

TK-805D

SERVICE MANUAL

KENWOOD
 MantasPlus.com

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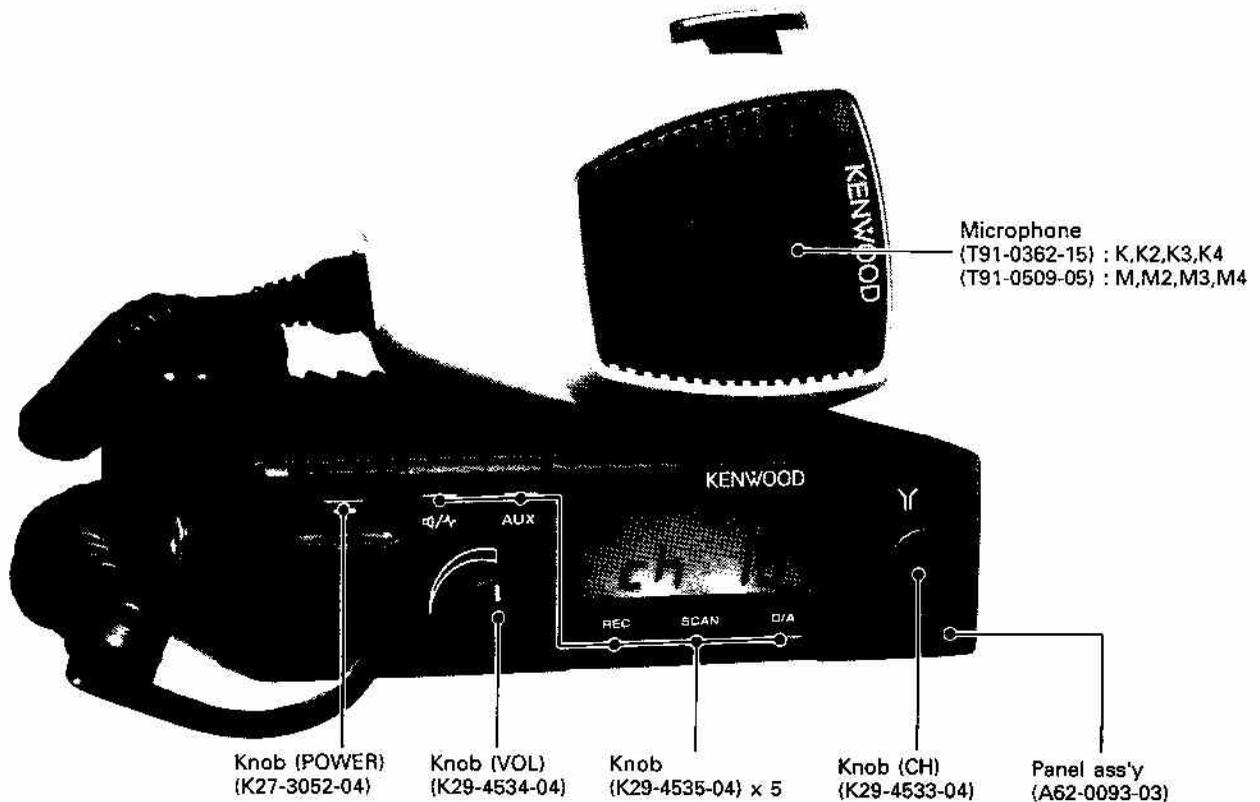


Photo is K,K2,K3,K4 type.

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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 the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These 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, or 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 verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by a qualified technician only.

FCC COMPLIANCE AND TYPE ACCEPTANCE NUMBERS

Type acceptance number	Frequency range	Compliance
ALHTK-805D-1	450~470MHz	Parts 22, 74, 90 and 95
ALHTK-805D-2	470~490MHz	Parts 22, 74 and 90
ALHTK-805D-3	490~512MHz	Parts 22, 74 and 90
ALHTK-805D-4	406~430MHz	Parts 22, 74 and 90

1. POWER-UP

To turn on the radio, press the power switch (IO). The channel indicator will illuminate to indicate power is ON.

2. TO RECEIVE

Operation	Procedure
1. Disable QT, DQT (if so equipped)	Remove microphone from its hanger.
2. Unsquench radio	Press the MONITOR switch ( / ). Keep the key down for 2 seconds.
3. Set VOLUME control	Adjust VOLUME control for a normal listening level.
4. Set SQUELCH control	Press the MONITOR switch ( / ) again.
5. Select operating frequency. (Multichannel models only)	Rotate CH selector switch to desired channel.
The radio will now receive all traffic on the selected channel.	
6. Enable QT, DQT (if so equipped)	Insert microphone back into its hanger.
You will now hear messages for your system only.	

3. TO TRANSMIT

Operation	Procedure
1. Disable QT, DQT (if so equipped)	Press the MONITOR switch ( / ) or remove microphone from hanger.
2. Select operating frequency. (Multichannel models only)	
3. LISTEN	DO NOT TRANSMIT if channel is in use.
4. Key transmitter	Press and hold the microphone PTT switch. The LCD on the front panel will indicating the transmitter is ON ().
5. Transmit message	Hold microphone at about 2 inches distance and speak at a normal voice level. Keep transmissions brief.
6. Receive reply	Release the microphone PTT switch.
7. Enable QT, DQT at end of the conversation. (if so equipped)	Press the MONITOR switch ( / ) and replace the microphone into its hanger.

GENERAL

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. QT 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 may also provide a good antenna location. If 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.

CAUTION:

If DC power is to be controlled by the vehicle ignition switch, a switching relay should be used to switch the positive power lead. The vehicle ignition switch then controls DC to the relay coil.

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.

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.

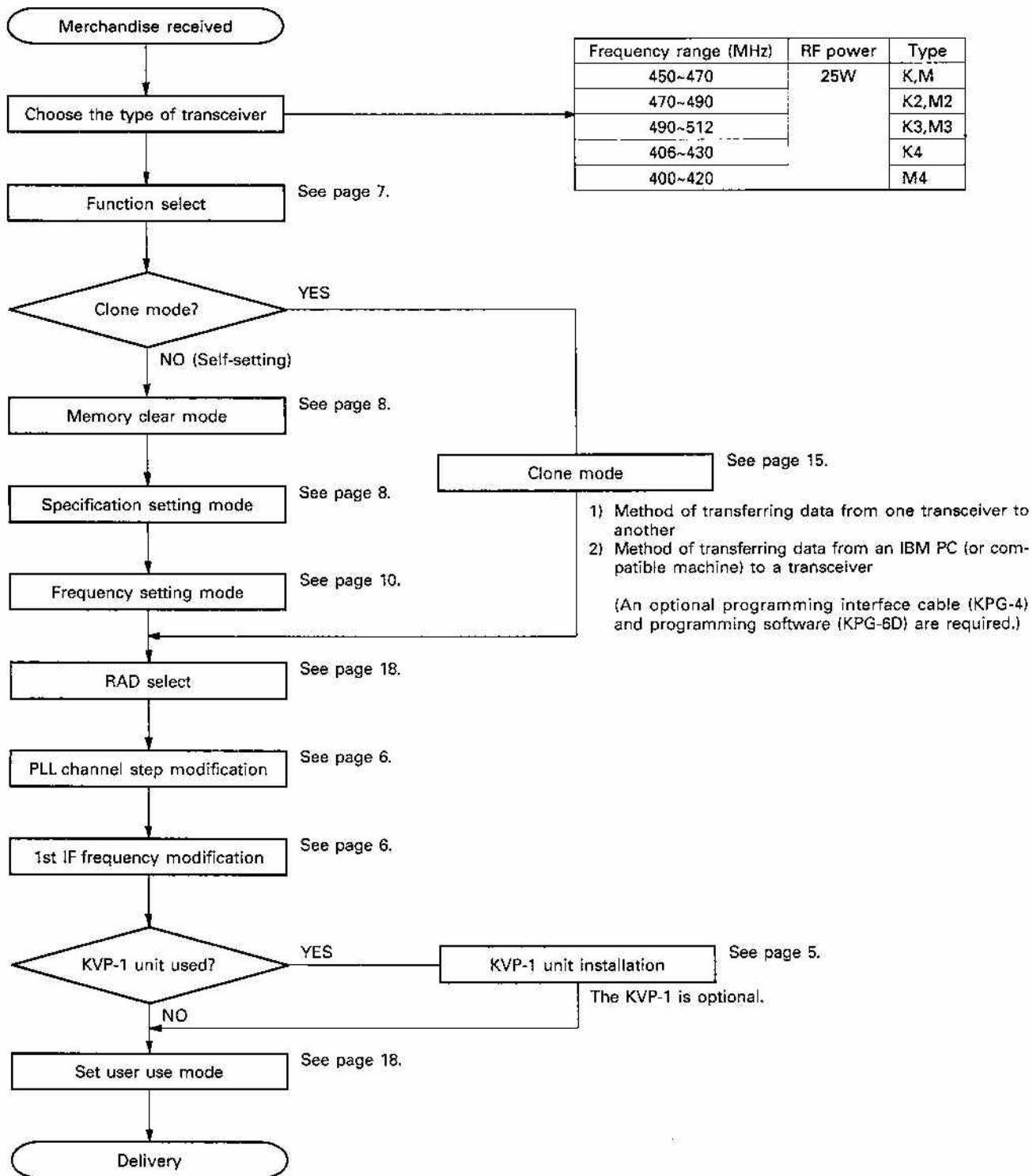
5-2. Radio location

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.

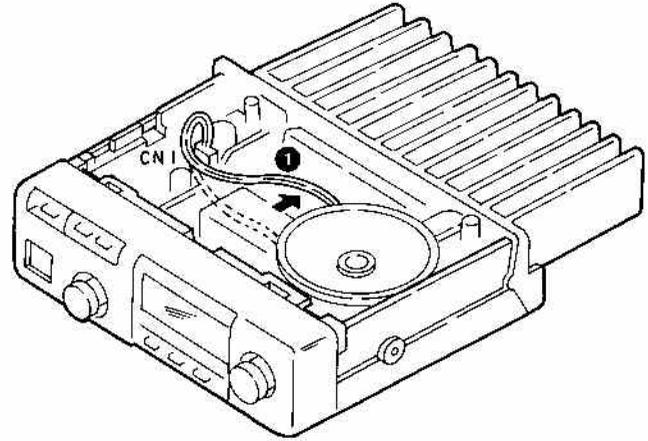
SYSTEM SET-UP



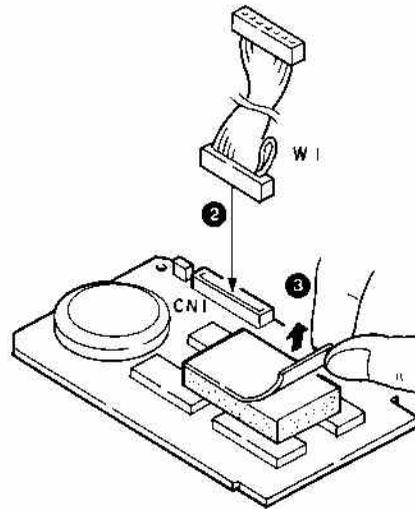
INSTALLATION

KVP-1 Unit Installation

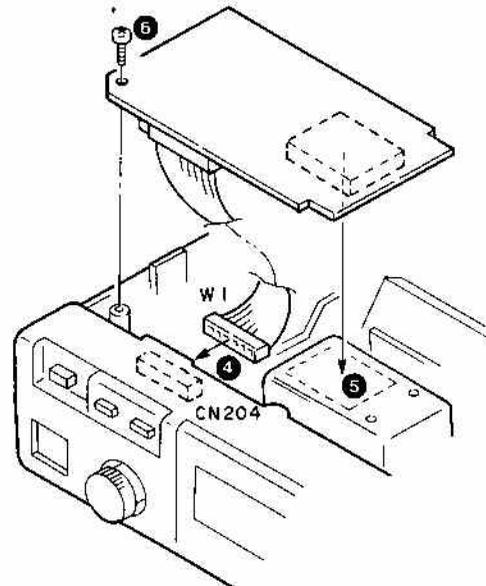
1. Remove the top cover of the radio.
2. Shift the connector with a lead going to the speaker toward the final module (1).



3. Insert the supplied W1 (E37-0151-05) connector (2) with lead into CN1 of the unit.
4. Remove the double-sided adhesive pad (3) from the unit.



5. Insert the W1 connector (4) with lead into CN204 of the radio.
6. Put the unit on the radio shield case (5) and secure it to the radio frame with a single screw (6).
7. Push the unit from above (7) until it touches the shield case.
8. Put the top cover of the radio back on.



MODIFICATION

PLL Channel Step Modification

The PLL channel step frequency can be changed to 5kHz (6.25kHz) or 10kHz (12.5kHz). (It can be changed in four steps.)

Switching between 5 and 6.25kHz or between 10 and 12.5kHz is done each time the SCAN key is pressed in the receive/transmit frequency setting mode. (see page 10.)

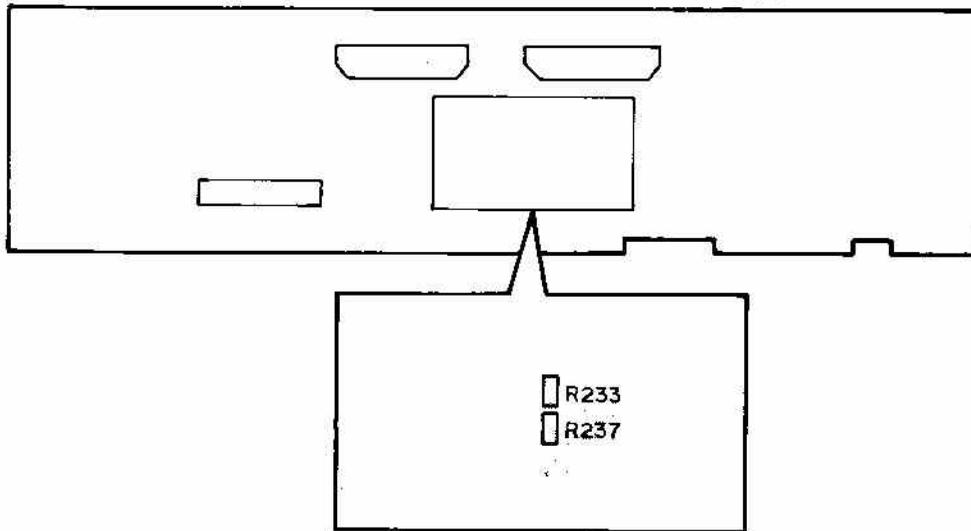
Switching between 5 (6.25) and 10 (12.5) kHz can be done by setting R233 (RK73FB2A473J: 47kΩ) and R237 (R92-0670-05: 0Ω) of the TX-RX unit (B/2).

	R233	R237
5KHz, 6.25KHz	X	○
10kHz, 12.5kHz	○	X

X: Removed, ○: Installed

(A chip is installed where R233 goes at the factory.)

TX-RX UNIT (B/2) Foil side view



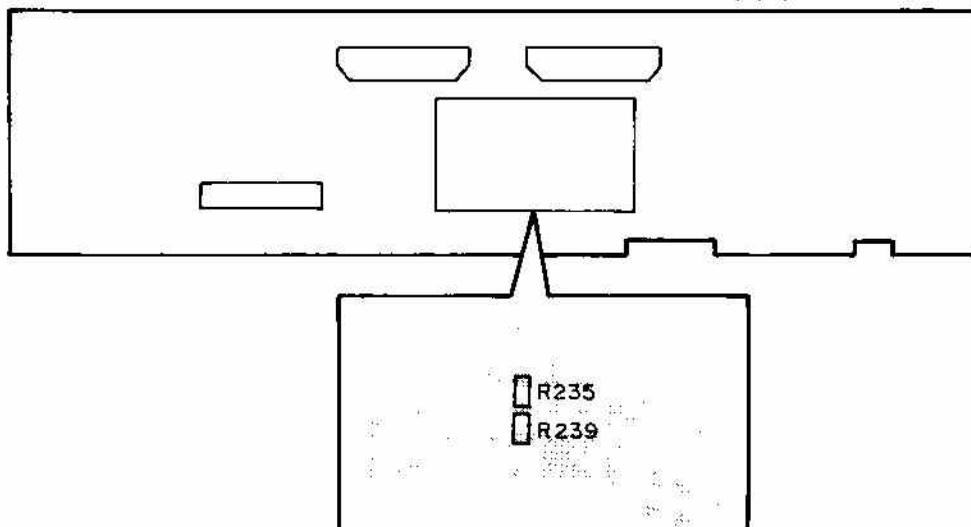
1st IF Frequency Modification

1st IF frequency is set by changing the chip resistors on the TX-RX unit (B/2).

