200004480	S.COIL	MLF1608D R82K-T
L303	6110003190	COIL	LA-509
L304	6200004480	S.COIL	MLF1608D R82K-T
R302	7030007290	S.RESISTOR	ERJ2GEJ 222 X (2.2 kΩ)
R303	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R304	7030005590	S.RESISTOR	ERJ2GEJ 680 X (68 Ω)
R305	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R306	7030009200	S.RESISTOR	ERJ2GEJ 390 X (39 Ω)
R307	7030009200	S.RESISTOR	ERJ2GEJ 390 X (39 Ω)
R311	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R312	7030005290	S.RESISTOR	ERJ2GEJ 682 X (6.8 kΩ)

S.=Surface mount

[2F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
Q602	1590002380	S.TRANSISTOR	XP1115 (TX)
Q901	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q902	1590002580	S.FET	HAT1024R-EL
D52	1790001290	S.VARICAP	MA304 (TX)
D53	1790001290	S.VARICAP	MA304 (TX)
D54	1790001290	S.VARICAP	MA304 (TX)
D55	1750000530	S.DIODE	1SV271 (TPH3)
D101	1790001260	S.DIODE	MA2S077-(TX)
D102	1790001260	S.DIODE	MA2S077-(TX)
D103	1790001260	S.DIODE	MA2S077-(TX)
D201	1750000530	S.DIODE	1SV271 (TPH3)
D202	1790001260	S.DIODE	MA2S077-(TX)
D203	1790001260	S.DIODE	MA2S077-(TX)
D301	1790001250	S.DIODE	MA2S111-(TX)
D302	1790001250	S.DIODE	MA2S111-(TX)
D400	1790001260	S.DIODE	MA2S077-(TX)
D401	1790000840	S.DIODE	MA132WA (TX)
D402	1790000840	S.DIODE	MA132WA (TX)
D403	1790001260	S.DIODE	MA2S077-(TX)
D404	1790001260	S.DIODE	MA2S077-(TX)
D601	1790001260	S.DIODE	MA2S077-(TX)
D602	1790001260	S.DIODE	MA2S077-(TX)
D603	1790001260	S.DIODE	MA2S077-(TX)
D604	1790001260	S.DIODE	MA2S077-(TX)
D605	1790000850	S.DIODE	MA132WK (TX)
D606	1790001260	S.DIODE	MA2S077-(TX)
D607	1790001260	S.DIODE	MA2S077-(TX)
D902	1790000860	S.DIODE	MA133 (TX)
D903	1790001240	S.DIODE	MA2S728-(TX)
D904	1790000670	S.DIODE	SB07-03C-TB
FI101	2020001270	CERAMIC	CFWM450E
FI201	2040001000	S.SAW	EFCH435MWNP1
			[EUR], [ITA], [SEA]
	2040001020	S.SAW	EFCH445MWNP1
			[USA-3]
FI401	2010001960	MONOLITH	45M15AM FL-244
L53	6150004920	S.COIL	LS-518
L54	6150004920	S.COIL	LS-518
L55	6150004920	S.COIL	LS-518
L101	6200002710	S.COIL	ELJFC 1R8K-F
L102	6150004840	S.COIL	LS-510
L201	6200004370	S.COIL	LL1608-F15NK
L202	6200004380	S.COIL	LL1608-F18NK
L203	6200004360	S.COIL	LL1608-F12NK
L204	6200004360	S.COIL	LL1608-F12NK
L400	6200006980	S.COIL	ELJRE R10G-F
L401	6200004340	S.COIL	LL1608-F6N8K
L403	6200002710	S.COIL	ELJFC 1R8K-F
L603	6200004370	S.COIL	LL1608-F15NK
L604	6200004350	S.COIL	LL1608-F10NK
L605	6200004350	S.COIL	LL1608-F10NK
L606	6200004390	S.COIL	LL1608-F22NK
L607	6200004390	S.COIL	LL1608-F22NK
L609	6200004400	S.COIL	LL1608-F47NK
R5	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R51	7030005070	S.RESISTOR	ERJ2GEJ 683 X (68 kΩ)
R52	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R53	7030005590	S.RESISTOR	ERJ2GEJ 680 X (68 Ω)
R54	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R55	7030007280	S.RESISTOR	ERJ2GEJ 331 X (330 Ω)
R56	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R57	7030005060	S.RESISTOR	ERJ2GEJ 333 X (33 kΩ)
R58	7030004970	S.RESISTOR	ERJ2GEJ 470 X (47 Ω)
R59	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R60	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R61	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R62	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R63	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R64	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R101	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R102	7030005000	S.RESISTOR	ERJ2GEJ 471 X (470 Ω)
R103	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R104	7030005080	S.RESISTOR	ERJ2GEJ 823 X (82 kΩ)
R105	7030005030	S.RESISTOR	ERJ2GEJ 152 X (1.5 kΩ)
R106	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)

[2F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R107	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R108	7030007340	S.RESISTOR	ERJ2GEJ 153 X (15 kΩ)
R110	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R111	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R112	7030005000	S.RESISTOR	ERJ2GEJ 471 X (470 Ω)
R113	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R114	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R115	7030005230	S.RESISTOR	ERJ2GEJ 334 X (330 kΩ)
R116	7030005000	S.RESISTOR	ERJ2GEJ 471 X (470 Ω)
R117	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R118	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R119	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R120	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R121	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R122	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R123	7030005160	S.RESISTOR	ERJ2GEJ 105 X (1 MΩ)
R151	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R152	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R153	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R155	7030000140	S.RESISTOR	MCR10EZJH 10 Ω (100)
R156	7030000140	S.RESISTOR	MCR10EZJH 10 Ω (100)
R157	7030000140	S.RESISTOR	MCR10EZJH 10 Ω (100)
R158	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R159	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R160	7030005330	S.RESISTOR	RR0816P-562-D (5.6 kΩ)
R161	7030005330	S.RESISTOR	RR0816P-562-D (5.6 kΩ)
R162	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R201	7030005060	S.RESISTOR	ERJ2GEJ 333 X (33 kΩ)
R202	7030007270	S.RESISTOR	ERJ2GEJ 151 X (150 Ω)
R203	7030004990	S.RESISTOR	ERJ2GEJ 221 X (220 Ω)
R204	7030005070	S.RESISTOR	ERJ2GEJ 683 X (68 kΩ)
R205	7030007280	S.RESISTOR	ERJ2GEJ 331 X (330 Ω)
R206	7030007300	S.RESISTOR	ERJ2GEJ 332 X (3.3 kΩ)
R207	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R300	7510000960	S.THERMISTOR	TBPS1R104K475H5Q
R301	7030006020	S.RESISTOR	RR0510P-682-D (6.8 kΩ)
R302	7310003590	S.TRIMMER	EVM-1XSX50 B24 (203)
R303	7030005070	S.RESISTOR	ERJ2GEJ 683 X (68 kΩ)
R304	7310003590	S.TRIMMER	EVM-1XSX50 B24 (203)
R305	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R306	7030005170	S.RESISTOR	ERJ2GEJ 474 X (470 kΩ)
R308	7310003630	S.TRIMMER	EVM-1XSX50 BQ4 (473)
R309	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R310	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R311	7030009290	S.RESISTOR	ERJ2GEJ 562 X (5.6 kΩ)
R312	7030005240	S.RESISTOR	ERJ2GEJ 473 X (47 kΩ)
R313	7310003610	S.TRIMMER	EVM-1XSX50 B14 (103)
R314	7310003630	S.TRIMMER	EVM-1XSX50 BQ4 (473)
R315	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)
R316	7310003610	S.TRIMMER	EVM-1XSX50 B14 (103)
R401	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R402	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R403	7030005580	S.RESISTOR	ERJ2GEJ 560 X (56 Ω)
R404	7030005600	S.RESISTOR	ERJ2GEJ 273 X (27 kΩ)
R405	7030005570	S.RESISTOR	ERJ2GEJ 820 X (82 Ω)
R406	7030005710	S.RESISTOR	ERJ2GEJ 121 X (120 Ω)
R407	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R408	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R409	7030003520	S.RESISTOR	ERJ3GEJ 472 V (4.7 kΩ)
R410	7030005120	S.RESISTOR	ERJ2GEJ 102 X (1 kΩ)
R411	7030005010	S.RESISTOR	ERJ2GEJ 681 X (680 Ω)
R414	7030005000	S.RESISTOR	ERJ2GEJ 471 X (470 Ω)
R415	7030005310	S.RESISTOR	ERJ2GEJ 124 X (120 kΩ)
R502	7030005530	S.RESISTOR	ERJ2GEJ 100 X (10 Ω)
R504	7310003590	S.TRIMMER	EVM-1XSX50 B24 (203)
R505	7030007340	S.RESISTOR	ERJ2GEJ 153 X (15 kΩ)
R506	7510001040	S.THERMISTOR	TBPS1R153K460H5Q
R601	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R602	7030007300	S.RESISTOR	ERJ2GEJ 332 X (3.3 kΩ)
R603	7030005220	S.RESISTOR	ERJ2GEJ 223 X (22 kΩ)
R604	7030007280	S.RESISTOR	ERJ2GEJ 331 X (330 Ω)
R605	7030004980	S.RESISTOR	ERJ2GEJ 101 X (100 Ω)
R606	7030007290	S.RESISTOR	ERJ2GEJ 222 X (2.2 kΩ)
R607	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R608	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R609	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R610	7030007290	S.RESISTOR	ERJ2GEJ 222 X (2.2 kΩ)
R612	7030005040	S.RESISTOR	ERJ2GEJ 472 X (4.7 kΩ)
R903	7030000180	S.RESISTOR	MCR10EZJH 22 Ω (220)
R904	7030000180	S.RESISTOR	MCR10EZJH 22 Ω (220)
R905	7030005090	S.RESISTOR	ERJ2GEJ 104 X (100 kΩ)
R906	7030005050	S.RESISTOR	ERJ2GEJ 103 X (10 kΩ)

