

# KENWOOD

## **Document Copyrights**

Copyright 2006 by Kenwood Corporation. All rights reserved.

No part of this manual may be reproduced, translated, distributed, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, for any purpose without the prior written permission of Kenwood.

## **Disclaimer**

While every precaution has been taken in the preparation of this manual, Kenwood assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. Kenwood reserves the right to make changes to any products herein at any time for improvement purposes.

VHF FM TRANSCEIVER

# TK-7180H/7182H

## SERVICE MANUAL

# KENWOOD

Kenwood Corporation

© 2005-8 PRINTED IN JAPAN  
B51-8736-00 (N) 828

### TK-7180H K



### TK-7182H K



## CONTENTS / GENERAL

GENERAL .....	2
<b>SYSTEM SET-UP</b>	
TK-7180H .....	4
TK-7182H .....	5
REALIGNMENT .....	6
INSTALLATION .....	9
DISASSEMBLY FOR REPAIR .....	16
CIRCUIT DESCRIPTION .....	19
SEMICONDUCTOR DATA .....	24
COMPONENTS DESCRIPTION .....	27
PARTS LIST .....	29
<b>EXPLODED VIEW</b>	
TK-7180H .....	40
TK-7182H .....	41
PACKING .....	42
<b>ADJUSTMENT</b>	
TK-7180H .....	43
TK-7182H .....	55
TERMINAL FUNCTION .....	66
<b>PC BOARD</b>	
DISPLAY UNIT (X54-3480-10) : TK-7180H .....	72
DISPLAY UNIT (X54-3540-10) : TK-7182H .....	74
TX-RX UNIT (X57-6980-XX) (A/3, C/3) .....	76
TX-RX UNIT (X57-6980-XX) (B/3) .....	78
<b>SCHEMATIC DIAGRAM</b>	
DISPLAY UNIT (X54-3480-10) : TK-7180H .....	82
DISPLAY UNIT (X54-3540-10) : TK-7182H .....	84
TX-RX UNIT (X57-6980-XX) .....	86
<b>INTERCONNECTION DIAGRAM</b>	
TK-7180H .....	96
TK-7182H .....	97
<b>BLOCK DIAGRAM</b>	
TK-7180H .....	98
TK-7182H .....	100
LEVEL DIAGRAM .....	102
<b>OPTIONAL ACCESSORIES</b>	
KRK-10 (Control Head Remote Kit: 23ft/7m) ....	104
KAP-2 (Horn Alert/P.A. Relay unit) .....	109
KCT-40 (Radio Interface Cable) .....	109
KCT-46 (Ignition Sense Cable) .....	109
KMC-35 (Microphone) .....	109
KMC-36 (Keypad Microphone) .....	109
SPECIFICATIONS .....	BACK COVER

## 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 this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which 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, and 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.

### 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.

## GENERAL

### 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

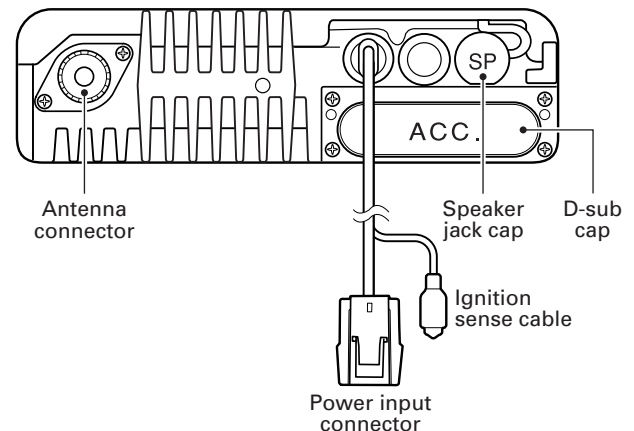
Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply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

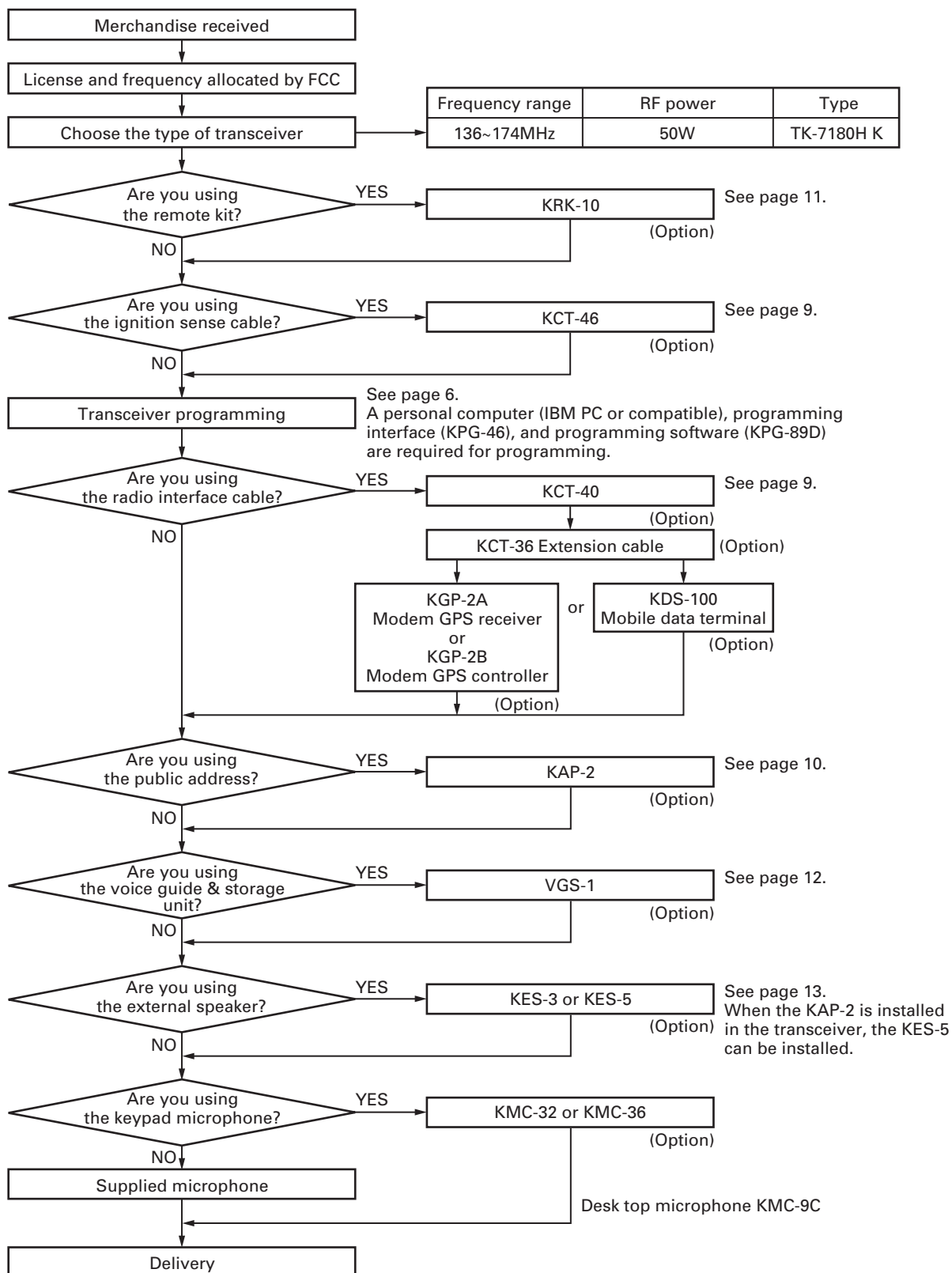
## NOTE

- If you do not intend to use the speaker 3.5-mm jack and the D-sub 25-pin connector, fit the supplied speaker-jack cap and D-sub cap to stop dust and sand from getting in.
- If the transceiver is turned ON or OFF when the power-on/off status message is enabled, the transceiver sends the status.

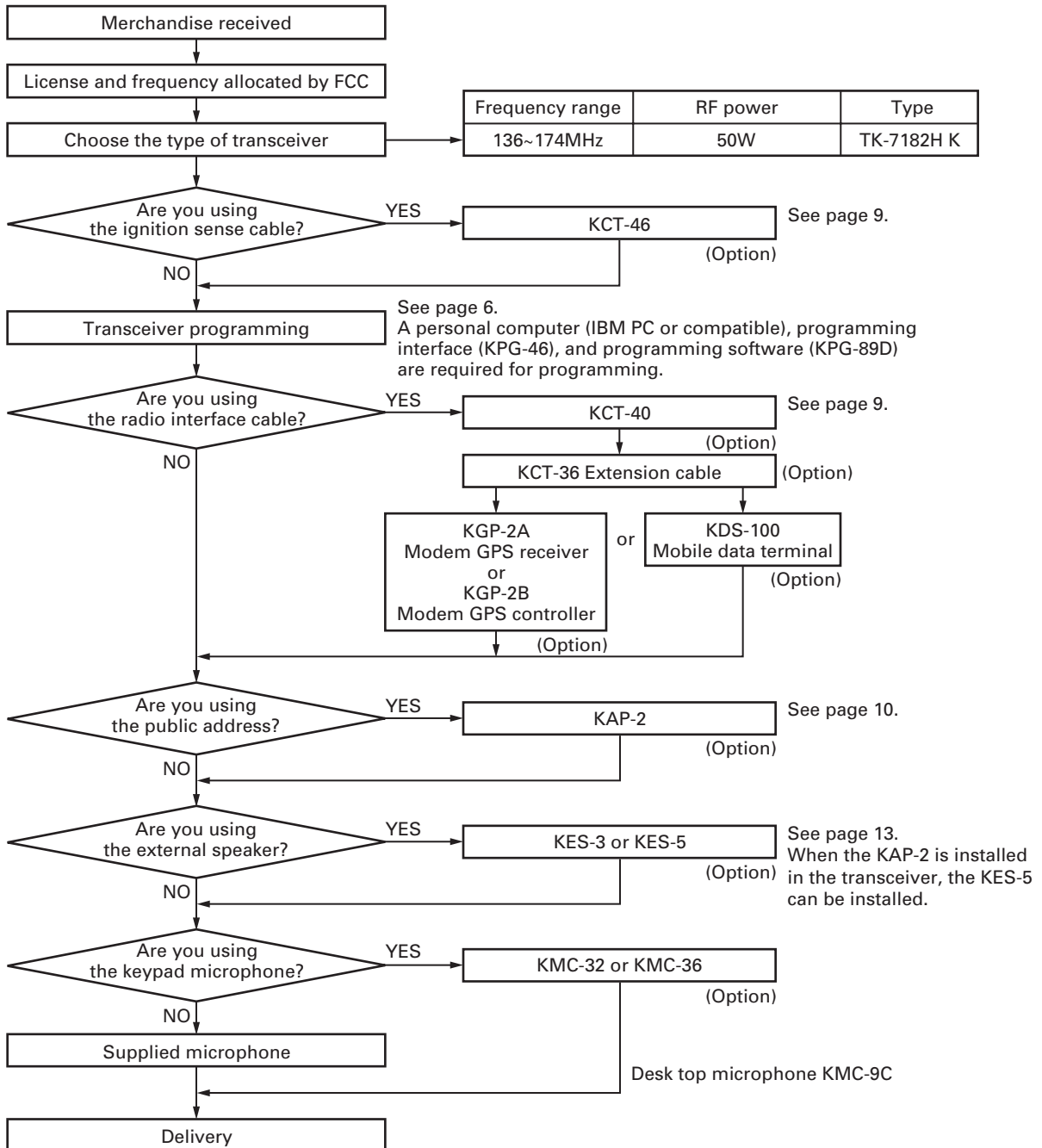


# TK-7180H/7182H

## SYSTEM SET-UP (TK-7180H)

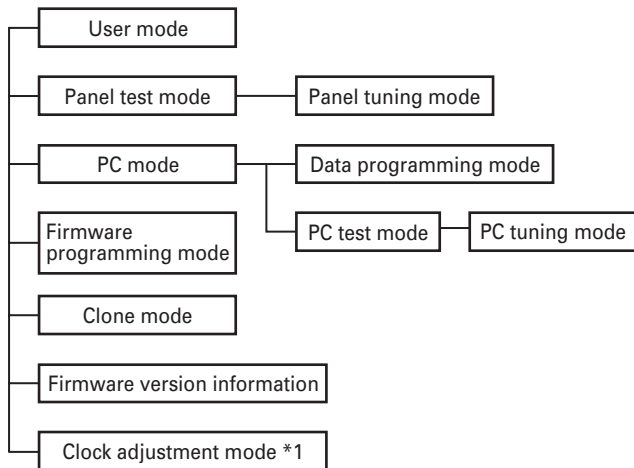


## SYSTEM SET-UP (TK-7182H)



## 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 (IBM compatible).
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 test.
PC tuning mode	Used to tune 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.
Clone mode	Used to transfer programming data from one transceiver to another.
Firmware version information	Used to confirm the internal firmware version.
Clock adjustment mode *1	Used by the dealer to adjust date and time.

\*1 : TK-7180H only

### 2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
Panel test mode	[A] + Power ON
PC mode	Received commands from PC
Panel tuning mode	[Panel test mode] + [S]
Firmware programming mode	[S] + Power ON
Clone mode	[B] + Power ON
Firmware version information	[▲] + Power ON
Clock adjustment mode *2	[C] + Power ON

\*2 : TK-7180H only

### 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-46) and programming software (KPG-89D).

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM PC for programming.

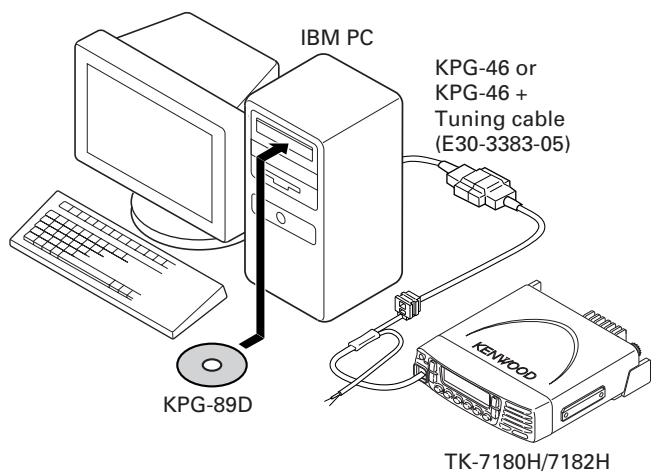


Fig. 1



## REALIGNMENT

### 5-2. Connection procedure

1. Connect the transceiver to the personal computer with the interface cable.
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 personal computer must match model type, when it is written into the flash memory.

### 5-3. KPG-46 description

#### (PC programming interface cable: Option)

The KPG-46 is required to interface the transceiver to the computer. It has a circuit in its D-sub connector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-46 connects the modular microphone jack of the transceiver to the computers RS-232C serial port.

### 5-4. Programming software KPG-89D description

The KPG-89D is the programming software for the transceiver supplied on a CD-ROM. This software runs under MS-Windows 98, ME, Windows 2000 or XP on an IBM-PC or compatible machine.

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. Firmware Programming Mode

### 6-1. 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.)

### 6-2. Connection procedure

Connect the transceiver to the personal computer (IBM PC or compatible) with the interface cable (KPG-46). (Connection is the same as in the PC Mode.)

#### Note :

You can only program firmware from the 8-pin microphone connector on the front panel. Using the 25-pin logic interface on the rear panel will not work.

### 6-3. 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 [S] key while turning the transceiver power ON. Then, the orange LED on the transceiver lights and "PROG 115200" (TK-7180H) or "PROG1152" (TK-7182H) 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, "PG" is blinking (TK-7180H) or "LOADING" is displayed (TK-7182H).
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.

### 6-4. Function

1. If you press the [■] key while "PROG 115200" (TK-7180H) or "PROG1152" (TK-7182H) is displayed, the display changes to "PROG 19200" (TK-7180H) or "PROG 192" (TK-7182H) (The LED blinks green) to indicate that the write speed is low speed (19200 bps). If you press the [■] key again while "PROG 19200" (TK-7180H) or "PROG 192" (TK-7182H) is displayed, the display changes to "PROG 38400" (TK-7180H) or "PROG 384" (TK-7182H) (The LED lights red and orange alternatively). If you press the [■] key again while "PROG 38400" (TK-7180H) or "PROG 384" (TK-7182H) is displayed, the display changes to "PROG 57600" (TK-7180H) or "PROG 576" (TK-7182H) (The LED blinks orange). If you press the [■] key again while "PROG 57600" (TK-7180H) or "PROG 576" (TK-7182H) is displayed, the display returns to "PROG 115200" (TK-7180H) or "PROG1152" (TK-7182H) (The LED lights orange).
2. If you press the [▲] key while "PROG 115200" (TK-7180H) or "PROG1152" (TK-7182H) is displayed, the checksum is calculated, and a result is displayed. If you press the [▲] key again while the checksum is displayed, "PROG 115200" (TK-7180H) or "PROG1152" (TK-7182H) is redisplayed.

#### Note:

Normally, write in the high-speed mode.



## REALIGNMENT

### 7. Clone Mode

Programming data can be transferred from one transceiver to another by connecting them via their 8-pin microphone connectors. The operation is as follows (the transmit transceiver is the master and the receive transceiver is a slave).

The following data cannot be cloned.

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

1. Press and hold the [B] key while turning the transceiver power ON. If the read authorization password is set to the transceiver, "CLONE LOCK" (TK-7180H) or "CLN LOCK" (TK-7182H) is displayed. If the password is not set, "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H) is displayed.
2. When you enter the correct password, and "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H) is displayed, the transceiver can be used as the cloning master. The following describes how to enter the password.

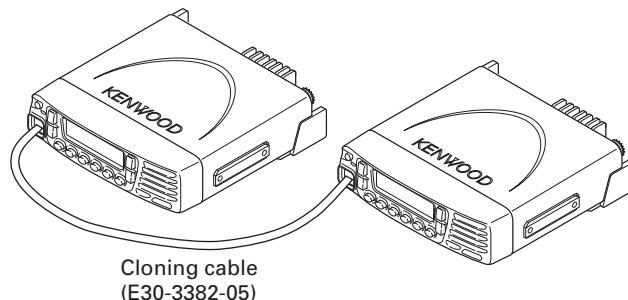
3.
  - **How to enter the password with the microphone keypad;** If one of keys 0 to 9 is pressed while "CLONE LOCK" (TK-7180H) or "CLN LOCK" (TK-7182H) is displayed, the pressed number is displayed on the LCD. Each press of the key shifts the display in order to the left. When you enter the password and press the [\*] key, "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H) is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" (TK-7180H) or "CLN LOCK" (TK-7182H) is redisplayed.
  - **How to enter the password with the [^] and [v] keys;** If the [^] and [v] keys is pressed while "CLONE LOCK" (TK-7180H) or "CLN LOCK" (TK-7182H) is displayed, the number (0 to 9) blinks on the LCD. When you press the [C] key, the currently selected number is determined. If you press the [A] key, the least digit of the password is deleted. If you press the [S] key after entering the password in this procedure, "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H) is displayed if the entered password is correct. If the password is incorrect, "CLONE LOCK" (TK-7180H) or "CLN LOCK" (TK-7182H) is redisplayed.

4. Power on the slave transceiver.
5. Connect the cloning cable (Part No. E30-3382-05) to the modular microphone jacks on the master and slave.
6. Press the [S] key on the master while the master displays "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H). The data of the master is sent to the slave. While the slave is receiving the data, "PROGRAM" is displayed. When cloning of data is completed, the master displays "END", and the slave automatically operates in the User mode. The slave can then be operated by the same program as the master.

7. The other slave can be continuously cloned. When the [S] key on the master is pressed while the master displays "END", the master displays "CLONE MODE" (TK-7180H) or "CLONE" (TK-7182H). Carry out the operation in step 4 to 6.

#### Notes:

- Only the same models can be cloned together.
- Cannot be cloned if the overwrite password is programmed to the slave.



Cloning cable  
(E30-3382-05)

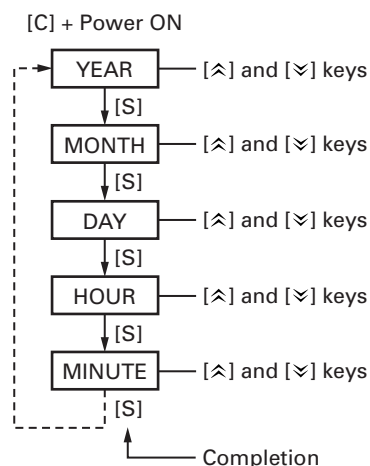
Fig. 2

### 8. Firmware Version Information

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

### 9. Clock Adjustment Mode (TK-7180H only)

#### 9-1. Flow chart of operation



## INSTALLATION

### 1. Ignition Sense Cable (KCT-46 : Option)

The KCT-46 is an optional cable for enabling the ignition function. The ignition function lets you turn the power to the transceiver on and off with the car ignition key.

#### 1-1. Connecting the KCT-46 cable to the transceiver

1. Open the KCT-46 fuse holder and insert a mini blade fuse (3A). ( ① )
2. While holding a clear protective cover, remove the black cap at the end of the yellow cable (ignition sense cable) of the transceiver. ( ② )
3. Connect the plug of the KCT-46 to the yellow cable terminal of the transceiver. ( ③ )
4. Connect the other end of the KCT-46 to the ignition line of the car. ( ④ )

**Note :** You must setup using the KPG-89D.

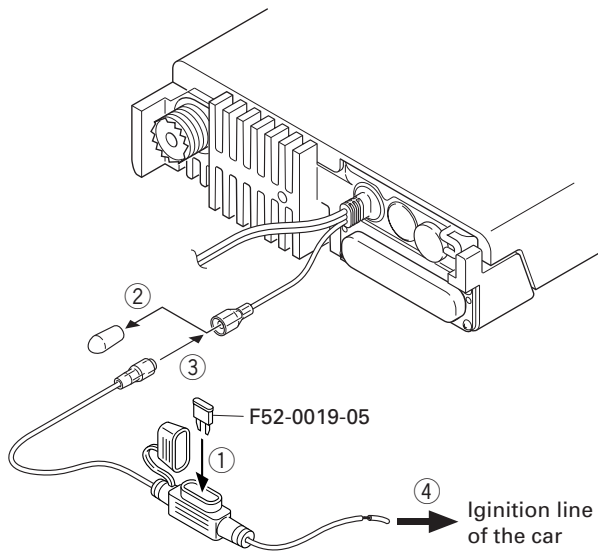


Fig. 1

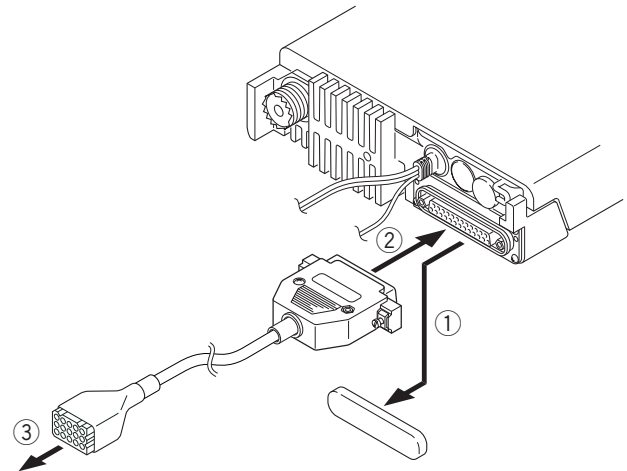
### 2. Radio Interface Cable (KCT-40 : Option)

The KCT-40 connection cable kit is used to connect the transceiver to the KDS-100 (Mobile data terminal), KGP-2A (Modem GPS receiver), KGP-2B (Modem GPS controller) or through the KCT-36 extension cable.

#### 2-1. Connecting the KCT-40 cable to the transceiver

1. Remove the D-sub cap on the rear of the transceiver. ( ① )
2. Connect the D-sub connector of the KCT-40 to the D-sub 25-pin terminal of the transceiver. ( ② )
3. Connect the 15-pin connector of the KCT-40 to a KDS-100, KGP-2A, KGP-2B or through a KCT-36 extension cable. ( ③ )

**Note :** You must setup using the KPG-89D.



KDS-100, KGP-2A,  
KGP-2B or through  
KCT-36 extension cable

Fig. 2

#### 2-2. Terminal function

D-sub 25-pin Pin No.	TK-7180H/7182H Function	Molex 15-pin Pin No.	KDS-100 Function	KGP-2A/2B Function
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	DI	5	DO	DO
6	-	-	-	-
7	GND	3	GND	GND
8	AIO8	9	TXS/LOK	TXS/LOK
9	TXD2	15	RXD	RXD
10	RXD2	14	TXD	TXD
11	-	-	-	-
12	AIO7	11	MM	MM
13	AIO6	6	PTT	PTT
14	SB	1	SB	SB
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	DEO	4	DI	DI
20	AIO5	8	SQ	SQ
21	AIO4	10	AM	AM
22	AIO3	13	-	DISP OFF
23	AIO2	12	-	-
24	AIO1	7	DTC	DTC
25	-	-	-	-

## INSTALLATION

### 3. Horn Alert/P.A. Relay Unit (KAP-2 : Option)

The Horn alert (max. 2A drive), Public address and External speaker function are enabled by installing the KAP-2 in the transceiver.

#### 3-1. Installing the KAP-2 unit in the transceiver (The kit A is not used in the KAP-2 accessories)

1. Remove the cabinet, top packing and shielding plate of the transceiver.
2. Set the KAP-2 relay unit jumper pins according to the purpose of use.
3. Remove the 6-pin jumper connector inserted in the TX-RX unit (B/3) connector (CN428). ( ① )
4. Insert one side of the lead wire with connector (E37-1114-05) into the relay unit connector (CN3) ( ② ) and the other side into the TX-RX unit (B/3) connector (CN428) ( ③ ).

5. Place the relay unit at the position shown in Figure 3-2 and secure it to the chassis with a screw.
6. Remove the cap on the rear of the chassis by pushing it from the inside with your finger. ( ④ )
7. Pass the 6-pin connector of the cable (E37-1113-05) through the chassis hole ( ⑤ ) and insert the bush into the chassis hole.
8. Rotate the bush of the cable 90 degrees counterclockwise as viewed from the rear of the chassis. ( ⑥ )
9. Insert the 6-pin connector of the cable into the connector (CN2) of the KAP-2 relay unit. ( ⑦ )

**Note :** You must setup using the KPG-89D.

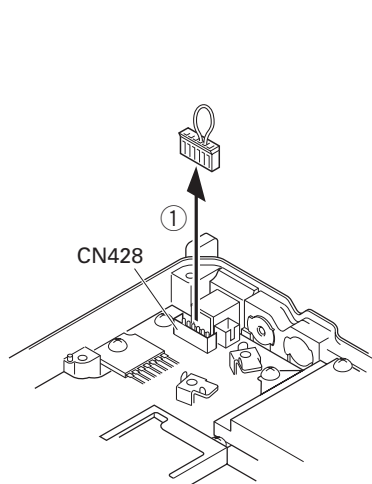


Fig. 3-1

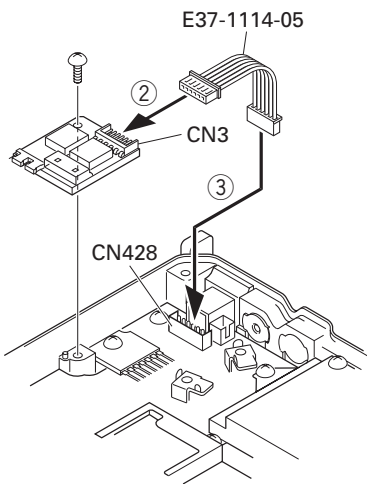


Fig. 3-2

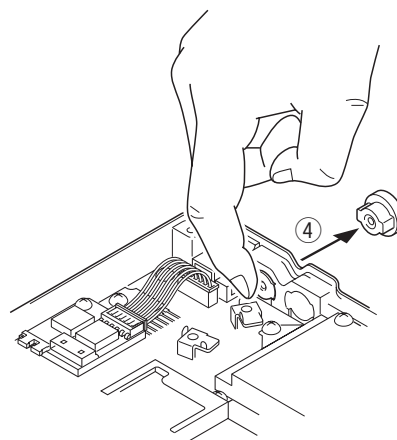


Fig. 3-3

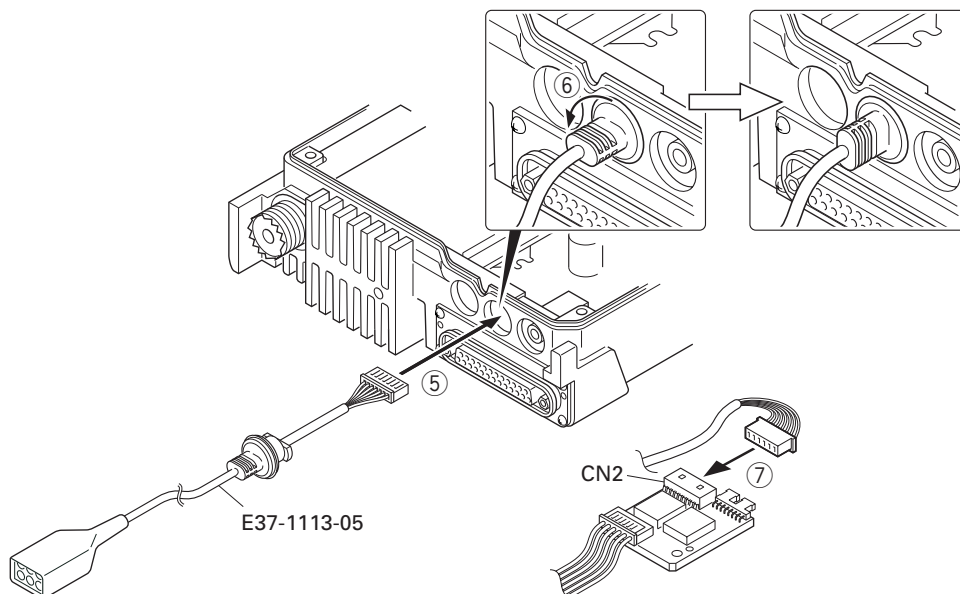


Fig. 3-4

## INSTALLATION

### 4. Control Head Remote Kit

#### (KRK-10 : Option) (TK-7180H only)

The KRK-10 remote kit is used to remotely operate the transceiver.

#### 4-1. Installing the KRK-10 kit to the transceiver

1. Remove the front panel from the transceiver.
2. Install the KRK-10 main panel onto the transceiver.
3. Install the KRK-10 rear panel onto the front panel.
4. Connect the KRK-10 main panel to the rear panel with the cable.

#### ■ Remove the front panel from the transceiver

1. Lift the two tabs of the panel on the bottom of the transceiver with a flat-head screwdriver ( ① ) and remove the panel from the chassis ( ② ).
- Note :** Confirm that the tabs of the speaker hardware fixture and holder is securely fitted in the front panel.
2. Remove the flat cable from the connector (CN902) of the display unit of the panel. ( ③ )
  3. Fold the black line of the flat cable (in three parts) as shown in Figure 4-2. ( ④, ⑤, ⑥ )

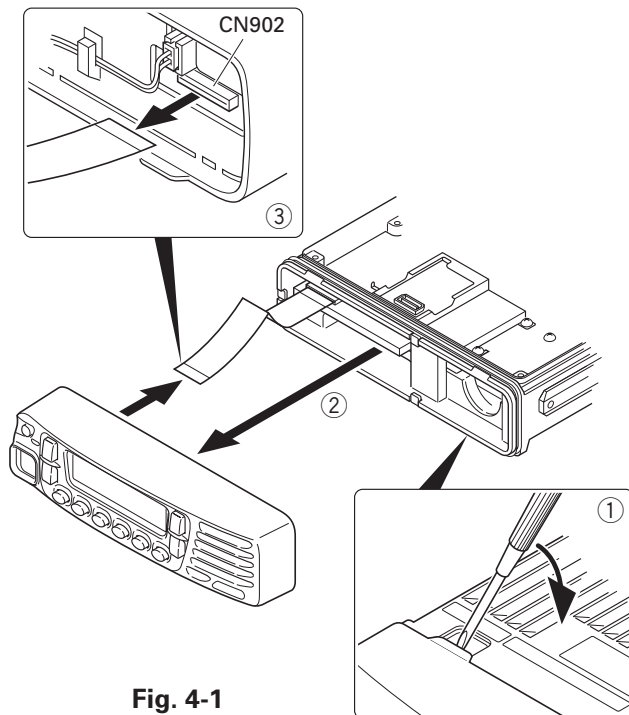


Fig. 4-1

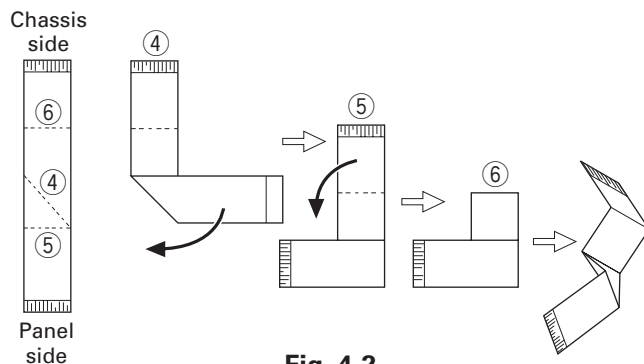


Fig. 4-2

#### ■ Install the KRK-10 main panel onto the transceiver

4. Insert the flat cable that was removed in step 2 above into the connector (CN1) of the interface unit (A/2) of the KRK-10 main panel (A62-1101-01). ( ⑦ )
- Note :** The terminal side of the flat cable must face down when inserting the flat cable into the connector.
5. Fit the main panel with four tabs onto the front of the chassis. ( ⑧ )
- Note :** When installing the main panel onto the front of the chassis, hold down the flat cable with your fingers to prevent it from being caught.

