VHF FM TRANSCEIVER / 甚高频调频无线电收发机

TK-768/H

SERVICE MANUAL

维修手册

KENWOOD

B51-8329-00 (N) 591

TK-768/H

TK-768/H (D) 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 data. 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.

SERVICE

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

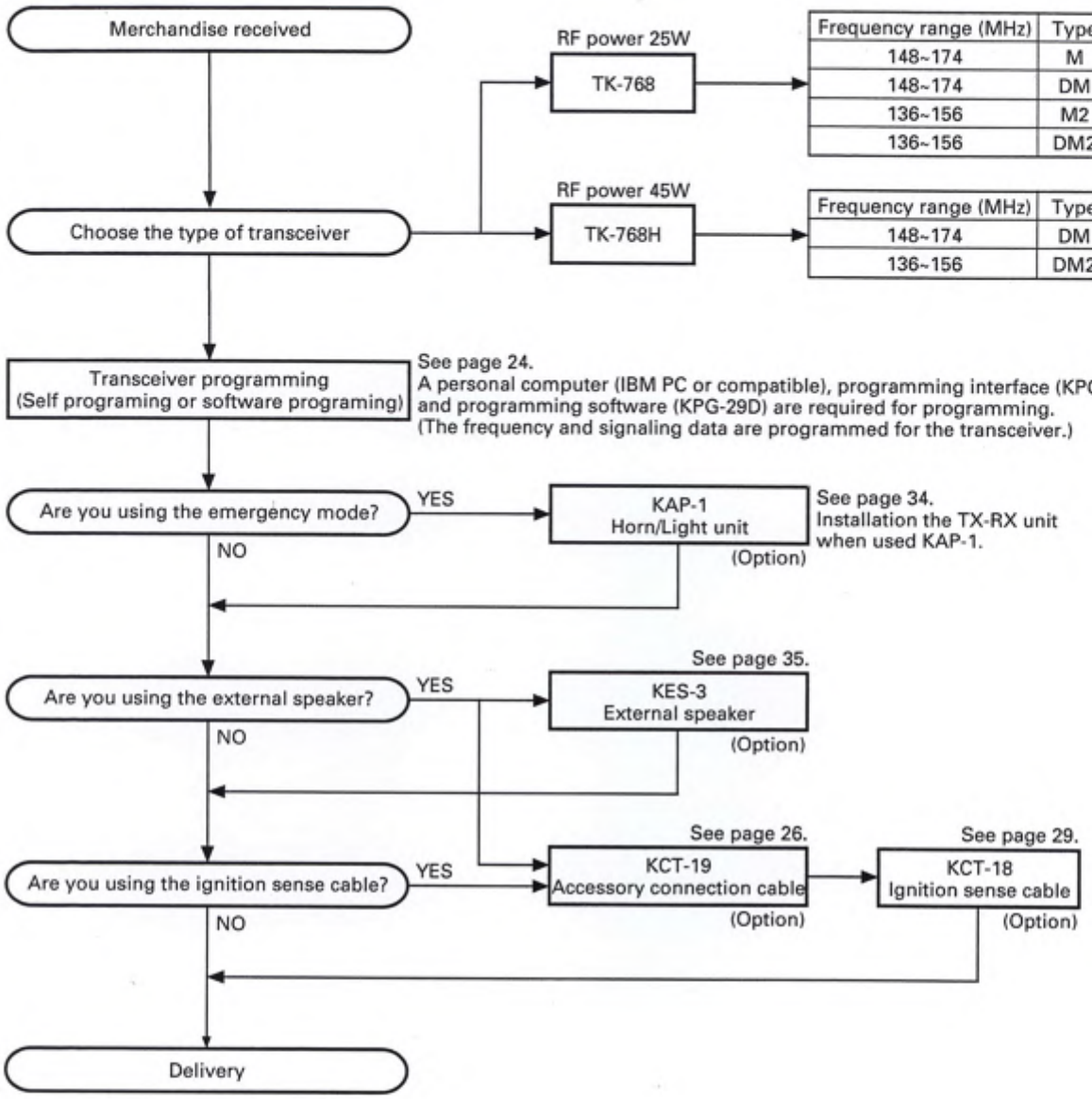
NOTE

WE CANNOT guarantee oscillator stability when using channel element manufactured by other than KENWOOD or its authorized agents.

DESTINATION LIST

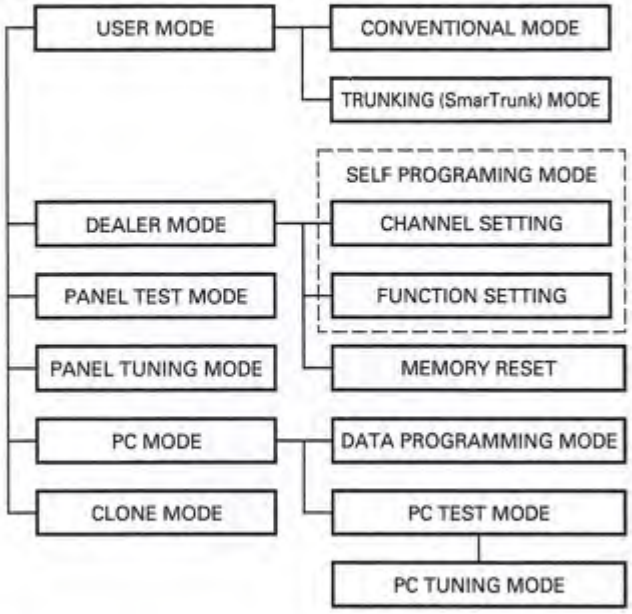
Model and destination			Frequency range (MHz)	TX power (W)	Signaling			Microphone type (ACSY)
					QT	DQT	DTMF	
TK-768		M	148~174	25	○	–	○	Basic
TK-768	D	M	148~174	25	○	–	○	16 key
TK-768H	D	M	148~174	45	○	–	○	16 key
TK-768		M2	136~156	25	○	–	○	Basic
TK-768	D	M2	136~156	25	○	–	○	16 key
TK-768H	D	M2	136~156	45	○	–	○	16 key

SYSTEM SET-UP



REALIGNMENT

1. Modes



Mode	Function
USER MODE	Customer use this mode.
CONVENTIONAL MODE	This mode is for use as a transceiver.
TRUNING (SmarTrunk) MODE	This mode used when a trunking board has been installed.
DEALER MODE	This mode is used by the dealer for making settings for the modes.
PANEL TEST MODE	Dealer uses to check the fundamental characteristics.
PANEL TUNING MODE	Dealer uses to tune the radio.
PC MODE	This mode is communication the radio to PC (IBM compatible). It requires the KPG-29D.
DATA PROGRAMMING MODE	This mode is frequency data and features write to the radio and read from the radio. This feature is include the FPU.
PC TEST MODE	This mode can check the radio by PC control. This feature is include the FPU. This paragraph is as same as PANEL TUNING.

Conventional mode/Trunking (SmarTrunk) mode

Switch between Conventional mode and Trunking mode by holding down the [MONI] key in POWER ON.
This can be selected when installed with a board with the trunking mode function (board model ST-865KW2).

Note : The SmarTrunk II™ call is a registered trademark of the Selectone Corporation.

2. How To Enter Each Mode

Mode	Operation
USER MODE	Usually Power ON then begin this mode.
DEALER MODE	The A switch is held on with Power ON the radio. The A switch holding about 2 sec. after Power ON the radio.
PANEL TEST MODE	The D/A switch is held on with Power ON the radio. The D/A switch holding about 2 sec. after Power ON the radio. But, if this mode is disabled by FPU then begin the USER MODE.
PANEL TUNING MODE	The SCAN switch is held on with Power ON the radio. The SCAN switch holdings about 2 sec. after Power ON the radio. But, if this mode is disabled by FPU then begin the USER MODE.
PC MODE	The radio Power ON to begin the USER MODE when through to the microphone then begin this mode. Note : PANEL TEST MODE and PANEL TUNING MODE does not begin the PC MODE.

3. Self Programing Mode

3-1. Setting the channels

The dealer can set the functions, such as frequency and signaling, for each channel of the transceiver without using the FPU.

Operation

1. Hold down the [A] key and turn the power on, and keep the [A] key pressed for two seconds to enter the initial mode. The display changes from "PrOG" to "SEL".
2. When the [MON] key is pressed again, the channel set mode is entered. The display shows "CH1".
3. There are channels 1 to 32. Then [D/A] key increments the channel number, and the [SCN] key decrements the channel number.
4. The setting items are listed in Table 1. When the choice is changed and the [CH▼] key is pressed, the displayed value for the current item is stored in memory and the next item appears.
5. When the [MON] key is pressed, the initial mode "SEL" returns.

Setting item (Table 1)

Function name	Setting (Defaults are underlined)	Display	Remarks
Channel select	CH1~CH32	_CH_1_	[SCN] Channel down
		_CH_32_	[D/A] Channel up
RX frequency	Blank	———	[CH△] Frequency ON/OFF select [A] Step select [SCN] 1 step down [D/A] 1 step up [VOL△] MHz step up
	100~550MHz 5/6.25kHz step	450.00625	[VOL▽] MHz step down At 6.25kHz step, dot light (Right side).
RX QT	OFF	_OFF_	[CH△] QT ON/OFF select [A] 1 step/standard select
	67.0~250.3Hz (0.1Hz step/standard)	_1_67.0_ 39_250.3_	[SCN] QT down [D/A] QT up At 1 step , dot light (Rignt side).
TX frequency	Blank	———	[CH△] Frequency ON/OFF select [A] Step select [SCN] 1 step down [D/A] 1 step up [VOL△] MHz step up [VOL▽] MHz step down
	100~550MHz 5/6.25kHz step	450.00625	At 6.25kHz step, dot light (Right side). TX FLAG light.
TX QT	OFF	_OFF_	[CH△] QT ON/OFF select [A] 1 step/standard select [SCN] QT down
	67.0~250.3Hz (0.1Hz step/standard)	_1_67.0_ 39_250.3_	[D/A] QT up At 1 step , dot light (Rignt side). TX FLAG light.
1 Scan DEL/ADD	DEL	_1_dEL_	[SCN] DEL/ADD select
	ADD	_1_Add_	[D/A] DEL/ADD select
2 DTMF signaling	ON	_2_On_	[SCN] ON/OFF select
	OFF	_2_OFF_	[D/A] ON/OFF select
3 PTT ID	ON	_3_On_	[SCN] ON/OFF select
	OFF	_3_OFF_	[D/A] ON/OFF select
4 Busy CH lockout	OFF	_4_OFF_	[SCN] OFF/1/2 select
	1	_4_1_	[D/A] OFF/1/2 select
	2	_4_2_	
5 ID	000~9999999999	_5_000	DTMF key = ID input
		_5_99999	

Note : Do not set the transmission frequency and receiving frequency by different steps. (If the receiving frequency is set by steps of 5kHz, set the transmission frequency by steps of 5kHz, too. Similarly, if the former is set by steps of 6.25kHz, set the latter by steps of 6.25kHz, too.)

REALIGNMENT

3-2. Setting the functions

The dealer can set the functions common to all the channels of the transceiver without using the FPU.

Operation

1. Hold down the [A] key and turn the power on, and keep the [A] key pressed for two seconds to enter the initial mode. The display changes from "PrOG" to "SEL".
2. When the [A] key is pressed again, the function set mode is entered. The display shows "150-1" or "150-2".
3. When the [VOL▲] key is pressed, the function number increments, and when the [VOL▼] key is pressed, the function number decrements. When the [VOL▲] or [VOL▼] key is held down, the function number increments or decrements continuously.
4. Change the choice using the [SCN] or [D/A] key or the microphone DTMF key. When the [CH▼] key is pressed, the displayed value for the current item is stored into memory and the next item appears. The setting items are listed in Table 2.
5. When the [A] key is pressed, the initial mode "SEL" returns.

Setting item (Table 2)

Function No.	Function Name	Setting (Defaults are uncerlined)	Display
	F version	VHF F1	_150_-_1
		VHF F2	_150_-_2
1	[MON]	No function	_1_OFF__
		Monitor	_1___1__
		Talk around	_1___2__
		Horn alert	_1___3__
		AUX (Scrambler)	_1___4__
		SCAN	_1___5__
		DEL/ADD	_1___6__
		Home channel	_1___7__
		Reverse	_1___8__
		Selectable QT	_1___9__
2	[A]	No function	_2_OFF__
		Monitor	_2___1__
		Talk around	_2___2__
		Horn alert	_2___3__
		AUX (Scrambler)	_2___4__
		SCAN	_2___5__
		DEL/ADD	_2___6__
		Home channel	_2___7__
		Reverse	_2___8__
		Selectable QT	_2___9__
3	[SCN]	No function	_3_OFF__
		Monitor	_3___1__
		Talk around	_3___2__
		Horn alert	_3___3__
		AUX (Scrambler)	_3___4__
		SCAN	_3___5__
		DEL/ADD	_3___6__
		Home channel	_3___7__
		Reverse	_3___8__
		Selectable QT	_3___9__

Function No.	Function Name	Setting (Defaults are uncerlined)	Display
4	[D/A]	No function	_4_OFF__
		Monitor	_4___1__
		Talk around	_4___2__
		Horn alert	_4___3__
		AUX (Scrambler)	_4___4__
		SCAN	_4___5__
		DEL/ADD	_4___6__
		Home channel	_4___7__
		Reverse	_4___8__
		Selectable QT	_4___9__
5	Minimum volume	0~31/1 step Default 12	_5__12__
6	Beep	YES	_6__On__
		NO	_6_OFF__
7	Time out timer	OFF	_7_OFF__
		30~300S/30s Default 180s	_7_180__
8	Signaling	OR	_8__Or__
		AND	_8_And__
9	Home channel	CH1~CH32/1CH Default CH1	_9___1__
10	Dealer/tuning mode	Enable	10__On__
		Disable	10_OFF__
11	Clone	Enable	11__On__
		Disable	11_OFF__
12	CO/TO	CO	12__CO__
		TO	12__tO__
13	Priority	None	13_OFF__
		Fixed	13___1__
		Selected	13___2__

REALIGNMENT

Function No.	Function Name	Setting (Defaults are uncerlined)	Display
14	Priority channel	CH1~CH32/1CH Default CH1	14__1__
15	Look back A	0.5~5.0s/0.1s Default 0.5s	15__0.5__
16	Look back B	0.5~5.0s/0.5s Default 2.0s	16__0.5__
17	Revert channel	Selected	17__1__
		Last called	17__2__
		Last used	17__3__
		Selected + T/B	17__4__
		Priority	17__5__
		Priority + T/B	17__6__
18	TX dwell time	0.5~5.0s/0.5s Default 3.0s	18__3.0__
19	Dropout delay time	0.5~5.0s/0.5s Default 3.0s	19__3.0__
20	Off hook scan	Enable	20__On__
		Disable	20_OFF__
21	Digit time	50~200ms/10ms	21__50__
22	Inter digit time	50~200ms/10ms	22__50__
23	First digit time	50~200ms/10ms	23__50__
24	First digit delay time	50~1000ms/50ms	24__50__
25	PTT ID	Connect	25__1__
		Disconnect	25__2__
		Both	25__3__
26	Dial ID	Enable	26__On__
		Disable	26_OFF__
27	DTMF hold time	ON	27__On__
		OFF	27_OFF__
28	Store and send	ON	28__On__
		OFF	28_OFF__

Function No.	Function Name	Setting (Defaults are uncerlined)	Display
29	D key assignment	D code	29__d__
		1~16s/1s	29__1__
			29__16__
30	DTMF signaling	Code SQ	30__1__
		Sel call	30__2__
31	Inter mediate code	0~9, A~D, *, #	31__F__
32	Group code	OFF, A~D, *, #	32_OFF__
33	Auto reset time	OFF	33_OFF__
		1~15s/1s Default 10s	33__10__
34	Call alert/ transpond	OFF	34_OFF__
		Call alert	34__1__
		Transpond (Call alert)	34__2__
		Transpond (ID code)	34__3__
		Transpond (Transpond code)	34__4__
35	Clear to transpond	YES	35__On__
		NO	35_OFF__
36	Off hook decode	Enable	36__On__
		Disable	36_OFF__
37	Off hook horn alert	Enable	37__On__
		Disable	37_OFF__
38	Connect ID	000~ ################	38__000 38_FFFFF
		Blank	38_——
	DTMF key = ID input, PTT+DTMF key = Clear		
39	Disconnect ID	000~Balnk	39__000
		################	39_FFFFF
		Blank	39_——
	DTMF key = ID input, PTT+DTMF key = Clear		
			__End__

Note : Set the channels befor setting the functions.
When both QT and DTMF signaling are used, the first digit delay time should be set to 100ms or longer.
If setting of the DTMF signaling is changed, the ID's of the all channels will be initialized to 000.

REALIGNMENT

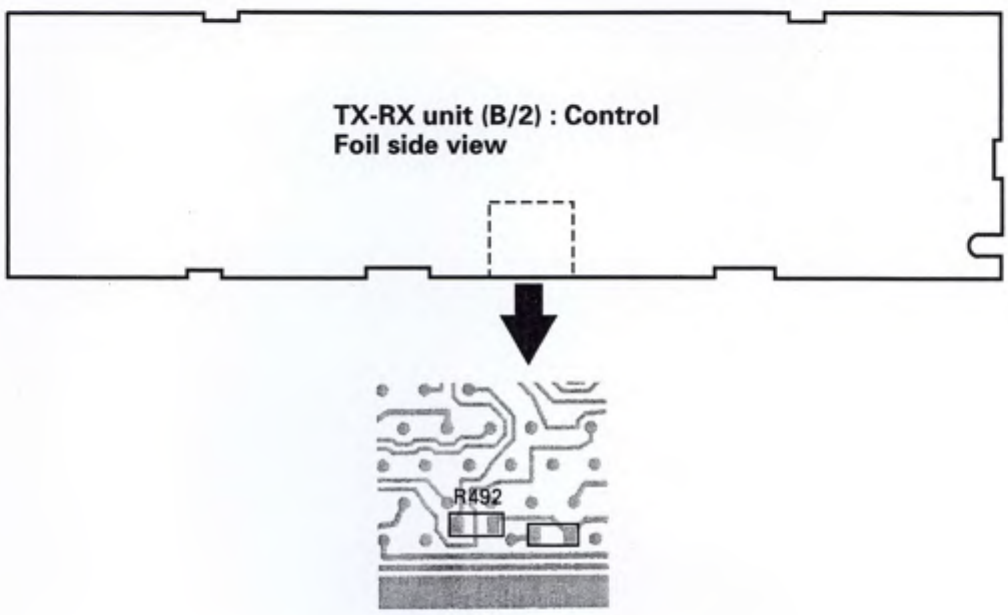
3-3. Disabling the self-programing function

You can make settings to prohibit self writing by the user and shifting to panel test mode and panel tuning mode with the FPU or self-programing.

The self-programing mode is enabled as the default state. If FPU is not used, disable Dealer/Tuning mode in the Self-programing menu.

Canceling shift-prohibit

Short the R492 (0Ω) and shift-prohibit will cancel at power on, or cancel by using the FPU.



4. Panel Test Mode

When the test mode is entered, all LCD segments light, the beeper sounds for one second, and VERSION SELECT mode is entered.

Use the following keys to select a version:

D/A key ..... UP
SCN key ..... DOWN

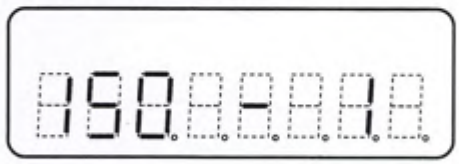
Table 3 lists the versions. The version is selected when the CHANNEL DOWN key is pressed.

Version	Display
VHF F1	150-1
VHF F2	150-2

Table 3

All LCD segments appear

Version select mode



REALIGNMENT

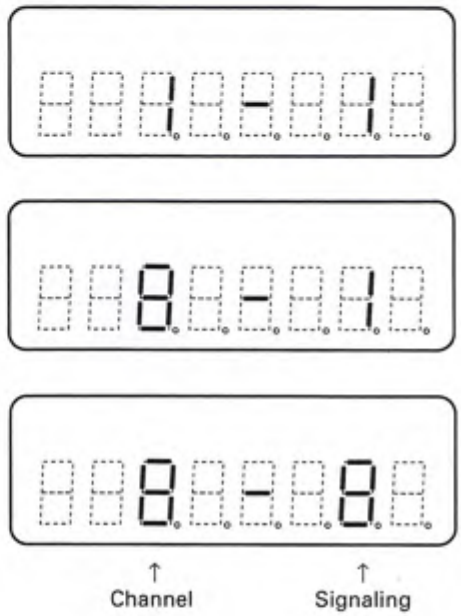
4-1. TEST MODE CHANNEL operation

When the CHANNEL DOWN key is pressed in the VERSION SELECT mode, the version is selected and a channel operation begins.

The channel frequencies for each version are listed in Table 5, and key functions for channel operations are listed in Table 4.

Key	Function
VOL UP	VOL UP
VOL DOWN	VOL DOWN
CH UP	MUTE OFF
CH DOWN	
MON	CH DOWN
A	CH UP
SCN	SIG DOWN
D/A	SIG UP
PTT	TX

Table 4



Frequency table for using on test mode

CH	M,DM,HDM		M2,DM2,HDM2	
	RX F (MHz)	TX F (MHz)	RX F (MHz)	TX F (MHz)
1	161.10000	161.00000	146.10000	146.00000
2	148.10000	148.00000	136.10000	136.00000
3	173.90000	174.00000	155.90000	156.00000
4	155.10000	155.10000	137.10000	137.10000
5	160.10000	160.10000	142.10000	142.10000
6	165.10000	165.10000	147.10000	147.10000
7	150.03000	150.00000	150.03000	150.00000
8	156.03000	156.00000	153.03000	153.00000

Signaling

	Decode	Encode	Remarks
1	None	None	
2	None	100Hz square wave	100Hz square wave
3	QT (67.0Hz)	QT (67.0Hz)	
4	QT (100Hz)	QT (100Hz)	
5	QT (151.4Hz)	QT (151.4Hz)	
6	QT (210.7Hz)	QT (210.7Hz)	
7	QT (250.3Hz)	QT (250.3Hz)	
8	None	DTMF single tone (1633Hz)	1633Hz single tone
9	None	DTMF encode tone [7]	[7] 852Hz, 1209Hz
10	DTMF decode Alert=Yes, Transpond= No	None	Code=159

Table 5

REALIGNMENT

5. Panel Tuning Mode

When the tuning mode is entered, the TUNING MODE START display appears for about one second, and the VERSION SELECT state becomes effective. This state is different from the VERSION SELECT state in the TEST MODE in that the dot at the lower right side of the display lights.

Use the following keys to select a version:

D/A key ..... UP
SCN key ..... DOWN

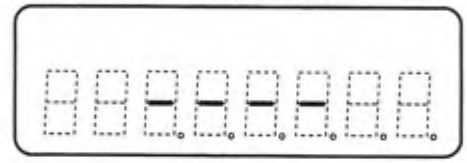
The version is selected when the CH DOWN key is pressed as the version select key.

When the version is selected with the CH DOWN key, the CH SELECT state of the tuning mode becomes effective.

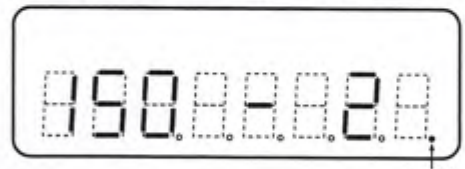
The channel and signaling can be selected in the same way as in the test mode.

The tuning items are listed in Tables 7 and 8, and key operations for tuning are listed in Table 6.

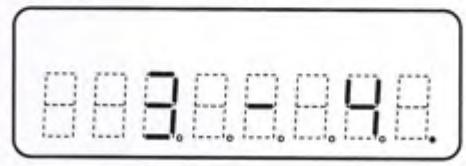
Tuning mode start display

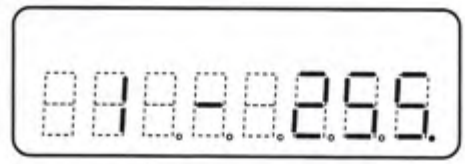


Tuning mode version select state



Tuning mode channel select state





Tuning mode channel select			Tuning mode tuning		
Key	Function	Remarks	Key	Function	Remarks
VOL UP	VOL up		VOL UP	VOL up	
VOL DOWN	VOL down		VOL DOWN	VOL down	
CH UP	To tuning	To the right state	CH UP	To CH SEL	To the left state
CH DOWN			CH DOWN	Select	To the next item
MON	CH down		MON	Item down	
AUX	CH up		AUX	Item up	
SCN	SIG down		SCN	Adjustment value down	
D/A	SIG up		D/A	Adjustment value up	
PTT	TX		PTT	TX	

Table 6

REALIGNMENT

Tuning item

Item No.	Tuning description	Valid range	Remarks
1	Frequency	0~255	
2	RF power	0~255	Three-point adjustment
2L	RF power (Low)	0~255	Low
2C	RF power (Center)	0~255	Center
2H	RF power (High)	0~255	High
3	Signaling balance	0~255	
4	Max deviation	0~255	Three-point adjustment
4L	Max deviation (Low)	0~255	Low
4C	Max deviation (Center)	0~255	Center
4H	Max deviation (High)	0~255	High
5	QT deviation	0~255	
6	Sensitivity	0~255	Three-point adjustment
6L	Sensitivity (Low)	0~255	Low
6C	Sensitivity (Center)	0~255	Center
6H	Sensitivity (High)	0~255	High
7	Squelch	0~42	

Table 7

Panel tuning state transition

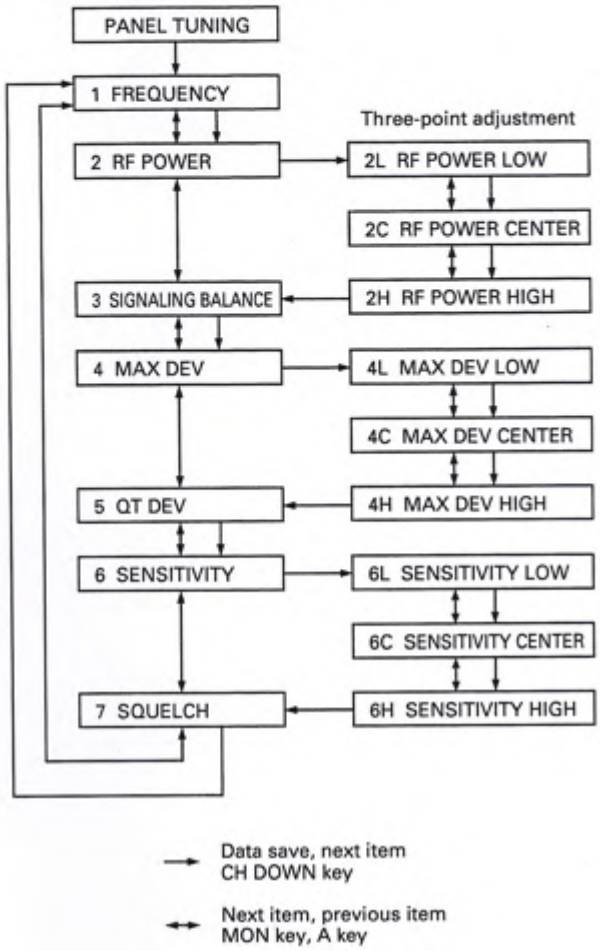


Table 8

REALIGNMENT/ 模式组合

6. Transceiver Programming

6-1. Introduction

The TK-768/H transceiver is programmed using an IBM PC or compatible machine, a programming interface (KPG-4), and a programming disk (KPG-29D). Figure 1 shows the setup for an IBM PC.

6. 通信机编程

6-1. 概述

TK-768/H 车载机可以使用 IBM PC 个人计算机（或其兼容机），编程接口电缆（KPG-4）和编程软盘（KPG-29D）进行编程设定功能和工作参数。参照图 1 连接计算机和通信机。

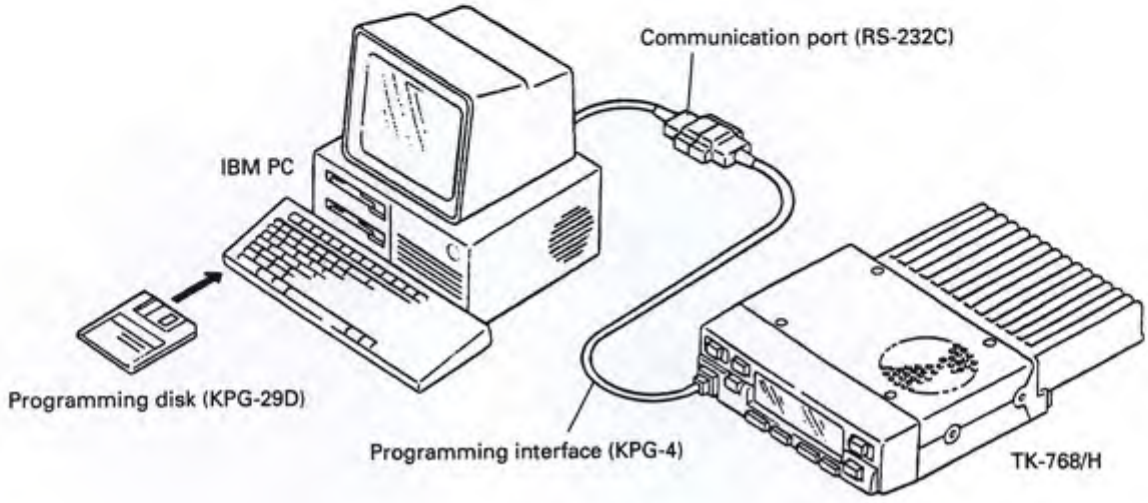


Fig. 1

6-2. KPG-4 Description

(Optional PC programming interface cable)

The KPG-4 is reeded to connect the TK-768/H to the computer. It has a circuit in the D-subconnector (25-pin) case that converts the RS-232C logic level to TTL level. The KPG-4 plug is connected to external socket of the TK-768/H and to the computer by a conversion cable (option) with a 9-pin female connector and a 25-pin male connector.

6-3. Programming Software Description

KPG-29D is the programming software for the TK-768/H, supplied on a 3.5" or 5.25" floppy disk. This software runs under MS-DOS (version 3.3 or later) on an IBM-PC/XT, AT, or PS2, or on a compatible machine. Data can be input to or read from the TK-768/H, and edited on the screen. Programmed data can be printed.

6-2. KPG-4 的说明

（选件，计算机编程接口电缆）

用 KPG-4 连接 TK-768/H 和计算机，在其 D 型副连接器（25 针）中有电平转换电路，可以把 RS-232 的逻辑电平变为 TTL 电平，KPG-4 一端的插头插入 TK-768/H 外部的插座，另一端连接计算机时要使用一根转换电缆，此转换电缆的一端是 25 芯的公插座，另一端是 9 芯的母插座。

6-3. 编程软件说明

KPG-29D 是用于 TK-768/H 的编程软件，以软磁盘方式提供，软磁盘有两种规格，一种是 3.5 寸盘，另一种是 5.25 寸盘。此软件可以在 IBM-PC/XT、AT 或 PS2 以及上述机种的兼容机上使用，在 MS-DOS（3.3 版或更新的版本）下运行。使用此软件可以向 TK-768/H 写入数据或从 TK-768/H 中读出数据，并且可以在屏幕上编辑，编程设定的数据可以打印。

REALIGNMENT/ 模式组合

6-4. Data Program Mode

In this mode, data is written into the EEPROM in the transceiver. When the power is turned on, data program mode can be entered immediately. When the KPG-4 is connected and commands can be received, "–PC–" is displayed to indicate that data program mode has been entered.

Tuning can be done using an IBM PC and KPG-29D, in the same way as in panel tuning mode. You can carry out panel tuning by selecting test mode on the KPG-29D menu screen and following the instructions on the screen. See the KPG-29D instruction manual for details.

6-5. Clone Mode (Figure 2)

Programmed data is transferred from one transceiver to another by using a microphone cable.

1. Turn the slave set on.
2. Hold down the CH [▼] key, turn the master set on, and keep the CH [▼] key down for two more seconds. "–C–" appears on the display to indicate that clone mode has been entered.
3. Connect the master set to the slave set.
4. Press the MON key on the master set. The ⇗ mark appears and data is sent from the master set to the slave set. "–PC–" appears on the slave set to show that it is receiving data.
5. When cloning is complete, the ⇗ mark on the master set disappears and "–C–" changes to "End". The slave set is automatically reset and enters user mode.

If cloning fails, the master set shows "ErrOr". Repeat steps 4 and 5.

If you wish to clone several sets, switch each of them on and repeat 4 and 5.

Note : Do not connect an user mode radio to the other user mode one.

6-4. 数据编程模式

在此模式中，把编程设定的数据写入通信机的EEPROM，当电源接通后，可以立即进入数据编程模式。当KPG-4连接好后即可以接收指令。当显示屏上出现"－PC－"标志后，就表示进入了数据编程模式。

可以使用IBM PC个人计算机和KPG-29对通信机进行调试，方法和面板调试模式中的方法相同。通过KPG-29屏幕菜单中的选择测试模式和其相关的提示说明可以实现面板调试，详细内容请参阅KPG-29D的使用说明。

6-5. 复制模式（图2）

使用话筒电缆可以将一台通信机已编程设定的数据传输到另一台相同的通信机中。

1. 接通"子机"的电源。
2. 按住"母机"的CH▼键，接通电源，保持按住CH▼键两秒钟以上，直到显示屏上出现了"-C-"标志，表示已进入复制方式。
3. 连接"母机"和"子机"。
4. 按"母机"的MON键，显示屏上出现⇗标志，表示数据已从"母机"向"子机"传送，在"子机"的显示屏上可以看到"-PC-"字符，表示"子机"正在接收数据。
5. 当复制完成后，"母机"的显示屏上的⇗标志消失，"-C-"标志变为"End"字符，"子机"则自动退出复制模式，进入用户模式。

如果复制失败，"母机"的显示屏上出现"ErrOr"字符，然后重复步骤4和步骤5。

如果你要复制一批机器，打开通信机的电源，逐台按步骤4和步骤5进行。

注意：如果双方都处于用户模式，请不要进行复制连接。

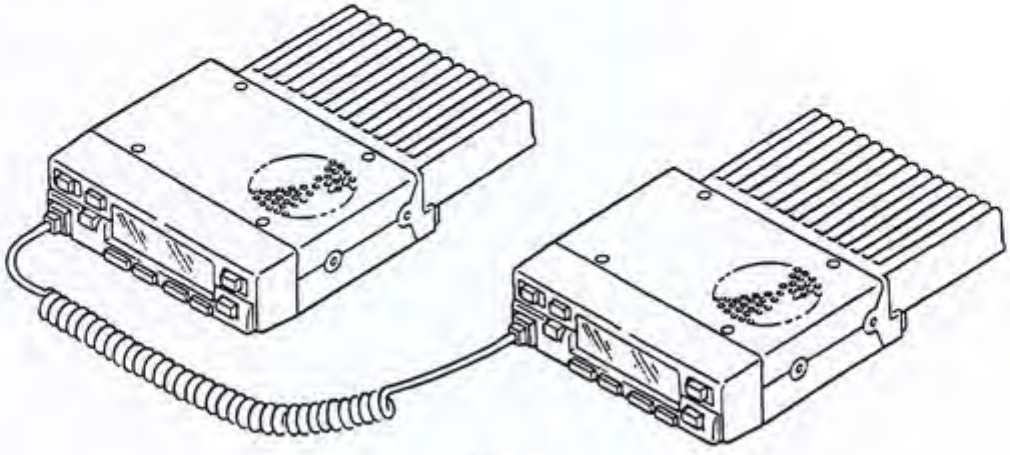


Fig. 2

7. Memory Reset

This function initializes the data in the EEPROM of the transceiver.

7-1. Operation

1. Hold down the [A] key and turn the power on, and keep the [A] key pressed for two seconds to enter the initial mode. The display changes form "PrOG" to "SEL".
2. Press the [VOL▼] and [D/A] keys at the same time to reset the memory. (The display does not change.) The model name, F version and tuning data is not initialized.

7. 存储器复位

对通信机的 EEPROM 存储器的存储内容初始化。

7-1. 操作步骤

1. 按住〔A〕键，打开电源开关，继续按住〔A〕键，保持约 2 分钟，则进入初始模式。
   进入初始化模式，显示屏上先出现「PrOG」字符，然后出现「SEL」字符。
2. 按住〔VOL▼〕键，按〔D／A〕键，则对存储器复位（显示屏上没有变化）。但是，对于型式名称数据、频率型式数据以及调试数据不进行初始化。

INSTALLATION

1. Accessory Connection Cable (KCT-19 : Option)

The KCT-19 is an accessory connection cable for connecting external equipment. The connector has 15 pins and the necessary signal lines are selected for use.

1-1. Installing the KCT-19 in the transceiver

1. Remove the upper and lower halves of the transceiver case, and lift the DC cord bushing (❶) from the chassis.
2. Remove the pad (❷).

安装

1.连接电缆配件（KCT-19：选购）

KCT-19 是一根用于连接外部设备的连接电缆。此电缆具有15只管脚可以选用所需的信号线。

1-1. 在通信机内安装 KCT-19

1. 取下通信机的上下机壳，并从机座上提起直流电源导线绝缘套管（❶）。
2. 取下垫片（❷）。

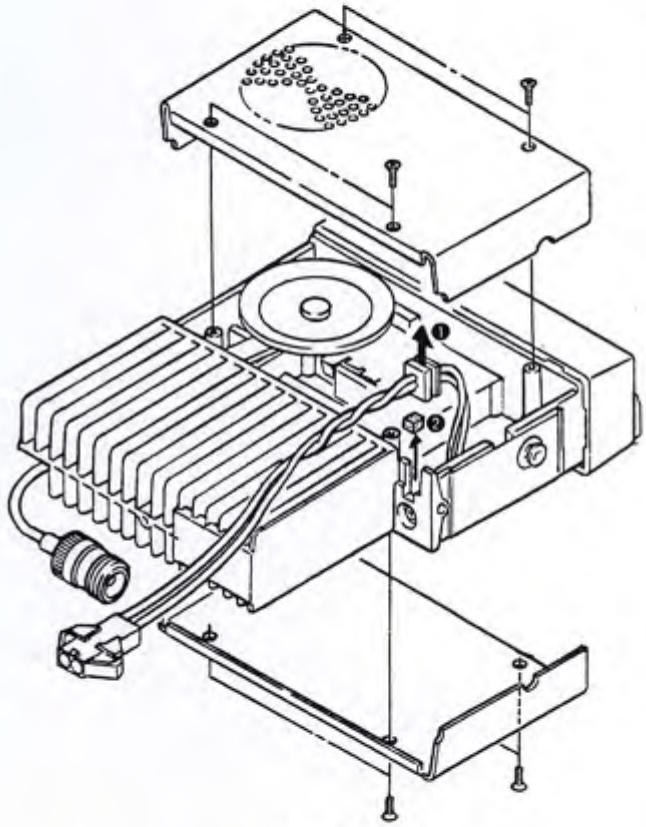


Fig. 1

INSTALLATION/ 安装

3. Insert the KCT-19 cable (❸) into the chassis (❹). The wire harness band (❺) must be inside the chassis.
4. Relocate the DC cord bushing in the chassis (❻).
5. Connect the KCT-19 to the TX-RX unit (A/2) as shown in Figure 2 (❼).
6. Connect the KCT-19 to the external accessory by inserting the crimp terminal (❽) into the square plug (❾), both of which are supplied with the KCT-19.

