

UHF P25 TRANSCEIVER

TK-5810(BG) TK-5810H(BG) SERVICE MANUAL

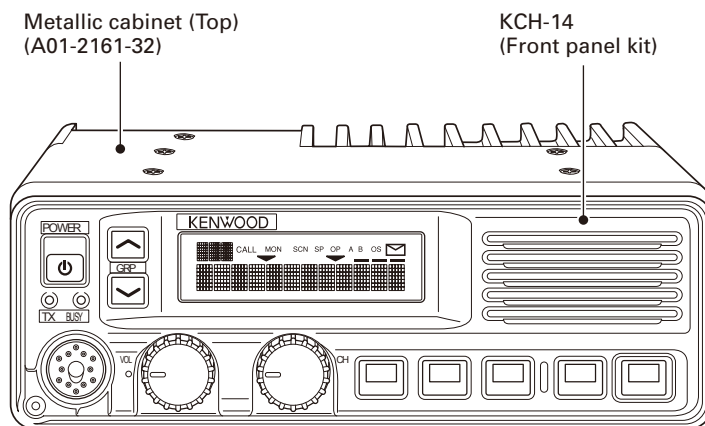
KENWOOD

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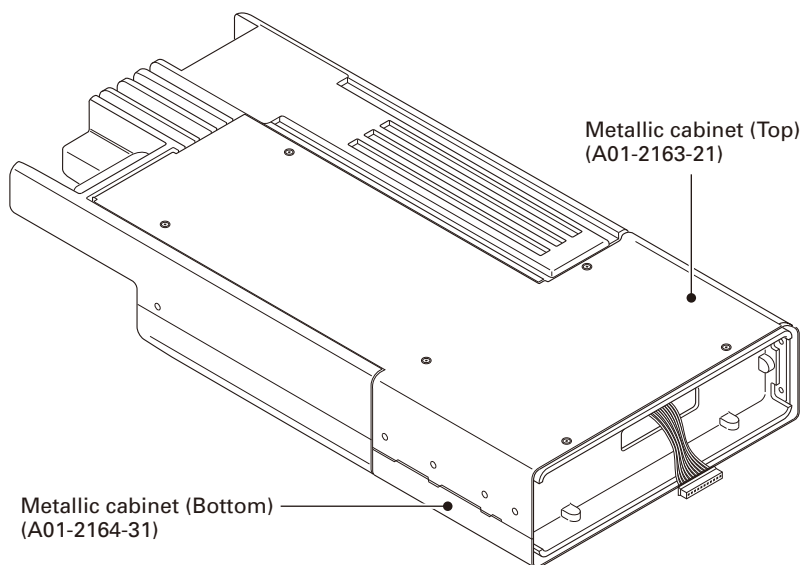
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B51-8913-00 (N)

Use this service manual together with the KCH-14/15 service manual (B51-8728-00) or KCH-16 service manual (B51-8834-00). As for the hardware of this transceiver, version 3 is used. The programming software must use KPG-95DG.

TK-5810(BG) with KCH-14



TK-5810H(BG)



CONTENTS

GENERAL	2	TERMINAL FUNCTION	75
SYSTEM SET-UP	4	PC BOARD	
REALIGNMENT	5	FINAL UNIT (X45-3790-XX): TK-5810(BG)	80
INSTALLATION	12	FINAL UNIT (X45-3800-XX): TK-5810H(BG)	82
DISASSEMBLY FOR REPAIR	20	CONTROL UNIT (X53-4400-10)	86
CIRCUIT DESCRIPTION	24	TX-RX UNIT (X57-7270-XX)	90
COMPONENTS DESCRIPTION	32	INTERCONNECTION DIAGRAM	94
PARTS LIST	35	SCHEMATIC DIAGRAM	96
EXPLODED VIEW	50	BLOCK DIAGRAM	114
PACKING	52	LEVEL DIAGRAM	120
TROUBLE SHOOTING	54	SPECIFICATIONS	121
ADJUSTMENT	56		

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Transceivers containing AMBE+2™ Vocoder:

The AMBE+2™ voice coding technology is embedded in the firmware under the license of Digital Voice Systems, Inc.

GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts: components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

GENERAL

PERSONAL SAFETY

The following precautions are recommended for personal safety:

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by only qualified technicians.

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

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

2. LICENSING REQUIREMENTS

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

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

3. PRE-INSTALLATION CHECKOUT

3-1. Introduction

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

3-2. Testing

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

4. PLANNING THE INSTALLATION

4-1. General

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

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

4-2. Antenna

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

4-3. Radio

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

4-4. DC Power and wiring

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

5. INSTALLATION PLANNING – CONTROL STATIONS

5-1. Antenna system

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

5-2. Radio location

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

SERVICE

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

NOTE

You must use KPG-95DG version 6.10 or later for this transceiver.

TK-5810(BG)/5810H(BG)

SYSTEM SET-UP

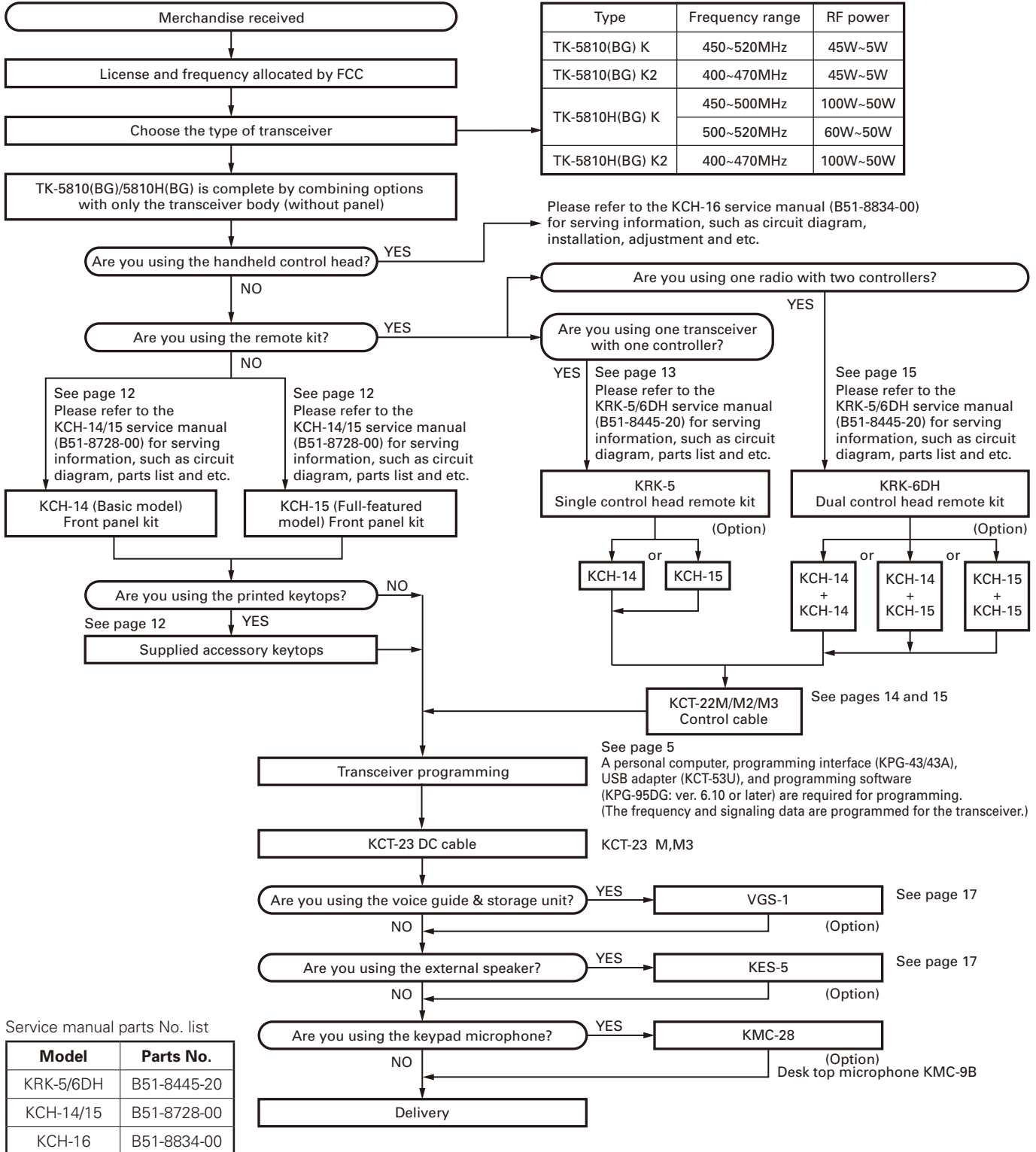
Before Reading About System Set-up

The TK-5810(BG)/5810H(BG) is a transceiver main unit (without a panel or speaker) that you complete by adding options.

The options are classified into three types according to operation and function.

1. Install the front panel kit (controller) directly on a radio to operate it. (Form: Radio + KCH-14/15)
2. Remotely control one radio with one controller. (Form: Radio + KRK-5 + KCH-14/15 + KCT-22M/M2/M3)
3. Remotely control one radio with two controllers. (Form: Radio + KRK-6DH + KCH-14/15 (two) + KCT-22M/M2/M3 (two))

Type	Frequency range	RF power
TK-5810(BG) K	450~520MHz	45W~5W
TK-5810(BG) K2	400~470MHz	45W~5W
TK-5810H(BG) K	450~500MHz	100W~50W
	500~520MHz	60W~50W
TK-5810H(BG) K2	400~470MHz	100W~50W

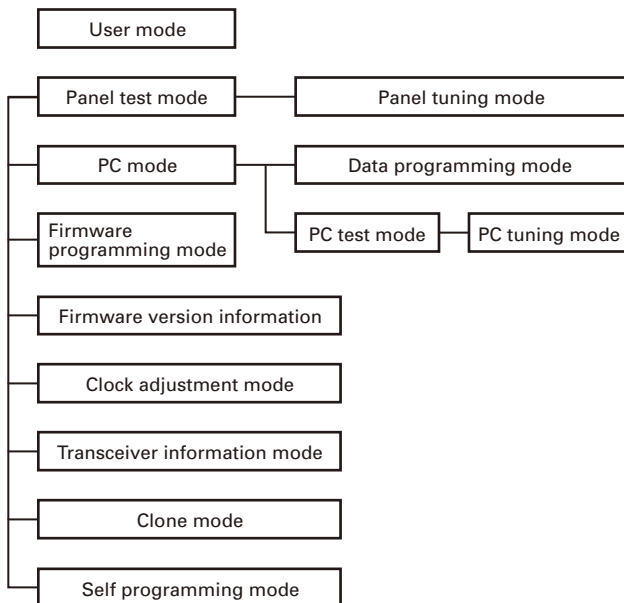


Service manual parts No. list

Model	Parts No.
KRK-5/6DH	B51-8445-20
KCH-14/15	B51-8728-00
KCH-16	B51-8834-00

REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
Panel test mode	Used by the dealer to check the fundamental characteristics.
Panel tuning mode	Used by the dealer to tune the transceiver.
PC mode	Used for communication between the transceiver and PC.
Data programming mode	Used to read and write frequency data and other features to and from the transceiver.
PC test mode	Used to check the transceiver using the PC. This feature is included in the FPU. See panel tuning.
Firmware programming mode	Used when changing the main program of the flash memory.
Firmware version information	Used to confirm the internal firmware version.
Clock adjustment mode	Used by the dealer to adjust date and time.
Transceiver information mode	Used to confirm the transceiver firmware version.
Clone mode	Used to transfer programming data from one transceiver to another.
Self programming mode	Frequency, signaling and features write to the transceiver.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode	[PF1] + Power ON
PC mode	Received commands from PC
Panel tuning mode	[Panel test mode] + [GRP\wedge]
Firmware programming mode	[PF2] + Power ON
Firmware version information	[PF3] + Power ON
Clock adjustment mode	[PF4] + Power ON
Transceiver information mode	[PF1] + [PF3] + Power ON
Clone mode	[PF5] + Power ON
Self programming mode	[GRP\wedge] + Power ON

3. Panel Test Mode

Setting method refer to ADJUSTMENT.

4. Panel Tuning Mode

Setting method refer to ADJUSTMENT.

5. PC Mode

5-1. Preface

The transceiver is programmed by using a personal computer, programming interface (KPG-43/43A), USB adapter (KCT-53U) and programming software (KPG-95DG: ver. 6.10 or later).

The programming software can be used with a PC. Figure 1 shows the setup of a PC for programming.

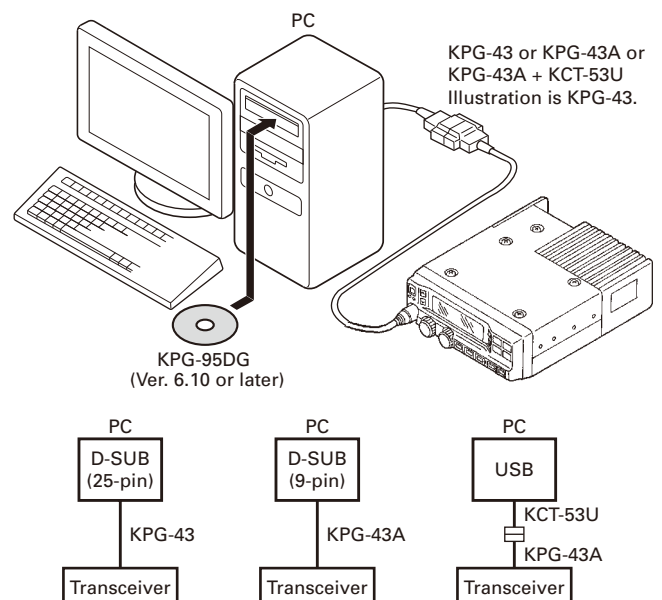


Fig. 1

TK-5810(BG)/5810H(BG)

REALIGNMENT

5-2. Connection procedure

1. Connect the transceiver to the computer using the interface cable and USB adapter (When the interface cable is KPG-43A, the KCT-53U can be used.).

Note:

- You must install the KCT-53U driver in the computer to use the USB adapter (KCT-53U).
- When using the USB adapter (KCT-53U) for the first time, plug the KCT-53U into a USB port on the computer with the computer power ON.

2. When the POWER switch on, user mode can be entered immediately. When PC sends command the transceiver enter PC mode, and "PROGRAM" is displayed on the LCD. When data transmitting from transceiver, the red LED is lights. When data receiving to transceiver, the green LED is lights.

Note:

The data stored in the computer must match the "Model Name and Market Code" when it is written into the flash memory.

5-3. KPG-43/KPG-43A description

(PC programming interface cable: Option)

The KPG-43/43A is required to interface the transceiver to the computer. It has a circuit in its D-sub connector (KPG-43: 25-pin, KPG-43A: 9-pin) case that converts the RS-232C logic level to the CMOS level.

The KPG-43/43A connects the microphone jack of the transceiver to the RS-232C serial port of the computer.

5-4. KCT-53U description (USB adapter: Option)

The KCT-53U is a cable which connects the KPG-43A to a USB port on a computer.

When using the KCT-53U, install the supplied CD-ROM (with driver software) in the computer. The KCT-53U driver runs under Windows 2000, XP or Vista (32-bit).

5-5. Programming software KPG-95DG description

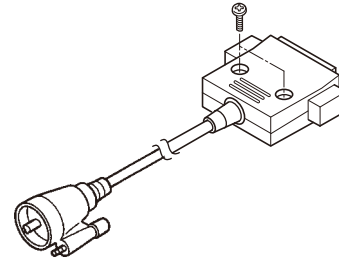
The KPG-95DG (ver. 6.10 or later) is the programming software for the transceiver supplied on a CD-ROM. This software runs under Windows 98, ME, Windows NT4.0, 2000, XP or Vista (32-bit) on a PC.

The data can be input to or read from the transceiver and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

6. PC Tuning Mode

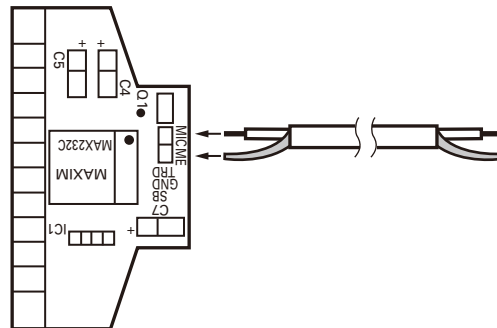
When making adjustment while in PC tuning mode, modify the KPG-43/43A programming interface cable as described below.

1. Remove the two screws from the plug cover, then lift the cover from the plug.

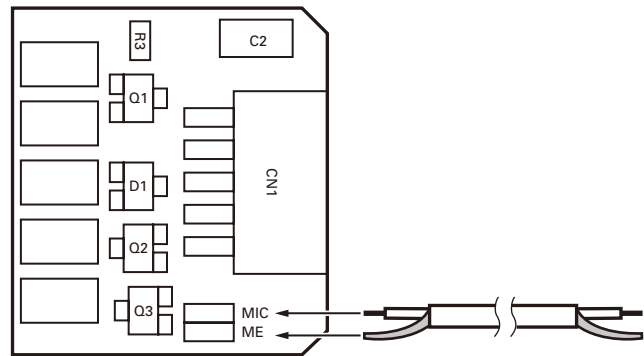


2. Solder the lead wire onto the MIC tab on the PCB, and the ground wire onto the ME tab.

- KPG-43



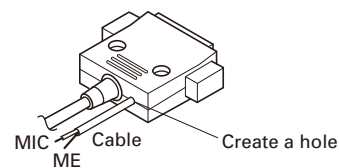
- KPG-43A



- 3.

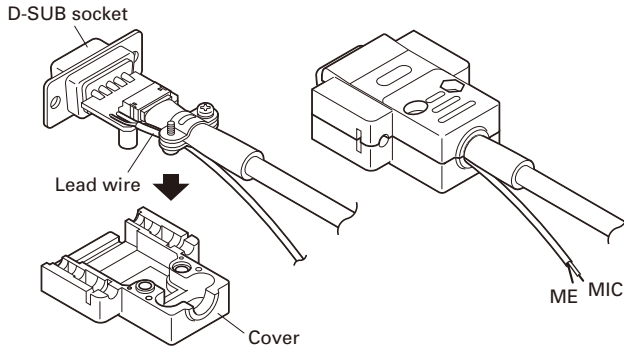
- KPG-43

Create a hole in the casing (as shown in the illustration) then fit the cable into the hole. Replace the cover and secure it using the two screws.



REALIGNMENT

- KPG-43A
Install the D-SUB socket into the cover after aligning the lead wire as shown in the figure.
Replace the cover and secure it using the two screws.



7. Firmware Programming Mode

7-1. Preface

Flash memory is mounted on the transceiver. This allows the transceiver to be upgraded when new features are released in the future. (For details on how to obtain the firmware, contact Customer Service.)

7-2. Connection procedure

Connect the transceiver to the personal computer (PC) using the interface cable (KPG-43/43A) and USB adapter (KCT-53U: When the interface cable is KPG-43A, the KCT-53U can be used.). (Connection is the same as in the PC Mode.)

7-3. Programming

1. Start up the firmware programming software (Fpro.exe).
2. Set the communications speed (normally, 115200 bps) and communications port in the configuration item.
3. Set the firmware to be updated by File name item.
4. Press and hold the [PF2] key while turning the transceiver power ON. Then, the orange LED on the transceiver lights and "PROGRAM FIRM" is displayed.
5. Check the connection between the transceiver and the personal computer, and make sure that the transceiver is in the Program mode.
6. Press "write" button in the window. When the transceiver starts to receive data, the [PG] display is blinking.
7. If writing ends successfully, the checksum is calculated and a result is displayed.
8. If you want to continue programming other transceivers, repeat steps 4 to 7.

Note:

- This mode cannot be entered if the Firmware Programming mode is set to Disable in the Programming software.

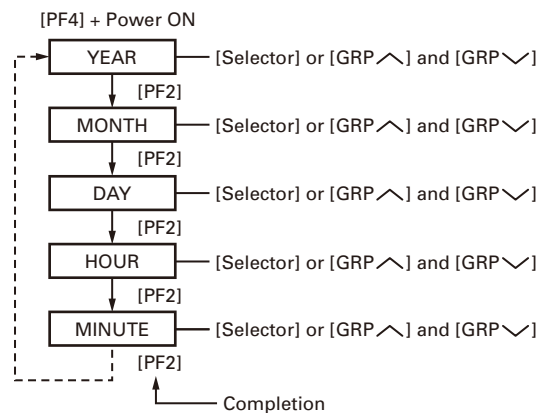
- These transceivers use firmware versions G5.10 or later. When using firmware versions earlier than version G5.10, a "Check connection" error message will appear on the LCD. Firmware versions earlier than version G5.10 will not write to the transceiver.
- While the firmware is being written, if the transceiver resets due to a power supply interruption or other problem, the LCD may not display correctly (for example, "PROGRAM FIRM" may not display). Additionally, transceiver keys other than the power switch cannot be operated. To return to normal operation, click the "Cancel" button in the firmware programming software, then turn the transceiver power OFF and back ON. "PROGRAM FIRM" reappears on the display and the transceiver keys can be operated. However, the previously written firmware data is lost; you must write the firmware using the firmware programming software again.

8. Firmware Version Information

Press and hold the [PF3] key while turning the transceiver power ON and then keep pressing and holding the [PF3] key, the firmware version information appears on the LCD.

9. Clock Adjustment Mode

9-1. Flow chart of operation



10. Transceiver Information Mode

Use this function to confirm the transceiver firmware version.

1. Press and hold the [PF1] and [PF3] keys while turning the transceiver power ON.
2. The transceiver firmware version appears on the LCD.
3. To exit the transceiver information mode, turn the transceiver power OFF.

REALIGNMENT

11. Clone Mode

Programming data can be transferred from one transceiver to another by connecting them via their microphone jacks. The operation is as follows (the transmit transceiver is the source and the receive transceiver is a target).

The following data cannot be cloned.

- Tuning data
- Embedded message with password
- Model name data
- ESN (Electronic Serial Number) data
- Network file data (P25)

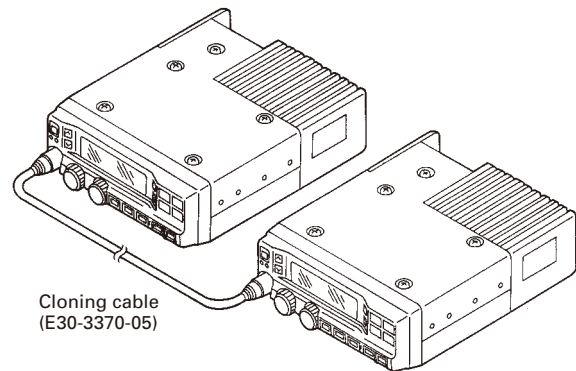
Key guide on the "INPUT PASSWORD" display.

1. Press and hold the [PF5] key while turning the transceiver power ON. If the Read authorization password is set to the transceiver, the transceiver displays "CLONE LOCK". If the password is not set, the transceiver displays "CLONE MODE".
2. When you enter the correct password, and "CLONE MODE" is displayed, the transceiver can be used as the cloning source. The following describes how to enter the read authorization password.
3.
 - **How to enter the read authorization password using the microphone keypad;**
If one of keys 0 to 9 is pressed while "CLONE LOCK" is displayed, the pressed number is displayed on the LCD. Each press of the key shifts the display in order to the left.
If you press the [#] key, the least digit of the password is deleted.
When you enter the password and press the [*] key, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.
 - **How to enter the read authorization password using the [Selector] knob;**
If the [Selector] knob is rotated while "CLONE LOCK" is displayed, the number (0 to 9) flashes on the LCD. When you press the [GRP^] key, the currently selected number is determined. If you press the [PF3] key, the least digit of the password is deleted. If you press the [PF2] key after entering the password in this procedure, "CLONE MODE" is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" is redisplayed.
4. Power ON the target transceiver.
5. Connect the cloning cable (part No. E30-3370-05) to the microphone jacks on the source and target.
6. Press the [PF2] key on the source while the source displays "CLONE MODE". The data of the source is sent to the target. While the target is receiving the data, "PROGRAM" is displayed. When cloning of data is completed, the source displays "END", and the target automatically operates in the User mode. The target can then be operated by the same program as the source.

7. The other target can be continuously cloned. When the [PF2] key on the source is pressed while the source displays "END", the source displays "CLONE MODE". Carry out the operation in step 4 to 6.

Note:

- You cannot clone transceivers using hardware versions 1.0 or 2.0.
Cloning is only possible when both transceivers are using hardware version 3.0.
- Cannot be cloned if the overwrite password is programmed to the target.
- "Model Name and Market Code", "Head Configuration" and "Head Type" must be same to clone the transceiver. However, it may be unable to clone the transceiver depending on the enhanced features settings.
(Refer to the FPU for the enhanced features details.)
- Under certain conditions, clone mode cannot be activated even if the clone mode of the source transceiver, using Hardware Version 3.0, is set to enable. Refer to the FPU for more details.
- Can not clone if the checksum in the Network File area of the source transceiver and the target transceiver is different.



REALIGNMENT

12. Self Programming Mode

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

The following setup items in the channels programmed by the FPU can be changed using the self-programming mode. The addition of new channel and the deletion of channel that has already been programmed by the FPU cannot be performed using the self-programming mode.

- RX Frequency
- TX Frequency
- Channel Type (ANALOG or MIXED)
- TX Mode (When the channel type is selected "MIXED".)
- Channel Spacing
- RX Signaling
- TX Signaling
- RX NAC
- TX NAC
- Talkgroup List No.

Note:

The personality will be also changed when the above-mentioned items is changed. (Refer to the FPU for the personality details.)

12-1. Enter to the self programming mode

Press and hold the [GRP\wedge] key while turning the transceiver power ON. Ignoring whether the Read authorization password is set or not, "PASSWORD" appears.

If the Read authorization password is not set to the transceiver, "SELF PG MODE" is displayed on the LCD when the [PF2] key is pressed while "PASSWORD" is displayed.

If the password is set to the transceiver, "SELF PG MODE" is displayed on the LCD when you enter the correct password while "PASSWORD" is displayed.

For the password input method, see "11. Clone Mode" step3 described on page 8.

Note:

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

12-2. Data writing

Before moving to the next Zone/Channel, "KEEP THIS CHANGE?" appears on the LCD, if you select "YES", the new data is written to memory. IF you select "NO", the new data will not be written; the new data will be erased.

12-3. Setup items for self programming mode

No.	Setup item	Display	Remarks
1	Select Zone/Channel	*** - ***	Zone: 1~100, Channel: 1~512
2	RX Frequency	***.*****MHz	Receive frequency
3	TX Frequency	***.*****MHz	Transmit frequency
4	Channel Type	TYPE	ANALOG/P25/MIXED
5	TX Mode	MODE	ANALOG/P25
6	Channel Spacing	SPACE	25.0kHz/12.5kHz (When the Channel type is selected "ANALOG" or "MIXED".) "P25 12.5kHz"
7	RX Signaling	RX-SIG	Receive QT/DQT
8	TX Signaling	TX-SIG	Transmit QT/DQT
9	RX NAC	RX-NAC***	000~FFF (Hexadecimal) Note: "F7F" cannot be set.
10	TX NAC	TX-NAC***	000~FFF (Hexadecimal) Note: "F7E" and "F7F" cannot be set.
11	Talkgroup List No.	None	When you do not want to set the Talkgroup list number to the transceiver.
		***	Talkgroup list number (1~250) (When the Talkgroup list name is not set to the transceiver.)
		*****	Talkgroup list name (12 digits) (When the Talkgroup list name is set to the transceiver.)

REALIGNMENT

12-4. Key operation

• Normal mode

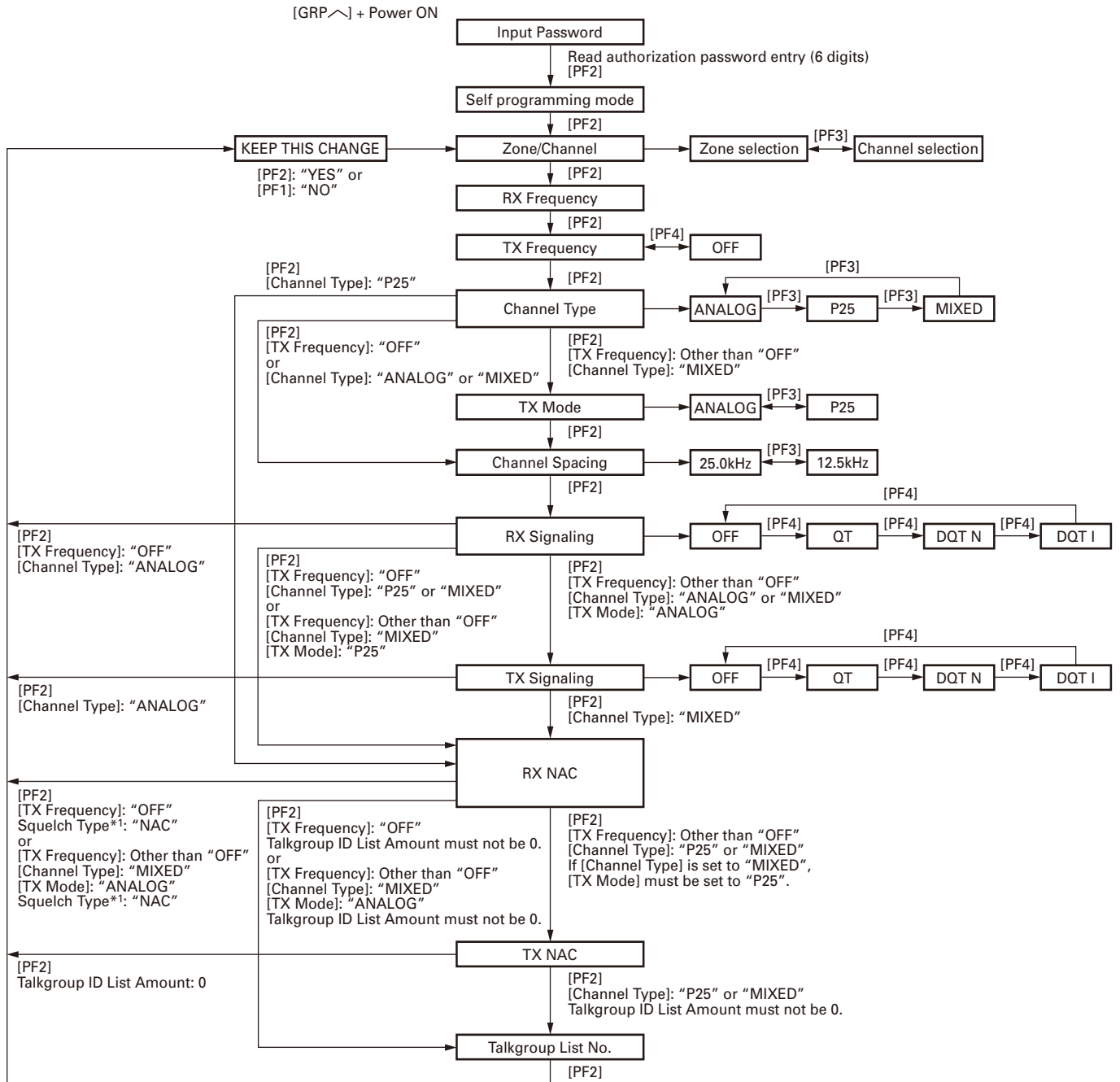
Key	Zone-Channel	RX Frequency	TX Frequency	Channel Type	TX Mode	Channel Spacing	RX Signaling	TX Signaling	RX NAC	TX NAC	TG List No.
[PF1]	Unused										
[PF2]	Go to the next item										
[PF3]	Zone/Channel switching	5kHz/ 6.25kHz/ 1MHz step switching		ANALOG/ P25/ MIXED switching	ANALOG/ P25 switching	Channel Spacing switching	1step/ Standard switching		Delete the least digit from the current number (Press and hold to delete all numbers.)		Unused
[PF4]	Data Writing	Unused	ON/ OFF switching	Unused			QT/ DQT(N)/ DQT(I)/ OFF switching		Unused		
[PF5]	Unused										
[Selector]	Zone/Channel up/ down	1step up/ down		Unused			Signaling up/ down		Increment/ Decrement a number in the specified digit		TG List number up/ down
[GRP ^]	Zone/Channel up	1step up		Unused			Signaling up		Determine the least digit		TG List number up
[GRP v]	Zone/Channel down	1step down		Unused			Signaling down		Unused		TG List number down
MIC keypad ([0] to [9])	Unused	Go to the MIC keypad input mode		Unused			Go to the MIC keypad input mode		Add a digit to the current number		Unused
MIC keypad ([*])	Unused										
MIC keypad ([#])	Unused								Delete the least digit from the current number (Press and hold to delete all numbers.)		Unused
MIC PTT	Unused								[PTT] + [2]: "A" [PTT] + [5]: "B" [PTT] + [8]: "C" [PTT] + [0]: "D" [PTT] + [#]: "E" [PTT] + [*]: "F"		Unused

• MIC keypad input mode

Key	RX Frequency	TX Frequency	RX Signaling	TX Signaling
[PF1]	Cancel the MIC keypad input mode (Return to the normal mode)			
[PF2]	Cancel the MIC keypad input mode (Return to the normal mode)			
[PF3]	Delete the least digit from the current number (Press and hold to delete all numbers.)			
[PF4]	Unused	ON/ OFF switching	QT/ DQT(N)/ DQT(I)/ OFF switching	
[PF5]	Unused			
[Selector]	Unused			
[GRP ^]	Unused			
[GRP v]	Unused			
MIC keypad ([0] to [9])	Add a digit to the current number (Return to the normal mode automatically if all digit are entered.)			
MIC keypad ([*])	Cancel the MIC keypad input mode (Return to the normal mode)			
MIC keypad ([#])	Delete the least digit from the current number (Press and hold to delete all numbers.)			
MIC PTT	Unused			

REALIGNMENT

12-5. Self programming mode flow chart



*1: The squelch type can not be set using the self-programming mode.

INSTALLATION

1. Front Panel Kit (KCH-14/15: Option)

1-1. Installing the KCH-14/15 front panel kit to the transceiver

1. Remove the upper case and lower case of the transceiver.
2. Insert the lead wire with connector (W700) of the control unit (X53-440) into the connector (CN1) of the KCH-14 or KCH-15.
3. Install the KCH-14 or KCH-15 on the transceiver using the four screws ① supplied with the front panel kit.

Note:

Take care that the lead wire with connector (W700) is not caught when fitting the KCH-14 or KCH-15 on the transceiver. (You can install the panel upside down if necessary to install the transceiver.)

4. Affixing the sheet (G11-4379-04) for the waterproof (Fig.1-1-2).

(1) Remove the covering paper of the sheet ②.

(2) Affix the sheet while taking note of the position of the three parts as shown in Fig.1-1-2 ③.

Firmly affix the sheet to the chassis by pushing the double-coated tape with your fingers.

(3) Repeat step (2) to affix the sheet to the other side of chassis.

Note:

The sheet cannot be reused. Affix a new sheet when you removed the sheet.

5. Reassemble the upper case and lower case. (Refer to page 18)

Note:

Take care that the sheet (G11-4379-04) is not peeled off when installing the upper/lower case.

6. Connect the short plug to the accessory connector (9-pin) on the rear of the transceiver.

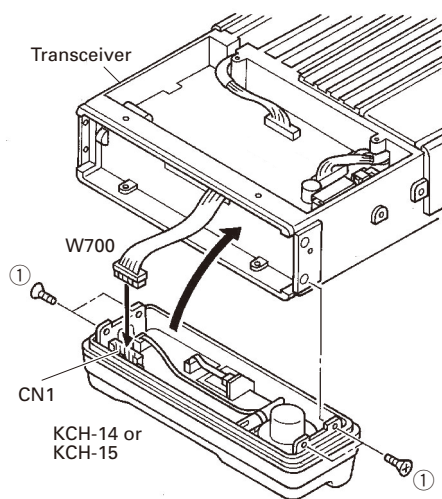
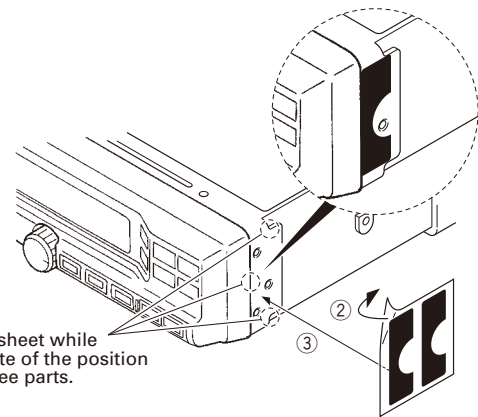


Fig. 1-1-1



Affix the sheet while taking note of the position of the three parts.

Fig. 1-1-2

1-2. Installing the accessory keytops to the front panel kit

When a function is set by the programming software (KPG-95DG), the key legend can be changed by inserting the accessory keytops into PF1 to PF9 of the KCH-15 (PF1 to PF5: KCH-14). The accessory contains 60 keytops as shown the table below.

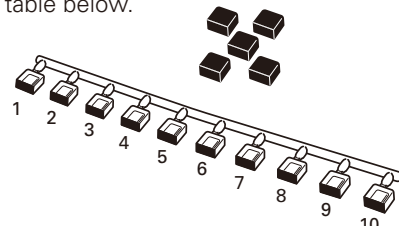


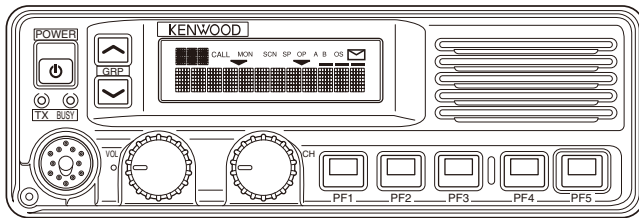
Fig. 1-2

No.	K29-5276-03	K29-5277-03	K29-5305-03
1	AN	RCL	CH1
2	D/A	RPT	CH2
3	DIM	SCN	CH3
4	HA	SP	CH4
5	HC	SPM	CH5
6	IC	SQ	AUX A
7	MON	TA	AUX B
8	OPT	∧	AUX C
9	OST	∨	EMG
10	PA	No printing	■

No.	K29-9353-13	K29-9354-13	K29-9356-03
1	2TN	GPS	PAG
2	AD	STS	SIT
3	AR	TAC	SRC
4	CLK	TON	No printing
5	FNC	RES	No printing
6	PBK	IDV	No printing
7	SCP	KDL	No printing
8	SEC	TGR	No printing
9	SEL	RGP	No printing
10	SES	No printing	No printing

INSTALLATION

KCH-14



KCH-15

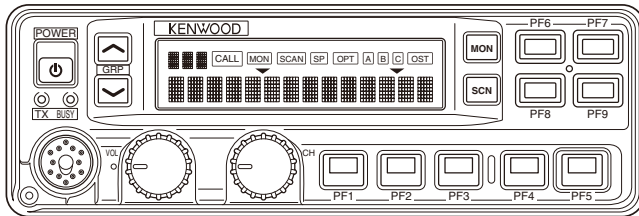


Fig. 1-3

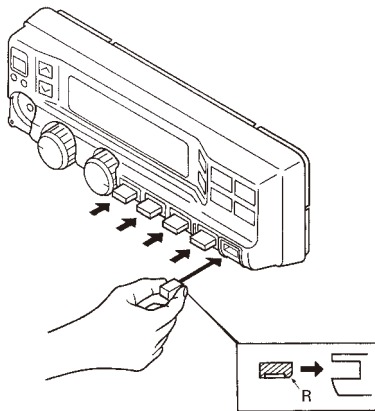


Fig. 1-4 Keytop insertion

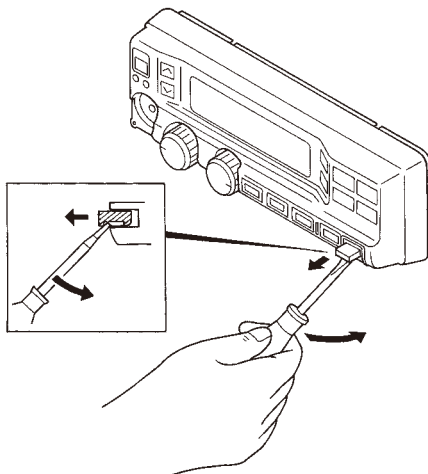


Fig. 1-5 Keytop removal

2. Remote kit (KRK-5: Option)

The KRK-5 remote kit is used to remotely operate the transceiver. The KRK-5 is connected to the KCH-14 or KCH-15 with an optional KCT-22M (8 feet), KCT-22M2 (17 feet), or KCT-22M3 (25 feet) control cable.

2-1. Installing the KRK-5 main panel onto the transceiver

1. Remove the upper case and lower case of the transceiver.
2. Insert the lead wire with connector (W700) of the control unit (X53-440) into the connector (CN4) of the KRK-5.
3. Install the KRK-5 main panel on the transceiver using four screws ①.

Note:

Take care that the lead wire with connector (W700) is not caught when fitting the KRK-5 main panel on the transceiver.

4. Affixing the sheet (G11-4379-04) for the waterproof (Fig.2-1-2).

(1) Remove the covering paper of the sheet ②.

(2) Affix the sheet while taking note of the position of the three parts as shown in Fig.2-1-2 ③.

Firmly affix the sheet to the chassis by pushing the double-coated tape with your fingers.

(3) Repeat step (2) to affix the sheet to the other side of chassis.

Note:

The sheet cannot be reused. Affix a new sheet when you removed the sheet.

5. Reassemble the upper case and lower case of the transceiver. (Refer to page 18)

Note:

Take care that the sheet (G11-4379-04) is not peeled off when installing the upper/lower case.

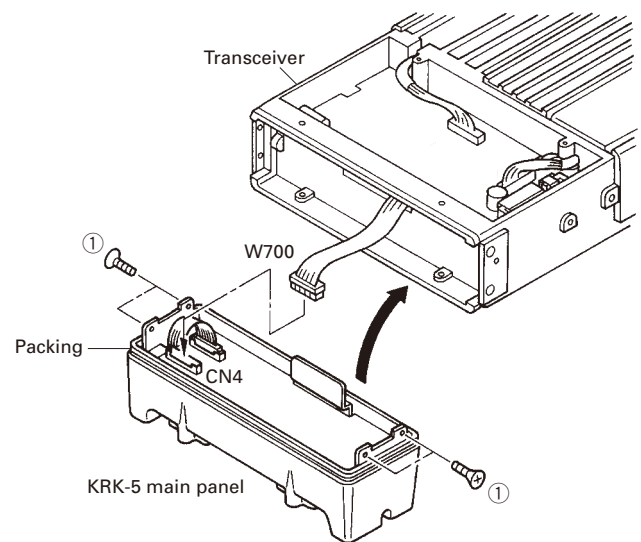


Fig. 2-1-1

INSTALLATION

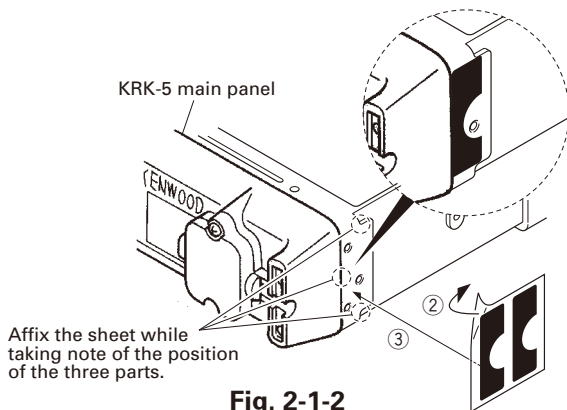


Fig. 2-1-2

2-2. Installing the KRK-5 rear panel onto the front panel kit

The following steps apply to both the KCH-14 and KCH-15.

1. Remove three screws ① on the KRK-5 rear panel, then remove the KRK-5 sub panel.
2. Insert the lead wire with connector (W102) of the KRK-5 into the connector (CN1) of the front panel kit ②.
3. Insert the lead wire with connector (W103) of the KRK-5 into the connector (CN3) of the front panel kit ③.
4. Make a slight cut in the end of the rubber cap ④.
5. Slide the lead wire of the connector wiring ⑤ through the slit in the rubber cap ⑥.
6. Insert the rubber cap into the hole of the KRK-5 rear panel ⑦.
7. Insert the connector ⑧ to the ACC connector ⑨ on the KRK-5 sub panel as shown by the arrow ⑩.
8. Install the KRK-5 sub panel onto the sub panel of the front panel kit ⑪.
9. Install the KRK-5 sub panel to the sub panel of the front panel kit using four screws ⑫.
10. Reinstall the KRK-5 rear panel using three screws removed in step 1.
11. Use a wire band to secure the lead wire at the end of the rubber cap ⑬.

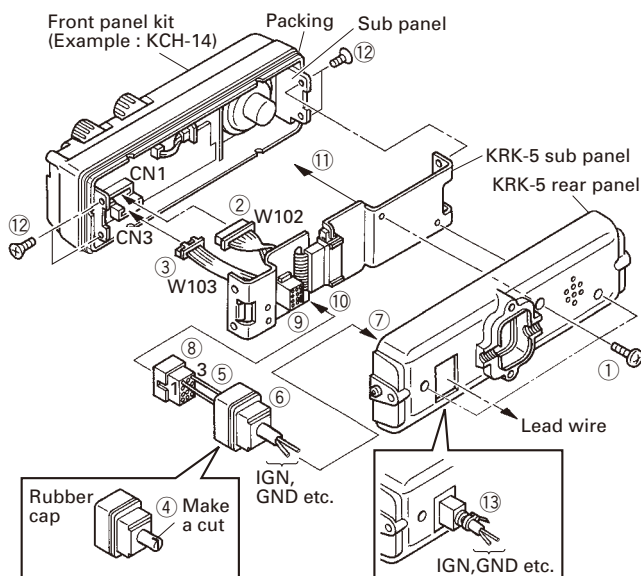


Fig. 2-2

2-3. Control cable (KCT-22) connection (Fig. 2-3)

1. Insert one connector of the control cable to the transceiver (with KRK-5) and the other to the display. Connect the cable to the GND terminal with the screw ① supplied with the control cable.
2. Secure the one connector of the control cable to the KRK-5 main panel with two screws ② according to the installation condition of the transceiver. Secure the control cable to the KRK-5 main panel with the cable fitting (J21-4354-04) and two screws ③ supplied with the KRK-5.
3. Secure the other connector of the control cable to the display with two screws ④ in the same way.

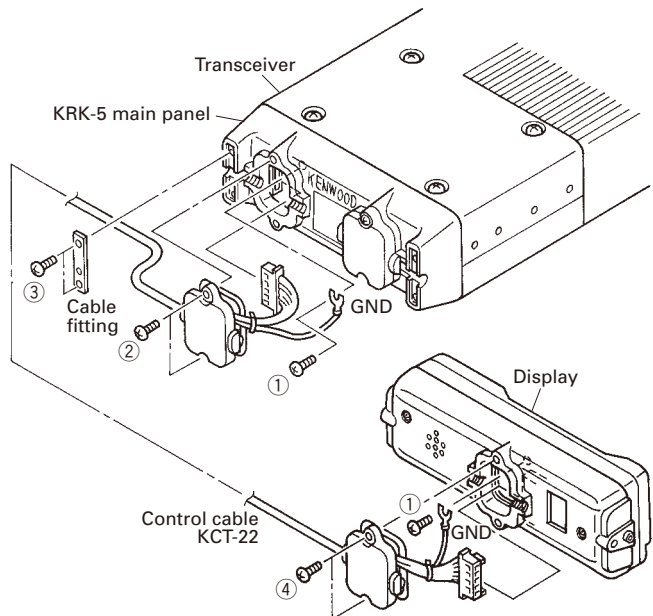


Fig. 2-3

2-4. Display installation (Fig. 2-4)

1. Install the display with the angle bracket (J29-0648-03) ① and two screws (N08-0526-04) ② supplied with the KRK-5.

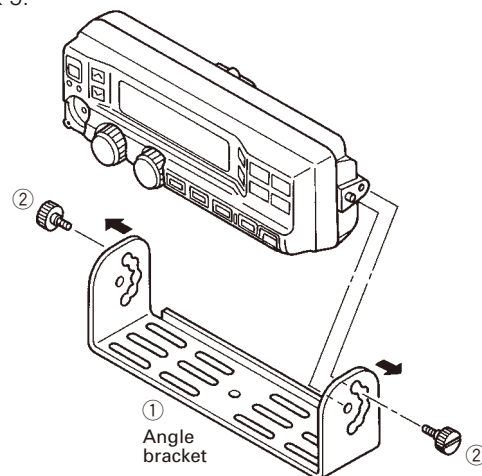


Fig. 2-4

INSTALLATION

3. Dual Control Head Remote Kit (KRK-6DH: Option)

The KRK-6DH remote kit connects two displays (two KCH-14s or KCH-15s) to the transceiver. The KRK-6DH is connected to the KCH-14s or KCH-15s with two optional control cables. There are three version of the control cable: KCT-22M (8 feet), KCT-22M2 (17 feet), and KCT-22M3 (25 feet).

3-1. Installing the KRK-6DH main panel onto the transceiver

1. Remove the upper case and lower case of the transceiver.
2. Insert the lead wire with connector (W700) of the control unit (X53-440) into the connector (CN4) of the KRK-6DH. Insert the lead wire with connector (W104) of the KRK-6DH into the connector (CN503) of the transceiver.
3. Install the KRK-6DH main panel on the transceiver using four screws ①.

Note:

Take care that the lead wire with connector (W700) is not caught when fitting the KRK-6DH main panel on the transceiver.

4. Affixing the sheet (G11-4379-04) for the waterproof (Fig.3-1-2).
 - (1) Remove the covering paper of the sheet ②.
 - (2) Affix the sheet while taking note of the position of the three parts as shown in Fig.3-1-2 ③.
Firmly affix the sheet to the chassis by pushing the double-coated tape with your fingers.
 - (3) Repeat step (2) to affix the sheet to the other side of chassis.

Note:

The sheet cannot be reused. Affix a new sheet when you removed the sheet.

5. Reassemble the upper case and lower case of the transceiver. (Refer to page 18)

Note:

Take care that the sheet (G11-4379-04) is not peeled off when installing the upper/lower case.

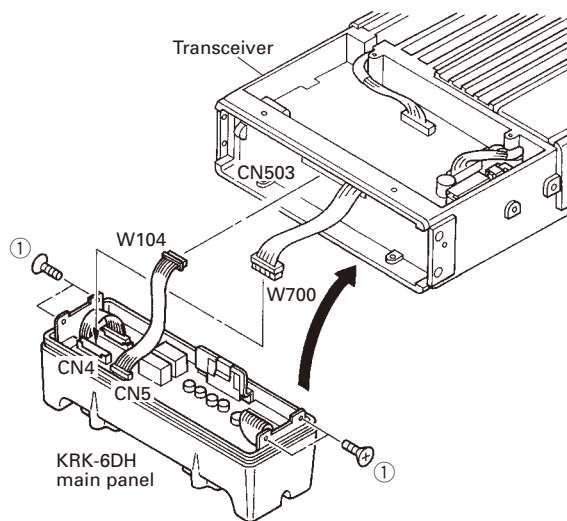


Fig. 3-1-1

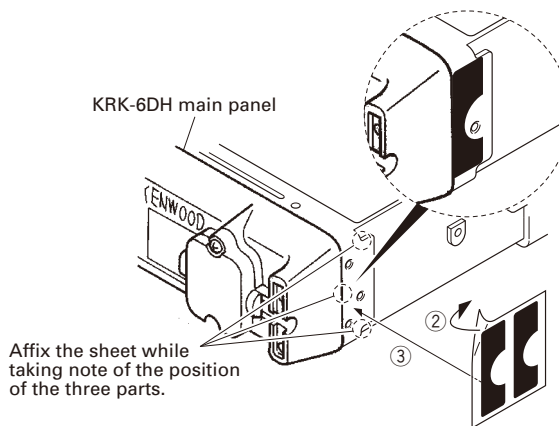


Fig. 3-1-2

3-2. Installing two KRK-6DH rear panels onto two front panel kits

Install each KRK-6DH rear panel onto each front panel kit as same as "2-2. Install the KRK-5 rear panel onto the front panel kit" described on page 14.

3-3. Control cable (KCT-22) connection (Fig. 3-2)

1. Use two control cables. Insert one connector of the one control cable to the transceiver (with KRK-6DH) and the other to the display 1.
Insert one connector of the other control cable to the transceiver (with KRK-6DH) and the other to the display 2. Connect each cable to the GND terminal with the screws ① supplied with each control cable.
2. Secure the one connector of each control cable to the KRK-6DH main panel with two screws ② according to the installation condition of the transceiver. Pass the control cables through the grooves at both ends of the KRK-6DH main panel and secure the control cables to the KRK-6DH with the cable fitting (J21-4354-04) and two screws ③ supplied with the KRK-6DH.
3. Secure the other connectors of the control cables to the display 1 and display 2 with two screws ④ in the same way.

INSTALLATION

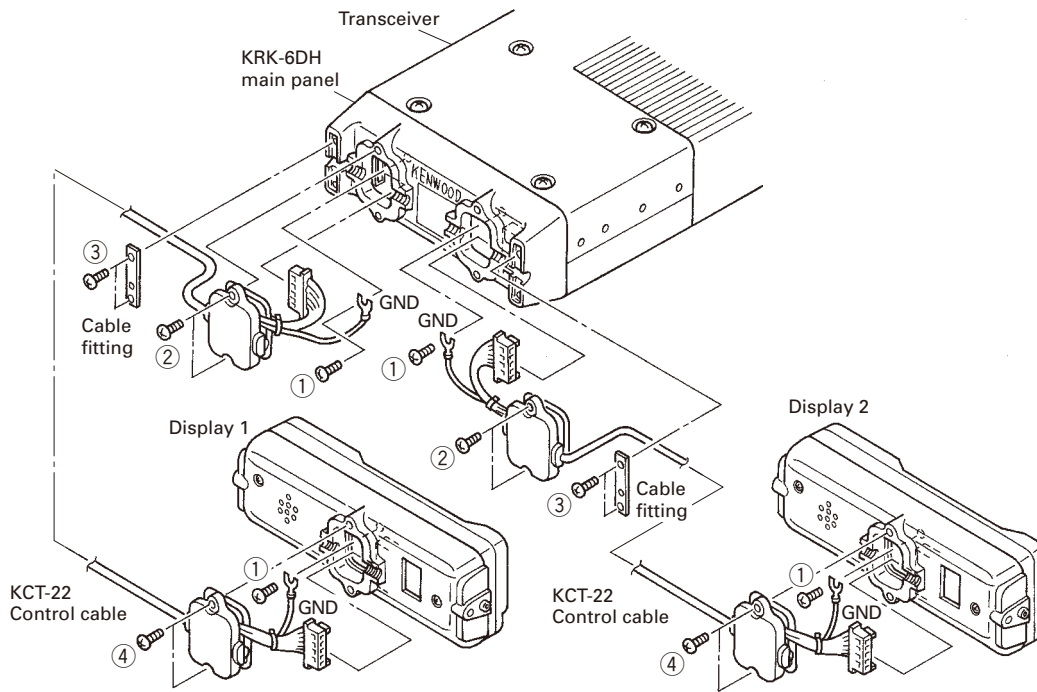


Fig. 3-2

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

The KCT-18 is an optional cable to use the following functions:

- **Ignition function**

The ignition function allows you to turn the transceiver's power on and off with the ignition key of your car. When you are driving with the ignition key on, the horn alert function is disabled.

- **Timed power-off function**

The timed power-off function turns the transceiver's power off the time specified with the programming software (KPG-95DG) after the ignition key is turned off. When you are driving with the ignition key on, the horn alert function is disabled.

The ignition sense function and the timed power-off function can be used at the same time.

4-1. Connecting the KCT-18 cable to the transceiver

1. Remove the short plug from the accessory connector (9-pin) on the rear of the transceiver.
2. Insert the KCT-18 lead terminal into pin 1 (IGN) of the short plug (9-pin).
3. Connect the short plug to the accessory connector (9-pin) on the rear of the transceiver.

Note:

You must setup using the KPG-95DG.

4-2. Connecting the KCT-18 cable to the KRK-5/6DH remote kit

1. Remove the square plug from the accessory connector (12-pin) on the rear of the control head.
2. Cut off the end of the rubber cap (accessory), insert the KCT-18 lead terminal into the rubber cap, and insert it into pin 1 (IGN) of the square plug.
3. Connect the square plug and rubber cap to the accessory connector (12-pin) on the rear of the control head, then clamp the bottom of the rubber cap with the supplied tie wrap.

Note:

You must setup using the KPG-95DG.

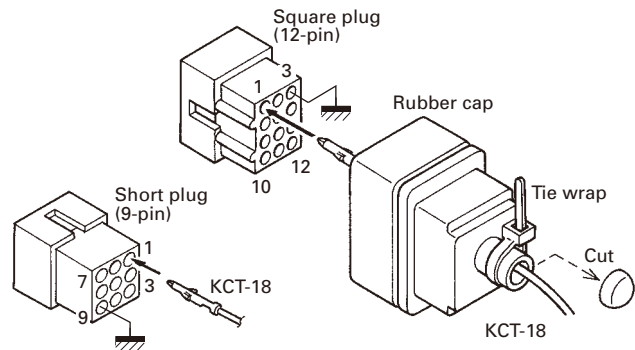


Fig. 4-1

Fig. 4-2

INSTALLATION

5. Voice Guide & Storage Unit (VGS-1: Option)

5-1. Installing the VGS-1 unit in the transceiver

1. Remove the upper case and upper packing of the transceiver.
2. Attach two cushions to the VGS-1 as shown in figure.

Note:

Be sure not to cover the VGS-1 connector (CN1) with the cushion.

3. Insert the VGS-1 connector (CN1) into the control unit connector (CN411).

Note:

You must setup using the KPG-95DG.

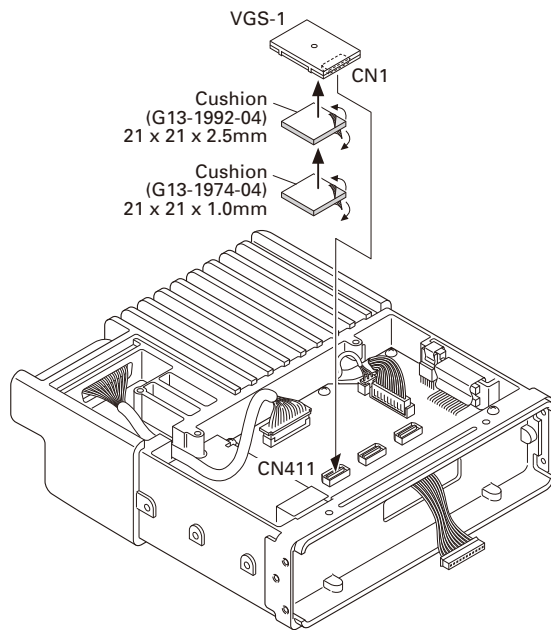


Fig. 5

6. External Speaker (KES-5: Option)

The speaker output from the transceiver is as follows:

1. The KCH-14 has a built-in speaker (3W/8 ohms).
2. The KCH-15 does not have a built-in speaker.
3. The external speaker output from the accessory connector (9-pin) on the rear of the transceiver is 13W/4 ohms. Use the KES-5.
4. The speaker output from the accessory connector (12-pin) on the rear of the control head is 2W/4 ohms. If the remote kit (KRK-5, KRK-6DH) is used, use the KES-5.

Note:

Since the transceiver uses a BTL audio amplifier, do not ground the speaker output pin.

6-1. Connecting the KES-5 external speaker to the transceiver

- **When taking the AF output from the accessory connector (9-pin) on the rear of the transceiver**

The following tools are required for changing the connector.

Extracting tool

The following extracting tool is recommended :
Molex Inc. Order No.: 11-03-0002

1. Remove the short plug from the accessory connector (9-pin) on the rear of the transceiver (Fig. 6-1-1).
Note: Save the jumper, which is required when the transceiver is used without the external speaker.
2. Remove the terminals with the jumper from the connector housing holes number 3 and 6 using the extracting tool.

Removing the jumper lead (Fig. 6-1-2)

- 1) Insert the extracting tool (11-03-0002) into the connector while pushing the jumper lead in the direction of (a).
- 2) Push the extracting tool into collapse the barbs of the crimp terminal.
- 3) Pull out the lead while continuing to push the extracting tool in the direction (b).
3. Reinsert the terminal with the black and white stripe lead into hole number 2, and the terminal with the black lead into hole number 6 (Fig. 6-1-3).
4. Connect the short plug to the accessory connector (9-pin) on the rear of the transceiver.

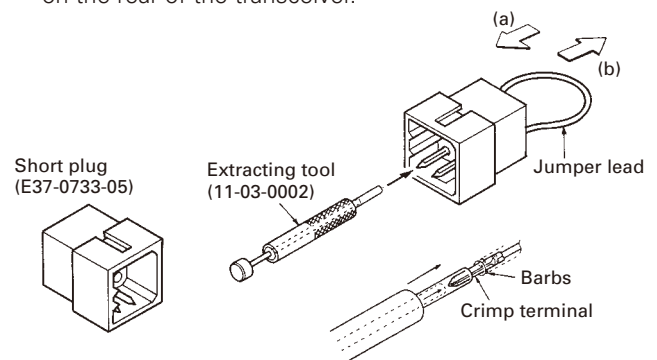


Fig. 6-1-1

Fig. 6-1-2

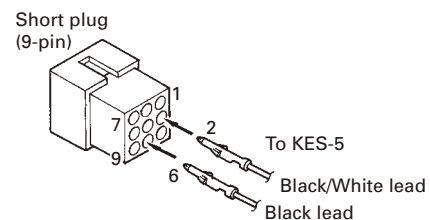


Fig. 6-1-3

INSTALLATION

6-2. Connecting the KES-5 external speaker to the KRK-5/6DH remote kit

- When taking the AF output from the 12-pin accessory connector on the rear of the control head

• Modification of plug (12-pin)

1. Remove the square plug from the accessory connector (12-pin) on the rear of the control head.
2. Cut off the end of the rubber cap, insert the KES-5 speaker cable into the cap, and insert it into pins 10 and 11 of the square plug.
3. Connect the square plug and rubber cap to the accessory connector (12-pin) on the rear of the control head, then clamp the bottom of the rubber cap with the supplied tie wrap.

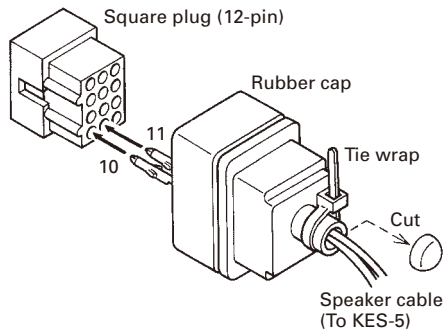


Fig. 6-2-1

- If the KCH-14 is used

If the KES-5 is connected to the 12-pin accessory connector, remove the internal speaker wire.

If the internal speaker is used, remove the wire connected to pins 10 and 11 of the 12-pin accessory connector.

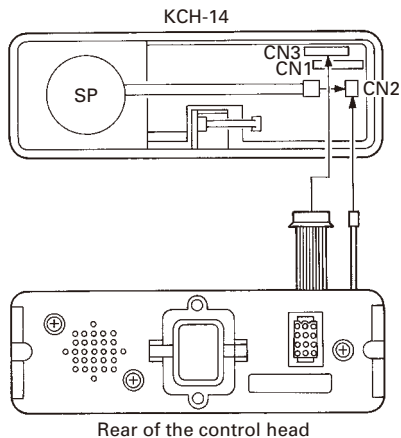


Fig. 6-2-2

6-3. Modification to increase the audio output of the control head

The speaker output can be increased to 13W by moving jumper resistor (0 ohm) R74 to \$R73 on the KCH-14 display unit (X54-349 A/3). In this case, the KCH-14 internal speaker cannot be used because the maximum input (3W) of the internal speaker is exceeded. Therefore, use the KES-5.

Note:

Even if the KRK-6DH is modified in this way, the audio output of head 2 cannot be increased.

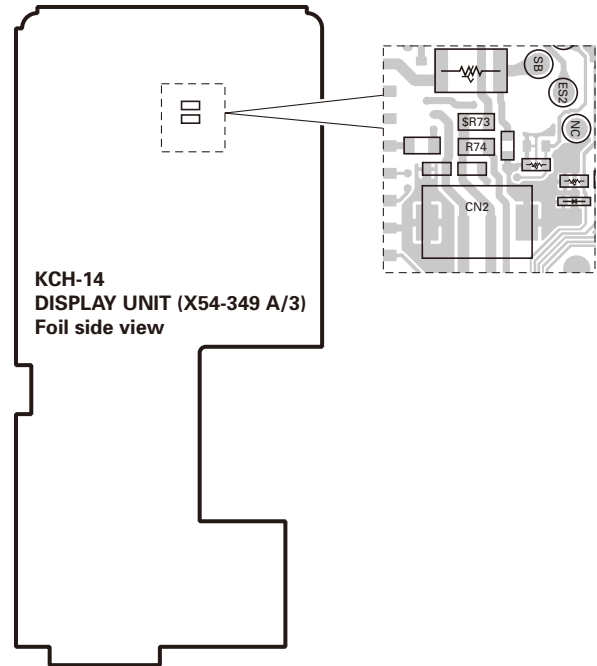


Fig. 6-3

6-4. Use as public address speaker

1. Remove the short plug from the 9-pin accessory connector on the rear of the transceiver. (Remove the jumper lead as described in Section 6-1 on page 17.)
2. Insert the KES-5 speaker leads into pins 7 and 8 of the short plug.
3. If you remove jumper shorting pins 3 and 6, the 20W PA (public address) voice signal is output from pins 7 and 8. (Only when the PA or SP switch is on.)
4. If you use the transceiver shorted with pins 3 and 6, the internal speaker is available (when the KCH-14 is used). The KCH-15 does not contain a speaker.

Note:

Relationship between accessory connector (9-pin) connection and speaker output.

When pins 3 and 6 are shorted; The 3W internal speaker is used (KCH-14 only).

When pins 3 and 6 are opened and is output from pins 7 and 8; The 20W external speaker is used.

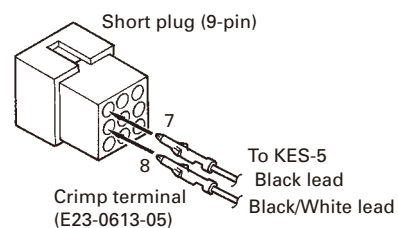


Fig. 6-4

INSTALLATION

7. Horn Alert Function

The HR1 and HR2 pins of the accessory connector (9-pin) on the rear of the transceiver are connected to the relay (K500) and the maximum current is 1A.

1. Remove the upper case of the transceiver.
2. To make the HR2 pin, remove the jumper resistor (0 ohm) R634 on the control unit (X53-440) as shown in Table 1.
3. Reassemble the PC board and the upper case.

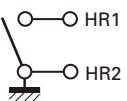
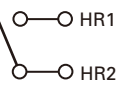
	Default	Modification
R634	Present	Absent
State		

Table 1

8. Handheld control head

(KCH-16: Option)

The KCH-16 Handheld control head is used to remotely operate the transceiver.

See the service manual No. B51-8834-00

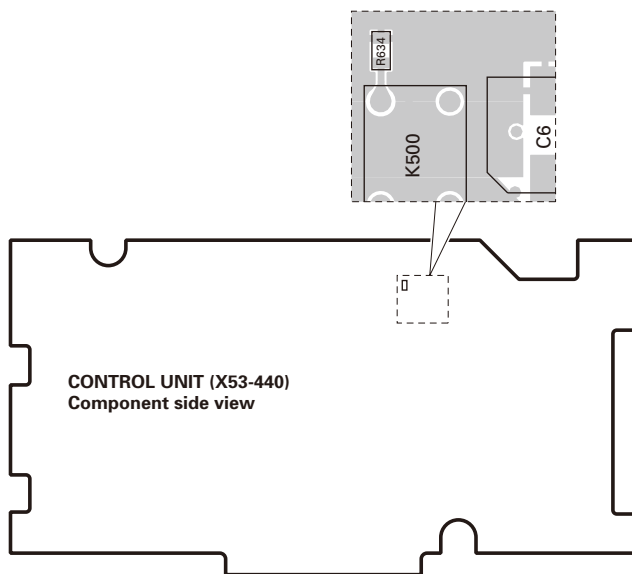


Fig. 7

TK-5810(BG)/5810H(BG)

DISASSEMBLY FOR REPAIR

Disassembly Procedure (TK-5810(BG))

■ Removing the upper/lower case and shielding cover

1. Remove the 9 screws ① and 9 spacers ②.
2. Remove the upper case ③ and lower case ④.
3. Remove the upper packing ⑤ and lower packing ⑥.
4. Remove the shielding cover ⑦.

■ Removing the TX-RX unit (X57-727)

1. Remove the 7 screws ⑧ holding the PLL shielding cover.
2. Remove the PLL shielding cover ⑨.
3. Remove the coaxial cables from the two connectors (CN151 and CN200) of the TX-RX unit ⑩.
4. Remove the flat cables from the two connectors (CN600 and CN601) of the TX-RX unit ⑪.

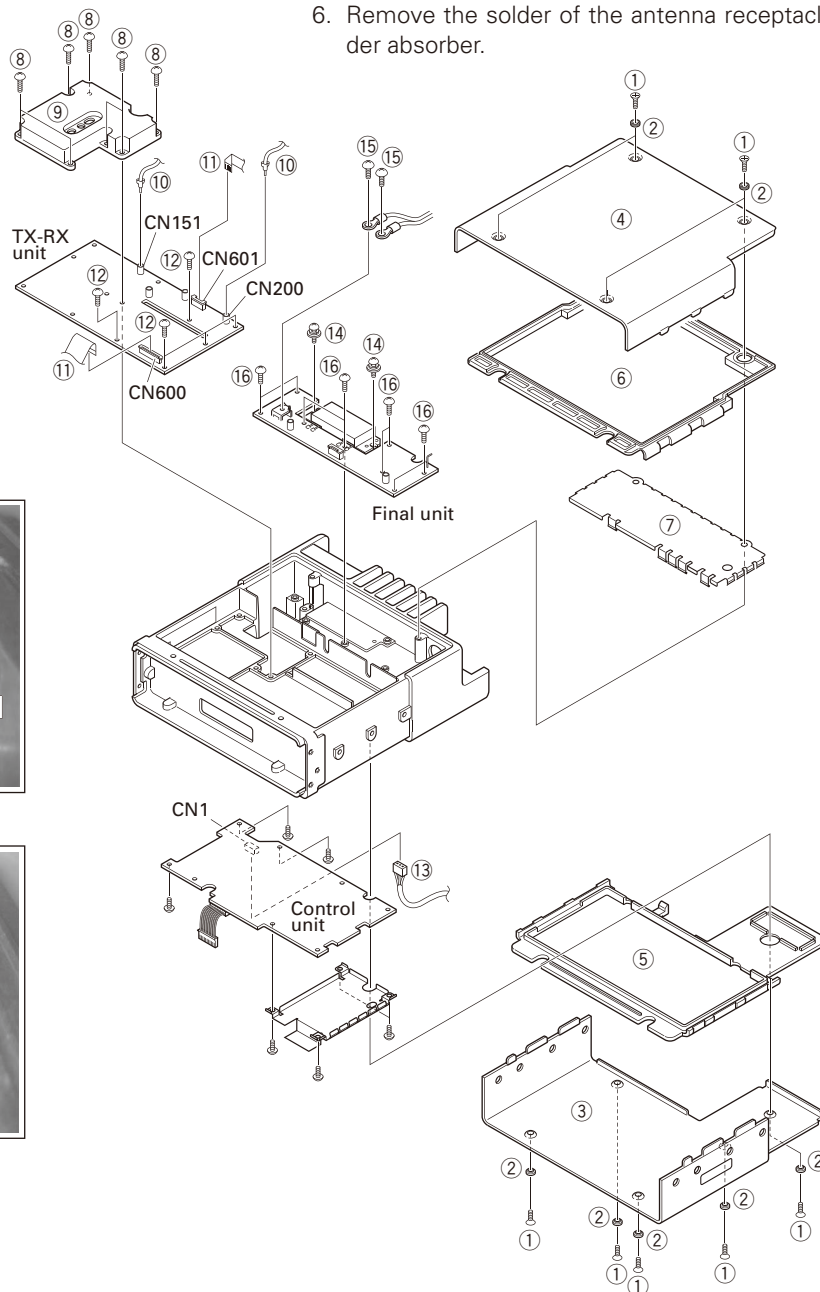
Note:

When re-installing the flat cable to the connector on the CN600 side, do not align the cable as shown in the figure 1, as there is a possibility of producing an effect on the sensitivity of P25.

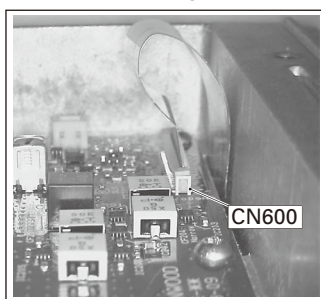
5. Remove the 5 screws ⑫.