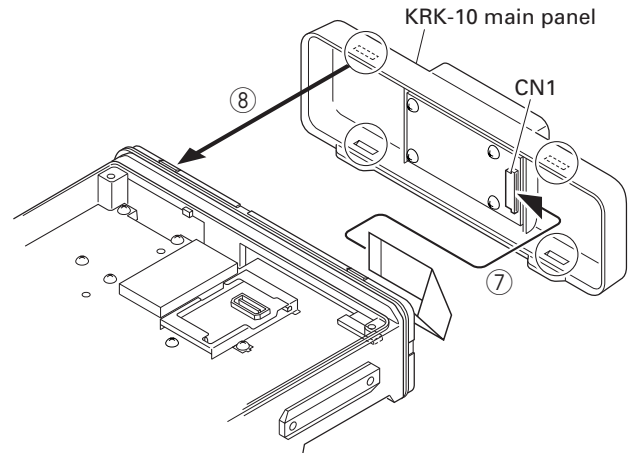


Fig. 4-3

#### ■ Install the KRK-10 rear panel onto the front panel

6. Insert the flat cable attached to the interface unit (B/2) of the KRK-10 rear panel (A82-0056-11) into the connector (CN902) of the display unit of the panel ( ⑨ ). (The flat cable has been pre-inserted in the connector (CN2) of the rear panel at the time of shipping.)
- Note :** The terminal side of the flat cable must face down when inserting the flat cable into the connector.
7. Fit the four tabs of the rear panel into the front panel. ( ⑩ )

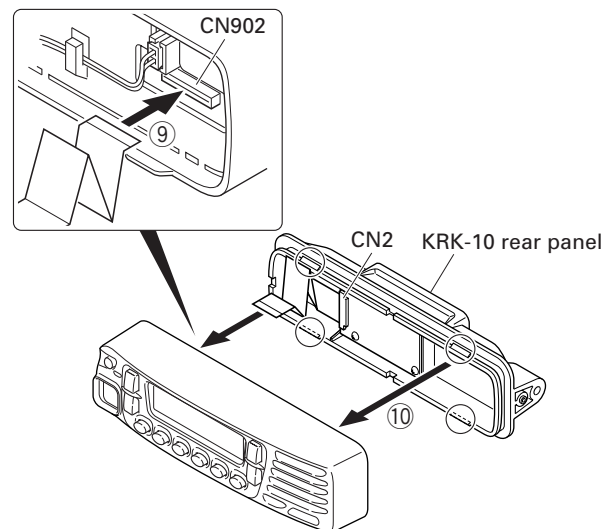


Fig. 4-4

## INSTALLATION

### ■ Connect the KRK-10 main panel to the rear panel with the cable

8. Insert one 14-pin connector of the cable (E30-7514-15) into the connector (CN3) of the interface unit (A/2) of the main panel. ( ⑪ )

**Note :** Insert the connector that has a sticker onto the cable to the connector of the main panel.

9. Secure the cable bush on the main panel and fit the waterproof packing (orange) ( ⑫ ) securely over top.

10. Install the molded cover ( ⑬ ) over the connector on the main panel and secure it with two screws ( ⑭ ).

11. Insert the other 14-pin connector of the cable into the connector (CN4) of the interface unit (B/2) of the rear panel. ( ⑮ )

12. Secure the cable bush on the rear panel and fit the waterproof packing (orange) ( ⑯ ) securely over top.

13. Install the molded cover ( ⑰ ) over the connector on the rear panel and secure it with two screws ( ⑱ ).

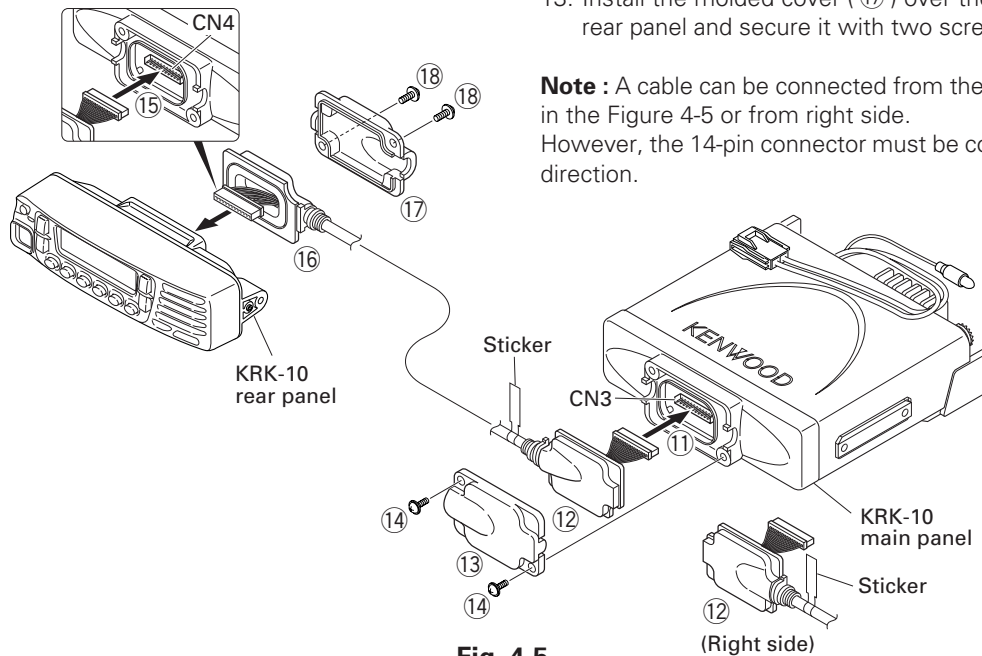


Fig. 4-5

(Right side)

## 5. Voice Guide & Storage Unit

### (VGS-1 : Option) (TK-7180H only)

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

1. Remove the cabinet, top packing and shielding plate of the transceiver.

2. Attach two cushions to VGS-1 as shown in Figure 5. ( ① )

**Note :** Be sure not to cover the connector with the bottom cushion.

3. Insert the VGS-1 connector (CN1) into the TX-RX unit (B/3) connector (CN403). ( ② )

**Note :** You must setup using the KPG-89D.

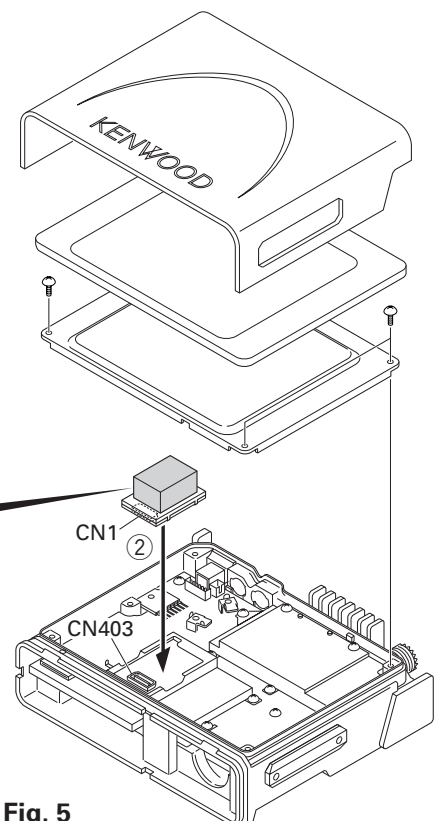
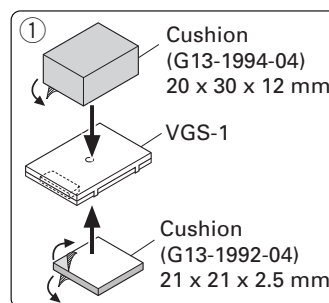


Fig. 5

## INSTALLATION

### 6. External Speaker (Option)

#### 6-1. KES-3

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

#### ■ Connection Procedure

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

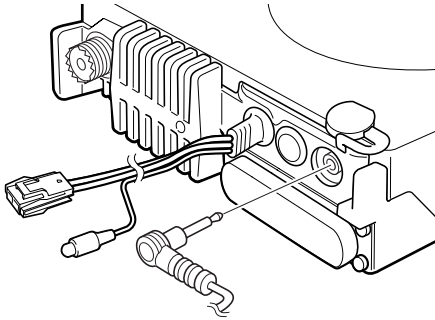


Fig. 6-1

#### 6-2. KES-5

External speaker KES-5 can be installed for KAP-2. If KES-5 is installed, it can be set by changing the CN1 short pin from pins 4 and 5 to pins 5 and 6 on the KAP-2.

KAP-2 CN1 Connect	Set Up
4-5	INT. SP or KES-3
5-6	KES-5

When you use the KES-5, plug the short pin to pins 5 and 6 on the KAP-2.

When you use the INT. SP or KES-3, plug the short pin to pins 4 and 5 on the KAP-2.

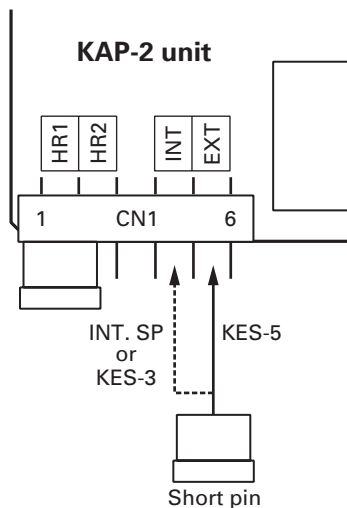


Fig. 6-2

#### ■ Connection Procedure

Insert the crimp terminal into the Square plug supplied with the KAP-2.

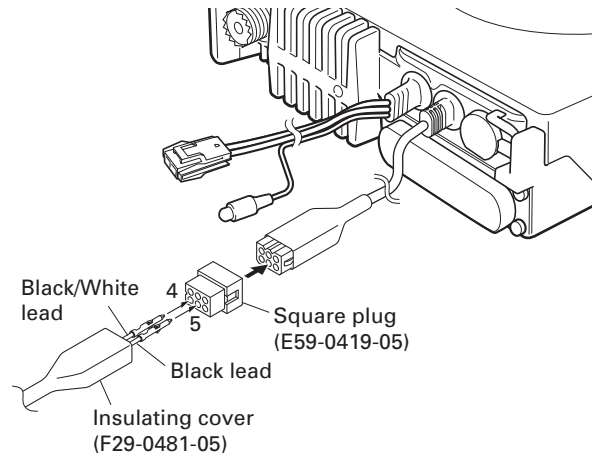
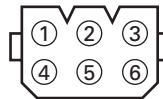


Fig. 6-3

#### ■ KAP-2 Cable (E37-1113-05) 6-pin Connector



Pin No.	Color	Name
1	Red	HR2
2	Blue	GND
3	Yellow	OSP
4	Green	ESP
5	Brown	GND
6	Black	HR1

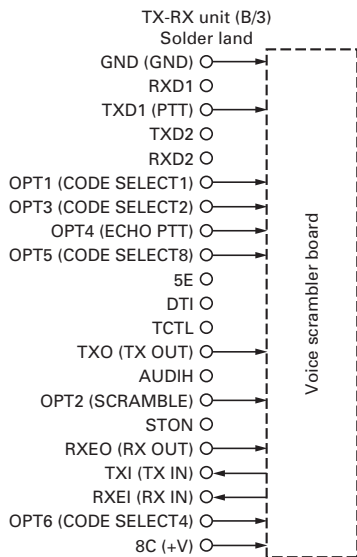


## INSTALLATION

### 7. Voice Scrambler Board Connection

1. Remove the front panel from the transceiver.
2. Solder each lead of the scrambler board to a necessary location of each landing on the component side of the TX-RX unit (B/3).
3. Wrap the scrambler board in a cushion and install it on the front of the chassis as shown in Figure 8-2.

**Note :** You must setup using the KPG-89D.

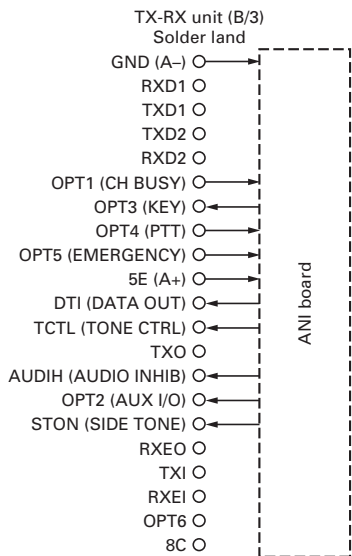


**Fig. 7**

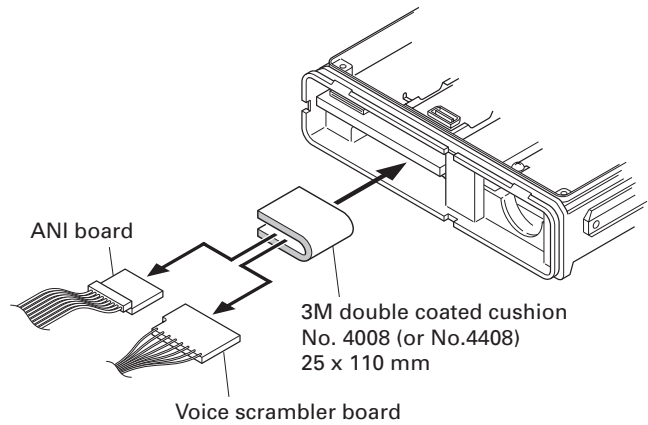
### 8. ANI Board Connection

1. Remove the front panel from the transceiver.
2. Solder each lead of the scrambler board to a necessary location of each landing on the component side of the TX-RX unit (B/3).
3. Wrap the scrambler board in a cushion and install it on the front of the chassis as shown in Figure 8-2.

**Note :** You must setup using the KPG-89D.



**Fig. 8-1**



**Fig. 8-2**

### 9. GPS Receiver Connection

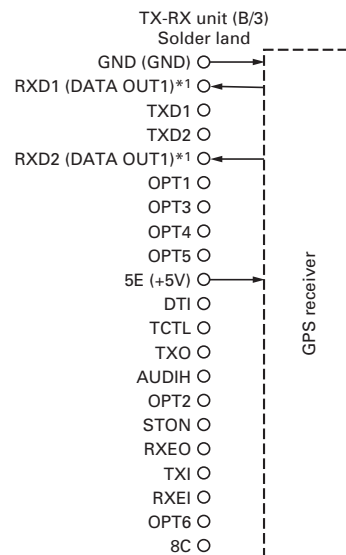
#### 9-1. Installing the GPS receiver

1. Remove the cabinet, top packing and shielding plate of the transceiver.
2. Remove the front panel from the transceiver.
3. Attach two cushions to the top of the GPS receiver.
4. Attach the GPS receiver to the shield case with two cushions as shown in Figure 9-2.
5. Solder each lead of the GPS receiver to a necessary location of each landing on the component side of the TX-RX unit (B/3).
6. Place the GPS antenna cable in the hollow at the rear of the chassis. (Fig. 9-2 ①)

**Note :** If the GPS receiver is installed, cut the base of the convex tab of the top packing with a pair of nippers, or similar tool. (Fig. 9-3 ②)

If the convex tab of the top packing is cut off, the water proofing property is no longer guaranteed.

**Note :** You must setup using the KPG-89D.



**Fig. 9-1**

\*1 : Depending on the connected optional accessory, the DATA OUT1 may connect to either RXD1 or RXD2.



## INSTALLATION

3M Double coated cushion  
No. 4016 (or No. 4416)  
30 x 25 mm

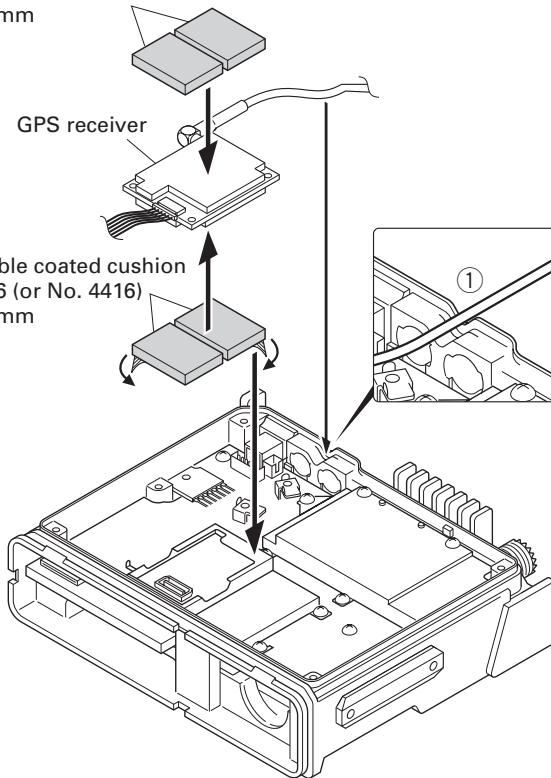


Fig. 9-2

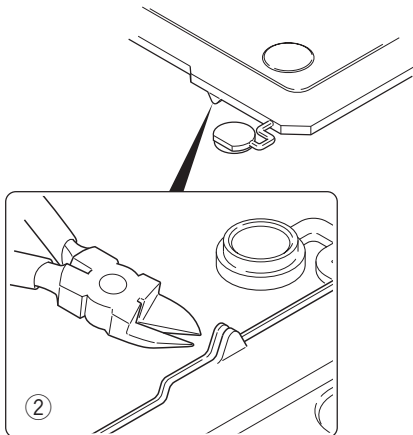


Fig. 9-3

### 9-2. Installing the GPS receiver together with the VGS-1 (TK-7180H only)

1. Remove the cabinet, top packing and shielding plate of the transceiver.
2. Remove the front panel from the transceiver.
3. Attach a cushion to the bottom of the VGS-1 as shown in Figure 9-5.

**Note :** Be sure not to cover the connector with the cushion.

4. Insert the VGS-1 connector (CN1) into the TX-RX unit (B/3) connector (CN403).
5. Perform step 3 to 6 of "9-1. Installing the GPS receiver" described on page 14.

**Note :** You must setup using the KPG-89D.

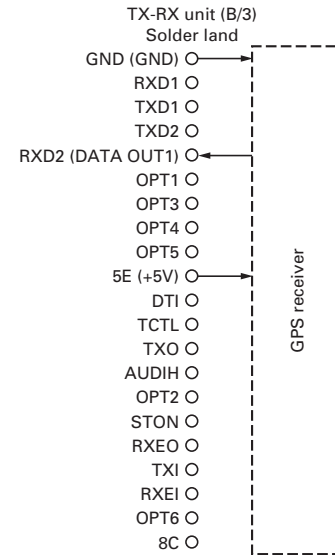


Fig. 9-4

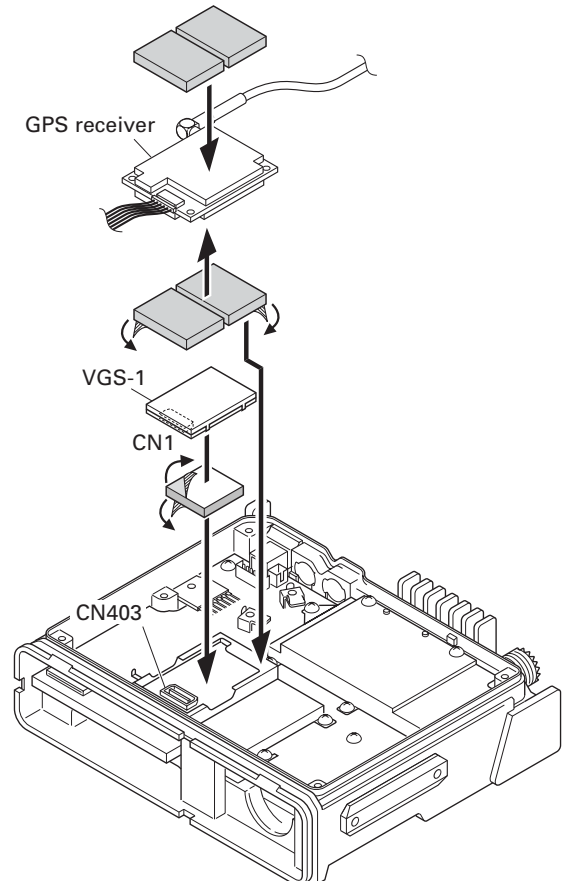


Fig. 9-5

## DISASSEMBLY FOR REPAIR

### 1. Precautions on Disassembly

#### ■ TX-RX PCB (TX-RX unit B/3) Disassembly

1. Remove all screws and antenna terminals on the TX-RX PCB.
2. Rotate the bush of the power supply cable 90 degrees counterclockwise as viewed from the rear of the chassis (①) and remove the power supply cable from the chassis (②).
3. When the speaker phone jack is pushed up, using your finger, from the rear of the chassis (③), the TX-RX PCB is removed from the chassis.

**Note :** The TX-RX PCB and D-sub PCB (TX-RX unit A/3) are connected with a flat cable. Remove them carefully.

4. Turn the TX-RX PCB over and remove the flat cable from the connector (CN427). (④)
5. Remove the TX-RX PCB from the chassis.

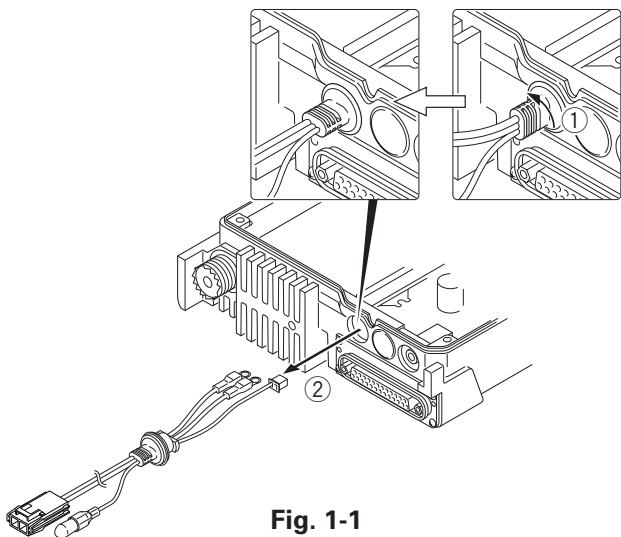


Fig. 1-1

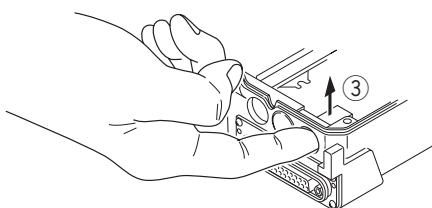


Fig. 1-2

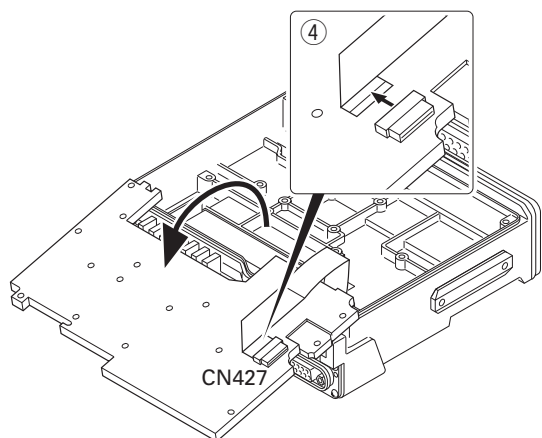


Fig. 1-3

#### ■ Removing the speaker hardware fixture (J21-8481-03) and holder (J19-5485-02)

1. Remove the speaker lead from the holder hook. (①)
2. Remove the speaker connector from the display unit connector (CN901). (②)
3. When removing the speaker hardware fixture, insert a flat-head screwdriver at the position shown in Figure 2-1 and tilt it in the direction shown by the arrow. (③)
4. To remove the holder, insert a flat-head screwdriver into tab of the holder and tilt it in the direction shown by the arrow. (④)

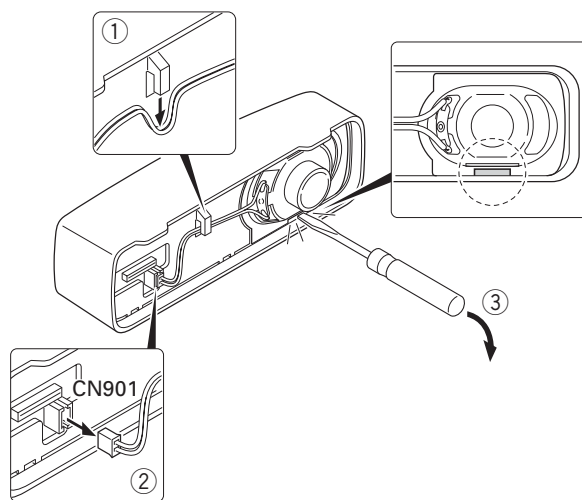


Fig. 2-1

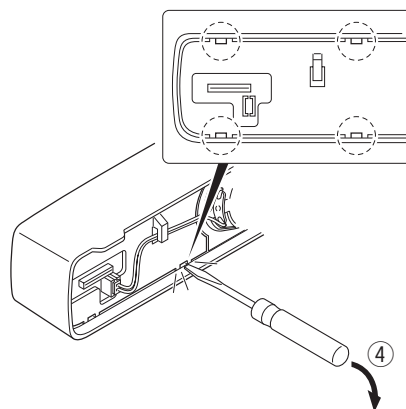


Fig. 2-2

## DISASSEMBLY FOR REPAIR

### 2. Precautions on Reassembly

#### ■ TX-RX PCB (TX-RX unit B/3) Reassembly

1. With the TX-RX PCB turned over, insert the flat cable from the D-sub PCB (TX-RX unit A/3) into the connector (CN427) on the TX-RX PCB.
2. Place the TX-RX PCB at its original position, tilt the TX-RX PCB and install the chassis as shown in Figure 3.

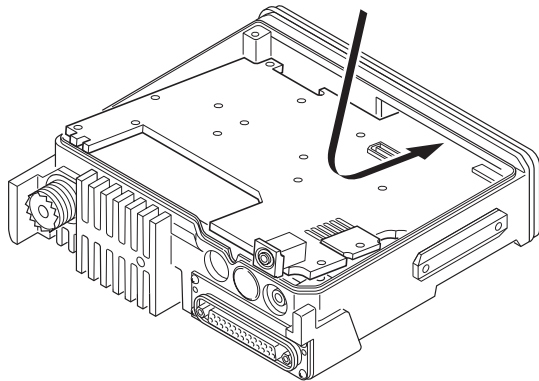


Fig. 3

#### ■ Securing the Audio IC (IC417) with screws

The screws for the audio IC are 8mm screws. These are longer than the other screws, so take care not to confuse them.

#### ■ FINAL shield case (F10-2489-03) installation procedure

1. Place the shield case on the final section of the TX-RX unit (B/3).
2. The shield case is installed on the positioning boss of the chassis by pushing down on "PUSH2" (on the shield case) while pushing "PUSH1" (stamped on two parts on the shield case) to the right.

#### ■ Power supply cable installation procedure

1. Pass the power supply cable through the chassis hole (①) as shown in Figure 4-1 and insert the bush into the chassis hole.
2. Rotate the bush of the power supply cable 90 degrees clockwise as viewed from the rear of the chassis. (②)
3. Align the ignition sense connector (yellow) of the power supply cable around the chemical capacitor (C801) and connect it to the TX-RX unit (B/3) connector (CN804).
4. Align the + (positive) terminal of the power supply cable (red) as shown in Figure 4-2 and fix it to the terminal strip with a screw.
5. Align the - (negative) terminal of the power supply cable (black) as shown in Figure 4-2 and fix it to the terminal strip with a screw.

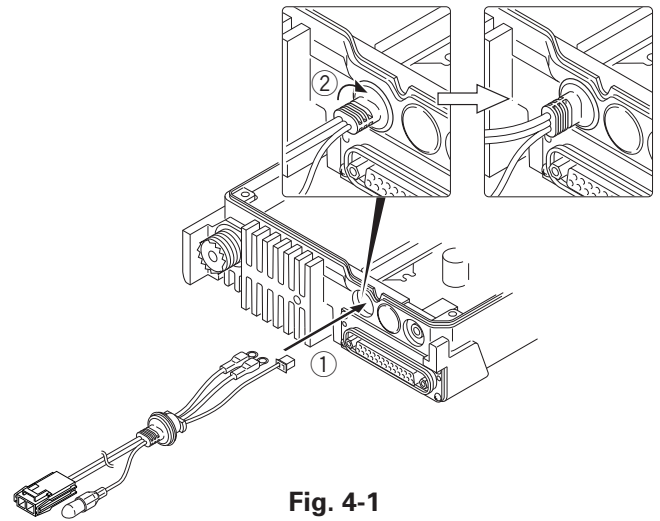


Fig. 4-1

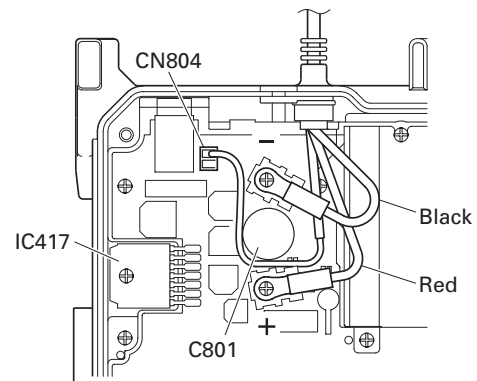


Fig. 4-2

#### ■ Top packing installation procedure

1. Place the top packing over the shielding plate.
2. Fit the convex tab of the top packing into the hollow of the chassis. (①)
3. Fit the chassis into the groove of the top packing. (②)  
Verify that the top packing is in close contact with the chassis.

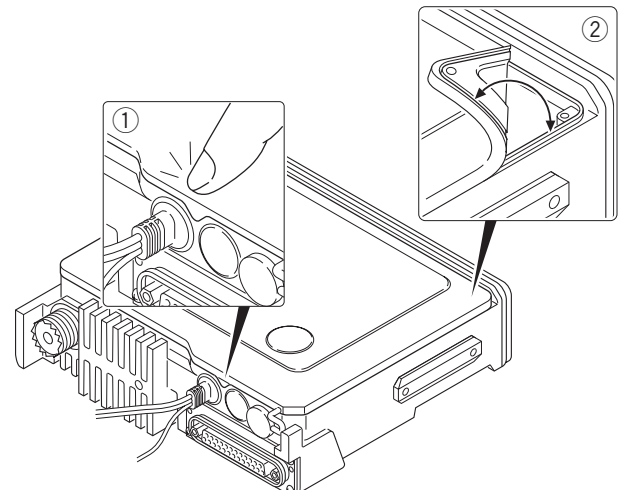


Fig. 5

## DISASSEMBLY FOR REPAIR

### ■ D-sub cap installation procedure

To improve water resistance, fit the D-sub cap into the D-sub terminal hardware fixture of the transceiver in the following order:

1. Fit the left side ( ① ) of the D-sub cap into the hardware fixture.
2. Fit the right side ( ② ) of the D-sub cap into the hardware fixture.
3. Fit the center ( ③ ) of the D-sub cap into the hardware fixture.

Verify that the D-sub cap is in close contact with the hardware fixture.

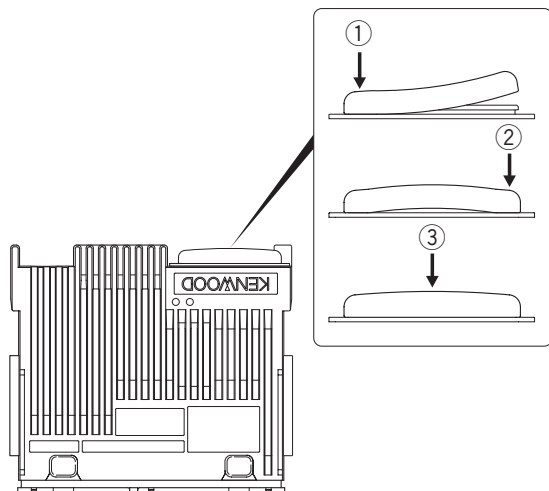


Fig. 6

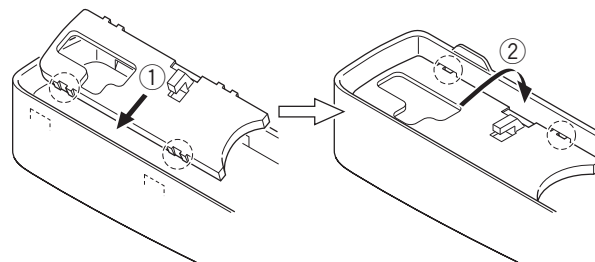


Fig. 7-1

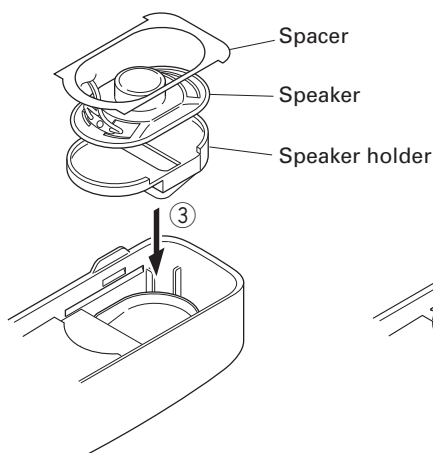


Fig. 7-2

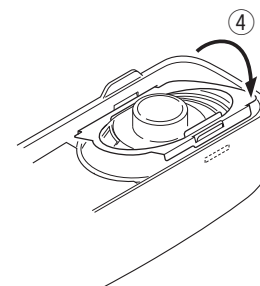


Fig. 7-3

### ■ Installing the holder (J19-5485-02) and speaker hardware fixture (J21-8481-03)

1. Insert two tabs of the holder (J19-5485-02) into the hollows in the top of the panel. ( ① )
2. Push the two tabs of the holder in on the opposite side of those in step 1 above and fit them into the hollow in the bottom of the panel. ( ② )

**Note :** Push in the holder until it snaps in place.

3. Install the speaker holder onto the panel. ( ③ )

**Note :** To improve water resistance, fit the panel into the groove of the holder.

4. Place the speaker into the speaker holder.

**Note :** The speaker must not ride on the holder rib.

5. Place the spacer on the speaker.

6. Insert the hardware fixture (J21-8481-03) into the hollow of the panel as shown in Figure 7-3, then push two parts of the hardware fixture and fit it into the hollow of the top of the panel. (Fig. 7-3 ④ )

**Note :** Push in the hardware fixture until it snaps in place.

7. Insert the speaker connector into the display unit connector (CN901).

8. Place the speaker lead on the holder hook.

## CIRCUIT DESCRIPTION

### 1. Overview

This transceiver is a VHF/FM transceiver designed to operate in the frequency range of 136 to 174MHz.

The transceiver consists of receiver, transmitter, phase-locked loop (PLL) frequency synthesizer, and control circuits.

### 2. Receiver Circuit

The receiver is double conversion superheterodyne, designed to operate in the frequency range of 136MHz to 174MHz.

The receiver circuit consists of the following circuits : 2-1 front-end circuit, 2-2 first mixer, 2-3 IF amplifier circuit, 2-4 audio amplifier circuit, and 2-5 squelch circuit.

#### 2-1. Front-end Circuit

The front-end circuit consists of former BPF (D11), RF amplifier Q103, and latter BPF (D103, D104, D105 and D106). The BPF covers frequency ranges 136 to 174MHz.

The latter BPF (D103, D104, D105 and D106) attenuates the unwanted signals, and sends only the necessary signal to the first mixer.

#### 2-2. First Mixer

The signal from the BPF is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer DBM (IC171) to become a 44.85MHz first intermediate frequency (IF) signal. The first IF signal is fed through a monolithic crystal filter (XF171) to further remove spurious signals.

