



SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

IC-2410A
IC-2410E
IC-2410H

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INTRODUCTION

This service manual describes the latest service information for the **IC-2410A/E/H** DUAL BAND FM TRANSCEIVER at the time of publication.

MODEL	VERSION NO.	VERSION	SYMBOL
IC-2410A	#05, #25	U.S.A.	USA
	#07, #27	Australia	AUS
	#08, #28	Asia	SEA
IC-2410E	#02, #22	Europe	EUR
	#03, #23	Italy	ITA
IC-2410H	#02, #22	Europe	EUR-H
	#03, #23	Italy	ITA-H
	#05, #25	U.S.A.	USA-H
	#07, #27	Australia	AUS-H
	#08, #28	Asia	SEA-H

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 DC 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.



This picture shows the IC-2410H U.S.A. version.

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>

1110002200 IC MC3372MR IC-2410A/E/H MAIN-A UNIT 5 pieces
8810006230 Screw FH M2.6x4 ZK IC-2410A/E/H Top cover 10 pieces

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

REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from the 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	1 — 1
SECTION 2	INSIDE VIEWS	2 — 1
SECTION 3	CIRCUIT DESCRIPTION	3 — 1 ~ 12
3-1	RECEIVER CIRCUITS	3 — 1
3-2	TRANSMITTER CIRCUITS	3 — 4
3-3	PLL CIRCUITS	3 — 7
3-4	OTHER CIRCUITS	3 — 10
3-5	CPU PORT ALLOCATIONS	3 — 11
SECTION 4	MECHANICAL PARTS AND DISASSEMBLY	4 — 1 ~ 4
4-1	CHASSIS AND MAIN-A UNITS	4 — 1
4-2	MAIN-B UNIT	4 — 3
4-3	ACCESSORIES	4 — 3
SECTION 5	PARTS LIST	5 — 1 ~ 13
SECTION 6	ADJUSTMENT PROCEDURES	6 — 1 ~ 9
6-1	PREPARATION BEFORE SERVICING	6 — 1
6-2	PLL ADJUSTMENT	6 — 2
6-3	RECEIVER ADJUSTMENT	6 — 4
6-4	TRANSMITTER ADJUSTMENT	6 — 8
SECTION 7	BOARD LAYOUTS	7 — 1 ~ 12
7-1	LOGIC AND DISPLAY UNITS	7 — 1
7-2	AF AND TONE (U.S.A. only) UNITS	7 — 3
7-3	MAIN-A, PLL-A AND VCO-A UNITS	7 — 5
7-4	MAIN-B, PLL-B VCO-B AND B-BAND UNITS	7 — 9
SECTION 8	OPTIONAL UNITS	8 — 1 ~ 3
8-1	UT-55 DTMF ENCODER/DECODER UNIT	8 — 1
8-2	UT-66 VOICE SYNTHESIZER UNIT	8 — 2
8-3	UT-67 TONE SQUELCH UNIT	8 — 3
SECTION 9	BLOCK DIAGRAM	9 — 1
SECTION 10	VOLTAGE DIAGRAM	10 — 1 ~ 2

SECTION 1 SPECIFICATIONS

GENERAL

- Frequency coverage

VERSION	VHF	UHF
U.S.A.	140.000~150.000*1 (Tx) 136.000~174.000*1 (Rx)	440.000~450.000
Italy	136.000~174.000*1	400.000~479.000*2
Europe	144.000~146.000	430.000~440.000
Australia	144.000~148.000	430.000~440.000
Asia	140.000~150.000*1 (Tx) 136.000~174.000*1 (Rx)	430.000~440.000

Unit: MHz

*1 Specifications guaranteed for 144.000~148.000 MHz.

*2 Specifications guaranteed for 430.000~440.000 MHz.

- Tuning step increments

: 5, 10, 12.5, 15, 20, 25 kHz, 1 MHz or 10 MHz

- Number of memory channels

	VHF	UHF
Memory channels	15	15
Call channels	1	1
Scan edge channels	2	2

- Mode

: FM (F3)

- Antenna impedance

: 50 Ω nominal

- Power supply requirement

: 13.8 V DC \pm 15 % (negative ground)

- Usable temperature range

: $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$ ($+14^{\circ}\text{F} \sim +140^{\circ}\text{F}$)

- Dimensions

: 140 (W) \times 40 (H) \times 174.5 (D) mm

5.5 (W) \times 1.6 (H) \times 6.9 (D) in

(projections not included)

- Weight

: 1.35 kg (3.0 lb)

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TRANSMITTER

- Modulation system

: Variable reactance frequency modulation

- Max. frequency deviation

: \pm 5 kHz

- Spurious emissions

: Less than -60 dB

- Microphone impedance

: 600 Ω

- Output power and current drain
(at 13.8 V DC)

		IC-2410A/E		IC-2410H	
		POWER	CURRENT	POWER	CURRENT
VHF	High	25 W	7.0 A	45 W	10.5 A
	Low 2	10 W	4.5 A	10 W	5.5 A
	Low 1	1 W	2.5 A	5 W	4.0 A
UHF	High	25 W	8.0 A	35 W	10.5 A
	Low 2	10 W	5.0 A	10 W	6.0 A
	Low 1	1 W	3.0 A	5 W	4.5 A

RECEIVER

- Receive system
- Intermediate frequencies

: Double-conversion superheterodyne

: 1st 17.2 MHz (VHF)

30.875 MHz (UHF)

2nd 455 kHz

- Sensitivity

: Less than 0.16 μV for 12 dB SINAD

- Squelch threshold sensitivity

: Less than 0.13 μV

- Selectivity

: More than 15 kHz/ -6 dB

Less than 30 kHz/ -60 dB

- Spurious rejection ratio

: More than 60 dB

- Audio output power

: More than 2.4 W at 10 % distortion with an 8 Ω load

- Current drain

: Max. audio output 1.8 A Squelched 1.2 A

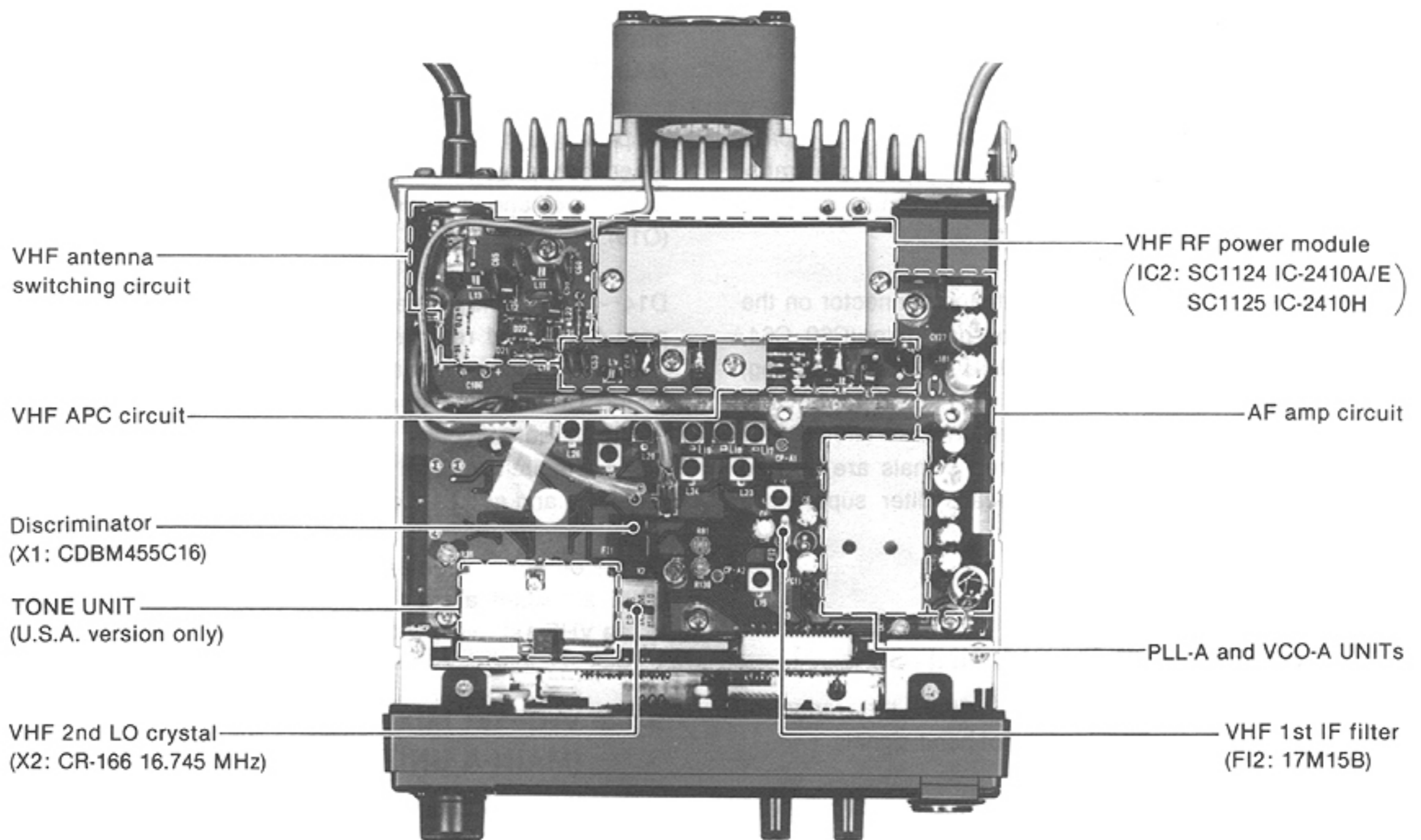
- Audio output impedance

: 4~8 Ω

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

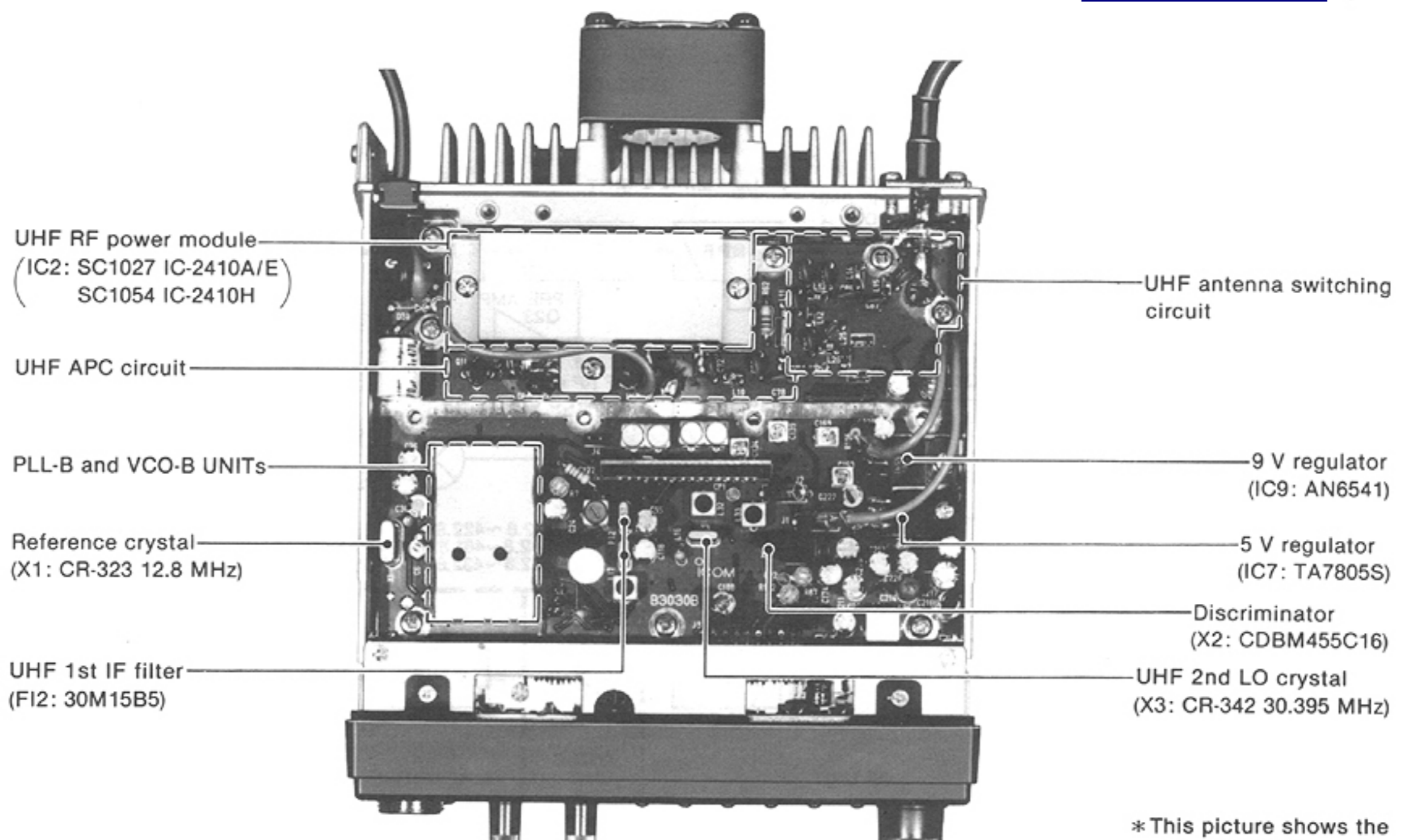
SECTION 2 INSIDE VIEWS

• MAIN-A UNIT



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• MAIN-B UNIT



* This picture shows the IC-2410A U.S.A. version

SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUITS

3-1-1 VHF ANTENNA SWITCHING CIRCUIT (MAIN-A 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 VHF signals enter the antenna connector on the MAIN-B UNIT and pass through a low-pass filter (C60, C64, C65, L11~L13) on the MAIN-A UNIT. When receiving, the antenna switching circuit (D9, D21, D22) turns OFF. The signals pass through a π -type low-pass filter (C117, C118, C120, L21, L22). The filtered signals are applied to the VHF RF circuit. The low-pass filter suppresses high harmonic components.

3-1-2 VHF RF CIRCUIT (MAIN-A AND MAIN-B UNITS)

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

The signals from the VHF antenna switching circuit pass through a RF switching diode (D19). When receiving one VHF frequency, 8 V from Q33 turn ON one side of D19. The VHF signals pass through a tuned bandpass filter (L20, C109, C110, C112, D17) and are applied to the RF amplifier (Q21).

When receiving two VHF frequencies simultaneously, 8 V from Q32 turn ON the other side of D19. The VHF signals are amplified at Q23, and then to RF amplifier (Q21) and MAIN-B UNIT through J1 respectively.

Amplified signals at Q21 are applied to a three-stage tuned bandpass filter (L17~L19, C97, C98, C100~C105, D14~D16) and are then applied to the VHF 1st mixer (Q19).

D14~D17 employ varactor diodes that track the bandpass filters and resonator circuits and are controlled by the VHF PLL lock voltage. The voltage is current-amplified at the DC amplifier circuit (Q4, Q5) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

On the other hand, entered signals from J1 on the MAIN-B UNIT amplified at RF amplifier (Q37) and then applied to the VHF 1st mixer (Q36).

3-1-3 VHF 1st MIXER CIRCUIT (MAIN-A UNIT)

The 1st mixer circuit converts the received signal to a fixed frequency of the 1st IF signal with a PLL output frequency. By changing a 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 Q19 with a 1st LO signal coming from the VHF VCO circuit to produce a 17.2 MHz 1st IF signal.

• VHF RECEIVER BLOCK DIAGRAM

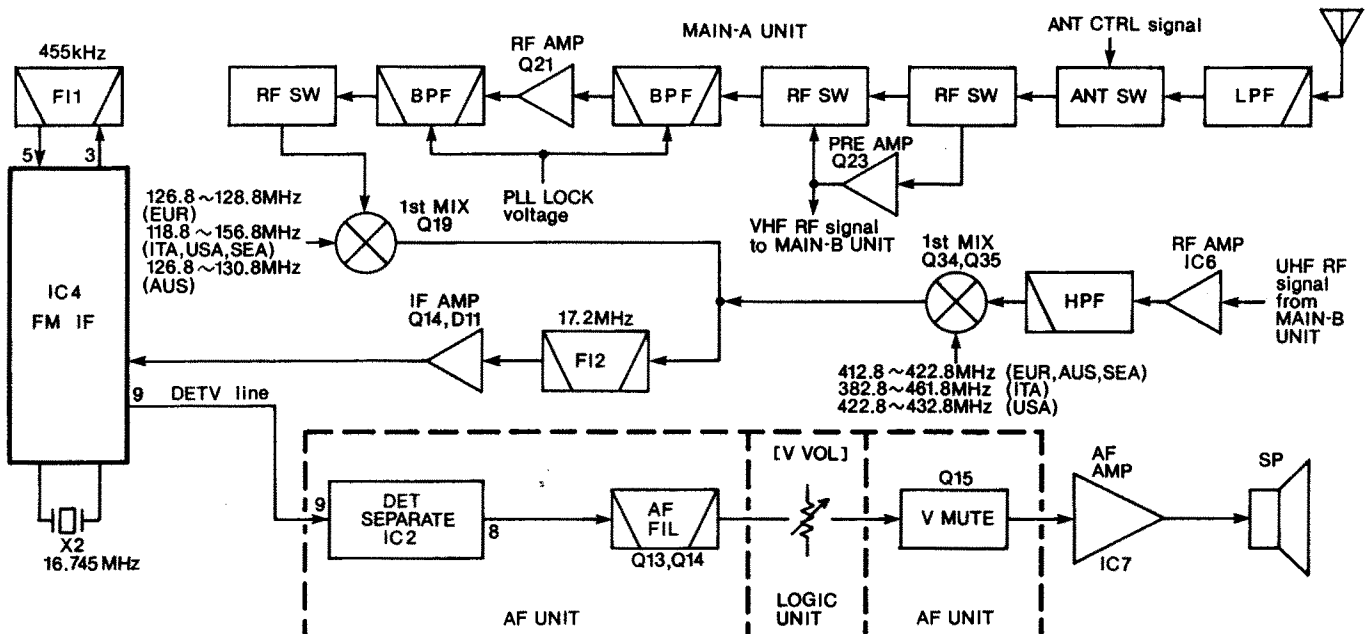


Fig. 1

3-1-4 VHF 1st IF CIRCUIT (MAIN-A UNIT)

The VHF 1st IF signal is applied to a matching circuit (L16, C93, C94). When receiving two UHF frequencies simultaneously, the UHF RF signals mixed at Q34 with a 1st LO signal coming from the VHF VCO circuit. The resulting 1st IF signal is applied to a pair of crystal filters (FI2) in order to obtain wide selection capability and to pass only the desired signals. The 1st IF signal passes through a matching circuit (L15, C88) and is then amplified at an IF amplifier (Q14). The amplified signal is applied to a demodulator circuit.

The limiter diode (D11) protects the following circuits from strong signals.

3-1-5 VHF 2nd IF AND DEMODULATOR CIRCUITS (MAIN-A 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 Q14 is applied to a 2nd mixer section of IC4 and is mixed with a 2nd LO signal for conversion to a 455 kHz 2nd IF signal.

IC4 contains the 2nd mixer, local oscillator circuit, limiter amplifier, quadrature detector circuit and active filter circuit. The local oscillator section and X2 generate 16.745 MHz for the 2nd LO signal.

The 2nd IF signal from the 2nd mixer (IC4, pin 3) passes through a high-quality ceramic filter (FI1) to suppress unwanted heterodyned frequency signals. It is then amplified at the limiter amplifier section (IC4, pin 5) and applied to the quadrature detector section (IC4, pin 5 and ceramic discriminator X1) to demodulate the 2nd IF signal into an AF signal.

The signal is output from IC4 (pin 9) as a "DETV" signal and then is applied to the AF UNIT.

3-1-6 VHF AF CIRCUIT (AF, LOGIC AND MAIN-A UNITS)

The AF circuit de-emphasizes demodulated the signal with -6 dB/octave and power-amplifies the signal to drive a speaker. The AF circuit includes a mute circuit to mute the signal with a noise squelch and a tone squelch.

The "DETV" signal from IC4 (pin 9) is applied to the IC switch (IC2) on the AF UNIT. IC3 controls the input level of IC2.

The AF signal from IC2 is applied to the active filter (Q13, Q14). The active filter (Q13, Q14) has frequency characteristics of -6 dB/octave and suppresses the tone signal for tone squelch operation.

The filtered signal is adjusted with the [V VOL] control (R23) on the LOGIC UNIT and is then amplified in the AF amplifier (IC7) on the MAIN-A UNIT to obtain the speaker driving level.

An AF mute transistor (Q15) cuts the input signals of the AF amplifier when the transceiver is transmitting or the squelch is closed.

3-1-7 VHF SQUELCH CIRCUIT (MAIN-A, AF AND LOGIC UNITS)

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

Some noise components in the AF signal from IC4 (pin 9) are applied to an active filter section (IC4, pin 10) via a de-emphasis circuit (R68, C73~C75). This circuit is an integrated circuit with frequency characteristics of -6 dB/octave. The binary output from the CPU (IC3, pins 27 and 28) on the LOGIC UNIT supplies the squelch level volume control signal. This control signal is controlled by Q20 and Q21 on the AF UNIT. The squelch level setting volume control (R130) on the MAIN-A UNIT adjusts the IC4 (pin 10) input level.

The active filter section amplifies noise components of frequencies of 20 kHz and above, and outputs the resulting signals from pin 11. Output signals are rectified by D12 and are then converted to DC voltage.

The rectified noise voltage triggers the squelch switch (Q15). The collector of Q15 outputs the squelch signal. The signal is applied to IC3 (pin 18) on the LOGIC UNIT through the "SQLSV" signal line.

• VHF SQUELCH CIRCUIT

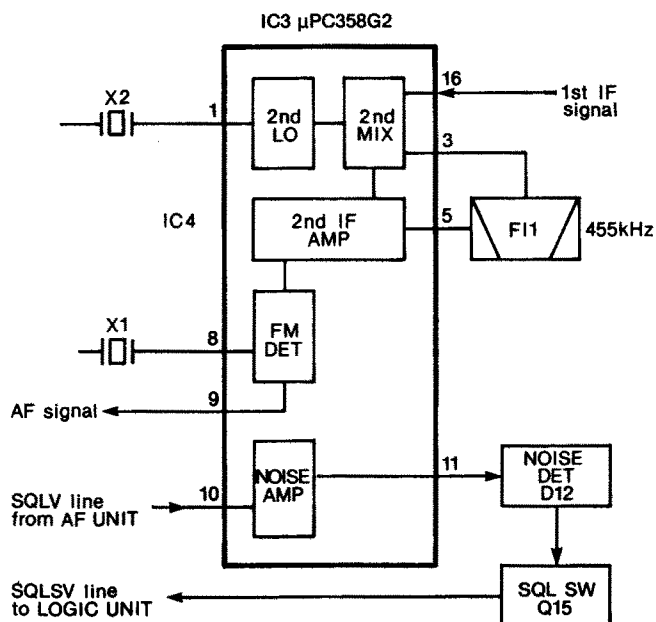


Fig. 2

The 2nd IF signal from the 2nd mixer (IC4, pin 3) passes through a high-quality ceramic filter (F11) to suppress unwanted heterodyned frequency signals. It is then amplified at the limiter amplifier section (IC4, pin 5) and applied to the quadrature detector section (IC4, pin 5 and ceramic discriminator X2) to demodulate the 2nd IF signal into an AF signal.

The signal is output from IC4 (pin 9) as a "DETU" signal and then is applied to the AF UNIT.

3-1-13 UHF AF CIRCUIT (MAIN-B, AF, LOGIC AND MAIN-A UNITS)

The "DETU" signal from IC4 (pin 9) is applied to the IC switch (IC2) on the AF UNIT. IC3 controls the input level of IC2.

The AF signal from IC2 is applied to the active filter (Q18, Q19). The active filter (Q18, Q19) has frequency characteristics of -6 dB/octave and suppresses the tone signal for tone squelch operation. The filtered signal is adjusted with the [U VOL] control (R24) on the LOGIC UNIT and is then amplified in the AF amplifier (IC7) on the MAIN-A UNIT to obtain the speaker driving level.

AF mute transistors (Q16, Q24) cut the input signals of the AF amplifier when the transceiver is transmitting or the squelch is closed.

3-1-14 UHF SQUELCH CIRCUIT (MAIN-B, AF AND LOGIC UNITS)

Some noise components in the AF signal from IC4 (pin 9) are applied to an active filter section (IC4, pin 10) via a de-emphasis circuit (R79, C101~C103). This circuit is an integrated circuit with frequency characteristics of -6 dB/octave.

The binary output from the CPU (IC3, pins 29 and 30) on the LOGIC UNIT supplies the squelch level volume control signal. This control signal is controlled by Q22 and Q23 on the AF UNIT. The squelch level setting volume control (R132) on the MAIN-B UNIT adjusts the IC4 (pin 10) input level.

The active filter section amplifies noise components of frequencies of 20 kHz and above, and outputs the resulting signals from pin 11. Output signals are rectified by D11 and are then converted to DC voltage.

The rectified noise voltage triggers the squelch switch (Q17). The collector of Q17 outputs the squelch signal. The signal is applied to IC3 (pin 19) on the LOGIC UNIT through the "SQLSU" signal line.

3-2 TRANSMITTER CIRCUITS

3-2-1 MICROPHONE AMPLIFIER CIRCUIT (LOGIC AND AF UNITS)

The microphone amplifier circuit amplifies audio signals with $+6$ dB/octave pre-emphasis from the microphone to a level needed for the modulation circuit. The microphone amplifier circuit is commonly used for both VHF and UHF bands.

The AF signals from the microphone on the LOGIC UNIT are applied to the AF UNIT and are then amplified at the microphone amplifier circuit (Q6) via the microphone mute switch circuit (Q2). The amplified signals are applied to IC1a (pin 2) and are then pre-emphasized to $+6$ dB/octave through C18 and R28 which are connected to pin 3. IC1a includes a low level amplifier with pre-emphasis and a limiter amplifier. The output signals from IC1a (pin 1) pass through a low-pass filter circuit (IC1b). The filtered signals are applied to either the MAIN-A UNIT as a "MODV" signal in the VHF band or the MAIN-B UNIT as a "MODU" signal in the UHF band.

• VHF TRANSMITTER BLOCK DIAGRAM

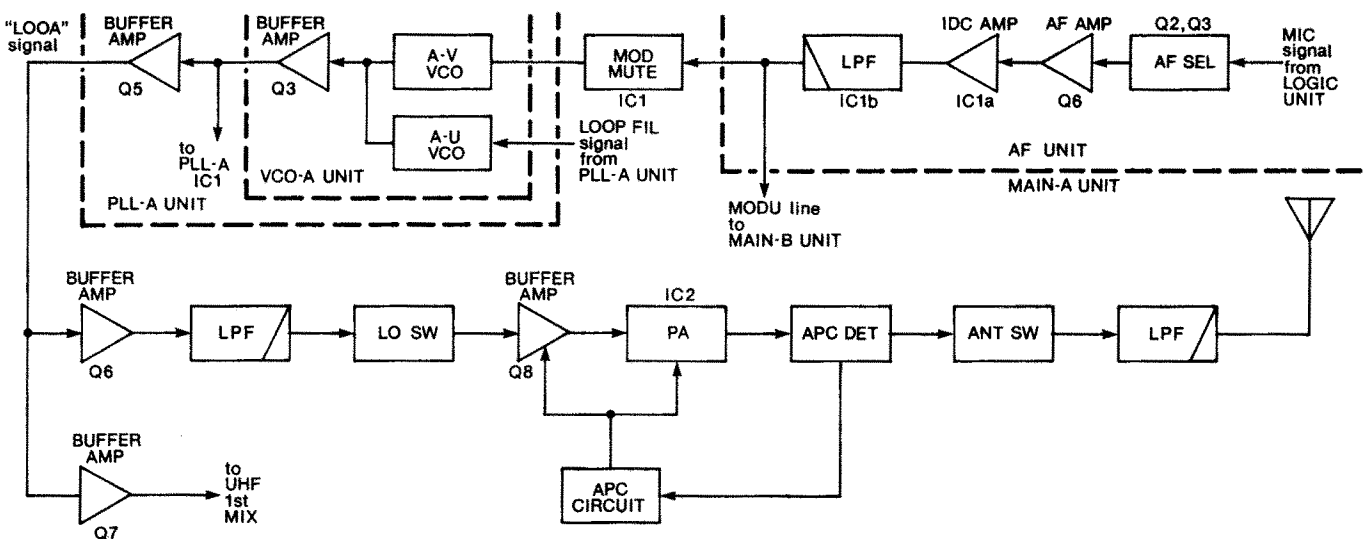


Fig. 4

3-2-2 VHF MODULATION CIRCUIT (VCO-A UNIT)

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

The audio signals from the AF UNIT (MODV signal) pass through the IC switch (IC1) and are then applied to the varactor diodes (D1~D4) to modulate the oscillated signals in the VHF VCO circuit. The VHF VCO circuit contains both the V-UHF VCO oscillator (Q1) and the V-VHF VCO oscillator (Q4). The oscillated signals are mixed together and then buffer-amplified at Q3. The amplified signals are applied to Q5 on the PLL-A UNIT through the "VCOOA" signal line. The resulting signals are output from the "LOOA" signal line and are then applied to the drive amplifier circuit.

3-2-3 VHF DRIVE AMPLIFIER CIRCUIT (MAIN-A UNIT)

The VCO output is buffer-amplified at Q6 and is then applied to a low-pass filter (C21, C22, C25, C28, L2, L5).

After passing through the transmit/receive switching circuit (D4), the VCO output is amplified at the drive amplifier (Q8) to obtain 200 mW (IC-2410H: 400 mW).

The control voltage from the APC circuit is applied to the collector of Q8 for stable RF output power from a power amplifier (IC2).

3-2-4 VHF POWER AMPLIFIER CIRCUIT (MAIN-A UNIT)

IC2 is a power module which provides a stable 25 W (IC-2410H: 45 W) of output power.

The RF signal from the drive amplifier (Q8) is applied to IC2 (pin 4). The amplified signal is output from IC2 (pin 1) and is then applied to the antenna connector through the antenna switching diode (D9) and low-pass filter circuit (C60, C64, C65, L11~L13).

3-2-5 VHF APC CIRCUIT (MAIN-A UNIT)

This circuit controls current in the power module's first stage and current in the driver amplifier to obtain stable RF output power.

The APC mismatch detector circuit consists of C49, C53, D7, D8, L9, R42, R43, R46 and R47. When the antenna impedance is matched at 50 Ω , the detected voltage by D7 and D8 is at its minimum. The detected voltage is applied to an APC amplifier (IC3b, pin 6) and an RF meter amplifier (IC3a, pin 3). The RF meter amplifier outputs RF meter voltage. The APC reference voltage is applied to pin 5 of IC3b.

When the antenna impedance is mismatched, the voltage of IC3b (pin 6) exceeds the reference voltage of IC3b (pin 5). The output level from IC3b (pin 7) decreases. Q12 amplifies the current from the APC amplifier (IC3b) which controls Q11. Q11 changes the supply voltage to Q8 and IC2.

This decreases the output power from the drive amplifier (Q8) and power amplifier (IC2) until the input voltage of IC3b (pin 6) reaches the same level as pin 5 of IC3b.

3-2-6 VHF OUTPUT POWER CONTROL CIRCUIT (MAIN-A UNIT)

The output power control circuit (Q9, Q10, R30~R32, R37, R39) selects 1 of 3 output power levels (HIGH, LOW-2 or LOW-1) and controls the output voltage from the APC circuit by the APC reference voltage.

When "HIGH" output power is selected, Q9 and Q10 are turned OFF. The APC reference voltage is determined by R30~R32 and is adjusted with R31.

When "LOW-2" output power is selected, Q10 is turned ON. The reference voltage is decreased by R39 connected to Q10.

When "LOW-1" output power is selected, Q9 is turned ON. The reference voltage is decreased by R37 connected to Q9.

• VHF POWER AND APC CIRCUIT

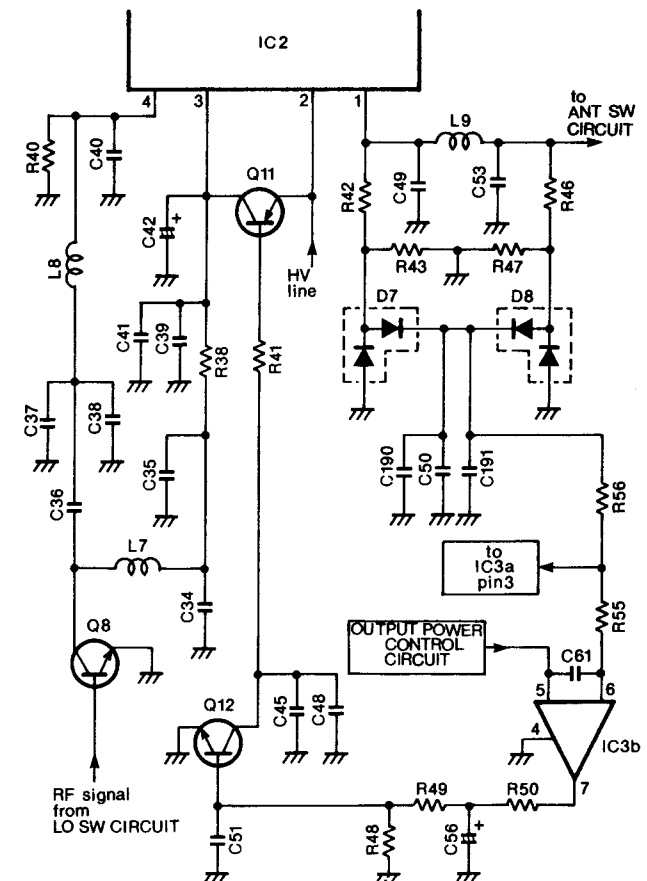


Fig. 5

3-2-7 VHF ANTENNA SWITCHING CIRCUIT (MAIN-A UNIT)

When transmitting, D9, D21 and D22 are turned ON. The RF output signal from IC2 is not permitted to enter the receiver circuit. The signal passes through L9, C55, D9 and a low-pass filter (C60, C64, C65, L11~L13) and is then output from an antenna connector. The low-pass filter suppresses high harmonic components.

3-2-8 UHF MODULATION CIRCUIT (VCO-B UNIT)

The audio signals from the AF UNIT (MODU signal) pass through the IC switch (IC1) and are then applied to the varactor diodes (D1~D4) to modulate the oscillated signals in the UHF VCO circuit. The UHF VCO circuit contains both the U-UHF VCO oscillator (Q1) and the U-VHF VCO oscillator (Q4). The oscillated signals are mixed together and then buffer-amplified at Q3. The amplified signals are applied to Q5 on the PLL-B UNIT through the "VCOOB" signal line. The resulting signals are output from the "LOOB" signal line and are then applied to the drive amplifier circuit.

3-2-9 UHF DRIVE AMPLIFIER CIRCUIT (MAIN-B UNIT)

The VCO output is buffer-amplified at Q8 and is then applied to a low-pass filter (C37~C39, L2).

After passing through the transmit/receive switching circuit (D4), the VCO output is amplified at the pre-drive amplifier (Q10). The amplified signal is re-amplified at the drive amplifier (Q11) to obtain 320 mW (IC-2410H: 500 mW).

The control voltage from the APC circuit is applied to the collector of Q11 for stable RF output power from a power amplifier (IC2).

3-2-10 UHF POWER AMPLIFIER CIRCUIT (MAIN-B UNIT)

IC2 is a power module which provides a stable 25 W (IC-2410H: 35 W) of output power.

The RF signal from the drive amplifier (Q11) is applied to IC2 (pin 1). The amplified signal is output from IC2 (pin 5) and is then applied to the antenna connector through the antenna switching diode (D9) and bandpass filter circuit (C83~C88, L12~L15).

• UHF TRANSMITTER BLOCK DIAGRAM

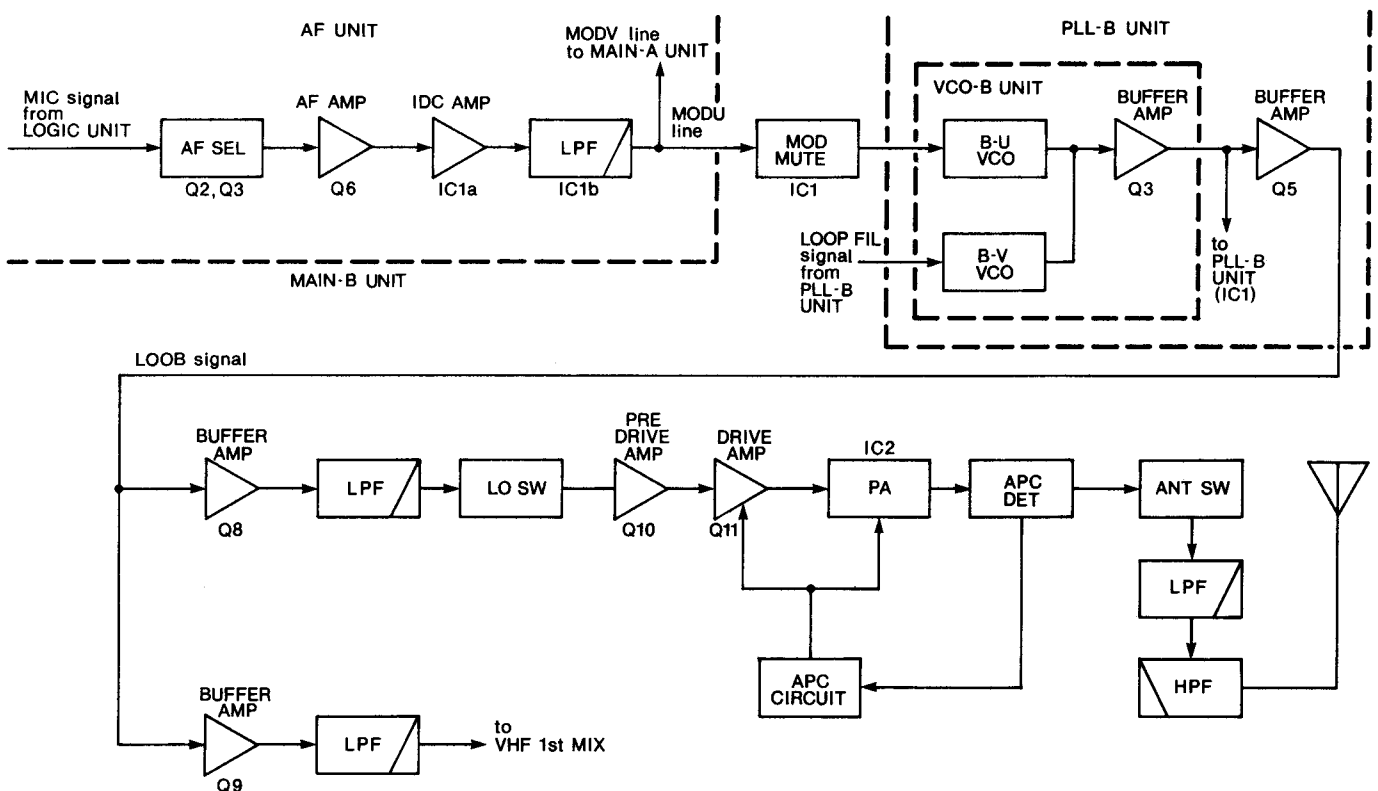


Fig. 6

3-2-11 UHF APC CIRCUIT (MAIN-B UNIT)

The APC mismatch detector circuit consists of C72, C75, D7, D8, L10, R53, R54, R60 and R61. When the antenna impedance is matched at 50 Ω , the detected voltage by D7 and D8 is at its minimum. The detected voltage is applied to an APC amplifier (IC3b, pin 6) and an RF meter amplifier (IC3a, pin 3). The RF meter amplifier outputs RF meter voltage. The APC reference voltage is applied to pin 5 of IC3b.

When the antenna impedance is mismatched, the voltage of IC3b (pin 6) exceeds the reference voltage of IC3b (pin 5). The output level from IC3b (pin 7) decreases. Q15 amplifies the current from the APC amplifier (IC3b) which controls Q14. Q14 changes the supply voltage to Q11 and IC2.

This decreases the output power from the drive amplifier (Q11) and power amplifier (IC2) until the input voltage of IC3b (pin 6) reaches the same level as pin 5 of IC3b.

3-2-12 VHF OUTPUT POWER CONTROL CIRCUIT (MAIN-B UNIT)

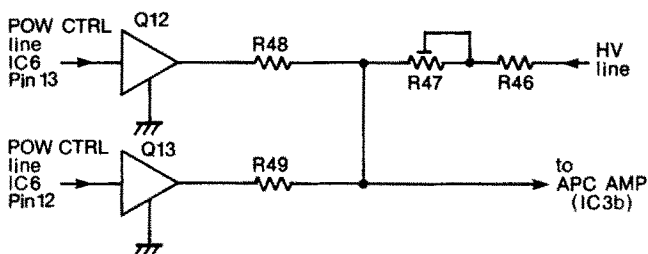
The output power control circuit (Q12, Q13, R46~R49) selects 1 of 3 output power levels (HIGH, LOW-2 or LOW-1) and controls the output voltage from the APC circuit by the APC reference voltage.

When "HIGH" output power is selected, Q12 and Q13 are turned OFF. The APC reference voltage is determined by R46, R47 and is adjusted with R47.

When "LOW-2" output power is selected, Q13 is turned ON. The reference voltage is decreased by R49 connected to Q13.

When "LOW-1" output power is selected, Q12 is turned ON. The reference voltage is decreased by R48 connected to Q12.

• UHF OUTPUT POWER CONTROL CIRCUIT



	Q12	Q13
HIGH	OFF	OFF
LOW2 (LPO-2)	OFF	ON
LOW1 (LPO-1)	ON	OFF

Fig. 7

3-2-13 UHF ANTENNA SWITCHING CIRCUIT (MAIN-B UNIT)

When transmitting, D9, D18 and D19 are turned ON. The RF output signal from IC2 is not permitted to enter the receiver circuit. The signal passes through L10, C78, D9 and a bandpass filter (C83~ C88, L12~L15) and is then output from an antenna connector.

3-3 PLL CIRCUITS

3-3-1 GENERAL

A PLL circuit steadily oscillates the transmit frequency and the receiver 1st LO frequency. The PLL circuit compares phases of the divided VCO frequency and reference frequency. The PLL output frequency is controlled by the divided ratio (N-data) of the programmable divider.