IF	R235 (47kΩ)	R239 (0Ω)
30.3MHz	X	○
34.4MHz	○	X

X: Removed, ○: Installed

TX-RX UNIT (B/2) Foil side view



REALIGNMENT

Function Select

Function select has SET and USE. One of the modes 1 to 5 can be selected in either case.

Test data is stored in the EEPROM of the TK-805D at the factory. If new data (channel frequencies, signal-

ing, AUX, scan, etc.) needs to be written into the EEPROM, use the specification setting mode or frequency setting mode. Select another mode as required.

1. Modes

1) Setting

Function (CN8)		Modes	Setting
SET	USE		
<input type="radio"/>	-	EEPROM clear mode	Clear all EEPROM data and enter the specification setting mode.
<input type="radio"/>	-	Specification setting mode	Specify items. (*1)
<input type="radio"/>	-	Frequency setting mode	Set each channel frequency, signaling, AUX, and scan data.
<input type="radio"/>	<input type="radio"/>	Clone mode	Transfer data from the transceiver to another transceiver, or from an IBM PC to a transceiver. (*2)
<input type="radio"/>	<input type="radio"/>	User use mode	The user operates the transceiver. (*3)

: The mode can be entered. - : The mode cannot be entered.

*1 : The initial frequency (band to be used), time-out timer, busy channel lockout, D/A key operation on/off, microphone hook, and priority are set.

*2 : The data specified in the specification and frequency setting modes is transferred.

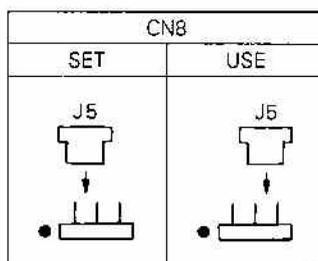
*3 : After items have been confirmed or set in each mode, set this mode for shipment.

2) After SET or USE has been set, each mode can be entered by the following operation.

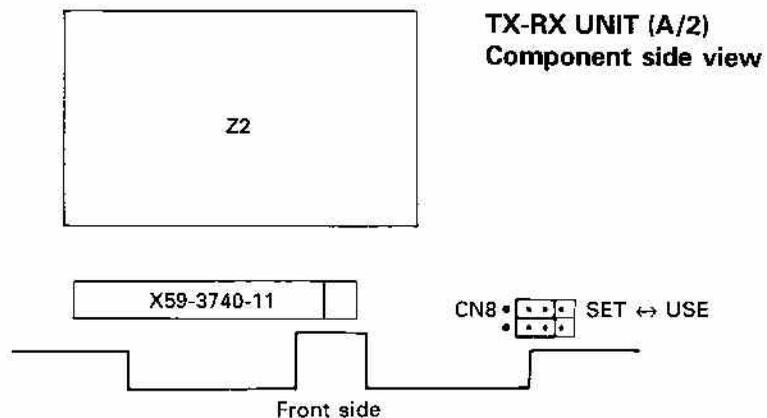
Mode	Operation
User use mode	Switch the power on without pressing a key.
Clone mode	Hold down the AUX and MONI keys, switch the power on, and keep the keys down for two seconds. A beep is heard. If the AUX key is released, data can be transferred from one transceiver to another. If the MONI key is released, data can be transferred from an IBM PC to a transceiver.
Specification setting mode	Hold down the AUX and SCAN keys, switch the power on, and keep the keys down for two seconds.
Frequency setting mode	Hold down the AUX and D/A keys, switch the power on, and keep the keys down for two seconds.
EEPROM clear mode	Hold down the AUX, D/A and SCAN keys, switch the power on, and keep the keys down for two seconds.

2. Setting function select SET and USE

To set the function to SET or USE, reconnect the shorting plug (J5) of connector CN8 on the TX-RX unit (A/2). (It is factory-set to SET.)



Note : Remove the plug (J5) from above.



REALIGNMENT

Memory Clear Mode

All the contents of the memory (EEPROM) are cleared in the memory clear mode.

- Confirm that the CN8 short connector is set to the SET side.
- Hold down the AUX, D/A, and SCAN keys, turn the POWER switch on, and keep the keys down for two seconds to clear all the contents of the EEPROM.
- After the EEPROM is cleared, the specification setting mode is entered.

Specification Setting Mode

1. In the specification setting mode, the initial frequency (the band to be used), time-out timer (TOT), busy channel lockout, D/A key on/off, microphone hooking, and priority are specified.
2. Each of these settings is selected by turning the encoder. When the PTT key is pressed, data is written into the EEPROM. To correct data, switch the power off and set new data again. (If data is corrected midway through entry, the setting before switching the power off remains in the EEPROM.)
3. All the items should be set in the specification setting mode until End is displayed.
4. To enter the specification setting mode, make sure that connector CN8 is set to the SET position (• mark). Hold down the AUX and SCAN keys, turn the POWER switch on, and keep the keys down for two seconds. Three beeps are heard and this mode is set.

1. Write method (See the flowchart.)

Each mode can be set in order while observing the LCD, as shown in the flowchart.

1) Initial frequency setting mode

In this mode, the initial band display changes as follows when the encoder is turned. Set the frequency to 450,000.

→150MHz↔250MHz↔350MHz↔450MHz←

When the PTT key is pressed, the TOT setting mode is entered.

2) TOT setting mode

When the encoder is turned, the TOT time setting changes as follows. Set the necessary time.

→ OFF ↔ 30sec ↔ 60sec ↔ 90sec ←
 ↳ 180sec ↔ 120sec ←

When the PTT key is pressed, the next busy channel lockout setting mode is entered.

3) Busy channel lockout setting mode

When the encoder is turned, the busy channel lockout function toggles on and off as follows. Set it on or off.

ON ↔ OFF

ON : Busy channel lockout function is available.

OFF : Busy channel lockout function is not available.

When the PTT key is pressed, the mode changes to the next D/A key operation on/off mode.

4) D/A key on/off setting mode

- The D/A key sets whether to receive the receive frequency written in the channel during scanning.
- The channel with a priority set can be set to the DELETE or ADD state, but the DELETE operation does not take place. (The priority channel operation is given precedence.)
- When the encoder is turned, the D/A key display changes as follows. Set the necessary function.

ON ↔ OFF

ON : User can change the setting.

OFF : User cannot change the setting.

When the PTT key is pressed, the next microphone hooking on/off setting mode is entered.

5) Microphone hooking on/off setting mode

• Function when ON is set

When the microphone is offhook, the monitor mode is set regardless of whether the MONI key is on or off. The monitor indicator  on the LCD shows whether the MONI key is on or off; it does not indicate whether the microphone is onhook or offhook.

Transmission does not take place when the PTT key is pressed with the microphone onhook.

• Function when OFF is set

Transmission takes place whether the microphone is onhook or offhook.

When the encoder is turned, the microphone hooking display changes as follows. Set the necessary function.

ON ↔ OFF

When the PTT key is pressed, the next priority operation setting mode is entered.

REALIGNMENT

6) Priority operation setting mode

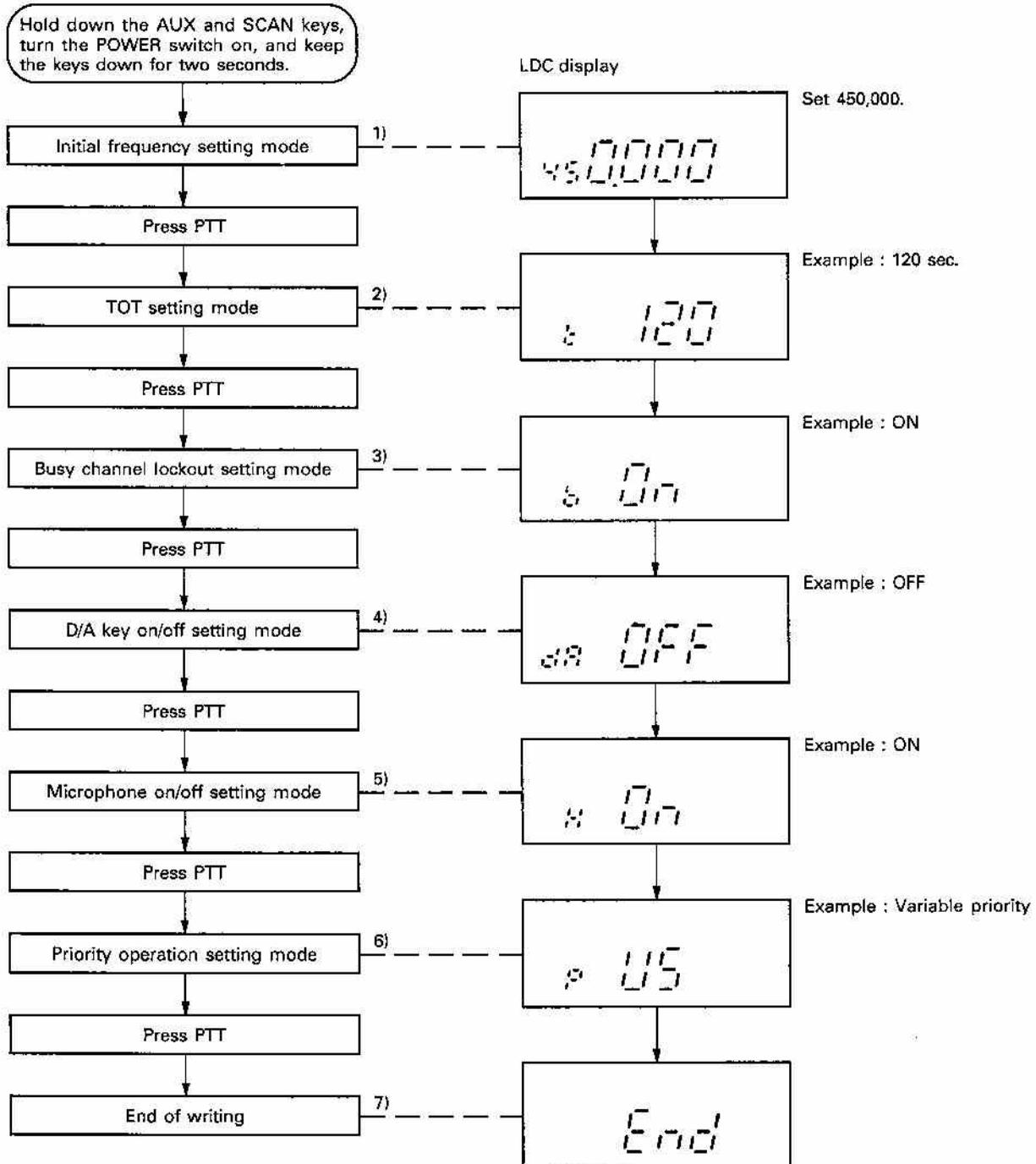
- There are two types of priority: fixed and variable. If the priority is fixed, a channel is determined in the frequency setting mode. (Only one channel can be specified.) If the priority is variable, the channel immediately before the SCAN switch is turned on becomes a priority channel.
- When the encoder is turned, the display changes as follows. Set the necessary function.

FI ↔ US

FI : Fixed priority
US : Variable priority

When the PTT key is pressed, End appears on the LCD, and the specification setting mode is terminated.