■ Removing the Final unit (X45-379)

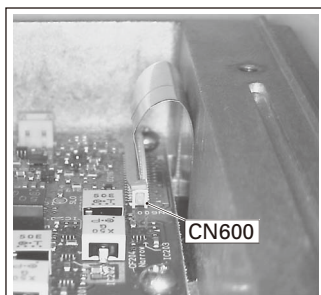
1. Remove the cables from the connector (CN1) of the control unit ⑬.
2. Remove the 2 screws ⑭ holding the power module.
3. Remove the solder of the power module with a solder absorber.
4. Remove the 2 screws ⑮ holding the + (positive) terminal and - (negative) terminal of the power supply cable.
5. Remove the 8 screws ⑯ holding the final unit.
6. Remove the solder of the antenna receptacle with a solder absorber.



Wrong



Right



DISASSEMBLY FOR REPAIR

Disassembly Procedure (TK-5810H(BG))

■ Removing the upper/lower case and shielding cover

1. Remove the 12 screws ① and 12 spacers ②.
2. Remove the upper case ③ and lower case ④.
3. Remove the upper packing ⑤ and lower packing ⑥.
4. Remove the shielding cover ⑦.

■ Removing the TX-RX unit (X57-727)

1. Remove the 7 screws ⑧ holding the PLL shielding cover.
2. Remove the PLL shielding cover ⑨.
3. Remove the coaxial cables from the two connectors (CN151 and CN200) of the TX-RX unit ⑩.
4. Remove the flat cables from the two connectors (CN600 and CN601) of the TX-RX unit ⑪.

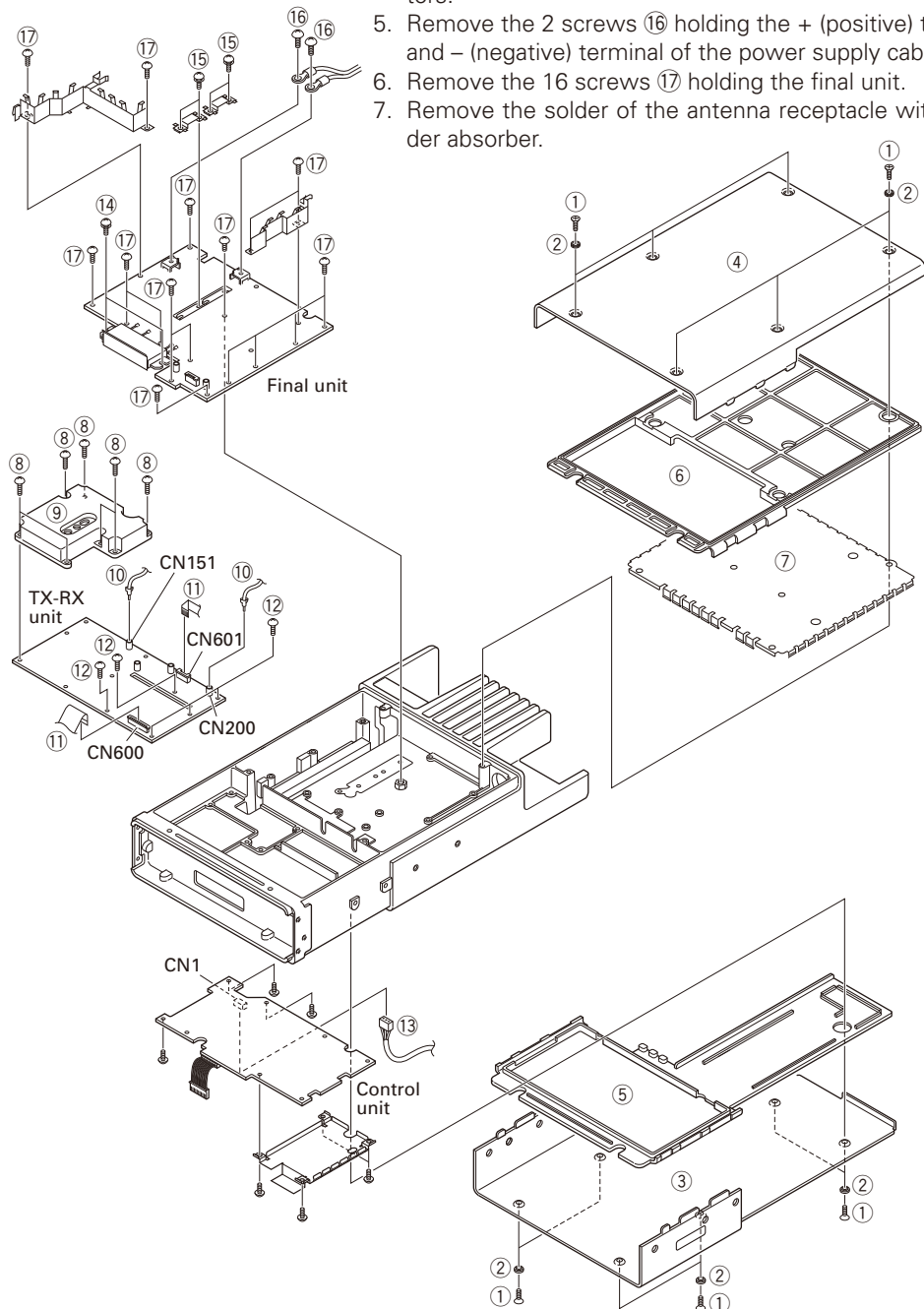
Note:

When re-installing the flat cable to the connector on the CN600 side, do not align the cable as shown in the figure 1, as there is a possibility of producing an effect on the sensitivity of P25.

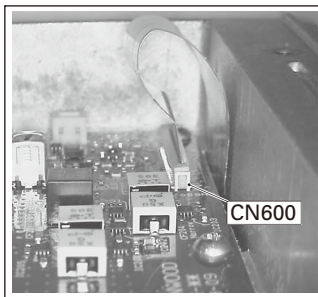
5. Remove the 5 screws ⑫.

■ Removing the Final unit (X45-380)

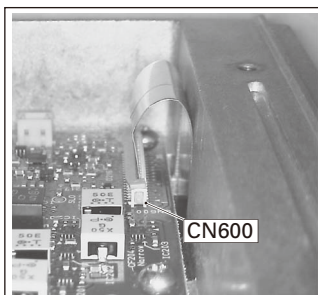
1. Remove the cables from the connector (CN1) of the control unit ⑬.
2. Remove the 2 screws ⑭ holding the power module.
3. Remove the solder of the power module with a solder absorber.
4. Remove the 4 screws ⑮ holding the two final transistors.
5. Remove the 2 screws ⑯ holding the + (positive) terminal and - (negative) terminal of the power supply cable.
6. Remove the 16 screws ⑰ holding the final unit.
7. Remove the solder of the antenna receptacle with a solder absorber.



Wrong



Right



TK-5810(BG)/5810H(BG)

DISASSEMBLY FOR REPAIR

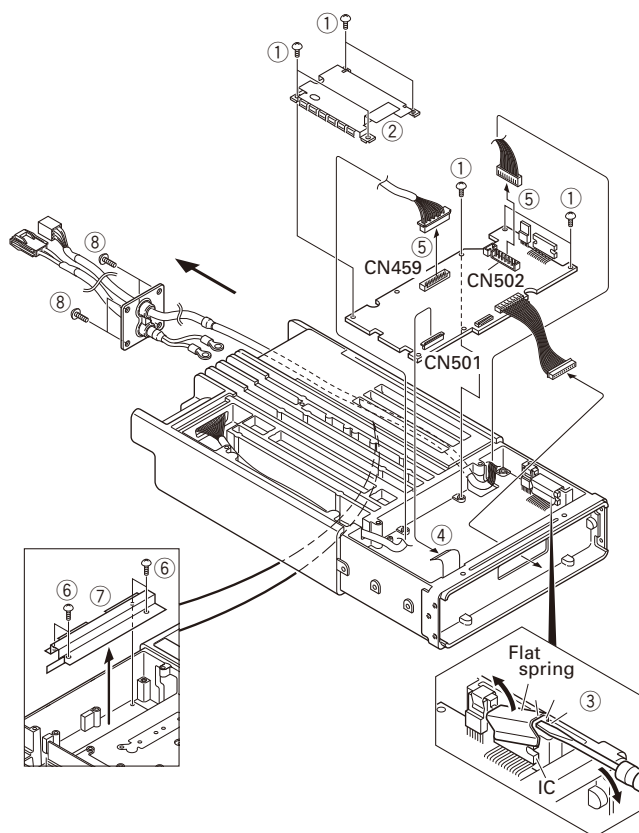
Disassembly Procedure (TK-5810(BG)/5810H(BG))

■ Removing the Control unit (X53-440)

1. Remove the 7 screws ①.
2. Remove the shielding plate ②.
3. With a flat-head screwdriver, remove the 2 flat springs holding the ICs (IC5 and IC522) ③.
4. Remove the flat cable from the connector (CN501) ④.
5. Remove the cables from the two connectors (CN459 and CN502) ⑤.

■ Removing the accessory cable and power supply cable on the rear of the transceiver

1. Confirm the following contents.
 - The screws holding the + (positive) terminal and – (negative) terminal of the power supply cable is removed.
 - The cable from the connector (CN502) of the Control unit is removed.
2. Remove the 4 screws ⑥ holding the shielding plate, and remove the shielding plate ⑦ from the chassis (TK-5810H(BG) only).
3. Remove the 4 screws ⑧ on the rear of the transceiver.
4. Pull out the power supply cable and accessory cable.



Precautions for Reassembly

■ Painting the lubricant (Part No.: 410-0019-05) on the groove of the case packing

Paint the lubricant to the position as shown in figure after replacing or assembling the case packing.

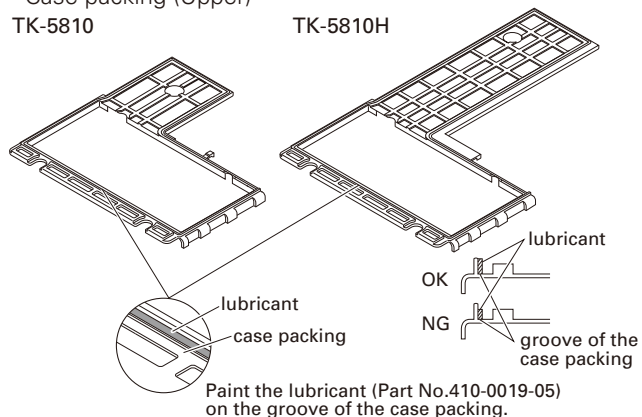
Note:

To assure waterproofing, paint the lubricant on the groove of the case packing.

• Case packing (Upper)

TK-5810

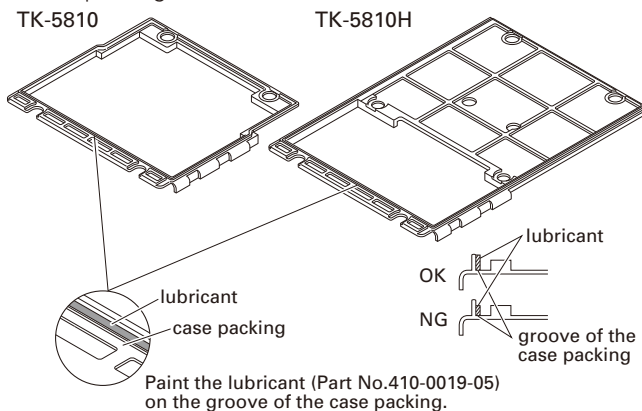
TK-5810H



• Case packing (Lower)

TK-5810

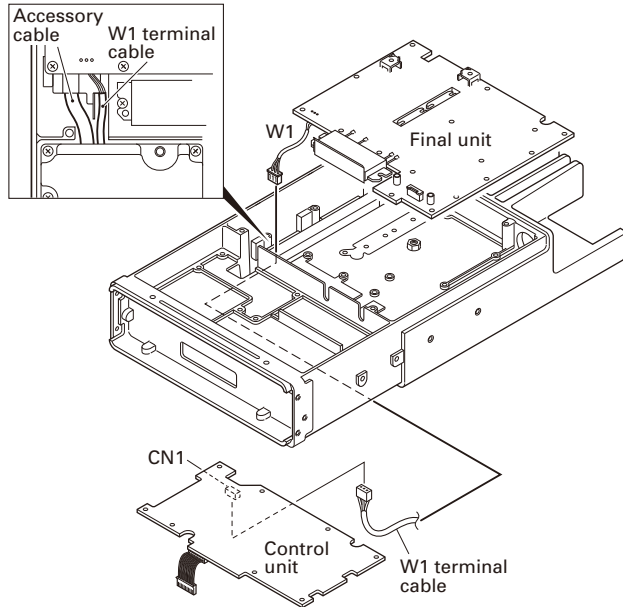
TK-5810H



DISASSEMBLY FOR REPAIR

■ Align the cable connecting the W2 terminal: TK-5810H(BG) only

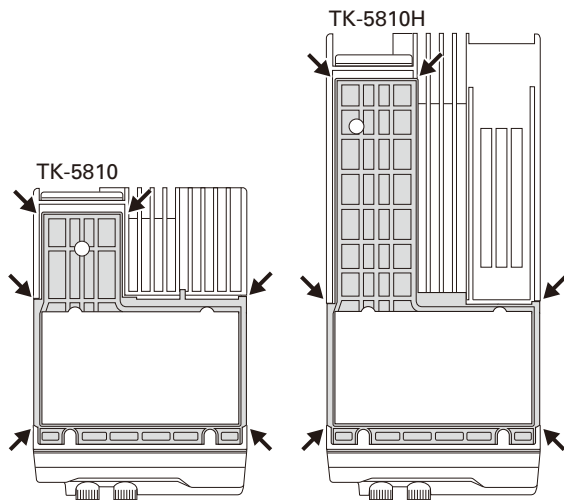
When you assemble the final unit, align the cable connecting the W1 terminal as shown in figure, then insert it into the connector (CN1) of the control unit.



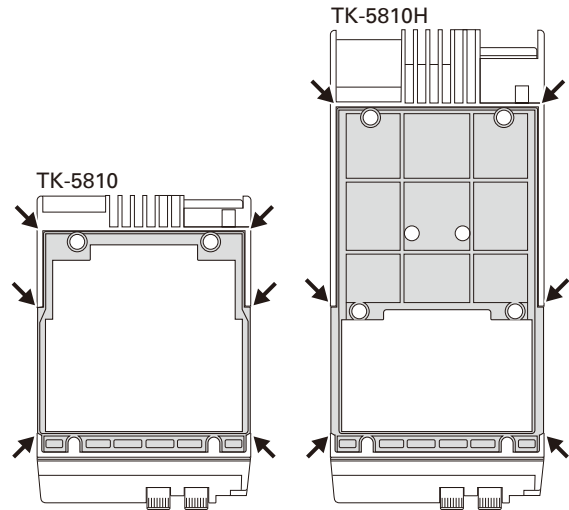
■ Procedures after installing the case packing to the chassis

After installing the case packing to the chassis, confirm that all corners of the upper/lower packing are securely fitted to the chassis. Place arrows shown in the figure below.

• Case packing (Upper)



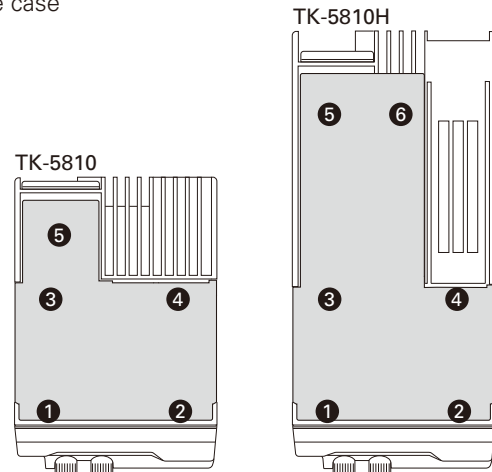
• Case packing (Lower)



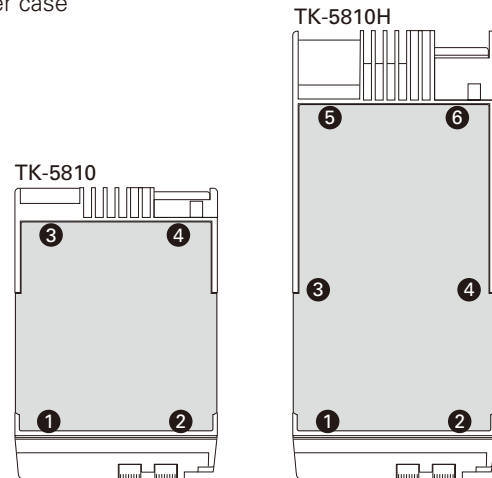
■ Sequence of tightening the screws for the upper/lower case to the chassis

Install the upper/lower case to the chassis and tighten the screws in the order shown in the figure below.

• Case case



• Lower case



CIRCUIT DESCRIPTION

1. Overview

This transceiver is a UHF/FM/P25 transceiver designed to operate in the frequency range of 450 to 520MHz (K) or 400 to 470MHz (K2).

The unit consists of receiver, transmitter, phase-locked loop (PLL) frequency synthesizer, base band parts, power supply, and control circuits.

2. Frequency Configuration

The receiver is a double-conversion superheterodyne using first intermediate frequency (IF) of 49.95MHz and second IF of 450kHz. Incoming signals from the antenna are mixed with the local signal from the PLL circuit to produce the first IF of 49.95MHz.

This is then mixed with the 50.4MHz second local oscillator output to produce the 450kHz second IF. This signal is detected to give the demodulated signal in the DSP.

The transmit signal frequency is generated by the PLL VCO, and modulated by the signal from the DSP. It is then amplified and fed to the antenna.

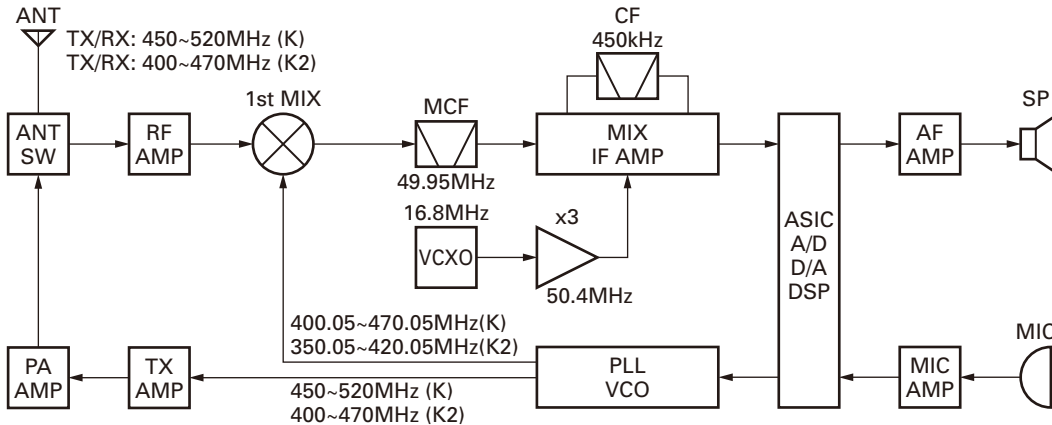


Fig. 1 Frequency configuration

3. Receiver System

3-1. Front-end RF Amplifier

The receive signal from the RX terminal (CN200) of the TX-RX unit (X57-727) is amplified by a transistor (Q200) and passes through the band-pass filter (L207, L208, L209 and L210) to remove unwanted signal.

The signal passing through the band-pass filter goes into the 1st mixer.

These band-pass filters are tuned to a desired frequency by variable capacitance diode (D204, D205, D206 and D207).

A tuning voltage corresponding to the desired signal is applied to each variable capacitance diode to tune to the receive frequency.

3-2. 1st Local

The 1st mixer uses double balanced mixer (IC200).

The receive signal passing through the band-pass filter (L207, L208, L209 and L210) and the 1st local signal generated by the VCO, are mixed by the 1st mixer (IC200) to produce a 1st IF signal (49.95MHz) (Lower heterodyne).

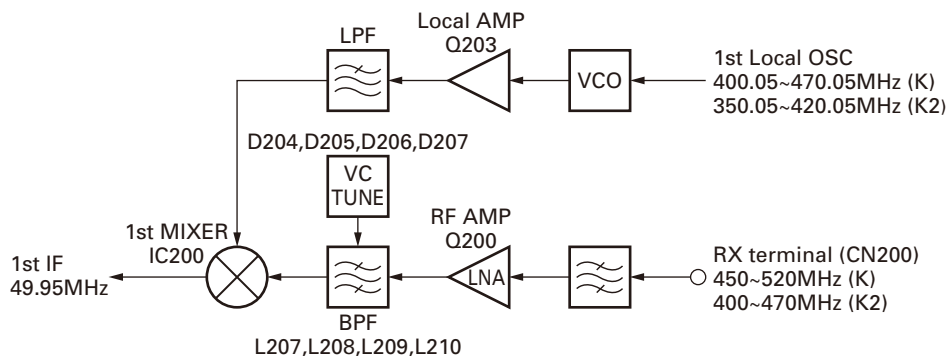


Fig. 2 Front-end RF amplifier and 1st local

CIRCUIT DESCRIPTION

3-3. 1st IF

The 1st IF signal passes through the MCF (Monolithic Crystal Filter) to remove unwanted signal.

The MCF has two paths (Wide band: XF201, Narrow band: XF200), and these are controlled with the IF filter switch (D208, D209, D210, D211, D212, D213, D214 and D215).

The signal passes through the MCF (XF201) when the Wide band (D209, D211, D213 and D215 are ON) is selected. The signal passes through the MCF (XF200) when the Narrow band (D208, D210, D212 and D214 are ON) is selected.

The 1st IF signal passing through these MCFs is amplified by the IF amplifier (Q205) and goes into the FM IC (IC209).

3-4. 2nd Local

The 1st IF signal (49.95MHz) amplified by the IF amplifier (Q205) and the 2nd local signal (50.4MHz) generated by tripling the reference oscillator frequency (16.8MHz) of the VCXO (X200) by Q207, are mixed in the FM IC (IC209) to produce a 2nd IF signal (450kHz) (Upper heterodyne).

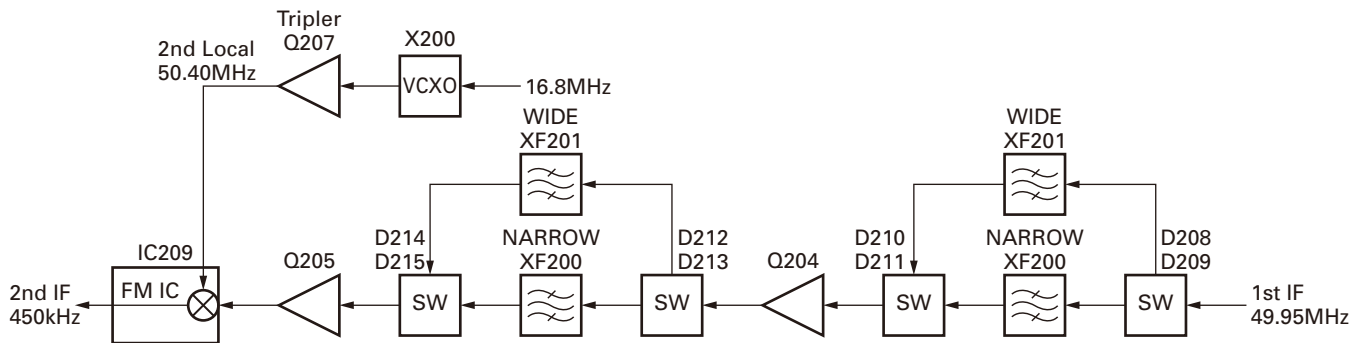


Fig. 3 1st IF and 2nd local

3-5. 2nd IF

The 2nd IF signal passes through the ceramic filter to remove unwanted signal.

The ceramic filter has two paths (Wide band: CF201 and CF202, Narrow/P25 band: CF200 and CF204), and these are controlled with the multiplexers (IC201, IC202, IC203, IC205, IC206 and IC207).

The control line is W/N1, W/N2 and VN.

The signal passes through the ceramic filters (CF201 and CF202) when the Wide band (W/N1: high level, W/N2: high level, VN: high level) is selected. The signal passes through the ceramic filters (CF200 and CF204) when the Narrow/P25 band (W/N1: low level, W/N2: low level, VN: high level) is selected.

After that, the signal is fed into ASIC (IC708) through ceramic filter (CF100), and then, the signal is demodulated in ASIC and the AF signal is dealing with DSP (IC701).

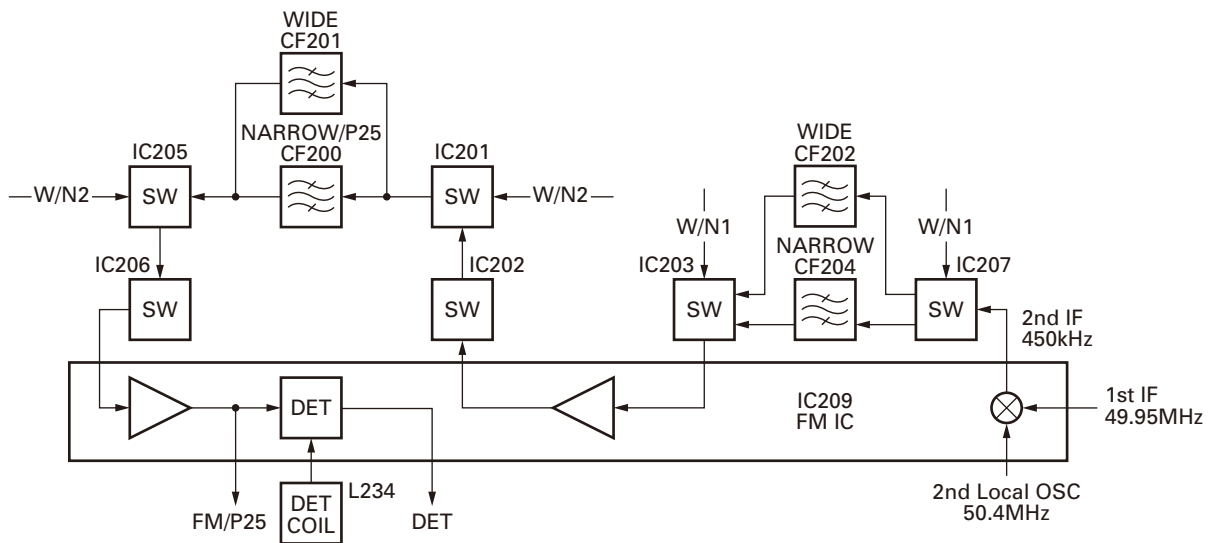


Fig. 4 2nd IF

CIRCUIT DESCRIPTION

3-6. Audio Amplifier Circuit

Audio processing (high-pass filter, low-pass filter, de-emphasized and so on) at FM mode and decoding at P25 mode are processed by DSP. Audio signal from IC708, IC701 goes through Low-pass filter (IC503). The signal then goes through mute switch (IC506), amplifier (IC510), and switch (IC515), and electronic volume control (IC517), and pre-amp (IC516), and audio mute switch (Q506), and audio route switch (IC518), and audio power amp (IC522).

While busy, /SPK_MUTE becomes High, turn Mute switch (Q506) off, and signal is fed to AF Power Amp (IC522). While Non-busy, /SPK_MUTE is become Low, turn Mute switch (Q506) on, then there is not AF output.

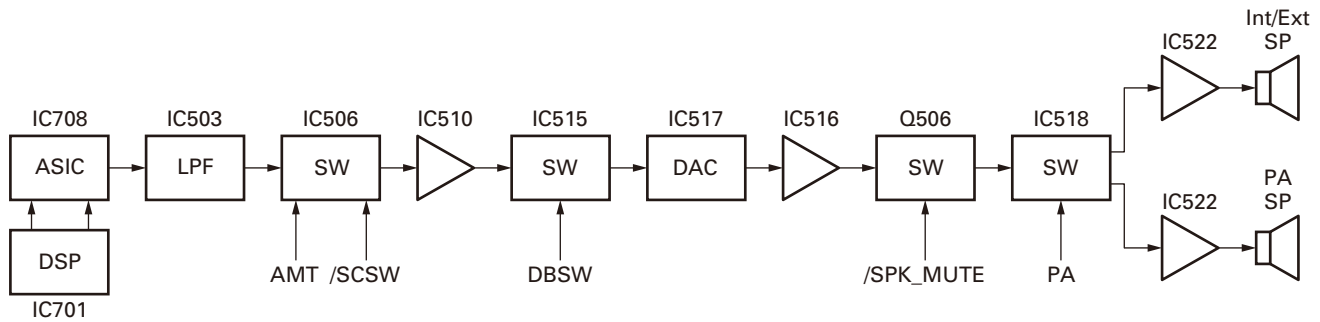


Fig. 5 Audio Amplifier circuit

3-7. Squelch Circuit

It amplifies the demodulated noise signal from FM IC (IC209) after filtering through BPF circuit. Then, the amplified signal is converted to DC signal by the detection circuit. The converted signal is fed to the ASIC (IC708).

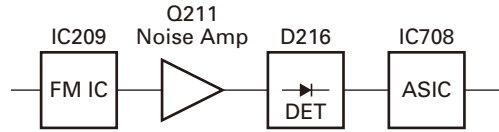


Fig. 6 Squelch circuit

4. Transmitter System

4-1. Audio Band Circuit

The signal from the microphone goes through the mute switch (Q503), the MIC-Mute signal (MM) becomes Low, and then mute switch (Q503) is turned off. The signal

from microphone goes through summing-Amp (IC512) and MIC-AGC (IC512, Q501, Q502, D500 and D501), and goes through audio route switch (IC509), and amplified by MIC-Amp IC505. LPF IC501 works as anti-aliasing filter.

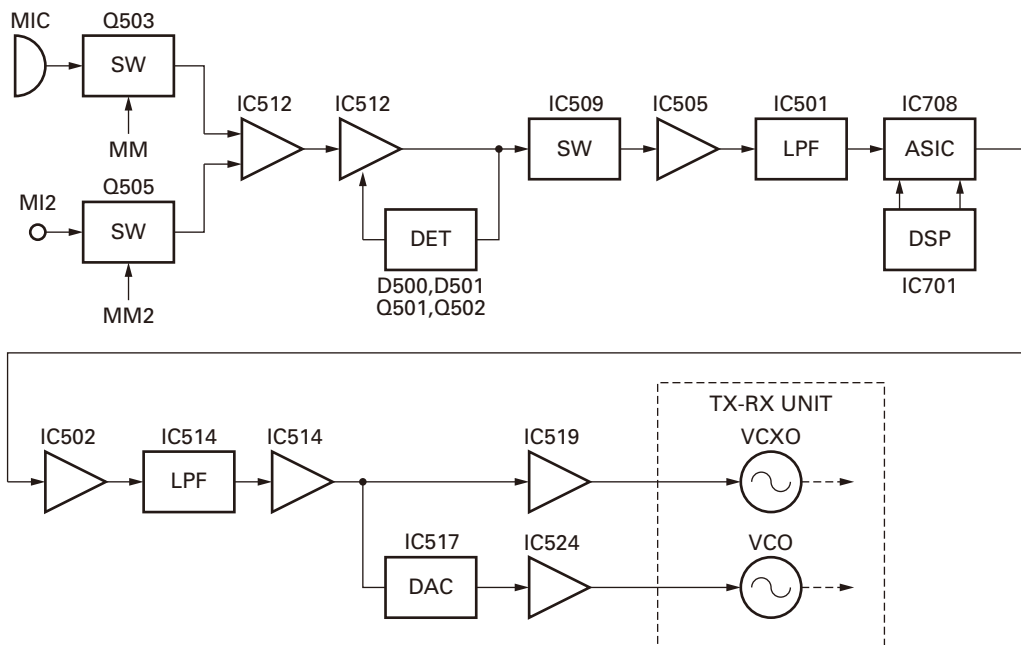


Fig. 7 Audio band and Base band circuit

CIRCUIT DESCRIPTION

4-2. Base Band Circuit

The audio signal output from the base band circuit is converted by ASIC (IC708) to digital data of a sampling frequency of 48 kHz. This digital data is sent to the DSP (IC701) and voice signals of 300Hz or lower and frequencies of 3kHz or higher are cut off and an audio range 300Hz to 3kHz is extracted. The audio signal is then pre-emphasized in FM mode and synthesized with the signals, such as QT and DQT, as required, and is then output from the ASIC (IC708). In P25 mode, the audio signal is converted to the 4-Level FSK base band signal and output from the ASIC (IC708). The DTMF, 2tone and MSK base band signals are also generated by the DSP (IC701) and output by the ASIC (IC708).

LPF (IC514) works as smoothing filter. The DAC (IC517) assigns the base band signal to the VCO and VCXO (X400). At this time, the level output according to the transmit carrier is fine-adjusted according to each modulation method.

4-3. Drive Amplifier Circuit (From T/R switch to Power module)

The transmit signal passing through the T/R switch (D420) is amplified by the two drive amplifiers (Q150 and Q151). The transmit signal from the drive amplifier (Q151) passes through a 3dB attenuator and is fed to the power module.

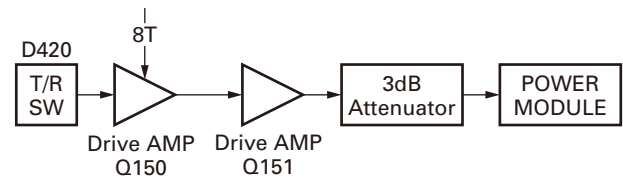


Fig. 8 Drive amplifier circuit

4-4. Final Amplifier Circuit (From Power module to Antenna output): TK-5810(BG)

The transmit signal from the TX terminal (CN1) of the final unit (X45-379) is amplified by the power module (IC2).

The signal amplified by the power module passes through the CM coupler, antenna switch (D1, D12, D3 and D11) and low-pass filter, then it is fed to the antenna.

CM coupler is a line for detecting forward RF power and reflected RF power.

Forward RF power is detected by D5, and is converted into DC voltage. The converted DC voltage is fed to the APC comparator (IC1), and is compared with the PC voltage, then is output from the OUT-B terminal (pin 7) of IC1 as an APC voltage. The APC voltage controls the gate voltage of the power module (IC2), and keeps transmission output stable.

If an abnormal antenna load is connected, reflected RF power is detected by D6, and output voltage (DC voltage) is fed to the APC comparator (IC1). The transmission output is reduced more as this DC voltage rises.

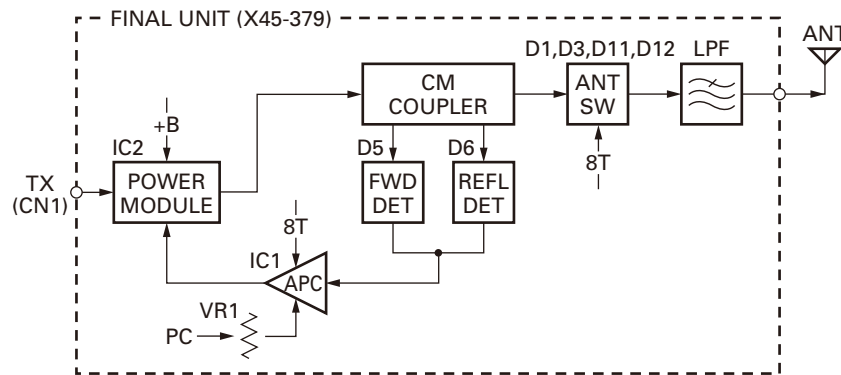


Fig. 9 Final amplifier circuit: TK-5810(BG)

4-5. Final Amplifier Circuit (From Power module to Antenna output): TK-5810H(BG)

The transmit signal from the TX terminal (CN1) of the final unit (X45-380) is amplified by the power module (IC1).

The signal amplified by the power module is divided into two signal, and further is amplified by the final amplifier (Q1 and Q2). The each signal from Q1 and Q2 is combined.

The combined signal passes through the antenna switch (D5, D6, D7, D8, D15 and D16), CM coupler and low-pass filter, then it is fed to the antenna.

CM coupler is a line for detecting forward wave and reflected wave.

Forward wave is detected by D2, and is converted into DC voltage. The converted DC voltage is fed to the APC comparator (IC2), and is compared with the PC voltage, then is output from the OUT-B terminal (pin 7) of IC2 as an APC voltage. The APC voltage controls the gate voltage of the power module (IC1) and final amplifier (Q1 and Q2), and keeps transmission output stable.

If an abnormal antenna load is connected, reflected wave is detected by D3, and output voltage (DC voltage) is fed to the APC comparator (IC2). The transmission output is reduced more as this DC voltage rises.

CIRCUIT DESCRIPTION

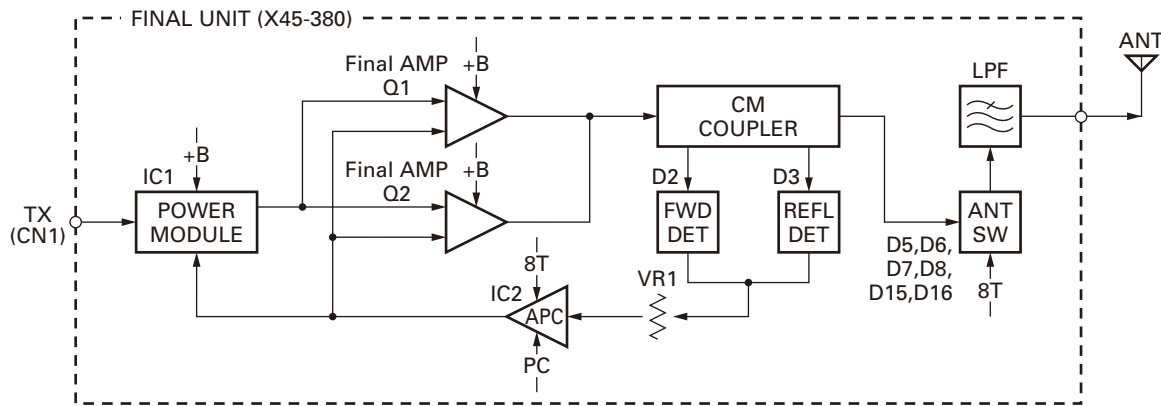


Fig. 10 Final amplifier circuit: TK-5810H(BG)

4-6. Automatic Power Control Circuit

The automatic power control (APC) circuit stabilizes the transmitter output power at a predetermined level and consists of forward/reflected power detector circuits.

The forward/reflected power detector circuits detect forward RF power and reflected RF power to DC voltage, and consists of a CM coupling type detection circuit formed by a CM coupler.

The voltage comparator compares the voltage obtained by the above detected voltage with the PC voltage.

An APC voltage proportional to the difference between the sensed voltage and the reference voltage appears at the output of the comparator. This output voltage controls the gate voltage to the final amplifier.

4-7. Temperature Protection Circuit: TK-5810(BG)

To prevent thermal destruction of the power module (IC2), this circuit reduces APC voltage when temperature of the power module (IC2) rises.

The ASIC (IC708) detects temperature with a thermistor (TH1 and TH4) and controls reference voltage to the APC circuit.

4-8. Temperature Protection Circuit: TK-5810H(BG)

To prevent thermal destruction of the power module (IC1) and final amplifier (Q1 and Q2), this circuit reduces APC voltage when temperature of the power module (IC1) and final amplifier (Q1 and Q2) rises.

The ASIC (IC708) detects temperature with the thermistor (TH1 and TH3) and controls reference voltage to the APC circuit.

5. PLL Frequency Synthesizer

The PLL Frequency Synthesizer consists of the following components:

- VCXO (X400)
- VCO (Q413, Q414 and Q415)
- Potentiometer IC (IC401)
- PLL IC (IC400)
- Local switch (D419 and D420)

This PLL system is composed of a PLL IC (IC400), a crystal oscillator (X400), VCO and a potentiometer IC (IC401).

VCO (Voltage Controlled Oscillator) is provided with 2 input terminals which are controlled by the potentiometer IC and the PLL IC. The potentiometer IC brings the oscillation frequency of VCO close to the target frequency, after the PLL locks it up.

The operation frequency of PLL is from 450 to 520MHz (K)/ 400 to 470MHz (K2) in TX mode and from 400.05 to 470.05MHz (K)/ 350.05 to 420.05MHz (K2) in RX mode. The frequency steps of the PLL is 2.5, 5, 10, 12.5, 20 or 25kHz. The comparative frequency of PLL which is 5, 10, 12.5, 20 or 25 are made by a programmable reference divider in PLL IC (IC400) from the 16.8MHz reference signal of the crystal oscillator (X400). Similarly, the VCO output signal is divided into comparative frequency by the programmable N divider in the PLL IC (IC400), and is compared with the divided reference signal in its phase detector.

The output signal of the phase detector is sent to one of the input terminals of the VCO.

5-1. VCXO (X400)

VCXO (X400) generates a reference frequency of 16.8 MHz for the PLL frequency synthesizer. This reference frequency is applied to pin 10 of the PLL IC (IC400).

The VCXO oscillation frequency is fine-adjusted by controlling the voltage applied to pin 1 of the VCXO with the ASIC (IC708). It is also controlled with pin 1 of the VCXO if the output from VCXO is modulated.

5-2. VCO

There is two RX VCOs (RX VCO1, RX VCO2) and a TX VCO.

The RX VCO1 (Q415) and RX VCO2 (Q414) generate a 1st local receive signal. The RX VCO1 oscillation frequency is 400.05 to 435.045MHz (K), 350.05 to 385.045MHz (K2) and the RX VCO2 oscillation frequency is 435.05 to 475.05 MHz (K), 385.05 to 420.05MHz (K2).

The TX VCO (Q413) generates a transmit carrier. The TX VCO oscillation frequency is 450 to 520MHz (K), 400 to 470MHz (K2).

CIRCUIT DESCRIPTION

The VCO oscillation frequency is determined by two systems of operation switching terminals "STR" and "VCO1/2" and two systems of voltage control terminals "C/V" and "ASSIST".

The operation switching terminals, "STR" and "VCO1/2", are controlled by the control lines (STR, VCO1/2) output from the ASIC (IC708). When the STR logic is high and the VCO1/2 logic is high, the RX VCO1 output a 1st local receive signal. When the STR logic is high and the VCO1/2 logic is low, the RX VCO2 output a 1st local receive signal. When the STR logic is low, the TX VCO output a transmit carrier.

The voltage control terminals, "C/V" and "ASSIST", are controlled by the PLL IC (IC400) and potentiometer IC (IC401) and the output frequency changes continuously according to the applied voltage. For the modulation input terminal, "MOD", the output frequency changes according to the applied voltage. This is used to modulate the VCO output. "MOD" works only when "STR" is low.

The oscillation frequency is controlled by the voltage of the input terminals of the VCO, obtained from the potentiometer IC applying to varactor diodes (D416, D417, D421, D411, D412, D422, D405, D406, and D407), and from the phase detector applying to diodes (D413, D414, D408, D409, D402, and D403).

5-3. Potentiometer IC (IC401)

The potentiometer IC (IC401) is connected to the VCO voltage control terminal, "ASSIST", and quickly controls the VCO oscillation frequency. However, its accuracy is low and the VCO frequency cannot be matched accurately with the desired transmit carrier or the 1st local receive signal.

The potentiometer IC is controlled by the ASIC (IC708) through the 3-line "PCS", "DAT", "CLK" serial bus.

5-4. Lockup Accelerator

The lockup accelerator is a circuit composed of a potentiometer IC (IC401) and a DC amplifier (IC403) to compel the oscillation frequency of the VCO to be close to the target.

The potentiometer IC outputs the voltage which meets the target frequency, and the signal is connected to one of two input terminals of the VCO through the DC amplifier.

5-5. PLL IC (IC400)

PLL IC compares the differences in phases of the VCO oscillation frequency and the VCXO reference frequency, returns the difference to the VCO CV terminal and realizes the "Phase Locked Loop" for the return control. This allows the VCO oscillation frequency to accurately match (lock) the desired frequency.

When the frequency is controlled by the PLL, the frequency convergence time increases as the frequency difference increases when the set frequency is changed. To supplement this, the potentiometer IC is used before control by the PLL IC to bring the VCO oscillation frequency close to the desired frequency. As a result, the VCO CV voltage does not change and is always stable at approximately 2V.

The desired frequency is set for the PLL IC by the ASIC (IC708) through the 3-line "EP", "DAT", "CLK" serial bus. Whether the PLL IC is locked or not is monitored by the ASIC through the "UL" signal line. If the VCO is not the desired frequency (unlock), the "UL" logic is low.

5-6. Local Switch (D419, D420)

The connection destination of the signal output from the amplifier (Q418) is changed with the diode switch (D420) that is controlled by the transmission power supply, 8T, and the diode switch (D419) that is controlled by the receive power supply, 8R.

If the 8T logic is high, it is connected to a transmit-side pre-drive amplifier (Q150). If the 8R logic is high, it passes through the local amplifier (Q203) and then is connected to a receive-side mixer (IC200).

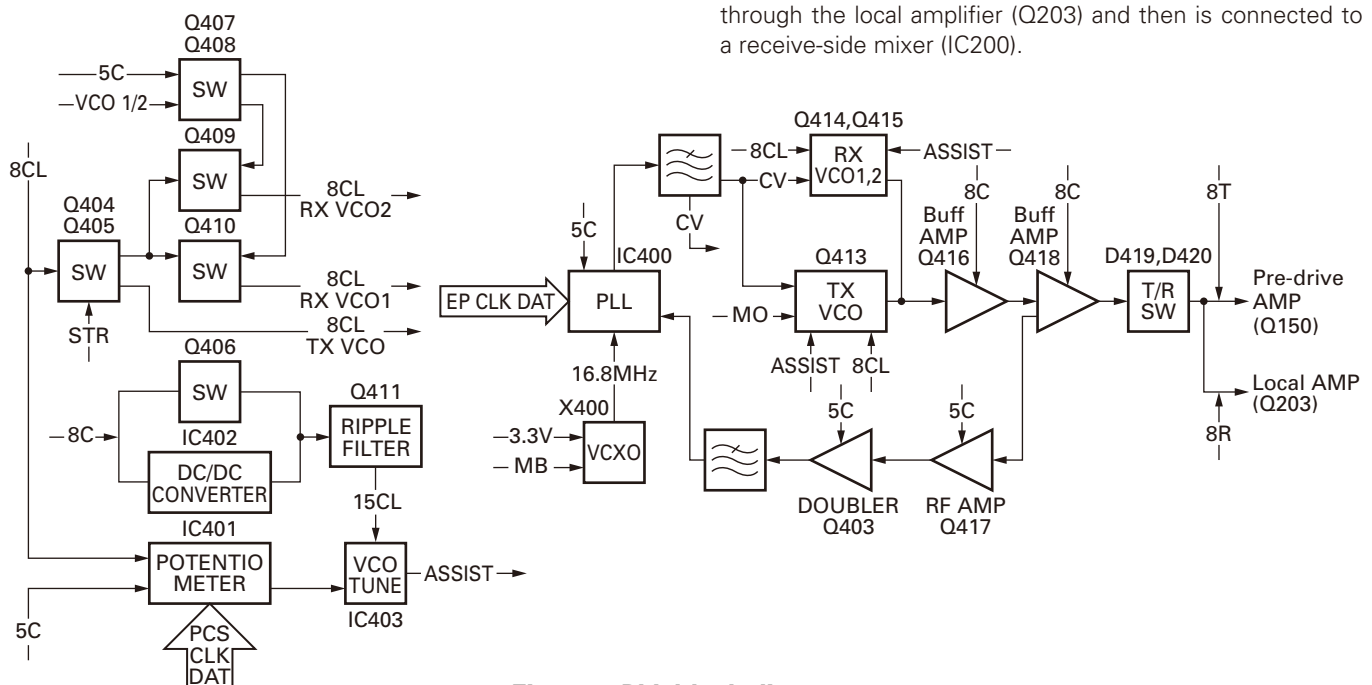


Fig. 11 PLL block diagram

CIRCUIT DESCRIPTION

6. Control Circuit

The control circuit consists of the ASIC (IC708) and its peripheral circuits. IC708 performs the following;

- 1) Switching between transmission and reception by PTT signal input.
- 2) Reading system, zone, frequency, and program data from the memory circuit.
- 3) Sending frequency program data to the PLL.
- 4) Controlling squelch on/off by the DC voltage from the squelch circuit.
- 5) Controlling the audio mute circuit by decode data input.

6-1. ASIC

The ASIC (IC708) is 32bit RISC processor, equipped with peripheral function and ADC/DAC.

This CPU operates at 18.432MHz clock and 3.3V/1.5V DC. It controls the flash memory, SRAM, DSP, the receive circuit, the transmitter circuit, the control circuit, and transfers data to or from an external device.

6-2. Memory Circuit

Memory circuit consists of the ASIC (IC708) and the SRAM (IC703), the flash memory (IC700). The flash memory has capacity of 64M-bit that contains the transceiver control program for the ASIC and stores the data. It also stores the data for transceiver channels and operating parameter that are written by the FPU. This program can be easily written from external devices. The SRAM has capacity of 2M-bit that contains work area and data area.

■ Flash memory

The flash memory stores the data that is written by the FPU (KPG-95DG), tuning data (Deviation, Squelch, etc.), and firmware program (User mode, Test mode, Tuning mode, etc.).

■ SRAM (static memory)

The SRAM has temporary data area and work area.

When the power supply is off, it is backed up by an internal secondary lithium battery. Therefore, the save data does not break.

■ Real-time clock

The clock function is based on real-time clock IC (IC704). When the power supply is off, it is backed up by an internal secondary lithium battery.

6-3. Display Unit (KCH-14/15/16)

The display unit is composed of the CPU and the LCD & Key backlight etc.

6-4. Temperature Detection Circuit

The temperature detection circuit detects the temperature using a temperature IC (IC702) and corrects the thermal characteristic change of the receiver and transmitter adjustments.

6-5. DSP

The DSP circuit consists of a DSP (IC701) and processes the base band signal. The DSP operates on an external clock of 18.432MHz (the same as the IC708), the I/O section operates at 3.3V and the core section operates at 1.5V. The DSP carries out the following processes:

- 4Level FSK processing
- Analog FM pre-emphasis/de-emphasis
- Vocoder processing between audio codec and modulation/demodulation
- CAI processing, such as error correction encoding
- QT/DQT encoding/decoding
- DTMF/2tone/MSK encoding/decoding
- Compressor/expander processing
- Transmit/receive audio filtering processing
- Microphone amplifier AGC processing
- Audio mute processing
- Modulation level processing

7. Power Supply Circuit

+B is connected to Final amplifier and DC/DC converter IC (IC4). IC4 regulates +B voltage to 5.0V (5M). 5M operates whenever +B is supplied. IC2 (33M), IC7 (33A) and IC8 (15M) are enabled while the 5M are operating. 33M, 33A and 15M provide the power to CPU, DSP, and Flash memory. At this time CPU starts working.

Voltage detector IC (IC1) watches +B voltage. If +B voltage is higher than 8.6V, IC1 (/BINT) outputs High. If the /BINT signal is high, Q3 (SB SW) is turned on by SBC signal from CPU (High: SB=ON, Low: SB=OFF). When the SB is turned on, IC5 (8C), IC3 (5C), IC9 (33GPS) start working. Q5 and Q10 and Q11 are controlled by SBC signal. If the SBC signal becomes High, Q5 (33M2) operates and Q10 (33AC) operates and Q11 (5MC SW) are turned on.

The CPU controls 8TC to High during transmission to supply power (8T) for transmission circuit. The CPU controls 8RC to High during reception to supply power (8R) for reception circuit. When the CPU detects the PSW (Power switch) signal, IGN (Ignition sense) signal or /BINT signal, it controls the SBC signal to Low, and turns the transceiver power (SB) off. When D1 and Q1 detect over-voltage condition, they turns Q3 (SB SW) off. But the CPU still works.

If +B is not provided to the transceiver, the power is provided to SRAM and RTC through the secondary battery connected with CN4.

CIRCUIT DESCRIPTION

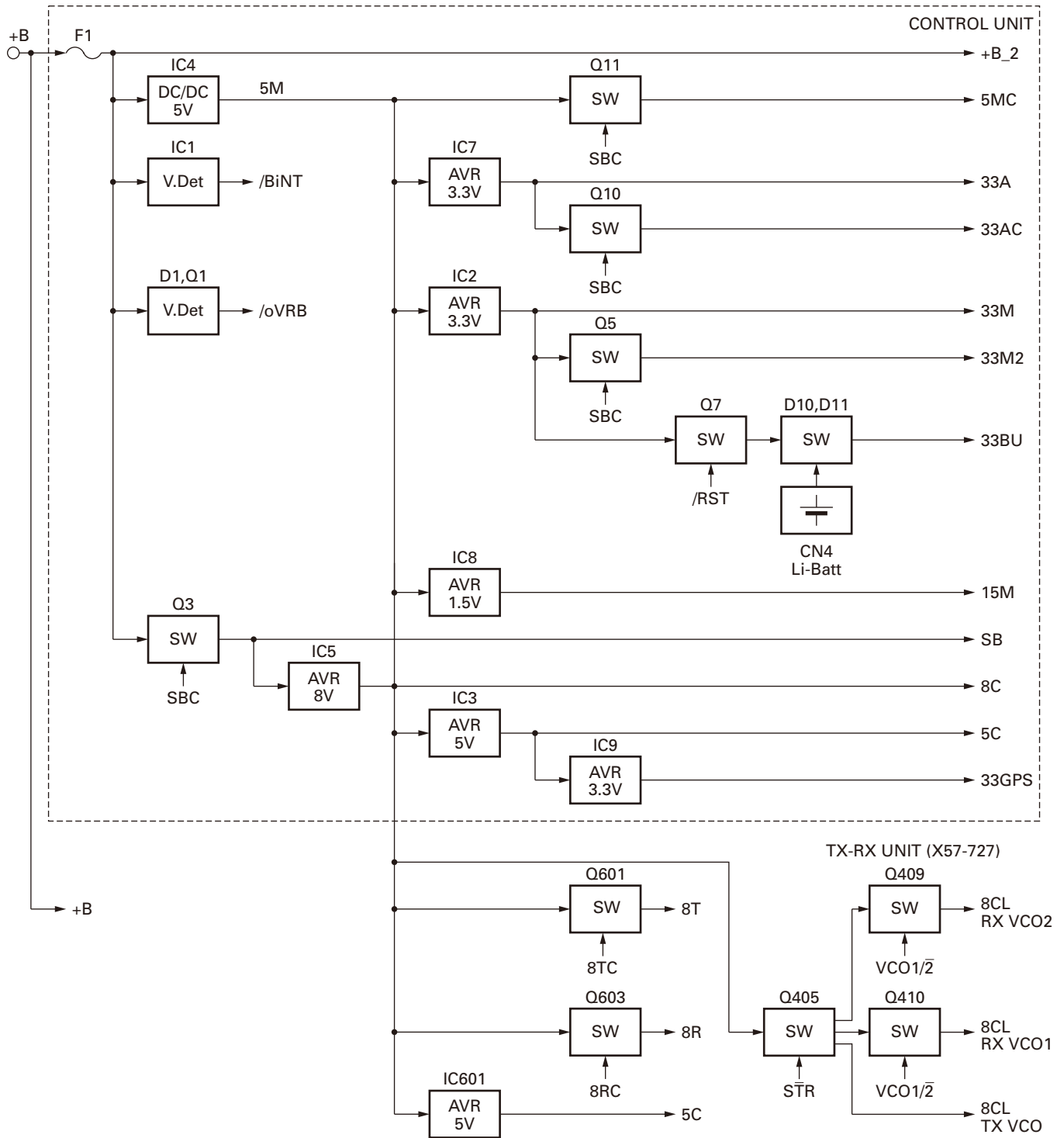


Fig. 12 Power supply circuit

TK-5810(BG)/5810H(BG)

COMPONENTS DESCRIPTION

Final unit (X45-3790-XX): TK-5810(BG)

Ref. No.	Part Name	Description
IC1	IC	APC comparator
IC2	IC	Power module
D1	Diode	ANT switch
D2	Zener diode	Protect of voltage
D3	Diode	ANT switch
D5	Diode	Forward wave rectification
D6	Diode	Reflected wave rectification
D10	Diode	Commbiner
D11,12	Diode	ANT switch
D13	Surge absorber	Surge absorption
D14	Diode	ANT switch

Final unit (X45-3800-XX): TK-5810H(BG)

Ref. No.	Part Name	Description
IC1	IC	TX drive AMP
IC2	IC	DC AMP and APC comparator
Q1,2	FET	Final AMP
D1	Zener diode	Protect of voltage
D2	Diode	Forward wave rectification
D3	Diode	Reflected wave rectification
D4	Diode	Commbiner
D5~8	Diode	ANT switch
D10	Surge absorber	Surge absorption
D13	Diode	Protect of reverse connection
D14	Surge absorber	Surge absorption
D15,16	Diode	ANT switch

Control unit (X53-4400-10)

Ref. No.	Part Name	Description
IC1	IC	Voltage detector (/BINT)
IC2	IC	Voltage regulator (33M)
IC3	IC	Voltage regulator (5C)
IC4	IC	DC/DC converter (5M)
IC5	IC	Voltage regulator (8C)
IC7	IC	Voltage regulator (33A)
IC8	IC	Voltage regulator (15M)
IC9	IC	Voltage regulator (33GPS)
IC100	IC	IF AMP (2nd IF)
IC101	IC	Buffer AMP (RSSI / ASQ)
IC102	IC	Buffer AMP (CV)

Ref. No.	Part Name	Description
IC103	IC	Buffer AMP (FTEMP1/FTEMP2)
IC200	IC	Data multiplexer
IC201	IC	Data multiplexer
IC202~206	IC	3.3V to 5V level converter
IC207	IC	5V to 3.3V level converter
IC208	IC	3.3V-5V level shifter
IC400	IC	I/O expander
IC401	IC	RS-232C driver
IC501	IC	DC AMP (Reference voltage) / Audio AMP (MIC)
IC502	IC	Buffer AMP (Data input) / DC AMP (Modulation line)
IC503	IC	Low-pass filter (RX audio) / Buffer AMP (Scrambler RX audio)
IC505	IC	Audio AMP (Scrambler TX audio) / Summing AMP (TX audio)
IC506	IC	Audio switch (Scrambler RX audio)
IC507	IC	Audio AMP (Scrambler TX audio) / DC AMP (Reference voltage)
IC508	IC	Audio switch (Side tone / VGS audio)
IC509	IC	Audio switch (Scrambler TX audio)
IC510	IC	Summing AMP (RX audio) / Audio AMP (VGS recording audio)
IC511	IC	Audio switch (VGS recording audio)
IC512	IC	Audio AMP (MIC AGC) / Summing AMP (MIC)
IC513	IC	Audio switch (TX audio monitor)
IC514	IC	Low-pass filter (Modulation signal) / Summing AMP (Data input)
IC515	IC	Audio switch (Optional audio line)
IC516	IC	Audio AMP (RX audio)
IC517	IC	8ch D/A converter
IC518	IC	Audio switch (Audio AMP output)
IC519	IC	DC AMP (Power control voltage)
IC520	IC	Audio AMP (Data output) / Audio AMP (AF output)
IC521	IC	DC AMP (RX front-end tuning voltage)
IC522	IC	Audio power AMP
IC523	IC	DC AMP (2nd Lo TCXO tuning voltage)
IC524	IC	Audio AMP (Modulation for VCO)
IC525	IC	DC AMP (Reference voltage)

COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
IC700	IC	Flash memory
IC701	IC	Digital signal processor
IC702	IC	Temperature sensor
IC703	IC	Static memory
IC704	IC	Real-time clock
IC705	IC	Voltage detector (System reset)
IC706	IC	Buffer AMP (Logic)
IC707	IC	Clock buffer AMP
IC708	IC	ASIC
Q1	Transistor	Over voltage control switch
Q2	Transistor	DC switch (SB)
Q3	FET	DC switch (SB)
Q4	FET	DC switch (33M2)
Q5	Transistor	DC switch (33M2)
Q6	FET	DC switch (33BU)
Q7	Transistor	DC switch (33BU)
Q8	FET	DC switch (33AC)
Q9	FET	DC switch (5MC)
Q10	Transistor	DC switch (33AC)
Q11	Transistor	DC switch (5MC)
Q12,13	Transistor	DC switch (PSC)
Q200,201	FET	DC switch (Power switch)
Q203,205	FET	DC switch (Panel reset)
Q204,206	Transistor	Data transmit (TRD)
Q400,401	Transistor	Data receive (GPS)
Q402,403	Transistor	DC switch (Aux output)
Q501	Transistor	AGC attenuator
Q502	Transistor	MIC AGC attenuator
Q503,505	FET	DC switch (MIC mute)
Q504	Transistor	DC switch (RX audio mute)
Q506	Transistor	Audio mute switch (RX audio)
Q507	Transistor	Mute switch (Audio power amp)
Q508	FET	DC switch (Audio power AMP mute)
Q509	Transistor	DC switch (Relay)
Q510	Transistor	DC switch (Ignition)
D1	Zener diode	Over voltage detection (+B)
D2	Diode	Capacitor discharge switch
D3	Diode	Over voltage protection switch
D4	Diode	Voltage protection (BLVL)
D5	Diode	Reverse current prevention (TAM1)

Ref. No.	Part Name	Description
D6	Diode	DC/DC converter catch diode
D7	Diode	Logic control switch (SBC)
D8	Diode	DC/DC converter boost diode
D10,11	Diode	Reverse current prevention (33BU)
D400~405	Diode	Surge absorption (D-sub connector)
D406~409	Diode	Logic level converter (GPS data)
D410,429,430	Zener diode	Surge absorption (D-sub connector)
D411,412	Varistor	Surge absorption (D-sub connector)
D413~421	Diode	Surge absorption (D-sub connector)
D422,423	Varistor	Surge absorption (D-sub connector)
D424,425,503	Diode	Surge absorption (D-sub connector)
D426~528	Zener diode	Surge absorption (D-sub connector)
D500,501	Diode	AGC detection
D502	Zener diode	Surge absorption (D-sub connector)
D504,505,507	Varistor	Surge absorption (Display unit)
D506	Varistor	Over current protection (Display unit)
D508,510	Varistor	Surge absorption (Display unit)
D509	Diode	Discharge switch (ASQ)
D512	Diode	Voltage protection (MB)

TX-RX unit (X57-7270-XX)

Ref. No.	Part Name	Description
IC200	IC	DBM
IC201~203	IC	Multiplexer
IC204	IC	OP AMP
IC205~207	IC	Multiplexer
IC209	IC	FM IC
IC210	IC	Buffer
IC211	IC	Multiplexer
IC400	IC	PLL IC
IC401	IC	Potentiometer
IC402	IC	DC/DC
IC403	IC	VCO Tune
IC600	IC	Shift register
IC601	IC	Voltage regulator(5V)
Q150,151	Transistor	RF AMP

COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
Q200	Transistor	RF AMP
Q201,202	Transistor	DC switch
Q203	Transistor	Local AMP
Q204,205	Transistor	IF AMP
Q207	Transistor	VCXO frequency AMP
Q208,209	Transistor	DC switch
Q210	FET	DC switch
Q211	Transistor	Noise detector
Q400	FET	CV detection
Q401,402	Transistor	UL detection
Q403	Transistor	PLL f-in AMP
Q404	Transistor	TX/RX switch
Q405	FET	TX/RX switch
Q406	FET	DC/DC
Q407	Transistor	VCO1/2 switch
Q408	FET	VCO1/2 switch
Q409,410	Transistor	VCO1/2 switch
Q411,412	Transistor	Ripple filter
Q413~415	FET	VCO oscillation
Q416	Transistor	Buffer AMP

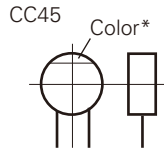
Ref. No.	Part Name	Description
Q417	Transistor	PLL f-in AMP
Q418	Transistor	Buffer AMP
Q600,601	Transistor	8T switch
Q602,603	Transistor	8R switch
D200~203	Variable capacitance diode	HPF control
D204~207	Variable capacitance diode	BPF control
D208~217	Diode	IF filter switch
D400	Diode	Ripple filter
D401	Diode	Assist DC
D402,403	Variable capacitance diode	Frequency control
D405~409	Variable capacitance diode	Frequency control
D411~414	Variable capacitance diode	Frequency control
D416,417	Variable capacitance diode	Frequency control
D418	Variable capacitance diode	Modulator
D419,420	Diode	TX/RX switch
D421,422	Variable capacitance diode	Frequency control

PARTS LIST

CAPACITORS

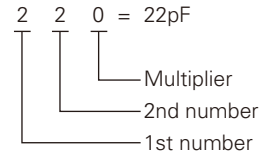
$\frac{C}{1} \frac{C}{2} \frac{45}{3} \frac{TH}{4} \frac{1H}{5} \frac{220}{6} \frac{J}{6}$

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



• Capacitor value

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



• Temperature coefficient

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

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

Example : CC45TH = -470±60ppm/°C

• Tolerance (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

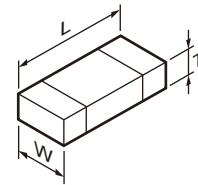
• Voltage rating

2nd word \ 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	2150	4000	5000	6300	8000	-

• Chip capacitors

- (EX) $\frac{C}{1} \frac{C}{2} \frac{73}{3} \frac{F}{4} \frac{SL}{5} \frac{1H}{6} \frac{000}{7} \frac{J}{7}$ → Refer to the table above.
- 1 = Type
 - 2 = Shape
 - 3 = Dimension
 - 4 = Temp. coefficient
 - 5 = Voltage rating
 - 6 = Value
 - 7 = Tolerance
- (Chip) (CH, RH, UJ, SL)
- (EX) $\frac{C}{1} \frac{K}{2} \frac{73}{3} \frac{F}{4} \frac{F}{5} \frac{1H}{6} \frac{000}{7} \frac{Z}{7}$
- (Chip) (B, F)

• Dimension



Chip capacitor

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
H	1.0±0.05	0.5±0.05	0.5±0.05

Chip resistor

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
H	1.0±0.05	0.5±0.05	0.35±0.05

RESISTORS

• Chip resistor (Carbon)

- (EX) $\frac{R}{1} \frac{D}{2} \frac{73}{3} \frac{E}{4} \frac{B}{5} \frac{2B}{6} \frac{000}{7} \frac{J}{7}$
- (Chip) (B, F)

• Carbon resistor (Normal type)

- (EX) $\frac{R}{1} \frac{D}{2} \frac{14}{3} \frac{B}{4} \frac{B}{5} \frac{2C}{6} \frac{000}{7} \frac{J}{7}$

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

• 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		

TK-5810(BG)/5810H(BG)

PARTS LIST

* New Parts. Δ indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

C : China

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3790-XX): TK-5810(BG)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-5810(BG)/5810H(BG)					
1	3A		A01-2161-32	METALLIC CABINET	K,K2
2	1B	*	A01-2162-32	METALLIC CABINET	K,K2
3	3D		A01-2163-21	METALLIC CABINET	HK,HK2
4	1D		A01-2164-31	METALLIC CABINET	HK,HK2
5	2B		A10-1388-51	CHASSIS	K,K2
6	2C		A10-4115-01	CHASSIS	HK,HK2
8	2F,2H	*	B62-1938-10	INSTRUCTION MANUAL	
10	2B,2D		E04-0167-15	RF COAXIAL RECEPTACLE (M)	
11	1A	*	E31-3269-15	LEAD WIRE WITH PLUG (X57-X45)	K,K2
12	1C	*	E37-0179-15	LEAD WIRE WITH PLUG (X57-X45)	HK,HK2
13	1E,1G	*	E37-0733-15	LEAD WIRE CONNECTOR ACCESSORY	
14	2B	*	E37-0772-35	LEAD WIRE CONNECTOR (D-SUB)	K,K2
15	3D		E37-0773-45	LEAD WIRE CONNECTOR (D-SUB)	HK,HK2
-			E37-0808-15	LEAD WIRE CONNECTOR (ANI)	
-			E37-0809-15	LEAD WIRE CONNECTOR (SCRAMB-)	
17	1A,2C		E37-1147-15	FLAT CABLE	
18	1B	*	E37-1149-25	LEAD WIRE CONNECTOR	K,K2
19	2D	*	E37-1150-25	LEAD WIRE CONNECTOR	HK,HK2
20	1A,2A		E37-1153-05	FLAT CABLE	K,K2
21	1C,2C		E37-1156-05	FLAT CABLE	HK,HK2
W700	3A,3C	*	E37-1326-15	LEAD WIRE WITH CONNECTOR	
23	2B		F10-1479-03	SHIELDING PLATE (FINAL)	K,K2
24	1D		F10-1488-02	SHIELDING PLATE (FINAL)	HK,HK2
25	1A,1C		F10-2265-13	SHIELDING COVER (X57)	
26	3B,3C		F10-3012-04	SHIELDING PLATE (X53)	
27	1C		F10-3015-04	SHIELDING PLATE (X45)	HK,HK2
29	1C		F10-3039-04	SHIELDING PLATE (X45)	HK,HK2
30	2C		F10-3040-04	SHIELDING PLATE (X45)	HK,HK2
31	1B,1D	*	F10-3069-12	SHIELDING PLATE (X57)	
32	3A,3C		G02-0709-04	FLAT SPRING	
33	1B		G02-1833-03	EARTH SPRING (PM)	K
34	1C		G02-1834-04	EARTH SPRING	HK,HK2
35	3A,3C		G02-1844-04	FLAT SPRING	
36	1B,2D		G10-1327-04	FIBROUS SHEET	
38	2A,2C,1E,1G		G11-4379-04	SHEET	
39	1A,2D		G13-2182-04	CUSHION (F10)	
40	1B,1D	*	G13-2195-14	CUSHION (A01)	
41	2B		G13-2196-04	CUSHION (X45)	K,K2
42	2B,2D		G53-1626-03	PACKING (D-SUB)	
43	2B,2D		G53-1657-04	PACKING (ANT)	
44	2B		G53-1658-04	PACKING (ACC)	K,K2
45	2D		G53-1659-04	PACKING (ACC)	HK,HK2
46	3A		G53-1665-12	PACKING (TOP)	K,K2
47	1B		G53-1666-12	PACKING (BOTTOM)	K,K2
48	3D		G53-1667-11	PACKING (TOP)	HK,HK2
49	1D		G53-1668-11	PACKING (BOTTOM)	HK,HK2
50	2B,2D		G53-1687-04	PACKING (D-SUB)	
52	1E,1G		H02-0626-04	INNER CARTON CASE	
53	3E		H52-2128-02	ITEM CARTON CASE	K,K2
54	3G		H52-2129-02	ITEM CARTON CASE	HK,HK2
55	2E,2G		H12-3176-02	PACKING FIXTURE	
56	2E,3F		H12-3183-02	PACKING FIXTURE	K,K2

Ref. No.	Address	New parts	Parts No.	Description	Destination
57	2G,3H		H12-3185-02	PACKING FIXTURE	HK,HK2
59	2B,2D		J21-8503-12	MOUNTING HARDWARE	
60	3A,3C		J39-0651-15	SPACER	
A	2B,2D		N09-2292-05	HEXAGON HEAD SCREW	
B	3A,3C		N32-3008-43	FLAT HEAD MACHINE SCREW	
C	1A		N35-3006-48	BINDING HEAD MACHINE SCREW	K,K2
D	1A,1C		N67-3008-48	PAN HEAD SEMS SCREW	
E	1A,2D		N68-4006-48	PAN HEAD SEMS SCREW	
F	1A,1C		N87-2606-48	BRAZIER HEAD TAPTITE SCREW	
G	1A,1C		N87-2612-48	BRAZIER HEAD TAPTITE SCREW	
H	1B,2B,2D		N87-3008-48	BRAZIER HEAD TAPTITE SCREW	
62	1E,1G		N99-2051-05	SCREW SET	
64	3B,3C		W09-0971-05	LITHIUM CELL	
-			X53-4400-11	SERVICE CONTROL UNIT	
FINAL UNIT (X45-3790-XX) -10: K -11: K2					
C5,6			CK73GB1H471K	CHIP C 470PF K	
C8			C92-0891-05	ELECTRO 330UF 25WV	
C11-13			CK73GB1H471K	CHIP C 470PF K	
C15,16			CK73GB1H471K	CHIP C 470PF K	K2
C16			CK73GB1H471K	CHIP C 470PF K	K
C17			CC73GCH1H030C	CHIP C 3.0PF C	K2
C17			CC73GCH1H050C	CHIP C 5.0PF C	K
C18			CK73GB1C104K	CHIP C 0.10UF K	
C19			CK73GB1C683K	CHIP C 0.068UF K	K
C19			CK73GB1H153K	CHIP C 0.015UF K	K2
C20			CM73F2H820J	CHIP C 82PF J	
C21			CK73GB1H471K	CHIP C 470PF K	
C22			CM73F2H060D	CHIP C 6.0PF D	
C23			CM73F2H050D	CHIP C 5.0PF D	
C24			CM73F2H060D	CHIP C 6.0PF D	K
C24			CM73F2H070D	CHIP C 7.0PF D	K2
C25			CK73GB1H471K	CHIP C 470PF K	
C27			CC73FCH1H050C	CHIP C 5.0PF C	K
C27			CC73FCH1H220J	CHIP C 22PF J	K2
C34			CC73GCH1H181J	CHIP C 180PF J	
C37			CC73FCH1H050C	CHIP C 5.0PF C	K
C37			CC73FCH1H080D	CHIP C 8.0PF D	K2
C40,41			CK73FB1H471K	CHIP C 470PF K	
C42			CM73F2H060D	CHIP C 6.0PF D	K
C42			CM73F2H070D	CHIP C 7.0PF D	K2
C46			CM73F2H070D	CHIP C 7.0PF D	
C47,48			CK73FB1H471K	CHIP C 470PF K	
C49,50			C92-0891-05	ELECTRO 330UF 25WV	
C52,53			CK73GB1H471K	CHIP C 470PF K	
C55			CM73F2H050D	CHIP C 5.0PF D	
C56			CK73GB1H152J	CHIP C 1500PF J	
C58,59			CK73GB1H471K	CHIP C 470PF K	
C61			CM73F2H101J	CHIP C 100PF J	
C62,63			CK73GB1H471K	CHIP C 470PF K	
C65			CK73GB1H471K	CHIP C 470PF K	K

PARTS LIST

FINAL UNIT (X45-3790-XX): TK-5810(BG)
FINAL UNIT (X45-3800-XX): TK-5810H(BG)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN1,2 CN9 CN10 CN13 CN14	1A 2A		E04-0154-05 E40-6429-05 E23-1118-05 E41-2672-05 E23-1290-05	PIN SOCKET FLAT CABLE CONNECTOR TERMINAL (1P) PIN ASSY RELAY TERMINAL		TH4			S1R103J440H	THERMISTOR	
FINAL UNIT (X45-3800-XX) -10: HK -11: HK2											
L2 L3-5 L8 L10 L11			L34-4523-05 L34-4517-05 L34-4517-05 L34-4523-05 L40-1575-92	AIR-CORE COIL AIR-CORE COIL AIR-CORE COIL AIR-CORE COIL SMALL FIXED INDUCTOR (15NH)	K	C1-4 C7 C8 C10,11 C12			CK73GB1H471K CK73GB1H471K CK73FB1H471K CK73FB1H471K CK73GB1H471K	CHIP C 470PF K CHIP C 470PF K CHIP C 470PF K CHIP C 470PF K CHIP C 470PF K	
R1 R1 R2,3 R2,3 R4			RK73FB2B471J RK73FB2B821J RK73FB2B100J RK73FB2B180J RK73FB2B471J	CHIP R 470 J 1/8W CHIP R 820 J 1/8W CHIP R 10 J 1/8W CHIP R 18 J 1/8W CHIP R 470 J 1/8W	K2 K K K2 K2	C14 C15 C16 C18 C18			CK73GB1H471K C93-0599-05 CK73GB1H471K C93-0553-05 C93-0554-05	CHIP C 470PF K CHIP C 470PF K CHIP C 470PF K CHIP C 3.0PF C CHIP C 4.0PF C	 K K2
R4 R6 R7 R9 R11			RK73FB2B821J RK73GB2A000J RK73GB2A101J RK73PB2H101J RK73GB2A224J	CHIP R 820 J 1/8W CHIP R 0.0 J 1/10W CHIP R 100 J 1/10W CHIP R 100 J 1/2W CHIP R 220K J 1/10W	K K2	C19 C20,21 C24,25 C27 C29,30			C93-0552-05 C93-0567-05 C93-0599-05 CK73GB1H471K C93-0555-05	CHIP C 2.0PF C CHIP C 39PF J CHIP C 470PF K CHIP C 470PF K CHIP C 5.0PF C	 K
R11 R12 R13 R13 R14			RK73GB2A473J RK73GB2A101J RK73GB2A153J RK73GB2A183J RK73GB2A394J	CHIP R 47K J 1/10W CHIP R 100 J 1/10W CHIP R 15K J 1/10W CHIP R 18K J 1/10W CHIP R 390K J 1/10W	K K K2	C29,30 C31 C32 C33,34 C33,34			C93-0560-05 CK73GB1H471K CK73GB1C104K C93-0553-05 C93-0556-05	CHIP C 10PF D CHIP C 470PF K CHIP C 0.10UF K CHIP C 3.0PF C CHIP C 6.0PF D	 K K2
R15 R16 R17 R18 R18			RK73GB2A103J RK73GB2A224J RK73GB2A104J RK73FB2B181J RK73FB2B820J	CHIP R 10K J 1/10W CHIP R 220K J 1/10W CHIP R 100K J 1/10W CHIP R 180 J 1/8W CHIP R 82 J 1/8W	 K2 K	C35 C35 C36 C36 C37			CM73F2H300F CM73F2H390F CM73F2H070D CM73F2H120J CK73GB1H471K	CHIP C 30PF F CHIP C 39PF F CHIP C 7.0PF D CHIP C 12PF J CHIP C 470PF K	 K2
R19 R19 R22 R23 R23			RK73PB2H330J RK73PB2H560J RK73GB2A104J RK73PB2H560J RK73PB2H680J	CHIP R 33 J 1/2W CHIP R 56 J 1/2W CHIP R 100K J 1/10W CHIP R 56 J 1/2W CHIP R 68 J 1/2W	K2 K K2 K	C38,39 C38,39 C40 C40 C41			CM73F2H300F CM73F2H390F CM73F2H070D CM73F2H120J CM73F2H300F	CHIP C 30PF F CHIP C 39PF F CHIP C 7.0PF D CHIP C 12PF J CHIP C 30PF F	 K2 K2
R27 R28 R28 R29 R30			RK73GB2A102J RK73FB2B102J RK73FB2B331J RK73GB2A000J RK73GB2A334J	CHIP R 1.0K J 1/10W CHIP R 1.0K J 1/8W CHIP R 330 J 1/8W CHIP R 0.0 J 1/10W CHIP R 330K J 1/10W	 K2 K	C41 C42 C43 C43 C44			CM73F2H390F C93-0599-05 CM73F2H270F CM73F2H300F C93-0599-05	CHIP C 39PF F CHIP C 470PF K CHIP C 27PF F CHIP C 30PF F CHIP C 470PF K	 K K2
R32 R34 R41 R42 R44			RK73GB2A102J RK73GB2A104J RK73PB2H101J RK73GB2A473J RK73GB2A000J	CHIP R 1.0K J 1/10W CHIP R 100K J 1/10W CHIP R 100 J 1/2W CHIP R 47K J 1/10W CHIP R 0.0 J 1/10W	 K2	C45 C45-47 C46,47 C48,49 C48,49			CM73F2H300F CM73F2H270F CM73F2H270F CM73F2H080C CM73F2H200C	CHIP C 30PF F CHIP C 27PF F CHIP C 27PF F CHIP C 8.0PF C CHIP C 20PF C	 K K2
R47 VR1		*	RK73GB2A000J R32-0350-05	CHIP R 0.0 J 1/10W SEMI FIXED VARIABLE RESISTOR		C51,52 C53,54 C55,56 C57,58 C57,58			CK73FB1H471K CM73F2H020C CK73FB1H103K CM73F2H020C CM73F2H100C	CHIP C 470PF K CHIP C 2.0PF C CHIP C 0.010UF K CHIP C 2.0PF C CHIP C 10PF C	 K K2
D1 D2 D3 D5,6 D10			MA4PH633 UDZS6.2B MA4PH633 HSM88AS-E MA2S111-F	DIODE ZENER DIODE DIODE DIODE DIODE		C59,60 C61,62 C61,62 C63 C63			CK73FB1E104K CM73F2H101J CM73F2H391J CM73F2H020C CM73F2H1R5C	CHIP C 0.10UF K CHIP C 100PF J CHIP C 390PF J CHIP C 2.0PF C CHIP C 1.5PF C	 K2 K K2 K
D11,12 D13 D14 IC1 IC2	1A		MA4PH633 ZSH5MA27 DF25V60 TA75W01FUF RA60H40471101	DIODE SURGE ABSORBER DIODE MOS-IC MOS-IC (POWER MODULE)		C67 C67 C68,69 C71 C73			CM73F2H010C CM73F2H040C CM73F2H020C CK73GB1H471K CM73F2H330J	CHIP C 1.0PF C CHIP C 4.0PF C CHIP C 2.0PF C CHIP C 470PF K CHIP C 33PF J	 K K2 K K2
IC2 TH1	1A		RA60H44521101 S1R103J440H	MOS-IC (POWER MODULE) THERMISTOR	K						

K : TK-5810(BG) K K2 : TK-5810(BG) K2
HK : TK-5810H(BG) K HK2 : TK-5810H(BG) K2

If a part reference number is listed in a shaded box, that part does not come with the PCB.