3-3-2 REFERENCE OSCILLATOR CIRCUIT (MAIN-B UNIT)

A 12.8 MHz reference frequency is determined by the oscillator (X1) and is then oscillated by a Colpitts oscillator circuit (Q3). The frequency is adjusted with C6. The reference frequency is buffer-amplified at Q4 and is then applied to both VHF and UHF PLL circuits.

3-3-3 VHF VCO CIRCUIT (VCO-A UNIT)

The VHF VCO circuit contains both V-UHF and V-VHF VCO circuits to obtain a 120 MHz~420 MHz oscillation for the VHF PLL circuit. This circuit is newly designed to receive two frequencies in the same band.

The V-UHF VCO circuit employs a Colpitts oscillator circuit (Q1). The output signal from the V-UHF VCO circuit is mixed with the V-VHF VCO oscillation via C10 and R9.

The V-VHF VCO circuits employ a Hartley oscillator circuit (Q4). The output signal from the V-VHF VCO circuit is mixed with the V-UHF VCO oscillation via C22 and R19.

Varactor diodes (D1~D4) provide frequency control. The buffer amplifier (Q3) amplifies VCO oscillation and does not permit the latter circuit to affect the VCO oscillation.

Pin 7 of IC1 on the PLL-A UNIT controls Q4 to activate either the V-VHF or the V-UHF VCO circuit.

3-3-7 UHF VCO CIRCUIT (VCO-B UNIT)

The UHF VCO circuit contains both U-UHF and U-VHF VCO circuits to obtain a 120 MHz~420 MHz oscillation for the UHF PLL circuit. This circuit is newly designed to receive two frequencies in the same band.

The U-UHF VCO circuit employs a Colpitts oscillator circuit (Q1). The output signal from the U-UHF VCO circuit is mixed with the U-VHF VCO oscillation via C10 and R9.

The U-VHF VCO circuit employs a Hartley oscillator circuit (Q4). The output signal from the U-VHF VCO circuit is mixed with the U-UHF VCO oscillation via C22 and R19.

Varactor diodes (D1~D4) provide frequency control. The buffer amplifier (Q3) amplifies VCO oscillation and does not permit the latter circuit to affect the VCO oscillation.

Pin 7 of IC1 on the PLL-B UNIT controls Q4 to activate either the U-VHF or the U-UHF VCO circuit.

3-3-8 UHF PROGRAMMABLE DIVIDER AND PHASE DETECTOR CIRCUITS (PLL-B UNIT)

The programmable divider shifts the dividing ratio with a prescaler depending on the operating frequency and determines the VCO oscillating frequency.

The phase detector circuit detects the off-phase components of the VCO frequency using a stable reference frequency.

The output signal from the VCO-B UNIT enters either PLL IC (IC1, pin 5) or a buffer amplifier (Q5) on the PLL-B UNIT.

IC1 is a one-chip PLL IC that contains a two-modulus prescaler, a pulse counter, a programmable divider and a phase detector.

The input signal from the PLL IC (IC1, pin 5) passes through the two-modulus prescaler and the programmable divider sections of IC1. A 12.8 MHz reference frequency from X1 is applied to IC1 (pin 15) and passes through a programmable divider section of IC1. Both of the divided signals are compared at a phase detector section of IC1. The phase-detected signal (pulse signal) is output from IC1 (pin 12).

3-3-9 UHF LOOP FILTER AND DC-DC-CONVERTER CIRCUITS (PLL-B AND MAIN-B UNITS)

Phase-detected signals (pulse signals) from IC1 (pin 12) are converted to DC voltage (PLL lock voltage) by a loop filter consisting of an active filter (Q1, Q2).

The UHF VCO oscillation on the VCO-B UNIT is controlled by varactor diodes (D1~D4). DC voltage (PLL lock voltage) is provided through the integrator circuit (C4, R5) and is then applied to a DC amplifier circuit (Q6, Q7). The voltage is used as the tuning voltage for the receiver bandpass filters.

30 V DC from the DC-DC converter circuit (IC8, Q40, Q41) is applied to a 24 V regulator (D1) to obtain a stable 24 V DC. The voltage is used at the loop filter to obtain a wide range of lock voltage for the PLL circuit.

3-3-10 UHF UNLOCK SENSOR CIRCUIT (PLL-B AND LOGIC UNITS)

When the PLL circuit is unlocked, IC1 (pin 13) becomes "HIGH". The "HIGH" signal is applied to the CPU (IC3, pin 21) as an unlock signal on the LOGIC UNIT.

• UHF PLL-B UNIT BLOCK DIAGRAM

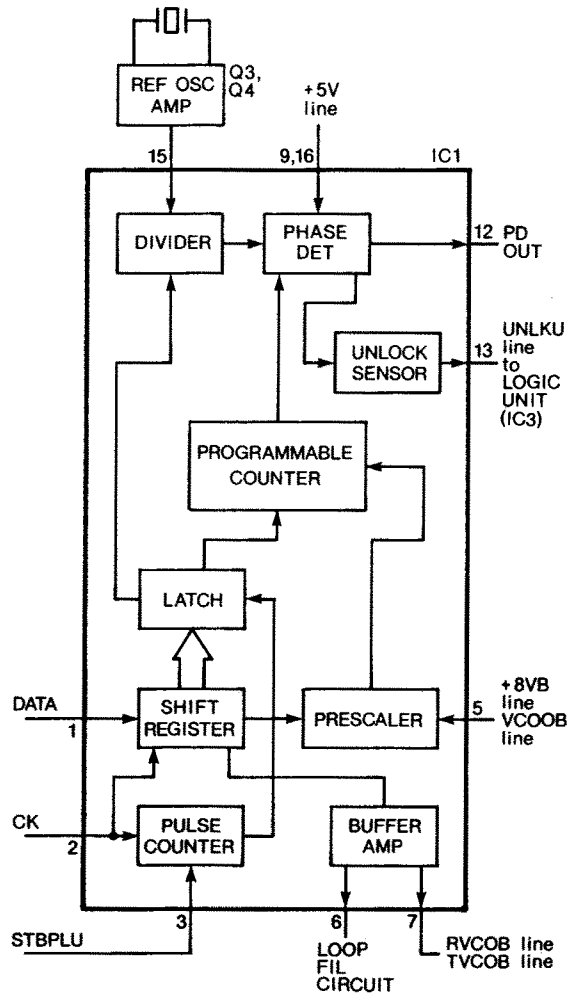


Fig. 9

3-4 OTHER CIRCUITS

3-4-1 VHF S/RF INDICATOR CIRCUIT (MAIN-A AND LOGIC UNITS)

The RF meter voltage from IC3a (pin 1) is rectified at an S/RF meter detector (D24). The detected voltage is output as the "SRFV" signal. The signal is applied to an S/RF comparator (IC4b, pin 5) on the LOGIC UNIT.

IC4b (pin 6) receives an S/RF indicator reference signal from the CPU (IC3, pins 4~7) using the D/A converter (R43~R46). These pins increase the reference signal level.

When the reference signal becomes greater than the "SRFV" signal, IC4b (pin 7) becomes "LOW". The CPU detects the signal strength level using the outputs from IC3 (pins 4~7) and indicates the signal strength level on the FUNCTION DISPLAY when receiving the "LOW" signal.

3-4-2 UHF S/RF INDICATOR CIRCUIT (MAIN-B AND LOGIC UNITS)

The RF meter voltage from IC3a (pin 1) is rectified at an S/RF meter detector (D21). The detected voltage is output as the "SRFU" signal. The signal is applied to an S/RF comparator (IC4a, pin 3) on the LOGIC UNIT.

IC4b (pin 2) receives an S/RF indicator reference signal from the CPU (IC3, pins 4~7) using the D/A converter (R43~R46). These pins increase the reference signal level.

When the reference signal becomes greater than the "SRFU" signal, IC4a (pin 1) becomes "LOW". The CPU detects the signal strength level using the outputs from IC3 (pins 4~7) and indicates the signal strength level on the FUNCTION DISPLAY when receiving the "LOW" signal.

3-4-3 CPU POWER SUPPLY CIRCUIT (LOGIC UNITS)

When the power switch is turned OFF, voltage is applied to the CPU (IC3, pin 26) via D3 from the lithium backup battery installed on the LOGIC UNIT to provide backup power for the memory contents.

3-4-4 CPU RESET CIRCUIT (LOGIC UNIT)

This circuit resets the CPU with a three-terminal voltage regulator IC (IC2). IC2 detects +5 V when the DC voltage is applied to the input terminal of IC2 and outputs 5V. When the 5 V line becomes higher than the threshold voltage of IC2, the CPU reset circuit outputs "HIGH" as the interrupt signal.

When the [POWER] switch is turned ON, the RESET port of the CPU (IC3, pin 43) becomes "HIGH". When the port receives "HIGH", the CPU restarts operation. The time constant (C14, R27, R28) provides sufficient reset time.

When the 5 V line becomes lower than the threshold voltage of IC2, the INT1 port of the CPU (IC3, pin 17) becomes "LOW", and the CPU enters the backup condition.

• CPU RESET CIRCUIT

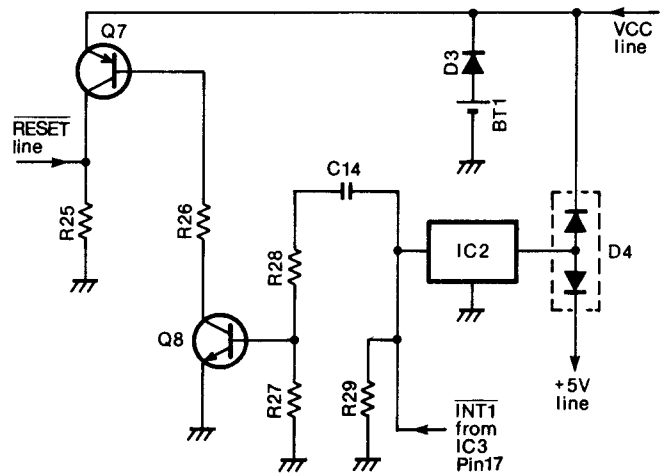


Fig. 10

3-4-5 DIMMER CIRCUIT (LOGIC UNIT)

The dimmer circuit consists of Q9~Q11 and other components and drives backlights (DS1~DS5), ensuring that brightness does not change even with a change of power supply.

The brightness of the FUNCTION DISPLAY is set at 1 of 5 levels using combinations of output levels in IC3 (pins 24 and 25). When the CPU (IC3, pins 24 and 25) changes its output level, Q11 changes the base voltage and the collector current of Q9 and Q10 changes. Therefore, the collector voltage is changed and the brightness of lamps DS1~DS5 changes.

• DIMMER CIRCUIT

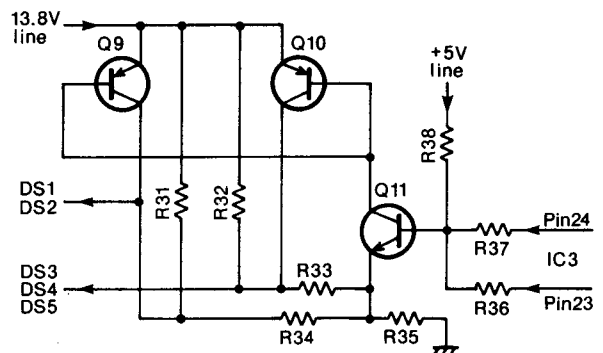


Fig. 11

3-4-6 REGULATOR CIRCUIT (MAIN-B UNIT)

IC9 is a 3-terminal voltage regulator IC chip. +13.8 V is applied to the input terminal. The output terminal outputs a regulated +9 V (+8 V line) to each unit.

Q38, Q39 and D29 produce a regulated 8 V (+8 V line) for the MAIN-A UNIT. This regulator is composed of a complementary connection to ensure high current amplification and supplies stable output voltage continuously with good temperature characteristics.

IC7 is a 3-terminal voltage regulator IC chip. +13.8 V is applied to the input terminal. The output terminal outputs a regulated +5.5 V (5 V line) using D28.

D1 produces a regulated 24 V for the UHF loop filter circuit. This voltage is converted from 30 V DC which is produced by the DC-DC converter (IC8, Q40, Q41).

3-5 CPU PORT ALLOCATIONS (LOGIC UNIT)

• IC3 CPU

PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION
D0	48	T SQLV	Detects a VHF tone squelch signal. When the signal is "HIGH", an optional tone squelch opens.
D1	49	T SQLU	Detects a UHF tone squelch signal. When the signal is "HIGH", an optional tone squelch opens.
D2	50	UNIT. T	Becomes "LOW" when an optional UT-67 TONE SQUELCH UNIT is connected.
D3	51	STB VC	Outputs a strobe signal for VHF control.
D4	52	STB UC	Outputs a strobe signal for UHF control.
D5	53	STB AC	Outputs a strobe signal for common control.
D6	54	STB PLV	Outputs a strobe signal for VHF PLL data on the MAIN-A UNIT.
D7	55	STB PLU	Outputs a strobe signal for UHF PLL data on the MAIN-B UNIT.
D8	56	MIC CK	Input port for the microphone clock.
D9	57	MIC U/D	Input port for the microphone up/down signal.
D10	58	PTT	Inputs a signal on the PTT line. This port becomes "HIGH" when the PTT switch is pushed.
D11	59	BEEP	Outputs a signal for beep tone.
D12	60	S TONE	Outputs a signal for 88.5 Hz tone.
D13	61	LINH	Outputs a control signal for LCD on the DISPLAY UNIT.
D14	62	LCE1	Outputs a signal for LCD driver (IC1) on the DISPLAY UNIT.
D15	63	LCE2	Outputs a signal for LCD driver (IC2) on the DISPLAY UNIT.
R00	64	LDATA	Outputs serial data for LCD.

PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION															
R01	1	LCK	Outputs clock signals for LCD.															
R02~ R03, R10	2~4	INI S0~ INI S2	Output strobe signals for the initial matrix.															
R11~ R13	5~7	SRF 01~ SRF 03	Output counting signals for the S/R F INDICATOR.															
R20~ R23	8~ 11	KEY I0~ KEY I3	Input ports for the key and initial matrix.															
R30	14	DIAL UP	Input port for the up signal of the TUNING CONTROL.															
R31	15	DIAL DN	Input port for the down signal of the TUNING CONTROL.															
R32	16	INT0/ DIAL CK	Input port for the up/down clock signal of the TUNING CONTROL.															
R33	17	INT1/ BACKUP	Input port for the signal of memory backup.															
R40~ R41	27~ 28	V SQL1~ V SQL2	Output control signals for VHF squelch level setting.															
R42~ R43	29~ 30	U SQL1~ U SQL2	Output control signals for UHF squelch level setting.															
R50	18	SQLS V	Detects a VHF squelch signal. When the signal is "HIGH", the VHF squelch opens.															
R51	19	SQLS U	Detects a UHF squelch signal. When the signal is "HIGH", the UHF squelch opens.															
R52	20	UNLK V	Detects a VHF PLL unlock signal. When the signal is "HIGH", the VHF PLL is unlocked. Normally, this port is "LOW".															
R53	21	UNLK U	Detects a UHF PLL unlock signal. When the signal is "HIGH", the UHF PLL is unlocked. Normally, this port is "LOW".															
R60	22	CK	Outputs a clock signal for the serial data (DATA).															
R61	23	DATA	Outputs serial data.															
R62~ R63	24~ 25	DIM0~ DIM1	For setting the LCD dimmer. Level 3 is the brightest. <table border="1" style="margin-left: 20px;"> <tr> <td>Level</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>DIM0</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> <tr> <td>DIM1</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> </table>	Level	0	1	2	3	DIM0	L	H	L	H	DIM1	L	L	H	H
Level	0	1	2	3														
DIM0	L	H	L	H														
DIM1	L	L	H	H														
R70	31	STB TV	Outputs a strobe signal for an optional UT-67 TONE SQUELCH UNIT control on the VHF band.															
R71	32	STB TU	Outputs a strobe signal for an optional UT-67 TONE SQUELCH UNIT control on the UHF band.															
R72	33	STB DT	Outputs a strobe signal for an optional UT-55 DTMF ENCODER/ DECODER UNIT control.															
R73	34	STB SP	Outputs a strobe signal for an optional UT-66 VOICE SYNTHESIZER UNIT control.															
R81	36	UNIT. S	Becomes "LOW" when an optional UT-66 VOICE SYNTHESIZER UNIT is connected.															
R82	37	UNIT. T	Becomes "LOW" when an optional UT-55 DTMF ENCODER/ DECODER UNIT is connected.															

PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION
R83	38	STD	Becomes "HIGH" while DTMF is decoding.
R90~ R93	39~ 42	D0~ D3	DTMF decode data (4 bits).
RA0	12	V SRFI	Inputs a resulting signal from the S/RF meter comparator on the VHF band.
RA1	13	U SRFI	Inputs a resulting signal from the S/RF meter comparator on the UHF band.
RESET	43	RESET INPUT	When a "HIGH" signal is applied to this port, either the CPU is initialized or changes to stand-by mode.
OSC1	45		Input port for the oscillator of the CPU clock.
OSC2	46		Output port for the oscillator of the CPU clock.
GND	47		Ground
VCC	26		Input port for the power source of the CPU.

• IC5 SHIFT REGISTER (MAIN-A UNIT)

PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION												
Q1	4	VTX	Becomes "HIGH" while transmitting on the VHF band.												
Q3	6	V1RX	Becomes "HIGH" while receiving on the VHF band.												
Q4	7	V3RX	Becomes "HIGH" while receiving on the UHF band.												
Q5~ Q6	14, 13	VLP1~ VLP2	For setting VHF RF output power. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Power</th> <th>High</th> <th>Low 1</th> <th>Low 2</th> </tr> </thead> <tbody> <tr> <td>VLP1</td> <td>L</td> <td>H</td> <td>L</td> </tr> <tr> <td>VLP2</td> <td>L</td> <td>L</td> <td>H</td> </tr> </tbody> </table>	Power	High	Low 1	Low 2	VLP1	L	H	L	VLP2	L	L	H
Power	High	Low 1	Low 2												
VLP1	L	H	L												
VLP2	L	L	H												

• IC6 SHIFT REGISTER (MAIN-B UNIT)

PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION												
Q1	4	UTX	Becomes "HIGH" while transmitting on the UHF band.												
Q2	5	U1RX	Becomes "HIGH" while receiving on the VHF band.												
Q3	6	U3RX	Becomes "HIGH" while receiving on the UHF band.												
Q6~ Q7	13, 12	ULP1~ ULP2	For setting UHF RF output power. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Power</th> <th>High</th> <th>Low 1</th> <th>Low 2</th> </tr> </thead> <tbody> <tr> <td>ULP1</td> <td>L</td> <td>H</td> <td>L</td> </tr> <tr> <td>ULP2</td> <td>L</td> <td>L</td> <td>H</td> </tr> </tbody> </table>	Power	High	Low 1	Low 2	ULP1	L	H	L	ULP2	L	L	H
Power	High	Low 1	Low 2												
ULP1	L	H	L												
ULP2	L	L	H												

• IC3 SHIFT REGISTER (AF UNIT)

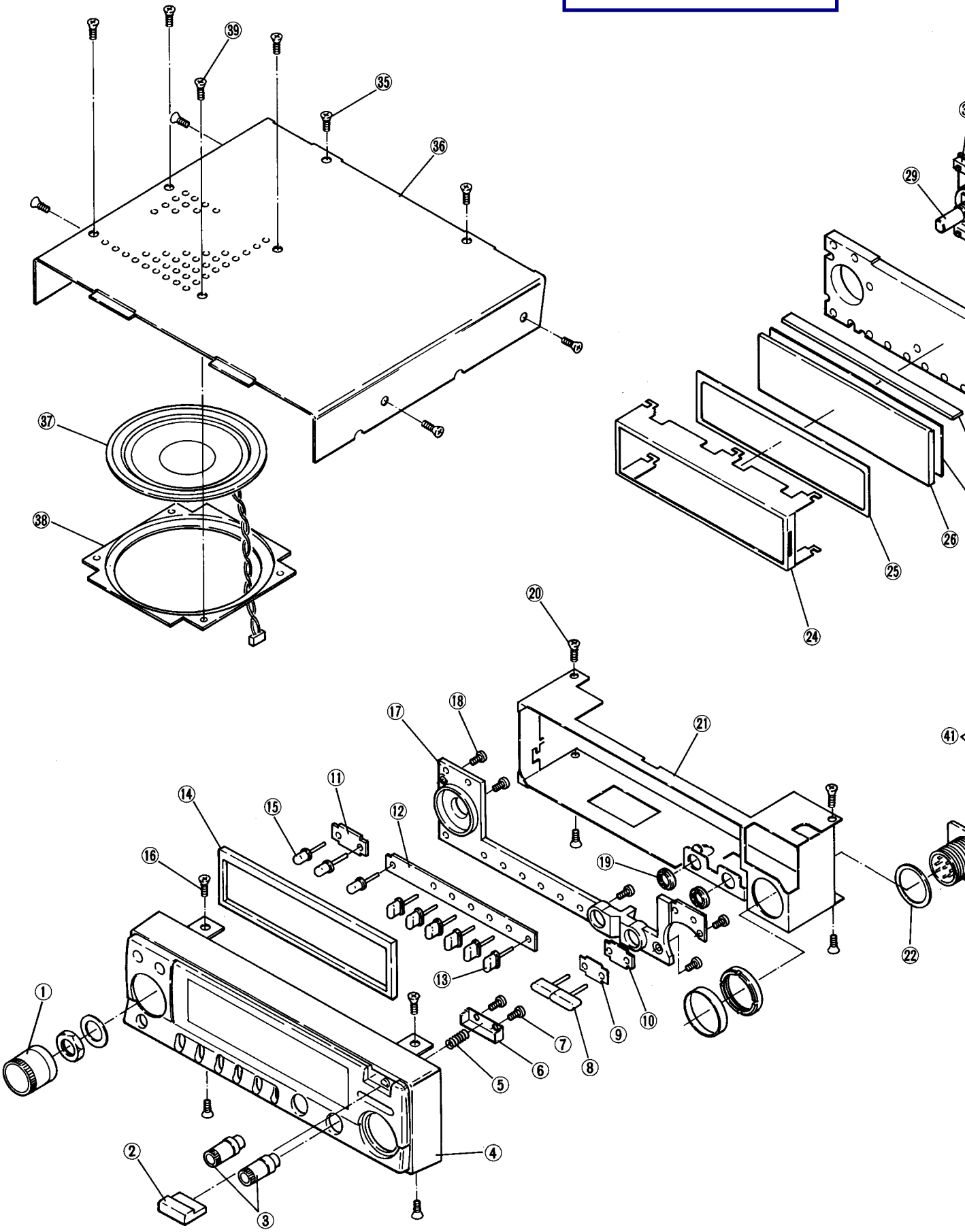
PORT No.	PIN No.	TERMINAL NAME	DESCRIPTION
Q1	4	VA MUTE	Becomes "HIGH" when the AF amplifier input is muted on the VHF band.
Q2	5	JA MUTE	Becomes "HIGH" when the AF amplifier input is muted on the UHF band.
Q3	6	VD MUTE	Becomes "HIGH" when the "DETV" signal is completely muted.
Q4	7	UD MUTE	Becomes "HIGH" when the "DETV" signal is completely muted.
Q6	13	M MUTE	Becomes "HIGH" when the microphone amplifier input is muted.
Q8	11	V MAIN	Becomes "HIGH" when the VHF is main band.

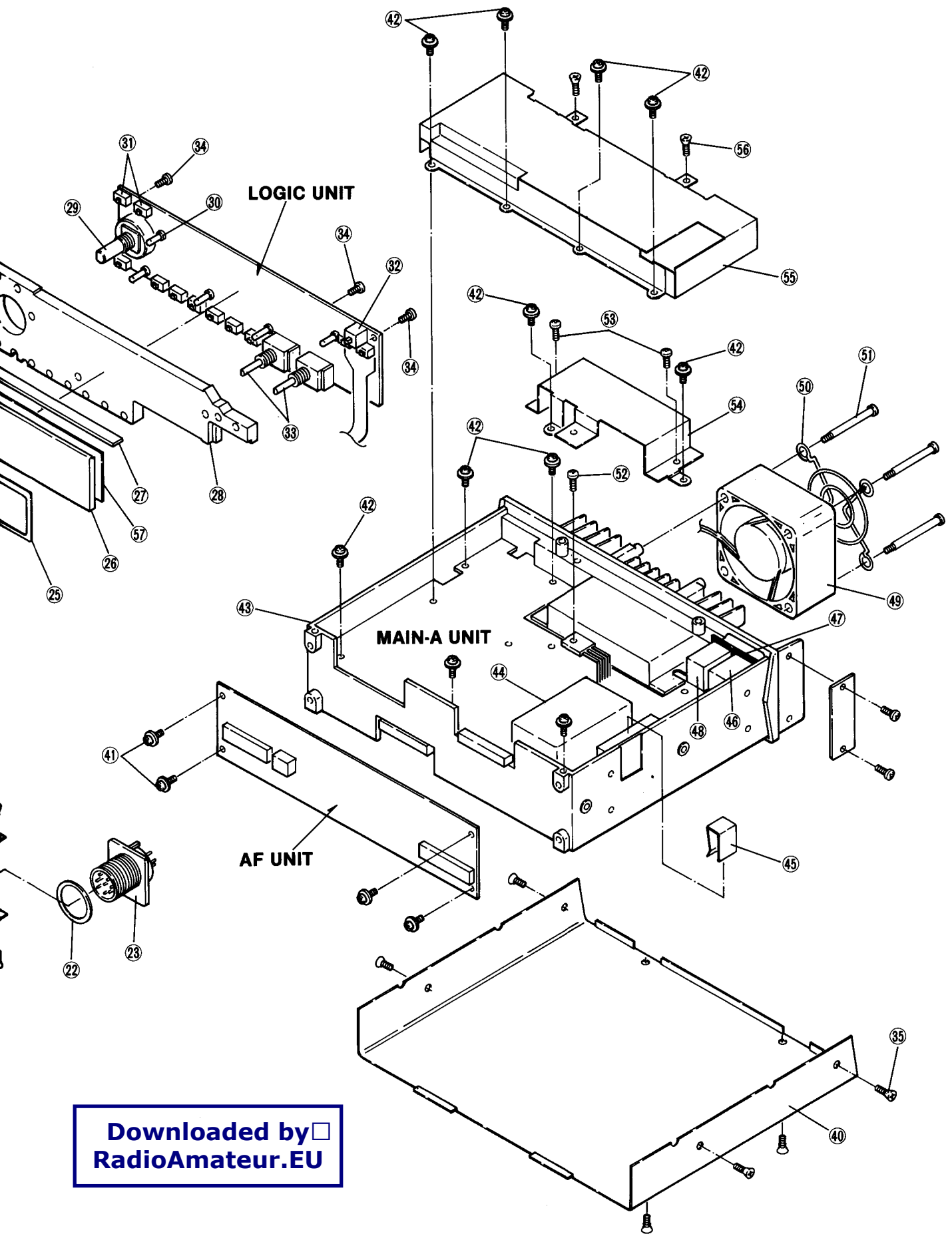
SECTION 4 MECHANICAL PARTS AND DISASSEMBLY

4-1 CHASSIS AND MAIN-A UNITS

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8610006890	Knob N169 [TUNING CONTROL]	1	②9	2250000050	Switch EVQ-WQGF15 24B [TUNING CONTROL]	1
②	8610006880	Button K174 [POWER]	1				
③	8610006900	Knob N168 [U VOL,V VOL]	2	③0	8930017650	Lamp spacer	5
④	8210006360	Front panel (A) IC-2410A	1	③1	2260000580	Switch SKHLAD035A [V/MHz], [M/CALL], [BAND], etc	11
	8210006370	Front panel (B) IC-2410E		③2	2230000800	Switch SW-112 (SPPH24) [POWER]	1
	8210006380	Front panel (C) IC-2410H		③3	7210001970	Variable resistor RV-244 (RK0971110) 10KA [V VOL], [U VOL]	2
⑤	8930021000	Release spring (L)	1	③4	8810000010	Screw PH M2 × 4	3
⑥	8930021130	SW plate	1	③5	8810006230	Screw OH M2.6 × 4 ZK	12
⑦	8810006690	Screw FH B0 No. 0-3 M1.4 × 4 NI	2	③6	8110004290	Top cover	1
⑧	8610006930	Button K175 [V SQL, U SQL]	2	③7	2510000470	Speaker EAS-6P100SA	1
⑨	8930021080	175 seal	1	③8	8930020660	Speaker plate	1
⑩	8930020870	A-switch sponge	1	③9	8810006230	Screw FH M2.6 × 4 ZK	4
⑪	8930020880	B-switch sponge	1	④0	8110004230	Bottom cover	1
⑫	8930020890	C-switch sponge	1	④1	8810003960	Setscrew A M2.6 × 5	4
⑬	8610006920	Button K177 [BAND], [DUP], etc	6	④2	8810003160	Setscrew A M3 × 6	11
⑭	8930020910	LCD rubber	1	④3	8010010900	969 Chassis	1
⑮	8610006910	Button K176	3	④4	8510006900	969 VCO case	1
		[V/MHz], [M/CALL], [MW]		④5	8930020860	IC holder	1
⑯	8810002050	Screw FH M2 × 4	4	④6	6450000140	Connector HSJ0807-01-010 [430 (440) MHz SP]	1
⑰	8010010860	Reflector	1	④7	8930020900	Jack plate	1
⑱	8810000980	Screw PH B0 M2 × 4	5	④8	6450000140	Connector HSJ0807-01-010 [144MHz SP]	1
⑲	8830000550	VR nut (E)	2				
⑳	8810002100	Screw FH M2.6 × 4	4	④9	2710000340	Fan motor MMF-04A12DM-ROA	1
㉑	8010011020	969 SUB chassis	1	⑤0	8930021020	Finger guard FG-40A	1
㉒	8850001200	Icom washer (U)	1	⑤1	8820000650	970 screw	4
㉓	6510000290	Connector 8S-S-E [MICROPHONE]	1	⑤2	8810003660	Icom screw A5	1
㉔	8930020690	969 LCD holder	1	⑤3	8810001910	Screw PH M3 × 6 NI BS	2
㉕	8930021060	Mask seal (black)	1	⑤4	8930020680	V module holder	1
		LCD FTD-10789AAH [FUNCTION DISPLAY] (orange)		⑤5	8510007030	V PA shield	1
㉖	5030000760	LCD FTD-10038AGH [FUNCTION DISPLAY] (black)	1	⑤6	8810002100	Screw FH M2.6 × 4	2
㉗	5030000770	LCD FTD-10789AAH [FUNCTION DISPLAY] (orange)	1	⑤7	8930023700	970 filter (orange)	1
㉘	8930021100	LCD contact strip SRCN-969-W	1				
㉙	8010010850	LCD reflector	1				

Screw abbreviations B0 : Self-tapping screw PH: Pan head FH: Flat head BS: Brass NI: Nickel
 ZK: Black OH: Oval countersunk head





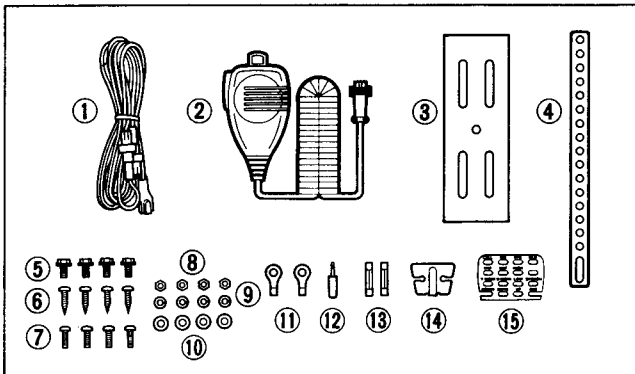
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4-2 MAIN-B UNIT

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8810003160	Setscrew A M3×6	12
②	8510006900	969 VCO case	1
③	8810003660	Icom screw A5	1
④	8930020670	U module holder	1
⑤	8810001910	Screw PH M3×6 NI BS	2
⑥	8810002100	Screw FH M2.6×4	2
⑦	8510007040	U PA shield	1
⑧	8510006440	ANT cover	2
⑨	8810001910	Screw PH M3×6 NI BS	4
⑩	6950000040	M type cap (ZK)	1
⑪	8900002450	Cable OPC-223 [ANTENNA CONNECTOR]	1
⑫	8900002700	Cable OPC-249 [DC 13.8 V]	1
⑬	8810001910	Screw PH M3×6 NI BS	4
⑭	6510007650	Pin LLM61T-2.0 (incl. ⑫)	2

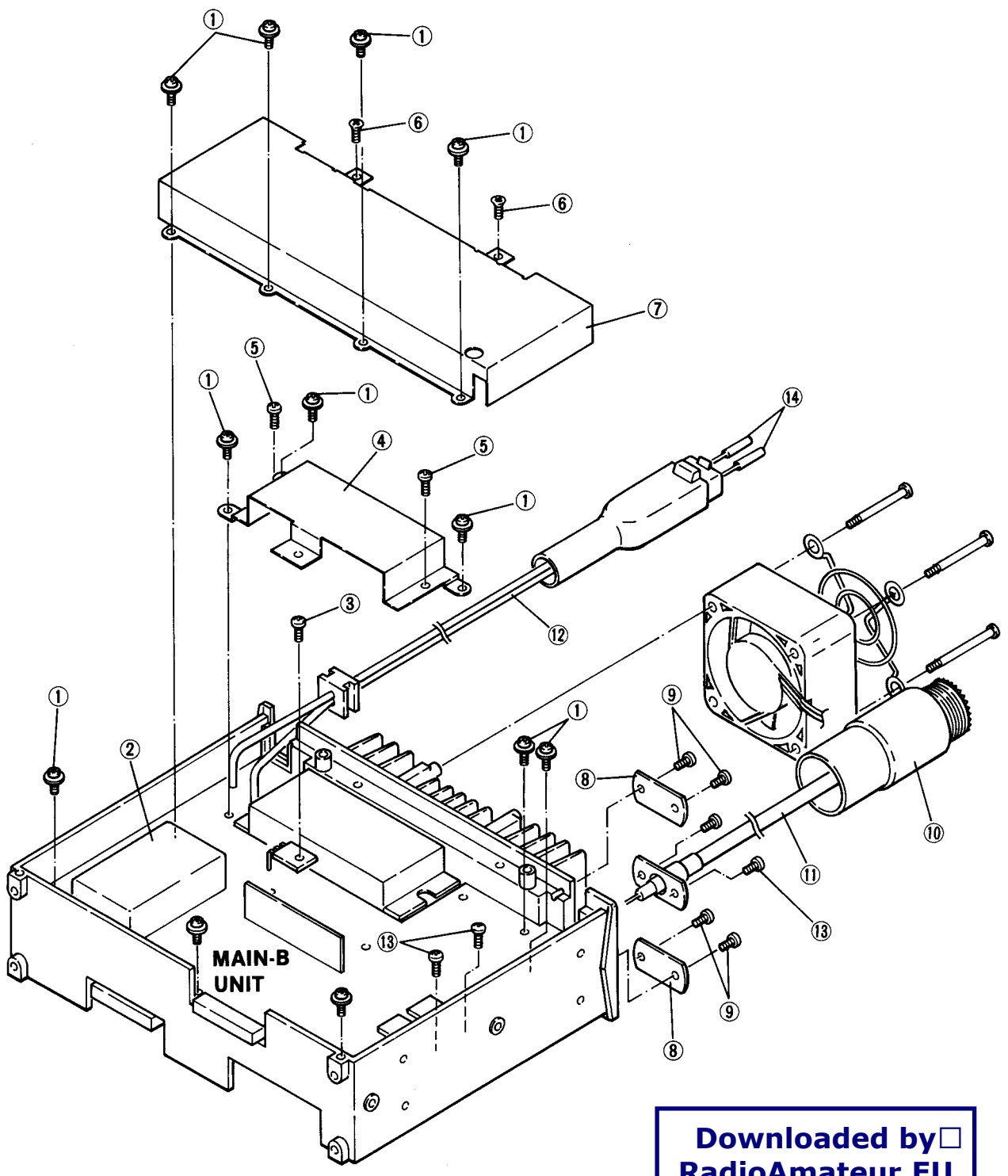
Screw abbreviations PH: Pan head FH: Flat head BS: Brass NI: Nickel ZK: Black

4-3 ACCESSORIES



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	Optional product	DC power cable OPC-044B	1
②	Optional product	Microphone HM-56 IC-2410A/H (USA, SEA)	1
		Microphone HM-58 IC-2410A/H (AUS)	
		Microphone HM-59 IC-2410E/H (EUR, ITA)	
③	8010005180	Mounting bracket (B) ZK	1
④	8010004060	Mounting support bracket	1
⑤	8820000530	Mounting bolt	4
⑥	8810000950	Screw PH A M5×16	4
⑦	8810000470	Screw PH M5×12 (+ -)	4
⑧	8830000120	Nut M5	4
⑨	8850000440	Spring washer M5 NI	4
⑩	8850000150	Flat washer M5 NI BS	4
⑪	6510003070	Cable plug R5.5-8	2
⑫	5610000020	AP313 3.5φ CS plug	1
⑬	5210000120	Fuse FGB 15A	2
⑭	8930007300	Microphone hanger	1
⑮	8310022240	Microphone sheet	1

Screw abbreviations PH: Pan head



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SECTION 5 PARTS LIST

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130003920	IC	TC4S69F (TE85R)
IC2	1110001500	IC	S-8054ALR-LN-T1
IC3	1140001810	IC	HD404019RB02FS
IC4	1120000430	IC	LA6393M-TP-T1
IC5	1130003920	IC	TC4S69F (TE85R)
Q1	1590000410	Transistor	RN2404 (TE85R)
Q2	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q3	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q4	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q5	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q6	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q7	1510000110	Transistor	2SA1182-Y (TE85R)
Q8	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q9	1510000690	Transistor	2SA1734 (TE12R)
Q10	1510000690	Transistor	2SA1734 (TE12R)
Q11	1530000160	Transistor	2SC2712-Y (TE85RTEM)
D1	1730000840	Zener	RD9.1M-T2B2
D2	1750000050	Diode	1SS193 (TE85R)
D3	1750000050	Diode	1SS193 (TE85R)
D4	1750000010	Diode	1SS181 (TE85R)
D6	1750000040	Diode	1SS190 (TE85R)
	1750000030	Diode	1SS187 (TE85R)
			(EUR,USA,EUR-H,USA-H)
			(AUS,AUS-H)
	1750000010	Diode	1SS181 (TE85R)
			(SEA,SEA-H)
D7	1750000040	Diode	1SS190 (TE85R)
			(EUR,EUR-H)
	1750000030	Diode	1SS187 (TE85R)
			(ITA,ITA-H)
D8	1710000600	Diode	1SS254
			(ITA,USA,SEA,ITA-H,
			USA-H,SEA-H)
D9	1710000600	Diode	1SS254
			(ITA,USA,SEA,ITA-H,
			USA-H,SEA-H)
D10	1710000600	Diode	1SS254
			(USA,SEA,USA-H,SEA-H)
D12	1710000600	Diode	1SS254
			(EUR,ITA,AUS,SEA,
			EUR-H,ITA-H,AUS-H,SEA-H)
D13	1750000030	Diode	1SS187 (TE85R)
			(EUR,AUS,EUR-H,AUS-H)
D14	1750000030	Diode	1SS187 (TE85R)
			(USA,USA-H)
	1750000010	Diode	1SS181 (TE85R)
			(ITA,ITA-H)
D15	1750000010	Diode	1SS181 (TE85R)
D16	1750000010	Diode	1SS181 (TE85R)
D17	1750000010	Diode	1SS181 (TE85R)
D18	1750000010	Diode	1SS181 (TE85R)
D19	1750000010	Diode	1SS181 (TE85R)
D20	1750000050	Diode	1SS193 (TE85R)
X1	6060000230	Crystal	FAR-C4CA-04194000-M01
R1	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)
R2	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R3	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R4	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R5	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R6	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R7	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R8	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R9	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R10	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R11	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R12	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R13	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R14	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R15	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R16	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R17	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R18	7030003610	Resistor	ERJ3GEYJ 273 V (27 k Ω)
R19	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R20	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R21	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R22	7030003610	Resistor	ERJ3GEYJ 273 V (27 k Ω)
R23	7210001970	Variable Resistor	RV-244 (RK0971110) 10KA
			[V VOL]
R24	7210001970	Variable Resistor	RV-244 (RK0971110) 10KA
			[U VOL]
R25	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R26	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R27	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R28	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R29	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R30	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R31	7030001170	Resistor	MCR50JZHJ 220 Ω (221)
R32	7030001170	Resistor	MCR50JZHJ 220 Ω (221)
R33	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 k Ω)
R34	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 k Ω)
R35	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 k Ω)
R36	7030003650	Resistor	ERJ3GEYJ 563 V (56 k Ω)
R37	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R38	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R39	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R40	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R41	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R42	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R43	7030003760	Resistor	ERJ3GEYJ 474 V (470 k Ω)
R44	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R45	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R46	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R47	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R48	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R49	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R50	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R51	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R52	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R53	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R54	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R55	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R56	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R57	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R58	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R59	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R60	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R61	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R62	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R63	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R64	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R65	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R66	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R67	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R68	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R69	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R70	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R71	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R72	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R73	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R74	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R75	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R76	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R77	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R78	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R81	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R82	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R83	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R84	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R85	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R86	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R87	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R88	7030003510	Resistor	ERJ3GEYJ 392 V (3.9 kΩ)
R89	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R90	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R91	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
C1	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C2	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C3	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C4	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C5	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C6	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C7	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C8	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C9	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C10	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C11	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C12	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C13	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C14	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C15	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C16	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C17	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C18	4030006830	Ceramic	C1608 JF 1C 104Z-T-A
C19	4510004540	Electrolytic	ECEV0JA470P
DS1	5080000150	LED	HRS-7219A
DS2	5080000150	LED	HRS-7219A
DS3	5080000150	LED	HRS-7219A
DS4	5080000150	LED	HRS-7219A
DS5	5080000150	LED	HRS-7219A
S1	2230000800	Switch	SW-112 (SPPH24) [POWER]
S2	2260000580	Switch	SKHLAD035A [V/MHz]
S3	2260000580	Switch	SKHLAD035A [M/CALL]
S4	2260000580	Switch	SKHLAD035A [BAND]
S5	2260000580	Switch	SKHLAD035A [DUP]
S6	2260000580	Switch	SKHLAD035A [T/T.SQL]
S7	2260000580	Switch	SKHLAD035A [PRG/CS]
S8	2260000580	Switch	SKHLAD035A [HI/LOW]
S9	2260000580	Switch	SKHLAD035A [SET]
S10	2260000580	Switch	SKHLAD035A [V SQL]
S11	2260000580	Switch	SKHLAD035A [U SQL]
S12	2260000580	Switch	SKHLAD035A [MW]
S13	2250000050	Switch	EVQ-WQGF15 24B [TUNING CONTROL]
BT1	3020000100	Lithium Battery	CR2025-1T21
EP2	0910030084	P.C. Board	B 3027D (LOGIC)
EP3	0910006331	F.P.C. Board	B 792A
EP7	0910029991	P.C. Board	B 3047A (VR)
EP8	0910029991	P.C. Board	B 3047A (VR)