2. Flowchart of the specification setting mode

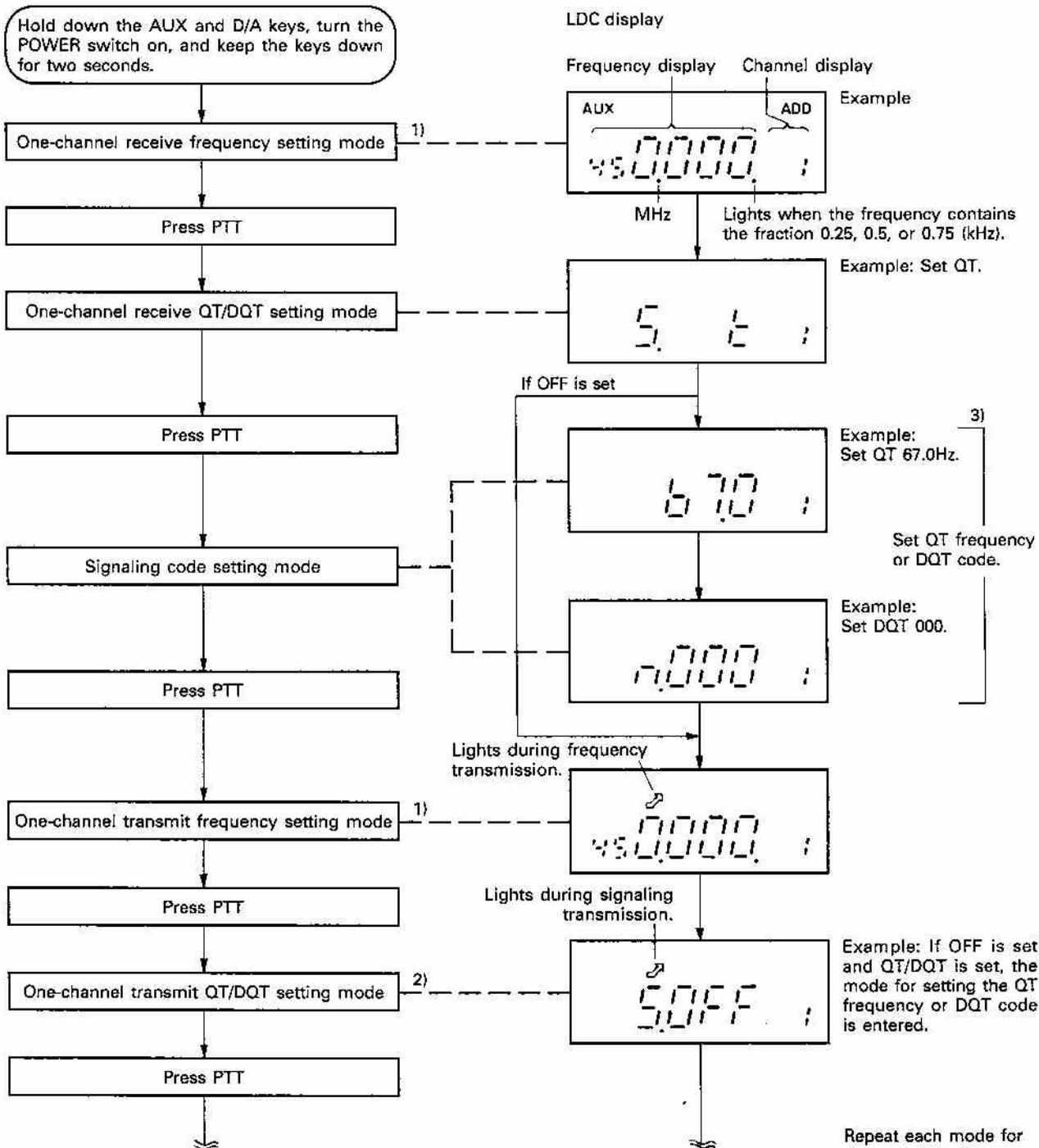


Frequency Setting Mode

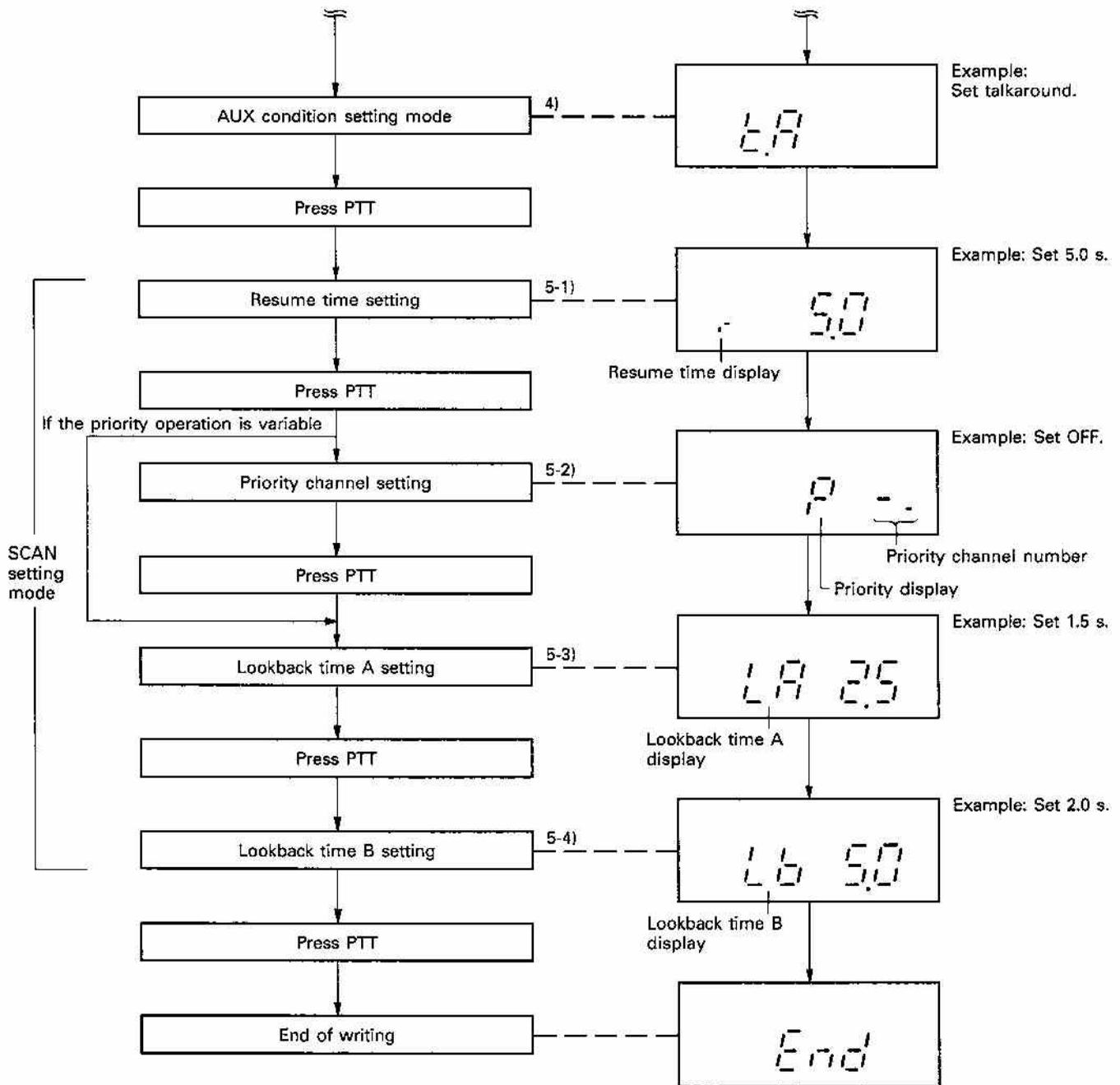
1. In the frequency setting mode, the transmit/receive frequency, QT (CTCSS)/DQT, AUX condition, and SCAN condition are specified.
2. To enter the frequency setting mode, make sure that connector CN8 is set to the SET position (• mark). Hold down the AUX and D/A keys, turn the

POWER switch on, and keep the keys down for two seconds. Four beeps are heard and the mode is set. When the mode is entered, the one-channel receive frequency setting mode is set first. Whenever the PTT key is pressed after setting a frequency, the mode changes as shown in flowchart.

1. Flowchart of frequency setting mode



REALIGNMENT



REALIGNMENT

2. Setting method (See the flowchart page 10)

The setting method in each mode is described below. Perform operations in the order given in the flowchart.

1) Receive/transmit frequency setting mode

• LCD

Channel display:

Channel number of the channel to be set

Frequency display:

- (1) If there is data stored in the EEPROM
The frequency stored in the EEPROM is displayed.
- (2) If there is no data stored in the EEPROM
 RX If one channel is used, the initial frequency (450,000)
If one channel is not used, dots (_ _ - - - -) are displayed, and when the encoder is turned, the receive frequency of one channel is displayed.
 TX Dots (_ _ - - - -) are displayed, and when the encoder is turned, the receive frequency of that channel is displayed.

Other display:

The transmit indicator  lights only when transmit data is input.

• Operation

1. When the encoder is turned, the display frequency changes (in steps). When the encoder is turned while the AUX key is being held down, the display frequency changes in MHz units.
2. Each time the SCAN key is pressed, the frequency display step is changed.
If port 30 is high : The frequency changes between 10kHz and 12.5kHz.
If port 30 is low : The frequency changes between 5kHz and 6.25kHz.
3. RX only
Each time the D/A key is pressed, the display toggles between ADD and DELETE.
If ADD indicator is lit : ADD function
If ADD indicator is off : DELETE function
Each time the REC key is pressed, the auxiliary function toggles on or off.
If AUX indicator is lit : Set
If AUX indicator is off : Not set

4. When the PTT key is pressed, the displayed frequency is set as the receive or transmit frequency for that channel, and the next receive or transmit QT/DQT setting mode is set.

Note : When the step is changed between 6.25kHz and 12.5kHz, the dot lights if the frequency contains the fraction 0.25, 0.5, or 0.75kHz, and it can be set, but the frequency is not displayed.

2) Receive and transmit QT/DQT setting mode

QT (CTCSS), DQT, or signaling off (OFF) is selected in this mode.

• LCD

Channel display:

Channel number of the channel to be set

Frequency display:

- (1) If there is data stored in the EEPROM
The signaling type stored in the EEPROM is displayed.
- (2) If there is no data stored in the EEPROM
OFF is displayed.

Other display:

The transmit indicator  lights only when transmit data is input.

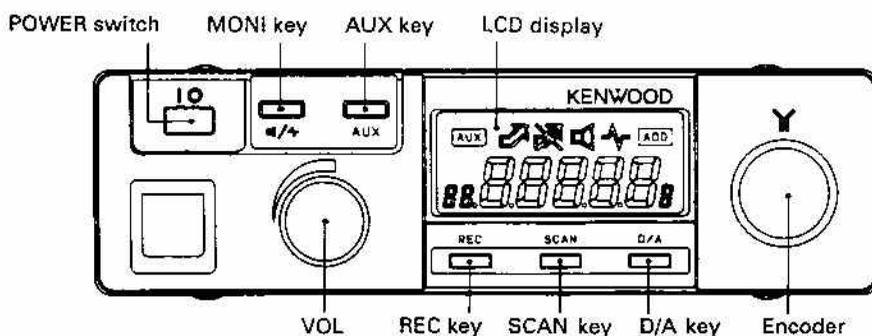
• Operation

1. When the encoder is turned, the display changes between QT, DQT, and signaling off (OFF). Set the necessary type.

→ DQT (*dt*) ↔ QT (*t*) ↔ OFF (*OFF*) ←

The letters in parentheses are displayed on the LCD.

2. If OFF is selected for signaling and then the PTT key is pressed, the transmit or receive frequency setting mode is entered. The transmit QT/DQT setting mode ends after 16 channels, and the AUX condition setting mode is entered.
If QT/DQT is selected and then the PTT key is pressed, the next receive and transmit QT frequency or DQT setting mode is entered.



REALIGNMENT

3) QT frequency/DQT code setting

• LCD

Channel display:

Channel number of the channel to be set

Frequency display:

- (1) If there is data stored in the EEPROM
The QT frequency/DQT code stored in the EEPROM is displayed.
- (2) If there is no data stored in the EEPROM:
QT 67.0 (Hz) is displayed.
DQT 000 is displayed.

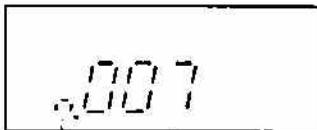
Other display:

The transmit indicator  lights only when transmit data is input.

• Operation

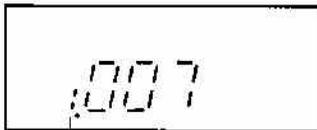
1. Each time the encoder is turned,
QT The frequency changes from 67.0 to 250.3Hz in 0.1-Hz steps.
DQT The code changes from 000 to 777 (octal) in digits.
2. Hold down the AUX key and turn the encoder.
QT The frequency changes by 1Hz or more.
DQT The two or more digits of the code change.
3. Hold down the REC key and turn the encoder.
QT The frequency changes by 10Hz or more.
DQT The third digit of the code changes.
4. Each time the SCAN key is pressed, the DQT code changes between normal and inverse.

LCD display



Example: Normal code of 007

Normal display



Example: Inverted code of 007

Inverted display

5. When the PTT key is pressed, the displayed QT frequency/DQT code is set as the QT frequency/DQT code for that channel, and the next transmit or receive frequency setting mode is set.

4) AUX condition setting mode

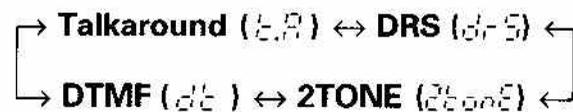
In the AUX condition setting mode, talkaround, digital recording system (DRS), 2TONE, or DTMF is selected.

• Initial LCD display

1. If there is AUX data stored in the EEPROM
The AUX data stored in the EEPROM is displayed.
2. If there is no data stored in the EEPROM
Talkaround is displayed.

• Operation

1. When the encoder is turned, the display changes between talkaround, DRS, 2TONE, and DTMF. Set the necessary type.



The letters in parentheses are displayed on the LCD.

2. When the PTT key is pressed, the displayed AUX condition is set, and the next SCAN setting mode is entered.

5) SCAN setting mode

In the SCAN setting mode, the resume time, priority channel, lookback time A, and lookback time B are written in the order listed.

5-1) Resume time setting

• Initial LCD display

1. If the resume time is stored in the EEPROM
The resume time stored in the EEPROM is displayed.
2. If there is no data stored in the EEPROM
1.0 (sec) is displayed.

• Operation

1. When the encoder is turned, the resume time can be selected. Set the necessary data.
15 steps: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0 (seconds)
2. When the PTT key is pressed, the displayed resume time is set, and the next priority channel can be set.

Note : If the priority is set to variable (US) in the specification setting mode, lookback time A can be set.

REALIGNMENT

5-2) Priority channel setting

• Initial LCD display

1. If a priority channel is stored in the EEPROM
The priority channel stored in the EEPROM is displayed.
2. If there is no data stored in the EEPROM
Dots (-) are displayed without priority channel specification.

• Operation

1. When the encoder is turned, the priority channel can be selected. Select the appropriate channel.
Channels **1** to **16**, no specification (-)
(The channel in which no receive frequency is set cannot be set as a priority channel.)
2. When the PTT key is pressed, the displayed priority channel is set, and the next lookback time A can be set.

Notes :

If a priority channel is set in the frequency setting mode and the setting is changed to variable priority in the specification setting mode, a variable priority operation is performed regardless of the priority channel set or no priority specification.

No priority channel specification means no priority specification during a fixed priority operation. If no priority channel is specified during a variable priority operation, priority specification must be present.

5-3) Lookback time A setting

• Initial LCD display

1. If lookback time A is stored in the EEPROM
The lookback time A stored in the EEPROM is displayed.
2. If there is no data stored in the EEPROM
1.0 (sec) is displayed.

• Operation

1. When the encoder is turned, the lookback time A data can be selected. Set the necessary data.
15 steps: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0 (seconds)
2. When the PTT key is pressed, the displayed lookback time A is set, and the next lookback time B can be set.

5-4) Lookback time B

• Initial LCD display

1. If lookback time B is stored in the EEPROM
Lookback time B stored in the EEPROM is displayed.
2. If there is no data stored in the EEPROM
1.0 (sec) is displayed.

• Operation

1. When the encoder is turned, the lookback time B data can be selected. Set necessary data.
15 steps: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0 (seconds)
2. When the PTT key is pressed, the displayed lookback time B is set, and End is displayed to indicate the end of writing.

3. Confirmation of written data

- Written data can be confirmed by holding down the MONI key and turning the encoder clockwise or counterclockwise in the frequency setting mode.
- When the encoder is turned one step clockwise or counterclockwise, the data can be confirmed as follows.

• When the encoder is turned clockwise

RX frequency
↓
RX signaling type setting
↓
RX QT frequency/DQT code setting
↓
TX frequency

• When the encoder is turned counterclockwise

TX frequency
↓
RX signaling type setting
↓
RX QT frequency/DQT code setting
↓
RX frequency

- When data is confirmed with the MONI key and encoder, the encoder, PTT, AUX, and D/A keys are still valid, and data can be rewritten.

Option Setting

Options can be set on and off for each channel. If an option is not on, DRS and talkaround do not function. (The receive frequency is set in the frequency setting mode.)

REALIGNMENT

Clone Mode

There are two clone modes. Select the appropriate mode as required.

- Connect two transceivers, and transfer the contents of the EEPROM of one transceiver to the the EEPROM of the other.
- Transfer data from an IBM PC or compatible machine to the EEPROM of a transceiver.

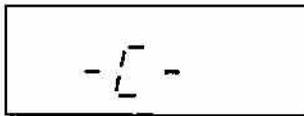
Note : This mode is valid regardless of whether CN8 is set to SET or USE.

1. Operation

1) Data transfer from one transceiver to another

1. Hold down the AUX and MONI keys on the two transceivers, turn the POWER switch on, and keep the keys down for two seconds. One beep is heard, then, when the AUX key is released, the LCD indicates the clone mode.

LCD display



2. Connect two transceivers in the clone mode with a microphone cable.

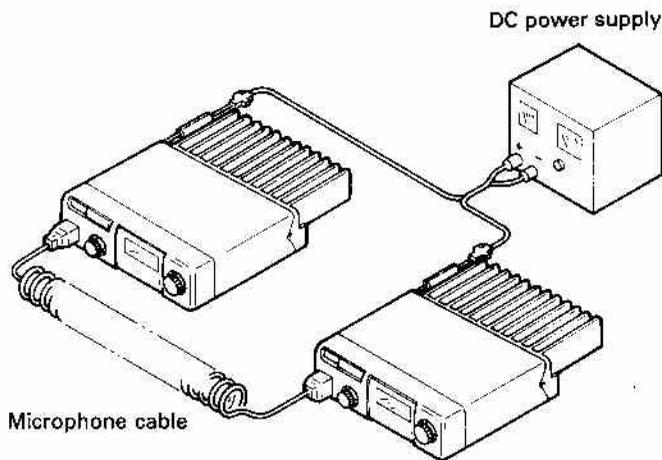
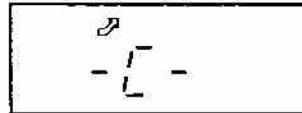


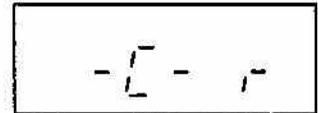
Fig. 1

3. When the MONI key on the transceiver ^{to which} ~~data is to be transferred~~ is pressed, the LCD shows the transmit indicator (), and data is transferred to the receiving transceiver.

LCD display



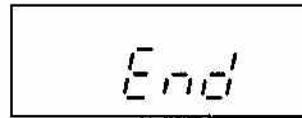
Transmitting transceiver



Receiving transceiver

4. When the data transfer ends (about 40 seconds), both transceivers beep and display End.

LCD display



5. If the MONI key is pressed while End is displayed, the condition in 1 returns.

REALIGNMENT

2) Data transfer from IBM PC to transceiver

• Preface

The TK-805D transceiver is programmed by using a personal computer, programming interface (KPG-4), and programming software (KPG-6D).

The programming software can be used with an IBM PC or compatible. Figure 2 shows the setup of an IBM PC for programming.

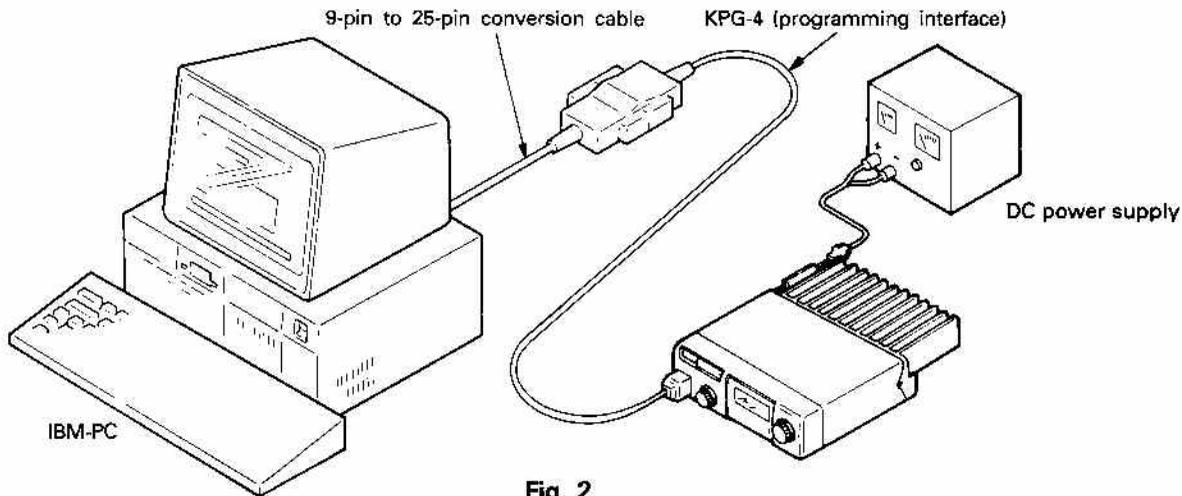


Fig. 2

• KPG-4 description

(P.C. programming interface cable : Option)

The KPG-4 is required to interface the TK-805D 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-4 connects the front panel modular microphone connector of the TK-805D to the computers RS-232C serial port.

