ICOM

SERVICE MANUAL

144 MHz FM TRANSCEIVER

IC-T22A
IC-T22E

UHF FM TRANSCEIVER

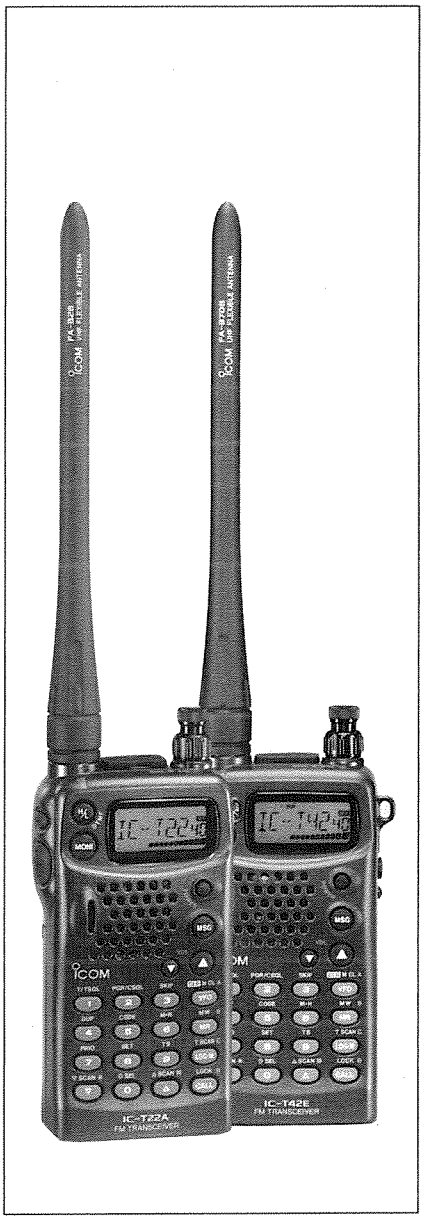
IC-T42A
IC-T42E

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the IC-T22A/E and IC-T42A/E FM TRANSCEIVER at the time of publication.

MODEL	VERSION No.	VERSION	SYMBOL
IC-T22E/T42E	#02	Europe	EUR
	#04	Italy	ITA
IC-T22A/T42A	#05	U.S.A.	USA
	#07	Australia	AUS
	#09	Asia	SEA



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 (100 mW) to the antenna connector. This could damage the transceiver's front end.

ORDERING PARTS

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

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

<SAMPLE ORDER>

1140005300	IC	HD404629C32H	IC-T22A	LOGIC UNIT	5 pieces
8810008750	Screw	PH B0 M2 x 15 ZK	IC-T22A	Rear panel	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 of electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 40 dB 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

				IC-T22A/E	IC-T42A/E
GENERAL	Frequency coverage (MHz)	U.S.A.		Tx:144.0–148.0 MHz Rx:136.0–174.0 MHz*1	Tx:440.0–450.0 MHz Rx:400.0–470.0 MHz*2
		Europe		144.0–146.0 MHz	430.0–440.0 MHz
		Asia		Tx:144.0–148.0 MHz Rx:140.0–150.0 MHz*1	430.0–440.0 MHz
		Italy		Tx:144.0–148.0 MHz Rx:136.0–174.0 MHz*1	Tx:430.0–440.0 MHz Rx:400.0–470.0 MHz*3
		Guaranteed range: *1144.0–148.0 MHz *2440.0–450.0 MHz *3430.0–440.0 MHz			
	Mode			FM (F3E)	
	Frequency stability (0 °C to +50 °C, +32 °F to +122 °F)			±10 ppm	±5 ppm
	Tuning steps			5, 10, 12.5, 15, 20, 25, 30 or 50 kHz	
	Antenna impedance			50 Ω (unbalanced)	
	External DC power			4.5 to 16 V DC (negative ground)	
	Current drain (at 13.5 V, typical)	Tx	High	1.4 A	
			Low	500 mA	
		Rx	Rated audio	150 mA	
			Power saved	15 mA (average)	
	Usable temperature range			–10 °C to +60 °C (+14 °F to +140 °F)	
	Dimensions (projections not included)			57 (W) x 110 (H) x 27 (D) mm; 2 1/4 (W) x 4 5/16 (H) x 1 1/16 (D) in (with BP-170 or BP-171) 57 (W) x 122 (H) x 29 (D) mm; 2 1/4 (W) x 4 13/16 (H) x 1 1/8 (D) in (with BP-180)	
	Weight (with a battery pack, belt clip and antenna)			290 g ; 10.2 oz (with BP-170) 310 g ; 10.9 oz (with BP-171) 335 g ; 11.8 oz (with BP-180)	280 g ; 9.9 oz (with BP-170) 300 g ; 10.6 oz (with BP-171) 325 g ; 11.5 oz (with BP-180)
TRANSMITTER	Output power*			5 W or 0.5 W (at 9.6 to 13.5 V), 3.5 W or 0.5 W (at 7.2 V)	
	Modulation system			Variable reactance frequency modulation	
	Max. frequency deviation*			±5.0 kHz	
	Spurious emissions			Less than –60 dB	
	Microphone impedance			2 kΩ	
RECEIVER	Receive system			Double conversion superheterodyne	
	Intermediate frequencies			1st: 30.85 MHz ; 2nd: 450 kHz	
	Sensitivity* (12 dB SINAD)			Less than 0.16 µV (typical)	
	Squelch sensitivity			Less than 0.16 µV (at threshold)	
	Selectivity			More than 15 kHz/–6 dB, Less than 30 kHz/–60 dB	
	Spurious and image rejection ratio*			More than 60 dB (more than 45 dB at 1/2 IF)	More than 50 dB (more than 45 dB at 1/2 IF)
	Audio output power* (at 13.5 V)			More than 200 mW (at 10 % distortion with an 8 Ω load)	
	Audio output impedance			8 Ω	

*Specifications guaranteed at a transceiver temperature of +25°C (+77°F).

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

SECTION 2 DISASSEMBLY INSTRUCTIONS

● Removing the rear panel

① Turn power OFF, then remove the battery pack.

② Unscrew 6 screws (4 x Ⓐ, 2 x Ⓑ) as shown in Fig 1, then separate the front and rear panels.

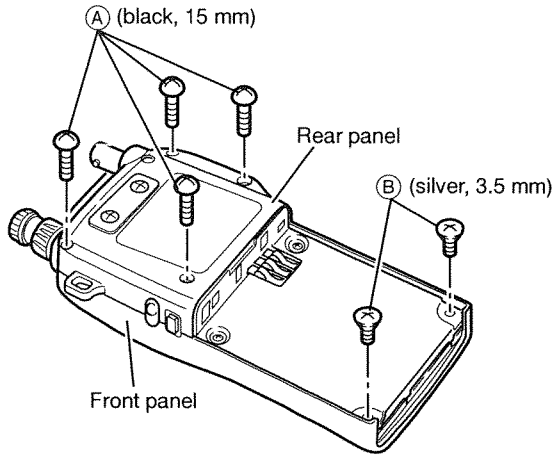


Fig. 1 Removing the rear panel

● Removing the MAIN unit

⑤ Unscrew 2 screws Ⓓ to separate the rear plate from the rear panel as shown Fig. 3.

⑥ Unscrew 2 screws Ⓔ and unplug J1 on the bottom side, to remove the MAIN unit.

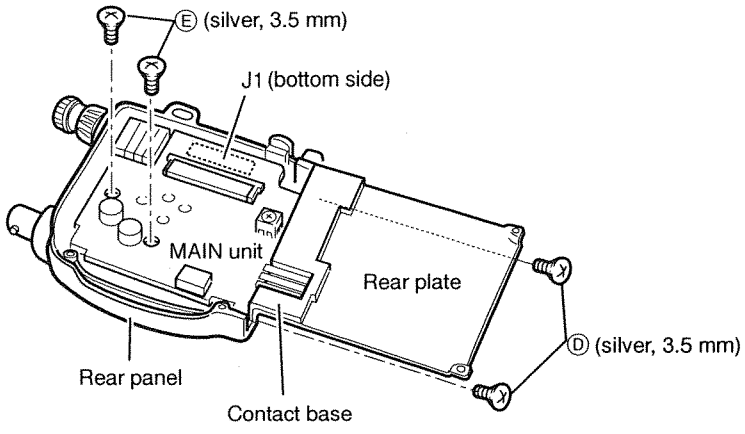


Fig. 3 Removing the MAIN unit

● Removing the LOGIC unit

③ Unplug the flat cable from J2, then unsolder speaker leads.

④ Unscrew 4 screws Ⓒ to remove the LOGIC unit.

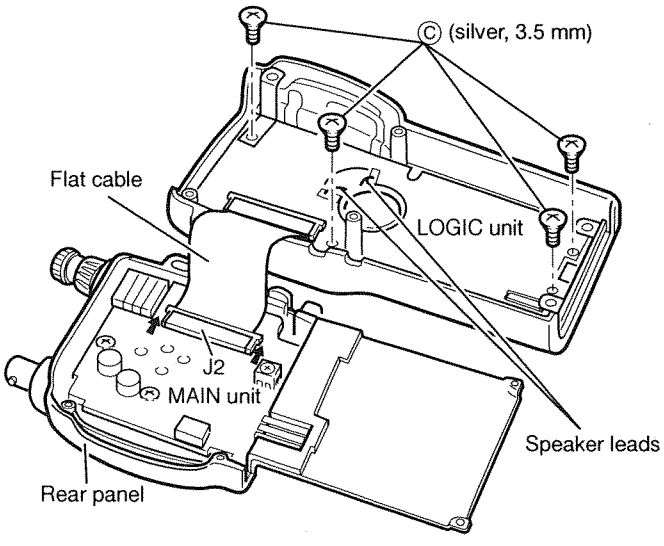


Fig. 2 Removing the LOGIC unit

● Removing the RF unit

⑦ Remove both the [DIAL] and [SQL] knobs and the 2 nuts Ⓘ and Ⓙ.

⑧ Unscrew 5 screws (3 x Ⓕ and 2 x Ⓖ) from the RF unit and 1 screw Ⓗ from the rear panel to remove the RF unit.

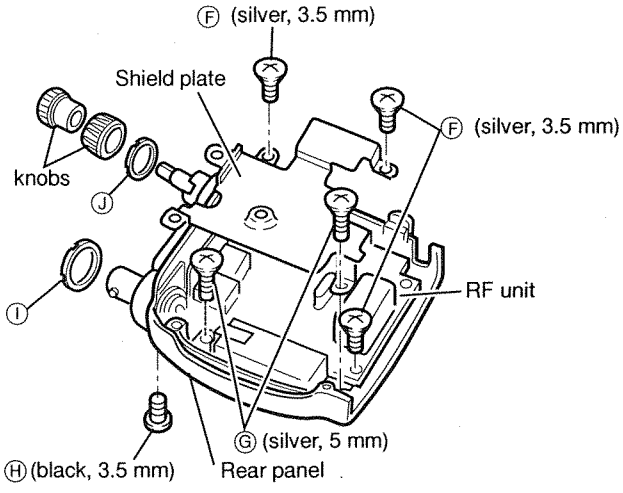
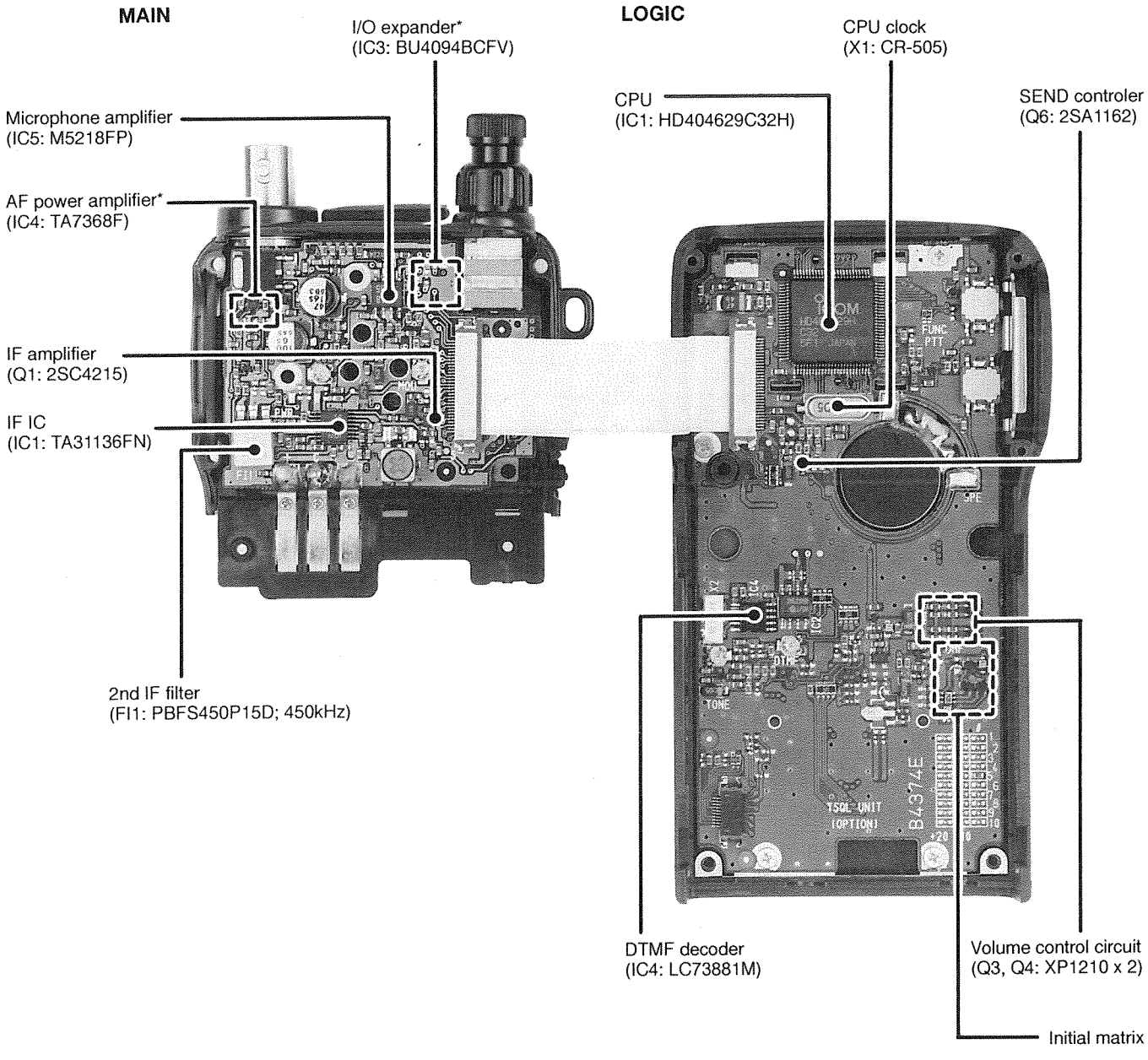


Fig. 4 Removing the RF unit

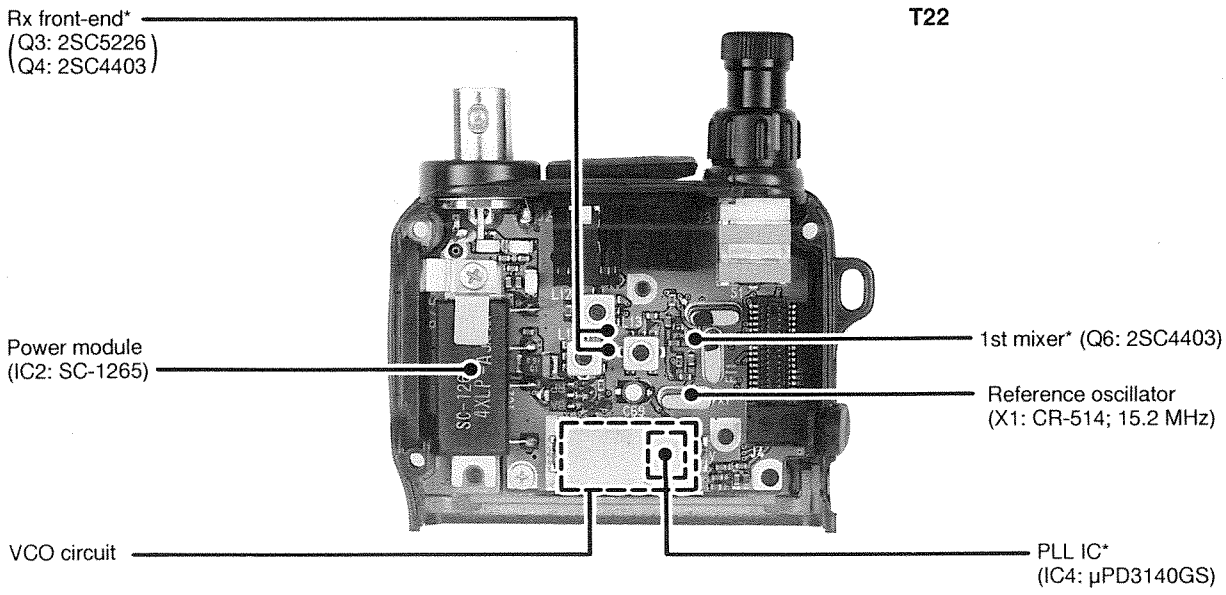
SECTION 3 INSIDE VIEWS

● MAIN AND LOGIC UNITS



* Located under side of the point

● VHF RF UNIT (IC-T22A/E)



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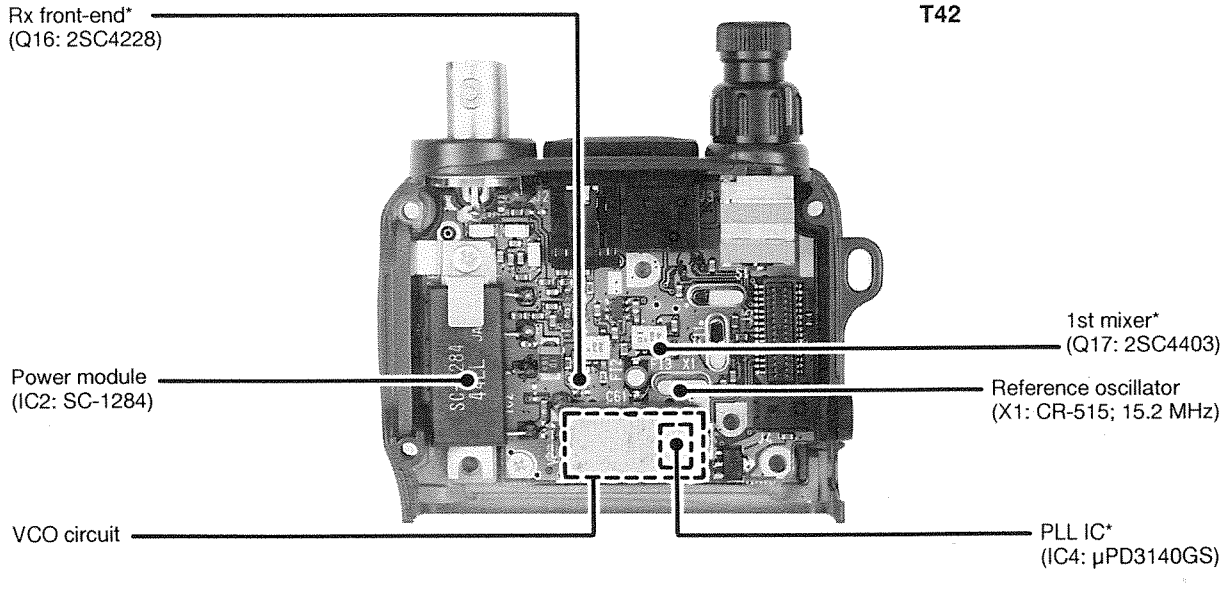
● UHF RF UNIT (IC-T42A/E)



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SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 ANTENNA SWITCHING CIRCUIT (VHF RF UNIT)

Received signals enter the antenna connector and then pass through the low-pass filter (L1–L3, C1–C5). The filtered signals are passed through the antenna switching circuit.

The antenna switching circuit functions as a low-pass filter while receiving. However, its impedance becomes very high while transmitting by attempting voltages to D4 and D5. Thus, transmit signals are blocked from entering the receiver circuits. The antenna switching circuit employs a 1/4λ type diode switching system. The passed signals are then applied to the RF amplifier circuit (Q3, Q4).

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

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

The signals from the antenna switching circuit pass through a high-pass filter (L11, D7, C29), and are applied to the RF amplifier (Q3, Q4). The RF amplifier consists of a cascade circuit. The amplified signals are passed through the next stage band-pass filter (L12, L13, D9, D10) to suppress unwanted signals. The filtered signals are then applied to the mixer circuit (Q6).

D7, D9 and D10 employ varactor diodes that track the band-pass filters and are controlled by the PLL lock voltage. These diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

4-1-3 1ST MIXER AND 1ST IF CIRCUITS (VHF RF UNIT AND MAIN UNIT)

The mixer circuit converts the received signal to a fixed frequency of the 1st IF signal with a PLL output frequency. By changing the PLL frequency, only the desired frequency will be passed through a pair of crystal filters (FI1) at the next stage of the mixer.

The signals from the RF circuit are mixed with the LO signal at the 1st mixer (Q6) to produce a 30.85 MHz 1st IF signal.

The 1st IF signal is passed through to a pair of crystal filters (FI1) to suppress out-of-band signals and then applied to the MAIN unit. The passed signal is amplified at the IF amplifier (Q1) and applied to the 2nd mixer circuit in the FM IF IC (IC1).

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

The FM IF IC (IC1) contains the 2nd mixer, 2nd local oscillator, limiter amplifier, S-meter detector and quadrature detector circuits.

The 2nd LO signal (30.4 MHz) from the VHF RF unit applied to IC1 (pin 2) and then mixed with the 1st IF signal (30.85 MHz) at the 2nd mixer section of IC1. The 1st IF signal (30.85 MHz) is mixed with the 2nd LO signal to be converted to a 450 kHz 2nd IF signal.

The 2nd IF signal (450 kHz) from the 2nd mixer section (IC1 pin 3) passes through the ceramic filter (FI1) where unwanted signals are suppressed. It is then amplified at the limiter amplifier section (IC1 pin 5) and applied to the quadrature detector section to demodulate the 2nd IF signal into AF signals. AF signals output from IC1 (pin 9) are de-emphasized with –6 dB/octave at R11 and C16.

The S-meter output "S METER" signal from IC1 (pin 12) is applied to the CPU (IC1 pin 4).