[DISPLAY UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130004190	IC	LC7582A
IC2	1130004190	IC	LC7582A
R1	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R2	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R3	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R4	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R5	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R6	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R7	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
C1	4030006830	Ceramic	C1608 SL 1H 331J-T-A
C2	4030006830	Ceramic	C1608 SL 1H 331J-T-A
DS1	5030000760	LCD	FTD-10038AGH [FUNCTION DISPLAY] (black)
	5030000770	LCD	FTD-10789AAH [FUNCTION DISPLAY] (orange)
EP2	8930021100	LCD contact strip	SRCN-969-W
EP1	0910029991	P.C. Board	B 3026A (DISPLAY)

[AF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110000960	IC	NJM4558M (T1)
IC2	1130004730	IC	BU4068BF-T1
IC3	1130005810	IC	BU4094BF-T1
IC4	1130003760	IC	TC4S81F (TE85R)
Q1	1530001950	Transistor	2SC2712-GR (TE85R)
Q2	1590000380	FET	2SJ106-Y (TE85R)
Q3	1590000380	FET	2SJ106-Y (TE85R)
Q4	1590000420	Transistor	RN1404 (TE85R)
Q5	1530001950	Transistor	2SC2712-GR (TE85R)
Q6	1530001950	Transistor	2SC2712-GR (TE85R)
Q7	1590000380	FET	2SJ106-Y (TE85R)
Q8	1590000380	FET	2SJ106-Y (TE85R)
Q9	1590000420	Transistor	RN1404 (TE85R)
Q10	1590000380	FET	2SJ106-Y (TE85R)
Q11	1590000420	Transistor	RN1404 (TE85R)
Q12	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q13	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q14	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q15	1530002550	Transistor	2SC3326-B (TE85R)
Q16	1530002550	Transistor	2SC3326-B (TE85R)
Q17	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q18	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q19	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q20	1530002550	Transistor	2SC3326-B (TE85R)
Q21	1530002550	Transistor	2SC3326-B (TE85R)
Q22	1530002550	Transistor	2SC3326-B (TE85R)
Q23	1530002550	Transistor	2SC3326-B (TE85R)
Q24	1530002550	Transistor	2SC3326-B (TE85R)
D1	1750000070	Diode	1SS226 (TE85R)
R1	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R2	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R3	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R4	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R5	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R6	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)

[AF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R7	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω) (USA,USA-H)
	7030003470	Resistor ERJ3GEYJ 182 V (1.8 k Ω) (EUR,ITA,AUS,SEA,EUR-H, ITA-H,AUS-H,SEA-H)
R8	7030003450	Resistor ERJ3GEYJ 122 V (1.2 k Ω) (USA,USA-H)
	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω) (EUR,ITA,AUS,SEA,EUR-H, ITA-H,AUS-H,SEA-H)
R9	7030003570	Resistor ERJ3GEYJ 123 V (12 k Ω)
R10	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R11	7030003840	Resistor ERJ3GEYJ 225 V (2.2 M Ω)
R12	7030003840	Resistor ERJ3GEYJ 225 V (2.2 M Ω)
R13	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R14	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R15	4810001370	Trimmer EVML1GA00B24 20KB
R16	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R17	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R18	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R19	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R20	7030003650	Resistor ERJ3GEYJ 563 V (56 k Ω)
R21	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R22	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R23	7030003420	Resistor ERJ3GEYJ 681 V (680 Ω)
R24	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R25	7030003390	Resistor ERJ3GEYJ 391 V (390 Ω)
R26	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R27	7030003740	Resistor ERJ3GEYJ 334 V (330 k Ω)
R28	7030003750	Resistor ERJ3GEYJ 394 V (390 k Ω)
R29	7030003790	Resistor ERJ3GEYJ 824 V (820 k Ω)
R30	7030003710	Resistor ERJ3GEYJ 184 V (180 k Ω)
R31	7030003550	Resistor ERJ3GEYJ 822 V (8.2 k Ω)
R32	7030003570	Resistor ERJ3GEYJ 123 V (12 k Ω)
R33	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R34	7030003670	Resistor ERJ3GEYJ 823 V (82 k Ω)
R35	7030003670	Resistor ERJ3GEYJ 823 V (82 k Ω)
R36	7030003670	Resistor ERJ3GEYJ 823 V (82 k Ω)
R39	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R40	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R41	7030003840	Resistor ERJ3GEYJ 225 V (2.2 M Ω)
R42	7030003660	Resistor ERJ3GEYJ 683 V (68 k Ω)
R43	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R44	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R45	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R46	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R47	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R48	7030003450	Resistor ERJ3GEYJ 122 V (1.2 k Ω)
R49	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R50	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R51	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R52	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R53	7030003630	Resistor ERJ3GEYJ 393 V (39 k Ω)
R54	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R55	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R56	7030003740	Resistor ERJ3GEYJ 334 V (330 k Ω)
R57	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R58	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R59	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R60	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R61	7030003380	Resistor ERJ3GEYJ 331 V (330 Ω)
R62	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R63	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R64	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R65	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R66	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R67	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R68	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R69	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R70	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R71	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R72	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R73	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R74	7030003740	Resistor ERJ3GEYJ 334 V (330 k Ω)
R75	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R76	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R77	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R78	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)

[AF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R79	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R80	7030003630	Resistor ERJ3GEYJ 393 V (39 k Ω)
R81	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R82	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R83	7030003380	Resistor ERJ3GEYJ 331 V (330 Ω)
R84	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R85	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R86	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R87	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R88	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R89	7030003500	Resistor ERJ3GEYJ 332 V (3.3 k Ω)
R90	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R91	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R92	7030003500	Resistor ERJ3GEYJ 332 V (3.3 k Ω)
R93	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R94	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R95	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R96	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R97	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R98	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R99	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R100	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R101	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R102	7030003550	Resistor ERJ3GEYJ 822 V (8.2 k Ω)
R103	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R104	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R105	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R106	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R107	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R108	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R109	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R110	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
C1	4510001370	Electrolytic 16 MS5 47 μ F
C2	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C3	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C4	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C5	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C6	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C7	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C8	4030005090	Ceramic C2012 JB 1H 223K-T-A
C9	4030005110	Ceramic C2012 JB 1E 473K-T-A
C10	4030005110	Ceramic C2012 JB 1E 473K-T-A
C11	4030008670	Ceramic C1608 JB 1H 222K-T-A
C12	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C13	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C14	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C15	4510001350	Electrolytic 16 MS5 10 μ F
C16	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C17	4030008660	Ceramic C2012 JB 1H 333K-T-A
C18	4510001470	Electrolytic 50 MS5 1 μ F
C19	4030007020	Ceramic C1608 CH 1H 120J-T-A
C20	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C21	4030008680	Ceramic C2012 SL 1H 821J-T-A
C22	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C23	4030008650	Ceramic C1608 JB 1H 332K-T-A
C24	4030006740	Ceramic C1608 SL 1H 820J-T-A
C25	4030006750	Ceramic C1608 SL 1H 101J-T-A
C26	4510001370	Electrolytic 16 MS5 47 μ F
C27	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C28	4550000320	Tantalum DN 1V 0R1M
C29	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C30	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C31	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C32	4030006900	Ceramic C1608 JB 1E 103K-T-A
C33	4030006900	Ceramic C1608 JB 1E 103K-T-A
C34	4030006470	Ceramic C2012 JB 1H 153K-T-A
C35	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C36	4030008660	Ceramic C2012 JB 1H 333K-T-A
C37	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C38	4030006470	Ceramic C2012 JB 1H 153K-T-A
C39	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C40	4030008670	Ceramic C2012 JB 1H 562K-T-A
C41	4030008670	Ceramic C2012 JB 1H 562K-T-A
C42	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C43	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C44	4550000270	Tantalum TESVA 1E 474M1-8L

[AF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C45	4550000270	Tantalum	TESVA 1E 474M1-8L
C46	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C47	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C48	4030008690	Ceramic	C1808 JB 1E 103K-T-A
C49	4030008900	Ceramic	C1808 JB 1E 103K-T-A
C50	4030008470	Ceramic	C2012 JB 1H 153K-T-A
C51	4030008660	Ceramic	C2012 JB 1H 333K-T-A
C52	4030008470	Ceramic	C2012 JB 1H 153K-T-A
C53	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C54	4030008670	Ceramic	C2012 JB 1H 562K-T-A
C55	4030008670	Ceramic	C2012 JB 1H 562K-T-A
C56	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C57	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C58	4030008650	Ceramic	C1808 JB 1H 471K-T-A
C59	4030008650	Ceramic	C1808 JB 1H 471K-T-A
C60	4030008650	Ceramic	C1808 JB 1H 471K-T-A
C61	4030008650	Ceramic	C1808 JB 1H 471K-T-A
C62	4550000270	Tantalum	TESVA 1E 474M1-8L
C63	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C64	4030008630	Ceramic	C1808 JF 1C 104Z-T-A
C65	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C66	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C67	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C68	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C69	4550002950	Tantalum	TESVA 0J 335M1-8L
EP1	0910030233	P.C. Board	B 3028C (AF)

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[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q12	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q13	1590000380	FET	2SJ108-Y (TE85R)
Q14	1530002030	Transistor	2SC3772-3-TA
Q15	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q16	1530001950	Transistor	2SC2712-GR (TE85R)
Q17	1530001950	Transistor	2SC2712-GR (TE85R)
Q18	1590000830	Transistor	FMG2 T149
Q19	1580000350	FET	3SK140-Y (TE85R)
Q20	1590000420	Transistor	RN1404 (TE85R)
Q21	1580000360	FET	3SK177-T2B U73
Q22	1530002030	Transistor	2SC3772-3-TA
Q23	1580000360	FET	3SK177-T2B U73
Q24	1590000690	Transistor	IMD6 T108
Q25	1590000460	Transistor	RN1402 (TE85R)
Q26	1590000460	Transistor	RN1402 (TE85R)
Q27	1590000460	Transistor	RN1402 (TE85R)
Q28	1590000460	Transistor	RN1402 (TE85R)
Q29	1590001000	Transistor	RN2427 (TE85R)
Q30	1590001000	Transistor	RN2427 (TE85R)
Q31	1590001000	Transistor	RN2427 (TE85R)
Q32	1590001000	Transistor	RN2427 (TE85R)
Q33	1590000460	Transistor	RN1402 (TE85R)
Q34	1580000350	FET	3SK140-Y (TE85R)
Q35	1590000420	Transistor	RN1404 (TE85R)
Q36	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q37	1520000200	Transistor	2SB798-T2 DK
D2	1750000050	Diode	1SS193 (TE85R)
D3	1750000020	Diode	1SS184 (TE85R)
D4	1750000080	Diode	1SS153-T2
D5	1750000080	Diode	1SS153-T2
D6	1750000050	Diode	1SS193 (TE85R)
D7	1790000490	Diode	HSM88AS-TR
D8	1790000490	Diode	HSM88AS-TR
D9	1710000290	Diode	MI308 (EUR,ITA,USA,AUS,SEA) MI407 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
D10	1730000730	Zener	RD6.2M-T2B2
D11	1750000070	Diode	1SS226 (TE85R)
D12	1790000490	Diode	HSM88AS-TR
D13	1790000450	Diode	MA862 (TX)
D14	1720000220	Varicap	1SV166-T2B
D15	1720000220	Varicap	1SV166-T2B
D16	1720000220	Varicap	1SV166-T2B
D17	1720000220	Varicap	1SV166-T2B
D18	1790000450	Diode	MA862 (TX)
D19	1790000450	Diode	MA862 (TX)
D20	1750000070	Diode	1SS226 (TE85R)
D21	1710000290	Diode	MI308
D22	1710000290	Diode	MI308
D23	1750000080	Diode	1SS153-T2
D24	1750000050	Diode	1SS193 (TE85R)
D25	1750000010	Diode	1SS181 (TE85R)
D26	1750000010	Diode	1SS181 (TE85R)
D27	1750000050	Diode	1SS193 (TE85R)
D28	1750000020	Diode	1SS184 (TE85R)
D29	1730000410	Zener	RD5.1M-T2B2
D30	1730000730	Zener	RD6.2M-T2B2
X1	6070000080	Discriminator	CDBM455C16
X2	6050003010	Crystal	CR-166
FI1	2020000550	Ceramic Filter	CFUM455E
FI2	2010000580	Filter	17M15B (FL-78)
L1	6200000830	Coil	LQH 3N 3R3M
L2	6200000770	Coil	LQN 2A 69NM
L3	6200000100	Coil	LQN 2A 22NM
L4	6200000120	Coil	LQN 2A 39NM
L5	6200000130	Coil	LQN 2A 47NM
L6	6200000891	Coil	NL 322522T-R15M-3

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130004200	IC	TC4S66F (TE85R)
IC2	1150000920	IC	SC1124 (EUR,ITA, USA,AUS,SEA)
	1150000910	IC	SC1125 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
IC3	1110001240	IC	μPC358G2-T1
IC4	1110002200	IC	MC3372MR
IC5	1130005810	IC	BU4094BF-T1
IC6	1110001971	IC	μPC1676G-T1
IC7	1110002540	IC	LA4445
Q1	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q2	1510000690	Transistor	2SA1734 (TE12R)
Q3	1530002050	Transistor	2SC3661-TA
Q4	1560000360	FET	2SK209-Y (TE85R)
Q5	1510000110	Transistor	2SA1162-Y (TE85R)
Q6	1530002030	Transistor	2SC3772-3-TA
Q7	1530002030	Transistor	2SC3772-3-TA
Q8	1530000840	Transistor	2SC2407 (A) (EUR,ITA,USA,AUS,SEA)
Q8	1590000390	Transistor	MRF559 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
Q9	1590000420	Transistor	RN1404 (TE85R)
Q10	1590000420	Transistor	RN1404 (TE85R)
Q11	1520000380	Transistor	2SB1143 S (EUR,ITA,USA,AUS,SEA)
	1520000390	Transistor	2SB1135 R (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L7	6110001610	Coil	LA - 244 (EUR,ITA,USA,AUS,SEA)
	6110001680	Coil	LA - 254 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
L8	6110001530	Coil	LA - 233 (EUR,ITA,USA,AUS,SEA)
	6110001550	Coil	LA - 235 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
L9	6110001540	Coil	LA - 234
L10	6170000180	Coil	LW - 19
L11	6110001610	Coil	LA - 244
L12	6110001620	Coil	LA - 245
L13	6110001610	Coil	LA - 244
L14	6200000020	Coil	LQH 3N 101K-S
L15	6150003150	Coil	LS - 331
L16	6150003150	Coil	LS - 331
L17	6150002810	Coil	LS - 291
L18	6150002810	Coil	LS - 291
L19	6150002810	Coil	LS - 291
L20	6150002810	Coil	LS - 291
L21	6110001550	Coil	LA - 235
L22	6110001550	Coil	LA - 235
L23	6150003120	Coil	LS - 321
L24	6150003120	Coil	LS - 321
L25	6150003120	Coil	LS - 321
L26	6150003120	Coil	LS - 321
L27	6200000100	Coil	LQN 2A 22NM
L28	6200000100	Coil	LQN 2A 22NM
R1	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R2	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R3	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R4	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R5	4610001110	Trimmer	EVMLGGA00B15 (104)
R6	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R7	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R8	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R9	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R10	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R11	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R12	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R13	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R14	7030003420	Resistor	ERJ3GEYJ 881 V (880 Ω)
R15	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R16	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R17	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)
R18	7030003700	Resistor	ERJ3GEYJ 154 V (150 k Ω)
R19	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R20	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R21	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R22	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k Ω)
R23	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R24	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 k Ω)
R25	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R26	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R27	7030003230	Resistor	ERJ3GEYJ 180 V (18 Ω)
R28	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R29	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R30	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R31	4610001100	Trimmer	EVMLGGA00B34 (303)
R32	7030003570	Resistor	ERJ3GEYJ 123 V (12 k Ω)
R33	7030003490	Resistor	ERJ3GEYJ 272 V (2.7 k Ω)
R34	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R37	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003490	Resistor	ERJ3GEYJ 272 V (2.7 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R38	7030001010	Resistor	MCR50JZHJ 10 Ω (100)
R39	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R40	7030001150	Resistor	MCR50JZHJ 150 Ω (151)

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R41	7030001190	Resistor	MCR50JZHJ 330 Ω (331)
R42	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R43	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R46	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R47	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R48	7030003620	Resistor	ERJ3GEYJ 333 V (33 k Ω)
R49	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R50	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R51	7030003790	Resistor	ERJ3GEYJ 824 V (820 k Ω)
R52	7030001130	Resistor	MCR50JZHJ 100 Ω (101)
R53	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R55	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R56	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R57	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R58	7030003570	Resistor	ERJ3GEYJ 123 V (12 k Ω)
R59	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R60	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R61	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R62	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 k Ω)
R63	7030003470	Resistor	ERJ3GEYJ 182 V (1.8 k Ω)
R64	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R65	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R66	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R67	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R68	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R69	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R70	7030003760	Resistor	ERJ3GEYJ 474 V (470 k Ω)
R72	7030003430	Resistor	ERJ3GEYJ 821 V (820 Ω)
R73	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R74	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R75	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R76	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R77	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R78	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R79	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R80	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R81	4610001110	Trimmer	EVMLGGA00B15 (104)
R82	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R83	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 M Ω)
R84	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R85	7030003700	Resistor	ERJ3GEYJ 154 V (150 k Ω)
R86	7030003490	Resistor	ERJ3GEYJ 272 V (2.7 k Ω)
R87	7030003470	Resistor	ERJ3GEYJ 182 V (1.8 k Ω)
R89	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R90	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R91	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R92	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k Ω)
R93	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R95	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R96	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R97	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R98	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R99	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R100	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)
R101	7030003230	Resistor	ERJ3GEYJ 180 V (18 Ω)
R102	7030003610	Resistor	ERJ3GEYJ 273 V (27 k Ω)
R103	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R104	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R106	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R107	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R108	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R110	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R111	7030003570	Resistor	ERJ3GEYJ 123 V (12 k Ω)
R112	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R114	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R115	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R116	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R117	7030003650	Resistor	ERJ3GEYJ 563 V (56 k Ω)
R119	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R121	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R122	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R124	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R125	7030003230	Resistor ERJ3GEYJ 180 V (18 Ω)
R126	7030003680	Resistor ERJ3GEYJ 104 V (10 kΩ)
R127	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R128	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R130	4610001230	Trimmer EVMLGGA00B14 (103)
R131	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R132	7030003480	Resistor ERJ3GEYJ 222 V (2.2 kΩ)
R133	7030003370	Resistor ERJ3GEYJ 271 V (270 Ω)
R134	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R135	7030000220	Resistor MCR10EZHZ 47 Ω (470)
R136	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R137	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R138	7030003790	Resistor ERJ3GEYJ 824 V (820 kΩ)
R139	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R140	7030000100	Resistor MCR10EZHZ 4.7 Ω (4R7)
R141	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R142	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R143	7030000100	Resistor MCR10EZHZ 4.7 Ω (4R7)
R144	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R145	7030003480	Resistor ERJ3GEYJ 222 V (2.2 kΩ)
R146	7030000220	Resistor MCR10EZHZ 47 Ω (470)
R147	7510000450	Thermistor DTN-T203C471LS (T)
C1	4550002950	Tantalum TESVA 0J 335M1-8L
C3	4030006860	Ceramic C1808 JB 1H 102K-T-A
C5	4030006860	Ceramic C2012 JF 1C 105Z-T-A
C6	4510003150	Electrolytic 35 SS 33 μF
C7	4030006860	Ceramic C1808 JB 1H 102K-T-A
C8	4030006860	Ceramic C1808 JB 1H 102K-T-A
C9	4030006860	Ceramic C1808 JB 1H 102K-T-A
C11	4510002640	Electrolytic 25 SS 47 μF
C12	4030006860	Ceramic C1808 JB 1H 102K-T-A
C13	4030006860	Ceramic C1808 JB 1H 102K-T-A
C14	4030006860	Ceramic C1808 JB 1H 102K-T-A
C15	4030006860	Ceramic C1808 JB 1H 102K-T-A
C16	4030006850	Ceramic C1808 JB 1H 471K-T-A
C17	4030006860	Ceramic C1808 SL 1H 220J-T-A
C18	4030006850	Ceramic C1808 JB 1H 471K-T-A
C19	4030006860	Ceramic C1808 JB 1H 102K-T-A
C20	4030006860	Ceramic C1808 JB 1H 102K-T-A
C21	4030006570	Ceramic C1808 SL 1H 080D-T-A
C22	4030006610	Ceramic C1808 SL 1H 100D-T-A
C23	4030006440	Ceramic C1808 SL 1H 1R5C-T-A
C24	4030006540	Ceramic C1808 SL 1H 030C-T-A
C25	4030006660	Ceramic C1808 SL 1H 220J-T-A
C26	4030006860	Ceramic C1808 JB 1H 102K-T-A
C27	4030006510	Ceramic C1808 SL 1H 0R5C-T-A
C28	4030006610	Ceramic C1808 SL 1H 100D-T-A
C29	4030006580	Ceramic C1808 SL 1H 070D-T-A
C30	4030006860	Ceramic C1808 JB 1H 102K-T-A
C31	4030006860	Ceramic C1808 SL 1H 220J-T-A
C32	4030006860	Ceramic C1808 JB 1H 102K-T-A
C33	4030006860	Ceramic C1808 JB 1H 102K-T-A
C34	4030006860	Ceramic C1808 JB 1H 102K-T-A
C35	4030006860	Ceramic C1808 JB 1H 102K-T-A
C36	4030006860	Ceramic C1808 SL 1H 220J-T-A
C37	4030006860	Ceramic C1808 SL 1H 220J-T-A (EUR,ITA,USA,AUS,SEA)
C38	4030006610	Ceramic C1808 SL 1H 100D-T-A
C39	4030006860	Ceramic C1808 JB 1H 102K-T-A
C40	4030006860	Ceramic C1808 SL 1H 220J-T-A
C41	4030006860	Ceramic C1808 JB 1H 102K-T-A
C42	4550000280	Tantalum DN 1V 100M
C43	4030006860	Ceramic C1808 JB 1H 102K-T-A
C45	4030006860	Ceramic C1808 JB 1H 102K-T-A
C46	4030006860	Ceramic C1808 JB 1H 102K-T-A
C47	4030006860	Ceramic C1808 JB 1H 102K-T-A
C48	4030006860	Ceramic C1808 JB 1H 102K-T-A
C49	4010003880	Ceramic DD06 SL 150K 500V
C50	4030006860	Ceramic C1808 JB 1H 102K-T-A
C51	4030006860	Ceramic C1808 JB 1H 102K-T-A
C52	4030006860	Ceramic C1808 JB 1H 102K-T-A
C53	4010003880	Ceramic DD06 SL 150K 500V
C54	4030006860	Ceramic C1808 JB 1H 102K-T-A
C55	4010004110	Ceramic DD05 B 471K 500V

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C56	4510001350	Electrolytic 16 MS5 10 μF
C57	4030006860	Ceramic C1808 JB 1H 102K-T-A
C58	4030006860	Ceramic C1808 JB 1H 102K-T-A
C59	4010004120	Ceramic DD07 B 102K 500V
C80	4010003890	Ceramic DD06 SL 180K 500V
C81	4030006860	Ceramic C1808 JB 1H 102K-T-A
C82	4030006860	Ceramic C1808 JB 1H 102K-T-A
C83	4030006860	Ceramic C1808 JB 1H 102K-T-A
C84	4010003930	Ceramic DD06 SL 270K 500V
C85	4010003930	Ceramic DD06 SL 270K 500V
C86	4030006860	Ceramic C1808 JB 1H 102K-T-A
C87	4030006830	Ceramic C1808 JF 1C 104Z-T-A
C88	4030006830	Ceramic C1808 JF 1C 104Z-T-A
C89	4030006780	Ceramic C1808 SL 1H 121J-T-A
C70	4030006710	Ceramic C1808 JB 1H 470J-T-A
C71	4030006660	Ceramic C1808 SL 1H 220J-T-A
C72	4030006630	Ceramic C1808 JF 1C 104Z-T-A
C73	4030006860	Ceramic C1808 JB 1H 102K-T-A
C74	4030006860	Ceramic C1808 JB 1H 102K-T-A
C75	4030006860	Ceramic C1808 JB 1H 102K-T-A
C76	4030006630	Ceramic C1808 JF 1C 104Z-T-A
C77	4030006860	Ceramic C1808 JB 1H 102K-T-A
C78	4510002640	Electrolytic 25 SS 47 μF
C79	4030006860	Ceramic C1808 JB 1H 102K-T-A
C80	4030006890	Ceramic C1808 JF 1H 103Z-T-A
C81	4030006690	Ceramic C1808 SL 1H 330J-T-A
C82	4030006860	Ceramic C1808 JB 1H 102K-T-A
C83	4030006860	Ceramic C1808 JB 1H 102K-T-A
C84	4030006900	Ceramic C1808 JB 1E 103K-T-A
C85	4030006900	Ceramic C1808 JB 1E 103K-T-A
C86	4510002930	Electrolytic 50 SS R47 μF
C87	4030006660	Ceramic C1808 SL 1H 220J-T-A
C88	4030006730	Ceramic C1808 SL 1H 680J-T-A
C89	4030006630	Ceramic C1808 JF 1C 104Z-T-A
C90	4030006540	Ceramic C1808 SL 1H 030C-T-A
C91	4030006860	Ceramic C1808 JB 1H 102K-T-A
C92	4030006900	Ceramic C1808 JB 1E 103K-T-A
C93	4030006730	Ceramic C1808 SL 1H 680J-T-A
C94	4030006740	Ceramic C1808 SL 1H 820J-T-A
C95	4030006900	Ceramic C1808 JB 1E 103K-T-A
C96	4030006860	Ceramic C1808 JB 1H 102K-T-A
C97	4030006570	Ceramic C1808 SL 1H 080D-T-A
C98	4030006630	Ceramic C1808 SL 1H 150J-T-A
C100	4030006510	Ceramic C1808 SL 1H 0R5C-T-A
C101	4030006610	Ceramic C1808 SL 1H 100D-T-A
C102	4030006520	Ceramic C1808 SL 1H 010C-T-A
C103	4030006510	Ceramic C1808 SL 1H 0R5C-T-A
C104	4030006600	Ceramic C1808 SL 1H 090D-T-A
C105	4030006510	Ceramic C1808 SL 1H 0R5C-T-A
C106	4030006860	Ceramic C1808 JB 1H 102K-T-A
C107	4030006860	Ceramic C1808 JB 1H 102K-T-A
C108	4030006860	Ceramic C1808 JB 1H 102K-T-A
C109	4030006750	Ceramic C1808 SL 1H 101J-T-A
C110	4030006870	Ceramic C1808 SL 1H 270J-T-A
C112	4030006590	Ceramic C1808 SL 1H 080D-T-A
C113	4030006860	Ceramic C1808 JB 1H 102K-T-A
C114	4030006860	Ceramic C1808 JB 1H 102K-T-A
C115	4030006860	Ceramic C1808 JB 1H 102K-T-A
C116	4030006860	Ceramic C1808 JB 1H 102K-T-A
C117	4030006860	Ceramic C1808 SL 1H 220J-T-A
C118	4030006700	Ceramic C1808 SL 1H 390J-T-A
C119	4030006860	Ceramic C1808 JB 1H 102K-T-A
C120	4010003890	Ceramic DD06 SL 180K 500V
C121	4030006850	Ceramic C1808 JB 1H 471K-T-A
C122	4030006620	Ceramic C1808 SL 1H 120J-T-A
C123	4030006860	Ceramic C1808 JB 1H 102K-T-A
C124	4030006860	Ceramic C1808 JB 1H 102K-T-A
C125	4030006620	Ceramic C1808 SL 1H 120J-T-A
C126	4030006860	Ceramic C1808 JB 1H 102K-T-A
C127	4030006690	Ceramic C1808 SL 1H 330J-T-A
C128	4030006640	Ceramic C1808 SL 1H 180J-T-A
C129	4030006860	Ceramic C1808 JB 1H 102K-T-A
C130	4030006860	Ceramic C1808 JB 1H 102K-T-A
C131	4030006620	Ceramic C1808 SL 1H 120J-T-A
C132	4030006860	Ceramic C1808 JB 1H 102K-T-A
C133	4030006860	Ceramic C1808 JB 1H 102K-T-A
C134	4030006860	Ceramic C1808 JB 1H 102K-T-A
C135	4030006860	Ceramic C1808 JB 1H 102K-T-A

[MAIN-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C137	4030008610	Ceramic	C1608 SL 1H 100D-T-A
C138	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C139	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C140	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C141	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C142	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C144	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C145	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C146	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C147	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C148	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C149	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C150	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C151	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C152	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C153	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C154	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C155	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C156	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C157	4030008750	Ceramic	C1608 SL 1H 101J-T-A
C158	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C159	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C160	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C181	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C182	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C183	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C184	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C185	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C186	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C187	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C188	4030008900	Ceramic	C1608 JB 1E 103K-T-A
C189	4030008610	Ceramic	C1608 SL 1H 100D-T-A
C170	4030008560	Ceramic	C1608 SL 1H 050C-T-A
C171	4030008610	Ceramic	C1608 SL 1H 100D-T-A
C172	4030008850	Ceramic	C1608 JB 1H 471K-T-A
C173	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C174	4510002640	Electrolytic	25 SS 47 μ F
C175	4510002440	Electrolytic	18 SS 220 μ F (8X11)
C176	4510002640	Electrolytic	25 SS 47 μ F
C177	4510002760	Electrolytic	10 SS 470 μ F
C178	4510002730	Electrolytic	10 SS 100 μ F
C179	4510001720	Electrolytic	18 SS 330 μ F (8X12.5)
C180	4510002730	Electrolytic	10 SS 100 μ F
C181	4510002760	Electrolytic	10 SS 470 μ F
C182	4030008760	Ceramic	C2012 X7R 1C 104K-T-A
C183	4030008760	Ceramic	C2012 X7R 1C 104K-T-A
C184	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C185	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C186	4510002380	Electrolytic	18 SS 470 μ F (10X12.5)
C187	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C188	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C189	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C190	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C191	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C192	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C193	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
EP1	0910030122	P.C. Board	B 3029B (MAIN-A)

[PLL-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130005700	IC	M58760FP
IC2	1130004200	IC	TC4S86F (TE85R)
Q1	1580000360	FET	2SK209-Y (TE85R)
Q2	1530002490	Transistor	2SC3324-GR (TE85R)
Q3	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q4	1590000420	Transistor	RN1404 (TE85R)
Q5	1530002030	Transistor	2SC3772-3-TA
Q6	1590000480	Transistor	RN2402 (TE85R)
R1	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R2	7030003530	Resistor	ERJ3GEYJ 582 V (5.8 k Ω)
R3	7030003410	Resistor	ERJ3GEYJ 581 V (580 Ω)
R4	7030000480	Resistor	MCR10EZJ 4.7 k Ω (472)
R5	7030003530	Resistor	ERJ3GEYJ 582 V (5.8 k Ω)
R6	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R7	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 k Ω)
R8	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R12	7030003530	Resistor	ERJ3GEYJ 582 V (5.8 k Ω)
R13	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R14	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R15	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R16	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R17	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R18	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R19	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R20	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R21	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R22	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R23	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R24	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
C1	4030004750	Ceramic	C2012 JB 1H 103K-T-A
C2	4030008900	Ceramic	C1608 JB 1E 103K-T-A
C3	4030008900	Ceramic	C1608 JB 1E 103K-T-A
C4	4550000550	Tantalum	TESVA 1V 224M1-8L
C5	4550000940	Tantalum	TESVB2 1D 225M-8L
C6	4550000940	Tantalum	TESVB2 1D 225M-8L
C7	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C8	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C9	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C10	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C12	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C13	4030008890	Ceramic	C1608 JF 1H 103Z-T-A
C14	4030007010	Ceramic	C1608 CH 1H 100D-T-A
C15	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C16	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C17	4030008890	Ceramic	C1608 JF 1H 103Z-T-A
C18	4030008860	Ceramic	C1608 SL 1H 220J-T-A
C19	4030008850	Ceramic	C1608 JB 1H 471K-T-A
EP1	0910030701	P.C. Board	B 3069A (PLL-A)

[VCO-A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1560000650	FET	2SK1577-2-T7
Q2	1590001280	Transistor	RN1406 (TE85R)
Q3	1530002240	Transistor	2SC3775-3-TA
Q4	1560000640	FET	2SK1740-TA
Q5	1590001280	Transistor	RN1406 (TE85R)
D1	1720000220	Varicap	1SV166-T2B
D2	1720000220	Varicap	1SV166-T2B
D3	1720000220	Varicap	1SV166-T2B
D4	1720000220	Varicap	1SV166-T2B
L1	6200001580	Coil	LER 015T R68M
L2	6200001580	Coil	LER 015T R68M
L3	6130002430	Coil	LB-271
L4	6200001570	Coil	LER 015T 1R0M
L5	6200001570	Coil	LER 015T 1R0M
L6	6200001580	Coil	LER 015T 1R8M
L7	6200001580	Coil	LER 015T 1R8M
L8	6200001580	Coil	LER 015T 1R8M
L9	6130002420	Coil	LB-270
L10	6200001230	Coil	MLF2012A 1R0M-T
R1	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R3	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R5	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R7	7030003310	Resistor	ERJ3GEYJ 820 V (82 Ω)
R9	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R10	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R11	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R12	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R13	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R14	7030003670	Resistor	ERJ3GEYJ 823 V (82 kΩ)
R15	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R16	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R17	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R18	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R19	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
C2	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C3	4030007110	Ceramic	C1608 CH 1H 680J-T-A
C6	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C7	4030006950	Ceramic	C1608 CH 1H 040C-T-A
C10	4030006910	Ceramic	C1608 CH 1H 0R5C-T-A
C11	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C12	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C13	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C14	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C15	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C17	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C18	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C20	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C21	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C22	4030006920	Ceramic	C1608 CH 1H 010C-T-A
C23	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C24	4030006880	Ceramic	C1608 JB 1H 102K-T-A
C25	4030006850	Ceramic	C1608 JB 1H 471K-T-A
EP1	0910029351	P.C. Board	B 2991A (VCO-A)

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130004200	IC	TC4S66F (TE85R)
IC2	1150000180	IC	SC1027 (EUR,ITA, USA,AUS,SEA)
	1150000750	IC	SC1054 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
IC3	1110001240	IC	μ PC358G2-T1
IC4	1110002200	IC	MC3372MR
IC5	1110001971	IC	μ PC1676G-T1
IC6	1130005810	IC	BU4094BF-T1
IC7	1110002020	IC	TA7805S
IC8	1110001700	IC	TL499ACPS
IC9	1110000490	IC	AN6541
Q1	1510000580	Transistor	2SA1362-GR (TE85R)
Q2	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q3	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q4	1530002380	Transistor	2SC2714-Y (TE85R)
Q5	1530002050	Transistor	2SC3661-TA
Q6	1560000360	FET	2SK209-Y (TE85R)
Q7	1510000110	Transistor	2SA1182-Y (TE85R)
Q8	1530002240	Transistor	2SC3775-3-TA
Q9	1530002030	Transistor	2SC3772-3-TA
Q10	1530002240	Transistor	2SC3775-3-TA
Q11	1590000390	Transistor	MRF559
Q12	1590000420	Transistor	RN1404 (TE85R)
Q13	1590000420	Transistor	RN1404 (TE85R)
Q14	1520000380	Transistor	2SB1143 S
Q15	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q16	1530002020	Transistor	2SC3770-3-TA
Q17	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q18	1590000420	Transistor	RN1404 (TE85R)
Q19	1580000350	FET	3SK140-Y (TE85R)
Q20	1530002240	Transistor	2SC3775-3-TA
Q21	1580000360	FET	3SK177-T2B U73
Q22	1580000360	FET	3SK177-T2B U73
Q23	1590000690	Transistor	IMD8 T108
Q24	1590000480	Transistor	RN1402 (TE85R)
Q25	1590000480	Transistor	RN1402 (TE85R)
Q26	1590000480	Transistor	RN1402 (TE85R)
Q27	1590000480	Transistor	RN1402 (TE85R)
Q28	1590000980	Transistor	DTB123EK T147
Q29	1590000980	Transistor	DTB123EK T147
Q30	1590000980	Transistor	DTB123EK T147
Q31	1590000980	Transistor	DTB123EK T147
Q32	1590000480	Transistor	RN1402 (TE85R)
Q33	1590000980	Transistor	DTB123EK T147
Q34	1590000480	Transistor	RN1402 (TE85R)
Q35	1590000420	Transistor	RN1404 (TE85R)
Q36	1580000350	FET	3SK140-Y (TE85R)
Q37	1530002030	Transistor	2SC3772-3-TA
Q38	1520000080	Transistor	2SB909M R
Q39	1530000180	Transistor	2SC2712-Y (TE85RTEM)
Q40	1530001940	Transistor	2SC2712-BL (TE85R)
Q41	1540000150	Transistor	2SD1225M R
Q42	1590001000	Transistor	RN2427 (TE85R)
Q43	1510000700	Transistor	2SA1736 (TE12R)
D1	1730001120	Zener	RD24M-T2B2
D2	1750000050	Diode	1SS193 (TE85R)
D3	1750000080	Diode	1SS196 (TE85R)
D4	1750000080	Diode	1SS153-T2
D5	1790000450	Diode	MA862 (TX)
D6	1750000050	Diode	1SS193 (TE85R)
D7	1790000490	Diode	HSM88AS-TR
D8	1790000490	Diode	HSM88AS-TR
D9	1710000290	Diode	M1308 (EUR,ITA, USA,AUS,SEA)
	1710000310	Diode	M1407 (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
D10	1730000730	Zener	RD6.2M-T2B2
D11	1790000490	Diode	HSM88AS-TR
D12	1750000070	Diode	1SS226 (TE85R)

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D13	1790000450	Diode	MA862 (TX)
D14	1790000450	Diode	MA862 (TX)
D15	1790000450	Diode	MA862 (TX)
D16	1790000450	Diode	MA862 (TX)
D17	1750000070	Diode	1SS226 (TE85R)
D18	1710000290	Diode	MI308
D19	1710000290	Diode	MI308
D20	1730000410	Zener	RD5.1M-T2B2
D21	1750000020	Diode	1SS184 (TE85R)
D22	1750000020	Diode	1SS184 (TE85R)
D23	1750000020	Diode	1SS184 (TE85R)
D24	1750000020	Diode	1SS184 (TE85R)
D25	1750000020	Diode	1SS184 (TE85R)
D26	1720000270	Varicap	1SV217 (TPH2)
D27	1720000270	Varicap	1SV217 (TPH2)
D28	1750000050	Diode	1SS193 (TE85R)
D29	1750000050	Diode	1SS193 (TE85R)
D31	1790000700	Diode	DSA3A1
X1	6050006950	Crystal	CR-323
X2	6070000080	Discriminator	CDBM455C16
X3	6050007470	Crystal	CR-342
FI1	2020000550	Ceramic Filter	CFUM455E
FI2	2010001140	Filter	30M15B5 (FL-138)
L1	6200000110	Coil	LQN 2A 33NM
L2	6200000090	Coil	LQN 2A 18NM
L3	6200000830	Coil	LQH 3N 3R3M
L4	6200000770	Coil	LQN 2A 68NM
L5	6200000130	Coil	LQN 2A 47NM
L6	6200000110	Coil	LQN 2A 33NM
L7	6200000720	Coil	LQN 2A 10NM
L8	6200000110	Coil	LQN 2A 33NM
L9	6200000090	Coil	LQN 2A 18NM
L10	6110001150	Coil	LA-153
L11	6170000180	Coil	LW-19
L12	6110002110	Coil	LA-382
L13	6110001520	Coil	LA-232
L14	6110001590	Coil	LA-242
L15	6110001520	Coil	LA-232
L16	6180001210	Coil	LAL 03NA 8R2K
L17	6150003220	Coil	LS-320
L18	6150002000	Coil	LS-264
L19	6200000090	Coil	LQN 2A 18NM
L20	6200000100	Coil	LQN 2A 22NM
L21	6150003240	Coil	LS-338 (HR5W)
L22	6150003230	Coil	LS-337 (HR5W)
L23	6200000720	Coil	LQN 2A 10NM
L24	6200000720	Coil	LQN 2A 10NM
L25	6110002110	Coil	LA-382
L26	6110001520	Coil	LA-232
L27	6200000090	Coil	LQN 2A 18NM
L28	6200000090	Coil	LQN 2A 18NM
L29	6200000720	Coil	LQN 2A 10NM
L30	6200000720	Coil	LQN 2A 10NM
L31	6200000891	Coil	NL 322522T-R15M-3
L32	6150003120	Coil	LS-321
L33	6150003120	Coil	LS-321
L34	6180002620	Coil	RCR664D-101K
L35	6180001120	Coil	FL 5H 101K
R1	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R2	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R3	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R5	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R6	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R7	4610001110	Trimmer	EVMLGGA00B15 (104)
R8	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R9	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R10	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R11	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R12	7030003740	Resistor	ERJ3GEYJ 334 V (330 k Ω)
R13	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R14	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)
R15	7030003380	Resistor	ERJ3GEYJ 331 V (330 Ω)
R16	7030003380	Resistor	ERJ3GEYJ 331 V (330 Ω)
R17	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R18	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R19	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R20	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R21	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R22	7030003200	Resistor	ERJ3GEYJ 100 V (10 Ω)
R23	7030003730	Resistor	ERJ3GEYJ 274 V (270 k Ω)
R24	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R25	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R26	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R27	7030003380	Resistor	ERJ3GEYJ 221 V (220 Ω)
R28	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R29	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R30	7030003420	Resistor	ERJ3GEYJ 661 V (660 Ω)
R31	7030000280	Resistor	MCR10EZJH 100 Ω (101)
R32	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R33	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R34	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω)
R35	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R36	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R37	7030003230	Resistor	ERJ3GEYJ 180 V (18 Ω)
R38	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R39	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)
R40	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 k Ω)
R41	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R42	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R43	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R44	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R46	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω) (EUR,ITA,USA,AUS,SEA)
	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R47	4610001100	Trimmer	EVMLGGA00B34 (303)
R48	7030003480	Resistor	ERJ3GEYJ 152 V (1.5 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R49	7030003570	Resistor	ERJ3GEYJ 123 V (12 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R50	7030001050	Resistor	MCR50JZHJ 22 Ω (220)
R51	7030001180	Resistor	MCR50JZHJ 270 Ω (271) (EUR,ITA,USA,AUS,SEA)
R52	7010004130	Resistor	R20J 330 Ω
R53	7030003480	Resistor	ERJ3GEYJ 152 V (1.5 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R54	7030003330	Resistor	ERJ3GEYJ 121 V (120 Ω)
R57	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R58	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R59	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R60	7030003480	Resistor	ERJ3GEYJ 152 V (1.5 k Ω) (EUR,ITA,USA,AUS,SEA)
	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k Ω) (EUR-H,ITA-H, USA-H,AUS-H,SEA-H)
R61	7030003330	Resistor	ERJ3GEYJ 121 V (120 Ω)
R62	7010004720	Resistor	R50XJ 100 Ω
R63	7030003790	Resistor	ERJ3GEYJ 824 V (820 k Ω)
R64	7030003580	Resistor	ERJ3GEYJ 153 V (15 k Ω)
R65	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R66	7030003800	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R67	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R68	7030003570	Resistor	ERJ3GEYJ 123 V (12 k Ω)
R69	7030003720	Resistor	ERJ3GEYJ 224 V (220 k Ω)
R70	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R71	7030003640	Resistor	ERJ3GEYJ 473 V (47 k Ω)
R72	7030000250	Resistor	MCR10EZJH 82 Ω (820)
R73	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k Ω)