3. 将 KCT-19 电缆（❸）插入到底座（❹）。电线线束带必须在底座（❺）内部。
4. 重新将直流电源导线绝缘套管安装回底座（❻）。
5. 如图 2（❼）所示，将 KCT-19 连接到 TX-RX 单元 (A/2)。
6. 通过把翻边端子插入方形插头（❽）（两者都和 KCT-19 一起提供）将 KCT-19连接到外部附件（❾）。

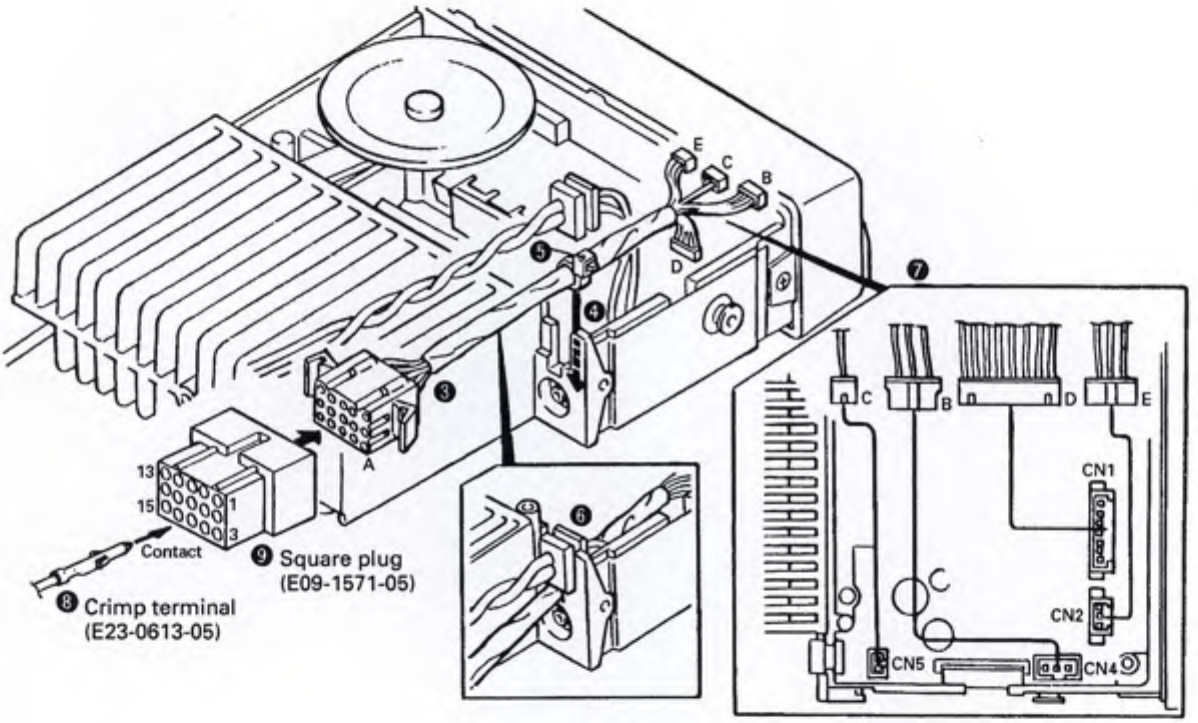


Fig. 2

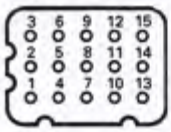
INSTALLATION/ 安装

1-2. Terminal function

No. (A)	No. (B,C,D,E)	Name	Function	KAP-1 Instllated
A-1	D-2	HK	MIC hook signal input. On hook : "L", Off hook : "OPEN"	←
A-2	D-5	ME	MIC GND	←
A-3	D-3	IGN	Ignition input for KCT-18.	←
A-4	D-1	DEO	Detection signal output. Output impedance : 1kΩ or less, Output level : 450mVrms (Standard modulation), Output frequency response : 0~3kHz flat	←
A-5	D-6	MI	External MIC signal input. Internal MIC signal output. (Standard modulation at 600Ω, 5mV)	←
A-6	B-2	E	GND	←
A-7	B-3	SB	DC power supply after power switch on. DC 13.6V±15% (11.6V~15.6V), Max. 1A	←
A-8	D-7	PTT	External PTT signal input. PTT on ; "L", PTT off : "OPEN"	←
A-9	D-4	DI	Data modulation signal input. Input impedance : 10kΩ or more, Deviation : 3kHz or more (4.5Vp-p input, Max dev. 4.1kHz) Frequency response : +1/-3dB (1kHz = 0dB) at DC~9.6kHz	←
A-10	B-1	HOR	Horn alert control signal output. Signal output for horn relay drive (open collector), "L" level during horn drive : max. sink current 100mA	HR1
A-11	D-8	SQ	Not used.	←
A-12	C-1	SP	Audio output. 4W at 4Ω less than 5% distortion.	HR2
A-13	E-1	AM	Audio mute signal input. Mute : "H", Unmute : "OPEN"	←
A-14	E-2	MM	MIC mute signal input. Mute : "H", Unmute : "OPEN"	←
A-15	E-3	FSW	Foot switch (for emergency) signal input. "L" : Emergency mode entry.	←

- Refer to Terminal function on page 74, if need description in detail.
- Connect CN5 of the radio to connector C of the KCT-19 instead of to the internal speaker connector, if use external speaker.

15-pin ACC terminal



端子功能

编号（A）	编号（B,C,D,E）	名称	功能	KAP-1 已安装
A-1	D-2	HK	麦克风挂钩输入。挂机："L"，摘机："OPEN"。	←
A-2	D-5	ME	麦克风接地。	←
A-3	D-3	IGN	KCT-18 的点火输入。	←
A-4	D-1	DEO	检测信号输出。输出阻抗：1KΩ 或更小。 输出电平：450mVrms（标准调制），输出频率响应：0～3kHz 平坦。	←
A-5	D-6	MI	麦克风输入。内部麦克风信号输出。（600Ω，5mV 下的标准调制）	←
A-6	B-2	E	接地。	←
A-7	B-3	SB	电源接通后的直流供电。DC 13.6V±15%（11.6V～15.6V），最大 1A。	←
A-8	D-7	PTT	外部 PTT 信号输入。	←
A-9	D-4	DI	数据调制信号输出。输入阻抗：10KΩ 或更大。 偏差：3KHz 或更大（4.5Vp-p 输入，最大偏差 4.1KHz.）。 频率响应：在 DC～9.6 kHz 时+1/−3dB（1kHz=0dB）	←
A-10	B-1	HOR	喇叭警报控制信号输出。喇叭继电器驱动（开集电极）。 喇叭驱动时"L"电平：最大吸引电流 100mA。	HR1
A-11	D-8	SQ	没有使用。	←
A-12	C-1	SP	声频输出。4Ω 阻抗，4W 输入时，失真小于 5%。	HR2
A-13	E-1	AM	声频静音信号输出。静音："H"，非静音："OPEN"。	←
A-14	E-2	MM	麦克风静音信号输出。静音："H"，非静音："OPEN"。	←
A-15	E-3	TXS	踏脚开关（紧急）信号输入。"L"：进入紧急模式。	←

- 如果需要详细说明，请参阅第 75 页上的端子功能。
- 如果使用外部扬声器，将无线电设备的 CN5 连接到 KCT-19 接头 C上而不是内部扬声器接头。

INSTALLATION/ 安装

2. Ignition Sense Cable (KCT-18 : Option)

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

If you use the Horn Alert function, you can turn the function off while driving with the ignition key.

2-1. Connecting the KCT-18 to the transceiver

1. Install the KCT-19 in the transceiver. (See the KCT-19 section.)
2. Insert the KCT-18 lead terminal (❷) into pin 3 of the square plug (❶) supplied with the KCT-19, then insert the square plug into the KCT-19 connector (❸).

2. 点火传感器电缆（KCT-18：选购）

KCT-18是一根用于使用点火功能的选购电缆，点火功能使你能用汽车点火钥匙打开或关闭通信机电源。

如果你用喇叭警报功能，你可以在用点火钥匙开车的时候关闭此功能。

2-1. 将KCT-18连接到通信机上。

1. 将 KCT-19 装入通信机。（参阅 KCT-19 部分）
2. 将 KCT-18 的导线端子（❷）插入与 KCT-19 一同提供的方形插头管脚 3（❶），然后把方形插头插入 KCT-19 连接器（❸）。

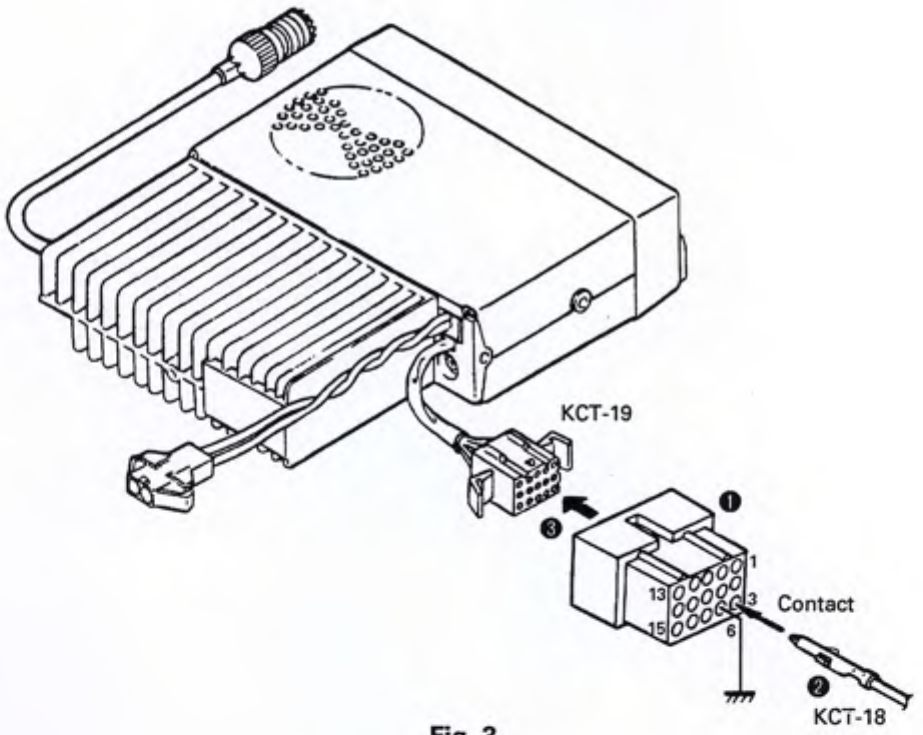


Fig. 3

INSTALLATION/ 安装

2-2. Modifying the transceiver

Modify the transceiver as follows to turn the power or the Horn Alert function on and off with the ignition key.

1. Remove the lower half of the transceiver case.
2. Set jumper resistors (0Ω) R5 and R6 of the TX-RX unit (A/2) as shown in Table 1.

2-2. 修改通信机

如下所示修改通信机，以便用点火钥匙打开和关闭电源或喇叭警报功能。

1. 取走通信机箱下半部分。
2. 如表1所示安装 TX-RX 单元 (A/2) 的跳线电阻（0欧姆）R5 和 R6。

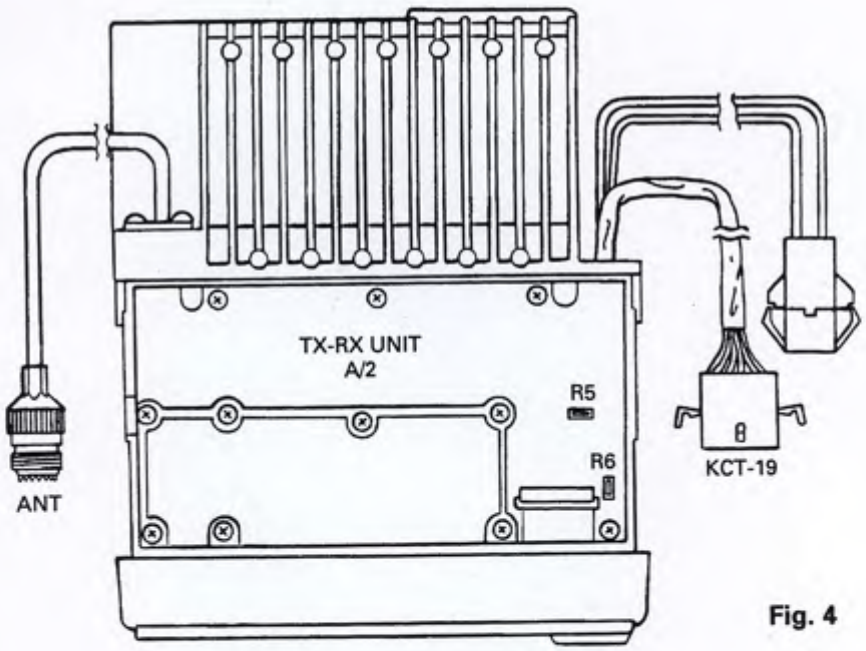


Fig. 4

Operation when KCT-18 is connected	R5	R6	
	Enable	Enable	← **KCT-18 cannot be connected**
Power on/off and Horn Alert on/off	Disable	Enable	
Horn Alert on/off	Enable	Disable	
	Disable	Disable	← **Power cannot be turned on**

Table 1 R5 and R6 setup chart

The Horn Alert function can be turned on and off only if the function has been assigned to the AUX key.

当连上KCT-18时的操作	R5	R6	
	起作用	起作用	← 不能连接KCT-18
电源开／关及喇叭警报开／关	不起作用	起作用	
喇叭警报开／关	起作用	不起作用	
	不起作用	不起作用	← 不能打开电源

表1 R5和R6安装图

只有在喇叭警报功能分配给 AUX 键时才能打开或关闭此功能。

INSTALLATION/ 安装

3. Emergency Mode

3-1. Outline

The transceiver can be modified to have the emergency mode and installed in the car. If the driver (such as a taxi driver) encounters a robber, he can transmit an emergency signal to a base station automatically by treading on the foot switch installed on the floor of the car.

The emergency mode can be activated when the power switch is turned off by changing the power switch function to the LCD display ON/OFF switch function.

An external speaker may be sounded or lights may be flashed in emergency to warn robbers by modifying the option KAP-1 to the Horn/Light drive relay output circuit and installing it in the transceiver.

3. 紧急状态模式

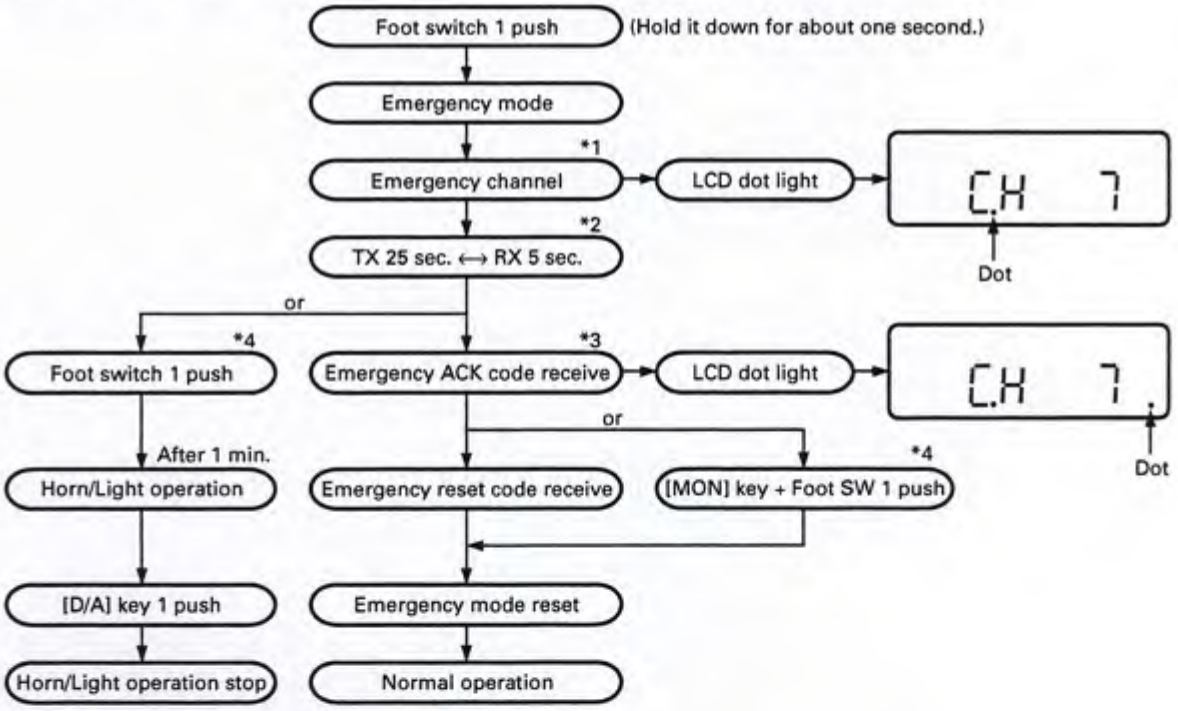
3-1. 概要

可将本通信机改装成具有紧急状态模式并将其安装于汽车内。如果司机（例如出租车司机）遇上一个抢劫者，他能够通过踩安装于汽车地板上的踢脚开关，向一个基站自动发送一个紧急信号。

当将电源开关功能改变到液晶显示器 ON/OFF 开关功能而切断电源开关时，可以激活紧急状态模式能被激活。

通过把选购的 KAP-1 安装到喇叭／灯光驱动继电器输出电路并将其安装到通信机内，可以使外部扬声器鸣叫或灯光闪烁，以警告抢劫者。

- **Emergency mode system chart**



*1: The emergency channel is the highest channel in which the receive frequency is stored. The channel indicator does not change, but a dot lights to indicate that the transceiver has entered the emergency mode.
*2: The transceiver sends the preset DTMF code (SOS) first, and then transmits the situation in the car, which is picked up with the microphone. The transmission indicator does not light during transmission.
*3: If the base station acknowledges the emergency, the dot lights.
*4: Hold the foot switch again for about one second.

*1. 紧急信道是最高的信道，在此信道储存着接收频率。信道指示不会改变，但会点亮一个圆点以指示通信机已进入紧急状态模式。
*2. 该通信机首先发送预设的 DTMF (SOS) 代码，然后发送由麦克风接收的车内情况。在发送过程中发送指示器不亮。
*3. 如果基地站应答收到紧急状态信号，圆点点亮。
*4. 再踩住踢脚开关约一秒。

Fig. 5

INSTALLATION/ 安装

3-2. Transceiver modification procedure

- **Install the foot switch**

Install the foot switch through the KCT-19 and KCT-18.

When the switch is treaded on, the radio enters the emergency mode.

- **Change the power switch circuit**

TX-RX unit (B/2) : Control section
R517 : Remove (R92-1252-05, 0Ω)
R401 : Add (R92-1252-05, 0Ω)
Jumper wire (W1) : Add

TX-RX unit (A/2) : RF section
R14 : Remove (RK73FB2A102J, 1.0kΩ)

Once the transceiver is modified, it cannot be turned on and off with the power switch. The power switch turns the LCD backlight and display on and off. (The power is switched on and off by IGNITION SENSE.)

3-2. 通信机改装步骤

- **安装踢脚开关**

通过 KCT-19 和 KCT-18 安装踢脚开关
当踩下此开关时，无线电设备进入紧急状态模式。

- **改变电源开关电路**

TX-RX 单元（B/2）：控制部分
R517：去除（R92-1252-05，0 欧姆）
R401：增加（R92-1252-05，0 欧姆）
跳线（W1）：增加

TX-RX 单元（A/2）：RF 射频部分
R14：去除（RK73FB2A102J，1.0k 欧姆）

一旦通信机经调整后，它不能用电源开关来打开和关闭。电源开关用来打开和关闭液晶显示后灯和指示器。（电源由点火传感器来打开和关闭。）

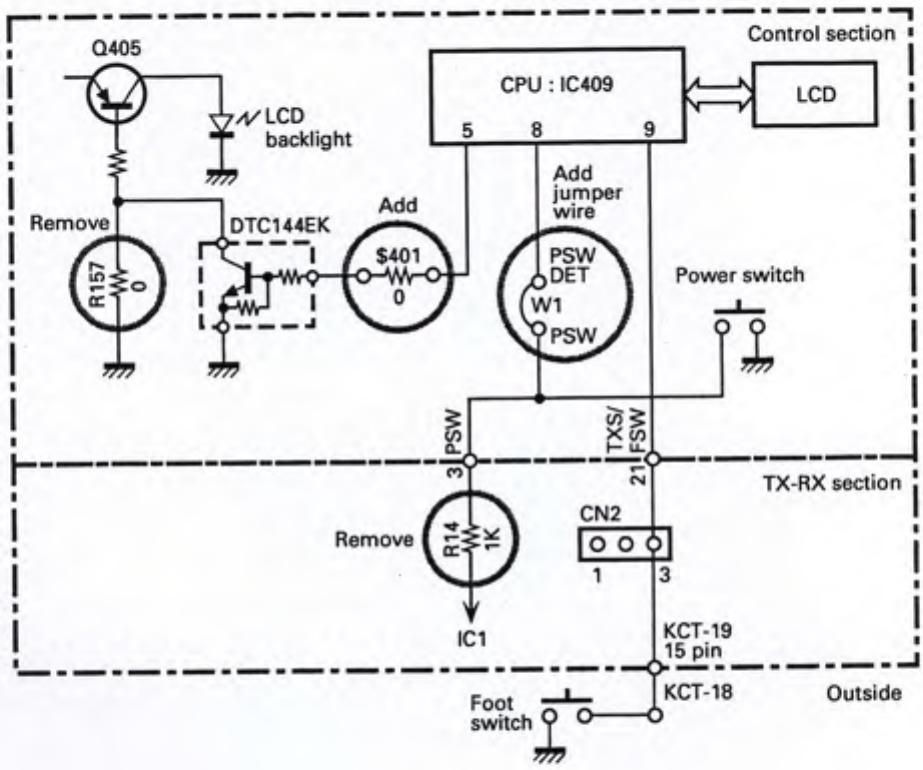


Fig. 6

INSTALLATION/ 安装

3-3. KAP-1 (option) emergency Horn/Light drive relay output modification

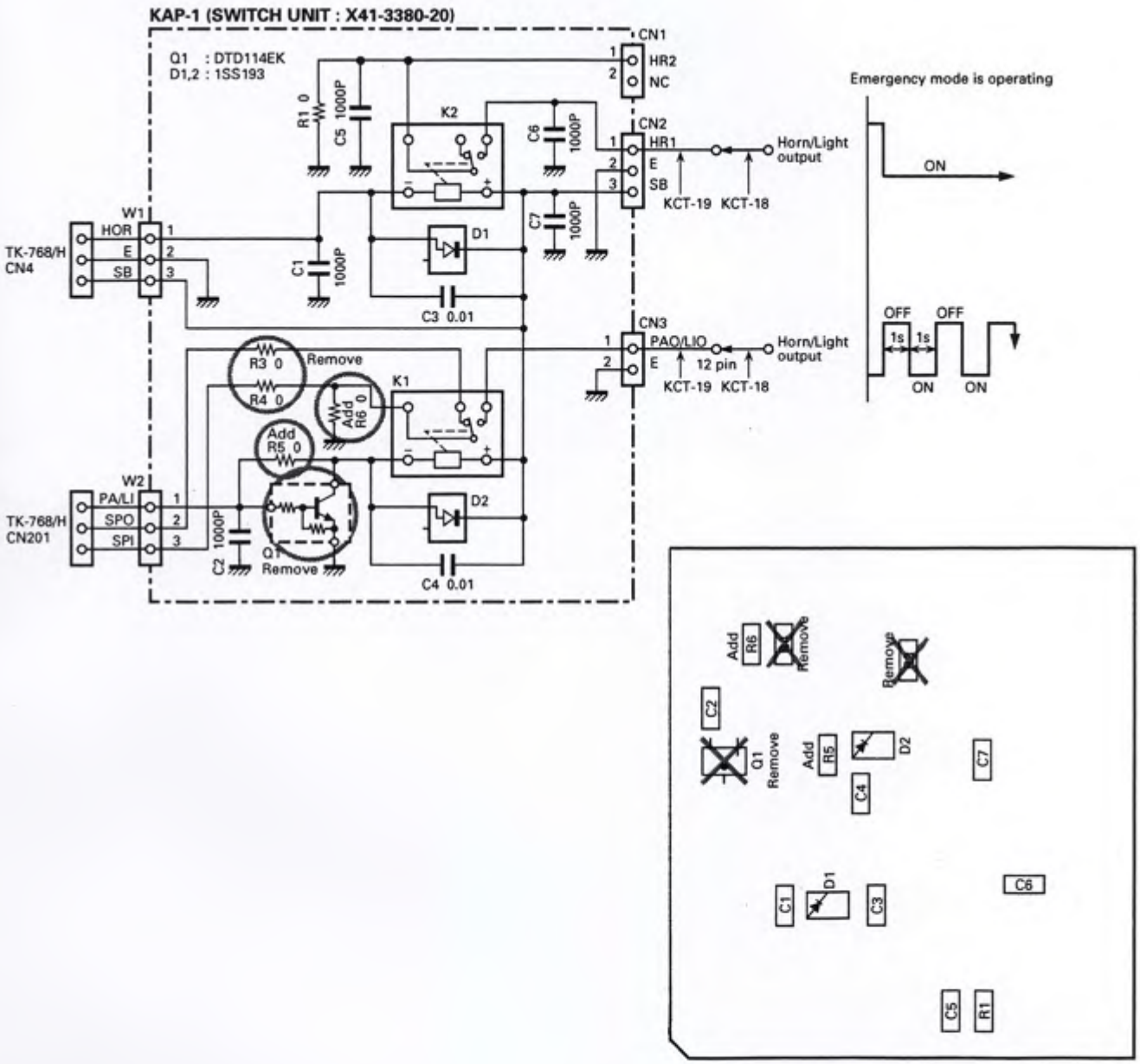
- **Modify the circuit**
  Q1 : Remove (DTD114EK)
  R3, R4 : Remove (R92-0670-05, 0Ω)
  R5, R6 : Add (R92-0670-05, 0Ω)
  (Remove Q1, R3 and R4, and add R5 and R6.)

- **Install it in the transceiver**
  Send the output with the KCT-19 and KCT-18.

3-3. KAP-1（选购）紧急状态喇叭／灯光驱动继电器输出改变

- **改变电路**
  Q1： 去除（DTD114EK）
  R3, R4： 去除（R92-0670-05, 0 欧姆）
  R5, R6： 增加（R92-0670-05, 0 欧姆）
  （去除 Q1, R3 和 R4，并增加 R5 和 R6）

- **将其安装入通信机**
  用 KCT-19 和 KCT-18 发送输出信号



KAP-1 foil side view

Fig. 7

INSTALLATION/ 安装

4. Horn/Light Unit (KAP-1 : Option)

4-1. Installing the KAP-1 in the transceiver

The Horn Alert (max. 2A drive) and Light functions are enabled by inserting the KAP-1 W1 (3P; white/black/red) into CN4 on the TX-RX unit, inserting W2 (3P: green) into CN201 on the TX-RX unit, and connecting the KCT-19 (option) to CN1 and CN2 of the KAP-1.

- **Installation procedure**

1. Open the upper case of the transceiver.
2. Insert the two cables (❶) with connectors from the KAP-1 switch unit into the connectors on the transceiver.
3. Secure the switch unit board on the chassis with two screws (❸) with the notch (❷) in the board placed at the front left side.

4.喇叭／灯光单元（KAP-1:选购）

4-1. 将KAP-1装入通信机

通过将 KAP-1 W1（3P; 白色／黑色／红色）插入 TX/RX 单元上的 CN4，将 W2（3P，绿色）插入 TX-RX 单元上的 CN201，并把 KCT-19（选购）连接到 KAP-1的 CN1 和 CN2，就能使得喇叭警报（最大 2A 驱动）和灯光功能进入工作状态。

- **安装步骤**

1. 打开通信机的上半部分机箱。
2. 把两根来自 KAP-1 带连接器的电缆（❶）插入到通信机的连接器中。
3. 用两枚螺丝（❷）把开关单元板固定在机座上，板上的槽口（❸）要置于左前侧。

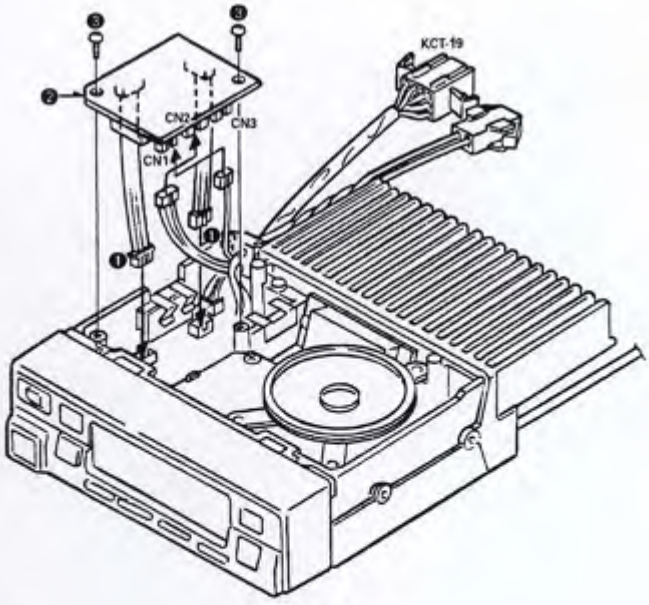


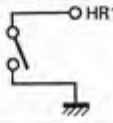
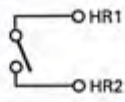
Fig. 8

4-2. Modifying the transceiver

- **Horn Alert**

The signal from pin 62 of IC409 (CPU) on the TX-RX unit turns Q13 and Q14 on and off and drives KAP-1 HA relay K2 to drive the horn with a maximum of 2A.

The default output is HR1. The relay open output can be obtained between HR1 and HR2 by removing R1 in the KAP-1.

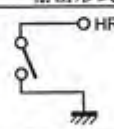
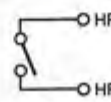
	R1	Output form
HR1 (Default)	Enable	
HR2	Disable	

4-2改装通信机

- **喇叭警告**

从 TX-RX 单元上 IC409（CPU）的针销 62 传来的信号将 Q13 和 Q14 打开和关闭并驱动 KAP-1 HA 传递 K2 以启动最大为 2A 的喇叭。

缺省输出为 HR1 。通过去除 KAP-1 的 R1 能取得 HR1 和 HR2 之间的继电器开路输出。

	R1	输出形式
HR1 (缺省)	起作用	
HR2	不起作用	

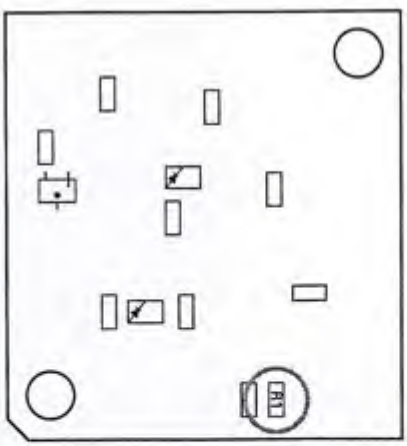


Fig. 9 KAP-1 foil side view

INSTALLATION/ 安装

4-3. Others

If the HR2 are not necessary and the speaker output is output to an external unit through the KCT-19, connect the KCT-19 C connector to CN5 on the TX-RX unit.

4-3. 其他

如果不需要 HR2 并且扬声器输出是通过 KCT-19 输出到外部单元，将 KCT-19C 接头连接到 TX-RX 上的 CN5 单元。

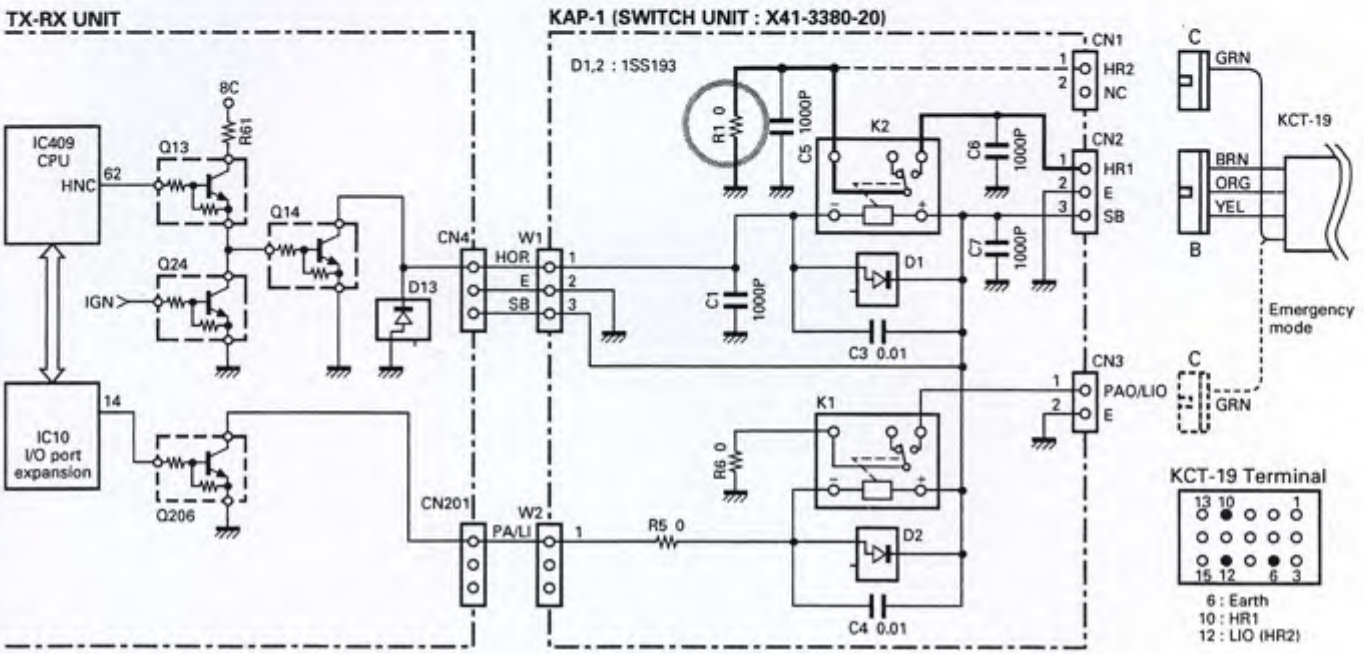


Fig. 10 After modification

5. External Speaker

5-1. KES-3 : Option

The KES-3 is an external speaker for the 3.5mm-diameter speaker jack.

- **Connection procedure**

1. Connect the KES-3 to the 3.5mm-diameter speaker jack on the rear of the transceiver.

5. 外部扬声器

5-1. KES-3：选购

KES-3是一个用于 3.5mm 直径扬声器插孔的外部扬声器。

- 连接步骤

1. 将 KES-3 连接到通信机背后 3.5mm 直径的扬声器插孔。

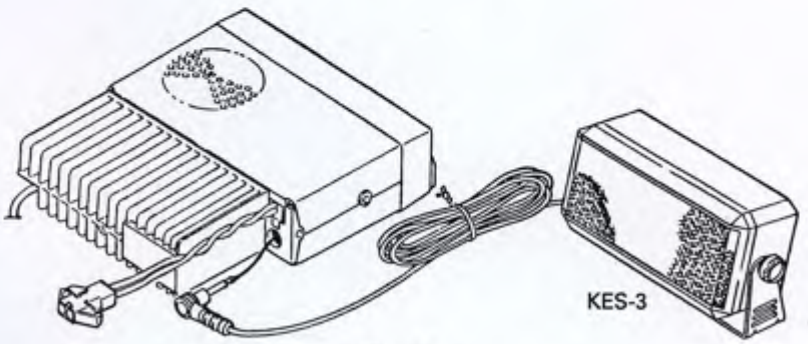


Fig. 11

INSTALLATION/ 安装

6. Fitting the Control Panel Upside Down

The TK-768/H control panel can be fitted upside down, so the transceiver can be mounted with its internal speaker (in the upper half of the case) facing down in your car.

1. Remove the upper and lower case of the transceiver and remove the panel from the main unit (❶).
2. Remove the flat cable (❷) and change the direction of bending the flat cable (❸).
3. Turn the panel over (❹), insert the flat cable into the main unit (❺). Attach the panel to the main unit, and reinstall the cases.

6. 控制面板倒置装配

TK-768/H控制面板可以上面朝下进行装配，因此可以将内部扬声器（位于盒子的上半部分）面朝下安装到你的汽车内。

1. 取下通信机的上盒和下盒，并从主机（❶）上取下面板。
2. 取下扁平电缆（❷），并改变扁平电缆的弯曲方向（❸）。
3. 将面板转向（❹），将扁平电缆出入主机（❺）。然后将面板安装到主机并重新装入盒子。

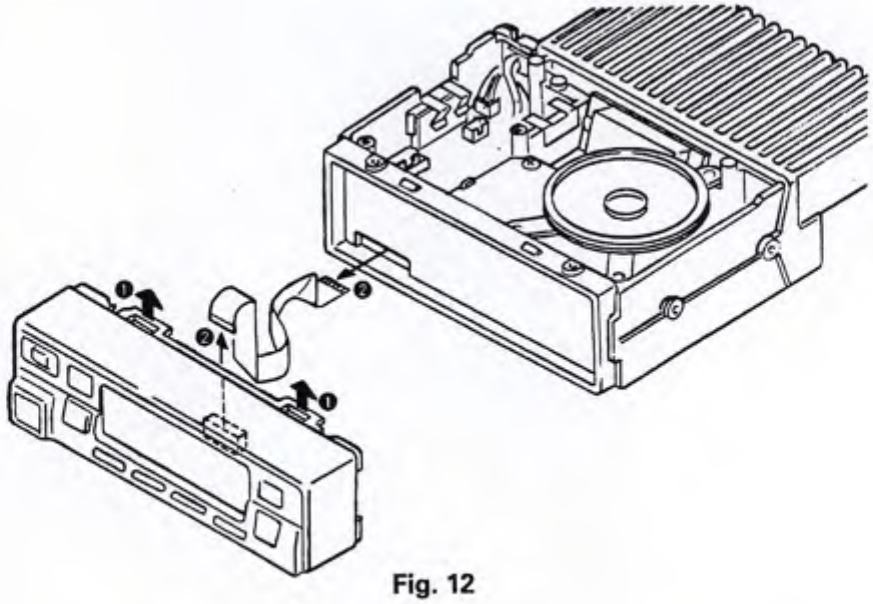


Fig. 12

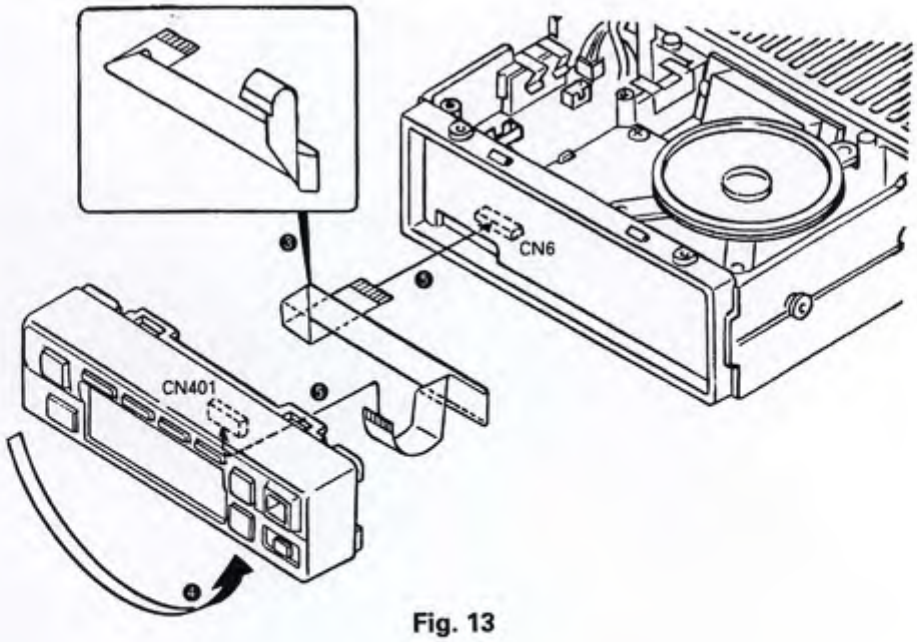


Fig. 13

CIRCUIT DESCRIPTION/ 电路说明

1. Circuit Configuration by Frequency

The receiver is a double-conversion superhet with a first intermediate frequency (IF) of 45.050MHz and a second IF of 455kHz. Incoming signals from the antenna are mixed with the local signal from the PLL to produce the first IF of 45.050MHz.

