HF SSB RADIOTELEPHONE

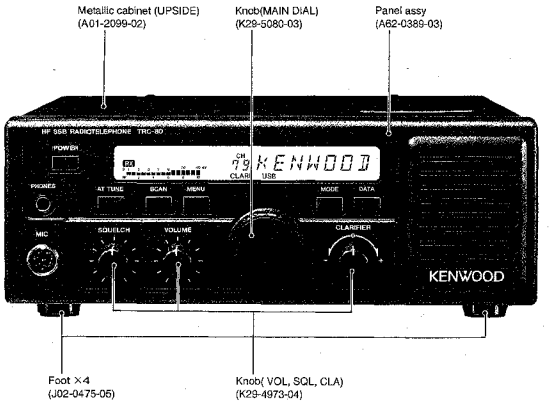
TRC-80

SERVICE MANUAL

维修手册

KENWOOD

B51-8293-00 (B) 1531



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GENERAL/ 概要

NTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced echnicians 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 equired.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be ncluded. 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 dentification.

引 言

本手册的范围

本手册是提供给熟悉专业通信设备并且具有维修经验的技术人员使用的。它包括了维修该设备所需要的全部资料和现行公布的数据。在出版后有可能发生变动，将用《服务通报》或《手册修订本》进行补充。

替换零件的订购

当订购替换零件或设备信息时，应注明完整的零件识别号码。所有的零件（元件、组件以及机壳）都有识别号码。如果不知道零件号码，为了正确地识别，必须写上此元件所属的机壳或组件的号码，并且应对元件进行充分的说明。

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

- 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.
- This equipment should be serviced by a qualified technician only.

SERVICE

This radiotelephone 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.

个人安全

为了个人的安全，请注意下列事项：

- 在没有认真地核实所有射频插头之前或有任何一个打开的插头没有连接到相应端子上的情况下，均不要发射。
- 在电爆管附近，或者，在易燃性气体环境中，必须关掉电源，不可操作本设备。
- 本设备只应该由有资格的技术人员来维修。

服务

为便于本无线电话的维修，建立了完整的服务体系，有包括原理图，印刷线路板图和调整步骤在内的资料供参考。

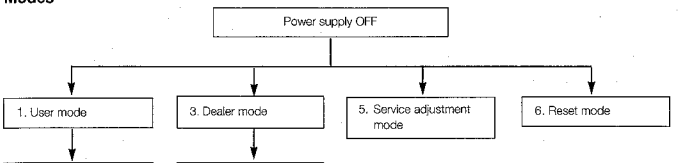
注意

当使用“建伍”或它的指定厂家之外的公司所制造的波道元件时，我们不能保证振荡器的稳定性。

TRC-80

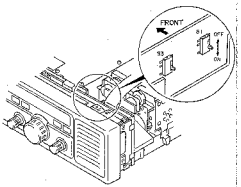
REALIGNMENT

Modes



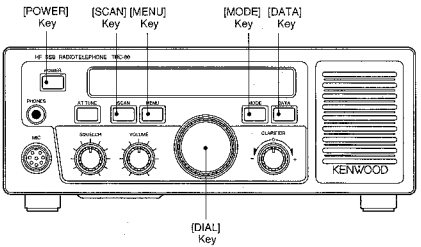
Note: DIP SW1 is set to "ON" when shipped from the factory. If the dealer mode , service adjustment mode and reset mode fail to function, please check to see that DIP SW1 is set to "ON."

No.	Mode	Function
1	User mode	For normal use
2	User menu mode	Selects the user menu
3	Dealer mode	Writes the various data settings to the memory channels
4	Dealer menu mode	Selects the dealer menu
5	Service adjustment mode	Selects the adjustment items for the service adjustment mode menu
6	Reset mode	Clears all memory channels and the menu contents



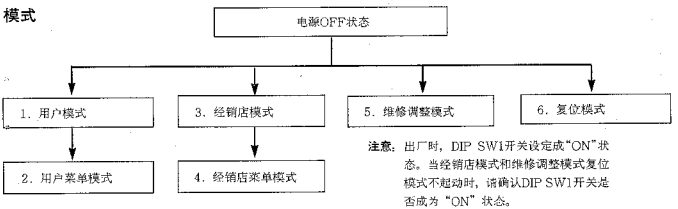
How to enable the mode

No.	Mode	Procedure
1	User mode	Power ON
2	User menu mode	Press User mode + [MENU]
3	Dealer mode	Press [MENU] + [MODE] + Power ON
4	Dealer menu mode	In Dealer mode , press [MENU]
5	Service adjustment mode	Press [SCAN] + [DATA] + Power ON
6	Reset mode	Press [MENU] + [MODE] + [DATA] + Power ON

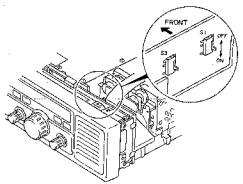


模式组合

模式



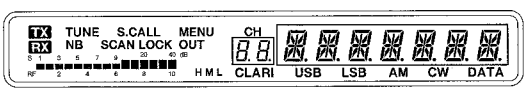
注意： 出厂时，DIP SW1开关设定成"ON"状态。当经销店模式和维修调整模式复位模式不起动时，请确认DIP SW1开关是否成为"ON"状态。



号 码	模　式	功　能
1	用户模式	正常用途
2	用户菜单模式	设定用户菜单
3	经销店模式	对存储信道写入各项数据
4	经销店菜单模式	设定经销店菜单
5	维修调整模式	设定维修调整模式菜单的调整项目
6	复位模式	全部清除存储信道、菜单的内容

各模式的输入法

号 码	模　式	操　作
1	用户模式	接通电源
2	用户菜单模式	用户模式＋[MENU]
3	经销店模式	[MENU]＋[MODE]＋接通电源
4	经销店菜单模式	在经销店模式＋[MENU]
5	维修调整模式	[SCAN]＋[DATA]＋接通电源
6	复位模式	[MENU]＋[MODE]＋[DATA]＋接通电源



REALIGNMENT

Reset

All reset

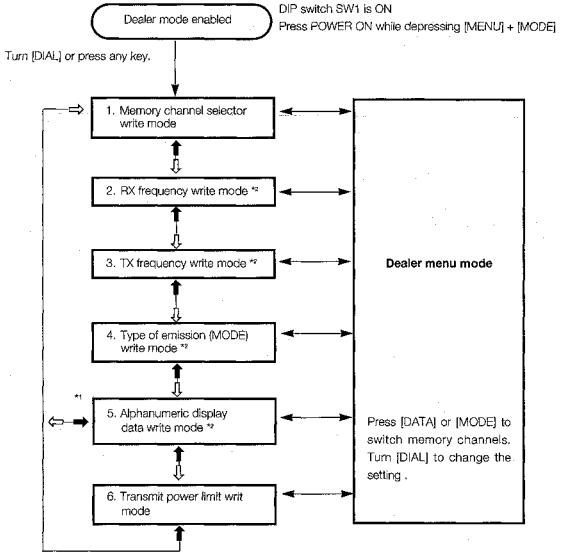
Restores the factory default settings .
Set DIP SW1 to ON, then press [POWER] while depressing [MENU], [MODE] and [DATA].
"HELLO" appears on the display, indicating the system has been reset.

- All reset does not clear adjustment data settings.
- If the power supply is cut off during all reset, the forced all reset is executed as soon as power is restored.

Battery reset

When power supply from the backup battery is interrupted, the factory default setting are restored, except for memory channels 01–10.

- Battery reset occurs automatically whenever the power backup fails to function.



*1 When the specified diode D7 is not present
*2 Press SCAN for line feed.
⬅ Press [MODE]
⇦ Press [DATA]
◄ Press [MENU]

模式组合

复位

全复位

恢复为出厂状态。

将DIP SW1开关设定成“ON”状态后，边按下［MENU］、［MODE］、［DATA］键，边按下［POWER］键。

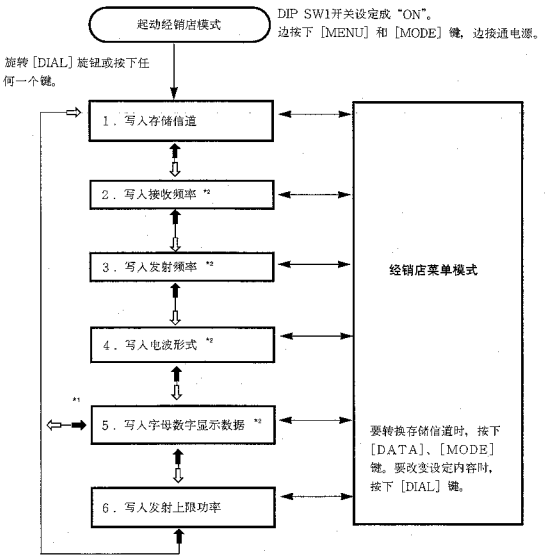
使HELLO显示后结束全复位。

- 在全复位模式，调整数据不被清除。
- 在全复位模式中关掉电源时，再一次接通电源时无条件地进行全复位。

蓄电池复位

当备用电池耗尽时，除了存储信道的01～10信道的内容，恢复为出厂状态。

- 后备没有被正常进行时，自动进行蓄电池复位。



*1 没有规格二极管D7时。

*2 进位要按下［SCAN］键。

⬅ 按下［MODE］键

⇦ 按下［DATA］键

◄ 按下［MENU］键

REALIGNMENT

Dealer Mode

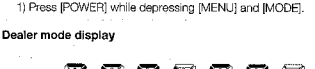
- This mode allows dealers to select functions for users.
- Dealers can customize the receive frequency, transmit frequency, type of emission(MODE), alphanumeric display, transmission power limit and set functions.

Contents to be customized	Mode to be used	Purpose
Receive frequency	Receive frequency write mode	To write to memory channels
Transmit frequency	Transmit frequency write mode	
Type of emission(MODE)	Type of emission (MODE) write mode	
Alphanumeric display	Alphanumeric display data write mode	
Transmit power limit	Transmit power limit write mode	
Set function	Menu mode	Select function setting
–	Memory channel selector mode	To select memory channels

● Procedure

1) Press [POWER] while depressing [MENU] and [MODE].

Dealer mode display



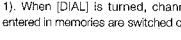
Press [DIAL] or any key, and enter Memory channel selector mode.

1. Memory channel selector mode (01)

This mode is for selector memory channels when writing frequency and other information to memory channels.

Second time : 01 USB only, the others are blank.

1). When [DIAL] is turned, channels ,including those not entered in memories are switched continuously.



2). Pressing [DATA] enables the receive frequency write mode.

2. Receive frequency write mode (00.000.00)

This mode is for writing receive frequency to memory channels. Frequency is set in single digits starting from the 10MHz to the 10Hz digit . The 1Hz digit is defaulted to " 0 ".

1). Turning the [DIAL] changes the digit to its minimum frequency setting.
2). When the setting of one digit is completed, press [SCAN] to move to the next digit. Digits are set in order from the 10MHz digit to the 10Hz digit. (When setting the 10Hz digit, for example, and the display shows 12.345.56)(00.000.00)
3). Pressing [DATA] enables the transmit frequency write mode.

Note:

- Setting begins from the 10MHz digit when the receive frequency write mode is first enabled.
- The set frequencies are checked to confirm they are within the specified receive frequency range.
- Setting all digits to " 0 " initializes the memory channel.
- In the receive frequency write mode, the digit being set flashes as it displays the frequency.
- If the transmit frequency happens to be the default setting (00.000.00), When writing the receive frequency is completed, the receive frequency setting is automatically written to the transmit frequency memory channel as well.
- Leading zeros are not suppressed in the frequency display.

( ) : Initial value

模式组合

经销店模式

- 经销店为用户进行功能设定而使用的模式。
- 各存储信道使接收频率、发射频率、发射形式、字母数字显示、发射上限功率及装置的功能定制化。

定制的内容	使用的模式	目的
接收频率	接收频率写入模式	存储信道的写入
发射频率	发射频率写入模式	
发射形式	发射形式写入模式	
字母数字显示	字母数字显示数据写入模式	
发射上限功率	发射上限功率写入模式	
装置的功能	菜单模式	设定装置的功能
—	存储信道转换模式	转换存储信道

●程序

1). 在按下[MENU]键和[MODE]键的同时按下[POWER]键。

经销店模式的显示

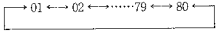
旋转[DIAL]旋钮或按下任何一个键来设定成存储信道选择模式。

1．储信道转换模式(01)

为在存储信道写入频率等信息而转换存储信道所使用的模式。

从第二次仅为01 USB，其他为空白。

1). 旋转[DIAL]旋钮时，包括没有被存储的信道进行如下循环转换。



2). 按下[DATA]键便可以使接收频率写入模式起作用。

2．接收频率写入模式(00.000.00)

为在存储信道写入接收频率所使用的模式。

从10位MHz到10位Hz按序地进行设定。对个位Hz自动输入0。

1). 旋转[DIAL]旋钮时，以此位为最小步进频率并进行转换。

2). 结束个位的设定时，按下[SCAN]键来转换为下一位。从10位MHz按序地转换至10Hz，而按下[DATA]键时，转换为发射频率写入模式。(例：设定10位Hz时) 12.345.56。(00.000.00)

3). 按下[DATA]键便可以使发射频率写入模式起作用。

注意：

- 成为接收频率写入模式时，将成为10位MHz的设定状态。
- 确认被设定的频率是否在接收频率范围内。
- 全位成为0时，使存储信道回到初期状态。
- 在接收信号写入模式，使设定位闪烁来进行频率显示。
- 结束接收频率写入后，发射频率为初期值(00.000.00)时，在发射频率存储信道上自动写入同一频率。
- 不进行频率显示的读取消零。

( )：初期值

REALIGNMENT

3. Transmit frequency write mode

This mode is for writing transmit frequency to the memory channels. Frequency is set in single digits starting from the 10MHz digit to the 10Hz digit. The 1Hz digit is defaulted to "0".

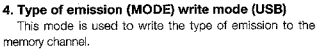
1). Turning the [DIAL] changes the digit to its minimum frequency setting.
2). When the setting of one digit is completed, press [SCAN] to move to the next digit. Digits are set in order from the 10MHz digit to the 10Hz digit.
3). Pressing [DATA] enables the type of emission (MODE) write mode. (When setting the 10Hz digit, for example, and the display shows 12.345.56)
4). When wishing to use the memory channel as a receive-only channel, set all digits to "0" , then press [DATA] to enable the type of emission (MODE) write mode.

Note :

- Setting begins from the 10MHz digit when the transmit frequency write mode is first enabled.
- The set frequencies are checked to confirm they are within the specified transmit frequency range.
- Setting all digits to "0" changes the memory channel to a receive-only channel.
- In the transmit frequency write mode, the digit being set flashes as it displays the frequency.
- Leading zeros are not suppressed in the frequency display.

4. Type of emission (MODE) write mode (USB)

This mode is used to write the type of emission to the memory channel.



1). Turning the [DIAL] triggers a display that scrolls continuously in the following order:

→ USB → LSB → AM → CW →

2). Pressing [DATA] enables the alphanumeric display data write mode.

5. Alphanumeric display data write mode (Blank)

This mode is used to write alphanumeric display data (up to 7 digits) to the memory channels

1). Turning the [DIAL] triggers a display that scrolls continuously in the following order:

→blank→ A → B → ... → Z →14 types of symbols→ 0 → 1 →... → 9 →

Blank	H	P	X	,	*	7
A	I	Q	Y	-	0	8
B	J	R	Z	/	1	9
C	K	S	$	=	2	
D	L	T	1/1	@	3	
E	M	U	<	\	4	
F	N	V	>	_	5	
G	O	W	+	#	6	

2). Digit are set starting from the left side. Pressing [SCAN] moves one digit position to the right.
3). Pressing [DATA] changes control to the:
- Transmit power limit write mode(when specified diode D7 is installed)
- Memory channel selector mode (when specified diode D7 is not installed)

6. Transmit power limit write mode (100W)

This mode is used to write the transmit power limit to the memory channel.

1). Turning the [DIAL] triggers a display that scrolls continuously in the following order :

→MAXIMUM (100W) → HIGH (50W) → MEDIUM (25W)→ LOW (15W) → MAXIMUM (100W) →

2). Press [DATA] to enable the memory channel switching mode.

( ) : Initial value

模式组合

3．发射频率写入模式

为在存储信道写入发射频率所使用的模式。

从10位MHz到10位Hz按序地进行设定。个位Hz自动输入0。

1)．旋转［DIAL］旋钮时，以此位为最小步进频率并进行转换。

2)．结束个位的设定时，按下［SCAN］键来转换为下一位。从10位MHz到10位Hz按序地进行转换。

3)．按下［DATA］键时转换为发射形式写入模式。(例：设定10位Hz时)12.345.56

4)．要设定成接收专用信道时，全位输入0后按下［DATA］键并进入发射形式写入模式。

注意：

- 成为发射频率写入模式时，成为10位MHz的设定状态。
- 确认被设定的频率是否在发射频率范围内。
- 全位成为0时，使其成为接收专用的存储信道。
- 在接收频率写入模式，使设定位闪烁来进行频率显示。
- 不进行频率显示的读取消零。

4．发射形式写入模式(USB)

为在存储信道写入发射形式所使用的模式。

1)．旋转［DIAL］旋钮便可以便连续滚动的显示起动。

→ USB → LSB → AM → CW →

2)．按下［DATA］键来设定成字母数字显示数据写入模式。

5．字母数字显示数据写入模式(空白)

为在存储信道写入字母数字显示数据(最大7位)所使用的模式。

1)．旋转［DIAL］旋钮时，

→ 空白 → A → B →……→ Z → 符号(14种) → 0 → 1 → ……→ 9 →

的顺序进行循环转换。

空白	H	P	X	,	*	7
A	I	Q	Y	−	0	8
B	J	R	Z	／	1	9
C	K	S	$	=	2	
D	L	T	1/1	@	3	
E	M	U	<	＼	4	
F	N	V	>	_	5	
G	O	W	+	#	6	

2)．按下[SCAN]键来移动到右侧位。从左端向右侧方向输入。

3)．按下［DATA］键后，进入：

- 发射功率写入模式(有规格二极管D7时)
- 存储信道转换模式(没有规格二极管D7时)

6．发射上限功率写入模式(100W)

为在存储信道写入发射上限功率所使用的模式。

1)．旋转［DIAL］旋钮时，

→ 最大(100W) → 高(50W) → 中(25W) → 低(15W) → → 最大(100W) →

的顺序进行循环转换。

2)．按下［DATA］键后进入存储信道转换模式。

( )：初期值

REALIGNMENT

Dealer menu mode

This mode is used select functions the dealer sets for the user.

Selecting the dealer menu mode

Press [MENU] while in the dealer mode's memory channel selector mode or any of its write modes.

Menu number selection

- To select menu numbers, press the [DATA] or [MODE] keys.

Selecting the setting contents

- To changes menu settings, turn the [DIAL].

Note :

- Menu numbers are designed to scroll in order continuously.
- Menu items are designed to scroll in order continuously.
- If the menu is scrolling, turn the [DIAL] to display the item, then select the desired setting.
- The selective call ON/OFF status and any memory code settings changes from the User menu mode will be reflected in the Dealer menu's settings.

Menu	Content
00	VFO transmit power and receive-only setting
01	MIC gain H/L setting
02	CW/selective call IF filter attachment
03	DATA (AFSK) IF filter attachment
04	AIP ON/OFF
05	AUX ON/OFF
06	Scan speed setting
07	BC AM 1/9kHz steps
08	Clarifier 10/1Hz steps
09	VOX ON/OFF
10	CW delay time setting (full/semi break-in setting)
11	CW side tone/pitch frequency setting
12	Power setting (H, M, L) display ON/OFF
13	Channel number display ON/OFF
14	DATA mode AFSK/FSK setting
15	DATA (FSK) IF filter selection
16	FSK shift width setting
17	FSK key polarity setting

Menu	Content
18	FSK H/L tone setting
19	FSK reverse setting
20	SCAN SW actuation enable/disenable
21	MENU SW actuation enable/disenable
22	MODE SW actuation enable/disenable
23	DATA SW actuation enable/disenable
30	Selective call ON/OFF
31	ID (own unit) code setting
32	Squelch opening time (unmute time) setting
33	Memory code A setting (call ID)
34	Memory code B setting (call ID)
35	Memory code C setting (call ID)
36	Memory code D setting (call ID)
37	Memory code A setting (character)
38	Memory code B setting (character)
39	Memory code C setting (character)
40	Memory code D setting (character)
41	User menu memory code setting ON/OFF
42	ID delay time setting

模式组合

经销店菜单模式

为用户选择装置的功能所使用的模式。

经销店菜单模式设定方法

在经销店模式的存储情道转换模式或各写人模式时，按［MENU］键。

单号码的转换

按下［DATA］或［MODE］键。

定内容的转换

旋转［DIAL］旋钮。

注意：

- 菜单号码的转换为循环式。
- 菜单内容的转换为循环式。
- 显示在滚动时，旋转［DIAL］旋钮来显示设定内容后转换其内容。
- 选择呼叫的ON/OFF、存储代码的设定内容在用户菜单模式要更时，经销店菜单也成为相同的设定内容。

菜单号码	内　　容
00	设定VFO的发射功率及接收专用
01	设定MIC增益H/L
02	CW选择呼叫　安装IF滤波器
03	DATA(AFSK)　安装IF滤波器
04	AIP的ON/OFF
05	AUX的ON/OFF
06	设定扫描速度
07	BC AM 1/9kHz步进
08	干忧消除器10/1Hz步进
09	VOX的ON/OFF
10	设定CW延迟时间(设定全/半插入)
11	设定CW侧音/音调频率
12	功率设定(H, M, L)显示的ON/OFF
13	信道号码显示的ON/OFF
14	设定DATA模式的AFSK/FSK
15	DATA(FSK)　选择IF滤波器
16	设定FSK移位宽度
17	设定FSK键极性
18	设定FSK H/L音调

菜单号码	内　　容
19	设定FSK反向
20	SCAN SW动作的可/不可
21	MENU SW动作的可/不可
22	MODE SW动作的可/不可
23	DATA SW动作的可/不可
30	选择呼叫的ON/OFF
31	设定ID(本局)代码
32	设定静噪开放时间(UNMUTE时间)的
33	设定存储代码A(呼叫ID)
34	设定存储代码B(呼叫ID)
35	设定存储代码C(呼叫ID)
36	设定存储代码D(呼叫ID)
37	设定存储代码A(字符)
38	设定存储代码B(字符)
39	设定存储代码C(字符)
40	设定存储代码D(字符)
41	在用户菜单下的存储代码设定的ON/OFF
42	设定ID延迟时间

REALIGNMENT

Transfer mode

This mode is used to copy the memory and menu data from one TRC-80 unit to one or more others to create "TRANS".

● Procedure

1). Connect a cross cable (E30-3232-05) to the ACC1 connectors on two TRC-80 units, as shown in the figure.
2). Turn on the power of the unit receiving the data.
3). Enable the Dealer mode in the unit to be transfered, then press [DATA].
● As the unit enters the Dealer mode it automatically detects the connected second TRC-80 unit, displays "TRANS" and begins the transfering transmission.
4). When transfering ends normally, the first TRC-80 returns to the Dealer mode which is then shown on its display.

Note :

● Transfer is not possible when the destination diode setting of the two units differ.
● It is also not possible when neither of the two units is equipped with transmit power setting diodes.

VFO Functions

• Should the VFO mode fail to function, please check to see that Dip SW3 is set to ON. to function, please check to see that Dip SW3 is set to ON.

1. Procedure

1) Press [MENU] to enables the user Menu mode.
2) Press [DATA] or [MODE] to select No.00.
3) Use [DIAL] to switch the memory to VFO.
4) Press [MENU] to select VFO.

2. Description

1) [DIAL] changes over from selecting memory channels to selecting VFO frequency.
2) [SCAN] changes over to selecting step frequency and the F.LOCK function.
Pressing [SCAN] scrolls through the settings in the following order.
10Hz→F.LOCK→100kHz→1kHz→10Hz
Turning the [DIAL] after changing step frequency rounds the lower digit off to "0".
3) When in the user Menu mode, memory channels frequency and type of emission (MODE) are set in the VFO at the point control is switched from Memory to VFO.
4) [DIAL] and [MENU] are disabled during F.LOCK.
5) Even if AT tuning is established during VFO, the changing of frequency automatically credits the state of AT through.

Personal Computer Interface

In addition to commands (in the instruction manual) made available to users is the SR(system reset) command that is made available only to dealers.

Note :

• SRP1= Reset the user menu
SRP2= Reset all
• The reset user Menu command resets all menu settings to the factory defaults.

User menu mode

This mode enables users to select various settings to suit their individual needs. The items that can be modified are listed below.

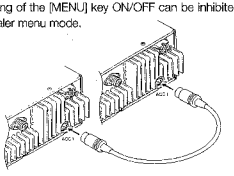
Menu	Contents
00	VFO/M
01	Transmit power switching
02	NB ON/OFF
03	Display switching frequency/alphanumeric
04	LOCK OUT ON/OFF
05	Scan busy stop switching TO/CO/OFF
06	Selective call ON/OFF
07	ID (own unit) code display
08	Memory code A setting (call ID)
09	Memory code B setting (call ID)
10	Memory code C setting (call ID)
11	Memory code D setting (call ID)
12	Memory code A setting (character)
13	Memory code B setting (character)
14	Memory code C setting (character)
15	Memory code D setting (character)

Selecting settings

• Begin by pressing [MENU] to display the User menu.
• Press [MODE] or [DATA] to select the desired item number.
• Use [DIAL] to change the setting.
• Press [MENU] once more to complete the change.

Note :

• Menu numbers are designed to scroll in order continuously.
• Menu items are designed to scroll in order continuously.
• Menu item number "00" can only be set when DIP SW3 is set to ON.
• Menu item numbers 08~15 can only be set when the user memory code setting in the Dealer menu mode is set to ON.
• Menu item numbers 01and 04 represent the channels prior to entering the user menu mode.
• If a Selective call kit is not installed, setting item number 06(user's own office code) to ON will only produce on the display. The selective call mode will not be enabled.
• Switching of the [MENU] key ON/OFF can be inhibited from the Dealer menu mode.



模式组合

传输

在装置之间复制所设定的存储内容，菜单等的功能。

操作方法

1. 如图所示，在2台装置的ACC1端子联接交叉电缆(E30-3232-05)。
2. 接通传送对方装置的电源。
3. 起动传送单位装置的经销店模式并按下［DATA］键。
   开始设定经销店模式时，自动判定装置的连接。如果有连接，则进行传输，并在显示器上显示“TRANS”。
4. 结束时，成为经销店模式，而显示器成为经销店模式显示。

注意：

- 当两个单元的目的地二级管设定不同时，不能进行传输。
- 当两个单元的任何一个没有装备发射功率设定二级管时，也不能进行传输。

VFO的功能

- 如果VFO模式未能起作用，请检查DIP SW3开关有无设定于“ON”位置。请将在DIP SW3开关有无设定于“ON”位置。

1. 操作方法

1. 按下［MENU］键来进入用户菜单模式。
2. 利用［DATA］键或［MODE］键来设定成No.00。
3. 利用［DIAL］旋钮来将MEMORY转换成VFO。
4. 按下［MENU］键来设定成VFO。

2. 说明

1. ［DIAL］从存储信道转换改变为VFO的频率转换。
2. ［SCAN］将成为步进频率转换及F. LOCK的功能。
   按下［SCAN］键时，将转换为：
   10Hz → F. LOCK → 100kHz → 1kHz → 10Hz。
   转换步进频率并转动［DIAL］旋钮时，下位的位数舍入为0。
3. 在用户菜单模式，从MEMORY改变为VFO时，存储信道的频率和电波形式被设定于VFO。
4. F. LOCK时，［DIAL］、［MENU］将不动作。
5. VFO时，即使能够进行AT的调谐，但转换频率时也会自动成为AT通过状态。

计算机接口

除了向用户公开(使用说明书所记载)的命令以外，作为父公开给经销店的命令有SR命令。SR(系统复位)

注意：

- SRP1＝用户菜单复位
  SRP2＝全复位
- 所谓用户菜单复位指将菜单内容设定成出厂状态。

用户菜单模式

按用户的希望进行改变的模式。能够改变的项目如下：

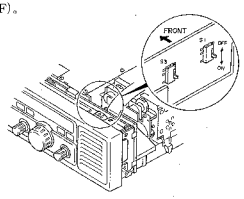
菜单号码	内　容
00	调频状态/记忆状态
01	转换发射功率
02	NB ON/OFF
03	转换显示　频率/字母数字
04	LOCK OUT ON/OFF
05	转换扫描BUSY停止　TO/CO/OFF
06	选择呼叫的ON/OFF
07	ID(自用单元)代码
08	设定存储代码A(呼叫ID)
09	设定存储代码B(呼叫ID)
10	设定存储代码C(呼叫ID)
11	设定存储代码D(呼叫ID)
12	设定存储代码A(字符)
13	设定存储代码B(字符)
14	设定存储代码C(字符)
15	设定存储代码D(字符)

操作方法

- 通过按下［MENU］键，进行菜单显示。
- 通过按下［MODE］或［DATA］键来转换菜单号码。
- 通过按下［DIAL］键，可以进行内容改变。
- 再一次按下［MENU］键来结束设定。

注意：

- 菜单号码的转换为循环式。
- 菜单内容的转换为循环式。
- 菜单00只在控制单元的DIP SW3开关设定成ON状态时能够进行设定。
- 菜单08～15在经销店模式的用户菜单下的存储代码设定成为ON状态时能够进行设定。
- 菜单01、04对应进入菜单模式之前的信道。
- 如果没有安装选择呼叫组件，由于本局代码显示没有被设定，因此即使使菜单06成为ON状态，也不能成为选择呼叫模式。
- 通过经销店菜单模式，能够禁止［MENU］的起动(ON、OFF)。



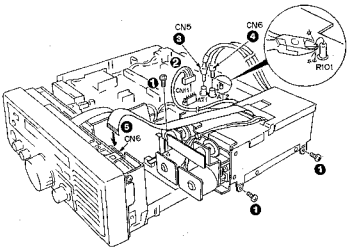
TRC-80

INSTALLATION/组装

Installing the AT unit (KAT-2)

Remove the case and shielding cover in advance.

1. Use screws (❶) to install the Antenna tuning unit.
2. Before insert the connector, cut the R101 wire by nippers.
3. Connect the lead with connector like pull out to front side to CN11(❷) on X45-3620-20 .
4. Connect the coaxial cable's white-marked line to the X45's CN5(❸) (AT1) and the other line to CN6(❹) (AT2).
5. Insert the flat cable from the tuner unit in CN6(❺) of control unit X53-3570-20.
6. Take care not to pinch the lead when reattaching the case.



自动调谐单元(KAT-2)安装方法

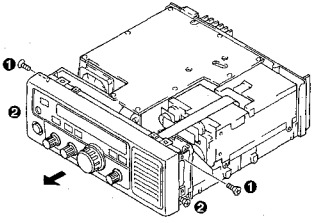
预先拆卸机壳和屏蔽盖。

1．用安装螺丝❶安装自动调谐单元。
2．在安装连接器之前，用剪钳切断R101的配线。
3．将带连接器的导线连接到X45-3620-20 CN11❷。
4．将同轴电缆中带有白色标志的一侧连接到X45的CN5❸(AT1)，将另一侧连接到CN6❹(AT2)。
5．将从调谐单元伸出的扁平电缆插入控制单元X53-3570-20 CN6❺。
6．安装机壳时，应注意导线的咬入。

Installing the selective call unit (KPE-1)

Remove the case in advance.

1. Remove the two screws (❶) on the upper left and right side of the front panel. Then loosen the two lower screws (❷) halfway and pull the front panel forward.



选择呼叫单元(KPE-1)安装方法

预先拆卸机壳

1．取下位于前面板左右上部的2个螺丝❶，并旋松位于下部的2个螺丝❷至中途位置，然后朝前面方向拉出前面板。

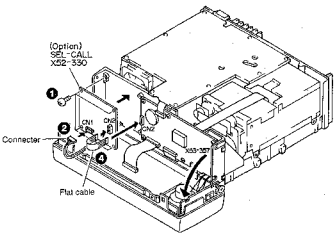
INSTALLATION/组装

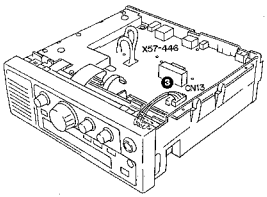
2. As shown in the figure, set the front panel down on its face, mount optional circuit board X52-330 (selective call) and secure it with the four (❶) screws.
3. Connect the accessory flat cable (❹) to CN2 of X53-3570-20 and CN2 on KPE-1. Then connect the accessory lead with connector(❷) to CN1 of KPE-1 and CN13 (❸) on X57-4660-20(bottom side).
4. Take care not to pinch the lead when reattaching the case.

2．如图所示，将前面板倒向前方，用4个螺丝❶安装选购的基片X52-330(选择呼叫)。

3．将附属的扁平电缆❹连接在X53-3570-20 CN2与KPE-1的CN2之间。接着，将附属的带连接器❷的导线连接到KPE-1 CN1和X57-4660-20 CN13❸(底面侧)。

4．安装机壳时，应注意导线的咬入。





Installing the TCXO (SO-2 or accessory of KPE-1)

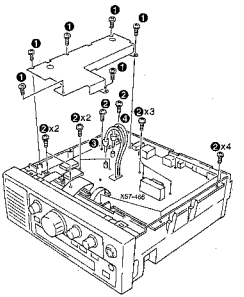
1. Remove the screws (❶) securing the shield plate and remove it.
2. Remove the screws (❷) holding the X57-466 circuit board.
3. Remove the CN19 (black ❸) and CN 1(red ❹) connectors.

中频滤波器TCXO(SO-2或KPE-1附属品)安装方法

1．取下屏蔽板安装螺丝❶并卸下屏蔽板。

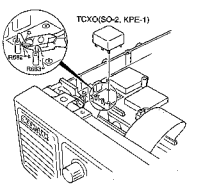
2．取下X57-466的基片安装螺丝❷。

3．预先取下连接器❸(黑色)和❹(红色)。



4. Prior to installing the optional TCXO(SO-2 or accessory of KPE-1) cut the lead wires on R682 and R683 with a wire clipper.

4．在安装选购的TCXO(SO-2或KPE-1的附属品)之前，用剪钳切断R682和R683的布线。

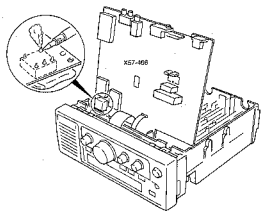


INSTALLATION/ 组装

5. Install the optional TCXO(SO-2 or accessory of KPE-1) and apply solder to the soldered side.
6. Take care not to pinch the lead when reattaching the case.

5．安装选购的TCXO(SO-2或KPE-1的附属品)后，从钎焊面一侧进行钎焊。

6．安装机壳时，应注意导线的咬入。

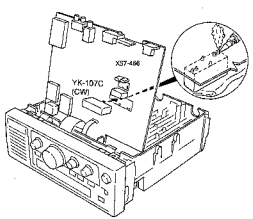


Installing the IF filter (YK-107C)

1. Install YK-107C and apply solder to the soldered side.

中频滤波器(YK-107C)安装方法

1．安装YK-107C后，从钎焊面一侧进行钎焊。



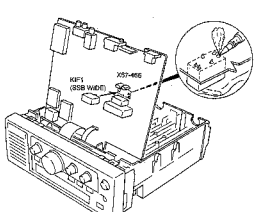
Installing the IF filter (KIF-1)

1. Install the optional KIF-1 and apply solder to the soldered side.
2. After install the IF filter, set in dealer mode absolutely.

中频滤波器(KIF-1)安装方法

1．安装选购的KIF-1后，从钎焊面一侧进行钎焊。

2．安装中频滤波器后，必须以经销店菜单模式进行设定。



CIRCUIT DESCRIPTION/电路说明

Frequency Configuration

The TRC-80 uses double conversion in all modes.

MODE	Display frequency
USB/LSB	Carrier point frequency
CW	Transmission carrier frequency
AM	IF filter frequency
FSK	Mark transmission frequency
AFSK	Carrier point frequency

Table 1 Display frequency in each mode

频率组成

TRC-80型在全部工作模式中使用双重超外差接收方式。

模 式	显 示 频 率
USB/LSB(上边带/下边带)	载波点频率
CW(等幅电报)	发射载波频率
AM(调幅)	中频滤波器频率
FSK(频移键控)	记号发射频率
AFSK(音频频移键控)	载波点频率

第 1 表

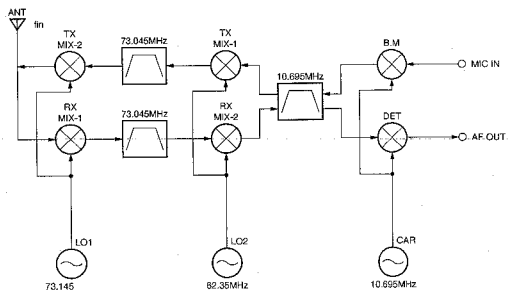


Fig. 1 frequency configuration

The receiver frequency in SSB mode is given by the following equation when the receiver tone produced by the input frequency (fIN) from the antenna is zero beat (when an SSB signal with a carrier point of fIN is zeroed in):

$f_{IN} = f_{LO1} - f_{LO2} - f_{CAR}$ ..... (1)

Since all these frequencies are generated by the PLL circuit, as shown in Figure 2 (PLL circuit frequency configuration), the receiver frequency is determined only by the reference frequency, f_{STD}, and the PLL divide ratio. This means, the accuracy of the reference frequency determines the accuracy of the operating frequency of the transceiver.

The accuracy of the reference crystal oscillator used in the TRC-80 is 10 ppm (-10 to +50℃). The accuracy of the optional temperature-compensated crystal oscillator (TCXO SO-2) is 0.5 ppm (-10 to +50℃).

In SSB transmission mode or in other modes, the frequency is determined by the reference frequency (f_{STD} and the PLL divide ratio. Table 1 lists the display frequencies in the various modes.

The pitch of the incoming signal in CW mode can be varied in 50Hz step in the range 400 or 800Hz without changing the center frequency of the IF filter (variable CW pitch system).

单边带(SSB)模式的接收频率在来自天线(ANT)的输入频率f_{IN}的接收声音成为零拍时(当f_{IN}为载波点的单边带(SSB)信号归零校正时)，成为如下所示计算方式：

$f_{IN} = f_{LO1} - f_{LO2} - f_{CAR}$ ..... (1)

如第2图的锁相环(PLL)系频率组成所示，在所有锁相环电路产生的接收频率只按标准基准频率f_{STD}和锁相环(PLL)的分频比来决定。

因此基准频率精度就成为应用频率精度。

在TRC-80型所使用的基准晶体振荡器的稳定度为10ppm(-10℃～+50℃)，当安装了选购件的温度补偿晶体振荡器(TCXO)SO-2型时，稳定度就能改善为0.5ppm(-10℃～+50℃)。

单边带(SSB)模式的发信及其他模式的情况也相同，频率是按基准频率f_{STD}和锁相环(PLL)的分频比来决定。

另外，各模式的显示频率是如第1表所示。

等幅电表模式的接收是位于中频滤波器的中心频点，当接收到目标位置时，可用等幅电报音质控制方法，将接收音质调至400Hz或800Hz内。

CIRCUIT DESCRIPTION/电路说明

PLL Circuit Configuration

The TRC-80 PLL circuit uses a reference frequency of 20MHz, and covers 100kHz to 30MHz. Figure 2 shows PLL block diagram, and frequency configuration.

1. Reference oscillator circuit

The reference frequency(fSTD) for frequency control is generated by the 20MHz crystal oscillator, X501 and Q525(2SC2714), The 20MHz reference frequency is supplied to DDS IC500,501(F71022×2) and PLL IC502 (MB86001PF).

The crystal oscillator circuit can be replaced by an optional TCXO(SO-2 or accessory of KPE-1). The TRC-80 can be switched to the TCXO by removing resistor(R682,R683).

2. LO1 (PLL loop)

Q531,533,535 (2SK508NV×3) are VCOs.

Q531 generates a signal of 73.145 to 83.544 MHz.

Q533 a signal of 83.545 to 94.544 MHz, and Q535 a signal of 94.545 to 103.045 MHz.

The 20MHz reference signal of fSTD is input to pin 15 of IC502 (MB86001PF) and is divided by 40 to produce a 500kHz comparison frequency. The output signal from the VCO is mixed with a 53.545 to 54.045 MHz signal from the PLL (described later) and IC503(SN76514N) to produce a 19.5 to 49.5 MHz signal. It is input to pin 6 of IC502, divided, and compared with the 500kHz signal by the phase comparator, and the VCO frequency is locked. Divide ratio date is supplied by the digital unit.

At IC500 (F71022) a 1.195 to 1.695 MHz digital signal is generated and the CP500,501 ladder resistor and Q522 (2SC2712) D/A converter used to convert it into an analog signal, which is put through a low-pass filter and mixed with 10MHz at mixer IC504 (UPC1037GR) to produce 8.305 to 8.805 MHz.

Furthermore, 62.35 MHz oscillated by X502 and Q517 (2SC2714) is mixed at IC505(UPC1686G) to become the abovementioned 53.545 to 54.045 MHz signal.

3. LO2 (PLL loop)

Oscillated by X502 and Q517 (2SC2714) part is output to LO1 cancel loop after passing through the Q518 (2SC2714) buffer, input to mixer IC505 (UPC1686G). The other part is output from CN502 as LO2.

4. CAR

A digital signal is generated near 695Hz at IC501 (F71022), and the analog signal converted by the CP502,503 ladder resistors and Q522 (2SC2712) D/A converter are mixed with the 10MHz generated from the chop output of IC501 at IC506 (UPC1037GR) output as 10.695MHz through the band pass filter and the amplifier.

During receiving AM mode the DDS oscillation is stopped. In FSK mode internal register of IC501 is switched for direct FSK modulation by the external RTK signal during selective call mode code transmission by the ABSL signal from the CPU.

锁相环电路(PLL)

TRC-80型的锁相环以20MHz作为PLL电路基准频率，覆盖自100kHz至30MHz的频率。锁相环电路为框图及频率组成如第2图所示。

1. 基准信号发生电路

用以控制频率的基准频率f_{STD}是由20MHz晶体振荡器X501和Q525(2SC2714)振荡产生的，此20MHz的基准频率接到数字式直接频率合成器(DDS) IC500、501(F71022×2)及锁相环(PLL) IC502(MB86001PF)。作为此两电路之基准频率。晶体振荡电路可以置换为任选的晶体补偿振荡器(TCXO)(SO-2或KPE-1附属的TCXO)，通过切断电阻R682、683来进行转换。

2. 锁相环回路I组成电压控制振荡器[LO1(PLL环路)]

Q531、533、535(2SK508NV×3)(VCO)。

Q531、Q533、Q535分别振荡于73.145～83.544MHz、83.545～94.544MHz、94.545～103.045MHz。

标准基准频率f_{STD}：20MHz输入到IC502(MB86001PF)的15号管脚，在内部分频为1/40而成为500kHz的比较频率。

电压控制振荡器(VCO)的输出与下面叙述的锁相环(PLL)的53.545～54.045MHz在IC503(SN76514N)中混频，成为19.5～49.5MHz的信号，输入到IC502的6号管脚，经分频后的相位比较器与500kHz信号比较，锁定电压控制振荡器(VCO)的频率。

分频比由数字单元发送。

在IC500(F71022)发生1.195～1.695MHz的数字信号，用由CP500、501的阶梯电阻及Q522(2SC2712)组成的数字一模拟转换器转换为模拟信号，通过低通滤波器并在混频器IC504:(UPC1037GR)与10MHz被混频而成为8.305～8.805MHz的频率。

此外，在IC505(UPC1686G)与在X502和Q517(2SC2714)振荡的62.35MHz频率混频，成为上述的53.545～54.045MHz的频率。

3. 锁相环回路II(LO2)

由X502和Q517(2SC2714)振荡，通过Q518:(2SC2714)的缓冲后，一个输出到锁相环回路I(LO1)的消除环路并输入混频器IC505(UPC1686G)。

另一个作为锁相环回路II(LO2)由CN502输出。

4. 载波信号(CAR)

在IC501(F71022)发生695Hz附近的数字信号，利用由CP502、503的阶梯电阻及Q522(2SC2712)组成的数字一模拟转换器转换的模拟信号在IC506(UPC1037GR)与IC501的削波输出发生的10MHz混频，成为10.695MHz信号并经带通滤波器、放大器输出。

调幅模式的接收时，使数字式直接频率合成器(DDS)的振荡停止。

另外，在频移键控(FSK)模式，通过来自外部的RTK信号，而在选呼呼叫(Selective call)模式的代码发送时，通过来自CPU的ABSL信号，来转换IC501的内部电阻，进行直接频移键控(FSK)调制。

CIRCUIT DESCRIPTION/电路说明

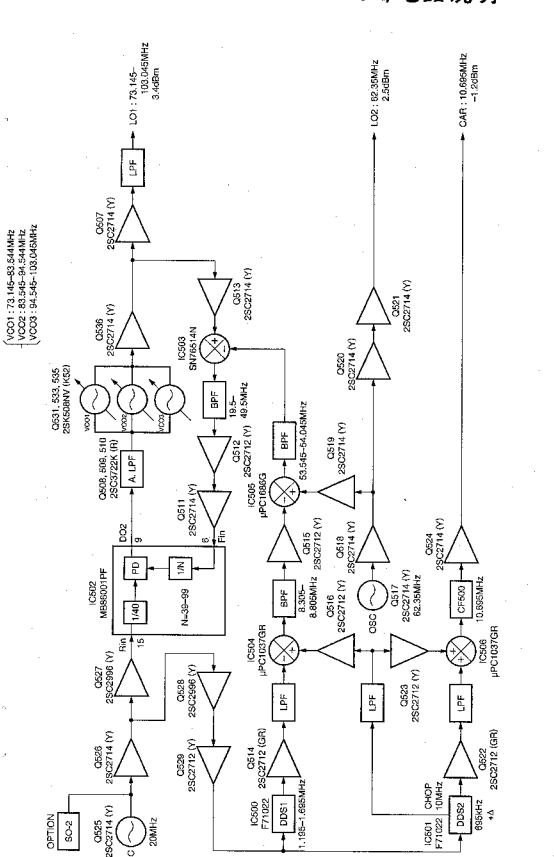


Fig. 2 Block diagram and frequency configuration of PLL

CIRCUIT DESCRIPTION/电路说明

5. DDS circuit configuration

The DDS IC has been developed with standard cells to implement a high-speed circuit and large-capacity ROM at low cost.

● IC configuration

IC configuration is as follows:

- There are two 28bit registers for setting frequency data, one 28bit frequency shift register for addition to the frequency registers, a 23bit parallel signal input section for frequency modulation with parallel signals, and a data entry and selection section.
- There is a frequency-modulation section comprising 28bit adders for adding frequency data and frequency modulation data; a phase data operation section that adds data from the frequency modulation section and 28bit phase data register; and a SIN-ROM that converts phase data to sine waves.

● Frequency/shift data setting

Using serial signals synchronized with clock pulses, 30 bits (2 bit's that specify the destination for which data is set, and 28 bits of frequency data) are set in the three internal registers.

● Frequency register selection

The data set in the two frequency registers is selected by the SLAB input of the DDS IC. This pin handles the ABSL signal for IC501, and the CASL signal for IC500. This function eliminates the need for the TRC-80 to set frequency data for each transmission/reception with the microprocessor.

● Frequency data selection

The SPSL input of the DDS IC selects whether to use the data in the internal frequency shift register or the data from the parallel input as frequency modulation data.

● Frequency modulation

The MDEN input of the DDS IC enables or disables frequency modulation. When frequency modulation is enabled,frequency data is added, and the result is input to the phase data operation section.

● Phase data operation

The target frequency phase data is output by accumulating 28bit frequency data in the 28-bit phase accumulator.

$F_{out} = F_S/2^{28} \cdot D_{sum}$

Fs :DDS IC input frequency/2

D_{sum} :Frequency data + Frequency modulation data

If 2^{28} is set for D_{sum} when 1/8 Fs is output, the phase data must be increased by π /8.

So far,28bit absolute value operation has been used, but a 28bit signed operation can also be used,assuming that the MSB is a sign. If complement data of 8000000 to FFFFFFFF(hex) is set, the phase moves in the negative direction for positive data.

● SIN-ROM

Phase data from the phase data operation section is converted to sine wave data of 0000 to FFFF(hex) in 16bit offset binary format. (Fig. 3)

5．数字式直接频率合成器(DDS)电路的组成

为了以低成本来实现高速运算电路和大容量只读存储器(ROM)，用标准单元法开发出了数字式直接频率合成器(DDS)集成电路。

●集成电路的组成

集成电路的组成如下：

- 用以设定频率数据的2个28位寄存器、为对频率寄存器进行加法计算的1个28位并移频寄存器、用以利用并行信号进行频率调制的23位并行信号输入器、具有进行数据输入选择的功能之数据输入和选择器。
- 由加法计算频率数据和频率调制数据的28位加法器组成的频率调制器。
- 进行来自频率调制器的数据和28位相位数据寄存器的加法计算之相位数据运算器。
- 正弦寄存器(SIN-ROM)将相位数据变换为正弦数据。

●频率/移位数据的设定

内装3个寄存器用时钟同步型串行信号来设定指定数据设定对方的2位、频率数据的28位总计30位。

●频率寄存器的选择

通过数字式直接频率合成器(DDS)集成电路的SLAB输入，进行设定在2个频率寄存器的数据的选择。本端子在IC501连接到ABSL信号，而在IC500连接到CASL信号。由于本功能，TRC-80型不需要让微计算机按每一收发信进行频率数据的设定。

●数据频率的选择

通过数字式直接频率合成器(DDS)集成电路的SPSL输入，选择频率调制数据为内部的移频寄存器或来自并行输入的数据。

●频率调制

通过数字式直接频率合成器(DDS)集成电路的MDEN输入，进行频率调制的允许/禁止，而在允许时进行与频率数据的加法计算，作为相位数据运算器的输入。

●相位数据的运算

通过对28位相位累加器加法计算28位的频率数据来输出目标频率的相位数据。

$F_{out} = F_S/2^{28} \cdot D_{sum}$

F_S ： DDS集成电路输入频率/2

D_{sum} ： 频率数据＋频率调制数据

要输出F_s的1/8频率时，如果对D_{sum}设定2^{28}，由于可以获得相位数据按π/8步进的输出，因此可以获得F_s的1/8的频率。

这里，运算为28位的绝对值运算。也可以考虑为以MBS为符号的28位带符号运算。这时，如果设定8000000hex～FFFFFFFhex的补码数据，对正数据时相位的步进方法成为负的方向。

●正弦寄存器(SIN-ROM)

将来自相位运算器的相位数据变换为0000hex～FFFFhex的16位位移二进制格式的正弦数据。(第3图)

CIRCUIT DESCRIPTION/电路说明

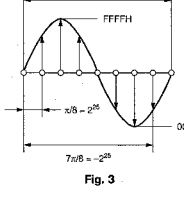


Fig. 3

Receiver Circuit Configuration

The configuration of the receiver circuit is double conversion with a first IF of 73.045 MHz and a second IF of 10.695 MHz in SSB, AM, CW mode.

The incoming signal from the antenna passes through the antenna switch relay of the final unit, then through the 30 MHz low-pass filter, and goes to the TX-RX unit. The signal passes through a 30 MHz low-pass filter in the TX-RX unit, and goes through the 8-segmented band-pass filters. If AIP is off, the signal passing through band-pass filter is amplified by the RF amplifier, Q8, Q9 (2SK520 ×2), and is input to the first mixer, Q4 to Q7 (2SK520 ×4). If AIP is on the signal bypasses Q8, Q9 and goes directly to the first mixer. It is mixed with the LO1 signal by the first mixer to produce a first IF signal of 73.045 MHz.

The first IF signal of 73.045 MHz passes through the MCF (XF1), is amplified by Q10 (3SK131), and mixed with the 62.35MHz LO2 signal by the second mixer, Q11 and Q12 (2SK520 ×2), to produce a second IF signal of 10.695 MHz.

The second IF signal of 10.695MHz is split into two. One signal goes to the NB amplifier, and the other passes through the NB gate FET Q19 (3SK131). The signal then goes to the IF filter. There are four types of IF filter: 6kHz, 2.7kHz, 2.2kHz and 500Hz (2.7kHz, 500Hz is optional). The signal passing through the IF filter is amplified Q21 (2SC2712) and Q30,31 (3SK131 ×2) SSB, CW, FSK modes are product-detected in D52,53 (HSM88AS) and AM mode envelope-detected in D54 (HSM88AS) and condenser.

After detection, the AF signal for each mode passes through analog switch IC3 (BU4066BCFV) and goes to AF preamplifier Q48 (2SC2712).

After the preamplifier, the signal passes through the mute circuit Q49 (2SD1757K) has the volume controlled at IC6 (TA8184F) and is amplified to the necessary electric power level at AF power amplifier IC7 (LA4446).

接收电路的组成

接收电路的组成是：单边带(SSB)、调幅(AM)、等幅(CW时)，第1中频为73.045MHz，第2中频为10.695MHz的双重超外差接收方式。

来自天线(ANT)端子的接收信号通过末级单元的天线收发转换继电器，经过30MHz低通滤波器进入发射－接收单元。在发射—接收单元，通过30MHz的低通滤波器，进入被分割为8个的带通滤波器。通过了各带通滤波器的信号在高动态范围电路：无效(AIP OFF)时由Q8、9(2SK520×2)的射频放大器放大，输入Q4～7(2SK520×4)的第1混频器。高动态范围电路：有效(AIP ON)时，不经Q8、9，直接输入第1混频器。在第1混频器，与锁相环回路Ⅰ(LO1)信号混频，变换为第1中频73.045MHz。

73.045MHz的第1中频信号通过MCF(XF1)，由Q10(3SK131)放大后在Q11、12(2SK520×2)的第2混频器与62.35MHz的锁相环回路Ⅰ(LO2)信号混频，变换为第2中频10.695MHz。

10.695MHz的第2中频信号一个在进入噪声抑制器用之(NB)放大器，另一个在进入噪声抑制器门限用(NB)FETQ19(3SK131)后，进入中频滤波器。

中频滤波器有6kHz、2.7kHz、2.2kHz、500Hz(2.7kHz、500Hz为任选)的4种。

通过中频滤波器的信号在Q21(2SC2712)及Q30、31(3SK131×2)被放大，单边带(SSB)，等幅电报(CW)，FSK(频移键控)、在D52、53(HSM88AS)被乘积检波，调幅(AM)在D54(HSM88AS)和电容器被包络检波并被输出。

经检波后的各模式的音频(AF)信号通过模似开关IC3(BU4066BCFV)进入音频(AF)前置放大器Q48(2SC2712)。

放大，再经静噪电路Q49(2SD1757K)，在IC6(TA8184F)进行音量控制，由音频(AF)功率放大器IC7(LA4446)放大。

CIRCUIT DESCRIPTION/电路说明

1. Receiver front-end

The signal input to the TX-RX unit passes through the 30 MHz low-pass filter, and signal above 1.605 MHz goes to seven band-pass filters. When AIP is off, The signal passes through each band-pass filter, D25 and D26 turn on and D23 and D24 turn off, and the signal is amplified by about 13 dB by Q8, Q9 (2SK520×2) and output to the first mixer. If AIP is on, D25 and D26 turn off and D23 and D24 turn on, and the signal is output directly to the first mixer without passing through Q8 and Q9. The first mixer, is a quad balanced mixer, Q4 to Q7 (2SK520×4). (Fig. 4)

1．接收前端

进入发射－接收单元的信号经过30MHz低通滤波器，而1.605MHz以上的信号被输入到分割为7个的带通滤波器。由于通过各带通滤波器的信号在高动态范围电路，无效(AIP OFF)时接通D25、26，断开D23、24，因此在Q8、9(2SK520×2)被放大约13dB，输出到第1混频器。又在高动态范围电路，有效(AIP ON)时断开D25、26，接通D23、24，因此不经Q8、9而直接输出到第1混频器。

第1混频器为Q4～7(2SK520×4)的正交平衡混频器。(第4图)

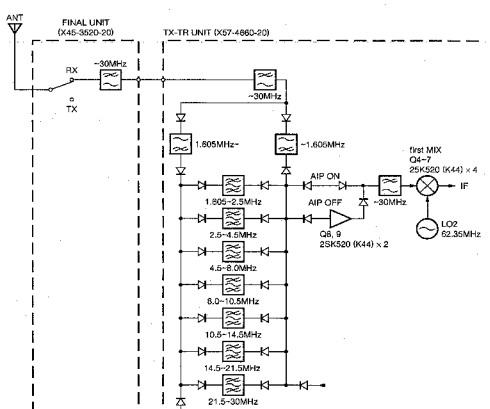


Fig. 4 Receiver Front-end

CIRCUIT DESCRIPTION/电路说明

2. Noise blanker circuits

The 10.695MHz IF signal generated from the first IF of 73.045MHz by the second mixer is input to IF amplifier Q19 (3SK131), sent through Q18 (RU201) amplified by noise amplifier Q801, Q802 and Q804 (2SC2714×3), sent through buffer Q806 (2SC2714) and noise-detected by D800(HSM276S). This signal switches Q805 (2SC2712) and Q807,808 (DTC114EK×2) and controls Q19 in the TX-RX unit. Q19 controls Q20 (2SC2712) and blanks the noise. (Fig. 5)

2．噪声熄灭电路

在第2混频器由第1中频73.045MHz变换为10.695MHz的中频信号被输入中频放大器Q19(3SK131)，并经过Q18(RU201)由Q801、802、804(2SC2714×3)的噪声放大器放大，在Q806；(2SC2714)的缓冲放大器后，由D800(HSM276S)被噪声检波。以此信号转换Q805(2SC2712)、Q807、808(DTC114EK×2)，由Q20(2SC2712)来控制Q19以熄灭噪声。(第5图)

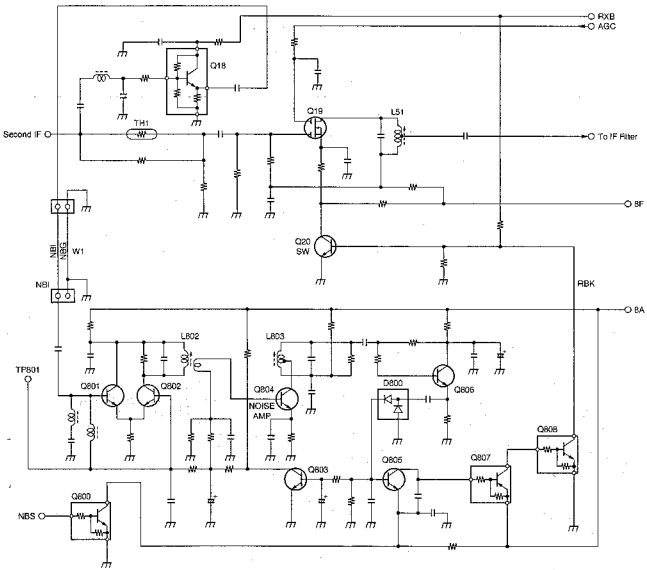


Fig. 5 Noise blanker circuit

CIRCUIT DESCRIPTION/电路说明

3. Signal strength meter circuit

In all mode, the signal strength meter circuit comprises operational amplifier IC2 (NJM2904M). The signal, level-detected is input to pin 3 of IC2 (1/2) and amplified by about 8 dB by IC2 (2/2), then goes to IC5 of control unit. (Fig. 6)

4. AGC circuit

The time constant for the signal envelope-detected by IC1(BU4066BCFV) is changed in each mode by the analog switch. The effective value, not the peak value, is used in AM mode. (Fig. 6)

5. Squelch

The squelch volume voltage is input to A/D input pin 78 of the CPU IC5(37702E8LHJMHB). The Signal strength meter voltage made by squelch volume voltage and the TX-RX unit is compare processed in the CPU, controlling the ABK signal.