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R74	7030003470	Resistor ERJ3GEYJ 182 V (1.8 k Ω)
R75	7030003840	Resistor ERJ3GEYJ 473 V (47 k Ω)
R76	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R77	7030003450	Resistor ERJ3GEYJ 122 V (1.2 k Ω)
R78	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R79	7030003400	Resistor ERJ3GEYJ 471 V (470 Ω)
R80	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R82	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R83	7030003340	Resistor ERJ3GEYJ 151 V (150 Ω)
R84	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R85	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R86	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R87	4810001110	Trimmer EVMLGGA00B15 (104)
R88	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R89	7030003400	Resistor ERJ3GEYJ 471 V (470 Ω)
R90	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R91	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R92	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R93	7030003200	Resistor ERJ3GEYJ 100 V (10 Ω)
R94	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R95	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R96	7030003350	Resistor ERJ3GEYJ 181 V (180 Ω)
R97	7030003350	Resistor ERJ3GEYJ 181 V (180 Ω)
R98	7030003260	Resistor ERJ3GEYJ 330 V (33 Ω)
R99	7030003300	Resistor ERJ3GEYJ 680 V (68 Ω)
R100	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R101	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R102	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R103	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R104	7030003380	Resistor ERJ3GEYJ 331 V (330 Ω)
R105	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R106	7030003580	Resistor ERJ3GEYJ 153 V (15 k Ω)
R107	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R108	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R109	7030003340	Resistor ERJ3GEYJ 151 V (150 Ω)
R110	7030003250	Resistor ERJ3GEYJ 270 V (27 Ω)
R111	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R112	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R113	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R114	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R115	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R116	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R117	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R118	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R119	7030003290	Resistor ERJ3GEYJ 580 V (58 Ω)
R120	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R121	7030000240	Resistor MCR10EZJH 68 Ω (680)
R122	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R123	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R124	7030003220	Resistor ERJ3GEYJ 150 V (15 Ω)
R125	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R126	7030003250	Resistor ERJ3GEYJ 270 V (27 Ω)
R127	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R128	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R129	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R130	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R131	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R132	4810001140	Trimmer EVMLGGA00B33 (302)
R133	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R134	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R135	7030003370	Resistor ERJ3GEYJ 271 V (270 Ω)
R136	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R137	7030003230	Resistor ERJ3GEYJ 180 V (18 Ω)
R138	7030003370	Resistor ERJ3GEYJ 271 V (270 Ω)
R139	7030003370	Resistor ERJ3GEYJ 271 V (270 Ω)
R140	7030003320	Resistor ERJ3GEYJ 101 V (100 Ω)
R141	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R142	7030003280	Resistor ERJ3GEYJ 470 V (47 Ω)
R143	7030003590	Resistor ERJ3GEYJ 183 V (18 k Ω)
R144	7030003500	Resistor ERJ3GEYJ 332 V (3.3 k Ω)
R145	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R148	7030000380	Resistor MCR10EZJH 1 k Ω (102)
R149	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R150	7030003490	Resistor ERJ3GEYJ 272 V (2.7 k Ω)
R151	7030003690	Resistor ERJ3GEYJ 124 V (120 k Ω)
R152	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R153	7030003400	Resistor ERJ3GEYJ 471 V (470 Ω)
R154	7010004830	Resistor R50XJ 4.7 Ω

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R155	7030003360	Resistor ERJ3GEYJ 221 V (220 Ω)
R156	7010004780	Resistor R50XJ 470 Ω
R157	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R158	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R159	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R161	7030003260	Resistor ERJ3GEYJ 330 V (33 Ω)
R162	7030003220	Resistor ERJ3GEYJ 150 V (15 Ω)
R163	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R164	7510000450	Thermistor DTN-T203C471LS (T)
C1	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C2	4030008690	Ceramic C1608 JF 1H 103Z-T-A
C3	4510002930	Electrolytic 50 SS R47 μF
C4	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C5	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C6	4810000380	Trimmer ECRGA020E30
C7	4030008560	Ceramic C1608 CH 1H 300J-T-A
C8	4030008660	Ceramic C1608 JB 1H 102K-T-A
C9	4030004980	Ceramic C2012 CH 1H 820J-T-A
C10	4030007090	Ceramic C1608 CH 1H 470J-T-A
C11	4030008430	Ceramic C1608 JF 1H 223Z-T-A
C12	4030008940	Ceramic C1608 CH 1H 030C-T-A
C13	4030008430	Ceramic C1608 JF 1H 223Z-T-A
C14	4030008660	Ceramic C1608 JB 1H 102K-T-A
C15	4030008660	Ceramic C1608 JB 1H 102K-T-A
C16	4030008430	Ceramic C1608 JF 1H 223Z-T-A
C17	4030008650	Ceramic C1608 JB 1H 471K-T-A
C18	4030008680	Ceramic C2012 JF 1C 105Z-T-A
C23	4030008850	Ceramic C1608 JB 1H 471K-T-A
C24	4510002840	Electrolytic 25 SS 47 μF
C26	4510002730	Electrolytic 10 SS 100 μF
C27	4030008660	Ceramic C1608 JB 1H 102K-T-A
C28	4030008650	Ceramic C1608 JB 1H 471K-T-A
C29	4030008650	Ceramic C1608 JB 1H 471K-T-A
C30	4510003150	Electrolytic 35 SS 33 μF
C31	4030008660	Ceramic C1608 JB 1H 102K-T-A
C32	4030008660	Ceramic C1608 JB 1H 102K-T-A
C33	4030008660	Ceramic C1608 JB 1H 102K-T-A
C34	4030006590	Ceramic C1608 SL 1H 080D-T-A
C35	4030008660	Ceramic C1608 JB 1H 102K-T-A
C37	4030006570	Ceramic C1608 SL 1H 080D-T-A
C38	4030006580	Ceramic C1608 SL 1H 070D-T-A
C39	4030006580	Ceramic C1608 SL 1H 070D-T-A
C40	4030008660	Ceramic C1608 JB 1H 102K-T-A
C41	4030008660	Ceramic C1608 JB 1H 102K-T-A
C42	4030006570	Ceramic C1608 SL 1H 080D-T-A
C43	4030008610	Ceramic C1608 SL 1H 100D-T-A
C44	4030008660	Ceramic C1608 SL 1H 220J-T-A
C45	4030008610	Ceramic C1608 SL 1H 100D-T-A
C46	4030008660	Ceramic C1608 JB 1H 102K-T-A
C47	4030008660	Ceramic C1608 JB 1H 102K-T-A
C48	4030008660	Ceramic C1608 JB 1H 102K-T-A
C49	4030008660	Ceramic C1608 JB 1H 102K-T-A
C50	4030008660	Ceramic C1608 JB 1H 102K-T-A
C51	4030008660	Ceramic C1608 SL 1H 220J-T-A
C52	4030008660	Ceramic C1608 JB 1H 102K-T-A
C53	4030008550	Ceramic C1608 SL 1H 040C-T-A
C54	4030008610	Ceramic C1608 SL 1H 100D-T-A
C55	4030008660	Ceramic C1608 JB 1H 102K-T-A
C56	4030008660	Ceramic C1608 JB 1H 102K-T-A
C57	4030008660	Ceramic C1608 JB 1H 102K-T-A
C58	4030008660	Ceramic C1608 JB 1H 102K-T-A
C59	4030008660	Ceramic C1608 SL 1H 220J-T-A
C60	4030006570	Ceramic C1608 SL 1H 080D-T-A
C61	4030006570	Ceramic C1608 SL 1H 080D-T-A
C62	4030008660	Ceramic C1608 JB 1H 102K-T-A
C64	4550000260	Tantalum DN 1V 100M
C65	4030008660	Ceramic C1608 JB 1H 102K-T-A
C66	4030008660	Ceramic C1608 JB 1H 102K-T-A
C67	4030008660	Ceramic C1608 JB 1H 102K-T-A
C68	4030008660	Ceramic C1608 JB 1H 102K-T-A
C69	4030008660	Ceramic C1608 JB 1H 102K-T-A
C70	4550000260	Tantalum DN 1V 100M
C71	4030008660	Ceramic C1608 JB 1H 102K-T-A
C72	4010003820	Ceramic DD06 SL 050C 500V
C73	4030008660	Ceramic C1608 JB 1H 102K-T-A
C74	4030008660	Ceramic C1608 JB 1H 102K-T-A

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C75	4010003820	Ceramic DD06 SL 050C 500V
C76	4510002980	Electrolytic 50 SS 10 μ F
C77	4030006860	Ceramic C1608 JB 1H 102K-T-A
C78	4010004110	Ceramic DD05 B 471K 500V
C79	4030006860	Ceramic C1608 JB 1H 102K-T-A
C80	4030006860	Ceramic C1608 JB 1H 102K-T-A
C81	4030006860	Ceramic C1608 JB 1H 102K-T-A
C82	4010004110	Ceramic DD05 B 471K 500V
C83	4010003820	Ceramic DD06 SL 050C 500V
C84	4010003850	Ceramic DD06 SL 080D 500V
C85	4010003830	Ceramic DD06 SL 060D 500V
C86	4010003870	Ceramic DD06 SL 120K 500V
C87	4010003820	Ceramic DD06 SL 050C 500V
C88	4010003860	Ceramic DD06 SL 100D 500V
C89	4030006860	Ceramic C1608 JB 1H 102K-T-A
C90	4030006860	Ceramic C1608 JB 1H 102K-T-A
C91	4030006860	Ceramic C1608 JB 1H 102K-T-A
C92	4030006860	Ceramic C1608 JB 1H 102K-T-A
C93	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C94	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C95	4510002980	Electrolytic 50 SS 10 μ F
C96	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C97	4030006840	Ceramic C1608 SL 1H 180J-T-A
C98	4030006720	Ceramic C1608 SL 1H 580J-T-A
C99	4030006690	Ceramic C1608 SL 1H 330J-T-A
C100	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C101	4030006860	Ceramic C1608 JB 1H 102K-T-A
C102	4030006860	Ceramic C1608 JB 1H 102K-T-A
C103	4030006860	Ceramic C1608 JB 1H 102K-T-A
C104	4030006860	Ceramic C1608 JB 1H 102K-T-A
C105	4030006860	Ceramic C1608 JB 1H 102K-T-A
C106	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C107	4030006690	Ceramic C1608 SL 1H 330J-T-A
C108	4510002930	Electrolytic 50 SS R47 μ F
C109	4030006860	Ceramic C1608 JB 1H 102K-T-A
C110	4030006860	Ceramic C1608 JB 1H 102K-T-A
C111	4030006860	Ceramic C1608 JB 1H 102K-T-A
C112	4030006860	Ceramic C1608 JB 1H 102K-T-A
C113	4030006860	Ceramic C1608 JB 1H 102K-T-A
C114	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C115	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C116	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C117	4030006860	Ceramic C1608 JB 1H 102K-T-A
C118	4510002980	Electrolytic 50 SS 10 μ F
C119	4030006860	Ceramic C1608 JB 1H 102K-T-A
C120	4030006710	Ceramic C1608 SL 1H 470J-T-A
C121	4030006610	Ceramic C1608 SL 1H 100D-T-A
C122	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C124	4030006660	Ceramic C1608 SL 1H 220J-T-A
C125	4030006890	Ceramic C1608 JF 1H 103Z-T-A
C126	4030006550	Ceramic C1608 SL 1H 040C-T-A
C127	4020000660	Cylinder UP125 SL 120J
C128	4030006850	Ceramic C1608 JB 1H 471K-T-A
C129	4030006850	Ceramic C1608 JB 1H 471K-T-A
C130	4030006550	Ceramic C1608 SL 1H 040C-T-A
C131	4030006860	Ceramic C1608 JB 1H 102K-T-A
C132	4030006850	Ceramic C1608 JB 1H 471K-T-A
C133	4030006850	Ceramic C1608 JB 1H 471K-T-A
C134	4610001340	Trimmer ECR-LA010A12
C135	4030006180	Ceramic C2012 UJ 1H 040C-T-A
C136	4030006860	Ceramic C1608 JB 1H 102K-T-A
C137	4030006860	Ceramic C1608 JB 1H 102K-T-A
C138	4030006860	Ceramic C1608 JB 1H 102K-T-A
C139	4610001340	Trimmer ECR-LA010A12
C140	4030006580	Ceramic C1608 SL 1H 050C-T-A
C141	4030006860	Ceramic C1608 JB 1H 102K-T-A
C142	4030006860	Ceramic C1608 JB 1H 102K-T-A
C144	4030006860	Ceramic C1608 JB 1H 102K-T-A
C145	4030006860	Ceramic C1608 JB 1H 102K-T-A
C146	4030006860	Ceramic C1608 JB 1H 102K-T-A
C147	4030006550	Ceramic C1608 SL 1H 040C-T-A
C148	4030006550	Ceramic C1608 SL 1H 040C-T-A
C149	4030006860	Ceramic C1608 JB 1H 102K-T-A
C150	4010003830	Ceramic DD06 SL 060D 500V
C151	4030006850	Ceramic C1608 JB 1H 471K-T-A
C152	4030006610	Ceramic C1608 SL 1H 100D-T-A
C153	4030006860	Ceramic C1608 JB 1H 102K-T-A
C154	4030006580	Ceramic C1608 SL 1H 050C-T-A

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C155	4030006610	Ceramic C1608 SL 1H 100D-T-A
C156	4030006850	Ceramic C1608 JB 1H 471K-T-A
C157	4030006860	Ceramic C1608 JB 1H 102K-T-A
C158	4030006860	Ceramic C1608 JB 1H 102K-T-A
C159	4030006850	Ceramic C1608 JB 1H 471K-T-A
C162	4030006860	Ceramic C1608 JB 1H 102K-T-A
C163	4610001340	Trimmer ECR-LA010A12
C164	4030006860	Ceramic C1608 JB 1H 102K-T-A
C165	4030006850	Ceramic C1608 JB 1H 471K-T-A
C166	4030006860	Ceramic C1608 JB 1H 102K-T-A
C167	4030006850	Ceramic C1608 JB 1H 471K-T-A
C168	4030006850	Ceramic C1608 JB 1H 471K-T-A
C169	4610001340	Trimmer ECR-LA010A12
C170	4030006860	Ceramic C1608 JB 1H 102K-T-A
C171	4030006560	Ceramic C1608 SL 1H 050C-T-A
C172	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C173	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C174	4510002940	Electrolytic 50 SS 1 μ F
C177	4030006860	Ceramic C1608 JB 1H 102K-T-A
C178	4030006860	Ceramic C1608 JB 1H 102K-T-A
C179	4030006860	Ceramic C1608 JB 1H 102K-T-A
C180	4030006580	Ceramic C1608 SL 1H 070D-T-A
C181	4030006860	Ceramic C1608 JB 1H 102K-T-A
C182	4030006640	Ceramic C1608 SL 1H 180J-T-A
C183	4030006550	Ceramic C1608 SL 1H 040C-T-A
C184	4030006860	Ceramic C1608 JB 1H 102K-T-A
C185	4030006550	Ceramic C1608 SL 1H 040C-T-A
C186	4030006550	Ceramic C1608 SL 1H 040C-T-A
C187	4030006550	Ceramic C1608 SL 1H 040C-T-A
C188	4030006640	Ceramic C1608 SL 1H 180J-T-A
C189	4030006750	Ceramic C1608 SL 1H 101J-T-A
C190	4030006750	Ceramic C1608 SL 1H 101J-T-A
C191	4030006750	Ceramic C1608 SL 1H 101J-T-A
C192	4030006750	Ceramic C1608 SL 1H 101J-T-A
C193	4030006750	Ceramic C1608 SL 1H 101J-T-A
C194	4030006750	Ceramic C1608 SL 1H 101J-T-A
C195	4030006750	Ceramic C1608 SL 1H 101J-T-A
C196	4030006750	Ceramic C1608 SL 1H 101J-T-A
C197	4030006750	Ceramic C1608 SL 1H 101J-T-A
C198	4030006750	Ceramic C1608 SL 1H 101J-T-A
C199	4030006750	Ceramic C1608 SL 1H 101J-T-A
C200	4030006750	Ceramic C1608 SL 1H 101J-T-A
C201	4030006750	Ceramic C1608 SL 1H 101J-T-A
C202	4030006750	Ceramic C1608 SL 1H 101J-T-A
C203	4030006750	Ceramic C1608 SL 1H 101J-T-A
C204	4030006750	Ceramic C1608 SL 1H 101J-T-A
C205	4030006750	Ceramic C1608 SL 1H 101J-T-A
C206	4510002640	Electrolytic 25 SS 47 μ F
C207	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C208	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C209	4510003150	Electrolytic 35 SS 33 μ F
C211	4510003150	Electrolytic 35 SS 33 μ F
C213	4510003150	Electrolytic 35 SS 33 μ F
C214	4550000320	Tantalum DN 1V 0R1M
C215	4030006860	Ceramic C1608 JB 1H 102K-T-A
C216	4510002870	Electrolytic 25 SS 100 μ F
C217	4510002870	Electrolytic 25 SS 100 μ F
C218	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C219	4510002640	Electrolytic 25 SS 47 μ F
C220	4510002640	Electrolytic 25 SS 47 μ F
C221	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C222	4510002730	Electrolytic 10 SS 100 μ F
C223	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C224	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C225	4510002640	Electrolytic 25 SS 47 μ F
C228	4510002380	Electrolytic 18 SS 470 μ F (10X12.5)
C229	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C230	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C231	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C232	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C233	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C234	4030006860	Ceramic C1608 JB 1H 102K-T-A
C235	4030006860	Ceramic C1608 JB 1H 102K-T-A
C236	4030006860	Ceramic C1608 JB 1H 102K-T-A
C237	4030006860	Ceramic C1608 JB 1H 102K-T-A
C238	4030006850	Ceramic C1608 JB 1H 471K-T-A
C239	4030006830	Ceramic C1608 JF 1C 104Z-T-A
C240	4030006860	Ceramic C2012 JF 1C 105Z-T-A

[MAIN-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C242	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C243	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C244	4030008860	Ceramic	C2012 JF 1C 105Z-T-A
C245	4030008530	Ceramic	C1608 SL 1H 020C-T-A
C246	4030008850	Ceramic	C1608 JB 1H 471K-T-A
C248	4030008550	Ceramic	C1608 SL 1H 040C-T-A
C249	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C250	4550000890	Tantalum	TESVC 1C 475M-12L
C251	4030008860	Ceramic	C1608 JB 1H 102K-T-A
EP1	0910030182	P.C. Board	B 3030B (MAIN-B)

[PLL-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130005700	IC	M58780FP
IC2	1130004200	IC	TC4S68F (TE85R)
Q1	1560000360	FET	2SK209-Y (TE85R)
Q2	1530002490	Transistor	2SC3324-GR (TE85R)
Q3	1530000160	Transistor	2SC2712-Y (TE85RTEM)
Q4	1590000420	Transistor	RN1404 (TE85R)
Q5	1530002030	Transistor	2SC3772-3-TA
Q6	1590000480	Transistor	RN2402 (TE85R)
R1	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R2	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 kΩ)
R3	7030003410	Resistor	ERJ3GEYJ 561 V (560 Ω)
R4	7030000460	Resistor	MCR10EZHZ 4.7 kΩ (472)
R5	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R6	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R7	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 kΩ)
R8	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R12	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R13	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R14	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R15	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R16	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R17	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R18	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R19	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R20	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R21	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R22	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R23	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R24	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
C1	4030005110	Ceramic	C2012 JB 1E 473K-T-A
C2	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C3	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C4	4550000550	Tantalum	TESVA 1V 224M1-8L
C5	4550000940	Tantalum	TESVB2 1D 225M-8L
C6	4550000940	Tantalum	TESVB2 1D 225M-8L
C7	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C8	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C9	4030008880	Ceramic	C1608 JB 1H 102K-T-A
C10	4030008880	Ceramic	C1608 JB 1H 102K-T-A
C12	4030008680	Ceramic	C2012 JF 1C 105Z-T-A
C13	4030008890	Ceramic	C1608 JF 1H 103Z-T-A
C14	4030007010	Ceramic	C1608 CH 1H 100D-T-A
C15	4030008880	Ceramic	C1608 JB 1H 102K-T-A
C16	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C17	4030008890	Ceramic	C1608 JF 1H 103Z-T-A
C18	4030008660	Ceramic	C1608 SL 1H 220J-T-A
C19	4030008850	Ceramic	C1608 JB 1H 471K-T-A
EP1	0910030721	P.C. Board	B 3082A (PLL-B)

[VCO-B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1560000650	FET	2SK1577-2-T7
Q2	1590001280	Transistor	RN1408 (TE85R)
Q3	1530002240	Transistor	2SC3775-3-TA
Q4	1560000640	FET	2SK1740-TA
Q5	1590001280	Transistor	RN1408 (TE85R)
D1	1720000220	Varicap	1SV166-T2B
D2	1720000220	Varicap	1SV166-T2B
D3	1720000220	Varicap	1SV166-T2B
D4	1720000220	Varicap	1SV166-T2B
L1	6200001560	Coil	LER 015T R68M
L2	6200001560	Coil	LER 015T R68M
L3	6130002450	Coil	LB-273
L4	6200001570	Coil	LER 015T 1R0M
L5	6200001570	Coil	LER 015T 1R0M
L6	6200001590	Coil	LER 015T 2R2M
L7	6200001590	Coil	LER 015T 2R2M
L8	6200001590	Coil	LER 015T 2R2M
L9	6130002440	Coil	LB-272
L10	6200001230	Coil	MLF2012A 1R0M-T
R1	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R3	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R5	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R6	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R7	7030003310	Resistor	ERJ3GEYJ 820 V (82 Ω)
R8	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R9	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R10	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R11	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R12	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R15	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R18	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R19	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
C2	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C3	4030007110	Ceramic	C1608 CH 1H 880J-T-A
C6	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C7	4030008550	Ceramic	C1608 SL 1H 040C-T-A
C9	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C10	4030006910	Ceramic	C1608 CH 1H 0R5C-T-A
C11	4030008880	Ceramic	C1608 JB 1H 102K-T-A
C12	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C13	4030008610	Ceramic	C1608 SL 1H 100D-T-A
C15	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C17	4030008880	Ceramic	C1608 JB 1H 102K-T-A
C18	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C21	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C22	4030006920	Ceramic	C1608 CH 1H 010C-T-A
C23	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C24	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C25	4030008850	Ceramic	C1608 JB 1H 471K-T-A
EP1	0910030710	P.C. Board	B 3081 (VCO-B)

[B-BAND UNIT]

[TONE UNIT] (U.S.A. only)

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530002430	Transistor	2SC4315 (TE85R)
Q2	1580000360	FET	3SK177-T2B U73
Q3	1590000420	Transistor	RN1404 (TE85R)
Q4	1530002240	Transistor	2SC3775-3-TA
D1	1750000080	Diode	1SS153-T2
L1	8200000720	Coil	LQN 2A 10NM
R1	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 k Ω)
R2	7030003600	Resistor	ERJ3GEYJ 223 V (22 k Ω)
R3	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R4	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R5	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R6	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R7	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R8	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
R9	7030003580	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R10	7030003440	Resistor	ERJ3GEYJ 102 V (1 k Ω)
C1	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C2	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C3	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C4	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C5	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C6	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C7	4030006700	Ceramic	C1608 SL 1H 390J-T-A
C8	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C9	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C10	4030008860	Ceramic	C1608 JB 1H 102K-T-A
C11	4030008860	Ceramic	C1608 JB 1H 102K-T-A
EP1	0910030691	P.C. Board	B 2379A (B-BAND)
EP2	6910003330	Lead Frame	PD2.0-0.9-8

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130005100	IC	FX385LG
X1	6080000480	Crystal	CSB1000J221T
R1	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
R2	7030003580	Resistor	ERJ3GEYJ 153 V (15 k Ω)
R3	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA)473
R4	7030003800	Resistor	ERJ3GEYJ 105 V (1 M Ω)
R5	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R6	7030003680	Resistor	ERJ3GEYJ 104 V (100 k Ω)
R7	7030003560	Resistor	ERJ3GEYJ 103 V (10 k Ω)
C1	4550000420	Tantalum	TESVA 1A 105M1-8L
C2	4030008880	Ceramic	C1608 JB 1C 223K-T-A
C3	4030007170	Ceramic	C1608 CH 1H 221J-T-A
C4	4030007170	Ceramic	C1608 CH 1H 221J-T-A
C5	4550002950	Tantalum	TESVA 0J 335M1-8L
EP1	0910031021	P.C. Board	B 3139A (TONE)

SECTION 6 ADJUSTMENT PROCEDURES

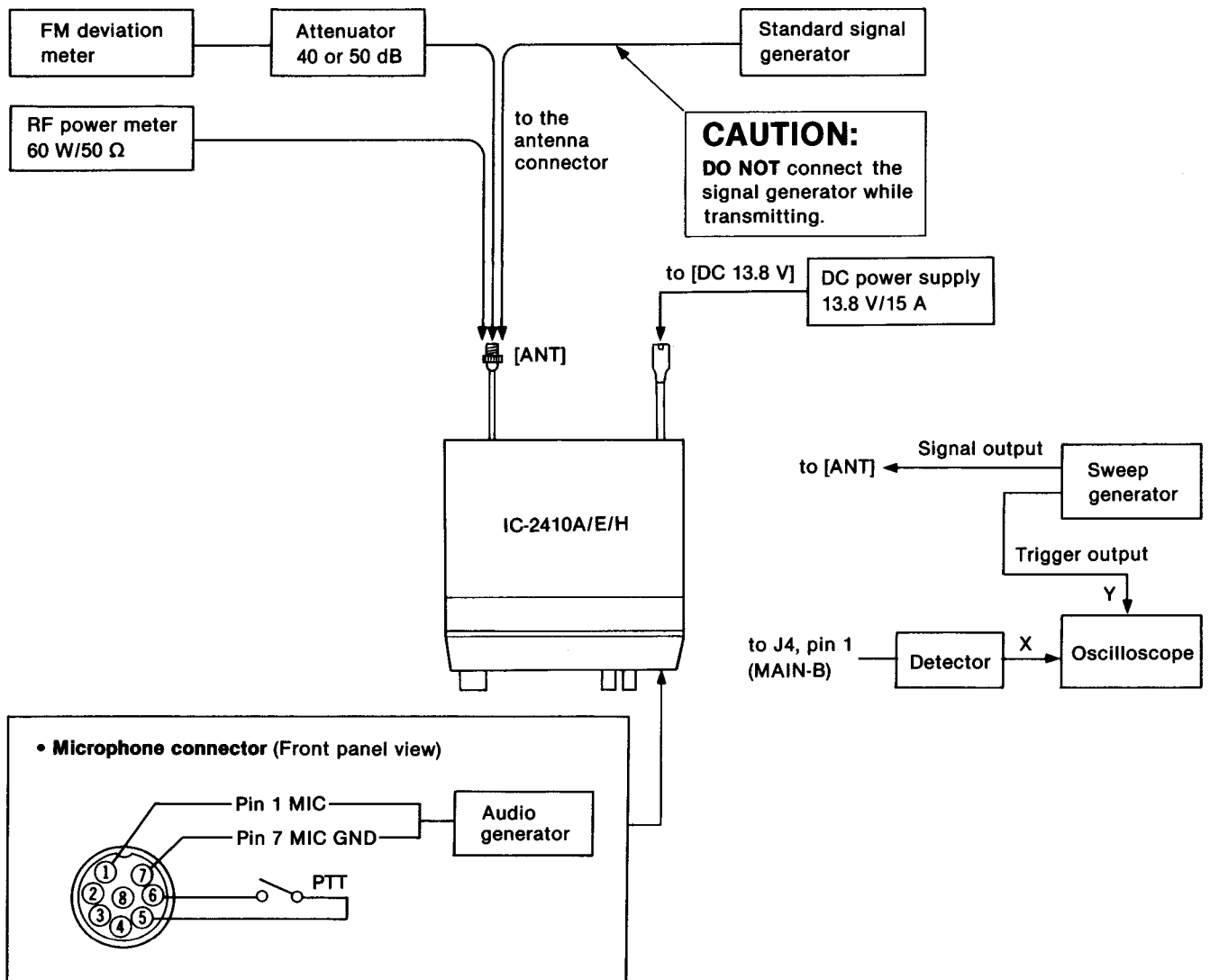
6-1 PREPARATION BEFORE SERVICING

REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 15 A or more	Audio generator	Frequency range : 300~3000 Hz Output level : 1~500 mV
RF power meter (terminated type)	Measuring range : 1~60 W Frequency range : 120~460 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1	Attenuator	Power attenuation : 40 or 50 dB Capacity : 60 W or more
Frequency counter	Frequency range : 0.1~460 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	Sweep generator	Frequency range : 0.1~460 MHz Sweep bandwidth : At least 10 MHz Output impedance : 50 Ω
Oscilloscope	Frequency range : DC~20 MHz Measuring range : 0.01~10 V	Detector	
Standard signal generator (SSG)	Frequency range : 0.1~460 MHz Output level : -127~-17 dBm (0.1 μV~32 mV)		
DC voltmeter	Input impedance : 50 kΩ/DC or better		

CW: Clockwise CCW: Counterclockwise CP: Check point

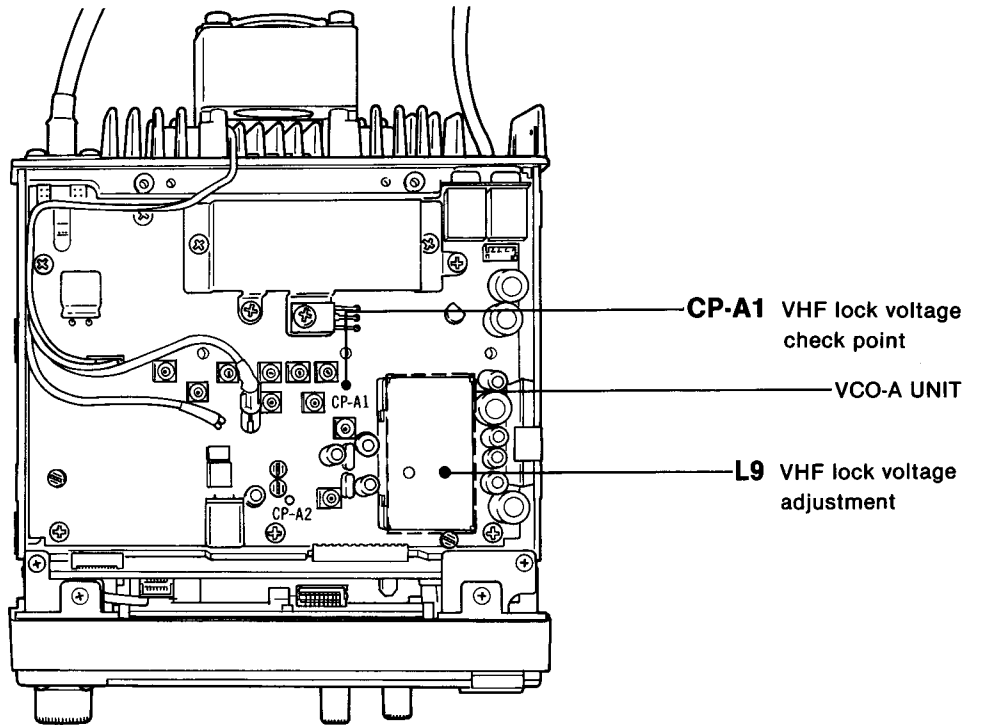
CONNECTION



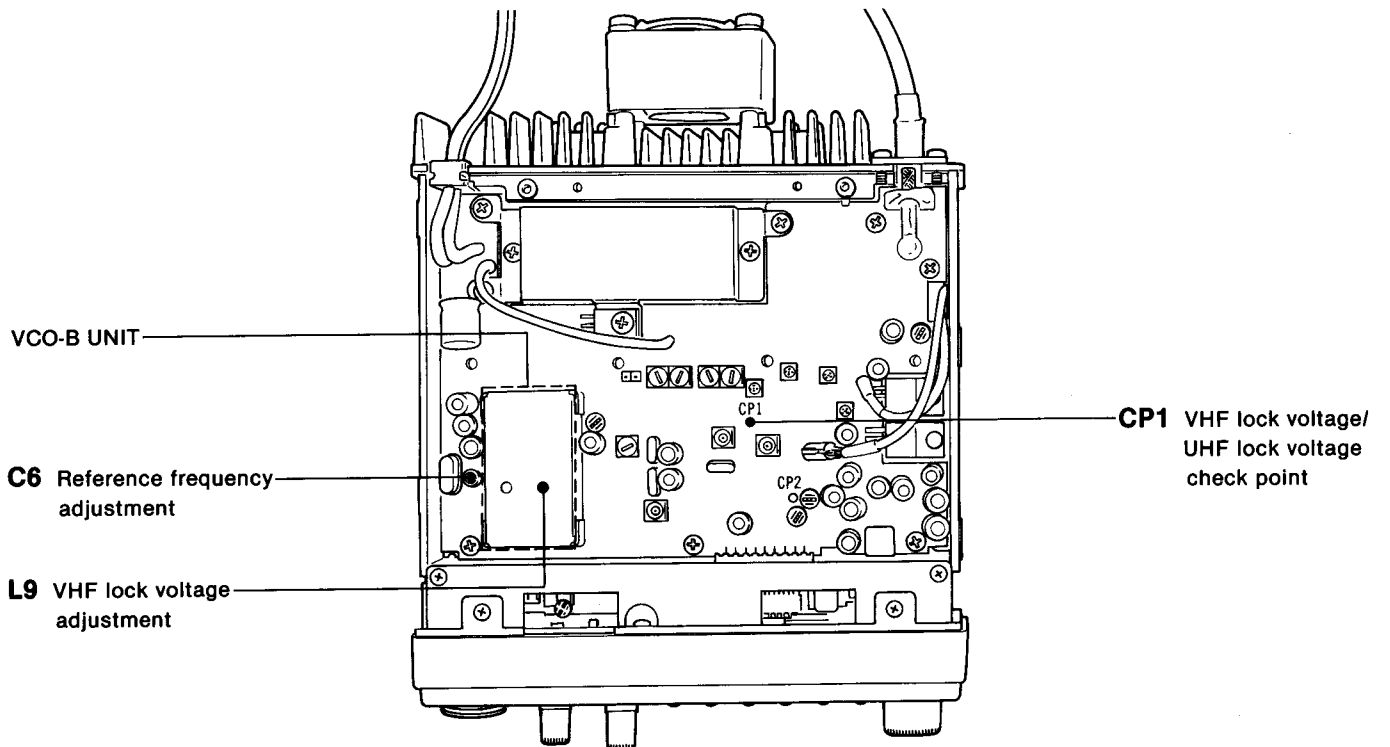
6-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
REFERENCE FREQUENCY	1	<ul style="list-style-type: none"> • Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) • Connect the RF power meter or a 50 Ω dummy load to the [ANT] connector. • Simplex • Transmitting 	Rear panel	Loosely couple the frequency counter to the [ANT] connector.	445.0000 MHz (USA version) 435.0000 MHz (All other versions)	MAIN-B	C6
VHF LOCK VOLTAGE	1	<ul style="list-style-type: none"> • Displayed frequency [V DISPLAY]: 145.0000 MHz • Receiving 	MAIN-A	Connect the DC voltmeter to CP-A1.	7.5 V	MAIN-A (VCO-A)	L9
	2	<ul style="list-style-type: none"> • Displayed frequency [U DISPLAY]: 145.0000 MHz 	MAIN-B	Connect the DC voltmeter to CP1.	5.5 V	MAIN-B (VCO-B)	L9
UHF LOCK VOLTAGE	1	<ul style="list-style-type: none"> • Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) • Receiving 	MAIN-B	Connect the DC voltmeter to CP1.	12 V \pm 0.5 V (USA version) 11 V \pm 0.5 V (All other versions)	MAIN-B	Verify

• MAIN-A UNIT

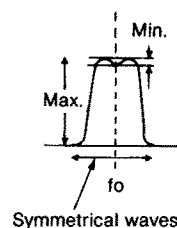


• MAIN-B UNIT



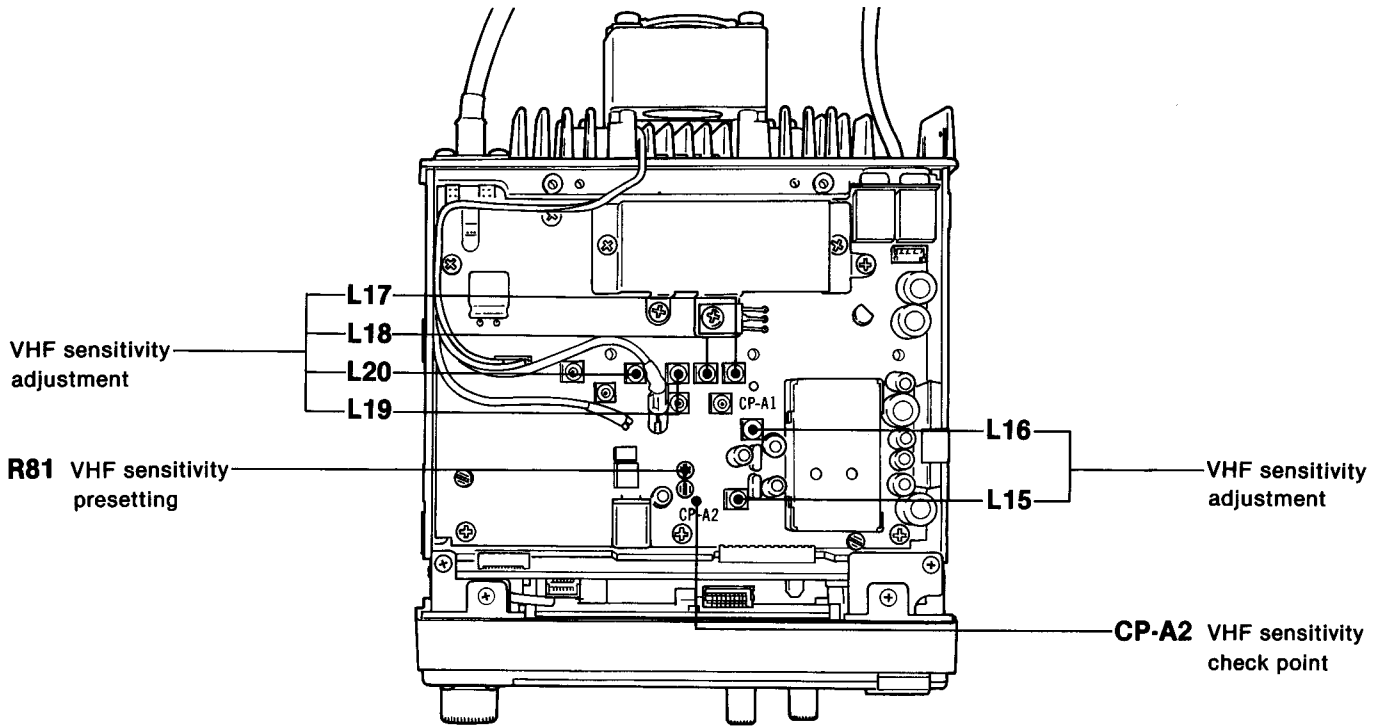
6-3 RECEIVER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT		
		UNIT	LOCATION		UNIT	ADJUST	
VHF SENSITIVITY	1	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) Connect the SSG to the [ANT] connector and set as: Level : 10 μV^* (-87 dBm) Modulation: 1 kHz Deviation : ± 3.5 kHz R81 (MAIN-A) : Max. CW Receiving 	MAIN-A	Connect the DC voltmeter to CP-A2.	Maximum	MAIN-A	Adjust in sequence L20, L19, L18, L17
	2	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) 	MAIN-B	Connect the DC voltmeter to CP2.	Maximum	MAIN-B	Adjust in sequence L32, L33
	3	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) Set the SSG as: Deviation : ± 7.0 kHz 	MAIN-A	Connect the DC voltmeter to CP-A2.	Maximum	MAIN-A	Adjust in sequence L16, L15
NOTE: Adjust the standard signal generator output level so that the DC voltmeter needle remains at all times in the lowest 30 % of the full range.							
UHF SENSITIVITY	1	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) Connect the sweep generator to the [ANT] connector and set as: Sweep level: 22 mV* (-20 dBm) Center frequency: Same as the displayed frequency Sweep bandwidth: 10 MHz or 20 MHz Receiving 	MAIN-B	Connect the oscilloscope to J4, pin 1 via the detector.	Adjust as follows:	MAIN-B	C139, C134, L22, L21
	2	<ul style="list-style-type: none"> Connect the SSG to the [ANT] connector and set as: Level : 10 μV^* (-87 dBm) Modulation: 1 kHz Deviation : ± 7.0 kHz R87 (MAIN-B) : Max. CW 		Connect the DC voltmeter to CP2.	Maximum		
NOTE: Adjust the standard signal generator output level so that the DC voltmeter needle remains at all times in the lowest 30 % of the full range.							