#### 2-3. IF Amplifier Circuit

The first IF signal is amplified by Q171 and Q172, and then enters IC172 (FM system IC). The signal is heterodyned again with a second local oscillator signal (44.395MHz) with in IC172 to become a 455kHz second IF signal. The second IF signal is fed through a 455kHz ceramic filters (CF172; Wide, CF171; Narrow) to further eliminate unwanted signal, and the quadrature detection circuit FM-detects the signal to produce a base-band signal and output it from pin 9.

#### 2-4. Audio Amplifier Circuit

The demodulated audio signal from IC172 goes to IC415 through the AF amplifier (IC412) and IC413. The audio signal goes to an electronic volume (IC410) and is amplified to drive a loudspeaker by an audio power amplifier (IC417). The audio output can be provided to external 4Ω speaker through the speaker jack output (J401) on the rear panel. Q419 is a mute switch.

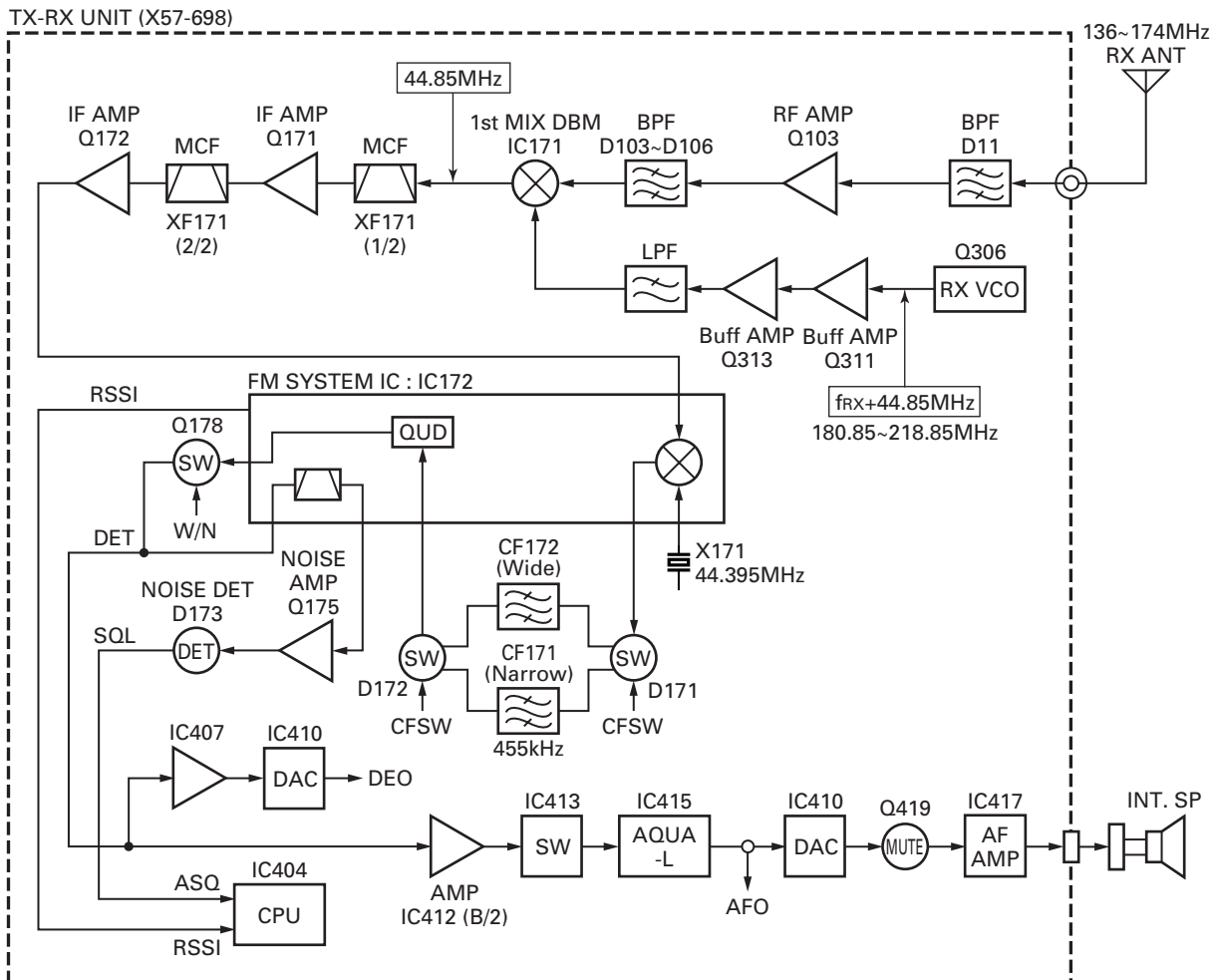


Fig. 1 Receiver circuit

## CIRCUIT DESCRIPTION

### 2-5. Squelch Circuit

The output signal from IC172 enters FM IC again, then passed through a band-pass filter.

The noise component output from IC172 is amplified by Q175 and rectified by D173 to produce a DC Voltage corresponding to the noise level. The DC voltage is sent to the analog port of the CPU (IC404).

IC172 outputs a DC voltage (RSSI) corresponding to the input of the IF amplifier.

### 3. Transmitter Circuit

The transmitter circuit consists of the following circuits : 3-1 microphone circuit, 3-2 modulation level adjustment circuit, 3-3 drive and final power amplifier circuit, and 3-4 automatic power control circuit.

#### 3-1. Microphone Circuit

The audio signal from the microphone goes into TX-RX unit (X57-698) from the display unit (X54-348) and passes through the mute switch (Q416). The audio signal is amplified by the microphone amplifier (IC414) and is input into the TXIN terminal of the audio processor (IC415) after passing through the multiplexer (IC413).

The input audio signal is output from the MOD terminal of the audio processor (IC415) and is amplified by the audio frequency amplifier (IC412) after passing through the electric volume (IC410).

#### 3-2. Modulation Level Adjustment Circuit

The audio signal amplified by the audio frequency amplifier (IC412) is added to the low speed data LSD passed through the low pass filter (IC409). The combined signals is supplied to the VCO (voltage controlled oscillator) and the VCXO (voltage controlled crystal oscillator) X301, respectively.

#### 3-3. Drive and Final Power Amplifier Circuit

The transmit signal obtained from the TX VCO buffer amplifier Q311, is amplified to approximately +17dBm by the driver amplifiers Q313, Q1 and Q2. This amplified signal is passed to the power amplifier module (power module) IC1, which consists of a MOS-FET amplifier and is capable of transmission output power.

#### 3-4. Automatic Power Control Circuit

The automatic transmission power control (APC) circuit stabilizes the transmitter output power at a predetermined level by detecting the power module output with a diodes D6, D7 and D8. Diodes D6, D7 and D8 apply a voltage to DC amplifier IC72 (A/2). IC72 (B/2) compares the APC control voltage (PC) generated by microprocessor IC404 and DC amplifier IC71 (A/2, B/2) with the detection output voltage from IC72 (A/2) to control the Vgg pin of IC1, and stabilizes transmission output.

The APC circuit is configured to protect over-current of the power module due to fluctuations of the load at the antenna end and to stabilize transmission output at voltage and temperature variations.

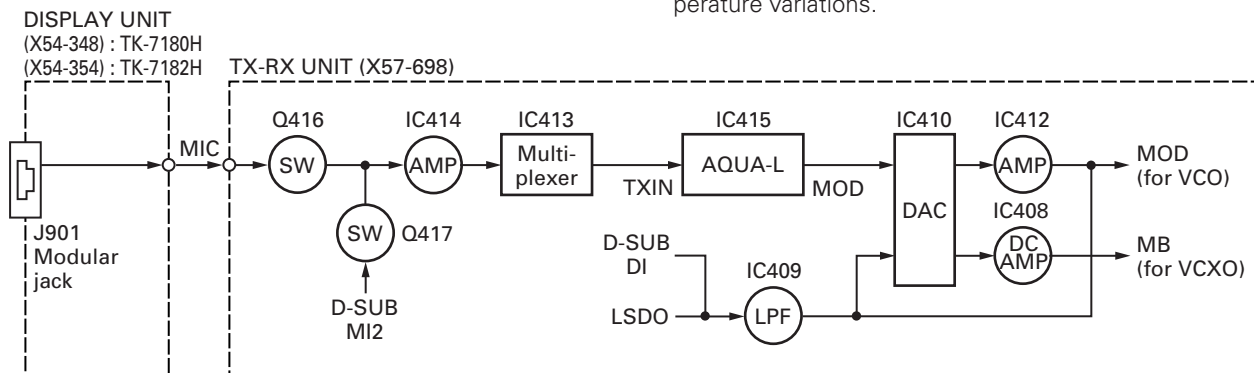


Fig. 2 Microphone and modulation level adjustment circuit

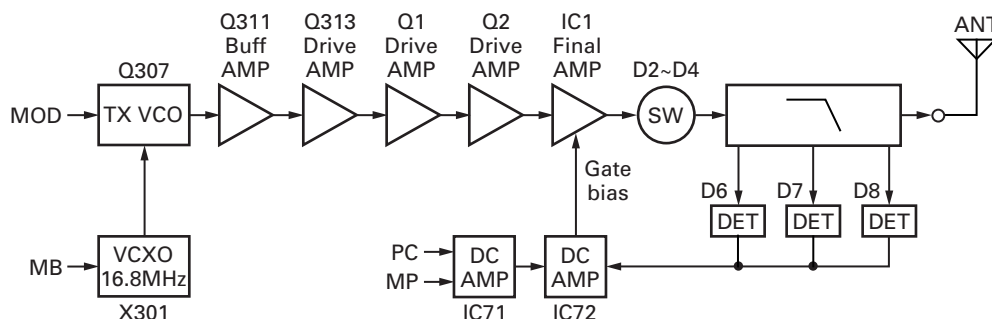


Fig. 3 Drive and Final power amplifier and automatic power control circuit



## CIRCUIT DESCRIPTION

### 4. PLL Frequency Synthesizer

The frequency synthesizer consists of the TCXO (X301), VCO, PLL IC (IC301) and buffer amplifiers.

The TCXO generates 16.8MHz. The frequency stability is 2.5ppm within the temperature range of -30 to +60°C. The frequency tuning and modulation of the TCXO are done to apply a voltage to pin 1 of the TCXO. The output of the TCXO is applied to pin 8 of the PLL IC.

The VCO consists of 2VCO and covers a dual range of 180.85~218.85MHz and 136~174MHz. The VCO generates 180.85~218.85MHz for providing to the first local signal in receive. The operating frequency is generated by Q307 in transmit mode and Q306 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator (IC301) to the variable capacitor diodes (D306, D308, D310 and D311 in transmit mode and D307, D309, D312 and D313 in receive mode).

The T/R pin of IC404 goes "high" in receive mode causing Q307 and Q309 to turn off, and Q306, Q308 and Q310 turn on. The T/R pin goes "low" in transmit mode.

The outputs from Q306 and Q307 are amplified by buffer amplifier (Q311) and doubled by Q301 and then sent to PLL IC.

The PLL IC consists of a prescaler, reference divider, phase comparator, charge pump (The frequency step of the PLL circuit is 10, 12.5 or 15kHz). The input signal from the pins 8 and 5 of the PLL IC is divided down to the 10, 12.5 or 15kHz and compared at phase comparator. The phase comparator output signal is fed into a low-pass filter (Q302, Q303 and Q304) before being applied to the VCO as a frequency control voltage. This low-pass filter's power is supplied by the DC/DC converter (IC251 and Q251). The DC signal is applied to the CV of the VCO and locked to keep the VCO frequency constant.

PLL data is output from DT (pin 112), PCK (pin 82) and PLE (pin 81) of the microprocessor (IC404). The data are input to the PLL IC when the channel is changed or when transmission is changed to reception and vice versa. A PLL lock condition is always monitored by the pin 80 (UL) of the microprocessor. When the PLL is unlocked, the UL goes low.

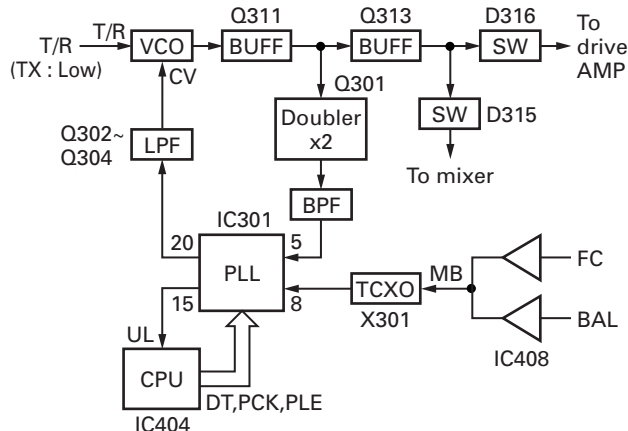


Fig. 4 PLL block diagram

### 5. Control Circuit

The block diagram of the control circuit is shown in Figure 5.

The CPU (IC404) is a 16-bit microcomputer that contains a 256k-byte Mask ROM and a 20k-byte RAM. This CPU is connected with an external 512k-byte Flash ROM (IC405) and operates in memory expansion mode.

The Firmware Program is stored in the Flash ROM and the user data and adjustment data are stored in the EEPROM (IC401). The CPU and Flash ROM are connected with an 8 bit bus and the EEPROM and RTC IC : IC402 (TK-7180H only) are connected with a I2C bus (\*1). The RTC IC (TK-7180H only) has a clock function and is controlled by the CPU (IC404).

Serial communication with a PC is performed through two paths: through the 232C Level converter IC (IC416) and through the Display Unit Panel CPU (IC902). The 8 bit Shift Register (IC403) is used as an 8-port Extended Output Port. IC410 is an 8 bit-8ch D/A converter. The channels are set as follows:

- Ch1 : Modulation balance
- Ch2 : Deviation Factor
- Ch3 : Max Power Level
- Ch4 : Reception tuning circuit
- Ch5 : Deviation Factor
- Ch6 : Speaker volume
- Ch7 : VCXO control voltage
- Ch8 : DEO output level

\*1: I2C bus is a registered trademark of PHILIPS of the Netherlands.

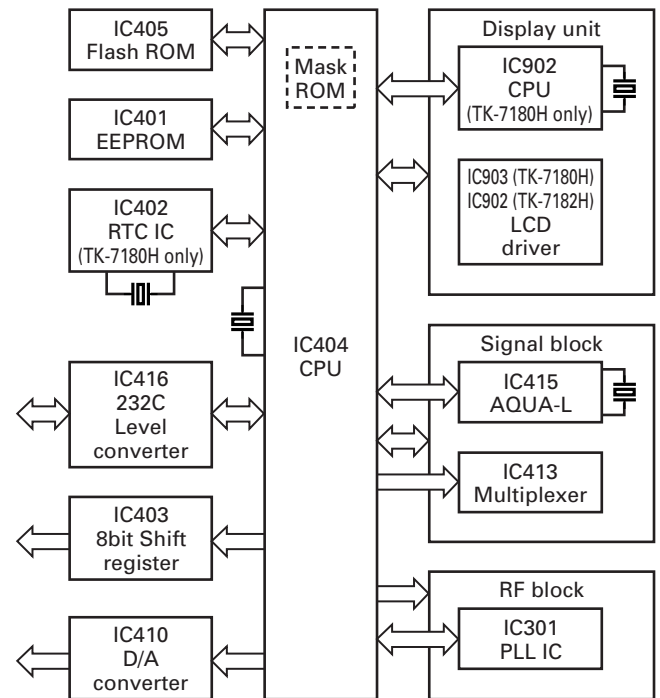


Fig. 5 Control circuit block diagram



## CIRCUIT DESCRIPTION

### 6. Power Supply Circuit

The block diagram of the power supply circuit is shown in Figure 6.

Power is always supplied from +B to the circuit (5M, +B) that is always started and the circuits (SB, 8C, 5E, 8T, 8R, 5C, 5R) controlled by the CPU (IC404). When +B is supplied to the transceiver, Q801, D805 and IC805, regulate the voltage (5M) which is supplied to the circuit around the CPU. The CPU starts.

When the CPU detects that the +B voltage is higher than the voltage prescribed by IC802, the transceiver power (SB) is turned ON by controlling the SBC signal (Low: transceiver power OFF, High: transceiver power ON).

The CPU controls the TXC signal (Low: Transmission system power OFF, High: Transmission system power ON) during transmission to supply power (8T) to the transmission circuit. The CPU controls the RXC signal (Low: Reception system power OFF, High: Reception system power ON) during reception to supply power (8R, 5R) to the reception circuit.

When the CPU detects the PSW (Power Switch) signal, IGN (Ignition Sense) signal or INT signal, it controls the SBC signal and turns the transceiver power (SB) OFF.

If +B is not provided to the transceiver, power is supplied to only the RTC IC (IC402) through the secondary battery connected with CN401 to back up the clock.

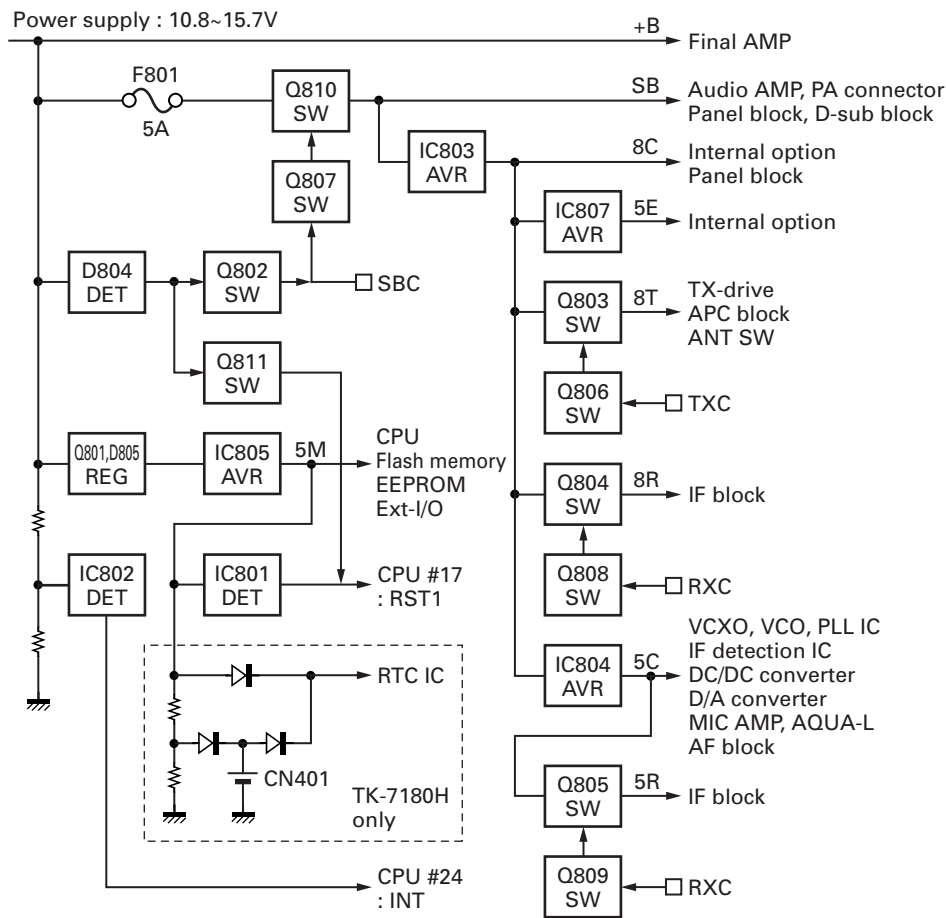


Fig. 6 Power supply circuit

## CIRCUIT DESCRIPTION

### 7. Display Circuit

#### 7-1. TK-7180H Transceiver

The display unit consists of the Panel CPU (IC902), the LCD driver (IC903), the TX/BUSY LED, the KEY detection, the Backlight and the Microphone jack circuits.

The Panel CPU is a 16-bit microcomputer that contains a 64k-byte Mask ROM and a 2k-byte RAM.

The Panel CPU performs serial communication with the Main CPU (IC404) on the TX-RX unit (B/3) and the Panel CPU detects keys and sends data communication contents through the MIC Jack to the Main CPU. The Panel CPU receives commands from the Main CPU and controls the display system.

The LCD operates with 1/9 duty under the LCD driver (IC903) control. The LCD and KEY Backlights are controlled by Q909. The display brightness of the LCD Backlight can be changed.

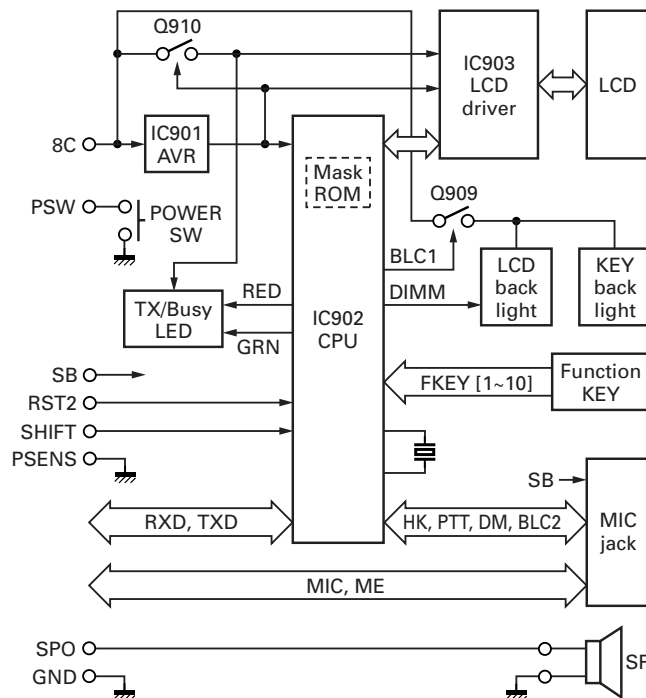


Fig. 7 TK-7180H Display circuit

#### 7-2. TK-7182H Transceiver

The display unit consists of the LCD driver (IC902), the TX/BUSY LED, the KEY detection, the Backlight and the Microphone jack circuits.

The LCD driver performs serial communication with the Main CPU (IC404) on the TX-RX unit (B/3) and the LCD driver detects keys and sends data to the Main CPU. The LCD driver receives commands from the Main CPU and controls the display system.

The LCD operates with 1/4 duty under the LCD driver (IC902) control. The LCD and KEY Backlights are controlled by Q908. The display brightness of the LCD Backlight can be changed by Q909.

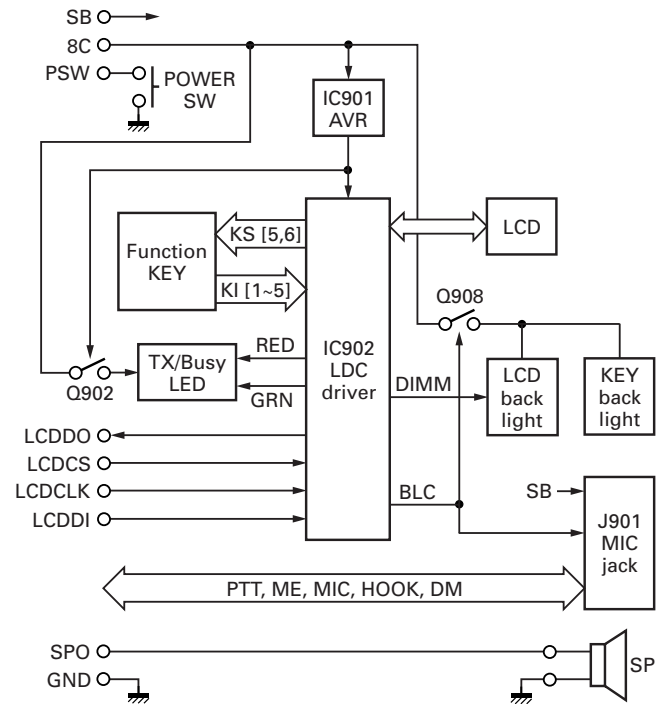


Fig. 8 TK-7182H Display circuit

# TK-7180H/7182H

## SEMICONDUCTOR DATA

### Microprocessor : 30625MGP169GU (TX-RX unit IC404) : TK-7180H

Pin No.	Port Name	I/O	Function
1	VREF	-	+5V
2	AVCC	-	+5V
3	SBC	O	Switched B control
4	RXC	O	RX control
5	TXC	O	TX control
6	PC	O	TX APC adjust
7	HSDO	O	High speed data output
8	STSW	O	Side tone switch
9	RTCL/EEPCL	O	RTC/EEPROM clock
10	HSDIN	I	High speed data input
11	NC	-	No connection
12	RTDT/EEPDAT	I/O	RTC/EEPROM data
13	BYTE	-	+5V
14	CNVSS	-	DGND (Vss)
15	DMUTE	O	Det mute
16	AM2	O	Audio mute 2
17	RST	I	Reset
18	Xout	O	11.0592MHz clock output
19	DGND	-	DGND (Vss)
20	Xin	I	11.0592MHz clock input
21	VCC1	-	+5V
22	NMI	-	+5V
23	PSW	I	Power switch input
24	INT	I	BATT voltage INT
25	INTRA	I	RTC INT
26	SHIFT/MODEL	I/O	Beat shift/Model select
27	BEEP	O	Beep output
28	SPSTB	O	Shift register strobe
29	SOE	O	Shift register output enable
30	AIO5	I/O	AUX I/O 5
31	AIO9	I/O	AUX I/O 9
32	DSTB	O	D/A converter LD
33	LSDO	O	Low speed data output
34	RXD2	I	RXD2
35	TXD2	O	TXD2
36	TXD1	O	TXD1/PTT (Scrambler board)
37	Vcc1	-	+5V
38	RXD1	I	RXD1
39	DGND	-	DGND (Vss)
40	MM1	O	MIC mute 1
41	PSENS	I	Panel sense
42	TXD	O	TXD
43	RXD	I	RXD
44	AFDAT	O	BB TDATA and DTRCLK
45	AFDIO	I/O	BB DI/O
46	AFDIR	O	BB DIR
47	DTRLOAD	O	BB DTMF enable
48	AFSTD	I	BB STD

Pin No.	Port Name	I/O	Function
49	LSW	O	BB LIM switch
50	RDY	-	+5V
51	NC	-	No connection
52	HOLD	-	+5V
53	NC	-	No connection
54~57	AIO4~AIO1	I/O	AUX I/O 4~1
58	NC	-	No connection
59	RD	O	Read (RD)
60	NC	-	No connection
61	WR	O	Write (WR)
62~64	AIO8~AIO6	I/O	AUX I/O 8~6
65,66	NC	-	No connection
67	RST2	O	Display $\mu$ -com reset
68	CS0	O	Chip select 0
69	NC	-	No connection
70~79	A18~A9	O	Address bus 18~9
80	UL	I	PLL unlock
81	PLE	O	PLL enable
82	PCK	O	PLL clock
83	NC	-	No connection
84	OPT6	I/O	Option board I/F 6
85	VCC2	-	+5V
86	A8	O	Address bus 8
87	DGND	-	DGND (Vss)
88~95	A7~A0	O	Address bus 7~0
96	IGN	I	Ignition sense
97	AFRTM	I	BB RDF/FD
98	TCLK/DTRDO	I	BB TCLK and DTRDO
99	MM2	O	MIC mute 2
100	T/R	O	TX/RX switch
101	AM1	O	Audio mute 1
102	EMTON	O	EM tone switch
103	NC	-	No connection
104~111	D7~D0	I/O	Data bus 7~0
112	DT	O	Serial data
113	CK	O	Serial clock
114	W/N	O	Wide/Narrow switch
115~117	OPT 1~OPT 3	I/O	Option board I/F 1~3
118,119	OPT 4, OPT 5	O	Option board I/F 4, 5
120	H/L	O	High/Low power switch
121	THP	I	TX thermal input
122,123	NC	-	No connection
124	ASQ	I	RX analog squelch input
125	RSSI	I	RX RSSI input
126	NC	-	No connection
127	AGND	-	AGND (Vss)
128	LSDIN	I	Low speed data input

## SEMICONDUCTOR DATA

## Microprocessor : 30625MGP238GU (TX-RX unit IC404) : TK-7182H

Pin No.	Port Name	I/O	Function
1	VREF	-	+5V
2	AVCC	-	+5V
3	SBC	O	Switched B control
4	RXC	O	RX control
5	TXC	O	TX control
6	PC	O	TX APC adjust
7	HSDO	O	High speed data output
8	STSW	O	Side tone switch
9	EEPCL	O	EEPROM clock
10	HSDIN	I	High speed data input
11	DM	I	DTMF MIC key scan
12	EEPDAT	I/O	EEPROM data
13	BYTE	-	+5V
14	CNVSS	-	DGND (Vss)
15	DMUTE	O	Det mute
16	AM2	O	Audio mute 2
17	RST	I	Reset
18	Xout	O	11.0592MHz clock output
19	DGND	-	DGND (Vss)
20	Xin	I	11.0592MHz clock input
21	VCC1	-	+5V
22	NMI	-	+5V
23	PSW	I	Power switch input
24	INT	I	BATT voltage INT
25	INTRA	-	+5V
26	SHIFT/MODEL	I/O	Beat shift/Model select
27	BEEP	O	Beep output
28	SPSTB	O	Shift register strobe
29	SOE	O	Shift register output enable
30	AIO5	I/O	AUX I/O 5
31	AIO9	I/O	AUX I/O 9
32	DSTB	O	D/A converter LD
33	LSDO	O	Low speed data output
34	RXD2	I	RXD2
35	TXD2	O	TXD2
36	TXD1	O	TXD1/PTT (Scrambler board)
37	Vcc1	-	+5V
38	RXD1	I	RXD1
39	DGND	-	DGND (Vss)
40	MM1	O	MIC mute 1
41	PTT	I	PTT input
42	TXD	O	TXD
43	RXD/HOOK	I	RXD/HOOK
44	AFDAT	O	BB TDATA and DTRCLK
45	AFDIO	I/O	BB DI/O
46	AFDIR	O	BB DIR
47	DTRLOAD	O	BB DTMF enable
48	AFSTD	I	BB STD

Pin No.	Port Name	I/O	Function
49	LSW	O	BB LIM switch
50	RDY	-	+5V
51	NC	-	No connection
52	HOLD	-	+5V
53	NC	-	No connection
54~57	AIO4~AIO1	I/O	AUX I/O 4~1
58	NC	-	No connection
59	RD	O	Read (RD)
60	NC	-	No connection
61	WR	O	Write (WR)
62~64	AIO8~AIO6	I/O	AUX I/O 8~6
65	LCDDO	O	LCD serial data output
66	LCDCLK	I	LCD serial clock
67	LCDCS	I	LCD chip select
68	CS0	O	Chip select 0
69	NC	-	No connection
70~79	A18~A9	O	Address bus 18~9
80	UL	I	PLL unlock
81	PLE	O	PLL enable
82	PCK	O	PLL clock
83	NC	-	No connection
84	OPT6	I/O	Option board I/F 6
85	VCC2	-	+5V
86	A8	O	Address bus 8
87	DGND	-	DGND (Vss)
88~95	A7~A0	O	Address bus 7~0
96	IGN	I	Ignition sense
97	AFRTM	I	BB RDF/FD
98	TCLK/DTRDO	I	BB TCLK and DTRDO
99	MM2	O	MIC mute 2
100	T/R	O	TX/RX switch
101	AM1	O	Audio mute 1
102	EMTON	O	EM tone switch
103	LCDDI	I	LCD serial data input
104~111	D7~D0	I/O	Data bus 7~0
112	DT	O	Serial data
113	CK	O	Serial clock
114	W/N	O	Wide/Narrow switch
115~117	OPT 1~OPT 3	I/O	Option board I/F 1~3
118,119	OPT 4, OPT 5	O	Option board I/F 4, 5
120	H/L	O	High/Low power switch
121	THP	I	TX thermal input
122,123	NC	-	No connection
124	ASQ	I	RX analog squelch input
125	RSSI	I	RX RSSI input
126	NC	-	No connection
127	AGND	-	AGND (Vss)
128	LSDIN	I	Low speed data input

# TK-7180H/7182H

## SEMICONDUCTOR DATA

### Microprocessor : 30302M88Z7GU (Display unit IC902) : TK-7180H only

Pin No.	Port Name	I/O	Function
1~4	NC	-	No connection
5	SHIFT	O	Beat shift
6	BYTE	-	+5V
7	CNVSS	-	GND
8,9	NC	-	No connection
10	RST	I	Reset
11	Xout	O	14.7456MHz clock output
12	GND	-	GND
13	Xin	I	14.7456MHz clock input
14	VCC	-	+5V
15	NMI	-	+5V
16	BLC2	O	MIC backlight control
17	BLC1	O	Key & LCD backlight control
18	DIMM	O	Dimmer control
19	LEDG	O	LED green
20	LEDR	O	LED red
21	NC	-	No connection
22	LCDCCK	O	LCD serial clock
23	LCDDT	O	LCD serial data
24	LCDCS	O	LCD chip select
25	LCDRST	O	LCD reset
26	NC	-	No connection
27	RXD2	I	RXD2 (Main $\mu$ -com)
28	TXD2	O	TXD2 (Main $\mu$ -com)
29	PTT/TXD	I/O	PTT/TXD (COM0)
30	NC	-	No connection
31	DM	O	MIC DM
32,33	NC	-	No connection
34	HK/RXD	I	HOOK/RXD (COM0)
35~59	NC	-	No connection
60	VCC	-	+5V
61	NC	-	No connection
62	VSS	-	GND
63~70	NC	-	No connection
71~82	S22~S11	I	No connection
83	S10	I	Front panel key (R down [▽])
84	S9	I	Front panel key (R up [△])

Pin No.	Port Name	I/O	Function
85	S8	I	Front panel key (■)
86	S7	I	Front panel key (C)
87	S6	I	Front panel key (B)
88	S5	I	Front panel key (A)
89	S4	I	Front panel key (S)
90	S3	I	Front panel key (▲)
91	S2	I	Front panel key (L down [∨])
92	S1	I	Front panel key (L up [∧])
93	NC	-	No connection
94	AVSS	-	GND
95	NC	-	No connection
96	VREF	-	+5V
97	AVCC	-	+5V
98~100	NC	-	No connection

### Shift Register : BU4094BCFV (TX-RX unit IC403)

Pin No.	Port Name	I/O	Function
1	STRB	I	Storage enable input
2	DATA	I	Serial data input
3	CLK	I	Serial clock input
4	Q1	O	AUX output 1
5	Q2	O	Public address
6	Q3	O	Horn alert
7	Q4	O	Scrambler switch
8	Vss	-	
9	Qs	O	
10	Q's	O	
11	Q8	O	Ceramic filter switch
12	Q7	O	No connection
13	Q6	O	AUX output 2
14	Q5	O	Gate switch
15	OE	I	Output enable
16	VDD	-	