TK-5810(BG)/5810H(BG)

PARTS LIST

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C73			CM73F2H470J	CHIP C 47PF J	K	L14,15	1C		L34-4875-05	AIR-CORE COIL (1T)	
C74,75			CK73FB1H471K	CHIP C 470PF K		L16,17	1C		L34-4875-05	AIR-CORE COIL (1T)	
C77			CM73F2H270J	CHIP C 27PF J	K	L18			L41-8275-33	SMALL FIXED INDUCTOR (0.082UH)	K
C77			CM73F2H330J	CHIP C 33PF J	K2	L18,19			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	K2
C78			CK73GB1H471K	CHIP C 470PF K		L19			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	K
C80			C93-0599-05	CHIP C 470PF K		R1			RK73FB2B821J	CHIP R 820 J 1/8W	K
C81			CK73FB1H471K	CHIP C 470PF K		R2			RK73FB2B000J	CHIP R 0.0 J 1/8W	K2
C82			CM73F2H040C	CHIP C 4.0PF C	K	R2,3			RK73FB2B100J	CHIP R 10 J 1/8W	K
C82			CM73F2H090C	CHIP C 9.0PF C	K2	R4			RK73FB2B821J	CHIP R 820 J 1/8W	K
C83			CM73F2H101J	CHIP C 100PF J	K2	R5			RK73FB2B000J	CHIP R 0.0 J 1/8W	
C83			CM73F2H391J	CHIP C 390PF J	K	R6			RK73GB2A183J	CHIP R 18K J 1/10W	
C84			CM73F2H040C	CHIP C 4.0PF C		R7			RK73GB2A821J	CHIP R 820 J 1/10W	K2
C85			CC73FCH1H101J	CHIP C 100PF J		R7-9			RK73GB2A000J	CHIP R 0.0 J 1/10W	K
C87			CM73F2H070C	CHIP C 7.0PF C		R8,9			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2
C88			CC73FCH1H080D	CHIP C 8.0PF D		R10			RK73GB2A103J	CHIP R 10K J 1/10W	
C89			CM73F2H070C	CHIP C 7.0PF C	K	R11			RK73GB2A123J	CHIP R 12K J 1/10W	
C89			CM73F2H080C	CHIP C 8.0PF C	K2	R12			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C90			CK73FB1H471K	CHIP C 470PF K		R13-15			RK73PB2H150J	CHIP R 15 J 1/2W	K2
C93			CC73FCH1H020C	CHIP C 2.0PF C	K2	R13,14			RK73PB2H150J	CHIP R 15 J 1/2W	K
C94			CM73F2H070C	CHIP C 7.0PF C	K	R15-18			RK73PB2H180J	CHIP R 18 J 1/2W	K
C94			CM73F2H080C	CHIP C 8.0PF C	K2	R16,17			RK73PB2H180J	CHIP R 18 J 1/2W	K2
C95			CK73FB1H471K	CHIP C 470PF K		R18			RK73PB2H150J	CHIP R 15 J 1/2W	K2
C96			CM73F2H070C	CHIP C 7.0PF C		R19			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C98			CM73F2H050C	CHIP C 5.0PF C	K	R20			RK73GB2A224J	CHIP R 220K J 1/10W	K2
C98			CM73F2H070C	CHIP C 7.0PF C	K2	R20			RK73GB2A274J	CHIP R 270K J 1/10W	K
C101			CK73FB1H471K	CHIP C 470PF K		R21			RK73GB2A101J	CHIP R 100 J 1/10W	
C102,103			CK73GB1H471K	CHIP C 470PF K		R22,23			RK73PB2H471J	CHIP R 470 J 1/2W	
C104			CK73GB1H103K	CHIP C 0.010UF K		R24			RK73GB2A224J	CHIP R 220K J 1/10W	K
C105,106			CM73F2H100C	CHIP C 10PF C	K	R24			RK73GB2A274J	CHIP R 270K J 1/10W	K2
C105,106			CM73F2H180C	CHIP C 18PF C	K2	R25			RK73GB2A124J	CHIP R 120K J 1/10W	K
C107,108			CM73F2H030C	CHIP C 3.0PF C	K	R25			RK73GB2A334J	CHIP R 330K J 1/10W	K2
C109			CC73FCH1H470J	CHIP C 47PF J	K	R26			RK73GB2A332J	CHIP R 3.3K J 1/10W	K2
C109			CC73FCH1H560J	CHIP C 56PF J	K2	R26			RK73GB2A472J	CHIP R 4.7K J 1/10W	K
C110			CK73FB1H471K	CHIP C 470PF K		R27			RK73GB2A102J	CHIP R 1.0K J 1/10W	
C116,117			CK73GB1H471K	CHIP C 470PF K		R28			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C119,120			CK73GB1H471K	CHIP C 470PF K		R29			RK73GB2A104J	CHIP R 100K J 1/10W	
C122,123			CK73GB1H471K	CHIP C 470PF K		R30			RK73GB2A102J	CHIP R 1.0K J 1/10W	K2
C124			CC73GCH1H270J	CHIP C 27PF J		R31			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C125,126			CK73GB1H471K	CHIP C 470PF K		R36			RK73GB2A104J	CHIP R 100K J 1/10W	
C131,132			CC73GCH1H270J	CHIP C 27PF J		R39			RK73GB2A103J	CHIP R 10K J 1/10W	K2
C133,134			CK73GB1H471K	CHIP C 470PF K		R39			RK73GB2A224J	CHIP R 220K J 1/10W	K
C135			CK73GB1C104K	CHIP C 0.10UF K		R40			RK73GB2A000J	CHIP R 0.0 J 1/10W	
C136			CK73GB1H103K	CHIP C 0.010UF K		R42			RK73FB2B560J	CHIP R 56 J 1/8W	K
C138			CC73GCH1H270J	CHIP C 27PF J		R42			RK73FB2B820J	CHIP R 82 J 1/8W	K2
C139,140	1C		C92-0777-05	ELECTRO 1000UF 25WV		R45			RK73GB2A224J	CHIP R 220K J 1/10W	K2
C141,142	1C		C90-4126-05	ELECTRO 680UF 25WV		R45			RK73GB2A563J	CHIP R 56K J 1/10W	K
C143	1C		C90-4126-05	ELECTRO 680UF 25WV		R46			RK73FB2B221J	CHIP R 220 J 1/8W	K
CN1,4	1C		E04-0154-05	PIN SOCKET		R46			RK73FB2B331J	CHIP R 330 J 1/8W	K2
CN5,6	1C		E23-1116-05	RELAY TERMINAL		R47			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2
CN3	1D		E23-1118-05	TERMINAL (1P)		R47			RK73GB2A103J	CHIP R 10K J 1/10W	K
W1	1C		E37-1218-15	LEAD WIRE WITH CONNECTOR		R49			RK73FB2B181J	CHIP R 180 J 1/8W	K2
CN2			E40-6429-05	FLAT CABLE CONNECTOR		R49			RK73FB2B391J	CHIP R 390 J 1/8W	K
L1,2			L92-0179-05	CHIP FERRITE		R50			RK73FB2B680J	CHIP R 68 J 1/8W	K
L3,4			L34-4518-05	AIR-CORE COIL		R50			RK73FB2B820J	CHIP R 82 J 1/8W	K2
L5,6			L92-0179-05	CHIP FERRITE		R54			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L7,8			L34-4520-05	AIR-CORE COIL		R55,56			RK73PB2H101J	CHIP R 100 J 1/2W	
L9,10			L92-0179-05	CHIP FERRITE		R57			RK73FB2B224J	CHIP R 220K J 1/8W	
L11,12			L34-4518-05	AIR-CORE COIL		R59	1C		RS14DB3F101J	FL-PROOF RS 100 J 3W	
L13			L34-4523-05	AIR-CORE COIL		VR1			R12-6431-05	TRIMMING POT. (220K/12)	

PARTS LIST

FINAL UNIT (X45-3800-XX): TK-5810H(BG)
CONTROL UNIT (X53-4400-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
D1			UDZS5.6B	ZENER DIODE		C59,60			CK73FB1E475K	CHIP C	4.7UF K
D2,3			HSM88AS-E	DIODE		C100,101			CK73HB1A104K	CHIP C	0.10UF K
D4			MA2S111-F	DIODE		C103-106			CK73HB1E103K	CHIP C	0.010UF K
D5,6			MA4P4002F	DIODE		C108,109			CK73HB1E103K	CHIP C	0.010UF K
D7,8			L7091CER	DIODE		C110-113			CK73HB1A104K	CHIP C	0.10UF K
D10			ZSH5MA27	SURGE ABSORBER		C122,123			CK73HB1A104K	CHIP C	0.10UF K
D13			DF25V60	DIODE		C124,125			CK73HB1H102K	CHIP C	1000PF K
D14			CSA70-401L	SURGE ABSORBER		C126			CK73HB1A104K	CHIP C	0.10UF K
D15,16			RN142S	DIODE		C200			CK73HB1A104K	CHIP C	0.10UF K
IC1	1C		RA13H4047M123	MOS-IC (POWER MODULE)	K2	C201			CK73HB1H102K	CHIP C	1000PF K
IC1	1C		RA13H4452M123	MOS-IC (POWER MODULE)	K	C202-209			CK73HB1A104K	CHIP C	0.10UF K
IC2	1C		TA75W01FUF	MOS-IC		C210-216			CK73HB1H102K	CHIP C	1000PF K
Q1,2	1C		RD60HUF1-101	FET		C400,401			CK73HB1A104K	CHIP C	0.10UF K
TH1			S1R104J475H	THERMISTOR		C402			CC73HCH1H101J	CHIP C	100PF J
TH3			S1R104J475H	THERMISTOR		C403			CK73GB1H104K	CHIP C	0.10UF K
CONTROL UNIT (X53-4400-10)						C404			CC73HCH1H101J	CHIP C	100PF J
C1			CK73GB1H473K	CHIP C	0.047UF K	C405			CK73HB1A104K	CHIP C	0.10UF K
C2			CK73HB1H102K	CHIP C	1000PF K	C406			CC73HCH1H101J	CHIP C	100PF J
C3			CK73HB1H471K	CHIP C	470PF K	C407			CK73GB1H104K	CHIP C	0.10UF K
C4			CC73HCH1H101J	CHIP C	100PF J	C408			CC73HCH1H101J	CHIP C	100PF J
C5			CC73HCH1H470J	CHIP C	47PF J	C409			CK73FB1A225K	CHIP C	2.2UF K
C6			C92-0891-05	ELECTRO	330UF 25WV	C410			CK73HB1E103K	CHIP C	0.010UF K
C7			CK73HB1H471K	CHIP C	470PF K	C411			CK73HB1H102K	CHIP C	1000PF K
C8			CK73HB1E103K	CHIP C	0.010UF K	C412,413			CK73GB1E105K	CHIP C	1.0UF K
C9			CK73GB1E105K	CHIP C	1.0UF K	C414			CK73HB1A104K	CHIP C	0.10UF K
C10			CK73HB1E103K	CHIP C	0.010UF K	C415			CK73GB1E105K	CHIP C	1.0UF K
C11			CK73HB1A104K	CHIP C	0.10UF K	C416			CC73HCH1H101J	CHIP C	100PF J
C12			CK73HB1H471K	CHIP C	470PF K	C417			CK73GB1E105K	CHIP C	1.0UF K
C13			CK73GB1H104K	CHIP C	0.10UF K	C418			CK73GB1H104K	CHIP C	0.10UF K
C14			CK73HB1E103K	CHIP C	0.010UF K	C419			CC73HCH1H101J	CHIP C	100PF J
C16			CK73HB1H471K	CHIP C	470PF K	C422			CK73FB1A106K	CHIP C	10UF K
C17			CK73FB1E475K	CHIP C	4.7UF K	C423			CK73HB1A104K	CHIP C	0.10UF K
C19			CK73FB1E475K	CHIP C	4.7UF K	C424			CC73HCH1H101J	CHIP C	100PF J
C20			CK73HB1A104K	CHIP C	0.10UF K	C425			CK73HB1H102K	CHIP C	1000PF K
C21			CK73HB1E103K	CHIP C	0.010UF K	C427,428			CK73FB1A106K	CHIP C	10UF K
C22			CK73GB1E105K	CHIP C	1.0UF K	C451-472			CC73HCH1H101J	CHIP C	100PF J
C25			CK73GB1H104K	CHIP C	0.10UF K	C500			CK73HB0J105K	CHIP C	1.0UF K
C26			CK73HB1E103K	CHIP C	0.010UF K	C503-505			CK73HB1A104K	CHIP C	0.10UF K
C27			CS77BA1A100M	CHIP TNTL	10UF 10WV	C506			CK73HB1H122K	CHIP C	1200PF K
C29			CK73GB1E105K	CHIP C	1.0UF K	C507-510			CK73HB1E103K	CHIP C	0.010UF K
C32			CK73FB1A106K	CHIP C	10UF K	C512			CC73HCH1H151J	CHIP C	150PF J
C33,34			CK73HB1E103K	CHIP C	0.010UF K	C513			CC73HCH1H221J	CHIP C	220PF J
C35			CK73GB1E105K	CHIP C	1.0UF K	C516			CC73HCH1H220J	CHIP C	22PF J
C37			CK73FB1A106K	CHIP C	10UF K	C517,518			CK73HB1A104K	CHIP C	0.10UF K
C38			CK73HB1E103K	CHIP C	0.010UF K	C520			CS77BA1A100M	CHIP TNTL	10UF 10WV
C39			CK73FB1A106K	CHIP C	10UF K	C521			CK73HB1H122K	CHIP C	1200PF K
C40			CK73GB1E105K	CHIP C	1.0UF K	C522			CK73HB1A104K	CHIP C	0.10UF K
C41			CS77BC1C330M	CHIP TNTL	33UF 16WV	C524-527			CK73HB1A104K	CHIP C	0.10UF K
C42			CK73FB1A106K	CHIP C	10UF K	C528			CC73HCH1H101J	CHIP C	100PF J
C43			C92-0765-05	CHIP TNTL	4.7UF 16WV	C529-531			CK73HB1A104K	CHIP C	0.10UF K
C45			CK73GB1E105K	CHIP C	1.0UF K	C533,534			CK73HB1A104K	CHIP C	0.10UF K
C47			CK73HB1E103K	CHIP C	0.010UF K	C535			CC73HCH1H220J	CHIP C	22PF J
C48			CK73GB1C225K	CHIP C	2.2UF K	C536			CK73HB1A104K	CHIP C	0.10UF K
C50			CK73HB1H471K	CHIP C	470PF K	C537			CC73HCH1H220J	CHIP C	22PF J
C51			CK73HB1E103K	CHIP C	0.010UF K	C539			CC73HCH1H220J	CHIP C	22PF J
C53			CK73HB1E103K	CHIP C	0.010UF K	C540,541			CK73HB1A104K	CHIP C	0.10UF K
C55			CK73GB1C225K	CHIP C	2.2UF K	C542			CC73HCH1H220J	CHIP C	22PF J
						C543-545			CK73HB1A104K	CHIP C	0.10UF K
						C546			CC73HCH1H220J	CHIP C	22PF J
						C548			CC73HCH1H220J	CHIP C	22PF J

K : TK-5810(BG) K K2 : TK-5810(BG) K2
HK : TK-5810H(BG) K HK2 : TK-5810H(BG) K2

If a part reference number is listed in a shaded box, that part does not come with the PCB.

TK-5810(BG)/5810H(BG)

PARTS LIST

CONTROL UNIT (X53-4400-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C549-551			CK73HB1A104K	CHIP C 0.10UF K		C717			CK73HB1H102K	CHIP C 1000PF K	
C552			CK73HB1H681K	CHIP C 680PF K		C718			CK73HB1A104K	CHIP C 0.10UF K	
C553			CK73FB1A106K	CHIP C 10UF K		C719			CK73HB1E103K	CHIP C 0.010UF K	
C554			CC73HCH1H390J	CHIP C 39PF J		C720			CK73HB1H102K	CHIP C 1000PF K	
C555,556			CK73GB1C225K	CHIP C 2.2UF K		C722,723			CK73HB1A104K	CHIP C 0.10UF K	
C557			CK73HB1A104K	CHIP C 0.10UF K		C724			CK73HB0J105K	CHIP C 1.0UF K	
C558,559			CK73HB1H102K	CHIP C 1000PF K		C725-727			CK73HB1H102K	CHIP C 1000PF K	
C560			CC73HCH1H220J	CHIP C 22PF J		C728,729			CK73HB1A104K	CHIP C 0.10UF K	
C561			CK73FB1A106K	CHIP C 10UF K		C731			CK73GB1E105K	CHIP C 1.0UF K	
C562			CK73HB1A104K	CHIP C 0.10UF K		C732			CK73HB1E103K	CHIP C 0.010UF K	
C563			CK73FB1A106K	CHIP C 10UF K		C733			CK73HB1H102K	CHIP C 1000PF K	
C564			CK73HB1H102K	CHIP C 1000PF K		C734			CK73HB1E103K	CHIP C 0.010UF K	
C565			CK73HB1A104K	CHIP C 0.10UF K		C736,737			CK73HB1H102K	CHIP C 1000PF K	
C566			CC73HCH1H220J	CHIP C 22PF J		C738,739			CK73HB1E103K	CHIP C 0.010UF K	
C567,568			CK73HB1A104K	CHIP C 0.10UF K		C743			CK73HB1A104K	CHIP C 0.10UF K	
C570			CC73HCH1H220J	CHIP C 22PF J		C744			CK73HB1H102K	CHIP C 1000PF K	
C571,572			CK73HB1A104K	CHIP C 0.10UF K		C745			CK73HB1E103K	CHIP C 0.010UF K	
C574			CC73HCH1H470J	CHIP C 47PF J		C746			CK73HB1H102K	CHIP C 1000PF K	
C575-577			CK73FB1A106K	CHIP C 10UF K		C747,748			CK73HB1A104K	CHIP C 0.10UF K	
C578-580			CK73HB1A104K	CHIP C 0.10UF K		C749			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV	
C581,582			CK73HB1H102K	CHIP C 1000PF K		C750			CK73HB1E103K	CHIP C 0.010UF K	
C583			CK73FB1A106K	CHIP C 10UF K		C753,754			CK73HB1A104K	CHIP C 0.10UF K	
C585			CK73HB1A104K	CHIP C 0.10UF K		C756			CK73HB1E103K	CHIP C 0.010UF K	
C586			CK73FB1A106K	CHIP C 10UF K		C757			CK73HB0J105K	CHIP C 1.0UF K	
C587			CK73HB1A104K	CHIP C 0.10UF K		C758			CK73HB1H102K	CHIP C 1000PF K	
C589			CK73HB1A104K	CHIP C 0.10UF K		C759			CK73HB1A104K	CHIP C 0.10UF K	
C590			CK73HB0J105K	CHIP C 1.0UF K		C760			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV	
C591			CC73HCH1H101J	CHIP C 100PF J		C762			CC73HCH1H101J	CHIP C 100PF J	
C593			CC73HCH1H390J	CHIP C 39PF J		C763			CK73HB1H102K	CHIP C 1000PF K	
C594			CK73HB1A104K	CHIP C 0.10UF K		C764-767			CK73HB1A104K	CHIP C 0.10UF K	
C596			CK73HB1H102K	CHIP C 1000PF K		C768			CK73HB1E103K	CHIP C 0.010UF K	
C597			CK73HB1H471K	CHIP C 470PF K		C769			CK73HB0J105K	CHIP C 1.0UF K	
C598			CC73HCH1H101J	CHIP C 100PF J		C770			CK73HB1H102K	CHIP C 1000PF K	
C599			CK73HB1A104K	CHIP C 0.10UF K		C771-775			CK73HB1A104K	CHIP C 0.10UF K	
C600			CE32BD1E470M	CHIP EL 47UF 25WV		C776			CK73HB1E103K	CHIP C 0.010UF K	
C601			CC73HCH1H470J	CHIP C 47PF J		C777			CK73HB0J105K	CHIP C 1.0UF K	
C602			CE32BD1E101M	CHIP EL 100UF 25WV		C779			CK73HB1E103K	CHIP C 0.010UF K	
C603			CK73HB1A104K	CHIP C 0.10UF K		C780,781			CK73FB1A106K	CHIP C 10UF K	
C605			CK73HB1A104K	CHIP C 0.10UF K		CN1			E41-2672-05	PIN ASSY	
C608			CK73GB1H103K	CHIP C 0.010UF K		CN411			E40-6357-05	PIN ASSY	
C609-616			CC73HCH1H470J	CHIP C 47PF J		CN424			E40-6357-05	PIN ASSY	
C617			CK73HB1E103K	CHIP C 0.010UF K		CN444			E40-6357-05	PIN ASSY	
C618-625			CK73HB1H471K	CHIP C 470PF K		CN457			E40-6720-05	SOCKET FOR PIN ASSY	
C626-628			CC73HCH1H470J	CHIP C 47PF J		CN459			E40-5960-05	PIN ASSY	
C629			CK73GB1H103K	CHIP C 0.010UF K		CN501			E40-6438-05	FLAT CABLE CONNECTOR	
C630-637			CK73HB1H102K	CHIP C 1000PF K		CN502	2A,2C		E40-6532-05	PIN ASSY (9P)	
C638-640			CK73HB1H471K	CHIP C 470PF K		CN503			E40-6472-05	PIN ASSY	
C641-644			CK73HB1H102K	CHIP C 1000PF K		CN504			E41-2730-05	PIN ASSY	
C645			CK73HB1A104K	CHIP C 0.10UF K		F1			F53-0328-15	FUSE	
C647,648			CK73HB1A104K	CHIP C 0.10UF K		F400			F53-0371-05	FUSE	
C650			CK73HB1A104K	CHIP C 0.10UF K		CN4			J19-5386-05	HOLDER	
C653			CK73HB1H681K	CHIP C 680PF K		CF100			L72-1040-05	CERAMIC FILTER (450KHZ)	
C700,701			CK73HB0J105K	CHIP C 1.0UF K		L2			L92-0639-05	CHIP FERRITE	
C702-704			CK73HB1H102K	CHIP C 1000PF K		L4			L33-1496-05	SMALL FIXED INDUCTOR (22UH)	
C705-708			CK73HB1A104K	CHIP C 0.10UF K		L500-502			L92-0140-05	CHIP FERRITE	
C709,710			CS77CPOJ100M	CHIP TNTL 10UF 6.3WV		L503-511			L92-0179-05	CHIP FERRITE	
C711			CK73HB1A104K	CHIP C 0.10UF K		L700-702			L92-0138-05	CHIP FERRITE	
C712,713			CK73HB1H102K	CHIP C 1000PF K		L703-707			L92-0162-05	BEADS CORE	
C714			CK73HB1A104K	CHIP C 0.10UF K							
C716			CK73HB1A104K	CHIP C 0.10UF K							

PARTS LIST

CONTROL UNIT (X53-4400-10)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L708,709			L92-0138-05	CHIP FERRITE		R202			RK73HB1J470J	CHIP R 47 J 1/16W	
X700			L77-1802-05	CRYSTAL RESONATOR (32.768KHZ)		R203-207			RK73HB1J101J	CHIP R 100 J 1/16W	
X701			L77-3015-05	TCXO (18.432MHZ)		R208			RK73HB1J104J	CHIP R 100K J 1/16W	
R1			RK73HB1J471J	CHIP R 470 J 1/16W		R209			RK73HB1J101J	CHIP R 100 J 1/16W	
R2			RK73HB1J473J	CHIP R 47K J 1/16W		R210			RK73HB1J103J	CHIP R 10K J 1/16W	
R3			RK73HH1J274D	CHIP R 270K D 1/16W		R211-225			RK73HB1J101J	CHIP R 100 J 1/16W	
R4			RK73HH1J104D	CHIP R 100K D 1/16W		R226			RK73HB1J104J	CHIP R 100K J 1/16W	
R5			RK73HB1J103J	CHIP R 10K J 1/16W		R227			RK73HB1J101J	CHIP R 100 J 1/16W	
R6			RK73GB2A100J	CHIP R 10 J 1/10W		R230			RK73HB1J103J	CHIP R 10K J 1/16W	
R7			RK73HB1J103J	CHIP R 10K J 1/16W		R231			RK73HB1J104J	CHIP R 100K J 1/16W	
R8			RK73HB1J473J	CHIP R 47K J 1/16W		R233-238			RK73HB1J104J	CHIP R 100K J 1/16W	
R9			RK73HB1J683J	CHIP R 68K J 1/16W		R239			RK73HB1J103J	CHIP R 10K J 1/16W	
R10			RK73HH1J684D	CHIP R 680K D 1/16W		R240-266			RK73HB1J104J	CHIP R 100K J 1/16W	
R11			RK73HH1J104D	CHIP R 100K D 1/16W		R268-271			RK73HB1J104J	CHIP R 100K J 1/16W	
R13			RK73HB1J103J	CHIP R 10K J 1/16W		R274			RK73HB1J103J	CHIP R 10K J 1/16W	
R14			RK73HB1J392J	CHIP R 3.9K J 1/16W		R275			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R15			RK73HB1J103J	CHIP R 10K J 1/16W		R276-280			RK73HB1J104J	CHIP R 100K J 1/16W	
R17			RK73GB2A220J	CHIP R 22 J 1/10W		R281			RK73HB1J470J	CHIP R 47 J 1/16W	
R20			RK73HB1J103J	CHIP R 10K J 1/16W		R282			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R23			RK73HB1J332J	CHIP R 3.3K J 1/16W		R283			RK73HB1J103J	CHIP R 10K J 1/16W	
R27			RK73HB1J474J	CHIP R 470K J 1/16W		R285-288			RK73HB1J104J	CHIP R 100K J 1/16W	
R28			RK73HB1J103J	CHIP R 10K J 1/16W		R289,290			RK73HB1J103J	CHIP R 10K J 1/16W	
R29			RK73HH1J124D	CHIP R 120K D 1/16W		R291			RK73HB1J104J	CHIP R 100K J 1/16W	
R30			RK73HH1J183D	CHIP R 18K D 1/16W		R292-296			RK73HB1J103J	CHIP R 10K J 1/16W	
R31			RK73HH1J223D	CHIP R 22K D 1/16W		R301			RK73HB1J104J	CHIP R 100K J 1/16W	
R32			RK73HB1J103J	CHIP R 10K J 1/16W		R303			RK73HB1J104J	CHIP R 100K J 1/16W	
R33			RK73HB1J272J	CHIP R 2.7K J 1/16W		R305-310			RK73HB1J470J	CHIP R 47 J 1/16W	
R34			RK73HB1J473J	CHIP R 47K J 1/16W		R311			RK73HB1J104J	CHIP R 100K J 1/16W	
R37,38			RK73HB1J103J	CHIP R 10K J 1/16W		R312-325			RK73HB1J101J	CHIP R 100 J 1/16W	
R40			RK73HB1J103J	CHIP R 10K J 1/16W		R328,329			RK73HB1J101J	CHIP R 100 J 1/16W	
R41			RK73HB1J102J	CHIP R 1.0K J 1/16W		R331-343			RK73HB1J101J	CHIP R 100 J 1/16W	
R46			RK73HB1J101J	CHIP R 100 J 1/16W		R344,345			RK73HB1J103J	CHIP R 10K J 1/16W	
R49			RK73FB2B000J	CHIP R 0.0 J 1/8W		R346			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R50			RK73HB1J103J	CHIP R 10K J 1/16W		R347			RK73HB1J101J	CHIP R 100 J 1/16W	
R51			RK73HB1J473J	CHIP R 47K J 1/16W		R348			RK73HB1J000J	CHIP R 0.0 J 1/16W	
R103			RK73HB1J102J	CHIP R 1.0K J 1/16W		R349			RK73HB1J474J	CHIP R 470K J 1/16W	
R104			RK73HB1J100J	CHIP R 10 J 1/16W		R403			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R105			RK73HH1J274D	CHIP R 270K D 1/16W		R405,406			RK73HB1J104J	CHIP R 100K J 1/16W	
R106			RK73HH1J473D	CHIP R 47K D 1/16W		R409,410			RK73HB1J104J	CHIP R 100K J 1/16W	
R107			RK73HH1J274D	CHIP R 270K D 1/16W		R412-418			RK73HB1J104J	CHIP R 100K J 1/16W	
R108			RK73HH1J473D	CHIP R 47K D 1/16W		R420-423			RK73HB1J104J	CHIP R 100K J 1/16W	
R109			RK73HH1J274D	CHIP R 270K D 1/16W		R424,425			RK73HB1J473J	CHIP R 47K J 1/16W	
R110			RK73HH1J473D	CHIP R 47K D 1/16W		R427			RK73GB2A100J	CHIP R 10 J 1/10W	
R111			RK73HH1J274D	CHIP R 270K D 1/16W		R429			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R112			RK73HH1J473D	CHIP R 47K D 1/16W		R431,432			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R114			RK73HB1J103J	CHIP R 10K J 1/16W		R434			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R115			RK73HH1J274D	CHIP R 270K D 1/16W		R437			RK73HB1J471J	CHIP R 470 J 1/16W	
R116			RK73HH1J473D	CHIP R 47K D 1/16W		R438-440			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R117			RK73HB1J103J	CHIP R 10K J 1/16W		R441			RK73HB1J471J	CHIP R 470 J 1/16W	
R118-122			RK73HH1J333D	CHIP R 33K D 1/16W		R444,445			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R124,125			RK73HB1J333J	CHIP R 33K J 1/16W		R461-469			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R127			RK73HB1J470J	CHIP R 47 J 1/16W		R471,472			RK73HB1J471J	CHIP R 470 J 1/16W	
R129,130			RK73HB1J470J	CHIP R 47 J 1/16W		R473			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R131			RK73HB1J102J	CHIP R 1.0K J 1/16W		R474			RK73HB1J471J	CHIP R 470 J 1/16W	
R136			RK73HB1J102J	CHIP R 1.0K J 1/16W		R475			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R138,139			RN73HH1J102D	CHIP R 1.0K D 1/16W		R476			RK73HB1J471J	CHIP R 470 J 1/16W	
R140			RK73HB1J103J	CHIP R 10K J 1/16W		R477,478			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R200			RK73HB1J101J	CHIP R 100 J 1/16W		R486,487			RK73HB1J101J	CHIP R 100 J 1/16W	
R201			RK73HB1J103J	CHIP R 10K J 1/16W		R500			RK73HB1J393J	CHIP R 39K J 1/16W	
						R501			RK73HB1J153J	CHIP R 15K J 1/16W	

K : TK-5810(BG) K K2 : TK-5810(BG) K2
 HK : TK-5810H(BG) K HK2 : TK-5810H(BG) K2

TK-5810(BG)/5810H(BG)

PARTS LIST

CONTROL UNIT (X53-4400-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R502,503			RK73HB1J103J	CHIP R 10K J 1/16W		R585			RK73HB1J563J	CHIP R 56K J 1/16W	
R504			RK73HB1J683J	CHIP R 68K J 1/16W		R586			RK73HB1J223J	CHIP R 22K J 1/16W	
R505			RK73HB1J103J	CHIP R 10K J 1/16W		R587			RK73HB1J334J	CHIP R 330K J 1/16W	
R507			RK73HB1J103J	CHIP R 10K J 1/16W		R589			RK73HB1J470J	CHIP R 47 J 1/16W	
R508			RK73HB1J563J	CHIP R 56K J 1/16W		R590			RK73HB1J104J	CHIP R 100K J 1/16W	
R509,510			RK73HB1J104J	CHIP R 100K J 1/16W		R591,592			RK73HB1J331J	CHIP R 330 J 1/16W	
R511			RK73HB1J470J	CHIP R 47 J 1/16W		R593			RK73HB1J334J	CHIP R 330K J 1/16W	
R512			RN73HH1J473D	CHIP R 47K D 1/16W		R594			RK73HB1J331J	CHIP R 330 J 1/16W	
R514			RK73HB1J104J	CHIP R 100K J 1/16W		R595			RK73HB1J562J	CHIP R 5.6K J 1/16W	
R515			RK73HB1J223J	CHIP R 22K J 1/16W		R596			RK73HB1J331J	CHIP R 330 J 1/16W	
R517			RK73HB1J563J	CHIP R 56K J 1/16W		R597			RK73HB1J470J	CHIP R 47 J 1/16W	
R518			RK73HB1J103J	CHIP R 10K J 1/16W		R598,599			RK73HB1J104J	CHIP R 100K J 1/16W	
R519			RN73HH1J103D	CHIP R 10K D 1/16W		R600			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R523			RK73HB1J103J	CHIP R 10K J 1/16W		R601			RK73HB1J103J	CHIP R 10K J 1/16W	
R525			RK73HB1J683J	CHIP R 68K J 1/16W		R602			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R527			RK73HB1J470J	CHIP R 47 J 1/16W		R603			RK73HB1J104J	CHIP R 100K J 1/16W	
R528			RK73HB1J683J	CHIP R 68K J 1/16W		R604			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R531			RK73HB1J103J	CHIP R 10K J 1/16W		R605			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R532			RK73HB1J473J	CHIP R 47K J 1/16W		R606			RK73HB1J104J	CHIP R 100K J 1/16W	
R535			RK73HB1J104J	CHIP R 100K J 1/16W		R608			RK73HB1J104J	CHIP R 100K J 1/16W	
R536			RK73HB1J470J	CHIP R 47 J 1/16W		R611			RK73HB1J471J	CHIP R 470 J 1/16W	
R537			RK73HB1J473J	CHIP R 47K J 1/16W		R613			RK73HB1J104J	CHIP R 100K J 1/16W	
R538			RK73HB1J393J	CHIP R 39K J 1/16W		R614			RK73HB1J563J	CHIP R 56K J 1/16W	
R540			RK73HB1J823J	CHIP R 82K J 1/16W		R615-618			RK73HB1J104J	CHIP R 100K J 1/16W	
R541,542			RK73HB1J470J	CHIP R 47 J 1/16W		R619			RK73HB1J274J	CHIP R 270K J 1/16W	
R543			RK73HB1J334J	CHIP R 330K J 1/16W		R620			RK73HB1J470J	CHIP R 47 J 1/16W	
R545			RK73HB1J124J	CHIP R 120K J 1/16W		R621			RK73HB1J104J	CHIP R 100K J 1/16W	
R546			RK73HB1J563J	CHIP R 56K J 1/16W		R622			RK73HB1J470J	CHIP R 47 J 1/16W	
R547			RK73HB1J184J	CHIP R 180K J 1/16W		R623			RK73HB1J104J	CHIP R 100K J 1/16W	
R548			RN73HH1J103D	CHIP R 10K D 1/16W		R624,625			RK73HB1J470J	CHIP R 47 J 1/16W	
R549			RK73HB1J470J	CHIP R 47 J 1/16W		R626			RK73HB1J474J	CHIP R 470K J 1/16W	
R550			RN73HH1J473D	CHIP R 47K D 1/16W		R627			RK73HB1J104J	CHIP R 100K J 1/16W	
R551			RK73HB1J470J	CHIP R 47 J 1/16W		R628			RK73HB1J274J	CHIP R 270K J 1/16W	
R552			RK73HB1J103J	CHIP R 10K J 1/16W		R629			RK73HB1J470J	CHIP R 47 J 1/16W	
R553			RK73HB1J563J	CHIP R 56K J 1/16W		R630			RK73HB1J103J	CHIP R 10K J 1/16W	
R554			RK73HB1J683J	CHIP R 68K J 1/16W		R631			RK73HB1J474J	CHIP R 470K J 1/16W	
R555			RK73HB1J470J	CHIP R 47 J 1/16W		R632			RK73HB1J103J	CHIP R 10K J 1/16W	
R556			RK73HB1J473J	CHIP R 47K J 1/16W		R634			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R557			RK73HB1J394J	CHIP R 390K J 1/16W		R635			RK73HB1J274J	CHIP R 270K J 1/16W	
R558			RK73HB1J472J	CHIP R 4.7K J 1/16W		R636			RK73HB1J104J	CHIP R 100K J 1/16W	
R559			RK73HB1J563J	CHIP R 56K J 1/16W		R637			RK73HB1J103J	CHIP R 10K J 1/16W	
R561			RK73HB1J123J	CHIP R 12K J 1/16W		R642			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R562			RK73HB1J154J	CHIP R 150K J 1/16W		R658			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R563			RK73HB1J470J	CHIP R 47 J 1/16W		R664			RK73HB1J104J	CHIP R 100K J 1/16W	
R564			RK73HB1J333J	CHIP R 33K J 1/16W		R665			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R565			RK73HB1J104J	CHIP R 100K J 1/16W		R668			RK73HB1J223J	CHIP R 22K J 1/16W	
R566			RK73HB1J562J	CHIP R 5.6K J 1/16W		R669			RK73HB1J823J	CHIP R 82K J 1/16W	
R567			RK73HB1J563J	CHIP R 56K J 1/16W		R670			RK73HB1J104J	CHIP R 100K J 1/16W	
R568			RK73HB1J224J	CHIP R 220K J 1/16W		R671			RK73HB1J473J	CHIP R 47K J 1/16W	
R569,570			RK73HB1J103J	CHIP R 10K J 1/16W		R675			RN73HH1J103D	CHIP R 10K D 1/16W	
R571			RK73HB1J392J	CHIP R 3.9K J 1/16W		R676			RN73HH1J473D	CHIP R 47K D 1/16W	
R572			RK73HB1J472J	CHIP R 4.7K J 1/16W		R700			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R573			RK73HB1J470J	CHIP R 47 J 1/16W		R703			RK73HB1J104J	CHIP R 100K J 1/16W	
R574			RK73HB1J103J	CHIP R 10K J 1/16W		R706			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R576			RK73HB1J223J	CHIP R 22K J 1/16W		R707			RK73HB1J104J	CHIP R 100K J 1/16W	
R577,578			RK73HB1J470J	CHIP R 47 J 1/16W		R711			RK73HB1J474J	CHIP R 470K J 1/16W	
R579			RK73HB1J123J	CHIP R 12K J 1/16W		R713			RK73HB1J220J	CHIP R 22 J 1/16W	
R580			RK73HB1J470J	CHIP R 47 J 1/16W		R714,715			RK73HB1J104J	CHIP R 100K J 1/16W	
R581			RK73HB1J472J	CHIP R 4.7K J 1/16W		R716,717			RK73HB1J473J	CHIP R 47K J 1/16W	
R583			RK73HB1J472J	CHIP R 4.7K J 1/16W		R718			RK73HB1J474J	CHIP R 470K J 1/16W	

PARTS LIST

CONTROL UNIT (X53-4400-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R719			RK73HB1J104J	CHIP R 100K J 1/16W		D406-409			1SS388F	DIODE	
R721			RK73HB1J104J	CHIP R 100K J 1/16W		D410			02DZ5.1F-Y	ZENER DIODE	
R725			RK73HB1J104J	CHIP R 100K J 1/16W		D411,412			AVRM16270K2AB	VARIATOR	
R727			RK73HB1J101J	CHIP R 100 J 1/16W		D413-421			DA204U	DIODE	
R734			RK73HB1J101J	CHIP R 100 J 1/16W		D422,423			AVRM16270K2AB	VARIATOR	
R736,737			RK73HB1J101J	CHIP R 100 J 1/16W		D424,425			1SS355	DIODE	
R738			RK73HB1J104J	CHIP R 100K J 1/16W		D426-428			02DZ18F-X	ZENER DIODE	
R740,741			RK73HB1J104J	CHIP R 100K J 1/16W		D429,430			02DZ5.1F-Y	ZENER DIODE	
R742			RK73HB1J101J	CHIP R 100 J 1/16W		D500,501			RB706F-40	DIODE	
R743-747			RK73HB1J104J	CHIP R 100K J 1/16W		D502			02DZ18F-X	ZENER DIODE	
R749			RK73HB1J104J	CHIP R 100K J 1/16W		D503			1SS355	DIODE	
R750			RK73HB1J473J	CHIP R 47K J 1/16W		D504,505			AVRM16270K2AB	VARIATOR	
R751-754			RK73HB1J104J	CHIP R 100K J 1/16W		D506			MINISMDC075F24	VARIATOR	
R757			RK73HB1J104J	CHIP R 100K J 1/16W		D507,508			AVRM16270K2AB	VARIATOR	
R758			RK73HB1J151J	CHIP R 150 J 1/16W		D509			MA2S111-F	DIODE	
R761			RK73HB1J220J	CHIP R 22 J 1/16W		D510			AVRM16270K2AB	VARIATOR	
R762			RK73HB1J101J	CHIP R 100 J 1/16W		D512			1SS388F	DIODE	
R763			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC1			XC6108C23CMN	MOS-IC	
R764			RK73HB1J220J	CHIP R 22 J 1/16W		IC2			XC6204B332P1	ANALOGUE IC	
R765			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC3			TA7805FQ	MOS-IC	
R766			RK73HB1J101J	CHIP R 100 J 1/16W		IC4			LT1616ES6-PBF	ANALOGUE IC	
R767,768			RK73HB1J472J	CHIP R 4.7K J 1/16W		IC5	2A,2C		LM2940T-8.0	MOS-IC	
R770			RK73HB1J474J	CHIP R 470K J 1/16W		IC7			XC6204B332M	MOS-IC	
R771-778			RK73HB1J101J	CHIP R 100 J 1/16W		IC8			XC6205B152PRN	ANALOGUE IC	
R779			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC9			XC6204B332M	MOS-IC	
R780			RK73HB1J104J	CHIP R 100K J 1/16W		IC100			MCP6021-E/OT	MOS-IC	
R781			RK73HB1J101J	CHIP R 100 J 1/16W		IC101-103			TC75W51FUF	MOS-IC	
R785			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC200			TC7S08FU-F	MOS-IC	
R786			RK73HB1J101J	CHIP R 100 J 1/16W		IC201			TC7SET08FU-F	MOS-IC	
R787,788			RK73HB1J104J	CHIP R 100K J 1/16W		IC202-206			TC74VHCT244AFK	MOS-IC	
R790			RK73HB1J000J	CHIP R 0.0 J 1/16W		IC207			TC74LCX245FK	MOS-IC	
R792			RK73HB1J101J	CHIP R 100 J 1/16W		IC208			TC7MBD3245AFK	MOS-IC	
R794-796			RK73HB1J101J	CHIP R 100 J 1/16W		IC400			PCA9535BS	MOS-IC	
R797			RK73HB1J104J	CHIP R 100K J 1/16W		IC401			ADM202EARNZ	MOS-IC	
R799			RK73HB1J224J	CHIP R 220K J 1/16W		IC501-503			TC75W51FUF	MOS-IC	
R802			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC505			TC75W51FUF	MOS-IC	
R804			RK73HB1J000J	CHIP R 0.0 J 1/16W		IC506			TC7W53FK(F)	MOS-IC	
R805			RK73HB1J474J	CHIP R 470K J 1/16W		IC507			TC75W51FUF	MOS-IC	
R806,807			RK73HB1J104J	CHIP R 100K J 1/16W		IC508,509			TC7W53FK(F)	MOS-IC	
R809-820			RK73HB1J104J	CHIP R 100K J 1/16W		IC510			TC75W51FUF	MOS-IC	
R822-826			RK73HB1J101J	CHIP R 100 J 1/16W		IC511			TC7W53FK(F)	MOS-IC	
R827			RK73HB1J104J	CHIP R 100K J 1/16W		IC512			TC75W51FUF	MOS-IC	
R828			RK73HB1J101J	CHIP R 100 J 1/16W		IC513			TC7S66FUF	MOS-IC	
R829			RK73HB1J104J	CHIP R 100K J 1/16W		IC514			TC75W51FUF	MOS-IC	
R831			RK73HB1J103J	CHIP R 10K J 1/16W		IC515			TC7S66FUF	MOS-IC	
R832,833			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC516			TA75S01F-F	MOS-IC	
R835			RK73FB2B000J	CHIP R 0.0 J 1/8W		IC517			M62364FP-F	MOS-IC	
K500	2B,2C		S76-0434-05	RELAY		IC518			TC7W53FK(F)	MOS-IC	
D1			02DZ18F-X	ZENER DIODE		IC519			TA75W01FUF	MOS-IC	
D2			1SS388F	DIODE		IC520			TC75W51FUF	MOS-IC	
D3			1SS416	DIODE		IC521			LMC7101BIM5	MOS-IC	
D4			HSC119	DIODE		IC522	2A,3C		TDA8561Q	BI-POLAR IC	
D5			MA2S111-F	DIODE		IC523			LMC7101BIM5	MOS-IC	
D6			CRS02-Q	DIODE		IC524,525			TC75S51FE(F)	MOS-IC	
D7			1SS301F	DIODE		IC700		*	Note 1 (BGA)	ROM IC	
D8			1SS388F	DIODE		IC701			Note 1 (BGA)	MCU	
D10,11			1SS388F	DIODE		IC702			LM73CIMKX-0	MOS-IC	
D400-405			DA204U	DIODE		IC703			Note 1 (BGA)	SRAM IC	
						IC704			RV5C386A	MOS-IC	
						IC705			XC6109C29ANN	ANALOGUE IC	

K : TK-5810(BG) K
HK : TK-5810H(BG) K

K2 : TK-5810(BG) K2
HK2 : TK-5810H(BG) K2

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part. If a part reference number is listed in a shaded box, that part does not come with the PCB.

PARTS LIST

CONTROL UNIT (X53-4400-10)

TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination	
IC706			TC7SH08FU-F	MOS-IC		C204			CC73GCH1H040B	CHIP C	4.0PF B	K2,HK2
IC707			SM5023CNDH-G	MOS-IC		C205			CC73GCH1H0R5B	CHIP C	0.5PF B	K,HK
IC708			Note 1 (BGA)	MOS-IC		C205			CC73GCH1H010B	CHIP C	1.0PF B	K2,HK2
Q1,2			RT1N141U-T111	TRANSISTOR		C206			CK73GB1H471K	CHIP C	470PF K	
Q3			2SJ645	FET		C207			CC73GCH1H030B	CHIP C	3.0PF B	
Q4			SSM3K15TE(F)	FET		C208			CC73GCH1H0R5B	CHIP C	0.5PF B	K,HK
Q5			2SA1955A-F	TRANSISTOR		C208			CC73GCH1H010B	CHIP C	1.0PF B	K2,HK2
Q6			SSM3K15TE(F)	FET		C209,210			CK73GB1H471K	CHIP C	470PF K	
Q7			2SA1955A-F	TRANSISTOR		C211			CC73GCH1H030B	CHIP C	3.0PF B	K,HK
Q8,9			SSM3K15TE(F)	FET		C211			CC73GCH1H040B	CHIP C	4.0PF B	K2,HK2
Q10,11			2SA1955A-F	TRANSISTOR		C212			CC73GCH1H020B	CHIP C	2.0PF B	K2,HK2
Q12,13			RN47A4-F	TRANSISTOR		C212			CC73GCH1H1R5B	CHIP C	1.5PF B	K,HK
Q200,201			SSM3K15TE(F)	FET		C213			CK73GB1H471K	CHIP C	470PF K	
Q203			SSM3K15TE(F)	FET		C214			CC73GCH1H120J	CHIP C	12PF J	K2,HK2
Q204			RT1N140U-T111	TRANSISTOR		C214			CC73GCH1H150J	CHIP C	15PF J	K,HK
Q205			SSM3K15TE(F)	FET		C216			CK73GB1H471K	CHIP C	470PF K	
Q206			RT1N140U-T111	TRANSISTOR		C218			CC73GCH1H080B	CHIP C	8.0PF B	K2,HK2
Q400,401			RT1N144U-T111	TRANSISTOR		C218			CC73GCH1H100C	CHIP C	10PF C	K,HK
Q402,403			2SD2114K(W)	TRANSISTOR		C220-223			CK73GB1H471K	CHIP C	470PF K	
Q501			2SC4738(GR)F	TRANSISTOR		C224			CC73GCH1H180J	CHIP C	18PF J	K2,HK2
Q502			2SA1832(GR)F	TRANSISTOR		C224			CC73GCH1H220J	CHIP C	22PF J	K,HK
Q503			2SJ243-A	FET		C225			CC73GCH1H090B	CHIP C	9.0PF B	K,HK
Q504			RT1N141U-T111	TRANSISTOR		C225			CC73GCH1H100C	CHIP C	10PF C	K2,HK2
Q505			2SJ243-A	FET		C226			CC73GCH1H030B	CHIP C	3.0PF B	K,HK
Q506			2SD1757K	TRANSISTOR		C226			CC73GCH1H050B	CHIP C	5.0PF B	K2,HK2
Q507			RT1N441U-T111	TRANSISTOR		C227			CC73GCH1H150J	CHIP C	15PF J	K2,HK2
Q508			2SJ243-A	FET		C227			CC73GCH1H180J	CHIP C	18PF J	K,HK
Q509			RT1N141U-T111	TRANSISTOR		C228			CC73GCH1H070B	CHIP C	7.0PF B	K,HK
Q510			RT1N140U-T111	TRANSISTOR		C228			CC73GCH1H090B	CHIP C	9.0PF B	K2,HK2
						C229			CC73GCH1H040B	CHIP C	4.0PF B	K,HK
TX-RX UNIT (X57-7270-XX) -10: K,HK -11: K2,HK2						C229			CC73GCH1H060B	CHIP C	6.0PF B	K2,HK2
C151			CK73GB1H471K	CHIP C	470PF K	C230			CC73GCH1H150J	CHIP C	15PF J	K2,HK2
C152			CC73GCH1H100C	CHIP C	10PF C	C230			CC73GCH1H180J	CHIP C	18PF J	K,HK
C153			CC73GCH1H220J	CHIP C	22PF J	C231			CC73GCH1H070B	CHIP C	7.0PF B	K,HK
C155			CC73GCH1H181J	CHIP C	180PF J	C231			CC73GCH1H090B	CHIP C	9.0PF B	K2,HK2
C156			CK73GB1H471K	CHIP C	470PF K	C232			CC73GCH1H050B	CHIP C	5.0PF B	
C157			CC73GCH1H010B	CHIP C	1.0PF B	C233			CC73GCH1H220J	CHIP C	22PF J	K,HK
C157			CC73GCH1H080B	CHIP C	8.0PF B	C233			CC73GCH1H270J	CHIP C	27PF J	K2,HK2
C158			CC73GCH1H120J	CHIP C	12PF J	C234			CK73GB1H471K	CHIP C	470PF K	
C158			CC73GCH1H180J	CHIP C	18PF J	C235			CC73GCH1H080B	CHIP C	8.0PF B	K,HK
C160			CC73GCH1H101J	CHIP C	100PF J	C235			CC73GCH1H100C	CHIP C	10PF C	K2,HK2
C161			CK73GB1H471K	CHIP C	470PF K	C236			CK73GB1H471K	CHIP C	470PF K	
C162		*	CE32BC1D470M	CHIP EL	47UF 20WV	C238,239			CC73GCH1H680J	CHIP C	68PF J	
C163			CC73GCH1H050B	CHIP C	5.0PF B	C240			CK73GB1H103K	CHIP C	0.010UF K	
C164			CK73GB1H471K	CHIP C	470PF K	C241,242			CK73GB1H471K	CHIP C	470PF K	
C165			CC73GCH1H060B	CHIP C	6.0PF B	C243			CK73GB1H103K	CHIP C	0.010UF K	
C165			CC73GCH1H070B	CHIP C	7.0PF B	C244,245			CC73GCH1H080B	CHIP C	8.0PF B	
C166			CK73GB1H471K	CHIP C	470PF K	C246			CC73GCH1H050B	CHIP C	5.0PF B	
C167			CC73GCH1H050B	CHIP C	5.0PF B	C247			CC73GCH1H040B	CHIP C	4.0PF B	
C168			CK73GB1H103K	CHIP C	0.010UF K	C248			CC73GCH1H090B	CHIP C	9.0PF B	
C169,170			CK73GB1H471K	CHIP C	470PF K	C249,250			CK73GB1H103K	CHIP C	0.010UF K	
C200			CK73GB1H471K	CHIP C	470PF K	C251			CC73GCH1H050B	CHIP C	5.0PF B	K,HK
C201			CC73GCH1H030B	CHIP C	3.0PF B	C251			CC73GCH1H080B	CHIP C	8.0PF B	K2,HK2
C201			CC73GCH1H040B	CHIP C	4.0PF B	C252			CC73GCH1H100C	CHIP C	10PF C	K,HK
C202			CK73GB1H471K	CHIP C	470PF K	C252			CC73GCH1H120J	CHIP C	12PF J	K2,HK2
C203			CC73GCH1H020B	CHIP C	2.0PF B	C253			CC73GCH1H050B	CHIP C	5.0PF B	K,HK
C203			CC73GCH1H1R5B	CHIP C	1.5PF B	C253			CC73GCH1H080B	CHIP C	8.0PF B	K2,HK2
C204			CC73GCH1H030B	CHIP C	3.0PF B	C254			CK73GB1H103K	CHIP C	0.010UF K	
						C255			CC73GCH1H100C	CHIP C	10PF C	
						C256			CC73GCH1H090B	CHIP C	9.0PF B	

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.

PARTS LIST

TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C257			CC73GCH1H070B	CHIP C 7.0PF B		C343,344			CK73GB1C104K	CHIP C 0.10UF K	
C260			CC73GCH1H050B	CHIP C 5.0PF B	K,HK	C400			CK73GB1H471K	CHIP C 470PF K	
C260			CC73GCH1H100C	CHIP C 10PF C	K2,HK2	C401			CK73GB1E103K	CHIP C 0.010UF K	
C261			CK73GB1H471K	CHIP C 470PF K		C402,403			CC73GCH1H101J	CHIP C 100PF J	
C262			CK73GB1H103K	CHIP C 0.010UF K		C404			CK73GB1C104K	CHIP C 0.10UF K	
C263			CC73GCH1H120J	CHIP C 12PF J	K,HK	C406			CK73GB1E103K	CHIP C 0.010UF K	
C263			CK73GB1H471K	CHIP C 470PF K	K2,HK2	C407			CC73GCH1H101J	CHIP C 100PF J	
C264			CK73GB1H103K	CHIP C 0.010UF K		C408-410			CK73GB1H471K	CHIP C 470PF K	
C265			CK73GB1H471K	CHIP C 470PF K	K2,HK2	C412			CC73GCH1H101J	CHIP C 100PF J	K,HK
C265,266			CK73GB1H471K	CHIP C 470PF K	K,HK	C412,413			CC73GCH1H101J	CHIP C 100PF J	K2,HK2
C266			CC73GCH1H101J	CHIP C 100PF J	K2,HK2	C413,414			CC73GCH1H470J	CHIP C 47PF J	K,HK
C267			CK73GB1H103K	CHIP C 0.010UF K		C414			CC73GCH1H470J	CHIP C 47PF J	K2,HK2
C268			CC73GCH1H101J	CHIP C 100PF J		C415			C92-0863-05	CHIP TNTL 0.047UF 35WV	
C269			CC73GCH1H120J	CHIP C 12PF J		C416			CS77BA1E010M	CHIP TNTL 1.0UF 25WV	K,HK
C270			CK73GB1E103K	CHIP C 0.010UF K		C416			CS77CA1ER47M	CHIP TNTL 0.47UF 25WV	K2,HK2
C271			CK73GB1H102K	CHIP C 1000PF K		C417			C92-0863-05	CHIP TNTL 0.047UF 35WV	
C272			CK73GB1H103K	CHIP C 0.010UF K		C418			CK73GB1C104K	CHIP C 0.10UF K	
C273			CC73GCH1H090B	CHIP C 9.0PF B		C419			CC73GCH1H470J	CHIP C 47PF J	
C274			CC73GCH1H080B	CHIP C 8.0PF B		C420			CK73GB1H471K	CHIP C 470PF K	
C275,276			CC73GCH1H040B	CHIP C 4.0PF B		C423			CK73GB1H103K	CHIP C 0.010UF K	
C277			CC73GCH1H090B	CHIP C 9.0PF B		C424			CK73GB1C104K	CHIP C 0.10UF K	
C278			CC73GCH1H100C	CHIP C 10PF C		C425			CC73GCH1H101J	CHIP C 100PF J	
C279,280			CK73GB1H103K	CHIP C 0.010UF K		C427			CK73GB1H102K	CHIP C 1000PF K	
C281			CC73GCH1H090B	CHIP C 9.0PF B		C430			CK73GB1H471K	CHIP C 470PF K	
C282			CC73GCH1H080B	CHIP C 8.0PF B		C431			CK73GB1H103K	CHIP C 0.010UF K	
C285,286			CK73GB1H102K	CHIP C 1000PF K		C432			CK73FB1C334K	CHIP C 0.33UF K	
C287			CK73GB1H103K	CHIP C 0.010UF K		C433			CK73GB1C104K	CHIP C 0.10UF K	
C288-290			CK73GB1C104K	CHIP C 0.10UF K		C434			CK73GB1H471K	CHIP C 470PF K	
C291			CC73GCH1H470J	CHIP C 47PF J		C435			CC73GCH1H080B	CHIP C 8.0PF B	K2,HK2
C292			CC73GCH1H101J	CHIP C 100PF J		C436			CC73GCH1H060B	CHIP C 6.0PF B	K2,HK2
C296			CK73GB1H103K	CHIP C 0.010UF K		C436			CC73GCH1H270J	CHIP C 27PF J	K,HK
C298-300			CK73GB1C104K	CHIP C 0.10UF K		C437			CC73GCH1H470J	CHIP C 47PF J	
C302			CK73GB1E103K	CHIP C 0.010UF K		C438			CC73GCH1H050B	CHIP C 5.0PF B	K2,HK2
C304			CC73GCH1H470J	CHIP C 47PF J		C438,439			CC73GCH1H2R5B	CHIP C 2.5PF B	K,HK
C305			CK73GB1E103K	CHIP C 0.010UF K		C439			CC73GCH1H470J	CHIP C 47PF J	K2,HK2
C306			CC73GCH1H101J	CHIP C 100PF J		C441			CC73GCH1H020B	CHIP C 2.0PF B	K,HK
C309-315			CK73GB1C104K	CHIP C 0.10UF K		C441			CC73GCH1H1R5B	CHIP C 1.5PF B	K2,HK2
C316			CK73FB0J106K	CHIP C 10UF K		C442			CC73GCH1H020B	CHIP C 2.0PF B	K2,HK2
C317			CC73GCH1H150J	CHIP C 15PF J		C442			CC73GCH1H030B	CHIP C 3.0PF B	K,HK
C319			CC73GCH1H150J	CHIP C 15PF J		C443			CC73GCH1H030B	CHIP C 3.0PF B	K2,HK2
C320			CK73GB1C104K	CHIP C 0.10UF K		C443			CC73GCH1H050B	CHIP C 5.0PF B	K,HK
C321,322			CK73GB1E103K	CHIP C 0.010UF K		C444,445			CK73GB1E105K	CHIP C 1.0UF K	
C323			CC73GCH1H030B	CHIP C 3.0PF B		C446			CS77AB21C4R7M	CHIP TNTL 4.7UF 16WV	
C324			CK73GB1C104K	CHIP C 0.10UF K		C447			CC73GCH1H101J	CHIP C 100PF J	
C325			CK73GB1E103K	CHIP C 0.010UF K		C448,449			CK73GB1C104K	CHIP C 0.10UF K	
C326			CS77BA0J100M	CHIP TNTL 10UF 6.3WV		C450			CK73GF1A105Z	CHIP C 1.0UF Z	
C327			CC73GCH1H181J	CHIP C 180PF J		C451-456			CK73GB1H471K	CHIP C 470PF K	
C328			CC73GCH1H270J	CHIP C 27PF J		C457			CC73GCH1H020B	CHIP C 2.0PF B	K2,HK2
C329			CK73GB1C104K	CHIP C 0.10UF K		C457			CC73GCH1H3R5B	CHIP C 3.5PF B	K,HK
C330			CC73GCH1H181J	CHIP C 180PF J		C458			CC73GCH1H010B	CHIP C 1.0PF B	K,HK
C331			CK73GB1H152J	CHIP C 1500PF J		C458			CC73GCH1H1R5B	CHIP C 1.5PF B	K2,HK2
C332			CK73GB1H102K	CHIP C 1000PF K		C459			CC73GCH1H101J	CHIP C 100PF J	K,HK
C333			CK73GB1C333K	CHIP C 0.033UF K		C459			CC73GCH1H470J	CHIP C 47PF J	K2,HK2
C334			CK73GB1C104K	CHIP C 0.10UF K		C460			CK73GB1E105K	CHIP C 1.0UF K	
C335			CS77BA0J220M	CHIP TNTL 22UF 6.3WV		C461			CC73GCH1H181J	CHIP C 180PF J	
C336			CK73GB1H102K	CHIP C 1000PF K		C463			CK73GB1H471K	CHIP C 470PF K	
C337,338			CK73GB1C104K	CHIP C 0.10UF K		C464			CC73GCH1H101J	CHIP C 100PF J	
C340			CK73GB1H102K	CHIP C 1000PF K		C465			CC73GCH1H220J	CHIP C 22PF J	
C341			CK73GB1C104K	CHIP C 0.10UF K		C466-468			CK73GB1E105K	CHIP C 1.0UF K	
C342			CK73GB1A224K	CHIP C 0.22UF K		C470-472			CK73GB1H471K	CHIP C 470PF K	

K : TK-5810(BG) K

K2 : TK-5810(BG) K2

HK : TK-5810H(BG) K

HK2 : TK-5810H(BG) K2

TK-5810(BG)/5810H(BG)

