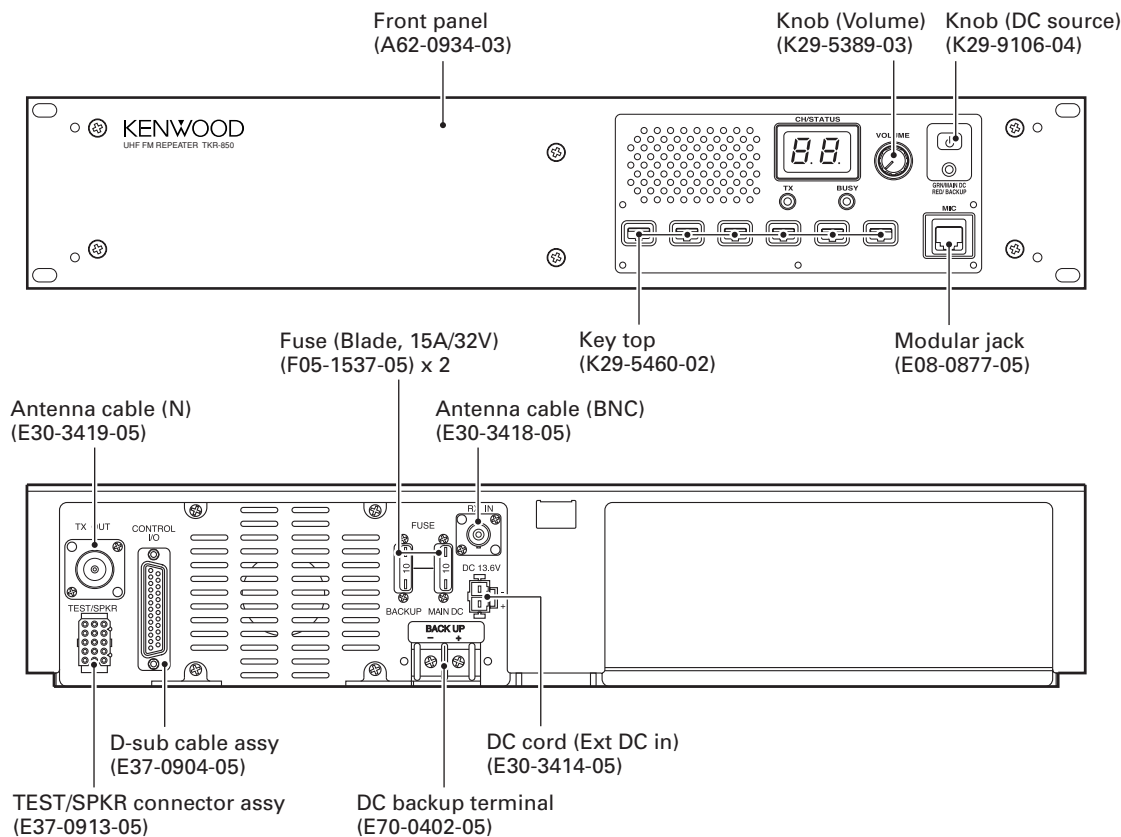


This service manual applies to products 60700001 or subsequent serial number.
In terms of the products with the serial numbers earlier than 60700001, refer to the TKR-850 service manual as per part number B51-8557-20 and B51-8676-00.



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TKR-850

GENERAL / SYSTEM SET-UP

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, and chassis. If the part number is not known, include the chassis or kit number of which it is a part and a sufficient description of the required component, for proper identification.

PERSONAL SAFETY

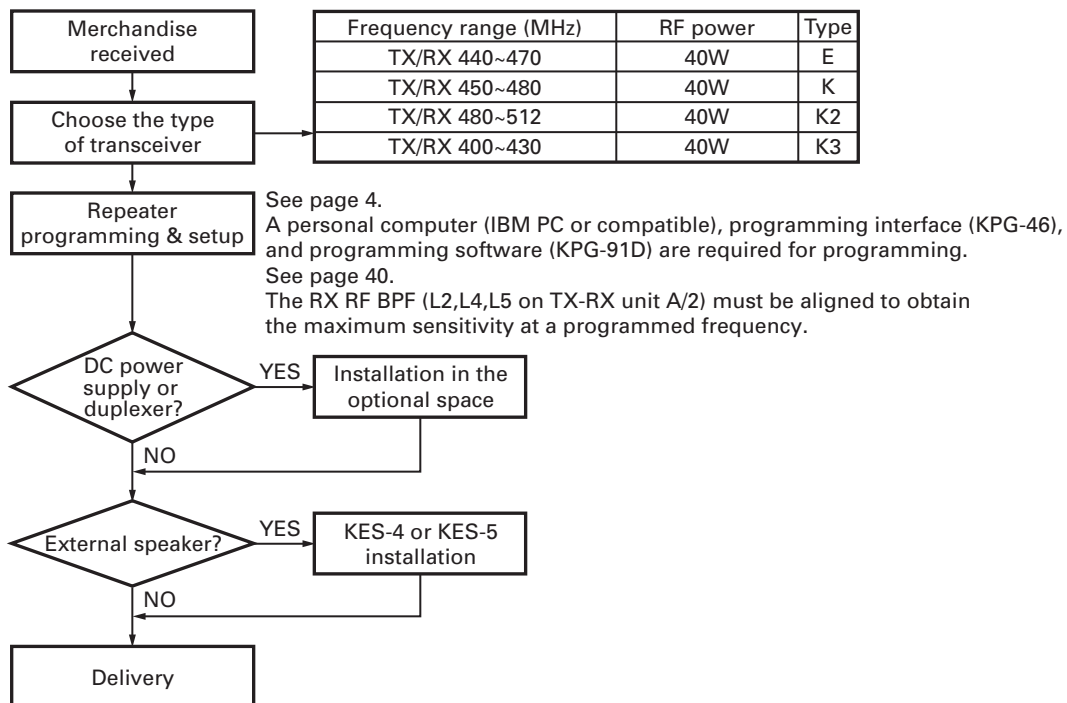
The following precautions are recommended for personal safety :

- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- This equipment should be serviced by only qualified technicians.

SERVICE

This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

SYSTEM SET-UP



OPERATING FEATURES

1. Two 7-segment LED displays

- Channel display (1~16) : While operating normally in user mode.

1 16

- When the displayed channel is contained in scan sequence, the right side decimal point is displayed.

2.

- When the displayed channel is the priority channel, the left side decimal point is displayed.

.3.

- "PC" is displayed while in PC mode.

PC

- "PG" is displayed while in firmware programming mode.
2 decimal points displayed = 115,200bps
1 decimal point displayed = 57,600bps
No decimal = 38,400bps

PG. PG.

- "E1" is displayed when FPU data is not written.

E1

- "E2" is displayed when the channel data is not written.

E2

- "E3" is displayed when PLL is unlocked.
Receiver PLL unlocked = BUSY LED blinks.
Transmitter PLL unlocked = TX LED blinks.

E3

- "E4" is displayed when PTT is attempted on a channel number that has no frequency data programmed.

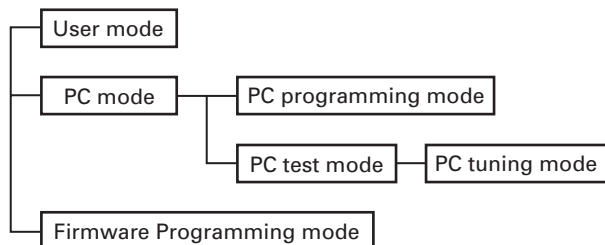
E4

- "SC" is displayed while in scan mode.

SC

REALIGNMENT

1. Modes



| Mode | Function |
|---------------------------|--|
| User mode | Use this mode for normal operation. |
| PC mode | Use this mode to make various settings by means of the FPU through the RS-232C port. |
| PC programming mode | Use to read and write frequency data and other features to and from the repeater. |
| PC test mode | Use to check the repeater using the PC. This feature is included in the FPU. |
| Firmware programming mode | Use when changing the firmware program of the flash memory. |

2. How to Enter Each Mode

| Mode | Operation |
|---------------------------|------------------------------------|
| User mode | Power on. |
| PC mode | Received commands from PC. |
| Firmware Programming mode | [PF1] key + Power on (one second). |

3. PC Mode

3-1. Preface

The TKR-850 repeater is programmed by using a personal computer, programming interface and KPG-91D (ver 2.0 or later) software.

3-2. Connection Procedure

1. Connect the TKR-850 to the personal computer with the interface cable.
2. When power is applied, the user mode is entered immediately. When the PC sends a command, the repeater enters the PC mode and displays "PC" on the 7-segment LED. When data is being transmitted to the PC from the repeater, the TX LED flashes. The BUSY LED flashes when data from the PC is being received by the repeater.

Note :

- The data stored in the personal computer must match the model type, when it is written into the flash memory.
- Change the TKR-850 to PC mode, then attach the interface cable.

3-3. KPG-46 Description (PC Programming Interface Cable : Option)

The KPG-46 is required to interface the TKR-850 to the computer. It has a circuit in its D-sub connector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-46 connects the microphone connector of the TKR-850 to the computer's RS-232C serial port.

3-4. Programming Software Description

The KPG-91D is the programming software for TKR-850 supplied on a CD-ROM. This software runs under Windows 98, ME, Windows 2000 or XP on an IBM-PC or compatible machine.

The data can be input to or read from TKR-850 and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

3-5. Programming With IBM PC

Data can be programmed into the flash memory in RS-232C format via the microphone connector.

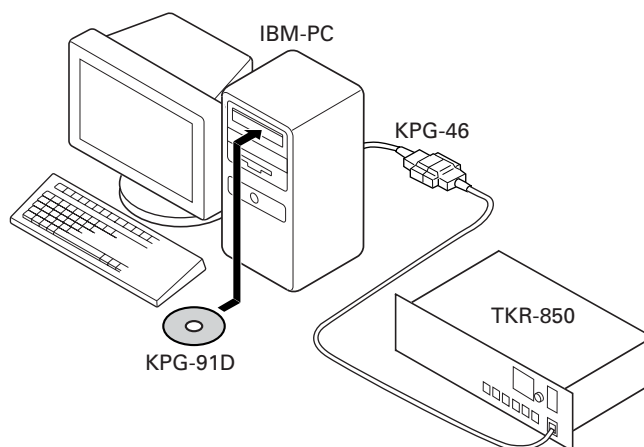


Fig. 1

4. Firmware Programming Mode

4-1. Preface

The TKR-850 uses flash memory to allow it to be easily upgraded when new features are released in the future.

4-2. Connection Procedure

Connect the TKR-850 to the personal computer (IBM PC or compatible) with the interface cable (KPG-46). (Connection is the same as in the PC mode.)

Notes :

You can only program firmware from the 8-pin microphone connector on the front panel. Using the 25-pin logic interface on the rear panel will not work.

REALIGNMENT / INSTALLATION

4-3. Programming

1. Start up the programming software (Fpro. exe).
2. Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
3. Set the firmware to be updated by file name item.
4. Turn the TKR-850 power on with the [PF1] key held down. Hold the key down for one second until the 7-segment display changes to "P.G.". When "P.G." appears, release your finger from the key.
5. Check the connection between the TKR-850 and the personal computer, and make sure that the TKR-850 is in the program mode.
6. Press write button in the window. A window opens on the display to indicate progress of writing.
7. If writing ends successfully, the TX LED on the TKR-850 lights.
8. If you want to continue programming other TKR-850s, repeat steps 3 to 6.

Notes :

This mode cannot be entered if the firmware program mode is set to disable in the programming software (KPG-91D).

4-4. Function

If you press the [PF1] key (front panel), both decimal points on the 7-segment display will disappear. The writing speed is 38400 bps (low-speed mode). If you press the [PF1] key again, the right hand decimal points will light. The writing speed is 57600 bps (middle-speed mode).

Note :

Normally, write in the high-speed mode (115200 bps).

INSTALLATION

1. External Power Supply Connection (Rear Connectors)

This unit has two external power supply connectors : Main DC and Backup.

If an external DC power supply is connected to the main DC connector and a backup battery is connected to the Backup connector at the same time, the DC power supply switches to the battery automatically if power failure occurs. Therefore, the operation of the repeater can be continued.

If the battery is used, but both the battery and power supply need not be connected (if an external switch is used or if only a solar battery is used), connect it to the Backup connector, not the Main DC connector. Current consumption can be reduced by approx. 120mA because the relay is not used.

If it is installed when the temperature at the repeater site is below freezing, check whether the switch (relay) works properly after installation.

2. Voice Scrambler

It operates only during base operation. The voice is not scrambled when it is repeated.

2-1. Modification

- 1) Remove R742 and R653 on the TX-RX unit (B/2) : control section.

2-2. Connection

- 1) The functions of pins of CN601 on the TX-RX unit (B/2) : control section are shown in the figure.
- 2) Join the CN601 connector to the voice scrambler board via the E37-0808-05 connector cable.

When the operation is checked in PC test mode after the modification, and the maximum deviation is adjusted, the voice from the local microphone is not modulated. In this case, remove the CN601 12-pin (PTO) cable and connect it to the land of the display unit (X54-333) from the voice scrambler. The voice from the local microphone can be modulated in PC test mode.

INSTALLATION

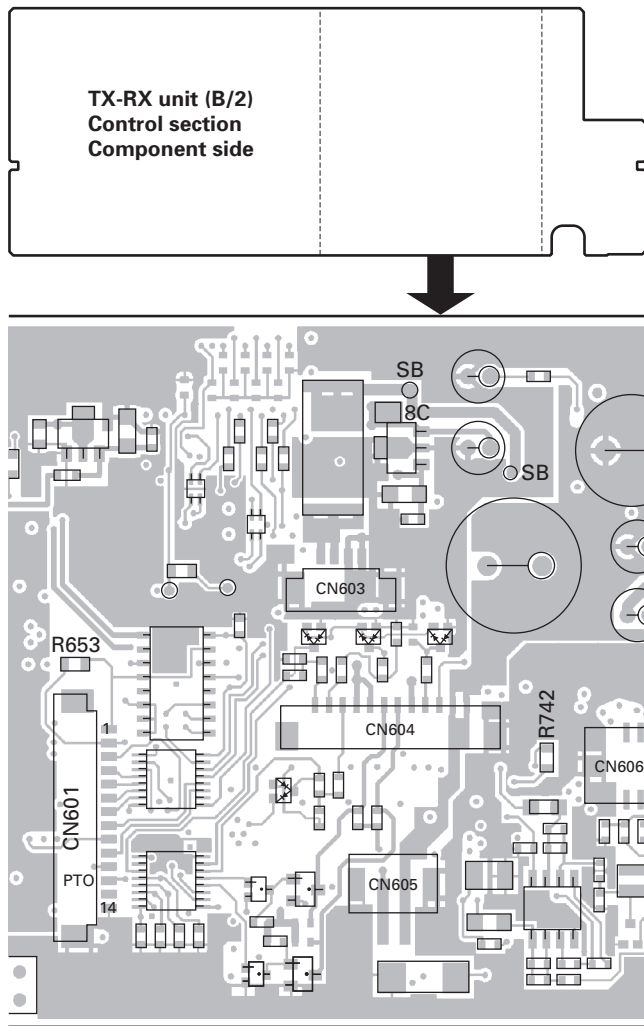


Fig. 1

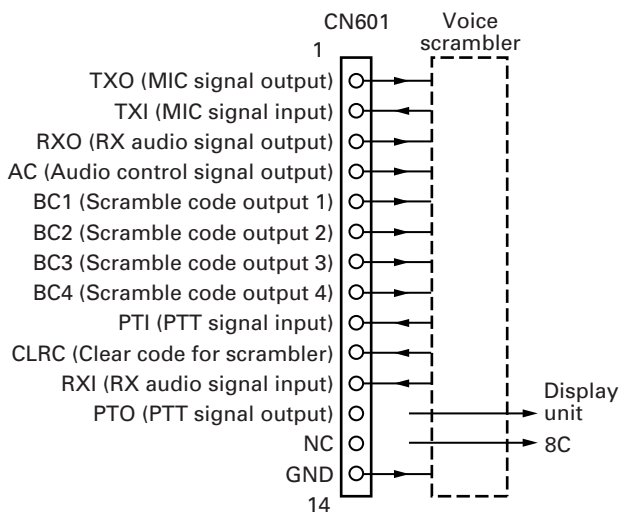


Fig. 2

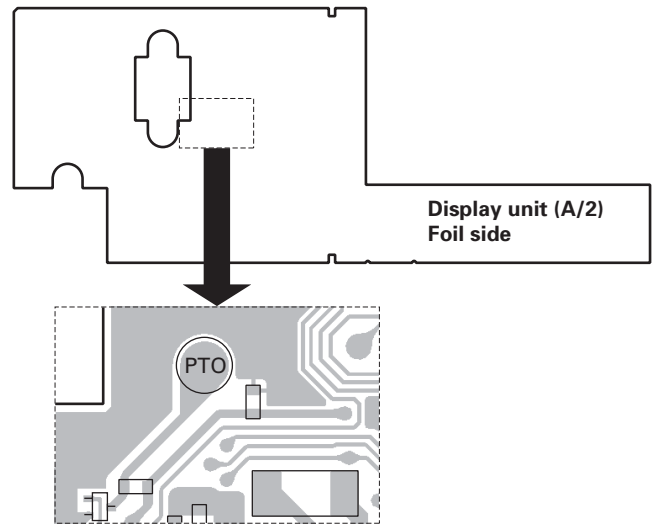


Fig. 3

3. External Speaker (KES-4 or KES-5)

The TKR-850 has a internal built-in speaker (5W/8Ω), and the external speaker output from the TEST/SPKR connector (15-pin) on the rear of the radio is 4W/4Ω. Use external speaker KES-4 or KES-5.

3-1. Connection for the KES-4 or KES-5 With the TKR-850

■ When taking the AF output from the TEST/SPKR connector (15-pin) on the rear of the radio

The following tools are required for changing the connector.

• Extracting tool

The following extracting tool is recommended :
Molex Inc. Order No. : J5800-002 (W05-0878-00)

1. Remove the connector with jumper from the external speaker connector on the rear panel of the radio. (Fig. 4-1)
Note : Save the jumper, which is required when the radio is used without the external speaker.
2. Remove the terminals with the jumper from the connector housing holes number 9 and 12 using the extracting tool.

Removing the jumper lead (Fig. 4-2)

- 1) Insert the extracting tool (J5800-002) into the connector while pushing the jumper lead in the direction of (a).
- 2) Push the extracting tool into collapse the barbs of the crimp terminal.
- 3) Pull out the lead while continuing to push the extracting tool in the direction (b).
3. Reinsert the terminal with the black and white stripe lead into hole number 12, and the terminal with the black lead into hole number 6. (Fig. 4-3)
4. Attach the connector to the external speaker connector on the radio.

INSTALLATION

Note :

Relationship between TEST/SPKR connector (15-pin) connection and speaker output.

When pins 9 and 12 are shorted : Built-in internal speaker is used.

When pins 9 and 12 are open and output is from pins 6 and 12 : KES-4 or KES-5 is used.

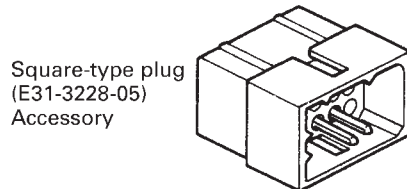


Fig. 4-1

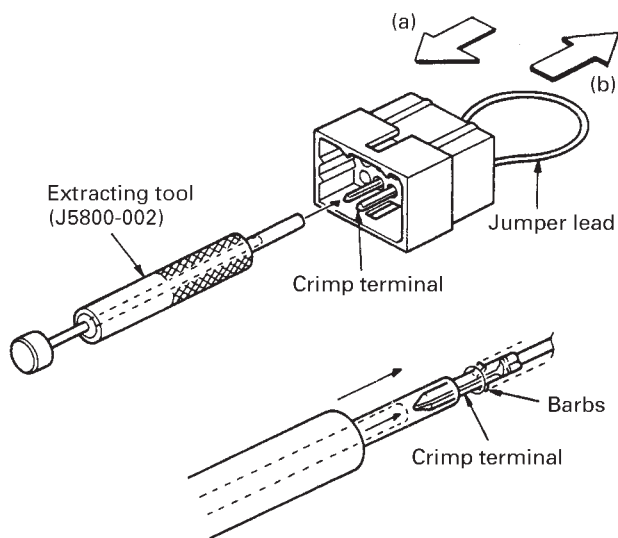


Fig. 4-2

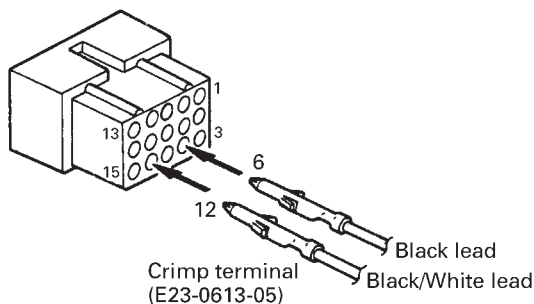


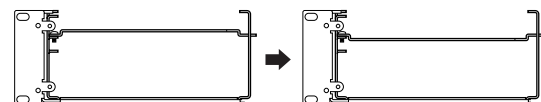
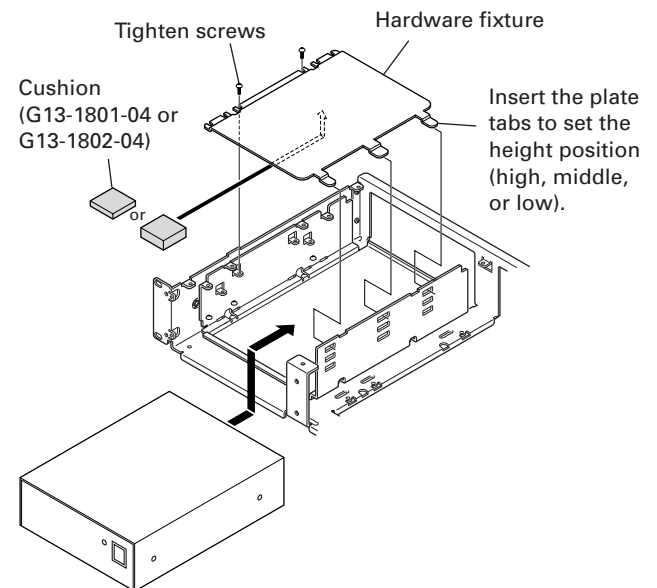
Fig. 4-3

4. Accessory Cabinet

You can install optional accessories, such as a DC power supply or duplexers in the accessory cabinet.

1. Place the optional accessory in the cabinet as shown below.
2. If necessary, attach cushions (G13-1801-04 and/or G13-1802-04) to the top plate (J21-8402-04) in order to adjust the space between the cabinet and the top plate. Then, insert the 3 tabs of the plate into the slots in the side of the cabinet. High, middle, or low positions are available. To affix the plate, inset and tighten 2 screws on the other side of the plate.

You can also flip the top plate upside-down to adjust a height of the cabinet space.



The top plate can be inverted to adjust the height of the cabinet space.

Fig. 5

TKR-850

INSTALLATION / MODIFICATION

5. Key Cover

To avoid accidentally pressing the keys, you can install the key cover.

1. Install and fix the key protector using the 5 supplied screws (N35-3006-45).

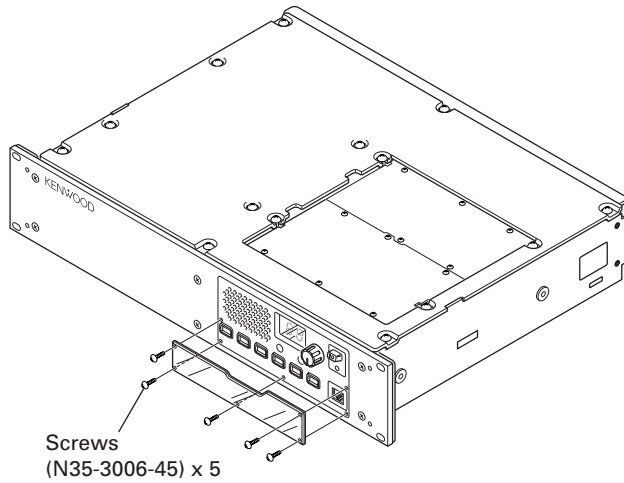


Fig. 6

6. Desktop Repeater

When you use the repeater on the desktop, attach the 4 spacers to the base of the repeater as shown in figure. With these spacers attached, the front panel will not touch the desk surface.

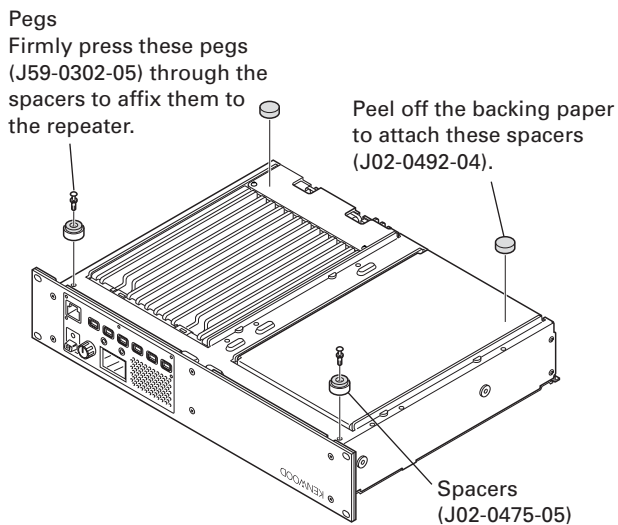


Fig. 7

7. Installing Name Plates

Punch out the name plate card. Then insert the plates onto the relative function keys.

You can reconfigure the name plates at any time.

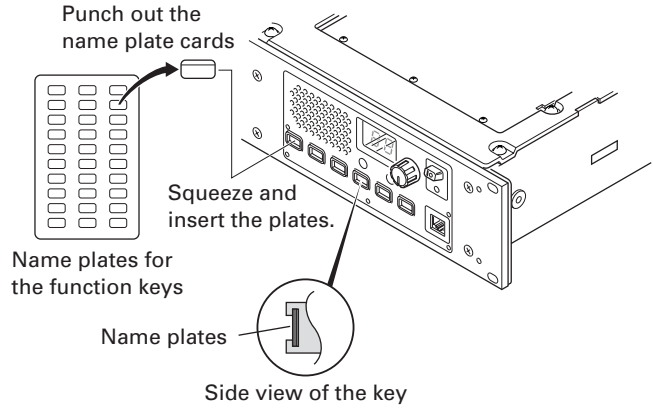


Fig. 8

MODIFICATION

1. DC Source Switch

To prevent the power supply from turning off due to misoperation of the DC source switch on the front panel or accidents (tampering) after installation, the main unit can be kept on regardless of the on/off of the DC source switch on the front panel.

Short the PSW land near K1 relay by soldering.

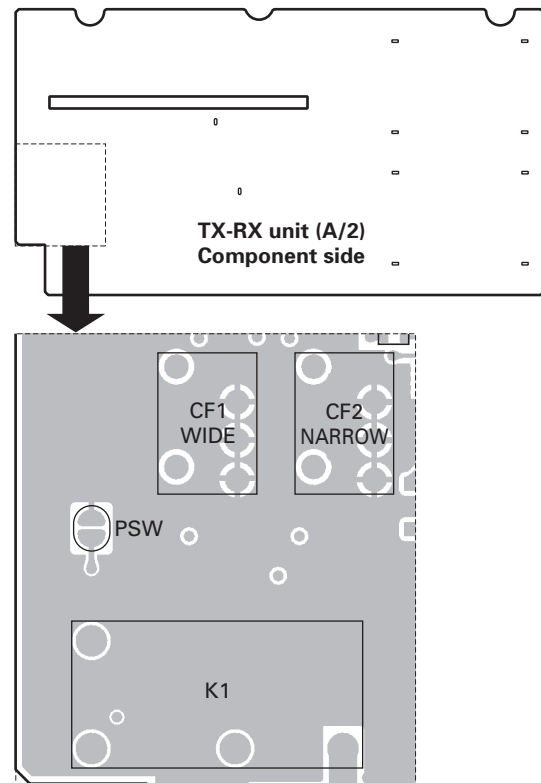


Fig. 1

MODIFICATION

2. Trickle Charge for Backup Battery

If the external DC power supply is connected to the Main DC connector and a backup battery (12V rechargeable type) is connected to the Backup connector at the same time, the battery can be trickle-charged from the external DC power supply with a maximum current of 0.5A.

Short the CHARGE land near R61.

Notes :

1. Make this modification after removing the DC power supply and battery for safety.
2. When the DC power supply is connected after the modification, DC voltage is output to the Backup connector. Be careful during setup.
3. When the backup battery is used for a long time, remove the battery from the repeater and recharge it because the trickle charge is not sufficient for recharging a completely discharged battery.

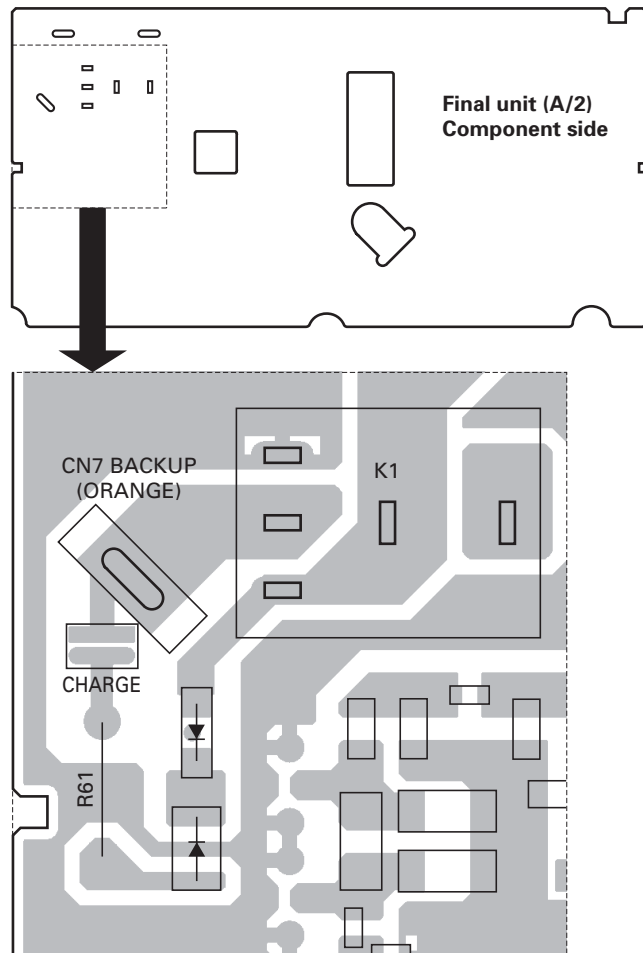


Fig. 2

3. Single Antenna

The TKR-850 can be used as a base station by sharing an external antenna connector for both transmitting and receiving data.

3-1. Modification

1. Change the installation position of C81 and C160 of the final unit using a soldering iron.

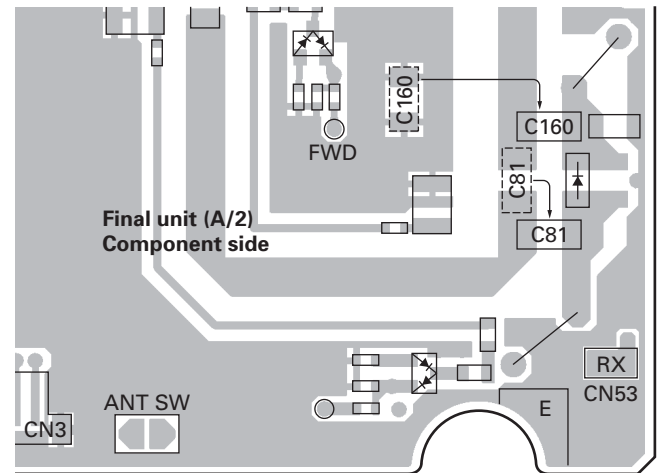


Fig. 3

2. Short-circuit the printed pattern of ANT SW near the CN3 connector by soldering.
3. Disconnect the pin connector from CN18 of the TX-RX unit. Remove the two screws used for securing the BNC connector on the back panel of the unit. Detach the antenna cable assy. (E30-3418-05)
4. Cut off the coaxial cable of the removed antenna cable assy on the BNC connector side. Strip off the insulation of the cut-off coaxial cable to prepare it to be soldered.

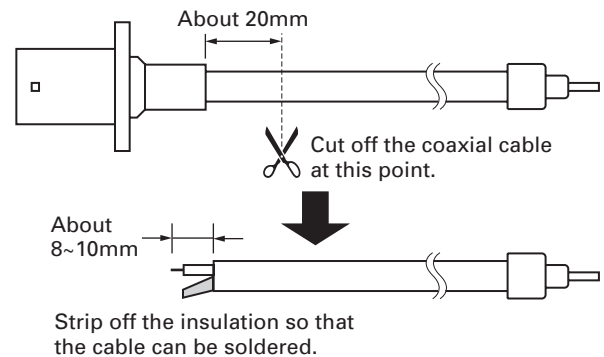


Fig. 4

TKR-850

MODIFICATION / DISASSEMBLY FOR REPAIR

3-2. Connection

1. Solder the prepared coaxial cable to the final unit.
2. Connect the pin connector of the coaxial cable to CN18 of the TX-RX unit.

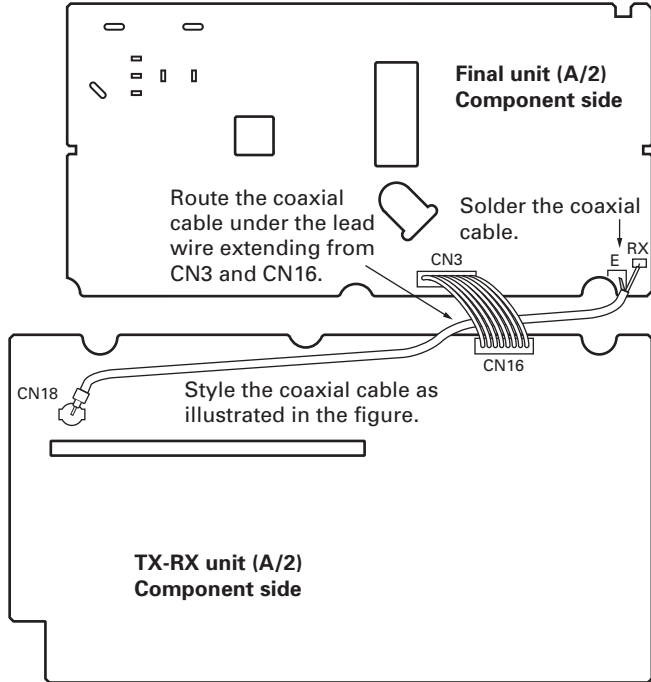


Fig. 5

3-3. Setting the FPU

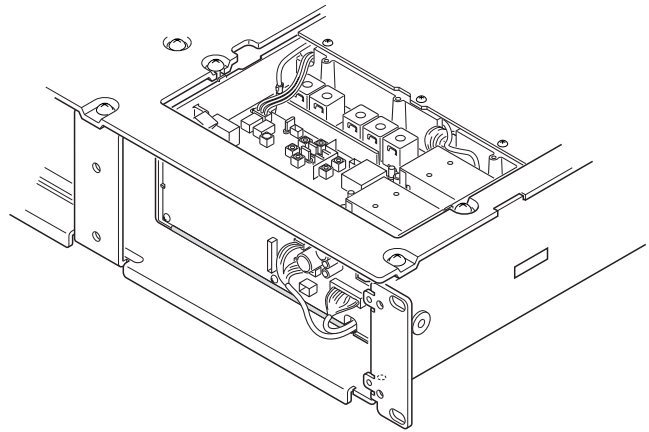
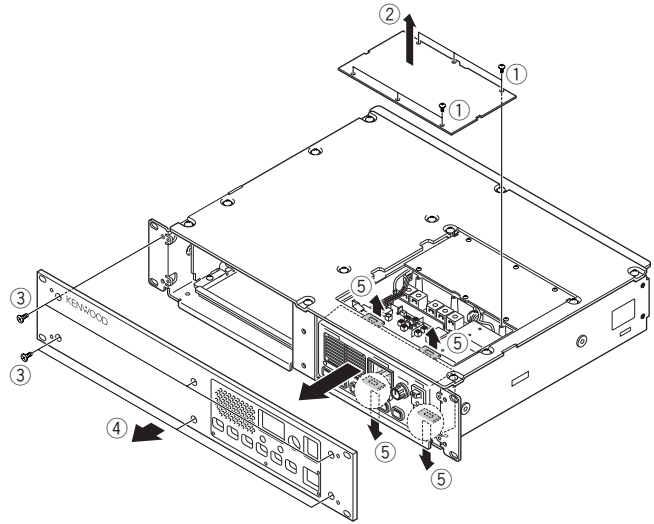
Set the channel to be used as "Simplex" using the FPU.

DISASSEMBLY FOR REPAIR

1. How to Remove the Panel Assy (ABS)

Note : You can remove the panel assembly (ABS) without removing the top panel (A62-0840-03).

1. To remove panel (TX-RX, ②), loose 6 screws (①).
2. To remove panel assembly (Front, ④), loose 6 screws (③).
3. The panel assembly (ABS) is security fastened by 4 tabs (⑤) on top and bottom. You can remove the panel assembly by pulling to front while you are pulling up the tabs.



CIRCUIT DESCRIPTION

1. Outline

The TKR-850 is a UHF/FM repeater designed to operate in the frequency range of 400 to 512MHz.

The unit consists of receiver, transmitter, phase-locked loop (PLL) frequency synthesizer, and control circuits.

2. Receiver Circuit

The receiver is double conversion super-heterodyne, designed to operate in the frequency range of 440 to 470MHz (E), 450 to 480MHz (K), 480 to 512MHz (K2) or 400 to 430 MHz (K3).

The receiver circuit located in TX-RX unit (X57-696 A/2) consists of the following : 2-1 front-end circuit, 2-2 first mixer, 2-3 IF amplifier circuit, 2-4 audio amplifier circuit, and 2-5 squelch circuit.

2-1. Front-end Circuit

The front-end circuit consists of BPF L2, RF amplifier Q1, and BPF L4/L5. The helical BPF covers frequency ranges 440 to 470MHz (E), 450 to 480MHz (K), 480 to 512MHz (K2) or 400 to 430MHz (K3), with a passband of 5.0MHz.

The BPF L4/L5 attenuates the unwanted signals, and sends only the necessary signal to the first mixer DBM A1.

2-2. First Mixer

The signal from the BPF is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer DBM (A1) to become a 44.85MHz first intermediate frequency (IF) signal. The first IF signal is fed through two monolithic crystal filters (XF2; Wide, XF1; Narrow) to further remove spurious signals.

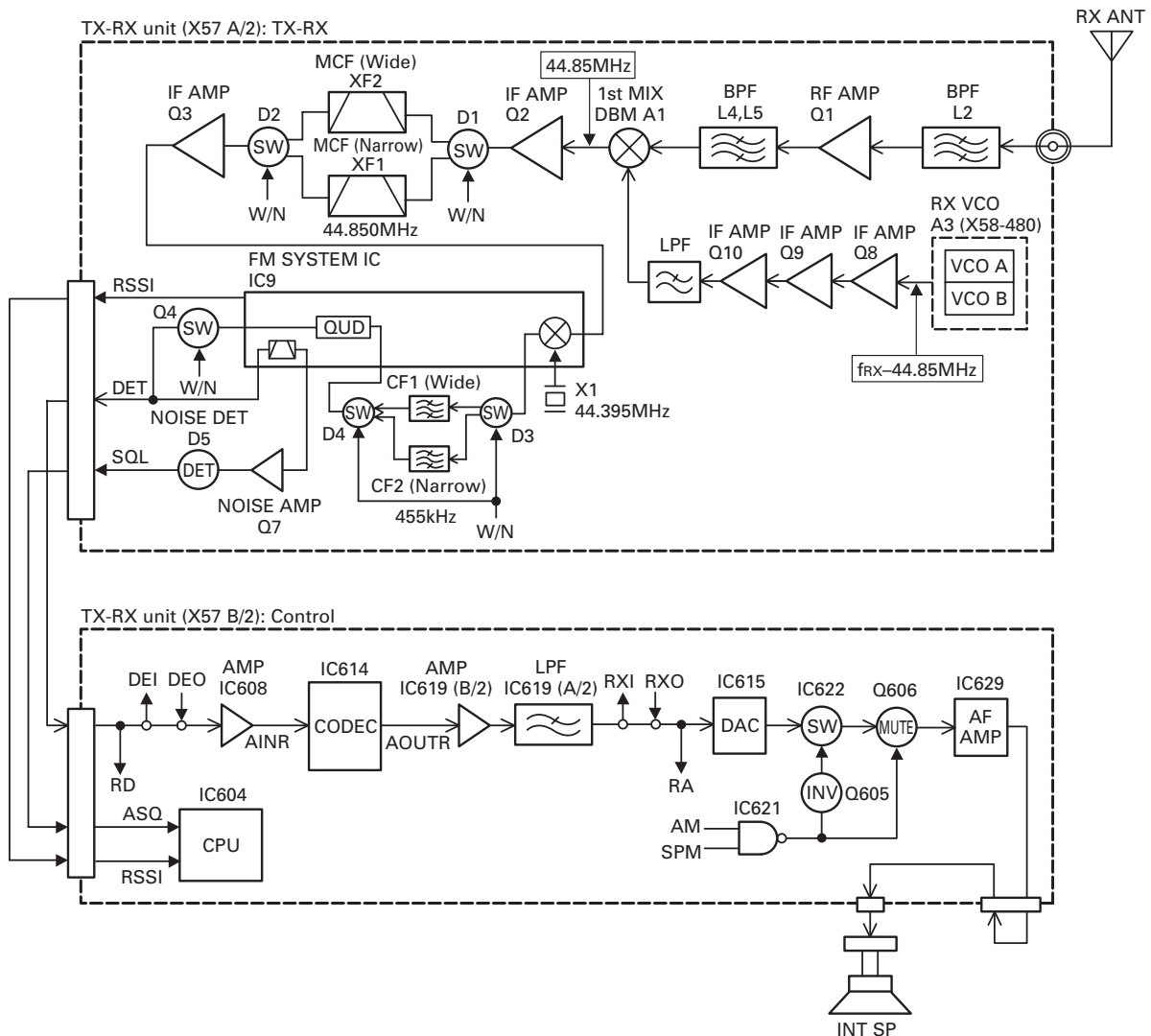


Fig. 1 Receiver circuit

CIRCUIT DESCRIPTION

2-3. IF Amplifier

The first IF signal is amplified by Q2 and Q3, and then enters IC9 (FM system IC). The signal is heterodyned again with a second local oscillator signal (44.395MHz) with in IC9 to become a 455kHz second IF signal. The second IF signal is fed through a 455kHz ceramic filter, CF1 (Wide), CF2 (Narrow) to further eliminate unwanted signal, and the quadrature detection circuit FM-detects the signal to produce a base-band signal and output it from pin 11.

2-4. Audio Amplifier

The audio amplifier circuit is located in control section of TX-RX unit (X57-696 B/2). The recovered audio signal obtained from IC9 is amplified by IC608, input to the AINR terminal of CODEC IC (IC614), and audio processed by DSP (IC618).

The processed audio signal from AOUTR terminal of IC614 is amplified by IC619 (B/2) to a sufficient level, anti-aliasing filtered by IC619 (A/2). The audio signal goes to an electronic volume (IC615) V3/V4, to the input of multiplexer IC (IC622), and is amplified to drive a loudspeaker by an audio power amplifier (IC629). The 4W audio output can be provided to external 4 ohms speaker through the 15-pin test connector "SPO, SPG" on the rear panel.

2-5. Squelch Circuit

The output signal from IC9 enters FM IC again, then passed through a band-pass filter.

The noise component output from IC9 is amplified by Q7 and rectified by D5 to produce a DC Voltage corresponding to the noise level. The DC voltage is sent to the analog port of the CPU (IC604).

IC9 outputs a DC voltage (RSSI) corresponding to the input of the IF amplifier.

3. Transmitter Circuit

The transmitter circuit consists of the following circuits : 3-1 microphone circuit, 3-2 modulation level adjustment circuit, 3-3 driver and final power amplifier circuit, 3-4 automatic power control circuit, 3-5 RF power down detect, and 3-6 fan action control circuit.

3-1. Microphone Circuit

The signal from the microphone is passed through AGC circuit located in display unit (X54-333), so that it does not saturate. This circuit consists of IC501, D501, D502, Q501, and Q502. The AGC is operated by controlling the + and - side levels of amplitude using the current obtained by positive and negative detection of the amplified audio signal. The audio signal goes to control section of TX-RX unit (X57-696 B/2) from display unit (X54-333).

The transmit audio signal goes to the input of the multiplexer IC (IC605) for microphone muting. The audio signal is amplified by IC610, input to the AINL terminal of CODEC IC (IC614), and audio processed by DSP (IC618). The processed audio signal from the AOUTL terminal of IC614 is amplified by IC616 (A/2) to a sufficient level, anti-aliasing filtered by IC616 (B/2), and amplified by the summing amplifier IC611 (A/2).

3-2. Modulation Level Adjustment Circuit

The output of the summing amplifier IC611 (A/2) is passed to an electronic volume (IC615) for maximum deviation adjustment before being applied to a varactor diode in the voltage controlled oscillator (VCO) A2 located in TX-RX unit (X57-696 A/2).

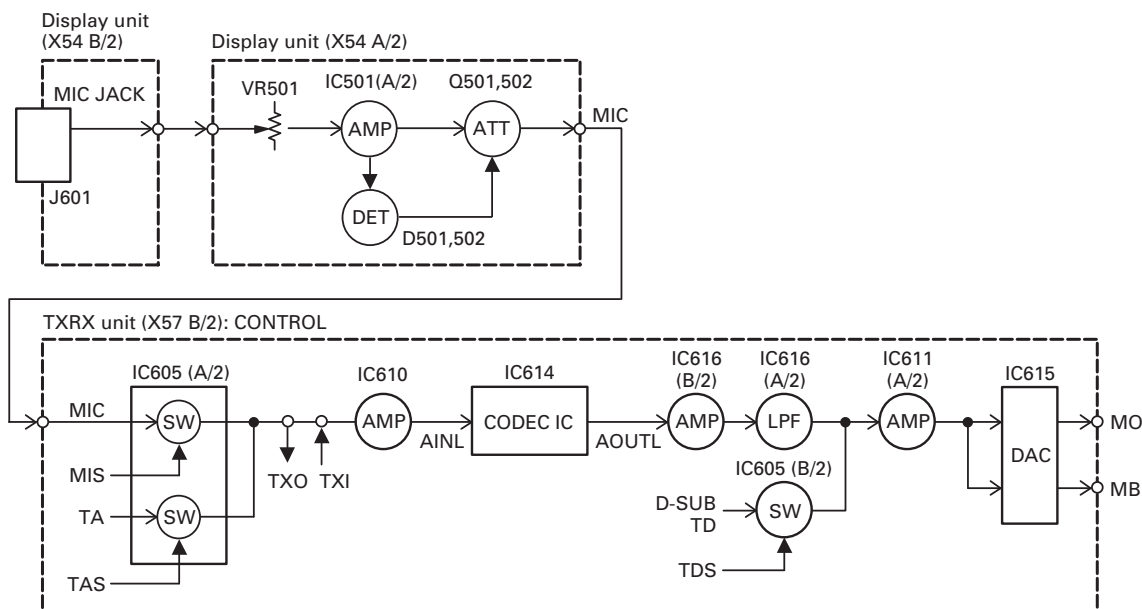


Fig. 2 Microphone circuit

CIRCUIT DESCRIPTION

3-3. Driver and Final Power Amplifier Circuit

The transmit signal is generated by the TX VCO (A2), amplified by Q11, and sent to final unit (X45-374). This amplified signal is amplified by Q1, Q2, Q3 and Q4, and is passed to the FINAL stage. The RF power amplifier consists of MOS FET.