• Programming software description

The KPG-6D Programming Disk is supplied in 5-1/4" and 3-1/2" disk format. The Software on this disk allows a user to program TK-805D radios via Programming Interface cable (KPG-4)

1. LOADING

This program assumes the user has a basic working knowledge of their particular IBM or IBM compatible computer. Consult your computer and DOS manual for detailed explanations.

2. COMPUTER SETUP (A one time setup procedure - go to step 1, if this has been done.)

This program needs the device driver file ANSI.SYS, in order to run properly. In DOS versions 3.1 and later, the ANSI.SYS file is located as either a file in DOS sub-directory or in the root(main) directory of your hard disk. The computer must be told to install ANSI.SYS at the time DOS is located, i.e., "booted up". This DOS looks for and "executes" during the boot process. It

should be located in the directory of your hard disk, or the disk you use to boot up DOS. If a CONFIG.SYS file does not exist, one can either create one, or, add the directive line to an existing CONFIG.SYS file. These can be accomplished by using the EDLIN text editor command discussed below (these processes are identical). The main objective is to have a CONFIG.SYS file that contains a directive to install the ANSI.SYS file.

Ex. : Dos is on C-drive, hard disk. Bring up C-drive prompt C : \ on your computer display.

STEP 1.

The first step is to look at your CONFIG.SYS file to see if a "DEVICE=...ANSI.SYS" line may already exist there. To list your CONFIG.SYS file, type the following : TYPE CONFIG.SYS <enter>

If found here, your computer is setup: insert the KPG-6D in drive A and type: KPG6D, then hit <enter> to start the program.

If no CONFIG.SYS file exists, or the CONFIG.SYS file did not contain a "DEVICE = ...ANSI.SYS" line, then find the location of your ANSI.SYS file by using the DOS directory command, DIR and chose the appropriate device driver line for STEP 2.

if found in the root directory use :

DEVICE = C : \ ANSI.SYS

if found in the DOS sub-directory use:

DEVICE = C : \ DOS \ ANSI.SYS

(i.e. specify a path in which CONFIG.SYS can find ANSI.SYS)

REALIGNMENT

STEP 2.

Create or edit the CONFIG.SYS file with as follows:

	Hit:	-Remarks-
2-a type: EDLIN CONFIG.SYS	<enter>	
2-b type: 1i	<enter>	
2-c type: DEVICE = (from STEP 1)	<enter>	
2-d hold (<Ctrl>) + press Z key, release	(^Z appears)	
	<enter>	
2-e type: E	<enter>	(C:\prompt re-appears)

(NOTE : This will in no way erase anything or cause harm to the operation of your computer or other software. This only has to be done once.)

*To re-check the CONFIG.SYS file for errors in the "Device=.....ANSI.SYS" line:

	Hit
type: TYPE CONFIG.SYS	<enter>

This will list the contents of the file. If an error is found:

	Hit
type: EDLIN CONFIG.SYS	<enter>
type: 1d	<enter>

This will "delete" the erroneous line 1. Now proceed from STEP 2-b through 2-e and enter the correct "DEVICE=.....ANSI.SYS" line in STEP 2-c

*ALTERNATIVE METHODS FOR EDITING AND/OR CREATING THE CONFIG.SYS FILE:

1. (Easiest) Use your Word Processor software :
Load in the CONFIG.SYS file and add the "DEVICE=.....ANSI.SYS" line (determined in STEP 1) as line 1, just as if you were interesting a line of text in a letter or memo. Then save the file back to its appropriate drive and/or path.
2. Use the "COPYCON" DOS command to add the "DEVICE=.....ANSI.SYS" line.
In this case, your whole CONFIG.SYS file must be re-typed letter-for-letter, symbol-for symbol, space-for-space.....BE CAREFUL!!! - as your PC may have quite an extensive CONFIG.SYS file.

Notes : + The above methods should be attempted by an experienced PC user.

+ The "DEVICE=.....ANSI.SYS" line does not necessarily have to be line 1 of the CONFIG.SYS file (this is chosen just for convenience), but it MUST BE placed before any "DEVICE =DISPLAY.SYS...." line.

STEP 3.

Re-boot DOS for the ANSI.SYS installation to be accomplished.

[TO START THE PROGRAMMING SOFTWARE]

STEP 4.

Insert the KPG-6D disk in drive A or appropriate drive and type : KPG6D. hit <enter>, to start the program.

The main menu of the KPG-6D should appear. Consult the "HELP" screens by pressing F1 to familiarize yourself with the software features.

Note : If STEP 2 and 3 are not done, the main menu display of the KPG-6D will contain random ASCII graphic characters at the top and/or the bottom of the screen. Also the program will "freeze-up" and not function.

To escape from this :

- i) hold <Ctrl> + press C key
- ii) press "Y" for the "terminate batch file Y/N" query. The drive prompt should appear.
- iii) Re-check that STEP 2 and 3 were done correctly.

3. TO INSTALL ONTO ANOTHER FLEXIBLE OR HARD DISK:

The KPG-6D program disk contains a batch file that will automatically copy the entire KPG-6D disk from one disk to another by typing in one command. This is useful when installing the KPG-6D into your hard disk or making a back-up copy. After DOS is booted up, insert the KPG-6D disk into an appropriate "source" drive and:

	Hit
type: 'source drive'	<enter>
Example: a:	<enter>
type: KPG6DINS (space) 'target drive'	<enter>
Example: KPG6DINS b:	<enter>

The program and all data files will be loaded into a new sub-directory structure starting at:

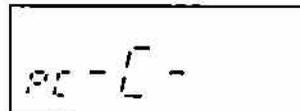
\KPG6D\

If the software does not work properly, please see INSTALLATION and proceed the installation again, or Call our Customer service.

• Programming method

1. Hold down the AUX and MONI keys on the TK-805D, turn the POWER switch on, and keep the keys down for two seconds. One beep is heard. When the MONI key is released, the LCD indicates the PC clone, and the IBM PC mode is entered.

LCD display



2. Transmit the data created by the IBM PC.
3. [] is indicated on the display of the TK-805D. (If data is being transmitted from the TK-805D to the IBM PC, [] is displayed.)
4. After the data transfer ends, the TK-805D is ready to receive data as in 2.

REALIGNMENT

User Use Mode

In this mode, the user uses the transceiver.

After writing all data, set the CN8 short connector to the USE side, and switch the power on to enter this mode.

1. Initial condition

CH : If the last channel number is backed up, that channel becomes ready to receive. If the last channel number is not backed up, channel 1 becomes ready to receive.

MONI : OFF

SQ OFF : OFF

SCAN : OFF

AUX : OFF

REC : OFF

2. Function

Encoder : Channel up/down

MONI : MONI ON/OFF (When this key is held down for two seconds, SQ is set to OFF.)

PTT : Transmit/receive

Microphone hook

: Microphone hook function (This function works by setting.)

AUX : Option ON/OFF

REC : Option ON/OFF

SCAN : SCAN ON/OFF

D/A : Change between ADD and DELETE (This function works after the SCAN key is pressed. It works only when available in the specification setting mode.)

RAD Selection

There are two RAD selection modes: RA and RD. Either can be selected, according to your purpose.

1. Modes

RA : The audio signal, muted or unmuted by the busy signal (IC204 port 23: pin 37), is obtained. (Factory setting: RA)

If DRS is set with AUX, set the mode to RA. (If the mode is set to RD, noise is recorded, not muted, and so is played back.)

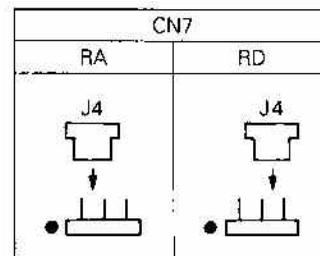
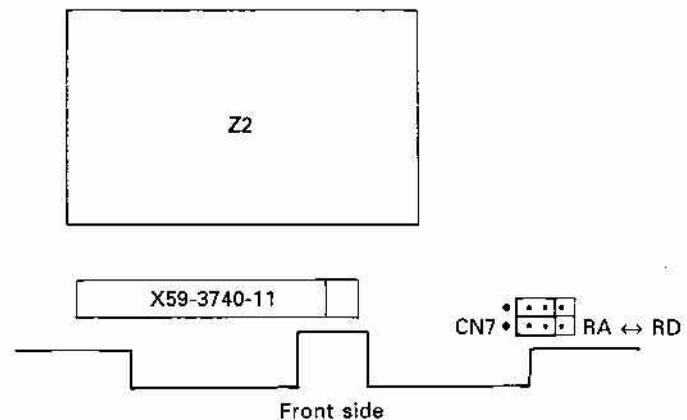
RD : The audio signal is always obtained whether there is a busy signal or not. If 2TONE or DTMF is set with AUX, set the mode to RD. (If the mode is set to RA, the voice signal may be muted if the radio signal is weak.)

If AUX is not set, or if talkaround is set, either RA or RD can be selected.

2. Switching between RA and RD

To set the RAD signal to RA or RD, reconnect the shorting plug (J4) of connector CN7 on the TX-RX unit (A/2). (It is factory-set to RA.)

TX-RX UNIT (A/2) Component side view



Note : Remove the plug (J4) from above.

REALIGNMENT

CN204 pin functions when AUX is set (DRS/2TONE/DTMF)

1. Digital recording system (DRS)

- When the REC key is pressed, the RA signal can be recorded, and CN204 pin 2 (PO1) goes high. CN204 pin 3 (PO2) goes high in synchronization with the busy signal, and recording starts and continues for about 32 seconds.
- When the AUX key is pressed, CN204 pin 2 (PO1) goes low, pin 3 (PO2) goes high, the recorded signal is output to RA, and playback starts.
- When the DRS is recording or playing back, CN204 pin 6 (PI2) goes low. When the operation ends, pin 6 goes high to indicate the state to the microprocessor. If the AUX key is pressed in the middle, PO3 goes high, and the operation stops.
- When recording starts, ACL goes low, and all is cleared to record data for 32 seconds from the beginning.

2. 2TONE

- When CN7 is reconnected to RD, the receive signal for 2TONE decoding is supplied from CN204 pin 9 (RAD) regardless of whether there is a busy signal or not.
- The 2TONE decode latch is connected to CN204 pin 6 (PI2) so that it is low if the code matches and high if it does not.
- Horn alert is selected so that a high signal is output from CN204 pin 4 (PO3) when it is on, and a low signal is output when it is off, whenever the AUX key is pressed. This signal is used to control the decode momentary signal.
- The 2TONE reset signal is output from CN204 pin 10 (PO4). Normally, the same logic as hook is used: low when hook is on, and high when it is off. The reset signal changes from low to high, and back to low when the channels are switched with the encoder.
- The same logic as PTT (high: RX, low: TX) is output to CN204 pin 3 (PO2).

3. DTMF

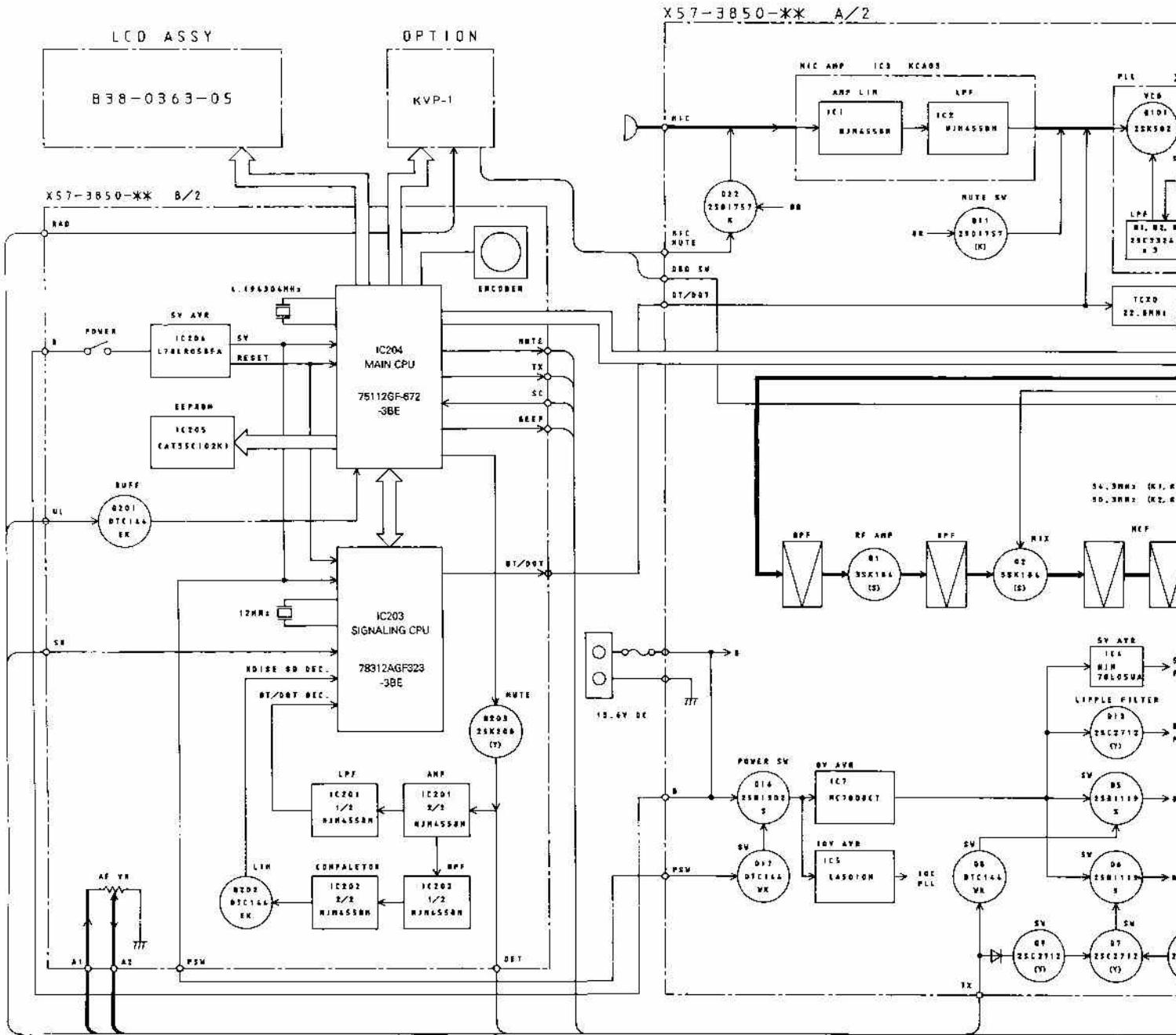
- When CN7 is reconnected to RD, the receive signal for DTMF decoding is supplied from CN204 pin 9 (RAD) regardless of whether there is a busy signal or not.
- The DTMF decode latch is connected to CN204 pin 6 (PI2) so that it is low if the code matches, and high if it does not.
- Horn alert is selected so that a high signal is output from CN204 pin 4 (PO3) when it is on, and a low signal is output when it is off, whenever the AUX key is pressed. This signal is used to control the decode momentary signal and the relay.
- The DTMF reset signal is output from CN204 pin 10 (PO4). Normally, the same logic as hook is used: low when the hook is on, and high when it is off. The reset signal changes from low to high, and back to low when the channels are switched with the encoder.
- TRANSPOND PTT is connected to CN204 pin 1 (PI1). When this pin is low, transmission takes place (normally high). The TRANSPOND TONE signal is sent to CN2 pin 2 (ABTO: answer back tone).
- The ALERT TONE signal is sent to CN2 pin 4 (ALERT). The signal is sent to CN2 pin 5 (DBD) only when the DEADBEAT DISABLE function is used (normally high; low when transmission is inhibited).

