VHF FM TRANSCEIVER

TK-705/B/N

SERVICE MANUAL

REVISED

KENWOOD

B51-8020-10(O)1481

Photo is K type.

CONTENTS

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-705-1	150 ~ 174MHz	Parts 15, 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 (if so equipped)	Remove microphone from its hanger.
2. Unsquelch radio	Press the SQUELCH switch (⌐V¬).
3. Set VOLUME control	Adjust VOLUME control for a normal listening level.
4. Set SQUELCH control	Press the SQUELCH switch (⌐V¬) 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 (if so equipped)	Insert microphone back into its hanger to activate KQT-8.
You will now hear messages for your system only.	

3. TO TRANSMIT

Operation	Procedure
1. Disable QT (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 at end of the conversation. (if QT 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 prefered, 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.

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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

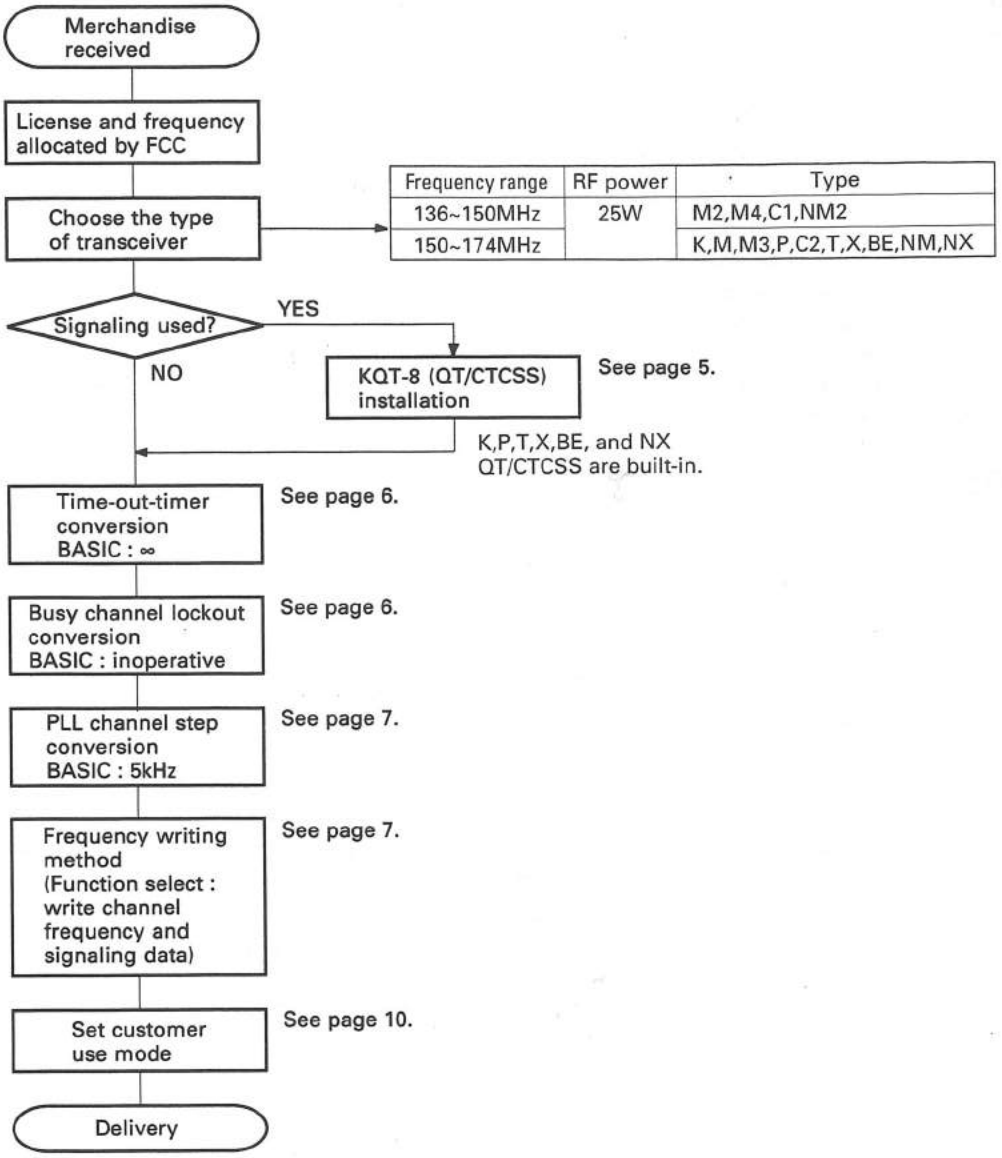
Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply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

System Set-up

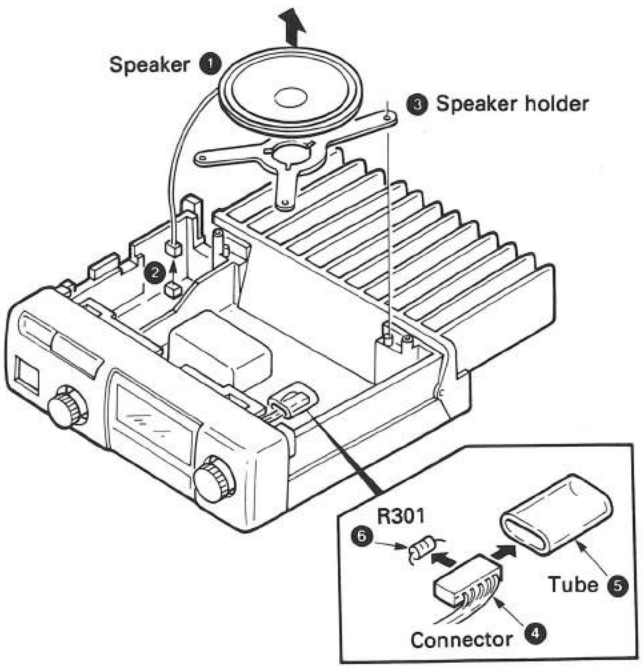


Frequency range	RF power	Type
136~150MHz	25W	M2,M4,C1,NM2
150~174MHz		K,M,M3,P,C2,T,X,BE,NM,NX

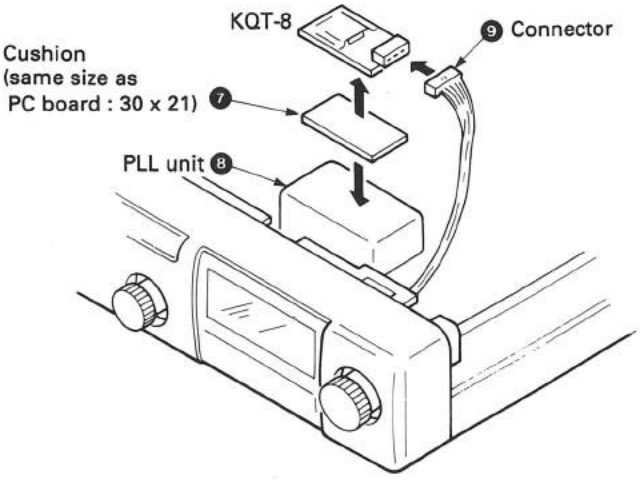
INSTALLATION

Installation of KQT-8

1. Remove the top case of the radio.
2. Remove the speaker (❶) and cable with connector (❷) from the radio.
3. Lift off the speaker holder from the radio (❸).
4. Remove the tube (❺) from the cable with connector (❹) in the radio, then remove the resistor R301 : RD14BB2B2R2 (❻).



5. Attach the cushion supplied with the KQT-8 to the foil side of the KQT-8 (❼).
6. Remove the paper from the cushion attached to the KQT-8, and stick the cushion onto the top case of the PLL unit (❽).
7. Connect the cable with connector (❾) to the connector of the KQT-8.
8. Insert the cable with connector (❷) of the spaker into the radio.
9. Reinstall the speaker holder (❸) in its original position in the radio, and place the speaker in the holder.



CONVERSION

Time-out-timer Conversion (TOT)

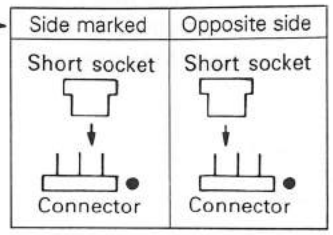
The time-out-timer returns the unit to the receive state automatically when transmission continues beyond a certain length of time.

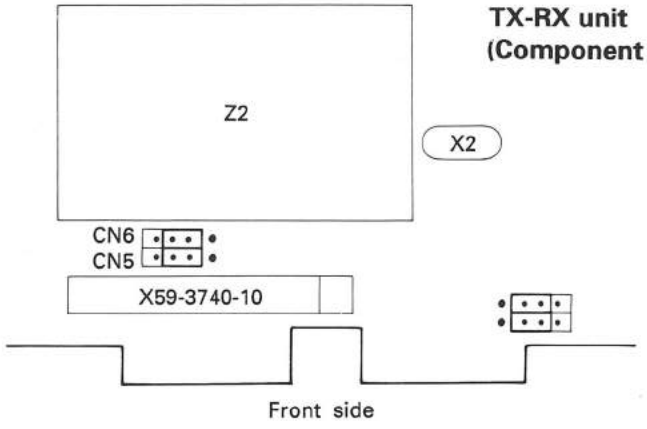
The time limit for the time-out-timer is set by changing the short socket (E18-0254-05) of the connectors (CN5 and CN6) on the TX-RX unit (A/2).

Remove the socket from above.

TOT (sec)	CN5	CN6
∞*	Side marked	Side marked
30	Side marked	Opposite side
60	Opposite side	Side marked
60	Opposite side	Opposite side

* : BASIC





TX-RX unit
(Component side view)

Busy Channel Lockout Conversion

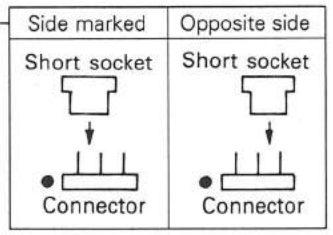
Busy channel lockout inhibits transmission from the local unit when some signaling has been set for the local unit and BUSY is ON and signaling mismatches.

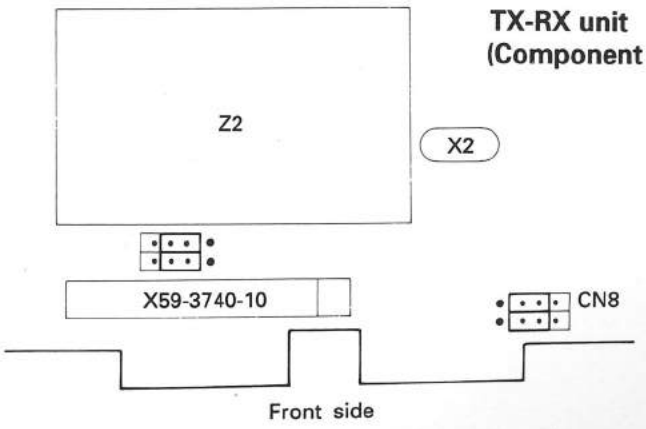
The busy channel lockout is set by changing the short socket of the connector (CN8) on the TX-RX unit (A/2).

Remove the socket from above.

CN8	
Opposite side	Side marked*
Function operative	Function inoperative

* : BASIC





TX-RX unit
(Component side view)

CONVERSION / FREQUENCY WRITING METHOD

PLL Channel Step Conversion

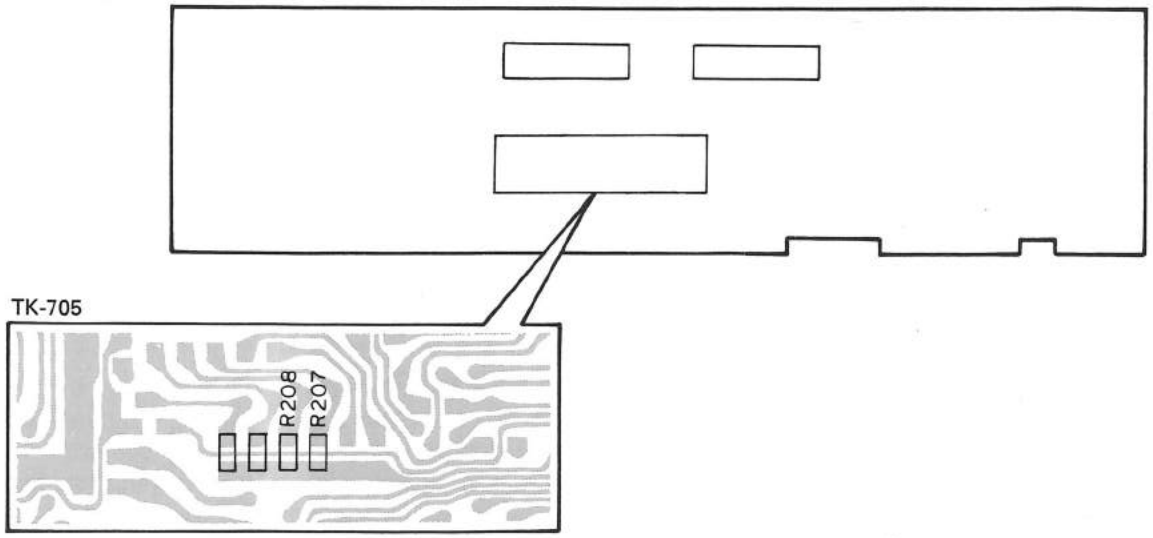
The PLL channel step frequency is chaged from 5kHz to 6.25kHz.

The frequency is set by changing the chip jumpers R207, R208 : R92-0670-05 on the TX-RX unit (B/2)

	R207	R208
5kHz*	O	O
6.25kHz	X	O

* : BASIC
O : Installed
X : Removed

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



Frequency Writing Method

(Function Select)

Function select I and II have the following mode 1) to 5). When frequencies and signaling data are written for the first time after delivery, use the frequency setting mode. Select an appropriate mode as required.

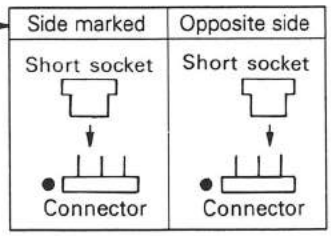
1. Function I and II setting method

To change the function to I or II, change the short socket of the connector CN7 on the TX-RX unit (A/2).

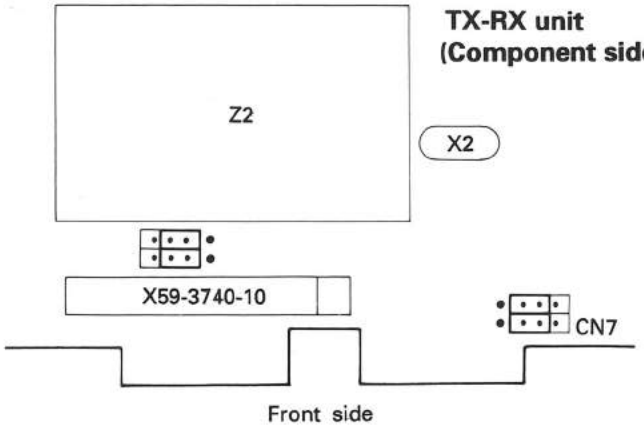
Remove the socket from above.

	CN7
Function I	Side marked*
Function II	Opposite side

* : BASIC



TX-RX unit (Component side view)



FREQUENCY WRITING METHOD

2. Modes

Note : After checking or setting in each mode, deliver the product with the customer use mode of Function II set.

Function I	1)	Memory clear mode	Clear all programmed EEPROM data (above frequencies and signaling data) and enter the frequency setting mode.
	2)	Frequency setting mode	Set the frequency and signaling data for each channel.
	3)	Clone mode	Copy the contents from a radio in which the frequency has been written to a radio in which no frequency is written.
Function II	4)	Customer use mode	Mode used by the user.
	5)	Service mode	The service man can check the data of the EEPROM when it is repaired.

1) Memory clear mode

This mode is set by turning the POWER switch on while pressing the MONITOR switch (🔊).

After all data of the built-in EEPROM (transmit/receive frequency and transmit/receive signaling data) has been cleared, the frequency setting mode is set.

2) Frequency setting mode

- **Notes**

Frequency setting is normal changed in 5kHz (6.25kHz) steps. If the channel selector is turned while pressing the SQUELCH switch (⌐╲╱¬), it is changed in 1MHz steps.

If the signaling unit is not installed, the transmit/receive signaling data setting is not displayed by the CHANNEL indicator.

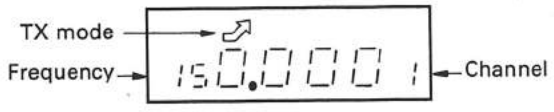
Transmission or reception cannot be performed in this mode.

- **Writing method (See flowchart)**

When the power switch is turned on, the receive frequency setting mode of CH1 on the channel indicator is set. (Only CH1 is initialized to 150.000MHz.)

The transmit/receive frequency and transmit/receive signaling data are set for each channel using the following procedure :

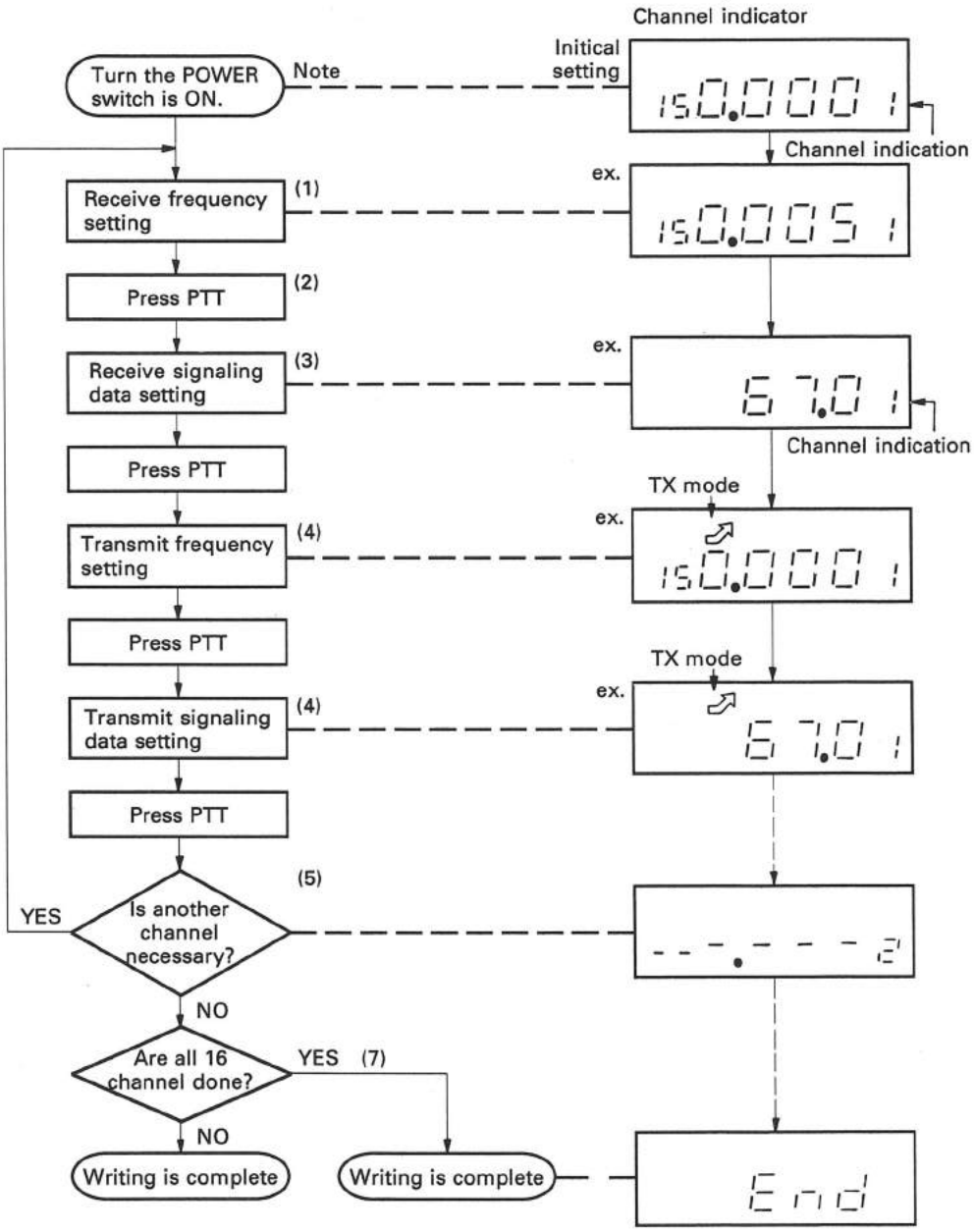
1. Set the receive frequency with the channel selector.
2. Press the PTT switch. The receive frequency specified in step 1 is memorized and the channel indicator shows receive signaling data input mode. The initial indication is off.
3. Set the receive signaling data with the channel selector and press the PTT switch. If the receive signaling data is not set, press the PTT switch.
4. The channel indicator now shows transmit frequency input mode. Set the transmit frequency by following step 1 to 3.



5. Repeat steps 1 to 4 for the channels for which frequencies need to be set.
6. If frequencies for a channel need not be set, simply press the PTT switch. The next step will be displayed.
7. When all 16 channels have been set up, "End" is displayed.
8. When setting is finished, the written contents can be checked by pressing the MONITOR switch (🔊). Even when channel data is being checked with the MONITOR switch, the CHANNEL selector, PTT, and SQUELCH switch are valid, and channel data can be rewritten.

FREQUENCY WRITING METHOD

- **Flowchart of frequency setting mode**

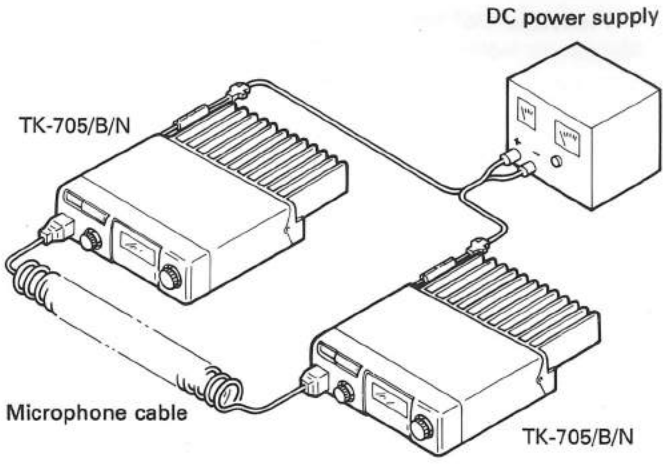


FREQUENCY WRITING METHOD

3) Clone mode

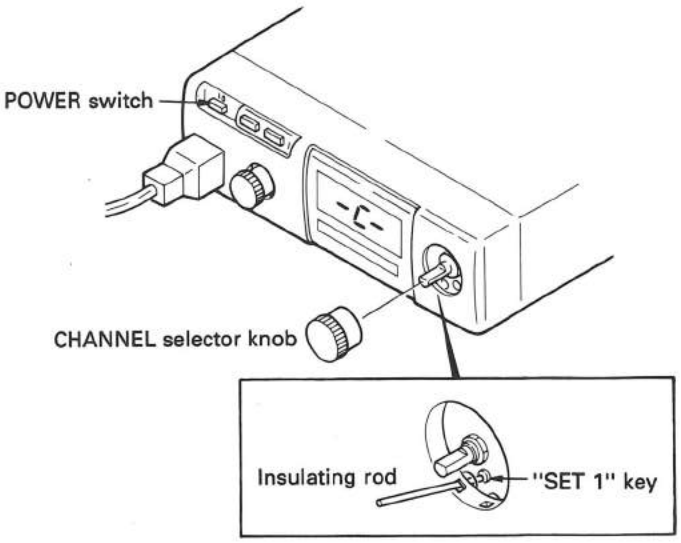
In this mode, two RADIOS are connected, and the contents of the EEPROM data written in one are copied ot the EEPROM of the other.

Note : When using the clone mode, verify that the Function Select (page 7) is set to Function I (the CN7 shorting socket is set to "Side marked").
The first IF and PLL step frequency must be set by the same model.

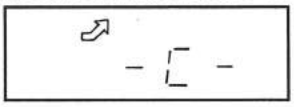


- **Operation method**

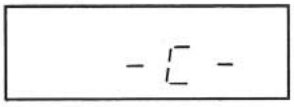
1. Pull out the CHANNEL selector knobs of the two radios.
2. Connect the two radios to the DC power supply. Connect the two redios with the supplied microphone cable (microphone connectors).
3. With the memory clear mode, clear the contents of the EEPROM of the radio to which the frequencies are to be written.
4. Set the two redios to the clone mode by turning on the POWER switch while pressing the "SET 1" key behind the CHANNEL selector with a thin insulating rod. The CHANNEL indicator will show "– C –".
5. Press again the "SET 1" key of the radio in which the frequencies have been written. The TX indicator will be displayed, and writing of frequencies will begin.



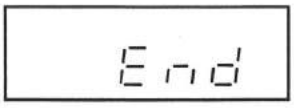
Radio from which data is written



Radio to which data is written



6. Data transfer ends in about 15 seconds, a beep sounds, and the CHANNEL indicator shows "End" (on both radios).



7. Switch to the customer use mode of Function II, and finish writing.

4) Customer use mode

The user can use the radio in this mode.

Set Function II, then turn the POWER switch on to set this mode. (This mode is not set if the POWER switch is turned on while the "SET 1" key is held down.)

5) Service mode

The service man can check the data of the EEPROM in this mode during repair.

