VHF FM TRANSCEIVER

TK-7100H

SERVICE MANUAL

KENWOOD

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GENERAL

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.

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- 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.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by only qualified technicians.

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

Unpack the radio from its shipping container and check for accessory items. If any item is missing, please contact KENWOOD immediately.

2. LICENSING REQUIREMENTS

Federal regulations require a station license for each radio installation (mobile or base) be obtained by the equipment owner. The licensee is responsible for ensuring transmitter power, frequency, and deviation are within the limits permitted by the station license.

Transmitter adjustments may be performed only by a licensed technician holding an FCC first, second or general class commercial radiotelephone operator's license. There is no license required to install or operate the radio.

3. PRE-INSTALLATION CHECKOUT

3-1. Introduction

Each radio is adjusted and tested before shipment. However, it is recommended that receiver and transmitter operation be checked for proper operation before installation.

3-2. Testing

The radio should be tested complete with all cabling and accessories as they will be connected in the final installation. Transmitter frequency, deviation, and power output should be checked, as should receiver sensitivity, squelch operation, and audio output. Signalling equipment operation should be verified.

4. PLANNING THE INSTALLATION

4-1. General

Inspect the vehicle and determine how and where the radio antenna and accessories will be mounted.

Plan cable runs for protection against pinching or crushing wiring, and radio installation to prevent overheating.

4-2. Antenna

The favored location for an antenna is in the center of a large, flat conductive area, usually at the roof center. The trunk lid is preferred, bond the trunk lid and vehicle chassis using ground straps to ensure the lid is at chassis ground.

4-3. Radio

The universal mount bracket allows the radio to be mounted in a variety of ways. Be sure the mounting surface is adequate to support the radio's weight. Allow sufficient space around the radio for air cooling. Position the radio close enough to the vehicle operator to permit easy access to the controls when driving.

4-4. DC Power and wiring

1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.
2. Connect the positive power lead directly to the vehicle battery positive terminal. Connecting the Positive lead to any other positive voltage source in the vehicle is not recommended.
3. Connect the ground lead directly to the battery negative terminal.
4. The cable provided with the radio is sufficient to handle the maximum radio current demand. If the cable must be extended, be sure the additional wire is sufficient for the current to be carried and length of the added lead.

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GENERAL / SYSTEM SET-UP

5. INSTALLATION PLANNING – CONTROL STATIONS

5-1. Antenna system

Control station. The antenna system selection depends on many factors and is beyond the scope of this manual. Your KENWOOD dealer can help you select an antenna system that will best serve your particular needs.

5-2. Radio location

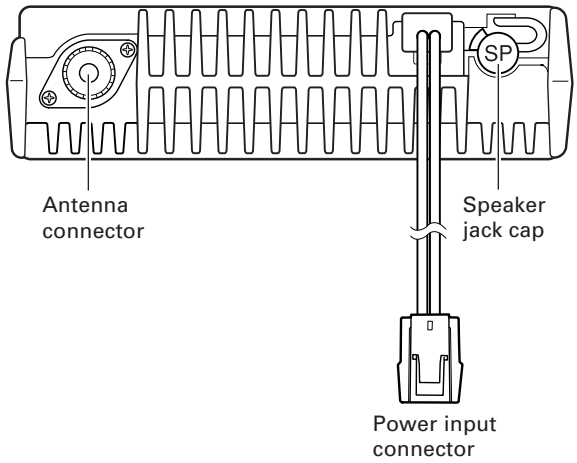
Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply to allow adequate cooling.

SERVICE

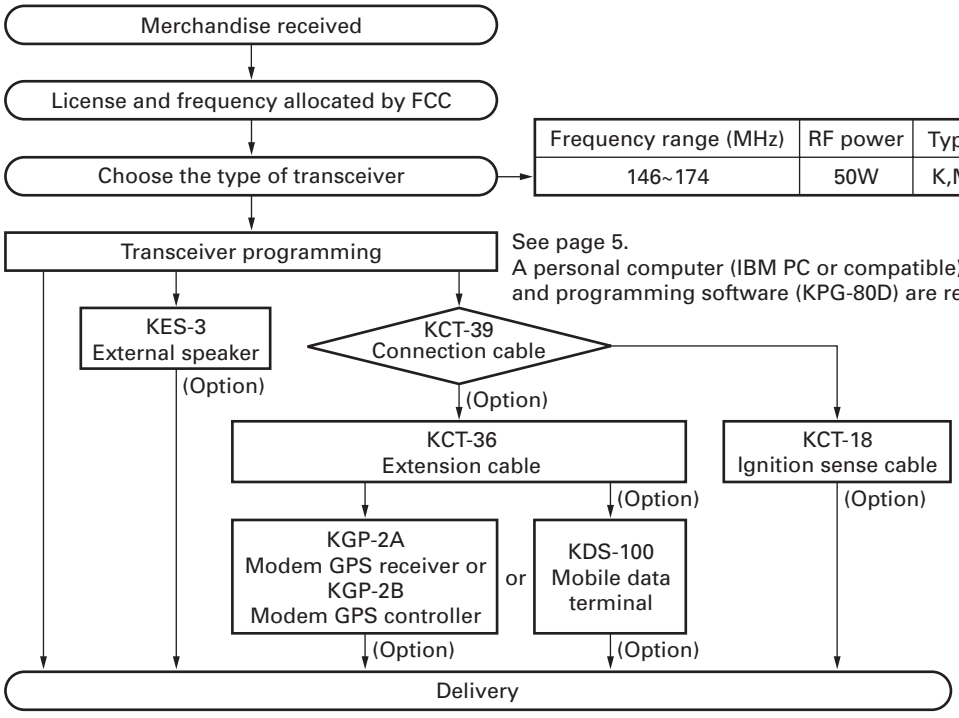
This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

NOTE

If you do not intend to use the 3.5-mm jack for the external speaker, fit the supplied speaker-jack cap to stop dust and sand from getting in.



SYSTEM SET-UP



Frequency range (MHz)	RF power	Type
146~174	50W	K,M

See page 5.
A personal computer (IBM PC or compatible), programming interface (KPG-46), and programming software (KPG-80D) are required for programming.

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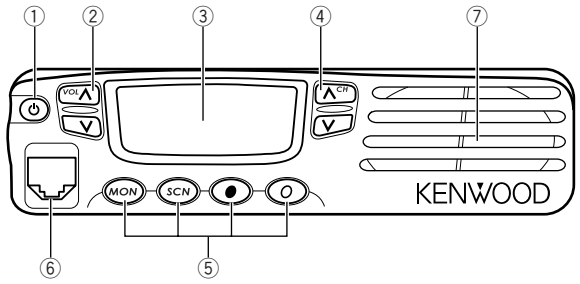
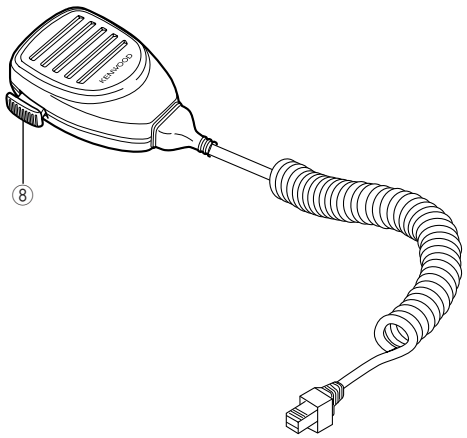
OPERATING FEATURES

1. Controls and Functions

1-1. Front Panel



1-2. Microphone



① ⏻ **(Power) switch**
Press to switch the transceiver ON. Press and hold for approximately 1 second to switch the transceiver OFF.

② **VOL ∧ / ∨ keys (left side)**
Press to increase or decrease the volume level.

③ **Display**
Refer to right.

④ **CH ∧ / ∨ keys (right side)**
Press to increase or decrease the channel number.

⑤ **MON / SCN / ● / O keys**
PF (Programmable Function) keys. Press each key to activate its programmable function.

⑥ **Microphone jack**
Insert the microphone plug into this jack.

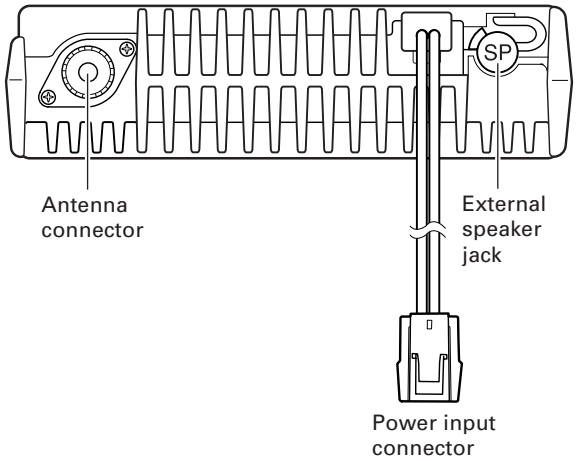
⑦ **Speaker**
Internal speaker.

⑧ **PTT switch**
Press this switch, then speak into the microphone to call a station.

1-3. Display

Indicator	Description
TX	Appears while transmitting.
	Appears when trunking is activated.
	Appears while monitoring the selected channel (squelch is off).
CALL	Appears when making a call using Code Squelch or Selective Call. Appears and blinks when receiving a Code Squelch call.
SCN	Appears while scanning.
AUX	Appears when the AUX port has been activated or when the Scrambler function has been selected.
TA	Appears while using the Talk Around function.
P	The selected channel is set as a Priority channel.
A	The selected channel is added to the scanning sequence.
BUSY	Appears when a signal is detected on the currently selected channel.
	Appears when the transceiver keys have been locked, using the Key Lock function.
	Displays the currently selected group and channel number, or the channel name.

1-4. Rear Panel



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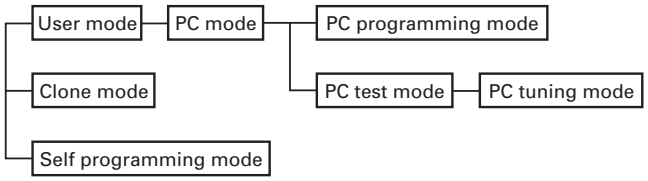
REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the radio and PC (IBM compatible).
PC programming mode	Used to read and write frequency data and other features to and from the radio.
PC test mode	Used to check the radio using the PC. This feature is included in the FPU.
PC tuning mode	Used to tune the radio using the PC.
Clone mode	Used to transfer programming data from one radio to another.
Self programming mode	You can program the frequency, signalling and other functions using only the radio.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[CH DOWN]+Power ON (Two seconds)
Self programming mode	[MON]+Powr ON (Two seconds)

3. PC Mode

3-1. Preface

The TK-7100H transceiver is programmed using a personal computer, a programming interface (KPG-46) and programming software (KPG-80D).

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM PC for programming.

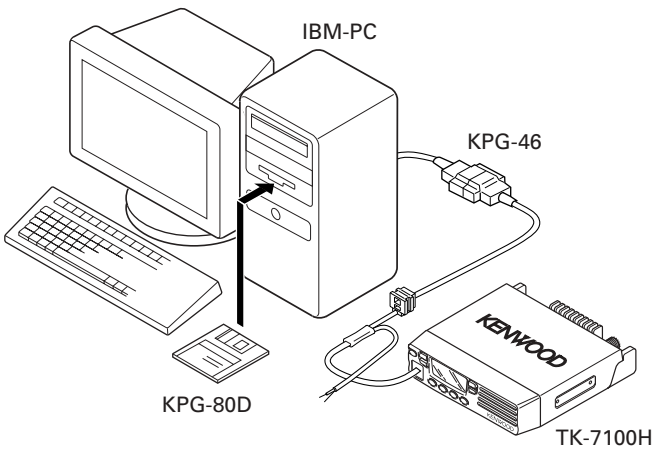


Fig. 1

3-2. Connection Procedure

1. Connect the TK-7100H to the personal computer with the interface cable.
2. When the Power is switched on, user mode can be entered immediately. When the PC sends a command, the radio enters PC mode.
   When data is transmitted from transceiver, the TX indicator blink.
   When data is received by the transceiver, the BUSY indicator blink.
   In the PC mode, " PC " is displayed on the LCD.

3-3. KPG-46 Description (PC programming interface cable : Option)

The KPG-46 is required to interface the TK-7100H to the computer. It has a circuit in its D-subconnector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-46 connects the modular microphone jack of the TK-7100H to the computers RS-232C serial port.

3-4. Programming Software Description

KPG-80D is the programming software for TK-7100H supplied on three 3.5" floppy diskettes. 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 TK-7100H and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

4. Clone Mode

Programming data can be transferred from one radio to another by connecting them via their modular microphone jacks. The operation is as follows (the transmit radio is the master and the receive radio is the slave).

Note :

Clone mode should be enabled.

1. Turn the master TK-7100H power ON with the [CH DOWN] key held down (2 seconds), " CLONE " is displayed on the LCD.
2. Power on the slave TK-7100H.
3. Connect the cloning cable (No. E30-3382-05) to the modular microphone jacks on the master and slave.
4. Press the [MON] key on the master TK-7100H transceiver. The data of the master is sent to the slave. While the master is sending data, [TX] icon blinked. While the slave is receiving the data, " PC " is displayed and [BUSY] icon blinked. When cloning of data is completed, the master displays "END", and the master [TX] icon turned off, and the slave automatically operates in the User mode. The slave can then be operated by the same program as the master.
5. The other slave can be continuously cloned. Carry out the operation in step 2 to 4.

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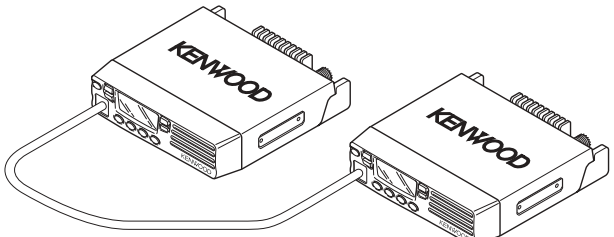
REALIGNMENT

4-1. Adding the data password.

If the data password is set in the optional feature menu, you must enter the password (Master transceiver) to activate a clone mode.

You can use 1, 2, 3, and 4 to configure the password. The maximum length of the password is 6 digits.

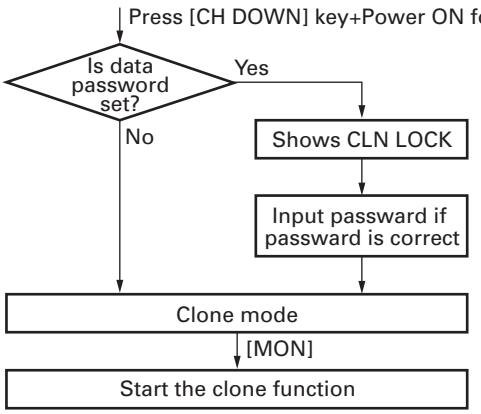
1. [CH DOWN]+Power ON.
2. "CLN LOCK" is displayed on the LCD.
3. Enter the password using 1 : [MON] key, 2 : [SCN] key, 3 : [●] key and 4 : [O] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a clone mode and " CLONE " is displayed. Otherwise, transceiver beeps and returns to the password input mode.



Clone cable
(E30-3382-05)

Fig. 2

■ Flow Chart (Master radio)



5. Self Programming Mode

Write mode for frequency data and signalling, etc. To be used ONLY by the authorized service person maintaining the user's equipment. After programming, reset the FPU to the "Self- Programming" disabled mode. Radios CANNOT be delivered to the end-user in the self-programming mode.

5-1. Enter to the Self Programming Mode

Hold down the [MON] key and turn the power switch on. When enter the self programming mode, " SELF " is displayed.

5-2. Adding the Data Password

If the data password is set in the optional feature menu, you must enter the password to activate a self programming mode.

You can use 1, 2, 3 and 4 to configure the password. The maximum length of the password is 6 digits.

1. [MON]+Power ON.
2. "SELFLOCK" is displayed on the LCD.
3. Enter the password using 1 : [MON] key, 2 : [SCN] key, 3 : [●] key and 4 : [O] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a self programming mode and " SELF " is displayed. Otherwise, transceiver beeps and returns to the password input mode.

Note :

This mode (self programming mode) cannot be set when it has been disabled with the FPU.

5-3. Channel Setting Mode

Each channel can be setup in its action mode by using the panel keys.

- Pressing [MON] when " SELF " is displayed, sets channel setting mode.
- Select an item set using [●] then change the selection with the [CH UP] or [CH DOWN].
- The data displayed using [SCN] is stored in the memory and then proceeds to the next item.
- Pressing [●] proceeds to the next item without storing it in the memory.
- Press [MON] to set the display to " SELF " and return to reset (default) status.

The setup items for channel setting mode are listed below.

No.	Function	Choices	Display	Remarks
	Select channel	1~64	1– 1. 1– 64.	● key : Group/Channel selection
	Select group	1~8	1.– 1 8.– 1	● key : Group/Channel selection
1	RX frequency	Step 2.5kHz~ 1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). O key : Select the frequency step
		Blank 100.0000~ 550.0000MHz	R.------- R.150.0000	O key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)

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REALIGNMENT

No.	Function	Choices	Display	Remarks
2	RX signalling	Off	- - - - - - - -	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0✻ QT 254.1✻	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N✻ DQT777N✻	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	
		DQT 000~777 Inverse (1 setp mode)	DQT000I✻ DQT777I✻	O key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
3	TX frequency	Step 2.5kHz~ 1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). O key : Select the frequency step
		Blank 100.0000~ 550.0000MHz	T.------- T.150.0000	O key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)
4	TX signalling	Off	- - - - - - - -	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0✻ QT 254.1✻	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N✻ DQT777N✻	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	
		DQT 000~777 Inverse (1 setp mode)	DQT000I✻ DQT777I✻	O key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
5	Option signalling	Off	NONE	Default
		DTMF	DTMF	
6	SP unmute	Carrier	S.UM CARR	
		QT/DQT	S.UM QTDQ	Not used when QT/DQT decode is not set.
		Carrier+DTMF	S.UM C+DT	Not used when option signalling is none.
		QT/DQT+ DTMF	S.UM Q+DT	Not used when option signalling is none.
7	Busy channel lockout	Off	BCL OFF	Default
		Carrier	BCL CARR	
		QT/DQT	BCL QTDQ	If QT/DQT decode is not set, it cannot be selected.
		DTMF	BCL DTMF	If option signalling is set to off, it cannot be selected.
8	Beat	No	SHFT NO	Default
		Yes	SHFT YES	
9	RF power	High power	PWR H	Default
		Low power	PWR L	
10	Wide/ Narrow	Wide	WIDE	Default
		Narrow	NARROW	
11	Scan Del/Add	Delete	SCAN DEL	
		Add	SCAN ADD	Default
12	Priority channel	No	P.CH NO	Default
		Yes	P.CH YES	Not used when scan priority is not fixed.
13	PTT ID	Off	P.ID OFF	Default
		Begin of TX	P.ID BOT	
		End of TX	P.ID EOT	
		Both	P.ID BOTH	
14	Scrambler	Off	SCR OFF	Default
		No	SCR ON	
15	Scrambler code	1~16	SCR 1 SCR 16	Default

- Finish beep will sound when displayed data is stored.
- The settings for scrambler and scrambler code can only be selected when voice scrambler board is installed.

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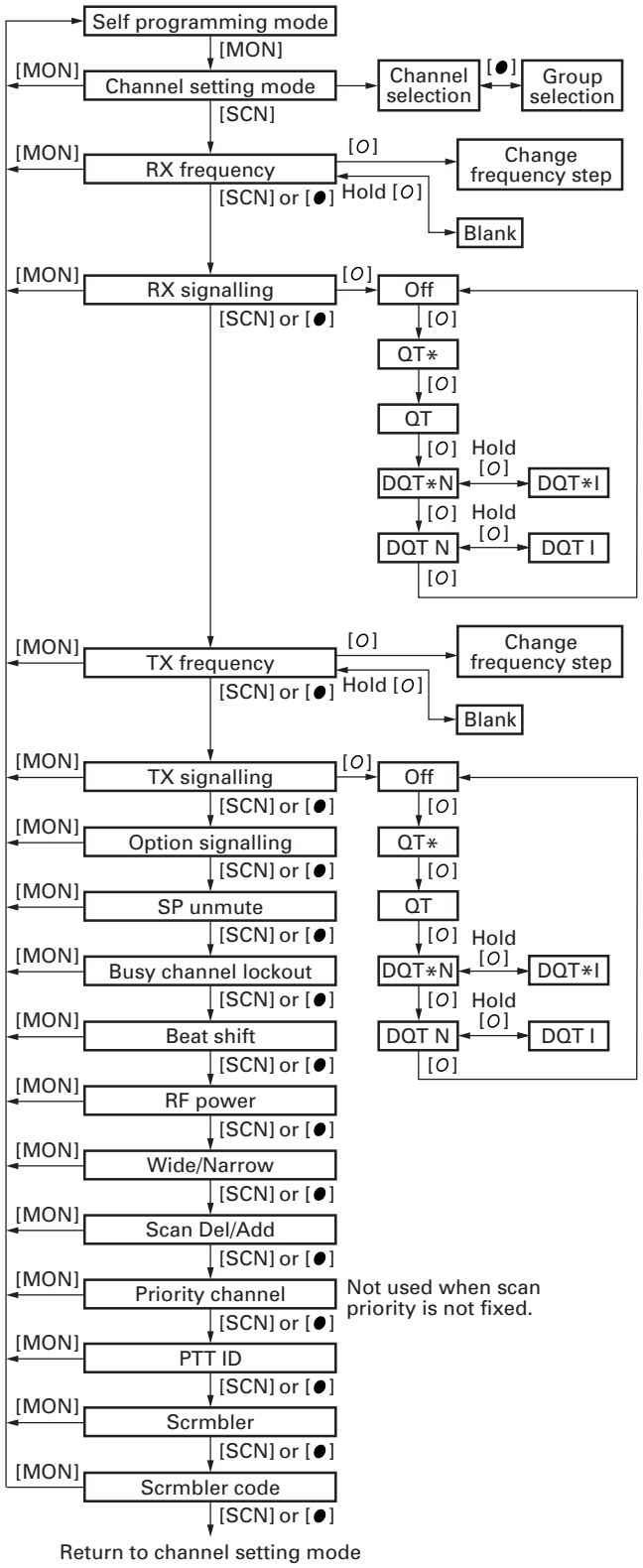
REALIGNMENT

■ Flow Chart

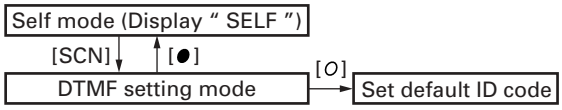


5-4. DTMF Setting Mode

Each radio can be setup in its action mode by using the panel keys.