3. 信号强度表电路

单边带(SSB)、等幅电报(CW)、调幅(AM)时的信号强度表电路由IC2(NJM2904M)的运算放大器组成。经电平检波的信号输入IC2(1/2)的3号管脚，在IC2(2/2)放大约8dB后，进入控制单元的IC5。(第6图)

4. 自动增益控制(AGC)电路

经包络检波的信号由IC1(BU4066BCFV)的模拟开关在各模式转换时间常数。调幅(AM)时不是以峰值而以有效值动作。(第6图)

5. 静噪电路

噪声音量电压被输入控制单元的CPU IC5(37702E8LHJMHB)的模拟－数字输入78号管脚。在中央处理单元内比较并运算噪声音量电压和由发射—接收单元做出的信号强度表电压并控制ABK信号。

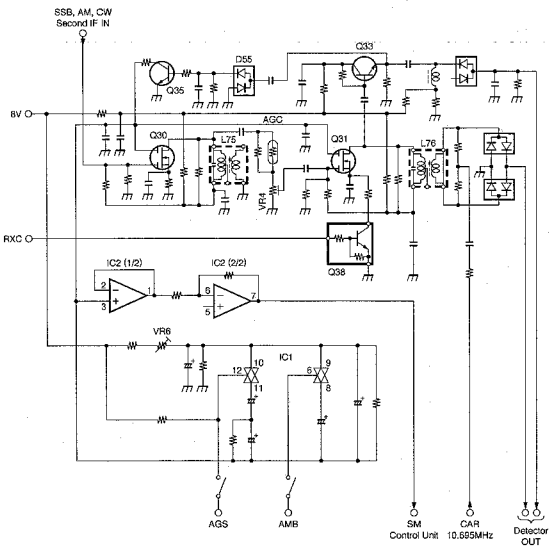


Fig. 6 S meter , AGC circuit

CIRCUIT DESCRIPTION/ 电路说明

5. IF filter

There are two internal 10.695MHz IF filters and two optional, so a total of four can be installed.

6. 中频滤波器

10.695MHz中频滤波器实际总计可以安装4个：内装2个，任选2个。

10.695MHz filter 10.695MHz滤波器	Part No./Name 零件号码/零件名称	Selection of each mode / 各模式的选择				
		CW 等幅电报	SSB 单边带	AM 调幅	DATA (AFSK) 音频频移(键控)	DATA (FSK) 频移键控
AM	L71-0433-15	-	-	◎	-	○
SSB-WIDE (OPTION)	L71-0457-05/ KIF-1	-		-	*	*
SSB	L71-0249-05	◎	◎	-	◎	◎
CW (OPTION)	L71-0283-15/ YK-107C	*	-	-	-	*

◎ mark is the initial set value
* mark is usable when the optional filter is attached
DATA (AFSK): SSB+DATA display
DATA (FSK) : DATA display

◎标记为预置值
*标记为在安装任选滤波器时可以使用。
DATA(AFSK):SSB+DATA显示
DATA(FSK):DATA显示

Also, filter selection and DATA key setting are switched in the following dealer mode menu.

另外，滤波器的选择及DATA键的设定可通过下列经销店模式来转换。

Dealer mode menu

CH.02: CW FILTER	OUT/IN
CH.03: DATA (AFSK)-SSB WIDE FILTER	OUT/IN
CH.15: DATA (FSK)-IF FILTER FOR	SSB/SSB-W/AM/CW
CH.14: DATA MODE	AFSK/FSK

经销店菜单模式

CH.02: CW FILTER	OUT/IN
CH.03: DATA(AFSK)-SSB WIDE FILTER	OUT/IN
CH.15: DATA(FSK)-IF FILTER FOR	SSB/SSB-W/AM/CW
CH.14: DATA MODE	AFSK/FSK

TRC-80

CIRCUIT DESCRIPTION/电路说明

Item	Rating
Center frequency	73.045 MHz
Passband width	±7.5kHz or more at 3dB
Attenuation band width	±30kHz or less at 20dB
Ripple	1dB or less
Insertion loss	2dB or less
Guaranteed attenuation	40dB or more at fo – 910kHz
Terminal impedance	2kΩ±10% / L type
Temperature range	-30°C~+70°C

Table 2 MCF (XF1) (L71-0432-05)

项 目	规 格
中心频率	73.045MHz
通带宽	在3dB, ±7.5kHz以上
衰减带宽	在20dB, ±30kHz以下
脉动	1dB以下
插入损耗	2dB以下
保证衰减量	在f0-910kHz, 40dB以上
终端阻抗	2kΩ±10%/L性
温度范围	−30℃～+70℃

第 2 表 MCF(XF1)(L71-0432-05)

Item	Rating
Nominal center frequency	10.695 MHz
Passband width	6kHz or more at 6dB
Attenuation band width	40kHz or less at 60dB
Ripple	2dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within fo±1MHz
Terminal impedance	1.2kΩ±10% / 6pF±10%

Table 3 MCF (L71-0433-15)

项 目	规 格
标称中心频率	10.695MHz
通带宽	在6dB, 6kHz以上
衰减带宽	在60dB, 40kHz以下
脉动	2dB以下
插入损耗	3dB以下
保证衰减量	在f0±1MHz以内, 60dB以上
终端阻抗	1.2kΩ±10%/6pF±10%

第 3 表 MCF(L71-0433-15)

Item	Rating
Nominal center frequency	10.695 MHz
Center frequency deviation	within ±200Hz at 6dB
Passband width and Attenuation band width	width 2.7kHz or more at 6dB
	±2.2kHz or less at 20dB
	±3.1kHz or less at 60dB
Ripple	2dB or less
Insertion loss	6dB or less
Terminal impedance	1.2kΩ±5% / 8pF±10%
Temperature range	-10°C~+60°C

Table 4 MCF (L71-0457-05) KIF-1:SSB WIDE (OPTION)

项 目	规 格
标称中心频率	10.695MHz
中心频率偏移	在6dB, ±200Hz以内
通带宽及	在6dB, 宽2.7kHz以上
衰减带宽	在20dB, ±2.2kHz以下
	在60dB, ±3.1kHz以下
脉动	2dB以下
插入损耗	6dB以下
终端阻抗	1.2kΩ±5%/8pF±10%
温度范围	−10℃～+60℃

第 4 表 MCF(L71-0457-05) KIF-1:SSB WIDE(任选)

Item	Rating
Nominal center frequency	10.695 MHz
Center frequency deviation	within ±200Hz at 6dB
Passband width and Attenuation band width	2.2kHz or more at 6dB
	±1.5kHz or less at 20dB
	±2.4kHz or less at 60dB
Ripple	2dB or less
Insertion loss	5dB or less
Guaranteed attenuation	60dB or more within ±40kHz
Terminal impedance	1.2kΩ±5% / 6pF±5%

Table 5 MCF (L71-0249-05)

项 目	规 格
标称中心频率	10.695MHz
中心频率偏移	在6dB, ±200Hz以内
通带宽及	在6dB, 2.2kHz以上
衰减带宽	在20dB, ±1.5kHz以下
	在60dB, ±2.4kHz以下
脉动	2dB以下
插入损耗	5dB以下
保证衰减量	在±40kHz以内, 60dB以上
终端阻抗	1.2kΩ±5%/6pF±5%

第 5 表 MCF(L71-0249-05)

Item	Rating
Nominal center frequency	10.695 MHz
Center frequency deviation	within ±80Hz (25°C, 6dB)
Passband width	500Hz or more (6dB)
Insertion loss	5dB ±2dB
Terminal impedance	1200Ω / 6pF

Table 6 MCF (L71-0283-15) YK-107C:CW(OPTION)

项 目	规 格
标称中心频率	10.695MHz
中心频率偏移	±80Hz以内(25°C, 6dB)
通带宽	500Hz以上(6dB)
插入损耗	5dB±2dB以内
终端阻抗	1200Ω/6pF

第 6 表 MCF(L71-0283-15)YK-107C:CW(任选)

CIRCUIT DESCRIPTION/电路说明

Transmitter Circuit Configuration

The audio signal from the microphone enters CN 12 of the TX-RX unit. The signal then goes to IC9(UPC1313HA) the microphone amplifier. After amplifying part of IC9's output at Q54(2SC2712), it is detected by D59(HSM88AS) and applied to the ALC terminal of IC9. The signal, is gain properly adjusted by D/A convertor IC13(M62363FP) and passes through analog switch IC8 (TC4S66F), is amplified by Q50 2SC2712). The amplified signal is balance-modulated with the CAR signal (10.695MHz) input from CN9 by IC4 UPC1037GR) passed through Q51 (2SC2712), and sent to the crystal filter passing through the filter, is amplified by Q24(3SK131). The signal is CAR level adjusted by the D48 RN731H)pin diode, and input to mixer.

The 62.35MHz LO2 signal from the PLL unit is input from CN3 of the TX-RX unit, and mixed with the 10.695MHz signal which CAR level adjusted amplified by Q25 and Q26 3SK131×2) to produce a 73.045MHz signal. The LO1 signal from the PLL unit is input from CN2 of the TX-RX unit, and mixed with the 73.045MHz signal passes through LC three-stage filter by Q27 and Q28(3SK131×2) to generate the desired signal. The signal passes through the band-pass filter and is amplified by Q29 (2SC2954) to produce the drive output, which goes to the final unit from CN19.

The signal is amplified to about 100W by Q1(2SC1971), Q2, 3(2SC3133× 2) and Q5,6(2SC2879× 2). Harmonic components are attenuated by the filter unit, and the signal is output from the antenna connector.

In AM mode, the signal is generated by unbalancing the carrier of SSB balance modulator IC4(UPC1037GR).

In CW mode, the signal is input to IC5(37702E8LHJMHB) of the control unit. The sidetone monitor signal is generated by IC5, and amplified by audio amplifier Q79(2SC2712) and C7(LA4446), and output from the speaker. The CW control signal is output from IC5 of the control unit, and input to CN14 of the TX-RX unit to switch Q25 and Q26 and generate the CW signal.

发射电路的组成

来自麦克风端子的音频信号从发射－接收单元的CN12进入，通过麦克风放大器IC9(UPC1313HA)。这里，IC9的部分输出在Q54(2SC2712)被放大后，由D59(HSM88AS)来检波并被加到IC9的自动电平控制(ALC)端子。

由IC9放大的音频信号经数字－模拟转换器IC13(M62363FP)增益调整后，通过模拟转换IC8(TC4S66F)，然后由Q50(2SC2712)来放大。

被放大的信号在IC4(UPC1037GR)与由CN9输入的载波(CAR)信号(10.695MHz)被平衡调制，经过Q51(2SC2712)后通过中频滤波器。

通过滤波器而成为单边带(SSB)的信号在Q24(3SK131)被放大，在D48(RN731H)的管脚二极管调整成为载波(CAR)电平后，输入给混频器。

来自锁相环路回路II信号62.35MHz由同一单元的CN3输入，在Q25、Q26(3SK131×2)与在D48的管脚二极管调整成为载波电平的10.695MHz信号混频，并被频率变换为73.045MHz。

此73.045MHz信号在通过LC3级的滤波器后，在Q27、Q28(3SK131×2)与由锁样环(PLL)单元的CN2输入的锁相环回路I(LO1)信号混频，变换为目标频率。然后，通过带通滤波器在Q29(2SC2954)被放大，成为激励输出而由CN19输出给末级功放。

在末级功放，信号由Q1(2SC1971)，Q2、3(2SC3133×2)，Q5、6(2SC2879×2)放大为约100W功率后，由天线插头座输出，预的谐波则被该单元的滤波器部被衰减。

调幅(AM)模式在单边带系统的平衡调制器IC4(UPC1037GR)的载频平衡失调后产生。

在等幅电报(CW)模式，利用键的关闭/开关来通过发射－接收单元的J6插孔。完整原样被输入到控制单元的CPU IC5(37702E8LHJMHB)，并在IC5做出侧音监察信号，在发射－接收单元的Q79(2SC2712)及IC7(LA4446)的音频放大器放大并由扬声器输出。

同时，由控制单元IC5输出等幅电报(CW)控制信号，由发射－接收单元CN14输入，转换Q25、26而成为等幅电报(CW)信号。

CIRCUIT DESCRIPTION/电路说明

1. ALC circuit

The forward wave voltage detected in the final unit passes through CN15 in the TX-RX unit, its level is potential dividing and it is applied to the differential amplifier comprising Q60 and Q61 (2SC2712×2). When VSF is applied to the base of Q60, the emitter voltage of Q60 and Q61 increases and the current flowing through the base of Q61 decreases; thus the collector voltage rises. When this voltage exceeds the emitter voltage of Q62 (2SC2712)(about 1.8V) plus Vbe (about 0.6V), the current flows through the base of Q62 and the collector voltage drops. ALC time constants C and R are connected to this collector.

The collector voltage change is shifted by Q64 (2SK208) and D68 (3.6V), and matched with the voltage for keying by Q65 (2SC2712) and D69(RLS73) to generate the ALC voltage. This ALC voltage activates ALC by lowering the second gate voltage of Q24 (3SK131) of the TX-RX unit. (Fig. 7)

1．自动电平控制(ALC)

在末级功放检测的最后的信号电压通过发射－接收单元的CN15被阻抗抽样，输入差动放大器Q60、61(2SC2712×2)。在Q60的基极有VSF进入时，Q60、61的发射极电压上升，结果Q61的基极电流减低，集电极电压上升。当此电压超过Q62(2SC2712)的发射极电压(约1.8V)＋V_{BE}(约0.6V)时，Q62的基极电流开始流动而集电极电压降低。本集电极连接有ALC的时间常数C、R。

对此集电极电压的变化，以Q64(2SK208)和D68(3.6V)进行电压漂移，在Q65(2SC2712)和D69(RLS73)与键控用电压比较而作为ALC电压。通过本ALC电压来降低Q24(3SK131)的第2门限的电压，可以使ALC起作用。(第7图)

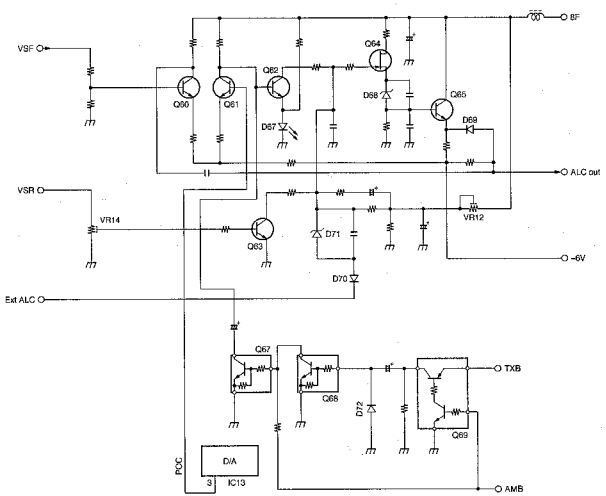


Fig. 7 ALC Power control circuit

CIRCUIT DESCRIPTION/电路说明

. Power control circuit

Power is controlled by lowering the base voltage of Q61 in X-RX unit. As the base voltage of Q61 decreases, the mitter voltage of Q60 and Q61 decreases. This activates LC and reduces the power even if the base voltage (VSF) of 60 is low. The power change is shifted by D/A converter C13(M62363FP) for changing base voltage of Q61. (Fig.7)

. Protection circuit

When the reflected wave voltage (VSR) detected by the filter nit rises, Q63 (2SC2714) in TX-RX unit turns on to reduce ne voltage of the ALC time constant line. The drive is ecreased and the power is reduced to protect the final ansistor.

. Temperature protection

If the final heat sink temperature rises, Q9 (DTD123EK) in the nal unit turns on and the fan starts running at low speed and uring transmission Q10(DTD123EK) turns on and starts unning a high speed. If the final heat sink temperature rises urther.

If this not enough to prevent the temperature from continuing o rise, the control unit CPU IC5(37702E8LHJMHB) emperature detection port THP becomes "H," forcibly wering the RF output. Also, if there are any fan troubles or if omething happens to get entangled and prevents the fan om turning, the RF output is similarly forced down to prevent verheating.

2. 功率控制电路

功率控制通过降低发射一接收单元的Q61的基极电压来进行。

降低Q61的基极电压时，Q60、61的发射极电压也会降低。这样，即使Q60的基极电压(VSF)少，也会使ALC起作用，造成功率衰减。

功率的转换利用IC13(M62363FP)的数字一模拟转换器通过改变Q61的基极电压来进行。(第7图)

3. 保护电路

当在滤波器单元检测的反射波电压(VSR)变高时，发射一接收单元的Q63(2SC2714)接通，通过降低ALC时间常数的线路电压，降低激励电平来降低功率，以保护末级晶体管等。

4. 温度保护

当末级散热器的温度上升时，末级单元的Q9(DTD123EK)接通而风扇开始以低速旋转。并且，发射时Q10(DTD123EK)接通而高速旋转。

温度仍然上升时，即使使控制单元的CPU IC5(37702E8LHJMHB)的温度检测端口THP设定成"H"，也会强制地降低射频输出。另外在风扇发生故障或异物堵塞而风扇部旋转时，同样地强制降低射频功率输出。

TRC-80

CIRCUIT DESCRIPTION/电路说明

Digital Control Circuit

The TRC-80's digital control circuit comprises a 16bit microcomputer CPU IC5 (37702E8LHJMHB), a reset IC3 (M62003FP), an EEPROM IC6 (AT93C6610SI2.7), Expander I/O IC7(M5M82C55AFP-2) since there are many control signals for TX-RX unit and filter unit, they are output to the shift register (serial to parallel converter) in series. (Fig. 8)

1. Power switch

With this transceiver, the power is turned on and off by the microcomputer. When the power switch is pressed, the microcomputer detects it and energizes, the power relay to supply 14V to the transceiver. When the power switch is pressed to turn the transceiver off, the microcomputer checks it a little longer than when turning the power on, and deenergizes the power relay.

数字控制电路

TRC-80型的控制部由CPU IC5(37702E8LHJMHB)(16位微计算机)和复位IC3(M62003FP)、EEPROM IC6(AT93C6610SI2.7)、扩展I/O IC7(M5M82C55AFP-2)来组成。

因为用于发射一接收单元和滤波器单元的控制信号数量颇多，因此向设于各单元的移位寄存器(串行/并行变换)以串行来输出信号。(第8图)

1. 电源开关

TRC-80型由CPU来进行电源通/断。

按下POWER开关时，CPU检测出确实被按下后接通电源继电器，并向装置供应14V。

电源已接通时按下POWER开关时，CPU进行比接通时长一些按下的检查，并断开电源继电器。

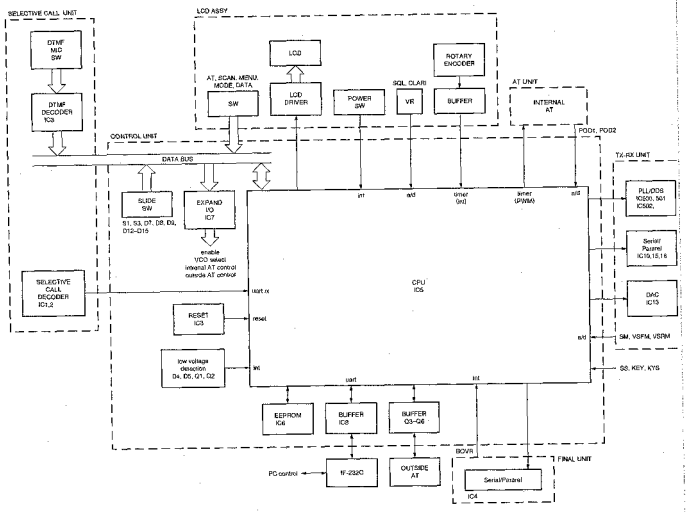


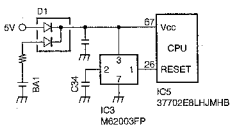
Fig. 8 Control block diagram

CIRCUIT DESCRIPTION/ 电路说明

2. Reset circuit

IC3 (M62003FP) monitors Vcc applied to the microcomputer. f the voltage falls below 2.15V, the IC outputs a reset signal "L") to the microcomputer, and the CPU initializes all internal data (including memory channel No.11-80). The reset signal is not output when the power is turned on or off or 14V is turned on or off. It is output when the battery voltage level goes low and 14V is turned on or off.

C34 generates the signal width (td) required to reset the microcomputer. (Fig. 9)



2. 复位电路

IC3(M62003FP)监察供应给CPU的Vcc，当它降低到2.15V以下时即会产生复位信号("L")。

CPU通过复位信号使内部的全部数据(包括存储信道号码11～80，经销店菜单)初始化。在电源开关的通/断或14V的通/断不会发生复位信号，而只有在电池消耗的状态进行断14V时产生。

C34会产生一个足够宽度之信号(td)使CPU复位。(第9图)

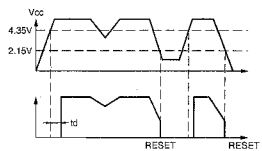


Fig. 9 Reset circuit

3. Backup circuit

This transceiver has two kinds of data stored in the microcomputer and EEPROM. Setting value of user and dealer menu data, such as memory channel data No.01～80, is stored in the microcomputer, and memory channel data No.01～10 for adjustment data, is stored in the EEPROM. To backup the CPU a power supply needed. If 14 V is cut off, power is supplied from a lithium battery. To retain data with the lithium battery, the microcomputer must be in backup mode. So, the backup detection circuit detects a voltage drop in the 14V line and outputs a backup request signal to the microcomputer. (Fig. 10)

3. 备用电路

TRC-80型配备CPU和EEPROM两种备用数据。

在工厂调整时设定的数据及存储信道号码01～10的数据被保存在EEPROM中，存储信道号码01～80，用户及经销店菜单的设定值等被保存在CPU中。

为了备用，CPU需要电源。本电源在14V被切断时由锂电池来供电。当利用锂电池保持数据时，需要使CPU成为备用状态，因此利用备用检测电路检测14V线路的电源降低，向CPU输出备用请求信号。(第10图)

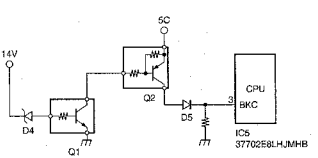


Fig. 10 Backup detection circuit

CIRCUIT DESCRIPTION/电路说明

4. EEPROM

Adjustment data and memory channel No.01 ~10 stored in the EEPROM, which consists of 256 16bit registers. Data can be written to and read from the EEPROM. Each time the power is switched on, data is read from the EEPROM. If corrupt data is detected, the default adjustment data is used and memory channel is cleared. Adjustment data can be written into the EEPROM in servicing mode.
Memory channel is written by dealer mode. (Fig. 11)

4．EEPROM

调整数据和存储信道号码01～10由256个16位寄存器构成，可以进行写入和读取。

每一次接通电源时，从EEPROM读取数据，而当检测到数据破坏时用系统默认值的调整数据动作，存储信道被清除。

通过起动调整模式，调整数据可以写入EEPROM。

存储信道可以利用经销店模式来写入。(第11图)

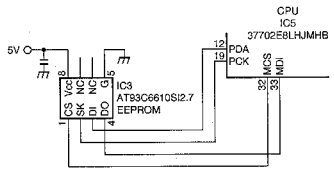


Fig. 11 EE PROM circuit

5. Busy signal

The level of the port is monitored in receive mode, and busy indication and busy stop are performed during scanning.

5．占线信号

接收时，监视端口电平，进行占线显示和扫描中占线停止等处理。

6. Encoder circuit

The encoder is a mechanical one. The waveforms of the encoder pulses are rectified by IC1 and IC2 (TC4S584F) in the LCD assembly, and the number of pulses is counted by the hardware counter in the microcomputer. (Fig. 12)

6．编码电路

采用机械式编码器，在IC1, 2(TC4S584F)进行波形整形后，利用CPU内的硬件计数器进行脉冲的计数。(第12图)

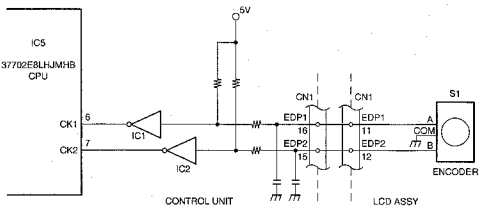


Fig. 12 Encoder circuit

CIRCUIT DESCRIPTION/电路说明

7. Serial interface

The CPU has an synchronous serial interface built in, enabling serial communication at the TTL level.

The TRC-80 can use this serial port for control via an external personal computer or for transmission of data among two transceiver units.

The data format is: TTL level, 8 data bit length, 1 stop bit, no parity, 9600 bps transmission speed. (Fig. 13)

8. Key scan

The key scan consists of the six elements S0 and K0~K4.

When the panel switch is pressed, the K0~K4 port becomes "L" level and detection can be done by software. Key chattering is absorbed by software.

Also, through the dealer menu settings, software can be used to set actuation enable/disenable for each of the switches "SCAN," "MENU," "MODE" and "DATA."

7. 串行接口

CPU内置非同步的串行接口，可以进行TTL电平的串行通信。

在TRC-80型，通过使用本串行端口可以进行利用外部个人计算机的控制或2台通信装置之间的数据传送。

数据的格式为TTL电平、8数据位长、1停止位，无奇偶性、9600bps的通信速度。（第13图）

8. 键扫描

键扫描由S0，K0～K4的6条来构成。

当按下盘面的开关时，K0～K4的端口成为“L”电平，可利用软件进行检测。

键的振动由软件来吸收。

另外，通过经销店菜单的设定，可以设定“SCAN”，“MENU”，“MODE”，“DATA”等的各开关的动作之可否。

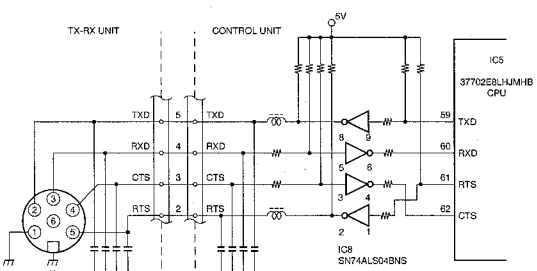


Fig. 13 Serial interface

CIRCUIT DESCRIPTION/ 电路说明

9. Beep

The beep signal is generated using the timer in the microcomputer. A dot lasts about 40ms; a dash, about 120ms. The oscillation frequency is about 1.4kHz.

10. PLL and DDS control circuit

The TRC-80 has one PLL and two DDSs. The main microcomputer outputs frequency data to the PLL and DDSs serially according to the display frequency.

11. TX-RX unit control signal circuit

The microcomputer sends the mode signal, IF filter select signal, power signal, band-pass filter signal, MIC gain, and CAR level data to the TX-RX unit. It receives meter signals and standby switch signals from the TX-RX unit, displays data on the meters, and performs the transmit operation. The output signal from the microcomputer goes to the serial-to-parallel converter (TC9174F, UPD6345GS), D/A converter(M62363FP). (Fig. 14)

9. 蜂鸣声

蜂鸣声信号由CPU的内置定时器直接产生。

短音的长度为约40ms，长音的长度为约120ms，发射频率为约1.4kHz。

10. PLL/DDS控制电路

TRC-80型有1个PLL和2个DDS，对于这些PLL，DDS发射器，CPU以串行数据输出基于所显示频率的发射频率数据。

11. 发射—接收单元控制信号

CPU对发射—接收单元提供模式信号、I滤波器选择信号、功率信号、带通滤波器信号、麦克风增益、CAR电平等数据。

相反，CPU从发射—接收单元接收各仪表信号、待机开关信号等，进行仪表显示、发射等动作。

CPU的输出信号输出给串行/并行变换器(TC9174F、UPD6345GS)，电子调节旋钮(M62363FP)。(第14图)

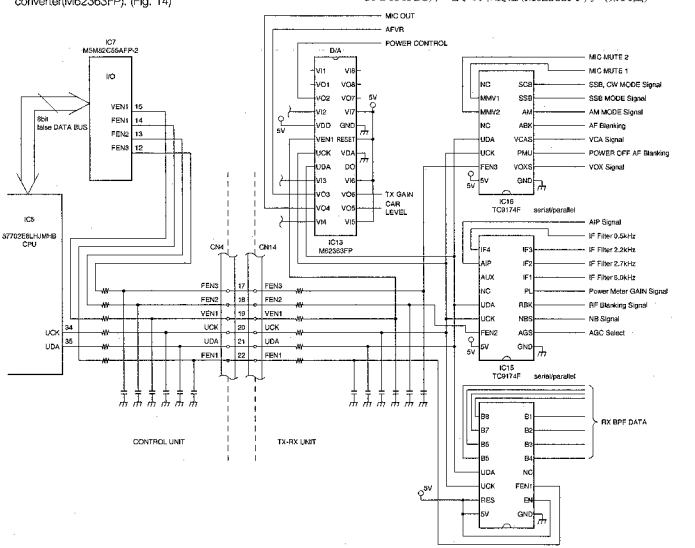


Fig. 14 TX-RX unit control signal

CIRCUIT DESCRIPTION/电路说明

12. Final unit control signal

The transmission LPF section signal and KAT-2 control signal to the final unit are output as serial data. (Fig. 15)

12. 末级单元控制信号

以串行数据输出发射低通滤波器选择信号、及KAT-2控制信号。而控制末级单元。(第15图)

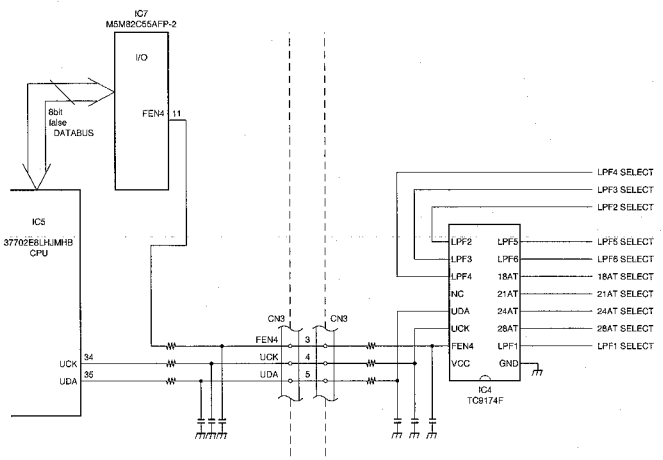


Fig. 15 Final unit control signal

CIRCUIT DESCRIPTION/电路说明

13. AT unit control signal

Concerning the preset AT, based on the KAT-2 installation signal (ATI), variable condenser position data (POD1, POD2) and preset position data, the CPU controls the variable condenser drive motor rotation direction and rotation speed, using feedback control to ensure it stops at preset positions. The tap signal from the tuning circuit is synthesized from the transmit LPF selection signal from the final unit.

The KAT-2 does not tuning below 2.0MHz, forcibly entering the AT-through mode. (Fig. 16)

The MAT-100 control signal is bidirectional and conducts tuning while handshaking with the MAT-100. (Fig. 17)

14. Selective call unit control signal

Based on the KPE-1 installation signal, DTMF decode data, FSK decode data and other data, the CPU transmits call codes, turns AF muting on and off, etc.

13. 天调(AT)单元控制信号

预置天调(AT)以KAT-2装配信号(ATI)、可变电阻器位置信息(POD1, POD2)等输入信号和预置位置信息为基础，CPU控制可变电阻器激励电动机的旋转方向、旋转速度，进行反馈控制以便在预置位置停止。调谐电路的抽头信号以来自末级单元的发射低通滤波器选择信号为基础合成。

在未满2.0MHz的情况，KAT-2不进行调谐动作。强制地成为AT直通的状态。(第16图)

MAT-100控制信号在双方向与MAT-100进行信号交换，同时进行调谐动作。(第17图)

14. 选择呼叫单元控制信号

以KPE-1装配信号、DTMF解码数据、FSK解码数据为基础，CPU进行呼叫代码的发射、AF静噪的通/断等。

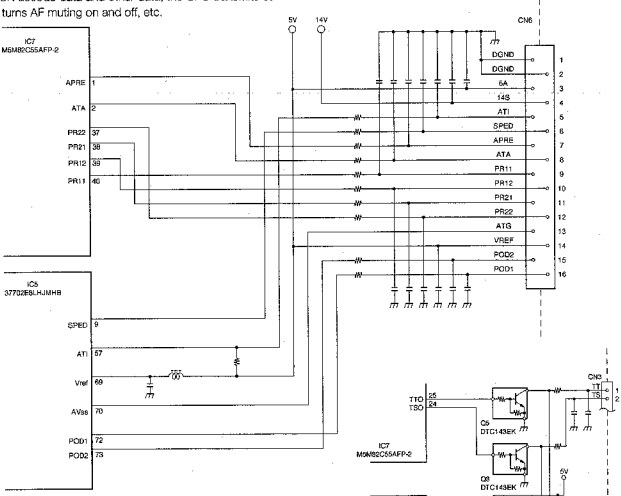
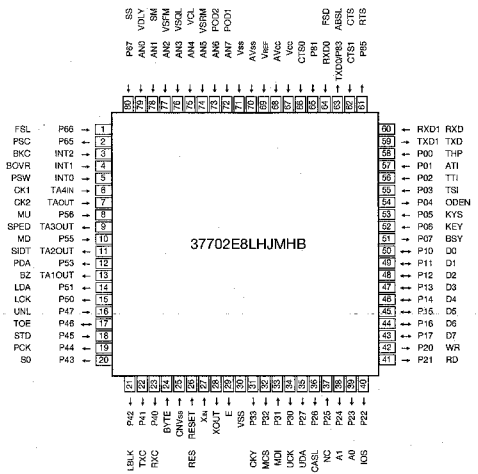


Fig. 16 KAT-2 Control circuit

Fig. 17 MAT-100 Control circuit

SEMICONDUCTOR DATA

Microprocessor : 37702E8LHJMHB Control unit (IC5)



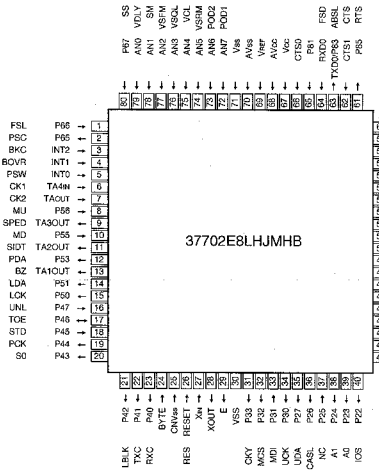
Pin No.	Pin Name	Port Name	I/O	Description
1	FSL	P66	I	Selective call lock detect input, H=detect, L=normal
2	PSC	P65	O	Power relay control, H=ON, L=OFF
3	BKC	INT2	I	Reduced voltage input, H=normal, L=reduced voltage, rise pulse=power supply turned on
4	BOVR	INT1	I	Excess voltage input, H=normal, L=excess voltage
5	PSW	INT0	I	POWER SW input, H=input, L=no input
6	CK1	TA4in	I	Encoder input 1
7	CK2	TA4out	I	Encoder input 2
8	MU	P56	I	Microphone UP key input, H=no input, L=input
9	SPED	TA3out	O	AT motor drive control, H=GO, L=STOP
10	MD	P55	I	Microphone DWN key input, H=no input, L=input
11	SIDT	TA2out	O	Side tone (timer output)
12	PDA	P53	O	PLL serial data, EEPROM serial data, diode matrix selection
13	BZ	TA1out	O	System beep (timer output)
14	LDA	P51	O	LCD driver serial data
15	LCK	P50	O	LCD driver serial clock
16	UNL	P47	I	PLL lock decision, H=lock, L=unlock
17	TOE	P46	O	DTMF IC bus control, H=enable, L=HighZ
			I	Selective call unit attachment decision, H=not attached, L=attached

SEMICONDUCTOR DATA

Pin No.	Pin Name	Port Name	I/O	Description
18	STD	P45	I	DTMF input decision, H=input, L=no input
19	PCK	P44	O	For PLL/DDS, serial clock
20	S0	P43	O	Key matrix selection, H (HighZ)=normal, L=select
21	LBLK	P42	O	LCD all illuminate, H=all illuminate, L=normal
22	TXC	P41	O	Transmission control, H=TX, L=non-TX
23	RXC	P40	O	Receiver control, H=RX, L=non-RX
24	BYTE	BYTE	I	(External bus width designated)
25	CNVss	CNVss	I	CPU actuation mode designated
26	RES	RESET	I	CPU reset
27	XIN	XIN	I	System clock
28	XOUT	XOUT	O	System clock
29	E	E	O	
30	Vss	Vss		
31	CKY	P33	O	Transmission control CKY output, H=transmission (carrier output), L=reception
32	MCS	P32	O	EEPROM CS, H=CS
33	MDI	P31	I	EEPROM data read
34	UCK	P30	O	Common serial clock
35	UDA	P27	O	Common serial data
36	CASL	P26	O	Carrier DDS register selection, H=register B, L=register A
37	NC	P25	I	Unused
38	A1	P24	O	Expansion I/O address
39	A0	P23	O	Expansion I/O address
40	IOS	P22	O	Expansion I/O CS signal, H=normal, L=CS
41	RD	P21	O	Expansion I/O RD signal, H=normal, L=RD
42	WR	P20	O	Expansion I/O WR signal, H=normal, L=WR
43	D7	P17	I/O	False data path
44	D6	P16	I/O	False data path
45	D5	P15	I/O	False data path
46	D4	P14	I/O	False data path
47	D3	P13	I/O	False data path
48	D2	P12	I/O	False data path
49	D1	P11	I/O	False data path
50	D0	P10	I/O	False data path
51	BSY	P07	O	Packet busy output, H=busy, L=normal
52	KEY	P06	I	Key input, H=no input, L=input
53	KYS	P05	I	Key plug attachment decision, H=attached, L=not attached
54	ODEN	P04	O	Expansion I/O reset output, H=reset, L=normal
55	TSI	P03	I	External AT control input
56	TTI	P02	I	External AT control input
57	ATI	P01	I	Internal AT attachment decision, H=not attached, L=attached
58	THP	P00	I	Power down request during temperature protection, H=protection actuation, L=normal
59	TXD	TXD1	O	uart data output
60	RXD	RXD1	I	uart data input
61	RTS	P85	O	uart reception authorization output, H=reception not allowed, L=reception allowed

IC数据

微处理器：37702E8LHJMHB　控制单元(IC5)



名 称	种 类	管 脚	输入/输出	内　　容
1	FSL	P66	I	选择呼叫锁定检测输入，H＝检测，L＝通常
2	PSC	P65	O	功率继电器控制，H＝ON，L＝OFF
3	BKC	INT2	I	减电压输入，H＝通常，L＝减电压，上升脉冲＝电源接通
4	BOVR	INT1	I	过电压输入，H＝通常，L＝过电压
5	PSW	INT0	I	电源开关输入，H＝有输入，L＝无输入
6	CK1	TA4输入	I	编码器输入1
7	CK2	TA4输出	I	编码器输入2
8	MU	P56	I	麦克风增大键输入，H＝无输入，L＝有输入
9	SPED	TA3输出	O	AT电动机驱动控制，H＝进行，L＝停止
10	MD	P55	I	麦克风减小键输入，H＝无输入，L＝有输入
11	SIDT	TA2输出	O	侧音(定时器输出)
12	PDA	P53	O	PLL串行数据，EEPROM串行数据，二极管矩阵选择
13	BZ	TA1输出	O	系统蜂鸣音(定时器输出)
14	LDA	P51	O	液晶显示器驱动用串行数据
15	LCK	P50	O	液晶显示器驱动用串行时钟
16	UNL	P47	I	PLL锁定判断，H＝锁定，L＝解除
17	TOE	P46	O	DTMF IC母控制，H＝禁止，L＝高Z
			I	选择呼叫单元安装判断，H＝未安装，L＝安装

IC数据

名 称	种 类	管 脚	输入/输出	内 容
18	STD	P45	I	DTMF输入判断，H=有输入，L=无输入
19	PCK	P44	O	PLL/DDS用，串行锁定
20	S0	P43	O	键矩阵选择，H(高Z)=通常，L=选择
21	LBLK	P42	O	液晶显示器全熄灭，H=全熄灭，L=通常
22	TXC	P41	O	发射控制，H=发射，L=非发射时
23	RXC	P40	O	接收控制，H=接收，L=非接收时
24	BYTE	BYTE	I	(指定外部母线宽度)
25	CNVss	CNVss	I	指定CPU动作模式
26	RES	RESET	I	CPU复位
27	X输入	X输入	I	系统时钟
28	X输出	X输出	O	系统时钟
29	E	E	O	
30	Vss	Vss		
31	CKY	P33	O	发射控制CKY输出，H=发射(载波输出)，L=接收
32	MCS	P32	O	EEPROM CS，H=CS时
33	MDI	P31	I	EEPROM数据读取
34	UCK	P30	O	共同串行时钟
35	UDA	P27	O	共同串行数据
36	CASL	P26	O	载波DDS寄存器选择，H=寄存器B，L=寄存器A
37	NC	P25	I	未使用
38	A1	P24	O	扩张输入/输出地址
39	A0	P23	O	扩张输入/输出地址
40	IOS	P22	O	扩张输入/输出 CS信号，H=通常，L=CS时
41	RD	P21	O	扩张输入/输出 RD信号，H=通常，L=RD时
42	WR	P20	O	扩张输入/输出 WR信号，H=通常，L=WR时
43	D7	P17	I/O	模拟数据母线
44	D6	P16	I/O	模拟数据母线
45	D5	P15	I/O	模拟数据母线
46	D4	P14	I/O	模拟数据母线
47	D3	P13	I/O	模拟数据母线
48	D2	P12	I/O	模拟数据母线
49	D1	P11	I/O	模拟数据母线
50	D0	P10	I/O	模拟数据母线
51	BSY	P07	O	温度保护时的发射功率降低要求，H=保护动作，L=通常时
52	KEY	P06	I	内置AT安装判断，H=未安装，L=安装
53	KYS	P05	I	外接AT控制输入
54	ODEN	P04	O	外接AT控制输入
55	TSI	P03	I	扩张输入/输出复位输出，H=复位，L=通常
56	TTI	P02	I	键插头安装判断，H=安装，L=未安装
57	ATI	P01	I	键输入，H=无输入，L=通常时
58	THP	P00	I	信息包占线输出，H=占线，L=通常时
59	TXD	TXD1	O	uart数据输出
60	RXD	RXD1	I	uart数据输入
61	RTS	P35	O	uart接收许可输出，H=不可接收，L=可接收

SEMICONDUCTOR DATA

Pin No.	Pin Name	Port Name	I/O	Description
62	CTS	CTS1	I	uart transmission authorization output, H=transmission not allowed, L=transmission allowed
63	ABSL	TXD0	O	Selective call code transmission uart data output
		P83	O	Local DDS, PLL register selection, H=register B, latch V1, L=register A, latch V2
64	FSD	RXD0	I	Selective call uart data input
65	P81	P81	I	Unused
66	CTS0	CTS0	I	Selective call transmission authorization input, H=transmission not allowed, L=transmission allowed
67	Vcc	Vcc	I	Power supply
68	AVcc	AVcc	I	A/D power supply
69	VREF	VREF	I	A/D reference power supply
70	AVss	AVss	I	A/D GND
71	Vss	Vss	I	GND
72	POD1	AN7	I	Variable condenser 1 VR, A/D input
73	POD2	AN6	I	Variable condenser 2 VR, A/D input
74	VSRM	AN5	I	Reflection wave voltage, A/D input
75	VCL	AN4	I	Clarifier VR, A/D input
76	VSQL	AN3	I	Squelch VR, A/D input
77	VSFM	AN2	I	RF meter voltage (progression wave voltage), A/D input
78	SM	AN1	I	S meter voltage, A/D input
79	VDLY	AN0	I	VOX delay VR, A/D input
80	SS	P67	I	Send switch input, H=no input, L=input

I/O Port : M5M82C55AFP-2 Control unit (IC7)

Pin No.	Pin Name	Port Name	I/O	Description
1	APRE	PA3	O	Internal AT setting, H=microprocessor, L=analog circuit
2	ATA	PA2	O	Internal AT setting, H=line in, L=cut away
3	NC	PA1	O	Not used
4	NC	PA0	O	Not used
5	RD	$\overline{RD}$	I	Readout control input
6	CS	$\overline{CS}$	I	Chip select input
7	GND	GND	I	GND
8	A1	A1	I	Port address 1
9	A0	A0	I	Port address 0
10	NC	PC7	O	Not used
11	FEN4	PC6	O	Serial parallel enable, final U, IC4 (9174)
12	FEN3	PC5	O	Serial parallel enable, TX-RX U, IC16 (9174)
13	FEN2	PC4	O	Serial parallel enable, TX-RX U, IC15 (9174)
14	FEN1	PC0	O	Serial parallel enable, TX-RX U, IC10 (6345)
15	VEN1	PC1	O	D/A enable, TX-RX U, IC13
16	LEN1	PC2	O	LCD driver enable, LCD ASSY, IC1
17	DEN2	PC3	O	DDS enable, TX-RX U, IC501
18	DEN1	PB0	O	DDS enable, TX-RX U, IC500
19	PLS	PB1	O	FSK key select, H=FSK key, L=selective call key
20	PEN1	PB2	O	PLL enable, TX-RX U, IC502

IC数据

名 称	种 类	管 脚	输入/输出	内 容
62	CTS	CTS1	I	uart发射许可输入，H=不可发射，L=可发射
63	ABSL	TXD0	O	选择呼叫代码发射uart数据输出
		P83	O	本地DDS, PLL寄存器选择, H=寄存器B, 闩锁V1, L=寄存器A, 闩锁V2
64	FSD	RXD0	I	选择呼叫uart数据输入
65	P81	P81	I	未使用
66	CTS0	CTS0	I	选择呼叫发射许可输入，H=不可发射，L=可发射
67	Vcc	Vcc	I	电源
68	AVcc	AVcc	I	模拟/数字用电源止
69	V_{REF}	V_{REF}	I	模拟/数字用基准电源
70	AVss	AVss	I	模拟/数字用接地
71	Vss	Vss	I	接地
72	POD1	AN7	I	可变电容器1VR，模拟/数字输入
73	POD2	AN6	I	可变电容器2VR，模拟/数字输入
74	VSRM	AN5	I	反射波电压，模拟/数字输入
75	VCL	AN4	I	干扰消除器VR，模拟/数字输入
76	VSQL	AN3	I	静噪VR，模拟/数字输入
77	VSFM	AN2	I	射频表电压(进行波电压)，模拟/数字输入
78	SM	AN1	I	信号强度计电压，模拟/数字输入
79	VDLY	AN0	I	VOX延迟VR，模拟/数字输入
80	SS	P87	I	发射转换输入，H=无输入，L=有输入

I/O端口：M5M82C55AFP-2　控制单元(IC7)

名 称	种 类	管 脚	输入/输出	内 容
1	APRE	PA3	O	内置AT控制，H=微计算机，L=模拟电路
2	ATA	PA2	O	内置AT的设定，H=线路输入，L=切断
3	NC	PA1	O	未使用
4	NC	PA0	O	未使用
5	RD	$\overline{RD}$	I	读取控制输入
6	CS	$\overline{CS}$	I	基片选择输入
7	GND	GND	I	接地
8	A1	A1	I	端口地址 1
9	A0	A0	I	端口地址 0
10	NC	PC7	O	未使用
11	FEN4	PC6	O	串行并行的禁止，末极单元，IC4(9174)
12	FEN3	PC5	O	串行并行的禁止，发射－接收单元，IC16(9174)
13	FEN2	PC4	O	串行并行的禁止，发射－接收单元，IC15(9174)
14	FEN1	PC0	O	串行并行的禁止，发射－接收单元，IC10(6345)
15	VEN1	PC1	O	数字－模拟的禁止，发射－接收单元，IC13
16	LEN1	PC2	O	液晶显示器敲励的禁止，液晶显示器组件，IC1
17	DEN2	PC3	O	DDS的禁止，发射－接收单元，IC501
18	DEN1	PB0	O	DDS的禁止，发射－接收单元，IC500
19	PLS	PB1	O	FSK键选择，H=FSK键，L=选择呼叫键
20	PEN1	PB2	O	PLL禁止，发射－接收单元，IC502

SEMICONDUCTOR DATA

Pin No.	Pin Name	Port Name	I/O	Description
21	VB3	PB3	O	VCO select, H=21.5MHz≦f, L=Other
22	VB2	PB4	O	VCO select, H=10.5MHz≦f<21.5MHz, L=Other
23	VB1	PB5	O	VCO select, H=f<10.5MHz, L=Other
24	TSO	PB6	O	External AT control output
25	TTO	PB7	O	External AT control output
26	Vcc	Vcc	I	Power supply
27	D7	D7	I	Data 7
28	D6	D6	I	Data 6
29	D5	D5	I	Data 5
30	D4	D4	I	Data 4
31	D3	D3	I	Data 3
32	D2	D2	I	Data 2
33	D1	D1	I	Data 1
34	D0	D0	I	Data 0
35	RES	RESET	I	Reset input
36	WR	$\overline{WR}$	I	Write control input
37	PR22	PA7	O	Motor 2 rotation direction control
38	PR21	PA6	O	
39	PR12	PA5	O	Motor 1 rotation direction control
40	PR11	PA4	O	

I/O port expansion : µPD6345GS TX-RX unit (IC10)

Pin No.	Pin Name	Port Name	Description
5	B4	O8	RX band select 4, ON=4.5MHz≦f<8.0MHz, OFF=Other
6	B3	O7	RX band select 3, ON=2.5MHz≦f<4.5MHz, OFF=Other
7	B2	O6	RX band select 2, ON=1.605MHz≦f<2.5MHz, OFF=Other
8	B1	O5	RX band select 1, ON=f<1.605MHz, OFF=Other
9	B8	O4	RX band select 8, ON=21.5MHz≦f, OFF=Other
10	B7	O3	RX band select 7, ON=14.5MHz≦f<21.5MHz, OFF=Other
11	B6	O2	RX band select 6, ON=10.5MHz≦f<14.5MHz, OFF=Other
12	B5	O1	RX band select 5, ON=8.0MHz≦f<10.5MHz, OFF=Other

D/A converter : M62363FP TX-RX unit (IC13)

Pin No.	Pin Name	Port Name	Description
1	NC	VI1	Not used
2	NC	VO1	Not used
3	POC	VO2	POWER control
4	(5V)	VI2	Created from 14V at zener & resistive division
9	RAF	VI3	AF reference voltage
10	AFC	VO3	AF volume (VCA control voltage)
11	MICOUT	VO4	Microphone output (audio), microphone gain
12	MICIN	VI4	Microphone input (audio)
13	(5v)	VI5	Vdd common
14	CAR	VO5	CAR level

TRC-80

IC数据

名 称	种 类	管 脚	输入/输出	内 容
21	VB3	PB3	O	VCO选择，H＝21.5MHz≦f，L＝其他
22	VB2	PB4	O	VCO选择，H＝10.5MHz≦f＜21.5MHz，L＝其他
23	VB1	PB5	O	VCO选择，H＝ f＜10.5MHz，L＝其他
24	TSO	PB6	O	外接AT控制输出
25	TTO	PB7	O	外接AT控制输出
26	Vcc	Vcc	I	电源
27	D7	D7	I	数据7
28	D6	D6	I	数据6
29	D5	D5	I	数据5
30	D4	D4	I	数据4
31	D3	D3	I	数据3
32	D2	D2	I	数据2
33	D1	D1	I	数据1
34	D0	D0	I	数据0
35	RES	RESET	I	复位输入
36	WR	$\overline{WR}$	I	写入控制输入
37	PR22	PA7	O	电动机2旋转方向控制
38	PR21	PA6	O	
39	PR12	PA5	O	电动机1旋转方向控制
40	PR11	PA4	O	

I/O端口扩充：μPD6345GS TX-RX单元(IC10)

名 称	种 类	管 脚	内 容
5	B4	O8	接收波段选择4，ON＝4.5MHz≦f＜8.0MHz，OFF＝其他
6	B3	O7	接收波段选择3，ON＝2.5MHz≦f＜4.5MHz，OFF＝其他
7	B2	O6	接收波段选择2，ON＝1.605MHz≦f＜2.5MHz，OFF＝其他
8	B1	O5	接收波段选择1，ON＝f＜1.605MHz，OFF＝其他
9	B8	O4	接收波段选择8，ON＝21.5MHz≦f，OFF＝其他
10	B7	O3	接收波段选择7，ON＝14.5MHz≦f＜21.5MHz，OFF＝其他
11	B6	O2	接收波段选择6，ON＝10.5MHz≦f＜14.5MHz，OFF＝其他
12	B5	O1	接收波段选择5，ON＝8.0MHz≦f＜10.5MHz，OFF＝其他

数字—模拟转换器：M62363FP TX-RX单元(IC13)

名 称	种 类	管 脚	内 容
1	NC	VI1	未使用
2	NC	VO1	未使用
3	POC	VO2	电源控制
4	(5V)	VI2	由14V以齐纳及电阻分割做出
9	RAF	VI3	音频参考电压
10	AFC	VO3	音频调节旋钮(VCA控制电压)
11	MICOUT	VO4	麦克风输出(音频)，麦克风增益
12	MICIN	VI4	麦克风输入(音频)
13	(5V)	VI5	Vdd共同
14	CAR	VO5	CAR电平

SEMICONDUCTOR DATA

Pin No.	Pin Name	Port Name	Description
15	TGC	VO6	TX gain control
16	(5V)	VI6	Vdd common
21	(5V)	VI7	Unused (Vdd common)
22	(SQ)	VO7	Unused (squelch threshold voltage)
23	(SWRP)	VO8	Unused (SWR protection control ALC voltage)
24	(VSR)	VI8	Unused (SWR protection detect voltage)

I/O port expansion : TC9174F TX-RX unit (IC15)

Pin No.	Pin Name	Port Name	Description
2	AGS	OP1	Selection of constant during AGC, ON=AGC FAST, OFF=AGC SLOW
3	NBS	OP2	NB setting, ON=NB off, OFF=NB on
4	RBK	OP3	RF blanking, ON=RBK on, OFF= RBK off
5	PL	OP4	VSFM, VSRM op-amp GAIN selection, ON=LOW gain, OFF=HIGH gain
6	IF1	OP5	IF filter selection, ON=6.0kHz selection, OFF=other
7	IF2	OP6	IF filter selection, ON=2.7kHz selection, OFF=other (option)
8	IF3	OP7	IF filter selection, ON=2.2kHz selection, OFF=other
9	IF4	OP8	IF filter selection, ON=0.5kHz selection, OFF=other (option)
10	AIP	OP9	AIP setting, ON=AIP on, OFF=AIP off
11	AUX	OP10	AUX setting, ON=AUX on, OFF=AUX off (No connect)

I/O port expansion : TC9174F TX-RX unit (IC16)

Pin No.	Pin Name	Port Name	Description
2	VOXS	OP1	VOX setting, ON=VOX on, OFF=VOX off
3	PMU	OP2	AF blanking during power supply OFF, ON=ABK on, OFF=ABK off
4	VCAS	OP3	VCA selection, ON=VR, OFF=D/A
5	ABK	OP4	AF blanking, ON=ABK on, OFF=ABK off
6	AM	OP5	Mode selection, ON=during AM mode, OFF=other
7	SSB	OP6	Mode selection, ON=during SSB mode, OFF=other
8	SCB	OP7	Mode selection, ON=during SSB mode or CW mode, OFF=other
9	nc	OP8	Not used(Usualy ON)
10	MMU1	OP9	Microphone mute 1 (input side) ON=normal, OFF=during microphone mute
11	MMU2	OP10	Microphone mute 2 (output side) ON=during microphone mute, OFF=normal

Band data decoder : TC9174F Final unit (IC4)

Pin No.	Pin Name	Port Name	Description
2	LPF1	OP1	Selected for LPF1, ON=f<2.4MHz, OFF=other
3	28AT	OP2	Selected for 28AT, ON=27.0MHz≦f, OFF=other
4	24AT	OP3	Selected for 24AT, ON=22.0MHz≦f<27.0MHz, OFF=other
5	21AT	OP4	Selected for 21AT, ON=19.0MHz≦f<22.0MHz, OFF=other
6	18AT	OP5	Selected for 18AT, ON=14.5MHz≦f<19.0MHz, OFF=other
7	LPF6	OP6	Selected for LPF6, ON=21.5MHz≦f, OFF=other
8	LPF5	OP7	Selected for LPF5, ON=14.5MHz≦f<21.5MHz, OFF=other
9	LPF2	OP8	Selected for LPF2/4AT, ON=2.4MHz≦f<4.5MHz, OFF=other
10	LPF3	OP9	Selected for LPF3/7AT, ON=4.5MHz≦f<8.0MHz, OFF=other
11	LPF4	OP10	Selected for LPF4/14AT, ON=8.0MHz≦f<14.5MHz, OFF=other

IC数据

名 称	种 类	管 脚	内 容
15	TGC	VO6	发射增益控制
16	(5V)	VI6	Vdd共同
21	(5V)	VI7	未使用(Vdd共同)
22	(SQ)	VO7	未使用(静噪阈值电压)
23	(SWRP)	VO8	未使用(SWR保护控制ALC电压)
24	(VSR)	VI8	未使用(SWR保护检测电压)

I/O端口扩充：TC9174F TX-RX单元(IC15)

名 称	种 类	管 脚	内 容
2	AGS	OP1	自动增益控制时间常数选择，ON＝AGC快速，OFF＝AGC慢速
3	NBS	OP2	噪音抑制设定，ON＝噪音抑制断，OFF＝噪音抑制通
4	RBK	OP3	射频消隐，ON＝射频消隐通，OFF＝射频消隐断
5	PL	OP4	选择VSFM，VSRM运算放大器增益，ON＝低增益，OFF＝高增益
6	IF1	OP5	选择中频滤波器，ON＝选择6.0KHz，OFF＝其他
7	IF2	OP6	选择中频滤波器，ON＝选择2.7KHz，OFF＝其他(任选)
8	IF3	OP7	选择中频滤波器，ON＝选择2.2KHz，OFF＝其他
9	IF4	OP8	选择中频滤波器，ON＝选择0.5KHz，OFF＝其他(任选)
10	AIP	OP9	设定AIP，ON＝AIP通，OFF＝AIP断
11	AUX	OP10	设定AUX，ON＝AUX通，OFF＝AUX断

I/O端口扩充：TC9174F TX-RX单元(IC16)

名 称	种 类	管 脚	内 容
2	VOXS	OP1	VOX设定，ON＝VOX通，OFF＝VOX断
3	FMU	OP2	电源断开时的射频消隐，ON＝射频消隐通，OFF＝射频消隐断
4	VCAS	OP3	选择VCA，ON＝可变电阻，OFF＝数字/模拟
5	ABK	OP4	射频消隐，ON＝射频消隐通，OFF＝射频消隐断
6	AM	OP5	选择模式，ON＝AM模式时，OFF＝其他
7	SSB	OP6	选择模式，ON＝SSB模式时，OFF＝其他
8	SCB	OP7	选择模式，ON＝SSB模式时或CW模式时，OFF＝其他
9	nc	OP8	未使用(经常ON)
10	MMU1	OP9	麦克风静噪1(输入侧)，ON＝通常时，OFF＝麦克风静噪时
11	MMU2	OP10	麦克风静噪2(输出侧)，ON＝麦克风静噪时，OFF＝通常时

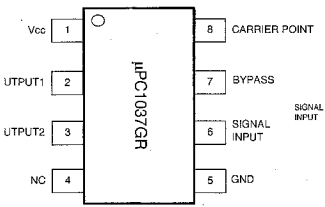
波段数据解码器：TC9174F 末极单元(IC4)

名 称	种 类	管 脚	内 容
2	LPF1	OP1	低通滤波器1用选择，ON＝f＜2.4MHz，OFF＝其他
3	28AT	OP2	28AT用选择，ON＝27.0MHz≦f，OFF＝其他
4	24AT	OP3	24AT用选择，ON＝22.0MHz≦f＜27.0MHz，OFF＝其他
5	21AT	OP4	21AT用选择，ON＝19.0MHz≦f＜22.0MHz，OFF＝其他
6	18AT	OP5	18AT用选择，ON＝14.5MHz≦f＜19.0MHz，OFF＝其他
7	LPF6	OP6	低通滤波器6用选择，ON＝21.5MHz≦f，OFF＝其他
8	LPF5	OP7	低通滤波器5用选择，ON＝14.5MHz≦f＜21.5MHz，OFF＝其他
9	LPF2	OP8	低通滤波器2，4AT共用选择，ON＝2.4MHz≦f＜4.5MHz，OFF＝其他
10	LPF3	OP9	低通滤波器3，7AT共用选择，ON＝4.5MHz≦f＜8MHz，OFF＝其他
11	LPF4	OP10	低通滤波器4，14AT共用选择，ON＝8MHz≦f＜14.5MHz，OFF＝其他

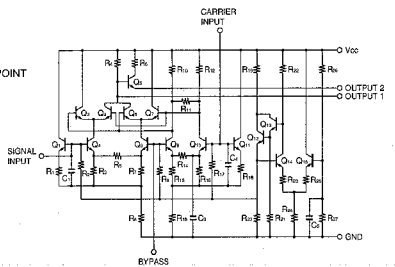
SEMICONDUCTOR DATA / IC数据

Balanced modulation : μPC1037GR TX-RX unit (IC4)

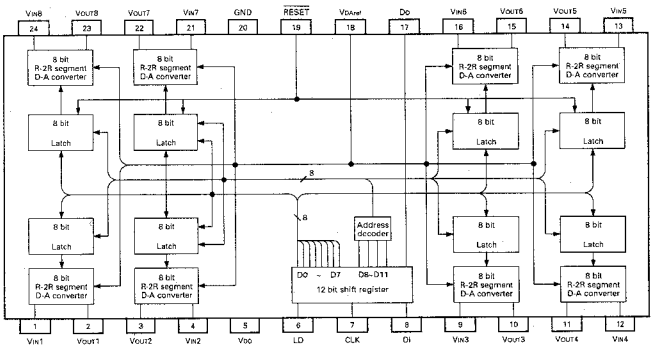
• Pin connection



• Equivalent circuit



D/A converter : M62363FP TX-RX unit (IC13)



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DESCRIPTION OF COMPONENTS

FINAL UNIT (X45-3520-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
IC1	NJM2904M	Comparator	Fan control.
IC2	UPC7805H	Regulator	14V → 5V
IC3	UPC7808H	Regulator	14V → 8V
IC4	TC9174F	Band data decoder	Serial to parallel conversion.
Q1	2SC1971	Pre-drive amplifier	HF band wide band amplification.
Q2,3	2SC3133	Drive amplifier	HF band push-pull wide band amplification.
Q4	2SC3421(Y)	Final bias supply	Final temperature compensation.
Q5,6	2SC2879(O,Y)	Final amplifier	HF band push-pull wide band amplification.
Q7	DTC143TK	Relay drive	The relay is energized when power is turned on.
Q8	DTC114EK	Switching transistor	On when overvoltage occurs.
Q9,10	DTD123EK	Fan motor drive	Runs the fan during transmission or when the temperature rises.
Q12	DTC124TK	Switching transistor	Off when the control circuit is troubled.
Q13	FMC2	Signal switch	Transmit/Receive changeover relay drive.
Q14	FMA5	Signal switch	Low-pass filter changeover relay drive.
Q15,16	FMA7	Signal switch	Low-pass filter changeover relay drive.
Q17,18	FMA5	Signal switch	Low-pass filter changeover relay drive.
Q19～21	DTB143EK	Signal switch	Low-pass filter changeover relay drive.
D1	MA27T-B	Temperature compensation	Pre-drive temperature detection.
D2	MA27-B	Temperature compensation	Drive temperature detection.
D3,4	MA27-B	Temperature compensation	Final temperature detection.
D5	SG-5L(R)	Protection diode	Reverse power connection.
D6	RD18M(B1)	Zener diode	Over voltage detection.
D7	LFB01	Relay surge absorption	Relay counter-voltage bypass.
D8	LFB01	Protection diode	Fan counter-voltage bypass.
D9	DAN202K	Switching	OR circuit.
D10,11	1SS101	RF detection	SWR power detection.
D12	LFB01	Relay surge absorption	Transmit/Receive changeover relay.
D13	DSA301LA	Spike surge absorption	Surge absorber.
D14	DAN202K	Switching	OR circuit.
D15	ERZ-M10DK220	Surge voltage absorption	14V line.
D701～706	LFB01	Relay surge absorption	LPF relay counter-voltage bypass.