## COMPONENTS DESCRIPTION

### Display unit (X54-3480-10) : TK-7180H

Ref. No.	Part Name	Description
IC901	IC	Voltage regulator/ 5V
IC902	IC	Microprocessor
IC903	IC	LCD driver
Q901,902	Transistor	Hook switch
Q904	Transistor	TX indication LED switch
Q905	Transistor	Busy indication LED switch
Q906	Transistor	Dimmer switch control
Q907	Transistor	Dimmer switch
Q909	Transistor	Backlight control switch
Q910	Transistor	8C switch
Q911	Transistor	8C switch control
Q913	Transistor	Backlight control
D901,902	Zener diode	Voltage protection
D903	Varistor	Current limiter
D904~906	Diode	Surge protection
D907	LED	TX/Busy indication
D909~920	LED	LCD backlight
D921~930	LED	KEY backlight

### Display unit (X54-3540-10) : TK-7182H

Ref. No.	Part Name	Description
IC901	IC	Voltage regulator/ 5V
IC902	IC	LCD driver
Q901,903	Transistor	Hook switch
Q902	Transistor	8C switch
Q904	Transistor	8C switch control
Q905	Transistor	TX indication LED switch
Q906	Transistor	Busy indication LED switch
Q907	Transistor	Backlight switch control
Q908	Transistor	Backlight switch
Q909	Transistor	Dimmer switch
D902	Zener diode	Voltage protection
D903	Varistor	Current limiter
D904	Diode	Isolator
D906	Diode	Surge protection
D908	LED	TX/Busy indication
D909~920	LED	LCD backlight
D921~930	LED	KEY backlight
D931~933	Varistor	Surge protection

### TX-RX unit (X57-6980-XX)

Ref. No.	Part Name	Description
IC1	IC	Power module
IC71,72	IC	DC amp for TX APC
IC171	IC	RX 1st mixer
IC172	IC	FM IF system IC
IC251	IC	DC-DC converter
IC301	IC	PLL system IC
IC302	IC	PLL CP switch
IC401	IC	EEPROM
IC402	IC	RTC processor
IC403	IC	Shift register
IC404	IC	Microprocessor
IC405	IC	Flash memory
IC406	IC	HSD BPF/HSD comparator
IC407	IC	DET amp/Data LPF (DB-25)
IC408	IC	LSD buffer amp/VCXO bias amp
IC409	IC	LSD LPF/Voltage DC-reference
IC410	IC	D/A converter
IC411	IC	RF BPF tuning voltage DC amp
IC412	IC	Modulation LPF/DET amp
IC413	IC	AF switch IC
IC414	IC	MIC amp
IC415	IC	AQUA-L
IC416	IC	Level converter IC (RS-232C)
IC417	IC	Audio IC
IC801	IC	Voltage detector (CPU reset)
IC802	IC	Voltage detector (INT)
IC803	IC	Voltage regulator/ 8V
IC804,805	IC	Voltage regulator/ 5V
IC807	IC	Voltage regulator/ 5V
Q1	Transistor	TX pre-driver
Q2	Transistor	TX driver
Q3	Transistor	TX gate switch
Q72	FET	High/Low power switch
Q73	Transistor	High/Low power switch
Q103	Transistor	Front-end LNA
Q171,172	Transistor	IF amp
Q173,174	Transistor	W/N CF switch control
Q175	Transistor	Noise amp
Q176	FET	DET mute switch

# TK-7180H/7182H

## COMPONENTS DESCRIPTION

Ref. No.	Part Name	Description
Q177	Transistor	W/N CF switch control
Q178	Transistor	W/N discrete switch
Q180	Transistor	W/N CF switch control
Q251	Transistor	Ripple filter
Q301	Transistor	PLL f-in doubler amp
Q302~304	Transistor	PLL LPF
Q305	Transistor	PLL f-in filter switch control
Q306,307	FET	TX/RX VCO
Q308~310	Transistor	TX/RX VCO switch
Q311	Transistor	VCO buffer amp
Q312	Transistor	Ripple filter
Q313	Transistor	VCO buffer amp
Q314	Transistor	PLL f-in filter switch control
Q402	Transistor	Beat shift switch
Q405	Transistor	AQUA control switch
Q406	FET	AF switch (LSD)
Q409	Transistor	AF mute switch
Q410,411	Transistor	MIC AGC
Q412	FET	AF mute switch
Q413,414	FET	AF switch
Q415	FET	AF switch (Voice)
Q416,417	FET	MIC mute switch
Q418	Transistor	AF mute control switch
Q419	Transistor	AF mute switch
Q421	Transistor	MIC mute switch
Q701,702	Transistor	Inverter switch
Q801	Transistor	Voltage regulator/ 8.5V
Q802	Transistor	SB control switch
Q803	Transistor	8T switch
Q804	Transistor	8R switch
Q805	Transistor	5R switch
Q806	Transistor	8T control switch
Q807	Transistor	SB control switch
Q808	Transistor	8R control switch
Q809	Transistor	5R control switch
Q810	FET	SB switch
Q811	Transistor	CPU reset switch

Ref. No.	Part Name	Description
Q812	Transistor	Ignition sense control switch
D1	Zener diode	Voltage protection
D2~4	Diode	ANT switch
D6~8	Diode	RF detector
D11	Variable capacitance diode	RF BPF tuning
D103~106	Variable capacitance diode	RF BPF tuning
D171,172	Diode	W/N CF switch
D173	Diode	SQ noise amp detector
D174	Diode	DET mute switch control
D251	Diode	Reverse voltage protection
D301,302	Diode	PLL f-in filter switch
D304,305	Diode	PLL f-in filter switch
D306~313	Variable capacitance diode	Frequency control for TX/RX VCO
D314	Variable capacitance diode	Modulation control for TX VCO
D315,316	Diode	TX/RX band switch
D402~404	Diode	RTC battery control
D405,406	Zener diode	Voltage protection
D407	Diode	DC detector
D408,409	Diode	MIC amp AGC detector
D412~414	Diode	Surge protect
D416	Diode	AF mute control
D417,418	Diode	Isolator
D419,420	Diode	MIC mute control
D421~423	Diode	Voltage protection
D701	Zener diode	Voltage protection
D702,703	Diode	Voltage protection
D704~708	Diode	Surge protect
D709,710	Zener diode	Voltage protection
D711~713	Diode	Surge protect
D714	Zener diode	Voltage protection
D801	Surge absorber	Voltage protection
D802	Diode	DC reverse connection protect
D804,805	Zener diode	Voltage protection

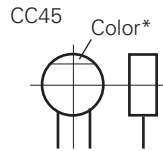


## PARTS LIST

### CAPACITORS

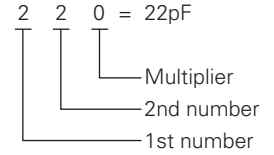
CC 45 TH 1H 220 J  
 1 2 3 4 5 6

- 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) CC 73 F SL 1H 000 J  
 1 2 3 4 5 6 7

(Chip) (CH, RH, UJ, SL)

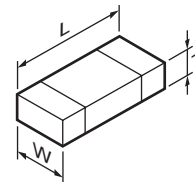
(EX) CK 73 F F 1H 000 Z  
 1 2 3 4 5 6 7

(Chip) (B, F)

Refer to the table above.

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

#### • 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) RD 73 E B 2B 000 J  
 1 2 3 4 5 6 7

(Chip) (B, F)

#### • Carbon resistor (Normal type)

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

(Chip) (B, F)

- 1 = Type ... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, etc.
- 3 = Dimension
- 4 = Temp. coefficient
- 5 = Voltage rating
- 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-7180H/7182H

## PARTS LIST

\* New Parts.  $\Delta$  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)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-7180H (Y51-5020-11), TK-7182H (Y51-5080-11)

DISPLAY UNIT (X54-3480-10)

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>TK-7180H/7182H</b>					
1	1B,1D		A01-2194-11	METALLIC CABINET	
2	3A,3C		A62-1094-23	PANEL ASSY	
4	2A,2C		B09-0681-03	CAP (KAP-2)	
5	1F		B62-1848-00	INSTRUCTION MANUAL	
7	2B,2D		E04-0167-05	RF COAXIAL RECEPTACLE (M)	
8	2B,2D		E30-7520-05	DC CORD (PIG TAIL)	
9	2E		E30-7523-05	DC CORD ASSY (WATER-PROOF)	
10	2A,2C		E37-1110-15	FLAT CABLE (30P/D-SUB)	
11	1A,1C		E37-1118-05	LEAD WIRE WITH CONNECTOR (SHORT CABLE)	
12	2A,2C		E37-1120-15	FLAT CABLE (30P/TX-RX)	
13	3B,3D		E37-1124-05	LEAD WIRE WITH CONNECTOR (2P/SP)	
15	2B,2D		F10-2488-02	SHIELDING PLATE (CHASSIS)	
16	1A,1C		F10-2489-03	SHIELDING CASE (FINAL)	
17	1A,1C		F10-2490-03	SHIELDING CASE (VCO)	
18	1E		F52-0024-05	FUSE (BLADE TYPE) 15A/32V	
19	3B,3D		G02-1824-04	EARTH SPRING	SK
20	3B,3D		G10-1342-04	FIBROUS SHEET (BIRITSUKI)	
21	2A,2C		G11-4290-04	RUBBER SHEET (CHASSIS)	
22	1B,1D		G11-4343-04	SHEET (CABINET)	
23	1A,1C		G13-2018-04	CUSHION	
24	2B,2D		G13-2047-04	CUSHION (DC SCREW)	
25	1B,1D		G53-1613-01	PACKING (SHIELD PLATE)	
27	1A,1C		G53-1616-03	PACKING (PHONE JACK)	
28	2B,2D		G53-1626-03	PACKING (D-SUB OUTER)	
29	2B,2D		G53-1643-04	PACKING (DC CORD)	
30	2B,2D		G53-1645-03	PACKING (D-SUB INNER)	
31	2A,2C		G53-1662-04	PACKING (ANT M TYPE)	
32	3A,3C		G53-1676-03	PACKING (CHASSIS)	
33	2E		H02-0624-03	INNER CARTON CASE	
34	2F		H12-3170-01	PACKING FIXTURE (LOWER)	
35	1F		H12-3171-03	PACKING FIXTURE (UPPER)	
37	3F	*	H52-2094-03	ITEM CARTON CASE	SK
37	3F	*	H52-2101-03	ITEM CARTON CASE	K
39	1E		J19-1584-05	HOLDER (ACCESSORY)	
40	3B,3D		J19-5464-13	HOLDER (SP)	
41	3B,3D		J19-5485-02	HOLDER (PANEL)	
42	2B,2D		J21-8479-02	HARDWARE FIXTURE (D-SUB)	
43	3B,3D		J21-8481-03	HARDWARE FIXTURE (SP)	
44	2E		J29-0662-03	BRACKET (ACCESSORY)	
45	3B,3D		J30-1289-04	SPACER (SP)	
47	3A,3C		K29-9349-01	KEY TOP	
A	2B,2D		N09-2409-05	HEXAGON HEAD SCREW (D-SUB)	
B	1A,1C		N67-3008-48	PAN HEAD SEMS SCREW (FINAL IC)	
C	1A,1C		N87-2606-48	BRAZIER HEAD TAPTITE SCREW (ANT, PCB)	
D	1A,1C		N87-2608-43	BRAZIER HEAD TAPTITE SCREW (AUDIO IC)	
49	2E		N99-2039-05	SCREW SET (ACCESSORY)	
51	3B,3D		T07-0757-05	SPEAKER	
52	1E		T91-0639-05	MICROPHONE (ACCESSORY)	
54	2A		W09-0971-05	LITHIUM CELL	K

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>DISPLAY UNIT (X54-3480-10) : TK-7180H</b>					
101	3B		B11-1825-04	FILTER (LCD)	
102	3B		B38-0888-15	LCD	
D907			B30-2151-05	LED (R/G)	
D909-920			B30-2281-05	LED (Y)	
D921-930			B30-2282-05	LED (Y)	
C907,908			CK73HB1H102K	CHIP C 1000PF	K
C909			CK73GB1H222K	CHIP C 2200PF	K
C910,911			CC73GCH1H101J	CHIP C 100PF	J
C912,913			CK73GB1H102K	CHIP C 1000PF	K
C914			CC73GCH1H101J	CHIP C 100PF	J
C916,917			CK73GB1C104K	CHIP C 0.10UF	K
C918			C92-0628-05	CHIP-TAN 10UF	10WV
C920			CC73GCH1H101J	CHIP C 100PF	J
C921			CK73GB1H102K	CHIP C 1000PF	K
C922			CK73GB1H103K	CHIP C 0.010UF	K
C924,925			CC73GCH1H100D	CHIP C 10PF	D
C926-928			CK73GB1H102K	CHIP C 1000PF	K
C930			CK73GB1H103K	CHIP C 0.010UF	K
C931			C92-0784-05	CHIP-TAN 4.7UF	10WV
C932-934			CK73GB1H103K	CHIP C 0.010UF	K
C935			CK73GB1H471K	CHIP C 470PF	K
C936			CK73GB1C104K	CHIP C 0.10UF	K
C937			CK73GB1H103K	CHIP C 0.010UF	K
C938			CK73GB1H102K	CHIP C 1000PF	K
104	3B		E29-1202-04	INTER CONNECTOR (LCD)	
CN901			E40-5704-05	PIN ASSY	
CN902			E40-6372-05	FLAT CABLE CONNECTOR	
J901	3B		E08-0877-05	MODULAR JACK	
107	3B		J19-5467-03	HOLDER (LCD)	
108	3B		J21-8470-03	MOUNTING HARDWARE (LCD)	
-			J31-0551-05	COLLAR	
L901,902			L40-1095-85	SMALL FIXED INDUCTOR (1.0UH)	
L903-907			L92-0140-05	CHIP FERRITE	
L908,909			L92-0163-05	BEADS CORE	
X901			L77-1956-05	CRYSTAL RESONATOR (14.7456MHZ)	
CP901-911			RK75HA1J101J	CHIP-COM 100	J 1/16W
R901			RK73GB2A102J	CHIP R 1.0K	J 1/10W
R903			RK73GB2A000JX	CHIP R 0.0	J 1/10W
R904			RK73GB2A102J	CHIP R 1.0K	J 1/10W
R905			RK73GB2A472J	CHIP R 4.7K	J 1/10W
R907			RK73GB2A333J	CHIP R 33K	J 1/10W
R909-911			RK73GB2A473J	CHIP R 47K	J 1/10W
R913-916			RK73HB1J474J	CHIP R 470K	J 1/16W
R917			RK73FB2B471J	CHIP R 470	J 1/8W
R918			RK73FB2B271J	CHIP R 270	J 1/8W
R919			RK73HB1J102J	CHIP R 1.0K	J 1/16W
R920			RK73HB1J000JX	CHIP R 0.0	J 1/16W
R925			RK73HB1J471J	CHIP R 470	J 1/16W
R926			RK73HB1J473J	CHIP R 47K	J 1/16W
R927-935			RK73HB1J102J	CHIP R 1.0K	J 1/16W
R936			RK73HB1J103J	CHIP R 10K	J 1/16W
R939			RK73GB2A472J	CHIP R 4.7K	J 1/10W
R940			RK73HB1J101J	CHIP R 100	J 1/16W

## PARTS LIST

DISPLAY UNIT (X54-3480-10)

DISPLAY UNIT (X54-3540-10)

TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R941			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R942		*	RK73EB2E470J	CHIP R 47 J 1/4W	
R943			RK73EB2E101J	CHIP R 100 J 1/4W	
R944			RK73HB1J000JX	CHIP R 0.0 J 1/16W	
R945			RK73GB2A103J	CHIP R 10K J 1/10W	
R947-950			RK73FB2B101J	CHIP R 100 J 1/8W	
R951,952			RK73FB2B391J	CHIP R 390 J 1/8W	
R953,954			RK73FB2B821J	CHIP R 820 J 1/8W	
R955-958			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R959			RK73HB1J103J	CHIP R 10K J 1/16W	
R962,963			RK73GB2A103J	CHIP R 10K J 1/10W	
R967			RK73HB1J271J	CHIP R 270 J 1/16W	
R969			RK73HB1J000JX	CHIP R 0.0 J 1/16W	
R970			RK73GB2A103J	CHIP R 10K J 1/10W	
R971			RK73HB1J102J	CHIP R 1.0K J 1/16W	
D901,902			02DZ18(X,Y)	ZENER DIODE	
D903			MINISMDC020	VARIATOR	
D905			DA204U	DIODE	
D931-933			AVRM1608080MAA	VARIATOR	
IC901			TA78L05F	MOS-IC	
IC902			30302M88Z7GU	MICROCONTROLLER IC	
IC903			LC75810T-8726	MOS-IC	
Q901,902			DTC144EE	DIGITAL TRANSISTOR	
Q904-906			DTC114EE	DIGITAL TRANSISTOR	
Q907			2SC2873(Y)	TRANSISTOR	
Q909,910			12A02CH	TRANSISTOR	
Q911			DTC114EE	DIGITAL TRANSISTOR	
Q913			DTC114EE	DIGITAL TRANSISTOR	
TH901			S1R103J440H	THERMISTOR	
<b>DISPLAY UNIT (X54-3540-10) : TK-7182H</b>					
101	3D		B11-1825-04	FILTER (LCD)	
103	3D		B38-0915-05	LCD	
D908			B30-2151-05	LED (R/G)	
D909-920			B30-2281-05	LED (Y)	
D921-930			B30-2282-05	LED (Y)	
C901			CK73GB1H102K	CHIP C 1000PF K	
C904			CK73GB1C104K	CHIP C 0.10UF K	
C905			CC73GCH1H101J	CHIP C 100PF J	
C906			CK73GB1H102K	CHIP C 1000PF K	
C908-910			CC73GCH1H101J	CHIP C 100PF J	
C911-915			CK73GB1H102K	CHIP C 1000PF K	
C916			CK73GB1E104K	CHIP C 0.10UF K	
C917			C92-0838-05	CHIP-TAN 10UF 10WV	
C918			CK73GB1E104K	CHIP C 0.10UF K	
C919			C92-0784-05	CHIP-TAN 4.7UF 10WV	
C920-922			CK73GB1H103K	CHIP C 0.010UF K	
C923			CK73GB1H681K	CHIP C 680PF K	
C924,925			CK73GB1H102K	CHIP C 1000PF K	
105	3D		E29-1207-04	INTER CONNECTOR (LCD)	
CN901			E40-5704-05	PIN ASSY	
CN902			E40-6372-05	FLAT CABLE CONNECTOR	
J901	3D		E08-0877-05	MODULAR JACK	
107	3D		J19-5467-03	HOLDER (LCD)	
108	3D		J21-8470-03	MOUNTING HARDWARE (LCD)	
-			J31-0551-05	COLLAR	
L901,902			L40-1095-85	SMALL FIXED INDUCTOR (1.0UH)	
L903-909			L92-0140-05	CHIP FERRITE	
R901			RK73GB2A471J	CHIP R 470 J 1/10W	
R902			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R903			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R904			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R905			RK73GB2A333J	CHIP R 33K J 1/10W	
R906			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R907			RK73GB2A103J	CHIP R 10K J 1/10W	
R908			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R909,910			RK73GB2A103J	CHIP R 10K J 1/10W	
R911-915			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R916			RK73GB2A563J	CHIP R 56K J 1/10W	
R917			RK73FB2B471J	CHIP R 470 J 1/8W	
R918			RK73FB2B271J	CHIP R 270 J 1/8W	
R919,920			RK73GB2A103J	CHIP R 10K J 1/10W	
R921			RK73GB2A474J	CHIP R 470K J 1/10W	
R922,923			RK73EB2E101J	CHIP R 100 J 1/4W	
R924-927			RK73FB2B101J	CHIP R 100 J 1/8W	
R928,929			RK73FB2B391J	CHIP R 390 J 1/8W	
R930,931			RK73FB2B821J	CHIP R 820 J 1/8W	
R932-936			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
D902			02DZ18(X,Y)	ZENER DIODE	
D903			MINISMDC020	VARIATOR	
D904			1S388	DIODE	
D906			DA204U	DIODE	
D931-933			AVRM1608080MAA	VARIATOR	
IC901			XC6201P502PR	MOS-IC	
IC902			LC75854W	MOS-IC	
Q901			DTC144EE	DIGITAL TRANSISTOR	
Q902			12A02CH	TRANSISTOR	
Q903			DTC144EE	DIGITAL TRANSISTOR	
Q904-907			DTC114EE	DIGITAL TRANSISTOR	
Q908			12A02CH	TRANSISTOR	
Q909			2SK2009	FET	
<b>TX-RX UNIT (X57-6980-XX) -12 : K -13 : SK</b>					
C1			CK73GB1H102K	CHIP C 1000PF K	
C2-5			CK73GB1H471K	CHIP C 470PF K	
C6			C92-0585-05	CHIP-TAN 4.7UF 16WV	
C7,8			CK73GB1H471K	CHIP C 470PF K	
C9			CC73GCH1H330J	CHIP C 33PF J	
C10			CK73GB1H471K	CHIP C 470PF K	
C13-15			CK73GB1H471K	CHIP C 470PF K	
C16			CC73GCH1H560J	CHIP C 56PF J	
C17			CC73GCH1H220J	CHIP C 22PF J	
C18			CK73GB1H471K	CHIP C 470PF K	
C19			CC73GCH1H470J	CHIP C 47PF J	
C20			CC73GCH1H101J	CHIP C 100PF J	
C21			CK73FB1H471K	CHIP C 470PF K	
C22			CK73GB1H471K	CHIP C 470PF K	
C24			C92-0606-05	CHIP-TAN 4.7UF 10WV	
C26			CC73GCH1H220J	CHIP C 22PF J	
C27			CC73GCH1H470J	CHIP C 47PF J	
C28			CC73GCH1H101J	CHIP C 100PF J	
C29-31			CK73GB1H471K	CHIP C 470PF K	

K : TK-7180H(K) SK : TK-7182H(K)

## PARTS LIST

## TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C32			C92-0834-05	ELECTRO 47UF 25WV		C150			CC73GCH1H090D	CHIP C 9.0PF D	
C33-35			CC73GCH1H101J	CHIP C 100PF J		C171			CC73GCH1H150J	CHIP C 15PF J	
C38-40			CK73GB1H471K	CHIP C 470PF K		C172			CC73GCH1H2R5C	CHIP C 2.5PF C	
C43			CC73FCH1H270J	CHIP C 27PF J		C173			CC73GCH1H220J	CHIP C 22PF J	
C44			C93-0573-05	CHIP C 120PF J		C174			CC73GCH1H070D	CHIP C 7.0PF D	
C45			CM73F2H390J	CHIP C 39PF J		C175			CC73GCH1H120J	CHIP C 12PF J	
C47			CC73GCH1H0R3B	CHIP C 0.3PF B		C176-178			CK73GB1H102K	CHIP C 1000PF K	
C48			CC73GCH1H040B	CHIP C 4.0PF B		C181			CK73GB1H102K	CHIP C 1000PF K	
C49			CK73GB1H471K	CHIP C 470PF K		C182,183			CK73GB1H103K	CHIP C 0.010UF K	
C50			CM73F2H220J	CHIP C 22PF J		C184			CK73GB1H102K	CHIP C 1000PF K	
C51			CK73GB1H471K	CHIP C 470PF K		C185			CK73GB1H103K	CHIP C 0.010UF K	
C52			CM73F2H150J	CHIP C 15PF J		C186			CC73GCH1H330J	CHIP C 33PF J	
C53			CM73F2H270J	CHIP C 27PF J		C187			CC73GCH1H390J	CHIP C 39PF J	
C55			C93-0561-05	CHIP C 12PF J		C188,189			CC73GCH1H040B	CHIP C 4.0PF B	
C56			C93-0562-05	CHIP C 15PF J		C190			CC73GCH1H390J	CHIP C 39PF J	
C57			CC73GCH1H0R3B	CHIP C 0.3PF B		C192-194			CK73GB1H103K	CHIP C 0.010UF K	
C58			CC73GCH1H030B	CHIP C 3.0PF B		C195			CK73GB1H102K	CHIP C 1000PF K	
C59			CK73GB1H471K	CHIP C 470PF K		C196,197			CK73GB1H103K	CHIP C 0.010UF K	
C60			C93-0562-05	CHIP C 15PF J		C198			CC73GCH1H680J	CHIP C 68PF J	
C61			CK73GB1H471K	CHIP C 470PF K		C199			CC73GCH1H390J	CHIP C 39PF J	
C63			CC73GCH1H220J	CHIP C 22PF J		C200,201			CC73GCH1H040B	CHIP C 4.0PF B	
C64			CC73GCH1H090D	CHIP C 9.0PF D		C202			CC73GCH1H390J	CHIP C 39PF J	
C65			CC73GCH1H220J	CHIP C 22PF J		C204-206			CK73GB1H103K	CHIP C 0.010UF K	
C74			CK73GB1H471K	CHIP C 470PF K		C207			CK73GB1H102K	CHIP C 1000PF K	
C76,77			CK73GB1H471K	CHIP C 470PF K		C208,209			CK73GB1H103K	CHIP C 0.010UF K	
C79,80			CK73GB1H471K	CHIP C 470PF K		C210			CC73GCH1H680J	CHIP C 68PF J	
C82			CC73GCH1H0R3B	CHIP C 0.3PF B		C211			CC73GCH1H100D	CHIP C 10PF D	
C83			CC73GCH1H050B	CHIP C 5.0PF B		C212			CK73GB1H471K	CHIP C 470PF K	
C84			CK73GB1H471K	CHIP C 470PF K		C213			CK73GB1H103K	CHIP C 0.010UF K	
C87,88			CC73GCH1H330J	CHIP C 33PF J		C214			CK73GB1C104K	CHIP C 0.10UF K	
C102			CK73GB1H102K	CHIP C 1000PF K		C215			CC73GCH1H180J	CHIP C 18PF J	
C108			CC73GCH1H270J	CHIP C 27PF J		C216			CC73GCH1H150J	CHIP C 15PF J	
C109			CC73GCH1H160J	CHIP C 16PF J		C217			CK73GB1H102K	CHIP C 1000PF K	
C110			CC73GCH1H820J	CHIP C 82PF J		C218			CK73GB1H103K	CHIP C 0.010UF K	
C111			CC73GCH1H470J	CHIP C 47PF J		C219			CK73FB1C105K	CHIP C 1.0UF K	
C112			CC73GCH1H220J	CHIP C 22PF J		C220,221			CK73GB1C104K	CHIP C 0.10UF K	
C113			CC73GCH1H100D	CHIP C 10PF D		C222			CK73GB1H102K	CHIP C 1000PF K	
C115			CC73GCH1H180J	CHIP C 18PF J		C223			CK73GB1H103K	CHIP C 0.010UF K	
C116			CC73GCH1H150J	CHIP C 15PF J		C224,225			CC73GCH1H271J	CHIP C 270PF J	
C119,120			CK73GB1H102K	CHIP C 1000PF K		C226,227			CK73GB1H102K	CHIP C 1000PF K	
C123			CK73GB1C104K	CHIP C 0.10UF K		C228			CK73GB1C104K	CHIP C 0.10UF K	
C124			CC73GCH1H070D	CHIP C 7.0PF D		C229			CK73GB1C333K	CHIP C 0.033UF K	
C125-127			CK73GB1H102K	CHIP C 1000PF K		C230			CK73GB1H103K	CHIP C 0.010UF K	
C128			CC73GCH1H120J	CHIP C 12PF J		C231			CC73GCH1H820J	CHIP C 82PF J	
C129			CK73GB1H102K	CHIP C 1000PF K		C232,233			CK73GB1H102K	CHIP C 1000PF K	
C130			CC73GCH1H120J	CHIP C 12PF J		C234			CK73FB1C224K	CHIP C 0.22UF K	
C131,132			CK73GB1H102K	CHIP C 1000PF K		C235			CK73GB1C104K	CHIP C 0.10UF K	
C133			CC73GCH1H120J	CHIP C 12PF J		C236			CK73GB1H103K	CHIP C 0.010UF K	
C134			CC73GCH1H100D	CHIP C 10PF D		C237			C92-0712-05	CHIP-TAN 22UF 6.3WV	
C135			CK73GB1H102K	CHIP C 1000PF K		C238			CK73GB1H103K	CHIP C 0.010UF K	
C136			CC73GCH1H120J	CHIP C 12PF J		C239,240			CK73GB1C104K	CHIP C 0.10UF K	
C137			CK73GB1H102K	CHIP C 1000PF K		C241			CK73GB1H102K	CHIP C 1000PF K	
C138			CC73GCH1H120J	CHIP C 12PF J		C251,252			CK73GB1H102K	CHIP C 1000PF K	
C139,140			CK73GB1H102K	CHIP C 1000PF K		C253			CK73GB1H103K	CHIP C 0.010UF K	
C141			CC73GCH1H120J	CHIP C 12PF J		C255			C92-0694-05	CHIP-TAN 10UF 16WV	
C142			CC73GCH1H330J	CHIP C 33PF J		C256			CK73GB1H103K	CHIP C 0.010UF K	
C144			CK73GB1H103K	CHIP C 0.010UF K		C257			C92-0519-05	CHIP-TAN 1.0UF 25WV	
C145			CK73GB1H102K	CHIP C 1000PF K		C258			C92-0516-05	CHIP-TAN 4.7UF 16WV	
C146			CC73GCH1H220J	CHIP C 22PF J		C259			C92-0628-05	CHIP-TAN 10UF 10WV	
C149			CK73GB1H102K	CHIP C 1000PF K		C299			C92-0713-05	CHIP-TAN 10UF 6.3WV	

## PARTS LIST

TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C301			CC73GCH1H101J	CHIP C 100PF J		C394			CC73GCH1H220J	CHIP C 22PF J	
C303			CK73GB1H102K	CHIP C 1000PF K		C395			CK73GB1C104K	CHIP C 0.10UF K	
C304			CC73GCH1H220J	CHIP C 22PF J		C396,397			CK73GB1H102K	CHIP C 1000PF K	
C305			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		C400			CK73FB1H123K	CHIP C 0.012UF K	
C307-309			CK73GB1H102K	CHIP C 1000PF K		C403			CK73HB1A104K	CHIP C 0.10UF K	K
C311			CK73GB1H102K	CHIP C 1000PF K		C404			CC73HCH1H050C	CHIP C 5.0PF C	K
C312			C92-0001-05	CHIP-TAN 0.1UF 35WV		C406			CC73GCH1H0R3B	CHIP C 0.3PF B	
C313			CK73GB1C104K	CHIP C 0.10UF K		C407			CK73GB1H103K	CHIP C 0.010UF K	
C314			CK73FB1E683K	CHIP C 0.068UF K		C408,409			CC73HCH1H150G	CHIP C 15PF G	
C315-317			CK73GB1H102K	CHIP C 1000PF K		C410-412			CK73GB1C104K	CHIP C 0.10UF K	
C318			C92-0657-05	CHIP-TAN 2.2UF 20WV		C413			CC73GCH1H102J	CHIP C 1000PF J	
C319			CK73GB1H102K	CHIP C 1000PF K		C420,421			CC73GCH1H101J	CHIP C 100PF J	
C320			C92-0657-05	CHIP-TAN 2.2UF 20WV		C422			CK73GB1H102K	CHIP C 1000PF K	
C321			CK73GB1C104K	CHIP C 0.10UF K		C423			CK73FF1C105Z	CHIP C 1.0UF Z	
C322			CC73GCH1H390J	CHIP C 39PF J		C424			CK73GB1H102K	CHIP C 1000PF K	
C323			CC73GCH1H330J	CHIP C 33PF J		C425-428			CC73GCH1H101J	CHIP C 100PF J	
C324			CC73GCH1H120J	CHIP C 12PF J		C429			CK73GB1A105K	CHIP C 1.0UF K	
C325			CC73GCH1H3R5B	CHIP C 3.5PF B		C430,431			CC73GCH1H101J	CHIP C 100PF J	
C326			CC73GCH1H020B	CHIP C 2.0PF B		C432			CK73GB1H102K	CHIP C 1000PF K	
C327			CK73FB1E224K	CHIP C 0.22UF K		C433			CK73GB1C104K	CHIP C 0.10UF K	
C331			CK73GB1H102K	CHIP C 1000PF K		C434			CK73GB1H561K	CHIP C 560PF K	
C332,333			CC73GCH1H390J	CHIP C 39PF J		C435			CK73GB1H102K	CHIP C 1000PF K	
C334			CC73GCH1H150J	CHIP C 15PF J		C436,437			CC73GCH1H101J	CHIP C 100PF J	
C335			CK73GB1C223K	CHIP C 0.022UF K		C438			CK73GB1E103K	CHIP C 0.010UF K	
C336			CK73GB1C104K	CHIP C 0.10UF K		C439			CK73GB1H102K	CHIP C 1000PF K	
C337			CK73GB1H102K	CHIP C 1000PF K		C440			CK73GB1C104K	CHIP C 0.10UF K	
C338			C92-0001-05	CHIP-TAN 0.1UF 35WV		C441			CK73FB0J106K	CHIP C 10UF K	
C339			CK73GB1H102K	CHIP C 1000PF K		C442			CK73GB1C104K	CHIP C 0.10UF K	
C340			CC73GCH1H270J	CHIP C 27PF J		C443			CK73GB1H103K	CHIP C 0.010UF K	
C342			CK73GB1H102K	CHIP C 1000PF K		C444			CC73GCH1H390J	CHIP C 39PF J	
C343			C92-0628-05	CHIP-TAN 10UF 10WV		C445			CC73GCH1H150J	CHIP C 15PF J	
C346			CC73GCH1H101G	CHIP C 100PF G		C446			CK73GB1H103K	CHIP C 0.010UF K	
C347			CC73GCH1H680G	CHIP C 68PF G		C447			CK73HB1A333K	CHIP C 0.033UF K	
C350			CC73GCH1H470G	CHIP C 47PF G		C448			CC73GCH1H101J	CHIP C 100PF J	
C352			CC73GCH1H150G	CHIP C 15PF G		C450			CK73FB0J106K	CHIP C 10UF K	
C353			CK73GB1H102K	CHIP C 1000PF K		C451			CK73GB1H103K	CHIP C 0.010UF K	
C354			CC73GCH1H560G	CHIP C 56PF G		C452			CC73GCH1H101J	CHIP C 100PF J	
C355			CC73GCH1H130G	CHIP C 13PF G		C453			CK73GB1C104K	CHIP C 0.10UF K	
C356			CC73GCH1HR75B	CHIP C 0.75PF B		C454			CK73GB1H103K	CHIP C 0.010UF K	
C357			CC73GCH1H150G	CHIP C 15PF G		C455			C92-0589-05	CHIP-TAN 47UF 6.3WV	
C358			CC73GCH1H100C	CHIP C 10PF C		C457			CK73GB1H471K	CHIP C 470PF K	
C359			CC73GCH1H090B	CHIP C 9.0PF B		C459			C92-0628-05	CHIP-TAN 10UF 10WV	
C360			CC73GCH1H150G	CHIP C 15PF G		C460-463			CK73GB1H103K	CHIP C 0.010UF K	
C361-363			CK73GB1H102K	CHIP C 1000PF K		C464			CK73HB1A333K	CHIP C 0.033UF K	
C364,365			CC73GCH1H010B	CHIP C 1.0PF B		C465			CC73GCH1H220J	CHIP C 22PF J	
C367-369			CK73GB1H102K	CHIP C 1000PF K		C467,468			CK73GB1H103K	CHIP C 0.010UF K	
C370			CK73GB1H471K	CHIP C 470PF K		C469			CK73GB1C104K	CHIP C 0.10UF K	
C371			C92-0560-05	CHIP-TAN 10UF 6.3WV		C470			CK73GB1H103K	CHIP C 0.010UF K	
C372			CC73GCH1H150J	CHIP C 15PF J		C472			CK73GB1C104K	CHIP C 0.10UF K	
C373-378			CK73GB1H102K	CHIP C 1000PF K		C475			CC73GCH1H101J	CHIP C 100PF J	
C379			CC73GCH1H150J	CHIP C 15PF J		C476			CK73GB1C104K	CHIP C 0.10UF K	
C380			CK73GB1H471K	CHIP C 470PF K		C478			CC73HCH1H101J	CHIP C 100PF J	
C381			CK73GB1H102K	CHIP C 1000PF K		C479,480			CK73GB1H102K	CHIP C 1000PF K	
C382			CK73GB1H103K	CHIP C 0.010UF K		C481			CK73HB1H102K	CHIP C 1000PF K	
C383			CK73GB1H102K	CHIP C 1000PF K		C482			CK73FB1A475K	CHIP C 4.7UF K	
C384			CK73GB1H103K	CHIP C 0.010UF K		C483			CK73GB1H103K	CHIP C 0.010UF K	
C385			CK73GB1H471K	CHIP C 470PF K		C484			CK73FB1A475K	CHIP C 4.7UF K	
C387,388			CK73GB1H102K	CHIP C 1000PF K		C485			CK73FB1H183K	CHIP C 0.018UF K	
C390-392			CK73GB1H102K	CHIP C 1000PF K		C487			CK73HB1H102K	CHIP C 1000PF K	
C393			CC73GCH1H270J	CHIP C 27PF J		C489			CK73GB1C104K	CHIP C 0.10UF K	