- Pressing [SCN] when " SELF " is displayed, sets the DTMF setting mode.
- The data displayed using [SCN] is stored in the memory.
- Pressing [●] to without storing it in the memory.
- Press [O] to default status.

■ Flow Chart



The setup items for DTMF setting mode are listed below.

No.	Function	Choices	Display	Remarks
1	ID code	000~9999999999 (Code squelch)	I D	Display when an item is selected (about 0.5 seconds).
			1 2 3 4 5 6 7 8	Display of the current setting (If it is 8 or more digits, scroll it).
			– – – – – 9 8 7	Display when a code is input (Input it with DTMF key only).
			– – – – – 0 0 0	O key : Set to default data
		0000~9999 (Selective call) (*1)	I D	Display when an item is selected (about 0.5 seconds).
			– – – – 1 2 3 4 (*1)	Display of the current setting (Input the code with DTMF key only).
			– – – – – 0 0 0 (*1)	O key : Set to default data

- Finish beep will sound when displayed data is stored.
- (*1) : ID code range is from 3 to 4 digits when selective call is selected.

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REALIGNMENT

6. Accessory Connection Cable (KCT-39)

The KCT-39 is an accessory connection cable for connecting external equipment. The connector has 15 pins and the necessary signal lines are selected for use.

6-1. Installing the KCT-39 in the Transceiver

1. Lift the DC cord bushing (❶) from the chassis. Peel the pad as shown in Figure 3 (❷).

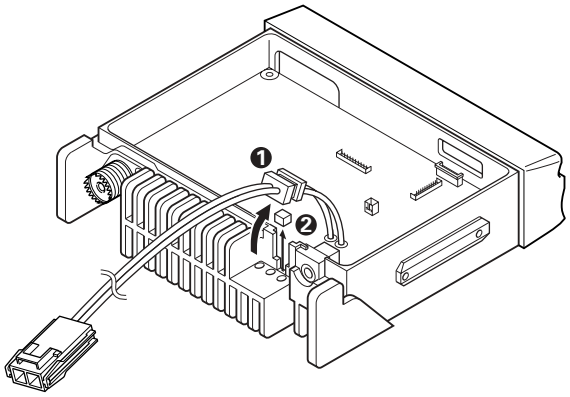


Fig. 3

2. Stick the pad to the DC cord (❸) and chassis (❹), both of which are supplied with the KCT-39.

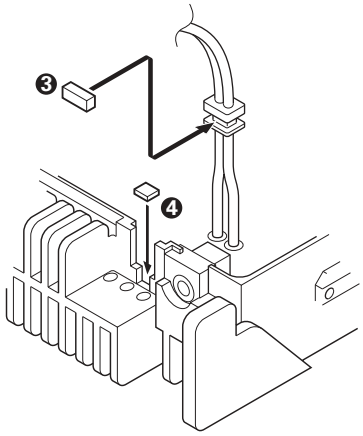


Fig. 4

3. Insert the KCT-39 cable (❺) into the chassis (❻). The wire harness band (❼) must be inside the chassis and face down.
4. Connect the KCT-39 to the TX-RX unit as shown in Figure 5 (❽).

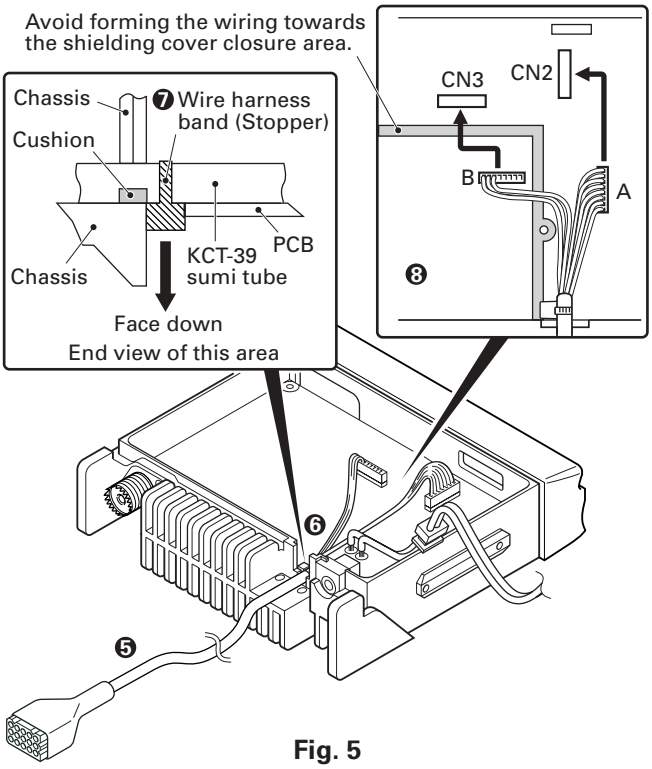


Fig. 5

5. Connect the KCT-39 to the external accessory by inserting the crimp terminal (❾) into the square plug (❿), both of which are supplied with the KCT-39.

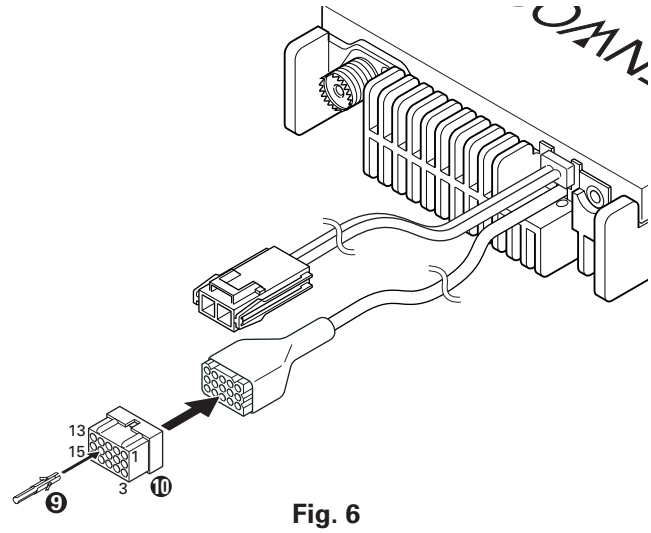
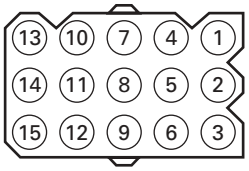


Fig. 6



■ Accessory Port Function

No.	Color	Internal connector	Name	No.	Color	Internal connector	Name
1	Red	CN2-1	SB	9	Purple	CN2-12	FNC8
2	Pink	CN3-1	IGN	10	Gray	CN2-10	FNC6
3	Black	CN2-3	GND	11	White	CN2-11	FNC7
4	Brown	CN3-3	DETO	12	NC	NC	
5	Orange	CN3-2	DATAI	13	NC	NC	
6	Yellow	CN2-8	FNC4	14	Sky blue	CN2-6	FNC2
7	Green	CN2-7	FNC3	15	Turquoise	CN2-5	FNC1
8	Blue	CN2-9	FNC5				

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REALIGNMENT / INSTALLATION

7. Ignition Sense Cable (KCT-18)

The KCT-18 is an optional cable for enabling the ignition function. The ignition function lets you turn the power to the transceiver on and off with the car ignition key.

7-2. Connecting the KCT-18 to the Transceiver

1. Install the KCT-39 in the transceiver. (See the KCT-39 section)
2. Insert the KCT-18 lead terminal (❶) into pin 2 of the KCT-39 (❷).

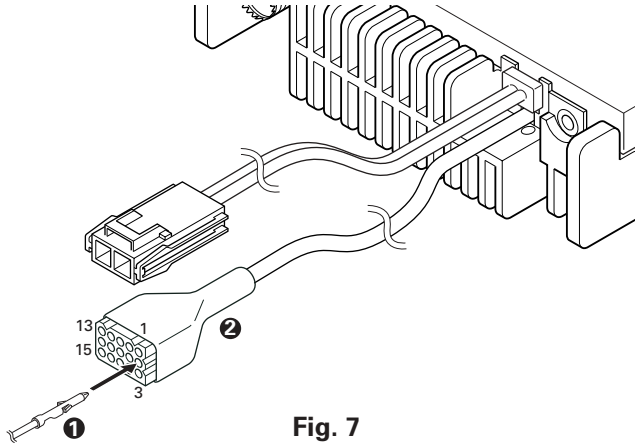

Fig. 7

7-3. Modifying the Transceiver

Modify the transceiver as follows to turn the power on and off with the ignition key.

1. Remove the jumper resistor (0Ω) R71 of the TX-RX unit.

■ Setting With the KPG-80D

Select "External Devices" from the "Edit" menu and enable the "Ignition Sense".

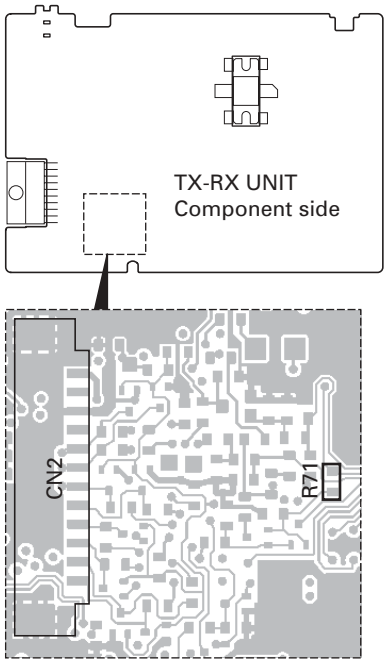

Fig. 8

1. Optional Board

1-1. Voice Scrambler Board Connection

■ Modification

1. Remove the cabinet and shielding cover from the transceiver.
2. Delete R202 and R267 on the TX-RX unit.

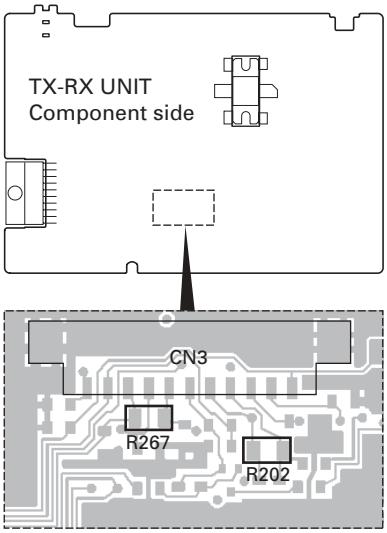

Fig. 1

■ Connection

The functions of pins of CN2 and CN3 on the TX-RX unit are shown in the TERMINAL FUNCTION section (page 34).

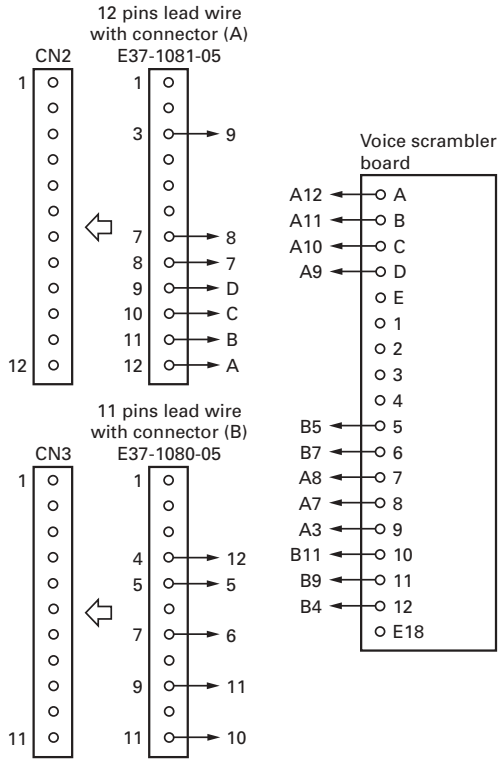

Fig. 2

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INSTALLATION

■ Pins Connection

Voice scrambler functions	12 pins lead wire with connector (A)	11 pins lead wire with connector (B)
A	A-12	–
B	A-11	–
C	A-10	–
D	A-9	–
5	–	B-5
6	–	B-7
7	A-8	–
8	A-7	–
9	A-3	–
10	–	B-11
11	–	B-9
12	–	B-4

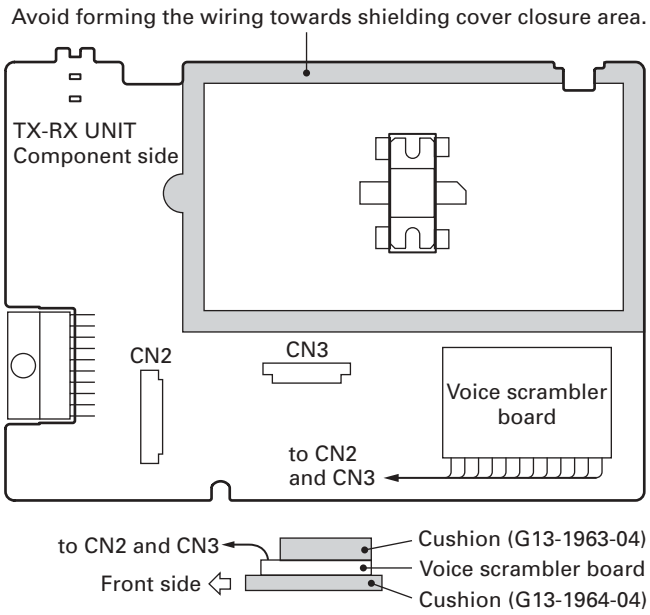


Fig. 3

■ Setting With the KPG-80D

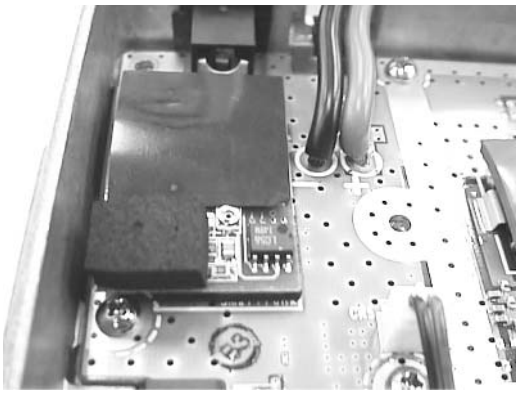
Select "External Devices" from the "Edit" menu and set the "Scrambler".

Note :

The voice scrambler board is connected subsequent to the de-emphasis circuit.

1-2. Example for Connection

■ Picture (Trunking Board)



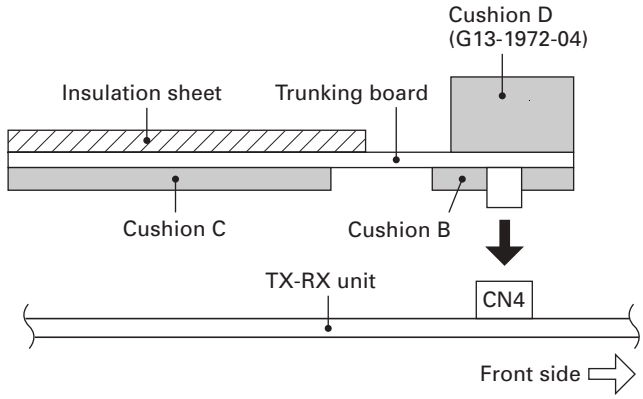


Fig. 4

■ Setting With the KPG-80D

Select "External Devices" from the "Edit" menu and set the "SmarTrunk".

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DISASSEMBLY FOR REPAIR

1. When you remove the panel, turn the transceiver up side down. Detach the panel by lifting the tabs as shown below.

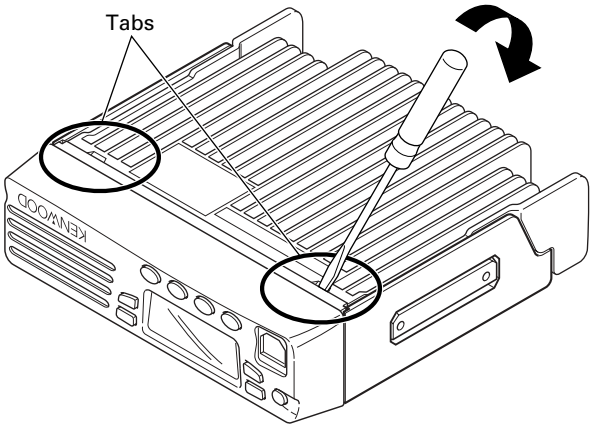


Fig. 1

2. To remove the cabinet, first turn the transceiver up side down. Detach the cabinet by prying the tabs as shown below.

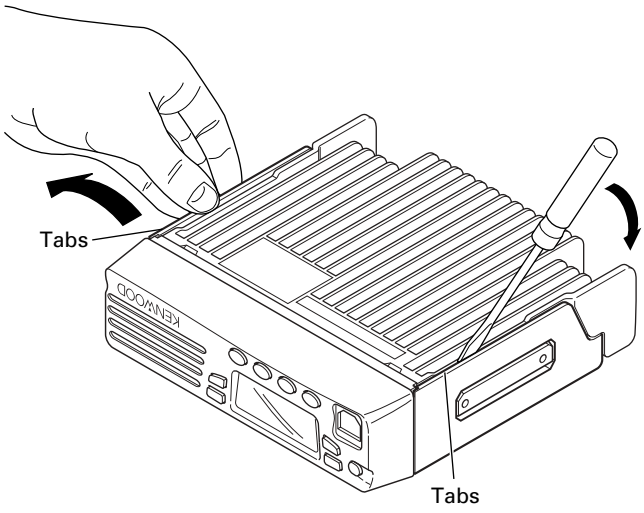


Fig. 2

3. When mounting the front panel, match the 4 tabs of the chassis with the panel, being sure they attach securely.

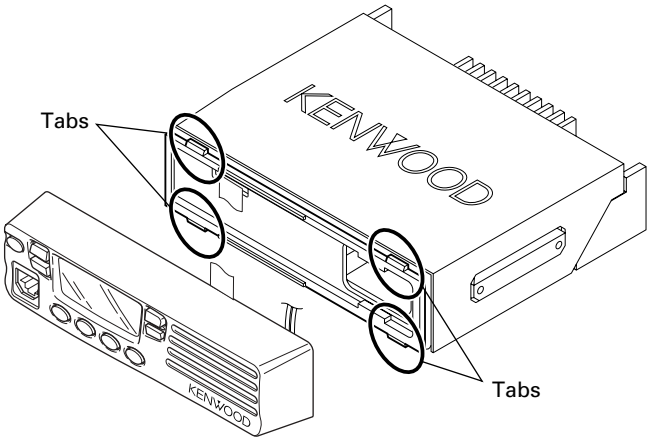
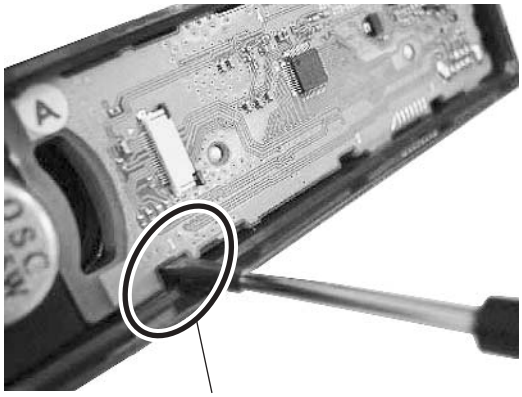


Fig. 3

4-1. Remove the display unit

To remove the display unit from the panel, follow the correct procedures shown (A regular screw driver is needed as illustrated).

①



Open the bottom of display unit at No. 1 as indicated.

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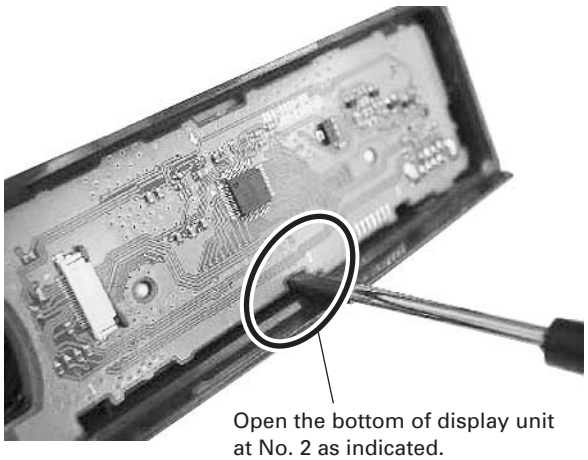
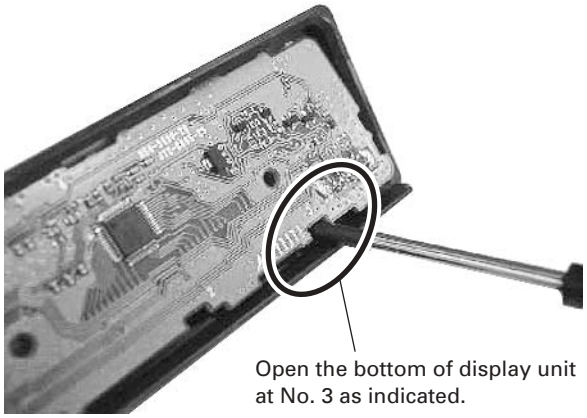
DISASSEMBLY FOR REPAIR

②



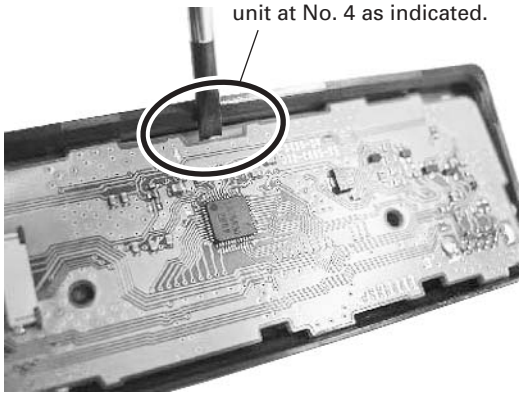
Open the bottom of display unit at No. 2 as indicated.

③



Open the bottom of display unit at No. 3 as indicated.

