ICOM

SERVICE MANUAL

144MHz FM TRANSCEIVER

IC-T21A
IC-T21E
IC-S21A
IC-S21E

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **IC-T21A/E, IC-S21A/E** 144 MHz FM TRANSCEIVER at the time of publication.
7 versions of the **IC-T21A/E** and 6 versions of the **IC-S21 A/E** have been designed. This service manual covers each version.

MODEL	VERSION NO.	VERSION	SYMBOL
IC-T21A	#05	U.S.A.	USA
	#07	Australia	AUS
	#09	Asia	SEA
IC-T21E	#04	Europe	EUR
	#06	Taiwan	TPE
	#08	Denmark	DEN
	#14	Italy	ITA
IC-S21A	#05	U.S.A.	USA
	#07	Australia	AUS
	#09	Asia	SEA
IC-S21E	#04	Europe	EUR
	#06	Taiwan	TPE
	#14	Italy	ITA

To upgrade quality, any 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 (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〉

1130003370	IC	SC1257	IC-T21A	IF UNIT	5pieces
8810003370	Screw	PH BD M2 × 10 ZK	IC-T21A	Rear panel	10pieces

Addresses are provided on the inside back cover for your

REPAIR NOTES

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

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS

■ GENERAL

• Frequency coverage :

MODEL	VERSION	FREQUENCY COVERAGE
IC-T21A	U.S.A.	144 – 148 MHz (TX); 144 – 148, 440 – 450 MHz (RX)
	Australia	144 – 148 MHz (TX); 144 – 148, 430 – 440 MHz (RX)
	Asia	144 – 148 MHz (TX); 138 – 174, 420 – 440 MHz (RX)
IC-T21C	Europe	144 – 146 MHz (TX); 144 – 146, 430 – 440 MHz (RX)
	Taiwan	145 – 146 MHz (TX); 145 – 146, 420 – 432 MHz (RX)
	Denmark	144 – 146 MHz (TX); 144 – 146, 432 – 438 MHz (RX)
	Italy	144 – 146 MHz (TX); 138 – 174, 420 – 440 MHz (RX)
IC-T21E	U.S.A.	144 – 148 MHz (TX/RX)
	Australia	144 – 148 MHz (TX/RX)
	Asia	144 – 148 MHz (TX); 138 – 174 (RX)
	Europe	144 – 146 MHz (TX); 144 – 146, 430 – 440 MHz (RX)
	Taiwan	145 – 146 MHz (TX/RX)
	Italy	144 – 146 MHz (TX); 138 – 174 (RX)

• Mode : FM (F3E)
• Tuning steps : 5, 10, 12.5, 15, 20, 25, 30 or 50 kHz
• Number of memory channels : 100 plus 1 P scan edge, 1 call, 1 repeat memory channels
• Antenna impedance : 50 Ω (unbalanced)
• Usable battery packs/case : BP-151, BP-152, BP-153, 4 dry cell batteries with BP-159
• External DC power : 4–16 V DC (negative ground)
• Current drain (at 13.5 V, typical) :

Transmit	HIGH	1.7 A
	LOW 1	1.0 A
	E LOW	80 mA
Receive	Power saved	6 mA (average)
	Rated audio output	160 mA

• Usable temperature range : −10°C to +60°C (+14°F to +140°F)
• Frequency stability : ±10 ppm (at 0°C to +50°C; +32°F to +122°F)
• Dimensions (with BP-151) : 54(W) × 111(H) × 35.5(D) mm
(Projections not included) 2.1(W) × 4.4(H) × 1.4(D) in
• Weight (with BP-151) : 315 g (11.1 oz)

■ TRANSMITTER

• Output power (at 13.5 V) : 5 W (HIGH), 4 W (LOW 3), 1.4 W (LOW 2), 1.0 (LOW 1), 15 mW (E LOW)
• Modulation system : Variable reactance frequency modulation
• Max. frequency deviation* : ±5.0 kHz
• Spurious emissions* : Less than −60 dB (HIGH), Less than −40 dB (E LOW)
• Microphone impedance : 2 kΩ

■ RECEIVER

• Receive system : Double-conversion superheterodyne
• Intermediate frequency : 1st 30.85 MHz
2nd 455 kHz
• Sensitivity* (for 12 dB SINAD) : Less than 0.16 µV for VHF; Less than 0.22 µV for UHF (IC-T21A/E only)
• Squelch sensitivity (threshold) : Less than 0.13 µV
• Selectivity : More than 15 kHz/−6 dB
Less than 30 kHz/−60 dB
• Spurious response rejection ratio* : More than 60 dB
(Except half of image frequency)
• Audio output power (at 13.5 V) : More than 300 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

Fig. 1 Removing the front panel

1. Remove 2 screws ⓐ, 2 screws ⓑ and 2 screws ⓒ, to open the front panel.

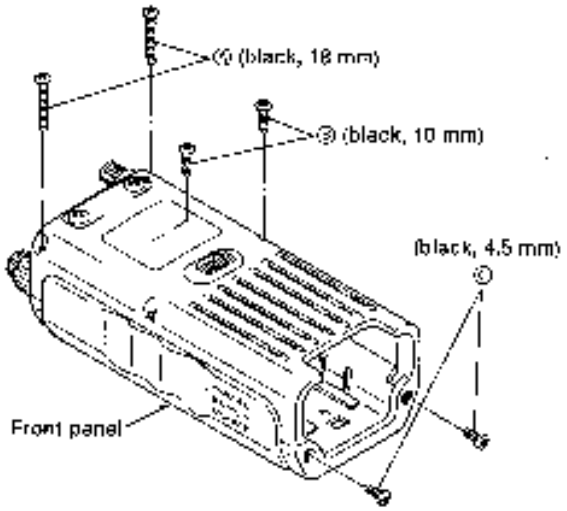


Fig. 2 Removing the 3F unit

1. Remove 2 screws ⓓ, and disconnect J3.
2. Unplug J1 to remove the 3F unit.

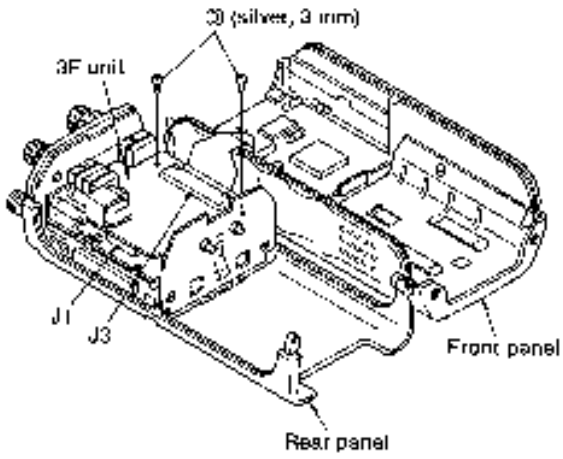


Fig. 3 Removing the 2F unit

1. Remove 1 screws Ⓕ and SW lug.
2. Remove 2 stand offs Ⓔ, then unplug J1 to remove the 2F unit.

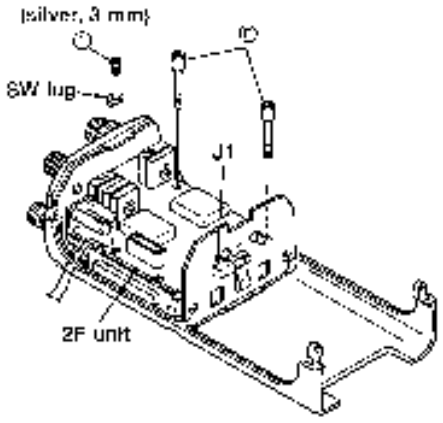
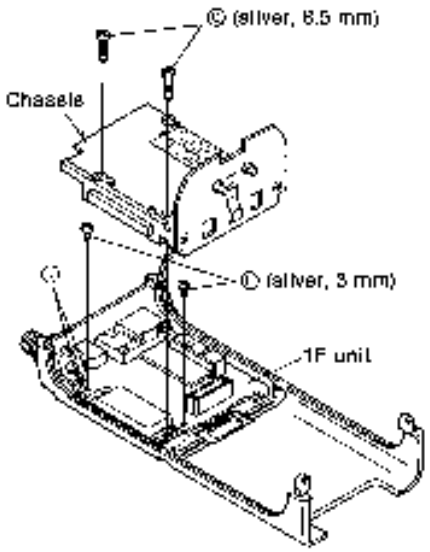


Fig. 4 Removing the 1F unit

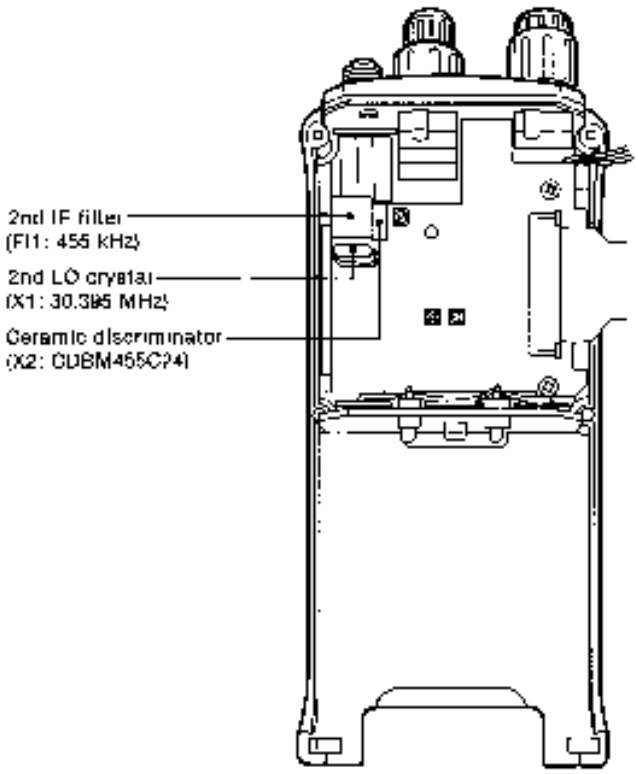
1. Remove 2 screws Ⓖ, to remove the chassis.
2. Remove 2 screws Ⓗ, and unsolder 2 points Ⓘ to remove the 1F unit.



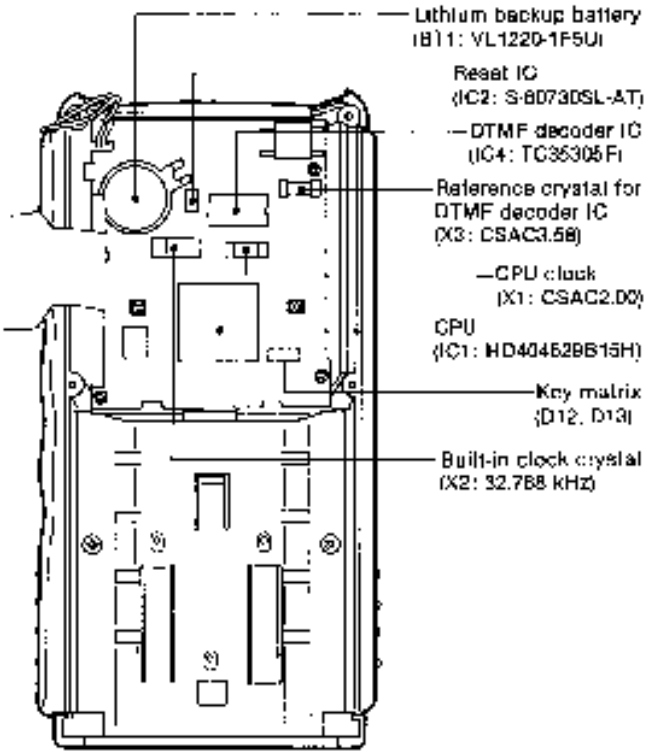
SECTION 3 INSIDE DESCRIPTIONS

3-1 IC-T21A/E

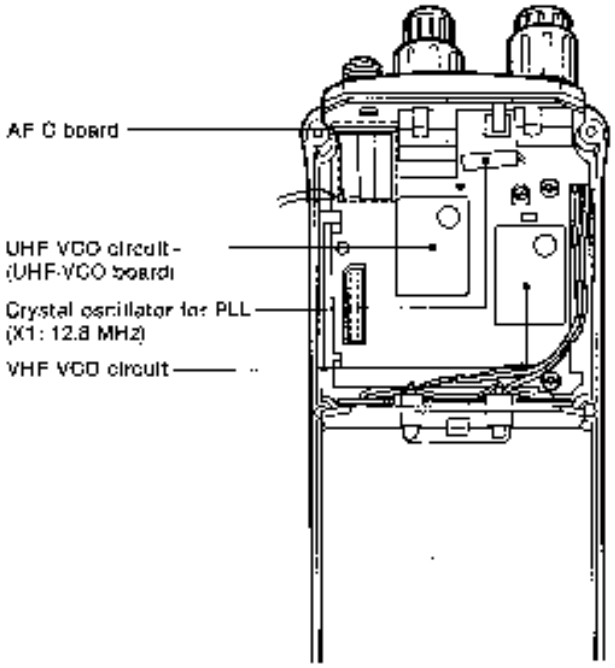
• 3F UNIT



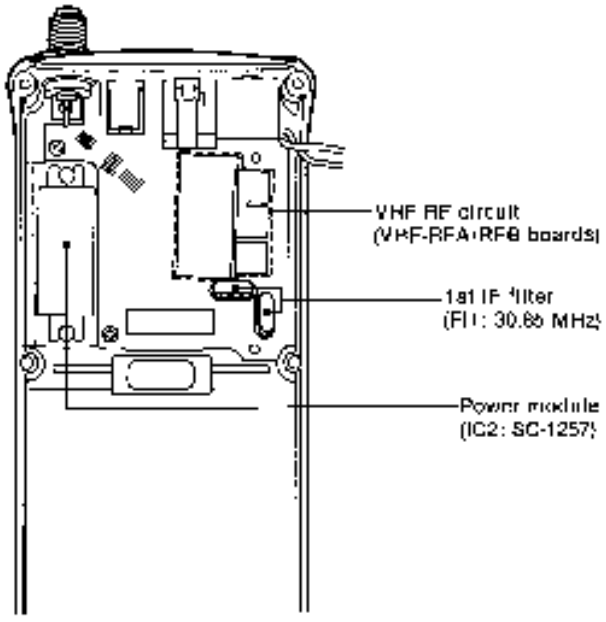
• LOGIC UNIT



• 2F UNIT

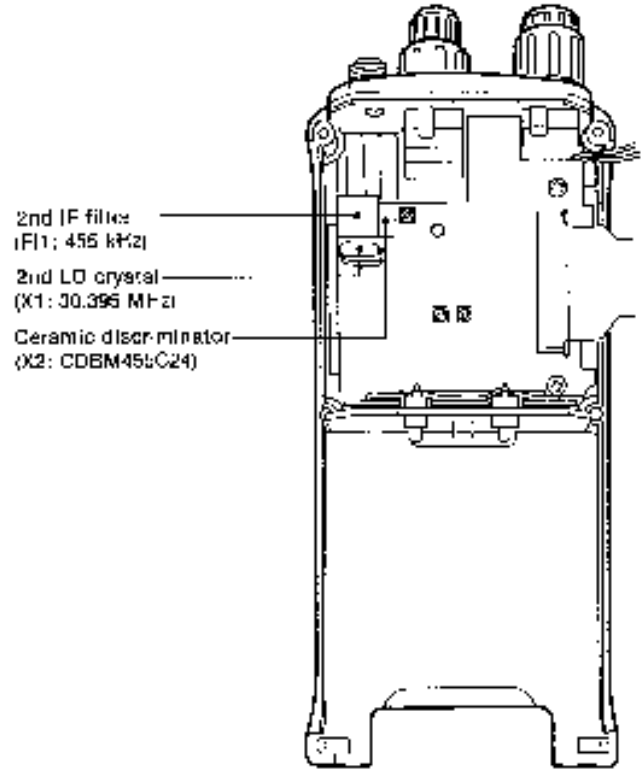


• 1F UNIT

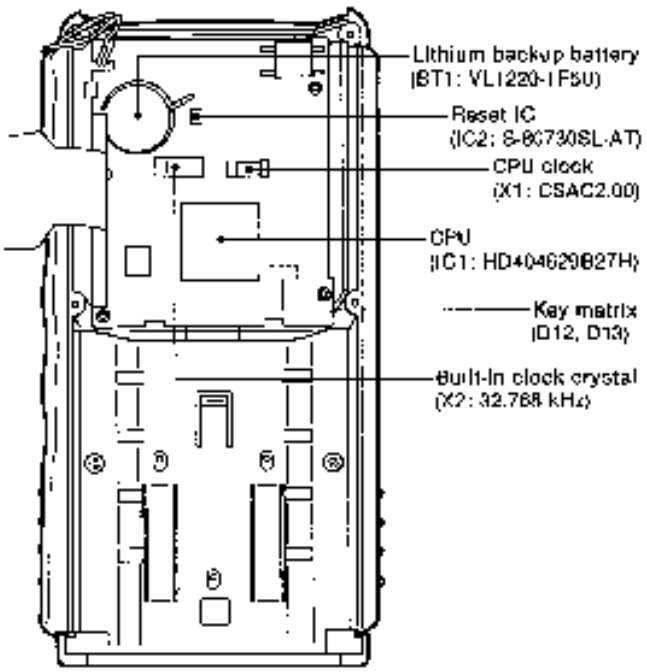


3-2 IC-S21A/E

• 3F UNIT



• LOGIC UNIT



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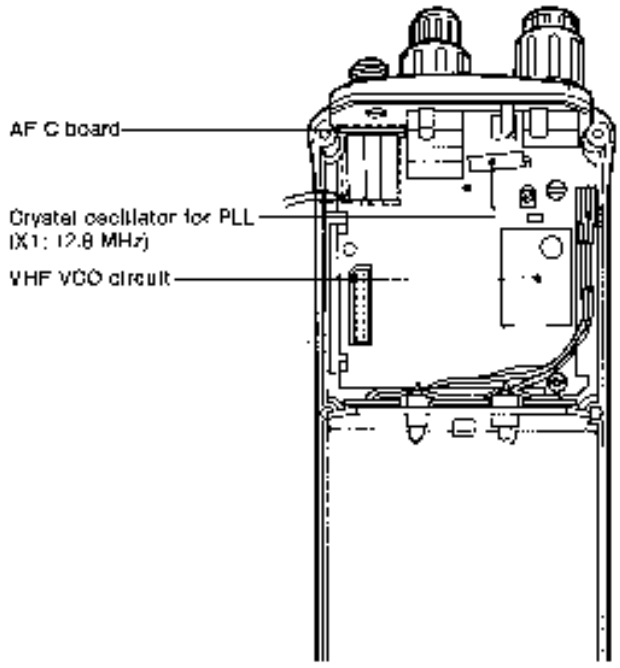
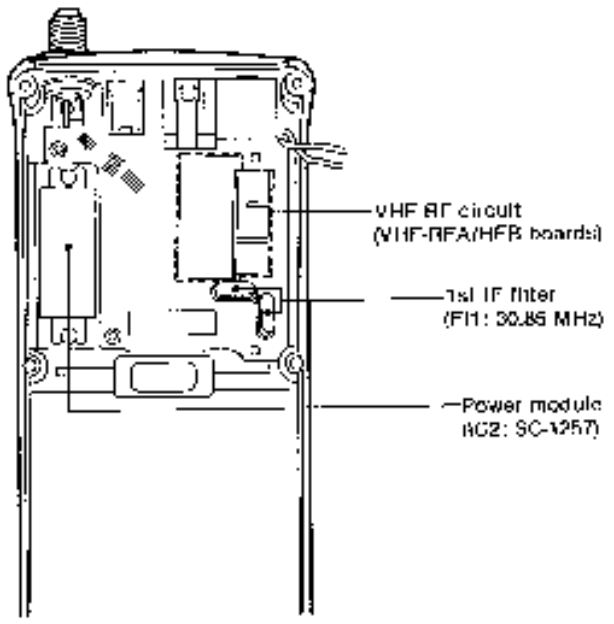
• 2F UNIT



• 1F UNIT



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 DUPLEXER CIRCUIT (1F UNIT) [IC-T21A/E only]

The IC-T21A/E 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 (L1–L3, C1–C5) for VHF signals and high-pass filter (C12–C16, L6, L7) 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 and a resonator circuit while transmitting. The circuit does not allow transmit signals to enter receiver circuits.

Received signals pass through a low-pass filter to suppress out-of-band signals. The filtered signals are applied to the two-stage λ/4 type antenna switching circuit (D1, D20, D2, D12) and then to the VHF-RFA board.

4-1-3 VHF RF CIRCUIT (VHF-RFA/RFB BOARDS)

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 band-pass filter (L1, D2) and are then applied to the RF amplifier (Q1, Q2). The amplified signals enter a two-stage band-pass filter (L2, L3, D4, D5, C12, C14, C16) to suppress unwanted signals. The filtered signals are applied to the VHF 1st mixer circuit on the 1F unit.

D2, D4 and D5 employ varactor diodes that track the band-pass filters and are controlled by the PLL lock voltage. The voltage is current amplified at Q10 on the 2F unit and is then applied to the varactor diodes. These diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

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

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

The signals from the VHF RF circuit are mixed at Q7 with the 1st LO signal coming from the 2F unit to produce a 30.65 MHz 1st IF signal. After passing through the matching circuit (L15), the 1st IF signal is applied to a pair of crystal filters (FI1) to suppress out-of-band signals. The filtered signal is applied to a 1st IF amplifier (Q18), and then to the 3F unit through the 2F unit.

4-1-5 UHF RF CIRCUIT (1F UNIT) [IC-T21A/E only]

Received signals are divided between VHF signals and UHF signals at the duplexer.

The UHF signals are passed through a low-pass filter (L8, L9, C17–C19) to suppress out-of-band signals. The signals are then amplified at the RF amplifiers (Q1, Q2) and pass through a band-pass filter. The filtered signals are amplified at Q22, and applied to the UHF 1st mixer circuit.

4-1-6 UHF 1ST MIXER AND IF CIRCUITS (1F UNIT) [IC-T21A/E only]

The signals from the UHF RF circuit are mixed at Q21 with the 1st LO signal coming from the 2F unit to produce a 30.65 MHz 1st IF signal. The 1st IF signal is applied to a pair of crystal filters (FI1) to suppress out of band signals. The filtered signal is applied to a 1st IF amplifier (Q18), and then to the 3F unit through the 2F unit.

4-1-7 2ND IF AND DEMODULATOR CIRCUITS (3F 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 1st IF signal from the 1F unit is applied to the 2nd mixer section of IC1 (pin 16), and is mixed with the 2nd LO signal to be converted to a 455 kHz 2nd IF signal.

IC1 contains the 2nd mixer, local oscillator, limiter amplifier, quadrature detector and S-meter circuits. The local oscillator section and X1 generate 30.395 MHz for the 2nd LO signal.

The 2nd IF signal from the 2nd mixer (IC1, pin 5) passes through the ceramic filter (F11) where unwanted signals are suppressed. It is then amplified at the limiter amplifier section (IC1, pin 8) and applied to the quadrature detector section (IC1, pin 10) and ceramic discriminator (X2) to demodulate the 2nd IF signal into AF signals.

AF signals output from IC1 (pin 9) are applied to the de-emphasis circuit (R10, C14). This de-emphasis circuit is an integrated circuit with frequency characteristics of −6 dB/octave. The resulting signals are applied to the AF amplifier (through BPF, AF mute switch, VOL), DTMF decoder (IC-T21A/E only) and TSQL unit (U.S.A. version only or optional UT-67).

• 2ND IF AND DEMODULATOR CIRCUITS

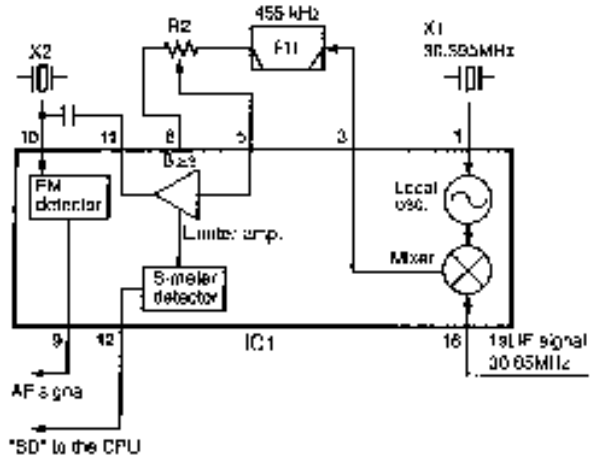


Fig. 1

4-1-8 AF AMP CIRCUIT (2F AND 3F UNITS)

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

AF signals are applied to Q5 and Q6 on the 3F unit. Q5 is an active filter that functions as a high-pass filter to suppress subaudible tone signals for tone squelch operation. Q6 is also an active filter that functions as a low-pass filter to suppress higher noise signals.

The filtered signal is applied to the [VOL] control (R15) on the 2F unit via the AF mute switch (IC3) on the 3F unit. When the squelch is closed, IC3 cuts the AF signal. The AF signal is power-amplified at the AF power amplifier (IC1) on the 2F unit to drive the speaker.

The voltage regulator (2F unit; Q4, Q5) supplies power to the AF power amplifier. The AFON signal from the data expander (2F unit; IC2) controls Q5 to reduce the current drain while the squelch is closed.

4-1-9 NOISE SQUELCH CIRCUIT (3F UNIT)

A noise squelch circuit cuts off 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 IC1 (pin 9) is applied to IC1 (pin 8) via C87. The [SQL] control (R15) on the 2F unit adjusts the pin 8 input level.

IC1 (pin 13) outputs the squelch signal. The signal is then applied to the CPU (IC1, pin 24) on the LOGIC unit through the BUSY signal line and the CPU outputs the RMUTE and BUSY LED signals.

The RMUTE signal activates the AF mute switch (IC3) to cut the AF signal. The BUSY LED signal is applied to Q6 on the LOGIC unit, turning ON the RX indicator.

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4-2 TRANSMITTER CIRCUITS

4-2-1 MICROPHONE AMPLIFIER (3F UNIT)

The microphone amplifier circuit amplifies audio signals with 1 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, or from the [MIC] jack, are applied to IC9 (pin 16), and are pre-emphasized to +6 dB/octave. IC9 functions as the microphone amplifier and limiter.

The output signals from IC9 (pin 8) pass through the frequency deviation pot (R46) and are applied to the modulation circuit on the 2F unit.

4-2-2 MODULATION CIRCUIT (2F UNIT)

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

The "MOD" signal changes the reactance of a varactor diode (D3) to modulate the oscillated signal at the VHF VCO circuit (Q14, Q15). The VCO output is buffer-amplified at Q17 and Q18, and is then applied to the transmit/receive switching circuit (D6, D7) on the 1F unit.

4-2-3 DRIVE AMPLIFIER (1F UNIT)

The drive amplifier circuit amplifies the VCO oscillating signal to the needed level at the power amplifier.

The signal from the transmit/receive switching circuit (D7) is amplified at the pre-drive amplifier (Q10) and is then re-amplified at the drive amplifier (Q11) to obtain approx. 15 mW.

An RF signal from the drive amplifier (Q11) passes through the output mixer switching circuit (D8) and is then applied to the RF power amplifier.

When E LOW (output mixer) is selected, the output of the drive amplifier (Q11) bypasses the RF power amplifier through D8–D10. The signal is passed through the π-filter, low-pass filter, and is then applied to the antenna connector. At this time, a half of the antenna switching circuit (D2) activates to prevent the output power from entering the receiver circuit.

4-2-4 RF POWER AMPLIFIER (1F UNIT)

IC2 is a power module which provides more than 6 W of output power with a 13 5 V DC power source.

An RF signal from the drive amplifier (Q11) is applied to IC2 (terminal PI). The amplified signal is output from terminal PO, and applied to the antenna connector through the APC detector, antenna switching circuit (D12) and low-pass filter.

4-2-5 APC CIRCUIT (1F UNIT)

The APC circuit protects the power module (IC2) from a mismatched output load and selects HIGH, LOW 3, LOW 2 or LOW 1 output power.

The output power level from the power module (IC2) is detected at the APC detector (L20, C56, C57, D13, D14). When antenna impedance is matched at 50 Ω, the detected level is at the minimum. However, when antenna impedance is mismatched, the detected voltage is higher than when matched.

When the antenna impedance is mismatched, the base voltage of Q15 (R41 side) is higher than the other base voltage of Q15 (R40 side, APC reference voltage). Q15 (R40 side) decreases the collector voltage of Q16. Collector current of Q16 is used at the power module (IC2) as VGG. Hence, when the antenna impedance is mismatched, the output power is decreased. A thermistor (R37) controls the base voltage of Q15 (R40 side, APC reference voltage) to reduce the output power when the temperature is increased.

The output power setting, except for E LOW, uses the APC circuit. The "PCON" voltage from the CPU (LOGIC unit IC1) shifts the reference voltage, selecting the four output power levels (HIGH, LOW 3, LOW 2 or LOW 1).

• APC CIRCUIT

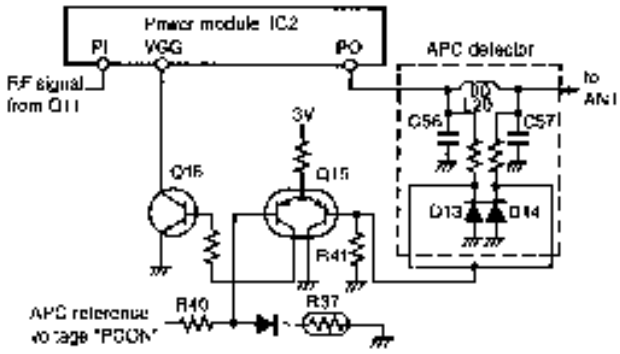

Fig. 2

4-3 PLL CIRCUITS

4-3-1 GENERAL (2F UNIT)

PLL circuits provide stable oscillation of the transmit frequency and the receive local frequency. The PLL circuit compares the phase of divided VCO frequency to the PLL reference signal. The PLL output frequency is controlled by a crystal oscillator and the divided ratio of the programmable divider.

The PLL circuit, using a one-chip PLL IC (IC3) that contains a dual modulus prescaler, a programmable divider, a phase detector and a charge pump, directly generates the transmit frequency and receive 1st LO frequency with a VCO. The PLL IC sets the divided ratio based on serial data from the CPU (LOGIC unit IC1) and compares the phases of a VCO signal and the PLL reference signal. The PLL IC detects the off-phase components and outputs them from pin 13 (from pin 8 for the IC-T21A/E UHF VCO).

4-3-2 REFERENCE OSCILLATOR CIRCUIT (2F UNIT)

12.8 MHz reference frequency is oscillated at the crystal oscillator (X1), and is input to IC3 (pin 15). The reference frequency is divided by 2560 to obtain 5 kHz (PLL reference signal).

4-3-3 VHF VCO CIRCUIT (2F UNIT)

VHF VCO circuit (Q14, Q15) generates the transmit frequency and the receive 1st LO frequency. The frequency shift signal "VSHIFT" from the data expander (IC2 pin 14) turns Q8 and D2 ON or OFF to switch the VCO frequency between transmitting and receiving.