S.=Surface mount

[2F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C11	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C12	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C54	4030009740	S.CERAMIC	C1005 CH 1E 100D-T-A
C55	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C56	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C57	4030009750	S.CERAMIC	C1005 CH 1E 120J-T-A
C58	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C59	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C60	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C61	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C62	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C63	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C64	4030011640	S.CERAMIC	C1005 CH 1E 010B-T-A
C65	4030011640	S.CERAMIC	C1005 CH 1E 010B-T-A
C66	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C67	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C68	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C69	4030009730	S.CERAMIC	C1005 CH 1E 090D-T-A
C70	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C71	4030009730	S.CERAMIC	C1005 CH 1E 090D-T-A
C72	4030009840	S.CERAMIC	C1005 CH 1E 060D-T-A
C101	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C102	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C103	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C106	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C107	4030009740	S.CERAMIC	C1005 CH 1E 100D-T-A
C109	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C110	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C111	4030009800	S.CERAMIC	C1005 JB 1E 471K-T-A
C112	4030009800	S.CERAMIC	C1005 JB 1E 471K-T-A
C113	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C114	4030009820	S.CERAMIC	C1005 JB 1C 103K-T-A
C115	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C116	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C117	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C118	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C119	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C120	4030009820	S.CERAMIC	C1005 JB 1C 103K-T-A
C121	4030009820	S.CERAMIC	C1005 JB 1C 103K-T-A
C122	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C123	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C124	4550003290	S.TANTALUM	TESVA 0G 475M1-8L
C125	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C126	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C151	4510005370	S.ELECTROLYTIC	ECEV1AA221P
C152	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C153	4550003080	S.TANTALUM	TEMSVA 1A 335M-8L
C154	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C155	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C156	4510004640	S.ELECTROLYTIC	ECEV1CA470SP
C157	4550003290	S.TANTALUM	TESVA 0G 475M1-8L
C158	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C159	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C160	4510007120	S.ELECTROLYTIC	ECEV1AA101SP
C161	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C162	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C201	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C202	4030011300	S.CERAMIC	C1005 CH 1E 121J-T-A
C203	4030009740	S.CERAMIC	C1005 CH 1E 100D-T-A
C204	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C205	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C206	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C207	4030009770	S.CERAMIC	C1005 CH 1E 220J-T-A
C300	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C301	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C302	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C303	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C400	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C402	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C403	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C404	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C405	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C406	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C407	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C408	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C409	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C410	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C411	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C412	4030011670	S.CERAMIC	C1005 CH 1E 2R5B-T-A
C413	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C414	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C415	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A

[2F UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C416	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C501	4030011320	S.CERAMIC	C1005 CH 1E 470J-T-A
C601	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C604	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C605	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C606	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C607	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C608	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C609	4030011660	S.CERAMIC	C1005 CH 1E 020B-T-A
C610	4030009720	S.CERAMIC	C1005 CH 1E 080D-T-A
C611	4030011650	S.CERAMIC	C1005 CH 1E 1R5B-T-A
C612	4030009700	S.CERAMIC	C1005 CH 1E 050C-T-A
C613	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C614	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C615	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C616	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C617	4030009710	S.CERAMIC	C1005 CH 1E 070D-T-A
C618	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C620	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C621	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C622	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C800	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C801	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C802	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C803	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C900	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C901	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C902	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C910	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C911	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C912	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C913	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C914	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C915	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C916	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C917	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C918	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C919	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C920	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C921	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C922	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C923	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J1	6510018480	S.CONNECTOR	IL-WX-30SB-VF-B-E1000
J2	6510018630	S.CONNECTOR	08-6210-030-010-800
J3	6510018180	S.CONNECTOR	52365-0690
EP1	0910051211	PCB	B 5216A

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1140007770	S.IC	M38267M8L-219-GP
	1140005840	S.IC	M38267M8L-155-GP [USA-3] only [Other]
IC2	1180001240	S.IC	S-81335HG-KI-T1
	1110003380	S.IC	S-80730SL-AT-T1
IC12	1110004110	S.IC	BA4510F-T1
IC13	1110002700	S.IC	NJM2904M-T1
IC15	1140005620	S.IC	X25080SI-2.7T6
Q1	1590001140	S.TRANSISTOR	UN9210 (TX)
Q4	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q5	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q10	1550000010	S.FET	2SJ364-Q (TX)
Q12	1590001190	S.TRANSISTOR	XP6501-(TX).AB
Q30	1590001690	S.TRANSISTOR	UN9115 (TX)
Q31	1590001150	S.TRANSISTOR	UN9211 (TX)
Q32	1520000430	S.TRANSISTOR	2SB1462-R (TX)
Q34	1590001860	S.TRANSISTOR	UN9215 (TX)
Q35	1590001860	S.TRANSISTOR	UN9215 (TX)
Q36	1590001860	S.TRANSISTOR	UN9215 (TX)
Q40	1590001470	S.TRANSISTOR	UN9213 (TX)
Q42	1590001150	S.TRANSISTOR	UN9211 (TX)