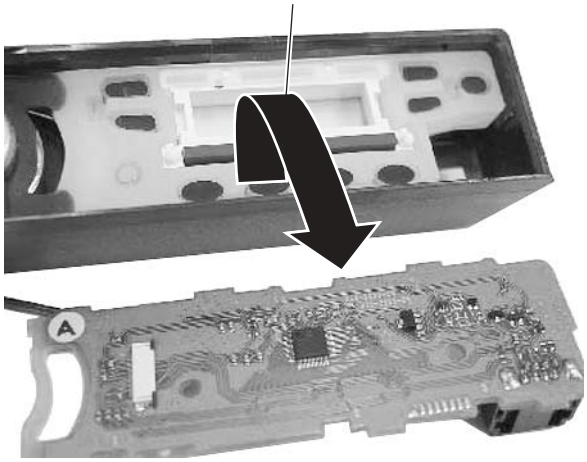
④



Open the top of display unit at No. 4 as indicated.

⑤

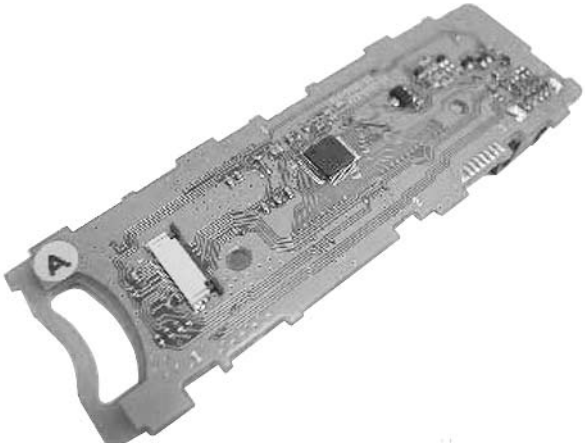
Lift up the display unit and remove.



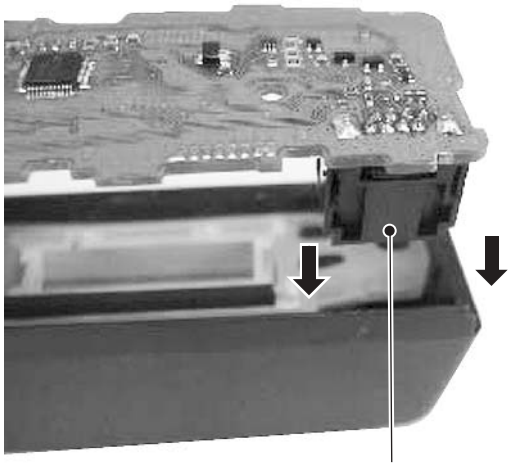
4-2. Mount the display unit

To mount the display unit on the panel, follow the correct procedures shown to ensure easy display unit assembly and good fitting onto the panel.

①



②



Insert phone jack into panel first.

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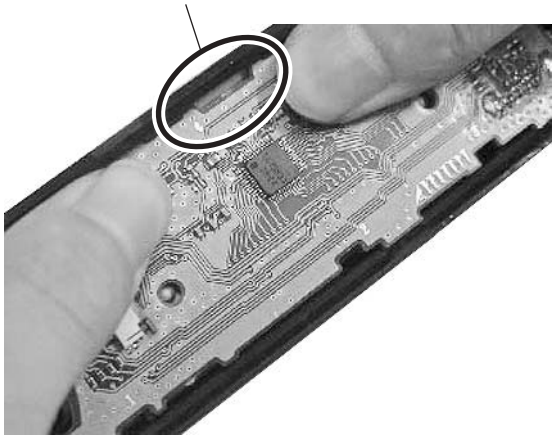
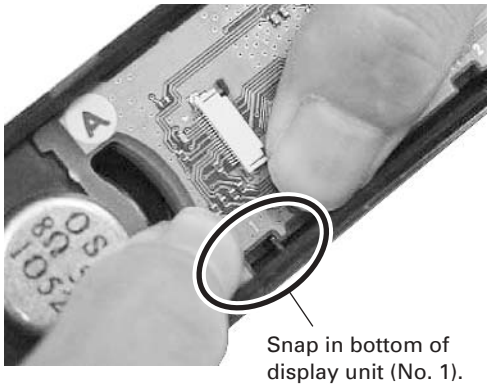
DISASSEMBLY FOR REPAIR

③

Snap in top of display unit (No. 4).

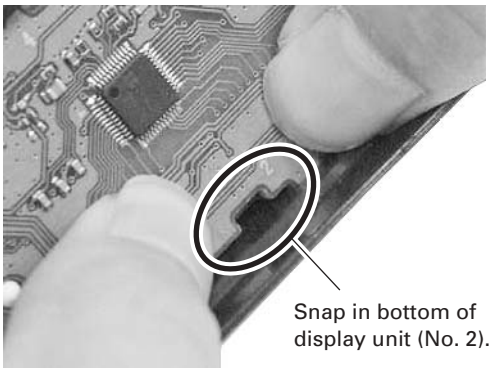


④



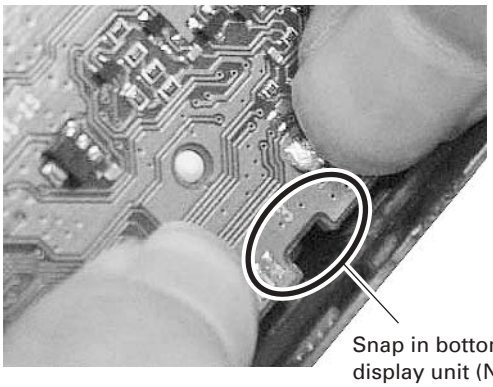
Snap in bottom of display unit (No. 1).

⑤



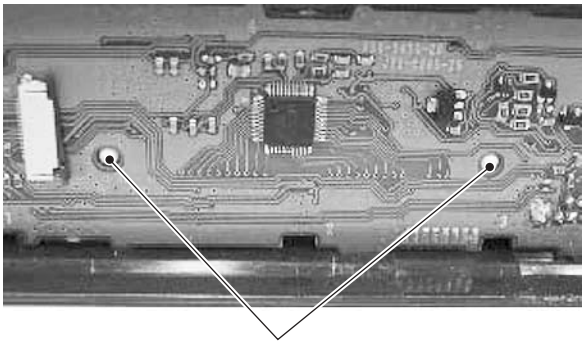
Snap in bottom of display unit (No. 2).

⑥



Snap in bottom of display unit (No. 3).

⑦



Ensure that display unit holes locator is properly located on the illumination guide locators as shown.

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CIRCUIT DESCRIPTION

Frequency Configuration

The receiver utilizes double conversion. The first IF is 49.95MHz and the second IF is 450kHz. The first local oscillator signal is supplied from the PLL circuit.

The PLL circuit in the transmitter generates the necessary frequencies. Figure 1 shows the frequencies.

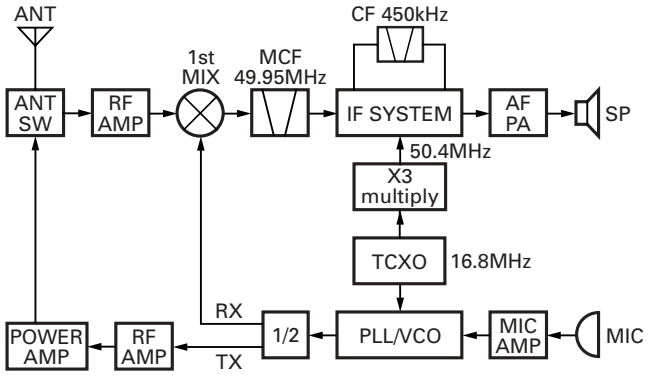

Fig. 1 Frequency configuration

Receiver System

The receiver is double conversion superheterodyne. The frequency configuration is shown in Figure 1.

■ Front-end RF Amplifier

An incoming signal from the antenna is applied to an RF amplifier (Q353) after passing through a transmit/receive switch circuit (D603, D605 are off) and a band pass filter (L357, L356 and varactor diodes : D353, D354). After the signal is amplified (Q353), the signal is filtered through a band pass filter (L354, L355 and varactor diodes: D351, D352) to eliminate unwanted signals before it is passed to the first mixer.

The voltage of these diodes are controlled by tracking the CPU (IC101) center frequency of the band pass filter. (See Fig. 2)

■ First Mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q352) to create a 49.95MHz first intermediate frequency (1st IF) signal. The first IF signal is then fed through one pair of monolithic crystal filter (MCF : XF351) to further remove spurious signals.

■ IF Amplifier

The first IF signal is amplified by Q351, and the enters IC301 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC301 to create a 450kHz second IF signal. The second IF signal is then fed through a 450kHz ceramic filter (Wide : CF301, Narrow : CF302) to further eliminate unwanted signals before it is amplified and FM detected in IC301.

Item	Rating
Nominal center frequency	49.95MHz
Pass bandwidth	±5.0kHz or more at 3dB
35dB stop bandwidth	±20.0kHz or less
Ripple	1.0dB or less
Insertion loss	5.0dB or less
Guaranteed attenMuation	80dB or more at fo±1MHz
	Spurious : 40dB or more within fo±1MHz
Terminal impedance	350Ω / 5.5pF

Table 1 Crystal filter (L71-0591-05) : XF351

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±6.0kHz or more
50dB bandwidth	±12.5kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	35.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 2 Ceramic filter (L72-0993-05) : CF301

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±4.5kHz or more
50dB bandwidth	±10.0kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	60.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 3 Ceramic filter (L72-0999-05) : CF302

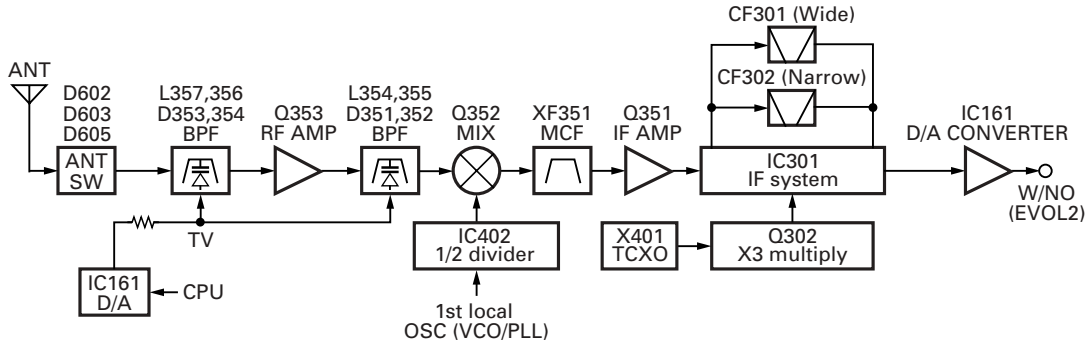

Fig. 2 Receiver system

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CIRCUIT DESCRIPTION

■ Wide/Narrow Changeover Circuit

The Wide port (pin 65) and Narrow port (pin 64) of the CPU is used to switch between ceramic filters. When the Wide port is high, the ceramic filter SW diodes (D303, D302) cause CF301 to turn on to receive a Wide signal.

When the Narrow port is high, the ceramic filter SW diodes (D303, D302) cause CF302 to turn on to receive a Narrow signal.

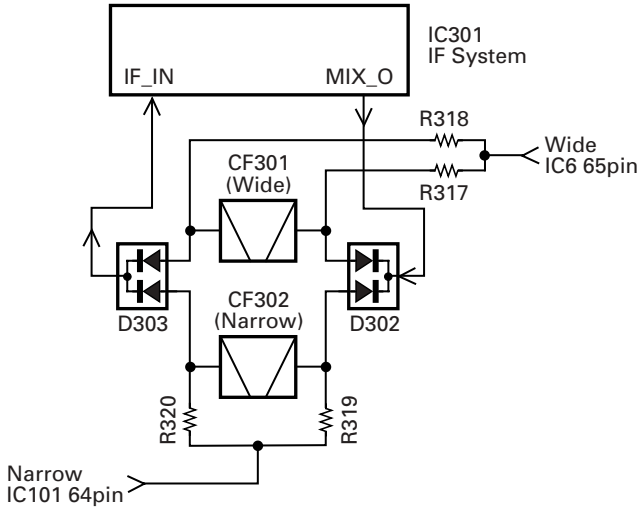

Fig. 3 Wide/Narrow changeover circuit

■ AF Signal System

The detection signal from IF IC (IC301) goes to D/A converter (IC161) to adjust the gain and is output to AF filter (IC251) for characterizing the signal. The AF signal output from IC251 and the DTMF signal, BEEP signal are summed and the resulting signal goes to the D/A converter (IC161). The AFO output level is adjusted by the D/A converter. The signal output from the D/A converter is input to the audio power amplifier (IC252). The AF signal from IC252 switches between the internal speaker and speaker jack (J1) output.

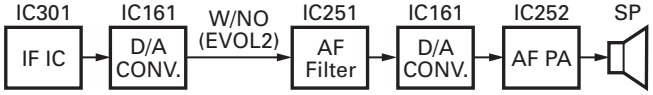

Fig. 4 AF signal system

■ Squelch Circuit

The detection output from the FM IF IC (IC301) passes through a noise amplifier (Q301) to detect noise. A voltage is applied to the CPU (IC101). The CPU controls squelch according to the voltage (SQIN) level. The signal from the RSSI pin of IC301 is monitored. The electric field strength of the receive signal can be known before the SQIN voltage is input to the CPU, and the scan stop speed is improved.

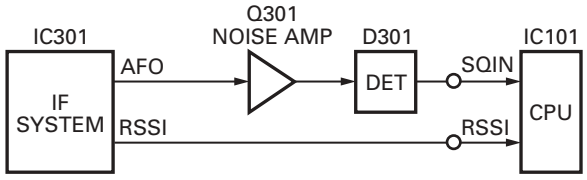

Fig. 5 Squelch circuit

PLL Frequency Synthesizer

The PLL circuit generates the first local oscillator signal for reception and the RF signal for transmission.

■ PLL

The frequency step of the PLL circuit is 5 or 6.25kHz. A 16.8MHz reference oscillator signal is divided at IC401 by a fixed counter to produce the 5 or 6.25kHz reference frequency. The voltage controlled oscillator (VCO) output signal is buffer amplified by Q410, then divided in IC401 by a dual-module programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal in the phase comparator in IC401. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 6)

■ VCO

The operating frequency is generated by Q406 in transmit mode and Q405 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator, to the varactor diodes (D405 and D406 in transmit mode and D403 and D404 in receive mode). The TX/RX pin is set low in receive mode causing Q408 and Q407 to turn Q406 off, and turn Q405 on. The TX/RX pin is set high in transmit mode. The outputs from Q405 and Q406 are amplified by Q410 and sent to the RF amplifiers.

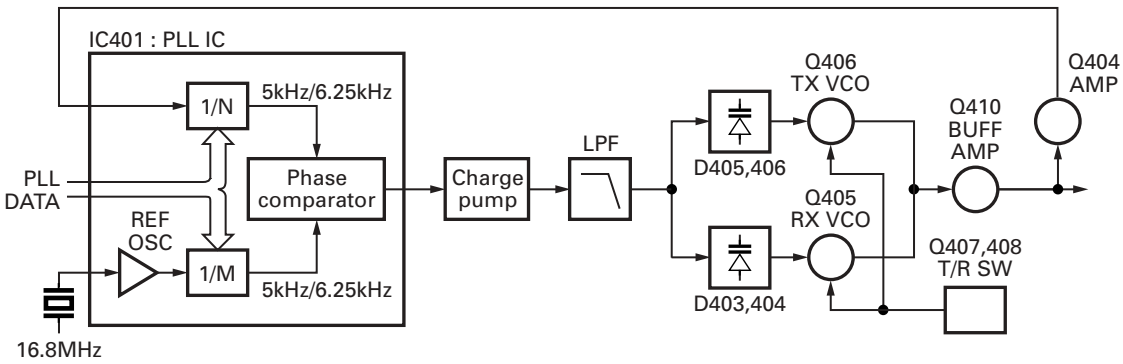

Fig. 6 PLL circuit

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CIRCUIT DESCRIPTION

■ Unlock Circuit

During reception, the 8RC signal goes high, the 8TC signal goes low, and Q34 turns on. Q33 turns on and a voltage is applied to the collector (8R). During transmission, the 8RC signal goes low, the 8TC signal goes high and Q36 turns on. Q35 turns on and a voltage is applied to 8T.

The CPU in the control unit monitors the PLL (IC401) LD signal directly. When the PLL is unlocked during transmission, the PLL LD signal goes low. The CPU detects this signal and makes the 8TC signal low. When the 8TC signal goes low, no voltage is applied to 8T, and no signal is transmitted.

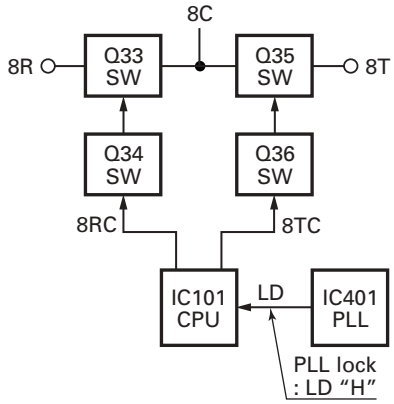

Fig. 7 Unlock circuit

Transmitter System

■ Outline

The transmitter circuit produces and amplifies the desired frequency directly. It FM-modulates the carrier signal by means of a varicap diode.

■ Power Amplifier Circuit

The transmit output signal from the VCO passes through the transmission/reception selection diode (D409) and amplified by Q501, Q502 and Q503. The amplified signal goes to the final amplifier (Q504) through a low-pass filter. The low-pass filter removes unwanted high-frequency harmonic components, and the resulting signal is goes the antenna terminal.

■ APC Circuit

The automatic transmission power control (APC) circuit detects part of a final amplifier output with a diode (D606, D607) and applies a voltage to IC501. IC501 compares the APC control voltage (PC) generated by the D/A converter (IC161) and DC amplifier (IC203) with the detection output voltage. IC501 generates the voltage to control Q503 and Q504 and stabilizes transmission output.

The APC circuit is configured to protect over current of Q503 and Q504 due to fluctuations of the load at the antenna end and to stabilize transmission output at voltage and temperature variations.

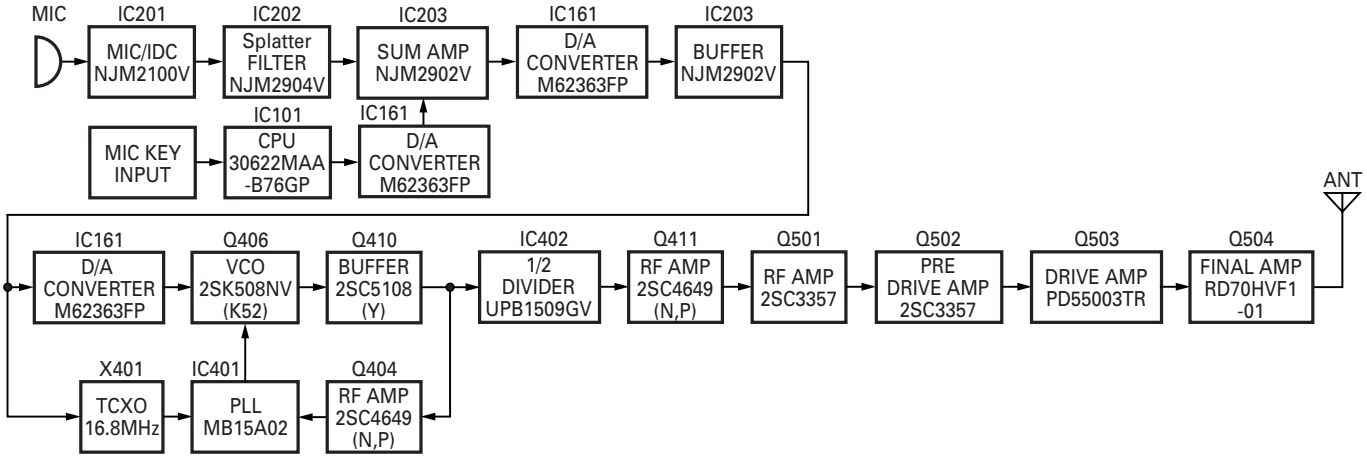

Fig. 8 Transmitter system

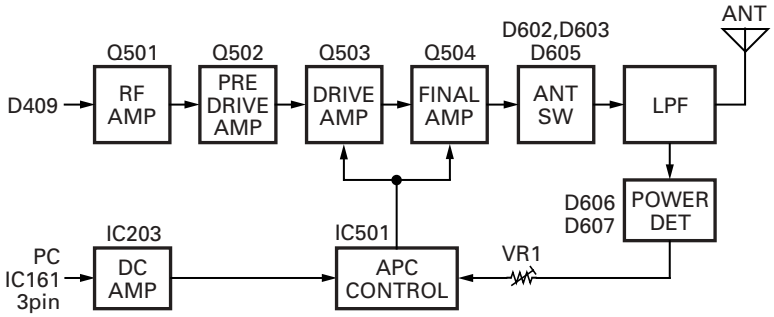

Fig. 9 APC circuit

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CIRCUIT DESCRIPTION

Control Circuit

The CPU carries out the following tasks:

1) Controls the WIDE, NARROW, TX/RX outputs.
2) Adjusts the AF signal level of the AF filter (IC251) and turns the filter select compounder on or off.
3) Controls the display unit.
4) Controls the PLL (IC401).
5) Controls the D/A converter (IC161) and adjusts the volume, modulation and transmission power.

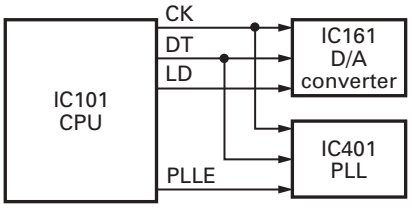

Fig. 10 Control circuit

■ Memory Circuit

The transceiver has an 64k-bit EEPROM (IC66). The EEPROM contains adjustment data. The CPU (IC101) controls the EEPROM through three serial data lines.

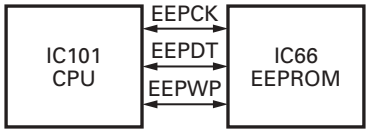

Fig. 11 Memory circuit

■ Display Circuit

The CPU (IC101) controls the display LCD and LEDs. When power is on, the CPU will use the MBL line to control the LCD illumination and key backlight LEDs.

The dimmer function is controlled by the switch Q11. The LCD controller (IC2) controls the functions of the LCD through the CE, CK, DI lines from the CPU.