REALIGNMENT

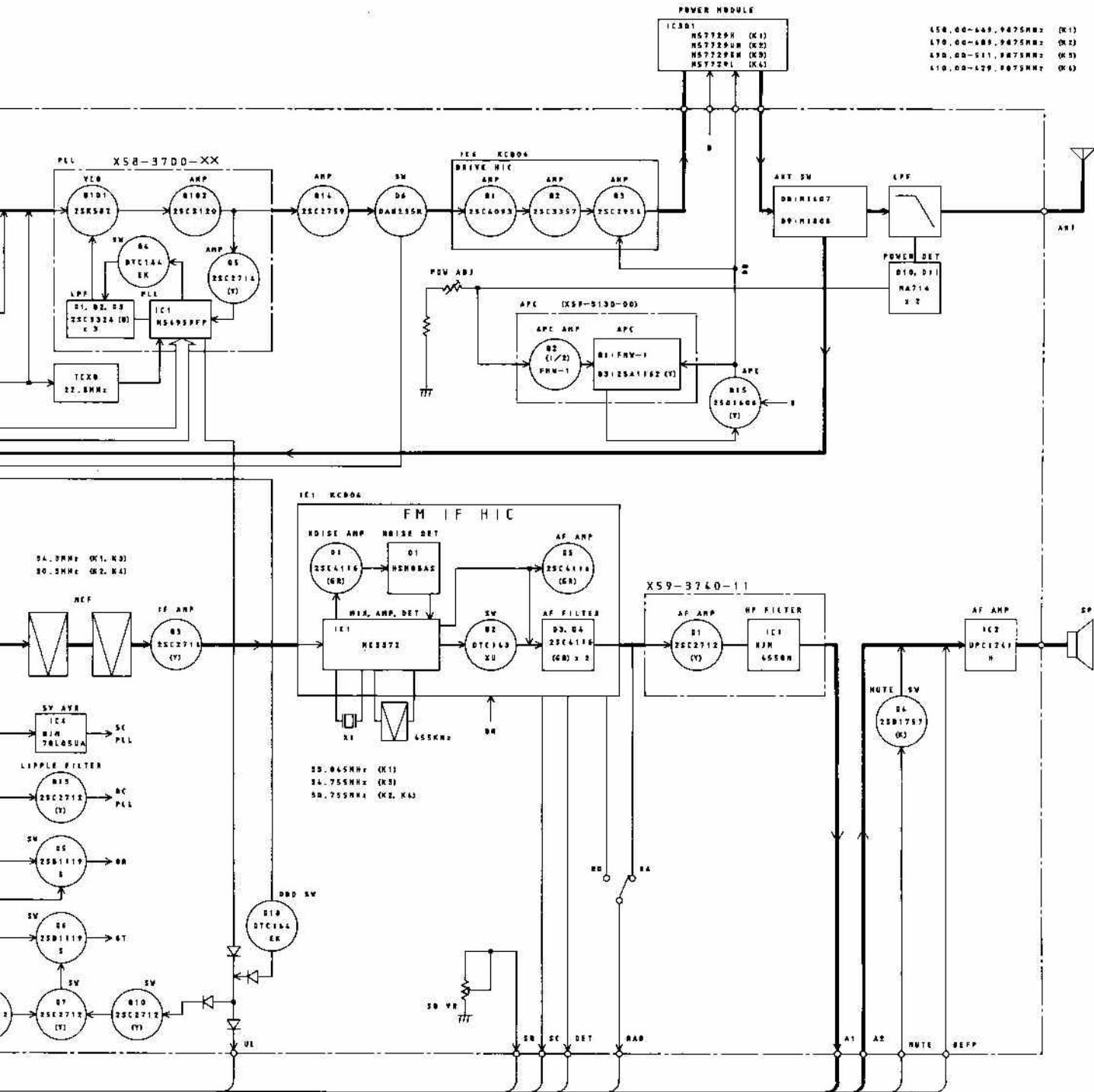
4. CN204 pin functions

If AUX is set to DRS, 2TONE, or DTMF, the CN204 pin functions change as shown in Table.

IC204 port/pin	CN204 pin	Pin name	Option setting DRS	2TONE	DTMF
P81/20	1	PI1	(VCX) : Unused	NC : Unused	TPT : When transpond tone is transmitted (TX : "L", Normally : "H")
P93/22	2	PO1	P3 : For KVP-1 (Recording mode : "H", Playback mode : "L")	NC : Unused	NC : Unused
P92/24	3	PO2	P0 : For KVP-1 (Recording or playback starts : "H", Normally : "L")	PTT logic output (RX : "H", TX : "L")	("H" output) : Unused
P91/25	4	PO3	P1 : For KVP-1 (Recording or playback stops : "H", Normally : "L")	PHA : Horn alert switch (ON : "H", OFF : "L")	PHA : Horn alert switch (ON : "H", OFF : "L")
	5	8C	(8C) : Unused	8C	8C
P80/21	6	PI2	EOS : For KVP-1 (During recording/playback : "L" Wait for recording or playback : "H")	DL : Decode latch (Match : "L", No match : "H")	DL : Decode latch (Match : "L", No match : "H")
	7	5C	5C	(5C) : Unused	(5C) : Unused
	8	E	GND	GND	GND
	9	RAD	RA : (Reconnect CN7)	RD : (Reconnect CN7)	RD : (Reconnect CN7)
P90/25	10	PO4	ACL : For KVP-1 reset output (Normally : "H", Reset : "L")	Reset : Output with the same logic as hook. (Hook ON : "L", OFF : "H")	Reset : Output with the same logic as hook. (Hook ON : "L", OFF : "H")



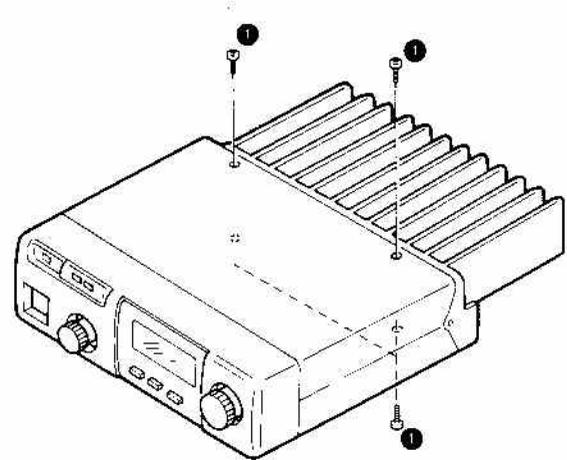
TK-805D DIAGRAM



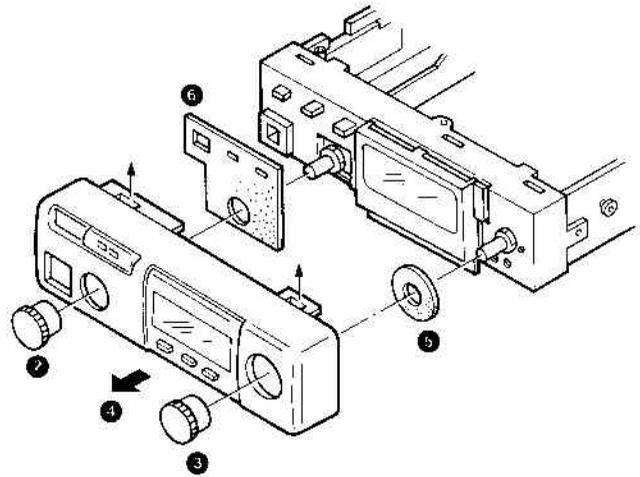
DISASSEMBLY FOR REPAIR

Removing the Front Panel

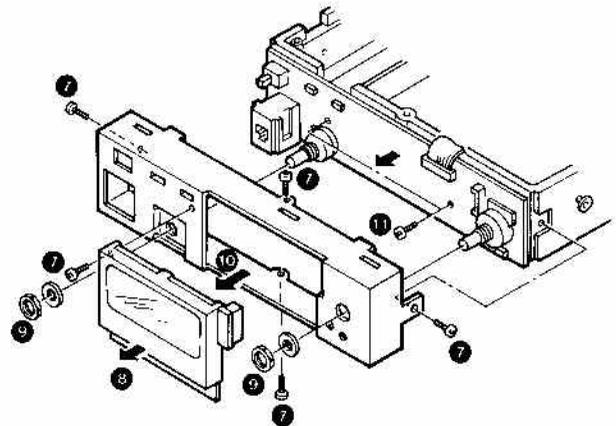
1. Remove the four screws holding the upper and lower cases (1).



2. Pull out the CHANNEL selector knob (2) and volume control knob (3).
 3. Slightly lift the stoppers holding the top and bottom of the front panel and pull out the front panel (4).
 4. Remove the cushions (5, 6).

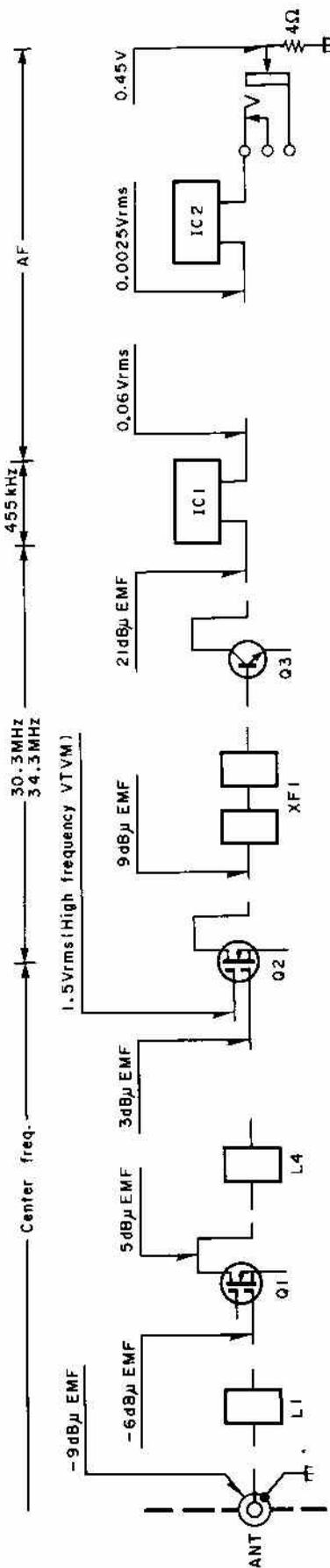


5. Remove the four screws on the sub-panel (7).
 6. Pull the display section forward (8).
 7. Remove the hexagonal nuts of the CHANNEL selector and volume controls (9).
 8. Pull the sub-panel forward (10).
 9. Remove the two screws holding the TX-RX unit (B/2), and remove the unit (11).



LEVEL DIAGRAM

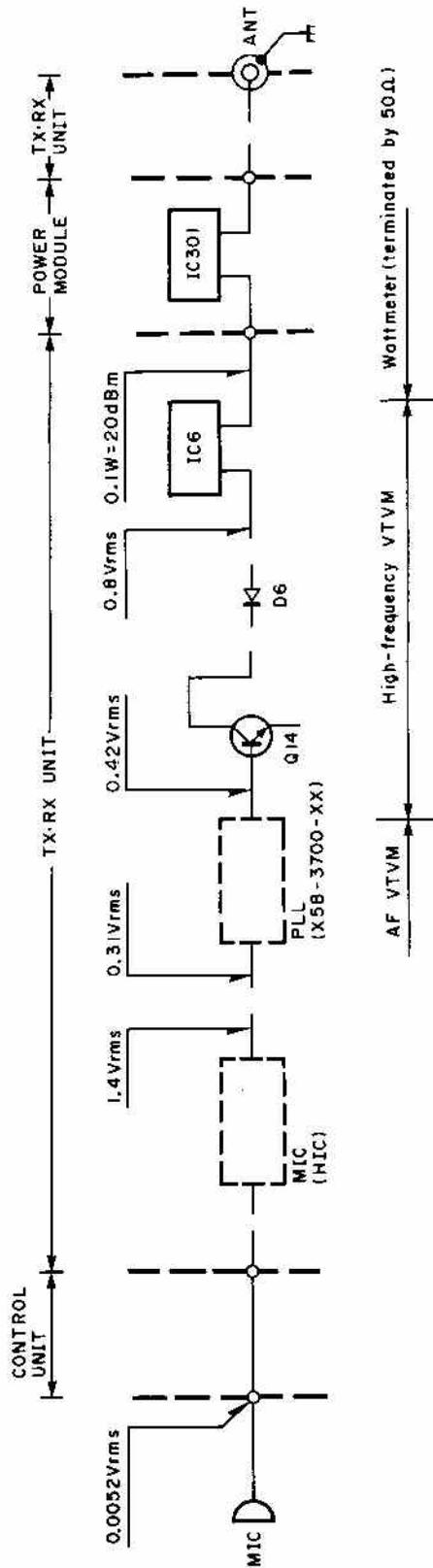
Receiver section



SG input level for 12dB SINAD are obtained. Measured by connecting the SG to each point via a 0.01μF capacitor.

AF level obtained when the AF output level is adjusted for 0.45V/4Ω with the front panel AF VOL control. Measured with AF voltmeter connected to the external speaker jack, receiving a 40dB EMF SSG signal modulated at 1kHz, DEV 3kHz.

Transmitter section



1. AG is set so that MIC input becomes 3kHz DEV at 1kHz mod.
2. Transmitting frequency : Center frequency

CIRCUIT DESCRIPTION

Transmitting System

• Overview

The transmitter produces the target frequency through the use of direct FM-modulation via a varactor diode.

• Modulation circuit

Audio signals from the microphone are fed into the mic amplifier HIC IC3 (KCA03) for amplification, and then into two operational amplifiers. The operational amplifiers form a splatter filter for pre-emphasis, amplification, limiting, and removal of unnecessary high-frequency components.

The FM modulation circuit directly FM-modulates the VCO signals, using a varactor diode.

• Pre-amplifier stage circuit

Signals from the VCO are applied to the drive HIC IC6 (KCB06). The amplifier always operates in a linear mode so that signals can be amplified without degradation. Additionally, the amplifier is designed to cover a wide range of frequencies and can produce stable output without adjustment. The APC (Automatic Power Control) controls collector voltage from the last stage of the pre-amplifier.

• Power amplifier circuit

The drive signal is amplified to the required level by the power module.

• APC circuit

The APC circuit for automatic transmit output control detects part of the power module output, and amplifies it to provide a control voltage for output control. The output control voltage is in inverse proportion to the output from the power module, so it is maintained at the same level.

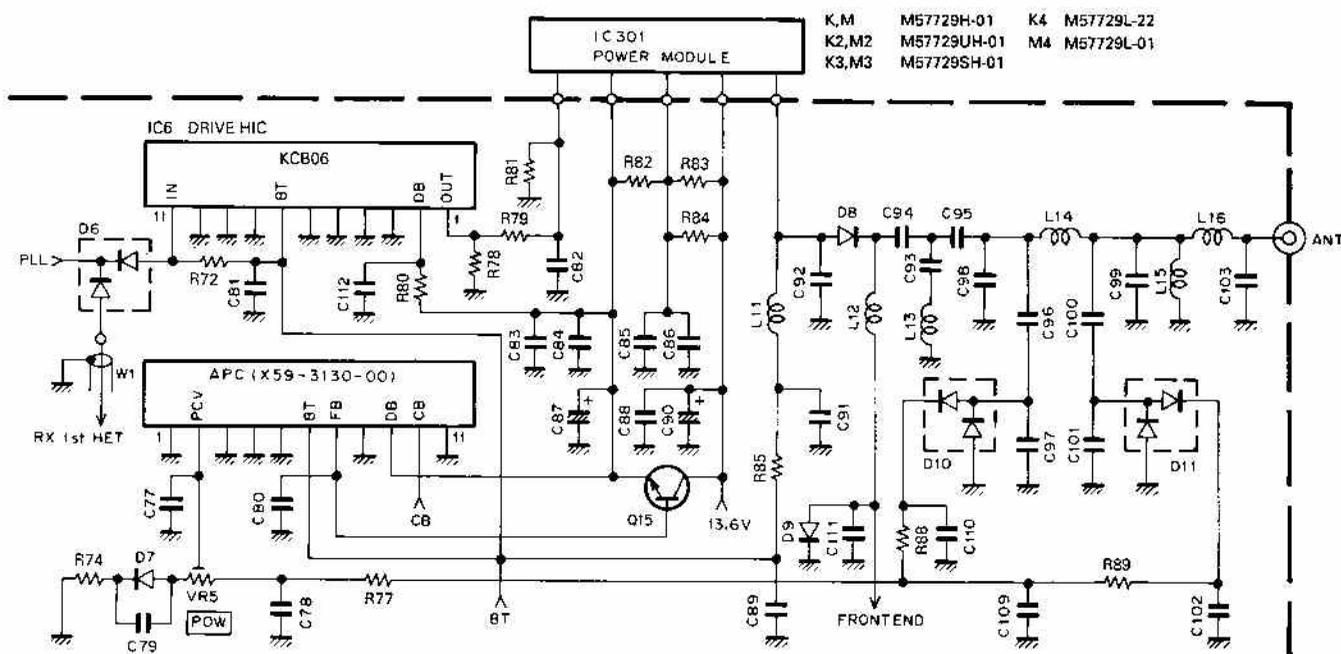


Fig. 2 Pre-amplifier stage, power amplifier, and APC circuits

(T_c = 25°C)

Item	Symbol	Condition	Rating	Unit
Operating voltage	V _{cc}		17	V
Current consumption	I _{cc}		10	A
Input power	P _{in}	Z _G = Z _L = 50Ω	0.6 (V _{cc1} ≤ 12.5V)	W
Output power	P _{out}	Z _G = Z _L = 50Ω	40	W
Operating case temperature	T _{c(op)}		-30 ~ +110	°C
Storage temperature	T _{stg}		-40 ~ +110	°C

Table 4 Power module maximum ratings (IC301)

CIRCUIT DESCRIPTION

PLL Synthesizer System

• Overview

Figure 3 is the PLL and VCO block diagram. In the TK-805D, the PLL system is implemented as a sub-unit which is divided into the upper VCO and lower PLL blocks. The sub-unit is shielded to prevent external interference.