The VCO generated signal is buffer-amplified at Q17, and is then applied to the transmit/receive switching circuit (2F unit D6, D7) through buffer circuit (Q18). The signal from Q17 is also applied to the programmable divider (IC3 pin 19) through buffer circuit (Q16).

4-3-4 UHF VCO CIRCUIT (UHF-VCO BOARD) [IC-T21A/E only]

UHF VCO circuit (Q1, Q2) generates the receive 1st LO frequency.

Output signal from the UHF-VCO board is buffer-amplified at Q10 on the 2F unit, and is then applied the UHF 1st mixer (1F unit Q27) through buffer circuit (2F unit Q11, Q12). The signal from Q10 is also applied to the programmable divider (IC3 pin 2) through buffer circuit (2F unit Q9).

4-3-5 PROGRAMMABLE DIVIDER AND PHASE DETECTOR CIRCUITS (2F UNIT)

The programmable divider in PLL IC (IC3) shifts the dividing ratio, depending on the operating frequency, with a prescaler and determines the VCO oscillating frequency.

The phase detector in PLL IC detects the off-phase components of the VCO frequency using the PLL reference signal (5 kHz) and outputs the out-of-phase signal (pulse signal) from pin 13 (for VHF) and pin 8 (for UHF).

4-3-6 LOOP FILTER CIRCUIT (2F UNIT)

The out-of-phase signal from IC3 (pins 13, 8) is converted to DC voltage by the lag-lead loop filter (R38, R34, C33, C34 for VHF; R18, R19, C12, C13 for UHF).

The converted DC voltage (PLL lock voltage) is applied to VCO circuits to control the oscillation. Q13 provides VHF RF circuit (band-pass filters on the VHF-PA/BPF1 boards) tuning.

• PLL CIRCUIT

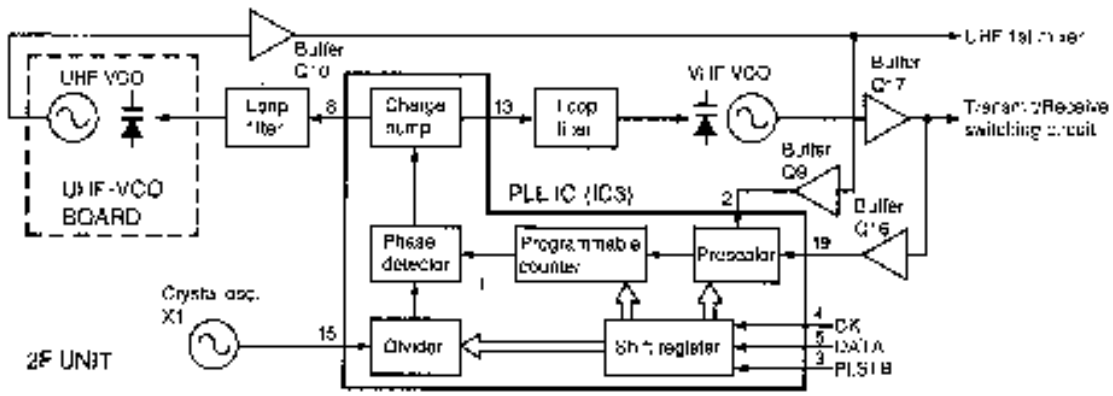

Fig. 3

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4-4 POWER SUPPLY CIRCUITS

4-4-1 VOLTAGE LINES

LINE	DESCRIPTION
Vcc	The attached battery pack voltage or external DC power voltage.
+3	Continuous 3 V converted from the Vcc line at IC4 on the 2F unit. This voltage is supplied even when the power is turned OFF.
+3M	+3 V controlled by "PSC" and "SEND" signal lines. This voltage is supplied while the power saver is OFF or during transmitting. This voltage is converted from the Vcc line at Q11 and Q12 on the 3F unit using IC4 output as the reference voltage.
+5C	Common 5 V controlled by the CPU. This voltage is supplied during power ON. This voltage is converted from the Vcc line at Q6 and Q7 on the LOGIC unit.
+5S	+5 V controlled by "PSC" signal line. This voltage is supplied while the power saver is OFF. This voltage is converted from the Vcc line at Q9 and Q10 on the 3F unit using the AND gate (IC8) output as the reference voltage.
R−5	Receive 5 V controlled by "PSC" and "RCON" signal lines. This voltage is supplied while receiving and the power saver is OFF. This voltage is converted from the Vcc line at Q7 and Q8 on the 3F unit, using the AND gate (IC7) output as the reference voltage.
8V	Transmit 8 V controlled by "TMUTE" signal line. This voltage is supplied during transmitting. This voltage is converted from the Vcc line at Q14 and Q13 on the 3F unit using "TSC" from the 2F unit as the reference voltage.
5V	+5 V converted from the +3M line at IC4 on the 2F unit.

4-4-2 CPU POWER SUPPLY CIRCUIT (LOGIC UNIT)

When no external power source is applied and the battery pack is discharged, voltage is applied to the CPU (IC1, pin 97) from the lithium backup battery (BT1) installed in the transceiver to keep the CPU on stand-by.

4-4-3 CHARGING CIRCUIT (PRT UNIT)

Current from the [DC13.5V] jack is applied to the constant current circuit (Q3, R2) through Q1 to charge an attached battery pack.

When a battery pack is attached, the current through D1 charges the attached battery pack. The charging current is determined by the battery pack internal resistance.

4-5 CPU PORT ALLOCATIONS

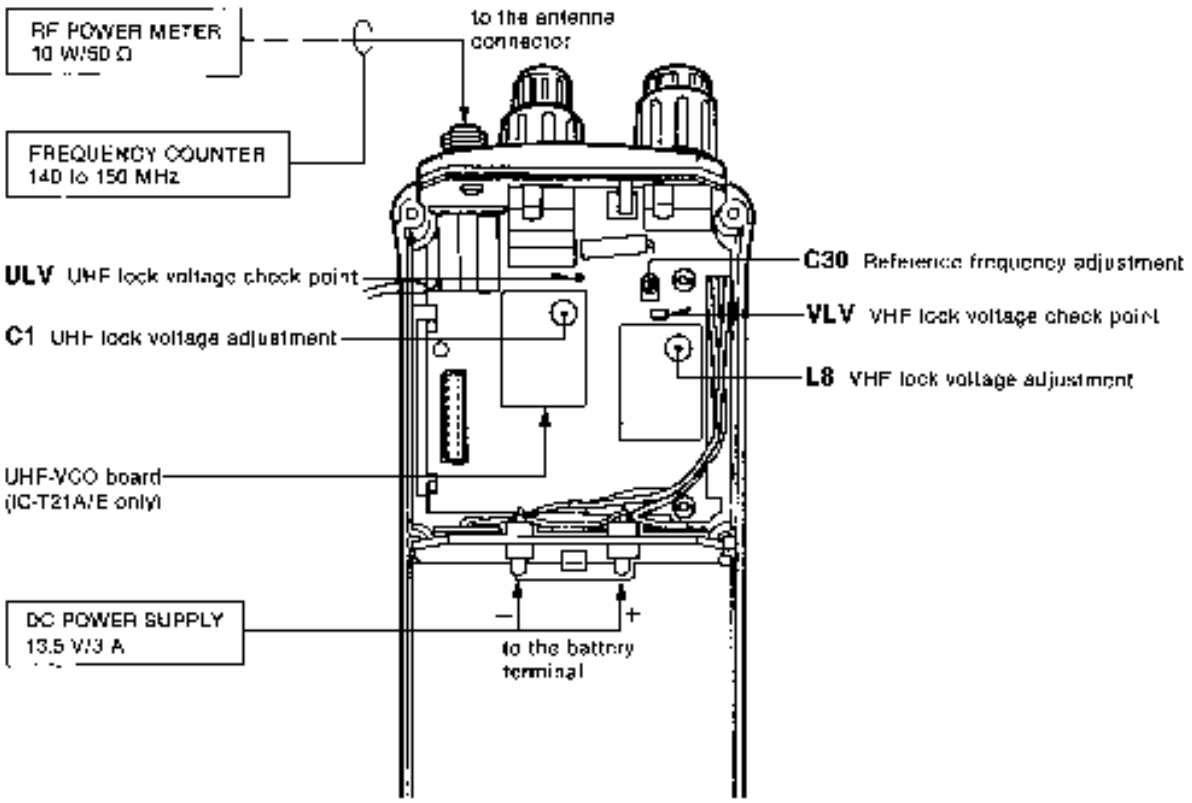
PIN NO.	PORT NAME	DESCRIPTION
1	AVCC	DC voltage input port
2	REMOTE	DATA input port from an optional HM-75
3	SD	S-meter level input port
4	BATT	Battery divided voltage input port
5	UL	PLL unlock signal input "LOW" when unlocked
6, 7	OSC1, OSC2	CPU clock oscillator terminals
10		Reset signal input port
11, 12	X1, X2	Oscillator terminals for clock indication
15	LIGHT O	Outputs LCD backlight control signal "LOW" for lighting
16	BUSYLED	Outputs RX LED control signal "LOW" for lighting
17	CE	Outputs DTMF enable signal
18	PD	Outputs DTMF standby signal
19	PSC	Outputs power save control signal
20	SEND	Outputs TX/RX switching signal "LOW" for transmission
22	TMUTE	Outputs transmit mute signal "HIGH" for mute
23	RMUTE	Outputs receive mute signal "HIGH" for mute
24	BUSY	Receive busy signal input port "LOW" when busy
25	INT0	"POWER" switch input port "LOW" when the switch is pushed
27, 28	D CK, D UP, D DN	Used for tuning dial input ports
30	BEEP	Outputs beep tone signal
31	TONE	Outputs 1750 Hz tone call signal
34	KS0 (OSTB)	Outputs a strobe signal for I/O expander IC (2F unit IC2) via IC6 (pins 9, 6)
35	KS1 (CK)	Outputs a clock signal via IC5 (pins 13, 11)
36	KS2 (PLSTB)	Outputs a strobe signal for PLL IC (2F unit IC3) via IC5 (pins 5, 6)
37	KS3 (DATA)	Outputs serial data for PLL IC, I/O expander, etc.
38	PTT	PTT switch input port "LOW" when the switch is pushed
39	FUNC	[FUNC] switch input port "LOW" when the switch is pushed
40	MCN	[MCN] switch input port "LOW" when the switch is pushed
41	LIGHTSW	[LIGHT] switch input port "LOW" when the switch is pushed
42-46	KR0-KR4	Key matrix input ports
47	DV	DTMF decoder input port "HIGH" when detecting a signal
48	TSQL	Tone squelch decoder input port "LOW" when detecting a signal
50, 51	POW1, POW2	Output selecting signal for transmit power
52-56		Used for driving the LCD
58, 59	DTMF0, DTMF3	Outputs DTMF signal

SECTION 5 ADJUSTMENT PROCEDURES

5-1 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
VHF LOCK VOLTAGE	1	• Displayed frequency: 145.00 MHz • Receiving or transmitting	2F	Connect the digital multimeter or oscilloscope to VLV.	1.5 V (Set the voltage according to which has the lower voltage condition: transmit or receive.)	2F	L8
UHF LOCK VOLTAGE (IC-T21A/E) only	1	• Displayed frequency: 440.00 MHz (EUR, USA, AUS, SEA, ITA) 432.00 MHz (TPE, DEN) • Receiving	2F	Connect the digital multimeter or oscilloscope to ULV.	1.7 V (EUR, USA, AUS, SEA, ITA) 1.5 V (TPE, DEN)	UHF-VCO BOARD	C1
REFERENCE FREQUENCY	1	• Displayed frequency: 145.00 MHz • Connect the RF power meter or a 50 Ω dummy load to the antenna connector. • Transmitting	2F	Loosely couple the frequency counter to the antenna connector.	145.0000 MHz	2F	C30

• **2F UNIT**

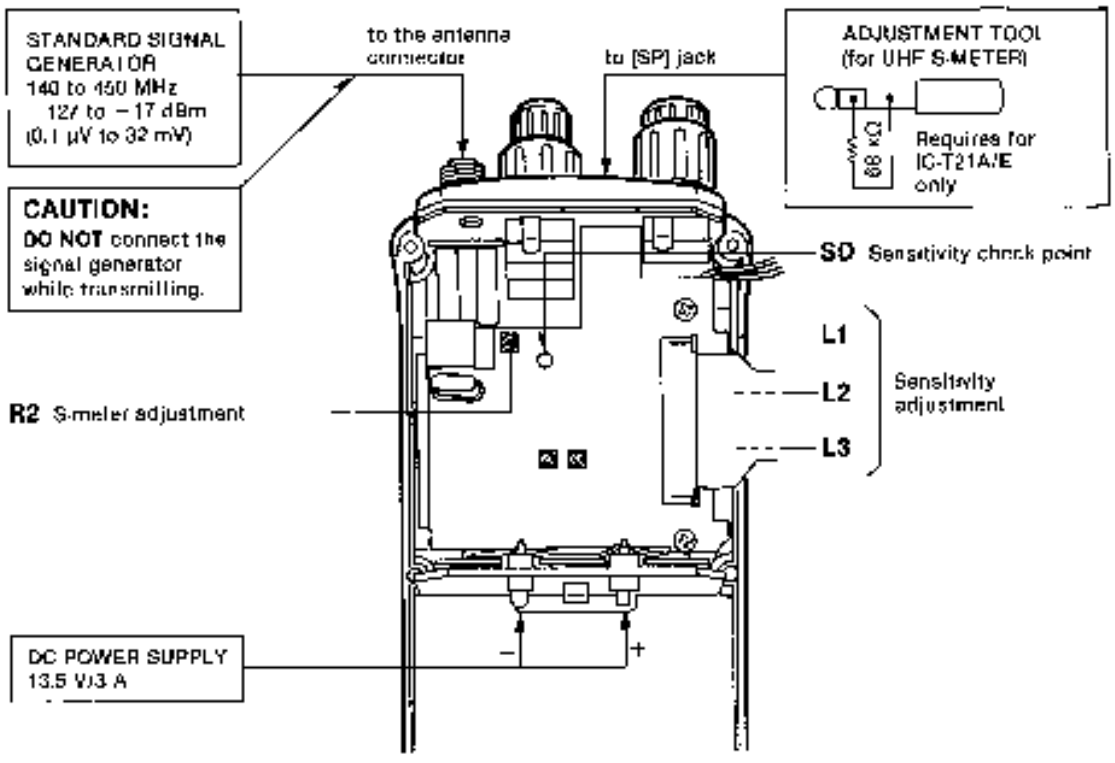


5-2 RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY	1	• Displayed frequency: 145.00 MHz • [SQL] control : Max. CCW • Connect the SSG to the antenna connector and set as: Level 0.32 µV* (−11.7 dBm) Modulation 1 kHz Deviation ±3.5 kHz • Receiving	SF	Connect the DC voltmeter to SD.	Maximum	VHF-3-B BOARD	Adjust in sequence L1, L2, L3
S-METER	1	• Displayed frequency: 145.00 MHz • Connect the SSG to the antenna connector and set as: Level : 0.50 µV* (−7.13 dBm) Modulation: 1 kHz Deviation : ±3.5 kHz • Receiving	Function display	S-RF indicator	3 dots (S2)	3F	R2
UHF S-METER (IC-T21A/E only)		• Operating frequency: 440.00 MHz (EUP, USA, AUS, SEA, ITA) 422.00 MHz (FRE, DEN) • Connect the SSG to the antenna connector and set as: Level : 0.50 µV* (−7.13 dBm) Modulation: 1 kHz Deviation : ±3.5 kHz • Connect a resistor (68 kΩ) to [MIC] connector as following diagram. • Receiving	Push [FUNC] and [MONI] switches simultaneously. (UHF S-meter is adjusted automatically.)				

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

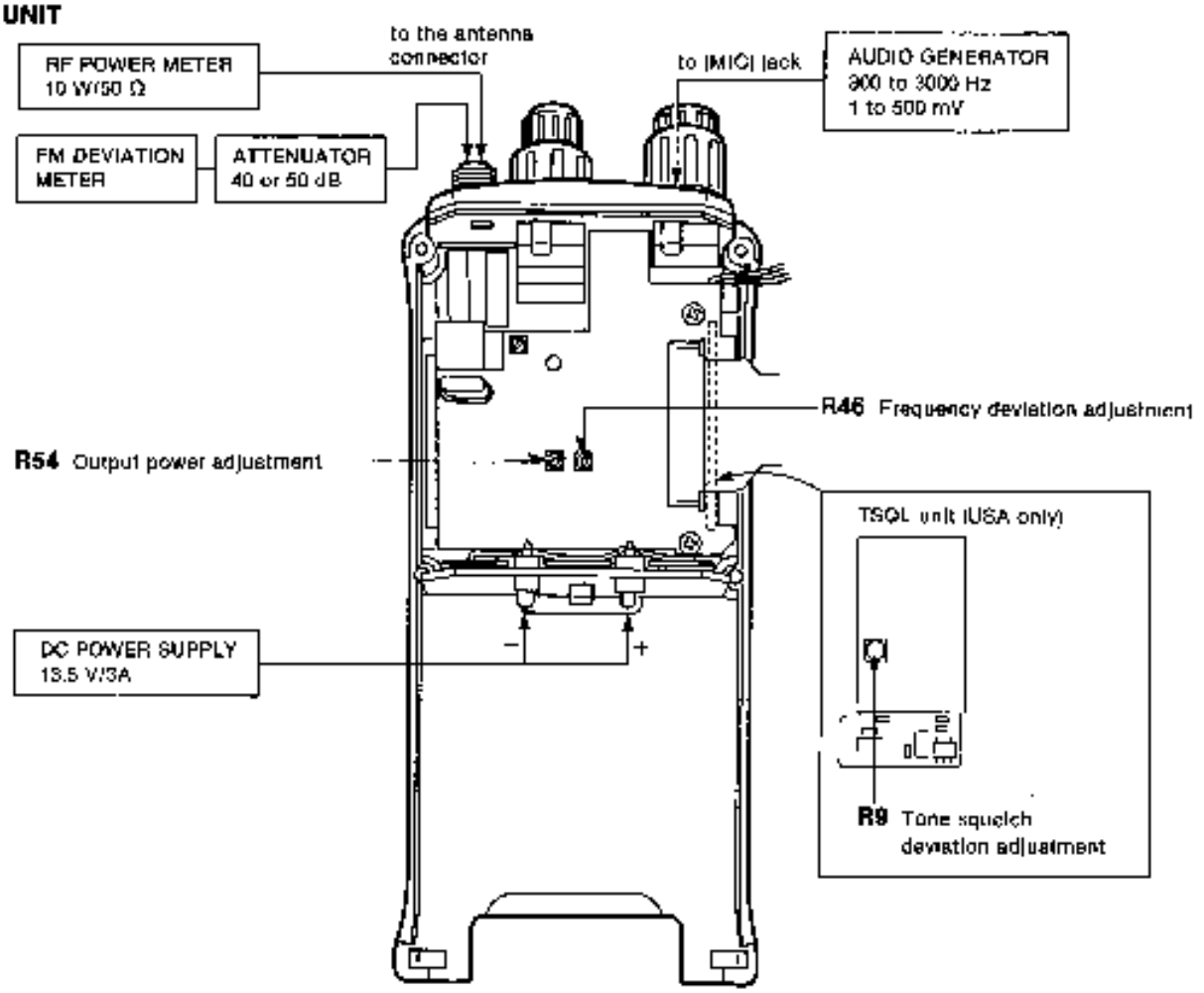
• 3F UNIT



5-3 TRANSMITTER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
OUTPUT POWER 1	• Displayed frequency: 145.00 MHz • Output power : HIGH • Transmitting	Top panel	Connect the RF power meter to the antenna connector	5.0 W	3F	R54
FREQUENCY DEVIATION 1	• Displayed frequency: 145.00 MHz • Output power : HIGH • Connect the audio generator to the [MIC] jack and set as: 170 mV/1.0 kHz (USA version) 55 mV/1.0 kHz (All other versions) • Set the FM deviation meter as: HPF : OFF LPF : 30 kHz De-emphasis : OFF Detector : (P-P)/2 • Simplex • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector via the attenuator.	±4.3 kHz	3F	R46
TONE SQUELCH (USA only) 1	• Displayed frequency: 145.00 MHz • Tone encoder : ON • Tone frequency : 88.5 Hz • Transmitting	Top panel	Connect the FM deviation meter to the antenna connector via the attenuator.	0.75 kHz	TSQL	R9

• 3F UNIT



SECTION 6 PARTS LIST

T21

[LOGIC UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140001190	S IC	HD4049BP(F)
IC2	1110003280	S IC	S-80730SL-AT-T1
IC3	1190003920	S IC	TC4S66F(TE85R)
IC4	1190003760	S IC	TC7SZ08F(TP2)
IC5	1120002410	S IC	TC74AC08FS(EL)
IC6	1180000280	S IC	24LC08BT/SN
Q1	1560001970	S TRANSISTOR	UN9213(TX)
Q2	1590003180	S TRANSISTOR	2SC4211-Y-TR
Q4	1590001840	S TRANSISTOR	XN4601(TX)
Q6	1590000460	S TRANSISTOR	2SB1132 T100 R
Q7	1590003100	S TRANSISTOR	2SC4211-Y-TR
Q8	1510000880	S TRANSISTOR	2SA1622-6-TR
Q9	1590001820	S TRANSISTOR	XN1117(TX)
Q10	1590001140	S TRANSISTOR	UN9210(TX)
Q13	1590001130	S TRANSISTOR	UN9110(TX)
Q14	1590001050	S TRANSISTOR	UN9217(TX)
D1	1750003020	S DIODE	1SS352 (TPH3)
D2	1750003020	S DIODE	1SS352 (TPH3)
D3	1750003130	S DIODE	DA204U T107
D4	1750003020	S DIODE	1SS352 (TPH3)
D5	1750000820	S DIODE	MA132K(TX)
D6	1750001720	S DIODE	MA6S121(TX)
D7	1750001200	S DIODE	MA6S121(TX)
D9	1750001200	S DIODE	MA6S121(TX)
D10	1750000920	S DIODE	1SS352 (TPH3)
D11	1750000280	S DIODE	1SS352 (TPH3)
D12	1750000820	S DIODE	MA132K(TX) (USA, TPC)
	1750000820	S DIODE	MA132HK(TX) (EUR, AUS)
	1750000850	S DIODE	MA132WK(TX) (DEN, SEA)
D13	1750000720	S DIODE	MA132K(TX) (USA, AUS, SEA, ITA)
D14	1750000220	S.DIODE	1SS352 (TPH3)
D15	1750000820	S.DIODE	MA132K(TX)
D16	1750000840	S DIODE	MA133(TX)
D17	1750000340	S DIODE	1SS357 (TPH3S)
X1	6060000220	S.CERAMIC	CSAC2.00MGC200-TC
X2	6000000760	XTAL	CR-49U 32.768KHz
X3	6000000150	S.CLHAMIC	CSAC8.00MGC300CO
R1	7030003900	S RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R2	7030003070	S RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R3	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R4	7030003700	S RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R5	7030003500	S RESISTOR	ERJ3GEYJ 302 V (3.0 kΩ)
R6	7030003650	S RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R7	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R9	7410300010	S.ARRAY	EXB V4V 153JV (15 kΩ)
R10	7310000810	S TRIMMER	EVM-1XSX50 B54 (500)
R11	7030003770	S RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R12	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R14	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R15	7030003830	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R16	7030003850	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R17	7030003410	S RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R18	7030003600	S RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R19	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R21	7030003380	S RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R22	7410300750	S ARRAY	EXB-V4V 104JV (100 kΩ)
R23	7410300750	S.ARRAY	EXB V4V 104JV (100 kΩ)
R24	7410300800	S.ARRAY	EXB V8V 103JV (10 kΩ)
R25	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R26	7030003900	S RESISTOR	ERJ3GEYJ 104 V (100 kΩ)

[LOGIC UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R27	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R28	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R29	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ) (EUR, DEN, ITA)
R30	7310000800	S.TRIMMER	EVM 1XSX50 B54 (500) (EUR, DEN, ITA)
R31	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) (EUR, DEN, ITA)
R33	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R35	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R40	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R42	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R43	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R44	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R46	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R47	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R48	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R49	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R50	7030003800	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R51	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R52	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R53	7030003900	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R54	7030003850	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R55	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R56	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4030000820	S.CERAMIC	C1608 JF 1C 104Z T-A
C2	4030000820	S.CERAMIC	C1608 JF 1C 104Z-T-A
C3	4030000820	S.CERAMIC	C1608 JF 1C 104Z-T-A
C4	4030000820	S.CERAMIC	C1608 JF 1C 104Z T-A
C5	4030007060	S.CERAMIC	C1608 CH 1H 270J T-A
C6	4030007100	S.CERAMIC	C1608 CH 1H 560J T-A
C7	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C8	4030007030	S.CLHAMIC	C1608 CH 1H 150J-T-A
C9	4550000220	S.TANTALUM	ECS1CJY475R
C10	4030000860	S.CERAMIC	C1608 JB 1H 102K T-A
C11	4030000860	S CERAMIC	C1608 JB 1H 102K-T-A
C12	4550000220	S.TANTALUM	TEMSVA 0J 156M-8L
C13	4030000850	S.CERAMIC	C1608 JB 1H 471K T-A
C14	4550000400	S.TANTALUM	ECSTOJP226R
C21	4030000850	S CERAMIC	C1608 JB 1H 471K-T-A
C23	4030000850	S.CLRAMIC	C1608 JB 1H 471K-T-A
C24	4030000850	S.CERAMIC	C1608 JB 1H 471K T-A
C25	4030000820	S CERAMIC	C1608 JB 1C 473K-T-A
C27	4030000620	S CERAMIC	C1608 JB 1C 103K-T-A
C28	4030000770	S.CERAMIC	C1608 X7S 1C 104K-T-A
C29	4550000150	S.TANTALUM	ECST1CY105R
C30	4030000860	S CERAMIC	C1608 JB 1H 102K-T-A
C31	4030000860	S.CLHAMIC	C1608 JB 1H 102K-T-A
C32	4030000860	S.CLRAMIC	C1608 JB 1H 102K T-A
C33	4030000560	S.CERAMIC	C1608 CH 1H 300J T-A
C34	4030000560	S.CERAMIC	C1608 CH 1H 300J-T-A
SP1	2510000580	SPEAKER	EAS-2P104D
BT1	3020000240	LITHIUM	VL1220-1F3U
DS1	5030000970	LCD	LD-B5665JL-5848
DS2	5040001110	S LED	SLM 23VMWS T07B
DS3	5040001390	S LED	CL-170G-CD-T
DS4	5040001790	S LED	CL-170G-CD-T
S1	2230000900	S SWITCH	JPM10011-V013R (POWER)
S2	2280001660	S SWITCH	SKCDPB
S3	2280001660	S SWITCH	SKCDPB

S.=Surface mount

[LOGIC UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION		
S4	2260001690	S.SWITCH	SKQDPB	
S201	2260001680	S.SWITCH	SKQDPB	
CP2	0910036914	PCB	B 3954D	(LOGIC)
EP3	0910036944	FPC	B 3972D	
			(Flexible cable LOGIC-3F)	
LP6	8830003370	LCD CONTACT	SRCN-1388 5C	
EP204	0910036931	FPC	B 3970A	(PTT)

[1F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110003370	S.IC	µPC2748T-E3
IC2	1150004970	IC	SC 1257
Q1	1530002940	S.TRANSISTOR	2SC4228-T2 R44
Q2	1530002940	S.TRANSISTOR	2SC4228-T2 R44
Q3	1530002940	S.TRANSISTOR	2SC4228-T2 R44
Q4	1530001680	S.TRANSISTOR	XP161101(TX)
Q5	1530002010	S.TRANSISTOR	XP1514(TX)
Q6	1530001140	S.TRANSISTOR	UN921C(TX)
Q7	1560000690	S.FET	2SK932-V (TPH5R)
Q8	1530001670	S.TRANSISTOR	XP1516(TX)
Q9	1530001850	S.TRANSISTOR	UN9116(TX)
Q10	1530002570	S.TRANSISTOR	2SC4405-3-TR
Q11	1530002170	S.TRANSISTOR	2SC4883-4-TR
Q12	1530001950	S.TRANSISTOR	XP4511(TX)
Q13	1530003180	S.TRANSISTOR	2SC4211-7-TR
Q14	1520000480	S.TRANSISTOR	2SB1132 T100 R
Q15	1530001150	S.TRANSISTOR	XP1401-(TX) AR
Q16	1530003000	S.TRANSISTOR	2SC4117-5L (TE85R)
Q17	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q18	1530002800	S.TRANSISTOR	2SC4215-O (TE85R)
Q20	1530001130	S.TRANSISTOR	UN9110(TX)
Q21	1530002500	S.TRANSISTOR	2SC4403-3-TR
Q22	1530002940	S.TRANSISTOR	2SC4228-T2 R44
Q23	1530001130	S.TRANSISTOR	UN9110(TX)
D1	1700000520	S.DIODE	MA77(TW)
D2	1700000520	S.DIODE	MA77(TW)
D4	1700000540	S.DIODE	MA132WA(TX)
D6	1700000520	S.DIODE	MA77(TW)
D7	1700000520	S.DIODE	MA77(TW)
D8	1700000360	S.DIODE	1SS364(TE85L)
D9	1700000520	S.DIODE	MA77(TW)
D10	1700000520	S.DIODE	MA77(TW)
D12	1700000520	S.DIODE	MA77(TW)
D13	1700000360	S.DIODE	HSU28TRF
D14	1700000360	S.DIODE	HSU28TRF
D15	1700000260	S.DIODE	1SS352 (TPH3)
D16	1700000260	S.DIODE	1SS352 (TPH3)
D17	1700001020	S.DIODE	SB30 03P TD
D18	1700000260	S.DIODE	1SS352 (TPH3)
D19	1700000260	S.DIODE	1SS352 (TPH3)
D20	1700000520	S.DIODE	MA77(TW)
D21	1700000520	S.DIODE	MA77(TW)
D22	1700000520	S.DIODE	MA77(TW)
D23	1700000520	S.DIODE	MA77(TW)
D24	1700000520	S.DIODE	MA77(TW)
D25	1700000240	S.DIODE	MA122WA(TX)
D26	1700000260	S.DIODE	1SS352 (TPH3)
FL1	2010001610	MONOLITH	FL 202 UM 9 30.850MHz
L1	6110002670	COIL	LA-22T
L2	6110002120	COIL	LA-22R
L3	6110002120	COIL	LA-22R
L4	6200002670	S.COIL	LL2012-F47NK
L5	6200002670	S.COIL	LL2012-F47NK
L6	6200002460	S.COIL	LL2012-F18NK