S.=Surface mount

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
Q44	1590001860	S.TRANSISTOR	UN9215 (TX)
Q45	1590001690	S.TRANSISTOR	UN9115 (TX)
D1	1790001250	S.DIODE	MA2S111-(TX)
D3	1790001250	S.DIODE	MA2S111-(TX)
D4	1790000990	S.ZENER	MA8051-H (TX)
D6	1790001250	S.DIODE	MA2S111-(TX)
D7	1790001250	S.DIODE	MA2S111-(TX)
D8	1790001200	S.DIODE	MA6S121 (TX)
D11	1160000050	S.DIODE	DAP202U T107 [ITA], [SEA]
	1750000240	S.DIODE	DA112 T107 [EUR], [USA-3]
D12	1750000220	S.DIODE	DA113W T107 [ITA]
	1750000240	S.DIODE	DA112 T107 [SEA], [USA-3]
D14	1790001250	S.DIODE	MA2S111-(TX) [EUR], [SEA], [USA-3] only
D15	1160000050	S.DIODE	DAP202U T107 [EUR], [SEA], [USA-3]
	1750000240	S.DIODE	DA112 T107 [ITA]
D16	1790001250	S.DIODE	MA2S111-(TX) [USA-3] only
D19	1790001250	S.DIODE	MA2S111-(TX)
X1	6050009620	S.XTAL	CR-534 (5.039 MHz)
R2	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R10	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [EUR], [ITA], [SEA]
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R38	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R41	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R42	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R43	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R44	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R45	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R46	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R47	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R48	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R140	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R141	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R142	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R143	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R144	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R145	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R146	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R147	7310002600	S.TRIMMER	RV-110 (RH03A3AS4X0AA) 473
R148	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R149	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R151	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R152	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R153	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R154	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R155	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R156	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R157	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R158	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R159	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R160	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R161	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R162	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R181	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R183	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R184	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R185	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R186	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R187	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R190	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R196	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R197	7030005840	S.RESISTOR	RR0510R-473-D (47 kΩ)
R198	7030005840	S.RESISTOR	RR0510R-473-D (47 kΩ)
R200	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R205	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R207	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R208	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R209	7030005840	S.RESISTOR	RR0510R-473-D (47 kΩ)
R210	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R211	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R213	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R214	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R215	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R216	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R218	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R219	7030003840	S.RESISTOR	ERJ3GEYJ 225 V (2.2 MΩ)
R220	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R221	7030005520	S.RESISTOR	RR0816R-334-D (330 kΩ)
R222	7030005970	S.RESISTOR	RR0816R-683-D (68 kΩ)
R223	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R224	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R230	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R231	7410000710	S.ARRAY	EXB-V8V 224JV (220 kΩ)
R233	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R234	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R235	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R236	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R237	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R238	7030005110	S.RESISTOR	ERJ2GEJ 224 X (220 kΩ)
R240	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R241	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R242	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R302	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [EUR] only
R304	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [ITA] only
R309	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [SEA] only
R336	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [USA-3] only
C5	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C6	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C15	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C17	4510005900	S.ELECTROLYTIC	ECEV0GA101SR
C18	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C20	4550006120	S.TANTALUM	TEMSVA 0G 226M-8L
C21	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C22	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C23	4550006780	S.TANTALUM	TEMSVB2 0J 476M-8R
C36	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C41	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C42	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C43	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C44	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C45	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C80	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C81	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C82	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C83	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C84	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C87	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C91	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C92	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C93	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C130	4030009800	S.CERAMIC	C1005 JB 1E 471K-T-A
C131	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C132	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C133	4550003290	S.TANTALUM	TESVA 0G 475M1-8L
C136	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C137	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C138	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C139	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C140	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C141	4550003290	S.TANTALUM	TESVA 0G 475M1-8L
C142	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C143	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A
C145	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C146	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C147	4030010040	S.CERAMIC	C1608 JB 1H 561K-T-A
C148	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C149	4550006780	S.TANTALUM	TEMSVB2 0J 476M-8R
C154	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C155	4030009650	S.CERAMIC	C1608 CH 1H 240J-T-A
C156	4030007060	S.CERAMIC	C1608 CH 1H 270J-T-A
C157	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C166	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C167	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C168	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C169	4030009980	S.CERAMIC	C1608 JB 1H 152K-T-A
C170	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C171	4030008910	S.CERAMIC	C1608 JB 1C 393K-T-A

S.=Surface mount

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C172	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C173	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C174	4030009820	S.CERAMIC	C1005 JB 1C 103K-T-A
C175	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C178	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C179	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C180	4030011600	S.CERAMIC	C1608 JB 1C 104KT-N
C181	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C200	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C201	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C202	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C203	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C204	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C205	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C206	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C207	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C208	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C209	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C210	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C211	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C212	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C213	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C214	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C215	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C216	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C217	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J1	6510018630	S.CONNECTOR	08-6210-030-010-800
DS1	5010000160	S.LED	LNJ310M6URA
DS2	5010000160	S.LED	LNJ310M6URA
DS3	5010000150	S.LED	LT1EP53A
DS4	5030001230	LCD	LD-BU4323J
S1	2220000560	S.SWITCH	SSSS812-B1
S2	2230000900	S.SWITCH	JPM1990-2013R
SP1	2510000840	SPEAKER	CS028014-12
W1	8900005320	FFC	OPC-519
W2	9045995030	WIRE	71/98/020/X98/X98
EP1	0910047181	PCB	B 4790A
EP2	8930037201	LCD CONTACT	SRCN-1600 ZNN-1

S.=Surface mount

SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

[CHASSIS PARTS]

REF. NO.	ODER NO.	DESCRIPTION	QTY.
J1	6510018560	Antenna connector BNC-R128 (incl. nut)	1
MP1	8210013462	1600 rear panel (A)-2	1
MP2	8310034261	1460 contact base-1	1
MP3	8010017660	2207 chassis	1
MP4	8930035131	Spring (V)-1	1
MP5	8930033760	1460 release plate	1
MP6	8930033771	1460 release button	1
MP7	8930033820	1460 contact spring	1
MP8	8610010171	Knob N248-1 [DAIL]	1
MP9	8610010180	Knob N249 [VOL]	1
MP10	8930035410	1460 contact rubber	3
MP11	8930035520	1459 rear plate	1
MP12	8930036200	1600 DC cap	1
MP13	8810008750	Screw PH BT 2 x 15 ZK	4
MP14	8810008970	Screw FFH BT No.0 2 x 3.5 NI-ZU	2
MP15	8810008970	Screw FFH BT No.0 2 x 3.5 NI-ZU	3
MP16	8810008970	Screw FFH BT No.0 2 x3.5 NI-ZU	1
MP17	8810009180	Screw FFH BT No.0 2 x 5 NI-ZU	2
MP18	8810008970	Screw FFH BT No.0 2 x 3.5 NI-ZU	2
MP19	8810006790	Screw PH No.0 2 x 3.5 ZK	1
MP20	8810008760	Screw PH BT 2 x 8 NI-ZU	2
MP21	8830000570	VR nut (A)	1
MP23	8810006650	Screw PH B0 No.0 1.4 x 2.5	3
MP24	9910005730	Screw BuH 3 x 3 ZK BS	2
MP28	8860040300	1810 earth spring	1
MP29	8930036190	1600 MIC cap	1
MP30	8930039830	Thermal sheet (D)	2
MP31	8930040410	Insulating plate (E0)	2
MP33	8860001030	1810 ANT rug	1
MP34	8930040350	1810 EMC plate	1
MP35	8510012130	2207 EMC plate	1

[1F UNIT]

REF. NO.	ODER NO.	DESCRIPTION	QTY.
J901	6450000130	Connector HSJ1102-01-540 [MIC]	1
J902	6450001060	Connector HSJ1493-01-010 [SP]	1
J903	6450000870	Connector HEC2711-01-020 [DC13.5V]	1
S1	7600000190	Encoder/VR TP96D96E20-15F-10KA-1810 [DIAL/VOL]	1
MP1	8510012060	2207 shield plate	1
MP2	8930048430	Insulating plate (F0)	1

[PA BOARD]

REF. NO.	ODER NO.	DESCRIPTION	QTY.
MP401	8410002260	2207 heat sink	1

[DUAL VCO BOARD]

REF. NO.	ODER NO.	DESCRIPTION	QTY.
MP301	8510010370	1810 VCO case	1

Screw abbreviations

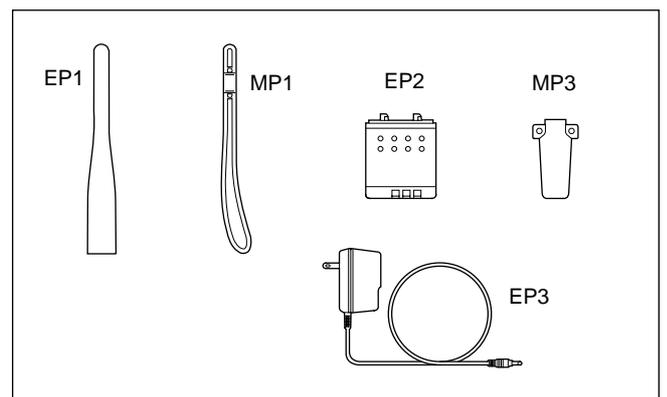
- A, B0, BT: Self-tapping
- PH: Pan head
- FFH: Flat head
- BiH: Bind head
- NI: Nickel
- SUS: Stainless
- ZK: Black