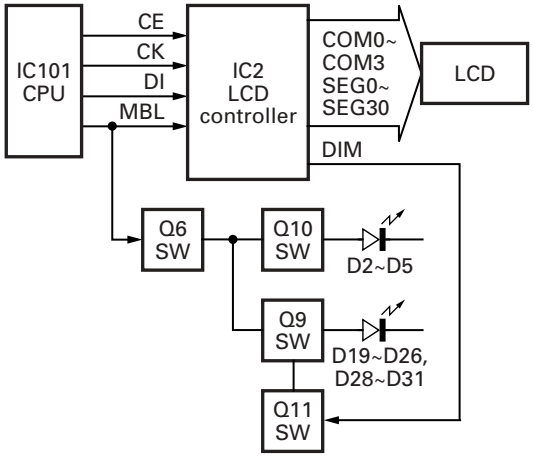

Fig. 12 Display circuit

■ Key Matrix Circuit

The TK-7100H front panel has function keys. Each of them is connected to a cross point of a matrix of the KMI1 to KMO2 ports of the microprocessor. The KMO1 to KMO2 ports are always high, while the KMI1 to KMI4 ports are always low.

The microprocessor monitors the status of the KMI1 to KMO2 ports. If the state of one of the ports changes, the microprocessor assumes that the key at the matrix point corresponding to that port has been pressed.

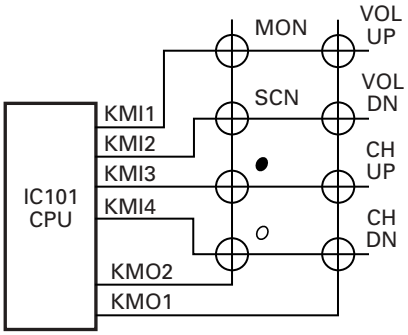

Fig. 13 Key matrix circuit

■ Encode

The QT and DQT signals are output from QT/DQT of the CPU (IC101) and summed with the external pin DI line by the summing amplifier (IC203) and the resulting signal goes to the D/A converter (IC161). The DTMF signal is output from DTMF of the CPU and goes to the D/A converter (IC161). The signal is summed with a MIC signal by the summing amplifier (IC203), and the resulting signal goes to the D/A converter (IC161).

The D/A converter (IC161) adjusts the MO level and the balance between the MO and QT/DQT levels. Part of a QT/DQT signal is summed with MO and the resulting signal goes to the VCOMOD pin of the VCO. This signal is applied to a varicap diode in the VCO for direct FM modulation.

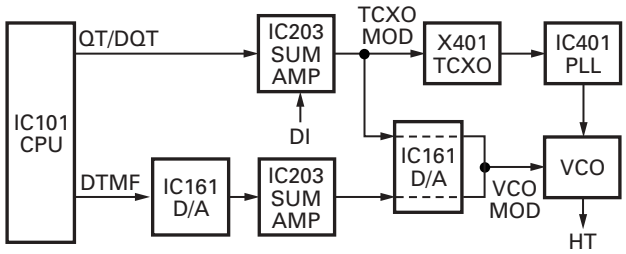

Fig. 14 Encodet

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CIRCUIT DESCRIPTION / SEMICONDUCTOR DATA

■ Decode

• **QT/DQT/DTMF**

The signal (W/NO (EVOL2)) goes to SIGNAL (pin 88) of CPU (IC101). The QT/DQT signal will pass through the low-pass filters in the CPU (IC101) and be decoded within the CPU (IC101). The DTMF signal will be decoded within the CPU (IC101).

Fig. 15 Decode

■ D/A Converter

The D/A converter (IC161) is used to adjust MO modulation, AF volume, TV voltage, FC reference voltage, and PC POWER CONTROL voltage level.

Adjustment values are sent from the CPU as serial data. The D/A converter has a resolution of 256 and the following relationship is valid:

D/A output = (Vin – VDAref) / 256 x n + VDAref

Vin: Analog input

VDAref: D/A reference voltage

n: Serial data value from the microprocessor (CPU)

Power Supply Circuit

When the power switch on the display unit is pressed, the power port on the display unit which is connected port 17 (POWER), goes low, then port 82 (SBC) goes high, Q32 turns on, SB SW (Q31) turns on and power (SB) is supplied to the radio.

When the DC power supplied to the radio, the voltage regulator IC (IC33) supply into the CPU VDD and reset voltage detect IC (IC34). IC34 will generate signal (RESET) in to the reset terminal on the CPU (IC101) to carry out a power ON reset. Also, CPU (IC101) is checking on port 91 (Battery Voltage). If DC power is less than about 9.5V, the radio is unable to power on.

When the DC power voltage deceases from normal voltage, the INT voltage detector IC (IC35) will set to high on CPU port 18 (INT) if B line will became less than about 9.5V. Then CPU send to EEPROM (IC66) the backup data and go into STOP mode.

This circuit has an overvoltage protection circuit. If a DC voltage of 18V or higher is applied to the base of Q61, this voltage turns Q61 on and turns Q32 and SB off.

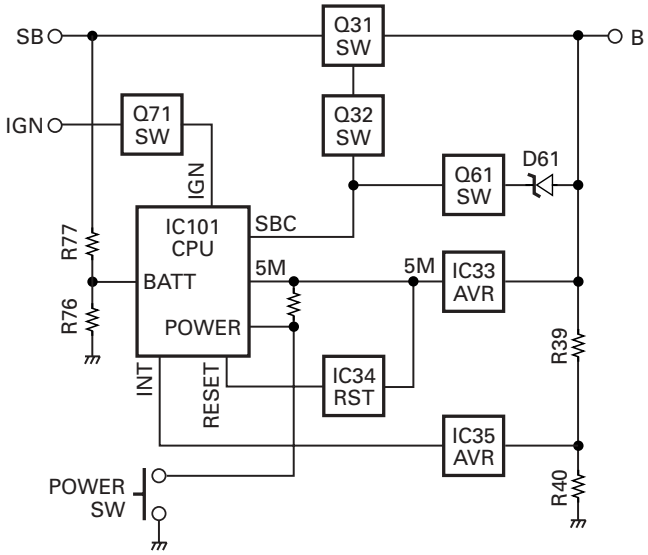

Fig. 16 Power supply circuit

Drive Amplifier : PD55003TR (TX-RX Unit Q503)

■ Absolute Maximum Ratings (T_{CASE} = 25°C)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source voltage	40	V
V_{GS}	Gate-Source voltage	±20	V
I_D	Drain current	2.5	A
P_{DISS}	Power dissipation (@ Tc=70°C)	31.7	W
Tj	Max. operating junction temperature	165	°C
T_{STG}	Storage temperature	–65 to +150	°C

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SEMICONDUCTOR DATA

Microprocessor : 30622MAA-B76GP (TX-RX Unit IC101)

■ Terminal Function

Pin No.	Name	I/O	Function
1	QT/DQT	O	QT/DQT output.
2	DTMF/MSK	O	DTMF/MSK/BEEP output
3	PLLE	O	PLL IC chip select.
4,5	NC	I	
6	GND	-	GND.
7	CNVSS	-	DNVss for flash.
8	EVLLD	O	E-volume LD.
9	BSHIFT	O	Beat shift.
10	RESET	-	Reset.
11	XOUT	-	X'tal (14.318MHz).
12	VSS	-	GND.
13	XIN	-	X'tal (14.318MHz).
14	VCC	-	+5V.
15	GND	-	GND (Input only).
16	NC	I	
17	POWER	I	Power key input.
18	INT	I	µcom stop.
19	NC	I	
20	TX/RX	O	TX/RX.
21	UL	O	PLL unlock detect.
22~25	NC	I	
26	EEPWP	O	EEPROM write protect
27	EEPCK	O	EEPROM clock (N ch open drain).
28	EEPDT	I/O	EEPROM data (N ch open drain).
29	FNC1	I/O	Function P1/TxD for flash.
30	FNC2	I/O	Function P2/RxD for flash.
31	CLKFLS	I	SCLK for flash.
32	BSYFLS	O	Busy for flash.
33	TXD	O	To FPU.
34	RXD	I	From FPU.
35	PTT	I	PTT key.
36	HOOK	I	Hook.
37,38	NC	I	
39	EMPFLS	I/O	EPM for flash.
40~42	NC	I	
43	FNC3	I/O	Function port 3.
44	CEFLS	I/O	CE for flash.
45,46	FNC4, FNC5	I/O	Function port 4, 5
47,48	FNC7, FNC6	I/O	Function port 7, 6.
49	FNC8	I/O	Function port 8.
50	AFM	O	AF mute.
51	SPM	O	Speaker mute.

Pin No.	Name	I/O	Function
52	AMPSW	O	AF AMP switch.
53	DT	O	Common data.
54	CK	O	Common clock.
55,56	NC	I	
57~59	DST1~DST3	I	Destination 1~3
60	VCC	-	+5V.
61	NC	I	
62	VSS	-	GND.
63	NC	I	
64	NARROW	O	
65	WIDE	O	
66~68	NC	I	
69	CL	O	Clock for LCD.
70	CE	O	Chip enable for LCD.
71	DI	O	Transfer data to LCD.
72	IGN	I	Ignition.
73	MICMT1	O	Mic 1 mute.
74	MICEM	O	Mic 2 mute.
75	MICMT2	O	Mic 3 mute.
76	8RC	O	8R control.
77	8TC	O	8T control.
78	CM	I/O	Mic key check.
79~81	NC	I	
82	SBC	O	Battery switch.
83	KMI2	I	Key matrix 2.
84	KMI1	I	Key matrix 1.
85	KMI3	I	Key matrix 3.
86	KMI4	I	Key matrix 4.
87	NC	I	
88	SIGNAL	I	DTMF/QT/DQT input.
89	TEMP2	I	Temperature 2.
90	TEMP1	I	Temperature 1.
91	BATT	I	Battery voltage.
92	RSSI	I	RSSI input.
93	SQIN	I	Squelch input.
94	AVSS	-	GND.
95	NC	I	
96	VREF	-	+5V.
97	AVCC	-	+5V.
98	NC	I	
99	KMO1	O	Key matrix output 1.
100	KMO2	O	Key matrix output 2.

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COMPONENTS DESCRIPTION

Display Unit (X54-3430-20)

Ref. No.	Parts name	Description
IC2	IC	LCD controller
Q6	Transistor	DC switch
Q9	Transistor	LCD backlit switch
Q10	Transistor	Key backlit switch
Q11	Transistor	Dimmer function switch
D2~5	LED	Key & LCD backlit
D17	Diode	DC switch
D18	Diode	DC controller
D19~26	LED	Key & LCD backlit
D27	Diode	Surge absorption
D28~31	LED	Key & LCD backlit

TX-RX Unit (X57-6700-20)

Ref. No.	Parts name	Description
IC31	IC	Voltage regulator (8C)
IC32	IC	Voltage regulator (5C)
IC33	IC	Voltage regulator (5M)
IC34	IC	Voltage detector reset
IC35	IC	Voltage detector int
IC66	IC	EEPROM
IC101	IC	CPU
IC161	IC	Digital potentiometer
IC201	IC	MIC amplifier / IDC
IC202	IC	MIC amplifier / Splatter filter
IC203	IC	Buffer amplifier / SUM amplifier / DC amplifier / 1/2 Vcc
IC251	IC	Audio filter
IC252	IC	Audio amplifier
IC301	IC	FM demodulation
IC401	IC	PLL synthesizer
IC402	IC	Divider (Hetero)
IC501	IC	APC controller
Q1	FET	TX AF
Q31,32	Transistor	DC switch (SB) / Active when power is on
Q33,34	Transistor	DC switch (8R) / Active while RX
Q35,36	Transistor	DC switch (8T) / Active while TX
Q61	Transistor	Over voltage detection / Active when PS voltage is more than 18V
Q71	Transistor	Ignition / Ignition sens
Q86,87	Transistor	Beat shift / Active while beat shift is on
Q201	Transistor	AF amplifier / MIC mute / Emergency MIC mute
Q202	FET	Emergency MIC mute / Active when MICEM is H
Q251	Transistor	Buffer amplifier / RX audio
Q252,253	FET	AF mute / Active while AFM is H
Q254	Digital transistor	AF mute / Active while SPM is H
Q255	Transistor	AF mute / Active while AMPSW is H
Q301	Transistor	Noise amplifier / SQL amplifier
Q302	Transistor	Buffer amplifier / 16.8MHz 3rd over tone
Q351	Transistor	IF amplifier
Q352	FET	Mixer
Q353	FET	RF amplifier / LNA
Q354	Transistor	RF BPF
Q402,403	Transistor	Charge pump
Q404	Transistor	RF amplifier / PLL F in
Q405	FET	RX VCO
Q406	FET	TX VCO
Q407	FET	T/R switch
Q408	Transistor	T/R switch
Q410	Transistor	Buffer amplifier / Output of VCO
Q411	Transistor	RF amplifier / Output of VCO
Q440	Transistor	Lipple filter
Q501,502	Transistor	RF amplifier / Drive stage
Q503	FET	RF amplifier / Drive amplifier
Q504	FET	RF amplifier / Final amplifier
D1	Diode	Surge absorption / CM
D2	Diode	Surge absorption / HOOK
D3	Diode	Surge absorption / PTT
D4~11	Diode	Surge absorption / FNC1~8
D31	Diode	Reverse connection protection
D32	Poly switch	Current protection
D61	Diode	Over voltage detection
D201	Diode	OR gate / MIC mute, AGC
D202	Diode	AGC
D251	Diode	Limiter
D301	Diode	Detection
D302,303	Diode	IF switch (Wide/Narrow)
D351~354	Varicap	RF BPF tuning
D401	Diode	Lipple filter
D402	Diode	Voltage dropped
D403,404	Varicap	RX VCO
D405,406	Varicap	TX VCO
D407	Varicap	Modulation
D408	Diode	Lipple filter
D409	Diode	RF switch (TX/RX)
D501,502	Diode	Temperature compensation
D503	Diode	Voltage protection
D602,603	Diode	ANT switch
D605	Diode	ANT switch
D606,607	Diode	APC voltage detect
D608	Diode	Temperature compensation

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PARTS LIST

✻ New Parts. ⚠ indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia **K** : USA **P** : Canada
Y : PX (Far East, Hawaii) **T** : England **E** : Europe
Y : AAFES (Europe) **X** : Australia **M** : Other Areas

TK-7100H, DISPLAY UNIT (X54-3430-20)
TX-RX UNIT (X57-6700-20)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
TK-7100H					
1	1B		A01-2181-01	CABINET	
2	3B		A10-4048-21	CHASSIS	
3	3A	✻	A62-1074-03	PANEL ASSY	
5	3A	✻	B11-1299-02	ILLUMINATION GUIDE	
6	3A	✻	B38-0878-05	LCD	
8	1D	✻	B62-1673-00	INSTRUCTION MANUAL (ENGLISH)	
9	1D	✻	B62-1674-00	INSTRUCTION MANUAL (SPANISH)	K
10	3B	✻	B72-2111-04	MODEL NAME PLATE	M
10	3B	✻	B72-2112-04	MODEL NAME PLATE	K
12	3B		E04-0167-05	RF COAXIAL PECEPTACLE (M)	
13	3A	✻	E29-1197-05	INTER CONNECTOR	
14	3C		E30-3339-05	DC CORD ACCESSORY	
15	2B		E30-3448-05	DC CORD (RADIO)	
16	2A	✻	E37-1041-05	FLAT CABLE	
-		✻	E37-1080-05	FOR SCRAMBLER BOARD (B)	
-		✻	E37-1081-05	FOR SCRAMBLER BOARD (A)	
19	3A	✻	E37-1082-05	SPEAKER CABLE	
21	2B	✻	F10-2449-01	SHIELDING COVER	
22	3C		F51-0017-05	FUSE (6✻30) ACCESSORY	
24	2B		G02-0894-04	EARTH SPRING (FINAL FET)	
25	3B		G11-2664-24	RUBBER SHEET (CHASSIS)	
26	2B	✻	G11-4240-04	RUBBER SHEET (DRIVE FET)	
27	3B		G13-1468-04	CUSHION (DC CABLE)	
-		✻	G13-1963-04	CUSHION (SCRAMBLER BOARD)	
-		✻	G13-1964-04	CUSHION (SCRAMBLER BOARD)	
-		✻	G13-1972-04	CUSHION D (TRUNKING BOARD)	
30	3A		G53-1525-03	PACKING (PANEL)	
31	2B		G53-1542-03	PACKING (PHONE JACK)	
32	1B		G53-1544-01	PACKING (CABINET)	
33	2A		G53-1548-02	GASKET	
35	2C,1D		H12-3112-05	PACKING FIXTURE	
36	3D		H13-1190-02	CARTON BOARD	
37	1D		H25-2341-04	PROTECTION BAG	
38	2D	✻	H52-1829-22	ITEM CARTON CASE	
40	3C		J19-1584-05	MIC HOLDER ACCESSORY	K
41	3D		J29-0662-03	BRACKET ACCESSORY	
43	3A	✻	K29-9262-01	KEY TOP	
A	2B		N67-2608-46	PAN HEAD SEMS SCREW	
B	2B,3B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW	
C	1B,2B		N87-2614-46	BRAZIER HEAD TAPTITE SCREW	
45	3C		N99-0395-05	SCREW SET ACCESSORY	
47	3A		T07-0739-05	SPEAKER	
48	2C		T91-0624-05	MICROPHONE ACCESSORY	K
DISPLAY UNIT (X54-3430-20)					
D2-5			B30-2205-05	LED (YG)	
D19-26			B30-2205-05	LED (YG)	
D28-31			B30-2205-05	LED (YG)	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C4			CC73GCH1H101J	CHIP C 100PF J	
C6			CK73GB1H103K	CHIP C 0.010UF K	
C15,16			CC73GCH1H101J	CHIP C 100PF J	
C18			CK73FB1A105K	CHIP C 1.0UF K	
C19			CK73GB1H681K	CHIP C 680PF K	
C22,23			CK73GB1H102K	CHIP C 1000PF K	
C24			CK73GB1H103K	CHIP C 0.010UF K	
C25			CK73GB1H102K	CHIP C 1000PF K	
C27,28			CK73GB1H102K	CHIP C 1000PF K	
C30			CK73GB1H103K	CHIP C 0.010UF K	
C31-33			CK73GB1H102K	CHIP C 1000PF K	
CN1			E40-6005-05	FLAT CABLE CONNECTOR	
J1			E08-0877-05	MODULAR JACK	
L1			L92-0138-05	FERRITE CHIP	
CP1			R90-0724-05	MULTI-COMP 1K X4	
R4-9			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R10,11			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R21-23			RK73GB1J103J	CHIP R 10K J 1/16W	
R24			RK73GB1J474J	CHIP R 470K J 1/16W	
R25			RK73GB1J473J	CHIP R 47K J 1/16W	
R26			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R33			RK73FB2A560J	CHIP R 56 J 1/10W	
R34			RK73GB1J101J	CHIP R 100 J 1/16W	
R36			RK73FB2A560J	CHIP R 56 J 1/10W	
R37			RK73GB1J100J	CHIP R 10 J 1/16W	
R38,39			RK73FB2A390J	CHIP R 39 J 1/10W	
R40			RK73FB2A473J	CHIP R 47K J 1/10W	
D17			MA2S111	DIODE	
D18			HSB123	DIODE	
D27			DA221	DIODE	
IC2			LC75834W	MOS IC	
Q6			KRC102S	DIGITAL TRANSISTOR	
Q9			2SB1132(Q,R)	TRANSISTOR	
Q10			KRA225S	DIGITAL TRANSISTOR	
Q11			RN47A4	TRANSISTOR	
TX-RX UNIT (X57-6700-20)					
C10			CK73GB1H102K	CHIP C 1000PF K	
C13-26			CK73GB1H471K	CHIP C 470PF K	
C28			CK73GB1H221K	CHIP C 220PF K	
C29			CK73GB1H471K	CHIP C 470PF K	
C30			CK73GB1H102K	CHIP C 1000PF K	
C33			CK73GB1H102K	CHIP C 1000PF K	
C34			C92-0721-05	CHIP-ELE 330UF 25WV	
C35-38			CK73GB1H102K	CHIP C 1000PF K	
C39,40			CK73GB1C104K	CHIP C 0.10UF K	
C41			C92-0795-05	CHIP-TAN 22UF 10WV	
C42			CK73GB1H103K	CHIP C 0.010UF K	
C43-45			C92-0795-05	CHIP-TAN 22UF 10WV	
C49,50			CK73GB1H103K	CHIP C 0.010UF K	
C51			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C52,53			CK73GB1H102K	CHIP C 1000PF K	