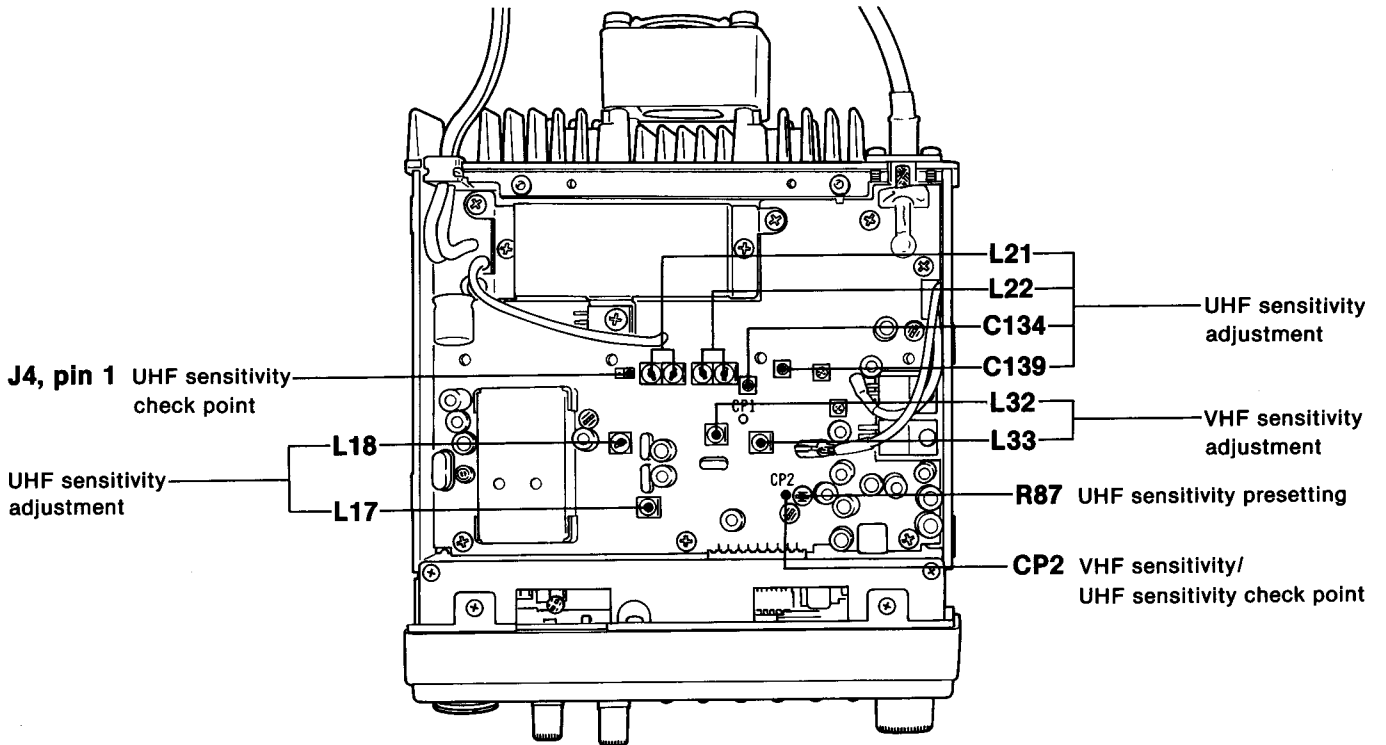


* This output level of the standard signal generator (SSG) is indicated as SSG's open circuit.

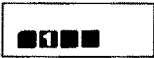
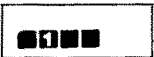
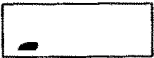
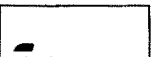
• MAIN-A UNIT



• MAIN-B UNIT

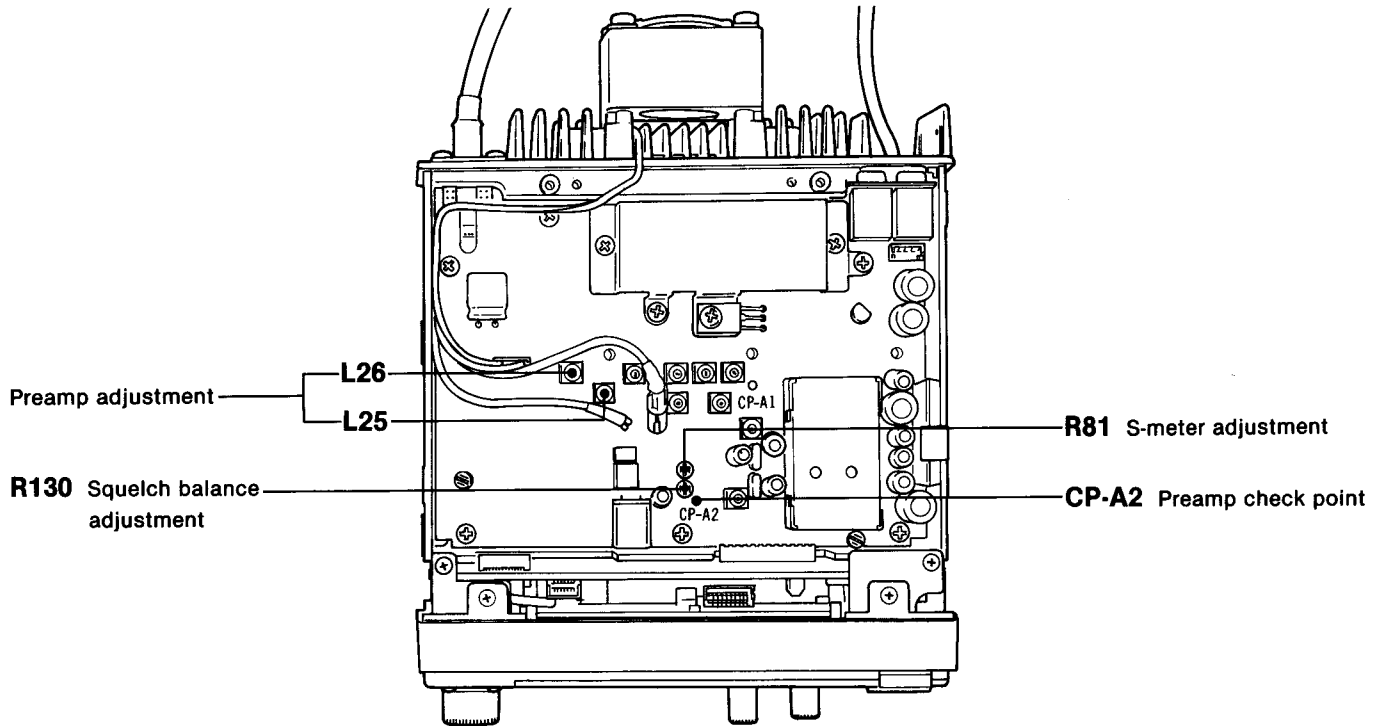


RECEIVER ADJUSTMENT (CONTINUED)

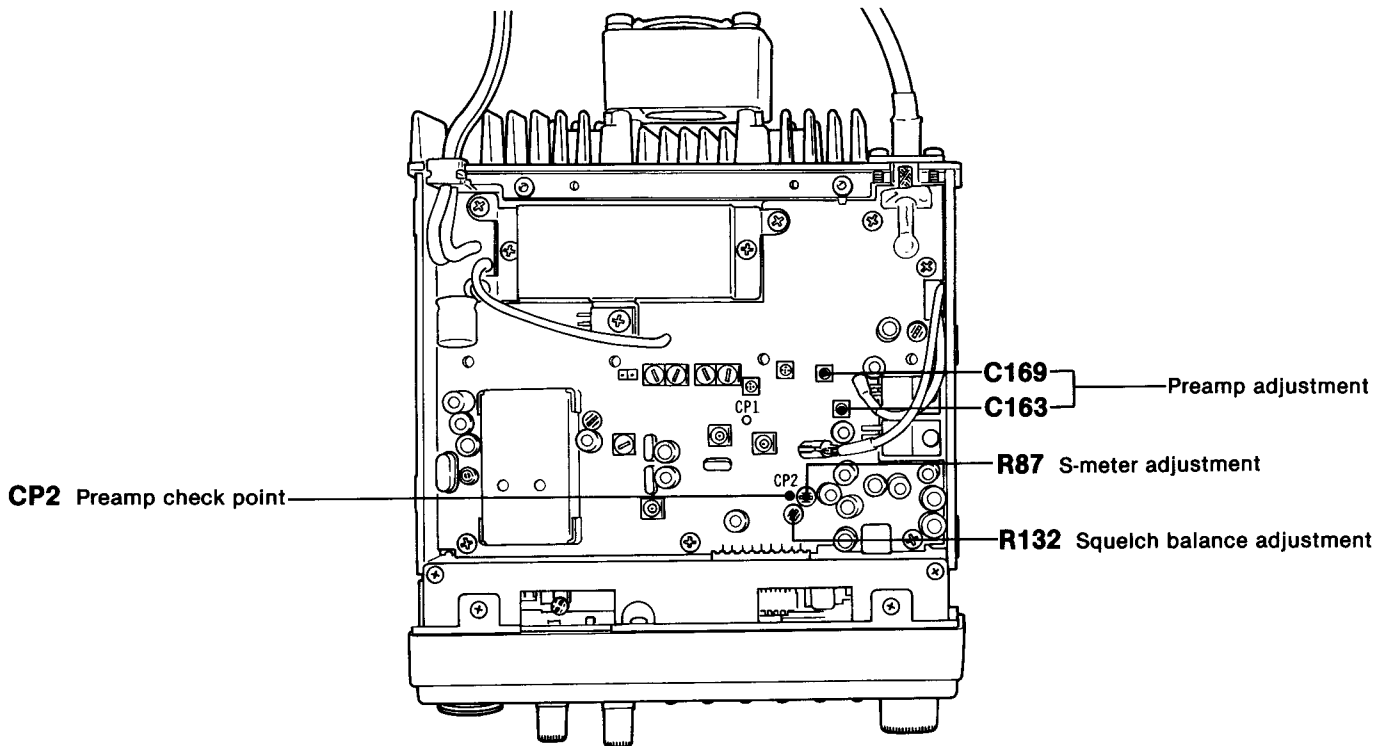
ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT		
		UNIT	LOCATION		UNIT	ADJUST	
PREAMP	1	<ul style="list-style-type: none"> Displayed frequency [V and U DISPLAYS]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) Connect the SSG to the [ANT] connector and set as: Level : 3.2 μV* (-97 dBm) Modulation: 1 kHz Deviation : \pm3.5 kHz Receiving 	MAIN-A	Connect the DC voltmeter to CP-A2.	Maximum	MAIN-A	Adjust in sequence L25, L26
	2	<ul style="list-style-type: none"> Displayed frequency [V and U DISPLAYS]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) 	MAIN-B	Connect the DC voltmeter to CP2.	Maximum	MAIN-B	C163, C169
	NOTE: Adjust the standard signal generator output level so that the DC voltmeter needle remains at all times in the lowest 30 % of the full range.						
S-METER	1	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) Connect the SSG to the [ANT] connector and set as: Level : 1.0 μV* (-107 dBm) Modulation: 1 kHz Deviation : \pm3.5 kHz Receiving 	Function display	S indicator [V DISPLAY]	4 dots (S3) 	MAIN-A	R81
	2	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) 		S indicator [U DISPLAY]	4 dots (S3) 	MAIN-B	R87
SQUELCH BALANCE	1	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) Connect the SSG to the [ANT] connector and set as: Level : 0.1 μV* (-127 dBm) Modulation: 1 kHz Deviation : \pm3.5 kHz 	Function display	Squelch indicator [V DISPLAY]	1 dot (SQL1) 	Front panel	[V SQL] switch
	2	<ul style="list-style-type: none"> R130 (MAIN-A) : Max. CW Receiving 	Top cover	Speaker	Squelch threshold point	MAIN-A	R130
	3	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) 	Function display	Squelch indicator [U DISPLAY]	1 dot (SQL1) 	Front panel	[U SQL] switch
	4		Top cover	Speaker	Squelch threshold point	MAIN-B	R132

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

• MAIN-A UNIT



• MAIN-B UNIT



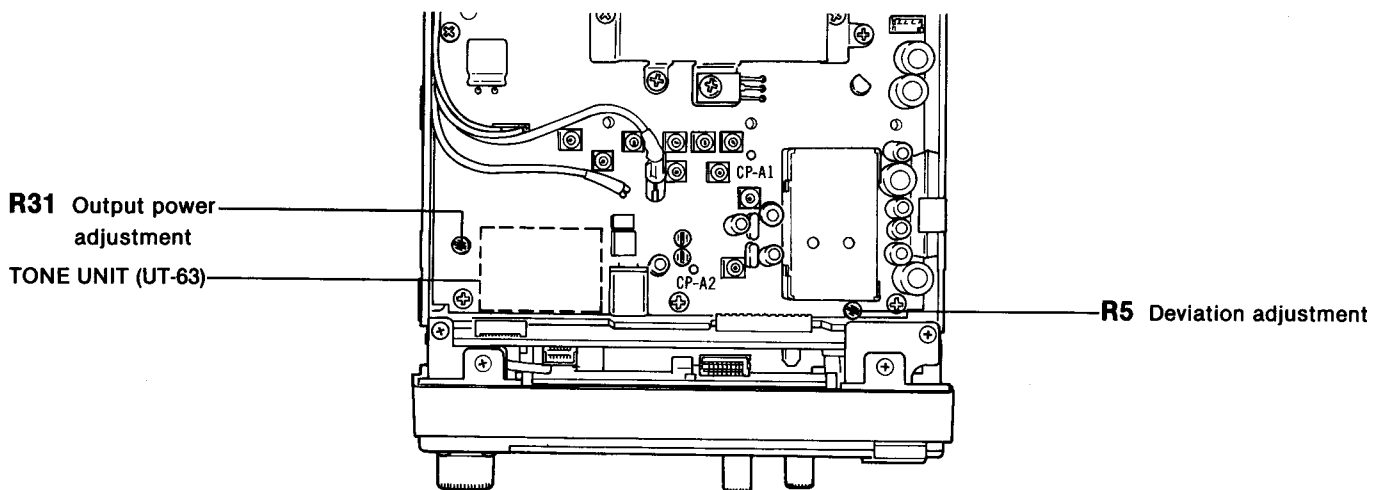
6-4 TRANSMITTER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT			
		UNIT	LOCATION		UNIT	ADJUST		
OUTPUT POWER	1	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) [HI/LOW] switch : HI Simplex Transmitting 	Rear panel	Connect the RF power meter to the [ANT] connector.	25 W (IC-2410A/E) 45 W (IC-2410H)	MAIN-A	R31	
	2	<ul style="list-style-type: none"> SET mode : LPo-1 [HI/LOW] switch : LOW 					1 W (IC-2410A/E) 5 W (IC-2410H)	Verify
	3	<ul style="list-style-type: none"> SET mode : LPo-2 [HI/LOW] switch : LOW 					10 W (IC-2410A/E/H)	
	4	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) [HI/LOW] switch : HI 			25 W (IC-2410A/E) 35 W (IC-2410H)	MAIN-B	R47	
	5	<ul style="list-style-type: none"> SET mode : LPo-1 [HI/LOW] switch : LOW 					1 W (IC-2410A/E) 5 W (IC-2410H)	Verify
	6	<ul style="list-style-type: none"> SET mode : LPo-2 [HI/LOW] switch : LOW 					10 W (IC-2410A/E/H)	
DEVIATION	1	<ul style="list-style-type: none"> Displayed frequency [V DISPLAY]: 146.0000 MHz (USA version) 145.0000 MHz (All other versions) [HI/LOW] switch : HI [T/T. SQL] switch : OFF Connect the audio generator to the microphone connector and set as: 65 mV/1.0 kHz (USA version) 20 mV/1.0 kHz (All other versions) Set the FM deviation meter as: HPF : 50 Hz LPF : 20 kHz De-emphasis: OFF Detector : (P-P)/2 Transmitting 	Rear panel	Connect the FM deviation meter to the [ANT] connector via the attenuator.	±4.8 kHz	MAIN-A	R5	
	2	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz (USA version) 435.0000 MHz (All other versions) 					MAIN-B	R7
TONE DEVIATION (USA only)	1	<ul style="list-style-type: none"> Displayed frequency [U DISPLAY]: 445.0000 MHz [T/T. SQL] switch : ON Remove TONE UNIT. Apply no signal to the microphone connector. Set the tone frequency as: 88.5 Hz Set the FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis: OFF Detector : (P-P)/2 Transmitting 	Rear panel	Connect the FM deviation meter to the [ANT] connector via the attenuator.	±0.8 kHz	AF	R15	
	2	<ul style="list-style-type: none"> Connect TONE UNIT. 					TONE (UT-63)	R3

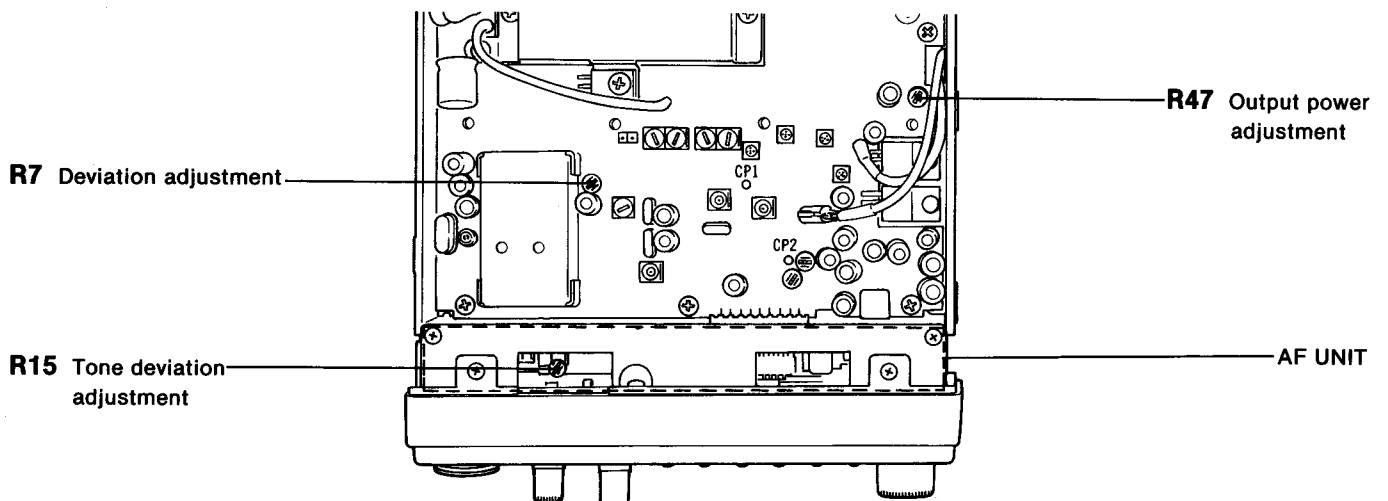
TRANSMITTER ADJUSTMENT (CONTINUED)

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
TONE DEVIATION (All other versions)	1 <ul style="list-style-type: none"> • Displayed frequency [U DISPLAY]: 435.0000 MHz • [T/T. SQL] switch : ON • Apply no signal to the microphone connector. • Set the tone frequency as: 88.5 Hz • Set the FM deviation meter as: <ul style="list-style-type: none"> HPF : OFF LPF : 20 kHz De-emphasis: OFF Detector : (P-P)/2 • Transmitting 	Rear panel	Connect the FM deviation meter to the [ANT] connector via the attenuator.	± 0.8 kHz	AF	R15

• MAIN-A UNIT



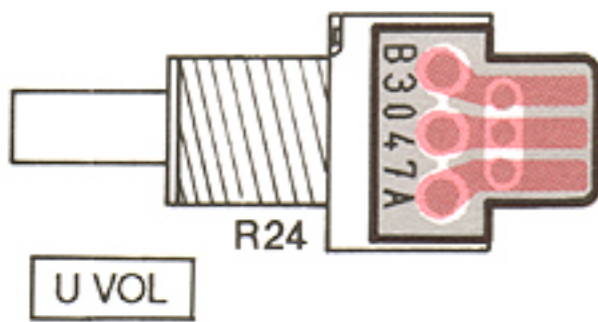
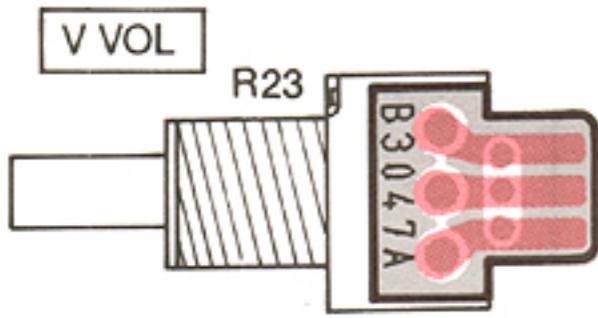
• MAIN-B UNIT



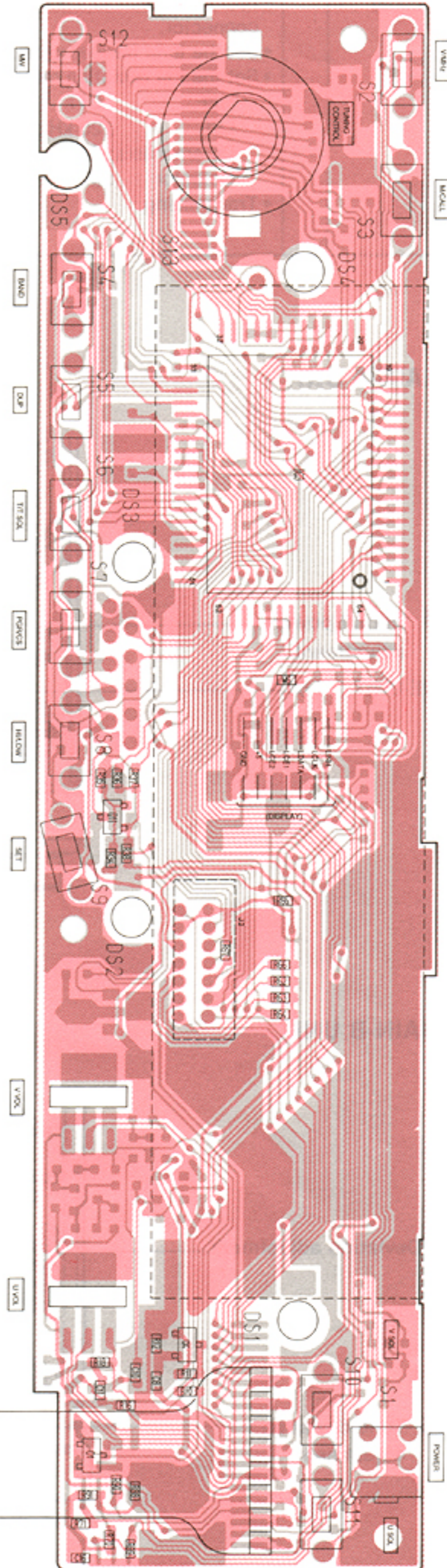
SECTION 7 BOARD LAYOUTS

7-1 LOGIC AND DISPLAY UNITS

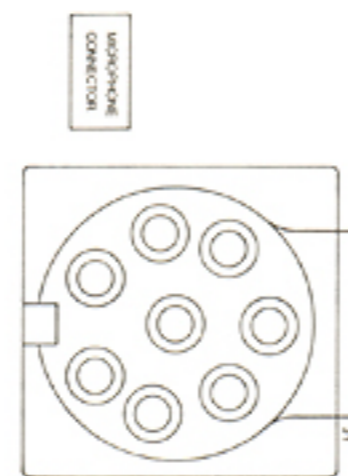
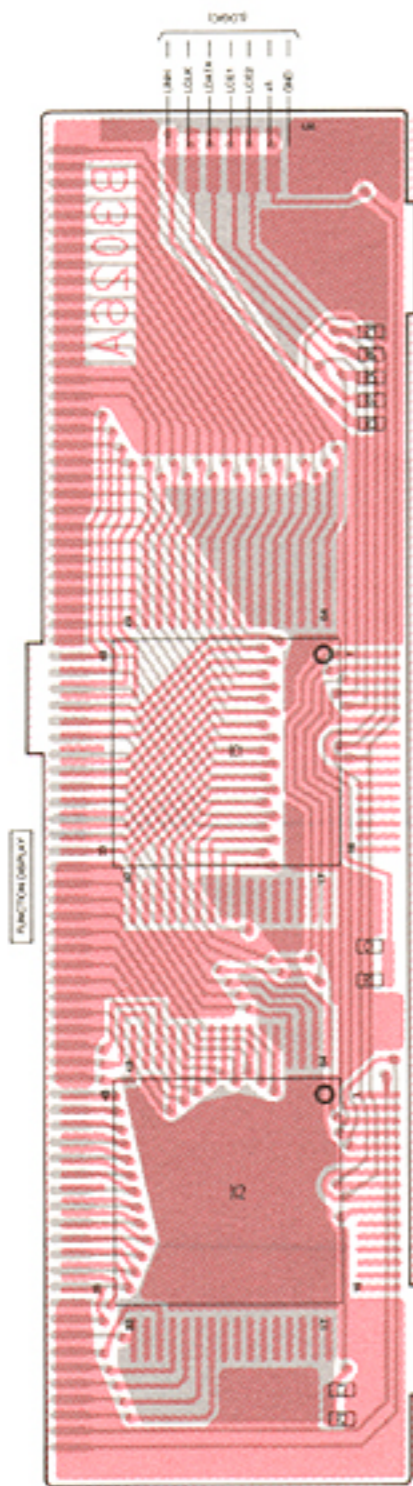
• VR UNIT



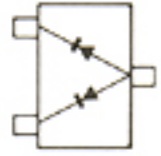
• LOGIC UNIT



• DISPLAY UNIT

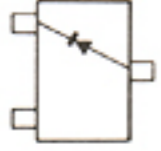


1SS181
(Symbol: A3)



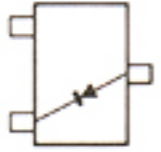
D4, D6 (SEA, SEA-H),
D14 (ITA, ITA-H),
D15, D16, D17, D18, D19

1SS187
(Symbol: D3)



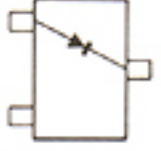
D6 (AUS, AUS-H), D7 (ITA, ITA-H),
D13 (EUR, AUS, EUR-H, AUS-H),
D14 (USA, USA-H)

1SS190
(Symbol: E3)



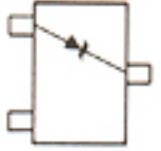
D6 (EUR, USA, EUR-H, USA-H),
D7 (EUR, EUR-H)

1SS193
(Symbol: F3)



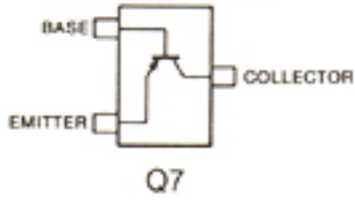
D2, D3, D20

RD9.1M B2
(Symbol: 912)



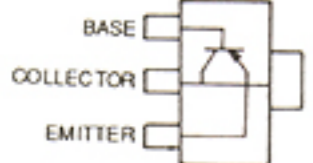
D1

2SA1162 Y
(Symbol: SY)



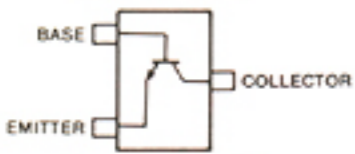
Q7

2SA1734
(Symbol: LB)



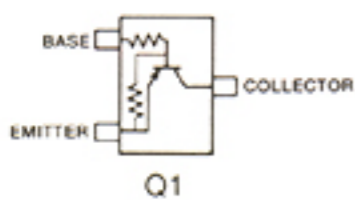
Q9, Q10

2SC2712 Y
(Symbol: LY)

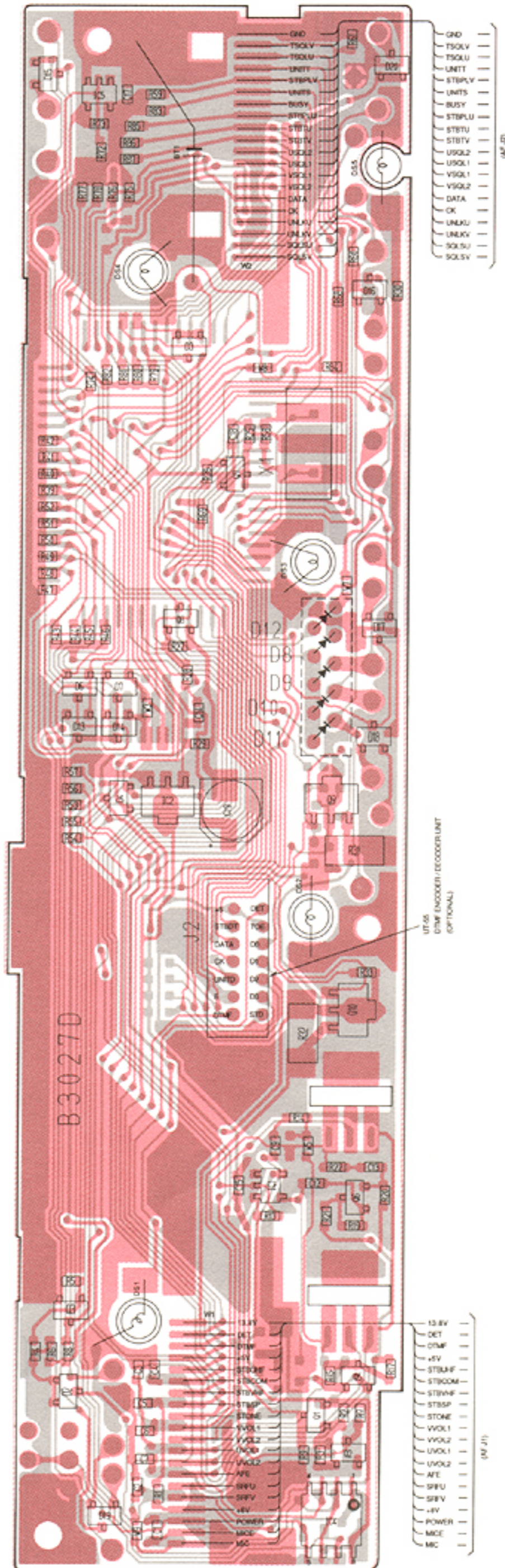


Q2, Q3, Q4, Q5, Q6, Q8, Q11

RN2404
(Symbol: YD)

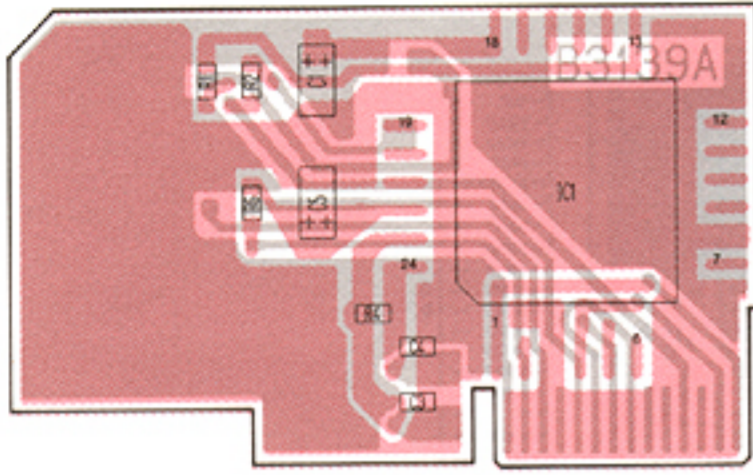


Q1

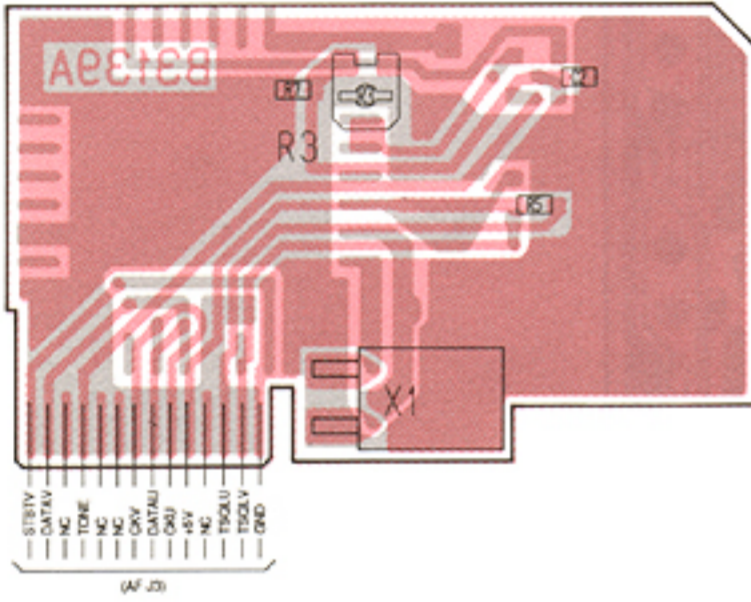


7-2 AF AND TONE (U.S.A. only) UNITS

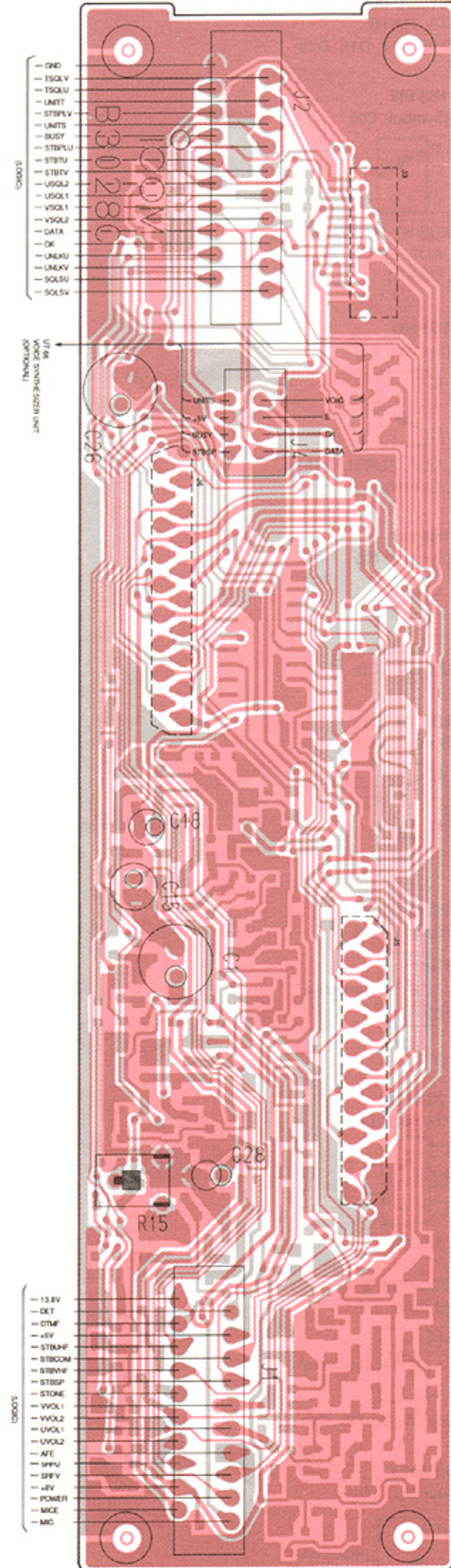
• TONE (U.S.A. only) UNIT



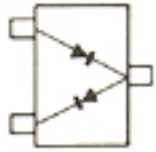
Downloaded by RadioAmateur.EU



• AF UNIT

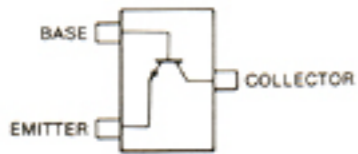


1SS226
(Symbol: C3)



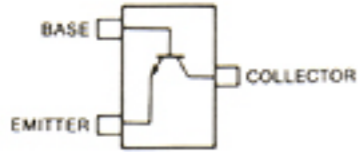
D1

2SC2712 GR
(Symbol: LG)



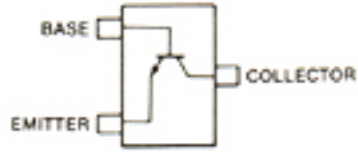
Q1, Q5, Q6

2SC2712 Y
(Symbol: LY)



Q12, Q13, Q14, Q17
Q18, Q19

2SC3326
(Symbol: CCB)



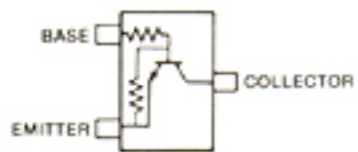
Q15, Q16, Q20, Q21
Q22, Q23, Q24

2SJ106 Y
(Symbol: VY)

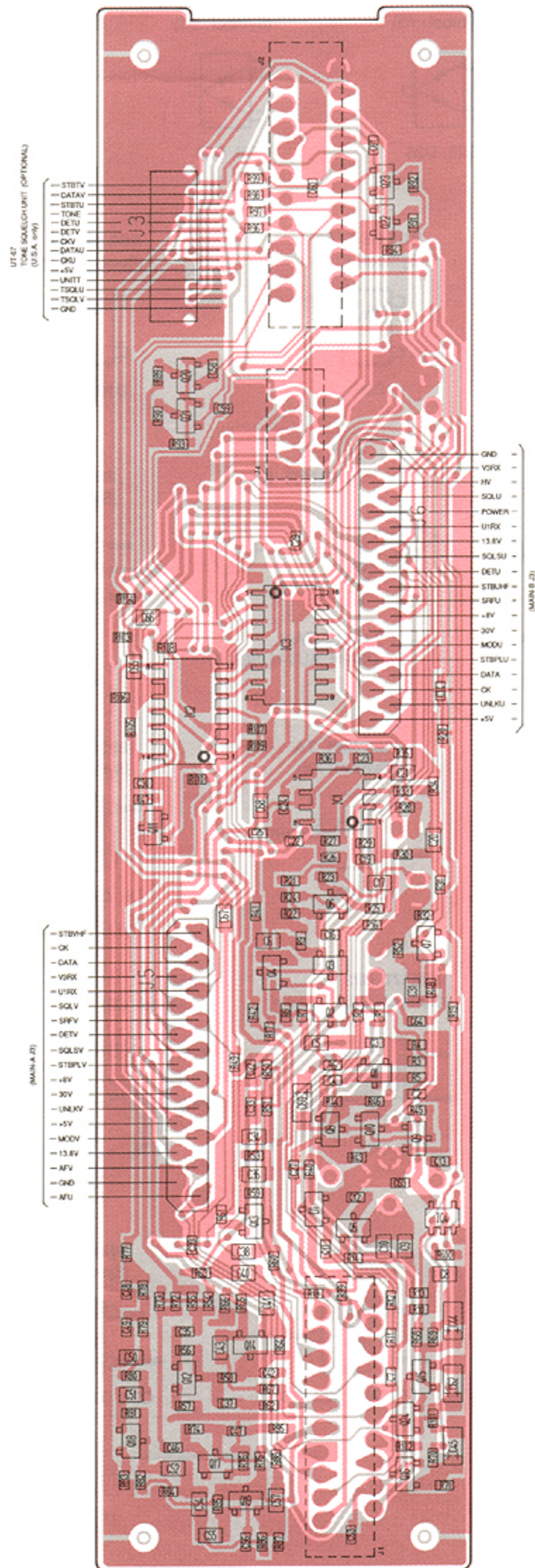


Q2, Q3, Q7, Q8, Q10

RN1404
(Symbol: XD)



Q4, Q9, Q11



7-3 MAIN-A, PLL-A AND VCO-A UNITS

• MAIN-A UNIT

1SS153
(Symbol: A9)



D4, D5, D23

1SS181
(Symbol: A3)



D25, D26

1SS184
(Symbol: B3)



D3, D28

1SS193
(Symbol: F3)



D2, D6, D24, D27

1SS226
(Symbol: C3)



D11, D20

HSM88AS
(Symbol: C1)



D7, D8, D12

MA862
(Symbol: M11)



D13, D18, D19

RD5.1M-T2B2
(Symbol: 512)



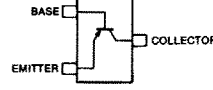
D29

RD6.2M B2
(Symbol: 622)



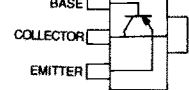
D10, D30

2SA1162 Y
(Symbol: SY)



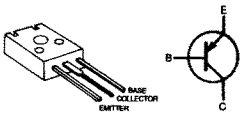
Q5

2SA1734
(Symbol: LB)



Q2

2SB1143 S



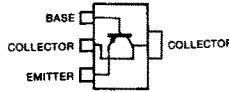
Q11 (EUR, ITA, USA, AUS, SEA)

2SB1135 R



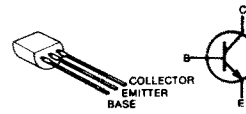
Q11 (EUR-H, ITA-H, USA-H, AUS-H, SEA-H)

2SB798 DK
(Symbol: DK)



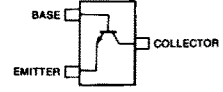
Q37

2SC2407 (A)



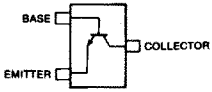
Q8 (EUR, ITA, USA, AUS, SEA)

2SC2712 GR
(Symbol: LG)