[LOGIC UNIT]

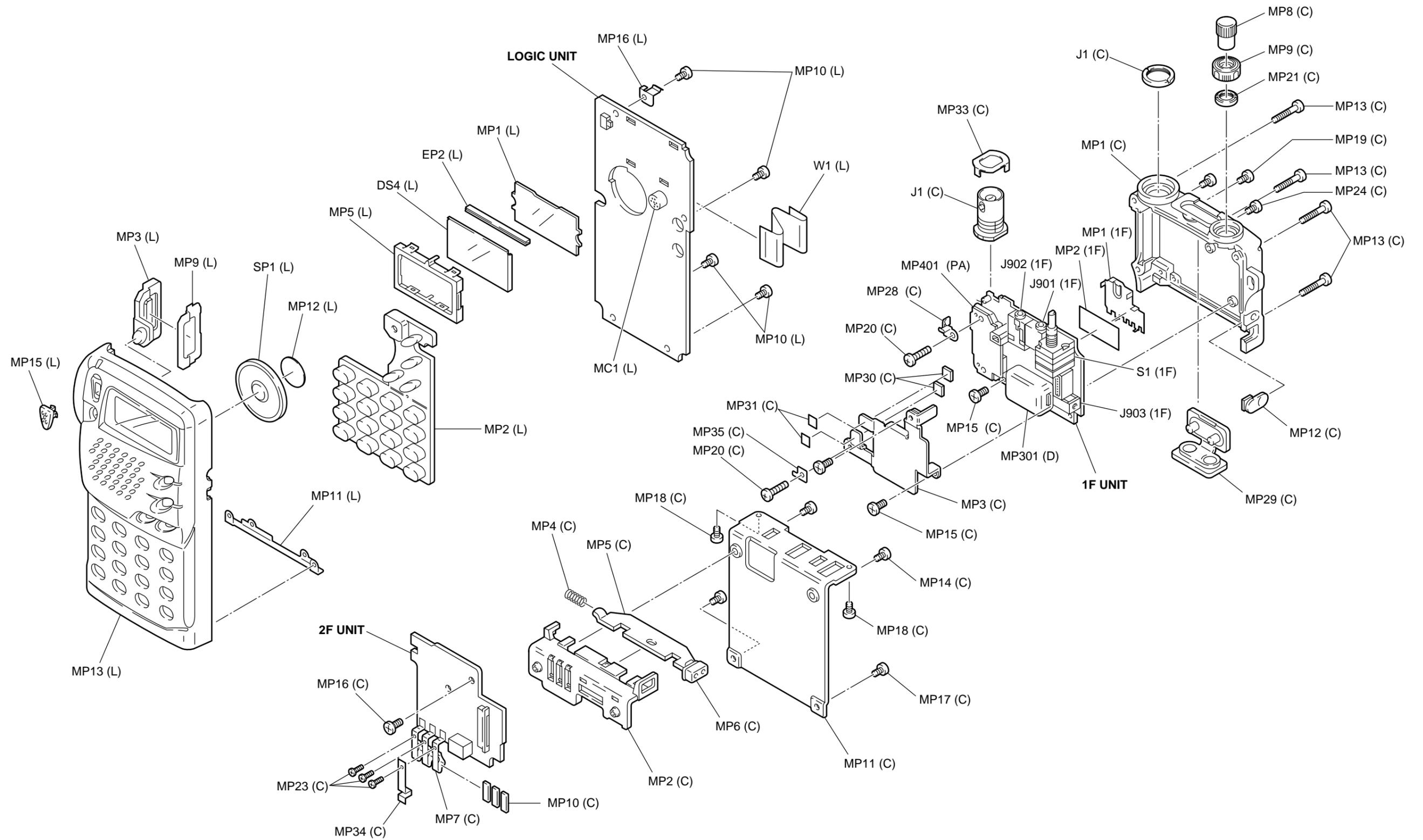
REF. NO.	ODER NO.	DESCRIPTION	QTY.
W1	8900005320	Flat cable OPC-519	1
DS4	5030001230	LCD LD-BU4323J	1
EP2	8930037201	LCD contact SRCN-1600 ZNN-1	1
MC1	7700001750	Microphone EM-123TH	1
MP1	8210012470	1600 reflector	1
MP2	8930039160	1810 10-key	1
MP3	8930039130	1810 PTT button	1
MP5	8930036150	1600 LCD holder	1
MP9	8930039140	1810 PTT plate	1
MP10	8810008970	Screw FFH BT No.0 2 x 3.5 NI-ZU	4
MP11	8510009790	1600 ground plate	1
MP12	8930036630	1600 SP sheet	1
MP13	8210015800	1810 front panel	1
MP15	8930039120	1810 lock button	1
MP16	8860001050	1810 LOGIC rug	1
SP1	2510000840	Speaker CS028014-12	1

[UNPACKING]

REF. NO.	ODER NO.	DESCRIPTION	QTY.
EP1	Optional product	ANTENNA FA-1443B [USA-3]	1
	Optional product	ANTENNA FA-B270C [other]	1
EP2	Optional product	BATTERY CASE BP-170 [SEA]	1
	Optional product	BATTERY PACK BP-173 [USA-3]	1
	Optional product	BATTERY PACK BP-180 [EUR], [ITA]	1
EP3	Optional product	CHARGER BC-110A [USA-3]	1
	Optional product	CHARGER BC 110D [EUR], [ITA]	1
MP1	8010011960	Handstrap HK-005	1
MP3	8010008620	752 belt clip	1



Antenna for U.S.A.version differs from that shown above.