PARTS LIST

TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C474			CK73GB1H103K	CHIP C 0.010UF K		C535			CC73GCH1H060B	CHIP C 6.0PF B	
C475			C93-0787-05	CERAMIC 0.1UF 50WV		C536			CK73GB1H471K	CHIP C 470PF K	
C477			CK73GB1H103K	CHIP C 0.010UF K		C537			CC73GCH1H050B	CHIP C 5.0PF B	K, HK
C478			CS77AC1D220M	CHIP TNTL 22UF 20WV		C537			CC73GCH1H060B	CHIP C 6.0PF B	K2, HK2
C479			CK73GB1H471K	CHIP C 470PF K		C538,539			CK73GB1H471K	CHIP C 470PF K	
C480			CS77AC1D220M	CHIP TNTL 22UF 20WV		C540			CC73GCH1H101J	CHIP C 100PF J	
C482,483			CK73GB1H103K	CHIP C 0.010UF K		C541,542			CK73GB1H471K	CHIP C 470PF K	
C484			CK73GB1H471K	CHIP C 470PF K		C600			CK73GB1H471K	CHIP C 470PF K	
C485			CC73GCH1H101J	CHIP C 100PF J	K, HK	C601			C92-0881-05	ELECTRO 47UF 10WV	
C485			CC73GCH1H270G	CHIP C 27PF G	K2, HK2	C602,603			CK73GB1H471K	CHIP C 470PF K	
C487			CK73GB1H471K	CHIP C 470PF K		C604			CS77CA1C010M	CHIP TNTL 1.0UF 16WV	
C488			CC73GCH1H120G	CHIP C 12PF G	K, HK	C605			CK73GB1H103K	CHIP C 0.010UF K	
C488			CC73GCH1H150G	CHIP C 15PF G	K2, HK2	C606			C92-0887-05	ELECTRO 1.0UF 50WV	
C489			CC73GCH1H330G	CHIP C 33PF G		C607,608			CK73GB1C104K	CHIP C 0.10UF K	
C490			CS77BA1A100M	CHIP TNTL 10UF 10WV		C609			C92-0949-05	CHIP TNTL 4.7UF 16WV	
C491			CC73GCH1H0R5B	CHIP C 0.5PF B	K2, HK2	C610-620			CK73GB1H471K	CHIP C 470PF K	
C491			CC73GCH1H010B	CHIP C 1.0PF B	K, HK	C621			CK73GB1H102K	CHIP C 1000PF K	
C492			CK73GB1H471K	CHIP C 470PF K	K, HK	C622-630			CK73GB1H471K	CHIP C 470PF K	
C492			CK73GB1H681K	CHIP C 680PF K	K2, HK2	C631,632			CK73GB1H102K	CHIP C 1000PF K	
C494			CC73GCH1H070B	CHIP C 7.0PF B		C634			CC73GCH1H1R5B	CHIP C 1.5PF B	K2, HK2
C495			CC73GCH1H1R5B	CHIP C 1.5PF B		C634			CC73GCH1H470J	CHIP C 47PF J	K, HK
C496			CC73GCH1H101J	CHIP C 100PF J	K, HK	C635			CC73GCH1H020B	CHIP C 2.0PF B	
C496			CC73GCH1H390J	CHIP C 39PF J	K2, HK2	C636,637			CK73GB1C393K	CHIP C 0.039UF K	K, HK
C497			CC73GCH1H0R5B	CHIP C 0.5PF B	K2, HK2	C638			CK73GB1C683K	CHIP C 0.068UF K	K, HK
C497			CC73GCH1H1R5B	CHIP C 1.5PF B	K, HK	C640			CC73GCH1H050B	CHIP C 5.0PF B	K, HK
C499			CC73GCH1H090B	CHIP C 9.0PF B	K2, HK2	C640			CC73GCH1H120J	CHIP C 12PF J	K2, HK2
C499			CC73GCH1H100C	CHIP C 10PF C	K, HK	C641			CK73GB1H471K	CHIP C 470PF K	
C500,501			CK73GB1H471K	CHIP C 470PF K		C642			CC73GCH1H050B	CHIP C 5.0PF B	K, HK
C502			CC73GCH1H020B	CHIP C 2.0PF B	K, HK	C642			CC73GCH1H120J	CHIP C 12PF J	K2, HK2
C502			CC73GCH1H2R5B	CHIP C 2.5PF B	K2, HK2	C644-647			CK73GB1H471K	CHIP C 470PF K	
C503			CS77AB21A220M	CHIP TNTL 22UF 10WV		CN150	1A,2C		E04-0154-05	PIN SOCKET	
C504			CS77AC1A470M	CHIP TNTL 47UF 10WV		CN151	1A,2C		E04-0154-05	PIN SOCKET	
C505			CK73GB1H103K	CHIP C 0.010UF K		CN200	1A,2C		E04-0154-05	PIN SOCKET	
C506			CK73GB1H471K	CHIP C 470PF K		CN202			E41-2735-05	PIN ASSY	
C508			CK73GB1H471K	CHIP C 470PF K		CN207			E41-2735-05	PIN ASSY	
C509			CC73GCH1H050B	CHIP C 5.0PF B		CN600			E40-6438-05	FLAT CABLE CONNECTOR	
C510			CC73GCH1H040B	CHIP C 4.0PF B		CN601			E40-6429-05	FLAT CABLE CONNECTOR	
C511			CC73GCH1H030B	CHIP C 3.0PF B		W400			E37-1235-05	JUMPER WIRE	
C512			CC73GCH1H0R5B	CHIP C 0.5PF B		CF200			L72-1018-05	CERAMIC FILTER (450KHZ/NAR)	
C513			CK73GB1H471K	CHIP C 470PF K		CF201,202			L72-1016-05	CERAMIC FILTER (450KHZ/WID)	
C514			CC73GCH1H060B	CHIP C 6.0PF B	K, HK	CF203	1A,2C		L72-1009-05	CERAMIC FILTER (450KHZ)	
C514			CC73GCH1H070B	CHIP C 7.0PF B	K2, HK2	CF204			L72-1018-05	CERAMIC FILTER (450KHZ/NAR)	
C515			CC73GCH1H0R5B	CHIP C 0.5PF B		L150,151			L40-3975-92	SMALL FIXED INDUCTOR (39NH)	
C516			CC73GCH1H060B	CHIP C 6.0PF B		L152			L40-5663-92	SMALL FIXED INDUCTOR (5.6NH)	
C517			CC73GCH1H050B	CHIP C 5.0PF B		L153			L40-2275-92	SMALL FIXED INDUCTOR (22NH)	K2, HK2
C518			CC73GCH1H0R5B	CHIP C 0.5PF B		L153,154			L40-1875-92	SMALL FIXED INDUCTOR (18NH)	K, HK
C519,520			CK73GB1H471K	CHIP C 470PF K		L154			L40-1875-92	SMALL FIXED INDUCTOR (18NH)	K2, HK2
C521			CC73GCH1H070B	CHIP C 7.0PF B	K, HK	L200-204			L34-4604-15	AIR-CORE COIL	
C521			CC73GCH1H090B	CHIP C 9.0PF B	K2, HK2	L205			L41-1878-08	SMALL FIXED INDUCTOR (18NH)	
C522			CC73GCH1H070B	CHIP C 7.0PF B	K2, HK2	L206			L92-0140-05	CHIP FERRITE	
C522,523			CC73GCH1H060B	CHIP C 6.0PF B	K, HK	L207-210			L34-4565-05	AIR-CORE COIL (5T)	K, HK
C523			CC73GCH1H050B	CHIP C 5.0PF B	K2, HK2	L207-210			L34-4566-05	AIR-CORE COIL (6T)	K2, HK2
C524			CC73GCH1H0R5B	CHIP C 0.5PF B		L211,212			L41-1588-08	SMALL FIXED INDUCTOR (150NH)	
C525			CK73GB1H471K	CHIP C 470PF K		L214,215			L39-1498-05	TOROIDAL COIL (4T)	
C527			CC73GCH1H050B	CHIP C 5.0PF B	K2, HK2	L216			L92-0140-05	CHIP FERRITE	
C527			CC73GCH1H060B	CHIP C 6.0PF B	K, HK	L217,218			L34-4748-05	COIL (700NH)	
C529			CK73GB1H471K	CHIP C 470PF K		L219			L39-1498-05	TOROIDAL COIL	
C530			CC73GCH1H040B	CHIP C 4.0PF B	K, HK	L220,221			L41-1578-08	SMALL FIXED INDUCTOR (15N)	K, HK
C530			CC73GCH1H050B	CHIP C 5.0PF B	K2, HK2	L220,221			L41-2278-08	SMALL FIXED INDUCTOR (22NH)	K2, HK2
C531-534			CK73GB1H471K	CHIP C 470PF K							

PARTS LIST

TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L222,223			L34-4749-05	COIL (535NH)		R216			RK73GB2A000J	CHIP R 0.0 J 1/10W	
L224			L41-1878-08	SMALL FIXED INDUCTOR (18NH)	K,HK	R219			RK73GB2A821J	CHIP R 820 J 1/10W	K2,HK2
L224		*	L41-3978-08	SMALL FIXED INDUCTOR (39NH)	K2,HK2	R220			RK73GB2A000J	CHIP R 0.0 J 1/10W	K,HK
L225			L40-6881-37	SMALL FIXED INDUCTOR (0.680UH)		R220			RK73GB2A5R6J	CHIP R 5.6 J 1/10W	K2,HK2
L226			L41-1008-08	SMALL FIXED INDUCTOR (10UH)		R221			RK73GB2A821J	CHIP R 820 J 1/10W	K2,HK2
L227,228			L34-4748-05	COIL (700NH)		R222			RK73GB2A470J	CHIP R 47 J 1/10W	
L229,230			L34-4749-05	COIL (535NH)		R223			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L231			L41-1008-08	SMALL FIXED INDUCTOR (10UH)		R225			RK73GB2A390J	CHIP R 39 J 1/10W	K,HK
L232			L40-5681-86	SMALL FIXED INDUCTOR (0.56UH)		R225			RK73GB2A470J	CHIP R 47 J 1/10W	K2,HK2
L234			L34-4725-05	COIL (455KHZ)		R226			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L401			L40-8265-92	SMALL FIXED INDUCTOR (8.2NH)		R227			RK73GB2A390J	CHIP R 39 J 1/10W	K2,HK2
L402,403			L41-1578-14	SMALL FIXED INDUCTOR (15NH)	K2,HK2	R227			RK73GB2A470J	CHIP R 47 J 1/10W	K1K3
L403,404			L41-4763-14	SMALL FIXED INDUCTOR (4.7NH)	K,HK	R228			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L405			L41-3363-14	SMALL FIXED INDUCTOR (3.3NH)	K,HK	R229,230			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L405			L41-6868-14	SMALL FIXED INDUCTOR (6.8NH)	K2,HK2	R231			RK73FB2B181J	CHIP R 180 J 1/8W	K,HK
L406			L33-1462-05	SMALL FIXED INDUCTOR		R231			RK73FB2B221J	CHIP R 220 J 1/8W	K2,HK2
L407			L41-3363-14	SMALL FIXED INDUCTOR (3.3NH)	K,HK	R232			RK73FB2B220J	CHIP R 22 J 1/8W	K2,HK2
L407			L41-6868-14	SMALL FIXED INDUCTOR (6.8NH)	K2,HK2	R232			RK73FB2B330J	CHIP R 33 J 1/8W	K,HK
L408-417			L92-0140-05	CHIP FERRITE		R233			RK73FB2B181J	CHIP R 180 J 1/8W	K,HK
L418-423			L41-1098-08	SMALL FIXED INDUCTOR (1.0UH)		R233			RK73FB2B221J	CHIP R 220 J 1/8W	K2,HK2
L424			L92-0140-05	CHIP FERRITE		R234			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L425-430			L41-1098-08	SMALL FIXED INDUCTOR (1.0UH)		R235			RK73GB2A222J	CHIP R 2.2K J 1/10W	
L431			L34-4607-15	AIR-CORE COIL (6T)	K,HK	R236			RK73GB2A221J	CHIP R 220 J 1/10W	K,HK
L431			L34-4608-15	AIR-CORE COIL (7T)	K2,HK2	R236			RK73GB2A271J	CHIP R 270 J 1/10W	K2,HK2
L432,433			L41-1098-08	SMALL FIXED INDUCTOR (1.0UH/252)		R237			RK73GB2A103J	CHIP R 10K J 1/10W	K,HK
L434			L34-4608-15	AIR-CORE COIL (7T)	K,HK	R237			RK73GB2A182J	CHIP R 1.8K J 1/10W	K2,HK2
L434			L34-4609-15	AIR-CORE COIL (8T)	K2,HK2	R238			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L435,436			L41-1098-08	SMALL FIXED INDUCTOR (1.0UH/252)		R239			RK73GB2A181J	CHIP R 180 J 1/10W	K,HK
L437			L34-4608-15	AIR-CORE COIL (7T)	K,HK	R239			RK73GB2A271J	CHIP R 270 J 1/10W	K2,HK2
L437			L34-4609-15	AIR-CORE COIL (8T)	K2K4	R240			RK73GB2A180J	CHIP R 18 J 1/10W	K2,HK2
L438,439			L41-1098-08	SMALL FIXED INDUCTOR (1.0UH)		R240			RK73GB2A330J	CHIP R 33 J 1/10W	K,HK
L441			L40-2775-92	SMALL FIXED INDUCTOR (27NH)	K2,HK2	R241			RK73GB2A181J	CHIP R 180 J 1/10W	K,HK
L441-444			L40-1875-92	SMALL FIXED INDUCTOR (18NH)	K,HK	R241			RK73GB2A271J	CHIP R 270 J 1/10W	K2,HK2
L442,443			L40-1875-92	SMALL FIXED INDUCTOR (18NH)	K2,HK2	R242			RK73GB2A330J	CHIP R 33 J 1/10W	K2,HK2
L444			L40-1575-92	SMALL FIXED INDUCTOR (15NH)	K2,HK2	R242			RK73GB2A331J	CHIP R 330 J 1/10W	K,HK
X200			L77-1961-05	VCXO (16.8MHZ/5PPM)		R243			RK73GB2A183J	CHIP R 18K J 1/10W	K,HK
X400			L77-3013-05	VCXO (16.8MHZ/1PPM)		R243			RK73GB2A332J	CHIP R 3.3K J 1/10W	K2,HK2
XF200	1A,2C		L71-0626-05	CRYSTAL FILTER (49.95MHZ NAR)		R244			RK73GB2A560J	CHIP R 56 J 1/10W	
XF201	1A,2C		L71-0625-05	CRYSTAL FILTER (49.95MHZ WID)		R245			RK73GB2A270J	CHIP R 27 J 1/10W	
R150,151			RK73GB2A821J	CHIP R 820 J 1/10W		R246			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R152			RK73GB2A5R6J	CHIP R 5.6 J 1/10W		R247,248			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R154			RK73GB2A000J	CHIP R 0.0 J 1/10W		R249			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R155			RK73GB2A123J	CHIP R 12K J 1/10W		R250			RK73GB2A153J	CHIP R 15K J 1/10W	
R156			RK73FB2B470J	CHIP R 47 J 1/8W		R251			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R158			RK73FB2B101J	CHIP R 100 J 1/8W		R252			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R159			RK73GB2A000J	CHIP R 0.0 J 1/10W		R253			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R160			RK73GB2A102J	CHIP R 1.0K J 1/10W		R254			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R161			RK73GB2A101J	CHIP R 100 J 1/10W		R255			RK73GB2A473J	CHIP R 47K J 1/10W	
R162			RK73GB2A332J	CHIP R 3.3K J 1/10W		R256			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R163			RK73FB2B100J	CHIP R 10 J 1/8W		R258			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R165			RK73FB2B100J	CHIP R 10 J 1/8W		R261			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R166,167			RK73FB2B271J	CHIP R 270 J 1/8W		R264			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R168			RK73FB2B180J	CHIP R 18 J 1/8W	K2,HK2	R265			RK73GB2A104J	CHIP R 100K J 1/10W	
R168			RK73FB2B220J	CHIP R 22 J 1/8W	K,HK	R266			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R201-204			RK73GB2A104J	CHIP R 100K J 1/10W		R268,269			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R205,206			RK73GB2A183J	CHIP R 18K J 1/10W		R271			RK73GB2A104J	CHIP R 100K J 1/10W	
R208			RK73GB2A221J	CHIP R 220 J 1/10W		R272			RK73GB2A473J	CHIP R 47K J 1/10W	
R209,210			RK73GB2A000J	CHIP R 0.0 J 1/10W		R274			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R211-215			RK73GB2A104J	CHIP R 100K J 1/10W		R275			RK73GB2A122J	CHIP R 1.2K J 1/10W	
						R276			RK73GB2A182J	CHIP R 1.8K J 1/10W	

K : TK-5810(BG) K K2 : TK-5810(BG) K2
 HK : TK-5810H(BG) K HK2 : TK-5810H(BG) K2

If a part reference number is listed in a shaded box, that part does not come with the PCB.

PARTS LIST

TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R277			RK73GB2A122J	CHIP R 1.2K J 1/10W		R423			RK73GB2A472J	CHIP R 4.7K J 1/10W	K,HK
R284			RK73GB2A103J	CHIP R 10K J 1/10W		R424			RK73GB2A330J	CHIP R 33 J 1/10W	
R287,288			RK73GB2A000J	CHIP R 0.0 J 1/10W		R425			RK73GB2A221J	CHIP R 220 J 1/10W	K,HK
R293,294			RK73GB2A000J	CHIP R 0.0 J 1/10W		R426			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R296			RK73GB2A331J	CHIP R 330 J 1/10W		R427			RK73GB2A470J	CHIP R 47 J 1/10W	
R297			RK73GB2A470J	CHIP R 47 J 1/10W		R428			RK73GB2A101J	CHIP R 100 J 1/10W	K,HK
R298			RK73GB2A681J	CHIP R 680 J 1/10W		R428			RK73GB2A102J	CHIP R 1.0K J 1/10W	K2,HK2
R299			RK73GB2A822J	CHIP R 8.2K J 1/10W		R429			RN73GH1J470D	CHIP R 47 D 1/16W	
R300			RK73GB2A470J	CHIP R 47 J 1/10W		R430			RN73GH1J681D	CHIP R 680 D 1/16W	
R301			RK73GB2A684J	CHIP R 680K J 1/10W		R431			RK73GB2A000J	CHIP R 0.0 J 1/10W	K,HK
R304-307			RK73GB2A000J	CHIP R 0.0 J 1/10W		R431			RK73GB2A102J	CHIP R 1.0K J 1/10W	K2,HK2
R310,311			RK73GB2A000J	CHIP R 0.0 J 1/10W		R432			RK73GB2A561J	CHIP R 560 J 1/10W	
R312			RK73GB2A102J	CHIP R 1.0K J 1/10W		R433			RK73GB2A101J	CHIP R 100 J 1/10W	K,HK
R313,314			RK73GB2A220J	CHIP R 22 J 1/10W		R433			RK73GB2A222J	CHIP R 2.2K J 1/10W	K2,HK2
R315			RK73GB2A104J	CHIP R 100K J 1/10W		R434			RN73GH1J331D	CHIP R 330 D 1/16W	
R316			RK73GB2A000J	CHIP R 0.0 J 1/10W		R436,437			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R317			RK73GB2A273J	CHIP R 27K J 1/10W		R439			RK73GB2A151J	CHIP R 150 J 1/10W	
R318			RK73GB2A470J	CHIP R 47 J 1/10W		R440			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R319			RK73GB2A681J	CHIP R 680 J 1/10W		R441			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R320			RK73GB2A331J	CHIP R 330 J 1/10W		R444			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R321			RK73GB2A274J	CHIP R 270K J 1/10W		R445-447			RK73GB2A101J	CHIP R 100 J 1/10W	
R323			RK73GB2A333J	CHIP R 33K J 1/10W		R448			RK73GB2A154J	CHIP R 150K J 1/10W	
R324,325			RK73GB2A000J	CHIP R 0.0 J 1/10W		R450			RK73GB2A330J	CHIP R 33 J 1/10W	
R326			RK73GB2A102J	CHIP R 1.0K J 1/10W		R451			RK73GB2A473J	CHIP R 47K J 1/10W	
R327,328			RK73GB2A332J	CHIP R 3.3K J 1/10W		R452			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R329			RK73GB2A273J	CHIP R 27K J 1/10W		R453			RK73GB2A100J	CHIP R 10 J 1/10W	
R330			RK73GB2A000J	CHIP R 0.0 J 1/10W		R454			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R333			RK73GB2A224J	CHIP R 220K J 1/10W		R455			RK73GB2A104J	CHIP R 100K J 1/10W	
R334			RK73GB2A471J	CHIP R 470 J 1/10W		R456			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R335			RK73GB2A000J	CHIP R 0.0 J 1/10W		R457			RK73GB2A104J	CHIP R 100K J 1/10W	
R336			RK73GB2A224J	CHIP R 220K J 1/10W		R458			RN73GH1J104D	CHIP R 100K D 1/16W	
R337			RK73GB2A683J	CHIP R 68K J 1/10W		R459			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R338			RK73GB2A332J	CHIP R 3.3K J 1/10W		R460			RK73GB2A123J	CHIP R 12K J 1/10W	
R339			RK73GB2A000J	CHIP R 0.0 J 1/10W		R461			RN73GH1J222D	CHIP R 2.2K D 1/16W	
R340			RK73GB2A102J	CHIP R 1.0K J 1/10W		R462			RK73GB2A224J	CHIP R 220K J 1/10W	
R341			RK73GB2A332J	CHIP R 3.3K J 1/10W		R463			RK73GB2A124J	CHIP R 120K J 1/10W	
R342			RK73GB2A104J	CHIP R 100K J 1/10W		R464			RN73GH1J334D	CHIP R 330K D 1/16W	
R344			RK73GB2A000J	CHIP R 0.0 J 1/10W		R465			RK73GB2A100J	CHIP R 10 J 1/10W	
R345			RK73GB2A473J	CHIP R 47K J 1/10W		R466,467			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R400			RK73GB2A000J	CHIP R 0.0 J 1/10W		R468,469			RK73GB2A104J	CHIP R 100K J 1/10W	
R401			RK73GB2A104J	CHIP R 100K J 1/10W		R470			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R402			RK73GB2A102J	CHIP R 1.0K J 1/10W		R471			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R403			RK73GB2A563J	CHIP R 56K J 1/10W		R472			RK73GB2A106J	CHIP R 10M J 1/10W	
R404			RK73GB2A101J	CHIP R 100 J 1/10W		R473			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R405			RK73GB2A103J	CHIP R 10K J 1/10W		R474			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R406			RK73GB2A104J	CHIP R 100K J 1/10W		R475			RK73GB2A473J	CHIP R 47K J 1/10W	
R407-410			RK73GB2A101J	CHIP R 100 J 1/10W		R476,477			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R411			RK73GB2A000J	CHIP R 0.0 J 1/10W		R478			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R412-414			RK73GB2A101J	CHIP R 100 J 1/10W		R479			RN73GH1J391D	CHIP R 390 D 1/16W	K,HK
R415			RK73GB2A103J	CHIP R 10K J 1/10W		R479			RN73GH1J471D	CHIP R 470 D 1/16W	K2,HK2
R416			RK73GB2A000J	CHIP R 0.0 J 1/10W		R480			RK73GB2A274J	CHIP R 270K J 1/10W	
R417			RK73GB2A103J	CHIP R 10K J 1/10W		R481			RN73GH1J391D	CHIP R 390 D 1/16W	K,HK
R418			RK73GB2A102J	CHIP R 1.0K J 1/10W		R481			RN73GH1J561D	CHIP R 560 D 1/16W	K2,HK2
R419			RK73GB2A103J	CHIP R 10K J 1/10W	K2,HK2	R482			RN73GH1J271D	CHIP R 270 D 1/16W	K2,HK2
R419			RK73GB2A472J	CHIP R 4.7K J 1/10W	K,HK	R482			RN73GH1J471D	CHIP R 470 D 1/16W	K,HK
R420			RK73GB2A101J	CHIP R 100 J 1/10W	K2,HK2	R483			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R420			RK73GB2A151J	CHIP R 150 J 1/10W	K,HK	R484			RK73GB2A100J	CHIP R 10 J 1/10W	
R422			RK73GB2A122J	CHIP R 1.2K J 1/10W	K,HK	R485			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R422			RK73GB2A392J	CHIP R 3.9K J 1/10W	K2,HK2	R486			RN73GH1J151D	CHIP R 150 D 1/16W	K,HK
R423			RK73GB2A103J	CHIP R 10K J 1/10W	K2,HK2	R486			RN73GH1J181D	CHIP R 180 D 1/16W	K2,HK2

PARTS LIST

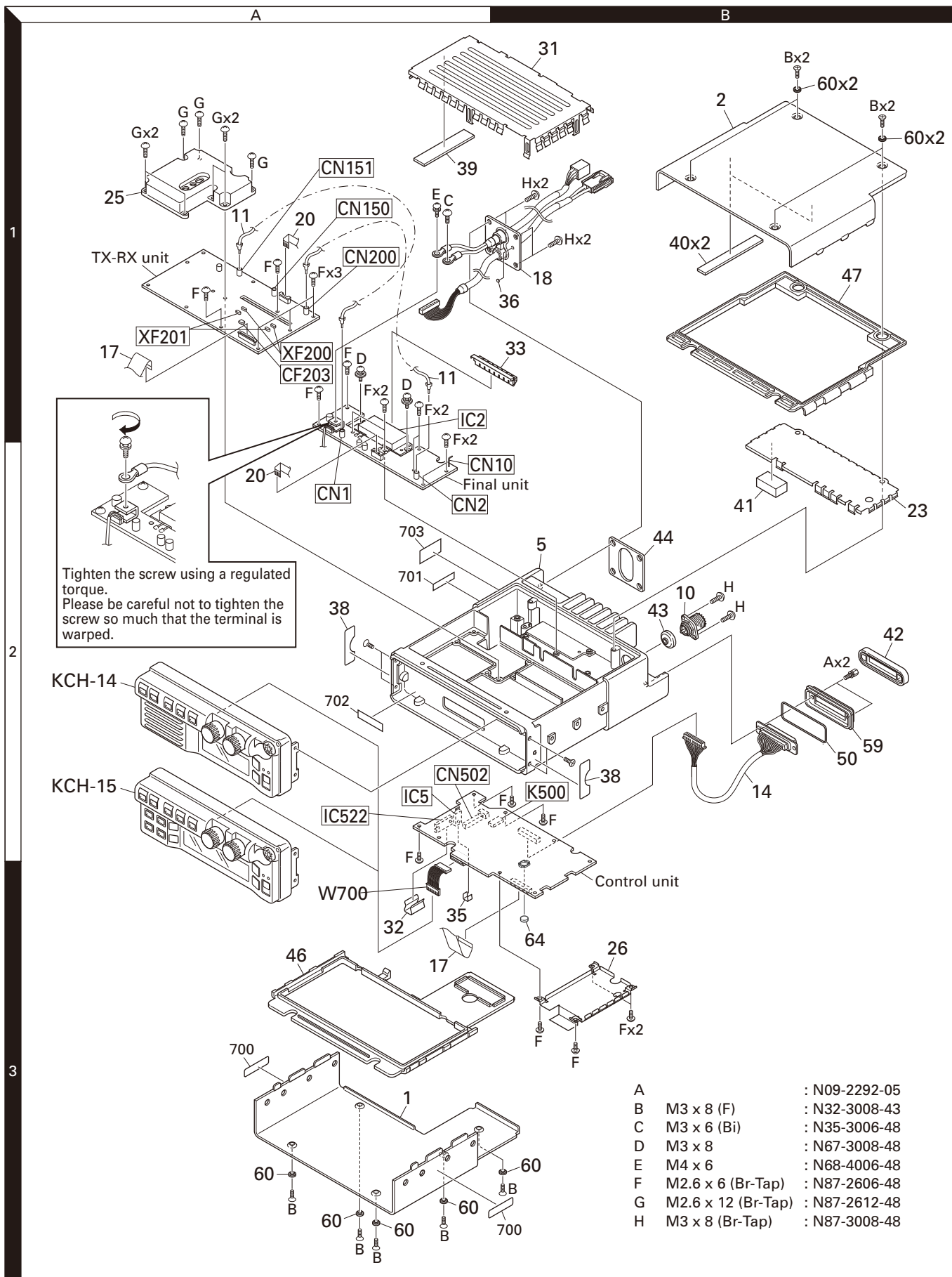
TX-RX UNIT (X57-7270-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R487			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2,HK2	D408			1SV305F	VARIABLE CAPACITANCE DIODE	K,HK
R487			RN73GH1J101D	CHIP R 100 D 1/16W	K,HK	D409			HVC376B	VARIABLE CAPACITANCE DIODE	K,HK
R488			RK73GB2A104J	CHIP R 100K J 1/10W		D411-413			1SV282-F	VARIABLE CAPACITANCE DIODE	K2,HK2
R489			RN73GH1J221D	CHIP R 220 D 1/16W	K,HK	D411,412			1SV282-F	VARIABLE CAPACITANCE DIODE	K,HK
R489			RN73GH1J271D	CHIP R 270 D 1/16W	K2,HK2	D413			1SV305F	VARIABLE CAPACITANCE DIODE	K,HK
R490			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2,HK2	D414			HVC376B	VARIABLE CAPACITANCE DIODE	K,HK
R490			RN73GH1J101D	CHIP R 100 D 1/16W	K,HK	D416,417			1SV282-F	VARIABLE CAPACITANCE DIODE	
R491			RK73GB2A224J	CHIP R 220K J 1/10W		D418			1SV278F	VARIABLE CAPACITANCE DIODE	
R493			RN73GH1J221D	CHIP R 220 D 1/16W	K,HK	D419,420			RN142S	DIODE	
R493			RN73GH1J331D	CHIP R 330 D 1/16W	K2,HK2	D421,422			1SV282-F	VARIABLE CAPACITANCE DIODE	
R494			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2,HK2	IC200			SPM5001	MOS-IC	
R494			RN73GH1J101D	CHIP R 100 D 1/16W	K,HK	IC201-203			TC7W53FK(F)	MOS-IC	
R495			RK73GB2A471J	CHIP R 470 J 1/10W	K,HK	IC204			TC75S51F-F	MOS-IC	
R496			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2,HK2	IC205-207			TC7W53FK(F)	MOS-IC	
R496			RK73GB2A120J	CHIP R 12 J 1/10W	K,HK	IC209			TA31137FNG	MOS-IC	
R497			RK73GB2A471J	CHIP R 470 J 1/10W	K,HK	IC210			TC7WU04FK-F	MOS-IC	
R498			RK73GB2A000J	CHIP R 0.0 J 1/10W		IC211			TC7S66FUF	MOS-IC	
R499			RK73GB2A223J	CHIP R 22K J 1/10W	K2,HK2	IC400			LMX2352TMX/NP	ANALOGUE IC	
R499			RK73GB2A273J	CHIP R 27K J 1/10W	K,HK	IC401			MCP41100T	ANALOGUE IC	
R500			RK73GB2A223J	CHIP R 22K J 1/10W	K,HK	IC402			XC9101D09AKR	ANALOGUE IC	
R500,501			RK73GB2A103J	CHIP R 10K J 1/10W	K2,HK2	IC403			LMC7101BIM5	MOS-IC	
R501			RK73GB2A153J	CHIP R 15K J 1/10W	K,HK	IC600			BU4094BCFV	MOS-IC	
R502			RK73GB2A330J	CHIP R 33 J 1/10W		IC601			TA7805FQ	MOS-IC	
R504			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q150,151			2SC3357-A(RF)	TRANSISTOR	
R505			RK73GB2A151J	CHIP R 150 J 1/10W	K,HK	Q200			2SC3357-A(RF)	TRANSISTOR	
R505			RK73GB2A471J	CHIP R 470 J 1/10W	K2,HK2	Q201			RT1N141U-T111	DIGITAL TRANSISTOR	
R506			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q202			RT1P141U-T111	DIGITAL TRANSISTOR	
R507			RK73GB2A101J	CHIP R 100 J 1/10W	K2,HK2	Q203,204			2SC3357-A(RF)	TRANSISTOR	
R507			RK73GB2A151J	CHIP R 150 J 1/10W	K,HK	Q205			2SC4215-F(Y)	TRANSISTOR	
R508			RK73GB2A331J	CHIP R 330 J 1/10W		Q207			2SC5108(Y)F	TRANSISTOR	
R509			RK73GB2A330J	CHIP R 33 J 1/10W		Q208			RT1N141U-T111	DIGITAL TRANSISTOR	
R510			RK73GB2A222J	CHIP R 2.2K J 1/10W		Q209			RT1P441U-T111	DIGITAL TRANSISTOR	
R511			RK73GB2A101J	CHIP R 100 J 1/10W		Q210			SSM3K15TE(F)	FET	
R512			RK73GB2A221J	CHIP R 220 J 1/10W	K,HK	Q211			2SC4617(S)	TRANSISTOR	
R513,514			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q400			2SK879(Y)F	FET	
R600			RK73GB2A473J	CHIP R 47K J 1/10W		Q401			RT1N441U-T111	DIGITAL TRANSISTOR	
R601			RK73GB2A222J	CHIP R 2.2K J 1/10W		Q402			2SA1832(GR)F	TRANSISTOR	
R602			RK73GB2A473J	CHIP R 47K J 1/10W		Q403			2SC5108(Y)F	TRANSISTOR	
R603			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q404			RN47A4-F	TRANSISTOR	
R604,605			RK73GB2A000J	CHIP R 0.0 J 1/10W		Q405			2SJ347F	FET	
R606			RK73GB2A273J	CHIP R 27K J 1/10W		Q406			SSM5H01TU	FET	
R607,608			RK73GB2A000J	CHIP R 0.0 J 1/10W	K2,HK2	Q407			RN47A4-F	TRANSISTOR	
R607,608			RK73GB2A391J	CHIP R 390 J 1/10W	K,HK	Q408			2SJ347F	FET	
R609			RK73GB2A181J	CHIP R 180 J 1/10W	K,HK	Q409,410			RN47A4-F	TRANSISTOR	
R610			RN73GH1J183D	CHIP R 18K D 1/16W		Q411,412			2SC4116(GR)F	TRANSISTOR	
R611			RK73GB2A000J	CHIP R 0.0 J 1/10W		Q413-415			2SK508NV(52K)	FET	
D200-203			JDV2S71E-F	VARIABLE CAPACITANCE DIODE		Q416-418			2SC5108(Y)F	TRANSISTOR	
D204-207			1SV286F	VARIABLE CAPACITANCE DIODE		Q600			RT1N141U-T111	DIGITAL TRANSISTOR	
D208-215			RN142S	DIODE		Q601			2SB1132(Q,R)	TRANSISTOR	
D216			RB706F-40	DIODE		Q602			RT1N141U-T111	DIGITAL TRANSISTOR	
D217			1SS388F	DIODE		Q603			2SB1132(Q,R)	TRANSISTOR	
D400			MA2S111-F	DIODE							
D401			DA221	DIODE							
D402			1SV282-F	VARIABLE CAPACITANCE DIODE	K2,HK2						
D402			1SV305F	VARIABLE CAPACITANCE DIODE	K,HK						
D403			HVC376B	VARIABLE CAPACITANCE DIODE	K,HK						
D405			BB664	VARIABLE CAPACITANCE DIODE	K,HK						
D405-408			1SV282-F	VARIABLE CAPACITANCE DIODE	K2,HK2						
D406,407			1SV282-F	VARIABLE CAPACITANCE DIODE	K,HK						

K : TK-5810(BG) K K2 : TK-5810(BG) K2
 HK : TK-5810H(BG) K HK2 : TK-5810H(BG) K2

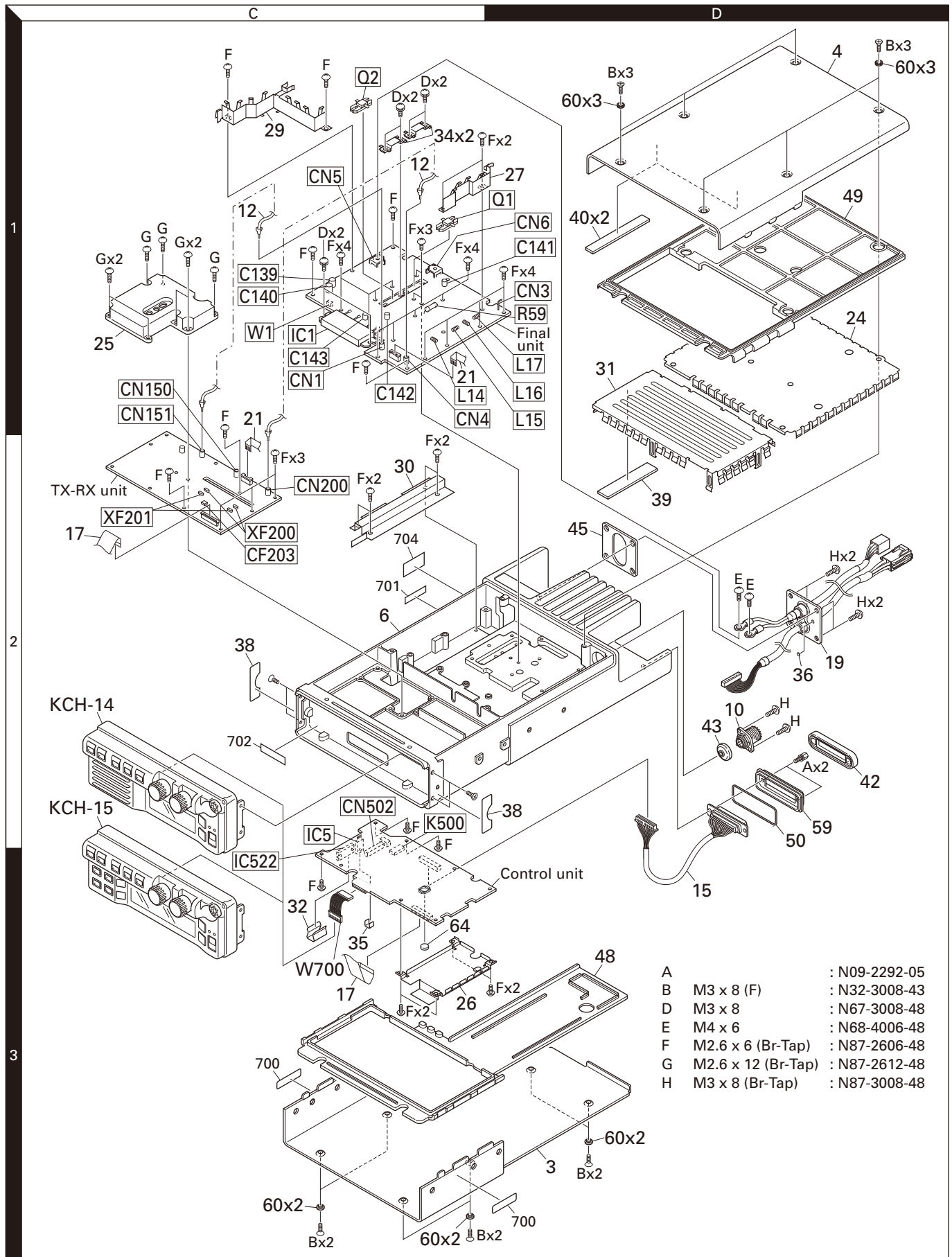
TK-5810(BG)/5810H(BG)

EXPLODED VIEW (TK-5810(BG))



50 Parts with the exploded numbers larger than 700 are not supplied.
 If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB.
 These parts must be ordered separately.

EXPLODED VIEW (TK-5810H(BG))



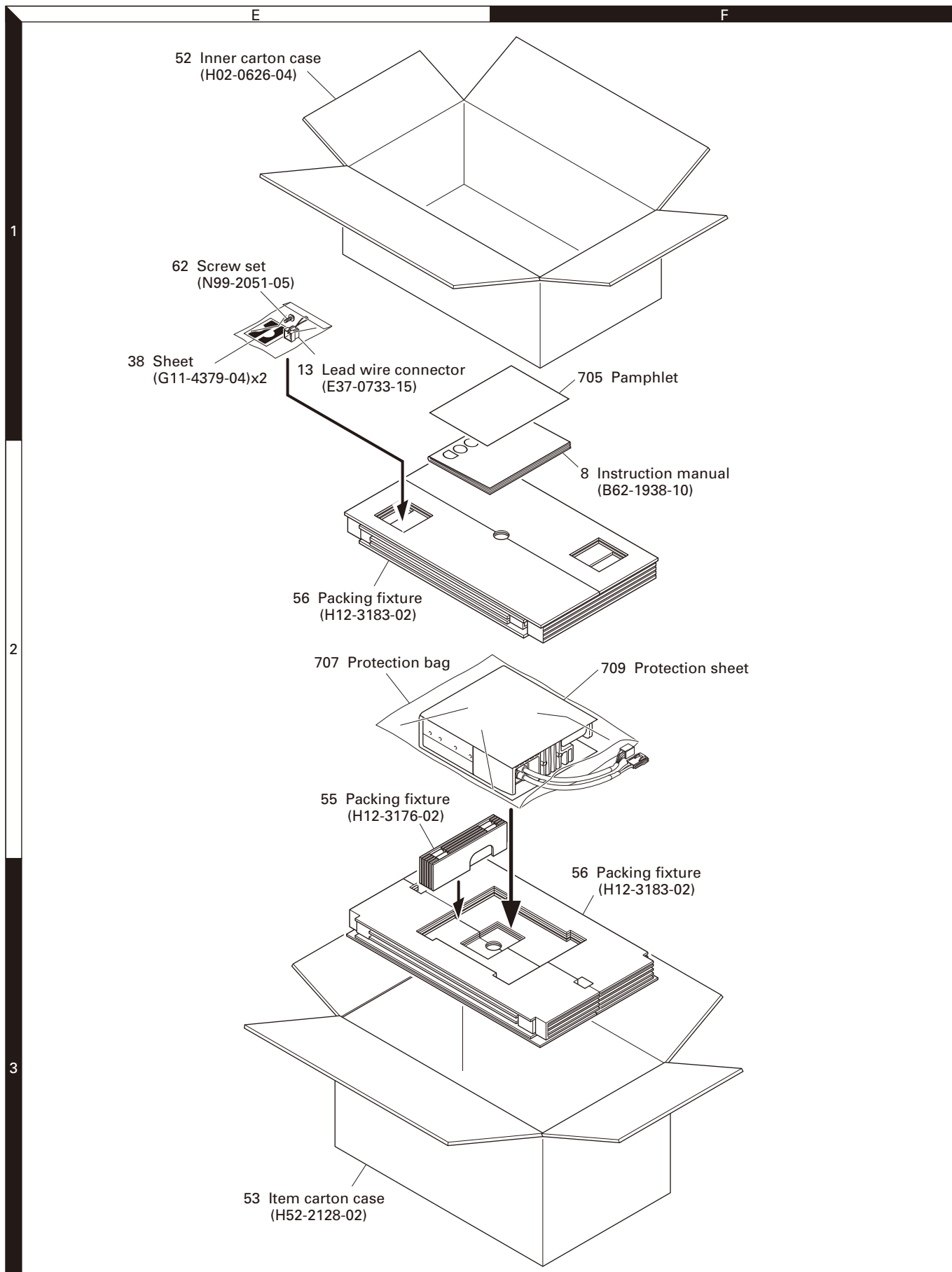
A		: N09-2292-05
B	M3 x 8 (F)	: N32-3008-43
D	M3 x 8	: N67-3008-48
E	M4 x 6	: N68-4006-48
F	M2.6 x 6 (Br-Tap)	: N87-2606-48
G	M2.6 x 12 (Br-Tap)	: N87-2612-48
H	M3 x 8 (Br-Tap)	: N87-3008-48

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

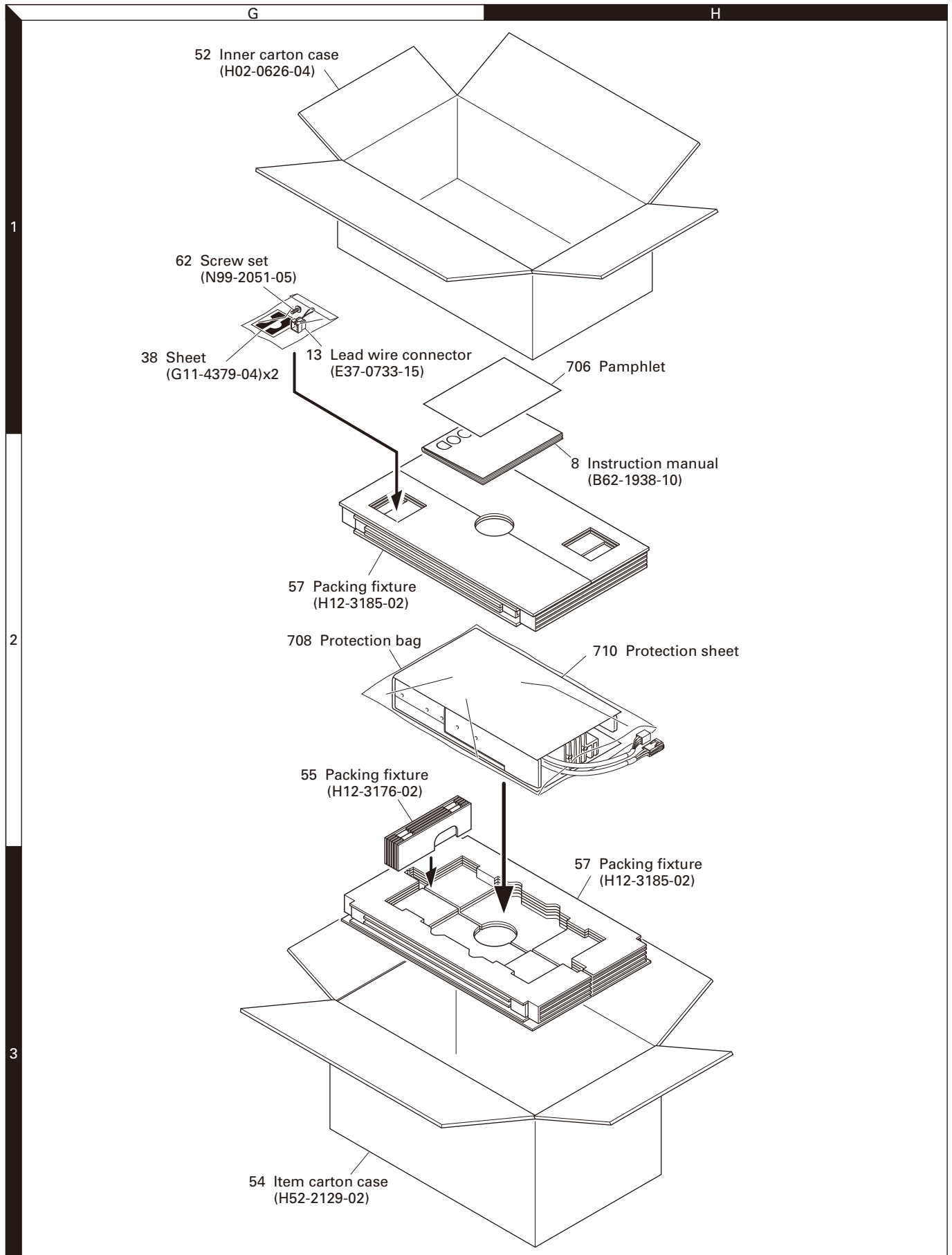
If a part reference number is listed in a box on the exploded view of the PCB, that part does not come with the PCB. These parts must be ordered separately.

TK-5810(BG)/5810H(BG)

PACKING (TK-5810(BG))



PACKING (TK-5810H(BG))



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

TROUBLE SHOOTING

Fault diagnosis of the BGA (Ball Grid Array) IC

■ Overview

A flowchart for determining whether or not the transceiver can be powered on (the LCD does not function even if the power switch is turned on) due to broken BGA parts.

■ BGA parts

ASIC (IC708), DSP (IC701), FLASH (IC700), SRAM (IC703)

● Checking power supply voltage

Checking voltage	
Points to be checked	Normal voltage
33M IC2 (5 pin)	3.3V
15M IC8 (5 pin)	1.5V
33A IC7 (5 pin)	3.3V
33BU Q7 (Collector)	3.3V

Power supply of each device is connected through the ferrite bead.
 [ASIC]
 33M: L708, 15M: L709
 [DSP]
 33M: L702, 15M: L701
 [FLASH]
 33M: L700
 [SRAM]
 33BU: L703

When an abnormal value is confirmed.

Checking for an abnormal point	
33M has an abnormal voltage. [ASIC] Remove L708 to check the voltage of the 33M. If the voltage becomes normal, the ASIC is broken. [DSP] Remove L702 to check the voltage of the 33M. If the voltage becomes normal, the DSP is broken.	
[FLASH] Remove L700 to check the voltage of the 33M. If the voltage becomes normal, the FLASH is broken.	
15M has an abnormal voltage. [ASIC] Remove L709 to check the voltage of the 15M. If the voltage becomes normal, the ASIC is broken. [DSP] Remove L701 to check the voltage of the 15M. If the voltage becomes normal, the DSP is broken.	

● Checking the clock

Checking the clock	
Points to be checked	Normal voltage (3.3V)
18.432MHz ASIC side R764	18.432MHz
DSP side R713	18.432MHz
32.768kHz IC704 (1 pin)	32.768kHz

When a normal value is confirmed.

When an abnormal value is confirmed.

33A has an abnormal voltage. [ASIC] Exchange IC7 (33A Regulator) to check the voltage of the 33A. If the voltage becomes normal, the ASIC is broken.
33BU has an abnormal voltage. [SRAM] Remove L703 to check the voltage of the 33BU. If the voltage becomes normal, the SRAM is broken.
If the voltage is not corrected, there is a problem other than the BGA parts.

● Checking the Reset/Control signal

Checking the control signal input to the ASIC	
Points to be checked	Normal voltage
RESET IC705 (4 pin)	3.3V
/BINT IC1 (1 pin)	3.3V
/OVRB D3 (Cathode side)	3.3V

When a normal value is confirmed.

When an abnormal value is confirmed.

Remove the R764 and R713. If it oscillates normally, the DSP and ASIC may be broken. Exchange IC704 (RTC). If it oscillates normally, the ASIC may be broken.

Checking the ASIC input switch signal	
*Each signal is not masked by the setting of the FPU. The POWER key is pressed and held.	
Points to be checked /PSW Q201 (Drain)	Confirmed voltage 0V
The ignition key is kept ON.	
Points to be checked /IGN (R825)	Confirmed voltage 0V

When a normal value is confirmed.

The BGA parts are not broken.

Points to be checked	
/FRST TP991	Normal voltage 3.3V

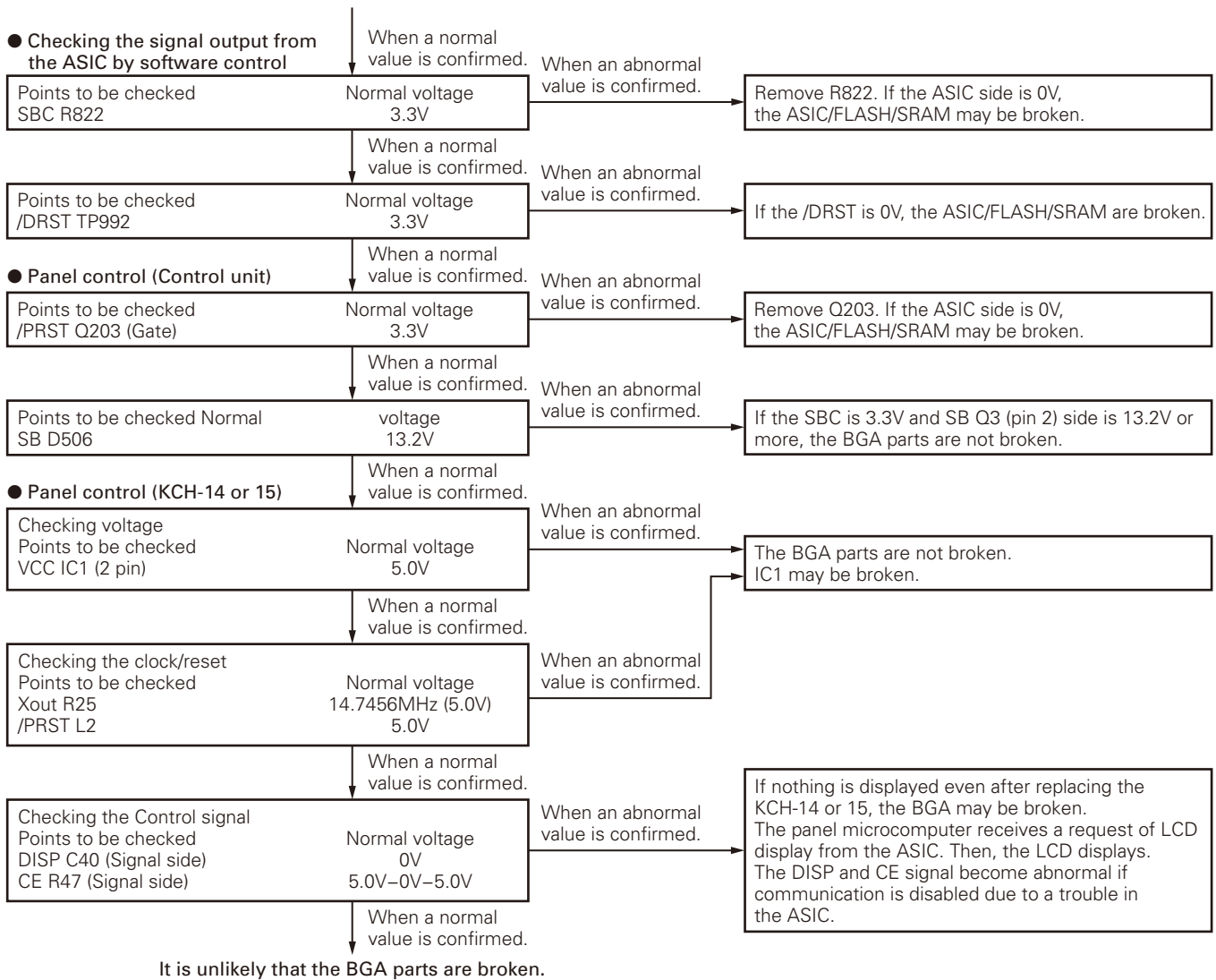
When a normal value is confirmed.

When an abnormal value is confirmed.

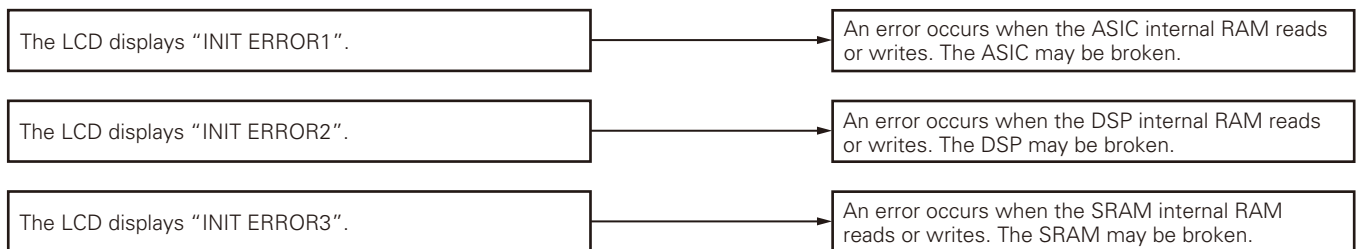
If the /FRST is always 0V, the ASIC is broken.
If the /FRST repeats 3.3V and 0V at intervals, the ASIC, FLASH and SRAM may be broken.

When a normal value is confirmed.

TROUBLE SHOOTING



● **When an error display appears on the LCD.**



Replacing Control Unit

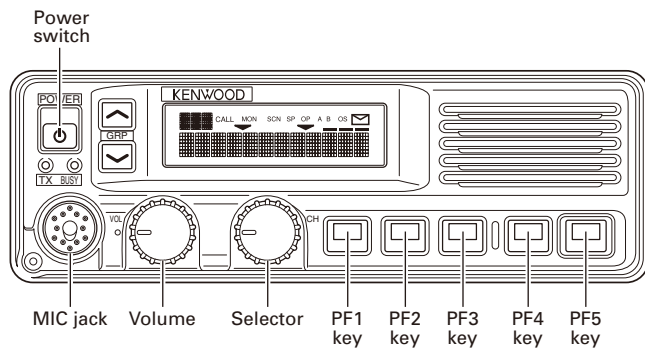
■ Control unit Information

Model Name	Original Control unit Number	For Service Control unit Number
TK-5810(BG) K,K2 TK-5810H(BG) K,K2	X53-4400-10	X53-4400-11

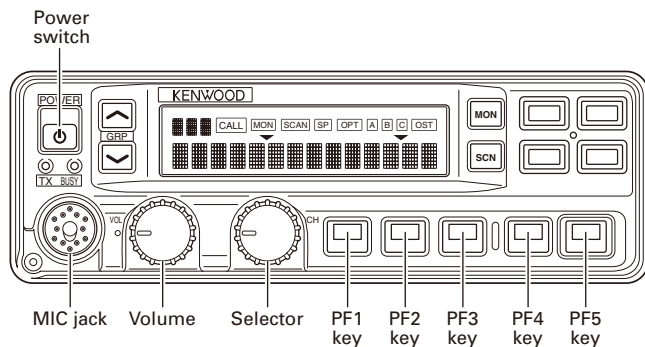
ADJUSTMENT

Controls

• KCH-14 (Basic control panel)



• KCH-15 (Full-featured control panel)



Panel Test Mode

■ Test mode operation features

This transceiver has a test mode. To enter test mode, press and hold the [PF1] key while turning the transceiver power ON. Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF.

- When the panel test mode is activated, the last used channel and signaling numbers are displayed. When the panel test mode is activated for the first time, the channel and signaling numbers are 1.
- If test signaling 26 (Tone Pattern) is selected, the result of Bit Error Rate (BER) calculation is displayed on the LCD. The BER value is also output from the serial port.

■ Key operation

Key	"FNC" not appears	
	Function	Display
[Selector]	Wide/Narrow/P25	Wide: "W" appears Narrow: "N" appears P25: "A" appears
[GRP ^]	Shifts to the Panel tuning mode	-
[GRP v]	High Power/Low Power	High: "SP" icon disappears Low: "SP" icon appears
[GRP v] Hold	Squelch off	"MON" icon appears
[PF1]	Test frequency channel down	Channel No.
[PF1] Hold	Test frequency channel continuation down	Channel No.
[PF2]	Test frequency channel up	Channel No.
[PF2] Hold	Test frequency channel continuation up	Channel No.
[PF3]	Test signaling down	Signaling No.
[PF3] Hold	Test signaling continuation down	Signaling No.
[PF4]	Test signaling up	Signaling No.
[PF4] Hold	Test signaling continuation up	Signaling No.
[PF5]	Function on	"FNC" appears
MIC PTT	Transmit	-
MIC keypad ([0] to [9] and [#], [*])	Use as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was presses is sent.	-

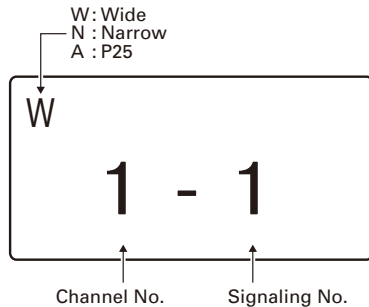
Key	"FNC" appears	
	Function	Display
[Selector]	Function off	-
[GRP ^]	Squelch level 0	On: "▼" icon appears
[GRP v]	AFC on/off	On: "OP" icon appears The "OP" icon is displayed only when Test Signaling has been set to 17~19 or 21~26.
[PF1]	Compander on/off	On: "A" icon appears
[PF2]	LCD all lights	LCD all point appears
[PF3]	MSK 1200bps/2400bps	2400bps: "CALL" icon appears
[PF4]	Beat shift on/off	On: "OS" icon appears (KCH-14) On: "OST" icon appears (KCH-15)
[PF5]	Function off	-
MIC PTT	Transmit	-
MIC keypad ([0] to [9] and [#], [*])	Function off	-

ADJUSTMENT

• LED indicator

Red LED Lights during transmission.
Green LED Lights when there is carrier.

• LCD display in the panel test mode



• Filter Mode

Display	Condition
W	WIDE (25kHz) Filter
N	NARROW (12.5kHz) Filter
A	P25 (12.5kHz) Filter

■ Frequency and Signaling

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

• Test Frequency

CH	K		K2	
	RX	TX	RX	TX
1	485.05000	485.10000	435.05000	435.10000
2	450.05000	450.10000	400.05000	400.10000
3	519.95000	519.90000	469.95000	469.90000
4	485.00000	485.00000	435.00000	435.00000
5	485.20000	485.20000	435.20000	435.20000
6	485.40000	485.40000	435.40000	435.40000
7~16	-	-	-	-

• Test Signaling

Signaling No.	RX	TX	P25/ Analog
1	None	None	Analog
2	None	100Hz Square Wave	Analog
3	QT 67.0Hz	QT 67.0Hz	Analog
4	QT 151.4Hz	QT 151.4Hz	Analog
5	QT 210.7Hz	QT 210.7Hz	Analog
6	QT 254.1Hz	QT 254.1Hz	Analog
7	DQT 023N	DQT 023N	Analog
8	DQT 754I	DQT 754I	Analog
9	DTMF Decode (CODE: 159D)	DTMF Encode (CODE: 159D)	Analog
10	None	DTMF Encode (CODE: 9)	Analog
11	2-tone Decode (A: 304.7Hz, B: 3106.0Hz)	2-tone Encode (A: 304.7Hz, B: 3106.0Hz)	Analog
12	Single Tone Decode (979.9Hz)	Single Tone Encode (979.9Hz)	Analog
13	None	Single Tone Encode (1000Hz)	Analog
14	MSK BER + CLK/Data Output	MSK PN9	Analog
15	MSK Decoe	MSK Encode	Analog
16	Codec Loop	None	Analog
17	NAC 293	NAC 293	P25
18	NAC 023	NAC 023	P25
19	NAC 5EA	NAC 5EA	P25
20	None	PN9	P25
21	NAC 293	Symbol Rate Pattern	P25
22	NAC 293	1/3 Deviation Pattern	P25
23	NAC 293	0 Continuous Pattern	P25
24	NAC 293	Fidelity Pattern	P25
25	None	FSW + PN9	P25
26	NAC293	NAC293 + 1011Hz Tone Pattern	P25
27	Tone Pattern	NAC293 + 1011Hz Tone Pattern	P25
28	Silence Pattern (1011Hz Full Rate)	NAC293 + Silence Pattern	P25
29	Audio Test Pattern (Full Rate)	NAC293 + Audio Test Pattern (Full Rate)	P25
30	Vocoder Loop (Full Rate)	None	P25

ADJUSTMENT

Panel Tuning Mode

The transceiver is adjusted in this mode.

■ Preparations for tuning the transceiver

Before attempting to tune the transceiver, connect the unit to a suitable power supply.

Whenever the transmitter is turned, the unit must be connected to a suitable dummy load (i.e. power meter).

The speaker output connector must be terminated with a 4Ω dummy load and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all times during tuning.

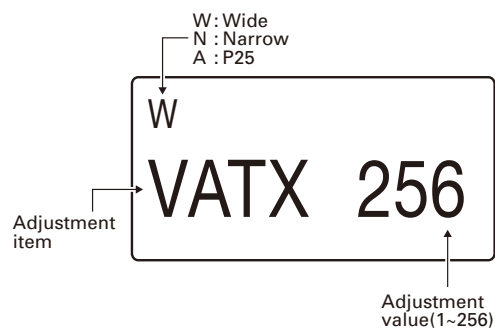
■ Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [GRP ^] key while the transceiver is in test mode.

Use the [PF5] key to write tuning data through tuning modes, and the [PF3] and [PF4] keys to adjust tuning requirements (1 to 256 appears on the LCD).

Use the [PF2] key to select the adjustment item through tuning modes. Use the [GRP v] key to exit 3, 5 or 7 reference level adjustments.

• LCD display in the panel tuning mode



■ Key operation

Key	Function
[Selector]	Unused
[GRP ^]	Exit the panel tuning mode and shift to the panel test mode.
[GRP v]	Exit the 3, 5 or 7 reference level adjustments without backup.
[PF1]	Back to the last adjustment item (The current adjustment data is cleared.)
[PF2]	Go to the next adjustment item (The current adjustment data is cleared.)
[PF3]	Adjustment value down
[PF3] Hold	Adjustment value continuation down
[PF4]	Adjustment value up
[PF4] Hold	Adjustment value continuation up
[PF5]	Enter the 3, 5 or 7 reference level adjustments.
MIC PTT	Transmit

■ 3, 5 or 7 reference level adjustments frequency

• Assist voltage adjustments

TX assist voltage

Tuning point	Display	K	K2
		TX (MHz)	
Low	LLL	450.10000	400.10000
Low''	LL	461.70000	411.70000
Low'	L	473.40000	423.40000
Center	C	485.10000	435.10000
High'	H	496.70000	446.70000
High''	HH	508.30000	458.30000
High	HHH	519.90000	469.90000

RX assist voltage (Lower)

Tuning point	Display	K	K2
		RX (MHz)	
Low	LLL	450.00000	400.00000
Low''	LL	455.90000	405.90000
Low'	L	461.70000	411.70000
Center	C	467.50000	417.50000
High'	H	473.33000	423.33000
High''	HH	479.16000	429.16000
High	HHH	484.99500	434.99500

RX assist voltage (Upper)

Tuning point	Display	K	K2
		RX (MHz)	
Low	LLL	485.00000	435.00000
Low''	LL	490.90000	440.90000
Low'	L	496.70000	446.70000
Center	C	502.50000	452.50000
High'	H	508.33000	458.33000
High''	HH	514.16000	464.16000
High	HHH	520.00000	470.00000

• Adjustment items other than assist voltage

Tuning point	Display	K		K2	
		RX (MHz)	TX (MHz)	RX (MHz)	TX (MHz)
Low	L	450.10000	450.00000	400.10000	400.00000
Low'	LC	467.60000	467.50000	417.60000	417.50000
Center	C	485.10000	485.00000	435.10000	435.00000
High'	CH	502.60000	502.50000	452.60000	452.50000
High	H	519.90000	519.95000	469.90000	470.00000

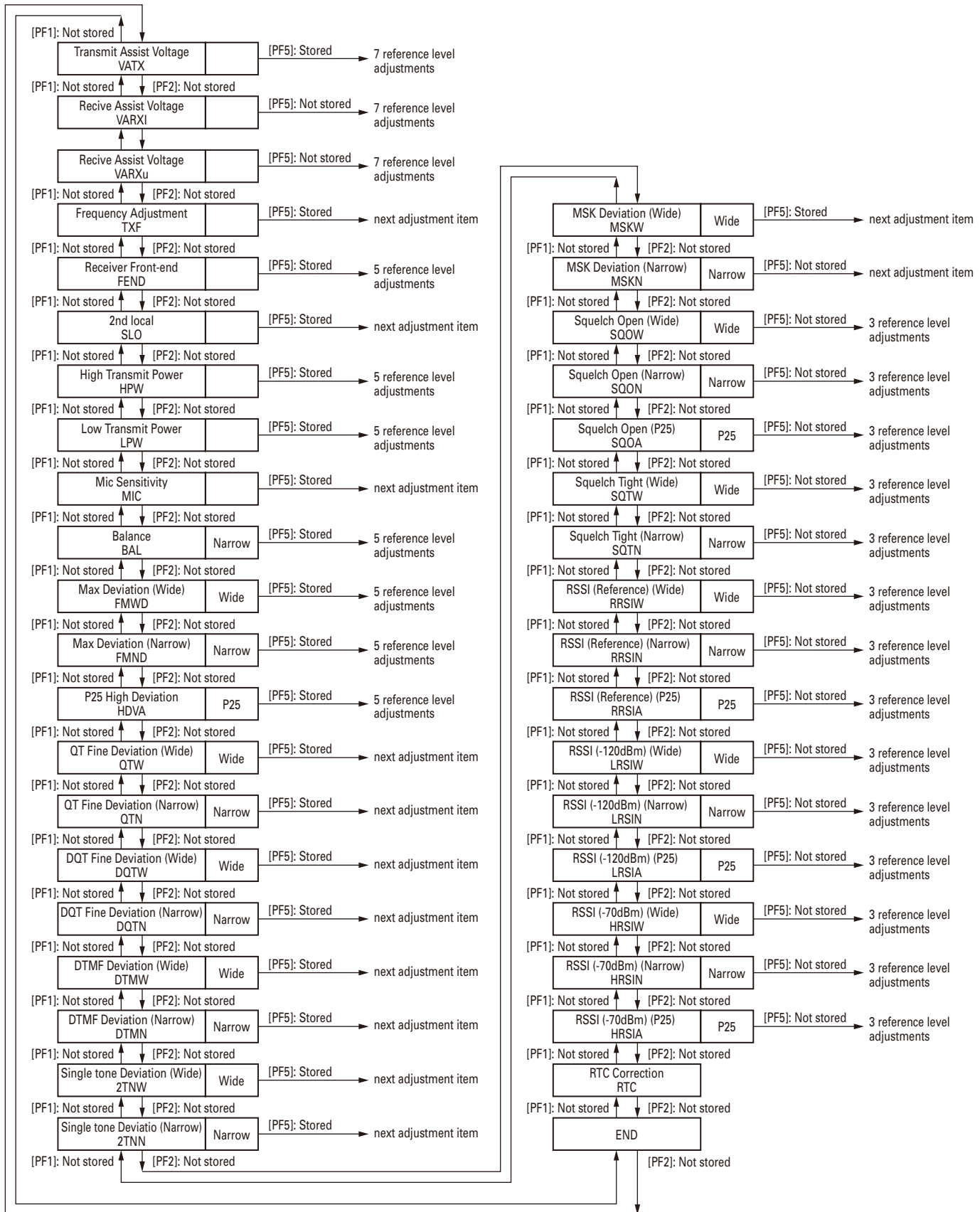
ADJUSTMENT

■ Adjustment item and Display (***: 1~256)

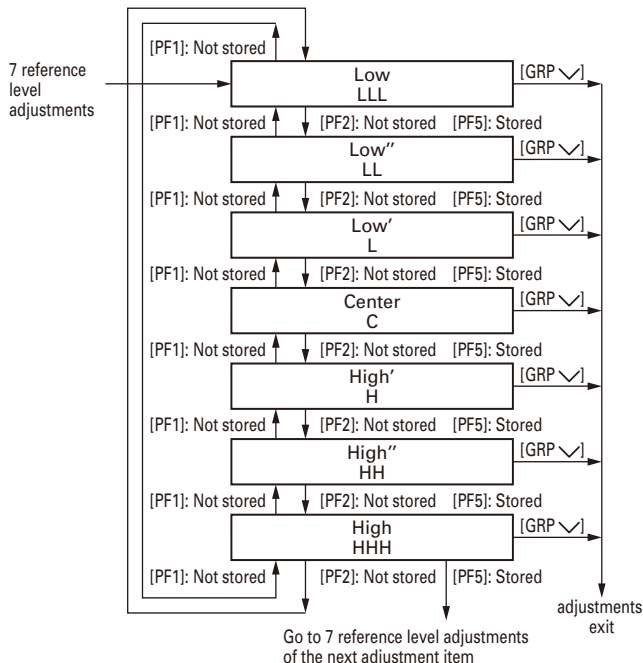
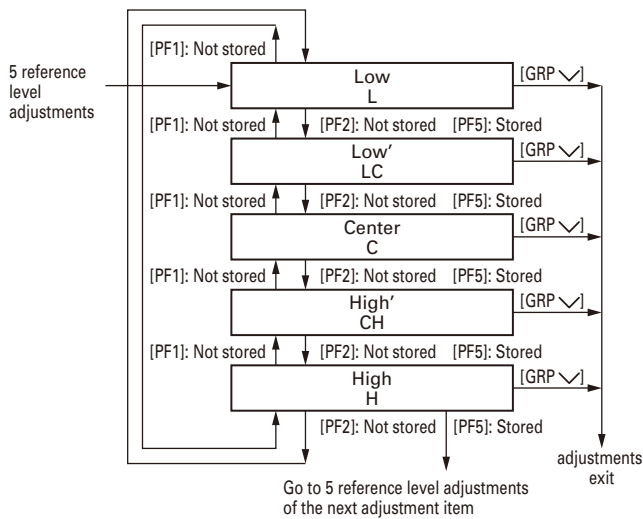
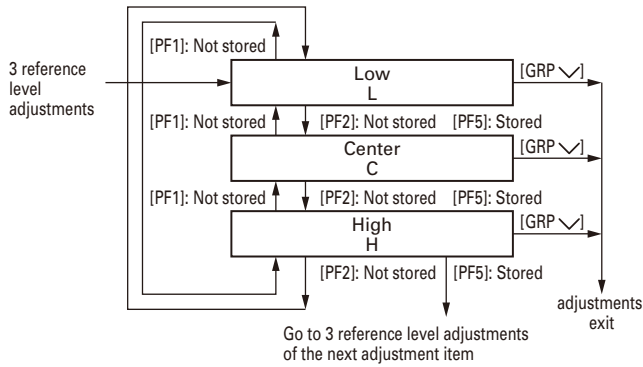
No.	Adjustment item	Display	Wide/Narrow/P25	Tuning Point	Note
1	Transmit Assist Voltage	VATX ***	-	7	
2	Receive Assist Voltage (Lower)	VARXI ***	-	7	
3	Receive Assist Voltage (Upper)	VARXu ***	-	7	
4	Frequency	TXF ***	-	1	
5	Receive Front-end	FEND ***	-	5	
6	2nd local	SLO ***	-	1	
7	High Transmit Power	HPW ***	-	5	
8	Low Transmit Power	LPW ***	-	5	
9	Mic Sensitivity	MIC ***	-	1	
10	Balance	BAL ***	Narrow	5	100Hz Square Wave
11	Max Deviation (Wide)	FMWD ***	Wide	5	
12	Max Deviation (Narrow)	FMND ***	Narrow	5	
13	P25 High Deviation	HDVA ***	P25	5	Symbol Rate Pattern
14	QT Fine Deviation (Wide)	QTW ***	Wide	1	QT: 67Hz
15	QT Fine Deviation (Narrow)	QTN ***	Narrow	1	QT: 67Hz
16	DQT Fine Deviation (Wide)	DQTW ***	Wide	1	DQT: 023N
17	DQT Fine Deviation (Narrow)	DQTN ***	Narrow	1	DQT: 023N
18	DTMF Deviation (Wide)	DTMW ***	Wide	1	DTMF Code : 9
19	DTMF deviation (Narrow)	DTMN ***	Narrow	1	DTMF Code : 9
20	Single Tone Deviation (Wide)	2TNW ***	Wide	1	Single Tone: 1633Hz
21	Single Tone deviation (Narrow)	2TNN ***	Narrow	1	Single Tone: 1633Hz
22	MSK Deviation (Wide)	MSKW ***	Wide	1	MSK PN Pattern
23	MSK deviation (Narrow)	MSKN ***	Narrow	1	MSK PN Pattern
22	Squelch Open (Wide)	SQOW ***	Wide	3	AF unmute
24	Squelch Open (Narrow)	SQON ***	Narrow	3	AF unmute
25	Squelch Open (P25)	SQOA ***	P25	3	AF unmute
26	Squelch Tight (Wide)	SQTW ***	Wide	3	AF unmute
28	Squelch Tight (Narrow)	SQTN ***	Narrow	3	AF unmute
29	RSSI (Reference) (Wide)	RRSIW ***	Wide	3	
30	RSSI (Reference) (Narrow)	RRSIN ***	Narrow	3	
31	RSSI (Reference) (P25)	RRSIA ***	P25	3	
32	RSSI (-120dBm) (Wide)	LRSIW ***	Wide	3	
33	RSSI (-120dBm) (Narrow)	LRSIN ***	Narrow	3	
34	RSSI (-120dBm) (P25)	LRSIA ***	P25	3	
35	RSSI (-70dBm) (Wide)	HRSIW ***	Wide	3	
36	RSSI (-70dBm) (Narrow)	HRSIN ***	Narrow	3	
37	RSSI (-70dBm) (P25)	HRSIA ***	P25	3	
38	RTC Correction	RTC ***	-		
39	END	-	-		

ADJUSTMENT

Flow chart



ADJUSTMENT



BER (Bit Error Rate) Measurement

1. The Panel Test Mode is used to measure the BER (Refer to "Test mode operation features" described on page 56.).
2. Select "26" for test signaling (Refer to "Test Signaling" described on page 57.).
When "26" is selected for the test signaling, the filter is automatically selected to "P25".
(If there is no RF input signal, the display shows "500000")
3. Select a filter (Refer to "Filter Mode" described on page 57.).
4. Select a test frequency (Refer to "Test Frequency" described on page 57.).

500000

5. Measure the BER (Bit Error Rate) using the digital radio tester. Enter a standard input signal into the transceiver as a standard tone test pattern.
6. Adjust the input signal level to achieve the standard bit error rate (BER).
(For example, if the BER is 5%, the display shows "050000".)

050000

C4FM (P25) Deviation Adjustment

1. The transceiver adjusts the deviation between High Deviation $\pm 1800\text{Hz}$ for the C4FM (P25).
2. The Symbol Rate Pattern is used when adjusting the High Deviation for the C4FM (P25) (Refer to "Test Signaling" described on page 57.). This test signal has a peak deviation equal to $\pi/2 \cdot 1800\text{Hz} = 2827\text{Hz}$.