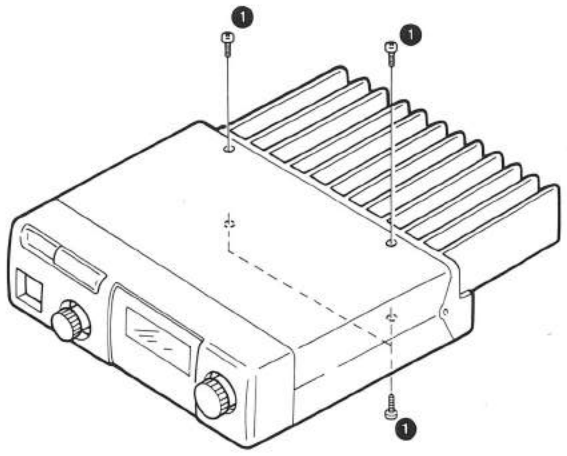
Set Function II, then turn the POWER switch on while the "SET 1" key is held down to set the service mode. The receive frequency of CH1 is displayed.

The data for each channel can be checked by pressing the MONITOR switch. However, the CHANNEL selector, PTT, and SQ OFF keys do not work.

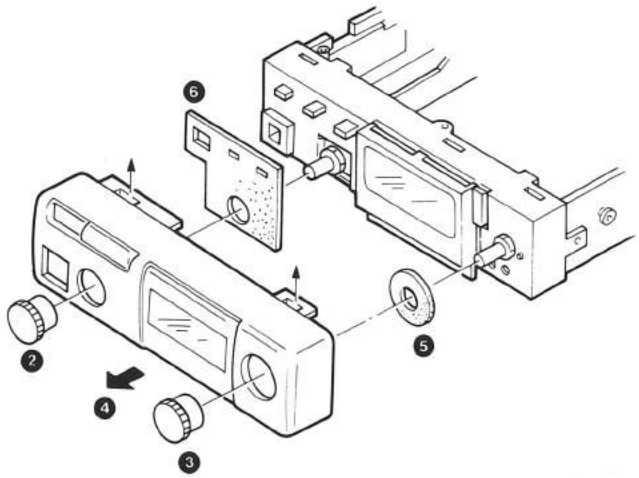
DISASSEMBLY FOR REPAIR

Removing the Front Panel

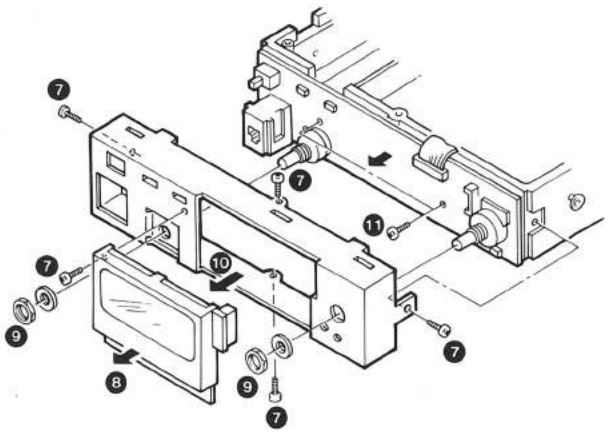
1. Remove the four screws holding the upper and lower cases (❶).



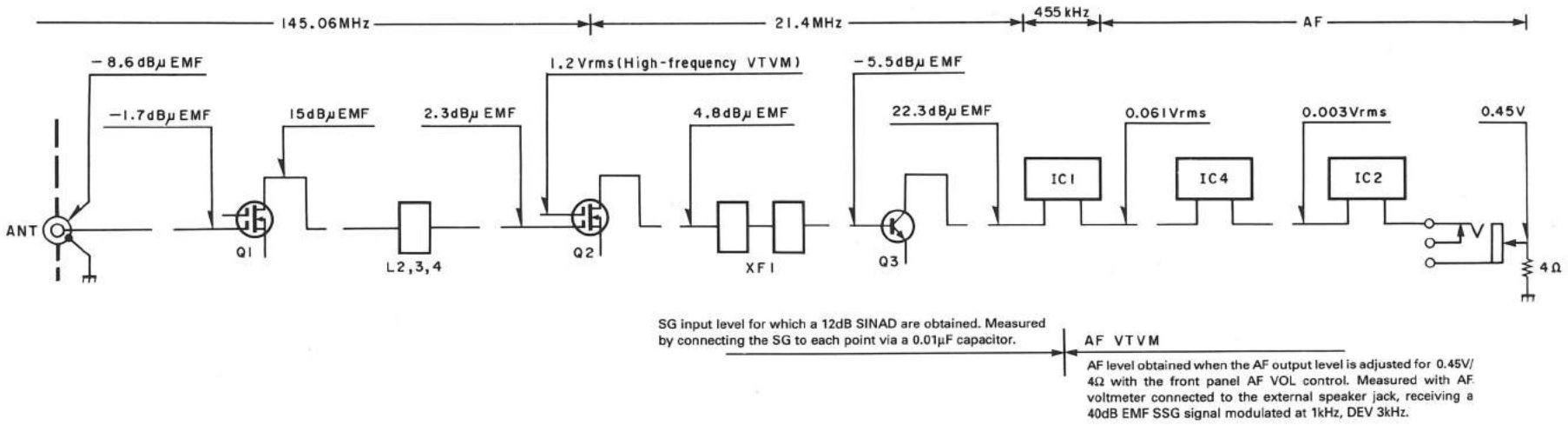
2. Pull out the CHANNEL selector knob (❷) and volume control knob (❸).
3. Slightly lift the stoppers holding the top and bottom of the front panel and pull out the front panel (❹).
4. Remove the cushions (❺, ❻).



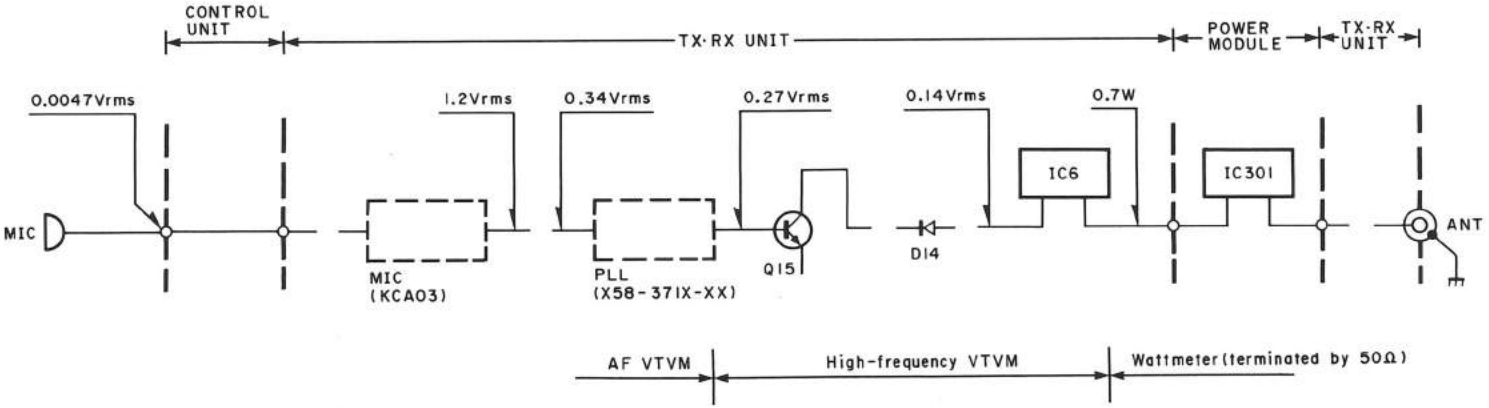
5. Remove the four screws on the sub-panel (❼).
6. Pull the display section forward (❽).
7. Remove the hexagonal nuts of the CHANNEL selector and volume controls (❾).
8. Pull the sub-panel forward (❿).
9. Remove the two screws holding the TX-RX unit (B/2), and remove the unit (⓫).



Receiver section

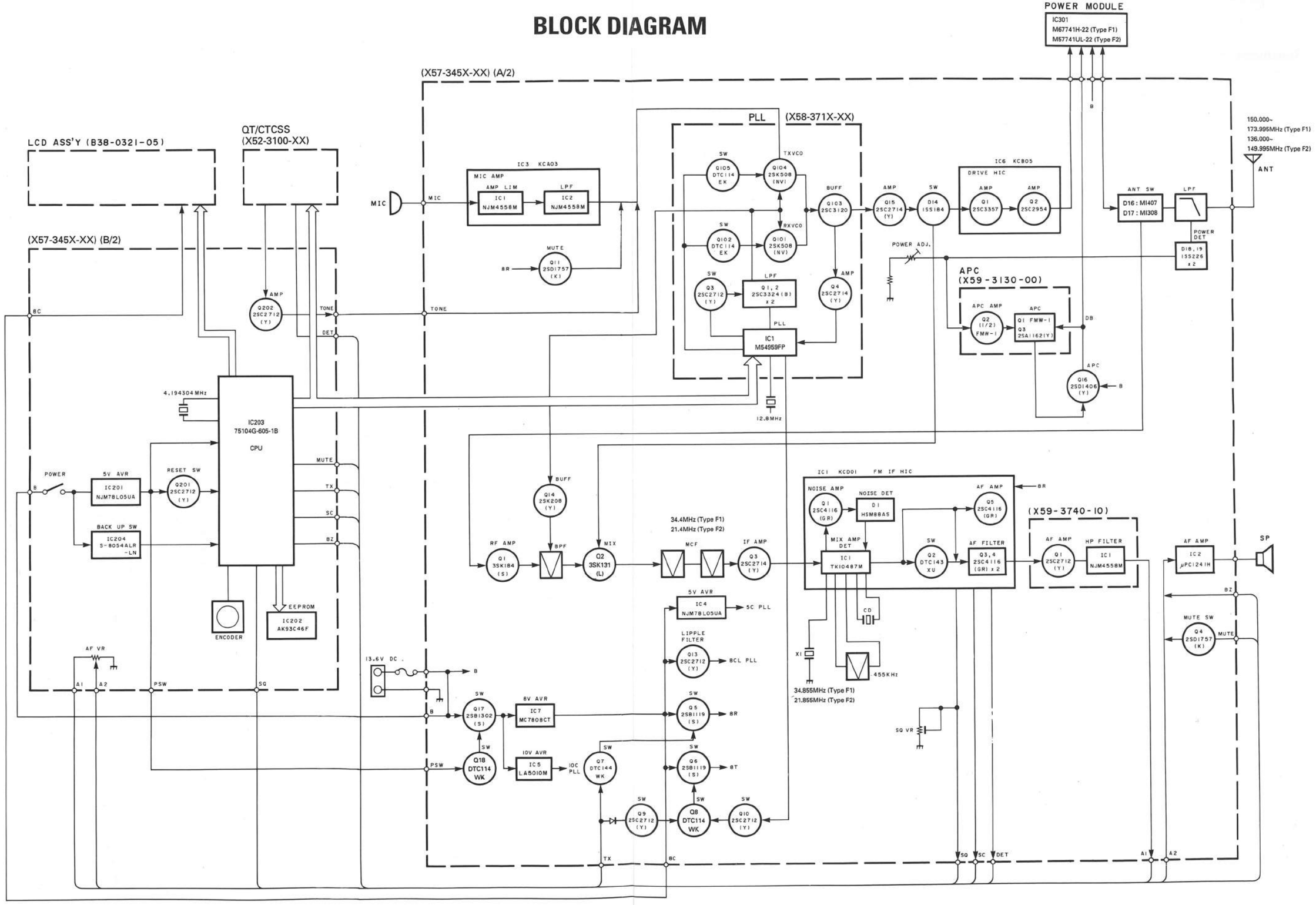


Transmitter section



1. AG is set so that MIC input becomes 3kHz DEV at 1kHz MOD.
2. Transmitting frequency : 145.06MHz

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

TX-RX unit (X57-345X-XX)	Type
0-10	K, P, C2, BE
0-21	M, M3
0-22	NM
0-23	NM2
0-51	T, NX
0-71	X
1-01	M2, M4, C1

Type F1	K, M, M3, P, C2, T, X, BE, NM, NX
Type F2	M2, M4, C1, NM2

Table 1

Circuit Configuration By Frequency

The TK-705/B/N incorporates a PLL synthesizer which uses a digital VFO to allow any channel step of 5 or 6.25kHz to be selected (See Figure 1).

The receiving system utilizes double-conversion techniques. That is an incoming signal is mixed down to the 1st intermediate frequency (IF) of 34.4MHz (**Type F1**), 21.4MHz (**Type F2**), using a 1st local oscillator frequency of from 115.600 to 139.595MHz (**Type F1**), 114.600 to 128.595MHz (**Type F2**). The 1st IF signal is then mixed with the 2nd local oscillator frequency of 34.855MHz (**Type F1**), 21.855MHz (**Type F2**) to generate the 2nd IF of 455kHz.

The transmitting system consists of a PLL circuit which allows direct modulation and direct frequency division. Signals from the PLL circuit are amplified by a linear amplifier for transmission.

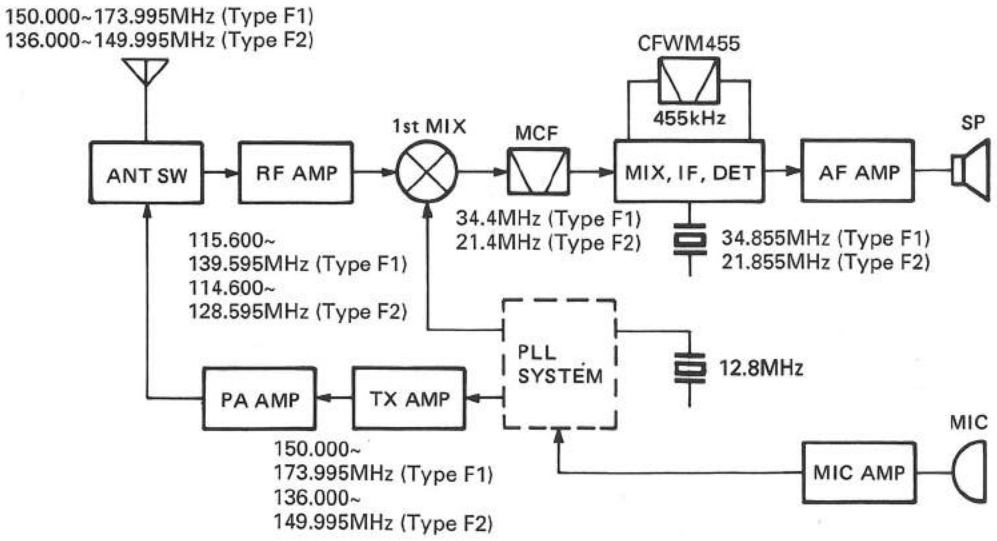


Fig. 1 Frequency configuration

CIRCUIT DESCRIPTION

Receiving System

• Overview

Incoming signals from the antenna pass through a low-pass filter in the final block of the transmitter system, and are switched to the front-end of the receiver system via a receive/transmit switching diode.

The signals are then passed through an antenna matching coil, where the high-frequency components are amplified by a GaAs FET. The signals are then fed into a four-stage bandpass filter that uses varactor diode tuning to reject unwanted signal components, and is fed to the 1st mixer. The 1st mixer uses the N-channel MOS FET that are used in the RF stage to obtain better two-signal characteristics. The 1st mixer mixes the signal with the 1st local oscillator frequency and converts it to the 1st IF (34.4/21.4MHz). The signal then passes through two monolithic crystal filters (MCFs) to remove unnecessary near-by frequency components. The signal from the MCFs is used as the 1st IF signal.

The 1st if signal is amplified and fed into IC1 (KCD01) in the FM IF HIC. The IF signal is then mixed with the 2nd local oscillator frequency of 34.855/21.855MHz to generate the 2nd IF of 455kHz. The 455kHz signal is then passed through a six element ceramic filter (CFWM455), and fed back into IC1 for additional amplification. The output signal from the IC1 is then fed into a power amplifier via the audio volume control for application to the speaker.

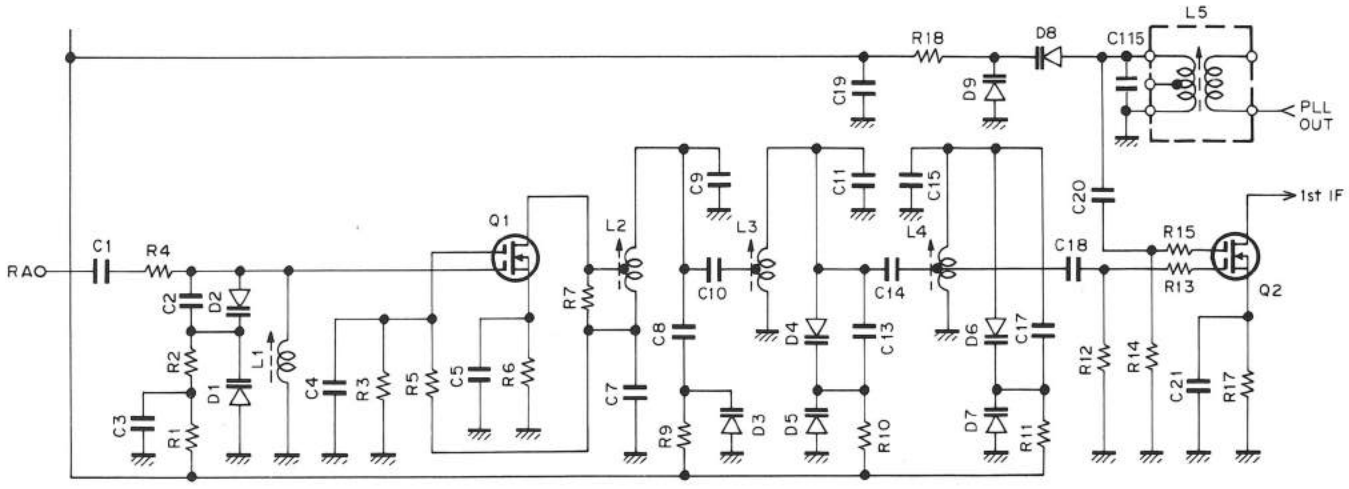


Fig. 2 Front-end section (varactor diode tuning)

CIRCUIT DESCRIPTION

Item	Rating
Nominal center frequency	34.4MHz
Pass bandwidth	±7.5kHz or more at 3dB
Attenuation bandwidth	±28kHz or less at 40dB
Ripple	1.5dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within ±1MHz (Spurious : 40dB or more)
Terminating impedance	800Ω/1.5pF

L71-0298-05 : TK-705 K,M,M3,P,C2,X
TK-705B E

Item	Rating
Nominal center frequency	34.4MHz
Pass bandwidth	±3.75kHz or more at 3dB
Attenuation bandwidth	±14.0kHz or less at 40dB
Ripple	1.5dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within ±1MHz (Spurious : 40dB or more)
Terminating impedance	440Ω/4pF

L71-0299-05 : TK-705 T
TK-705N M,X

Item	Rating
Nominal center frequency	21.4MHz
Pass bandwidth	±7.5kHz or more at 3dB
Attenuation bandwidth	±25kHz or less at 40dB
Ripple	1.0dB or less
Insertion loss	2.5dB or less
Guaranteed attenuation	85dB or more within ±1MHz (Spurious : 40dB or more)
Terminating impedance	1.6kΩ/1.0pF

L71-0244-05 : TK-705 M2,M4,C1

Item	Rating
Nominal center frequency	21.4MHz
Pass bandwidth	±3.75kHz or more at 3dB
Attenuation bandwidth	±14kHz or less at 40dB
Ripple	1.0dB or less
Insertion loss	2.5dB or less
Guaranteed attenuation	60dB or more within ±1MHz (Spurious : 40dB or more)
Terminating impedance	850Ω/5pF

L71-0261-05 : TK-705N M2

Table 2 MCF (TX-RX unit XF1)

Item	Rating
Nominal center frequency	455kHz ± 1kHz
6dB bandwidth	±6kHz or more (from 455kHz)
50dB bandwidth	±12.5kHz or less (from 455kHz)
Ripple (Within ±4kHz of 455kHz)	3dB or less
Insertion loss	6dB or less
Guaranteed attenuation (within ±100kHz of 455kHz)	35dB or more
I/O matching impedance	2.0kΩ

CFWM455F (L72-0372-05)
: TK-705 K,M,M2,M3,M4,P,C1,C2,X
TK-705B E

Item	Rating
Nominal center frequency	455kHz
6dB bandwidth	±4.5kHz or more (from 455kHz)
50dB bandwidth	±10kHz or less (from 455kHz)
Ripple (Within ±3kHz of 455kHz)	2dB or less
Insertion loss	6dB or less
Guaranteed attenuation (within ±100kHz of 455kHz)	35dB or more
I/O matching impedance	2.0kΩ

CFWM455G (L72-0376-05) : TK-705 T
TK-705N M,M2,X

Table 3 Ceramic filter (TX-RX unit CF1)

CIRCUIT DESCRIPTION

Transmitting System

• Overview

The transmitter produces the target frequency thru 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 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 (KCB05). 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. The TK-705/B/N uses a large heat sink for efficient heat dissipation.

• 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.

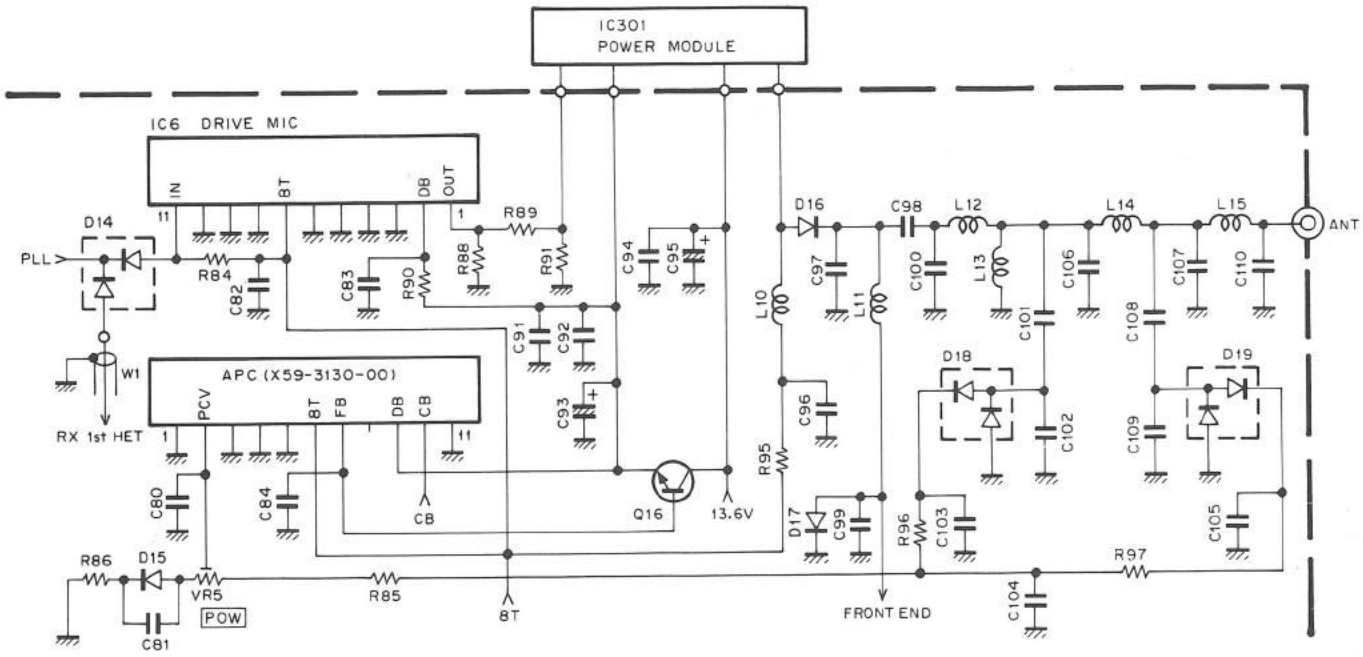


Fig. 3 Pre-amplifier stage, power amplifier, and APC circuits

Item	Symbol	Condition	Rating	Unit
Operating voltage	Vcc		17	V
Current consumption	Icc		7	A
Input power	Pin	Vcc≤12.5V, ZG=ZL=50Ω	500	mW
Output power	Pout	ZG=ZL=50Ω	35	W
Operating case temperature	Tc(op)		–30 ~ +110	°C
Storage temperature	Tstg		–40 ~ +110	°C

Table 4 Power module maximum rating (IC301)
M57741UL-22 : M2, M4, C1, NM2
M67741H-22 : K, M, M3, P, C2, T, X, BE, NM, NX

CIRCUIT DESCRIPTION

PLL Synthesizer System

• Overview

Figure 4 is the PLL and VCO block diagram. In the TK-705, 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 5kHz, available to allow 5 and 6.25kHz-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 generates the dial frequency. This dial 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 between transmit mode and receive mode. By using a signal ("H" in transmit mode) from pin 11 of the PLL IC (M54959FP), the LPF is deactivated-activated by Q3 only for the moment when the TK-705/B/N enters transmit mode. This helps produce lock more rapidly than previous methods.

In 150MHz mode, fVCO (RX) is calculated by the following formula:

fVCO = (150 – 34.4) = {(n x 128) + A} x fOSC / R

where,

- fVCO : VCO output frequency
- n : Binary value of the 10-bit programmable counter
- A : Binary value of the 7-bit programmable counter
- fOSC : 12.8MHz reference frequency
- R : Binary value of the 14-bit programmable counter
  2560 (5kHz step mode)
  2048 (6.25kHz step mode)

In 5kHz step mode,

n = 180 and A = 80.