This is then mixed with the 44.595MHz second local oscillator output to produce the 455kHz second IF. This is detected to give the demodulated signal.

The transmit signal frequency is generated by the PLL VCO, and modulated by the signal from the microphone. It is then amplified by TX amplifier and PA amplifier, and sent to the antenna.

1. 电路结构

接收部采用二次变频超外差方式，第一中频（IF）是45.05MHz，第二中频为455KHz。从天线接收的信号与来自锁相环回路（PLL）的第一本振信号混频产生45.050MHz 的第一中频（IF）信号，然后此信号和44.595MHz 的第二本振信号混频产生455KHz 的第二中频信号，第二中频信号经鉴频产生解调信号。

发射信号由锁相环电路中的压控振荡器直接产生，被来自话筒的音频信号调制后进入发射驱动放大器放大，放大后的信号再由末级功率放大器放大到额定功率后送往天线。

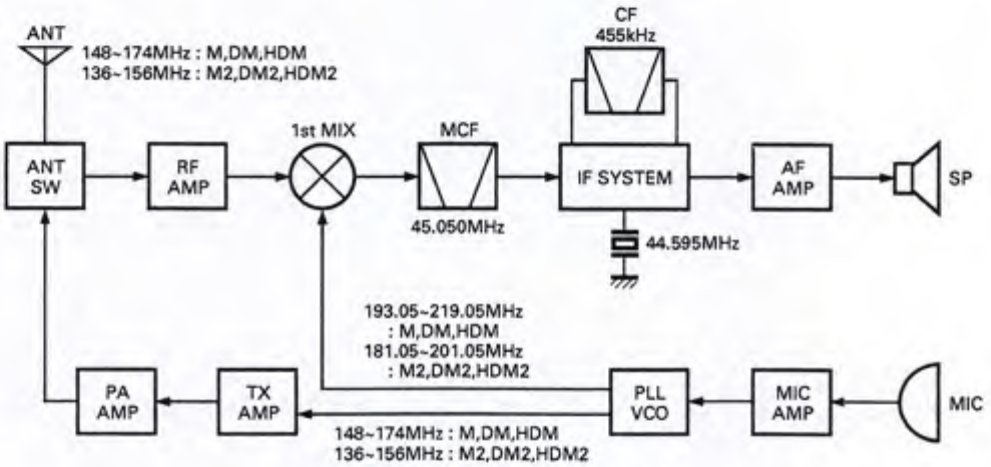


Fig. 1 Frequency configuration

2. Receiving System

2-1. RF unit

An incoming RF signal from the antenna terminal passes through the antenna switch (D20, and D24 are off) and the bandpass filter (L208). The signal is amplified by RF amplifier Q208, and passes through the bandpass filter (L205, 206, 207) again. The resulting signal goes to the first mixer (Q207), where it is mixed with the first local oscillator signal output from the frequency synthesizer to produce the first IF 45.050MHz.

2. 接收部

2-1. 射频单元

从天线端子输入的射频信号通过天线转换开关（D20和D24截止）和带通滤波器（L208）后，进入射频放大器（Q 208）放大。然后再通过带通滤波器（L205,206,207），经过滤波的信号进入第一混频器（Q207），与来自频率合成单元的第一本振信号混频，产生第一中频（45.050MHz）信号。

CIRCUIT DESCRIPTION/ 电路说明

2-2. IF unit

The first IF signal then passes through a four-pole monolithic crystal filter (XF1). The signal is amplified by first IF amplifier Q16 and goes to the second IF unit.

The second IF unit consists of an IF system IC (IC7) and the second mixer, second local oscillator, second IF filter, and FM detector. IC7 mixes the signal input to it with the 44.595MHz second local oscillator output of the crystal oscillator (X2) to produce the second IF of 455kHz.

The 455kHz signal then goes through 455kHz ceramic filter CF201 is amplified by the limiting amplifier, demodulated by the quadrature FM detector (in the same IC), and output to the receive audio amplifier.

2-3. Audio amplifier unit

The demodulated signal is amplified by IC2 (2/2), and goes through a low-pass filter consisting of IC403 (1/2), a high-pass filter consisting of IC403 (2/2), and a BEF consisting of IC405 (1/2) to remove the unwanted audio signal.

The signal the passes through the de-emphasis circuit consisting of the AF switch (Q406 on) and IC405 (2/2), and the volume level is adjusted by the IC6 D/A converter. The resulting signal goes to audio amplifier IC11, is amplified, and is output to the speaker.

2-4. Squelch circuit

The detector output is amplified by IC2 (2/2) and passes through a high-pass filter consisting of IC401 (2/2), which filters the noise components from the signal. Q420 converts the noise pulse level by hysteresis and applies it to the CPU (IC409).

The CPU counts the pulses, integrates them, and turns the squelch on and off according to the calculated value.

2-2. 中频单元

第一中频信号通过一个4极单晶体滤波器（XF1），滤波后的信号由第一中频放大器（Q16）放大，然后进入第二中频单元。

第二中频单元的核心是中频系统集成电路（IC7），包括有第二混频器，第二本振，第二中频滤波器和鉴频器（解调），在IC7中，输入的第一中频信号与晶体震荡器（X2）输出的44.595MHz的第二本振信号混频，产生455KHz的第二中频信号。

455KHz的第二中频信号通过455KHz的陶磁滤波器（CF201）滤波后，被限幅放大器放大，然后进入含有平方率检波器的鉴频器进行解调（在同一个集成电路中），解调后的输出信号送往接收音频放大器。

2-3. 音频放大单元

检波后的信号由IC2（2/2）放大器放大，再由以IC403（1/2）为核心的低通滤波器，以IC403（2/2）为核心的高通滤波器以及以IC405（1/2）为核心的陷波滤波器l滤波，滤除无用的音频信号。

经过滤波的信号进入由音频（AF）开关（Q406导通）和IC405（2/2）构成的去加重电路进行去加重处理，经过处理的音频信号通过由IC6 D/A（数字／模拟）变换器构成的音量调节电路进入音频放大器（IC11）放大，放大后的输出信号送入扬声器。

2-4. 静噪电路

检波后的输出信号经IC2（2/2）放大器放大，再通过一个由IC401(2/2）构成的高通滤波器，从信号中提取出噪声部分，此部分噪声信号由Q420变换为噪声脉冲电平，经滞后处理送往CPU(IC409）（微处理器）。

CPU对脉冲计数并进行积分运算，CPU根据计算值打开（或关闭）静噪。

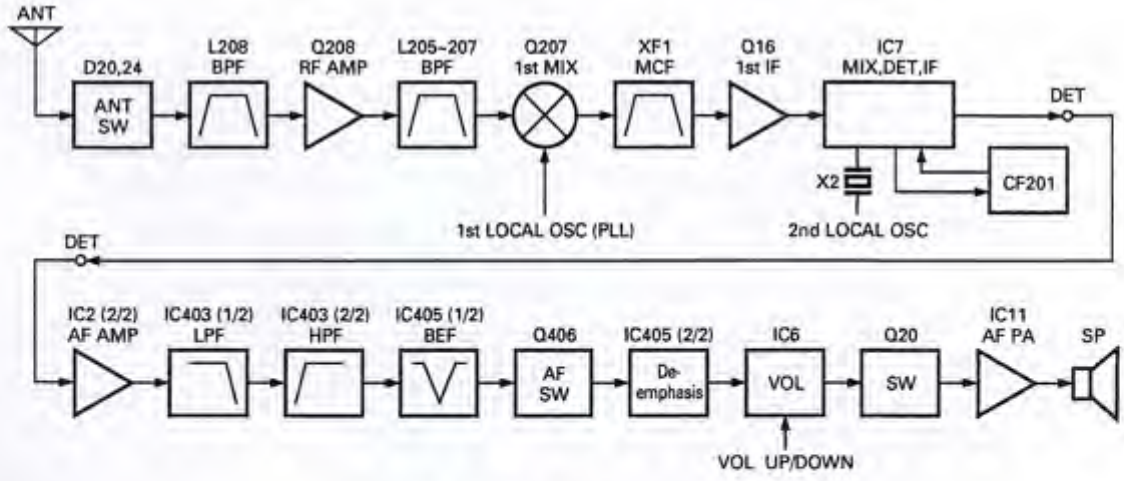


Fig. 2 Receiving system

CIRCUIT DESCRIPTION/ 电路说明

3. Transmitter System

3-1. Microphone amplifier

The signal from the microphone goes to the microphone mute switch (Q403 off). It then passes through the high-pass filter in IC402 (2/2) and the pre-emphasis/IDC circuit in IC402 (1/2).

The signal is applied to the IC404 summing amplifier and mixed with QT from the CPU (IC409). It then passes through the splatter filter (the fourth low-pass filter) consisting of IC406 (1/2, 2/2), which removes unwanted harmonics.

The output from the low-pass filter is input to the D/A converter (IC6) to adjust the modulation.

3. 发射部

3-1. 话筒放大单元

从话筒输入的音频信号经过话筒静音开关（Q403截止）进入由 IC402（2/2）构成的高通滤波器，经过滤波的信号在 IC402（1/2）进行预加重／限幅放大（IDC电路）处理。

经过处理的信号被送入 IC404 的加法放大器和来自 CPU 的 CTCSS 亚音频信号混合，然后通过由 IC406(1/2,2/2）构成的邻道滤波器（第 4 低通滤器）以滤除无用的杂散信号。

通过了低通滤波器的信号进入 D/A 变换器（IC6）以调整调制度。

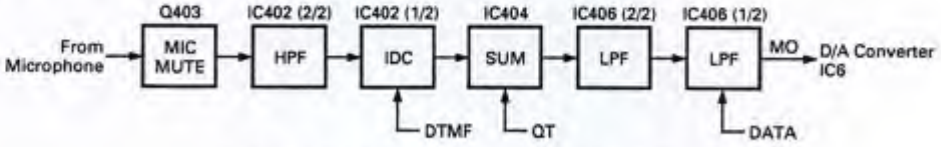


Fig. 3 Microphone amplification

3-2. Final amplifier

The signal from the PLL is amplified by drive amplifier (Q205, 206) and power module (IC501) to an output level of 25W/45W, and goes through the antenna switch D20 and harmonic filter, and on to the antenna terminal.

IC13 (1/2) compares the DC input to pin 2 with the reference voltage at pin 3 applied by IC8 (1/2), amplifies the result, and controls the DC amplifier (Q22 and Q23) to keep the transmit final current constant, thus keeping the transmit output constant.

3-2. 末级放大器

来自锁相环（PLL）的信号由激励放大器（Q205,Q206）放大，然后再进入末级功率放大器放大以达到额定的 25W/45W 发射功率，之后通过天线转换开关 D 20 和谐波滤波器送往天线端口。

IC13（1/2）把第 2 脚的直流输入电压和由 IC8（1/2）提供到第 3 脚的参考电压相比较，比较的结果被放大，形成控制信号，控制直流放大器（Q22和Q23），以保持发射末级放大器的电流的恒定。

3-3. APC circuit

The direct current that flows through the power module (IC501) produces a voltage across resistors R108. This voltage is applied to pin 6 of IC13 (2/2), and is input as the reference voltage difference of pin 5 and amplified.

3-3. 自动功率控制电路（APC）

流向功率模块的直流电流在 R108 电阻两端产生一个电压，此电压加到 IC13（2/2）的第 6 脚，并和 5 的参考电压形成差值输入，进行差值放大。

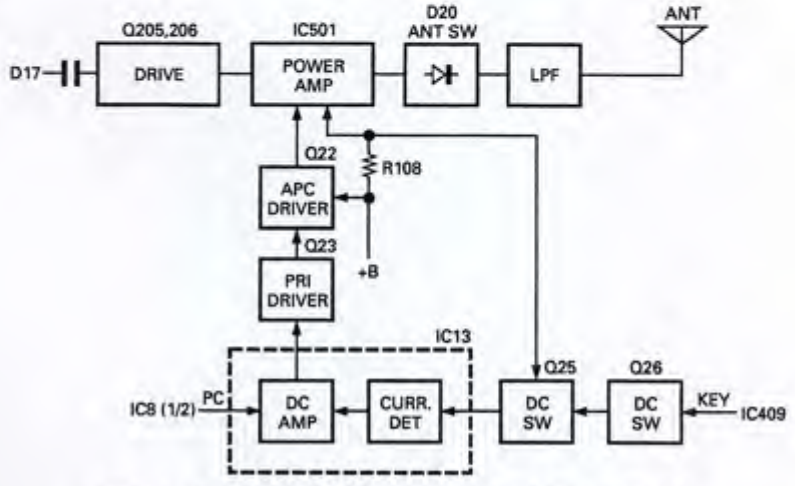


Fig. 4 Transmit power circuit and APC circuit

CIRCUIT DESCRIPTION/ 电路说明

4. Frequency Synthesizer Unit

4-1. VCO/PLL

The PLL generates the transmit signal and the first local oscillator receive signal. The RF signal generated by Q5 (TX) or Q2 (RX) in the VCO unit is amplified by Q3, and the resulting signal is output to the TX-RX unit. TX and RX Q5 and Q2 are switched by turning the source line for Q5 and Q2 on and off. This is done by Q4 and Q1 using the control signal (STR) generated by the serial-to-parallel converter in the TX-RX unit. The RF signal passes through Q3 of the VCO unit and amplifier Q209 of the TX-RX unit, and is input to IC202 (PLL IC). The 12.8MHz PLL reference signal generated by the VCXO (X1) in the TX-RX unit is also input to IC202.

Both signals are divided according to the division data from the control unit to produce a 12.5kHz signal. The phases are compared, and a phase difference signal is output and passes through the charge pump (in IC202) and the low-pass filter of the lug lead to produce the control voltage for Q5/Q2 (VCO). This voltage is applied to D3 and D4 (TX) or D1 and D2 (RX) in the VCO unit to keep the VCO frequency constant. The other output from Q3 is amplified by the RF amplifier (Q18), and output to the transmit or receive unit via the RF switch (D17).

4. 频率合成器单元

4-1. 压控振荡器（VCO)/锁相环（PLL）

由锁相环（PLL）产生发射信号和接收用的第一振信号，由压控振荡器（VCO）单元的 Q5（发射）或 Q2（接收）产生的射频信号被 Q3 放大，被放大的信号输入到 TX-RX（发射－接收）单元，通过 Q5 和 Q2 的源极的导通和关闭转换发射（Q5）和接收（Q2）。在 TX-RX 单元中的串行→并行变换器产生一个控制信号（STR），通过 Q4 和 Q1 控制发射(Q5）和接收（Q2）的转换。射频信号通过 VCO 单元的 Q3 和 TX-RX 单元的 Q209 放大器放大后进入 IC202（PLL IC）。由 TX-RX 单元中的 VCXO（压控晶体振荡器）产生的 12.8MHz 的锁相环（PLL）基准频率信号也输入到 IC202。

两个输入信号根据控制单位给定的分频比分别进行分频，均变为 12.5KHz 的信号，然后两个信号进行相位比较，输出相位差信号，相位差信号通过电荷泵（在 IC202中）后再通过牵引低通滤波器，产生一个控制 VCO（Q5/Q2）的电压信号，此电压信号加到 VCO 单元中的 D3 和 D4（发射）或 D1 和 D2（接收）上，以保持 VCO 频率的稳定。Q3 的另一路输出信号由射频放大器（Q18）放大后，经射频开关（D17）供给发射部或接收部。

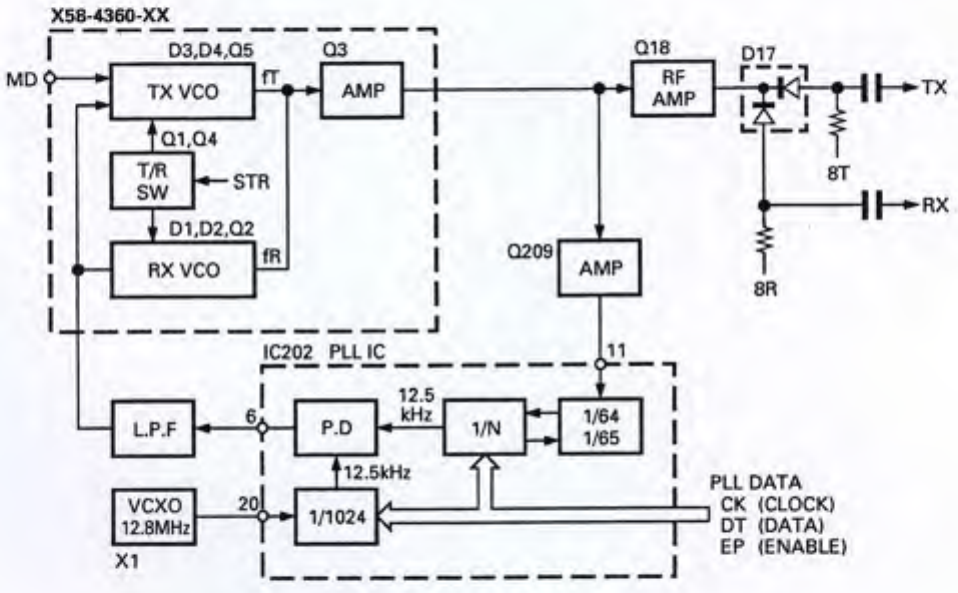


Fig. 5 PLL unit block diagram

CIRCUIT DESCRIPTION/ 电路说明

4-2. PLL unlock

When the PLL is unlocked, the lock detect signal (LD) of the PLL IC (IC202) is rectified by D212, and converted to a DC signal. The CPU monitors this signal. When the PLL is unlocked, the CPU turns the key output signal off (low), then turns Q10, Q6, and 8T off to prevent unnecessary transmission.

4-2. 锁相环失锁

当锁相环失锁时，锁相环集成电路（PLL IC, IC202）的锁定检测信号（LD）经 D212 整流变为一个直流信号，CPU 监视此信号。当锁相环失锁后，CPU 关闭键输出信号（低），然后关闭 Q10、Q6 和 8T 以阻止无效发射。

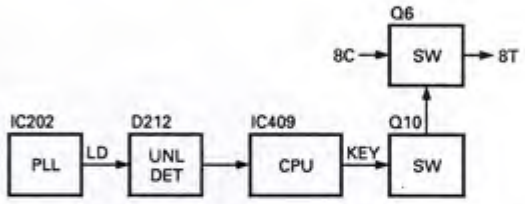


Fig. 6 PLL unlock circuit

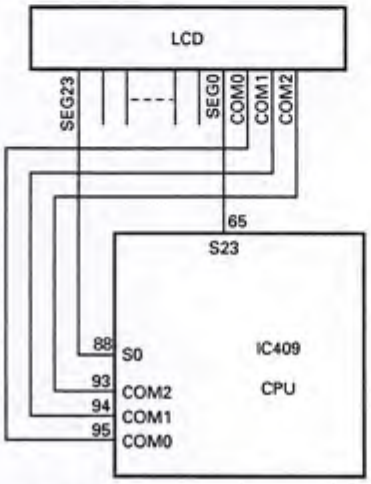


Fig. 7 Display section

5. Display Section

CPU (IC409) contains an LCD driver to drive the 7-segment, 8-digit LCD directly.

5. 显示部分

CPU（IC409）内含一个 LCD 驱动器，可以直接驱动 7 段 8 位 LCD（液晶显示器）。

6. Control Section

The control section consists of CPU (IC409) and its peripheral circuits. It controls the TX-RX unit. The CPU has the following main functions:

1) Switching between transmission and reception according to the PTT signal input.
2) Reading channel, frequency, and program data from the memory circuit.
3) Sending frequency data to the PLL.
4) Turning the squelch on and off according to the pulse signal input from the squelch circuit.
5) Controlling the audio mute circuit according to input decode data.
6) Sending encode data.
7) Sending data to the D/A converter.

6. 控制部分

控制部分包括微处理器（CPU IC409）和其外围电路，由 CPU 控制 TX-RX 单元，CPU 包括以下主要功能：

1）根据输入的 PTT 信号转换发射和接收
2）从存储器中读出信道、频率以及编程参数等数据
3）向锁相环（PLL 回路）送出频率数据
4）根据静噪电路的脉冲输入信号打开或关闭静噪
5）根据输入的解码数据控制音频静音电路
6）送出编码数据
7）送出数据道 D/A 变换器

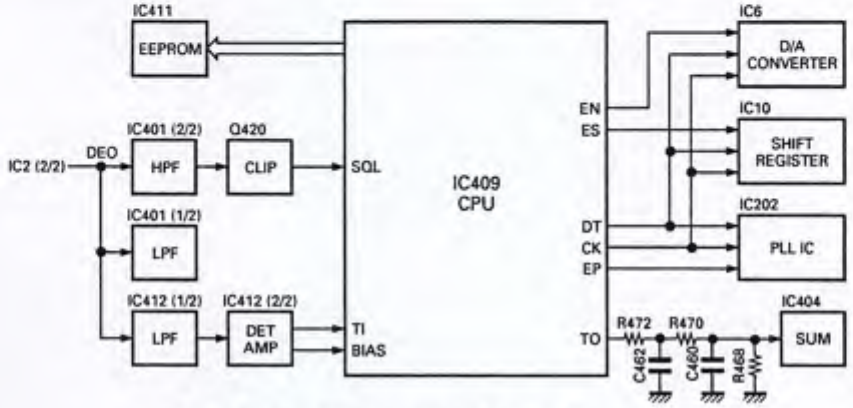


Fig. 8 Control section block diagram

CIRCUIT DESCRIPTION/ 电路说明

6-1. Memory circuit

IC201 is a 8-Kbit EEPROM that stores adjustment and backup data.

- **Shift register**

IC10 is an interface IC for I/O port expansion. It is used to expand the CPU (IC409) output ports.

- **D/A converter**

IC6 is used as a conventional semi-fixed-resistor converter. It sets the following:

1) RX sensitivity
2) Transmission power
3) Modulation level
4) Audio power
5) Frequency

6-2. TX encode data

The CPU (IC409) transmits encode data.

- **QT, DTMF**

QT data items are output from CPU pin 16. The signal from this pin passes through the CR low-pass filter and goes to the summing amplifier (IC404) in the microphone amplifier. DTMF data is output from CPU pin 10. This signal passes through the CR low-pass filter and goes to IC402 in the IDC circuit of the microphone amplifier. These are mixed with the audio signal and output to the splatter filter. It then goes to the D/A converter (IC6) and on to the VCXO and VCO.

6-3. RX decode data

- **QT**

The receive detection signal passes through a low-pass filter IC412 (1/2) to remove audio components. This signal is input to pin 4 of the CPU.

The CPU digitizes this signal, and decodes the signal.

- **DTMF**

DTMF decode IC410 on the control board.

6-4. PLL data output

PLL data is output from DATA (pin 60), ENABLE (pin 73), and CLOCK (pin 58) of the CPU (IC209). The signals are input to the PLL IC (IC202) when the channel is changed or when transmission is changed to reception and vice versa.

6-1. 存储器电路

IC201 是一个 8 位 EEPROM 存储器，存储调试和后备的数据。

- **移位寄存器**

IC10 是输入／输出口（I/O 口）的扩展接口集成电路，用于 CPU（IC409）输出口的扩展。

- **D/A 转换器（数字／模拟转换）**

IC6 是一个普通的半固定电阻（分档调节）变换器，用于设定如下参数：

1）接收灵敏度
2）发射功率
3）调制度
4）音频功率
5）频率

6-2. 发射编码数据

CPU（IC409）发出编码数据。

- **CTCSS 亚音频、DTMF**

CTCSS 亚音频信号数据从 CPU 的 16 脚输出，然后通过一个阻容（CR）低通滤波器输入到话筒放大单元的加法放大器。DTMF 数据从 CPU 的 10 脚输出，然后通过一个阻容（CR）低滤波器输入到话筒放大单元的 IDC 电路中的 IC402。信令信号和音频信号混合后通过邻道滤波器，然后进入 D/A 变换器（IC6）并加到 VCXO（压控晶体振荡器）和 VCO（压控振荡器）上。

6-3. 接收解码数据

- **CTCSS 亚音频**

检波后的信号通过一个低通滤波器 IC412（1/2），滤除音频部分后输入到 CPU 的第 4 脚，CPU 对此信号进行数字化，然后进行解码。

- **DTMF**

控制板上的 DTMF 解码集成电路（IC410）。

6-4. 锁相环（PLL）数据输出

锁相环数据信息由 CPU（IC209）的数据口（60 脚），使能口（73 脚）和时钟口（58 脚）输出，当改变信道或从发射状态为接收状态（反之亦然）时，控制信息输入到锁相环电路（IC202）。

CIRCUIT DESCRIPTION/ 电路说明

6-5. Horn control

The horn switch, consisting of Q13, Q14, and Q24, controls the horn relay. It is supplied by the dealer to provide the external horn alert function.

Q24 disables horn alert, turning on when its base is high, to inhibit the function. Normally, the output from IC10 is low, and Q13 is off; the base of Q14 is about 0V and Q14 is off. When horn alert is enabled, the output from IC10 goes high and Q13 turns on. The base current flows through R61 to Q14 to turn Q14 on. Q14 can sink a maximum of 100mA. If the optional KAP-1 is used, it can drive up to 2A.

6-5. 喇叭控制电路

喇叭开关（包括 Q13、Q14 和 Q24）控制喇叭继电器，由经销商设定提供外部喇叭提示功能。

通过 Q24 关闭喇叭提示功能，Q24 的基极为高电位时 Q24 导通，由此关闭喇叭提示功能。通常，由 IC10 输出一个低电平信号并使 Q13 截止，Q14 的基极由于是 0 V，因此也截止。当喇叭提示功能有效时，则 IC10 输出一个高电平信号，并且使 Q13 导通，通过 R61为 Q14 提供基极电流使 Q14 导通，Q14 的灌流负载最大可达 100mA。如果使用 KAP-1（选件），则驱动电流可达 2A。

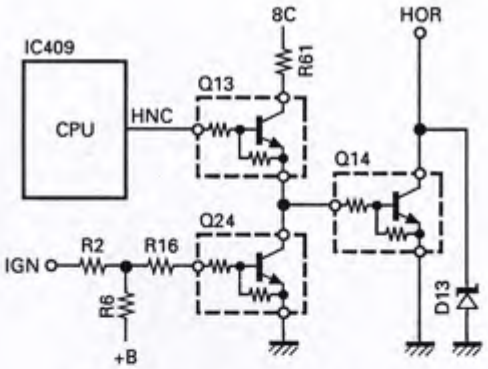


Fig. 9 Horn control circuit

6-6. Power supply circuit

D4 protects IC1 against overvoltage. Each time a pulse comes from the PSW terminal, the IC1 output is reversed. The reversed output signal passes through Q1 and Q3 and drives Q4. A voltage must be applied to the IGN terminal.

If 24V is supplied to the transceiver by mistake, Q2 turns on, and Q3 and Q4 are forced off, so the transceiver does not turn on.

6-6. 电源电路

D4 对 IC1 起保护作用，以防止过压损坏。PSW 端子（电源开关）每发出一个脉冲，IC1 的输出就翻转一次，翻转后的输出信号通过 Q1 和 Q3 驱动 Q4。有一路电压信号提供给 IGN 端子。

如果错接了 24V 电源，则 Q2 倒通，并且 Q3 和 Q4 被强制截止，由此使通信机不能接通电源。

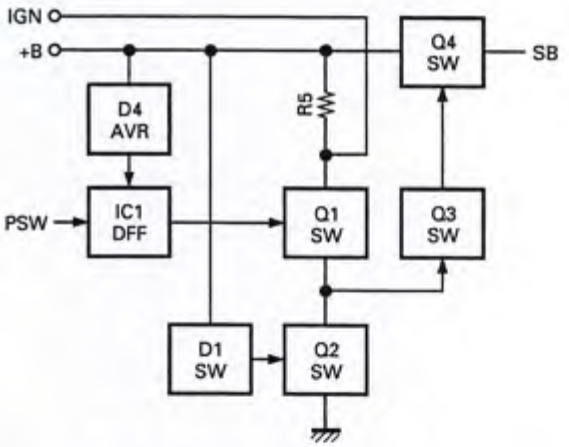
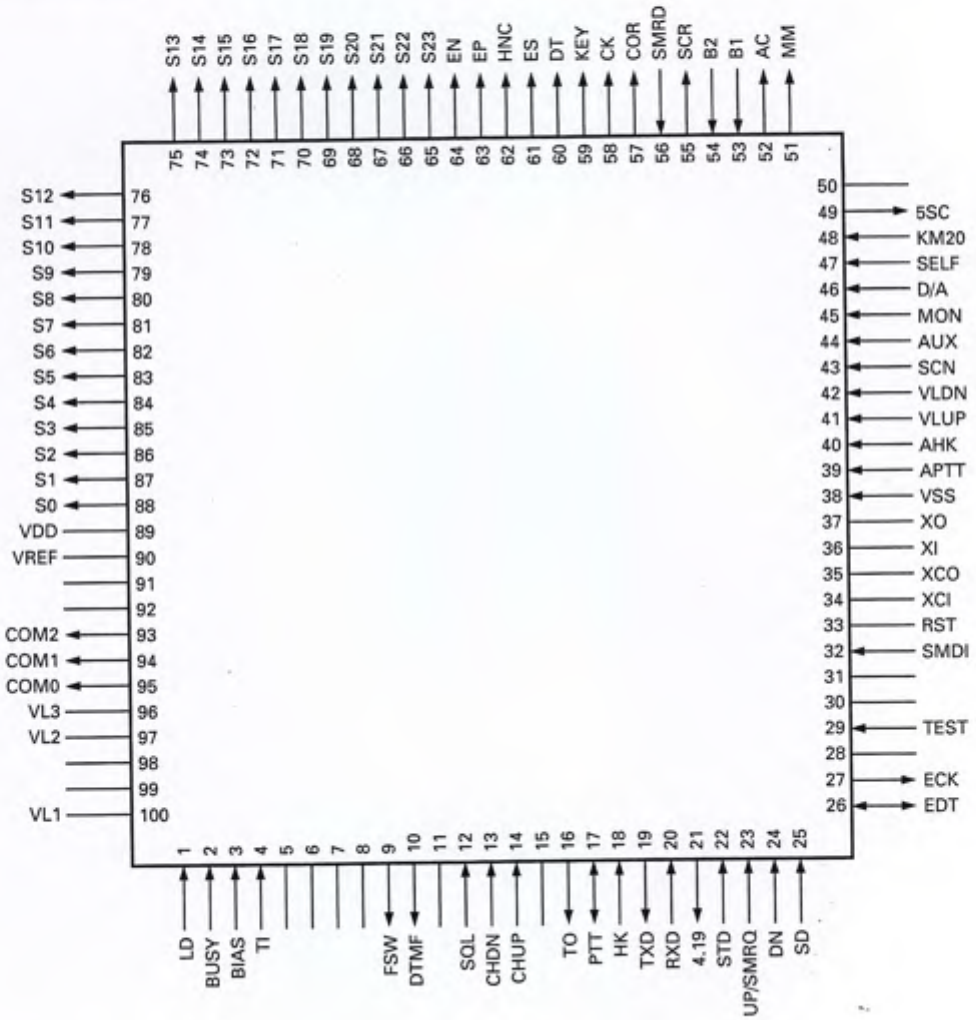


Fig. 10 Power supply circuit

SEMICONDUCTOR DATA

Microprocessor : M38267M8L157GP (TX-RX Unit IC409)

- **Terminal connection diagram**



- **Terminal function**

Pin No.	Port Name	I/O	Function
1	LD	I	PLL lock detect. "L" : Unlock, "H" : Lock
2	BUSY	I	Nor used.
3	BIAS	I	QT center voltage input.
4	TI	I	QT signal input.
5~8			
9	FSW	I	Foot switch. "L" : On, "H" : Off
10	DTMF	O	DTMF output.
11			
12	SQL	I	Squelch noise pulse input.
13	CHDN	I	CH down. "L" : On, "H" : Off
14	CHUP	I	CH up. "L" : On, "H" : Off
15			
16	TO	O	QT PWM output.
17	PTT	I/O	Normal microphone PTT. "L" : On, "H" : Off / DTMF microphone : serial interface.
18	HK	I	Microphone hook. "L" : On hook, "H" : Off hook

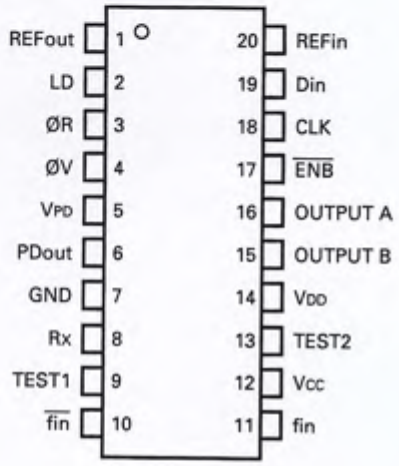
SEMICONDUCTOR DATA

Pin No.	Port Name	I/O	Function
19	TXD	O	RS-232C data output.
20	RXD	I	RS-232C data input.
21	4.19	O	DTMF decoder system clock.
22	STD	I	DTMF decoder STD. "L" : DTMF signal absent, "H" : DTMF signal present
23	UP/SMRQ	I	Smartrunk ACK/REQ.
24	DN	I	
25	SD	I	DTMF decoder data.
26	EDT	I/O	EEPROM serial data.
27	ECK	O	EEPROM serial clock.
28			
29	TEST	I	LCD check mode. "L" : On, "H" : Off
30, 31			
32	SMDI	I	Smartrunk serial data.
33	RST	–	Reset.
34	XCI	–	Sub clock.
35	XCO	–	Sub clock.
36	XI	–	Clock.
37	XO	–	Clock.
38	VSS	–	GND.
39	APTT	I	External PTT. "L" : On, "H" : Off
40	AHK	I	External hook. "L" : On hook, "H" : Off hook
41	VLUP	I	VOL up. "L" : On, "H" : Off
42	VLDN	I	VOL down. "L" : On, "H" : Off
43	SCN	I	SCN. "L" : On, "H" : Off
44	AUX	I	A. "L" : On, "H" : Off
45	MON	I	MON. "L" : On, "H" : Off
46	D/A	I	D/A. "L" : On, "H" : Off
47	SELF	I	Dealer/Test mode enter. "L" : OK, "H" : NG
48	KM20	I	DTMF microphone PTT. "L" : Off, "H" : On
49	5SC	O	Smartrunk power supply. "L" : Off, "H" : On
50			
51	MM	O	Microphone mute. "L" : Unmute, "H" : Mute
52	AC	O	Audio control. "L" : Mute, "H" : Unmute
53	B1	I	Scrambler binary data 1.
54	B2	I	Scrambler binary data 2.
55	SCR	O	Scrambler. "L" : Off, "H" : On
56	SMRD	I	Smartrunk data ready.
57	COR	O	
58	CK	O	Common clock.
59	KEY	O	TX key. "L" : TX off, "H" : TX on
60	DT	O	Common data.
61	ES	O	Shift register strobe. "L" : Load, "H" : Latch
62	HNC	O	Horn control. "L" : Off, "H" : On
63	EP	O	PLL chip select. "L" : Select, "H" : Not select
64	EN	O	D/A converter chip select. "L" : Select, "H" : Not select
65~88	S23~S0	O	LCD segment 23~0.
89	VDD	–	+5V.
90	VREF	–	+5V.
91, 92			
93~95	COM2~COM0	O	LCD common 2~0.
96, 97	VL3, VL2	–	
98, 99			
100	VL1	–	

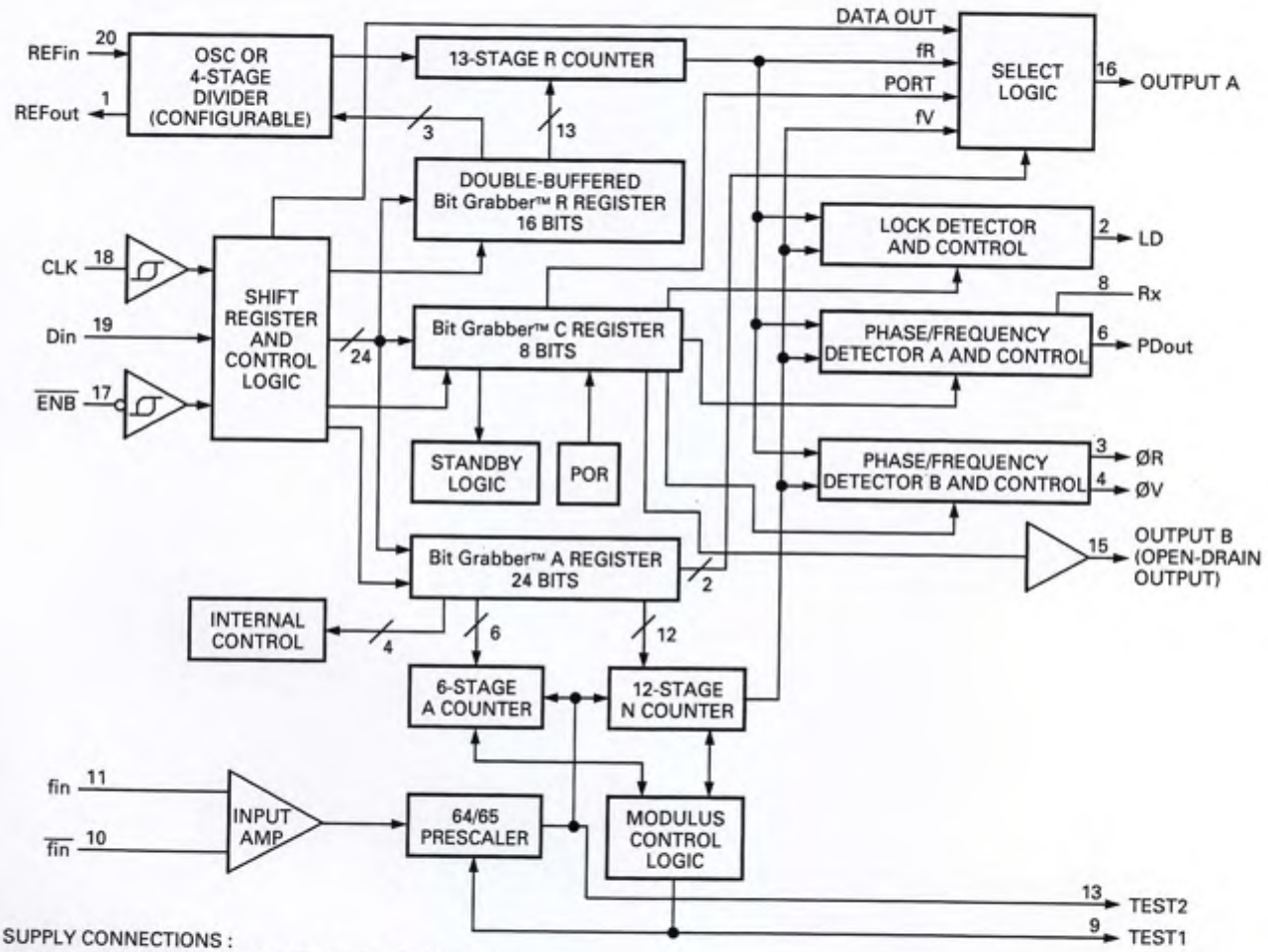
SEMICONDUCTOR DATA/ 半导体数据

PLL System : MC145190F (TX-RX UNit IC202)