CONTROL UNIT (X53-3570-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
IC1,2	TC4S584F	Inverter	Encoder shape wave.
IC3	M62003FP	Reset	
IC4	TA78L06F	Regulator	Constant voltage 6V output.
IC5	37702E8LHJMHB	CPU	Microprocessor
IC6	AT93C6610SI2.7	EEPROM	4K bits
IC7	M5M82C55AFP-2	I/O port	8bit x3.24ports
IC8	SN74ALS04BNS	Buffer	Buffer of serial interface.
Q1	DTC143TK	Signal switch	Backup judgement.
Q2	DTA143EK	Signal switch	Backup judgement.

元件的说明

FINAL UNIT(X45-3520-20)

参考号码	管脚名称	用途/功能	操作/条件
IC1	NJM2904M	比较器	风扇控制
IC2	UPC7805H	稳压器	14V → 5V
IC3	UPC7808H	稳压器	14V → 8V
IC4	TC9174F	波段数据解码器	串行/并行变换
Q1	2SC1971	前级激励放大器	高频带宽带放大
Q2、3	2SC3133	激励放大器	高频带推拉宽带放大
Q4	2SC3421(Y)	终端偏压电源	终端温度补偿
Q5、6	2SC2879(O、Y)	终端放大器	高频带宽带放大
Q7	DTC143TK	继电器激励	为电源开关时继电器电源发出
Q8	DTC114EK	转换晶体管	发生过电压时被通
Q9、10	DTD123EK	风扇电动机激励	发射期间或温度上升时、运转风扇
Q12	DTC124TK	转换晶体管	为控制电路故障时切断
Q13	FMC2	信号转换器	发射/接收转换继电器激励
Q14	FMA5	信号转换器	低的通过滤波器转换继电器激励
Q15、16	FMA7	信号转换器	低通滤波器转换继电器激励
Q17、18	FMA5	信号转换器	低通滤波器转换继电器激励
Q19~21	DTB143EK	信号转换器	低通滤波器转换继电器激励
D1	MA27T-B	温度补偿	前级激励温度检测
D2	MA27-B	温度补偿	激励温度检测
D3、D4	MA27-B	温度补偿	终端温度检测
D5	SG-5L(R)	保护二极管	反向电源连接
D6	RD18M(B1)	齐纳二极管	过电压检测
D7	LFB01	继电器电涌吸收	继电器反向旁通
D8	LFB01	保护二极管	风扇反向旁通
D9	DAN202K	转换	OR电路
D10、11	1SS161	射频检测	SWR功率检测
D12	LFB01	继电器电涌吸收	发射/接收转换继电器
D13	DSA301LA	峰值电涌吸收	电涌吸收器
D14	DAN202K	转换器	OR电路
D15	ERZ-M10DK220	电涌电压吸收	14V线路
D701~706	LFB01	继电器电涌吸收	低通滤波器反压旁通

CONTROL UNIT(X53-3570-20)

参考号码	管脚名称	用途/功能	操作/条件
IC1、2	TC4S584F	变频器	编码器波形式形
IC3	M62003FP	复位	
IC4	TA78L06F	稳压器	输出6V恒压
IC5	37702E8LHJMHB	CPU	微处理器
IC6	AT93C6610SI2.7	EEPROM	4K位
IC7	M5M82C55AFP-2	I/O端口	8位×3.24端口
IC8	SN74ALS04BNS	缓冲	串行接口的缓冲
Q1	DTC143TK	信号转换器	后备判断
Q2	DTA143EK	信号转换器	后备判断

DESCRIPTION OF COMPONENTS

CONTROL UNIT (X53-3570-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
Q3,4	DTC143EK	Signal switch	On during AT tune.
Q5,6	DTC143EK	Signal switch	On during AT through.
Q7	DTC143EK	Signal switch	Off in AF mute
D1	1SS301	Switching(reverse flow prevention)	CPU power supply OR circuit.
D2	1SS355	Reverse flow prevention	
D3	DAP202U	Switching	Stand by switch OR circuit.
D4	RD8.2M(B2)	Zener diode	Backup detection(voltage shift).
D5,6	1SS355	Reverse flow prevention	
D7,10	1SS355	Switching	Destination selection.
D11	1SS301	Switching	Destination selection.
D12,13	1SS355	Switching	Destination selection.
D14	RD9.1M(B3)	Zener diode	AF mute detection(voltage shift).
D15	1SS355	Switching	Destination selection
D16	1MN10	Reverse flow prevention	Key matrix judgment.
D17,18	1SS355	Reverse flow prevention	Key matrix judgment.

TX-RX UNIT (X57-4660-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
IC1	BU4066BCFV	Switching	Analog switch.
IC2	NJM2904M	Amplifier	S-meter level amplification.
IC3	BU4066BCFV	Switching	Analog switch.
IC4	UPC1037GR	Balanced modulation	SSB AM modulation.
IC6	TA8184F	Electrical volume	
IC7	LA4446	Audio amplifier	Audio power amplification.
IC8	TC4S66F	Switching	Analog switch.
IC9	UPC1313HA	MIC amplifier	Amplification for mic input.
IC10	UPD6345GS	I/O port expansion	Serial to parallel conversion.
IC11	TA78L05F	Regulator	8V → 5V
IC12	NJM2904M	Amplifier	SWR power amplification.
IC13	M62363FP	D/A converter	Level control.
IC14	NJM2904M	Amplifier	CAR,TGC voltage amplification.
IC15	TC9174F	I/O port expansion	Serial to parallel conversion.
IC16	TC9174F	I/O port expansion	Serial to parallel conversion.
IC500	F71022	DDS	
IC501	F71022	DDS	
IC502	MB86001PF	PLL	2.3.4:Divide ratio setting input 5:Register select 6:19.5 ~ 49.5MHz 9:Lock voltage output 11:Unlock output 15 : 20MHz input
IC503	SN76514N	Mixer	5:73.145~103.045MHz input 11:53.545~54.045MHz input 3:19.5~49.5MHz output
IC504	UPC1037GR	Mixer	2:8.305~8.805MHz output 6:1.195~1.695MHz input 8:10MHz input
IC505	UPC1686G	Mixer	2:62.35MHz input 5:53.545~54.045MHz output 6:8.305~8.805MHz input
IC506	UPC1037GR	Mixer	3:10.695MHz output 6:0.695MHz input 8: 10MHz input
IC508	TC4S66F	Switching	Analog switch.
IC900	NJM2904M	Amplifier	VOX,ANTI VOX amplifier.
IC901	TC4001BFS	NOR circuit	VOX level comparator.

元件的说明

CONTROL UNIT(X53-3570-20)

参考号码	管脚名称	用途/功能	操作/条件
Q3、4	DTC143EK	信号转换器	AT调谐时接通
Q5、6	DTC143EK	信号转换器	AT通过时接通
Q7	DTC143EK	信号转换器	音频静噪中断开
D1	1SS301	转换(防止反向电流)	CPU电源OR电路
D2	1SS355	防止反向电流	
D3	DAP202U	转换	待机转换器放电路
D4	RD8.2M(B2)	齐纳二极管	后备检测(电压偏移)
D5、6	1SS355	防止反向电流	
D7、10	1SS355	转换	目的地选择
D11	1SS301	转换	目的地选择
D12、13	1SS355	转换	目的地选择
D14	RD9.1M(B3)	齐纳二极管	音频静噪检测(电压偏移)
D15	1SS355	转换	目的地选择
D16	1MN10	防止反向电流	键矩阵判断
D17、18	1SS355	防止反向电流	键矩阵判断

TX-RX UNIT(X57-4660-20)

参考号码	管脚名称	用途/功能	操作/条件
IC1	BU4066BCFV	转换	模拟转换
IC2	NJM2904M	放大器	信号强度计电平放大
IC3	BU4066BCFV	转换	模拟转换
IC4	UPC1037GR	平衡调制	SSB、AM调制
IC6	TA8164F	电容量调节旋钮	
IC7	LA4446	音频放大器	音频功率放大
IC8	TC4S66F	转换器	模拟转换
IC9	UPC1318HA	麦克风放大器	麦克风输入放大
IC10	UPD6345GS	I/O端口扩充	串行/并行变换
IC11	TA78L05F	稳压器	8V→5V
IC12	NJM2904M	放大器	SWR功率放大
IC13	M62363FP	数字模拟转换器	电平控制
IC14	NJM2904M	放大器	CAR、TGC电压放大
IC15	TC9174F	I/O端口扩充	串行/并行变换
IC16	TC9174F	I/O端口扩充	串行/并行变换
IC500	F71022	DDS	
IC501	F71022	DDS	
IC502	MB86001PF	PLL	2、3、4:分频比设定输入 5:寄存器选择 6:19.5～49.5MHz 9:锁定电压输出 11:解除电压输出 15.20MHz
IC503	SN76514N	混频器	5:73.145～103.045MHz 输入 11:53.545～54.045MHz输入 3:19.5～49.5MHz输出
IC504	UPC1037GR	混频器	2:8.305～8.805MHz输出 6:1.195～1.695MHz输入 8:10MHz输入
IC505	UPC1686G	混频器	2:62.35MHz输入 5:53.545～54.045MHz输出 8:8.305～8.805MHz输入
IC506	UPC1037GR	混频器	3:10.695MHz输出 6:0.695MHz输入 8:10MHz输入
IC508	TC4S66F	转换	模拟转换
IC900	NJM2904M	放大器	VOX、ANTI、VOX放大器
IC901	TC4001BFS	NOR电路	VOX电平比较器

DESCRIPTION OF COMPONENTS

Ref.No.	Parts No.	Use/Function	Operation/Condition
Q1	2SD1757K	Switching	TX:ON RX:OFF
Q2	2SB1188(Q)	Switching	TX:OFF RX:ON
Q3	DTC143TK	Switching	TX:OFF RX:ON
Q4～7	2SK520(K44)	Mixer	IF:73.045MHz RF:100kHz～30MHz LO1:73.145～103.045MHz
Q8,9	2SK520(K44)	RF Amplifier	AIP OFF:ON
Q10	3SK131(M)	IF Amplifier	Amplification for IF frequency 73.045MHz
Q11,12	2SK520(K43)	Mixer	IF1:73.045MHz, LO2:62.35MHz, IF2:10.695MHz
Q13	2SC2954	Amplifier	LO1 amplification.
Q14	DTA124EK	Switching	AIP ON :ON
Q15	FMG3A	Switching	AIP ON/OFF select switch.
Q17	2SB1188(Q)	Switching	AIP OFF:ON
Q18	RU201	Amplifier	Buffer amplifier for NB noise amplifier.
Q19	3SK131(M)	Amplifier	IF2 amplification.
Q20	2SC2712(Y)	Switching	For NB
Q21	2SC2712(Y)	Amplifier	10.695MHz amplification for receive.
Q22	FMC2	Switching	CKY H: ON
Q23	2SC2712(Y)	DC LPF	ALC keying.
Q24	3SK131(M)	Amplifier	10.695MHz amplification for transmit.
Q25,26	3SK131(M)	Mixer	LO2:62.35MHz IN:10.695MHz OUT:73.045MHz
Q27,28	3SK131(M)	Mixer	LO1:73.145～103.045MHz, IN:73.045MHz, OUT:100kHz～30MHz
Q29	2SC2954	Amplifier	Drive amplifier for transmit.
Q30,31	3SK131(M)	Amplifier	IF amplifier for receive.
Q32	2SC2712(Y)	Amplifier	AF buffer amplifier for SSB,CW.
Q33	2SC2712(Y)	RX IF Buffer amplifier	AM detection,AGC.
Q34	2SC2712(Y)	Amplifier	AF buffer amplifier for AM.
Q35	2SC2712(Y)	Amplifier	AGC amplifier.
Q36	DTC114EK	Switching	ON in receive.
Q38	DTC114EK	Switching	ON in receive.
Q39	2SC2712(Y)	Amplifier	AF amplifier for packet communication.
Q40	2SK208(GR)	Amplifier	AF amplifier for selective call.
Q46	DTC114EK	Switching	ON when BUSY is Hi.
Q47	DTA124EK	Switching	VCA volume selection.
Q48	2SC2712(Y)	Amplifier	AF pre-amplifier.
Q49	2SD1757K	Switching	AF mute.
Q50	2SC2712(Y)	Amplifier	Buffer for input to balanced modulator.
Q51	2SC2712(Y)	Amplifier	Amplifier for balanced modulator output.
Q52	DTC114EK	Switching	On in CW mode (MIC mute).
Q54	2SC2712(Y)	Amplifier	Detection for MIC amplifier output.
Q55	2SC2712(Y)	Switching	DC/DC converter.
Q56	2SA1162(Y)	Switching	DC/DC converter.
Q57	2SC2712(Y)	Switching	DC/DC converter.
Q58	2SC3649(S,T)	Switching	Linear amplifier control.
Q59	2SD1624(S)	Ripple filter	Power supply for AF amplifier.
Q60～62	2SC2712(Y)	Amplifier	ALC amplifier.
Q63	2SC2712(Y)	Amplifier	SWR protection.
Q64	2SK208(GR)	Amplifier	ALC amplifier.

元件的说明

TX-RX UNIT(X57-4660-20)

参考号码	管脚名称	用途/功能	操作/条件
Q1	2SD1757K	转换	TX:ON RX:OFF
Q2	2SB1188(Q)	转换	TX:OFF RX:ON
Q3	DTC143TK	转换	TX:OFF RX:ON
Q4～7	2SK520(K44)	混频器	中频:73.045MHz 射频:100kHz～30MHz LO1:73.145～103.045MHz
Q8、9	2SK520(K44)	射频放大器	AIP OFF:ON
Q10	3SK131(M)	中频放大器	为中频73.045MHz放大
Q11、12	2SK520(K43)	混频器	IF1:73.045MHz、LO2:62.35MHz、IF2:10.695MHz
Q13	2SC2954	放大器	LO1放大
Q14	DTA124EK	转换	AIP ON:ON
Q15	FMG3A	转换	AIP ON/OFF选择转换
Q17	2SB1188(Q)	转换	AIP OFF:ON
Q18	RU201	放大器	NB噪音放大器用缓冲放大器
Q19	3SK131(M)	放大器	IF2放大
Q20	2SC2712(Y)	转换	NB用
Q21	2SC2712(Y)	放大器	接收用10.695MHz放大
Q22	FMC2	转换	CKY H:ON
Q23	2SC2712(Y)	直流低通滤波器	ALC关键
Q24	3SK131(M)	放大器	10.695MHz放大和发射
Q25、26	3SK131(M)	混频器	LO2:62.35MHz IN:10.695MHZ OUT:73.045MHz
Q27、28	3SK131(M)	混频器	LO1:73.145～103.045MHz、IN:73.045MHz、 OUT:100kHz～30MHz
Q29	2SC2954	放大器	发射用激励放大器
Q30、31	3SK131(M)	放大器	接收用中频放大器
Q32	2SC2712(Y)	放大器	SSB、CW用音频缓冲放大器
Q33	2SC2712(Y)	接收中频缓冲放大器	AM检测、AGC
Q34	2SC2712(Y)	放大器	音频缓冲放大和AM
Q35	2SC2712(Y)	放大器	AGC放大器
Q36	DTC114EK	转换	在接收下接通
Q38	DTC114EK	转换	在接收下接通
Q39	2SC2712(Y)	放大器	报文分组通信用音频放大器
Q40	2SK208(GR)	放大器	选择呼叫用音频放大器
Q46	DTC114EK	转换	在BUSY为Hi时接通
Q47	DTA124EK	转换	VCA音量选择
Q48	2SC2712(Y)	放大器	音频前级放大器
Q49	2SD1757K	转换	音频静噪
Q50	2SC2712(Y)	放大器	平衡调制器输入用缓冲放大器
Q51	2SC2712(Y)	放大器	平衡调制器输出用放大器
Q52	DTC114EK	转换	在CW状态接通(麦克风静噪)
Q54	2SC2712(Y)	放大器	检测麦克风放大器输出
Q55	2SC2712(Y)	转换	直流—直流变换器
Q56	2SA1162(Y)	转换	直流—直流变换器
Q57	2SC2712(Y)	转换	直流—直流变换器
Q58	2SC3649(S、T)	转换	线性放大器控制
Q59	2SD1624(S)	波纹滤波器	音频放大器电源
Q60～62	2SC2712(Y)	放大器	ALC放大器
Q63	2SC2712(Y)	放大器	SWR保护
Q64	2SK208(GR)	放大器	ALC放大器

DESCRIPTION OF COMPONENTS

Ref.No.	Parts No.	Use/Function	Operation/Condition
Q65	2SC2712(Y)	Amplifier	ALC amplifier.
Q67	DTC114EK	Switching	ON in AM mode , OFF in transmit·AM mode.
Q68	DTC114EK	Switching	ON in transmit·AM mode.
Q69	FMC1	Switching	ON in transmit·AM mode.
Q70	DTC143YK	Switching	ON when TXC is Hi.
Q71	2SB1188(Q)	Switching	ON when TXC is Hi.
Q72	FMG3A	Switching	TXB/RXB select switch.
Q74	2SB1188(Q)	Switching	ON when TXB is low.
Q75	2SC2712(Y)	Switching	ON in AF mute.
Q76	DTA124EK	Switching	ON when power switch is OFF.
Q77	FMA5	Switching	AF mute/AM mode:ON
Q78	FMA5	Switching	SSB/CW:ON
Q79	2SC2712(Y)	Amplifier	Amplification for side-tone.
Q80	DTA114EK	Switching	ON when PSK is low.
Q81	DTC114EK	Switching	ON when PSK is low.
Q82,83	DTC114EK	Switching	ON in low-power or AT tune.
Q507	2SC2714(Y)	Amplifier	LO1(73.145～103.045MHz)output.
Q508～510	2SC3722K(R)	LPF	Active LPF.
Q511	2SC2714(Y)	Amplifier	19.5～49.5MHz PLL(IC502)input.
Q512	2SC2712(Y)	Buffer amplifier	19.5～49.5MHz
Q513	2SC2714(Y)	Buffer amplifier	73.145～103.045MHz mixer(IC503)input.
Q514	2SC2712(GR)	Buffer amplifier	D/A buffer,1.195～1.695MHz mixer(IC504)input.
Q515	2SC2712(Y)	Buffer amplifier	8.305～8.805MHz mixer(IC505)input.
Q516	2SC2712(Y)	Buffer amplifier	10MHz mixer(IC504)input.
Q517	2SC2714(Y)	Crystal OSC	62.35MHz
Q518	2SC2714(Y)	Buffer amplifier	62.35MHz
Q519	2SC2714(Y)	Buffer amplifier	62.35MHz,mixer(IC505)input.
Q520	2SC2714(Y)	Buffer amplifier	62.35MHz,LO2 output.
Q521	2SC2714(Y)	Amplifier	LO2(62.35MHz)output.
Q522	2SC2712(GR)	Buffer amplifier	D/A buffer 0.695MHz,mixer(IC505)input.
Q523	2SC2712(Y)	Buffer amplifier	10MHz mixer(IC506)input.
Q524	2SC2714(Y)	Amplifier	CAR(10.695MHz)output.
Q525	2SC2714(Y)	Crystal OSC	20MHz
Q526	2SC2714(Y)	Buffer amplifier	20MHz
Q527	2SC2996(Y)	Buffer amplifier	20MHz PLL(IC502)input.
Q528	2SC2996(Y)	Buffer amplifier	20MHz
Q529	2SC2712(Y)	Amplifier	20MHz DDS(IC500, 501)input.
Q530	DTC114EK	Switching	VCO1 selection.
Q531	2SK508NV(K52)	VCO1	73.145～83.545MHz
Q532	DTC114EK	Switching	VCO2 selection.
Q533	2SK508NV(K52)	VCO2	83.545～94.545MHz
Q534	DTC114EK	Switching	VCO3 selection.
Q535	2SK508NV(K52)	VCO3	94.545～103.545MHz
Q536	2SC2714(Y)	Buffer amplifier	VCO output 73.145～103.545MHz
Q800	DTC114EK	Switching	NB ON/OFF
Q801,802	2SC2714(Y)	Amplifier	NB amplifier.

元件的说明

参考号码	管脚名称	用途/功能	操作/条件
Q65	2SC2712(Y)	放大器	ALC放大器
Q67	DTC114EK	转换	在AM状态时接通，在发射—AM状态时切断
Q68	DTC114EK	转换	在发射—AM状态时接通
Q69	FMC1	转换	在发射—AM状态时接通
Q70	DTC143YK	转换	在TXC-Hi时接通
Q71	2SB1188(Q)	转换	在TXC-Hi时接通
Q72	FMG3A	转换	TXB/RXB选择转换器
Q74	2SB1188(Q)	转换	在TXB低时接通
Q75	2SC2712(Y)	转换	在音频静噪状态下接通
Q76	DTA124EK	转换	在关闭电源开关时接通
Q77	FMA5	转换	音频静噪/AM状态时接通
Q78	FMA5	转换	SSB/CW状态时接通
Q79	2SC2712(Y)	放大器	侧音用放大
Q80	DTA114EK	转换	在PSK低时接通
Q81	DTC114EK	转换	在PSK低时接通
Q82、83	DTC114EK	转换	在低功率或AT调谐时接通
Q507	2SC2714(Y)	放大器	LO1(73.145～103.045MHz)输出
Q508～510	2SC3722K(R)	低的通过滤波器	有源低通滤波器
Q511	2SC2714(Y)	放大器	19.5～49.5MHz PLL(IC502)输入
Q512	2SC2712(Y)	缓冲放大器	19.5～49.5MHz
Q513	2SC2714(Y)	缓冲放大器	73.145～103.045MHz混频器(IC503)输入
Q514	2SC2712(GR)	缓冲放大器	数字—模拟缓冲器1.195～1.695MHz混频器(IC504)输入
Q515	2SC2712(Y)	缓冲放大器	8.305～8.805MHz混频器(IC505)输入
Q516	2SC2712(Y)	缓冲放大器	10MHz混频器(IC504)输入
Q517	2SC2714(Y)	石英晶体振荡器	62.35MHz
Q518	2SC2714(Y)	缓冲放大器	62.35MHz
Q519	2SC2714(Y)	缓冲放大器	62.35MHz、混频器(IC505)输入
Q520	2SC2714(Y)	缓冲放大器	62.35MHz、LO2输出
Q521	2SC2714(Y)	放大器	LO2(62.35MHz)输出
Q522	2SC2712(GR)	缓冲放大器	D/A缓冲器0.695MHz、混频器(IC506)输入
Q523	2SC2712(Y)	缓冲放大器	10MHz 混频器(IC506)输入
Q524	2SC2714(Y)	放大器	CAR(10.695MHz)输出
Q525	2SC2714(Y)	石英晶体振荡器	20MHz
Q526	2SC2714(Y)	缓冲放大器	20MHz
Q527	2SC2996(Y)	缓冲放大器	20MHz PLL(IC502)输入
Q528	2SC2996(Y)	缓冲放大器	20MHz
Q529	2SC2712(Y)	放大器	20MHz DDS(IC500、501)输入
Q530	DTC114EK	转换	VCO1选择
Q531	2SK508NV(K52)	VCO1	73.145～83.545MHz
Q532	DTC114EK	转换	VCO2选择
Q533	2SK508NV(K52)	VCO2	83.545～94.545MHz
Q534	DTC114EK	转换	VCO3选择
Q535	2SK508NV(K52)	VCO3	94.545～103.545MHz
Q536	2SC2714(Y)	缓冲放大器	VCO 73.145～103.545MHz输出
Q800	DTC114EK	转换	NB ON/OFF
Q801、802	2SC2714(Y)	放大器	NB放大器

DESCRIPTION OF COMPONENTS

Ref.No.	Parts No.	Use/Function	Operation/Condition
Q803	2SC2712(Y)	Amplifier	AGC for NB.
Q804	2SC2714(Y)	Amplifier	NB amplifier.
Q805	2SC2712(Y)	Switching	NB amplifier.
Q806	2SC2714(Y)	Buffer amplifier	NB amplifier.
Q807,808	DTA114EK	Switching	NB amplifier.
Q900	2SC2712(Y)	VOX amplifier	MIC amplifier.
Q901	2SC2712(Y)	Switching	ON when IO901-10pin is "H".
Q902	DTA114EK	Switching	VOX ON/OFF.
Q903	DTC114EK	Switching	VOX input ON/OFF.
D1	V08(G)	Lightning surge absorption	
D2,3	RLS245	Lightning surge absorption	
D4	V08(G)	Lightning surge absorption	
D5	1SV128	Switching	ON in receive, OFF in transmit.
D6	LFB01	Switching	ON in receive, OFF in transmit.
D7,8	RLS135	Switching	ON in 100kHz~1.60499MHz
D9,10	RLS135	Switching	ON in 1.605MHz~2.49999MHz
D11,12	RLS135	Switching	ON in 2.500MHz~4.49999MHz
D13,14	RLS135	Switching	ON in 4.500MHz~7.99999MHz
D15,16	RLS135	Switching	ON in 8.000MHz~10.49999MHz
D17,18	RLS135	Switching	ON in 10.500MHz~14.49999MHz
D19,20	RLS135	Switching	ON in 14.500MHz~21.49999MHz
D21,22	RLS135	Switching	ON in 21.500MHz~29.99999MHz
D23,24	RLS135	Switching	ON when AIP is ON.
D25,26	RLS135	Switching	ON when AIP is OFF.
D27	1SS355	Switching	ON when MMUI is ON.
D28	1SS355	Switching	ON when packet using.
D29	1SS355	Switching	AGC time constant.
D30	DAN235K	Switching	Switch for sending LO1 to the transmit or receive mixer.
D31	DAN235K	Switching	Switch for sending LO2 to the transmit or receive mixer.
D32	DAP236K	Switching	10.695MHz filter select switch.
D33	RLS135	Switching	ON in transmit.
D34	DAN235K	Switching	transmit or receive selection.
D35	RLS135	Switching	ON in receive.
D36	DAP236K	Switching	10.695MHz filter select switch.
D37	DAN235K	Switching	10.695MHz filter select switch.
D38~43	DAP236K	Switching	10.695MHz filter select switch.
D44	1SS355	Reverse-flow prevention	
D45	B30-2001-05	LED	Voltage limiter.
D47	1SS355	Reverse-flow prevention	
D48	RN731H	PIN diode	Diode of 10.695MHz level variability.
D49	1SS355	Reverse-flow prevention	
D50	RLS135	Switching	ON in transmit.
D51	LFB01	Switching	ON in transmit.
D52	HSM88AS	Detection	SSB,CW envelope detection.
D53	HSM88AS	Detection	SSB,CW envelope detection.
D54	HSM88AS	Detection	AM envelope detection.

元件的说明

参考号码	管脚名称	用途/功能	操作/条件
Q803	2SC2712(Y)	放大器	NB用AGC
Q804	2SC2714(Y)	放大器	NB放大器
Q805	2SC2712(Y)	转换	NB放大器
Q806	2SC2714(Y)	缓冲放大器	NB放大器
Q807、808	DTA114EK	转换	NB放大器
Q900	2SC2712(Y)	VOX放大器	麦克风放大器
Q901	2SC2712(Y)	转换器	在IC901-10管脚“H”时接通
Q902	DTA114EK	转换器	VOX 通/断
Q903	DTC114EK	转换器	VOX输入 通/断
D1	V08(G)	雷涌吸收	
D2、3	RLS245	雷涌吸收	
D4	V08(G)	雷涌吸收	
D5	1SV128	转换器	接收时接通，发射时切断
D6	LFB01	转换器	接收时接通，发射时切断
D7、8	RLS135	转换器	100kHz～1.60499MHz时接通
D9、10	RLS135	转换器	1.605MHz～2.49999MHz时接通
D11、12	RLS135	转换器	2.500MHz～4.49999MHz时接通
D13、14	RLS135	转换器	4.500MHz～7.99999MHz时接通
D15、16	RLS135	转换器	8.000MHz～10.49999MHz时接通
D17、18	RLS135	转换器	10.500MHz～14.49999MHz时接通
D19、20	RLS135	转换器	14.500MHz～21.49999MHz时接通
D21、22	RLS135	转换器	21.500MHz～29.99999MHz时接通
D23、24	RLS135	转换器	在AIP接通状态时接通
D25、26	RLS135	转换器	在AIP切断状态时接通
D27	1SS355	转换器	在MMU接通状态时接通
D28	1SS355	转换	在报文分组通信使用状态时接通
D29	1SS355	转换	AGC时间常数
D30	DAN235K	转换	转换向发射或接收混频器发射LO1
D31	DAN235K	转换	转换向发射或接收混频器发射LO2
D32	DAP236K	转换	10.695MHz滤波器选择转换
D33	RLS135	转换	在发射时接通
D34	DAN235K	转换	发射/接收选择
D35	RLS135	转换	在接收时接通
D36	DAP236K	转换	10.695MHz滤波器选择转换
D37	DAN235K	转换	10.695MHz滤波器选择转换
D38～43	DAP236K	转换	10.695MHz滤波器选择转换
D44	1SS355	防止反向电流	
D45	B30-2001-05	LED	电压限制器
D47	1SS355	防止反向电流	
D48	RN731H	PIN二极管	10.695MHz 电平可变二级管
D49	1SS355	防止反向电流	
D50	RLS135	转换	在发射时接通
D51	LFB01	转换	在发射时接通
D52	HSM88AS	检测	SSB、CW包络检测
D53	HSM88AS	检测	SSB、CW包络检测
D54	HSM88AS	检测	AM包络检测

DESCRIPTION OF COMPONENTS

Ref.No.	Parts No.	Use/Function	Operation/Condition
D55	HSM88AS	Detection	AGC squelch detection.
D56	RLS135	Switching	ON in transmit.
D59	HSM88AS	Detection	Detection of MIC amplifier output.
D60	1SS355	Reverse-flow prevention	
D61	1SS355	Reverse-flow prevention	
D63	HSM88AS	Reverse-flow prevention	
D64	1SS226	Rectification	DC/DC converter.
D65	RD6.2M(B2)	Zener diode	For constant voltage.
D66	RLS245	Surge absorption	Protect for transistor of linear amplifier control.
D67	B30-2001-05	LED	Voltage limiting
D68	RD3.6M(B2)	Zener diode	3.6V voltage shift.
D69,70	1SS355	Reverse-flow prevention	
D71	RD12M(B2)	Zener diode	12V voltage shift.
D72	1SS355	Reverse-flow prevention	
D73	HSM88AS	Reverse-flow prevention	
D75	RD3.3M(B2)	Zener diode	Reduce the output power when power supply voltage drop.
D76	HSM88AS	Reverse-flow prevention	
D79	1SS355	Reverse-flow prevention	
D80	RD4.7M(B2)	Zener diode	Reduce the output power when power supply voltage drop.
D81~87	1SS355	Reverse-flow prevention	
D88	RD4.7M(B2)	Zener diode	Over voltage protection.
D500,501	1SS355	Switching	DDS register selection.
D502	1SV166	Vari-cap	VCO1
D503	RLS135	Switching	VCO1 output.
D504	1SV166	Vari-cap	VCO2
D505	RLS135	Switching	VCO2 output.
D506	1SV166	Vari-cap	VCO3
D507	RLS135	Switching	VCO3 output.
D800	HSM276S	Detection	noise detection.
D900	1SS355	Reverse-flow prevention	
D901	1SS355	Reverse-flow prevention	
D902	1SS355	Reverse-flow prevention	

元件的说明

参考号码	管脚名称	用途/功能	操作/条件
D55	HSM88AS	检测	AGC噪声抑制检测
D56	RLS135	转换	在发射时接通
D59	HSM88AS	检测	麦克风放大器输出检测
D60	1SS355	防止反向电流	
D61	1SS355	防止反向电流	
D63	HSM88AS	防止反向电流	
D64	1SS226	整流	直流一直流变换器
D65	RD6.2M(B2)	齐纳二极管	恒电压用
D66	RLS245	电涌吸收	保护线性放大器控制的晶体管
D67	B30-2001-05	LED	电压限制
D68	RD3.6M(B2)	齐纳二极管	3.6V电压偏移
D69、70	1SS355	防止反向电流	
D71	RD12M(B2)	齐纳二极管	12V电压偏移
D72	1SS355	防止反向电流	
D73	HSM88AS	防止反向电流	
D75	RD3.3M(B2)	齐纳二极管	电源电压降低时减少输出功率
D76	HSM88AS	防止反向电流	
D79	1SS355	防止反向电流	
D80	RD4.7M(B2)	齐纳二极管	电源电压降低时减少输出功率
D81～87	1SS355	防止反向电流	
D88	RD4.7M(B2)	齐纳二极管	过电压保护
D500、501	1SS355	转换	DDS寄存器选择
D502	1SV166	可变电容器	VCO1
D503	RLS135	转换	VCO1输出
D504	1SV166	可变电容器	VCO2
D505	RLS135	转换	VCO2输出
D506	1SV166	可变电容器	VCO3
D507	RLS135	转换	VCO3输出
D800	HSM276S	检测	噪音检测
D900	1SS355	防止反向电流	
D901	1SS355	防止反向电流	
D902	1SS355	防止反向电流	

DESCRIPTION OF COMPONENTS

KPE-1 (X52-3300-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
IC1	NJM2211M	FSK demodulator	
IC2	SN74ALS04BNS	Buffer	
IC3	LC7383M	DTMF decoder	
D4	B30-2004-05	LED	Lights when "MARK" signal in
D5	B30-2004-05	LED	Lights when "SPACE" signal in
D6	B30-2004-05	LED	Lights when "FSK" signal in

KAT-2 (X53-3630-20)

Ref.No.	Parts No.	Use/Function	Operation/Condition
IC1	SN74S74NS	D-FF	
IC2	TC4066BF	Analog switch	For control changeover motor 1.
IC3	TC4066BF	Analog switch	For control changeover motor 2.
IC4	BA6109U2	Motor drive	For motor 1.
IC5	BA6109U2	Motor drive	For motor 2.
IC6	NJM2903M	Comparator	Amplification difference detection.
Q1,2	2SC2714(Y)	Amplifier	Waveform shaping.
Q3	DTC114EK	Switching	ON when APRE "H".
Q4	2SA1204(Y)	Switching	Motor speed control pulse.
Q5	DTC114EK	Switching	Motor speed control pulse.
Q6	DTD143EK	Switching	K1 relay changeover.
D1	1SS101	Detection	Current component amplification detection.
D2	1SS101	Detection	Current component amplification detection.
D3~8	1SS226	Switching	Clipper
D9	LFB01	Switching	Spike absorption.
D101~107	LFB01	Switching	Spike absorption.

元件的说明

<PE-1(X52-3300-20)

参考号码	管脚名称	用途/功能	操作/条件
IC1	NJM2211M	FSK解调	
IC2	SN74ALS04BNS	缓冲	
IC3	LC7383M	DTMF解码器	
D4	B30-2004-05	发光二极管	在“MARK”信号输入时点灯
D5	B30-2004-05	发光二极管	在“SPACE”信号输入时点灯
D6	B30-2004-05	发光二极管	在“FSK”信号输入时点灯

<AT-2(X53-3630-20)

参考号码	管脚名称	用途/功能	操作/条件
IC1	SN74S74NS	D-FF	
IC2	TC4066BF	模拟转换	用以控制转换电动机 1
IC3	T4066BF	模拟转换	用以控制转换电动机 2
IC4	BA6109U2	电动机激励	电动机 1 用
IC5	BA6109U2	电动机激励	电动机 2 用
IC6	NJM2903M	比较器	放大差检测
Q1、2	2SC2714(Y)	放大器	波形成形
Q3	DTC114EK	转换	在APRE“H”时接通
Q4	2SA1204(Y)	转换	电动机速度控制脉冲
Q5	DTC114EK	转换	电动机速度控制脉冲
Q6	DTD143EK	转换	继电器(K1)转换
D1	1SS101	检测	电流分量放大检测
D2	1SS101	检测	电流分量放大检测
D3～8	1SS226	转换	削波器
D9	LFB01	转换	峰值电涌吸收
D101～107	LFB01	转换	峰值电涌吸收

TERMINAL FUNCTION

Final unit (X45-3520-20) (A/2)

Connector No.	Pin No.	Pin name	Function
CN1	Coax.	DRV	Drive input
CN2	1	FAN+	Power supply for fan
	2	FAN–	Power supply for fan
CN3	1	TT	Antenna tuner control
	2	TS	Antenna tuner control
	3	FEN4	Shift register 4 enable
	4	UCK	Shift register control clock
	5	UDA	Shift register control data
	6	DGND	Digital ground
	7	THP	Thermal protection. High when it operates
	8	BOVR	Low : DC over-voltage (approx. 19V or more)
	9	PSC	High when power switch is turned
	10	5A	5V
	11	14V	14V
	12	14S	14V (switched)
	13	8A	Analog 8V
	14	GND	GND
	15	NC	No connect
	16	NC	No connect
CN4	1	GND	GND
	2	TS	Antenna tuner control
	3	TT	Antenna tuner control
	4	AGND	Analog GND
	5	14S	14V(switched)
CN5	Coax.	AT1	AT signal1
CN6	Coax.	AT2	AT signal2
CN7	Coax.	RAT	Receive signal output
CN9		ANT.G	Antenna GND
CN10	1	GND	GND
	2	VSF	Forward wave voltage
	3	VSR	Reflected wave voltage
	4	TXB	8V when transmitting
	5	14AG	14V(For audio IC) GND
	6	14AF	14V(For audio IC)
	7	8A	8V
	8	14S	14V (switched)
CN11	1	GND	GND
	2	4AT	AT band data 2.40000–4.49999MHz
	3	7AT	AT band data 4.50000–7.99999MHz
	4	14AT	AT band data 8.00000–14.49999MHz
	5	18AT	AT band data 14.50000–18.99999MHz
	6	21AT	AT band data 19.00000–21.99999MHz
	7	24AT	AT band data 22.00000–26.99999MHz
	8	28AT	AT band data 27.00000–29.99999MHz

Connector No.	Pin No.	Pin name	Function
W1		14V	14V
		14V	14V
		GND	GND
		GND	GND
W2		ANT	ANT

Final unit (X45-3520-20) (B/2)

Connector No.	Pin No.	Pin name	Function
CN100	1	PH1	Headphone output1
	2	PH2	Headphone output2
	3	PHG	Headphone GND
J800		PHONES	Headphone output pin

Control unit (X53-3570-20)

Connector No.	Pin No.	Pin name	Function
CN1	1	RAF	Reference audio voltage
	2	DGND	Digital GND
	3	5C	5V for power switch
	4	5A	5V
	5	8A	8V
	6	14S	14V (switched)
	7	LEN1	LCD control enable
	8	LBLK	LCD BLANKING
	9	S0	Key matrix select
	10	K4	Key matrix
	11	K3	Key matrix
	12	K2	Key matrix
	13	K1	Key matrix
	14	K0	Key matrix
	15	EDP2	Encoder pulse
	16	EDP1	Encoder pulse
	17	PSW	High when the power switch is on
	18	LCK	LCD control clock
	19	LDA	LCD control data
	20	MD	Microphone DOWN switch
	21	MU	Microphone UP switch
	22	SS	Stand by switch
	23	VSQL	Squelch volume voltage
	24	VCL	CLARIFIER volume voltage
	25	VAF	AF volume voltage
	26	DGND	Digital GND
CN2	1	DGND	Digital GND
	2	FSL	Selective call signal detector
	3	FSD	Selective call data

端子功能

末级单元(X45-3520-20)(A/2)

连接器号	管脚号	管脚名	功　能
CN1	同轴	DRV	激励输入
CN2	1	FAN-	风扇用电源
	2	FAN-	风扇用电源
CN3	1	TT	天线调谐器控制
	2	TS	天线调谐器控制
	3	FEN4	移位寄存器4允许
	4	UCK	移位寄存器控制时钟
	5	UDA	移位寄存器控制数据
	6	DGND	数字接地
	7	THP	热保护，动作时变高
	8	BOVR	低：直流过电压(约19V或以上)
	9	PSC	接通电源开关时变高
	10	5A	5V
	11	14V	14V
	12	14S	接通电源时14V
	13	8A	模拟8V
	14	GND	接地
	15	NC	没有连接
	16	NC	没有连接
CN4	1	GND	接地
	2	TS	天线调谐器控制
	3	TT	天线调谐器控制
	4	AGND	模拟接地
	5	14S	接通电源时14V
CN5	同轴	AT1	AT信号1
CN6	同轴	AT2	AT信号2
CN7	同轴	RAT	接收信号输出
CN9		ANT.G	天线接地
CN10	1	GND	接地
	2	VSF	行波电压
	3	VSR	反射波电压
	4	TXB	发射时8V
	5	14AG	14V(音频集成电路用)接地
	6	14AF	14V(音频集成电路用)
	7	8A	8V
	8	14S	接通电源时14V
CN11	1	GND	接地
	2	4AT	AT波段数据2.40000～4.49999MHz
	3	7AT	AT波段数据4.50000～7.99999MHz
	4	14AT	AT波段数据8.00000～14.49999MHz
	5	18AT	AT波段数据14.50000～18.99999MHz
	6	21AT	AT波段数据19.00000～21.99999MHz
	7	24AT	AT波段数据22.00000～26.99999MHz
	8	28AT	AT波段数据27.00000～29.99999MHz

连接器号	管脚号	管脚名	功　能
W1		14V	14V
		14V	14V
		GND	接地
		GND	接地
W2		ANT	天线

末级单元(X45-3520-20)(B/2)

连接器号	管脚号	管脚名	功　能
CN100	1	PH1	头戴耳机输出1
	2	PH2	头戴耳机输出2
	3	PHG	头戴耳机接地
J800		PHONES	头戴耳机输出管脚

控制单元(X53-3570-20)

连接器号	管脚号	管脚名	功　能
CN1	1	RAF	参考音频电压
	2	DGND	数字接地
	3	5C	电源转换用5V
	4	5A	5V
	5	8A	8V
	6	14S	接通电源时14V
	7	LENJ	液晶显示器控制允许
	8	LBLK	液晶显示器消隐
	9	S0	键矩阵选择
	10	K4	键矩阵
	11	K3	键矩阵
	12	K2	键矩阵
	13	K1	键矩阵
	14	K0	键矩阵
	15	EDP2	编码器脉冲
	16	EDP1	编码器脉冲
	17	PSW	接通电源开关时变高
	18	LCK	液晶显示器控制时钟
	19	LDA	液晶显示器控制数据
	20	MD	麦克风向下
	21	MU	麦克风向上
	22	SS	待机转换
	23	VSQL	静噪音量电压
	24	VCL	干扰消除器音量电压
	25	VAF	音频音量电压
	26	DGND	数字接地
CN2	1	DGND	数字接地
	2	FSL	选择呼叫信号检测器
	3	FSD	选择呼叫数据

TERMINAL FUNCTION

Control unit (X53-3570-20)

Connector No.	Pin No.	Pin name	Function
CN2	4	5A	5V
	5	DGND	Digital GND
	6	STD	Signal tone detector
	7	Q4	DTMF decode data
	8	Q3	DTMF decode data
	9	Q2	DTMF decode data
	10	Q1	DTMF decode data
	11	TOE	DTMF decoder control
	12	DGND	Digital GND
CN3	1	TT	Antenna tuner control
	2	TS	Antenna tuner control
	3	FEN4	Shift register 4 enable
	4	UCK	Shift register control clock
	5	UDA	Shift register control data
	6	DGND	Digital GND
	7	THP	Thermal protection. High when it operates
	8	BOVR	Low: DC over-voltage (approx. 19V or more)
	9	PSC	High when power switch is turned.
	10	5A	5V
	11	14V	14V
	12	14S	14V (switched)
	13	8A	8V
	14	GND	GND
	15	NC	No connect
	16	NC	No connect
CN4	1	DGND	Digital GND
	2	RTS	PC I/F (request to send)
	3	CTS	PC I/F (clear to send)
	4	RXD	PC I/F (RX DATA)
	5	TXD	PC I/F (TX DATA)
	6	AMUT	Audio mute
	7	VAF	AF Volume voltage
	8	SIDE	Side tone
	9	BZ	Beep
	10	BSY	Busy signal
	11	CKY	Keying control
	12	RXC	Receive control
	13	TXC	Transmit control
	14	SM	Signal meter voltage
	15	VSFM	Forward wave voltage
	16	VSRM	Reflected wave voltage
	17	FEN3	Shift register 3 enable

Connector No.	Pin No.	Pin name	Function
CN4	18	FEN2	Shift register 2 enable
	19	VEN1	Electronic volume control enable
	20	UCK	Shift register, electronic volume control clock
	21	UDA	Shift register, electronic volume control data
	22	FEN1	Shift register 1 enable
	23	KYS	Key jack input. High :When jack is inserted.
	24	KEY	CW keying. High:key down
	25	SS	Stand by switch
	26	GND	GND
CN5	1	GND	GND
	2	ABSL	DDS2 register selection
	3	DEN2	DDS2 enable
	4	CASL	DDS1&PLL register selection
	5	DEN1	DDS1 enable
	6	NC	No connect
	7	PLS	Keying line switch
	8	PEN1	PLL enable
	9	PDA	PLL data
	10	PCK	PLL clock
	11	ULK	Unlock detection signal Low : Unlock
	12	VB3	VCO3 Selection signal
	13	VB2	VCO2 Selection signal
	14	VB1	VCO1 Selection signal
	15	VDLY	Delay volume voltage
	16	GND	GND
CN6	1	DGND	Digital GND
	2	DGND	Digital GND
	3	5A	5V
	4	14S	14V (switched)
	5	AT1	Preset AT install. "L" : install
	6	SPED	Motor speed control
	7	APRE	Preset control select
	8	ATA	AUTO/THRU switch
	9	PR11	Motor rotate direction control 1
	10	PR12	Motor rotate direction control 2
	11	PR21	Motor rotate direction control 3
	12	PR22	Motor rotate direction control 4
	13	ATG	AT GND
	14	VREF	AT reference voltage (5V)
	15	POD2	VC102 position detection signal
	16	POD1	VC101 position detection signal

端子功能

控制单元(X53-3570-20)

连接器号	管脚号	管脚名	功　能
CN2	4	5A	5V
	5	DGND	数字接地
	6	STD	信号音调检测器
	7	Q4	DTMF解码数据
	8	Q3	DTMF解码数据
	9	Q2	DTMF解码数据
	10	Q1	DTMF解码数据
	11	TOE	DTMF解码器控制
	12	DGND	数字接地
CN3	1	TT	天线调谐器控制
	2	TS	天线调谐器控制
	3	FEN4	移位寄存器4允许
	4	UCK	移位寄存器控制时钟
	5	UDA	移位寄存器控制数据
	6	DGND	数字接地
	7	THP	热保护。动作时变高
	8	BOVR	低:直流过电压(约19V或以上)
	9	PSC	接通电源开关时变高
	10	5A	5V
	11	14V	14V
	12	14S	接通电源时14V
	13	8A	8V
	14	GND	接地
	15	NC	没有连接
	16	NC	没有连接
CN4	1	DGND	数字接地
	2	RTS	个人计算机接口(请求发送)
	3	CTS	个人计算机接口(清除发送)
	4	RXD	个人计算机接口(接收数据)
	5	TXD	个人计算机接口(发射数据)
	6	AMUT	音频静噪
	7	VAF	音频音量电压
	8	SIDE	侧音
	9	BZ	蜂鸣声
	10	BSY	占线信号
	11	CKY	键入控制
	12	RXC	接收控制
	13	TXC	发射控制
	14	SM	信号强度计电压
	15	VSFM	行波电压
	16	VSRM	反射波电压
	17	FEN3	移位寄存器3允许

连接器号	管脚号	管脚名	功　能
CN4	18	FEN2	移位寄存器2允许
	19	VEN1	电子音量控制允许
	20	UCK	移位寄存器、电子音量控制时钟
	21	UDA	移位寄存器、电子音量控制数据
	22	FEN1	移位寄存器1允许
	23	KYS	键插孔输入。 高:插入插孔时CW键入。
	24	KEY	高:按压键时
	25	SS	待机转换
	26	GND	接地
CN5	1	GND	接地
	2	ABSL	DDS2寄存器选择
	3	DEN2	DDS2允许
	4	CASL	DDS1和PLL寄存器选择
	5	DEN1	DDS1允许
	6	NC	没有连接
	7	PLS	键入线路转换
	8	PEN1	PLL允许
	9	PDA	PLL数据
	10	PCK	PLL时钟
	11	ULK	解锁检测信号 低:解锁
	12	VB3	VCO3选择信号
	13	VB2	VCO2选择信号
	14	VB1	VCO1选择信号
	15	VDLY	延迟音量电压
	16	GND	接地
CN6	1	DGND	数字接地
	2	DGND	数字接地
	3	5A	5V
	4	14S	接通电源时14V
	5	ATI	预置AT安装。"L":安装
	6	SPED	马达速度控制
	7	APRE	预置控制选择
	8	ATA	自动/直通转换
	9	PR11	马达旋转方向控制1
	10	PR12	马达旋转方向控制2
	11	PR21	马达旋转方向控制3
	12	PR22	马达旋转方向控制4
	13	ATG	AT接地
	14	VREF	AT参考电压(5V)
	15	POD2	VC102位置检测信号
	16	POD1	VC101位置检测信号

TERMINAL FUNCTION

TX-RX unit (X57-4660-20)