ADJUSTMENT

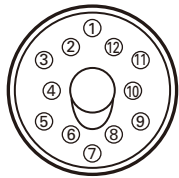
Test Equipment Required for Alignment

Test Equipment		Major Specifications	
1.	Standard Signal Generator (SSG)	Frequency Range Modulation Output	400 to 520MHz Frequency modulation and external modulation -127dBm/0.1μV to greater than -47dBm/1mV
2.	Power Meter	Input Impedance Operation Frequency Measurement Range	50Ω 400 to 520MHz or more Vicinity of 200W
3.	Deviation Meter	Frequency Range	400 to 520MHz
4.	Digital Volt Meter (DVM)	Measuring Range Input Impedance	1 to 20V DC High input impedance for minimum circuit loading
5.	Oscilloscope		DC through 30MHz
6.	High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7.	Ammeter		30A
8.	AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 3mV to 3V
9.	Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more 0 to 1V
10.	Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11.	Spectrum Analyzer	Measuring Range	DC to 1GHz or more
12.	Tracking Generator	Center frequency Output Voltage	50kHz to 600MHz 100mV or more
13.	4Ω Dummy Load		Approx. 4Ω, 30W
14.	Regulated Power Supply		13.6V (TK-5810(BG)), 13.4V (TK-5810H(BG)) approx. 30A (adjusted from 9 to 20V) Useful if ammeter equipped

Caution

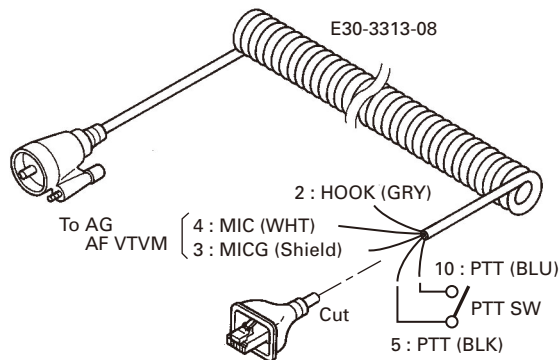
Since the RX AF output is a BTL output, there is a DC Component. Isolate this with a capacitor or transformer as shown in the figure.

MIC connector (Front view)



- 1: SB
- 2: HK
- 3: ME
- 4: MIC
- 5: E
- 6: TRD
- 7: KVL
- 8: DM
- 9: BLC
- 10: PTT
- 11: NC
- 12: ES2

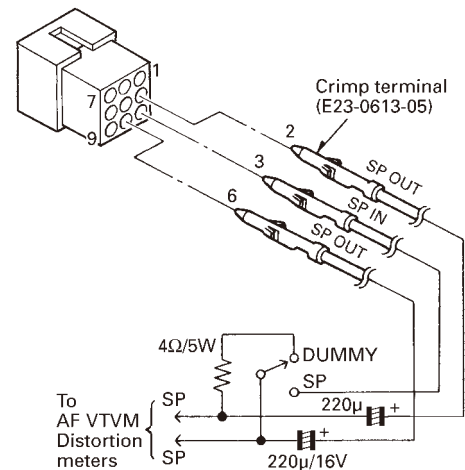
Test cable for microphone input



Cable for BPF or MCF adjustment

- E30-3418-05 (for BPF ADJ)
- W05-1000-00 (for MCF ADJ)

Test cable for speaker output



ADJUSTMENT

Common Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage: 13.6V (TK-5810(BG)) 13.4V (TK-5810H(BG)) 2) SSG standard modulation [Wide] MOD: 1kHz, DEV: 3kHz [Narrow] MOD: 1kHz, DEV: 1.5kHz								
2. Transmit Assist voltage	1) Adj item: [VATX] Adjust: [***] 2) Adj item: [LLL]→ [LL]→[L]→[C]→ [H]→[HH]→ [HHH] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Transmit Assist Voltage] 2) Adj item: [Low]→ [Low'']→[Low']→ [Center]→[High']→ [High'']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	Power meter DVM	Rear panel TX-RX	ANT Test point CVu		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀,▶]	[Panel tuning mode] Adjust the value to obtain the voltage of Test point "CVu" as shown to the right. [PC test mode] • Automatic Adjustment 1) Press [*Tune Assist Voltage (Auto)] button. 2) [Assist Voltage Result] window shows result of assist voltage after the automatic adjustment was finished. *: This mode adjust [TX], [RX] Assist voltage at once. • Manual Adjustment 1) Press [Meter] button. 2) The display on the [VCO Lock Voltage] indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage.	K 2.00V±0.1V K2 2.20V±0.1V When adjusting the assist voltage in PC tuning mode, slide the bar to indicate "VCO Lock Voltage" within K 2.0V±0.1V, K2 2.2V±0.1V on Meter window.
3. Receive Assist Voltage (Lower)	1) Adj item: [VARXI] Adjust: [***] 2) Adj item: [LLL]→ [LL]→[L]→[C]→ [H]→[HH]→ [HHH] Adjust: [***] Press [PF5] key to store the adjustment value.	1) Adj item: [RX Assist Voltage (Lower)] 2) Adj item: [Low]→ [Low'']→[Low']→ [Center]→[High']→ [High'']→[High] Press [OK] button to store the adjustment value.							
(Upper)	1) Adj item: [VARXu] Adjust: [***] 2) Adj item: [LLL]→ [LL]→[L]→[C]→ [H]→[HH]→ [HHH] Adjust: [***] Press [PF5] key to store the adjustment value.	1) Adj item: [RX Assist Voltage (Upper)] 2) Adj item: [Low]→ [Low'']→[Low']→ [Center]→[High']→ [High'']→[High] Press [OK] button to store the adjustment value.							

ADJUSTMENT

Item	Condition		Measurement			Adjustment		Specifications / Remarks	
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts		Method
4. MCF (Wide)	[Panel test mode] 1) CH-Sig: 1-1 Filter: W	[PC test mode] 1) Channel: 1 Signaling: 1 Bandwidth : 5.0kHz/25.0kHz	Spectrum analyzer Tracking generator	TX-RX	CN202 CN207	TX-RX	L218 L223 L228 L230	Adjust the coils to obtain the waveform as shown to below.	
	Spectrum analyzer setting Center-f: 49.95MHz Span: 40kHz RBW: 1kHz VBW: 1kHz TG Level: -20dBm X dB/div: 2dB Connect the cable (W05-1000-00) to CN202 and CN207.								
(Narrow)	2) Filter: N	2) Channel: 2 Signaling: 1 Bandwidth : 2.5kHz/12.5kHz					L217 L222 L227 L229	Adjust the coils to obtain the waveform as shown to below.	
	Spectrum analyzer setting Center-f: 49.95MHz Span: 30kHz RBW: 1kHz VBW: 1kHz TG Level: -20dBm X dB/div: 2dB Connect the cable (W05-1000-00) to CN202 and CN207.								
5. 2nd Local	1) Adj item: [SLO] Adjust: [***] Press [PF5] key to store the adjustment value.	1) Adj item: [2nd Local] Press [OK] button to store the adjustment value.	f. counter	TX-RX	SLO		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	Change the adjustment value adjustment value of the specified frequency.	50.4MHz±70Hz
6. Quadrature coil	[Panel test mode] 1) CH-Sig: 1-1 Filter: N	[PC test mode] 1) Channel: 1 Signaling: 1 Bandwidth : 2.5kHz/12.5kHz	DVM	TX-RX	Test Point QUAD	TX-RX	L234	Adjust the coil within the limit of the specified voltage.	1.0V ± 0.05V
7. RTC oscillation	1) Adj item: [RTC] Adjust: [***]	1) Adj item: [RTC Collection]					[Panel tuning mode] [▽] [PC test mode] [Auto Tuning]	[Panel tuning mode] Press [▽] key. After automatic adjustment adjusted value is displayed on LCD. Press [PF5] key to store the adjustment value. [PC test mode] Press [Start] button of "Auto Tuning". Press [Apply] button to store the adjustment value after the automatic adjustment was Finished.	Adjustment of the transceiver's internal clock.

ADJUSTMENT


Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. Frequency adjust *1	1) CH-Sig: 3-1 Adj item: [TXF] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Channel: 3 Signaling: 1 Bandwidth : 2.5kHz/12.5kHz PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	f. counter	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	Change the adjustment value within the limit of the specified frequency.	K 519.90MHz±50Hz K2 469.90MHz±50Hz Note: After replacing the VCXO (X200) align frequency.

*1: The reference oscillator frequency may drift due to shock (jarring the radio) or operating conditions. We recommend that the Frequency adjustment be checked each time the radio is serviced, or at least once per year. Maintenance should only be performed under 25°C±2°C.

Transmitter Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	[Panel test mode] 1) CH-Sig: 3-1 PTT: ON	[PC test mode] 1) Channel: 3 Signaling: 1 PTT: Press [Transmit] button.	f. counter	Rear panel	ANT			Check @+25°C	K ±0.40ppm -207Hz~+207Hz @519.90MHz K2 ±0.40ppm -187Hz~+187Hz @469.90MHz
2. Max Transmit power TK-5810(BG) TK-5810H(BG)	[Panel test mode] 1) CH-Sig: 1-1 PTT: ON	[PC test mode] 1) Channel: 1 Signaling: 1 PTT: Press [Transmit] button.	Power meter Ammeter	Rear panel	ANT	TX-RX	VR1	50W 107W	±2.0W ±2.0W
3. High Transmit power TK-5810(BG) TK-5810H(BG)	1) Adj item: [HPW] Adjust: [***] 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low]→[Low']→[Center]→[High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.					[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	45W K [L (Low)]: 100W [LC (Low')]: 100W [C (Center)]: 100W [CH (High')]: 100W [H (High)]: 60W K2 100W	±1.0W 14.0A or less ±2.0W 28.0A or less
4. Low Transmit power TK-5810(BG) TK-5810H(BG)	1) Adj item: [LPW] Adjust: [***] 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low]→[Low']→[Center]→[High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						5W 50W	±0.5W 5.0A or less ±1.0W 15.0A or less

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Balance adjust *2	1) Adj item: [BAL] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF : 15kHz HPF : OFF 2) Adj item: [Low]→ [Low']→[Center]→ [High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	Make the demodulation waves into square waves. 	
6. Maximum Deviation adjust *2 (Wide)	1) Adj item: [FMWD] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: ±PEAK/2 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Max Deviation (Wide)] Deviation meter LPF : 15kHz HPF : OFF Detector: ±PEAK/2 2) Adj item: [Low]→ [Low']→[Center]→ [High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						4000Hz	±50Hz
(Narrow)	1) Adj item: [FMND] Adjust: [***] 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Max Deviation (Narrow)] Deviation meter LPF : 15kHz HPF : OFF Detector: ±PEAK/2 2) Adj item: [Low]→ [Low']→[Center]→ [High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						2000Hz	±50Hz Set it the adjustment value obtained from the [Max Deviation Adjust [Wide] adjustment of step 6.
7. P25 high deviation *2	1) Adj item: [HDVA] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF Detector: ±PEAK/2 2) Adj item: [L]→[LC] →[C]→[CH]→[H] Adjust: [***] PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [P25 High Deviation] Deviation meter LPF : 3kHz HPF : OFF Detector: ±PEAK/2 2) Adj item: [Low]→ [Low']→[Center]→ [High']→[High] PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						2827Hz	2771~2883Hz Set it the adjustment value obtained from the [Max Deviation Adjust [Narrow] adjustment of step 6.
*2: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 69. Balance adjustment is common with the adjustment of all signaling deviation.									

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. MIC sensitivity check *3	1) Adj item: [MIC] Adjust: [129] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 AG: 1kHz PTT: ON	1) Adj item: [Mic sensitivity] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 2) Adj item: [129] AG: 1kHz PTT: Press [Transmit] button.	Deviation meter Oscilloscope AG AF VTVM	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀,▶]	Adjust AG input to get a standard MOD.	5.0mV \pm 1.5mV
*3: The MIC sensitivity is related to the Max DEV adjustment. If the Max DEV has been adjusted correctly, the MIC sensitivity must be within 5mV \pm 1.5mV at adjustment digit "129".									
9. QT Fine Deviation write *4 (Wide)	1) Adj item: [QTW] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [QT Fine Deviation (Wide)] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀,▶]	Write the value as followings. 133 (Reference value) 0.75kHz	\pm 50Hz
(Narrow)	1) Adj item: [QTN] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [QT Fine Deviation (Narrow)] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 132 (Reference value) 0.35kHz	\pm 25Hz
10. DQT Fine Deviation write *4 (Wide)	1) Adj item: [DQTW] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [DQT Fine Deviation (Wide)] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 101 (Reference value) 0.75kHz	\pm 50Hz
(Narrow)	1) Adj item: [DQTN] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [DQT Fine Deviation (Narrow)] Deviation meter LPF: 3kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 99 (Reference value) 0.35kHz	\pm 25Hz
*4: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 69. Balance adjustment is common with the adjustment of all signaling deviation.									

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. DTMF Deviation write *4 (Wide)	1) Adj item: [DTMW] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Wide)] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	Write the value as followings. 170 (Reference value) 3.00kHz	\pm 100Hz
(Narrow)	1) Adj item: [DTMN] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Narrow)] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 171 (Reference value) 1.50kHz	\pm 50Hz
12. Single Tone Deviation write *4 (Wide)	1) Adj item: [2TNW] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Wide)] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 133 (Reference value) 3.00kHz	\pm 100Hz
(Narrow)	1) Adj item: [2TNN] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [Single Tone Deviation (Narrow)] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 133 (Reference value) 1.50kHz	\pm 50Hz
13. MSK Deviation write *4 (Wide)	1) Adj item: [MSKW] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [MSK Deviation (Wide)] Deviation meter LPF: 15kHz HPF: OFF Detector: \pm PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.						Write the value as followings. 132 (Reference value) 3.00kHz	\pm 100Hz

*4: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 69.
Balance adjustment is common with the adjustment of all signaling deviation.

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
(Narrow)	1) Adj item: [MSKN] Adjust: [***] Deviation meter LPF: 15kHz HPF: OFF Detector: ±PEAK/2 PTT: ON Press [PF5] key to store the adjustment value.	1) Adj item: [MSK] Deviation (Narrow) Deviation meter LPF: 15kHz HPF: OFF Detector: ±PEAK/2 PTT: Press [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Rear panel	ANT		[Panel tuning mode] [PF3] [PF4] [PC test mode] [◀],[▶]	Write the value as followings. 134 (Reference value) 1.50kHz	±50Hz
*4: Refer to the "Necessary Deviation adjustment item for each signaling and mode" table on page 69. Balance adjustment is common with the adjustment of all signaling deviation.									

■ Necessary Deviation adjustment item for each signaling and mode

Mode	Signaling	Necessary adjustment and order	
		Wide	Narrow
Analog	Audio	1. Balance adjust 2. Analog Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow)
	QT	1. Balance adjust 2. Analog Deviation adjust (Wide) 3. QT Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow) 3. QT Deviation adjust (Narrow)
	DQT	1. Balance adjust 2. Analog Deviation adjust (Wide) 3. DQT Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow) 3. DQT Deviation adjust (Narrow)
	DTMF	1. Balance adjust 2. Analog Deviation adjust (Wide) 3. DTMF Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow) 3. DTMF Deviation adjust (Narrow)
	Single Tone	1. Balance adjust 2. Analog Deviation adjust (Wide) 3. Single Tone Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow) 3. Single Tone Deviation adjust (Narrow)
	MSK	1. Balance adjust 2. Analog Deviation adjust (Wide) 3. MSK Deviation adjust (Wide)	1. Balance adjust 2. Analog Deviation adjust (Narrow) 3. MSK Deviation adjust (Narrow)
P25		–	1. Balance adjust 2. P25 Deviation adjust

Receiver Section

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. RX Front-end write	1) Adj item: [FEND] Adjust: [***] 2) Adj item: [L]→[LC]→[C]→[CH]→[H] Adjust: [***] Press [PF5] key to store the adjustment value.	1) Adj item: [Receive Front-end] 2) Adj item: [Low]→[Low']→[Center]→[High']→[High] Press [OK] button to store the adjustment value.						Enter the following adjustment values to the transceiver. K [L (Low)]: 210 [LC (Low')]: 175 [C (Center)]: 130 [CH (High')]: 95 [H (High)]: 65 K2 [L (Low)]: 200 [LC (Low')]: 155 [C (Center)]: 115 [CH (High')]: 80 [H (High)]: 50	

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 Filter: W SSG output : -47dBm (1mV) (MOD: 1kHz/±3kHz)	[PC test mode] 1) Channel: 1 Signaling: 1 Bandwidth : 5kHz/25.0kHz SSG output : -47dBm (1mV) (MOD: 1kHz/±3kHz)	SSG DVM AF VTVM Dummy load (4Ω)	Rear panel	ANT Ext.SP connector		Volume knob	Turn the Volume knob to obtain 2.0V AF output. (2W @4Ω load)	2.0V±0.3V
3. Sensitivity check (Wide)	[Panel test mode] 1) CH-Sig: 1-1 Filter: W SSG output : -117dBm (0.32μV) (MOD: 1kHz/±3kHz) 2) CH-Sig: 2-1 3) CH-Sig: 3-1	[PC test mode] 1) Channel: 1 Signaling: 1 Bandwidth : 5.0kHz/25.0kHz SSG output : -117dBm (0.32μV) (MOD: 1kHz/±3kHz) 2) Channel: 2 3) Channel: 3	SSG AF VTVM Oscilloscope		ANT Ext.SP connector			Check	12dB SINAD or more
(Narrow)	1) CH-Sig: 1-1 Filter: N SSG output : -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz) 2) CH-Sig: 2-1 3) CH-Sig: 3-1	1) Channel: 1 Signaling: 1 Bandwidth : 2.5kHz/12.5kHz SSG output : -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz) 2) Channel: 2 3) Channel: 3							
4. Squelch Open (Wide)	1) Adj item: [SQOW] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output: 12dB SINAD level for analog Wide -3.0dB (MOD: 1kHz/±3kHz) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [Squelch Open (Wide)] 2) Adj item: [Low]→[Center]→[High] SSG output: 12dB SINAD level for analog Wide -3.0dB (MOD: 1kHz/±3kHz) After input signal from SSG, press [Apply] button to store the adjustment value.					[Panel tuning mode] [PF5] [PC test mode] [Apply]	[Panel tuning mode] After input signal from SSG, press [PF5] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] key to store the adjustment value.	
(Narrow)	1) Adj item: [SQON] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output: 12dB SINAD level for analog Narrow -3.0dB (MOD: 1kHz/±1.5kHz) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [Squelch Open (Narrow)] 2) Adj item: [Low]→[Center]→[High] SSG output: 12dB SINAD level for analog Narrow -3.0dB (MOD: 1kHz/±1.5kHz) After input signal from SSG, press [Apply] button to store the adjustment value.							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
(P25)	1) Adj item: [SQOA] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output: 12dB SINAD level for analog Wide (MOD: 1kHz/±3kHz) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [Squelch Open (P25)] 2) Adj item: [Low]→ [Center]→[High] SSG output: 12dB SINAD level for analog Wide (MOD: 1kHz/±3kHz) After input signal from SSG, press [Ap- ply] button to store the adjustment value.	SSG AF VTVM Oscillo- scope	Rear panel	ANT Ext.SP connector		[Panel tuning mode] [PF5] [PC test mode] [Apply]	[Panel tuning mode] After input signal from SSG, press [PF5] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] button to store the adjustment value.	
5. Squelch Tight (Wide)	1) Adj item: [SQTW] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output: 12dB SINAD level for analog Wide +5dB (MOD: 1kHz/±3kHz) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [Squelch Tight (Wide)] 2) Adj item: [Low]→ [Center]→[High] SSG output: 12dB SINAD level for analog Wide +5dB (MOD: 1kHz/±3kHz) After input signal from SSG, press [Ap- ply] button to store the adjustment value.							
(Narrow)	1) Adj item: [SQTN] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output: 12dB SINAD level for ana- log Narrow +6.5dB (MOD: 1kHz/±1.5kHz) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [Squelch Tight (Narrow)] 2) Adj item: [Low]→ [Center]→[High] SSG output: 12dB SINAD level for ana- log Narrow +6.5dB (MOD: 1kHz/±1.5kHz) After input signal from SSG, press [Ap- ply] button to store the adjustment value.							
6. RSSI (ref- erence) (Wide)	1) Adj item: [RRSIW] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (Reference) (Wide)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [Ap- ply] button to store the adjustment value.							
(Narrow)	1) Adj item: [RRSIN] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (Ref- erence) (Narrow)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [Ap- ply] button to store the adjustment value.							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
(P25)	1) Adj item: [RRSIA] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (Reference) (P25)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -125dBm (0.126μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.	SSG AF VTVM Oscillo- scope	Rear panel	ANT Ext.SP connector		[Panel tuning mode] [PF5] [PC test mode] [Apply]	[Panel tuning mode] After input signal from SSG, press [PF5] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] key to store the adjustment value.	
7. RSSI (-120dBm) (Wide)	1) Adj item: [LRSIW] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (-120dBm) (Wide)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.							
(Narrow)	1) Adj item: [LRSIN] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (-120dBm) (Narrow)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.							
(P25)	1) Adj item: [LRSIA] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (-120dBm) (P25)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -120dBm (0.22μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.							
8. RSSI (-70dBm) (Wide)	1) Adj item: [HRSIW] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI (-70dBm) (Wide)] 2) Adj item: [Low]→ [Center]→[High] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.							

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
(Narrow)	1) Adj item: [HRSIN] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI] (-70dBm) (Narrow) 2) Adj item: [Low]→ [Center]→[High] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.	SSG AF VTVM Oscillo- scope	Rear panel	ANT Ext.SP connector		[Panel tuning mode] [PF5] [PC test mode] [Apply]	[Panel tuning mode] After input signal from SSG, press [PF5] key to store the adjustment value. [PC test mode] After input signal from SSG, press [Apply] key to store the adjustment value.	
(P25)	1) Adj item: [HRSIA] Adjust: [***] 2) Adj item: [L]→[C]→[H] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [PF5] key to store the adjustment value.	1) Adj item: [RSSI] (-70dBm) (P25) 2) Adj item: [Low]→ [Center]→[High] SSG output : -70dBm (70.7μV) (MOD: OFF) After input signal from SSG, press [Apply] button to store the adjust- ment value.							

Radio Check Section

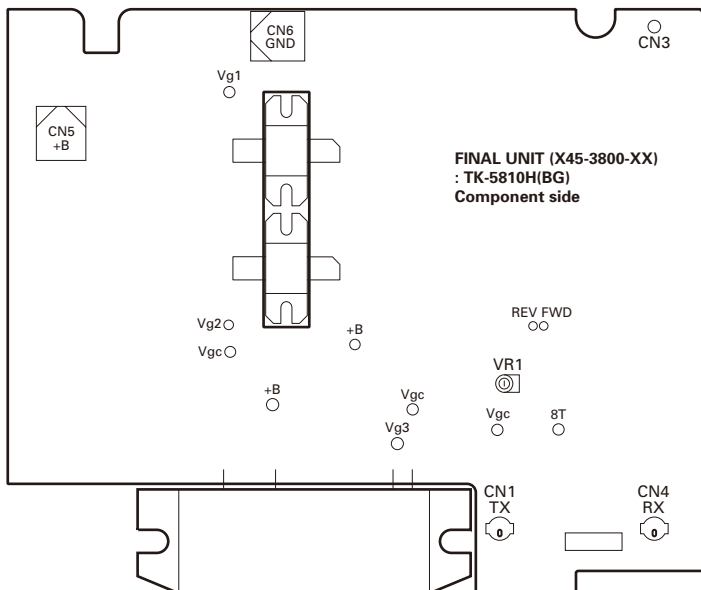
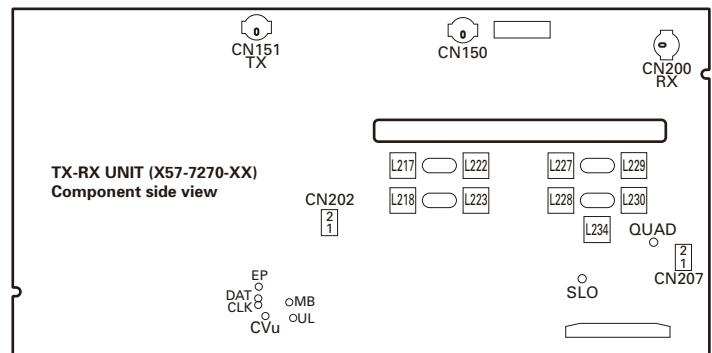
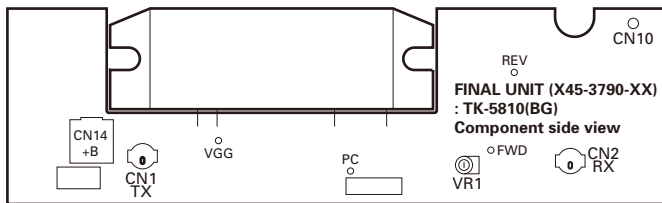
Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency check	[Panel test mode] 1) CH-Sig: 1-3 PTT: ON	[PC test mode] 1) Channel: 3 Signaling: 1 PTT : Press [Transmit] button.	f. counter	Rear panel	ANT			Check	K ±0.40ppm -207Hz~+207Hz @519.90MHz K2 ±0.40ppm -187Hz~+187Hz @469.90MHz
2. High power check TK-5810(BG) TK-5810H(BG)	[Panel test mode] 1) CH-Sig: 1-1 2) CH-Sig: 2-1 3) CH-Sig: 3-1 PTT: ON	[PC test mode] 1) Channel: 1 2) Channel: 2 3) Channel: 3 PTT: Press [Transmit] button.	Power meter Ammeter						38.3~51.8W 14.0 A or less K Channel: 1/2 85.0~115.0W Channel: 3 51.0~69.0W K2 85.0~115.0W
3. Low power check TK-5810(BG) TK-5810H(BG)	[Panel test mode] 1) CH-Sig: 1-1 2) CH-Sig: 2-1 3) CH-Sig: 3-1 PTT: ON	[PC test mode] 1) Channel: 1 2) Channel: 2 3) Channel: 3 PTT: Press [Transmit] button.							4.0~6.0W 45.0~55.0W

TK-5810(BG)/5810H(BG)

ADJUSTMENT

Item	Condition		Measurement			Adjustment			Specifications / Remarks
	Panel tuning mode	PC test mode	Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Sensitivity check (Wide)	[Panel test mode] 1) CH-Sig: 1-1 Filter: W SSG output : -117dBm (0.32μV) (MOD: 1kHz/±3kHz)	[PC test mode] 1) Channel: 1 Signaling: 1 Bandwidth : 5.0kHz/25.0kHz SSG output : -117dBm (0.32μV) (MOD: 1kHz/±3kHz)	SSG AF VTVM Oscilloscope	Rear panel	ANT Ext.SP connector			Check	12dB SINAD or more
	(Narrow) 1) CH-Sig: 1-1 Filter: N SSG output : -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)	1) Channel: 1 Signaling: 1 Bandwidth : 2.5kHz/12.5kHz SSG output : -117dBm (0.32μV) (MOD: 1kHz/±1.5kHz)							
	2) CH-Sig: 2-1 3) CH-Sig: 3-1	2) Channel: 2 3) Channel: 3							

Adjustment Points



TERMINAL FUNCTION

Final unit (X45-3790-XX): TK-5810(BG)

Pin No.	Name	I/O	Function
CN1 (to TX-RX unit CN151)			
1	TX	I	TX drive input
CN2 (to TX-RX unit CN200)			
1	RX	O	RX signal output
CN9 (to TX-RX unit CN601)			
1	FTEMP2	O	Final unit temperature 2
2	FTEMP1	O	Final unit temperature 1
3	8T	-	8V input during transmission
4	8T	-	8V input during transmission
5	E	-	GND
6	PC	I	TX power control voltage
CN13 (to Control unit CN1)			
1	E	-	GND
2	+B	O	Power supply output (13.6V±15%)
3	+B	O	Power supply output (13.6V±15%)
CN14 (to DC cable)			
1	+B	I	Power supply input (13.6V±15%)

Final unit (X45-3800-XX): TK-5810H(BG)

Pin No.	Name	I/O	Function
CN1 (to TX-RX unit CN151)			
1	TX	I	TX drive input
CN2 (to TX-RX unit CN601)			
1	FTEMP2	O	Final unit temperature 2
2	FTEMP1	O	Final unit temperature 1
3	8T	-	8V input during transmission
4	8T	-	8V input during transmission
5	E	-	GND
6	PC	I	TX power control voltage
CN4 (to TX-RX unit CN200)			
1	RX	O	RX signal output
CN5 (to DC cable)			
1	+B	I	Power supply input (13.4V±15%)
CN6 (to DC cable)			
1	E	-	GND
W1 (to Control unit CN1)			
1	+B	O	Power supply output (13.4V±15%)
2	+B	O	Power supply output (13.4V±15%)
3	E	-	GND

Control unit (X53-4400-10)

Pin No.	Name	I/O	Function
CN1 (to Final unit CN13: TK-5820, W1: TK-5810H)			
1	+B	I	Power supply voltage
2	+B	I	Power supply voltage
3	E	-	GND
CN411 (to VGS)			
1	VBUSY	I	BUSY signal (Active High)
2	PLAY	I	PLAY signal (Active High)
3	RXD1	I	Serial data input 1
4	TXD1	O	Serial data output 1
5	BSEL	O	Beat shift
6	EN	O	ENABLE (Active Low)
7	USEL	O	UART SPEED select
8	VRST	O	RESET
9	DE	-	Digital GND
10	E	-	GND
11	AI	I	Audio input (3Vp-p)
12	AO	O	Audio output (100mVp-p)
13	E	-	GND
14	5C	-	Common 5V
15	NC	-	No connection
16	NC	-	No connection
17	NC	-	No connection
18	NC	-	No connection
19	NC	-	No connection
20	NC	-	No connection
21	NC	-	No connection
22	NC	-	No connection
23	NC	-	No connection
24	NC	-	No connection
25	NC	-	No connection
26	8C	-	Common 8V
CN424 (to ANI board)			
1	BUSY	O	BUSY signal output. L: TX, H: Not TX L≤0.4V, H≥4.6V / 30kΩ load
2	AKEY	I	TX Control signal input. Active Low L≤0.8V, H≥2.6V
3	NC	-	No connection
4	NC	-	No connection
5	NC	-	No connection
6	PTOA	O	PTT signal output. L: PTT ON, H: PTT OFF L≤0.4V, H≥4.6V / 30kΩ load

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
7	NC	-	No connection
8	EMG	O	EMERGENCY signal output. L: Operated, H: Not operated L \leq 0.4V, H \geq 4.6V / 30k Ω load
9	E	-	GND
10	E	-	GND
11	NC	-	No connection
12	NC	-	No connection
13	E	-	GND
14	5C	-	Common 5V (Standby: 3.5mA / Encoding: 35mA)
15	STON	I	SIDE TONE input. 1kHz 5Vp-p
16	ATXI	I	DATA signal input. Adjustable from 0V to 4.5Vp-p
17	TCONT	I	SPEAKER MUTE signal input. L: Unmute, L \leq 0.8V, H \geq 4.2V
18	NC	-	No connection
19	AINH	I	MIC MUTE signal input. L: Mute, L \leq 0.8V, H \geq 4.2V
20	AUX I/O	I	EMERGENCY signal input. Active Low, L \leq 0.8V, H \geq 4.2V
21	NC	-	No connection
22	NC	-	No connection
23	NC	-	No connection
24	NC	-	No connection
25	NC	-	No connection
26	8C	-	Common 8V
CN444 (to SCRAMBLER board)			
1	BC1	O	SCRAMBLE CODE signal output 1. L \leq 0.4V, H \geq 4.6V / 30k Ω load
2	BC2	O	SCRAMBLE CODE signal output 2. L \leq 0.4V, H \geq 4.6V / 30k Ω load
3	LOK	O	LOK output. L: LOK, H: UN LOK
4	PTOS	O	TX signal output. L: TX, H: Not TX L \leq 0.4V, H \geq 4.6V / 30k Ω load
5	NC	-	No connection
6	ECHO	I/O	ECHO PTT
7	NC	-	No connection
8	BC4	O	SCRAMBLE CODE signal output 4. L \leq 0.4V, H \geq 4.6V / 30k Ω load
9	E	-	GND
10	E	-	GND
11	NC	-	No connection
12	NC	-	No connection
13	E	-	GND
14	5C	-	Common 5V

Pin No.	Name	I/O	Function
15	NC	-	No connection
16	NC	-	No connection
17	T/R	-	No connection
18	NC	-	No connection
19	PTT	-	No connection
20	AC	O	SCRAMBLE CONTROL signal output. L: ON, H: OFF L \leq 0.4V, H \geq 4.6V / 30k Ω load
21	TXO	O	MIC signal output. Z \leq 1k Ω (85mVp-p typ.)
22	RXE0	O	AUDIO signal output. Z \leq 100 Ω (1.2Vp-p typ.)
23	RXEI	I	AUDIO signal input. Z i =27k Ω (1.2Vp-p typ.)
24	STXI	I	MIC signal input. Z \leq 100k Ω
25	BC3	O	SCRAMBLE CODE signal output 3. L \leq 0.4V, H \geq 4.6V / 30k Ω load
26	8C	-	Common 8V
CN457 (for production)			
1~20			
CN459 (to D-SUB 25pin connector)			
1	NC	-	No connection
2	SB	-	Switched B
3	RXD2	I	Serial data input 2
4	AUXO2	O	Auxiliary output 2
5	TXD2	O	Serial data output 2
6	AUXO1	O	Auxiliary output 1
7	AUX I/O 9	I/O	Auxiliary input/output 9
8	AFO	O	RX audio signal output
9	DI	I	Data signal input
10	GND	-	GND
11	MI2	I	External MIC input
12	DEO	O	Detected signal output
13	GND	-	GND
14	AUX I/O 5	I/O	Auxiliary input/output 5
15	AUX I/O 8	I/O	Auxiliary input/output 8
16	AUX I/O 4	I/O	Auxiliary input/output 4
17	TXD3	O	Serial data output 3
18	AUX I/O 3	I/O	Auxiliary input/output 3
19	RXD3	I	Serial data input 3
20	AUX I/O 2	I/O	Auxiliary input/output 2
21	GND	-	GND
22	AUX I/O 1	I/O	Auxiliary input/output 1
23	AUX I/O 7	I/O	Auxiliary input/output 7

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
24	ME	-	MIC GND
25	AUX I/O 6	I/O	Auxiliary input/output 6
26	GND	-	GND
27	NC	-	No connection
28	NC	-	No connection
29	NC	-	No connection
30	NC	-	No connection
CN501 (to TX-RX unit CN600)			
1	E	-	GND
2	CV	I	Controlled voltage of VCO
3	FTEMP2	I	Final unit temperature 2
4	FTEMP1	I	Final unit temperature 1
5	PCS	O	Chip select of potentiometer
6	L2FT	O	Tuning frequency of 2nd local
7	UL	I	Lock detect of PLL
8	EP	O	Enable of PLL
9	WN2	-	Switch of ceramic filter (H: Wide / L: Narrow)
10	MO	O	Modulation signal for VCO
11	MB	O	Modulation and Frequency control signal for VCXO
12	8C	-	Common 8V
13	8C	-	Common 8V
14	8C	-	Common 8V
15	8C	-	Common 8V
16	DAT	O	DATA
17	SOE3	O	Enable of shift register 3
18	CLK	O	CLOCK
19	STRB3	O	Chip select of shift register 3
20	8T	-	8V output during transmission
21	Vref	-	Reference voltage
22	E	-	GND
23	DET	I	Detection signal output
24	E	-	GND
25	PC	O	TX power controlled voltage
26	E	-	GND
27	IF_IN	I	IF signal
28	IF_IN	I	IF signal
29	IF_IN	I	IF signal
30	E	-	GND

Pin No.	Name	I/O	Function
31	E	-	GND
32	E	-	GND
33	ASQL	I	Analog squelch signal output
34	RSSI	I	RSSI signal output
35	TV	O	Tuning voltage signal input for RX BPF
36	E	-	GND
CN502 (to ACC9pin connector)			
1	IGN	I	Ignition sense input.
2	E	-	GND
3	HR1	O	Horn alert signal output 1. (1A max)
4	HR2	O	Horn alert signal output 2. (1A max)
5	OS2	O	BTL output for external speaker B (PA).
6	OS1	O	BTL output for external speaker B (PA).
7	ES2	O	BTL output for external speaker A.
8	ES1	O	BTL output for external speaker A.
9	IRS	I	Remote speaker switch.
CN503 (to KRK-X)			
1	AFO	O	RX audio signal output for Head2
2	DE3	I/O	Detection signal
3	E	-	GND
4	EI	O	ENABLE of shift register
5	CLK	O	CLOCK
6	DAT	O	DATA
7	RESET	O	RESET
8	5C	-	Common 5V
9	PSC	I/O	Power switch control signal
10	CS	O	Chip select of D/A converter
CN504 (to Display unit CN1)			
1	ES2	O	Output for remote speaker
2	IRS	O	Output for remote speaker
3	SB	O	Switched B
4	IGN	I	Ignition sense input.
5	PSW	I	Power switch control signal input
6	TRD	I/O	TX data output / RX data input
7	1/2	O	Remote head 1 signal output
8	RESET	O	RESET
9	GND	-	GND
10	MIC	I	MIC signal input
11	ME	I	MIC GND

TERMINAL FUNCTION

TX-RX unit (X57-7270-XX)

Pin No.	Name	I/O	Function
CN150			
1	TX	O	TX drive output
CN151 (to Final unit CN1)			
1	TX	O	TX drive output
CN200 (to Final unit CN2: TK-5810, CN4: TK-5810H)			
1	RX	I	RX signal input
CN202 (for MCF adjustment)			
1	MCFin	I	MCF input
2	E	-	GND
CN207 (for MCF adjustment)			
1	MCFOUT	O	MCF output
2	E	-	GND
CN600 (to CONT unit CN501)			
1	E	-	GND
2	TV	I	Tuning voltage signal input for RX BPF
3	RSSI	O	RSSI signal output
4	ASQL	O	Analog squelch signal output
5~7	E	-	GND
8~10	IF IN	O	IF signal
11	E	-	GND
12	PC	I	TX power control voltage
13	E	-	GND
14	DET	O	Detection signal output
15	E	-	GND
16	Vref	-	Reference voltage
17	8T	-	8V input during transmission
18	STRB3	I	Enable of shift register 3
19	CLK	I	Clock input
20	SOE3	I	Chip select of shift register 3
21	DAT	I	Data input
22~25	8C	-	Common 8V
26	MB	I	Modulation and frequency control signal for VCO
27	MO	I	Modulation signal for VCO
28	WN $\bar{2}$	I	Switch of ceramic filter (H: Wide / L: Narrow)
29	EP	I	Enable of PLL
30	UL	O	Lock detection of PLL
31	L2FT	I	Tuning frequency of 2nd local
32	PCS	I	Chip select of potentiometer
33	FTEMP1	O	Final unit temperature 1

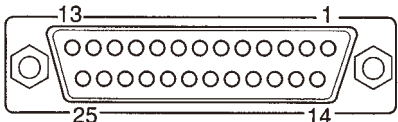
Pin No.	Name	I/O	Function
34	FTEMP2	O	Final unit temperature 2
35	CV	O	Control voltage of VCO
36	E	-	GND
CN601 (to Final unit CN9: TK-5810, CN2: TK-5810H)			
1	PC	O	TX power control voltage
2	E	-	GND
3	8T	-	8V input during transmission
4	8T	-	8V input during transmission
5	FTEMP1	I	Final unit temperature 1
6	FTEMP2	I	Final unit temperature 2

D-SUB 25pin connector

Pin No.	Name	I/O	Function
1	NC (RSSI)	O	NC / (RSSI signal output)
2	RXD2	I	Serial data input 2. RS-232C Level ($\pm 30V$ max.) $L \leq 0.4V$, $H \geq 2.4V$, $Z_i \geq 5k\Omega$
3	TXD2	O	Serial data output 2. RS-232C Level $L \leq -5V$, $H \geq 5V / 3k\Omega$ load, $Z_o \leq 2k\Omega$
4	AUX I/O 9 (RTS)	I/O	Auxiliary input/output 9 (FPU selectable)/ (RTS) Active low with 47k Ω pull up to 5V $L \leq 0.8V$, $H \geq 4.2V$
5	DI (CTS)	I	Data signal input / (CTS). $Z_i \geq 10k\Omega$ Deviation: 60% Dev or more (at 1kHz/2Vp-p) Frequency Response: +3~-3dB (20Hz~9.6kHz) (0dB: 1kHz 60% Dev.)
6	MI2	I	External MIC input. $Z_i = 600\Omega$ Deviation: 60% Dev (at 1kHz/5 $\pm 2mV$ input) Frequency Response : Compliance with TIA/EIA-603
7	E	-	GND
8	AUX I/O 8	I/O	Auxiliary input/output 8 (FPU selectable) Active low with 47k Ω pull up to 5V $L \leq 0.8V$, $H \geq 4.2V$
9	TXD3	O	Serial data output 3 Default: CMOS level $L \leq 0.7V$, $H \geq 4.2V / 25k\Omega$ load, $Z_o \leq 1k\Omega$ After remodelling: RS-232C Level $L \leq -5V$, $H \geq 5V / 3k\Omega$ load, $Z_o \leq 2k\Omega$
10	RXD3	I	Serial data input 3 Default: CMOS level (0~5V max) $L \leq 0.8V$, $H \geq 4.2V$ After remodelling: RS-232C Level ($\pm 30V$ max) $L \leq -5V$, $H \geq 5V$
11	E	-	GND
12	AUX I/O 7	I/O	Auxiliary input/output 7 (FPU selectable) Active low with 47k Ω pull up to 5V $L \leq 0.8V$, $H \geq 4.2V$

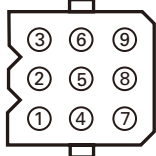
TERMINAL FUNCTION

Pin No.	Name	I/O	Function
13	AUX I/O 6	I/O	Auxiliary input/output 6 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
14	SB	-	Switched B (13.6V±15%). 2A max
15	AUXO 2	O	Auxiliary output 2 (FPU selectable) Active low: Open collector (Max 500mA)
16	AUXO 1	O	Auxiliary output 1 (FPU selectable) Active low: Open collector (Max 500mA)
17	AFO	O	RX audio signal output. Zo≤1kΩ PA: MIC signal output. 0.65Vp-p typ. (1kHz/5mV input) RX: RX low level output. (W)1.3Vp-p typ., (N)1.1Vp-p typ. (at Standard modulation)
18	E	-	GND
19	DEO	O	Detected signal output. Zo≤600kΩ 500mVp-p (at 1kHz 60% Dev./ -53dBm) Frequency response (0dB: 1kHz 60% Dev.) (wide) 20Hz~4.8kHz: +1/-6dB, 4.8kHz~9.6kHz: +1/-24dB (narrow) 20Hz~4.8kHz: +1/-15dB
20	AUX I/O 5	I/O	Auxiliary input/output 5 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
21	AUX I/O 4	I/O	Auxiliary input/output 4 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
22	AUX I/O 3	I/O	Auxiliary input/output 3 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
23	AUX I/O 2	I/O	Auxiliary input/output 2 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
24	AUX I/O 1	I/O	Auxiliary input/output 1 (FPU selectable) Active low with 47kΩ pull up to 5V L≤0.8V, H≥4.2V
25	ME	-	MIC GND



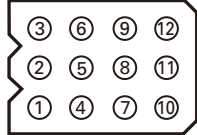
Accessory 9pin connector

Pin No.	Name	I/O	Function
1	IGN	I	Ignition sense input.
2	ES2	O	BTL output for external speaker A.
3	RS1	I	Remote speaker switch.
4	HR1	O	Horn alert signal output1. (1A max)
5	HR2	O	Horn alert signal output2. (1A max)
6	ES1	O	BTL output for external speaker A.
7	OS1	O	BTL output for external speaker B (PA).
8	OS2	O	BTL output for external speaker B (PA).
9	E	-	GND



Accessory 12pin connector (Head)

Pin No.	Name	I/O	Function
1	IGN	I	Ignition sense input.
2	SB	O	Switched B (TK-5810(BG): 13.6V±15%/ TK-5810H(BG): 13.4V±15%)
3	E	-	GND
4	MIC	I	MIC signal input / 60% Dev at 1kHz/5±2mV input
5	ME	-	MIC GND
6	AI1	I	Auxiliary input 1 (FPU selectable)
7	AI2	I	Auxiliary input 2 (FPU selectable)
8	AO1	O	Auxiliary output 1 (FPU selectable) (Open collector)/ 500mA max
9	AO2	O	Auxiliary output 2 (FPU selectable) (Open collector)/ 500mA max
10	RS1	O	Remote speaker output
11	RS2	O	Remote speaker output
12	NC	-	No connection

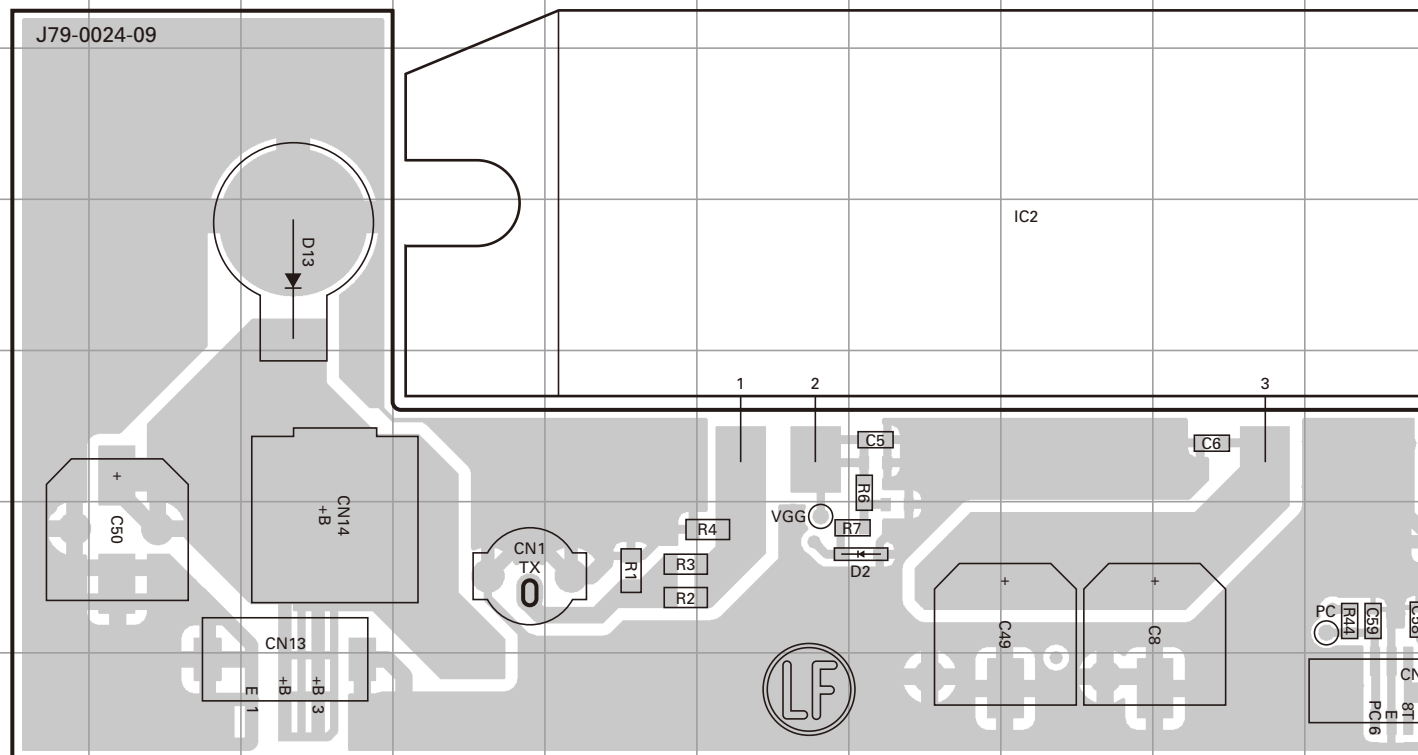


TK-5810(BG)/5810H(BG) PC BOARD

FINAL UNIT (X45-3790-XX): TK-5810(BG)

-10 : K -11 : K2

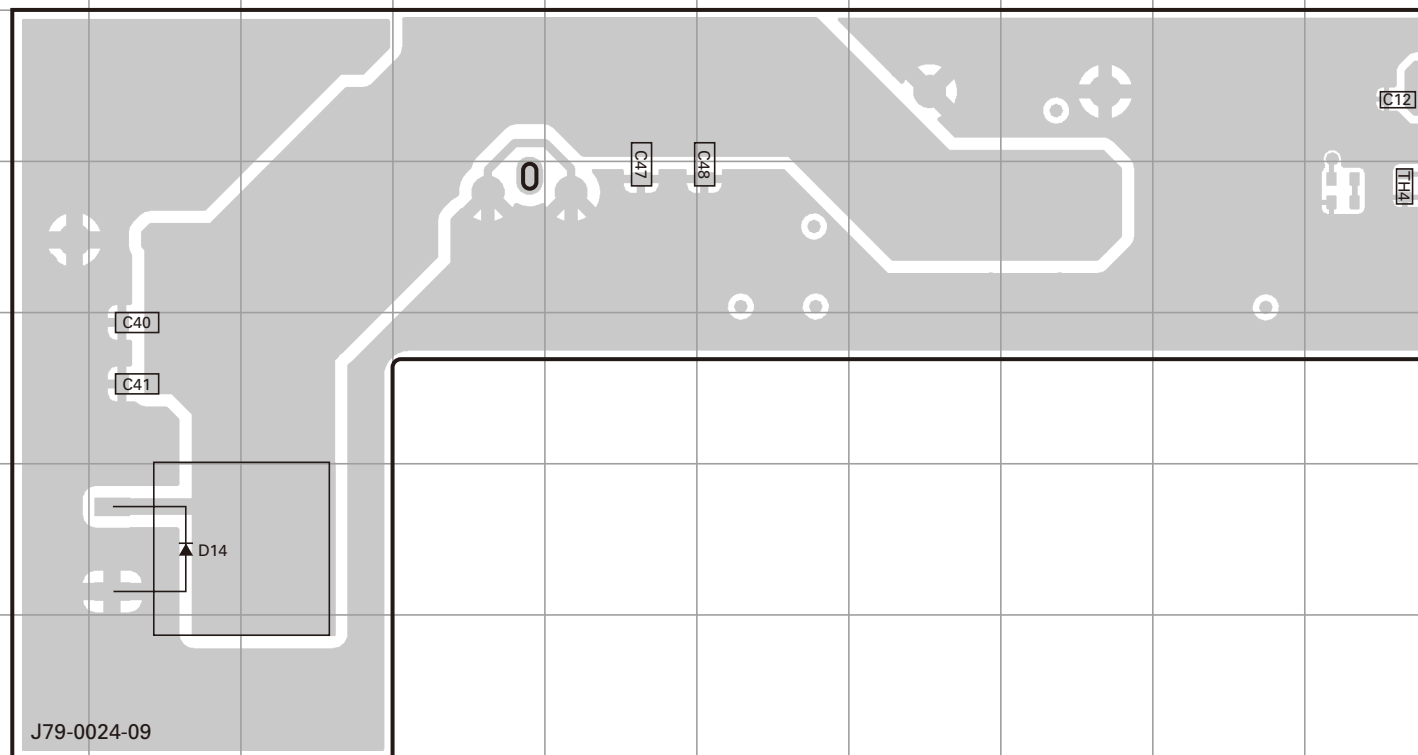
Component side view (J79-0024-09)



FINAL UNIT (X45-3790-XX): TK-5810(BG)

-10 : K -11 : K2

Foil side view (J79-0024-09)

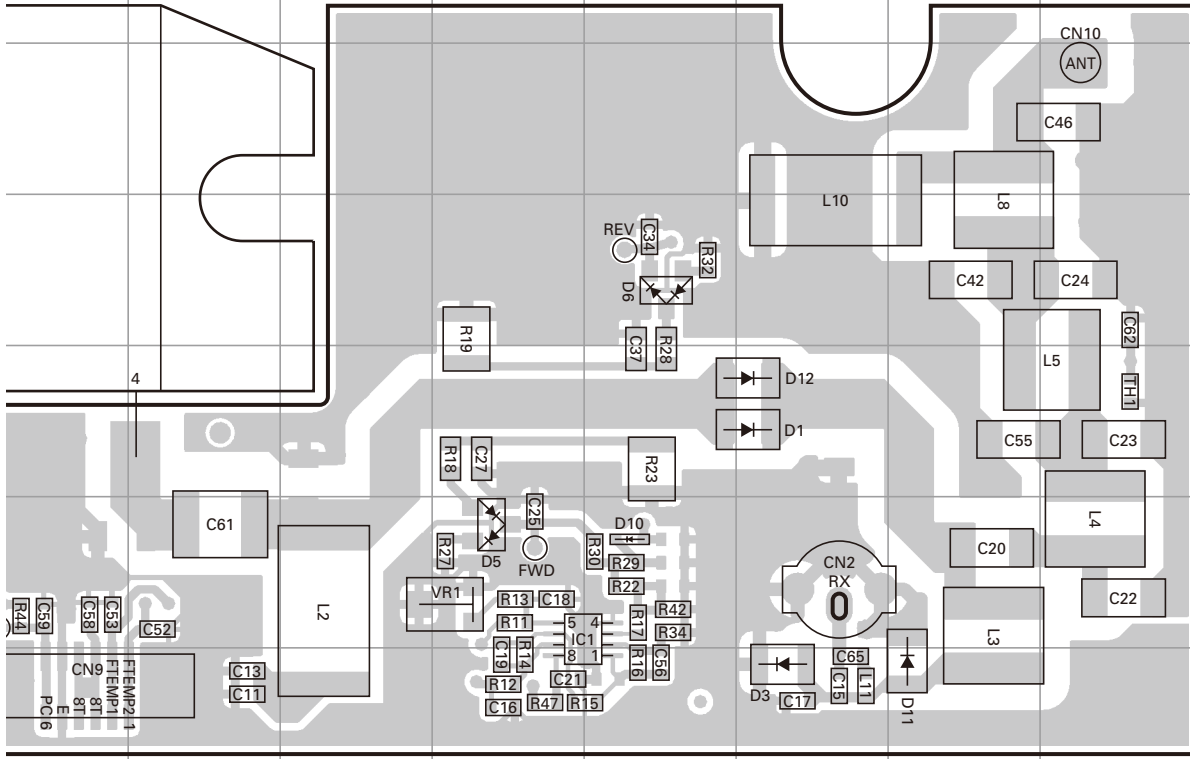


PC BOARD TK-5810(BG)/5810H(BG)

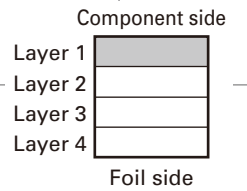
FINAL UNIT (X45-3790-XX): TK-5810(BG)

-10 : K -11 : K2

Component side view (J79-0024-09)



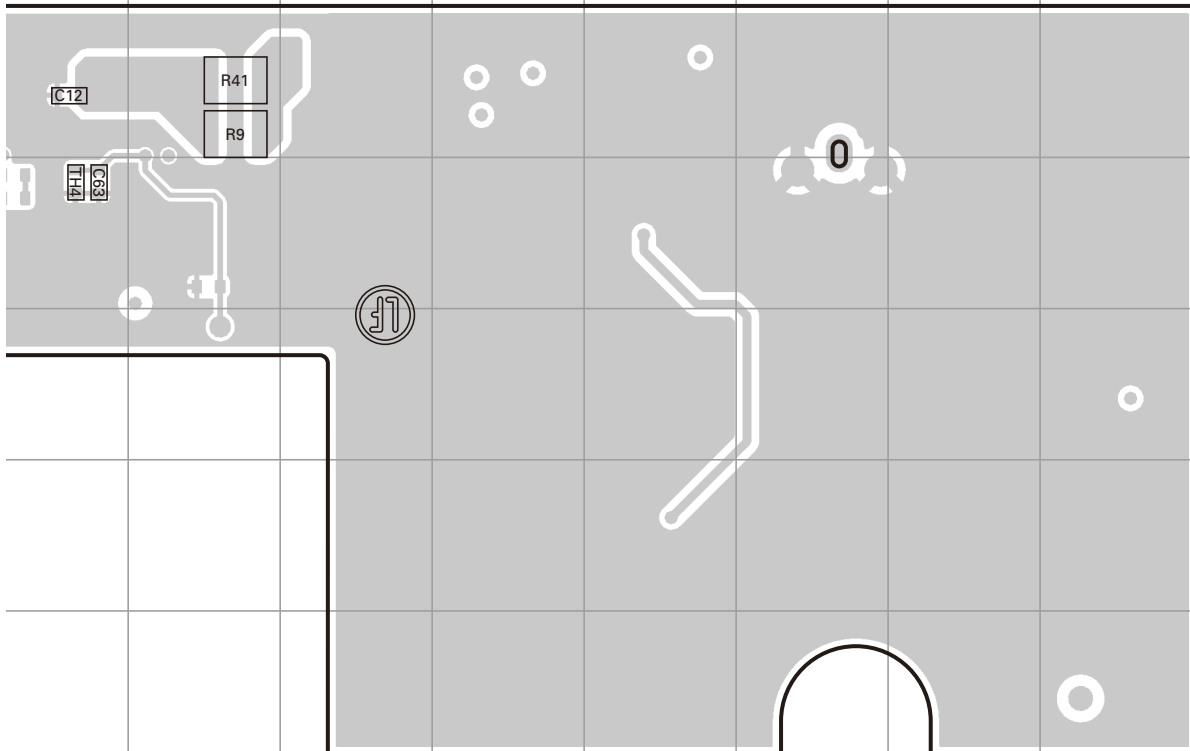
Ref. No.	Address
IC1	6M
IC2	4H
D1	5O
D2	6G
D3	7O
D5	6M
D6	4N
D10	6N
D11	7P
D12	5O
D13	4C



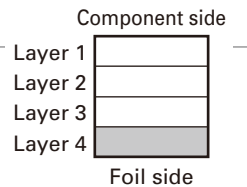
FINAL UNIT (X45-3790-XX): TK-5810(BG)

-10 : K -11 : K2

Foil side view (J79-0024-09)



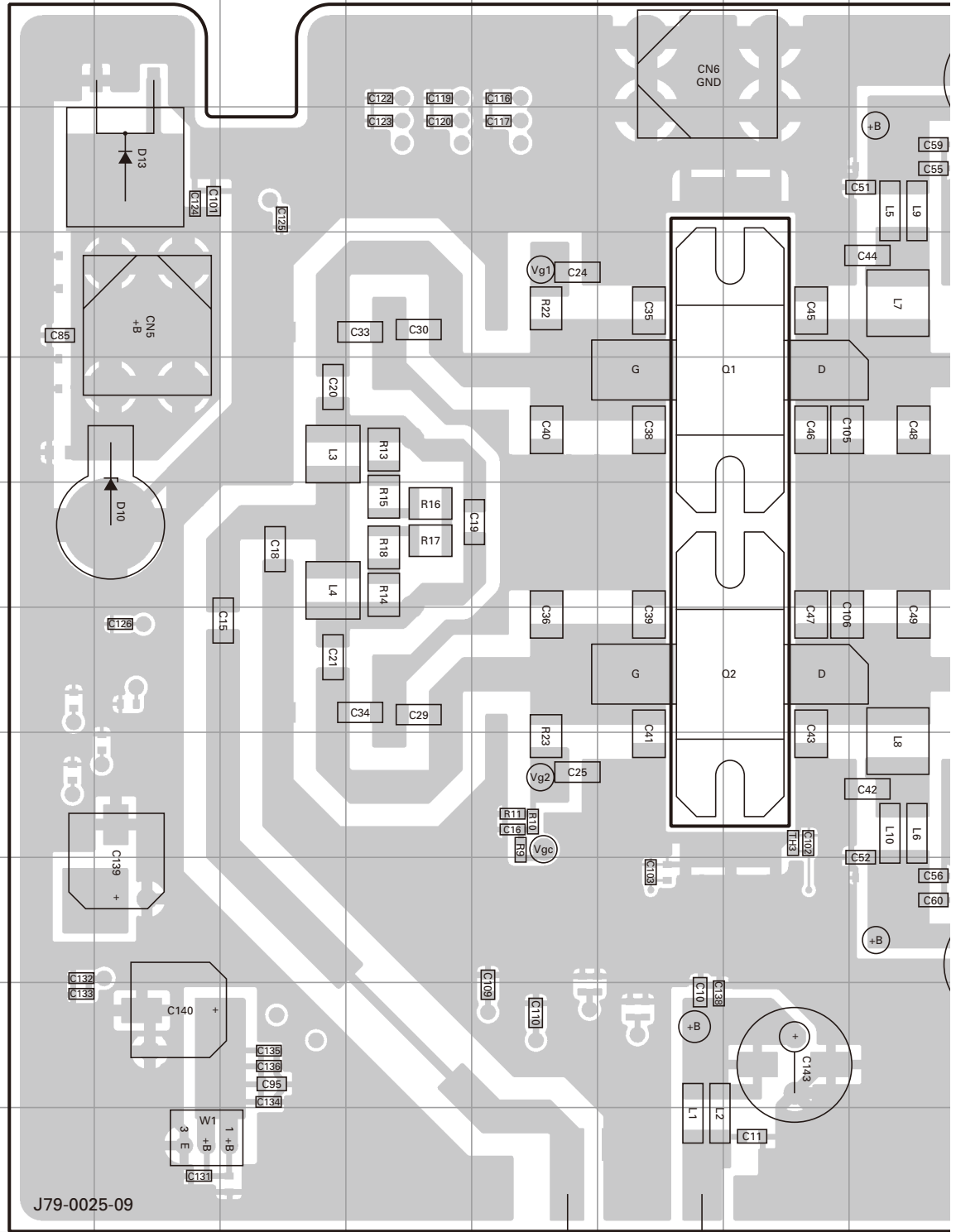
Ref. No.	Address
D14	12B



TK-5810(BG)/5810H(BG) PC BOARD

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

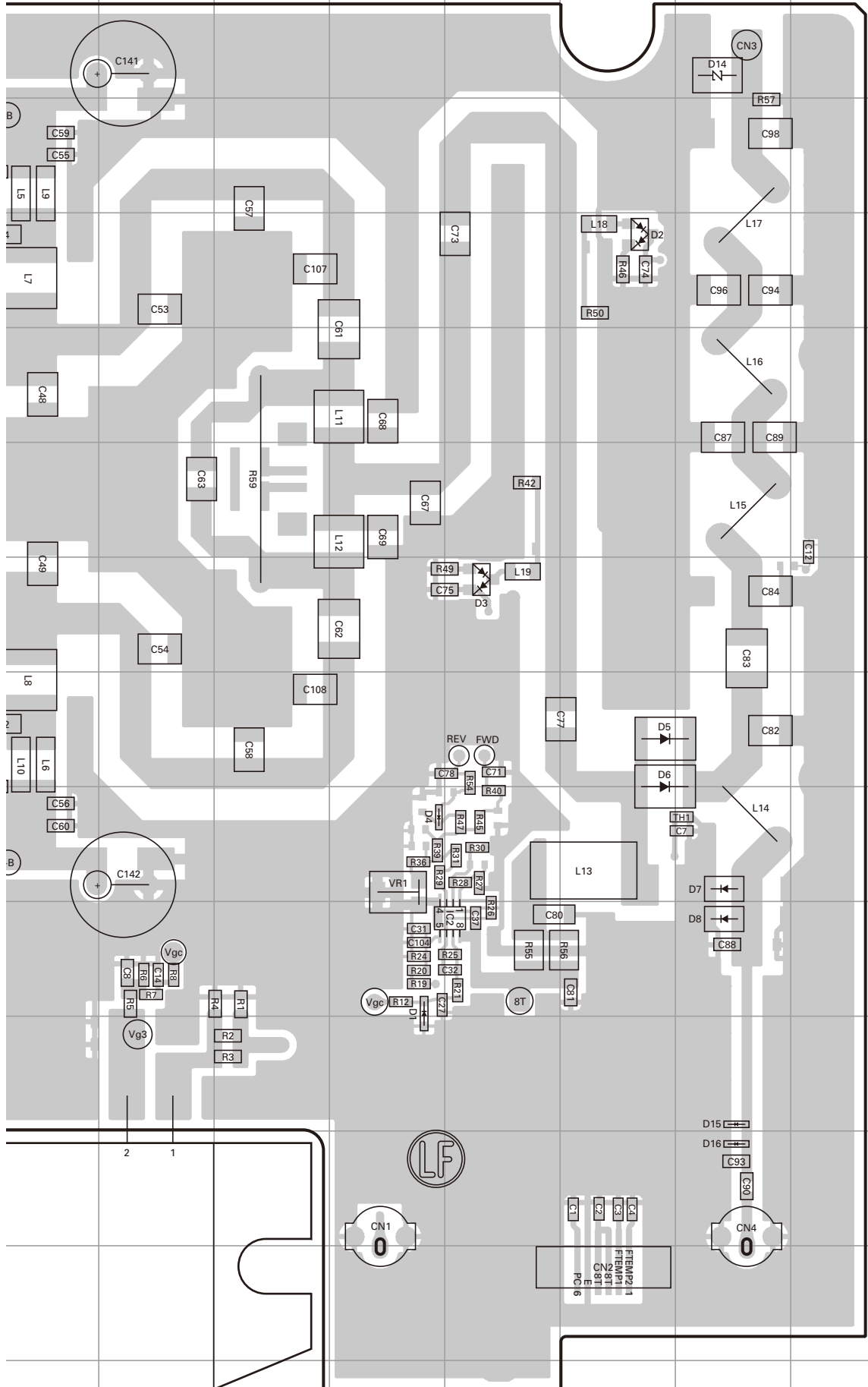
-10 : K -11 : K2 Component side view (J79-0025-09)



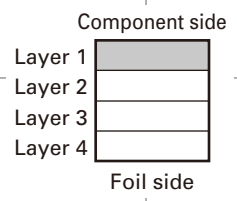
PC BOARD TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

-10 : K -11 : K2 Component side view (J79-0025-09)



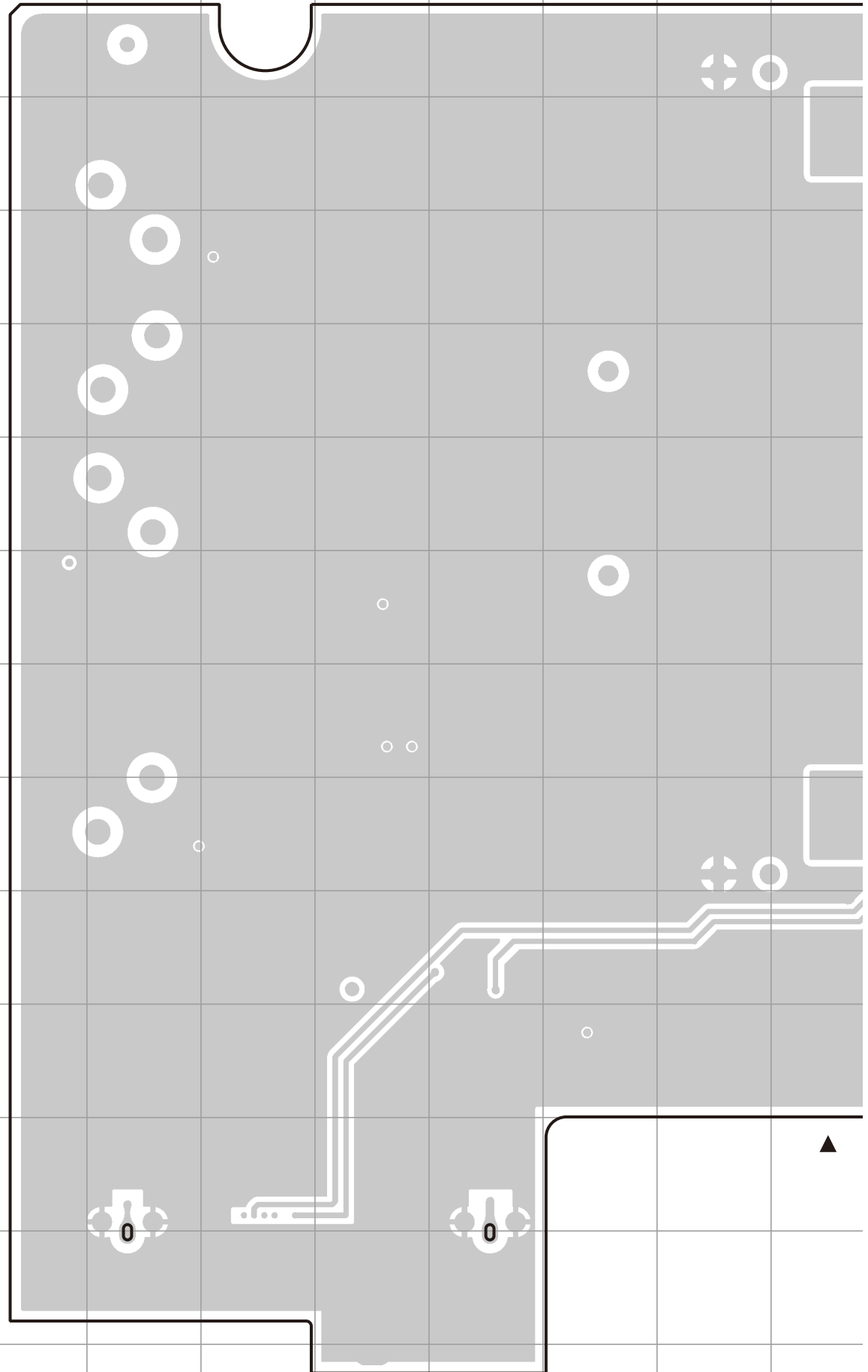
Ref. No.	Address
IC1	13I
IC2	10N
Q1	5I
Q2	7I
D1	10M
D2	4O
D3	7N
D4	9M
D5	8O
D6	8O
D7	9P
D8	10P
D10	6D
D13	3D
D14	2P
D15	11P
D16	12P



A B C D E F G H I J

TK-5810(BG)/5810H(BG) PC BOARD

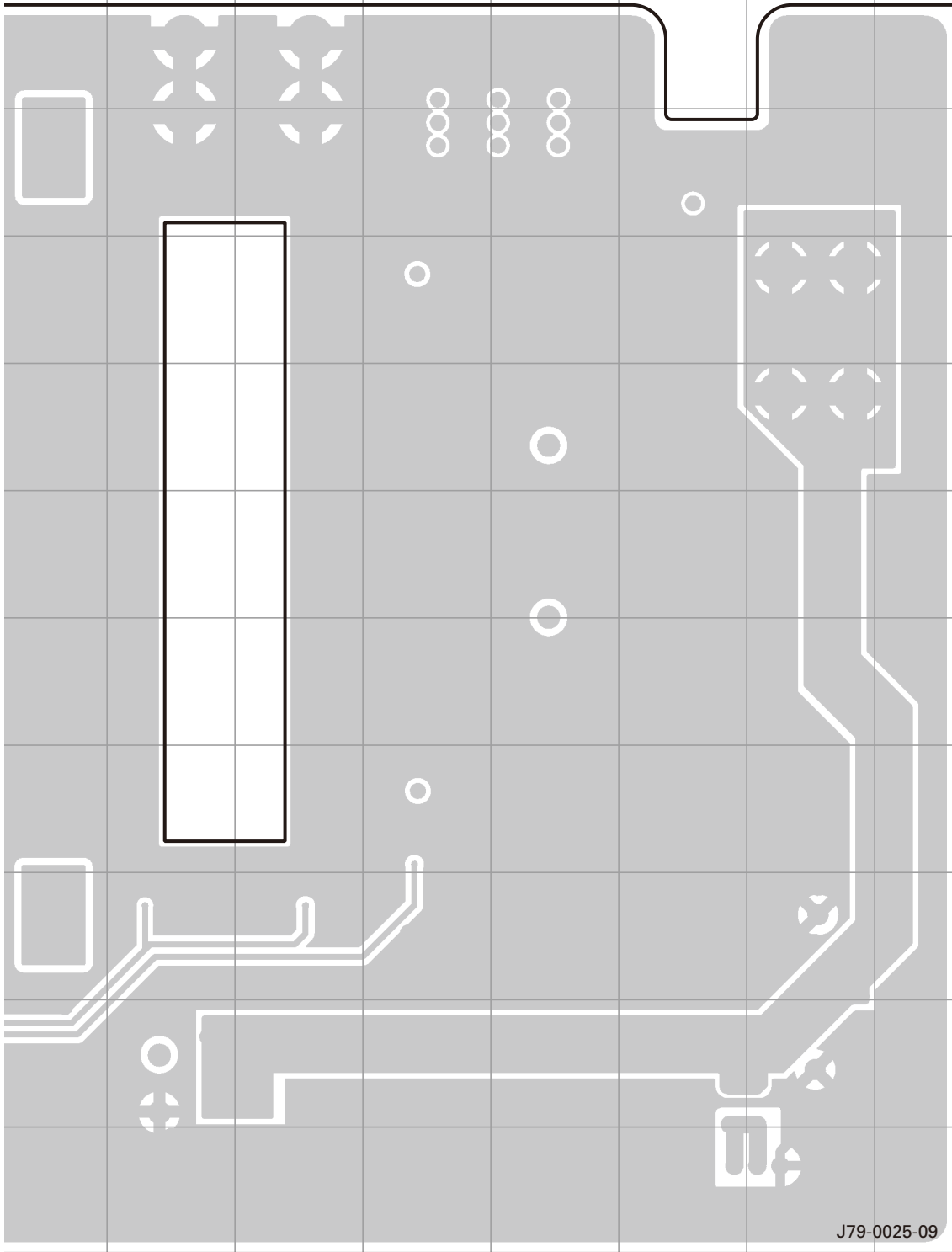
FINAL UNIT (X45-3800-XX): TK-5810H(BG)
-10 : K -11 : K2 Foil side view (J79-0025-09)