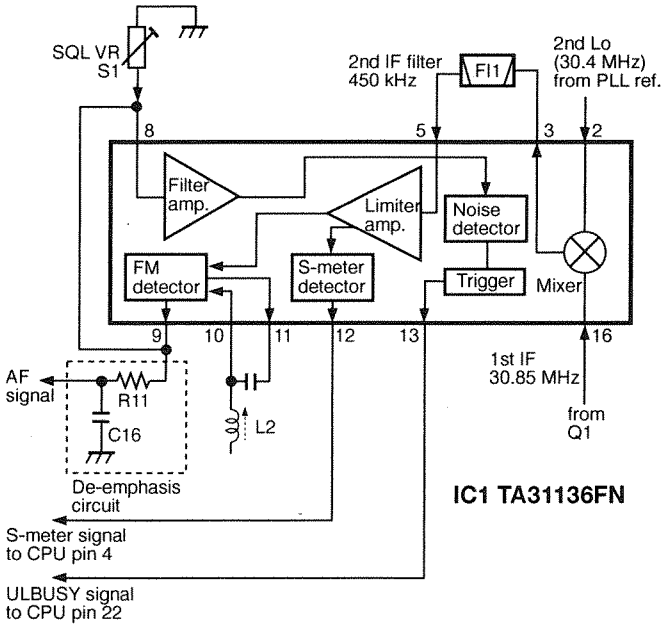


Fig. 1 2ND IF AMPLIFIER

4-1-6 AF AMPLIFIER CIRCUIT (MAIN AND LOGIC UNITS)

AF signals from IC1 (pin 9) are passed through the AF selector switch (IC6) and active filters (Q2). Q2 functions as a high-pass filter (pins 1, 5, 6) and low-pass filter (pins 2–4) to suppress subaudible tones and higher noise components, respectively.

The filtered signals are passed through the AF mute switch (IC2), and then applied to the level controller circuit (Q3, Q4) in the LOGIC UNIT via the "DEO" line. The attenuation level (volume level) of the controller is controlled by the 4-bit data from the CPU (AF0–AF3).

The AF signals are amplified at the AF preamplifier (Q5) and then applied to the MAIN unit via the "DEI" line. The signals are amplified at the AF power amplifier (IC4), passed through the [EXT SP] jack in the VHF RF unit and then applied to the internal speaker via the LOGIC unit.

An "AFM" signal cuts the AF signal on the AF mute switch (IC2) for noise squelch, tone squelch, etc. An "AFON" signal deactivates the AF power amplifier (IC4) to reduce the current drain during audio mute (except beep emission).

4-1-7 NOISE SQUELCH (MAIN UNIT)

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

Some of the noise components in the AF signal from the FM IF IC (IC1 pin 9) are applied to the active filter section (IC1 pins 7, 8). The [SQL] control on the VHF RF unit 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 the "ULBUSY" (High or Low) signal by the squelch trigger section. The "ULBUSY" signal is applied to the CPU (pin 22).

The CPU controls the I/O expander IC (IC3) to output the "AFM" signal from pin 13. The "AFM" signal controls the audio mute switch (IC2) to cut the AF signal line.

4-2 TRANSMITTER CIRCUITS

4-2-1 MICROPHONE AMPLIFIER CIRCUIT (MAIN 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), or from the [MIC] jack are applied to the limiter amplifier (IC5 pin 3) which has +6 dB/octave pre-emphasis characteristics. The signals pass through the splatter filter (IC5 pins 5–7) and frequency deviation pot (R64) and are then applied to the modulation circuit on the V VCO board. Q6 on the LOGIC unit is the PTT control circuit, and outputs "High" to the CPU when transmitting.

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

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

The "MOD" signal changes the reactance of a diode (D302) to modulate the oscillated signal at the VCO circuit (Q301, Q302, D302). The VCO output is buffer-amplified at Q20 and then applied to the drive amplifier (Q21) via the transmit/receive switch (D16).

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

IC2 is a power module which provides more than 5 W of output power with a 13.5 V DC power source.

An RF signal from the transmit/receive switch (D16) is amplified at the drive amplifiers (Q21) and then applied to IC2. The amplified signal is then applied to the antenna connector via the transmit/receive switching circuit (D3).

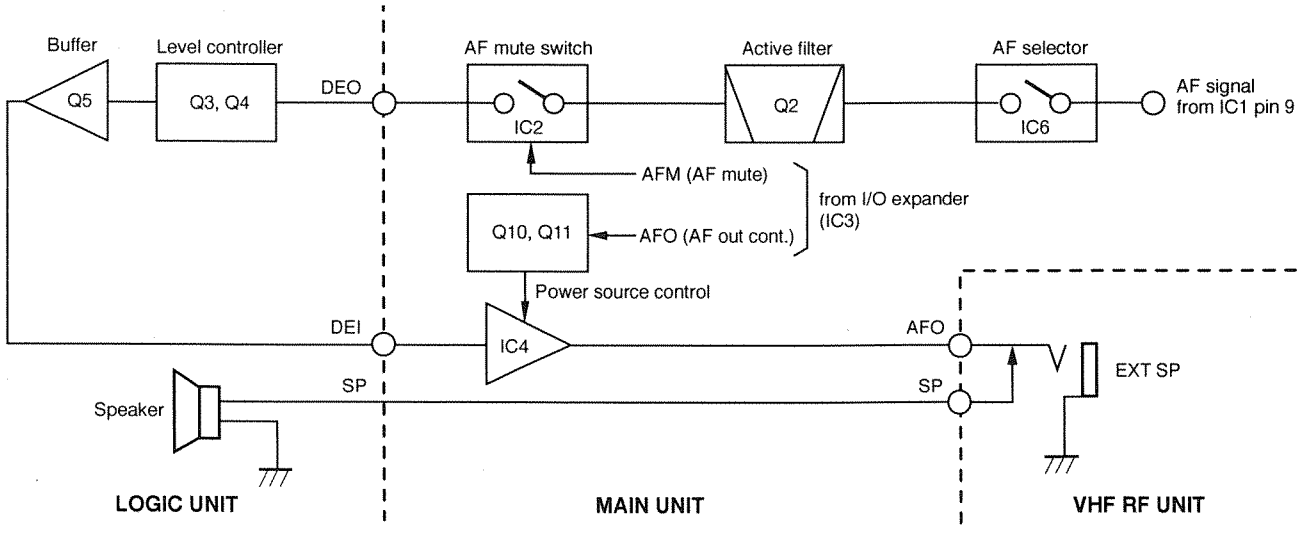


Fig. 2 AF SIGNAL LINE

4-2-4 APC CIRCUIT (VHF RF UNIT)

The APC circuit protects the power module (IC2) from a mismatched output load and selects HIGH and LOW output power.

The APC detector circuit (L3, D1, D2) detects forward signals and rectified signals at D2 and D1 respectively. The combined voltage is at a minimum level when the antenna is matched at 50 Ω and is increased when it is mismatched.

The detected voltage is applied to one of the differential amplifier inputs (Q23b). When the antenna impedance is mismatched, the detected voltage exceeds the reference voltage. Thus the bias voltage of IC2 is decreased via Q24.

Low output power is obtained by changing the reference voltage (Q23a) coming from "H/L" signal (IC3, pin 6) on the MAIN unit. A thermistor (R62) controls APC reference voltage to reduce the output power when the temperature is increased.

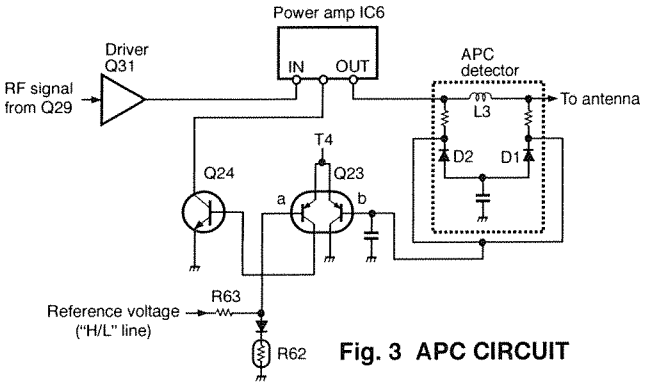


Fig. 3 APC CIRCUIT

4-2-6 ANTENNA SWITCHING CIRCUIT (VHF RF UNIT)

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

When transmitting, D3, D4 and D5 are turned ON. The signal passes through the low-pass filter (L1–L3, C1–C5) and is then applied to the antenna connector. The low-pass filter suppress high harmonic components.

4-3 PLL CIRCUITS

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

The oscillated signal at the VCO circuit (V VCO board Q301, Q302) is amplified at Q17 and then applied to the PLL IC (IC4 pin 2). IC4 divides this input with the serial data from the CPU and phase-detects it with the divided reference frequency and then outputs the phase difference as pulses.

The output signals from IC4 (pin 8) are converted to DC voltages (lock voltage) by the loop filter (R46, C84) and are then fed back to the VCO circuit to stabilize the VCO frequency.

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

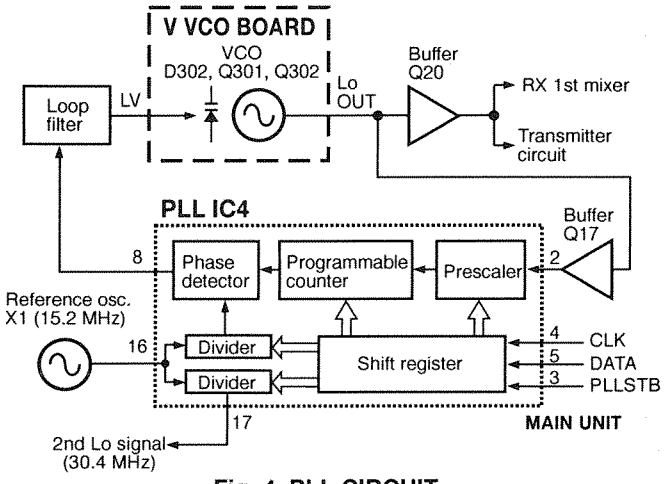


Fig. 4 PLL CIRCUIT

4-4 OTHER CIRCUITS

4-4-1 OPTIONAL TONE SQUELCH UNIT

The optional UT-94 TONE SQUELCH UNIT provides pocket beep, tone squelch and programmable tone encoder functions.

ENCODER FUNCTION

The serial data from the CPU (LOGIC unit IC1) is applied to IC1. The tone signal reply to the data signal is output from IC1 (pin 21) and is applied to R9. R9 adjusts the deviation level.

DECODER FUNCTION

The DET signal from the FM IF IC is applied to the active low-pass filter between pin 1 and pin 2 within IC1. The filtered signal is compared with the programmed tone signal. Pin 14 of IC1 becomes "LOW" when the received signal matches to the programmed tone frequency.

4-5 VOLTAGE LINES

LINE	DESCRIPTION
VCC	The same voltage as the connected battery pack or external DC power source. The voltage appears regardless of the [POWER] switch.
+3	Commonly used 3 V which is produced by the 3 V regulator IC (MAIN unit IC7). The voltage appears regardless of the [POWER] switch.
+3C	Commonly used 3 V which is produced by the +3V regulator circuti (MANI unit Q15–Q17). The voltage is controlled with the "PCON" signal which appears when the power is turned ON.
R3	3 V for the receiver circutis. The voltage is produced at the R3V regulator (MAIN unit Q8, Q9) and is controlled by the "R3SC" signal which contains the power save control signal.
T4	4 V for the transmitter circuit. The voltage is produced at the T4V regulator circuit (VHF RF unit Q12–Q14) and is controlled with the "T4C" signal.

4-6 PORT ALLOCATIONS

4-6-1 CPU (LOGIC UNIT)

Pin number	Port name	Description
1	VCC	Input port for the CPU power source.
2	LBATT	Input port for connected voltage for low battery ditection.
3	KEY	Input port for the [MONI] and [FUNC] switch.
4	SMETER	Input port for a S-meter detection signal.
5	REMOTE	Input port for optional speaker-microphones remote control signal.
8, 9	OSC1, 2	Clock oscillator terminals for a CPU clock.
10	RESET	CPU is initialized when this port receives "HIGH."
14	SCL	Outputs a serial clock signal for the EEPROM (IC3).
15	SDA	Outputs a serial data for the EEPROM (IC3).
16	PD	Outputs a DTMF decoder power control signal.
17	DDATA	Input port for a DTMF decoder data from IC4.
18	DOCK	Outputs a serial clock signal for the DTMF decoder (IC4).
19	STD	Input port for detection of a DTMF decoder.
20	TSQL	Input port for detection of a tone squelch decoder signal.
21	RTSST	Outputs a strobe signal for a tone squelch.
22	ULBUSY	Detects squelch and PLL unlock signals. This port becomes "LOW" when the squelch is closed during Rx, or PLL is unlocked during Tx.
24	STOPC	Input port for a restart signal from the [POWER] key.
25	SEND	Input port for the [PTT] switch. "HIGH": [PTT] is pushed.
26	PWR	Input port for the [POWER] key. "HIGH": [POWER] key is pushed.
28	DCK	Input port for the dial clock signal.
29	UP	Input port for the dial up signal.
34	PLLSTB	Outputs a strobe signal to the PLL IC (VHF RF unit, IC4).
35	CK	Outputs a serial clock signal to the PLL IC (VHF RF unit, IC4).
36	IOSTB	Outputs a strobe signal to the data expander (MAIN unit, IC3).
37	DATA	Outputs a serial data for the PLL IC (VHF RF unit, IC4) and data expander (MAIN unit, IC3).
38–41	AF0–AF3	Output AF volume control signals.
42	PCON	Outputs the power source control signal. "HIGH": When the power is turned ON.
43–49	KI0–KI6	Outputs strobe signals to the key matrix.
50–53	KR0–KR3	Input port for the key matrix.
54	T4C	Outputs T4V regulator control signal "HIGH":During Tx.
55	BUSYLED	Outputs the receive LED control signal. "HIGH": lights
56	LIGHT	Outputs the LCD back light control signal. "HIGH": lights
57	CONT	Outputs the LCD contrast signal. "HIGH": high contrast

4-6-2 I/O EXPANDER (MAIN UNIT IC4)

Pin number	Port name	Description
4	+3SC	Outputs a +3S regulator control signal for the power save function. "LOW": When the power save function deativates. "H/L" with intervals: When the power save function activates.
6	MB	Outputs a RF power selection signal when transmitting. "LOW": Low power
7	SHIFT	Outputs a VCO switching signal for Tx and Rx frequencies.
11	R3SC	Outputs a R3S regulator control signal. "LOW": During Rx "H/L" with intervals: During power saved.
12	MICM	Outputs a microphone mute signal. "HIGH": Mic mute ON
13	AFM	Outputs a receive audio mute signal. "LOW": Audio mute ON
14	AFON	Outputs an AF power amplifier control signal. "HIGH": AF amplifier deactivates. "LOW" : AF amplifier activates.

SECTION 5 ADJUSTMENT PROCEDURES

5-1 IC-T22 PLL ADJUSTMENT

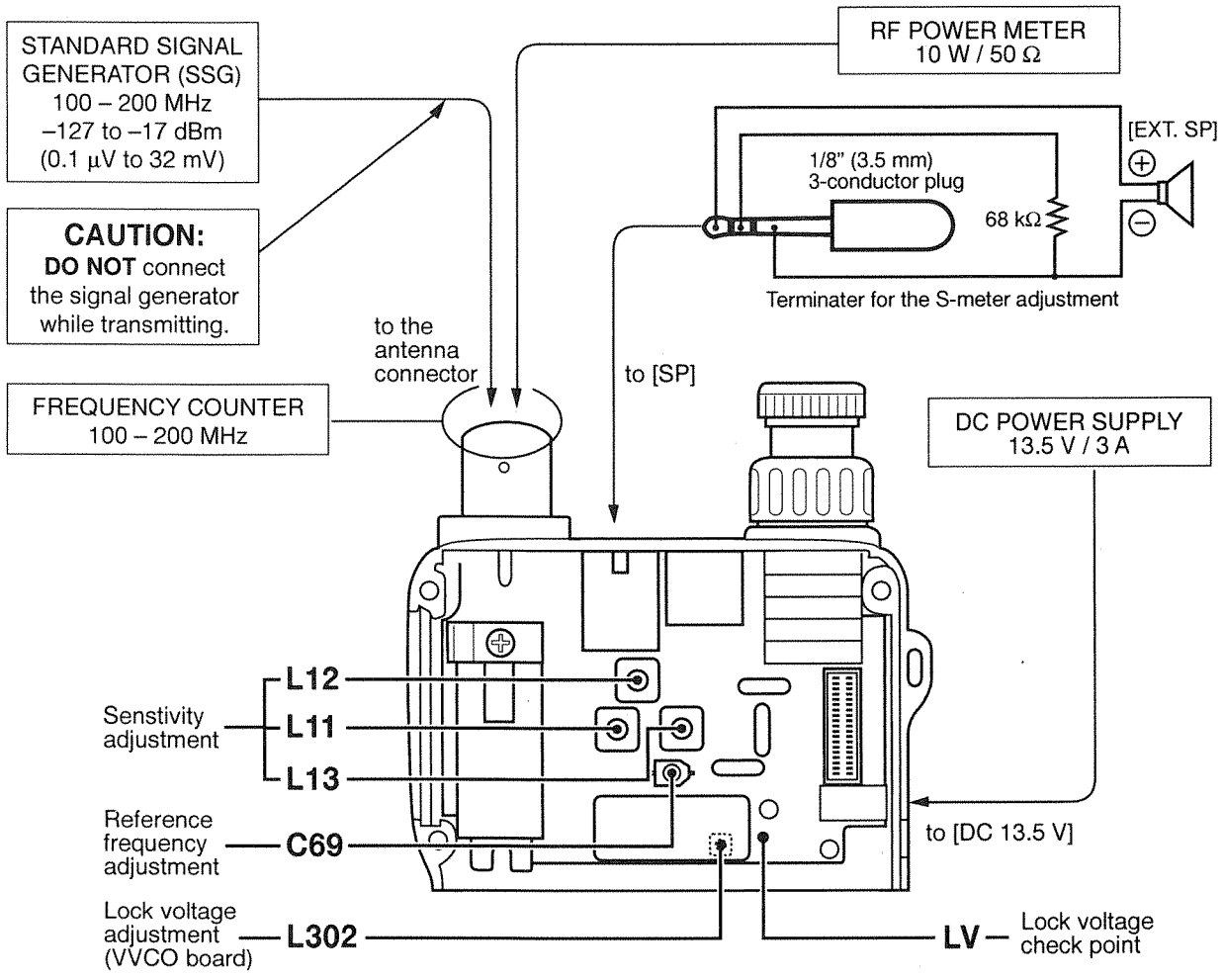
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1	• Displayed frequency : 146.000 MHz • Transmitting	VHF RF	Connect a digital voltmeter or oscilloscope to the check point "LV."	1.5 V	VVCO	L302
	2	• Receiving			1.25 V ± 0.25 V		Verify
REFERENCE FREQUENCY	1	• Displayed frequency : 146.000 MHz • Connect the RF power meter or a 50 Ω dummy load to the antenna connector. • Transmitting	Top panel	Loosely couple the frequency counter to the antenna connector.	146.000 MHz	VHF RF	C69

5-2 IC-T22 RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY	1	• Displayed frequency : 145.000 MHz • [SQL] control : Max. CCW • Connect the SSG to the antenna connector and set as: Level : 1.0 µV* (–107 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	MAIN	Connect a DC voltmeter to the check point "S."	Maximum DC voltage	VHF RF	Adjust in sequence L13, L12, L11
	2	• Set the SSG output as: Level : 1 mV* (–47 dBm) Modulation : OFF		Connect a DC voltmeter to the check point "CP1."	1.0 V	MAIN	L2
S-METER	1	• Displayed frequency: 145.000 MHz • Connect the SSG to the antenna connector and set as: Level : 0.5 µV* (–113 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Connect the terminator to the [SP] jack. • Receiving	Front panel			While pushing the [FUNC] key, push the [CALL] key.	
	2	• Set the SSG output for the S-meter becoming to S3 (4 dots).		The SSG output level.	0.28 µV to 0.89 µV (–118 dBm to –108 dBm)		Verify

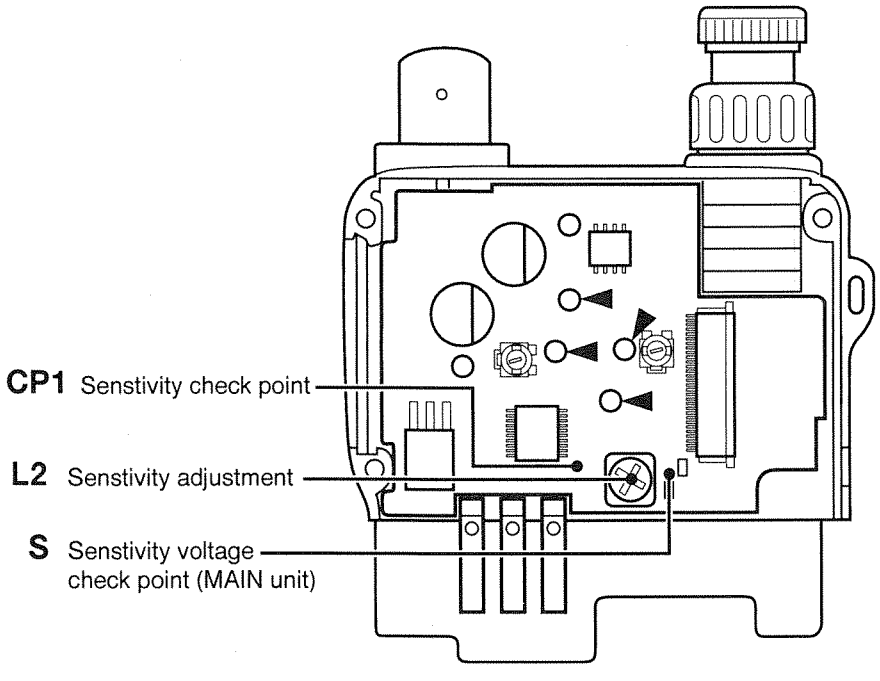
* This output level of the standard signal generator (SSG) is indicated as the SSG's open circuit.

• **VHF RF UNIT**



Note: VHF RF unit adjustment can be performed through openings on the Main unit side "◀".