K : TK-7100H K
M : TK-7100H M

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PARTS LIST

TX-RX UNIT (X57-6700-20)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C54,55			CK73GB1C104K	CHIP C	0.10UF	K	
C56			CK73GB1H102K	CHIP C	1000PF	K	
C61			CK73GB1H102K	CHIP C	1000PF	K	
C66			CK73GB1H102K	CHIP C	1000PF	K	
C72			CK73GB1H102K	CHIP C	1000PF	K	
C77,78			CK73GB1H102K	CHIP C	1000PF	K	
C82			CK73GB1H102K	CHIP C	1000PF	K	
C83			CK73GB1C104K	CHIP C	0.10UF	K	
C87			CC73GCH1H180J	CHIP C	18PF	J	
C88,89			CC73GCH1H060B	CHIP C	6.0PF	B	
C90			CC73GCH1H180J	CHIP C	18PF	J	
C97,98			CK73GB1H102K	CHIP C	1000PF	K	
C101			CK73GB1H102K	CHIP C	1000PF	K	
C102			CK73GB1C104K	CHIP C	0.10UF	K	
C103			CK73GB1H102K	CHIP C	1000PF	K	
C104			CK73GB1C104K	CHIP C	0.10UF	K	
C151			CK73GB1H182K	CHIP C	1800PF	K	
C152			CK73GB1H392K	CHIP C	3900PF	K	
C161			CK73GB1H102K	CHIP C	1000PF	K	
C162			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C163			CK73GB1H102K	CHIP C	1000PF	K	
C164			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C201			CK73GB1C104K	CHIP C	0.10UF	K	
C202			CK73GB1H102K	CHIP C	1000PF	K	
C203			CK73GB1C273K	CHIP C	0.027UF	K	
C204			C92-0514-05	CHIP-TAN	2.2UF	10WV	
C205			CK73GB1C104K	CHIP C	0.10UF	K	
C206			CK73GB1H102K	CHIP C	1000PF	K	
C207			CK73GB1C223K	CHIP C	0.022UF	K	
C208			CK73GB1H103K	CHIP C	0.010UF	K	
C210			CK73GB1C104K	CHIP C	0.10UF	K	
C211			CK73GB1H821K	CHIP C	820PF	K	
C212			CK73GB1H122K	CHIP C	1200PF	K	
C213			CK73GB1H332K	CHIP C	3300PF	K	
C214			CC73GCH1H151J	CHIP C	150PF	J	
C215			CK73GB1C104K	CHIP C	0.10UF	K	
C217,218			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C220			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C221			CK73GB1C104K	CHIP C	0.10UF	K	
C225			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C226			CK73GB1H472K	CHIP C	4700PF	K	
C227			CK73GB1E103K	CHIP C	0.010UF	K	
C228			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C229			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C230			CK73GB1C104K	CHIP C	0.10UF	K	
C231,232			CK73GB1H102K	CHIP C	1000PF	K	
C233			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C250			CK73GB1C104K	CHIP C	0.10UF	K	
C251			C92-0714-05	CHIP-TAN	4.7UF	6.3WV	
C252			CC73GCH1H390J	CHIP C	39PF	J	
C253,254			CK73GB1A105K	CHIP C	1.0UF	K	
C255			CK73GB1H822K	CHIP C	8200PF	K	
C256			CK73GB1E183K	CHIP C	0.018UF	K	
C257			CK73GB1C393K	CHIP C	0.039UF	K	
C258-261			CK73GB1H103J	CHIP C	0.010UF	J	
C262			CK73GB1H102K	CHIP C	1000PF	K	
C263,264			CK73GB1C333K	CHIP C	0.033UF	K	
C265,266			CK73GB1C104K	CHIP C	0.10UF	K	
C267			CK73GB1A474K	CHIP C	0.47UF	K	
C268			CK73GB1C104K	CHIP C	0.10UF	K	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C269			CK73GB1A105K	CHIP C	1.0UF	K	
C270			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C271			CK73GB1H332K	CHIP C	3300PF	K	
C272			CK73GB1H102K	CHIP C	1000PF	K	
C273			CK73GB1A105K	CHIP C	1.0UF	K	
C274			CK73FB1C224K	CHIP C	0.22UF	K	
C275			CK73GB1A105K	CHIP C	1.0UF	K	
C276,277			CK73GB1H102K	CHIP C	1000PF	K	
C278			CK73GB1C104K	CHIP C	0.10UF	K	
C279			C92-0516-05	CHIP-TAN	4.7UF	16WV	
C280			C92-0040-05	CHIP-ELE	47UF	16WV	
C281			CK73GB1H102K	CHIP C	1000PF	K	
C282			C92-0722-05	CHIP-ELE	470UF	16WV	
C283			CK73GB1H102K	CHIP C	1000PF	K	
C301			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C302			CK73GB1H102K	CHIP C	1000PF	K	
C303			CK73GB1H472K	CHIP C	4700PF	K	
C304,305			CC73GCH1H331J	CHIP C	330PF	J	
C306			CK73GB1H102K	CHIP C	1000PF	K	
C307			CK73GB1E223K	CHIP C	0.022UF	K	
C308			CK73GB1H102K	CHIP C	1000PF	K	
C309			CK73GB1E223K	CHIP C	0.022UF	K	
C310			CK73FB1C334K	CHIP C	0.33UF	K	
C311,312			CK73GB1C104K	CHIP C	0.10UF	K	
C313			C92-0662-05	CHIP-TAN	15UF	6.3WV	
C314			CK73GB1H103K	CHIP C	0.010UF	K	
C315-318			CK73GB1C104K	CHIP C	0.10UF	K	
C319			CC73GCH1H101J	CHIP C	100PF	J	
C322			CC73GCH1H560J	CHIP C	56PF	J	
C323			CC73GCH1H271J	CHIP C	270PF	J	
C324			CK73GB1H103K	CHIP C	0.010UF	K	
C326			CK73GB1H103K	CHIP C	0.010UF	K	
C350			CK73GB1H471K	CHIP C	470PF	K	
C351			CC73GCH1H330J	CHIP C	33PF	J	
C353			CK73GB1H103K	CHIP C	0.010UF	K	
C355			CC73GCH1H150J	CHIP C	15PF	J	
C357			CK73GB1H103K	CHIP C	0.010UF	K	
C358			CK73GB1H102K	CHIP C	1000PF	K	
C359			CC73GCH1H080B	CHIP C	8.0PF	B	
C360-362			CK73GB1H102K	CHIP C	1000PF	K	
C363			CK73GB1H103K	CHIP C	0.010UF	K	
C364			CK73GB1H102K	CHIP C	1000PF	K	
C366			CK73GB1C104K	CHIP C	0.10UF	K	
C367			CC73GCH1H101J	CHIP C	100PF	J	
C368			CC73GCH1H220J	CHIP C	22PF	J	
C369			CC73GCH1H040B	CHIP C	4.0PF	B	
C370			CK73GB1H102K	CHIP C	1000PF	K	
C371			CC73GCH1H020B	CHIP C	2.0PF	B	
C372			CK73GB1H102K	CHIP C	1000PF	K	
C373			CC73GCH1H040B	CHIP C	4.0PF	B	
C374			CC73GCH1H220J	CHIP C	22PF	J	
C375-380			CK73GB1H102K	CHIP C	1000PF	K	
C382			CC73GCH1H220J	CHIP C	22PF	J	
C383			CK73GB1H102K	CHIP C	1000PF	K	
C384			CC73GCH1H010B	CHIP C	1.0PF	B	
C386			CC73GCH1H240J	CHIP C	24PF	J	
C387			CK73GB1H102K	CHIP C	1000PF	K	
C388			CC73GCH1H040B	CHIP C	4.0PF	B	
C389			CK73GB1H102K	CHIP C	1000PF	K	
C401-403			CC73GCH1H101J	CHIP C	100PF	J	

K : TK-7100H K
M : TK-7100H M

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PARTS LIST

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Ref. No.	Address	New parts	Parts No.	Description			Destination
C404			C92-0662-05	CHIP-TAN	15UF	6.3WV	
C406			CK73GB1H102K	CHIP C	1000PF	K	
C408			CC73GCH1H220J	CHIP C	22PF	J	
C409			CK73GB1C104K	CHIP C	0.10UF	K	
C410			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C411			CK73GB1C104K	CHIP C	0.10UF	K	
C412			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C413			CK73GB1H103K	CHIP C	0.010UF	K	
C414			CK73GB1C104K	CHIP C	0.10UF	K	
C416-418			CK73GB1H102K	CHIP C	1000PF	K	
C421,422			CK73GB1H471K	CHIP C	470PF	K	
C423			C92-0555-05	CHIP-TAN	0.047UF	35WV	
C424			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C425			C92-0001-05	CHIP C	0.1UF	35WV	
C426			CC73GCH1H270J	CHIP C	27PF	J	
C427			CC73GCH1H080B	CHIP C	8.0PF	B	
C428			CK73GB1H471K	CHIP C	470PF	K	
C429			CC73GCH1H010B	CHIP C	1.0PF	B	
C430,431			CC73GCH1H050B	CHIP C	5.0PF	B	
C432			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C434			CK73GB1H471K	CHIP C	470PF	K	
C435			CC73GCH1H100C	CHIP C	10PF	C	
C436			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C437			CK73GB1H471K	CHIP C	470PF	K	
C438			CC73GCH1H020B	CHIP C	2.0PF	B	
C439			CC73GCH1H060B	CHIP C	6.0PF	B	
C440			CC73GCH1H070B	CHIP C	7.0PF	B	
C441			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C442			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C444			CK73GB1H471K	CHIP C	470PF	K	
C448,449			CK73GB1H471K	CHIP C	470PF	K	
C450			C92-0568-05	CHIP-TAN	22UF	10WV	
C451,452			CK73GB1H471K	CHIP C	470PF	K	
C453			CK73GB1H221K	CHIP C	220PF	K	
C454			CC73GCH1H060B	CHIP C	6.0PF	B	
C455			CC73GCH1H030B	CHIP C	3.0PF	B	
C456			CC73GCH1H020B	CHIP C	2.0PF	B	
C457			CK73GB1H102K	CHIP C	1000PF	K	
C458			CK73GB1H221K	CHIP C	220PF	K	
C459			CK73GB1H102K	CHIP C	1000PF	K	
C460			CC73GCH1H180J	CHIP C	18PF	J	
C461			CK73GB1H102K	CHIP C	1000PF	K	
C462			CC73GCH1H100C	CHIP C	10PF	C	
C463,464			CK73GB1H102K	CHIP C	1000PF	K	
C465			CC73GCH1H220J	CHIP C	22PF	J	
C466			CC73GCH1H101J	CHIP C	100PF	J	
C467			CK73GB1H102K	CHIP C	1000PF	K	
C468			CK73GB1H221K	CHIP C	220PF	K	
C471			CC73GCH1H100C	CHIP C	10PF	C	
C501,502			CK73GB1H102K	CHIP C	1000PF	K	
C503			CC73GCH1H101J	CHIP C	100PF	J	
C504-507			CK73GB1H102K	CHIP C	1000PF	K	
C509			CC73GCH1H150J	CHIP C	15PF	J	
C510			CC73GCH1H080B	CHIP C	8.0PF	B	
C511-514			CK73GB1H102K	CHIP C	1000PF	K	
C515			CC73GCH1H270J	CHIP C	27PF	J	
C516			CK73GB1H821K	CHIP C	820PF	K	
C517			CC73GCH1H030B	CHIP C	3.0PF	B	
C518			CC73GCH1H330J	CHIP C	33PF	J	
C519			CC73GCH1H820J	CHIP C	82PF	J	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C522			CK73FB1H102K	CHIP C	1000PF	K	
C525			CK73GB1H102K	CHIP C	1000PF	K	
C526			CK73GB1H681K	CHIP C	680PF	K	
C527			CK73GB1H102K	CHIP C	1000PF	K	
C528			CK73GB1H221K	CHIP C	220PF	K	
C529			CK73FB1H102K	CHIP C	1000PF	K	
C530			CK73FB1C474K	CHIP C	0.47UF	K	
C531			C92-0719-05	CHIP-ELE	47UF	25WV	
C533			C93-0570-05	CHIP C	68PF	J	
C536			CK73FB1H102K	CHIP C	1000PF	K	
C541,542			CM73F2H270J	CHIP C	27PF	J	
C545			C93-0603-05	CHIP C	1000PF	K	
C546			CK73FB1C474K	CHIP C	0.47UF	K	
C549			CM73F2H221J	CHIP C	220PF	J	
C550			CM73F2H680J	CHIP C	68PF	J	
C552,553			C93-0562-05	CHIP C	15PF	J	
C554			C93-0603-05	CHIP C	1000PF	K	
C555			C93-0555-05	CHIP C	5.0PF	C	
C556			C93-0603-05	CHIP C	1000PF	K	
C557,558			CK73GB1H103K	CHIP C	0.010UF	K	
C559			CK73GB1C104K	CHIP C	0.10UF	K	
C560			CK73GB1H102K	CHIP C	1000PF	K	
C574			CK73GB1H102K	CHIP C	1000PF	K	
C576			CK73GB1H221K	CHIP C	220PF	K	
C601			CC73GCH1H120J	CHIP C	12PF	J	
C602			C93-0555-05	CHIP C	5.0PF	C	
C603			C93-0603-05	CHIP C	1000PF	K	
C605			C93-0564-05	CHIP C	22PF	J	
C606			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C607			CC73GCH1H020B	CHIP C	2.0PF	B	
C608			C93-0566-05	CHIP C	33PF	J	
C610			CC73GCH1H0R5B	CHIP C	0.5PF	B	
C611			CC73GCH1H020B	CHIP C	2.0PF	B	
C613			C93-0566-05	CHIP C	33PF	J	
C615			C93-0564-05	CHIP C	22PF	J	
C616,617			CK73GB1H102K	CHIP C	1000PF	K	
TC351			C05-0399-05	CERAMIC TRIMMER CAP (6PF)			
TC352			C05-0245-05	CERAMIC TRIMMER CAP (10PF)			
TC401,402			C05-0245-05	CERAMIC TRIMMER CAP (10PF)			
J1			E11-0425-05	3.5D PHONE JACK (3P)			
CN1		✻	E40-6268-05	FLAT CABLE CONNECTOR			
CN2			E40-5702-05	PIN ASSY			
CN3		✻	E40-6292-05	PIN ASSY			
CN4			E40-5932-05	PIN ASSY SOCKET			
CN5			E40-3246-05	PIN ASSY			
CN601			E23-0486-05	TERMINAL			
F501			F53-0108-05	FUSE (1.8A/50V)			
CF301			L72-0993-05	CERAMIC FILTER			
CF302			L72-0999-05	CERAMIC FILTER			
L101		✻	L92-0443-05	FERRITE CHIP			
L201		✻	L92-0443-05	FERRITE CHIP			
L301			L34-4554-05	COIL			
L302			L41-3385-08	SMALL FIXED INDUCTOR			
L303,304			L40-3381-86	SMALL FIXED INDUCTOR (0.33UH)			
L351			L41-8285-08	SMALL FIXED INDUCTOR			
L352			L41-5685-08	SMALL FIXED INDUCTOR			
L354-356			L34-4612-05	AIR-CORE COIL			
L357			L34-4611-05	AIR-CORE COIL			

K : TK-7100H K
M : TK-7100H M

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PARTS LIST

TX-RX UNIT (X57-6700-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
L401		✻	L92-0443-05	FERRITE CHIP	
L403			L41-1005-08	SMALL FIXED INDUCTOR	
L404		✻	L92-0442-05	FERRITE CHIP	
L405		✻	L92-0443-05	FERRITE CHIP	
L406,407			L40-2702-86	SMALL FIXED INDUCTOR (27UH)	
L408			L40-2778-67	SMALL FIXED INDUCTOR (27NH)	
L409-412			L40-2702-86	SMALL FIXED INDUCTOR (27UH)	
L413			L40-3978-67	SMALL FIXED INDUCTOR (39NH)	
L414,415		✻	L40-4791-86	SMALL FIXED INDUCTOR (4.7UH)	
L416,417		✻	L92-0443-05	FERRITE CHIP	
L418			L41-3375-06	SMALL FIXED INDUCTOR	
L419			L41-1085-06	SMALL FIXED INDUCTOR	
L420			L41-1585-06	SMALL FIXED INDUCTOR	
L421			L41-1085-06	SMALL FIXED INDUCTOR	
L422			L41-5675-06	SMALL FIXED INDUCTOR	
L501,502			L41-6875-08	SMALL FIXED INDUCTOR	
L503,504			L41-2775-06	SMALL FIXED INDUCTOR	
L505			L34-4606-05	AIR-CORE COIL	
L506			L34-4693-05	AIR-CORE COIL	
L507		✻	L34-4732-05	AIR-CORE COIL	
L508			L34-4669-05	AIR-CORE COIL	
L509			L34-4667-05	AIR-CORE COIL	
L601			L34-4668-05	AIR-CORE COIL	
L602-604			L34-4670-05	AIR-CORE COIL	
L605			L34-4667-05	AIR-CORE COIL	
X86		✻	L77-1934-05	CRYSTAL RESONATOR (14.31818MHZ)	
X401			L77-1868-15	TCXO (16.8MHZ)	
XF351			L71-0591-05	MCF (49.95MHZ)	
R1			RK73GB1J101J	CHIP R 100 J 1/16W	
R2			R92-1252-05	CHIP R 0 OHM J 1/16W	
R3			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R4			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R5			RK73GB1J223J	CHIP R 22K J 1/16W	
R31			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R32			R92-1215-05	CHIP R 470 J 1/2W	
R33			RK73GB1J473J	CHIP R 47K J 1/16W	
R34			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R35			RK73GB1J473J	CHIP R 47K J 1/16W	
R36			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R37			R92-1252-05	CHIP R 0 OHM J 1/16W	
R38			RK73GB1J334J	CHIP R 330K J 1/16W	
R39			RK73GB1J474J	CHIP R 470K J 1/16W	
R40			RK73GB1J394J	CHIP R 390K J 1/16W	
R41			RK73GB1J334J	CHIP R 330K J 1/16W	
R61			RK73GB1J471J	CHIP R 470 J 1/16W	
R62			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R66,67			RK73GB1J473J	CHIP R 47K J 1/16W	
R68,69			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R70			RK73GB1J473J	CHIP R 47K J 1/16W	
R71			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R72			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R73			RK73GB1J104J	CHIP R 100K J 1/16W	
R74			RK73GB1J473J	CHIP R 47K J 1/16W	
R75			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R76			RK73GJ1J393D	CHIP R 39K D 1/16W	
R77			RK73GH1J274D	CHIP R 270K D 1/16W	
R78			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R81			RK73GB1J473J	CHIP R 47K J 1/16W	
R82			R92-1252-05	CHIP R 0 OHM J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R86			R92-1252-05	CHIP R 0 OHM J 1/16W	
R87			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R91,92			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R93,94			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R101,102			RK73GB1J473J	CHIP R 47K J 1/16W	
R103-106			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R107,108			RK73GB1J473J	CHIP R 47K J 1/16W	
R109			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R110			RK73GB1J473J	CHIP R 47K J 1/16W	
R111			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R112,113			RK73GB1J473J	CHIP R 47K J 1/16W	
R114-119			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R120-123			R92-1252-05	CHIP R 0 OHM J 1/16W	
R124			RK73GB1J473J	CHIP R 47K J 1/16W	
R125-128			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R129			R92-1252-05	CHIP R 0 OHM J 1/16W	
R130,131			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R151			RK73GB1J103J	CHIP R 10K J 1/16W	
R152			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R161			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R162			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R163			RK73GB1J473J	CHIP R 47K J 1/16W	
R164-166			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R201			RK73GB1J681J	CHIP R 680 J 1/16W	
R202			R92-0670-05	CHIP R 0 OHM	
R203			RK73GB1J104J	CHIP R 100K J 1/16W	
R204			RK73GB1J183J	CHIP R 18K J 1/16W	
R205			RK73GB1J821J	CHIP R 820 J 1/16W	
R206			RK73GB1J101J	CHIP R 100 J 1/16W	
R207			RK73GB1J754J	CHIP R 750K J 1/16W	
R208			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R209			RK73GB1J244J	CHIP R 240K J 1/16W	
R210			RK73GB1J183J	CHIP R 18K J 1/16W	
R211,212			RK73GB1J823J	CHIP R 82K J 1/16W	
R213			RK73GB1J334J	CHIP R 330K J 1/16W	
R214,215			RK73GB1J683J	CHIP R 68K J 1/16W	
R216			RK73GB1J274J	CHIP R 270K J 1/16W	
R217			RK73GB1J224J	CHIP R 220K J 1/16W	
R218			RK73GB1J823J	CHIP R 82K J 1/16W	
R219			RK73GB1J184J	CHIP R 180K J 1/16W	
R220,221			RK73GH1J153D	CHIP R 15K D 1/16W	
R222			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R223			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R224			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R225			RK73GB1J154J	CHIP R 150K J 1/16W	
R226			RK73GB1J104J	CHIP R 100K J 1/16W	
R227			RK73GB1J223J	CHIP R 22K J 1/16W	
R228			RK73GB1J103J	CHIP R 10K J 1/16W	
R229			RK73GB1J684J	CHIP R 680K J 1/16W	
R230			RK73GB1J124J	CHIP R 120K J 1/16W	
R231			RK73GB1J683J	CHIP R 68K J 1/16W	
R232			RK73GB1J912J	CHIP R 9.1K J 1/16W	
R233			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R249-251			RK73GB1J473J	CHIP R 47K J 1/16W	
R252			RK73GB1J474J	CHIP R 470K J 1/16W	
R253			R92-1252-05	CHIP R 0 OHM J 1/16W	
R254			RK73GB1J681J	CHIP R 680 J 1/16W	
R255,256			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R257			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R258			RK73GB1J272J	CHIP R 2.7K J 1/16W	