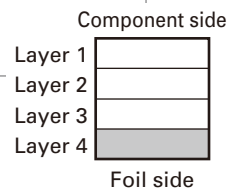
PC BOARD TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

-10 : K -11 : K2 Foil side view (J79-0025-09)

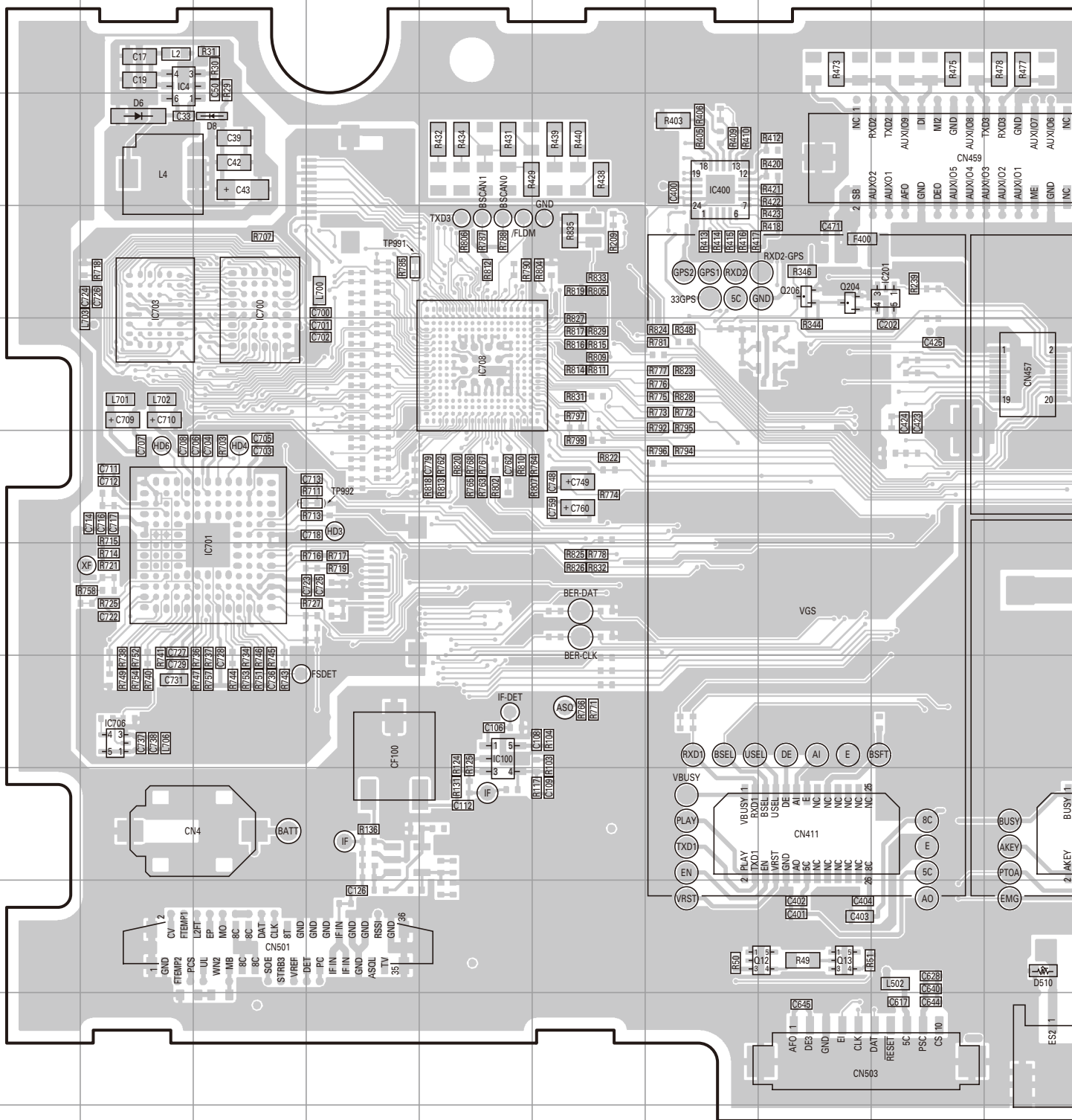


J79-0025-09



TK-5810(BG)/5810H(BG) PC BOARD

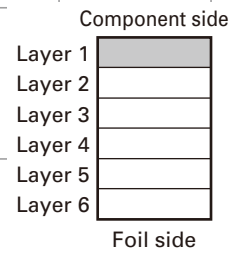
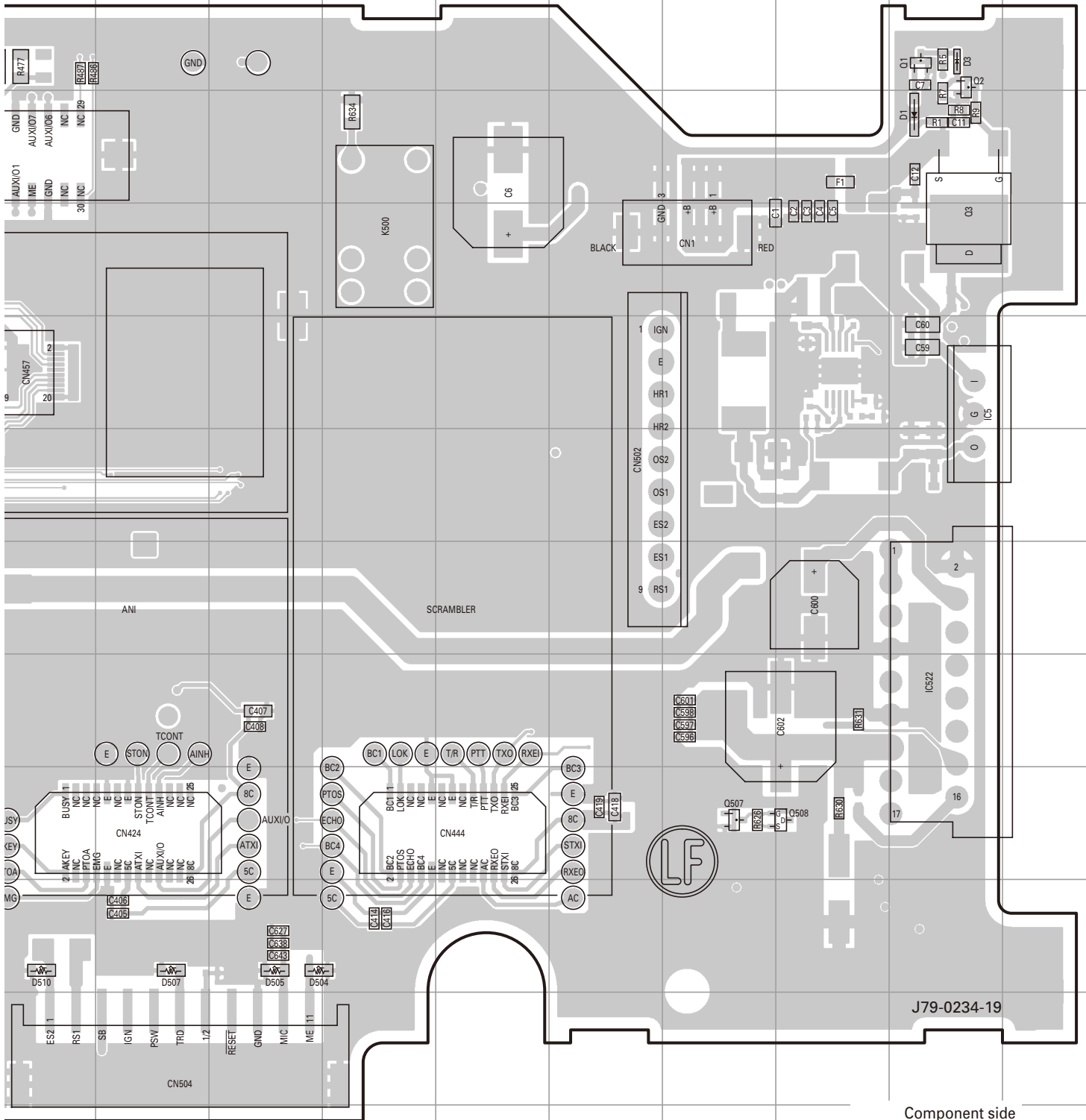
CONTROL UNIT (X53-4400-10) Component side view (J79-0234-19)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC4	2B	IC700	4C	Q2	2R	Q507	9P	D504	10L
IC5	5R	IC701	7C	Q3	4R	Q508	9Q	D505	10L
IC100	8E	IC703	4B	Q12	10H	D1	3R	D507	10K
IC201	4I	IC706	8B	Q13	10H	D3	2R	D510	10J
IC400	3G	IC708	5E	Q204	4H	D6	3B		
IC522	8R	Q1	2R	Q206	4H	D8	3C		

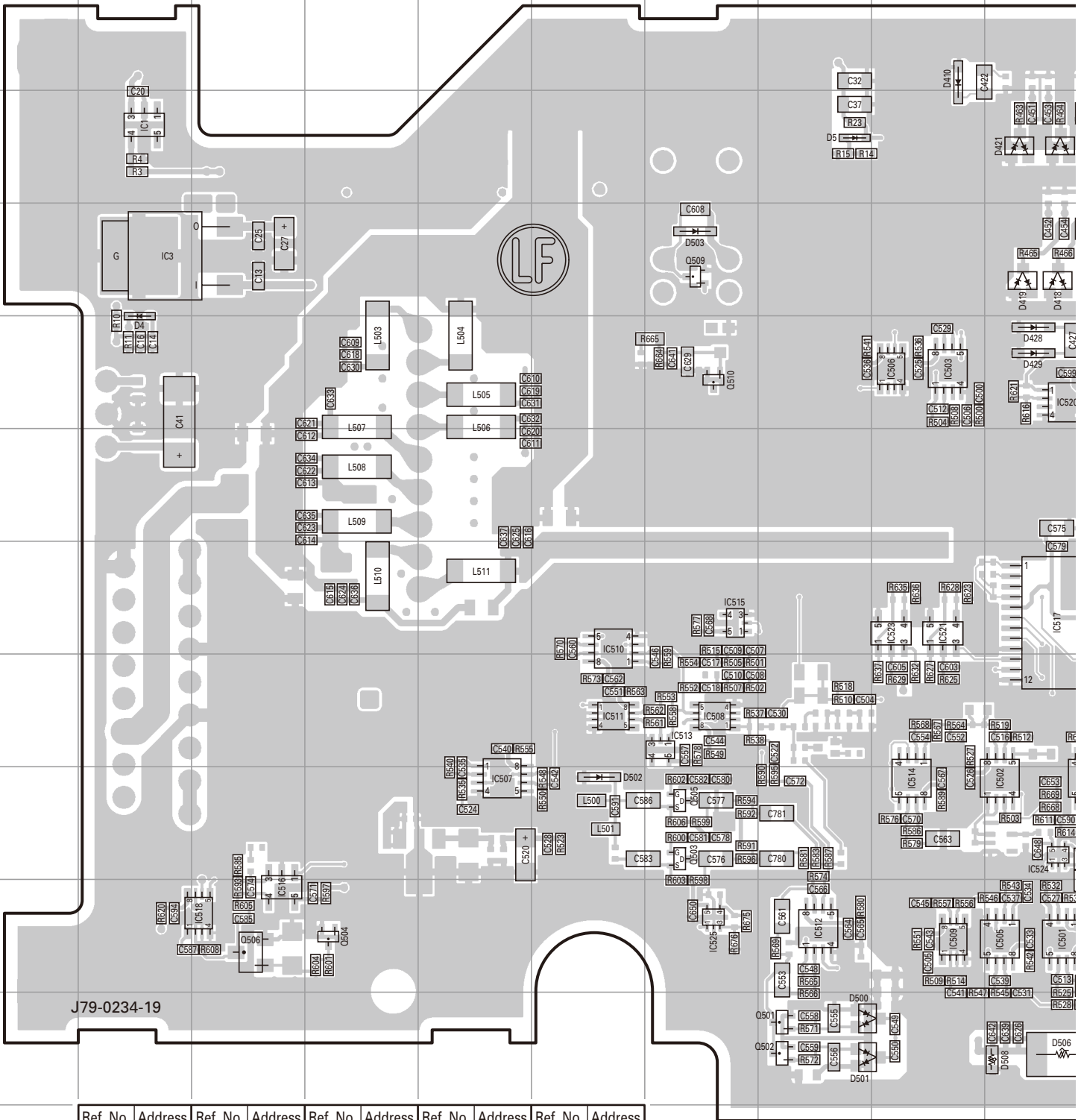
PC BOARD TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10) Component side view (J79-0234-19)



TK-5810(BG)/5810H(BG) PC BOARD

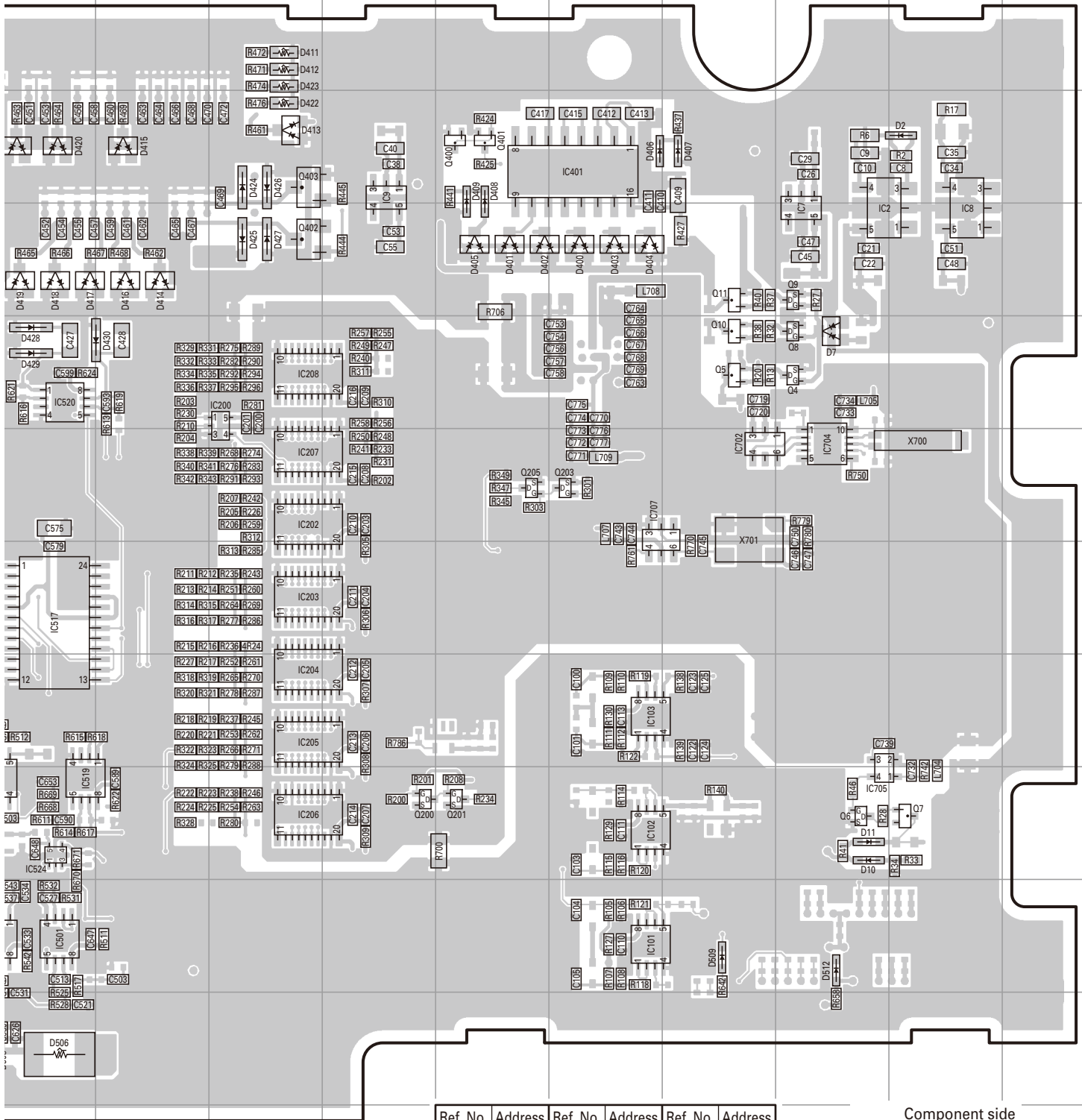
CONTROL UNIT (X53-4400-10) Foil side view (J79-0234-19)



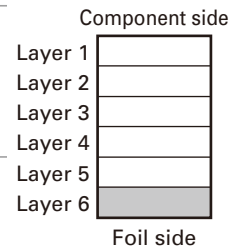
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	3B	IC200	5L	IC501	10J	IC511	8F	IC520	5J								
IC2	4Q	IC202	6L	IC502	9J	IC512	10H	IC521	7I								
IC3	4B	IC203	7L	IC503	5I	IC513	8G	IC523	7I	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC7	4Q	IC204	8L	IC505	10J	IC514	9I	IC524	9J	Q4	5Q	Q10	5P	Q400	3N	Q503	9C
IC8	4R	IC205	8L	IC506	5I	IC515	7G	IC525	10G	Q5	5P	Q11	4P	Q401	3N	Q504	10I
IC9	3M	IC206	9L	IC507	9E	IC516	10C	IC702	6P	Q6	9Q	Q200	9M	Q402	4L	Q505	9C
IC101	10O	IC207	6L	IC508	8G	IC517	7J	IC704	6Q	Q7	9R	Q201	9N	Q403	3L	Q506	10I
IC102	9O	IC208	5L	IC509	10I	IC518	10C	IC705	9Q	Q8	5Q	Q203	6O	Q501	11H	Q509	4C
IC103	8O	IC401	3O	IC510	7F	IC519	9J	IC707	6O	Q9	4Q	Q205	6N	Q502	11H	Q510	5C

PC BOARD TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10) Foil side view (J79-0234-19)

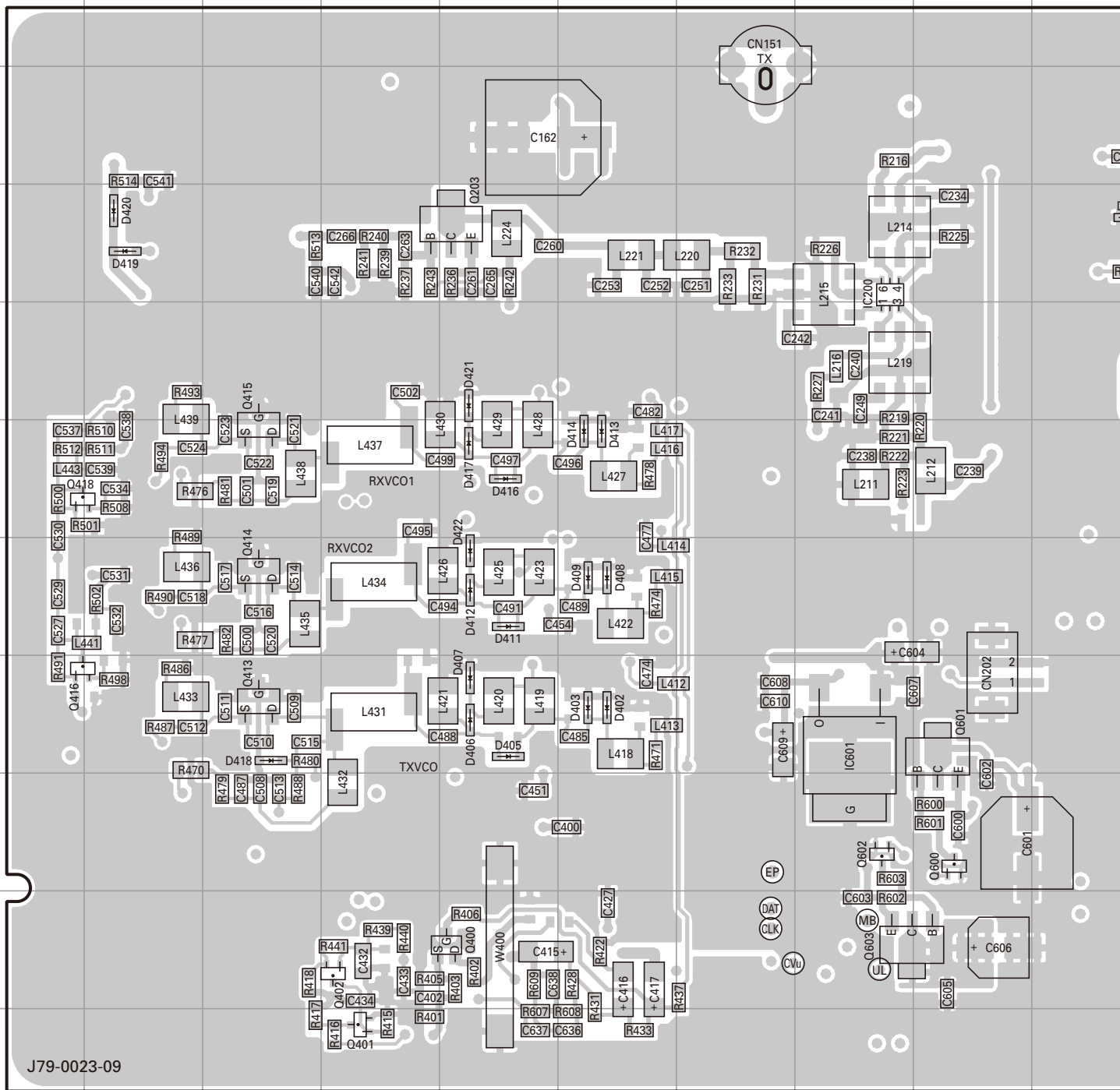


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
		D412	2L	D421	3J	D430	5K
		D413	3L	D422	3L	D500	11H
503	9G	D2	3R	D400	4O	D406	3O
504	10D	D4	5B	D401	4N	D407	3P
505	9G	D5	3H	D402	4N	D408	3N
506	10C	D7	5Q	D403	4O	D409	3N
509	4G	D10	9Q	D404	4O	D410	2I
510	5G	D11	9Q	D405	4N	D411	2L
		D414	4K	D423	2L	D501	11H
		D415	3K	D424	3L	D502	9F
		D416	4K	D425	4L	D503	4G
		D417	4J	D426	3L	D506	11J
		D418	4J	D427	4L	D508	11J
		D419	4J	D428	5J	D509	10P
		D420	3J	D429	5J	D512	10Q



TK-5810(BG)/5810H(BG) PC BOARD

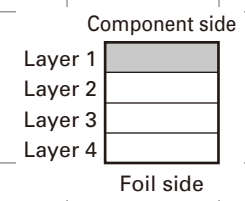
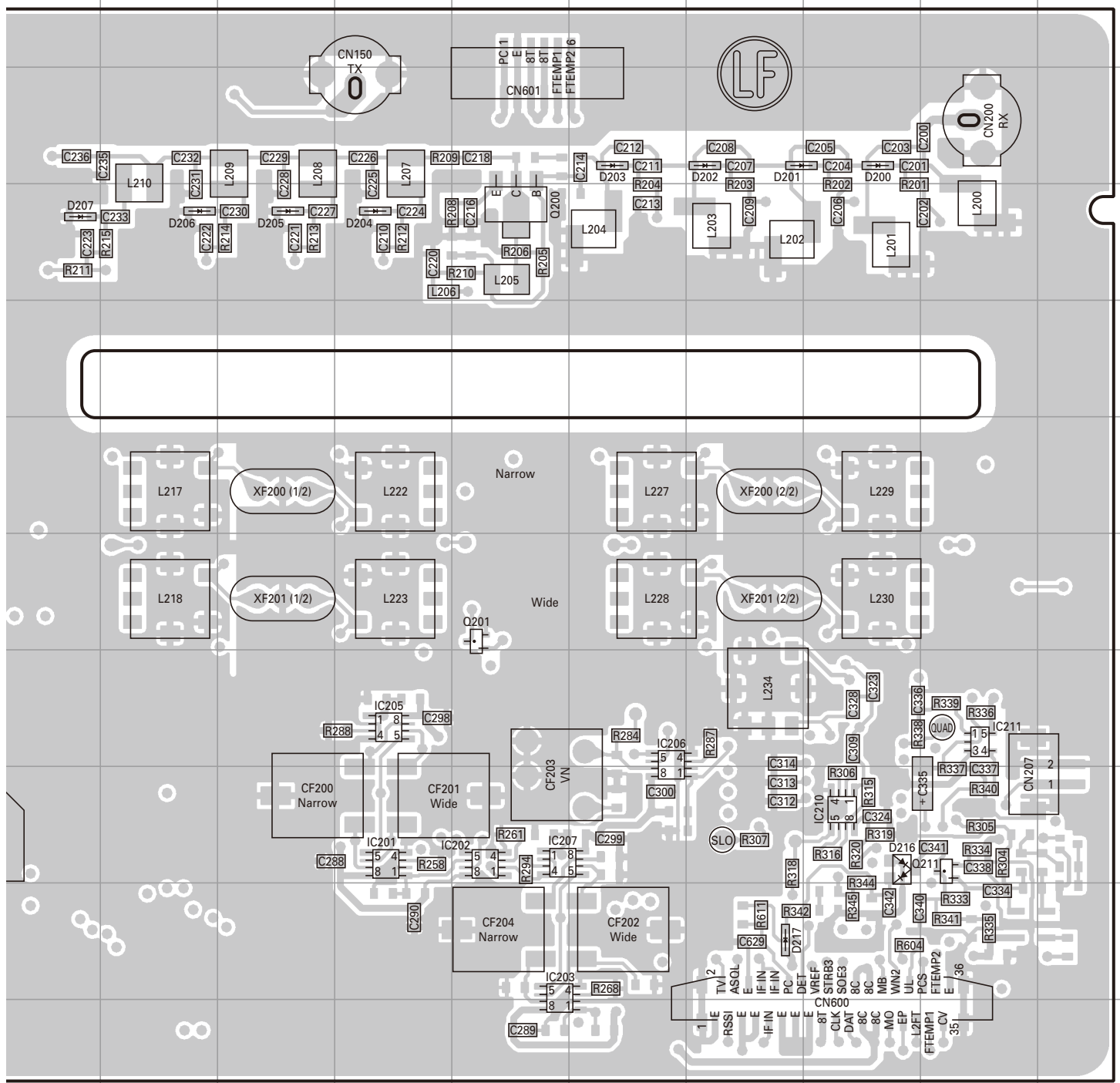
TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Component side view (J79-0023-09)



IC200	4H	IC601	8H	Q414	7C	D201	3P	D402	8F	D413	6F
IC201	9M	Q200	4N	Q415	6C	D202	3P	D403	8F	D414	6F
IC202	9N	Q201	7N	Q416	8A	D203	3O	D405	8E	D416	6E
IC203	10N	Q203	4E	Q418	6A	D204	4M	D406	8E	D417	6E
IC205	8M	Q211	9R	Q600	9I	D205	4L	D407	8E	D418	8C
IC206	8O	Q400	10E	Q601	8I	D206	4K	D408	7F	D419	4B
IC207	9N	Q401	11D	Q602	9H	D207	4J	D409	7F	D420	4B
IC210	9Q	Q402	10D	Q603	10H	D216	9Q	D411	7E	D421	5E
IC211	8R	Q413	8C	D200	3Q	D217	10P	D412	7E	D422	7E

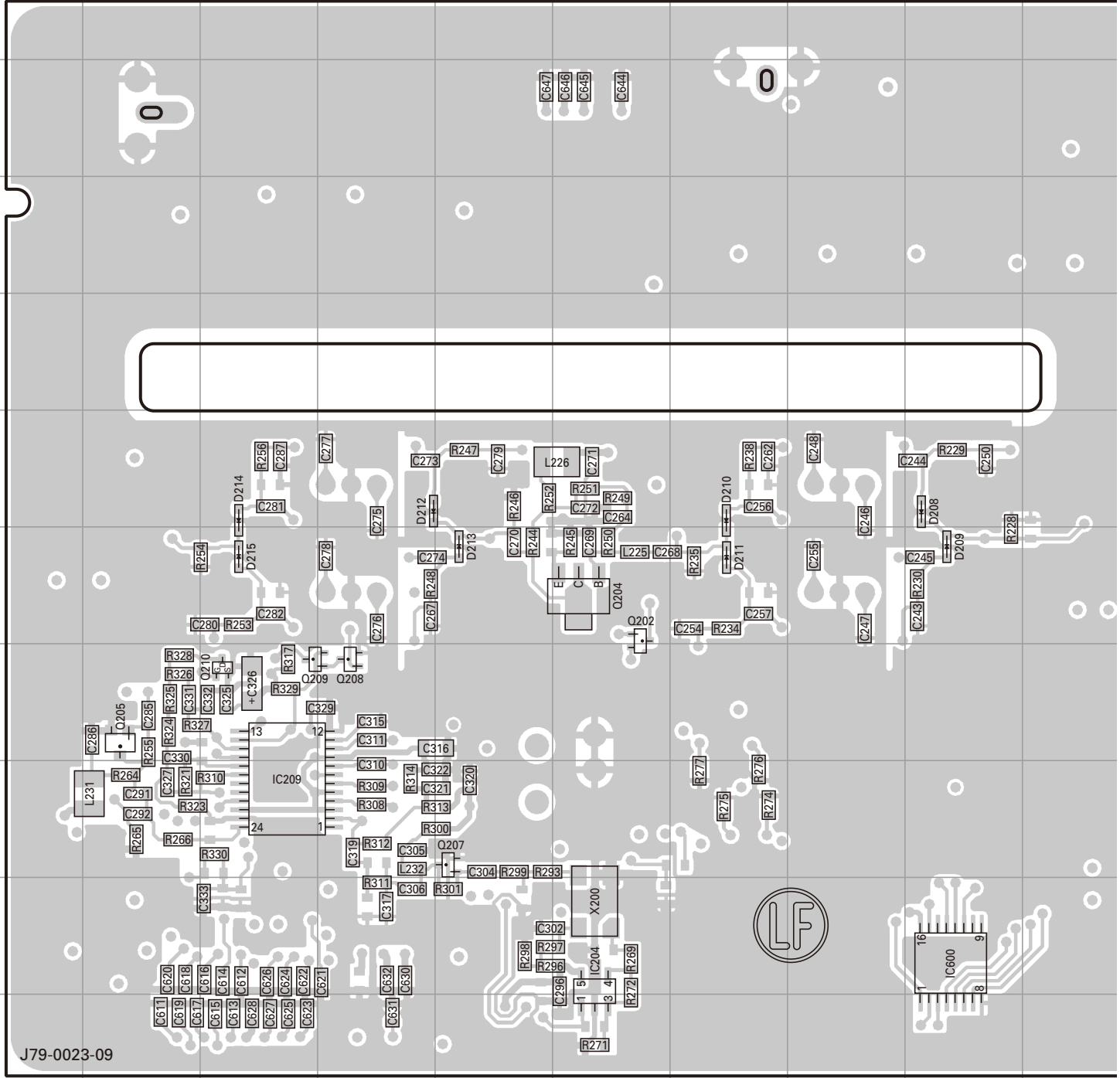
PC BOARD TK-5810(BG)/5810H(BG)

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Component side view (J79-0023-09)



TK-5810(BG)/5810H(BG) PC BOARD

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
 Foil side view (J79-0023-09)

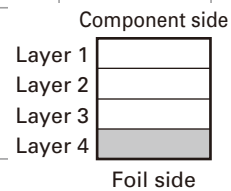


J79-0023-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC204	10F	Q150	3Q	Q209	8C	Q408	7O	D209	7I	D400	7N
IC209	9C	Q151	3O	Q210	8C	Q409	6P	D210	6G	D401	9N
IC400	10O	Q202	7F	Q403	8R	Q410	6P	D211	7G		
IC401	8O	Q204	7F	Q404	6O	Q411	7N	D212	6D		
IC402	8L	Q205	8B	Q405	6O	Q412	6N	D213	7E		
IC403	9N	Q207	9E	Q406	8L	Q417	7R	D214	6C		
IC600	10I	Q208	8D	Q407	7O	D208	6I	D215	7C		

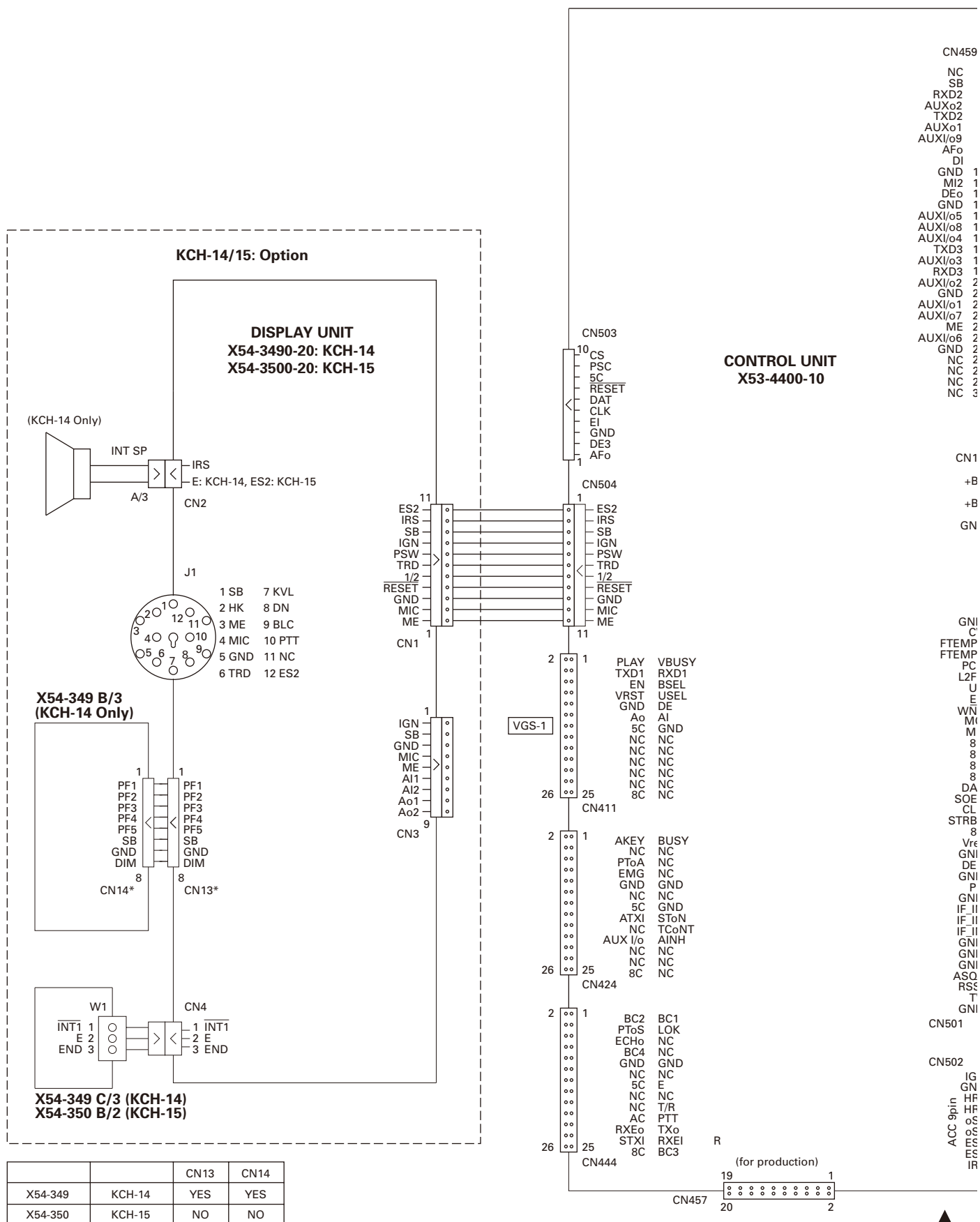
PC BOARD TK-5810(BG)/5810H(BG)

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Foil side view (J79-0023-09)

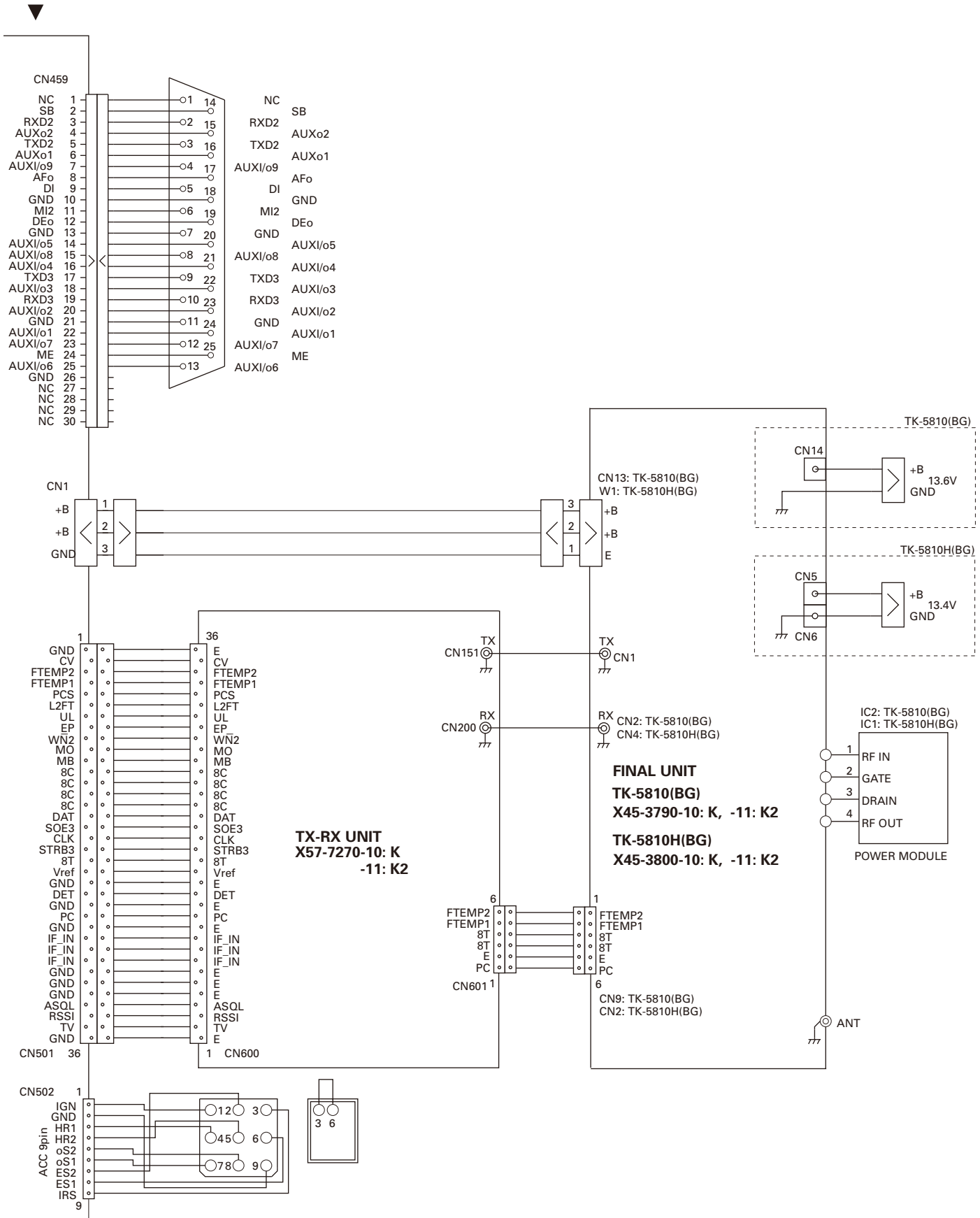


TK-5810(BG)/5810H(BG)

INTERCONNECTION DIAGRAM

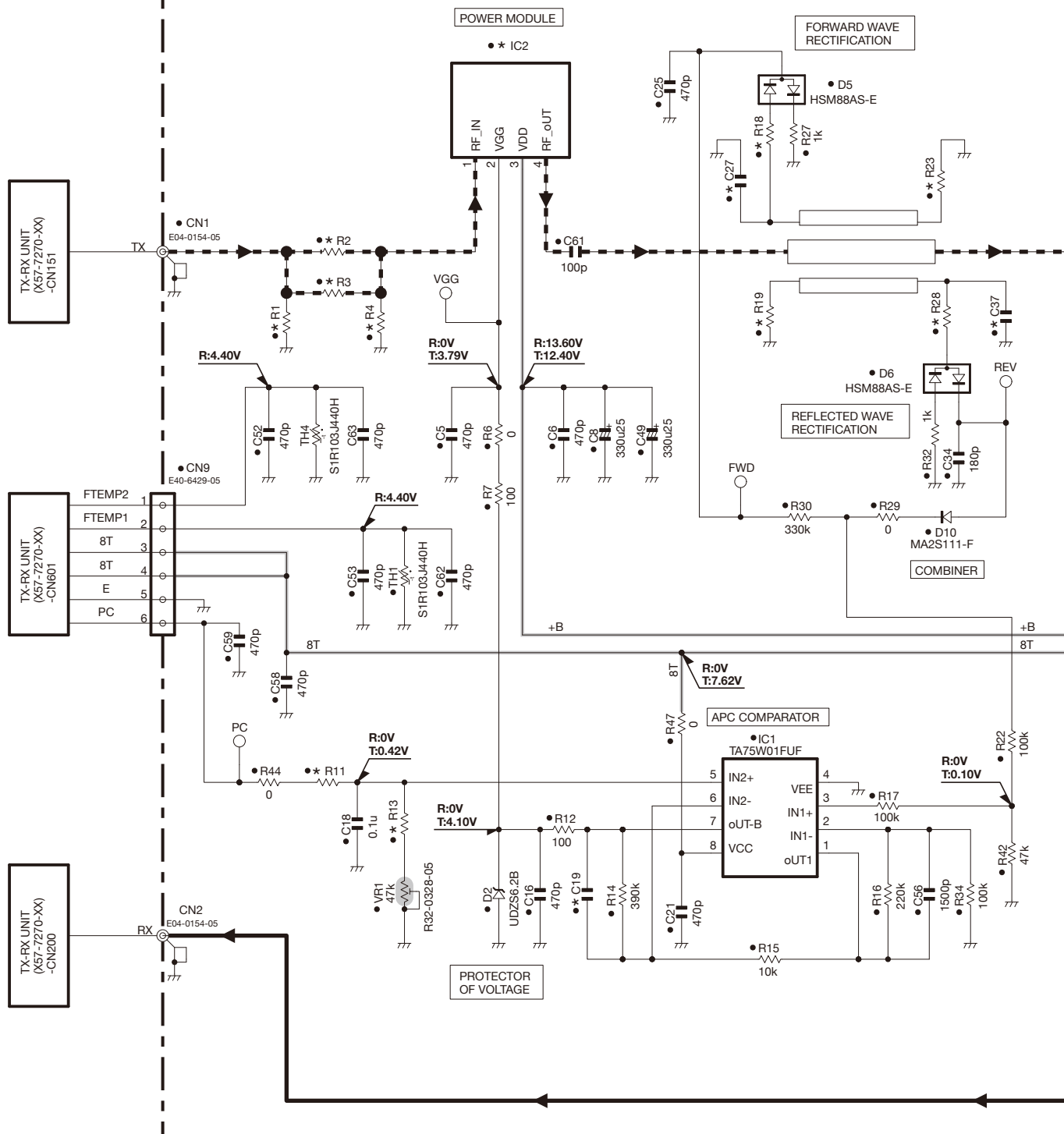


INTERCONNECTION DIAGRAM



TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

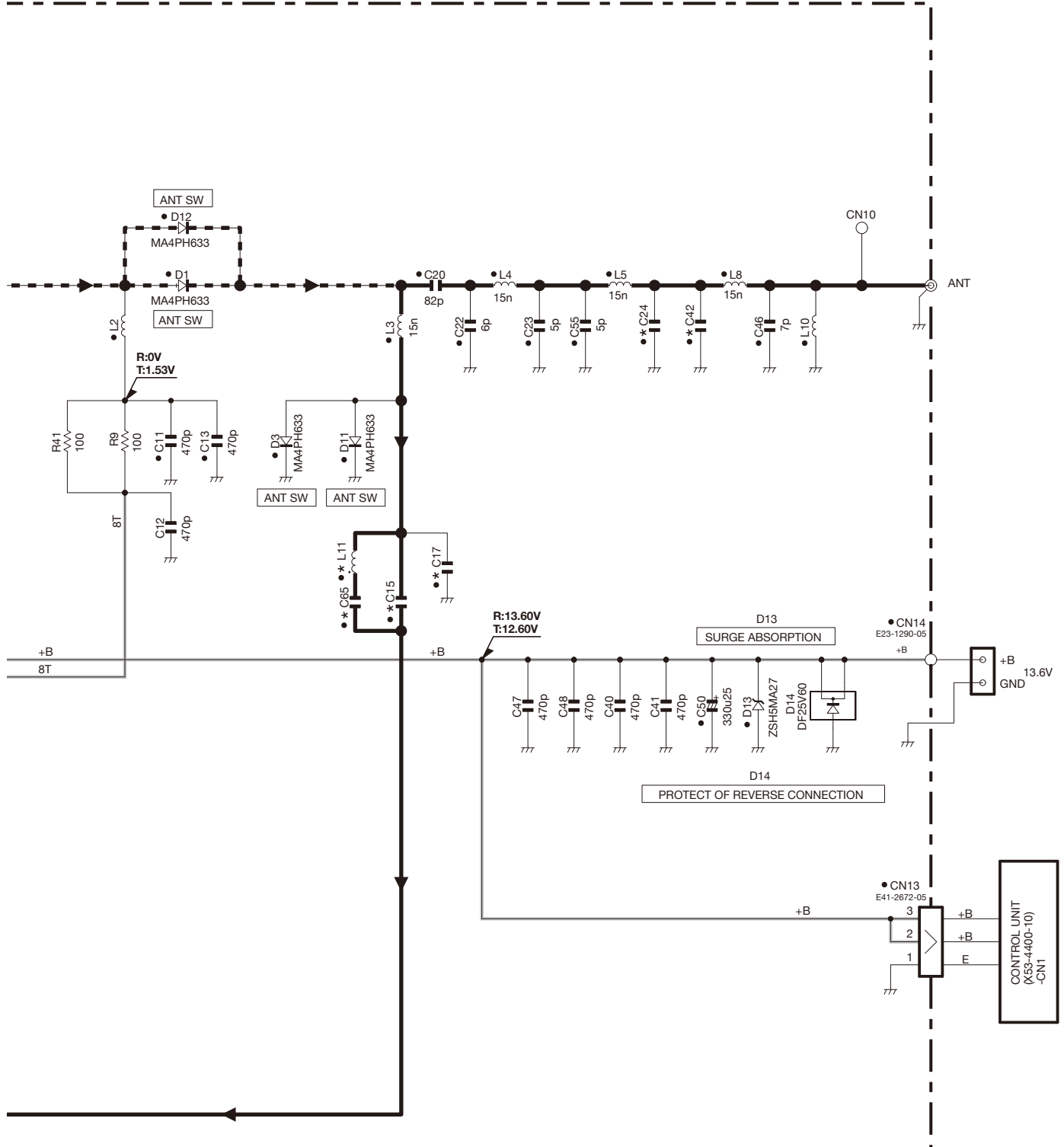
FINAL UNIT (X45-3790-XX): TK-5810(BG)



X45-3790-XX	IC2	R1	R2	R3	R4	R11	R13	R18	R19	R23	R28	C19	C27	C37	
-10	K	RA60H44521101	820	10	10	820	47k	15k	82	56	68	330	0.068u	5p	5p
-11	K2	RA60H40471101	470	18	18	470	220k	18k	180	33	56	1k	0.015u	22p	8p

SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3790-XX): TK-5810(BG)

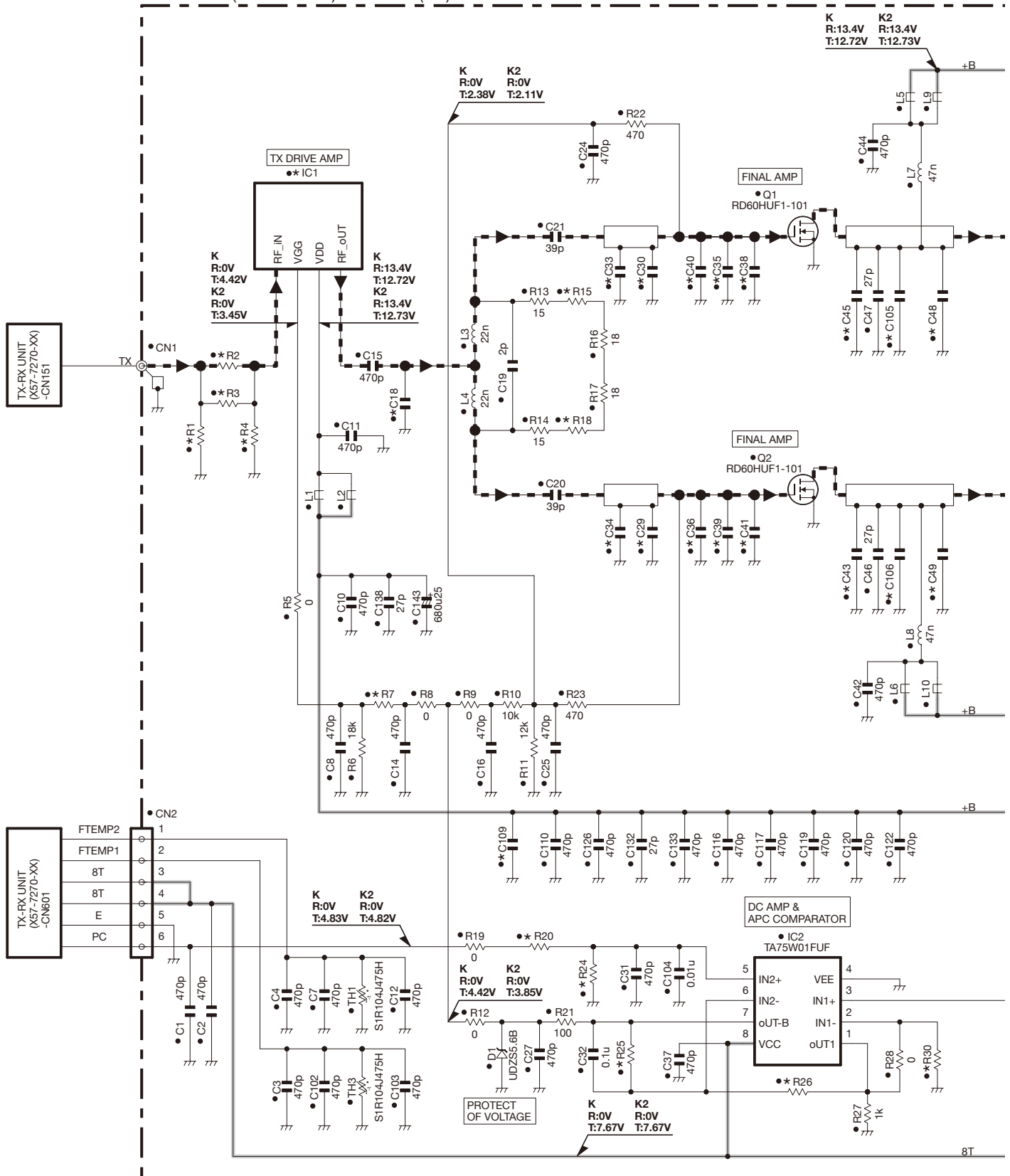


X45-3790-XX	L11	C15	C17	C24	C42	C65
-10	K	15n	NO	5p	6p	470p
-11	K2	NO	470p	3p	7p	NO

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

TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

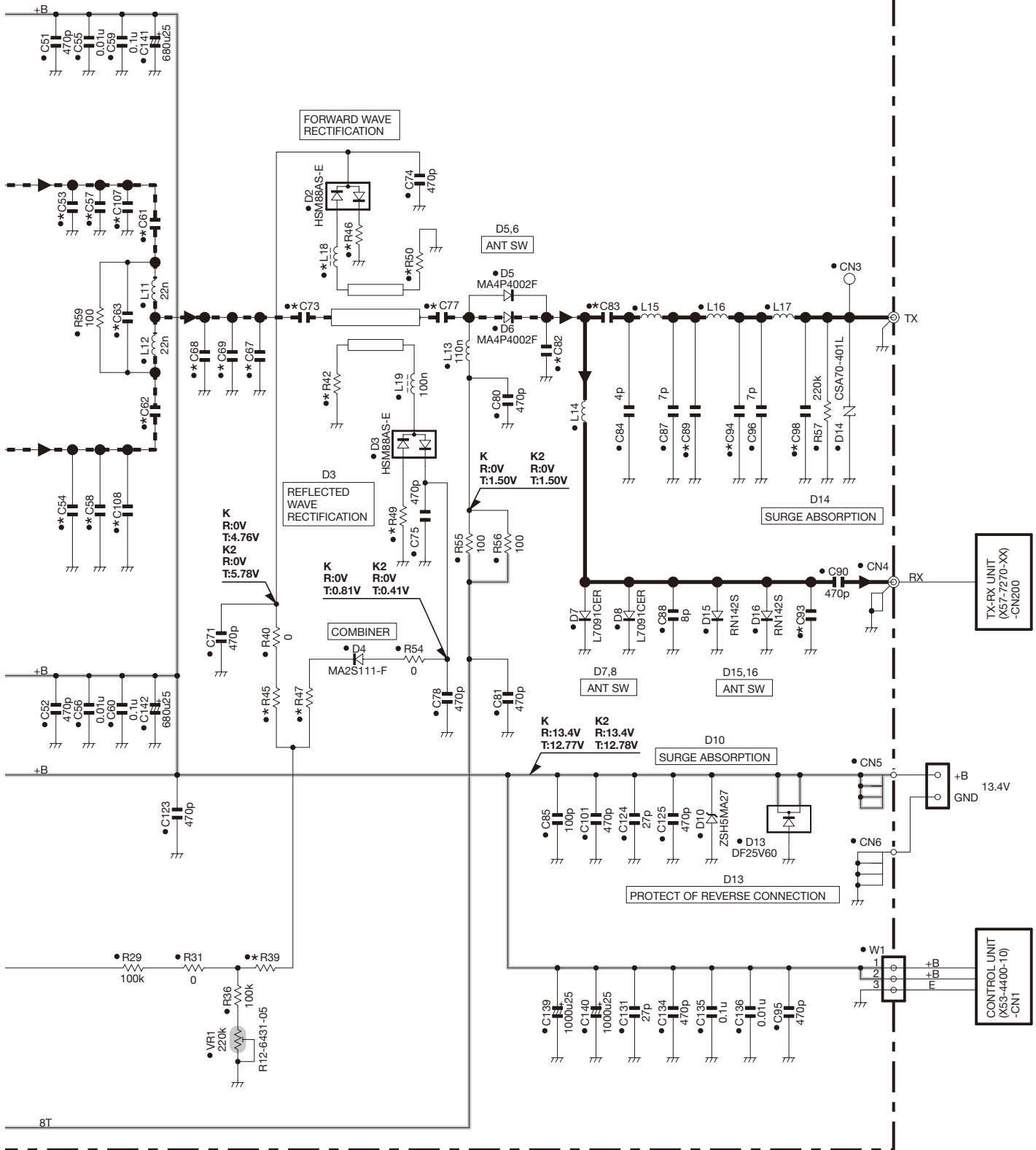


X45-3800-XX	IC1	R1	R2	R3	R4	R7	R15	R18	R20	R24	R25	R26	R30	
-10	K	RA13H4452M123	820	10	10	820	0	18	18	270k	220k	120k	4.7k	NO
-11	K2	RA13H4047M123	NO	0	NO	NO	820	15	15	220k	270k	330k	3.3k	1k

X45-3800-XX	C18	C29	C30	C33	C34	C35	C36	C38	C39	C40	C41	C43	C45	C48	C49	C105	C106	C109	
-10	K	3p	5p	5p	3p	3p	30p	7p	30p	30p	7p	30p	27p	27p	8p	8p	10p	10p	47p
-11	K2	4p	10p	10p	6p	6p	39p	12p	39p	39p	12p	39p	30p	30p	20p	20p	18p	18p	56p

SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

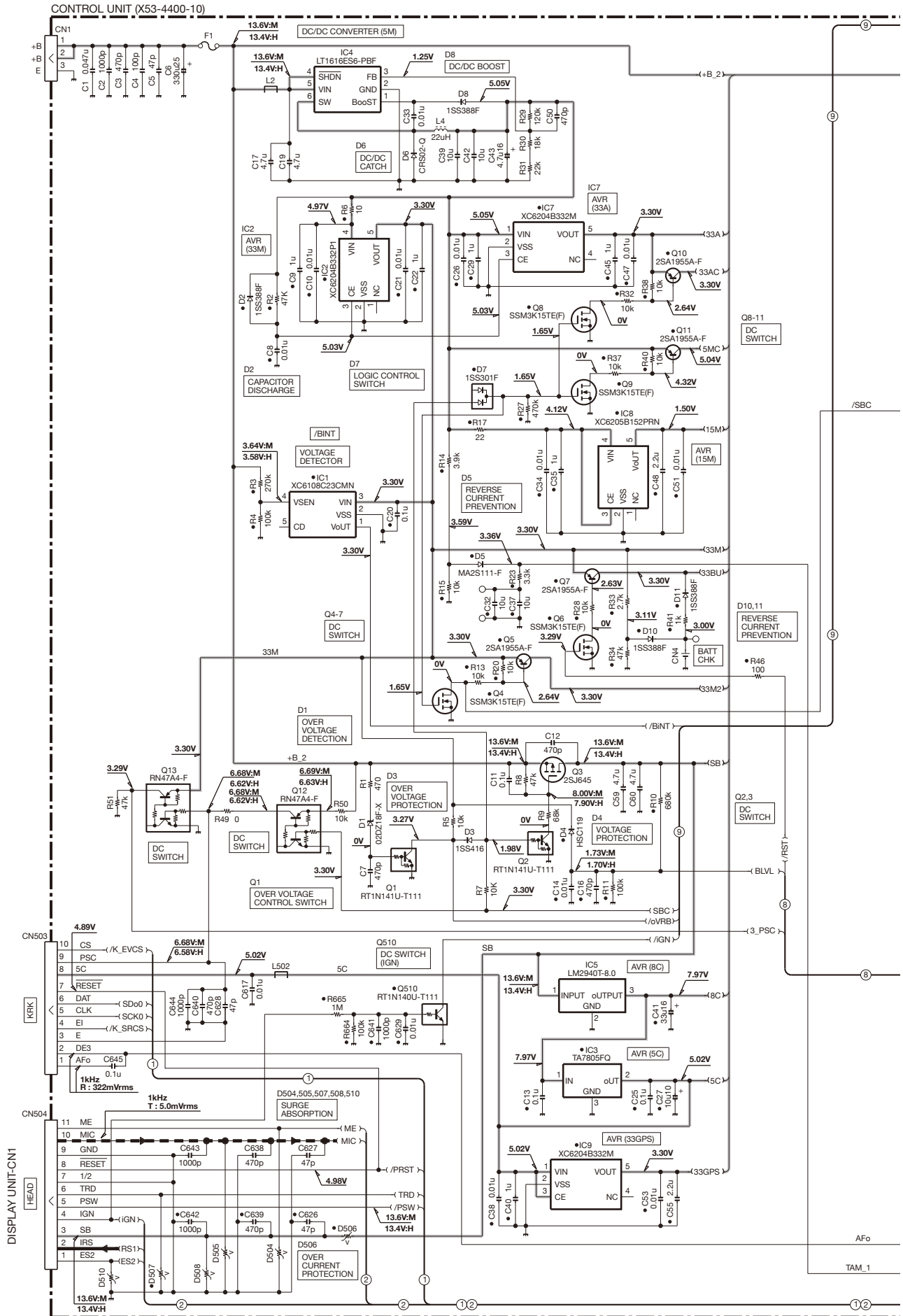


Note:
The components marked with a dot (•) are parts of layer 1.

X45-3800-XX	L18	R39	R42	R45	R46	R47	R49	R50	C53	C54	C57	C58
-10	K	82n	220k	56	56k	220	10k	390	68	2p	2p	2p
-11	K2	100n	10k	82	220k	330	0	180	82	NO	NO	10p

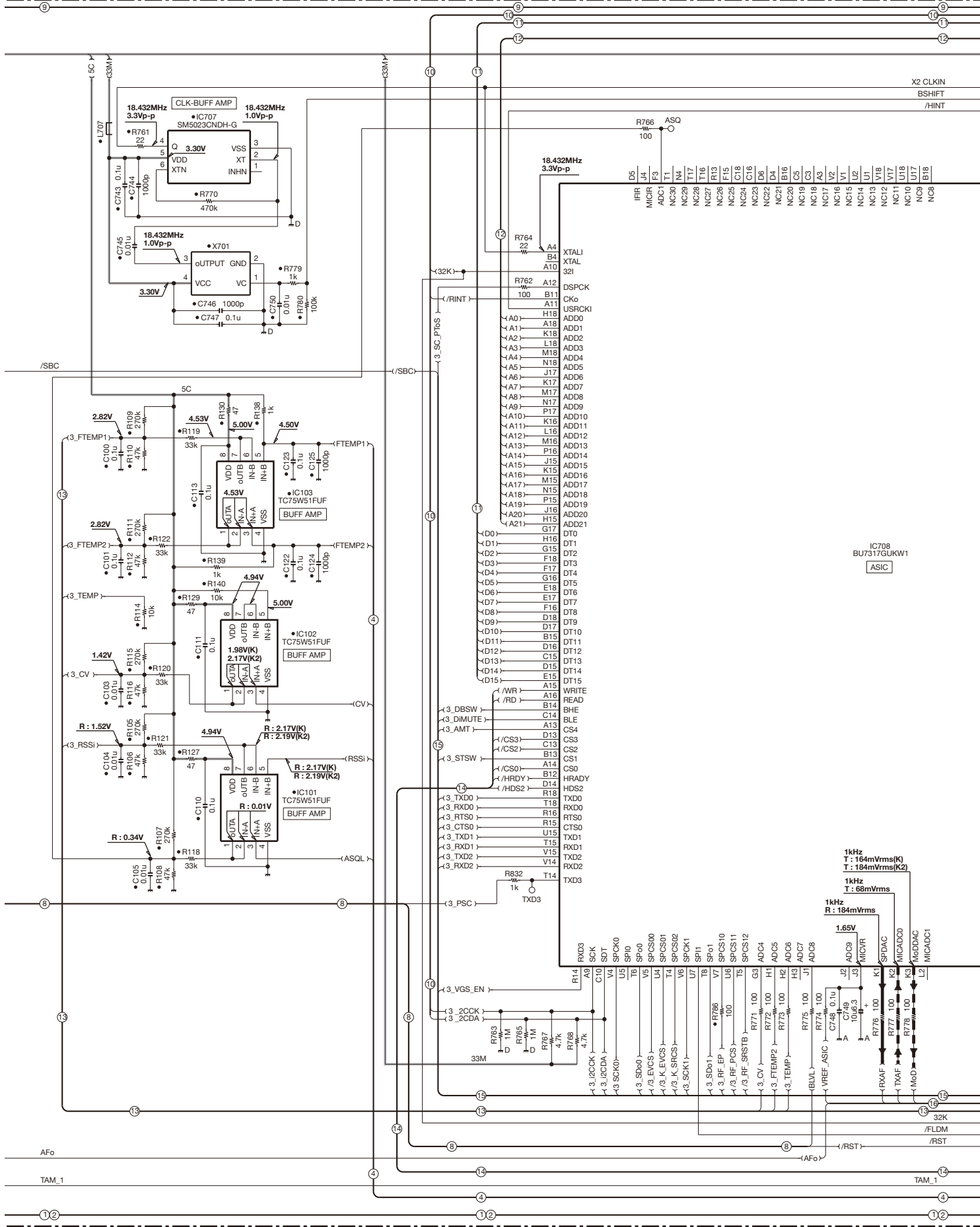
X45-3800-XX	C61	C62	C63	C67	C68	C69	C73	C77	C82	C83	C89	C93	C94	C98	C107	C108
-10	K	390p	390p	1.5p	1p	2p	2p	47p	27p	4p	390p	7p	NO	7p	5p	3p
-11	K2	100p	100p	2p	4p	NO	NO	33p	33p	9p	100p	8p	2p	8p	7p	NO

TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM



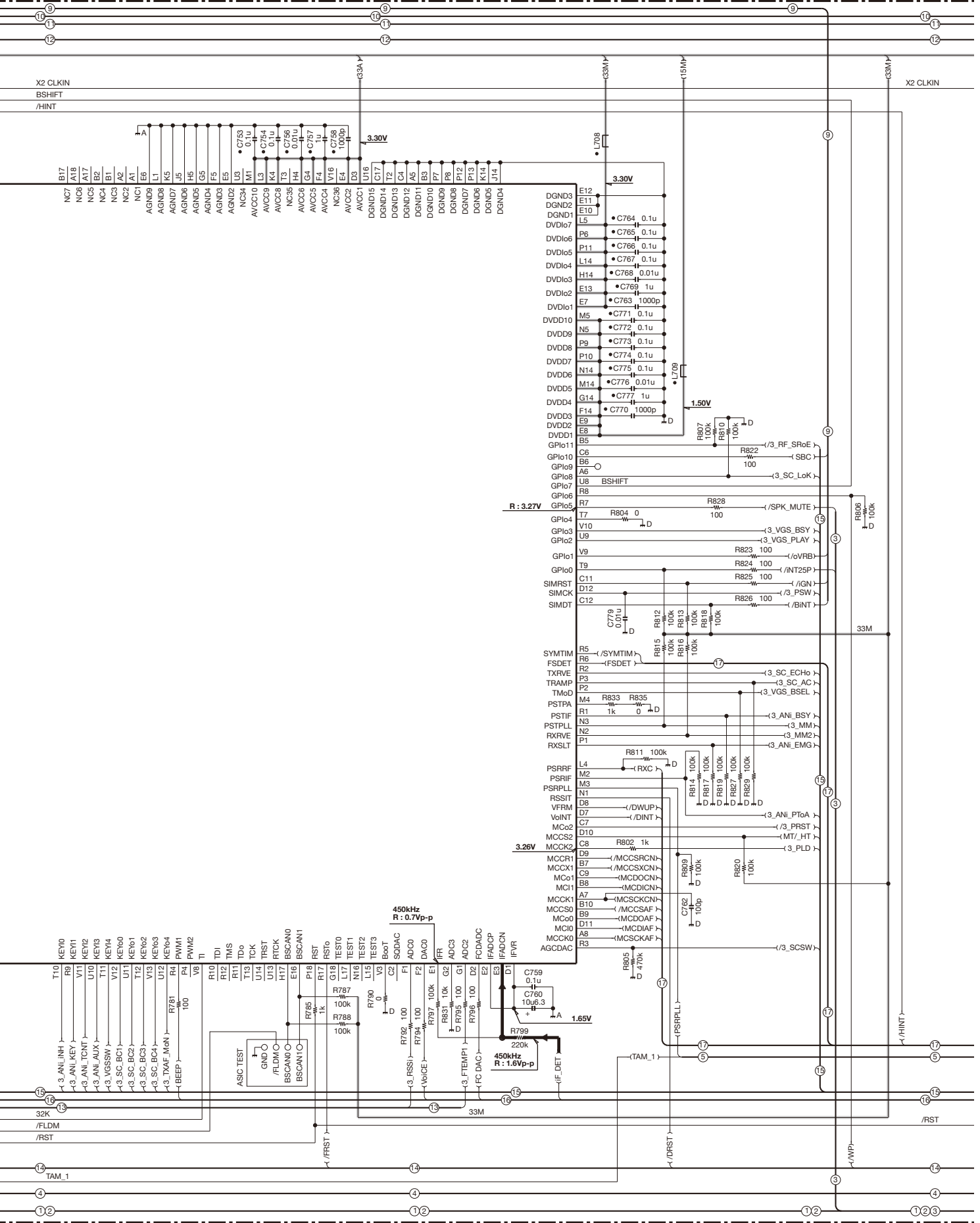
SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10)



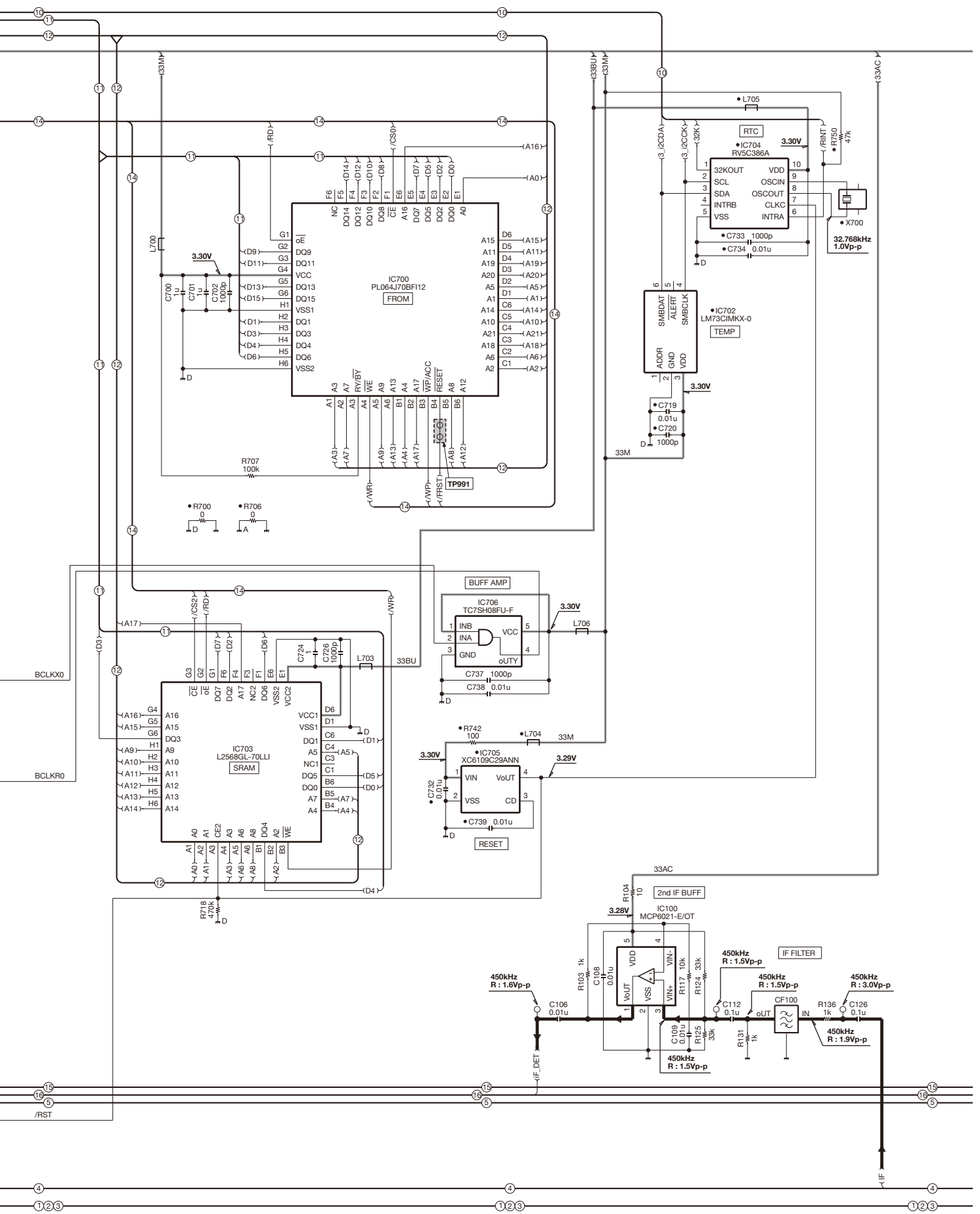
TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4400-10)