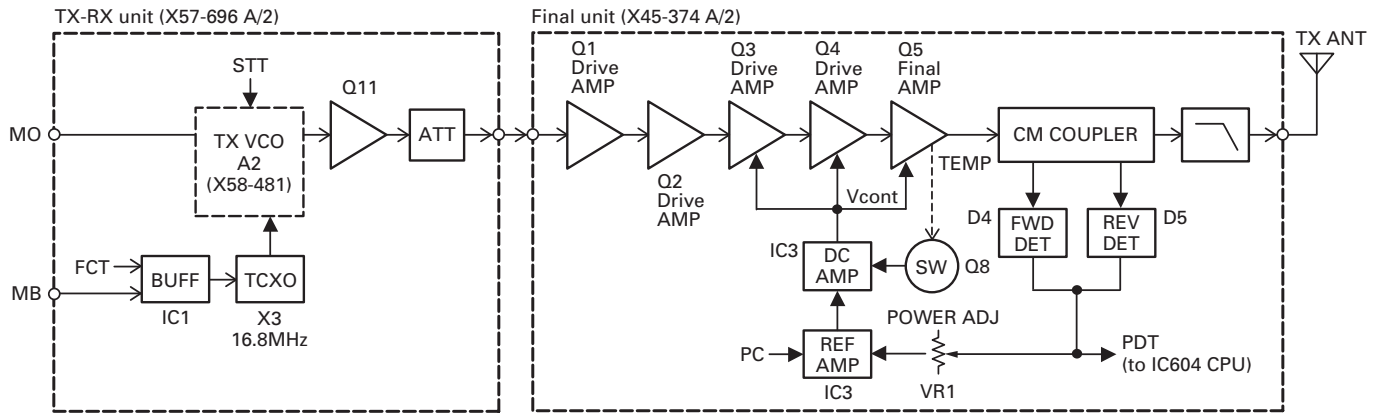


Fig. 3 Driver and final power amplifier circuit

3-4. Automatic Power Control Circuit and Transmitter

The automatic power control (APC) circuit stabilizes the transmitter output power at a pre-determined level, and consists of forward/reverse power detector circuits, and switching transistor Q8. The forward/reverse power detector circuits detects forward RF power and reverse RF power to DC voltage, and consists of a CM coupling type detection circuit formed by a strip line, RF detector D4/D5, and DC amplifier IC3 (A/2).

The voltage comparator (IC3 B/2) compares the above detected voltage with a reference voltage, set using the micro-processor and IC6 located in the TX-RX unit. An APC voltage proportional to the difference between the sensed voltage and the reference voltage appears at the output of IC3. This output voltage controls the gate voltage for the drive amplifiers Q3 and Q4 and final amplifier Q5, which keeps the transmitter output power constant.

3-5. RF Power Down Detect

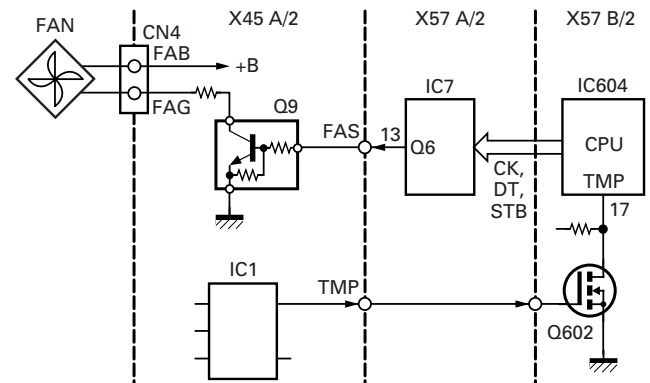
When the transmitter output power has dropped to or below the preset values (High Power : about 16W, Low Power : about 10W) in "RF Power Down Detect" adjustment, IC604 (CPU : X57-696) detects the drop in power and outputs a Low-level (default) signal to the AUX out port.

3-6. Fan Action Control Circuit

If fan action is set to "Temperature", the cooling fan is turned ON or OFF according to temperature.

If the ambient temperature of the final unit exceeds approx. 35°C, the output from the temperature detection IC1 changes from H to L. This signal is sent to the CPU (IC604) by Q602 in the TX-RX unit B/2 (control section), and the output from pin 13 (FAS) of IC7 in the TX-RX unit A/2 controlled by the CPU goes H.

This signal turns Q9 in the final unit ON to run the cooling fan. It has a hysteresis of approx. 2°C by IC1. If fan action is set to "Continuous", the fan operates continuously, but Q9 stays ON.



[Fan operation]

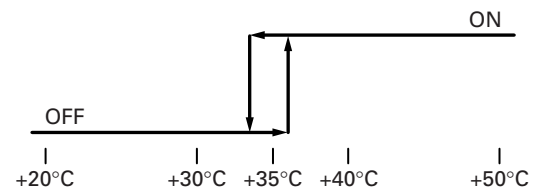


Fig. 4 Fan action control circuit

CIRCUIT DESCRIPTION

4. PLL Frequency Synthesizer

The PLL frequency synthesizer circuit consists of the following circuits : 4-1 receiver PLL circuit, 4-2 transmitter PLL circuit, and 4-3 unlocked detector circuit.

4-1. Receiver PLL

The receiver PLL circuit is located in VCO unit A3 (X58-480) on TX-RX unit (X57-696 A/2), and consists of VCXO X2, VCO's (Q350 and Q351), a single-chip PLL IC IC300, buffer amplifier Q355, and high-frequency amplifier Q302.

The VCXO generates 16.8MHz. The frequency stability is within ± 1.5 ppm (Temperature range of -30 to $+60^{\circ}\text{C}$). The frequency tuning of the VCXO is done to apply a voltage to pin 1 of the VCXO. The output of the VCXO is applied to pin 8 of the PLL IC through the pin 7 of the VCO.

The first local oscillator is a lower heterodyne local oscillator, and the VCO oscillator frequency is 405.15 to 435.15MHz (K), 395.15 to 425.15MHz (E), 435.15 to 467.15MHz (K2) or 355.15 to 385.15MHz (K3).

The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator to the varactor diodes.

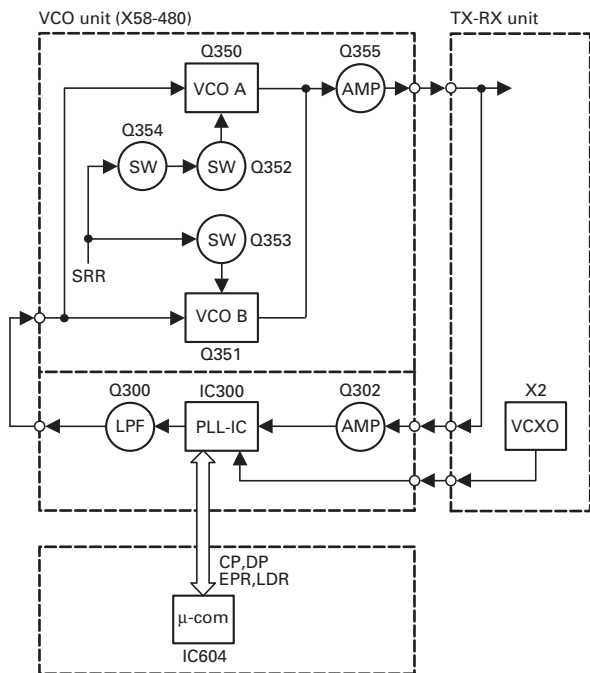


Fig. 5 Receiver PLL

4-2. Transmitter PLL

The transmitter PLL circuit is located in VCO unit A2 (X58-481) on TX-RX unit (X57-696 A/2), and consists of VCXO X3, VCO's (Q350 : K,K2,E, Q351 : K3), a single-chip PLL IC IC300, buffer amplifier Q355, and high-frequency amplifier Q302.

The VCXO generates 16.8MHz. The frequency stability is within ± 1.5 ppm (Temperature range of -30 to $+60^{\circ}\text{C}$). The frequency tuning and modulation of the VCXO are done to apply a voltage to pin 1 of the VCXO. The output of the VCXO is applied to pin 8 of the PLL IC through the pin 7 of the VCO.

The VCO oscillator frequency is 450.00 to 480.00MHz (K), 440.00 to 470.00MHz (E), 480.00 to 512.00MHz (K2) or 400.00 to 430.00MHz (K3).

The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator to the varactor diodes.

4-3. Unlock Detector Circuit

If a pulse signal appears at the LD pin of IC300, an unlock condition occurs, causing the voltage applied to the pin of the microprocessor to go low. The names of this pin are LDT for TX PLL and LDR for RX PLL. When the microprocessor detects this condition, the transmitter is disabled.

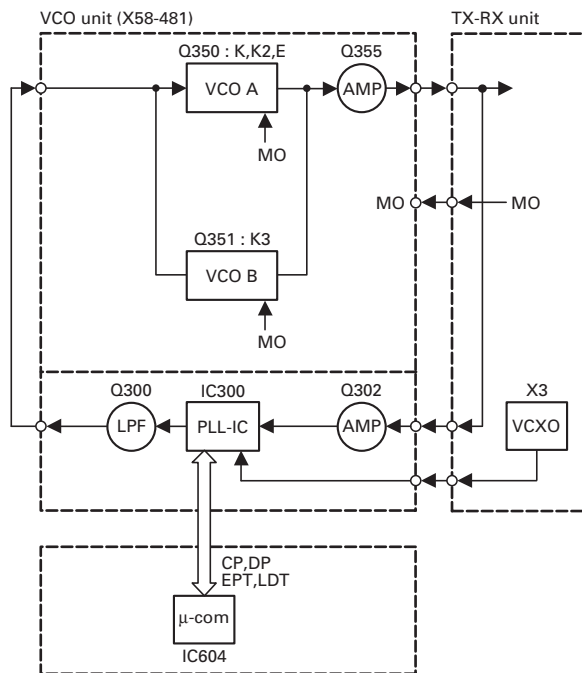


Fig. 6 Transmitter PLL

| Top view (MHz) | |
|------------------|--|
| TX VCO (X58-481) | <ul style="list-style-type: none"> VCO A : 450-480 (K) 480-512 (K2) 440-470 (E) VCO B : 400-430 (K3) |
| RX VCO (X58-480) | <ul style="list-style-type: none"> VCO A : 440-460 (K,E) 480-500 (K2) 400-420 (K3) -44.850 VCO B : 460-480 (K,E) 500-512 (K2) 420-430 (K3) -44.850 |

Fig. 7 VCO oscillation frequency

CIRCUIT DESCRIPTION

5. Control Circuit

The control circuit mainly located in the control section of TX-RX unit (X57-696 B/2) consists of the following : 5-1 CPU, 5-2 memory circuit, 5-3 CPU clock shift, 5-4 shift register circuit, 5-5 display circuit, 5-6 DSP circuit, 5-7 base-band circuit, 5-8 RS-232C circuit, 5-9 power supply circuit, and 5-10 5-tone decode circuit.

5-1. CPU

The CPU (IC604) is a 16bit single-chip microcomputer containing a 32k ROM and 3k RAM. This CPU controls the flash ROM, the DSP, the receiver circuit, the transmitter circuit, the control circuit, and the display circuit and transfers data to or from an external device.

5-2. Memory Circuit

IC609 has a flash ROM with a capacity of 2M bits that contains the control program for the CPU, the signal processing program for DSP and data such as channels and operating features.

This program can be easily written from an external device. Data such as the operating status are programmed into the EEPROM (IC600).

5-3. CPU Clock Shift

There are the 14.754MHz clock for the CPU (IC604) and the 16.515MHz clock for the DSP (IC618) at the control section of TX-RX unit (X57-696). When these clocks are multiplexed with the reception frequency, they become an internal beat signal. To prevent this, by tuning Q600 and Q604 on the clock frequency is shifted. (Shift on/off can be set through programming.)

5-4. Shift Register Circuit

Serial data is sent to the shift register (IC502 to IC505 located in display unit, IC602, IC623, IC7 located in TX-RX unit) from the CPU (IC604) to control various functions in the unit.

5-5. Display Circuit

The display circuit (X54-333) contains two 7-segment LEDs D506, D507 (orange), D503 (red : transmission), two-color D504 (green : busy, orange : selective called), two-color LED D505 (red : backup, green : main DC), LEDs in switches S501 to S506, IC502, IC503, IC504, and IC505 to display this model channels and states.

IC502 to IC505 are shift registers which convert serial data from the CPU to parallel data and light LEDs.

Q507, Q510, and Q511 are switching transistors which control two-color LED D505.

IC506, and IC507 are three-pin power supply ICs which produce power used for the display circuit.

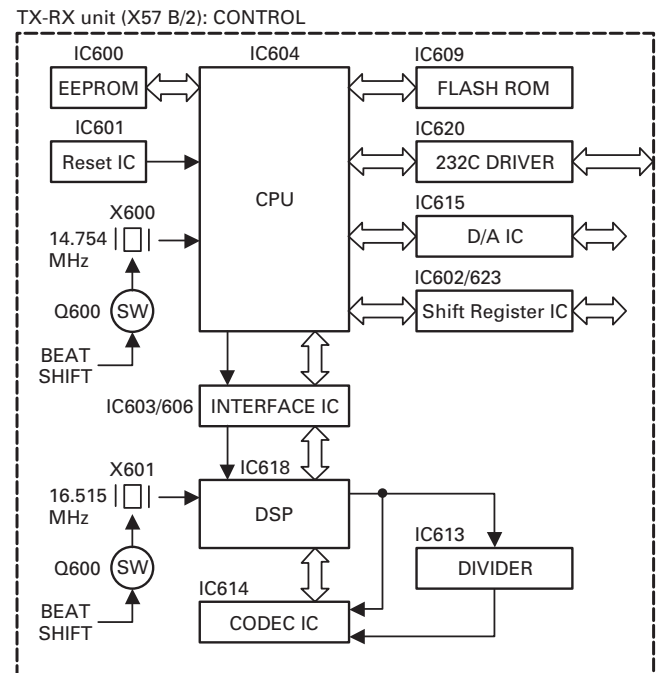


Fig. 8 Control circuit

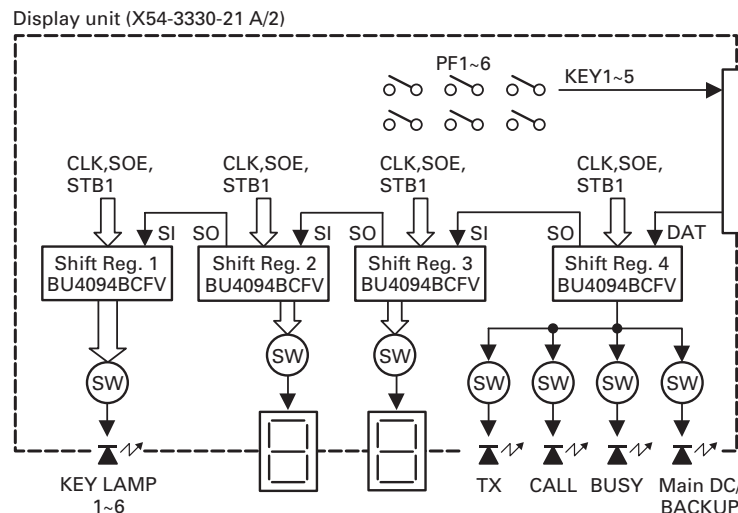


Fig. 9 Display circuit

CIRCUIT DESCRIPTION

5-6. DSP

The DSP circuit filters transmit/receive audio signal and encode/decodes signaling (QT, DQT). This circuit consists of IC618, IC612, IC613, IC614, IC603, IC606, IC608, IC610, IC616, and IC619.

The receive signal DET is converted from analog to digital by IC614 with a sampling frequency of 16.128kHz. The digitized audio signal is sent to DSP IC618 to process the signaling signal and audio signal. The processed digital audio signal is fed to CODEC IC613, converted from digital to analog, and the analog signal is output from pin 16 (AOUTR). Then, the audio signal is amplified by IC619 (B/2), passes through the IC619 (A/2) low-pass filter, and goes to an electronic volume IC615.

The transmit audio signal coming from IC605 is amplified by IC610, fed to pin 3 (AINL) of CODEC IC614, and converted from analog to digital at a sampling frequency of 16.128kHz. The digitized transmit audio signal is AGC-processed, pre-emphasized and filtered at 300Hz to 3kHz by DSP IC618, and the resulting signal is fed back to CODEC IC614, and converted from digital to analog, and the analog signal is output from pin 15 (AOUTL). The transmit signal from AOUTL is amplified by IC616 (B/2), passes through the IC616 (A/2) low-pass filter, and goes to the IC611 (A/2) summing amplifier.

IC613 is a counter IC and the clock required for the CODEC and DSP is generated by dividing the 16.515MHz clock signal produced by DSP IC618.

IC603 and IC606 are interface IC between the CPU operated at 5.0V and the DSP operated at 3.3V.

5-7. Base-Band Circuit

The base-band circuit switches between the modulation signal to the transmitter circuit, and remote audio and adjusts their levels. This circuit consists of IC605, IC607, IC611, IC615, and IC617.

Modulation inputs include local microphone input, low-speed data (LSD), high-speed data (HSD), external audio input (TA), and external data input (TD), and demodulation outputs include receive audio output (RA), and receive data output (RD).

The multiplexer (IC605) changes signals, the electronic volume (IC615) adjusts the level, and the operational amplifier (IC607, IC611, IC617) amplifiers and sums signals.

5-8. RS-232C Circuit

The RS-232C circuit connects the RS-232C serial port of a personal computer directly to this model to perform FPU operation. The FPU operation can also be performed by connecting a programming cable (KPG-46) to the local microphone on the front panel. But, if the D-sub connector on the rear panel is used, the programming cable is not required. The 232C driver IC (IC620) changes the TTL-232C level. The firmware can only be rewritten with the local microphone on the front panel.

5-9. Power Supply Circuit

The power supply circuit generates power to operate the CPU, DSP, flash ROM, bi-directional buffer, and base-band circuit. This circuit consists of IC624, IC625, IC626, IC627, IC628, and IC630.

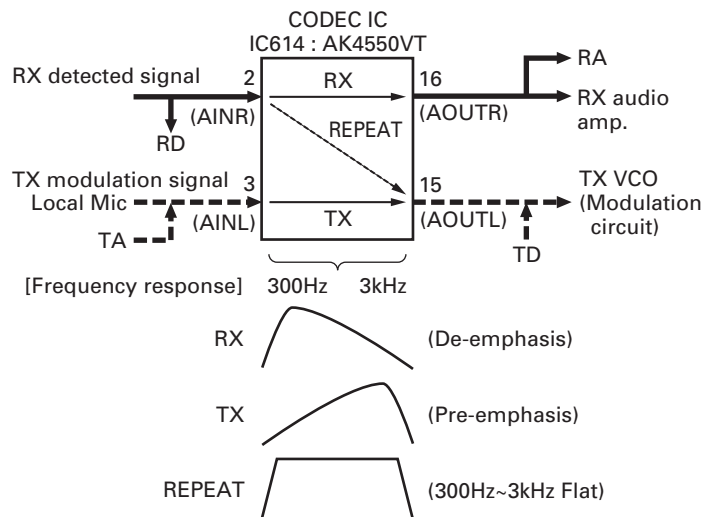


Fig. 10 An audio signal course and the frequency characteristic

CIRCUIT DESCRIPTION

5-10. 5-tone* Decode

The 300 to 3000Hz frequency characteristics of the signal that enters the comparator are made flat by the circuit, and the band is made into that band required to detect 5-tone signal by the low-pass filter (IC632 2/2), high-pass filter (IC632 1/2) and BEF filter (IC631 1/2). The signal made into a square wave by the comparator (IC631), and input to the CPU, IC604.

IC604 checks the square wave frequency for the presence of the required tone, and if the tone matches, IC604 performs the subsequent required processing.

* : The 5-tone signaling is used only the E markets.

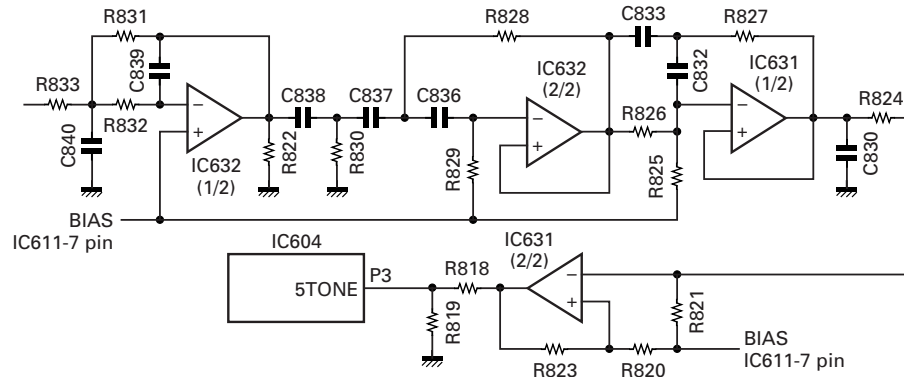


Fig. 11 5-tone decode

6. DC Power Supply Circuit

6-1. DC Source Switching Relay Circuit

1. The final unit contains a relay (K1) for switching between the Main DC and Backup Battery.

If an external power source is connected to the Main DC terminal, the Backup terminal is isolated by the relay. If the Main DC turns OFF due to power failure, it is switched to the Backup terminal by the relay. The CPU monitors which is used, Main DC or Backup Battery.

5. Trickle charge circuit

If both Main DC and Backup Battery are connected, trickle charging of 0.5A max. can be performed from the Main DC power supply to the Battery.

(The default is OFF. See the Modification section for information on the modification method.)

The battery is charged from the Main DC with D8, D9 and R61. If it exceeds 0.5A, the charging circuit is turned OFF by D9.

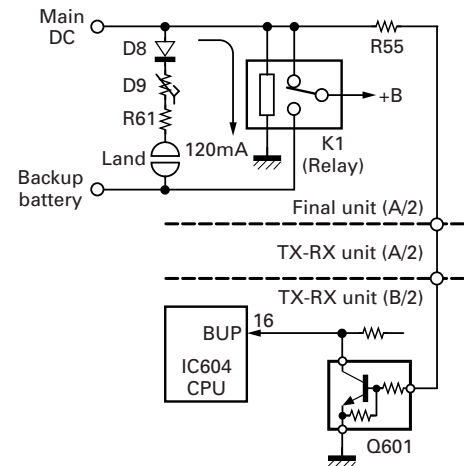


Fig. 12 DC source switching relay circuit

6-2. SB Switching Relay Circuit

1. SB (Switched +B) is supplied through the relay (K1) in the TX-RX unit A/2.

When S507 (DC source switch) in the display unit is turned ON, the relay (K1) is turned ON to output SB.

2. If +B exceeds 18V, the relay is forcibly turned OFF by D12 and Q25 to interrupt the power and protect the main unit.

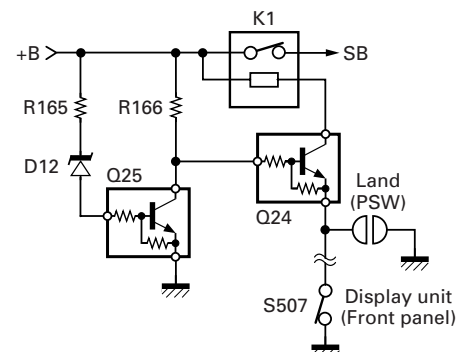


Fig. 13 SB switching relay circuit

Main CPU : 30622M4A-487GP (TX-RX unit IC604)

■ Pin Function

| Pin No. | Name | I/O | Function |
|---------|-------|-----|--|
| 1 | IO5 | I/O | Aux I/O No.5 (Acc D-sub 25 pin) |
| 2 | IO4 | I/O | Aux I/O No.4 (Acc D-sub 25 pin) |
| 3 | 5TN | I | 5-tone input |
| 4 | IO2 | I/O | Aux I/O No.2 (Acc D-sub 25 pin) |
| 5 | IO1 | I/O | Aux I/O No.1 (Acc D-sub 25 pin) |
| 6 | BYTE | – | 5V |
| 7 | CNVss | – | GND |
| 8 | ENT | O | TX PLL IC enable |
| 9 | ENR | O | RX PLL IC enable |
| 10 | Reset | I | Microcomputer reset input |
| 11 | Xout | – | 14.7456MHz |
| 12 | Vss | – | GND |
| 13 | Xin | – | 14.7456MHz |
| 14 | Vcc | – | 5V |
| 15 | NMI | – | Not used |
| 16 | BUP | I | Backup battery detect H : Backup, L : Main |
| 17 | TEMP | I | Temperature detect for fan action H : Temp high, L : Temp low |
| 18 | INTy | I | INT request from DSP |
| 19 | CLK | O | Common clock |
| 20 | DAT | O | Common data |
| 21 | SFT | O | Beat shift H : On, L : Off |
| 22 | LD1 | O | Control D/A converter LD |
| 23 | IO3 | I/O | Aux I/O No.3 (Acc D-sub 25 pin) |
| 24 | BEEP | O | Beep output |
| 25 | LD2 | O | D/A converter 2LD |
| 26 | RS | O | DSP reset H : Off, L : On |
| 27 | EPTT | O | Acc PTT (Acc D-sub 25 pin) H : Off, L : On |
| 28 | PTT | I | Mic PTT H : Off, L : On |
| 29 | TXD1 | O | Mic TXD |
| 30 | RXD1 | I | Mic HOOK/RXD |
| 31 | SCLK | O | EEPROM clock |
| 32 | SDAT | I/O | EEPROM data |
| 33 | TXD0 | O | Acc TXD (Acc D-sub 25 pin) |
| 34 | RXD0 | I | Acc RXD (Acc D-sub 25 pin) |
| 35 | CP | O | PLL IC clock |
| 36 | DP | O | PLL IC data |
| 37 | RDY | I | CPU ready input |

| Pin No. | Name | I/O | Function |
|---------|-----------|-----|---|
| 38 | ALE | – | Not used |
| 39 | HOLD | – | Not used |
| 40 | HLDA | – | Not used |
| 41 | BCLK | O | Not used |
| 42 | RD | O | Flash ROM WR/DSP HDS1 |
| 43 | BHE | – | Not used |
| 44 | WR | O | Flash ROM WR/DSP HDS2 |
| 45 | STB2 | O | Control shift register STB |
| 46 | INTx | O | DSP interrupt H : Off, L : On |
| 47 | HCS | O | DSP HCS |
| 48 | CS0 | O | Flash ROM CS |
| 49 | A19 | O | Not used |
| 50~59 | A18~A9 | O | Flash ROM address bus |
| 60 | Vcc | – | 5V |
| 61 | A8 | O | Flash ROM address bus |
| 62 | Vss | – | GND |
| 63~70 | A7~A0 | O | Flash ROM address bus |
| 71 | EMON | I | Acc monitor (Acc D-sub 25 pin) H : Off, L : On |
| 72 | LDR | I | RX VCO lock detect H : Lock, L : Unlock |
| 73 | LDT | I | TX VCO lock detect H : Lock, L : Unlock |
| 74,75 | KEY5,KEY4 | O | Key matrix output |
| 76~78 | KEY3~KEY1 | I | Key matrix input |
| 79~86 | D7~D0 | I/O | Flash ROM data bus |
| 87 | FWD | I | RF power down level input |
| 88 | RSSI | I | RSSI level input |
| 89 | ASQ | I | Squelch level input |
| 90 | VLI | I | Volume level input |
| 91 | BATT | I | Power supply voltage level input |
| 92 | A11 | I | Aux input No.1 (Acc D-sub 25 pin) |
| 93 | A12 | I | Aux input No.2 (Acc D-sub 25 pin) |
| 94 | AVss | – | GND |
| 95 | A13 | I | Aux input No.3 (Acc D-sub 25 pin) |
| 96 | Vref | – | 5V |
| 97 | AVcc | – | 5V |
| 98 | STB1 | O | Display shift register STB |
| 99 | SOE | O | Shift register common OE |
| 100 | IO6 | I/O | Aux I/O No.6 (Acc D-sub 25 pin) |

SEMICONDUCTOR DATA

DSP : 320VC5402PGE (TX-RX unit IC618)

■ Pin Function

| Pin No. | Name | I/O | Function |
|---------|---------|-----|--|
| 1,2 | NC1,NC2 | - | Not used (No connection) |
| 3 | Vss | - | GND |
| 4 | DVDD | - | VDD for I/O pins (+3.3V) |
| 5 | A0 | O | Not used (No connection) |
| 6 | HD0 | I/O | HPI data bus |
| 7~11 | A1~A5 | O | Not used (No connection) |
| 12 | NC3 | - | Not used (No connection) |
| 13 | HAS | I | HPI address strobe (Pull up) |
| 14 | Vss | - | GND |
| 15 | NC4 | - | Not used (No connection) |
| 16 | CVDD | - | VDD for core CPU (+1.8V) |
| 17 | HCS | I | HPI chip select |
| 18 | HR/W | I | HPI read/write |
| 19 | READY | I | Data ready (Pull up) |
| 20 | PS | O | Not used (No connection) |
| 21 | DS | O | Not used (No connection) |
| 22 | IS | O | Not used (No connection) |
| 23 | R/W | O | Not used (No connection) |
| 24 | MSTRB | O | Not used (No connection) |
| 25 | IOSTRB | O | Not used (No connection) |
| 26 | MSC | O | Not used (No connection) |
| 27 | XF | O | CODEC control H : Power down, L : Active |
| 28 | HOLDA | - | Not used (No connection) |
| 29 | IAQ | - | Not used (No connection) |
| 30 | HOLD | I | Hold (Pull up) |
| 31 | BIO | I | Serial data synchronize input |
| 32 | MP/MC | I | Not used (Pull down) |
| 33 | DVDD | - | VDD for I/O pins (+3.3V) |
| 34 | Vss | - | GND |
| 35~38 | NC5~NC8 | - | Not used (No connection) |
| 39 | HCNTL0 | I | HPI control 0 |
| 40 | Vss | - | GND |
| 41 | BCLKR0 | I | Receive clock input (SCLK : 516.09375kHz) |
| 42 | BCLKR1 | - | Not used (No connection) |
| 43 | BFSR0 | I | Frame sync. for receiver input (LRCK : 16.128kHz) |
| 44 | BFSR1 | I | Frame sync. for receiver input (LRCK : 16.128kHz) |

| Pin No. | Name | I/O | Function |
|---------|------------|-----|---|
| 45 | BDR0 | I | Serial data receive input |
| 46 | HCNTL1 | I | HPI control 1 |
| 47 | BDR1 | - | Not used (No connection) |
| 48 | BCLKX0 | I | Transmit clock input (SCLK : 516.09375kHz) |
| 49 | BCLKX1 | O | Master clock output (MCLK : 4.12875MHz) |
| 50 | Vss | - | GND |
| 51 | HINT/TOUT1 | O | Boot mode select (Pull up) |
| 52 | CVDD | - | VDD for core CPU (+1.8V) |
| 53 | BFSX0 | I | Frame sync. for transmitter input (LRCK : 16.128kHz) |
| 54 | BFSX1 | I | Frame sync. for transmitter input (LRCK : 16.128kHz) |
| 55 | HRDY | - | Not used (No connection) |
| 56 | DVDD | - | VDD for I/O pins (+3.3V) |
| 57 | Vss | - | GND |
| 58 | HD1 | I/O | HPI data bus |
| 59 | BDX0 | O | Serial data transmit output |
| 60 | BDX1 | - | Not used (No connection) |
| 61 | IACK | - | Not used (No connection) |
| 62 | HBIL | I | Byte identification (HPI) |
| 63 | NMI | I | Not used (Pull up) |
| 64 | INT0 | I | Command interrupt from host CPU |
| 65 | INT1 | I | Not used (Pull up) |
| 66 | INT2 | I | Boot mode select (Pull up) |
| 67 | INT3 | I | Not used (Pull up) |
| 68 | CVDD | - | VDD for core CPU (+1.8V) |
| 69 | HD2 | I/O | HPI data bus |
| 70 | Vss | - | GND |
| 71~74 | NC9~NC12 | - | Not used (No connection) |
| 75 | DVDD | - | VDD for I/O pins (+3.3V) |
| 76 | Vss | - | GND |
| 77 | CLKMD1 | I | Clock mode select (Pull down) |
| 78 | CLKMD2 | I | Clock mode select (Pull up) |
| 79 | CLKMD3 | I | Clock mode select (Pull down) |
| 80 | NC13 | - | Not used (No connection) |
| 81 | HD3 | I/O | HPI data bus |
| 82 | TOUT0 | - | Not used (No connection) |
| 83 | EMU0 | I/O | Emulator 0 (to JTAG connector) |

TKR-850

SEMICONDUCTOR DATA / COMPONENTS DESCRIPTION

| Pin No. | Name | I/O | Function |
|---------|-----------|-----|--------------------------------------|
| 84 | EMU1/OFF | I/O | Emulator 1 (to JTAG connector) |
| 85 | TDO | O | Test data output (to JTAG connector) |
| 86 | TDI | I | Test data input (to JTAG connector) |
| 87 | TRST | I | Test reset (to JTAG connector) |
| 88 | TCK | I | Test clock (to JTAG connector) |
| 89 | TMS | I | Test mode select (to JTAG connector) |
| 90 | NC14 | - | Not used (No connection) |
| 91 | CVDD | - | VDD for core CPU (+1.8V) |
| 92 | HPIENA | I | Not used (Pull up) |
| 93 | Vss | - | GND |
| 94 | CLKOUT | O | Not used (No connection) |
| 95 | HD4 | I/O | HPI data bus |
| 96 | X1 | - | 16.515MHz (System clock) |
| 97 | X2/CLKIN | - | 16.515MHz (System clock) |
| 98 | RS | I | DSP reset input |
| 99~104 | D0~D5 | - | Not used (No connection) |
| 105 | A6 | O | Not used (No connection) |
| 106 | Vss | - | GND |
| 107~109 | A7~A9 | O | Not used (No connection) |
| 110 | NC15 | - | Not used (No connection) |
| 111 | Vss | - | GND |
| 112 | DVDD | - | VDD for I/O pins (+3.3V) |
| 113~119 | D6~D12 | - | Not used (No connection) |
| 120 | HD5 | I/O | HPI data bus |
| 121~123 | D13~D15 | - | Not used (No connection) |
| 124 | HD6 | I/O | HPI data bus |
| 125 | CVDD | - | VDD for core CPU (+1.8V) |
| 126 | NC16 | - | Not used (No connection) |
| 127 | HDS1 | I | HPI data strobe 1 (Pull up) |
| 128 | Vss | - | GND |
| 129 | HDS2 | I | HPI data strobe 2 (Pull down) |
| 130 | DVDD | - | VDD for I/O pins (+3.3V) |
| 131~134 | A10~A13 | O | Not used (No connection) |
| 135 | HD7 | I/O | HPI data bus |
| 136~141 | A14~A19 | O | Not used (No connection) |
| 142 | CVDD | - | VDD for core CPU (+1.8V) |
| 143,144 | NC17,NC18 | - | Not used (No connection) |

Final Unit (X45-374X-XX)

| Ref. No. | Part name | Description |
|-----------|-------------|-------------------------------|
| IC1 | IC | Thermostat |
| IC2 | IC | Voltage regulator |
| IC3 | IC | DC amplifier |
| Q1,2 | Transistor | RF amplifier |
| Q3,4 | FET | TX drive amplifier |
| Q5 | FET | Final amplifier |
| Q8,9 | Transistor | DC switch |
| D2 | Zener diode | Voltage reference |
| D4,5 | Diode | RF detector |
| D7 | Zener diode | Surge protector |
| D8 | Diode | Reverse current protection |
| D9 | Vatistor | Current protector |
| D10 | Diode | Surge absorption |
| D51,52 | Diode | Reverse connection protection |
| D53,55,56 | Diode | RF switch |

Display Unit (X54-3330-21)

| Ref. No. | Part name | Description |
|-----------|------------|-------------------|
| IC501 | MOS IC | MIC amplifier |
| IC502~505 | IC | Shift register |
| IC506,507 | IC | Voltage regulator |
| Q501,502 | Transistor | Level controller |
| Q503,504 | FET | DC switch |
| Q506 | Transistor | DC switch |
| Q507 | FET | DC switch |
| Q508~511 | Transistor | DC switch |
| Q512~514 | FET | DC switch |
| Q516~519 | FET | DC switch |
| Q521~525 | FET | DC switch |
| D501,502 | Diode | AF detector |
| D503~505 | LED | LED |
| D506,507 | LED | 7 segment |
| D508~514 | Diode | Surge absorption |
| D601,602 | Diode | Surge absorption |
| D603 | Varistor | Current protector |

TX-RX Unit (X57-696X-XX)

| Ref. No. | Part name | Description |
|----------|-----------|-------------------|
| IC1,2 | IC | Buffer amplifier |
| IC3~5 | IC | Voltage regulator |

COMPONENTS DESCRIPTION

| Ref. No. | Part name | Description |
|-----------|------------|------------------------------|
| IC6 | IC | D/A converter |
| IC7 | IC | Shift register |
| IC9 | IC | FM IF system |
| IC10,11 | IC | Voltage regulator |
| IC600 | IC | EEPROM |
| IC601 | IC | Voltage detector |
| IC602 | IC | Shift register |
| IC603 | IC | Bus transceiver |
| IC604 | IC | CPU |
| IC605 | IC | Multiplexer |
| IC606 | IC | Bus transceiver |
| IC607,608 | IC | AF amplifier |
| IC609 | IC | Flash ROM |
| IC610,611 | IC | AF amplifier |
| IC612 | IC | Inverter |
| IC613 | IC | Counter |
| IC614 | IC | CODEC |
| IC615 | IC | D/A converter |
| IC616,617 | IC | AF amplifier |
| IC618 | IC | DSP |
| IC619 | IC | AF amplifier |
| IC620 | IC | RS-232C transceiver |
| IC621 | IC | NAND gate |
| IC622 | IC | Multiplexer |
| IC623 | IC | Shift register |
| IC624~628 | IC | Voltage regulator |
| IC629 | IC | AF power amplifier |
| IC630 | IC | Voltage regulator |
| IC631,632 | IC | AF amplifier |
| Q1~3 | Transistor | RF amplifier |
| Q4 | Transistor | Wide/Narrow switch |
| Q5,6 | Transistor | DC switch |
| Q7 | Transistor | Noise amplifier |
| Q8,9 | Transistor | RF amplifier |
| Q10 | Transistor | Current control |
| Q11 | Transistor | RF amplifier |
| Q12~15 | Transistor | Ripple filter |
| Q16~19 | Transistor | DC switch |
| Q23~26 | Transistor | DC switch |
| Q27 | Transistor | Wide 5kHz/Narrow 4kHz switch |
| Q600 | FET | DC switch |
| Q601 | Transistor | DC switch |
| Q602 | FET | DC switch |

| Ref. No. | Part name | Description |
|----------|-------------|---------------------------|
| Q603 | Transistor | Inverter |
| Q604 | FET | DC switch |
| Q605 | Transistor | Inverter |
| Q606 | Transistor | AF mute switch |
| Q607~609 | Transistor | DC switch |
| Q610 | FET | DC switch |
| Q611,612 | Transistor | DC switch |
| Q613,614 | Transistor | Current control |
| Q615 | Transistor | DC switch |
| D1~4 | Diode | Wide/Narrow switch |
| D5 | Diode | Noise detection |
| D7 | Diode | DC switch |
| D8 | Diode | TX switch |
| D11 | Zener diode | Surge protector |
| D12 | Diode | DC switch |
| D13 | Diode | Noise detection |
| D600 | Diode | Surge protector |
| D606~612 | Diode | Surge protector |
| D614~616 | Diode | Surge protector |
| D618~623 | Diode | Surge protector |
| D626 | Variistor | Current protector |
| D627,628 | Diode | Reverse current protector |
| D629 | Diode | Surge protector |

RX VCO Unit (X58-480X-XX)

| Ref. No. | Part name | Description |
|----------|------------|-------------------|
| IC300 | IC | PLL |
| Q300,301 | Transistor | Active filter |
| Q302 | Transistor | Buffer amplifier |
| Q350,351 | FET | VCO OSC |
| Q352~354 | Transistor | DC switch |
| Q355 | Transistor | Buffer amplifier |
| D350~353 | Varicap | Frequency control |

TX VCO Unit (X58-481X-XX)

| Ref. No. | Part name | Description |
|----------|------------|-------------------|
| IC300 | IC | PLL |
| Q300,301 | Transistor | Active filter |
| Q302 | Transistor | Buffer amplifier |
| Q350,351 | FET | VCO OSC |
| Q355 | Transistor | Buffer amplifier |
| D350~353 | Varicap | Frequency control |
| D354,355 | Varicap | Modulation |

TKR-850

PARTS LIST

* New Parts. Δ indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TKR-850 (Y54-319X-XX)

FINAL UNIT (X45-374X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------------|---------|-----------|-------------|--------------------------------------|-------------|
| TKR-850 | | | | | |
| 1 | 2B | | A10-4037-21 | CHASSIS | |
| 2 | 1B | | A62-0836-04 | PANEL (TX/RX) | |
| 3 | 1B | | A62-0837-04 | PANEL (FINAL) | |
| 4 | 1D | | A62-0840-03 | PANEL (OUTER) | |
| 5 | 3A | | A62-0933-13 | PANEL ASSY (INNER) | |
| 6 | 3C | | A62-0934-03 | FRONT PANEL | |
| 8 | 1F | | B10-2635-04 | FRONT GLASS ACCESSORY | |
| 9 | 1F | | B11-1259-04 | FILTER ACCESSORY | |
| 10 | 3B | | B42-7160-04 | STICKER (MODEL NAME) | |
| 11 | 1F | * | B62-1835-00 | INSTRUCTION MANUAL | K,K2,K3 |
| 11 | 1F | * | B62-1837-00 | INSTRUCTION MANUAL | E |
| 12 | 2C,3D | * | B72-2301-04 | MODEL NAME-PLATE | K |
| 12 | 2C,3D | * | B72-2302-04 | MODEL NAME-PLATE | K2 |
| 12 | 2C,3D | * | B72-2303-04 | MODEL NAME-PLATE | E |
| 12 | 2C,3D | * | B72-2305-04 | MODEL NAME-PLATE | K3 |
| 14 | 2C | | E30-3414-05 | DC CORD(EXT DC IN) | |
| 15 | 1C | | E30-3418-05 | ANTENNA CABLE (BNC) | |
| 16 | 2C | | E30-3419-05 | ANTENNA CABLE (N) | |
| 17 | 1E | | E30-3427-15 | DC CORD ACCESSORY | |
| 18 | 1E | | E31-3228-05 | TEST/SPKR PLUG ACCESSORY | |
| 19 | 1B | | E37-0902-05 | DC WIRE (RED) | |
| 20 | 1B | | E37-0903-05 | DC WIRE (BLACK) | |
| 21 | 2C | | E37-0904-05 | D-SUB CABLE ASSY | |
| 22 | 3B | | E37-0905-15 | SPEAKER CABLE | |
| 23 | 3A | | E37-0906-05 | LEAD WIRE WITH CONNECTOR (CONT-DISP) | |
| 24 | 3A | | E37-0908-05 | LEAD WIRE WITH CONNECTOR (11P) | |
| 25 | 2B | | E37-0909-05 | LEAD WIRE WITH CONNECTOR (8P) | |
| 26 | 1B | | E37-0911-05 | LEAD WIRE WITH CONNECTOR (3P) | |
| 27 | 2B | | E37-0912-05 | COAXIAL CABLE | |
| 28 | 2C | | E37-0913-05 | TEST/SPKR CONNECTOR ASSY | |
| 29 | 1B | | E37-0934-05 | DC WIRE (ORANG) | |
| 30 | 2C | | E37-0964-05 | DC BACKUP WIRE (BLACK) | |
| 31 | 2C | | E37-0965-05 | DC BACKUP WIRE (RED) | |
| 32 | 2B | | E37-0967-05 | FLAT CABLE (36P) | |
| 33 | 2C | | E70-0402-05 | DC BACKUP TERMINAL | |
| 35 | 1C,1E | | F05-1537-05 | FUSE (BLADE TYPE) (15A/32V) | |
| 36 | 2C | | F09-0445-05 | CAP (D-SUB) ACCESSORY | |
| 37 | 2C | | F09-0471-05 | FANMOTOR | |
| - | | | F10-2374-04 | SHIELDING PLATE (TX/RX) | |
| - | | | F10-2379-04 | SHIELDING CASE (TX/RX COMP) | |
| - | | | F10-2409-04 | SHIELDING CASE (TX/RX FOIL) | |
| 41 | 1C | | F20-3322-04 | INSULATING SHEET (BACKUP) | |
| 43 | 1B,2B | | G02-0576-14 | FLAT SPRING | |
| - | | | G02-0729-14 | FLAT SPRING (TX/RX FOIL) | |
| 44 | 2B | | G02-0829-14 | FLAT SPRING | |
| 45 | 3B | | G02-0885-13 | EARTH SPRING | |
| 51 | 1B | | G02-0894-04 | EARTH SPRING (FINAL FET) | |
| 46 | 2B,3B | | G10-1263-04 | FIBROUS SHEET (CHASSIS) | |
| 47 | 3C,2D | | G10-1264-04 | FIBROUS SHEET (PANEL) | |
| 50 | 3B | * | G10-1344-04 | FIBROUS SHEET | |
| 58 | 3B | * | G10-1345-04 | FIBROUS SHEET | |
| 48 | 1F | | G13-1801-04 | CUSHION ACCESSORY | |

| Ref. No. | Address | New parts | Parts No. | Description | Destination |
|--|---------|-----------|---------------|--------------------------------------|-------------|
| 49 | 1F | | G13-1802-04 | CUSHION ACCESSORY | |
| 50 | 2B | * | G13-1886-04 | CUSHION (BNC) | |
| 52 | 1E | | H25-0029-04 | PROTECTION BAG (60/110/0.07) | |
| 53 | 1F | | H25-0747-04 | PROTECTION BAG (250X350) | |
| 54 | 1E | | H25-0762-04 | PROTECTION BAG (120X300) | |
| 55 | 1F | | H25-2328-04 | PROTECTION BAG (80/250/0.07) | |
| 57 | 3F | | H52-1779-02 | ITEM CARTON CASE | |
| 59 | 1E | | J02-0475-05 | FOOT ACCESSORY | |
| 60 | 1E | | J02-0492-04 | FOOT ACCESSORY | |
| 61 | 1F | | J21-8402-04 | MOUNTING HARDWARE ACCESSORY | |
| 64 | 1B | | J21-8467-04 | MOUNTING HARDWARE (DRIVE FET) | |
| 62 | 1E | | J59-0302-05 | GROMMET ACCESSORY | |
| - | | | J61-0307-05 | BAND | |
| 65 | 1E | | K01-0418-15 | HANDLE ACCESSORY | |
| 66 | 3A | | K29-5389-03 | KNOB (VOLUME) | |
| 67 | 3A | | K29-5460-02 | KEY TOP | |
| 68 | 3A | | K29-9106-04 | KNOB (DC SOURCE) | |
| A | 2C | | N09-2292-05 | HEXAGON HEAD SCREW | |
| B | 1C,2C | | N30-2606-46 | PAN HEAD MACHINE SCREW | |
| C | 2A,1E | | N30-4006-46 | PAN HEAD MACHINE SCREW | |
| D | 2B,2C | | N30-4014-46 | PAN HEAD MACHINE SCREW | |
| E | 1C | | N30-4020-45 | PAN HEAD MACHINE SCREW | |
| F | 1C,2C | | N32-3006-46 | FLAT HEAD MACHINE SCREW | |
| G | 3B,3C | | N32-4008-45 | FLAT HEAD MACHINE SCREW | |
| H | 1B | | N33-3006-45 | OVAL HEAD MACHINE SCREW | |
| J | 1E | | N35-3006-45 | BINDING HEAD MACHINE SCREW ACCESSORY | |
| K | 1C | | N35-4006-45 | BINDING HEAD MACHINE SCREW | |
| L | 1B,3B | | N67-3008-46 | PAN HEAD SEMS SCREW | |
| M | 1C | | N80-2608-45 | PAN HEAD TAPTITE SCREW | |
| N | 2C | | N87-2606-46 | BRAZIER HEAD TAPTITE SCREW | |
| O | 3A | | N87-3005-45 | BRAZIER HEAD TAPTITE SCREW | |
| P | 2B,3B | | N87-3006-46 | BRAZIER HEAD TAPTITE SCREW | |
| R | 2C | | N90-3014-46 | TP HEAD MACHINE SREW | |
| 70 | 3A | | T07-0247-05 | SPEAKER | |
| - | | | 490-0174-05 | ADHESIVE TAPE | |
| FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3 | | | | | |
| C1 | | | CC73GCH1H100D | CHIP C 10PF D | K2,K3 |
| C1 | | | CK73GB1H471K | CHIP C 470PF K | K,E |
| C3 | | | C90-2146-05 | ELECTRO 100UF 25WV | |
| C6,7 | | | CK73GB1H471K | CHIP C 470PF K | |
| C8 | | | CC73GCH1H030C | CHIP C 3.0PF C | K2 |
| C8 | | | CC73GCH1H080D | CHIP C 8.0PF D | K,E |
| C8 | | | CC73GCH1H100D | CHIP C 10PF D | K3 |
| C10 | | | CK73GB1H471K | CHIP C 470PF K | |
| C12-15 | | | CK73GB1H471K | CHIP C 470PF K | |
| C17 | | | CC73GCH1H050C | CHIP C 5.0PF C | K,K2,E |
| C17 | | | CC73GCH1H560J | CHIP C 56PF J | K3 |
| C18,19 | | | CK73GB1H471K | CHIP C 470PF K | |