Therefore, fVCO is calculated as follows:

fVCO = {(180 x 128) + 80} x 12800 / 2560
= {23040 + 80} x 5
= 115600= 115.600MHz

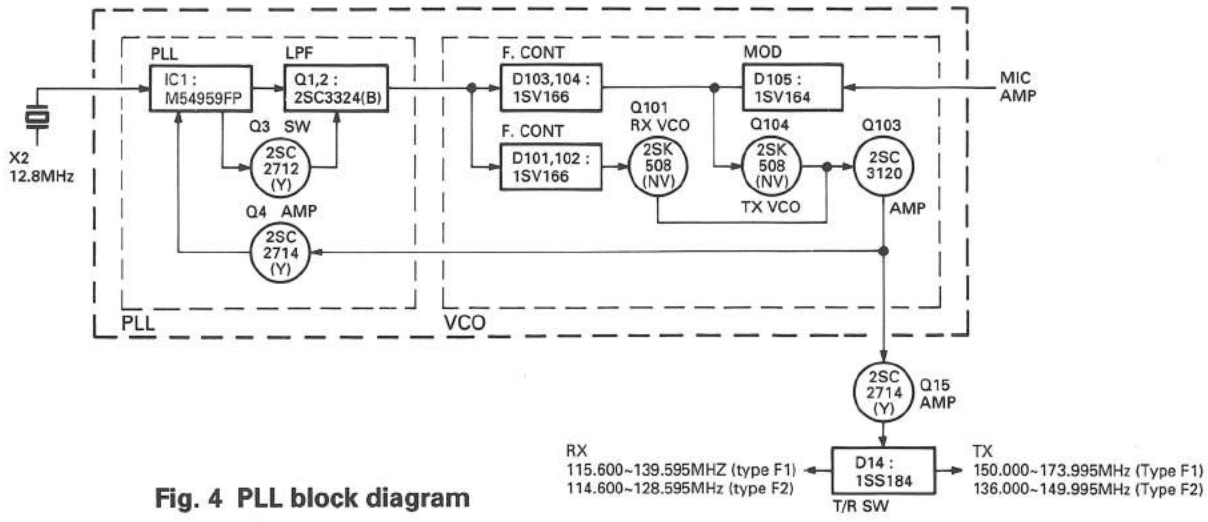


Fig. 4 PLL block diagram

• 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 Q8 and Q6 are off, and the collector of Q6 (8T) provides no voltage.

When the PTT switch is depressed. As a result, P121 of CPU becomes "L", turning Q9 off, and Q8 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 Q8 off and the base of Q6 becomes 8V, 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.

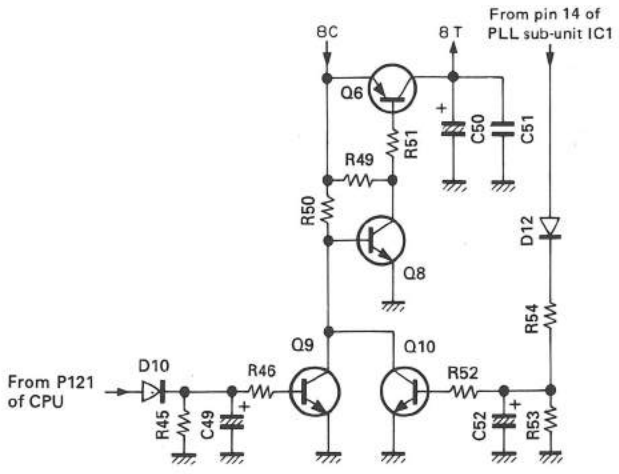


Fig. 5 8T and unlock circuits

CIRCUIT DESCRIPTION

Digital Control System

• Overview

The control system consists of a 4 bit micro-controller (IC203), a reset circuit (Q201), a memory back-up circuit (IC204) and an Electronically Erasable Read Only Memory (EEPROM).

• 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 EEPROM.

• Reset and back-up circuits

Micro-controller reset and memory back-up are enabled by monitoring 5C voltage.

At initial power on, a differentiator (C203) turns on Q201 to initiate reset of the micro-controller (IC203). If the voltage rises slowly, the output voltage transient of IC204 is detected by IC203 and reset is initiated internally.

If 5C voltage falls below 4.5V, the output of IC204 becomes low, causing the micro-controller to go to the back-up mode.

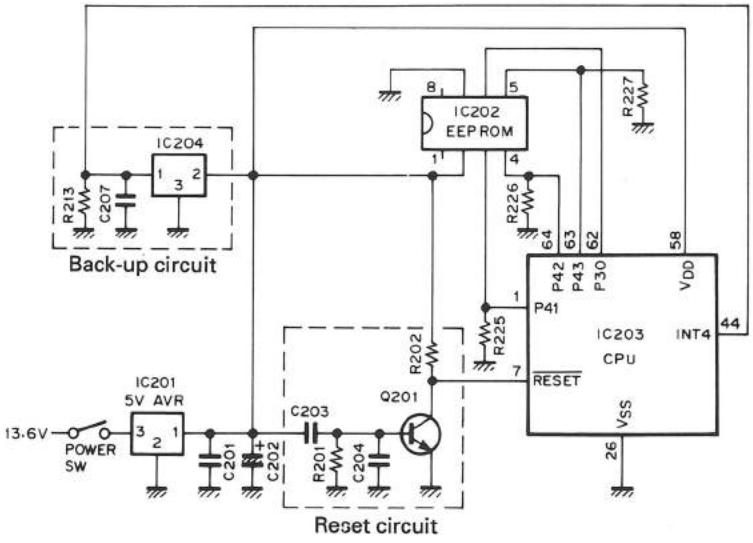


Fig. 6 Reset and back-up circuits

• 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 P21, P22, and P23 of the CPU.

• PLL data output

PLL data is available from P72 (CK), P73 (DT), and P71 (EN1) of the CPU. Figure 7 is a timing chart for PLL data transfer, and Figure 8 shows the format of PLL data.

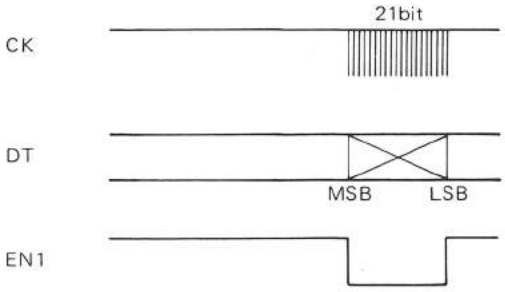
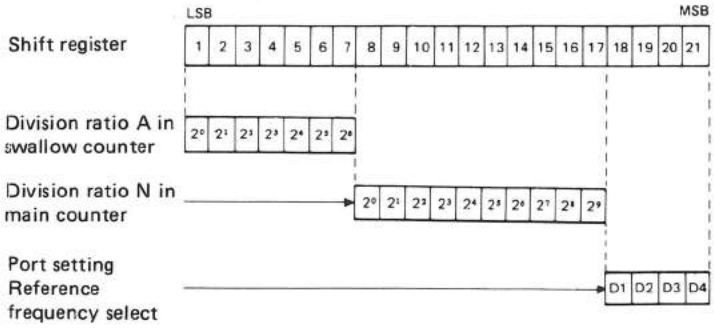


Fig. 7 Timing chart for PLL data transfer



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

1. Division ratio data A and N (17 bits)

F (display – 34.4MHz in RX mode)
= {(N x 128) + A} x 12.8MHz / ref
N : Division ratio set in 10-bit main counter (binary)
A : Division ratio set in 7-bit swallow counter (binary)

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

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

3. Switch select (2 bits)

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

Fig. 8 PLL data format

CIRCUIT DESCRIPTION

• Input and output of QT/CTCSS unit (option)

The optional CTCSS unit receives data from P70, P72, and P73 of the CPU. Figure 9 is a timing chart for CTCSS data transfer, and Figure 10 shows the format of CTCSS data. When a tone from the CTCSS unit is detected, a "H" level signal is sent to P61 of the CPU, opening the squelch.

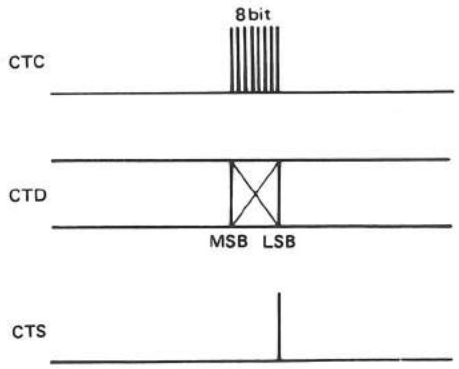


Fig. 9 Timing chart for QT/CTCSS data transfer

Tone frequency select data for CTCSS unit

D1	D2	D3	D4	D5	D6

Example : 88.5Hz L H L H H H

Fig. 10 QT/CTCSS data format

Pin No.	Pin name	I/O	Logic	Function	Pin No.	Pin name	I/O	Logic	Function
1	P41	O	–	CS of EEPROM.	33	PTH01	–	–	Not used.
2	P40	O	–	Not used.	34	PTH00	–	–	
3	P53	I	–	Distination.	35	TI1	–	–	
4	P52	I	–		36	TI0	–	–	
5	P51	I	–		37	P23	O	–	DATA of LCD.
6	P50	I	–		38	P22	O	–	CK of LCD.
7	$\overline{\text{RESET}}$	I	L	Reset input.	39	P21	O	–	CE of LCD.
8	X2	–	–	4.194304MHz crystal oscillator.	40	P20	O	–	Beeper output.
9	X1	–	–		41	P03/SI	–	–	Not used.
10	P63	–	–	Not used.	42	P02/SO	–	–	
11	P62	I	L	Busy input. Busy : "L"	43	P01/$\overline{\text{SCK}}$	–	–	
12	P61	I	H	QT/CTCSS tone matching input.	44	INT4	I	H	Back-up detect input.
13	P60	–	–	Not used.	45	P123	O	L	SQ off output. SQ off : "L"
14	P73	O	–	DATA of PLL IC and QT/CTCSS.	46	P122	–	–	Not used.
15	P72	O	–	CK of PLL IC and QT/CTCSS.	47	P121	O	L	TX/RX select.
16	P71	O	–	LE of PLL IC.	48	P120	O	L	Key output.
17	P70	O	–	ST of QT/CTCSS.	49	P133	–	–	Not used.
18	P83	O	H	MUTE output.	50	P132	–	–	
19	P82	–	–	Not used.	51	P131	I	–	Set 2 key input.
20	P81	–	–		52	P130	I	–	Set 1 key input.
21	P80	–	–		53	P143	I	–	SQ key input.
22	P93	I	–	Distination.	54	P142	I	–	Hook.
23	P92	I	–		55	P141	I	–	MONITOR input.
24	P91	I	–		56	P140	I	–	PTT key input.
25	P90	I	–	GND.	57	NC	–	–	Not used.
26	Vss	–	–	GND.	58	V_{DD}	–	–	Power supply pin.
27	INT3	–	–	Not used.	59	P33	–	–	Not used.
28	INT2	I	–	Encoder input.	60	P32	O	–	
29	INT1	I	–		61	P31	I	–	Jumper key output.
30	INT0	–	–	Not used.	62	P30	I	–	DO of EEPROM.
31	PTH03	I	–	Not used.	63	P43	O	–	DI of EEPROM.
32	PTH02	I	–	Not used.	64	P42	O	–	SK of EEPROM.

Table 6 75104G-605-1B terminal functions (TX-RX unit IC203)

DESCRIPTION OF COMPONENTS

TX-RX UNIT (X57-345X-XX)

Component	Use/Function	Operation/Condition/Compatibility
IC1	2nd local oscillator, IF amplification, detection, low-frequency amplification, noise amplification, noise detection, squelch switching	①1st IF signal input. ③ ④2nd local oscillator. ⑨ Busy output. ⑩ Squelch control. ⑮ Low-frequency output.
IC2	AF amplification	①AF input, ⑧AF output.
IC3	Mic amplification	⑦Mic input, ② Mic output.
IC4	5V AVR	
IC5	10V AVR	For PLL.
IC6	Transmit drive	
IC7	8V AVR	
IC201	5V AVR	
IC202	EEPROM	
IC203	Microprocessor	See circuit description.
IC204	Voltage detector	
Q1	High-frequency amplification	Operates in receive mode.
Q2	1st mixer	Convertes received 144MHz-range signals to 1st IF 10.7MHz.
Q3	High-frequency amplification	Amplifies 1st IF signal.
Q4	AF line mute	Operates when transmit mode, AL 1ch receive mode, CTCSS, bell or squelch is ON.
Q5	8R switching	ON in receive mode.
Q6	8T switching	ON in transmit mode.
Q7	8R switching control	ON in receive mode.
Q8	8T switching control	ON in transmit mode.
Q9	8T switching control	OFF in transmit mode.
Q10	8T switching control	OFF when PLL locked.
Q11	Mic line mute	ON in receive mode.
Q13	PLL 8V ripple filter	
Q14	CV line buffer	
Q15	VCO output amplification	
Q16	TX drive stage +B control	
Q17	Power switch	
Q18	Power switch control	ON when power switch is ON.
Q201	Reset switch	ON for approx. 3ms when system power turned on, usually OFF.
Q202	Tone amplification	
D1~D9	Vari-cap tuning	
D11	12.8MHz tuning	For PLL.
D10,12	Reverse current prevention	
D14	VCO output switch	
D15	Temperature compensation	
D16,17	Transmit/receive switching	
D18,19	Power detection	For APC.
D20	Reverse power protection	
D201,202	Reverse current prevention	

PARTS LIST

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TK-705/B/N

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
TK-705/B/N						
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	2A		A20-7032-13	PANEL ASSY		
5	2B		A22-0765-23	SUB PANEL		
			B38-0322-05	DISPLAY ASSY(LED)		
			B42-3343-04	LABEL(S/NO.)		
			B42-3394-14	LABEL(FCC)	KTX	A
			B42-3394-14	LABEL(FCC)	E	B
			B42-3394-14	LABEL(FCC)	X	C
			B46-0409-30	WARRANTY CARD	K	A
			B46-0409-30	WARRANTY CARD	E	B
			B50-8316-00	INSTRUCTION MANUAL(ENGLISH)		
			B62-0121-00	INSTRUCTION MANUAL	P	A
7	2A		B03-0557-04	DRESSING PLATE		
8	2A		B10-1126-04	FRONT GLASS		
9	2B		B38-0321-05	DISPLAY ASSY(LCD)		
10	1C		B40-3987-04	MODEL NAME PLATE	KC2	A
10	1C		B40-3988-04	MODEL NAME PLATE	MM2C1	A
10	1C		B40-3988-04	MODEL NAME PLATE	M3M4	A
10	1C	＊	B40-7649-04	MODEL NAME PLATE	P	A
10	1C	＊	B72-0040-04	MODEL NAME PLATE	E	B
10	1C	＊	B72-0046-04	MODEL NAME PLATE	T	A
10	1C	＊	B72-0106-04	MODEL NAME PLATE	X	A
10	1C		B72-0136-04	MODEL NAME PLATE	MM2X	C
11	1B,1C		B42-2455-04	LABEL(M4X8MAX)	K	A
11	1B,1C		B42-2455-04	LABEL(M4X8MAX)	E	B
			E30-2036-05	GND WIRE(MIC)		
			E30-2076-15	DC CORD ASSY		
			E31-3197-15	CONNECTING WIRE(SP)		
			E40-9016-05	PIN ASSY SOCKET		
15	1C		E30-2145-05	ANT CABLE	KMM2M3	A
15	1C		E30-2145-05	ANT CABLE	M4C1C2	A
15	1C		E30-2145-05	ANT CABLE	PX	A
15	1C		E30-2145-05	ANT CABLE	MM2X	C
15	1C		E30-3031-05	ANT CABLE	T	A
15	1C		E30-3031-05	ANT CABLE	E	B
16	1C		E30-2172-15	DC CORD		
			F11-1133-14	SHIELDING COVER	T	A
19	1C		F51-0016-05	FUSE (10A)		
			G13-0959-04	CUSHION (MIL)	KPTX	A
			G13-0959-04	CUSHION (MIL)	E	B
			G13-0959-04	CUSHION (MIL)	X	C
			G13-0978-04	CUSHION (VCO-KOT8)		
22	1B		G02-0576-14	FLAT SPRING		
24	2A		G09-0405-05	KNOB FIXED SPRING		
25	1B		G10-0651-04	NON-WOVEN FABRIC		
26	1B,2C		G10-0681-04	NON-WOVEN FABRIC		
27	1B,2B		G10-0686-04	NON-WOVEN FABRIC (CABINET)		
28	1B		G13-0688-04	CUSHION (DC CORD)		
29	1B		G13-0818-04	CUSHION (CABINET-KOT8)		

L:Scandinavia **K:**USA **P:**Canada
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Y:AAFES(Europe) **X:**Australia **M:**Other Areas

A : TK-705 K,M,M2,M3,M4,P,C1,C2,T,X
B : TK-705B E
C : TK-705N M,M2,X

⚠ indicates safety critical components.

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31	2B		G13-0935-04	CUSHION (SQ)		
32	2A		G13-0936-04	CUSHION (VOL)		
33	2B		G13-0937-04	CUSHION (CH)		
			H01-8287-04	ITEM CARTON BOX		
			H10-2677-02	POLYSTYRENE FOAMED FIXTURE		
			H11-0830-04	POLYSTYRENE PLATE		
			H13-0814-04	POLYSTYRENE BOARD	KMM2M3	A
			H13-0814-04	POLYSTYRENE BOARD	M4C1C2	A
			H13-0814-04	POLYSTYRENE BOARD	PX	A
			H13-0814-04	POLYSTYRENE BOARD	E	B
			H13-0814-04	POLYSTYRENE BOARD	MM2X	C
			H25-0103-04	PROTECTION BAG (DC CORD)		
			H25-0720-04	PROTECTION BAG (RADIO)		
			J19-1376-15	MIC HANGER		
			J21-4282-08	MOUNTING HARDWARE(LCD)		
			J29-0441-03	MOUNTING BRACKET	KMM2M3	A
			J29-0441-03	MOUNTING BRACKET	M4C1C2	A
			J29-0441-03	MOUNTING BRACKET	PX	A
			J29-0441-03	MOUNTING BRACKET	E	B
			J29-0441-03	MOUNTING BRACKET	MM2X	C
			J29-0450-03	MOUNTING BRACKET	T	A
			J90-0405-04	GUIDE	T	A
35	1C		J19-1434-04	HOLDER (SP)		
40	2B		K27-3052-04	KNOB(POWER)		
41	2A		K29-4533-04	KNOB(CH)		
42	2A		K29-4534-04	KNOB(VOL)		
43	2B		K29-4535-04	KNOB(SQ)		
			N09-2077-05	SCREW(MODULE)		
			N09-2110-05	SCREW	T	A
			N99-0321-05	SCREW SET	KMM2M3	A
			N99-0321-05	SCREW SET	M4C1C2	A
			N99-0321-05	SCREW SET	PX	A
			N99-0321-05	SCREW SET	E	B
			N99-0321-05	SCREW SET	MM2X	C
			N99-0335-05	SCREW SET	T	A
A	2B		N09-0626-04	SCREW (M3X10)		
B	2A,2B		N38-2640-46	SCREW (SUB PANEL)		
C	1C,2C		N33-2606-45	SCREW (CABINET)		
D	1C,2B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW(PCB		
E	2A,2B		N88-2606-46	FLAT HEAD TAPTITE SCREW		
R301			RD14BB2B2R2J	RD 2.2 J 1/8W	MM2M3	A
R301			RD14BB2B2R2J	RD 2.2 J 1/8W	M4C1C2	A
R301			RD14BB2B2R2J	RD 2.2 J 1/8W	MM2	C
			T91-0362-15	MICROPHONE	KMM2PT	A
			T91-0362-15	MICROPHONE	C1C2X	A
			T91-0362-15	MICROPHONE	E	B
			T91-0362-15	MICROPHONE	MM2X	C
			T91-0511-05	MICROPHONE	M3M4	A
45	1B		T07-0246-05	LOUDSPEAKER(FULLRANGE)		
			LC7582	IC(LCD DRIVER)		
IC301			M57741UL-22	IC(POWER MODULE)	M2M4C1	A
IC301			M57741UL-22	IC(POWER MODULE)	M2	C
IC301			M67741H-22	IC(POWER MODULE)	KPMTX	A

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TK-705/B/N
TX-RX UNIT (X57-345X-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	Destination 仕向	Remarks 備考
IC301			M67741H-22	IC(POWER MODULE)	M3C2	A
IC301			M67741H-22	IC(POWER MODULE)	E	B
IC301			M67741H-22	IC(POWER MODULE)	MX	C
			X52-3100-00	QT/CTCSS UNIT	KPX	A
			X52-3100-00	QT/CTCSS UNIT	E	B
			X52-3100-01	QT/CTCSS UNIT	T	A
			X52-3100-01	QT/CTCSS UNIT	X	C
47	2B,2C		X57-3450-10	TX･RX UNIT	KPC2	A
47	2B,2C		X57-3450-10	TX･RX UNIT	E	B
47	2B,2C		X57-3450-21	TX･RX UNIT	MM3	A
47	2B,2C	*	X57-3450-22	TX･RX UNIT	M	C
47	2B,2C	*	X57-3450-23	TX･RX UNIT	M2	C
47	2B,2C	*	X57-3450-51	TX･RX UNIT	T	A
47	2B,2C	*	X57-3450-51	TX･RX UNIT	X	C
47	2B,2C	*	X57-3450-71	TX･RX UNIT	X	A
47	2B,2C		X57-3451-01	TX･RX UNIT	M2M4C1	A
TX-RX UNIT (X57-345X-XX) **0-10 : K,P,C2,BE 0-21 : M,M3 0-22 : NM 0-23 : NM2 0-51 : T,NX 0-71 : X 1-01 : M2,M4,C1**						
C1			CC73FCH1H030C	CHIP C 3PF C	KPTX	A
C1			CC73FCH1H030C	CHIP C 3PF C	MM3C2	A
C1			CC73FCH1H030C	CHIP C 3PF C	E	B
C1			CC73FCH1H030C	CHIP C 3PF C	MX	C
C1			CC73FCH1H040C	CHIP C 4PF C	M2M4C1	A
C1			CC73FCH1H040C	CHIP C 4PF C	M2	C
C2			CC73FCH1H220J	CHIP C 22PF J	M2M4C1	A
C2			CC73FCH1H220J	CHIP C 22PF J	M2	C
C3			CK73FB1E103K	CHIP C 0.01UF K		
C4 ,5			CK73FB1H102K	CHIP C 1000PF K		
C6			CK73FB1E103K	CHIP C 0.01UF K		
C7			CK73FB1H102K	CHIP C 1000PF K		
C8			CC73FCH1H220J	CHIP C 22PF J	M2M4C1	A
C8			CC73FCH1H220J	CHIP C 22PF J	M2	C
C8			CC73FCH1H330J	CHIP C 33PF J	KPTX	A
C8			CC73FCH1H330J	CHIP C 33PF J	MM3C2	A
C8			CC73FCH1H330J	CHIP C 33PF J	E	B
C8			CC73FCH1H330J	CHIP C 33PF J	MX	C
C9			CC73FCH1H040C	CHIP C 4PF C	M2M4C1	A
C9			CC73FCH1H040C	CHIP C 4PF C	M2	C
C10			CC73FCH1H0R5C	CHIP C 0.5PF C		
C11			CC73FCH1H030C	CHIP C 3PF C	KPTX	A
C11			CC73FCH1H030C	CHIP C 3PF C	MM3C2	A
C11			CC73FCH1H030C	CHIP C 3PF C	E	B
C11			CC73FCH1H030C	CHIP C 3PF C	MX	C
C11			CC73FCH1H040C	CHIP C 4PF C	M2M4C1	A
C11			CC73FCH1H040C	CHIP C 4PF C	M2	C
C12			CK73FB1E103K	CHIP C 0.01UF K		
C13			CC73FCH1H220J	CHIP C 22PF J	M2M4C1	A
C13			CC73FCH1H220J	CHIP C 22PF J	M2	C
C14			CC73FCH1H0R5C	CHIP C 0.5PF C		
C15			CC73FCH1H0R5C	CHIP C 0.5PF C	KPTX	A
C15			CC73FCH1H0R5C	CHIP C 0.5PF C	MM3C2	A
C15			CC73FCH1H0R5C	CHIP C 0.5PF C	E	B
C15			CC73FCH1H0R5C	CHIP C 0.5PF C	MX	C