[1F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
L7	6200002460	S.COIL	LL2012-F18NK
L8	6200002230	S.COIL	LL2012-F22NK
L9	6200002230	S.COIL	LL2012-F22NK
L11	6200002450	S.COIL	LL2012-F15NK
L13	6200002440	S.COIL	LL2012-F10NK
L14	6200002440	S.COIL	LL2012-F10NK
L15	6200000880	S.COIL	LQH 2N 1R8M
L16	6200001630	S.COIL	ELJNC R10K-F
L17	6200003670	S.COIL	ELJNC 68NK-F
L18	6200001770	S.COIL	ELJNC 47NK-F
L19	6200001520	S.COIL	MIF2012D R82K-T
L20	6200002820	S.COIL	LQN 1A 47NJ04
L21	6200002440	S.COIL	LL2012-F10NK
L22	6200002440	S.COIL	LL2012-F10NK
L23	6200002450	S.COIL	LL2012-F15NK
L24	6200002440	S.COIL	LL2012-F10NK
L25	6200002710	S.COIL	ELJFC 1R8K-F
R1	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2	7030002450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R3	7030002610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R4	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R5	7030002360	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R6	7030002610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R7	7030002610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R8	7030002360	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R9	7030002610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R10	7030002360	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R12	7030002450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R13	7030002680	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R14	7030002610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R15	7030002290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R16	7030002490	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R17	7030002480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R18	7030002400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R21	7030002410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R22	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R23	7030002200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R24	7030002540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R25	7030002290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R26	7030002200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R27	7030002240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R28	7030002480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R29	7030002490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R30	7030002450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R31	7030002450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R32	7030002450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R33	7030002640	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R34	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R35	7030002200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R36	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R37	7510000200	S.THERMISTOR	TND0 SU472LT
R38	7030002550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R39	7030002590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R40	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R41	7030002500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R42	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R43	7030002570	S.RESISTOR	ERJ3GEYJ 362 V (3.6 kΩ)
R44	7030002560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030002320	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R46	7030002530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R47	7030002530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R48	7030002320	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R50	7030002300	S.RESISTOR	ERJ3GEYJ 000 V (0 Ω)
H51	7030002600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
H52	7030002560	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R53	7030002320	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R54	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
H55	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R56	7030002280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R57	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R58	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
H59	7030002520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R60	7030002640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R61	7030002470	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)

S.=Surface mount

T21

[1F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
H02	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
C1	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C2	4030008860	S.CERAMIC	C1608 CH 1H 050C-T-A
C3	4030007080	S.CERAMIC	C1608 CH 1H 270J-T-A
C4	4030008080	S.CERAMIC	C1608 CH 1H 020C-T-A
C5	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C6	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C8	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C12	4030008060	S.CERAMIC	C1608 CH 1H 010D-T-A
C13	4030007080	S.CERAMIC	C1608 CH 1H 270J-T-A
C14	4030008080	S.CERAMIC	C1608 CH 1H 050C-T-A
C15	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C16	4030008860	S.CERAMIC	C1608 CH 1H 080D-T-A
C17	4030008080	S.CERAMIC	C1608 CH 1H 080D-T-A
C18	4030008080	S.CERAMIC	C1608 CH 1H 020C-T-A
C19	4030008050	S.CERAMIC	C1608 CH 1H 040C-T-A
C20	4030008040	S.CERAMIC	C1608 CH 1H 030C-T-A
C21	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C22	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C23	4030008860	S.CERAMIC	C1608 CH 1H 070D-T-A
C26	4030008060	S.CERAMIC	C1608 CH 1H 010D-T-A
C27	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C28	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C29	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C30	4030008850	S.CERAMIC	C1608 CH 1H 040C-T-A
C31	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C32	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C33	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C35	4030008040	S.CERAMIC	C1608 CH 1H 030C-T-A
C37	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C38	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C40	4030008060	S.CERAMIC	C1608 CH 1H 010D-T-A
C42	4030007060	S.CERAMIC	C1608 CH 1H 050D-T-A
C44	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C45	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030007060	S.CERAMIC	C1608 CH 1H 150J-T-A
C47	4030008260	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C49	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C50	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C51	4030008260	S.CERAMIC	C1608 JB 1H 102K-T-A
C53	4030008260	S.CERAMIC	C1608 JB 1H 102K-T-A
C54	4550008210	S.TANTALUM	ECST1CX106R
C56	4030007010	S.CERAMIC	C1608 CH 1H 100J-T-A
C57	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C58	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C59	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C61	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C63	4550008170	S.TANTALUM	ECST1AY225R
C64	4030008030	S.CERAMIC	C1608 JF 1C 104Z-T-A
C65	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C66	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C67	4550008200	S.TANTALUM	ECST0JY106R
C68	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C69	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C70	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C71	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C72	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C73	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C74	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C75	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C76	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C78	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C80	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C82	4030008830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C83	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C84	4030008020	S.CERAMIC	C1608 CH 1H 010C-T-A

[1F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C85	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C86	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C87	4030008020	S.CERAMIC	C1608 CH 1H 010C-T-A
C88	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C89	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C90	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C91	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C92	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C93	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C94	4030008020	S.CERAMIC	C1608 CH 1H 010C-T-A
C95	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C96	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C97	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C98	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C99	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C100	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C102	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C103	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C104	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C105	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
W6	7030003860	S.JUMPER	ERJ3GE JPW V
W7	7030003860	S.JUMPER	ERJ3GE JPW V
J1	8810008140	CONNECTOR	DF5-1324-03A
J2	8510016070	S.CONNECTOR	53284-2600
J3	8450008070	CONNECTOR	HFCP/11-01-020 (DC 3.5V)
J4	8450001060	CONNECTOR	HSJ1460-01-010 (SP)
J5	8450000130	CONNECTOR	HSJ1102-01-540 (MIC)
EP1	0910030777	PCB	B-3270C

[2F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110002810	S.IC	NJM2070M-TI
IC2	1150004100	S.IC	M66221GP-30AD
IC3	1130007480	S.IC	μPD3140GS-F1 (QSS)
IC4	1180000850	S.IC	RH5RG50A-TI
Q1	1510000880	S.TRANSISTOR	2SA1022-S-TR
Q2	1590001470	S.TRANSISTOR	UNS213(TX)
Q3	1590001440	S.TRANSISTOR	UNS210(TX)
Q4	1520000850	S.TRANSISTOR	2SB1201-S-TR
Q5	1590001870	S.TRANSISTOR	XP1501 (TX)/AB
Q6	1590001180	S.TRANSISTOR	UNS110(TX)
Q7	1590001850	S.TRANSISTOR	UNS115(TX)
Q8	1590001140	S.TRANSISTOR	UNS210(TX)
Q9	1530003170	S.TRANSISTOR	2SC4883-4-TR
Q10	1530003170	S.TRANSISTOR	2SC4883-4-TR
Q11	1530003170	S.TRANSISTOR	2SC4883-4-TR
Q12	1530003170	S.TRANSISTOR	2SC4883-4-TR
Q13	1560000540	S.FET	2SK880-Y (TE85R)
Q14	1530002820	S.TRANSISTOR	2SC4226-T2-R25
Q15	1530002820	S.TRANSISTOR	2SC4226-T2-R25
Q16	1530002580	S.TRANSISTOR	2SC4403-3-TR
Q17	1530002580	S.TRANSISTOR	2SC4403-3-TR
Q18	1530002580	S.TRANSISTOR	2SC4403-3-TR
Q19	1580001870	S.TRANSISTOR	UN921E(TX)
Q20	1580001870	S.TRANSISTOR	UN921F(TX)
Q21	1590001870	S.TRANSISTOR	UN921D(TX)
Q22	1580001810	S.TRANSISTOR	UN911D(TX)
Q23	1580001810	S.TRANSISTOR	UN911D(TX)
D1	1700000800	S.DIODE	MA728(TW)
D2	1700000820	S.DIODE	MA77(TW)
D3	1720000370	S.VARICAP	HVU350TRF
X1	8050008730	XTAL	CR-456 CA-105H 12.8 MHz

S:Surface mount

[2F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6200001650	S.COIL	ELJNC 18NK-F
L2	6200001750	S.COIL	ELJNC 15NK-F
L3	6200002470	S.COIL	ELJNC 12NK-F
L4	6200001780	S.COIL	ELJNC 22NK-F
L5	6150000890	S.COIL	S15211
L6	6200003820	S.COIL	LQH3C 331K04
L7	6200001520	S.COIL	MLF2012D R82K-T
L8	6110003030	COIL	LA-486
L9	6200002320	S.COIL	ELJNC R18K-F
L10	6200003430	S.COIL	ELJNC R22K-F
L11	6200003520	S.COIL	LQH3C 331K04
R1	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R2	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R3	7030003360	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R4	7030003430	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R5	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R6	7030003480	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R7	7030002200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R8	7030002260	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R10	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030002560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R14	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R15	7210002830	VARIABLE	1P30DC014P10KB 10KA [VOLUME]
R16	7030003460	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R19	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R19	7030003480	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R20	7030003560	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R21	7030003340	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R22	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R23	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R24	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R25	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R26	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R27	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R28	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R29	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R30	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R31	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R32	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R33	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R34	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R35	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R36	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R37	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R38	7030003200	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R39	7030003300	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R40	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R41	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R42	7030003300	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R43	7030003000	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R44	7030003810	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R45	7030003300	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R46	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R47	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R48	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R49	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R50	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R51	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R52	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R53	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R54	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R55	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R56	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R57	7030002440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R58	7030002760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R59	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R61	7030003360	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
C1	4030006850	S.CERAMIC	C1608 JB 1H 471K T-A
C2	4550006150	S.TANTALUM	ECST1CY105R

[2F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C3	4030006920	S.CERAMIC	C1608 JB 1C 473K-T-A
C4	4550006150	S.TANTALUM	ECST1CY105R
C5	4030006920	S.CERAMIC	C1608 JB 1C 473K-T-A
C6	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C7	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C12	4550006150	S.TANTALUM	ECST1CY105R
C13	4030006920	S.CERAMIC	C1608 JB 1C 473K-T-A
C14	4030006960	S.CERAMIC	C1608 CH 1H 050C-T-A
C15	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C16	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C17	4030006870	S.CERAMIC	C1608 CH 1H 080D-T-A
C18	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C19	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C20	4030006960	S.CERAMIC	C1608 CH 1H 050C-T-A
C21	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C23	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C24	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C25	4030006510	S.CERAMIC	C1608 CH 1H 010B-T-A
C26	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C27	4550006110	S.TANTALUM	TEMSVB2 0J 336M8L
C28	4550006220	S.TANTALUM	TEMSVA 0J 156M-8L
C29	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C30	4810003610	S.TRIMMER	CTZ3E 10A W1
C31	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C32	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C33	4550006360	S.TANTALUM	ECST1AY225KR
C34	4550006330	S.TANTALUM	TESVA 1V 104M1-8L
C35	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C36	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C37	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C38	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C40	4030006920	S.CERAMIC	C1608 CH 1H 010C-T-A
C41	4030006920	S.CERAMIC	C1608 CH 1H 010C-T-A
C42	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C43	4030006920	S.CERAMIC	C1608 CH 1H 010C-T-A
C44	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C45	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030006940	S.CERAMIC	C1608 CH 1H 030C-T-A
C47	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C49	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C51	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C52	4030006940	S.CERAMIC	C1608 CH 1H 030C-T-A
C53	4030006870	S.CERAMIC	C1608 CH 1H 080D-T-A
C54	4550006110	S.TANTALUM	TEMSVB2 0J 336M8L
C55	4030006860	S.CERAMIC	C2012 JB 1C 104K-T-A
C56	4550006340	S.TANTALUM	ECST1AY335R
C57	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C58	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C59	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C61	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C64	4030007150	S.CERAMIC	C1608 CH 1H 151J-T-A
W1	7030003800	S.JUMPER	ERJ3GE JPW V
W2	7030003800	S.JUMPER	ERJ3GE JPW V
W3	7030003800	S.JUMPER	ERJ3GE JPW V
W4	7030003800	S.JUMPER	ERJ3GE JPW V
J1	8510016050	S.CONNECTOR	53351-2060
J2	8510016090	S.CONNECTOR	53261-3490
S1	7800000160	ENCODER	TPS6N0uF2u14F [DIAL]
EP1	0810039805	PCB	B-3921E (2F)
EP2	0810039831	PCB	B-3994A (VOL/SQL)
EP3	0910041851	PCB	B-3995A (DIAL)

S.=Surface mount

[3F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110003490	S.IC	TA31136FN(D,EL)
IC2	1120004200	S.IC	TC4S66F (TE85R)
IC3	1120004200	S.IC	TC4S66F (TE85R)
IC4	1110003480	S.IC	S-81330HC-MR-T1
IC5	1120004170	S.IC	TC4S01F (TE85R)
IC6	1120003770	S.IC	TC4S81F (TE85R)
IC7	1120003750	S.IC	TC4S81F (TE85R)
IC8	1120003780	S.IC	TC4S81F (TE85R)
IC9	1110003110	S.IC	μPC5023GR-003-GJG-T2
Q1	1520001920	S.TRANSISTOR	UN211F(TX)
Q2	1520001170	S.TRANSISTOR	XP1501-(TX),AB
Q3	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q4	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q5	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q6	1520001180	S.TRANSISTOR	2SC4211-Y-TR
Q7	1520003480	S.TRANSISTOR	2SB1132-T100-R
Q8	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q9	1520003480	S.TRANSISTOR	2SB1132-T100-R
Q10	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q11	1520003480	S.TRANSISTOR	2SB1132-T100-R
Q12	1520003180	S.TRANSISTOR	2SC4211-Y-TR
Q13	1520001860	S.TRANSISTOR	UN9215(TX)
Q14	1520001130	S.TRANSISTOR	UN9113(TX)
Q15	1520001140	S.TRANSISTOR	UN9210(TX)
D1	1750000280	S.DIODE	1SS352 (TPH3)
D2	1750000280	S.DIODE	1SS352 (TPH3)
D3	1750000280	S.DIODE	1SS352 (TPH3)
FI1	2020000380	CERAMIC	KBF 455PS-15A2C
X1	6050000820	XTAL	CR-457 UM-5 30.595180MHz
X2	6070000130	OSCHI	CSBM455C24
R1	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R2	7310003740	S.TRIMMER	EVM-1XSX50-BE3 (222)
R3	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R5	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R6	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R7	7030003500	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R9	7030003500	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R9	7030003500	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R10	7030003500	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R11	7030003400	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R12	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R13	7030003880	S.RESISTOR	ERJ3GEYJ 883 V (88 kΩ)
R14	7030003360	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R15	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R16	7030003830	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R17	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R18	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R19	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R20	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R21	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R22	7030003580	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R23	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R24	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R25	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R26	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R27	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R28	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R30	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R32	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R33	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R34	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R36	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)

[3F UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R37	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ) (USA)
	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ) (EUR, TPE, AUS, DEN, SEA, ITA)
R38	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R40	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R41	7030003000	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R42	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, TPE, SEA, AUS)
	7030003500	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ) (EUR, DEN, ITA)
R43	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, TPE, SEA, AUS)
	7030003040	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ) (EUR, DEN, ITA)
R44	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, TPE, SEA, AUS)
	7030003050	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ) (EUR, DEN, ITA)
R45	7030003680	S.RESISTOR	ERJ3GEYJ 884 V (880 kΩ)
R46	7310003630	S.TRIMMER	EVM-1XSX50-BQ4 (473)
R54	7310003580	S.TRIMMER	EVM-1XSX50-B15 (104)
R55	7030003800	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R57	7030003480	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R58	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R59	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4030006880	S.CERAMIC	C1608 CH 1H 070D-T-A
C2	4030007080	S.CERAMIC	C1608 CH 1H 150J-T-A
C3	4030008830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C4	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C5	4030006880	S.CERAMIC	C1608 JB 1H 102K-T-A
C6	4030008800	S.CERAMIC	C1608 JD 1H 102K-T-A
C7	4030008880	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030008900	S.CERAMIC	C1608 JB 1E 102K-T-A
C9	4030008880	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030008800	S.CERAMIC	C2012 JD 1C 104K-T-A
C11	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C12	4030008880	S.CERAMIC	C1608 JB 1H 102K-T-A
C13	4030006880	S.CERAMIC	C1608 JB 1H 102K-T-A
C14	4030008000	S.CERAMIC	C2012 JB 1C 104K-T-A
C15	4030008900	S.CERAMIC	C1608 JB 1E 102K-T-A
C16	4030008900	S.CERAMIC	C1608 JB 1E 102K-T-A
C17	4550008170	S.TANTALUM	ECST1AY225R
C18	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4550008140	S.TANTALUM	ECST1CY474R
C20	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C21	4030008900	S.CERAMIC	C1608 JB 1E 102K-T-A
C22	4030008900	S.CERAMIC	C1608 JB 1E 102K-T-A
C23	4030008470	S.CERAMIC	C1608 JB 1H 272K-T-A
C24	4030008520	S.CERAMIC	C1608 JB 1H 681K-T-A
C25	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C26	4550008170	S.TANTALUM	ECST1AY225R
C27	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C28	4550008170	S.TANTALUM	ECST1AY225R
C29	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C30	4550008170	S.TANTALUM	ECST1AY225R
C31	4030008880	S.CERAMIC	C1608 JB 1H 102K-T-A
C32	4550008220	S.TANTALUM	ECST0JY476R
C33	4030008880	S.CERAMIC	C1608 JB 1H 102K-T-A
C34	4550008200	S.TANTALUM	ECST0JY106R
C35	4550008190	S.TANTALUM	ECST1CY105R
C36	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C37	4030008940	S.CERAMIC	C2012 JB 1C 683K-T-A
C38	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C39	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A (USA)
	4030006880	S.CERAMIC	C1608 JB 1C 153K-T-A (EUR, TPE, AUS, DEN, SEA, ITA)
C40	4030007150	S.CERAMIC	C1608 CH 1H 151J-T-A
C41	4030008020	S.CERAMIC	C1608 JB 1C 472K-T-A
C42	4550008300	S.TANTALUM	ECST1AY475R
C43	4550008200	S.TANTALUM	ECST0JY106R

S.-Surface mount

[SF UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C44	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C46	4550006150	S.TANTALUM	ECST1CY105R
C47	4550006150	S.TANTALUM	ECST1CY105R
C48	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A (USA, TPE, SEA, AUS)
	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A (EUR, DEN, ITA)
C49	4030006770	S.CERAMIC	C1608 JB 1H 682K-T-A (USA, TPE, SEA, AUS)
	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A (EUR, DEN, ITA)
C50	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A (USA, TPE, SEA, AUS)
	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A (EUR, DEN, ITA)
C51	4030006870	S.CERAMIC	C1608 JB 1H 182K-T-A
C52	4030006860	S.CERAMIC	C2012 JB 1C 106K-T-A
C53	4030006860	S.CERAMIC	C2012 JB 1C 106K-T-A
C54	4030006830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C55	4030006880	S.CERAMIC	C1608 JB 0H 102K-T-A
C56	4030006860	S.CERAMIC	C2012 JB 1C 106K-T-A
C57	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C58	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
J1	8510016040	S.CONNECTOR	52857 2400
J2	8510019150	S.CONNECTOR	53302-1091
J3	8510014450	S.CONNECTOR	52201-2000
EP1	0910030828	PCB	B 3953F

[UHF-VCO BOARD] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C1	1530002020	S.TRANSISTOR	2SC4226-T2 R2S
C2	1530002020	S.TRANSISTOR	2SC4226-T2 R2S
D1	1720000370	S.VARICAP	HVU350TRF
D2	1720000370	S.VARICAP	HVU350TRF
L1	6200001620	S.COIL	MLF2012D R82K-T
L2	6200002220	S.COIL	LQN1A 8N8J04
R1	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R2	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R3	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R4	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R5	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4010001880	S.TRIMMER	CTZ3E-03A-W1
C2	4030000040	S.CERAMIC	C1608 CH 1H 030C-T-A
C3	4030006920	S.CERAMIC	C1608 CH 1H 010C-T-A
C4	4030006920	S.CERAMIC	C1608 CH 1H 010C-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	4030006010	S.CERAMIC	C1608 CH 1H 0R5C-T-A
J1	8510030020	CONNECTOR	IPS-1223
J2	8510030020	CONNECTOR	IPS-1223
J3	8510030020	CONNECTOR	IPS-1223
EP1	0910033812	PCB	B 3922B

[16KEY UNIT] (IC-T21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1700000690	S.ZENER	MAZS1-H(TX)
C1	1730002320	S.ZENER	MAZS1-M(TX)
C101	4030000850	S.CERAMIC	C1608 JB 1H 471K-T-A
MC101	7700001370	MICROPHONE	KUB-3328 010C10
EP3	0910033923	FPC	B 3969C

[PRT UNIT] (IC-T21A/E, IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1520000480	S.TRANSISTOR	2SB1132 T100 R
Q2	1520003100	S.TRANSISTOR	2SC4211-7-TR
Q3	1530001030	S.TRANSISTOR	IMX2 T108
Q4	1500001730	S.TRANSISTOR	UN5113(TX)
D1	1730000180	S.DIODE	DA204U T107
D2	1720001030	S.DIODE	SR30-03P-TB
D3	1790000840	S.DIODE	MA132WA(TX)
R1	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2	7030000080	S.RESISTOR	MCR10EZHJ 3.3 Ω (3H3)
C1	4030006830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C2	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C3	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C4	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C5	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C6	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
W1	7030003860	S.JUMPER	ERJ3GEJPW-V
EP1	0910036862	PCB	B 3971B

[AF C BOARD] (IC-T21A/E, IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C1	4510005610	ELECTROLYTIC	ECA 0JG 101X
C2	4510005610	ELECTROLYTIC	ECA 0JG 101X
C3	4510005610	ELECTROLYTIC	ECA 0JG 101X
EP1	0910036851	PCB	B 3946A

[VHF-RFA BOARD] (IC-T21A/E, IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530003170	S.TRANSISTOR	2SC4883-4-TR
Q2	1530002560	S.TRANSISTOR	2SC4403-4-TR
D1	1790000820	S.DIODE	MA77(TW)
D2	1720000370	S.VARICAP	HVU350TRF
D3	1790000820	S.DIODE	MA77(TW)
D4	1720000370	S.VARICAP	HVU350TRF
D5	1720000370	S.VARICAP	HVU350TRF
D6	1790000820	S.DIODE	MA77(TW)
D7	1790000880	S.DIODE	MA742(TX)
R1	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R3	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)

S...Surface mount

T21

S21

T21

S21

[VHF-RFA BOARD] (IC-T21A/E, IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R4	7030003260	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)
R5	7030003320	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R6	7030003420	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R7	7030003390	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R8	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R9	7030003350	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R10	7030003690	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R11	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R12	7030003530	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C2	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C3	4030007090	S.CERAMIC	C1608 CH 1H 080D-T-A
C4	4030007090	S.CERAMIC	C1608 CH 1H 080D-T-A
C5	4030007080	S.CERAMIC	C1608 CH 1H 470J-T-A
C6	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030007090	S.CERAMIC	C1608 CH 1H 080D-T-A
C12	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C13	4030006890	S.CERAMIC	C1608 CH 1H 050C-T-A
C14	4030006570	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C15	4030006850	S.CERAMIC	C1608 JB 1H 102K-T-A
C16	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C17	4030007020	S.CERAMIC	C1608 CH 1H 120J-T-A
EP1	0910003120	LEADFRAM	AR1.27-0.7-12.9
EP2	0910039783	PCB	B-3819C

[VHF-RFB BOARD] (IC-T21A/E, IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6150003120	COIL	LS-321
L2	6150003120	COIL	LS-321
L3	6150003420	COIL	LS-378
EP1	0910039783	PCB	B-3820C

[TSQL UNIT] (USA version only)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130003620	S.IC	TC4S69F (TE85R)
IC2	1130007220	S.IC	AK2441-T
X1	6050008720	XTAL	CR-440 A1-38 8.0864MHz
R1	7030008730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R2	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R3	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R4	7030008700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R5	7030008730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R6	7030003640	S.RESISTOR	ERJ3GEYJ 362 V (3.6 kΩ)
R7	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R8	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R9	7310003800	S.TRIMMER	EVM 1XSX50 B54 (500)
R10	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R11	7030003730	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R12	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R13	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R14	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
C1	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C2	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C3	4030006990	S.CERAMIC	C1608 JF 1C 104Z-T-A
C4	4550006900	S.TANTALUM	ECST0JY106R

[TSQL UNIT] (USA version only)

REF. NO.	ORDER NO.	DESCRIPTION	
C5	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C6	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C7	4550006920	S.TANTALUM	ECST0JY475R
C8	4550006150	S.TANTALUM	ECST1CY105R
C9	4550006150	S.TANTALUM	ECST1CY105R
C10	4030006980	S.CERAMIC	C2012 JB 1C 104K-T-A
C11	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C12	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C13	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C14	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
C15	4550006150	S.TANTALUM	ECST1CY105R
J1	0510016300	S.CONNECTOR	52466-1091
EP1	0910040052	PCB	B-3970B

[LOGIC UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140004140	S.IC	HD404629B27H
IC2	1110003320	S.IC	S-80730SL-AT-T1
IC3	1130003620	S.IC	TC4S69F (TE85R)
IC5	1120002440	S.IC	TC74AC08F(EL)
IC6	1190000260	S.IC	24LC08B/SN
Q1	1580004470	S.TRANSISTOR	UMN21N(TX)
Q2	1530003130	S.TRANSISTOR	2SC4211-Y-TR
Q4	1580001840	S.TRANSISTOR	XN4601(TX)
Q6	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q7	1530003160	S.TRANSISTOR	2SC4211-Y-TR
Q8	1510000680	S.TRANSISTOR	2SA1832-6-TR
Q9	1580001830	S.TRANSISTOR	XN1117(TX)
Q10	1580001140	S.TRANSISTOR	UN9210(TX)
Q13	1580001130	S.TRANSISTOR	UN9110(TX)
D1	1750000260	S.DIODE	1SS352 (TPH3)
D2	1750000260	S.DIODE	1SS352 (TPH3)
D3	1750000130	S.DIODE	DA204U T107
D4	1750000260	S.DIODE	1SS352 (TPH3)
D5	1790000320	S.DIODE	MA132K(TX)
D7	1790001200	S.DIODE	MA6S121(TX)
D9	1790001200	S.DIODE	MA6S121(TX)
D10	1750000260	S.DIODE	1SS352 (TPH3)
D11	1750000260	S.DIODE	1SS352 (TPH3)
D12	1790000820	S.DIODE	MA132K(TX) (USA, TPE)
	1790000830	S.DIODE	MA132HK(TX) (EUR, AUS)
	1790000850	S.DIODE	MA132WK(TX) (SLA)
D13	1790000820	S.DIODE	MA132K(TX) (USA, AUS, SEA, ITA)
D14	1750000260	S.DIODE	1SS352 (TPH3)
D15	1790000820	S.DIODE	MA132K(TX)
D17	1750000340	S.DIODE	1SS357 (TPH3)
X1	6050000520	S.CERAMIC	CRACK-CSMGC200-TC
X2	6050008760	XTAL	CR-482 32.768KHz
R1	7030003860	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R2	7030003870	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R3	7030003850	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R4	7030003740	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R5	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R6	7030003850	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R7	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R13	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)

S.–Surface mount

[LOGIC UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R14	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R15	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R16	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R17	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R18	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R19	7030003580	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R21	7030003380	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R22	7410000750	S.ARRAY	EXB-V4V 104JV (100 kΩ)
R23	7410000750	S.ARRAY	EXB-V4V 104JV (100 kΩ)
R24	7410000800	S.ARRAY	EXB-V8V 103JV (10 kΩ)
R25	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R26	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R27	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R28	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R29	7030003780	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ) (EUR ITA)
R30	7310003500	S.TRIMMER	EVM-1XSX50 B54 (500) (EUR ITA)
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) (EUR ITA)
R35	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R39	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R40	7030003920	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R42	7030003580	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R43	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R44	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030003780	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R46	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R47	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R48	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R49	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R50	7030003500	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R51	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R52	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R53	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R55	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R56	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4030009530	S.CERAMIC	C1608 JF 1C 104Z-T-A
C2	4030009830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C3	4030009830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C4	4030009830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C5	4030007080	S.CERAMIC	C1608 CH 1H 270J-T-A
C6	4030007100	S.CERAMIC	C1608 CH 1H 560J-T-A
C7	4030007090	S.CERAMIC	C1608 CH 1H 150J-T-A
C8	4030007090	S.CERAMIC	C1608 CH 1H 150J-T-A
C9	4550005320	S.TANTALUM	ECSTOJY475R
C10	4030009900	S.CERAMIC	C1608 JD 1H 102K T-A
C11	4030009880	S.CERAMIC	C1608 JB 1H 102K T-A
C12	4550006220	S.TANTALUM	TEMSVA 0J 156M-8
C13	4020005950	S.CERAMIC	C1608 JB 1H 471K-T-A
C14	4550008400	S.TANTALUM	ECST0JP225H
C21	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C23	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C24	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C25	4030009920	S.CERAMIC	C1608 JB 1C 473K-T-A
C29	4550008150	S.TANTALUM	ECST1CY105H
C30	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C31	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C32	4030009880	S.CERAMIC	C1608 JB 1H 102K T-A
SP1	2510000580	SPEAKER	EAS 8P104D
BT1	9020000240	LITHIUM	VL1220-1T9U
S1	2260000800	S.SWITCH	JPM1990-2013R (POWER)
S2	2260001080	S.SWITCH	SKQDPB
S3	2260001080	S.SWITCH	SKQDPB
S4	2260001080	S.SWITCH	SKQDPB
SS01	2260001080	S.SWITCH	SKQDPB

[LOGIC UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
EP2	0010042080	PCB	B-4186 (LOGIC)
EP5	0910039044	FPC	B-3972D (Flexible cable LOGIC-SF)
EP6	8030030370	LCD CONTACT	SRCN-1388 SIS
FP204	0910039031	FPC	B-3970A (PTT)
DS1	5080001110	LCD	LD-BUST17J-E-3648-1I
DS2	5040001110	S.LED	SLM-23VMWS-T07B
DS3	5040001790	S.LED	CL-170G-CD-T
DS4	5040001790	S.LED	CL-170G-CD-T