PARTS LIST

FINAL UNIT (X45-374X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Desti-nation | Ref. No. | Address | New parts | Parts No. | Description | Desti-nation |
|----------|---------|-----------|---------------|---------------------|--------------|----------|---------|-----------|---------------|------------------------------|--------------|
| C20 | | | CK73FB1H471K | CHIP C 470PF K | | C83 | | | C93-0555-05 | CHIP C 5.0PF C | K2 |
| C21 | | | CC73FCH1H100D | CHIP C 10PF D | K2 | C83 | | | C93-0556-05 | CHIP C 6.0PF D | K,E |
| C21 | | | CC73FCH1H120J | CHIP C 12PF J | K,E | C83 | | | C93-0557-05 | CHIP C 7.0PF D | K3 |
| C21 | | | CC73FCH1H220J | CHIP C 22PF J | K3 | C86 | | | C93-0558-05 | CHIP C 8.0PF D | K2 |
| C22 | | | CC73FCH1H060D | CHIP C 6.0PF D | K,E | C86 | | | C93-0560-05 | CHIP C 10PF D | K,E |
| C22 | | | CC73FCH1H090D | CHIP C 9.0PF D | K2 | C86 | | | C93-0561-05 | CHIP C 12PF J | K3 |
| C22 | | | CC73FCH1H120J | CHIP C 12PF J | K3 | C88 | | | C93-0556-05 | CHIP C 6.0PF D | K3 |
| C23 | | | CK73FB1H471K | CHIP C 470PF K | | C89 | | | C93-0555-05 | CHIP C 5.0PF C | K,K2,E |
| C24 | | * | C90-5640-05 | ELECTRO 100UF 16WV | | C91-98 | | | CK73GB1H471K | CHIP C 470PF K | |
| C26 | | | CC73GCH1H101J | CHIP C 100PF J | K3 | C99 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C26 | | | CC73GCH1H471J | CHIP C 470PF J | K,K2,E | C100-102 | | | CK73GB1H471K | CHIP C 470PF K | |
| C27 | | | CK73GB1H471K | CHIP C 470PF K | | C103 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C28 | | | CK73FB1E104K | CHIP C 0.10UF K | | C104 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C29 | | | CK73GB1H471K | CHIP C 470PF K | | C105 | | | CK73GB1H471K | CHIP C 470PF K | |
| C30 | | | CK73FB1E224K | CHIP C 0.22UF K | | C106 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C31 | | | C93-0599-05 | CHIP C 470PF K | | C107 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C32 | | | C93-0558-05 | CHIP C 8.0PF D | K,K3,E | C108 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C32 | | | C93-0559-05 | CHIP C 9.0PF D | K2 | C109 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C33,34 | | | C93-0565-05 | CHIP C 27PF J | K,K2,E | C112 | | | CK73GB1H471K | CHIP C 470PF K | |
| C33,34 | | | C93-0567-05 | CHIP C 39PF J | K3 | C113 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C35 | | | C93-0599-05 | CHIP C 470PF K | | C114 | | | CK73GB1H471K | CHIP C 470PF K | |
| C36 | | | CK73FB1E104K | CHIP C 0.10UF K | | C115 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C38 | | | CK73GB1H471K | CHIP C 470PF K | | C116 | | | CK73GB1H471K | CHIP C 470PF K | |
| C39 | | | C93-0558-05 | CHIP C 8.0PF D | K2 | C117 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C39 | | | C93-0561-05 | CHIP C 12PF J | K,E | C118 | | | C93-0554-05 | CHIP C 4.0PF C | K,E |
| C39 | | | C93-0563-05 | CHIP C 18PF J | K3 | C119 | | | CK73GB1H471K | CHIP C 470PF K | K,E |
| C40 | | | C93-0564-05 | CHIP C 22PF J | K,E | C120 | | | CK73FB1H223K | CHIP C 0.022UF K | |
| C40 | | | C93-0565-05 | CHIP C 27PF J | K2 | C121,122 | | | CM73F2H150J | CHIP C 15PF J | K,E |
| C41 | | | C93-0599-05 | CHIP C 470PF K | | C121,122 | | | CM73F2H180J | CHIP C 18PF J | K2,K3 |
| C42 | | | CC73FCH1H220J | CHIP C 22PF J | | C123 | | | CM73F2H220J | CHIP C 22PF J | K2 |
| C43 | | | CM73F2H180J | CHIP C 18PF J | K2 | C123,124 | | | CM73F2H220J | CHIP C 22PF J | K,E |
| C43 | | | CM73F2H220J | CHIP C 22PF J | K,K3,E | C123,124 | | | CM73F2H270J | CHIP C 27PF J | K3 |
| C44 | | | C93-0556-05 | CHIP C 6.0PF D | K,E | C124 | | | CM73F2H180J | CHIP C 18PF J | K2 |
| C44 | | | C93-0560-05 | CHIP C 10PF D | K3 | C155 | | | C93-0599-05 | CHIP C 470PF K | |
| C46 | | | C93-0599-05 | CHIP C 470PF K | | C157 | | | CK73GB1H471K | CHIP C 470PF K | |
| C48 | | | CK73GB1H471K | CHIP C 470PF K | | C160 | | | CM73F2H820J | CHIP C 82PF J | |
| C49 | | | CC73GCH1H101J | CHIP C 100PF J | | C161 | | | CC73GCH1H220J | CHIP C 22PF J | |
| C50 | | | CK73FB1E104K | CHIP C 0.10UF K | | C165,166 | | | CK73FB1H471K | CHIP C 470PF K | |
| C51 | | | C90-2143-05 | ELECTRO 47UF 25WV | | C167,168 | | | CC73GCH1H220J | CHIP C 22PF J | |
| C52 | | | CC73GCH1H101J | CHIP C 100PF J | | C169 | | | CC73FCH1H560J | CHIP C 56PF J | |
| C53 | | | CK73FB1E104K | CHIP C 0.10UF K | | C170-172 | | | CC73GCH1H220J | CHIP C 22PF J | |
| C54 | | | C90-2146-05 | ELECTRO 100UF 25WV | | C173,174 | | | CC73FCH1H220J | CHIP C 22PF J | |
| C55 | | | C93-0599-05 | CHIP C 470PF K | | C177 | | | CC73FCH1H150J | CHIP C 15PF J | |
| C56 | | | CC73FCH1H220J | CHIP C 22PF J | | C178 | | | C93-0553-05 | CHIP C 3.0PF C | |
| C59 | | | CM73F2H080D | CHIP C 8.0PF D | K2 | C179 | | | CC73FCH1H030C | CHIP C 3.0PF C | |
| C59 | | | CM73F2H100D | CHIP C 10PF D | K,E | CN1 | | | E04-0154-05 | PIN SOCKET | |
| C59 | | | CM73F2H120J | CHIP C 12PF J | K3 | CN3 | | | E40-5632-05 | PIN ASSY | |
| C60 | | | C93-0556-05 | CHIP C 6.0PF D | K2 | CN4 | | | E40-3246-05 | PIN ASSY | |
| C60 | | | C93-0558-05 | CHIP C 8.0PF D | K3 | CN5 | | | E40-5703-05 | PIN ASSY | |
| C61 | | | CM73F2H820J | CHIP C 82PF J | | CN6-8 | | | E23-0462-05 | TERMINAL | |
| C68 | | | CK73GB1H471K | CHIP C 470PF K | | F1 | | | F53-0217-05 | FUSE | |
| C69 | | | CC73GCH1H101J | CHIP C 100PF J | | CN51,52 | | | J13-0071-05 | FUSE HOLDER | |
| C70 | | | CK73FB1E104K | CHIP C 0.10UF K | | L1 | | | L40-1075-92 | SMALL FIXED INDUCTOR (10NH) | K,K2,3 |
| C71,72 | | | CK73GB1H471K | CHIP C 470PF K | | L1 | | | L40-3963-92 | SMALL FIXED INDUCTOR (3.9NH) | K3 |
| C75 | | | CK73GB1H471K | CHIP C 470PF K | | L2 | | | L40-1075-34 | SMALL FIXED INDUCTOR (10NH) | K,E |
| C77 | | | CC73GCH1H101J | CHIP C 100PF J | | L2 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K2 |
| C78 | | | CK73GB1H471K | CHIP C 470PF K | | L2 | | | L40-2775-34 | SMALL FIXED INDUCTOR (27NH) | K3 |
| C79 | | | CK73FB1E104K | CHIP C 0.10UF K | | L3 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | K,K2,E |
| C80 | | | C92-0777-05 | ELECTRO 1000UF 25WV | | | | | | | |
| C81 | | | CM73F2H820J | CHIP C 82PF J | | | | | | | |

PARTS LIST

FINAL UNIT (X45-374X-XX)
DISPLAY UNIT (X54-3330-21)

| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------|---------|-----------|--------------|------------------------------|-------------|-----------------------------------|---------|-----------|----------------|----------------------|-------------|
| L3 | | | L40-8265-92 | SMALL FIXED INDUCTOR (8.2NH) | K3 | R48 | | | RK73GB1J471J | CHIP R 470 J 1/16W | |
| L5 | | | L41-6865-20 | SMALL FIXED INDUCTOR | | R49 | | | R92-1217-05 | CHIP R 0 OHM | |
| L6,7 | | | L34-4517-05 | AIR-CORE COIL | | R50 | | | R92-1317-05 | CHIP R 18 J 1W | |
| L9 | | | L34-4517-05 | AIR-CORE COIL | | R54 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| L11 | | | L34-4517-05 | AIR-CORE COIL | | R55 | | | RK73GB1J474J | CHIP R 470K J 1/16W | |
| L12 | | | L34-4523-05 | AIR-CORE COIL | | R56 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| L14 | | | L40-1575-34 | SMALL FIXED INDUCTOR (15NH) | K,E | R57 | | | RK73GB1J471J | CHIP R 470 J 1/16W | |
| L14,15 | | | L40-1075-34 | SMALL FIXED INDUCTOR (10NH) | K2,K3 | R58 | | | RK73GB1J474J | CHIP R 470K J 1/16W | |
| L15 | | | L40-1075-34 | SMALL FIXED INDUCTOR (10NH) | K,E | R59 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| L16 | | | L40-1075-92 | SMALL FIXED INDUCTOR (10NH) | | R60 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| L17 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | | R61 | | | R92-2687-05 | RESISTOR 5.6 J 5W | |
| L19 | | | L34-4667-05 | AIR-CORE COIL | | R62 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| L20 | | | L34-4758-05 | AIR-CORE COIL | | R70 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R1 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R71 | | | R92-1214-05 | CHIP R 120 J 1/2W | |
| R2 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | K,E | R72 | | | RK73GB1J184J | CHIP R 180K J 1/16W | |
| R2 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | K2,K3 | R73 | | | R92-1204-05 | CHIP R 100 J 1/4W | |
| R3 | | | RK73GB1J470J | CHIP R 47 J 1/16W | K2,K3 | R77 | | | RK73GB1J154J | CHIP R 150K J 1/16W | |
| R4 | | | RK73GB1J100J | CHIP R 10 J 1/16W | | VR1 | | | R12-6429-05 | TRIMMING POT. (100K) | |
| R4 | | | RK73GB1J220J | CHIP R 22 J 1/16W | K,E | K1 | | | S76-0426-05 | RELAY | |
| R6 | | | RK73GB1J100J | CHIP R 10 J 1/16W | K2,K3 | D2 | | | 02DZ6.2(Y) | ZENER DIODE | |
| R6 | | | RK73GB1J470J | CHIP R 47 J 1/16W | K,E | D4,5 | | | HSM88AS | DIODE | |
| R7 | | | RK73GB1J682J | CHIP R 6.8K J 1/16W | | D7 | | | ZSA5A27 | ZENER DIODE | |
| R8 | | | RK73FB2A100J | CHIP R 10 J 1/10W | | D8 | | | RB051L-40 | DIODE | |
| R9 | | | RK73FB2A220J | CHIP R 22 J 1/10W | | D9 | | | MINISMDC050-02 | VARISTOR | |
| R11 | | | RK73GB1J104J | CHIP R 100K J 1/16W | K,K2,E | D10 | | | 1SS355 | DIODE | |
| R11 | | | RK73GB1J333J | CHIP R 33K J 1/16W | K3 | D51,52 | | | DSA3A1 | DIODE | |
| R12 | | | RK73GB1J153J | CHIP R 15K J 1/16W | K3 | D53 | | | MA4PH633 | DIODE | |
| R12 | | | RK73GB1J183J | CHIP R 18K J 1/16W | K,K2,E | D55,56 | | | MA4PH633 | DIODE | |
| R13 | | | RK73FB2A220J | CHIP R 22 J 1/10W | K3 | IC1 | | | MAX6502UKP035 | ANALOGUE IC | |
| R13 | | | RK73FB2A470J | CHIP R 47 J 1/10W | K,K2,E | IC2 | | | NJM78L05UA | BI-POLAR IC | |
| R14 | | | R92-0365-05 | CHIP R 1.0K J 1/2W | KE | IC3 | | | TA75W01FU | MOS-IC | |
| R14 | | | R92-2571-05 | CHIP R 270 J 1/2W | K2,K3 | Q1 | | | 2SC5110(O) | TRANSISTOR | |
| R15 | | | R92-1211-05 | CHIP R 5.6 J 1/2W | K,E | Q2 | | | 2SC3356(R24) | TRANSISTOR | |
| R15 | | | R92-1259-05 | CHIP R 18 J 1/2W | K2,K3 | Q3 | | | 2SK2596 | FET | |
| R16 | | | R92-0365-05 | CHIP R 1.0K J 1/2W | K,E | Q4 | | | PD55008S | DRIVE FET | |
| R16 | | | R92-2571-05 | CHIP R 270 J 1/2W | K2,K3 | Q5 | | | RD60HUF1-01 | FINAL FET | |
| R17 | | | RK73FB2A154J | CHIP R 150K J 1/10W | | Q8 | | | 2SC4116(Y) | TRANSISTOR | |
| R18 | | | RK73EB2B101J | CHIP R 100 J 1/8W | | Q9 | | | DTD123EK | DIGITAL TRANSISTOR | |
| R19 | | | RK73FB2A104J | CHIP R 100K J 1/10W | | TH1 | | | PTH9M04BE471TS | THERMISTOR | |
| R20,21 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | DISPLAY UNIT (X54-3330-21) | | | | | |
| R22 | | | R92-1215-05 | CHIP R 470 J 1/2W | | D503-505 | | | B30-2151-05 | LED (RED/GREEN) | |
| R23 | | | RK73FB2A104J | CHIP R 100K J 1/10W | K2 | C501 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| R23,24 | | | RK73FB2A104J | CHIP R 100K J 1/10W | K,K3,E | C502,503 | | | C92-0501-05 | CHIP-TAN 1.5UF 10WV | |
| R24 | | | RK73FB2A124J | CHIP R 120K J 1/10W | K2 | C504,505 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| R26 | | | RK73GB1J101J | CHIP R 100 J 1/16W | | C506 | | | CC73GCH1H470J | CHIP C 47PF J | |
| R31 | | | RK73GB1J224J | CHIP R 220K J 1/16W | | C507,508 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| R34 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | C509 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| R35 | | | RK73GB1J104J | CHIP R 100K J 1/16W | | C510 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| R36 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | C511,512 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| R37 | | | R92-0670-05 | CHIP R 0 OHM | | C513-518 | | | CC73GCH1H101J | CHIP C 100PF J | |
| R38 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | C519,520 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| R40 | | | R92-1204-05 | CHIP R 100 J 1/4W | | C521 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| R41,42 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | C522 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| R44 | | | R92-0670-05 | CHIP R 0 OHM | | C523 | | * | CK73FB1E334K | CHIP C 0.33UF K | |
| R45 | | | RK73GB1J223J | CHIP R 22K J 1/16W | | C524 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| R46 | | | RK73GB1J471J | CHIP R 470 J 1/16W | K,E | C525 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| R46 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K2,K3 | | | | | | |
| R47 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | K,E | | | | | | |
| R47 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | K2,K3 | | | | | | |

PARTS LIST

DISPLAY UNIT (X54-3330-21)
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| Ref. No. | Address | New parts | Parts No. | Description | Desti-nation |
|-----------|---------|-----------|---------------|------------------------------|--------------|
| C526 | | * | CK73FB1E334K | CHIP C 0.33UF K | |
| C601 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C602 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C603 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C606 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C607 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| CN501 | | | E40-6140-05 | PIN ASSY | |
| CN502 | | | E40-6102-05 | PIN ASSY | |
| CN601 | | | E40-6141-05 | PIN ASSY | |
| J601 | | | E08-0877-05 | MODULAR JACK | |
| - | | | J31-0543-05 | COLLAR (LH-5-1.5) | |
| CP501-504 | | | RK75GB1J471J | CHIP-COM 470 J 1/16W | |
| R502,503 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R505 | | | RK73GB1J683J | CHIP R 68K J 1/16W | |
| R506 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R507 | | | RK73GB1J682J | CHIP R 6.8K J 1/16W | |
| R508 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R509 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R510 | | | RK73GB1J224J | CHIP R 220K J 1/16W | |
| R511,512 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R513 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R514 | | | RK73GB1J154J | CHIP R 150K J 1/16W | |
| R516 | | | R92-2565-05 | CHIP R 1.2K J 1/2W | |
| R517 | | | R92-2023-05 | CHIP R 820 J 1/2W | |
| R518,519 | | | R92-2565-05 | CHIP R 1.2K J 1/2W | |
| R520-526 | | | R92-2023-05 | CHIP R 820 J 1/2W | |
| R529-540 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R541-544 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R601 | | | RK73GB1J681J | CHIP R 680 J 1/16W | |
| R604,605 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R606 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| VR501 | | | R32-0643-05 | SEMI FIXED VARIABLE RESISTOR | |
| VR601 | | | R31-0630-05 | VARIABLE RESISTOR | |
| S501-506 | | | S70-0410-15 | TACT SWITCH | |
| S507 | | | S68-0410-05 | PUSH SWITCH | |
| D501,502 | | | HSM88AS | DIODE | |
| D506,507 | | | LA-501DD | LED | |
| D508-514 | | | DA204U | DIODE | |
| D601,602 | | | DA204U | DIODE | |
| D603 | | | MINISMD020 | VARISTOR | |
| IC501 | | | NJM4558E | MOS-IC | |
| IC502-505 | | | BU4094BCFV | MOS-IC | |
| IC506,507 | | | TA78L05F | MOS-IC | |
| Q501 | | | 2SC4116(Y) | TRANSISTOR | |
| Q502 | | | 2SA1586(Y,GR) | TRANSISTOR | |
| Q503,504 | | | UPA672T | FET | |
| Q506 | | | DTA114EUA | DIGITAL TRANSISTOR | |
| Q507 | | | UPA672T | FET | |
| Q508-511 | | | DTA114EUA | DIGITAL TRANSISTOR | |
| Q512-514 | | | UPA672T | FET | |
| Q516-519 | | | UPA672T | FET | |
| Q521-524 | | | UPA672T | FET | |
| Q525 | | | 2SK1824 | FET | |

| Ref. No. | Address | New parts | Parts No. | Description | Desti-nation |
|---|---------|-----------|---------------|--------------------|--------------|
| TX-RX UNIT (X57-696X-XX) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E | | | | | |
| C2 | | | CC73GCH1H010C | CHIP C 1.0PF C | K3 |
| C3 | | | CC73GCH1H100D | CHIP C 10PF D | K2,K3 |
| C3 | | | CC73GCH1H120J | CHIP C 12PF J | K,E |
| C4,5 | | | CK73GB1H471K | CHIP C 470PF K | |
| C7 | | | CC73GCH1H070D | CHIP C 7.0PF D | K2 |
| C7 | | | CC73GCH1H080D | CHIP C 8.0PF D | K3 |
| C7 | | | CC73GCH1H120J | CHIP C 12PF J | K,E |
| C8 | | | CC73GCH1H0R5C | CHIP C 0.5PF C | K,E |
| C8 | | | CC73GCH1H010C | CHIP C 1.0PF C | K2,K3 |
| C13 | | | CK73GB1H471K | CHIP C 470PF K | |
| C14,15 | | | CC73GCH1H060D | CHIP C 6.0PF D | K,E |
| C14,15 | | | CC73GCH1H070D | CHIP C 7.0PF D | K3 |
| C14,15 | | | CC73GCH1H080D | CHIP C 8.0PF D | K2 |
| C24 | | | C92-0695-05 | CHIP-TAN 10UF 10WV | |
| C25 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C28 | | | CC73GCH1H080D | CHIP C 8.0PF D | K3 |
| C28,29 | | | CC73GCH1H020C | CHIP C 2.0PF C | K,K2,E |
| C29 | | | CC73GCH1H110J | CHIP C 11PF J | K3 |
| C30 | | | CC73GCH1H680J | CHIP C 68PF J | |
| C31 | | | CC73GCH1H331J | CHIP C 330PF J | |
| C32 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C33 | | | CC73GCH1H330J | CHIP C 33PF J | |
| C34 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C36,37 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C38,39 | | | CC73GCH1H680J | CHIP C 68PF J | |
| C40,41 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C42,43 | | | CC73GCH1H030C | CHIP C 3.0PF C | |
| C44,45 | | | CC73GCH1H040C | CHIP C 4.0PF C | |
| C46,47 | | | CC73GCH1H030C | CHIP C 3.0PF C | |
| C48 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C49,50 | | | CC73GCH1H680J | CHIP C 68PF J | |
| C51 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C52 | | | CK73GB1H103J | CHIP C 0.010UF J | |
| C53 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C54 | | | CK73GB1H103J | CHIP C 0.010UF J | |
| C55,56 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C57 | | | CK73GB1H103J | CHIP C 0.010UF J | |
| C58 | | | CC73GCH1H180J | CHIP C 18PF J | |
| C59 | | | CC73GCH1H150J | CHIP C 15PF J | |
| C60 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C61 | | | CC73GCH1H080D | CHIP C 8.0PF D | |
| C62,63 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C64 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C65 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C66,67 | | | CC73GCH1H331J | CHIP C 330PF J | |
| C68-70 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C71 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C72 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C73 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C74 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C75 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C76 | | | C92-0696-05 | CHIP-TAN 47UF 10WV | |
| C77 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C78 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C79 | | | CK73FB1C224K | CHIP C 0.22UF K | |
| C80,81 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C82-84 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C86 | | | CK73GB1H102K | CHIP C 1000PF K | |

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| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------|---------|-----------|---------------|---------------------|-------------|----------|---------|-----------|---------------|----------------------|-------------|
| C87 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C178 | | | C92-0606-05 | CHIP-TAN 4.7UF 10WV | |
| C88 | | | CK73GB1H102K | CHIP C 1000PF K | | C179 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C89,90 | | | CK73GB1H103J | CHIP C 0.010UF J | | C184,185 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C91 | | | CC73GCH1H040C | CHIP C 4.0PF C | K,K2,E | C189,190 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C91 | | | CC73GCH1H050C | CHIP C 5.0PF C | K3 | C191-195 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C92,93 | | | CK73GB1H471K | CHIP C 470PF K | | C197 | | | CK73FB1H333K | CHIP C 0.033UF K | |
| C94 | | | CC73GCH1H030C | CHIP C 3.0PF C | K,K2,E | C198 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C94,95 | | | CC73GCH1H040C | CHIP C 4.0PF C | K3 | C199 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C95 | | | CC73GCH1H040C | CHIP C 4.0PF C | K,E | C204-208 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C95 | | | CC73GCH1H060D | CHIP C 6.0PF D | K2 | C210 | | | CC73GCH1H060D | CHIP C 6.0PF D | K2 |
| C96-99 | | | CK73GB1H471K | CHIP C 470PF K | | C210 | | | CC73GCH1H080D | CHIP C 8.0PF D | K,E |
| C100 | | | CC73GCH1H060D | CHIP C 6.0PF D | K3 | C210 | | | CC73GCH1H100D | CHIP C 10PF D | K3 |
| C100,101 | | | CC73GCH1H050C | CHIP C 5.0PF C | K,K2,E | C211 | | | CC73GCH1H120J | CHIP C 12PF J | K,E |
| C101 | | | CC73GCH1H050C | CHIP C 5.0PF C | K3 | C212-214 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C102 | | | CK73GB1H471K | CHIP C 470PF K | | C215 | | | CC73GCH1H050C | CHIP C 5.0PF C | K2 |
| C104 | | | CK73GB1H471K | CHIP C 470PF K | | C216 | | | CK73GB1H471K | CHIP C 470PF K | |
| C105 | | | CC73GCH1H070D | CHIP C 7.0PF D | | C217 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C106 | | | CK73GB1H471K | CHIP C 470PF K | | C218 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C107 | | | CC73GCH1H060D | CHIP C 6.0PF D | | C223 | | | CC73GCH1H101J | CHIP C 100PF J | K,E |
| C109 | | | CC73GCH1H120J | CHIP C 12PF J | | C224 | | | CC73GCH1H030C | CHIP C 3.0PF C | K3 |
| C111 | | | CC73GCH1H060D | CHIP C 6.0PF D | | C231 | | | C92-0633-05 | CHIP-TAN 22UF 10WV | |
| C114-117 | | | CC73GCH1H100D | CHIP C 10PF D | | C232-234 | | | CK73GB1H103J | CHIP C 0.010UF J | |
| C120,121 | | | CK73GB1H471K | CHIP C 470PF K | | C235 | | | CC73GCH1H101J | CHIP C 100PF J | K3 |
| C122,123 | | | CK73GB1H103K | CHIP C 0.010UF K | | C251 | | | CC73GCH1H020C | CHIP C 2.0PF C | K2 |
| C124,125 | | | C92-1341-05 | ELECTRO 100UF 16WV | | C251 | | | CC73GCH1H030C | CHIP C 3.0PF C | K3 |
| C126,127 | | | C92-0633-05 | CHIP-TAN 22UF 10WV | | C600 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C128,129 | | | CK73GB1H103K | CHIP C 0.010UF K | | C602 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C130,131 | | | CK73GB1H102K | CHIP C 1000PF K | | C605 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C132,133 | | | CK73GB1H471K | CHIP C 470PF K | | C613,614 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C134,135 | | | CK73GB1H103K | CHIP C 0.010UF K | | C616 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C136-139 | | | C90-4016-05 | ELECTRO 47UF 16WV | | C623 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C140,141 | | | CK73GB1H103K | CHIP C 0.010UF K | | C629 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C142,143 | | | CK73GB1H102K | CHIP C 1000PF K | | C634,635 | | | CC73GCH1H220J | CHIP C 22PF J | |
| C144 | | | CK73GB1H471K | CHIP C 470PF K | | C638 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C145 | | | C92-0606-05 | CHIP-TAN 4.7UF 10WV | | C639 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C146 | | | CK73GB1H471K | CHIP C 470PF K | | C640 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C147 | | | C92-0633-05 | CHIP-TAN 22UF 10WV | | C641 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C148 | | | CK73GB1H102K | CHIP C 1000PF K | | C642 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C149 | | | CK73GB1H103K | CHIP C 0.010UF K | | C643 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C150 | | | C92-0633-05 | CHIP-TAN 22UF 10WV | | C644 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C151 | | | C92-0008-05 | CHIP-TAN 3.3UF 16WV | | C645,646 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C152 | | | CK73GB1H103K | CHIP C 0.010UF K | | C647 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C153 | | | CK73GB1H471K | CHIP C 470PF K | | C648 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C154 | | | C92-0560-05 | CHIP-TAN 10UF 6.3WV | | C649 | | | CC73GCH1H330J | CHIP C 33PF J | |
| C155 | | | CK73GB1H103K | CHIP C 0.010UF K | | C652 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C156 | | | CK73GB1H102K | CHIP C 1000PF K | | C657 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C157 | | | CK73GB1H103K | CHIP C 0.010UF K | | C662 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C158 | | | C92-0008-05 | CHIP-TAN 3.3UF 16WV | | C663 | | | C92-0519-05 | CHIP-TAN 1.0UF 25WV | |
| C159 | | | CK73GB1H471K | CHIP C 470PF K | | C670 | | | C92-0003-05 | CHIP-TAN 0.47UF 25WV | |
| C160 | | | CK73GB1H102K | CHIP C 1000PF K | | C679 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C161-163 | | | CK73GB1H103K | CHIP C 0.010UF K | | C681 | | | C92-0546-05 | CHIP-TAN 68UF 6.3WV | |
| C164 | | | CK73GB1H471K | CHIP C 470PF K | | C684 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C166,167 | | | CK73GB1H471K | CHIP C 470PF K | | C685 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C171 | | | CK73GB1H471K | CHIP C 470PF K | | C690 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C172 | | | CK73GB1H102K | CHIP C 1000PF K | | C691,692 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C173 | | | CK73GB1H103K | CHIP C 0.010UF K | | C693,694 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C174 | | | C92-0008-05 | CHIP-TAN 3.3UF 16WV | | C695,696 | | | CK73GB1H471K | CHIP C 470PF K | |
| C175 | | | CK73GB1H102K | CHIP C 1000PF K | | C697,698 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C176 | | | CK73GB1H103K | CHIP C 0.010UF K | | C700,701 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | |
| C177 | | | CK73GB1H471K | CHIP C 470PF K | | C703,704 | | | CK73GB1C104K | CHIP C 0.10UF K | |

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| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------|---------|-----------|---------------|---------------------|-------------|----------|---------|-----------|---------------|----------------------|-------------|
| C705 | | | CK73GB1E103K | CHIP C 0.010UF K | | C792-794 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C706 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C795 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C707-709 | | | CK73GB1E103K | CHIP C 0.010UF K | | C796,797 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C710 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C798 | | | CE04EW1E470M | ELECTRO 47UF 25WV | |
| C711 | | | CK73GB1H471K | CHIP C 470PF K | | C799 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C712 | | | CK73GB1E103K | CHIP C 0.010UF K | | C800 | | | CE04EW1E470M | ELECTRO 47UF 25WV | |
| C713,714 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C801 | | | C92-0560-05 | CHIP-TAN 10UF 6.3WV | |
| C715 | | | CK73GB1E103K | CHIP C 0.010UF K | | C802-805 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C716,717 | | | CK73GB1H471K | CHIP C 470PF K | | C806 | | | CE04EW1E470M | ELECTRO 47UF 25WV | |
| C718,719 | | | CK73GB1E103K | CHIP C 0.010UF K | | C807-810 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C720 | | | C92-0532-05 | CHIP-TAN 1.0UF 10WV | | C811 | | | CE04EW1E470M | ELECTRO 47UF 25WV | |
| C721,722 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C812,813 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C723 | | | CK73FB1C105K | CHIP C 1.0UF K | | C814 | | | C92-0777-05 | ELECTRO 1000UF 25WV | |
| C724 | | | CK73GB1H182K | CHIP C 1800PF K | | C815 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C725 | | | CC73GCH1H470J | CHIP C 47PF J | | C816 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C726 | | | CC73GCH1H181J | CHIP C 180PF J | | C817 | | | CE04EW1E470M | ELECTRO 47UF 25WV | |
| C727,728 | | | CK73GB1E103K | CHIP C 0.010UF K | | C818-820 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C729 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C821,822 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C730,731 | | | CK73GB1E103K | CHIP C 0.010UF K | | C823 | | | C92-0619-05 | CHIP-TAN 47UF 4WV | |
| C732 | | | CK73GB1H471K | CHIP C 470PF K | | C824 | | | CK73GB1H472K | CHIP C 4700PF K | |
| C733 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C825 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C734 | | | CC73GCH1H270J | CHIP C 27PF J | | C826 | | | C92-0560-05 | CHIP-TAN 10UF 6.3WV | |
| C735 | | | CC73GCH1H150J | CHIP C 15PF J | | C827 | | | C92-0823-05 | CHIP-TAN 100UF 10WV | |
| C736 | | | CK73GB1H182K | CHIP C 1800PF K | | C828 | | | C92-0514-05 | CHIP-TAN 2.2UF 10WV | |
| C737 | | | CC73GCH1H270J | CHIP C 27PF J | | C829 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C738 | | | CK73GB1E103K | CHIP C 0.010UF K | | C830 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C739 | | | CC73GCH1H181J | CHIP C 180PF J | | C831 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C740 | | | CC73GCH1H101J | CHIP C 100PF J | | C832,833 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C741 | | | CK73GB1E103K | CHIP C 0.010UF K | | C834,835 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C742 | | | CK73GB1H471K | CHIP C 470PF K | | C836-838 | | | CK73GB1E103K | CHIP C 0.010UF K | |
| C743 | | | CK73GB1E103K | CHIP C 0.010UF K | | C839 | | | CK73GB1H271K | CHIP C 270PF K | |
| C744-746 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C840 | | | CK73GB1H472K | CHIP C 4700PF K | |
| C747,748 | | | CK73GB1E103K | CHIP C 0.010UF K | | C841 | | | CK73FB1C105K | CHIP C 1.0UF K | |
| C749 | | | CK73GB1H471K | CHIP C 470PF K | | C842 | | | C92-0519-05 | CHIP-TAN 1.0UF 25WV | |
| C750,751 | | | CK73GB1E103K | CHIP C 0.010UF K | | C843,844 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C752 | | | CK73GB1H471K | CHIP C 470PF K | | C851 | | | CK73GB1C104K | CHIP C 0.10UF K | |
| C753,754 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | C852 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C755 | | | CK73GB1H471K | CHIP C 470PF K | | CN1 | | | E04-0154-05 | PIN SOCKET | |
| C756,757 | | | C92-0628-05 | CHIP-TAN 10UF 10WV | | CN2 | | | E40-5538-05 | PIN ASSY | |
| C758 | | | CK73FB1C105K | CHIP C 1.0UF K | | CN3 | | | E04-0154-05 | PIN SOCKET | |
| C759 | | | CK73GB1H471K | CHIP C 470PF K | | CN4 | | | E40-5538-05 | PIN ASSY | |
| C760 | | | CK73GB1H102K | CHIP C 1000PF K | | CN14 | | | E40-6009-05 | FLAT CABLE CONNECTOR | |
| C761 | | | CK73GB1C104K | CHIP C 0.10UF K | | CN15 | | | E40-5703-05 | PIN ASSY | |
| C762,763 | | | CK73GB1H102K | CHIP C 1000PF K | | CN16 | | | E40-5632-05 | PIN ASSY | |
| C764,765 | | | CK73GB1E103K | CHIP C 0.010UF K | | CN18,19 | | | E04-0154-05 | PIN SOCKET | |
| C766-768 | | | CC73GCH1H101J | CHIP C 100PF J | | CN600 | | | E40-6102-05 | PIN ASSY | |
| C769-771 | | | C92-0560-05 | CHIP-TAN 10UF 6.3WV | | CN601 | | | E40-5701-05 | PIN ASSY | |
| C772 | | | C92-0823-05 | CHIP-TAN 100UF 10WV | | CN602 | | | E40-6009-05 | FLAT CABLE CONNECTOR | |
| C773 | | | C92-0514-05 | CHIP-TAN 2.2UF 10WV | | CN603 | | | E40-5887-05 | PIN ASSY | |
| C774 | | | CK73FB1C105K | CHIP C 1.0UF K | | CN604 | | | E40-5702-05 | PIN ASSY | |
| C775-779 | | | C92-0519-05 | CHIP-TAN 1.0UF 25WV | | CN605 | | | E40-5704-05 | PIN ASSY | |
| C780-782 | | | CK73FB1C105K | CHIP C 1.0UF K | | CN606 | | | E40-5960-05 | PIN ASSY | |
| C783 | | | CK73GB1H471K | CHIP C 470PF K | | F1 | | | F53-0217-05 | FUSE | |
| C784 | | | CK73FB1C105K | CHIP C 1.0UF K | | CF1 | | | L72-0366-05 | CERAMIC FILTER | |
| C785,786 | | | CK73GB1C104K | CHIP C 0.10UF K | | CF2 | | | L72-0376-05 | CERAMIC FILTER | |
| C787 | | | CK73FB1C105K | CHIP C 1.0UF K | | L1 | | | L34-4616-05 | AIR-CORE COIL | |
| C788 | | | CC73GCH1H101J | CHIP C 100PF J | | L2 | | | L79-1849-05 | HELICAL BLOCK | K,E |
| C789 | | | CE04EW1E331M | ELECTRO 330UF 25WV | | L2 | | * | L79-1852-05 | HELICAL BLOCK | K2 |
| C790 | | | CC73GCH1H101J | CHIP C 100PF J | | | | | | | |
| C791 | | | CK73GB1H471K | CHIP C 470PF K | | | | | | | |

PARTS LIST

TX-RX UNIT (X57-696X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|-----------|---------|-----------|-------------|--------------------------------|--------------|----------|---------|-----------|--------------|-------------|---------------|
| L2 | | * | L79-1853-05 | HELICAL BLOCK | K3 | R2 | | | RK73GB1J122J | CHIP R | 1.2K J 1/16W |
| L3 | | | L40-1575-34 | SMALL FIXED INDUCTOR (15NH) | K2,K3 | R3 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| L3 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K,E | R5 | | | RK73GB1J101J | CHIP R | 100 J 1/16W |
| L4,5 | | | L79-1849-05 | HELICAL BLOCK | K,E | R8 | | | RK73GB1J151J | CHIP R | 150 J 1/16W |
| L4,5 | | * | L79-1852-05 | HELICAL BLOCK | K2 | R9 | | | RK73GB1J223J | CHIP R | 22K J 1/16W |
| L4,5 | | * | L79-1853-05 | HELICAL BLOCK | K3 | R10 | | | RK73GB1J180J | CHIP R | 18 J 1/16W |
| L6 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K,K2,E | R11 | | | RK73GB1J271J | CHIP R | 270 J 1/16W |
| L6 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K3 | R13 | | | RK73GB1J271J | CHIP R | 270 J 1/16W |
| L10 | | | L40-1581-37 | SMALL FIXED INDUCTOR (0.150UH) | | R14 | | | RK73GB1J333J | CHIP R | 33K J 1/16W |
| L11 | | | L40-1885-34 | SMALL FIXED INDUCTOR (180NH) | | R17 | | | RK73GB1J824J | CHIP R | 820K J 1/16W |
| L12 | | | L40-3381-37 | SMALL FIXED INDUCTOR (0.330UH) | | R18 | | | RK73GB1J684J | CHIP R | 680K J 1/16W |
| L13 | | | L40-1005-34 | SMALL FIXED INDUCTOR (10UH) | | R19 | | | RK73GB1J474J | CHIP R | 470K J 1/16W |
| L14 | | | L34-4527-05 | COIL | | R20 | | | RK73GB1J224J | CHIP R | 220K J 1/16W |
| L15 | | | L34-4526-05 | COIL | | R30 | | | RK73GB1J821J | CHIP R | 820 J 1/16W |
| L16 | | | L34-4527-05 | COIL | | R31 | | | RK73GB1J5R6J | CHIP R | 5.6 J 1/16W |
| L17,18 | | | L34-4526-05 | COIL | | R32 | | | RK73GB1J821J | CHIP R | 820 J 1/16W |
| L19 | | | L34-4527-05 | COIL | | R33 | | | RK73GB1J470J | CHIP R | 47 J 1/16W |
| L20 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | | R34 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| L21 | | | L40-1005-34 | SMALL FIXED INDUCTOR (10UH) | | R35 | | | RK73GB1J182J | CHIP R | 1.8K J 1/16W |
| L23 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | | R36 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| L24 | | | L34-4459-05 | COIL | | R37 | | | RK73GB1J682J | CHIP R | 6.8K J 1/16W |
| L25 | | | L40-2775-34 | SMALL FIXED INDUCTOR (27NH) | | R38 | | | R92-1252-05 | CHIP R | 0 OHM J 1/16W |
| L26 | | | L40-1575-34 | SMALL FIXED INDUCTOR (15NH) | K,K2,E | R39 | | | RK73GB1J560J | CHIP R | 56 J 1/16W |
| L26-28 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K3 | R40 | | | RK73GB1J270J | CHIP R | 27 J 1/16W |
| L27 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K,E | R41 | | | RK73GB1J222J | CHIP R | 2.2K J 1/16W |
| L27,28 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K2 | R42-45 | | | RK73GB1J223J | CHIP R | 22K J 1/16W |
| L28 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K,E | R46 | | | RK73GB1J222J | CHIP R | 2.2K J 1/16W |
| L29,30 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | K,K2,E | R47 | | | RK73GB1J153J | CHIP R | 15K J 1/16W |
| L29,30 | | | L40-2275-92 | SMALL FIXED INDUCTOR (22NH) | K3 | R48 | | | RK73GB1J473J | CHIP R | 47K J 1/16W |
| L31,32 | | | L40-1005-34 | SMALL FIXED INDUCTOR (10UH) | | R49 | | | RK73GB1J221J | CHIP R | 220 J 1/16W |
| L33 | | | L40-1575-92 | SMALL FIXED INDUCTOR (15NH) | K,E | R50 | | | RK73GB1J153J | CHIP R | 15K J 1/16W |
| L33 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | K2 | R51 | | | R92-1252-05 | CHIP R | 0 OHM J 1/16W |
| L33 | | | L40-2275-92 | SMALL FIXED INDUCTOR (22NH) | K3 | R52 | | | RK73GB1J223J | CHIP R | 22K J 1/16W |
| L34 | | | L40-1005-34 | SMALL FIXED INDUCTOR (10UH) | | R53 | | | RK73GB1J682J | CHIP R | 6.8K J 1/16W |
| L35-39 | | | L92-0140-05 | CHIP FERRITE | | R54 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| L40 | | | L92-0158-05 | CHIP FERRITE | | R55 | | | RK73GB1J223J | CHIP R | 22K J 1/16W |
| L42 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | K3 | R56 | | | RK73GB1J682J | CHIP R | 6.8K J 1/16W |
| L42 | | | L40-6865-92 | SMALL FIXED INDUCTOR (6.8NH) | K,K2,E | R57 | | | RK73GB1J332J | CHIP R | 3.3K J 1/16W |
| L43 | | | L92-0140-05 | CHIP FERRITE | | R58 | | | RK73GB1J153J | CHIP R | 15K J 1/16W |
| L45 | | | L40-1875-92 | SMALL FIXED INDUCTOR (18NH) | K3 | R60 | | | RK73GB1J103J | CHIP R | 10K J 1/16W |
| L600-608 | | | L92-0140-05 | CHIP FERRITE | | R61 | | | RK73GB1J274J | CHIP R | 270K J 1/16W |
| L611-613 | | | L92-0140-05 | CHIP FERRITE | | R62 | | | RK73GB1J222J | CHIP R | 2.2K J 1/16W |
| X1 | | | L77-1762-05 | CRYSTAL RESONATOR (44.395MHZ) | | R63 | | | RK73GB1J183J | CHIP R | 18K J 1/16W |
| X2,3 | | | L77-1849-05 | VCXO (16.8MHZ) | | R65 | | | RK73GB1J472J | CHIP R | 4.7K J 1/16W |
| X600 | | | L78-0431-05 | RESONATOR (14.7456MHZ) | | R66 | | | RK73GB1J334J | CHIP R | 330K J 1/16W |
| X601 | | | L77-1799-05 | CRYSTAL RESONATOR (16.515MHZ) | | R67 | | | RK73GB1J560J | CHIP R | 56 J 1/16W |
| XF1 | | | L71-0513-05 | MCF (44.85MHZ NARR) | | R68,69 | | | RK73GB1J332J | CHIP R | 3.3K J 1/16W |
| XF2 | | | L71-0512-05 | MCF (44.85MHZ WIDE) | | R70 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| XF2 | | | L71-0627-05 | MCF (44.85M WIDE S) | K,K2,K3 E | R71 | | | RK73GB1J823J | CHIP R | 82K J 1/16W |
| CP600,601 | | | R90-0725-05 | MULTI-COMP 1K X2 | | R72 | | | RK73GB1J334J | CHIP R | 330K J 1/16W |
| CP603 | | | R90-1019-05 | MULTI-COMP 100 X2 | | R73 | | | RK73GB1J474J | CHIP R | 470K J 1/16W |
| CP604,605 | | | R90-0725-05 | MULTI-COMP 1K X2 | | R74,75 | | | RK73GB1J220J | CHIP R | 22 J 1/16W |
| CP606 | | | R90-0719-05 | MULTI-COMP 4.7K X2 | | R76 | | | RK73GB1J104J | CHIP R | 100K J 1/16W |
| CP607,608 | | | R90-0725-05 | MULTI-COMP 1K X2 | | R77,78 | | | RK73GB1J473J | CHIP R | 47K J 1/16W |
| CP609 | | | R90-1019-05 | MULTI-COMP 100 X2 | | R79 | | | RK73GB1J104J | CHIP R | 100K J 1/16W |
| CP610,611 | | | R90-0750-05 | CHIP COM 10 J 1/16W | | R82 | | | RK73GB1J474J | CHIP R | 470K J 1/16W |
| CP612-614 | | | R90-0725-05 | MULTI-COMP 1K X2 | | R83 | | | R92-1252-05 | CHIP R | 0 OHM J 1/16W |
| CP615-619 | | | R90-0750-05 | CHIP COM 10 J 1/16W | | R87,88 | | | RK73GB1J102J | CHIP R | 1.0K J 1/16W |
| CP620 | | | R90-1019-05 | MULTI-COMP 100 X2 | | R90 | | | R92-1252-05 | CHIP R | 0 OHM J 1/16W |
| | | | | | | R91 | | | RK73GB1J472J | CHIP R | 4.7K J 1/16W |

PARTS LIST

TX-RX UNIT (X57-696X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Desti-nation | Ref. No. | Address | New parts | Parts No. | Description | Desti-nation |
|----------|---------|-----------|--------------|----------------------|--------------|----------|---------|-----------|--------------|----------------------|--------------|
| R92 | | | RK73GB1J182J | CHIP R 1.8K J 1/16W | | R606 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R93 | | | RK73GB1J101J | CHIP R 100 J 1/16W | K2 | R607-613 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R93,94 | | | RK73GB1J101J | CHIP R 100 J 1/16W | K,K3,E | R614 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R94 | | | RK73GB1J820J | CHIP R 82 J 1/16W | K2 | R615 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R95 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R616 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R96 | | | RK73GB1J182J | CHIP R 1.8K J 1/16W | | R618 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R97 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | | R619 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R98 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R620-622 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R99 | | | RK73GB1J101J | CHIP R 100 J 1/16W | | R623,624 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R100 | | | RK73GB1J680J | CHIP R 68 J 1/16W | | R625-627 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R101 | | | RK73GB1J470J | CHIP R 47 J 1/16W | | R629 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R102 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | | R630,631 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R103 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R633,634 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R105 | | | RK73GB1J270J | CHIP R 27 J 1/16W | | R635 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R106 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R637 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R107 | | | RK73GB1J470J | CHIP R 47 J 1/16W | | R638 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R109 | | | RK73GB1J101J | CHIP R 100 J 1/16W | | R639 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R113 | | | RK73GB1J471J | CHIP R 470 J 1/16W | | R640 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R114 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R641 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R120,121 | | | RK73GB1J152J | CHIP R 1.5K J 1/16W | | R642 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R122,123 | | | RK73GB1J100J | CHIP R 10 J 1/16W | | R643 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R124,125 | | | RK73GB1J152J | CHIP R 1.5K J 1/16W | | R644 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R126,127 | | | RK73GB1J100J | CHIP R 10 J 1/16W | | R645,646 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R128 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R647,648 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R129,130 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R649-651 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R131 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R652 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R134 | | | RK73GB1J821J | CHIP R 820 J 1/16W | | R653,654 | | | R92-0670-05 | CHIP R 0 OHM | |
| R135 | | | RK73GB1J5R6J | CHIP R 5.6 J 1/16W | | R655 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R136 | | | RK73GB1J821J | CHIP R 820 J 1/16W | | R656 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R137,138 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R657-661 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R139-142 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R662 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R143 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R663-667 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R144 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R668 | | | RK73GB1J183J | CHIP R 18K J 1/16W | |
| R145 | | | RK73FB2A470J | CHIP R 47 J 1/10W | | R669-671 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |
| R148 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R672 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R150 | | | RK73GB1J180J | CHIP R 18 J 1/16W | | R673 | | | RK73GB1J224J | CHIP R 220K J 1/16W | |
| R151-158 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R674 | | | RK73GB1J823J | CHIP R 82K J 1/16W | |
| R160,161 | | | RK73GB1J471J | CHIP R 470 J 1/16W | | R675 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R162-164 | | | RK73GB1J271J | CHIP R 270 J 1/16W | | R676 | | | RK73GB1J823J | CHIP R 82K J 1/16W | |
| R165 | | | RK73GB1J471J | CHIP R 470 J 1/16W | | R678 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R166 | | | RK73GB1J223J | CHIP R 22K J 1/16W | | R679,680 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |
| R168 | | | RK73GB1J271J | CHIP R 270 J 1/16W | K3 | R681 | | | RK73GB1J183J | CHIP R 18K J 1/16W | |
| R168 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K,K2,E | R682 | | | RK73GB1J153J | CHIP R 15K J 1/16W | |
| R169 | | | RK73GB1J392J | CHIP R 3.9K J 1/16W | | R683 | | | RK73GB1J124J | CHIP R 120K J 1/16W | |
| R171 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R684 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R173-175 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K2 | R685,686 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R173,174 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K3 | R687 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |
| R174,175 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K,E | R688-690 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R175 | | | RK73GB1J391J | CHIP R 390 J 1/16W | K3 | R691-693 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R176 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R694,695 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R178 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K3 | R696 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R178,179 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K,K2,E | R697 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R181 | | | RK73GB1J182J | CHIP R 1.8K J 1/16W | | R698 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R182 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R699 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R600 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R700 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R601 | | | R92-0670-05 | CHIP R 0 OHM | | R701 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R602 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R702 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R603 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R703 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R604 | | | RK73GB1J333J | CHIP R 33K J 1/16W | | R704,705 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R605 | | | RK73GB1J104J | CHIP R 100K J 1/16W | | R707-709 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |