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C15			CC73FCH1H020C	CHIP C	2.0PF	C	M2M4C1	A
C15			CC73FCH1H020C	CHIP C	2.0PF	C	M2	C
C16			CK73FB1H102K	CHIP C	1000PF	K		
C17			CC73FCH1H220J	CHIP C	22PF	J	M2M4C1	A
C17			CC73FCH1H220J	CHIP C	22PF	J	M2	C
C18			CC73FCH1H150J	CHIP C	15PF	J		
C19			CK73FB1E103K	CHIP C	0.01UF	K		
C20			CC73FCH1H030C	CHIP C	3PF	C		
C21 ,22			CK73FB1H102K	CHIP C	1000PF	K		
C23			CK73FB1E103K	CHIP C	0.01UF	K		
C24			CC73FCH1H070D	CHIP C	7PF	D	M2M4C1	A
C24			CC73FCH1H090D	CHIP C	9PF	D	KMPX	A
C24			CC73FCH1H090D	CHIP C	9PF	D	M3C2	A
C24			CC73FCH1H090D	CHIP C	9PF	D	E	B
C24			CC73FCH1H160J	CHIP C	16PF	J	M2	C
C24			CC73FCH1H220J	CHIP C	22PF	J	T	A
C24			CC73FCH1H220J	CHIP C	22PF	J	MX	C
C25			CE04EW1A470M	ELECTRO	47UF	10WV		
C26			CK73FB1E103K	CHIP C	0.01UF	K		
C27 ,28			CK73FB1H102K	CHIP C	1000PF	K		
C29			CC73FCH1H330J	CHIP C	33PF	J	M2M4C1	A
C29			CC73FCH1H330J	CHIP C	33PF	J	M2	C
C29			CC73FCH1H470J	CHIP C	47PF	J	KPTX	A
C29			CC73FCH1H470J	CHIP C	47PF	J	MM3C2	A
C29			CC73FCH1H470J	CHIP C	47PF	J	E	B
C29			CC73FCH1H470J	CHIP C	47PF	J	MX	C
C30			CC73FCH1H390J	CHIP C	39PF	J	KPTX	A
C30			CC73FCH1H390J	CHIP C	39PF	J	MM3C2	A
C30			CC73FCH1H390J	CHIP C	39PF	J	E	B
C30			CC73FCH1H390J	CHIP C	39PF	J	MX	C
C31			CC73FCH1H820J	CHIP C	82PF	J	M2M4C1	A
C31			CC73FCH1H820J	CHIP C	82PF	J	M2	C
C31			CK73FB1H102K	CHIP C	1000PF	K	KPTX	A
C31			CK73FB1H102K	CHIP C	1000PF	K	MM3C2	A
C31			CK73FB1H102K	CHIP C	1000PF	K	E	B
C31			CK73FB1H102K	CHIP C	1000PF	K	MX	C
C32			C92-0511-05	CHIP TAN	0.15UF	35WV		
C33			CK73FF1C105Z	CHIP C	1.0UF	Z		
C34 ,35			CK73FB1E104K	CHIP C	0.10UF	K		
C36			CE04EW1A471M	ELECTRO	470UF	10WV		
C37			CK73FB1E103K	CHIP C	0.01UF	K		
C38			CE04EW1C470M	ELECTRO	47UF	16WV		
C39 ,40			CE04EW1A470M	ELECTRO	47UF	10WV		
C41			CE04EW1A470M	ELECTRO	47UF	10WV		
C42			CK73FB1H273K	CHIP C	0.027UF	K		
C43			CC73FSL1H101J	CHIP C	100PF	J		
C44			CE04EW1C100M	ELECTRO	10UF	16WV		
C45 ,46			CK73FF1C105Z	CHIP C	1.0UF	Z		
C47			CK73FB1E103K	CHIP C	0.01UF	K		
C48			CE04EW1A470M	ELECTRO	47UF	10WV		
C49			C92-0504-05	CHIP TAN	0.68UF	20WV		
C50			CE04EW1C100M	ELECTRO	10UF	16WV		
C51			CK73FB1E103K	CHIP C	0.01UF	K		
C52			C92-0504-05	CHIP TAN	0.68UF	20WV		
C53 ,54			CK73FB1H102K	CHIP C	1000PF	K		

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C56			CK73EB1E473K	CHIP C	0.047UF K	KPTX	A
C56			CK73EB1E473K	CHIP C	0.047UF K	MM3C2	A
C56			CK73EB1E473K	CHIP C	0.047UF K	E	B
C56			CK73EB1E473K	CHIP C	0.047UF K	MX	C
C56			CK73EB1H683K	CHIP C	0.068UF K	M2M4C1	A
C56			CK73EB1H683K	CHIP C	0.068UF K	M2	C
C57			CK73FB1E103K	CHIP C	0.01UF K		
C58			CC73FUJ1H180J	CHIP C	18PF J		
C59			CC73FUJ1H150J	CHIP C	15PF J		
C61			CK73EF1C105Z	CHIP C	1.0UF Z		
C62			CK73FB1E103K	CHIP C	0.01UF K		
C63 -65			CK73FB1H102K	CHIP C	1000PF K		
C66			CK73FB1H102K	CHIP C	1000PF K		
C67			CK73FB1E103K	CHIP C	0.01UF K		
C68			CE04EW1A470M	ELECTRO	47UF 10WV		
C69			CK73FB1E103K	CHIP C	0.01UF K		
C70 ,71			CE04EW1A221M	ELECTRO	220UF 10WV		
C72			CK73FB1E103K	CHIP C	0.01UF K		
C73 ,74			CK73FB1H102K	CHIP C	1000PF K		
C75			CC73FCH1H220J	CHIP C	22PF J		
C76			CK73FB1H102K	CHIP C	1000PF K		
C77			CC73FCH1H220J	CHIP C	22PF J		
C78			CE04EW1C471M	ELECTRO	470UF 16WV		
C79			CK73FB1E103K	CHIP C	0.01UF K		
C80 -82			CK73FB1H102K	CHIP C	1000PF K		
C83			CK73FF1C105Z	CHIP C	1.0UF Z		
C84			CK73FB1H102K	CHIP C	1000PF K		
C85			CK73FB1E103K	CHIP C	0.01UF K		
C86			CE04EW1A470M	ELECTRO	47UF 10WV		
C87			CK73FB1H102K	CHIP C	1000PF K		
C88 ,89			CK73FB1E103K	CHIP C	0.01UF K		
C90			CE04EW1C102M	ELECTRO	1000UF 16WV		
C91			CK73FB1H102K	CHIP C	1000PF K		
C92			CK73FF1C105Z	CHIP C	1.0UF Z		
C93			CE04EW1C470M	ELECTRO	47UF 16WV		
C94			CK73FB1H102K	CHIP C	1000PF K		
C95			CE04EW1C100M	ELECTRO	10UF 16WV		
C96			CK73FB1H102K	CHIP C	1000PF K		
C97			CC45SL2H120J	CERAMIC	12PF J	KPTX	A
C97			CC45SL2H120J	CERAMIC	12PF J	MM3C2	A
C97			CC45SL2H120J	CERAMIC	12PF J	E	B
C97			CC45SL2H120J	CERAMIC	12PF J	MX	C
C97			CC45SL2H180J	CERAMIC	18PF J	M2M4C1	A
C97			CC45SL2H180J	CERAMIC	18PF J	M2	C
C98			CK45B2H102K	CERAMIC	1000PF K		
C99			CC73FCH1H090D	CHIP C	9PF D	KPTXC2	A
C99			CC73FCH1H090D	CHIP C	9PF D	E	B
C99			CC73FCH1H090D	CHIP C	9PF D	X	C
C99			CC73FCH1H120J	CHIP C	12PF J	MM3	A
C99			CC73FCH1H120J	CHIP C	12PF J	M	C
C99			CC73FCH1H220J	CHIP C	22PF J	M2M4C1	A
C99			CC73FCH1H220J	CHIP C	22PF J	M2	C
C100			CM73F2H220J	CHIP C	22PF J		
C101			CC73FCH1H0R5C	CHIP C	0.5PF C		
C102			CC73FCH1H020C	CHIP C	2.0PF C	M2M4C1	A

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格			Destination 仕向	Remarks 備考
C102			CC73FCH1H020C	CHIP C	2.0PF	C	M2	C
C102			CC73FCH1H030C	CHIP C	3PF	C	KPTX	A
C102			CC73FCH1H030C	CHIP C	3PF	C	MM3C2	A
C102			CC73FCH1H030C	CHIP C	3PF	C	E	B
C102			CC73FCH1H030C	CHIP C	3PF	C	MX	C
C103-105			CK73FB1H102K	CHIP C	1000PF	K		
C106,107			CC45SL2H390J	CERAMIC	39PF	J	KPTX	A
C106,107			CC45SL2H390J	CERAMIC	39PF	J	MM3C2	A
C106,107			CC45SL2H390J	CERAMIC	39PF	J	E	B
C106,107			CC45SL2H390J	CERAMIC	39PF	J	MX	C
C106,107			CC45SL2H470J	CERAMIC	47PF	J	M2M4C1	A
C106,107			CC45SL2H470J	CERAMIC	47PF	J	M2	C
C108			CC73FCH1H0R5C	CHIP C	0.5PF	C		
C109			CC73FCH1H020C	CHIP C	2.0PF	C	KM	D
C110			CC45SL2H150J	CERAMIC	15PF	J	KPTX	A
C110			CC45SL2H150J	CERAMIC	15PF	J	MM3C2	A
C110			CC45SL2H150J	CERAMIC	15PF	J	E	B
C110			CC45SL2H150J	CERAMIC	15PF	J	MX	C
C110			CC45SL2H220J	CERAMIC	22PF	J	M2M4C1	A
C110			CC45SL2H220J	CERAMIC	22PF	J	M2	C
C112			CK73FB1H102K	CHIP C	1000PF	K		
C113			CK73FB1E223K	CHIP C	0.022UF	K		
C114			C92-0005-05	CHIP-TAN	2.2UF	6.3WV		
C115			CC73FCH1H020C	CHIP C	2.0PF	C	M2M4C1	A
C115			CC73FCH1H020C	CHIP C	2.0PF	C	M2	C
C116,117			CC73FCH1H050C	CHIP C	5PF	C	M2	C
C201			CK73FB1H103K	CHIP C	0.010UF	K		
C202			CE04CW1C100M	ELECTRO	10UF	16WV		
C203			CK73FB1H223K	CHIP C	0.022UF	K		
C204			CK73FB1H102K	CHIP C	1000PF	K		
C205,206			CC73FCH1H330J	CHIP C	33PF	J		
C208-212			CK73FB1H102K	CHIP C	1000PF	K		
C213			C92-0005-05	CHIP-TAN	2.2UF	6.3WV		
C214			C92-0501-05	CHIP-TAN	1.5UF	6.3WV		
TC1			C05-0345-05	TRIM CAP(10PF)				
			E33-1871-15	FINISHED WIRE SET(MONI)			T	A
CN1			E40-3237-05	PIN CONNECTOR (SP)				
CN2			E40-5183-05	PIN CONNECTOR (DTMF)				
CN3 ,4			E40-5202-05	PIN CONNECTOR (13P)				
CN5 -8			E40-5328-05	PIN CONNECTOR (3P)				
CN201,202			E40-5203-05	PIN CONNECTOR (13P)				
CN203			E40-3485-05	PIN CONNECTOR (LCD)				
J1			E11-0425-05	PHONE JACK				
J2 -5			E18-0254-05	SOCKET				
J201			E08-0673-05	RECTANGULAR RECEPTACLE(MIC)				
TP1 ,2			E23-0465-05	TERMINAL				
W1			E33-1902-05	FINISHED WIRE SET(HET)				
W201			E31-6062-05	CONNECTING WIRE(QT/CTCSS)				
			J30-0545-05	SPACER				
CD1			L79-0855-05	CERAMIC DISCRI(CDB455C7)				
CF1			L72-0372-05	CERAMIC FILTER(CFWM455F)			KMM2PX	A
CF1			L72-0372-05	CERAMIC FILTER(CFWM455F)			M3M4	A
CF1			L72-0372-05	CERAMIC FILTER(CFWM455F)			C1C2	A
CF1			L72-0372-05	CERAMIC FILTER(CFWM455F)			E	B

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CF1			L72-0376-05	CERAMIC FILTER(CFWM455G)	T	A
CF1			L72-0376-05	CERAMIC FILTER(CFWM455G)	MM2X	C
L1 -4			L34-4080-05	COIL		
L5			L34-0956-05	COIL		
L6			L30-0508-05	IFT (21.4MHZ)	M2M4C1	A
L6			L30-0508-05	IFT (21.4MHZ)	M2	C
L6			L34-4191-05	COIL (34.4MHZ)	KPTX	A
L6			L34-4191-05	COIL (34.4MHZ)	MM3C2	A
L6			L34-4191-05	COIL (34.4MHZ)	E	B
L6			L34-4191-05	COIL (34.4MHZ)	MX	C
L7			L40-1001-19	SMALL FIXED INDUCTOR (10UF)		
L8 ,9			L40-1092-19	SMALL FIXED INDUCTOR (1UH)	KPTX	A
L8 ,9			L40-1092-19	SMALL FIXED INDUCTOR (1UH)	MM3C2	A
L8 ,9			L40-1092-19	SMALL FIXED INDUCTOR (1UH)	E	B
L8 ,9			L40-1092-19	SMALL FIXED INDUCTOR (1UH)	MX	C
L9			L40-3391-19	SMALL FIXED INDUCTOR (3.3UH)	M2M4C1	A
L9			L40-3391-19	SMALL FIXED INDUCTOR (3.3UH)	M2	C
L10			L34-1239-05	COIL		
L11			L34-0895-05	COIL		
L12			L34-0742-05	COIL	KPTX	A
L12			L34-0742-05	COIL	MM3C2	A
L12			L34-0742-05	COIL	E	B
L12			L34-0742-05	COIL	MX	C
L12			L34-0894-05	COIL	M2M4C1	A
L12			L34-0894-05	COIL	M2	C
L13			L34-0908-05	COIL		
L14 ,15			L34-0499-05	COIL	KPTX	A
L14 ,15			L34-0499-05	COIL	MM3C2	A
L14 ,15			L34-0499-05	COIL	E	B
L14 ,15			L34-0499-05	COIL	MX	C
L14 ,15			L34-0894-05	COIL	M2M4C1	A
L14 ,15			L34-0894-05	COIL	M2	C
L201			L92-0132-05	FERRITE CHIP COIL		
L202			L92-0132-05	FERRITE CHIP COIL		
X1			L77-1415-05	CRYSTAL RESONATOR(34.855MHZ)	KPTX	A
X1			L77-1415-05	CRYSTAL RESONATOR(34.855MHZ)	MM3C2	A
X1			L77-1415-05	CRYSTAL RESONATOR(34.855MHZ)	E	B
X1			L77-1415-05	CRYSTAL RESONATOR(34.855MHZ)	MX	C
X1			L77-1416-05	CRYSTAL RESONATOR(21.855MHZ)	M2M4C1	A
X1			L77-1416-05	CRYSTAL RESONATOR(21.855MHZ)	M2	C
X2			L77-1383-05	CRYSTAL RESONATOR(12.8MHZ)		
X201			L77-1397-05	CRYSTAL RESONATOR(4.19MHZ)		
XF1			L71-0244-05	MCF (21.4MHZ)	M2M4C1	A
XF1			L71-0261-05	MCF (21.4MHZ)	M2	C
XF1			L71-0298-05	MCF (34.4MHZ)	KMM3	A
XF1			L71-0298-05	MCF (34.4MHZ)	C2PX	A
XF1			L71-0298-05	MCF (34.4MHZ)	E	B
XF1			L71-0299-05	MCF (34.4MHZ)	T	A
XF1			L71-0299-05	MCF (34.4MHZ)	MX	C
R1			R92-0670-05	CHIP R 0 OHM		
R2			RK73FB2A104J	CHIP R 100K J 1/10W		
R3			RK73FB2A222J	CHIP R 2.2K J 1/10W	KPTXM2	A
R3			RK73FB2A222J	CHIP R 2.2K J 1/10W	C1C2M4	A
R3			RK73FB2A222J	CHIP R 2.2K J 1/10W	E	B

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TX-RX UNIT (X57-345X-XX)

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R3			RK73FB2A222J	CHIP R 2.2K J 1/10W	M2X	C
R3			RK73FB2A472J	CHIP R 4.7K J 1/10W	MM3	A
R3			RK73FB2A472J	CHIP R 4.7K J 1/10W	M	C
R4			RK73FB2A180J	CHIP R 18 J 1/10W	X	A
R4			RK73FB2A330J	CHIP R 33 J 1/10W	M2M4C1	A
R4			RK73FB2A330J	CHIP R 33 J 1/10W	M2	C
R4			R92-0670-05	CHIP R 0 OHM	KPTC2	A
R4			R92-0670-05	CHIP R 0 OHM	MM3	A
R4			R92-0670-05	CHIP R 0 OHM	E	B
R4			R92-0670-05	CHIP R 0 OHM	MX	C
R5			RK73FB2A274J	CHIP R 270K J 1/10W		
R6			RK73FB2A101J	CHIP R 100 J 1/10W		
R7			RK73FB2A103J	CHIP R 10K J 1/10W	KM	
R8			RK73FB2A101J	CHIP R 100 J 1/10W		
R9 -11			RK73FB2A104J	CHIP R 100K J 1/10W		
R12			RK73FB2A473J	CHIP R 47K J 1/10W		
R13			RK73FB2A181J	CHIP R 180 J 1/10W	X	A
R13			R92-0670-05	CHIP R 0 OHM	KPTM	A
R13			R92-0670-05	CHIP R 0 OHM	M2M3M4	A
R13			R92-0670-05	CHIP R 0 OHM	C1C2	A
R13			R92-0670-05	CHIP R 0 OHM	E	B
R13			R92-0670-05	CHIP R 0 OHM	MM2X	C
R14			RK73FB2A473J	CHIP R 47K J 1/10W		
R15			RK73FB2A470J	CHIP R 47 J 1/10W	KPTM	A
R15			RK73FB2A470J	CHIP R 47 J 1/10W	M2M3M4	A
R15			RK73FB2A470J	CHIP R 47 J 1/10W	C1C2	A
R15			RK73FB2A470J	CHIP R 47 J 1/10W	E	B
R15			RK73FB2A470J	CHIP R 47 J 1/10W	MM2X	C
R15			R92-0670-05	CHIP R 0 OHM	X	A
R16			RK73FB2A274J	CHIP R 270K J 1/10W		
R17			RK73FB2A4R7J	CHIP R 4.7 J 1/10W	X	A
R17			RK73FB2A470J	CHIP R 47 J 1/10W	KPTM	A
R17			RK73FB2A470J	CHIP R 47 J 1/10W	M2M3M4	A
R17			RK73FB2A470J	CHIP R 47 J 1/10W	C1C2	A
R17			RK73FB2A470J	CHIP R 47 J 1/10W	E	B
R17			RK73FB2A470J	CHIP R 47 J 1/10W	MM2X	C
R18			RK73FB2A104J	CHIP R 100K J 1/10W		
R19			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R20			RK73FB2A100J	CHIP R 10 J 1/10W	X	A
R20			RK73FB2A101J	CHIP R 100 J 1/10W	KPTM	A
R20			RK73FB2A101J	CHIP R 100 J 1/10W	M2M3M4	A
R20			RK73FB2A101J	CHIP R 100 J 1/10W	C1C2	A
R20			RK73FB2A101J	CHIP R 100 J 1/10W	E	B
R20			RK73FB2A101J	CHIP R 100 J 1/10W	MM2X	C
R21			RK73FB2A391J	CHIP R 390 J 1/10W	T	A
R21			RK73FB2A391J	CHIP R 390 J 1/10W	MX	C
R21			RK73FB2A681J	CHIP R 680 J 1/10W	M2M4C1	A
R21			RK73FB2A681J	CHIP R 680 J 1/10W	M2	C
R21			R92-0670-05	CHIP R 0 OHM	KPXMM3	A
R21			R92-0670-05	CHIP R 0 OHM	C2	A
R21			R92-0670-05	CHIP R 0 OHM	E	B
R22			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R23			RK73FB2A221J	CHIP R 220 J 1/10W	T	A
R23			RK73FB2A221J	CHIP R 220 J 1/10W	MX	C
R23			RK73FB2A391J	CHIP R 390 J 1/10W	KPXMM2	A

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
R23			RK73FB2A391J	CHIP R 390 J 1/10W	M3M4	A
R23			RK73FB2A391J	CHIP R 390 J 1/10W	C1C2	A
R23			RK73FB2A391J	CHIP R 390 J 1/10W	E	B
R23			RK73FB2A391J	CHIP R 390 J 1/10W	M2	C
R24			RK73FB2A101J	CHIP R 100 J 1/10W		
R25			RK73FB2A224J	CHIP R 220K J 1/10W		
R26			RK73FB2A471J	CHIP R 470 J 1/10W		
R27			R92-0670-05	CHIP R 0 ΩHM		
R28			R92-0670-05	CHIP R 0 ΩHM	M2M4C1	A
R28			R92-0670-05	CHIP R 0 ΩHM	M2	C
R29			RK73FB2A153J	CHIP R 15K J 1/10W	KPTX	A
R29			RK73FB2A153J	CHIP R 15K J 1/10W	MM3C2	A
R29			RK73FB2A153J	CHIP R 15K J 1/10W	E	B
R29			RK73FB2A153J	CHIP R 15K J 1/10W	MX	C
R29			RK73FB2A473J	CHIP R 47K J 1/10W	M2M4C1	A
R29			RK73FB2A473J	CHIP R 47K J 1/10W	M2	C
R30			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R31			R92-0670-05	CHIP R 0 ΩHM		
R32			RK73FB2A273J	CHIP R 27K J 1/10W		
R33			RK73FB2A273J	CHIP R 27K J 1/10W		
R34			R92-1220-05	FIXED RESISTOR 1 ΩHM		
R35			RK73FB2A680J	CHIP R 68 J 1/10W	MM2X	C
R35			RK73FB2A680J	CHIP R 68 J 1/10W	T	A
R35			RK73FB2A101J	CHIP R 100 J 1/10W	KMPX	A
R35			RK73FB2A101J	CHIP R 100 J 1/10W	M2M3M4	A
R35			RK73FB2A101J	CHIP R 100 J 1/10W	C1C2	A
R35			RK73FB2A101J	CHIP R 100 J 1/10W	E	B
R36			R92-0670-05	CHIP R 0 ΩHM		
R37			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R38			RK73FB2A473J	CHIP R 47K J 1/10W		
R39			RK73FB2A333J	CHIP R 33K J 1/10W		
R40			RK73FB2A473J	CHIP R 47K J 1/10W		
R41			RK73FB2A223J	CHIP R 22K J 1/10W		
R42			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R43			RK73FB2A153J	CHIP R 15K J 1/10W		
R44			RK73FB2A272J	CHIP R 2.7K J 1/10W	KMPX	A
R44			RK73FB2A272J	CHIP R 2.7K J 1/10W	M2M3M4	A
R44			RK73FB2A272J	CHIP R 2.7K J 1/10W	C1C2	A
R44			RK73FB2A272J	CHIP R 2.7K J 1/10W	E	B
R45			RK73FB2A334J	CHIP R 330K J 1/10W		
R46			RK73FB2A223J	CHIP R 22K J 1/10W		
R47			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R48			RK73FB2A103J	CHIP R 10K J 1/10W		
R49			RK73FB2A103J	CHIP R 10K J 1/10W		
R50			RK73FB2A103J	CHIP R 10K J 1/10W		
R51			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R52			RK73FB2A223J	CHIP R 22K J 1/10W		
R53			RK73FB2A473J	CHIP R 47K J 1/10W		
R54			R92-0670-05	CHIP R 0 ΩHM		
R55			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R58			RK73FB2A103J	CHIP R 10K J 1/10W		
R59			RK73FB2A103J	CHIP R 10K J 1/10W		
R60			R92-0670-05	CHIP R 0 ΩHM		
R61			RK73FB2A103J	CHIP R 10K J 1/10W	M2M4C1	A
R61			RK73FB2A103J	CHIP R 10K J 1/10W	M2	C

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R61			RK73FB2A223J	CHIP R 22K J 1/10W	KPTX	A
R61			RK73FB2A223J	CHIP R 22K J 1/10W	MM3C2	A
R61			RK73FB2A223J	CHIP R 22K J 1/10W	E	B
R61			RK73FB2A223J	CHIP R 22K J 1/10W	MX	C
R62			R92-0670-05	CHIP R 0 ΩHM		
R63			RK73FB2A183J	CHIP R 18K J 1/10W	M2M4C1	A
R63			RK73FB2A183J	CHIP R 18K J 1/10W	M2	C
R63			RK73FB2A393J	CHIP R 39K J 1/10W	KPTX	A
R63			RK73FB2A393J	CHIP R 39K J 1/10W	MM3C2	A
R63			RK73FB2A393J	CHIP R 39K J 1/10W	E	B
R63			RK73FB2A393J	CHIP R 39K J 1/10W	MX	C
R64			R92-0670-05	CHIP R 0 ΩHM		
R65			R92-0670-05	CHIP R 0 ΩHM		
R66			R92-0670-05	CHIP R 0 ΩHM		
R67			RK73FB2A104J	CHIP R 100K J 1/10W		
R68			RK73FB2A473F	CHIP R 47K F 1/10W		
R69			RK73FB2A823F	CHIP R 82K F 1/10W		
R70			RK73FB2A153F	CHIP R 15K F 1/10W		
R71			RK73FB2A220F	CHIP R 22 F 1/10W		
R72			R92-0670-05	CHIP R 0 ΩHM		
R73			RK73FB2A104J	CHIP R 100K J 1/10W		
R74			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R75			RK73FB2A471J	CHIP R 470 J 1/10W		
R76			R92-0670-05	CHIP R 0 ΩHM		
R77			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R78			RK73FB2A220J	CHIP R 22 J 1/10W		
R79			RK73FB2A223J	CHIP R 22K J 1/10W		
R80			RK73FB2A103J	CHIP R 10K J 1/10W		
R81 ,82			RK73FB2A101J	CHIP R 100 J 1/10W		
R83 ,84			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R85			RK73FB2A104J	CHIP R 100K J 1/10W		
R86			R92-0670-05	CHIP R 0 ΩHM		
R87			RK73FB2A220J	CHIP R 22 J 1/10W		
R88			RK73FB2A471J	CHIP R 470 J 1/10W	MM4C1	A
R88			RK73FB2A471J	CHIP R 470 J 1/10W	M2	C
R89			RK73FB2A120J	CHIP R 12 J 1/10W	M2M4C1	A
R89			RK73FB2A120J	CHIP R 12 J 1/10W	M2	C
R89			R92-0670-05	CHIP R 0 ΩHM	KPTK	A
R89			R92-0670-05	CHIP R 0 ΩHM	MM3C2	A
R89			R92-0670-05	CHIP R 0 ΩHM	E	B
R89			R92-0670-05	CHIP R 0 ΩHM	MX	C
R90			R92-0685-05	CHIP R 22 J 1/2W	M2M4C1	A
R90			R92-0685-05	CHIP R 22 J 1/2W	M2	C
R90			R92-0699-05	SΩLID 10 1/2W	KPTX	A
R90			R92-0699-05	SΩLID 10 1/2W	MM3C2	A
R90			R92-0699-05	SΩLID 10 1/2W	E	B
R90			R92-0699-05	SΩLID 10 1/2W	MX	C
R91			RK73FB2A471J	CHIP R 470 J 1/10W	M2M4C1	A
R91			RK73FB2A471J	CHIP R 470 J 1/10W	M2	C
R92			R92-0670-05	CHIP R 0 ΩHM		
R93			R92-1215-05	CHIP R 470 J 1/2W		
R94			RK73FB2A103J	CHIP R 10K J 1/10W		
R95			R92-1213-05	CARBΩN 100 J 1/2W		
R96 ,97			RK73FB2A223J	CHIP R 22K J 1/10W		
R98			RK73FB2A391J	CHIP R 390 J 1/10W	M	C