[1F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110001370	S.IC	μPC2748T-E3
IC2	1150001370	IC	SC-1257
Q1	1530002040	S.TRANSISTOR	2SC4228-T2 R44
Q4	1500001680	S.TRANSISTOR	XP1110(TX)
Q5	1500001690	S.TRANSISTOR	XP1110(TX)
Q6	1500001140	S.TRANSISTOR	UN5210(TX)
Q7	1500000550	S.FET	2SK932-Y (TE85R)
Q9	1500001670	S.TRANSISTOR	XP4116(TX)
Q8	1500001850	S.TRANSISTOR	UN5116(TX)
Q10	1530002570	S.TRANSISTOR	2SC4405-3-TR
Q11	1530003170	S.TRANSISTOR	2SC4082-4-TR
Q12	1500001960	S.TRANSISTOR	XP4311(TX)
Q13	1530003180	S.TRANSISTOR	2SC4215-Y-TH
Q14	1520000490	S.TRANSISTOR	2SB1132-T100-R
Q15	1500001180	S.TRANSISTOR	XP1401-(TX)-AB
Q16	1530000000	S.TRANSISTOR	2SC4117-RI (TE85R)
Q17	1540000350	S.TRANSISTOR	2SD2216-S(TX)
Q18	1530002900	S.TRANSISTOR	2SC4215-O-(TE85H)
Q20	1500001130	S.TRANSISTOR	UN5110(TX)
Q21	1530002560	S.TRANSISTOR	2SC4403-3-TR
D1	1790000920	S.DIODE	MA77(TW)
D2	1790000920	S.DIODE	MA77(TW)
D6	1790000920	S.DIODE	MA77(TW)
D7	1790000920	S.DIODE	MA77(TW)
D8	1750000980	S.DIODE	1SS394(TE85L)
D9	1790000920	S.DIODE	MA77(TW)
D10	1790000920	S.DIODE	MA77(TW)
D12	1790000920	S.DIODE	MA77(TW)
D13	1720000980	S.DIODE	HSU82TRF
D14	1720000980	S.DIODE	HSU86TRF
D15	1750000280	S.DIODE	1SS352 (TPH3)
D16	1750000280	S.DIODE	1SS352 (TPH3)
D17	1790001030	S.DIODE	SB50-03P-TD
D19	1750000280	S.DIODE	1SS352 (TPH3)
D18	1750000280	S.DIODE	1SS352 (TPH3)
D20	1790000920	S.DIODE	MA77(TW)
D28	1750000280	S.DIODE	1SS352 (TPH3)
FI1	2010001010	MONOLITH	FL-202 UM-5 30.650MHz
L1	8110002070	COIL	LA-227
L2	8110002120	COIL	LA-228
L3	8110002120	COIL	LA-228
L4	0200002070	S.COIL	LL2012-F47NK
L5	0200002070	S.COIL	LL2012-F47NK
L6	0200002460	S.COIL	LL2012-F18NK
L7	0200002460	S.COIL	LL2012-F18NK
L8	0200002440	S.COIL	LL2012-F10NK
L9	0200002480	S.COIL	LL2012-F18NK
L11	0200002450	S.COIL	LL2012-F15NK
L15	0200000860	S.COIL	LQH3N1R0M
L10	0200001030	S.COIL	LLMC H10K F

S.–Surface mount

S21

[1F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
L17	8220003870	S.COIL	ELJNC 68NK F
L18	8220003770	S.COIL	ELJNC 47NK-F
L19	8220001520	S.COIL	MLF2012D R82K-T
L20	8220002820	S.COIL	LQN *A 47NJ04
L25	8220002710	S.COIL	ELJFC 1R8K-F
R1	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R3	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R5	7030003330	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R12	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R13	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R14	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R15	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R16	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R17	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R18	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R21	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R22	7030003500	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R23	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R24	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R25	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R26	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R27	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R28	7030003480	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R29	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R30	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R31	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R32	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R33	7030003510	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R34	7030003520	S.RESISTOR	ERJ3GEYJ 512 V (5.1 kΩ)
R35	7030003280	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)
R36	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R37	7510000200	S.THERMISTOR	TN20-3U473LT
R38	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R39	7030003520	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R40	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R41	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R42	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R43	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R44	7030003530	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030003300	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R46	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R47	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R48	7030003300	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R50	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R51	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R52	7030003260	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R58	7030003920	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R60	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R81	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R82	7030003000	S.RESISTOR	ERJ3GEYJ 220 V (22 kΩ)
C1	4030007040	S.CERAMIC	C1608 CH 1H 180J T A
C2	4030008860	S.CERAMIC	C1608 CH 1H 050C T A
C3	4030007080	S.CERAMIC	C1608 CH 1H 270J T A
C4	4030008860	S.CERAMIC	C1608 CH 1H 020C T A
C5	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C6	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030007070	S.CERAMIC	C1608 CH 1H 330J T A
C8	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C12	4030008550	S.CERAMIC	C1608 CH 1H 080D-T-A
C13	4030007080	S.CERAMIC	C1608 CH 1H 360J-T-A
C14	4030008860	S.CERAMIC	C1608 CH 1H 050C T A
C15	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C16	4030008860	S.CERAMIC	C1608 CH 1H 080D-T-A
C17	4030007010	S.CERAMIC	C1608 CH 1H 100D T A
C18	4030008840	S.CERAMIC	C1608 CH 1H 030C-T-A
C19	4030008850	S.CERAMIC	C1608 CH 1H 050C-T-A
C20	4030008610	S.CERAMIC	C1608 CH 1H 080D-T-A
C21	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C22	4030008250	S.CERAMIC	C1608 JB 1H 472K T A

REF. NO.	ORDER NO.	DESCRIPTION	
C23	4030008860	S.CERAMIC	C1608 CH 1H 070D-T-A
C29	4030008850	S.CERAMIC	C1608 JB 1H 471K T A
C31	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C33	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C35	4030008860	S.CERAMIC	C1608 CH 1H 070D T A
C37	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C38	4030008850	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030008900	S.CERAMIC	C1608 JB 1E 103K-T-A
C40	4030008860	S.CERAMIC	C1608 CH 1H 050C-T-A
C42	4030007000	S.CERAMIC	C1608 CH 1H 080D-T-A
C44	4030007040	S.CERAMIC	C1608 CH 1H 180J T A
C45	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C47	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C48	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C49	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C50	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C51	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C53	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C54	4550000210	S.TANTALUM	ECSTICX106R
C56	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C57	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C58	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C59	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C61	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4030008850	S.CERAMIC	C1608 JB 1H 471K T A
C63	4550000170	S.TANTALUM	ECSTIAY225R
C64	4030008030	S.CERAMIC	C1608 JF 1C 104Z-T-A
C65	4030008850	S.CERAMIC	C1608 JB 1H 471K T A
C66	4030008850	S.CERAMIC	C1608 JB 1H 471K T A
C67	4550000200	S.TANTALUM	ECSTCJY106R
C68	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C69	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C70	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C71	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C72	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C73	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C74	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C75	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C76	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C78	4030008900	S.CERAMIC	C1608 JB 1E 103K-T-A
C80	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C82	4030008030	S.CERAMIC	C1608 JF 1C 104Z-T-A
C83	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C89	4030008850	S.CERAMIC	C1608 JB 1H 471K T A
C90	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C91	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C97	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C98	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C100	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C102	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C103	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
C104	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A
C105	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C106	4030008860	S.CERAMIC	C1608 JB 1H 102K T A
W8	7030003860	S.JUMPER	ERJ3GE JPW V
J1	6210008440	CONNECTOR	IPS-1324-03A
J2	5510010070	S.CONNECTOR	53264-2060
J3	6450000270	CONNECTOR	HEC2711-01-020 (DC13.8V)
J4	6450001060	CONNECTOR	HSJ1493-01-010 (SP)
J5	6450000930	CONNECTOR	HSJ1132-01-540 (MIC)
UP1	0810041874	PCB	B-4166D

S.=Surface mount

[2F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1113002810	S.IC	NJM2070M-TI
IC2	1153001100	S.IC	M88221BP 30AD
IC3	1130001480	S.IC	uPD3144GS-E1 (DS5)
IC4	1160000850	S.IC	HN5RC501A-TI
Q1	1610000880	S.TRANSISTOR	2SA1832-6-TR
Q2	1600001470	S.TRANSISTOR	UN9213(TX)
Q4	1600000850	S.TRANSISTOR	2SB1201-5-TR
Q5	1600001170	S.TRANSISTOR	XP1501-(TX) AR
Q6	1600001120	S.TRANSISTOR	UN9110(TX)
Q8	1600001140	S.TRANSISTOR	UN9210(TX)
Q12	1660000540	S.FET	2SK880 Y (TE85R)
Q14	1630002920	S.TRANSISTOR	2SC4226-T2 D25
Q15	1630002920	S.TRANSISTOR	2SC4226-T2 R25
Q16	1630002560	S.TRANSISTOR	2SC4403-3-TR
Q17	1630002560	S.TRANSISTOR	2SC4403-3-TR
Q18	1660002560	S.TRANSISTOR	2SC4403-3-TR
Q19	1660001970	S.TRANSISTOR	UN921E(TX)
Q20	1600001970	S.TRANSISTOR	UN921F(TX)
Q21	1600001970	S.TRANSISTOR	UN921E(TX)
Q22	1600001910	S.TRANSISTOR	UN911D(TX)
Q23	1600001910	S.TRANSISTOR	UN911D(TX)
D1	1780000880	S.DIODE	MA728(TW)
D2	1780000820	S.DIODE	MA77(TW)
D3	1720000370	S.VARICAP	HVU350TRF
X1	0650008720	XTAL	CR-450 C/A 303H 12.8 MHz
L5	6160000660	S.COIL	S1581-11
L6	6200003020	S.COIL	LQH3C-331K04
L7	6200001520	S.COIL	MLF2012D-R82K-T
L8	6110003000	COIL	LA-438
L9	6200002920	S.COIL	ELJNC-D18K-F
L10	6200003300	S.COIL	ELJNC-R22K-F
L11	6200002020	S.COIL	LQH3C-331K04
R1	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R2	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R3	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R4	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R5	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R6	7030003460	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R7	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R10	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R14	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R15	7210002330	VARIABLE	RP98D0014H-10KD 10KA [VOL/SQL]
R16	7030003620	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R32	7030003560	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R33	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R34	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R35	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R36	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R37	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R38	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R39	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R40	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R41	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R42	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R43	7030003560	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R44	7030002810	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R45	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R46	7030003560	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R47	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R48	7030002220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R49	7030002220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)

[2F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R51	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R52	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R53	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R54	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R55	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R56	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R57	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R58	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R60	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
C1	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C2	4550008150	S.TANTALUM	ECST1CY105R
C3	4030009820	S.CERAMIC	C1608 JB 1C 473K-T-A
C4	4550009100	S.TANTALUM	ECST1CY155R
C5	4030009820	S.CERAMIC	C1608 JB 1C 473K-T-A
C6	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C7	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C9	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C11	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C26	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C27	4550009110	S.TANTALUM	TEMSVB2 0J 336M-L
C28	4550009220	S.TANTALUM	TEMSVA 0J 156M-L
C29	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C30	4810001910	S.TRIMMER	CTZ3E-10A-W1
C31	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C32	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C33	4550009380	S.TANTALUM	ECST1AY225KR
C34	4550009530	S.TANTALUM	TESVA 1V 104M-1-0L
C35	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C36	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C37	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C38	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C39	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C40	4030009020	S.CERAMIC	C1608 CH 1H 010C-T-A
C41	4030009020	S.CERAMIC	C1608 CH 1H 010C-T-A
C42	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C43	4030009820	S.CERAMIC	C1608 CH 1H 010C-T-A
C44	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C45	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030009820	S.CERAMIC	C1608 CH 1H 020C-T-A
C47	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C49	4030007050	S.CERAMIC	C1608 CH 1H 220J-T-A
C50	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C51	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C52	4030009040	S.CERAMIC	C1608 CH 1H 030C-T-A
C53	4030009070	S.CERAMIC	C1608 CH 1H 080D-T-A
C54	4550009110	S.TANTALUM	TEMSVB2 0J 336M-L
C55	4030009850	S.CERAMIC	C2012 JB 1C 104K-T-A
C56	4550009340	S.TANTALUM	ECST1AY335R
C57	4030009850	S.CERAMIC	C1608 JB 1H 471K-T-A
C58	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C59	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C61	4030009880	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4550009220	S.TANTALUM	TEMSVA 0J 156M-L
C63	4030009050	S.CERAMIC	C1608 CH 1H 103K-T-A
C64	4030007150	S.CERAMIC	C1608 CH 1H 151J-T-A
W1	7030003800	S.JUMPER	ERJ3GE JPW V
W3	7030003800	S.JUMPER	ERJ3GE JPW V
W4	7030003060	S.JUMPER	ERJ3GE JPW V
J1	8512018050	S.CONNECTOR	52610-0890
J2	8513018000	S.CONNECTOR	53261-2490
S1	7600000160	ENCODER	RP90N00L20141 [DIAL]
EP1	0910042011	PCB	B-1167A (2F)
EP2	0910042121	PCB	B-3564A (VOL/SQL)
EP3	0910042161	PCB	B-3565A (DIAL)

S = Surface mount

S21

[3F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110003190	S.IC	TA31136FN(EL)
IC2	1130004200	S.IC	TC4S66F (TE85R)
IC3	1130004200	S.IC	TC4S66F (TE85R)
IC4	1110003480	S.IC	S-81330HG-KB-T1
IC5	1130004170	S.IC	TC4S01F (TE85R)
IC6	1130003780	S.IC	TC4S81F (TE85R)
IC7	1130003780	S.IC	TC4S81F (TE85R)
IC8	1130003760	S.IC	TC4S81F (TE85R)
IC9	1110003410	S.IC	μPC5023GR-043-GJG-TZ
Q1	1560001020	S.TRANSISTOR	UN911F(TX)
Q2	1560001170	S.TRANSISTOR	XP1501-(TX).AB
Q3	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q4	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q5	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q6	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q7	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q8	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q9	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q10	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q11	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q12	1520003180	S.TRANSISTOR	2SC4211-7-TR
Q13	1560001060	S.TRANSISTOR	UN9215(TX)
Q14	1560001130	S.TRANSISTOR	UN9110(TX)
Q15	1560001140	S.TRANSISTOR	UN9210(TX)
D1	1750003260	S.DIODE	1SS352 (TPH4)
D2	1750003260	S.DIODE	1SS352 (TPH4)
D3	1750003260	S.DIODE	1SS352 (TPH4)
F1	2520000060	CERAMIC	KBF 455PS-15A70
X1	8070000170	XTAL	CR-484 UM 5 30.305MHz
X2	8070000180	OSCIL	CDBM455C24
R1	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R2	7210003740	S.TRIMMER	EVM-1XSX50 B50 (222)
R3	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R5	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R6	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R7	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R8	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R9	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R10	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R11	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R12	7030003470	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R13	7030003660	S.RESISTOR	ERJ3GEYJ 883 V (88 kΩ)
R14	7030003530	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R15	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R16	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R17	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R18	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R19	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R20	7030003520	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R21	7030003520	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R22	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R23	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R24	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R25	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R26	7030003620	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R27	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R28	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R30	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R32	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R33	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R34	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R35	7030003520	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)

[3F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
R37	7030003810	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ) (EUR, AUS, SEA, ITA, TPE)
	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ) (USA)
R38	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R40	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R41	7030003000	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R42	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, AUS, SEA, TPE)
	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ) (EUR, ITA)
R43	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, AUS, SEA, TPE)
	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ) (EUR, ITA)
R44	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ) (USA, AUS, SEA, TPE)
	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ) (EUR, ITA)
R45	7030003680	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R46	7310003690	S.TRIMMER	EVM-1XSX50 B04 (473)
R54	7310003560	S.TRIMMER	EVM-1XSX50 B15 (104)
R55	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R57	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R58	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R59	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4030000830	S.CERAMIC	C1608 CH 1H 0R5D-T-A
C2	4030007630	S.CERAMIC	C1608 CH 1H 150J-T-A
C3	4030000830	S.CERAMIC	C1608 JF 1C 0.047-T-A
C4	4030006860	S.CERAMIC	C1608 JB 1H 471K-T-A
C5	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C6	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C7	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C9	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030006890	S.CERAMIC	C2012 JB 1C 104K-T-A
C11	4030007630	S.CERAMIC	C1608 CH 1H 150J-T-A
C12	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C13	4030000860	S.CERAMIC	C1608 JB 1H 102K-T-A
C14	4030006860	S.CERAMIC	C2012 JB 1C 104K-T-A
C15	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C16	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C17	4550006170	S.TANTALUM	ECST1AY225R
C18	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4550006140	S.TANTALUM	ECST1EY474R
C20	4030006820	S.CERAMIC	C1608 JB 1C 473K-T-A
C21	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C22	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C23	4030006840	S.CERAMIC	C1608 JB 1H 272K-T-A
C24	4030006830	S.CERAMIC	C1608 JB 1H 681K-T-A
C25	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C26	4550006170	S.TANTALUM	ECST1AY225R
C27	4030006860	S.CERAMIC	C1608 JB 1H 471K-T-A
C28	4550006170	S.TANTALUM	ECST1AY225R
C29	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C30	4550006170	S.TANTALUM	ECST1AY225R
C31	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C32	4550006320	S.TANTALUM	ECST0JY476R
C33	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C34	4550006230	S.TANTALUM	ECST0JY106R
C35	4550006150	S.TANTALUM	ECST1CY105R
C36	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C37	4030006840	S.CERAMIC	C2012 JB 1C 681K-T-A
C38	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C39	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A (USA)
	4030006860	S.CERAMIC	C1608 JB 1C 102K-T-A (EUR, AUS, SEA, ITA, TPE)
C40	4030007150	S.CERAMIC	C1608 CH 1H 101J-T-A
C41	4030006890	S.CERAMIC	C1608 JB 1C 473K-T-A
C42	4550006300	S.TANTALUM	ECST1AY475R
C43	4550006200	S.TANTALUM	ECST0JY106R
C44	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C45	4550006150	S.TANTALUM	ECST1CY105R

S.–Surface mount

[3F UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
C47	4550008150	S.TANTALUM	ECST1CY105R
C48	4030006070	S.CERAMIC	C1608 JB 1H 222K-T-A (USA, AUS, SEA, TPE)
	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A (EUR, ITA)
C49	4030008770	S.CERAMIC	C1608 JB 1H 562K-T-A (USA, AUS, SEA, TPE)
	4030008870	S.CERAMIC	C1608 JB 1H 182K-T-A (EUR, ITA)
C50	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A (USA, AUS, SEA, TPE)
	4030008850	S.CERAMIC	C1608 JB 1H 471K-T-A (EUR, ITA)
C51	4030009870	S.CERAMIC	C1608 JB 1H 182K-T-A
C52	4030008980	S.CERAMIC	C2012 JB 1C 104K-T-A
C53	4030008980	S.CERAMIC	C2012 JB 1C 104K-T-A
C54	4030008930	S.CERAMIC	C1608 JF 1C 104Z-T-A
C55	4030006980	S.CERAMIC	C1608 JB 1H 102K-T-A
C56	4030008980	S.CERAMIC	C2012 JB 1C 104K-T-A
C57	4030006880	S.CERAMIC	C1608 JB 1H 102K-T-A
C58	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
J1	6510016040	S.CONNECTOR	52357-2490
J2	6510016150	S.CONNECTOR	53398-1091
J3	6510014450	S.CONNECTOR	52204-2690
EP1	0810042020	PCB	B-4168

[MIC UNIT] (IC-S21A/E)

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1790000000	S.ZENER	MA8051-H(TX)
C101	4030006460	S.CERAMIC	C1608 JB 1H 471K-T-A
EP3	0810042140	FPC	B-4172

S21

SECTION 7 MECHANICAL PARTS

T21

S21

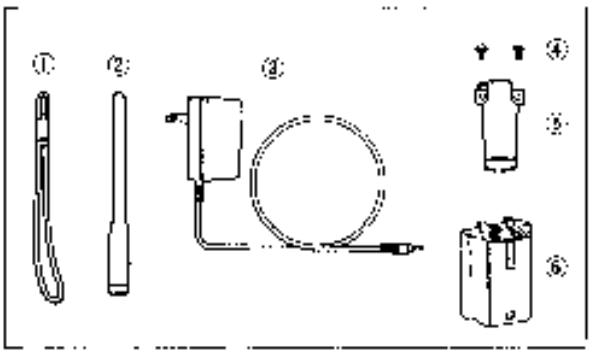
• CHASSIS PARTS

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8210010230	1454 front panel (A) (IC-S21A)	1
	8210010240	1454 front panel (B) (IC-S21E)	
②	8850030800	1454 MIC holder (IC-S21A/E only)	1
③	8210009530	1368 front panel (A) (IC-T21A)	1
	8210009540	1368 front panel (B) (IC-T21E)	
④	8930029950	1368 10-key (IC-T21A/E only)	1
⑤	2510050560	Speaker EAS-2P104D	1
⑥	8930029890	1368 3-button (IC-T21A/E)	1
	8930031200	1368 3-button (A) (IC-S21A/E)	
⑦	8810009791	Flexible cable B-9075A (PTT)	1
⑧	8930026980	1368 SW holder	1
⑨	8930029901	1368 SW sheet-1	1
⑩	8810008950	Screw PH BD No. 0-3 M1.4×3 NI	3
⑪	8930026970	1368 LCD rubber	1
⑫	8930026950	1368 LCD holder	1
⑬	5030009970	LCD LD-B6814J (IC-T21A/E)	1
	5030001110	LCD LD-BJE717J (IC-S21A/E)	
⑭	8930030370	LCD contact SHDN-1368-8B	2
⑮	8210009000	1368 reflector	1
⑯	7702001570	Microphone KUFS328-3-0310	1
⑰	8910008944	Flexible cable B-9070 (LOGIC-SF)	1
⑱	8810001710	Screw PH B2 No. 0-3 M1.4×3.5 ZK	4
⑲	8850029800	1368 10-key holder	1
⑳	8810007920	Screw TTP PT No. 0 M2×6 ZK	2
㉑	8510008720	Knob N205 VOL	1
㉒	8510008710	Knob N204 (SQL)	1
㉓	8510008700	Knob N202 (DIAL)	1
㉔	8850030790	VR nut (H)	2
㉕	8210009990	1368 top panel	1

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
㉖	8930029021	1368 PW button-1 (POWER)	1
㉗	8930029010	1368 top seal	1
㉘	8930029960	1368 top plate	1
㉙	8930030510	1368 top shield	1
㉚	8930030530	1368 SW lug	1
㉛	8610005660	Screw PH No. 0 M2×3 NI	5
㉜	8930029200	Stand bar (H)	2
㉝	8810007930	Screw PH No. 2 M2.6×6.5 NI	2
㉞	8950030500	Electrical tape No. 1245 20×13	1
㉟	8810014790	1368 chassis	1
㊱	8930029081	1368 module shield-1	1
㊲	8950028810	1368 release button	1
㊳	8950029970	Spring (R)	1
㊴	8930029890	1368 PTT shield	1
㊵	8860300950	E-ring M1.2	2
㊶	8830028800	1368 contact base	1
㊷	8930029360	Spring (S)	2
㊸	8810029680	1368 contact pin	2
㊹	8930029020	1368 contact spring	1
㊺	8810007040	Screw P-H No. 0 M2×4.5 ZK	5
㊻	8930029880	VR nut (T)	1
㊼	8930029870	1368 ANT lug	1
㊽	8610016190	Connector SMA-R003 (ANT)	1
㊾	8210029990	1368 rear panel	1
㊿	8930029090	1368 jack cover	1
(51)	8810014982	Hole bushing (B) 2	2
(52)	8810007910	Screw PH B0 M2×5 ZK	2
(53)	8810014570	Screw PH B0 M2×10 ZK	2

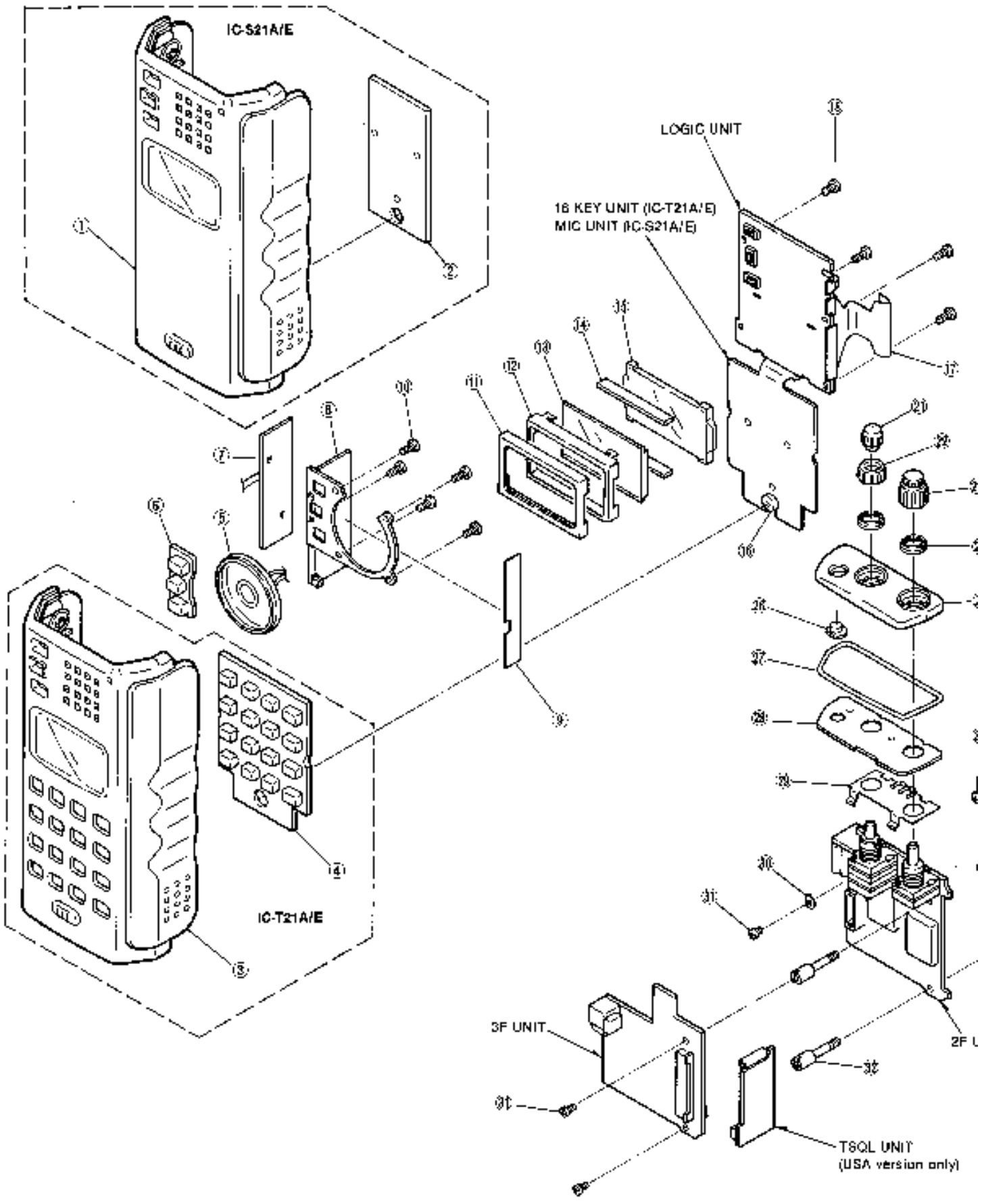
Screw abbreviations HO: Self-tapping PH: Pan head FHH: Flat fillister head NI: Nickel ZK: Black

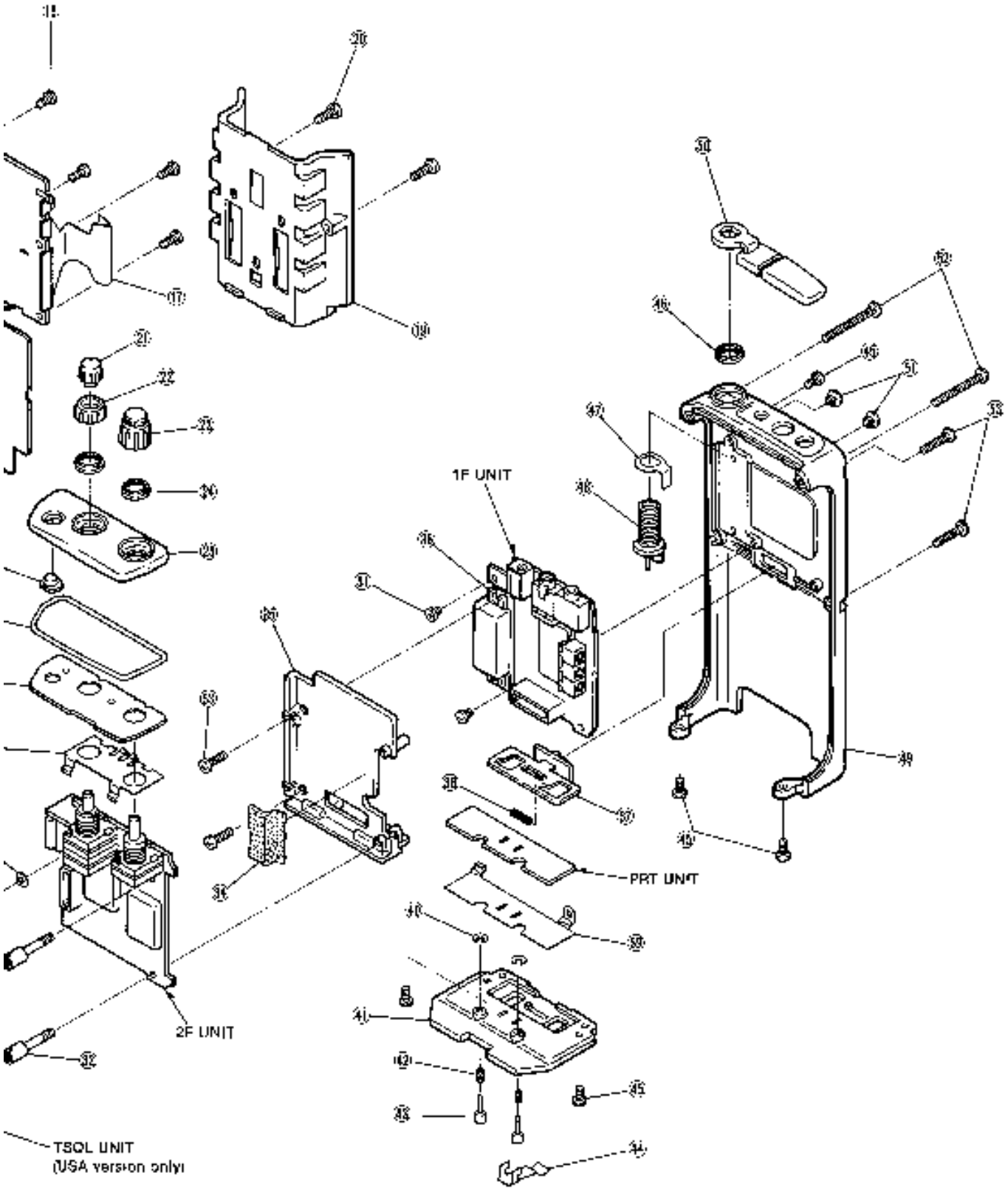
• ACCESSORIES



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8810015080	Handstrap	1
②	Optional product	FA-S21/A ANTENNA	1
③	Optional product	BC-74D WALL CHARGER (EUR, DEN, ITA)	1
		BC-74V WALL CHARGER (AUS)	
		BC-74A WALL CHARGER (USA)	
④	8810007930	Screw BuH M3×3 ZK BS	2
⑤	8930029840	1368 belt clip	1
⑥	Optional product	BP-15 BATTERY PACK (EUR, USA, AUS, DEN, ITA)	1
		BP-159 BATTERY CASE (FPP, 6×A)	

Screw abbreviations BuH: Button head BS: Brass ZK: Black


IC-S21A/E
LOGIC UNIT
16 KEY UNIT (IC-T21A/E)
MIC UNIT (IC-S21A/E)
IC-T21A/E
3F UNIT
2F U
TSQL UNIT
(USA version only)


1F UNIT
PRT UNIT
2F UNIT
TSOL UNIT
(USA version only)