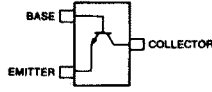
Q16, Q17

2SC2712 Y
(Symbol: LY)



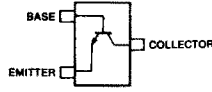
Q1, Q12, Q15, Q36

2SC3661 TA
(Symbol: FY)



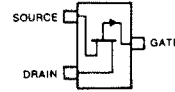
Q3

2SC3772 3
(Symbol: LY3)



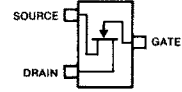
Q6, Q7, Q14, Q22

2SJ106 Y
(Symbol: VY)



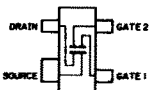
Q13

2SK209 Y
(Symbol: XY)



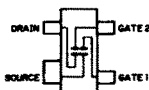
Q4

3SK140 Y
(Symbol: UG)



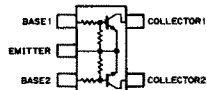
Q19, Q34

3SK177 U73
(Symbol: U73)



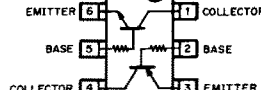
Q21, Q23

FMG2
(Symbol: G2)



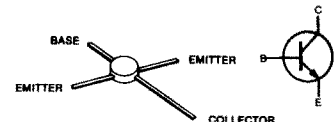
Q18

IMD6
(Symbol: D6)



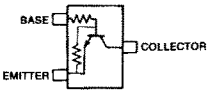
Q24

MRF559



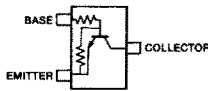
Q8 (EUR-H, ITA-H, USA-H, AUS-H, SEA-H)

RN1402
(Symbol: XB)



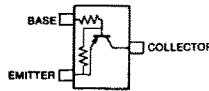
Q25, Q26, Q27, Q28, Q33

RN1404
(Symbol: XD)



Q9, Q10, Q20, Q35

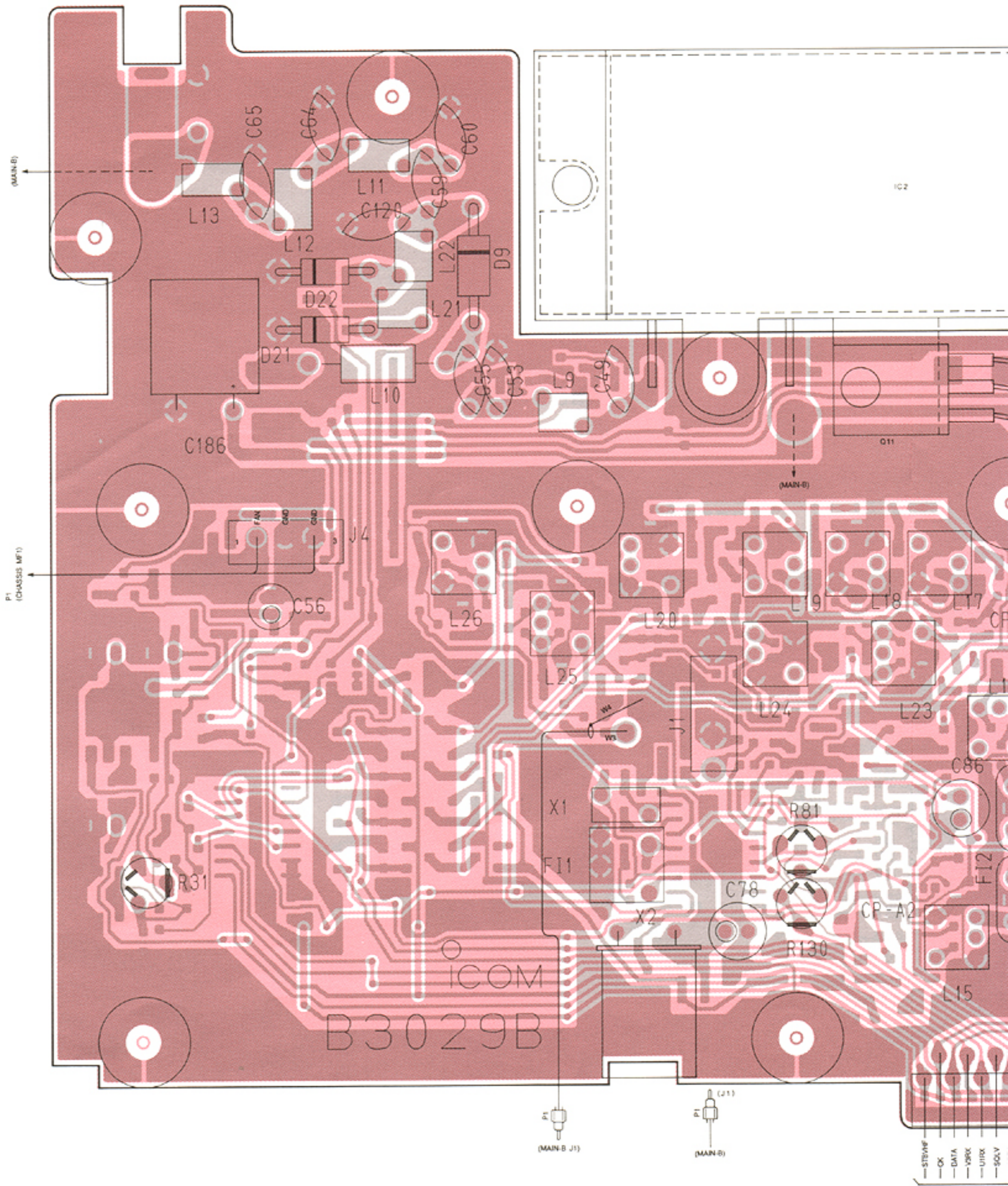
RN2427
(Symbol: RG)



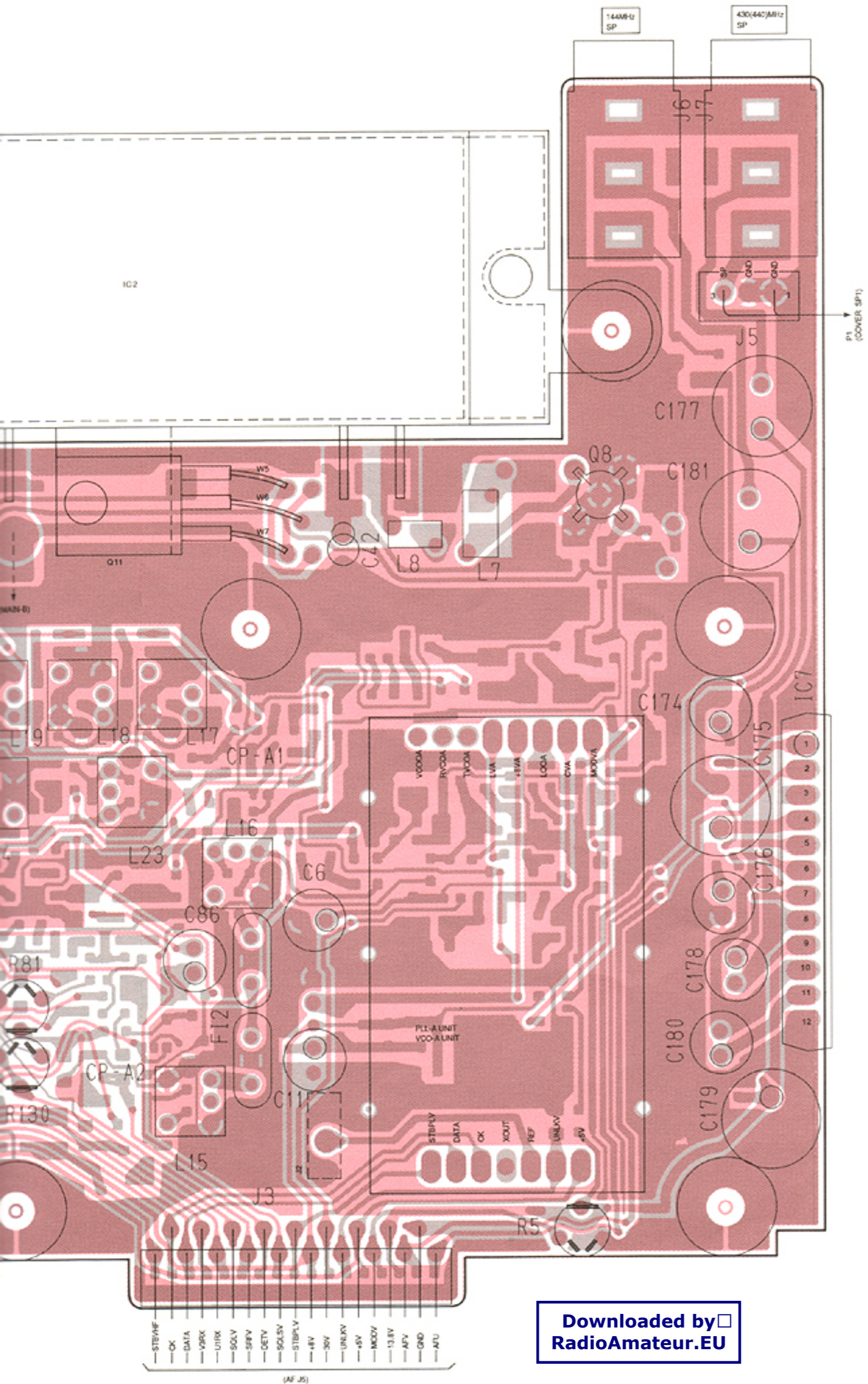
Q29, Q30, Q31, Q32

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• MAIN-A UNIT (TOP VIEW)

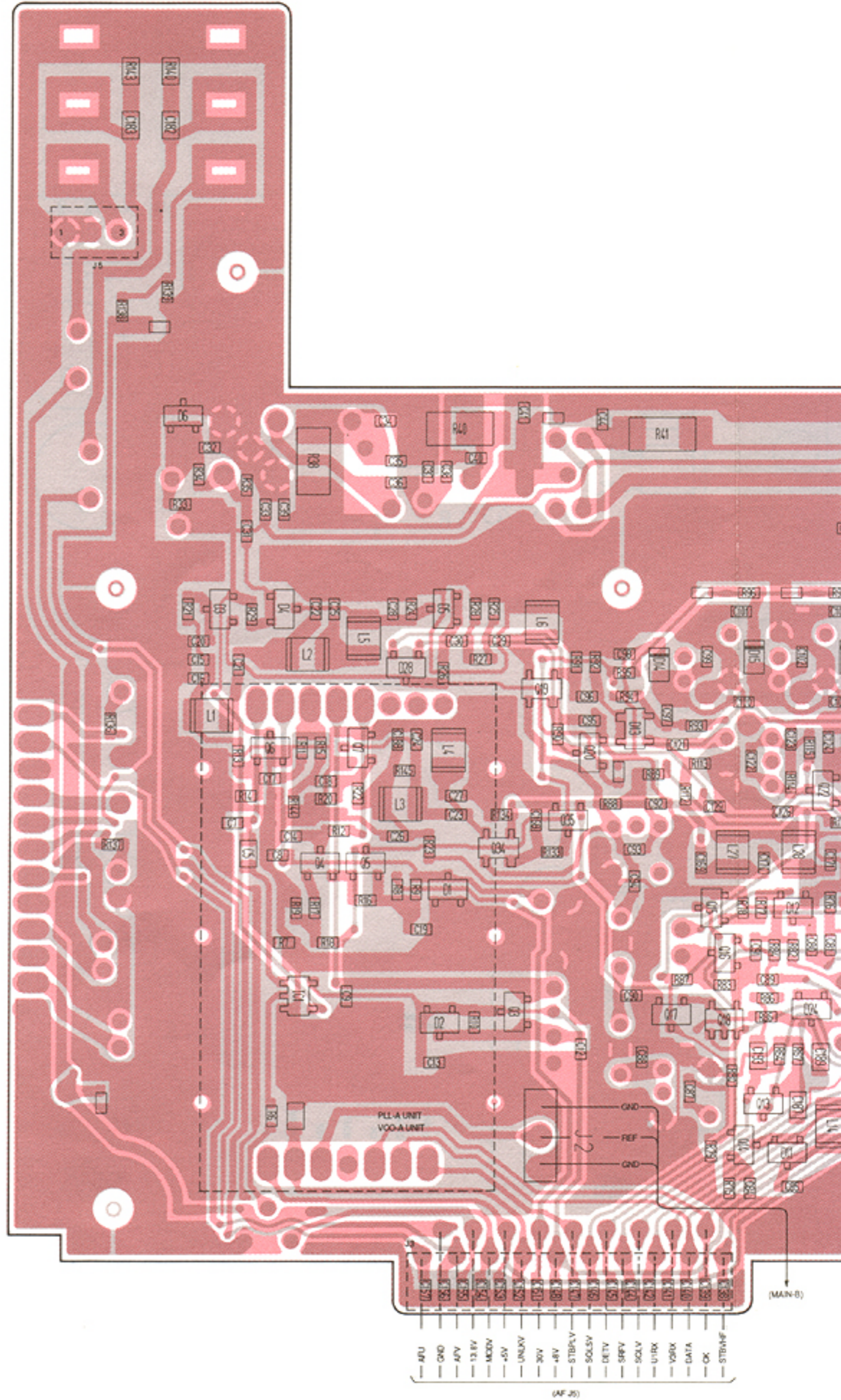


The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

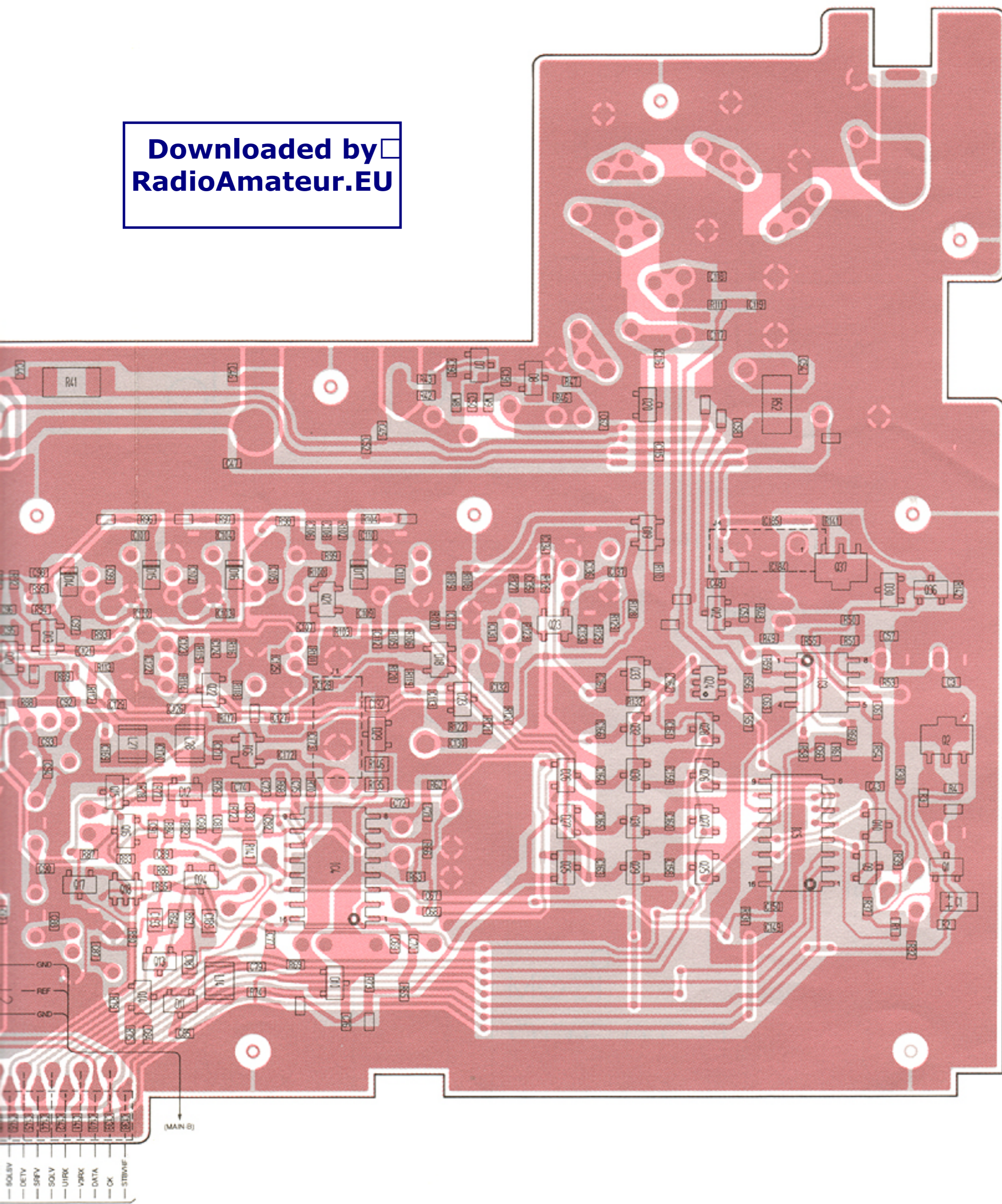


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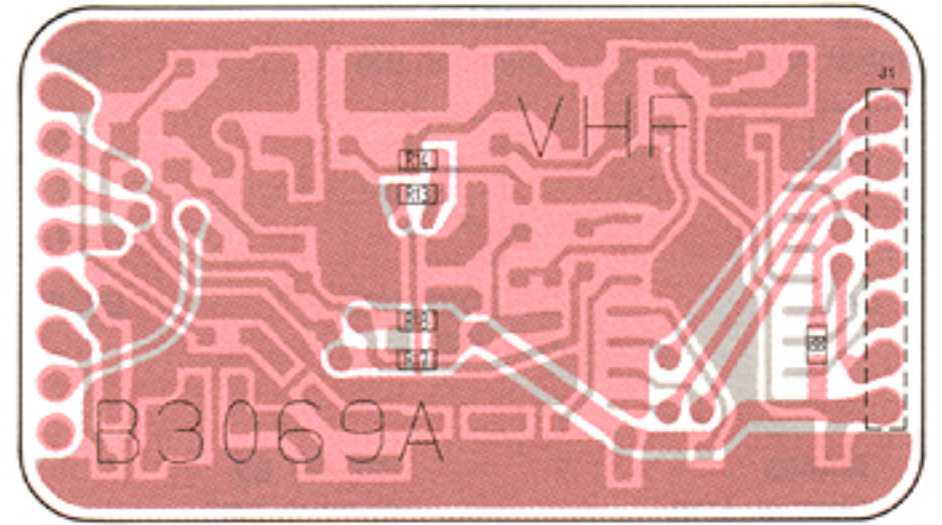
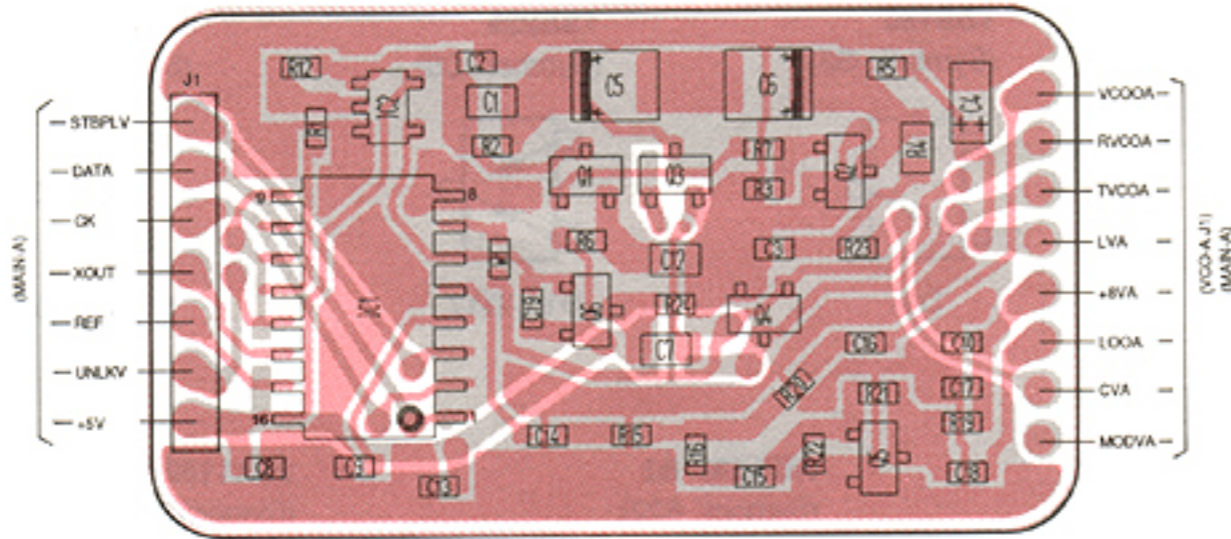
• MAIN-A UNIT (BOTTOM VIEW)



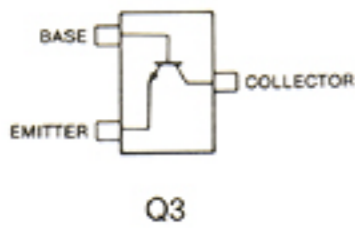
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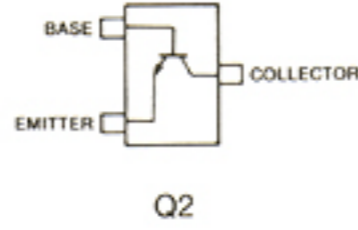
• PLL-A UNIT



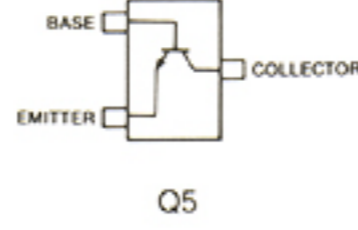
2SC2712 Y
(Symbol: LY)



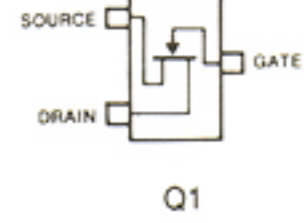
2SC3324-GR
(Symbol: CBG)



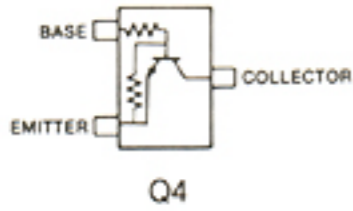
2SC3772 3
(Symbol: LY3)



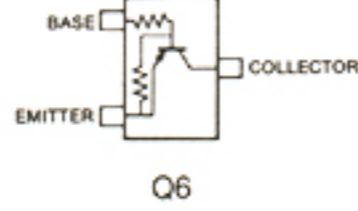
2SK209 Y
(Symbol: XY)



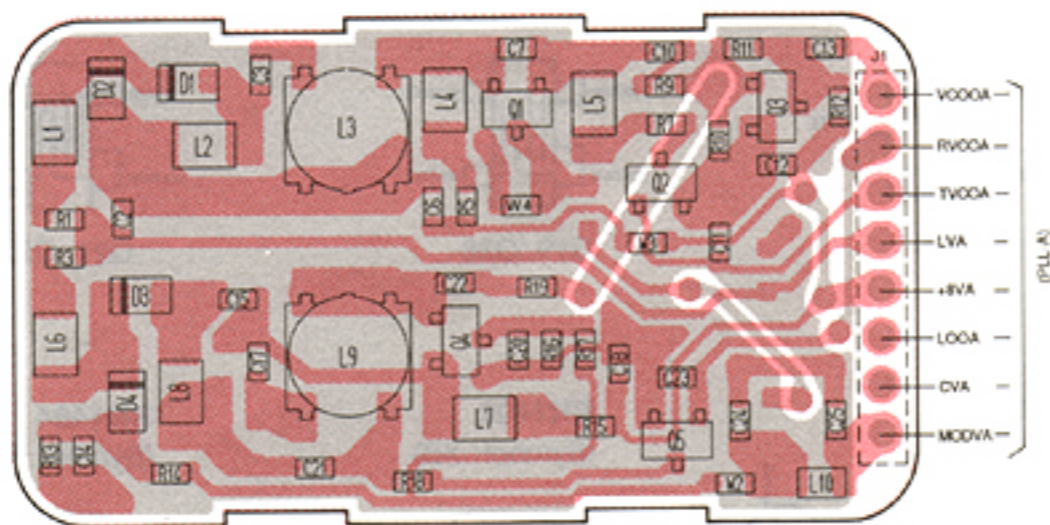
RN1404
(Symbol: XD)



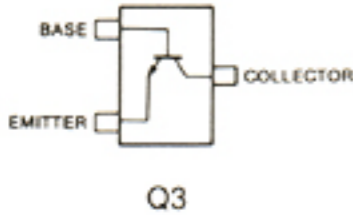
RN2402
(Symbol: YB)



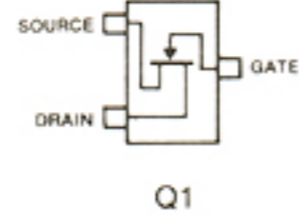
• VCO-A UNIT



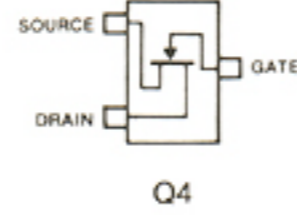
2SC3775 3
(Symbol: OY3)



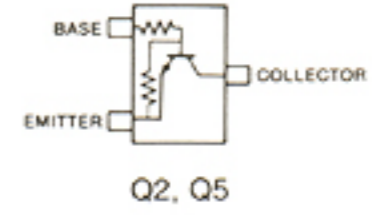
2SK1577-2-T7
(Symbol: P2)



2SK1740-TA
(Symbol: IJ)

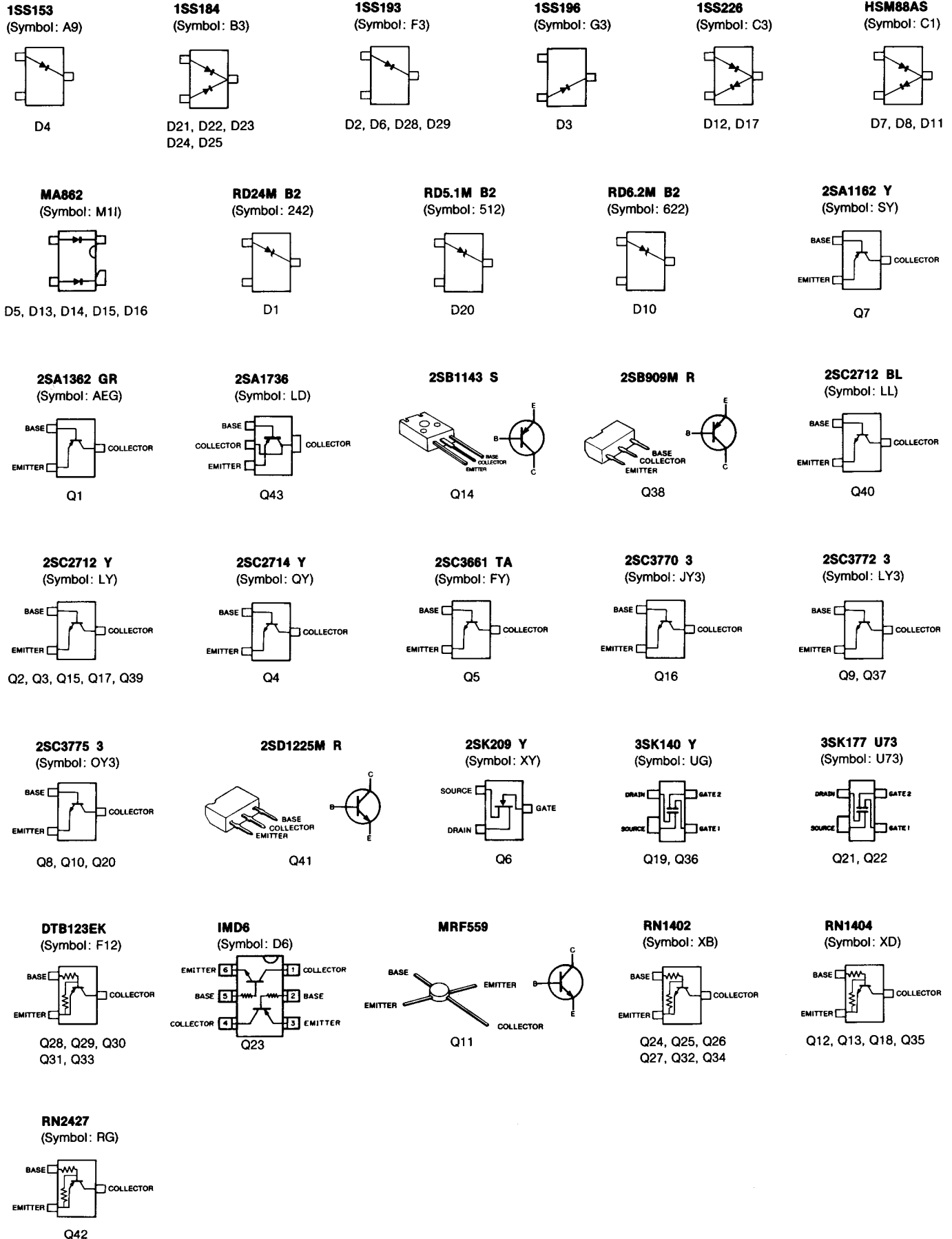


RN1406
(Symbol: XF)

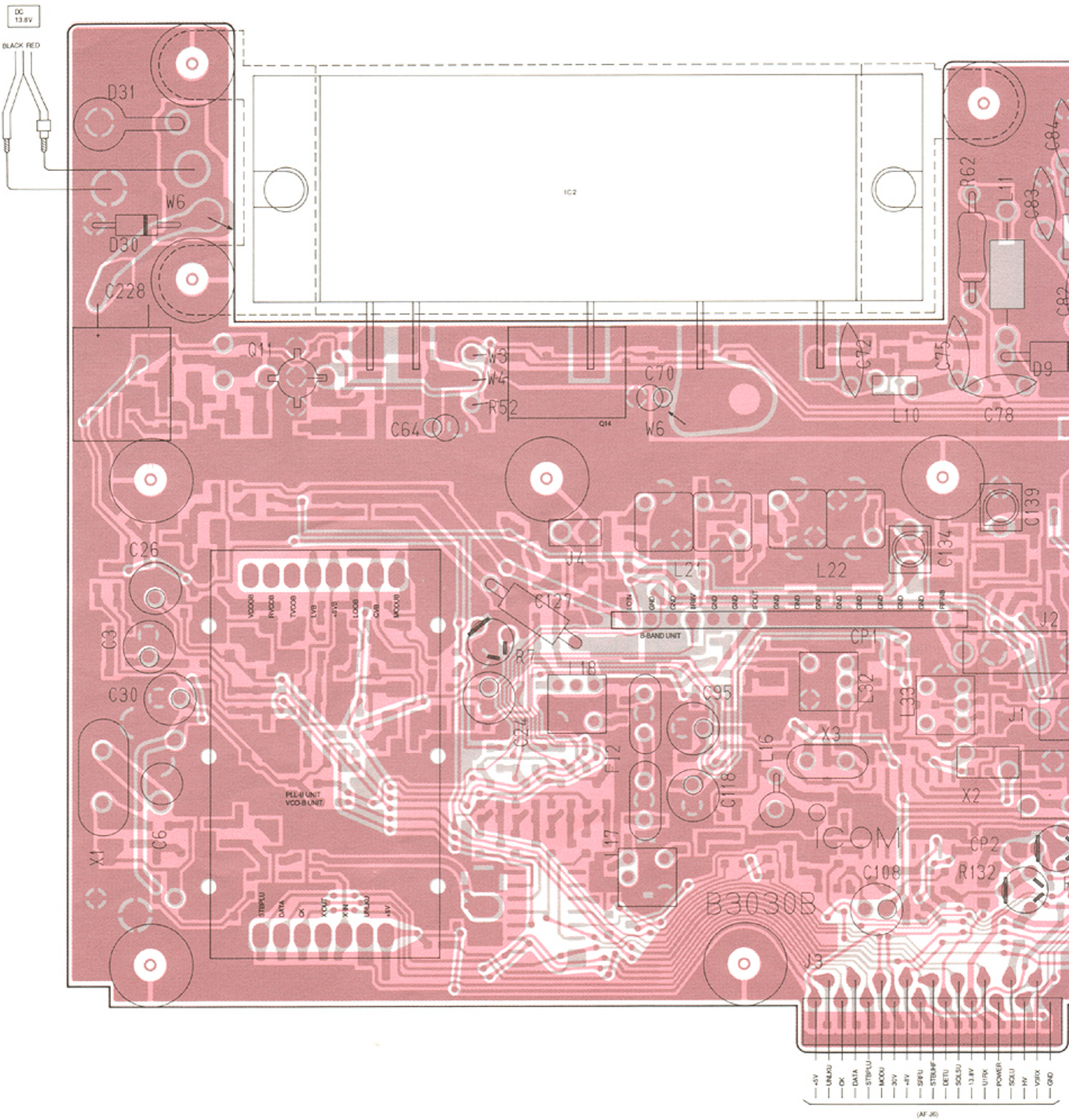


7-4 MAIN-B, PLL-B, VCO-B AND B-BAND UNITS

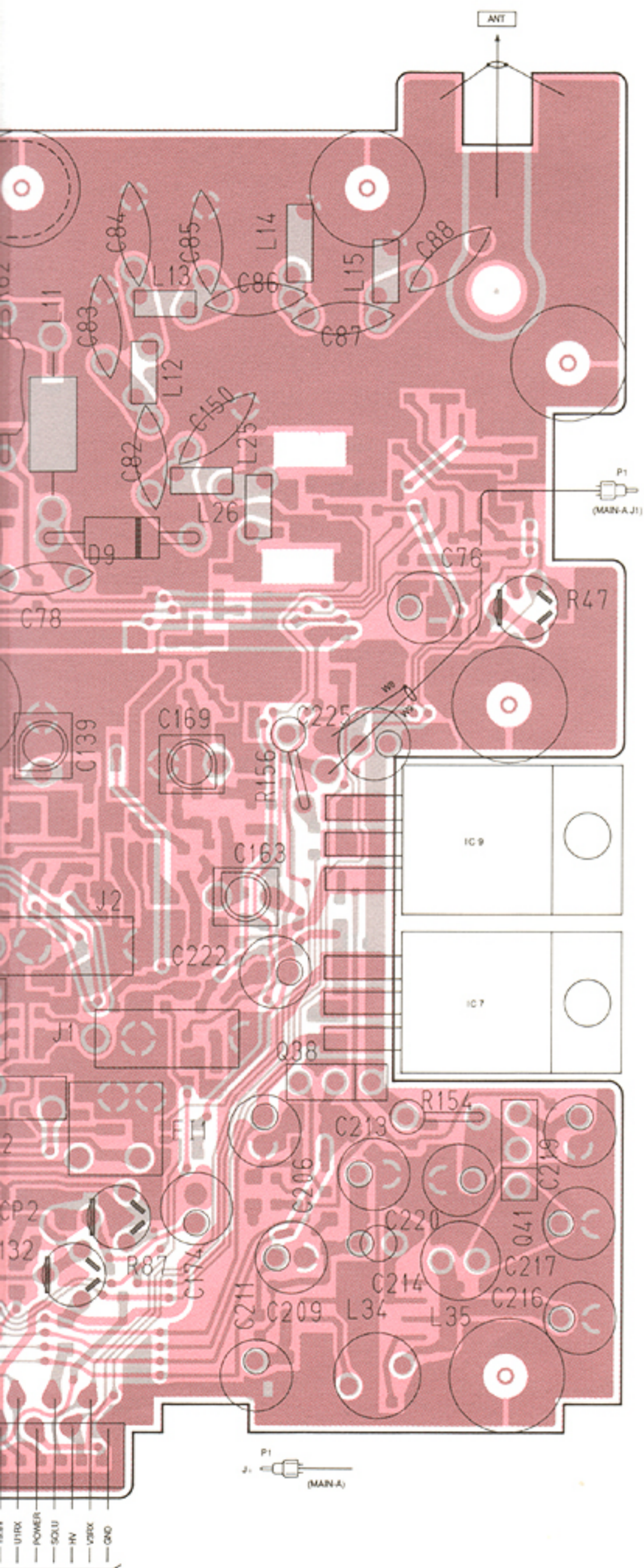
• MAIN-B UNIT



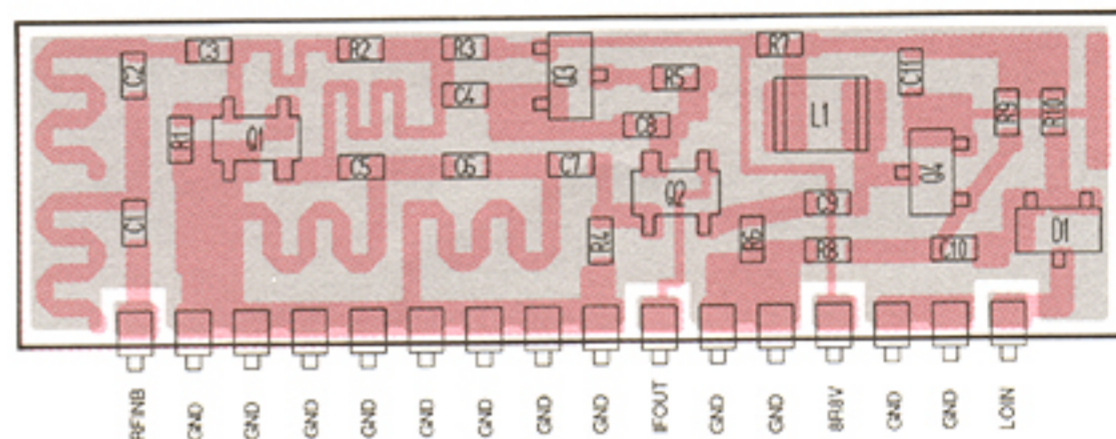
• MAIN-B UNIT (TOP VIEW)



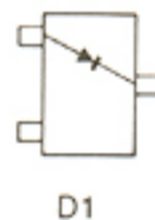
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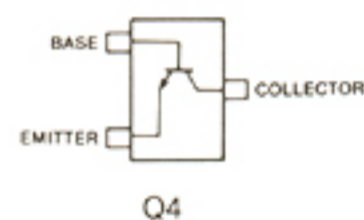
• B-BAND UNIT



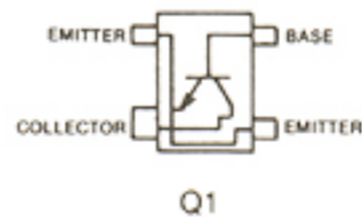
1SS153
(Symbol: A9)



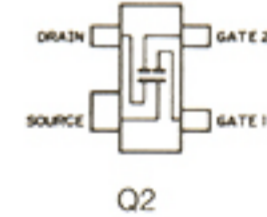
2SC3775 3
(Symbol: OY3)



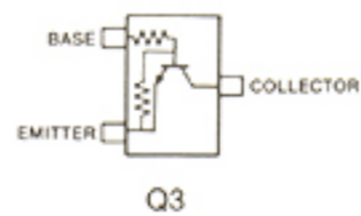
2SC4315
(Symbol: MK)



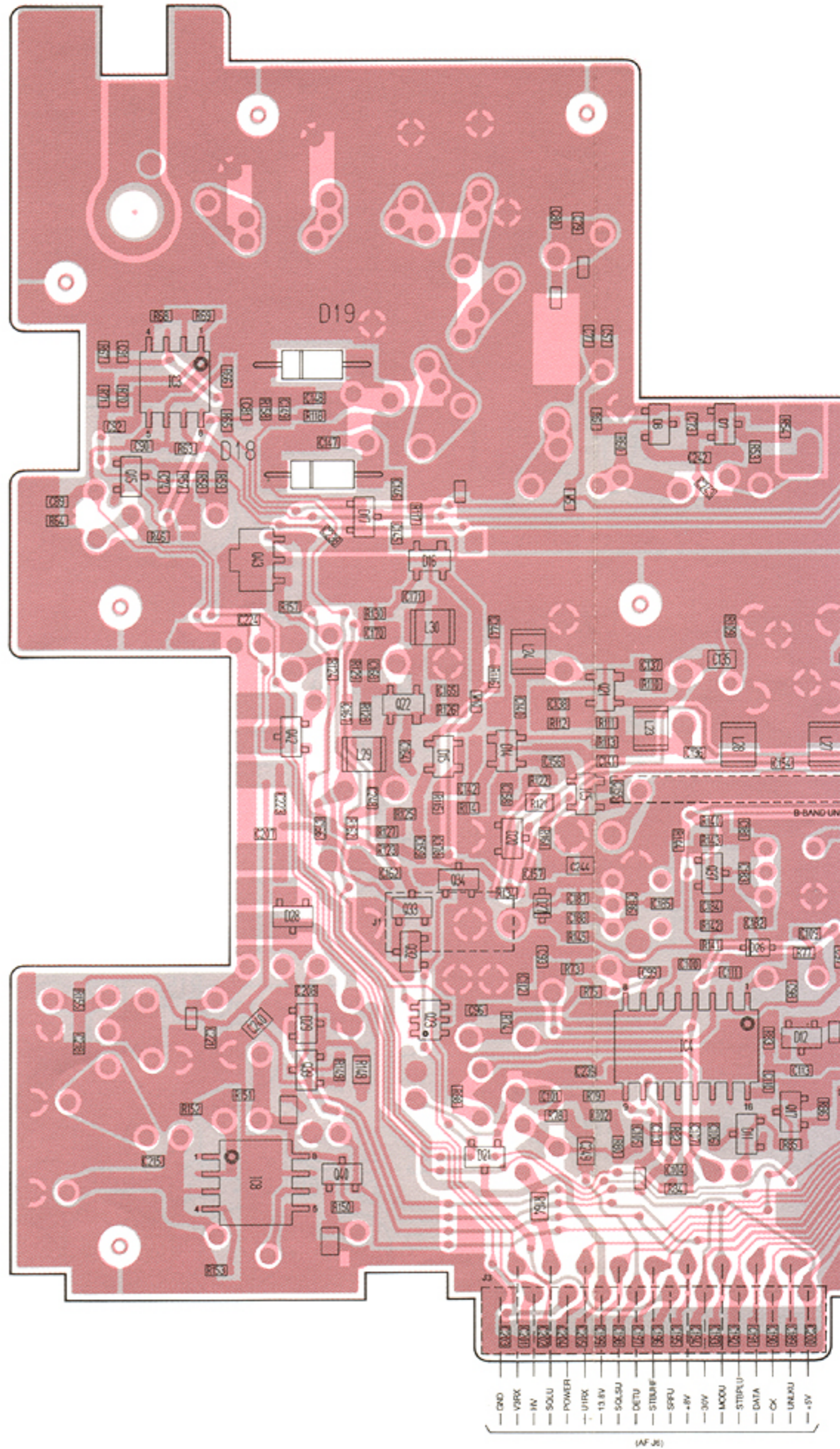
3SK177 U73
(Symbol: U73)