K : TK-7100H K
M : TK-7100H M

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PARTS LIST

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Ref. No.	Address	New parts	Parts No.	Description	Destination
R259			RK73GB1J123J	CHIP R 12K J 1/16W	
R260			RK73GB1J224J	CHIP R 220K J 1/16W	
R261			RK73GB1J124J	CHIP R 120K J 1/16W	
R262			RK73GB1J153J	CHIP R 15K J 1/16W	
R263			RK73GH1J913D	CHIP R 91K D 1/16W	
R264			RK73GH1J124D	CHIP R 120K D 1/16W	
R265			RK73GH1J562D	CHIP R 5.6K D 1/16W	
R266			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R267			R92-0670-05	CHIP R 0 OHM	
R268			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R269			RK73GB1J823J	CHIP R 82K J 1/16W	
R270			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R271			RK73GB1J561J	CHIP R 560 J 1/16W	
R272			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R273			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R274,275			RK73GB1J153J	CHIP R 15K J 1/16W	
R276			RK73GB1J473J	CHIP R 47K J 1/16W	
R277			RK73GB1J683J	CHIP R 68K J 1/16W	
R278			RK73GB1J123J	CHIP R 12K J 1/16W	
R279			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R280			RK73GB1J391J	CHIP R 390 J 1/16W	
R281			R92-0670-05	CHIP R 0 OHM	
R301,302			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R303			RK73GB1J223J	CHIP R 22K J 1/16W	
R304			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R305			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R306			RK73GB1J274J	CHIP R 270K J 1/16W	
R308			RK73GB1J334J	CHIP R 330K J 1/16W	
R309			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R310			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R311			RK73GB1J333J	CHIP R 33K J 1/16W	
R312			RK73GB1J473J	CHIP R 47K J 1/16W	
R313			RK73GB1J104J	CHIP R 100K J 1/16W	
R314			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R315			RK73GB1J183J	CHIP R 18K J 1/16W	
R316			RK73GB1J223J	CHIP R 22K J 1/16W	
R317-320			RK73GB1J103J	CHIP R 10K J 1/16W	
R321			RK73GB1J223J	CHIP R 22K J 1/16W	
R322			RK73GB1J101J	CHIP R 100 J 1/16W	
R323			RK73GB1J224J	CHIP R 220K J 1/16W	
R324			R92-1252-05	CHIP R 0 OHM J 1/16W	
R325			RK73GB1J333J	CHIP R 33K J 1/16W	
R349			RK73GB1J473J	CHIP R 47K J 1/16W	
R350			RK73GB1J273J	CHIP R 27K J 1/16W	
R351			RK73GB1J471J	CHIP R 470 J 1/16W	
R352			RK73GB1J101J	CHIP R 100 J 1/16W	
R353			RK73GB1J104J	CHIP R 100K J 1/16W	
R354			RK73GB1J331J	CHIP R 330 J 1/16W	
R355			RK73GB1J471J	CHIP R 470 J 1/16W	
R356			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R358			RK73GB1J470J	CHIP R 47 J 1/16W	
R359			RK73GB1J224J	CHIP R 220K J 1/16W	
R360			RK73GB1J474J	CHIP R 470K J 1/16W	
R361			RK73GB1J470J	CHIP R 47 J 1/16W	
R362			RK73GB1J474J	CHIP R 470K J 1/16W	
R363			RK73GB1J154J	CHIP R 150K J 1/16W	
R364			R92-1252-05	CHIP R 0 OHM J 1/16W	
R365			RK73GB1J104J	CHIP R 100K J 1/16W	
R366			RK73GB1J471J	CHIP R 470 J 1/16W	
R367			RK73GB1J470J	CHIP R 47 J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R368			RK73GB1J104J	CHIP R 100K J 1/16W	
R369			R92-1252-05	CHIP R 0 OHM J 1/16W	
R370			RK73GB1J151J	CHIP R 150 J 1/16W	
R371			RK73GB1J474J	CHIP R 470K J 1/16W	
R372			RK73GB1J224J	CHIP R 220K J 1/16W	
R373			RK73GB1J684J	CHIP R 680K J 1/16W	
R374			RK73GB1J184J	CHIP R 180K J 1/16W	
R375,376			RK73GB1J104J	CHIP R 100K J 1/16W	
R378			R92-1252-05	CHIP R 0 OHM J 1/16W	
R379			RK73GB1J104J	CHIP R 100K J 1/16W	
R401-403			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R404			RK73GB1J103J	CHIP R 10K J 1/16W	
R405			R92-1252-05	CHIP R 0 OHM J 1/16W	
R407			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R408			RK73GB1J100J	CHIP R 10 J 1/16W	
R409			RK73GB1J104J	CHIP R 100K J 1/16W	
R410			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R411			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R412,413			RK73GB1J103J	CHIP R 10K J 1/16W	
R414			RK73GB1J471J	CHIP R 470 J 1/16W	
R415			R92-1252-05	CHIP R 0 OHM J 1/16W	
R416			RK73GB1J471J	CHIP R 470 J 1/16W	
R417			RK73GB1J224J	CHIP R 220K J 1/16W	
R418,419			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R420			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R421			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R422			RK73GB1J103J	CHIP R 10K J 1/16W	
R423,424			RK73GB1J221J	CHIP R 220 J 1/16W	
R425,426			RK73GB1J473J	CHIP R 47K J 1/16W	
R427			RK73GB1J104J	CHIP R 100K J 1/16W	
R428			RK73GB1J473J	CHIP R 47K J 1/16W	
R429,430			RK73GB1J101J	CHIP R 100 J 1/16W	
R431			RK73GB1J104J	CHIP R 100K J 1/16W	
R432			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R433			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R434			R92-1252-05	CHIP R 0 OHM J 1/16W	
R435			RK73GB1J101J	CHIP R 100 J 1/16W	
R436			RK73GB1J124J	CHIP R 120K J 1/16W	
R437			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R438			RK73GB1J223J	CHIP R 22K J 1/16W	
R439			RK73GB1J473J	CHIP R 47K J 1/16W	
R440-442			RK73GB1J101J	CHIP R 100 J 1/16W	
R443			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R444			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R501			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R502			RK73GB1J271J	CHIP R 270 J 1/16W	
R503			RK73GB1J180J	CHIP R 18 J 1/16W	
R504			RK73GB1J271J	CHIP R 270 J 1/16W	
R505			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R506			RK73GB1J103J	CHIP R 10K J 1/16W	
R507			RK73GB1J100J	CHIP R 10 J 1/16W	
R509			RK73GB1J220J	CHIP R 22 J 1/16W	
R510			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R511			RK73FB2A470J	CHIP R 47 J 1/10W	
R512			RK73FB2A100J	CHIP R 10 J 1/10W	
R513			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R514			R92-1217-05	CHIP R 0 OHM	
R516			R92-0670-05	CHIP R 0 OHM	
R518			RK73EB2B330J	CHIP R 33 J 1/8W	
R519			RK73GB1J333J	CHIP R 33K J 1/16W	

K : TK-7100H K
M : TK-7100H M

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PARTS LIST

TX-RX UNIT (X57-6700-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R520			RK73GB1J183J	CHIP R 18K J 1/16W	
R521			RK73GB1J101J	CHIP R 100 J 1/16W	
R522			RK73EB2B181J	CHIP R 180 J 1/8W	
R523			RK73GB1J393J	CHIP R 39K J 1/16W	
R524			R92-1215-05	CHIP R 470 J 1/2W	
R525			RK73GB1J563J	CHIP R 56K J 1/16W	
R526			R92-1261-05	CHIP R 150 J 1/2W	
R527			RK73GB1J224J	CHIP R 220K J 1/16W	
R528,529			RK73GB1J471J	CHIP R 470 J 1/16W	
R530			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R531			RK73GB1J473J	CHIP R 47K J 1/16W	
R532,533			R92-1252-05	CHIP R 0 OHM J 1/16W	
R601,602			RK73GB1J223J	CHIP R 22K J 1/16W	
R603			RK73GB1J473J	CHIP R 47K J 1/16W	
R605			RK73GB1J153J	CHIP R 15K J 1/16W	
R606			RK73GB1J221J	CHIP R 220 J 1/16W	
VR1			R12-6427-05	VARIABLE RESISTOR (47K)	
D1-11			DA221	DIODE	
D31			ZSH5MA27	SURGE ABSORBER	
D32			1812L110PR	VARISTOR	
D61			02DZ18(X,Y)	ZENER DIODE	
D201			DAN222	DIODE	
D202			1SS372	DIODE	
D251			MA742	DIODE	
D301			MA742	DIODE	
D302,303			DAN222	DIODE	
D351-354			HVC350B	VARIABLE CAPACITANCE DIODE	
D401			MA2S111	DIODE	
D402			HZU5ALL	DIODE	
D403-406			MA2S304	VARIABLE CAPACITANCE DIODE	
D407			MA360	VARIABLE CAPACITANCE DIODE	
D408			MA2S111	DIODE	
D409			DAN235E	DIODE	
D501			1SS355	DIODE	
D502			DA221	DIODE	
D503			02DZ5.1(Y)	ZENER DIODE	
D602			MA4PH633	DIODE	
D603			XB15A709	DIODE	
D605			XB15A709	DIODE	
D606,607			MA742	DIODE	
D608			1SS355	DIODE	
IC31			KIA7808AF	ANALOG IC	
IC32,33			NJM78L05UA	BI-POLAR IC	
IC34,35			PST9140NR	MOS IC	
IC66			AT24C64N10SI18	ROM IC	
IC101		✻	30622MAA-B76GP	MPU	
IC161			M62363FP	MOS IC	
IC201			NJM2100V	MOS IC	
IC202			NJM2904V	MOS IC	
IC203			NJM2902V	MOS IC	
IC251			NJM2902V	MOS IC	
IC252	2B		LA4600	AF POWER IC	
IC301			TK14489V	BI-POLAR IC	
IC401			MB15A02	MOS IC	
IC402			UPB1509GV	BI-POLAR IC	
IC501			TA75W01FU	MOS IC	
Q1			2SK1824	FET	
Q31			2SA1641(S,T)	TRANSISTOR	
Q32			KRC102S	DIGITAL TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q33			2SA1745(6,7)	TRANSISTOR	
Q34			KRC102S	DIGITAL TRANSISTOR	
Q35			KTA1664(Y)	TRANSISTOR	
Q36			KRC102S	DIGITAL TRANSISTOR	
Q61			KRC404RTK	DIGITAL TRANSISTOR	
Q71			KRC414RTK	DIGITAL TRANSISTOR	
Q86,87			2SK1824	FET	
Q201			2SC4919	TRANSISTOR	
Q202			2SJ243	FET	
Q251			2SC4617(S)	TRANSISTOR	
Q252,253			2SK1824	FET	
Q254			DTC363EU	DIGITAL TRANSISTOR	
Q255			KRC102S	DIGITAL TRANSISTOR	
Q301			2SC2412K	TRANSISTOR	
Q302			2SC4617(S)	TRANSISTOR	
Q351			2SC5108(Y)	TRANSISTOR	
Q352,353			3SK255	FET	
Q354			2SK1824	FET	
Q402			2SA1832(GR)	TRANSISTOR	
Q403			2SC4738(GR)	TRANSISTOR	
Q404			2SC4649(N,P)	TRANSISTOR	
Q405,406			2SK508NV(K52)	FET	
Q407			2SJ243	FET	
Q408			KRX102U	TRANSISTOR	
Q410			2SC5108(Y)	TRANSISTOR	
Q411			2SC4649(N,P)	TRANSISTOR	
Q440			2SC4617(S)	TRANSISTOR	
Q501,502			2SC3357	TRANSISTOR	
Q503		✻	PD55003TR	FET	
Q504	2B		RD70HVF1-01	RF POWER FET	
TH97,98			B57331V2104J	THERMISTOR	
TH301			B57331V2104J	THERMISTOR	

K : TK-7100H K
M : TK-7100H M

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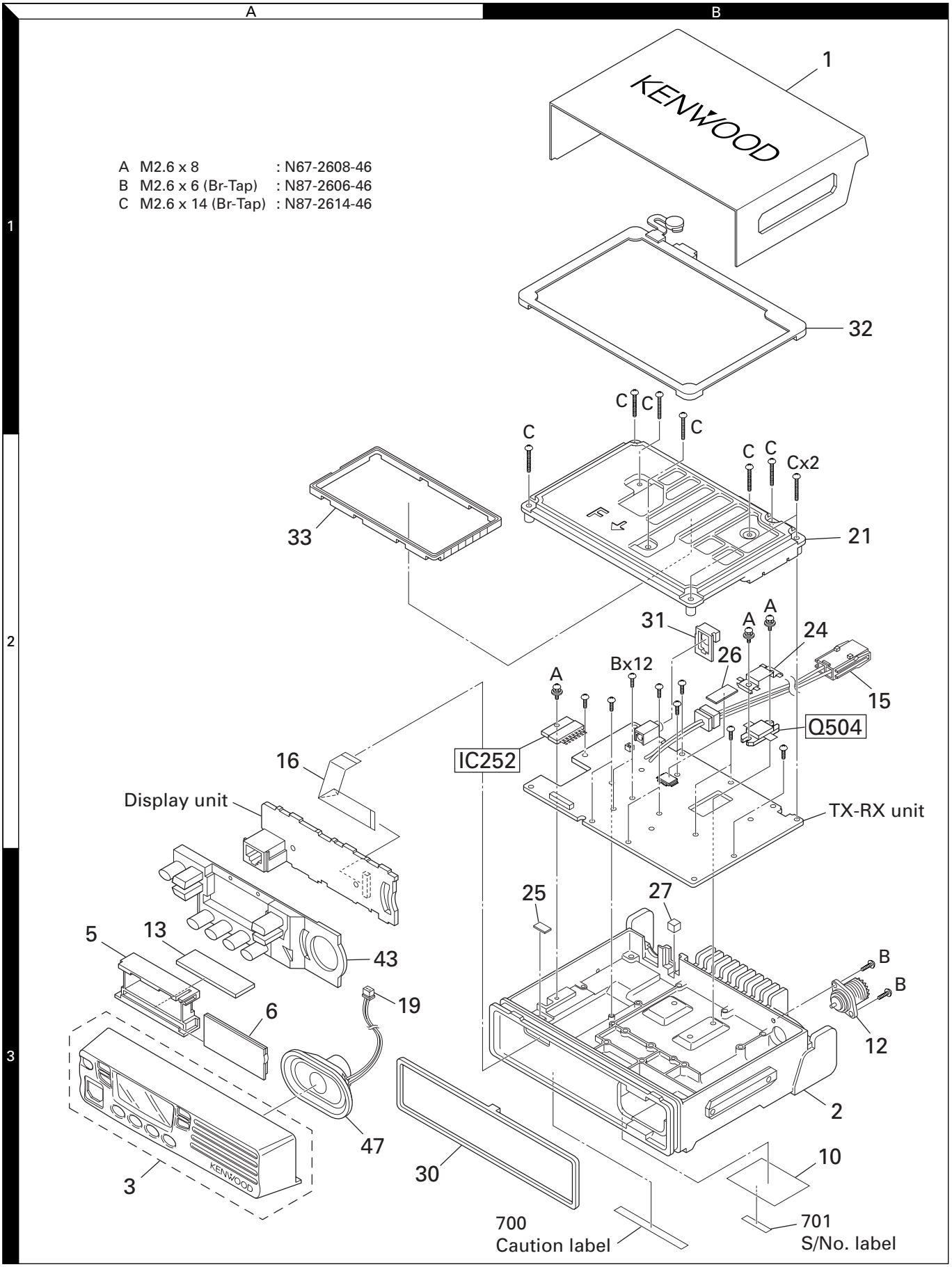
EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

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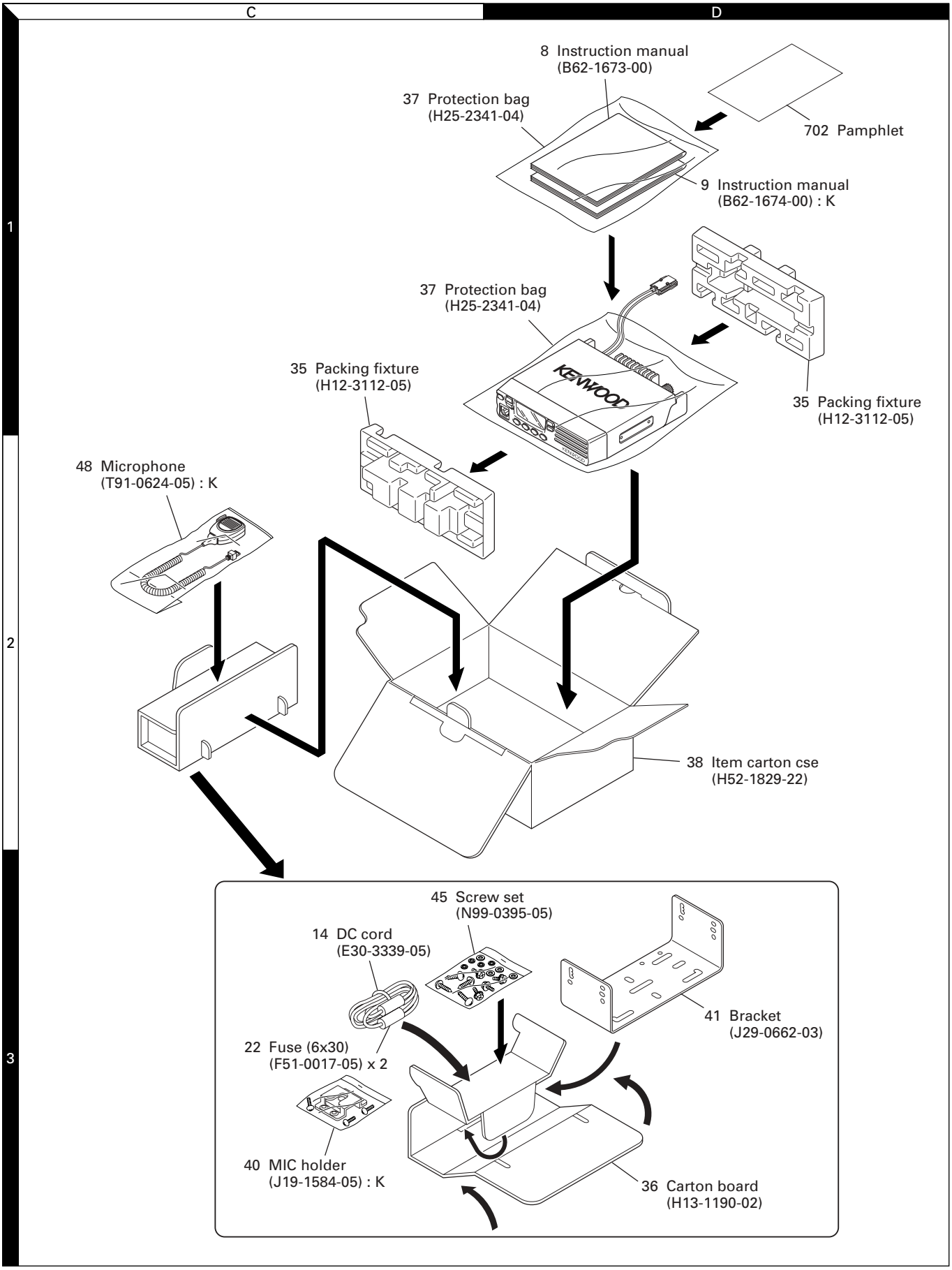
PACKING



Parts with the exploded numbers larger than 700 are not supplied.

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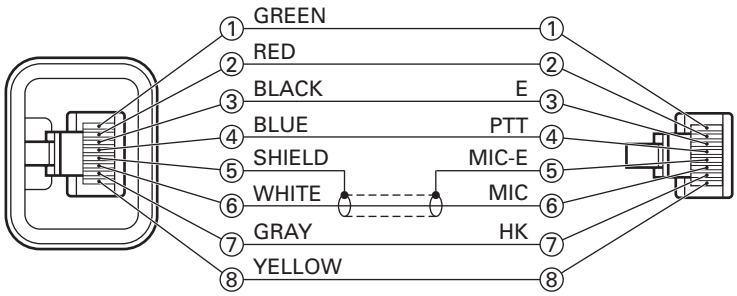
ADJUSTMENT

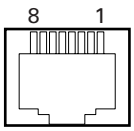
Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	136 to 175MHz Frequency modulation and external modulation –127dBm/0.1μV to greater than –7dBm/100mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 136 to 175MHz or more Vicinity of 100W
3. Deviation Meter	Frequency Range	136 to 175MHz
4. Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7. Ammeter		20A
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 3V
9. Audio Generator (AG)	Frequency Range Output	20Hz to 20kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. 4Ω Dummy Load		Approx. 4Ω, 10W or more
12. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9 to 17V) Useful if ammeter requipped
13. Spectrum Analyzer	Center frequency	50KHz to 600MHz
14. Tracking Generator	Output Voltage	100mV or more

Test cable for microphone input (E30-3360-08)



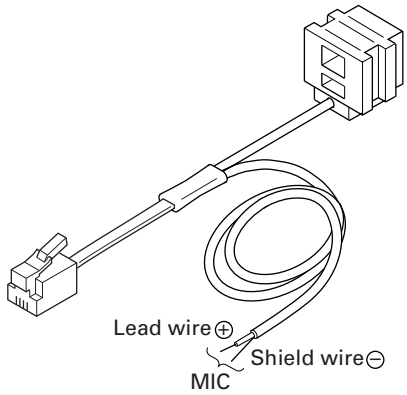
MIC connector (Front view)



1 : BLC
2 : PSB
3 : E
4 : PTT
5 : ME
6 : MIC
7 : HOOK
8 : CM

Tuning cable (E30-3383-05)

Adapter cable (E30-3383-05) is required for injecting an audio if PC tuning is used.
See "PC Mode" section for the connection.



Test Frequency (MHz)

Channel	TX	RX
1 : Center	160.100	160.050
2 : Low	146.100	146.050
3 : High	173.900	173.950
4	160.000	160.000
5	160.200	160.200
6	160.400	160.400

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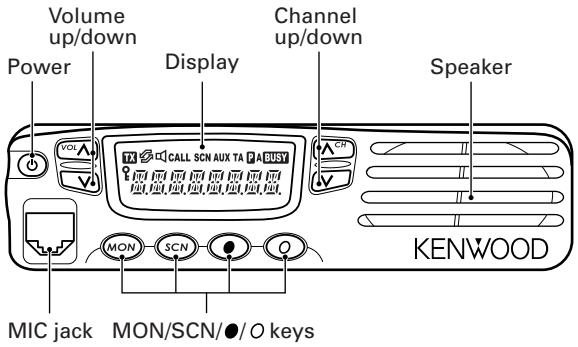
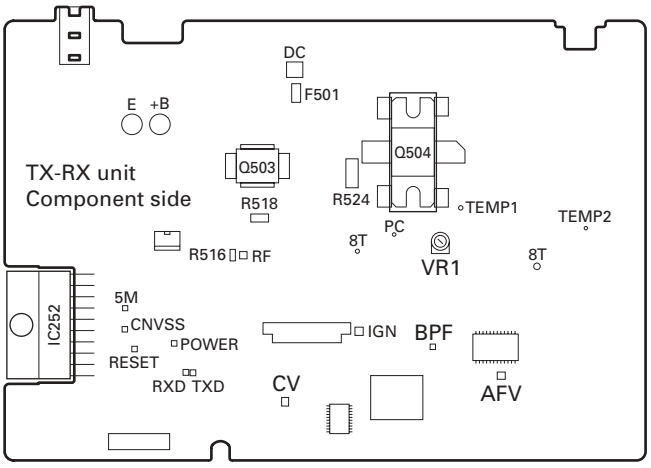
ADJUSTMENT

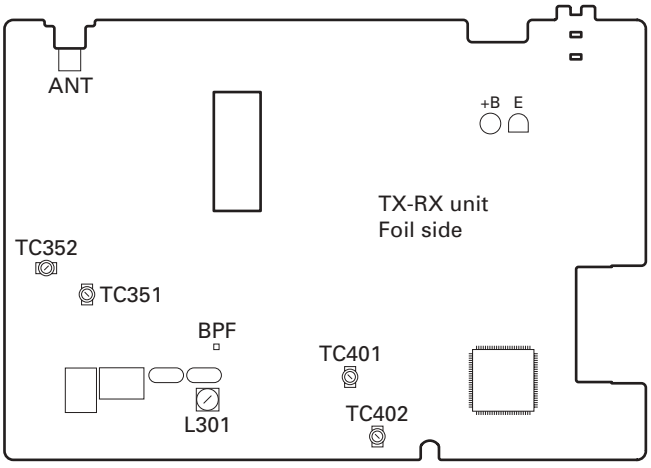
Adjustment Location

■ Switch



■ Adjustment Points





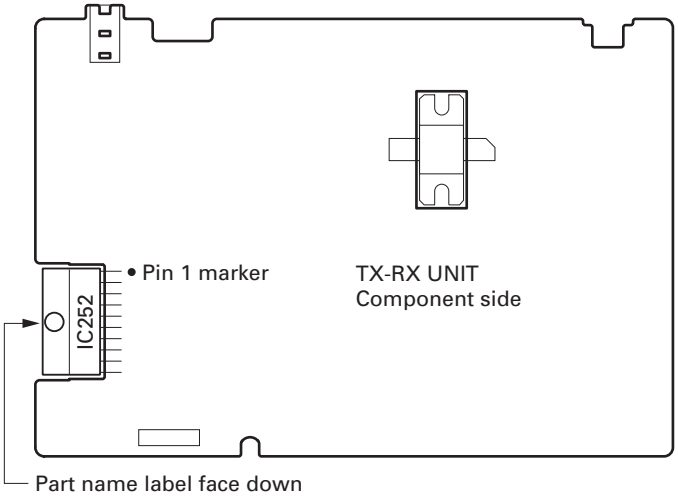
■ Notes

• EEPROM

The tuning data (Deviation, Squelch, etc.) for the EEPROM, is stored in memory. When parts are changed, re-adjust the transceiver.