PARTS LIST

TX-RX UNIT (X57-696X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------|---------|-----------|--------------|----------------------|-------------|----------|---------|-----------|--------------|---------------------|-------------|
| R710 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R794 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R712 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R795 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R713 | | | RK73GB1J273J | CHIP R 27K J 1/16W | | R798 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R714 | | | RK73GB1J223J | CHIP R 22K J 1/16W | | R799 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R715 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R802 | | | RK73FB2A2R2J | CHIP R 2.2 J 1/10W | |
| R717,718 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R803 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R719 | | | RK73GB1J154J | CHIP R 150K J 1/16W | | R804 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R720 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R805 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R721 | | | RK73GB1J223J | CHIP R 22K J 1/16W | | R806 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R722 | | | RK73GB1J334J | CHIP R 330K J 1/16W | | R807 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R723,724 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R808 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R726 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R809 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R727 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R810 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R728,729 | | | RK73GB1J223J | CHIP R 22K J 1/16W | | R811 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R730 | | | RK73GB1J101J | CHIP R 100 J 1/16W | | R812 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |
| R731 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R813,814 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R732 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R815 | | | RK73GB1J104J | CHIP R 100K J 1/16W | |
| R733 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R817 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R734 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R818 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | |
| R735 | | | RK73GB1J333J | CHIP R 33K J 1/16W | | R819-822 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R736,737 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R823 | | | RK73GB1J474J | CHIP R 470K J 1/16W | |
| R738 | | | RK73GB1J274J | CHIP R 270K J 1/16W | | R824 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | |
| R739 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R825,826 | | | RK73GB1J824J | CHIP R 820K J 1/16W | |
| R740 | | | RK73GB1J104J | CHIP R 100K J 1/16W | | R827 | | | RK73GB1J822J | CHIP R 8.2K J 1/16W | |
| R741 | | | RK73GB1J154J | CHIP R 150K J 1/16W | | R828 | | | RK73GB1J273J | CHIP R 27K J 1/16W | |
| R742 | | | R92-0670-05 | CHIP R 0 OHM | | R829 | | | RK73GB1J224J | CHIP R 220K J 1/16W | |
| R743 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R830 | | | RK73GB1J563J | CHIP R 56K J 1/16W | |
| R744 | | | RK73GB1J393J | CHIP R 39K J 1/16W | | R831 | | | RK73GB1J154J | CHIP R 150K J 1/16W | |
| R745 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R832 | | | RK73GB1J822J | CHIP R 8.2K J 1/16W | |
| R747 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R833 | | | RK73GB1J223J | CHIP R 22K J 1/16W | |
| R749-752 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | R834 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | |
| R753,754 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | R836 | | | RK73GB1J473J | CHIP R 47K J 1/16W | |
| R758 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R837 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | |
| R760 | | | RK73GB1J122J | CHIP R 1.2K J 1/16W | | R839,840 | | | RK73GB1J561J | CHIP R 560 J 1/16W | |
| R762 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | | R841,842 | | | R92-0670-05 | CHIP R 0 OHM | |
| R763 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | R843 | | | RK73GB1J274J | CHIP R 270K J 1/16W | |
| R764,765 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | R844 | | | RK73GB1J334J | CHIP R 330K J 1/16W | |
| R766 | | | RK73GB1J122J | CHIP R 1.2K J 1/16W | | K1 | | | S76-0401-05 | RELAY | |
| R767 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D1-4 | | | DAN235K | DIODE | |
| R768 | | | RK73GB1J122J | CHIP R 1.2K J 1/16W | | D5 | | | MA742 | DIODE | |
| R771 | | | RK73GB1J122J | CHIP R 1.2K J 1/16W | | D7 | | | 1SS355 | DIODE | |
| R772 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D8 | | | DAN235K | DIODE | |
| R773 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | D11 | | | O2DZ5.1(Y) | ZENER DIODE | |
| R774 | | | RK73GB1J105J | CHIP R 1.0M J 1/16W | | D12 | | | O2DZ18(X,Y) | ZENER DIODE | |
| R775 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D13 | | | MA742 | DIODE | |
| R776 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | D600 | | | DA204U | DIODE | |
| R777 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D606-612 | | | DA204U | DIODE | |
| R778 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | D614-616 | | | DA204U | DIODE | |
| R779 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D618-623 | | | DA204U | DIODE | |
| R780 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | D626 | | | MINISMDE190 | VARISTOR | |
| R781 | | | RK73GB1J471J | CHIP R 470 J 1/16W | | D627,628 | | | 1SS355 | DIODE | |
| R782 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | D629 | | | DA204U | DIODE | |
| R783 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | IC1,2 | | | NJM4558E | MOS-IC | |
| R785 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | IC3 | | | NJM78L05UA | BI-POLAR IC | |
| R786 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | IC4 | | | NJM7808FA | BI-POLAR IC | |
| R787 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | IC5 | | | AN8009M | MOS-IC | |
| R789 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | IC6 | | | M62354GP | MOS-IC | |
| R790 | | | RK73GB1J473J | CHIP R 47K J 1/16W | | IC7 | | | BU4094BCF | MOS-IC | |
| R791 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | | | | | | |
| R793 | | | RK73GB1J102J | CHIP R 1.0K J 1/16W | | | | | | | |

PARTS LIST

RX VCO UNIT (X58-480X-XX)

TX VCO UNIT (X58-481X-XX)

| Ref. No. | Address | New parts | Parts No. | Description | Destination |
|-----------|---------|-----------|---------------|------------------------------|-------------|
| C379 | | | CC73GCH1H040C | CHIP C 4.0PF C | |
| C383 | | | CK73GB1H471K | CHIP C 470PF K | |
| C386 | | | CC73GCH1H101J | CHIP C 100PF J | K,K3,E |
| C386 | | | CC73GCH1H220J | CHIP C 22PF J | K2 |
| TC350,351 | | | C05-0396-05 | CERAMIC TRIMMER (8PF) | |
| CN300 | | | E40-5699-05 | PIN ASSY | |
| CN350 | | | E40-5755-05 | PIN ASSY | |
| CN351 | | | E40-6098-05 | PIN ASSY | |
| - | | | F10-2377-04 | SHIELDING CASE | |
| L300 | | | L92-0148-05 | CHIP FERRITE | |
| L301,302 | | | L40-1575-34 | SMALL FIXED INDUCTOR (15NH) | K2 |
| L301,302 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K,K3,E |
| L303 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K2 |
| L303 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K,E |
| L303 | | | L40-2775-34 | SMALL FIXED INDUCTOR (27NH) | K3 |
| L350-355 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | |
| L356,357 | | | L34-4607-05 | AIR-CORE COIL | K2 |
| L356,357 | | | L34-4608-05 | AIR-CORE COIL | K,E |
| L356,357 | | | L34-4609-05 | AIR-CORE COIL | K3 |
| L358-361 | | | L40-1595-34 | SMALL FIXED INDUCTOR (1.5UH) | |
| L362 | | | L40-2775-34 | SMALL FIXED INDUCTOR (27NH) | K2 |
| L362 | | | L40-3371-34 | SMALL FIXED INDUCTOR (33NH) | K,K3,E |
| R300 | | | RK73GB1J100J | CHIP R 10 J 1/16W | |
| R301-304 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R305 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R306 | | | RK73GB1J220J | CHIP R 22 J 1/16W | |
| R308 | | | RK73GB1J560J | CHIP R 56 J 1/16W | |
| R309 | | | RK73GB1J331J | CHIP R 330 J 1/16W | K,K3,E |
| R309 | | | RK73GB1J391J | CHIP R 390 J 1/16W | K2 |
| R310 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | |
| R311 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R312 | | | RK73GB1J331J | CHIP R 330 J 1/16W | K,K3,E |
| R312 | | | RK73GB1J391J | CHIP R 390 J 1/16W | K2 |
| R313 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | |
| R314 | | | RK73GB1J474J | CHIP R 470K J 1/16W | |
| R315 | | | RK73GB1J151J | CHIP R 150 J 1/16W | |
| R316 | | | RK73FB2A152J | CHIP R 1.5K J 1/10W | |
| R317,318 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R319 | | | RK73GB1J330J | CHIP R 33 J 1/16W | |
| R320 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | |
| R321 | | | RK73GB1J273J | CHIP R 27K J 1/16W | |
| R322 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R350-353 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| R354,355 | | | RK73GB1J330J | CHIP R 33 J 1/16W | |
| R356 | | | RK73GB1J181J | CHIP R 180 J 1/16W | K2 |
| R356 | | | RK73GB1J221J | CHIP R 220 J 1/16W | K,K3,E |
| R357 | | | RK73GB1J151J | CHIP R 150 J 1/16W | K2 |
| R357 | | | RK73GB1J181J | CHIP R 180 J 1/16W | K,K3,E |
| R358,359 | | | RK73GB1J470J | CHIP R 47 J 1/16W | |
| R360-363 | | | RK73GB1J472J | CHIP R 4.7K J 1/16W | |
| R364 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R365 | | | RK73GB1J333J | CHIP R 33K J 1/16W | |
| R366 | | | RK73GB1J103J | CHIP R 10K J 1/16W | |
| R367 | | | RK73GB1J101J | CHIP R 100 J 1/16W | |
| R368 | | | RK73GB1J330J | CHIP R 33 J 1/16W | |
| D350-353 | | | 1SV282 | VARIABLE CAPACITANCE DIODE | |
| IC300 | | | CD8468 | MOS-IC | |
| IC300 | | | SA7025DK | MOS-IC | |

| Ref. No. | Address | New parts | Parts No. | Description | Destination |
|---|---------|-----------|---------------|----------------------|-------------|
| Q300,301 | | | 2SC4116(GR) | TRANSISTOR | |
| Q302 | | | 2SC4226(R24) | TRANSISTOR | |
| Q350,351 | | | 2SK508NV(K52) | FET | |
| Q352,353 | | | 2SC4116(Y) | TRANSISTOR | |
| Q354 | | | DTC114EUA | DIGITAL TRANSISTOR | |
| Q355 | | | 2SC4226(R24) | TRANSISTOR | |
| TX VCO UNIT (X58-481X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3 | | | | | |
| C304,305 | | | CK73GB1H102K | CHIP C 1000PF K | |
| C306 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C307 | | | CK73GB1H471K | CHIP C 470PF K | |
| C308-310 | | | CK73FB1E104K | CHIP C 0.10UF K | |
| C311 | | | C92-0001-05 | CHIP-TAN 0.1UF 35WV | |
| C312 | | | CC73GCH1H050C | CHIP C 5.0PF C | K2 |
| C312 | | | CC73GCH1H060D | CHIP C 6.0PF D | K,E |
| C312 | | | CC73GCH1H070D | CHIP C 7.0PF D | K3 |
| C314 | | | CC73GCH1H100D | CHIP C 10PF D | K2 |
| C314 | | | CC73GCH1H120J | CHIP C 12PF J | K,K3,E |
| C315 | | | CK73FB1H473K | CHIP C 0.047UF K | |
| C317 | | | CC73GCH1H050C | CHIP C 5.0PF C | K2 |
| C317 | | | CC73GCH1H060D | CHIP C 6.0PF D | K,E |
| C317 | | | CC73GCH1H070D | CHIP C 7.0PF D | K3 |
| C318 | | | C92-0514-05 | CHIP-TAN 2.2UF 10WV | |
| C319 | | | CK73GB1H471K | CHIP C 470PF K | |
| C320 | | | C92-0514-05 | CHIP-TAN 2.2UF 10WV | |
| C321 | | | CC73GCH1H040C | CHIP C 4.0PF C | |
| C322 | | | CK73GB1H471K | CHIP C 470PF K | |
| C323 | | | CK73FB1E224K | CHIP C 0.22UF K | |
| C324 | | | C92-0002-05 | CHIP-TAN 0.22UF 35WV | K,K2,E |
| C324 | | | C92-0502-05 | CHIP-TAN 0.33UF 35WV | K3 |
| C325 | | | CC73GCH1H040C | CHIP C 4.0PF C | |
| C329,330 | | | CK73GB1H471K | CHIP C 470PF K | |
| C350 | | | CK73GB1H471K | CHIP C 470PF K | K,K2,E |
| C351 | | | CK73GB1H471K | CHIP C 470PF K | |
| C352 | | | CC73GCH1H101J | CHIP C 100PF J | K,K3,E |
| C353 | | | CK73GB1H471K | CHIP C 470PF K | K3 |
| C354 | | | CK73GB1H471K | CHIP C 470PF K | K,K2,E |
| C355 | | | CC73GCH1H100C | CHIP C 10PF C | K3 |
| C356 | | | CC73GCH1H070B | CHIP C 7.0PF B | K2 |
| C356 | | | CC73GCH1H080B | CHIP C 8.0PF B | K,E |
| C357 | | | CK73GB1H471K | CHIP C 470PF K | K3 |
| C358 | | | CC73GCH1H030B | CHIP C 3.0PF B | K3 |
| C359 | | | CC73GCH1H1R5B | CHIP C 1.5PF B | K,K2,E |
| C360 | | | CK73FB1E104K | CHIP C 0.10UF K | K,K2,E |
| C361 | | | CK73FB1E104K | CHIP C 0.10UF K | K3 |
| C362 | | | CC73GCH1H120G | CHIP C 12PF G | K,K2,E |
| C363 | | | CC73GCH1H180G | CHIP C 18PF G | K3 |
| C364 | | | CK73GB1H471K | CHIP C 470PF K | K,K2,E |
| C365 | | | CK73GB1H471K | CHIP C 470PF K | K3 |
| C366 | | | CC73GCH1H070B | CHIP C 7.0PF B | K,K2,E |
| C367 | | | CC73GCH1H070B | CHIP C 7.0PF B | K3 |
| C368 | | | CC73GCH1H070B | CHIP C 7.0PF B | K,K2,E |
| C369 | | | CC73GCH1H080B | CHIP C 8.0PF B | K3 |
| C370 | | | CC73GCH1H070B | CHIP C 7.0PF B | K,K2,E |
| C371 | | | CC73GCH1H080B | CHIP C 8.0PF B | K3 |
| C374 | | | CC73GCH1H0R5B | CHIP C 0.5PF B | K,K2,E |
| C375 | | | CC73GCH1H0R5B | CHIP C 0.5PF B | K3 |
| C377,378 | | | CK73GB1H471K | CHIP C 470PF K | |

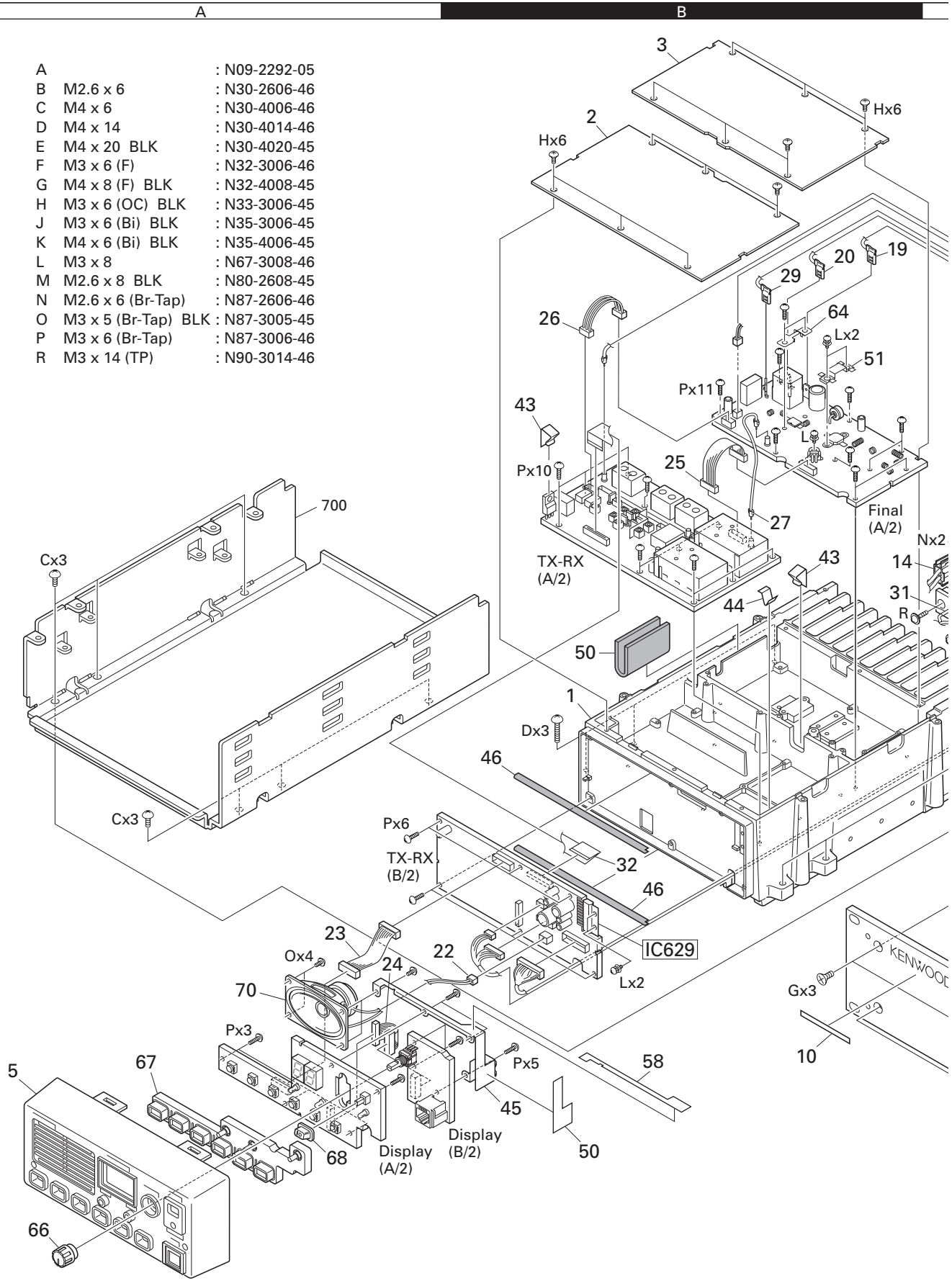
PARTS LIST

TX VCO UNIT (X58-481X-XX)

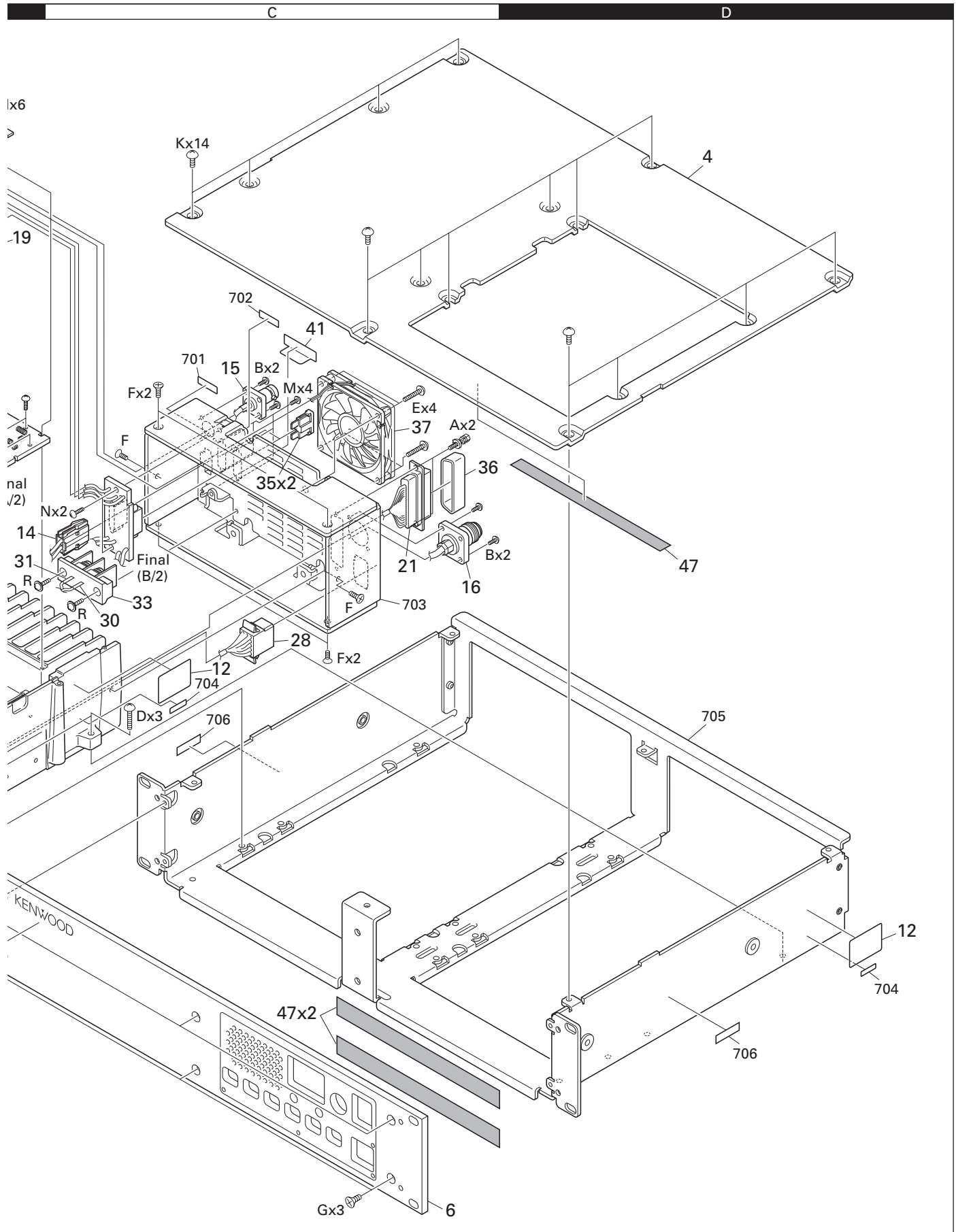
| Ref. No. | Address | New parts | Parts No. | Description | Destination | Ref. No. | Address | New parts | Parts No. | Description | Destination |
|----------|---------|-----------|---------------|------------------------------|-------------|----------|---------|-----------|---------------|----------------------------|-------------|
| C379 | | | CC73GCH1H040C | CHIP C 4.0PF C | | R368 | | | RK73GB1J330J | CHIP R 33 J 1/16W | |
| C380 | | | CC73GCH1H0R5B | CHIP C 0.5PF B | K,K2,E | R372,373 | | | RK73GB1J104J | CHIP R 100K J 1/16W | K,K2,E |
| C381 | | | CC73GCH1H0R5B | CHIP C 0.5PF B | K3 | R374,375 | | | RK73GB1J104J | CHIP R 100K J 1/16W | K3 |
| C382,383 | | | CC73GCH1H471J | CHIP C 470PF J | | R376 | | | RK73GB1J151J | CHIP R 150 J 1/16W | K2 |
| TC350 | | | C05-0396-05 | CERAMIC TRIMMER (8PF) | K,K2,E | R376 | | | RK73GB1J181J | CHIP R 180 J 1/16W | K,E |
| TC351 | | | C05-0396-05 | CERAMIC TRIMMER (8PF) | K3 | R377 | | | RK73GB1J181J | CHIP R 180 J 1/16W | K3 |
| CN300 | | | E40-5699-05 | PIN ASSY | | D350 | | | 1SV282 | VARIABLE CAPACITANCE DIODE | K,K2,E |
| CN350 | | | E40-5755-05 | PIN ASSY | | D351 | | | 1SV282 | VARIABLE CAPACITANCE DIODE | K3 |
| CN351 | | | E40-6098-05 | PIN ASSY | | D352 | | | 1SV282 | VARIABLE CAPACITANCE DIODE | K,K2,E |
| - | | | F10-2377-04 | SHIELDING CASE | | D353 | | | 1SV282 | VARIABLE CAPACITANCE DIODE | K3 |
| L300 | | | L92-0148-05 | CHIP FERRITE | | D354 | | | 1SV214 | VARIABLE CAPACITANCE DIODE | K,K2,E |
| L301,302 | | | L40-1575-34 | SMALL FIXED INDUCTOR (15NH) | K,K2,E | D355 | | | 1SV214 | VARIABLE CAPACITANCE DIODE | K3 |
| L301,302 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K3 | IC300 | | | CD8468 | MOS-IC | |
| L303 | | | L40-1875-34 | SMALL FIXED INDUCTOR (18NH) | K2 | IC300 | | | SA7025DK | MOS-IC | |
| L303 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K,E | Q300,301 | | | 2SC4116(GR) | TRANSISTOR | |
| L303 | | | L40-2775-34 | SMALL FIXED INDUCTOR (27NH) | K3 | Q302 | | | 2SC4226(R24) | TRANSISTOR | |
| L304-307 | | | L92-0140-05 | CHIP FERRITE | | Q350 | | | 2SK508NV(K52) | FET | K,K2,E |
| L350,351 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | K3 | Q351 | | | 2SK508NV(K52) | FET | K3 |
| L352-354 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | K,K2,E | Q355 | | | 2SC4226(R24) | TRANSISTOR | |
| L355 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | K3 | | | | | | |
| L356 | | | L34-4605-05 | AIR-CORE COIL | K2 | | | | | | |
| L356 | | | L34-4645-05 | AIR-CORE COIL | K,E | | | | | | |
| L357 | | | L34-4607-05 | AIR-CORE COIL | K3 | | | | | | |
| L358 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | K,K2,E | | | | | | |
| L359 | | | L40-1595-34 | SMALL FIXED INDUCTOR (1.5UH) | K3 | | | | | | |
| L360 | | | L40-1095-34 | SMALL FIXED INDUCTOR (1UH) | K,K2,E | | | | | | |
| L361 | | | L40-1595-34 | SMALL FIXED INDUCTOR (1.5UH) | K3 | | | | | | |
| L362 | | | L40-2275-34 | SMALL FIXED INDUCTOR (22NH) | K2 | | | | | | |
| L362 | | | L40-3371-34 | SMALL FIXED INDUCTOR (33NH) | K,K3,E | | | | | | |
| R300 | | | RK73GB1J100J | CHIP R 10 J 1/16W | | | | | | | |
| R301-304 | | | RK73GB1J101J | CHIP R 100 J 1/16W | | | | | | | |
| R305 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | | | | | | |
| R306 | | | RK73GB1J220J | CHIP R 22 J 1/16W | | | | | | | |
| R308 | | | RK73GB1J560J | CHIP R 56 J 1/16W | | | | | | | |
| R309 | | | RK73GB1J331J | CHIP R 330 J 1/16W | | | | | | | |
| R310 | | | RK73GB1J332J | CHIP R 3.3K J 1/16W | | | | | | | |
| R311 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | | | | | | |
| R312 | | | RK73GB1J331J | CHIP R 330 J 1/16W | | | | | | | |
| R313 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | | | | | | | |
| R314 | | | RK73GB1J474J | CHIP R 470K J 1/16W | | | | | | | |
| R315 | | | RK73GB1J151J | CHIP R 150 J 1/16W | | | | | | | |
| R316 | | | RK73FB2A152J | CHIP R 1.5K J 1/10W | | | | | | | |
| R317,318 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | | | | | | | |
| R319 | | | RK73GB1J330J | CHIP R 33 J 1/16W | | | | | | | |
| R320 | | | RK73GB1J222J | CHIP R 2.2K J 1/16W | | | | | | | |
| R321 | | | RK73GB1J273J | CHIP R 27K J 1/16W | | | | | | | |
| R322 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | | | | | | |
| R350 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K3 | | | | | | |
| R351 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K,K2,E | | | | | | |
| R352 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K3 | | | | | | |
| R353 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | K,K2,E | | | | | | |
| R354 | | | RK73GB1J330J | CHIP R 33 J 1/16W | K,K2,E | | | | | | |
| R355 | | | RK73GB1J330J | CHIP R 33 J 1/16W | K3 | | | | | | |
| R358 | | | RK73GB1J470J | CHIP R 47 J 1/16W | K3 | | | | | | |
| R359 | | | RK73GB1J470J | CHIP R 47 J 1/16W | K,K2,E | | | | | | |
| R365 | | | RK73GB1J333J | CHIP R 33K J 1/16W | | | | | | | |
| R366 | | | RK73GB1J103J | CHIP R 10K J 1/16W | | | | | | | |
| R367 | | | RK73GB1J820J | CHIP R 82 J 1/16W | | | | | | | |

EXPLODED VIEW

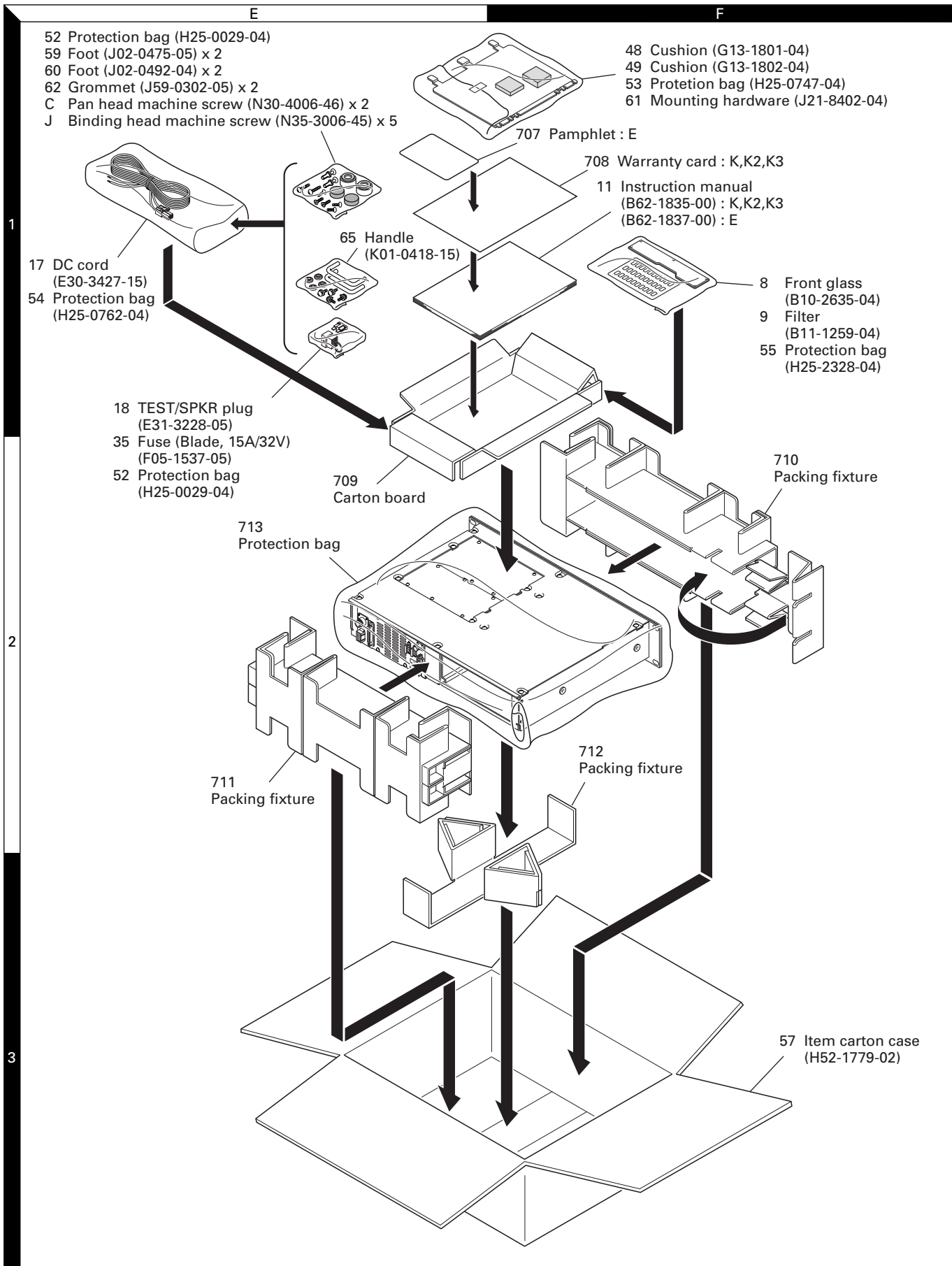
| | | |
|---|---------------------|---------------|
| A | : | N09-2292-05 |
| B | M2.6 x 6 | : N30-2606-46 |
| C | M4 x 6 | : N30-4006-46 |
| D | M4 x 14 | : N30-4014-46 |
| E | M4 x 20 BLK | : N30-4020-45 |
| F | M3 x 6 (F) | : N32-3006-46 |
| G | M4 x 8 (F) BLK | : N32-4008-45 |
| H | M3 x 6 (OC) BLK | : N33-3006-45 |
| J | M3 x 6 (Bi) BLK | : N35-3006-45 |
| K | M4 x 6 (Bi) BLK | : N35-4006-45 |
| L | M3 x 8 | : N67-3008-46 |
| M | M2.6 x 8 BLK | : N80-2608-45 |
| N | M2.6 x 6 (Br-Tap) | : N87-2606-46 |
| O | M3 x 5 (Br-Tap) BLK | : N87-3005-45 |
| P | M3 x 6 (Br-Tap) | : N87-3006-46 |
| R | M3 x 14 (TP) | : N90-3014-46 |



EXPLODED VIEW



PACKING

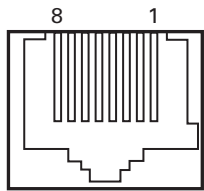


ADJUSTMENT

Test Equipment Required for Alignment

| Test Equipment | Major Specifications | |
|---------------------------------------|------------------------|--|
| 1. Standard Signal Generator (SSG) | Frequency Range | 400 to 512MHz |
| | Modulation | Frequency modulation and external modulation |
| | Output | 0.1μV to greater than 1mV |
| 2. Power Meter | Input Impedance | 50Ω |
| | Operation Frequency | 400 to 512MHz or more |
| | Measurement Capability | Vicinity of 100W |
| 3. Deviation Meter | Frequency Range | 400 to 512MHz |
| 4. Digital Volt Meter (DVM) | Measuring Range | 1 to 20V DC |
| | Accuracy | High input impedance for minimum circuit loading |
| 5. Oscilloscope | | DC through 30MHz |
| 6. High Sensitivity Frequency Counter | Frequency Range | 10Hz to 600MHz |
| | Frequency Stability | 0.2ppm or less |
| 7. Ammeter | | 15A or more |
| 8. AF Volt Meter (AF VTVM) | Frequency Range | 50Hz to 10kHz |
| | Voltage Range | 3mV to 3V |
| 9. Audio Generator (AG) | Frequency Range | 50Hz to 5kHz |
| | Output | 0 to 1V |
| 10. Distortion Meter | Capability | 3% or less at 1kHz |
| | Input Level | 50mV to 10Vrms |
| 11. Voltmeter | Measuring Range | 10 to 1.5V DC or less |
| | Input Impedance | 50kΩ/V or greater |
| 12. 4Ω Dummy Load | | Approx. 4Ω, 5W |

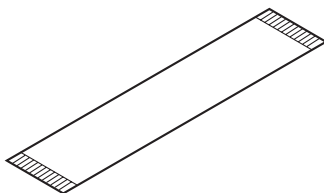
MIC connector (Front panel view)



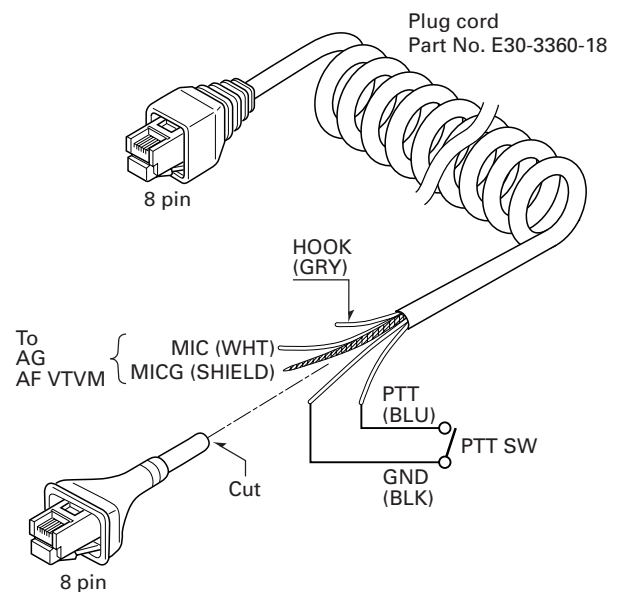
- 1 : NC
- 2 : +B
- 3 : GND
- 4 : PTT/TXD1 (PC serial data from radio)
- 5 : MIC GND
- 6 : MIC
- 7 : HOOK/RXD1 (PC serial data to radio)
- 8 : NC

Flat cable (36-pin) about 256mm

To connect the TX-RX unit A/2 (CN14) to the TX-RX unit B/2 (CN602) while in servicing, you can use the 36-pin flat cable, E37-0979-05, which is available from the KENWOOD parts center.



Test cable for microphone input



ADJUSTMENT

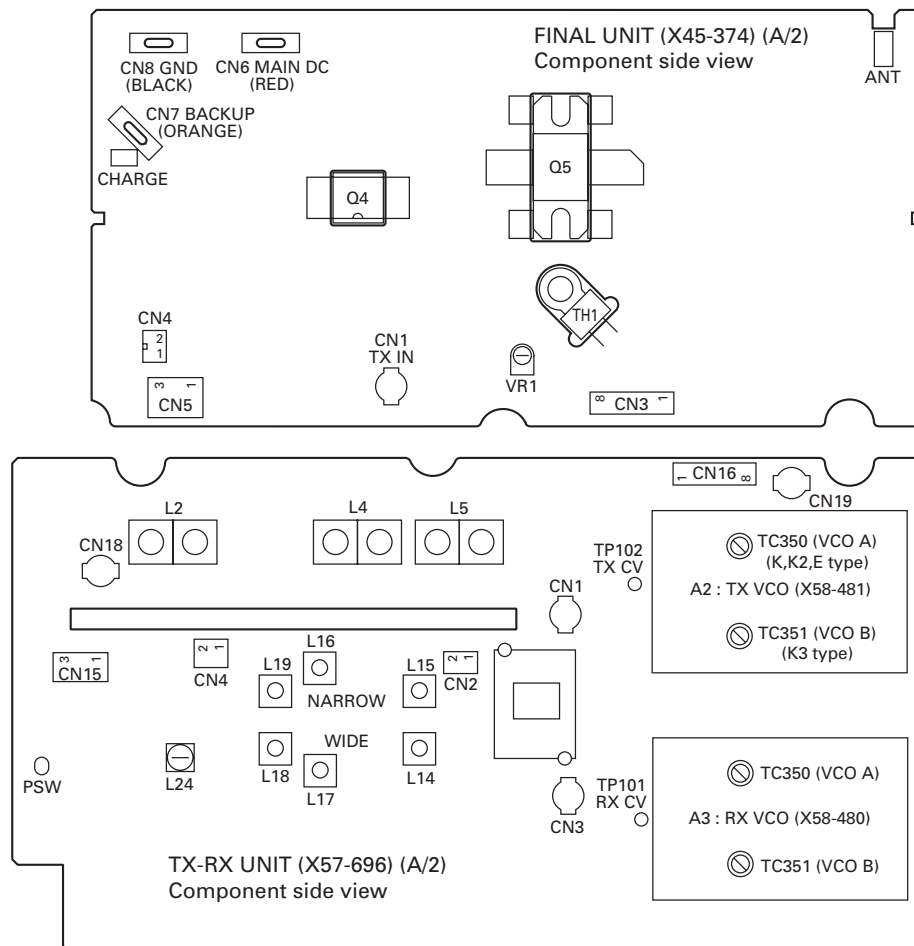
Test Channel (Default)

| No. | K | | K2 | | K3 | | E | |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|
| | RX | TX | RX | TX | RX | TX | RX | TX |
| 1 | 450.10 | 450.00 | 480.10 | 480.00 | 400.10 | 400.00 | 440.10 | 440.00 |
| 2 | 465.10 | 465.00 | 496.10 | 496.00 | 415.10 | 415.00 | 455.10 | 455.00 |
| 3 | 479.90 | 480.00 | 511.90 | 512.00 | 429.90 | 430.00 | 469.90 | 470.00 |
| 4 | 455.10 | 455.00 | 485.10 | 485.00 | 405.10 | 405.00 | 445.10 | 445.00 |
| 5 | 460.10 | 460.00 | 490.10 | 490.00 | 410.10 | 410.00 | 450.10 | 450.00 |
| 6 | 470.10 | 470.00 | 500.10 | 500.00 | 420.10 | 420.00 | 460.10 | 460.00 |
| 7 | 475.10 | 475.00 | 505.10 | 505.00 | 425.10 | 425.00 | 465.10 | 465.00 |
| 8 | 462.60 | 462.50 | 493.60 | 493.50 | 412.60 | 412.50 | 452.60 | 452.50 |
| 9 | 467.60 | 467.50 | 498.60 | 498.50 | 417.60 | 417.50 | 457.60 | 457.50 |
| 10 | 440.10 | 440.00 | 499.90 | 500.00 | 419.90 | 420.00 | 459.90 | 460.00 |
| 11 | 459.90 | 460.00 | 519.90 | 520.00 | 439.90 | 440.00 | 479.90 | 480.00 |

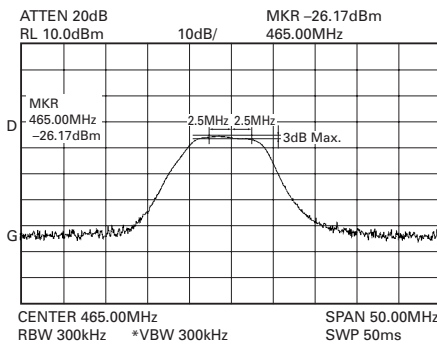
Test Signaling

| No. | Decode tone | Encode tone |
|-----|-----------------------|------------------------|
| 1 | None | None |
| 2 | None | 100Hz square wave |
| 3 | QT 67.0Hz | QT 67.0Hz |
| 4 | QT 151.4Hz | QT 151.4Hz |
| 5 | QT 210.7Hz | QT 210.7Hz |
| 6 | QT 250.3Hz | QT 250.3Hz |
| 7 | DQT 023N | DQT D023N |
| 8 | DQT 754I | DQT D754I |
| 9 | None | CW ID Encode [ID=VVV] |
| 10 | None | Single Tone [1000Hz] |
| 11 | DTMF 159D | DTMF 159D |
| 12 | None | DTMF Tone 9 |
| 13 | None | Courtesy Tone |
| 14 | None | Battery Warning Tone |
| 15 | None | Battery Operation Tone |
| 16 | 5-Tone [12345] (CCIR) | 5-Tone [12345] (CCIR) |

Adjustment Points

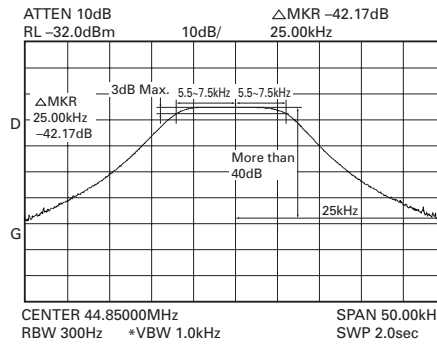


ADJUSTMENT



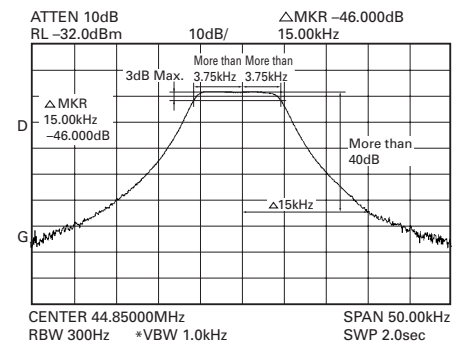
BPF center frequency (Factory-default)
 K : 465MHz, E : 455MHz, K2 : 496MHz,
 K3 : 415MHz

Fig. 1



MCF : Wide

Fig. 2



MCF : Narrow

Fig. 3

Fine-Tuning the TKR-850

“ADJUSTMENT” items described in the Service Manual for the TKR-850 give the factory-default adjustment procedure covering all adjustment items.

However, it is not necessary to adjust all the items when adjusting the power, deviation, receiver sensitivity, etc at the frequency of the channel to be used by the TKR-850.

Adjustment procedure at the frequency of the channel to be used

1. Program a channel frequency using the FPU (KPG-91D).
2. From the FPU menu, select in the order of “EDIT”, “Test Frequency” and “CH paste” to rewrite the test frequency from the factory-default to the one to be used for the channel.

Erase all channel frequencies rewritten through this operation and press the ENTER key to retrieve the factory-default test frequency.

Refer to the explanation given under HELP for the FPU (KPG-91D) for details.

3. Check whether the frequency rewritten under the “Test mode” of the FPU (KPG-91D) is correct, then select the item to be adjusted from the FPU (KPG-91D) menu and adjust the set value for the item to an optimum value with the “TEST” tag.

Note :

After adjustment of the “Max. Deviation”, be sure to check the “DQT balance”.

The “5-tone” adjustment is required only for the E market products.