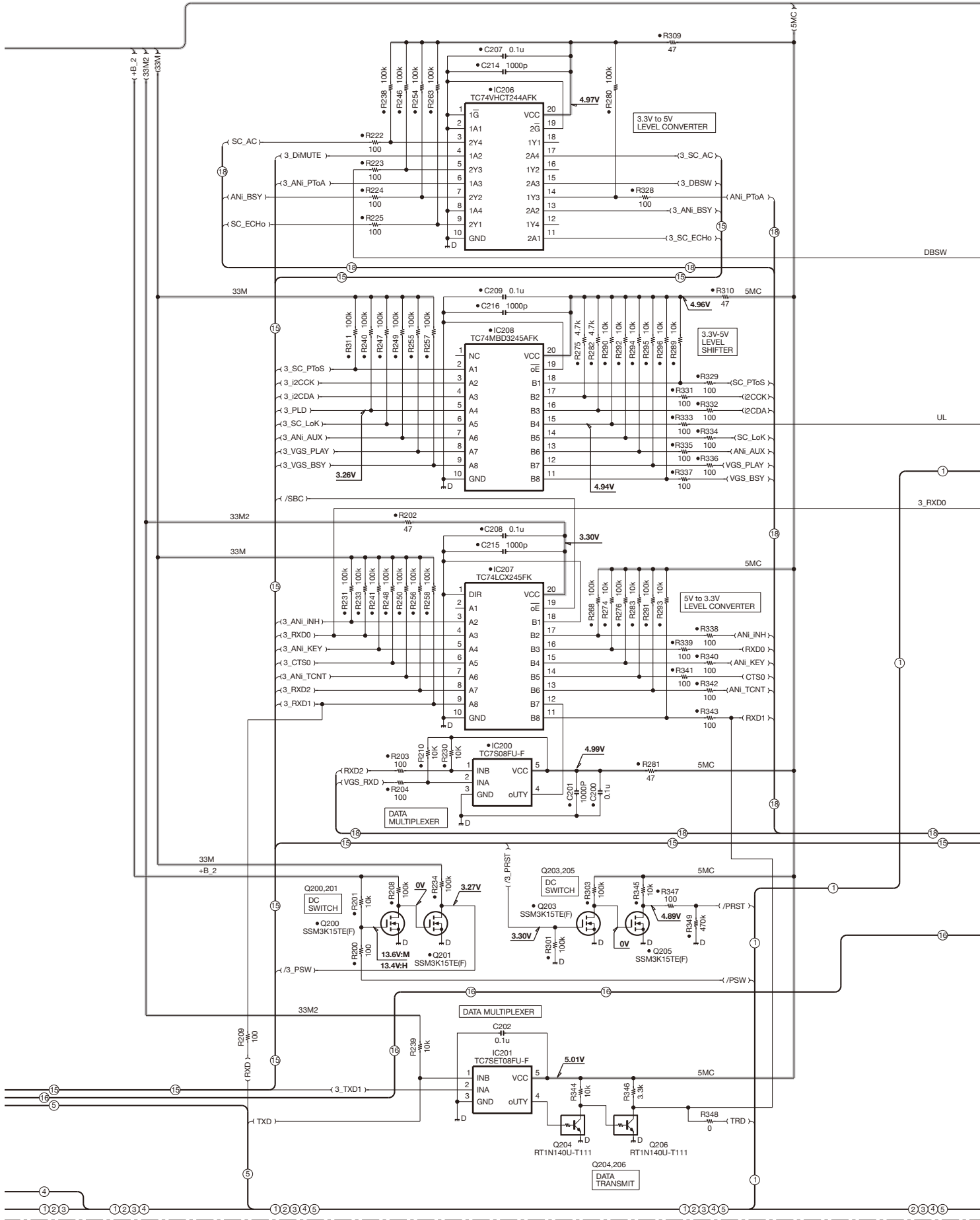
TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4400-10)



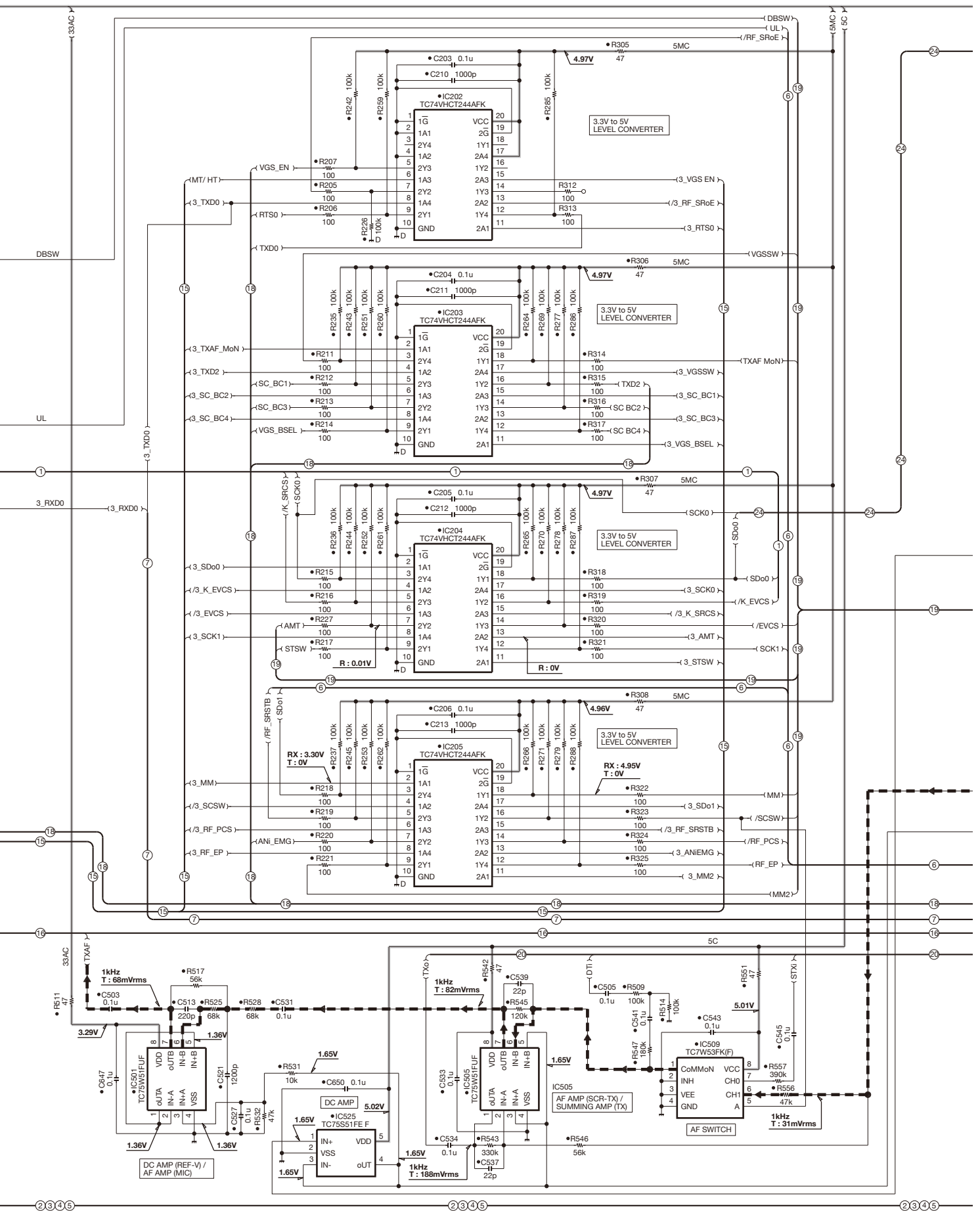
SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10)



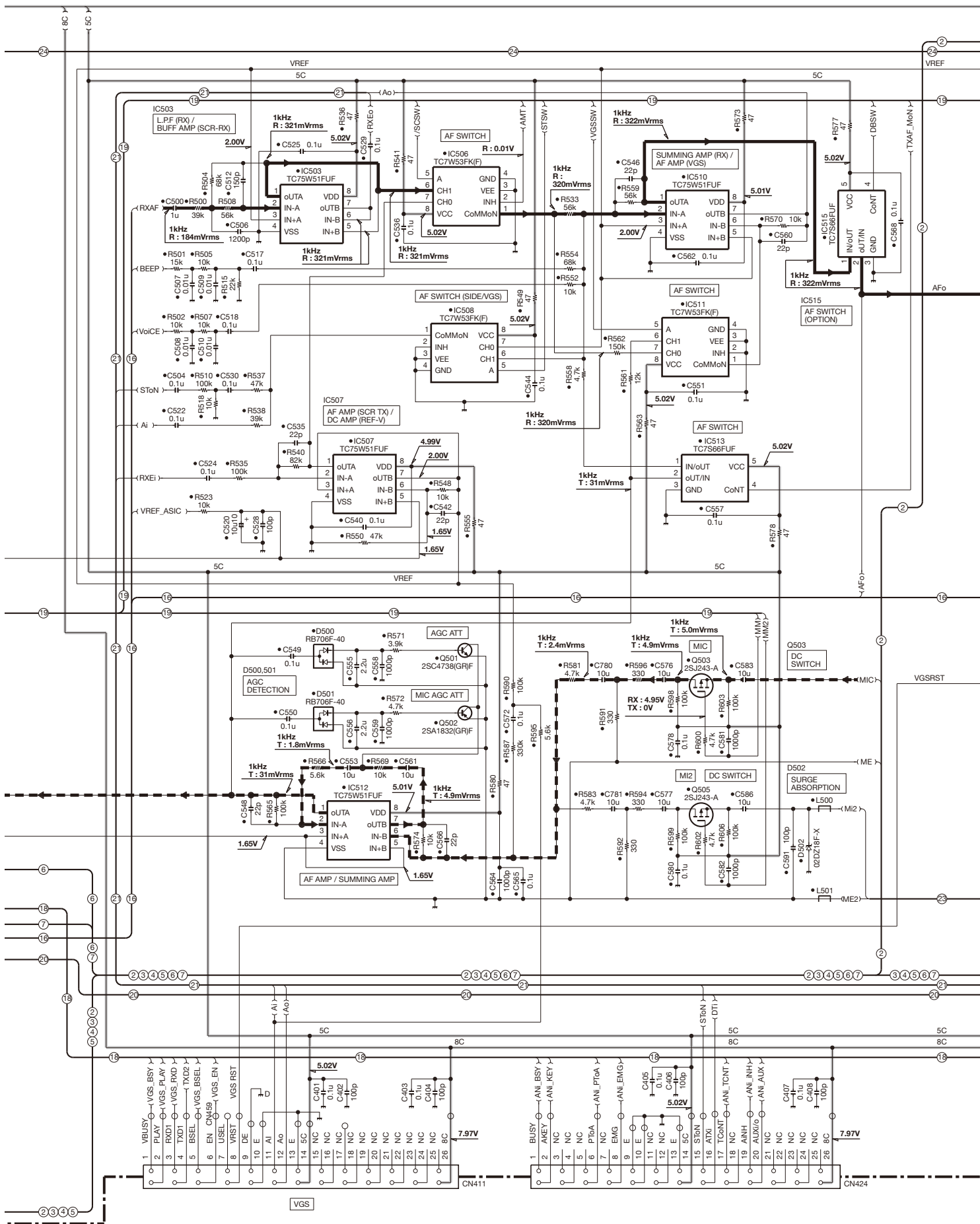
TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4400-10)



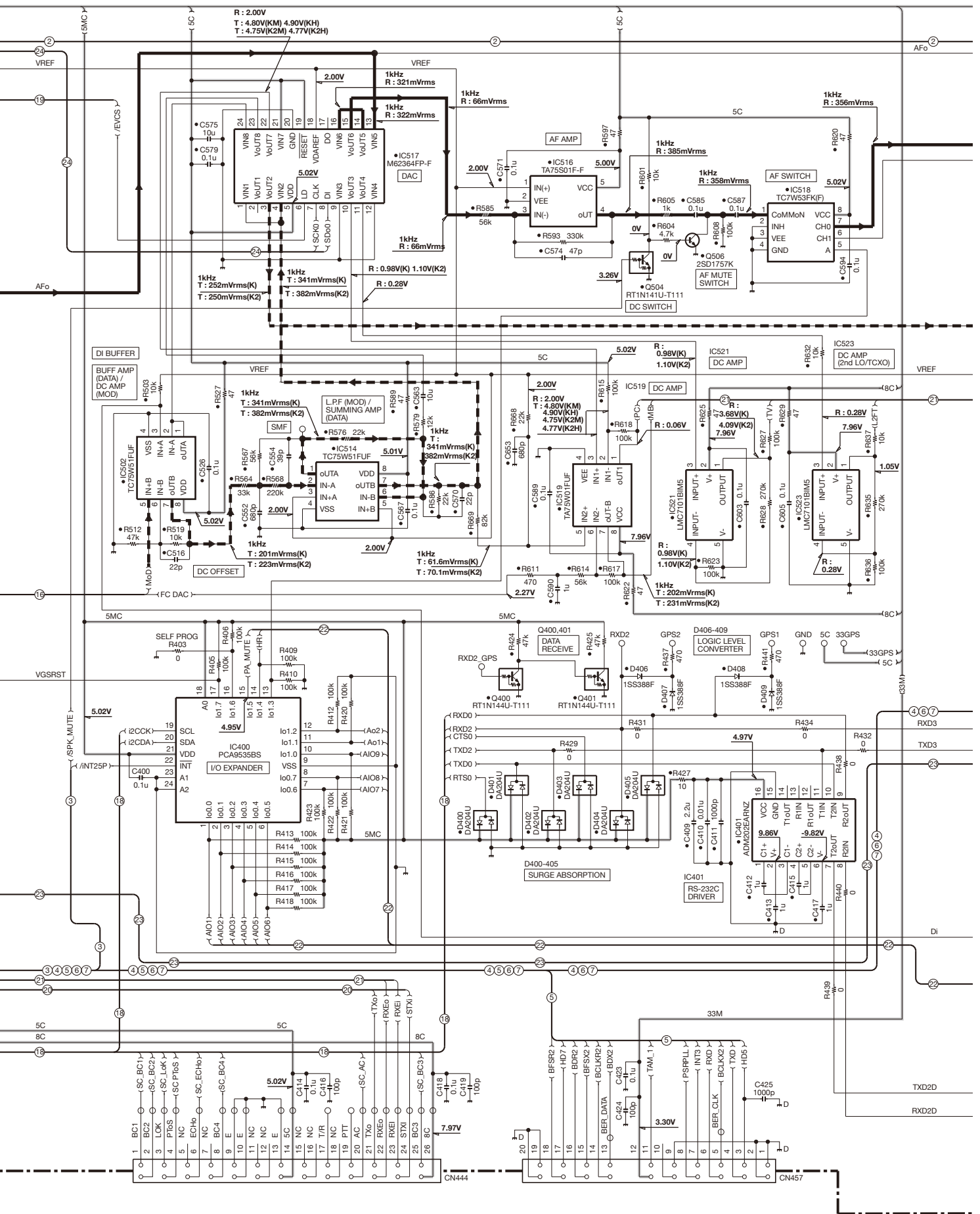
SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10)



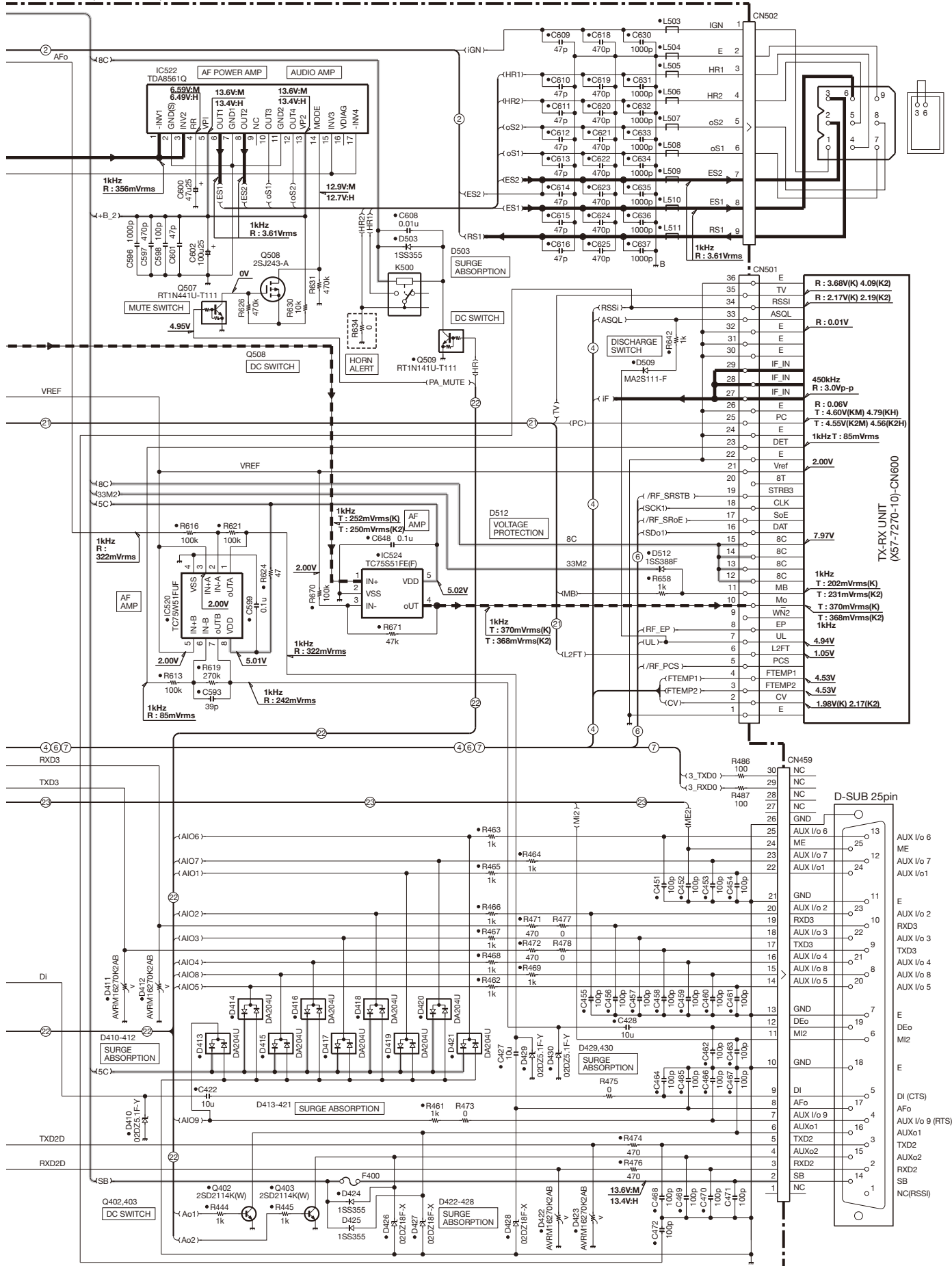
TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

CONTROL UNIT (X53-4400-10)



SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

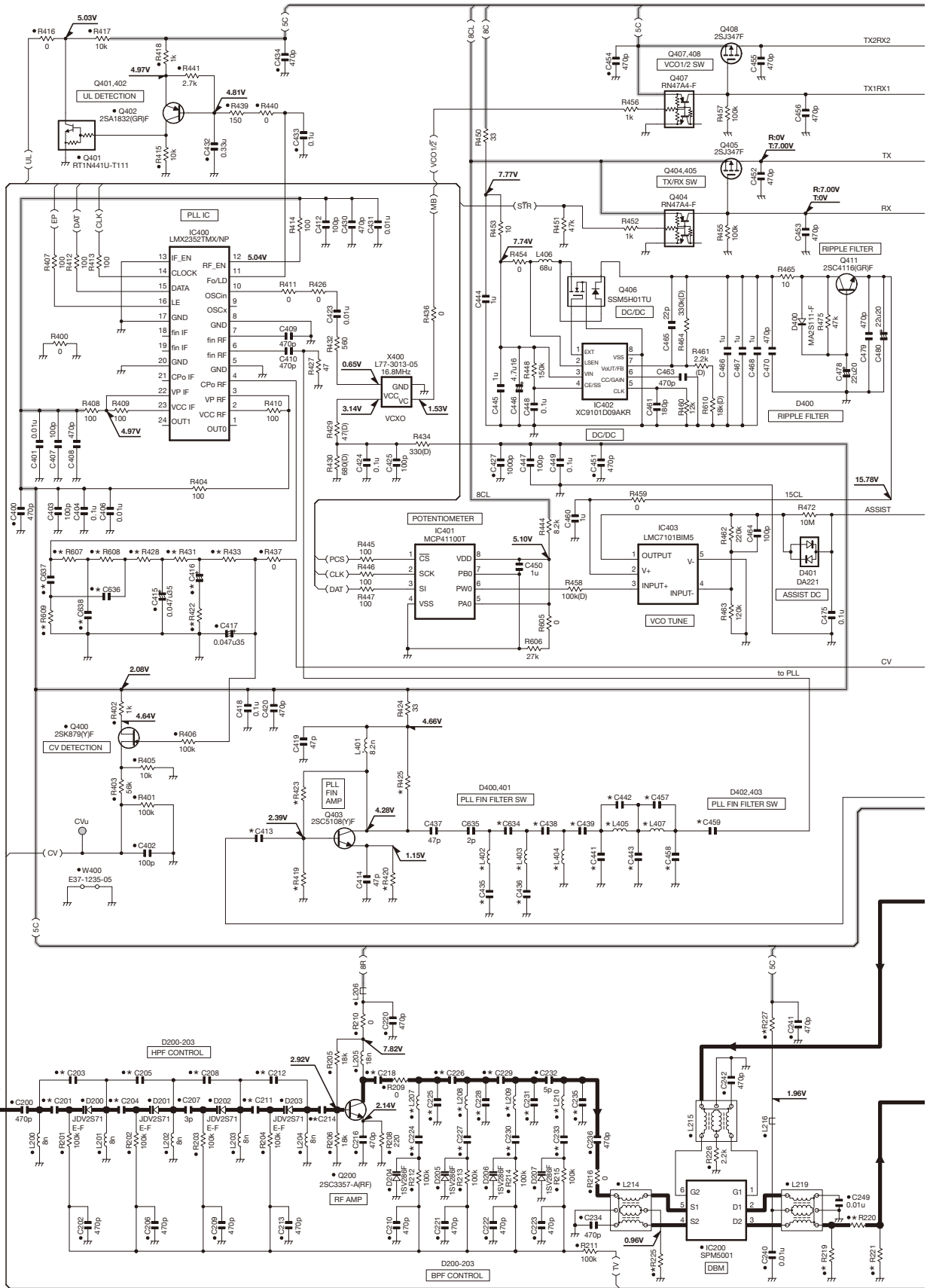
CONTROL UNIT (X53-4400-10)



Note : The components marked with a dot (•) are parts of layer 6.

TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

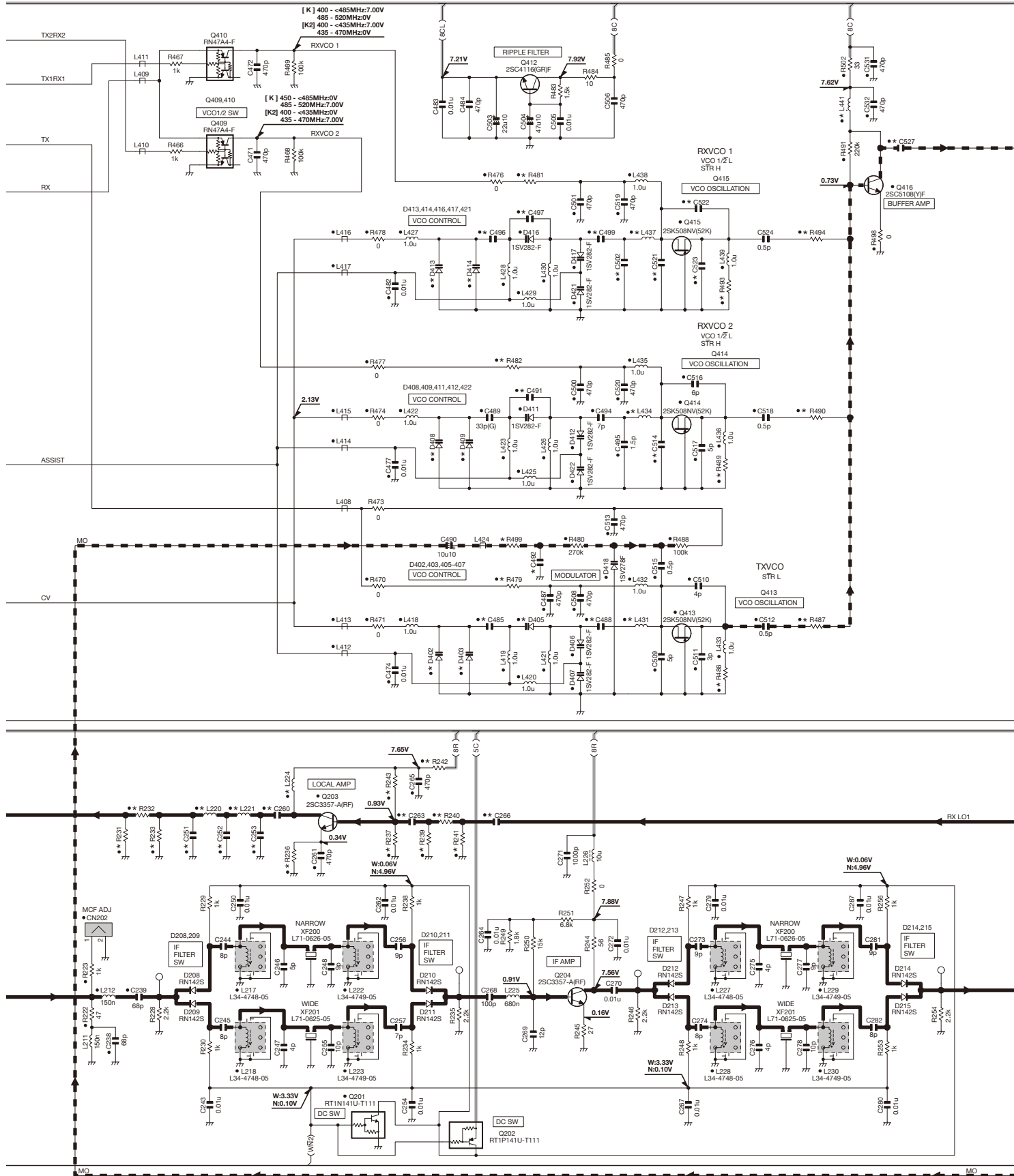
TX-RX UNIT (X57-7270-XX)



	L207	L208	L209	L210	L402	L403	L404	L405	L407	R219	R220	R221	R225	R227	R419	R420	R422	R423	R425	R428	R431	R433	R607	R608	R609	C201	C203							
X57-7270-XX	K	L34-4565-05(5T)	L34-4565-05(6T)	L34-4565-05(5T)	NO	4.7n	4.7n	3.3n	3.3n	NO	NO	NO	NO	47	4.7k(D)	150(D)	1.2k	4.7k	220	100	0	100	390	390	180	3p	1.5p							
-11	K2	L34-4566-05(6T)	L34-4566-05(6T)	L34-4566-05(6T)	NO	15n	15n	NO	8.8n	820	5.6	820	47	39	10k(D)	100(D)	3.9k	10k	10k	NO	1k	1k	2.2k	0	0	NO	4p	2p						
X57-7270-XX	C204	C205	C208	C211	C212	C214	C218	C224	C225	C226	C227	C228	C229	C230	C231	C233	C235	C413	C416	C435	C436	C438	C439	C441	C442	C443	C457	C458	C459	C634	C636	C637	C638	
-10	K	3p	0.5p	0.5p	3p	1.5p	7p	15p	7p	4p	18p	7p	4p	18p	7p	22p	8p	1p	NO	27p	2.5p	2p	3p	5p	3.5p	1p	100p	47p	0.039u	0.039u	0.068u			
-11	K2	4p	1p	1p	4p	2p	12p	8p	18p	10p	5p	15p	9p	6p	15p	9p	27p	10p	100p	0.47u	8p	6p	5p	47p	1.5p	2p	3p	2p	1.5p	47p	1.5p	NO	NO	NO

SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

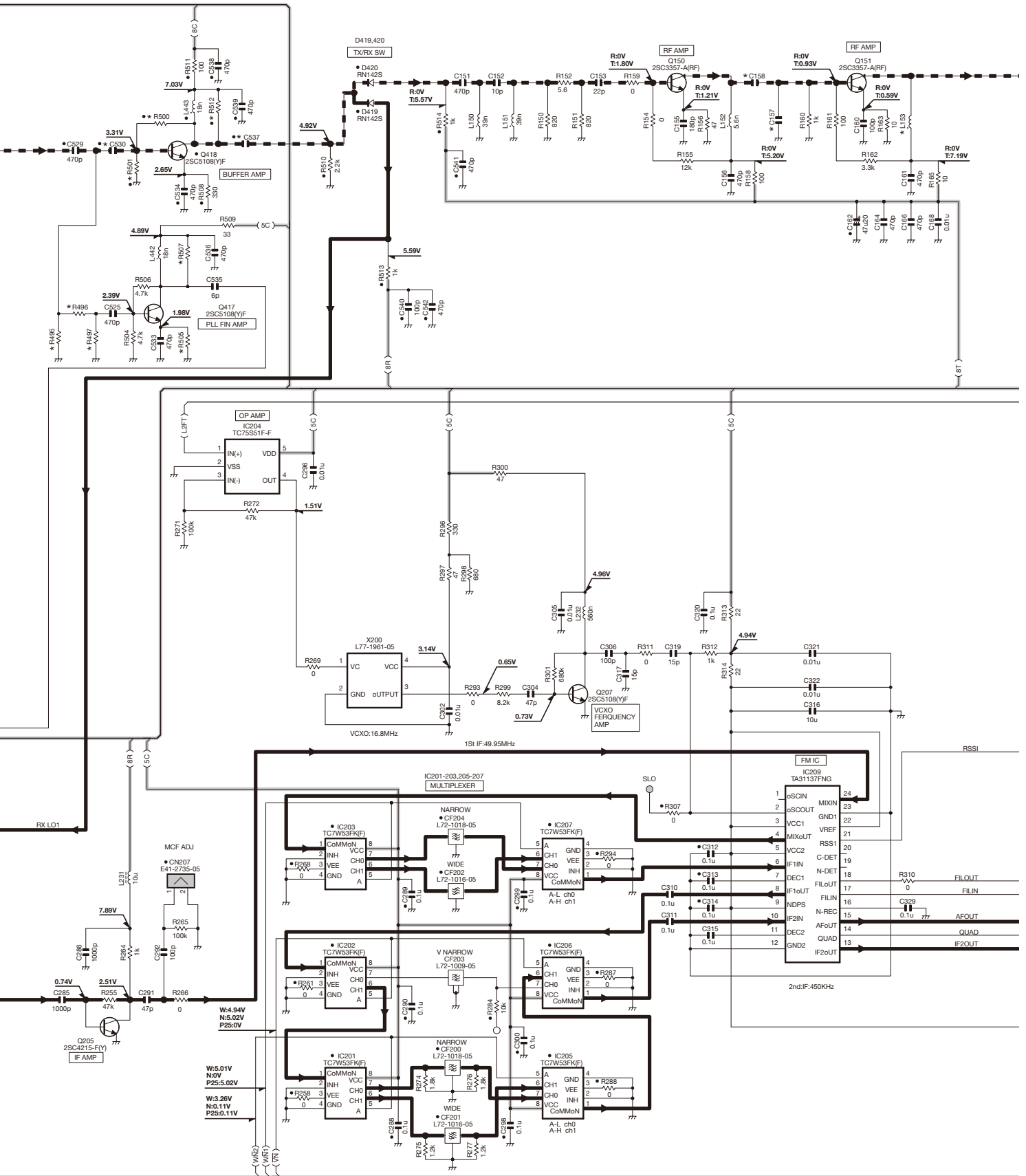
TX-RX UNIT (X57-7270-XX)



X57-7270-XX	D402	D403	D405	D408	D409	D413	D414	L220	L221	L224	L431	L434	L437	L441	R231	R232	R233	R236	R237	R239	R240	R241	R242	R243						
-10	K	1SV305F	HVC376B	BB664	1SV305F	HVC376B	1SV305F	HVC376B	15n	15n	18n	L34-4607-15 17.5n	L34-4608-15 22n	L34-4608-15 22n	18n	180	33	180	220	10k	180	33	180	330	18k					
-11	K2	1SV282-F	NO	NO	1SV282-F	NO	NO	22n	22n	22n	22n	L34-4608-15 22n	L34-4609-15 28n	L34-4609-15 28n	27n	220	22	220	270	1.8k	270	18	270	33	3.9k					
X57-7270-XX	R479	R481	R482	R486	R487	R488	R490	R493	R494	R499	C251	C252	C253	C260	C263	C266	C485	C488	C491	C492	C496	C497	C499	C502	C514	C521	C522	C523	C527	
-10	K	390	390(D)	470(D)	150	100	220	220	100(D)	220(D)	27k	5p	10p	5p	5p	12p	470p	100p	12p	1p	470p	100p	1.5p	10p	2p	6p	7p	6p	6p	6p
-11	K2	470	560(D)	270(D)	180	0	270	0	330(D)	0	22k	8p	12p	8p	10p	470p	100p	27p	15p	0.5p	680p	39p	0.5p	9p	2.5p	7p	9p	7p	5p	5p

TK-5810(BG)/5810H(BG) SCHEMATIC DIAGRAM

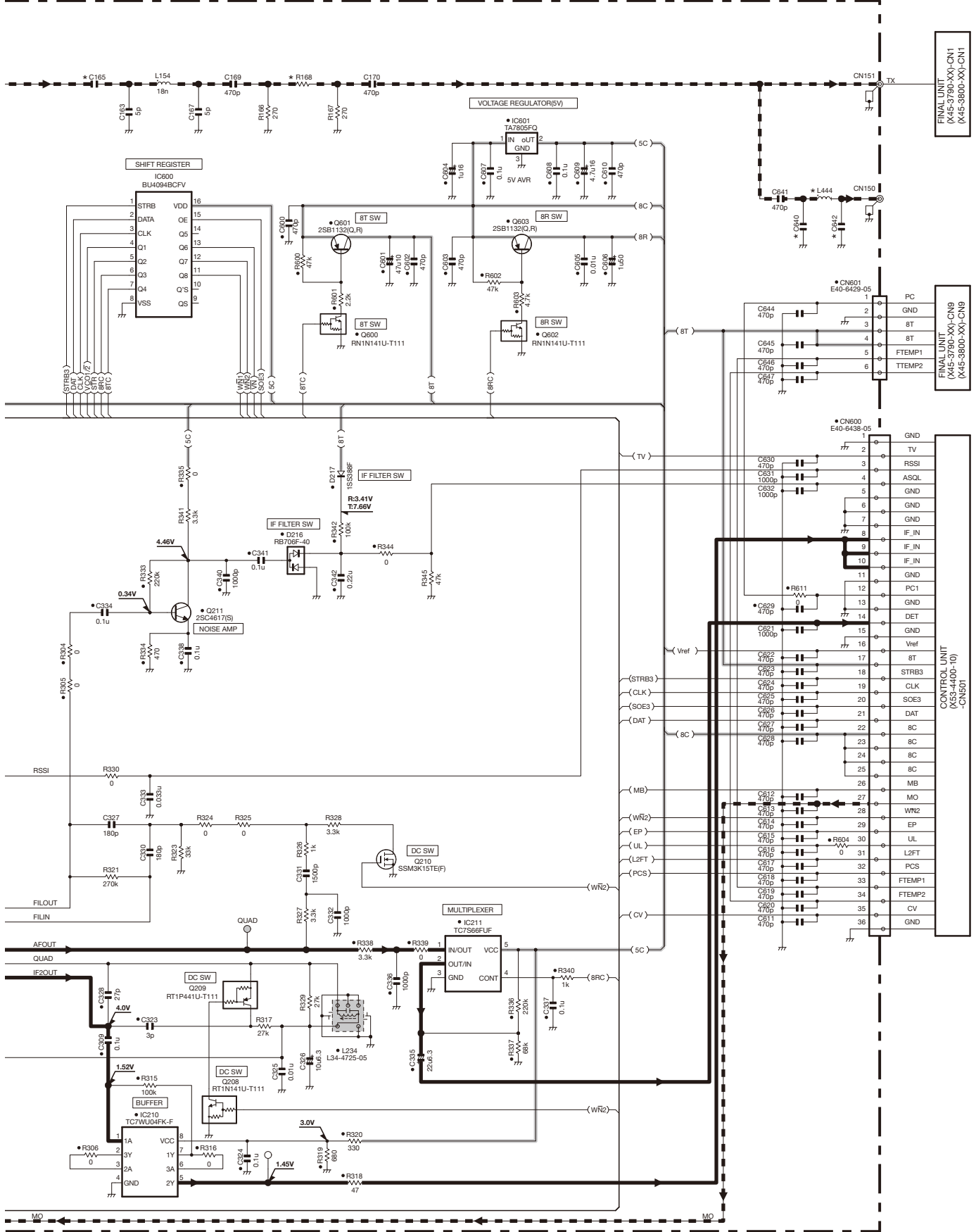
TX-RX UNIT (X57-7270-XX)



X57-7270-XX	L153	R495	R496	R497	R500	R501	R505	R507	R512	C157	C158	C330	C537
-10	K	18n	470	12	470	22k	15k	150	150	220	1p	4p	5p
-11	K2	22n	NO	0	NO	10k	10k	470	100	NO	8p	18p	5p

SCHEMATIC DIAGRAM TK-5810(BG)/5810H(BG)

TX-RX UNIT (X57-7270-XX)

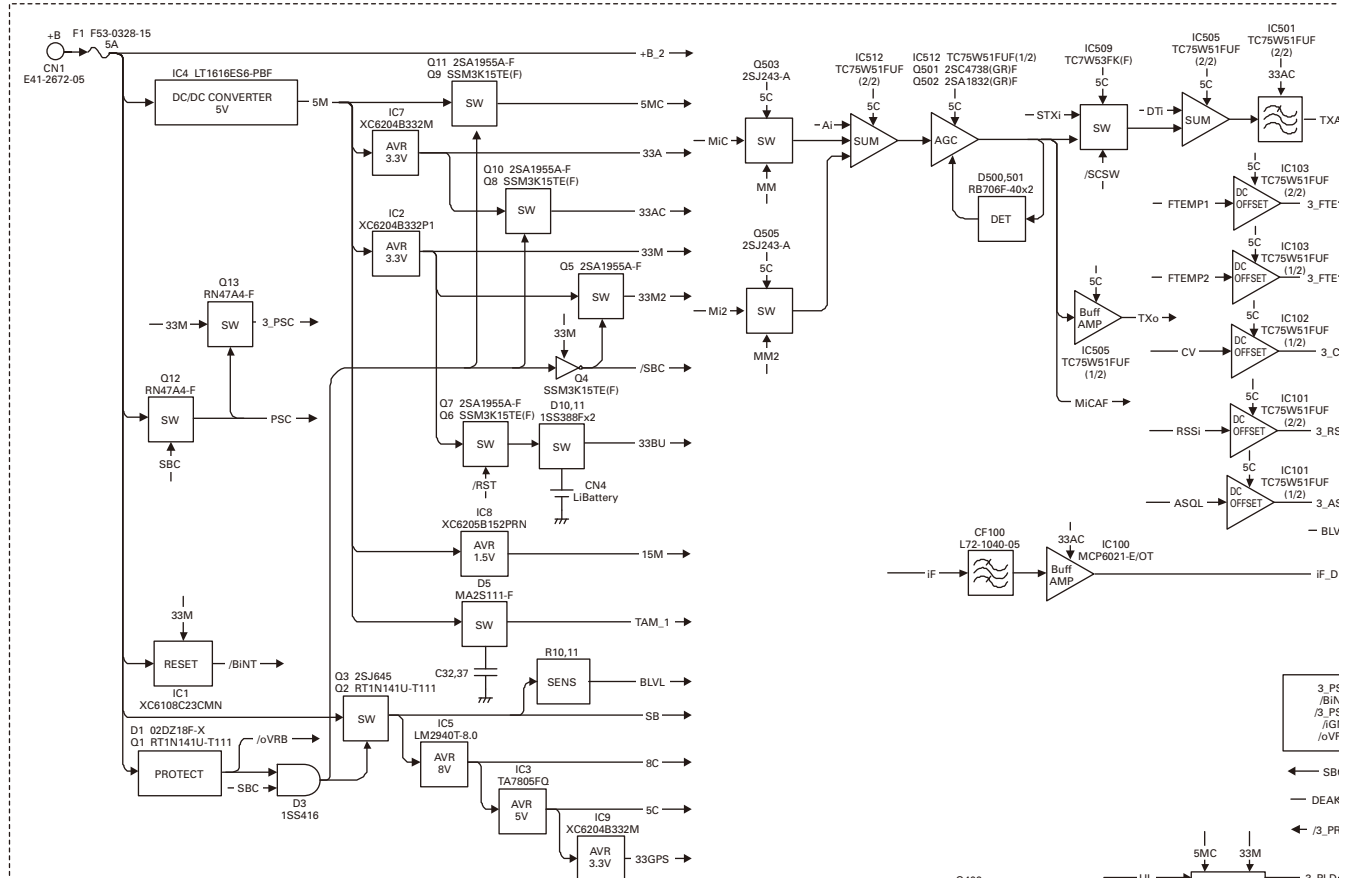


X57-7270-XX	L444	R168	C165	C640	C642
-10	K	18n	22	5p	5p
-11	K2	15n	18	7p	12p

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

BLOCK DIAGRAM

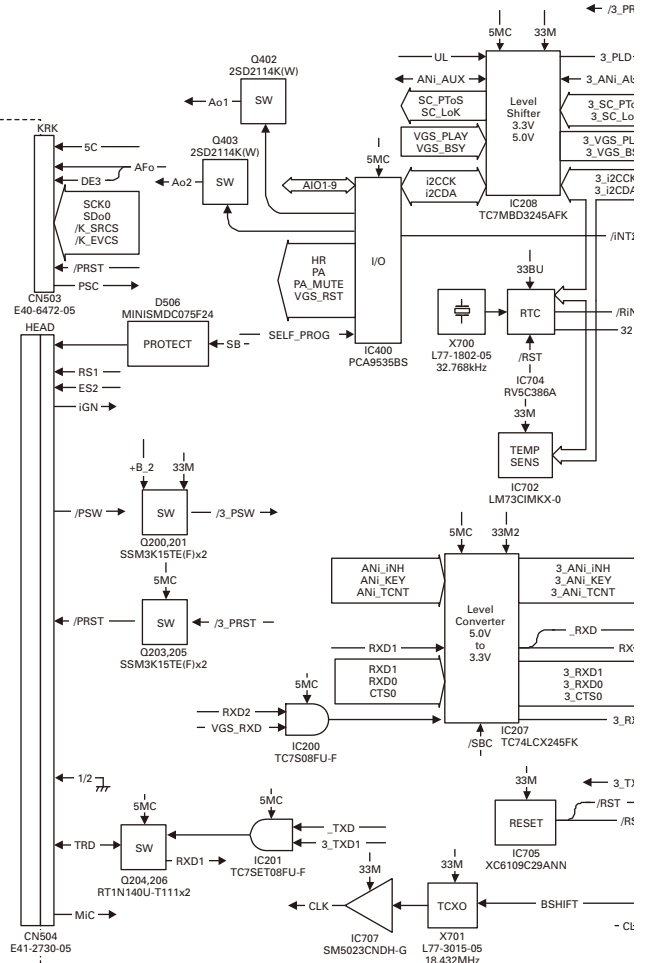
Control unit



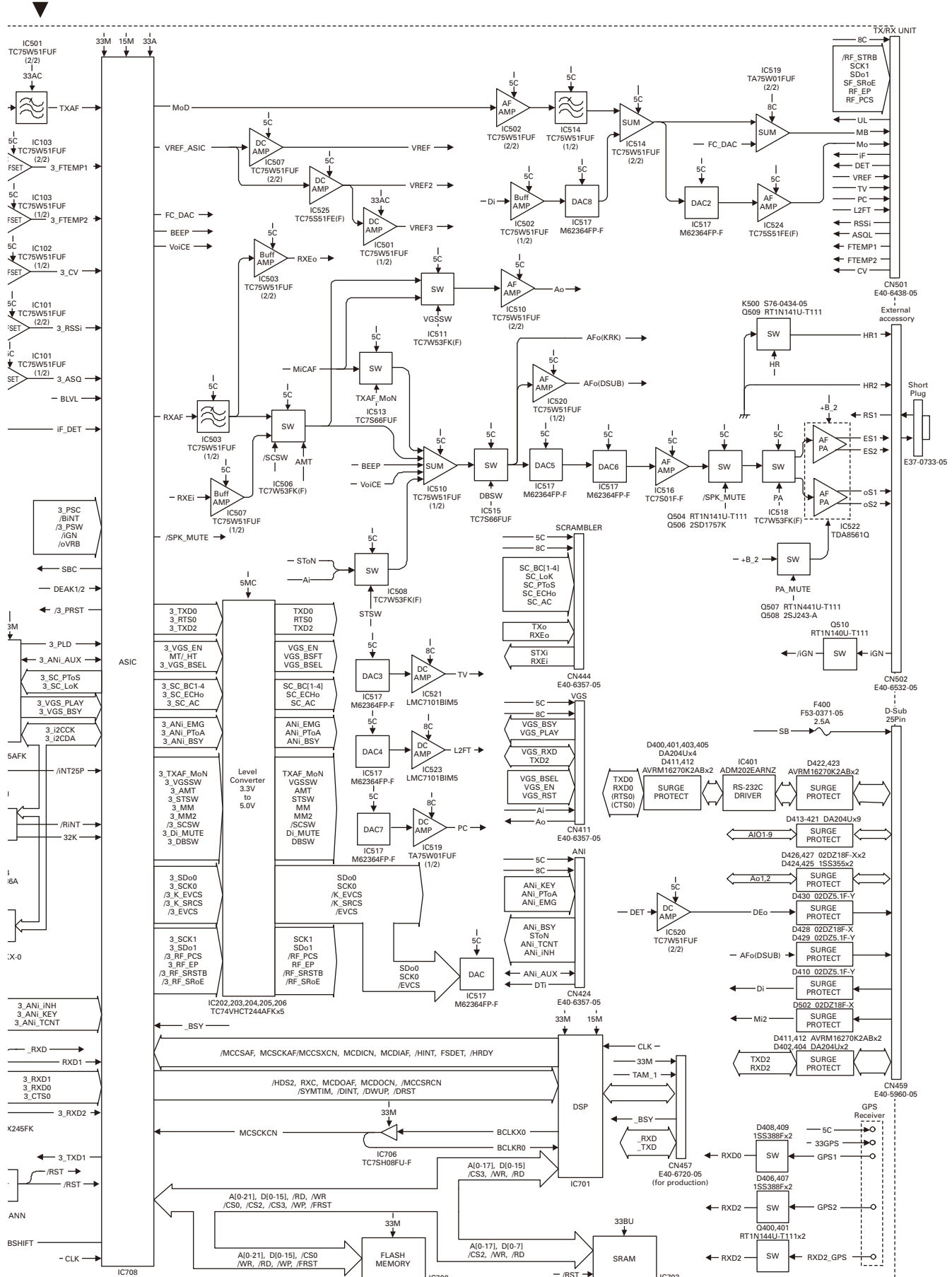
(option)

Display Unit

- Front Panel Kit KCH-14
- Front Panel Kit KCH-15
- Handheld Control Head KCH-16



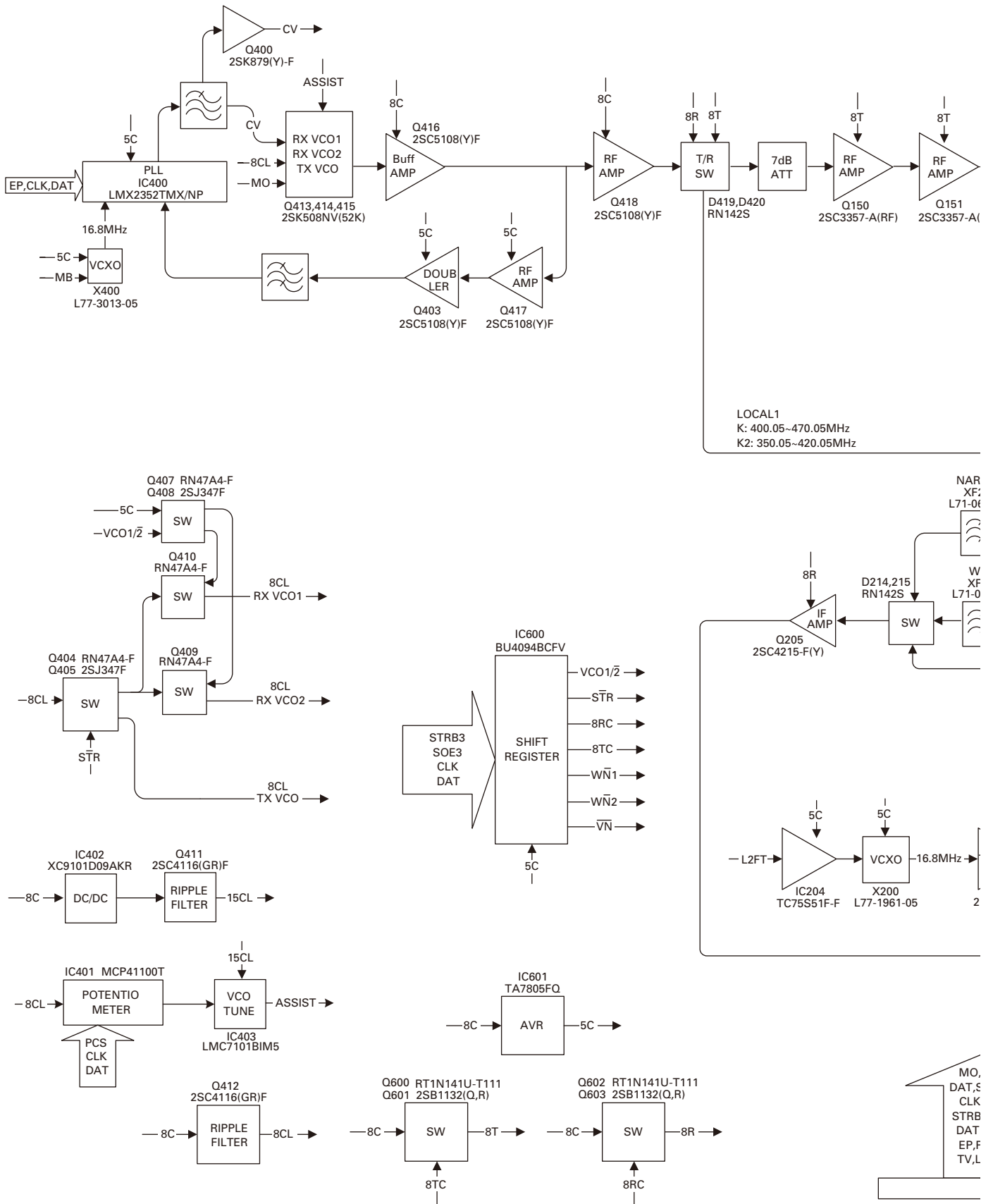
BLOCK DIAGRAM



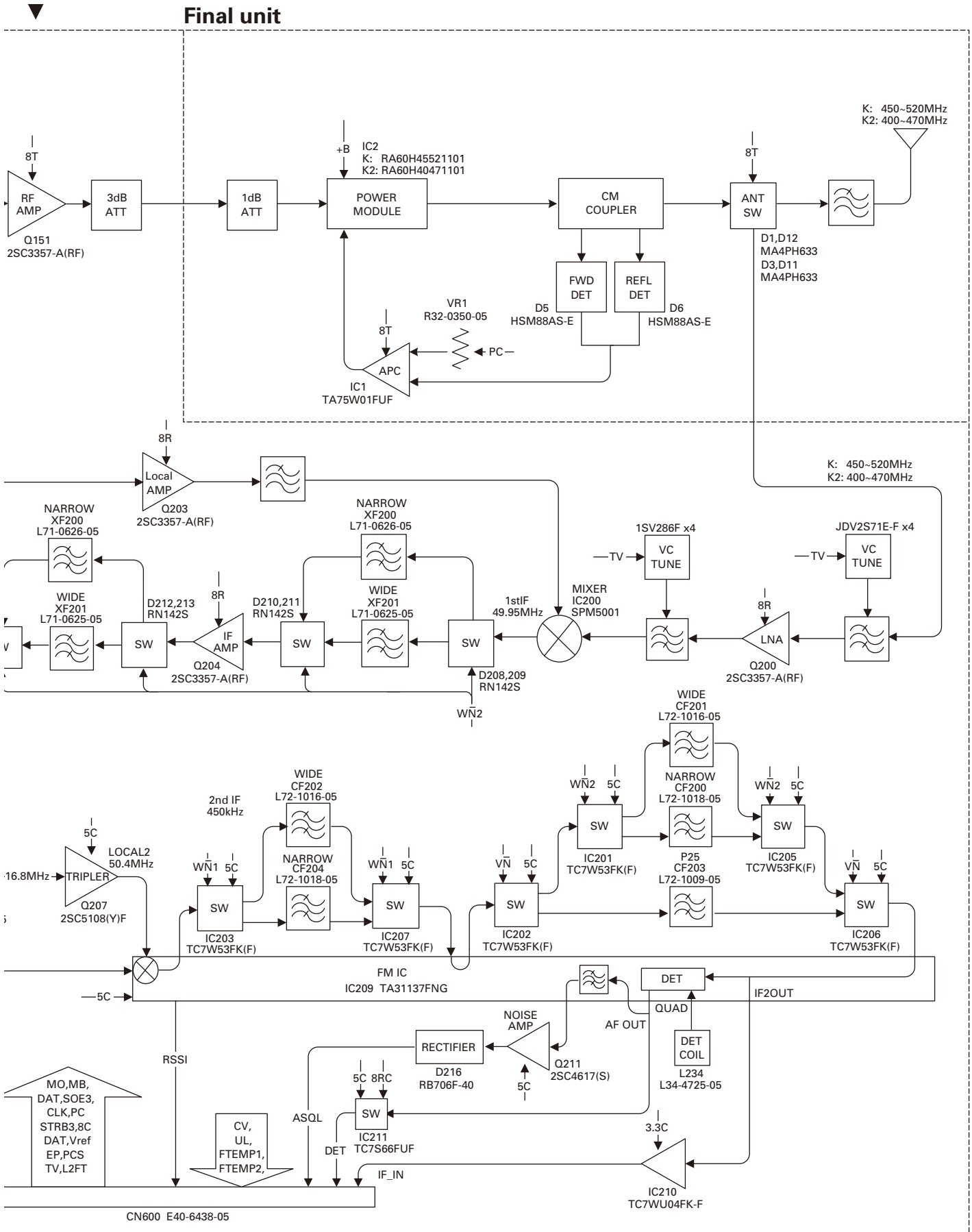
TK-5810(BG)/5810H(BG)

BLOCK DIAGRAM (TK-5810(BG))

TX-RX unit



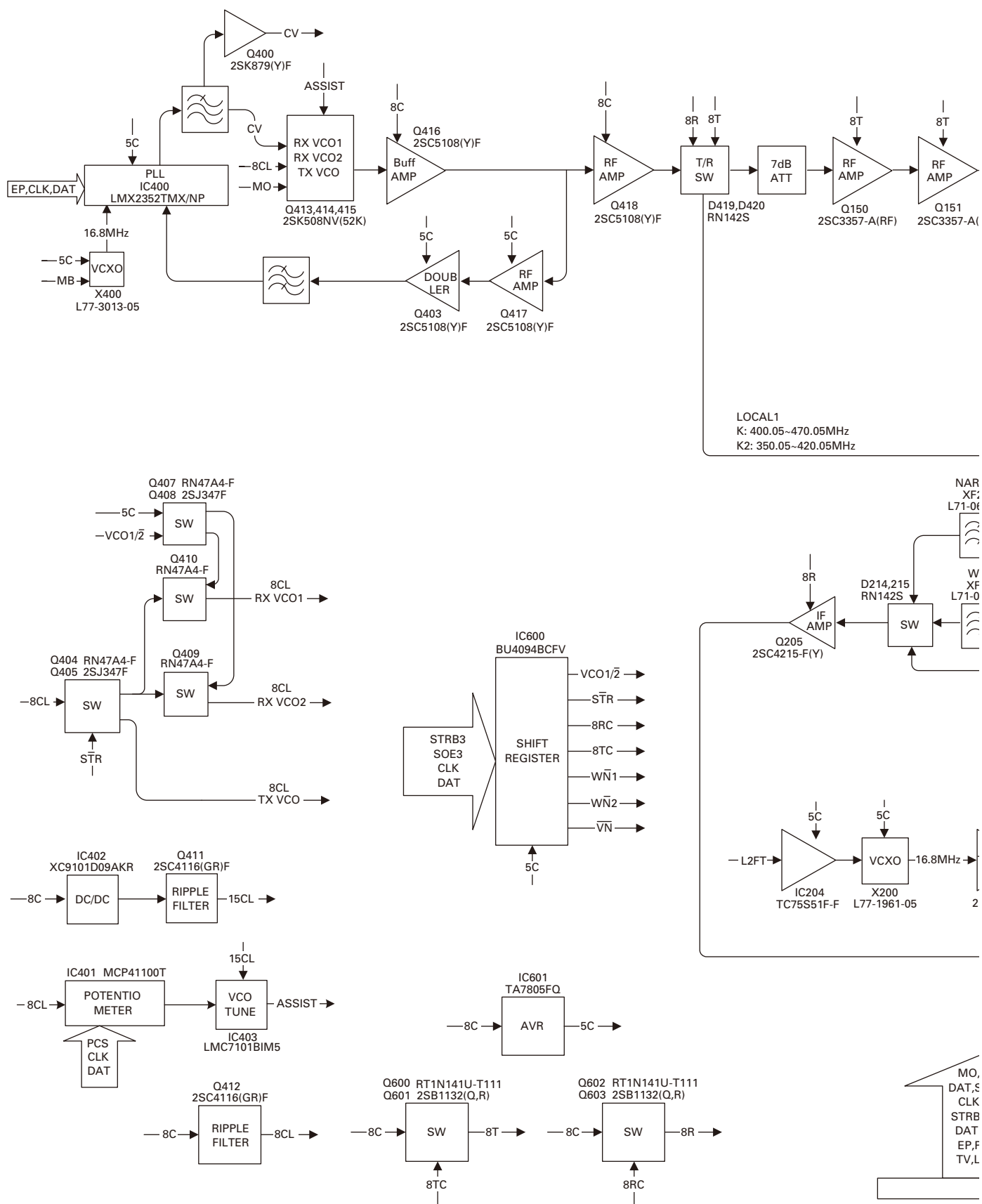
BLOCK DIAGRAM (TK-5810(BG))



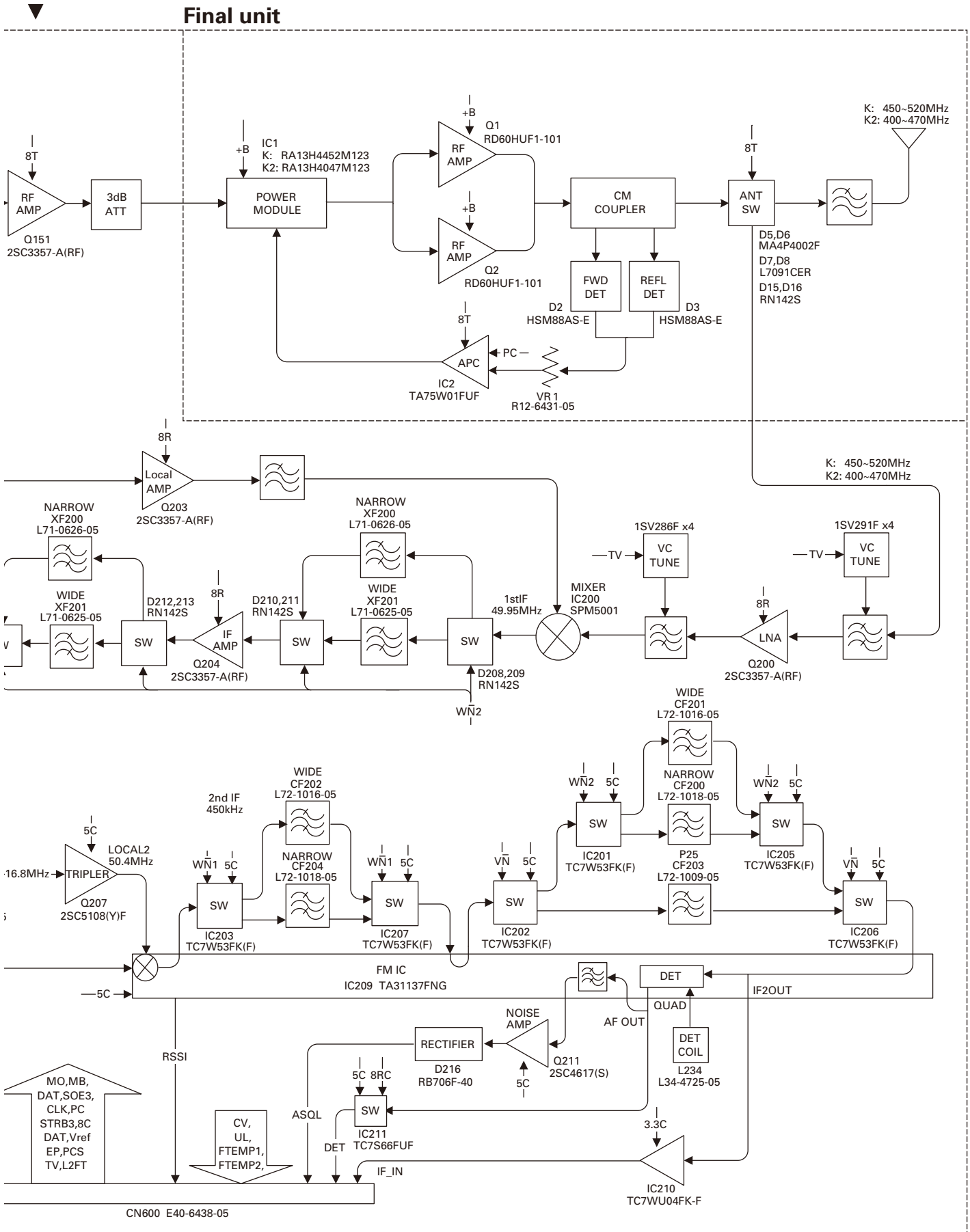
TK-5810(BG)/5810H(BG)

BLOCK DIAGRAM (TK-5810H(BG))

TX-RX unit

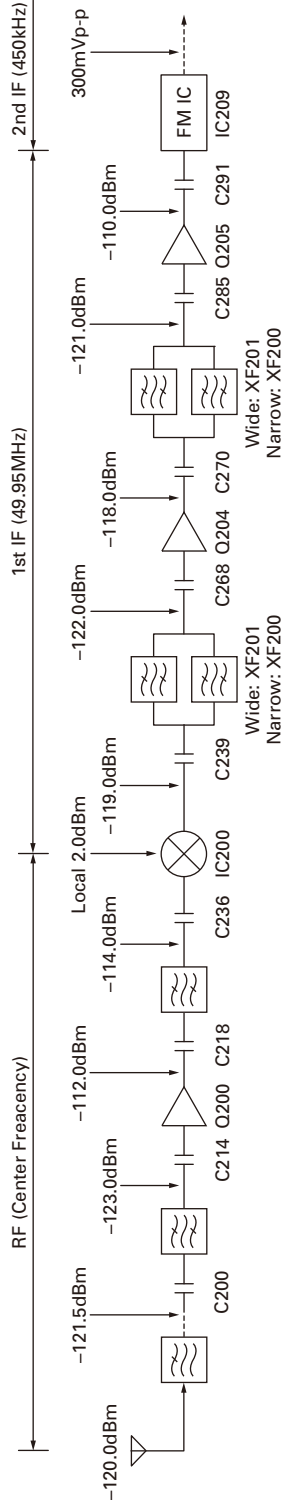


BLOCK DIAGRAM (TK-5810H(BG))

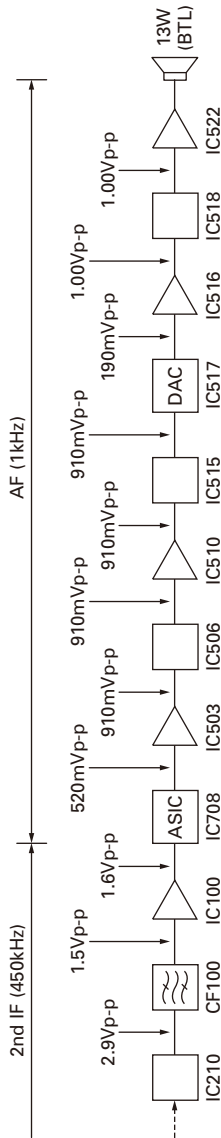


LEVEL DIAGRAM

Receiver Section

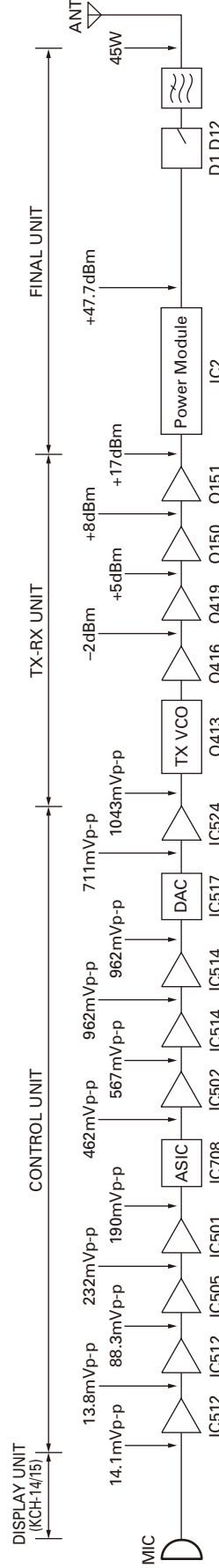


To make measurement in the AF section, connect the AC level meter. (ANT input: -53dBm, 1kHz FM, 3kHz DEV (Wide).) In the RF section, use a 470pF coupling capacitor. (The display shows the SSG input value required to obtain 12dB SINAD.)

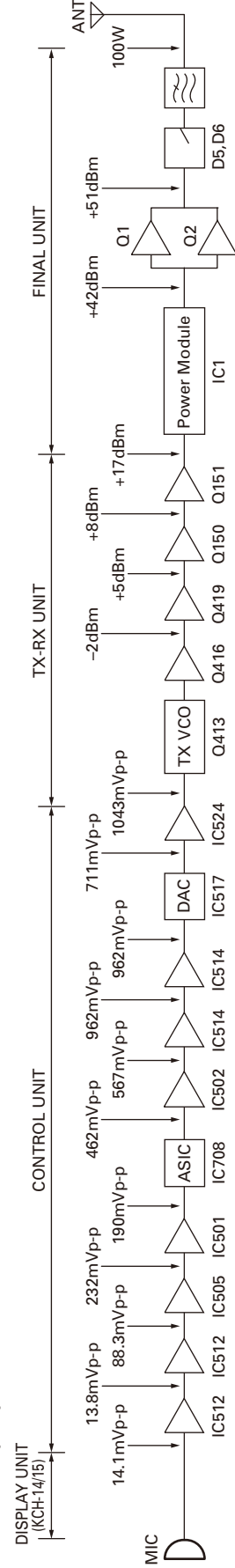


Transmitter Section

TK-5810(BG)



TK-5810H(BG)



AG is set to the MIC input becomes 3kHz DEV at 1kHz MOD. To make measurements in the AF section, connect the AC level meter. In the RF section, use 1000pF coupling capacitor.