There are two reference frequencies, 6.25kHz and 5 kHz, available to allow 10 or 12.5kHz-step operation. The 6.25kHz is obtained by dividing the reference oscillator frequency of 12.8MHz by 2048, and the 5kHz is obtained by dividing it by 2560. The VCO directly gen-

erates the requirement frequency. This requirement frequency is amplified once and then fed into a pulse swallow-type PLL IC for frequency division and phase comparison, in order to lock the frequency.

The PLL system is locked without switching between transmit mode and receive mode. By using a signal ("H" in transmit mode) from pin 10 of the PLL IC (M54959FP), the LPF is deactivated-activated by Q4 only for the moment when the TK-805D enters transmit mode. This helps produce lock more rapidly than previous methods.

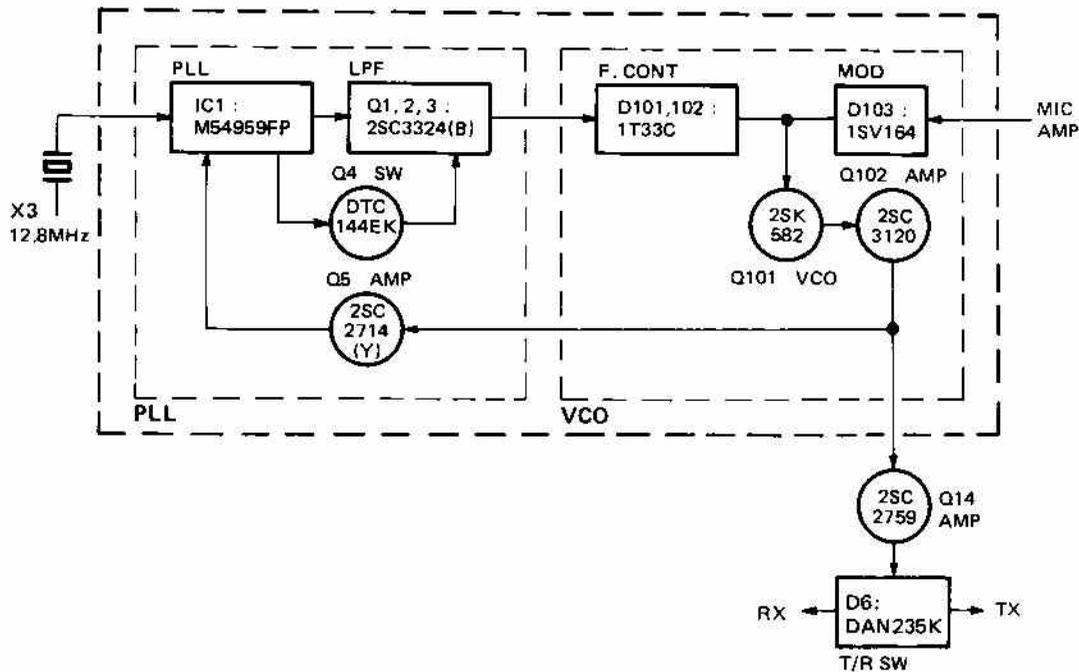


Fig. 3 PLL block diagram

CIRCUIT DESCRIPTION

• 8T (8V in transmit mode) and unlock circuits

In receive mode, the base of Q9 has 0.7V. As a result, Q9 is on, and Q7 and Q6 are off, and the collector of Q6 (8T) provides no voltage.

When the PTT switch is depressed. As a result, P21 of CPU (IC204) becomes "L", turning Q9 off, and Q7 and Q6 on. The 8T line is therefore supplied with 8V.

The unlock circuit operates only in transmit mode. Q10 is a PLL unlocking switching transistor. Usually, the base of Q10 is supplied with 0V ("L"), and the collector is supplied with 8V ("H").

When the PLL is unlocked, the base of Q10 is supplied with 0.7V, turning Q10 on. As a result, the collector of Q10 becomes "L" (0V). This turns Q7 off and the collector of Q6 becomes 0V, turning it off. Therefore, when the PLL is unlocked, Q6 is off removing bias voltage from the 8T line. Without the 8T voltage no transmit signal is generated.

If the DBD (dead beat disable) function is used for DTMF control, a signal that is normally high (or open), going low during a DBD operation, is applied to CN2 DBD pin 5. This turns Q18 on, and Q10 is controlled by the PLL unlock signal only. Q18 turns off during a DBD operation, and Q10 turns on regardless of the PLL unlock signal. The collector of Q10 goes low, 8T is not output as described previously, and transmission is inhibited. If DBD is not used, do not connect it.

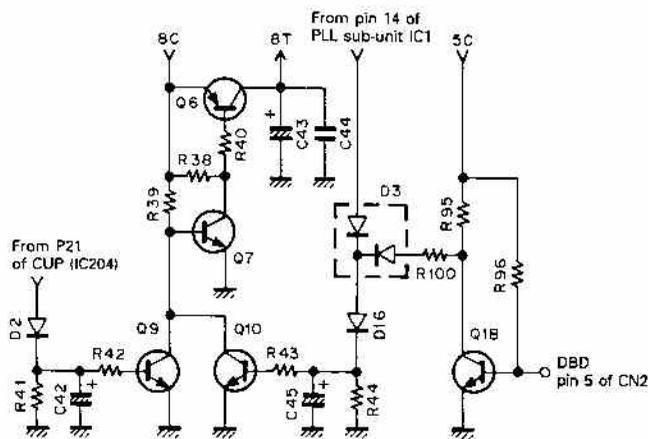


Fig. 4 8T and unlock circuits

Digital Control System

• Overview

The control system consists of a 8 bit micro-controller (IC203), a 4 bit micro-controller (IC204), a reset IC (IC206), and an Electronically Erasable Read Only Memory (EEROM) (IC205).

• Frequency programming of transmit and receive

Transmit and receive frequencies are programmed by using the channel selector and the PTT switch on the transceiver when an internal jumper is installed.

After the internal jumper is removed, the transceiver reverts to the user mode and the channel selector only selects those frequencies already programmed into the EEROM.

• Reset circuit

Micro-controller reset and memory back-up are enabled by RST (IC206).

At initial power on (if the voltage rises slowly), the output RST of IC206 is detected by IC203, 204 and reset is initiated internally.

If 5C voltage exceeds 4.8V, the output RST of IC206 becomes high, causing the micro-controller to go to the reset mode.

• Display circuit

The display circuit is contained in the LCD assembly. It consists of a LCD driver, its peripheral circuits, and an LCD. The LCD is dynamically operated at a 50% duty cycle. The LCD driver receives LCD data from P61, P72, and P73 of the CPU (IC204).

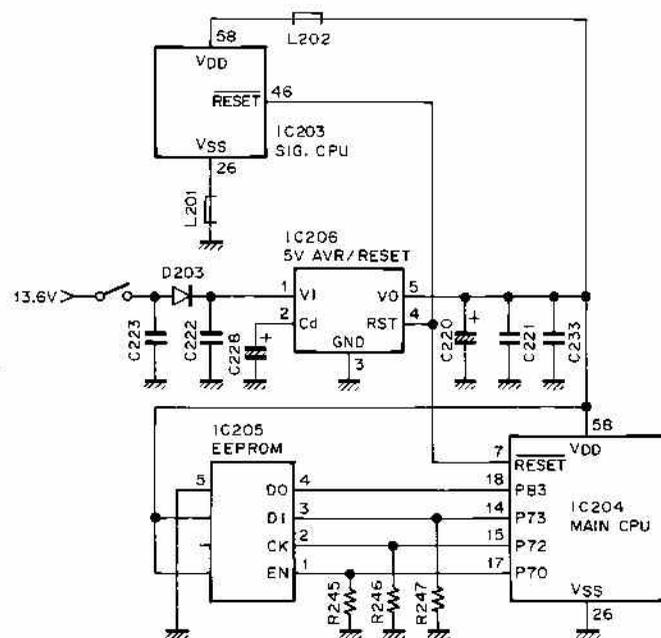


Fig. 5 Reset circuit

CIRCUIT DESCRIPTION

• PLL data output

PLL data is available from P72 (CK), P73 (DT), and P71 (EN) of the CPU (IC204). Figure 6 is a timing chart for PLL data transfer, and Figure 7 shows the format of PLL data.

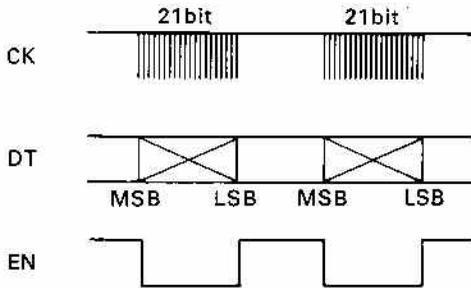
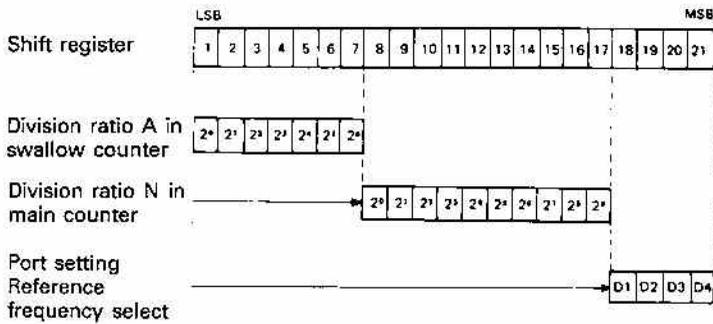


Fig. 6 timing chart for PLL data transfer



The 21-bit data is made up of the following:

1. Reference frequency (ref) select (2 bits)

Data		Phase reference frequency	
D1	D2		
L	L	5kHz	10kHz step mode
H	L	6.25kHz	12.5kHz step mode

2. Switch select (2 bits)

Data		Output port		
D3	D4	SW1	SW2	
L	H	L	H	RX mode
H	L	H	L	TX mode

Fig. 7 PLL data format

Signaling/squelch

The IC1 DET output is amplified by about 26dB by the IC201 (2/2) amplifier, and divided into the QT/DQT signal and the SQ (noise squelch) signal. The QT/DQT signal is limited to 300Hz or less by the IC201 (1/2) low-pass filter, and sent to ANO (pin 27) of the microprocessor (IC203) for signaling. The SQ signal is limited to 30kHz or more by the IC202 (1/2) high-pass filter, and rectified by the IC202 (2/2) comparator. A signal in the range 0 to 5V is produced by level shifter Q202, and sent to IC203 P30 (pin 20). The microprocessor checks whether the DQT/QT signaling matches. If it does, IC203 P14 DTSS (pin 7) outputs a low signal; otherwise, it outputs a high signal. If there is an SQ signal, IC203 P16 SSQ (pin 9) outputs a low signal; otherwise, it outputs a high signal.

D205 quickly stabilizes the potential on the positive side of C224 to the mid-point bias of IC201 (2/2) when the power is switched on or when transmission changes to reception. Q203 mutes only during scanning, so that signaling is detected correctly while the PLL is unlocked.

For transmission, the QT and DST signals are output as PWM (pulse width modulation) signals from the output pin (P34, pin 33) of the digital-to-analog converter (IC203). They pass through a CR filter, and a modulation signal is sent to the TO pin.

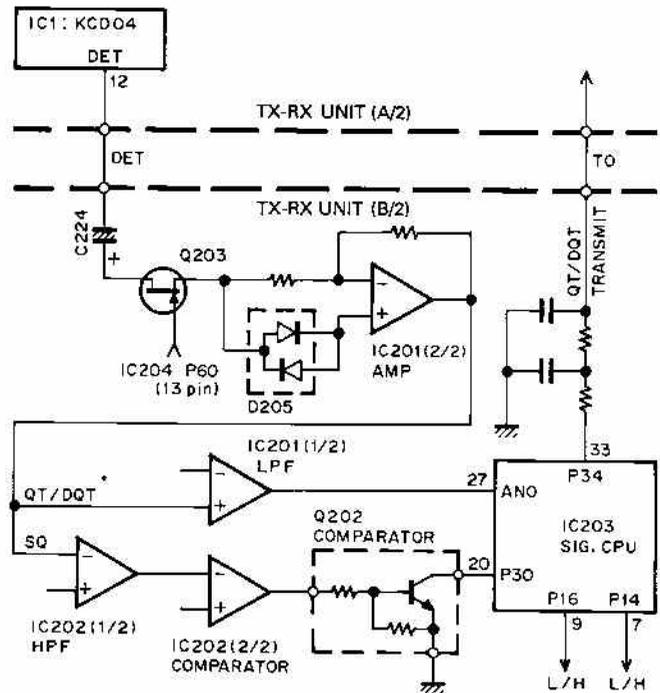


Fig. 8 Signaling/squelch

SEMICONDUCTOR DATA

Signaling CPU : 78312AGF323-3BE (IC203) Terminal Functions

Pin No.	Port No.	Port name	Pin name	I/O	Function
1,2	P06, P07			-	Unused, VDD connection.
3~5	P10~P12			-	Unused, VDD connection.
6	P13		DET25	O	Signaling rise (during scan). 0 : Present, 1 : Absent
7	P14		DETSS	O	Signaling match signal. 0 : Present, 1 : Absent
8	P15			-	Unused, open.
9	P16		SSQ	O	Squelch. 0 : Present, 1 : Absent
10	P17			O	Serial interface busy. 0 : Busy, 1 : OK
11	P20	NMI		-	Unused, GND connection.
12	P21	INTE0		-	Unused, GND connection.
13	P22	INTE1		-	Unused, GND connection.
14	P23	INTE2		-	Unused, GND connection.
15	P24	TXD		-	Unused, GND connection.
16	P25	RXD	TXD	I	Serial data.
17	P26	SCK		-	Unused, open.
18	P27	CTS	CTS	I	Serial clock.
19	RFSH			-	Unused, open.
20	P30	CI0		I	Squelch noise detection.
21	P31	CTRL0		-	Unused, open.
22	P32	CI1		-	Unused, open.
23	P33	CTRL1		-	Unused, open.
24	X1			I	12MHz crystal oscillator.
25	X2			I	12MHz crystal oscillator.
26	Vss			I	GND
27	AN0			I	Signaling signal input.
28	AN1			I	Squelch level setting.
29,30	AN2, AN3			-	Unused, open.
31	AVref			I	VDD connection.
32	AVss			I	GND connection.
33	P34	PWM0	TO	O	Signaling output.
34	P35	PWM1		-	Unused, open.
35	P36	CLR0/TO0		-	Unused, open.
36	P37	CLR1/TO1		-	Unused, open.
37~44	P50~P57	A8~A15		-	Unused, VDD connection.
45	EA			I	VDD connection.
46	RESET			I	Reset pulse input.
47	RD			-	Unused, open.
48	WR			-	Unused, open.
49	ALE			-	Unused, open.
50~57	P40~P47	AD0~AD7		-	Unused, VDD connection.
58	VDD			I	5V connection.
59~64	P00~P05			-	Unused, VDD connection.