UNIT abbreviation (C): CHASSIS PARTS, (L): LOGIC UNIT, (PA): PA UNIT, (D): DIAL VCO UNIT, (1F): 1F UNIT

SECTION 8 SEMI-CONDUCTOR INFORMATION

• TRANSISTOR AND FET'S

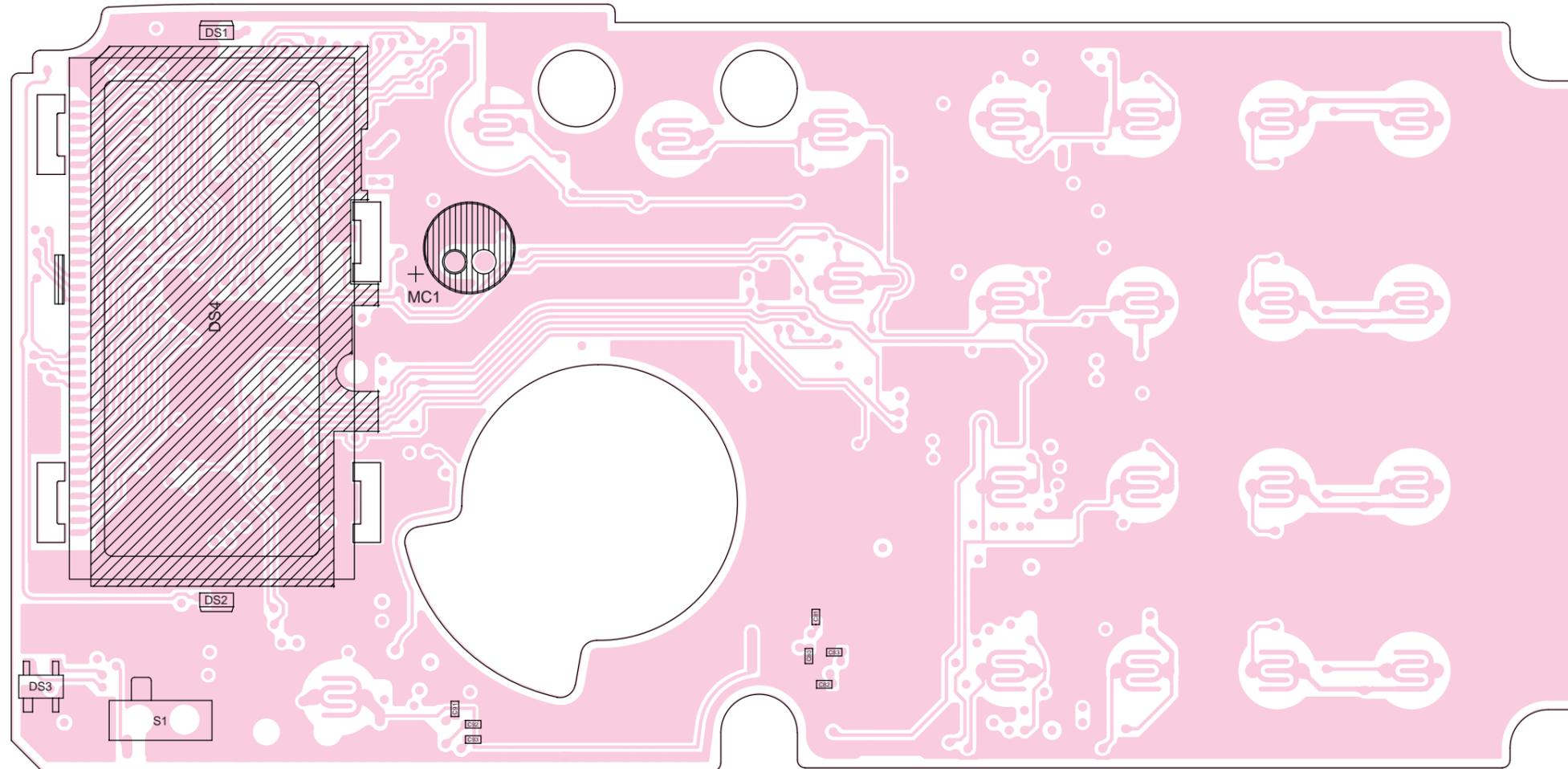
2SA1588 GR (Symbol: ZG) 	2SB1132 R (Symbol: BARB) 	2SB1201 S (Symbol: B1201) 	2SB1462 R (Symbol: BR) 	2SC3356 R25 (Symbol: R25)
2SC4081 S (Symbol: BS) 	2SC4215 O (Symbol: QO) 	2SC4226 R25 (Symbol: R25) 	2SC4228 R45 (Symbol: R45) 	2SC4403 3 (Symbol: LY3)
2SC5006 (Symbol: 24) 	2SC5107 O (Symbol: MFO) 	2SC5108 Y (Symbol: MC) 	2SC5226 4 (Symbol: LN4) 	2SD2216 S (Symbol: Y)
2SJ346 Q (Symbol: 4MQ) 	2SK880 Y (Symbol: XY) 	2SK3074 (Symbol: UW) 	2SK3075 (Symbol: UB F) 	DTC114 TU (Symbol: 04)
HAT1024 R (Symbol: 1024) 	UN9114 (Symbol: 6D) 	UN9115 (Symbol: 6E) 	UN9210 (Symbol: 8L) 	UN9211 (Symbol: 8A)
UN9213 (Symbol: 8C) 	UN9215 (Symbol: 8E) 	UN921L (Symbol: 8Q) 	XP1114 (Symbol: 7Q) 	XP1115 (Symbol: 9L)
XP1213 (Symbol: 9L) 	XP1501 (Symbol: 5R) 	XP6501 AB (Symbol: 5N) 		

• DIODES

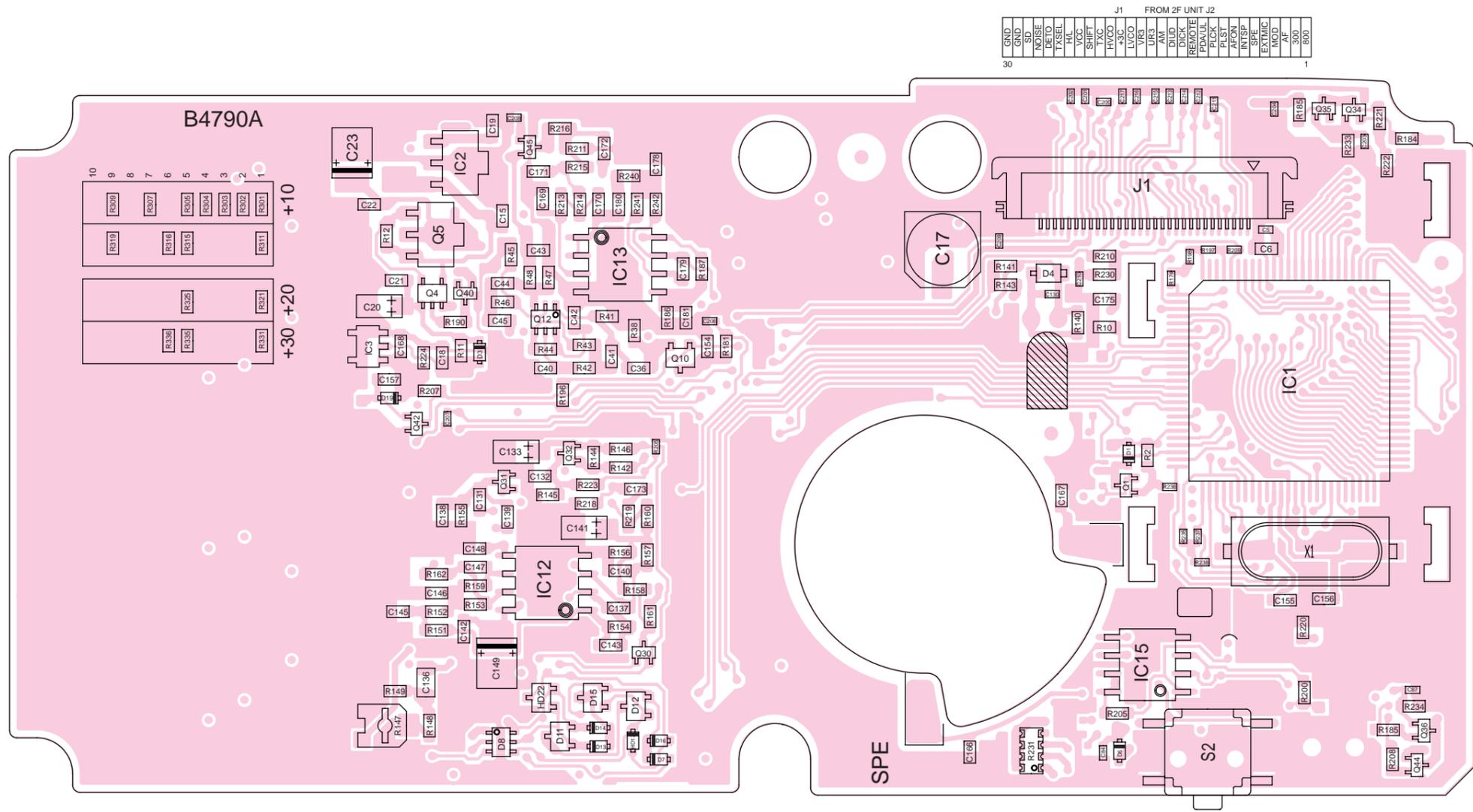
1SV271 (Symbol: TG) 	DA112 (Symbol: AZ) 	DA113 (Symbol: AY) 	DAP202U (Symbol: P) 	MA8051H (Symbol: 5^1)
HVU350 (Symbol: 4) 	MA132WA (Symbol: MO) 	MA132WK (Symbol: MU) 	MA133 (Symbol: MP) 	MA2S077 (Symbol: S)
MA2S111 (Symbol: A) 	MA2S728 (Symbol: B) 	MA304 (Symbol: 7R) 	MA6S121 (Symbol: M2D) 	MA8030H (Symbol: 3^0)
MA8043L (Symbol: 8^2) 	RB060L-40 (Symbol: 36) 			