Alignment

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|-------------------------|--|----------------|------|----------|------------|-------|---|------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 1. Setting | 1) Connect the unit to a suitable DC power supply. | | | | | | | |
| 2. Write test frequency | 1) Turn the DC source switch on after connecting a PC and FPU cable to the radio. 2) Write the test and shipping frequency to the radio. 3) End of test frequency writing. | | | | | | → “E1” appears on LED display → Green (BUSY) LED lights up | |
| 3. Setting | 1) Connect the unit to a suitable DC power supply. 2) Turn the power switch on after connecting a PC and FPU cable to the radio. 3) Start up the program for the adjustment. | | | | | | | |

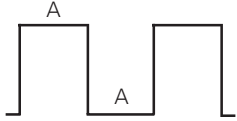
ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|---|--|--------------------|----------------|----------|----------------|--|---|------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 4. RX PLL lock voltage | 1) RX VCO A high CH : 11 K CH : 10 K2,K3,E | DVM | TX-RX (A/2) | RX-CV | RX VCO (A3) | TC350 | 1.50V | ±0.1V |
| | 2) RX VCO A low CH : 10 K CH : 1 K2,K3,E | | | | | | Check | 8V or less |
| | 3) RX VCO B high CH : 3 K,K2 CH : 11 K3,E | | | | RX VCO (A3) | TC351 | 1.50V | ±0.1V |
| | 4) RX VCO B low CH : 5 K CH : 6 K2,K3,E | | | | | | Check | 8V or less |
| 5. TX PLL lock voltage | 1) TX VCO high CH : 3 | f. counter | | TX-CV | TX VCO (A2) | TC350 K,K2,E TC351 K3 | 1.50V | ±0.1V |
| | 2) TX VCO low CH : 1 | | | | | | Check | 8V or less |
| 6. RX frequency | 1) Connect the frequency counter to CN3, then measure the frequency CH : 2 | f. counter | | CN3 | | | PC adj. Test CH-44.85MHz | 50Hz or less |
| <p>Note : RX frequency means the local frequency of the RX VCO. So its frequency is wanted frequency minus the IF frequency.</p> | | | | | | | | |
| 7. Setting | 1) Remove 8 pin cable and the coaxial cable from CN16, and CN19 on TX-RX side. | | | | | | | |
| 8. TX frequency | 1) Connect the frequency counter to CN19, then measure the frequency CH : 2 | f. counter | TX-RX (A/2) | CN19 | | | PC adj. | 50Hz or less |
| 9. Setting | 1) Insert 8 pin cable and the coaxial cable to CN16, and CN19 on TX-RX side. | | | | | | | |
| 10. Maximum power limiting | 1) Measure the RF power at TX ANT. High CH | Power meter | Rear | TX ANT | Final | VR1 | Adjust the RF power to 43W. | ±1W |
| 11. TX RF high power | 1) Measure the RF power at TX ANT. Low CH 2) Center CH 3) High CH | | | | | | PC adj. 40W (Factory-default) | ±1W |
| 12. TX RF low power | 1) Measure the power level at TX ANT. Low CH 2) Center CH 3) High CH | | | | | | PC adj. 25W (Factory-default) | ±1W |
| 13. BPF | 1) Connect the TG to RX ANT, then connect CN1 to the spectrum analyzer input. Spectrum analyzer setting Span : 50MHz Scale : 10dB to 5dB div Tracking generator setting Output : -30dBm | Tracking generator | Rear | RX ANT | TX-RX (A/2) | L2 L4 L5 | Center the frequency you are using, then adjust it to look like the wave Fig. 1. (Page 39) | |
| | | Spectrum analyzer | TX-RX (A/2) | CN1 | | | | |

ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|---------------------------------|---|---|-------------|---------------------------------------|-------------|-------------------|--|-------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 14. MCF (Wide) | 1) Connect the TG to CN2, then connect CN4 to the spectrum analyzer input. CH : 2 (Wide) Spectrum analyzer setting Span : 50kHz to 25kHz Scale : 10dB to 2dB div Center freq' : 44.850MHz Tracking generator setting Output : -30dBm | Tracking generator | Rear | RX ANT | TX-RX (A/2) | L14 L17 L18 | Adjust it to look like the wave Fig. 2. (Page 39) | |
| (Narrow) | 2) CH : 2 (Narrow) | Spectrum analyzer | TX-RX (A/2) | CN2 CN4 | | | | |
| 15. Discriminator | 1) Connect the SSG to RX ANT. CH : 2 (Wide) SSG output : -53dBm/501 μ V SSG MOD : 1kHz SSG DEV : 3kHz AF : 2V/4 Ω | SSG AF VM Distortion meter | Rear | RX ANT TEST/SPKR jack SPO (pin 12) | | L24 | Adjust the distortion to minimum. | |
| 16. Threshold squelch (Wide) | 1) Connect SSG to RX ANT. CH : 2 (Wide) SSG output : 4dB below to 12dB SINAD level SSG MOD : 1kHz SSG DEV : 3kHz AF : 2V/4 Ω | SSG Audio analyzer VTVM Oscilloscope | Rear | RX ANT TEST/SPKR jack SPO (pin 12) | | | PC adj. Adjust to point of closing squelch | |
| | 2) SSG : OFF | | | | | | Check | Squelch must be closed. |
| (Narrow) | 3) CH : 2 (Narrow) SSG output : 4dB below to 12dB SINAD level SSG MOD : 1kHz SSG DEV : 1.5kHz AF : 2V/4 Ω | | | | | | PC adj. Adjust to point of closing squelch | |
| | 4) SSG : OFF | | | | | | Check | Squelch must be closed. |
| 17. Tight squelch (Wide) | 1) Connect SSG to RX ANT. CH : 2 (Wide) SSG output : 7dB over to 12dB SINAD level SSG MOD : 1kHz SSG DEV : 3kHz AF : 2V/4 Ω | | | | | | PC adj. Adjust to point of opening squelch | |
| (Narrow) | 2) CH : 2 (Narrow) SSG output : 7dB over to 12dB SINAD level SSG MOD : 1kHz SSG DEV : 1.5kHz AF : 2V/4 Ω | | | | | | PC adj. Adjust to point of opening squelch | |

ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|---------------------------------|---|---|-------|--|------------|-------|--|---|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 18. RD out level (Wide) | 1) Connect SSG to RX ANT. CH : 2 (Wide) SSG output : -53dBm/501μV SSG MOD : 1kHz SSG DEV : 3.0kHz | SSG | Rear | RX ANT | | | PC adj. 80mV | ±5mV |
| (Narrow) | 2) CH : 2 (Narrow) SSG output : -53dBm/501μV SSG MOD : 1kHz SSG DEV : 1.5kHz | DVM | | CONTROL I/O jack RD (pin 10) 4.7kΩ load | | | | |
| 19. RA out level (Wide) | 1) Connect SSG to RX ANT. CH : 2 (Wide) SSG output : -53dBm/501μV SSG MOD : 1kHz SSG DEV : 3.0kHz | SSG | Rear | RX ANT | | | PC adj. 400mV | ±20mV |
| (Narrow) | 2) CH : 2 (Narrow) SSG output : -53dBm/501μV SSG MOD : 1kHz SSG DEV : 1.5kHz | DVM | | CONTROL I/O jack RA (pin 11) 4.7kΩ load | | | | |
| 20. Maximum deviation (Wide) | 1) Connect AG to the MIC terminal. Low CH (TX VCO low) Center CH (VCO center) High CH (TX VCO high) Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF AG : 1kHz/50mV (Terminal load) Transmission | MOD ANA or Deviation meter Oscilloscope | Rear | TX OUT | | | PC adj. 4.1kHz | ±0.1kHz |
| (Narrow) | 2) Low CH (TX VCO low) Center CH (VCO center) High CH (TX VCO high) Transmission | AG AF VTVM | Front | MIC | | | PC adj. 2.05kHz | |
| 21. DQT balance (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF Transmission | MOD ANA or Deviation meter Oscilloscope | Rear | TX OUT | | | PC adj. Make the de-modulated waves into square waves. | Oscilloscope DC range flat "A" part  |
| (Narrow) | 2) CH : 2 Transmission | | | | | | | |
| 22. QT deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF Detector : p-p/2 Transmission | | | TX ANT | | | PC adj. 0.75kHz | ±0.05kHz |
| (Narrow) | 2) CH : 2 Transmission | | | | | | PC adj. 0.35kHz | ±0.05kHz |

Note : After adjustment of the "Max. Deviation", be sure to check the "DQT balance".

ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|--|--|---|------|--|------------|-------|--------------------|---------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 23. DQT deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF Detector : Peak hold Transmission | MOD ANA or Deviation meter Oscilloscope | Rear | TX ANT | | | PC adj. 0.75kHz | ±0.05kHz |
| | (Narrow) | | | | | | | 2) CH : 2 Transmission |
| 24. CW ID deviation (Wide) | 1) CH2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 2kHz | ±0.1kHz |
| | (Narrow) | | | | | | | 2) CH : 2 Transmission |
| 25. Test tone deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 3kHz | ±0.1kHz |
| | (Narrow) | | | | | | | 2) CH : 2 Transmission |
| 26. TA (TX audio input) deviation (Wide) | 1) Insert AG output into the control I/O TA terminal (pin 9). CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF AG freq' : 1kHz (Sine wave) AG level : 280mV Transmission | MOD ANA or Deviation meter Oscilloscope AG AF VTVM | Rear | TX ANT CONTROL I/O jack TA (pin 9) | | | PC adj. 3.0kHz | ±0.1kHz |
| | (Narrow) | | | | | | | 2) CH : 2 Transmission |
| 27. TD deviation (Wide) | 1) Insert AG output into the control I/O TD terminal (pin 8). CH : 2 Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF AG freq' : 100Hz (Sine wave) AG level : 0.5Vp-p (177mVrms) Transmission | | | CONTROL I/O jack TD (pin 8) | | | PC adj. 0.75kHz | ±0.1kHz |
| | (Narrow) | | | | | | | 2) CH : 2 Transmission |

ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|---|---|---|------|---------------------------|------------|-------|-------------------|------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 28. DTMF deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | MOD ANA or Deviation meter Oscilloscope | Rear | TX ANT | | | PC adj. 3.0kHz | ±0.1kHz |
| | (Narrow) | | | | | | | |
| 29. Courtesy tone deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 1.0kHz | ±0.05kHz |
| | (Narrow) | | | | | | | |
| 30. Battery warning tone deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 3.0kHz | ±0.1kHz |
| | (Narrow) | | | | | | | |
| 31. Battery operation tone deviation (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 1.0kHz | ±0.05kHz |
| | (Narrow) | | | | | | | |
| 32. 5-tone deviation (E type only) (Wide) | 1) CH : 2 Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | | | | | | PC adj. 3.0kHz | ±0.1kHz |
| | (Narrow) | | | | | | | |
| 33. Repeat gain level (Wide) | 1) CH : 2 SSG output : -53dBm SSG MOD : 1kHz SSG DEV : 1kHz Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF Transmission | SSG MOD ANA or Deviation meter Oscilloscope | Rear | RX ANT | | | PC adj. 1kHz | ±0.1kHz |
| | (Narrow) | | | 2) CH : 2 Transmission | | | | |

When "RF Power Down Detect" is programmed in the AUXO function, threshold of transmission output is set with the following menu.

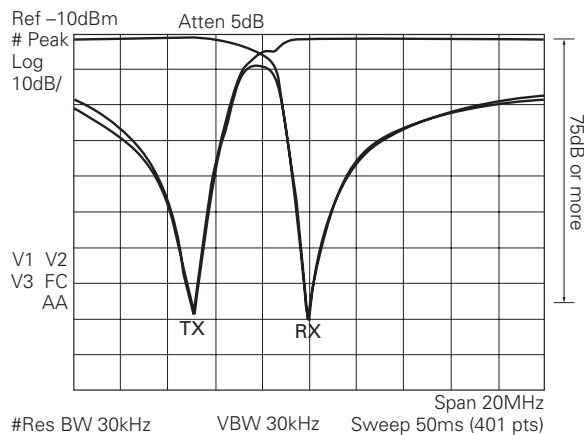
ADJUSTMENT

| Item | Condition | Measurement | | | Adjustment | | | Specifications/Remarks |
|------------------------------|------------------------|----------------|------|----------|------------|-------|---|------------------------|
| | | Test-equipment | Unit | Terminal | Unit | Parts | Method | |
| 34. Power down detect (High) | 1) CH : 2 (High power) | Power meter | Rear | TX ANT | | | PC adj. About 16W (Factory-default) | |
| | (Low) | | | | | | 2) CH : 2 (Low power) | |

Confirmation and Alignment of Set-up to Prevent Receiver Desensitization

1. Confirmation of Duplexer alignment

The duplexer allows the Repeater to simultaneously transmit and receive. To accomplish this, in the programmed receive frequency, the transmit frequency must be notched or suppressed by 75dB or more. Additionally, on the programmed transmit frequency, the receive frequency must be notched or suppressed by 75dB or more. The following figures are examples of Duplexer alignment using a spectrum analyzer.

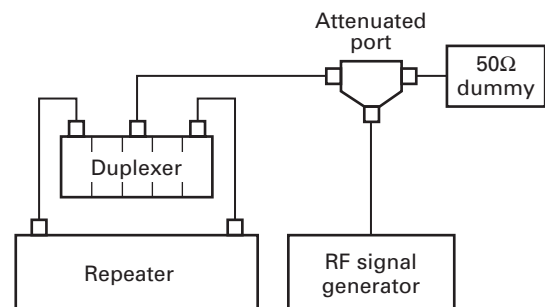


2. Confirmation of Repeater Desensitization

The following figure is a Test set-up for Repeater Desensitization.

After this Test set-up is completed, confirm the Repeater Desensitization as mentioned below.

- 1) Disable the repeater mode.
- 2) Adjust the level of the RF generator until 12dB SINAD is reached.
- 3) Increase the output of the RF generator by 1dB. (This increases the SINAD.)
- 4) Enable the repeater mode.
- 5) Read the SINAD level. It should not drop below 12dB SINAD. If the SINAD is less than 12dB, check the tightness of the connectors and the tuning of duplexer.



TERMINAL FUNCTION

Final Unit (X45-374X-XX)

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---|--------------|---------------|-----|--|
| CN1 | | DRV | I | TX driver input signal (Coaxial) |
| CN3 To X57 (A/2) TX-RX unit | 1 | TMP | O | High temperature detector signal output for fan action |
| | 2 | BUP | O | Main DC/BACKUP status output |
| | 3 | PDT | O | RF power down signal output |
| | 4 | FAS | I | Fan control signal input |
| | 5 | PC | I | TX power control signal input |
| | 6 | 8T | I | 8V input during transmission |
| | 7 | NC | - | Reserved |
| | 8 | GND | - | Ground |
| CN4 | | FAB | O | Power supply output for cooling fan |
| | | FAG | O | Fan ground |
| CN5 | 1 | E | - | Ground |
| | 2 | B | O | Power supply output |
| | 3 | B | O | Power supply output |
| CN6 | 1 | Main DC | I | Power supply input (from Main DC terminal) |
| CN7 | 1 | BACKUP | I | Power supply input (from BACKUP terminal) |
| CN8 | 1 | GND | - | Ground |

Display Unit (X54-3330-21) (A/2)

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---|--------------|---------------|-----|--|
| CN501 To X54 (B/2) display unit | 1 | HK | I | Hook detection input/RXD input |
| | 2 | MIC | I | MIC signal input |
| | 3 | MIG | - | MIC ground |
| | 4 | PTT | I/O | PTT input/TXD output |
| | 5 | GND | - | Ground |
| | 6 | NC | - | No connection |
| | 7 | SB | O | Power supply output after power switch |
| | 8 | NC | - | No connection |
| | 9 | GND | - | Ground |
| | 10 | 5M | O | Common 5V output |
| | 11 | VLI | I | Volume control input for AF signal |
| CN502 To X57 (B/2) TX-RX control section | 1 | MIG | - | MIC ground |
| | 2 | MIC | O | MIC signal output |
| | 3 | VLI | O | Volume control output for AF signal |
| | 4 | 5C | I | Common 5V input |
| | 5 | K4 | I | KEY input 4 |
| | 6 | K5 | I | KEY input 5 |
| | 7 | K2 | O | KEY output 2 |
| | 8 | K3 | O | KEY output 3 |
| | 9 | K1 | O | KEY output 1 |
| | 10 | HK/RXD | O | Hook detection output/RXD output |
| | 11 | SOE | I | Output enable for shift register |
| | 12 | PTT/TXD | I/O | PTT output/TXD input |

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|---------------------------------------|
| | 13 | STB1 | I | Strobe data for shift register |
| | 14 | CLK | I | Clock data input |
| | 15 | DAT | I | Serial data input |
| | 16 | PSW | O | Power switch output |
| | 17 | GND | - | Ground |
| | 18 | NC | - | No connection |
| | 19 | SB | I | Power supply input after power switch |
| | 20 | SB | I | Power supply input after power switch |

Display Unit (X54-3330-21) (B/2)

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---|--------------|---------------|-----|--|
| CN601 To X54 (A/2) display unit | 1 | VLI | O | Volume control output for AF signal |
| | 2 | 5M | I | Common 5V input |
| | 3 | GND | - | Ground |
| | 4 | NC | - | No connection |
| | 5 | SB | I | Power supply input after power switch |
| | 6 | NC | - | No connection |
| | 7 | GND | - | Ground |
| | 8 | PTT | I/O | PTT output/TXD input |
| | 9 | MIG | - | MIC ground |
| | 10 | MIC | O | MIC signal output |
| | 11 | HK | O | Hook detection output/RXD output |
| J601 (Mic jack) | 1 | NC | - | No connection |
| | 2 | SB | O | Power supply output after power switch |
| | 3 | GND | - | Ground |
| | 4 | PTT/TXD | I/O | PTT input/TXD output |
| | 5 | MIG | - | MIC ground |
| | 6 | MIC | I | MIC signal input |
| | 7 | HK/RXD | I | Hook detection input/RXD input |
| | 8 | NC | - | No connection |

TX-RX Unit (X57-696X-XX) (A/2) : TX-RX Section

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---|--------------|---------------|-----|---|
| CN1 | - | - | O | Use for RX helical BPF tuning (Coaxial) |
| CN2 | - | - | I | Use for RX MCF tuning |
| CN3 | - | - | O | Use for RX frequency adjustment (Coaxial) |
| CN4 | - | - | O | Use for RX MCF tuning |
| CN14 To X57 (B/2) control section of TX-RX unit | 1 | NC | - | No connection |
| | 2 | DET | O | Detection signal output |
| | 3 | NC | - | No connection |
| | 4 | GND | - | Ground |
| | 5 | ASQ | O | Squelch signal output |
| | 6 | RSSI | O | RSSI signal output |
| | 7 | SC | O | Squelch control signal output |
| | 8 | DP | I | Data input for PLL |
| | 9 | CP | I | Clock input for PLL |

TERMINAL FUNCTION

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|----------------------------------|--------------|---------------|-----|--|
| | 10 | EPR | I | Enable input for RX PLL |
| | 11 | EPT | I | Enable input for TX PLL |
| | 12 | LDR | O | Lock detector for RX PLL |
| | 13 | LDT | O | Lock detector for TX PLL |
| | 14 | DT | I | Data input |
| | 15 | CK | I | Clock input |
| | 16 | STB | I | Strobe input for shift register |
| | 17 | FWD | O | RF power down signal output |
| | 18 | LD2 | I | Latch data input for DA converter |
| | 19 | BUP | O | Backup signal output |
| | 20 | PSW | I | Power switch input |
| | 21 | TMP | O | High temperature detector signal output for fan action |
| | 22 | SOE | I | Output enable for shift register |
| | 23 | GND | - | Ground |
| | 24 | MB | I | Modulation signal input for VCXO |
| | 25 | MO | I | Modulation signal input for VCO |
| | 26 | GND | - | Ground |
| | 27 | GND | - | Ground |
| | 28 | QS | I | Data |
| | 29 | NC | - | No connection |
| | 30 | SB | O | Power supply output after power switch |
| | 31 | SB | O | Power supply output after power switch |
| | 32 | SB | O | Power supply output after power switch |
| | 33 | SB | O | Power supply output after power switch |
| | 34 | NC | - | No connection |
| | 35 | 8C | O | Common 8V output |
| | 36 | 8C | O | Common 8V output |
| CN15 | 1 | E | - | Earth |
| | 2 | B | I | Power supply input |
| | 3 | B | I | Power supply input |
| CN16 | 1 | GND | - | Ground |
| | 2 | NC | - | No connection |
| To X45 final unit | 3 | 8T | O | 8V output during transmission |
| | 4 | PC | O | TX power control signal output |
| | 5 | FAS | O | Fan control signal output |
| | 6 | PDT | I | RF power down signal input |
| | 7 | BUP | I | Main DC/BACKUP status input |
| | 8 | TMP | I | High temperature detector signal input for fan action |
| CN18 | 1 | RX IN | I | Receive signal input (Coaxial) |
| CN19 | 1 | DO | O | Transmission signal output (Coaxial) |
| | 4 | NC | - | No Connection |
| display unit | 5 | DAT | O | Serial data output |
| | 6 | PSW | I | Power switch input |
| | 7 | STB1 | O | Strobe data for shift register |
| | 8 | CLK | O | Clock data output |
| | 9 | SOE | O | Output enable for shift register |
| | 10 | TXD1 | I/O | PTT input/TXD output |
| | 11 | K1 | I | KEY input 1 |
| | 12 | RXD1 | I | Hook detection input/RXD input |
| | 13 | K2 | I | KEY input 2 |
| | 14 | K3 | I | KEY input 3 |
| | 15 | K4 | O | KEY output 4 |
| | 16 | K5 | O | KEY output 5 |
| | 17 | VLI | I | Volume control input for AF signal. |
| | 18 | 5C | O | Common 5V output |
| | 19 | MIG | - | Mic ground |
| | 20 | MIC | I | MIC signal input |
| CN601 | 1 | TXO | O | MIC signal output to the board |
| | 2 | TXI | I | MIC signal input from the board |
| To optional board | 3 | RXO | O | RX audio signal output to the board |
| | 4 | AC | O | Audio control signal output |
| | 5 | BC1 | O | Scramble code output. |
| | 6 | BC2 | O | Scramble code output. |
| | 7 | BC3 | O | Scramble code output. |
| | 8 | BC4 | O | Scramble code output. |
| | 9 | PTI | I | PTT signal input |
| | 10 | CLRC | O | Clear code for scramble |
| | 11 | RXI | I | RX audio signal input from the board |
| | 12 | PTO | O | PTT signal output |
| | 13 | NC | O | No connection |
| | 14 | GND | - | Ground |
| CN602 | 1 | 8C | I | Common 8V input |
| | 2 | 8C | I | Common 8V input |
| To X57 (A/2) TX-RX unit | 3 | NC | - | No connection |
| | 4 | SB | I | Power supply input after power switch |
| | 5 | SB | I | Power supply input after power switch |
| | 6 | SB | I | Power supply input after power switch |
| | 7 | SB | I | Power supply input after power switch |
| | 8 | NC | - | No connection |
| | 9 | QS | O | Data |
| | 10 | GND | - | Ground |
| | 11 | GND | - | Ground |
| | 12 | MO | O | Modulation signal output for VCO |
| | 13 | MB | O | Modulation signal output for VCXO |
| | 14 | GND | - | Ground |
| | 15 | SOE | O | Output enable for shift register |
| | 16 | TMP | I | High temperature detector signal input |
| | 17 | PSW | O | Power switch output |
| | 18 | BUP | I | Backup signal input |

TX-RX Unit (X57-696X-XX) (B/2) : Control Section

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|-----------------|--------------|---------------|-----|--|
| CN600 | 1 | SB | O | Power supply output after power switch |
| To X54 (B/2) | 2 | SB | O | Power supply output after power switch |
| | 3 | GND | - | Ground |

TERMINAL FUNCTION

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---|--------------|---------------|-----|--|
| | 19 | LD2 | O | Latch data output for DA converter |
| | 20 | FWD | I | RF power down signal input |
| | 21 | STB | O | Strobe output for shift register |
| | 22 | CK | O | Clock output |
| | 23 | DT | O | Data output |
| | 24 | LDT | I | Lock detector for TX PLL |
| | 25 | LDR | I | Lock detector for RX PLL |
| | 26 | EPT | O | Enable output for TX PLL |
| | 27 | EPR | O | Enable output for RX PLL |
| | 28 | CP | O | Clock output for PLL |
| | 29 | DP | O | Data output for PLL |
| | 30 | SC | I | Squelch control signal input |
| | 31 | RSSI | I | RSSI signal input |
| | 32 | ASQ | I | Squelch signal input |
| | 33 | GND | - | Ground |
| | 34 | NC | - | No connection |
| | 35 | DET | I | Detection signal input |
| | 36 | NC | - | No connection |
| CN603 To ACC 15 pin connector | 1 | SB | O | Power supply output after power switch |
| | 2 | SB | O | Power supply output after power switch |
| | 3 | GND | - | Ground |
| | 4 | GND | - | Ground |
| CN604 To ACC 15 pin connector | 1 | AO5 | O | Auxiliary output 5 (FPU selectable) |
| | 2 | AO4 | O | Auxiliary output 4 (FPU selectable) |
| | 3 | AO3 | O | Auxiliary output 3 (FPU selectable) |
| | 4 | SPO | O | External speaker output |
| | 5 | SPO | O | External speaker output |
| | 6 | AO2 | O | Auxiliary output 2 (FPU selectable) |
| | 7 | AO1 | O | Auxiliary output 1 (FPU selectable) |
| | 8 | SPI | I | Internal speaker input |
| | 9 | RSSI | O | RSSI signal output |
| | 10 | RD | O | RX data output |
| | 11 | SPG | - | External speaker ground |
| | 12 | SPG | - | External speaker ground |
| CN605 | 1 | SPO | O | Internal speaker AF output |
| | 2 | SPG | - | Internal speaker ground |
| CN606 To ACC 25 pin D-sub connector | 1 | NC | - | No connection |
| | 2 | NC | - | No connection |
| | 3 | SPM | I | Speaker mute signal input |
| | 4 | IO6 | I/O | Programable I/O 6 |
| | 5 | RXG | - | RX signal ground |
| | 6 | IO5 | I/O | Programable I/O 5 |
| | 7 | RA | O | RX audio output (voice) |
| | 8 | IO4 | I/O | Programable I/O 4 |
| | 9 | RD | O | RX data output (voice & data) |
| | 10 | IO3 | I/O | Programable I/O 3 |
| | 11 | TA | I | TX audio input (voice) |
| | 12 | IO2 | I/O | Programable I/O 2 |
| | 13 | TD | I | TX data input (data or signaling) |

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|-------------------------------------|
| | 14 | IO1 | I/O | Programable I/O 1 |
| | 15 | DG | - | Control line ground |
| | 16 | TXG | - | TX signal ground |
| | 17 | AI3 | I | Auxiliary input 3 (FPU selectable) |
| | 18 | NC | - | No connection |
| | 19 | AI2 | I | Auxiliary input 2 (FPU selectable) |
| | 20 | SC | O | Squelch control output |
| | 21 | AI1 | I | Auxiliary input 1 (FPU selectable) |
| | 22 | EPTT | I | External press-to-talk switch input |
| | 23 | TXD2 | O | RS-232C output signal (for FPU) |
| | 24 | EMON | I | External monitor switch input |
| | 25 | RXD2 | I | RS-232C input signal (for FPU) |
| | 26 | NC | - | No connection |
| | 27 | NC | - | No connection |
| | 28 | NC | - | No connection |
| | 29 | NC | - | No connection |
| | 30 | NC | - | No connection |

RX VCO Unit (X58-480X-XX)

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|------------------------------------|
| CN300 | 1 | FIN | I | Prescaler RF signal input |
| | 2 | 5C | I | Common 5V input |
| | 3 | LDR | O | Lock detector for RX PLL |
| | 4 | EPR | I | Enable input for RX PLL |
| | 5 | DP | I | Data input for PLL |
| | 6 | CP | I | Clock input for PLL |
| | 7 | REF | I | Reference frequency signal input |
| CN350 | 1 | GND | - | Ground |
| | 2 | SRR | I | Switching signal input for RX VCO |
| | 3 | 8CL | I | 8V input through the ripple filter |
| | 4 | CV | I | RX PLL lock voltage |
| | 5 | 9CL | I | 9V input through the ripple filter |
| | 6 | NC | - | No connection |
| CN351 | 1 | VO | O | RX VCO output |
| | 2 | GND | - | Ground |

TX VCO Unit (X58-481X-XX)

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|-----------------------------------|
| CN300 | 1 | FIN | I | Prescaler RF signal input |
| | 2 | 5C | I | Common 5V input |
| | 3 | LDT | O | Lock detector for TX PLL |
| | 4 | EPT | I | Enable input for TX PLL |
| | 5 | DP | I | Data input for PLL |
| | 6 | CP | I | Clock input for PLL |
| | 7 | REF | I | Reference frequency signal input |
| CN350 | 1 | GND | - | Ground |
| | 2 | STT | I | Switching signal input for TX VCO |

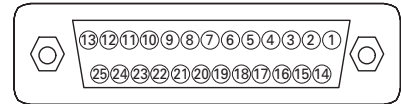
TERMINAL FUNCTION

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|------------------------------------|
| | 3 | 8CL | I | 8V input through the ripple filter |
| | 4 | CV | I | RX PLL lock voltage |
| | 5 | 9CL | I | 9V input through the ripple filter |
| | 6 | MO | I | Modulation signal input |
| CN351 | 1 | VO | O | TX VCO output |
| | 2 | GND | - | Ground |

ACC 25 pin D-sub Connector

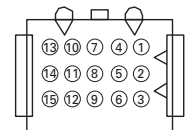
| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|---|
| | 1 | NC | - | No connection |
| | 2 | RXD2 | I | Serial data to radio |
| | 3 | TXD2 | O | Serial data from radio |
| | 4 | AI1 | I | Programmable function input 1 |
| | 5 | AI2 | I | Programmable function input 2 |
| | 6 | AI3 | I | Programmable function input 3 |
| | 7 | DG | - | Control line ground |
| | 8 | TD | I | TX data input (data or signalling) Input impedance: 600Ω Coupling: AC coupling Deviation: 0.75kHz (wide)/ 0.35kHz (Narrow) (100Hz 0.5Vp-p input) |
| | 9 | TA | I | TX audio input (voice) Input impedance: 600Ω Coupling: AC coupling Frequency response: Pre-emphasis curve Deviation: 60% deviation (1kHz 280mVrms ±25mV input) |
| | 10 | RD | O | RX data output (voice & data) Output impedance: 1kΩ or less Coupling: AC coupling Non-squelched Frequency response: ±2.5dB at 10~3000Hz Output level: 70~90mVrms (standard modulation) |
| | 11 | RA | O | RX audio output (voice) Output impedance: 1kΩ or less Coupling: AC coupling Squelched Frequency response: De-emphasis curve Output level: 360~440mVrms (standard modulation) |
| | 12 | RXG | - | RX signal ground (for RA, RD ground only) |

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|--|
| | 13 | SPM | I | Speaker mute signal input "L": Mute on |
| | 14 | NC | - | No connection |
| | 15 | EMON | I | External monitor switch input "L": Monitor on, "H": Monitor off |
| | 16 | EPTT | I | External press-to-talk switch input "L": PTT on, "H": PTT off |
| | 17 | SC | O | Squelch control output "L": Busy, "H": Not busy |
| | 18 | NC | - | No connection |
| | 19 | TXG | - | TX signal ground (for TA, TD ground only) |
| | 20 | AIO1 | I/O | Programmable function input/output 1 |
| | 21 | AIO2 | I/O | Programmable function input/output 2 |
| | 22 | AIO3 | I/O | Programmable function input/output 3 |
| | 23 | AIO4 | I/O | Programmable function input/output 4 |
| | 24 | AIO5 | I/O | Programmable function input/output 5 |
| | 25 | AIO6 | I/O | Programmable function input/output 6 |



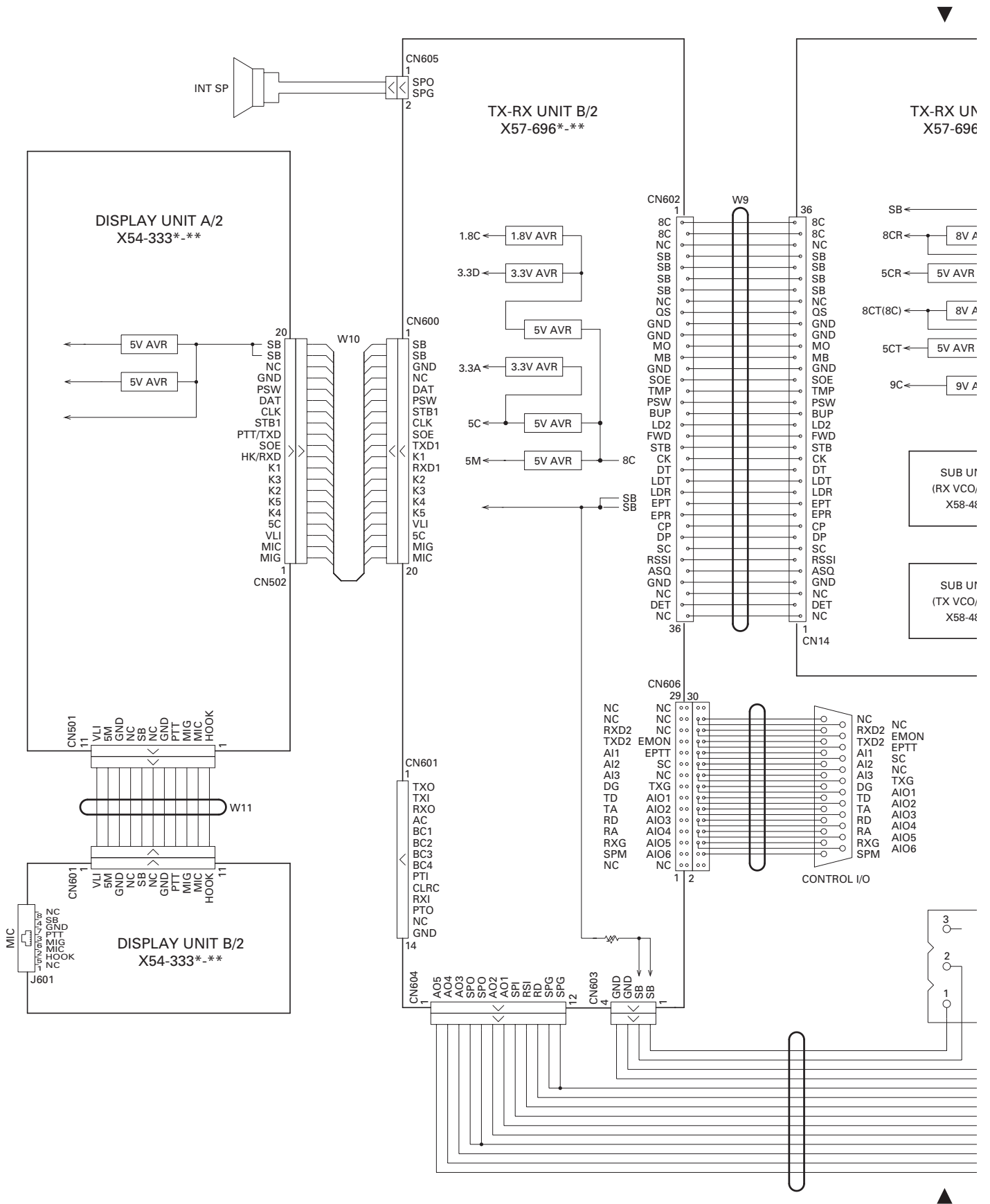
ACC 15 pin Connector

| Connector No. | Terminal No. | Terminal Name | I/O | Terminal function |
|---------------|--------------|---------------|-----|--|
| | 1 | SB | O | Power supply output after power switch; 1A maximum |
| | 2 | SB | O | Power supply output after power switch; 1A maximum |
| | 3 | NC | - | No connection |
| | 4 | GND | - | Ground |
| | 5 | GND | - | Ground |
| | 6 | SPG | - | Speaker ground |
| | 7 | RD | O | RX data output (Equal to D-sub connector terminal No. 10.) |
| | 8 | RSSI | O | RSSI output (Analog signal output) |
| | 9 | SPI | I | Internal speaker input |
| | 10 | AO1 | O | Auxiliary output 1 Open collector. Low : 150mA max. |
| | 11 | AO2 | O | Auxiliary output 2 Open collector. Low : 150mA max. |
| | 12 | SPO | O | External speaker output |
| | 13 | AO3 | O | Auxiliary output 3 |
| | 14 | AO4 | O | Auxiliary output 4 |
| | 15 | AO5 | O | Auxiliary output 5 |

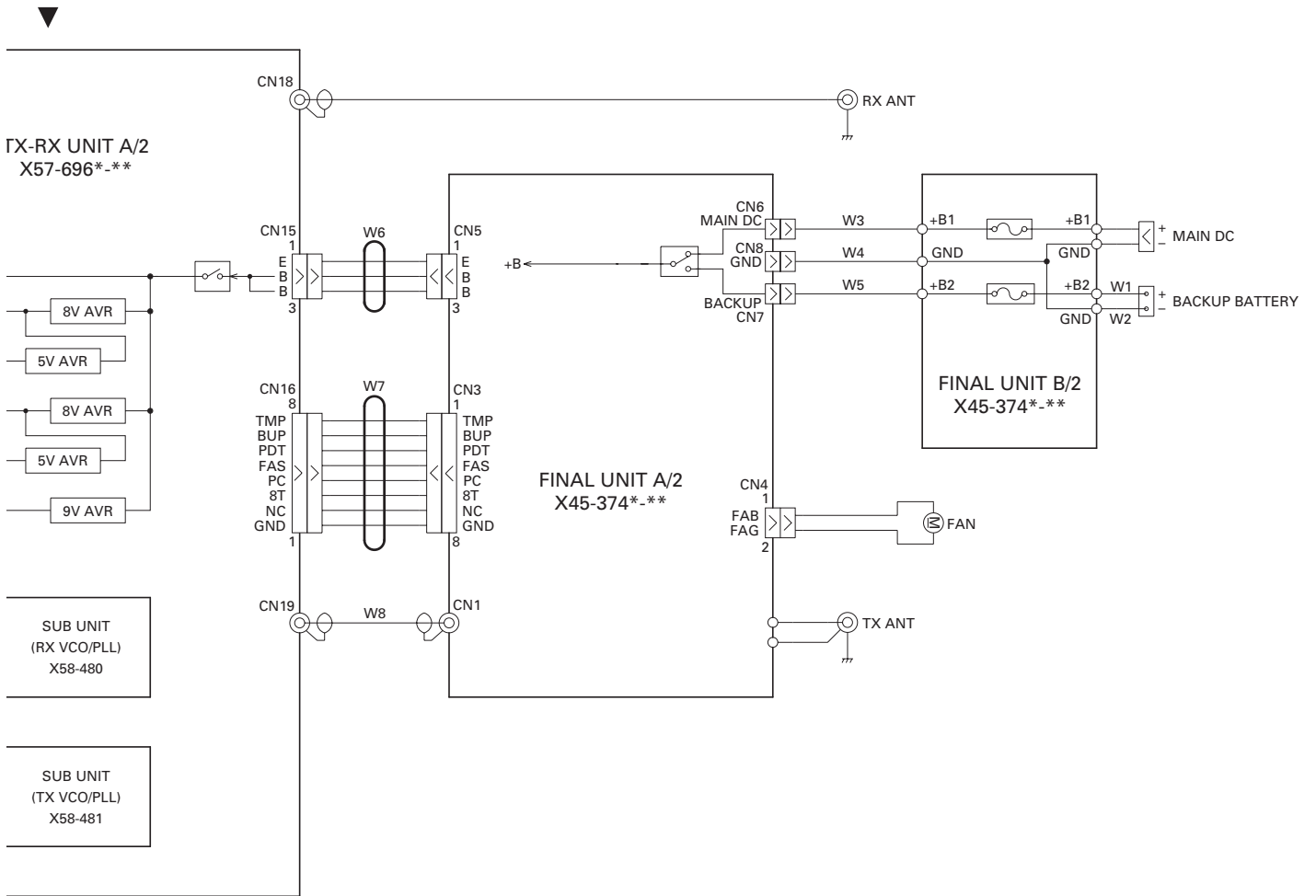


TKR-850

INTERCONNECTION DIAGRAM

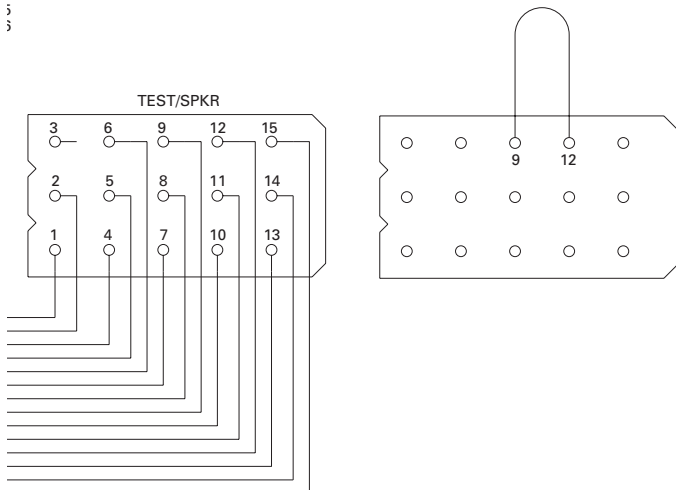


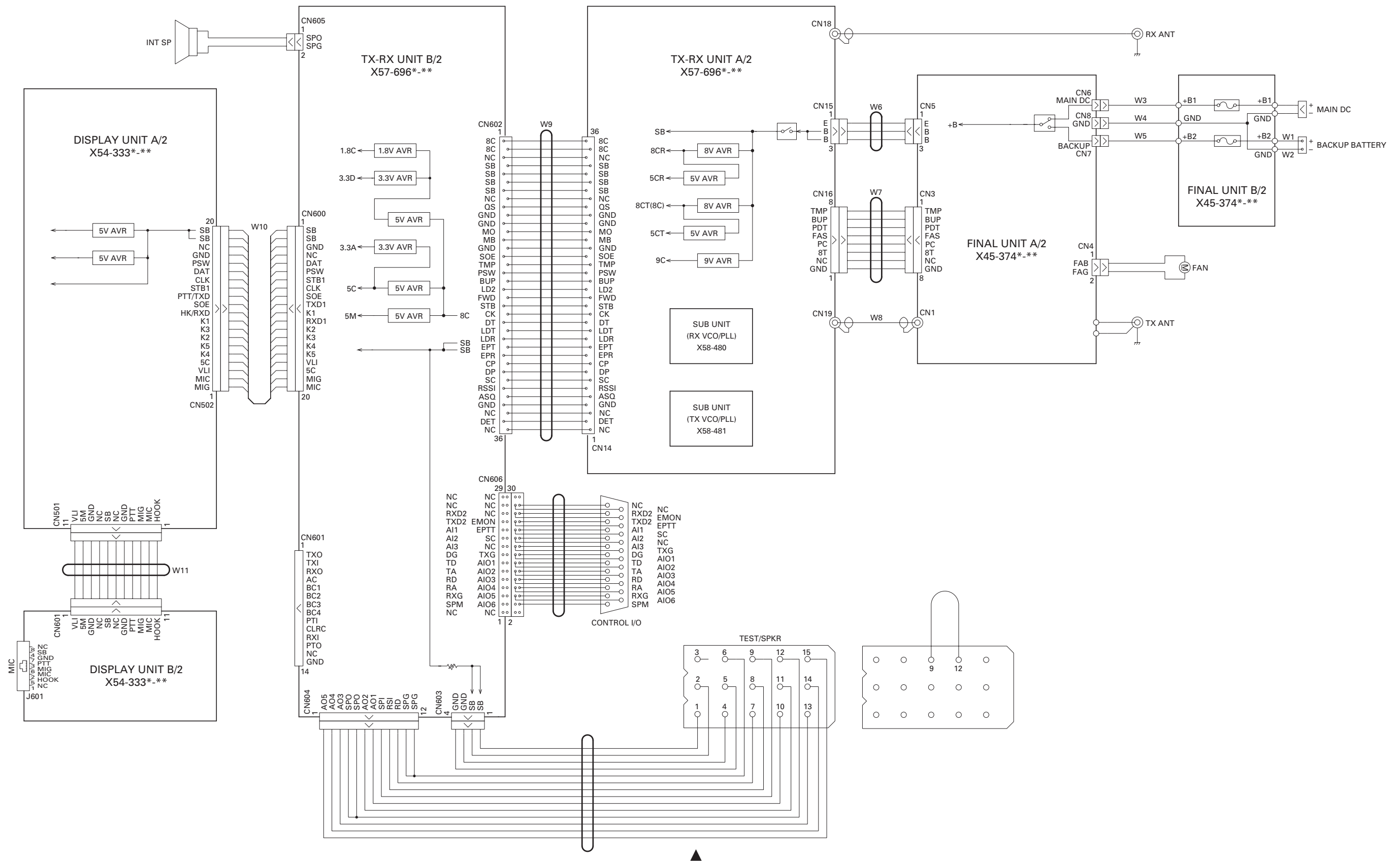
INTERCONNECTION DIAGRAM



IN
Γ

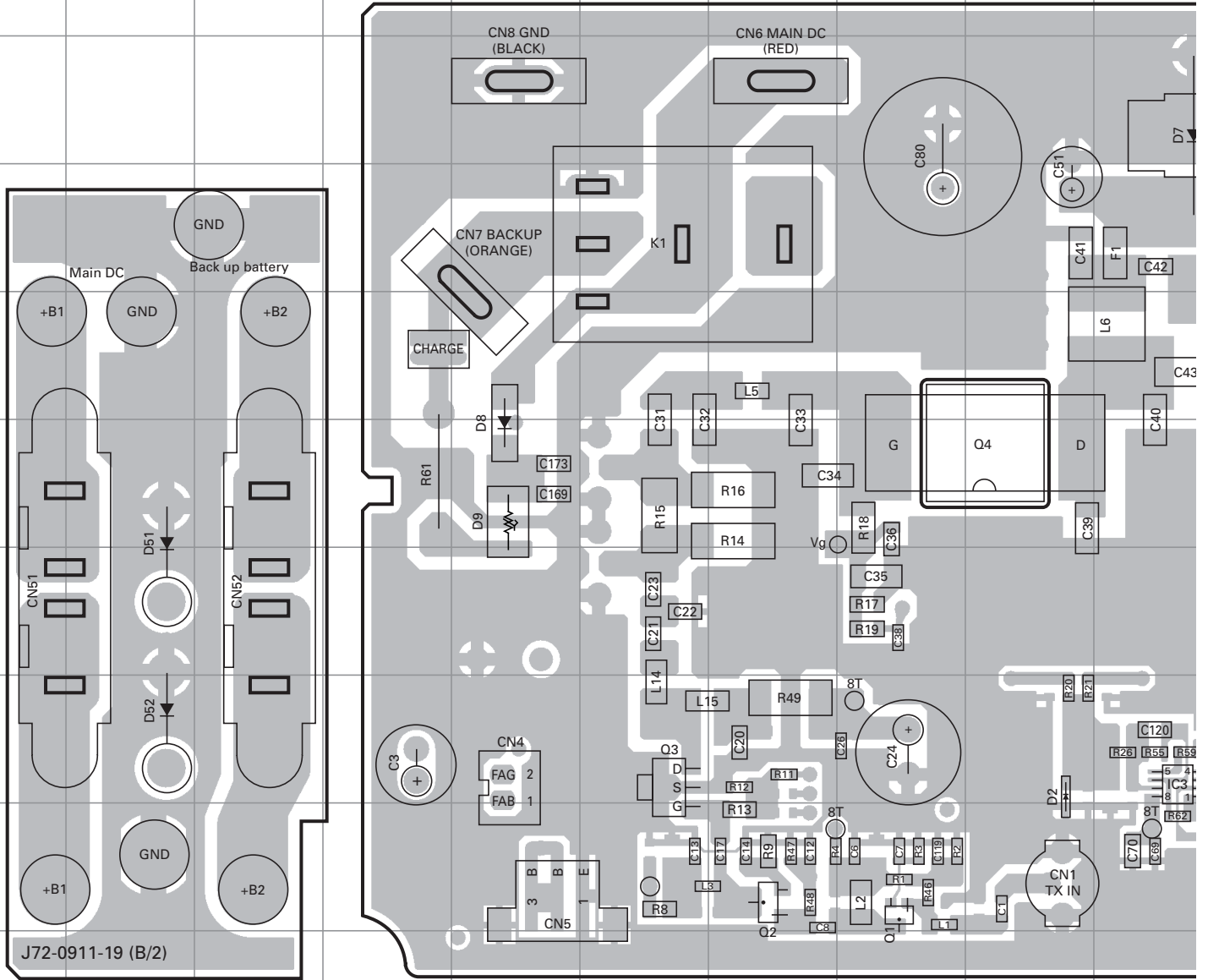
- 1
- 2
- 3
- 4
- 5
- 5





TKR-850 PC BOARD

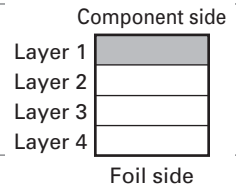
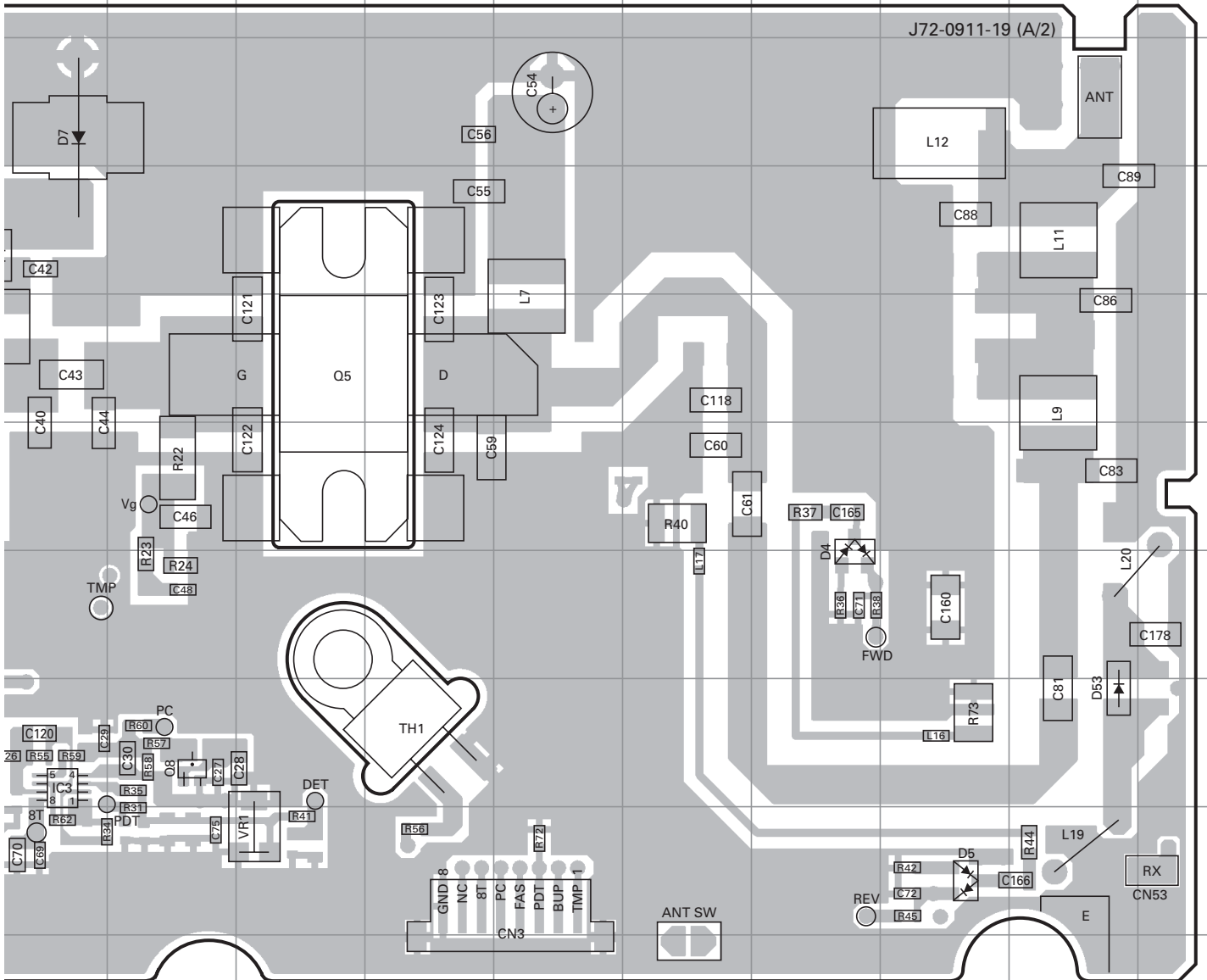
FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
 Component side view (J72-0911-19)



| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|
| IC3 | 8J | Q4 | 6I | D4 | 7P | D9 | 6E |
| Q1 | 9H | Q5 | 5L | D5 | 9Q | D51 | 7B |
| Q2 | 9G | Q8 | 8K | D7 | 3J | D52 | 8B |
| Q3 | 8F | D2 | 8I | D8 | 6E | D53 | 8R |