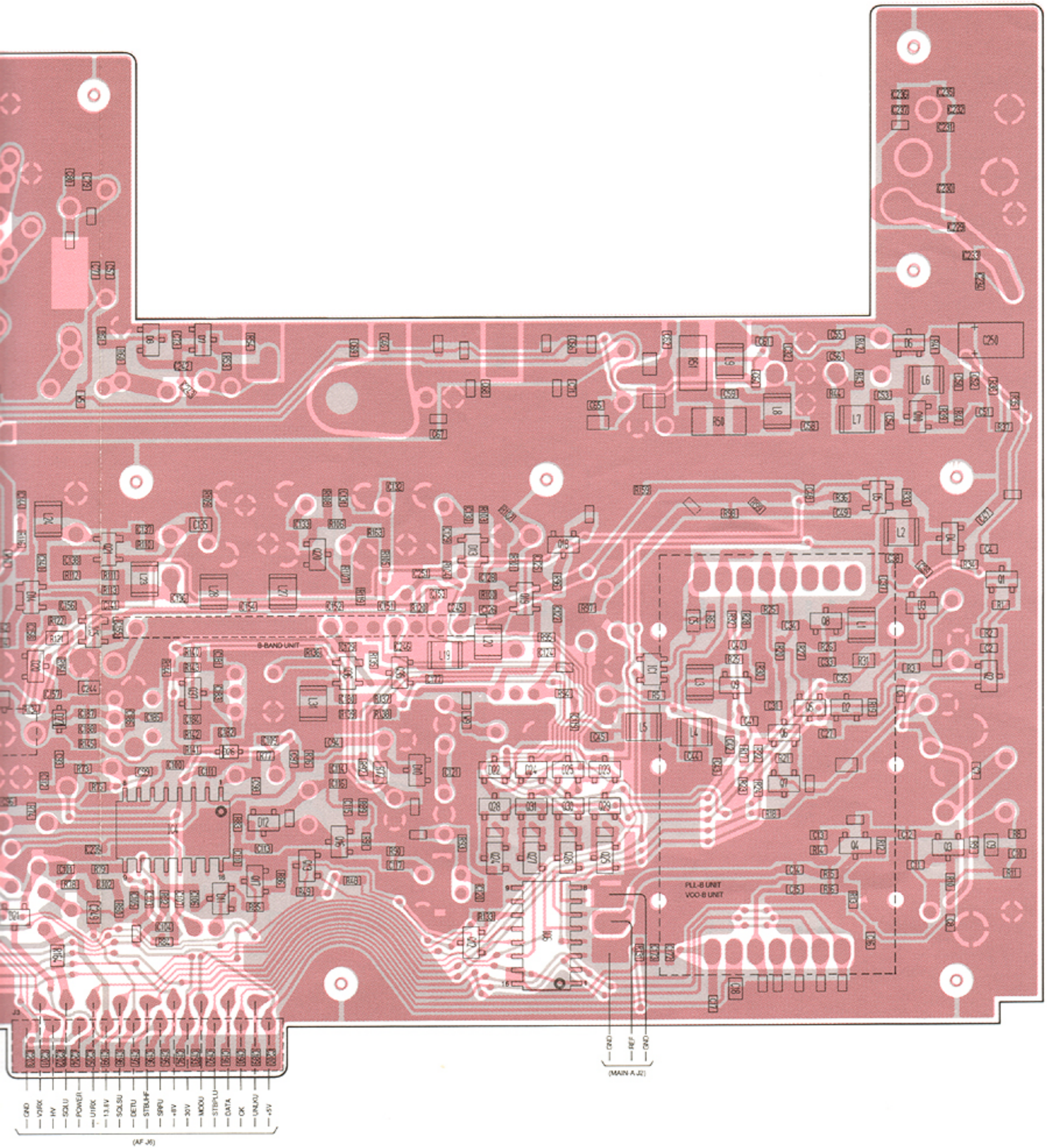


RN1404
(Symbol: XD)

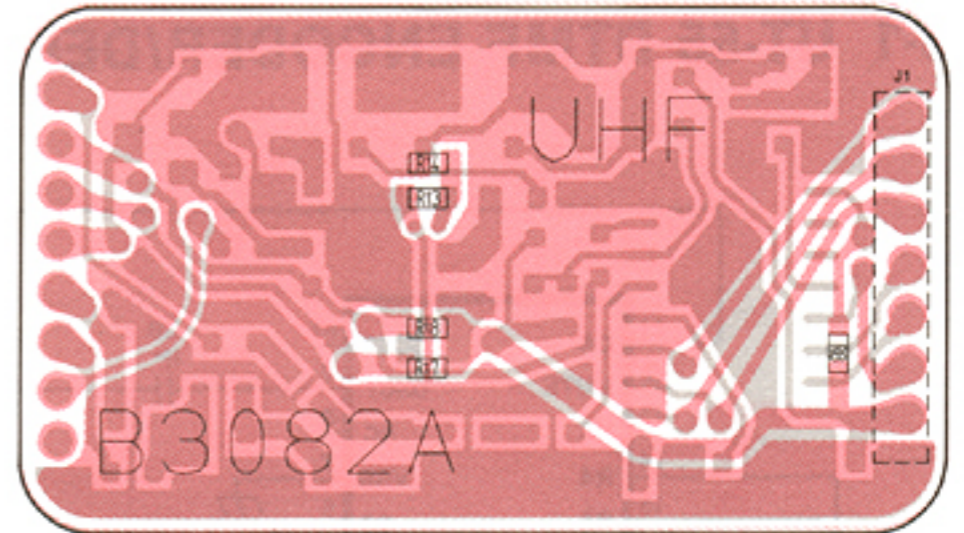
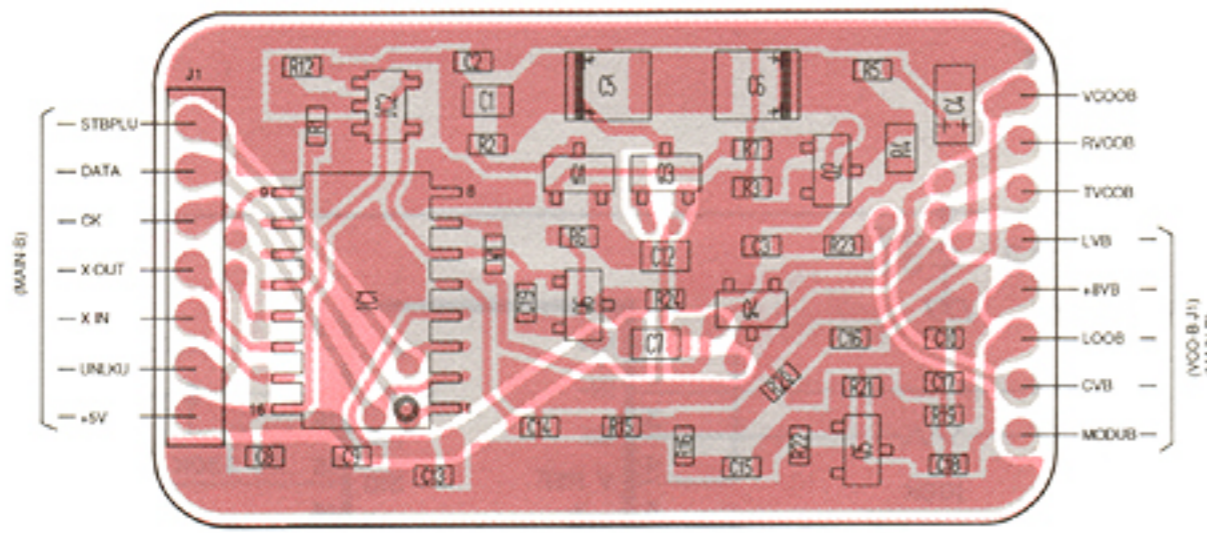


• MAIN-B UNIT (BOTTOM VIEW)

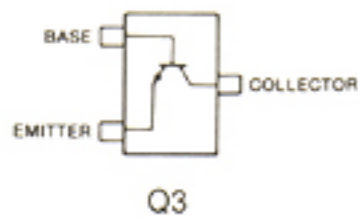




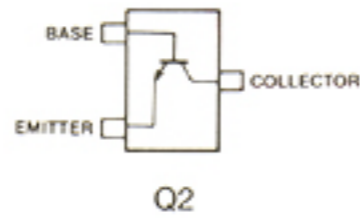
• PLL-B UNIT



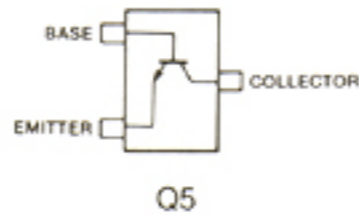
2SC2712 Y
(Symbol: LY)



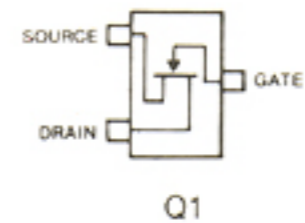
2SC3324-GR
(Symbol: CBG)



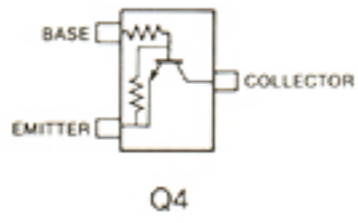
2SC3772 3
(Symbol: LY3)



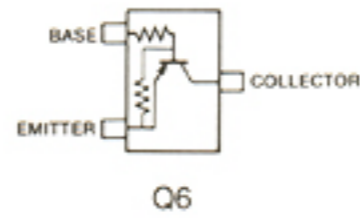
2SK209 Y
(Symbol: XY)



RN1404
(Symbol: XD)

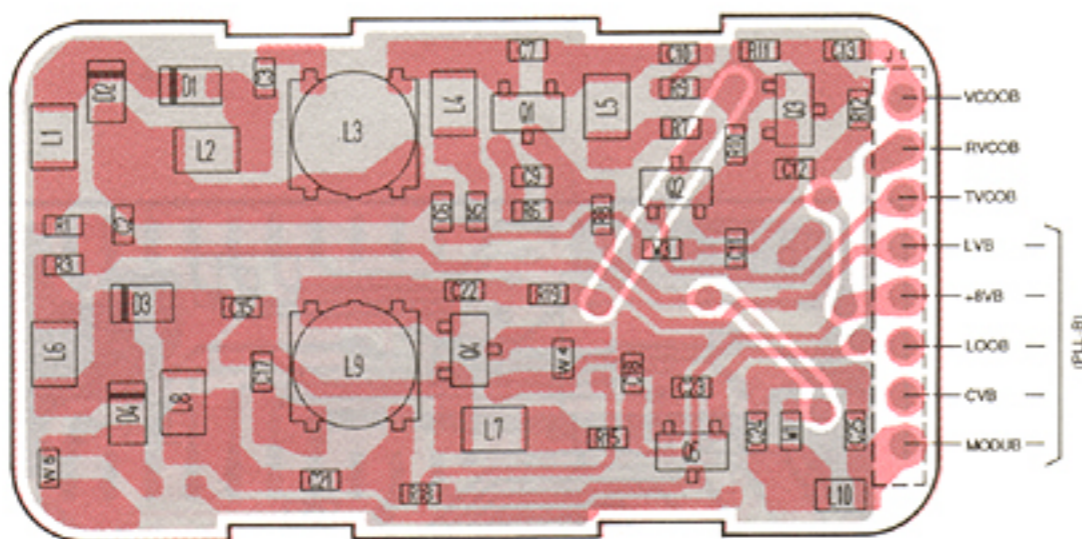


RN2402
(Symbol: YB)

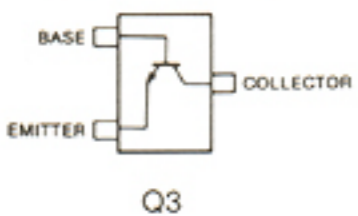


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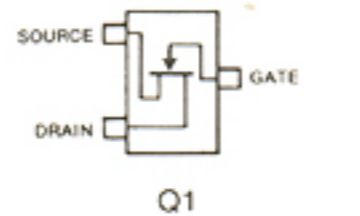
• VCO-B UNIT



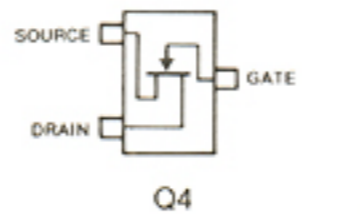
2SC3775 3
(Symbol: OY3)



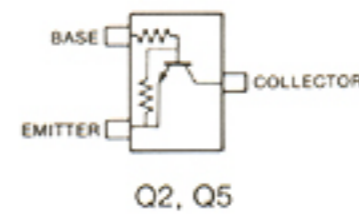
2SK1577-2
(Symbol: P2)



2SK1740-TA
(Symbol: IJ)

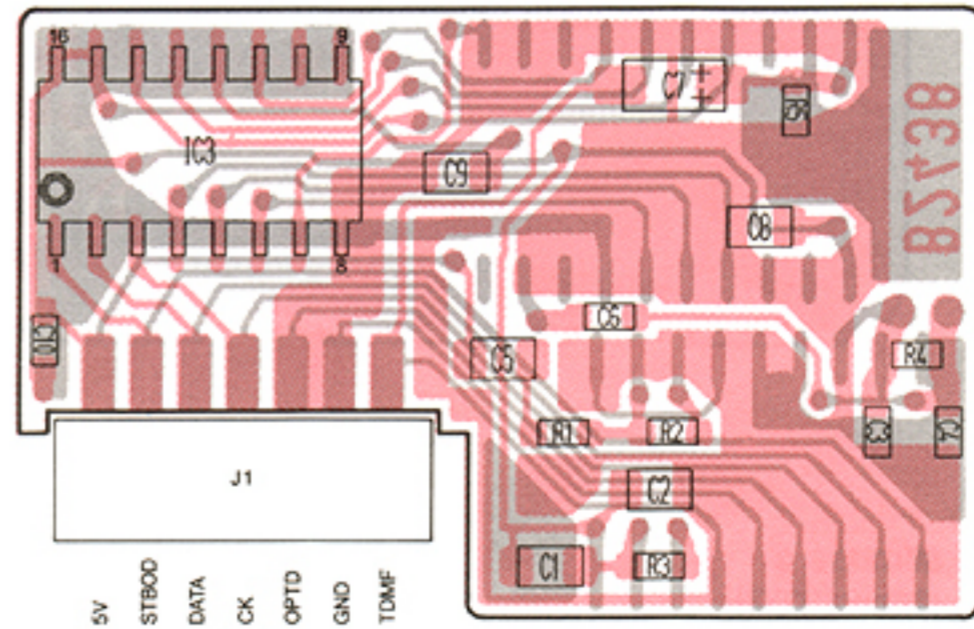
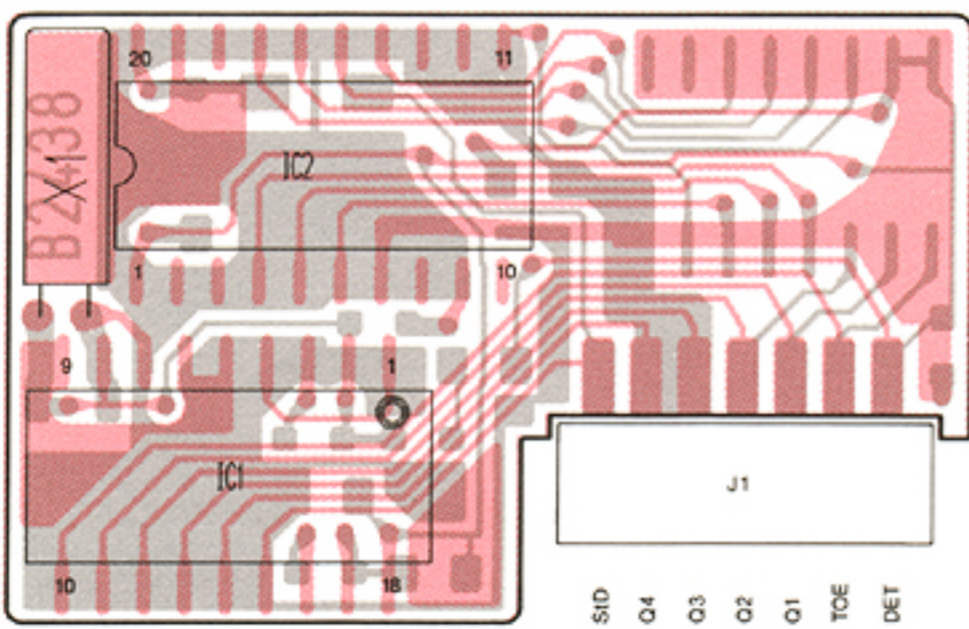
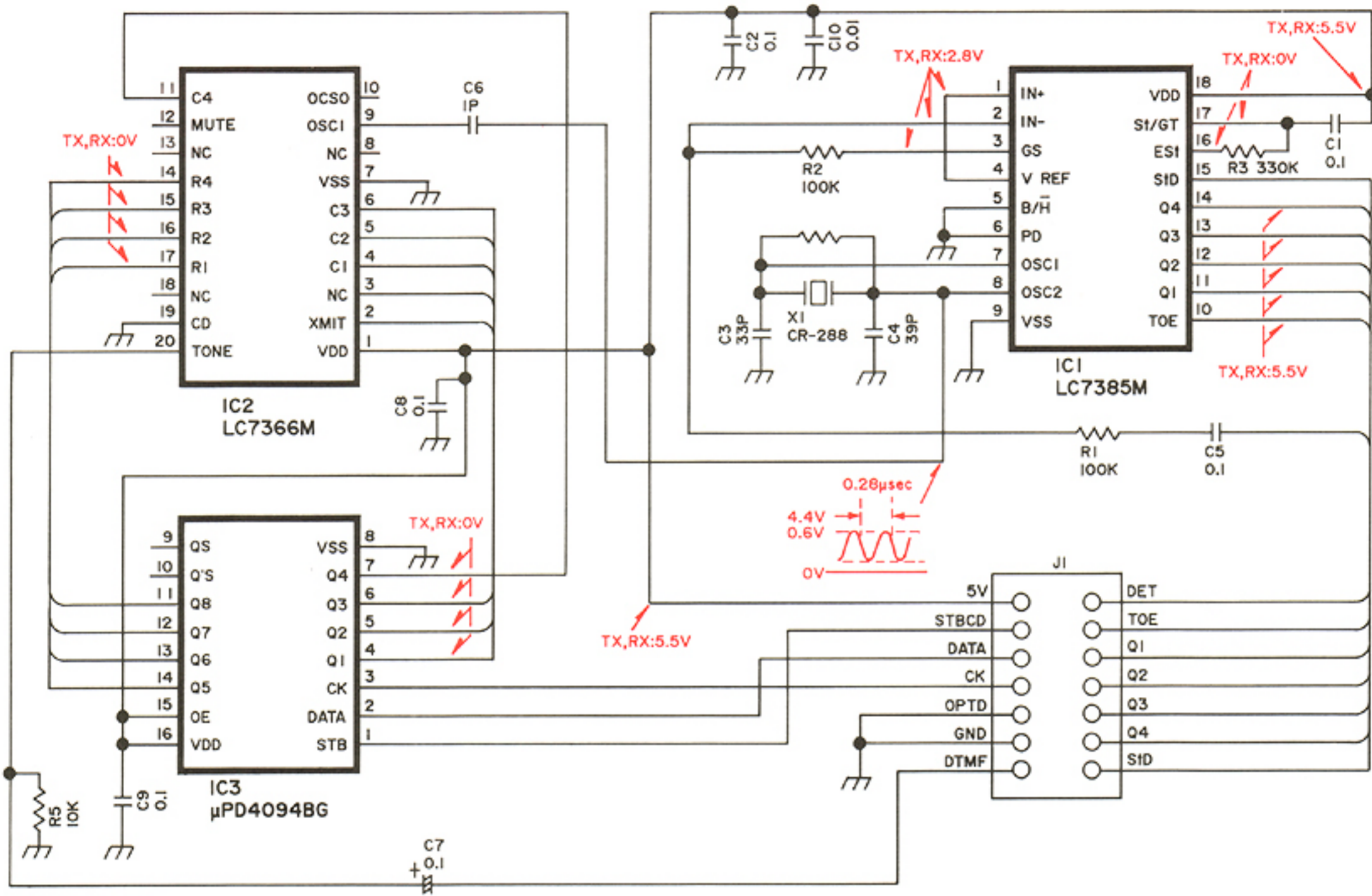


RN1406
(Symbol: XF)

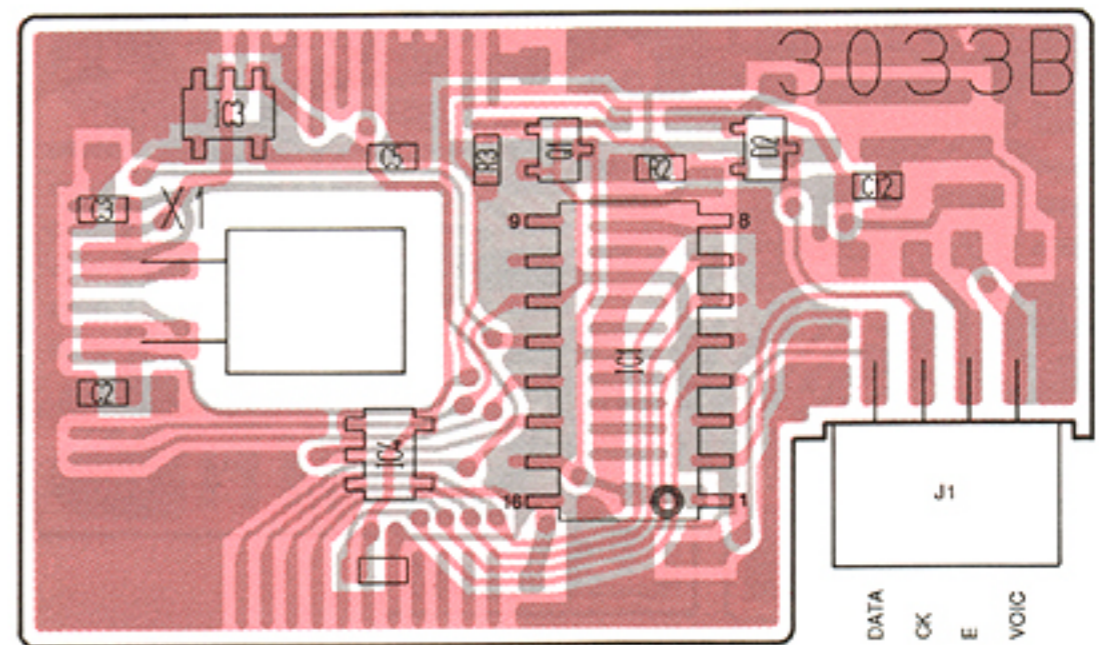
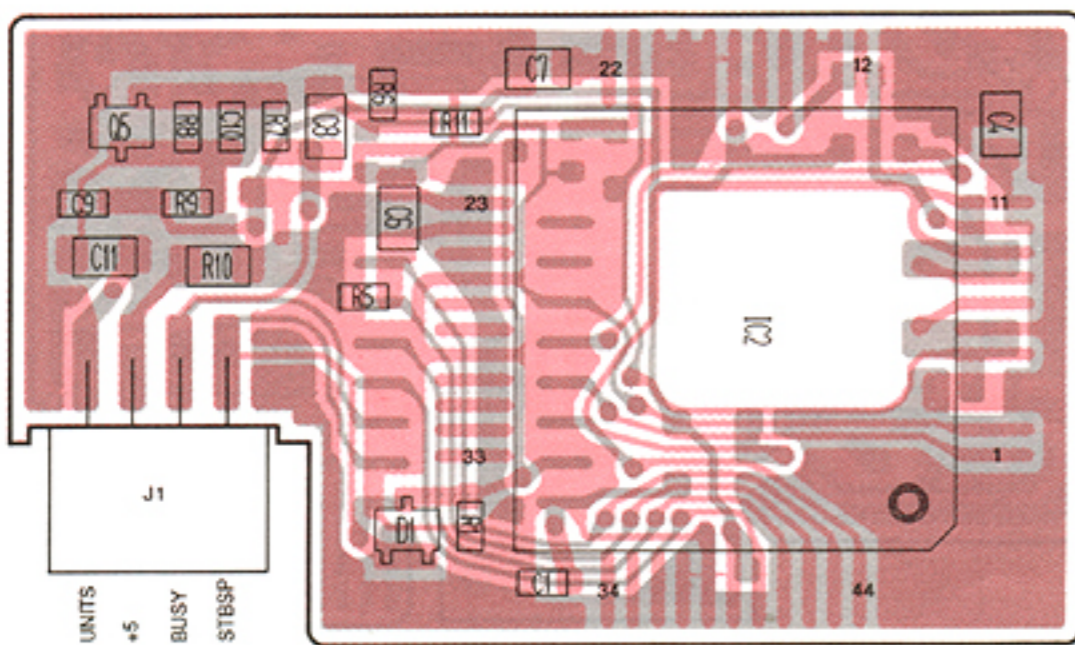
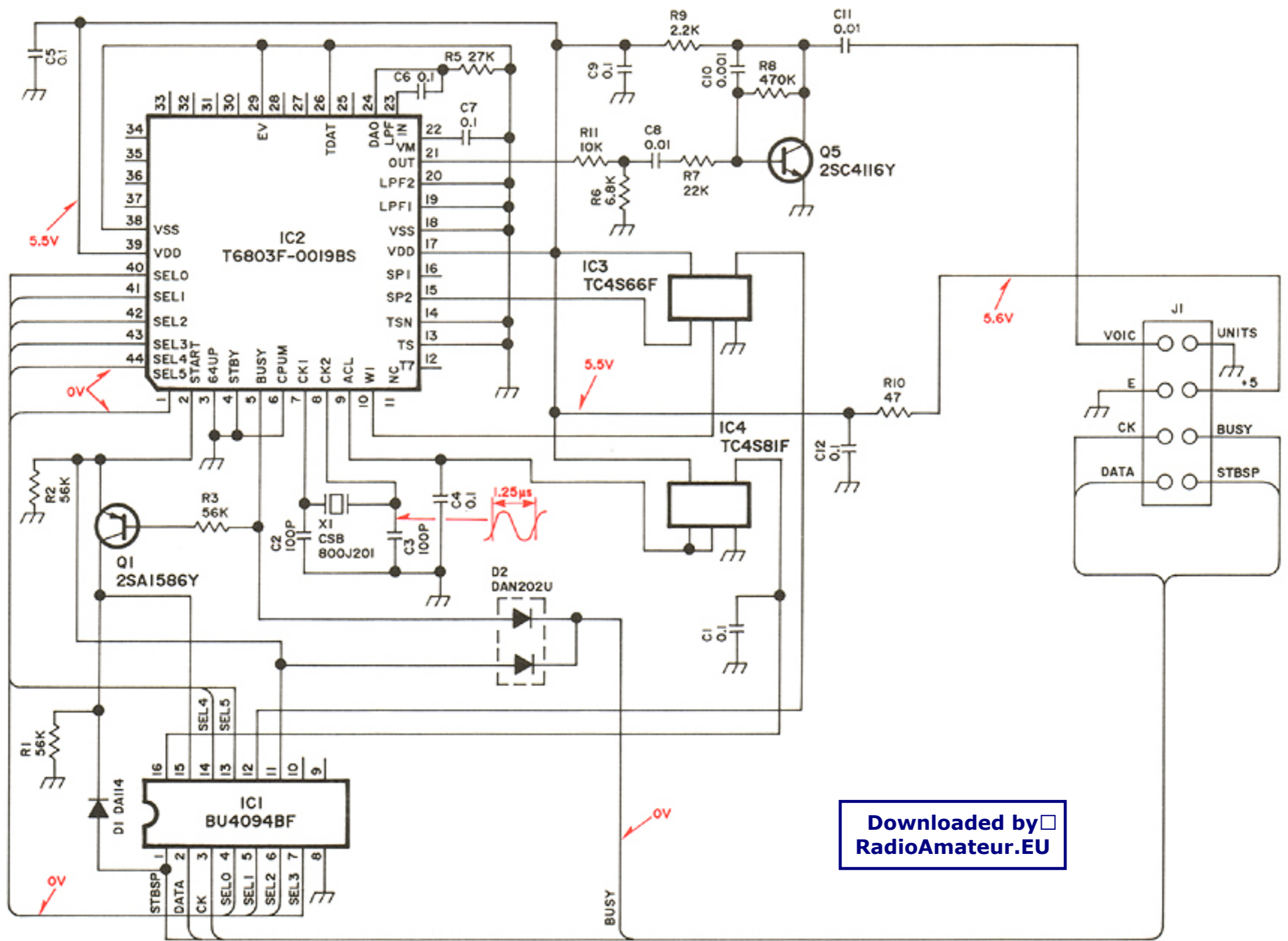


SECTION 8 OPTIONAL UNITS

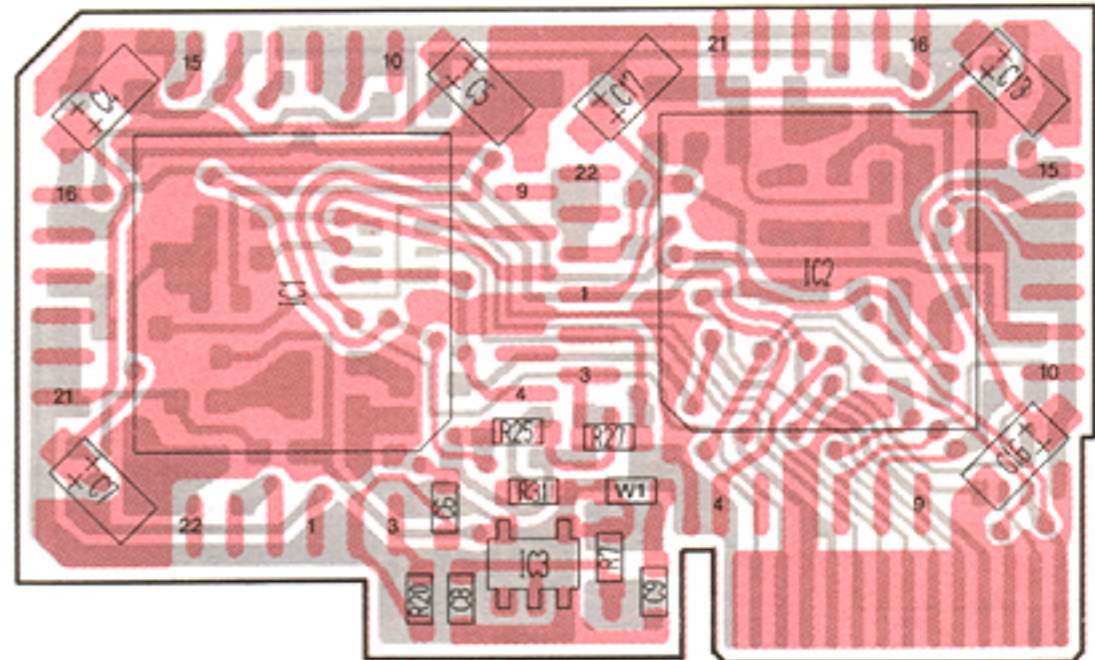
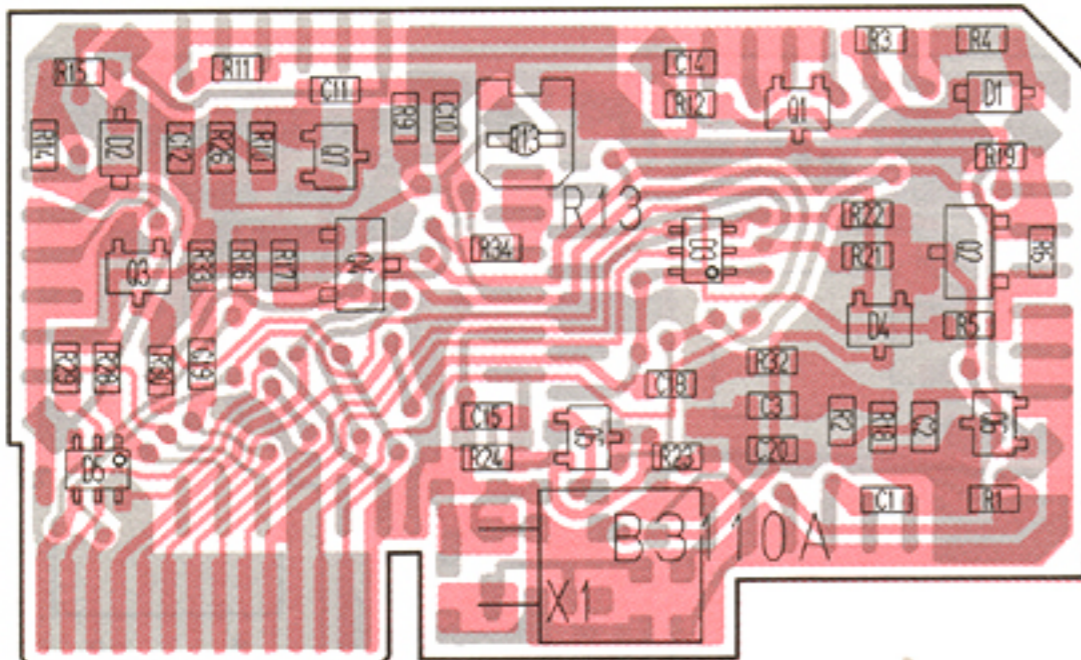
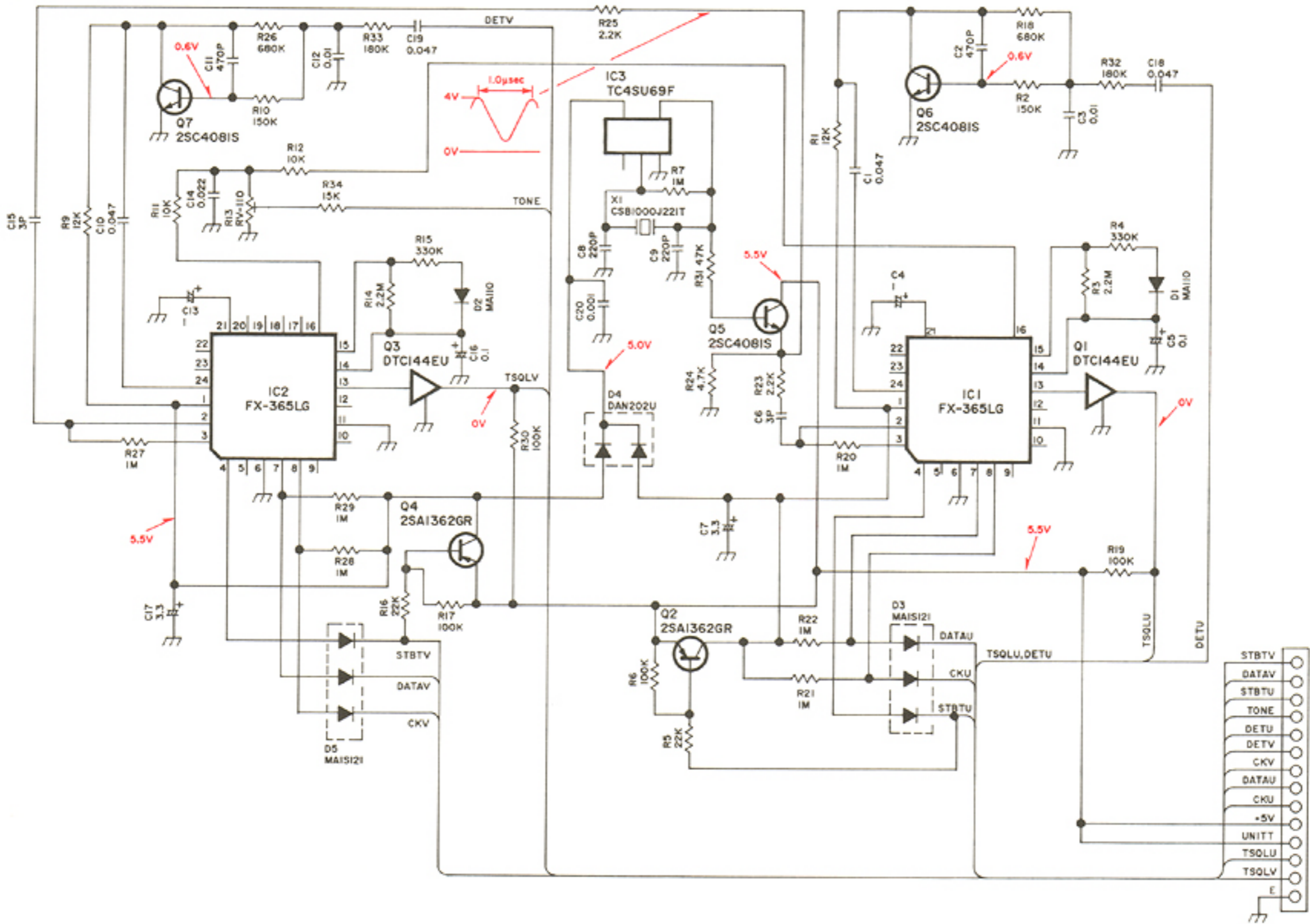
8-1 UT-55 DTMF ENCODER/DECODER UNIT