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R99			R92-0670-05	CHIP R 0 ΩHM		
R201			RK73FB2A563J	CHIP R 56K J 1/10W		
R202-206			RK73FB2A473J	CHIP R 47K J 1/10W		
R207			R92-0670-05	CHIP R 0 ΩHM	KPC2X	A
R207			R92-0670-05	CHIP R 0 ΩHM	MC1	A
R207			R92-0670-05	CHIP R 0 ΩHM	M2M3M4	A
R207			R92-0670-05	CHIP R 0 ΩHM	E	B
R208			R92-0670-05	CHIP R 0 ΩHM		
R209			R92-0670-05	CHIP R 0 ΩHM	M2M4C1	A
R209			R92-0670-05	CHIP R 0 ΩHM	M2	C
R210			R92-0670-05	CHIP R 0 ΩHM		
R211			RK73FB2A473J	CHIP R 47K J 1/10W		
R212			RK73FB2A104J	CHIP R 100K J 1/10W		
R213			RK73FB2A183J	CHIP R 18K J 1/10W		
R214-216			RK73FB2A473J	CHIP R 47K J 1/10W		
R217,218			RK73FB2A103J	CHIP R 10K J 1/10W		
R219,220			RK73FB2A473J	CHIP R 47K J 1/10W		
R221			R92-0679-05	CHIP R 0 ΩHM		
R222			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R223			RK73FB2A473J	CHIP R 47K J 1/10W		
R224			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R225-227			RK73FB2A473J	CHIP R 47K J 1/10W		
R227-229			RK73FB2A334J	CHIP R 330K J 1/10W		
R228			RK73FB2A103J	CHIP R 10K J 1/10W		
R230			RK73FB2A561J	CHIP R 560 J 1/10W		
R231			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R232			RK73FB2A103J	CHIP R 10K J 1/10W		
R233			R92-0670-05	CHIP R 0 ΩHM	KMPX	A
R233			R92-0670-05	CHIP R 0 ΩHM	M2M3M4	A
R233			R92-0670-05	CHIP R 0 ΩHM	C1C2	A
R233			R92-0670-05	CHIP R 0 ΩHM	E	B
R233			R92-0670-05	CHIP R 0 ΩHM	MM2	C
VR1			R12-3132-05	TRIM PΩT. 47K		
VR2			R12-6423-05	TRIM PΩT. 10K		
VR4			R12-3132-05	TRIM PΩT. 47K		
VR5			R12-3128-05	TRIM PΩT. 22K		
VR201			R05-3452-05	PΩTENTIΩMETER(10K.A)		
S201			S40-2440-15	PUSH SWITCH (PΩWER)		
S202,203			S40-1086-05	TACT SWITCH		
S204,205			S40-1436-05	TACT SWITCH		
S206			W02-0866-05	RΩTARY ENCΩRDER		
D1			1SV164	DIΩDE		
D2			1SV164	DIΩDE	KPTX	A
D2			1SV164	DIΩDE	MM3C2	A
D2			1SV164	DIΩDE	E	B
D2			1SV164	DIΩDE	MX	C
D3			1SV164	DIΩDE		
D4			1SV164	DIΩDE	KPTX	A
D4			1SV164	DIΩDE	MM3C2	A
D4			1SV164	DIΩDE	E	B
D4			1SV164	DIΩDE	MX	C
D5			1SV164	DIΩDE	M2M4C1	A
D5			1SV164	DIΩDE	M2	C
D5			1SV166	DIΩDE	KPTX	A

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D5			1SV166	DIODE	MM3C2	A
D5			1SV166	DIODE	E	B
D5			1SV166	DIODE	MX	C
D6			1SV164	DIODE	KPTX	A
D6			1SV164	DIODE	MM3C2	A
D6			1SV164	DIODE	E	B
D6			1SV164	DIODE	MX	C
D7 ,8			1SV164	DIODE		
D9			1SV164	DIODE	M2M4C1	A
D9			1SV164	DIODE	M2	C
D9			1SV166	DIODE	KPTX	A
D9			1SV166	DIODE	MM3C2	A
D9			1SV166	DIODE	E	B
D9			1SV166	DIODE	MX	C
D10			1SS184	DIODE		
D11			MA344B	CHIP DIODE		
D12			1SS184	DIODE		
D14			1SS184	DIODE		
D15			1SS181	DIODE		
D16			MI407	DIODE		
D17			MI308	DIODE		
D18 ,19			1SS226	DIODE		
D20			DSA3A1	DIODE		
D201			1SS226	DIODE		
D202			MA110	DIODE		
D202			1SS355	DIODE		
IC1			KCD01	HIC(FM-IF)		
IC2			UPC1241H	IC(AF POWER AMP)		
IC3			KCA03	HIC(MIC AMP)		
IC4			NJM78L05UA	IC(VOLTAGE REGULATOR/ +5V)		
IC5			LA5010M	IC(VOLTAGE REGULATOR/+10V)		
IC6			KCB05	HIC(DRIVE)		
IC7			MC7808CT	IC(VOLTAGE REGULATORS/ +8V)		
IC201			NJM78L05UA	IC(VOLTAGE REGULATOR/ +5V))		
IC202			AK93C46F	IC(1K EEPROM)		
IC203			75104G-605-1B	IC(MICROPROCESSOR)		
IC204			S-8054ALR-LN	IC(BACK UP)		
Q1			3SK184(S)	FET		
Q2			3SK131(L)	FET		
Q3			2SC2714(Y)	TRANSISTOR		
Q4			2SD1757K	TRANSISTOR		
Q5 ,6			2SB1119S	TRANSISTOR		
Q7			DTC144WK	DIGITAL TRANSISTOR		
Q8			DTC114WK	DIGITAL TRANSISTOR		
Q9 ,10			2SC2712(Y)	TRANSISTOR		
Q11			2SD1757K	TRANSISTOR		
Q13			2SC2712(Y)	TRANSISTOR		
Q14			2SK208(Y)	FET		
Q15			2SC2714(Y)	TRANSISTOR		
Q16			2SD1406(Y)	TRANSISTOR		
Q17			2SB1302S	TRANSISTOR		
Q18			DTC114WK	DIGITAL TRANSISTOR		
Q201,202			2SC2712(Y)	TRANSISTOR		
TH1			157-252-55038	THERMISTER (2.5K)		

L:Scandinavia **K:**USA **P:**Canada
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A : TK-705 K,M,M2,M3,M4,P,C1,C2,T,X
B : TK-705B E
C : TK-705N M,M2,X

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PARTS LIST

× New Parts
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TX-RX UNIT (X57-345X-XX)
PLL (X58-371X-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	Destination 仕向	Remarks 備考
Z1			X59-3740-10	SUB UNIT(HPF)		
Z2			X58-3710-10	SUB UNIT(PLL)	KPTX	A
Z2			X58-3710-10	SUB UNIT(PLL)	MM3C2	A
Z2			X58-3710-10	SUB UNIT(PLL)	E	B
Z2			X58-3710-10	SUB UNIT(PLL)	MX	C
Z2			X58-3711-01	SUB UNIT(PLL)	M2M4C1	A
Z2			X58-3711-01	SUB UNIT(PLL)	M2	C
Z3			X59-3130-00	SUB UNIT(APC)		
PLL (X58-371X-XX) 0-10 : K,M,M3,P,C2,T,X,BE,NM,NX 1-01 : M2,M4,C1,NM2						
C1			CK73FB1E223K	CHIP C 0.022UF K		
C2 ,3			CK73FB1H102K	CHIP C 1000PF K		
C4			CK73FB1E223K	CHIP C 0.022UF K		
C5			CK73FB1H471K	CHIP C 470PF K		
C6 ,7			C92-0516-05	CHIP TAN 4.7UF 16WV		
C8			C92-0003-05	CHIP TAN 0.47UF 25WV		
C9			CK73EB1E473K	CHIP C 0.047UF K		
C10			CC73FCH1H050C	CHIP C 5PF C		
C11 ,12			CK73FB1H102K	CHIP C 1000PF K		
C13 ,14			CK73FB1E223K	CHIP C 0.022UF K		
C101			CC73GCH1H470J	CHIP C 47PF J	M2M4C1	A
C101			CC73GCH1H470J	CHIP C 47PF J	M2	C
C101			CC73GSL1H221J	CHIP C 220PF J	KMPTX	A
C101			CC73GSL1H221J	CHIP C 220PF J	M3C2	A
C101			CC73GSL1H221J	CHIP C 220PF J	E	B
C101			CC73GSL1H221J	CHIP C 220PF J	MX	C
C102			CC73GCH1H030C	CHIP C 3PF C	M2M4C1	A
C102			CC73GCH1H030C	CHIP C 3PF C	M2	C
C102			CC73GCH1H1R5C	CHIP C 1.5PF C	KMPTX	A
C102			CC73GCH1H1R5C	CHIP C 1.5PF C	M3C2	A
C102			CC73GCH1H1R5C	CHIP C 1.5PF C	E	B
C102			CC73GCH1H1R5C	CHIP C 1.5PF C	MX	C
C103,104			CK73GB1E103K	CHIP C 0.010UF K		
C105			CC73GCH1H020C	CHIP C 2.0PF C		
C106			CC73GCH1H220J	CHIP C 22PF J		
C107,108			CK73GB1H102K	CHIP C 1000PF K		
C109			CK73GB1E103K	CHIP C 0.010UF K		
C110			CC73GCH1H330J	CHIP C 33PF J	M2M4C1	A
C110			CC73GCH1H330J	CHIP C 33PF J	M2	C
C110			CC73GSL1H221J	CHIP C 220PF J	KMPTX	A
C110			CC73GSL1H221J	CHIP C 220PF J	M3C2	A
C110			CC73GSL1H221J	CHIP C 220PF J	E	B
C110			CC73GSL1H221J	CHIP C 220PF J	MX	C
C111			CC73GCH1H010C	CHIP C 1PF C	KMPTX	A
C111			CC73GCH1H010C	CHIP C 1PF C	M3C2	A
C111			CC73GCH1H010C	CHIP C 1PF C	E	B
C111			CC73GCH1H010C	CHIP C 1PF C	MX	C
C112,113			CK73GB1E103K	CHIP C 0.010UF K		
C114			CC73GCH1H020C	CHIP C 2.0PF C		
C115			CC73GCH1H020C	CHIP C 2.0PF C	M2M4C1	A
C115			CC73GCH1H020C	CHIP C 2.0PF C	M2	C
C116			CK73GB1H102K	CHIP C 1000PF K		
C117			CC73GCH1HR75C	CHIP C 0.75PF C		
C118			CK73GB1H102K	CHIP C 1000PF K		

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PLL (X58-371X-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	Destination 仕向	Remarks 備考
CN1			E40-5201-05	PIN CONNECTOR (7P)		
CN101			E40-0411-05	PIN CONNECTOR (4P)		
CN102			E40-0311-05	PIN CONNECTOR (3P)		
			F11-1122-14	SHIELDING COVER		
L1			L40-3391-19	SMALL FIXED INDUCTOR (3.3UH)		
L101,102			L40-4791-19	SMALL FIXED INDUCTOR (4.7UH)		
L103			L34-2331-05	COIL 4T		
L104-106			L40-4791-19	SMALL FIXED INDUCTOR (4.7UH)		
L107			L34-2331-05	COIL 4T	M2M4C1	A
L107			L34-2331-05	COIL 4T	M2	C
L107			L34-2332-05	COIL 3T	KMPTX	A
L107			L34-2332-05	COIL 3T	M3C2	A
L107			L34-2332-05	COIL 3T	E	B
L107			L34-2332-05	COIL 3T	MX	C
L108			L40-4791-19	SMALL FIXED INDUCTOR (4.7UH)		
L109			L40-1092-19	SMALL FIXED INDUCTOR (1UH)		
R1 -5			RK73GB1J473J	CHIP R 47K J 1/16W		
R6			RK73GB1J152J	CHIP R 1.5K J 1/16W		
R7			RK73GB1J222J	CHIP R 2.2K J 1/16W	KMPTX	A
R7			RK73GB1J222J	CHIP R 2.2K J 1/16W	M3C2	A
R7			RK73GB1J222J	CHIP R 2.2K J 1/16W	E	B
R7			RK73GB1J222J	CHIP R 2.2K J 1/16W	MX	C
R7			RK73GB1J272J	CHIP R 2.7K J 1/16W	M2M4C1	A
R7			RK73GB1J272J	CHIP R 2.7K J 1/16W	M2	C
R8			RK73GB1J392J	CHIP R 3.9K J 1/16W		
R9			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R10 ,11			RK73GB1J103J	CHIP R 10K J 1/16W		
R12			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R13			RK73GB1J473J	CHIP R 47K J 1/16W		
R14			RK73GB1J223J	CHIP R 22K J 1/16W		
R15			RK73GB1J103J	CHIP R 10K J 1/16W		
R16			RK73GB1J221J	CHIP R 220 J 1/16W		
R101			RK73GB1J101J	CHIP R 100 J 1/16W		
R102			RK73GB1J470J	CHIP R 47 J 1/16W		
R103			RK73GB1J101J	CHIP R 100 J 1/16W		
R104			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R105			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R106			RK73GB1J471J	CHIP R 470 J 1/16W		
R107			RK73GB1J101J	CHIP R 100 J 1/16W		
R108			RK73GB1J470J	CHIP R 47 J 1/16W		
R109			RK73GB1J183J	CHIP R 18K J 1/16W		
R110			RK73GB1J470J	CHIP R 47 J 1/16W		
R111			RK73GB1J101J	CHIP R 100 J 1/16W		
R112,113			RK73GB1J471J	CHIP R 470 J 1/16W		
R114			RK73GB1J104J	CHIP R 100K J 1/16W		
D101-104			1SV166	DIODE		
D105			1SV164	DIODE		
IC1			M54959FP	IC(FREQ SYNTHESIZER PLL)		
Q1			2SC2713(B)	TRANSISTOR		
Q1			2SC3324(B)	TRANSISTOR		
Q2			2SC3324(B)	TRANSISTOR		
Q2			2SC3324(B)	TRANSISTOR		
Q3			2SC2712(Y)	TRANSISTOR		

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PLL (X58-371X-XX)
APC (X59-3130-00)
HPF (X59-3740-10)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
Q4			2SC2714(Y)	TRANSISTOR		
Q101			2SK508NV(K52)	FET		
Q102			DTC114EK	DIGITAL TRANSISTOR		
Q103			2SC3120	TRANSISTOR		
Q104			2SK508NV(K52)	FET		
Q105			DTC114EK	DIGITAL TRANSISTOR		
APC (X59-3130-00)						
C1			CK73FB1H102K	CHIP C 1000PF K		
C2			C92-0501-05	CHIP-TAN 1.5UF 6.3WV		
C3			CK73FB1H472K	CHIP C 4700PF K		
C4			CK73FB1H102K	CHIP C 1000PF K		
C5			CK73FB1H472K	CHIP C 4700PF K		
C6			CK73FB1H102K	CHIP C 1000PF K		
			E23-0471-05	TERMINAL		
R1			RD41FB2B222J	CARBON 2.2K J 1/8W		
R2			RD41FB2B102J	CARBON 1K J 1/8W		
R3			RD41FB2B152J	CARBON 1.5K J 1/8W		
R4 ,5			RD41FB2B103J	CARBON 10K J 1/8W		
R6			RD41FB2B122J	CARBON 1.2K J 1/8W		
Q1 ,2			FMW1	TRANSISTOR		
Q3			2SA1162(Y)	TRANSISTOR		
HPF (X59-3740-10)						
C1 -3			CK73GB1H272K	CHIP C 2700PF K		
C4 -6			CK73FB1H272K	CHIP C 2700PF K		
C7			CK73FB1H102K	CHIP C 1000PF K		
C8			CK73FB1H272K	CHIP C 2700PF K		
C10			CK73EF1C105Z	CHIP C 1.0UF Z		
			E23-0471-05	TERMINAL		
R1			RK73GB1J394J	CHIP R 390K J 1/16W		
R2			RK73GB1J681J	CHIP R 680 J 1/16W		
R3			RK73GB1J332J	CHIP R 3.3K J 1/16W		
R4			RK73GB1J124J	CHIP R 120K J 1/16W		
R5			RK73GB1J683J	CHIP R 68K J 1/16W		
R6 ,7			RK73GB1J824J	CHIP R 820K J 1/16W		
R8			RK73FB2A124G	CHIP R 120K G 1/10W		
R9			RK73FB2A564G	CHIP R 560K G 1/10W		
R10			RK73FB2A104G	CHIP R 100K G 1/10W		
R16			RK73GB1J122J	CHIP R 1.2K J 1/16W		
R17			R92-0670-05	CHIP R 0 OHM		
IC1			NJM4558M	IC(OP AMP X2)		
Q1			2SC2712(Y)	TRANSISTOR		

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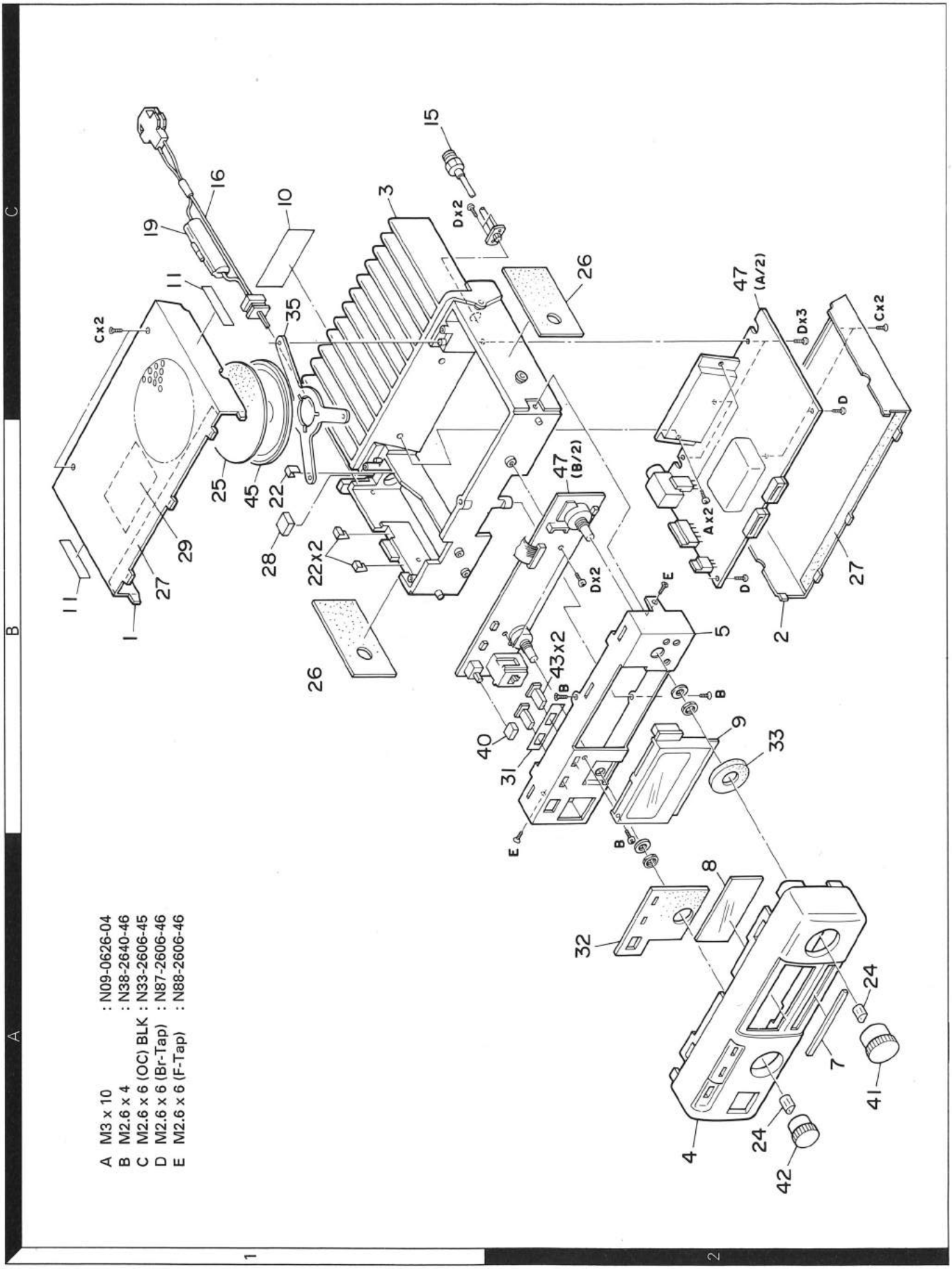
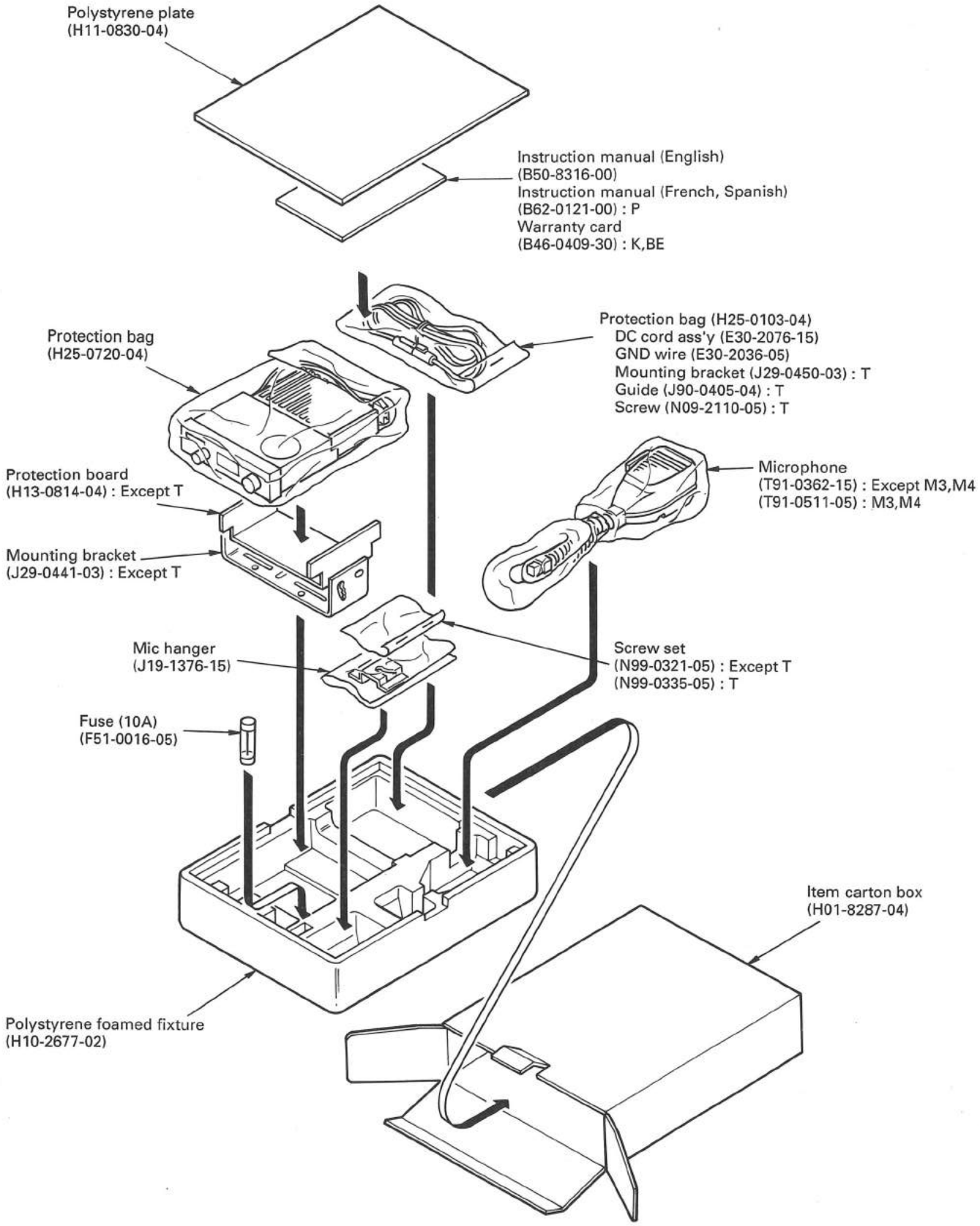
TK-705/B/N

EXPLODED VIEW



PACKING


Polystyrene plate
(H11-0830-04)
Instruction manual (English)
(B50-8316-00)
Instruction manual (French, Spanish)
(B62-0121-00) : P
Warranty card
(B46-0409-30) : K,BE
Protection bag (H25-0103-04)
DC cord ass'y (E30-2076-15)
GND wire (E30-2036-05)
Mounting bracket (J29-0450-03) : T
Guide (J90-0405-04) : T
Screw (N09-2110-05) : T
Protection bag
(H25-0720-04)
Microphone
(T91-0362-15) : Except M3,M4
(T91-0511-05) : M3,M4
Protection board
(H13-0814-04) : Except T
Mounting bracket
(J29-0441-03) : Except T
Mic hanger
(J19-1376-15)
Screw set
(N99-0321-05) : Except T
(N99-0335-05) : T
Fuse (10A)
(F51-0016-05)
Item carton box
(H01-8287-04)
Polystyrene foamed fixture
(H10-2677-02)

ADJUSTMENT

Test Equipment Required for Alignment

No.	Test Equipment	Major Specifications	
1	Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 500MHz. Frequency modulation and external modulation. 0.1μV to greater than 1mV.
2	Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω. 100 to 500MHz or more. Vicinity of 60W.
3	Deviation Meter	Frequency Range	100 to 500MHz.
4	Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 30V DC. High input impedance for minimum circuit loading.
5	Oscilloscope		DC through 30MHz.
6	High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 500MHz. 0.2ppm or less.
7	Ammeter		15A.
8	AF Volt Meter (AFVTVM)	Frequency Range Voltage Range	50Hz to 10kHz. 3mV to 3V.
9	Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more. 0 to 1V.
10	Distortion Meter	Capability Input Level	3% or less at 1kHz. 50mV to 10Vrms.
11	Voltmeter	Measuring Range Input Impedance	1.5 to 30V DC or less. 50kΩ/V or greater.
12	4Ω Dummy Load		Approx. 4Ω, 3W.
13	Regulated Power Supply		13.6V, approx. 15A (adjustable from 9 to 17V). Useful if ammeter equipped.