K : TK-7180H(K) SK : TK-7182H(K)

## PARTS LIST

## TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C490			CK73HB1H102K	CHIP C 1000PF K		C583			CK73GB1H471K	CHIP C 470PF K	
C491,492			CK73GB1C104K	CHIP C 0.10UF K		C584			CC73GCH1H680J	CHIP C 68PF J	
C493			CK73FB1A475K	CHIP C 4.7UF K		C585-587			CC73GCH1H101J	CHIP C 100PF J	
C496			CK73GB1C104K	CHIP C 0.10UF K		C588			CK73GB1H102K	CHIP C 1000PF K	
C497			CK73GB1H102K	CHIP C 1000PF K		C591			CK73GB1C104K	CHIP C 0.10UF K	
C498			CC73HCH1H101J	CHIP C 100PF J		C592,593			CC73GCH1H070D	CHIP C 7.0PF D	
C499			CK73GB1H821K	CHIP C 820PF K		C594			CK73HB1H102K	CHIP C 1000PF K	
C500			CC73HCH1H101J	CHIP C 100PF J		C595			CC73GCH1H101J	CHIP C 100PF J	
C501			CC73GCH1H220J	CHIP C 22PF J		C596			CK73GB1C104K	CHIP C 0.10UF K	
C502			CK73HB1H102K	CHIP C 1000PF K		C597,598			CK73GB1H103K	CHIP C 0.010UF K	
C503			CC73GCH1H680J	CHIP C 68PF J		C701			CK73GB1H102K	CHIP C 1000PF K	
C504			CK73HB1H102K	CHIP C 1000PF K		C702-704			CC73GCH1H101J	CHIP C 100PF J	
C505,506			CK73GB1A105K	CHIP C 1.0UF K		C705-711			CK73GB1H102K	CHIP C 1000PF K	
C507			CK73GB1C104K	CHIP C 0.10UF K		C712			CC73GCH1H101J	CHIP C 100PF J	
C511-513			CK73GB1C104K	CHIP C 0.10UF K		C713			CK73GB1H102K	CHIP C 1000PF K	
C514			CC73GCH1H820J	CHIP C 82PF J		C714,715			CC73GCH1H101J	CHIP C 100PF J	
C515,516			CK73HB1H102K	CHIP C 1000PF K		C716,717			CK73GB1H102K	CHIP C 1000PF K	
C517			CK73GB1H103K	CHIP C 0.010UF K		C718-720			CC73GCH1H101J	CHIP C 100PF J	
C518			CK73GB1C104K	CHIP C 0.10UF K		C721			CK73GB1H102K	CHIP C 1000PF K	
C519,520			CK73GB1H102K	CHIP C 1000PF K		C722,723			CC73GCH1H101J	CHIP C 100PF J	
C524			CK73GB1H102K	CHIP C 1000PF K		C801			C92-0777-05	ELECTRO 1000UF 25WV	
C525,526			CK73GB1C104K	CHIP C 0.10UF K		C802			CK73GB1H102K	CHIP C 1000PF K	
C528			CK73GB1H222K	CHIP C 2200PF K		C803			CK73GB1E473J	CHIP C 0.047UF J	
C529			CC73GCH1H470J	CHIP C 47PF J		C804			CC73GCH1H471J	CHIP C 470PF J	
C530			CK73FB0J106K	CHIP C 10UF K		C805			CK73GB1H102K	CHIP C 1000PF K	
C531			CK73GB1H102K	CHIP C 1000PF K		C806			CC73GCH1H101J	CHIP C 100PF J	
C532			CK73GB1E123K	CHIP C 0.012UF K		C807			CK73GB1E473J	CHIP C 0.047UF J	
C533			CK73GB1E153K	CHIP C 0.015UF K		C808			CK73GB1C104K	CHIP C 0.10UF K	
C534			CK73GB1H102K	CHIP C 1000PF K		C809			CC73GCH1H471J	CHIP C 470PF J	
C535			CK73GB1C683K	CHIP C 0.068UF K		C810			CK73GB1E473J	CHIP C 0.047UF J	
C536,537			CK73GB1C104K	CHIP C 0.10UF K		C811,812			CK73GB1C104K	CHIP C 0.10UF K	
C538			CK73GB1H102K	CHIP C 1000PF K		C813,814			CC73GCH1H471J	CHIP C 470PF J	
C539,540			C92-0628-05	CHIP-TAN 10UF 10WV		C815			C92-0585-05	CHIP-TAN 4.7UF 16WV	
C541			CK73GB1C104K	CHIP C 0.10UF K		C816			C92-0628-05	CHIP-TAN 10UF 10WV	
C542			CK73GB1H102K	CHIP C 1000PF K		C817			CC73GCH1H471J	CHIP C 470PF J	
C543,544			C92-0628-05	CHIP-TAN 10UF 10WV		C818			CK73GB1H472K	CHIP C 4700PF K	
C545			CK73HB1H102K	CHIP C 1000PF K		C819,820			CK73GB1C104K	CHIP C 0.10UF K	
C546			CK73GB1H103K	CHIP C 0.010UF K		C821			C92-0585-05	CHIP-TAN 4.7UF 16WV	
C547-549			CK73HB1H102K	CHIP C 1000PF K		C822			CC73GCH1H471J	CHIP C 470PF J	
C550			CC73HCH1H101J	CHIP C 100PF J		C823			CK73HB1H102K	CHIP C 1000PF K	
C551-553			CK73HB1H102K	CHIP C 1000PF K		C824			CK73GB1H103K	CHIP C 0.010UF K	
C554			CC73HCH1H101J	CHIP C 100PF J		C829			CK73GB1H102K	CHIP C 1000PF K	
C555-557			CK73HB1H102K	CHIP C 1000PF K		C831,832			C92-0585-05	CHIP-TAN 4.7UF 16WV	
C558			CC73HCH1H101J	CHIP C 100PF J		TC301,302			C05-0396-05	CERAMIC TRIMMER CAPACITOR (8PF)	
C559			CK73HB1H102K	CHIP C 1000PF K		CN5			E23-1278-05	TERMINAL	
C560,561			CK73GB1C104K	CHIP C 0.10UF K		CN13			E23-1278-05	TERMINAL	
C562-565			C92-0519-05	CHIP-TAN 1.0UF 25WV		CN200-203			E23-1278-05	TERMINAL	
C566			CK73FB1C105K	CHIP C 1.0UF K		CN301,302			E40-6404-05	PIN ASSY	
C567			CC73HCH1H101J	CHIP C 100PF J		CN326			E23-1278-05	TERMINAL	
C568			CK73HB1H102K	CHIP C 1000PF K		CN328-330			E23-1278-05	TERMINAL	
C570			CK73FB1C105K	CHIP C 1.0UF K		CN403			E40-6361-05	PIN ASSY	
C572,573			CK73GB1H102K	CHIP C 1000PF K		CN427			E40-6371-05	FLAT CABLE CONNECTOR	
C574			C92-0672-05	ELECTRO 22UF 16WV		CN428			E40-6373-05	PIN ASSY	
C575			C92-0834-05	ELECTRO 47UF 25WV		CN429			E40-6412-05	FLAT CABLE CONNECTOR	
C576			C92-0836-05	ELECTRO 330UF 16WV		CN701			E40-6371-05	FLAT CABLE CONNECTOR	
C577			CK73GB1C104K	CHIP C 0.10UF K		CN802,803			E23-1260-04	TERMINAL	
C578			C92-0834-05	ELECTRO 47UF 25WV		CN804			E40-3246-05	PIN ASSY	
C579			CK73GB1H102K	CHIP C 1000PF K		CN815			E23-1278-05	TERMINAL	
C580			C92-0834-05	ELECTRO 47UF 25WV		J401			E11-0425-05	3.5D PHONE JACK (3P)	
C581,582			CK73GB1H102K	CHIP C 1000PF K							



## PARTS LIST

TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
J701			E58-0494-05	SUB SOCKET (D)		L316			L40-3395-85	SMALL FIXED INDUCTOR (3.3UH)	
F401			F53-0352-05	FUSE (2A)		L317			L40-2795-85	SMALL FIXED INDUCTOR (2.7UH)	
F801			F53-0278-05	FUSE (5A)		L318,319			L40-8275-92	SMALL FIXED INDUCTOR (82NH)	
CN401			J19-5386-05	HOLDER	K	L320			L40-3975-92	SMALL FIXED INDUCTOR (39NH)	
CD171			L79-1701-05	TUNING COIL		L321			L92-0140-05	CHIP FERRITE	
CF171			L72-0376-05	CERAMIC FILTER		L401,402			L92-0138-05	CHIP FERRITE	
CF172			L72-0372-05	CERAMIC FILTER		L403-407			L92-0140-05	CHIP FERRITE	
L1			L40-8275-92	SMALL FIXED INDUCTOR (82NH)		L408			L92-0138-05	CHIP FERRITE	
L2			L92-0140-05	CHIP FERRITE		L409			L92-0140-05	CHIP FERRITE	
L3			L40-6875-92	SMALL FIXED INDUCTOR (68NH)		L410,411			L92-0179-05	CHIP FERRITE	
L4			L92-0140-05	CHIP FERRITE		L415			L92-0179-05	CHIP FERRITE	
L5,6			L92-0179-05	CHIP FERRITE		L701,702			L92-0140-05	CHIP FERRITE	
L7			L34-4638-05	AIR-CORE COIL		X171			L77-1762-05	CRYSTAL RESONATOR (44.395MHZ)	
L8			L34-4744-05	AIR-CORE COIL		X301			L77-1952-05	TCXO (16.8MHZ)	
L9-12			L34-4742-05	AIR-CORE COIL		X401			L77-1802-05	CRYSTAL RESONATOR (32768HZ)	K
L13			L34-4482-05	AIR-CORE COIL		X403			L77-1965-05	CRYSTAL RESONATOR (3.6864MHZ)	
L14			L40-3375-92	SMALL FIXED INDUCTOR (33NH)		X404			L77-1950-05	CRYSTAL RESONATOR (11.0592MHZ)	
L15			L92-0179-05	CHIP FERRITE		XF171			L71-0618-05	MCF (44.85M)	
L16			L40-3975-92	SMALL FIXED INDUCTOR (39NH)		CP401			R90-0740-05	MULTIPLE RESISTOR	K
L103			L41-1085-14	SMALL FIXED INDUCTOR (100NH)		CP402-417			RK75HA1J102J	CHIP-COM 1.0K J 1/16W	
L104			L41-6878-14	SMALL FIXED INDUCTOR (68NH)		R1			RK73GB2A271J	CHIP R 270 J 1/10W	
L105			L41-3978-14	SMALL FIXED INDUCTOR (39NH)		R2			RK73GB2A180J	CHIP R 18 J 1/10W	
L106			L41-2778-14	SMALL FIXED INDUCTOR (27NH)		R3			RK73GB2A271J	CHIP R 270 J 1/10W	
L108			L92-0140-05	CHIP FERRITE		R4			RK73GB2A333J	CHIP R 33K J 1/10W	
L109			L41-8275-14	SMALL FIXED INDUCTOR (82NH)		R5			RK73GB2A682J	CHIP R 6.8K J 1/10W	
L110-113			L34-4566-05	AIR-CORE COIL		R6			RK73GB2A181J	CHIP R 180 J 1/10W	
L114			L40-2275-92	SMALL FIXED INDUCTOR (22NH)		R7			RK73GB2A100J	CHIP R 10 J 1/10W	
L171			L41-2778-14	SMALL FIXED INDUCTOR (27NH)		R8			RK73GB2A471J	CHIP R 470 J 1/10W	
L172			L41-2278-14	SMALL FIXED INDUCTOR (22NH)		R9			RK73GB2A220J	CHIP R 22 J 1/10W	
L173,174			L39-1421-05	TOROIDAL COIL		R10			RK73GB2A272J	CHIP R 2.7K J 1/10W	
L175			L92-0140-05	CHIP FERRITE		R11			RK73GB2A561J	CHIP R 560 J 1/10W	
L176			L39-1421-05	TOROIDAL COIL		R12			RK73GB2A150J	CHIP R 15 J 1/10W	
L177			L41-2785-14	SMALL FIXED INDUCTOR (270NH)		R13			RK73GB2A331J	CHIP R 330 J 1/10W	
L178,179			L41-3988-14	SMALL FIXED INDUCTOR (390NH)		R14			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
L180			L40-6875-92	SMALL FIXED INDUCTOR (68NH)		R15			RK73FB2B221J	CHIP R 220 J 1/8W	
L181			L40-1001-86	SMALL FIXED INDUCTOR (10UH)		R16,17			RK73FB2B470J	CHIP R 47 J 1/8W	
L182			L40-1085-92	SMALL FIXED INDUCTOR (100NH)		R18			RK73FB2B221J	CHIP R 220 J 1/8W	
L183,184			L41-3988-14	SMALL FIXED INDUCTOR (390NH)		R19			RK73GB2A151J	CHIP R 150 J 1/10W	
L185			L40-6875-92	SMALL FIXED INDUCTOR (68NH)		R21			RK73GB2A221J	CHIP R 220 J 1/10W	
L186			L40-1001-86	SMALL FIXED INDUCTOR (10UH)		R22			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L187			L40-1085-92	SMALL FIXED INDUCTOR (100NH)		R23			RK73GB2A682J	CHIP R 6.8K J 1/10W	
L188			L40-8281-86	SMALL FIXED INDUCTOR (0.82UH)		R25			R92-1214-05	CHIP R 120 J 1/2W	
L189			L40-1091-86	SMALL FIXED INDUCTOR (1.0UH)		R27			RK73GB2A124J	CHIP R 120K J 1/10W	
L251			L33-1468-05	SMALL FIXED INDUCTOR		R28			RK73GB2A822J	CHIP R 8.2K J 1/10W	
L301			L40-5695-85	SMALL FIXED INDUCTOR (5.6UH)		R29			RK73GB2A332J	CHIP R 3.3K J 1/10W	
L302			L92-0140-05	CHIP FERRITE		R30			R92-1061-05	JUMPER REST 0 OHM	
L303			L41-8268-14	SMALL FIXED INDUCTOR (8.2NH)		R31			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
L304			L41-6868-14	SMALL FIXED INDUCTOR (6.8NH)		R33			RK73GB2A124J	CHIP R 120K J 1/10W	
L305,306			L41-6878-14	SMALL FIXED INDUCTOR (68NH)		R38			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
L307			L41-6868-14	SMALL FIXED INDUCTOR (6.8NH)		R71			RK73GB2A563J	CHIP R 56K J 1/10W	
L308			L41-1078-14	SMALL FIXED INDUCTOR (10NH)		R72			RK73GB2A333J	CHIP R 33K J 1/10W	
L309			L40-3395-85	SMALL FIXED INDUCTOR (3.3UH)		R75			RK73GB2A393J	CHIP R 39K J 1/10W	
L310			L40-2795-85	SMALL FIXED INDUCTOR (2.7UH)		R76-79			RK73GB2A104J	CHIP R 100K J 1/10W	
L311			L40-3395-85	SMALL FIXED INDUCTOR (3.3UH)		R81,82			RK73GB2A104J	CHIP R 100K J 1/10W	
L312			L40-2795-85	SMALL FIXED INDUCTOR (2.7UH)		R84			RK73GB2A124J	CHIP R 120K J 1/10W	
L313			L34-4610-05	AIR-CORE COIL		R85			RK73GB2A104J	CHIP R 100K J 1/10W	
L314			L34-4612-05	AIR-CORE COIL		R86			RK73GB2A394J	CHIP R 390K J 1/10W	
L315			L40-2795-85	SMALL FIXED INDUCTOR (2.7UH)		R87,88			RK73GB2A104J	CHIP R 100K J 1/10W	
						R89			RK73GB2A473J	CHIP R 47K J 1/10W	

K : TK-7180H(K) SK : TK-7182H(K)



## PARTS LIST

## TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R90			RK73GB2A394J	CHIP R 390K J 1/10W		R257			RK73GB2A153J	CHIP R 15K J 1/10W	
R109			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R258			RK73GB2A220J	CHIP R 22 J 1/10W	
R111			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R300			RK73GB2A103J	CHIP R 10K J 1/10W	
R115			RK73GB2A472J	CHIP R 4.7K J 1/10W		R301,302			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R116			RK73GB2A102J	CHIP R 1.0K J 1/10W		R303			RK73GB2A561J	CHIP R 560 J 1/10W	
R117			RK73GB2A222J	CHIP R 2.2K J 1/10W		R304			RK73GB2A470J	CHIP R 47 J 1/10W	
R119			RK73GB2A151J	CHIP R 150 J 1/10W		R305			RK73GB2A560J	CHIP R 56 J 1/10W	
R120			RK73GB2A120J	CHIP R 12 J 1/10W		R306			RK73GB2A104J	CHIP R 100K J 1/10W	
R121-124			RK73GB2A104J	CHIP R 100K J 1/10W		R307			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R125			RK73GB2A181J	CHIP R 180 J 1/10W		R308			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R126			RK73GB2A330J	CHIP R 33 J 1/10W		R309			RK73GB2A181J	CHIP R 180 J 1/10W	
R127			RK73GB2A181J	CHIP R 180 J 1/10W		R310			RK73GB2A331J	CHIP R 330 J 1/10W	
R129			RK73GB2A104J	CHIP R 100K J 1/10W		R311,312			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R130,131			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R313			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R132			RK73GB2A104J	CHIP R 100K J 1/10W		R314,315			RK73GB2A223J	CHIP R 22K J 1/10W	
R171			RK73GB2A821J	CHIP R 820 J 1/10W		R316			RK73GB2A474J	CHIP R 470K J 1/10W	
R172			RK73GB2A5R6J	CHIP R 5.6 J 1/10W		R317			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R173			RK73GB2A821J	CHIP R 820 J 1/10W		R318			R92-2157-05	METAL-R 1.2K J 1/4W	
R174			RK73GB2A680J	CHIP R 68 J 1/10W		R319			RK73GB2A220J	CHIP R 22 J 1/10W	
R175			RK73GB2A222J	CHIP R 2.2K J 1/10W		R320			RK73GB2A101J	CHIP R 100 J 1/10W	
R176			RK73GB2A470J	CHIP R 47 J 1/10W		R321			RK73GB2A103J	CHIP R 10K J 1/10W	
R177			RK73GB2A102J	CHIP R 1.0K J 1/10W		R322			RK73GB2A473J	CHIP R 47K J 1/10W	
R178			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R323			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R179			RK73GB2A102J	CHIP R 1.0K J 1/10W		R324			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R180			RK73GB2A821J	CHIP R 820 J 1/10W		R325			RK73GB2A154J	CHIP R 150K J 1/10W	
R181			RK73GB2A331J	CHIP R 330 J 1/10W		R326			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R182			RK73GB2A332J	CHIP R 3.3K J 1/10W		R327			RK73GB2A101J	CHIP R 100 J 1/10W	
R183			RK73GB2A680J	CHIP R 68 J 1/10W		R328			RK73GB2A223J	CHIP R 22K J 1/10W	
R184			RK73GB2A100J	CHIP R 10 J 1/10W		R329			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R185			RK73GB2A821J	CHIP R 820 J 1/10W		R330			RK73GB2A101J	CHIP R 100 J 1/10W	
R186			RK73GB2A331J	CHIP R 330 J 1/10W		R331			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R187			RK73GB2A332J	CHIP R 3.3K J 1/10W		R332			RK73GB2A101J	CHIP R 100 J 1/10W	
R188			RK73GB2A680J	CHIP R 68 J 1/10W		R333,334			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R189			RK73GB2A100J	CHIP R 10 J 1/10W		R335			RK73GB2A220J	CHIP R 22 J 1/10W	
R190			RK73GB2A153J	CHIP R 15K J 1/10W		R336			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R191,192			RK73GB2A223J	CHIP R 22K J 1/10W		R337,338			RK73GB2A103J	CHIP R 10K J 1/10W	
R193			RK73GB2A473J	CHIP R 47K J 1/10W		R339			RK73GB2A104J	CHIP R 100K J 1/10W	
R194,195			RK73GB2A223J	CHIP R 22K J 1/10W		R340			RK73GB2A101J	CHIP R 100 J 1/10W	
R196			RK73GB2A153J	CHIP R 15K J 1/10W		R341			RK73GB2A331J	CHIP R 330 J 1/10W	
R197,198			RK73GB2A334J	CHIP R 330K J 1/10W		R342			RK73GB2A181J	CHIP R 180 J 1/10W	
R199			RK73GB2A560J	CHIP R 56 J 1/10W		R343			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R200			RK73GB2A332J	CHIP R 3.3K J 1/10W		R344-346			RK73GB2A101J	CHIP R 100 J 1/10W	
R202			RK73GB2A472J	CHIP R 4.7K J 1/10W		R347			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R203			RK73GB2A332J	CHIP R 3.3K J 1/10W		R348			RK73GB2A103J	CHIP R 10K J 1/10W	
R204			RK73GB2A222J	CHIP R 2.2K J 1/10W		R349			RK73GB2A273J	CHIP R 27K J 1/10W	
R205			RK73GB2A332J	CHIP R 3.3K J 1/10W		R350			RK73GB2A223J	CHIP R 22K J 1/10W	
R206			RK73GB2A102J	CHIP R 1.0K J 1/10W		R351			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R207			RK73GB2A473J	CHIP R 47K J 1/10W		R352			RK73GB2A330J	CHIP R 33 J 1/10W	
R208			RK73GB2A392J	CHIP R 3.9K J 1/10W		R353			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R209			RK73GB2A100J	CHIP R 10 J 1/10W		R354			RK73GB2A331J	CHIP R 330 J 1/10W	
R210			RK73GB2A272J	CHIP R 2.7K J 1/10W		R355			RK73GB2A271J	CHIP R 270 J 1/10W	
R212			RK73GB2A104J	CHIP R 100K J 1/10W		R356,357			RK73GB2A103J	CHIP R 10K J 1/10W	
R217			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R358			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R221			RK73GB2A473J	CHIP R 47K J 1/10W		R359			RK73GB2A151J	CHIP R 150 J 1/10W	
R222			RK73GB2A102J	CHIP R 1.0K J 1/10W		R360,361			RK73GB2A331J	CHIP R 330 J 1/10W	
R251			RK73GB2A102J	CHIP R 1.0K J 1/10W		R362			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R252			RK73GB2A472J	CHIP R 4.7K J 1/10W		R365,366			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R253			RK73GB2A103J	CHIP R 10K J 1/10W		R367			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R254,255			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R368			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R256			RK73GB2A124J	CHIP R 120K J 1/10W		R369			RK73GB2A223J	CHIP R 22K J 1/10W	

## PARTS LIST

TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R370			RK73GB2A102J	CHIP R 1.0K J 1/10W		R490			RK73GB2A184J	CHIP R 180K J 1/10W	
R375			RK73GB2A102J	CHIP R 1.0K J 1/10W		R491			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R376			RK73GB2A473J	CHIP R 47K J 1/10W		R492			RK73GB2A684J	CHIP R 680K J 1/10W	
R377			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R493			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R379,380			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R494,495			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R401			RK73HH1J362D	CHIP R 3.6K D 1/16W	K	R496			RK73GB2A104J	CHIP R 100K J 1/10W	
R402			RK73HH1J512D	CHIP R 5.1K D 1/16W	K	R497			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R403			RK73GB2A101J	CHIP R 100 J 1/10W		R498			RK73GB2A274J	CHIP R 270K J 1/10W	
R405,406			RK73HB1J474J	CHIP R 470K J 1/16W		R499			RK73GB2A104J	CHIP R 100K J 1/10W	
R407			RK73HB1J103J	CHIP R 10K J 1/16W		R500			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R408,409			RK73HB1J471J	CHIP R 470 J 1/16W		R501			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R410			RK73HB1J103J	CHIP R 10K J 1/16W		R502			RK73GB2A103J	CHIP R 10K J 1/10W	
R411,412			RK73HB1J474J	CHIP R 470K J 1/16W		R503			RK73GB2A104J	CHIP R 100K J 1/10W	
R414			RK73HB1J103J	CHIP R 10K J 1/16W		R504			RK73GB2A103J	CHIP R 10K J 1/10W	
R418,419			RK73HB1J473J	CHIP R 47K J 1/16W		R505			RK73GB2A683J	CHIP R 68K J 1/10W	
R420			RK73HB1J334J	CHIP R 330K J 1/16W		R506			RK73GB2A224J	CHIP R 220K J 1/10W	
R421,422			RK73HB1J473J	CHIP R 47K J 1/16W		R507			RK73GB2A154J	CHIP R 150K J 1/10W	
R423			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R508			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R424-427			RK73HB1J102J	CHIP R 1.0K J 1/16W		R509			RK73GB2A333J	CHIP R 33K J 1/10W	
R428			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R511			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R429,430			RK73HB1J471J	CHIP R 470 J 1/16W		R512			RK73GB2A153J	CHIP R 15K J 1/10W	
R431			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R513			RK73GB2A564J	CHIP R 560K J 1/10W	
R432			RK73HB1J102J	CHIP R 1.0K J 1/16W		R514			RK73GB2A183J	CHIP R 18K J 1/10W	
R433			RK73HB1J471J	CHIP R 470 J 1/16W	SK	R515			RK73GB2A104J	CHIP R 100K J 1/10W	
R434			RK73HB1J473J	CHIP R 47K J 1/16W	K	R517			RK73GB2A563J	CHIP R 56K J 1/10W	
R435			RK73HB1J102J	CHIP R 1.0K J 1/16W		R519			RK73GB2A104J	CHIP R 100K J 1/10W	
R437			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R520			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R439			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R521			RK73GB2A473J	CHIP R 47K J 1/10W	
R440-444			RK73HB1J102J	CHIP R 1.0K J 1/16W		R522			RK73GB2A104J	CHIP R 100K J 1/10W	
R445,446			RK73GB2A103J	CHIP R 10K J 1/10W		R523			RK73GB2A154J	CHIP R 150K J 1/10W	
R447			RK73HB1J474J	CHIP R 470K J 1/16W		R524			RK73GB2A103J	CHIP R 10K J 1/10W	
R448			RK73HB1J102J	CHIP R 1.0K J 1/16W		R525			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R449			RK73HB1J474J	CHIP R 470K J 1/16W		R526			RK73GB2A274J	CHIP R 270K J 1/10W	
R450			RK73HB1J102J	CHIP R 1.0K J 1/16W		R527			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R451			RK73HB1J474J	CHIP R 470K J 1/16W		R528			RK73GB2A183J	CHIP R 18K J 1/10W	
R452			RK73HB1J102J	CHIP R 1.0K J 1/16W		R529			RK73GB2A684J	CHIP R 680K J 1/10W	
R453			RK73HB1J474J	CHIP R 470K J 1/16W		R530			RK73GB2A563J	CHIP R 56K J 1/10W	
R454			RK73HB1J102J	CHIP R 1.0K J 1/16W		R531			RK73GB2A103J	CHIP R 10K J 1/10W	
R455,456			RK73HB1J471J	CHIP R 470 J 1/16W		R532			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R457			RK73HB1J473J	CHIP R 47K J 1/16W		R533			RK73GB2A104J	CHIP R 100K J 1/10W	
R458,459			RK73HB1J474J	CHIP R 470K J 1/16W		R534			RK73GB2A103J	CHIP R 10K J 1/10W	
R460			RK73HB1J102J	CHIP R 1.0K J 1/16W	SK	R535			RK73GB2A394J	CHIP R 390K J 1/10W	
R461			RK73HB1J474J	CHIP R 470K J 1/16W	K	R536			RK73GB2A153J	CHIP R 15K J 1/10W	
R461,462			RK73HB1J474J	CHIP R 470K J 1/16W	SK	R537,538			RK73GB2A104J	CHIP R 100K J 1/10W	
R463,464			RK73HB1J102J	CHIP R 1.0K J 1/16W	SK	R539			RK73GB2A393J	CHIP R 39K J 1/10W	
R465			RK73GB2A473J	CHIP R 47K J 1/10W		R540			RK73GB2A473J	CHIP R 47K J 1/10W	
R466,467			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R541			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R468			RK73HB1J473J	CHIP R 47K J 1/16W		R542			RK73GB2A154J	CHIP R 150K J 1/10W	
R469			RK73HB1J102J	CHIP R 1.0K J 1/16W		R544			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R470			RK73GB2A102J	CHIP R 1.0K J 1/10W		R545			RK73GB2A103J	CHIP R 10K J 1/10W	
R471,472			RK73HB1J102J	CHIP R 1.0K J 1/16W		R548			RK73GB2A823J	CHIP R 82K J 1/10W	
R473			RK73HB1J473J	CHIP R 47K J 1/16W		R550			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R474-476			RK73HB1J474J	CHIP R 470K J 1/16W		R552			RK73GB2A103J	CHIP R 10K J 1/10W	
R477,478			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R553			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R479-481			RK73HB1J474J	CHIP R 470K J 1/16W	SK	R554			RK73GB2A563J	CHIP R 56K J 1/10W	
R481			RK73HB1J474J	CHIP R 470K J 1/16W	K	R555			RK73GB2A123J	CHIP R 12K J 1/10W	
R482			RK73HB1J473J	CHIP R 47K J 1/16W		R556			RK73GB2A563J	CHIP R 56K J 1/10W	
R483-486			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R557			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R487			RK73GB2A185J	CHIP R 1.8M J 1/10W		R558			RK73GB2A224J	CHIP R 220K J 1/10W	
R488,489			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R559			RK73GB2A000JX	CHIP R 0.0 J 1/10W	

K : TK-7180H(K) SK : TK-7182H(K)