SECTION 9 BOARD LAYOUTS

9 - 1 LOGIC UNIT
• TOP VIEW

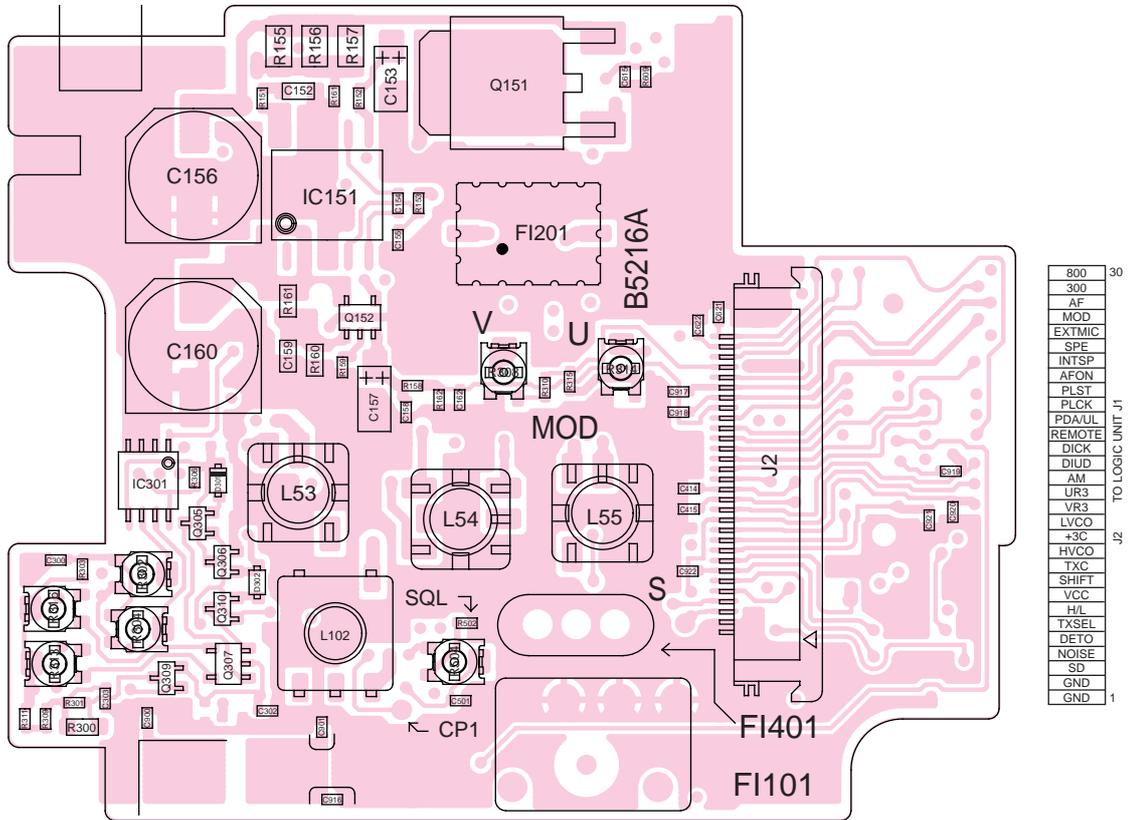


• BOTTOM VIEW

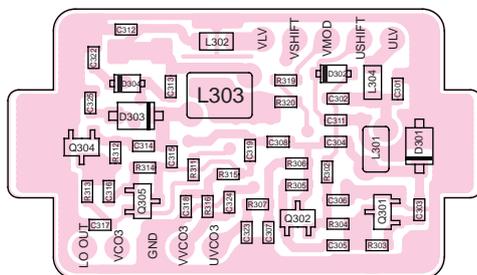


FROM 2F UNIT J2	
38	GND
39	SD
40	NOISE
41	DET0
42	TABEL
43	AVC
44	VFC
45	SHIFT
46	TXC
47	HVCO
48	+3C
49	LVCO
50	UPR
51	AM
52	DUD
53	DICK
54	REMOTE
55	PDAUL
56	PLK
57	PLSK
58	AFON
59	INTSP
60	SPE
61	EXTMIC
62	MOD
63	AP
64	300
65	800

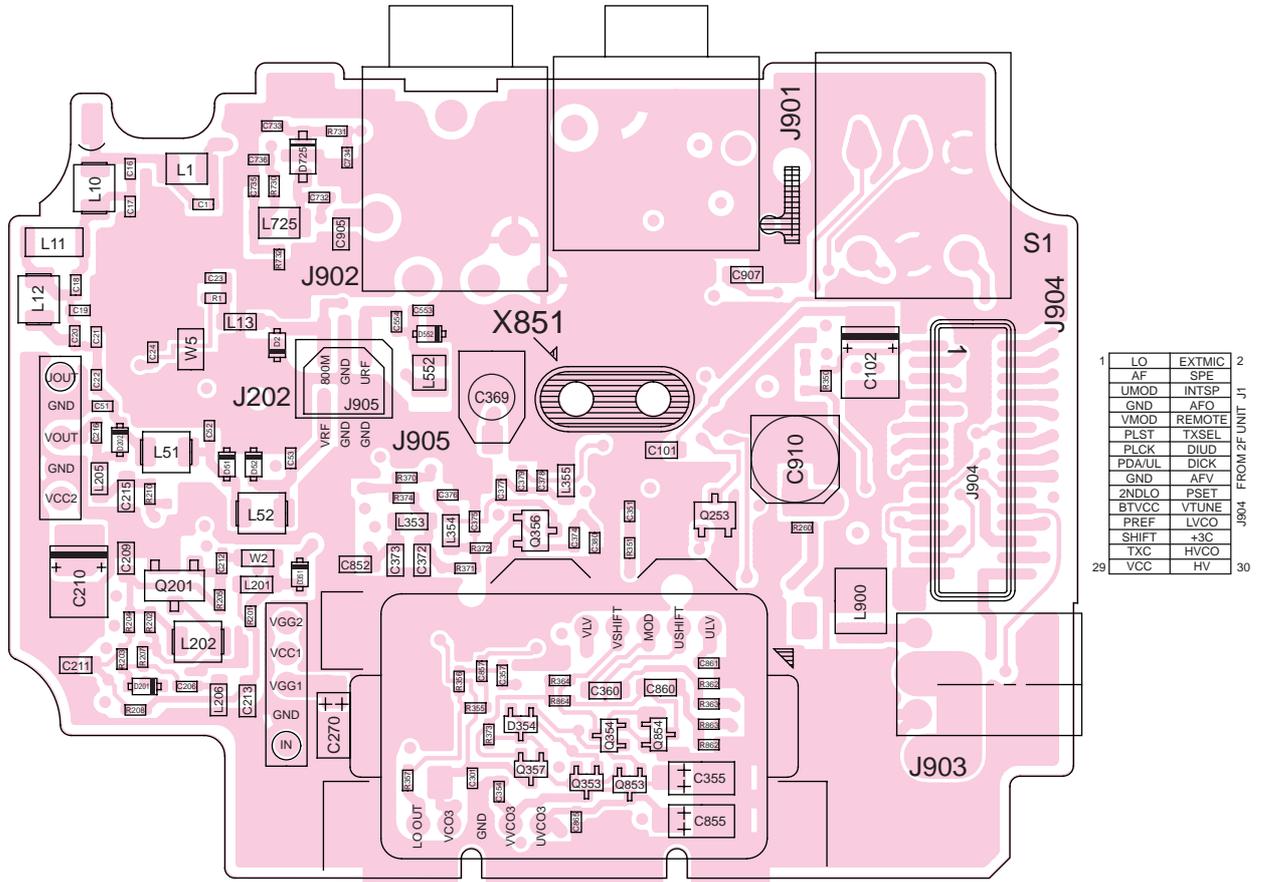
9 - 2 2F UNIT
• 2F UNIT (TOP VIEW)