- **Terminal connection diagram**



- **Block diagram**



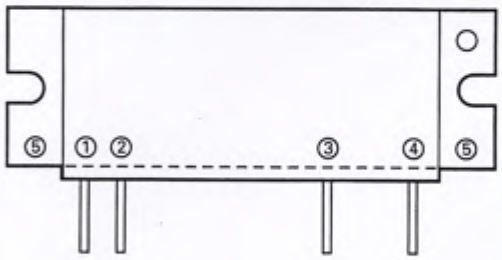
SUPPLY CONNECTIONS :
PIN12= Vcc (V+TO INPUT AMP AND 64/65 PRESCALER)
PIN5 = VPD (V+TO PHASE/FREQUENCY DETECTORS A AND B)
PIN14= VDD (V+TO BALANCE OF CIRCUIT)
PIN7 = GND (COMMON GROUND)

SEMICONDUCTOR DATA/ 半导体数据

Power Module : M67741H-32/M67741L-32/M67781H-32/M67781L-32 (IC501)

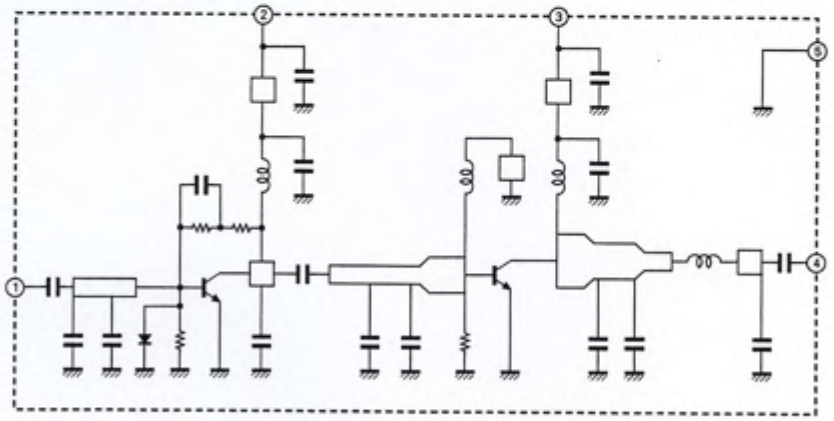
M67741H-32 : M,DM M67741L-32 : M2,DM2 M67781H-32 : HDM M67781L-32 : HDM2

- **Terminal connection diagram**



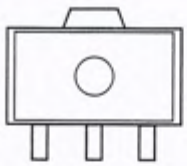
1 : Input
2 : First stage power supply
3 : Final stage power supply
4 : Output
5 : Fin (Earth)

- **Equivalent circuit**



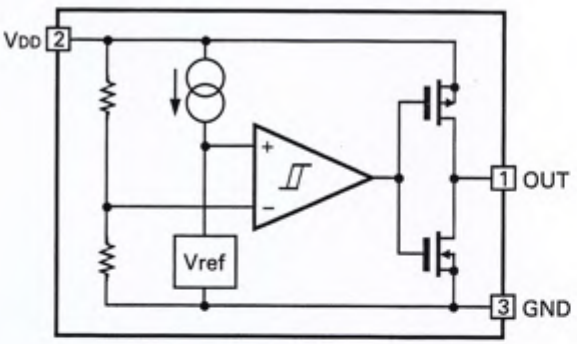
Reset Switch : RH5VL42C (TX-RX Unit IC408)

- **Terminal connection diagram**



1 2 3
OUT VDD GND

- **Block diagram**



DESCRIPTION OF COMPONENTS

TX-RX UNIT (X57-4950-XX) -21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2

Ref No.	Parts No.	Use/Function	Operation/Condition
IC1	BU4013BF	Power supply circuit logic control	
IC2	NJM4558M	Audio amplifier (Detected output)	
IC3	NJM78L05UA	Voltage regulator	5C
IC4	TA7808S	Voltage regulator	8C
IC6	M62363FP	Level adjuster	
IC7	MC3372SV	IF system	
IC8	NJM2904M	Buffer amplifier	
IC10	BU4094BCF	I/O port expansion	
IC11	LA4422	Audio power amplifier	
IC13	NJM2904M	Comparator, DC amplifier	
IC14	TA75S01F	Amplifier	
IC201	NJM78L09UA	Voltage regulator	9C
IC202	MC145190F	PLL system	
IC401	NJM4558E	Active filter	
IC402	NJM4558E	Active filter, Limiter	
IC403	NJM4558E	Active filter	
IC404	TA75S01F	Adder	
IC405, 406	NJM4558E	Active filter	
IC407	NJM78L05UA	Voltage regulator	5M
IC408	RH5VL42C	Reset switch	
IC409	M38267M8L157GP	Microprocessor	
IC410	LC73881M	DTMF decode	
IC411	AT2408N10SI2.5	EEPROM	
IC412	NJM4558E	Active filter, Amplifier	
Q1	DTA114EU	DC switch	On when power switch on.
Q2	DTC114EU	DC switch	On when 24V connected, then Q3 turn off.
Q3	DTC114EU	DC switch	On when power switch on.
Q4	2SA1641(S,T)	DC switch	On when power switch on.
Q5	DTA114YK	DC switch	On when power switch off, then D22 turn on.
Q6	2SB1132(Q,R)	DC switch	8T switch. RX : 0V, TX : 8V
Q8	2SA1362(Y)	DC switch	8R switch. RX : 8V, TX : 0V
Q10	DTC114EU	DC switch	On when TX.
Q11	DTC114EU	DC switch	On when RX.
Q13	DTC114EK	DC switch	On when horn control on.
Q14	DTD114EK	DC switch	On when horn control on.
Q15	2SC4116(GR)	Ripple filter	
Q16	2SC2059K(P)	RX 1st IF amplifier	
Q18	2SC4215(Y)	RF amplifier	
Q20	DTC363EK	Muting switch	Audio mute. Off when busy.
Q22	2SB1565(E,F)	APC driver	25W model
Q22	2SA1757(E,F)	APC driver	45W model
Q23	2SC4116(GR)	DC amplifier	APC controller
Q24	DTC114EK	DC switch	On when IGN line "H".
Q25	DTA144EU	DC switch	On when TX.
Q26	DTC114EU	DC switch	On when TX.
Q205	2SC3357	RF amplifier	
Q206	2SC2954	RF amplifier	
Q207	SGM2014M	RX 1st mixer	
Q208	3SK241(R)	RF amplifier	
Q209	2SC2059K(P)	Buffer amplifier	
Q210	2SC4116(GR)		45W model
Q211	DTC144EK		45W model.

DESCRIPTION OF COMPONENTS

Ref No.	Parts No.	Use/Function	Operation/Condition
Q212	DTD114EK		
Q401	2SC4081(R)	PTT switch	On when "PTT OFF", off when "PTT ON". (At using KMC-23/24 only)
Q403	DTC363EK	Muting switch	
Q405	2SB1132(Q,R)	Constant current regulator	About 60mA output.
Q406	DTA114TK	AF switch	
Q409	DTC144EK	DC switch	
Q411	DTC144EK		
Q419	DTA144EK	DC switch	
Q420	DTC144EK	DC switch	On/off by noise.
D1	02CZ18(X,Y)	Voltage reference	
D2	DSA3A1-FK	Reverse power protection	45W model only.
D3	1SS355 or MA110	Reverse current protection	
D4	02CZ15(X,Y)	Voltage reference	
D5	1SS355 or MA110	Reverse current protection	
D6	ERZ-M10DK220	Surge absorption	
D9~12	DA204K	Surge absorption	
D13	02CZ20(Y,Z)	Voltage reference	
D14	DSM3MA1	Reverse power protection	25W model only.
D17	DAN235K	RF switch	
D20	MA4PH633	TX/RX switch	On when TX.
D22	1SS355 or MA110	DC switch	On when power switch off.
D24	MI809	TX/RX switch	On when TX.
D204	DAN235K	Filter switch (PLL BPF)	On when TX.
D205	DAN202K	DC switch	
D206, 207	DA204K	Temperature compensation	
D208~210	1SV269	BPF tuning	Vari-cap tuning.
D211	1SV214	BPF tuning	Vari-cap tuning
D212	1SS355 or MA110	DC switch	On when PLL unlocked.
D213	1SV214	BPF tuning	Vari-cap tuning.
D214	DA204K	RF detector	Final protection. 45W model only.
D215	02CZ12(X,Y)	DC switch	Final protection. 45W model only.
D401, 402	DA204K	Surge absorption	
D403	DAN202U	DC switch	On when microphone mute on.
D404	DA204K	DC switch	
D405	DA204K	Constant current setting	

VCO (X58-4360-XX) -10 : M,DM,HDM -11 : M2,DM2,HDM2

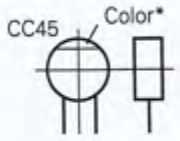
Ref No.	Parts No.	Use/Function	Operation/Condition
Q1	UMG1	TX/RX switching	
Q2	2SK508NV(K52)	Oscillator for RX	
Q3	2SC4215(Y)	Buffer amplifier	
Q4	DTC114EU	TX/RX switching	
Q5	2SK508NV(K52)	Oscillator for TX	
D1~4	1SV269	Variable diode	Frequency control.

PARTS LIST/ 零部件一览表

CAPACITORS

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

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



• Capacitor value

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

2 2 0 = 22pF
0 — Multiplier
2 — 2nd number
2 — 1st number

• Temperature coefficient

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

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

Example : CC45TH = –470 ± 60ppm/°C

• Tolerance

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

Less than 10pF

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

• Voltage rating

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

• Chip capacitors (Refer to the table above except dimension)

(EX) CC 73 F SL 1H 000 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) CK 73 F F 1H 000 Z
1 2 3 4 5 6 7
(Chip) (B, F)

RESISTORS

• Chip resistor (Carbon)

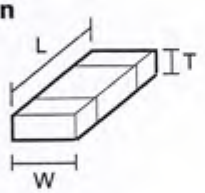
(EX) RD 73 E B 2B 000 J
1 2 3 4 5 6 7
(Chip) (B,F)

• Carbon resistor (Normal type)

(EX) RD 14 B B 2C 000 J
1 2 3 4 5 6 7

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

Dimension



• Dimension (Chip capacitor)

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

• Dimension (Chip resistor)

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

Rating wattage

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

PARTS LIST/ 零部件一览表

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

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

Ref. No.	Address	New parts	Parts No.	Description		Destination
TK-768/H						
1	1B	*	A01-2112-03	CABINET (UPPER)		
2	2B	*	A01-2113-03	CABINET (LOWER)		
3	3A	*	A62-0449-13	PANEL ASSY		
5	2E		B09-0235-05	CAP (JACK)		
6	2A	*	B10-1230-04	FRONT GLASS		
7	1B,1C		B42-2455-04	STICKER (M4x8 MAX)		
9	1C		B42-5650-04	S/NO LABEL		
10	3E		B44-2163-04	UPC CODE LABEL (ITEM)		
12	1D	*	B62-0598-00	INSTRUCTION MANUAL	ACSY	
13	1C	*	B72-0790-04	MODEL NAME PLATE		M,DM
13	1C	*	B72-0791-04	MODEL NAME PLATE		M2,DM2
13	1C	*	B72-0792-04	MODEL NAME PLATE		HDM
13	1C	*	B72-0793-04	MODEL NAME PLATE		HDM2
15	2E		E30-2076-15	DC CORD	ACSY	
16	1C		E30-2145-15	ANTENNA CABLE		
17	1C		E30-2172-15	DC CORD (BODY)		
18	1C		E37-0461-05	LEAD WIRE WITH CONECTOR (SP)		
19	2B	*	E37-0587-05	FLAT CABLE		
20	2B	*	F10-2234-04	SHIELDING COVER (APC)		HDM,HDM2
21	1B	*	F10-2202-04	SHIELDING PLATE		
22	2E		F51-0016-05	FUSE (10A : DC CORD)	ACSY	M,M2,DM
22	2E		F51-0016-05	FUSE (10A : DC CORD)	ACSY	DM2
22	2E		F51-0017-05	FUSE (15A : DC CORD)	ACSY	HDM,HDM2
25	1B	*	G02-0791-04	FLAT SPRING (AVR,APC)		
-			G10-0769-04	AUXILIARY PART		
27	2A	*	G10-0790-04	AUXILIARY PART (PANEL)		
28	1B,2C	*	G10-0781-04	AUXILIARY PART (CHASSIS)		
29	1C		G10-0786-04	AUXILIARY PART (SP)		
30	1B		G13-1468-04	FORMED PLATE (DC CORD)		
32	2B	*	G53-0796-04	PACKING (JACK)		
34	3D	*	H10-2789-02	POLYSTYRENE FOAMED FIXTURE		
35	1E	*	H11-0883-04	POLYSTYRENE FOAMED BOARD		
36	2D	*	H13-0975-14	CARTON BOARD		
37	2E		H25-0103-04	BAG (DC CORD)		
38	1D		H25-0720-04	BAG (BODY)		
39	3E	*	H52-0756-02	ITEM CARTON CASE		
41	1C		J19-1580-04	HOLDER (SP)		
42	2D	*	J19-1584-05	HOLDER	ACSY	
43	2D	*	J29-0627-03	BRACKET	ACSY	
45	2A	*	K29-5081-02	KEY TOP (RUBBER)		
A	1C,2B		N33-2606-45	SCREW (CABINET)		
B	2B		N67-3008-46	SCREW (IC)		
C	1C,2B		N87-2608-46	SCREW (PCB,ANT)		
D	1B		N83-2608-46	SCREW (SHIELD)		
47	2D	*	N99-0395-05	SCREW SET	ACSY	
MIC	2E	*	T91-0552-05	MICROPHONE	ACSY	M,M2
MIC	2E	*	T91-0553-05	MICROPHONE (DTMF)	ACSY	DM,DM2
MIC	2E	*	T91-0553-05	MICROPHONE (DTMF)	ACSY	HDM,HDM2
SP	1C		T07-0331-05	SPEAKER		
IC501	2B	*	M67741H-32	IC (POWER MODUAL)		M,DM
IC501	2B		M67741L-32	IC (POWER MODUAL)		M2,DM2

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

TK-768/H
TX-RX UNIT (X57-4950-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC501	2B	*	M67781H-32	IC (POWER MODUAL)	HDM
IC501	2B	*	M67781L-32	IC (POWER MODUAL)	HDM2
TX-RX UNIT (X57-4950-XX) -21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2					
101	2A	*	B11-1148-04	REFLECTOR	
102	2B	*	B11-1149-04	FILTER	
103	2A	*	B38-0759-05	LCD	
C1-10			CK73GB1H102K	CHIP C 1000PF K	
C12			CK73GB1H102K	CHIP C 1000PF K	
C15,16			CK73GB1H102K	CHIP C 1000PF K	
C17			CE04EW1E471M	ELECTRO 470UF 25WV	
C19			CK73GB1H471K	CHIP C 470PF K	
C20			CK73GB1H102K	CHIP C 1000PF K	
C23			C92-0512-05	CHIP-TAN 1.0UF 16WV	
C24			C92-0036-05	CHIP-ELE 4.7UF 16WV	
C25			CK73GB1H471K	CHIP C 470PF K	
C26			CK73GB1H103K	CHIP C 0.010UF K	
C27			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C28			CK73GB1H471K	CHIP C 470PF K	
C30,31			CK73FB1E104K	CHIP C 0.10UF K	
C33			CK73GB1H103K	CHIP C 0.010UF K	
C35			CK73FB1E104K	CHIP C 0.10UF K	
C37			CK73GB1H103K	CHIP C 0.010UF K	
C38			CK73GB1H102K	CHIP C 1000PF K	
C39			CK73FB1E104K	CHIP C 0.10UF K	
C41			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C42			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C43,44			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C46			CK73GB1H102K	CHIP C 1000PF K	
C47			CK73FF1C105Z	CHIP C 1.0UF Z	
C48			CK73FB1E104K	CHIP C 0.10UF K	
C50			CK73FB1E104K	CHIP C 0.10UF K	
C51			CK73GB1H102K	CHIP C 1000PF K	
C53			C92-0543-05	CHIP-TAN 3.3UF 10WV	
C54			CC73GCH1H150J	CHIP C 15PF J	
C55			CC73GCH1H220J	CHIP C 22PF J	
C57			CC73GCH1H180J	CHIP C 18PF J	
C58			CK73GB1H103K	CHIP C 0.010UF K	
C60			CC73GCH1H220J	CHIP C 22PF J	
C61			C92-0003-05	CHIP-TAN 0.47UF 25WV	
C63			CK73GB1H102K	CHIP C 1000PF K	
C65,66			CK73GB1H102K	CHIP C 1000PF K	
C67			C92-0546-05	CHIP-TAN 68UF 6.3WV	
C68,69			CK73GB1H103K	CHIP C 0.010UF K	
C70			CK73GB1H102K	CHIP C 1000PF K	
C71			C92-0044-05	CHIP-ELE 47UF 10WV	
C73			CK73GB1H471K	CHIP C 470PF K	
C74			C92-0044-05	CHIP-ELE 47UF 10WV	
C75			C92-0004-05	CHIP-TAN 1.0UF 16WV	
C77			CK73GB1H103K	CHIP C 0.010UF K	
C79			C92-0507-05	CHIP-TAN 4.7UF 6.3WV	
C81			C92-0040-05	CHIP-ELE 47UF 16WV	
C82			CK73GB1H103K	CHIP C 0.010UF K	
C83			CC73GCH1H180J	CHIP C 18PF J	

TK-768/H

PARTS LIST/ 零部件一览表

TX-RX UNIT (X57-4950-XX)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C84,85			CK73GB1H102K	CHIP C	1000PF	K	
C86			CK73GB1H103K	CHIP C	0.010UF	K	
C87			CK73GB1H102K	CHIP C	1000PF	K	
C88			CC73GCH1H060D	CHIP C	6PF	D	
C90			CC73GCH1H180J	CHIP C	18PF	J	
C93			CK73FF1C105Z	CHIP C	1.0UF	Z	
C95			CK73GB1H103K	CHIP C	0.010UF	K	
C97			C92-0044-05	CHIP-ELE	47UF	10WV	
C98			CK73GB1H102K	CHIP C	1000PF	K	
C99			C92-0044-05	CHIP-ELE	47UF	10WV	
C101			CK73GB1H102K	CHIP C	1000PF	K	
C102			CK73GB1H103K	CHIP C	0.010UF	K	
C104			CK73GB1H471K	CHIP C	470PF	K	
C105			CK73GB1H103K	CHIP C	0.010UF	K	
C108			C92-0040-05	CHIP-ELE	47UF	16WV	
C110			CE04EW1A471M	ELECTRO	470UF	10WV	
C111			CK73FB1E104K	CHIP C	0.10UF	K	
C113			CK73GB1H102K	CHIP C	1000PF	K	
C118			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C119-121			CK73GB1H102K	CHIP C	1000PF	K	
C123			CK73GB1H102K	CHIP C	1000PF	K	
C124			CK73GB1H471K	CHIP C	470PF	K	
C125			C92-0040-05	CHIP-ELE	47UF	16WV	
C126			CK73GB1H102K	CHIP C	1000PF	K	
C127			CK73FB1E473K	CHIP C	0.047UF	K	
C128,129			CK73GB1H102K	CHIP C	1000PF	K	
C137			C92-0040-05	CHIP-ELE	47UF	16WV	
C138,139			CK73GB1H102K	CHIP C	1000PF	K	
C141			CC73GCH101J	CHIP C	100PF	K	HDM,HDM2
C141			CK73GB1H471K	CHIP C	470PF	K	M,M2,DM
C141			CK73GB1H471K	CHIP C	470PF	K	DM2
C142			CK73GB1H102K	CHIP C	1000PF	K	
C143			CK73FB1E104K	CHIP C	0.10UF	K	
C146			CK73GB1H102K	CHIP C	1000PF	K	
C147			CK73GB1H103K	CHIP C	0.010UF	K	
C148			CK73GB1H102K	CHIP C	1000PF	K	
C151			CK73GB1H102K	CHIP C	1000PF	K	
C152			C93-0557-05	CHIP C	7PF	J	M,DM
C152			C93-0561-05	CHIP C	12PF	J	M2,DM2
C152		*	C93-0564-05	CHIP C	22PF	J	HDM2
C153			CK73EB1H103K	CHIP C	0.010UF	K	
C154			C93-0603-05	CHIP C	1000PF	K	
C155			C93-0557-05	CHIP C	7.0PF	D	HDM
C155			C93-0561-05	CHIP C	12PF	J	M,DM
C155		*	C93-0564-05	CHIP C	22PF	J	M2,DM2
C155		*	C93-0564-05	CHIP C	22PF	J	HDM2
C156		*	C93-0563-05	CHIP C	18PF	J	M2,DM2
C156		*	C93-0563-05	CHIP C	18PF	J	HDM2
C156		*	C93-0564-05	CHIP C	22PF	J	M,DM,HDM
C157		*	C93-0564-05	CHIP C	22PF	J	
C159			C93-0603-05	CHIP C	1000PF	K	
C160			CC73GCH1H101J	CHIP C	100PF	J	
C161		*	C93-0563-05	CHIP C	18PF	J	
C162		*	C93-0567-05	CHIP C	39PF	J	
C164		*	C93-0565-05	CHIP C	27PF	J	
C167			CK73GB1H102K	CHIP C	1000PF	K	
C175			CK73GB1H471K	CHIP C	470PF	K	
C186			CK73FB1E104K	CHIP C	0.10UF	K	
C187,188			CK73GB1H102K	CHIP C	1000PF	K	
C199,200			CC73GCH1H101J	CHIP C	100PF	J	HDM,HDM2

Ref. No.	Address	New parts	Parts No.	Description			Destination
C201,202			CK73FB1E104K	CHIP C	0.10UF	K	
C203,204			CC73GCH1H120J	CHIP C	12PF	J	M,DM,HDM
C203,204			CC73GCH1H180J	CHIP C	18PF	J	M2,DM2
C203,204			CC73GCH1H180J	CHIP C	18PF	J	HDM2
C205,206			CK73GB1H102K	CHIP C	1000PF	K	
C212			CK73GB1H471K	CHIP C	470PF	K	
C213			CC73GCH1H101J	CHIP C	100PF	J	
C214-217			CK73GB1H102K	CHIP C	1000PF	K	
C218			CC73GCH1H270J	CHIP C	27PF	J	
C219			CK73GB1H102K	CHIP C	1000PF	K	
C220			CK73GB1H472K	CHIP C	4700PF	K	
C221			CC73FCH1H220J	CHIP C	22PF	J	
C222,223			CK73GB1H102K	CHIP C	1000PF	K	
C224			CK73GB1H103K	CHIP C	0.010UF	K	
C225			CC73GCH1H150J	CHIP C	15PF	J	M,DM,HDM
C225			CC73GCH1H220J	CHIP C	22PF	J	M2,DM2
C225			CC73GCH1H220J	CHIP C	22PF	J	HDM2
C226			CK73GB1H103K	CHIP C	0.010UF	K	
C227			CK73GB1H102K	CHIP C	1000PF	K	
C228			CC73GCH1H150J	CHIP C	15PF	J	M,DM,HDM
C228			CC73GCH1H180J	CHIP C	18PF	J	M2,DM2
C228			CC73GCH1H180J	CHIP C	18PF	J	HDM2
C229			CC73GCH1H150J	CHIP C	15PF	J	
C230			CC73GCH1HR75C	CHIP C	0.75PF	C	M,DM,HDM
C230			CC73GCH1H020C	CHIP C	2PF	C	M2,DM2
C230			CC73GCH1H020C	CHIP C	2PF	C	HDM2
C231			CC73GCH1H120J	CHIP C	12PF	J	
C232			CC73GCH1H1R5C	CHIP C	1.5PF	C	M2,DM2
C232			CC73GCH1H1R5C	CHIP C	1.5PF	C	HDM2
C232			CC73GCH1HR75C	CHIP C	0.75PF	C	M,DM,HDM
C233			CK73GB1H102K	CHIP C	1000PF	K	
C234			CC73GCH1H100D	CHIP C	10PF	D	M,DM,HDM
C234			CC73GCH1H120J	CHIP C	12PF	J	M2,DM2
C234			CC73GCH1H120J	CHIP C	12PF	J	HDM2
C235			CC73GCH1H103K	CHIP C	0.01UF	J	
C236,237			CK73GB1H102K	CHIP C	1000PF	K	
C239			CC73FCH1H030C	CHIP C	3.0PF	C	
C240			CC73GCH1H100D	CHIP C	10PF	D	
C241-243			CK73GB1H102K	CHIP C	1000PF	K	
C244-246			CC73GCH1H101J	CHIP C	100PF	J	
C247			CK73GB1H102K	CHIP C	1000PF	K	
C248			CK73FB1C474K	CHIP C	0.47UF	K	
C249			CK73GB1H102K	CHIP C	1000PF	K	
C250			C92-0543-05	CHIP-TAN	3.3UF	10WV	
C251			C92-0536-05	CHIP-TAN	10UF	10WV	
C252			CK73GB1H103K	CHIP C	0.010UF	K	
C253,254			CK73GB1H102K	CHIP C	1000PF	K	
C255			C92-0003-05	CHIP-TAN	0.47UF	25WV	
C256			CK73GB1H102K	CHIP C	1000PF	K	
C257			C92-0516-05	CHIP-TAN	4.7UF	16WV	
C258			CK73GB1H102K	CHIP C	1000PF	K	
C259			C92-0001-05	CHIP-TAN	0.1UF	35WV	
C260			CC73GCH1H050C	CHIP C	5.0PF	C	
C261			CK73FB1E223K	CHIP C	0.022UF	K	
C262			CC73GCH1H020C	CHIP C	2.0PF	C	
C263			C92-0628-05	CHIP-TAN	10UF	10WV	
C264			CC73GCH1H180J	CHIP C	18PF	J	
C265			CC73GCH1H180J	CHIP C	18PF	J	M,DM,HDM
C265			CC73GCH1H220J	CHIP C	22PF	J	M2,DM2
C265			CC73GCH1H220J	CHIP C	22PF	J	HDM2

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

PARTS LIST/ 零部件一览表

TX-RX UNIT (X57-4950-XX)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C266			CK73GB1H102K	CHIP C	1000PF	K	
C267			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C268			CK73FF1C105Z	CHIP C	1.0UF	Z	
C269			CC73GCH1H180J	CHIP C	18PF	J	M,DM,HDM
C269			CC73GCH1H220J	CHIP C	22PF	J	M2,DM2
C269			CC73GCH1H220J	CHIP C	22PF	J	HDM2
C271			CC73GCH1H0R5B	CHIP C	0.5PF	B	HDM,HDM2
C273			CK73GB1H102K	CHIP C	1000PF	K	HDM,HDM2
C274,275			CC73GCH1H101J	CHIP C	100PF	J	
C277			CK73GB1H102K	CHIP C	1000PF	K	
C278			CC73GCH1H050C	CHIP C	5PF	C	M2,DM2
C278			CC73GCH1H050C	CHIP C	5PF	C	HDM2
C279			CC73GCH1H020C	CHIP C	2PF	C	M2,DM2
C279			CC73GCH1H020C	CHIP C	2PF	C	HDM2
C401,402			CK73GB1H471K	CHIP C	470PF	K	
C403			CK73GB1C104K	CHIP C	0.10UF	K	
C404,405			CK73GB1E123K	CHIP C	0.012UF	K	
C406			C92-0003-05	CHIP-TAN	0.47UF	25WV	
C407,408			CK73GB1C104K	CHIP C	0.10UF	K	
C409			CC73GCH1H101J	CHIP C	100PF	J	
C410,411			CK73GB1H471K	CHIP C	470PF	K	
C412			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C413			CK73GB1E223K	CHIP C	0.022UF	K	
C414			CC73GCH1H101J	CHIP C	100PF	J	
C415			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C416			CK73GB1H222K	CHIP C	2200PF	K	
C417			CK73GB1E223K	CHIP C	0.022UF	K	
C418			CK73GB1C273K	CHIP C	0.027UF	K	
C419			CC73GCH1H470J	CHIP C	47PF	J	
C420			CK73GB1H471K	CHIP C	470PF	K	
C421			CK73GB1H472K	CHIP C	4700PF	K	
C422			CK73GB1H471K	CHIP C	470PF	K	
C423			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C424			CK73GB1H471K	CHIP C	470PF	K	
C425			CK73GB1H681K	CHIP C	680PF	K	
C426			CK73GB1C104K	CHIP C	0.1UF	K	
C427			CK73GB1H102K	CHIP C	1000PF	K	
C428			CK73GB1H471K	CHIP C	470PF	K	
C430			CK73FF1C105Z	CHIP C	1.0UF	Z	
C431			CK73GB1E223K	CHIP C	0.022UF	K	
C432			CC73GCH1H100D	CHIP C	10PF	D	
C433			CK73GB1H471K	CHIP C	470PF	K	
C434,435			CK73GB1H682K	CHIP C	6800PF	K	
C436			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C437			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C438			CK73GB1H682K	CHIP C	6800PF	K	
C439			CK73GB1E103K	CHIP C	0.010UF	K	
C440			CC73GCH1H470J	CHIP C	47PF	J	
C441			CK73GB1E103K	CHIP C	0.010UF	K	
C442,443			CK73GB1H471K	CHIP C	470PF	K	
C444			CC73FCH1H751J	CHIP C	750PF	J	
C445			CK73GB1H122K	CHIP C	1200PF	K	
C446,447			CK73GB1H471K	CHIP C	470PF	K	
C448			CC73GCH1H151J	CHIP C	150PF	J	
C449			CK73GB1E103K	CHIP C	0.010UF	K	
C450			CK73GB1H332K	CHIP C	3300PF	K	
C451			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C452			C92-0536-05	CHIP-TAN	10UF	10WV	
C453,454			CK73GB1C104K	CHIP C	0.10UF	K	
C455			CK73GB1E103K	CHIP C	0.010UF	K	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C457			CK73GB1H471K	CHIP C	470PF	K	
C458			CK73GB1E103K	CHIP C	0.010UF	K	
C459			CK73GB1H102K	CHIP C	1000PF	K	
C460			CK73GB1E103K	CHIP C	0.010UF	K	
C461			CK73GB1H102K	CHIP C	1000PF	K	
C462			CK73GB1H472K	CHIP C	4700PF	K	
C463			C92-0606-05	CHIP-TAN	4.7UF	10WV	
C464-466			CK73GB1E103K	CHIP C	0.010UF	K	
C467			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C468			CK73GB1E223K	CHIP C	0.022UF	K	
C469			CK73GB1C104K	CHIP C	0.10UF	K	
C470			CC73GCH1H101J	CHIP C	100PF	J	
C471			CK73GB1E103K	CHIP C	0.010UF	K	
C472-475			CC73GCH1H101J	CHIP C	100PF	J	
C480			CC73GCH1H030C	CHIP C	3.0PF	C	
C481,482			CC73GCH1H100D	CHIP C	10PF	D	
C486			CK73GB1C104K	CHIP C	0.10UF	K	
C487			C92-0505-05	CHIP-TAN	10UF	16WV	
C488,489			CK73GB1H471K	CHIP C	470PF	K	
C491			CK73GB1C104K	CHIP C	0.10UF	K	
C492			CC73GCH1H680J	CHIP C	68PF	J	
C494			CK73GB1H103K	CHIP C	0.010UF	K	
105	2B	*	E29-1139-04	INTER CONNECTOR (LCD)			
CN1			E40-5737-05	PIN CONNECTOR FOR INSIDE (8P)			
CN2			E40-5738-05	PIN CONNECTOR FOR INSIDE (3P)			
CN4			E40-3247-05	PIN CONNECTOR FOR INSIDE (3P)			
CN5			E40-3246-05	PIN CONNECTOR FOR INSIDE (2P)			
CN6		*	E40-5567-05	FLAT CABLE CONNECTOR (26P)			
CN201			E40-3247-05	PIN CONNECTOR FOR INSIDE (3P)			
CN401		*	E40-5567-05	FLAT CABLE CONNECTOR (26P)			
J1			E11-0442-05	PHONE JACK (3.5D)			
J401			E08-0673-15	MODULAR JACK			
F1			F53-0108-05	FUSE (1.8A)			
107	2A	*	J21-4479-04	HARDWARE FIXTURE			
-			J30-0545-05	SPACER			
CD1			L79-1013-05	DISCLI (455KHZ)			
CF201			L72-0372-05	CERAMIC FILTER (455KHZ)			
L1			L40-1092-34	SMALL FIXED INDUCTOR			
L2			L40-1005-34	SMALL FIXED INDUCTOR (10UH)			
L3			L40-1081-37	SMALL FIXED INDUCTOR (0.1UH)			
L19		*	L34-4480-05	COIL (5T)			
L20		*	L34-4479-05	COIL (2.5T)			HDM
L20		*	L34-4481-05	COIL (6T)			M,M2,DM
L20		*	L34-4481-05	COIL (6T)			DM2,HDM2
L21		*	L34-4478-05	COIL (9.5T)			
L22,23		*	L34-4481-05	COIL (6T)			
L24		*	L34-4478-05	COIL (9.5T)			
L201			L40-6871-34	SMALL FIXED INDUCTOR (68NH)			
L202			L40-8271-34	SMALL FIXED INDUCTOR (82NH)			
L203			L40-3981-37	SMALL FIXED INDUCTOR (0.39UH)			
L204			L40-3381-37	SMALL FIXED INDUCTOR (0.33UH)			
L205		*	L34-4472-05	COIL			
L206,207		*	L34-4473-05	COIL			
L208		*	L34-4472-05	COIL			
L209			L40-6872-37	SMALL FIXED INDUCTOR (0.068UH)			
L210			L40-3971-36	SMALL FIXED INDUCTOR (39NH)			
L211			L40-1081-37	SMALL FIXED INDUCTOR (0.1UH)			
X1		*	L77-1676-05	VCXO (12.8MHZ)			

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

TK-768/H

PARTS LIST/ 零部件一览表

TX-RX UNIT (X57-4950-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
X2			L77-1595-05	CRYSTAL RESONATOR (44.595MHZ)	
X401			L77-1630-05	CRYSTAL RESONATOR (8.388MHZ)	
XF1			L71-0443-05	MCF (45.050MHZ)	
R1			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R2			R92-1252-05	CHIP R 0 OHM	
R3			RK73GB1J103J	CHIP R 10K J 1/16W	
R4			R92-1252-05	CHIP R 0 OHM	
R5,6			R92-0670-05	CHIP R 0 OHM	
R7,8			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R9,10			R92-1252-05	CHIP R 0 OHM	
R11			RK73GB1J224J	CHIP R 220K J 1/16W	
R12			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R13			R92-1252-05	CHIP R 0 OHM	
R14			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R15			R92-1252-05	CHIP R 0 OHM	
R16			RK73GB1J103J	CHIP R 10K J 1/16W	
R17			RK73GB1J104J	CHIP R 100K J 1/16W	
R18			RK73GB1J123J	CHIP R 12K J 1/16W	
R19			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R21			RK73GB1J153J	CHIP R 15K J 1/16W	
R22			RK73GB1J473J	CHIP R 47K J 1/16W	
R23			R92-1215-05	CHIP R 470 J 1/2W	
R25			RK73GB1J104J	CHIP R 100K J 1/16W	M2,DM2
R25			RK73GB1J104J	CHIP R 100K J 1/16W	HDM2
R25			RK73GB1J124J	CHIP R 120K J 1/16W	M,DM,HDM
R26			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R27			RK73GB1J184J	CHIP R 180K J 1/16W	
R28			RK73GB1J104J	CHIP R 100K J 1/16W	
R30			RK73GB1J104J	CHIP R 100K J 1/16W	
R34			RK73GB1J473J	CHIP R 47K J 1/16W	
R36			RK73GB1J473J	CHIP R 47K J 1/16W	
R37			RK73GB1J103J	CHIP R 10K J 1/16W	
R38			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R40			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R41			RK73GB1J224J	CHIP R 220K J 1/16W	
R42			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R44			RK73GB1J220J	CHIP R 22 J 1/16W	
R46			RK73GB1J473J	CHIP R 47K J 1/16W	
R49			RK73GB1J104J	CHIP R 100K J 1/16W	
R50			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R51			RK73GB1J104J	CHIP R 100K J 1/16W	M,DM,HDM
R51			RK73GB1J104J	CHIP R 100K J 1/16W	HDM2
R51			RK73GB1J333J	CHIP R 33K J 1/16W	M2,DM2
R52			RK73GB1J220J	CHIP R 22 J 1/16W	
R53			RK73GB1J274J	CHIP R 270K J 1/16W	
R55			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R56			R92-1252-05	CHIP R 0 OHM	
R57			RK73GB1J104J	CHIP R 100K J 1/16W	
R59			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R60,61			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R64			RK73GB1J471J	CHIP R 470 J 1/16W	
R66			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R68			RK73GB1J471J	CHIP R 470 J 1/16W	
R71			RK73GB1J684J	CHIP R 680K J 1/16W	
R72			RK73GB1J223J	CHIP R 22K J 1/16W	
R73			RK73GB1J101J	CHIP R 100 J 1/16W	
R74			RK73GB1J681J	CHIP R 680 J 1/16W	
R76			RK73GB1J103J	CHIP R 10K J 1/16W	
R77			RK73GB1J101J	CHIP R 100 J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R78			RK73GB1J473J	CHIP R 47K J 1/16W	
R80			R92-0670-05	CHIP R 0 OHM	
R81			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R83			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R85			RK73GB1J681J	CHIP R 680 J 1/16W	
R86			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R88			RK73FB2A2R2J	CHIP R 2.2 J 1/10W	
R92			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R93			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R94			R92-0685-05	CHIP R 22 J 1/2W	
R99			RK73FB2A470J	CHIP R 47 J 1/10W	
R101			RK73FB2A470J	CHIP R 47 J 1/10W	
R102			RK73EB2B181J	CHIP R 180 J 1/8W	
R103			RK73EB2B151J	CHIP R 150 J 1/8W	
R104			RK73FB2A103J	CHIP R 10K J 1/10W	
R106			RK73FB2A154J	CHIP R 150K J 1/10W	
R107			RK73FB2A473J	CHIP R 47K J 1/10W	
R108		*	R92-2554-05	FIXED R 0.047 3W	M,M2,DM
R108		*	R92-2554-05	FIXED R 0.047 3W	DM2
R108		*	R92-2562-05	FIXED R 0.047 5W	HDM,HDM2
R112			RK73FB2A472J	CHIP R 4.7K J 1/10W	M,M2,DM
R112			RK73FB2A472J	CHIP R 4.7K J 1/10W	DM2
R112			RK73FB2A473J	CHIP R 47K J 1/10W	HDM,HDM2
R113			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R115,116			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R117			R92-1268-05	RN 4.7K B 1/8W	
R118			R92-2538-05	RN 3.9K B 1/8W	
R119			R92-1261-05	CHIP R 150 J 1/2W	
R124			RK73GB1J271J	CHIP R 270 J 1/16W	
R125			RK73GB1J180J	CHIP R 18 J 1/16W	
R126			RK73GB1J271J	CHIP R 270 J 1/16W	
R137			RK73GB1J104J	CHIP R 100K J 1/16W	
R139			R92-1252-05	CHIP R 0 OHM	
R140,141			RK73FB2A391J	CHIP R 390 J 1/10W	M,DM
R140,141			RK73FB2A821J	CHIP R 820 J 1/10W	M2,DM2
R140,141			RK73FB2A821J	CHIP R 820 J 1/10W	HDM,HDM2
R142,143			RK73FB2A100J	CHIP R 10 J 1/10W	M2,DM2
R142,143			RK73FB2A100J	CHIP R 10 J 1/10W	HDM,HDM2
R142,143			RK73FB2A330J	CHIP R 33 J 1/10W	M,DM
R144			RK73GB1J333J	CHIP R 33K J 1/16W	
R147			RK73GB1J474J	CHIP R 470K J 1/16W	
R207-210			RK73GB1J103J	CHIP R 10K J 1/16W	
R211			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R212			RK73GB1J560J	CHIP R 56 J 1/16W	
R213			RK73GB1J392J	CHIP R 3.9K J 1/16W	M2,DM2
R214,215			R92-1252-05	CHIP R 0 OHM J 1/16W	
R218,219			RK73GB1J104J	CHIP R 100K J 1/16W	
R222			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R223			RK73FB2A103J	CHIP R 10K J 1/10W	
R224			RK73FB2A100J	CHIP R 10 J 1/10W	
R225			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R226			RK73FB2A560J	CHIP R 56 J 1/10W	
R227			RK73FB2A470J	CHIP R 47 J 1/10W	
R228			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R229			RK73FB2A100J	CHIP R 10 J 1/10W	
R230			RK73GB1J681J	CHIP R 680 J 1/16W	
R231,232			RK73GB1J101J	CHIP R 100 J 1/16W	
R234			RK73GB1J473J	CHIP R 47K J 1/16W	
R235			RK73GB1J333J	CHIP R 33K J 1/16W	
R236,237			RK73GB1J104J	CHIP R 100K J 1/16W	