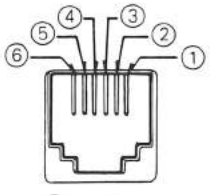
The set has been adjusted for the frequencies shown in the following table. When required, re-adjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

	RX freq' fR( ) MHz			TX freq' fT( ) MHz		
	L	M	H	L	M	H
Type F1	150.050	162.050	173.950	150.000	162.000	173.995*
Type F2	136.050	143.050	149.950	136.000	143.000	149.995

L : Low freq' M : Mid freq' H : Hi freq' * T type : 173.9875MHz

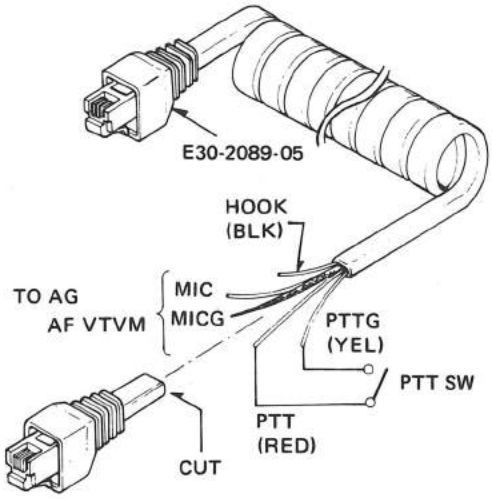
Type F1 : K,M,M3,P,C2,T,X,BE,NM,NX
Type F2 : M2,M4,C1,NM2

MIC connector front view



① SB
② PTTG
③ PTT
④ MICG
⑤ MIC
⑥ HOOK

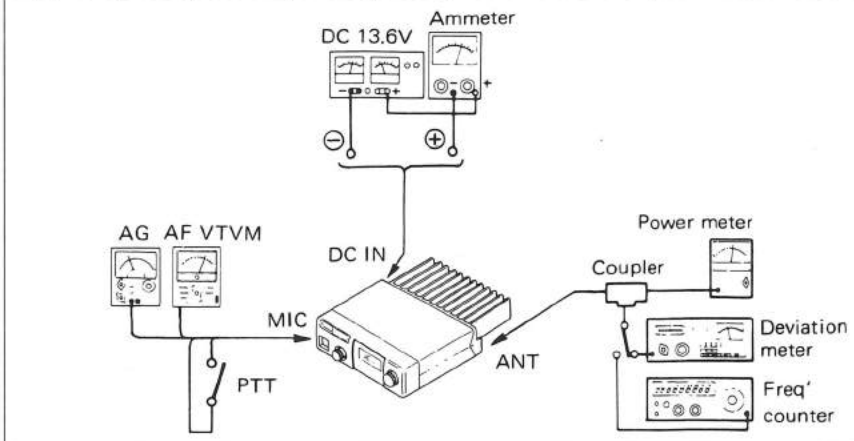
- **The following test cables are recommended.**



Test cable for Microphone input

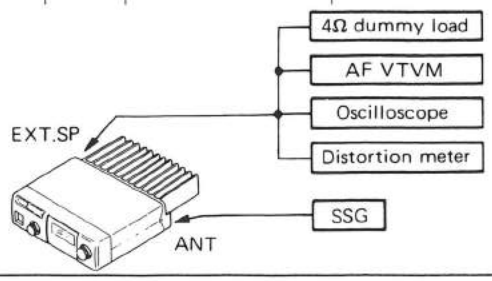
ADJUSTMENT

Common Section Adjustment

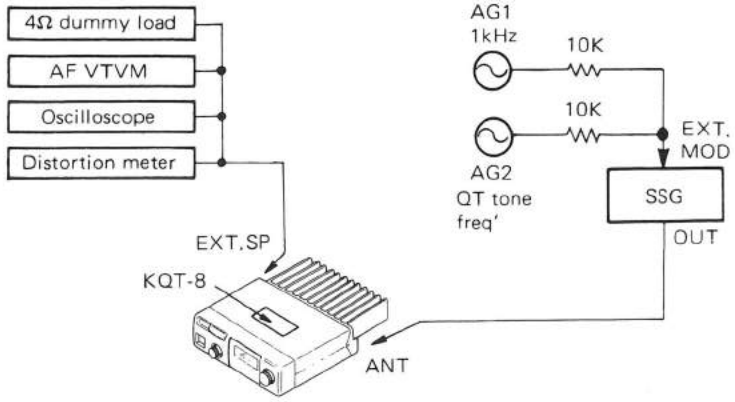
Item		Condition	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting		1) Write in freq' and signaling data with EEPROM writer. Source voltage : DC 13.6V POWER SW : OFF VOL VR : Full counterclockwise (CCW). TX-RX unit VR1 : CW VR5 : CCW VR2, 4 : Center							
2. PLL	RX	1) CH : Channel with lowest RX FREQ' (fRL).	DVM	TX-RX	TP2			Check	1.5V or more
	TX	2) CH : Channel with highest TX FREQ' (fTH). PTT : ON	Dummy	Rear panel	ANT				8.0V or less
3. Transmit frequency adjustment		1) CH : Channel with TX center FREQ' (fTM). PTT : ON	f. counter Power meter	Rear panel	ANT	TX-RX	TC1	Freq' adj. of TX.	±100Hz
		2) CH : Check other channel PTT : ON						Check	

Receiver Section Adjustment

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. BPF	1) CH : Channel with lowest RX FREQ' (fRL). **Type F1** CH : Channel with RX center FREQ' (fRM). **Type F2** SSG output : 0.5µV/–113dBm MOD : 1kHz DEV : ±3.0kHz **TK-705 (except T)** ±2.4kHz **TK-705B** ±1.5kHz **TK-705N, TK-705 T** SQ SW (⌒) : OFF	DC V.M	TX-RX	TP1	TX-RX	L1~5	Repeat for MAX.	
2. Distortion	1) CH : Channel with RX center FREQ' (fRM). SSG output : 501µV/–53dBm MOD : 1kHz DEV : ±3.0kHz **TK-705 (except T)** ±2.4kHz **TK-705B** ±1.5kHz **TK-705N, TK-705 T**	Distortion meter Oscilloscope	Rear panel	SP	TX-RX	L6	Remove the core and align with the (second **Type F1**, first **Type F2**) minimum distortion level point.	
3. Receiving sensitivity	1) CH : Channel with lowest RX FREQ' (fRL), channel with RX center FREQ' (fRM) and channel with highest RX FREQ' (fRH). SSG output : 0.25µV/–119dBm : 0.5µV/–113dBm **TK-705 X, TK-705N X** MOD : 1kHz DEV : ±3.0kHz **TK-705 (except T)** ±2.4kHz **TK-705B** ±1.5kHz **TK-705N, TK-705 T** SQ SW : OFF	AF V.M Oscilloscope	Rear panel	SP			Check	SINAD 12dB or more.



ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Squelch	1) CH : Channel with RX center FREQ' (fRM). SQ SW : ON SSG output : 12dB SINAD – 3dBμ	LCD			TX-RX	VR1	Set to the point at which squelch just close.	Busy indicator should off.
	2) SSG output : OFF						Check	Squelch should close.
	3) SSG output : 12dB SINAD							Squelch should open.
5. Check decoder sensitivity for signaling squelch KQT-8	1) CH : Set the channel selector to the channel with which QT (CTCSS) is used. SSG FREQ' : Set it to the FREQ' of the channel mentioned above. SSG output : Turn the SSG output so that the SINAD sensitivity becomes 10dB.							
	2) SSG MOD SW : EXT. MOD AG1 FREQ' : 1kHz AG2 FREQ' : QT tone freq'							
	3) AG1 : Power switch OFF AG2 output : Adjust the output level of AG2 so that the SSG deviation becomes 0.75kHz							
	4) AG1 : Power switch ON AG1 output : Adjust the output level of AG1 so that the SSG deviation becomes 3.75kHz (i.e., QT tone frequency /0.75kHz deviation, +1kHz/3kHz deviation) MIC hook : ON hook SQ SW : OFF		Rear panel	EXT. SP			Check	Open.

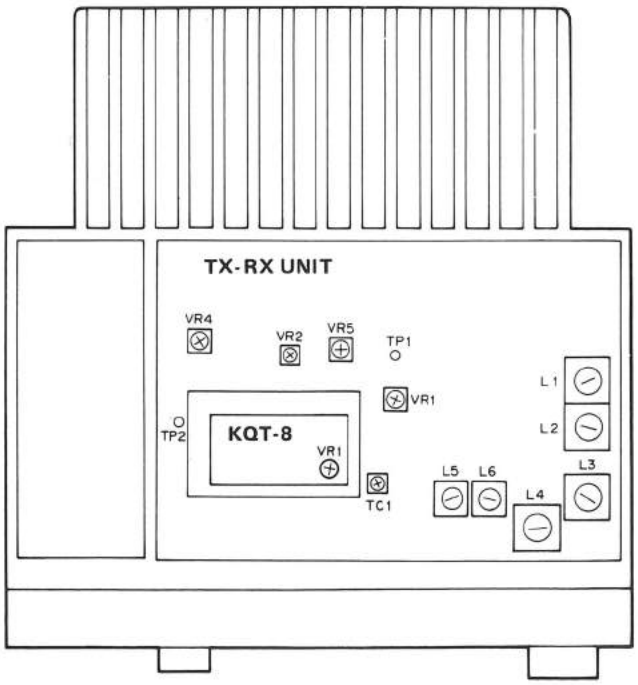
Transmitter Section Adjustment

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. APC	1) CH : Channel with TX center FREQ' (fTM). PTT : ON	Power meter Ammeter	Rear panel	ANT			Check	30W or more.
								TX indicator (⇗) on.
					TX-RX	VR5	27W	±1W, 7.0A or less
	2) CH : Channel with lowest TX FREQ' (fTL) and channel with highest TX FREQ' (fTH). PTT : ON						Check	20~30W 7.0A or less.

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. Tone deviation adjustment KQT-8	1) CH : Set the channel selector to the channel with which QT (CTCSS) is used. Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF PTT : ON	Power meter Deviatin meter	Rear panel	ANT	KQT-8	VR1	±0.8kHz **TK-705 (except T)** ±0.6kHz **TK-705B** ±0.35kHz **TK-705N, TK-705 T**	±100Hz ±100Hz ±50Hz
3. Maximum deviation adjustment	1) Connect AG to the MIC terminal. AG : 1kHz/50mV Deviation meter filter HPF : 50Hz LPF : 20kHz De-emphasis : 750µsec. TX-RX unit VR1 : MAX CW. CH : Channel with highest TX FREQ' (f_{TH}). PTT : ON	Power Deviation meter AG	Rear panel Front pamel	ANT MIC	TX-RX	VR4	±4.2kHz **TK-705 (except T)** ±3.4kHz **TK-705B** ±2.0kHz **TK-705N TK-705 T** Adjust one more than the other by switching between –P and +P	±100Hz
4. MIC sensitivity adjustment	1) AG : 1kHz/5mV				TX-RX	VR2	±3.0kHz **TK-705 (except T)** ±2.4kHz **TK-705B** ±1.5kHz **TK-705N TK-705 T**	±100Hz
5. Protection	1) CH : Channel with lowest TX FREQ' (f_{TL}). ANT : OPEN PTT : ON	Ammeter					Check	7.0A or less.

Adjustment Point (Top View)

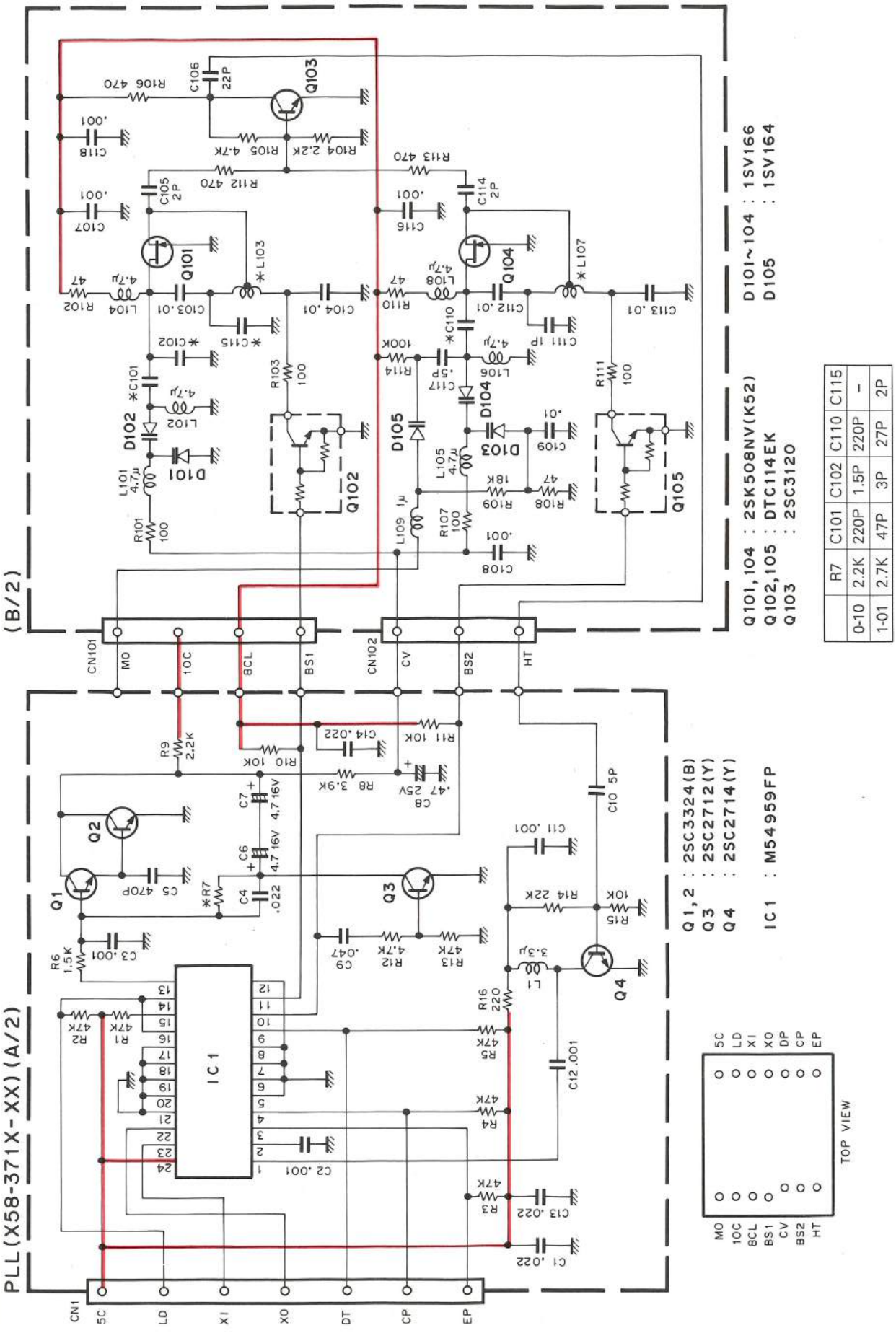


TERMINAL FUNCTIONS

Connector No.	Terminal No.	Terminal Name	Terminal Function
TX-RX UNIT (X57-345X-XX) (A/2)			
CN1	1	SP	Speaker input.
	2	E	GND.
CN3	1	E	GND.
	2	MODE	Function select.
	3	COM	Common.
	4	SC	Squelch busy control output.
	5	SQ	Squelch output.
	6	P91	Busy CH lockout control select.
	7	DET	Audio output.
	8	8C	Common +8V.
	9	TX	TX control.
	10	DP	PLL data.
	11	CP	PLL clock.
	12	EP	PLL enable.
	13	E	GND.
CN4	1	E	GND.
	2	A2	Audio input.
	3	P93	T.O.T. select.
	4	TO	Tone input.
	5	MIC	MIC input.
	6	ME	MIC GND.
	7	P92	T.O.T select.
	8	BEEP	BEEP input.
	9	A1	AF output.
	10	MUTE	AF mute input.
	11	PSW	Power switch control input.
	12	B	+13.6V
	13	E	GND.

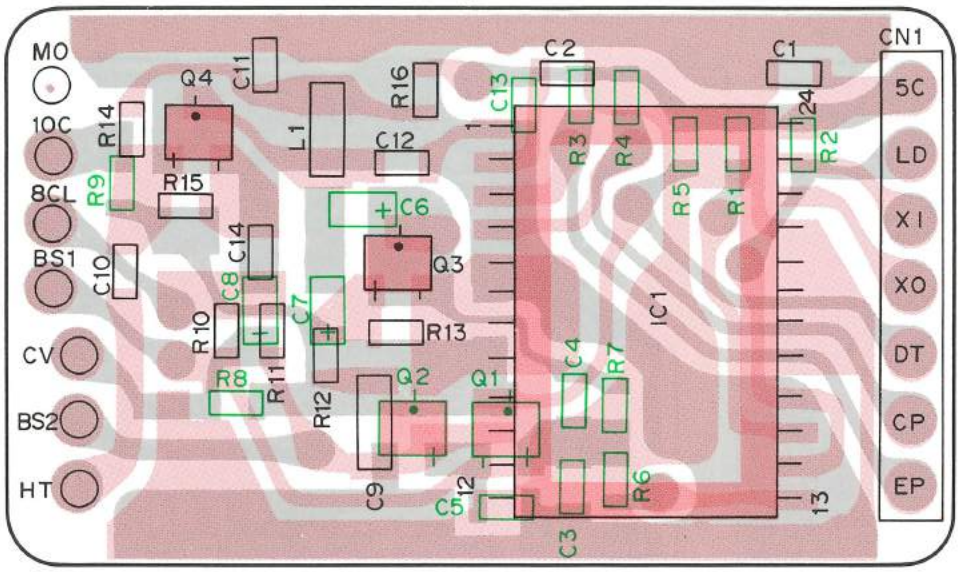
Connector No.	Terminal No.	Terminal Name	Terminal Function
TX-RX UNIT (X57-345X-XX) (B/2)			
CN201	1	E	GND.
	2	MODE	Function select.
	3	COM	Common.
	4	SC	Squelch busy control output.
	5	SQ	Squelch output.
	6	P91	Busy CH lockout control select.
	7	DET	Audio output.
	8	8C	Common +8V.
	9	TX	TX control.
	10	DP	PLL data.
	11	CP	PLL clock.
	12	EP	PLL enable.
	13	E	GND.
CN202	1	E	GND.
	2	A2	Audio input.
	3	P93	T.O.T. select.
	4	TO	Tone input.
	5	MIC	MIC input.
	6	ME	MIC GND.
	7	P92	T.O.T select.
	8	BEEP	BEEP input.
	9	A1	AF output.
	10	MUTE	AF mute input.
	11	PSW	Power switch control input.
	12	B	+13.6V
	13	E	GND.
CN203	1	CE	Display enable.
	2	DT	Display data.
	3	CK	Display clock.
	4	E	GND.
	5	5C	Common +5V.
	6	8C	Common +8V.

PLL (X58-371X-XX) 0-10 : K,P,M,C2 1-01 : P2,M2,C1



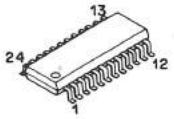
	R7	C101	C102	C110	C115
0-10	2.2K	220P	1.5P	220P	–
1-01	2.7K	47P	3P	27P	2P

PLL (X58-371X-XX) (A/2) Component side view



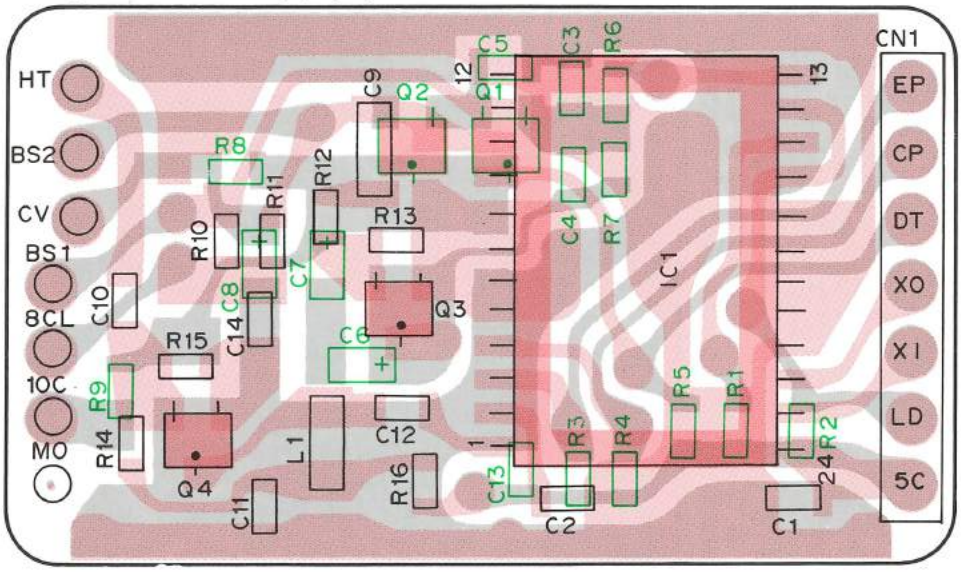
2SC2712
2SC2714
2SC3120
2SC3324
DTC114EK

M54959FP

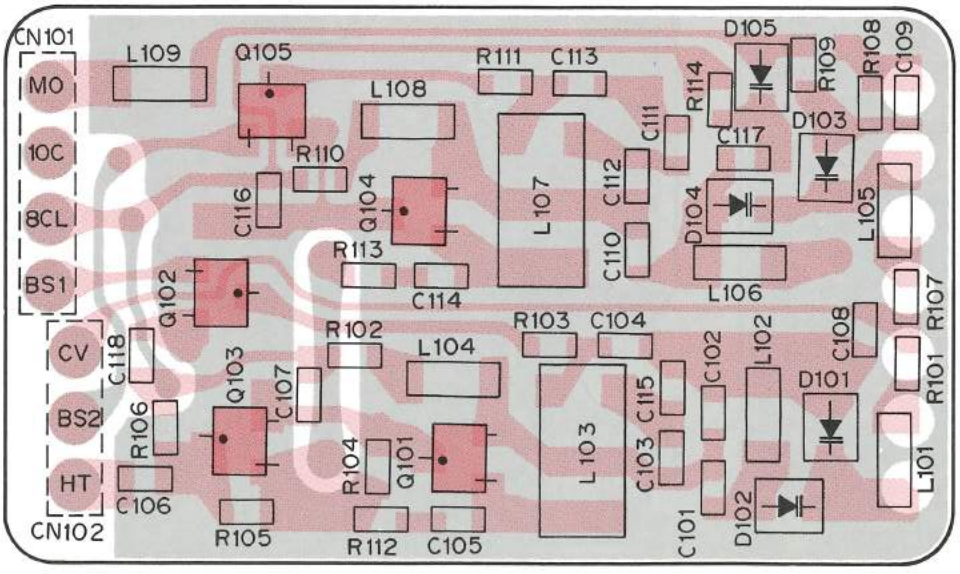


2SK508NV

PLL (X58-371X-XX) (A/2) Foil side view



PLL (X58-371X-XX) (B/2) Component side view

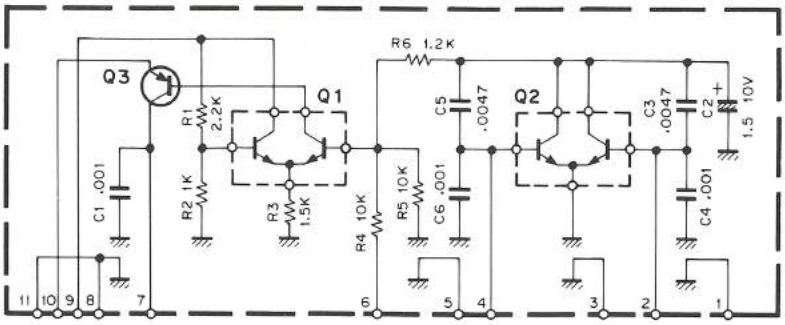


: Component side
: Foil side

CIRCUIT DIAGRAMS / PC BOARD VIEWS TK-705/B/N

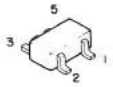
APC (X59-3130-00)