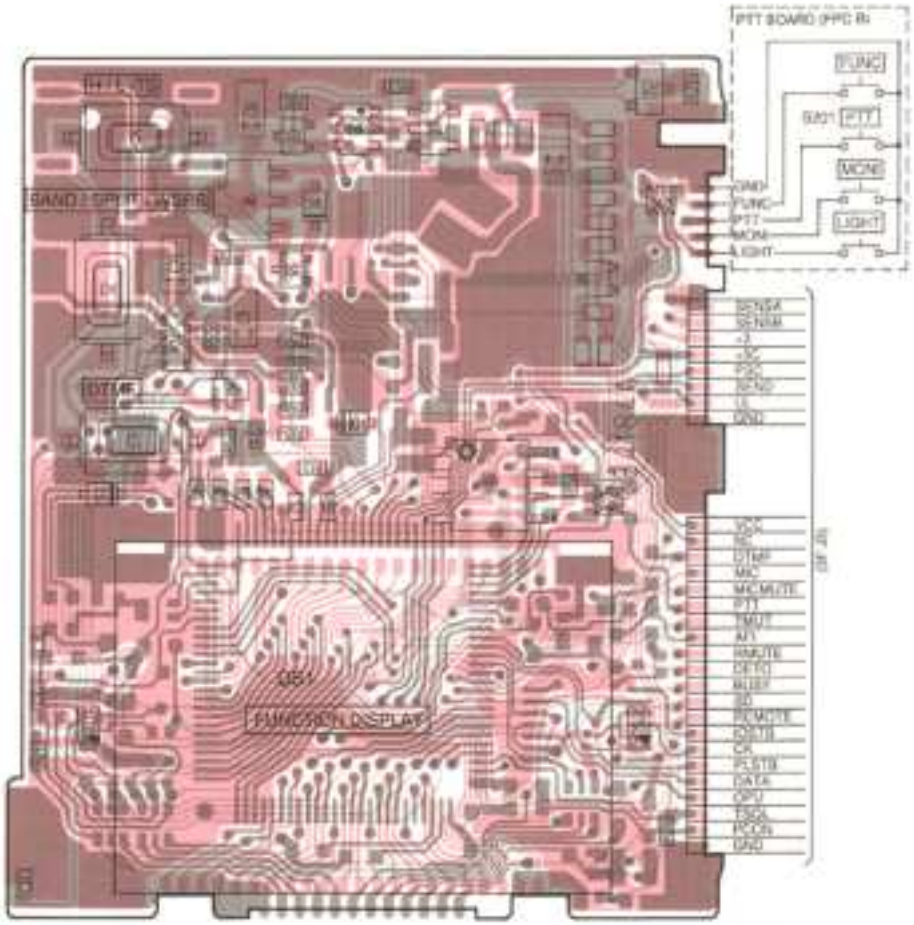
SECTION 8 BOARD LAYOUTS

■ IC-T21A/E

8-1 LOGIC UNIT

• LOGIC UNIT

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



XN4601
(Symbol: SC)

Q4

2SB1132 R
(Symbol: BARR)

Q6

2SC4211 7
(Symbol: L7)

Q7

2SA1622 6
(Symbol: M6)

Q8

XN1117
(Symbol: OL)

Q9

DA204U
(Symbol: K)

D3

• LOGIC UNIT

T21

UN9213
(Symbol: 9C)

Q1

2SC4211 7
(Symbol: L7)

Q2

UN9210
(Symbol: 8L)

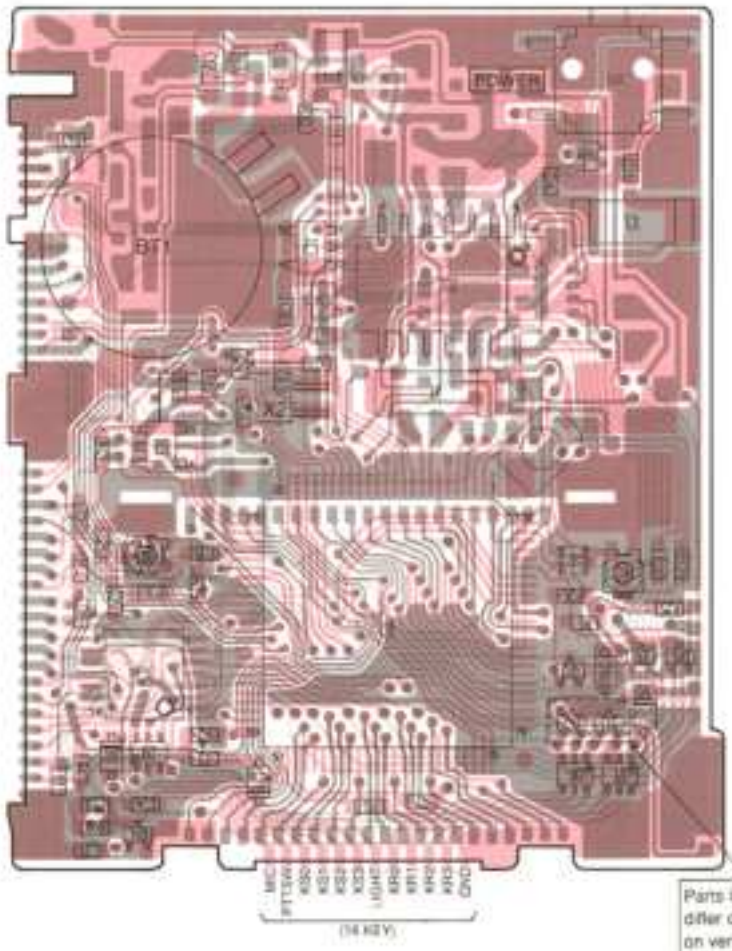
Q10

UN9110
(Symbol: 6L)

Q13

UN9217
(Symbol: 8H)

Q14



Parts locations differ depending on version. See below for details.

MA132K
(Symbol: M1)

D5, D12 (USA, TPE), D13 (USA, AUS, SEA, ITA), D15

MA6S121
(Symbol: M2D)

D6, D7, D9

MA132HK
(Symbol: M3N)

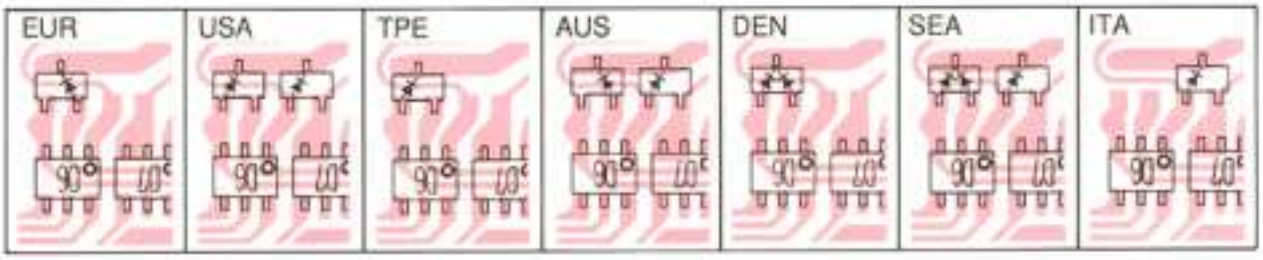
D12 (EUR, AUS)

MA132WK
(Symbol: MU)

D13 (DEN, SEA)

MA133
(Symbol: MP)

D16



8-2 1F AND 2F UNITS

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

• 1F UNIT

2SK882 Y (Symbol: TY) — Q7

XP4316 (Symbol: 7U) — Q8

UN9116 (Symbol: 6F) — Q9

XP4311 (Symbol: 7X) — Q12

2SC4211 7 (Symbol: L7) — Q13

2SB1132 R (Symbol: BARR) — Q14

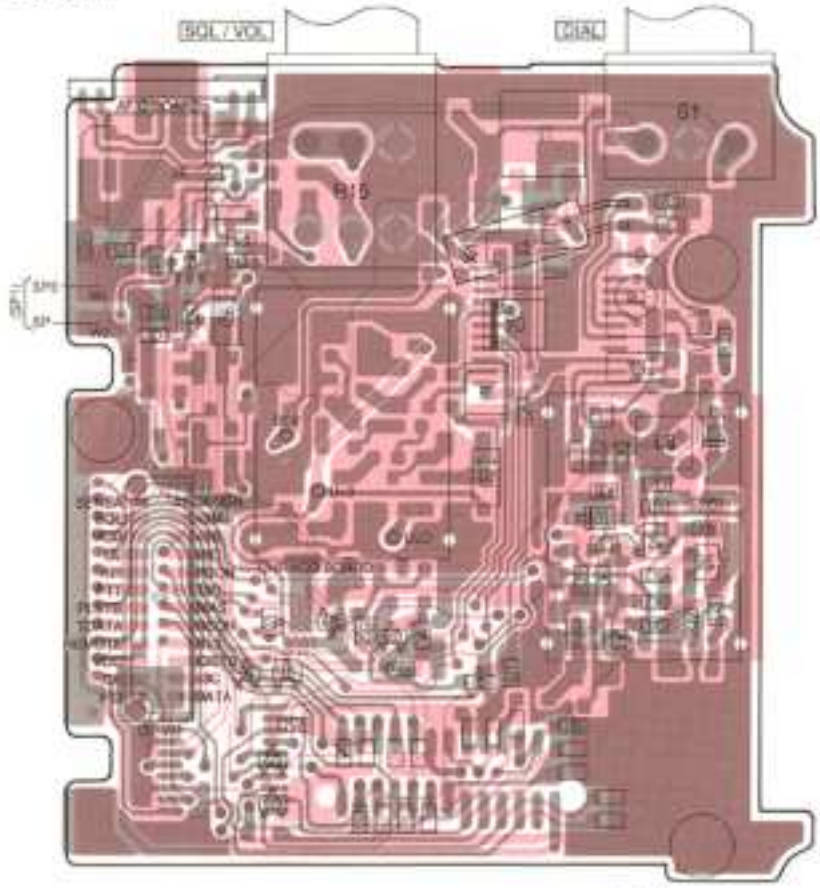
XP1401 (Symbol: 5V) — Q15

2SC4117 BL (Symbol: DL) — Q16

UN9110 (Symbol: 6L) — Q20

SB30 03P (Symbol: SG) — D17

• 2F UNIT



2SB1201 (Symbol: 2M) — Q4

XP1501 (Symbol: 5R) — Q5

UN9110 (Symbol: 6L) — Q6

UN9115 (Symbol: 6E) — Q7

UN9210 (Symbol: 8L) — Q8

2SC4226 R25 (Symbol: R25) — Q14, Q15

UN921E (Symbol: 8N) — Q19, Q20, Q21

UN911D (Symbol: 6M) — Q22, Q23

HVU350TRF (Symbol: 4) — D3

• 1F UNIT

2SC4228 R44 (Symbol: R44)

Q1, Q2, Q3, Q22

XP1110 (Symbol: AD)

Q4

XP1114 (Symbol: 7Q)

Q5

UN9210 (Symbol: 8L)

Q6

2SC4663 4 (Symbol: FN4)

Q11

2SC4405 3 (Symbol: OY3)

Q10

2SD2218 (Symbol: 5I)

Q17

2SC4215 0 (Symbol: Q0)

Q18

2SC4403 3 (Symbol: LY3)

Q21

UN9110 (Symbol: 6L)

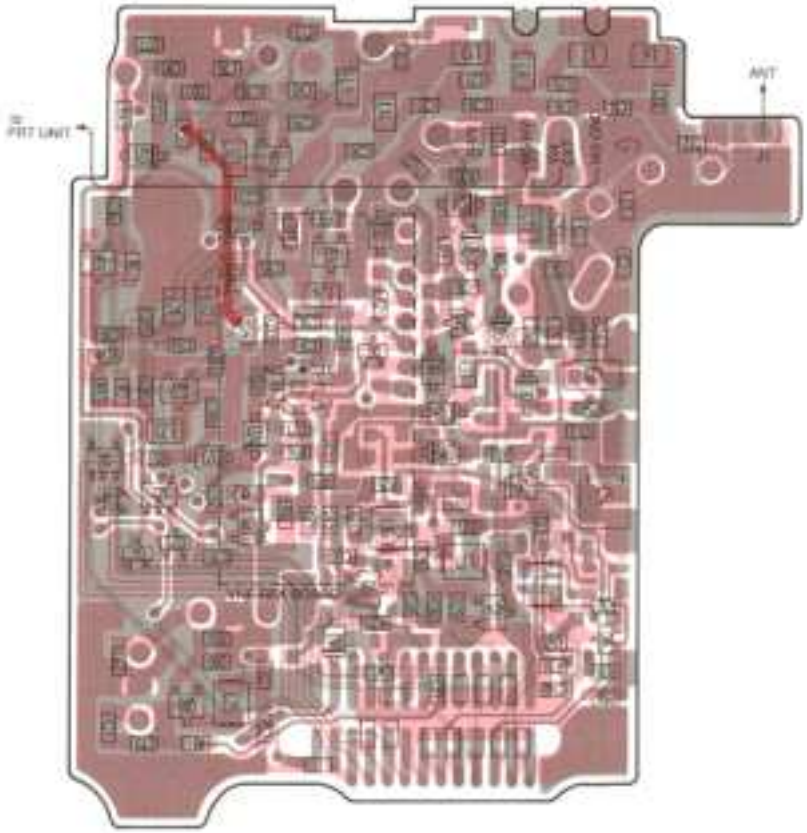
Q23

MA132WA (Symbol: M0)

D4, D25

1SS364 (Symbol: BF)

D6



• 2F UNIT

2SA1622 6 (Symbol: M6)

Q1

UN9213 (Symbol: 8C)

Q2

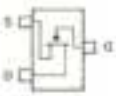
UN9210 (Symbol: 8L)

Q3

2SC4663 4 (Symbol: FN4)

Q9, Q10, Q11, Q12

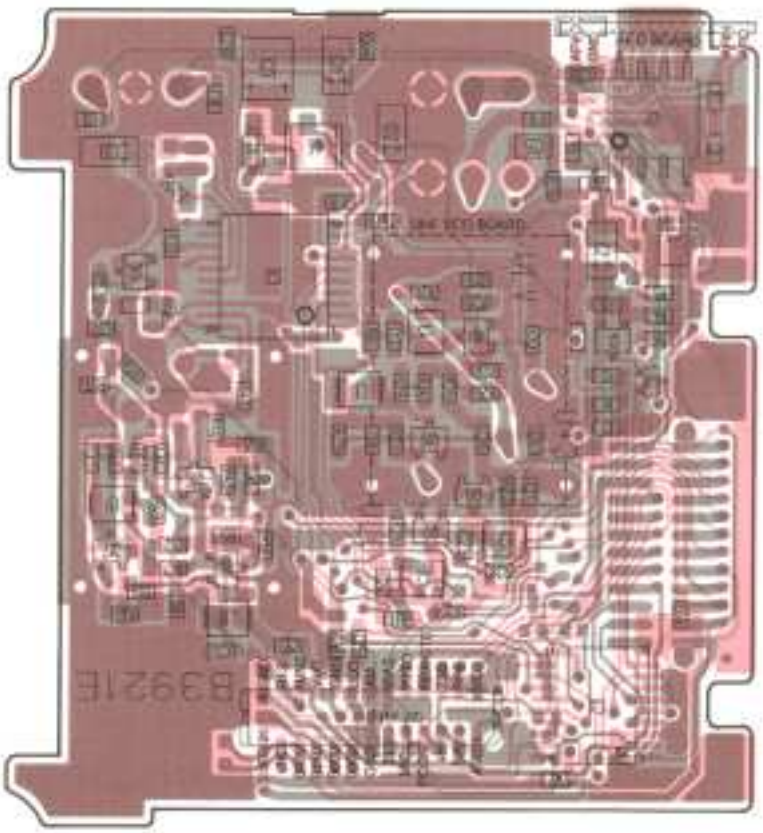
2SK880 Y (Symbol: XY)



Q13

2SC4403 3 (Symbol: LY3)

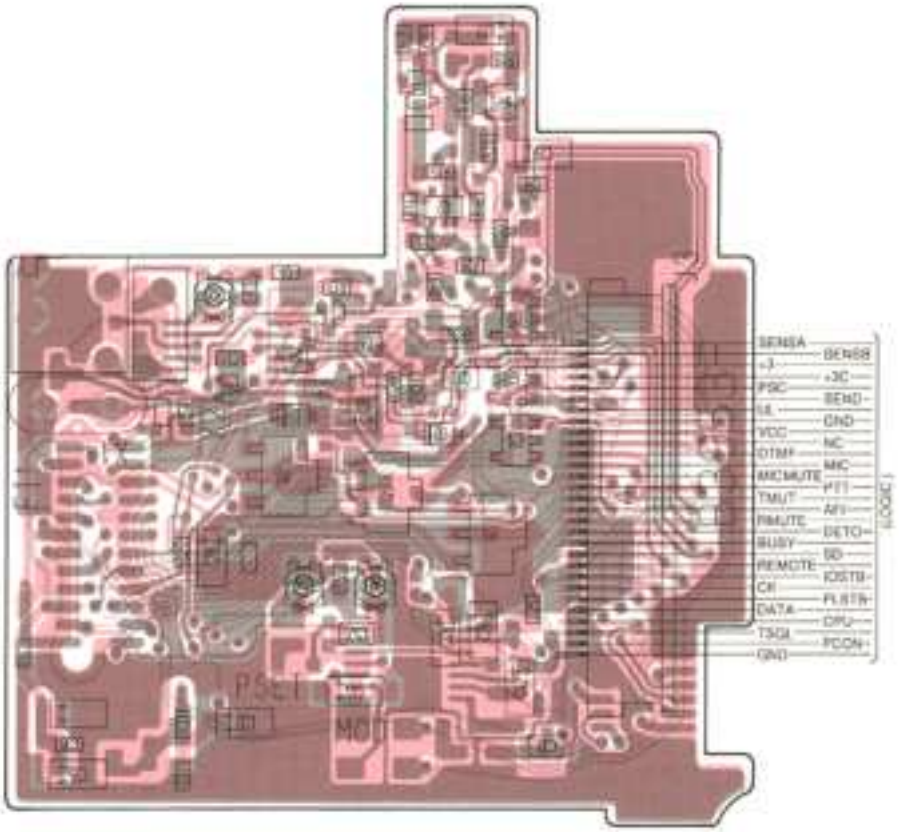
Q16, Q17, Q18



8-3 3F UNIT AND UHF-VCO BOARD

• 3F UNIT

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



UN911F
(Symbol: 6O)

Q1

XP1501
(Symbol: 5R)

Q2

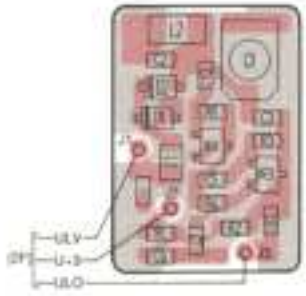
2SC4211 7
(Symbol: L7)

Q3, Q4, Q10, Q12

2SB1132 R
(Symbol: BARR)

Q7, Q9, Q11

• UHF-VCO BOARD



2SC4226 R25
(Symbol: R25)

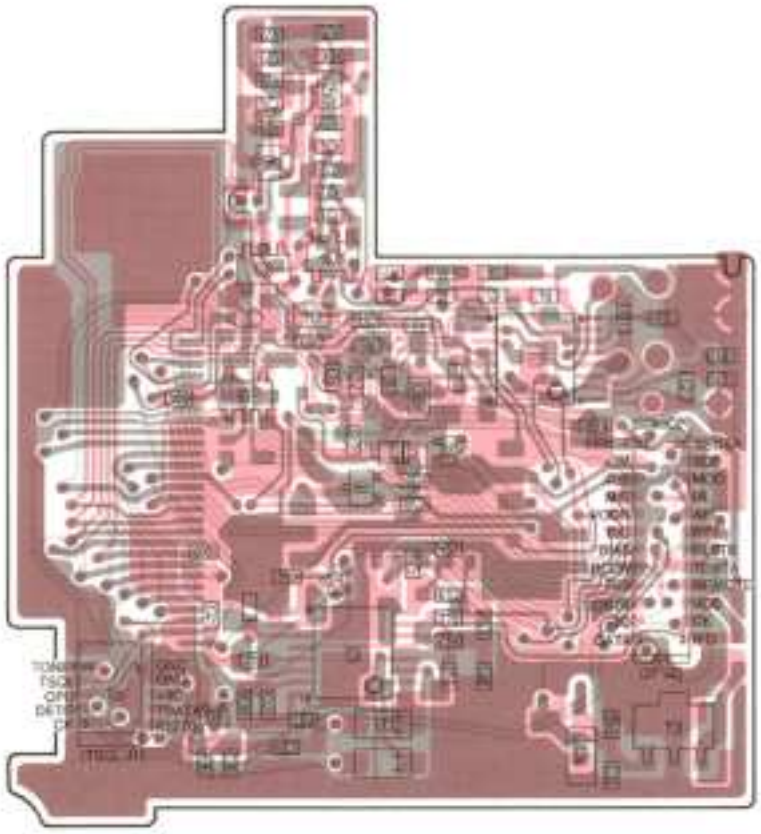
Q1, Q2

HVU350TRF
(Symbol: A)

D1, D2

• 3F UNIT

T21



2SC4211 7
(Symbol: L7)

Q5, Q6, Q8

UN9215
(Symbol: 8E)

Q13

UN9110
(Symbol: 6L)

Q14

UN9210
(Symbol: 8L)

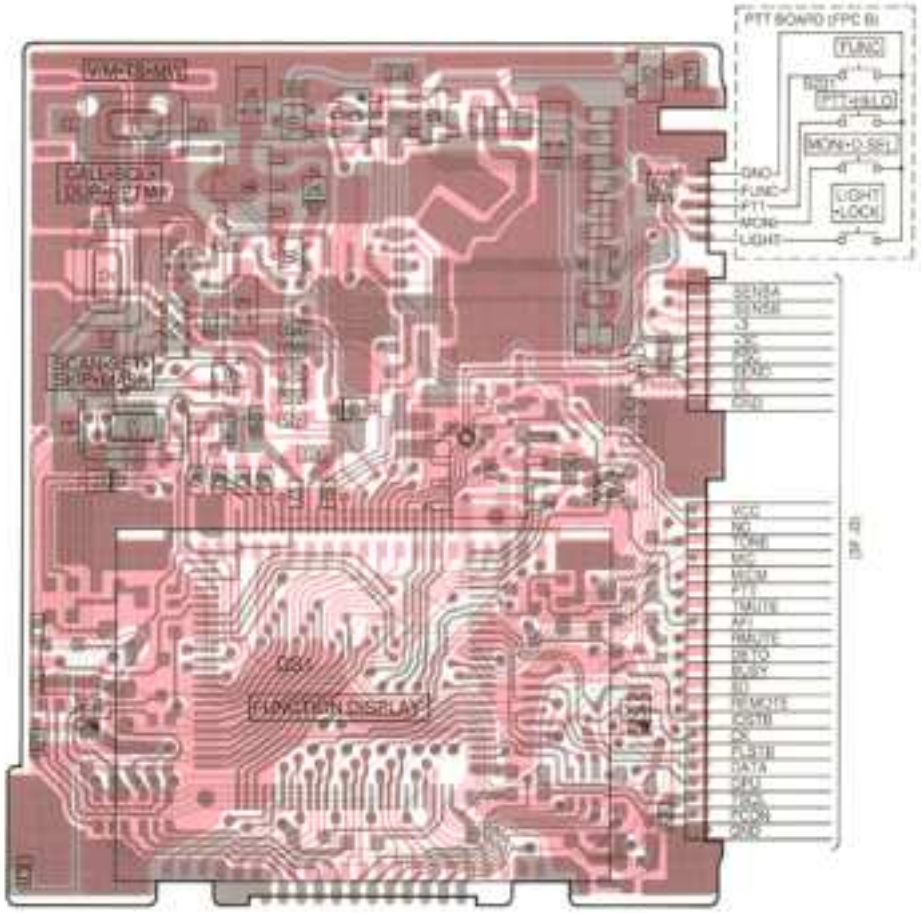
Q15

■ IC-S21A/E

8-4 LOGIC UNIT

• LOGIC UNIT

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



XN4601
(Symbol: 5C)

Q4

2SB1132 R
(Symbol: BARR)

Q6

2SC4211 7
(Symbol: L7)

Q7

2SA1822 6
(Symbol: M6)

Q8

XN1117
(Symbol: OL)

Q9

DA204U
(Symbol: K)

D3

• LOGIC UNIT

UN9213
(Symbol: 8C)

Q1

2SC4211 7
(Symbol: L7)

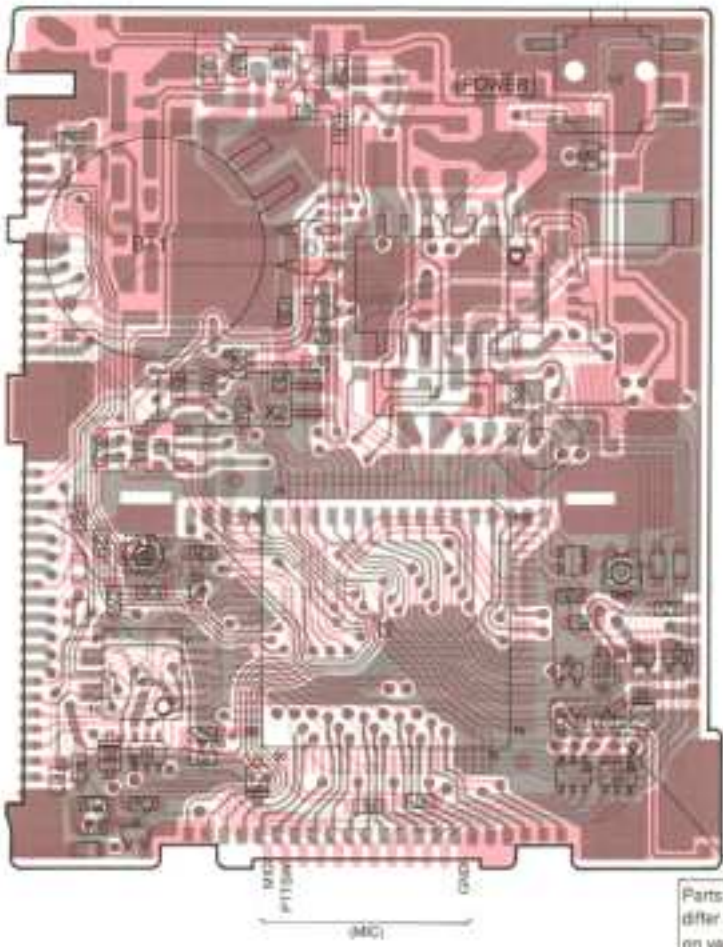
Q2

UN9210
(Symbol: 8L)

Q10

UN9110
(Symbol: 6L)

Q13



Parts locations differ depending on version. See below for details.