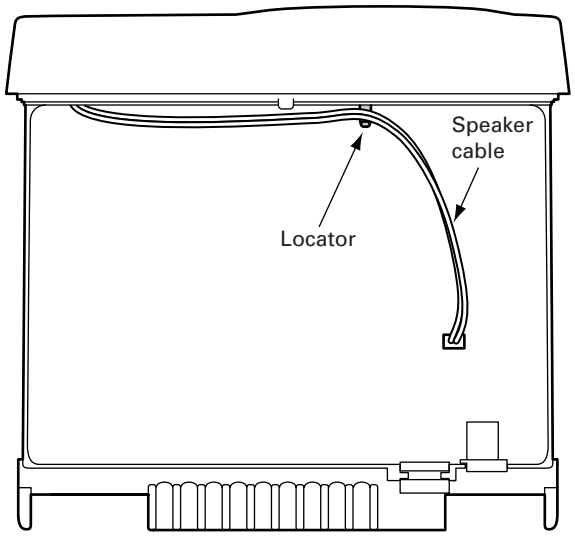
• AF PA IC (IC252)

How to mounting the IC252.



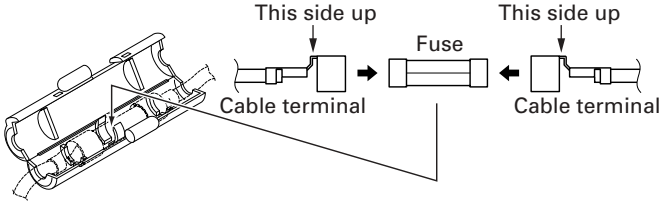
• Speaker Cable

The speaker cable should be formed before mounting the shield cover as below.



• Fuse

To mount the fuse, the cable terminal direction must be as follow.



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ADJUSTMENT

PCB Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) Power supply voltage DC Power supply terminal : 13.6V					
2. VCO lock voltage*	1) CH : TX high	Digital voltmeter	CV	TC402	5.5V	±0.1V
	2) CH : RX high			TC401	5.5V	±0.1V
	3) CH : TX low				Check	0.7V or more
	4) CH : RX low					
3. IF coil	1) CH : RX center (Wide) 2) SSG output : –53dBm (501µV) Mod : 1kHz, Dev : 3kHz	SSG Digital voltmeter	AFV	L301	3.25~3.35V (DC)	
4. RF bandpass filter	1) CH : RX center (Wide) CH : RX low (Wide) CH : RX high (Wide) 2) Tra generator output : –30dBm Connect the spectrum analyzer to BPF terminal	Tra generator Spectrum analyzer	ANT BPF	TC351 TC352	Adjust the BPF waveform to Fig. 1	

*** Adjustment of TX VCO lock voltage**

1. Remove R516, F501, R518 and R524 (all on component side).
2. Remove PCB from chassis.
3. Transmit and check voltage at [CV] point.

Warning : Do not transmit if step "1." is not complete.

4. Adjust of voltage can be done by tuning TC402.

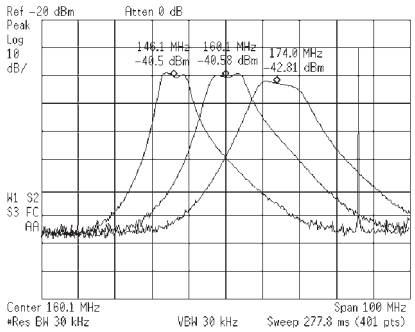

Fig. 1

Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Seisitivity	1) CH : RX low (Wide/Narrow) CH : RX center (Wide/Narrow) CH : RX high (Wide/Narrow) 2) SSG output : –118dBm (0.28µV) (Wide) : –116dBm (0.35µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)	SSG Oscilloscope AF V.M Distortion meter	ANT EXT. SP		Check	SINAD : 12dB or higher
2. Squelch 9	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : –115dBm (0.4µV) (Wide) : –114dBm (0.45µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)			PC key	Adjust to open the squelch	
3. Squelch 1	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : –120dBm (0.22µV) (Wide) : –119dBm (0.25µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)					

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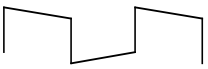
ADJUSTMENT

Transmitter Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Frequency	1) CH : TX center 2) Transmit	Frequency counter	ANT	PC key	Adjust to center frequency	Within ±100Hz
2. Maximum power limitting	1) CH : TX high 2) Transmit	Power meter		VR1	53W	±1W
3. High power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit			PC key	50W	±1.0W
4. Low power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit				25W	±1.0W
5. DQT balance	1) CH : TX low (Wide) CH : TC center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			Adjust the waveform as below 	
6. MAX balance	1) CH : TX low (Wide) CH : TC center (Wide/Narrow) CH : TX high (Wide) 2) AG : 1kHz/50mV 3) Transmit	Modulation analyzer or Linear detector (LPF : 15kHz) Oscilloscope AG AF V.M	ANT MIC		±4.0kHz (Wide) ±2.0kHz (Narrow) According to the large +, –	±50Hz
7. MIC sensitivity	1) CH : TX center (Wide/Narrow) 2) AG : 1kHz/5mV 3) Transmit				Check	±3kHz±0.2kHz (Wide) ±1.5kHz±0.1kHz (Narrow)
8. DQT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
9. QT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit				±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
10. DTMF/MSK deviation	1) CH : TX center (Wide/Narrow) 2) Transmit				±3.0kHz (Wide) ±1.5kHz (Narrow)	±0.2kHz

If normal power is not obtained, please follow the step below

Open the shielding cover (upper), and screw 3 locations around ANT pin.

1. Switch off the transceiver.
   Impedance of Final FET (Q504) and Drive FET (Q503) can be measured easily using DVM Ω mode.
   Normal condition – Gate : 20kΩ~50kΩ, Drain : 1MΩ~2MΩ
   The above impedance values are rough estimations.
2. Switch on the transceiver. Check the voltage at F501 output point.
   The voltage is around 13.6V in receiving condition. The voltage will be 12.6V~ in transmitting condition. If found 0V at this point then F501 is broken.
3. Remove R516.
4. Connect 50Ω load at the ANT location.
   Transmit and check current drain at High power mode.
   If the current drain is less than 1A, then Final FET is broken.
   If the current drain is less than 5.0A, short the Drive FET gate to ground, and check the current drain.
   If the current drain is not 0.1A less than the original value, then the Drive FET is broken.
5. Check input power level at Drive FET gate location.
   Connect the wire to [RF] location.
   Transmit and check for power to be within the range of 0.3W~0.6W.
   If power found is less than 0.3W, check the circuit before the Drive FET.

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TERMINAL FUNCTION

CN2

No.	Name	I/O	Function
1	SB	O	Battery voltage DC supply
2	NC	-	-
3	GND	O	Ground
4	NC	-	-
5	FNC1	I/O	Programable I/O (programmed by FPU)
6	FNC2	I/O	Programable I/O (programmed by FPU)
7	FNC3	I/O	Programable I/O (programmed by FPU)
8	FNC4	I/O	Programable I/O (programmed by FPU)
9	FNC5	I/O	Programable I/O (programmed by FPU)
10	FNC6	I/O	Programable I/O (programmed by FPU)
11	FNC7	I/O	Programable I/O (programmed by FPU)
12	FNC8	I/O	Programable I/O (programmed by FPU)

■ Function Port Assignment

	KDS100, KGP-2A/2B	
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	Data Channel	I
FNC4	PTT	I
FNC5	Carrier Operated Relay	O
FNC6	Audio Mute	I
FNC7	Mic Mute	I
FNC8	TX Relay	O
	SmarTrunk II	
	Name	I/O
FNC1	TXD	O
FNC2	RXD	I
FNC3	Reset	O
FNC4	-	-
FNC5	-	-
FNC6	-	-
FNC7	-	-
FNC8	-	-
	Scrambler	
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	TX Relay	O
FNC4	Scrambler	O
FNC5	Scrambler Code1 (1)	O
FNC6	Scrambler Code2 (2)	O
FNC7	Scrambler Code3 (4)	O
FNC8	Scrambler Code4 (8)	O

Port Function is Low Active. (Exclude : Scrambler Code)

CN3

No.	Name	I/O	Function
1	IGN	I	Ignition sens input
2	DATAI	I	External transmit signal input
3	DETO	O	FM detector output
4	TXAFI	I	TX audio input from scrambler board
5	TXAFO	O	TX audio output to scrambler board
6	EMGMIC	I	Emergency MIC input (1kHz/1.2mVrms)
7	RXAFO	O	RX audio output to scrambler board
8	ALTI	I	External alert tone signal input
9	RXAFI	I	RX audio input from scrambler board
10	5C	O	5V DC power supply (50mA MAX)
11	8C	O	8V DC power supply (50mA MAX)

CN4

No.	Name	I/O	Function
1	GND	O	Ground
2	NC	-	-
3	NC	-	-
4	NC	-	-
5	FNC2	I/O	Programable I/O (programmed by FPU)
6	NC	-	-
7	NC	-	-
8	FNC3	I/O	Programable I/O (programmed by FPU)
9	FNC1	I/O	Programable I/O (programmed by FPU)
10	NC	-	-
11	5C	O	5V DC power supply (50mA MAX)
12	NC	-	-
13	DATAI	I	External transmit signal input
14	DETO2	O	FM detector output
15	ALTI	I	External alert tone signal input
16	NC	-	-
17	NC	-	-
18	NC	-	-
19	NC	-	-
20	GND	O	Ground

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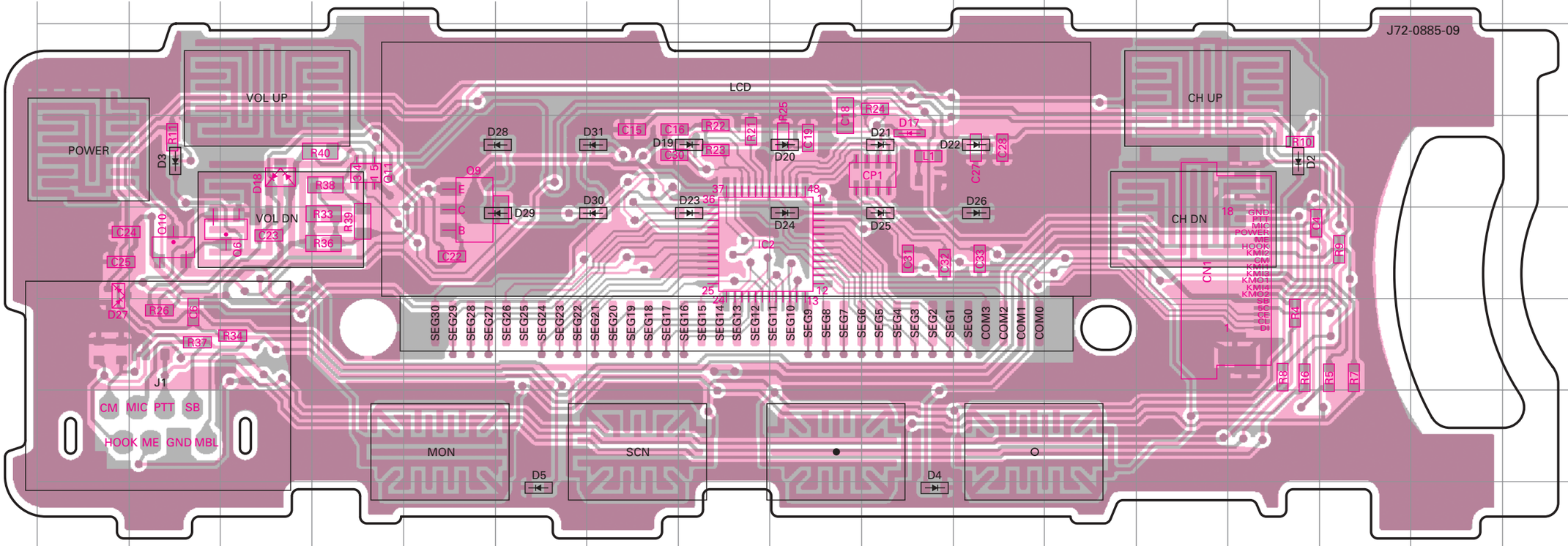
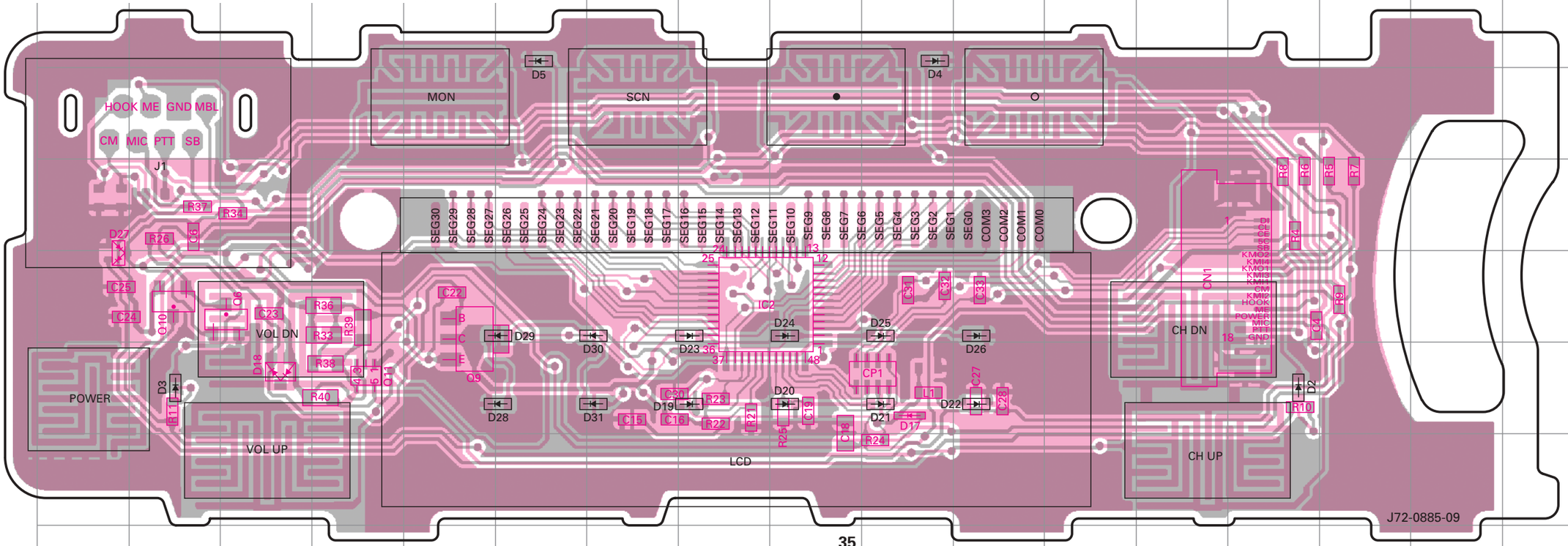
PC BOARD TK-7100H

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)



Ref. No.	Address	Ref. No.	Address
IC2	4H	D20	3I
Q6	4C	D21	3J
Q9	4E	D22	3K
Q10	4B	D23	4H
Q11	3D	D24	4L
D2	3N	D25	4J
D3	3B	D26	4K
D4	7J	D27	4A
D5	7F	D28	3F
D17	3J	D29	4F
D18	3C	D30	4G
D19	3H	D31	3G

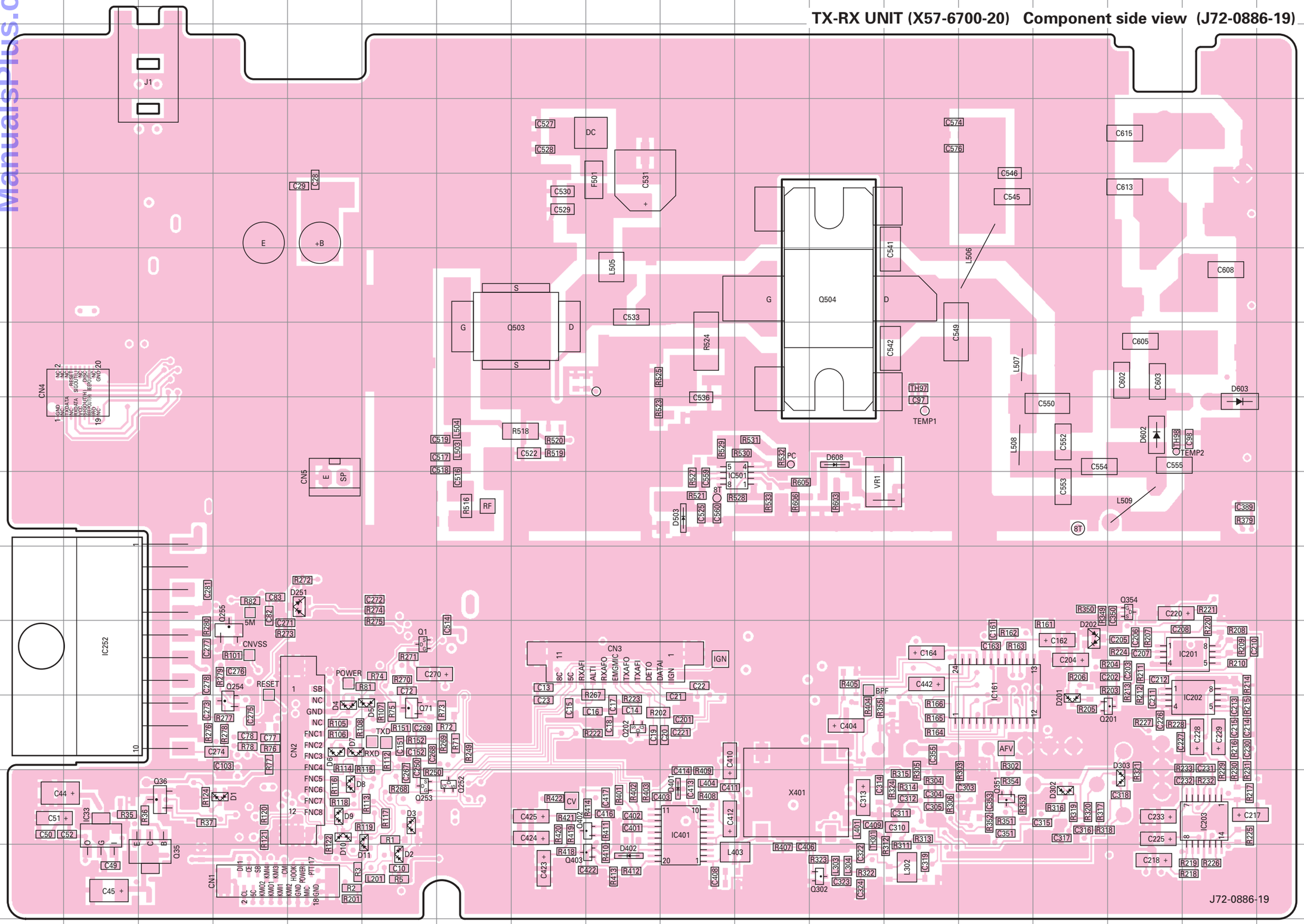
DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)



Ref. No.	Address	Ref. No.	Address
IC2	11H	D20	12I
Q6	11C	D21	12J
Q9	11E	D22	12K
Q10	11B	D23	11H
Q11	12D	D24	11I
D2	12N	D25	11J
D3	12B	D26	11K
D4	8J	D27	11A
D5	8F	D28	12F
D17	12J	D29	11F
D18	12C	D30	11G
D19	12H	D31	12G

TK-7100H PC BOARD

TX-RX UNIT (X57-6700-20) Component side view (J72-0886-19)



Ref. No.	Address
IC33	12B
IC161	10N
IC201	10Q
IC202	11Q
IC203	12Q
IC252	10B
IC401	12J
IC501	8K
Q1	10F
Q35	13C
Q36	12C
Q71	11F
Q201	11P
Q202	11I
Q252	12G
Q253	12F
Q254	11D
Q255	10D
Q302	13L
Q351	12N
Q354	9P
Q402	12I
Q403	13I
Q503	6H
Q504	5L
D1	12D
D2	13F
D3	12F
D4	11E
D5	11F
D6	11E
D7	11E
D8	12E
D9	12E
D10	12E
D11	12F
D201	11O
D202	10O
D251	9E
D302	12O
D303	12P
D401	12J
D402	13I
D503	8J
D602	7P
D603	7Q
D608	7L