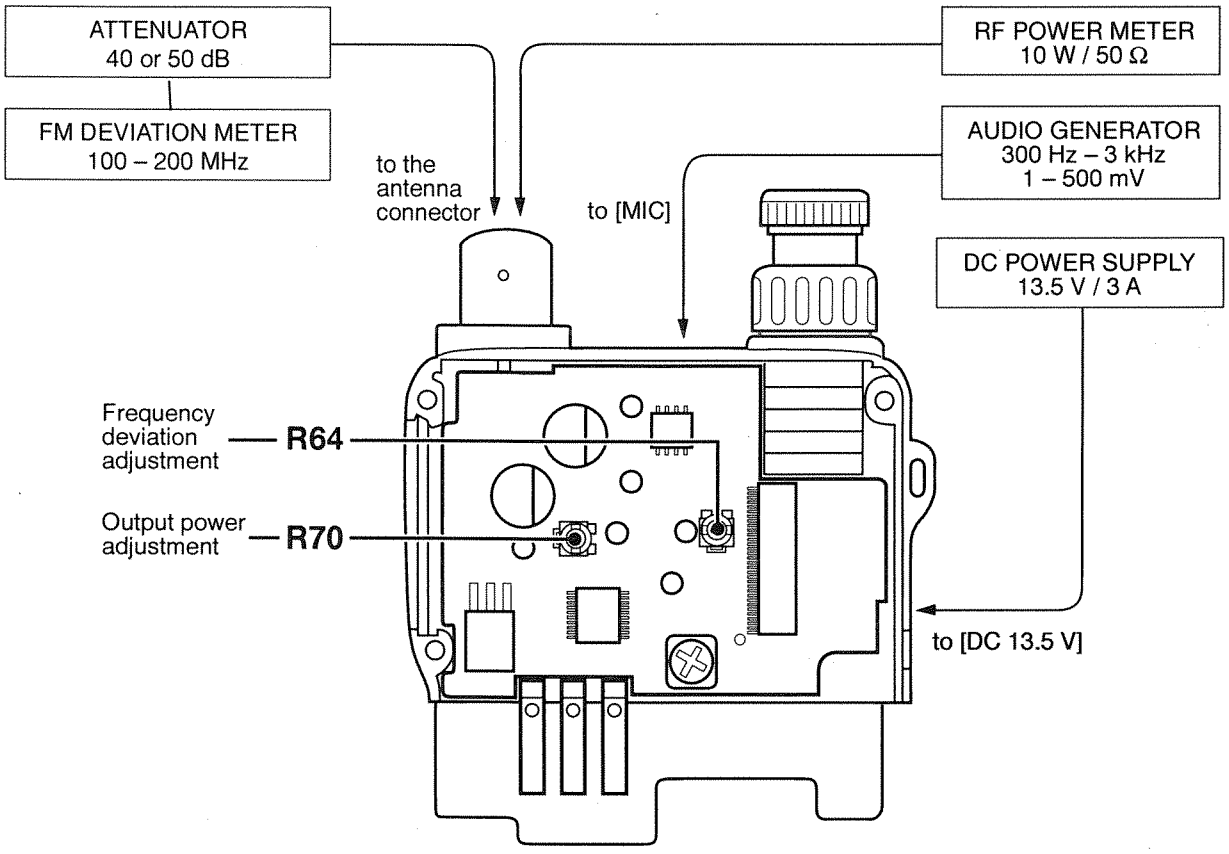
• **MAIN UNIT**



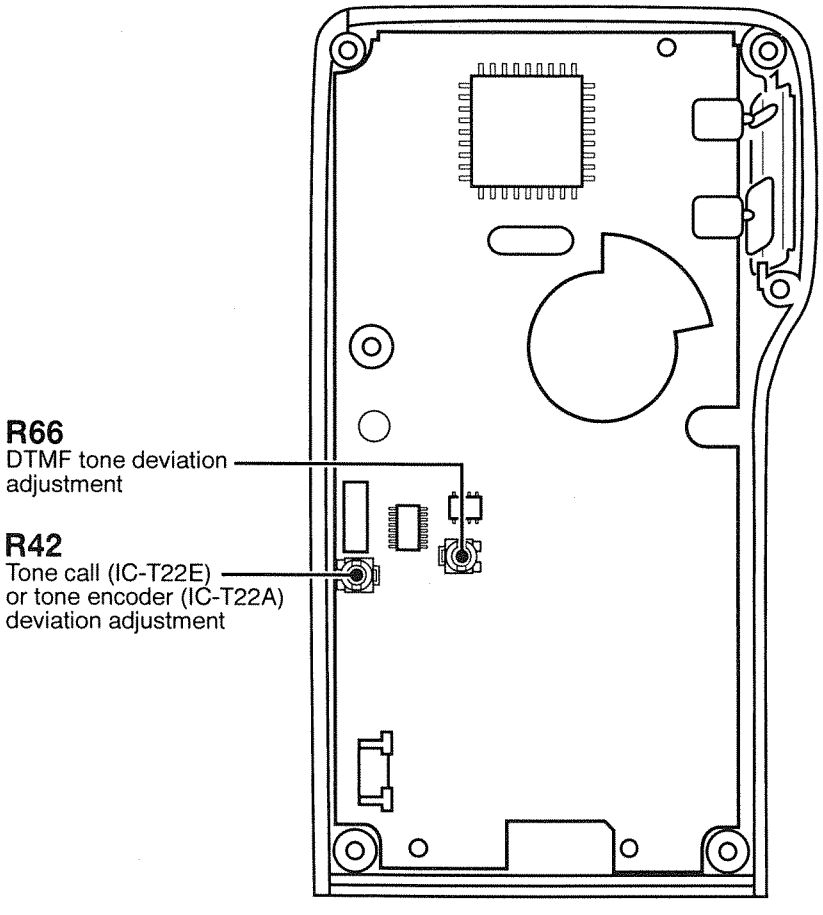
5-3 IC-T22 TRANSMITTER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
OUTPUT POWER	1	• Displayed frequency : 145.000 MHz • Output power : High • Be sure the power supply voltage is 13.5 V • Transmitting	Top panel	Connect the RF power meter to the antenna connector.	5.0 W	MAIN	R70
	2	• Output power : Low			0.1 – 1.0 W		Verify
FREQUENCY DEVIATION	1	• Displayed frequency : 145.000 MHz • Output power : High • Connect the audio generator to the [MIC] jack and set as : 95 mV/1.0 kHz • Set the FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±4.5 kHz	MAIN	R64
DTMF TONE DEVIATION	1	• Displayed frequency : 145.000 MHz • Push [D] key while transmitting.	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±3.5 kHz	LOGIC	R66
TONE CALL DEVIATION (IC-T22E)	1	• Displayed frequency : 145.000 MHz • Push [MONI] switch while transmitting.	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±3.5 kHz	LOGIC	R42
TONE ENCODER DEVIATION (IC-T22A)	1	• Displayed frequency : 145.000 MHz HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 • Tone frequency : 88.5 Hz • Apply no signal to the [MIC] connector • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±0.75 kHz	LOGIC	R42

• **MAIN UNIT**



• **LOGIC UNIT**



5-4 IC-T42 PLL ADJUSTMENT

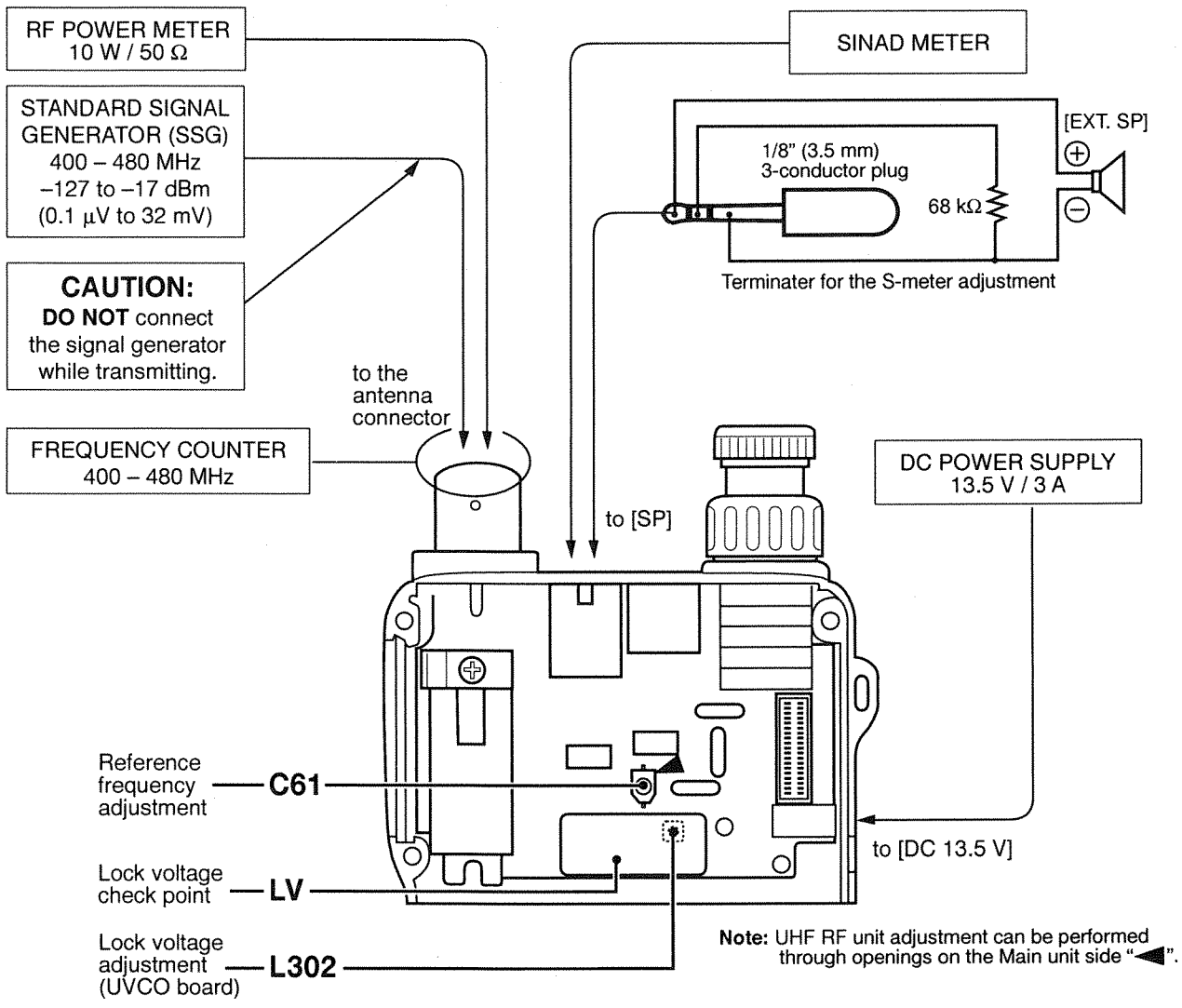
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1	• Displayed frequency : 440.000 MHz • Transmitting	RF	Connect the digital voltmeter or oscilloscope to the check point "LV."	2.4 V	UVCO	L302
	2	• Receiving			1.9 V ± 0.2 V		Verify
REFERENCE FREQUENCY	1	• Displayed frequency : 440.000 MHz • Connect the RF power meter or a 50 Ω dummy load to the antenna connector. • Transmitting	Top panel	Loosely couple the frequency counter to the antenna connector.	440.000 MHz	UHF RF	C61

5-5 IC-T42 RECEIVER ADJUSTMENT

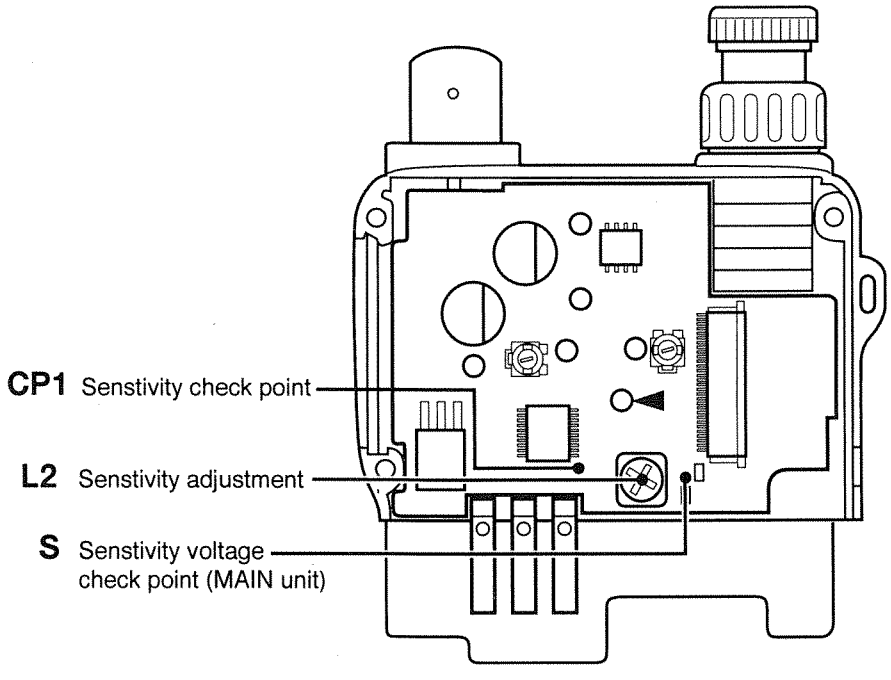
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY	1	• Displayed frequency : 440.000 MHz • [SQL] control : Max. CCW • Connect the SSG to the antenna connector and set as: Level : 1 mV* (–47 dBm) Modulation : OFF • Receiving	MAIN	Connect a DC voltmeter to the check point "CP1."	1.0 V	MAIN	L2
	2	• Set the SSG output as: Level : 0.18 µV* (–122 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz	To panel	Connect a SINAD meter to the [SP] jack.	Less than 0.18 µV for 12 dB SINAD		Verify
S-METER	1	• Displayed frequency : 445.000 MHz (USA) 435.000 MHz (All other versions) • Connect the SSG to the antenna connector and set as: Level : 0.5 µV* (–113 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Connect the terminator to the [SP] jack. • Receiving	Front panel			While pushing the [FUNC] key, push the [CALL] key.	
	2	• Set the SSG output for the S-meter becoming to S3 (4 dots).		The SSG output level.	0.28 µV to 0.89 µV (–118 dBm to –108 dBm)		Verify

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

• **UHF RF UNIT**



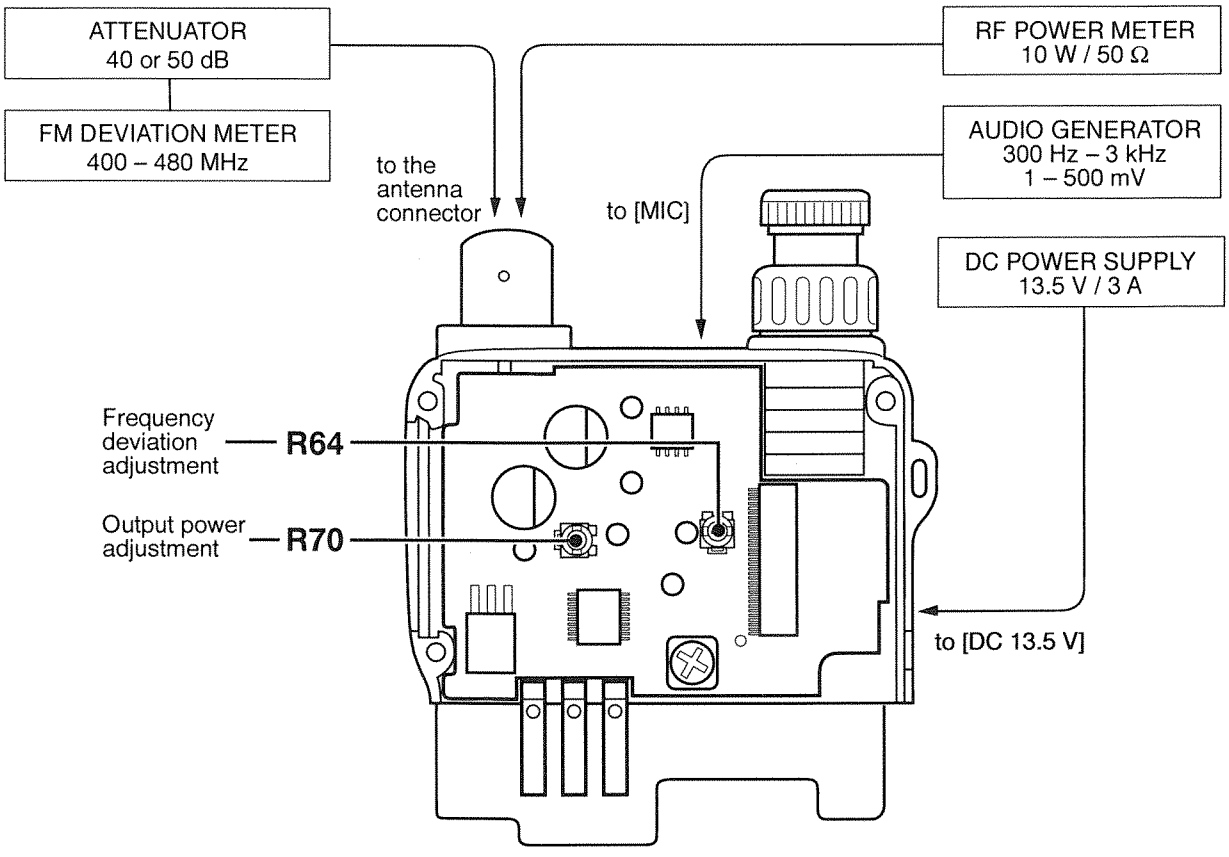
• **MAIN UNIT**



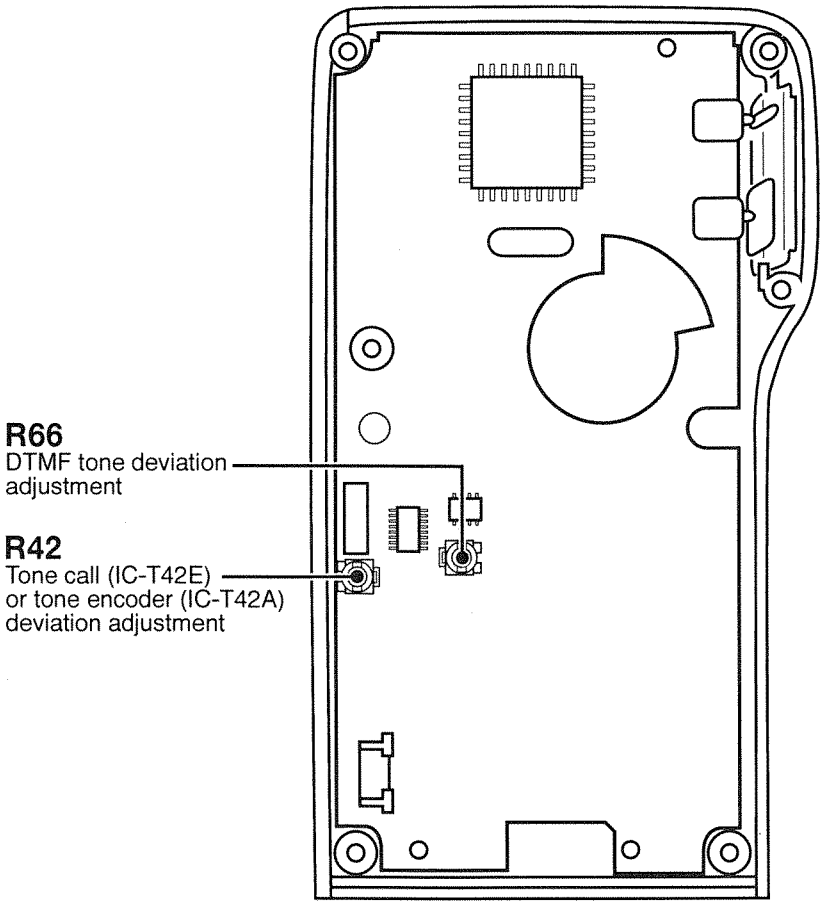
5-6 IC-T42 TRANSMITTER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
UHF OUTPUT POWER	1	• Displayed frequency : 440.000 MHz • Output power : High • Be sure the power supply voltage is 13.5 V • Transmitting	Top panel	Connect the RF power meter to the antenna connector.	5.0 W	MAIN	R70
	2	• Output power : Low			0.2 – 1.0 W		Verify
FREQUENCY DEVIATION	1	• Displayed frequency : 445.000 MHz (USA) 435.000 MHz (All other versions) • Output power : High • Connect the audio generator to the [MIC] jack and set as : 95 mV/1.0 kHz • Set the FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±4.5 kHz	MAIN	R64
DTMF TONE DEVIATION	1	• Displayed frequency : 445.000 MHz (USA) 435.000 MHz (All other versions) • Push [D] key while transmitting.	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±3.5 kHz	LOGIC	R66
TONE CALL DEVIATION (IC-T42E)	1	• Displayed frequency : 435.000 MHz • Push [MONI] switch while transmitting.	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±3.5 kHz	LOGIC	R42
TONE ENCODER DEVIATION (IC-T42A)	1	• Displayed frequency : 445.000 MHz (USA) 435.000 MHz (All other versions) HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 • Tone frequency : 88.5 Hz • Apply no signal to the [MIC] connector • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	±0.75 kHz	LOGIC	R42

• **MAIN UNIT**



• **LOGIC UNIT**



SECTION 6 PARTS LIST

[VHF RF UNIT] (IC-T22 only)

REF. NO.	PARTS NO.	DESCRIPTION	
IC2	1150001400	IC	SC1265
IC4	1130007610	S.IC	μPD3140GS-E1 (DS8)
Q1	1530002900	S.TRANSISTOR	2SC4228-T2 R45
Q2	1530002570	S.TRANSISTOR	2SC4405-3-TR
Q3	1530003430	S.TRANSISTOR	2SC5226-4-TL
Q4	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q5	1590001690	S.TRANSISTOR	UN9115(TX)
Q6	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q7	1590001690	S.TRANSISTOR	UN9115(TX)
Q8	1590001690	S.TRANSISTOR	UN9115(TX)
Q12	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q13	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q14	1590001140	S.TRANSISTOR	UN9210(TX)
Q15	1590001690	S.TRANSISTOR	UN9115(TX)
Q16	1530003280	S.TRANSISTOR	2SC4211-6-TR
Q17	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q18	1560000540	S.FET	2SK880-Y (TE85R)
Q19	1590001140	S.TRANSISTOR	UN9210(TX)
Q20	1590001530	S.TRANSISTOR	UMX5 TL
Q21	1530002570	S.TRANSISTOR	2SC4405-3-TR
Q23	1590001160	S.TRANSISTOR	XP1401-(TX).AB
Q24	1530003280	S.TRANSISTOR	2SC4211-6-TR
Q25	1590001140	S.TRANSISTOR	UN9210(TX)
D1	1790000660	S.DIODE	MA728(TW)
D2	1790000660	S.DIODE	MA728(TW)
D3	1790000620	S.DIODE	MA77(TW)
D4	1790000620	S.DIODE	MA77(TW)
D5	1790000620	S.DIODE	MA77(TW)
D6	1790000620	S.DIODE	MA77(TW)
D7	1790001290	S.VARICAP	MA304(TX)
D8	1790000620	S.DIODE	MA77(TW)
D9	1790001290	S.VARICAP	MA304(TX)
D10	1790001290	S.VARICAP	MA304(TX)
D11	1790000620	S.DIODE	MA77(TW)
D12	1790001260	S.DIODE	MA2S077-(TX)
D13	1750000370	S.DIODE	DA221 TL
D15	1790001030	S.DIODE	SB30-03P-TD
D16	1790000450	S.DIODE	MA862(TX)
D17	1160000060	S.DIODE	DAN202U T107
D18	1790001260	S.DIODE	MA2S077-(TX)
FI1	2010001610	MONOLITHIC	FL-202 (30.850 MHz)
X1	6050009420	XTAL	CR-514 (15.200 MHz)
L1	6200002820	S.COIL	LQN 1A 47NJ04
L2	6200002390	S.COIL	LQN 1A 64NJ04
L3	6200002390	S.COIL	LQN 1A 64NJ04
L4	6200002380	S.COIL	LQN 1A 56NJ04
L5	6200002380	S.COIL	LQN 1A 56NJ04
L6	6200004480	S.COIL	MLF1608D R82K-T
L7	6200004930	S.COIL	MLF1608E 8R2K-T
L8	6200004220	S.COIL	MLR1608M 27NJ-T
L9	6200004060	S.COIL	MLR1608M 18NJ-T
L11	6150004360	S.COIL	LS-491
L12	6150004360	S.COIL	LS-491
L13	6150004360	S.COIL	LS-491