APC (X59-3130-00)

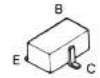


Q1, 2 : FMW-1
Q3 : 2SA1162(Y)

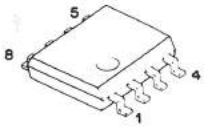
FMW-1



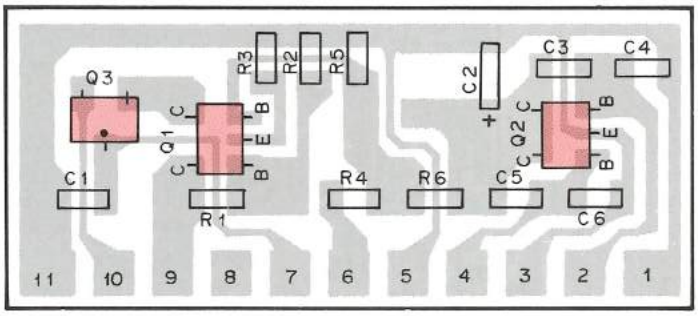
2SA1162
2SC2712



NJM4558M

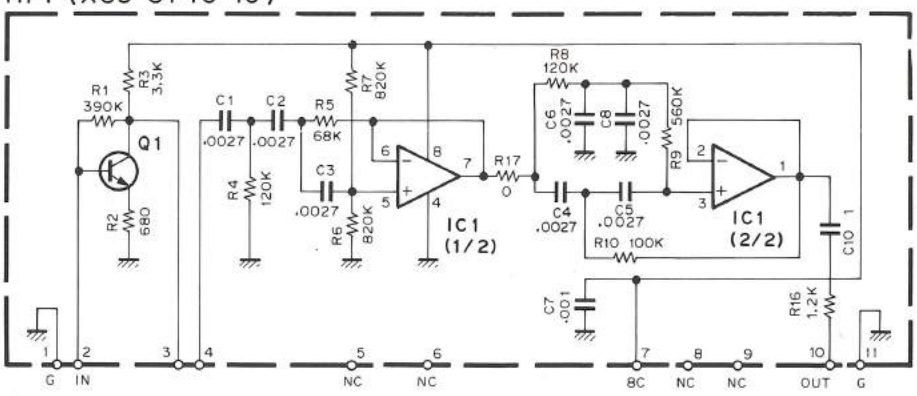


APC (X59-3130-00) Foil side view



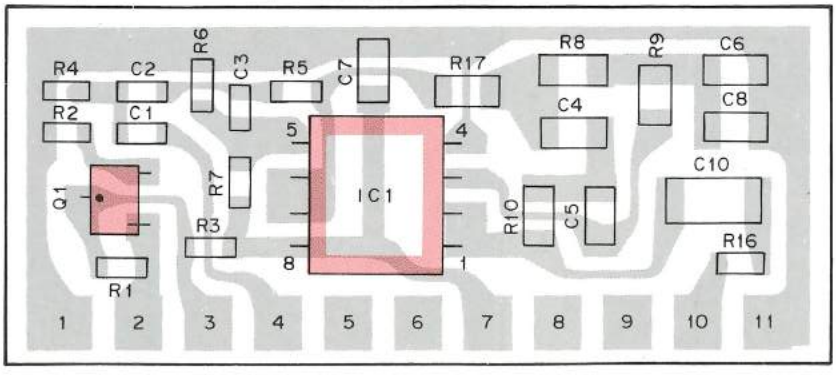
HPF (X59-3740-10)

HPF (X59-3740-10)



Q1 : 2SC2712(Y)
IC1 : NJM4558M

HPF (X59-3740-10) Foil side view

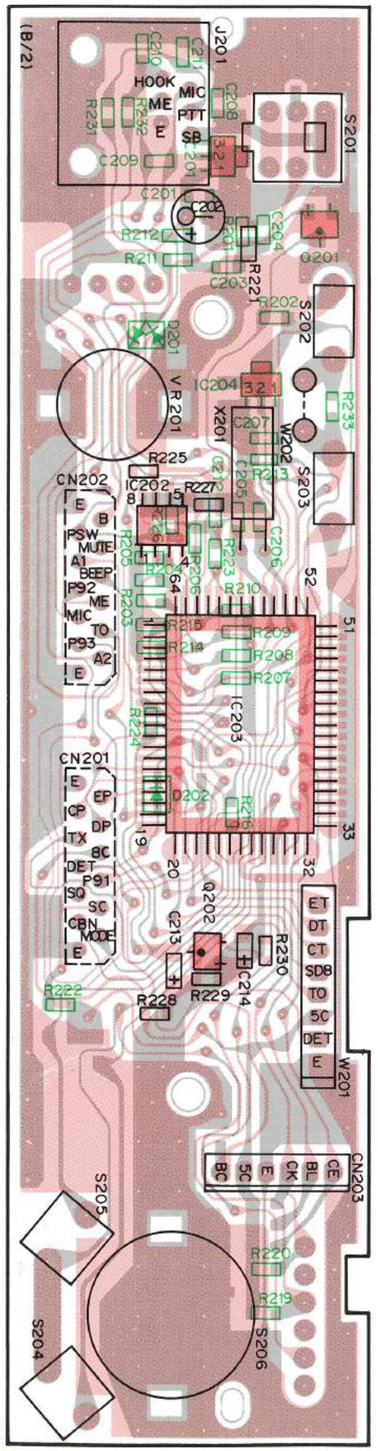


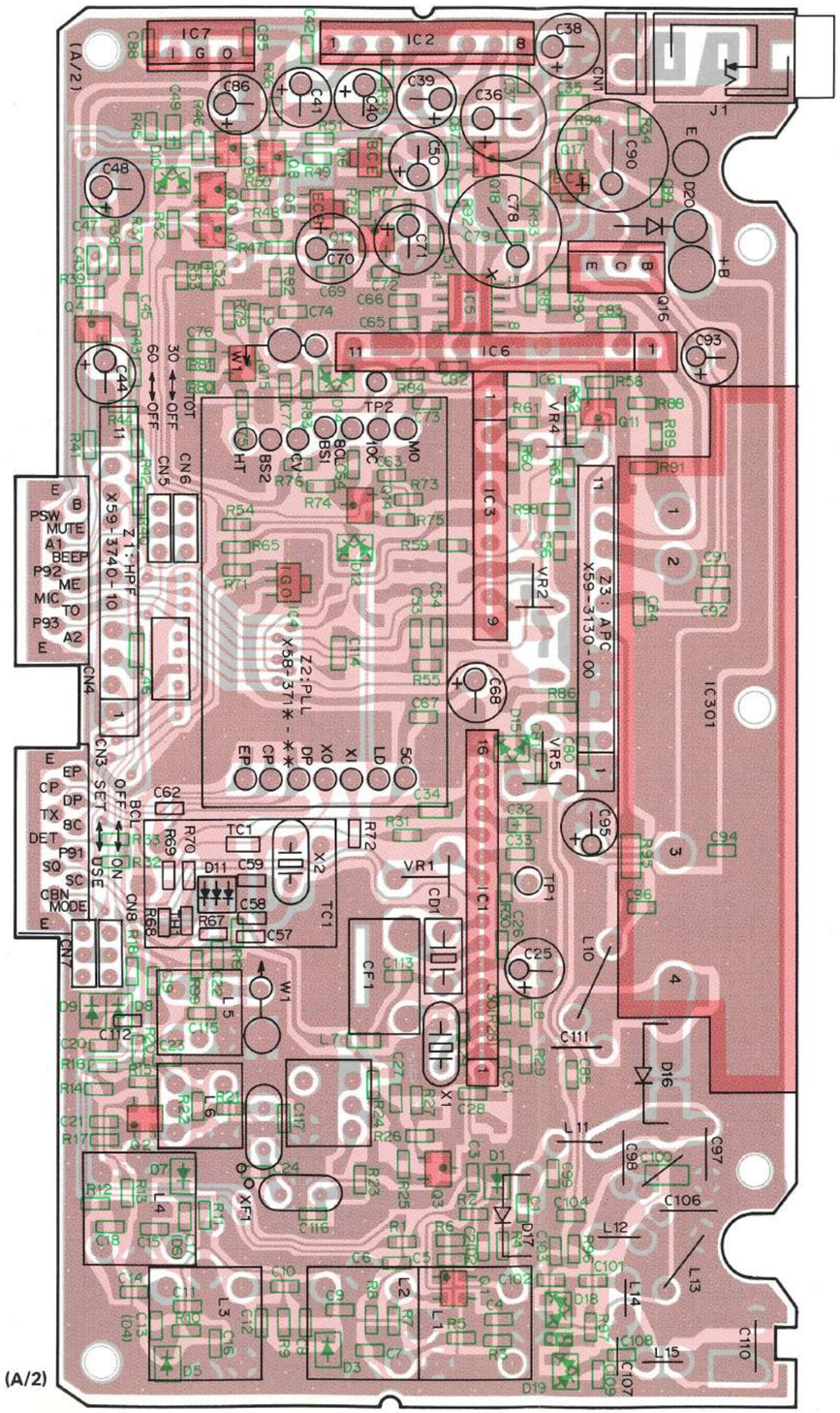
: Component side
: Foil side

TK-705/B/N PC BOARD VIEWS

TX-RX UNIT (X57-345X-XX) Component side view

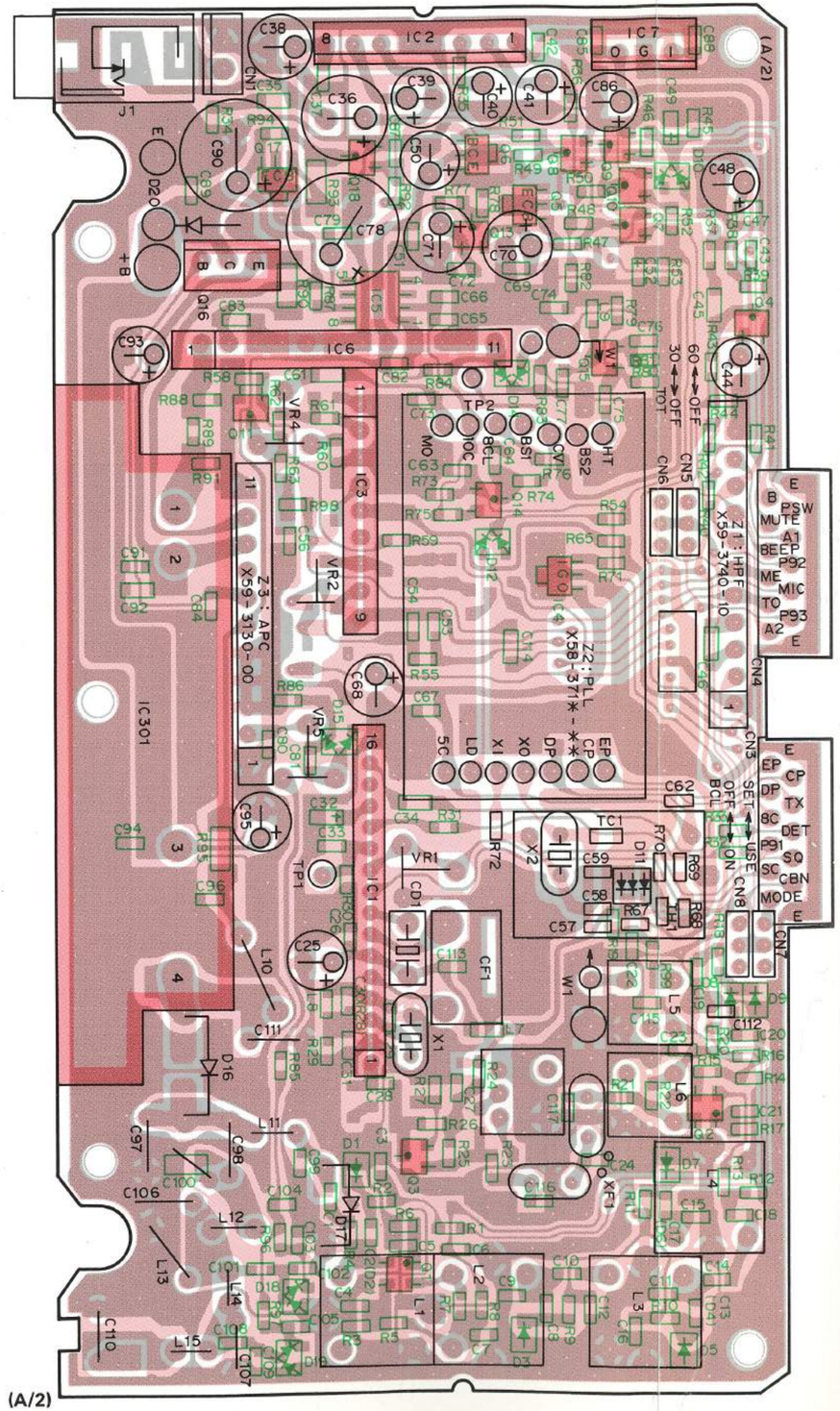
0-10 : K,P,C2,BE 0-21 : M,M3 0-22 : NM 0-23 : NM2 0-51 : T,NX 0-71 : X 1-01 : M2,M4,C1





TX-RX UNIT (X57-345X-XX) Foil side view

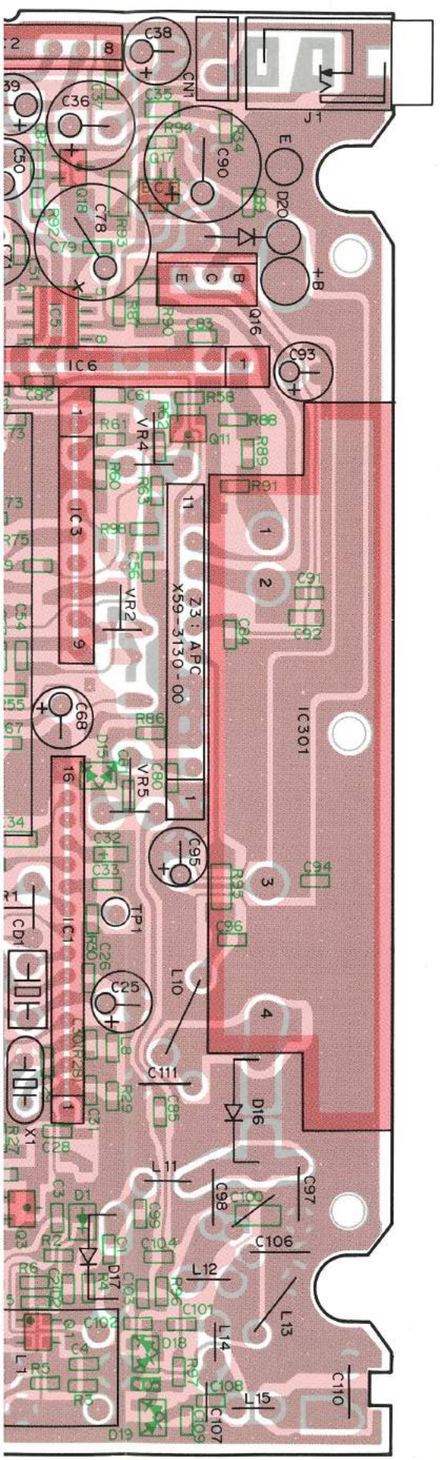
0-10 : K,P,C2,BE 0-21 : M,M3 0-22 : NM 0-23 : NM2 0-51 : T,NX 0-71 : X 1-01 : M2

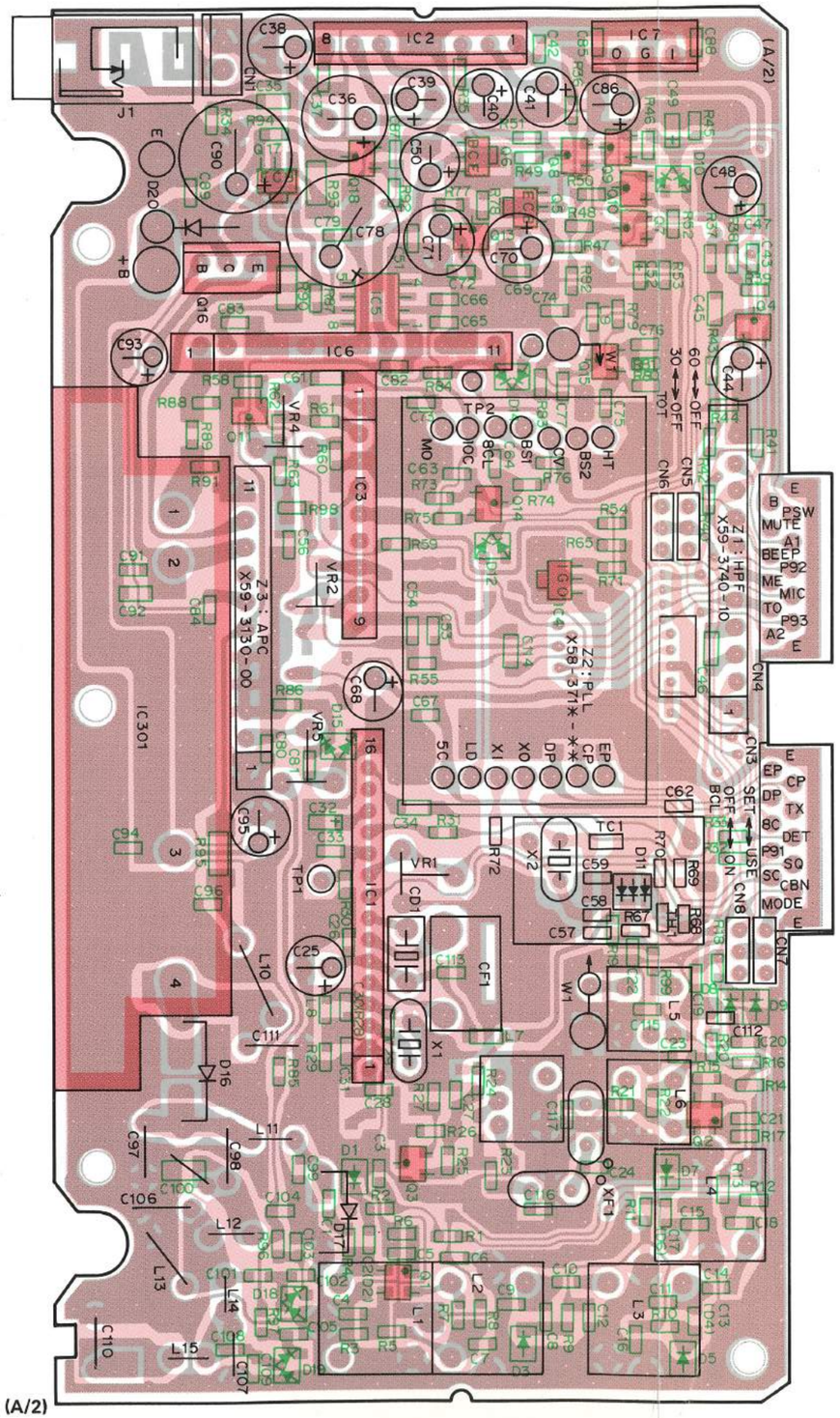


M4,C1

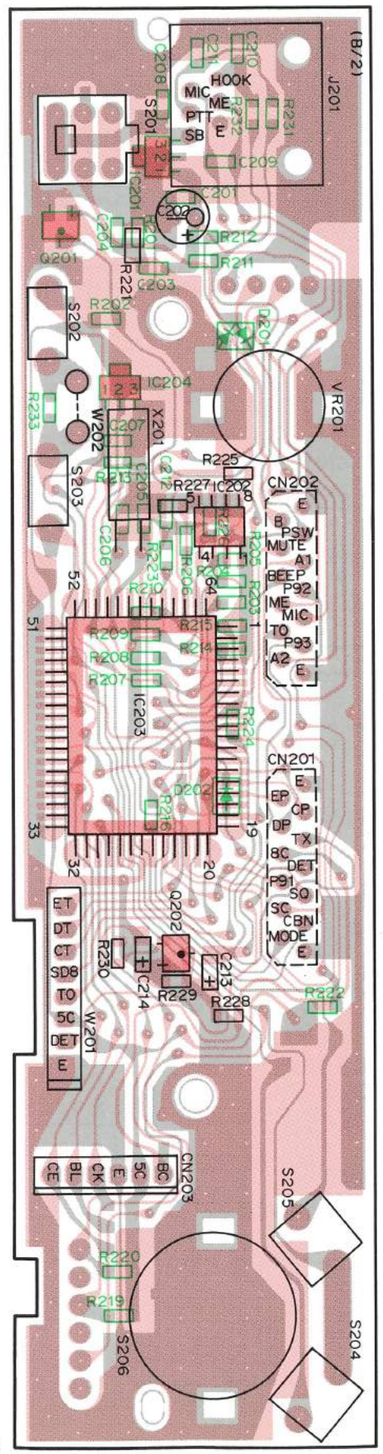
TX-RX UNIT (X57-345X-XX) Foil side view

0-10 : K,P,C2,BE 0-21 : M,M3 0-22 : NM 0-23 : NM2 0-51 : T,NX 0-71 : X 1-01 : M2,M4,C1





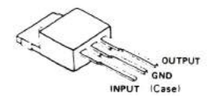
(A/2)



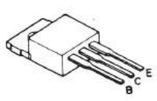
(B/2)

2SC2712
2SC2714
2SD1757K
DTC114WK
DTC144WK

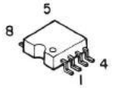
MC7808CT



2SD1406



AK93C46F



2SB1119S
2SB1302S

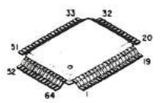
μPC1241H

2SK208

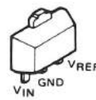
LA5010M

3SK131
3SK184

75104G-605-1B



NJM78L05UA
S-8054ALR-LN



TX · RX UNIT (X57-345X-XX)(A/2) 0-10: K, P, C2, B E 0-21: M, M3 0-22: N M
0-23: N M2 0-51: T, N X 0-71: X 1-01: M2, M4, C1

*IC 301 POWER MODULE

IC3 MIC AMP HIC

IC6 DRIVE HIC

Z2 PLL (X58-371X-**)

Z3 APC (X59-3130-00)

IC4 5V AVR

IC5 10V AVR

IC7 8V AVR

IC2 AF PA

Z1 HPF (X59-3740-10)

IC1 FM IF HIC

MAX DEV

MIC SENS

POW

SQL

SET

BCL

VOL

POWER

ANT

GND

FUSE 10A

DC: 13.6V

SP

EX. SP

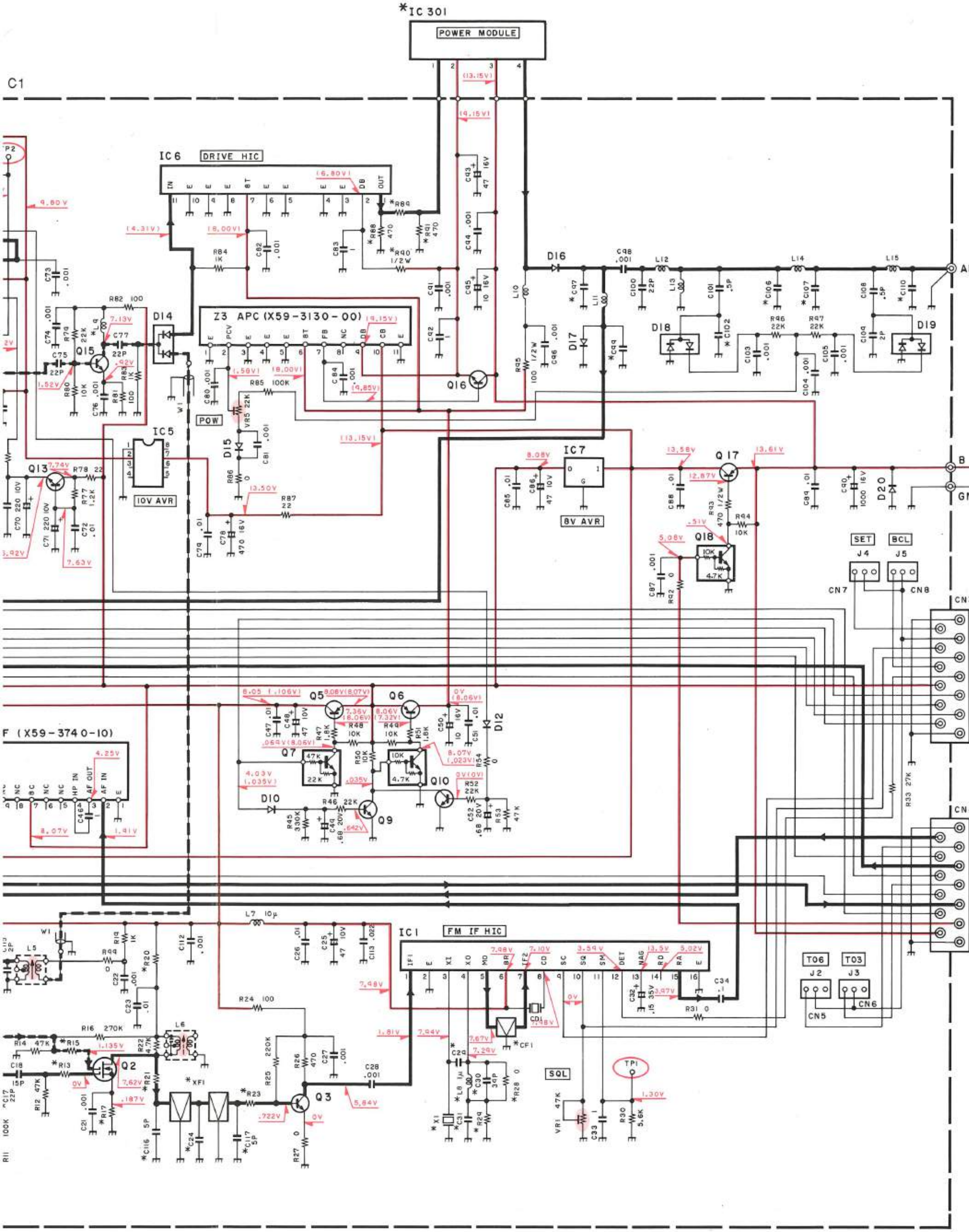
(A/2)