Connector No.	Pin No.	Pin name	Function
CN1	Coax.	RAT	Receive signal input
CN2	Coax.	LO1	LO1 input 73.145~103.045MHz
CN3	Coax.	LO2	LO2 input 62.35MHz
CN9	1	CAR	CAR input 10.695MHz
	2	GND	GND
CN10	1	SP	Speaker output
	2	SPG	Speaker GND
CN11	1	PH1	Headphone output1
	2	PH2	Headphone output2
	3	PHG	Headphone GND
CN12	1	MIC	MIC signal input
	2	MICG	MIC GND
	3	NC	No connect
	4	SPO	Speaker output
	5	SPOG	Speaker GND
CN13	1	AF	Audio
	2	AFG	Audio GND
	3	MIC	MIC signal input
	4	MICG	MIC GND
CN14	1	DGND	Digital GND
	2	RTS	PC I/F (request to send)
	3	CTS	PC I/F (clear to send)
	4	RXD	PC I/F(RX DATA)
	5	TXD	PC I/F(TX DATA)
	6	AMUT	Audio mute
	7	VAF	AF Volume voltage
	8	SIDE	Side tone
	9	BZ	Beep
	10	BSY	Busy signal
	11	CKY	Keying control
	12	RXC	Receive control
	13	TXC	Transmit control
	14	SM	Signal meter voltage
	15	VSFM	Forward wave voltage
	16	VSRM	Reflected wave voltage
	17	FEN3	Shift register 3 enable
	18	FEN2	Shift register 2 enable
	19	VEN1	Electronic volume control enable
	20	UCK	Shift register, electronic volume control clock
	21	UDA	Shift register, electronic volume control data
	22	FEN1	Shift register 1 enable
	23	KYS	Key jack input. High: When jack is inserted
	24	KEY	CW keying. High : key down
	25	SS	Stand by switch

Connector No.	Pin No.	Pin name	Function
CN14	26	GND	GND
CN15	1	14S	14V (switched)
	2	8A	8V
	3	14AF	14V(For audio IC)
	4	14AG	14V(For audio IC) GND
	5	TXB	8V when transmitting
	6	VSR	Reflected wave voltage
	7	VSF	Forward wave voltage
	8	GND	GND
CN19	Coax.	DRV	Drive output
W1	1	NB1	NB amplifier signal input
	2	NBG	Ground
J1	1	DGND	Digital GND
	2	TXD	PC I/F (TX DATA)
	3	RXD	PC I/F (RX DATA)
	4	CTS	PC I/F (clear to send)
	5	RTS	PC I/F (request to send)
	6	NC	No connect
J2	1	NC	No connect
	2	RTK	RTTY keying line
	3	ANO	Received data output
	4	GND	GND
	5	PSQ	Squelch control output
	6	PKS	DATA terminal SEND key (LOW : transmission microphone mute)
	7	PKD	Transmission data input
	8	PKDG	Transmission data GND
J3		RELAY	Linear relay control
J4		ALC	ALC VOLTAGE
J5		EXT.SP	External speaker pin
J6		KEY	CW key input pin

端子功能

TX-RX 单元(X57-4660-20)

连接器号	管脚号	管脚名	功　能
CN1	同轴	RAT	接收信号输入
CN2	同轴	LO1	LO1输入73.145~103.045MHz
CN3	同轴	LO2	LO2输入62.35MHz
CN9	1	CAR	CAR输入10.695MHz
	2	GND	接地
CN10	1	SP	扬声器输出
	2	SPG	扬声器接地
CN11	1	PH1	头戴耳机输出1
	2	PH2	头戴耳机输出2
	3	PHG	头戴耳机接地
CN12	1	MIC	麦克风信号输入
	2	MICG	麦克风接地
	3	NC	没有连接
	4	SPO	扬声器输出
	5	SPOG	扬声器接地
CN13	1	AF	音频
	2	AFG	音频接地
	3	MIC	麦克风信号输入
	4	MICG	麦克风接地
CN14	1	DGND	数字接地
	2	RTS	个人计算机接口(请求发送)
	3	CTS	个人计算机接口(清除发送)
	4	RXD	个人计算机接口(接收数据)
	5	TXD	个人计算机接口(发射数据)
	6	AMUT	音频静噪
	7	VAF	音频音量电压
	8	SIDE	侧音
	9	BZ	蜂鸣声
	10	BSY	占线信号
	11	CKY	键入控制
	12	RXC	接收控制
	13	TXC	发射控制
	14	SM	信号强度计电压
	15	VSFM	行波电压
	16	VSRM	反射波电压
	17	FEN3	移位寄存器3允许
	18	FEN2	移位寄存器2允许
	19	VEN1	电子音量控制允许
	20	UCK	移位寄存器，电子音量控制时钟
	21	UDA	移位寄存器，电子音量控制数据
	22	FEN1	移位寄存器1允许
	23	KYS	键插孔输入。高：插入插孔时
	24	KEY	CW键入。高：按压键时
	25	SS	待机转换
	26	GND	接地

连接器号	管脚号	管脚名	功　能
CN15	1	14S	接通电源时14V
	2	8A	8V
	3	14AF	14V(音频集成电路用)
	4	14AG	14V(音频集成电路用)接地
	5	TXB	发射时8V
	6	VSR	反射波电压
	7	VSF	行波电压
	8	GND	接地
CN19	同轴	DRV	激励输出
W1	1	NB1	噪声抑制放大器信号输入
	2	NBG	接地
J1	1	DGND	数字接地
	2	TXD	个人计算机接口(发射数据)
	3	RXD	个人计算机接口(接收数据)
	4	CTS	个人计算机接口(清除发送)
	5	RTS	个人计算机接口(请求发送)
	6	NC	没有连接
J2	1	NC	没有连接
	2	RTK	RTTY键入线路
	3	ANO	接收数据输出
	4	GND	接地
	5	PSQ	静噪控制输出
	6	PKS	数据端子发送键 (LOW：发射麦克风静噪)
	7	PKD	发射数据输入
	8	PKDG	发射数据接地
J3		RELAY	线性继电器控制
J4		ALC	ALC电压
J5		EXT.SP	外接扬声器管脚
J6		KEY	CW键输入管脚

TERMINAL FUNCTION

TX-RX unit(X57-4660-20)

Connector No.	Pin No.	Pin name	Function
CN500	1	GND	GND
	2	ABSL	DDS2 register selection
	3	DEN2	DDS2 enable
	4	CASL	DDS1&PLL register selection
	5	DEN1	DDS1 enable
	6	NC	No connect
	7	PLS	Keying line switch
	8	PEN1	PLL enable
	9	PDA	PLL data
	10	PCK	PLL clock
	11	ULK	Unlock detection signal LOW : Unlock
	12	VB3	VCO3 Selection signal
	13	VB2	VCO2 Selection signal
	14	VB1	VCO1 Selection signal
	15	VDLY	Delay-volume voltage
	16	GND	GND
CN501	Coax.	LO1	LO1 output 73.145~103.045MHz
CN502	Coax.	LO2	LO2 output 82.35MHz
CN503	1	CAR	CAR output 10.695MHz
	2	GND	GND
W1	1	NB1	NB amplifier signal input
	2	NBG	NB GND

LCD ASSY

Connector No.	Pin No.	Pin name	Function
CN1	1	DGND	Digital GND
	2	VAF	AF volume voltage
	3	VCL	CLARIFIER volume voltage
	4	VSQL	Squelch volume voltage
	5	SS	Stand by switch
	6	MU	Microphone UP switch
	7	MD	Microphone DOWN switch
	8	LDA	LCD control data
	9	LCK	LCD control clock
	10	PSW	High when the power switch is on
	11	EDP1	Encoder pulse
	12	EDP2	Encoder pulse
	13	K0	Key matrix
	14	K1	Key matrix
	15	K2	Key matrix
	16	K3	Key matrix
	17	K4	Key matrix
	18	S0	Key matrix select
	19	LBLK	LCD blanking
	20	LEN1	LCD control enable
	21	14S	14V (switched)
	22	8A	8V
	23	5A	5V
	24	5C	5V for power switch
	25	DGND	Digital GND
	26	RAF	Reference audio voltage
CN2	1	MIC	MIC signal output
	2	MICG	MIC GND
	3	AGND	Analog GND
	4	SPO	Speaker output
	5	SPOG	Speaker GND
J1	1	MIC	MIC signal output
	2	SS	Stand by switch
	3	DOWN	Microphone DOWN
	4	UP	Microphone UP
	5	8A	8V
	6	SPO	Speaker output
	7	MICG	MIC GND
	8	GND	GND

端子功能

TX-RX单元(X57-4660-20)

连接器号	管脚号	管脚名	功　能
CN500	1	GND	接地
	2	ABSL	DDS2寄存器选择
	3	DEN2	DDS2允许
	4	CASL	DDS1和PLL寄存器选择
	5	DEN1	DDS1允许
	6	NC	没有连接
	7	PLS	键入线路转换
	8	PEN1	PLL允许
	9	PDA	PLL数据
	10	PCK	PLL时钟
	11	ULK	解锁检测信号 低:解锁
	12	VB3	VCO3选择信号
	13	VB2	VCO2选择信号
	14	VB1	VCO1选择信号
	15	VDLY	延迟音量电压
	16	GND	接地
CN501	同轴	LO1	LO1输出73.145~103.045MHz
CN502	同轴	LO2	LO2输出62.35MHz
CN503	1	CAR	CAR输出10.695MHz
	2	GND	接地
W1	1	NB1	噪声抑制放大器信号输入
	2	NBG	噪声抑制接地

LCD ASSY

连接器号	管脚号	管脚名	功　能
CN1	1	DGND	数字接地
	2	VAF	音频音量电压
	3	VCL	干扰消除器音量电压
	4	VSQL	静噪音量电压
	5	SS	待机转换
	6	MU	麦克风音量增大转换
	7	MD	麦克风音量减小转换
	8	LDA	液晶显示器控制数据
	9	LCK	液晶显示器控制时钟
	10	PSW	接通电源转换时变高
	11	EDP1	编码器脉冲
	12	EDP2	编码器脉冲
	13	K0	键矩阵
	14	K1	键矩阵
	15	K2	键矩阵
	16	K3	键矩阵
	17	K4	键矩阵
	18	S0	键矩阵选择
	19	LBLK	液晶显示器消隐
	20	LEN1	液晶显示器控制允许
	21	14S	接通电源时14V
	22	8A	8V
	23	5A	5V
	24	5C	电源转换用5V
	25	DGND	数字接地
	26	RAF	参考音频电压
CN2	1	MIC	麦克风信号输出
	2	MICG	麦克风接地
	3	AGND	模拟接地
	4	SPO	扬声器输出
	5	SPOG	扬声器接地
J1	1	MIC	麦克风信号输出
	2	SS	待机转换
	3	DOWN	麦克风向下
	4	UP	麦克风向上
	5	8A	8V
	6	SPO	扬声器输出
	7	MICG	麦克风接地
	8	GND	接地

TERMINAL FUNCTION

SELECTIVE CALL (OPTION)

Connector No.	Pin No.	Pin name	Function
CN1	1	AF	Audio
	2	AFG	Audio GND
	3	MIC	MIC signal input
	4	MICG	MIC GND
CN2	1	DGND	Digital GND
	2	TOE	DTMF decoder control
	3	Q1	DTMF decode data
	4	Q2	DTMF decode data
	5	Q3	DTMF decode data
	6	Q4	DTMF decode data
	7	STD	Signal tone detector
	8	DGND	Digital GND
	9	5A	5V
	10	FSD	Selective call data
	11	FSL	Selective call signal detector
	12	DGND	Digital GND

AT (OPTION)

Connector No.	Pin No.	Pin name	Function
CN3	1	POD1	VC101 position detection signal
	2	POD2	VC102 position detection signal
	3	VREF	AT reference voltage (5V)
	4	ATG	AT GND
	5	PR22	Motor rotate direction control 4
	6	PR21	Motor rotate direction control 3
	7	PR12	Motor rotate direction control 2
	8	PR11	Motor rotate direction control 1
	9	ATA	AUTO/THRU switch
	10	APRE	Preset control select
	11	SPED	Motor speed control
	12	AT1	Preset AT install. "L" : Install
	13	14S	14V (switched)
	14	5A	5V
	15	DGND	Digital GND
	16	DGND	Digital GND
W1		GND	GND
		AT1	AT signal 1
W2		GND	GND
		AT2	AT signal 2
W103	1	GND	GND
	2	4AT	AT band data 2.40000~4.49999MHz
	3	7AT	AT band data 4.50000~7.99999MHz
	4	14AT	AT band data 8.00000~14.49999MHz
	5	18AT	AT band data 14.50000~18.99999MHz
	6	21AT	AT band data 19.00000~21.99999MHz
	7	24AT	AT band data 22.00000~26.99999MHz
	8	28AT	AT band data 27.00000~29.99999MHz

端子功能

选择呼叫(任选)

连接器号	管脚号	管脚名	功　能
CN1	1	AF	音频
	2	AFG	音频接地
	3	MIC	麦克风信号输入
	4	MICG	麦克风接地
CN2	1	DGND	数字接地
	2	TOE	DTMF解码器控制
	3	Q1	DTMF解码数据
	4	Q2	DTMF解码数据
	5	Q3	DTMF解码数据
	6	Q4	DTMF解码数据
	7	STD	信号音调检测器
	8	DGND	数字接地
	9	5A	5V
	10	FSD	选择呼叫数据
	11	FSL	选择呼叫信号检测器
	12	DGND	数字接地

AT(任选)

连接器号	管脚号	管脚名	功　能
CN3	1	POD1	VC101位置检测信号
	2	POD2	VC102位置检测信号
	3	VREF	AT参考电压(5V)
	4	ATG	AT接地
	5	PR22	电动机旋转方向控制 4
	6	PR21	电动机旋转方向控制 3
	7	PR12	电动机旋转方向控制 2
	8	PR11	电动机旋转方向控制 1
	9	ATA	自动/直通转换
	10	APRE	预置控制选择
	11	SPED	电动机速度控制
	12	AT1	预置AT安装。"L"：安装
	13	14S	接通电源叫14V
	14	5A	5V
	15	DGND	数字接地
	16	DGND	数字接地
W1		GND	接地
		AT1	AT信号 1
W2		GND	接地
		AT2	AT信号 2
W103	1	GND	接地
	2	4AT	AT波段数据2.40000～4.49999MHz
	3	7AT	AT波段数据4.50000～7.99999MHz
	4	14AT	AT波段数据5.00000～14.49999MHz
	5	18AT	AT波段数据14.50000～18.99999MHz
	6	21AT	AT波段数据19.00000～21.99999MHz
	7	24AT	AT波段数据22.00000～26.99999MHz
	8	28AT	AT波段数据27.00000～29.99999MHz

TRC-80

PARTS LIST/零件目录

CAPACITORS

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

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

• Capacitor value

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

• Temperature coefficient

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

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

Exemple : CC45TH = -470 ± 60ppm/°C

• Tolerance (More than 10pF)

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

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

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

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
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
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

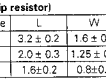
(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

• Carbon resistor (Normal type)

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

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Dimension



Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

PARTS LIST/ 零件目录

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

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

TRC-80
FINAL UNIT(X45-3520-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
			TRC-80		
1	1A	*	A01-2099-02	METALLIC CABINET UPSIDE	
2	3B	*	A01-2100-02	METALLIC CABINET BOTTOM	
3	2A	*	A62-0389-03	PANEL ASSY	
6	2A	*	B38-0739-05	LCD ASSY	
7	*		B62-0485-00	INSTRUCTION MANUAL(EN,CH,SPA)	
8	2B	*	B72-0784-04	MODEL NAME PLATE	
10	1B		E04-0167-05	RF COAXIAL RECEPTACLE ANT	
12	1B	*	E23-0982-04	EARTH LUG	
13			E30-3157-05	DC CORD	
14	1B,3B		E37-0225-05	LEAD WIRE WITH MINIPIN PLUG B	
15	1B,3B	*	E37-0497-05	LEAD WIRE WITH MINIPIN PLUG R	
16	2A,2B	*	E37-0499-05	FLAT CABLE 26P X57CN14-X52CN4	
17	1B,2B	*	E37-0500-05	FLAT CABLE 18P X45CN3-X52CN3	
18	1B,3B	*	E37-0501-05	FLAT CABLE 8P X45CN10-X57CN15	
19	2A,2B	*	E37-0503-05	LEAD WIRE WITH CONNECTOR PHONE	
20	2A,3B	*	E37-0505-05	LEAD WIRE WITH CONNECTOR MIC	
21	2B,3A	*	E37-0508-05	LEAD WIRE WITH CONNECTOR 5P	
22	1B	*	E37-0509-05	LEAD WIRE WITH CONNECTOR AT	
		*	E37-0572-05	FLAT CABLE FOR SERVICE /REPEAR	
24			F05-2531-05	FUSE 25A/32V	
25	1B		F05-4027-05	FUSE 4A/32V	
26	1A		F09-0438-05	FAN MOTOR	
27	2A		F20-9521-04	INSULATING BOARD BATTERY	
			F29-0014-05	INSULATING BUSH Q1	
30	1B		G02-0575-04	FLAT SPRING TX-RX IC	
31	1B		G02-0732-14	FLAT SPRING FINAL	
32	1A		G10-0676-04	HEIRIOUS SHEET CASE	
33	2A		G13-1515-04	CUSION CHASSIS	
35		*	H52-0635-02	ITEM CARTON CASE	
36		*	H10-2787-02	POLYSTYRENE FOAMED FIXTURE (F)	
37		*	H10-2788-02	POLYSTYRENE FOAMED FIXTURE (R)	
38		*	H13-0962-04	CARTON BOARD	
39			H20-1410-03	PROTECTION COVER	
40			H25-0029-04	PROTECTION BAG	
41			H25-0750-04	PROTECTION BAG DC CORD	
45	3B	*	J02-0475-05	FOOT	
46	2B		J19-1458-05	HOLDER	
47	1A		J21-4439-04	HARDWARE FIXTURE FAN	
48	2A		J31-0141-04	DOLLAR MIC BP	
50	3A		K29-5080-03	KNOB MAIN DIAL	
51	3A	*	K29-4973-04	KNOB VOL,SQL,CLA	
1	2B		N15-1040-46	FLAT WASHER	
2	2A		N02-3006-46	FLAT HEAD MACHIN SCREW	
3	1A,3A		N33-3006-45	OVAL HEAD MACHIN SCREW	
4	1A		N25-3018-46	BINDING HEAD MACHINE SCREW	
5	2B		N25-4010-46	BINDING HEAD MACHINE SCREW	
3	3A	*	N87-3005-46	PAN HEAD SEMS SCREW	
4	1B		N87-3010-46	PAN HEAD SEMS SCREW	
1	1B,3B		N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
2	1B		N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
M	3A	*	N90-2605-45	TP HEAD MACHIN SCREW	

Ref. No.	Address	New parts	Parts No.	Description	Destination
N	3B		N91-3010-46	TP HEAD TAPPING SCREW	
55	3A	*	T07-0325-05	LOUDSPEAKER(FULLRANGE)	
56A		*	T91-0662-05	MICROPHONE ASSY	
56B		*	E30-3229-08	CURL CORD	
56C		*	K29-5077-08	PTT LEVER KNOB	
56D		*	S70-0444-08	PTT TACT SWITCH	
56E		*	T91-0664-08	MIC ELEMENT	
60	2A		W09-0515-05	LITHIUM BATTERY	
			FINAL UNIT (X45-3520-20)		
C1			CK73FB1E103K	CHIP C 0.010UF K	
C2			CK73FB1H102K	CHIP C 1000PF K	
C3			CK73FB1E104K	CHIP C 0.10UF K	
C4			CC73FSL1H821J	CHIP C 820PF J	
C5			CK73FB1E103K	CHIP C 0.010UF K	
C6			CK73FB1E104K	CHIP C 0.10UF K	
C7			CK73FB1H102K	CHIP C 1000PF K	
C8			CK73FB1E104K	CHIP C 0.10UF K	
C9			CK73FB1H102K	CHIP C 1000PF K	
C10			CK73FB1E104K	CHIP C 0.10UF K	
C11			CE04EW1C100M	ELECTRO 10UF 16WV	
C12			CK73FB1E104K	CHIP C 0.10UF K	
C13 ,14			CK73FB1E103K	CHIP C 0.010UF K	
C15			CK73FB1H102K	CHIP C 1000PF K	
C16			C90-2193-05	ELECTRO 35UF 25WV	
C17			CE04EW1C100M	ELECTRO 10UF 16WV	
C18			CC45SL2H221J	CERAMIC 220PF J	
C19 ,20			CK73FB1E104K	CHIP C 0.10UF K	
C21			CK73FB1H472K	CHIP C 4700PF K	
C22			CM73F2H102J	CHIP C 1000PF J	
C23			CK73FB1E104K	CHIP C 0.10UF K	
C24 ,25			C91-1004-05	CHIP C 6800PF J	
C26			CK73FB1H102K	CHIP C 1000PF K	
C27			CM73F2H561J	CHIP C 560PF J	
C28			CK73FB1E104K	CHIP C 0.10UF K	
C29			CM73F2H122J	CHIP C 1200PF J	
C30		*	CC45SL2H151J	CERAMIC 150PF J	
C31			CK73FB1E104K	CHIP C 0.10UF K	
C32			C90-2194-05	ELECTRO 220UF 25WV	
C33 ,34			CK73FB1E103K	CHIP C 0.010UF K	
C35			CE04EW1E471M	ELECTRO 470UF 25WV	
C36			CK73FB1E103K	CHIP C 0.010UF K	
C37			CK73FB1E104K	CHIP C 0.10UF K	
C38			CK73FB1E103K	CHIP C 0.010UF K	
C39			CK73FB1H102K	CHIP C 1000PF K	
C40 ,43			CK73FB1E104K	CHIP C 0.10UF K	
C44			CK73FB1E103K	CHIP C 0.010UF K	
C45 ,46			CE04EW1E100M	ELECTRO 10UF 25WV	
C47			CE04EW1E102M	ELECTRO 1000UF 25WV	
C48			CK73FB1E104K	CHIP C 0.10UF K	
C49 ,50			CE04EW1E100M	ELECTRO 10UF 25WV	
C51 ,52			CK73FB1E104K	CHIP C 0.10UF K	
C53 ,54			CK73FB1E103K	CHIP C 0.010UF K	
C55			CC73FSL1H221J	CHIP C 220PF J	

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FINAL UNIT(X45-3520-20)

Ref. No.	Address	New parts	Parts No.	Description		Destination
C56			CC73FCH1H101J	CHIP C	100PF J	
C57			CC45RCH2H030C	CERAMIC	3.0PF C	
C58			CC73FCH1H568J	CHIP C	56PF J	
C59			CK73FB1E103K	CHIP C	0.010UF K	
C60			CC73FSL1H221J	CHIP C	220PF J	
C61			CK73FB1E103K	CHIP C	0.010UF K	
C62			CK73FB1E104K	CHIP C	0.10UF K	
C63			CC73FCH1H680J	CHIP C	68PF J	
C64			CC73FGH1H121J	CHIP C	120PF J	
C65			CC73FCH1H560J	CHIP C	56PF J	
C66 -74			CK73FB1H102K	CHIP C	1000PF K	
C75			CK73FB1E103K	CHIP C	0.010UF K	
C76			CK73FB1E104K	CHIP C	0.10UF K	
C77			CE04EW1E102M	ELECTRO	1000UF 25WV	
C78			CK73FB1E104K	CHIP C	0.10UF K	
C79 -81			CK73FB1H102K	CHIP C	1000PF K	
C84			CK73FB1E103K	CHIP C	0.010UF K	
C85 -87			CK73FB1H102K	CHIP C	1000PF K	
C88 ,89			CS1-1075-05	CERAMIC	470PF K	
C101			CM93D2H821J	MICA	820PF J	
C102		*	CC45FSL2H471J	CERAMIC	470PF J	
C103			CM93D2H182J	MICA	1800PF J	
C104		*	CC45FSL2H151J	CERAMIC	150PF J	
C105			CM93D2H821J	MICA	820PF J	
C201		*	CC45FSL2H561J	CERAMIC	560PF J	
C202		*	CC45FSL2H331J	CERAMIC	330PF J	
C203		*	CC45FSL2H391J	CERAMIC	390PF J	
C204		*	CC45FSL2H121J	CERAMIC	120PF J	
C205		*	CC45FSL2H151J	CERAMIC	150PF J	
C206		*	CC45FSL2H121J	CERAMIC	120PF J	
C207		*	CC45FSL2H471J	CERAMIC	470PF J	
C208		*	CC45FSL2H151J	CERAMIC	150PF J	
C301		*	CC45FSL2H271J	CERAMIC	270PF J	
C302		*	CC45FSL2H151J	CERAMIC	150PF J	
C303		*	CC45FSL2H271J	CERAMIC	270PF J	
C304			CC45FSL2H560J	CERAMIC	56PF J	
C305		*	CC45FSL2H271J	CERAMIC	270PF J	
C307			CC45FSL2H221J	CERAMIC	220PF J	
C401			CC45FSL2H181J	CERAMIC	180PF J	
C402			CC45FSL2H470J	CERAMIC	47PF J	
C403		*	CC45FSL2H331J	CERAMIC	330PF J	
C404		*	CC45FSL2H121J	CERAMIC	120PF J	
C405		*	CC45FSL2H151J	CERAMIC	150PF J	
C501		*	CC45FSL2H121J	CERAMIC	120PF J	
C502			CC45FSL2H150J	CERAMIC	15PF J	
C503			CC45FSL2H221J	CERAMIC	220PF J	
C504			CC45FSL2H470J	CERAMIC	47PF J	
C505			CC45FSL2H101J	CERAMIC	100PF J	
C601			CC45FSL2H680J	CERAMIC	68PF J	
C602		*	CC45FSL2H120J	CERAMIC	12PF J	
C603		*	CC45FSL2H121J	CERAMIC	120PF J	
C604			CC45FSL2H470J	CERAMIC	47PF J	
C605			CC45FSL2H680J	CERAMIC	68PF J	
C607			CC45FSL2H100D	CERAMIC	10PF D	
C701-706			CK73FB1H103K	CHIP C	0.010UF K	
TC1			C05-0030-15	TRIM CAP	20P	
CN1			E04-0191-05	RF COAXIAL CABLE RECEPTACLE		

Ref. No.	Address	New parts	Parts No.	Description	Destination
CN2			E40-3246-05	PIN CONNECTOR FOR INSIDE FAN	
CN3		*	E40-5764-05	PIN CONNECTOR FOR INSIDE	
CN4			E40-3249-05	PIN CONNECTOR FOR INSIDE	
CN5 ,6			E04-0154-05	RF COAXIAL CABLE RECEPTACLE	
CN7			E04-0191-05	RF COAXIAL CABLE RECEPTACLE	
CN9		*	E22-0986-05	TERMINAL	
CN10		*	E40-5765-05	PIN CONNECTOR FOR INSIDE	
CN11			E40-3252-05	PIN CONNECTOR FOR INSIDE	
CN101		*	E22-0896-05	TERMINAL	
CN104		*	E22-0868-05	TERMINAL	
CN800			E40-3238-05	PIN CONNECTOR FOR INSIDE	
J609			E11-0431-05	PHONE JACK	
W1		*	E37-0499-05	LEAD WIRE WITH CONNECTOR	
W2			E37-0445-05	PROCESSED LEAD WIRE	
F1			F53-0093-05	FUSE 5A/125V	
F2			F06-4027-05	FUSE 4A/32V	
A1 ,2			J13-0410-05	FUSE HOLDER F2	
L1		*	L40-3985-48	SMALL FIXED INDUCTOR 390nH	
L2		*	L40-1015-48	SMALL FIXED INDUCTOR 180uH	
L3			L40-3395-48	SMALL FIXED INDUCTOR 3.9uH	
L4			L39-0481-05	TOROIDAL COIL	
L5 -7			L33-0689-05	CHOKE COIL	
L8		*	L39-1257-05	TOROIDAL COIL	
L9			L40-4795-48	SMALL FIXED INDUCTOR 4.7uH	
L10			L33-0617-15	CHOKE COIL	
L11 ,12			L33-0689-05	CHOKE COIL	
L13			L39-0490-15	TOROIDAL COIL	
L14			L33-0617-15	CHOKE COIL	
L15			L33-0651-05	CHOKE COIL	
L16			L39-1252-15	TOROIDAL COIL	
L17			L40-2221-33	SMALL FIXED INDUCTOR 22nH	
L18			L39-0480-15	TOROIDAL COIL	
L19			L40-2221-33	SMALL FIXED INDUCTOR 22nH	
L20 ,21		*	L40-2782-15	SMALL FIXED INDUCTOR 270nH	
L22 ,23			L40-1005-48	SMALL FIXED INDUCTOR 10uH	
L24			L40-1001-12	SMALL FIXED INDUCTOR 1uH	
L101		*	L39-1259-05	TOROIDAL COIL	
L102		*	L39-1260-05	TOROIDAL COIL	
L201			L39-1224-05	TOROIDAL COIL	
L202			L39-1225-05	TOROIDAL COIL	
L301		*	L39-1268-05	TOROIDAL COIL	
L302		*	L39-1258-05	TOROIDAL COIL	
L401			L39-1221-05	TOROIDAL COIL	
L402			L39-1220-05	TOROIDAL COIL	
L501			L34-1275-05	AIR-CORE COIL 7.5T	
L502			L34-1280-05	AIR-CORE COIL 6.5T	
L601			L34-1281-05	AIR-CORE COIL 5.5T	
L602			L34-1282-05	AIR-CORE COIL 4.5T	
L701-706		*	L40-1015-48	SMALL FIXED INDUCTOR 100uH	
T101			L92-0104-05	TOROIDAL CORE	
T102			L92-0104-05	TOROIDAL CORE	
T103			L92-0107-05	TOROIDAL CORE	
T104			L92-0107-05	TOROIDAL CORE	
T105			L92-0108-05	TOROIDAL CORE	
T106			L92-0108-05	TOROIDAL CORE	
T107			L92-0108-05	TOROIDAL CORE	
T108			L92-0108-05	TOROIDAL CORE	

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FINAL UNIT(X45-3520-20)
CONTROL UNIT(X53-3570-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R1			RK73FB2A331J	CHIP R 330 J 1/10W	
R2			RK73FB2A68RJ	CHIP R 680 J 1/10W	
R3			RK73FB2A101J	CHIP R 100 J 1/10W	
R4			RK73FB2A8R2J	CHIP R 8.2 J 1/10W	
R5			RS2-1221-05	CHIP R 82 J 1/4W	
R6			RK73FB2A6R8J	CHIP R 6.8 J 1/10W	
R7			RS2-1242-05	CHIP R 6.8 J 1/4W	
R8			RS2-1243-05	CHIP R 8.2 J 1/4W	
R9			RK73FB2A331J	CHIP R 330 J 1/10W	
R10			RS2-1318-05	CHIP R 100 J 1W	
R11 ,12			RS2-0696-05	CHIP R 33 J 1/4W	
R13			RS2-1318-05	CHIP R 100 J 1W	
R14 -17		*	RS14CB3A5R6J	FL-PROOF RS 5.6 J 1W	
R18			RK73FB2A39RJ	CHIP R 39R J 1/10W	
R19 ,20		*	RS14CB3A150J	FL-PROOF RS 15 J 1W	
R21 ,22		*	RS14CB3A4R7J	FL-PROOF RS 4.7 J 1W	
R23			RS2-1317-05	CHIP R 18 J 1W	
R24 ,25			RS2-1318-05	CHIP R 39 J 1W	
R26			RK73FB2A474J	CHIP R 470K J 1/10W	
R27			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R28			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R29			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R30			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R32			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R33			RK73FB2A681J	CHIP R 680 J 1/10W	
R34			RK73FB2A562J	CHIP R 5.6K J 1/10W	
R35			RK73FB2A103J	CHIP R 10K J 1/10W	
R36			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R37			RK73FB2A4R7J	CHIP R 4.7 J 1/10W	
R38			RS2-0696-05	CHIP R 33 J 1/4W	
R39			RS2-1244-05	CHIP R 27 J 1/4W	
R40 -43			RK73FB2A101J	CHIP R 100 J 1/10W	
R101			RS2-1051-05	JUMPER REST 0 OHM	
R600,601			RS2-1204-05	CHIP R 100 J 1/4W	
VR1			R12-6730-05	TRIM POT 220	
VR2		*	R12-6737-05	TRIM POT 3.3K	
VR3			R12-6730-05	TRIM POT 220	
K1		*	S76-0414-05	RELAY	
K2			S51-1429-05	RELAY	
K101,102			S51-1420-05	RELAY	
K201,202			S51-1420-05	RELAY	
K301,302			S51-1420-05	RELAY	
K401,402			S51-1420-05	RELAY	
K501,502			S51-1420-05	RELAY	
K601,602			S51-1420-05	RELAY	
D1			MA27T-B	DIODE	
D2 -4			MA27-B	DIODE	
D5			SG-5UR1	DIODE	
D6			RD1(BMB1)	ZENER DIODE/18V	
D7 ,8			1FB01	DIODE	
D9			DAN202K	DIODE	
D10 ,11			1SS301	DIODE	
D12			1FB01	DIODE	
D13			DSA301LA	SURGE ABSORBER	
D14			DAN202K	DIODE	
D15			ERZ-M10DK220	SERGE ABSORBER	
D701-706			1FB01	DIODE	
IC1			NJM2904M	(DIOP AMP X2)	

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC2			UPC7809H	(CVOLTAGE REGULATOR/ +9V)	
IC3			UPC7808H	(CVOLTAGE REGULATOR/ +8V)	
IC4			TC9174F	(CDCMOS I/O EXTENSION)	
Q1			2SC1971	TRANSISTOR	
Q2 ,3			2SC3133	TRANSISTOR	
Q4			2SC3421(Y)	TRANSISTOR	
Q5 ,6			2SC2878(O,Y)	TRANSISTOR	
Q7			DTC143TK	DIGITAL TRANSISTOR	
Q8			DTC114EK	DIGITAL TRANSISTOR	
Q9 ,10			DTD123EK	DIGITAL TRANSISTOR	
Q12			DTC124TK	DIGITAL TRANSISTOR	
Q13			RMC2	DIGITAL TRANSISTOR	
Q14			RMA6	DIGITAL TRANSISTOR	
Q15,16			RMA7	DIGITAL TRANSISTOR	
Q17,18			RMA5	DIGITAL TRANSISTOR	
Q19 -21			DTB143EK	DIGITAL TRANSISTOR	
TH1			5TP41L	THERMISTOR (10K)	
-			212-1021-05	PLASTIC TUBE	

CONTROL UNIT(X53-3570-20)

C1 -6			CK73GB1H102K	CHIP C	1000PF	K
C7 ,8			CC73GCH1H101J	CHIP C	100PF	J
C9 -19			CK73GB1H102K	CHIP C	1000PF	K
C20 ,21			CK73GF1E104Z	CHIP C	0.10UF	Z
C22			C92-0009-05	CHIP-TAN	4.7UF	16WV
C23			CK73GF1E104Z	CHIP C	0.10UF	Z
C24 ,25			CK73GB1H102K	CHIP C	1000PF	K
C26			C92-0009-05	CHIP-TAN	4.7UF	16WV
C27 -32			CK73GB1H102K	CHIP C	1000PF	K
C33			CK73FF1C105Z	CHIP C	1.0UF	Z
C34			CK73GF1E104Z	CHIP C	0.10UF	Z
C35			CK73GB1E223K	CHIP C	0.022UF	K
C36			CK73GB1H103K	CHIP C	0.010UF	K
C37			C92-0609-05	CHIP-TAN	4.7UF	10WV
C38 ,39			CK73GB1H102K	CHIP C	1000PF	K
C40 -44			CK73GF1E104Z	CHIP C	0.10UF	Z
C45			CK73GB1H102K	CHIP C	1000PF	K
C46 ,47			CK73GF1E104Z	CHIP C	0.10UF	Z
C48 -52			CK73GB1H102K	CHIP C	1000PF	K
C53			CK73FF1C105Z	CHIP C	1.0UF	Z
C54			CK73GF1E104Z	CHIP C	0.10UF	Z
C55 ,56			CC73GCH1H330J	CHIP C	33PF	J
C57 -69			CK73GB1H102K	CHIP C	1000PF	K
C70			CK73GB1H103K	CHIP C	0.010UF	K
C72 -74			CK73GB1H102K	CHIP C	1000PF	K
C75 -79			CK73GB1H103K	CHIP C	0.010UF	K
C80			CK73GB1H102K	CHIP C	1000PF	K
C81			CK73GB1H103K	CHIP C	0.010UF	K
C82			CK73GB1H102K	CHIP C	1000PF	K
C84			CK73GB1H103K	CHIP C	0.010UF	K
C85 -87			CK73GB1H102K	CHIP C	1000PF	K
C88 -93			CK73GB1H103K	CHIP C	0.010UF	K
C94 ,95			CK73GF1E104Z	CHIP C	0.10UF	Z
C96 -103			CK73GB1H102K	CHIP C	1000PF	K
C104,105			CK73GB1H103K	CHIP C	0.010UF	K
C107			CK73GF1E104Z	CHIP C	0.10UF	Z
C108			CK73GB1H103K	CHIP C	0.010UF	K
C110			CK73GB1H102K	CHIP C	1000PF	K

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CONTROL UNIT(X53-3570-20)
TX-RX UNIT(X57-4660-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C111			CK73GB1HR03K	CHIP C 0.010UF K	
CN1			E40-5736-05	FLAT CABLE CONNECTOR 28P	
CN2		*	E40-5758-05	FLAT CABLE CONNECTOR 12P	
CN3		*	E40-5762-05	FLAT CABLE CONNECTOR 16P	
CN4		*	E40-5761-05	FLAT CABLE CONNECTOR 26P	
CN5		*	E40-5762-05	FLAT CABLE CONNECTOR 16P	
CN6			E40-5381-05	FLAT CABLE CONNECTOR 16P	
L1 -4			L40-1801-18	SMALL FIXED INDUCTOR 18UH	
L5 ,6		*	L40-4705-46	SMALL FIXED INDUCTOR 47UH	
L7 -9			L40-1801-18	SMALL FIXED INDUCTOR 18UH	
L10		*	L40-4705-46	SMALL FIXED INDUCTOR 47UH	
X1		*	L77-1624-05	CRYSTAL RESONATOR 7.3728MHz	
R1 -3			RK73GB1J471J	CHIP R 470 J 1/16W	
R4 -8			RK73GB1J221J	CHIP R 220 J 1/16W	
R9			RK73GB1J471J	CHIP R 470 J 1/16W	
R10 ,11			RK73GB1J221J	CHIP R 220 J 1/16W	
R12 -19			RK73GB1J471J	CHIP R 470 J 1/16W	
R20 -23			RK73GB1J103J	CHIP R 10K J 1/16W	
R24 -31			RK73GB1J221J	CHIP R 220 J 1/16W	
R32			RK73GB1J103J	CHIP R 10K J 1/16W	
R35 ,36			RK73GB1J103J	CHIP R 10K J 1/16W	
R40			RK73GB1J103J	CHIP R 10K J 1/16W	
R41			RK73GB1J471J	CHIP R 470 J 1/16W	
R42			RK73GB1J103J	CHIP R 10K J 1/16W	
R43			RK73GB1J474J	CHIP R 470K J 1/16W	
R44			RK73GB1J103J	CHIP R 10K J 1/16W	
R45			RK73GB1J472J	CHIP R 47K J 1/16W	
R46 -48			RK73GB1J103J	CHIP R 10K J 1/16W	
R49			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R50 ,51			RK73GB1J471J	CHIP R 470 J 1/16W	
R52 ,53			RK73GB1J221J	CHIP R 220 J 1/16W	
R54			RK73GB1J471J	CHIP R 470 J 1/16W	
R55 ,56			RK73GB1J101J	CHIP R 100 J 1/16W	
R57			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R58			RK73GB1J103J	CHIP R 10K J 1/16W	
R59 ,60			RK73GB1J104J	CHIP R 100K J 1/16W	
R61			RK73GB1J471J	CHIP R 470 J 1/16W	
R62 ,63			RK73GB1J221J	CHIP R 220 J 1/16W	
R64 -72			RK73GB1J471J	CHIP R 470 J 1/16W	
R73			RK73GB1J223J	CHIP R 22K J 1/16W	
R74			RS2-1252-05	CHIP R 0 OHM	
R75			RK73GB1J221J	CHIP R 220 J 1/16W	
R76 ,77			RK73GB1J471J	CHIP R 470 J 1/16W	
R78 ,79			RK73GB1J101J	CHIP R 100 J 1/16W	
R80 ,81			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R82			RK73GB1J103J	CHIP R 10K J 1/16W	
R83 -90			RK73GB1J473J	CHIP R 47K J 1/16W	
R92 -94			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R95			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R99 -101			RK73GB1J223J	CHIP R 22K J 1/16W	
R102-105			RK73GB1J103J	CHIP R 10K J 1/16W	
R106-117			RK73GB1J221J	CHIP R 220 J 1/16W	
R118			RK73GB1J471J	CHIP R 470 J 1/16W	
R119-121			RK73GB1J104J	CHIP R 100K J 1/16W	
R122-124			RK73GB1J221J	CHIP R 220 J 1/16W	
R125			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R126-129			RK73GB1J221J	CHIP R 220 J 1/16W	
R130,131			RK73GB1J101J	CHIP R 100 J 1/16W	
R132,133			RK73GB1J473J	CHIP R 47K J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R134-137			RK73GB1J471J	CHIP R 470 J 1/16W	
R138-141			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R142			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R143			RK73GB1J471J	CHIP R 470 J 1/16W	
R144			RK73GB1J223J	CHIP R 22K J 1/16W	
R145			RK73GB1J103J	CHIP R 10K J 1/16W	
R146			RK73GB1J471J	CHIP R 470 J 1/16W	
R147			RS2-1252-05	CHIP R 0 OHM	
R148			RS2-0570-05	CHIP R 0 OHM	
R149			RK73GB1J103J	CHIP R 10K J 1/16W	
R150			RK73GB1J221J	CHIP R 220 J 1/16W	
S1			S62-0412-05	SLIDE SWITCH	
S3			S62-0412-05	SLIDE SWITCH	
D1			1SS391	DIODE	
D2			1SS355	DIODE	
D3			DAP202U	DIODE	
D4			RD6.2MB(B2)	ZENER DIODE/6.2V	
D5 -10			1SS355	DIODE	
D11			1SS301	DIODE	
D12 ,13			1SS355	DIODE	
D14		*	RD9.1MB(B3)	ZENER DIODE/9.1V	*
D15			1SS355	DIODE	
D16			MMN10	DIODE	
D17 ,18			1SS355	DIODE	
IC1 ,2			TC4SS84F	(OSCHMITT TRIGGER)	
IC3			MC33099P	(ORESET)	
IC4			TA78L09F	(OVOLTAGE REGURATOR/ +9V)	
IC5		*	37702E8UJHHB	(OMICROPROCESSOR)	
IC6		*	AT93C6610SI2.7	(O4k bit SERIAL EEPROM)	
IC7			M5M82C55AFP-2	(OI/O EXPANDER)	
IC8			SN74ALS04BNS	(OINVERTER)	
Q1			DTC143TK	DIGITAL TRANSISTOR	
Q2			DTA143EK	DIGITAL TRANSISTOR	
Q3			DTC143EK	DIGITAL TRANSISTOR	
Q4			DTA143EK	DIGITAL TRANSISTOR	
Q5			DTC143EK	DIGITAL TRANSISTOR	
Q6			DTA143EK	DIGITAL TRANSISTOR	
Q7			DTC143EK	DIGITAL TRANSISTOR	

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D45			B30-2001-05	LED	
D67			B30-2001-05	LED	
C1			CC73GCH1H470J	CHIP C 47PF J	
C2			CC73FCH1H070D	CHIP C 7.0PF D	
C3			CC73GCH1H390J	CHIP C 39PF J	
C6			CK73EB1H104K	CHIP C 0.10UF K	
C7			CK73FB1H103K	CHIP C 0.010UF K	
C8			CK73FF1E104Z	CHIP C 0.10UF Z	
C9			CK73F1C105Z	CHIP C 1.0UF Z	
C10			CE04EW1E4R7M	ELECTRO 4.7UF 25WV	
C11			CK73GB1H103K	CHIP C 0.010UF K	
C12			CK73FB1H272K	CHIP C 2700PF K	
C13			CK73FF1E104Z	CHIP C 0.10UF Z	
C14			CK73GB1H392K	CHIP C 3900PF K	
C15			CK73FB1H272K	CHIP C 2700PF K	
C16			CK73GB1H222K	CHIP C 2200PF K	
C17			CK73GB1H472K	CHIP C 4700PF K	

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ℓ. No.	Address	New parts	Parts No.	Description			Destination
8			CK73GB1H222K	CHIP C	2200PF	K	
9			CK73FB1E104K	CHIP C	0.10UF	K	
0			CK73GB1H103K	CHIP C	0.010UF	K	
1			CK73FF1C105Z	CHIP C	1.0UF	Z	
2			CK73GB1H392K	CHIP C	3900PF	K	
3			CK73FF1E104Z	CHIP C	0.10UF	Z	
4 -26			CK73GB1H102K	CHIP C	1000PF	K	
7			CK73GB1H392K	CHIP C	3900PF	K	
8			CK73FF1E104Z	CHIP C	0.10UF	Z	
9			CK73GB1H182K	CHIP C	1800PF	K	
0			CK73FF1E104Z	CHIP C	0.10UF	Z	
1			CK73GB1H102K	CHIP C	1000PF	K	
2			CK73GCH1H391J	CHIP C	390PF	J	
3			CK73GB1H102K	CHIP C	1000PF	K	
4			CK73GB1H182K	CHIP C	1800PF	K	
5			CK73FF1E104Z	CHIP C	0.10UF	Z	
6			CK73GB1H102K	CHIP C	1000PF	K	
7			CK73FF1E104Z	CHIP C	0.10UF	Z	
8			CK73GB1H102K	CHIP C	1000PF	K	
9			CK73GCH1H271J	CHIP C	270PF	J	
0,41			CK73GB1H102K	CHIP C	1000PF	K	
2			CK73FF1E104Z	CHIP C	0.10UF	Z	
3			CK73GB1H821K	CHIP C	820PF	K	
4			CK73FF1E104Z	CHIP C	0.10UF	Z	
5			CK73GB1H102K	CHIP C	1000PF	K	
6			CC73GCH1H121J	CHIP C	120PF	J	
7			CK73GB1H102K	CHIP C	1000PF	K	
8			CK73GB1H821K	CHIP C	820PF	K	
9			CK73FF1E104Z	CHIP C	0.10UF	Z	
0			CK73GB1H681K	CHIP C	680PF	K	
1			CK73FF1E104Z	CHIP C	0.10UF	Z	
2			CK73GB1H102K	CHIP C	1000PF	K	
3			CC73GCH1H820J	CHIP C	82PF	J	
4			CK73GB1H103K	CHIP C	0.010UF	K	
5			CK73GB1H681K	CHIP C	680PF	K	
6			CK73FF1E104Z	CHIP C	0.10UF	Z	
7			CC73GCH1H331J	CHIP C	330PF	J	
8			CK73FF1E104Z	CHIP C	0.10UF	Z	
9			CK73GB1H102K	CHIP C	1000PF	K	
0			CC73GCH1H680J	CHIP C	68PF	J	
1			CK73GB1H102K	CHIP C	1000PF	K	
2			CC73GCH1H331J	CHIP C	330PF	J	
3			CK73FF1E104Z	CHIP C	0.10UF	Z	
4			CC73GCH1H221J	CHIP C	220PF	J	
5			CK73FF1E104Z	CHIP C	0.10UF	Z	
6			CK73GB1H102K	CHIP C	1000PF	K	
7			CC73GCH1H470J	CHIP C	47PF	J	
8			CK73GB1H102K	CHIP C	1000PF	K	
9			CC73GCH1H221J	CHIP C	220PF	J	
0			CK73FF1E104Z	CHIP C	0.10UF	Z	
1			CC73GCH1H680J	CHIP C	68PF	J	
2			CC73GCH1H060D	CHIP C	6.0PF	D	
3			CC73FCH1H151J	CHIP C	150PF	J	
4			CC73GCH1H180J	CHIP C	18PF	J	
5			CC73GCH1H680J	CHIP C	68PF	J	
6 ,77			CK73FF1E104Z	CHIP C	0.10UF	Z	
8			CK73FB1H102K	CHIP C	1000PF	K	
9 -81			CK73FF1E104Z	CHIP C	0.10UF	Z	
2			CK73FB1H471K	CHIP C	470PF	K	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C83			CK73GB1H103K	CHIP C	0.010UF	K	
C84			CC73FCH1H220J	CHIP C	22PF	J	
C85			CK73FF1E104Z	CHIP C	0.10UF	Z	
C86			CK73GB1C104K	CHIP C	0.10UF	K	
C87			CK73FF1E104Z	CHIP C	0.10UF	Z	
C88			CK73GB1H103K	CHIP C	0.010UF	K	
C89 -91			CK73FF1E104Z	CHIP C	0.10UF	Z	
C92			CC73GCH1H020C	CHIP C	2.0PF	C	
C93			CC73FCH1H030C	CHIP C	3.0PF	C	
C94			CC73FCH1H010C	CHIP C	1.0PF	C	
C95			CC73GCH1H100D	CHIP C	10PF	D	
C96			CC73FCH1H101J	CHIP C	100PF	J	
C97			CK73FF1E104Z	CHIP C	0.10UF	Z	
C98, 99			CK73GB1H103K	CHIP C	0.010UF	K	
C100			CC73FCH1H010C	CHIP C	1.0PF	C	
C101			CC73FCH1H060D	CHIP C	6.0PF	D	
C102-104			CK73GB1H103K	CHIP C	0.010UF	K	
C105			CK73FB1H103K	CHIP C	0.010UF	K	
C106			CK73FB1H471K	CHIP C	470PF	K	
C107			CK73FB1H103K	CHIP C	0.010UF	K	
C108			CK73GB1H103K	CHIP C	0.010UF	K	
C109			CK73GB1H471K	CHIP C	470PF	K	
C110			CK73GB1H103K	CHIP C	0.010UF	K	
C111			CC73FCH1H270J	CHIP C	27PF	J	
C112			CK73GB1H103K	CHIP C	0.010UF	K	
C114			CK73GB1H102K	CHIP C	1000PF	K	
C115			CK73FF1C105Z	CHIP C	1.0UF	Z	
C116			CK73FB1H103K	CHIP C	0.010UF	K	
C117			CC73GCH1H020J	CHIP C	2.0PF	J	
C118			CK73GB1H103K	CHIP C	0.010UF	K	
C119			CK73FB1H103K	CHIP C	0.010UF	K	
C120			CC73GCH1H100D	CHIP C	10PF	D	
C121			CC73GCH1H020C	CHIP C	2.0PF	C	
C122-124			CK73FB1H103K	CHIP C	0.010UF	K	
C125			CK73FB1H103K	CHIP C	0.010UF	K	
C126			CK73FF1E104Z	CHIP C	0.10UF	Z	
C127,128			CK73GB1H103K	CHIP C	0.010UF	K	
C129			CK73FB1H103K	CHIP C	0.010UF	K	
C130-133			CK73GB1H103K	CHIP C	0.010UF	K	
C134			CK73FB1H103K	CHIP C	0.010UF	K	
C135,136			CK73GB1H103K	CHIP C	0.010UF	K	
C140-142			CC73GCH1H100D	CHIP C	10PF	D	
C146,147			CK73FB1H103K	CHIP C	0.010UF	K	
C148			CC73FCH1H040C	CHIP C	4.0PF	C	
C149			CC73FCH1H200J	CHIP C	20PF	J	
C151-154			CK73FB1H103K	CHIP C	0.010UF	K	
C155			CC73FCH1H030C	CHIP C	3.0PF	C	
C157-159			CK73FB1H103K	CHIP C	0.010UF	K	
C161			CC73FCH1H030C	CHIP C	3.0PF	C	
C163-166			CK73FB1H103K	CHIP C	0.010UF	K	
C167			CC73FCH1H040C	CHIP C	4.0PF	C	
C168			CC73FCH1H030C	CHIP C	3.0PF	C	
C169,170			CK73FB1H103K	CHIP C	0.010UF	K	
C171			CK73GB1H102K	CHIP C	0.010UF	K	
C172			CK73FF1C474Z	CHIP C	0.47UF	Z	
C173			CK73FF1E104Z	CHIP C	0.10UF	Z	
C174			CK73GB1H103K	CHIP C	0.010UF	K	
C175			CK73FF1E104Z	CHIP C	0.10UF	Z	
C176		*	CK73GF1E473Z	CHIP C	0.047UF	Z	

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Ref. No.	Address	New parts	Parts No.	Description			Destination
C177			CK73FB1H103K	CHIP C	0.010UF	K	
C178-180			CK73GB1H103K	CHIP C	0.010UF	K	
C181			CK73FB1H471K	CHIP C	470PF	K	
C182-184			CK73GB1H103K	CHIP C	0.010UF	K	
C185			CC73GCH1H050C	CHIP C	5.0PF	C	
C186			CK73FB1H332K	CHIP C	3300PF	K	
C187			CK73FB1H103K	CHIP C	0.010UF	K	
C188			CC73GCH1H200J	CHIP C	20PF	J	
C189,190			CK73GB1H103K	CHIP C	0.010UF	K	
C191			CK73FB1H103K	CHIP C	0.010UF	K	
C192			CK73GB1H103K	CHIP C	0.010UF	K	
C193			CC73YUJ1H080D	CHIP C	8.0PF	D	
C194,195			CK73FB1H103K	CHIP C	0.010UF	K	
C196			CK73GB1H103K	CHIP C	0.010UF	K	
C197			CC73CH1H010C	CHIP C	1.0PF	C	
C198			CK73FB1H103K	CHIP C	0.010UF	K	
C199			CK73GB1H471K	CHIP C	470PF	K	
C201,202			CK73GB1H103K	CHIP C	0.010UF	K	
C203			CC73YUJ1H080D	CHIP C	8.0PF	D	
C204			CC73CH1H010C	CHIP C	1.0PF	C	
C205			CC73CH1H050C	CHIP C	5.0PF	C	
C206,207			CK73GB1H103K	CHIP C	0.010UF	K	
C208-210			CK73FB1E104Z	CHIP C	0.10UF	Z	
C211			CE04EW1C100M	ELECTRO	10UF	16WV	
C212-215			CK73FF1E104Z	CHIP C	0.10UF	Z	
C216			CE04EW1C100M	ELECTRO	10UF	16WV	
C217,218			CK73FF1E104Z	CHIP C	0.10UF	Z	
C219			CK73FB1H103K	CHIP C	0.010UF	K	
C220			CK73GB1H103K	CHIP C	0.010UF	K	
C222			CK73FB1H103K	CHIP C	0.010UF	K	
C224			CK73GB1H103K	CHIP C	0.010UF	K	
C225			CC73FCH1H470J	CHIP C	47PF	J	
C227,228			CK73GB1H103K	CHIP C	0.010UF	K	
C230-232			CK73GB1H103K	CHIP C	0.010UF	K	
C233			CK73GB1H392K	CHIP C	3900PF	K	
C234			CK73GB1E123K	CHIP C	0.012UF	K	
C235			CK73GB1H332K	CHIP C	3300PF	K	
C236			CK73FF1C105Z	CHIP C	1.0UF	Z	
C237			CK73GB1H103K	CHIP C	0.010UF	K	
C238			CK73FB1H103K	CHIP C	0.010UF	K	
C239			CC73GCH1H100D	CHIP C	10PF	D	
C240			CC73GCH1H030C	CHIP C	3.0PF	C	
C241			CC73GCH1H221J	CHIP C	220PF	J	
C242			CK73GB1H103K	CHIP C	0.010UF	K	
C243			CK73GF1E332Z	CHIP C	0.0033UF	Z	
C244			CK73FF1C105Z	CHIP C	1.0UF	Z	
C245			CC73FCH1H470J	CHIP C	47PF	J	
C246			CC73FCH1H221J	CHIP C	220PF	J	
C252,253			CK73GB1H103K	CHIP C	0.010UF	K	
C254			CE04EW1A101M	ELECTRO	100UF	10WV	
C255,256			CE04EW1C100M	ELECTRO	10UF	16WV	
C257			CE04EW1C470M	ELECTRO	47UF	16WV	
C258			CK73GB1H103K	CHIP C	0.010UF	K	
C259			CE04EW1C100M	ELECTRO	10UF	16WV	
C260			CE04EW1E470M	ELECTRO	4.7UF	25WV	
C261			CE04EW1C100M	ELECTRO	10UF	16WV	
C262			CK73GB1H102K	CHIP C	1000PF	K	
C263-267			CK73FB1H102K	CHIP C	1000PF	K	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C270			CE04EW1C100M	ELECTRO	10UF	16WV	
C271			CE04EW1H4R7M	ELECTRO	4.7UF	50WV	
C272			CE04EW1H010M	ELECTRO	1.0UF	50WV	
C273			CE04EW1HR22M	ELECTRO	0.22UF	50WV	
C274			CE04EW1H4R7M	ELECTRO	4.7UF	50WV	
C275,276			CK73GB1H103K	CHIP C	0.010UF	K	
C277			CK73GF1E333Z	CHIP C	0.033UF	Z	
C279			CK73GB1H822K	CHIP C	8200PF	K	
C280			CK73GF1E104Z	CHIP C	0.10UF	Z	
C281			CK73GB1H332K	CHIP C	3300PF	K	
C282			CE04EW1C220M	ELECTRO	22UF	16WV	
C283			CE04EW1C100M	ELECTRO	10UF	16WV	
C284			CK73GF1E104Z	CHIP C	0.10UF	Z	
C286,287			CK73F1C1R5Z	CHIP C	1.0UF	Z	
C288			CC73GCH1H050C	CHIP C	5.0PF	C	
C289			CE04EW1E470M	ELECTRO	4.7UF	25WV	
C290-293			CK73GB1H103K	CHIP C	0.010UF	K	
C294			CE04EW1C220M	ELECTRO	22UF	16WV	
C295			CK73GB1H103K	CHIP C	0.010UF	K	
C296			CK73FB1H103K	CHIP C	0.010UF	K	
C297			CK73GB1H103K	CHIP C	0.010UF	K	
C303			CK73GB1H472K	CHIP C	4700PF	K	
C304			CK73FB1E104K	CHIP C	0.10UF	K	
C305			CE04EW1C470M	ELECTRO	47UF	16WV	
C306			CK73FB1E104K	CHIP C	0.10UF	K	
C307			CK73FB1H103K	CHIP C	0.010UF	K	
C308			CE04EW1C101M	ELECTRO	100UF	16WV	
C309			CK73GB1H471K	CHIP C	470PF	K	
C310			CE04EW1C470M	ELECTRO	47UF	16WV	
C311			CK73GB1H222K	CHIP C	2200PF	K	
C312			CK73FB1H103K	CHIP C	0.010UF	K	
C313			CE04EW1C471M	ELECTRO	470UF	16WV	
C314			CK73GB1H102K	CHIP C	1000PF	K	
C315-317			CC73GCH1H101J	CHIP C	100PF	J	
C318			CK73GF1E104Z	CHIP C	0.10UF	Z	
C319			CE04EW1A101M	ELECTRO	100UF	10WV	
C320			CE04EW1H2R2M	ELECTRO	2.2UF	50WV	
C321,322			CE04EW1E4R7M	ELECTRO	4.7UF	25WV	
C323			CS2-0514-05	CHIP-TAN	2.2UF	10WV	
C324			CE04EW1E4R7M	ELECTRO	4.7UF	25WV	
C325			CK73GB1H222K	CHIP C	2200PF	K	
C326			CE04EW1H2R2M	ELECTRO	2.2UF	50WV	
C327			CK73GB1H103K	CHIP C	0.010UF	K	
C328			CK73FF1E104Z	CHIP C	0.10UF	Z	
C330			CK73FB1H222K	CHIP C	2200PF	K	
C331			CK73FB1H332K	CHIP C	3300PF	K	
C332			CE04EW1C470M	ELECTRO	47UF	16WV	
C333			CK73FB1H103K	CHIP C	0.010UF	K	
C334,335			CE04EW1C470M	ELECTRO	47UF	16WV	
C336,337			CK73FB1H103K	CHIP C	0.010UF	K	
C338			CE04EW1C101M	ELECTRO	100UF	16WV	
C339			CK73GB1H103K	CHIP C	0.010UF	K	
C340			CE04EW1C470M	ELECTRO	47UF	16WV	
C341			CE04EW1C101M	ELECTRO	100UF	16WV	
C342			CK73GB1E223K	CHIP C	0.022UF	K	
C343			CE04EW1H4R7M	ELECTRO	0.47UF	50WV	
C344		*	CK73GF1E473Z	CHIP C	0.047UF	Z	
C345			CE04EW1E4R7M	ELECTRO	4.7UF	25WV	
C346			CK73GB1H103K	CHIP C	0.010UF	K	