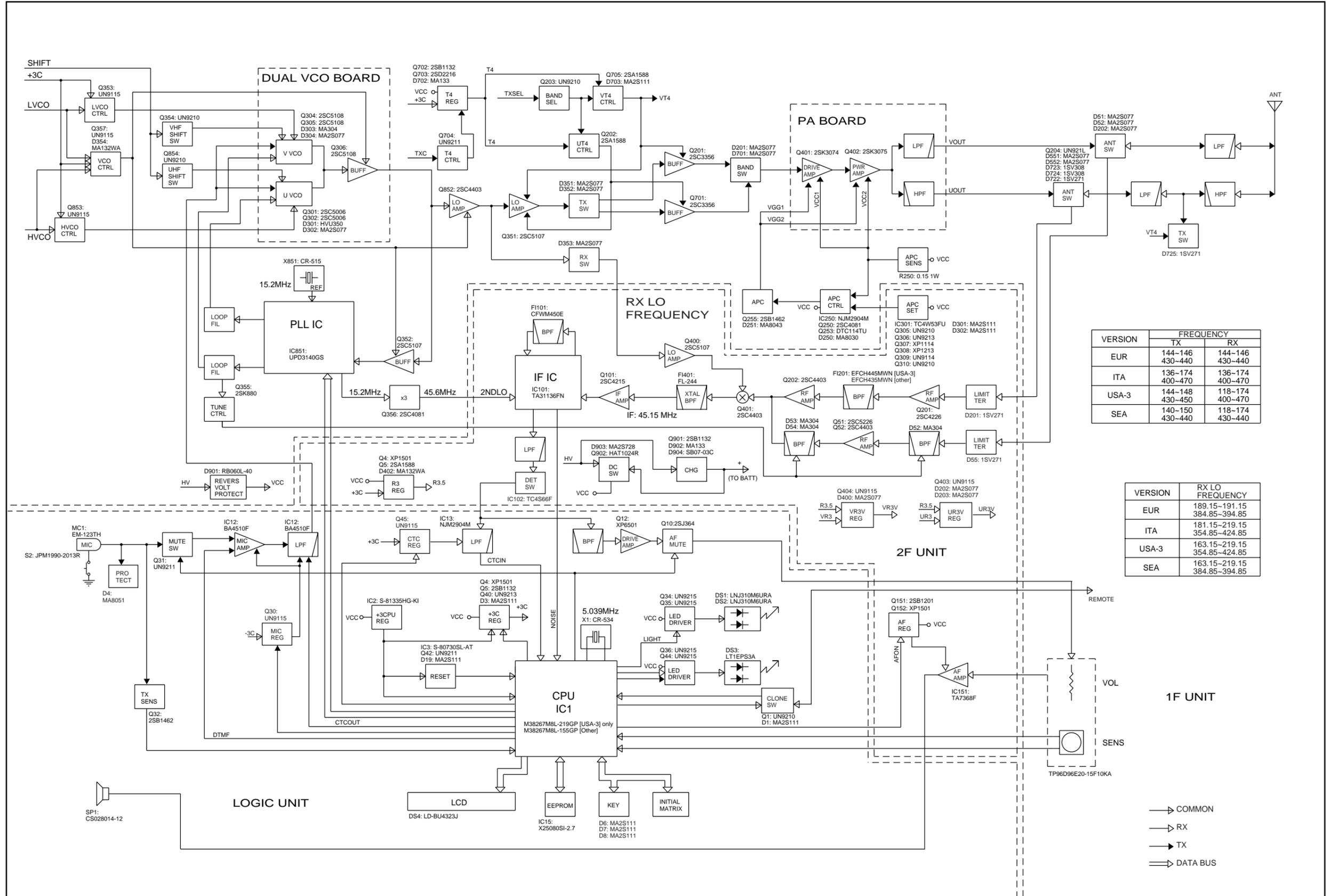
• DUAL VCO BOARD (TOP VIEW)



9 - 3 1F UNIT
• 1F UNIT (TOP VIEW)