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

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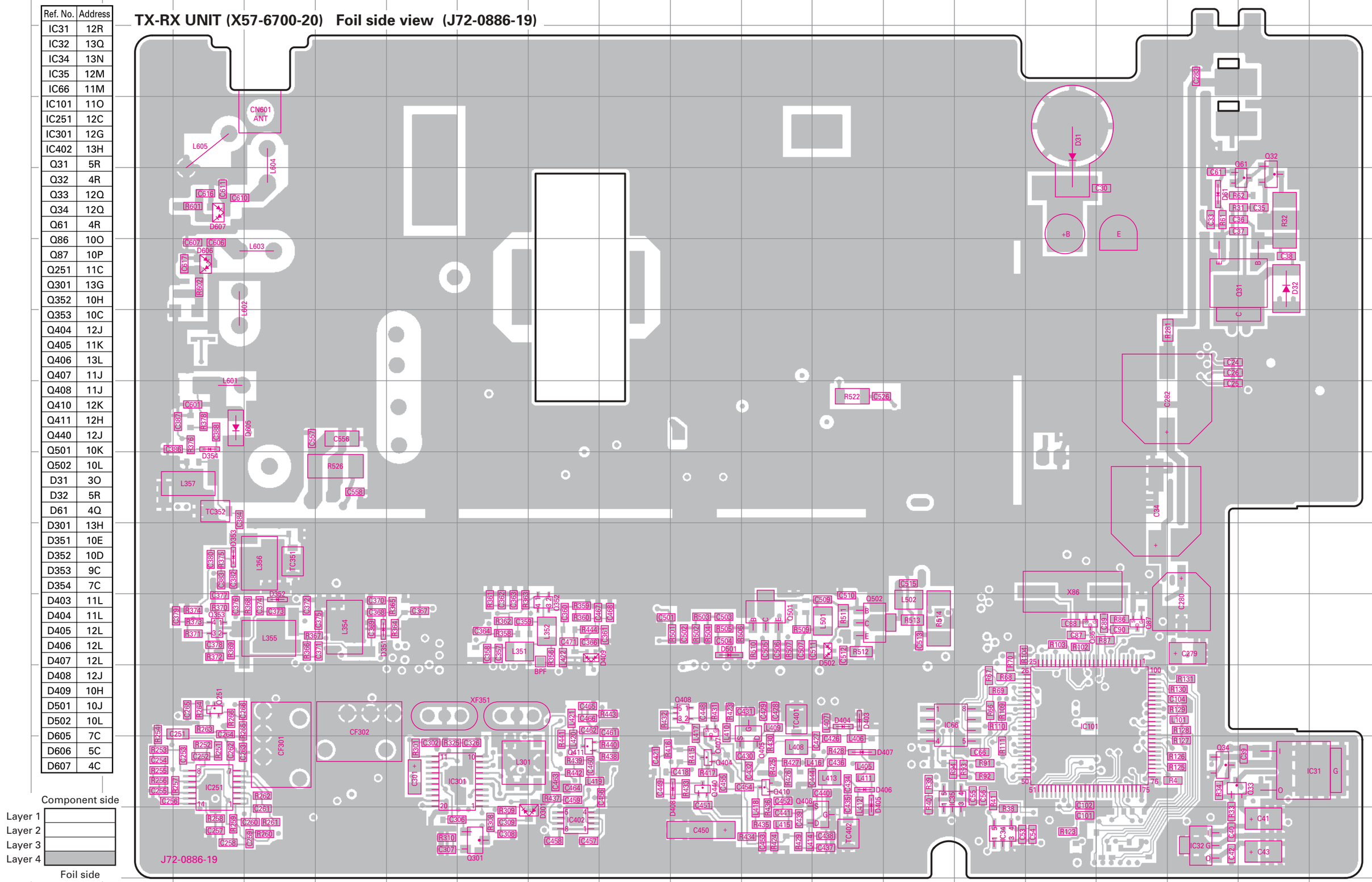
PC BOARD TK-7100H

TX-RX UNIT (X57-6700-20) Foil side view (J72-0886-19)

Ref. No.	Address
IC31	12R
IC32	13Q
IC34	13N
IC35	12M
IC66	11M
IC101	11O
IC251	12C
IC301	12G
IC402	13H
Q31	5R
Q32	4R
Q33	12Q
Q34	12Q
Q61	4R
Q86	10O
Q87	10P
Q251	11C
Q301	13G
Q352	10H
Q353	10C
Q404	12J
Q405	11K
Q406	13L
Q407	11J
Q408	11J
Q410	12K
Q411	12H
Q440	12J
Q501	10K
Q502	10L
D31	3O
D32	5R
D61	4Q
D301	13H
D351	10E
D352	10D
D353	9C
D354	7C
D403	11L
D404	11L
D405	12L
D406	12L
D407	12L
D408	12J
D409	10H
D501	10J
D502	10L
D605	7C
D606	5C
D607	4C


CN601 ANT
L605
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L601
L357
TC352
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TC351
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BPF
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IC301
IC402
IC66
IC101
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X86
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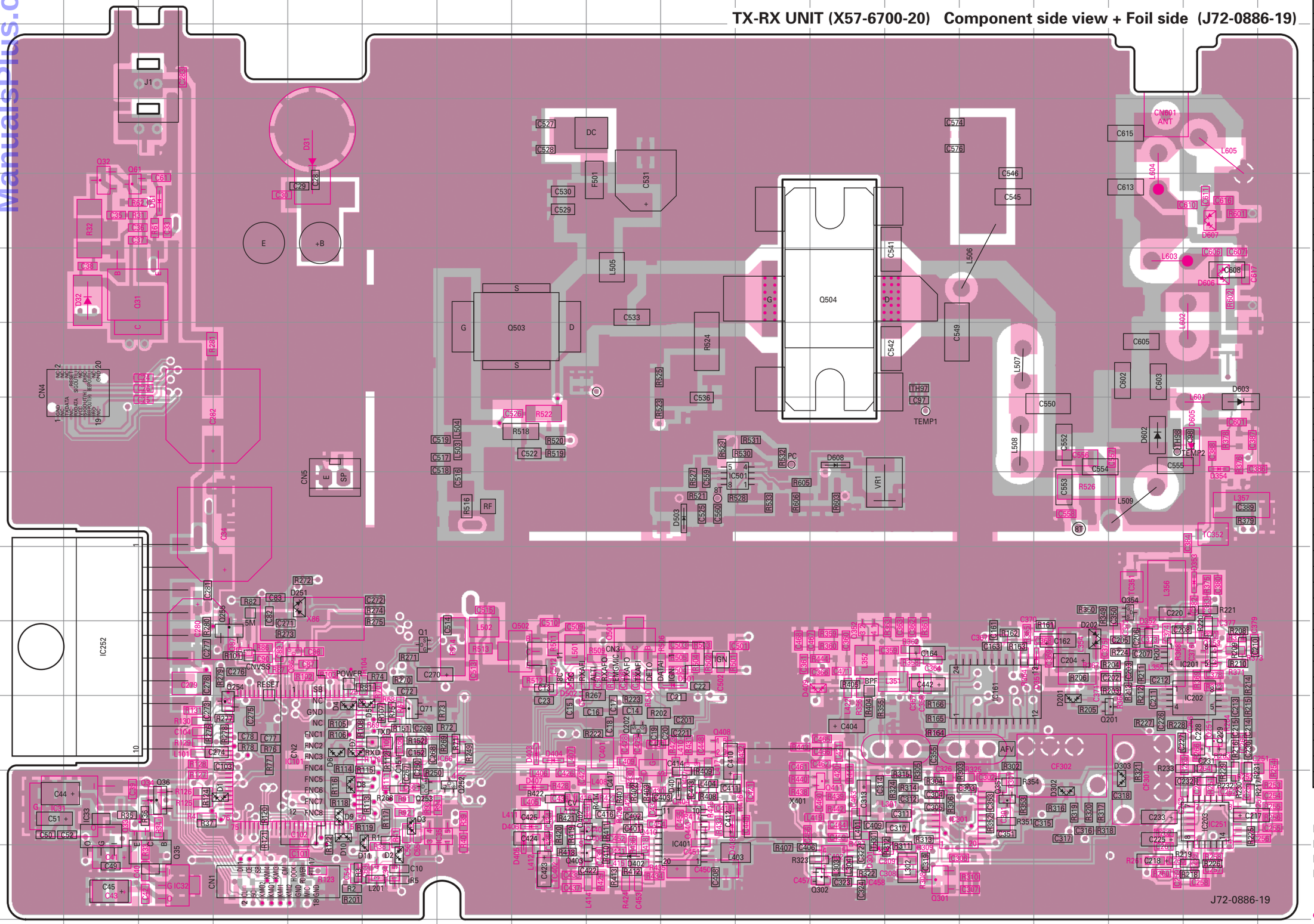
C100

TK-7100H PC BOARD

TX-RX UNIT (X57-6700-20) Component side view + Foil side (J72-0886-19)



Ref. No.	Address	Ref. No.	Address
IC31	12B	Q411	12L
IC32	13C	Q440	12J
IC33	12B	Q501	10I
IC34	13F	Q502	10H
IC35	12G	Q503	6H
IC66	11G	Q504	5L
IC101	11E	D1	12D
IC161	10N	D2	13F
IC201	10Q	D3	12F
IC202	11Q	D4	11E
IC203	12Q	D5	11F
IC251	12Q	D6	11E
IC252	10B	D7	11E
IC301	12N	D8	12E
IC401	12J	D9	12E
IC402	13L	D10	12E
IC501	8K	D11	12F
Q1	10F	D31	3E
Q31	5B	D32	5B
Q32	4B	D61	4C
Q33	12C	D201	11O
Q34	12C	D202	10O
Q35	13C	D251	9E
Q36	12C	D301	13L
Q61	4B	D302	12O
Q71	11F	D303	12P
Q86	10E	D351	10O
Q87	10D	D352	10P
Q201	11P	D353	9Q
Q202	11I	D354	7Q
Q251	11Q	D401	12J
Q252	12G	D402	13I
Q253	12F	D403	11H
Q254	11D	D404	11H
Q255	10D	D405	12H
Q301	13M	D406	12H
Q302	13L	D407	12H
Q351	12N	D408	12J
Q352	10L	D409	10L
Q353	10Q	D501	10J
Q354	9P	D502	10H
Q402	12I	D503	8J
Q403	13I	D602	7P
Q404	12J	D603	7Q
Q405	11I	D605	7Q
Q406	13H	D606	5Q
Q407	11J	D607	4Q
Q408	11J	D608	7L
Q410	12I		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

● Connect 1 and 4

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SCHEMATIC DIAGRAM TK-7100H

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

X57-6700-20 TX-RX UNIT

X54-3430-20 DISPLAY UNIT

X54-3430-20

D2-5,19-26,28-31	B30-2005-05	Q6	KRC102S	IC2	LC75834W
D17	MA8251I1	Q19	XRA2256		
D18	B30-2012	Q11	RN47A4		
D27	DA2E1				

X57-6700-20

D1-11,502	DA221	Q1,86,87,252,253,354	2SK1824	IC31	KIA7809AF
D32	2SK8MA27	Q33	2SA1641(S,T)	IC32,33	NJM78L05UA
D37	1SV262	Q34,36,255	KRC102S	IC34,35	PST9140NR
D61	1SS133	Q55	2SA1745(6,7)	IC66	AT24C64N10SI18
D201,302,303	DAN222	Q61	KTA1664(Y)	IC101	30620MAA-B760JP
D202	1SS372	Q71	KRC402R/TK	IC161	M62363FP
D251-301,606,607	MA742	Q201	KRC414R/TK	IC201	NJM2100V
D351-354	HVC350B	Q202-407	2SC4919	IC202	NJM2904V
D401,408	MAZS111	Q251,302,440	2SJ243	IC203,251	NJM2902V
D402	HZU5ALL	Q351	2SC4617(S)	IC252	LA4600
D404-406	MA3300	Q352	2SA1774(R,S)	IC351	TA8132BFG
D407	MA360	Q353	2SC2412K	IC401	MB15A02
D409	DAN235E	Q354	2SC5108(Y)	IC402	UPB1509GV
D501,608	1SS355	Q552,553	2SK255	IC501	TA79W01FU
D503	02DZ5.1(Y)	Q402	2SA1832(GR)		
D602	MA4PH633	Q403	2SC4738(GR)		
D603,605	XB15A709	Q404,411	2SC4649(N,Y)		
		Q405-406	2SK508NV(KZ)		
		Q408	KRX102U		
		Q502	2SB1132(Q,R)		
		Q503	PDS5003TR		
		Q504	IRO70HVF1-01		

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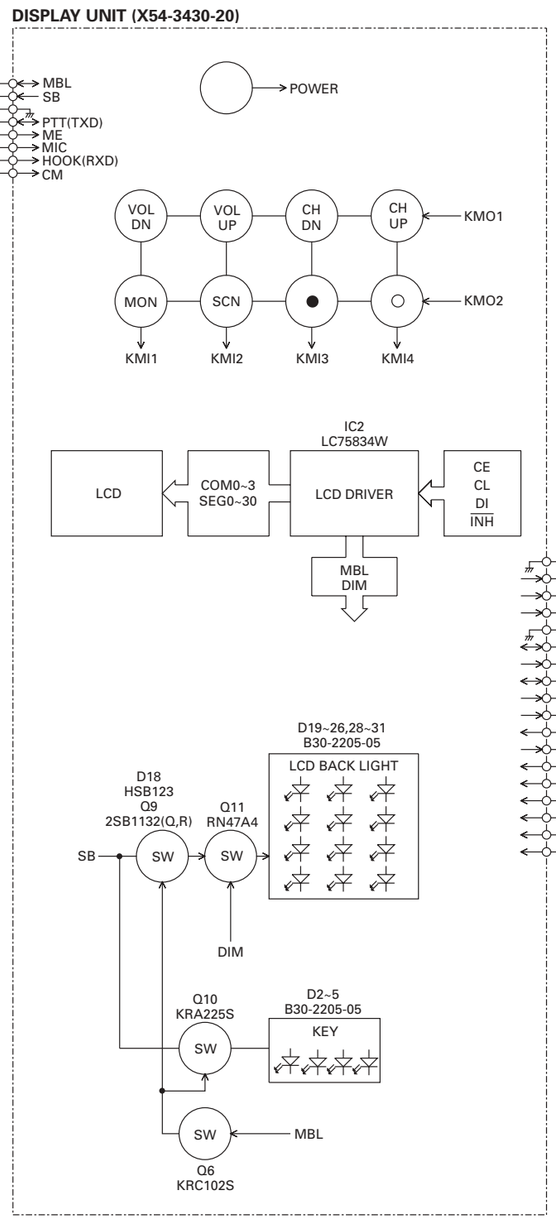
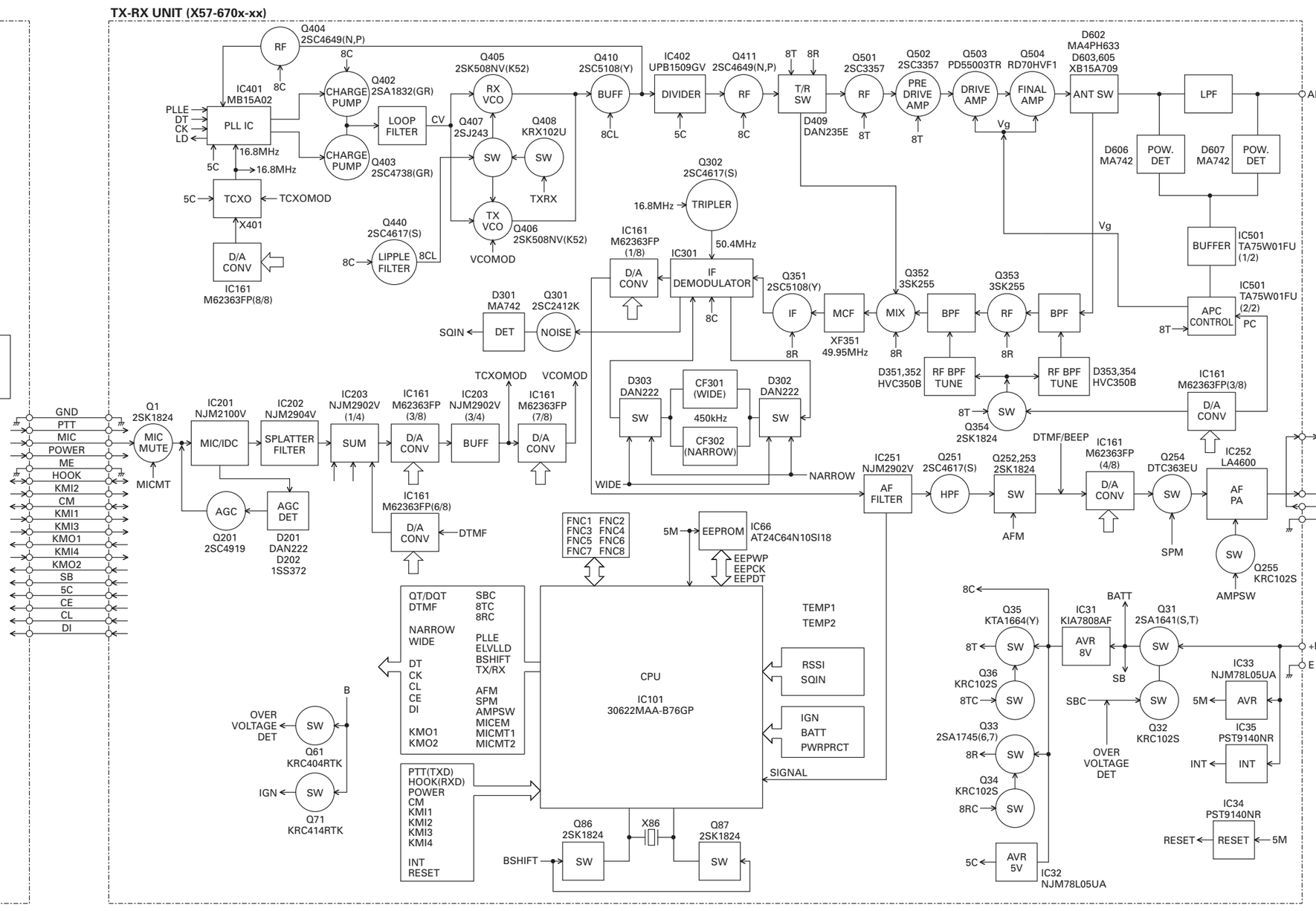
BLOCK DIAGRAM





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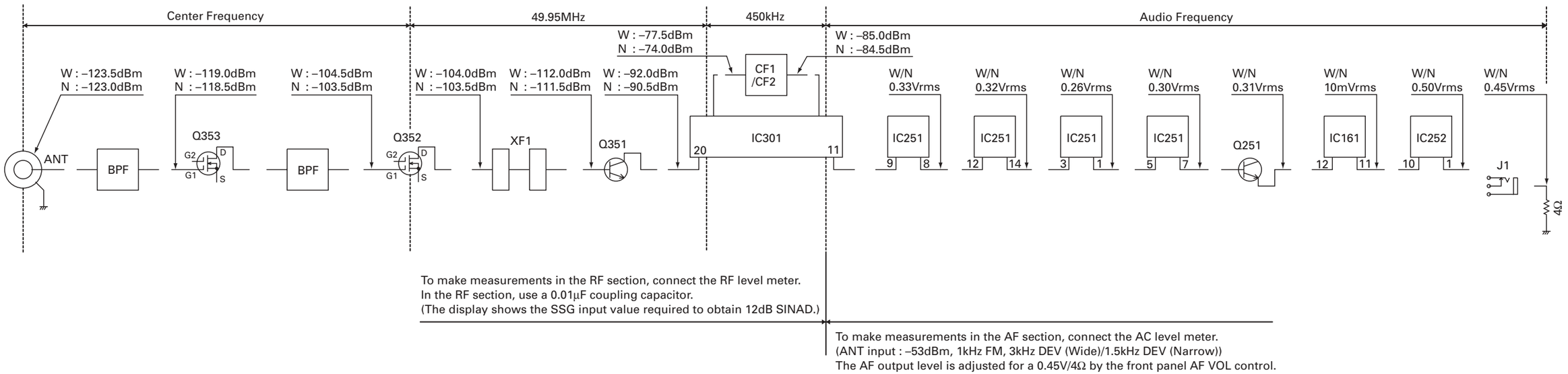
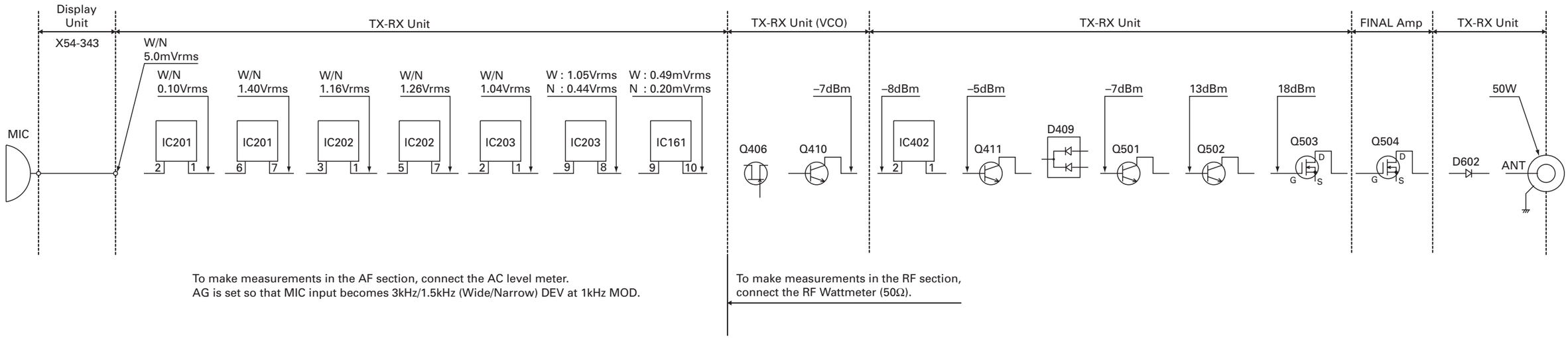
LEVEL DIAGRAM

Receiver Section



Transmitter Section



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SPECIFICATIONS

GENERAL

Frequency Range	146 to 174MHz
Channels / Groups	64CH / 8GRP
Channel Spacing	Wide : 25kHz Narrow : 12.5kHz
PLL Channel Stepping	2.5, 5, 6.25, 7.5kHz
Operating Voltage	13.6V DC ±15%
Current Drain	Less than 0.4A on standby Less than 1.0A on receive Less than 14.0A on transmit
Operating Temperature Range	–30°C to +60°C
Dimensions & Weight	6.30 (160) W x 1.70 (43) H x 5.40 (137) D inch (mm), 2.60 lbs (1.18kg)
Channel Frequency Spread	28MHz

RECEIVER (Measurements made per EIA standard EIA/TIA-603)

Sensitivity (12dB SINAD)	Wide : 0.28µV Narrow : 0.35µV
Selectivity	Wide : 75dB Narrow : 65dB
Intermodulation	Wide : 70dB Narrow : 60dB
Spurious Response	75dB
Audio Power Output	4.0W
Frequency Stability	±2.5ppm

TRANSMITTER (Measurements made per EIA standard EIA/TIA-603)

RF Power Output	High : 50W Low : 25W
Spurious and Harmonics	70dB
Modulation	Wide : 16K0F3E Narrow : 11K0F3E
FM Noise	Wide : 45dB Narrow : 40dB
Audio Distortion	Less than 3%
Frequency Stability	±2.5ppm

TK-7100H

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