## PARTS LIST

### TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R565			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R652			RK73GB2A820J	CHIP R 82 J 1/10W	
R566			RK73GB2A105J	CHIP R 1.0M J 1/10W		R653			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R567			RK73GB2A394J	CHIP R 390K J 1/10W		R654			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R568			RK73GB2A124J	CHIP R 120K J 1/10W		R655			RK73GB2A000JX	CHIP R 0.0 J 1/10W	
R569			RK73GB2A104J	CHIP R 100K J 1/10W		R657			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R570			RK73GB2A154J	CHIP R 150K J 1/10W		R658			RK73HB1J000JX	CHIP R 0.0 J 1/16W	SK
R571			RK73GB2A124J	CHIP R 120K J 1/10W		R658-662			RK73HB1J000JX	CHIP R 0.0 J 1/16W	K
R572			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R664			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R573			RK73GB2A332J	CHIP R 3.3K J 1/10W		R665			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R574,575			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R666			RK73GB2A104J	CHIP R 100K J 1/10W	
R576			RK73GB2A224J	CHIP R 220K J 1/10W		R667			RK73GB2A333J	CHIP R 33K J 1/10W	
R577,578			RK73HB1J000JX	CHIP R 0.0 J 1/16W	K	R669-671			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R578			RK73HB1J000JX	CHIP R 0.0 J 1/16W	SK	R672			RK73GB2A334J	CHIP R 330K J 1/10W	
R579			RK73GB2A223J	CHIP R 22K J 1/10W		R673			RK73GB2A183J	CHIP R 18K J 1/10W	
R580,581			RK73GB2A472J	CHIP R 4.7K J 1/10W		R701-705			RK73GB2A473J	CHIP R 47K J 1/10W	
R582			RK73GB2A105J	CHIP R 1.0M J 1/10W		R706-710			RK73GB2A471J	CHIP R 470 J 1/10W	
R583,584			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R711-713			RK73GB2A473J	CHIP R 47K J 1/10W	
R585			RK73GB2A184J	CHIP R 180K J 1/10W		R714-720			RK73GB2A471J	CHIP R 470 J 1/10W	
R586			RK73GB2A471J	CHIP R 470 J 1/10W		R801			RK73GB2A224J	CHIP R 220K J 1/10W	
R587			RK73GB2A154J	CHIP R 150K J 1/10W		R802			RK73GB2A334J	CHIP R 330K J 1/10W	
R588			RK73GB2A472J	CHIP R 4.7K J 1/10W		R803			RK73GB2A103J	CHIP R 10K J 1/10W	
R589,590			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R805			RK73GB2A471J	CHIP R 470 J 1/10W	
R591			RK73HB1J000JX	CHIP R 0.0 J 1/16W		R806,807			RK73GB2A103J	CHIP R 10K J 1/10W	
R592			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R808,809			RK73GB2A473J	CHIP R 47K J 1/10W	
R594			RK73GB2A681J	CHIP R 680 J 1/10W		R811,812			RK73GB2A103J	CHIP R 10K J 1/10W	
R595			RK73GB2A274J	CHIP R 270K J 1/10W		R813			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R596			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R814			RK73GB2A473J	CHIP R 47K J 1/10W	
R597			RK73GB2A224J	CHIP R 220K J 1/10W		R815			RK73GB2A683J	CHIP R 68K J 1/10W	
R598			RK73GB2A472J	CHIP R 4.7K J 1/10W		R816			RK73HB1J473J	CHIP R 47K J 1/16W	
R599			RK73GB2A184J	CHIP R 180K J 1/10W		R819			RK73GB2A683J	CHIP R 68K J 1/10W	
R600			RK73GB2A472J	CHIP R 4.7K J 1/10W		R820			RK73GB2A473J	CHIP R 47K J 1/10W	
R601			RK73GB2A474J	CHIP R 470K J 1/10W		R821			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R602			RK73GB2A105J	CHIP R 1.0M J 1/10W		R822			RK73GB2A104J	CHIP R 100K J 1/10W	
R603,604			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R823			RK73GB2A473J	CHIP R 47K J 1/10W	
R606			RK73GB2A000JX	CHIP R 0.0 J 1/10W		R824			RK73GB2A103J	CHIP R 10K J 1/10W	
R607			RK73GB2A274J	CHIP R 270K J 1/10W		R825			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R608			RK73GB2A184J	CHIP R 180K J 1/10W		D1			02DZ5.6(X,Y)	ZENER DIODE	
R609			RK73GB2A223J	CHIP R 22K J 1/10W		D2			XB15A709	DIODE	
R610			RK73GB2A154J	CHIP R 150K J 1/10W		D3,4			XB15A407A2GB	DIODE	
R611			RK73GB2A103J	CHIP R 10K J 1/10W		D6-8			HSM88AS	DIODE	
R612,613			RK73GB2A104J	CHIP R 100K J 1/10W		D11			1SV283	VARIABLE CAPACITANCE DIODE	
R614			RK73HB1J000JX	CHIP R 0.0 J 1/16W		D103-106			1SV283	VARIABLE CAPACITANCE DIODE	
R615,616			RK73GB2A472J	CHIP R 4.7K J 1/10W		D171,172			DAN235E	DIODE	
R617			RK73GB2A104J	CHIP R 100K J 1/10W		D173			RB706F-40	DIODE	
R618			RK73GB2A224J	CHIP R 220K J 1/10W		D174			MA2S111	DIODE	
R619			RK73GB2A104J	CHIP R 100K J 1/10W		D251			1SS388	DIODE	
R620			RK73GB2A224J	CHIP R 220K J 1/10W		D301,302			MA2S077	DIODE	
R621,622			RK73FB2B000J	CHIP R 0.0 J 1/8W		D304,305			MA2S077	DIODE	
R623,624			RK73GB2A473J	CHIP R 47K J 1/10W		D306-313			BB664	VARIABLE CAPACITANCE DIODE	
R625			RK73GB2A472J	CHIP R 4.7K J 1/10W		D314			1SV278	VARIABLE CAPACITANCE DIODE	
R629,630			RK73FB2B000J	CHIP R 0.0 J 1/8W		D315,316			HVC131	DIODE	
R632			RK73GB2A473J	CHIP R 47K J 1/10W		D402-404			1SS388	DIODE	K
R633			RK73FB2B000J	CHIP R 0.0 J 1/8W		D405			EMZ6.8N	ZENER DIODE	
R636			RK73FB2B000J	CHIP R 0.0 J 1/8W		D406			02DZ5.1(Y)	ZENER DIODE	
R641,642			RK73GB2A472J	CHIP R 4.7K J 1/10W		D407			RB706F-40	DIODE	
R643			RK73GB2A471J	CHIP R 470 J 1/10W		D408,409			MA742	DIODE	
R644			RK73GB2A102J	CHIP R 1.0K J 1/10W		D412-414			DA204U	DIODE	
R645			RK73GB2A562J	CHIP R 5.6K J 1/10W		D416			DAN202U	DIODE	
R648			RK73GB2A222J	CHIP R 2.2K J 1/10W		D417-423			1SS388	DIODE	
R651			RK73GB2A000JX	CHIP R 0.0 J 1/10W							

## PARTS LIST

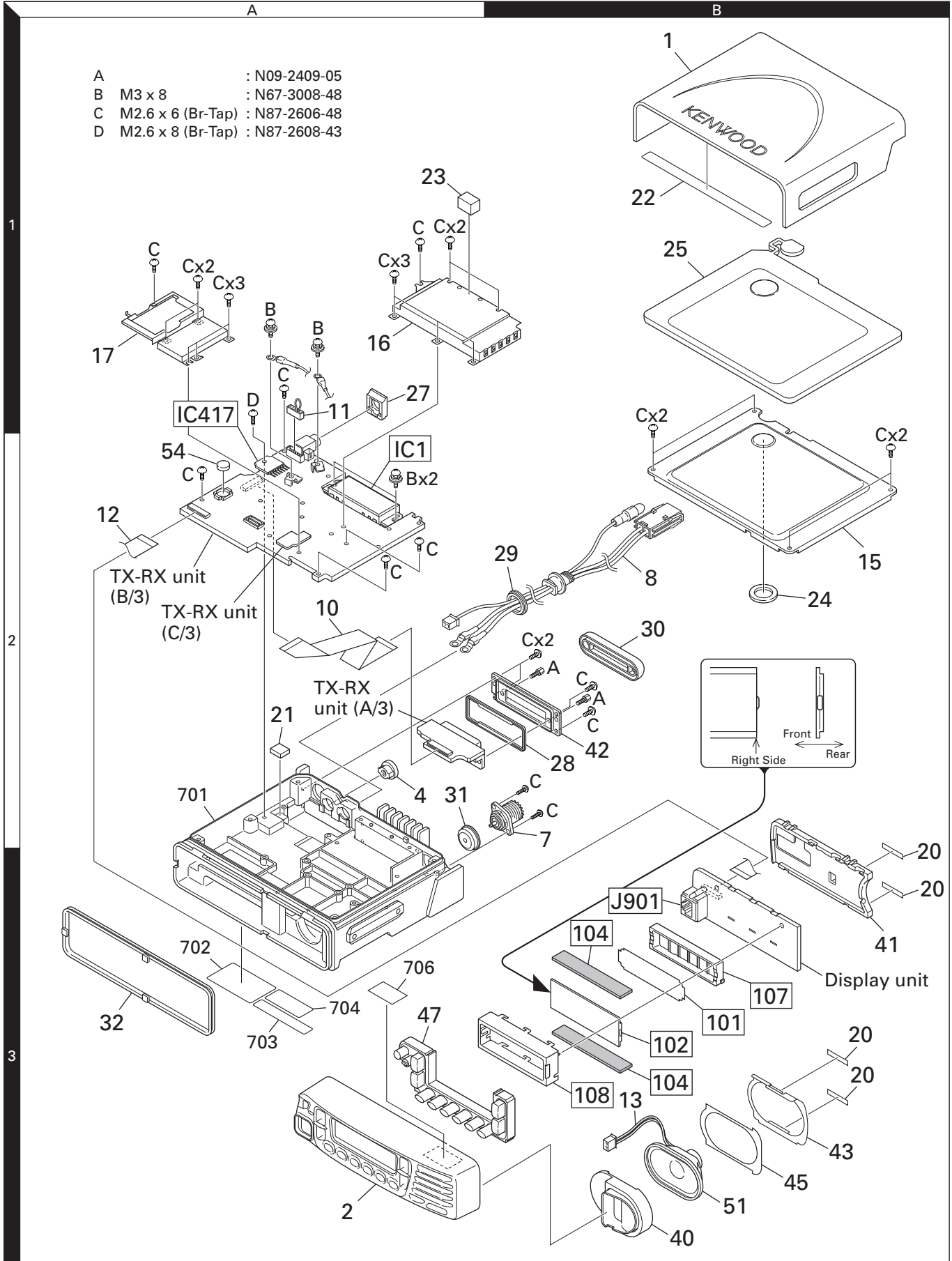
TX-RX UNIT (X57-6980-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D701			02DZ18(X,Y)	ZENER DIODE		Q312			2SC4617(S)	TRANSISTOR	
D702,703			1SS355	DIODE		Q313			2SC5108(Y)	TRANSISTOR	
D704-708			DA204U	DIODE		Q314			DTA144EE	DIGITAL TRANSISTOR	
D709,710			02DZ18(X,Y)	ZENER DIODE		Q402			DTC114YE	DIGITAL TRANSISTOR	
D711-713			DA204U	DIODE		Q405			DTA114EE	DIGITAL TRANSISTOR	
D714			02DZ18(X,Y)	ZENER DIODE		Q406			HN1J02FU	FET	
D801			22ZR-10D	SURGE ABSORBER		Q409			DTC363EU	DIGITAL TRANSISTOR	
D802			DSA3A1	DIODE		Q410			2SC4116(Y)	TRANSISTOR	
D804			02DZ18(X,Y)	ZENER DIODE		Q411			2SA1586(Y,GR)	TRANSISTOR	
D805			02CZ9.1(X,Y)	ZENER DIODE		Q412			2SK1824	FET	
IC1	2A,2C		RA60H1317M1-23	MOS-IC		Q413,414			2SJ243	FET	
IC71,72			TA75W01FU	MOS-IC		Q415			HN1L02FU	FET	
IC171			SPM5001	MOS-IC		Q416,417			2SJ243	FET	
IC172			TA31136FN	MOS-IC		Q418			DTC114EE	DIGITAL TRANSISTOR	
IC251			MAX5026EUT+T	MOS-IC		Q419			DTC363EU	DIGITAL TRANSISTOR	
IC301			ADF4111BCP7	MOS-IC		Q421			DTA144EE	DIGITAL TRANSISTOR	
IC302			TC7S66FU	MOS-IC		Q701,702			2SD2114K(W)	TRANSISTOR	
IC401			AT24256N10SU27	ROM IC		Q801			2SC2873(Y)	TRANSISTOR	
IC402			RV5C386A	MOS-IC	K	Q802			DTC114EE	DIGITAL TRANSISTOR	
IC403			BU4094BCFV	MOS-IC		Q803-805			12A02CH	TRANSISTOR	
IC404			30625MGP169GU	MICROPROCESSOR IC	K	Q806-809			DTC114EE	DIGITAL TRANSISTOR	
IC404			30625MGP238GU	MICROPROCESSOR IC	SK	Q810			2SJ645	FET	
IC405			AT29C040A-90TU	ROM IC		Q811			DTC114EE	DIGITAL TRANSISTOR	
IC406-409			TC75W51FU	MOS-IC		Q812			DTC114TE	DIGITAL TRANSISTOR	
IC410			M62364FP-F	MOS-IC		TH3			S1R104J475H	THERMISTOR	
IC411			LMC7101BIM5	MOS-IC		TH171			S1R473J475H	THERMISTOR	
IC412			TC75W51FU	MOS-IC							
IC413			TC7MZ4053FK	MOS-IC							
IC414			TC75W51FU	MOS-IC							
IC415			AQUA-L	MOS-IC							
IC416	2A,2C		ADM202EARN	MOS-IC							
IC417			TA7252AP	ANALOGUE IC							
IC801			S-80942CNNBG9C	MOS-IC							
IC802			XC61CN5002NR	MOS-IC							
IC803			TA7808F	ANALOGUE IC							
IC804			TA7805F	MOS-IC							
IC805			NJM78L05UA	BI-POLAR IC							
IC807			XC6201P502PR	MOS-IC							
Q1			2SC5108(Y)	TRANSISTOR							
Q2			2SC5192	TRANSISTOR							
Q3			DTC114EE	DIGITAL TRANSISTOR							
Q72			2SK1824	FET							
Q73			DTC114EE	DIGITAL TRANSISTOR							
Q103			2SC3357	TRANSISTOR							
Q171,172			2SC5108(Y)	TRANSISTOR							
Q173			DTA114EE	DIGITAL TRANSISTOR							
Q174			DTC144EE	DIGITAL TRANSISTOR							
Q175			2SC4617(Q)	TRANSISTOR							
Q176			2SK1824	FET							
Q177			DTC144EE	DIGITAL TRANSISTOR							
Q178			DTA144EE	DIGITAL TRANSISTOR							
Q180			DTC144EE	DIGITAL TRANSISTOR							
Q251			2SC4617(S)	TRANSISTOR							
Q301			2SC5108(Y)	TRANSISTOR							
Q302-304			2SC4116(BL)	TRANSISTOR							
Q305			DTC144EE	DIGITAL TRANSISTOR							
Q306,307			2SK508NV(K52)	FET							
Q308,309			2SC4116(GR)	TRANSISTOR							
Q310			DTC114EE	DIGITAL TRANSISTOR							
Q311			2SC5108(Y)	TRANSISTOR							

# TK-7180H/7182H

## EXPLODED VIEW (TK-7180H)

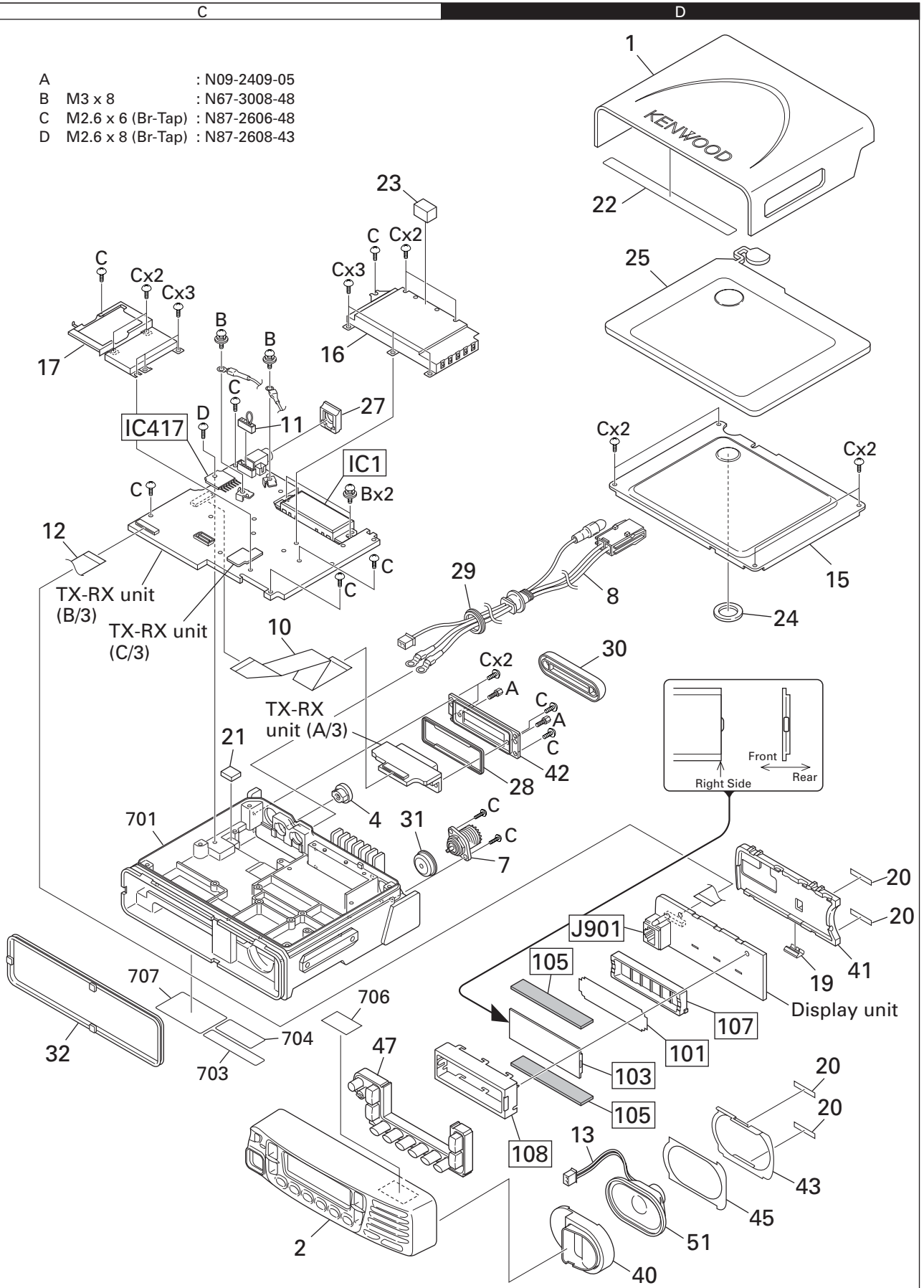
- A : N09-2409-05  
 B M3 x 8 : N67-3008-48  
 C M2.6 x 6 (Br-Tap) : N87-2606-48  
 D M2.6 x 8 (Br-Tap) : N87-2608-43



# TK-7180H/7182H

## EXPLODED VIEW (TK-7182H)

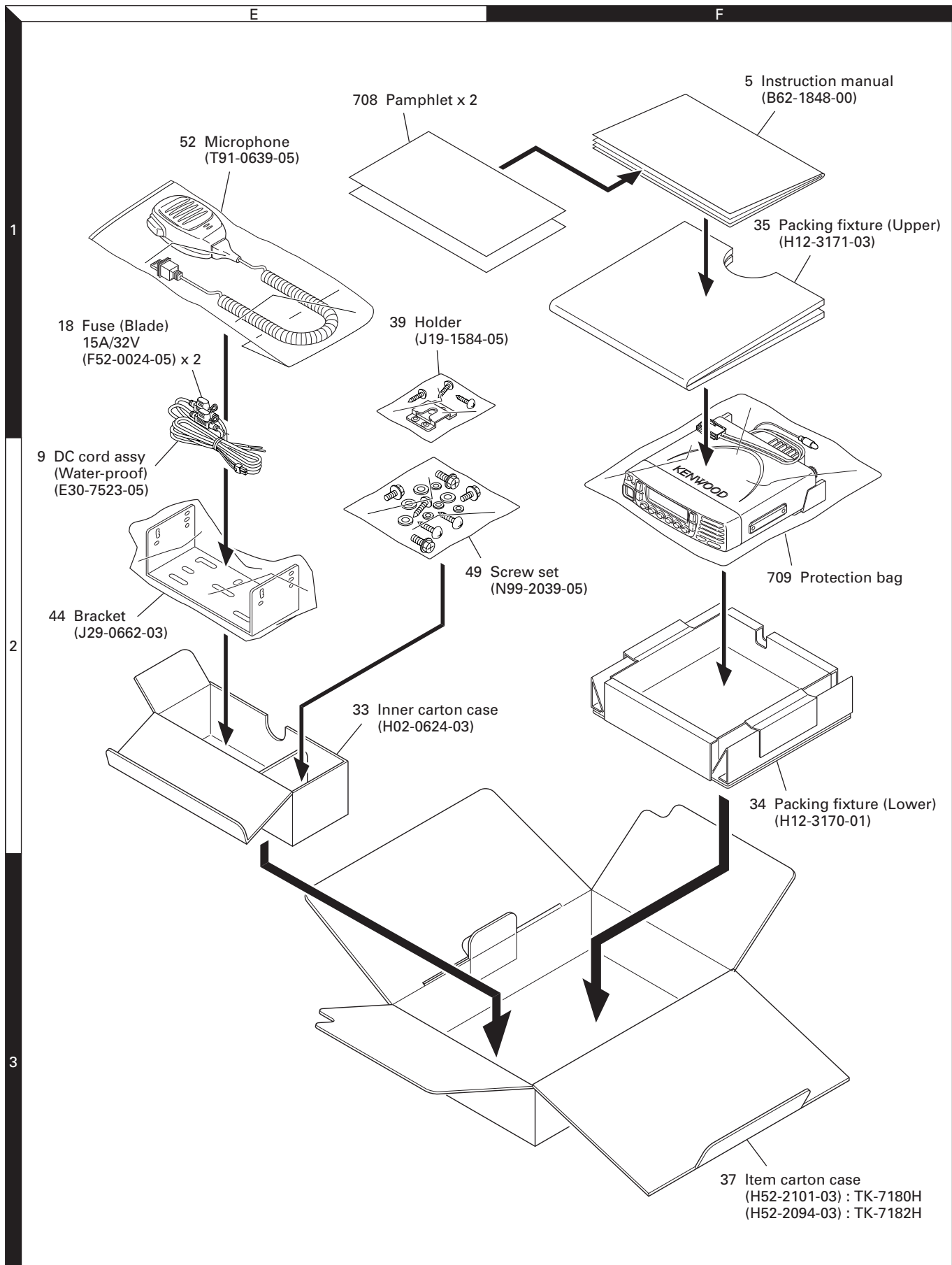
- A : N09-2409-05
- B M3 x 8 : N67-3008-48
- C M2.6 x 6 (Br-Tap) : N87-2606-48
- D M2.6 x 8 (Br-Tap) : N87-2608-43



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

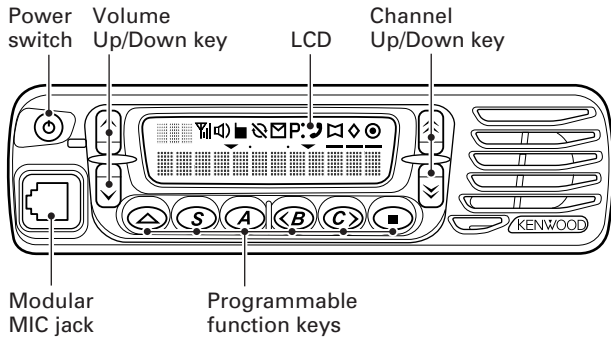


## PACKING



## ADJUSTMENT (TK-7180H)

### Controls



### Panel Test Mode

#### ■ Test mode operation features

This transceiver has a test mode. **To enter test mode, press and hold the [A] key while turning the transceiver power ON. Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily.** Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

#### ■ Key operation

Key	"FNC" not appears	
	Function	Display
[S]	Shifts to Panel tuning mode	-
[A]	Function on	"FNC" appears
[B]	MSK 1200bps and 2400bps	2400bps :  icon appears
[C]	Test signaling CH up	Signaling No.
[^]/[v]	Test frequency CH up/down	Channel No.
[^]/[v]	Volume up/down	-
[Δ]	Squelch on/off	
[■]	Narrow/Wide 4k/Wide 5k	Narrow : "n", Wide 4k : "s", Wide 5k : "w"
<b>Microphone key</b>		
[PTT]	Transmit	-
[0] to [9] and [A], [B], [C], [D], [#], [*]	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
[S]	High power / Low power	Low :  icon appears
[A]	Function off	-
[B]	Compander on/off	On :  icon appears
[C]	Beat shift on/off	On :  icon appears
[^]/[v]	Function off	-
[^]/[v]	Function off	-
[Δ]	Squelch level 0	On :  icon appears
[■]	LCD all lights	LCD all point appears
<b>Microphone key</b>		
[PTT]	Transmit	-
[0] to [9] and [A], [B], [C], [D], [#], [*]	Function off	-

#### Notes :

- If a [S], [A], [B], [C] key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent.
- The "Wide 4k" cannot be used, please skip it.

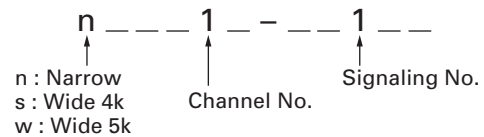
#### • LED indicator

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

#### • Sub LCD indicator

"FNC" Appears at function on.

#### • LCD display in panel test mode





# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

### ■ 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	RX (MHz)	TX (MHz)
1	155.05000	155.10000
2	136.05000	136.10000
3	173.95000	173.90000
4	155.00000	155.00000
5	155.20000	155.20000
6	155.40000	155.40000
7	177.95000	177.90000
8~16	-	-

#### • Test signaling

No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	LTR Data : AREA=0, GOTO=12 HOME=12 ID=47, FREE=25	LTR Data : AREA=0, GOTO=12 HOME=12 ID=47, FREE=25
4	QT : 67.0Hz	QT : 67.0Hz
5	QT : 151.4Hz	QT : 151.4Hz
6	QT : 210.7Hz	QT : 210.7Hz
7	QT : 254.1Hz	QT : 254.1Hz
8	DQT : D023N	DQT : D023N
9	DQT : D754I	DQT : D754I
10	DTMF : 159D	DTMF : 159D
11	None	DTMF Code 9
12	2-tone : A : 304.7Hz B : 3106.0Hz	2-tone : A : 304.7Hz B : 3106.0Hz

No.	RX	TX
13	Single Tone : 979.9Hz	Single Tone : 979.9Hz
14	None	Single Tone : 1000Hz
15	5-tone (CCIR 12345)	5-tone (CCIR 12345)
16	None	MSK
17	MSK : Preamble : 0xAAAA Sync : 0x23EB Data : 0x230960C6AAAA CRC : 0xC4D7	MSK : Preamble : 0xAAAA Sync : 0x23EB Data : 0x230960C6AAAA CRC : 0xC4D7

**Note :** The "5-tone signaling" cannot be used, please skip it.

### Panel Tuning 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.

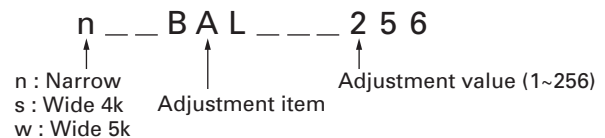
#### ■ Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [S] key while the transceiver is in test mode. Use the [B] key to write tuning data through tuning modes, and the [↗]/[↘] key to adjust tuning requirements (1 to 256 appears on the LCD).

Use the [C] key to select the adjustment item through tuning modes. Use the [A] key to adjust 3 or 5 reference level adjustments, and use the [■] key to switch between Wide 5k/Wide 4k/Narrow.

Channel appears on the LCD. Set channel according to tuning requirements.

#### • LCD display in panel tuning mode



## ADJUSTMENT (TK-7180H)

## ■ Key operation

Key	Function	
	Push	Hold (1 second)
[S]	End of panel tuning mode	-
[A]	To enter 3 or 5 reference level adjustments	-
[B]	Writes the adjustment value	-
[C]	Go to next adjustment item	Back to last adjustment item
[↗]/[↘]	Adjustment value up/down	Continuation up/down
[^]/[v]	Volume level up/down	Continuation up/down
[△]	Squelch on/off	-
[■]	Selects Narrow, Wide 4k, Wide 5k	-

## ■ 3 or 5 reference level adjustments frequency

Tuning point	RX (MHz)	TX (MHz)
Low	136.05000	136.10000
Low'	145.55000	145.60000
Center	155.05000	155.10000
High'	164.55000	164.60000
High	173.95000	173.90000

## ■ Adjustment item and Display

(\*\*\*) : 1~256, Only MSK : 1~64)

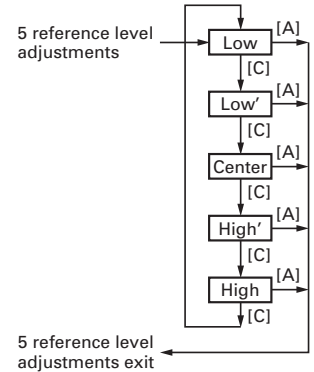
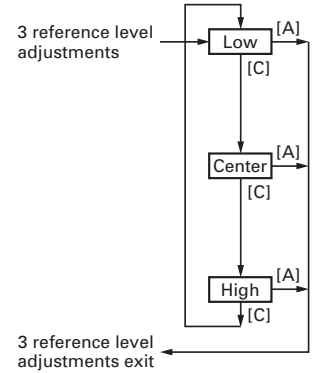
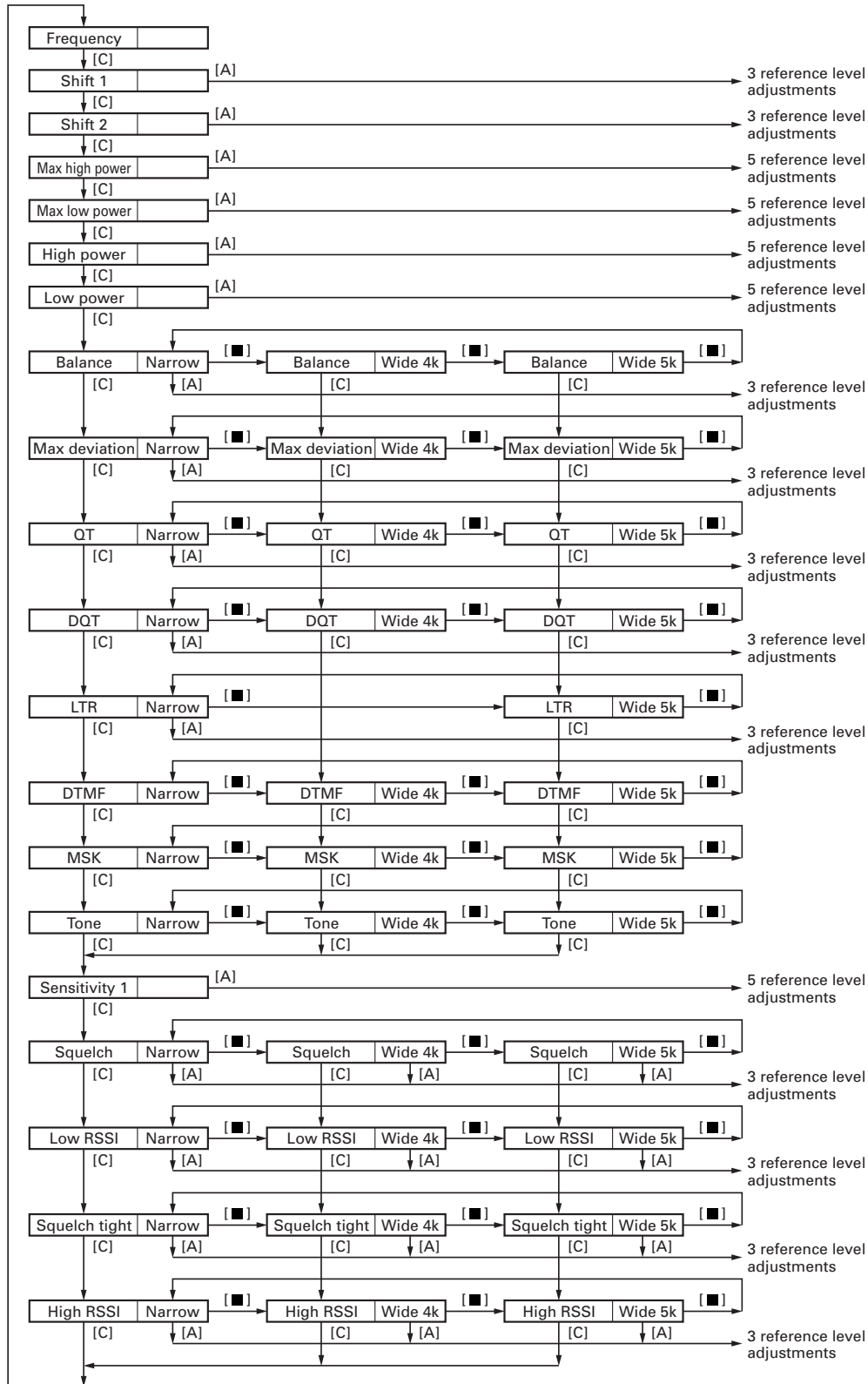
Order	Adjustment item	Display
1	Frequency	FREQ ***
2	Shift 1	SHFT1 ***
3	Shift 2	SHFT2 ***
4	Max high power	MHPWR ***
5	Max low power	MLPWR ***
6	High power	HPWR ***
7	Low power	LPWR ***
8	Balance	BAL ***
9	Max deviation	DEV ***
10	QT	QT ***
11	DQT	DQT ***
12	LTR	LTR ***
13	DTMF	DTMF ***
14	MSK	MSK **
15	Tone	TONE ***
16	Sensitivity 1	SENS1 ***
17	Squelch	SQL ***
18	Low RSSI	LRSSI ***
19	Squelch tight	SQLT ***
20	High RSSI	HRSSI ***

# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

### Flow chart

**Note :** The "Wide 4k" cannot be used, please skip it.

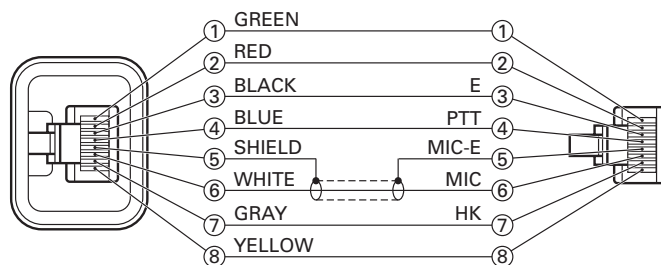


## ADJUSTMENT (TK-7180H)

### Test Equipment Required for Alignment

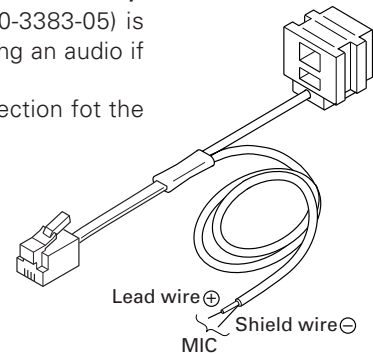
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range	136 to 174MHz
	Modulation	Frequency modulation and external modulation
	Output	0.1μV to greater than 1mV
2. Power Meter	Input Impedance	50Ω
	Operation Frequency	136 to 174MHz or more
	Measurement Capability	Vicinity of 50W
3. Deviation Meter	Frequency Range	136 to 174MHz
4. Digital Volt Meter (DVM)	Measuring Range	1 to 20V DC
	Accuracy	High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range	10Hz to 600MHz
	Frequency Stability	0.2ppm or less
7. Ammeter		13A or more
8. AF Volt Meter (AF VTVM)	Frequency Range	50Hz to 10kHz
	Voltage Range	3mV to 3V
9. Audio Generator (AG)	Frequency Range	50Hz to 5kHz
	Output	0 to 1V
10. Distortion Meter	Capability	3% or less at 1kHz
	Input Level	50mV to 10Vrms
11. Voltmeter	Measuring Range	10 to 1.5V DC or less
	Input Impedance	50kΩ/V or greater
12. 4Ω Dummy Load		Approx. 4Ω, 20W
13. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9 to 20V) Useful if ammeter equipped

### Test cable for microphone input (E30-3360-08)

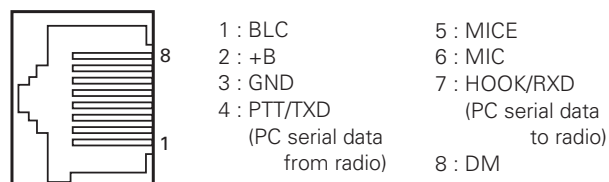


### Tuning cable (E30-3383-05)

Adapter cable (E30-3383-05) is required for injecting an audio if PC tuning is used. See "PC Mode" section for the connection.