PC BOARD TKR-850

FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
 Component side view (J72-0911-19)

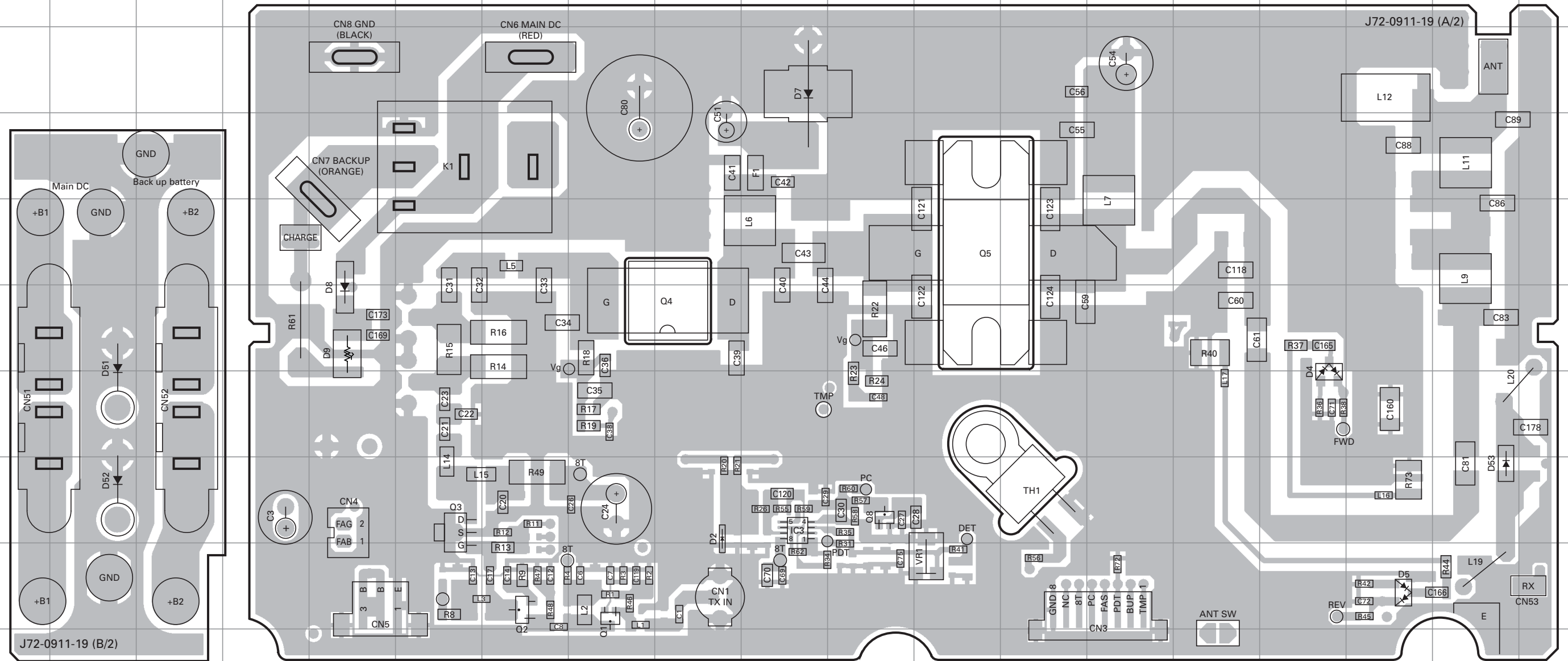


TKR-850 PC BOARD

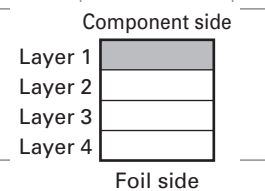
PC BOARD TKR-850

FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
Component side view (J72-0911-19)

FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
Component side view (J72-0911-19)

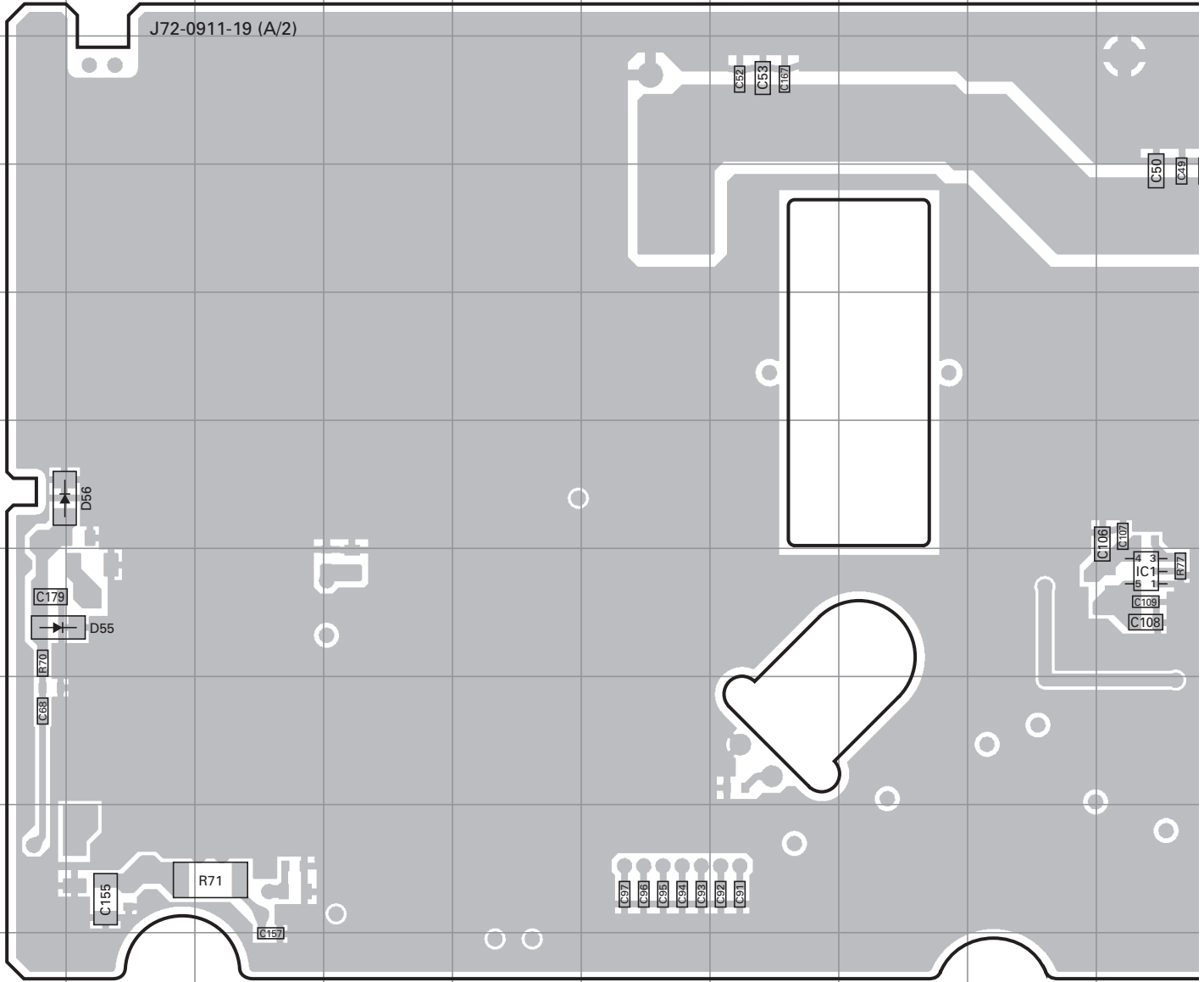


| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|
| IC3 | 8J | Q4 | 6I | D4 | 7P | D9 | 6E |
| Q1 | 9H | Q5 | 5L | D5 | 9Q | D51 | 7B |
| Q2 | 9G | Q8 | 8K | D7 | 3J | D52 | 8B |
| Q3 | 8F | D2 | 8I | D8 | 6E | D53 | 8R |



TKR-850 PC BOARD

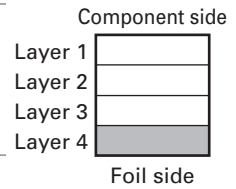
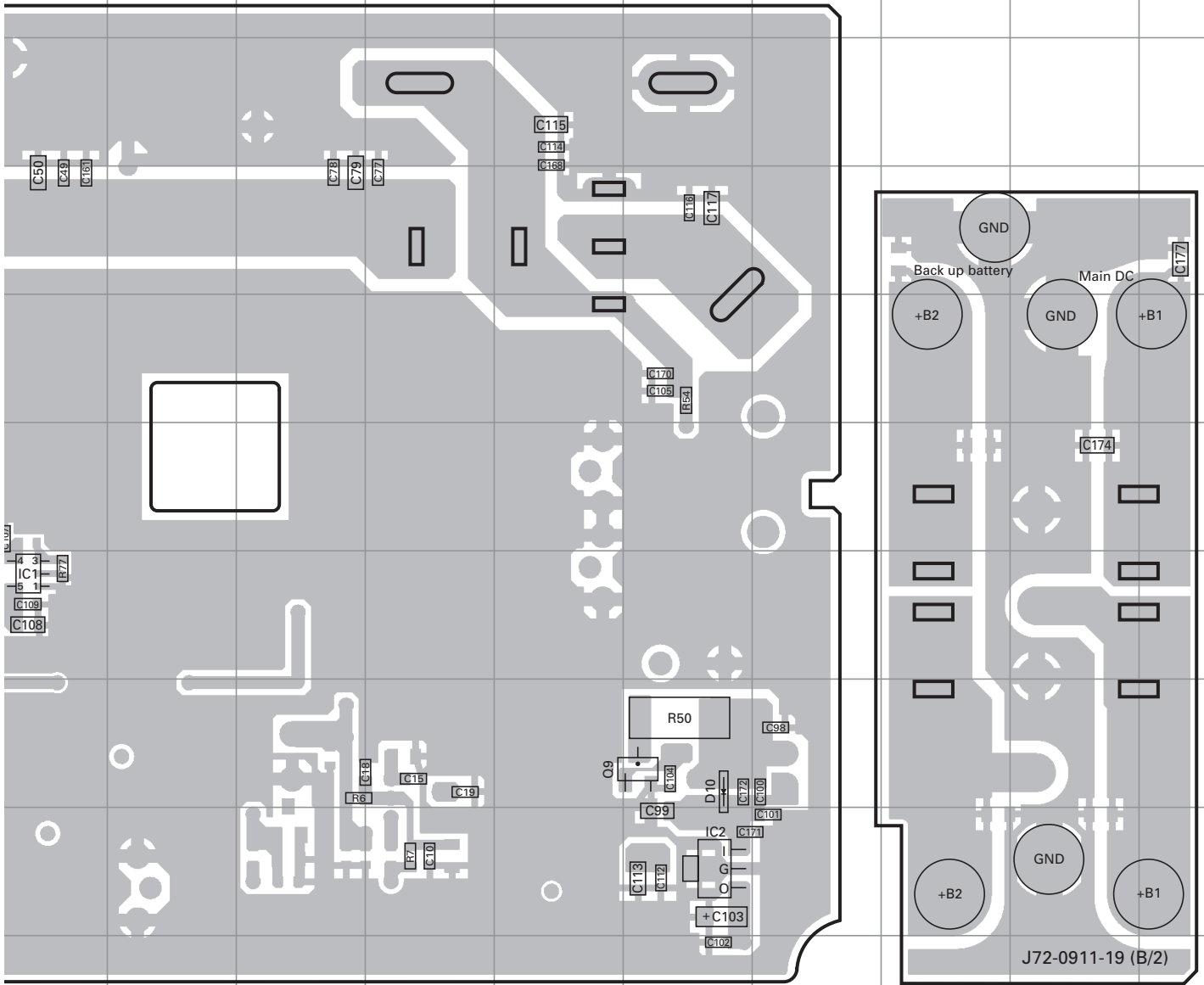
FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
 Foil side view (J72-0911-19)



| Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|
| IC1 | 7J | D55 | 6A |
| IC2 | 9O | D56 | 7A |
| Q9 | 8O | | |
| D10 | 8O | | |

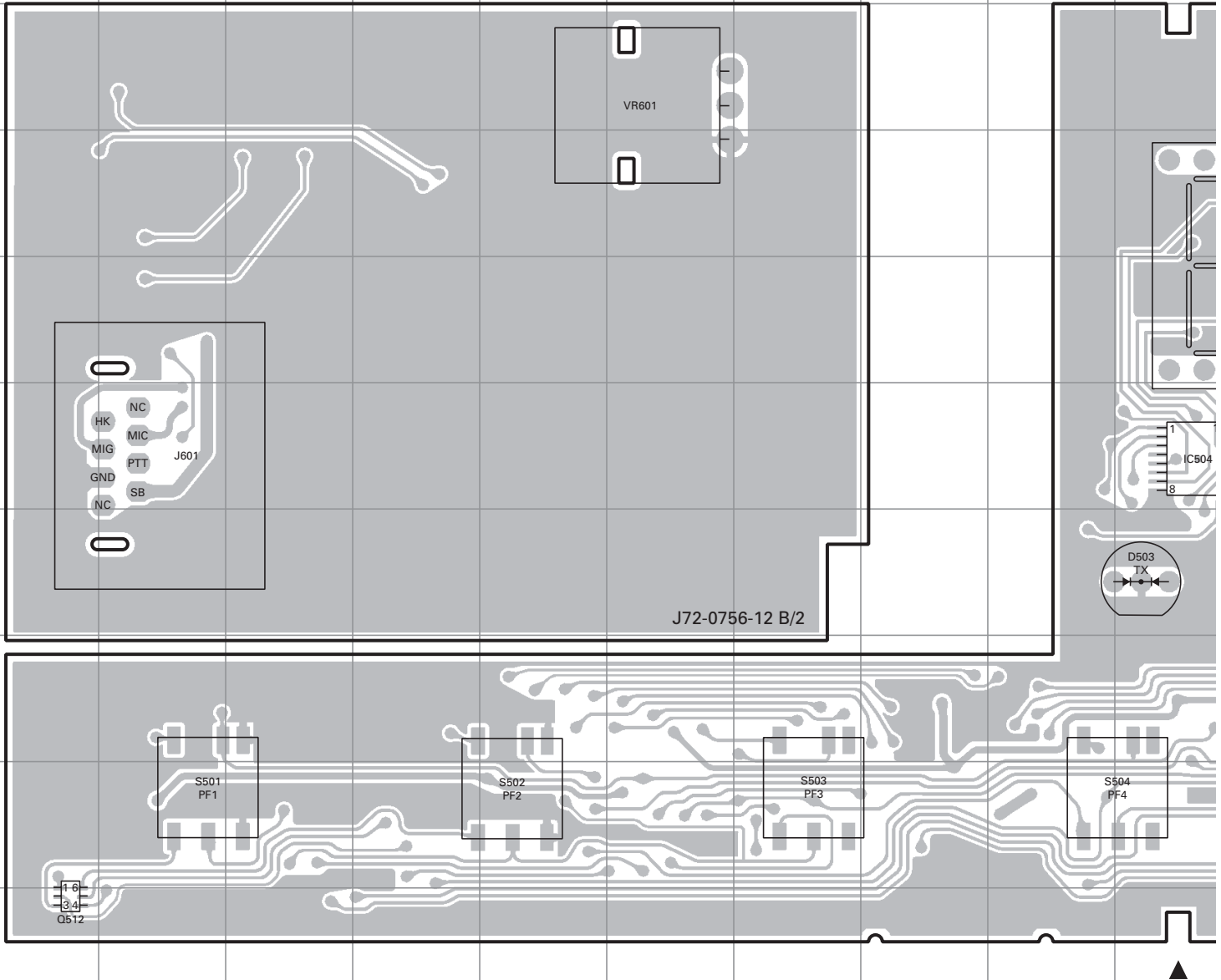
PC BOARD TKR-850

FINAL UNIT (X45-374X-XX) 0-10 : K,E 0-11 : K2 0-12 : K3
Foil side view (J72-0911-19)



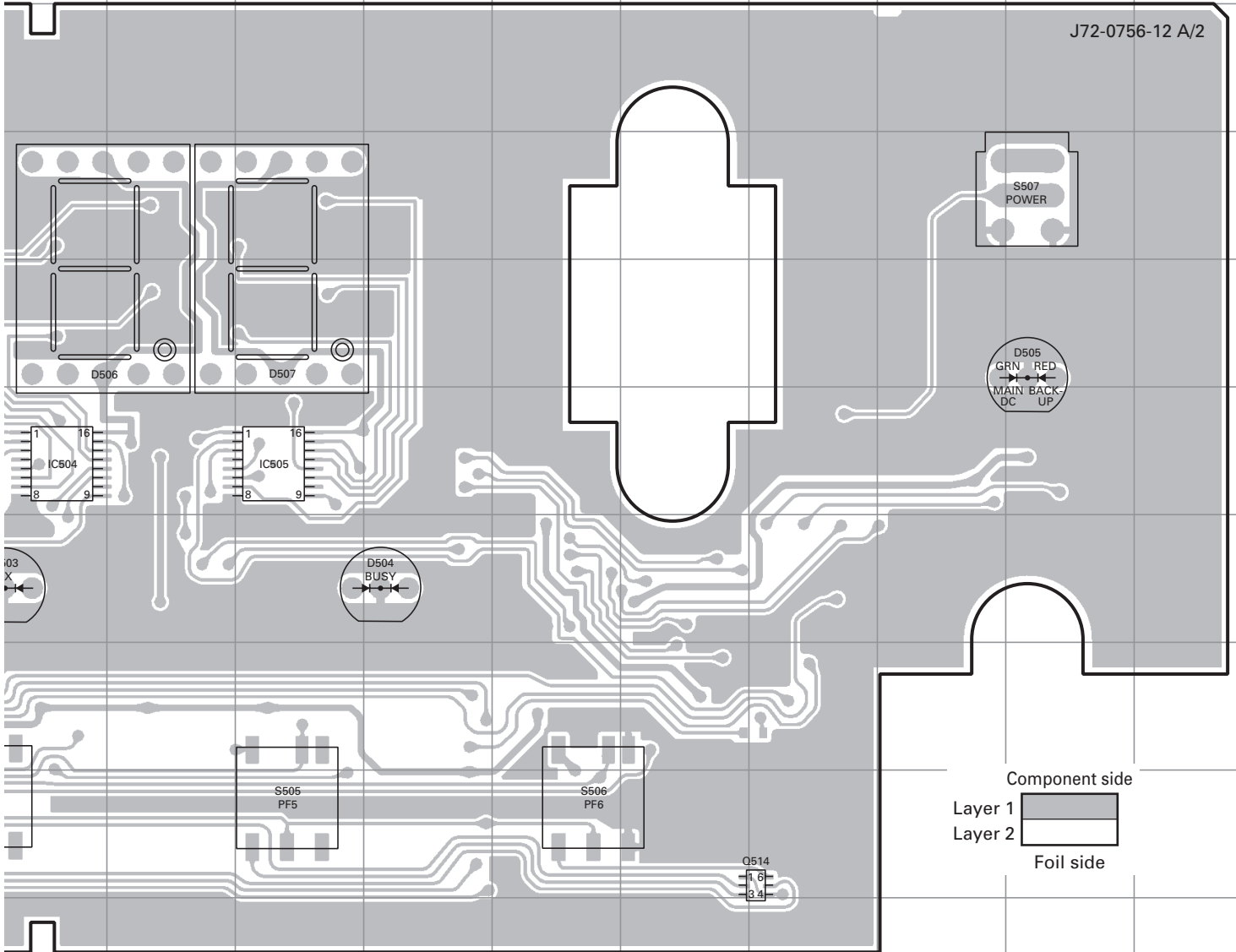
TKR-850 PC BOARD

DISPLAY UNIT (X54-3330-21) Component side view (J72-0756-12)



PC BOARD TKR-850

DISPLAY UNIT (X54-3330-21) Component side view (J72-0756-12)



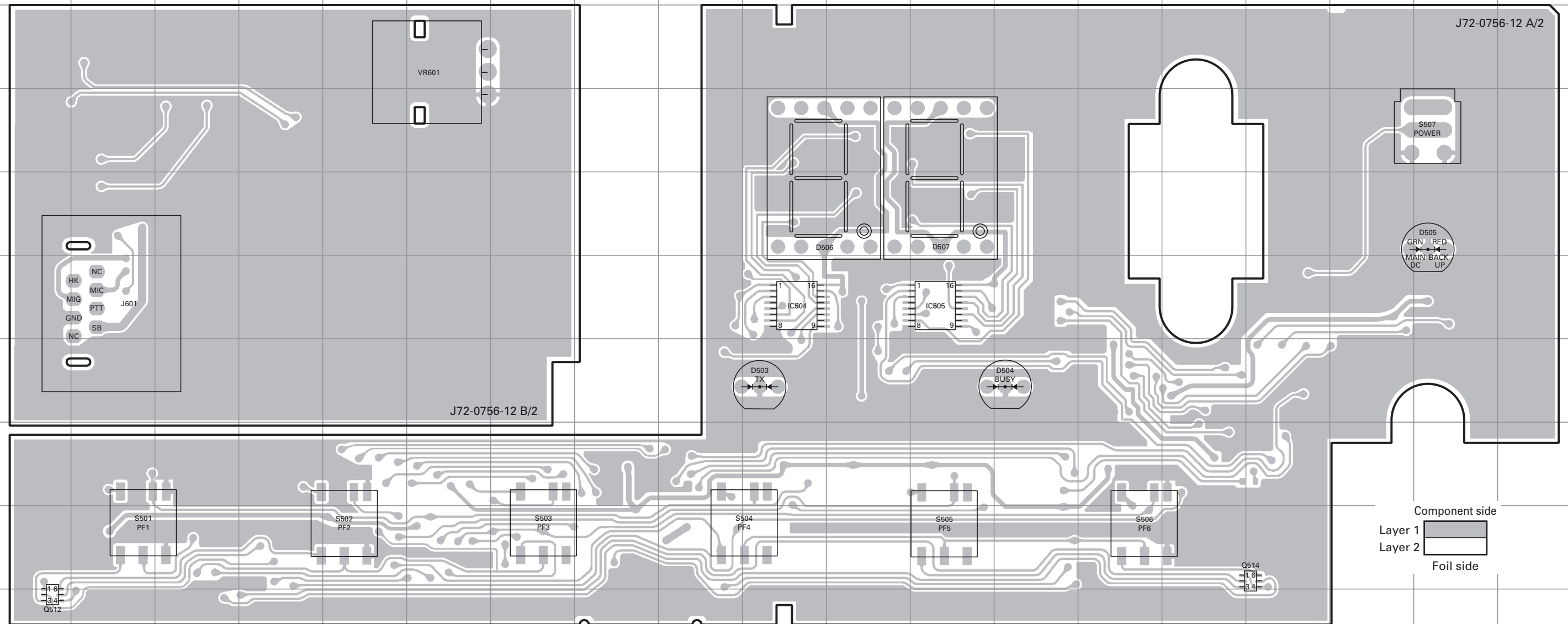
| Ref. No. | Address |
|----------|---------|
| IC504 | 6J |
| IC505 | 6L |
| Q512 | 10A |
| Q514 | 9P |
| D503 | 7J |
| D504 | 7M |
| D505 | 5R |
| D506 | 5J |
| D507 | 5L |

TKR-850 PC BOARD

PC BOARD TKR-850

DISPLAY UNIT (X54-3330-21) Component side view (J72-0756-12)

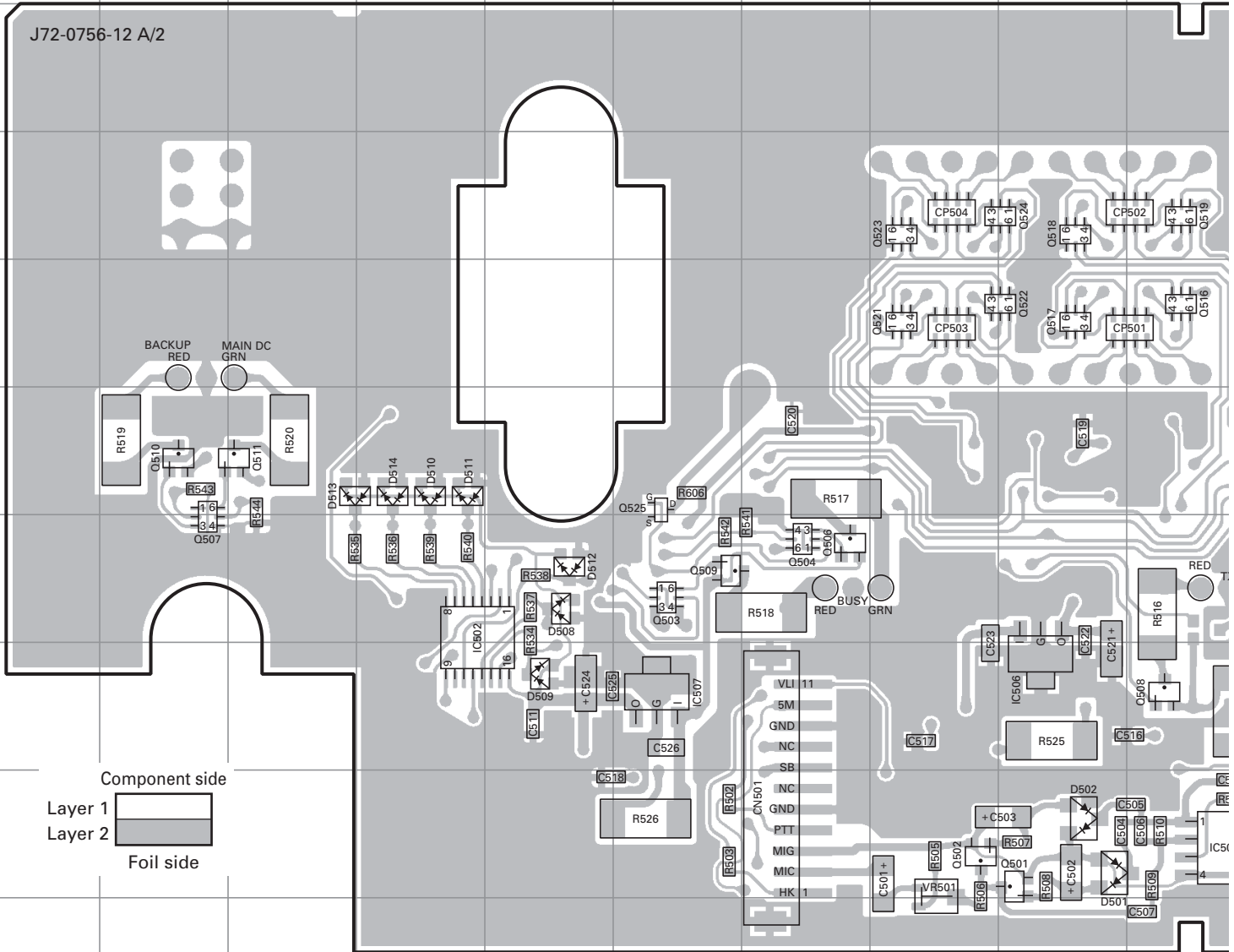
DISPLAY UNIT (X54-3330-21) Component side view (J72-0756-12)



| Ref. No. | Address |
|----------|---------|
| IC504 | 6J |
| IC505 | 6L |
| Q512 | 10A |
| Q514 | 9P |
| D503 | 7J |
| D504 | 7M |
| D505 | 5R |
| D506 | 5J |
| D507 | 5L |

TKR-850 PC BOARD

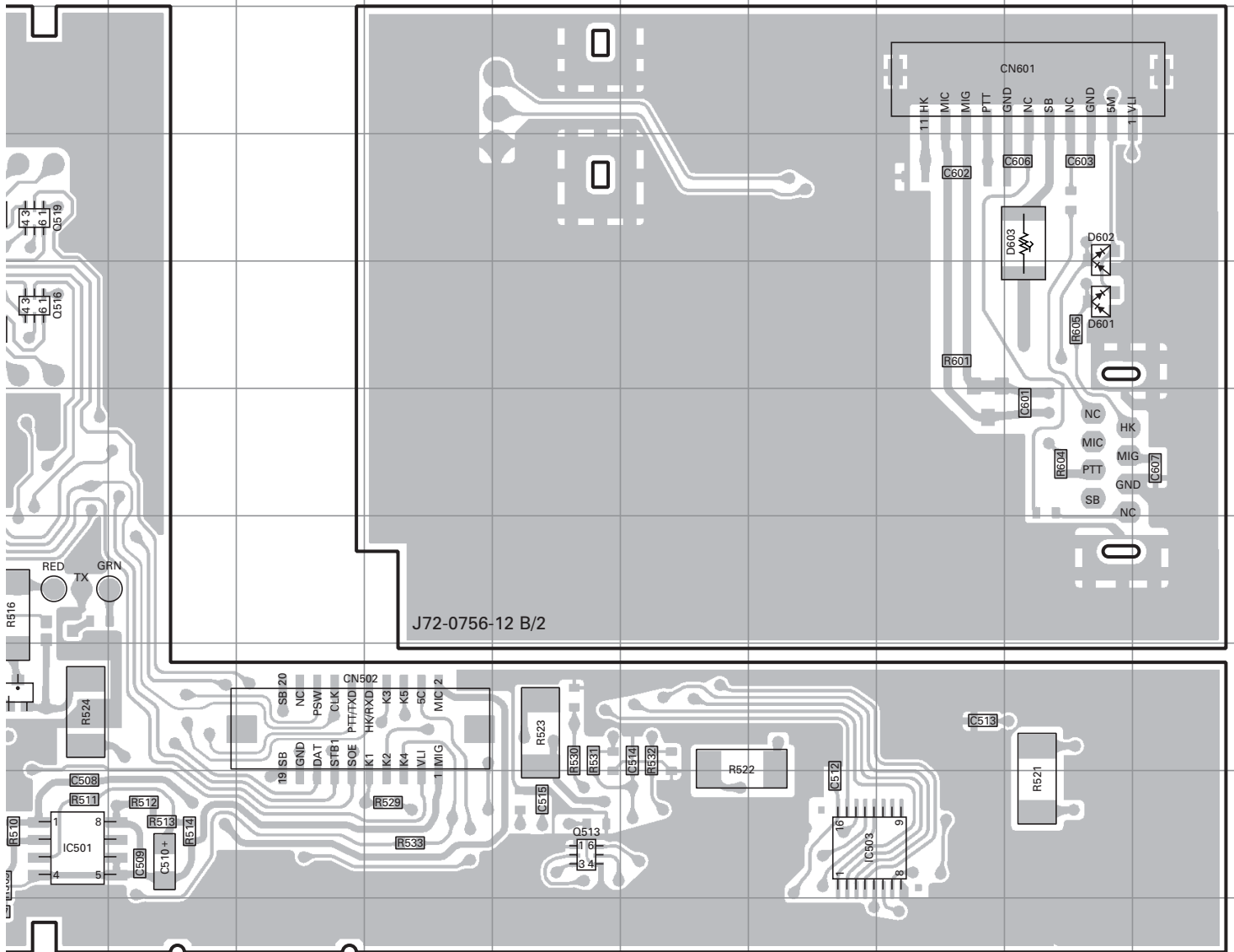
DISPLAY UNIT (X54-3330-21) Foil side view (J72-0756-12)



| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|
| IC501 | 9J | Q507 | 7B | Q521 | 5H | D511 | 6D |
| IC502 | 7D | Q508 | 8J | Q522 | 5I | D512 | 7E |
| IC503 | 9P | Q509 | 7F | Q523 | 4H | D513 | 6C |
| IC506 | 8I | Q510 | 6B | Q524 | 4I | D514 | 6D |
| IC507 | 8F | Q511 | 6C | Q525 | 6F | D601 | 5R |
| Q501 | 9I | Q513 | 9N | D501 | 9I | D602 | 4R |
| Q502 | 9H | Q516 | 5J | D502 | 9I | D603 | 4R |
| Q503 | 7F | Q517 | 5I | D508 | 7E | | |
| Q504 | 7G | Q518 | 4I | D509 | 8E | | |
| Q506 | 7G | Q519 | 4J | D510 | 6D | | |

PC BOARD TKR-850

DISPLAY UNIT (X54-3330-21) Foil side view (J72-0756-12)

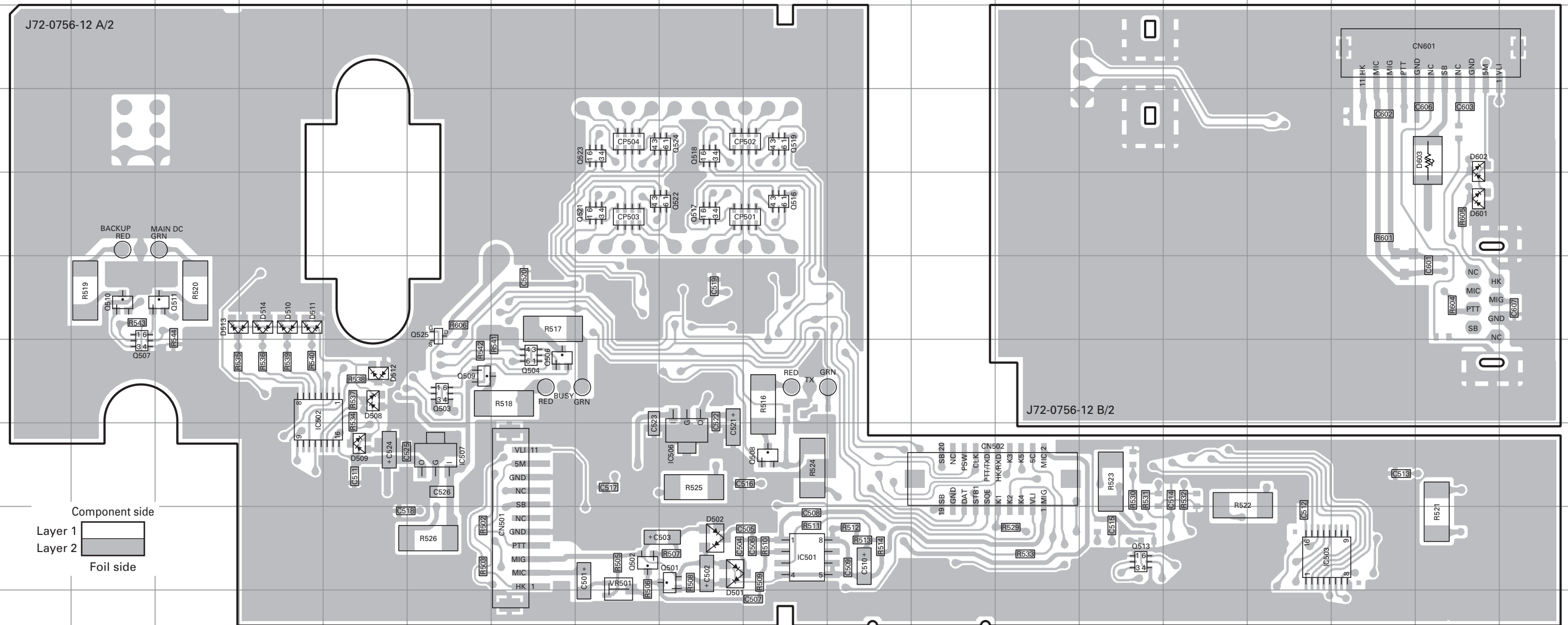


TKR-850 PC BOARD

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DISPLAY UNIT (X54-3330-21) Foil side view (J72-0756-12)

DISPLAY UNIT (X54-3330-21) Foil side view (J72-0756-12)



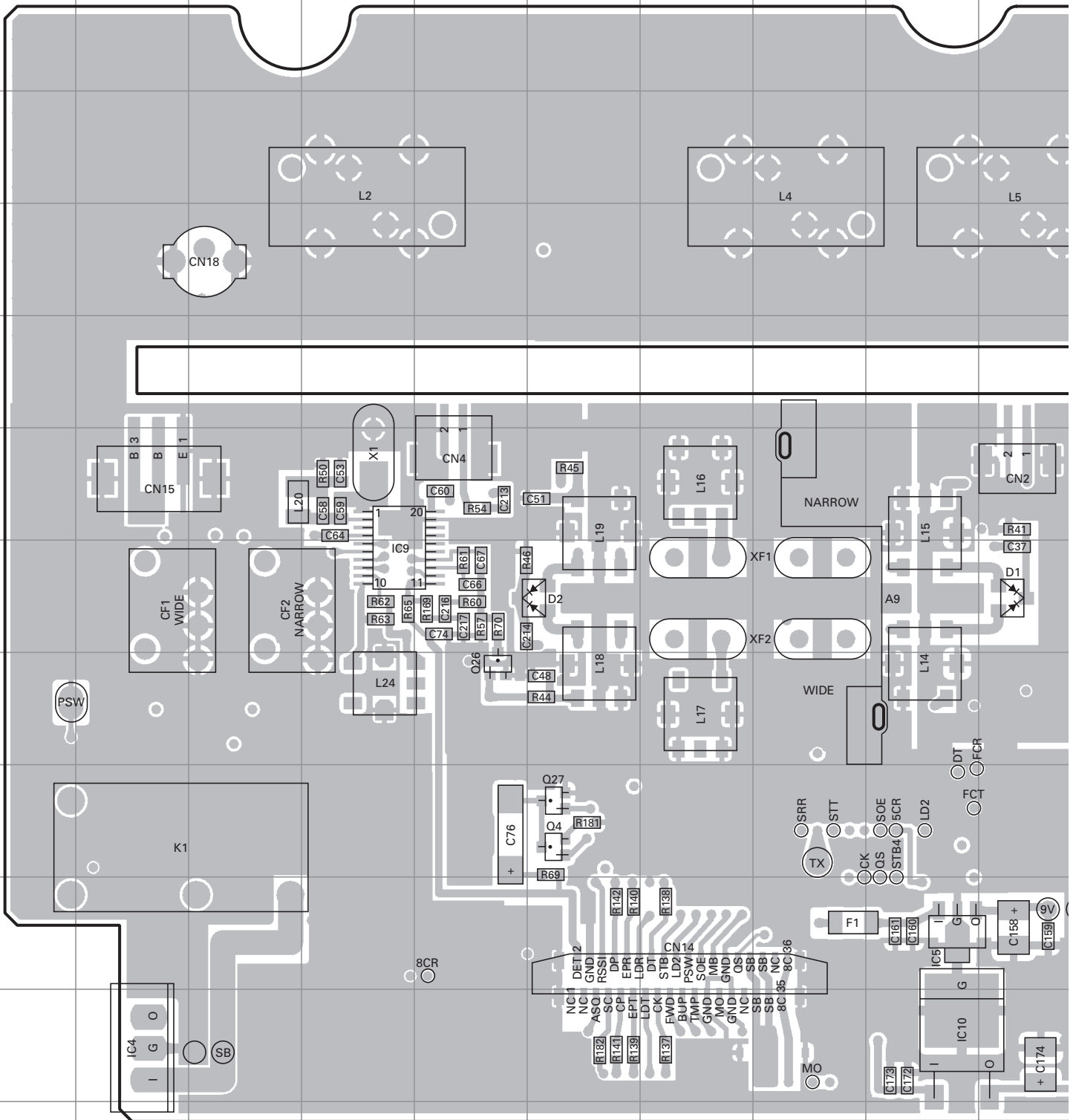
Component side
 Layer 1
 Layer 2
 Foil side

| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|
| IC501 | 9J | Q507 | 7B | Q521 | 5H | D511 | 6D |
| IC502 | 7D | Q508 | 8J | Q522 | 5I | D512 | 7E |
| IC503 | 9P | Q509 | 7F | Q523 | 4H | D513 | 6C |
| IC506 | 8I | Q510 | 6B | Q524 | 4I | D514 | 6D |
| IC507 | 8F | Q511 | 6C | Q525 | 6F | D601 | 5R |
| Q501 | 9I | Q513 | 9N | D501 | 9I | D602 | 4R |
| Q502 | 9H | Q516 | 5J | D502 | 9I | D603 | 4R |
| Q503 | 7F | Q517 | 5I | D508 | 7E | | |
| Q504 | 7G | Q518 | 4I | D509 | 8E | | |
| Q506 | 7G | Q519 | 4J | D510 | 6D | | |

TKR-850 PC BOARD

TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

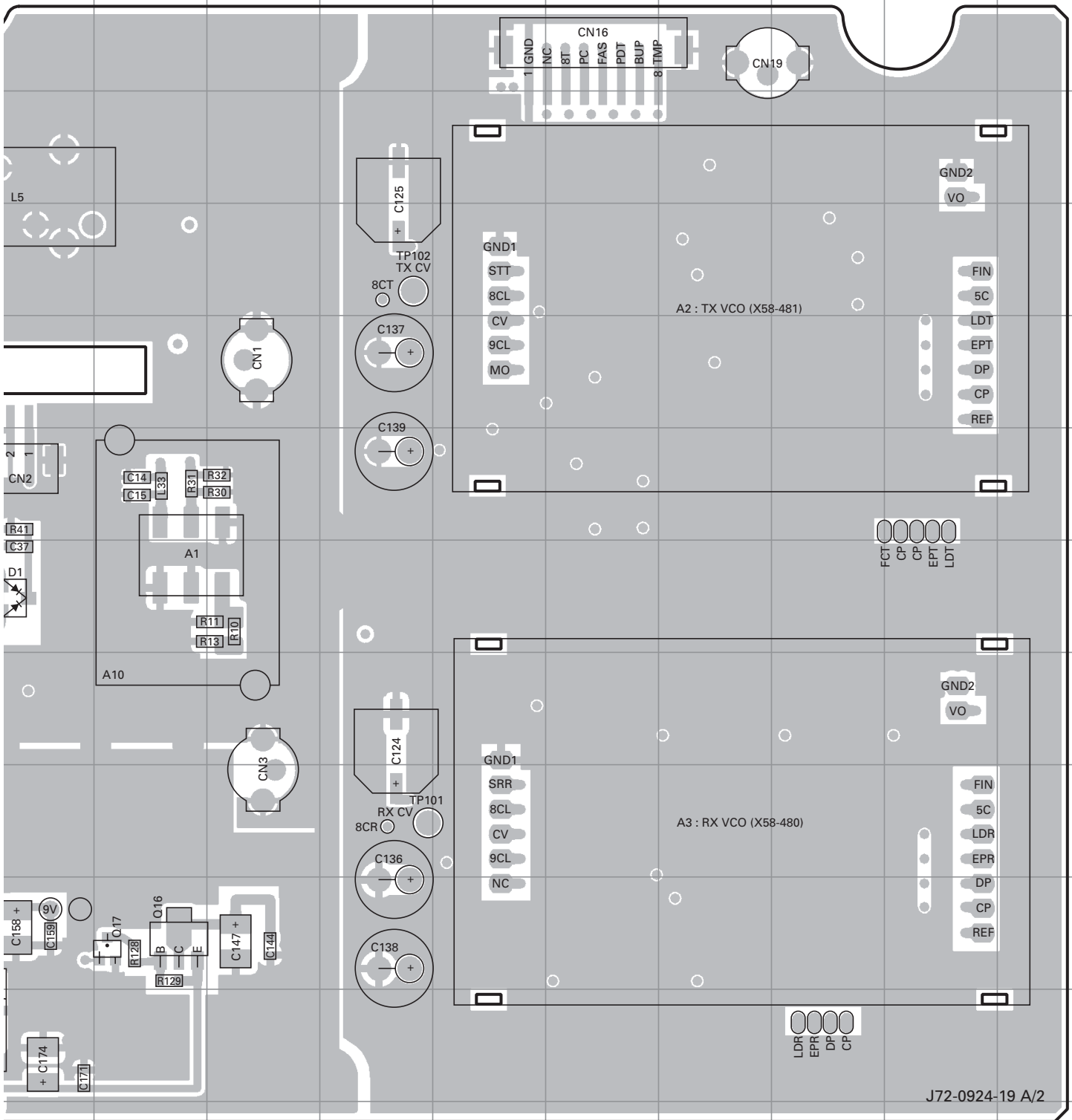
Component side view (J72-0924-19 A/2)



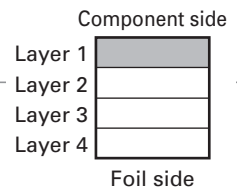
| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|
| IC4 | 11B | Q4 | 9F | Q27 | 9F |
| IC5 | 10I | Q16 | 10K | D1 | 7J |
| IC9 | 7D | Q17 | 10K | D2 | 7F |
| IC10 | 11I | Q26 | 8E | | |

PC BOARD TKR-850

TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E
 Component side view (J72-0924-19 A/2)



J72-0924-19 A/2



TKR-850 PC BOARD

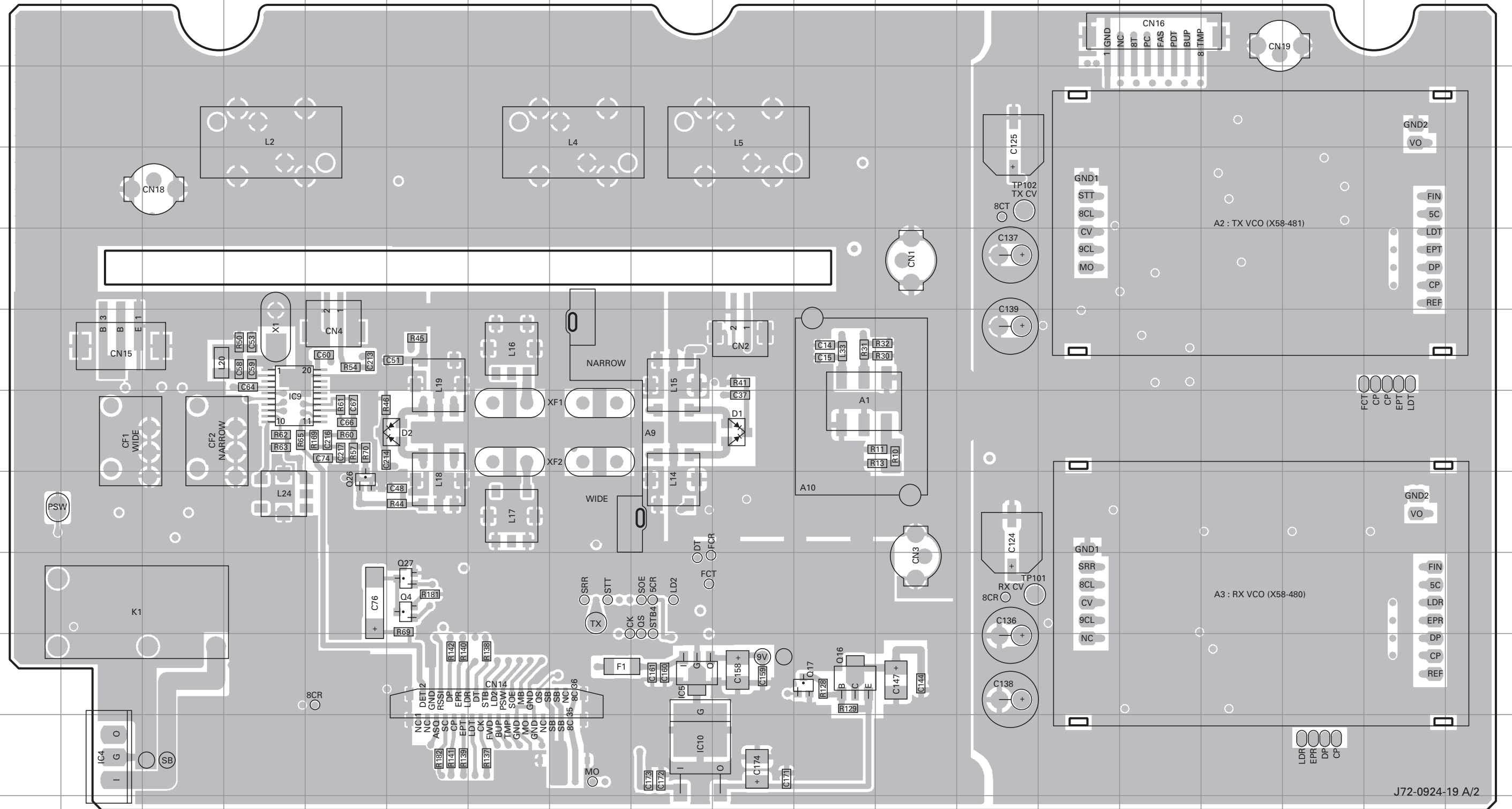
TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