MA132K
(Symbol: M1)

D6, D12 (USA, TPE), D13 (USA, AUS, SEA, ITA), D15

MA6S121
(Symbol: M2D)

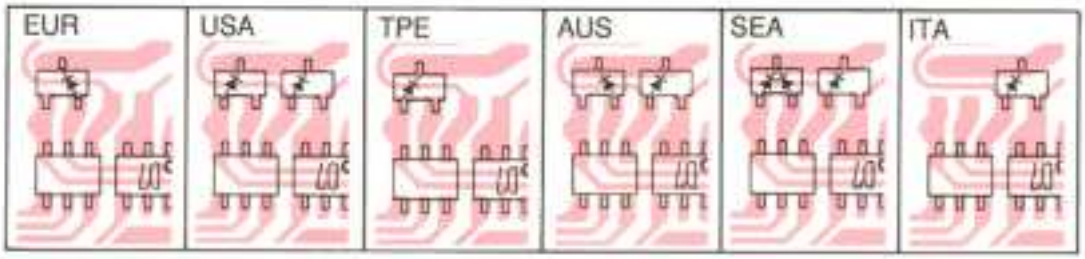
D7, D9

MA132HK
(Symbol: M3N)

D12 (EUR, AUS)

MA132WK
(Symbol: ML)

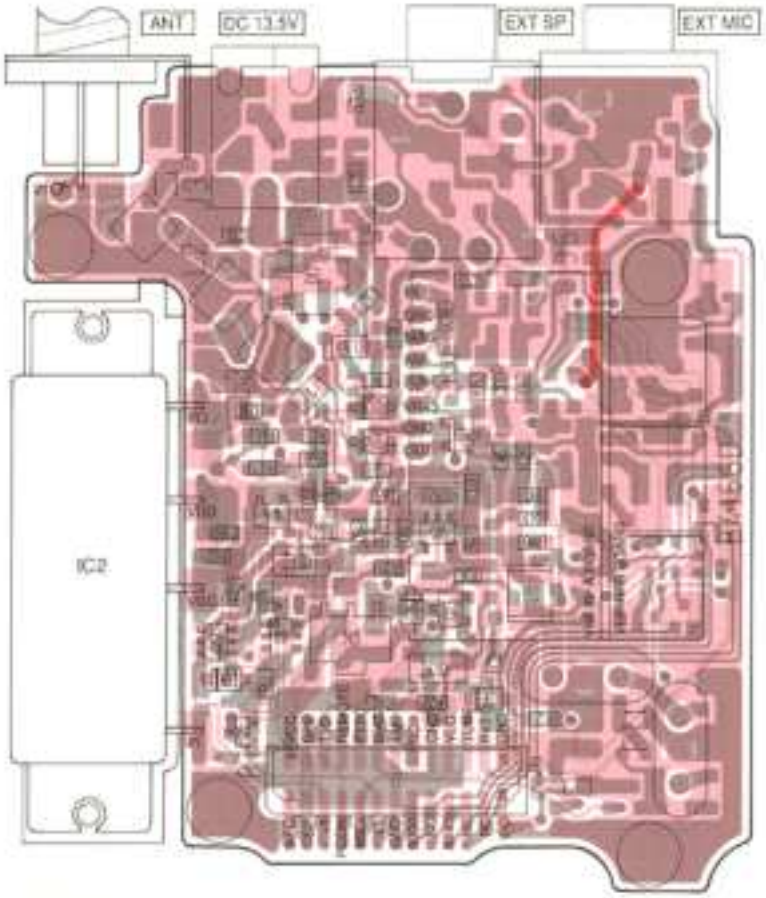
D12 (SEA)



8-5 1F AND 2F UNITS

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

• 1F UNIT



2SK882 Y (Symbol: TY)
Q7

XP4316 (Symbol: 7U)
Q8

UN9110 (Symbol: 6F)
Q9

XP4311 (Symbol: 7X)
Q12

2SC4211 7 (Symbol: L7)
Q13

2SB1132 R (Symbol: BARR)
Q14

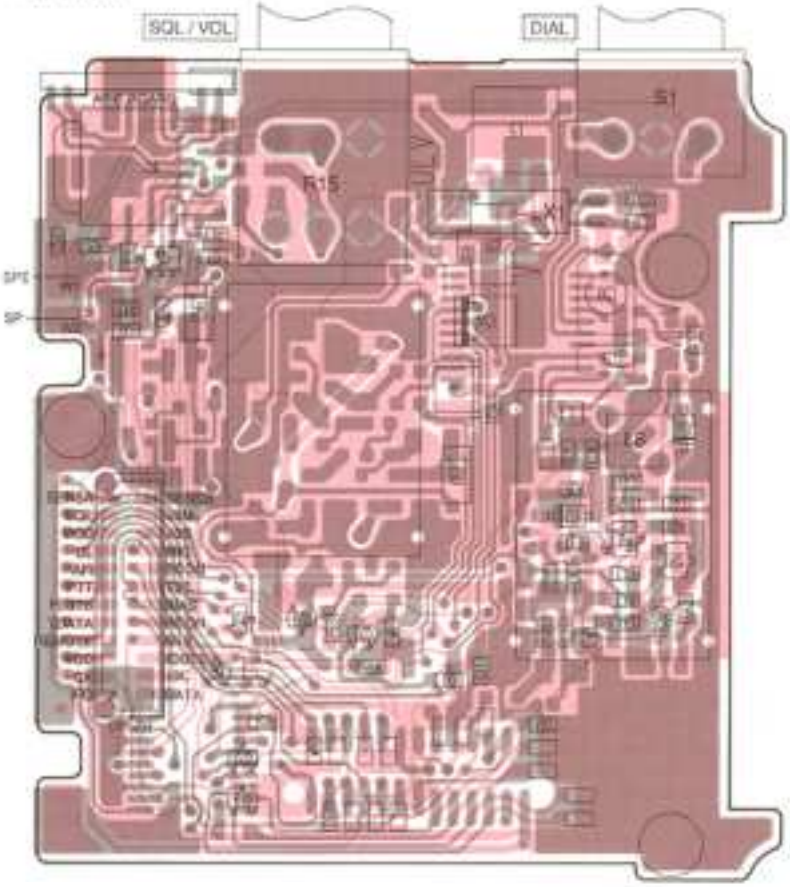
XP1401 (Symbol: 5V)
Q15

2SC4117 BL (Symbol: DL)
Q18

UN9110 (Symbol: 6L)
Q20

SB30 03P (Symbol: SG)
D17

• 2F UNIT



2SB1201 (Symbol: 2M)
Q4

XP1501 (Symbol: 5R)
Q5

UN9110 (Symbol: 6L)
Q6

UN9210 (Symbol: 8L)
Q8

2SC4226 R25 (Symbol: R25)
Q14, Q15

UN921E (Symbol: 8N)
Q19, Q20, Q21

UN911D (Symbol: 6M)
Q22, Q23

HVU350TRF (Symbol: 4)
D3

S21

• 1F UNIT

2SC4228 R44
(Symbol: R44)

Q1

XP1110
(Symbol: AD)

Q4, Q5

UN9210
(Symbol: 8L)

Q6

2SC4663 4
(Symbol: FN4)

Q11

2SC4405 3
(Symbol: OY3)

Q10

2SD2216
(Symbol: 5)

Q17

2SC4215 0
(Symbol: Q0)

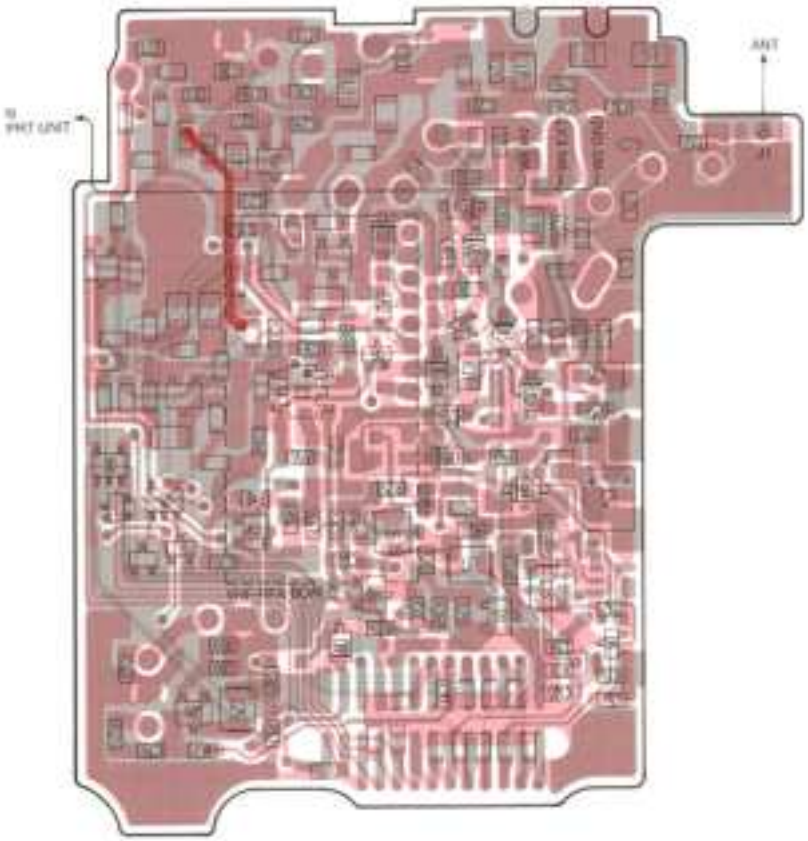
Q18

2SC4403 3
(Symbol: LY3)

Q21

1SS364
(Symbol: BF)

D8



• 2F UNIT

2SA1622 6
(Symbol: M6)

Q1

UN9213
(Symbol: 8C)

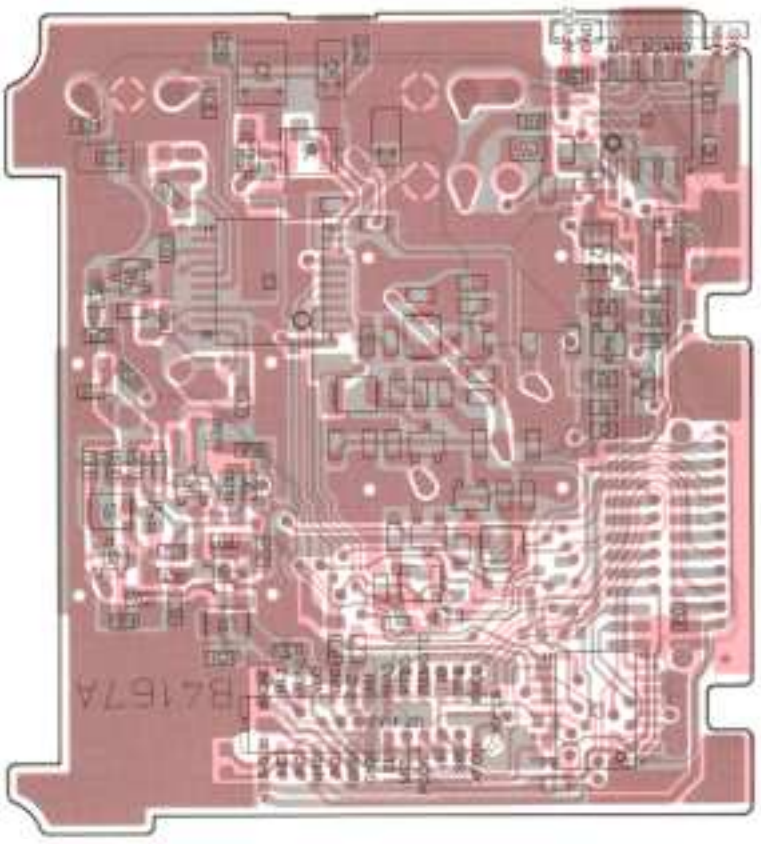
Q2

2SK880 Y
(Symbol: XY)

Q13

2SC4403 3
(Symbol: LY3)

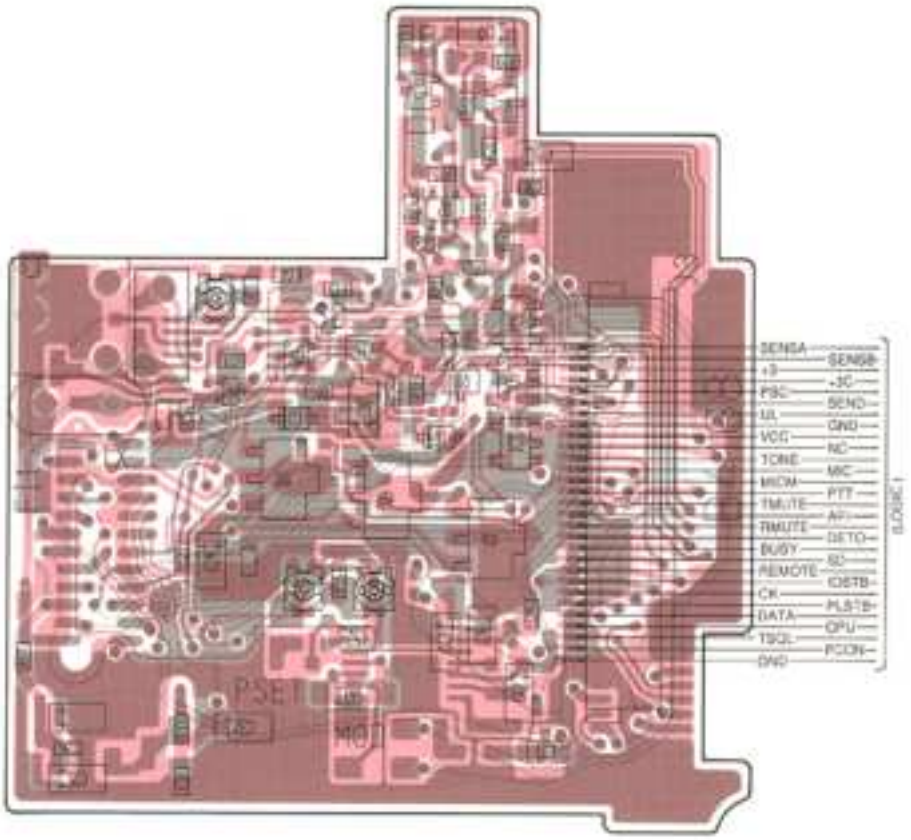
Q16, Q17, Q18



8-6 3F UNIT

• 3F UNIT

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



UN911F
(Symbol: 6C)

Q1

XP1501
(Symbol: 5R)

Q2

2SC4211 7
(Symbol: L7)

Q3, Q4, Q10, Q12

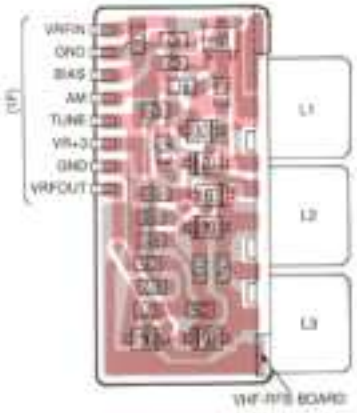
2SB1132 R
(Symbol: BARR)

Q7, Q9, Q11

S21

8-7 COMMON BOARDS AND UNITS

• VHF-RFA BOARD



• TSQL UNIT (USA version only)

HVU350TRF
(Symbol: 4)

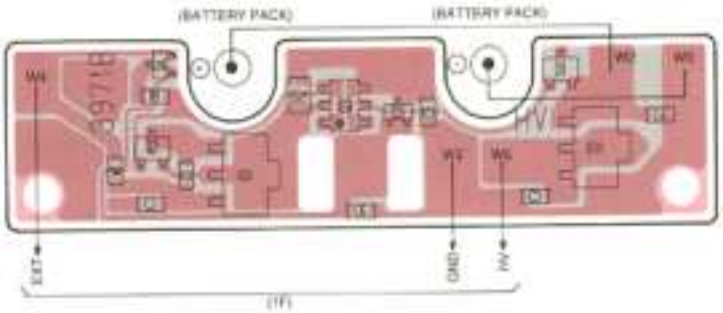
D2, D4, D5

MA742
(Symbol: M1U)

D7

• AFC BOARD

• PRT UNIT



2SB1132 R
(Symbol: BAR1)

Q1

2SC4211 7
(Symbol: L7)

Q2

IMX2
(Symbol: X2)

Q3

UN9113
(Symbol: 6C)

Q4

DA204U
(Symbol: K)

D1

SB30 03P
(Symbol: SG)

D2

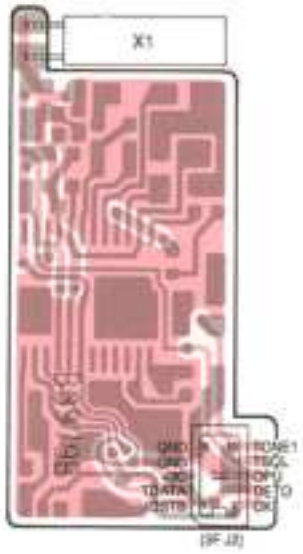
MA132WA
(Symbol: MO)

D3

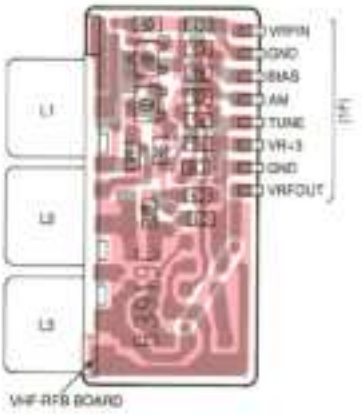
T21

S21

• TSQL UNIT (USA version only)



• VHF-RFA BOARD

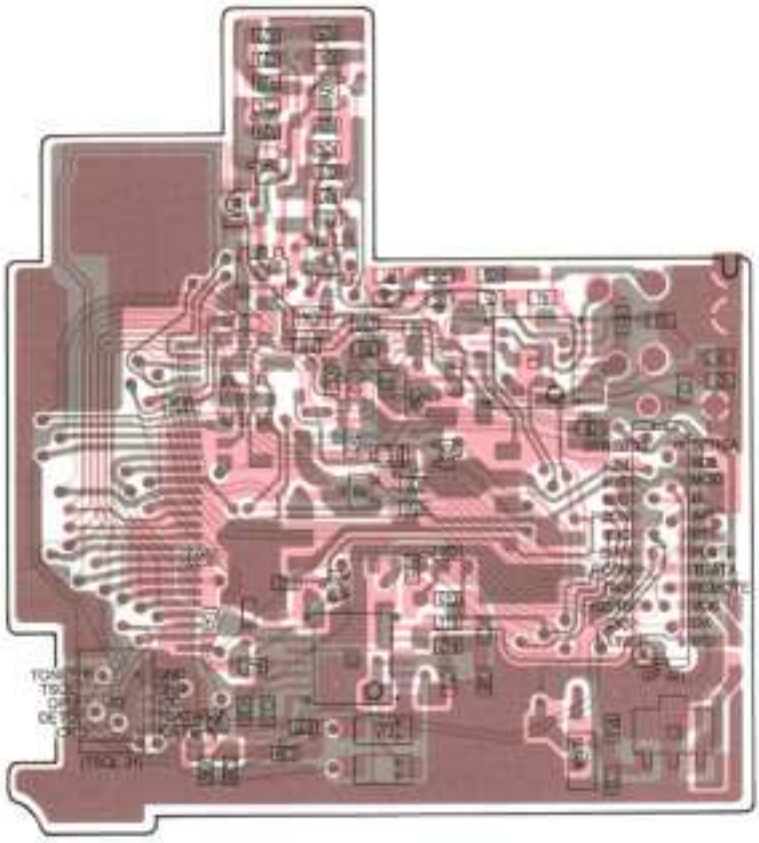


2SC4863 4 TR
(Symbol: FN4)

2SC4403 3
(Symbol: LY3)

• 3F UNIT

S21



2SC4211 7
(Symbol: L7)

Q5, Q6, Q8

UN9215
(Symbol: 6E)

Q13

UN9110
(Symbol: 6L)

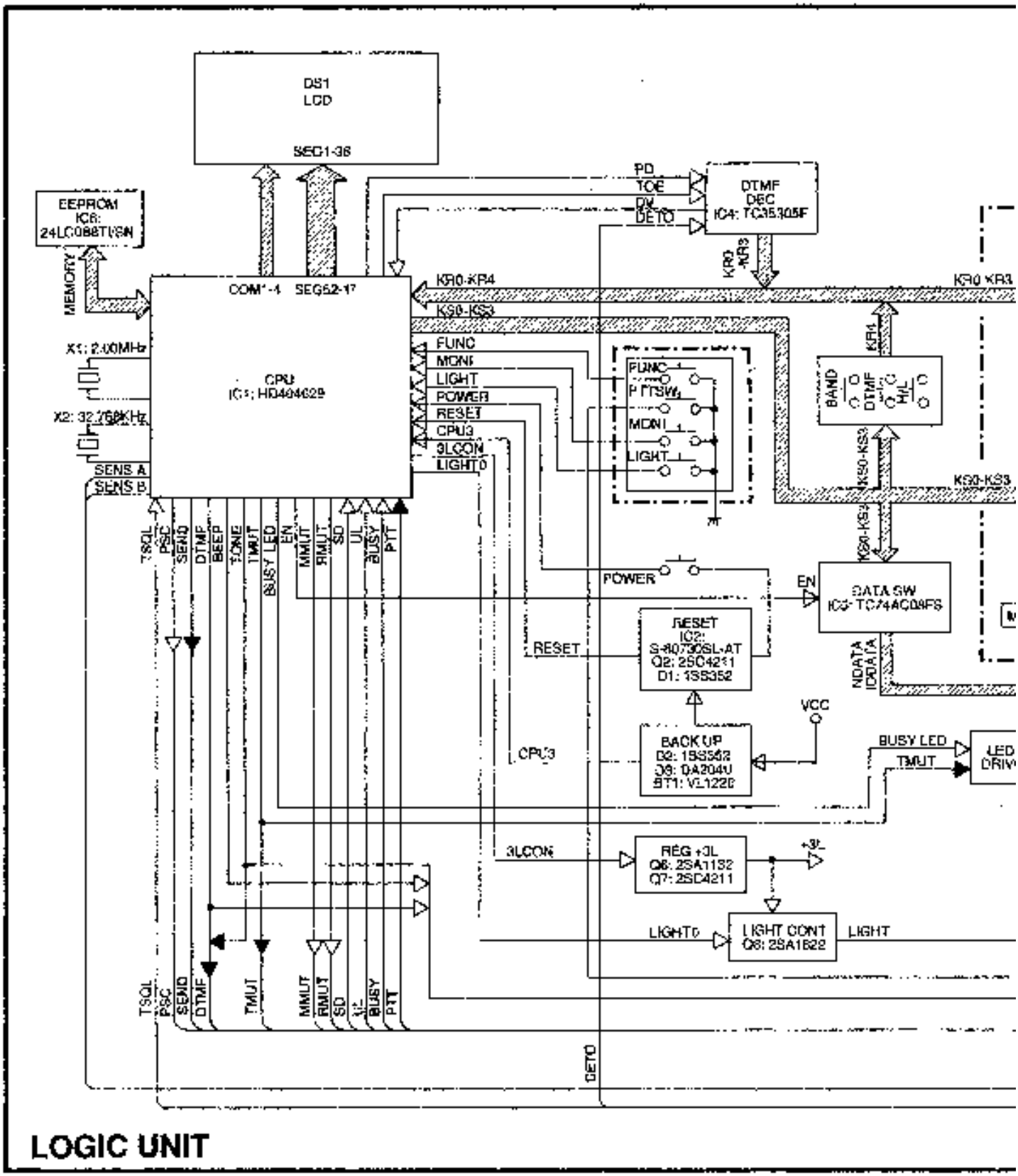
Q14

UN9210
(Symbol: 6L)