Main CPU : 75112GF-672-3BE (IC204) Terminal Function

Pin No.	Port No.	Port name	Pin name	I/O	Function
1	P41			I	Unused, GND or VDD connection.
2	P40	PDETSS	DETSS	I	Signaling match/mismatch. 1 : Mismatch, 0 : Match
3	P53	PDET25	DET25	I	Signaling rise (during scan). 1 : Absent, 0 : Present
4	P52	PUL	LOCK	I	PLL unlock signal.
5	P51	PDQTNITX		I	Logic switching during DQT or transmission. 1 : Inverse, 0 : Normal
6	P50			I	Unused, VDD connection.
7	RESET			I	

SEMICONDUCTOR DATA

Pin No.	Port No.	Port name	Pin name	I/O	Function
8,9	X2, X1			I	4.19MHz crystal oscillator.
10	P63	PSUCOMSK		O	Clock for sub-microprocessor communication.
11	P62	PDQTN1		I	Logic switching during DQT or reception. 1 : Inverse, 0 : Normal
12	P61		CE	O	LCD CE.
13	P60			O	Scan detection mute control. 1 : Unmute, 0 : Mute
14	P73	PROMDI	DT	O	LCD, PLL, EEPROM, and sub-microprocessor data.
15	P72	PROMSK	CK	O	LCD, PLL, and EEPROM CK.
16	P71	PPLLEP	EN	O	PLL IC LE.
17	P70	PROMCS		O	EEPROM CS.
18	P83	PROMDO		I	EEPROM DO.
19	P82			I	
20	P81	POPTX		I	DTMF transpond tone transmission signal.
21	P80	POPDET/PEOS		I	2TONE, DTMF detection. 0 : Match, 1 : Mismatch/DRS EOS signal input. 0 : Stop, 1 : Operate
22	P93	PREC		O	Record/playback switching during DRS. 1 : Record, 0 : Playback
23	P92	PSTART/POPPTT		O	Start during DRS/PTTSW logic output during 2TONE.
24	P91	PRAY/PSTOP		O	Stop during DRS/2TONE, DTMF horn alert switch.
25	P90	POPRET/PACL		O	2TONE, DTMF reset.
26	Vss			I	GND.
27	INT3/P13			-	Unused, GND connection.
28,29	INT2/P12, INT1/P11			I	Encoder.
30	INT0/P10	PSET		I	Setting/use mode switching. 0 : Setting, 1 : Use
31-34	PTH03-PTH00			-	Unused, GND connection.
35	T10	P2CH		-	2-/16-channel switching. Low : 16 channels
36	T11		HOOK	I	IBM PC connection start bit interrupt input.
37	P23	PSMUTE		O	Voice sub mute.
38	PCL/P22	PMUTE		O	Voice mute.
39	PTO1/P21	PTXB		O	Transmission circuit switch. 1 : Reception, 0 : Transmission
40	PTO0/P20		BEEP	O	Beep.
41	SI/P03			-	Unused, VDD connection.
42	SO/P02	PPTTSW	PTT	I/O	Output PTT key input, IN/OUT in clone mode.
43	SCK/P01			-	Unused, open.
44	INT4/P00			-	Unused, VDD connection.
45	P123			I	Unused, VDD connection.
46	P122			-	Unused.
47	P121	PHOOK	HOOK	I/O	In when the microphone is hooked, data out when IBM PC is connected.
48	P120	PAUX1	AUX1	I	AUX key input.
49	P133	PMONI	MONI	I	MONI key input.
50	P132	PAUX2	REC	I	REC key input.
51	P131	PSCAN	SCAN	I	SCAN key input.
52	P130	PDA	D/A	I	D/A key input.
53-56	P143-P140			-	Unused.
57	NC			I	VDD.
58	VDD			I	5V.
59,60	P33, P32			I	IF setting.
61	P31	PSB1		I	Channel setting. 1 : 48 channel, 0 : 16 channel
62	P30	PSB0		I	Step setting. 1 : 10-, 12.5kHz, 0 : 5-, 6.25kHz
63	P43	PSUCOMBS	BUSY	I	Communication busy signal. 1 : Enabled, 0 : Disabled
64	P42	PSSQ	SSQ	I	Slow squelch signal. 1 : Present, 0 : Absent

DESCRIPTION OF COMPONENTS

TX-RX UNIT (X57-3850-XX) -10 : K,M -11 : K2,M2 -12 : K3,M3 -13 : K4 -24 : M4

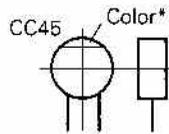
Component	Use/Function	Operation/Condition/Compatibility
IC1	2nd local oscillator, IF amplification, detection, low-frequency amplification, noise amplification, noise detection, squelch switching	1 : 1st IF signal input. 3,4 : 2nd local oscillator. 9 : Busy input. 11 : S-meter output. 12 : DET output. 14 : RD output 15 : Low-frequency output.
IC2	AF amplification	1 : AF input. 6 : AF output.
IC3	MIC amplification	Mic amplification and splatter filter.
IC4	5V AVR	
IC5	10V AVR	For PLL.
IC6	Transmit drive	
IC7	8V AVR	
IC201	Amplification, LPF	
IC202	HPF, comparator	
IC203	Microprocessor	Signaling.
IC204	Microprocessor	Main control.
IC205	EEPROM	
IC206	5V AVR	
IC301	RF power amplification	
Q1	High-frequency amplification	Operates in receive mode.
Q2	1st mixer	
Q3	1st IF amplification	
Q4	AF mute	
Q5	8R switching	On in receive mode.
Q6	8T switching	On in transmit mode.
Q7	8T switching control	On in transmit mode.
Q8	8R switching control	On in receive mode.
Q9	8T switching control	Off in transmit mode.
Q10	8T switching control	Off when PLL locked.
Q11	Mic line mute	Off in transmit mode.
Q12	Mic mute	On when DTMF power output and receive mode.
Q13	PLL 8V ripple filter	
Q14	PLL output amplification	
Q15	TX power control (APC)	
Q16	DC switch	
Q17	DC switch control	On when power switch is on.
Q18	8T switching control	For DTMF DBD switch.
Q201	UL line buffer	Off when PLL locked.
Q202	Limiter	
Q203	DET line mute switch	OFF when SCAN UL, normally ON.
D1	Transmit/receive switching	
D2-4	Switch	
D6	VFO output switch	
D7	Temperature compensation	
D8, 9	Transmit/receive switching	
D10, 11	Power detection	For APC.
D12	Reverse current prevention	
D13	Switch	
D14	RF limiter	
D15	Surge absorber	
D16	Switch	
D202	Microprocessor protection	
D203	Reverse current prevention	
D205	Limiter	

PARTS LIST

CAPACITORS

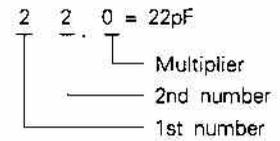
CC 45 TH 1H 220 J
1 2 3 4 5 6

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, ect.
- 3 = Temp. coefficient
- 4 = Voltage rating
- 5 = Value
- 6 = Tolerance



Capacitor value

- 010 = 1pF
- 100 = 10pF
- 101 = 100pF
- 102 = 1000pF = 0.001μF
- 103 = 0.01μF



Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

Tolerance

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF -10 ~ +50 Less than 4.7μF -10 ~ +75

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

Less than 10pF

Voltage rating

2nd word \ 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-

Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL) Refer to the table above.

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Dimension

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25

Dimension

Dimension code	L	W	T	Wattage
E	3.2 ± 0.2	1.6 ± 0.2	0.57	2B
F	2.0 ± 0.3	1.25 ± 0.2	0.45	2A

RESISTORS

Chip resistor (Carbon)

(EX) R D 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

Carbon resistor (Normal type)

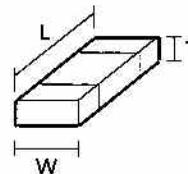
(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, ect.
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Voltage rating
- 6 = Value
- 7 = Tolerance

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
2A	1/10W	2E	1/4W	3A	1W
2B	1/8W	2H	1/2W	3D	2W
2C	1/6W				

Dimension



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Parts without Parts No. are not supplied.

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Teile ohne Parts No. werden nicht geliefert.

TK-805D

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
TK-805D						
1	1B		A01-1065-03	METALLIC CABINET(UPPER)		
2	2B		A01-1066-03	METALLIC CABINET(LOWER)		
3	1C		A10-1292-01	CHASSIS CALKED ASSY		
4	2B		A22-0765-23	SUB PANEL		
5	2A		A62-0093-03	PANEL ASSY		
7	2A		B03-0563-04	DRESSING PLATE		
8	2A		B10-1126-04	FRONT GLASS		
-			B38-0322-05	DISPLAY ASSY(LED)		
9	2B		B38-0363-05	DISPLAY ASSY(LCD)		
11	1B, 1C		B42-2455-04	LABEL(M4X8 MAX)		
12	1C		B42-3343-04	LABEL(S/No.)		
-			B42-3394-04	LABEL(FCC)		KK2
-			B42-3394-04	LABEL(FCC)		K3K4
13	1E		B46-0409-30	WARRANTY CARD		KK2
13	1E		B46-0409-30	WARRANTY CARD		K3K4
14	1E		B62-0129-00	INSTRUCTION MANUAL		
15	1C	*	B72-0215-04	MODEL NAME PLATE		K
15	1C	*	B72-0217-04	MODEL NAME PLATE		K2
15	1C	*	B72-0218-04	MODEL NAME PLATE		K3
15	1C	*	B72-0219-04	MODEL NAME PLATE		K4
15	1C	*	B72-0220-04	MODEL NAME PLATE		MM2M3
15	1C	*	B72-0220-04	MODEL NAME PLATE		M4
16	1E		E30-2036-05	GND WIRE(MIC)		
17	1E		E30-2076-05	DC CORD ASSY		
18	1C		E30-2145-05	ANT CABLE		
19	1C		E30-2172-15	DC CORD		
-			E31-3197-15	CONNECTING WIRE(SP)		
-			E40-9016-05	PIN ASSY SOCKET		
20	1C, 1D		F05-1031-05	FUSE(10A)		
-			F11-1133-14	SHIELDING COVER(IC301)		
-			G02-0558-04	FLAT SPRING		
21	1B		G02-0576-14	FLAT SPRING(IC, Tr)		
22	1C		G02-0592-04	FLAT SPRING(TX-RX UNIT)		
23	2A		G09-0405-05	KNOB FIXED SPRING		
24	1B		G10-0651-04	NON-WOVEN FABRIC(SP)		
25	1B, 2C		G10-0681-04	NON-WOVEN FABRIC(CHASSIS)		
26	1B, 2B		G10-0686-04	NON-WOVEN FABRIC(CABINET)		
27	1B		G13-0688-04	CUSHION(DC CORD)		
28	2B		G13-0935-04	CUSHION(VOL.)		
29	2A		G13-0936-04	CUSHION(POWER, MONI, AUX)		
30	2B		G13-0937-04	CUSHION(CH)		
31	2B		G13-0953-14	CUSHION(REC, SCAN, D/A)		
-			G13-0959-04	CUSHION(MIL)		KK2
-			G13-0959-04	CUSHION(MIL)		K3K4
33	3D		H10-2677-02	POLYSTYRENE FOAMED FIXTURE		
34	1D		H11-0830-04	POLYSTYRENE PLATE		
35	2D		H13-0814-04	PROTECTION BOARD		
36	1E		H25-0103-04	PROTECTION BAG(DC CORD)		
37	1D		H25-0720-04	PROTECTION BAG(RADIO)		
38	3E	*	H52-0145-04	ITEM CARTON BOX		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

▲ indicates safety critical components.

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× New Parts

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TK-805D

TX-RX UNIT (X57-3850-XX)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
40	2D		J19-1376-15	MIC HANGER		
41	1C		J19-1434-04	HOLDER(SP)		
-			J21-4282-08	MOUNTING HARDWARE		
43	2D		J29-0441-03	MOUNTING BRACKET		
45	2B		K27-3052-04	KNØB(PØWER)		
46	2A		K29-4533-04	KNØB(CH)		
47	2A		K29-4534-04	KNØB(VØL.)		
48	2B		K29-4535-04	KNØB(MØNI, AUX)		
A	2B		N09-0626-04	SCREW(M3X10)		
B	2B	*	N38-2640-46	SCREW(SUB PANEL)		
C	1C, 2C		N33-2606-45	SCREW(CABINT)		
D	2B, 1C		N87-2606-46	BRAZIER HEAD TAPTITE SCREW(PCB)		
E	2B		N88-2606-46	FLAT HEAD TAPTITE SCREW		
50	2E		N99-0321-05	SCREW SET		
52	1B		T07-0246-05	LOUDSPEAKER(FULLRANGE)		
53	2E		T91-0362-15	MICROPHONE		KK2
53	2E		T91-0362-15	MICROPHONE		K3K4
53	2E		T91-0509-05	MICROPHONE		MM2M3
53	2E		T91-0509-05	MICROPHONE		M4
IC301			LC7582	IC(LCD DRIVER)		
IC301			M57729H-22	IC(PØWER MØDULE/ 450-470MHZ)		KM
IC301			M57729L-22	IC(PØWER MØDULE/ 400-420MHZ)		K4M4
IC301			M57729SH-22	IC(PØWER MØDULE/ 490-512MHZ)		K3M3
IC301			M57729UH-22	IC(PØWER MØDULE/ 470-490MHZ)		K2M2
55	1B, 2C	*	X57-3850-10	TX-RX UNIT		KM
55	1B, 2C	*	X57-3850-11	TX-RX UNIT		K2M2
55	1B, 2C	*	X57-3850-12	TX-RX UNIT		K3M3
55	1B, 2C	*	X57-3850-13	TX-RX UNIT		K4
55	1B, 2C	*	X57-3850-24	TX-RX UNIT		M4
TX-RX UNIT (X57-3850-XX) -10 : K,M -11 : K2,M2 -12 : K3,M3 -13 : K4 -24 : M4						
C1			CC73FSL1H101J	CHIP C 100PF J		
C2			CC73FCH1H010C	CHIP C 1PF C		
C3			CC73FCH1H030C	CHIP C 3PF C		KMK3M3
C3			CC73FCH1H030C	CHIP C 3PF C		K2M2
C3			CC73FCH1H270J	CHIP C 27PF J		K4M4
C4			CK73FB1H102K	CHIP C 1000PF K		
C5			CC73FSL1H101J	CHIP C 100PF J		
C6			CK73FB1H102K	CHIP C 1000PF K		
C7			CC73FCH1H020C	CHIP C 2.0PF C		K4M4
C7			CC73FCH1H030C	CHIP C 3PF C		KMK3M3
C7			CC73FCH1H030C	CHIP C 3PF C		K2M2
C8			CK73FB1H102K	CHIP C 1000PF K		
C9			CC73FCH1H010C	CHIP C 1PF C		K4M4
C10			CC73FCH1H180J	CHIP C 18PF J		KMK2M2
C10			CC73FCH1H180J	CHIP C 18PF J		K3M3
C10			CC73FCH1H220J	CHIP C 22PF J		K4M4
C11			CK73FB1H102K	CHIP C 1000PF K		
C12 ,76			CC73FCH1H050C	CHIP C 5PF C		
C13 ,14			CK73FB1H102K	CHIP C 1000PF K		
C15			CC73FCH1H070D	CHIP C 7PF D		K4M4
C15			CC73FCH1H070D	CHIP C 7PF D		K2M2
C15			CC73FCH1H100D	CHIP C 10PF D		KMK3M3
C16			CK73FB1H102K	CHIP C 1000PF K		
C18			CK73FB1H102K	CHIP C 1000PF K		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