Component side view (J72-0924-19 A/2)

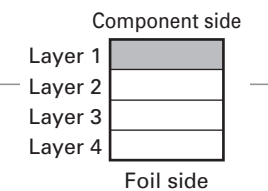
PC BOARD TKR-850

TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

Component side view (J72-0924-19 A/2)



| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|
| IC4 | 11B | Q4 | 9F | Q27 | 9F |
| IC5 | 10I | Q16 | 10K | D1 | 7J |
| IC9 | 7D | Q17 | 10K | D2 | 7F |
| IC10 | 11I | Q26 | 8E | | |

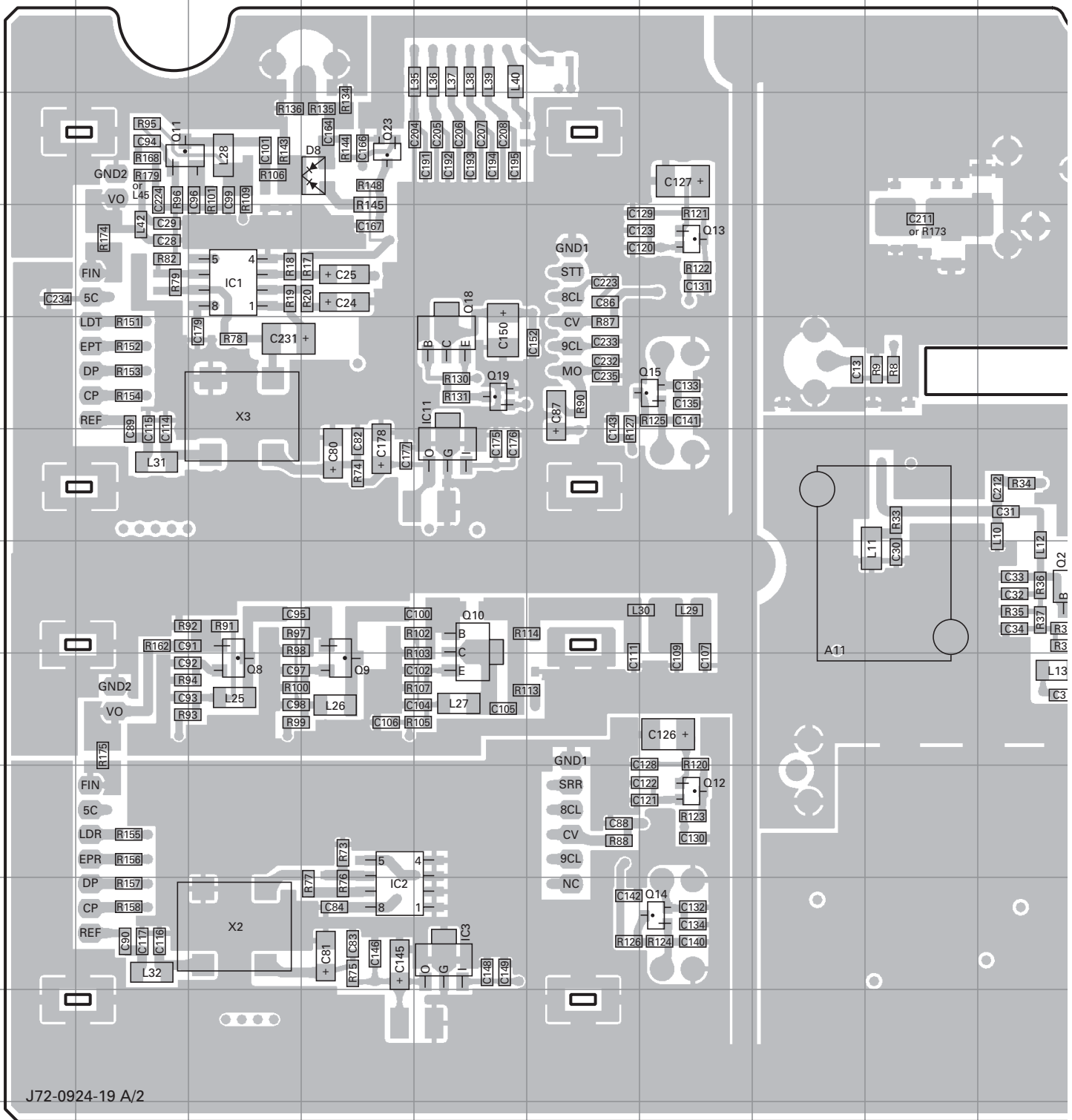


J72-0924-19 A/2

TKR-850 PC BOARD

TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

Foil side view (J72-0924-19 A/2)



J72-0924-19 A/2

| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| IC1 | 4C | Q1 | 3N | Q8 | 8C | Q14 | 10G | Q25 | 9R | D11 | 10N |
| IC2 | 10D | Q2 | 7J | Q9 | 8D | Q15 | 5G | D3 | 7Q | D12 | 9Q |
| IC3 | 10E | Q3 | 7O | Q10 | 7E | Q18 | 5E | D4 | 8Q | D13 | 11N |
| IC6 | 9K | Q5 | 9N | Q11 | 3B | Q19 | 5E | D5 | 11O | | |
| IC7 | 9L | Q6 | 9M | Q12 | 9G | Q23 | 3D | D7 | 9S | | |
| IC11 | 6E | Q7 | 10O | Q13 | 4G | Q24 | 9R | D8 | 3D | | |

TKR-850 PC BOARD

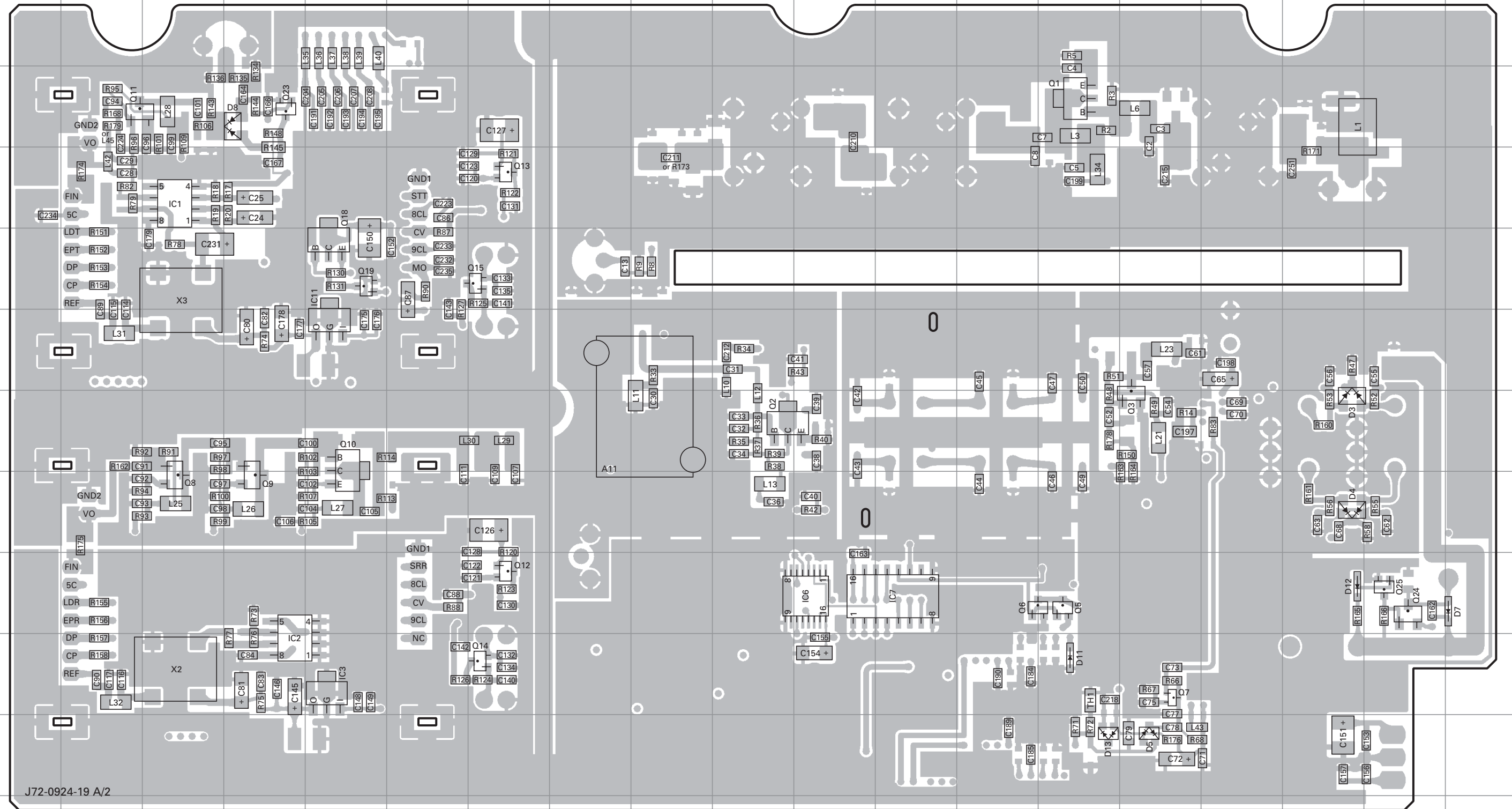
TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

Foil side view (J72-0924-19 A/2)

PC BOARD TKR-850

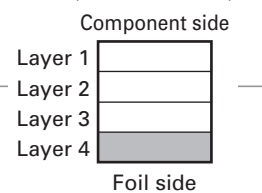
TX-RX UNIT (X57-696X-XX) (A/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E

Foil side view (J72-0924-19 A/2)



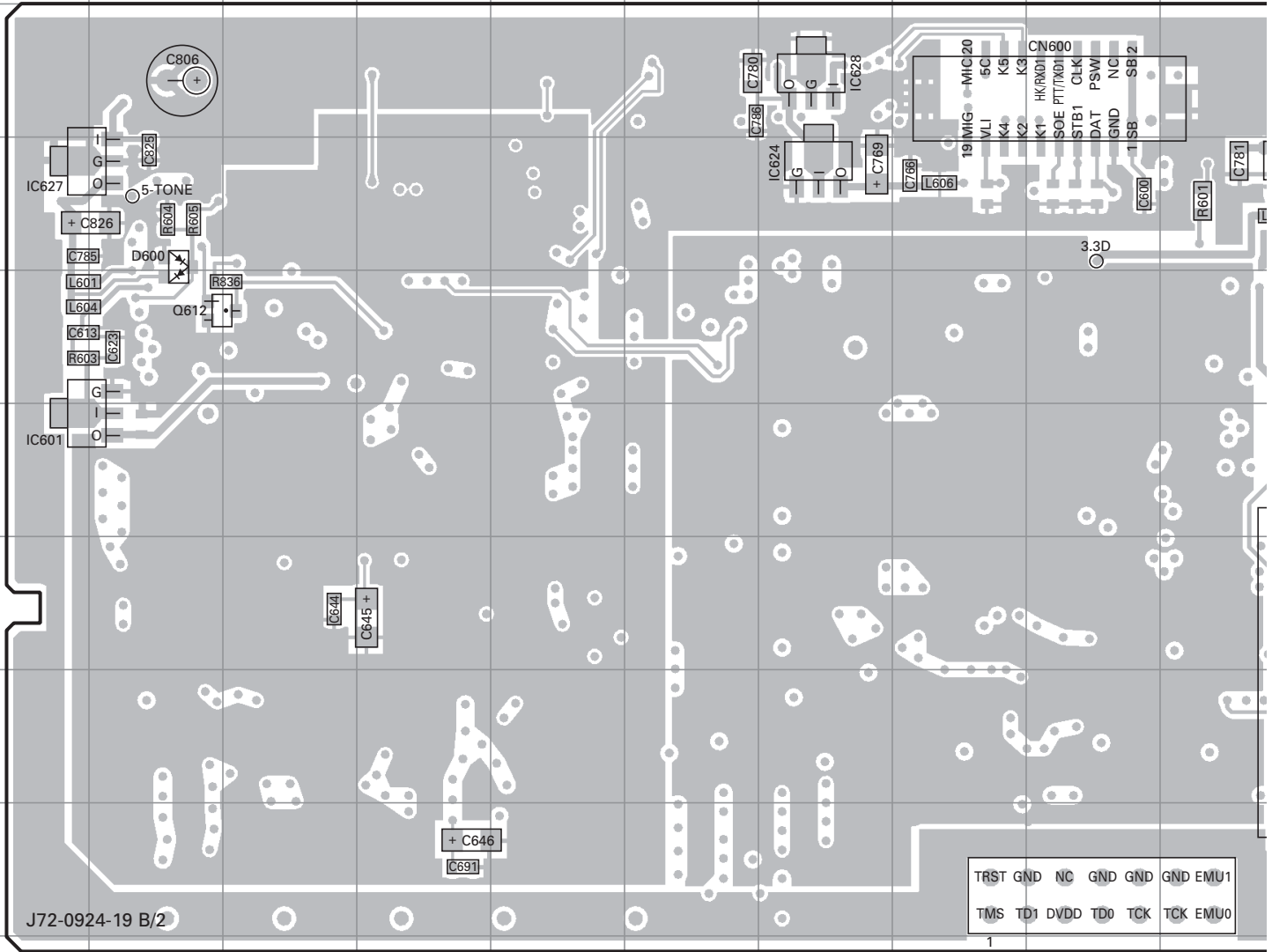
J72-0924-19 A/2

| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| IC1 | 4C | Q1 | 3N | Q8 | 8C | Q14 | 10G | Q25 | 9R | D11 | 10N |
| IC2 | 10D | Q2 | 7J | Q9 | 8D | Q15 | 5G | D3 | 7Q | D12 | 9Q |
| IC3 | 10E | Q3 | 7O | Q10 | 7E | Q18 | 5E | D4 | 8Q | D13 | 11N |
| IC6 | 9K | Q5 | 9N | Q11 | 3B | Q19 | 5E | D5 | 11O | | |
| IC7 | 9L | Q6 | 9M | Q12 | 9G | Q23 | 3D | D7 | 9S | | |
| IC11 | 6E | Q7 | 10O | Q13 | 4G | Q24 | 9R | D8 | 3D | | |



TKR-850 PC BOARD

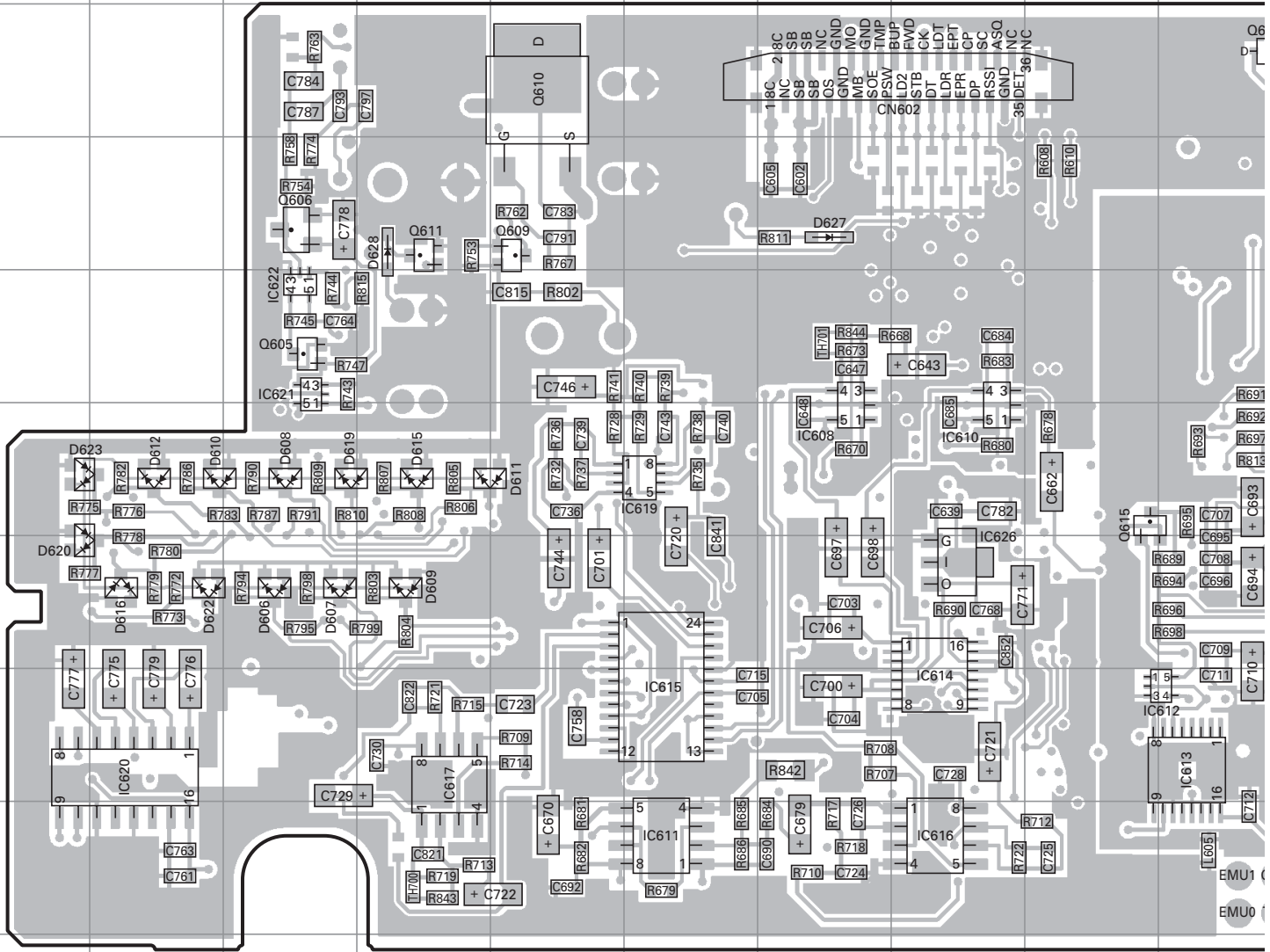
TX-RX UNIT (X57-696X-XX) (B/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E
 Component side view (J72-0924-19 B/2)



| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|
| IC601 | 6A | IC628 | 3G | D600 | 4B |
| IC602 | 7K | IC629 | 4R | D614 | 6M |
| IC605 | 6K | IC630 | 4N | D618 | 6M |
| IC607 | 8O | Q607 | 8L | D621 | 7M |
| IC623 | 8K | Q608 | 9L | D626 | 4M |
| IC624 | 4G | Q612 | 5B | D629 | 6N |
| IC625 | 4K | Q613 | 8M | | |
| IC627 | 4A | Q614 | 9M | | |

TKR-850 PC BOARD

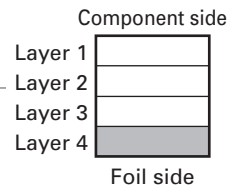
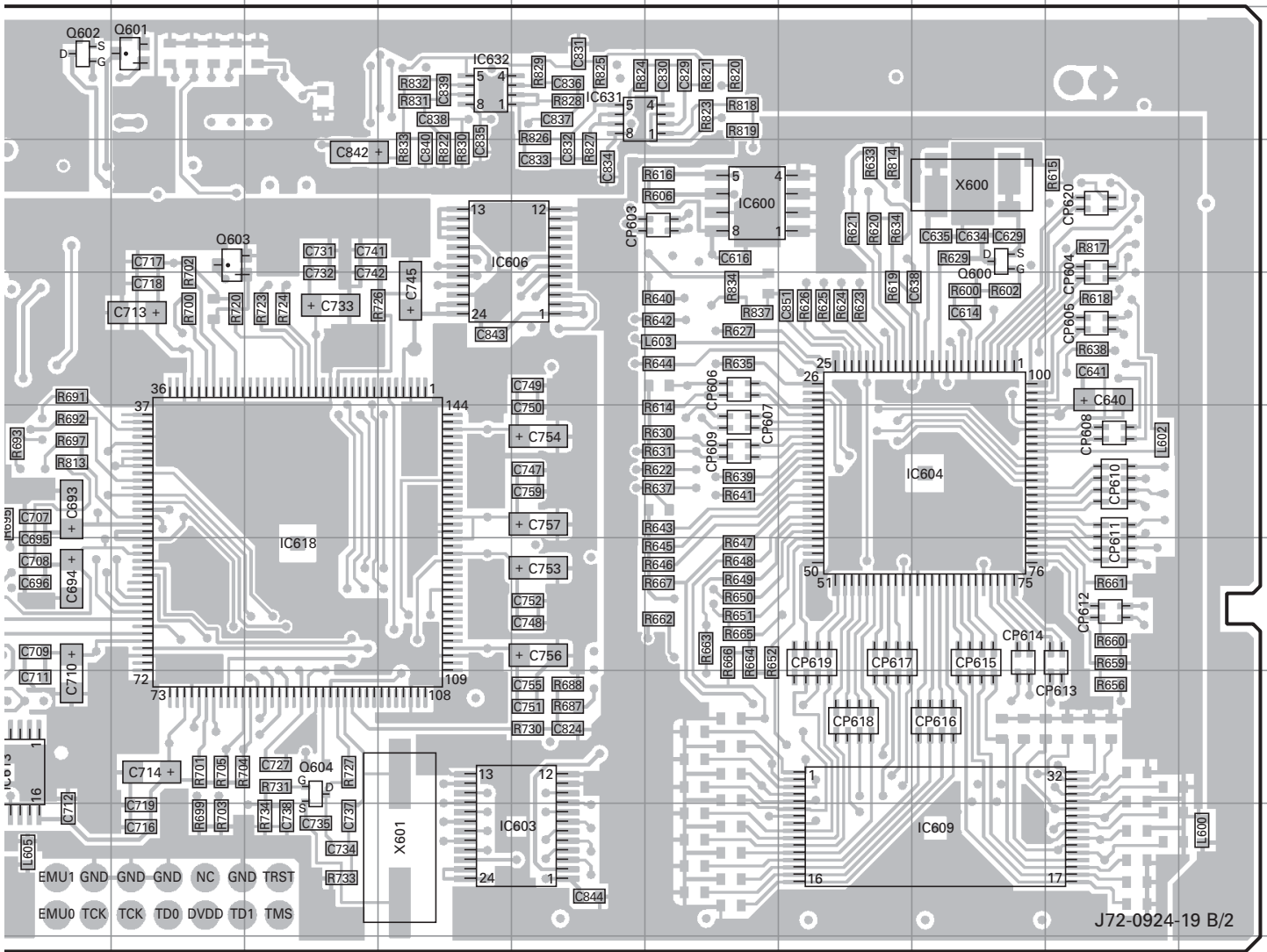
TX-RX UNIT (X57-696X-XX) (B/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E
 Foil side view (J72-0924-19 B/2)



| Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address | Ref. No. | Address |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| IC600 | 4O | IC612 | 8J | IC620 | 8B | Q602 | 3J | Q615 | 6I | D615 | 6D |
| IC603 | 9N | IC613 | 8J | IC621 | 5C | Q603 | 4K | D606 | 7C | D616 | 7B |
| IC604 | 6Q | IC614 | 8H | IC622 | 5C | Q604 | 8L | D607 | 7C | D619 | 6C |
| IC606 | 4M | IC615 | 8F | IC626 | 7H | Q605 | 5C | D608 | 6C | D620 | 7A |
| IC608 | 6G | IC616 | 9H | IC631 | 3N | Q606 | 4C | D609 | 7D | D622 | 7B |
| IC609 | 9Q | IC617 | 8D | IC632 | 3M | Q609 | 4E | D610 | 6B | D623 | 6A |
| IC610 | 6H | IC618 | 7L | Q600 | 4Q | Q610 | 3E | D611 | 6E | D627 | 4G |
| IC611 | 9F | IC619 | 6F | Q601 | 3K | Q611 | 4D | D612 | 6B | D628 | 4D |

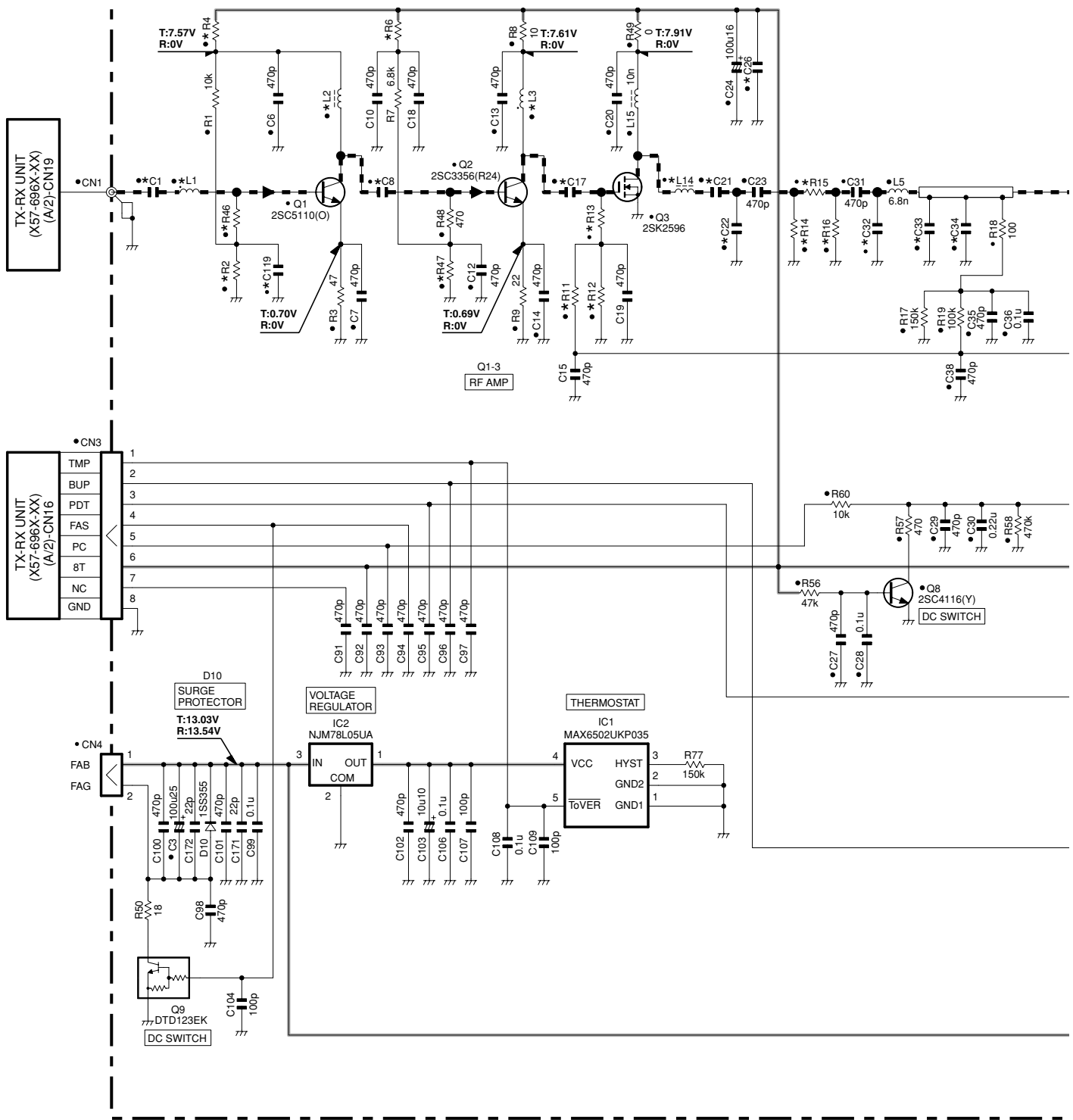
PC BOARD TKR-850

TX-RX UNIT (X57-696X-XX) (B/2) 0-11 : K 0-12 : K2 0-13 : K3 2-70 : E
Foil side view (J72-0924-19 B/2)



TKR-850 SCHEMATIC DIAGRAM

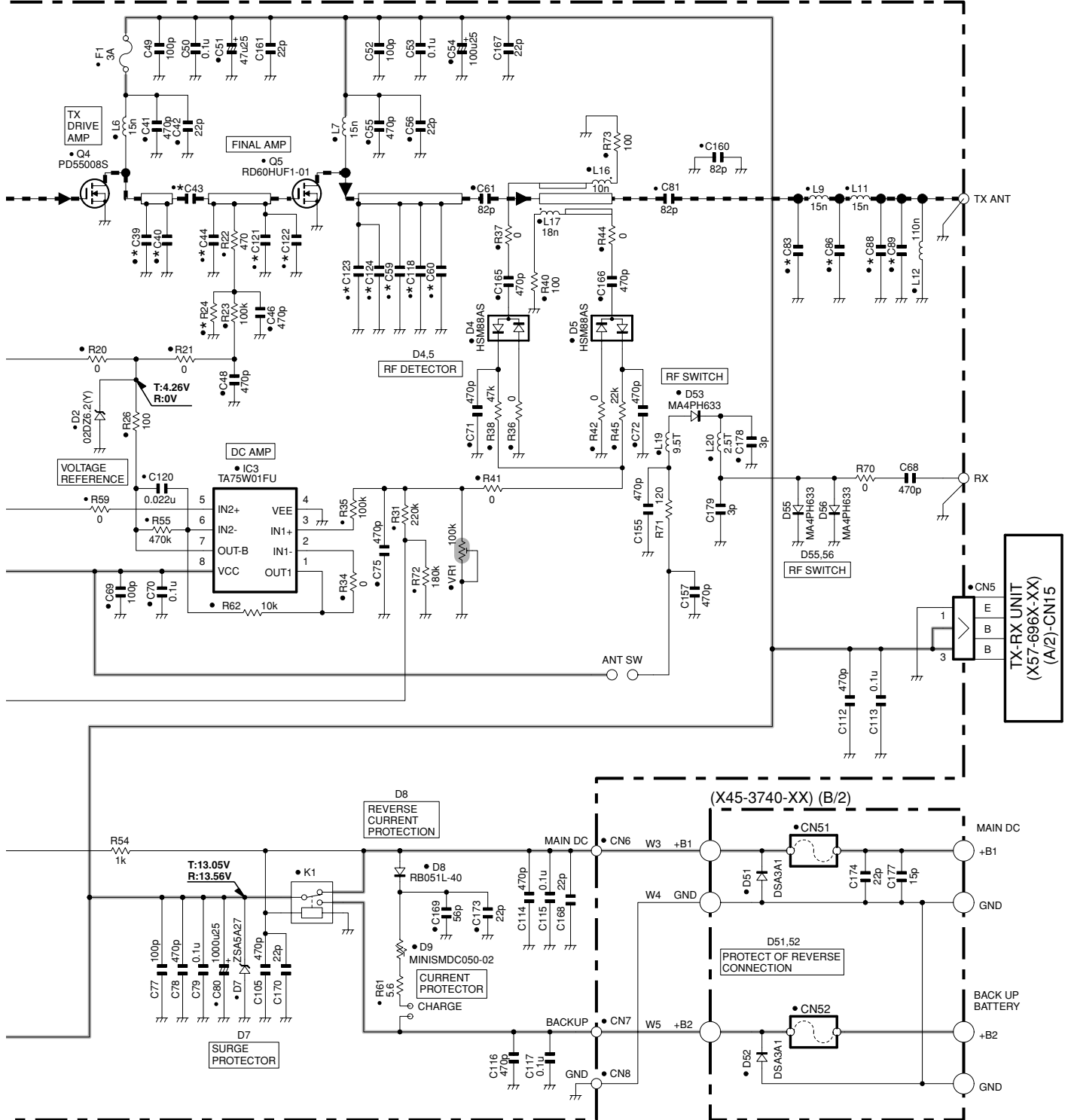
FINAL UNIT (X45-3740-XX) (A/2)



| X45-3740-XX | L1 | L2 | L3 | L14 | R2 | R4 | R6 | R11 | R12 | R13 | R14 | R15 | R16 | R46 | R47 | C1 | C8 | C17 | C21 | C22 | C26 | C32 | C33 | C34 | C119 | |
|-------------|-----|------|-----|------|-----|------|----|-----|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|------|-----|-----|------|------|
| 0-10 | K.E | 10n | 10n | 18n | 15n | 2.2k | 22 | 47 | 100k | 18k | 47 | 1k | 5.6 | 1k | 470 | 2.2k | 470p | 8p | 5p | 12p | 6p | 470p | 8p | 27p | 27p | 470p |
| 0-11 | K2 | 10n | 18n | 18n | 10n | 4.7k | 10 | 10 | 100k | 18k | 47 | 270 | 18 | 270 | 0 | 3.3k | 10p | 3p | 5p | 10P | 9p | 470p | 9p | 27p | 27p | NO |
| 0-12 | K3 | 3.9n | 27n | 8.2n | 10n | 4.7k | 10 | 10 | 33k | 15k | 22 | 270 | 18 | 270 | 0 | 3.3k | 10p | 10p | 56p | 22p | 12p | 100p | 8p | 39p | 39p | NO |

SCHEMATIC DIAGRAM TKR-850

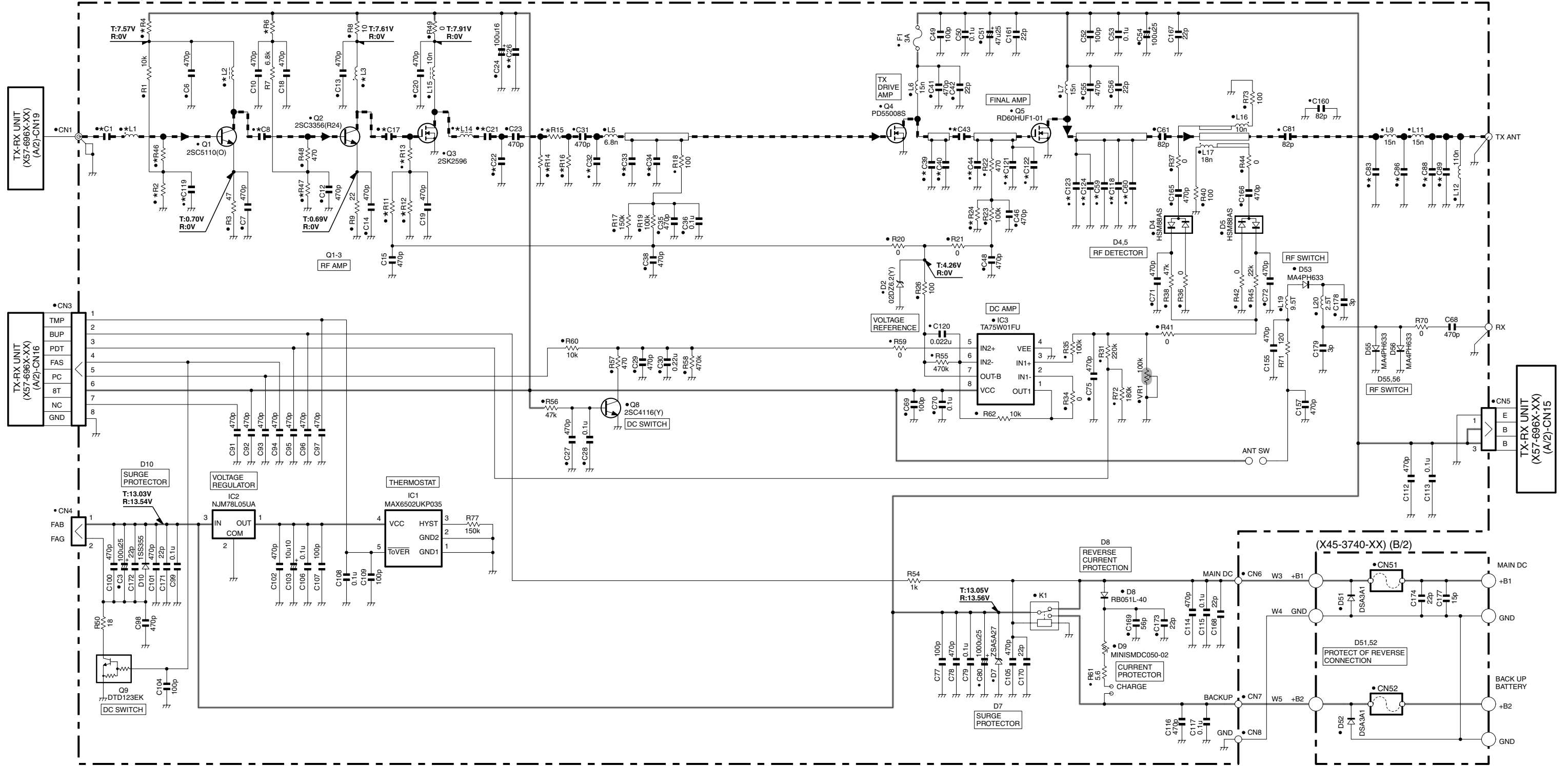
FINAL UNIT (X45-3740-XX) (A/2)



| X45-3740-XX | R24 | C39 | C40 | C43 | C44 | C59 | C60 | C83 | C86 | C88 | C89 | C118 | C121 | C122 | C123 | C124 | |
|-------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|
| 0-10 | K.E | 100k | 12p | 22p | 22p | 6p | 10p | NO | 6p | 10p | NO | 5p | 4p | 15p | 15p | 22p | 22p |
| 0-11 | K2 | 120k | 27p | 18p | 18p | NO | 8p | 6p | 5p | 8p | NO | 5p | NO | 18p | 18p | 22p | 18p |
| 0-12 | K3 | 100k | 18p | NO | 22p | 10p | 12p | 8p | 7p | 12p | 6p | NO | NO | 18p | 18p | 27p | 27p |

Note : The components marked with a dot (•) are parts of layer 1.

FINAL UNIT (X45-3740-XX) (A/2)



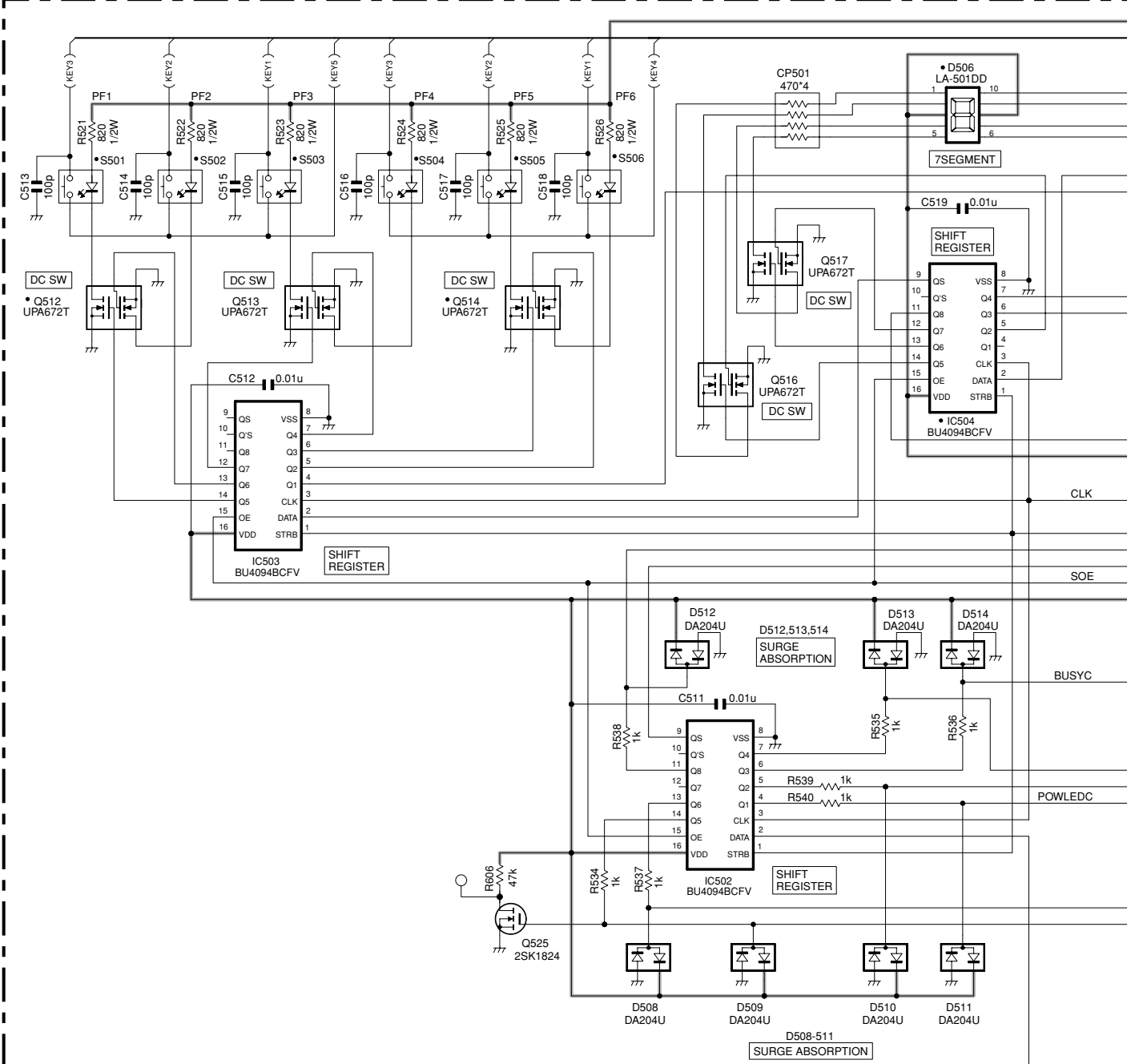
| X45-3740-XX | L1 | L2 | L3 | L14 | R2 | R4 | R6 | R11 | R12 | R13 | R14 | R15 | R16 | R46 | R47 | C1 | C8 | C17 | C21 | C22 | C26 | C32 | C33 | C34 | C119 | |
|-------------|-----|------|-----|------|-----|------|----|-----|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|------|-----|-----|------|------|
| 0-10 | K,E | 10n | 10n | 18n | 15n | 22k | 22 | 47 | 100k | 18k | 47 | 1k | 5.6 | 1k | 470 | 2.2k | 470p | 8p | 5p | 12p | 6p | 470p | 8p | 27p | 27p | 470p |
| 0-11 | K2 | 10n | 18n | 18n | 10n | 4.7k | 10 | 10 | 100k | 18k | 47 | 270 | 18 | 270 | 0 | 3.3k | 10p | 3p | 5p | 10p | 9p | 470p | 9p | 27p | 27p | 18p |
| 0-12 | K3 | 3.9n | 27n | 8.2n | 10n | 4.7k | 10 | 10 | 33k | 15k | 22 | 270 | 18 | 270 | 0 | 3.3k | 10p | 10p | 56p | 22p | 12p | 100p | 8p | 39p | 39p | NO |

| X45-3740-XX | R24 | C39 | C40 | C43 | C44 | C59 | C60 | C83 | C86 | C88 | C89 | C118 | C121 | C122 | C123 | C124 |
|-------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| 0-10 | K,E | 100k | 12p | 22p | 22p | 6p | 10p | NO | 6p | 10p | NO | 5p | 4p | 15p | 15p | 22p |
| 0-11 | K2 | 120k | 8p | 27p | 18p | NO | 8p | 6p | 5p | 8p | NO | 27p | NO | 18p | 18p | 22p |
| 0-12 | K3 | 100k | 18p | NO | 22p | 10p | 12p | 8p | 7p | 12p | 6p | NO | NO | 18p | 18p | 27p |

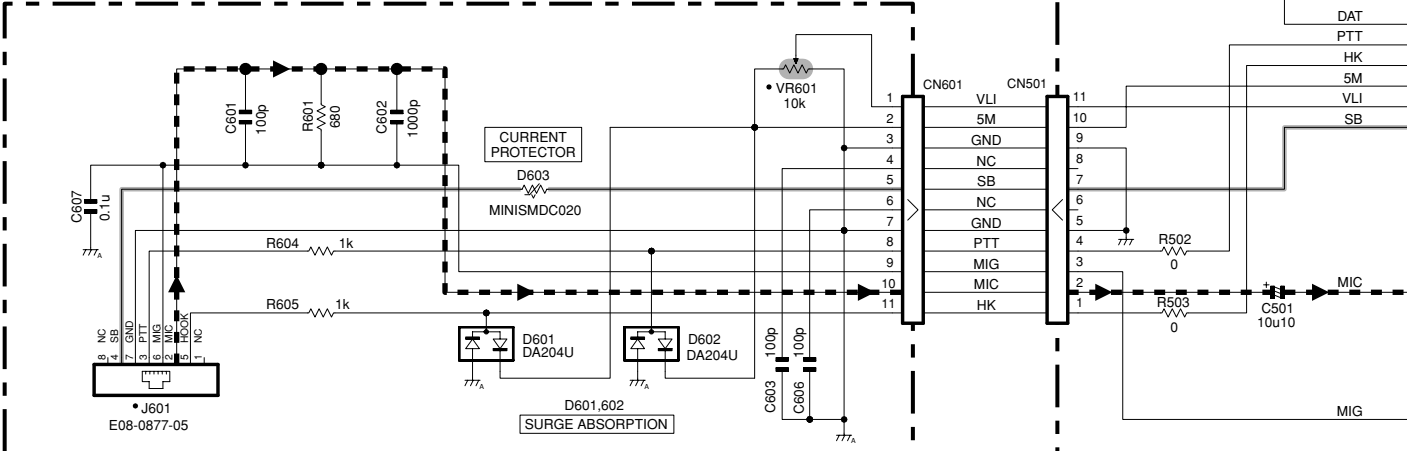
TKR-850 SCHEMATIC DIAGRAM

Note : The components marked with a dot (•) are parts of layer 1.