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ef. No.	Address	New parts	Parts No.	Description			Destination
347			CC73GCH1H101J	CHIP C	100PF	J	
348			CK73GB1H103K	CHIP C	0.010UF	K	
349			CE04EW1C100M	ELECTRO	10UF	16WV	
350			CE04EW1E4R7M	ELECTRO	4.7UF	25WV	
351			CE04EW1H010M	ELECTRO	1.0UF	50WV	
352,353			CK73GB1H102K	CHIP C	1000PF	K	
354		*	CK73GF1E473Z	CHIP C	0.047UF	Z	
355			CK73GB1H102K	CHIP C	1000PF	K	
356,357			CK73FF1E104Z	CHIP C	0.10UF	Z	
358,359			CK73GB1H103K	CHIP C	0.010UF	K	
360-365			CC73FCH1H470J	CHIP C	47PF	J	
366,367			CK73GB1H162K	CHIP C	1600PF	K	
368-372			CK73GB1H103K	CHIP C	0.010UF	K	
373,374			CC73GCH1H101J	CHIP C	100PF	J	
376,377			CK73FB1H102K	CHIP C	1000PF	K	
378,379			CK73GB1H103K	CHIP C	0.010UF	K	
380-383			CK73GB1H102K	CHIP C	1000PF	K	
384,385			CK73RJJ1H080D	CHIP C	8.0PF	D	
386		*	CK73GF1E473Z	CHIP C	0.047UF	Z	
387,388			CE04EW1C100M	ELECTRO	10UF	16WV	
389			CE04EW1H010M	ELECTRO	1.0UF	50WV	
390			CE04EW1C470M	ELECTRO	47UF	16WV	
391,392			CE04EW1C100M	ELECTRO	10UF	16WV	
393-399			CK73GB1H102K	CHIP C	1000PF	K	
401			CE04LW1C331M	ELECTRO	330UF	16WV	
402			CE04EW1C470M	ELECTRO	47UF	16WV	
403			CK73FB1H103K	CHIP C	0.010UF	K	
404			CK73GB1H102K	CHIP C	1000PF	K	
405			CK73GB1H222K	CHIP C	2200PF	K	
407			CK73GB1E223K	CHIP C	0.022UF	K	
408,409			CK73GB1H103K	CHIP C	0.010UF	K	
411,412			CK73FF1C105Z	CHIP C	1.0UF	Z	
500,501			CK73GB1H103K	CHIP C	0.010UF	K	
504,505			CC73FCH1H270J	CHIP C	27PF	J	
506,507			CK73GB1H103K	CHIP C	0.010UF	K	
508			CK73FF1C105Z	CHIP C	1.0UF	Z	
510,511			CC73FCH1H270J	CHIP C	27PF	J	
512,513			CK73FB1H102K	CHIP C	1000PF	K	
514			CK73FB1H103K	CHIP C	0.010UF	K	
515,516			CC73GCH1H470J	CHIP C	47PF	J	
517			CC73GCH1H330J	CHIP C	33PF	J	
518			CC73GCH1H060D	CHIP C	6.0PF	D	
519			CC73GCH1H470J	CHIP C	47PF	J	
520			CC73GCH1H110J	CHIP C	11PF	J	
522			CK73GB1H103K	CHIP C	0.010UF	K	
523			CE04EW1A221M	ELECTRO	220UF	10WV	
524			CK73FB1H103K	CHIP C	0.010UF	K	
526			CE04EW1C470M	ELECTRO	47UF	16WV	
527			CK73GB1H103K	CHIP C	0.010UF	K	
528,529			C92-0004-05	CHIP-TAN	1.0UF	16WV	
530			CK73FB1H103K	CHIP C	0.010UF	K	
531			CE04EW1C470M	ELECTRO	47UF	16WV	
532			CC73GCH1H101J	CHIP C	100PF	J	
533			CC73GCH1H331J	CHIP C	330PF	J	
534			CK73GB1H103K	CHIP C	0.010UF	K	
535			CC73GCH1H101J	CHIP C	100PF	J	
536,537			CK73GB1H103K	CHIP C	0.010UF	K	
538			CC73GCH1H020C	CHIP C	2.0PF	C	
539			CC73GCH1H030C	CHIP C	3.0PF	C	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C540			CC73GCH1H020C	CHIP C	2.0PF	C	
C541			CC73GCH1H1R5C	CHIP C	1.5PF	C	
C542,543			CC73GCH1H270J	CHIP C	27PF	J	
C544			CK73FB1H103K	CHIP C	0.010UF	K	
C545,546			CK73GB1H103K	CHIP C	0.010UF	K	
C547			CK73FB1H103K	CHIP C	0.010UF	K	
C548			CK73GB1H103K	CHIP C	0.010UF	K	
C549			CK73GB1H102K	CHIP C	1000PF	K	
C550			CK73GB1H103K	CHIP C	0.010UF	K	
C551			CK73GB1H102K	CHIP C	1000PF	K	
C552			CC73GCH1H070D	CHIP C	7.0PF	D	
C553,554			CC73GCH1H750C	CHIP C	0.75PF	C	
C555			CC73GCH1H070D	CHIP C	7.0PF	D	
C557			CE04EW1H2R2M	ELECTRO	2.2UF	50WV	
C558			CK73FB1H102K	CHIP C	1000PF	K	
C559			CC73GCH1H181J	CHIP C	180PF	J	
C560			CC73GCH1H100D	CHIP C	10PF	D	
C561			CC73GCH1H221J	CHIP C	220PF	J	
C562			CC73GCH1H220J	CHIP C	22PF	J	
C563			CC73GCH1H151J	CHIP C	150PF	J	
C564,565			CK73FB1H103K	CHIP C	0.010UF	K	
C568			CK73GF1E104Z	CHIP C	0.10UF	Z	
C570			CC73GCH1H470J	CHIP C	47PF	J	
C571			CK73GB1H561K	CHIP C	560PF	K	
C572			CC73GCH1H470J	CHIP C	47PF	J	
C573			CC73GCH1H151J	CHIP C	150PF	J	
C574			CC73GCH1H680J	CHIP C	68PF	J	
C575			CC73GCH1H270J	CHIP C	27PF	J	
C576			CC73GCH1H330J	CHIP C	33PF	J	
C577			CC73GCH1H101J	CHIP C	100PF	J	
C578			CC73GCH1H100D	CHIP C	10PF	D	
C579			CC73GCH1H220J	CHIP C	22PF	J	
C580,581			CK73GB1H103K	CHIP C	0.010UF	K	
C584			CK73GB1H102K	CHIP C	1000PF	K	
C585-587			CK73GB1H103K	CHIP C	0.010UF	K	
C588			CK73GB1H102K	CHIP C	1000PF	K	
C589			CK73FB1H103K	CHIP C	0.010UF	K	
C590,591			CC73GCH1H270J	CHIP C	27PF	J	
C592			CK73GB1H103K	CHIP C	0.010UF	K	
C594			CK73GB1H103K	CHIP C	0.010UF	K	
C595			CC73FCH1H070D	CHIP C	7.0PF	D	
C596			CC73FCH1H220J	CHIP C	22PF	J	
C597			CK73FB1H102K	CHIP C	1000PF	K	
C598			CC73FCH1H220J	CHIP C	22PF	J	
C599			CK73FB1H103K	CHIP C	0.010UF	K	
C600			CC73GCH1H030C	CHIP C	3.0PF	C	
C601			CK73FB1H103K	CHIP C	0.010UF	K	
C602			CK73GB1H102K	CHIP C	1000PF	K	
C603			CK73GB1H103K	CHIP C	0.010UF	K	
C604,605			CK73GB1H102K	CHIP C	1000PF	K	
C606			CK73GB1H103K	CHIP C	0.010UF	K	
C607			CK73GB1H102K	CHIP C	1000PF	K	
C608			CK73FB1H103K	CHIP C	0.010UF	K	
C609			CK73GB1H102K	CHIP C	1000PF	K	
C610			CC73FCH1H330J	CHIP C	33PF	J	
C611			CC73FCH1H680D	CHIP C	6.0PF	D	
C612			CC73FCH1H680J	CHIP C	68PF	J	
C614			CE04EW1H2R2M	ELECTRO	2.2UF	50WV	

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Ref. No.	Address	New parts	Parts No.	Description		Destination
C615			CK73FB1H102K	CHIP C 1000PF	K	
C616			CC73GCH1H181J	CHIP C 180PF	J	
C617			CC73GCH1H100D	CHIP C 10PF	D	
C618			CC73GCH1H221J	CHIP C 220PF	J	
C619			CC73GCH1H220J	CHIP C 22PF	J	
C620			CC73GCH1H151J	CHIP C 150PF	J	
C621			CK73GB1H103K	CHIP C 0.010UF	K	
C623-625			CK73GB1H103K	CHIP C 0.010UF	K	
C626			CK73FB1H103K	CHIP C 0.010UF	K	
C627			CK73GF1E104Z	CHIP C 0.10UF	Z	
C629			CK73GB1H103K	CHIP C 0.010UF	K	
C630			CC73GCH1H220J	CHIP C 22PF	J	
C631			CC73GCH1H151J	CHIP C 150PF	J	
C632			CK73GB1E223K	CHIP C 0.022UF	K	
C633			CC73GCH1H101J	CHIP C 100PF	J	
C634,635			CK73FB1H103K	CHIP C 0.010UF	K	
C636			CE04EW1C100M	ELECTRO 10UF	16WV	
C637			CC73HCH1H100D	CHIP C 10PF	D	
C638			CC73FCH1H390J	CHIP C 39PF	J	
C639			CC73FCH1H151J	CHIP C 150PF	J	
C640			CC73FCH1H390J	CHIP C 39PF	J	
C641			CK73FB1H103K	CHIP C 0.010UF	K	
C642			CC73FCH1H050C	CHIP C 5.0PF	C	
C643,644			CK73FB1H103K	CHIP C 0.010UF	K	
C645			CK73FB1H102K	CHIP C 1000PF	K	
C646			CK73FB1H103K	CHIP C 0.010UF	K	
C647			CK73FB1H102K	CHIP C 1000PF	K	
C648,649			CK73FB1H103K	CHIP C 0.010UF	K	
C650			CE04EW1C100M	ELECTRO 10UF	16WV	
C651,652			CC73GCH1H150J	CHIP C 15PF	J	
C653-658			CC73FCH1H221J	CHIP C 220PF	J	
C660			CK73GB1H103K	CHIP C 0.010UF	K	
C663			CC73FCH1H221J	CHIP C 220PF	J	
C668			CK73FB1H223K	CHIP C 0.022UF	K	
C669			CE04EW1A221M	ELECTRO 220UF	10WV	
C670			CK73FB1H103K	CHIP C 0.010UF	K	
C671			CC73GCH1H390J	CHIP C 39PF	J	
C672			CK73FB1H102K	CHIP C 1000PF	K	
C673			CC73GCH1H150J	CHIP C 15PF	J	
C674			CK73GB1H102K	CHIP C 1000PF	K	
C675			CC73GCH1H090D	CHIP C 9.0PF	D	
C676			CC73GCH1H100D	CHIP C 10PF	D	
C677			CC73GCH1H180J	CHIP C 18PF	J	
C678,679			CK73GB1H102K	CHIP C 1000PF	K	
C680			CC73GCH1H050C	CHIP C 5.0PF	C	
C681			CC73GCH1H330J	CHIP C 33PF	J	
C682			CK73FB1H102K	CHIP C 1000PF	K	
C683			CC73GCH1H100D	CHIP C 10PF	D	
C684			CK73GB1H102K	CHIP C 1000PF	K	
C685			CC73GCH1H070D	CHIP C 7.0PF	D	
C686			CC73GCH1H090D	CHIP C 9.0PF	D	
C687			CC73GCH1H160J	CHIP C 16PF	J	
C688,689			CK73GB1H102K	CHIP C 1000PF	K	
C690			CC73GCH1H050C	CHIP C 5.0PF	C	
C691			CC73GCH1H200J	CHIP C 20PF	J	
C692			CK73FB1H102K	CHIP C 1000PF	K	
C693			CC73GCH1H100D	CHIP C 10PF	D	
C694			CK73GB1H102K	CHIP C 1000PF	K	

Ref. No.	Address	New parts	Parts No.	Description		Destination
C695			CC73GCH1H050C	CHIP C 5.0PF	C	
C696			CC73GCH1H080D	CHIP C 8.0PF	D	
C697			CC73GCH1H120J	CHIP C 12PF	J	
C698,699			CK73GB1H102K	CHIP C 1000PF	K	
C700			CC73GCH1H050C	CHIP C 5.0PF	C	
C701-704			CK73GB1H102K	CHIP C 1000PF	K	
C705			CC73GCH1H391J	CHIP C 390PF	J	
C706			CC73GCH1H270J	CHIP C 27PF	J	
C707			CK73FB1H103K	CHIP C 0.010UF	K	
C709			CC73GCH1H180J	CHIP C 18PF	J	
C710			CK73FB1H102K	CHIP C 1000PF	K	
C711			CK73GB1H103K	CHIP C 0.010UF	K	
C712			C92-0001-05	CHIP-TAN 0.10UF	35WV	
C713			CC73GCH1H020C	CHIP C 2.0PF	C	
C714			CK73FB1H103K	CHIP C 0.010UF	K	
C715			CK73GB1H102K	CHIP C 1000PF	K	
C800			CK73FB1H103K	CHIP C 0.010UF	K	
C801			CC73GCH1H060D	CHIP C 6.0PF	D	
C802			CK73GB1H103K	CHIP C 0.010UF	K	
C804			CK73GB1H103K	CHIP C 0.010UF	K	
C805			C92-0003-05	CHIP-TAN 0.47UF	25WV	
C806,807			CK73FB1H103K	CHIP C 0.010UF	K	
C808			C92-0003-05	CHIP-TAN 0.47UF	25WV	
C810			CK73FB1H103K	CHIP C 0.010UF	K	
C811			CK73GB1H102K	CHIP C 1000PF	K	
C812			CC73GCH1H100D	CHIP C 10PF	D	
C813,814			CK73GB1H103K	CHIP C 0.010UF	K	
C815,816			CK73FB1H103K	CHIP C 0.010UF	K	
C817			C92-0004-05	CHIP-TAN 1.0UF	16WV	
C818			CE04EW1A101M	ELECTRO 100UF	10WV	
C819			CK73FB1H103K	CHIP C 0.010UF	K	
C900,901			CC73GCH1H101J	CHIP C 100PF	J	
C902			CE04EW1A101M	ELECTRO 100UF	10WV	
C903,904			CK73F1C105Z	CHIP C 1.0UF	Z	
C905			CE04EW1C100M	ELECTRO 10UF	16WV	
C906			CK73GB1H102K	CHIP C 0.010UF	K	
C907			CE04EW1A101M	ELECTRO 100UF	10WV	
C908			CK73GB1E223K	CHIP C 0.022UF	K	
C909			CK73GB1H102K	CHIP C 1000PF	K	
C910			CK73F1C105Z	CHIP C 1.0UF	Z	
TC501			C05-0355-05	TRIM CAP 30P		
TC502-505			C05-0345-05	TRIM CAP 10P		
CN1 -3			E04-0154-05	PIN SOCKET RAT		
CN4			E40-0211-05	PIN ASSY MCF ADJ(IN		
CN7			E40-0211-05	PIN ASSY MCF ADJ(IN		
CN9, 10			E40-0237-05	PIN ASSY CAR		
CN11			E40-3238-05	PIN ASSY PH		
CN12			E40-3240-05	PIN ASSY MIC SPO		
CN13			E40-3239-05	PIN ASSY SEL(MIC AF)		
CN14		*	E40-5797-05	FLAT CABLE CONNECTOR		
CN15		*	E40-5765-05	FLAT CABLE CONNECTOR		
CN19			E04-0154-05	PIN SOCKET		
CN500		*	E40-5764-05	FLAT CABLE CONNECTOR		
CN501,502			E04-0154-05	PIN SOCKET		
CN503			E40-3237-05	PIN ASSY		
J1			E06-6656-05	DIN SOCKET ACC1		
J2		*	E06-6407-05	DIN SOCKET ACC2		
J3 ,4			E13-0166-05	PHONO JACK RELAY		

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I. No.	Address	New parts	Parts No.	Description	Desti-nation
			E11-0414-05	PHONE JACK EXT SP	
			E11-0438-05	PHONE JACK KEY	
	3B	*	E37-0505-05	LEAD WIRE WITH CONNECTOR NB	
	3B	*	E37-0485-05	LEAD WIRE WITH MINIPIN PLUG	
	3B	*	E37-0496-05	LEAD WIRE WITH MINIPIN PLUG	
	3G	*	E37-0507-05	LEAD WIRE WITH CONNECTOR CAR	
			F53-0055-05	FUSE 0.8A	
		*	G13-1493-04	CUSHION VCO	
			J30-0545-05	SPACER XF1	
001			L72-0281-05	CERAMIC FILTER 10.7MHz	
			L40-2785-48	SMALL FIXED INDUCTOR 270nH	
,4			L33-0695-05	SMALL FIXED INDUCTOR 1.0mH	
			L40-5695-48	SMALL FIXED INDUCTOR 5.6UH	
			L33-0695-05	SMALL FIXED INDUCTOR 1.0mH	
,8			L40-6855-48	SMALL FIXED INDUCTOR 6.8UH	
			L40-1805-48	SMALL FIXED INDUCTOR 1.8UH	
			L40-6805-48	SMALL FIXED INDUCTOR 6.8UH	
			L40-1895-48	SMALL FIXED INDUCTOR 1.8UH	
		*	L40-1295-48	SMALL FIXED INDUCTOR 1.2UH	
			L40-5605-48	SMALL FIXED INDUCTOR 5.6UH	
		*	L40-1505-48	SMALL FIXED INDUCTOR 1.5UH	
			L40-8285-48	SMALL FIXED INDUCTOR 820nH	
			L40-2792-18	SMALL FIXED INDUCTOR 2.7UH	
			L40-8285-48	SMALL FIXED INDUCTOR 820nH	
			L40-4785-48	SMALL FIXED INDUCTOR 470nH	
			L40-2792-18	SMALL FIXED INDUCTOR 2.7UH	
			L40-4785-48	SMALL FIXED INDUCTOR 470nH	
			L40-2785-48	SMALL FIXED INDUCTOR 270nH	
			L40-1895-48	SMALL FIXED INDUCTOR 1.8UH	
			L40-2785-48	SMALL FIXED INDUCTOR 270nH	
			L40-2285-48	SMALL FIXED INDUCTOR 220nH	
		*	L40-1295-48	SMALL FIXED INDUCTOR 1.2UH	
			L40-2285-48	SMALL FIXED INDUCTOR 220nH	
			L40-1505-48	SMALL FIXED INDUCTOR 150nH	
			L40-8285-48	SMALL FIXED INDUCTOR 820nH	
			L40-1585-48	SMALL FIXED INDUCTOR 150nH	
,32			L40-2785-48	SMALL FIXED INDUCTOR 270nH	
			L19-0324-05	TOROIDAL COIL	
			L33-0695-05	SMALL FIXED INDUCTOR 1.0mH	
		*	L40-4705-48	SMALL FIXED INDUCTOR 47UH	
		*	L39-1255-05	TOROIDAL COIL	
		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
		*	L34-4413-05	COIL	
			L19-0324-05	TOROIDAL COIL	
			L40-3305-48	SMALL FIXED INDUCTOR 3.3UH	
			L19-0324-05	TOROIDAL COIL	
,43		*	L34-4408-05	COIL	
		*	L34-4415-05	COIL	
		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
		*	L39-1255-05	COIL	
		*	L34-4408-05	COIL	
		*	L34-4414-05	COIL	
		*	L40-1085-48	SMALL FIXED INDUCTOR 100nH	
		*	L34-4410-05	COIL	
,53		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L56			L40-5695-48	SMALL FIXED INDUCTOR 5.6UH	
L57			L40-1005-48	SMALL FIXED INDUCTOR 10UH	
L58 ,59		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L60		*	L34-4412-05	COIL	
L61		*	L34-4411-05	COIL	
L62		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L63		*	L34-4406-05	COIL	
L64 ,65			L34-4333-05	COIL	
L66		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L67			L34-4333-05	COIL	
L68		*	L39-1255-05	COIL	
L69			L34-4333-05	COIL	
L70			L19-0324-05	TOROIDAL COIL	
L71		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L72			L40-1605-48	SMALL FIXED INDUCTOR 16UH	
L73			L19-0324-05	TOROIDAL COIL	
L74		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L75 ,76		*	L34-4401-05	COIL	
L77 ,78		*	L40-4705-48	SMALL FIXED INDUCTOR 47UH	
L79		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L81			L40-1021-13	SMALL FIXED INDUCTOR 1.0mH	
L82			L33-0695-05	SMALL FIXED INDUCTOR 1.0mH	
L84		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L500-503		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L504			L40-6885-48	SMALL FIXED INDUCTOR 680nH	
L505		*	L40-1085-48	SMALL FIXED INDUCTOR 100nH	
L506			L40-8275-48	SMALL FIXED INDUCTOR 82nH	
L507		*	L40-5675-48	SMALL FIXED INDUCTOR 56nH	
L508		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L509			L40-3395-48	SMALL FIXED INDUCTOR 3.3UH	
L510		*	L40-1585-48	SMALL FIXED INDUCTOR 1.5UH	
L511			L40-2295-48	SMALL FIXED INDUCTOR 2.2UH	
L512			L40-3395-48	SMALL FIXED INDUCTOR 3.3UH	
L513		*	L34-4398-05	COIL	
L514		*	L34-4399-05	COIL	
L515		*	L34-4398-05	COIL	
L516		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L517,518		*	L40-2295-48	SMALL FIXED INDUCTOR 22UH	
L522			L40-3395-48	SMALL FIXED INDUCTOR 3.3UH	
L523		*	L40-3905-48	SMALL FIXED INDUCTOR 3.9UH	
L524			L40-5695-48	SMALL FIXED INDUCTOR 5.6UH	
L525			L40-8295-48	SMALL FIXED INDUCTOR 8.2UH	
L527		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L528,529			L40-1005-48	SMALL FIXED INDUCTOR 10UH	
L530		*	L40-1295-48	SMALL FIXED INDUCTOR 1.2UH	
L531		*	L34-4399-05	COIL	
L532		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L533			L40-2295-48	SMALL FIXED INDUCTOR 22UH	
L534		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L535,536		*	L40-2205-48	SMALL FIXED INDUCTOR 22UH	
L539		*	L34-4401-05	COIL	
L540,541		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L542			L40-1005-48	SMALL FIXED INDUCTOR 10UH	
L543			L40-4705-48	SMALL FIXED INDUCTOR 4.7UH	
L544		*	L40-1015-48	SMALL FIXED INDUCTOR 100UH	
L545		*	L34-4424-05	COIL	
L546			L34-2360-05	COIL	
L547		*	L34-4424-05	COIL	

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Ref. No.	Address	New parts	Parts No.	Description	Destination
L548			L34-2359-05	COIL	
L549		*	L34-4424-05	COIL	
L550			L34-2359-05	COIL	
L551			L40-8285-48	SMALL FIXED INDUCTOR 820nH	
L600			L40-8285-48	SMALL FIXED INDUCTOR 820nH	
L601		*	L40-4705-48	SMALL FIXED INDUCTOR 47UH	
L602,603		*	L34-4401-05	COIL	
L604			L33-0655-05	SMALL FIXED INDUCTOR 1.0mH	
X501			L77-1521-15	CRYSTAL RESONATOR 20MHz	
X502		*	L77-1598-05	CRYSTAL RESONATOR 62.95MHz	
XF1			L71-0432-05	CRYSTAL FILTER 73.145MHz	
XF2			L71-0249-05	CRYSTAL FILTER 10.695MHz	
XF3			L71-0433-15	CRYSTAL FILTER 10.695MHz	
B			N30-2604-46	PAN HEAD MACHIN SCREW	
CP500-503			R90-0721-05	MULTI-COMP 4.7KX16	
R1			R92-0679-05	CHIP R 0 OHM	
R2			RK73GB2A101J	CHIP R 100 J 1/10W	
R3			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R4			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R5			RK73FB2A104J	CHIP R 100 J 1/10W	
R6			RK73RB2A222J	CHIP R 2.2K J 1/10W	
R7			RK73FB2A181J	CHIP R 180 J 1/10W	
R8			RK73FB2A101J	CHIP R 100 J 1/10W	
R9			RK73EB2B151J	CHIP R 150 J 1/8W	
R10			RK73FB2A330J	CHIP R 33 J 1/10W	
R11			RK73EB2B121J	CHIP R 120 J 1/8W	
R12			RK73FB2A330J	CHIP R 33 J 1/10W	
R13			RK73EB2B121J	CHIP R 120 J 1/8W	
R14			RK73FB2A330J	CHIP R 33 J 1/10W	
R15			RK73EB2B121J	CHIP R 120 J 1/8W	
R16			RK73RB2A330J	CHIP R 33 J 1/10W	
R17			RK73EB2B121J	CHIP R 120 J 1/8W	
R18			RK73FB2A330J	CHIP R 33 J 1/10W	
R19			RK73EB2B121J	CHIP R 120 J 1/8W	
R20			RK73FB2A330J	CHIP R 33 J 1/10W	
R21			RK73EB2B121J	CHIP R 120 J 1/8W	
R22			RK73FB2A330J	CHIP R 33 J 1/10W	
R23			RK73EB2B121J	CHIP R 120 J 1/8W	
R24			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R25			RK73FB2A471J	CHIP R 470 J 1/10W	
R26			RK73FB2A151J	CHIP R 150 J 1/10W	
R27 ,28			RK73GB1J681J	CHIP R 680 J 1/16W	
R29 -32			RK73RB2A100J	CHIP R 10 J 1/10W	
R33			RK73GB1J271J	CHIP R 270 J 1/16W	
R34			RK73FB2A100J	CHIP R 10 J 1/10W	
R35			RK73FB2A221J	CHIP R 220 J 1/10W	
R36			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R37			RK73FB2A101J	CHIP R 100 J 1/10W	
R38			RK73FB2A220J	CHIP R 22 J 1/10W	
R39			RK73FB2A470J	CHIP R 47 J 1/10W	
R40			RK73FB2A391J	CHIP R 390 J 1/10W	
R41			RK73FB2A332J	CHIP R 3.3K J 1/10W	
R42			R92-0678-05	CHIP R 0 OHM	
R43			RK73GB1J474J	CHIP R 470K J 1/16W	
B44			RK73GB1J273J	CHIP R 27K J 1/16W	
B45			RK73GB1J471J	CHIP R 470 J 1/16W	
B46			RK73FB2A104J	CHIP R 100K J 1/10W	
B47			RK73GB1J101J	CHIP R 100 J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R48			R92-1252-05	CHIP R 0 OHM	
R49			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R50			R92-1252-05	CHIP R 0 OHM	
R51 ,52			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R53			RK73FB2A272J	CHIP R 2.7K J 1/10W	
R54			RK73GB1J101J	CHIP R 100 J 1/16W	
R55			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R56			RK73FB2A56OJ	CHIP R 56 J 1/10W	
R57			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R58			RK73FB2A471J	CHIP R 470 J 1/10W	
R59			RK73FB2A220J	CHIP R 22 J 1/10W	
R60			RK73FB2A270J	CHIP R 27 J 1/10W	
R61			RK73FB2A680J	CHIP R 68 J 1/10W	
R62			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R63			RK73GB1J103J	CHIP R 10K J 1/16W	
R64			RK73GB1J681J	CHIP R 680 J 1/16W	
R65			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R66			RK73RB2A102J	CHIP R 1.0K J 1/10W	
R67			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R68			RK73GB1J103J	CHIP R 10K J 1/16W	
R69			RK73GB1J101J	CHIP R 100 J 1/16W	
R70			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R71			RK73GB1J333J	CHIP R 33K J 1/16W	
R72			RK73GB1J101J	CHIP R 100 J 1/16W	
R73			RK73GB1J104J	CHIP R 100K J 1/16W	
R74			RK73GB1J471J	CHIP R 470 J 1/16W	
R75			RK73GB1J223J	CHIP R 22K J 1/16W	
R76			RK73GB1J103J	CHIP R 10K J 1/16W	
R77			RK73GB1J101J	CHIP R 100 J 1/16W	
R78			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R79			RK73GB1J103J	CHIP R 10K J 1/16W	
R80 ,81			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R83			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R85			RK73FB2A221J	CHIP R 220 J 1/10W	
R86			RK73GB1J471J	CHIP R 470 J 1/16W	
R87			RK73FB2A270J	CHIP R 27 J 1/10W	
R88			RK73GB1J101J	CHIP R 100 J 1/16W	
R89			RK73GB1J104J	CHIP R 100K J 1/16W	
R90			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R93			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R94			R92-1252-05	CHIP R 0 OHM	
R95			R92-0670-05	CHIP R 0 OHM	
R96 ,97			RK73FB2A681J	CHIP R 680 J 1/10W	
R98			RK73FB2A101J	CHIP R 100 J 1/10W	
R100			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R101			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R102			RK73FB2A331J	CHIP R 330 J 1/10W	
R103			RK73FB2A101J	CHIP R 100 J 1/10W	
R105			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R106			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R107			RK73FB2A391J	CHIP R 390 J 1/10W	
R108			RK73FB2A101J	CHIP R 100 J 1/10W	
R110			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R111			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R112			RK73FB2A471J	CHIP R 470 J 1/10W	
R113			RK73FB2A101J	CHIP R 100 J 1/10W	
R115			RK73FB2A221J	CHIP R 220 J 1/10W	
R116			RK73FB2A122J	CHIP R 1.2K J 1/10W	

PARTS LIST/零件目录

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L No.	Address	New parts	Parts No.	Description			Destination
17			RK73GB1J333J	CHIP R	33K	J 1/16W	
18			RK73FB2A562J	CHIP R	5.6K	J 1/10W	
19			RK73GB1J473J	CHIP R	47K	J 1/16W	
20			RK73GB1J223J	CHIP R	22K	J 1/16W	
21-123			RK73GB1J473J	CHIP R	47K	J 1/16W	
24			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
25			RK73GB1J330J	CHIP R	33	J 1/16W	
26			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
27			RK73GB1J561J	CHIP R	560	J 1/16W	
28			RK73GB1J682J	CHIP R	6.8K	J 1/16W	
29			RK73GB1J223J	CHIP R	22K	J 1/16W	
30			RK73FB2A331J	CHIP R	330	J 1/10W	
31			RK73GB1J681J	CHIP R	680	J 1/16W	
32			RK73FB2A103J	CHIP R	10K	J 1/10W	
33			RK73FB2A101J	CHIP R	100	J 1/10W	
34			RK73GB1J223J	CHIP R	22K	J 1/16W	
35			RK73GB1J821J	CHIP R	820	J 1/16W	
36			RK73FB2A101J	CHIP R	100	J 1/10W	
37			RB2-0670-05	CHIP R	0 OHM		
38			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
39			RK73FB2A823J	CHIP R	82K	J 1/10W	
40			RK73FB2A103J	CHIP R	10K	J 1/10W	
41			RK73GB1J680J	CHIP R	68	J 1/16W	
42,143			RK73GB1J330J	CHIP R	33	J 1/16W	
44			RK73GB1J680J	CHIP R	68	J 1/16W	
45			RK73FB2A472J	CHIP R	4.7K	J 1/10W	
46,147			RK73GB1J331J	CHIP R	330	J 1/16W	
48,149			RK73GB1J101J	CHIP R	100	J 1/16W	
50			RK73GB1J473J	CHIP R	47K	J 1/16W	
51			RK73FB2A390J	CHIP R	39	J 1/10W	
52			RK73FB2A181J	CHIP R	180	J 1/10W	
53,154			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
55			RK73GB1J103J	CHIP R	10K	J 1/16W	
56			RK73GB1J273J	CHIP R	27K	J 1/16W	
57-160			RK73FB2A330J	CHIP R	33	J 1/10W	
61,162			RB2-1252-05	CHIP R	0 OHM		
163			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
164			RK73GB1J151J	CHIP R	150	J 1/16W	
165			RK73FB2A560J	CHIP R	56	J 1/10W	
166			RK73FB2A820J	CHIP R	82	J 1/10W	
167,168			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
169			RK73GB1J101J	CHIP R	100	J 1/16W	
170			RK73GB1J561J	CHIP R	560	J 1/16W	
171			RK73GB1J330J	CHIP R	33	J 1/16W	
172,173			RK73FB2A330J	CHIP R	33	J 1/10W	
174			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
175			RK73GB1J470J	CHIP R	47	J 1/16W	
176			RK73GB1J104J	CHIP R	100K	J 1/16W	
177			RK73GB1J333J	CHIP R	33K	J 1/16W	
178			RK73FB2A471J	CHIP R	470	J 1/10W	
179			RK73FB2A101J	CHIP R	100	J 1/10W	
180			RK73GB1J223J	CHIP R	22K	J 1/16W	
181			RK73FB2A103J	CHIP R	10K	J 1/10W	
182			RK73FB2A333J	CHIP R	33K	J 1/10W	
183			RK73FB2A104J	CHIP R	100K	J 1/10W	
184			RK73GB1J471J	CHIP R	470	J 1/16W	
185			RK73FB2A101J	CHIP R	100	J 1/10W	
186			RK73FB2A102J	CHIP R	10K	J 1/10W	

Ref. No.	Address	New parts	Parts No.	Description			Destination
R187,188			RK73FB2A221J	CHIP R	220	J 1/10W	
R190			RK73GB1J103J	CHIP R	10K	J 1/16W	
R191			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
R192			RK73GB1J224J	CHIP R	220K	J 1/16W	
R193			RK73GB1J223J	CHIP R	22K	J 1/16W	
R194			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
R195			RK73GB1J101J	CHIP R	100	J 1/16W	
R196			RK73GB1J224J	CHIP R	220K	J 1/16W	
R197			RK73FB2A222J	CHIP R	2.2K	J 1/10W	
R198			RK73GB1J562J	CHIP R	5.6K	J 1/16W	
R199			RK73GB1J471J	CHIP R	470	J 1/16W	
R200			RK73GB1J104J	CHIP R	100K	J 1/16W	
R201			RK73GB1J473J	CHIP R	47K	J 1/16W	
R202			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
R203,204			RK73GB1J224J	CHIP R	220K	J 1/16W	
R205			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
R206			RK73FB2A104J	CHIP R	100K	J 1/10W	
R207			RK73GB1J472J	CHIP R	4.7K	J 1/16W	
R208			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
R209			RK73GB1J224J	CHIP R	220K	J 1/16W	
R210			RB2-1252-05	CHIP R	0 OHM		
R212			RB2-1252-05	CHIP R	0 OHM		
R213			RK73GB1J101J	CHIP R	100	J 1/16W	
R214			RK73GB1J104J	CHIP R	100K	J 1/16W	
R215			RK73GB1J223J	CHIP R	22K	J 1/16W	
R216			RK73GB1J562J	CHIP R	5.6K	J 1/16W	
R217			RK73GB1J222J	CHIP R	2.2K	J 1/16W	
R218			RK73GB1J561J	CHIP R	560	J 1/16W	
R219			RK73GB1J103J	CHIP R	10K	J 1/16W	
R220			RK73FB2A823J	CHIP R	82K	J 1/10W	
R221			RK73GB1J101J	CHIP R	100	J 1/16W	
R222			RK73GB1J105J	CHIP R	1.0M	J 1/16W	
R223			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
R224			RK73FB2A181J	CHIP R	180	J 1/10W	
R225			RK73GB1J101J	CHIP R	100	J 1/16W	
R233			RB2-1252-05	CHIP R	0 OHM		
R235			RK73GB1J473J	CHIP R	47K	J 1/16W	
R236			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
R237			RK73GB1J474J	CHIP R	470K	J 1/16W	
R238,239			RK73GB1J103J	CHIP R	10K	J 1/16W	
R240			RK73GB1J331J	CHIP R	330	J 1/16W	
R241			RK73GB1J393J	CHIP R	39K	J 1/16W	
R242			RK73GB1J104J	CHIP R	100K	J 1/16W	
R243			RK73FB2A823J	CHIP R	82K	J 1/10W	
R244			RK73GB1J104J	CHIP R	100K	J 1/16W	
R245			RK73GB1J472J	CHIP R	4.7K	J 1/16W	
R246			RK73GB1J223J	CHIP R	22K	J 1/16W	
R247			RK73GB1J473J	CHIP R	47K	J 1/16W	
R248			RK73GB1J273J	CHIP R	27K	J 1/16W	
R249			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
R250			RK73GB1J472J	CHIP R	4.7K	J 1/16W	
R251			RK73GB1J221J	CHIP R	220	J 1/16W	
R252			RK73FB2A272J	CHIP R	2.7K	J 1/10W	
R253			RK73GB1J472J	CHIP R	4.7K	J 1/16W	
R254,255			RK73GB1J104J	CHIP R	100K	J 1/16W	
R257			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R258			RK73FB2A184J	CHIP R	180K	J 1/10W	
R259			RK73GB1J101J	CHIP R	100	J 1/16W	
R260			RK73GB1J102J	CHIP R	1.0K	J 1/16W	

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Ref. No.	Address	New parts	Parts No.	Description		Destination
R261			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R262			RK73GB1J332J	CHIP R 3.3K J 1/16W		
R263,264			RK73GB1J224J	CHIP R 220K J 1/16W		
R265			RK73GB1J101J	CHIP R 100 J 1/16W		
R266			RK73GB1J182J	CHIP R 1.8K J 1/16W		
R267			RK73GB1J331J	CHIP R 330 J 1/16W		
R268			RK73GB1J221J	CHIP R 220 J 1/16W		
R269			RK73GB1J224J	CHIP R 220K J 1/16W		
R270			R92-1252-05	CHIP R 0 OHM		
R271			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R272			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R273			RK73FB2A101J	CHIP R 100 J 1/10W		
R274			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R275			RK73GB1J104J	CHIP R 100K J 1/16W		
R276			RK73GB1J224J	CHIP R 220K J 1/16W		
R277			RK73GB1J104J	CHIP R 100K J 1/16W		
R278			RK73FB2A101J	CHIP R 100 J 1/10W		
R279			RK73GB1J103J	CHIP R 10K J 1/16W		
R280			RK73GB1J332J	CHIP R 3.3K J 1/16W		
R281			RK73GB1J622J	CHIP R 6.2K J 1/16W		
R282			RK73GB1J103J	CHIP R 10K J 1/16W		
R283			R92-0670-05	CHIP R 0 OHM		
R284			RK73GB1J103J	CHIP R 10K J 1/16W		
R285			RK73FB2A101J	CHIP R 100 J 1/10W		
R286			RK73GB1J561J	CHIP R 560 J 1/16W		
R287			RK73GB1J223J	CHIP R 22K J 1/16W		
R288			RK73GB1J333J	CHIP R 33K J 1/16W		
R289			RK73GB1J104J	CHIP R 100K J 1/16W		
R290			RK73GB1J101J	CHIP R 100 J 1/16W		
R291			RK73GB1J104J	CHIP R 100K J 1/16W		
R292			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R293			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R294			RK73GB1J474J	CHIP R 470K J 1/16W		
R298			RK73FB2A101J	CHIP R 100 J 1/10W		
R298-309			RK73GB1J103J	CHIP R 10K J 1/16W		
R307			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R308			RK73FB2A473J	CHIP R 47K J 1/10W		
R309,310			RK73FB2A223J	CHIP R 22K J 1/10W		
R311			RK73FB2A471J	CHIP R 470 J 1/10W		
R312,313			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R314,315			RK73GB1J101J	CHIP R 100 J 1/16W		
R316			RK73GB1J822J	CHIP R 8.2K J 1/16W		
R317			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R318			RK73GB1J153J	CHIP R 15K J 1/16W		
R319			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R320			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R321			RK73GB1J103J	CHIP R 10K J 1/16W		
R322,323			RK73GB1J331J	CHIP R 330 J 1/16W		
R324			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R325			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R326,327			RK73GB1J333J	CHIP R 33K J 1/16W		
R328			RK73GB1J822J	CHIP R 8.2K J 1/16W		
R329			RK73GB1J223J	CHIP R 22K J 1/16W		
R330			RK73GB1J101J	CHIP R 100 J 1/16W		
R331			RK73GB1J104J	CHIP R 100K J 1/16W		
R332			RK73FB2A123J	CHIP R 12K J 1/10W		
R333			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R334,335			RK73GB1J681J	CHIP R 680 J 1/16W		

Ref. No.	Address	New parts	Parts No.	Description		Destination
R336			RK73GB1J103J	CHIP R 10K J 1/16W		
R337,338			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R339			RK73GB1J223J	CHIP R 22K J 1/16W		
R340,341			R92-1252-05	CHIP R 0 OHM		
R342			RK73FB2A564J	CHIP R 560K J 1/10W		
R343,344			RK73GB1J104J	CHIP R 100K J 1/16W		
R345			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R346-349			RK73GB1J103J	CHIP R 10K J 1/16W		
R350-355			RK73GB1J101J	CHIP R 100 J 1/16W		
R356			R92-0670-05	CHIP R 0 OHM		
R357			R92-1252-05	CHIP R 0 OHM		
R358			RK73GB1J101J	CHIP R 100 J 1/16W		
R359			RK73GB1J103J	CHIP R 10K J 1/16W		
R360			RK73GB1J221J	CHIP R 220 J 1/16W		
R361			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R362			RK73GB1J272J	CHIP R 2.7K J 1/16W		
R366			R92-1252-05	CHIP R 0 OHM		
R367			RK73FB2A333J	CHIP R 33K J 1/10W		
R368			RK73GB1J473J	CHIP R 47K J 1/16W		
R369			R92-1252-05	CHIP R 0 OHM		
R373			RK73GB1J101J	CHIP R 100 J 1/16W		
R375			RK73GB1J101J	CHIP R 100 J 1/16W		
R376			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R377			RK73GB1J224J	CHIP R 220K J 1/16W		
R378			RK73GB1J104J	CHIP R 100K J 1/16W		
R379,380			RK73GB1J393J	CHIP R 39K J 1/16W		
R381			RK73FB2A684J	CHIP R 680K J 1/10W		
R382			RK73FB2A154J	CHIP R 150K J 1/10W		
R383			RK73GB1J103J	CHIP R 10K J 1/16W		
R384			R92-1252-05	CHIP R 0 OHM		
R385-389			RK73FB2A101J	CHIP R 100 J 1/10W		
R389-393			RK73GB1J104J	CHIP R 100K J 1/16W		
R394			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R395-398			RK73GB1J104J	CHIP R 100K J 1/16W		
R399			RK73GB1J563J	CHIP R 56K J 1/16W		
R400			RK73GB1J153J	CHIP R 15K J 1/16W		
R401			RK73FB2A4R7J	CHIP R 4.7 J 1/10W		
R402			RK73GB1J103J	CHIP R 10K J 1/16W		
R403			RK73GB1J104J	CHIP R 100K J 1/16W		
R404			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R405			RK73FB2A273J	CHIP R 27K J 1/10W		
R406			RK73FB2A101J	CHIP R 100 J 1/10W		
R407			RK73FB2A473J	CHIP R 47K J 1/10W		
R408			RK73FB2A4R7J	CHIP R 4.7 J 1/10W		
R413			R92-0670-05	CHIP R 0 OHM		
R414			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R415			RK73FB2A680J	CHIP R 68 J 1/10W		
R416			RK73GB1J562J	CHIP R 5.6K J 1/16W		
R417			RK73GB1J153J	CHIP R 15K J 1/16W		
R418			RK73GB1J105J	CHIP R 1.0M J 1/16W		
R419			RK73FB2A101J	CHIP R 100 J 1/10W		
R420			RK73GB1J562J	CHIP R 5.6K J 1/16W		
R421,422			R92-0670-05	CHIP R 0 OHM		
R535			RK73GB1J330J	CHIP R 33 J 1/16W		
R536			RK73GB1J562J	CHIP R 5.6K J 1/16W		
R537			RK73GB1J103J	CHIP R 10K J 1/16W		
R538			RK73GB1J330J	CHIP R 33 J 1/16W		
R539			RK73GB1J101J	CHIP R 100 J 1/16W		

PARTS LIST/零件目录

TX-RX UNIT(X57-4660-20)

No.	Address	New parts	Parts No.	Description			Destination
0			RK73GB1J221J	CHIP R	220	J 1/16W	
1			RK73GB1J101J	CHIP R	100	J 1/16W	
2			RK73GB1J471J	CHIP R	470	J 1/16W	
3			RK73FB2A100J	CHIP R	10	J 1/10W	
4			RK73GB1J471J	CHIP R	470	J 1/16W	
5			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
6			RK73GB1J183J	CHIP R	18K	J 1/16W	
7			RK73GB1J122J	CHIP R	1.2K	J 1/16W	
8			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
9			RK73GB1J683J	CHIP R	68K	J 1/16W	
0			RK73FB2A182J	CHIP R	1.8K	J 1/10W	
1			RK73GB1J151J	CHIP R	150	J 1/16W	
2			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
3			RK73FB2A221J	CHIP R	220	J 1/10W	
4			RK73GB1J122J	CHIP R	1.2K	J 1/16W	
5			RK73GB1J331J	CHIP R	330	J 1/16W	
6			RK73GB1J101J	CHIP R	100	J 1/16W	
7			RK73GB1J822J	CHIP R	8.2K	J 1/16W	
8			RK73GB1J272J	CHIP R	2.7K	J 1/16W	
9			RK73GB1J471J	CHIP R	470	J 1/16W	
0			RK73GB1J101J	CHIP R	100	J 1/16W	
1,562			RK73GB1J472J	CHIP R	4.7K	J 1/16W	
3			RK73GB1J101J	CHIP R	100	J 1/16W	
4			RK73FB2A101J	CHIP R	100	J 1/10W	
5			RK73GB1J101J	CHIP R	100	J 1/16W	
6			RK73GB1J471J	CHIP R	470	J 1/16W	
7			RK73GB1J223J	CHIP R	22K	J 1/16W	
8			RK73GB1J103J	CHIP R	10K	J 1/16W	
9			RK73GB1J561J	CHIP R	560	J 1/16W	
0			RK73FB2A103J	CHIP R	10K	J 1/10W	
1			RK73FB2A153J	CHIP R	15K	J 1/10W	
2			RK73FB2A101J	CHIP R	100	J 1/10W	
3			RK73FB2A221J	CHIP R	220	J 1/10W	
4			RK73GB1J102J	CHIP R	1.0K	J 1/16W	
5			RS2-1252-05	CHIP R	0 OHM		
6			RK73GB1J681J	CHIP R	680	J 1/16W	
7			RK73GB1J101J	CHIP R	100	J 1/16W	
8			RK73GB1J391J	CHIP R	390	J 1/16W	
9			RK73GB1J223J	CHIP R	22K	J 1/16W	
0			RK73GB1J103J	CHIP R	10K	J 1/16W	
1			RK73GB1J220J	CHIP R	22	J 1/16W	
2			RK73GB1J101J	CHIP R	100	J 1/16W	
3			RK73GB1J471J	CHIP R	470	J 1/16W	
4			RS2-1252-05	CHIP R	0 OHM		
5			RK73GB1J470J	CHIP R	47	J 1/16W	
6			RK73FB2A222J	CHIP R	2.2K	J 1/10W	
7			RK73GB1J561J	CHIP R	560	J 1/16W	
8			RK73GB1J223J	CHIP R	22K	J 1/16W	
9			RK73GB1J103J	CHIP R	10K	J 1/16W	
0			RK73GB1J101J	CHIP R	100	J 1/16W	
1			RK73GB1J471J	CHIP R	470	J 1/16W	
2			RK73FB2A103J	CHIP R	10K	J 1/10W	
3			RK73FB2A820J	CHIP R	820	J 1/10W	
4			RK73FB2A101J	CHIP R	100	J 1/10W	
5			RK73FB2A473J	CHIP R	47K	J 1/10W	
6			RK73GB1J473J	CHIP R	47K	J 1/16W	
6,599			RK73GB1J101J	CHIP R	100	J 1/16W	
0			RK73FB2A102J	CHIP R	1.0K	J 1/10W	

Ref. No.	Address	New parts	Parts No.	Description			Destination
R601			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R602			RK73GB1J223J	CHIP R	22K	J 1/16W	
R603			RK73GB1J103J	CHIP R	10K	J 1/16W	
R604			RK73GB1J101J	CHIP R	100	J 1/16W	
R605			RK73GB1J471J	CHIP R	470	J 1/16W	
R606			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R607			RK73GB1J223J	CHIP R	22K	J 1/16W	
R608			RK73GB1J103J	CHIP R	10K	J 1/16W	
R609			RK73GB1J101J	CHIP R	100	J 1/16W	
R610			RK73GB1J471J	CHIP R	470	J 1/16W	
R611			RK73GB1J470J	CHIP R	47	J 1/16W	
R612			RK73GB1J123J	CHIP R	12K	J 1/16W	
R613			RK73FB2A472J	CHIP R	4.7K	J 1/10W	
R615			RK73FB2A681J	CHIP R	680	J 1/10W	
R616			RK73FB2A103J	CHIP R	10K	J 1/10W	
R617			RK73FB2A153J	CHIP R	15K	J 1/10W	
R618			RK73FB2A101J	CHIP R	100	J 1/10W	
R619			RK73FB2A221J	CHIP R	220	J 1/10W	
R620			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
R621			RS2-1252-05	CHIP R	0 OHM		
R622			RK73GB1J681J	CHIP R	680	J 1/16W	
R623			RK73GB1J223J	CHIP R	22K	J 1/16W	
R624			RK73GB1J103J	CHIP R	10K	J 1/16W	
R625			RK73GB1J101J	CHIP R	100	J 1/16W	
R626			RK73GB1J471J	CHIP R	470	J 1/16W	
R627			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R628			RK73GB1J101J	CHIP R	100	J 1/16W	
R629			RK73GB1J271J	CHIP R	270	J 1/16W	
R630			RK73GB1J821J	CHIP R	820	J 1/16W	
R631			RK73GB1J104J	CHIP R	100K	J 1/16W	
R632			RK73FB2A223J	CHIP R	22K	J 1/10W	
R633			RK73FB2A103J	CHIP R	10K	J 1/10W	
R634			RK73FB2A222J	CHIP R	2.2K	J 1/10W	
R635			RK73FB2A101J	CHIP R	100	J 1/10W	
R636,637			RK73FB2A473J	CHIP R	47K	J 1/10W	
R638,639			RK73FB2A101J	CHIP R	100	J 1/10W	
R640			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
R641			RK73FB2A681J	CHIP R	680	J 1/10W	
R642			RK73FB2A101J	CHIP R	100	J 1/10W	
R643			RK73FB2A471J	CHIP R	470	J 1/10W	
R644			RK73FB2A681J	CHIP R	680	J 1/10W	
R645			RK73FB2A101J	CHIP R	100	J 1/10W	
R646			RK73FB2A471J	CHIP R	470	J 1/10W	
R647			RK73FB2A271J	CHIP R	270	J 1/10W	
R648			RK73FB2A184J	CHIP R	180K	J 1/10W	
R649			RK73FB2A102J	CHIP R	1.0K	J 1/10W	
R650			RS2-1252-05	CHIP R	0 OHM		
R651-659			RK73GB1J101J	CHIP R	100	J 1/16W	
R661			RK73GB1J682J	CHIP R	6.8K	J 1/16W	
R662			RK73GB1J271J	CHIP R	270	J 1/16W	
R663			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R665			RK73GB1J682J	CHIP R	6.8K	J 1/16W	
R666			RK73GB1J271J	CHIP R	270	J 1/16W	
R667			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R668			RK73GB1J682J	CHIP R	6.8K	J 1/16W	
R670			RK73GB1J271J	CHIP R	270	J 1/16W	
R671,672			RK73GB1J332J	CHIP R	3.3K	J 1/16W	
R673,674			RK73GB1J472J	CHIP R	4.7K	J 1/16W	

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PARTS LIST/零件目录

TX-RX UNIT(X57-4660-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R675			RK73GB1J470J	CHIP R 47 J 1/16W	
R676			RK73GB1J471J	CHIP R 470 J 1/16W	
R677			RK73FB2A223J	CHIP R 22K J 1/10W	
R678			R92-1252-05	CHIP R 0 OHM	
R680			RK73FB2A103J	CHIP R 10K J 1/10W	
R681			RK73GB1J561J	CHIP R 560 J 1/16W	
R682,683			RD1/4C2C100J	RD 10 J 1/6W	
R684-686			RK73GB1J101J	CHIP R 100 J 1/16W	
R687			RK73GB1J681J	CHIP R 680 J 1/16W	
R688			RK73GB1J123J	CHIP R 12K J 1/16W	
R689			RK73GB1J103J	CHIP R 10K J 1/16W	
R690			RK73GB1J561J	CHIP R 560 J 1/16W	
R800			RK73FB2A221J	CHIP R 220 J 1/10W	
R801			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R802			RK73GB1J103J	CHIP R 10K J 1/16W	
R803			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R804			RK73GB1J223J	CHIP R 22K J 1/16W	
R805			RK73FB2A333J	CHIP R 33K J 1/10W	
R806			RK73GB1J683J	CHIP R 68K J 1/16W	
R807			RK73GB1J103J	CHIP R 10K J 1/16W	
R808			RK73FB2A103J	CHIP R 10K J 1/10W	
R809			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R810			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R811			RK73GB1J333J	CHIP R 33K J 1/16W	
R812			RK73FB2A221J	CHIP R 220 J 1/10W	
R813			RK73FB2A103J	CHIP R 10K J 1/10W	
R814			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R815			RK73GB1J563J	CHIP R 56K J 1/16W	
R816			RK73GB1J101J	CHIP R 100 J 1/16W	
R817			RK73GB1J681J	CHIP R 680 J 1/16W	
R818			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R819			R92-1252-05	CHIP R 0 OHM	
R820-823			R92-0679-05	CHIP R 0 OHM	
R900			RK73GB1J103J	CHIP R 10K J 1/16W	
R901			RK73GB1J101J	CHIP R 100 J 1/16W	
R902			RK73GB1J104J	CHIP R 100K J 1/16W	
R903			RK73GB1J223J	CHIP R 22K J 1/16W	
R904			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R905			RK73GB1J561J	CHIP R 560 J 1/16W	
R906			RK73GB1J103J	CHIP R 10K J 1/16W	
R907			RK73GB1J101J	CHIP R 100 J 1/16W	
R908			RK73GB1J104J	CHIP R 100K J 1/16W	
R909,910			RK73GB1J103J	CHIP R 10K J 1/16W	
R911,912			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R913			RK73GB1J103J	CHIP R 10K J 1/16W	
R915			RK73GB1J103J	CHIP R 10K J 1/16W	
R916			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R917			RK73GB1J474J	CHIP R 470K J 1/16W	
R918			RK73GB1J103J	CHIP R 10K J 1/16W	
R919			RK73GB1J471J	CHIP R 470 J 1/16W	
R920			RK73FB2A103J	CHIP R 10K J 1/10W	
VR1			R12-5711-05	TRIM POT 4.7k	
VR2			R12-5717-05	TRIM POT 47k	
VR3			R12-5707-05	TRIM POT 1.0k	
VR4			R12-5717-05	TRIM POT 47k	
VR6-8			R12-5713-05	TRIM POT 10k	
VR9,10			R12-5744-05	TRIM POT 47k	
VR11			R12-5740-05	TRIM POT 10k	