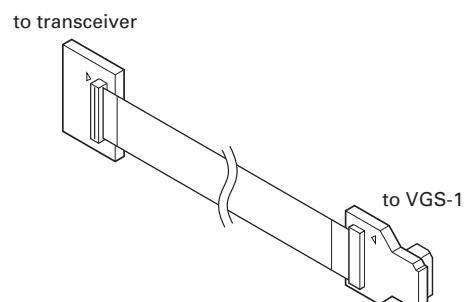


### MIC connector (Front panel view)



### Check Jig for the VGS-1

KENWOOD part : W05-1127-00



# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

### Common Section


Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Power supply voltage DC power supply terminal : 13.6V 2) SSG standard modulation [Wide 5k] MOD : 1kHz, DEV : 3kHz [Wide 4k] MOD : 1kHz, DEV : 2.4kHz [Narrow] MOD : 1kHz, DEV : 1.5kHz							
2. VCO lock voltage • RX	<b>[Panel test mode]</b> 1) CH-Sig : 3-1	Power meter	Rear panel	ANT	TX-RX (B/3)	TC301	8.1V	±0.1V
	2) CH-Sig : 2-1	DVM	TX-RX (B/3)	CV			Check	2.0V±0.5V
	<b>[Panel tuning mode] LPWR*</b> 3) CH-Sig : 3-1 PTT : ON				TX-RX (B/3)	TC302	8.1V	±0.1V
	4) CH-Sig : 2-1 PTT : ON						Check	2.0V±0.5V

\* TX can be continued on unlock condition in panel tuning mode.

### Transmitter Section (K market model skips adjustment of Wide 4k)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency adjust	1) Adj item : [FREQ] Adjust : [***] PTT : ON	f. counter	Rear panel	ANT	Front panel	[↗],[↘]	Center frequency ±50Hz	Note : After replacing the VCXO (X301) align frequency.
2. Frequency shift 1 adjust	1) Adj item : [SHFT1] Adjust : [***] 2) Adj item : [L SHFT1] → [C SHFT1] → [H SHFT1] Adjust : [***] PTT : ON						[L SHFT1] Low frequency+1.25kHz [C SHFT1] Center frequency+1.25kHz [H SHFT1] High frequency+1.25kHz	±50Hz
3. Frequency shift 2 adjust	1) Adj item : [SHFT2] Adjust : [***] 2) Adj item : [L SHFT2] → [C SHFT2] → [H SHFT2] Adjust : [***] PTT : ON						[L SHFT2] Low frequency+2.5kHz [C SHFT2] Center frequency+2.5kHz [H SHFT2] High frequency+2.5kHz	±50Hz
4. Max high power adjust	1) Adj item : [MHPWR] Adjust : [***] 2) Adj item : [L MHPWR] → [L' MHPWR] → [C MHPWR] → [H' MHPWR] → [H MHPWR] Adjust : [***] PTT : ON	Power meter					53W	±3W  <b>CAUTION!</b> Do not attempt to adjust the transceiver's transmit output power beyond its specifications. If the transceiver is adjusted beyond the specifications, it may cause deterioration of the parts reliability and the output power may be lowered suddenly and unstable. The transceiver may be also extremely hot.

## ADJUSTMENT (TK-7180H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Max low power adjust	1) Adj item : [MLPWR] Adjust : [***] 2) Adj item : [L MLPWR] → [L' MLPWR] → [C MLPWR] → [H' MLPWR] → [H MLPWR] Adjust : [***] PTT : ON	Power meter	Rear panel	ANT	Front panel	[↗],[↘]	25W	±2W  <b>CAUTION!</b> Do not attempt to adjust the transceiver's transmit output power beyond its specifications. If the transceiver is adjusted beyond the specifications, it may cause deterioration of the parts reliability and the output power may be lowered suddenly and unstable. The transceiver may be also extremely hot.
6. High power adjust	1) Adj item : [HPWR] Adjust : [***] 2) Adj item : [L HPWR] → [L' HPWR] → [C HPWR] → [H' HPWR] → [H HPWR] Adjust : [***] PTT : ON	Power meter Ammeter					50W	±1W 13A or less
7. High power check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 PTT : ON 2) CH-Sig : 2-1 PTT : ON 3) CH-Sig : 3-1 PTT : ON						Check	45~55W 13A or less
8. Low power adjust	1) Adj item : [LPWR] Adjust : [***] 2) Adj item : [L LPWR] → [L' LPWR] → [C LPWR] → [H' LPWR] → [H LPWR] Adjust : [***] PTT : ON				Front panel	[↗],[↘]	10W	±0.5W 8A or less
9. Low power check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 Set low power (Push [S]) PTT : ON 2) CH-Sig : 2-1 PTT : ON 3) CH-Sig : 3-1 PTT : ON						Check	7~13W 8A or less
10. DQT balance adjust  • Narrow  • Wide 4k  • Wide 5k	1) Adj item : [n BAL] Adjust : [***] Deviation meter filter LPF : 3kHz HPF : OFF 2) Adj item : [nL BAL] → [nC BAL] → [nH BAL] Adjust : [***] PTT : ON 3) Adj item : [s BAL] Adjust : [***] PTT : ON 4) Adj item : [w BAL] Adjust : [***] PTT : ON	Power meter  Deviation meter Oscilloscope AG AF VTVM	Rear panel  Front panel	ANT  Modular MIC jack	Front panel	[↗],[↘]	Make the demodulation waves into square waves.	

# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. Max DEV adjust  • Narrow  • Wide 4k  • Wide 5k	1) Adj item : [n DEV] Adjust : [***] AG : 1kHz/50mV at MIC terminal Deviation meter filter LPF : 15kHz HPF : OFF	Power meter  Deviation meter Oscilloscope AG AF VTVM	Rear panel  Front panel	ANT  Modular MIC jack	Front panel	[↗],[↘]	2.10kHz (According to the larger +, -)	±0.10kHz
	2) Adj item : [nL DEV] → [nC DEV] → [nH DEV] Adjust : [***] PTT : ON						3.30kHz (According to the larger +, -)	±0.10kHz
	3) Adj item : [s DEV] Adjust : [***] PTT : ON						4.20kHz (According to the larger +, -)	±0.10kHz
12. MIC sensitivity check (Wide 5k only)	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 AG : 1kHz/5mV at MIC terminal PTT : ON						Check	2.5~3.5kHz
13. QT deviation adjust  • Narrow  • Wide 4k  • Wide 5k	1) Adj item : [n QT] Adjust : [***] Deviation meter filter LPF : 3kHz HPF : OFF				Front panel	[↗],[↘]	0.35kHz	±0.05kHz
	2) Adj item : [nL QT] → [nC QT] → [nH QT] Adjust : [***] PTT : ON	0.60kHz	±0.10kHz					
	3) Adj item : [s QT] Adjust : [***] PTT : ON	0.75kHz	±0.10kHz					
14. DQT deviation adjust  • Narrow  • Wide 4k  • Wide 5k	1) Adj item : [n DQT] Adjust : [***] Deviation meter filter LPF : 3kHz HPF : OFF						0.35kHz	±0.05kHz
	2) Adj item : [nL DQT] → [nC DQT] → [nH DQT] Adjust : [***] PTT : ON	0.60kHz	±0.10kHz					
	3) Adj item : [s DQT] Adjust : [***] PTT : ON	0.75kHz	±0.10kHz					
	4) Adj item : [w DQT] Adjust : [***] PTT : ON							



## ADJUSTMENT (TK-7180H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
15. LTR deviation adjust • Narrow	1) Adj item : [n LTR] Adjust : [***] Deviation meter filter LPF : 3kHz HPF : OFF	Power meter	Rear panel	ANT	Front panel	[↗],[↘]	0.75kHz	±0.10kHz
	2) Adj item : [nL LTR] → [nC LTR] → [nH LTR] Adjust : [***] PTT : ON	Deviation meter Oscilloscope AG AF VTVM	Front panel	Modular MIC jack				
• Wide	3) Adj item : [w LTR] Adjust : [***] PTT : ON						1.00kHz	±0.10kHz
16. DTMF deviation adjust • Narrow	1) Adj item : [n DTMF] Adjust : [***] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						1.5kHz	±0.1kHz
	• Wide 4k	2) Adj item : [s DTMF] Adjust : [***] PTT : ON					2.4kHz	±0.1kHz
	• Wide 5k	3) Adj item : [w DTMF] Adjust : [***] PTT : ON					3.0kHz	±0.1kHz
17. MSK deviation adjust • Narrow	1) Adj item : [n MSK] Adjust : [**] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						1.5kHz	±0.1kHz
	• Wide 4k	2) Adj item : [s MSK] Adjust : [**] PTT : ON					2.4kHz	±0.1kHz
	• Wide 5k	3) Adj item : [w MSK] Adjust : [**] PTT : ON					3.0kHz	±0.1kHz
18. TONE deviation adjust • Narrow	1) Adj item : [n TONE] Adjust : [***] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						1.5kHz	±0.1kHz
	• Wide 4k	2) Adj item : [s TONE] Adjust : [***] PTT : ON					2.4kHz	±0.1kHz
	• Wide 5k	3) Adj item : [w TONE] Adjust : [***] PTT : ON					3.0kHz	±0.1kHz

# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

### Receiver Section (K market model skips adjustment of Wide 4k)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity adjust	1) Adj item : [SENS1] Adjust : [***] 2) Adj item : [L SENS1] → [L' SENS1] → [C SENS1] → [H' SENS1] → [H SENS1] Adjust : [***]	SSG  AF VTVM Oscilloscope	Rear panel	ANT  EXT. SP	Front panel	[↗],[↘]	Enter the following adjustment values to the transceiver by pressing [↗] and [↘] keys. [L SENS1] : 60 [L' SENS1] : 88 [C SENS1] : 109 [H' SENS1] : 159 [H SENS1] : 192 After setting the adjustment value, press [B] key. The adjustment value will be stored in memory.	Note : After replacing the EEPROM (IC401) aline sensitivity.
2. Sensitivity check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 SSG output Wide 5k : -117dBm (0.32μV) (MOD : 1kHz±3kHz) Narrow : -116dBm (0.35μV) (MOD : 1kHz±1.5kHz)						Check	12dB SINAD or more
3. Squelch (Preset) adjust • Narrow	1) Adj item : [n SQL] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz±1.5kHz)						After input signal from SSG, press [B] key. That numeric will be stored in memory.	After adjusting SQL, check SQL open/close. SSG 12dB SINAD level + 4dB : Open SSG 12dB SINAD level - 6dB : Close [nC SQL] MOD 1kHz±1.5kHz [sC SQL] MOD 1kHz±2.4kHz [wC SQL] MOD 1kHz±3.0kHz
	2) Adj item : [nL SQL] → [nC SQL] → [nH SQL] Adjust : [***]							
• Wide 4k	3) Adj item : [s SQL] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz±2.4kHz)							
	4) Adj item : [sL SQL] → [sC SQL] → [sH SQL] Adjust : [***]							
• Wide 5k	5) Adj item : [w SQL] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz±3.0kHz)							
	6) Adj item : [wL SQL] → [wC SQL] → [wH SQL] Adjust : [***]							

## ADJUSTMENT (TK-7180H)

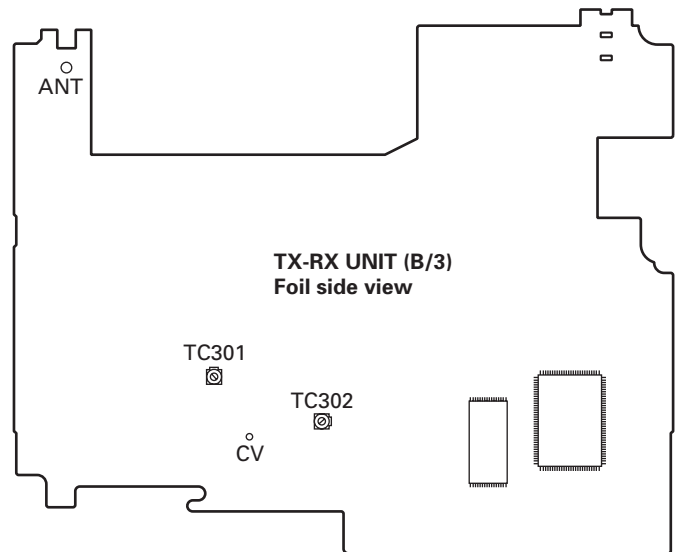
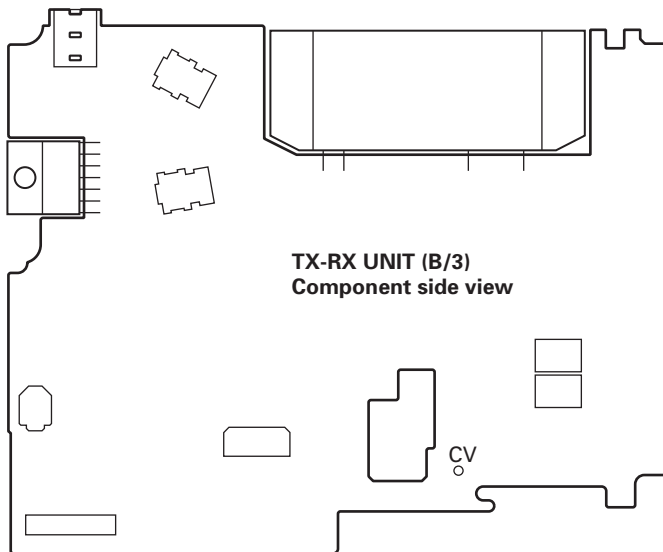
Item	Condition	Measurement			Adjustment			Specifications/Remarks	
		Test-equipment	Unit	Terminal	Unit	Parts	Method		
4. Low RSSI adjust • Narrow	1) Adj item : [n LRSSI] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz/±1.5kHz)	SSG  AF VTVM Oscilloscope	Rear panel	ANT  EXT. SP			After input signal from SSG, press [B] key. That numeric will be stored in memory.	The following erroneous performance may occur if any irregular RSSI adjustment, such as pressing the [B] key assigned for determination when it is the ANT OPEN state, is performed. • The antenna bar (▼) cannot appear correctly. • Scan does not stop.	
	2) Adj item : [nL LRSSI] → [nC LRSSI] → [nH LRSSI] Adjust : [***]								
	• Wide 4k								3) Adj item : [s LRSSI] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz/±2.4kHz)
	4) Adj item : [sL LRSSI] → [sC LRSSI] → [sH LRSSI] Adjust : [***]								
	• Wide 5k								5) Adj item : [w LRSSI] Adjust : [***] SSG output : 12dB SINAD level (MOD : 1kHz/±3.0kHz)
	6) Adj item : [wL LRSSI] → [wC LRSSI] → [wH LRSSI] Adjust : [***]								
5. Squelch (Tight) adjust • Narrow	1) Adj item : [n SQLT] Adjust : [***] SSG output : 12dB SINAD+5dB level (MOD : 1kHz/±1.5kHz)						After input signal from SSG, press [B] key. That numeric will be stored in memory.	After adjusting SQL, check SQL open/close. SSG 12dB SINAD level +10dB : Open SSG 12dB SINAD level : Close [nC SQLT] MOD 1kHz/±1.5kHz [sC SQLT] MOD 1kHz/±2.4kHz [wC SQLT] MOD 1kHz/±3.0kHz	
	2) Adj item : [nL SQLT] → [nC SQLT] → [nH SQLT] Adjust : [***]								
	• Wide 4k								3) Adj item : [s SQLT] Adjust : [***] SSG output : 12dB SINAD+5dB level (MOD : 1kHz/±2.4kHz)
	4) Adj item : [sL SQLT] → [sC SQLT] → [sH SQLT] Adjust : [***]								
	• Wide 5k								5) Adj item : [w SQLT] Adjust : [***] SSG output : 12dB SINAD+5dB level (MOD : 1kHz/±3.0kHz)
	6) Adj item : [wL SQLT] → [wC SQLT] → [wH SQLT] Adjust : [***]								

# TK-7180H/7182H

## ADJUSTMENT (TK-7180H)

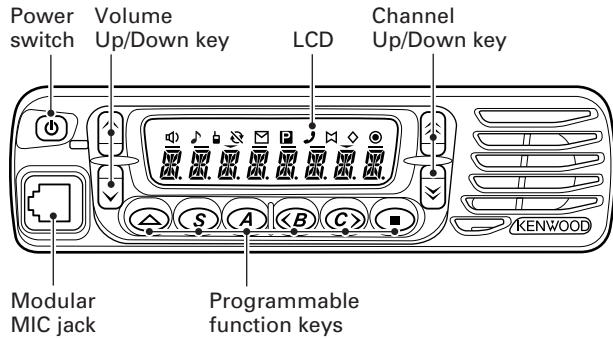
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. High RSSI adjust • Narrow	1) Adj item : [n HRSSI] Adjust : [***] SSG output : -70dBm (MOD : 1kHz±1.5kHz)	SSG  AF VTVM Oscilloscope	Rear panel	ANT			After input signal from SSG, press [B] key. That numeric will be stored in memory.	The following erroneous performance may occur if any irregular RSSI adjustment, such as pressing the [B] key assigned for determination when it is the ANT OPEN state, is performed. • The antenna bar (▼) cannot appear correctly. • Scan does not stop.
	2) Adj item : [nL HRSSI] → [nC HRSSI] → [nH HRSSI] Adjust : [***]			EXT. SP				
	• Wide 4k			3) Adj item : [s HRSSI] Adjust : [***] SSG output : -70dBm (MOD : 1kHz±2.4kHz)				
	4) Adj item : [sL HRSSI] → [sC HRSSI] → [sH HRSSI] Adjust : [***]							
	• Wide 5k			5) Adj item : [w HRSSI] Adjust : [***] SSG output : -70dBm (MOD : 1kHz±3.0kHz)				
	6) Adj item : [wL HRSSI] → [wC HRSSI] → [wH HRSSI] Adjust : [***]							

### Adjustment Points



## ADJUSTMENT (TK-7182H)

### Controls



### Panel Test Mode

#### ■ Test mode operation features

This transceiver has a test mode. **To enter test mode, press and hold the [A] key while turning the transceiver power ON. Before the transceiver enters test mode, the frequency version information appears on the LCD momentarily.** Test mode can be inhibited by programming. To exit test mode, turn the transceiver power OFF. The following functions are available in test mode.

#### ■ Key operation

Key	"■" not appears *1	
	Function	Display
[S]	Shifts to Panel tuning mode	-
[A]	Function on	"■" appears *1
[B]	MSK 1200bps and 2400bps	2400bps : ☒ icon appears
[C]	Test signaling CH up	Signaling No.
[^]/[v]	Test frequency CH up/down	Channel No.
[^]/[v]	Volume up/down	-
[△]	Squelch on/off	🔊
[■]	Narrow/Wide	Narrow : "N" Wide : "W"
<b>Microphone key</b>		
[PTT]	Transmit	-
[0] to [9] and [A], [B], [C], [D], [#], [*]	Use as the DTMF keypad. If a key is pressed during transmission, the DTMF corresponding to the key that was presses is sent.	-

Key	"■" appears *1	
	Function	Display
[S]	High power / Low power	Low : 📶 icon appears
[A]	Function off	-
[B]	Compander on/off	On : 📶 icon appears
[C]	Beat shift on/off	On : ⬠ icon appears
[^]/[v]	Function off	-
[^]/[v]	Function off	-
[△]	Squelch level 0	On : 📶 icon appears
[■]	LCD all lights	LCD all point appears
<b>Microphone key</b>		
[PTT]	Transmit	-
[0] to [9] and [A], [B], [C], [D], [#], [*]	Function off	-

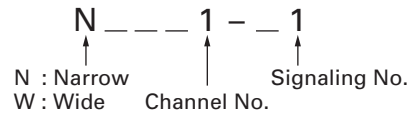
#### Note :

If a [S], [A], [B], [C] key is pressed during transmission, the DTMF corresponding to the key that was pressed is sent.

#### • LED indicator

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

#### • LCD display in panel test mode



\*1 : "■" appears at the position as shown in figure below.



# TK-7180H/7182H

## ADJUSTMENT (TK-7182H)

### ■ 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	RX (MHz)	TX (MHz)
1	155.05000	155.10000
2	136.05000	136.10000
3	173.95000	173.90000
4	155.00000	155.00000
5	155.20000	155.20000
6	155.40000	155.40000
7	177.95000	177.90000
8~16	-	-

#### • Test signaling

No.	RX	TX
1	None	None
2	None	100Hz Square Wave
3	LTR Data : AREA=0, GOTO=12 HOME=12 ID=47, FREE=25	LTR Data : AREA=0, GOTO=12 HOME=12 ID=47, FREE=25
4	QT : 67.0Hz	QT : 67.0Hz
5	QT : 151.4Hz	QT : 151.4Hz
6	QT : 210.7Hz	QT : 210.7Hz
7	QT : 254.1Hz	QT : 254.1Hz
8	DQT : D023N	DQT : D023N
9	DQT : D754I	DQT : D754I
10	DTMF : 159D	DTMF : 159D
11	None	DTMF Code 9
12	2-tone : A : 304.7Hz B : 3106.0Hz	2-tone : A : 304.7Hz B : 3106.0Hz
13	Single Tone : 979.9Hz	Single Tone : 979.9Hz

No.	RX	TX
14	None	Single Tone : 1000Hz
15	None	MSK
16	MSK : Preamble : 0xAAAA Sync : 0x23EB Data : 0x230960C6AAAA CRC : 0xC4D7	MSK : Preamble : 0xAAAA Sync : 0x23EB Data : 0x230960C6AAAA CRC : 0xC4D7

### Panel Tuning 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.

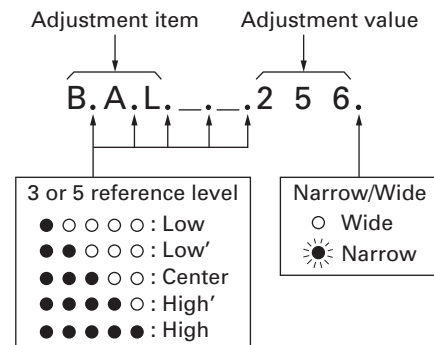
#### ■ Transceiver tuning (To enter tuning mode)

To enter tuning mode, press the [S] key while the transceiver is in test mode. Use the [B] key to write tuning data through tuning modes, and the [↗]/[↘] key to adjust tuning requirements (1 to 256 appears on the LCD).

Use the [C] key to select the adjustment item through tuning modes. Use the [A] key to adjust 3 or 5 reference level adjustments, and use the [■] key to switch Wide and Narrow.

Channel appears on the LCD. Set channel according to tuning requirements.

#### • LCD display in panel tuning mode



## ADJUSTMENT (TK-7182H)

## ■ Key operation

Key	Function	
	Push	Hold (1 second)
[S]	End of panel tuning mode	-
[A]	To enter 3 or 5 reference level adjustments	-
[B]	Writes the adjustment value	-
[C]	Go to next adjustment item	Back to last adjustment item
[↗]/[↘]	Adjustment value up/down	Continuation up/down
[↖]/[↙]	Volume level up/down	Continuation up/down
[△]	Squelch on/off	-
[■]	Selects Narrow or Wide	-

## ■ 3 or 5 reference level adjustments frequency

Tuning point	RX (MHz)	TX (MHz)
Low	136.05000	136.10000
Low'	145.55000	145.60000
Center	155.05000	155.10000
High'	164.55000	164.60000
High	173.95000	173.90000

## ■ Adjustment item and Display

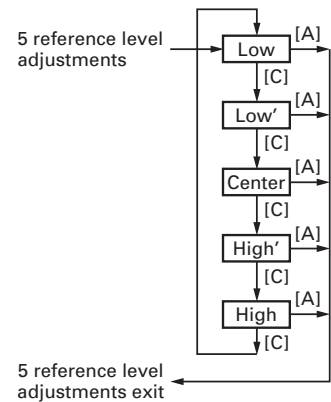
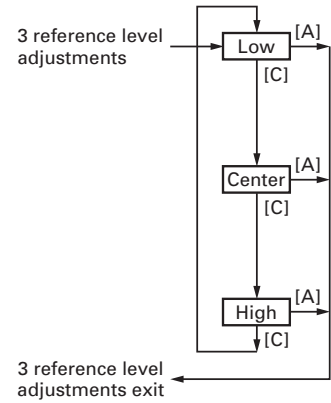
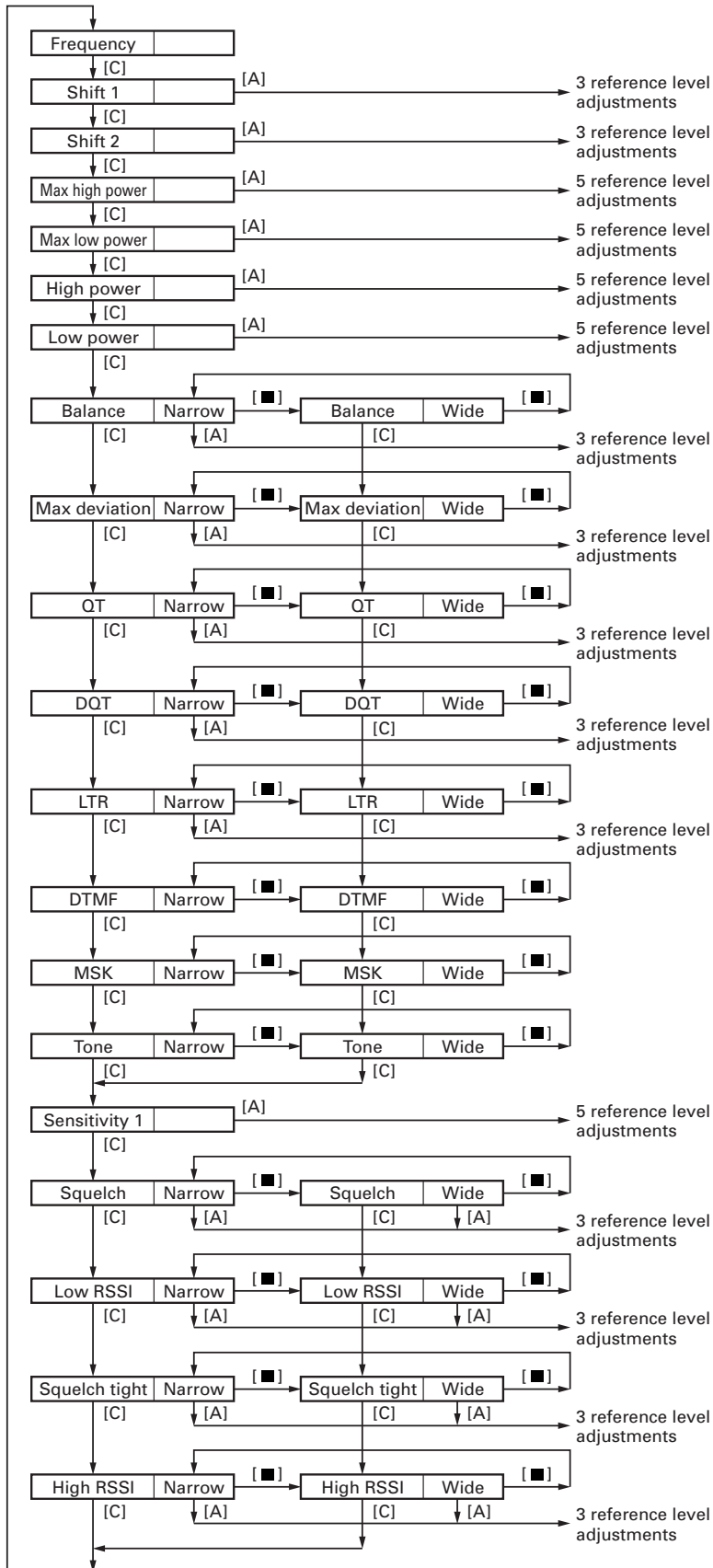
(\*\*\*) : 1~256, Only MSK : 1~64)

Order	Adjustment item	Display
1	Frequency	F R E Q _ * * *
2	Shift 1	S F T 1 _ * * *
3	Shift 2	S F T 2 _ * * *
4	Max high power	M H P W _ * * *
5	Max low power	M L P W _ * * *
6	High power	H P W R _ * * *
7	Low power	L P W R _ * * *
8	Balance	B A L _ _ * * *
9	Max deviation	D E V _ _ * * *
10	QT	Q T _ _ _ * * *
11	DQT	D Q T _ _ * * *
12	LTR	L T R _ _ * * *
13	DTMF	D T M F _ * * *
14	MSK	M S K _ _ _ * *
15	Tone	T O N E _ * * *
16	Sensitivity 1	S E N 1 _ * * *
17	Squelch	S Q L 5 _ * * *
18	Low RSSI	L R S I _ * * *
19	Squelch tight	S Q L 9 _ * * *
20	High RSSI	H R S I _ * * *



## ADJUSTMENT (TK-7182H)

### ■ Flow chart

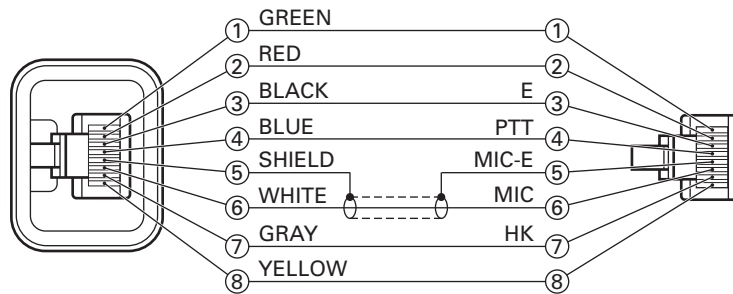


## ADJUSTMENT (TK-7182H)

### Test Equipment Required for Alignment

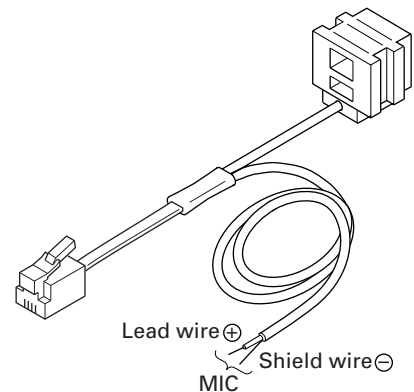
Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range	136 to 174MHz
	Modulation	Frequency modulation and external modulation
	Output	0.1μV to greater than 1mV
2. Power Meter	Input Impedance	50Ω
	Operation Frequency	136 to 174MHz or more
	Measurement Capability	Vicinity of 50W
3. Deviation Meter	Frequency Range	136 to 174MHz
4. Digital Volt Meter (DVM)	Measuring Range	1 to 20V DC
	Accuracy	High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range	10Hz to 600MHz
	Frequency Stability	0.2ppm or less
7. Ammeter		13A or more
8. AF Volt Meter (AF VTVM)	Frequency Range	50Hz to 10kHz
	Voltage Range	3mV to 3V
9. Audio Generator (AG)	Frequency Range	50Hz to 5kHz
	Output	0 to 1V
10. Distortion Meter	Capability	3% or less at 1kHz
	Input Level	50mV to 10Vrms
11. Voltmeter	Measuring Range	10 to 1.5V DC or less
	Input Impedance	50kΩ/V or greater
12. 4Ω Dummy Load		Approx. 4Ω, 20W
13. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9 to 20V) Useful if ammeter equipped

### Test cable for microphone input (E30-3360-08)

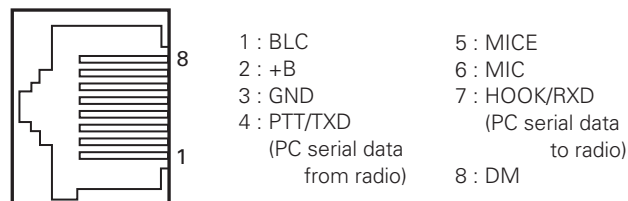


### Tuning cable (E30-3383-05)

Adapter cable (E30-3383-05) is required for injecting an audio if PC tuning is used. See "PC Mode" section for the connection.



### MIC connector (Front panel view)



# TK-7180H/7182H

## ADJUSTMENT (TK-7182H)

### Common Section


Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Power supply voltage DC power supply terminal : 13.6V 2) SSG standard modulation [Wide] MOD : 1kHz, DEV : 3kHz [Narrow] MOD : 1kHz, DEV : 1.5kHz							
2. VCO lock voltage • RX	<b>[Panel test mode]</b> 1) CH-Sig : 3-1	Power meter	Rear panel	ANT	TX-RX (B/3)	TC301	8.1V	±0.1V
	2) CH-Sig : 2-1	DVM	TX-RX (B/3)	CV			Check	2.0V±0.5V
	<b>[Panel tuning mode] LPWR*</b> 3) CH-Sig : 3-1 PTT : ON				TX-RX (B/3)	TC302	8.1V	±0.1V
	4) CH-Sig : 2-1 PTT : ON						Check	2.0V±0.5V

\* TX can be continued on unlock condition in panel tuning mode.

### Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Frequency adjust	1) Adj item : [FREQ_] Adjust : [***] PTT : ON	f. counter	Rear panel	ANT	Front panel	[↗],[↘]	Center frequency ±50Hz	Note : After replacing the VCXO (X301) align frequency.
2. Frequency shift 1 adjust	1) Adj item : [SFT1_] Adjust : [***] 2) Adj item : [S.FT1_] → [S.F.T.1_] → [S.F.T.1._] Adjust : [***] PTT : ON						[S.FT1_] Low frequency+1.25kHz [S.F.T.1_] Center frequency+1.25kHz [S.F.T.1._] High frequency+1.25kHz	±50Hz
3. Frequency shift 2 adjust	1) Adj item : [SFT2_] Adjust : [***] 2) Adj item : [S.FT2_] → [S.F.T.2_] → [S.F.T.2._] Adjust : [***] PTT : ON						[S.FT2_] Low frequency+2.5kHz [S.F.T.2_] Center frequency+2.5kHz [S.F.T.2._] High frequency+2.5kHz	±50Hz
4. Max high power adjust	1) Adj item : [MHPW_] Adjust : [***] 2) Adj item : [M.HPW_] → [M.H.PW_] → [M.H.P.W_] → [M.H.P.W._] Adjust : [***] PTT : ON	Power meter					53W	±3W <b>CAUTION!</b> Do not attempt to adjust the transceiver's transmit output power beyond its specifications. If the transceiver is adjusted beyond the specifications, it may cause deterioration of the parts reliability and the output power may be lowered suddenly and unstable. The transceiver may be also extremely hot.