[VHF RF UNIT] (IC-T22 only)

REF. NO.	PARTS NO.	DESCRIPTION	
L14	6200004920	S.COIL	MLF1608A 2R2K-T
L15	6200004780	S.COIL	MLF1608A 1R5K-T
L16	6200004780	S.COIL	MLF1608A 1R5K-T
L17	6200005510	S.COIL	ELJND R27J-F [AUS]
L18	6200004720	S.COIL	MLF1608D R10K-T
L20	6200004100	S.COIL	MLF1608D 68NM-T
R1	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R3	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R4	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R5	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R6	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R7	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R8	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R9	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R10	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R13	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R14	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R15	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R16	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R17	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R18	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R19	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R20	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R21	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R23	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R24	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R25	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R26	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R27	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R28	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R29	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R30	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R31	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R32	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R33	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R34	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R35	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R36	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R37	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R38	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R39	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R40	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R42	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R43	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R44	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R45	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R46	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R47	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R48	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R49	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R50	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R51	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R52	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R53	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R54	7030003350	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R56	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R57	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R62	7510000200	S.THERMISTOR	TN20-3U473LT
R63	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)

S. = Surface mount

[VHF RF UNIT] (IC-T22 only)

REF. NO.	PARTS NO.	DESCRIPTION	
R64	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R65	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R66	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R67	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R68	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R69	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R70	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R71	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R72	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R73	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R74	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
C1	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C2	4030009920	S.CERAMIC	C1608 CH 1H 050B-T-A
C3	4030007060	S.CERAMIC	C1608 CH 1H 270J-T-A
C4	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C5	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C6	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C8	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C9	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C10	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T-A
C11	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T-A
C12	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C13	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C14	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C15	4030009920	S.CERAMIC	C1608 CH 1H 050B-T-A
C16	4030007100	S.CERAMIC	C1608 CH 1H 560J-T-A
C17	4030009920	S.CERAMIC	C1608 CH 1H 050B-T-A
C18	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C20	4030009920	S.CERAMIC	C1608 CH 1H 050B-T-A
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C22	4030009970	S.CERAMIC	C1608 JB 1H 182K-T-A
C23	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C24	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C25	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C26	4030007080	S.CERAMIC	C1608 CH 1H 390J-T-A
C27	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C28	4030009910	S.CERAMIC	C1608 CH 1H 040B-T-A
C29	4030006980	S.CERAMIC	C1608 CH 1H 070D-T-A
C30	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C31	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C32	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C33	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C34	4030006970	S.CERAMIC	C1608 CH 1H 060D-T-A
C35	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C36	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C37	4030009510	S.CERAMIC	C1608 CH 1H 010B-T-A
C38	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030006970	S.CERAMIC	C1608 CH 1H 060D-T-A
C40	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C41	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C42	4030009510	S.CERAMIC	C1608 CH 1H 010B-T-A
C43	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C44	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C47	4030006980	S.CERAMIC	C1608 CH 1H 070D-T-A
C48	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C49	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C61	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4030007020	S.CERAMIC	C1608 CH 1H 120J-T-A
C63	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C64	4030009910	S.CERAMIC	C1608 CH 1H 040B-T-A
C65	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C66	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C67	4030007000	S.CERAMIC	C1608 CH 1H 090D-T-A
C68	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A

[VHF RF UNIT] (IC-T22 only)

REF. NO.	PARTS NO.	DESCRIPTION	
C69	4610001890	S.TRIMMER	CTZ3E-20C-W1
C70	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C71	4030007080	S.CERAMIC	C1608 CH 1H 390J-T-A
C72	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C73	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C75	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C76	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C78	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C79	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C80	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C81	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C82	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C83	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C84	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C85	4550002950	S.TANTALUM	TESVA 0J 335M1-8L
C86	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C87	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C88	4030006990	S.CERAMIC	C1608 CH 1H 080D-T-A
C89	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C90	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C91	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C92	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C93	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C94	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C95	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C96	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C99	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C100	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C101	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C102	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C103	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C104	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C105	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C106	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C108	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C109	4550006080	S.TANTALUM	TEMSVB2 1C 106M-8L
C110	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C111	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C112	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C113	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C115	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C116	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C130	4550003030	S.TANTALUM	TEMSVA 0J 475M-8L
S1	7600000170	ENCODER	TP96D96E20-15FB10K-1460
J2	6450001060	CONNECTOR	HSJ1493-01-010
J3	6450000130	CONNECTOR	HSJ1102-01-540
J4	6450000870	CONNECTOR	HEC2711-01-020
J5	6510018470	S.CONNECTOR	IL-WX-30PB-VF84-B-E900
W1	7030003860	S.JUMPER	ERJ3GE JPW V
W4	7120000380	JUMPER	JPW 01 R-01
EP1	0910045873	PCB	B 4592C

S. = Surface mount

[V VCO UNIT] (IC-T22 only)

REF. NO.	PARTS NO.	DESCRIPTION	
Q301	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q302	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
D301	1790001260	S.DIODE	MA2S077-(TX)
D302	1790001290	S.VARICAP	MA304(TX)
L301	6200004480	S.COIL	MLF1608D R82K-T
L302	6110003110	COIL	LA-501
R302	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R303	7030005800	S.RESISTOR	RR0510P-102-D (1 kΩ)
R304	7030005800	S.RESISTOR	RR0510P-102-D (1 kΩ)
R305	7030007060	S.RESISTOR	ERJ2GEJ 684X (680 kΩ)
R306	7030005820	S.RESISTOR	RR0510P-103-D (10 kΩ)
R307	7030005820	S.RESISTOR	RR0510P-103-D (10 kΩ)
R308	7030005780	S.RESISTOR	RR0510P-221-D (220 Ω)
R309	7030005780	S.RESISTOR	RR0510P-221-D (220 Ω)
R310	7030005750	S.RESISTOR	RR0510R-470-D (47 Ω)
C301	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C302	4030010280	S.CERAMIC	C1005 CH 1E 390J-T-A
C303	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C304	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C305	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C306	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C307	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C308	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C309	4030009550	S.CERAMIC	C1608 CH 1H 2R5B-T-A
C310	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J301	6510018640	CONNECTOR	IMSA-9230B-1-05Z064-T
EP1	0910045785	PCB	B 4314E

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1110003490	S.IC	TA31136FN(D,EL)
IC2	1130004200	S.IC	TC4S66F (TE85R)
IC3	1130007570	S.IC	BU4094BCFV-EZ
IC4	1110001810	S.IC	TA7368F(TP1)
IC5	1110002490	S.IC	M5218FP-73A
IC6	1130004200	S.IC	TC4S66F (TE85R)
IC7	1180001240	S.IC	S-81335HG-KI-T1
Q1	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q2	1590001190	S.TRANSISTOR	XP6501-(TX).AB
Q3	1590001860	S.TRANSISTOR	UN9215(TX)
Q4	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q5	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q6	1590001690	S.TRANSISTOR	UN9115(TX)
Q7	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q8	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q9	1510000880	S.TRANSISTOR	2SA1622-6-TR
Q10	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q11	1520000650	S.TRANSISTOR	2SB1201-S-TL
Q12	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q13	1590001150	S.TRANSISTOR	UN9211(TX)
Q15	1590001170	S.TRANSISTOR	XP1501-(TX).AB
Q16	1530003280	S.TRANSISTOR	2SC4211-6-TR
Q17	1520000460	S.TRANSISTOR	2SB1132 T100 R
D1	1790000970	S.DIODE	MA729(TX)
D2	1750000370	S.DIODE	DA221 TL
D3	1790000670	S.DIODE	SB07-03C-TA
D4	1790001030	S.DIODE	SB30-03P-TD
FI1	2020001120	S.CERAMIC	PBFS450P15D
L1	6200002710	S.COIL	ELJFC 1R8K-F
L2	6150004840	S.COIL	LS-510
R1	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R2	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R3	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R5	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R6	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R7	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R8	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R9	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R10	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R11	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R14	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R15	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R16	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R17	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R18	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R19	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R20	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R21	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R22	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R23	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R24	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R25	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R26	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R27	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R28	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R29	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R30	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)

S. = Surface mount

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R32	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R33	7030001590	S.RESISTOR	MCR18EZHJ 470 (47 Ω)
R34	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R35	7030005330	S.RESISTOR	RR0816P-562-D (5.6 kΩ)
R36	7030005320	S.RESISTOR	RR0816P-103-D (10 kΩ)
R37	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R38	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R39	7030003350	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R40	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R41	7030000180	S.RESISTOR	MCR10EZHJ 220 (22 Ω)
R42	7030000180	S.RESISTOR	MCR10EZHJ 220 (22 Ω)
R43	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R46	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R47	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R48	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R52	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R53	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R54	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R55	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R56	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R57	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R58	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R59	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R60	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R61	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R62	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R63	7510000900	S.THERMISTOR	NTCCF2012 3SH 223 kC-T
R64	7310002600	S.TRIMMER	RV-110 (RH03A3AS4X0AA)473
R65	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R66	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R67	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R69	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R70	7310002580	S.TRIMMER	RV-108 (RH03A3A15X05A)104
R71	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R72	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R73	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R74	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R75	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R76	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R77	7030001590	S.RESISTOR	MCR18EZHJ470 (47 Ω)
R78	7030003810	S.RESISTOR	ERJ3GEYJ 125 V (1.2 MΩ)
C1	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C2	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C3	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C4	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C6	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C7	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C10	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C12	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C13	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C14	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C15	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C16	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C17	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C18	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C19	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C20	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C22	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C25	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C26	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C27	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C28	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C29	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C30	4550000550	S.TANTALUM	TESVA 1V 224M1-8L

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
C31	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C32	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C33	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C34	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C35	4550004040	S.TANTALUM	TEMSVA 0J 685M-8L
C36	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C37	4510004640	S.ELECTROL	ECEV1CA470SP
C38	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4510005320	S.ELECTROL	ECEV0JA101SP
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C41	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C42	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C43	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C44	4510005370	S.ELECTROL	ECEV1AA221P
C45	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C47	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C49	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C50	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C51	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C52	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C53	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C54	4550000550	S.TANTALUM	TESVA 1V 224M1-8L
C55	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C56	4030008470	S.CERAMIC	C1608 JB 1H 272K-T-A
C57	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C58	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A
C59	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C61	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C62	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C63	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C64	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C67	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C68	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C69	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C70	4550006220	S.TANTALUM	TEMSVA 0J 156M-8L
C71	4550006220	S.TANTALUM	TEMSVA 0J 156M-8L
C72	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C73	4550002980	S.TANTALUM	TEMSVA 1C 225M-8L
C74	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C75	4550002980	S.TANTALUM	TEMSVA 1C 225M-8L
C76	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030008880	S.CERAMIC	C1608 JB 1C 223K-T-A
C78	4030008880	S.CERAMIC	C1608 JB 1C 223K-T-A
C79	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
J1	6510018480	S.CONNECTOR	IL-WX-30SB-VF-B-E1000
J2	6510018630	S.CONNECTOR	08-6210-030-010-800
W1	7030003860	S.JUMPER	ERJ3GE JPW V
EP1	0910045764	PCB (T22)	B 4373D
	0910045804	PCB (T42)	B 4373D

S. = Surface mount

[LOGIC UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1140005320	S.IC	HD404629C32H
IC2	1190000260	S.IC	24LC08BTI/SN
IC3	1110003380	S.IC	S-80730SL-AT-T1
IC4	1130007560	S.IC	LC73881M-TLM
Q1	1590001140	S.TRANSISTOR	UN9210(TX)
Q2	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q3	1590001180	S.TRANSISTOR	XP1210(TX)
Q4	1590001180	S.TRANSISTOR	XP1210(TX)
Q5	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q6	1510000880	S.TRANSISTOR	2SA1622-6-TR
Q7	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q9	1590001860	S.TRANSISTOR	UN9215(TX)
Q10	1590001860	S.TRANSISTOR	UN9215(TX)
Q11	1590001140	S.TRANSISTOR	UN9210(TX)
Q12	1540000350	S.TRANSISTOR	2SD2216-S(TX) [EUR], [ITA]
D1	1790001280	S.DIODE	MA111(TX)
D4	1790001200	S.DIODE	MA6S121(TX)
D5	1790001280	S.DIODE	MA111(TX)
D6	1790001280	S.DIODE	MA111(TX) [T42 only]
D7	1750000220	S.DIODE	DA113W T107
D8	1790001280	S.DIODE	MA111(TX) [USA], [EUR], [AUS], [SEA]
D9	1160000050	S.DIODE	DAP202U [T22 USA], [SEA]
	1750000220	S.DIODE	DA113W [AUS]
	1750000240	S.DIODE	DA112 [T42 USA], [EUR]
D10	1750000240	S.DIODE	DA112 [ITA], [AUS], [SEA]
	1750000220	S.DIODE	DA113W [USA]
X1	6050009300	S.XTAL	CR-505 SMD-494MHz
X2	6050009020	S.CERAMIC	EFOS4194E3
R1	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R2	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R3	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R4	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R5	7410000820	S.ARRAY	EXB-V4V 223JV (22 kΩ)
R6	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R7	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R8	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R9	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R10	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R11	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R12	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R13	7030005680	S.RESISTOR	RR0816R-473-D (47 kΩ)
R14	7030005690	S.RESISTOR	RR0816P-123-D (12 kΩ)
R15	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R16	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150Ω)
R17	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R18	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R19	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R20	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R21	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R22	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R23	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R24	7030003350	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R25	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R27	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R28	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R29	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R30	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R31	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R32	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R33	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R34	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R35	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ) [USA], [AUS], [SEA]

[LOGIC UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R36	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ) [USA], [AUS], [SEA]
R37	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ) [EUR], [ITA]
	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ) [USA], [AUS], [SEA]
R38	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [USA], [AUS], [SEA]
R39	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [USA], [AUS], [SEA]
	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ) [EUR], [ITA]
R40	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ) [USA], [AUS], [SEA]
	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ) [EUR], [ITA]
R41	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ) [USA], [AUS], [SEA]
	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ) [EUR], [ITA]
R43	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) [USA], [AUS], [SEA]
	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ) [EUR], [ITA]
R44	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ) [EUR], [ITA]
R46	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R47	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R48	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R49	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R50	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R51	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R65	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R66	7310002580	S.TRIMMER	RV-108 (RH03A3A15X05A)104
R69	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R72	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R74	7410000750	S.ARRAY	EXB-V4V 104JV (100 kΩ)
R75	7410000750	S.ARRAY	EXB-V4V 104JV (100 kΩ)
R76	7410000730	S.ARRAY	EXB-V8V 104JV (100 kΩ)
R77	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R78	7410000730	S.ARRAY	EXB-V8V 104JV (100 kΩ)
R79	7410000730	S.ARRAY	EXB-V8V 104JV (100 kΩ)
R80	7410000730	S.ARRAY	EXB-V8V 104JV (100 kΩ)
R81	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R82	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R86	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R87	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R88	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ) [USA]
R102	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)[EUR]
R104	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)[ITA]
R105	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)[USA]
R107	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)[AUS]
R109	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)[SEA]
R131	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ) [EUR. ITA]
R132	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ) [EUR], [ITA]
R133	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ) [EUR], [ITA]
R134	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ) [EUR], [ITA]
C1	4550006290	S.TANTALUM	TEMSVB2 0G 476M-8L
C2	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C3	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C4	4030009650	S.CERAMIC	C1608 CH 1H 240J-T-A
C5	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C6	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A

S. = Surface mount

[LOGIC UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
C8	4550000460	S.TANTALUM	TESVA 1C 105M1-8L
C9	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C10	4550000460	S.TANTALUM	TESVA 1C 105M1-8L
C11	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C12	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C13	4550003290	S.TANTALUM	TESVA 0G 475M1-8L
C14	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C15	4550006050	S.TANTALUM	TEMSVA 0J 106M8L
C16	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C17	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C18	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A [EUR] [ITA]
	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A [USA], [AUS], [SEA]
C20	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A [EUR], [ITA]
	4030008850	S.CERAMIC	C1608 JB 1C 123K-T-A [USA], [AUS], [SEA]
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C22	4550000460	S.TANTALUM	TESVA 1C 105M1-8L
C23	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A [EUR], [ITA]
C24	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C25	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A [USA] [AUS] [SEA]
C26	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C27	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C28	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C29	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C32	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A [EUR], [ITA]
DS1	5030001230	LCD	LD-BU4323J(E-4158-1)
DS2	5010000150	S.LED	LT1EP53A
DS3	5010000160	S.LED	LNJ310M6URA
DS4	5010000160	S.LED	LNJ310M6URA
S1	2230000900	S.SWITCH	JPM1990-2013R
S2	2230000900	S.SWITCH	JPM1990-2013R
J1	6510018630	S.CONNECTOR	08-6210-030-010-800
J2	6510018620	S.CONNECTOR	08-6212-010-010-800
W3	8900005320	FFC	OPC-519 (N:30 L:55)
W5	9029705030	WIRE	72/98/020/X98/X98
SP1	2510000840	SPEAKER	CS028014-12
MC1	7700001750	MICROPHONE	EM-123TH
EP2	0910045775	PCB	B 4374E

[UHF RF UNIT] (IC-T42 only)

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1130007610	S.IC	µPD3140GS-E1 (DS8)
IC2	1150001530	IC	SC1284 A
IC4	1110003370	S.IC	µPC2748T-E3
IC5	1110003370	S.IC	µPC2748T-E3
Q1	1590001160	S.TRANSISTOR	XP1401-(TX).AB
Q2	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q3	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q8	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q9	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
Q10	1590001690	S.TRANSISTOR	UN9115(TX)
Q11	1530000370	S.TRANSISTOR	2SC3356-T2B
Q12	1530003280	S.TRANSISTOR	2SC4211-6-TR
Q16	1530002900	S.TRANSISTOR	2SC4228-T2
Q17	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q18	1590001690	S.TRANSISTOR	UN9115(TX)
Q19	1590001690	S.TRANSISTOR	UN9115(TX)
Q20	1590001690	S.TRANSISTOR	UN9115(TX)
Q21	1590001140	S.TRANSISTOR	UN9210(TX)
Q22	1530003280	S.TRANSISTOR	2SC4211-6-TR
Q23	1590001140	S.TRANSISTOR	UN9210(TX)
Q24	1530002900	S.TRANSISTOR	2SC4228-T2
D1	1790000450	S.DIODE	MA862(TX)
D2	1790001260	S.DIODE	MA2S077-(TX)
D3	1790001240	S.DIODE	MA2S728-(TX)
D6	1790000450	S.DIODE	MA862(TX)
D10	1790000660	S.DIODE	MA728(TW)
D11	1790000660	S.DIODE	MA728(TW)
D14	1790000450	S.DIODE	MA862(TX)
D16	1750000370	S.DIODE	DA221 TL
D17	1790001030	S.DIODE	SB30-03P-TD
D18	1720000360	S.DIODE	HSU88TRF
D19	1790000620	S.DIODE	MA77(TW)
D20	1720000360	S.DIODE	HSU88TRF
D21	1790000620	S.DIODE	MA77(TW)
D22	1790000450	S.DIODE	MA862(TX)
D24	1160000060	S.DIODE	DAN202U T107
D25	1160000060	S.DIODE	DAN202U T107
D26	1790001250	S.DIODE	MA2S111-(TX)
FI1	2010001610	MONOLITHIC	FL-202 (30.850MHz)
FI2	2040001060	S.FILTER	LFB30N11B0446B010 [USA]
	2040001050	S.FILTER	LFB30N11B0436B010 [EUR], [ITA], [AUS], [SEA]
FI3	2040001060	S.FILTER	LFB30N11B0446B010 [USA]
FI3	2040001050	S.FILTER	LFB30N11B0436B010 [EUR], [ITA], [AUS], [SEA]
X1	6050009430	XTAL	CR-515 (15.200MHz)
L1	6200004480	S.COIL	MLF1608D R82K-T
L2	6200004780	S.COIL	MLF1608A 1R5K-T
L3	6200002330	S.COIL	LQN 1A 15NJ04
L4	6200002340	S.COIL	LQN 1A 23NJ04
L5	6200002340	S.COIL	LQN 1A 23NJ04
L6	6200002330	S.COIL	LQN 1A 15NJ04
L7	6200002330	S.COIL	LQN 1A 15NJ04
L8	6200004350	S.COIL	LL1608-F10NK
L9	6200004930	S.COIL	MLF1608E 8R2K-T
L10	6200002330	S.COIL	LQN 1A 15NJ04
L11	6200004780	S.COIL	MLF1608A 1R5K-T
L12	6200004210	S.COIL	MLR1608M 15NJ-T
L13	6200004680	S.COIL	LL1608-F8N2K
L14	6200004350	S.COIL	LL1608-F10NK

S. = Surface mount

[UHF RF UNIT] (IC-T42 only)

REF. NO.	PARTS NO.	DESCRIPTION	
L15	6200004350	S.COIL	LL1608-F10NK
L16	6200004390	S.COIL	LL1608-F22NK
L17	6200004220	S.COIL	MLR1608M 27NJ-T
L18	6200002360	S.COIL	LQN 1A 33NJ04
L19	6200002340	S.COIL	LQN 1A 23NJ04
L20	6200002240	S.COIL	ELJFC 2R2K-F
L21	6200004370	S.COIL	LL1608-F15NK
L22	6200004360	S.COIL	LL1608-F12NK
L24	6200004420	S.COIL	LL1608-F33NK
L25	6200004410	S.COIL	LL1608-F27NK
L26	6200005250	S.COIL	LL1608-F5N6K 5.6N [USA]
	6200004350	S.COIL	LL1608-F10NK 10N [EUR], [ITA], [AUS], [SEA]
L27	6200003550	S.COIL	MLF1608A 4R7K-T
L28	6200004400	S.COIL	LL1608-F47NK 47N
R1	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k)
R2	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k)
R3	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k)
R4	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R5	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R6	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R7	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R8	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R9	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R10	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R16	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R21	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R22	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R23	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R24	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)
R25	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R26	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R27	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R28	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R31	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R32	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R33	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R34	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R35	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R36	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R37	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R38	7510000200	S.THERMISTOR	TN20-3U473LT
R39	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R40	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R41	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R46	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R47	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R48	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R49	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R50	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R51	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R52	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R53	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R54	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R55	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R56	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R57	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R58	7030003350	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R59	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R63	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R64	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R65	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R66	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R67	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R68	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R69	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R70	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)

[UHF RF UNIT] (IC-T42 only)