DISPLAY UNIT (X54-3330-21) (A/2)

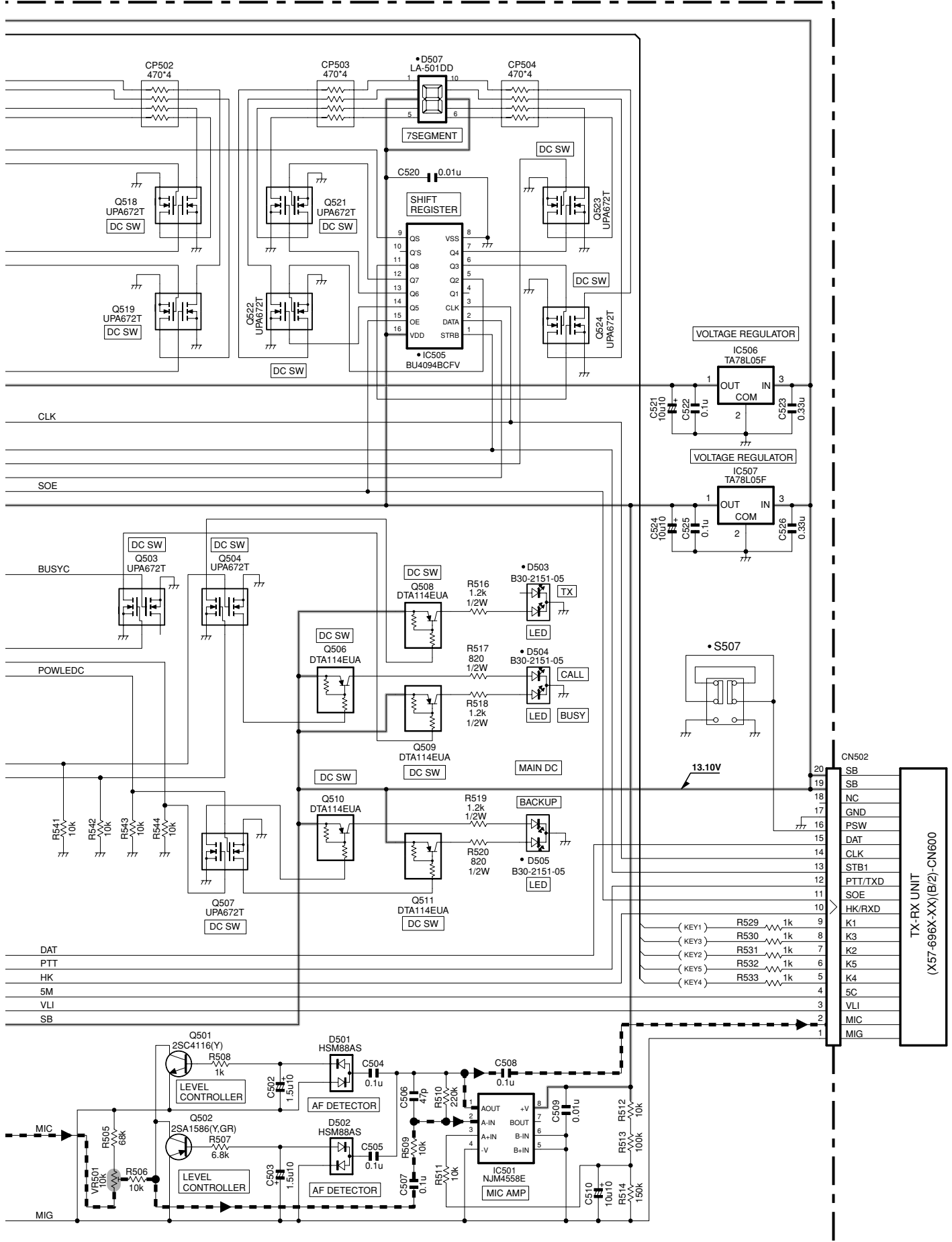


DISPLAY UNIT (X54-3330-21) (B/2)

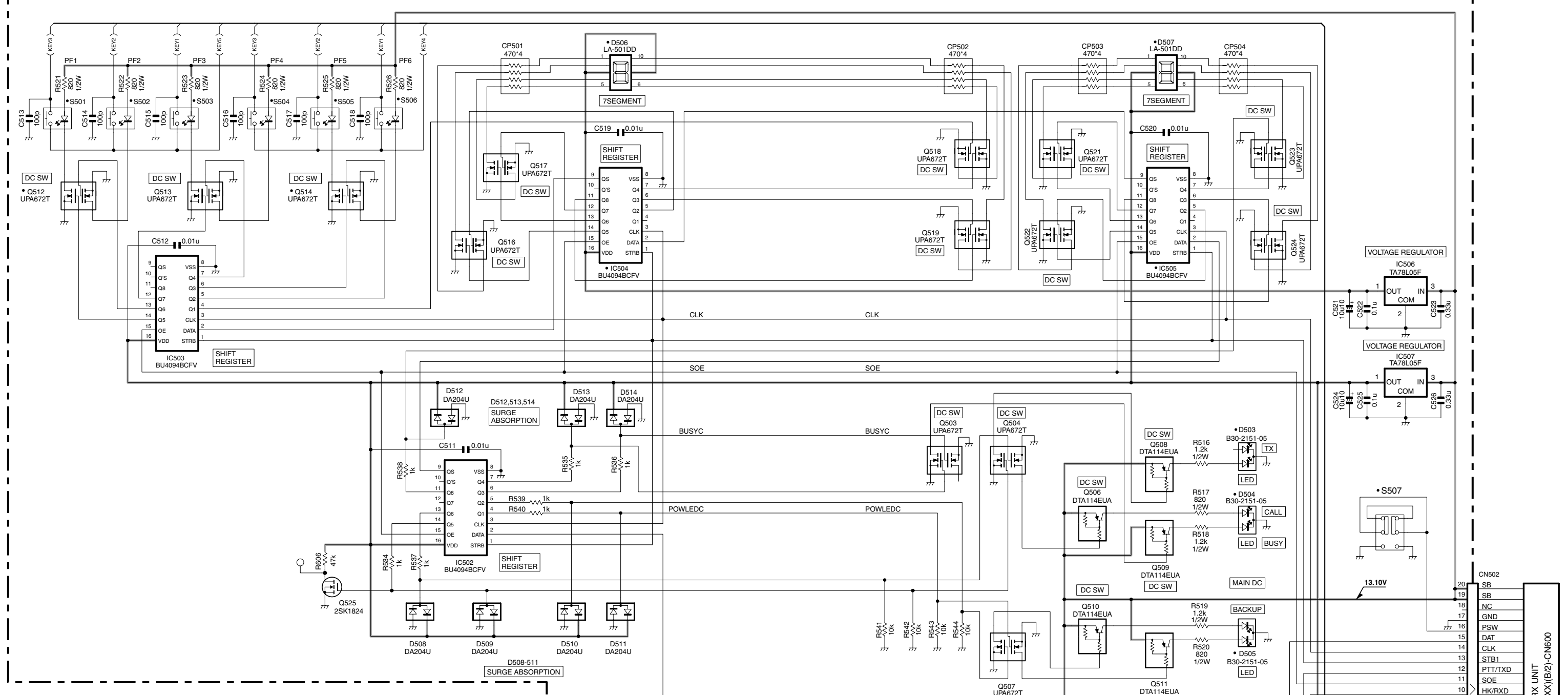


SCHEMATIC DIAGRAM TKR-850

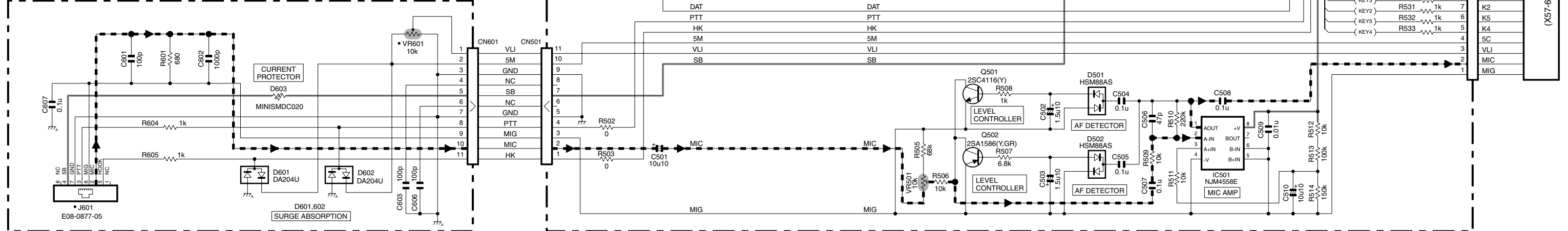
DISPLAY UNIT (X54-3330-21) (A/2)



DISPLAY UNIT (X54-3330-21) (A/2)

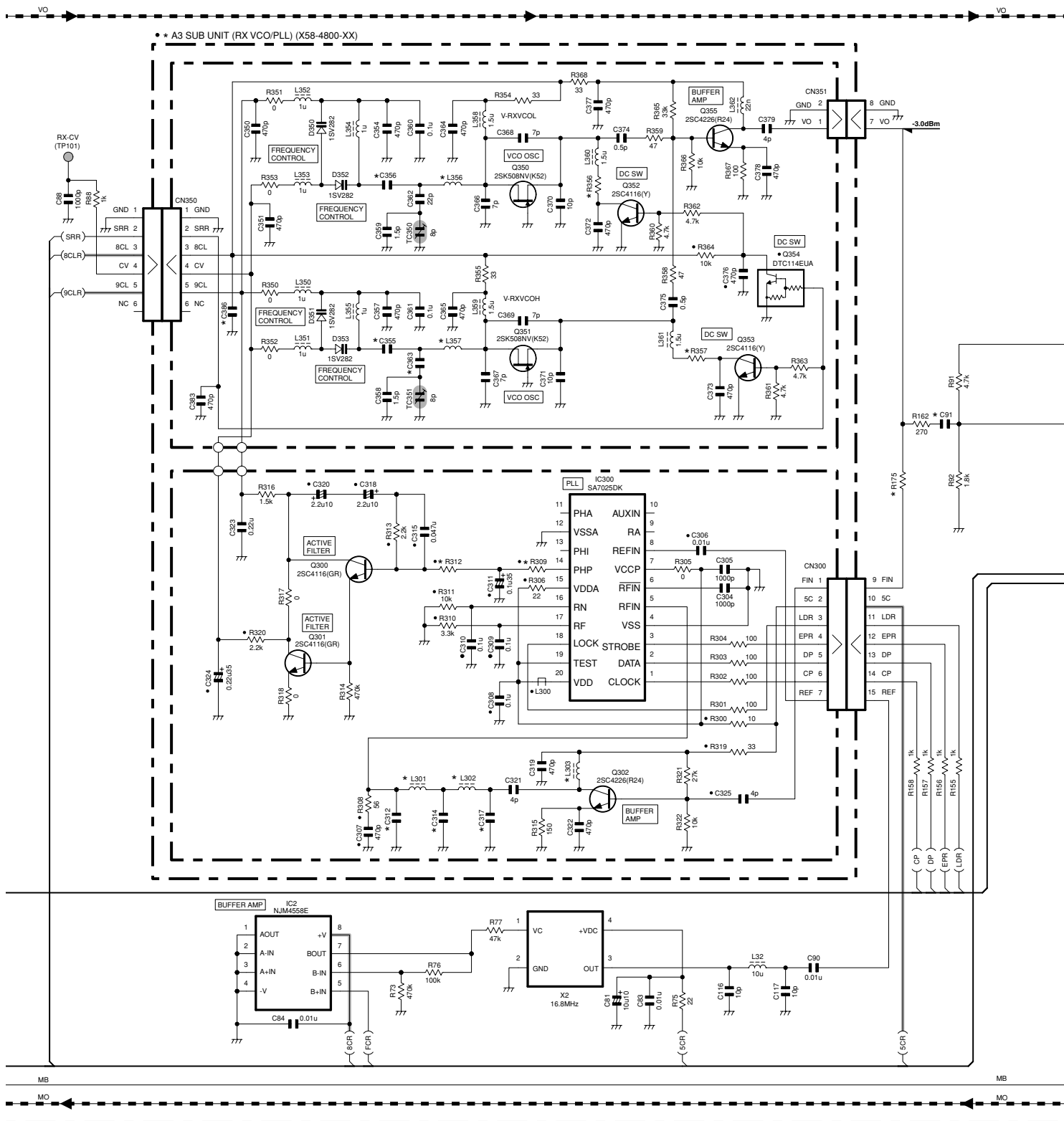


DISPLAY UNIT (X54-3330-21) (B/2)



SCHEMATIC DIAGRAM TKR-850

TX-RX UNIT (X57-696X-XX) (A/2)



A3 SUB UNIT (RX VCO/PLL)

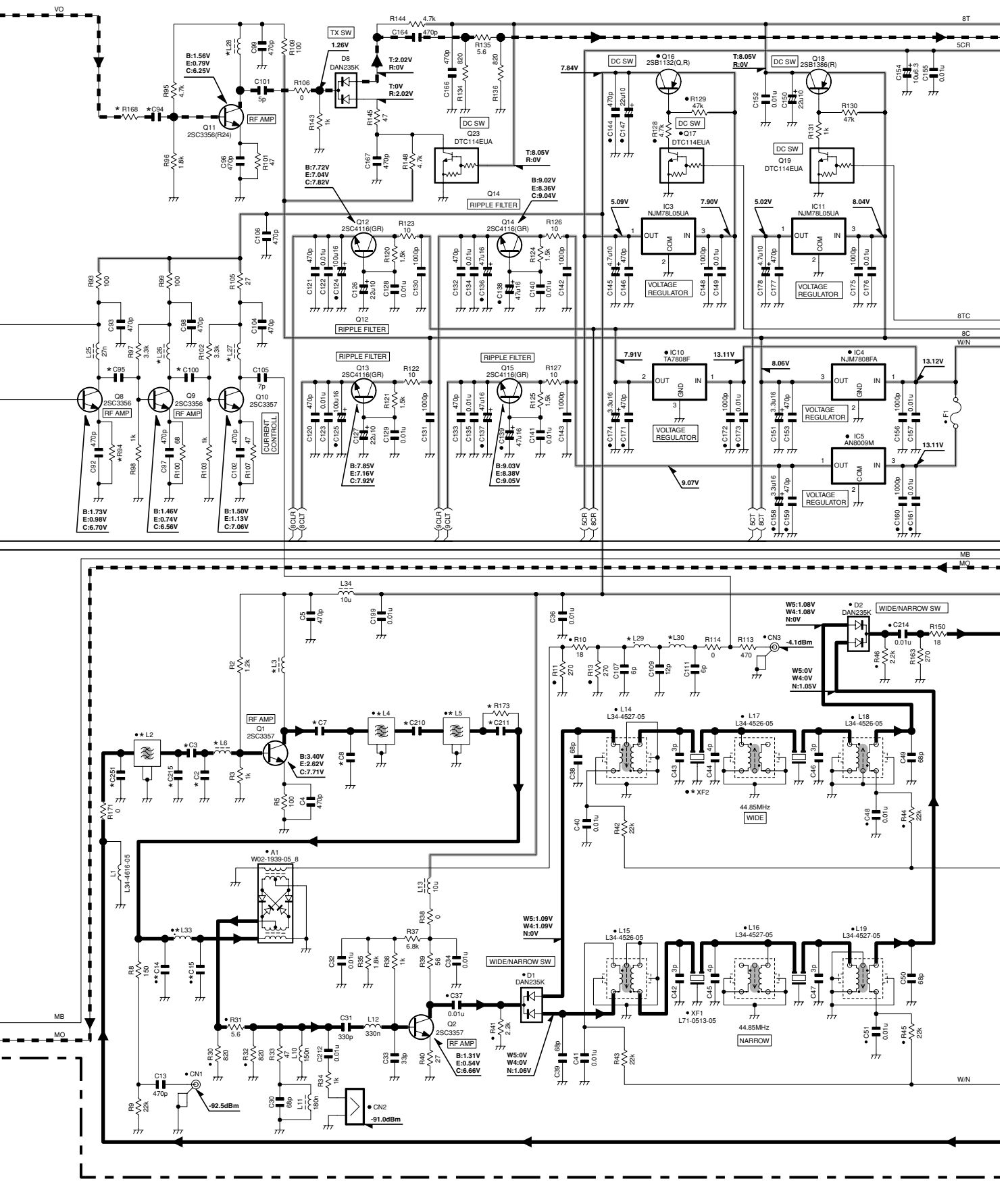
| X58-4800-XX | C312 | C314 | C317 | C355 | C356 | C363 | C386 | L301 | L302 | L303 | L356 | L357 | R309 | R312 | R356 | R357 | |
|-------------|------|------|------|------|------|------|------|------|------|------|-------------|-------------|-------------|------|------|------|-----|
| -10 | K.E | 7p | 12p | 7p | 5p | 6p | 15p | 100p | 18n | 18n | 22n | L34-4608-05 | L34-4608-05 | 330 | 330 | 220 | 180 |
| -11 | K2 | 6p | 15p | 6p | 5p | 6p | 18p | 22p | 15n | 18n | L34-4607-05 | L34-4607-05 | 390 | 390 | 180 | 150 | |
| -12 | K3 | 8p | 18p | 8p | 6p | 7p | 15p | 100p | 18n | 18n | L34-4609-05 | L34-4609-05 | 330 | 330 | 220 | 180 | |

TX-RX UNIT

| X57-696X-XX | A3 | C91 | R175 | |
|-------------|-----|-------------|------|-----|
| 0-11,2-70 | K.E | X58-4800-10 | 4P | 0 |
| 0-12 | K2 | X58-4800-11 | 4P | 0 |
| 0-13 | K3 | X58-4800-12 | 5P | 390 |

TKR-850 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-696X-XX) (A/2)

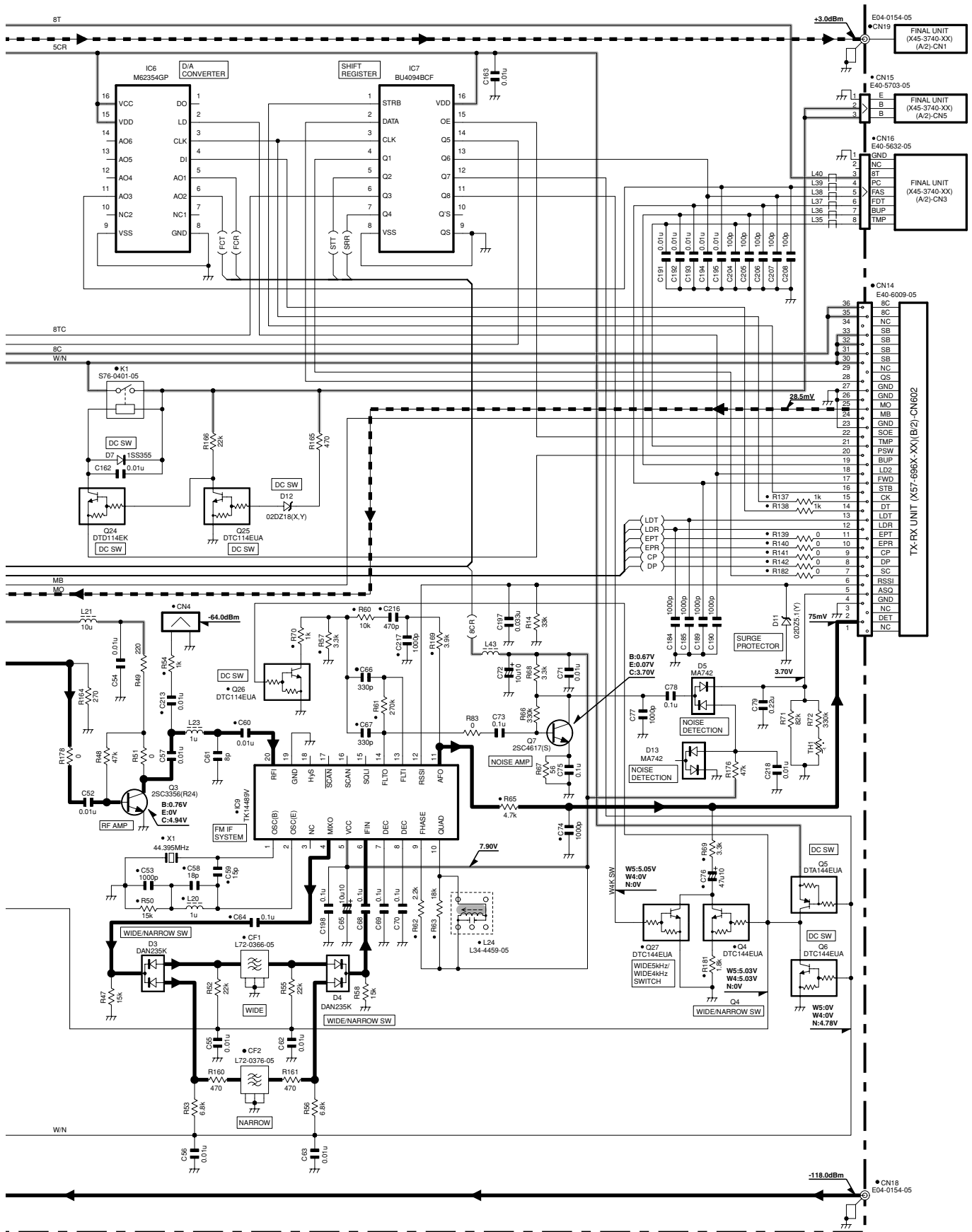


TX-RX UNIT

| X57-696X-XX | C2 | C3 | C7 | C8 | C14 | C15 | C94 | C95 | C100 | C210 | C211 | C215 | C251 | L2 | L3 | L4 | L5 | L6 | L26 | L27 | L28 | L29 | L30 | L33 | R94 | R168 | R173 | XF2 | |
|-------------|----|----|-----|-----|------|-----|-----|-----|------|------|------|------|------|----|-------------|-----|-------------|-------------|-----|-----|-----|-----|-----|-----|-----|------|------|-------------|-------------|
| 2-70 | E | NO | 12P | 12P | 0.5P | 6P | 6P | 3P | 4P | 5P | 8P | 12P | NO | NO | L79-1849-05 | 18n | L79-1849-05 | L79-1849-05 | 18n | 15n | 22n | 18n | 18n | 18n | 15n | 100 | 0 | NO | L71-0627-05 |
| 0-11 | K | NO | 12P | 12P | 0.5P | 6P | 6P | 3P | 4P | 5P | 8P | 12P | NO | NO | L79-1849-05 | 18n | L79-1849-05 | L79-1849-05 | 18n | 15n | 22n | 18n | 18n | 18n | 15n | 100 | 0 | NO | L71-0512-05 |
| 0-12 | K2 | NO | 10P | 7P | 1P | 8P | 6P | 3P | 6P | 5P | 8P | NO | 5P | 2P | L79-1852-05 | 18n | L79-1852-05 | L79-1852-05 | 18n | 15n | 18n | 18n | 18n | 18n | 82 | 0 | 0 | L71-0512-05 | |
| 0-13 | K3 | 1P | 10P | 8P | 1P | 7P | 7P | 4P | 4P | 6P | 10P | NO | NO | 3P | L79-1853-05 | 15n | L79-1853-05 | L79-1853-05 | 22n | 22n | 22n | 22n | 22n | 22n | 100 | 270 | 0 | L71-0512-05 | |

SCHEMATIC DIAGRAM TKR-850

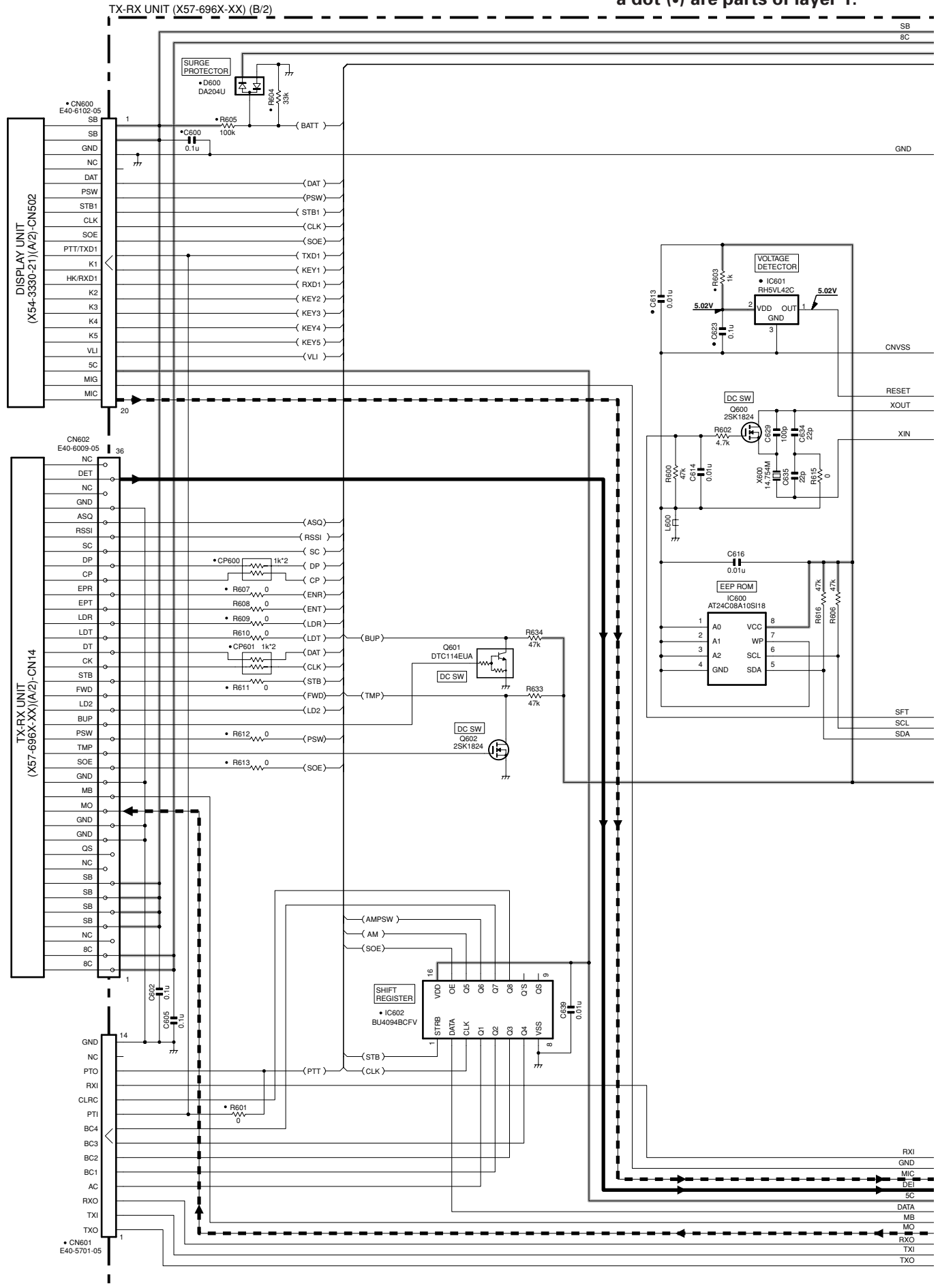
TX-RX UNIT (X57-696X-XX) (A/2)



Note : The components marked with a dot (•) are parts of layer 1.

TKR-850 SCHEMATIC DIAGRAM

Note : The components marked with a dot (•) are parts of layer 1.

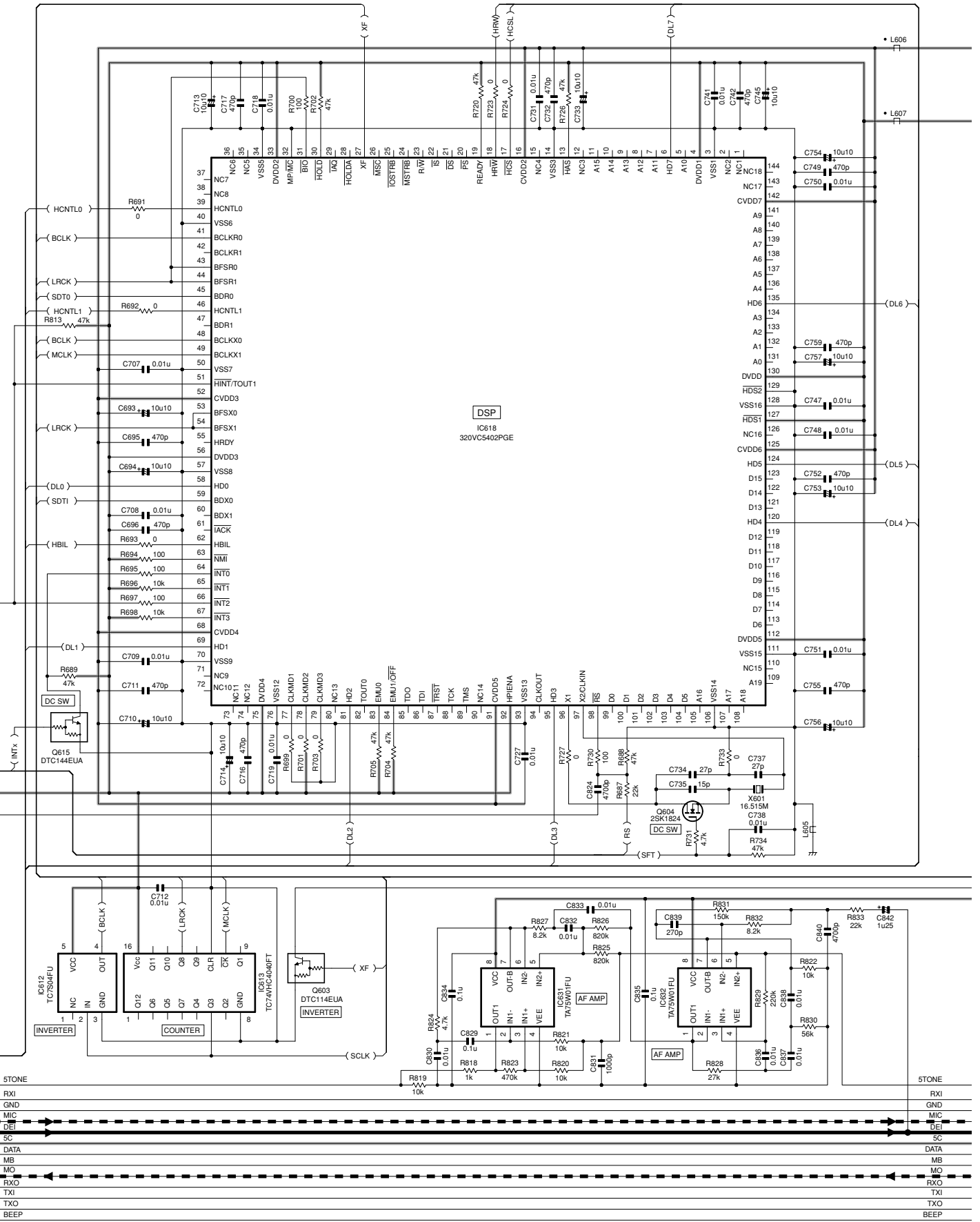


TKR-850 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-696X-XX) (B/2)

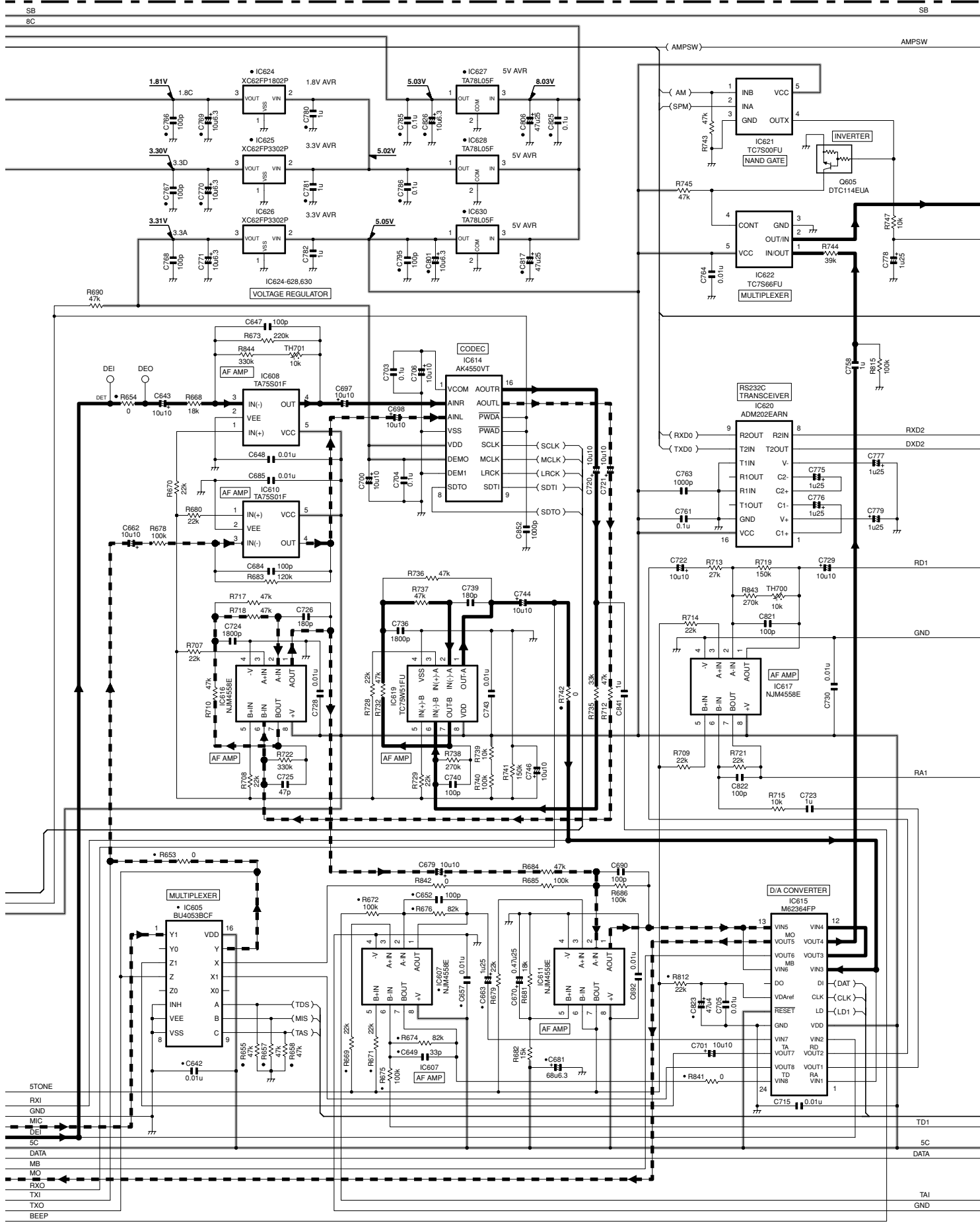
SB
8C

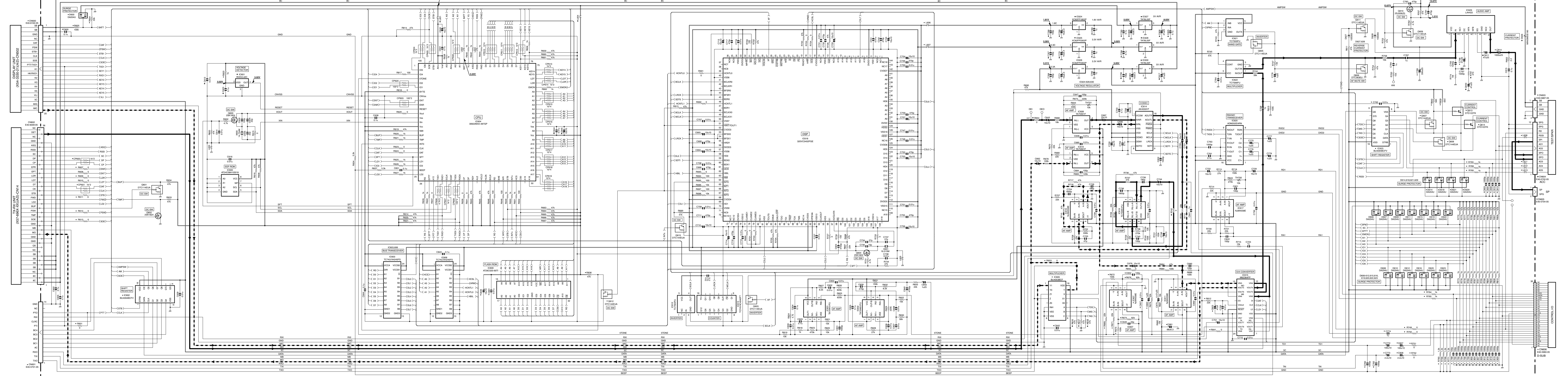
SB
8C



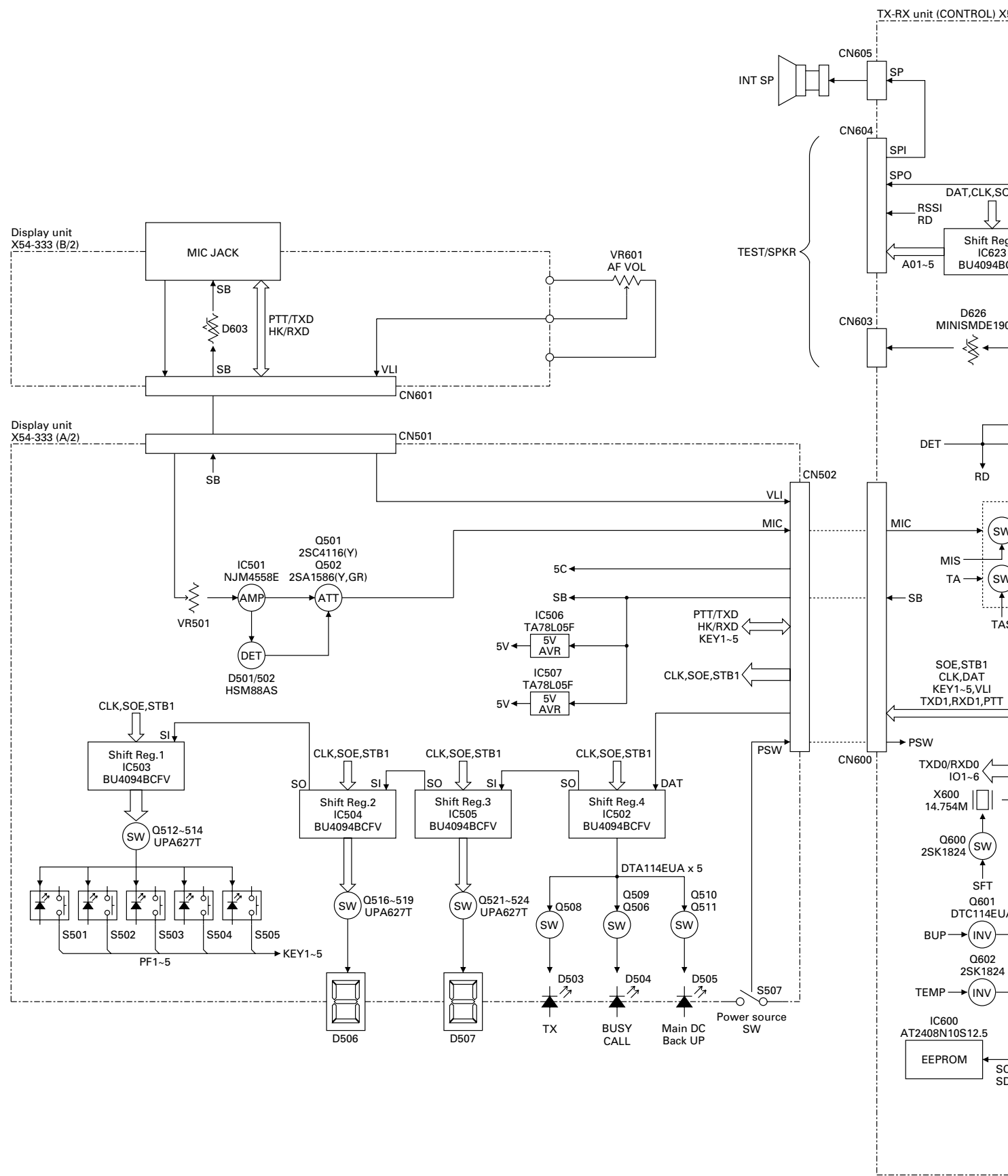
SCHEMATIC DIAGRAM TKR-850

TX-RX UNIT (X57-696X-XX) (B/2)

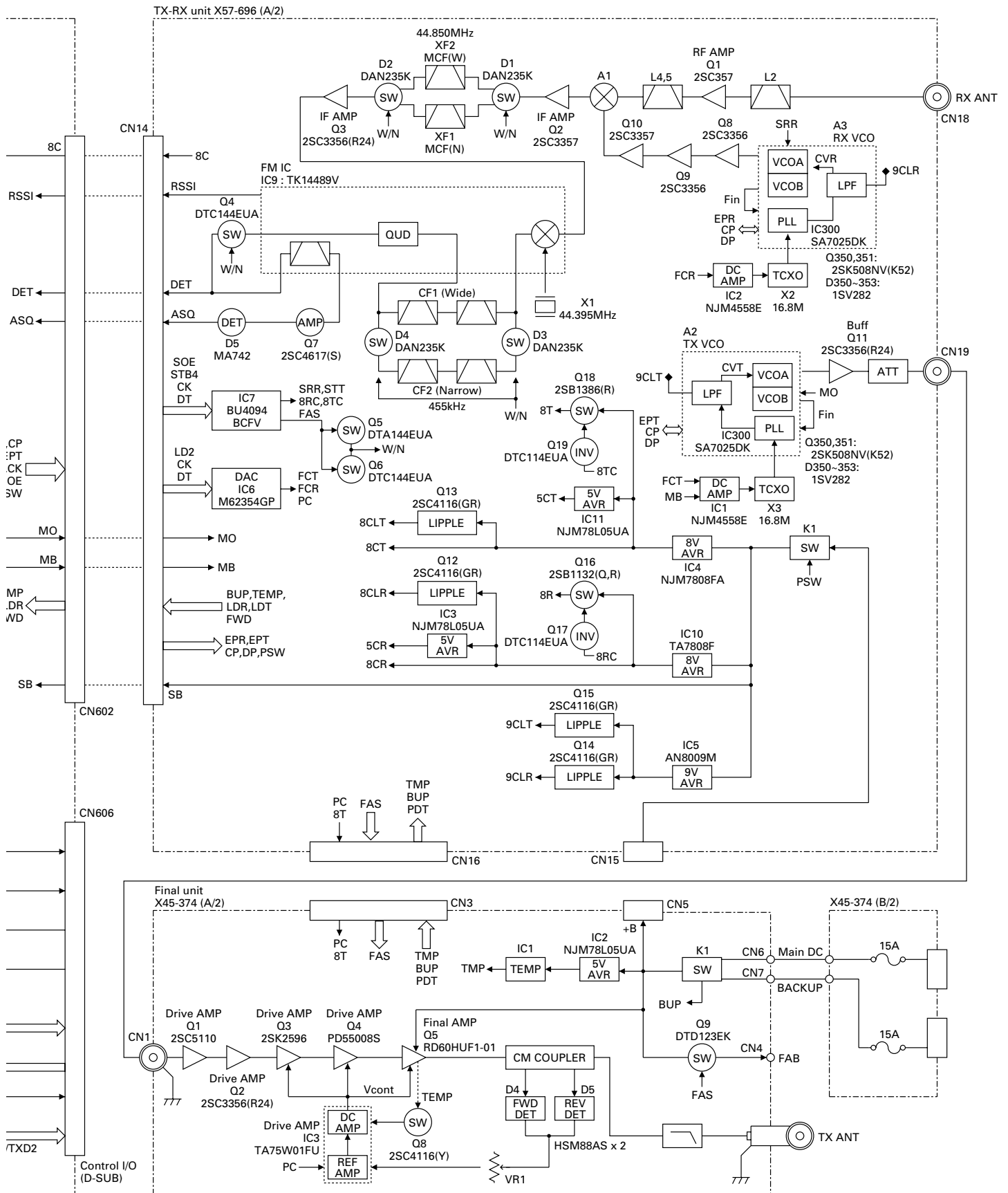




BLOCK DIAGRAM



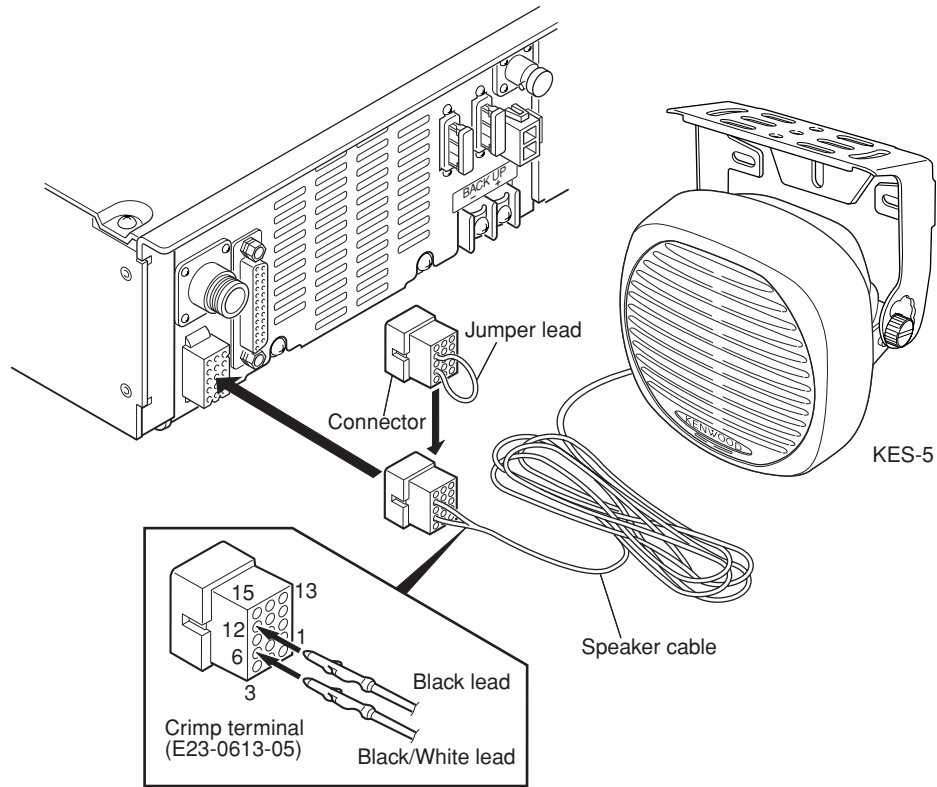
BLOCK DIAGRAM



KES-5 (EXTERNAL SPEAKER)

When Using an External Speaker

1. Make sure the unit's power is tuned off.
2. When using the external speaker, remove the jumper lead from the connector, and attach the speaker cable.
3. When not using the external speaker, replace the jumper lead and insert the connector into the speaker jack (pin9 and 12).



Specifications

| | |
|-------------------------------|----------------------------|
| Maximum input power | 40W |
| Impedance | 4Ω |
| Dimensions (W x H x D) | 129 x 129 x 77 mm |
| projection not included | 5-1/16 x 5-1/16 x 3 inches |
| Weight | 820g / 1.81 lbs |

SPECIFICATIONS (K,K2,K3 TYPE)

GENERAL

| | | | |
|-----------------------------------|---|--------------------|--------------------|
| Frequency Range | K : 450 to 480MHz | K2 : 480 to 512MHz | K3 : 400 to 430MHz |
| Number of Channels | 16 channel | | |
| Channel Spacing | Wide : 25kHz Narrow : 12.5kHz (PLL channel stepping 5kHz/6.25kHz) | | |
| Operating Voltage | 13.6V DC \pm 15% (10.8~15.6V) | | |
| Current Drain | | | |
| Standby | 0.8A | | |
| Standby w/power save | 0.3A (Operating mode DC-IN : Backup, FAN : Temp, SAVE : ON, DISP : OFF) | | |
| Receive | 1.2A | | |
| Transmit/Receive | Less than 13A | | |
| Duty Cycle | | | |
| Receive | 100% | | |
| Transmit | 100% (100% @25W) | | |
| Frequency Stability | Less than \pm 0.00015% -30°C to $+60^{\circ}\text{C}$ (-22°F to $+140^{\circ}\text{F}$) | | |
| Antenna Impedance | 50 Ω | | |
| Operating Temperature Range | -30°C to $+60^{\circ}\text{C}$ (-22°F to $+140^{\circ}\text{F}$) | | |
| Dimensions | 483 (19) W x 88 (3-1/2) H x 340 (13-1/3) D mm (inch) | | |
| Weight | 9.7kg (21.4 lbs.) | | |

RECEIVER (Measured by TIA/EIA-603)

| | | |
|---------------------------------------|--|---|
| Sensitivity | | |
| 12dB SINAD | 0.35 μV (-116dBm) | |
| 20dB Quieting | 0.45 μV (-114dBm) | |
| Selectivity | Wide : 83dB (\pm 25kHz) | Narrow : 75dB (12.5kHz) |
| Intermodulation | Wide : 78dB (\pm 25kHz/ \pm 50kHz) | Narrow : 75dB (\pm 12.5kHz/ \pm 25kHz) |
| Hum and Noise | Wide : 50dB | Narrow : 45dB |
| Spurious & Image Rejection | 90dB | |
| Audio Output (Ext. Speaker) | 4W at 4 Ω less than 5% distortion | |
| Audio Distortion (Ext. Speaker) | Less than 2.5% at 1000Hz | |
| Band Spread | 5MHz | |

TRANSMITTER (Measured by TIA/EIA-603)

| | | |
|----------------------------|--|------------------|
| RF Power Output | 40W adjustable to 15W (100% duty @25W) | |
| Type of Emission | Wide : 16K0F3E | Narrow : 11K0F3E |
| Spurious Response | Harmonics : 80dB | Others : 75dB |
| FM Hum and Noise | Wide : 50dB | Narrow : 45dB |
| Audio Distortion | Less than 3% at 1000Hz | |
| Microphone Impedance | 600 Ω | |
| Band Spread | 30MHz | |

TKR-850

SPECIFICATIONS (E TYPE)

GENERAL

| | |
|-----------------------------------|---|
| Frequency Range | 440 to 470MHz |
| Number of Channels | 16 channel |
| Channel Spacing | Wide : 25kHz Narrow : 12.5kHz (PLL channel stepping 5kHz/6.25kHz) |
| Operating Voltage | 13.2V DC |
| Current Drain | |
| Standby | 0.8A |
| Standby w/power save | 0.3A (Operating mode DC-IN : Backup, FAN : Temp, SAVE : ON, DISP : OFF) |
| Receive | 1.2A |
| Transmit/Receive | Less than 13A |
| Duty Cycle | Receive : 100% Transmit : 100% (100% @25W) |
| Frequency Stability | Less than $\pm 0.00015\%$ -30°C to $+60^{\circ}\text{C}$ |
| Antenna Impedance | 50 Ω |
| Operating Temperature Range | -30°C to $+60^{\circ}\text{C}$ |
| Dimensions | 483 W x 88 H x 340 D mm |
| Weight | 9.7kg |

RECEIVER (Measured by EN 300 086)

| | |
|---------------------------------------|--|
| Sensitivity | 0.45 μV |
| Adjucent Channel Selectivity | 83dB ($\pm 25\text{kHz}$) 75dB ($\pm 12.5\text{kHz}$) |
| Intermodulation | 72dB |
| Spurious & Image Rejection | 90dB |
| Audio Output (Ext. Speaker) | 4W at 4 Ω less than 5% distortion |
| Audio Distortion (Ext. Speaker) | Less than 2.5% at 1000Hz |
| Band Spread | 5MHz |

TRANSMITTER (Measured by EN 300 086)

| | |
|-----------------------------|---|
| RF Power Output | 40W adjustable to 25W (100% duty @25W) |
| Type of Emission | 16K0F3E, 8K50F3E, 14K0F2D, 7K50F2D |
| Modulation Limiting | $\pm 5\text{kHz}$ at $\pm 25\text{kHz}$ $\pm 2.5\text{kHz}$ at $\pm 12.5\text{kHz}$ |
| Spurious Emission | $-36\text{dBm} \leq 1\text{GHz}$ $-30\text{dBm} > 1\text{GHz}$ |
| FM Noise (EIA) | 25kHz : 50dB 12.5kHz : 45dB |
| Modulation Distortion | Less than 3% at 1000Hz |
| Microphone Impedance | 600 Ω |
| Band Spread | 30MHz |

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