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

PARTS LIST/ 零部件一览表

TX-RX UNIT (X57-4950-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R238			RK73GB1J101J	CHIP R 100 J 1/16W	
R239			RK73GB1J104J	CHIP R 100K J 1/16W	
R240			RK73GB1J103J	CHIP R 10K J 1/16W	
R241			RK73GB1J680J	CHIP R 68 J 1/16W	
R242			RK73GB1J683J	CHIP R 68K J 1/16W	M2,DM2
R242			RK73GB1J683J	CHIP R 68K J 1/16W	HDM2
R242			RK73GB1J184J	CHIP R 180K J 1/16W	M,DM,HDM
R243			RK73GB1J103J	CHIP R 10K J 1/16W	
R244			R92-1252-05	CHIP R 0 OHM	M,DM,HDM
R246			RK73GB1J104J	CHIP R 100K J 1/16W	
R247			R92-1281-05	FIXED R 4.7 1/4W	
R248			R92-1252-05	CHIP R 0 OHM	
R250-252			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R253			RK73GB1J124J	CHIP R 120K J 1/16W	
R254			RK73GB1J101J	CHIP R 100 J 1/16W	
R255			R92-1252-05	CHIP R 0 OHM	
R256			RK73GB1J473J	CHIP R 47K J 1/16W	
R257			RK73GB1J101J	CHIP R 100 J 1/16W	
R259			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R260			RK73GB1J101J	CHIP R 100 J 1/16W	
R261			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R262			RK73GB1J101J	CHIP R 100 J 1/16W	
R263			RK73GB1J103J	CHIP R 10K J 1/16W	
R264			RK73GB1J223J	CHIP R 22K J 1/16W	
R265			RK73GB1J330J	CHIP R 33 J 1/16W	
R266			RK73GB1J104J	CHIP R 100K J 1/16W	
R267			RK73GB1J124J	CHIP R 120K J 1/16W	
R268			RK73GB1J184J	CHIP R 180K J 1/16W	
R269			RK73GB1J154J	CHIP R 150K J 1/16W	
R270			R92-1252-05	CHIP R 0 OHM	M,DM,HDM
R270			RK73GB1J150J	CHIP R 15 J 1/16W	M2,DM2
R270			RK73GB1J150J	CHIP R 15 J 1/16W	HDM2
R272			RK73GB1J101J	CHIP R 100 J 1/16W	
R275			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R276			RK73GB1J683J	CHIP R 68K J 1/16W	M2,DM2
R276			RK73GB1J683J	CHIP R 68K J 1/16W	HDM2
R401			RK73GB1J391J	CHIP R 390 J 1/16W	
R402			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R403-405			R92-1252-05	CHIP R 0 OHM	
R406			RK73GB1J104J	CHIP R 100K J 1/16W	
R408			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R409-411			RK73GB1J103J	CHIP R 10K J 1/16W	
R412			RK73GB1J681J	CHIP R 680 J 1/16W	
R413			RK73GB1J103J	CHIP R 10K J 1/16W	
R414			RK73GB1J473J	CHIP R 47K J 1/16W	
R415			RK73GB1J684J	CHIP R 680K J 1/16W	
R416			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R417			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R418			RK73GB1J124J	CHIP R 120K J 1/16W	
R419			RK73GB1J154J	CHIP R 150K J 1/16W	
R420			R92-1252-05	CHIP R 0 OHM	
R421			RK73GB1J153J	CHIP R 15K J 1/16W	
R422			RK73GB1J183J	CHIP R 18K J 1/16W	
R423			RK73GB1J123J	CHIP R 12K J 1/16W	
R424			R92-1252-05	CHIP R 0 OHM	
R425			RK73GB1J153J	CHIP R 15K J 1/16W	
R426			RK73GB1J223J	CHIP R 22K J 1/16W	
R427			RK73GB1J274J	CHIP R 270K J 1/16W	
R428			RK73GB1J333J	CHIP R 33K J 1/16W	
R429			RK73GB1J224J	CHIP R 220K J 1/16W	
R430			RK73GB1J184J	CHIP R 180K J 1/16W	
R431			RK73GB1J183J	CHIP R 18K J 1/16W	
R432			RK73GB1J223J	CHIP R 22K J 1/16W	
R433,434			RK73GB1J184J	CHIP R 180K J 1/16W	
R435			RK73GB1J223J	CHIP R 22K J 1/16W	
R436			RK73GB1J183J	CHIP R 18K J 1/16W	
R438			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R439			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R441			RK73GB1J103J	CHIP R 10K J 1/16W	
R442			RK73GB1J561J	CHIP R 560 J 1/16W	
R443			RK73GB1J824J	CHIP R 820K J 1/16W	
R444			RK73GB1J224J	CHIP R 220K J 1/16W	
R445			RK73GB1J153J	CHIP R 15K J 1/16W	
R447			RK73GB1J273J	CHIP R 27K J 1/16W	
R448			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R449			RK73GB1J563J	CHIP R 56K J 1/16W	
R450			RK73GB1J334J	CHIP R 330K J 1/16W	
R451			RK73GB1J104J	CHIP R 100K J 1/16W	
R452			RK73GB1J224J	CHIP R 220K J 1/16W	
R453,454			RK73GB1J824J	CHIP R 820K J 1/16W	
R455			RK73GB1J100J	CHIP R 10 J 1/16W	
R456			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R457,458			RK73GB1J823J	CHIP R 82K J 1/16W	
R459			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R460			RK73GB1J103J	CHIP R 10K J 1/16W	
R461			RK73GB1J104J	CHIP R 100K J 1/16W	
R462,463			RK73GB1J683J	CHIP R 68K J 1/16W	
R464			RK73GB1J183J	CHIP R 18K J 1/16W	
R465			RK73GB1J684J	CHIP R 680K J 1/16W	
R466			RK73GB1J183J	CHIP R 18K J 1/16W	
R467			RK73GB1J103J	CHIP R 10K J 1/16W	
R468			RK73GB1J223J	CHIP R 22K J 1/16W	
R469-471			RK73GB1J103J	CHIP R 10K J 1/16W	
R472			RK73GB1J223J	CHIP R 22K J 1/16W	
R473			R92-1252-05	CHIP R 0 OHM	
R474			R92-0670-05	CHIP R 0 OHM	
R475			R92-1252-05	CHIP R 0 OHM	
R476-478			RK73GB1J473J	CHIP R 47K J 1/16W	
R479			RK73GB1J103J	CHIP R 10K J 1/16W	
R480			R92-1252-05	CHIP R 0 OHM	
R481-488			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R489			R92-1252-05	CHIP R 0 OHM	
R490			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R491			RK73GB1J473J	CHIP R 47K J 1/16W	
R493			RK73GB1J391J	CHIP R 390 J 1/16W	
R494-497			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R498,499			RK73GB1J473J	CHIP R 47K J 1/16W	
R500,501			R92-1252-05	CHIP R 0 OHM	
R502			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R503			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R508			R92-1252-05	CHIP R 0 OHM	
R512			R92-0670-05	CHIP R 0 OHM	
R513,514			RK73GB1J473J	CHIP R 47K J 1/16W	
R515			RK73GB1J333J	CHIP R 33K J 1/16W	
R517			R92-1252-05	CHIP R 0 OHM	
R518			RK73GB1J823J	CHIP R 82K J 1/16W	
R519			RK73GB1J684J	CHIP R 680K J 1/16W	
R520			RK73GB1J153J	CHIP R 15K J 1/16W	
R521			RK73GB1J473J	CHIP R 47K J 1/16W	
R522			RK73GB1J223J	CHIP R 22K J 1/16W	

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

TK-768/H

PARTS LIST/ 零部件一览表

TX-RX UNIT (X57-4950-XX)
VCO (X58-4360-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R523			RK73GB1J473J	CHIP R 47K J 1/16W	
R524			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R525			RK73GB1J684J	CHIP R 680K J 1/16W	
R526			RK73GB1J224J	CHIP R 220K J 1/16W	
R527,528			RK73GB1J473J	CHIP R 47K J 1/16W	
R529			RK73GB1J224J	CHIP R 220K J 1/16W	
R530			RK73GB1J223J	CHIP R 22K J 1/16W	
R531,532			R92-1252-05	CHIP R 0 OHM	
VR401		*	R32-0657-05	SEMI FIXED VR 10K	
VR402		*	R32-0659-05	SEMI FIXED VR 300K	
D1			02CZ18(X,Y)	DIODE	
D2			DSA3A1-FK	DIODE	HDM,HDM2
D3			MA110	DIODE	
D3			1SS355	DIODE	
D4			02CZ15(X,Y)	DIODE	
D5			MA110	DIODE	
D5			1SS355	DIODE	
D6			ERZ-M10DK220	SURGE ABSORVER	
D9-12			DA204K	DIODE	
D13			02CZ20(Y,Z)	DIODE	
D14		*	DSM3MA1	DIODE	M,M2,DM
D14		*	DSM3MA1	DIODE	DM2
D17			DAN235K	DIODE	
D20			MA4PH633	DIODE	
D22			MA110	DIODE	
D22			1SS355	DIODE	
D24			MI809	DIODE	
D204			DAN235K	DIODE	
D205			DAN202K	DIODE	
D206,207			DA204K	DIODE	
D208-210		*	1SV269	VARIABLE DIODE	
D211			1SV214	VARIABLE DIODE	
D212			MA110	DIODE	
D212			1SS355	DIODE	
D213			1SV214	VARIABLE DIODE	
D214			DA204K	DIODE	HDM,HDM2
D215			02CZ12(X,Y)	DIODE	HDM,HDM2
D401,402			DA204K	DIODE	
D403			DAN202U	DIODE	
D404,405			DA204K	DIODE	
D406-411		*	B30-2140-05	LED	
IC1			BU4013BF	IC (D TYPE FLIP FLOPX2)	
IC2			NJM4558M	IC (OP AMP X2)	
IC3			NJM78L05UA	IC (VOLTAGE REGULATOR/ +5V)	
IC4			TA7808S	IC (VOLTAGE REGULATOR/ +8V)	
IC6			M62363FP	IC (8bit D/A CONVERTER)	
IC7			MC3372SV	IC (FM IF)	
IC8			NJM2904M	IC (OP AMP X2)	
IC10			BU4094BCF	IC (8-STAGE SHIFT/STORE REGISTE	
IC11			LA4422	IC (AF POWER AMP/ 5.8W)	
IC13			NJM2904M	IC (OP AMP X2)	
IC14			TA75S01F	IC (OP AMP)	
IC201		*	NJM78L09UA	IC (VOLTAGE REGULATOR/ +9V)	
IC202		*	MC145190F	IC	
IC401-403			NJM4558E	IC (OP AMP X2)	
IC404			TA75S01F	IC (OP AMP)	
IC405,406			NJM4558E	IC (OP AMP X2)	
IC407			NJM78L05UA	IC (VOLTAGE REGULATOR/ +5V)	
IC408		*	RH5VL42C	IC	
IC409		*	M38267M8L157GP	IC (MPU)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC410			LC73881M	IC	
IC411			AT2408N10SI2.5	IC (8kbit SERIAL EEPROM)	
IC412			NJM4558E	IC (OP AMP X2)	
Q1			DTA114EU	DIGITAL TRANSISTOR	
Q2,3			DTC114EU	DIGITAL TRANSISTOR	
Q4			2SA1641(S,T)	TRANSISTOR	
Q5			DTA114YK	DIGITAL TRANSISTOR	
Q6			2SB1132(Q,R)	TRANSISTOR	
Q8			2SA1362(Y)	TRANSISTOR	
Q10,11			DTC114EU	DIGITAL TRANSISTOR	
Q13			DTC114EK	DIGITAL TRANSISTOR	
Q14			DTD114EK	DIGITAL TRANSISTOR	
Q15			2SC4116(GR)	TRANSISTOR	
Q16			2SC2059K(P)	TRANSISTOR	
Q18			2SC4215(Y)	TRANSISTOR	
Q20			DTC363EK	DIGITAL TRANSISTOR	
Q22		*	2SA1757(E,F)	TRANSISTOR	HDM,HDM2
Q22			2SB1565(E,F)	TRANSISTOR	M,M2,DM
Q22			2SB1565(E,F)	TRANSISTOR	DM2
Q23			2SC4116(GR)	TRANSISTOR	
Q24			DTC114EK	DIGITAL TRANSISTOR	
Q25			DTA144EU	DIGITAL TRANSISTOR	
Q26			DTC114EU	DIGITAL TRANSISTOR	
Q205			2SC3357	TRANSISTOR	
Q206			2SC2954	TRANSISTOR	
Q207			SGM2014M	FET	
Q208			3SK241(R)	FET	
Q209			2SC2059K(P)	TRANSISTOR	
Q210			2SC4116(GR)	TRANSISTOR	HDM,HDM2
Q211			DTC144EK	DIGITAL TRANSISTOR	HDM,HDM2
Q212			DTD114EK	DIGITAL TRANSISTOR	HDM,HDM2
Q401		*	2SC4081(R)	TRANSISTOR	
Q403			DTC363EK	DIGITAL TRANSISTOR	
Q405			2SB1132(Q,R)	TRANSISTOR	
Q406			DTA114TK	DIGITAL TRANSISTOR	
Q409			DTC144EK	DIGITAL TRANSISTOR	
Q411			DTC144EK	DIGITAL TRANSISTOR	
Q419			DTA144EK	DIGITAL TRANSISTOR	
Q420			DTC144EK	DIGITAL TRANSISTOR	
A1	2B	*	X58-4360-10	SUB UNIT (VCO)	M,DM,HDM
A1	2B	*	X58-4360-11	SUB UNIT (VCO)	M2,DM2
A1	2B	*	X58-4360-11	SUB UNIT (VCO)	HDM2

VCO (X58-4360-XX)
-10 : M,DM,HDM -11 : M2,DM2,HDM2

C1-3			CK73GB1H102K	CHIP C	1000PF	K	
C4			CC73GCH1H820J	CHIP C	82PF	J	
C5,6			CC73GCH1H070D	CHIP C	7.0PF	D	M2,DM2
C5,6			CC73GCH1H070D	CHIP C	7.0PF	D	HDM2
C5,6			CC73GCH1H060D	CHIP C	6.0PF	D	M,DM,HDM
C7,8			CK73GB1H102K	CHIP C	1000PF	K	
C9			CC73GCH1H060D	CHIP C	6.0PF	D	
C10			CC73GCH1H040C	CHIP C	4.0PF	C	M2,DM2
C10			CC73GCH1H040C	CHIP C	4.0PF	C	HDM2
C10			CC73GCH1H080D	CHIP C	8.0PF	D	M,DM,HDM
C11			CC73GCH1H060D	CHIP C	6.0PF	D	M2,DM2
C11			CC73GCH1H060D	CHIP C	6.0PF	D	HDM2
C11			CC73GCH1H120J	CHIP C	12PF	D	M,DM,HDM

TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

PARTS LIST/ 零部件一览表

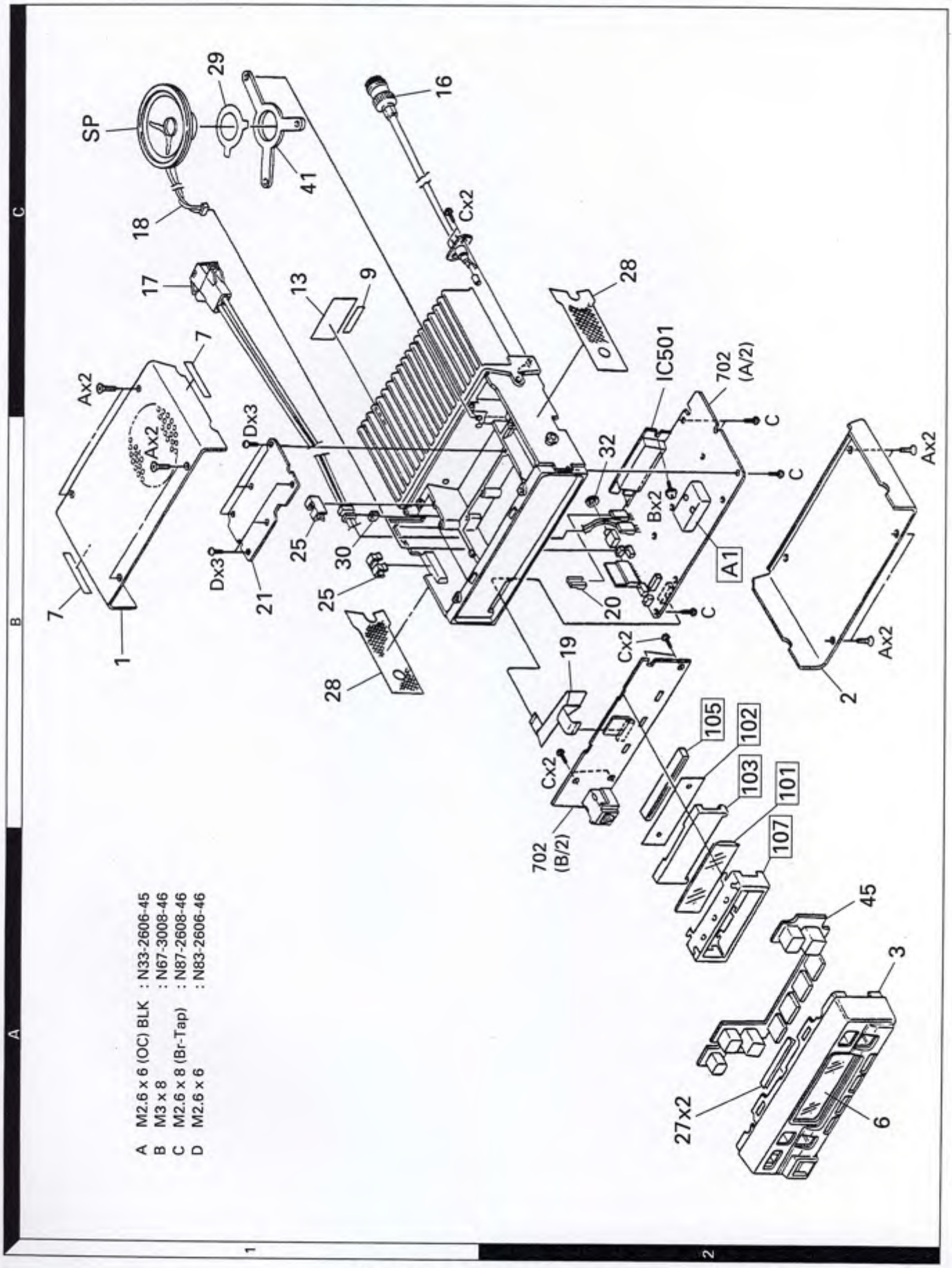
Ref. No.	Address	New parts	Parts No.	Description	Destination
C12,13			CK73GB1H102K	CHIP C 1000PF K	
C14			CC73GCH1H010C	CHIP C 1.0PF C	M2,DM2
C14			CC73GCH1H010C	CHIP C 1.0PF C	HDM2
C14			CC73GCH1H020C	CHIP C 2.0PF C	M,DM,HDM
C15,16			CK73GB1H102K	CHIP C 1000PF K	
C17			CK73GB1H103K	CHIP C 0.010UF K	
C18			CC73GCH1H270J	CHIP C 27PF J	M2,DM2
C18			CC73GCH1H270J	CHIP C 27PF J	HDM2
C18			CC73GCH1H560J	CHIP C 56PF J	M,DM,HDM
C20			CC73GCH1H060D	CHIP C 6.0PF D	M,DM,HDM
C20			CC73GCH1H1R5C	CHIP C 1.5PF C	M2,DM2
C20			CC73GCH1H1R5C	CHIP C 1.5PF C	HDM2
C21			CK73GB1H103K	CHIP C 0.010UF K	
C22			CK73GB1H102K	CHIP C 1000PF K	
C23			CK73GB1H103K	CHIP C 0.010UF K	
C24			CC73GCH1H020C	CHIP C 2.0PF C	
C25			CC73GCH1H150J	CHIP C 15PF J	
C27			CK73GB1H102K	CHIP C 1000PF K	
CN1		*	E40-5815-05	PIN CONNECTOR FOR INSIDE (6P)	
-		*	F10-2204-04	SHIELDING CASE	
L1,2			L33-1268-05	CHOKE COIL (10UH)	
L3			L34-4449-05	COIL	M2,DM2
L3			L34-4449-05	COIL	HDM2
L3		*	L34-4432-05	COIL	M,DM,HDM
L4-8			L33-1268-05	CHOKE COIL (10UH)	
L9		*	L34-4429-05	COIL	M,DM,HDM
L9		*	L34-4484-05	COIL	M2,DM2
L9		*	L34-4484-05	COIL	HDM2
L10			L40-1081-34	SMALL FIXED INDUCTOR (100NH)	M2,DM2
L10			L40-1081-34	SMALL FIXED INDUCTOR (100NH)	HDM2
L10			L40-6871-34	SMALL FIXED INDUCTOR (68NH)	M,DM,HDM
R1			RK73GB1J101J	CHIP R 100 J 1/16W	
R2			RK73GB1J470J	CHIP R 47 J 1/16W	M2,DM2
R2			RK73GB1J470J	CHIP R 47 J 1/16W	HDM2
R2			RK73GB1J391J	CHIP R 390 J 1/16W	M,DM,HDM
R3			RK73GB1J181J	CHIP R 180 J 1/16W	M2,DM2
R3			RK73GB1J181J	CHIP R 180 J 1/16W	HDM2
R3			RK73GB1J221J	CHIP R 220 J 1/16W	M,DM,HDM
R4			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R5			R92-1252-05	CHIP R 0 OHM	
R6			RK73GB1J101J	CHIP R 100 J 1/16W	
R7			RK73GB1J183J	CHIP R 18K J 1/16W	
R8			RK73GB1J181J	CHIP R 180 J 1/16W	
R9			RK73GB1J470J	CHIP R 47 J 1/16W	M2,DM2
R9			RK73GB1J470J	CHIP R 47 J 1/16W	HDM2
R9			RK73GB1J391J	CHIP R 390 J 1/16W	M,DM,HDM
R10			RK73GB1J151J	CHIP R 150 J 1/16W	M,DM,HDM
R10			RK73GB1J181J	CHIP R 180 J 1/16W	M2,DM2
R10			RK73GB1J181J	CHIP R 180 J 1/16W	HDM2
R11			RK73GB1J473J	CHIP R 47K J 1/16W	
R12			RK73GB1J103J	CHIP R 10K J 1/16W	
R13			RK73GB1J101J	CHIP R 100 J 1/16W	
R14			RK73GB1J390J	CHIP R 39 J 1/16W	
R15			R92-0670-05	CHIP R 0 OHM	
D1-4			1SV269	VARIABLE CAPACITANCE DIODE	
Q1			UMG1	TRANSISTOR	
Q2			2SK508NV(K52)	FET	

VCO (X58-4360-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q3			2SC4215(Y)	TRANSISTOR	
Q4			DTC114EU	DIGITAL TRANSISTOR	
Q5			2SK508NV(K52)	FET	

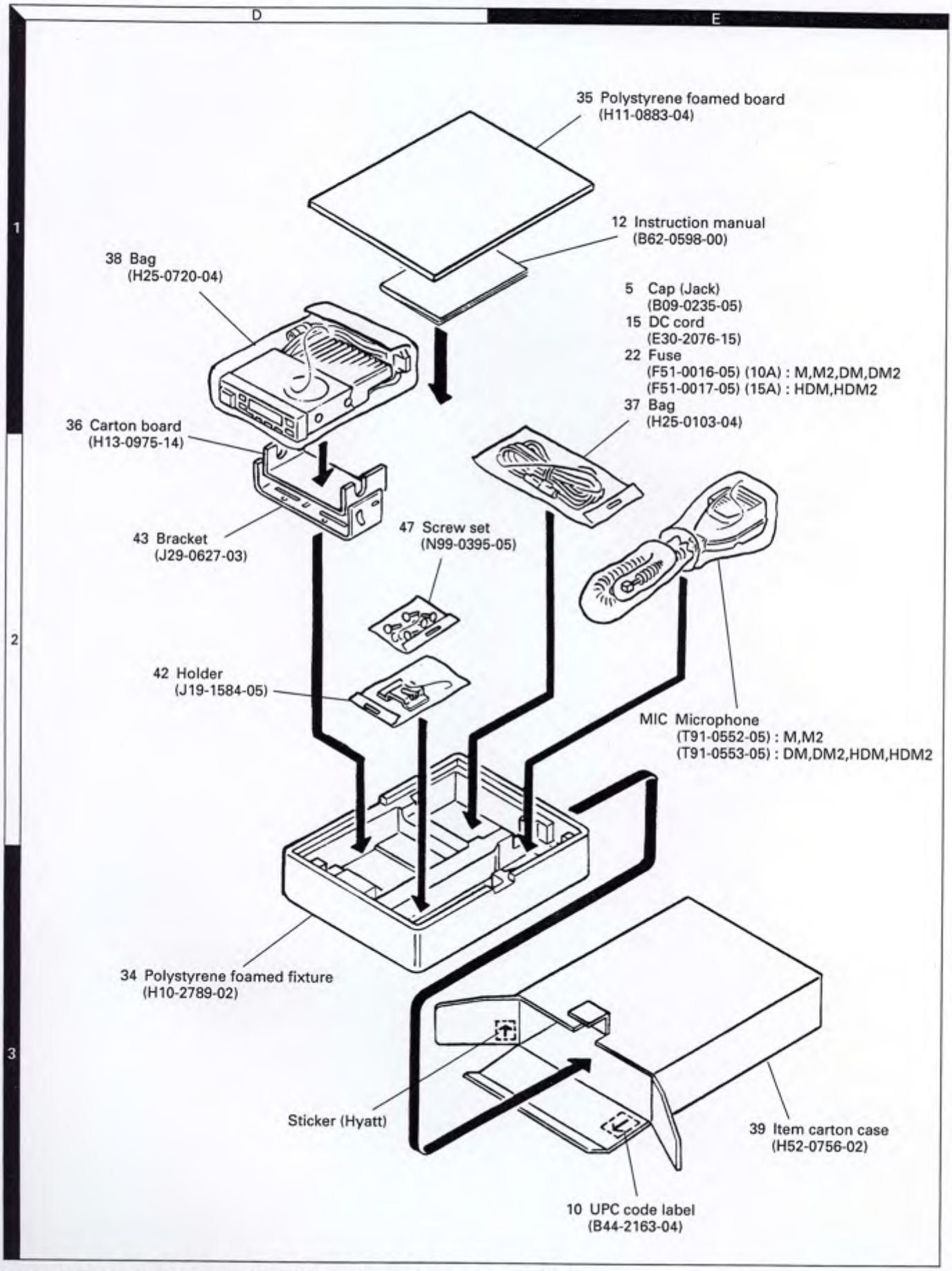
TK-768 : M,M2,DM,DM2
TK-768H : DM,DM2

EXPLODED VIEW/ 部件分解图



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

PACKING/包装

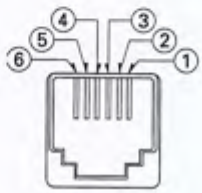


Parts with the exploded numbers larger than 700 are not supplied.

ADJUSTMENT

Test Equipment Required for Alignment

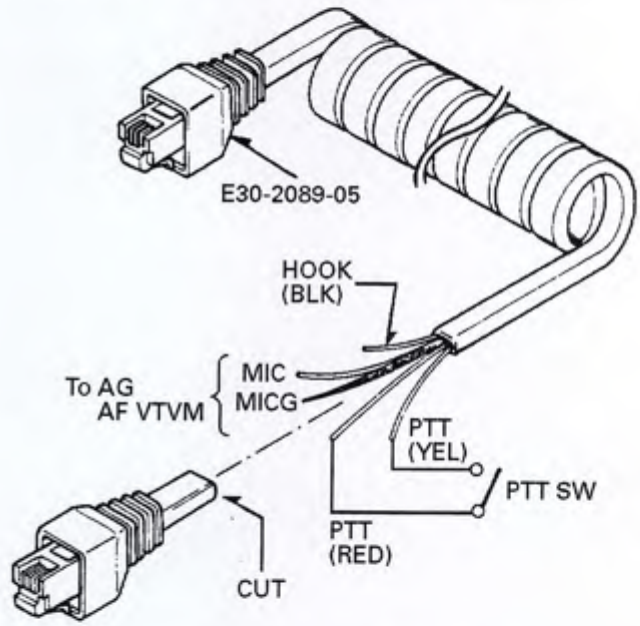
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	100 to 200MHz Frequency modulation and external modulation –127dBm/0.1μV to greater than –7dBm/100mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 100 to 200MHz or more Vicinity of 60W
3. Deviation Meter	Frequency Range	100 to 200MHz
4. Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 15V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 200MHz 0.2ppm or less
7. Ammeter		15A
8. AF Volt Meter (AF VTVM)	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



① SB
② PTTG
③ PTT
④ MICG
⑤ MIC
⑥ HOOK

MIC connector (Front view)

- The following test cable is recommended.

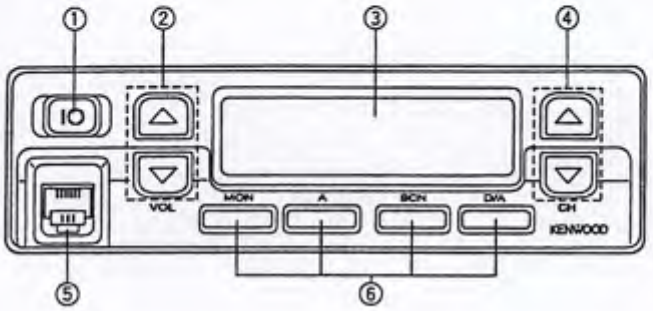


Test cable for microphone input

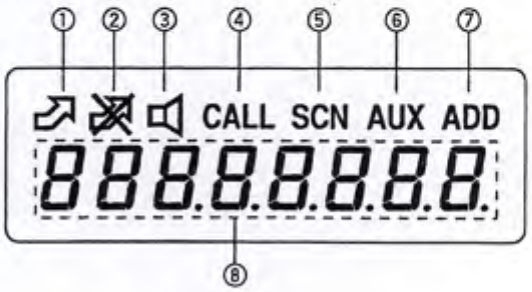
ADJUSTMENT/ 调整

Adjustment Location

- **Front panel**



- **Display**



① **POWER switch**
Press to turn the power ON or OFF.

② **VOLUME [▲] / [▼] buttons**
Press [▲] to increase the volume or [▼] to decrease the volume. To quickly step the volume up or down, hold down [▲] or [▼] respectively.

③ **Display**
See below for more details.

④ **CHANNEL [▲] / [▼] buttons**
Press [▲] to select the next higher channel or [▼] to select the next lower channel. You can choose from a maximum of 32 channels programmed by the dealer. To quickly step upward or downward through the channels, hold down [▲] or [▼] respectively.

⑤ **Microphone connector**
Insert the 6-pin modular connector plug of the microphone until the locking tab clicks.

⑥ **Function buttons**
The functions of these buttons are dependent on dealer programming.

① **POWER**
Visible while transmitting.

②
Visiible when signals are present on the currently selected channel.

③
Appears when the Monitor function is activated.

④ **CALL**
Blinks when the correct DTMF code for Code Squelch or Selctive Call is received. Also appears when transmitting while using Code Squelch or Selective Call.

⑤ **SCN**
Appears when the Scan function is activated.

⑥ **AUX**
Appears when the auxiliary function programmed by the dealer is activated.

⑦ **ADD**
Appears when the currently selected channel is included in the scan list.

⑧ 8.8.8.8.8.8.8.8.
Displays a channel numbers, ID codes, and other information.

① 电源开关 (POWER)
按此键可以接通或者关闭电源.

② 音量调节 [▲] / [▼] 键 (VOLUME)
按 [▲] 键，增大音量；按 [▼] 键，减小音量．一直按住 [▲] 键 (或 [▼] 键)，可以快速增大 (或减小) 音量.

③ 显示屏
详细操作参阅下面的内容

④ 信道选择 [▲] / [▼] 键 (CHANNEL)
按 [▲] 键，选择下一个号码高的信道；按 [▼] 键，选择下一个号码低的信道．可以在由经销商编程设定的信道 (最多 32 个信道) 中进行选择．一直按住 [▲] 键 (或 [▼] 键) 可以快速调节信道上升 (或下降)．

⑤ 话筒插口
插入话筒的 6 芯插头直到锁定片锁住.

⑥ 功能键
功能键的具体功能取决于经销商的编程设定.

①
当发射时出现.

②
当所选择的信道上有信号时出现.

③
当启动了监听功能后出现.

④ **CALL**
在设置了编码静噪功能或信息传呼功能后，当接收到了正确的 DTMF(双音多频) 代码时，此标志闪烁；当进行发射时，此标志稳定显示.

⑤ **SCN**
当启动扫描功能后出现.

⑥ **AUX**
当经销商编程使用辅助功能时出现.

⑦ **ADD**
当所选择的信道是扫描序列中的信道时出现.

⑧ 8.8.8.8.8.8.8.8.
显示信道号码、自台身份号码和其他信息.

ADJUSTMENT/ 调整

Tuning item

Item No.	Tuning description	Valid range	Remarks
1	Frequency	0~255	
2	RF power	0~255	Three-point adjustment
2L	RF power (Low)	0~255	Low
2C	RF power (Center)	0~255	Center
2H	RF power (High)	0~255	High
3	Signaling balance	0~255	
4	Max deviation	0~255	Three-point adjustment
4L	Max deviation (Low)	0~255	Low
4C	Max deviation (Center)	0~255	Center
4H	Max deviation (High)	0~255	High
5	QT deviation	0~255	
6	Sensitivity	0~255	Three-point adjustment
6L	Sensitivity (Low)	0~255	Low
6C	Sensitivity (Center)	0~255	Center
6H	Sensitivity (High)	0~255	High
7	Squelch	0~42	

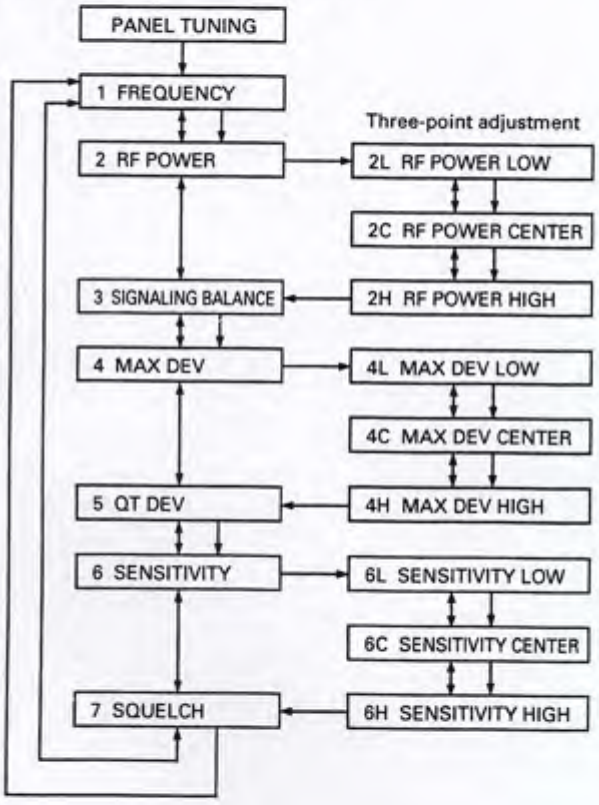
Table 1

调试项目

项目号码	调整说明	有效范围	备注
1	频率	0~255	
2	射频功率	0~255	3 点调整
2L	射频功率（低）	0~255	低端点
2C	射频功率（中）	0~255	中心点
2H	射频功率（高）	0~255	高端点
3	信令平衡	0~255	
4	最大调制频偏	0~255	3 点调整
4L	最大调制频偏（低）	0~255	低端点
4C	最大调制频偏（中）	0~255	中心点
4H	最大调制频偏（高）	0~255	高端点
5	亚音频调制频偏	0~255	
6	接收灵敏度	0~255	3 点调整
6L	接收灵敏度（低）	0~255	低端点
6C	接收灵敏度（中）	0~255	中心点
6H	接收灵敏度（高）	0~255	高端点
7	静噪	0~42	

表 1

Panel tuning state transition

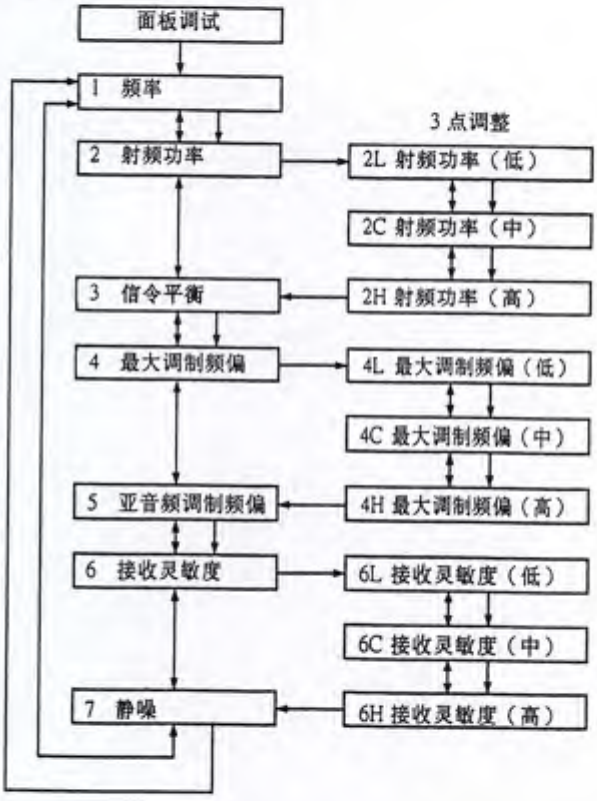


→ Data save, next item
CH DOWN key

↔ Next item, previous item
MON key, A key

Table 2

面板调试状态流程图



→ 数据被存储，转到下一项
按 CH DOWN 键

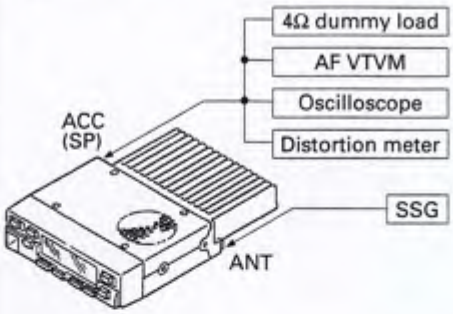
↔ 转到下一项或退回前一项
按 MON 键或按 A 键

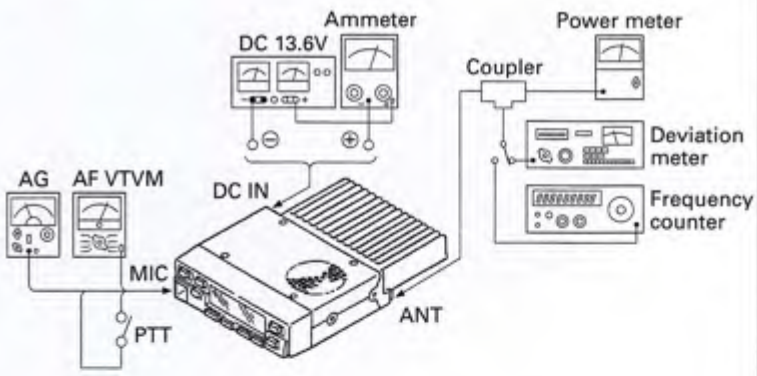
表 2

ADJUSTMENT

Common Section

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Condition</th><th colspan="3">Measurement</th><th colspan="3">Adjustment</th><th rowspan="2">Specifications/Remarks</th></tr>
<tr><th>Test-equipment</th><th>Unit</th><th>Terminal</th><th>Unit</th><th>Parts</th><th>Method</th></tr>
<tr><td>1. Memory frequency</td><td colspan="8">
• Frequency range (MHz)
148~174 : M, DM,HDM
136~156 : M2, DM2,HDM2

• Adjustment frequency (MHz)
<table>
<tr><td rowspan="2">CH</td><td colspan="2">M, DM,HDM</td><td colspan="2">M2, DM2,HDM2</td><td rowspan="2"></td></tr>
<tr><td>TX</td><td>RX</td><td>TX</td><td>RX</td></tr>
<tr><td>1</td><td>161.000</td><td>161.100</td><td>146.000</td><td>146.100</td><td>Center</td></tr>
<tr><td>2</td><td>148.000</td><td>148.100</td><td>136.000</td><td>136.100</td><td>Low</td></tr>
<tr><td>3</td><td>174.000</td><td>173.900</td><td>156.000</td><td>155.900</td><td>High</td></tr>
</table>
• Signaling
<table>
<tr><td></td><td>Encode</td><td>Decode</td></tr>
<tr><td>1</td><td>–</td><td>–</td></tr>
<tr><td>2</td><td>100Hz square wave</td><td>–</td></tr>
<tr><td>3</td><td>QT (67.0Hz) tone</td><td>QT (67.0Hz)</td></tr>
<tr><td>4</td><td>QT (100.0Hz) tone</td><td>QT (100.0Hz)</td></tr>
<tr><td>5</td><td>QT (151.4Hz) tone</td><td>QT (151.4Hz)</td></tr>
<tr><td>6</td><td>QT (210.7Hz) tone</td><td>QT (210.7Hz)</td></tr>
<tr><td>7</td><td>QT (250.3Hz) tone</td><td>QT (250.3Hz)</td></tr>
<tr><td>8</td><td>DTMF (1633Hz)</td><td>–</td></tr>
<tr><td>9</td><td>DTMF encode tone [7] key</td><td>–</td></tr>
<tr><td>10</td><td>–</td><td>DTMF (159)</td></tr>
</table>
</td></tr>
<tr><td>2. Setting</td><td colspan="8">
• Receiver section
The indicated SSG output level are for maximum output.
Whenever there is no modulation designation, standard modulation (MOD : 1kHz, DEV : ±3kHz) is indicated.