REF. NO.	PARTS NO.	DESCRIPTION	
R74	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R75	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R76	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R77	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R78	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R79	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R80	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R81	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
C1	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C2	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C3	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C4	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C5	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C6	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030009970	S.CERAMIC	C1608 JB 1H 182K-T-A
C10	4030007000	S.CERAMIC	C1608 CH 1H 090D-T-A
C11	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C14	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C15	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C16	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C17	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C19	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C20	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C22	4030009530	S.CERAMIC	C1608 CH 1H 030B-T-A
C24	4550006050	S.TANTALUM	TEMSVA 0J 106M8L
C25	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C26	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C28	4030007020	S.CERAMIC	C1608 CH 1H 120J-T-A
C29	4030009530	S.CERAMIC	C1608 CH 1H 030B-T-A
C30	4030006980	S.CERAMIC	C1608 CH 1H 070J-T-A
C31	4030006970	S.CERAMIC	C1608 CH 1H 060D-T-A
C32	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C33	4030006980	S.CERAMIC	C1608 CH 1H 070D-T-A
C34	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T-A
C35	4030006990	S.CERAMIC	C1608 CH 1H 080D-T-A
C36	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T-A
C37	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T-A
C38	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030006990	S.CERAMIC	C1608 CH 1H 080D-T-A
C40	4030007080	S.CERAMIC	C1608 CH 1H 390J-T-A
C41	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C42	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C43	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C44	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C45	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C46	4030010740	S.CERAMIC	C1608 JB 1A 104K-T-A
C47	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C49	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C50	4550006080	S.TANTALUM	TEMSVB2 1C 106M-8L
C51	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C52	4030009910	S.CERAMIC	C1608 CH 1H 040B-T-A
C53	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C54	4030007020	S.CERAMIC	C1608 CH 1H 120J-T-A
C59	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C60	4030007080	S.CERAMIC	C1608 CH 1H 390J-T-A
C61	4610001890	S.TRIMMER	CTZ3E-20C-W1
C71	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C72	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C73	4030006970	S.CERAMIC	C1608 CH 1H 060D-T-A
C74	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C75	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C76	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C78	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C79	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A

S. = Surface mount

[UHF RF UNIT] (IC-T42 only)

REF. NO.	PARTS NO.	DESCRIPTION	
C80	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C81	4030006980	S.CERAMIC	C1608 CH 1H 070D-T-A
C82	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C83	4030006970	S.CERAMIC	C1608 CH 1H 060D-T-A
C86	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C87	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C88	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C89	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C90	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C91	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C92	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C93	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C94	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C95	4030009920	S.CERAMIC	C1608 CH 1H 050B-T-A
C96	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C97	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C98	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C99	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C100	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C101	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C102	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C103	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C112	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C113	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C114	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C115	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C116	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C117	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C118	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C119	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C120	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C121	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C122	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C123	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C124	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C125	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C126	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C127	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C128	4030009650	S.CERAMIC	C1608 CH 1H 240J-T-A
C129	4510006450	S.TANTALUM	TEMSVA2 0J 475M-8R
C131	4030007010	S.CERAMIC	C1608 CH 1H 100J-T-A
C132	4030006990	S.CERAMIC	C1608 CH 1H 080J-T-A
S1	7600000170	ENCODER	TP96D96E20-15FB10K-1460
J2	6450001060	CONNECTOR	HSJ1493-01-010
J3	6450000130	CONNECTOR	HSJ1102-01-540
J4	6450000870	CONNECTOR	HEC2711-01-020
J5	6510018470	S.CONNECTOR	IL-WX-30PB-VF84-B-E900
W1	7030003860	S.JUMPER	ERJ3GE JPW V
W2	7120000380	JUMPER	JPW 01 R-01
W3	7030003860	S.JUMPER	ERJ3GE JPW V
EP1	0910046901	PCB	B 4722A

[U VCO UNIT] (IC-T42 only)

REF. NO.	PARTS NO.	DESCRIPTION	
Q301	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q302	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q303	1530003310	S.TRANSISTOR	2SC5107-O (TE85R)
D301	1720000370	S.VARICAP	HVU350TRF
D302	1790001260	S.DIODE	MA2S077-(TX)
L302	6110001990	COIL	LA-223
L303	6200004400	S.COIL	LL1608-F47NK
R301	7030006020	S.RESISTOR	RR0510P-682-D (6.8 kΩ)
R302	7030005880	S.RESISTOR	RR0510R-820-D (82 Ω)
R303	7030006030	S.RESISTOR	RR0510P-822-D (8.2 kΩ)
R304	7030005860	S.RESISTOR	RR0510R-823-D (82 kΩ)
R305	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R306	7030005780	S.RESISTOR	RR0510P-221-D (220 Ω)
R307	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R308	7030005760	S.RESISTOR	RR0510R-680-D (68 Ω)
R309	7030005810	S.RESISTOR	RR0510P-152-D (1.5 kΩ)
R310	7030005780	S.RESISTOR	RR0510P-221-D (220 Ω)
C301	4030009760	S.CERAMIC	C1005 CH 1E 150J-T-A
C302	4030009730	S.CERAMIC	C1005 CH 1E 090D-T-A
C303	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C304	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C305	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C306	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C307	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T-A
C308	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C309	4030007000	S.CERAMIC	C1608 CH 1H 090D-T-A
C310	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
C311	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C312	4030009810	S.CERAMIC	C1005 JB 1E 102K-T-A
J301	6510018640	CONNECTOR	IMSA-9230B-1-05Z064-T
EP301	0910045794	PCB	B 4315D

S. = Surface mount

SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

7-1 CABINET PARTS

[CHASSIS PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J 1	6510018560	Connector BNC-R128	1
MP 1	8210012350	1600 Rear panel	1
MP 2	8310034261	1460 Contact base-1	1
MP 3	8010016110	1600 Chassis	1
MP 4	8930035131	Spring (V)-1	1
MP 5	8930033760	1460 Release plate	1
MP 6	8930033770	1460 Release button	1
MP 7	8930033820	1460 Contact spring	3
MP 8	8610009830	Knob N225(A)	1
MP 9	8610009341	Knob N226-1	1
MP 10	8930035410	1460 Contact rubber	3
MP 11	8930035520	1459 Rear plate	1
MP 12	8930036200	1600 DC Cap	1
MP 13	8810008750	Screw PH B0 M2 x 15 ZK	4
MP 14	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	2
MP 15	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	3
MP 16	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	2
MP 17	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	2
MP 18	8810008740	Screw PH B0 No.0-1 M2.6 x 5 NI-ZU (BT)	2
MP 19	8810006790	Screw PH No.0 M2 x 3.5 ZK	1
MP 20	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	2
MP 21	8830000570	Nut(A)	1
MP 22	8930036340	1600 Antenna grounding rug	1
MP 23	8810006650	Screw PH B0 No.0 M1.4 x 2.5	3
MP 24	8810005730	Screw PH-tras M3 x 3 ZK BS	2
MP 26	8510010020	1600 Module shield	1
MP 27	8930036190	1600 Microphone cap	1

[VVCO AND UVCO UNITS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP 1	8510009750	1600 VCO case	1

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP 1	8930027620	1257 Spring	1

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W 3	8900005320	Cable OPC-519 (N:30 L:55)	1
DS 1	5030001230	LCD LD-BU4323J	1
EP 1	8930037201	LCD contact screen SRCN-1600 ZNN-1	1
SP 1	2510000840	Speaker CS028014-12	1
MC 1	7700001750	Microphone EM-123TH	1
MP 1	8210012470	1600 LCD Reflector	1
MP 2	8930036180	1600 Rubber button 10 key	1
MP 4	8930036240	1600 PTT button	1
MP 6	8930036150	1600 LCD holder	1
MP 10	8930036250	1600 PTT plate	1
MP 11	8810008970	Screw FH B0 No.0 M2 x 3.5 NI-ZU (BT)	4
MP 12	8510009790	1600 Grounding plate	1
MP 13	8930036630	1600 Speaker sheet	1
MP 14	8210013010	1600 Front panel (G) assembled (IC-T22A)	1
	8210013020	1600 Front panel (H) assembled (IC-T22E)	1
	8210013040	1600 Front panel (J) assembled (IC-T42A)	1
	8210013050	1600 Front panel (K) assembled (IC-T42E)	1
MP 15	8860000980	1600 Logic rug plate (IC-T42A/E)	1

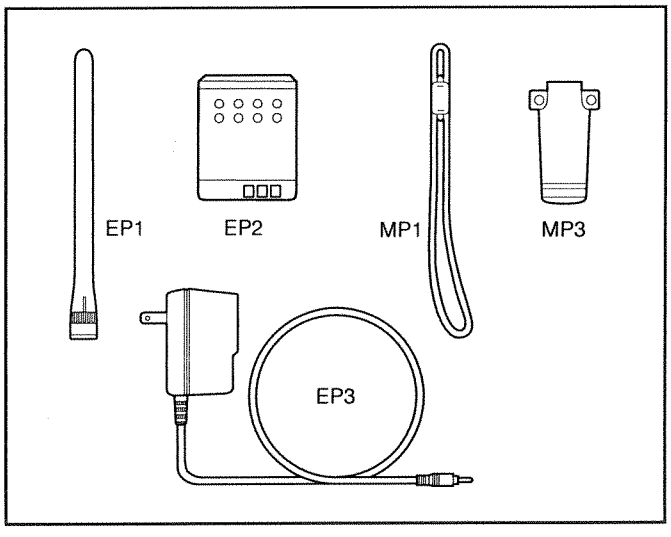
[VHF RF AND UHF RF UNITS]

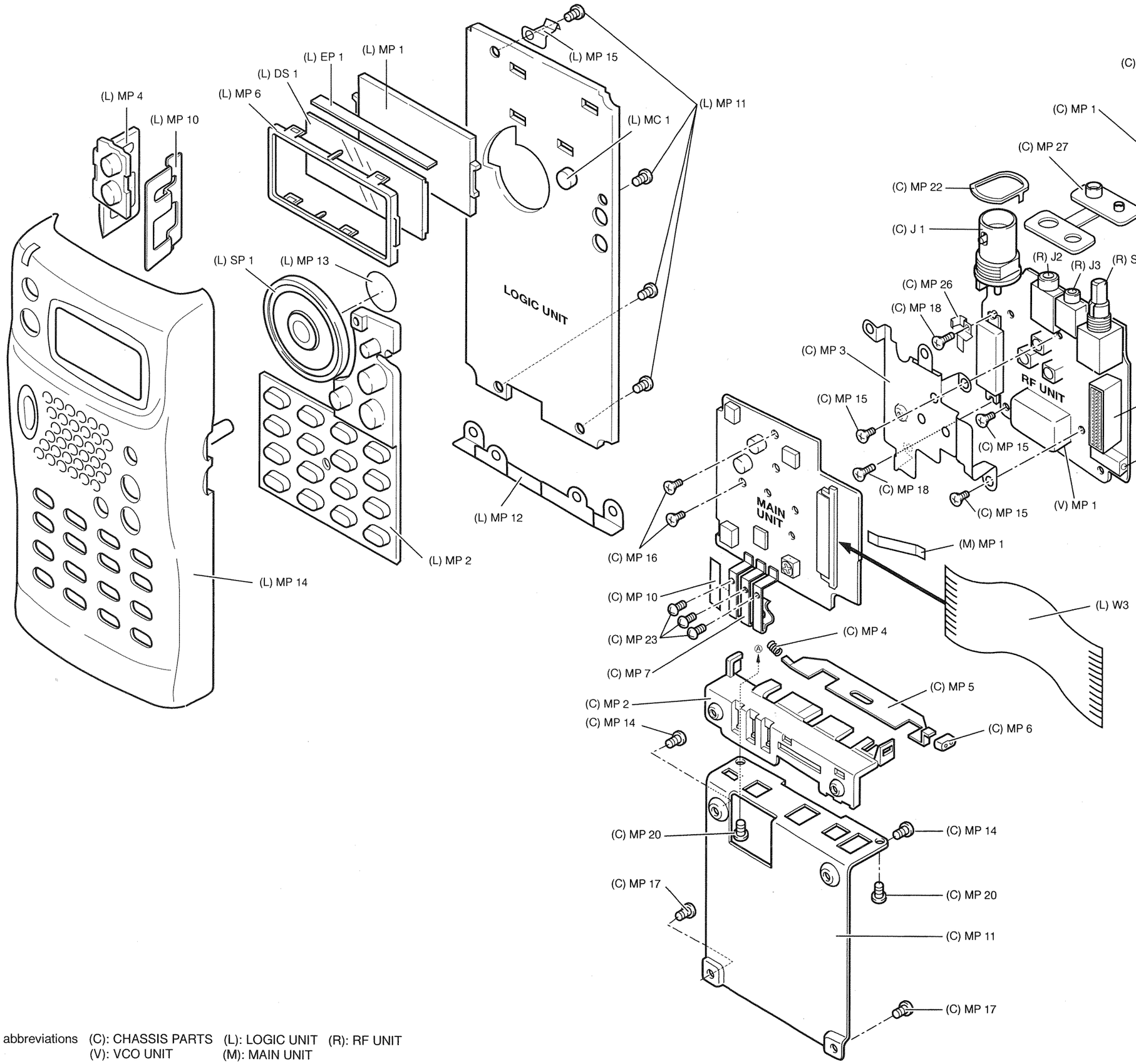
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J 2	6450001060	Speaker jack HSJ1493-01-010	1
J 3	6450000130	Microphone jack HSJ1102-01-540	1
J 4	6450000870	DC input jack HEC2711-01-020	1
J 5	6510018470	Connector IC-WX-30PB-VF84-B	1
S 1	7600000170	Encoder TP96D96E20-15F10KB-1460	1

Screw abbreviations: PH: Pan head FH: Flat head B0: Self-tapping NI: Nickel ZK: Black

7-2 ACCSESSORIES

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
EP 1	Optional products	Antenna FA-B2B (IC-T22A/E)	1
	Optional products	Antenna FA-B70B (IC-T42A/E)	1
EP 2	Optional products	Battery case BP-170 (SEA)	1
	Optional products	Battery pack BP-180 (USA)	1
	Optional products	Battery pack BP-171 (Other versions)	1
EP 3	Optional products	Wall charger BC-110V (AUS)	1
	Optional products	Wall charger BC-110A (USA)	1
	Optional products	Wall charger BC-110D (EUR, ITA)	1
MP 1	8010011960	Strap belt HK-005	1
MP 3	8010008620	752 Belt clip	1

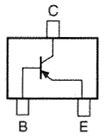
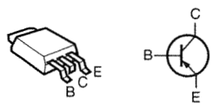
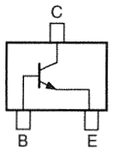
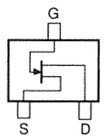
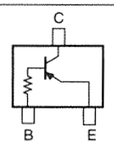
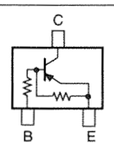
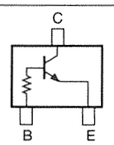
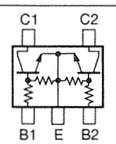


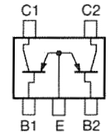
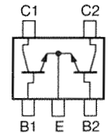
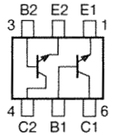
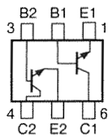


Unit abbreviations (C): CHASSIS PARTS (L): LOGIC UNIT (R): RF UNIT
(V): VCO UNIT (M): MAIN UNIT

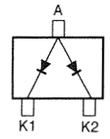
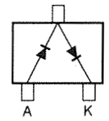
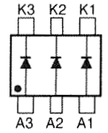
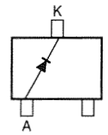
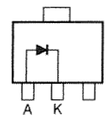
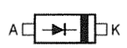
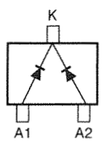
SECTION 8 SEMI-CONDUCTOR INFORMATIONS

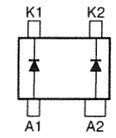
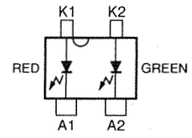
8-1 TRANSISTORS

NAME	SYMBOL	INSIDE VIEW
2SA1622-6 2SB1132-R	M6 BAR	
2SB1201	–	
2SC3356 2SC4211-6 2SC4215-O 2SC4226-T2 2SC4228-R45 2SC4403-3 2SC4405-3 2SC5107-O 2SC5226 2SD2216-S	R24/R25 L6 QO R25 R45 LY3 OY3 MFO LN YS	
2SK880-Y	XY	
UN9110	6L	
UN9115	6E	
UN9210 UN9215	8L 8E	
XP1210	AC	

NAME	SYMBOL	INSIDE VIEW
XP1401	5V	
XP1501 AB	5R	
XP6501 AB	5N	
UMX5	X5	

8-2 DIODES

NAME	SYMBOL	INSIDE VIEW
DAP202U	P	
DA221	K	
MA6S121	M2D	
SB07-03C-TA	J	
SB30-03P	SG	
HVU350 MA304	4 7R	
MA77 MA111 MA728 MA729 MA2S111 MA2S077 MA2S728	4B 1B 2A 2B A S B	
DAN202U	N	

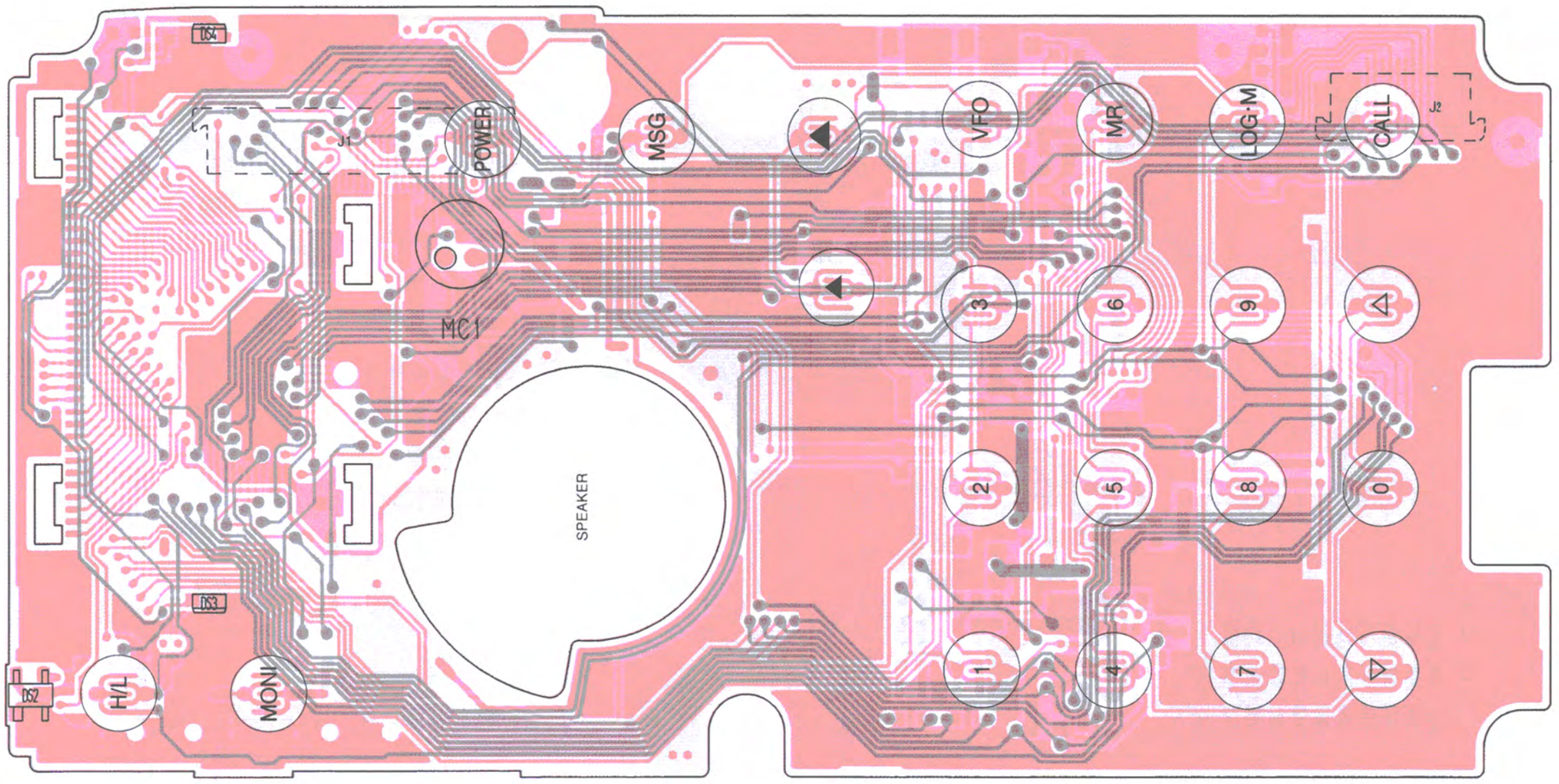
NAME	SYMBOL	INSIDE VIEW
MA862	M1I	
LT1EP53A	–	

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

SECTION 9 BOARD LAYOUTS

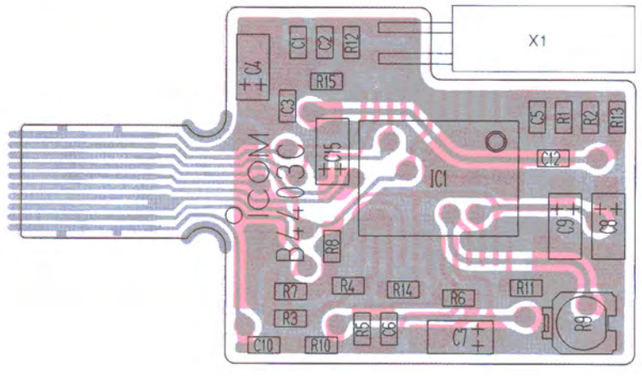
9-1 LOGIC UNIT

• LOGIC UNIT (TOP VIEW)

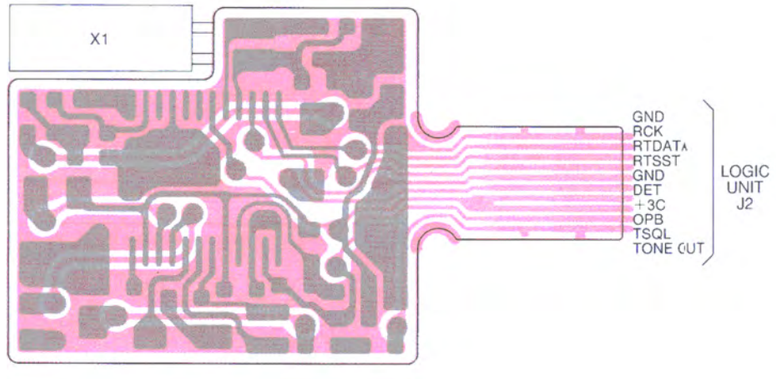


Surface Inside Underside

• TSQL UNIT (TOP VIEW)



• TSQL UNIT (BOTTOM VIEW)