Ref. No.	Address	New parts	Parts No.	Description	Destination
VR12			R12-5713-05	TRIM POT 10k	
VR14			R12-5744-05	TRIM POT 47k	
VR590			R12-3127-05	TRIM POT 10k	
VR601			R12-1084-05	TRIM POT 1.0k	
VR602			R12-3127-05	TRIM POT 10k	
D1			V09(G)	DIODE	
D2 ,3			RLS245	DIODE	
D4			V09(G)	DIODE	
D5			1SV128	DIODE	
D6			LF601	DIODE	
D7 -26			RLS135	DIODE	
D27 -29			1SS355	DIODE	
D30 ,31			DAN235K	DIODE	
D32			DAP238K	DIODE	
D33			RLS135	DIODE	
D34			DAN235K	DIODE	
D35			RLS135	DIODE	
D36			DAP238K	DIODE	
D37			DAN235K	DIODE	
D38 -43			DAP238K	DIODE	
D44			1SS355	DIODE	
D47			1SS355	DIODE	
D48		*	RN731H	DIODE	
D49			1SS355	DIODE	
D50			RLS135	DIODE	
D51			LF601	DIODE	
D52 -55			HSM88AS	DIODE	
D56			RLS135	DIODE	
D59			HSM88AS	DIODE	
D60 ,61			1SS355	DIODE	
D63			HSM88AS	DIODE	
D64			1SS226	DIODE	
D65			RD6.2M(B2)	ZENER DIODE/6.2V	
D66			RLS245	DIODE	
D68		*	RD3.6M(B2)	ZENER DIODE/3.6V	
D69 ,70			1SS355	DIODE	
D71			RD12M(B2)	ZENER DIODE/12V	
D72			1SS355	DIODE	
D73			HSM88AS	DIODE	
D75			RD3.3M(B2)	ZENER DIODE/3.3V	
D76			HSM88AS	DIODE	
D79			1SS355	DIODE	
D80			RD4.7M(B2)	ZENER DIODE/4.7V	
D81 -87			1SS355	DIODE	
D88			RD4.7M(B2)	ZENER DIODE/4.7V	
D500,501			1SS355	DIODE	
D502			1SV168	VARI-CAP DIODE	
D503			RLS135	DIODE	
D504			1SV168	VARI-CAP DIODE	
D505			RLS135	DIODE	
D506			1SV168	VARI-CAP DIODE	
D507			RLS135	DIODE	
D900			HSM278S	DIODE	
D900-902			1SS355	DIODE	
IC1		*	BUM066BCFV	IC(ANALOG SWITCH X4)	
IC2			NJM2904M	IC(DP AMP X2)	
IC3		*	BUM056BCFV	IC(ANALOG SWITCH X4)	
IC4		*	UPC1037GR	IC(BALANCED MODULATOR)	
IC6		*	TA8184F	IC(VOLUME CONTROL X2)	

PARTS LIST/零件目录

TX-RX UNIT(X57-4660-20)
LCD ASSY (B38-0739-05)

No.	Address	New parts	Parts No.	Description	Destination
			LA4446	IC(AF POWER AMP)	
			TC4S66F	IC(BILATERAL SWITCH)	
			UPC1318HA	IC(PRE AMP)	
			UPD4053S	IC(I/O EXPANDER)	
			TA78L05F	IC(5V VOLTAGE REGULATOR)	
			NJM2904M	IC(OP AMP X2)	
			MB2363FP	IC(5ch D/A CONVERTER)	
			NJM2904M	IC(OP AMP X2)	
.16			TC9174F	IC(CMOS I/O EXTENSION)	
0,501			F7I402	IC(DDS)	
2		*	MB86801PF	IC(PLL SYNTHESIZER)	
3			SN76514N	IC(MIXER)	
4		*	UPC1037GR	IC(BALANCED MODULATOR)	
5		*	UPC1686G	IC(MIX)	
6		*	UPC1037GR	IC(BALANCED MODULATOR)	
8			TC4S66F	IC(BILATERAL SWITCH)	
0			NJM2904M	IC(OP AMP X2)	
1		*	TC4001BFS	IC(NOR GATE X4)	
			2SD1757K	TRANSISTOR	
			2SA1213(Y)	TRANSISTOR	
			DTC143TK	DIGITAL TRANSISTOR	
-9			2SK520(K44)	FET	
			3SK131(M)	FET	
.12			2SK508(K43)	FET	
			2SC2954	TRANSISTOR	
			DTA124EK	DIGITAL TRANSISTOR	
		*	FMG3A	DIGITAL TRANSISTOR	
			2SA1213(Y)	TRANSISTOR	
			RU201	TRANSISTOR	
			3SK131(M)	FET	
.21			2SC2712(Y)	TRANSISTOR	
			FMC2	DIGITAL TRANSISTOR	
			2SC2712(Y)	TRANSISTOR	
-28			3SK131(M)	FET	
			2SC2954	TRANSISTOR	
.31			3SK131(M)	FET	
-35			2SC2712(Y)	TRANSISTOR	
			DTC114EK	DIGITAL TRANSISTOR	
			DTC114EK	DIGITAL TRANSISTOR	
			2SC2712(Y)	TRANSISTOR	
		*	2SK208(GR)	FET	
			DTC114EK	DIGITAL TRANSISTOR	
			DTA124EK	DIGITAL TRANSISTOR	
			2SC2712(Y)	TRANSISTOR	
			2SD1757K	TRANSISTOR	
.51			2SC2712(Y)	TRANSISTOR	
			DTC114EK	DIGITAL TRANSISTOR	
.55			2SC2712(Y)	TRANSISTOR	
			2SA1162(Y)	TRANSISTOR	
			2SC2712(Y)	TRANSISTOR	
			2SC3649(S,T)	TRANSISTOR	
			2SD1624(S)	TRANSISTOR	
-63			2SC2712(Y)	TRANSISTOR	
		*	2SK208(GR)	FET	
			2SC2712(Y)	TRANSISTOR	
.68			DTC114EK	DIGITAL TRANSISTOR	
			FMC1	DIGITAL TRANSISTOR	
			DTC143TK	DIGITAL TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q71			2SA1213(Y)	TRANSISTOR	
Q72		*	FMG3A	DIGITAL TRANSISTOR	
Q74			2SA1213(Y)	TRANSISTOR	
Q75			2SC2712(Y)	TRANSISTOR	
Q76			DTA124EK	DIGITAL TRANSISTOR	
Q77 ,78			FMA5	DIGITAL TRANSISTOR	
Q79			2SC2712(Y)	TRANSISTOR	
Q80			DTA114EK	DIGITAL TRANSISTOR	
Q81 -83			DTC114EK	DIGITAL TRANSISTOR	
Q507			2SC2714(Y)	TRANSISTOR	
Q508-510			2SC2722(R)	TRANSISTOR	
Q511			2SC2714(Y)	TRANSISTOR	
Q512			2SC2712(Y)	TRANSISTOR	
Q513			2SC2714(Y)	TRANSISTOR	
Q514			2SC2712(GR)	TRANSISTOR	
Q515,516			2SC2712(Y)	TRANSISTOR	
Q517-521			2SC2714(Y)	TRANSISTOR	
Q522			2SC2712(GR)	TRANSISTOR	
Q523			2SC2712(Y)	TRANSISTOR	
Q524-526			2SC2714(Y)	TRANSISTOR	
Q527,528			2SC2999(Y)	TRANSISTOR	
Q529			2SC2712(Y)	TRANSISTOR	
Q530			DTC114EK	DIGITAL TRANSISTOR	
Q531			2SK596NV(K52)	FET	
Q532			DTC114EK	DIGITAL TRANSISTOR	
Q533			2SK508NV(K52)	FET	
Q534			DTC114EK	DIGITAL TRANSISTOR	
Q535			2SK508NV(K52)	FET	
Q536			2SC2714(Y)	TRANSISTOR	
Q800			DTC114EK	DIGITAL TRANSISTOR	
Q801,802			2SC2714(Y)	TRANSISTOR	
Q803			2SC2712(Y)	TRANSISTOR	
Q804			2SC2714(Y)	TRANSISTOR	
Q805			2SC2712(Y)	TRANSISTOR	
Q806			2SC2714(Y)	TRANSISTOR	
Q807			DTA114EK	DIGITAL TRANSISTOR	
Q808			DTC114EK	DIGITAL TRANSISTOR	
Q900,901			2SC2712(Y)	TRANSISTOR	
Q902			DTA114EK	DIGITAL TRANSISTOR	
Q903			DTC114EK	DIGITAL TRANSISTOR	
TH1			157-502-53002	THERMISTOR 5K	
TH2			157-501-53009	THERMISTOR 500	
TH3			157-302-53008	THERMISTOR 3K	
TH4			157-102-53003	THERMISTOR 1K	
TH5			157-302-53008	THERMISTOR 3K	
TH6			157-502-53002	THERMISTOR 5K	
TH7			157-103-55001	THERMISTOR 10k	
TH8 ,9			157-102-53003	THERMISTOR 1K	
TH10			157-502-53002	THERMISTOR 5K	
TH11		*	157-104-53001	THERMISTOR 100k	

LCD ASSY(B38-0739-05)

PL1 -5			B30-2147-08	PILOT LAMP	
C1			CK73FB1H103K	CHIP C 0.010UF K	
C2			CS2-0042-05	CHIP-ELE 22UF 10WV	
C3			CK73FB1H103K	CHIP C 0.010UF K	
C4 ,5			CK73FB1H102K	CHIP C 1000PF K	
C6 -10			CK73FB1H103K	CHIP C 0.010UF K	

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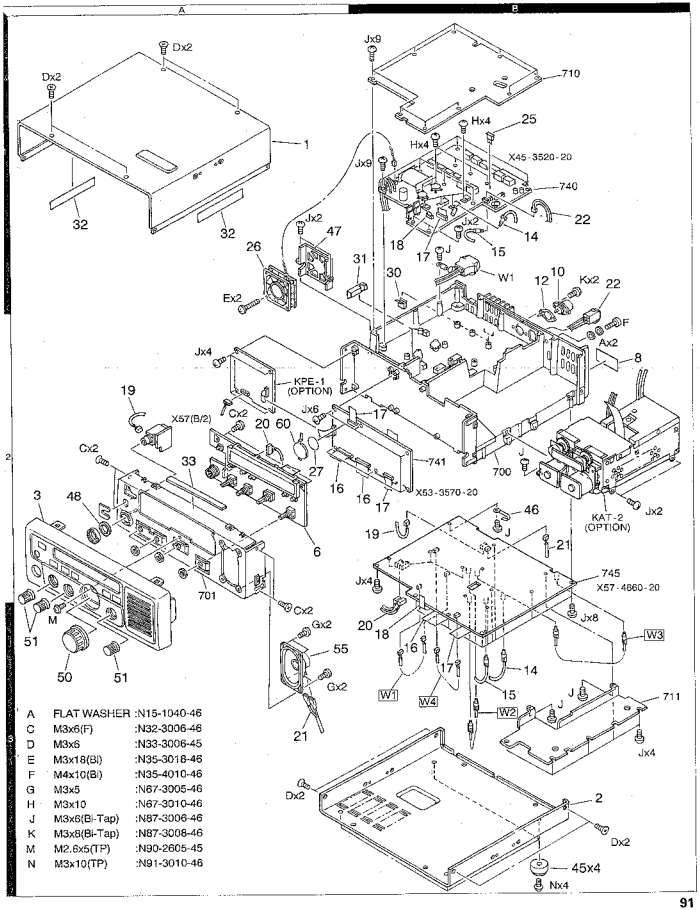
PARTS LIST/零件目录

LCD ASSY (B38-0739-05)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C11			C92-0034-05	CHIP-ELE 220UF 25WV	
C12 ,13			CK73F1H104Z	CHIP C 0.10UF Z	
C14 -19			CK73FB1H103K	CHIP C 0.010UF K	
C23			C92-0040-05	CHIP-ELE 47UF 16WV	
-			E23-0623-04	EARTH LUG	
CN1			E40-5797-05	CONNECTOR	
CN2			E40-3240-05	CONNECTOR	
J1			E06-0856-15	RF COAXIAL RECEPTACLE	
L1 ,2			L40-1011-18	SMALL FIXED INDUCTOR 100mH	
L3			L40-1001-18	SMALL FIXED INDUCTOR 10mH	
R1 ,2			RK73FB2A473J	CHIP R 47K J 1/10W	
R3			RK73FB2A104J	CHIP R 100K J 1/10W	
R4			RK73FB2A125J	CHIP R 1.2M J 1/10W	
R5 ,6			RK73FB2A223J	CHIP R 22K J 1/10W	
R7			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R8			RK73FB2A101J	CHIP R 100 J 1/10W	
R9			RK73FB2A153J	CHIP R 15K J 1/10W	
R10			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R11			RK73FB2A101J	CHIP R 100 J 1/10W	
R12			RK73FB2A153J	CHIP R 15K J 1/10W	
R13 -15			RK73FB2A101J	CHIP R 100 J 1/10W	
R21 -23			R92-1240-05	CHIP R 10 J 1/4W	
R24 -27			RK73FB2A470J	CHIP R 47 J 1/10W	
R28 ,29			RK73FB2A122J	CHIP R 1.2K J 1/10W	
R30 -32			RS2-0670-05	CHIP R 0 OHM	
R34			RK73FB2A392J	CHIP R 3.9K J 1/10W	
R35			RK73EB2A332J	CHIP R 3.3K J 1/10W	
R36 ,37			RS2-1257-05	CHIP R 10 J 1W	
VR1		*	R31-0610-05	POTEMTIOMETER VOL	
VR2		*	R31-0609-05	POTEMTIOMETER CLA	
VR3		*	R31-0610-05	POTEMTIOMETER SQL	
S2 -7			S40-1428-05	PUSH SWITCH	
D2			IMN10	DIODE	
IC1			MSM5265GS-V1K	IC(LCD DRIVER)	
IC2			TA7809F	IC(VOLTAGE REGURATOR/ +9V)	
LCD1			SLU10068-01	LCD	
S1		*	W02-1873-05	ENCODER	

EXPLODED VIEW/ 外观



A	FLAT WASHER	:N15-1040-46
C	M3x6(F)	:N32-3006-46
D	M3x6	:N33-3006-45
E	M3x18(Bi)	:N35-3018-46
F	M4x10(Bi)	:N35-4010-46
G	M3x5	:N67-3005-46
H	M3x10	:N67-3010-46
J	M3x6(Bi-Tap)	:N87-3006-46
K	M3x8(Bi-Tap)	:N87-3008-46
M	M2.6x5(TP)	:N90-2605-45
N	M3x10(TP)	:N91-3010-46

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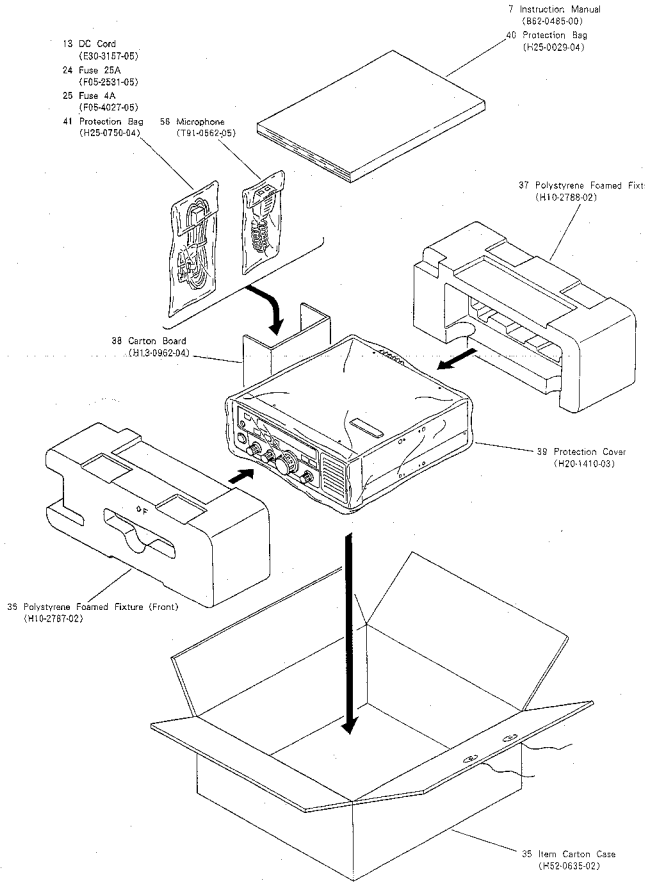
PACKING/ 包装



ADJUSTMENT/ 调整

Required Test Equipment

1. Stabilized Power supply
1). The supply voltage can be changed between 5V and 18V, and the current is 30A or more.
2). The standard voltage is 13.6V.

2. DC Ammeter
1). Class 1 ammeter (17 ranges and other features).
2). The full scale can be set to either 3A or 30A.
3). A cable of less internal loss must be used.

3. Frequency Counter (f. counter)
1). Frequencies of up to 1GHz or so can be measured.
2). The sensitivity can be changed to 500MHz or below, and measurements are highly stable and accurate(0.2ppm or so).

4. Power Meter
1). Measurable frequency : Up to 500MHz
2). Impedance : 50Ω, unbalanced
3). Measuring range : Full scale of 150W or so
4). A standard cable(5D2W 1m) must be used.

5. RF VTVM (RF V.M)
1).Measurable frequency : Up to 500Hz or so

6. Digital Voltmeter(D.V.M)
1). Voltage range : FS = 18V or so
2). Input resistance : 1MΩ or more

7. Oscilloscope
1). Measuring range : DC to 100MHz
2). Provides highly accurate measurements for 5 to 25MHz.

8. AF Voltmeter (AF V.M)
1). Measurable frequency : 50Hz to 1MHz
2). Maximum sensitivity : 1mV or more

9. AF Generator (AG)
1). Frequency range : 200Hz to 5kHz
2). Output : 1mV or less to 1V, low distortion

10. Spectrum Analyzer
1). Measuring range : DC to 1GHz or more

11. Standard Signal Generator (SSG)
1). Maximum frequency : 500MHz or more
2). Output : -20dB/0.1μV to 120dB/1V
3). Output impedance : 50Ω

12. Tracking Generator
1). Center frequency : 50kHz to 500MHz
2). Frequency deviation : ±35MHz
3). Output voltage : 100mV or more

13. Dummy Load (DM)
1). AF Dummy 4Ω, 5W or more
2). RF Dummy 150Ω, 150W or more

14. Directional Coupler
- Use a non-conductive rod such as a Bakelite rod for adjustment (especially of trimmers and coils).
- To protect the SSG, do not send out signals while adjusting the receiving unit.
- The indicated SSG output levels are for maximum output.

所需测试仪器

1．稳压电源
1）．输出电压可在5V与8V之间调整，并且电流是30A或更大。
2）．标准电压是13.6V。

2．
1）．1级电流表(17量程和其他特性)。
2）．满刻度能被设定到3A和30A。
3）．必须使用低损耗电缆。

3．频率计
1）．可测量最高达到1GHz左右的频率。
2）．灵敏度能被改变到500MHz或更低，并且具有高稳定度和精确度(0.2ppm左右)。

4．功率表
1）．频率范围：最高达到500MHz。
2）．阻抗：50Ω，非平衡式。
3）．量程：150W左右的满刻度。
4）．必须使用标准导线(5D2W1m)。

5．射频电子管电压表(射频电压表)
1）．频率范围：最高达到500MHz左右。

6．数字式电压表
1）．电压量程：FS＝18V左右。
2）．输入电阻：1MΩ或更大。

7．示波器
1）．量程：DC到100MHz。
2）．为5至25MHz提供高度地精确的测量。

8．音频电压表(音频电子管电压表)
1）．频率范围：50Hz至1MHz。
2）．最大灵敏度：1mV或更高。

9．音频发生器(AG)
1）．频率范围：200Hz～5kHz
2）．输出：1mV以下～1V，低失真。

10．频谱分析仪
1）．量程：DC至1GHz或更高。

11．标准信号发生器(SSG)
1）．最大频率：500MHz或更大。
2）．输出，－20dB/0.1μV至120dB/1V。
3）．输出阻抗：50Ω。

12．跟踪发送器
1）．中心频率：50kHz至500MHz。
2）．频率漂移：±35MHz。
3）．输出电压：100mV或更大。

13．假负载(DM)
1）．AF假负载4Ω，5W以上。
2）．RF假负载150Ω，150W以上。

14．方向耦合器
- 利用如胶木杆之类的绝缘杆来调节(特别是对端子和线圈)。
- 为了保护标准信号发生器，在调节接收单元的同时，不可发送出信号。
- 被表示的标准信号发生器的输出水平是为最大输出。

ADJUSTMENT

service adjustment mode

1. Function

1) service adjustment mode is only to set the adjustment items displayed in the service adjustment mode menu.
2) Adjusted data is all stored in EEPROM.
3) The EEPROM is only renewed when MENU No. 39 is entered and writing done by means of [MODE] or [DATA].

2. Setting

1) [POWER] ON while depressing [SCAN] and [DATA]
2) Use [DIAL] to select the MENU No.
3) Set the data using [MODE] or [DATA].
4) MENU No. 39 writes data to the EEPROM.
   "RUN" is displayed while writing.
   "GOOD" is displayed when writing has been done successfully.
   "ERROR" is displayed when a writing error occurs. (At this time, press [MODE] or [DATA] once again.)
5) This function is turned off by turning [POWER] OFF.

NOTE :

When repairing X53-3570-20 board, you find the shortness of the flat cable makes checking the unit difficult. We provide the E37-0572-05 (for control unit) and the E37-0573-05 (for AT) cables as servicing parts which you are free to order as necessary.

Adjustment mode menu

No.	Contents
00	Checksum display
01	100W (MAX) power setting, RF meter 100W point intake
02	50W (HI) power setting, RF meter 50W point intake
03	25W (MID) power setting, RF meter 25W point intake
04	15W (LO) power setting, RF meter 15W point intake
05	12.5W (HI) power setting, RF meter 12.5W point intake
06	Power setting during AT
07	6.25W (MID) power setting, RF meter 6.25W point intake
08	3.75W (LO) power setting, RF meter 3.75W point intake
09	100W power setting TX gain, RF meter 100W point intake
10	50W power setting TX gain, RF meter 50W point intake
11	25W power setting TX gain, RF meter 25W point intake
12	TX gain setting during 15W, RF meter 15W point intake
13	TX gain setting during AT
14	TX gain setting during 25W
15	TX gain setting during 12.5W
16	TX gain setting during 6.25W
17	TX gain setting during 3.75W
18	SSB, microphone sensitivity setting
19	AM, microphone sensitivity setting

No.	Contents
20	Microphone sensitivity f compensation (f<6.0MHz)
21	Microphone sensitivity f compensation (6.0MHz≦f<21.5MHz)
22	Microphone sensitivity f compensation (21.5MHz≦f)
23	SWR protection setting
24	SWR, 3 setting (for display, AT control)
25	CW carrier level setting
26	AM carrier level setting
27	LSB carrier compensation
28	USB carrier compensation
29	S meter, deflection start level setting (for display)
30	S meter, S9 deflection level setting (for display)
31	S meter, S9+40dB deflection start level setting (for display)
32	Squelch level setting (threshold)
33	SQL volume center compensation
34	CLAR volume center compensation
35	TX LPF non-selection
(36)	LCD total illumination
37	BEEP level verification
38	Side tone level verification
39	Write to EEPROM

Memory frequency configuration

M CH	Frequency	MODE	M CH	Frequency	MODE
01	14.250MHz	USB	09	100kHz	USB
02	500kHz	AM	10	14.200MHz	CW
03	10.499MHz	AM	11	14.200MHz	USB
04	10.500MHz	AM	12	3.500MHz	CW
05	21.499MHz	AM	13	29.600MHz	CW
06	21.500MHz	AM	14	24.900MHz	CW
07	29.999MHz	AM	15	14.200MHz	USB
08	14.100MHz	USB	16	14.200MHz	CW

When use M CH, input data in advance , or adjust on VFO.

调整

维修调整模式

1．功能

1) 维修调整模式为只进行设定显示于维修调整模式菜单上的调整项目的模式。

2) 被调整的数据全部保存在EEPROM上。

3) EEPPOM的更新只限于在设定成菜单号码39并利用[MODE]、[DATA]键来实行写入时进行。

2．设定

1) 边按下[SCAN]、[DATA]键，边接通[POWER]按钮。

2) 利用[DIAL]旋钮来选择菜单号码。

3) 利用[MODE]、[DATA]键来设定数据。

4) 在菜单号码39对EEPROM进行数据写入处理。
写入中显示“RUN”。
如果能够正常写入，则显示“GOOD”。
如果发生写入错误，则显示“ERROR”。
(此时，再一次按下[MODE]、[DATA]键。)

5) [POWEM]键设定成OFF时，功能便被解除。

注意：

修理X53-3570-20基片时，由于扁平电缆短而不易进行检查，因此作为维修部件准备有扁平电缆E37-0572-05(控制用)和E37-0573-05(自动调谐单元用)请定货并使用它们。

调整模式菜单

号码	内容
00	检验和数显示
01	100W(最大)功率设定　射频表100W点取入
02	50W(HI)功率设定　射频表50W点取入
03	25W(MID)功率设定　射频表25W点取入
04	15W(LOW)功率设定　射频表15W点取入
05	12.5W(HI)功率设定　射频表12.5W点取入
06	AT时的功率设定
07	6.25W(MID)功率设定　射频表6.25W点取入
08	3.75W(LOW)功率设定　射频表3.75W点取入
09	100W时的TX设定　射频表100W点取入
10	50W时的TX设定　射频表50W点取入
11	25W时的TX设定　射频表25W点取入
12	15W时的TX设定　射频表15W点取入
13	AT时的TX增益设定
14	25W时的TX增益设定
15	12.5W时的TX增益设定
16	6.25W时的TX增益设定
17	3.75W时的TX增益设定
18	SSB，麦克风灵敏度设定
19	AM，麦克风灵敏度设定

号码	内容
20	麦克风灵敏度的f补偿(f<8.0MHz)
21	麦克风灵敏度的f补偿(8.0MHz≤f<21.5MHz)
22	麦克风灵敏度的f补偿(21.5MHz≤f)
23	SWR保护设定
24	SWR，3设定(显示，AT控制用)
25	CW载波电平设定
26	AM载波电平设定
27	LSB载波补偿
28	USB载波补偿
29	信号强度计，振摆电平设定(显示用)
30	信号强度计，S9振摆电平设定(显示用)
31	信号强度计，S9＋40dB振摆电平设定(显示用)
32	静噪电平设定(阈值)
33	噪音抑制调节旋钮中央补偿
34	干扰清除调节旋钮中央补偿
35	发射低通滤波器选择
(36)	液晶显示灯全发亮
37	蜂鸣器电平确认
38	侧音电平确认
39	对EEPROM的写入

记忆频率组成

MCH	频率	MODE	MCH	频率	MODE
01	14.250MHz	USB	09	100kHz	USB
02	500kHz	AM	10	14.200MHz	CW
03	10.499MHz	AM	11	14.200MHz	USB
04	10.500MHz	AM	12	3.500MHz	CW
05	21.499MHz	AM	13	29.600MHz	CW
06	21.500MHz	AM	14	24.900MHz	CW
07	29.999MHz	AM	15	14.200MHz	USB
08	14.100MHz	USB	16	14.200MHz	CW

使用MCH时，请预先输入数据，或以VFO进行调整。

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ADJUSTMENT

Preparation

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	DC IN : 13.6V CONT SW 1 : ON CLARIFIER : CENTER SQL VR : MIN							

PLL and CAR

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Reference frequency	1) M.CH : 01	F.counter (probe 10:1)	TX-RX	TP501	TX-RX	TC501	20.000.000MHz adjustment	±20Hz
2. 62.35 MHz adjustment	1) M.CH : 01		TX-RX	TP506	TX-RX	TC502	62.350.000MHz adjustment	±20Hz
3. 10.695MHz adjustment	1) M.CH : 01	oscillo	TX-RX	TP503	TX-RX	L539	adjust to1.4Vp-p	±0.2Vp-p
4. 54MHz BPF adjustment	1) M.CH : 01		TX-RX	TP505	TX-RX	L513 514 515	Repeat adjustment 2 to 3 times. Level : MAX	1.0Vp-p or more
5. VCO 1 Lock voltage check	1) M.CH : 02	D.V.M	TX-RX	TP504	TX-RX	TC503	adjust to 2.0V	±0.1V
	2) M.CH : 03						Check	7.0V or less
6. VCO 2 Lock voltage check	1) M.CH : 04				TX-RX	TC504	adjust to 2.0V	±0.1V
	2) M.CH : 05						Check	7.0V or less
7. VCO 3 Lock voltage check	1) M.CH : 06				TX-RX	TC505	Adjust to 2.0V	±0.1V
	2) M.CH : 07						Check	7.0V or less
8. LO 1 Level check	1) M.CH : 08 2) Pull out CN501(LO 1) 3) Insert CN501 after the check.	RFV.M 50Ω and terminal	TX-RX	CN501			Level check	-0.5~+5.0dBm
9. LO 2 (62.35MHz) Level adjustment	1) M.CH : 08 2) Pull out CN502(LO2) 3) Insert CN502 after the check.		TX-RX	CN502	TX-RX	(L531)	Level check * 0dBm or more: Maximum for L531	0~+3.0dBm

Receiver section

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AGC adjustment	1) M.CH : 08 2) Pull out CN502(LO2)	D.V.M	TX-RX	TP2	TX-RX	VR5	Adjust to 2.9V.	±0.03V
2. MCF adjustment	1) M.CH : 08 2) Spectrum analyzer setting TG level : -30dBm Center FREQ. : 73.045MHz FREQ. SPAN : 70kHz ATT : 10dB V. REF : 2dB/DIV 3) Insert CN502(LO2) after the check.	Spectrum analyzer Tracking generator	TX-RX	CN7 CN4	TX-RX	L38 42 43	Repeat adjustment 2 to 3 times and with at maximum, adjust waveform to flat at right.	73.045 73.038 73.052

调整

准备

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1.设定	DCIN : 13.6V CONT SW1 : ON CLARI FIER: CENTER SQL.VR : MIN							

PLL和CAR

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1.基准频率	1)MCH : 01	频率计	TX-RX	TP501	TX-RX	TC501	20.000.000MHz 调整	±20Hz
2.62.35MHz 调整	1)MCH : 01		TX-RX	TP506	TX-RX	TC502	62.350.000MHz 调整	±20Hz
3.10.695MHz 调整	1)MCH : 01	示波器	TX-RX	TP503	TX-RX	L539	调整成为 1.4Vp-p	±0.2Vp-p
4.54MHz 调整BPF	1)MCH : 01		TX-RX	TP505	TX-RX	L513 514 515	重复调整2～3次 电平 : MAX	1.0Vp-p或以上
5.VCO 1 锁定电压检查	1)MCH : 02	D.V.M	TX-RX	TP504	TX-RX	TC503	调整成为2.0V	±0.1V
	2)MCH : 03						检查	7.0V或以下
6.VCO 2 锁定电压检查	1)MCH : 04				TX-RX	TC504	调整成为2.0V	±0.1V
	2)MCH : 05						检查	7.0V或以下
7.VCO 3	1)MCH : 06				TX-RX	TC505	调整成为2.0V	±0.1V
检查锁定电压	2)MCH : 07						检查	7.0V或以下
8.LO 1 检查电平	1)MCH : 08 2)拉出CN501(LO1) 3)检查后插入CN501	RFV.M 50Ω终端	TX-RX	CN501			检查电平	−0.5～+5.0dBm
9.LO 2 (62.35MHz) 调整电平	1)MCH : 08 2)拉出CN502(LO2) 3)检查后插入CN502		TX-RX	CN502	TX-RX	L531	检测电平 *0dB或以上 对L531最大	0～+3.0dBm

接收机

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1.调整AGC	1)MCH : 08 2)拉出CN502(LO2)	D.V.M	TX-RX	TP2	TX-RX	VR5	调整成为2.0V	±0.03V
2.调整MCF	1)MCH : 08 2)频谱分析仪设定值 TG电平 : −30dBm 中央FREQ : 73.045MHz FREQ SPAN : 70KHz ATT : 10dB V.REF : 2dB/DIV 3)检查后插入CN502(LO2)	频谱 分析仪 跟踪 发生器	TX-RX	CN7 CN4	TX-RX	L38 42 43	重复调整2～3次， 然后在最大值。 调整波形成为在 右侧平坦。	73.045 73.038 73.052

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. IF AMP adjustment	1) M CH : 08 2) DATA : 1 Push 3) MODE : USB 4) SSG f : 14.101MHz SSG ATT : -113dBm ~-119dBm	SSG AF V.M Oscillo DM S.P	Rear panel	ANT EXT. SP	TX-RX	L44 48 49 51 75 78	Repeat adjustment 2 to 3 times. AF output : MAX	
4. MIX BAL adjustment	1) M CH : 09 2) AIP : OFF SSG RF : OFF					VR1	Noise to minimum	
5. IF GAIN adjustment	1) M CH : 08 2) SSG f : 14.101MHz SSG ATT : -103dBm				Front panel	AF. VOL	adjust AF output to 0.63V.	
	3) SSG RF : -113dBm				TX-RX	VR4	adjust AF output to 0.4V.	0.4V ± 0.05V
	4) SSG RF : -103dBm						check	0.63V ± 0.05V
6. S meter adjustment S1 adjustment	1) Press the [SCAN], [DATA] key POWER ON (service adjustment) 2) Use the dial to align menu number 29. 3) SSG f : 14.101MHz 4) SSG ATT : -107dBm	SSG AF V.M Oscillo DM S.P	Rear panel	ANT EXT. SP	Front panel	MODE or DATA	Press MODE or DATA key one time	
S9 adjustment	1) Use the dial to align menu number 30. 2) SSG ATT : -81dBm							
Full adjustment	1) Use the dial to align menu number 31. 2) SSG ATT : -41dBm							
7. SQL threshold adjustment	1) Use the dial to align menu number 32. 2) SSG ATT : OFF 3) SQL VR : CENTER						Press MODE or DATA key one time	
8. SQL VR adjustment	1) Use the dial to align menu number 33. 2) SSG ATT : OFF 3) SQL VR : CENTER						Press MODE or DATA key one time	
9. CLARI VR adjustment	1) Use the dial to align menu number 34. 2) SSG ATT : OFF 3) CLARI VR : CENTER						Press MODE or DATA key one time	
10. Beep sound adjustment	1) Use the dial to align menu number 37.				TX-RX	VR9	0.25V	±6dBm
11. Side tone adjustment	1) Use the dial to align menu number 38.				TX-RX	VR10	0.2V	±8dBm
12. ROM data writing	Use the dial to align menu number 39 → Display(READY)→ press [MODE] or [DATA] → write → finish (GOOD)							
13. NB check	1) Press MENU key one time, set 02 for using DATA and MODE key, and NB is ON for turning the encoder. 2) Adjust the noise generator to S1,S9 level , then check. 3) After the check , Press the MENU key one time.	Noise generator D.V.M	TX-RX	TP801				Noise decreases

调整

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
3.调整 IF AMP	1)MCH:08 2)DATA :1kHz 3)MODE :USB 4)SSGf :14.101MHz SSG ATT :−113dBm ~−119dBm	SSG AF V.M 示波器 DM S.P	背面	ANT EXT. SP	TX-RX	L44 48 49 51 75 76	重复调整2~3次。 AF输出:MAX	
4.调整 MIX BAL	1)MCH:09 2)AIP :OFF SSG RF :OFF					VR1	使噪音最小	
5.调整 IF GAIN	1)MCH:08 2)SSGf :14.101MHz SSG ATT :−103dBm				前面	AF. VOL	调整AF输出成为0.63V	
	3)SSG RF :−113dBm				TX-RX	VR4	调整AF输出成为0.4V	0.4V±0.05V
	4)SSG RF :−105dBm						检查	0.63±0.05V
6.调整信号强度计 S1调整	1)按下 [SCAN]、[DATA] 键来接通电源(维修调整模式) 2)用 [DIAL] 旋钮来对好菜单号码29 3)SSG f:14.101MHz 4)SSG ATT:−107dBm	SSG AF V.M 示波器 DM. SP	背面	ANT EXT.SP	前面	MODE 或 DATA	[MODE] 或 [DATA] 键按下1次	
S9调整	1)用 [DIAL] 旋钮来对好菜单号码30 2)SSG ATT:−81dBm							
全调整	1)用 [DIAL] 旋钮来对好菜单号码31 2)SSG ATT:−41dBm							
7.调整阀值	1)用 [DIAL] 旋钮来对好菜单号码32 2)SSG ATT:OFF 3)SQL VR:CENTER						[MODE] 或 [DATA] 键按下1次	
8.调整 SQL VR	1)用 [DIAL] 旋钮来对好菜单号码32 2)SSG ATT:OFF 3)SQL VR:CENTER						[MODE] 或 [DATA] 键按下1次	
9.调整 CLARI VR	1)用 [DIAL] 旋钮来对好菜单号码34 2)SSG ATT:OFF 3)CLARI VR:CENTER						[MODE] 或 [DATA] 键按下1次	
10.确认喇叭音	1)用 [DIAL] 旋钮来对好菜单号码37				TX-RX	VR9	0.25V	±6dBm
11.确认耳音	1)用 [DIAL] 旋钮来对好菜单号码38				TX-RX	VR10	0.2V	±6dBm
12.写入ROM数据	用 [DIAL] 旋钮来对好画面939	显示(READY)→按下 [MODE] 或 [DATA] 键→写入→结束(GOOD)						
13.调整NB	1)按下MENU键一次,设定02以使用DATA和MODE键,这时NB成为ON以转动编码器。 2)调整噪音发生器成为S1,S9电平,然后检查。 3)检查后,按下MENU键一次。	噪音发生器 D.V.M	TX-RX	TP801				噪音被低

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
14. S/N check	1) M CH : following frequency 2) AF VR : 0.45V/4Ω SSG f : following frequency Should be LSB : +1kHz LSB : −1kHz	Wireless tester or SSG VTVM Oscillo SP.DM	Rear panel	ANT EXT.SP				
	Frequency	MODE	SG ATT	SG MOD	DEV		S/N measurement	10dB or more
	550.0kHz	AM	−77dBm	1kHz	60%			
	1.550.0kHz	AM	–	1kHz	60%			
	1.800.0kHz	LSB	−119dBm	OFF			AIP ON	Sensitivity down (5–10dB)
	3.550.0kHz	–	–	–				
	7.100.0kHz	–	–	–				
	10.100.0kHz	–	–	–				
	14.100.0kHz	USB	–	–				
	21.100.0kHz	–	–	–				
	24.800.0kHz	–	–	–				
	28.800.0kHz	–	–	–				

Transmitter section

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. ALC voltage adjustment	1) M CH : 10 2) Transmit	D.V.M	TX-RX	TP1	TX-RX	VR12	adjust to 2.7V	+0.05V −0.10V
2. TX AMP adjustment	1) M CH : 10 2) Insert the measure cable. 3) Transmit	50Ω end terminal Oscillo or Spectrum analyzer	TX-RX	CN19	TX-RX	L50 61 63 64 65 67 69	Repeat adjustment 2 to 3 times, and with level at maximum.	CAR at 14.250MHz : MAX
3. MIX BIAS adjustment	1) M CH : 10 2) Transmit					VR2	Adjust level to maximum.	
4.CW/AM CAR level setting	1) Press the [SCAN], [DATA] key POWER ON (service adjustment) 2) Use the dial to align menu number 25. 3) Transmit	Spectrum analyzer	TX-RX	CN19	Front panel	MODE or DATA	Press MODE or DATA key to adjust to 9dBm	±1dBm
	1) Use the dial to align menu number 26. 2) Transmit						Press MODE or DATA key to adjust to 6.5dBm	±0.5dBm
5. TGC adjustment	1) Use the dial to align menu number 10. 2) Transmit						Press MODE or DATA key to adjust to 6dBm	±0.5dBm
	3) Use the dial to align menu number 11. 4) Transmit						Press MODE or DATA key to adjust to 3dBm	±0.5dBm
	5) Use the dial to align menu number 12. 6) Transmit						Press MODE or DATA key to adjust to 0.6dBm	±0.5dBm
6. ROM data writing	Use the dial to align menu number 39	Display(READY)→ press [MODE] or [DATA] → write → finish (GOOD)						
7. Idle current adjustment	1) M CH : 11 2) VR1,2 : MAX to unchclockwise 3) Transmit	DC Am meter			FINAL		Check the current value Io.	
						VR1	Adjust to Io + 250mA(I1)	
						VR2	Adjust to I1 + 250mA	
8. Fan operation check	1) Transmit							Fan starts running, and ventilate to rear panel.

调整

项 目	条 件	测量			调整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
14. 检查S/N	1) MCH：下列频率 2) AF VR：0.45V/4Ω SSG f 下列频率 应为 USB：＋1kHz LSB：－1kHz	SSG VTVM 示波器 DM. SP	背面	ANT EXT. SP				
	频率	MODE	SG ATT	SG MOD	DEV		S/N测量	10dB或以上
	550.0kHz	AM	－77dBm	1kHz	60%			
	1,550.0kHz	AM	-	1kHz	60%			
	1,800.0kHz	LSB	－119dBm	OFF				
	3,550.0kHz	-	-	-				
	7,100.0kHz	-	-	-			AIP ON	灵敏度降低 (5～10dB)
	10,100.0kHz	-	-	-				
	14,100.0kHz	USB	-	-				
	21,100.0kHz	-	-	-				
	24,800.0kHz	-	-	-				
	28,800.0kHz	-	-	-				

发射机

项 目	条 件	测量			调整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1. 调整 ALC电压	1) MCH：10 2) 发射	D.V.M	TX-RX	TP1	TX-RX	VR12	调整成为2.7V	+0.05V −0.10V
2. 调整 TX AMP	1) MCH：10 2) 插入测量电缆 3) 发射	50Ω终端 端子 示波器 或 频谱分析仪	TX-RX	CN19	TX-RX	L60 61 63 64 65 67 69	重复调整2～3次，然后走电平最大值。	
3. 调整 MIX BIAS	1) MCH：10 2) 发射					VR2	调整电平成为最大	
4. 调整CW/ AM CAR 电平	1) 按下［SCAN］、［DATA］键来接通电源(维修调整模式) 2) 用［DIAL］旋钮来对好菜单号码25 3) 发射	频谱 分析仪	TX-RX	CN19	前面	MODE 或 DATA	按下［MODE］或［DATA］键来调整成为9dBm	±1dBm
	1) 用［DIAL］旋钮来对好菜单号码26 2) 发射						按下［MODE］或［DATA］键来调整成为6.5dBm	±0.5dBm
5. 调整TGC	1) 用［DIAL］旋钮来对好菜单号码10 2) 发射						按下［MODE］或［DATA］键来调整成为6dBm	±0.5dBm
	3) 用［DIAL］旋钮来对好菜单号码11 4) 发射						按下［MODE］或［DATA］键来调整成为3dBm	±0.5dBm
	5) 用［DIAL］旋钮来对好菜单号码12 6) 发射						按下［MODE］或［DATA］键来调整成为0.8dBm	±0.5dBm
6. 写入ROM 数据	用［DIAL］旋钮来对好画面的39	显示(READY)→按下［MODE］或［DATA］键→写入→结束(GOOD)						
7. 调整无功电流	1) MCH：11 2) VR1，2：逆时针方向至MAX 3) 发射	直流电流表			FINAL		检查电流值I_0	
						VR1	调整成为 I_0＋250mA (I_1)	
						VR2	调整成为 I_1＋250mA	
8. 检查风扇动作	1) 发射							风扇开始运转，而进行背面散逸风。

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. NULL adjustment	1) Insert the flat cable to CN19. 2) M CH : 12 3) VR3 : MAX to anchlockwise LOW POWER 4) Transmit	D.V.M Power meter	FINAL rear panel	CN104 ANT	FINAL	TC1	Adjust voltage to minimum.	Reference value : 50mV
10. Power adjustment (100W)	1) Press the [SCAN], [DATA] key POWER ON (service adjustment) 2) Use the dial to align menu number 01. 3) Transmit	Power meter	Rear panel	ANT	Front panel	MODE or DATA	Press the MODE or DATA key and adjust to 100W.	±5.0W
(50W)	4) Use the dial to align menu number 02. 5) Transmit						Press the MODE or DATA key and adjust to 50W.	±3.0W
(25W)	6) Use the dial to align menu number 03. 7) Transmit						Press the MODE or DATA key and adjust to 25W.	±2.5W
(15W)	8) Use the dial to align menu number 04. 9) Transmit						Press the MODE or DATA key and adjust to 15W.	±1.5W
(12.5W)	10) Use the dial to align menu number 05. 11) Transmit						Press the MODE or DATA key and adjust to 12.5W.	±1.0W
(10W)	12) Use the dial to align menu number 06. 13)Transmit						Press the MODE or DATA key and adjust to 10W.	±1.0W
(6.25W)	14) Use the dial to align menu number 07. 15)Transmit						Press the MODE or DATA key and adjust to 6.25W.	±0.5W
(3.75W)	16) Use the dial to align menu number 08. 17) Transmit RF meter data is also written at the same time as the above power adjustment.						Press the MODE or DATA key and adjust to 3.75W.	±0.5W
11. Microphone sensitivity adjustment	1) Use the dial to align menu number 18. 2) AG : 1kHz 5mV 3) Transmit	Power meter AG AF V.M	Rear panel	ANT	Front panel	MODE or DATA	Press MODE or DATA and adjust to 60W.	±5.0W
12. AM microphone sensitivity adjustment	1) Use the dial to align menu number 19.						Set to the SSB microphone sensitivity setting value × the square root of 2..	
13. ROM data writing	Use the dial to align menu number 39	Display(READY)→ press [MODE] or [DATA] → write → finish (GOOD)						
14. Power frequency response	1) M CH : 13 2) Transmit	Power meter	Rear panel	ANT	FINAL	VR3	Adjust to MAX.	95W or more
15. Spurious adjustment	1) M CH : 14 2) Transmit	Power meter Spectrum analyzer Coupler	Rear panel	ANT	TX-RX	VR3	Adjust spurious to MIN.(Near ±1.6MHz)	−50dB or more
16. Suppression adjustment	1) M CH : 15 2) Set U.LSB for MODE key. 3) Transmit				TX-RX	VR7 VR8	Adjust CAR level to MIN. Repeat adjustment USB, LSB alternately, so CAR level to MIN.	−50dB or more

调整

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
9. 调整NULL	1)向CN19插入曲平电缆 2)MCH：12 3)VR3：逆时针方向至MAX此功率 4)发射	D.V.M 功率计	FINAL 背面	CN104 ANT	FINAL	TC1	电压调整成为最小。	参考值：50mV
10. 调整功率 (100W)	1)按下［SCAN］、［DATA］键来接通电源(维修调整模式) 2)用［DIAL］旋钮来对好菜单号码01 3)发射	功率表	背面	ANT	前面	MODE或DATA	按下［MODE］或［DATA］键来调整成为100W	±5.0W
(50W)	4)用［DIAL］旋钮来对好菜单号码02 5)发射						按下［MODE］或［DATA］键来调整成为50W	±3.0W
(25W)	6)用［DIAL］旋钮来对好菜单号码03 7)发射						按下［MODE］或［DATA］键来调整成为25W	±2.5W
(15W)	8)用［DIAL］旋钮来对好菜单号码04 9)发射						按下［MODE］或［DATA］键来调整成为15W	±1.5W
(12.5W)	10)用［DIAL］旋钮来对好菜单号码05 11)发射						按下［MODE］或［DATA］键来调整成为12.5W	±1.0W
(10W)	12)用［DIAL］旋钮来对好菜单号码06 13)发射						按下［MODE］或［DATA］键来调整成为10W	±1.0W
(6.25W)	14)用［DIAL］旋钮来对好菜单号码07 15)发射						按下［MODE］或［DATA］键来调整成为6.25W	±0.5W
(3.75W)	16)用［DIAL］旋钮来对好菜单号码08 17)发射 在上述功率调整时，射频计的数据也被同时写入。						按下［MODE］或［DATA］键来调整成为3.75W	±0.5W
11. 调整麦克风灵敏度	1)用［DIAL］旋钮来对好菜单号码18 2)AG：1kHz 5mV 3)发射	功率表 AG AFV.M	背面	ANT	前面	MODE或DATA	按下［MODE］或［DATA］键来调整成为60W	±5.0W
12. 调整AM麦克风灵敏度	1)用［DIAL］旋钮来对好菜单号码19						设定成SSB麦克风灵敏度的设定值×√2倍	
13. 写入ROM数据	用［DIAL］旋钮来对好画面的39	显示(READY)→按下［MODE］或［DATA］键→写入→结束(GOOD)						
14. 调整功率频率响应	1)MCH：13 2)发射	功率计	背面	ANT	FINAL	VR3	调整成为MAX	95W或以上
15. 调整乱真	1)MCH：14 2)发射	功率计 频谱分析仪	背面	ANT	TX-RX	VR3	调整乱真成为MIN(±1.6MHz附近)	−50dB或以上
16. 调整抑制	1)MCH：15 2)为MODE键设定U.LSB 3)发射	连振器			TX-RX	VR7 VR8	调整CAR电平成为MIN。重复交换地调整USB、LSB，以使CAR电平成为MIN。	−50dB或以上

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
17. SWR protection adjustment	1) M CH : 16 2) 150Ω dummy load connect 3) Transmit	150Ω dummy pass-through type power meter	Rear panel	ANT	TX-RX	VR14	Adjust to 40W.	±4.0W
18. SWR 3.0 (for AT) adjustment	1) Press the [SCAN], [DATA] key POWER ON (service adjustment) 2) Use the dial to align menu number 24. 3) 150Ω dummy load connect 4) Transmit				Front panel	MODE or DATA	Press MODE or DATA one time.	
19. CAR point adjustment	1) Use the dial to align menu number 27, 28. 2) 27: LSB CAR point calibration 28: USB CAR point calibration 3) AG1: 900Hz/5mV AG2: 2700Hz/5mV 4) Transmit	Power meter AG Oscillo Coupler	Rear panel	ANT	Front panel	MODE or DATA	While observing the oscilloscope waveforms, adjust so the waveforms cross. At LSB or USB, adjust while pressing MODE or DATA.	OK  NG 
20. ROM data writing	Use the dial to align menu number 39	Display (READY) → press [MODE] or [DATA] → write → finish (GOOD)						
21. Display check	1) Use the dial to align menu number 36.						Check all display illumination	
22. Transmit output power current consumption spurious	1) Check for following frequency M CH Frequency MODE CH 02 500kHz AM CH 11 14.200MHz USB CH 13 29.600kHz CW 2) SSB : AG 1kHz 10mV during input 3) AM : During non-modulation 4) Transmit	Power meter Spectrum anaryzer AG Linear detector f. counter		ANT MIC			Transmit output power RF meter Push [MENU] key one time, set 01 by [DATA] or [MODE] key. Change to HI,MID,LOW to turn encoder.	( ) : AM mode [Non display] RF meter, all illumination 80W–110W (20W–30W) [HI] 45W–55W (10W–15W) [MID] 22W–28W (5W–8W) [LOW] 13W–17W (2W–5W)
							Current consumption	Not display 20.5A or less HI 15A or less MID 12A or less LOW 9A or less
							spurious (during HI POWER)	higher harmonic –50dB or less Other –40dB or less

调整

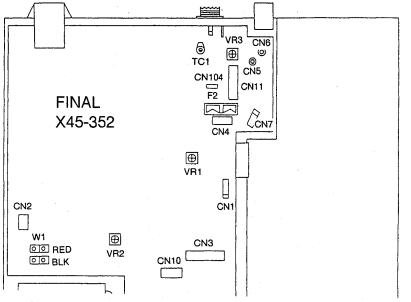
项 目	条 件	测量			调整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
17. 调整SWR保护	1) MCH : 16 2) 连接150Ω虚负载 3) 发射	150Ω 虚穿通式功率计	背面	ANT	TX-RX	VR14	调整成为40W	±4.0W
18. 调整SWR3.0(AT用)	1) 按下 [SCAN]、[DATA] 键来接通电源(维修调整模式) 2) 用 [DIAL] 旋钮来对好菜单号码24 3) 150Ω虚连接 4) 发射				前面	MODE 或 DATA	按下 [MODE] 或 [DATA] 键1次	
19. 调整CAR点	1) 用 [DIAL] 旋钮来对好菜单号码27、28 2) 27 : LSB校正CAR点 28 : USB校正CAR点 3) AG1 : 300Hz/5mV AG2 : 2700Hz/5mV 4) 发射	功率表 示波器 连接器	背面	ANT	前面	MODE 或 DATA	边看示波器的波形边调整成为波形交叉 在LSB及USB,边按下[MODE]或[DATA]键边进行调整	OK  NG 
20. 写入ROM数据	用 [DIAL] 旋钮来对好画面的39	显示(READY) → 按下 [MODE] 或 [DATA] 键 → 写入 → 结束(GOOD)						
21. 确认显示	1) 用 [DIAL] 旋钮来对好菜单号码36						确认显示全部发光	
22. 发射输出 电流消耗 杂散	1) 以下列CH来确认 M.CH 频 率 MODE CH02 500kHz AM CH11 14.200MHz USB CH13 29.600kHz CW 2) SSB : 输入AG 1kHz 10mV时 3) AM : 无调制时 4) 发射	功率表 频谱分析仪 AG 线性检测器 P计数器		ANT MIC			发射输出 RF计 [MENU]键按下一次,用[DATA]或[MODE]键设定成01。旋转ENC旋钮来转换成HI、MID、LOW。	( )内为AM模式 [无显示] RF计全发亮 90W～110W (20W～30W) [HI] 45W～55W (10W～15W) [MID] 22W～28W (5W～8W) [LOW] 13W～17W (2W～5W)
							电流消耗	无显示 20.5A以下 HI 15A以下 MID 12A以下 LOW 9A以下
							杂散 (HI POWER时)	谐波 −50dB以下 其他 −40dB以下

TRC-80

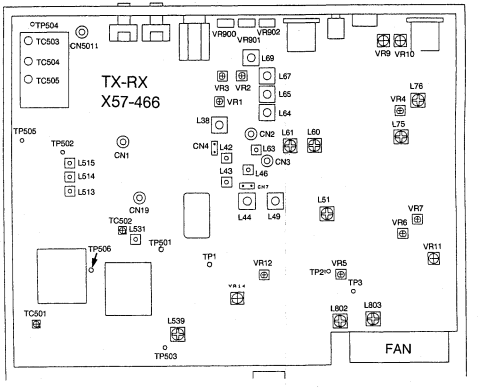
ADJUSTMENT/ 调整

Parts layout

(Top view)

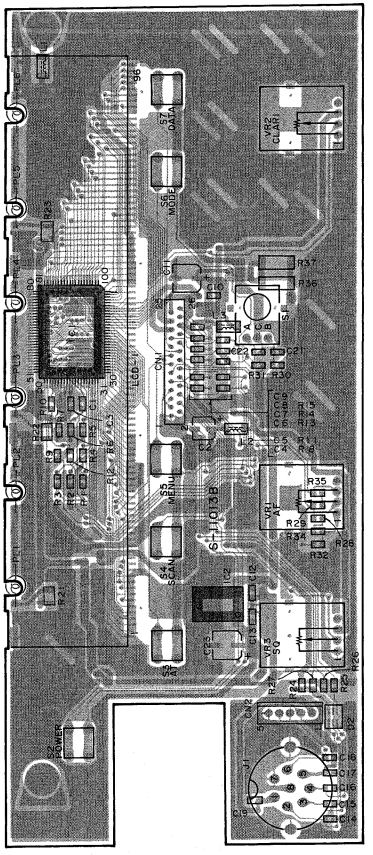


(Bottom view)



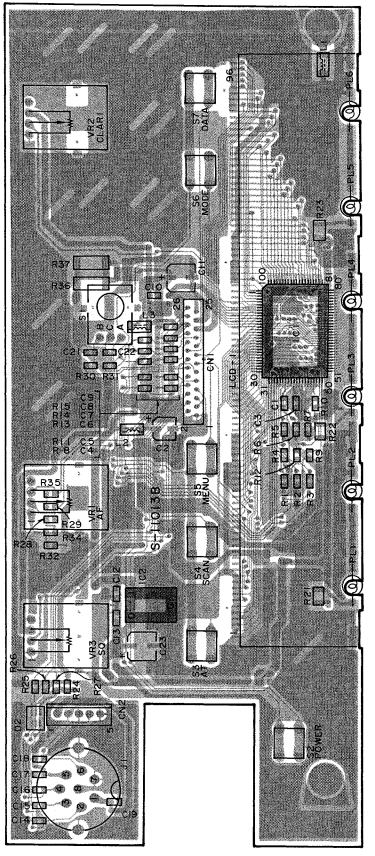
TRC-80 PC BOARD VIEW/印刷线路板图

LCD ASSY (B38-0739-05) Component side view

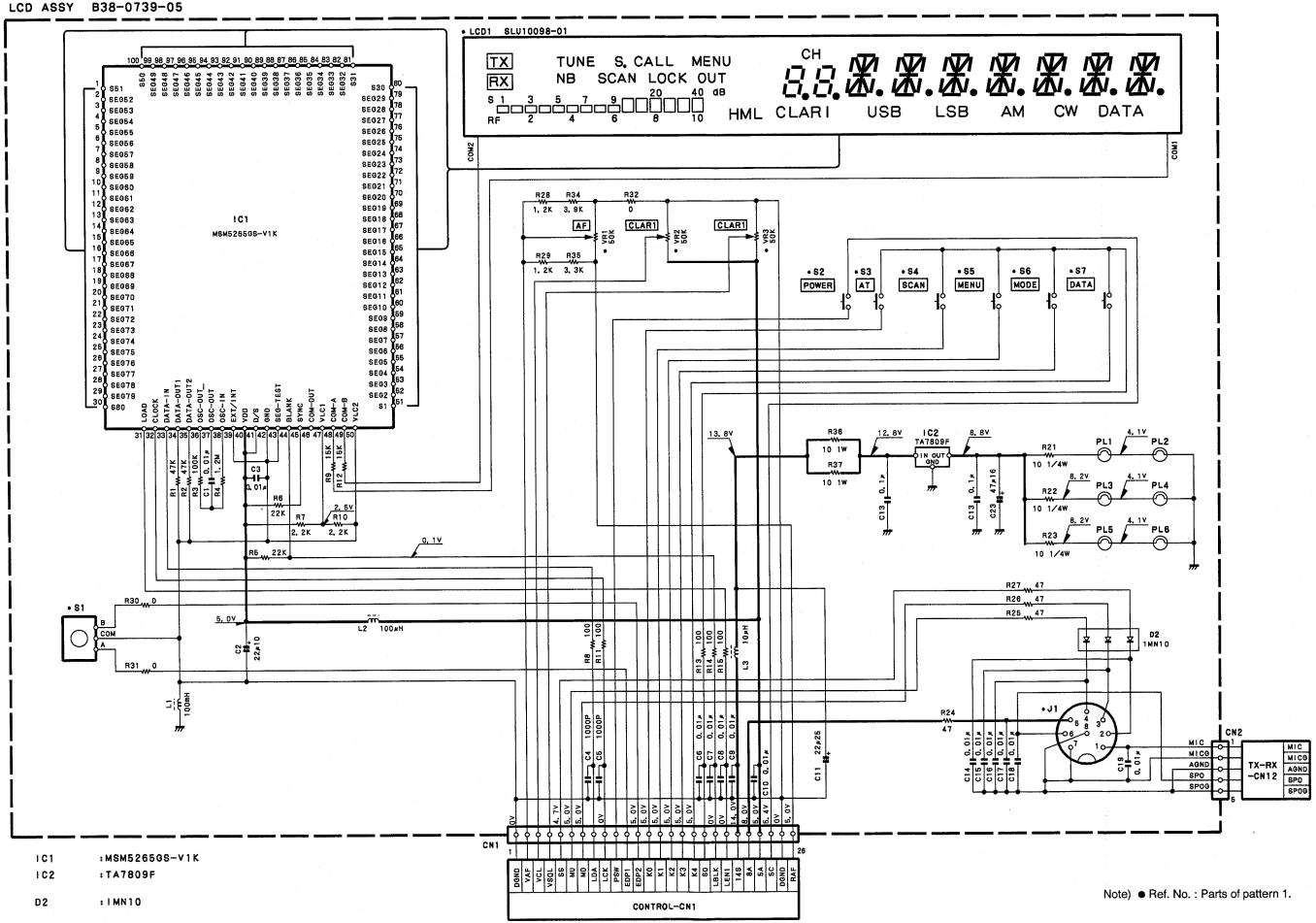


: Component side
: Foil side

LCD ASSY (B38-0739-05) Foil side view



LCD ASSY B38-0739-05

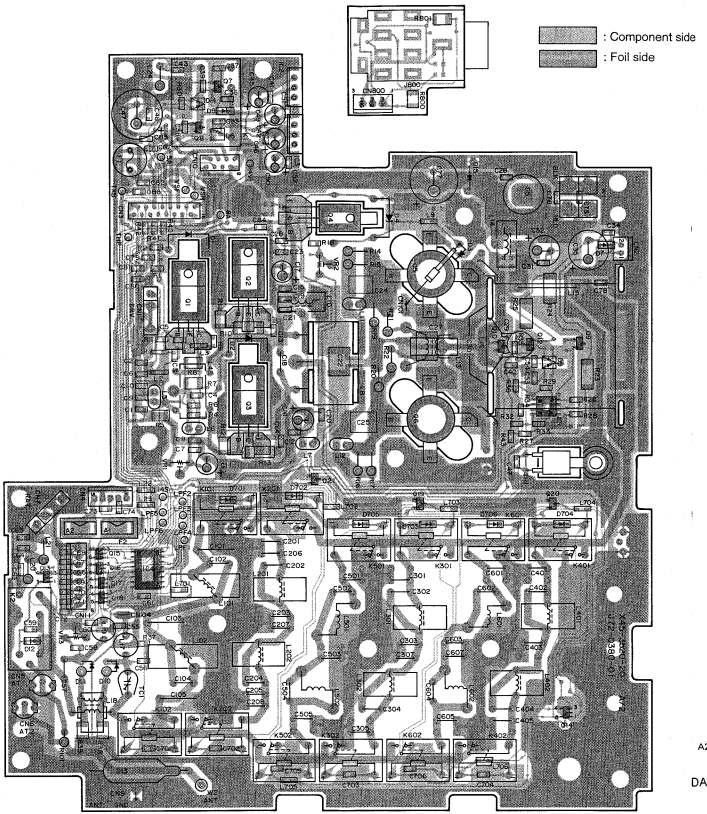


IC1 : MSM5265GS-V1K
IC2 : TA7809F
D2 : 1MN10

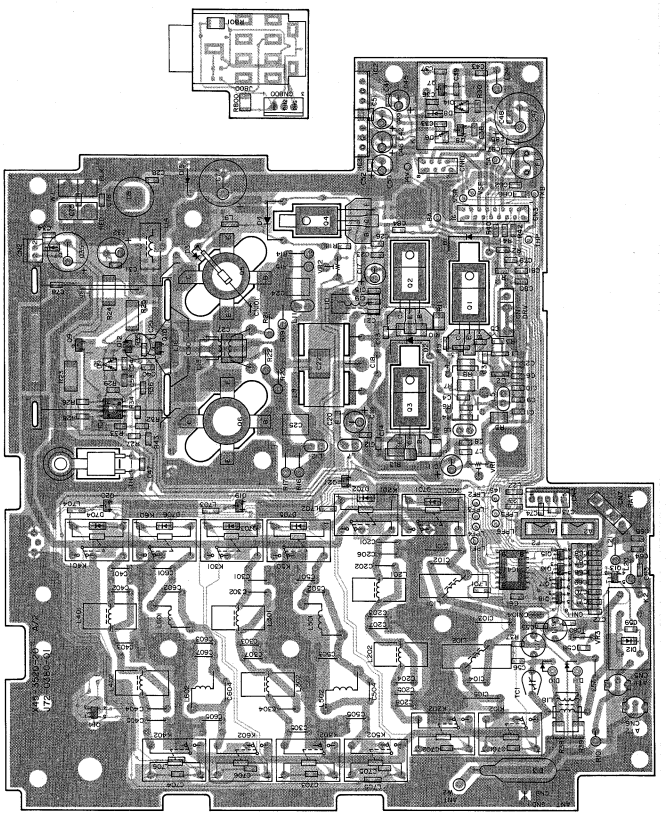
Note) ● Ref. No. : Parts of pattern 1.