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TX-RX UNIT (X57-3850-XX)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
C19			CC73FCH1H470J	CHIP C 47PF J		
C20			CC73FCH1H390J	CHIP C 39PF J		
C21 ,22			CK73FB1H102K	CHIP C 1000PF K		
C23			CE04EW1A470M	ELECTRØ 47UF 10WV		
C24			CK73FF1C105Z	CHIP C 1.0UF Z		
C26			CK73FB1E104K	CHIP C 0.10UF K		
C28			CK73FB1E104K	CHIP C 0.10UF K		
C29			CK73FB1E103K	CHIP C 0.01UF K		
C30			CE04EW1C470M	ELECTRØ 47UF 16WV		
C31			CE04EW1A471M	ELECTRØ 470UF 10WV		
C32 -34			CE04EW1A470M	ELECTRØ 47UF 10WV		
C35			CK73FB1E153K	CHIP C 0.015UF K		
C36			CC73FSL1H101J	CHIP C 100PF J		
C38 ,39			CK73FF1C105Z	CHIP C 1.0UF Z		
C40			CK73FB1E103K	CHIP C 0.01UF K		
C41 ,43			CE04EW1A470M	ELECTRØ 47UF 10WV		
C42			C92-0504-05	CHIP TAN 0.68UF 20WV		
C44			CK73FB1E103K	CHIP C 0.01UF K		
C45			C92-0504-05	CHIP TAN 0.68UF 20WV		
C46 ,47			CK73FB1H102K	CHIP C 1000PF K		
C49			CK73FB1H102K	CHIP C 1000PF K		
C51			C92-0004-05	ELECTRØ 1.0UF 16WV		
C52			CK73FB1H471K	CHIP C 470PF K		
C58			CK73FB1H102K	CHIP C 1000PF K		
C61			CK73FB1E103K	CHIP C 0.01UF K		
C62			C90-2049-05	ELECTRØ 15UF 6.3WV		
C63			CK73FB1E103K	CHIP C 0.01UF K		
C64			CE04EW1A221M	ELECTRØ 220UF 10WV		
C65			CE04EW1C100M	ELECTRØ 10UF 16WV		
C66			CK73FB1E103K	CHIP C 0.01UF K		
C67 ,68			CK73FB1H102K	CHIP C 1000PF K		
C69			CK73FB1E103K	CHIP C 0.01UF K		
C70			CK73FB1H102K	CHIP C 1000PF K		
C71			CE04EW1C471M	ELECTRØ 470UF 16WV		
C72			CC73FSL1H101J	CHIP C 100PF J		
C73			CC73FCH1H070D	CHIP C 7PF D		
C74 ,75			CK73FB1H102K	CHIP C 1000PF K		
C77 -81			CK73FB1H102K	CHIP C 1000PF K		
C82			CC73FCH1H040C	CHIP C 4PF C	K4M4	
C83			CK73FB1H102K	CHIP C 1000PF K		
C84			CK73FF1C105Z	CHIP C 1.0UF Z		
C85			CK73FB1H102K	CHIP C 1000PF K		
C86			CK73FF1C105Z	CHIP C 1.0UF Z		
C87			CE04EW1C470M	ELECTRØ 47UF 16WV		
C88			CC73FSL1H101J	CHIP C 100PF J		
C89			CK73FB1H102K	CHIP C 1000PF K		
C90			CE04EW1C100M	ELECTRØ 10UF 16WV		
C91			CK73FB1H471K	CHIP C 470PF K		
C92			CM73F2H050D	CHIP C 5.0PF D	KMK2M2	
C92			CM73F2H050D	CHIP C 5.0PF D	K4	
C92			CM73F2H070D	CHIP C 7.0PF D	K3M3	
C92			CM73F2H100D	CHIP C 10PF D	M4	
C93			CC45SL2H180J	CERAMIC 18PF J		
C94			CC45SL2H150J	CERAMIC 15PF J		
C95			CC45SL2H220J	CERAMIC 22PF J		

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TX-RX UNIT (X57-3850-XX)

Ref. No. 参照番号	Address 位置	New Parts 系	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C96			CC73FCH1H0R5C	CHIP C 0.5PF C		
C97			CC73FCH1H020C	CHIP C 2.0PF C		
C98			CC45SL2H040C	CERAMIC 4.0PF C	K2M2	
C98			CC45SL2H050C	CERAMIC 5.0PF C	KM	
C98			CC45SL2H050C	CERAMIC 5.0PF C	K3M3	
C98			CC45SL2H060D	CERAMIC 6.0PF D	K4M4	
C99			CC45SL2H070D	CERAMIC 7.0PF D	KM	
C99			CC45SL2H070D	CERAMIC 7.0PF D	K3M3	
C99			CC45SL2H080D	CERAMIC 8.0PF D	K2M2	
C99			CC45SL2H100D	CERAMIC 10PF D	K4M4	
C100			CC73FCH1H0R5C	CHIP C 0.5PF C		
C101			CC73FCH1H020C	CHIP C 2.0PF C		
C102			CK73FB1H102K	CHIP C 1000PF K		
C103			CM73F2H040D	CHIP C 4.0PF D	K2M2	
C103			CM73F2H050D	CHIP C 5.0PF D	K3M3	
C103			CM73F2H060D	CHIP C 6.0PF D	K4M4	
C104			CK73FB1E103K	CHIP C 0.01UF K		
C105			CB04BW1C100M	ELBCTRO 10UF 16WV		
C106, 107			CK73FB1E103K	CHIP C 0.01UF K		
C108			C90-2092-05	ELBCTRO 10UF 16WV		
C109, 110			CK73FB1H102K	CHIP C 1000PF K		
C111			CC73FCH1H020C	CHIP C 2.0PF C	K2M2	
C111			CC73FCH1H030C	CHIP C 3PF C	KM	
C111			CC73FCH1H030C	CHIP C 3PF C	K3M3	
C111			CC73FCH1H040C	CHIP C 4PF C	K4M4	
C112			CK73FP1C105Z	CHIP C 1.0UF Z		
C113			CK73FB1H102K	CHIP C 1000PF K		
C114			C92-0507-05	CHIP TAN 4.7UF 6.3WV		
C115			CK73FB1E104K	CHIP C 0.10UF K		
C116, 117			CC73FSL1H101J	CHIP C 100PF J		
C118			CK73FB1E103K	CHIP C 0.01UF K		
C119			C92-0003-05	CHIP TAN 0.47UF 25WV		
C120			CK73FB1E153K	CHIP C 0.015UF K		
C121			CK73FB1H102K	CHIP C 1000PF K		
C122, 123			CC73FCH1H180J	CHIP C 18PF J	K3M3	
C201			CC73FSL1H101J	CHIP C 100PF J		
C202			CK73FB1E273K	CHIP C 0.027UF K		
C203			C92-0507-05	CHIP TAN 4.7UF 6.3WV		
C204, 205			CK73FB1E273K	CHIP C 0.027UF K		
C206, 207			CC73FSL1H101J	CHIP C 100PF J		
C208			CC73FCH1H180J	CHIP C 18PF J		
C209, 210			CK73FB1H102K	CHIP C 1000PF K		
C211			CK73FB1H472K	CHIP C 4700PF K		
C212			C92-0507-05	CHIP TAN 4.7UF 6.3WV		
C213, 214			CC73FCH1H100D	CHIP C 10PF D	KMK2M2	
C213, 214			CC73FCH1H100D	CHIP C 10PF D		K3M3
C215, 216			CK73FB1E104K	CHIP C 0.10UF K		
C217			CK73FB1H102K	CHIP C 1000PF K		
C218, 219			CC73FCH1H330J	CHIP C 33PF J		
C220			CB04NW1C470M	ELECTRO 47UF 16WV		
C221-223			CK73FB1H102K	CHIP C 1000PF K		
C224			C92-0513-05	CHIP-TAN 3.3UF 6.3WV		
C225-227			CK73FB1H102K	CHIP C 1000PF K		
C228			C92-0003-05	CHIP TAN 0.47UF 25WV		
C229			CK73FB1E104K	CHIP C 0.10UF K		

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TX-RX UNIT (X57-3850-XX)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
C230			CK73FB1H102K	CHIP C 1000PF K		
C231			CK73FB1E104K	CHIP C 0.10UF K		
C232			CK73FB1H102K	CHIP C 1000PF K		
C233			CK73FB1E104K	CHIP C 0.10UF K		
C234			CK73FB1H102K	CHIP C 1000PF K		
TC1			C05-0348-05	TRIM CAP 10PF		
CN1			E40-3237-05	PIN CONNECTOR(SP)		
CN2			E40-5183-05	PIN CONNECTOR(DTMF)		
CN3 ,4			E40-5202-05	PIN CONNECTOR(13P)		
CN7 ,8			E40-5328-05	PIN CONNECTOR(3P)		
CN201,202			E40-5203-05	PIN CONNECTOR(13P)		
CN203			E40-3485-05	PIN CONNECTOR(LCD)		
CN204			E40-5187-05	PIN CONNECTOR(OPTION)		
J1			E11-0425-05	PHONE JACK		
J4 ,5			E18-0254-05	SOCKET		
J201			E08-0673-05	RECTANGULAR RECEPTACLE(MIC)		
TP1			E40-0211-05	PIN CONNECTOR		
TP2 -4			E23-0465-05	TERMINAL		
W1			E33-1902-05	FINISHED WIRE SET(HBT)		
			J30-0545-05	SPACER		
CD1			L79-1013-05	FILTER (CDBM455C16)		
CF1			L72-0372-05	CERAMIC FILTER(CFWM455F)		
L1			L79-0877-05	HELICAL RESONATOR(455MHZ)		KM
L1			L79-0879-05	HELICAL RESONATOR(480MHZ)		K2M2
L1			L79-0881-05	HELICAL RESONATOR(505MHZ)		K3M3
L1			L79-0883-05	HELICAL RESONATOR(415MHZ)		K4M4
L2			L40-1872-80	SMALL FIXED INDUCTOR(18NH)		
L3			L40-1072-80	SMALL FIXED INDUCTOR(10NH)		
L4			L79-0878-05	HELICAL RESONATOR(455MHZ)		KM
L4			L79-0880-05	HELICAL RESONATOR(480MHZ)		K2M2
L4			L79-0882-05	HELICAL RESONATOR(505MHZ)		K3M3
L4			L79-0884-05	HELICAL RESONATOR(415MHZ)		K4M4
L5			L40-1072-80	SMALL FIXED INDUCTOR(10NH)		K2M2
L5			L40-1272-48	SMALL FIXED INDUCTOR(12NH)		K3M3
L5			L40-1872-80	SMALL FIXED INDUCTOR(18NH)		KM
L5			L40-2272-80	SMALL FIXED INDUCTOR(22NH)		K4M4
L6			L40-1872-80	SMALL FIXED INDUCTOR(18NH)		
L7			L34-2157-05	COIL		K2M2
L7			L34-2157-05	COIL		K4M4
L7			L34-4191-05	COIL		KMK3M3
L8			L40-1092-81	SMALL FIXED INDUCTOR(1UH)		
L10			L40-2272-80	SMALL FIXED INDUCTOR(22NH)		
L11			L34-0908-05	COIL (9.5T)		
L12			L34-1052-05	COIL (1.5T)		K3M3
L12			L34-1185-05	COIL (2.5T)		KMK2M2
L12			L34-1185-05	COIL		K4M4
L13			L34-1032-05	COIL (3.5T)		
L14			L34-1052-05	COIL (1.5T)		KMK2M2
L14			L34-1052-05	COIL (1.5T)		K4M4
L14			L34-1083-05	COIL (1T)		K3M3
L15			L34-0908-05	COIL (9.5T)		
L16			L34-1052-05	COIL (1.5T)		KMK2M2
L16			L34-1052-05	COIL (1.5T)		K4M4

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TX-RX UNIT (X57-3850-XX)

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L16			L34-1083-05	COIL (1T)	K3M3	
L17			L40-1001-17	SMALL FIXED INDUCTOR(10UH)	K3M3	
L201,202			L92-0131-05	FERRITE CHIP COIL		
X1			L77-1419-05	CRYSTAL RESONATOR(30.755MHZ)	K2M2	
X1			L77-1419-05	CRYSTAL RESONATOR(30.755MHZ)	K4M4	
X1			L77-1420-05	CRYSTAL RESONATOR(33.845MHZ)	KM	
X1			L77-1421-05	CRYSTAL RESONATOR(34.755MHZ)	K3M3	
X3		*	L77-1451-05	TCXO (12.8MHZ)		
X201			L77-1435-05	CRYSTAL RESONATOR(12MHZ)		
X202			L77-1397-05	CRYSTAL RESONATOR(4.19MHZ)		
XF1			L71-0294-05	MCF (30.3MHZ)	K2M2	
XF1			L71-0294-05	MCF (30.3MHZ)	K4M4	
XF1			L71-0296-05	MCF (34.3MHZ)	KM	
XF1			L71-0296-05	MCF (34.3MHZ)	K3M3	
R1			RK73FB2A333J	CHIP R 33K J 1/10W		
R2			RK73FB2A104J	CHIP R 100K J 1/10W		
R3			RK73FB2A333J	CHIP R 33K J 1/10W		
R4 ,5			RK73FB2A101J	CHIP R 100 J 1/10W		
R6			RK73FB2A223J	CHIP R 22K J 1/10W		
R7			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R8			R92-0670-05	CHIP R 0 OHM		
R9 ,10			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R11			RK73FB2A221J	CHIP R 220 J 1/10W		
R12			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R13			RK73FB2A470J	CHIP R 47 J 1/10W		
R14			R92-0670-05	CHIP R 0 OHM		
R15			RK73FB2A101J	CHIP R 100 J 1/10W		
R16			RK73FB2B221J	CHIP R 220 J 1/8W		
R17			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R18			RK73FB2A334J	CHIP R 330K J 1/10W		
R19			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R20			RK73FB2A153J	CHIP R 15K J 1/10W		
R21			RK73FB2A104J	CHIP R 100K J 1/10W		
R22			RK73FB2A273J	CHIP R 27K J 1/10W		
R23			RK73FB2A103J	CHIP R 10K J 1/10W		
R24			R92-1220-05	FIXED RESISTOR 1 OHM		
R25			RK73FB2A101J	CHIP R 100 J 1/10W		
R26			R92-0670-05	CHIP R 0 OHM		
R27 ,28			RK73FB2A473J	CHIP R 47K J 1/10W		
R29			RK73FB2A333J	CHIP R 33K J 1/10W		
R30			RK73FB2A473J	CHIP R 47K J 1/10W		
R32			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R33 ,34			RK73FB2A022J	CHIP R 8.2K J 1/10W		
R35			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R36			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R37 -39			RK73FB2A103J	CHIP R 10K J 1/10W		
R40			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R41			RK73FB2A334J	CHIP R 330K J 1/10W		
R42 ,43			RK73FB2A223J	CHIP R 22K J 1/10W		
R44			RK73FB2A473J	CHIP R 47K J 1/10W		
R47			RK73FB2A103J	CHIP R 10K J 1/10W		
R48			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R49			RK73FB2A103J	CHIP R 10K J 1/10W		
R50			RK73FB2A472J	CHIP R 4.7K J 1/10W		

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R51			R92-0670-05	CHIP R 0 0HM		
R53			R92-0670-05	CHIP R 0 0HM		
R55			R92-0670-05	CHIP R 0 0HM		
R56 ,57			RK73FB2A103J	CHIP R 10K J 1/10W		
R62			RK73FB2A331J	CHIP R 330 J 1/10W	KMK2M2	
R62			RK73FB2A331J	CHIP R 330 J 1/10W	K4M4	
R63			RK73FB2A220J	CHIP R 22 J 1/10W		
R64			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R65			R92-0670-05	CHIP R 0 0HM		
R66			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R67			RK73FB2A220J	CHIP R 22 J 1/10W		
R68			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R69			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R70 ,71			RK73FB2A101J	CHIP R 100 J 1/10W		
R72			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R73			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R74			R92-0670-05	CHIP R 0 0HM		
R75 ,76			RK73FB2A100J	CHIP R 10 J 1/10W		
R77			RK73FB2A104J	CHIP R 100K J 1/10W		
R78			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R79			RK73FB2A5R6J	CHIP R 5.6 J 1/10W		
R80			R92-0685-05	CHIP R 22 J 1/2W	KMK2M2	
R80			R92-0685-05	CHIP R 22 J 1/2W	K3M3	
R80			R92-0699-05	SOLID 10 1/2W	K4M4	
R81			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R82			R92-0679-05	CHIP R 0 0HM	K4M4	
R83 ,84			R92-0679-05	CHIP R 0 0HM	KMK2M2	
R83 ,84			R92-0679-05	CHIP R 0 0HM	K3M3	
R85			R92-1214-05	CHIP R 120 J 1/2W		
R86			R92-1215-05	CHIP R 470 J 1/2W		
R87 -89			RK73FB2A103J	CHIP R 10K J 1/10W		
R90			RK73FB2A473J	CHIP R 47K J 1/10W		
R91			RK73FB2A273J	CHIP R 27K J 1/10W		
R92			RK73FB2A273J	CHIP R 27K J 1/10W	K2M2	
R92			RK73FB2A683J	CHIP R 68K J 1/10W	KK3K4	
R92			RK73FB2A683J	CHIP R 68K J 1/10W	MM3M4	
R93			RK73FB2A103J	CHIP R 10K J 1/10W		
R95 ,96			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R97			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R99			RK73FB2A273J	CHIP R 27K J 1/10W		
R100,101			R92-0670-05	CHIP R 0 0HM		
R102			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R103			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R104			RK73FB2A681J	CHIP R 680 J 1/10W		
R105			RK73FB2A473J	CHIP R 47K J 1/10W		
R106			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R202			RK73FB2A473J	CHIP R 47K J 1/10W		
R203			RK73FB2A223J	CHIP R 22K J 1/10W		
R204			RK73FB2A474J	CHIP R 470K J 1/10W		
R205,206			RK73FB2A103J	CHIP R 10K J 1/10W		
R207			RK73FB2A393J	CHIP R 39K J 1/10W		
R208,209			RK73FB2A224J	CHIP R 220K J 1/10W		
R210			RK73FB2A563J	CHIP R 56K J 1/10W		
R211			RK73FB2A103J	CHIP R 10K J 1/10W		
R212			RK73FB2A183J	CHIP R 18K J 1/10W		

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