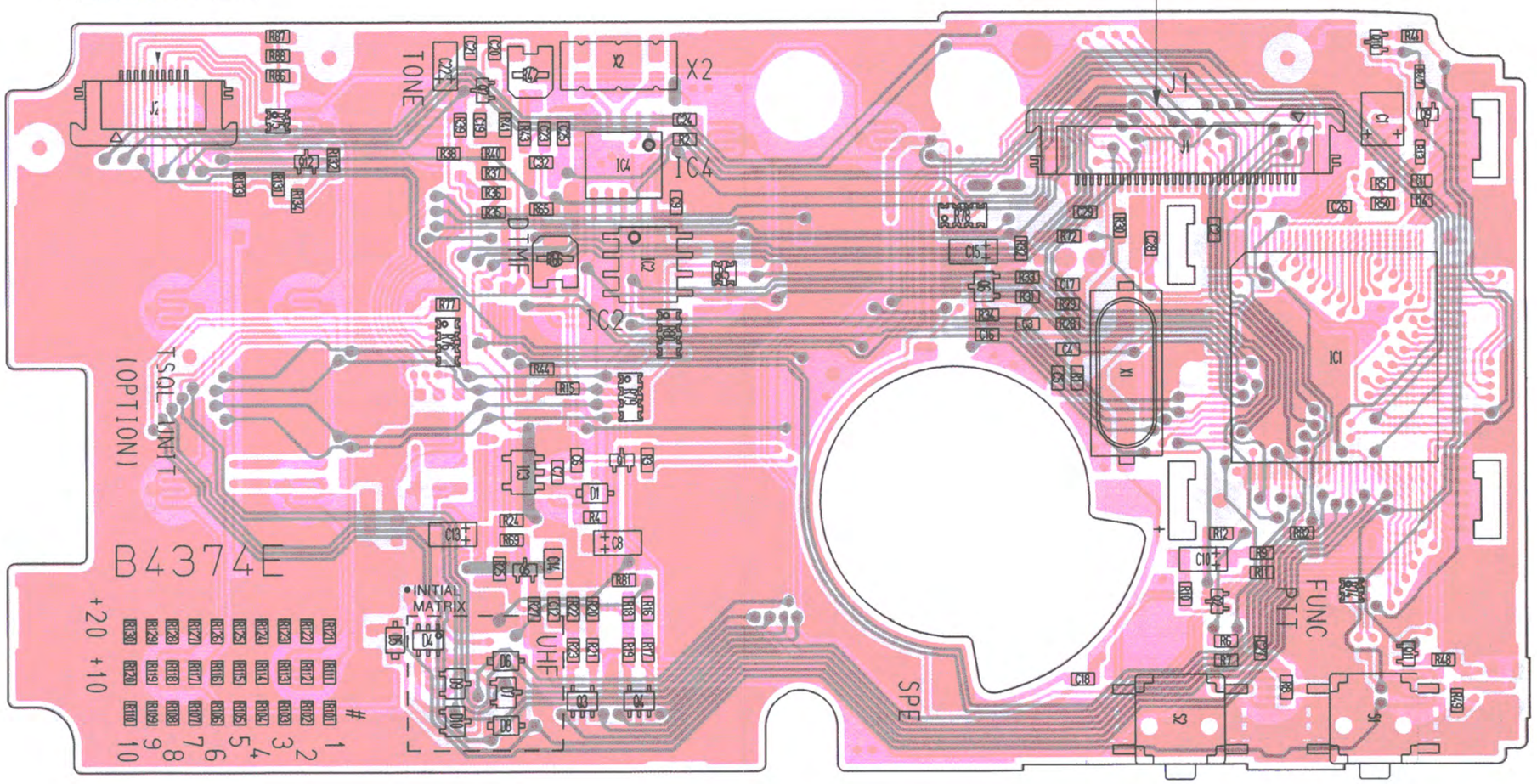
• LOGIC UNIT (B0TTOM VIEW)

LOGIC UNIT J2

GND	CK	DATA	RTSST	GND	+3C	OPB	TSQL	TONE OUT
DET								

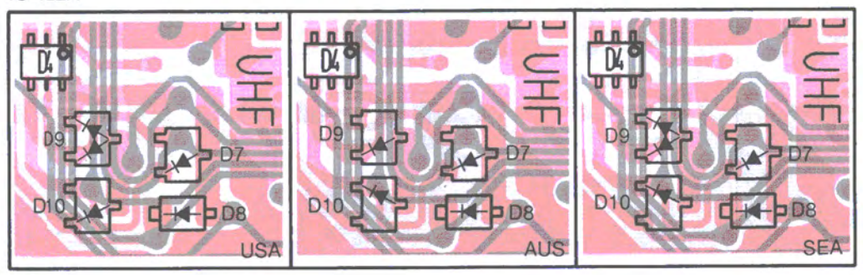
MAIN UNIT J2

SPE	SP	GND	REMOTE	MIC	EXTMIC	ARX	UP	DCK	T4C	DEO	GND	DEI	—	+3	+3C	VCC	GND	T4	SMETER	ULBUSY	AM	DET	DTMF	TONE	PCON	PLLSTB	IOSTB	DATA	CK

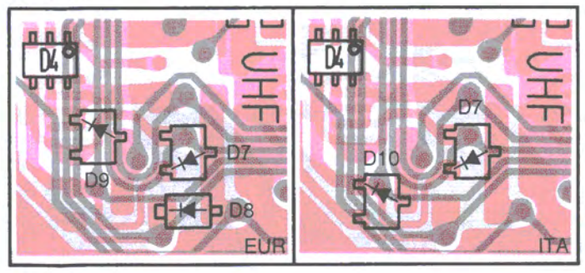


• INTIAL MATRIX

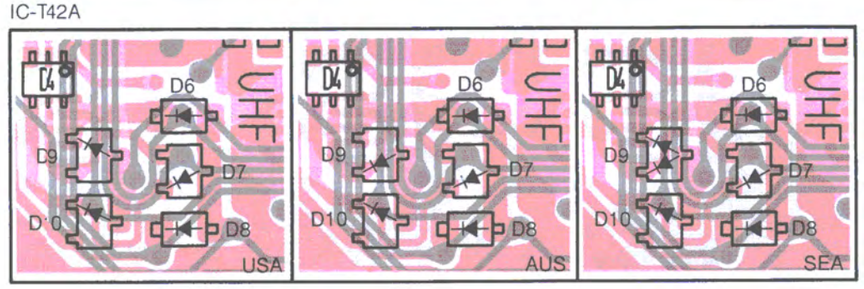
IC-T22A



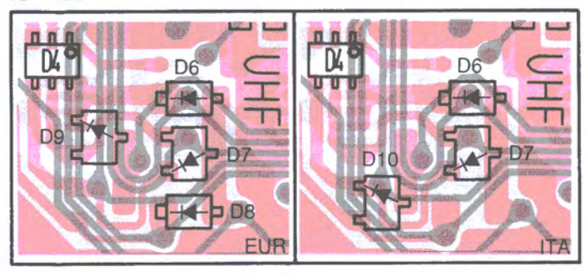
IC-T22E



IC-T42A



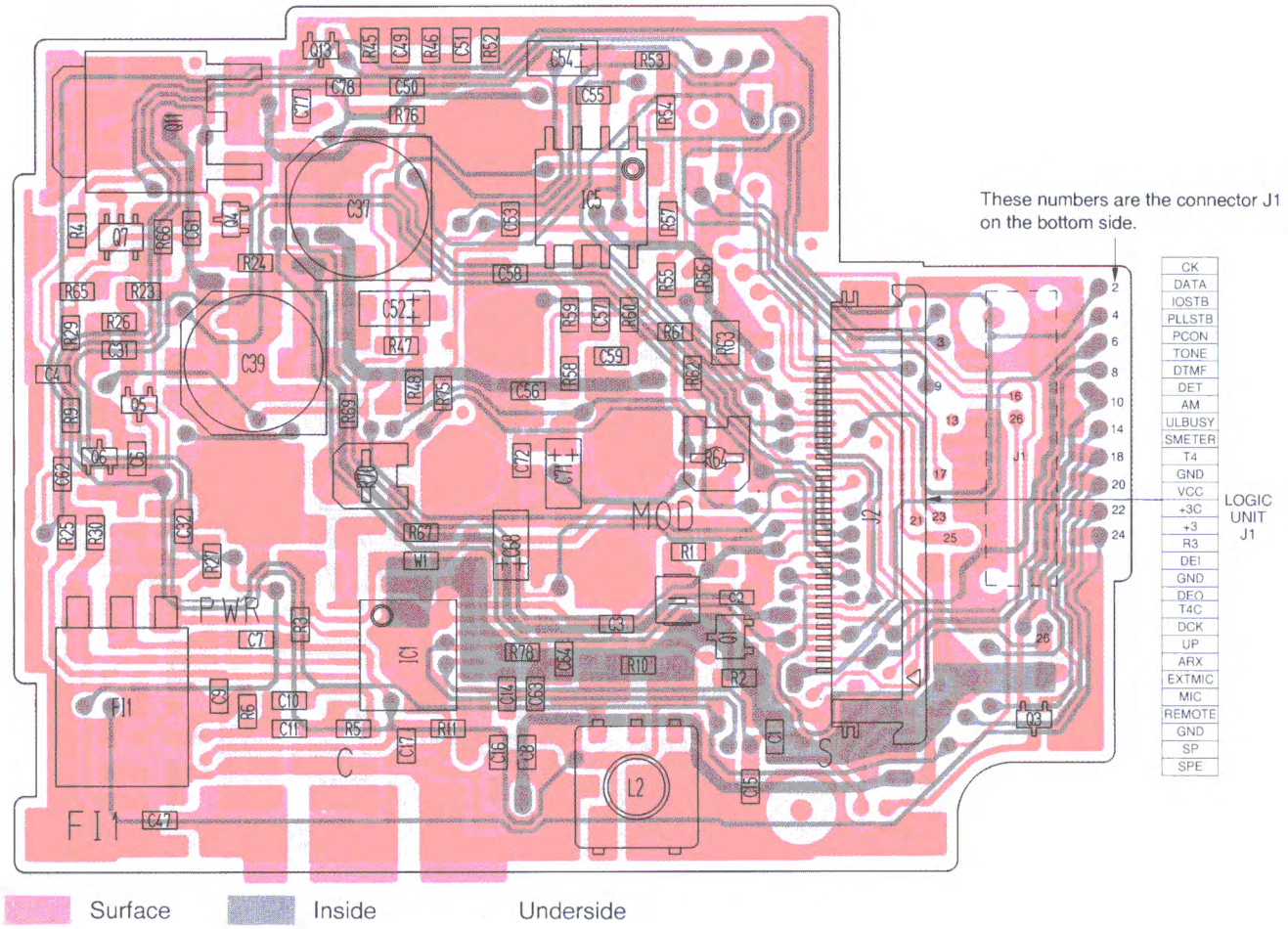
IC-T42E



9-2 MAIN UNIT

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

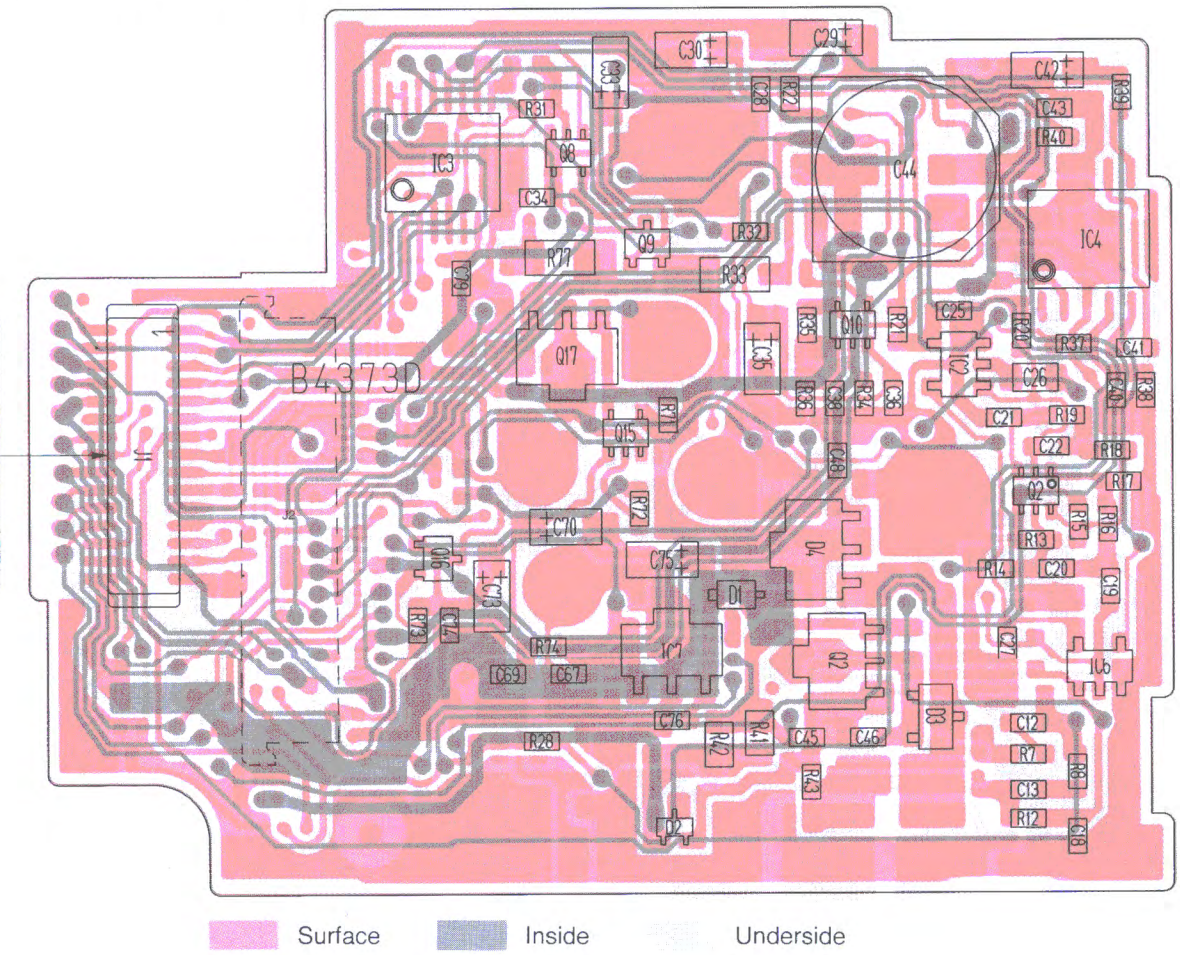
• **MAIN UNIT (TOP VIEW)**



• MAIN UNIT (BOTTOM VIEW)

VHF RF UNIT
J5

AM	AFO
REMOTE	HB
SPE	R3
EXTMIC	ARX
SP	MB
T4	H/L
UL	IF
+3SC	GND
+3C	MOD
UP	SHIFT
DCK	2NDLO
SQL	DATA
AGC	CK
T4C	PLLSTB
VCC	HV

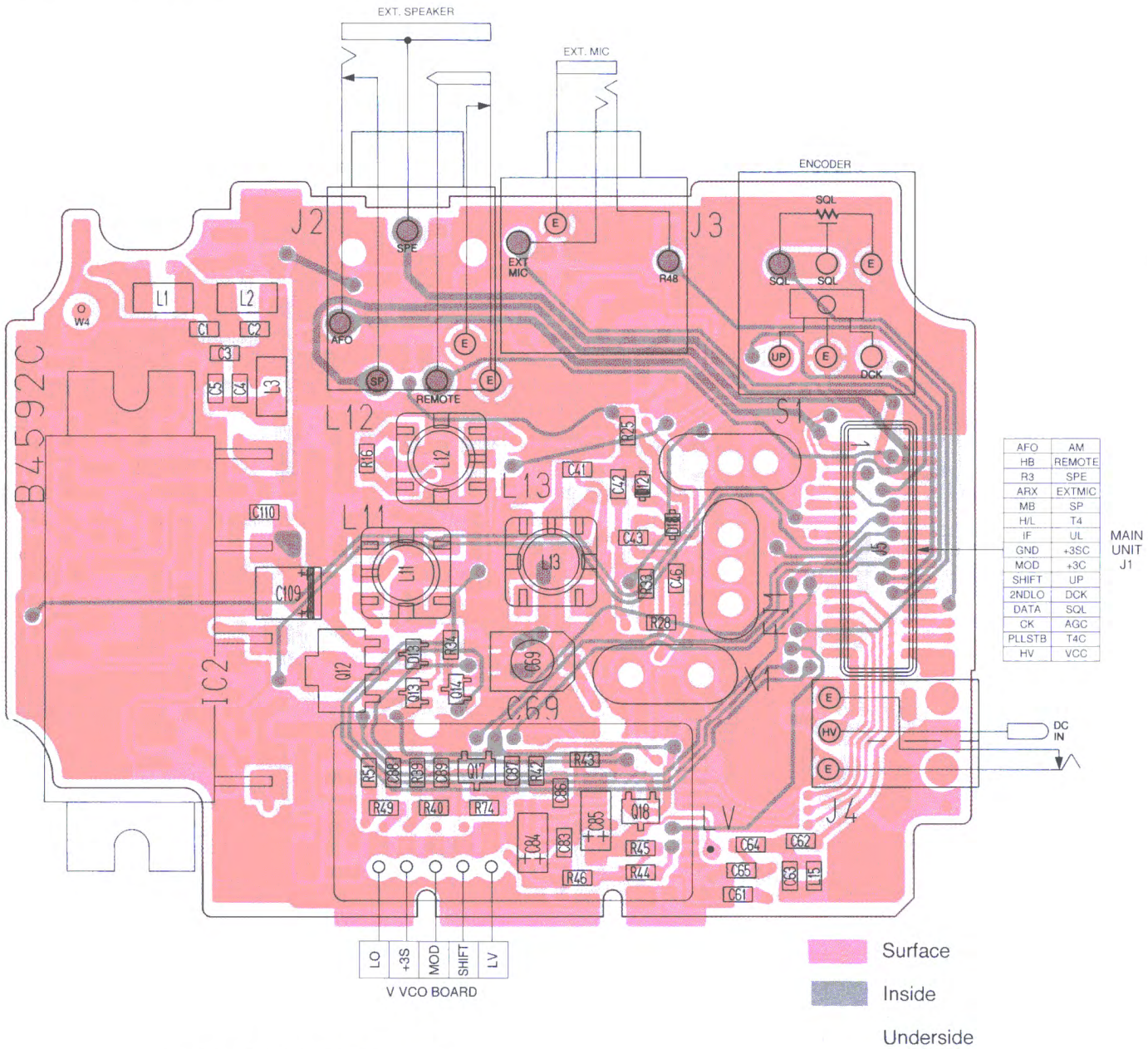


Surface Inside Underside

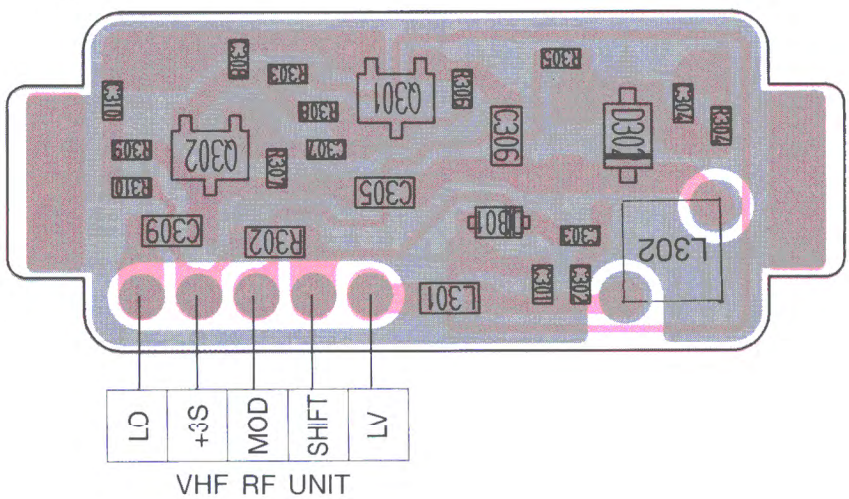
The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

9-3 VHF RF UNIT

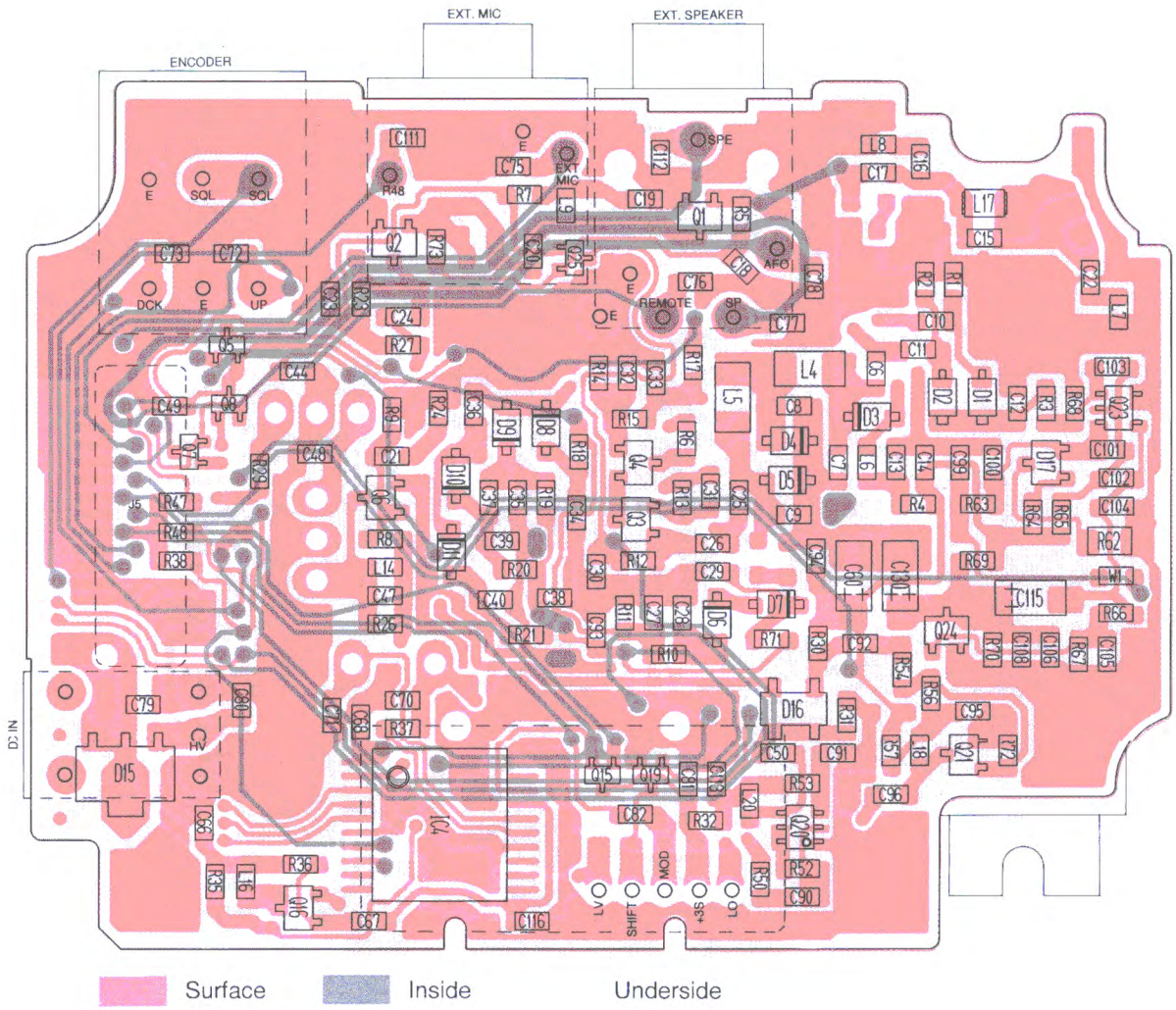
• VHF RF UNIT (TOP VIEW)



• V VCO BOARD (TOP VIEW)