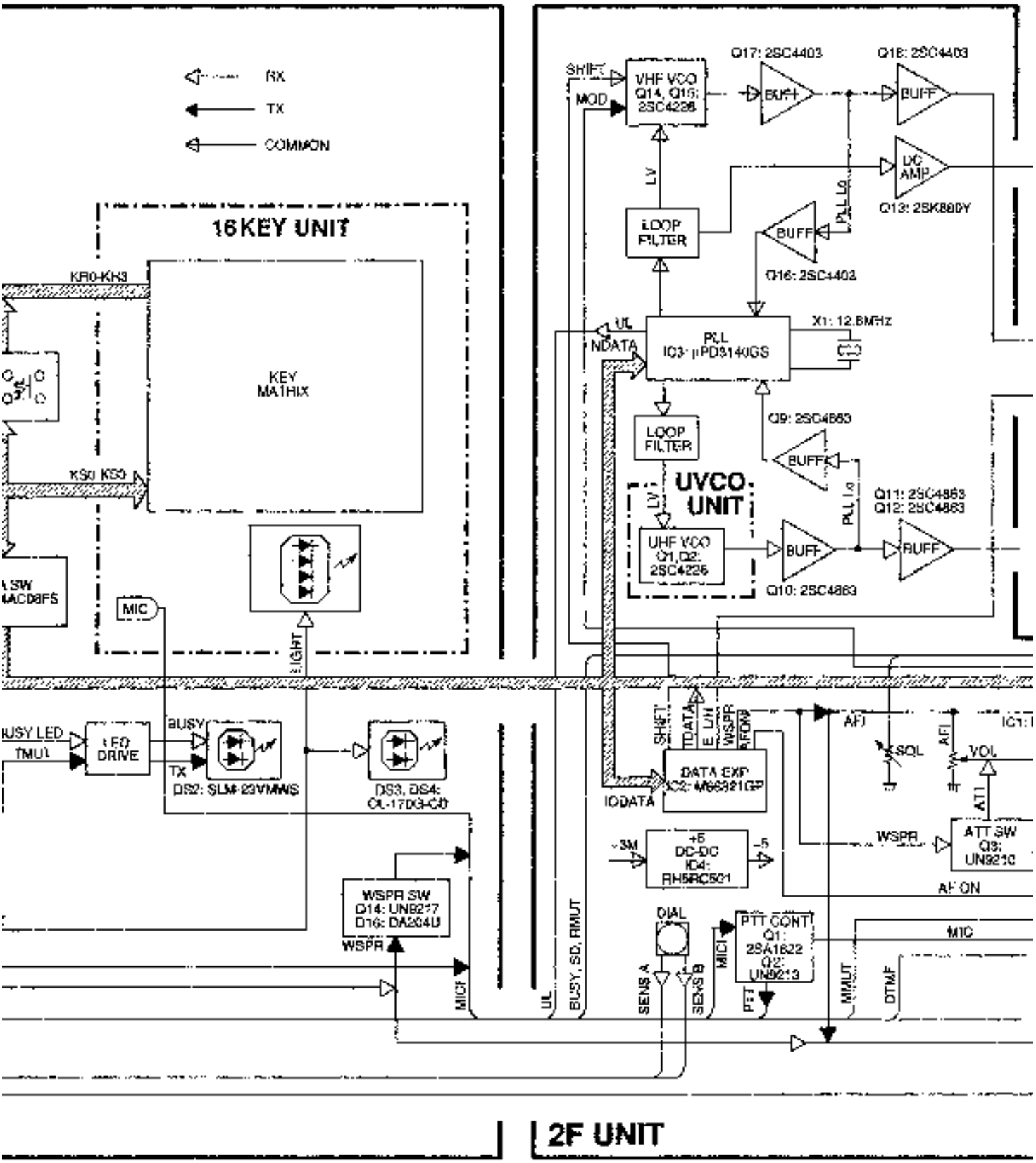
Q15

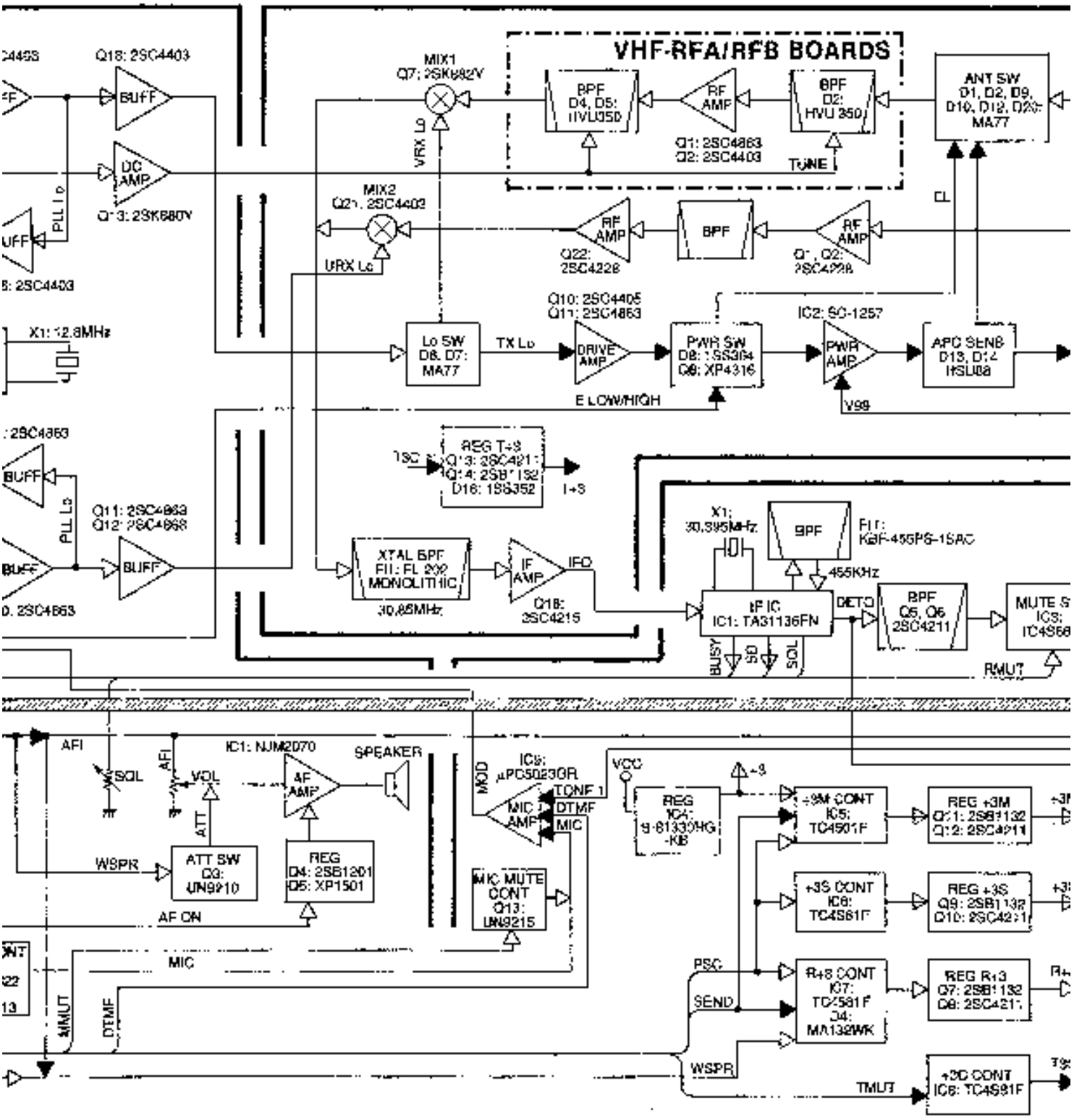
SECTION 9 BLOCK DIAGRAMS

9-1 IC-T21A/E

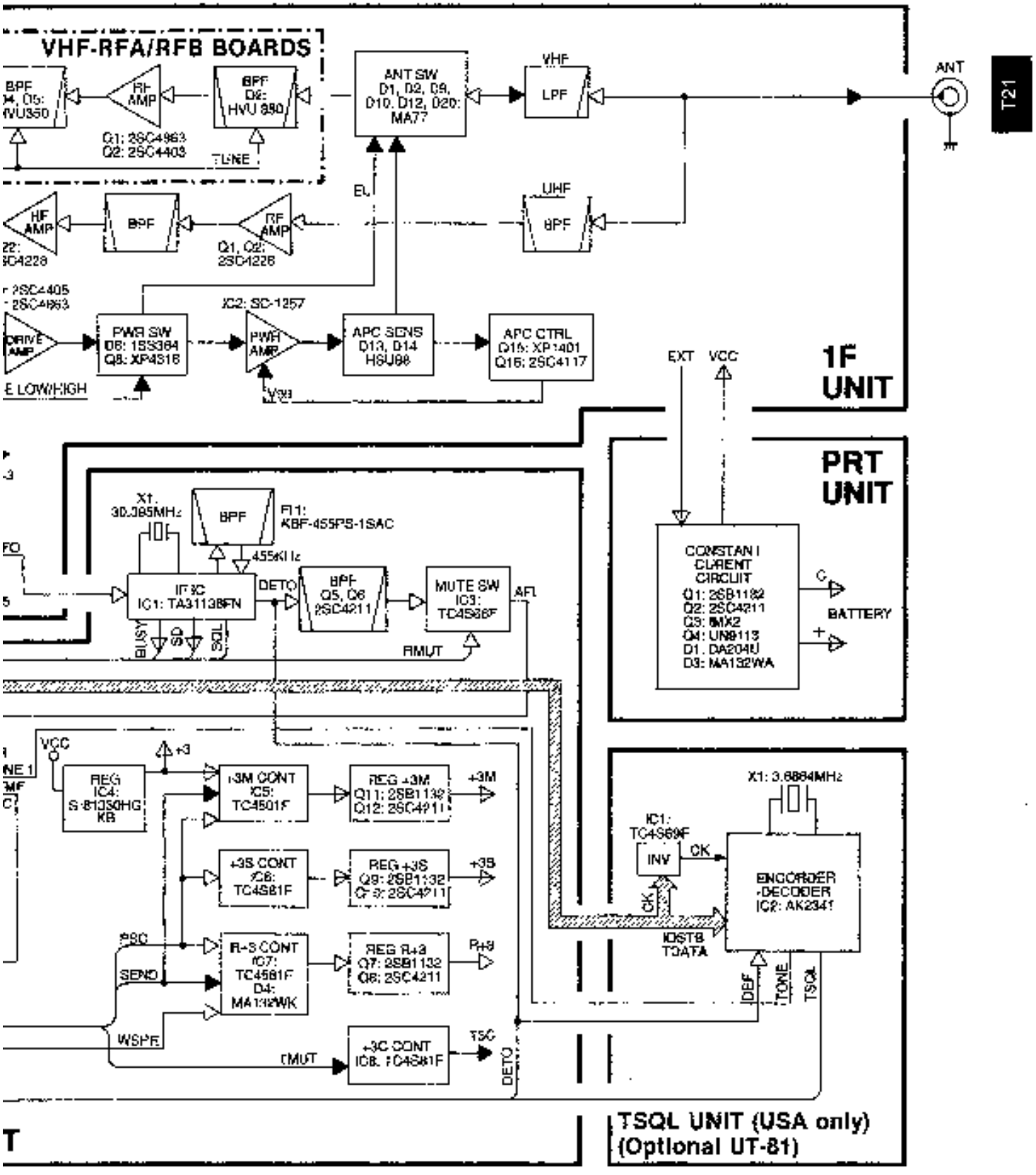


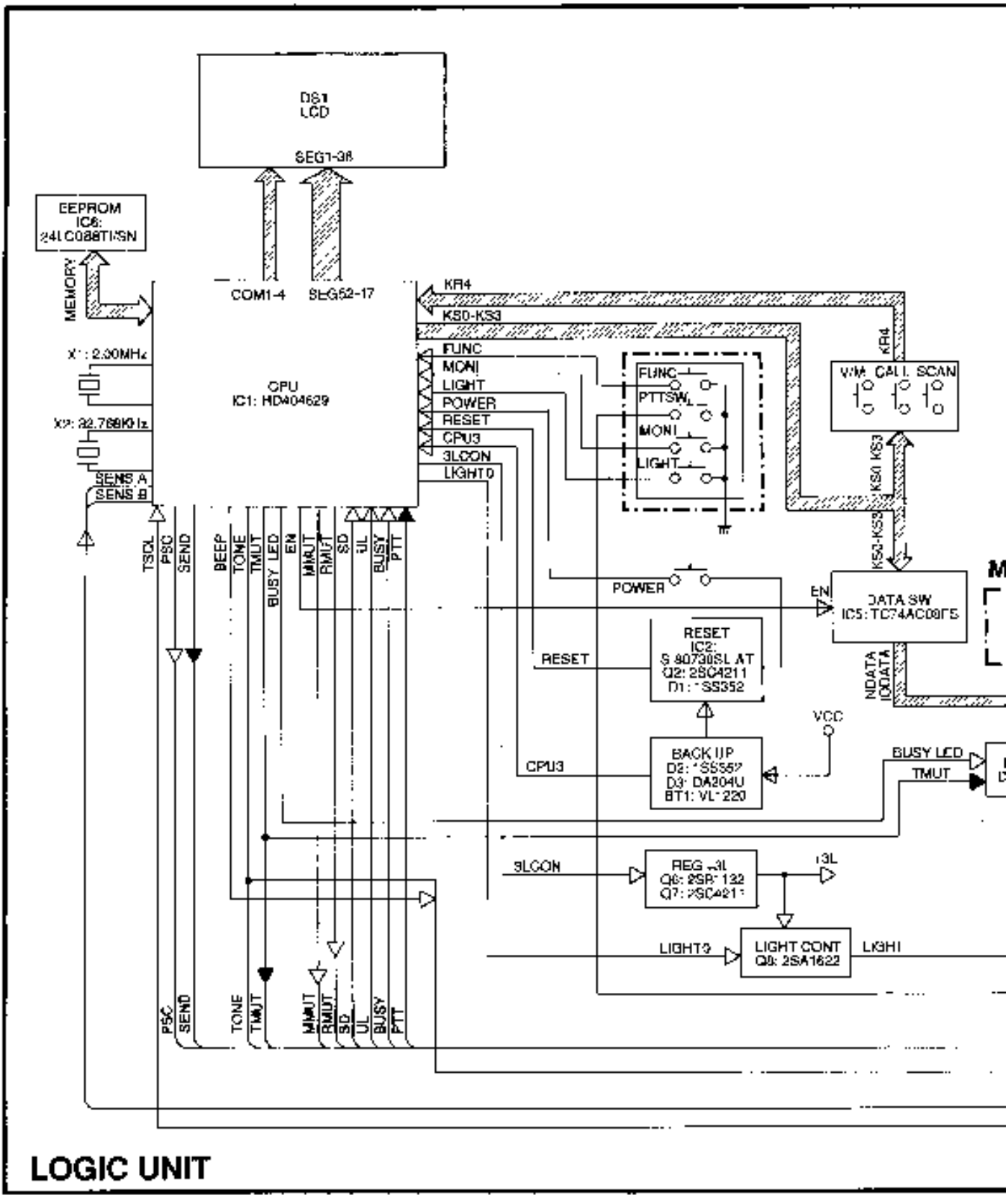
LOGIC UNIT

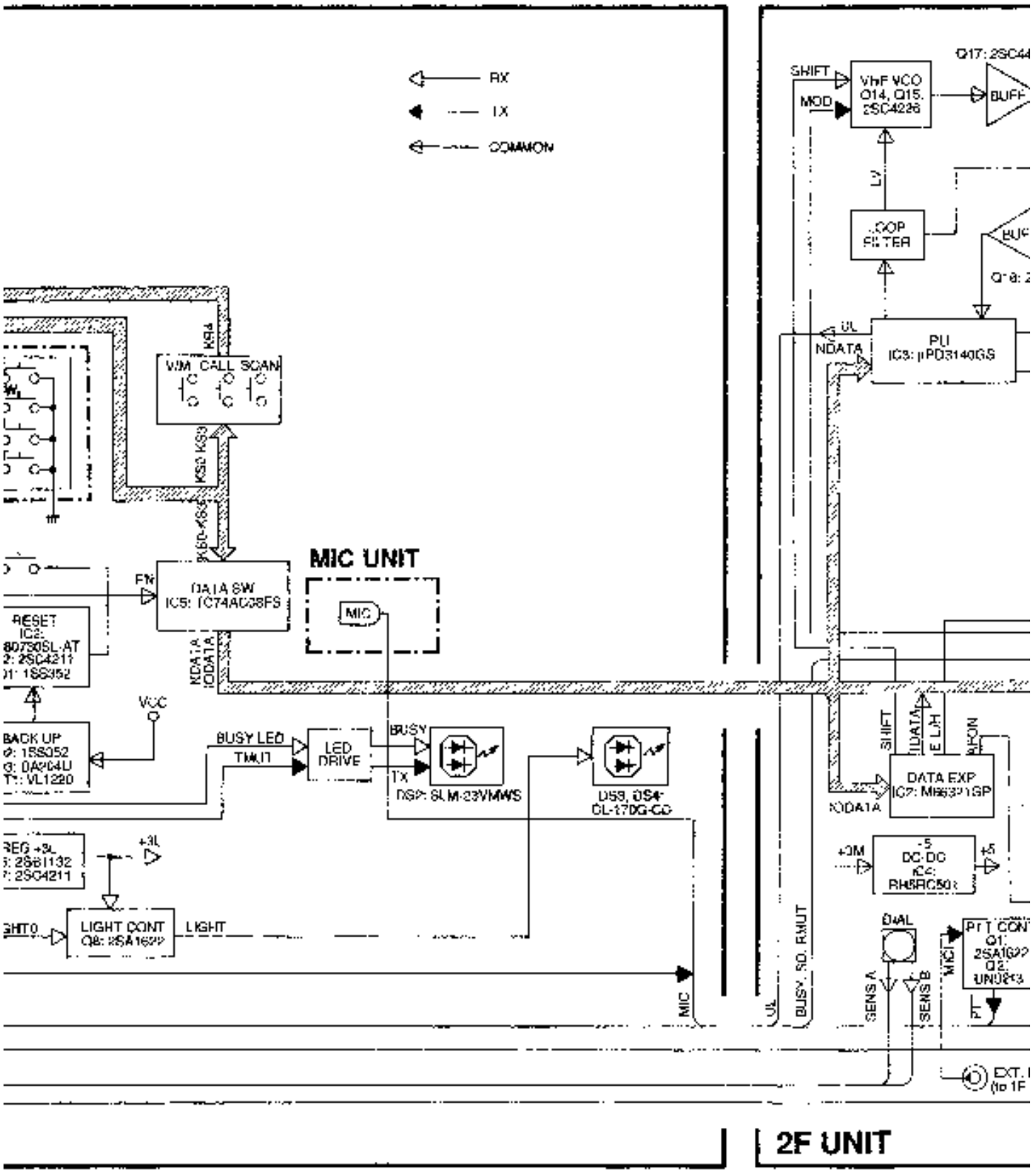

RX
TX
COMMON
16KEY UNIT
KR0-KR3
KEY
MATRIX
KS0 KS3
MIC
LIGHT
BUSY LED
TMUT
LED
DRIVE
BUSY
TX
DS2: SLM-23VMWS
DS3, DS4:
OL-17D3-C0
WSPR SW
Q14: UNB217
D16: DA204U
WSPR
MICI
UL
BUSY, SD, RMUT
SENS A
SENS B
DIAL
PTT CONT
Q1:
2SA1622
Q2:
UN9213
PTT
MMUT
DTMF
MIC
SHIFT
MOD
VHF VCO
Q14, Q15:
2SC4226
Q17: 2SC4403
BUFF
Q18: 2SC4403
BUFF
DC
AMP
Q13: 2SK880Y
LV
LOOP
FILTER
PLL LO
BUFF
Q16: 2SC4403
UL
NDATA
PLL
IC3: µPD3140GS
X1: 12.8MHz
Q9: 2SC4883
LOOP
FILTER
BUFF
UVCO
UNIT
LV
UHF VCO
Q1, Q2:
2SC4226
PLL LO
Q11: 2SC4883
Q12: 2SC4883
BUFF
BUFF
Q10: 2SC4883
SHIFT
TDATA
E L/H
WSPR
RFOW
IODATA
DATA EXP
IC2: M66321GP
AFI
SQL
AFI
VOL
ATT
ATT SW
Q3:
UN9210
WSPR
AF ON
+5
DC-DC
IC4:
RH5RC501
+5
M10
2F UNIT

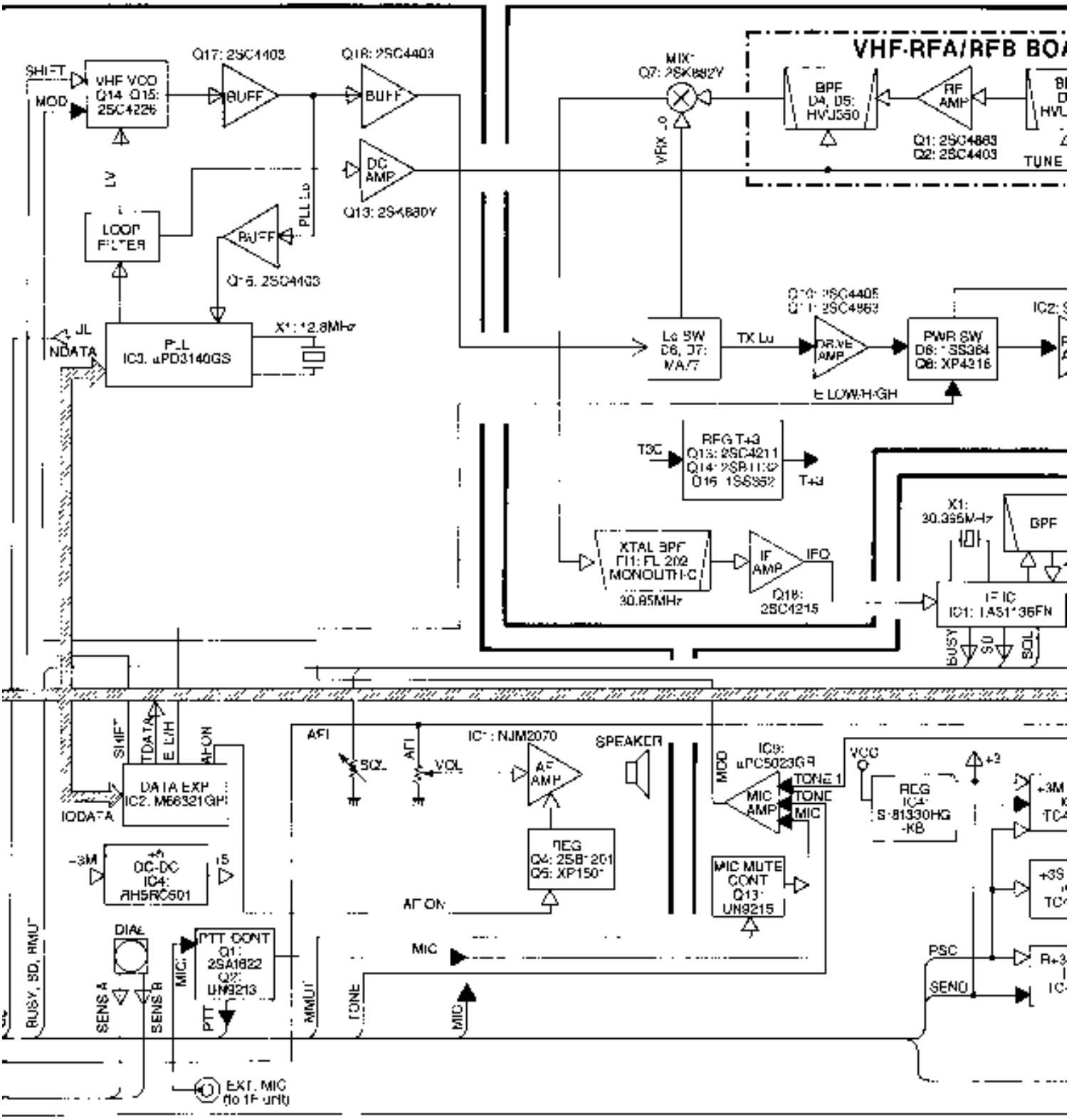

VHF-RFA/RFB BOARDS
Q18: 2SC4403
BUFF
DC AMP
Q13: 2SK880V
PLL Lo
MIX1
Q7: 2SK882V
VRX Lo
BPF
D4, D5: HVU350
RF AMP
Q1: 2SC4883
Q2: 2SC4403
BPF
D2: HVU 350
TUNE
ANT SW
D1, D2, D9, D10, D12, D20: MA77
MIX2
Q21: 2SC4402
URX Lo
RF AMP
Q22: 2SC4228
BPF
RF AMP
Q1, Q2: 2SC4228
X1: 12.8MHz
Lo SW
D8, D7: MA77
TX Lo
Q10: 2SC4405
Q11: 2SC4883
DRIVE AMP
PWR SW
D8: 1SS364
Q9: XP4316
IC2: SC-1257
PWR AMP
APC SENS
D13, D12: HSU08
E LOW/HIGH
VSS
REG T+S
Q13: 2SC4213
Q14: 2SB1132
D16: 1SS352
T+S
X1: 30.595MHz
BPF
FIL: KBF-455PS-1SAC
455KHz
XTAL BPF
FIL: FL 202 MONOLITHIC
30.65MHz
IF AMP
IFO
Q18: 2SC4215
IF IC
IC1: TA31136FN
DETO
BPF
Q5, Q6 2SC4211
MUTE S
IC3: TC4S66
BUSY
SD
SQL
RMUT
AFI
SQL
VOL
ATT
IC1: NJM2070
AF AMP
SPEAKER
WSPR
ATT SW
D3: UN9210
REG
D4: 2SB1201
D5: XP1501
AF ON
MOD
IC5: μPD5023GR
TONE
DTMF
MIC
MIC AMP
MIC MUTE CONT
Q13: UN9215
MIC
MMUT
DTMF
VCC
REG
IC4: S-81330HG -KB
+3
+3M CONT
IC5: TC4S01F
REG +3M
Q11: 2SB1132
Q12: 2SC4911
+3S CONT
IC6: TC4S81F
REG +3S
Q9: 2SB1132
Q10: 2SC4213
PSC
SEND
R+8 CONT
IC7: TC4S81F
IC4: MA132WK
REG R+3
Q7: 2SB1132
Q8: 2SC4213
WSPR
TMUT
+3C CONT
IC8: TC4S81F

3F UNIT

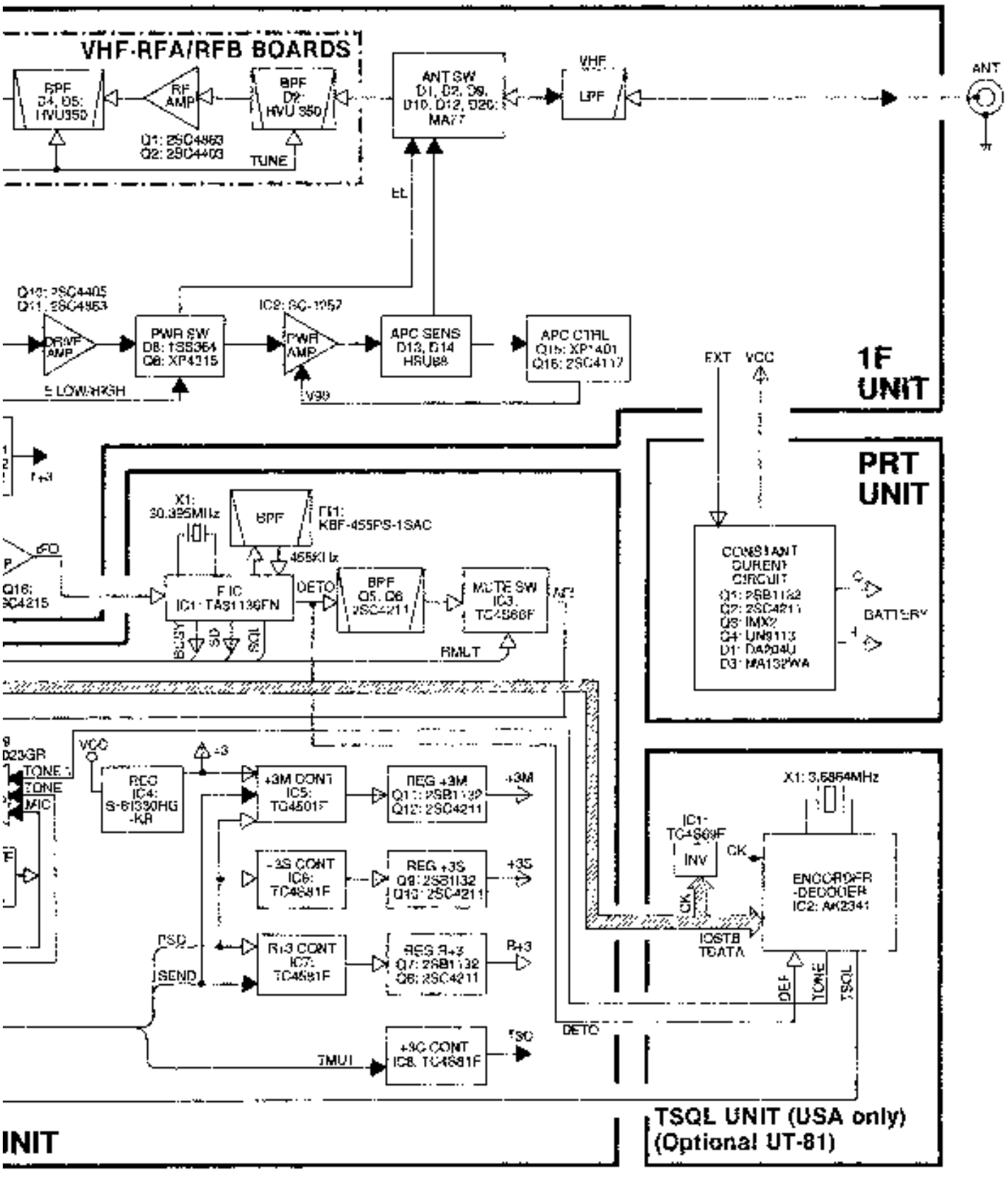

VHF-RFA/RFB BOARDS
BPF
RF AMP
BPF D6: HVU 980
Q1: 2SC4963
Q2: 2SC4403
TUNE
ANT SW D1, D2, D9, D10, D12, D20: MA77
VHF
LPF
ANT
UHF
BPF
HF AMP
BPF
RF AMP
Q1, Q2: 2SC1226
PWR SW D8: 1SS364 Q8: XP4316
X2: SC-1257
PWR AMP
APC SENS D13, D14 HSU88
APC CTRL Q15: XP1401 Q16: 2SC4117
EXT
VCC
1F UNIT
PRT UNIT
X1: 30.385MHz
BPF
F11: KBF-455PS-1SAC
455kHz
IF IC IC1: TA31136FN
DETO
BPF Q5, Q6 2SC4211
MUTE SW IC3: TC4S66F
AFI
BUSY
SQ
SQL
RMUT
CONSTANT CURRENT CIRCUIT
Q1: 2SB1132
Q2: 2SC4211
Q3: 5MX2
Q4: UN9113
D1: DA204U
D3: MA132WA
BATTERY
VCC
+3
REG IC4: S-81350HG KB
+3M CONT IC5: TC4501F
REG +3M Q11: 2SB1132 Q12: 2SC4211
+3M
+3S CONT IC6: TC4S81F
REG +3S Q9: 2SB1132 Q9: 2SC4211
+3S
R-S CONT IC7: TC4S81F D4: MA132WK
REG R+S Q7: 2SB1132 Q8: 2SC4211
R+S
PSC
SEND
WSPR
RMUT
+3C CONT IC8: TC4S81F
TSC
DETO
X1: 3.6864MHz
IC1: TC4S69F
INV
CK
ENCODER -DECODER IC2: AK2341
IDSTB
IDATA
DEF
TONE
TSQL
TSQL UNIT (USA only)
(Optional UT-81)


DS1
LCD
SEG1-38
EEPROM
IC6:
24LC08BT/SN
MEMORY
COM1-4
SEG52-17
KR4
KS0-KS3
X1: 2.30MHz
X2: 32.768KHz
CPU
IC1: HD404629
FUNC
MONI
LIGHT
POWER
RESET
CPU3
3LCON
LKHT0
SENS A
SENS B
TSDL
PSC
SEND
BEEP
TONE
TMUT
BUSY LED
EN
MMUT
RMUT
SD
UL
BUSY
PTT
PTTSW
V/M
CALL
SCAN
KS0
KS3
POWER
DATA SW
IC5: TC74AC08F5
EN
RESET
RESET
IC2:
S 80730SL AT
Q2: 2SC4211
D1: 1SS352
VCC
BACK UP
D2: 1SS352
D3: DA204U
BT1: VL-220
CPU3
BUSY LED
TMUT
3LCON
REG 3L
Q6: 2SB1132
Q7: 2SC4211
3L
LIGHT3
LIGHT CONT
Q8: 2SA1622
LKHT
LOGIC UNIT


RX
TX
COMMON
MIC UNIT
MIC
VIM CALL SCAN
DATA SW
IC5: TC74AC08FS
RESET
BACK UP
LED DRIVE
BUSY LED
TIMIT
BUSY
TX
DSP: SLM-23VMWS
LIGHT CONT
LIGHT
SHIFT
MOD
VHF VCO
Q14, Q15:
2SC4226
BUFF
LPF
PLL
IC3: µPD3140GS
NDATA
DATA EXP
IC7: M66291GP
DC-DC
RH5RC50
PTT CONT
SENS A
SENS B
MIC
PTT
BUSY, SQ, RMUT
2F UNIT

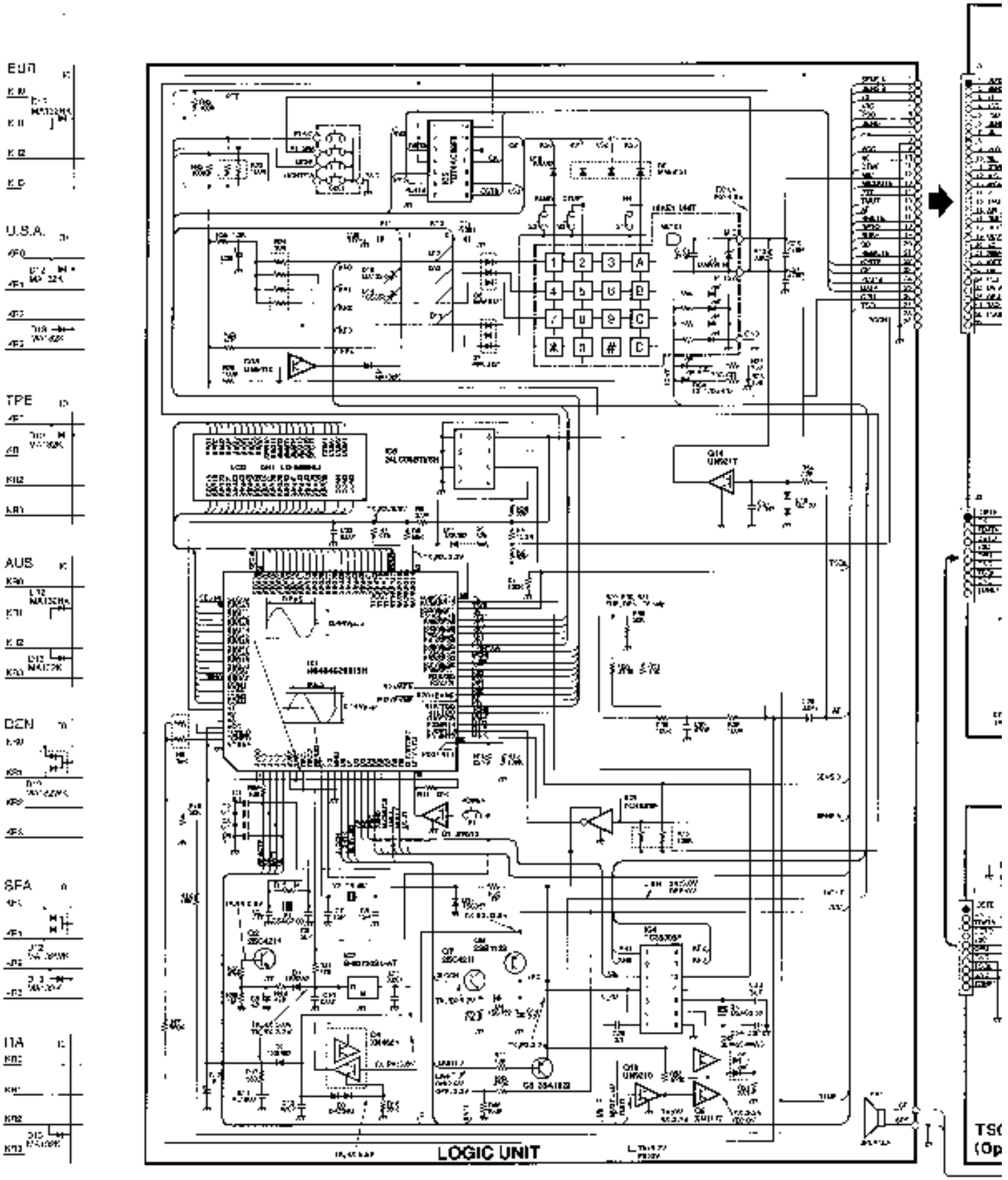


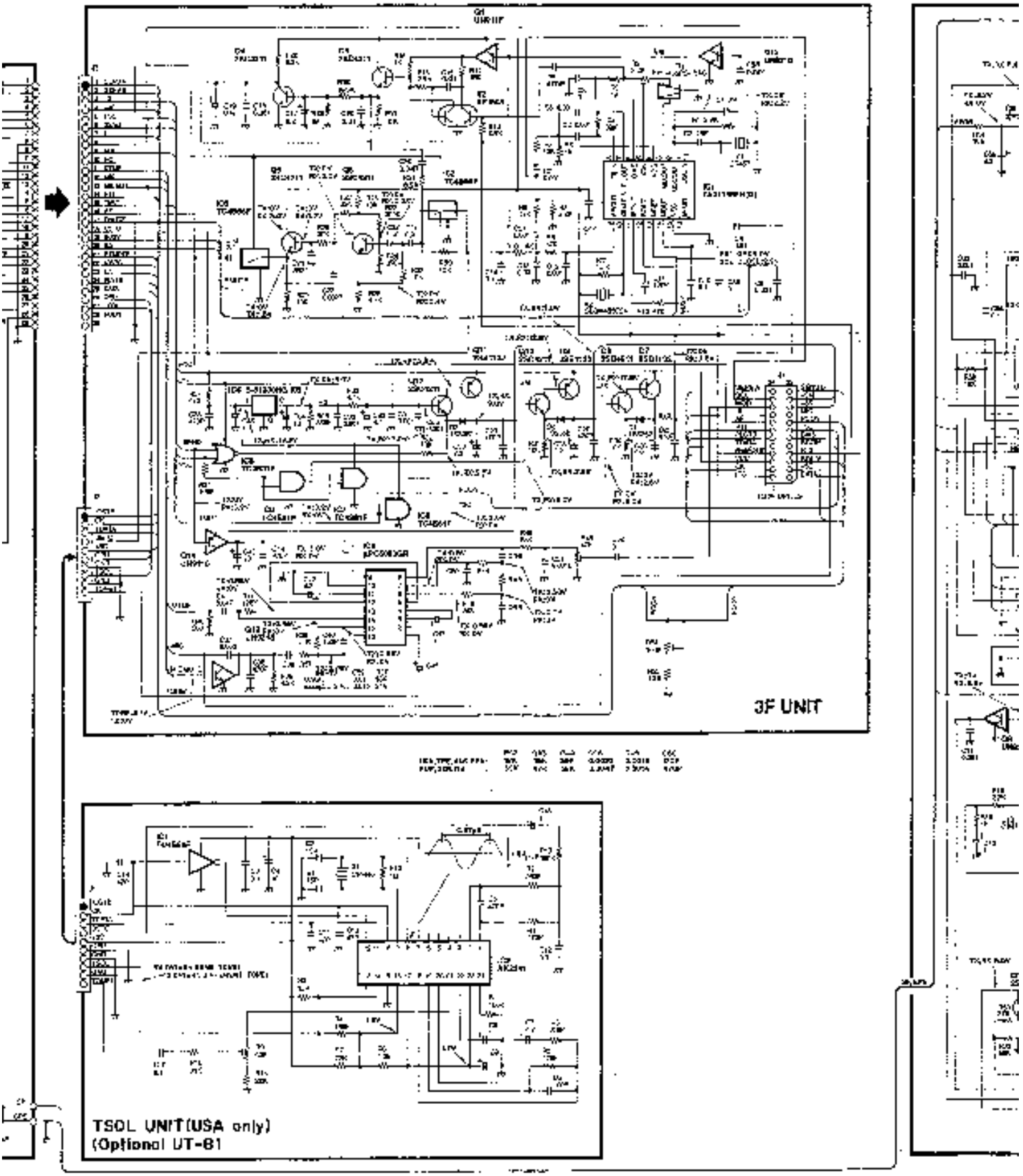
2F UNIT | **3F UNIT**

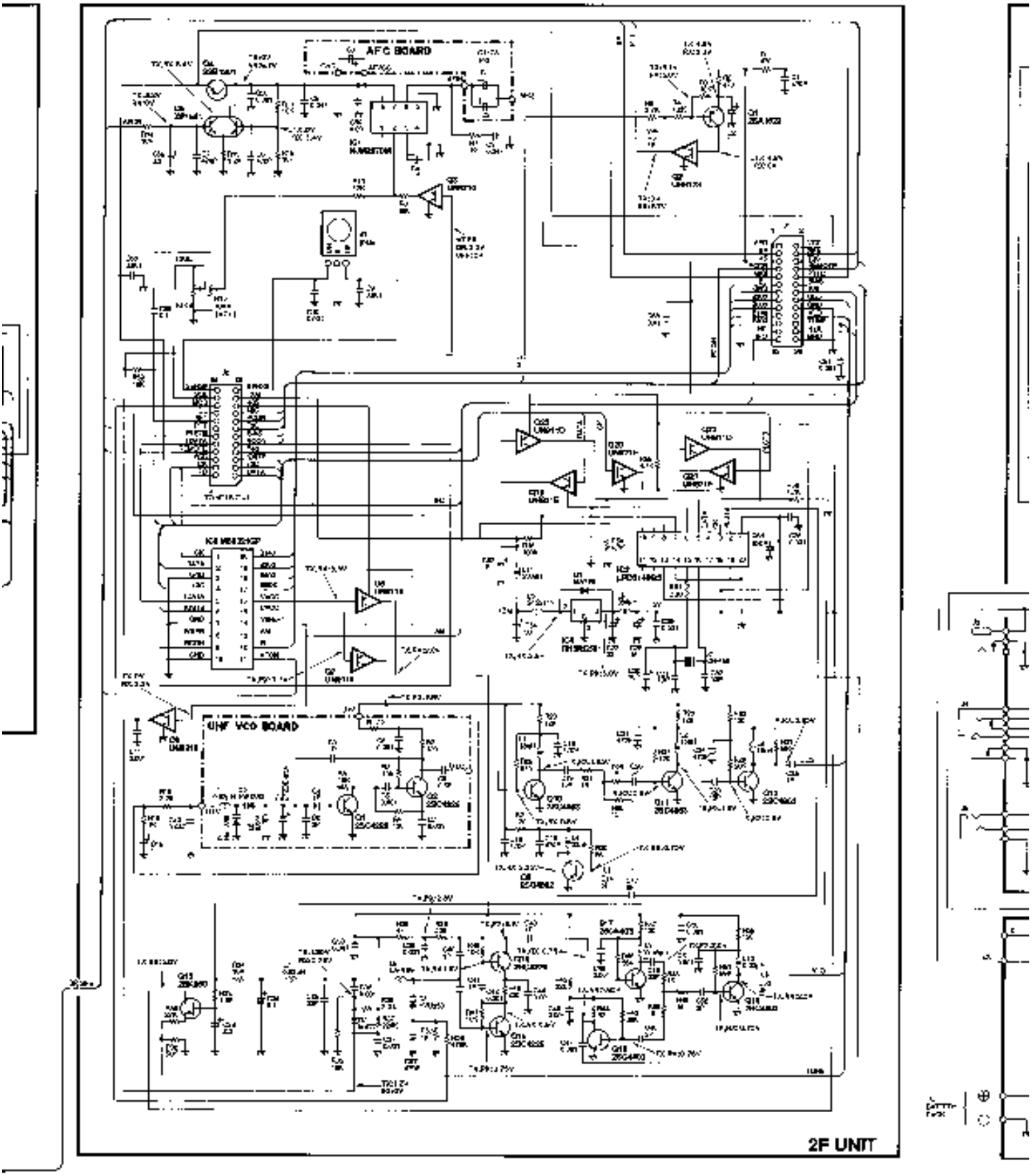

VHF-RFA/RFB BOARDS
BPF D4, D5: HVU350
RF AMP
Q1: 2SC4953
Q2: 2SC4403
BPF D9: HVU350
TUNE
ANT SW D1, D2, D9, D10, D12, D20: MA77
VHF
LPF
ANT
EL
Q10: 2SC4405
Q11: 2SC4953
DRIVE AMP
PWR SW D8: 1SS364 Q8: XP4215
IC9: SC-1057
PWR AMP
APC SENS D13, D14 HRU88
APC CTRL Q15: XP1401 Q16: 2SC4117
5 LOW/HIGH
V30
EXT VCC
1F UNIT
PRT UNIT
X1: 30.395MHz
BPF
FI1: KBF-455PS-1SAC
455KHz
F IC IC1: TA31136FN
DETO
BPF Q5, Q6 2SC4211
MUTE SW IC3: TC4S66F
BUSY
SD
SCK
RMUT
CONSTANT CURENT CIRCUIT
Q1: 2SB1132
Q2: 2SC4211
Q3: IMX2
Q4: UN9113
D1: DA204U
D3: MA132WA
BATTERY
VCC
+3
REG IC4: S-81330HG -KR
+3M CONT IC5: TC4501F
REG +3M Q11: 2SB1132 Q12: 2SC4211
+3M
-3S CONT IC6: TC4S81F
REG +3S Q9: 2SB1132 Q10: 2SC4211
+3S
R+3 CONT IC7: TC4S81F
REG R+3 Q7: 2SB1132 Q8: 2SC4211
R+3
+9C CONT IC8: TC4S81F
+9C
TMUT
DSD
DSEND
DETO
X1: 3.6864MHz
IC1: TC4S69F
INV
CK
ENCODER -DECODER IC2: AK2341
IOSTB
IODATA
DEF
TONE
TSQL
TSQL UNIT (USA only) (Optional UT-81)
INIT