TRC-80 PC BOARD VIEW/ 印刷线路板图

FINAL UNIT(X45-3520-20) Component side view



FINAL UNIT(X45-3520-20) Foil side view



DTC143TK DTD123EK
DTC114EK DTB143EK
DTC124TK

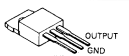
2SC3421(Y)

2SC2879(O,Y)

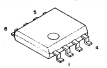
2SC3133

2SC1971

DAN202K



UPC7805H
UPC7808H

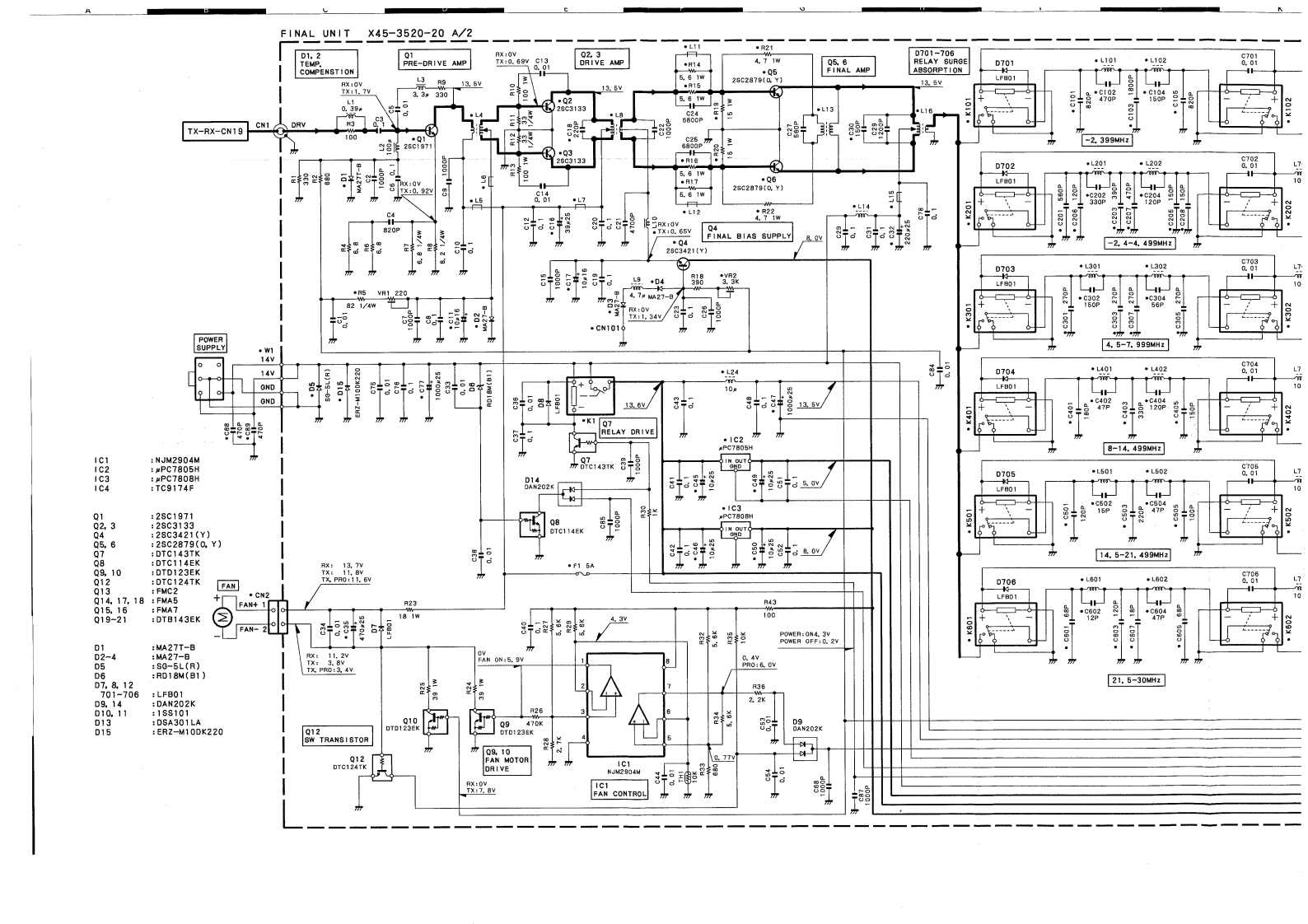


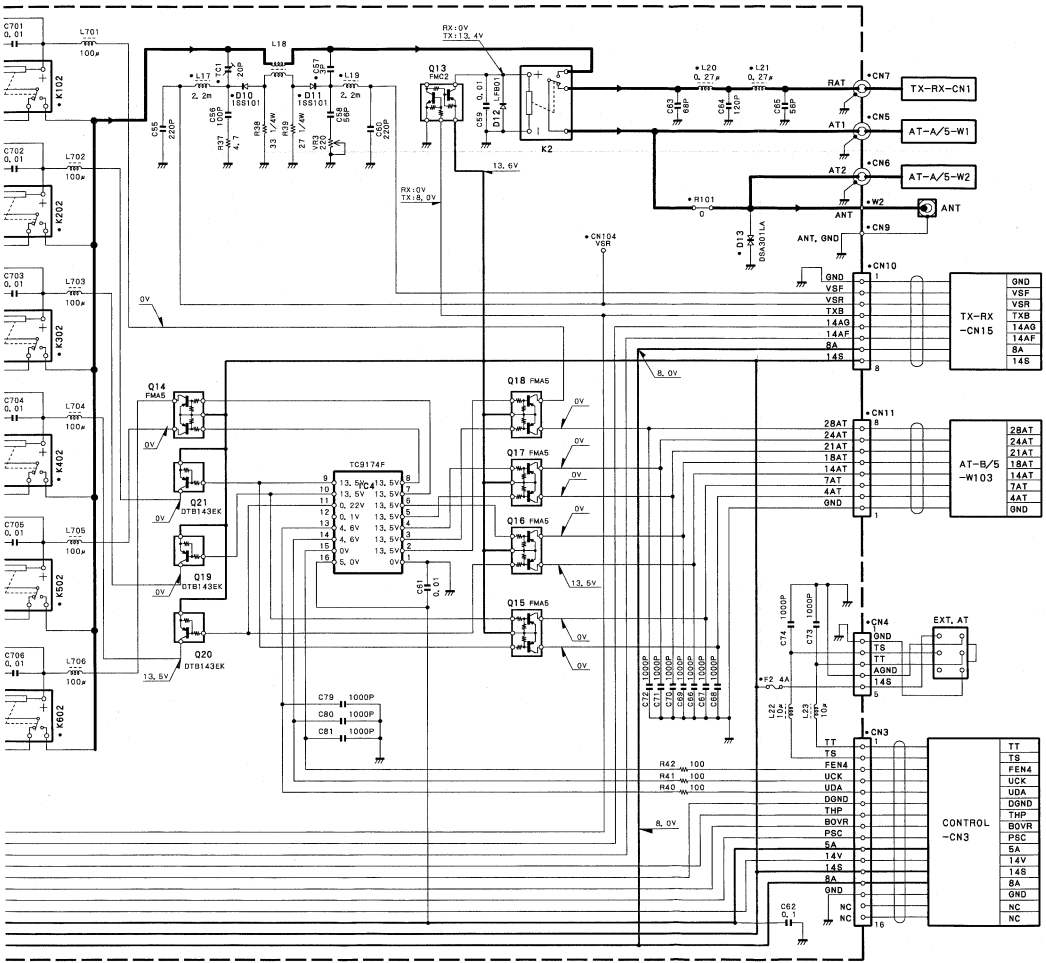
NJM2904M

FMC2

TC9174F

FMA5
FMA7

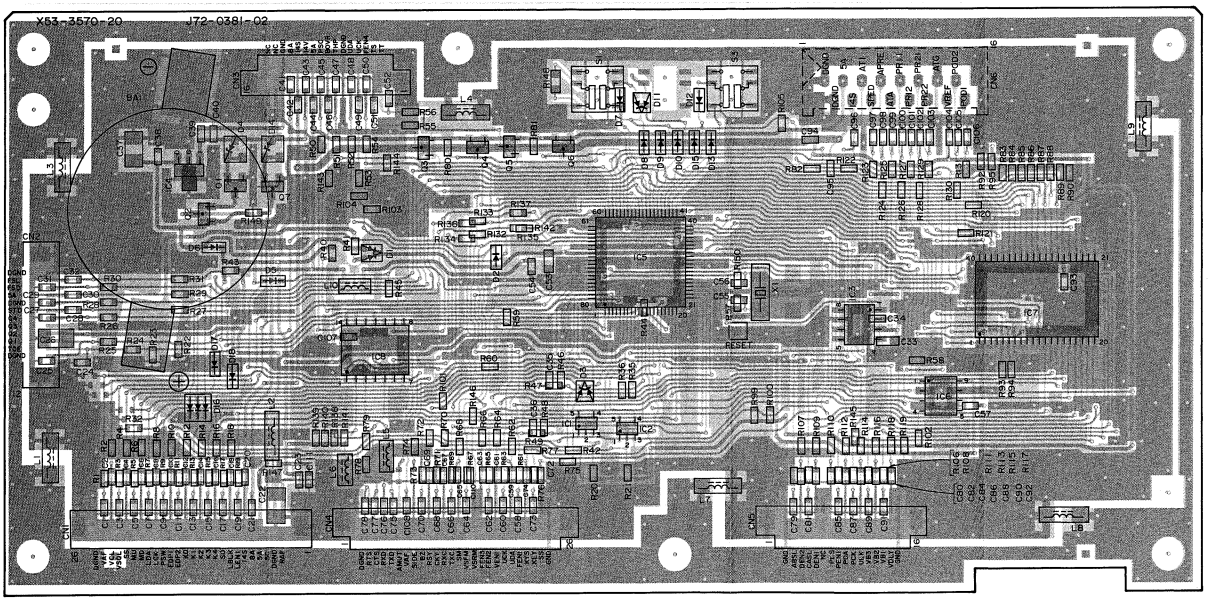

FINAL UNIT X45-3520-20 A/2
D1, 2 TEMP. COMPENSTION
Q1 PRE-DRIVE AMP
Q2, 3 DRIVE AMP
Q5, 6 FINAL AMP
D701~706 RELAY SURGE ABSORPTION
TX-RX-CN19
CN1
DRV
Q4 FINAL BIAS SUPPLY
POWER SUPPLY
Q7 RELAY DRIVE
IC2 μPC7805H
IC3 μPC7808H
D14 DAN202K
Q8 DTC114EK
F1 5A
FAN
CN2
FAN+ 1
FAN- 2
Q12 SW TRANSISTOR
Q12 DTC124TK
Q9, 10 FAN MOTOR DRIVE
Q10 DTD123EK
Q9 DTD123EK
IC1 NJM2904M
IC1 FAN CONTROL
D9 DAN202K
D701 LFB01
D702 LFB01
D703 LFB01
D704 LFB01
D705 LFB01
D706 LFB01
-2, 399MHz
-2, 4-4, 499MHz
4, 5-7, 999MHz
8-14, 499MHz
14, 5-21, 499MHz
21, 5-30MHz
IC1 :NJM2904M
IC2 :μPC7805H
IC3 :μPC7808H
IC4 :TC9174F
Q1 :2SC1971
Q2, 3 :2SC3133
Q4 :2SC3421(Y)
Q5, 6 :2SC2879(O, Y)
Q7 :DTC143TK
Q8 :DTC114EK
Q9, 10 :DTD123EK
Q12 :DTC124TK
Q13 :FMC2
Q14, 17, 18 :FMA5
Q15, 16 :FMA7
Q19~21 :DTB143EK
D1 :MA27T-B
D2~4 :MA27-B
D5 :SG-5L(R)
D6 :RD18M(B1)
D7, 8, 12 701~706 :LFB01
D9, 14 :DAN202K
D10, 11 :1S81O1
D13 :DSA301LA
D15 :ERZ-M10DK220



Note) ● Ref. No. : Parts of pattern 1.

TRC-80 PC BOARD VIEW/ 印刷线路板图

CONTROL UNIT(X53-3570-20) Component side view



1MN10

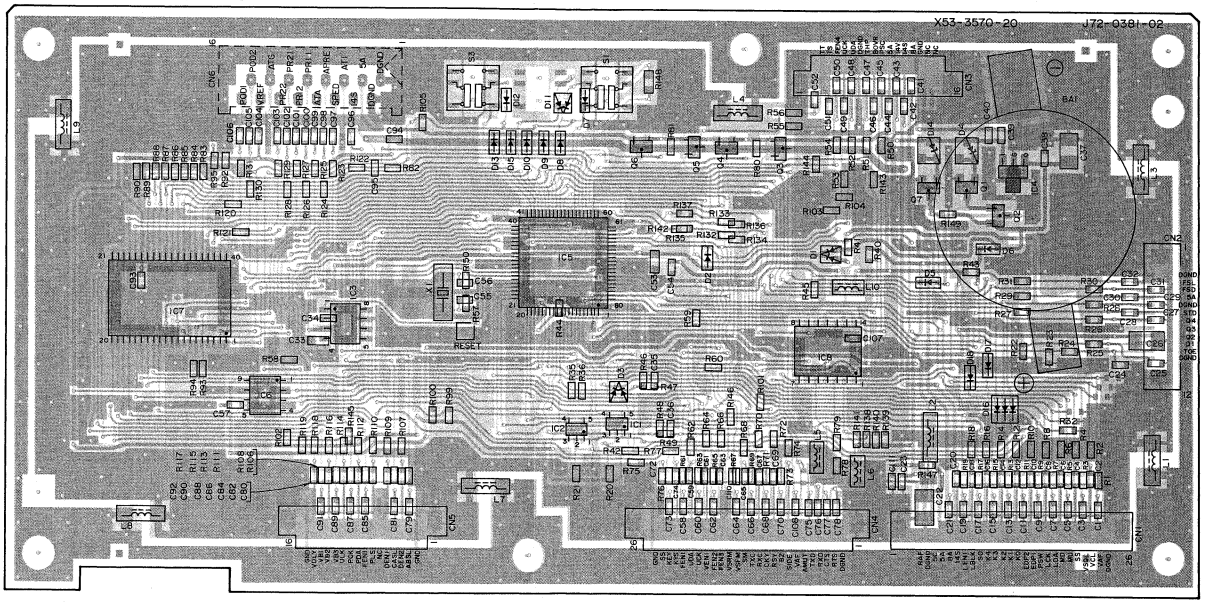
DAP202U

TC4S584F

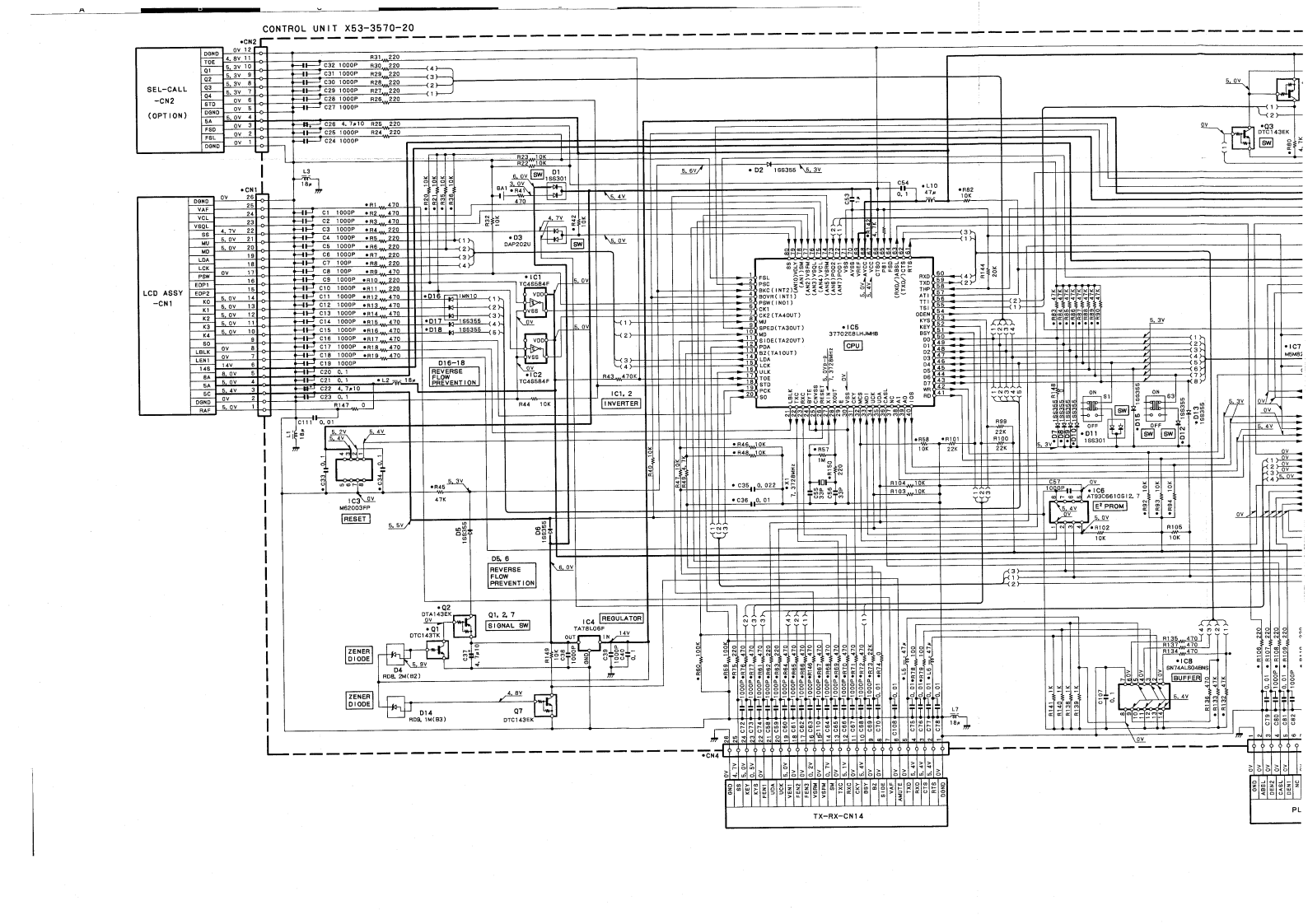
DTA143EK
DTC143TK
DTC143EK

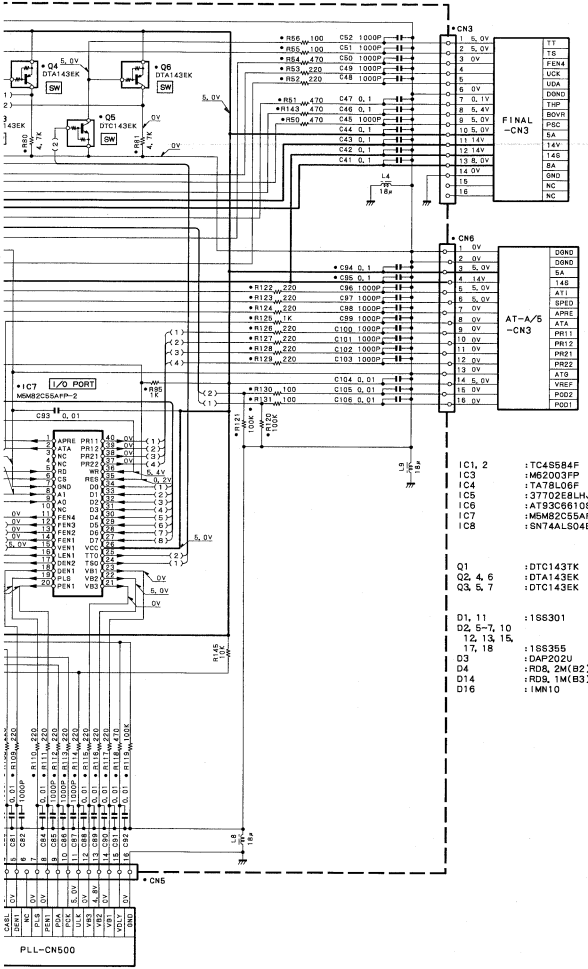
: Component side
: Foil side

CONTROL UNIT(X53-3570-20) Foil side view



M5M82C55AFP-2


CONTROL UNIT X53-3570-20
SEL-CALL -CN2 (OPTION)
LCD ASSY -CN1
CPU
EEPROM
BUFFER
REGULATOR
INVERTER
RESET
REVERSE FLOW PREVENTION
SIGNAL SW
ZENER DIODE
TX-RX-CN14



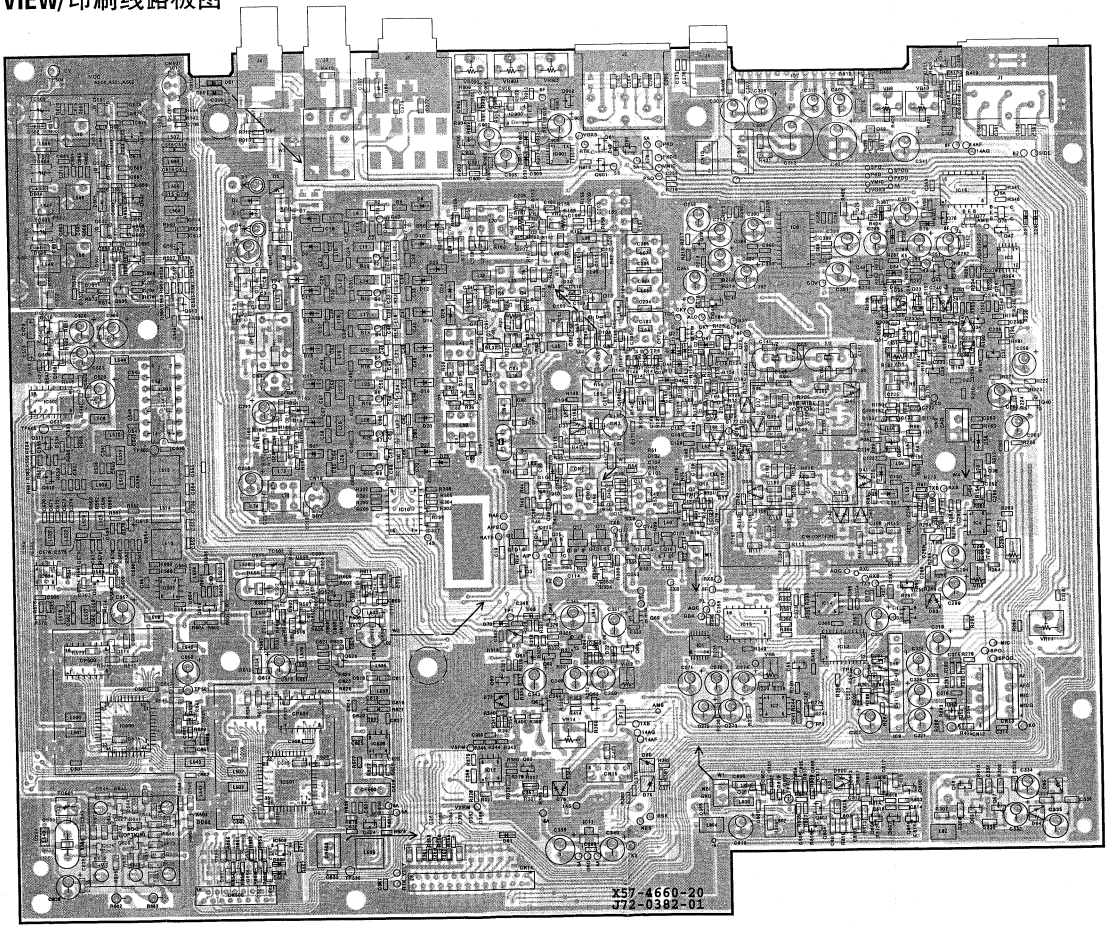
IC1, 2 :TC4S584F
IC3 :M62003FP
IC4 :TA78L06F
IC5 :37702E8LHJMHA
IC6 :AT93C6610SI2, 7
IC7 :M5M82C55AFP-2
IC8 :SN74ALS04BNS

Q1 :DTC143TK
Q2, 4, 6 :DTA143EK
Q3, 5, 7 :DTC143EK

D1, 11 :1SS301
D2, 5-7, 10 12, 13, 15, 17, 18 :1SS355
D3 :DAP202U
D4 :RD8.2M(B2)
D14 :RD8.1M(B3)
D16 :IMN10

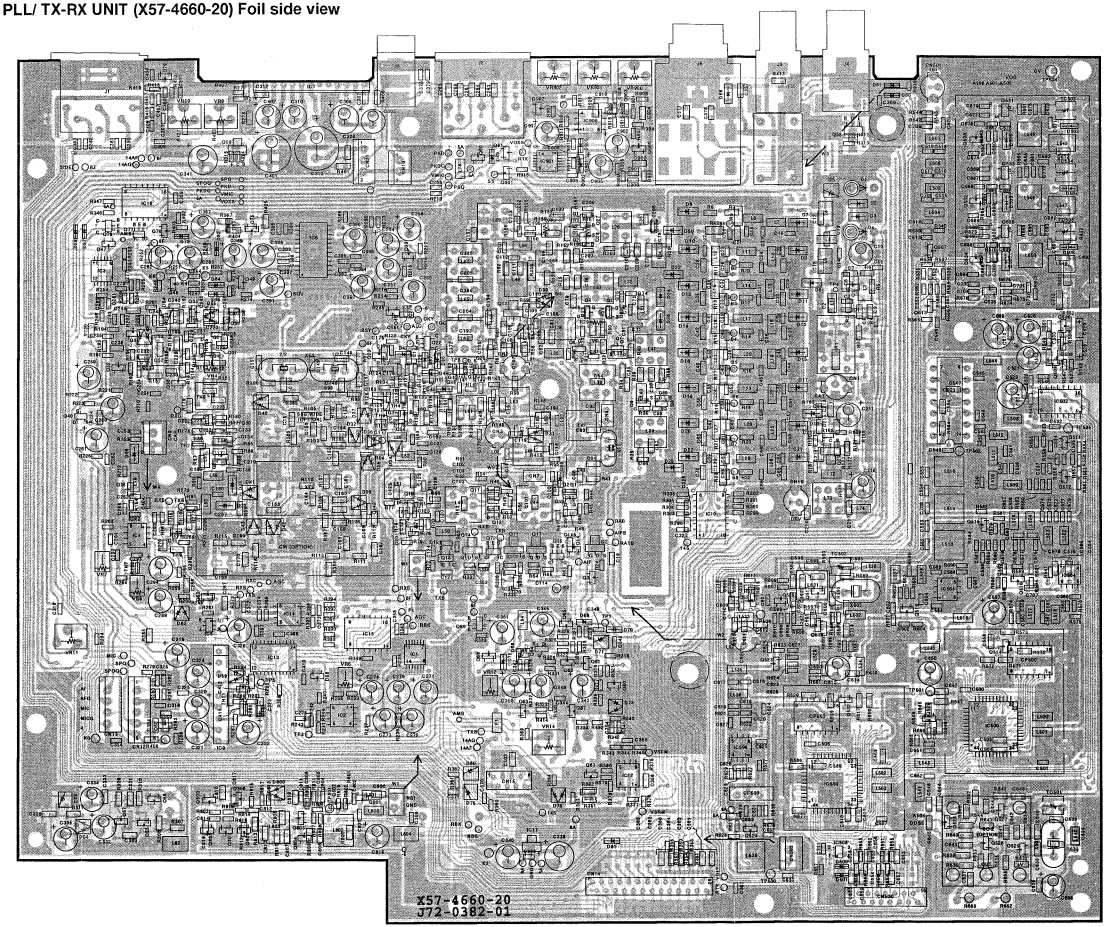
Note) ● Ref. No. : Parts of pattern 1.

PLL/ TX-RX UNIT (X57-4660-20)
Component side view



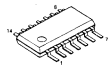
: Component side
: Foil side

PLL/ TX-RX UNIT (X57-4660-20) Foil side view



TA78L05F

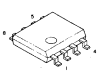
BU4066BCFV



UPC1313HA

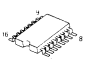
TA8184F
M62363FP

NJM2904M
UPC1037GR



LA4446

TC9174F



TC4S66F

DAN235K

HSM88AS
1SS226

2SC2954
2SC3649
2SD1624

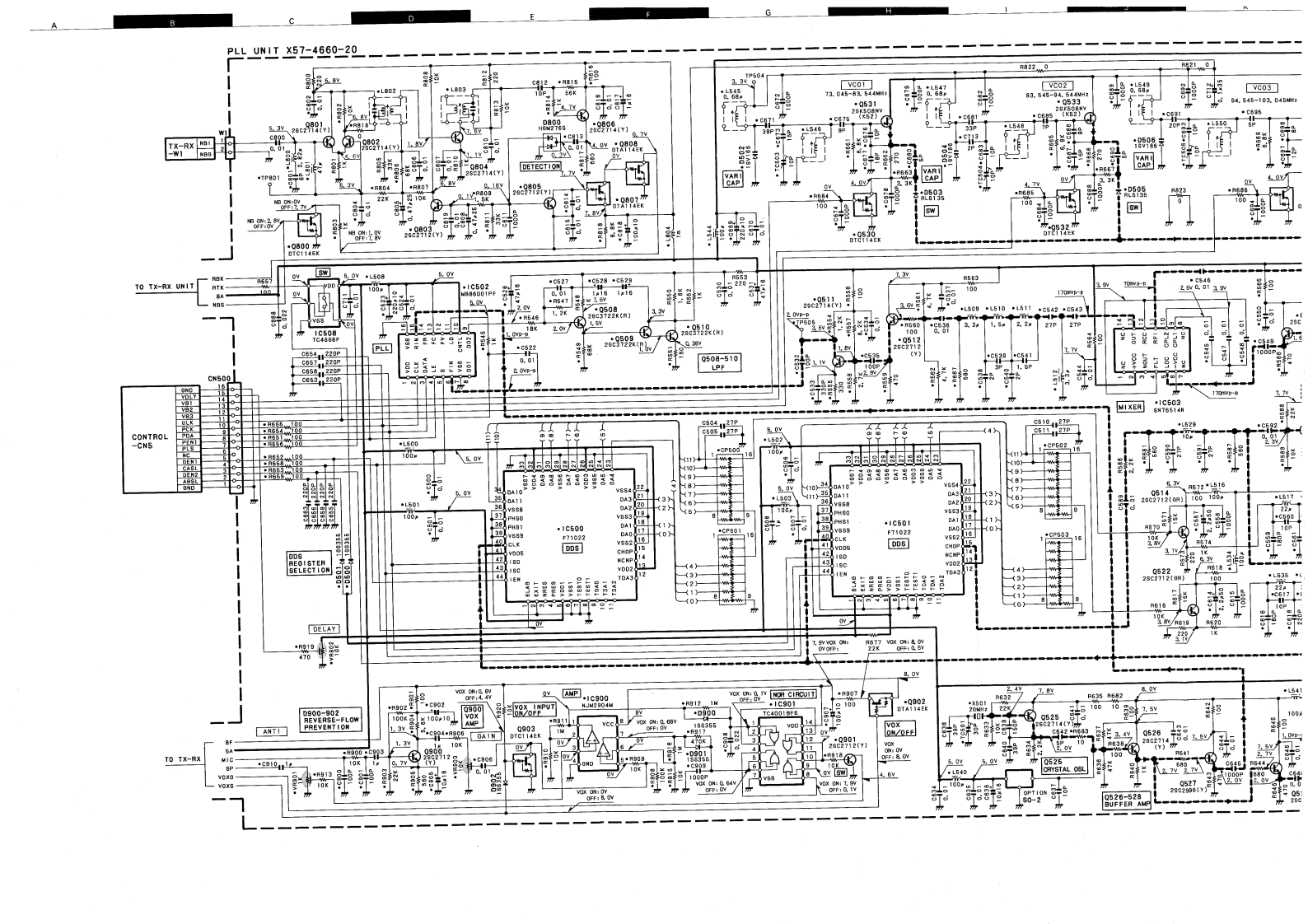
FMG3A

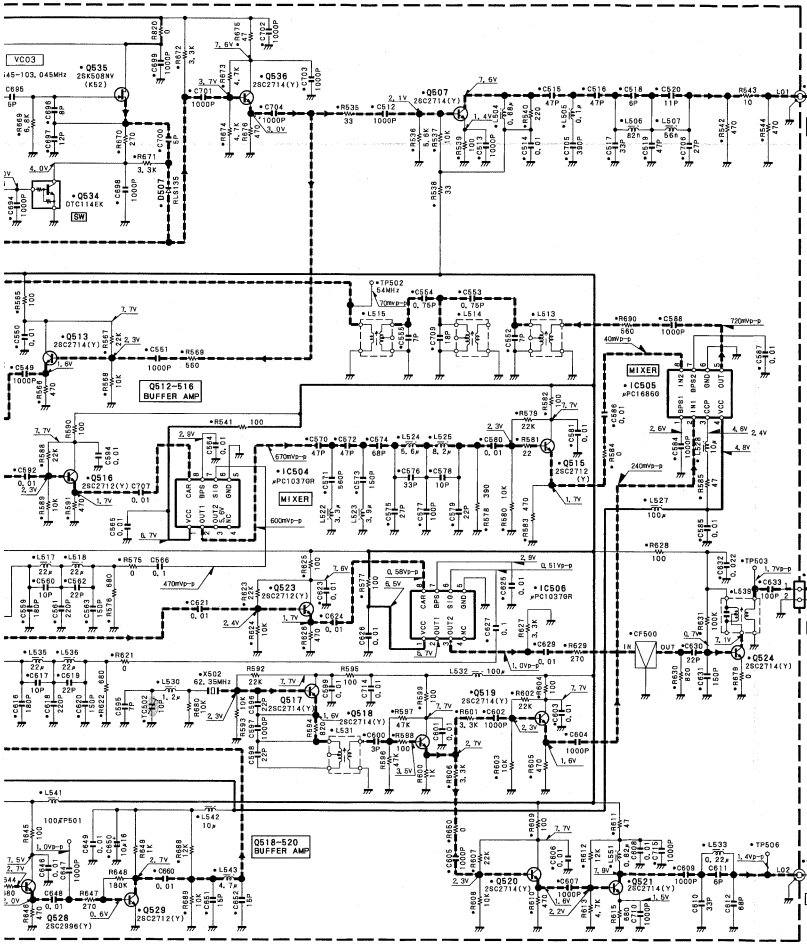
2SK520
2SK208

2SA1162
2SD1757K
2SC2712
DTA124EK
DTA114EK
DTC143TK

FMC2

3SK131


PLL UNIT X57-4660-20
TX-RX -W1
TO TX-RX UNIT
CONTROL -CN5
CN500
IC500 F71022 DDS
IC501 F71022 DDS
IC508 TC4866F
IC502 M88601PF PLL
IC503 SN76514N MIXER
DDS REGISTER SELECTION
DELAY
D900-902 REVERSE-FLOW PREVENTION
ANT1
TO TX-RX
VCO1 73.045-83.544MHz
VCO2 83.545-94.544MHz (X52)
VCO3 94.545-103.045MHz
VARI CAP
SW
DETECTION
LPF
IC900 NJM2904M
VOX INPUT ON/OFF
VOX AMP
GAIN
IC901 TC4001BFS
NOR CIRCUIT
VOX ON/OFF
Q526-528 BUFFER AMP
Q525 CRYSTAL OSC
OPTION SO-2



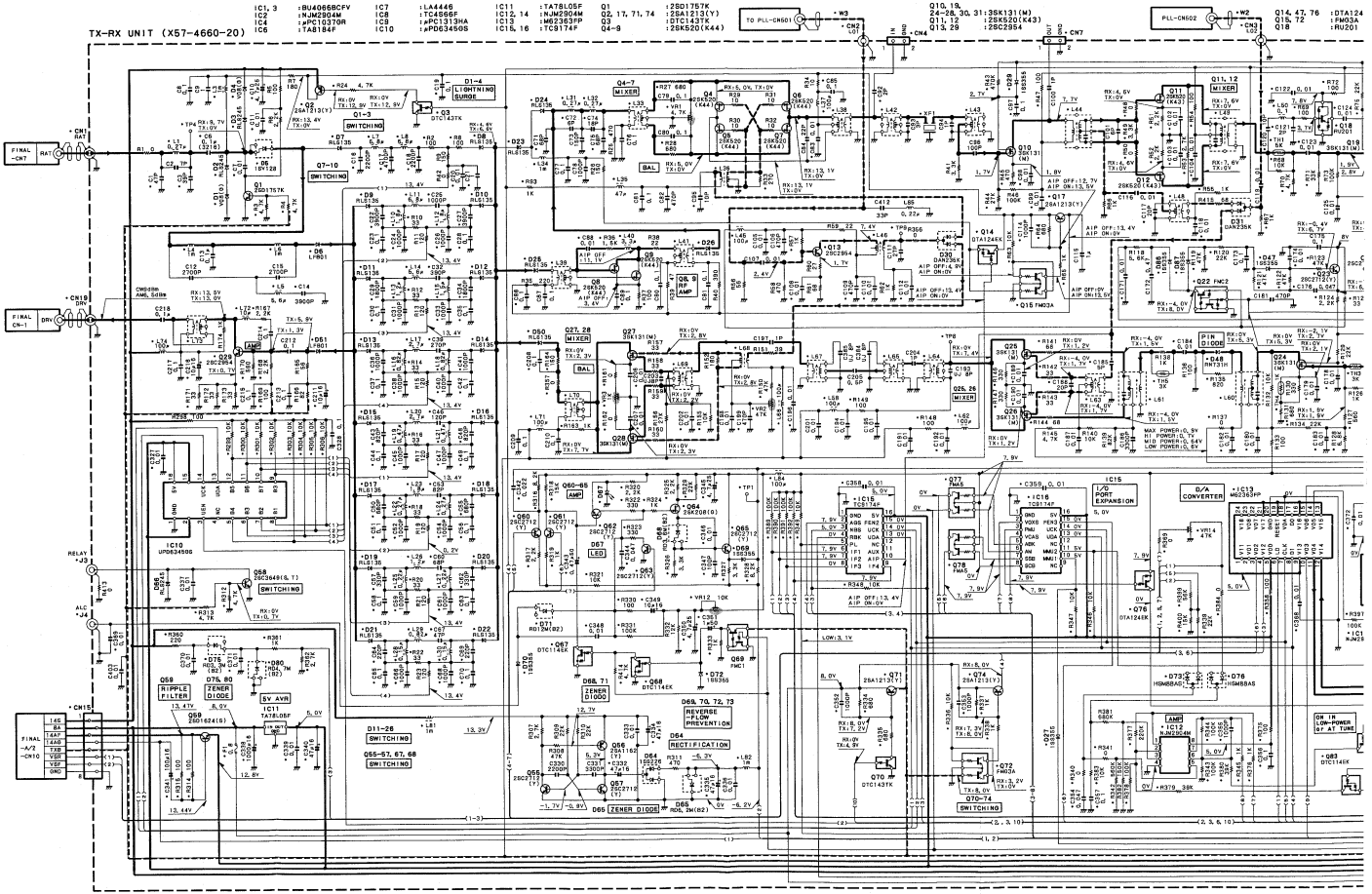
IC500, 501 : F71022
IC502 : MB86001PF
IC503 : SN76514N
IC504, 506 : μPC1037GR
IC505 : μPC16866
IC508 : TC4566F
IC900 : NJM2904M
IC901 : TC4001BFS

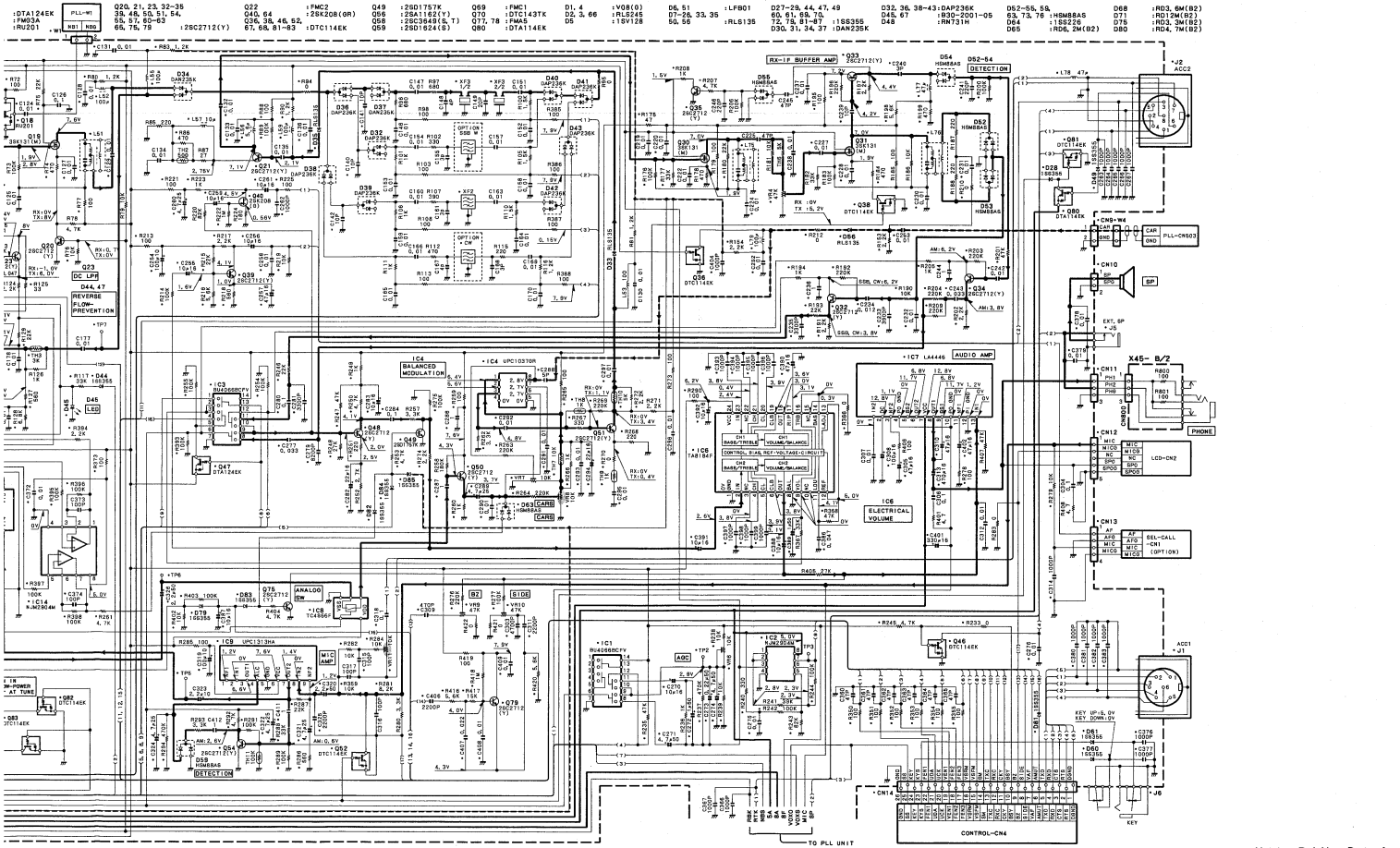
Q507, 511, 513, 517~521, 524, 525, 526, 536, 801, 802, 804, 806 : 2SC2714(Y)
Q508~510 : 2SC3722K(R)
Q512, 515, 516, 523, 529, 803, 805, 900, 901 : 2SC2712(Y)
Q514, 522 : 2SC2712(GR)
Q527, 528 : 2SC2996(Y)
Q530, 532, 534, 800, 903 : DTC114EK
Q531, 533, 535 : 2SK508NV(K52)
Q807, 808, 902 : DTA114EK

D500, 501, 900, 901, 902 : 1SS355
D502, 504, 506 : 1SV166
D503, 505, 507 : RLS135
D800 : HSM276S

Note) ● Ref. No. : Parts of pattern 1.

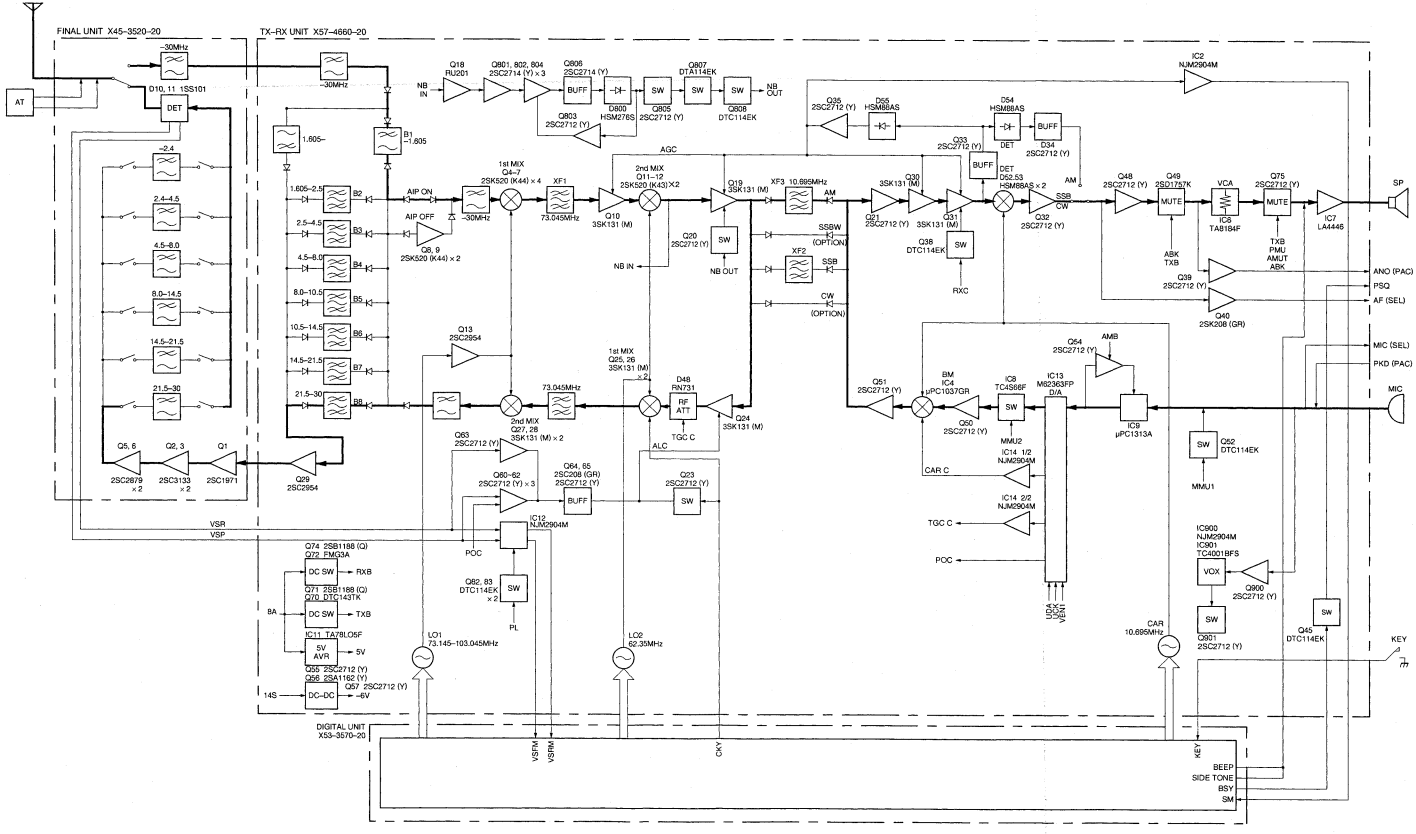
TRC-80 SCHEMATIC DIAGRAM/ 原理图



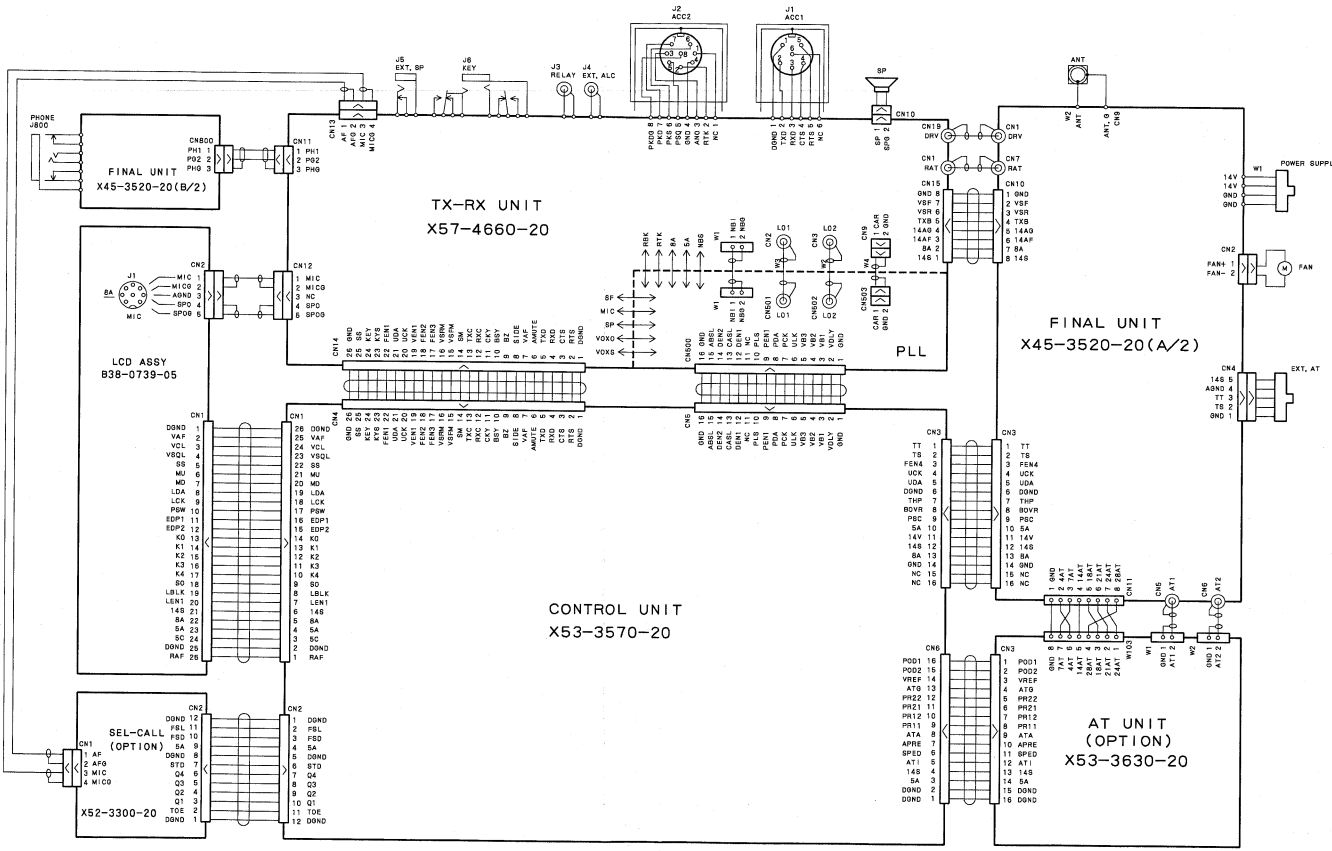


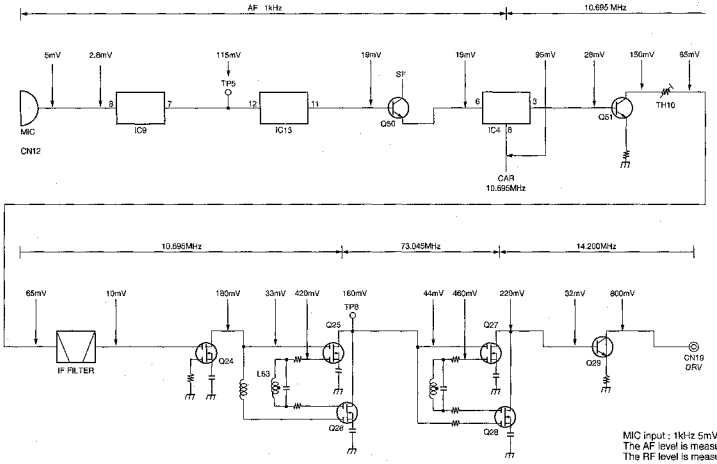
Note) ● Ref. No. : Parts of pattern

BLOCK DIAGRAM / 方框图



WIRING DIAGRAM / 配线图

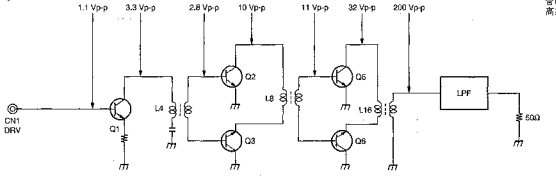




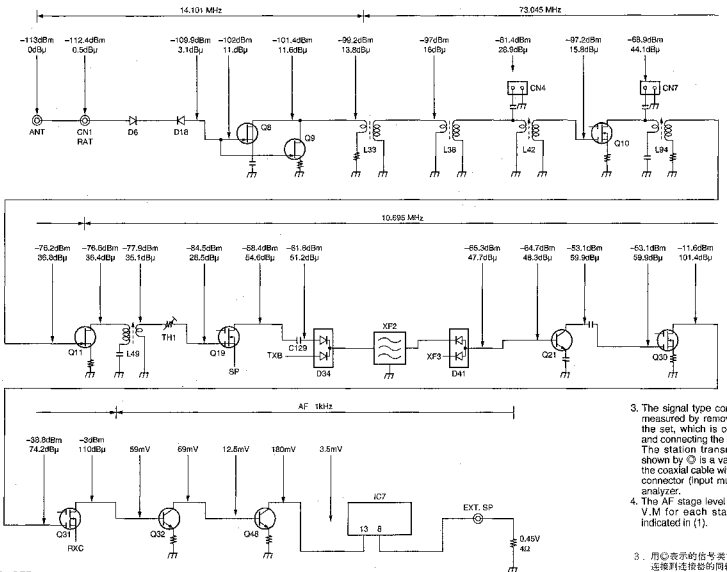
MIC input : 1kHz 5mV
The AF level is measured by an AF VTVM.
The RF level is measured by an RF VTVM.