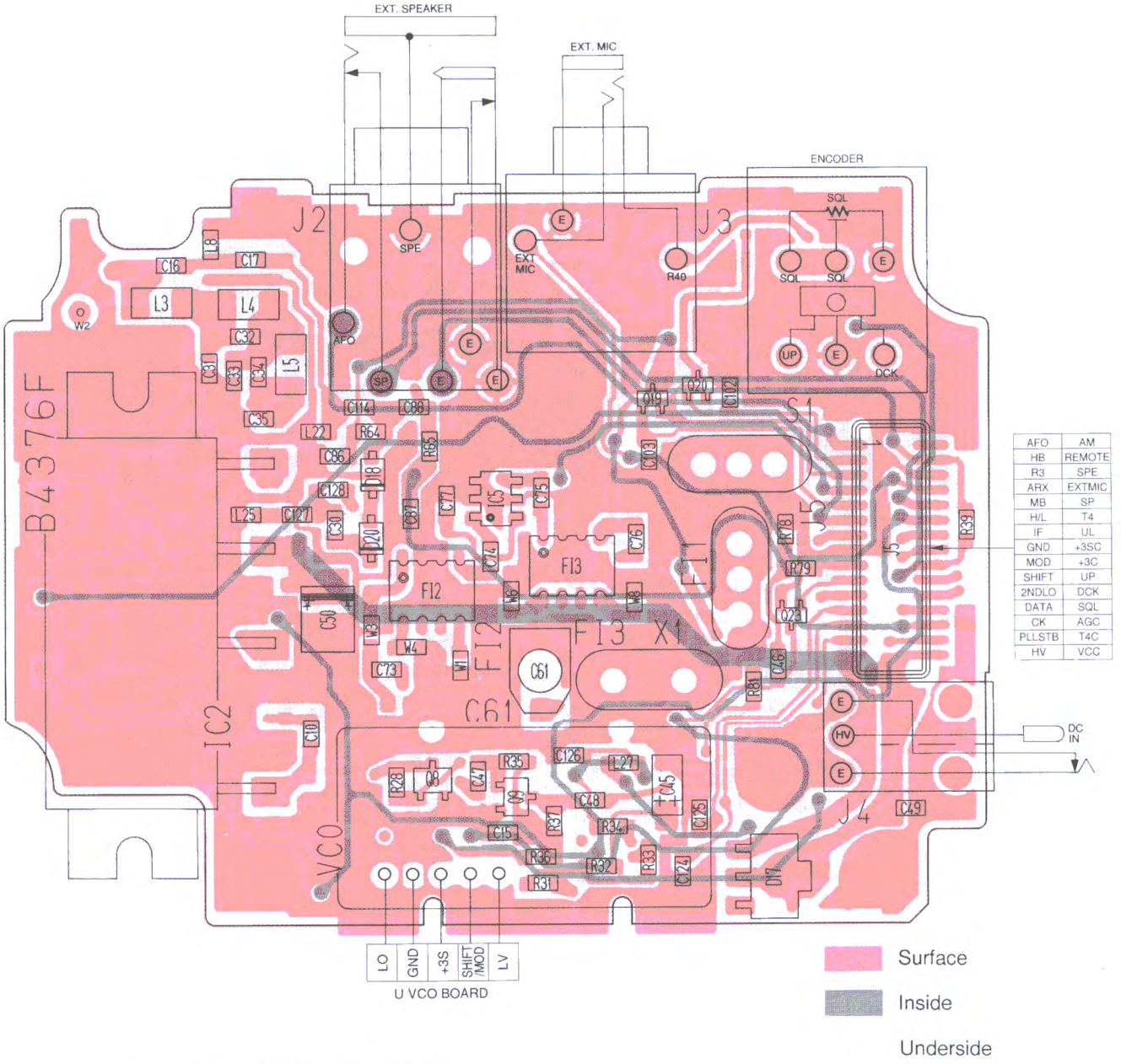
• VHF RF UNIT (BOTTOM VIEW)



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

9-4 UHF RF UNIT

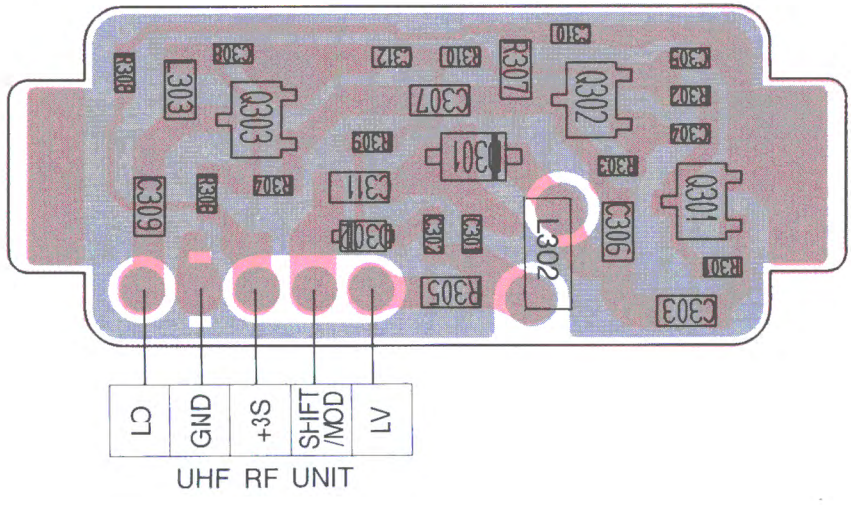
• **UHF RF UNIT (TOP VIEW)**



AFO	AM
HB	REMOTE
R3	SPE
ARX	EXTMIC
MB	SP
H/L	T4
IF	UL
GND	+3SC
MOD	+3C
SHIFT	UP
2NDLO	DCK
DATA	SQL
CK	AGC
PLLSTB	T4C
HV	VCC

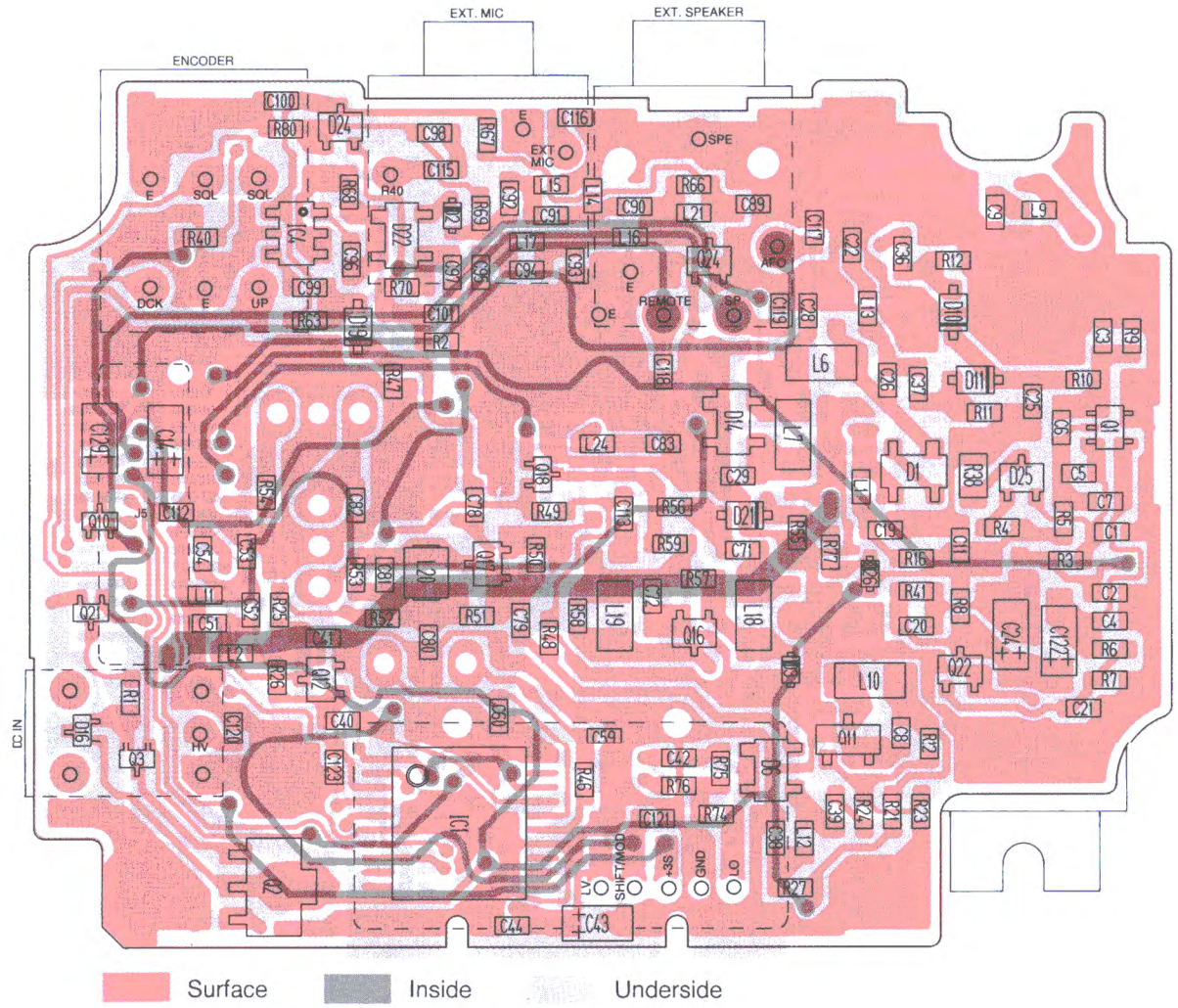
MAIN UNIT J1

• **U VCO BOARD (TOP VIEW)**



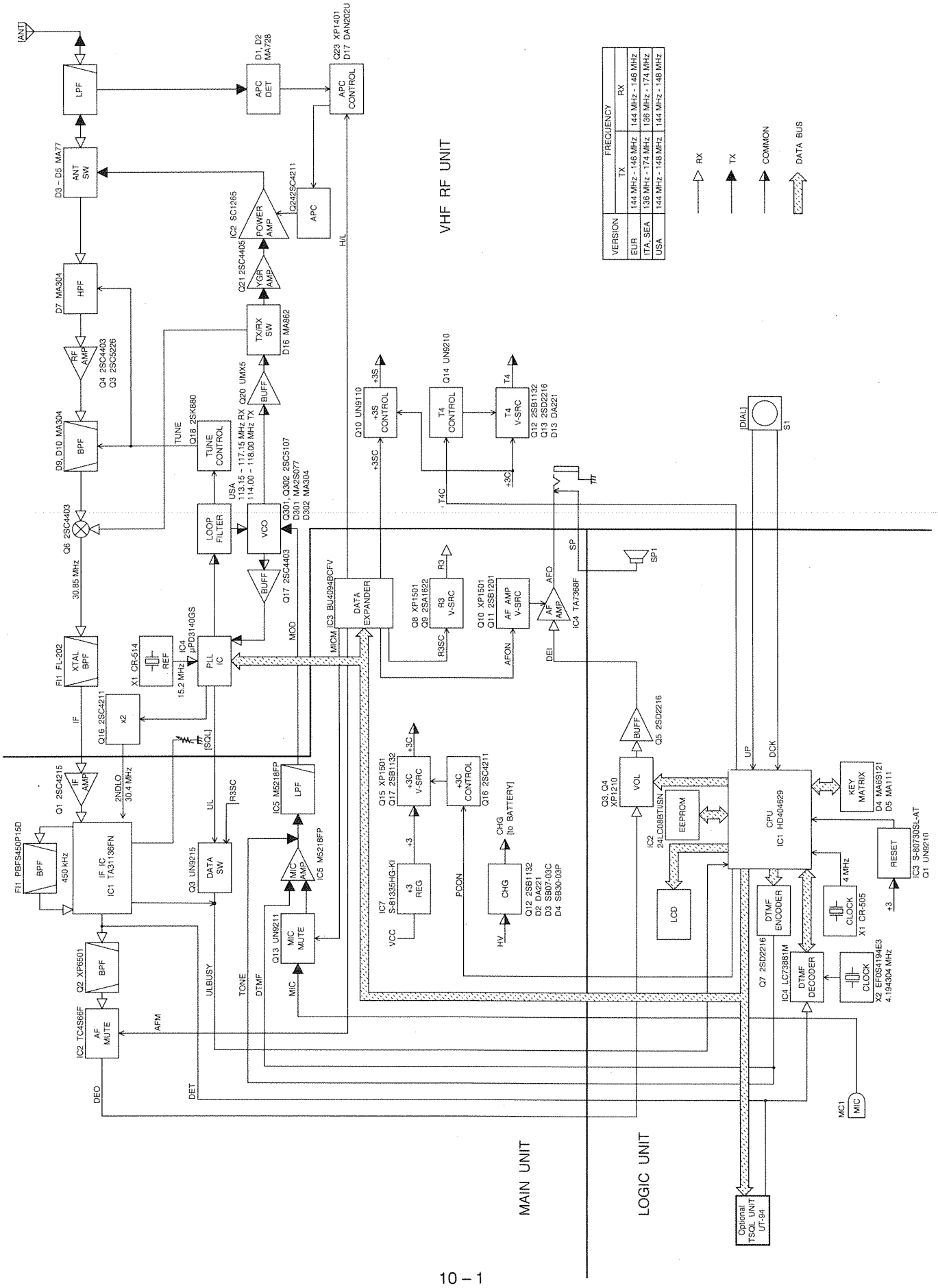
UHF RF UNIT

• UHF RF UNIT (BOTTOM VIEW)