SPECIFICATIONS

GENERAL

Frequency Range	
K.....	450~520MHz
K2.....	400~470MHz
Number of Channels	1024
Zones	100
Max. Channels per Zone.....	512
Channel Spacing	
Analog.....	12.5/25kHz
Digital.....	12.5kHz
Operating Voltage	
TK-5810.....	13.6V DC \pm 15%
TK-5810H.....	13.4V DC \pm 15%
Current Drain	
Standby.....	Less than 0.6A
Receive.....	Less than 2.3A
Transmit	
TK-5810.....	12A
TK-5810H.....	25A
Duty Cycle.....	Transmit: 20%
Operating Temperature Range	
.....	-22°F to +140°F (-30°C to +60°C)
Frequency Stability	\pm 2.0ppm (-22°F to +140°F)
Antenna Impedance	50 Ω
Dimensions (W x H x D) (Projections included)	
RF Deck only	
TK-5810.....	7.01 x 2.36 x 7.68 in. (178 x 60 x 195 mm)
TK-5810H.....	7.01 x 2.36 x 12.87 in. (178 x 60 x 327 mm)
with KCH-14 or KCH-15	
TK-5810.....	7.05 x 2.36 x 9.09 in. (179 x 60 x 231 mm)
TK-5810H.....	7.05 x 2.36 x 14.29 in. (179 x 60 x 363 mm)
Weight (net)	
RF Deck only	
TK-5810.....	5.3lbs. (2.4kg)
TK-5810H.....	8.6lbs. (3.9kg)
with KCH-14	
TK-5810.....	5.9lbs. (2.7kg)
TK-5810H.....	9.2lbs. (4.2kg)
with KCH-15	
TK-5810.....	5.9lbs. (2.7kg)
TK-5810H.....	9.2lbs. (4.2kg)

RECEIVER

Sensitivity	
Digital (5% BER)	0.25 μ V
Digital (1% BER)	0.40 μ V
Analog 12dB SINAD.....	0.25 μ V
Selectivity	
Digital.....	-63dB
Analog @25kHz.....	-83dB
Analog @12.5kHz.....	-76dB
Intermodulation Distortion	
Digital.....	-80dB
Analog @25/30kHz.....	-80dB
Analog @12.5/15kHz.....	-80dB
Spurious and Image	
Digital.....	-90dB
Analog.....	-90dB
Audio Distortion	
Digital.....	Less than 1.0%
Analog.....	Less than 2.0%
Audio Output	
Internal (KCH-14) @3%	1.5W/8 Ω
External @3%	12W/4 Ω
Internal (KCH-14) @5%	1.625W/8 Ω
External @5%	13W/4 Ω

TRANSMITTER

RF Output Power	
TK-5810.....	45W to 5W
TK-5810H(K).....	100W to 50W for 450~500MHz, More than 60W to 50W for 500~520MHz
TK-5810H(K2).....	100W to 50W for 400~470MHz
Spurious and Harmonics	80dB
FM Hum and Noise	
Analog @25kHz.....	50dB
Analog @12.5kHz.....	45dB
Microphone Impedance.....	600 Ω
Audio Distortion	Less than 2%
Modulation	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 20K0F7D, 11K2F7D, 14K4F1D, 7K20F1D

TK-5810(BG)/5810H(BG)

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Kwai Fong, N.T., Hong Kong

Kenwood Electronics Singapore Pte Ltd

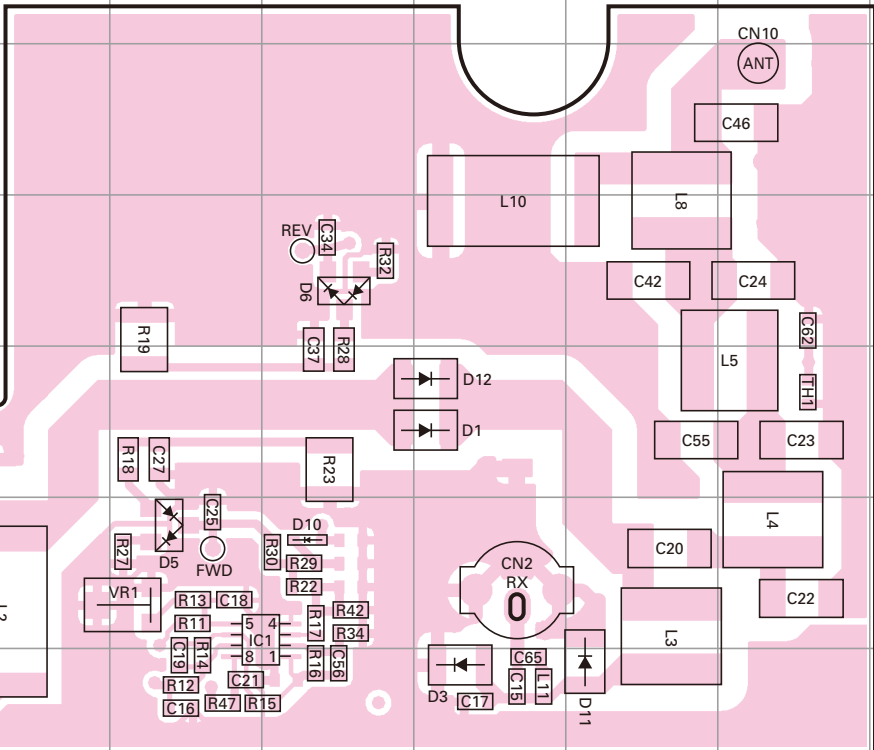
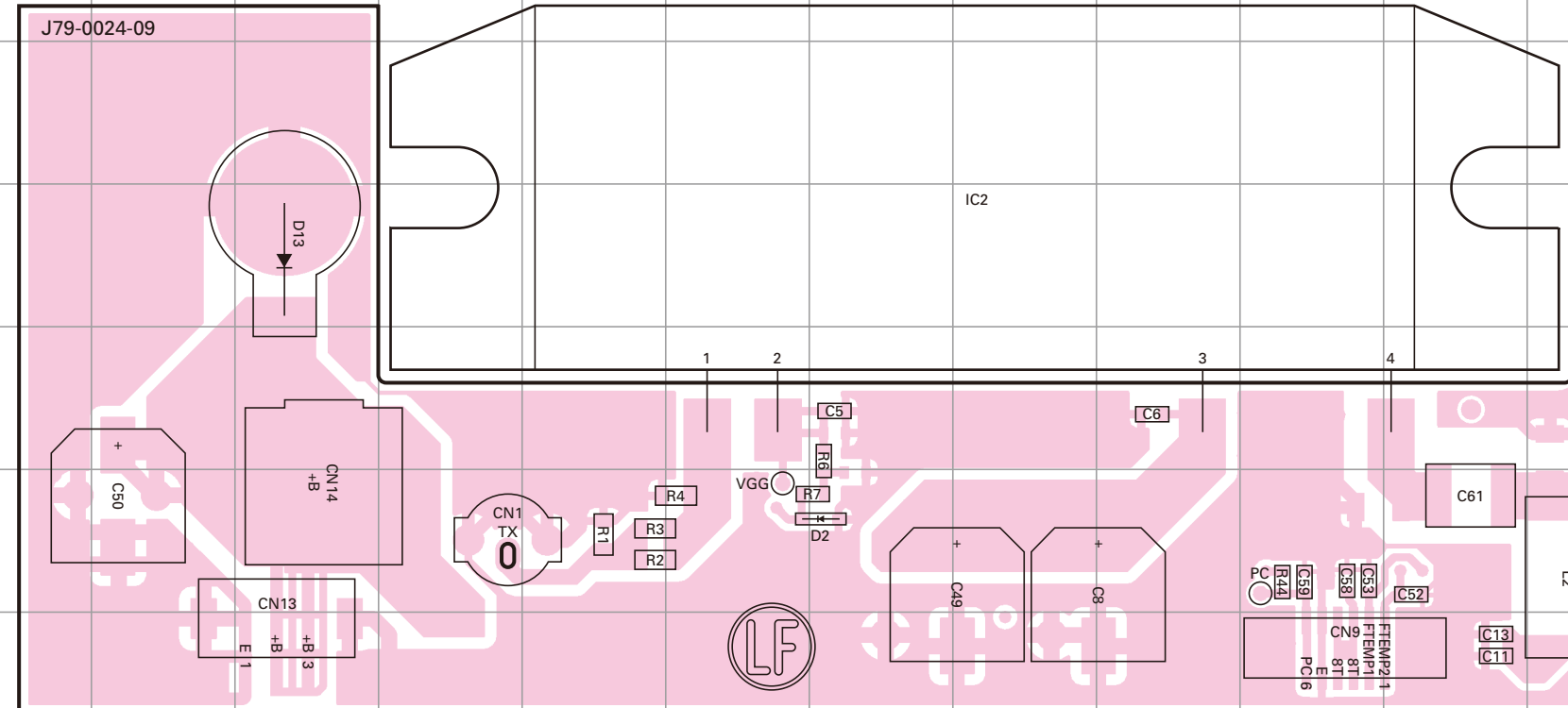
1 Ang Mo Kio Street 63, Singapore 569110

TK-5810(BG)/5810H(BG) PC BOARD

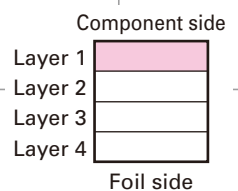
PC BOARD TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3790-XX): TK-5810(BG)
-10 : K -11 : K2
Component side view (J79-0024-09)

FINAL UNIT (X45-3790-XX): TK-5810(BG)
-10 : K -11 : K2
Component side view (J79-0024-09)

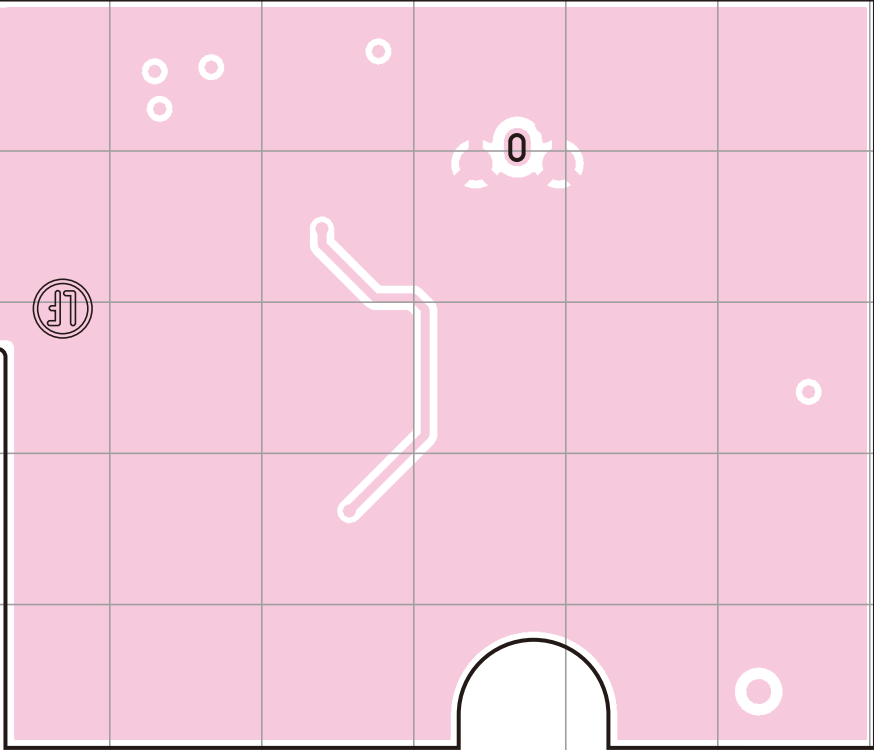
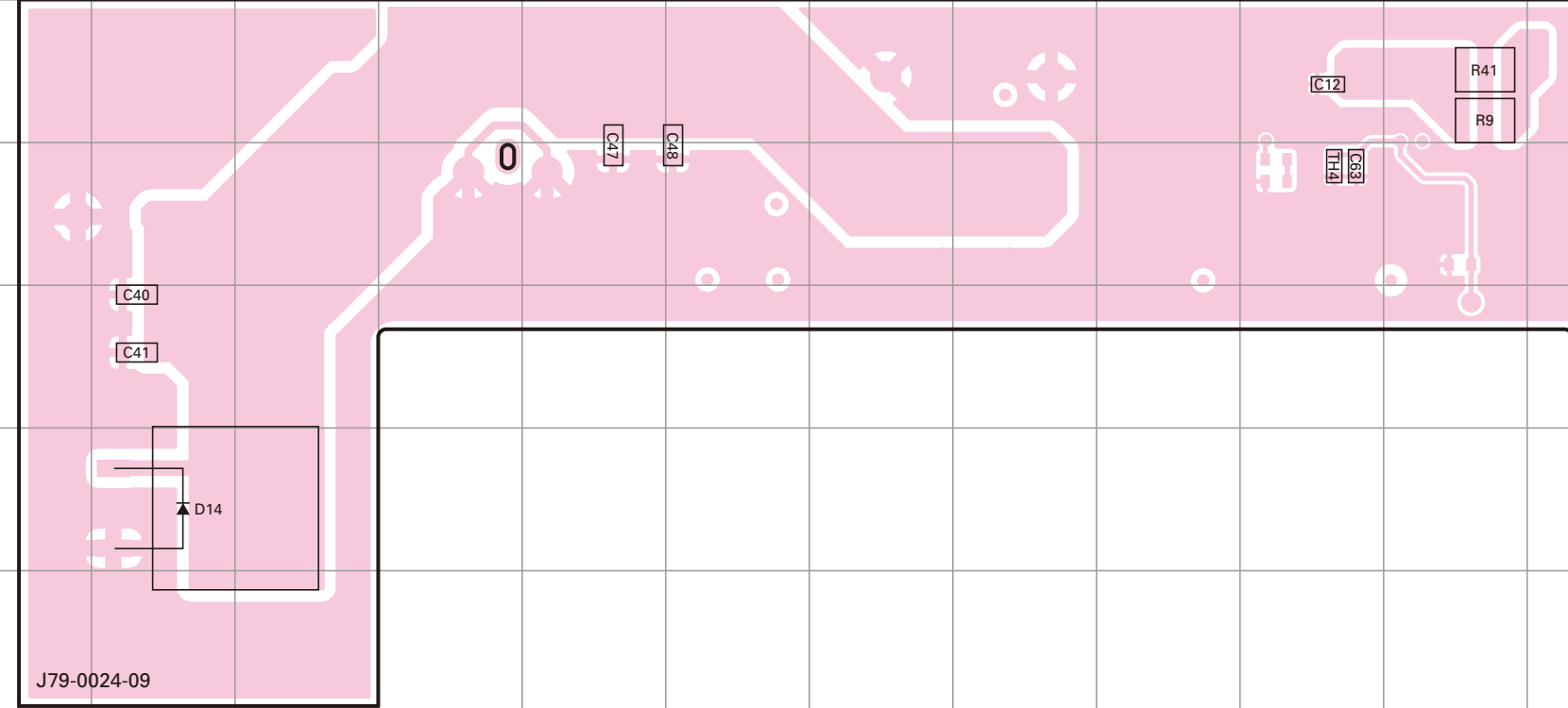


Ref. No.	Address
IC1	6M
IC2	4H
D1	5O
D2	6G
D3	7O
D5	6M
D6	4N
D10	6N
D11	7P
D12	5O
D13	4C

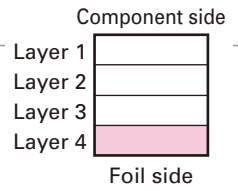


FINAL UNIT (X45-3790-XX): TK-5810(BG)
-10 : K -11 : K2
Foil side view (J79-0024-09)

FINAL UNIT (X45-3790-XX): TK-5810(BG)
-10 : K -11 : K2
Foil side view (J79-0024-09)



Ref. No.	Address
D14	12B

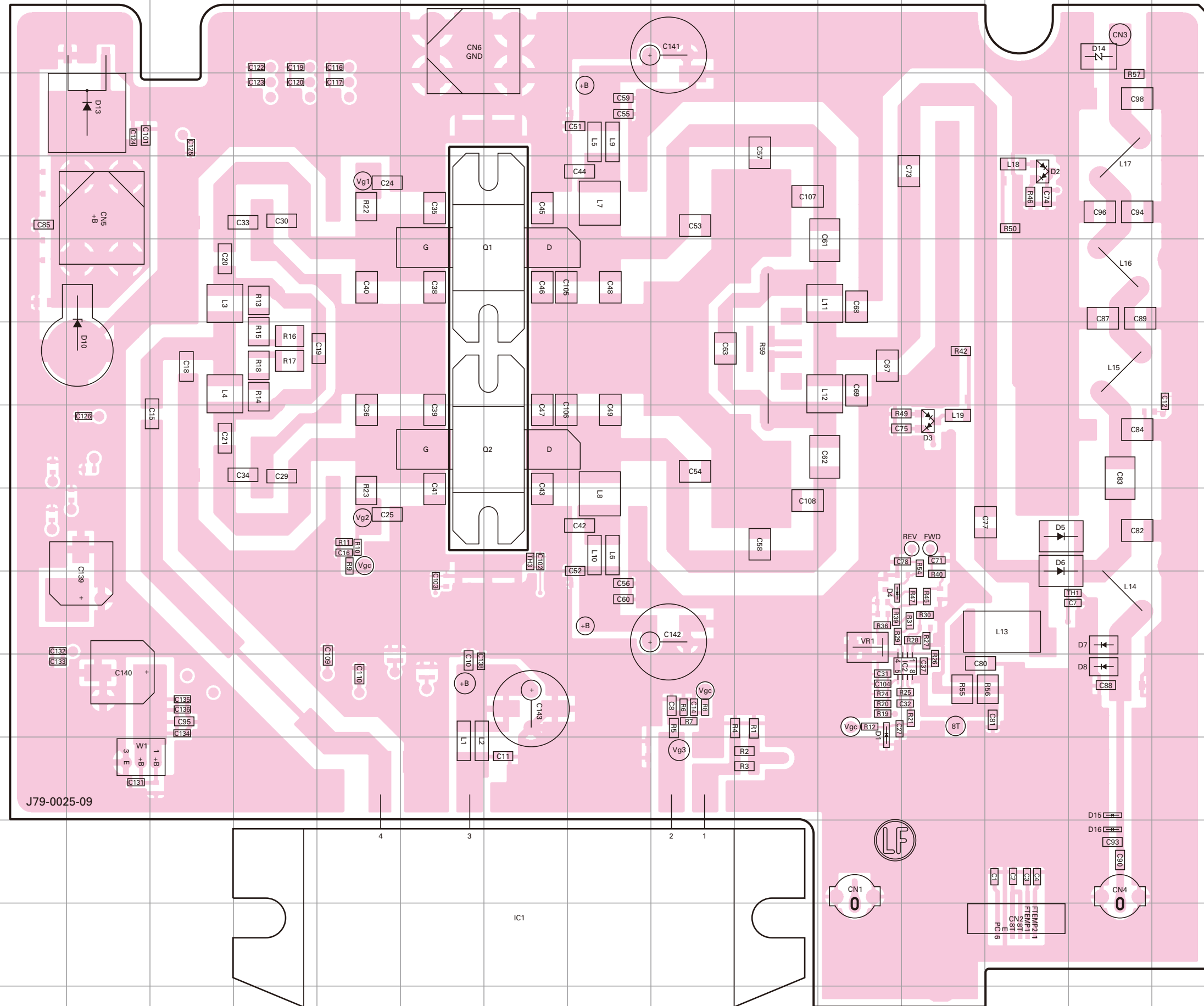


TK-5810(BG)/5810H(BG) PC BOARD

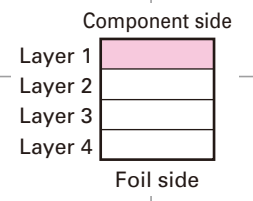
FINAL UNIT (X45-3800-XX): TK-5810H(BG)
 -10 : K -11 : K2 Component side view (J79-0025-09)

PC BOARD TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3800-XX): TK-5810H(BG)
 -10 : K -11 : K2 Component side view (J79-0025-09)



Ref. No.	Address
IC1	13I
IC2	10N
Q1	5I
Q2	7I
D1	10M
D2	4O
D3	7N
D4	9M
D5	8O
D6	8O
D7	9P
D8	10P
D10	6D
D13	3D
D14	2P
D15	11P
D16	12P



J79-0025-09

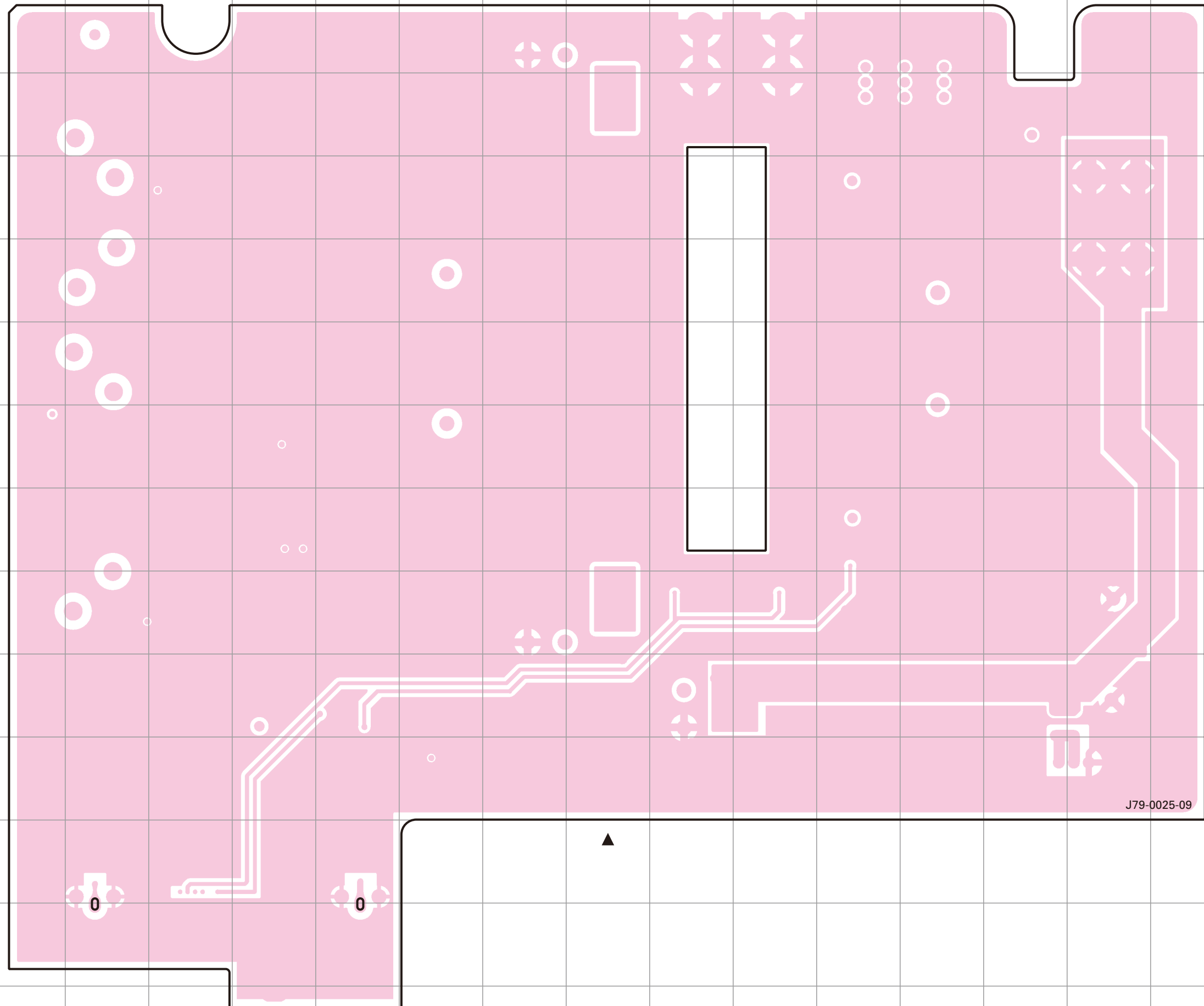
PC6
 O81
 O81
 O81
 F1EMP1
 F1EMP1
 F1EMP1
 C3
 C3
 C3

TK-5810(BG)/5810H(BG) PC BOARD

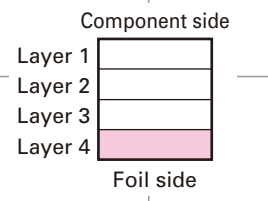
FINAL UNIT (X45-3800-XX): TK-5810H(BG)
-10 : K -11 : K2 Foil side view (J79-0025-09)

PC BOARD TK-5810(BG)/5810H(BG)

FINAL UNIT (X45-3800-XX): TK-5810H(BG)
-10 : K -11 : K2 Foil side view (J79-0025-09)



J79-0025-09

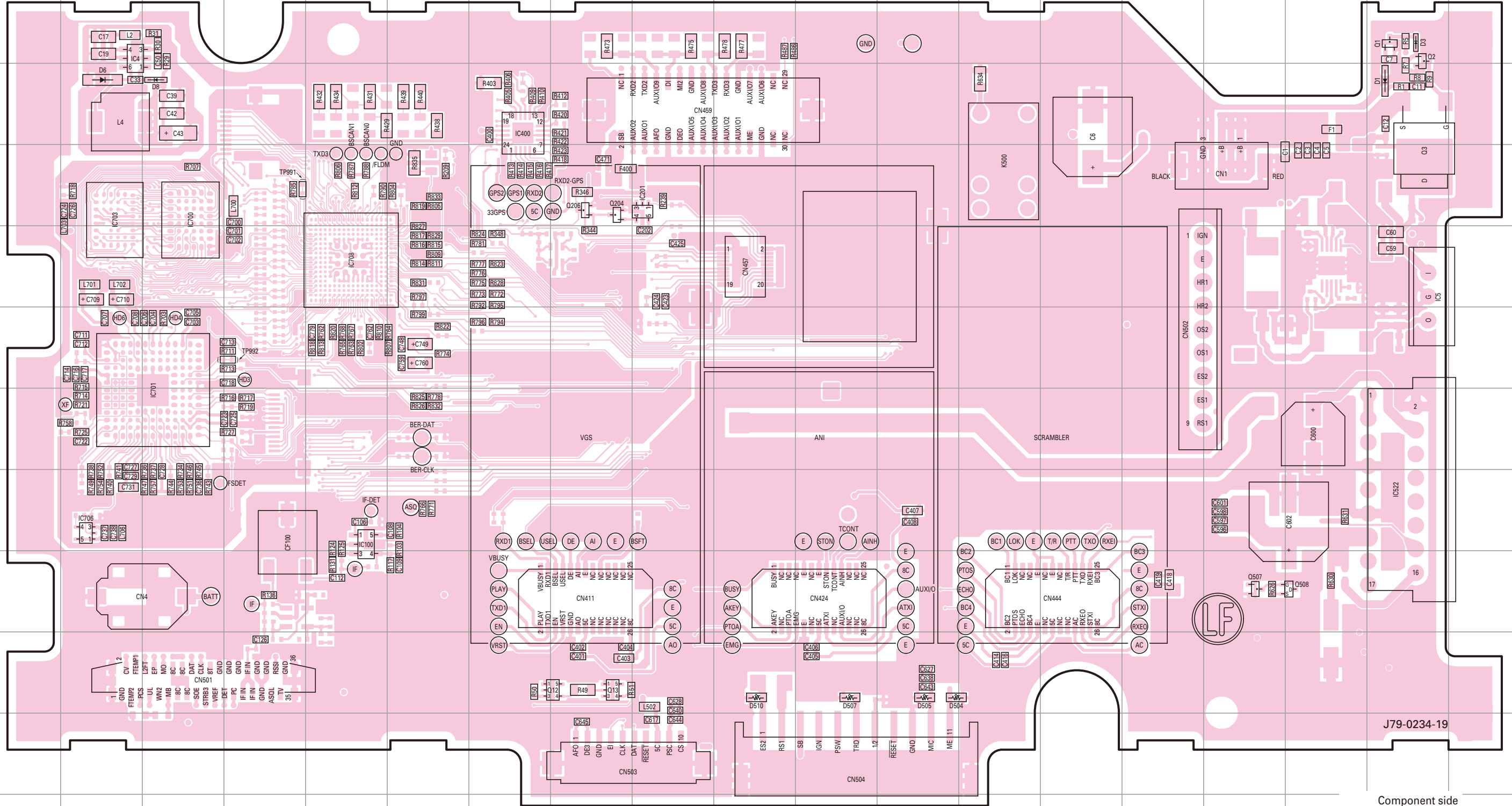


TK-5810(BG)/5810H(BG) PC BOARD

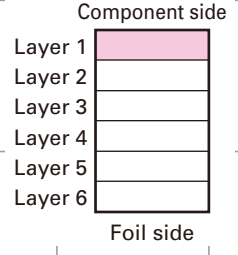
PC BOARD TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10) Component side view (J79-0234-19)

CONTROL UNIT (X53-4400-10) Component side view (J79-0234-19)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC4	2B	IC700	4C	Q2	2R	Q507	9P	D504	10L
IC5	5R	IC701	7C	Q3	4R	Q508	9Q	D505	10L
IC100	8E	IC703	4B	Q12	10H	D1	3R	D507	10K
IC201	4I	IC706	8B	Q13	10H	D3	2R	D510	10J
IC400	3G	IC708	5E	Q204	4H	D6	3B		
IC522	8R	Q1	2R	Q206	4H	D8	3C		

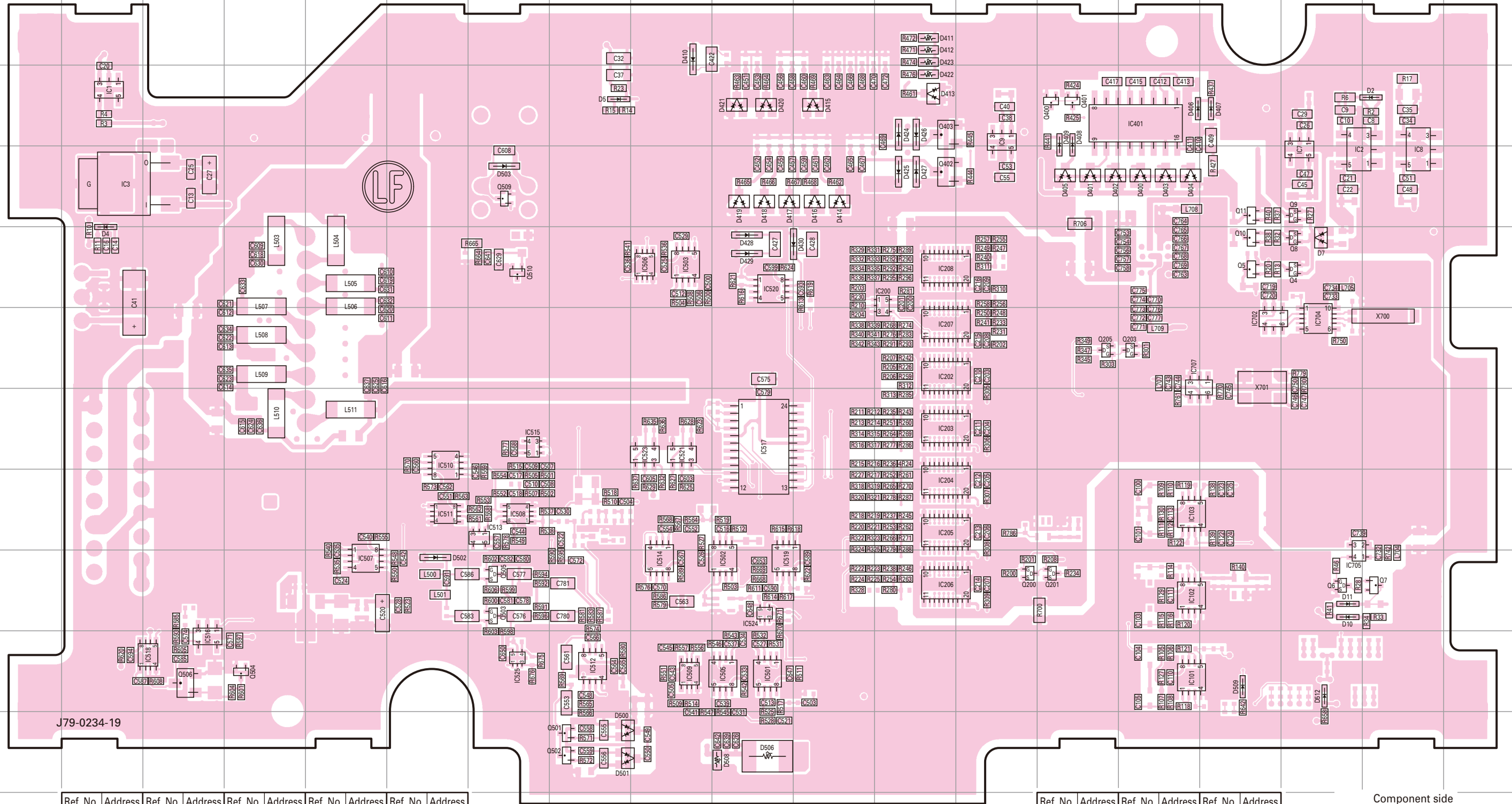


TK-5810(BG)/5810H(BG) PC BOARD

PC BOARD TK-5810(BG)/5810H(BG)

CONTROL UNIT (X53-4400-10) Foil side view (J79-0234-19)

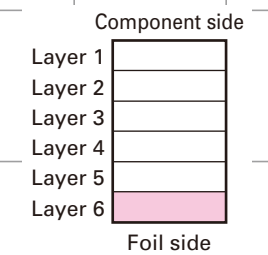
CONTROL UNIT (X53-4400-10) Foil side view (J79-0234-19)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	3B	IC200	5L	IC501	10J	IC511	8F	IC520	5J
IC2	4Q	IC202	6L	IC502	9J	IC512	10H	IC521	7I
IC3	4B	IC203	7L	IC503	5I	IC513	8G	IC523	7I
IC7	4Q	IC204	8L	IC505	10J	IC514	9I	IC524	9J
IC8	4R	IC205	8L	IC506	5I	IC515	7G	IC525	10G
IC9	3M	IC206	9L	IC507	9E	IC516	10C	IC702	6P
IC101	10O	IC207	6L	IC508	8G	IC517	7J	IC704	6Q
IC102	9O	IC208	5L	IC509	10I	IC518	10C	IC705	9Q
IC103	8O	IC401	3O	IC510	7F	IC519	9J	IC707	6O

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q4	5Q	Q10	5P	Q400	3N	Q503	9G	D2	3R	D400	4O	D406	3O	D415	3K
Q5	5P	Q11	4P	Q401	3N	Q504	10D	D4	5B	D401	4N	D407	3P	D416	4K
Q6	9Q	Q200	9M	Q402	4L	Q505	9G	D5	3H	D402	4N	D408	3N	D417	4J
Q7	9R	Q201	9N	Q403	3L	Q506	10C	D7	5Q	D403	4O	D409	3N	D418	4J
Q8	5Q	Q203	6O	Q501	11H	Q509	4G	D10	9Q	D404	4O	D410	2I	D419	4J
Q9	4Q	Q205	6N	Q502	11H	Q510	5G	D11	9Q	D405	4N	D411	2L	D420	3J

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
D412	2L	D421	3J	D430	5K
D413	3L	D422	3L	D500	11H
D414	4K	D423	2L	D501	11H
D415	3K	D424	3L	D502	9F
D416	4K	D425	4L	D503	4G
D417	4J	D426	3L	D506	11J
D418	4J	D427	4L	D508	11J
D419	4J	D428	5J	D509	10P
D420	3J	D429	5J	D512	10Q

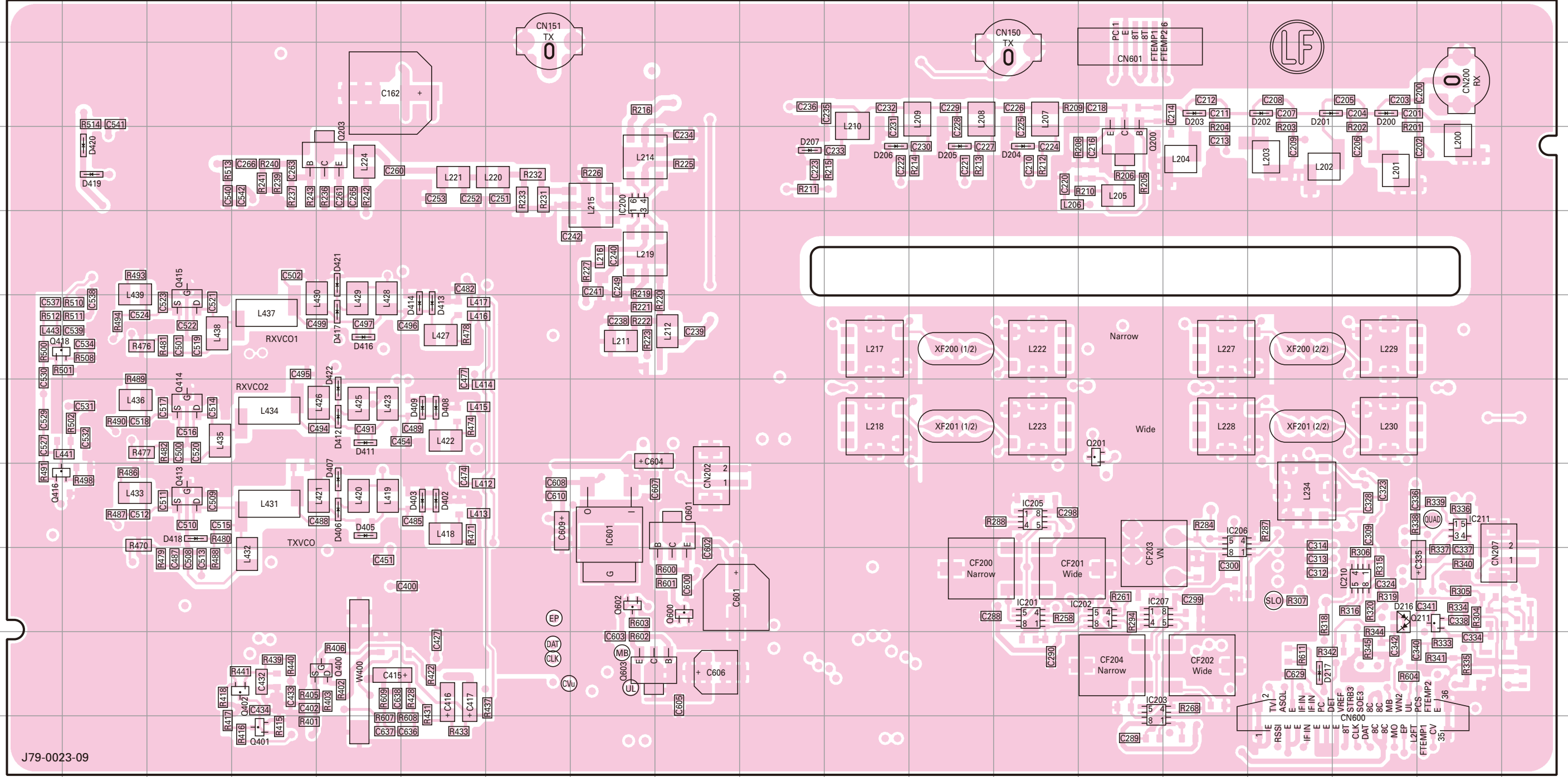


TK-5810(BG)/5810H(BG) PC BOARD

PC BOARD TK-5810(BG)/5810H(BG)

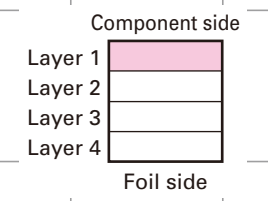
TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Component side view (J79-0023-09)

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Component side view (J79-0023-09)



J79-0023-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC200	4H	IC601	8H	Q414	7C	D201	3P	D402	8F	D413	6F
IC201	9M	Q200	4N	Q415	6C	D202	3P	D403	8F	D414	6F
IC202	9N	Q201	7N	Q416	8A	D203	3O	D405	8E	D416	6E
IC203	10N	Q203	4E	Q418	6A	D204	4M	D406	8E	D417	6E
IC205	8M	Q211	9R	Q600	9I	D205	4L	D407	8E	D418	8C
IC206	8O	Q400	10E	Q601	8I	D206	4K	D408	7F	D419	4B
IC207	9N	Q401	11D	Q602	9H	D207	4J	D409	7F	D420	4B
IC210	9Q	Q402	10D	Q603	10H	D216	9Q	D411	7E	D421	5E
IC211	8R	Q413	8C	D200	3Q	D217	10P	D412	7E	D422	7E

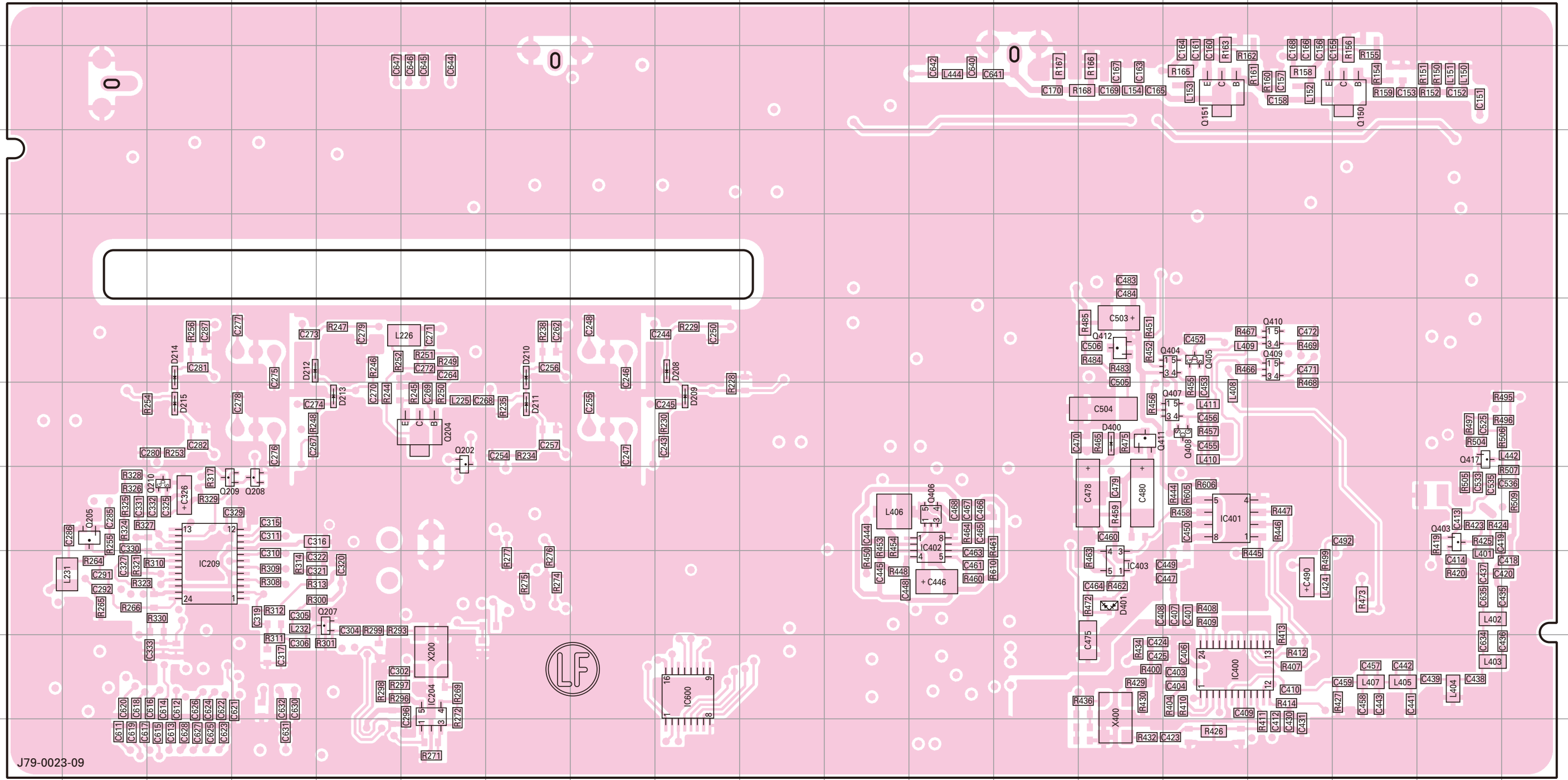


TK-5810(BG)/5810H(BG) PC BOARD

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Foil side view (J79-0023-09)

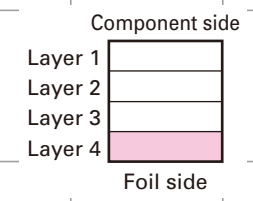
PC BOARD TK-5810(BG)/5810H(BG)

TX-RX UNIT (X57-7270-XX) -10 : K -11 : K2
Foil side view (J79-0023-09)

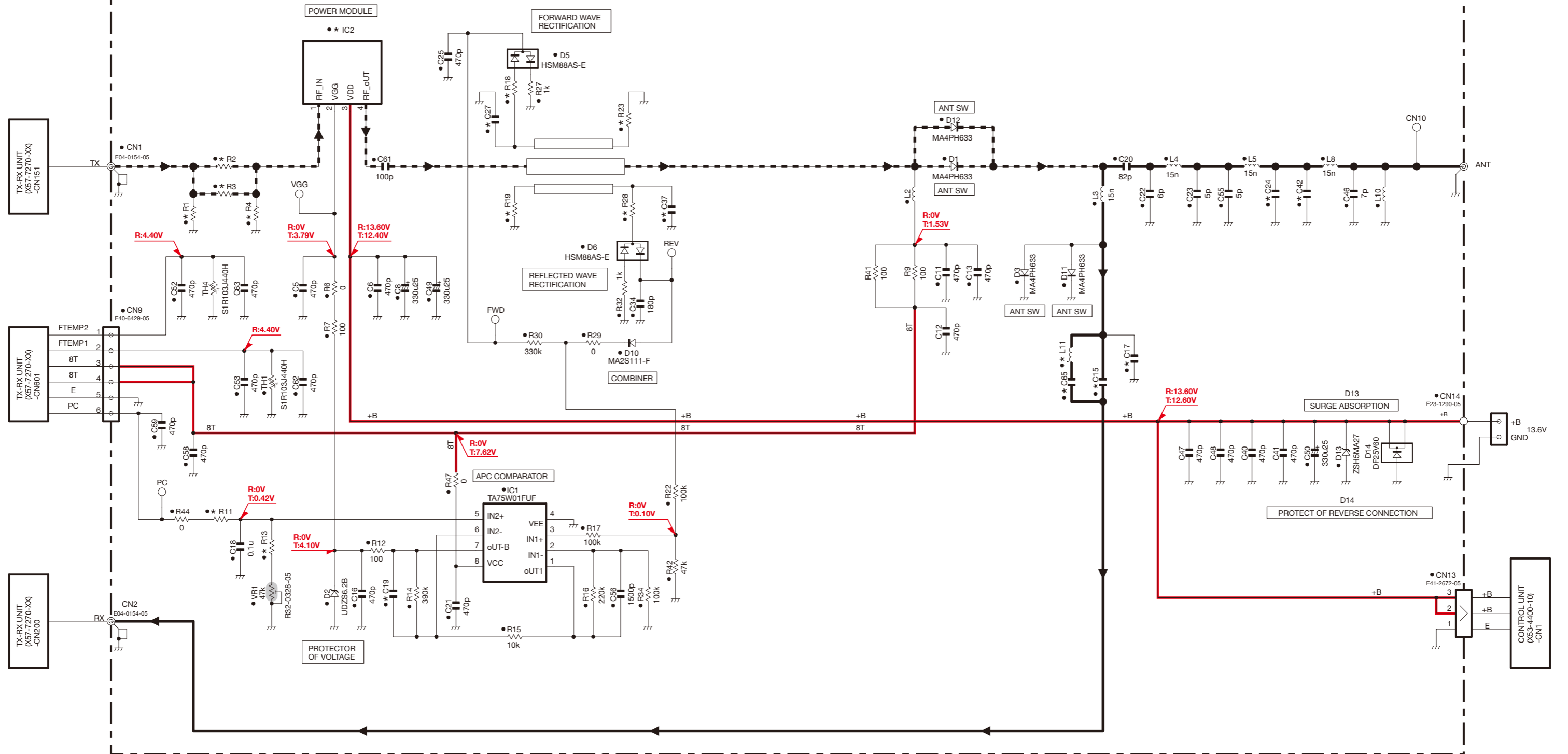


J79-0023-09

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC204	10F	Q150	3Q	Q209	8C	Q408	7O	D209	7I	D400	7N
IC209	9C	Q151	3O	Q210	8C	Q409	6P	D210	6G	D401	9N
IC400	10O	Q202	7F	Q403	8R	Q410	6P	D211	7G		
IC401	8O	Q204	7F	Q404	6O	Q411	7N	D212	6D		
IC402	8L	Q205	8B	Q405	6O	Q412	6N	D213	7E		
IC403	9N	Q207	9E	Q406	8L	Q417	7R	D214	6C		
IC600	10I	Q208	8D	Q407	7O	D208	6I	D215	7C		



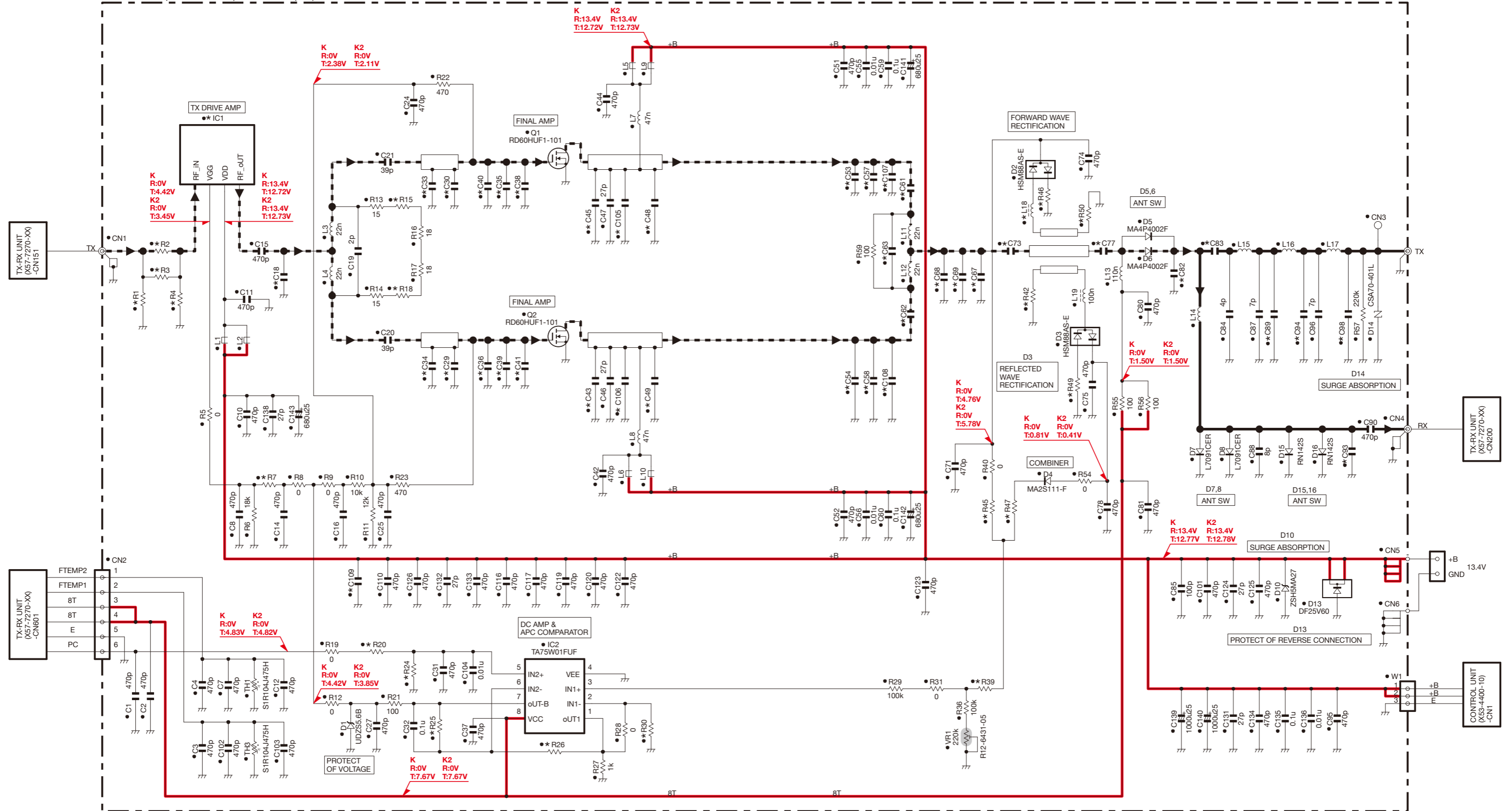
FINAL UNIT (X45-3790-XX): TK-5810(BG)



X45-3790-XX	IC2	R1	R2	R3	R4	R11	R13	R18	R19	R23	R28	C19	C27	C37	
-10	K	RA60H44521101	820	10	10	820	47k	15k	82	56	68	330	0.068u	5p	5p
-11	K2	RA60H40471101	470	18	18	470	220k	18k	180	33	56	1k	0.015u	22p	8p

X45-3790-XX	L11	C15	C17	C24	C42	C65
-10	K	15n	NO	5p	6p	6p
-11	K2	NO	470p	3p	7p	7p

FINAL UNIT (X45-3800-XX): TK-5810H(BG)

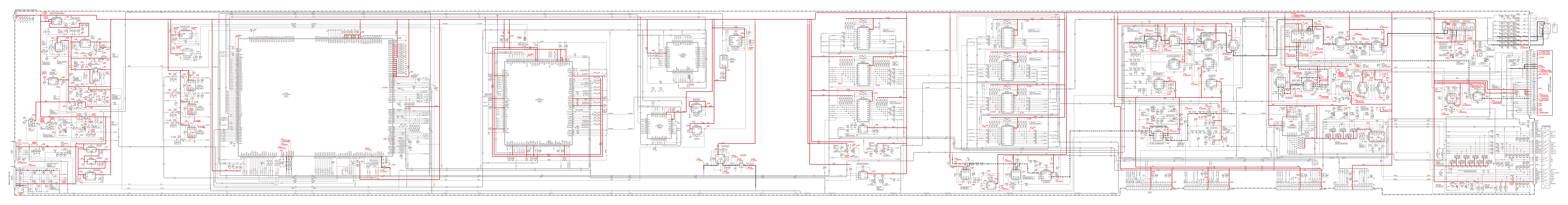


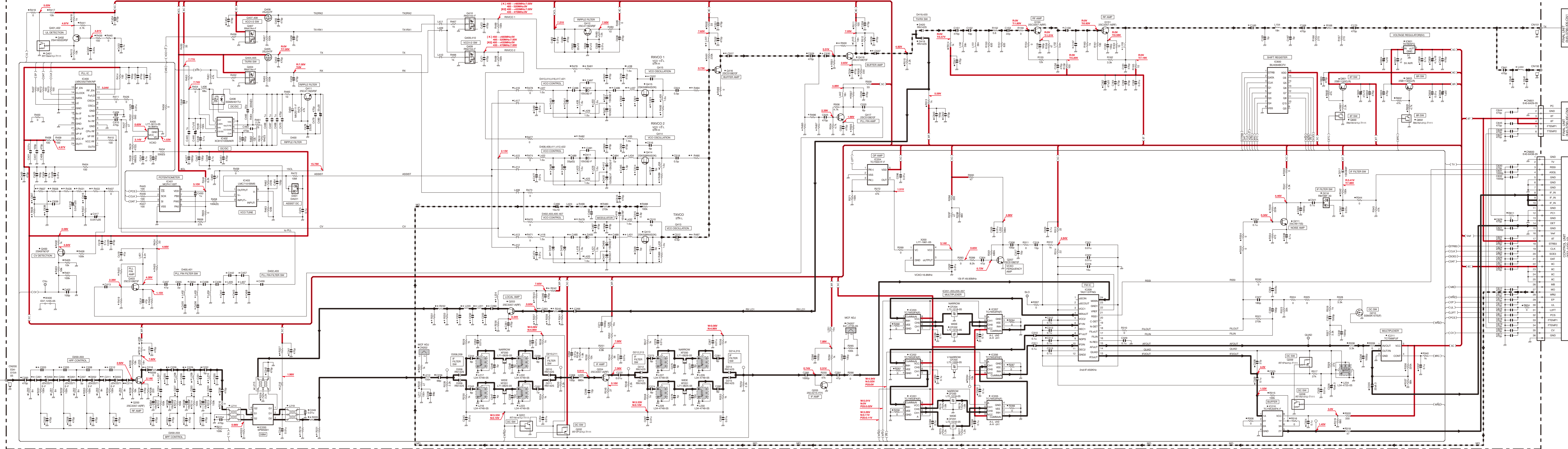
X45-3800-XX	IC1	R1	R2	R3	R4	R7	R15	R18	R20	R24	R25	R26	R30	
-10	K	RA13H4452M123	820	10	10	820	0	18	18	270k	220k	120k	4.7k	NO
-11	K2	RA13H4407M123	NO	0	NO	820	15	15	220k	270k	330k	3.3k	1k	

X45-3800-XX	C18	C29	C30	C33	C34	C35	C36	C38	C39	C40	C41	C43	C45	C48	C49	C105	C106	C109	
-10	K	3p	5p	5p	3p	3p	30p	7p	30p	30p	7p	30p	27p	27p	8p	8p	10p	10p	47p
-11	K2	4p	10p	10p	6p	6p	39p	12p	39p	39p	12p	39p	30p	30p	20p	20p	18p	18p	56p

X45-3800-XX	L18	R39	R42	R45	R46	R47	R49	R50	C53	C54	C57	C58
-10	K	82n	220k	56	56k	220	10k	390	68	2p	2p	2p
-11	K2	100n	10k	82	220k	330	0	180	82	NO	NO	10p

X45-3800-XX	C61	C62	C63	C67	C68	C69	C73	C77	C82	C83	C89	C93	C94	C98	C107	C108
-10	K	390p	390p	1.5p	1p	2p	2p	47p	27p	4p	390p	7p	NO	7p	5p	3p
-11	K2	100p	100p	2p	4p	NO	NO	33p	33p	9p	100p	8p	2p	8p	7p	NO





Final Unit (X57-7270-XX) (X57-7270-XX)

L207	L208	L209	L210	L242	L403	L404	L405	L407	R210	R221	R222	R223	R227	R419	R420	R422	R423	R425	R428	R431	R433	R407	R408	R409	C301	C303	
-10	K	L34-4565-05(5T)	L34-4565-05(5T)	L34-4565-05(5T)	L34-4565-05(5T)	15h	15h	NO	8.8h	8.8h	8.8h	5.6	8.8h	47	3h	10(40)	10(40)	3.3k	10k	NO	1k	2.2k	0	0	NO	4k	2p

Final Unit (X57-7270-XX) (X57-7270-XX)

D402	D403	D405	D406	D409	D413	D414	L320	L321	L324	L431	L434	L437	L441	R231	R232	R233	R236	R237	R239	R240	R241	R242	R243	
-10	K	15V20SF	15V20SF	15V20SF	HVC378F	HVC378F	15h	15h	18h	L34-4607-15.17(5)	L34-4608-15.22h	L34-4608-15.22h	L34-4608-15.22h	18h	18h	33	180	220	10k	180	33	180	330	18h

Final Unit (X57-7270-XX) (X57-7270-XX)

R496	R498	R499	R500	R501	R505	R507	R512	C157	C158	C330	C337		
-10	K	18h	470	12	470	25k	15k	150	220	2p	15p	4p	5p

Final Unit (X57-7270-XX) (X57-7270-XX)

L444	R498	C168	C169	C242	
-10	K	18h	22	5p	5p

Final Unit (X57-7270-XX) (X57-7270-XX)

R470	R481	R486	R488	R489	R490	R494	R495	C251	C252	C253	C260	C261	C262	C263	C264	C265	C266	C267	C268	C269	C270	C271	C272	C273	C274	C275	C276	C277	C278	C279	C280	
-11	K	39k	50k	470k	100k	100k	100k	220k	220k	100k	100k	27k	15k	10k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k	15k

Final Unit (X57-7270-XX) (X57-7270-XX)

R470	R481	R486	R488	R489	R490	R494	R495	C251	C252	C253	C260	C261	C262	C263	C264	C265	C266	C267	C268	C269	C270	C271	C272	C273	C274	C275	C276	C277	C278	C279	C280
-11	K	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k	27k

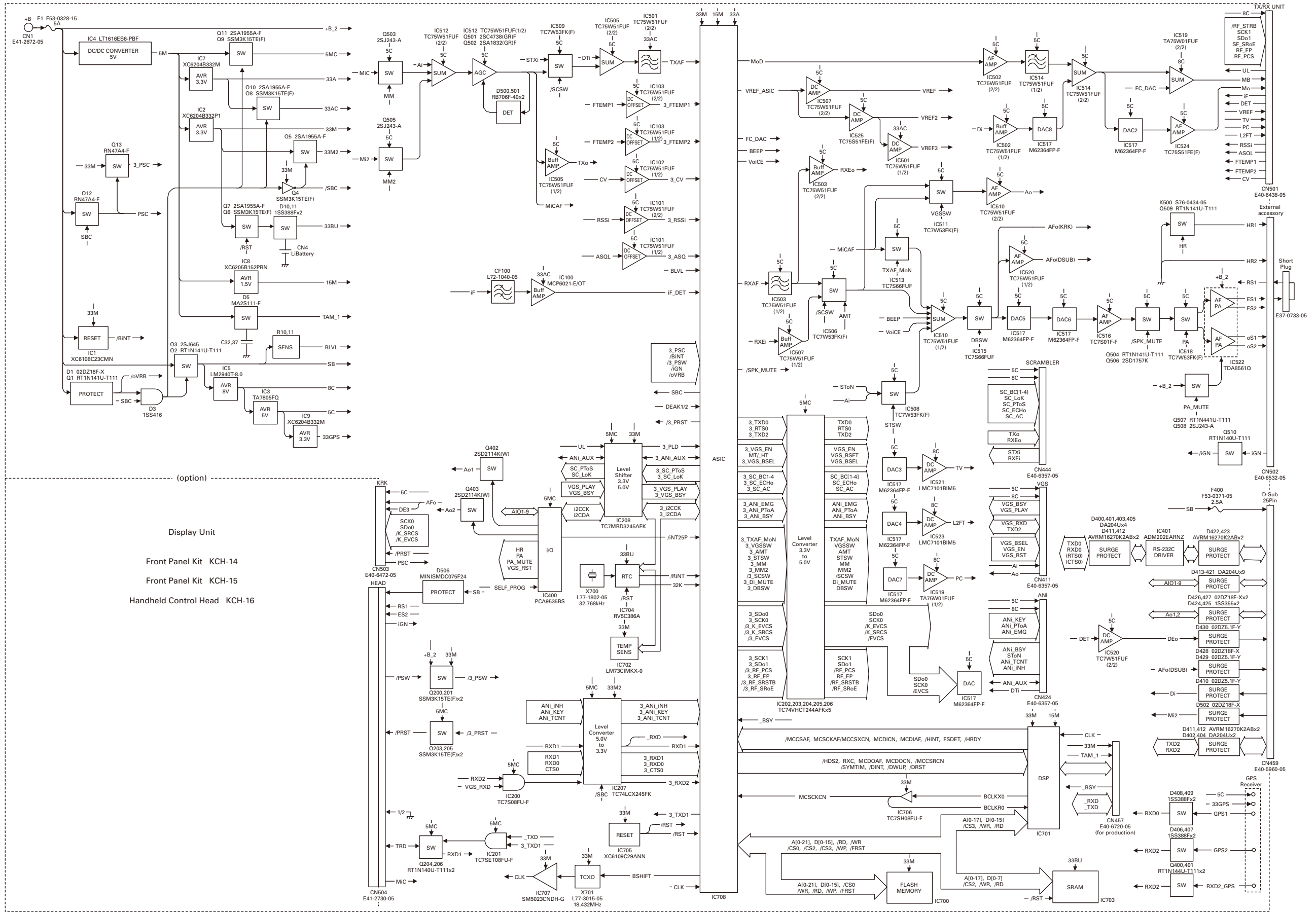
Final Unit (X57-7270-XX) (X57-7270-XX)

R496	R498	R499	R500	R501	R505	R507	R512	C157	C158	C330	C337	
-11	K	22k	10k	0	NO	10k	47k	100	NO	5p	15p	5p

Final Unit (X57-7270-XX) (X57-7270-XX)

L444	R498	C168	C169	C242		
-11	K	15h	18h	7p	10p	15p

Control unit

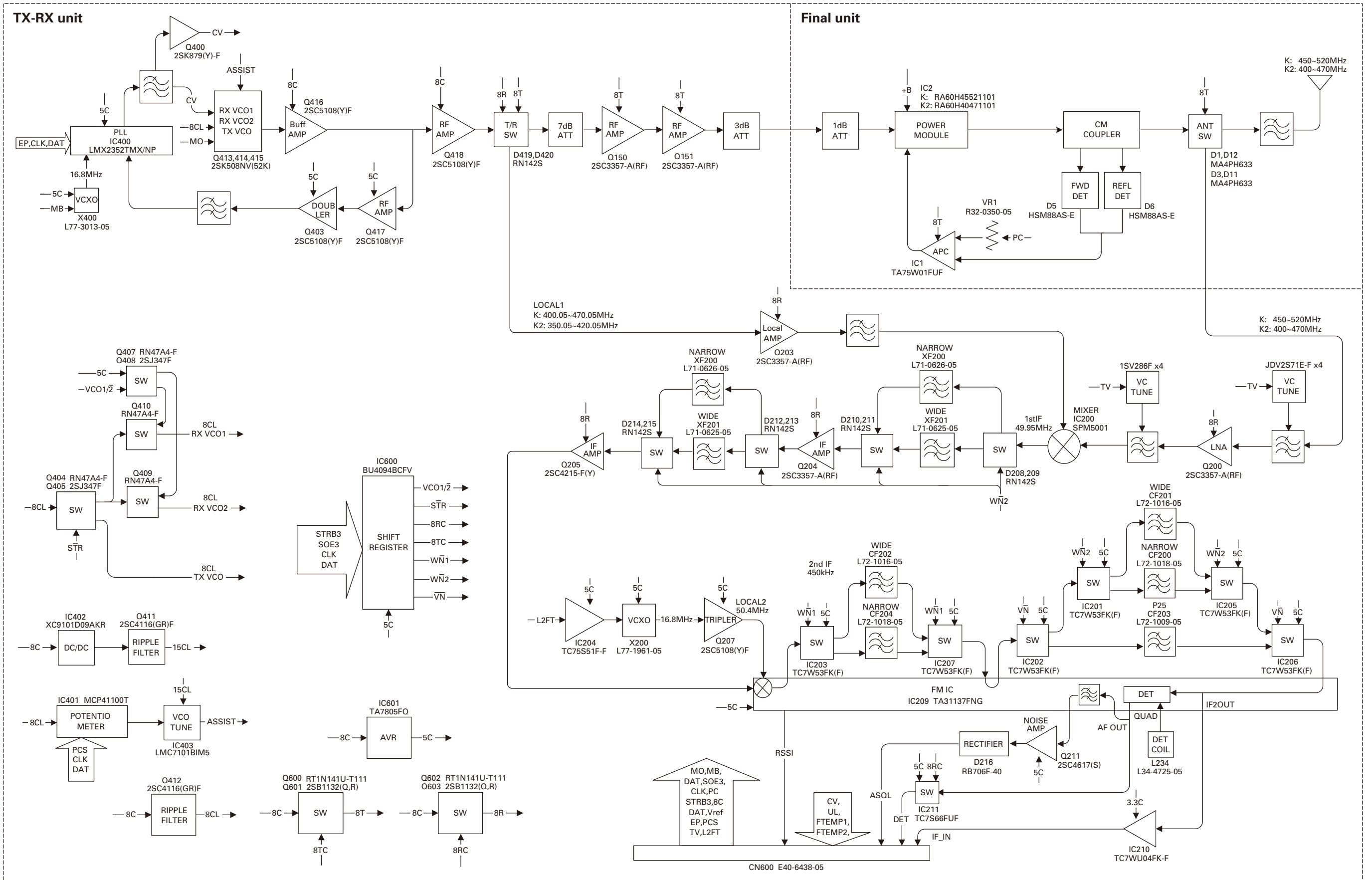


(option)

Display Unit

- Front Panel Kit KCH-14
- Front Panel Kit KCH-15
- Handheld Control Head KCH-16

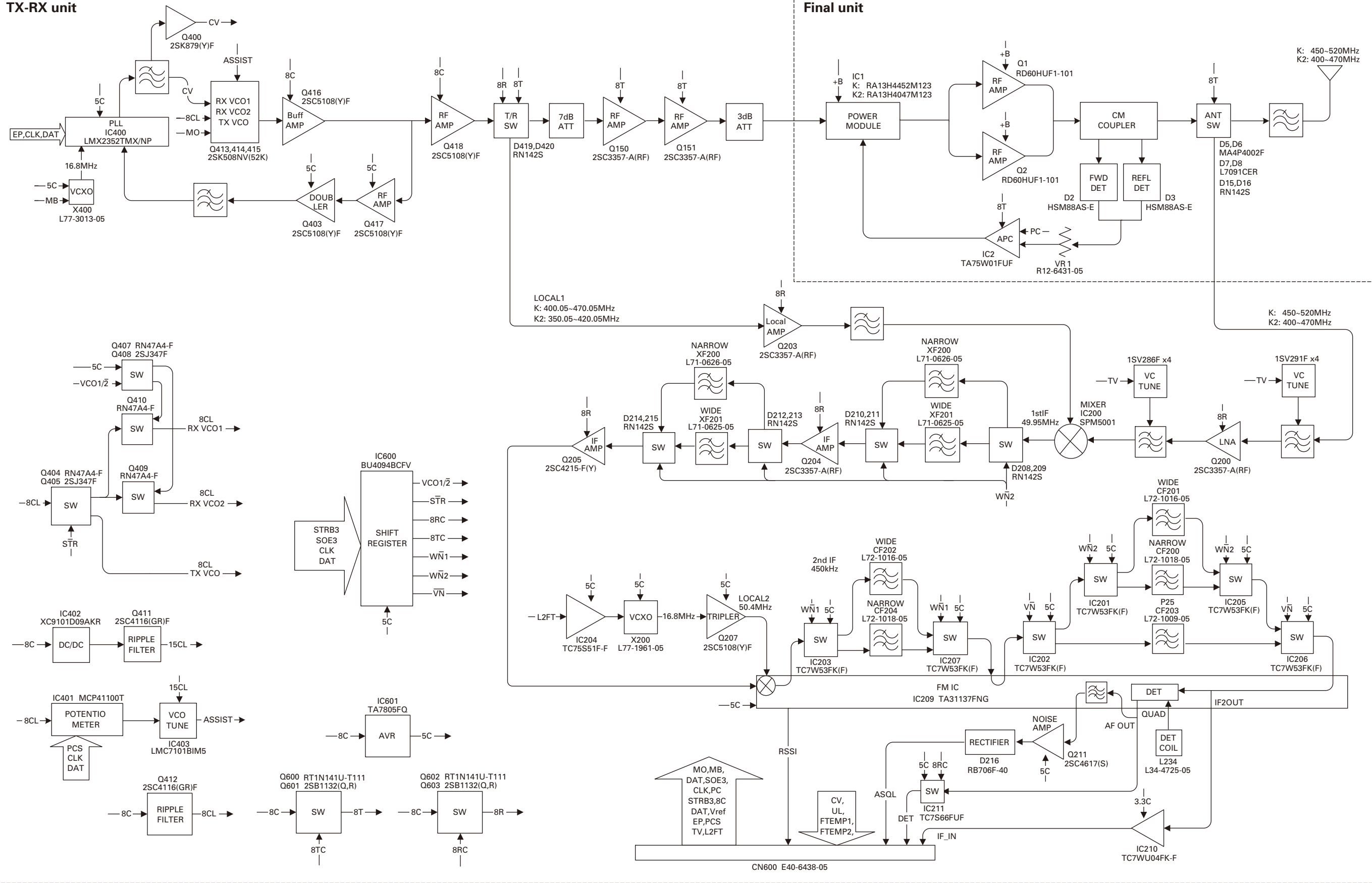
TK-5810(BG)

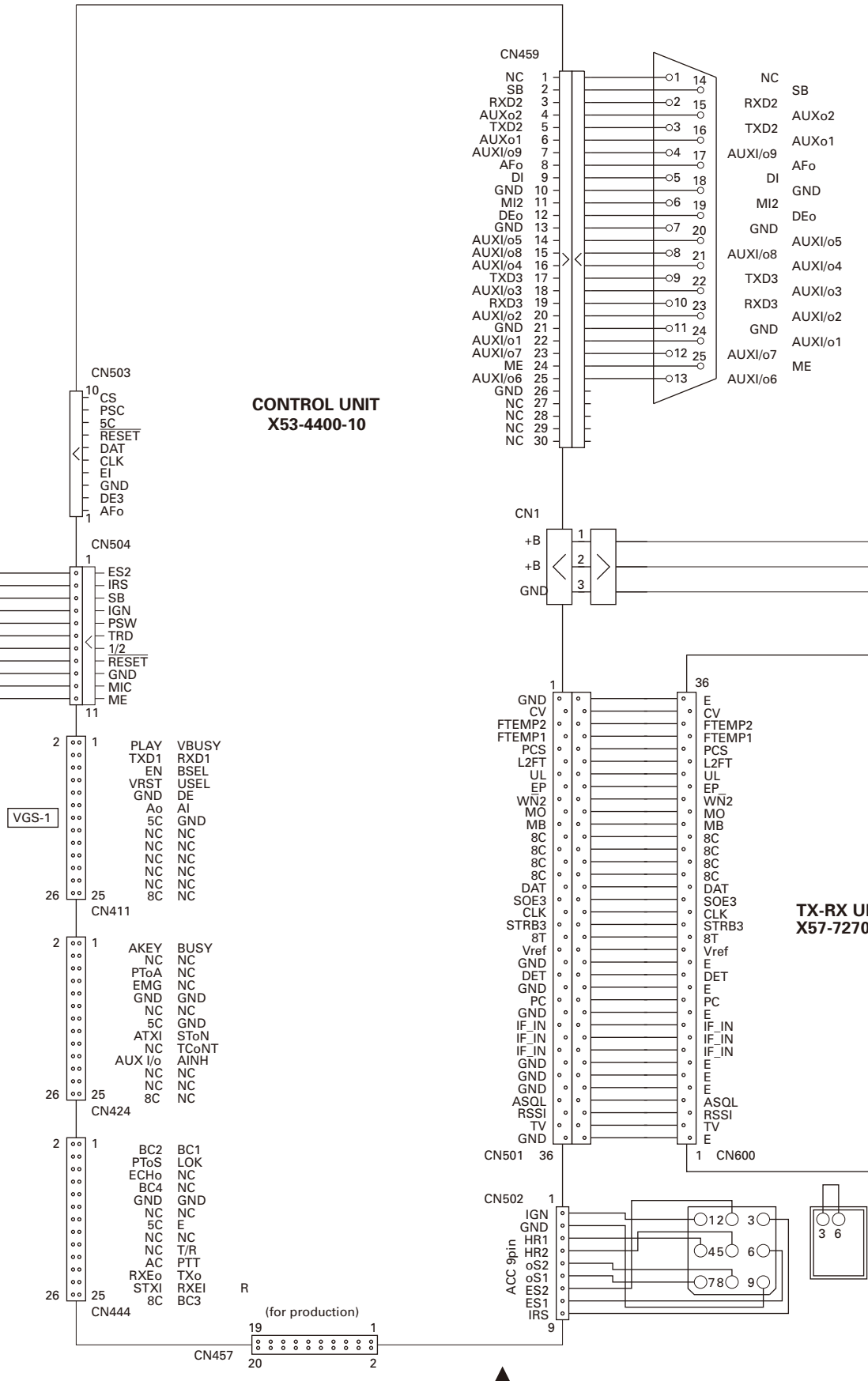
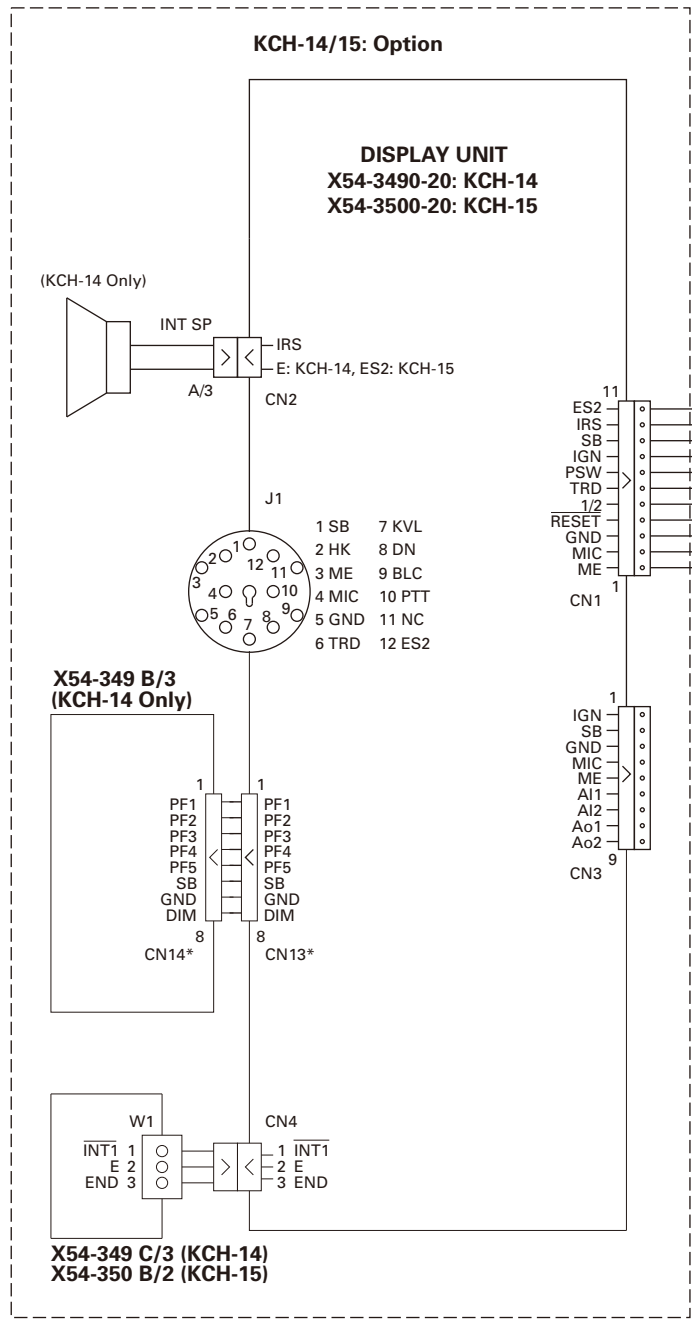


TK-5810H(BG)

TX-RX unit

Final unit





		CN13	CN14
X54-349	KCH-14	YES	YES
X54-350	KCH-15	NO	NO