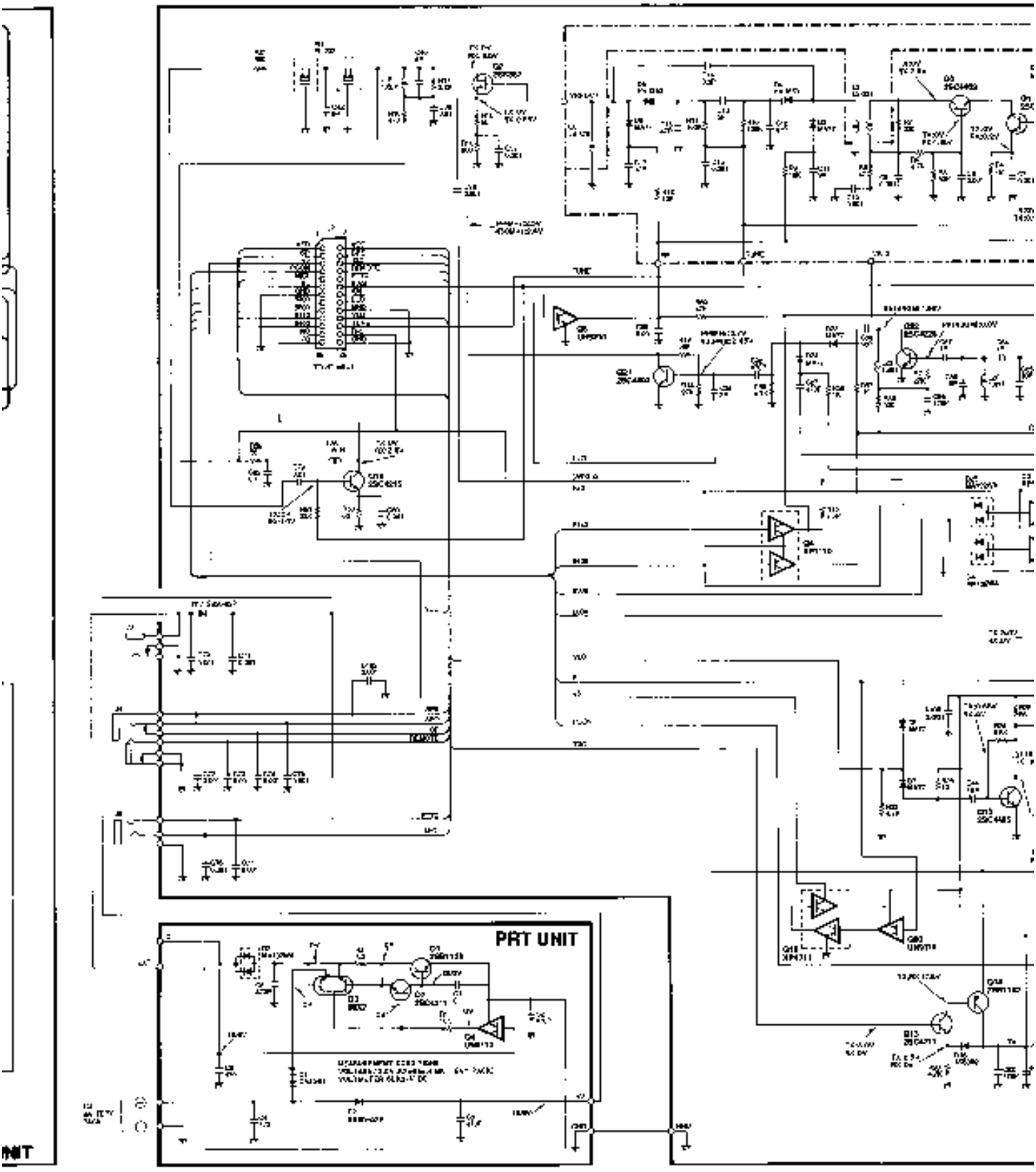
SECTION 10 VOLTAGE DIAGRAMS

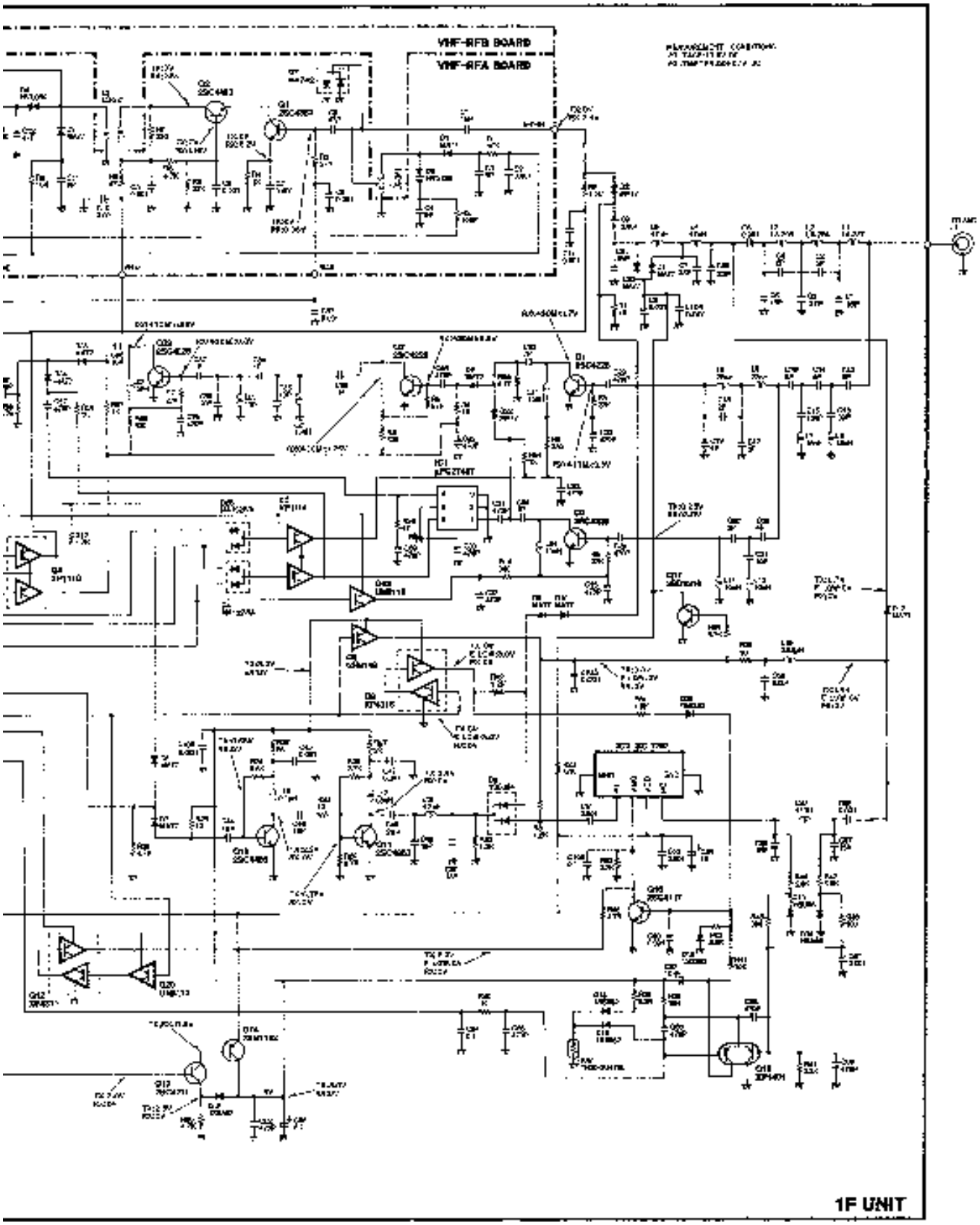
10-1 IC-T21A/E



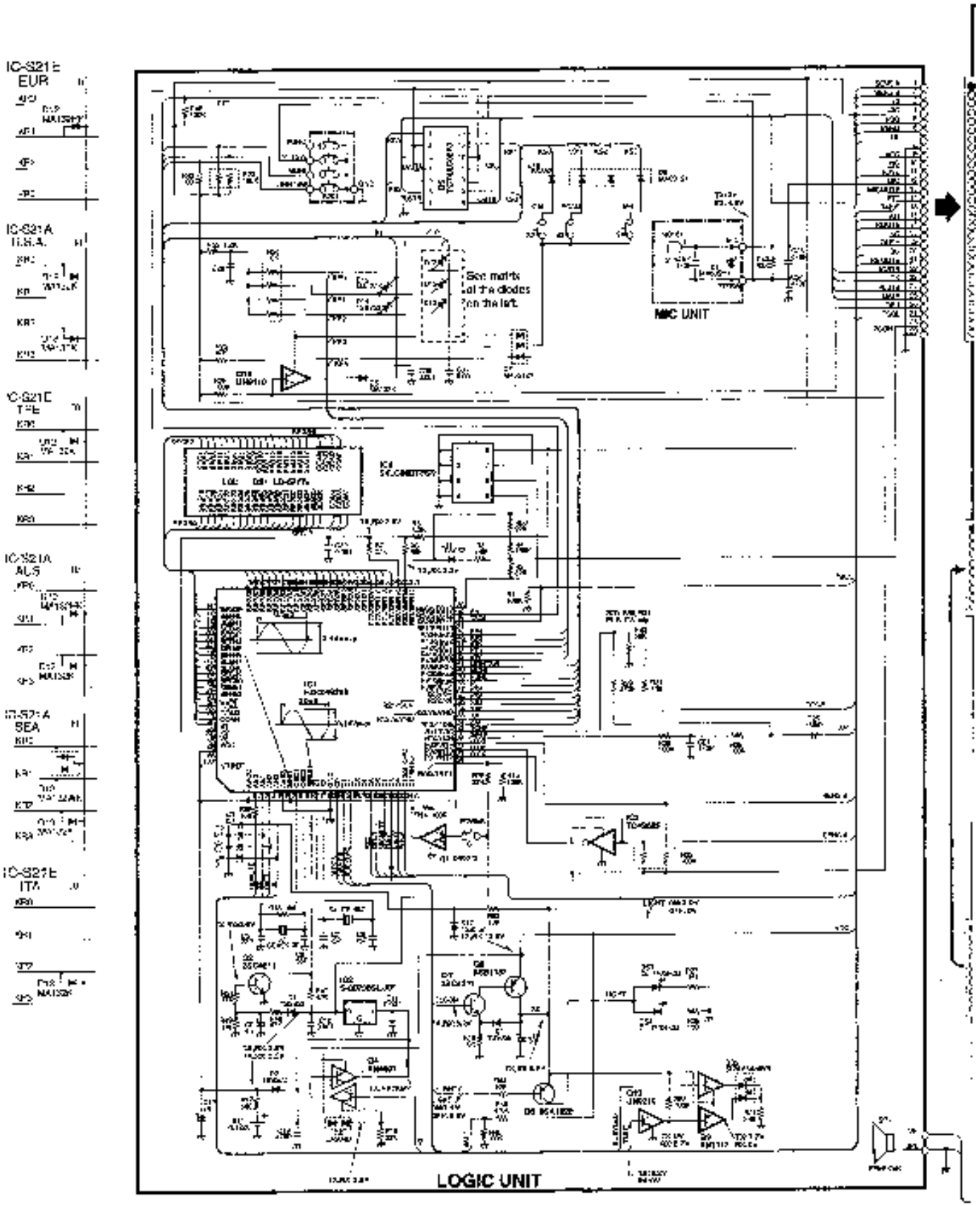

3F UNIT
TSOL UNIT(USA only)
(Optional UT-81

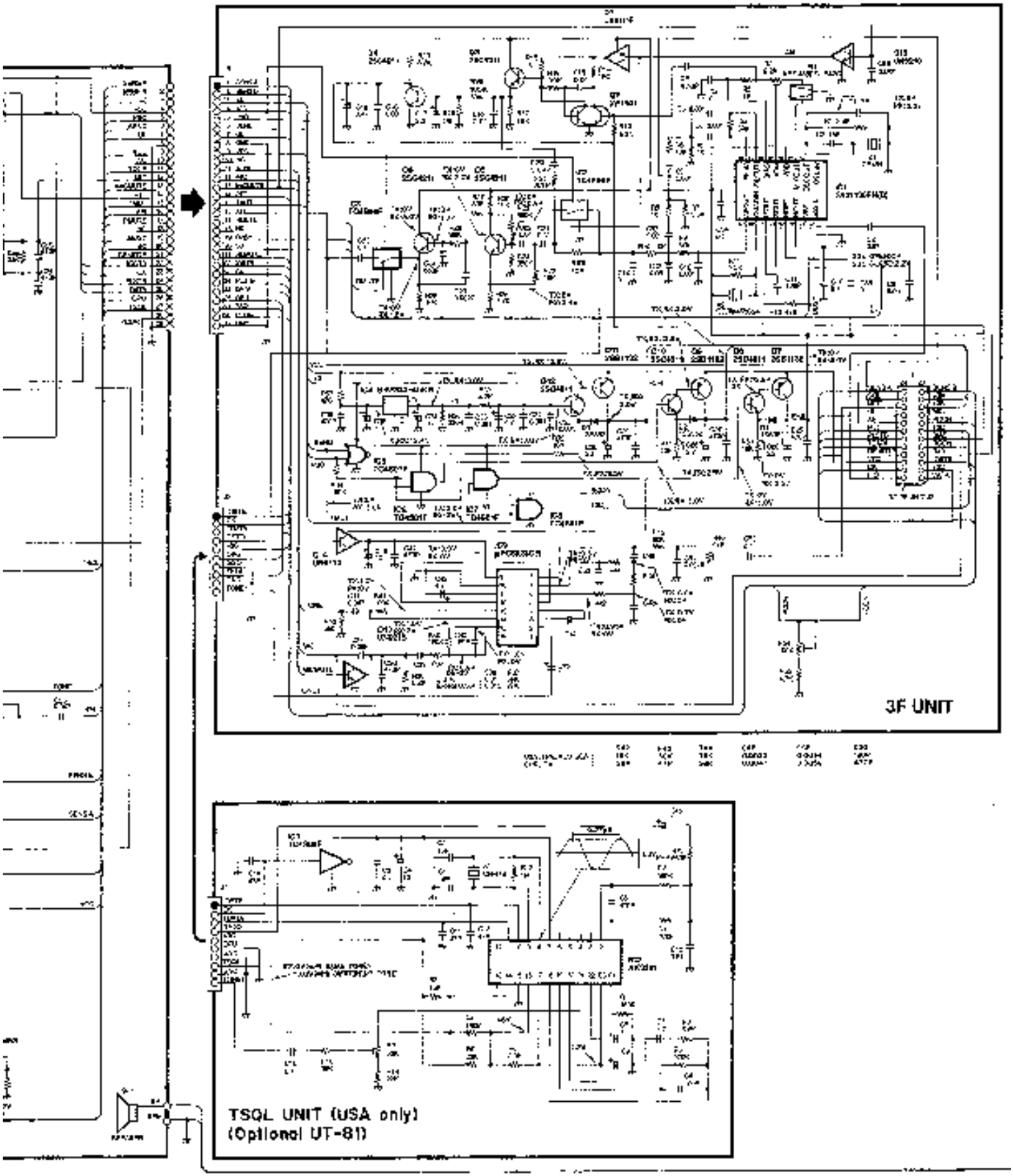

AFC BOARD
UHF VCO BOARD
2F UNIT

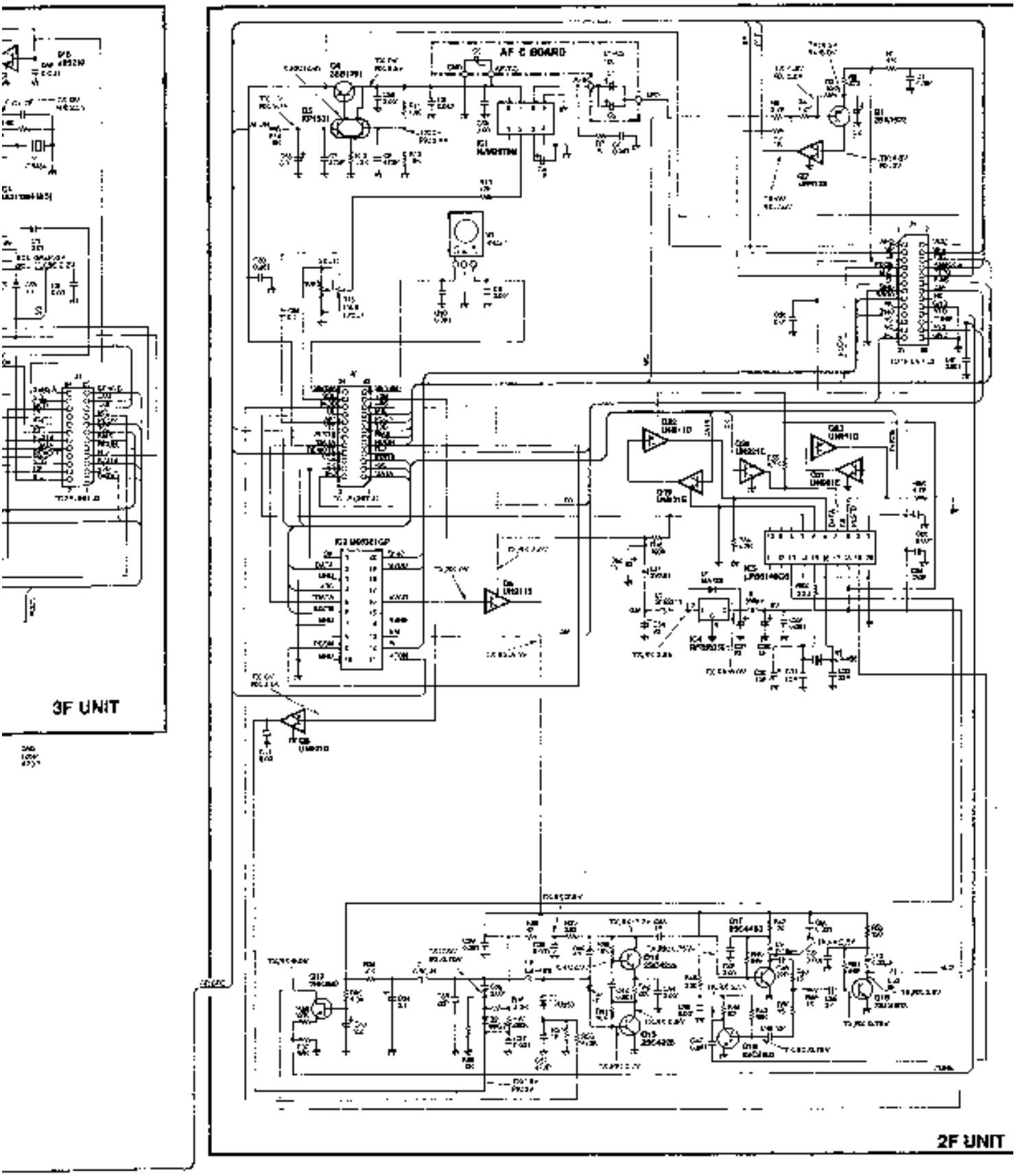

PRT UNIT

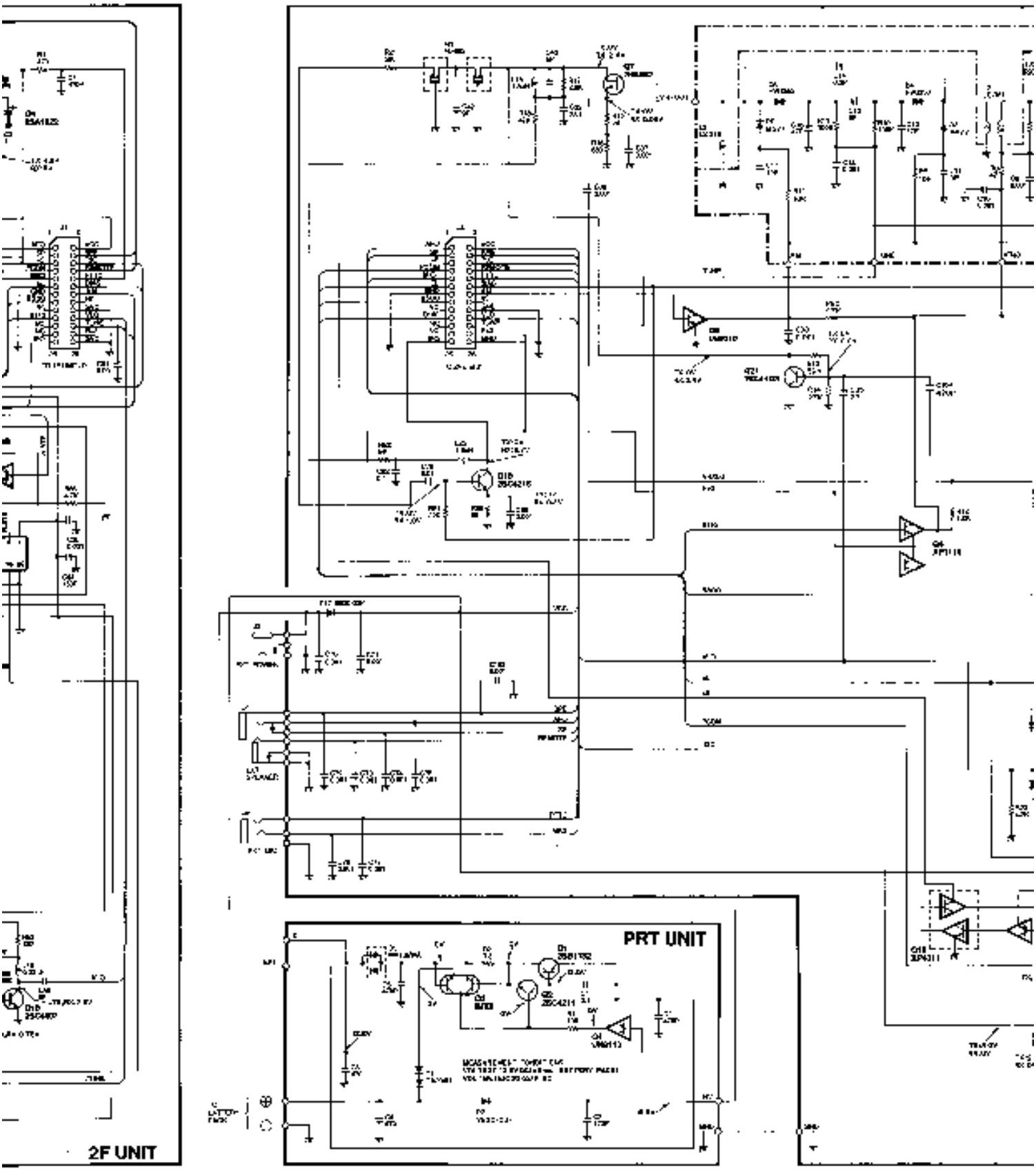


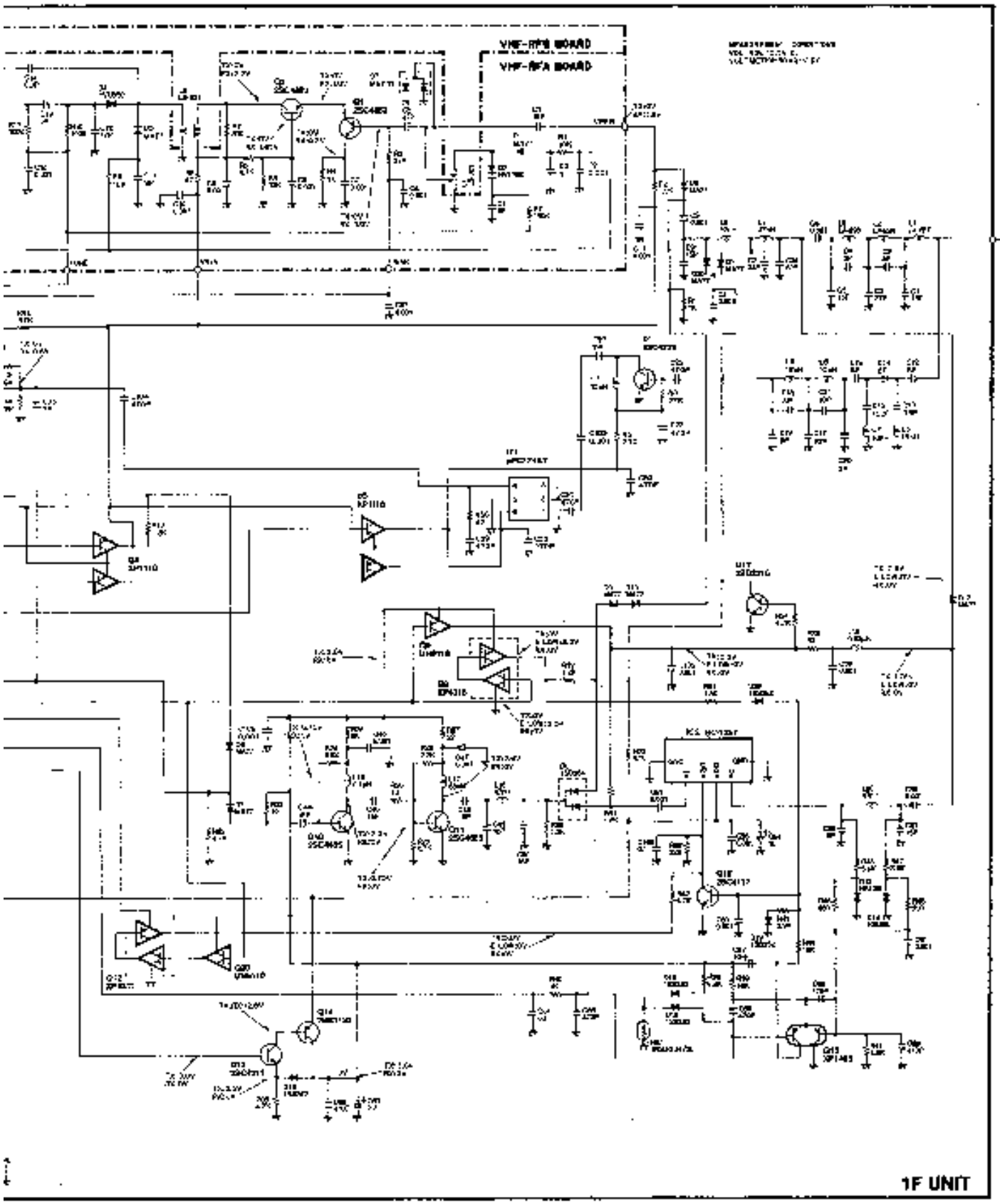
1F UNIT


IC-S21E
EUR
IC-S21A
U.S.A.
IC-S21E
TYE
IC-S21A
AUS
IC-S21A
SEA
IC-S21E
ITA
See marks of the diodes on the left.
MIC UNIT
LOGIC UNIT


3F UNIT
TSQL UNIT (USA only)
(Optional UT-81)


AF C BOARD
3F UNIT
2F UNIT


2F UNIT
PRT UNIT



1F UNIT

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