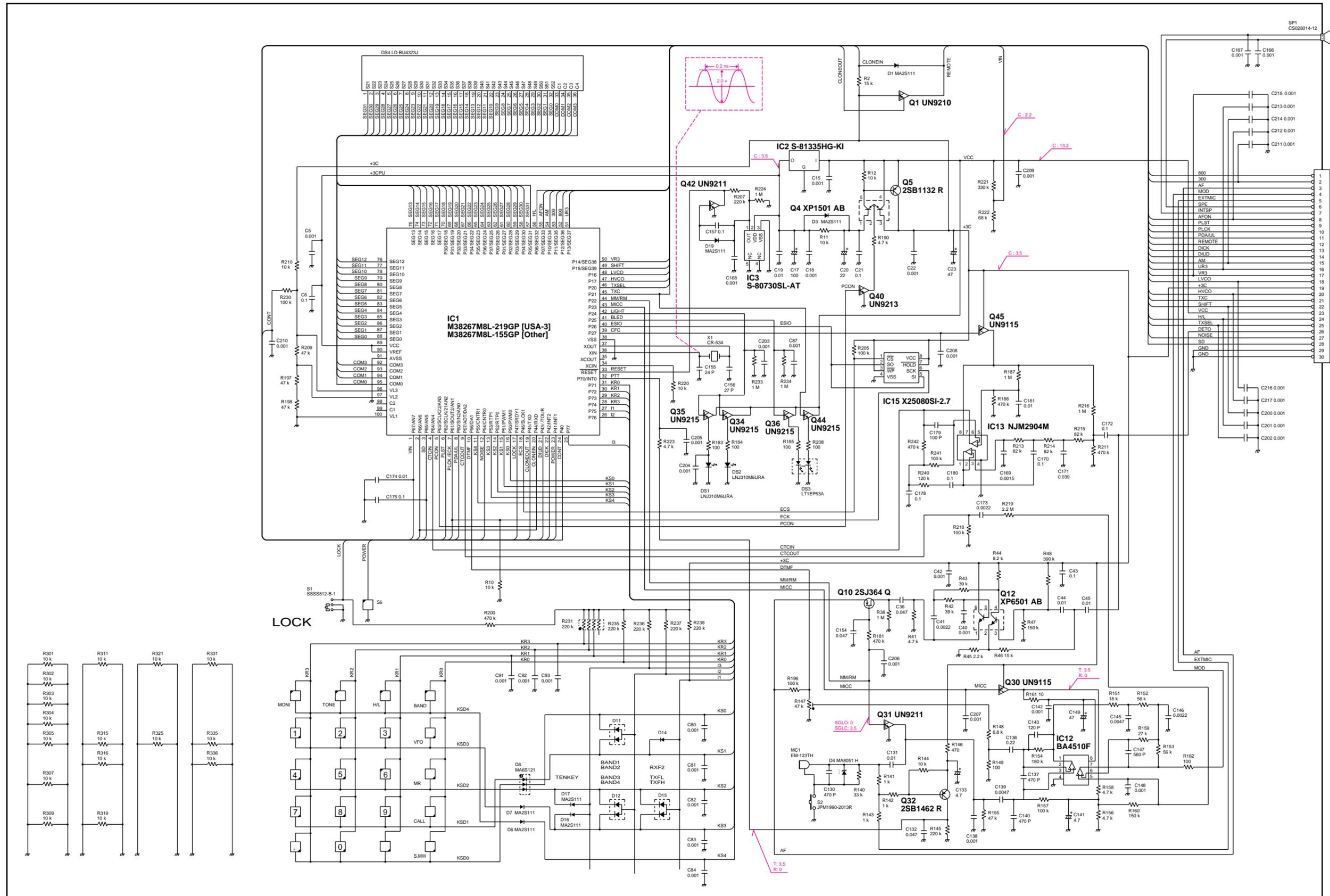


SECTION 10 BLOCK DIAGRAM

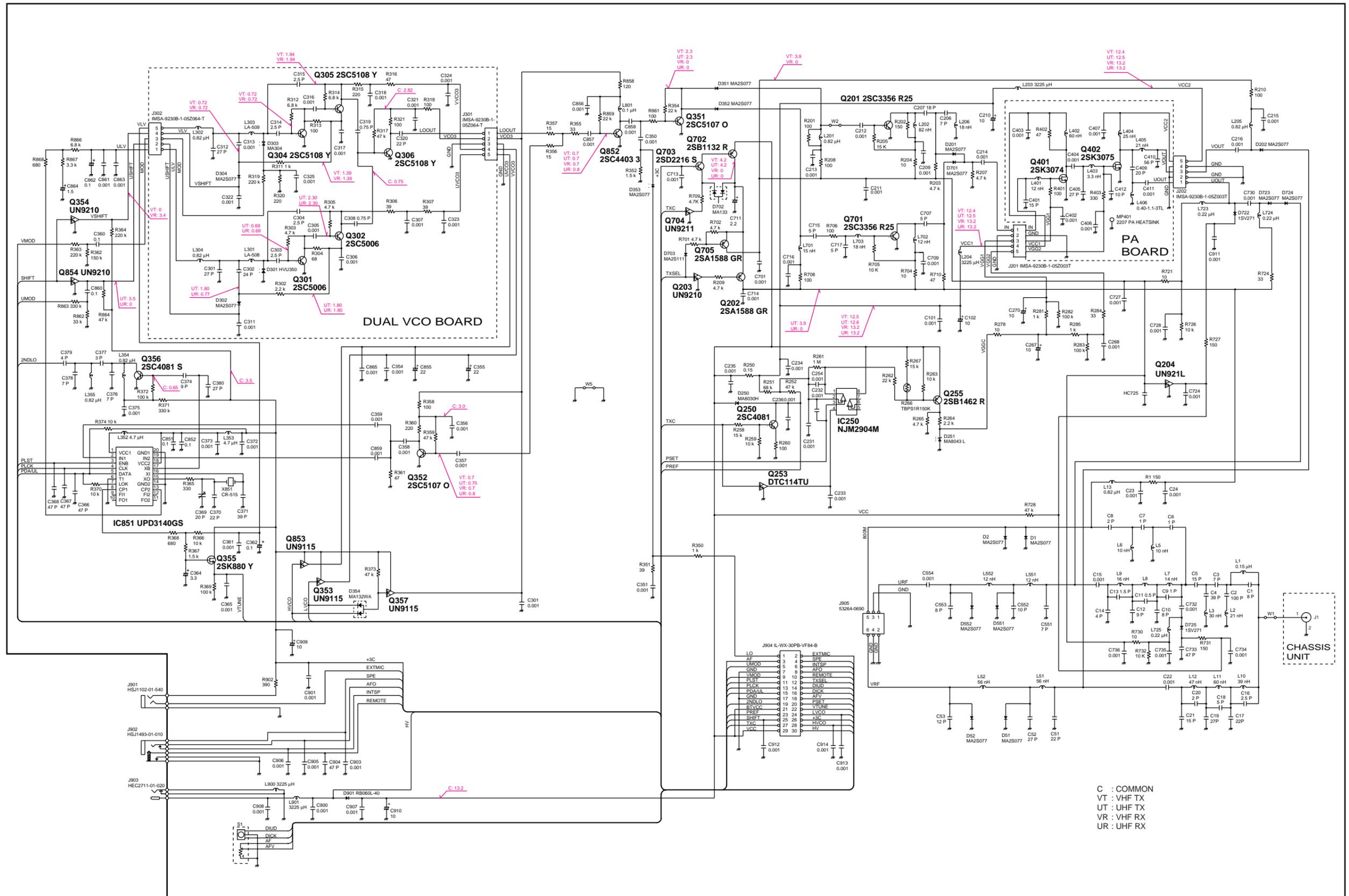


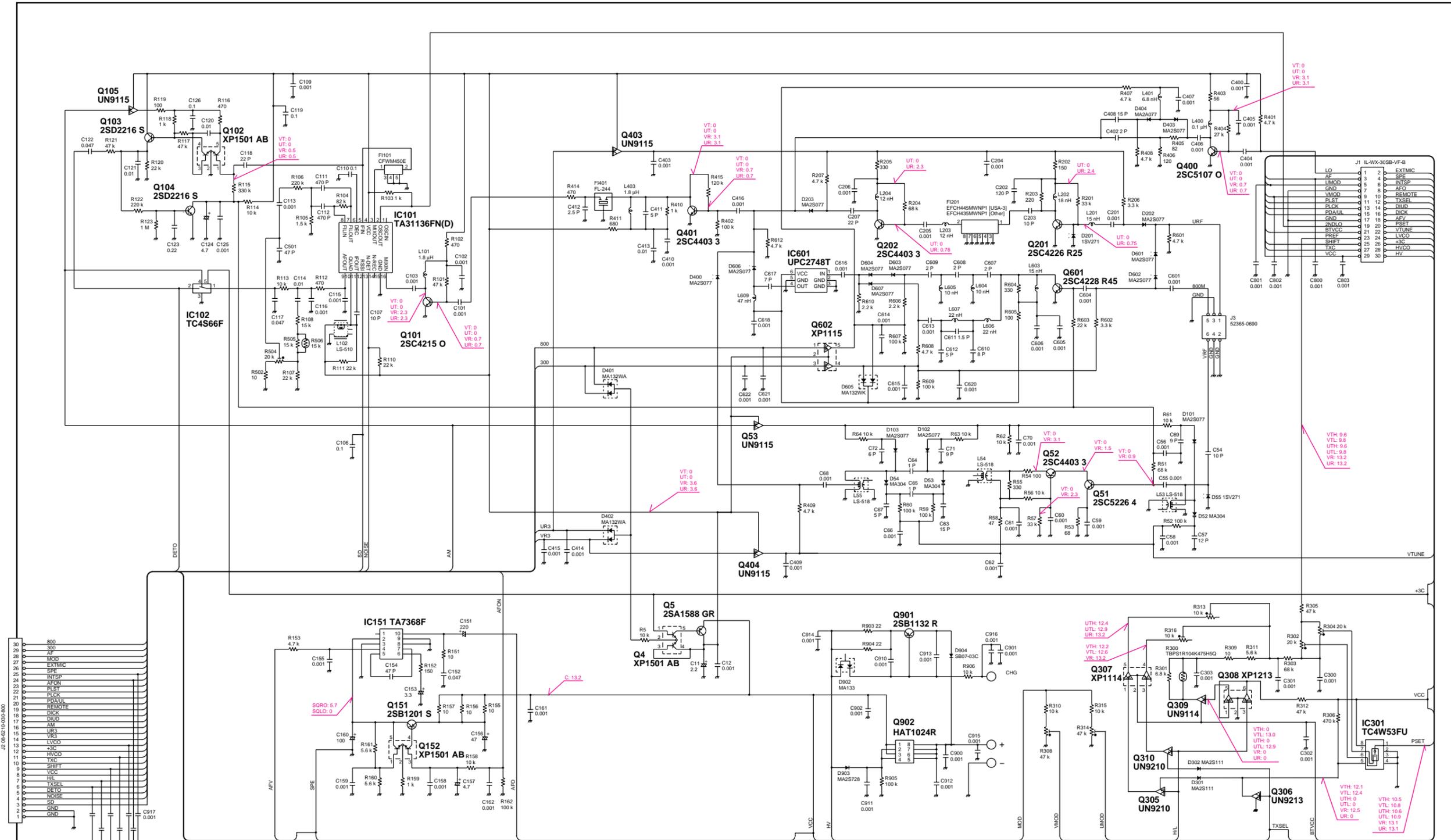
SECTION 11 VOLTAGE DIAGRAM

• LOGIC UNIT



11 - 1





- C : COMMON
- VT : VHF TX
- UT : UHF TX
- VR : VHF RX
- UR : UHF RX
- VTH : VHF TX HI-POWER
- VTL : VHF TX LOW-POWER
- UTH : UHF TX HI-POWER
- UTL : UHF TX LOW-POWER
- SQLO : SQL OPEN
- SQLC : SQL CLOSE

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