• Transmitter section


</td></tr>
<tr><td>3. Panel test mode setting</td><td colspan="8">The D/A switch is held on with turn on the set. The D/A switch holding about 1 second after turn on the set.
But, if this mode is disabled by FPU then begin the USER MODE.</td></tr>
<tr><td>4. Panel tuning mode setting</td><td colspan="8">The SCAN switch is held on with turn on the set. The SCAN switch holding about 1 second after turn on the set.
But, if this mode is disabled by FPU then begin the USER MODE.</td></tr>
<tr><td rowspan="2">5. PLL lock voltage</td><td>1) Set : Panel test mode.
CH : 2 – Sig : 1
Transmit and receive.</td><td rowspan="2">DVM

Dummy load</td><td rowspan="2">TX-RX (A/2)

Rear panel</td><td rowspan="2">TP1

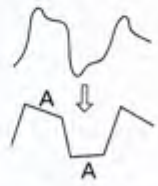
ANT</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">Check the voltage.</td><td>More than 1.4V.</td></tr>
<tr><td>2) CH : 3 – Sig : 1
Transmit and receive.</td><td>Less than 8.3V</td></tr>
</table>

ADJUSTMENT

Receiver Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity	1) Set : Panel tuning mode. Tuning item : 6L CH : 2 – Sig : 1 SSG frequency : $f_{RX(LOW)}$ SSG output : –118dBm SSG MOD : 1kHz AF output : 0.45V/4Ω	SSG AF VTVM Distortion meter Oscilloscope AG	Rear panel	ANT EXT. SP	TX-RX (A/2)	L205–L208 SCN or D/A key	Adjust for maximum SINAD.	Maximize the SINAD them. SINAD is more than 12dB.
	2) Tuning item : 6C CH : 1 – Sig : 1 SSG frequency : $f_{RX(CENTER)}$				Front panel	SCN or D/A key	Up/down for tuning data.	
	3) Tuning item : 6H CH : 3 – Sig : 1 SSG frequency : $f_{RX(HIGH)}$							
2. Squelch	1) Set : Panel tuning mode. Tuning item : 7 CH : 1 – Sig : 1 SSG frequency : $f_{RX(CENTER)}$ SSG output : Value when 3dB is subtracted from the sensitivity value of 12dB SINAD. SSG MOD : 1kHz							Squelch closed once. Then squelch must be opened.
	2) SSG output : OFF						Check	Squelch must be closed.

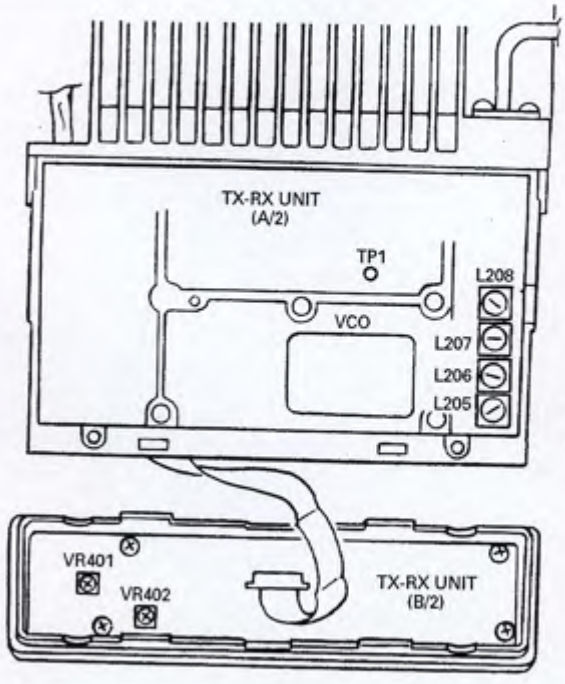
Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency	1) Set : Panel tuning mode. Tuning item : 1 CH : 1 – Sig : 1 PTT : ON	Powermeter f. counter	Rear panel	ANT	Front panel	SCN or D/A key	Up/down for tuning data.	$f_{TX(CENTER)}$ ± 100Hz
2. Maximum power check	1) Set panel tuning mode. Tuning item : 2 CH : 1 – Sig : 1 PTT : ON	Powermeter Ammeter	Rear panel	ANT			Check	**M,M2,DM,DM2** More than 27.0W **HDM,HDM2** More than 46.0W
3. Power	1) Set : Panel tuning mode. Tuning item : 2L CH : 2 – Sig : 1 PTT : ON				Front panel	SCN or D/A key	Up/down for tuning data.	25.0W±2W **M,M2,DM,DM2** 45.0W±1W **HDM,HDM2**
	2) Tuning item : 2C CH : 1 – Sig : 1 PTT : ON							**M,M2,DM,DM2** 25.0W±2W, Less than 7.0A **HDM,HDM2** 45.0W±1W, Less than 11.0A
	3) Tuning item : 2H CH : 3 – Sig : 1 PTT : ON							25.0W±2W **M,M2,DM,DM2** 45.0W±1W **HDM,HDM2**
4. Signaling balance	1) Set : Panel tuning mode. Tuning item : 3 CH : 1 – Sig : 2 Deviation meter filter LPF : 3kHz HPF : OFF De-emphasis : OFF PTT : ON	Powermeter Deviation meter Oscilloscope AF VTVM AG	Rear panel Front panel	ANT MIC	Front panel	SCN or D/A key	Up/down for tuning data. Make the de-modulation wave-form neat.	Flat the A parts. 

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Maximum deviation	1) Set : Panel tuning mode. Tuning item : 4L CH : 2 – Sig : 1 AG : 1kHz/50mV Deviation meter filter LPF : 15kHz HPF : OFF De-emphasis : OFF PTT : ON	Powermeter Deviation meter Oscilloscope AF VTVM AG	Rear panel Front panel	ANT MIC	Front panel	SCN or D/A key	Up/down for tuning data. According to the larger +, –.	±4.05kHz ± 0.1kHz Oscilloscope waveform is is not abnormal.
	2) Tuning item : 4C CH : 1 – Sig : 1 PTT : ON							
	3) Tuning item : 4H CH : 3 – Sig : 1 PTT : ON							
6. MIC sensitivity	1) Set : Panel test mode. CH : 1 – Sig : 1 AG : 1kHz/5mV Deviation meter filter LPF : 15kHz HPF : OFF De-emphasis : OFF PTT : ON						Check	±2.2~±3.9kHz Oscilloscope waveform is not abnormal. If you need to adjust, you can adjust by VR401 on the TX-RX unit (B/2).
7. QT deviation	1) Set : Panel tuning mode. Tuning item : 5 CH : 1 – Sig : 5 Deviation meter filter LPF : 3kHz HPF : 50Hz PTT : ON				Front panel	SCN or D/A key	Up/down for tuning data.	0.75kHz±50Hz
8. DTMF deviation check	1) Set : Panel test mode. CH : 1 – Sig : 9 Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						Check	±2.4~±3.7kHz If you need to adjust, you can adjust by VR402 on the TX-RX unit (B/2).

Adjustment Points



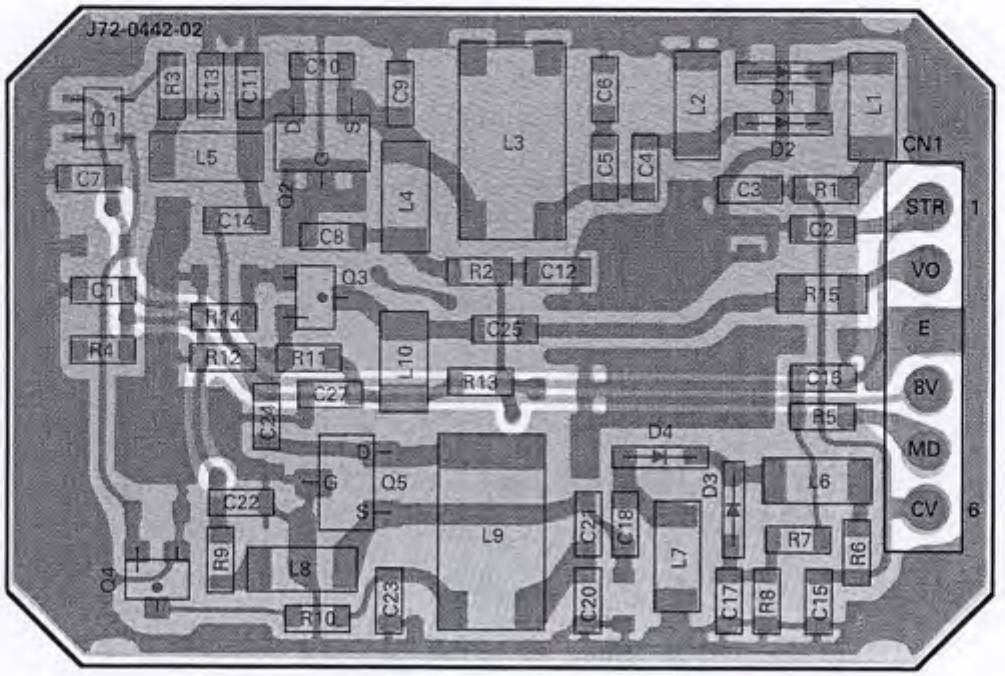
L205~208 : Sensitivity
VR401 : MIC sensitivity
VR402 : DTMF deviation

TERMINAL FUNCTION

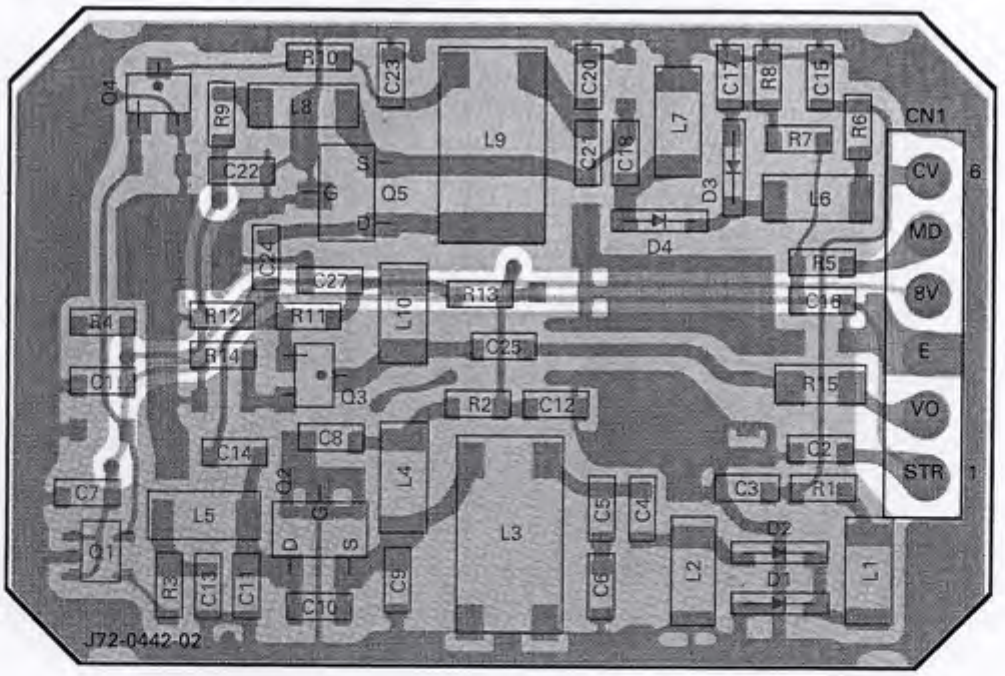
CN No.	Pin No.	Pin name	I/O	Function
TX-RX UNIT (A/2) : TX-RX section				
CN1	1	DEO	O	Detection signal output.
	2	AHK	I	External HOOK signal input. On hook : "L", Off hook : "H"
To KCT-19	3	IGN	I	Ignition input for KCT-18.
	4	DI	I	External modulation signal input.
	5	ME	–	MIC earth.
	6	MI	I/O	Internal MIC signal output, Externa MIC signal input (Standard modulation at 600Ω, 5mV).
	7	PTT	I	External PTT signal input. GND : TX, Open : RX
	8	SQ	–	Not used.
CN2	1	AM	I	Audio mute signal input. Mute : "H", Unmute : Open
TO KCT-19	2	MM	I	MIC mute signal input. Mute : "H", Unmute : Open
	3	FSW	I	Foot switch signal input (for emergency mode). "L" : Emergency mode entry
CN4	1	HOR	O	Horn alert control signal output. Signal output for horn relay drive (open collector), "L" level during horn drive : max. sink current 100mA.
To KCT-19 or KAP-1	2	E	–	Earth.
	3	SB	O	Power output after power switch (+13.6V±15%, 1A max.).
CN5	1	SP	O	Output for internal/external speaker.
To INT. SP or KCT-19	2	E	–	Earth.
CN6	1	E	–	Earth.
	2	MO	I	Modulation signal input.
To Control section	3	PSW	I	Power switch control signal input. Power switch on : 0V
	4	DEO	O	Detection signal output.
	5	MM	O	MIC mute signal output.
	6	DI	O	External modulation signal output.
	7	NC	–	Not connection.
	8	AFO	I	Audio signal input.
	9	8C	O	Common 8V output.
	10	ME	–	MIC earth.
	11	MI	I/O	Internal MIC signal input. External MIC signal output.
	12	AHK	O	External HOOK signal output. On hook : "L", Off hook : "H"
	13	SB	O	Power output after power switch.
	14	SB	O	(+13.6V±15%)
	15	KEY	I	KEY signal input. TX : "H"
	16	CK	I	Clock input for PLL/shift register/D-A converter.
	17	DT	I	Data input for PLL/shift register/D-A converter.
	18	BUSY	O	S-meter voltage output (Not use).
	19	LD	O	Lock detect output for PLL. Lock : "H", Unlock : "L"
	20	ES	I	Enable input for shift register.
	21	FSW	O	Foot switch signal output (for emergency mode). "L" : Emergency mode entry
	22	HNC	I	Horn control signal input. Horn on : "H", Horn off : "L"
	23	EP	I	Enable input for PLL.
	24	EN	I	Enable input for D-A converter.
	25	APTT	O	External PTT signal output.
	26	E	–	Earth.

CN No.	Pin No.	Pin name	I/O	Function
CN201	1	LIO	O	Relay for emergency function in KAP-1 control signal. Emergency on : "H", Emergency off : "L"
To KAP-1	2	SPO	–	Not used.
	3	SPI	–	Not used.
J1		EXT SP	O	Output for external speaker (4W/5% distortion).
		DC 13.6V	I	Power supply input (DC 13.6V±15%).
		ANT	I/O	Connect for ANT connector.
TX-RX UNIT (B/2) : Control section				
CN401	1	E	–	Earth.
	2	MO	O	Modulation signal output.
To TX-RX section	3	PSW	O	Power switch control signal output. Power switch on : 0V
	4	DEO	I	Detection signal input.
	5	MM	I	MIC mute signal input.
	6	DI	i	External modulation signal input.
	7	NC	–	Not connection.
	8	AFO	O	Audio signal output.
	9	8C	I	Common 8V input.
	10	ME	–	MIC earth.
	11	MI	O/I	Internal MIC signal output. External MIC signal input.
	12	AHK	I	External HOOK signal input. On hook : "L", Off hook : "H"
	13	SB	I	Power output after power switch.
	14	SB	I	(+13.6V±15%)
	15	KEY	O	KEY signal output. TX : "H"
	16	CK	O	Clock output for PLL/shift register/D-A converter.
	17	DT	O	Data output for PLL/shift register/D-A converter.
	18	BUSY	I	S-meter voltage input (Not use).
	19	LD	I	Lock detect input for PLL. Lock : "H", Unlock : "L"
	20	ES	O	Enable output for shift register.
	21	FSW	I	Foot switch signal input. (for emergency mode) "L" : Emergency mode entry
	22	HNC	O	Horn control signal output. Horn on : "H", Horn off : "L"
	23	EP	O	Enable output for PLL.
	24	EN	O	Enable output for D-A converter.
	25	APTT	I	External PTT signal input.
	26	E	–	Earth.
J401	1	SB	O	Power output after power switch (+13.6V±15%, 1.8A max.).
To MIC jack	2	E	–	Earth.
	3	PTT	I/O	PTT signal input (GND : TX, Open : RX). Serial data input/output.
	4	ME	–	MIC earth.
	5	MI	I	MIC signal input. (Standard modulation at 600Ω, 5mV)
	6	HK	I/O	Hook signal input. On hook : "L", Off hook : "H" Serial data input/output.
VCO : Sub unit				
CN1	1	STR	O	TX/RX VCO switch signal output.
	2	VO	O	VCO signal output.
	3	E	–	Earth.
	4	8V	I	8V input for VCO.
	5	MD	I	Modulation signal input.
	6	CV	O	PLL lock voltage output.

VCO (X58-4360-XX) Component side view
-10 : M,DM,HDM -11 : M2,DM2,HDM2



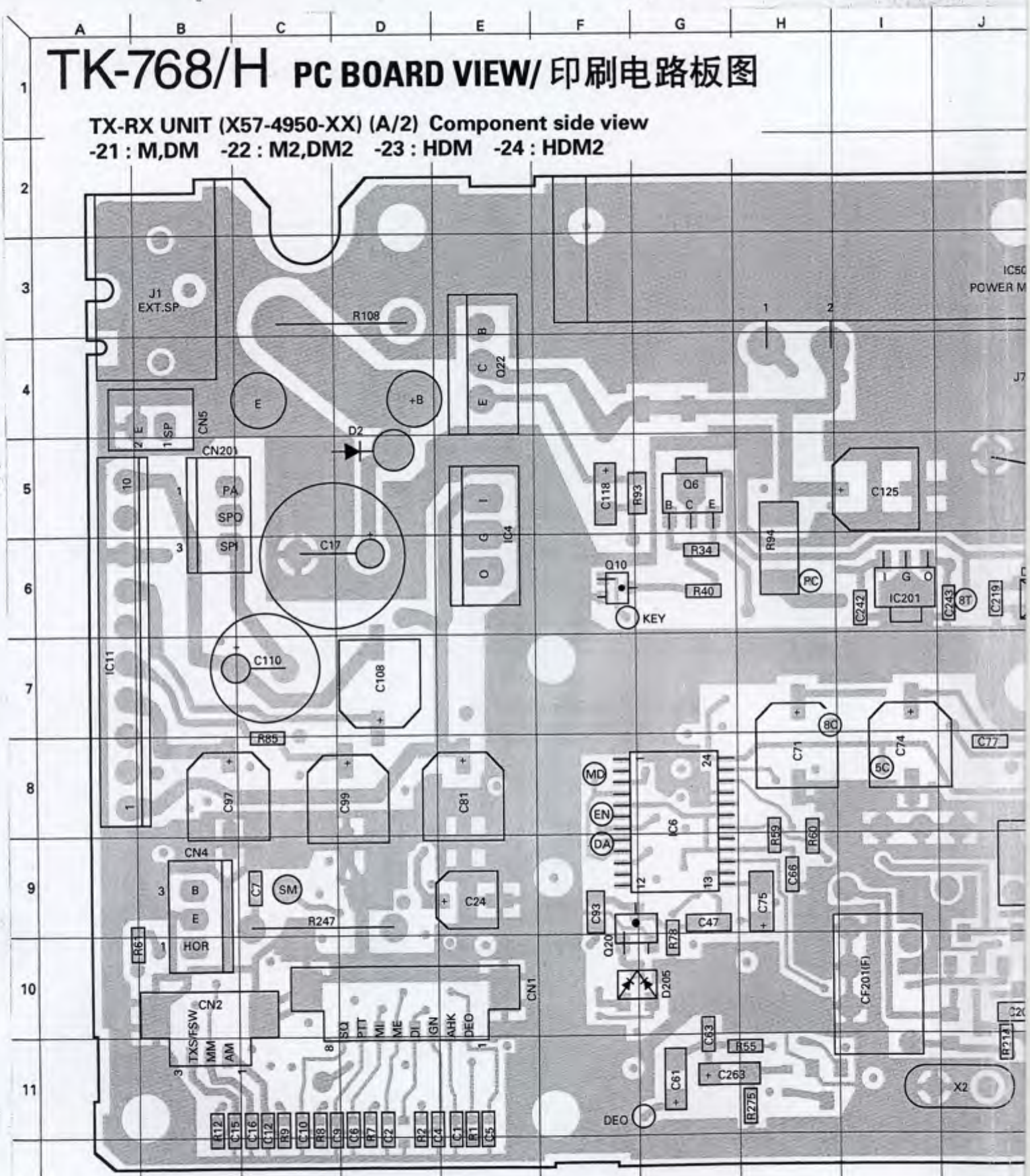
VCO (X58-4360-XX) Foil side view
-10 : M,DM,HDM -11 : M2,DM2,HDM2

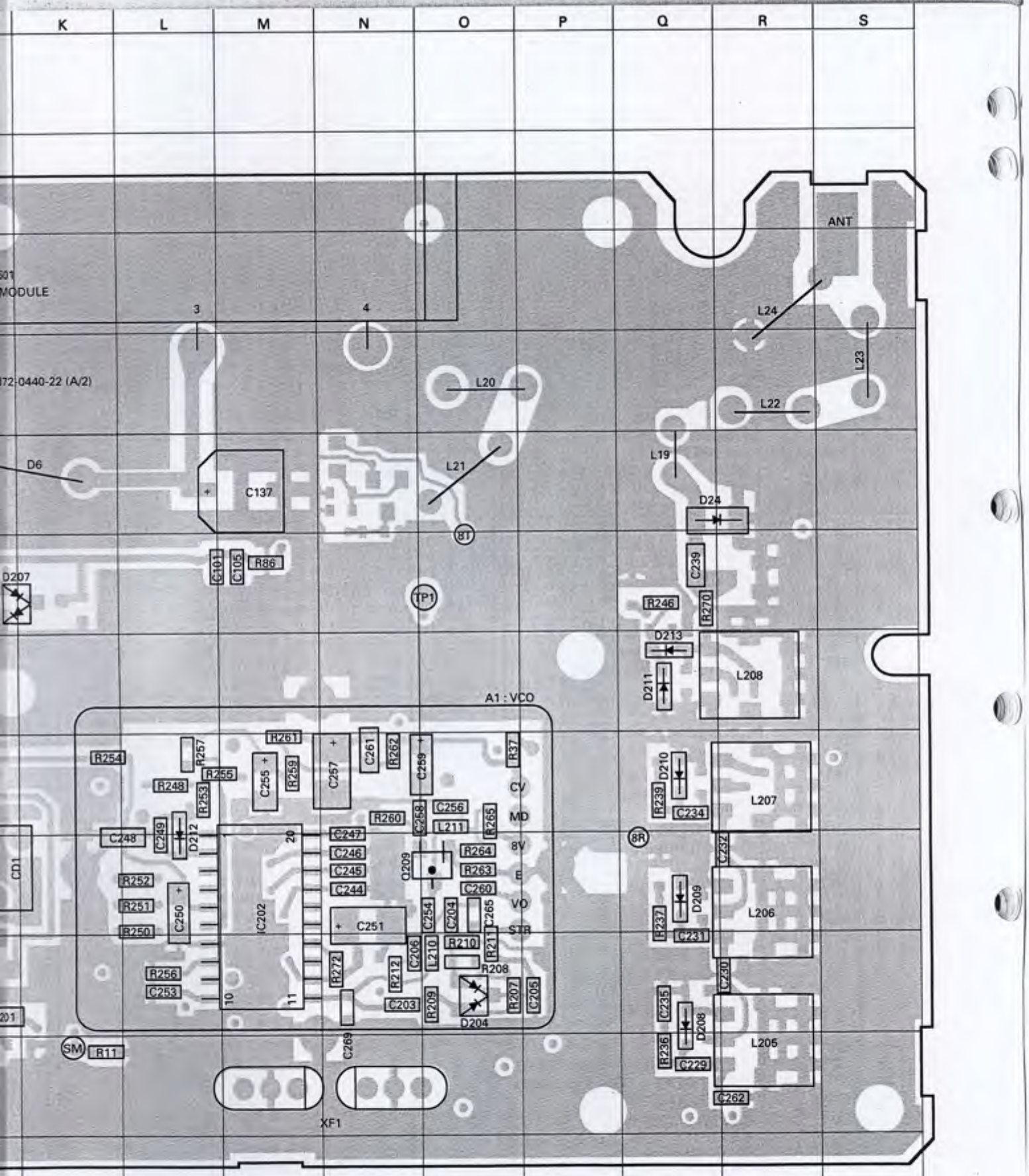


Component side
Foil side

TK-768/H PC BOARD VIEW/ 印刷电路板图

TX-RX UNIT (X57-4950-XX) (A/2) Component side view
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2





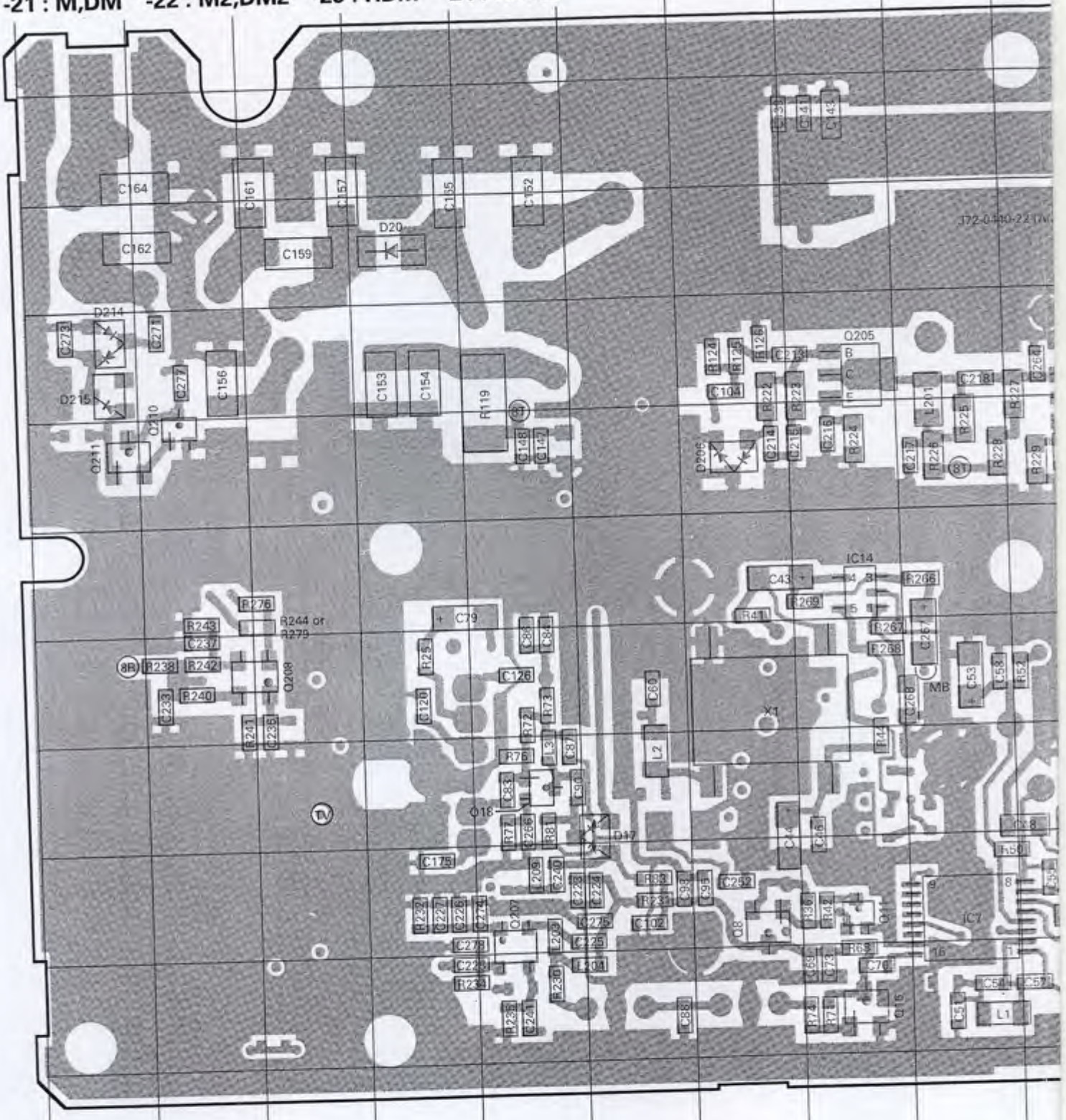
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC4	5E	Q20	10F	D207	6J
IC6	8G	Q22	4E	D208	10Q
IC11	7A	Q209	9O	D209	9Q
IC201	6I	D2	5D	D210	8Q
IC202	9M	D6	5K	D211	7Q
IC501	3J	D24	5Q	D212	8L
Q6	5G	D204	10O	D231	7Q
Q10	6F	D205	10G		

Component side

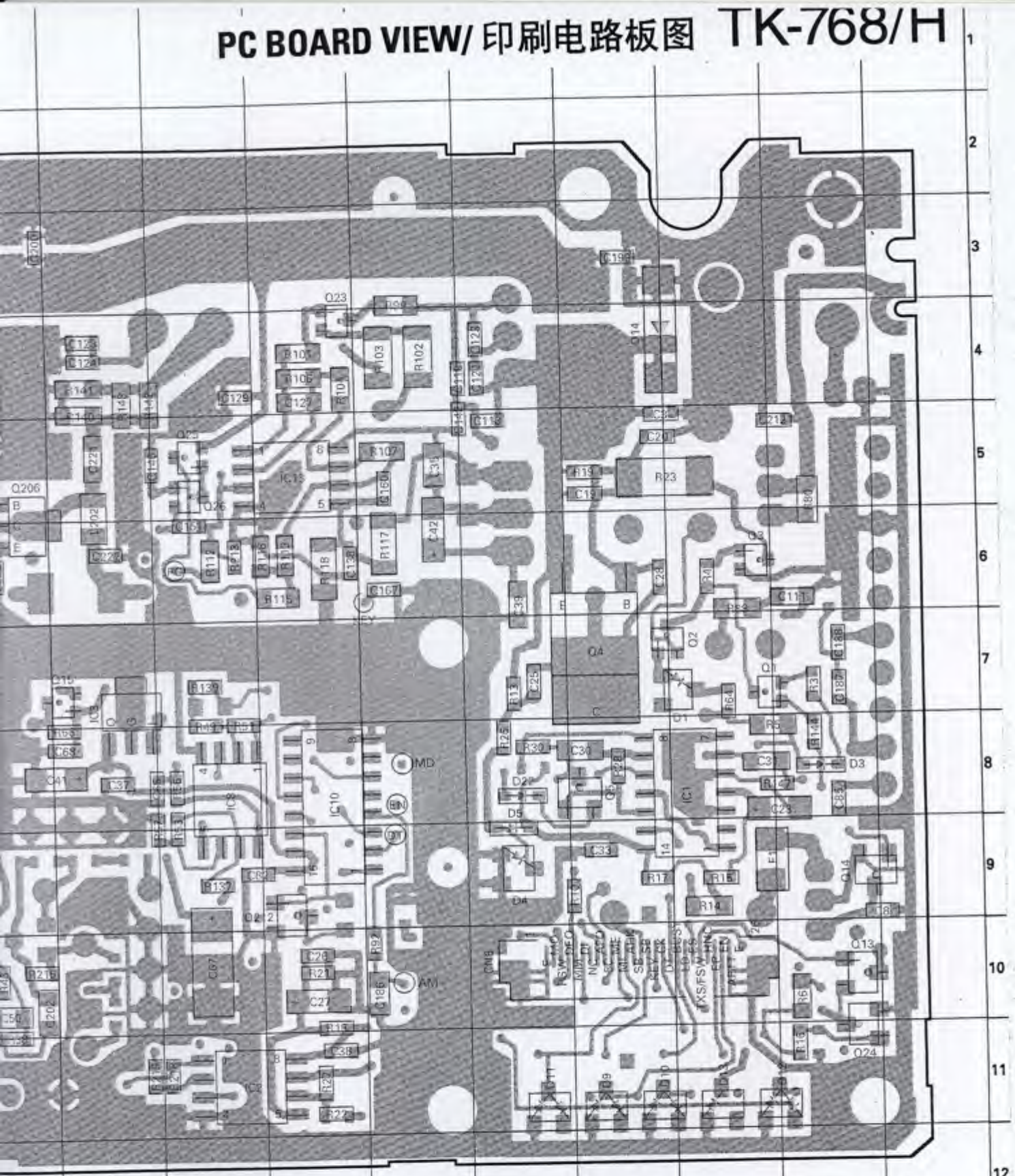
Pattern 1
Pattern 2
Pattern 3
Pattern 4

Foil side

TX-RX UNIT (X57-4950-XX) (A/2) Foil side view
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2



PC BOARD VIEW/ 印刷电路板图 TK-768/H



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	8Q	Q1	7Q	Q14	9R	Q205	5H	D3	8R	D14	4P
IC2	11L	Q2	7P	Q15	7K	Q206	5J	D4	9O	D17	9F
IC3	7K	Q3	6Q	Q16	11H	Q207	10E	D5	9O	D20	4D
IC7	10I	Q4	7P	Q18	9E	Q208	8C	D9	11P	D22	8O
IC8	8L	Q5	8P	Q23	4M	Q210	6B	D10	11P	D206	6G
IC10	8M	Q8	10G	Q24	11R	Q211	6A	D11	11O	D214	5A
IC13	5M	Q11	10H	Q25	5L	Q212	9M	D12	11Q	D215	5A
IC14	7H	Q13	10R	Q26	5L	D1	7Q	D13	11Q		