IC1	: KCD01	Q1	: 3SK184(S)
IC2	: μPC1241H	Q2	: 3SK131(V12)
IC3	: KCA03	Q3,15	: 2SC2714(Y)
IC4	: NJM78L05UA	Q4,11	: 2SD1757(K)
IC5	: LA5010M	Q5,6	: 2SB1119S
IC6	: KCB05	Q7	: DTC144WK
IC7	: MC7808CT	Q8,18	: DTC114WK
		Q9,10,13	: 2SC2712(Y)
IC301	: *	Q14	: 2SK208(Y)
		Q16	: 2SD1406(Y)
		Q17	: 2SB1302S

TX · RX UNIT (X57-345X-XX)(B

	X57-345 *-**#	X58-371 *-**#	X52-310 *-**#	*A	C1	C2	C8	C9	C11	C13	C15	C17	C24	C29	C30	C31	C56	C97	C99	C100	C106 107	C110	C115	C116 117	CF1	R3	R4	R13	R15	R17	R20	R21	R23	R28	R29	R35	R44	R61	R63	R88	R89	R90	R91	R207	R209	R233	IC301	D2,4,6	D5,9	L6	L9	X1	XF1	W202
K,P, B E	0-10	0-10	0-00	YES	3P	NO	33P	NO	3P	NO	.5P	NO	9P	47P	YES	.001	.047	12P	9P	3P	39P	15P	NO	NO	CFWM455F	2.2K	0	0	47	47	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	15V166	YES	1μ	34.855M	34.4M	NO
C2	0-10	0-10	0-00	OPTION	3P	NO	33P	NO	3P	NO	.5P	NO	9P	47P	YES	.001	.047	12P	9P	3P	39P	15P	NO	NO	CFWM455F	2.2K	0	0	47	47	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	15V166	YES	1μ	34.855M	34.4M	NO
M,M3	0-21	0-10	0-00	OPTION	3P	NO	33P	NO	3P	NO	.5P	NO	9P	47P	YES	.001	.047	12P	9P	3P	39P	15P	NO	NO	CFWM455F	4.7K	0	0	47	47	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	15V166	YES	1μ	34.855M	34.4M	NO
	1-01	1-01	0-00	YES	4P	YES	22P	YES	4P	YES	2P	YES	7P	33P	NO	82P	.068	18P	22P	2P	47P	22P	YES	NO	CFWM455F	2.2K	33	0	47	47	100	680	390	YES	47K	100	YES	10K	18K	YES	12	22	YES	YES	YES	YES	M57741UL-22	NO	15V164	NO	3.3μ	21.855M	21.4M	NO
M2,M4,C1	1-01	1-01	0-00	OPTION	4P	YES	22P	YES	4P	YES	.2P	YES	7P	33P	NO	82P	.068	18P	22P	2P	47P	22P	YES	NO	CFWM455F	2.2K	33	0	47	47	100	680	390	YES	47K	100	YES	10K	18K	YES	12	22	YES	YES	YES	YES	M57741UL-22	NO	15V164	NO	3.3μ	21.855M	21.4M	NO
N M	0-22	0-10	0-01	OPTION	3P	NO	33P	NO	3P	NO	.5P	NO	22P	47P	YES	.001	.047	12P	12P	3P	39P	15P	NO	NO	CFWM455G	4.7K	0	0	47	47	100	680	390	220	NO	15K	68	NO	22K	39K	NO	0	10	NO	NO	NO	NO	M67741H-22	YES	15V166	YES	1μ	34.855M	34.4M	3.75K	NO
T, N X	0-51	0-10	0-01	YES	3P	NO	33P	NO	3P	NO	.5P	NO	22P	47P	YES	.001	.047	12P	9P	3P	39P	15P	NO	NO	CFWM455G	2.2K	0	0	47	47	100	390	220	NO	15K	68	NO	22K	39K	NO	0	10	NO	NO	NO	NO	M67741H-22	YES	15V166	YES	1μ	34.855M	34.4M	3.75K	NO
N M2	0-23	1-01	0-00	YES	4P	YES	22P	YES	4P	YES	2P	YES	16P	33P	NO	82P	.068	18P	22P	2P	47P	22P	YES	YES	CFWM455G	2.2K	33	0	47	47	100	680	390	YES	47K	68	NO	10K	18K	YES	12	22	YES	NO	NO	YES	M57741UL-22	NO	15V164	NO	3.3μ	21.855M	21.4M	3.75K	YES
X	0-71	0-10	0-00	YES	3P	NO	33P	NO	3P	NO	.5P	NO	9P	47P	YES	.001	.047	12P	9P	3P	39P	15P	NO	NO	CFWM455F	2.2K	18	180	0	4.7	10	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	15V166	YES	1μ	34.455M	34.4M		NO

SCHEMATIC DIAGRAM TK-705/B/N



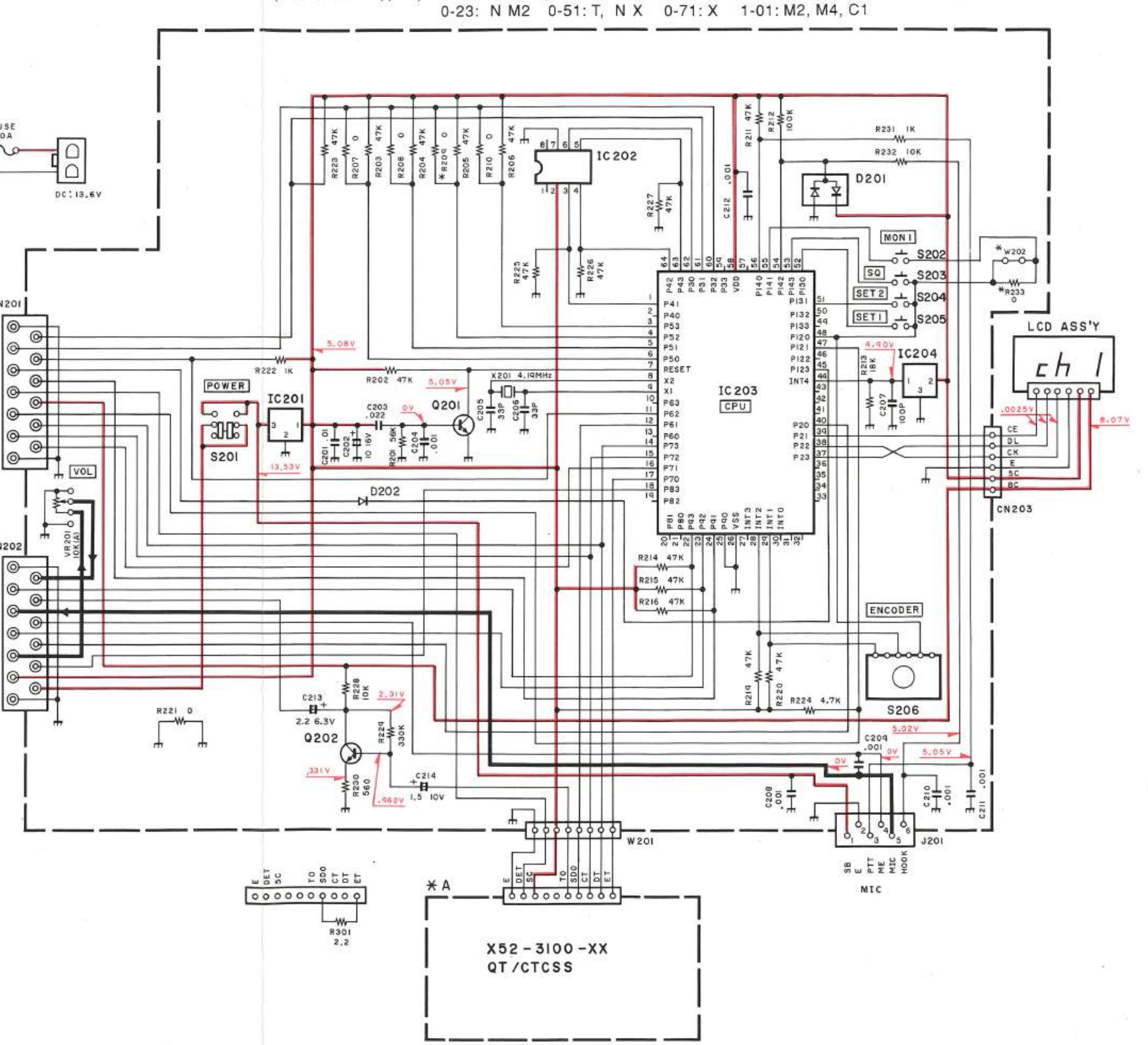
(A/2)

IC1	: KCD01	Q1	: 3SK184(S)	D1,3,7,8	: 1SV164
IC2	: µPC1241H	Q2	: 3SK131(V12)	*D2,4,6	: 1SV164
IC3	: KCA03	Q3,15	: 2SC2714(Y)	D5	: *
IC4	: NJM78L05UA	Q4,11	: 2SD1757(K)	D9	: *
IC5	: LA5010M	Q5,6	: 2SB1119S	D10,12,14	: 1SS184
IC6	: KCB05	Q7	: DTC144WK	D11	: MA344B
IC7	: MC7808CT	Q8,18	: DTC114WK	D15	: 1SS181
		Q9,10,13	: 2SC2712(Y)	D16	: MI407
IC301	: *	Q14	: 2SK208(Y)	D17	: MI308
		Q16	: 2SD1406(Y)	D18,19	: 1SS226
		Q17	: 2SB1302S	D20	: DSA3A1

(B/2)

IC201	: NJM78L05UA
IC202	: AK93C46F
IC203	: 75104G-605-1B
IC204	: S-8054ALR-LN
Q201,202	: 2SC2712(Y)
D201	: 1SS226
D202	: 1SS355 or MA110

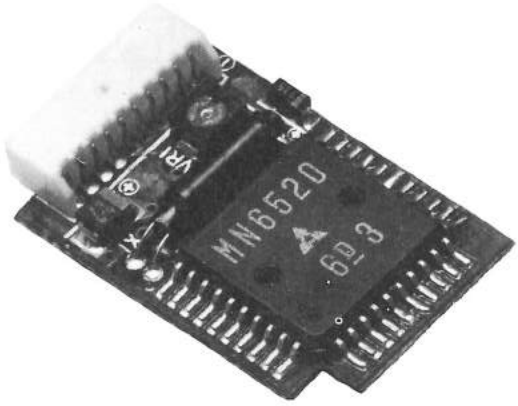
TX · RX UNIT (X57-345X-XX)(B/2) 0-10: K, P, C2, B E 0-21: M, M3 0-22: N M
0-23: N M2 0-51: T, N X 0-71: X 1-01: M2, M4, C1



7	R20	R21	R23	R28	R29	R35	R44	R61	R63	R88	R89	R90	R91	R207	R209	R233	IC301	D2,4,6	D5,9	L6	L9	X1	XF1	W202
	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	1SV166	YES	1µ	34.855M	34.4M	NO
	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	1SV166	YES	1µ	34.855M	34.4M	NO
	100	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	1SV166	YES	1µ	34.855M	34.4M	NO
	100	680	390	YES	47K	100	YES	10K	18K	YES	12	22	YES	YES	YES	YES	M57741UL-22	NO	1SV164	NO	3.3µ	21.855M	21.4M	NO
	100	680	390	YES	47K	100	YES	10K	18K	YES	12	22	YES	YES	YES	YES	M57741UL-22	NO	1SV164	NO	3.3µ	21.855M	21.4M	NO
	100	390	220	NO	15K	68	NO	22K	39K	NO	0	10	NO	NO	NO	YES	M67741H-22	YES	1SV166	YES	1µ	34.855M	34.4M 3.75K	NO
	100	390	220	NO	15K	68	NO	22K	39K	NO	0	10	NO	NO	NO	NO	M67741H-22	YES	1SV166	YES	1µ	34.855M	34.4M 3.75K	YES
	100	680	390	YES	47K	68	NO	10K	18K	YES	12	22	YES	NO	NO	YES	M57741UL-22	NO	1SV164	NO	3.3µ	21.855M	21.4M 3.75K	NO
	10	0	390	NO	15K	100	YES	22K	39K	NO	0	10	NO	YES	NO	YES	M67741H-22	YES	1SV166	YES	1µ	34.455M	34.4M	NO

KQT-8 (QT/CTCSS)

KQT-8 External View



KQT-8 Parts List

Ref No.	New Parts	Parts No.	Description
QT/CTCSS UNIT (X52-3100-XX)			
C1		CK73FB1H102K	Chip C 1000pF K
C2		C92-0010-05	Tantal 4.7µF 6.3WV
C3		C92-0520-05	Tantal 22µF 4.0WV
C4,5		CK73EB1E104K	Chip C 0.1µF K
C6		CK73EB1H223K	Chip C 0.022µF K
C7		CK73EB1E104K	Chip C 0.1µF K
C8,9		CC73FCH1H150J	Chip C 15pF J
C10		CK73FB1H102K	Chip C 1000pF K
C11		CK73FB1E473M	Chip C 0.047µF M
C12		C92-0507-05	Chip tan 4.7µF 6.3WV
C13		C92-0510-05	Chip tan 3.3µF 4.0WV
		E40-5152-05	Pin connector (10P)
X1		L77-1313-05	X'tal resonator 4.194304MHz
R1~10		RK73FB2AXXXJ	Chip R
R11		R92-0670-05	Chip R 0Ω
R12~14		RK73FB2AXXXJ	Chip R
VR1		R12-3460-05	Trimming pot. 33kΩ
Q1		DTC144TK	Digital transistor
Q2		DTA114EK	Digital transistor
Q3		2SC2712(GR)	Chip transistor
IC1		MN6520	IC
IC2		MN4094BS	IC

KQT-8 Fine Adjustment of Tone Frequency

The tone frequency can be fine adjusted with an interval of 0.5% step over the range of 0 to +1.5%. Ground the T1 (pin 10) and T2 (pin 9) of IC1 to obtain the desired frequency.

	T1	T2
0%	X	X
+0.5%	O	X
+1.0%	X	O
+1.5%	O	O

O : GND, X : OPEN

KQT-8 Reference Data

Tone frequency and MN6520 (IC1) relationship

Tone frequency (Hz)	MN6520 terminal					
	$\overline{S6}$	$\overline{S5}$	$\overline{S4}$	$\overline{S3}$	$\overline{S2}$	$\overline{S1}$
	MN4094BS terminal					
	Q1	Q2	Q3	Q4	Q7	Q8
67.0	L	H	H	H	L	H
71.9	L	H	H	H	L	L
74.4	L	H	H	L	H	H
77.0	L	H	H	L	H	L
79.7	L	H	H	L	L	H
82.5	L	H	H	L	L	L
85.4	L	H	L	H	H	H
88.5	L	H	L	H	H	L
91.5	L	H	L	H	L	H
94.8	H	H	H	L	L	H
100.0	H	H	H	L	L	L
103.5	H	H	L	H	H	H
107.2	H	H	L	H	H	L
110.9	H	H	L	H	L	H
114.8	H	H	L	H	L	L
118.8	H	H	L	L	H	H
123.0	H	H	L	L	H	L
127.3	H	H	L	L	L	H
131.8	H	H	L	L	L	L
136.5	H	L	H	H	H	H
141.3	H	L	H	H	H	L
146.2	H	L	H	H	L	H
151.4	H	L	H	H	L	L
156.7	H	L	H	L	H	H
162.2	H	L	H	L	H	L
167.9	H	L	H	L	L	H
173.8	H	L	H	L	L	L
179.9	H	L	L	H	H	H
186.2	H	L	L	H	H	L
192.8	H	L	L	H	L	H
203.5	H	L	L	H	L	L
210.7	H	L	L	L	H	H
218.1	H	L	L	L	H	L
225.7	H	L	L	L	L	H
233.6	H	L	L	L	L	L
241.8	L	H	H	H	H	H
250.3	L	H	H	H	H	L

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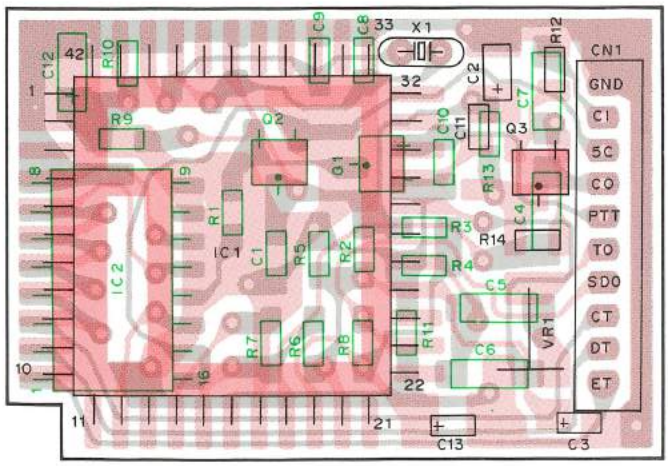
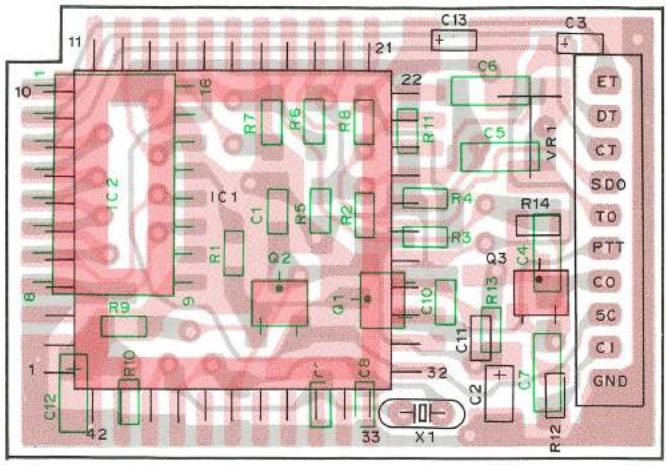
KQT-8 (QT/CTCSS)

KQT-8 PC Board View

Component side view

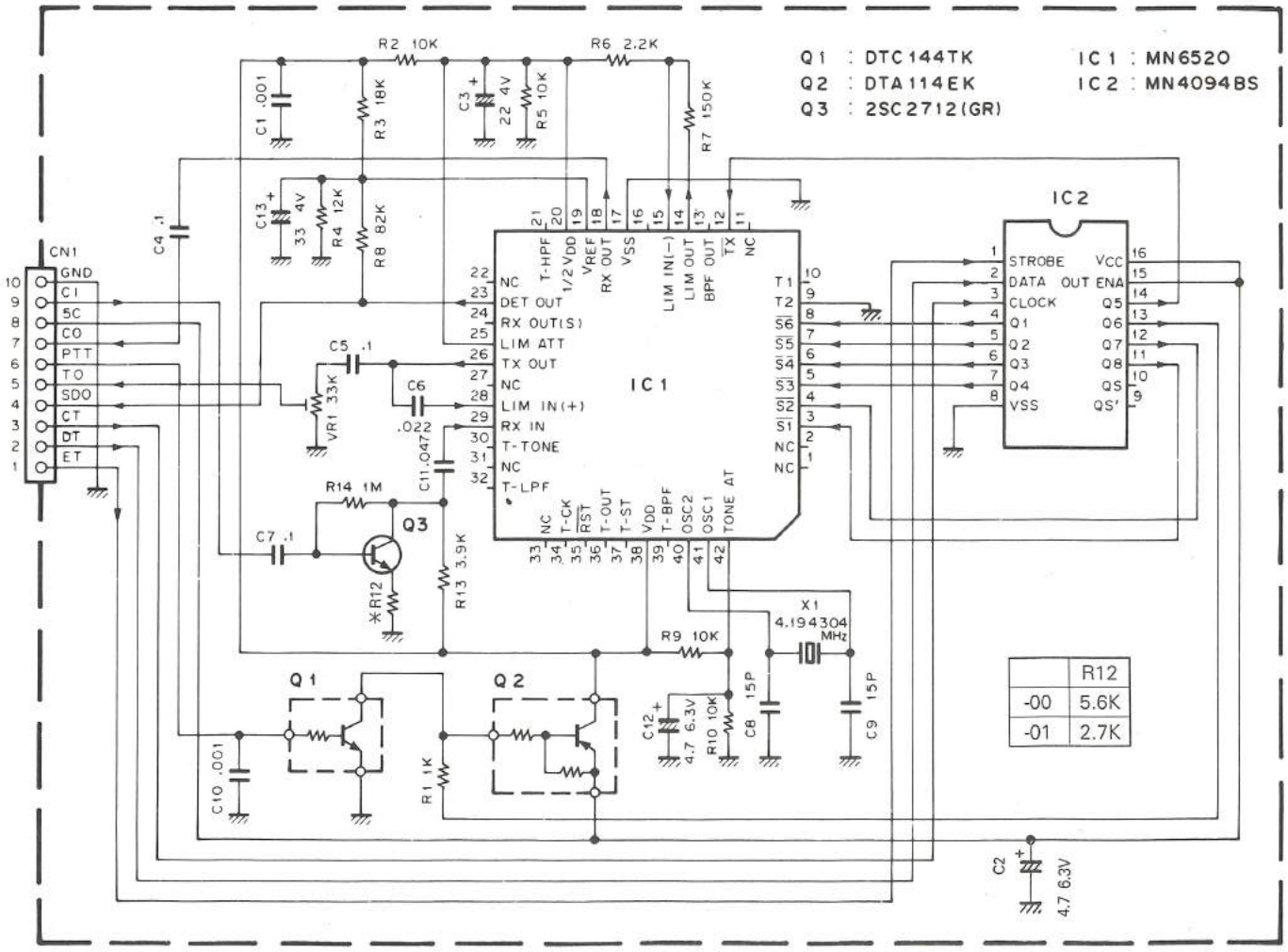


Foil side view



KQT-8 Circuit Diagram

QT/CTCSS UNIT (X52-3100-XX)



TK-705/B/N

SPECIFICATIONS

GENERAL

Frequency Range	136 to 150MHz : M2,M4,C1,NM2 150 to 174MHz : K,M,M3,P,C2,T,X,BE,NM,NX
Number of Channels	16 semi-duplex channels
Channel Spacing	30kHz (PLL channel step 5.0kHz)
Input Voltage	13.6V DC negative ground
Current Drain	0.7A on receive, 7.0A on transmit
Duty Cycle	Receiver 100%, Transmitter 20%
Temperature Range	–30°C to +60°C (–22°F to +140°F)
Dimensions and Weight	5.51" (140mm) W x 1.58" (40mm) H x 6.41" (163mm) D, 2.20lbs. (1.0kg)

RECEIVER (Measurements made per EIA standard EIA-204-D)

RF Input Impedance	50Ω
Sensitivity	
EIA 12dB SINAD	0.2μV 0.5μV : X,NX
Modulation Acceptance	±7kHz
Selectivity	–80dB
Intermodulation	–75dB
Spurious and Image Rejection	–90dB
Audio Power Output	4W at 4Ω less than 5% distortion
Frequency Stability	±0.0005% from –30°C to +60°C
Channel Frequency Spread	24MHz : K,M,M3,P,C2,T,X,BE,NM,NX 14MHz : M2,M4,C1,NM2

TRANSMITTER (Measurements made per EIA standard EIA-152-C)

RF Power Output	25W adjustable to 5W
RF output Impedance	50Ω
Spurious and Harmonics	–70dB
Modulation	F3E, ±5kHz for 100% at 1kHz : K,M,M2,M3,M4,P,C1,C2,X F3E, ±4kHz for 100% at 1kHz : BE F3E, ±2.5kHz for 100% at 1kHz : T,NM,NM2,NX
FM Noise	–50dB
Microphone Impedance	Low impedance
Audio Distortion	1.0% at 1000Hz
Frequency Stability	±0.0005% from –30°C to +60°C
Channel Frequency Spread	24MHz : K,M,M3,P,C2,T,X,BE,NM,NX 14MHz : M2,M4,C1,NM2

Radio specifications may vary in accordance with the type accepted local national regulations (including 12.5kHz narrow channel spacing).

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