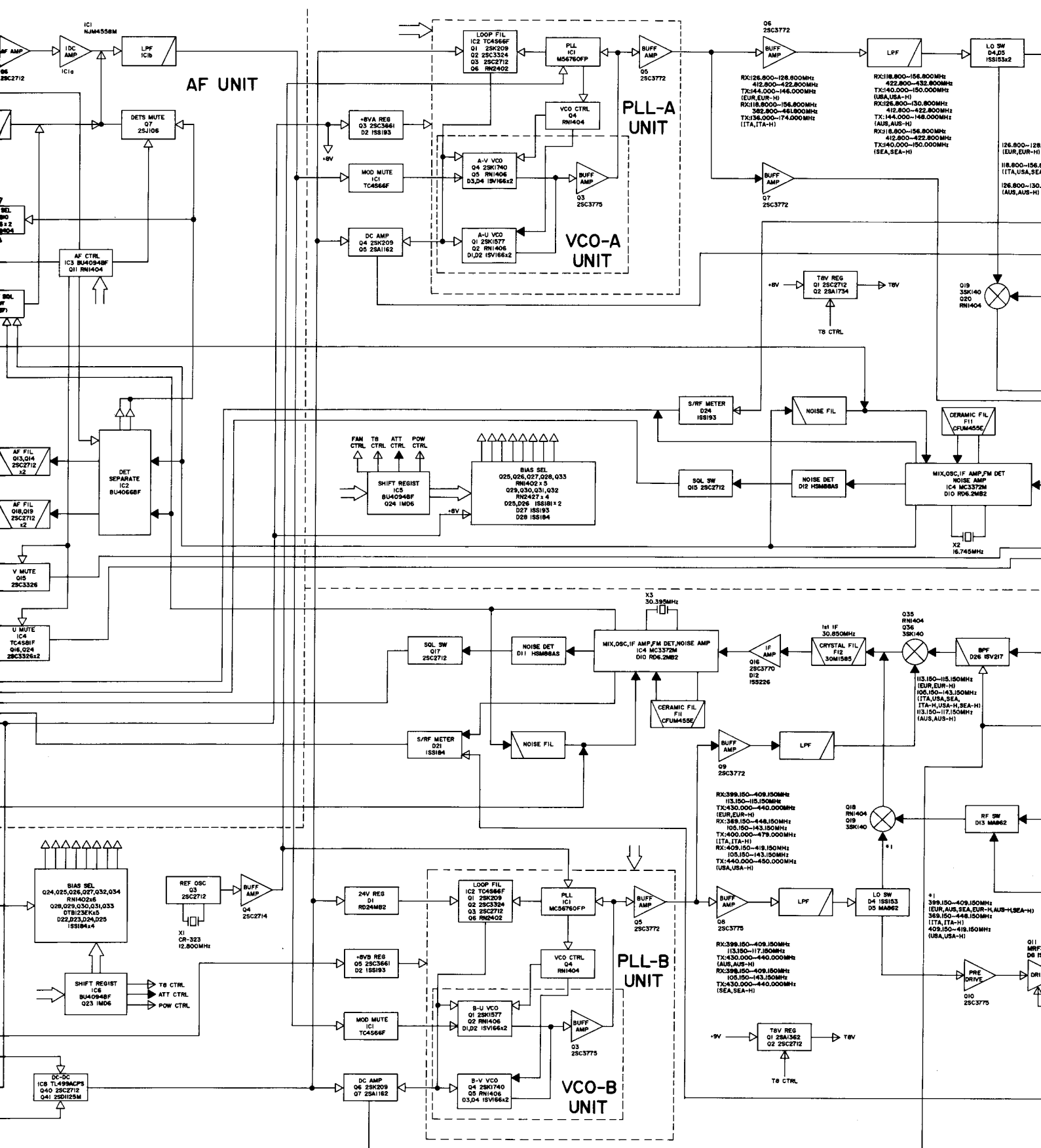
8-2 UT-66 VOICE SYNTHESIZER UNIT

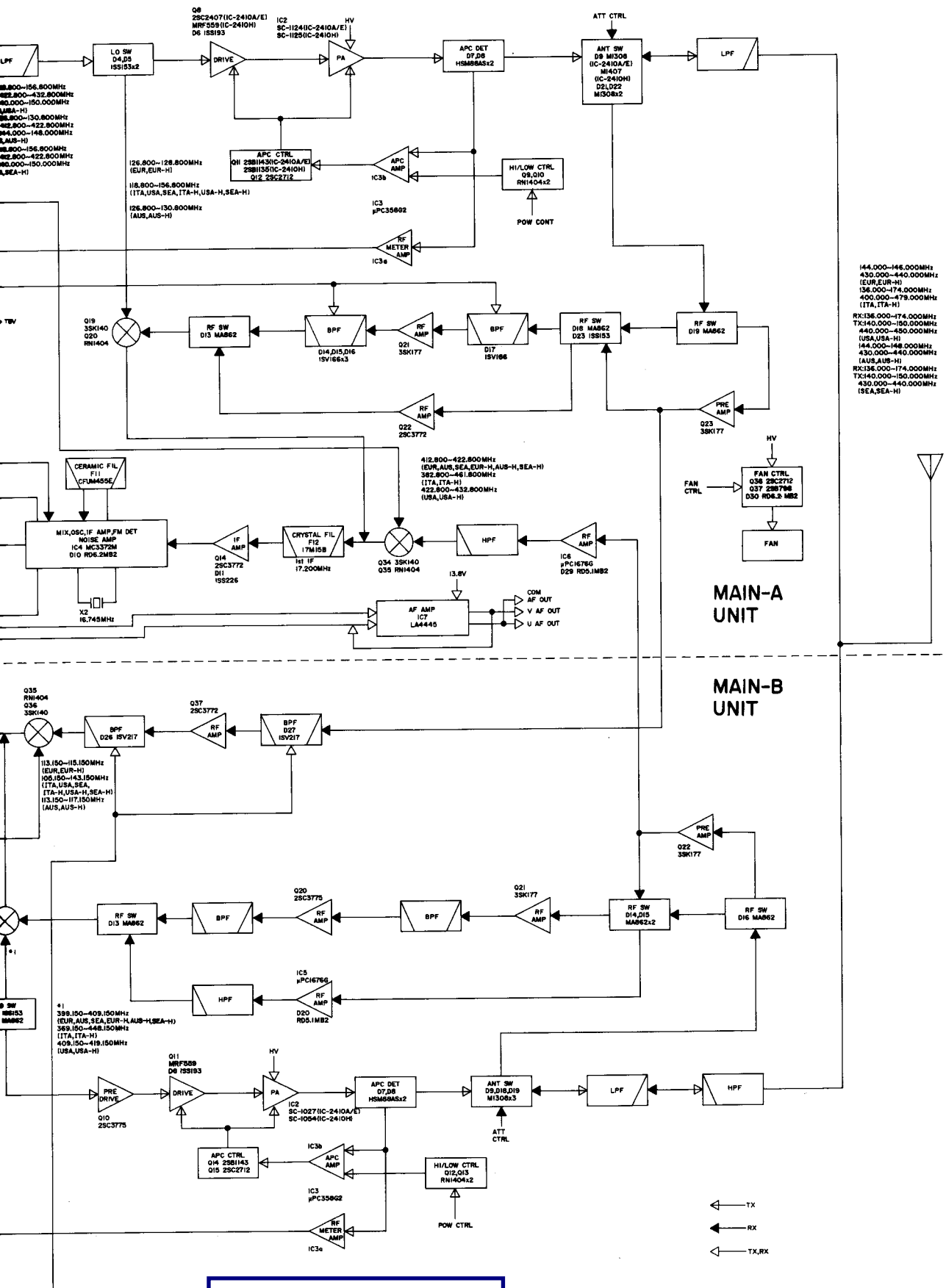


8-3 UT-67 TONE SQUELCH UNIT

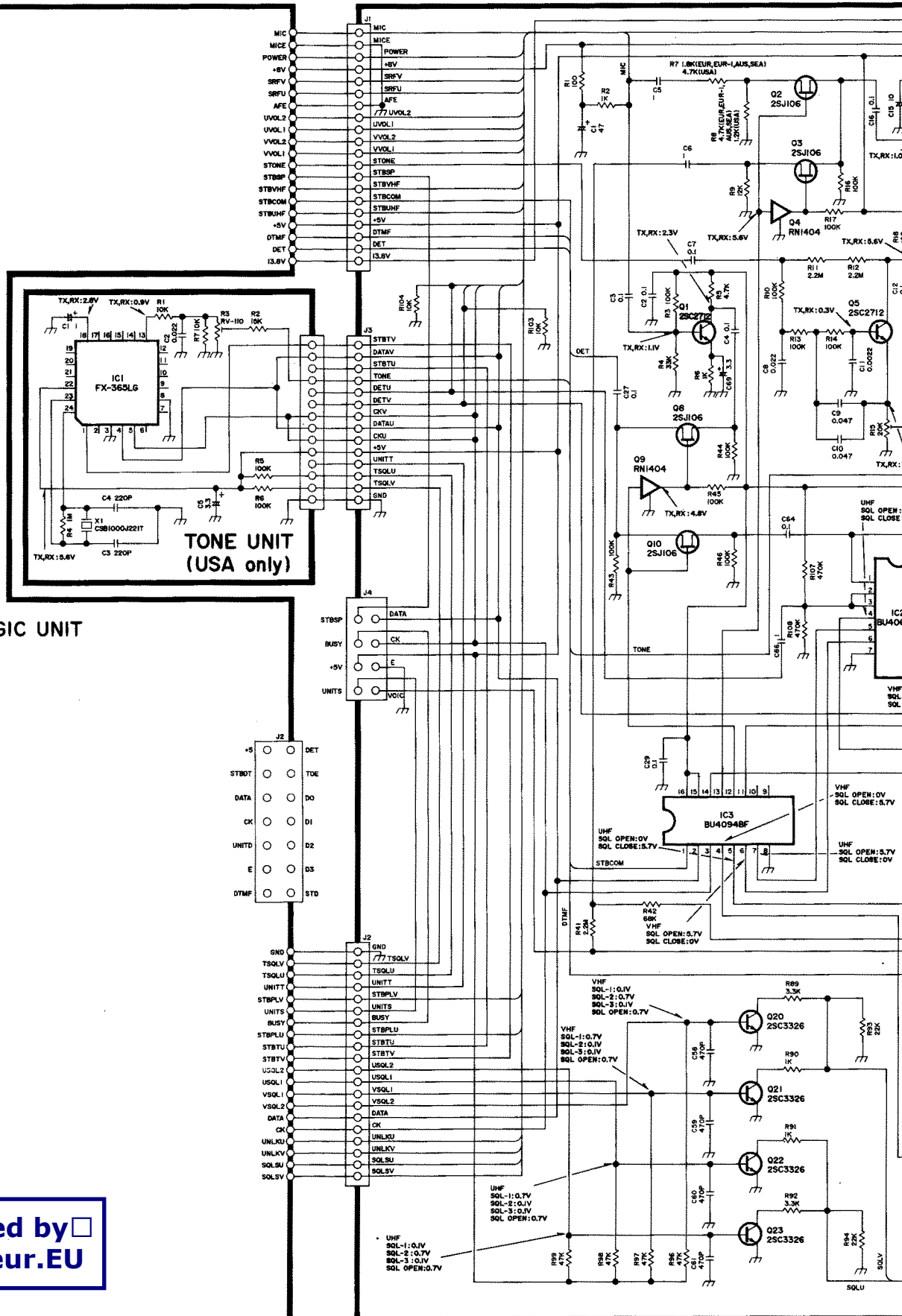


STBTV
DATAV
STBTU
TONE
DETV
DETV
CKV
DATAU
CKU
+5V
UNITT
TSOLU
TSOLV
E

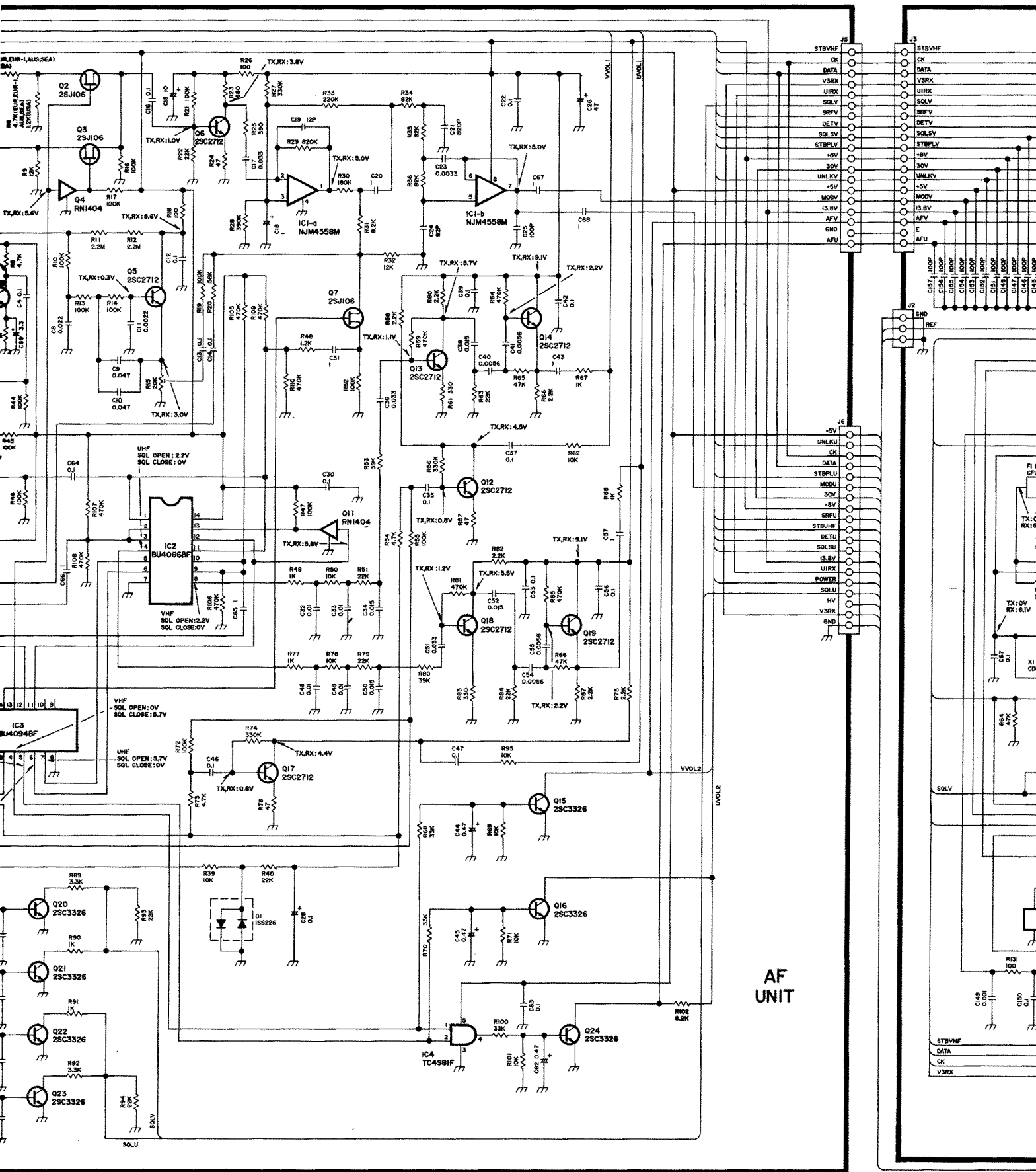




SECTION 10 VOLTAGE DIAGRAMS

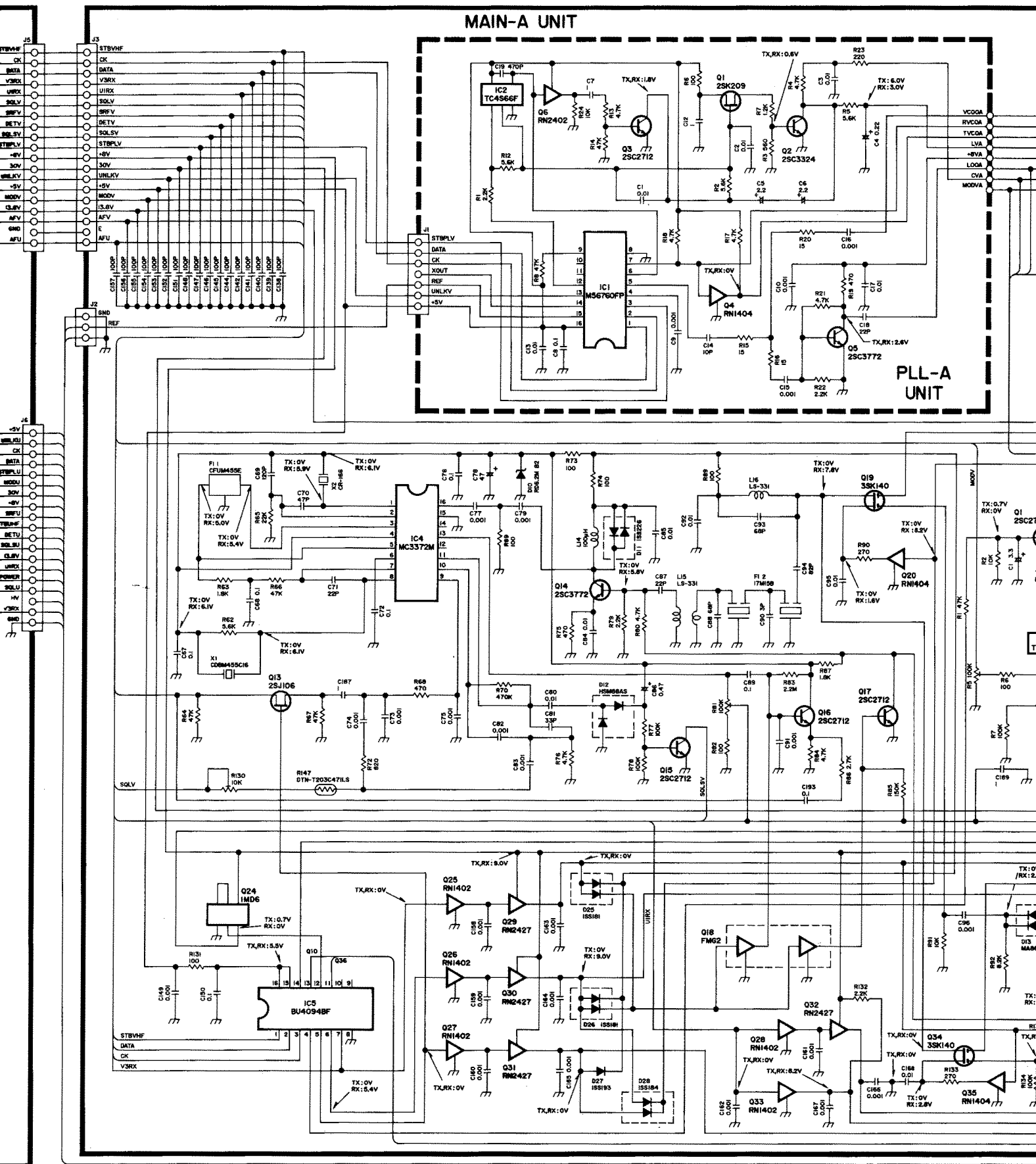


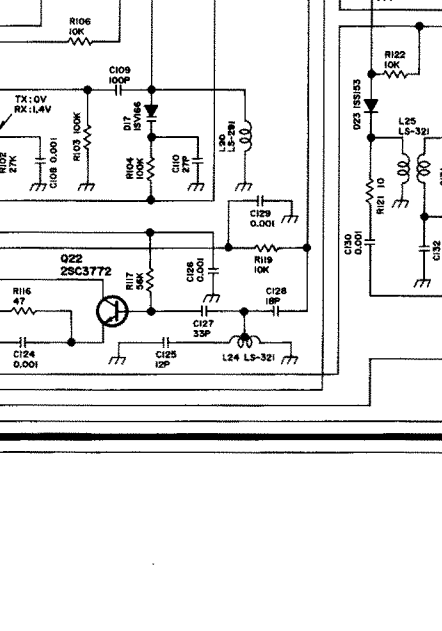
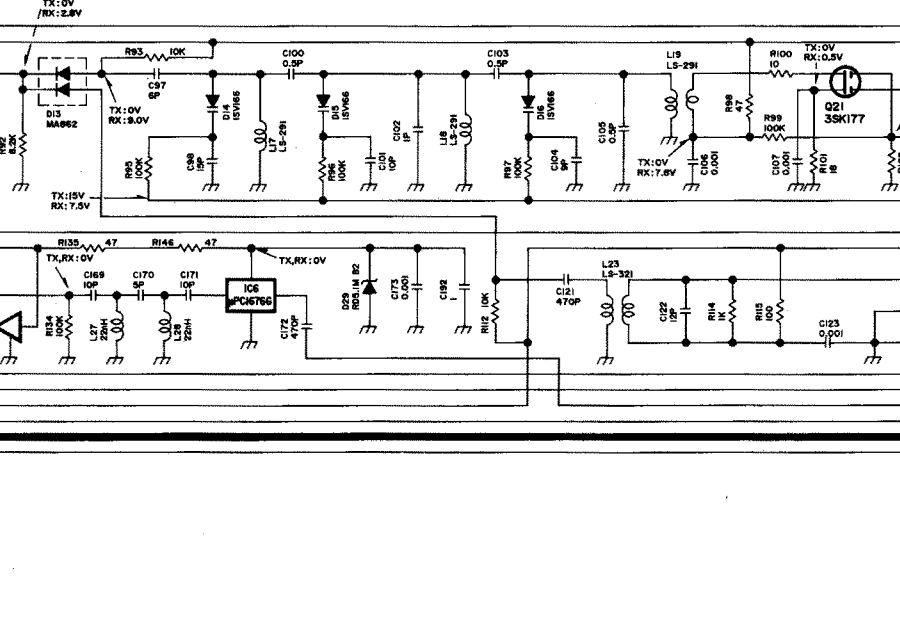
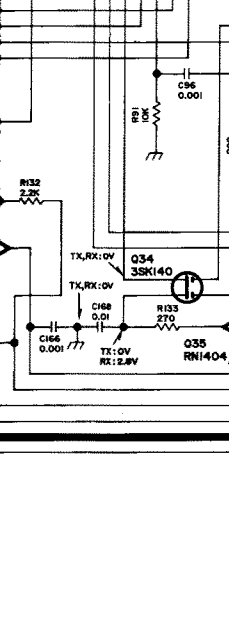
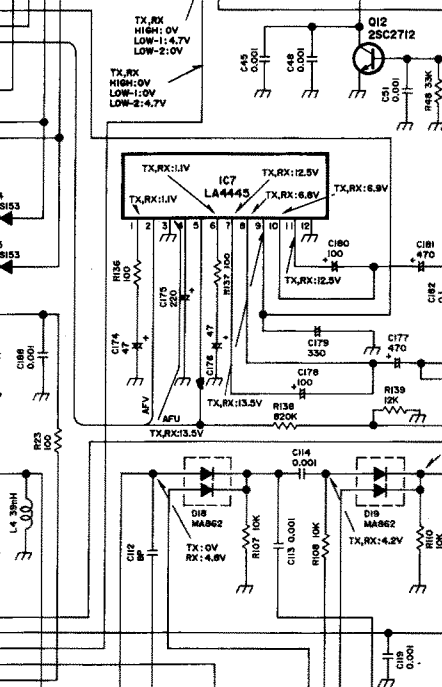
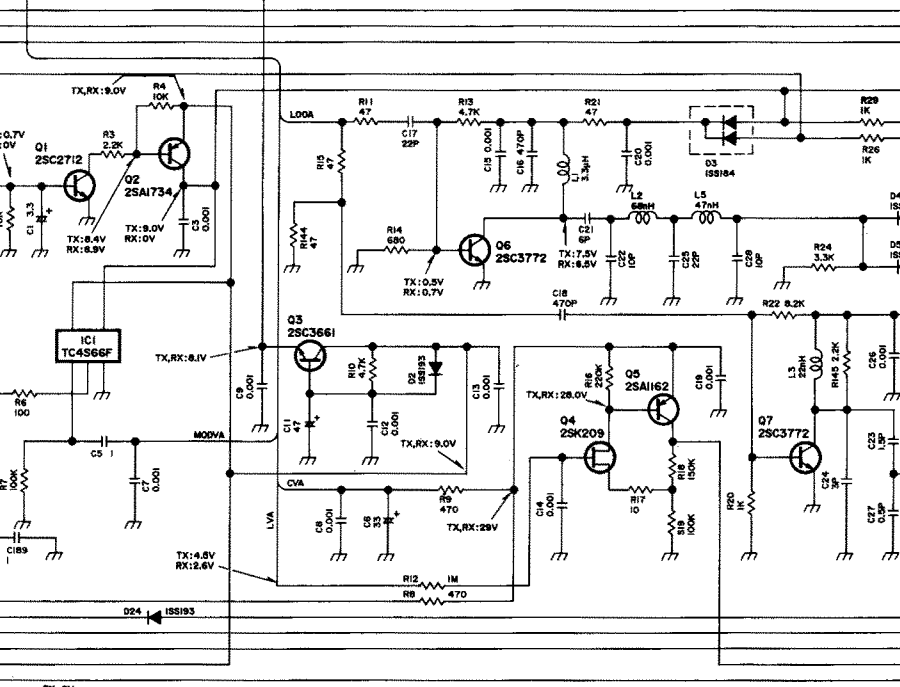
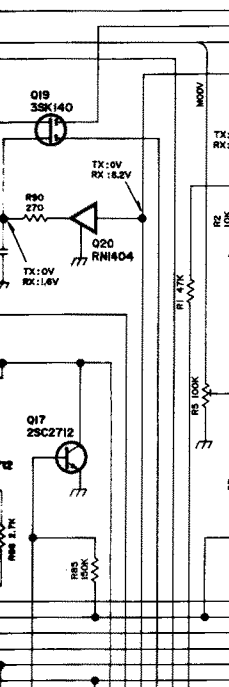
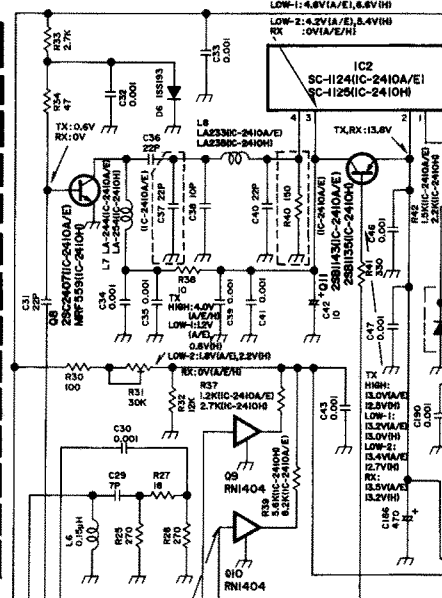
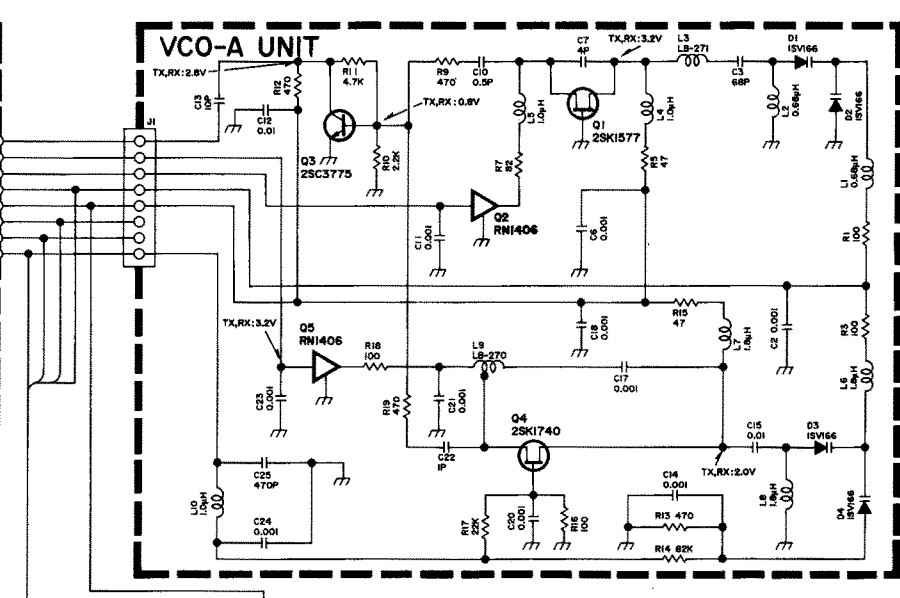
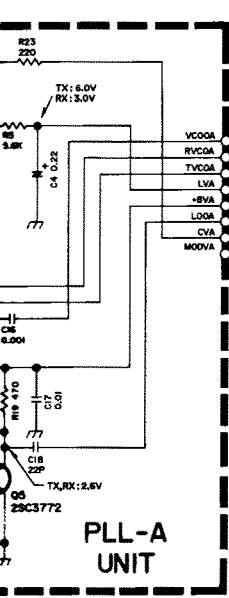
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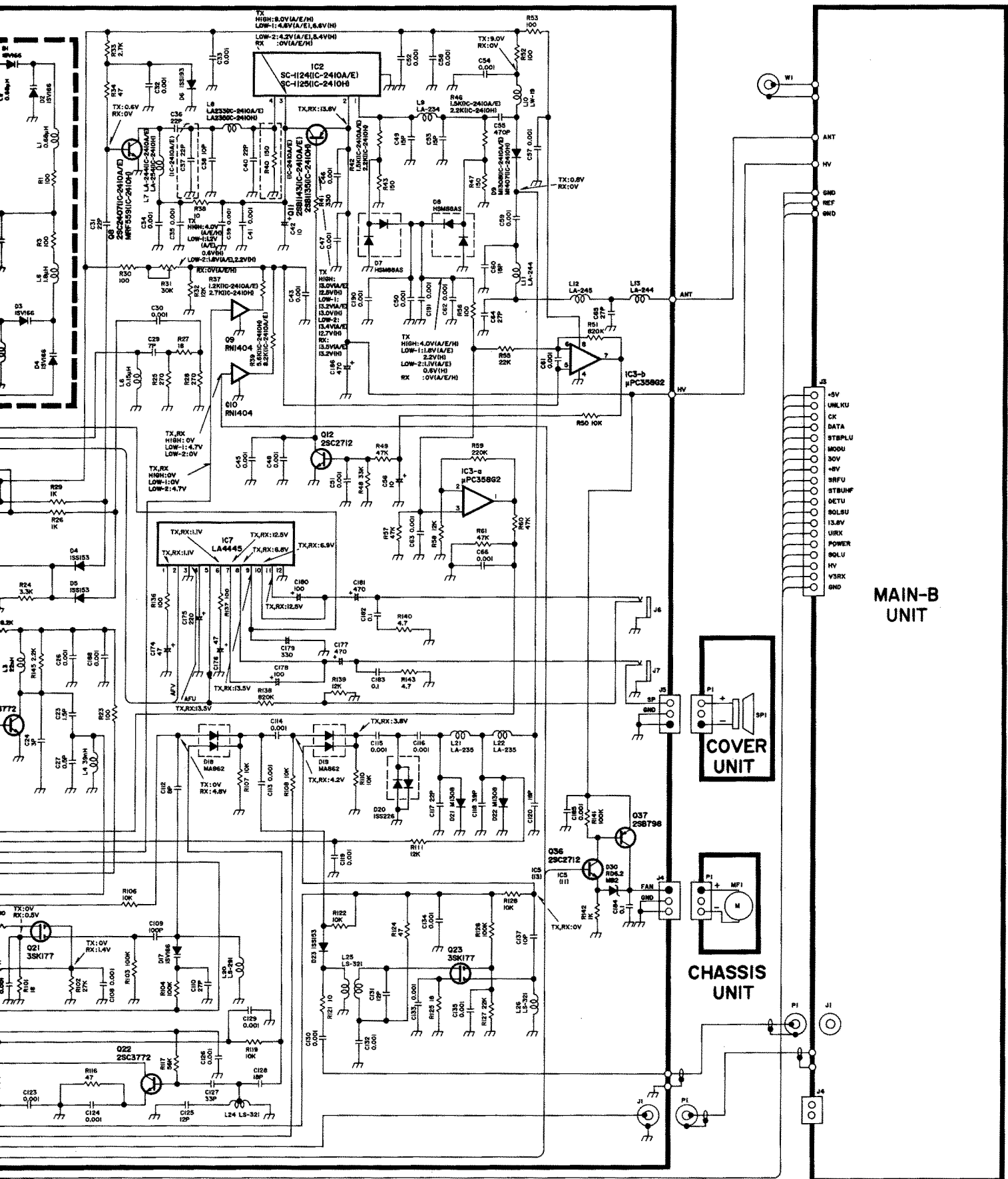


AF UNIT

MAIN-A UNIT



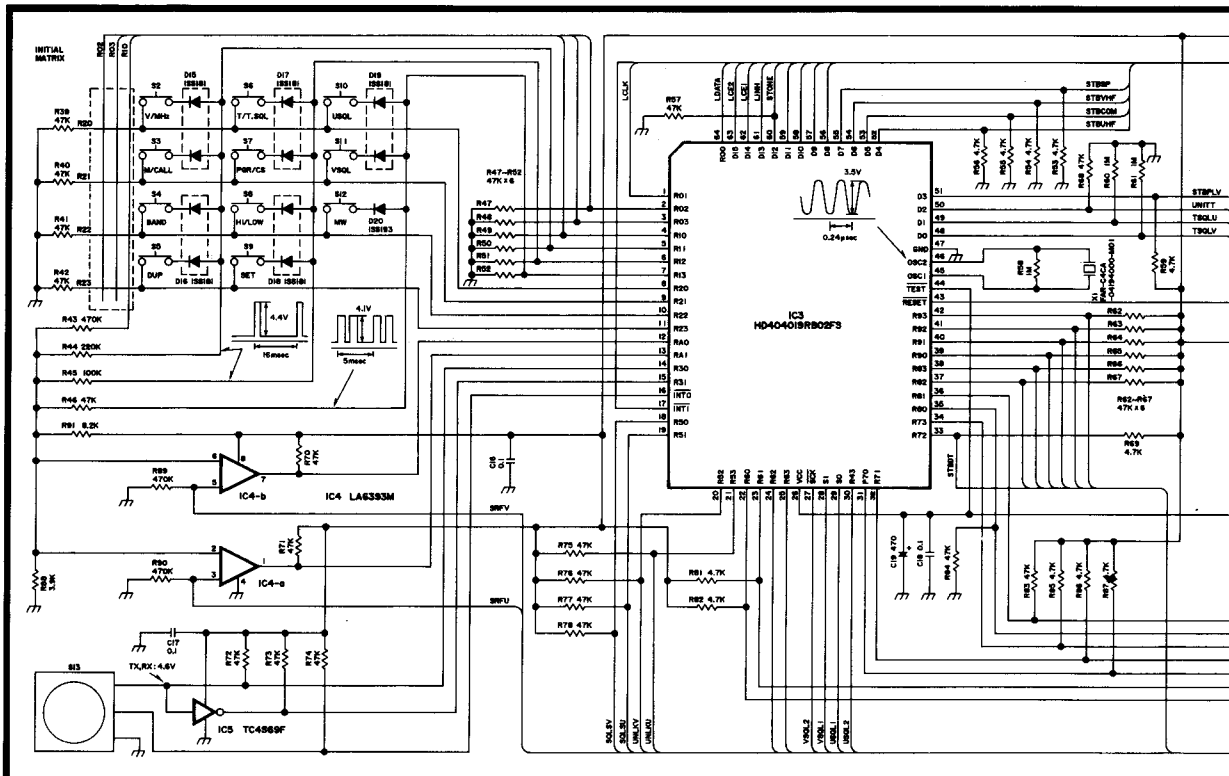
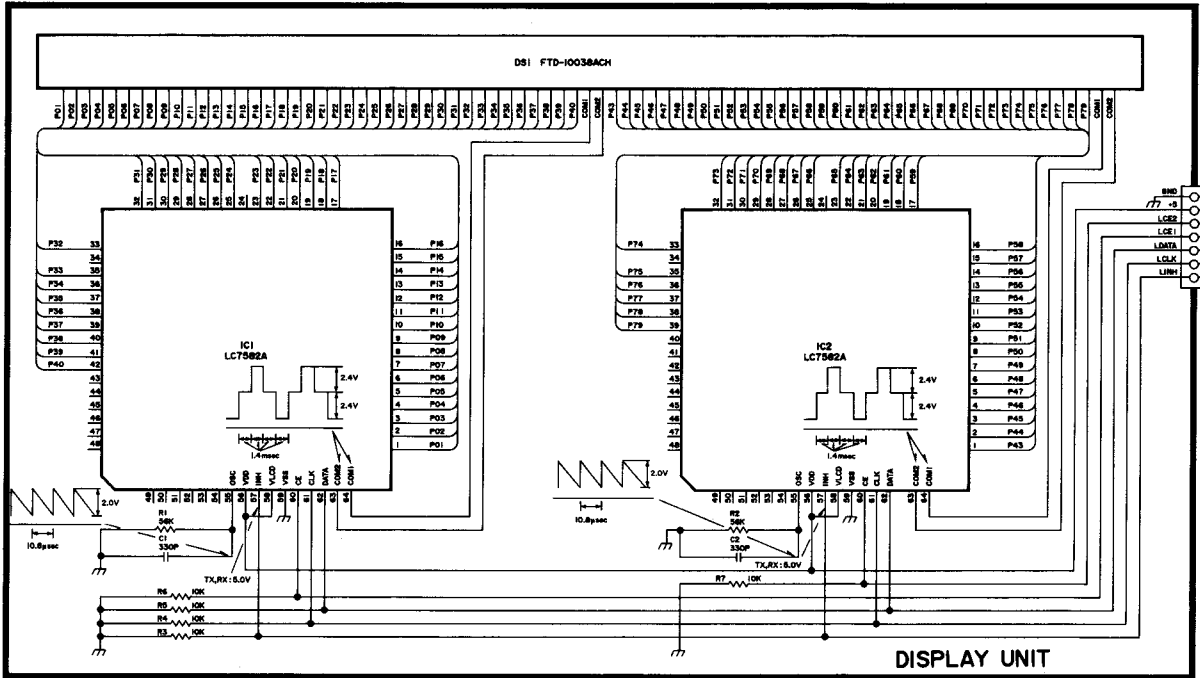
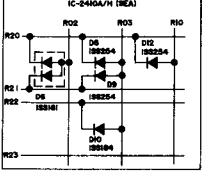
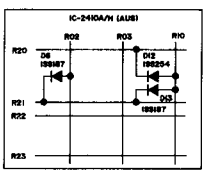
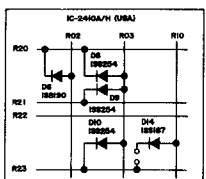
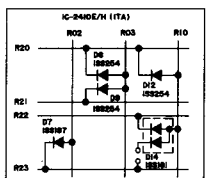
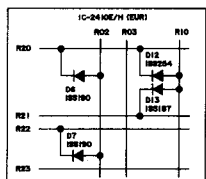


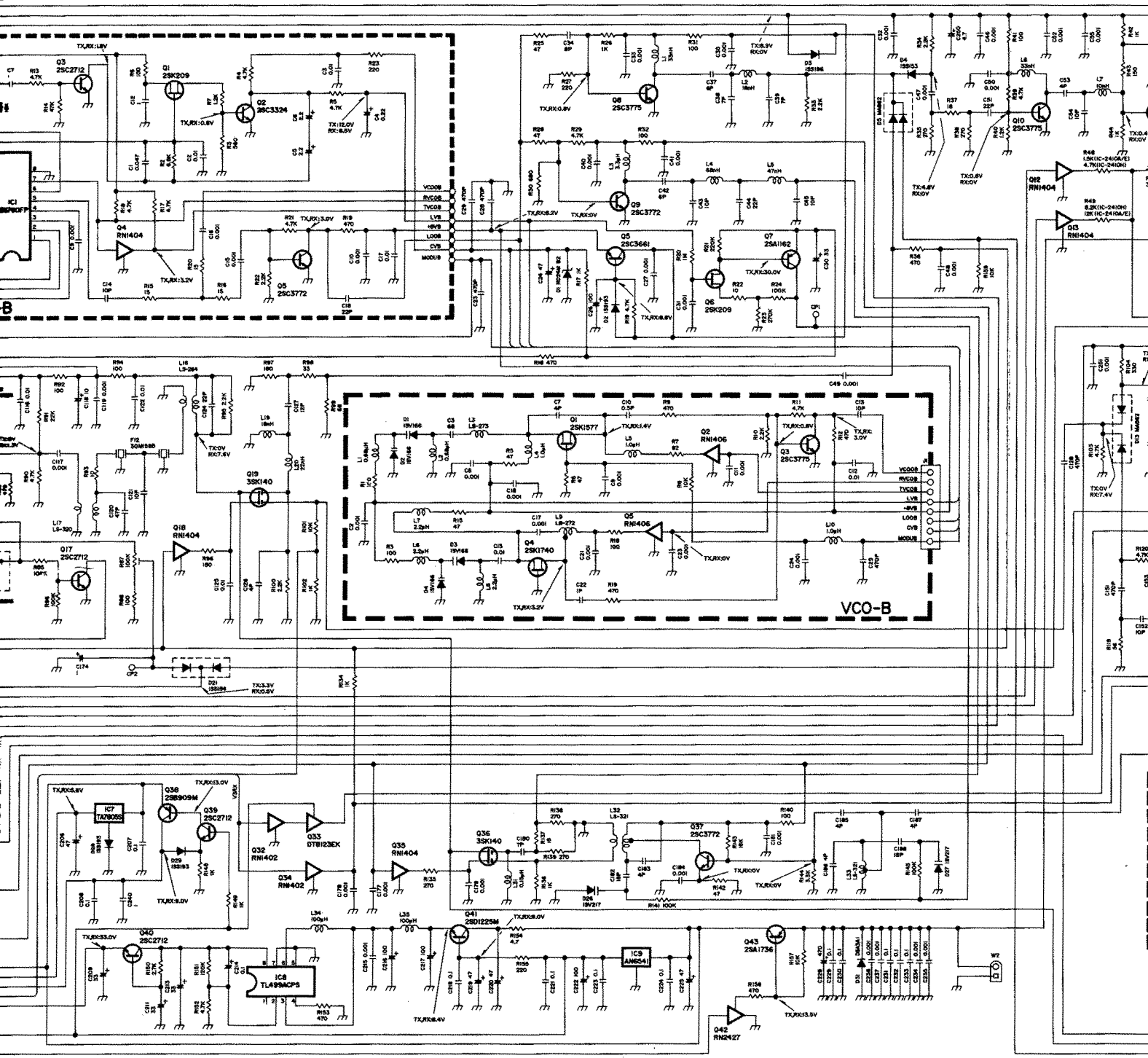


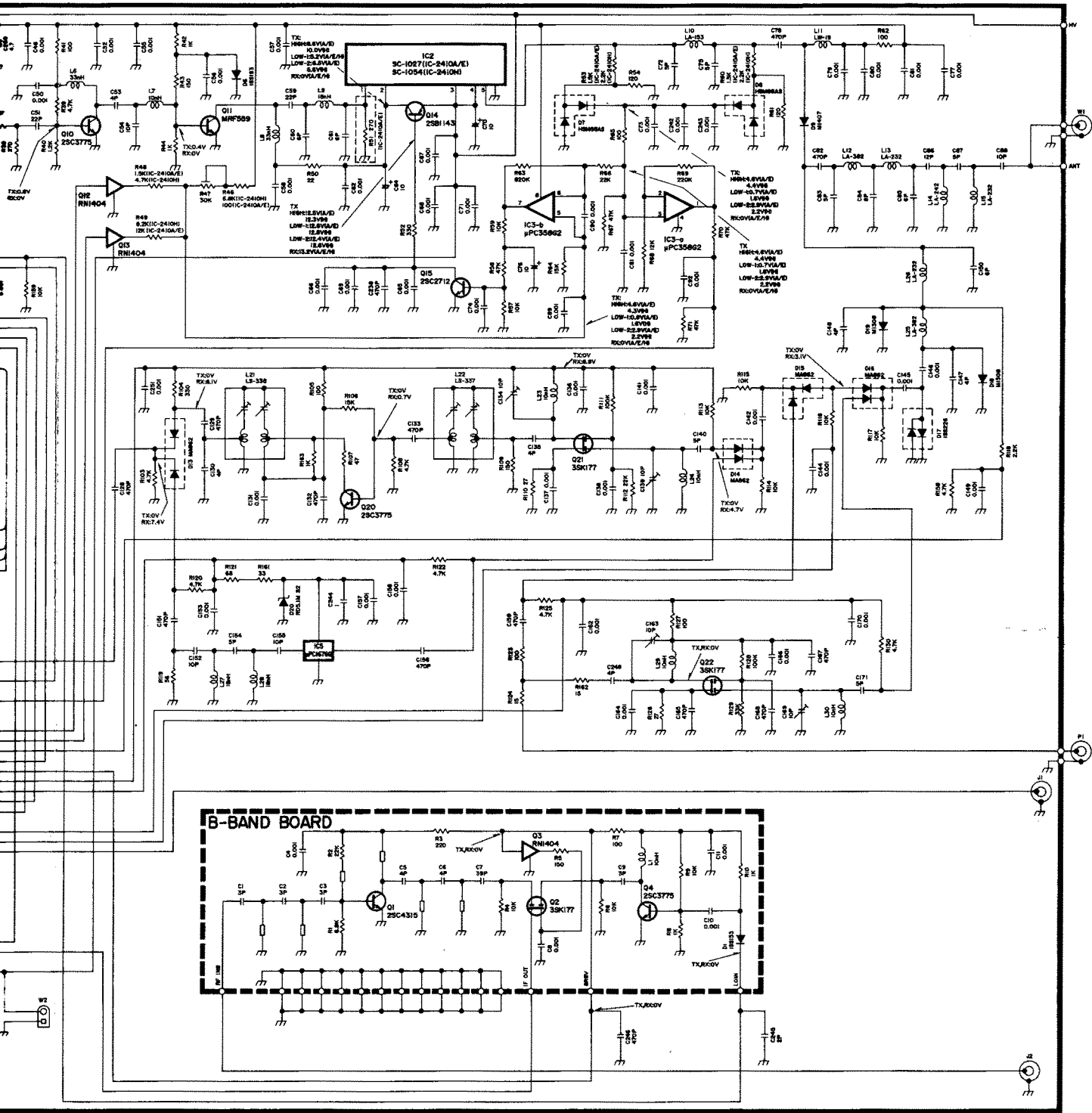
MAIN-B UNIT

COVER UNIT

CHASSIS UNIT







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