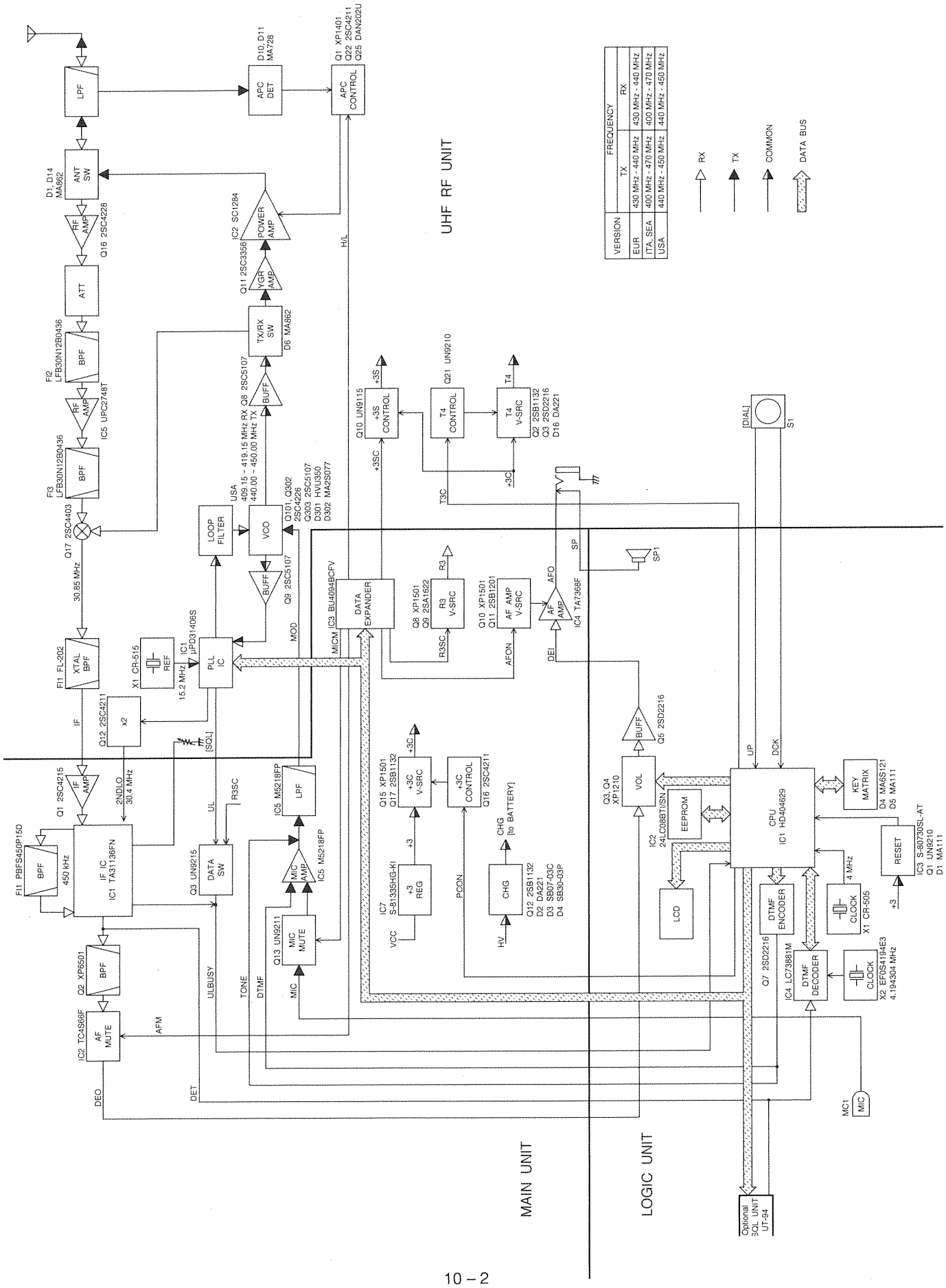


SECTION 10 BLOCK DIAGRAM

10-1 IC-T22A/E

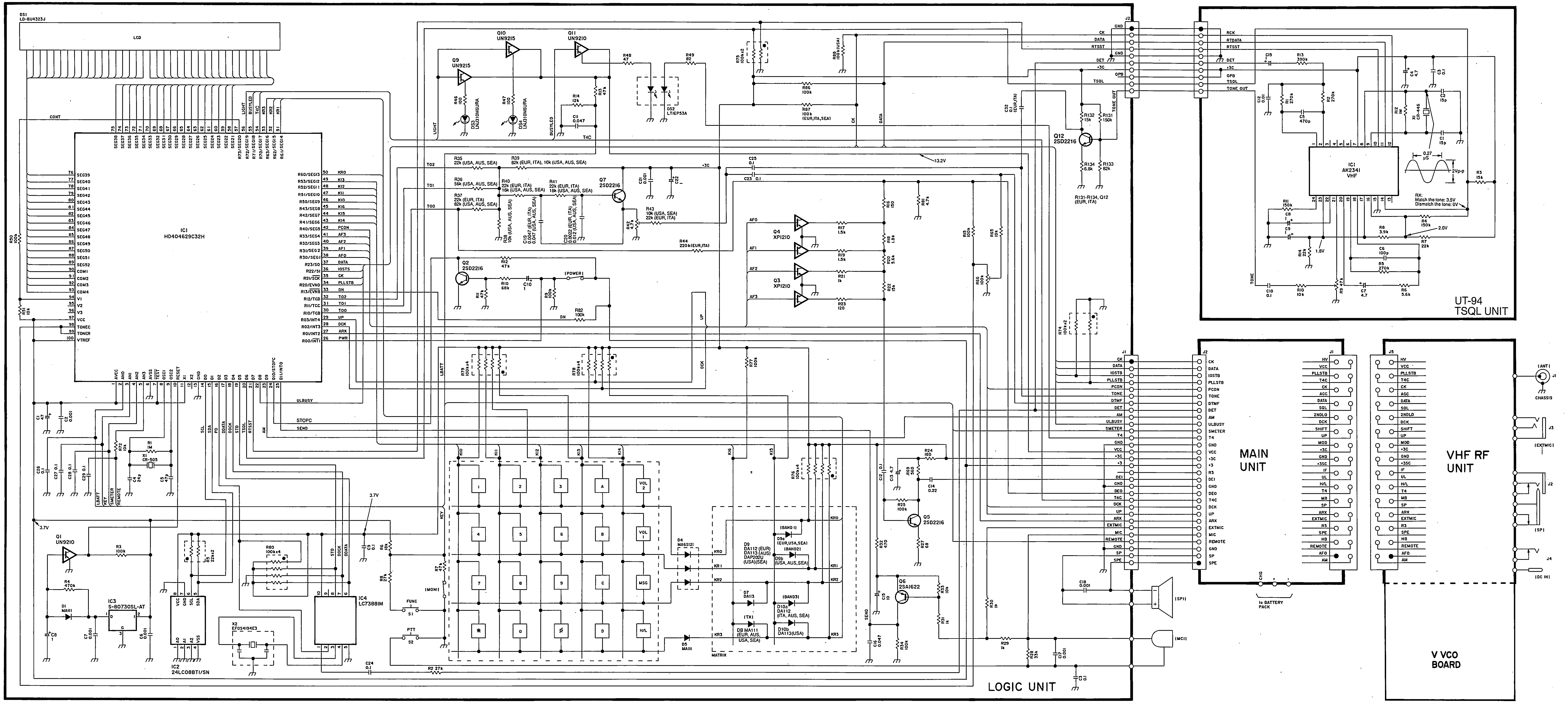


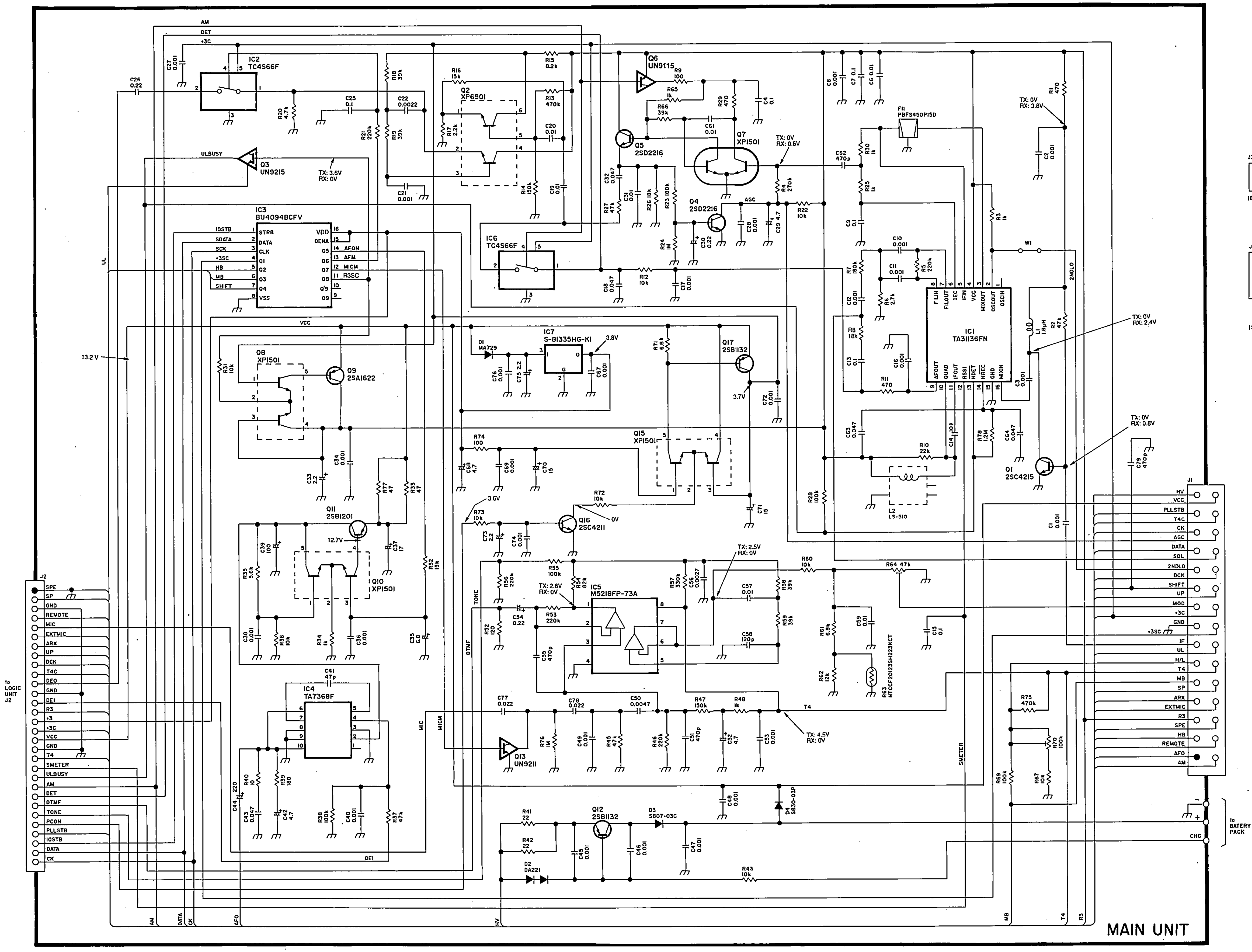
10-2 IC-T42A/E

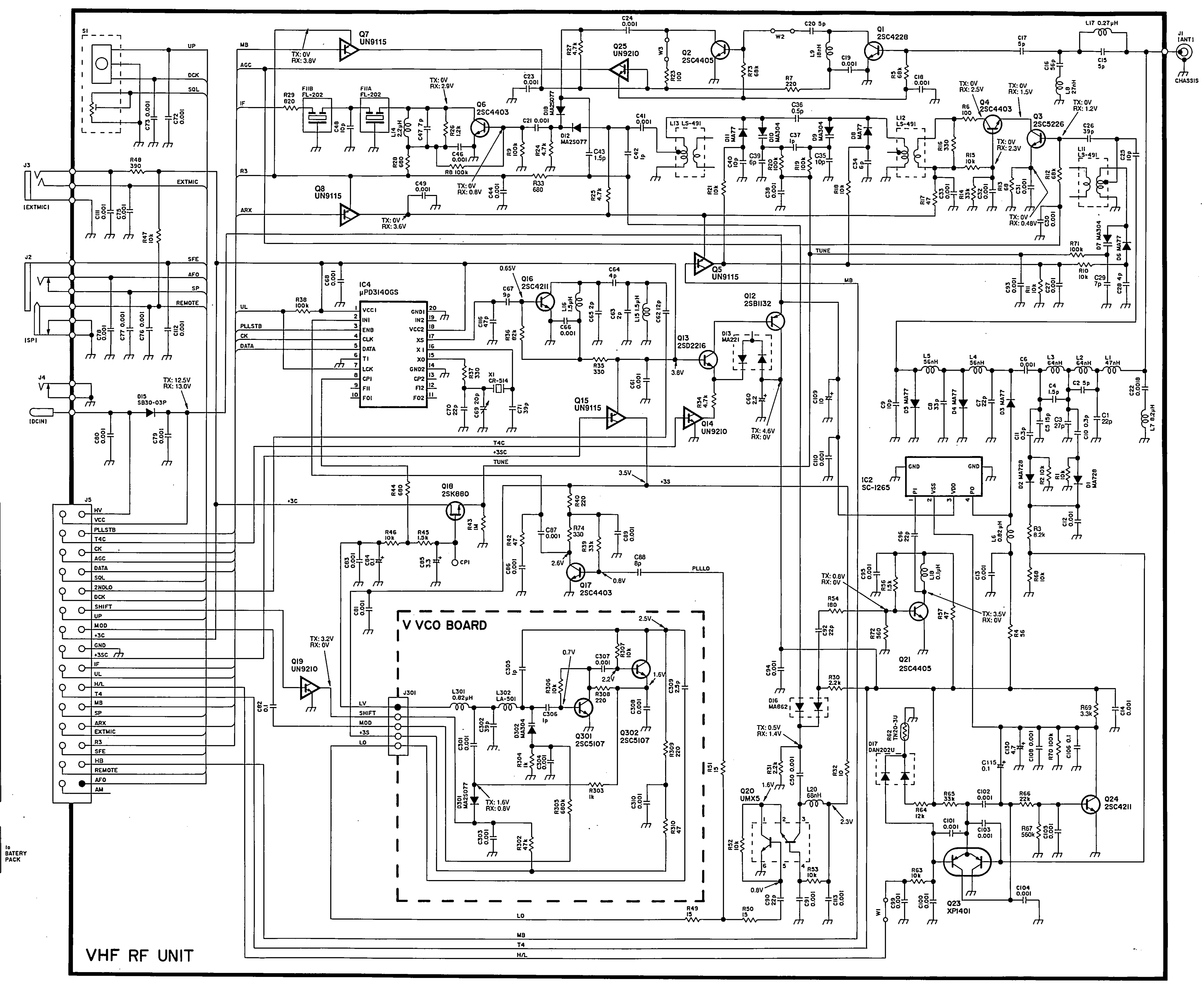

UHF RF UNIT
MAIN UNIT
LOGIC UNIT
FREQUENCY
VERSION
TX
RX
EUR
430 MHz - 440 MHz
430 MHz - 440 MHz
ITA, SEA
400 MHz - 470 MHz
400 MHz - 470 MHz
USA
440 MHz - 450 MHz
440 MHz - 450 MHz
RX
TX
COMMON
DATA BUS
LPF
APC DET
APC CONTROL
ANT SW
RF AMP
ATT
BPF
TX/RX SW
YGR AMP
POWER AMP
BUFF
LOOP FILTER
VCO
PLL IC
REF
XTAL BPF
X2
IF AMP
IF IC
DATA SW
MIC AMP
MIC MUTE
AF MUTE
DATA EXPANDER
R3 V-SRC
AF AMP V-SRC
AF AMP
T4 V-SRC
T4 CONTROL
+3S CONTROL
+3C V-SRC
+3C CONTROL
+3 REG
CHG
VOL
EEPROM
LCD
CPU IC1 HD404629
KEY MATRIX
DTMF ENCODER
DTMF DECODER
CLOCK
RESET
[DIAL]
S1
SP1
MIC
Optional SQL UNIT UT-94

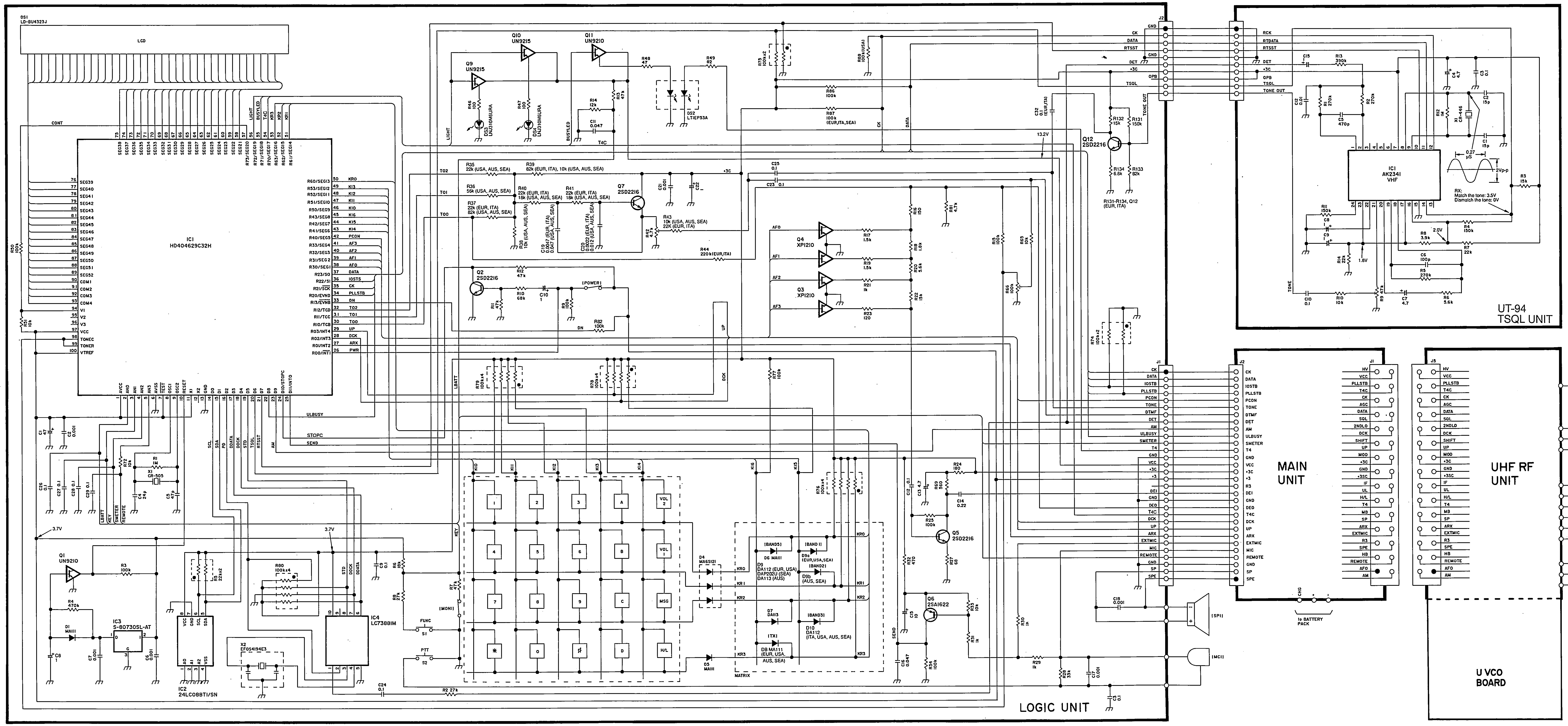
SECTION 11 VOLTAGE DIAGRAM

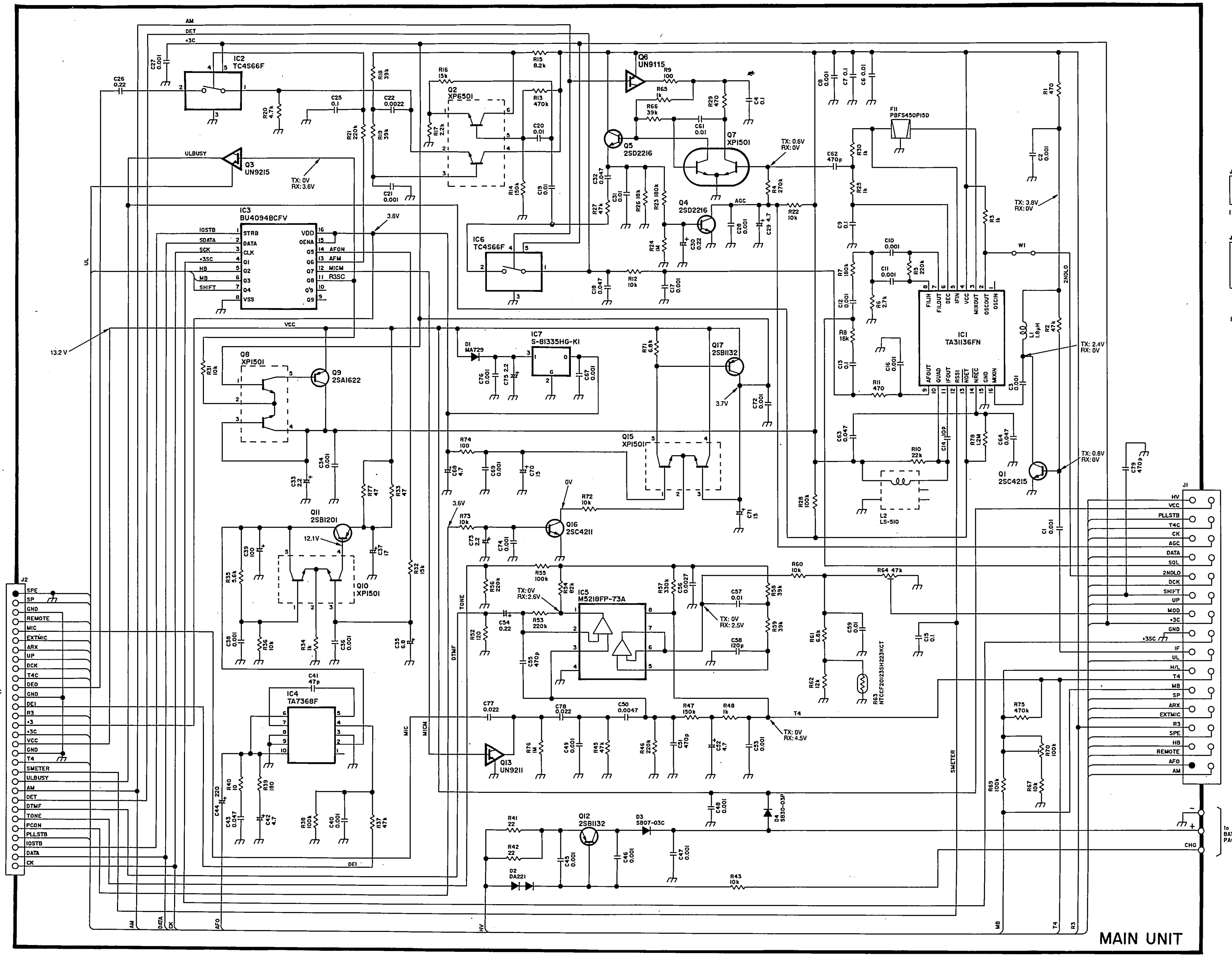
11-1 IC-T22A/E

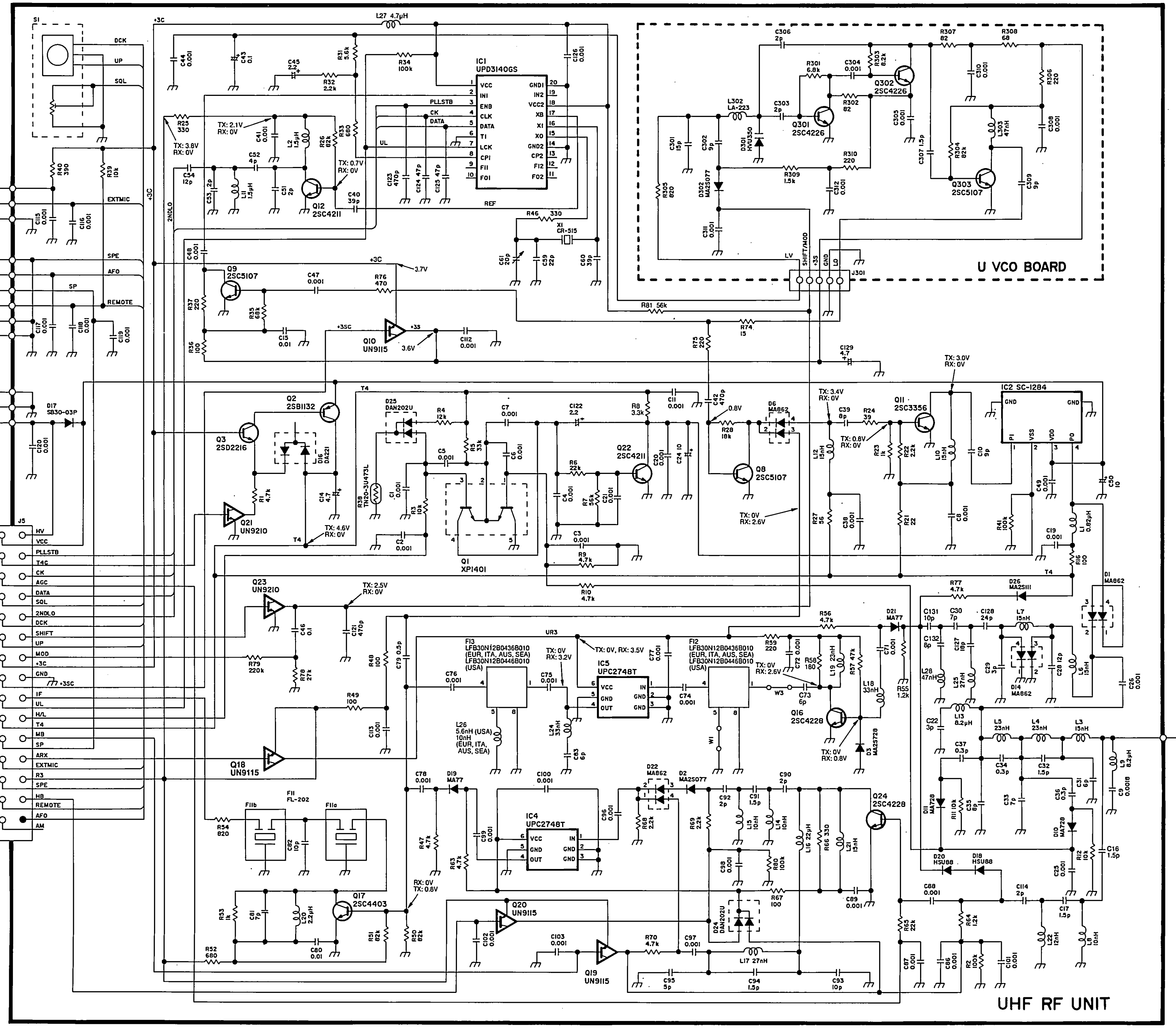



MAIN UNIT


V VCO BOARD
VHF RF UNIT


LOGIC UNIT
UT-94
TSQL UNIT
MAIN UNIT
UHF RF UNIT
U VCO BOARD


MAIN UNIT
IC1 TA31136FN
IC2 TC4S66F
IC3 BU4094BCFV
IC4 TA7368F
IC5 M5218FP-73A
IC6 TC4S66F
IC7 S-81335HG-KI
Q1 2SC4215
Q2 XP6501
Q3 UN9215
Q4 2SD2216
Q5 2SD2216
Q6 UN9115
Q7 XP1501
Q8 XP1501
Q9 2SA1622
Q10 XP1501
Q11 2SB1201
Q12 2SB1132
Q13 UN9211
Q15 XP1501
Q16 2SC4211
Q17 2SB1132
D1 MA729
D2 DA221
D3 SB07-03C
D4 SB30-03P
FI1 PBFS450P15D
L2 LS-510
L1 1.8μH
R63 NTCCF20123SH223KCT
J1
J2
to LOGIC UNIT J2
to BATTERY PACK
CHG
13.2 V
TX: 0V RX: 3.6V
TX: 0.6V RX: 0V
TX: 3.8V RX: 0V
TX: 2.4V RX: 0V
TX: 0.8V RX: 0V
TX: 0V RX: 2.6V
TX: 0V RX: 2.5V
TX: 0V RX: 4.5V
3.8V
3.7V
3.6V
12.1V
0V
SPE
SP
GND
REMOTE
MIC
EXTMIC
ARX
UP
DCK
T4C
DEO
DEI
R3
+3
+3C
VCC
T4
SMETER
ULBUSY
AM
DET
DTMF
TONE
PCON
PLLSTB
IOSTB
DATA
CK
HV
AGC
SQL
2NDLO
SHIFT
MOD
+3SC
IF
UL
H/L
MB
HB
AFO


UHF RF UNIT
U VCO BOARD
IC1 UPD3140GS
IC2 SC-1284
IC4 UPC2748T
IC5 UPC2748T
Q301 2SC4226
Q302 2SC4226
Q303 2SC5107
D301 HVU350
D302 MA2S077
L302 LA-223
L303 47nH
J301
LV
SHIFT/MOD
+3S
GND
LO
Q1 XP1401
Q2 2SB1132
Q3 2SD2216
Q8 2SC5107
Q9 2SC5107
Q10 UN9115
Q11 2SC3356
Q12 2SC4211
Q16 2SC4228
Q17 2SC4403
Q18 UN9115
Q19 UN9115
Q20 UN9115
Q21 UN9210
Q22 2SC4211
Q23 UN9210
Q24 2SC4228
D1 MA862
D2 MA2S077
D3 MA2S728
D6 MA862
D10 MA728
D11 MA728
D14 MA862
D16 DA221
D17 SB30-03P
D18 HSU88
D19 MA77
D20 HSU88
D21 MA77
D22 MA862
D24 DAN202U
D25 DAN202U
D26 MA2S111
X1 CR-515
FI1 FL-202
FI2 LFB30N12B0436B010 (EUR, ITA, AUS, SEA) LFB30N12B0446B010 (USA)
FI3 LFB30N12B0436B010 (EUR, ITA, AUS, SEA) LFB30N12B0446B010 (USA)
R38 TN20-3U473L
L26 5.6nH (USA) 10nH (EUR, ITA, AUS, SEA)
L27 4.7μH
S1
J1 [ANT]
CHASSIS
J2 [SP]
J3 [EXTMIC]
J4 [DCIN]
J5
DCK
UP
SQL
EXTMIC
SPE
AFO
SP
REMOTE
+3C
2NDLO
PLLSTB
CK
DATA
UL
REF
T4
UR3
TX: 2.1V RX: 0V
TX: 3.8V RX: 0V
TX: 0.7V RX: 0V
TX: 3.0V RX: 0V
TX: 3.4V RX: 0V
TX: 0.6V RX: 0V
TX: 0V RX: 2.6V
TX: 4.6V RX: 0V
TX: 2.5V RX: 0V
TX: 0V, RX: 3.5V
TX: 0V RX: 3.2V
TX: 0V RX: 0.8V
RX: 0V TX: 0.8V
3.7V
3.6V
0.8V
HV
VCC
T4C
AGC
SQL
DCK
SHIFT
MOD
GND
+3SC
IF
H/L
MB
ARX
R3
HB
AM

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BP 5804, 31505 Toulouse Cedex, France
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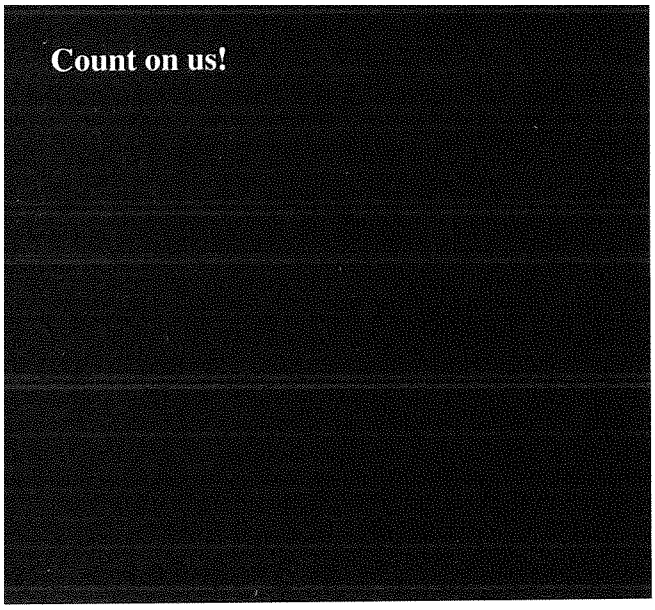
Fax : 61. 36. 03. 00
Telex : 521515 ICOM FRA



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