Component side

Pattern 1

Pattern 2

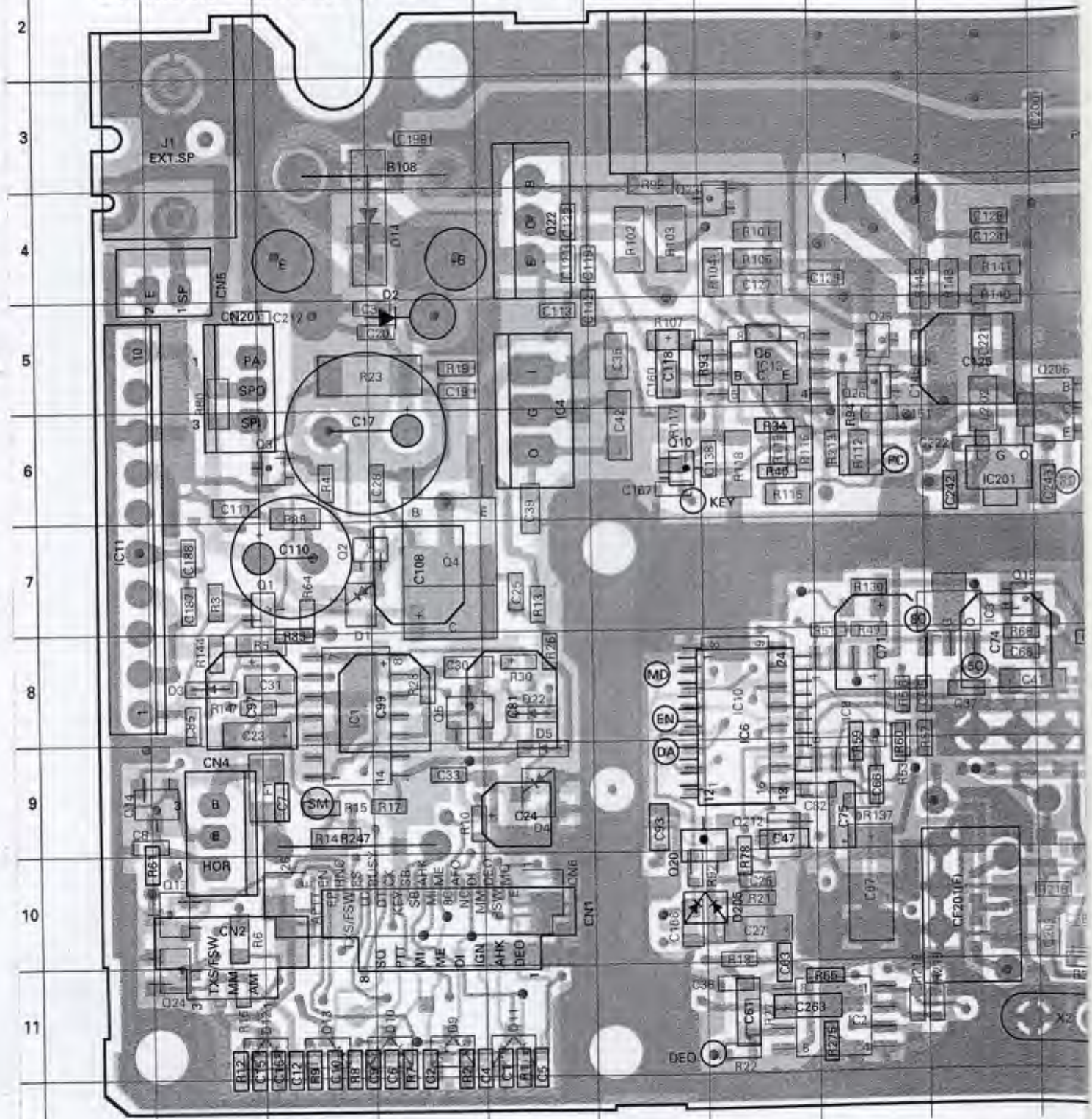
Pattern 3

Pattern 4

Foil side

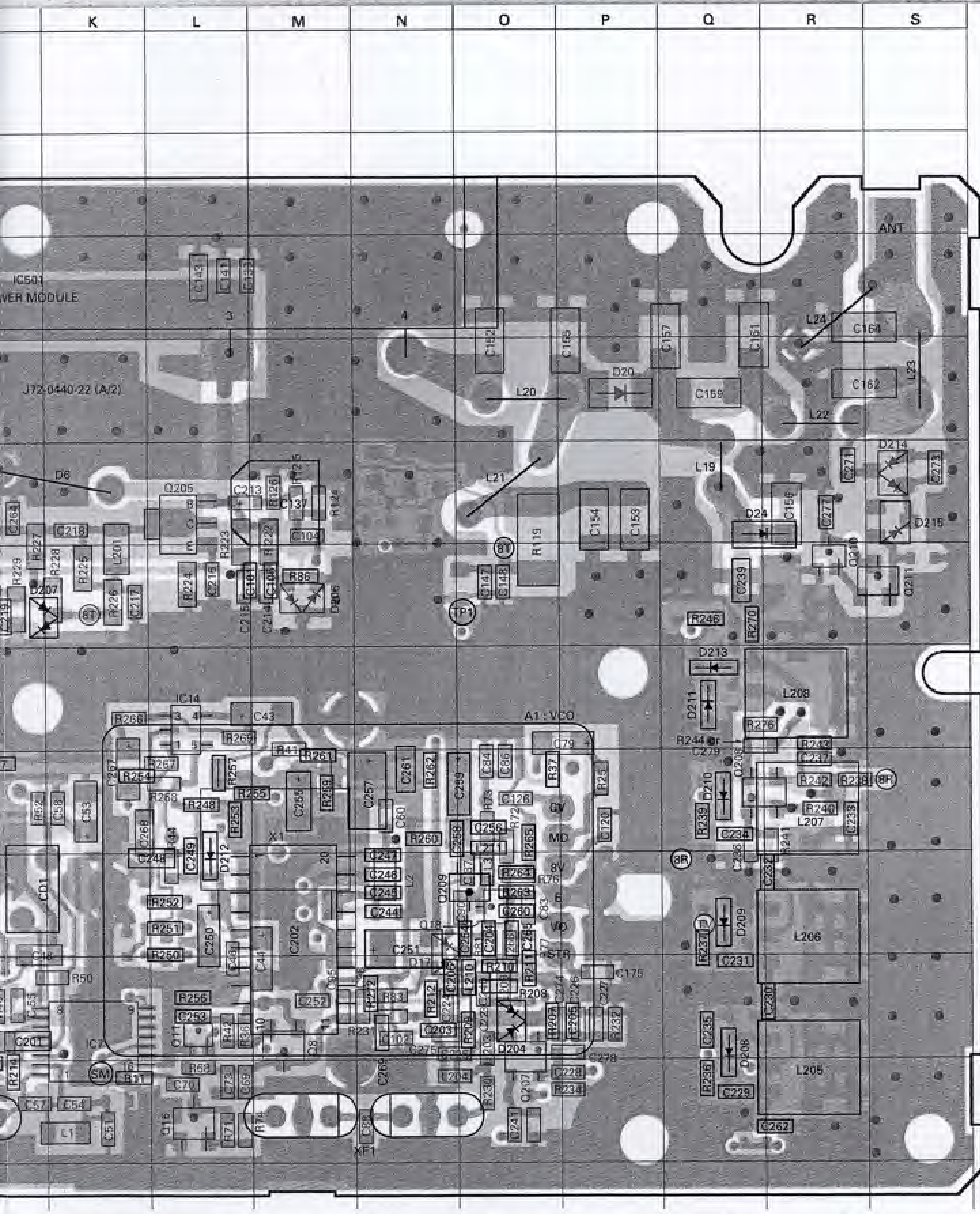
TK-768/H PC BOARD VIEW/ 印刷电路板图

TX-RX UNIT (X57-4950-XX) (A/2) Component side view + Foil side
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2



	C152	C199	C200	C271	C273	C278	C279	R213
-21 (M,DM)	YES	NO	NO	NO	NO	NO	NO	NO
-22 (M2,DM2)	YES	NO	NO	NO	NO	YES	YES	YES
-23 (HDM)	NO	YES	YES	YES	YES	NO	NO	NO
-24 (HDM2)	YES	YES	YES	YES	YES	YES	YES	NO
	R244	R276	D2	D14	D214	D215	Q210	Q211
-21 (M,DM)	YES	NO	NO	NO	YES	NO	NO	NO
-22 (M2,DM2)	NO	YES	NO	NO	YES	NO	NO	NO
-23 (HDM)	YES	NO	YES	YES	NO	YES	YES	YES
-24 (HDM2)	NO	YES	YES	YES	NO	YES	YES	YES

Ref. No.	Address	Ref. No.	Address	Ref.
IC1	8C	IC11	7A	Q3
IC2	11H	IC13	5G	Q4
IC3	7I	IC14	7L	Q5
IC4	5E	IC201	6I	Q6
IC6	8G	IC202	9M	Q8
IC7	10K	IC501	3J	Q1
IC8	8H	Q1	7C	Q1
IC10	8G	Q2	7C	Q1



o.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
	6C	Q14	9B	Q25	5H	Q211	6S	D9	11D	D22	8E	D210	8Q
	7D	Q15	7I	Q26	5H	Q212	9G	D10	11D	D24	5Q	D211	7Q
	8D	Q16	11L	Q205	5L	D1	7C	D11	11E	D204	10O	D212	8L
	5G	Q18	9O	Q206	5J	D2	5D	D12	11C	D205	10G	D213	7Q
	10M	Q20	10F	Q207	11O	D3	8B	D13	11C	D206	6M	D214	5S
	6F	Q22	4E	Q208	8Q	D4	9E	D14	4D	D207	6J	D215	5S
	10L	Q23	4G	Q209	9O	D5	9E	D17	10N	D208	10Q		
	10B	Q24	11B	Q210	6R	D6	5K	D20	4P	D209	9Q		

Component side

Pattern 1

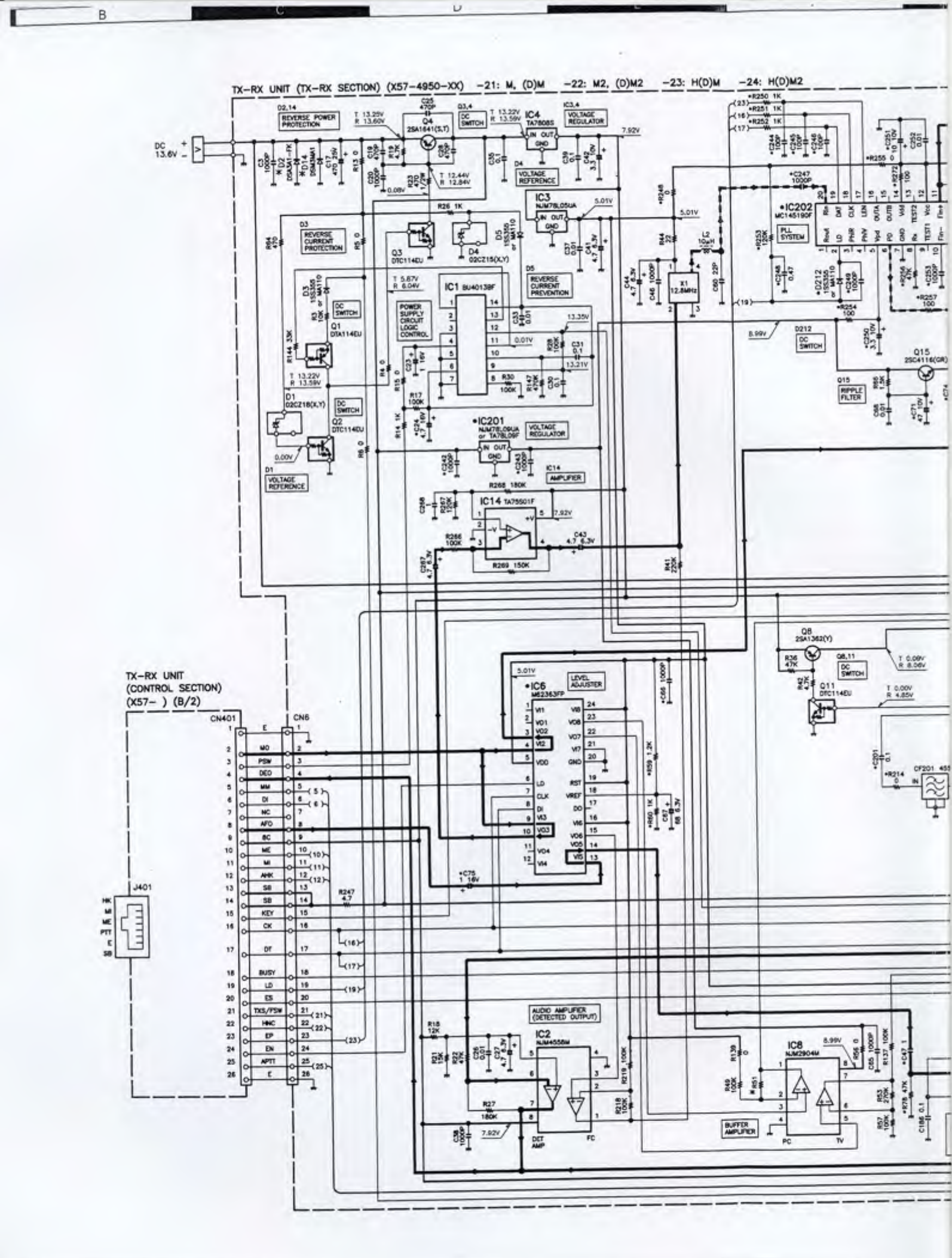
Pattern 2

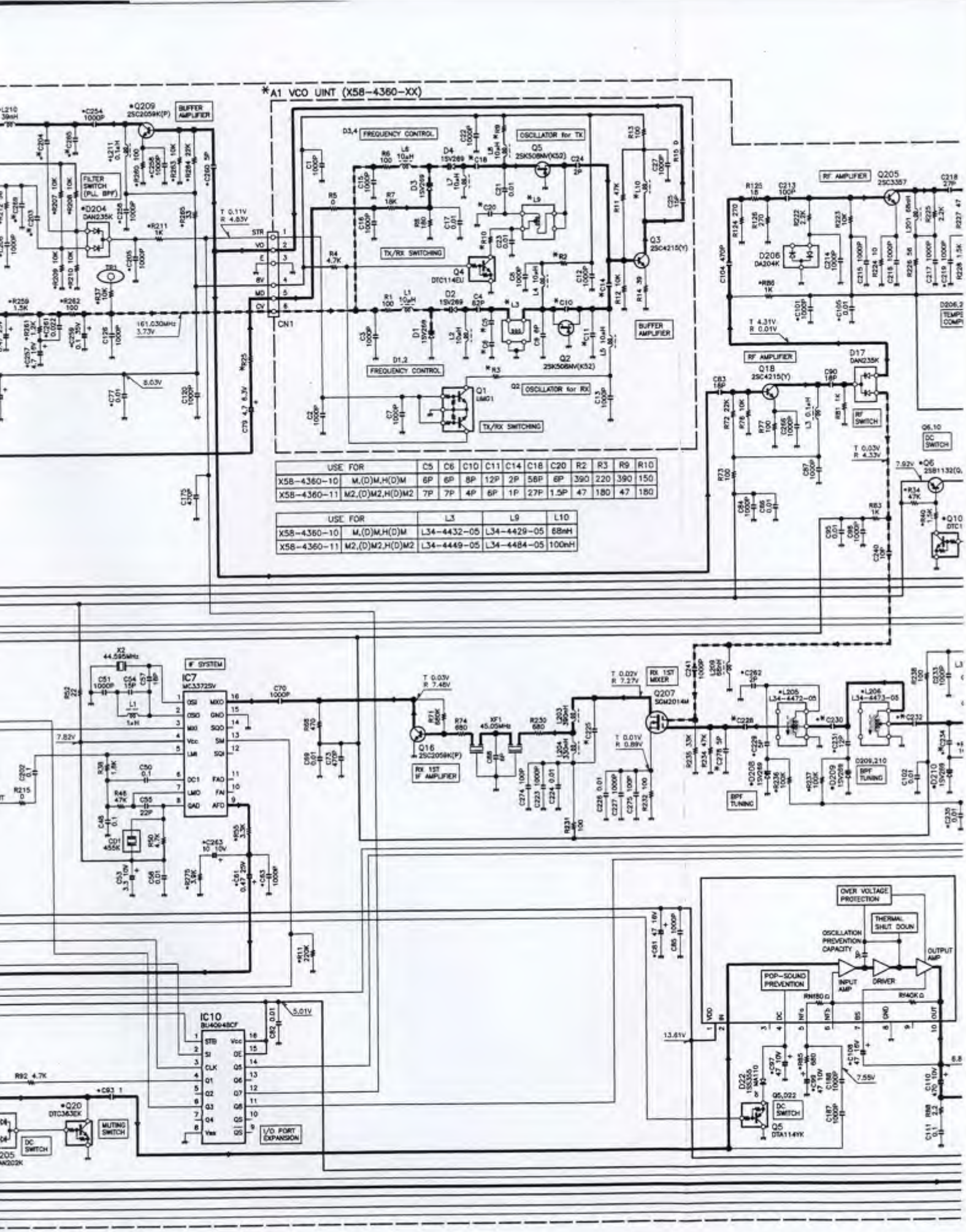
Pattern 3

Pattern 4

Foil side

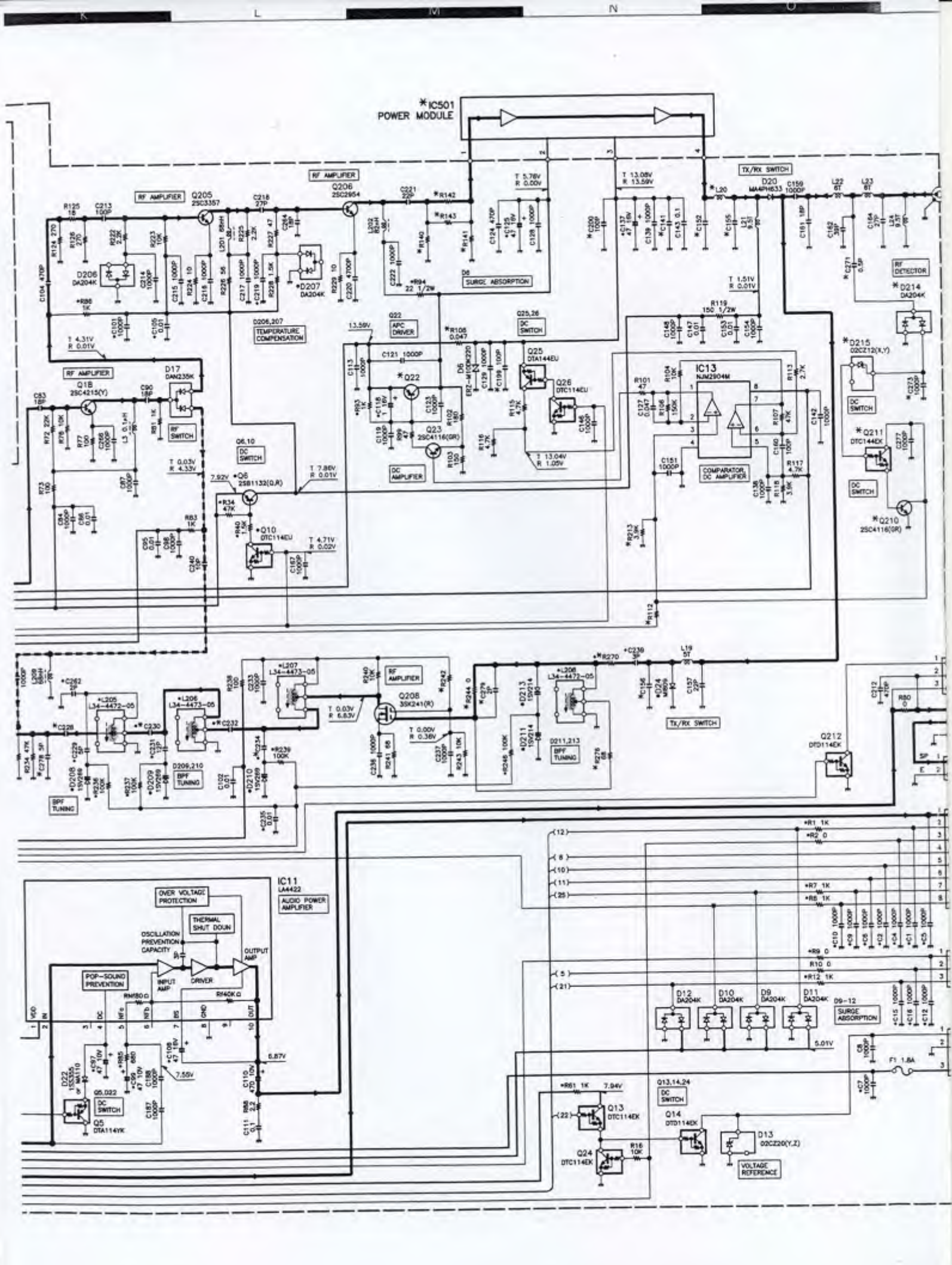
● Connect 1 and 4


TX-RX UNIT (TX-RX SECTION) (X57-4950-XX) -21: M, (D)M -22: M2, (D)M2 -23: H(D)M -24: H(D)M2
TX-RX UNIT (CONTROL SECTION) (X57-) (B/2)
IC1 BU4013BF
IC2 NJM4558M
IC3 NJM78L05UA
IC4 TA78S08S
IC6 M62363FP
IC8 NJM2904M
IC14 TA75501F
IC201 NJM78L09UA or TA78L09F
IC202 MC145190F
CN401
CN6
J401
REVERSE POWER PROTECTION
REVERSE CURRENT PROTECTION
REVERSE CURRENT PREVENTION
VOLTAGE REGULATOR
VOLTAGE REFERENCE
DC SWITCH
POWER SUPPLY CIRCUIT LOGIC CONTROL
PLL SYSTEM
RIPPLE FILTER
LEVEL ADJUSTER
AUDIO AMPLIFIER (DETECTED OUTPUT)
BUFFER AMPLIFIER
AMPLIFIER
DET AMP
FC
PC
TV
DC 13.6V



USE FOR	C5	C6	C10	C11	C14	C18	C20	R2	R3	R9	R10
X58-4360-10 M,(D)M,H(D)M	6P	6P	8P	12P	2P	56P	6P	390	220	390	150
X58-4360-11 M2,(D)M2,H(D)M2	7P	7P	4P	6P	1P	27P	1.5P	47	180	47	180

USE FOR	L3	L9	L10
X58-4360-10 M,(D)M,H(D)M	L34-4432-05	L34-4429-05	68nH
X58-4360-11 M2,(D)M2,H(D)M2	L34-4449-05	L34-4484-05	100nH


*IC501
POWER MODULE
RF AMPLIFIER
Q205
2SC3357
Q206
2SC2954
TX/RX SWITCH
D20
MA4PH633
RF DETECTOR
D214
DA204K
SURGE ABSORPTION
TEMPERATURE COMPENSATION
APC DRIVER
DC SWITCH
Q25,26
DTA144EU
DTC114EU
IC13
NJM2904M
COMPARATOR, DC AMPLIFIER
Q18
2SC4215(Y)
D17
DAN235K
RF SWITCH
Q6,10
2SB1132(Q,R)
Q22
Q23
2SC4116(GR)
DC AMPLIFIER
Q215
02CZ12(X,Y)
Q211
DTC144EK
Q210
2SC4116(GR)
Q208
3SK241(R)
BPF TUNING
D209,210
Q212
DTD114EK
IC11
LA4422
AUDIO POWER AMPLIFIER
OVER VOLTAGE PROTECTION
THERMAL SHUT DOUN
OSCILLATION PREVENTION CAPACITY
POP-SOUND PREVENTION
INPUT AMP
DRIVER
OUTPUT AMP
D12
DA204K
D10
DA204K
D9
DA204K
D11
DA204K
D9-12
SURGE ABSORPTION
Q5
DTA114YK
Q13
DTC114EK
Q14
DTD114EK
Q24
DTC114EK
D13
02CZ20(Y,Z)
VOLTAGE REFERENCE
Q13,14,24
DC SWITCH
Q5,22
DC SWITCH

CIRCUIT DIAGRAM/电路图 TK-768/H

ANT

USE FOR		IC501
X57-4950-21	M,(D)M	M67741H-32
X57-4950-22	M2,(D)M2	M67741L-32
X57-4950-23	H(D)M	M67781H-32
X57-4950-24	H(D)M2	M67781L-32

USE FOR		R25	R51	R108	R112	R140,141	R142,143	R213	R242	R244	R270	R276	C141	C152
X57-4950-21	M,(D)M	120K	100K	0.047 3W	4.7K	390	33	NO	180K	YES	0	NO	470P	7P
X57-4950-22	M2,(D)M2	100K	33K	0.047 3W	4.7K	820	10	YES	68K	NO	15	YES	470P	12P
X57-4950-23	H(D)M	120K	100K	0.047 5W	47K	820	10	NO	180K	YES	0	NO	100P	NO
X57-4950-24	H(D)M2	100K	100K	0.047 5W	47K	820	10	NO	68K	NO	15	YES	100P	22P

USE FOR		C155	C156	C199,200	C203,204	C225	C228	C230	C232	C234	C265,269	C271	C273
X57-4950-21	M,(D)M	12P	22P	NO	12P	15P	15P	0.75P	0.75P	10P	18P	NO	NO
X57-4950-22	M2,(D)M2	22P	18P	NO	18P	22P	18P	2P	1.5P	12P	22P	NO	NO
X57-4950-23	H(D)M	7P	22P	YES	12P	15P	15P	0.75P	0.75P	10P	18P	YES	YES
X57-4950-24	H(D)M2	22P	18P	YES	18P	22P	18P	2P	1.5P	12P	22P	YES	YES

USE FOR		C278,279	Q22	Q210	Q211	D2	D14	D214	D215	L20	A1
X57-4950-21	M,(D)M	NO	2SB1565(E,F)	NO	NO	NO	YES	NO	NO	6T	X58-4360-10
X57-4950-22	M2,(D)M2	YES	2SB1565(E,F)	NO	NO	NO	YES	NO	NO	6T	X58-4360-11
X57-4950-23	H(D)M	NO	2SA1757(E,F)	YES	YES	YES	NO	YES	YES	2.5T	X58-4360-10
X57-4950-24	H(D)M2	YES	2SA1757(E,F)	YES	YES	YES	NO	YES	YES	6T	X58-4360-11

CN201
PA
SPO
SPI

J1 EXT. SP

CN5 INT SP

CN1
DEO
AHK
IGN
DI
MC
MI
PTT
SQ

CN2
AM
MM
TXS/FSW

CN4
HOR

SB

D1 : 02CZ18(X,Y)
D2 : DSA3A1-FK
D3,5,22,212 : 1SS355 or MA110
D4 : 02CZ15(X,Y)
D6 : ERZ-M10DK220
D9-12,206,207,214 : DA204K
D13 : 02CZ20(Y,Z)
D14 : DSM3MA1
D17,204 : DAN235K
D20 : MA4PH633
D24 : MI809
D205 : DAN202K
D208-210 : 1SV269
D211,213 : 1SV214
D215 : 02CZ12(X,Y)

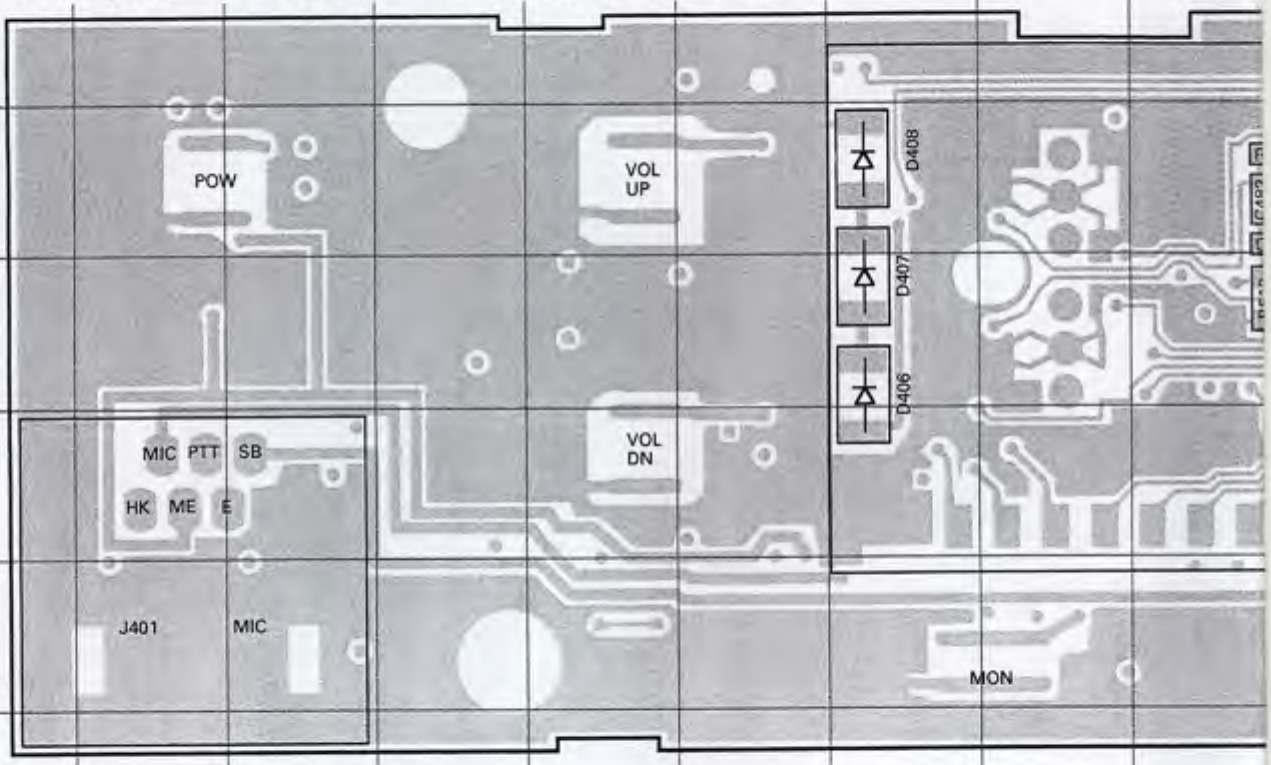
IC1 : BU4013BF
IC2 : NJM4558M
IC3 : NJM78L05UA
IC4 : TA7808S
IC6 : M62363FP
IC7 : MC3372SV
IC8,13 : NJM2904M
IC10 : BU4094BCF
IC11 : LA4422
IC14 : TA75S01F
IC201 : TA78L09F or NJM78L09UA
IC202 : MC145190F

Q1 : DTA114EU
Q2,3,10,11,26 : DTC114EU
Q4 : 2SA1641(S,T)
Q5 : DTA114YK
Q6 : 2SB1132(Q,R)
Q8 : 2SA1362(Y)
Q13,24 : DTC114EK
Q14,212 : DTD114EK
Q15,23,210 : 2SC4116(GR)
Q16,209 : 2SC2059K(P)
Q18 : 2SC4215(Y)
Q20 : DTC363EK
Q22 : ✱
Q25 : DTA144EU
Q205 : 2SC3357
Q206 : 2SC2954
Q207 : SGM2014M
Q208 : 3SK241(R)

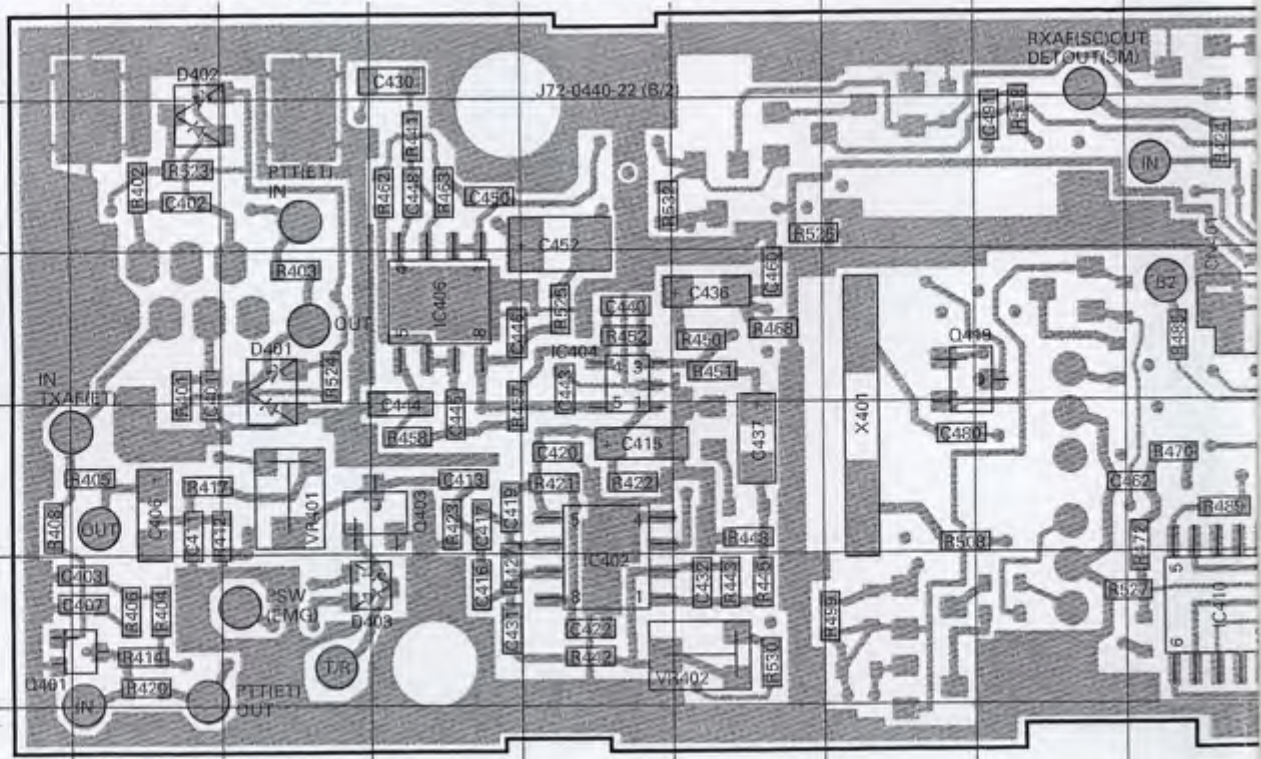
Note : • is parts of pattern 1

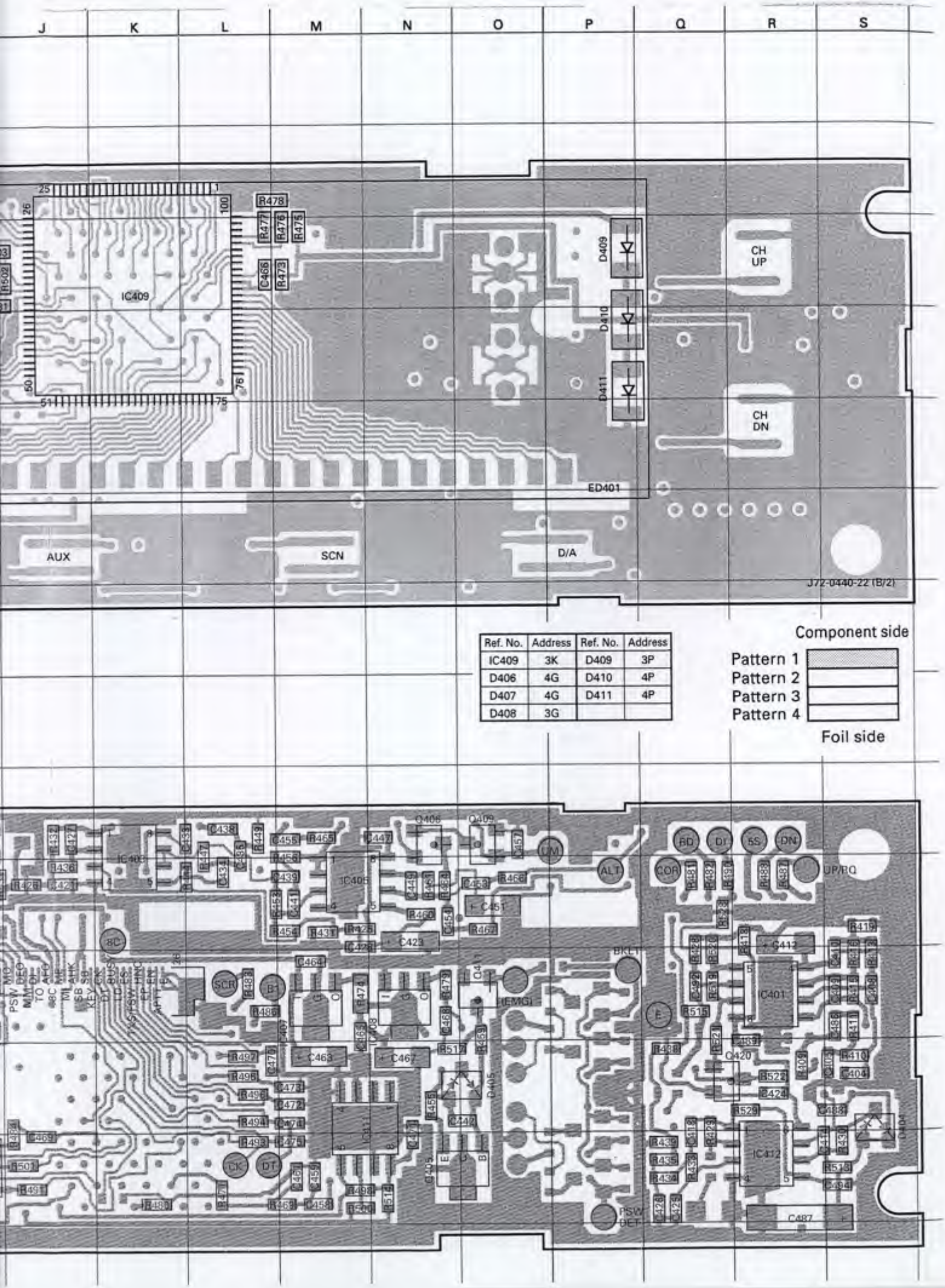
TK-768/H PC BOARD VIEWS/ 印刷电路板图

TX-RX UNIT (X57-4950-XX) (B/2) Component side view
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2



TX-RX UNIT (X57-4950-XX) (B/2) Foil side view
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2





Ref. No.	Address	Ref. No.	Address
IC409	3K	D409	3P
D406	4G	D410	4P
D407	4G	D411	4P
D408	3G		

Component side

Pattern 1

Pattern 2

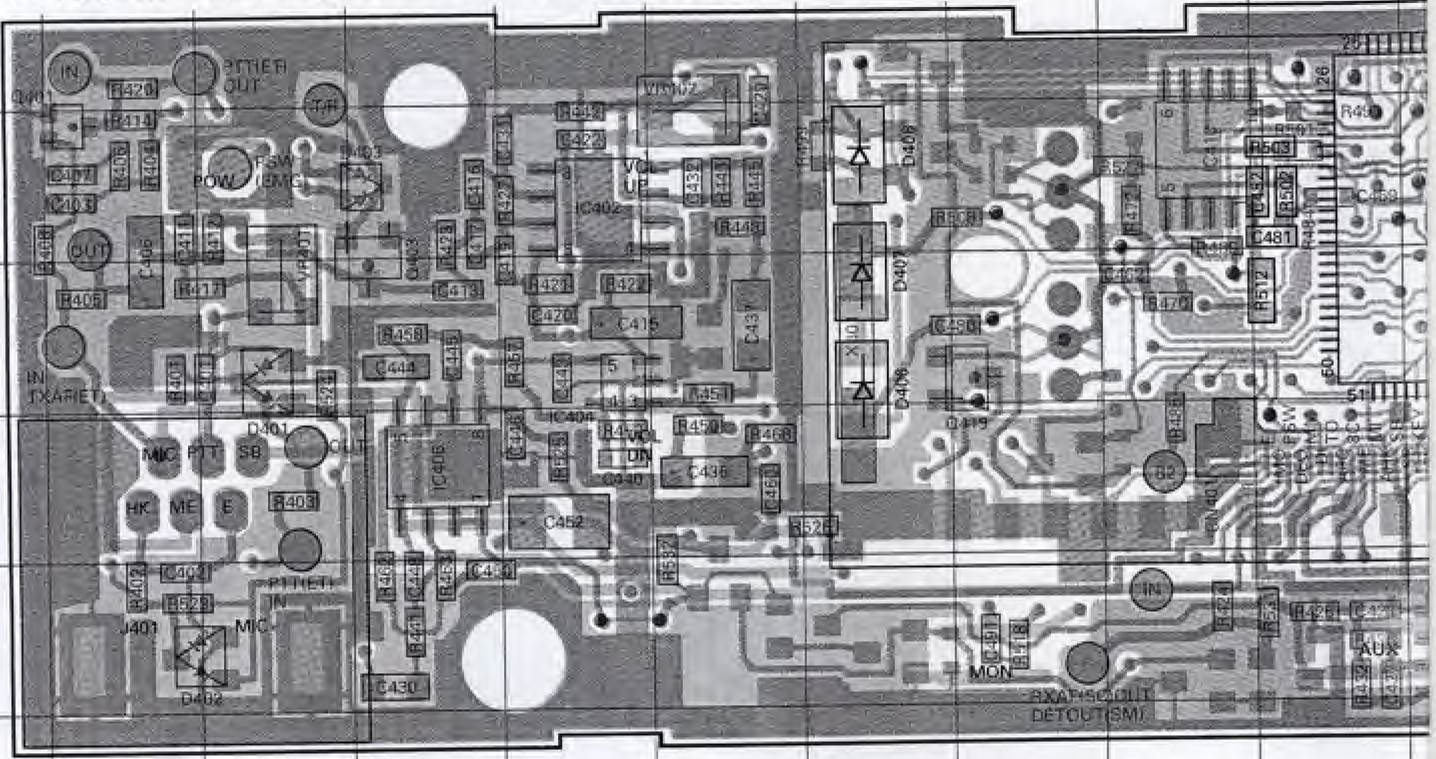
Pattern 3

Pattern 4

Foil side

T U V W X Y Z AA AB AC

TX-RX UNIT (X57-4950-XX) (B/2) Component side view + Foil side
-21 : M,DM -22 : M2,DM2 -23 : HDM -24 : HDM2

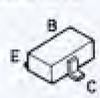


Component side

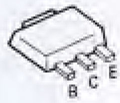
Pattern 1
Pattern 2
Pattern 3
Pattern 4

Foil side

DTA114EU 2SA1362
DTA114TK 2SC2059K
DTA114YK 2SC4081
DTA144EK 2SC4116
DTA144EU 2SC4215
DTC114EK
DTC114EU
DTC144EK
DTC363EK
DTD114EK