MIC输入：1 kHz
管脚5 低频用AF电子管伏特计、
高频用RF电子管伏特计测量。

TX section (2/2)



RX section



AIP : OFF

1. Connect the signal generator to the ANT terminal at 14.2MHz USB, apply a signal of 0dBμ (EMF), tune so that the AF output beat frequency is 1kHz, and adjust the AF VR so that the AFoutput is 0.63V/4Ω.
2. Connect the signal generator to each measurement point (cut off the DC), and the AF output in (1) so that the above EMFs set are obtained.
   During measurement, the beat frequency of the AF output is normally 1kHz.

1．在14.2MHz USB将信号发生器连接到ANT端子，施加0 dBμ[EMF]的信号，调谐AF以使输出拍频成为1 kHz。然后调整AF VR以使AF输出成为0.63V/4Ω。

2．将信号发生器连接到各测量点(切断直流电源)和(1)中的AF输出，以便获得上述EMF设定值。
   测量期间，AF输出的拍频一般是1 kHz。

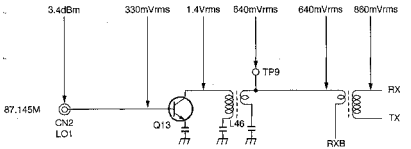
3. The signal type connector, TP, shown by ◎ is measured by removing the coaxial cable inside the set, which is connected to that connector, and connecting the signal generator in its place.
   The station transmission system connector shown by ◎ is a value measured by connecting the coaxial cable within the set connected to that connector (input must be 50Ω) to the spectrum analyzer.
4. The AF stage level is the level measured at AF V.M for each stage during the conditions indicated in (1).

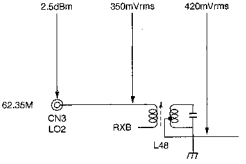
3．用◎表示的信号类型连接器TP通过移动装置内的连接到连接器的同轴电缆来测量，然后连接信号发生器于其原始位置。
   用◎表示的电台发射系统连接器是通过将连接到该连接器(输入应为50Ω)的装置内的同轴电缆连接到频谱分析仪来测量的数值。

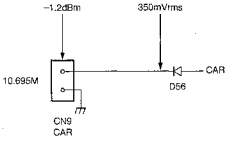
4．AF级电平是在AF V.M.对每一级，在(1)所指示的条件期间测量的电平。

LEVEL DIAGRAM/ 电平图

Local oscillator section



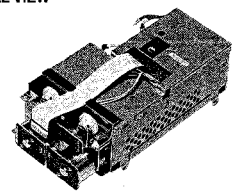




TRC-80

AT UNIT(KAT-2)/自动调谐单元(KAT-2)

EXTERNAL VIEW



1. Auto antenna tuner

When the AT TUNE switch is pressed, ATA goes high. AUTO/THRU switching relay k1 closes, and the AT is inserted. The CW mode is entered, and the transmission output becomes about 10W. If the VSWR is less than 1.1, tuning is regarded as complete, and the AT TUNE operation stops. If the VSWR is greater than 1.1, the duty cycle of the motor control pulse (described later) is controlled according to the VSWR. If tuning is not complete after more than 20 seconds, AT TUNE operation stops at below VSWR 1.3.

The motor speed is determined by the microprocessor, and the direction is determined by the phase comparator IC1 and amplitude comparator IC6 if the APRE is low, and by the microprocessor if the APRE is high. (Fig. 1)

1. 自动天线调谐器

按下AT TUNE按钮时ATA成为“H”，自动/通过转换继电器K1被接通而成为AT插入，模式成为CW，发射输出成为约10W。这时，VSWR低于1.1时认为调谐完毕而解除AT TUNE动作。(20秒钟不能够获得调谐时，在VSWR1.3以下解除AT TUNE动作。)

当VSWR大于1.1时，相应VSWR控制以后论述的电动机控制脉冲的负载。

电动机的速度由为计算机来决定，其方向在APRE为“L”时由相位比较器IC1，振幅比较器IC6来决定，在APRE为“H”时全部由微计算机来控制。

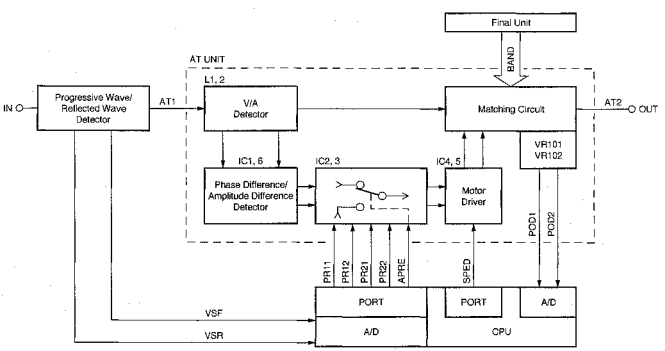


Fig.1 Block diagram of Auto antenna tuner

AT UNIT(KAT-2)/自动调谐单元(KAT-2)

2. Auto tuning

The transmitter power from the final unit passes through current/voltage detection transformers L1 and L2, which have toroidal cores. The current and voltage components detected here are rectified by a waveform rectification circuit consisting of D3-5,Q1,D6-8, and Q2 and are then phase-compared by IC1(SN74S74NS). The output signals (Q and $\overline{Q}$) from pins 5 and 6 of IC1 passes from IC2(TC4066BF) through the switch, and are applied to the motor drive IC, IC4(BA6109U2). Variable capacitor VC101 is turned by motor M1 so that the phase difference of the voltage and current components decreases.

The voltage and current components detected by L1 and L2 are rectified by diode's D1 and D2(1SS101),and are applied to voltage comparison circuit IC6(NJM2903M) as the amplitude component of the signal. The comparator output passes from IC3(TC4066BF) through the switch. Motor M2 is driven by another motor drive IC, IC5(BA6109U2), which turns variable capacitor VC102 in the direction that decreases the amplitude difference of the voltage and current components.

Thus, variable capacitor VC101 adjusts the capacitance of the circuit so that the current and voltage phases match, and variable capacitor VC102 adjusts the resistance of the circuit so that the current and voltage amplitude difference decreases. If the phases match and the amplitude difference is zero, the VSWR is 1.0.

The speed of motors M1, M2 is determined by the duty cycle of the pulse input to pin 8 of IC4 and IC5. It is controlled according to the VSWR calculated by the CPU in the control unit and the speed corresponding to preset or manual antenna tuning.

Pulse signal SPED from the control unit passes through Q5 (DTC114EK), and is amplified by Q4(2SA1204) to produce a control pulse input to IC4 and IC5.

When this control,when the VSWR is 1.6 or more, the motor runs fast since the duty cycle of the motor drive voltage pulse is 100%. When the VSWR is 1.1, the duty cycle becomes about 60%, and the motor runs slowly.

2. 自动调谐

来自末级单元的发射电力通过使用环形磁心的电流、电压检测变压器L1, L2。在此, 被检测的电流电压成分通过由D3～5, Q1和D6～8, Q2构成的波形整形电路后, 由IC1(SN74S74NS)来进行相位比较。IC1的5, 6号管脚的输出(Q, $\overline{Q}$)通过IC2(TC4066BF)的开关进入电动机激励IC4(BA6109U2), 激励电动机M1而使可变电容器VC101旋转到电压成分和电流成分的相位差变少的方向。

另外, 由L1, L2来检测的电流, 电压成分经二极管D1, D2(1SS101)来整流,作为振幅成分输入电压比较电路IC6(NJM2903M)比较器。比较器的输出通过IC3(TC4066BF)的开关, 进入另一个电动机激励IC5(BA6109U2), 激励电动机M2而使可变电容器VC102旋转到振幅差变少的方向。

为此, 电容分量调整用可变电容器VC101控制成为电流和电压的相位成为一致, 电阻成分调整用可变电容器VC102控制成为电流和电压的振幅差变小。相位一致, 振幅差0时成为VSWR1.0。

M1, M2的电动机速度由输入IC4, 5的8号管脚的脉冲占空比来决定, 以相应由控制单元的CPU计算的VSWR和可变电容器的现在位置和预置位置之差的速度来控制。

由控制单元输出的脉冲信号"SPED"通过Q5(DTC114EK)在Q4(2SA1204)被放大, 成为输入IC4, 5的控制脉冲。

据此控制, 在VSWR1.6以上时, 由于电动机激励电压脉冲的占空比为100%, 因此成为高速旋转, 而当VSWR值变低时占空比也会连续变小, 在VSWR1.1时在约60%, 电动机成为低速旋转。

TRC-80

AT UNIT(KAT-2)/自动调谐单元(KAT-2)

The matching circuit is a T type. The tap position from 2.0 to 30MHz is controlled by seven relays,K101 to K107.

Position detection potentiometers VR101 and VR102 are linked to the spindles of variable capacitor's VC101 and VC102 with a gear ratio of 1:1. Voltages of 0 to 5V(POD1 and POD2) are produced according to the positions of the variable capacitor's This position data is input to the CPU through the A/D converter by the control unit, and is used as the reference voltage in the feedback control system, That is used for preset antenna tuning. The same signal is also used for preset data and to signal the completion of antenna tuning.

The potentiometers used here are not ones that rotate through 360 degrees. Since the TRC-80 limits the rotation angle of each potentiometer, the rotation range is from the minimum capacitance to the maximum capacitance, plus a little extra for headroom.

Through this control, like preset antenna tuning, which will be described later, POD1 and POD2 are monitored by the microprocessor. If the lower limit voltage of 1.0V or the upper limit voltage of 4.0V is reached,the microprocessor recognizes that a variable capacitor is close to one of its limits. To return the voltage to the opposite side, APRE is switched high. For VC101, If the voltage is close to the lower limit with respect to PRE1, the voltage near the upper limit is output. If the voltage is close to the upper limit with respect to PRE1, the voltage near the lower limit is output.

The other variable capacitor, VC102, should be fixed. If the variable capacitor voltage exceeds the specified limit, the variable capacitor is returned to the opposite limit. The other variable capacitor remains in the same position.

The motor direction is determined by the CPU, unless auto antenna tuning is performed with high APRE.

The logic of PR11 to PR22 is the same as that of IC4 and IC5. The signal output from the control unit passes through IC2 and IC3, and is input to IC4 and IC5.

		PR11	PR12	PR21	PR22
Motor 1	Forward rotation	H	L	-	-
	Reverse rotation	L	H	-	-
Motor 2	Forward rotation	-	-	H	L
	Reverse rotation	-	-	L	H

● Preset tuning

When auto antenna tuning ends,the position of the variable capacitor's is stored in memory by the microprocessor as preset data for each channel.

When a memory channel that has been tuned once changed back from another memory channel, APRE goes high, the motors are controlled by the microprocessor, and preset antenna tuning takes place. During preset antenna tuning, transmission are inhibit even if the transceiver is ready to transmit.

The initial preset data when writes a memory by dealer includes standard data for a 50Ω load on 1MHz step from 2.0MHz.

匹配电路成为T型，用K101～K107的7个继电器来转换2.0～30MHz为止的抽头位置。

可变电容器VC101、102的旋转轴连接有齿轮比1:1而用于位置检测的调节旋钮VR101、102，相应可变电阻器的容量发生0～5V的电压POD1、POD2。本位置信息在控制单元通过模拟/数字转换器输入CPU，成为预置调谐在反馈控制系的基准电压。另外，还用于预置用数据和端检测用。

这里使用的调节旋钮为非无终点的普通旋钮，因为旋转角度有限，因此在TRC-80型，将旋转范围作为从可变电容器的容量最小到最大加余量来加以限制。

本控制与下面论述的预置调谐相同，用微计算机监视POD1，POD2来进行。当下限电压成为1.0V或上限电压成为4.0V时，检测靠到边缘，将APRE设定成"H"以便靠到相反的边缘。当该可变电容器为VC101，则输出成如果对P_{OD1}靠到下限，使其靠到上限附近，而如果靠到上限，使其靠到下限附近。

这时候，另一个可变电容器VC102成为固定状态。这样，超越范围的可变电容器被拉回相反一侧，而在此期间，另一个可变电容器停止在同一位置并等待。

除了APRE为"H"时的自动调谐之外，电动机的旋转方向由CPU来决定。

PR11～22的逻辑与IC4，5的逻辑相同，由数字单元输出的信号在通过IC2，3后，输入IC4，5。

		PR11	PR12	PR21	PR22
电动机 1	正转	H	L	-	-
	逆转	L	H	-	-
电动机 2	正转	-	-	H	L
	逆转	-	-	L	H

● 预置调谐

自动调谐结束时，此时的可变电容器的位置作为预置数据按每信道利用微计算机进行存储。

当一次调谐好的存储信道从其他存储信道回来时，APRE成为"H"，由微计算机进行电动机控制，进行预置调谐。在进行本预置调谐期间，即使成为发射状态也不会进行电波的发出。

由经销店进行存储写入时的初期预置数据成为从2.0MHz每1MHz50Ω负荷之下的标准状态的数据。

PARTS LIST / 零件目录

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

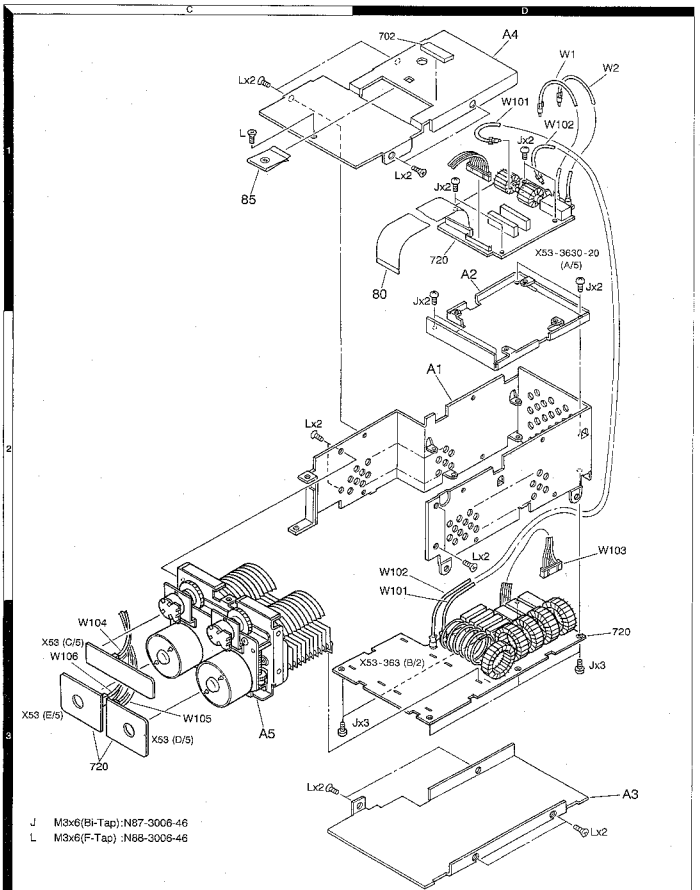
L : Scandinavia **K** : USA **P** : Canada
Y : PK (Far East, Hawaii) **T** : England **E** : Europe
Y : AAFES (Europe) **X** : Australia **M** : Other Areas

cf. No.	Address	New parts	Parts No.	Description	Destination
			KAT-2		
J1		*	E37-0573-05	FLAT CABLE FOR SERVICE REPEAR	
			N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
			490-0093-05	ADHESIVE TAPE	
			AT UNIT (X53-3630-20)		
1			CM93D2H560J	MICA 56PF J	
2 -8			CK73FB1H103K	CHIP C 0.01UF K	
9 ,10			CK73FB1H102K	CHIP C 1000PF K	
11			CK73FB1H103K	CHIP C 0.01UF K	
12			CE04EW1A470M	ELECTRO 47UF 10WV	
13 -19			CK73FB1H103K	CHIP C 0.01UF K	
20			CE04EW1E101M	ELECTRO 100UF 25WV	
21 -35			CK73FB1H103K	CHIP C 0.01UF K	
101-107			CK73FB1H103K	CHIP C 0.01UF K	
C1			C05-0031-15	TRIM CAP 10P	
C101,102			C02-0024-05	VARIABLE-CAP 300PF	
S	3C		D40-0638-05	MECHANISM ASSY	
J0	1D	*	E37-0558-05	FLAT CABLE	
N1 ,2			E04-0191-05	RF COAXIAL CABLE RECEPTACLE	
N3			E40-5349-05	PIN CONNECTOR FOR INSIDE	
N4			E40-3243-05	PIN CONNECTOR FOR INSIDE	
V1	1D	*	E37-0562-05	LEAD WIRE WITH MINIPIN PLUG	
V2	1D	*	E37-0563-05	LEAD WIRE WITH MINIPIN PLUG	
V101	1D,2D		E31-6038-05	INSIDE CONNECTING WIRE CN1	
V102	1D,2D		E31-6083-05	INSIDE CONNECTING WIRE CN2	
V103-106	2D,3C	*	E33-1993-05	FINISHED WIRE SET	
1	2D	*	F10-2184-02	SHIELDING PLATE	
2	1D		F10-1499-04	SHIELDING PLATE	
3	3D		F10-1500-03	SHIELDING PLATE	
4	1D		F10-2001-03	SHIELDING PLATE	
15	1C		G02-0717-04	FLAT SPRING	
			J61-0307-05	BAND	
1			L39-0498-05	TOROIDAL COIL	
2			L39-0415-25	TOROIDAL COIL	
3 -8			L40-1011-13	SMALL FIXED INDUCTOR 160UH	
9 -11			L40-1011-17	SMALL FIXED INDUCTOR 180UH	
12 -15			L40-1011-14	SMALL FIXED INDUCTOR 100UH	
101		*	L34-4425-05	AIR-CORE COIL	
102		*	L39-1285-05	TOROIDAL COIL	
103		*	L39-1282-05	TOROIDAL COIL	
104		*	L39-1283-05	TOROIDAL COIL	
105		*	L39-1284-05	TOROIDAL COIL	
106		*	L39-1288-05	TOROIDAL COIL	
107			L40-1011-14	SMALL FIXED INDUCTOR 100UH	
108			L40-1011-15	SMALL FIXED INDUCTOR 100UH	
109-113			L40-1011-14	SMALL FIXED INDUCTOR 100UH	
102-106			L92-0119-05	TOROIDAL CORE	
	1D,3D		N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
	1C,3D		N88-3006-46	FLAT HEAD TAPTITE SCREW	

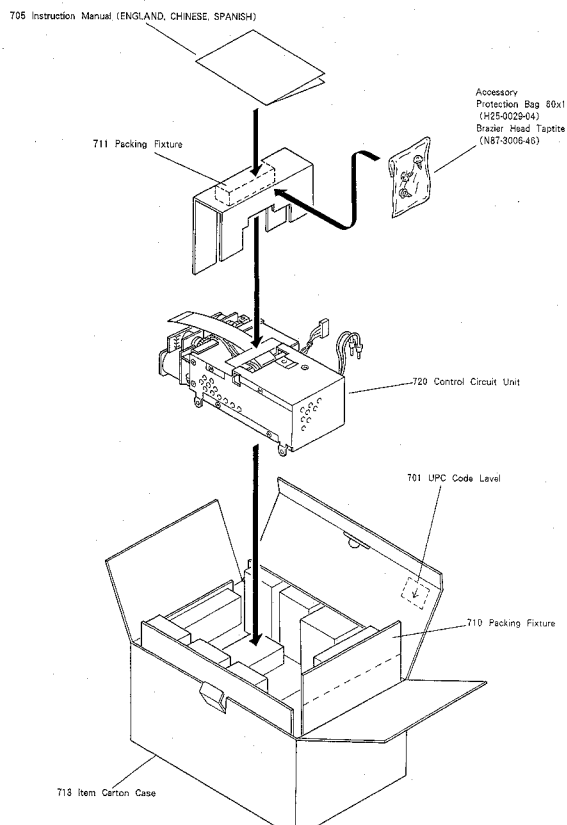
Ref. No.	Address	New parts	Parts No.	Description	Destination
R1 ,2			RD14CB2E101J	RD 100 J 1/4W	
R3			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R4			RD14CB2E470J	RD 47 J 1/4W	
R5 ,6			RK73FB2A181J	CHIP R 180 J 1/10W	
R7 -10			RK73FB2A103J	CHIP R 10K J 1/10W	
R11			RK73FB2A563J	CHIP R 56K J 1/10W	
R12			RK73FB2A121J	CHIP R 120 J 1/10W	
R13			RK73FB2A101J	CHIP R 100 J 1/10W	
R14			RK73FB2A563J	CHIP R 56K J 1/10W	
R15			RK73FB2A121J	CHIP R 120 J 1/10W	
R16			RK73FB2A101J	CHIP R 100 J 1/10W	
R17			RK73FB2A330J	CHIP R 33 J 1/10W	
R18			RK73FB2A103J	CHIP R 10K J 1/10W	
R19			RK73FB2A330J	CHIP R 33 J 1/10W	
R20 -23			RK73FB2A103J	CHIP R 10K J 1/10W	
R24 ,25			RD14BB2E100J	RD 10 J 1/4W	
R26			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R27 -32			RK73FB2A103J	CHIP R 10K J 1/10W	
R33			RK73FB2A472J	CHIP R 4.7K J 1/10W	
R34 -42			R92-0676-05	CHIP R 0 OHM	
VR101,102			R01-3435-05	POTENTIOMETER10K	
K1			S51-2417-05	RELAY	
K101-104		*	S76-0415-05	RELAY	
K105-107			S76-0401-05	RELAY	
M1 ,2			T42-0453-05	DC MOTOR	
D1 ,2			1SS161	DIODE	
D3 -8			1SS226	DIODE	
D9			LR601	DIODE	
D101-107			LR601	DIODE	
IC1			SN74S74NS	IC(FLIP-FLOP)	
IC2 ,3			MC14066BF	IC(BILATERAL SWITCH X4)	
IC4 ,5			TC4066BF	IC(BILATERAL SWITCH)	
IC6			NJM2903M	IC(COMPARATOR X2)	
Q1 ,2			2SC2714(Y)	TRANSISTOR	
Q3			DTC114EK	DIGITAL TRANSISTOR	
Q4			2SA1204(Y)	TRANSISTOR	
Q5			DTC114EK	DIGITAL TRANSISTOR	
Q6			DTD143EK	DIGITAL TRANSISTOR	
W5 -19			961-0005-05	COATING WIRE	

TRC-80

EXPLODED VIEW/ 外观



PACKING/ 包装


705 Instruction Manual (ENGLAND, CHINESE, SPANISH)
Accessory
Protection Bag 80x110
(H25-0029-04)
Brazier Head Taptite Screw
(N87-3006-46)
711 Packing Fixture
720 Control Circuit Unit
701 UPC Code Level
710 Packing Fixture
713 Item Carton Case

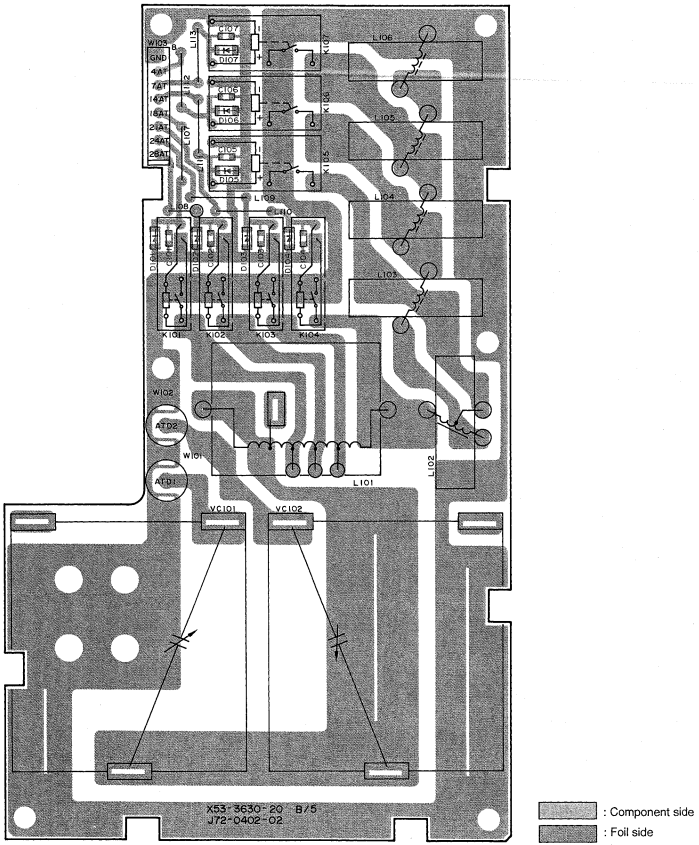
TRC-80

ADJUSTMENT/ 调整

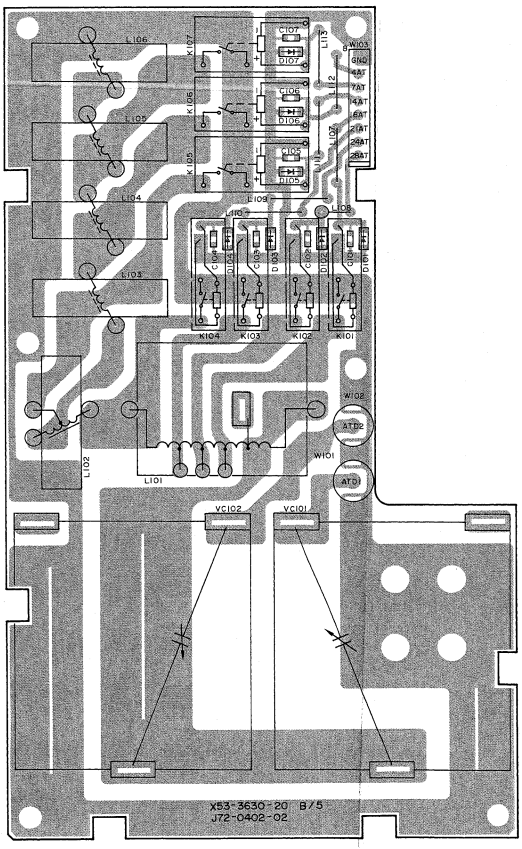
Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Auto Antenna tuner check	1) DISPLAY : 2MHz MODE : CW 2) Dummy load : 20Ω 3) POWER ON 4) AT TUNE ON 5) Set silver-point of TC1 to 45°.  6) Press [AT TUNE] key.	Oscillo Dummy load	AT		AT	TC1		RF meter decreases, then AT is stop.
	1) Dummy load : 150Ω 2) Press [AT TUNE] key.							
	1) Dummy load : 50Ω 2) Press [AT TUNE] key.							

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1. 自动天线调谐器检查	1) 显示：2MHz 模式：CW 2) 假负载：20Ω 3) 电源接通 4) 自动天线调谐接通 5) 将TC1银色部分设定成45°  6) 按下AT TUNE键	示波器 假负载	AT		AT	TC1		RF表下降，AT停止。
	1) 假负载：150Ω 2) 按下AT TUNE键							
	1) 假负载：150Ω 2) 按下AT TUNE键							

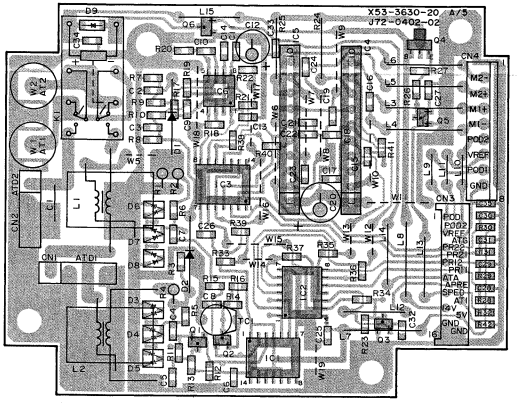
AT UNIT (X53-3630-20) B/5 Component side view



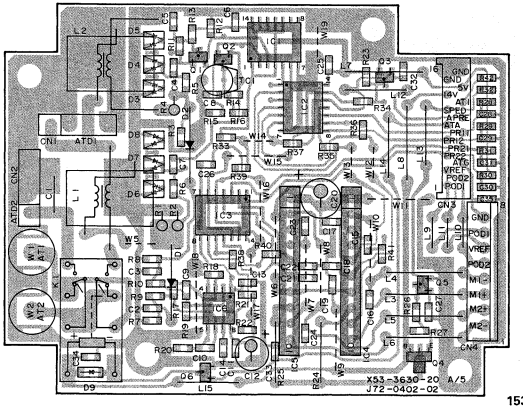
AT UNIT (X53-3630-20) B/5 Foil side view



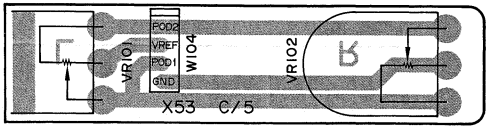
AT UNIT (X53-3630-20) A/5 Component side view



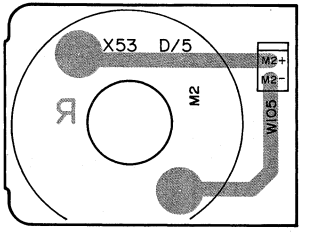
AT UNIT (X53-3630-20) A/5 Foil side view



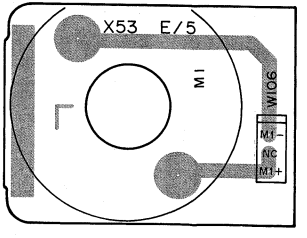
AT UNIT (X53-3630-20) C/5 Component side view



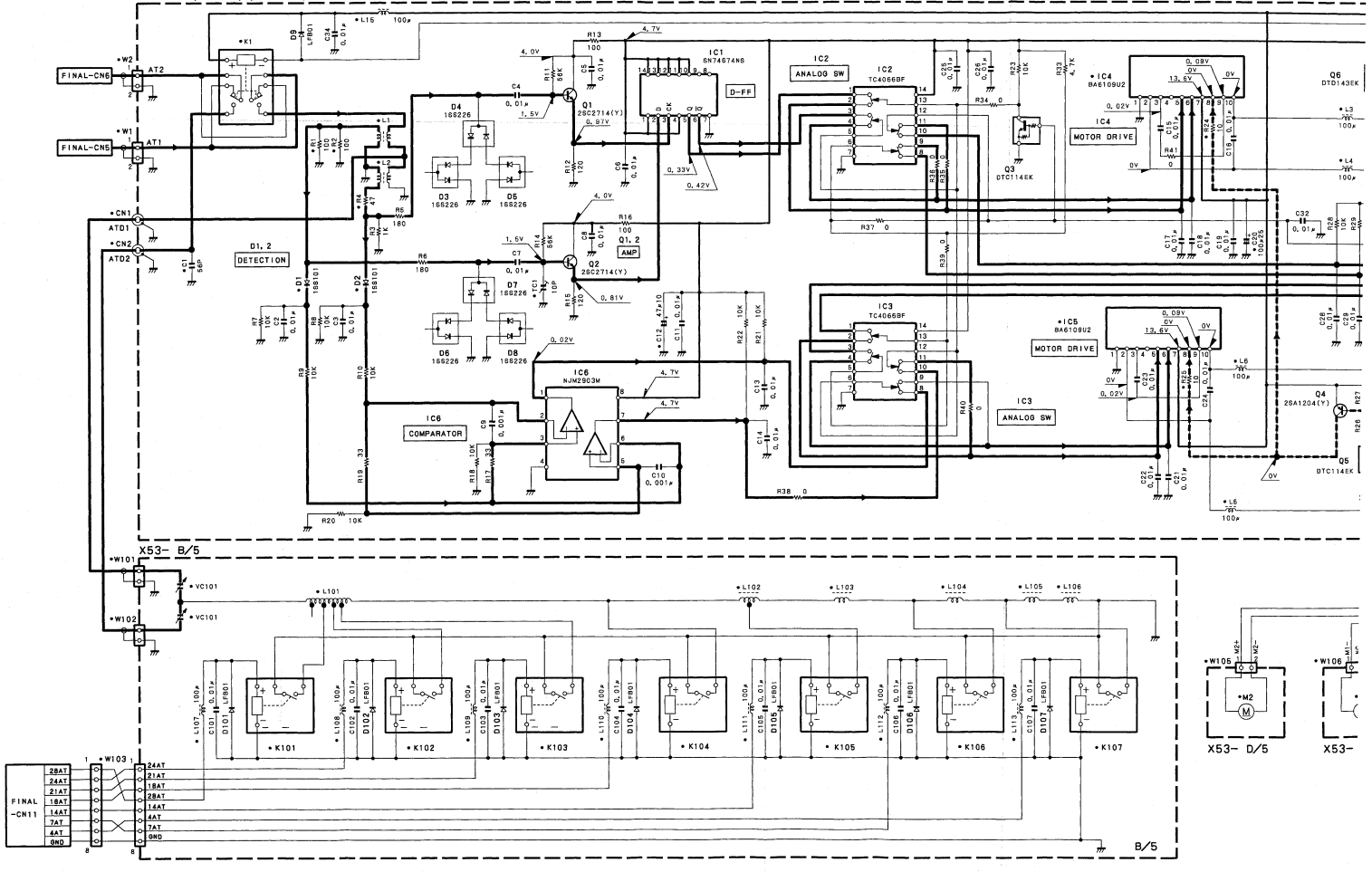
AT UNIT (X53-3630-20) D/5 Component side view

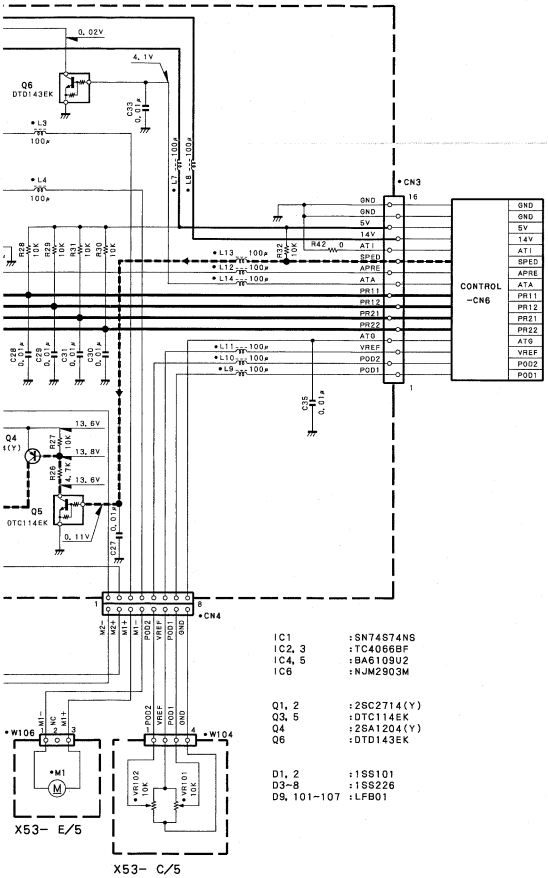


AT UNIT (X53-3630-20) E/5 Component side view



2SC2714
DTC114EK


AT UNIT(KAT-2)(OPTION) X53-3630-20 A/5
FINAL-CN6
FINAL-CN5
ATD1
ATD2
D1, 2 DETECTION
IC1 SN74S74NS D-FF
IC2 TC4066BF ANALOG SW
IC3 TC4066BF ANALOG SW
IC4 BA6109U2 MOTOR DRIVE
IC5 BA6109U2 MOTOR DRIVE
IC6 NJM2903M COMPARATOR
Q1, 2 AMP
Q1 2SC2714(Y)
Q2 2SC2714(Y)
Q3 DTC114EK
Q4 2SA1204(Y)
Q5 DTC114EK
Q6 DTD143EK
X53- B/5
X53- D/5
FINAL -CN11
28AT
24AT
21AT
18AT
14AT
7AT
4AT
GND
K101
K102
K103
K104
K105
K106
K107
B/5



IC1 :SN74S74NS
IC2, 3 :TC4066BF
IC4, 5 :BA6109U2
IC6 :NJM2903M

Q1, 2 :2SC2714(Y)
Q3, 5 :DTC114EK
Q4 :2SA1204(Y)
Q6 :DTD143EK

D1, 2 :1SS101
D3-8 :1SS226
D9, 101-107 :LFB01

Note) ● Ref. No. : Parts of pattern 1.

TRC-80

SELECTIVE CALL UNIT(KPE-1)/ 选择呼叫单元(KPE-1)

EXTERNAL VIEW

Selective call circuit description

The selective call unit consists of the DTMF decoder section and the FSK decoder section circuits.

1. DTMF decoder

The DTMF tone input from the LCD assembly microphone input connector is input to IC3:LC7385M via the TX-RX unit. When an effective tone is detected the STD terminal becomes "H" and an enable TOE is output from the control unit's CPU. This in turn causes DTMF decode data to be output from IC3:LC7385M and Q1~Q4. The control unit's CPU reads in this DTMF decode data, converts it to FSK data and transmits.

2. FSK decoder

The AF signal detected at the TX-RX unit is input to Pin 2 of IC1:NJM2211M. If it is an effective tone the tone detect signal is output through buffer IC2:SN74ALS04BNS and FSL is sent to the control CPU. FSK decode data is sent from pin 7 of IC1 through buffer IC2 as the FSD to the control unit's internal CPU. The CPU detects conformity with code set for that unit and changes the mode, clears AF muting, etc.

The IC1 internal VCO central frequency (fo) is determined by C5, R9 and VR1 and adjusted to 2210Hz. The tracking bandwidth (Δf) is determined by R6, R9 and VR1.

1. Auto antenna tuner

选择呼叫动作

选择呼叫单元由DTMF解码部和FSK解码部的2种电路来构成。

1. DTMF解码器

由LCD组件的MIC端子输入的DTMF音调中继发射一接收单元而输入到IC3(LC7385M)。检测有效的音调时STD端子成为"H"，由控制单元的CPU输出允许TOE。据此，从IC3(LC7385M)和Q1～Q4输出DTMF解码数据。控制单元的CPU读取本DTMF解码数据，变换为FSK数据并被发射。

2. FSK解码器

在发射一接收单元被检波的AF信号被输入到IC1(NJM2211M)的2号管脚，如果是有效的音调则发出音调检测信号，经过缓冲IC2(SN74ALS04BNS)而FSL被送到控制部的CPU。FSK解码数据由IC1的7号管脚经过缓冲器IC2而作为FSD送到控制单元内的CPU。CPU确认同本台代码的一致进行模式的变更、解除AF静噪等。

IC1内部的VCO中心频率(fo)由C5、R9、VR1来决定而被调整成为2210Hz。跟踪带宽(Δf)由R6、R9、VR1来决定。

Adjustment

Item	Condition	Measurement			Adjustment			Specifications/ Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency adjustment	1) S1 changes to TEST. 2) SG : 2210Hz	f. counter SG	SEL CALL UNIT (X52-330)	TP1	SEL CALL UNIT (X52-330)	VR1	2210±2Hz	

项 目	条 件	测 量			调 整			规 格
		测试装置	单 元	端 子	单 元	零 件	方 法	
1. 频率调整	1) 旋转S1成为TEST 2) SG : 2210Hz	频率计 SG	选择呼叫单元 (X52-330)	TP1	选择呼叫单元 (X52-330)	VR1	2210±2Hz	

PARTS LIST/零件目录

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

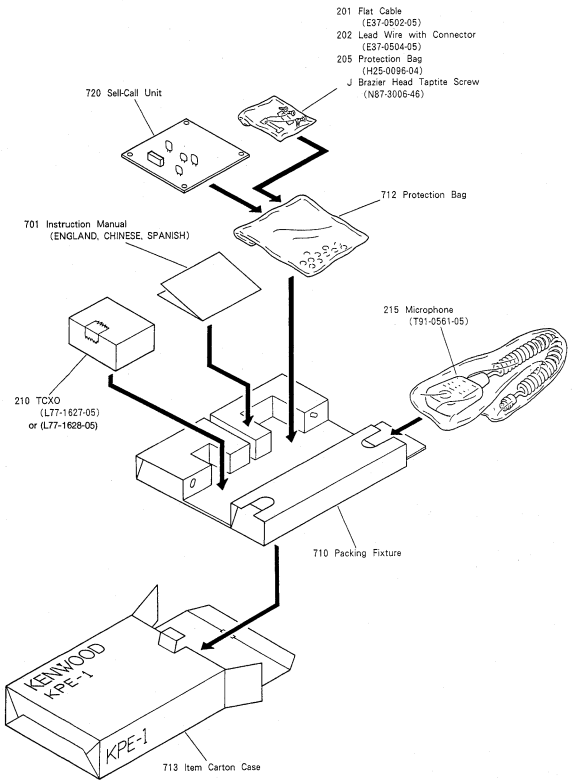
L : Scandinavia **K** : USA **P** : Canada
Y : PX (Far East, Hawaii) **T** : England **E** : Europe
Y : AAFES (Europe) **X** : Australia **M** : Other Areas

KPE-1

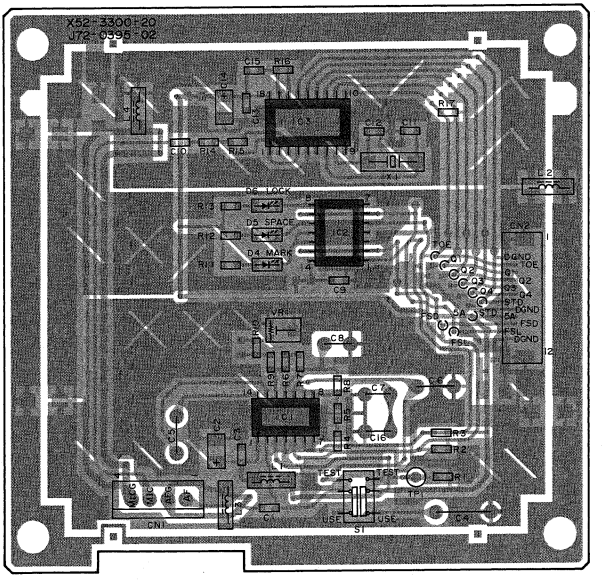
SEL CALL UNIT (X52-3300-20)

ef. No.	Address	New parts	Parts No.	Description	Destination
			KPE-1		
01		*	E37-0502-05	FLAT CABLE	
02		*	E37-0504-05	LEAD WIRE WITH CONNECTOR	
05			H25-0096-04	PROTECTION BAG	
10		*	L77-1627-05	TCXO ACCESSORY	
10		*	L77-1628-05	TCXO ACCESSORY	
	2A		N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
15		*	T91-0561-05	MICROPHONE ACCESSORY	
			SEL CALL UNIT(X52-3300-20)		
4 -6			B30-2004-05	LED	
:1			CK73FF1E104Z	CHIP C 0.10UF Z	
:2			C92-0009-05	CHIP-TAN 4.7UF 10WV	
:3			CK73FF1E104Z	CHIP C 0.10UF Z	
:4			CQ92M1H184J	MYLAR 0.18UF J	
:5		*	C91-1167-05	LAMINATED CAP0.015UF J	
:6			CQ92M1H104J	MYLAR 0.10UF J	
:7			CQ92M1H822J	MYLAR 8200PF J	
:8			CQ92M1H392J	MYLAR 3900PF J	
:9			CK73FF1E104Z	CHIP C 0.10UF Z	
:10			CK73FB1H103K	CHIP C 0.010UF K	
:11 ,12			CC73FCH1H330J	CHIP C 33PF J	
:13			CK73FF1E104Z	CHIP C 0.10UF Z	
:14			C92-0009-05	CHIP-TAN 4.7UF 10WV	
:15			CK73FF1E104Z	CHIP C 0.10UF Z	
:16			CQ92M1H153J	MYLAR 0.015UF J	
:N1			E40-3239-05	PIN ASSY 4P	
:N2		*	E40-5758-05	FLAT CABLE CONNECTOR 12P	
1 -4			L40-1801-18	SMALL FIXED INDUCTOR 18UH	
:1			L78-0301-05	RESONATOR 3.5795MHz	
:1			RK73FB2A474J	CHIP R 470K J 1/10W	
:2 ,3			RK73FB2A472J	CHIP R 4.7K J 1/10W	
:4			RK73FB2A474J	CHIP R 470K J 1/10W	
:5			RK73FB2A393J	CHIP R 39K J 1/10W	
:6			RK73FB2A394J	CHIP R 390K J 1/10W	
:7			RS2-0670-05	CHIP R 0 OHM	
:8			RK73FB2A104J	CHIP R 100K J 1/10W	
:9			RK73FB2A273J	CHIP R 27K J 1/10W	
:10			RS2-0670-05	CHIP R 0 OHM	
:12 -13			RK73FB2A471J	CHIP R 470 J 1/10W	
:14			RK73FB2A473J	CHIP R 47K J 1/10W	
:15			RK73FB2A684J	CHIP R 680K J 1/10W	
:16			RK73FB2A334J	CHIP R 330K J 1/10W	
:17			RK73FB2A473J	CHIP R 47K J 1/10W	
:R1			R12-6711-05	TRIM POT 4.7k	
1			S62-0412-05	SLIDE SWITCH	
:1		*	NJM2211M	IC(FSK DEMODULATOR)	
:2			SN74ALS04BNS	IC(INVERTER)	
:3			LC7385M	IC(DTMF DECODER)	

PACKING/ 包装


201 Flat Cable
(E37-0502-05)
202 Lead Wire with Connector
(E37-0504-05)
205 Protection Bag
(H25-0096-04)
J Brazier Head Taptite Screw
(N87-3006-46)
720 Self-Call Unit
712 Protection Bag
701 Instruction Manual
(ENGLAND, CHINESE, SPANISH)
215 Microphone
(T91-0561-05)
210 TCXO
(L77-1627-05)
or (L77-1628-05)
710 Packing Fixture
KENWOOD
KPE-1
KPE-1
713 Item Carton Case

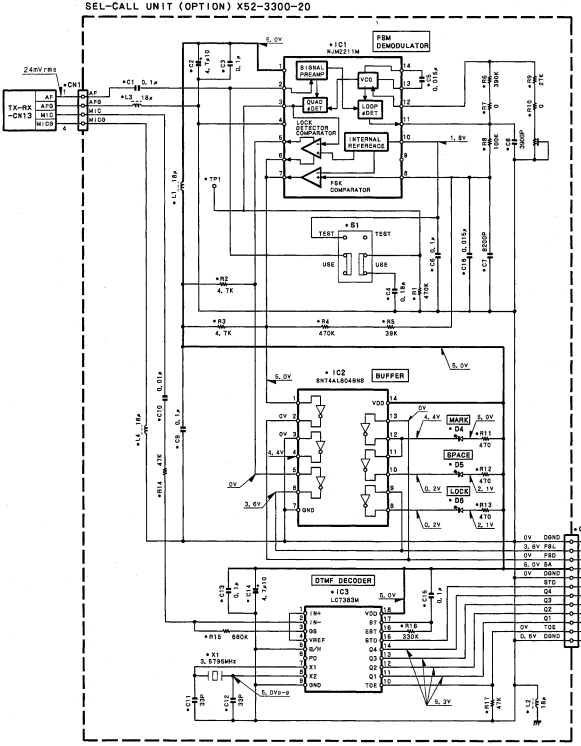
SEL CALL UNIT (X52-3300-20)



: Component side

: Foil side

TRC-80 SCHEMATIC DIAGRAM/ 原理图



规格

TRC-80		
一般		
发射器频率范围	仅适用于TRC-80型	*TRC-80+KAT-2
	1.8-2.39999MHz	2.0-2.39999MHz
	3.5-4.4999MHz	3.5-4.49999MHz
	6.0-7.99999MHz	6.0-7.99999MHz
	11.0-14.49999MHz	11.0-14.49999MHz
	16.0-21.49999MHz	16.0-21.49999MHz
	24.0-29.99999MHz	24.0-29.99999MHz
接收器频率范围	0.5-29.99999MHz	
模式	J3E(SSB), A1A(CW), A3E(AM), F1D(FSK), F2D(AFSK)	
工作温度	−20°C～+60°C	
功率需求	13.6V DC ±15%(负极接地)	
电量消耗		
接收	小于1.45A	
发射	小于20.5A	
频率稳定性	−10°C～+50°C, 至±10ppm −20°C～+60°C, 至±15ppm −10°C～+50°C, 至±0.5ppm(或SO-2) −20°C～+60°C, 至±1.0ppm(或KPE-1)	
可适用的MIL标准	MIL-STD 810D: 振动, 方法514.3, 范畴10, 程序1	
天线阻抗	50Ω	
尺寸(宽×高×深)	270×96×271mm (10-5/8×3-3/4×10-11/16 In)	
净重	5.2kg(11.5bs.)	

接收器	
电路	双重超外差接收方式
中频	
一次中频	73.045MHz
二次中频	10.695MHz
灵敏度	小于4μV(0.5-1.79999MHz)
SSB/CW/FSK	0.25μV(1.8-29.99999MHz)
(10dB S/N)	32μV(0.5-1.79999MHz)
AM(10dB S/N)	2.5μV(1.8-29.99999MHz)
假信号响应	
中频镜象干扰比	大于70dB
中频拒斥	大于80dB
选择性	
SSB/CW/FSK	大于2.2kHz(−6dB)
	大于4.8kHz(−60dB)
	大于5.0kHz(−6dB)
AW	大于40.0kHz(−60dB)
CW(用YK-107C)	大于0.5kHz(−6dB)
	大于2.0kHz(−50dB)
干扰消除器可变范围	经销店设定: ±110Hz(1Hz步进)
音频输出	大于3.5W(4Ω, 10%)
音频输出阻抗	4Ω
发射器	
射频功率输出	
SSB/CW/FSK	100W
AM(未调制信号)	25W
载波抑制	大于40dB
不希望的边带抑制	大于50dB(1.0kHz)
麦克风阻抗	600Ω

TRC-80

SPECIFICATIONS

TRC-80		
GENERAL		
	TRC-80 only	TRC-80+KAT-2
Transmitter frequency range	1.8~2.39999 MHz	2.0~2.39999 MHz
	3.5~4.49999 MHz	3.5~4.49999 MHz
	6.0~7.99999 MHz	6.0~7.99999 MHz
	11.0~14.49999 MHz	11.0~14.49999 MHz
	16.0~21.49999 MHz	16.0~21.49999 MHz
	24.0~29.99999 MHz	24.0~29.99999 MHz
Receiver frequency range	0.5~29.99999 MHz	
Modes	J3E(SSB), A1A(CW), A3E(AM), F1D(FSK), F2D(AFSK)	
Operating temperature	–20°C~+60°C	
Power requirement	13.6V DC ±15% (negative ground)	
Current drain		
Receive	Less than 1.45 A	
Transmit	Less than 20.5 A	
Frequency stability	–10°C~+50°C, within ±10 ppm –20°C~+60°C, within ±15 ppm –10°C~+50°C, within ±0.5 ppm(with SO-2) –20°C~+60°C, within ±1.0 ppm(with KPE-1)	
Applicable MIL-STD	MIL-STD 810D : Vibration, Method 514.3, Category 10, Procedure 1	
Antenna impedance	50Ω	
Dimensions (W×H×D)	270×96×271 mm (10-5/8×3-3/4×10-11/16 in.)	
Weight (net)	5.2kg (11.5 lbs.)	

KENWOOD follows a policy of continuous advancement in development.
For this reason specifications may be changed without notice.

RECEIVER	
Circuitry	Double conversion superheterodyne
Intermediate frequencies	
1st IF	73.045 MHz
2st IF	10.695 MHz
Sensitivity	
SSB/CW/FSK (10 dB S/N)	Less than 4μV(0.5~1.79999 MHz); Less than 0.25μV(1.8~29.99999 MHz)
AM(10 dB S/N)	Less than 3.2μV(0.5~1.79999 MHz); Less than 2.5μV(1.8~29.99999 MHz)
Spurious response	
IF image ratio	More than 70 dB
IF rejection	More than 80 dB
Selectivity	
SSB/CW/FSK	More than 2.2 kHz (–6 dB); Less than 4.8 kHz (–60 dB)
AM	More than 5.0 kHz (–6 dB); Less than 40.0 kHz (–60 dB)
CW (with YK-107C)	More than 0.5 kHz (–6 dB); Less than 2.0 kHz (–50 dB)
Clarifier variable range	±1.1 kHz (10 Hz step)/ Dealer setting : ±110 Hz(1 Hz step)
Audio output	More than 3.5 W (4Ω, 10% distortion)
Audio output impedance	4Ω
TRANSMITTER	
RF power output	
SSB/CW/FSK	100 W
AM (unmodulated signal)	25 W
Carrier suppression	More than 40 dB
Unwanted sideband suppression	More than 50 dB (1.0 kHz)
Microphone impedance	600 Ω

Optional Accessories

Internal Automatic Antenna Tuner :	**KAT-2**
External Automatic Antenna Tuner :	**KAT-1**
Desktop Microphone :	**MC-60A**
Selective Call Kit :	**KPE-1**
SSB Filter (2.7kHz) :	**KIF-1**
CW Filter (500Hz) :	**YK-107C**
Temperature Controlled Crystal Oscillator (TCXO):	**SO-2**
Phone Patch Interface :	**PC-1A**
Mobile Mount Bracket :	**MB-430**
DC Power Supply (22.5 A) :	**PS-53**
DC Power Supply (20.5 A) :	**PS-33**
Headphones :	**HS-6**

KENWOOD CORPORATION
14-6, Dogenzaka 1-chome, Shibuya-ku, Tokyo 150, Japan

KENWOOD SERVICE CORPORATION
P.O. BOX 22745, 2201 East Dominguez Street, Long Beach, CA 90801-5745, U.S.A.

KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker Str. 15, 6056 Heusenstamm, Germany

KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium

TRIO-KENWOOD FRANCE S.A.
13, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD U.K. LIMITED
KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom

KENWOOD ELECTRONICS NEDERLAND B.V.
Amsterdamseweg 35, 1422 AC Uithoorn, The Netherlands

KENWOOD ELECTRONICS ITALIA S.p.A.
Via G. Sirtori, 7/9 20129 Milano, Italy

KENWOOD IBERICA S.A.
Bolivia, 239-08020 Barcelona, Spain

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(A.C.N. 001 499 074)
P.O. Box 504, 8 Figtree Drive, Australia Centre, Homebush, N.S.W. 2140, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Unit 3712-3724, Level 37, Tower one Metroplaza, 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong

KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

KENWOOD ELECTRONICS LATIN AMERICA S.A.
P.O. Box 55-2791 Piso 6 Plaza Chase Cl. 47 y Aquilino de la Guardia Panama, Republic of Panama