2SB1132
2SC2954
2SC3357



2SA1641

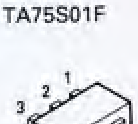
2SA1757
2SB1565

NJM78L
NJM78L

Ref. No.	Address	Ref. No.	Address
IC401	11R	Q403	12D
IC402	13E	Q405	13N
IC403	9K	Q406	9N
IC404	11E	Q409	9O
IC405	10M	Q411	11O
IC406	11D	Q419	11G
IC407	11M	Q420	12Q
IC408	11M	D401	11C
IC410	13I	D402	10B
IC411	12M	D403	13C
IC412	13R	D404	12S
Q401	13B	D405	12N

M67741H-32
M67741L-32
M67781H-32
M67781L-32

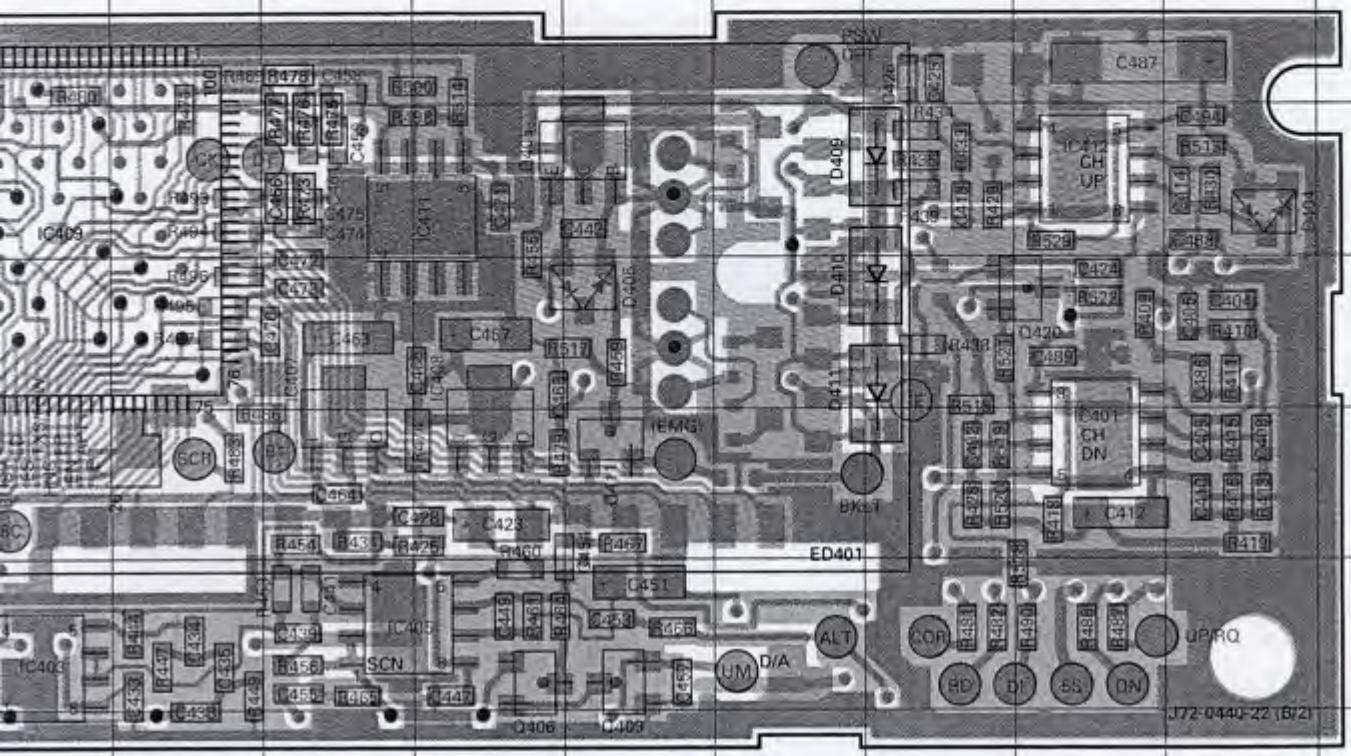
TA75S01F



NJM2904M
NJM4558E
NJM4558M

AT2408N10SI2.5

LA44



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC401	5AK	IC409	3AD	Q409	6AH	D405	4AH
IC402	3X	IC410	3AB	Q411	5AH	D406	4Z
IC403	6AD	IC411	3AG	Q419	4AA	D407	4Z
IC404	4X	IC412	3AK	Q420	4AK	D408	3Z
IC405	6AF	Q401	3U	D401	4V	D409	3AI
IC406	5W	Q403	3W	D402	6U	D410	4AI
IC407	5AF	Q405	3AH	D403	3W	D411	4AI
IC408	5AG	Q406	6AG	D404	3AL		

Component side

Pattern 1
Pattern 2
Pattern 3
Pattern 4

Foil side

● Connect 1 and 4

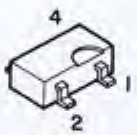
5UA
9UA

RH5VL42C

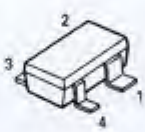
2SK508NV

TA7808S

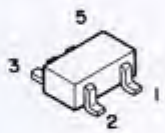
3SK241



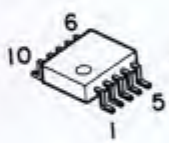
SGM2014M



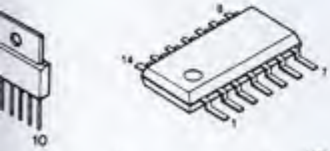
UMG1



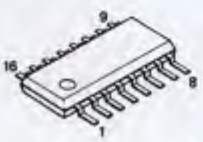
LC73881M



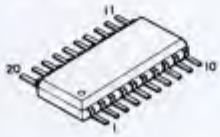
BU4013BF



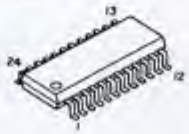
BU4094BCF
MC3372SV



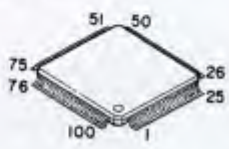
MC145190F



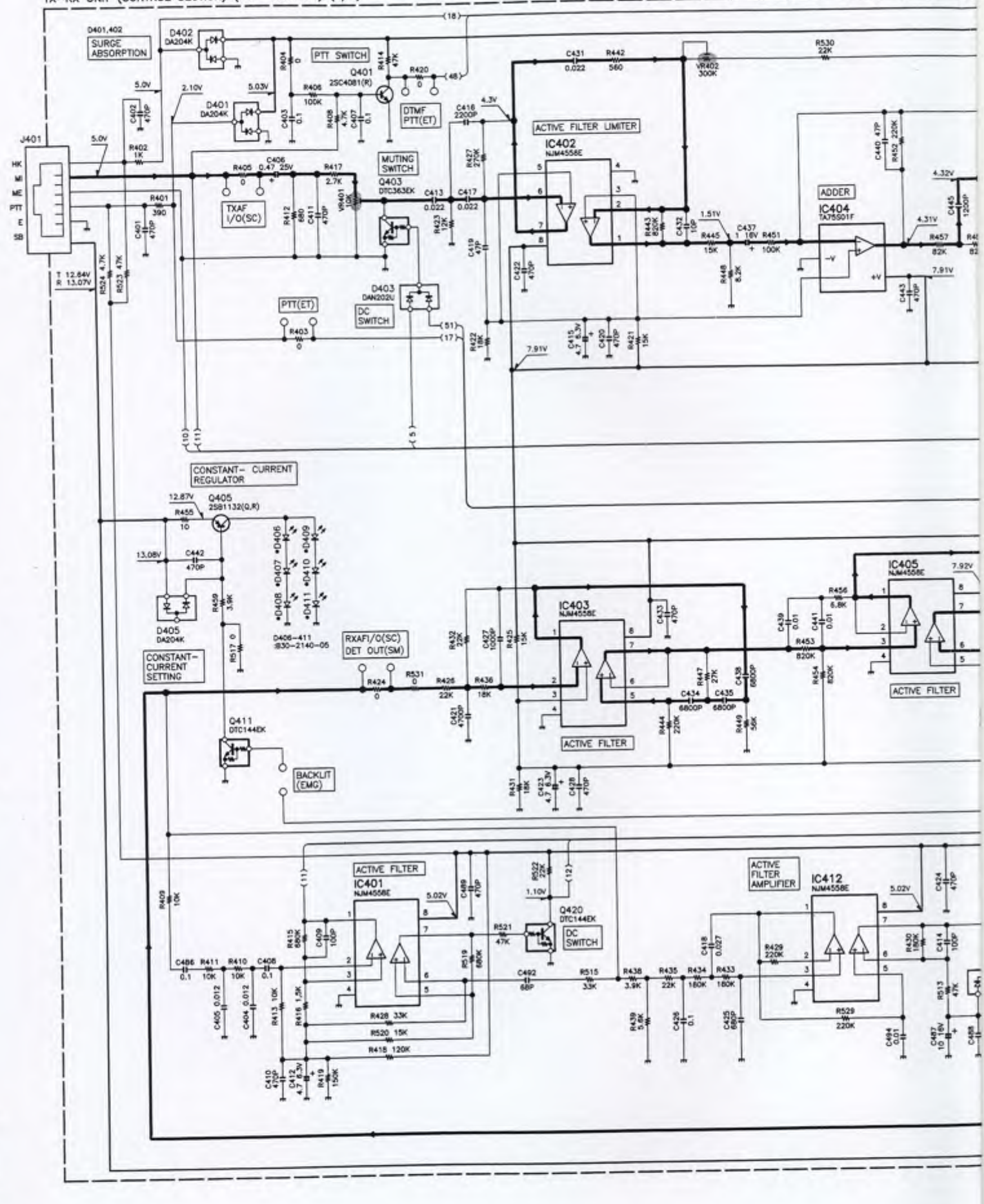
M62363FP



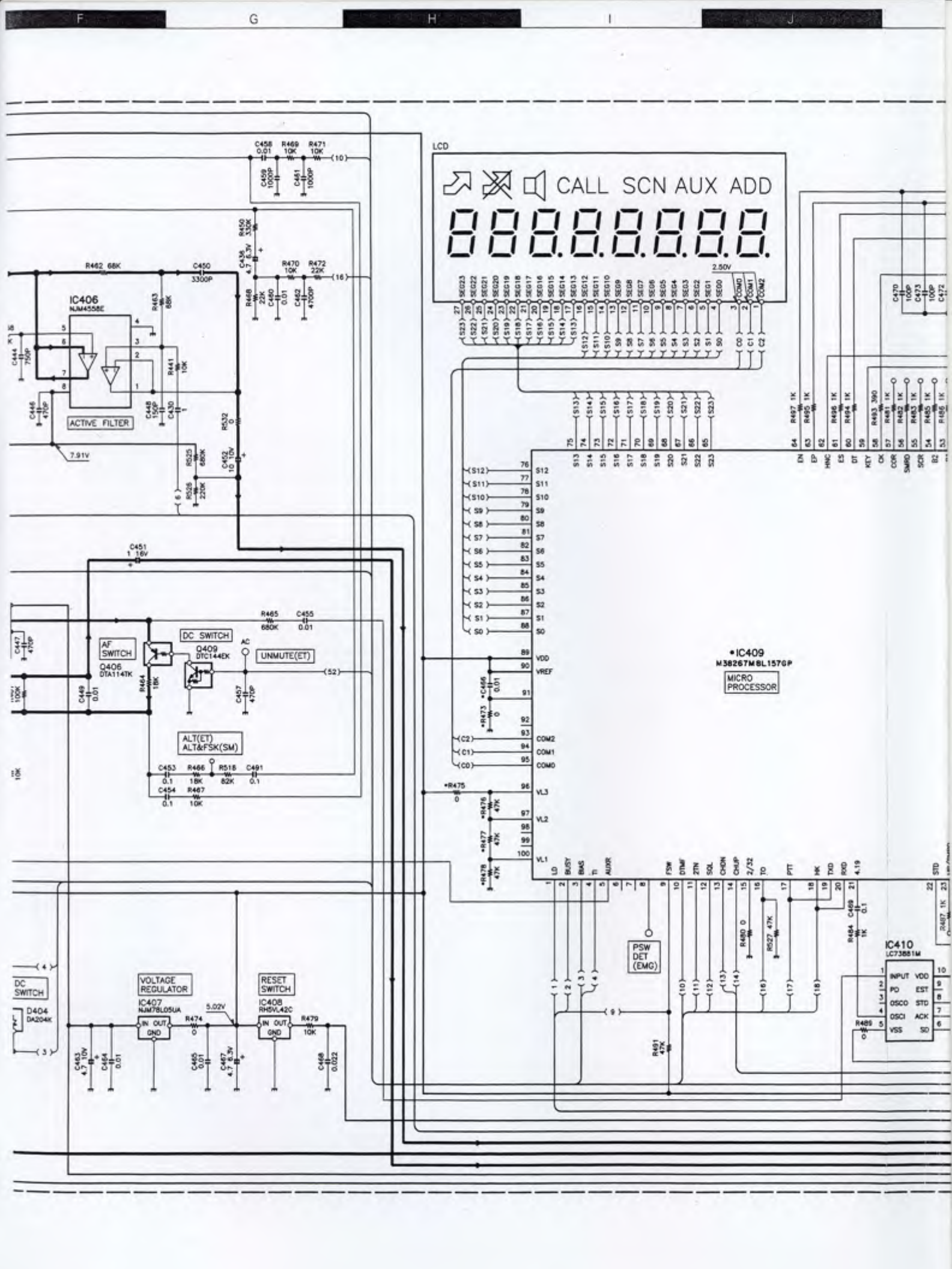
M38267M8L157GP



TX-RX UNIT (CONTROL SECTION) (X57-4950-XX) (B/2)

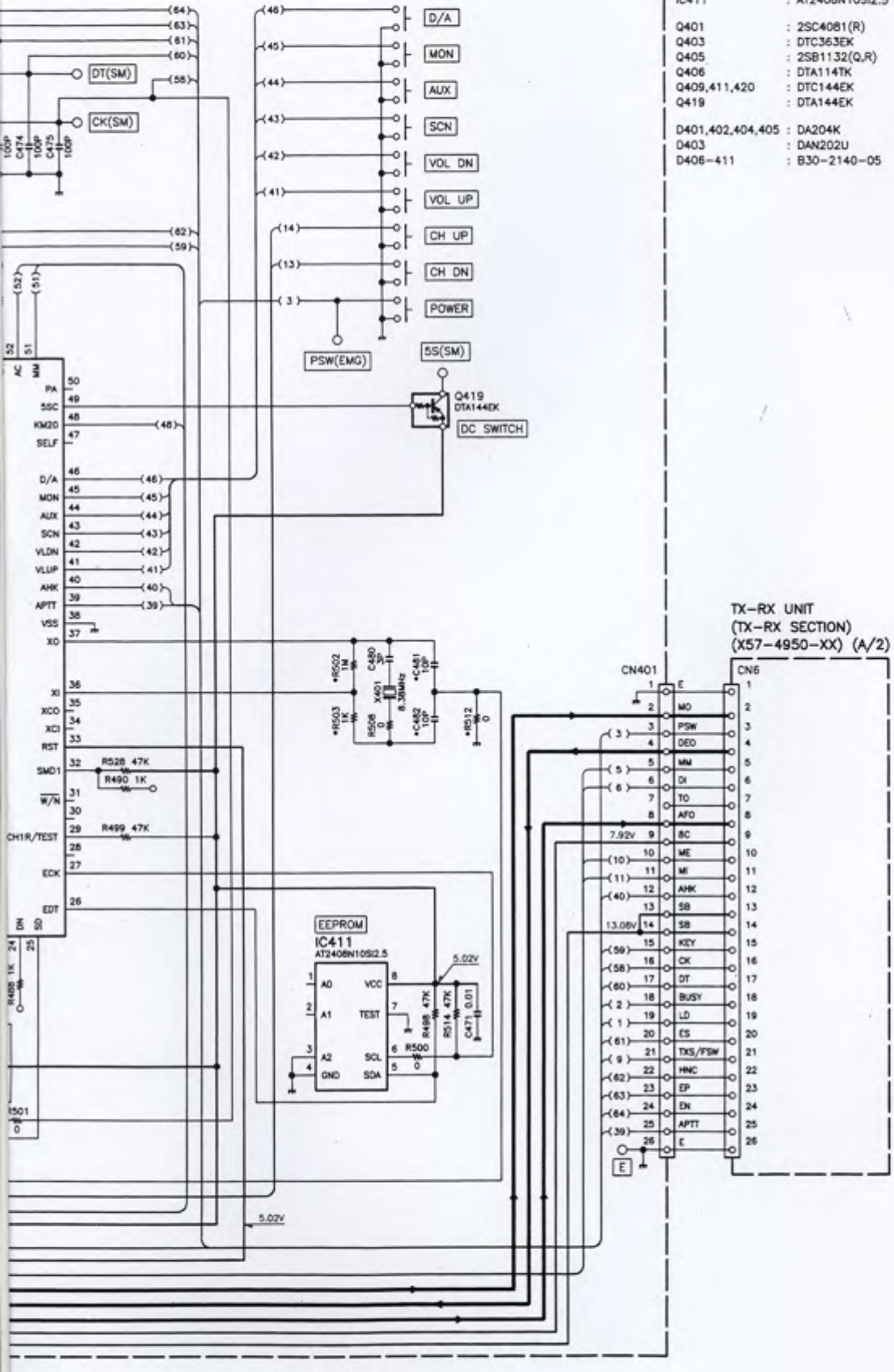


Note : • is parts of pattern 1

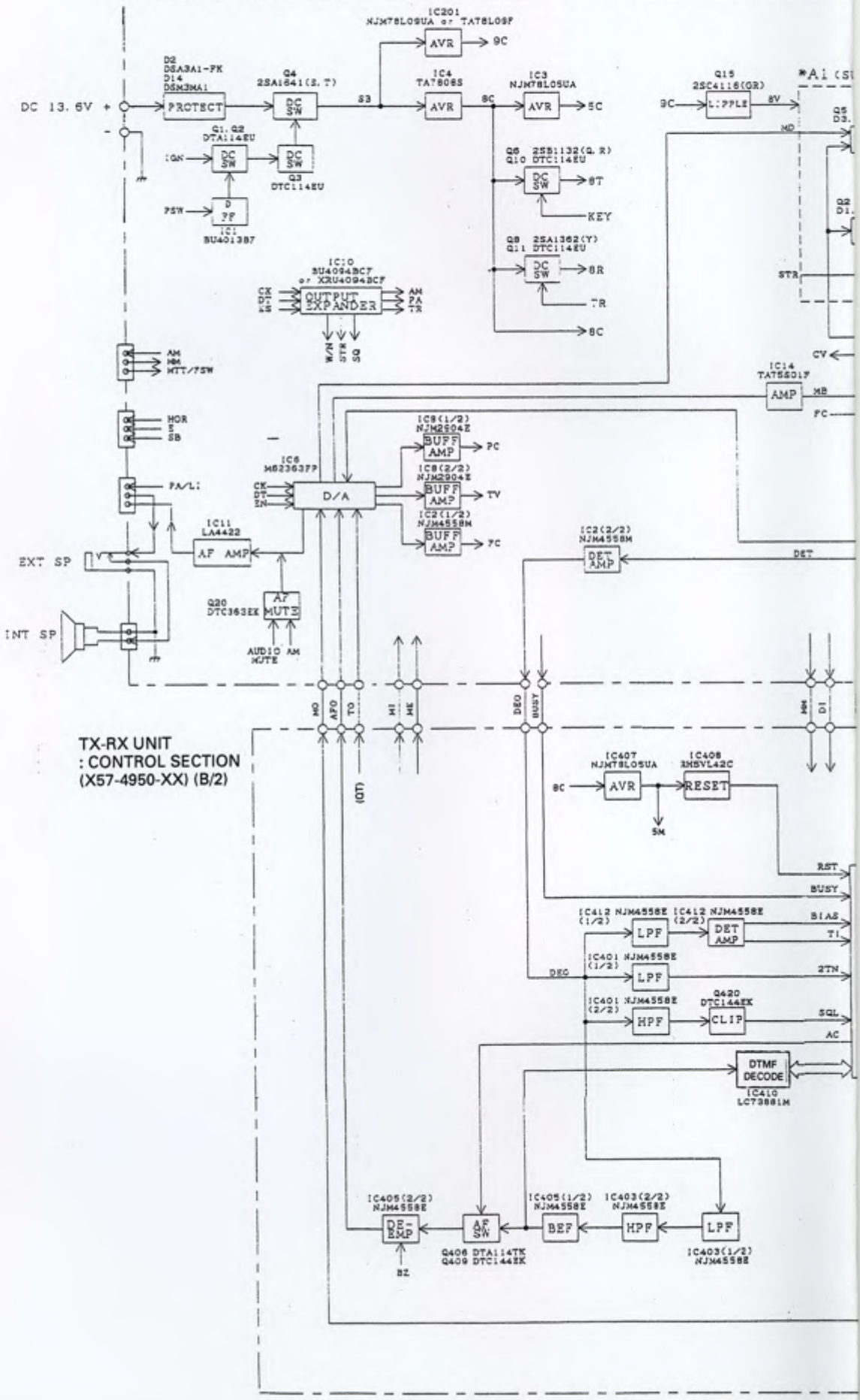

F
G
H
I
J
LCD
CALL SCN AUX ADD
IC406
NJM4558E
ACTIVE FILTER
7.91V
AF SWITCH
Q406
DTA114TK
DC SWITCH
Q409
DTC144EK
UNMUTE(ET)
ALT(ET)
ALT&FSK(SM)
*IC409
M38267M8L157GP
MICRO PROCESSOR
PSW DET (EMG)
IC410
LC73881M
VOLTAGE REGULATOR
IC407
NJM78L05UA
5.02V
RESET SWITCH
IC408
RH5VL42C
D404
DA204K
DC SWITCH

CIRCUIT DIAGRAM/电路图 TK-768/H

IC401~403,405,406,412	
	: NJM4558E
IC404	: TA75S01F
IC407	: NJM78L05UA
IC408	: RH5VL42C
IC409	: **M38267M8L157GP**
IC410	: LC73881M
IC411	: AT2408N10SI2.5
Q401	: 2SC4081(R)
Q403	: DTC363EK
Q405	: 2SB1132(Q,R)
Q406	: DTA114TK
Q409,411,420	: DTC144EK
Q419	: DTA144EK
D401,402,404,405	: DA204K
D403	: DAN202U
D406~411	: B30-2140-05

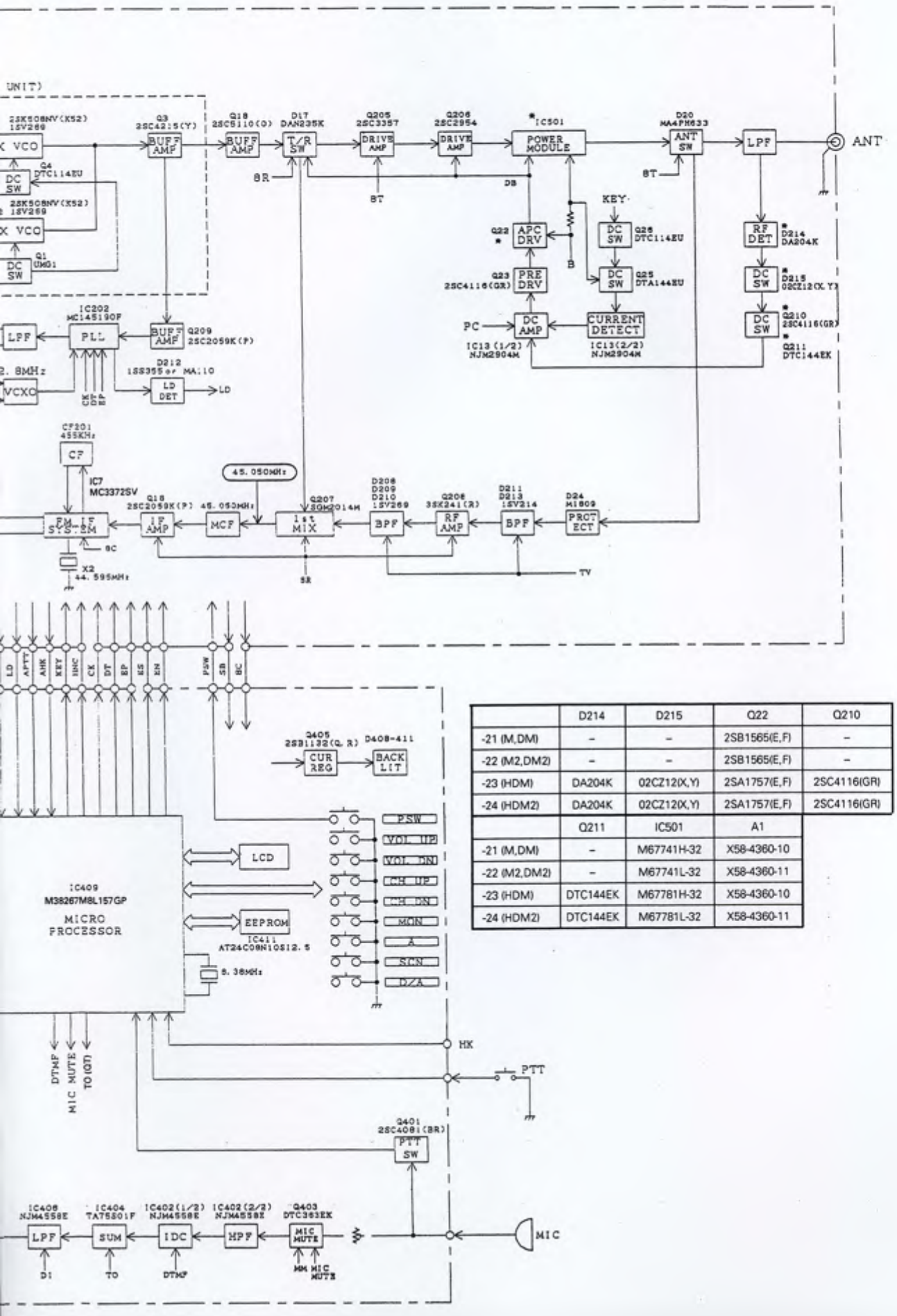


TX-RX UNIT : TX-RX SECTION (X57-4950-XX) (A/2)



TX-RX UNIT
: CONTROL SECTION
(X57-4950-XX) (B/2)

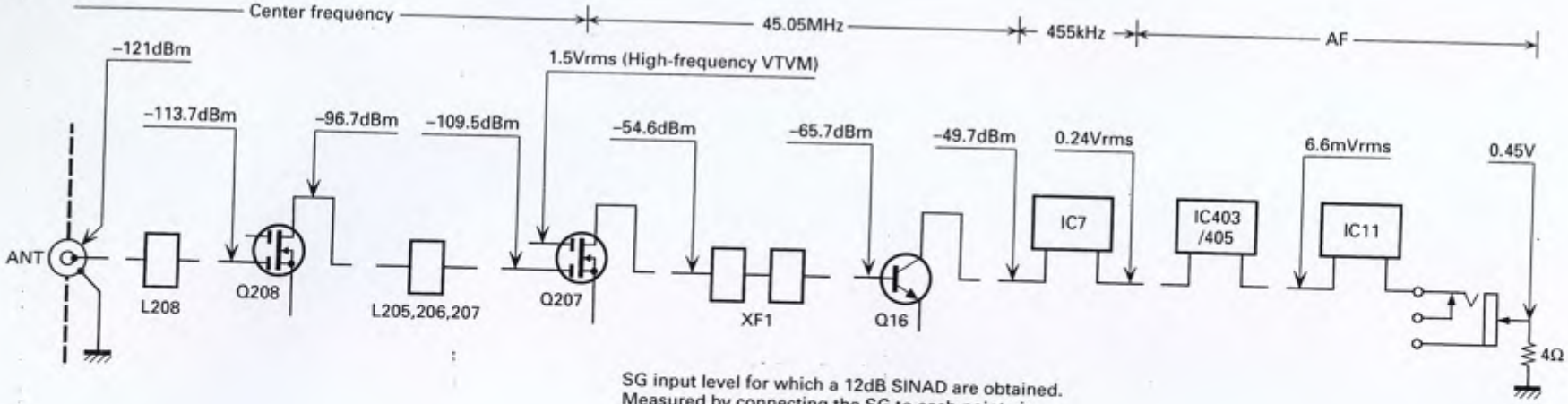
DIAGRAM/ 结构图



	D214	D215	Q22	Q210
-21 (M,DM)	-	-	2SB1565(E,F)	-
-22 (M2,DM2)	-	-	2SB1565(E,F)	-
-23 (HDM)	DA204K	02CZ12(X,Y)	2SA1757(E,F)	2SC4116(GR)
-24 (HDM2)	DA204K	02CZ12(X,Y)	2SA1757(E,F)	2SC4116(GR)

	Q211	IC501	A1
-21 (M,DM)	-	M67741H-32	X58-4360-10
-22 (M2,DM2)	-	M67741L-32	X58-4360-11
-23 (HDM)	DTC144EK	M67781H-32	X58-4360-10
-24 (HDM2)	DTC144EK	M67781L-32	X58-4360-11

RX Section



SG input level for which a 12dB SINAD are obtained.
Measured by connecting the SG to each point via a 0.0015μF capacitor. (Squelch off)

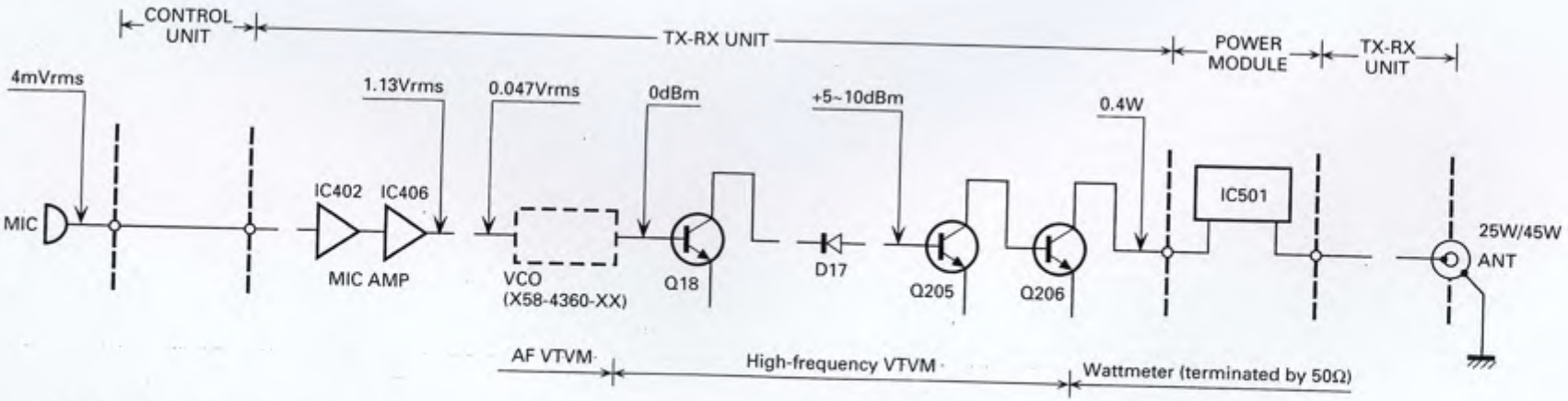
用于获得 12dB SINAD 的 SG 输入电平。
通过一个 0.0015μF 的电容连接 SG 来测量。（静噪关）

AF VTVM

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

当用前面板 AF VOL 控制将 AF 输出电平调节为 0.45/4Ω 时获得的AF电平。
用AF 电压表连接到外部扬声器插孔进行测量，接收一个以1kHz, DEV 3kHz调制的40dB EMF SSG 信号。

TX Section



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

1.AG 设定成使 MIC 输入在 1kHz MOD 下变为 3kHz DEV。
2.发送频率：中心频率

KAP-1 (HORN/LIGHT UNIT/ 喇叭 /灯光单元)

External View

Overview

This unit is designed as an option that is built into the TK-768/H land mobile transceivers. It has a horn alert switching relay.

Main Features

- **Horn alert (HA) function**

An external equipment can be controlled by turning the HA function on and off and using signaling decode output.

概述

本装置是作为一个选构件设计的，它可以内装于 TK－768/H 陆地移动通信机，并具有一个喇叭报警开关继电器。

主要功能

- **喇叭报警（HA）功能**

一个外部装置可以通过调谐 HA 功能的开和关及使用信号解码输出来控制。

Part List

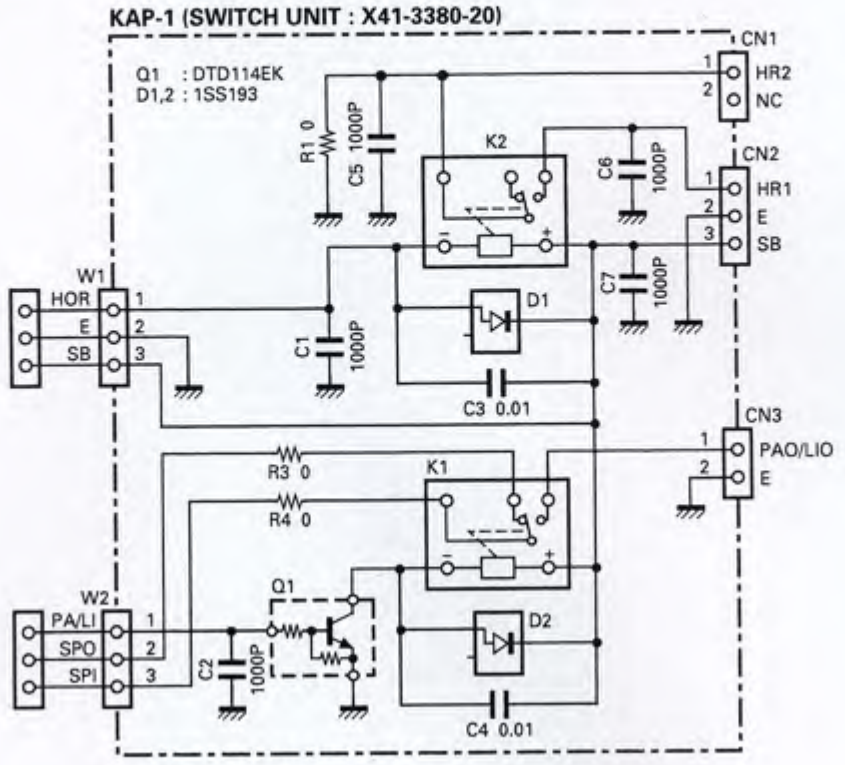
＊ : New parts

Ref. No.	New parts	Parts No.	Description
KAP-1			
		N87-2606-46	BRAZIER HEAD TAPTITE SCREW
		X41-3380-20	SWITCH UNIT
SWITCH UNIT (X41-3380-20)			
C1,2		CK73FB1H102K	CHIP C 1000PF K
C3,4		CK73FB1E103K	CHIP C 0.010UF K
C5-7		CK73FB1H102K	CHIP C 1000PF K
W1		E37-0630-05	LEAD WIRE WITH CONNECTOR
W2		E37-0631-05	LEAD WIRE WITH CONNECTOR
CN1		E40-3246-05	PIN ASSY (2P)
CN3		E40-3246-05	PIN ASSY (2P)
CN2		E40-3247-05	PIN ASSY (3P)
R1		R92-0670-05	CHIP R 0 OHM
R3,4		R92-0670-05	CHIP R 0 OHM
K1,2		S51-1420-05	RELAY
D1,2		1SS193	DIODE
Q1		DTD114EK	DIGITAL TRANSISTOR

TK-768/H

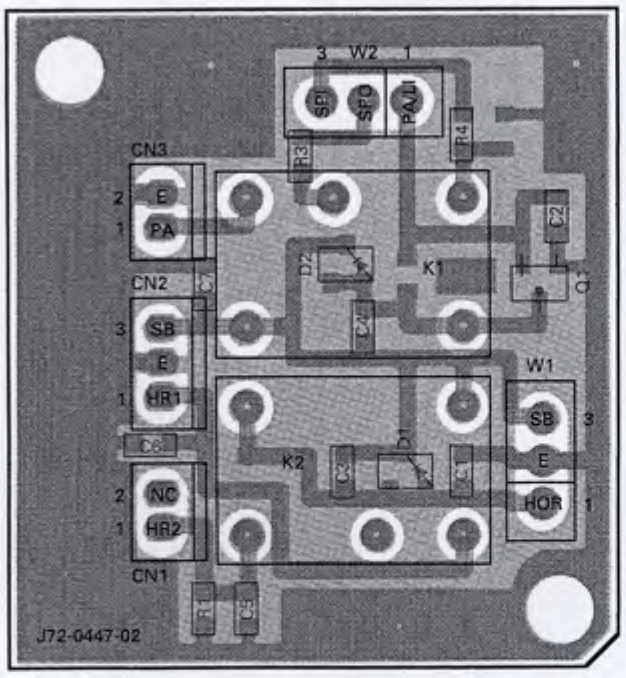
KAP-1(HORN/LIGHT UNIT/喇叭/灯光单元)

Circuit Diagram

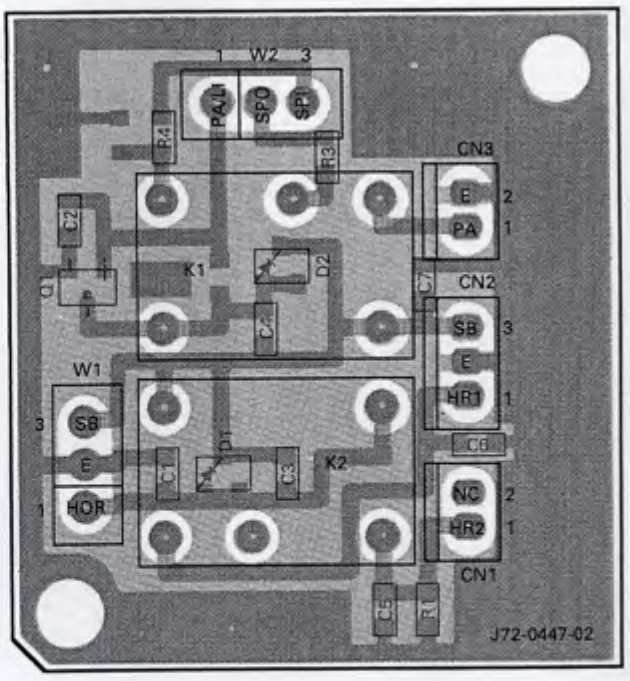


PC Board View

SW unit (X41-3380-20) Component side view



SW unit (X41-3380-20) Foil side view



Component side
Foil side

SPECIFICATIONS

General

Frequency range	M,DM,HDM : 148 to 174MHz M2,DM2,HDM2 : 136 to 156MHz
Number of channels	32 semi-duplex channels
Channel spacing	25kHz (PLL channel step 5kHz/6.25kHz)
Input voltage	13.6V DC negative ground
Current drain	0.4A on standby 1.0A on receive TK-768 : 8A on transmit TK-768H : 12A on transmit
Duty cycle	Receiver 100% Transmitter 20%
Temperature range	–30°C to +60°C (–22°F to +140°F)
Dimensions & Weight	140 (5.51) W x 40 (1.58) H x 170 (6.73) D mm (inch) 1.0kg (2.20lbs)

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

RF input impedance	50Ω
Sensitivity (EIA 12dB SINAD)	0.25μV
Selectivity	78dB
Intermodulation	73dB
Spurious and Image rejection	80dB
Audio power output	4W at 4Ω less than 5% distortion
Frequency stability	±0.0005% from –30°C to + 60°C
Channel frequency spread	26MHz/20MHz

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

RF power output	TK-768 : 25W TK-768H : 45W
Spurious and Harmonics	–70dB
Modulation	F3E, ±5kHz for 100% at 1000Hz
FM noise	–50dB (25kHz)
Microphone impedance	Low impedance
Audio distortion	3% at 1kHz
Frequency stability	±0.0005% at –30°C to +60°C
Channel frequency speed	26MHz/20MHz