## ADJUSTMENT (TK-7182H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Max low power adjust	1) Adj item : [MLPW_] Adjust : [***] 2) Adj item : [M.LPW_] → [M.L.PW_] → [M.L.P.W_] → [M.L.P.W._] → [M.L.P.W._] Adjust : [***] PTT : ON	Power meter	Rear panel	ANT	Front panel	[↗],[↘]	25W	±2W  <b>CAUTION!</b> Do not attempt to adjust the transceiver's transmit output power beyond its specifications. If the transceiver is adjusted beyond the specifications, it may cause deterioration of the parts reliability and the output power may be lowered suddenly and unstable. The transceiver may be also extremely hot.
6. High power adjust	1) Adj item : [HPWR_] Adjust : [***] 2) Adj item : [H.PWR_] → [H.P.WR_] → [H.P.W.R_] → [H.P.W.R._] → [H.P.W.R._] Adjust : [***] PTT : ON	Power meter Ammeter					50W	±1W 13A or less
7. High power check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 PTT : ON 2) CH-Sig : 2-1 PTT : ON 3) CH-Sig : 3-1 PTT : ON						Check	45~55W 13A or less
8. Low power adjust	1) Adj item : [LPWR_] Adjust : [***] 2) Adj item : [L.PWR_] → [L.P.WR_] → [L.P.W.R_] → [L.P.W.R._] → [L.P.W.R._] Adjust : [***] PTT : ON				Front panel	[↗],[↘]	10W	±0.5W 8A or less
9. Low power check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 Set low power (Push [S]) PTT : ON 2) CH-Sig : 2-1 PTT : ON 3) CH-Sig : 3-1 PTT : ON						Check	7~13W 8A or less
10. DQT balance adjust	1) Adj item : [BAL_] Adjust : [***] Deviation meter filter LPF : 3kHz HPF : OFF • Narrow 2) Adj item : [B.AL_] → [B.A.L_] → [B.A.L._] Adjust : [***] PTT : ON • Wide 3) Adj item : [BAL_] Adjust : [***] PTT : ON	Power meter  Deviation meter Oscilloscope AG AF VTVM	Rear panel  Front panel	ANT  Modular MIC jack	Front panel	[↗],[↘]	Make the demodulation waves into square waves.	

# TK-7180H/7182H

## ADJUSTMENT (TK-7182H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
11. Max DEV adjust  • Narrow	1) Adj item : [DEV_ _] Adjust : [***.] AG : 1kHz/50mV at MIC terminal Deviation meter filter LPF : 15kHz HPF : OFF	Power meter  Deviation meter Oscilloscope AG AF VTVM	Rear panel	ANT	Front panel	[↗],[↘]	2.10kHz (According to the larger +, -)	±0.10kHz
	2) Adj item : [D.EV_ _] → [D.E.V._ _] Adjust : [***.] PTT : ON		Front panel	Modular MIC jack				
• Wide	3) Adj item : [DEV_ _] Adjust : [***.] PTT : ON					4.20kHz (According to the larger +, -)	±0.10kHz	
12. MIC sensitivity check (Wide only)	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 AG : 1kHz/5mV at MIC terminal PTT : ON					Check	2.5~3.5kHz	
13. QT deviation adjust  • Narrow	1) Adj item : [QT_ _ _] Adjust : [***.] Deviation meter filter LPF : 3kHz HPF : OFF				Front panel	[↗],[↘]	0.35kHz	±0.05kHz
	2) Adj item : [Q.T_ _ _] → [Q.T._ _ _] Adjust : [***.] PTT : ON							
• Wide	3) Adj item : [QT_ _ _] Adjust : [***.] PTT : ON					0.75kHz	±0.10kHz	
14. DQT deviation adjust  • Narrow	1) Adj item : [DQT_ _] Adjust : [***.] Deviation meter filter LPF : 3kHz HPF : OFF					0.35kHz	±0.05kHz	
	2) Adj item : [D.QT_ _] → [D.Q.T._ _] Adjust : [***.] PTT : ON							
• Wide	3) Adj item : [DQT_ _] Adjust : [***.] PTT : ON					0.75kHz	±0.10kHz	
15. LTR deviation adjust  • Narrow	1) Adj item : [LTR_ _] Adjust : [***.] Deviation meter filter LPF : 3kHz HPF : OFF					0.75kHz	±0.10kHz	
	2) Adj item : [L.TR_ _] → [L.T.R._ _] Adjust : [***.] PTT : ON							
• Wide	3) Adj item : [LTR_ _] Adjust : [***.] PTT : ON					1.00kHz	±0.10kHz	

## ADJUSTMENT (TK-7182H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
16. DTMF deviation adjust • Narrow	1) Adj item : [DTMF_] Adjust : [***.] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON	Power meter	Rear panel	ANT	Front panel	[↗],[↘]	1.5kHz	±0.1kHz
	• Wide	2) Adj item : [DTMF_] Adjust : [***.] PTT : ON	Deviation meter Oscilloscope AG AF VTVM	Front panel	Modular MIC jack		3.0kHz	
17. MSK deviation adjust • Narrow	1) Adj item : [MSK_ _ _] Adjust : [**.] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						1.5kHz	±0.1kHz
	• Wide	2) Adj item : [MSK_ _ _] Adjust : [**] PTT : ON					3.0kHz	±0.1kHz
18. TONE deviation adjust • Narrow	1) Adj item : [TONE_] Adjust : [***.] Deviation meter filter LPF : 15kHz HPF : OFF PTT : ON						1.5kHz	±0.1kHz
	• Wide	2) Adj item : [TONE_] Adjust : [***] PTT : ON					3.0kHz	±0.1kHz

## Receiver Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Sensitivity adjust	1) Adj item : [SEN1_] Adjust : [***] 2) Adj item : [S.EN1_] → [S.E.N1_] → [S.E.N.1_] → [S.E.N.1_ _] → [S.E.N.1_ _] Adjust : [***]	SSG AF VTVM Oscilloscope	Rear panel	ANT EXT. SP	Front panel	[↗],[↘]	Enter the following adjustment values to the transceiver by pressing [↗] and [↘] keys. [S.EN1_] : 60 [S.E.N1_] : 88 [S.E.N.1_] : 109 [S.E.N.1_ _] : 159 [S.E.N.1_ _] : 192 After setting the adjustment value, press [B] key. The adjustment value will be stored in memory.	Note : After replacing the EEPROM (IC401) align sensitivity.

# TK-7180H/7182H

## ADJUSTMENT (TK-7182H)

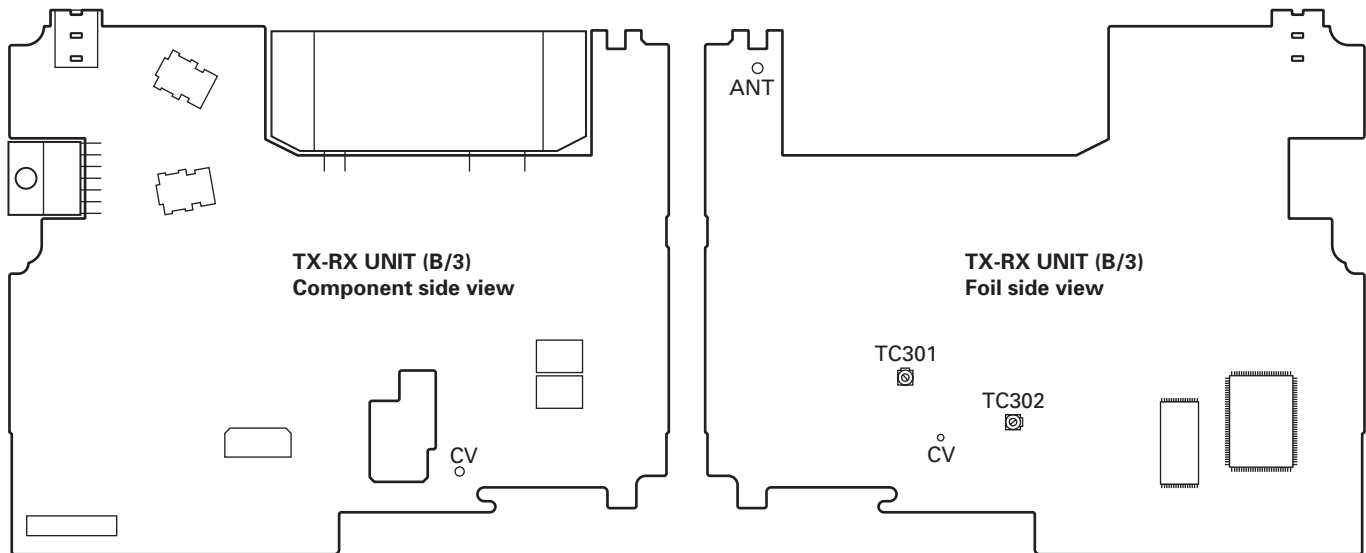
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. Sensitivity check	<b>[Panel test mode]</b> 1) CH-Sig : 1-1 SSG output Wide : -117dBm (0.32μV) (MOD : 1kHz±3kHz) Narrow : -116dBm (0.35μV) (MOD : 1kHz±1.5kHz)	SSG  AF VTVM Oscilloscope	Rear panel	ANT  EXT. SP			Check	12dB SINAD or more
3. Squelch (Preset) adjust • Narrow	1) Adj item : [SQL5_] Adjust : [***.] SSG output : 12dB SINAD level (MOD : 1kHz±1.5kHz)						After input signal from SSG, press [B] key. That numeric will be stored in memory.	After adjusting SQL, check SQL open/close. SSG 12dB SINAD level + 4dB : Open SSG 12dB SINAD level - 6dB : Close
	2) Adj item : [S.QL5_] → [S.Q.L.5_] → [S.Q.L.5_] Adjust : [***.]							
	• Wide							
	3) Adj item : [SQL5_] Adjust : [***.] SSG output : 12dB SINAD level (MOD : 1kHz±3.0kHz)							
4. Low RSSI adjust • Narrow	1) Adj item : [LRSI_] Adjust : [***.] SSG output : 12dB SINAD level (MOD : 1kHz±1.5kHz)						After input signal from SSG, press [B] key. That numeric will be stored in memory.	The following erroneous performance may occur if any irregular RSSI adjustment, such as pressing the [B] key assigned for determination when it is the ANT OPEN state, is performed. • Scan does not stop.
	2) Adj item : [L.RSI_] → [L.R.S.I_] → [L.R.S.I_] Adjust : [***.]							
	• Wide							
	3) Adj item : [LRSI_] Adjust : [***.] SSG output : 12dB SINAD level (MOD : 1kHz±3.0kHz)							
5. Squelch (Tight) adjust • Narrow	1) Adj item : [SQL9_] Adjust : [***.] SSG output : 12dB SINAD+5dB level (MOD : 1kHz±1.5kHz)						After input signal from SSG, press [B] key. That numeric will be stored in memory.	After adjusting SQL, check SQL open/close. SSG 12dB SINAD level +10dB : Open SSG 12dB SINAD level : Close
	2) Adj item : [S.QL9_] → [S.Q.L.9_] → [S.Q.L.9_] Adjust : [***.]							
	• Wide							
	3) Adj item : [SQL9_] Adjust : [***.] SSG output : 12dB SINAD+5dB level (MOD : 1kHz±3.0kHz)							
	4) Adj item : [S.QL9_] → [S.Q.L.9_] → [S.Q.L.9_] Adjust : [***.]							



## ADJUSTMENT (TK-7182H)

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. High RSSI adjust • Narrow	1) Adj item : [HRSI_] → Adjust : [***.] SSG output : -70dBm (MOD : 1kHz±1.5kHz)	SSG  AF VTVM Oscilloscope	Rear panel	ANT			After input signal from SSG, press [B] key. That numeric will be stored in memory.	The following erroneous performance may occur if any irregular RSSI adjustment, such as pressing the [B] key assigned for determination when it is the ANT OPEN state, is performed. • Scan does not stop.
	EXT. SP							
	2) Adj item : [H.RSI_] → [H.R.S.I_] → [H.R.S.I._] Adjust : [***.]							
	• Wide							
3) Adj item : [HRSI_] → Adjust : [***.] SSG output : -70dBm (MOD : 1kHz±3.0kHz)								
4) Adj item : [H.RSI_] → [H.R.S.I_] → [H.R.S.I._] Adjust : [***.]								

### Adjustment Points



## TERMINAL FUNCTION

## Display unit (X54-3480-10) : TK-7180H

Pin No.	Name	Description
<b>CN901 (to internal speaker)</b>		
1	GND	Ground
2	SPO	Speaker output
<b>CN902 (to TX-RX unit B/3 CN429)</b>		
1	SPO	Speaker input
2	SPO	Speaker input
3	SPO	Speaker input
4	SPO	Speaker input
5	SPO	Speaker input
6	SPO	Speaker input
7	GND	Ground
8	8C	8V input
9	SB	Power input of switched power supply
10	SB	Power input of switched power supply
11	NC	No connection
12	PSW	Detection signal output of power switch
13	GND	Ground
14	GND	Ground
15	MIC	MIC signal output
16	ME	MIC ground
17	GND	Ground.
18	PSENS	Detection signal output of display unit
19	RST2	Reset signal input
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	NC	No connection
24	SHIFT/MODEL	Control signal input of beat-shift function
25	NC	No connection
26	5C	5V output
27	TXD	Serial data signal input
28	RXD	Serial data signal output
29	GND	Ground
30	GND	Ground
<b>J901 (MIC jack)</b>		
1	BLC	MIC backlight control
2	SB	DC 13.6V±15%, 200mA typ.
3	E	Ground
4	PTT/TXD	PTT : PTT input, TXD : Serial data output

Pin No.	Name	Description
5	ME	MIC ground
6	MIC	MIC signal input
7	HOOK/RXD	HOOK : Hook detection, RXD : Serial data input
8	DM	MIC data detection

## Display unit (X54-3540-10) : TK-7182H

Pin No.	Name	Description
<b>CN901 (to internal speaker)</b>		
1	GND	Ground
2	SPO	Speaker output
<b>CN902 (to TX-RX unit B/3 CN429)</b>		
1	SPO	Speaker input
2	SPO	Speaker input
3	SPO	Speaker input
4	SPO	Speaker input
5	SPO	Speaker input
6	SPO	Speaker input
7	GND	Ground
8	8C	8V input
9	SB	Power input of switched power supply
10	SB	Power input of switched power supply
11	NC	No connection
12	PSW	Detection signal output of power switch
13	GND	Ground
14	GND	Ground
15	MIC	MIC signal output
16	ME	MIC ground
17	GND	Ground
18	PTT	PTT signal output
19	LCDCS	LCD driver chip enable signal input
20	LCDCLK	LCD driver clock signal input
21	LCDDI	LCD driver data input
22	LCDDO	LCD driver data output
23	GND	Ground
24	NC	No connection
25	NC	No connection
26	NC	No connection
27	TXD	Serial data signal input
28	RXD	Serial data signal output / Hook signal output
29	GND	Ground

# TERMINAL FUNCTION

Pin No.	Name	Description
30	DM	DTMF MIC data output
<b>J901 (MIC jack)</b>		
1	BLC	MIC backlight control
2	SB	DC 13.6V±15%, 200mA typ.
3	E	Ground
4	PTT/TXD	PTT : PTT input, TXD : Serial data output
5	ME	MIC ground
6	MIC	MIC signal input
7	HOOK/RXD	HOOK : Hook detection, RXD : Serial data input
8	DM	MIC data detection

## TX-RX unit (X57-6980-XX) (A/3)

Pin No.	Name	Description
<b>CN701 (to TX-RX unit B/3 CN427)</b>		
1	AUXIO6	AUX input/output 6
2	AUXIO7	AUX input/output 7
3	AUXIO1	AUX input/output 1
4	AUXIO2	AUX input/output 2
5	RXD2	Serial data output 2
6	AUXIO3	AUX input/output 3
7	TXD2	Serial data input 2
8	AUXIO4	AUX input/output 4
9	AUXIO8	AUX input/output 8
10	AUXIO5	AUX input/output 5
11	AUXIO9	AUX input/output 9
12	AUXO1	AUX input 1
13	TXD1	Serial data input 1
14	AUXO2	AUX input 2
15	RXD1	Serial data output 1
16	GND	Ground
17	ME	MIC ground
18	MI2	External MIC output
19	DEO	Detected signal input
20	GND	Ground
21	5C	5V
22	DI	Data signal output
23	AFO	RX filtered audio input
24	SB	Power input after power switch
25	SB	Power input after power switch

Pin No.	Name	Description
26	SB	Power input after power switch
27	SB	Power input after power switch
28	SB	Power input after power switch
29	SB	Power input after power switch
30	NC	No connection
<b>J701 (ACC 25-pin)</b>		
1	NC	No connection
2	RXD1	Serial data input 1. RS-232C level. Input voltage range : ±30V max. L≤0.4V, H≥2.4V, Zi≥5kΩ
3	TXD1	Serial data output 1. RS-232C level. L≤-5V, H≥5V/3kΩ load, Zo≤2kΩ
4	AUXI/O9	AUX input/output 9. Active low with 47kΩ pull-up to 5V
5	DI	Data signal input. 2.0Vp-p typ.
6	MI2	External MIC input (DC-coupled)
7	GND	Ground
8	AUXI/O8	AUX input/output 8. Same as AUXI/O9
9	TXD2	Serial data output 2. TTL level. L≤0.7V, H≥4.2V/25kΩ load, Zo≤1kΩ
10	RXD2	Serial data input 2. TTL level. Input voltage range : +5/0V max. L≤0.8V, H≥4.2V
11	GND	Ground
12	AUXI/O7	AUX input/output 7. Same as AUXI/O9
13	AUXI/O6	AUX input/output 6. Same as AUXI/O9
14	SB	Power output after power switch. DC13.6V±15%, 2.0A max.
15	AUXO2	AUX output 2. Open collector (500mA max.) (Default none) L≤0.3V
16	AUXO1	AUX output 1. Same as AUXO2
17	AFO	RX filtered audio output (DC-coupled). AF low level output. Wide : 700mVp-p typ. Narrow : 700mVp-p typ. (Standard modulation)
18	GND	Ground
19	DEO	Detected signal output (DC-coupled). 740mVp-p typ.
20	AUXI/O5	AUX input/output 5. Same as AUXI/O9

## TERMINAL FUNCTION

Pin No.	Name	Description
21	AUXI/O4	AUX input/output 4. Same as AUXI/O9
22	AUXI/O3	AUX input/output 3. Same as AUXI/O9
23	AUXI/O2	AUX input/output 2. Same as AUXI/O9
24	AUXI/O1	AUX input/output 1. Same as AUXI/O9
25	ME	MIC ground

## TX-RX unit (X57-6980-XX) (B/3)

Pin No.	Name	Description
<b>CN301 (to TX-RX unit C/3)</b>		
1	REF	Reference signal output to the PLL IC
2	Fin	Complementary signal output to the PLL IC
3	CPGND	Ground
4	5C	5V output
5	GND	Ground
6	CP	Signal input from charge pump block in the PLL IC
<b>CN302 (to TX-RX unit C/3)</b>		
1	UL	Control signal input form the PLL IC
2	PLE	Control signal output to the PLL IC
3	DT	Control signal output to the PLL IC
4	PCK	Control signal output to the PLL IC
5	GND	Ground
6	DGND	Ground
<b>CN403 (to VGS-1) : TK-7180H</b>		
1	OPT1	VGS busy signal input. Option board I/F 1. Output : L≤0.45V, H≥4.7V/25kΩ load Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
2	OPT3	VGS playback signal input. Option board I/F 3. Output : L≤0.45V, H≥4.7V/25kΩ load Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
3	RXD1	Serial data input. Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
4	TXD1	Serial data output / PTT singanl output (SC20-460). Output : L≤0.45V, H≥4.7V/25kΩ load
5	CLK	Serial clock output
6	OPT4	VGS enable output. Option board I/F 4. Output : L≤0.45V, H≥4.7V/25kΩ load
7	USEL	UART speed select output. L : 19200bps fixed
8	OPT5	VGS reset signal output. Option board I/F 5. Output : L≤0.45V, H≥4.7V/25kΩ load

Pin No.	Name	Description
9	DGND	Ground
10	AGND	Ground
11	AI	VGS audio input. Zin≥10kΩ, 1Vp-p max, Input Voltage : 0V~5.0V
12	AO	VGS audio output. Zo≤10kΩ
13	AGND	Ground
14	5E	5V power supply output. 78mA max
15	STON	Side tone input. 1kHz, 5Vp-p
16	DTI	Data signal input. Zin≥22kΩ, 600±200mVp-p
17	TCTL	Speaker mute signal input. Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
18	NC	No connection
19	AUDIH	MIC mute signal input
20	OPT2	Option board I/F 2. Output : L≤0.45V, H≥4.7V/25kΩ load Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
21	TXO	MIC signal output (AC coupled) before pre-emphasis. Zo>2.2kΩ, 130±50mVp-p typ.
22	RXEO	Audio signal output (DC coupled) after de-emphasis. Zo>30kΩ, 1±0.3Vp-p typ.
23	RXEI	Audio signal input (DC coupled) after de-emphasis. Zin>15kΩ, 1±0.3Vp-p typ.
24	TXI	MIC signal input (AC coupled) before pre-emphasis. Zin>22kΩ, 500±50mVp-p typ.
25	OPT6	Option board I/F 6. Output : L≤0.45V, H≥4.7V/25kΩ load
26	8C	Power input after power switch. 8.0V typ, 100mA max
<b>CN403 (to Option board) : TK-7182H</b>		
1	OPT1	Option board I/F 1. Output : L≤0.45V, H≥4.7V/25kΩ load Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
2	OPT3	Option board I/F 3. Output : L≤0.45V, H≥4.7V/25kΩ load Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
3	RXD1	Serial data input. Input : L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
4	TXD1	Serial data output / PTT output (Scrambler board) Output : L≤0.45V, H≥4.7V/25kΩ load

# TERMINAL FUNCTION

Pin No.	Name	Description
5	CLK	Serial clock output
6	OPT4	Option board I/F 4. Output : $L \leq 0.45V$ , $H \geq 4.7V/25k\Omega$ load
7	USEL	UART speed select output. L : 19200bps fixed
8	OPT5	Option board I/F 5. Output : $L \leq 0.45V$ , $H \geq 4.7V/25k\Omega$ load
9	DGND	Ground
10	AGND	Ground
11	AI	Audio input. $Z_{in} \geq 10k\Omega$ , 1Vp-p max, Input Voltage : 0V~5.0V
12	AO	Audio output. $Z_o \leq 10k\Omega$
13	AGND	Ground
14	5E	5V power supply output. 78mA max
15	STON	Side tone input. 1kHz, 5Vp-p
16	DTI	Data signal input. $Z_{in} \geq 22k\Omega$ , $600 \pm 200mVp-p$
17	TCTL	Speaker mute signal input. Input : $L \leq 1.0V$ , $H \geq 4.0V$ , Input voltage : 0V~5.0V
18	NC	No connection
19	AUDIH	MIC mute signal input
20	OPT2	Option board I/F 2. Output : $L \leq 0.45V$ , $H \geq 4.7V/25k\Omega$ load Input : $L \leq 1.0V$ , $H \geq 4.0V$ , Input voltage : 0V~5.0V
21	TXO	MIC signal output (AC coupled) before pre-emphasis. $Z_o > 2.2k\Omega$ , $130 \pm 50mVp-p$ typ.
22	RXEO	Audio signal output (DC coupled) after de-emphasis. $Z_o > 30k\Omega$ , $1 \pm 0.3Vp-p$ typ.
23	RXEI	Audio signal input (DC coupled) after de-emphasis. $Z_{in} > 15k\Omega$ , $1 \pm 0.3Vp-p$ typ.
24	TXI	MIC signal input (AC coupled) before pre-emphasis. $Z_{in} > 22k\Omega$ , $500 \pm 50mVp-p$ typ.
25	OPT6	Option board I/F 6. Output : $L \leq 0.45V$ , $H \geq 4.7V/25k\Omega$ load
26	8C	Power input after power switch. 8.0V typ, 100mA max
<b>CN427 (to TX-RX unit A/3 CN701)</b>		
1	NC	No connection
2	SB	Power output after power switch
3	SB	Power output after power switch
4	SB	Power output after power switch

Pin No.	Name	Description
5	SB	Power output after power switch
6	SB	Power output after power switch
7	SB	Power output after power switch
8	AFO	RX filtered audio output
9	DI	Data signal input
10	5C	5V
11	GND	Ground
12	DEO	Detected signal output
13	MI2	External MIC input
14	ME	MIC ground
15	GND	Ground
16	RXD1	Serial data input 1
17	AUXO2	AUX output 2
18	TXD1	Serial data output 1
19	AUXO1	AUX output 1
20	AUXIO9	AUX input/output 9
21	AUXIO5	AUX input/output 5
22	AUXIO8	AUX input/output 8
23	AUXIO4	AUX input/output 4
24	TXD2	Serial data output 2
25	AUXIO3	AUX input/output 3
26	RXD2	Serial data input 2
27	AUXIO2	AUX input/output 2
28	AUXIO1	AUX input/output 1
29	AUXIO7	AUX input/output 7
30	AUXIO6	AUX input/output 6
<b>CN428</b>		
1	SB	Power output of switched power supply
2	SPI	Speaker output
3	SPO	Speaker input
4	PA	Control signal output of PA function
5	HOR	Control signal output of Horn alert function
6	GND	Ground
<b>CN429 (to Display unit CN902) : TK-7180H</b>		
1	(DM)	Reserve
2	GND	Ground
3	RXD	Serial data signal input
4	TXD	Serial data signal output
5	NC	No connection
6	5C	5V output

## TERMINAL FUNCTION

Pin No.	Name	Description
7	SHIFT/MODEL	Control signal output of beat-shift function
8	(CLK)	Reserve
9	(LCDDO)	Reserve
10	(LCDDI)	Reserve
11	(LCDRST)	Reserve
12	RST2	Reset signal output
13	PSENS	Detection signal input of display unit
14	GND	Ground
15	ME	MIC ground
16	MIC	MIC signal input
17	GND	Ground
18	GND	Ground
19	PSW	Detection signal input of power switch
20	NC	No connection
21	SB	Power output of switched power supply
22	SB	Power output of switched power supply
23	8C	8V output
24	GND	Ground
25	SPO	Speaker output
26	SPO	Speaker output
27	SPO	Speaker output
28	SPO	Speaker output
29	SPO	Speaker output
30	SPO	Speaker output
<b>CN429 (to Display unit CN902) : TK-7182H</b>		
1	DM	DTMF MIC data input
2	GND	Ground
3	RXD	Serial data signal input / Hook signal input
4	TXD	Serial data signal output
5	NC	No connection
6	5C	5V output
7	SHIFT/MODEL	Not used
8	GND	Ground
9	LCDDO	LCD driver data input
10	LCDDI	LCD driver data output
11	LCDCLK	LCD driver clock signal output
12	LCDCS	LCD driver chip enable signal output
13	PTT	PTT signal input
14	GND	Ground
15	ME	MIC ground

Pin No.	Name	Description
16	MIC	MIC signal input
17	GND	Ground
18	GND	Ground
19	PSW	Detection signal input of power switch
20	NC	No connection
21	SB	Power output of switched power supply
22	SB	Power output of switched power supply
23	8C	8V output
24	GND	Ground
25	SPO	Speaker output
26	SPO	Speaker output
27	SPO	Speaker output
28	SPO	Speaker output
29	SPO	Speaker output
30	SPO	Speaker output
<b>CN804</b>		
1	IGN	Ignition sense input
2	GND	Ground

### Solder Land

Name	Description
<b>to ANI board</b>	
GND (A-)	Ground
OPT1 (CH BUSY)	TX sense signal output. Conv. L : TX, H : Not TX LTR L : Link complete, H : Not link complete L≤0.45V, H≥4.7V/25kΩ load
OPT3 (KEY)	TX control signal input. Active low. L≤1.0V, H≥ 4.0V, Input voltage 0V~5.0V
OPT4 (PTT)	PTT signal output. L : TX, H : Not TX L≤0.45V, H≥4.7V/25kΩ load
OPT5 (EMERGENCY)	Emergency signal output. L : Emergency function is operated, H : Emergency function is not operated L≤0.45V, H≥4.7V/25kΩ load
5E (A+)	5V power supply (78mA max.).
DTI (DATA OUT)	Data signal input. Zin>22kΩ, 600±200mVp-p (Standard modulation)
TCTL (TONE CTRL)	Speaker mute signal input. H : Unmute L≤0.8V, H≥4.2V, Input voltage : 0V~5.0V

## TERMINAL FUNCTION

Name	Description
AUDI <sub>H</sub> (AUDIO INHIB)	MIC mute signal input. L : Mute
OPT2 (AUX I/O)	Emergency signal input. Active low. L≤1.0V, H≥4.0V, Input voltage 0V~5.0V
STON (SIDE TONE)	Side tone input. 1kHz, 5Vp-p
<b>to Scrambler board</b>	
GND (GND)	Ground
TXD1 (PTT)	PTT signal output. L : TX, H : Not TX L≤0.45V, H≥4.7V/25kΩ load (PTT signal input) Active low. L≤1.0V, H≥4.0V, Input voltage : 0V~5.0V
OPT1 (CODE SELECT1)	Scramble code signal output 1. L≤0.45V, H≥4.7V/25kΩ load
OPT3 (CODE SELECT2)	Scramble code signal output 2. L≤0.45V, H≥4.7V/25kΩ load
OPT4 (ECHO PTT)	Echo PTT signal output. L : TX, H : Not TX L≤0.45V, H≥4.7V/25kΩ load
OPT5 (CODE SELECT8)	Scramble code signal output 4. L≤0.45V, H≥4.7V/25kΩ load
TXO (TX OUT)	MIC signal output (AC coupled) before pre-emphasis. Z <sub>o</sub> >2.2kΩ, 130±50mVp-p typ. (Standard modulation)

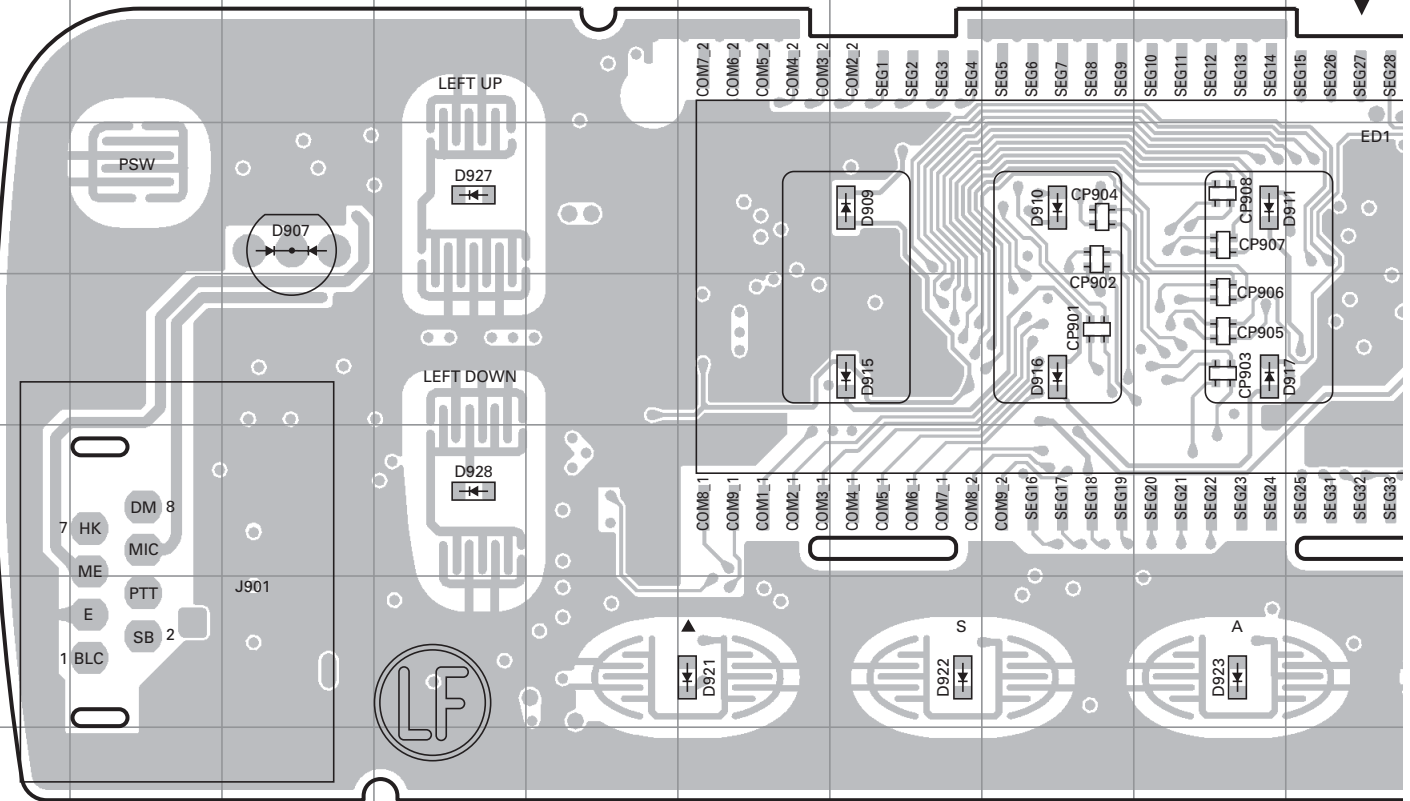
Name	Description
OPT2 (SCRAMBLE)	Scrambler control signal output. L : ON, H : OFF. L≤0.45V, H≥4.7V/25kΩ load
RXE <sub>O</sub> (RX OUT)	Audio signal output (DC coupled) after de-emphasis. Z <sub>o</sub> >30kΩ, 1±0.3Vp-p typ. (Standard modulation)
TXI (TX IN)	MIC signal input (AC coupled) before pre-emphasis. Z <sub>in</sub> >2.2kΩ, 130±50mVp-p typ. (Standard modulation)
RXE <sub>I</sub> (RX IN)	Audio signal input (DC coupled) after de-emphasis. Z <sub>in</sub> >15kΩ, 1±0.3Vp-p typ. (Standard modulation)
OPT6 (CODE SELECT4)	Scramble code signal output 3. L≤0.45V, H≥4.7V/25kΩ load
8C (+V)	8V AVR output. 8.0V typ, 100mA max.
<b>to GPS receiver</b>	
GND (GND)	Ground
RXD1*1 (DATA OUT1)	Data output
RXD2*1 (DATA OUT1)	Data output
5E (+5V)	5V

\*1 : Depending on the connected optional accessory, the DATA OUT1 may connect to either RXD1 or RXD2.

# TK-7180H/7182H PC BOARD

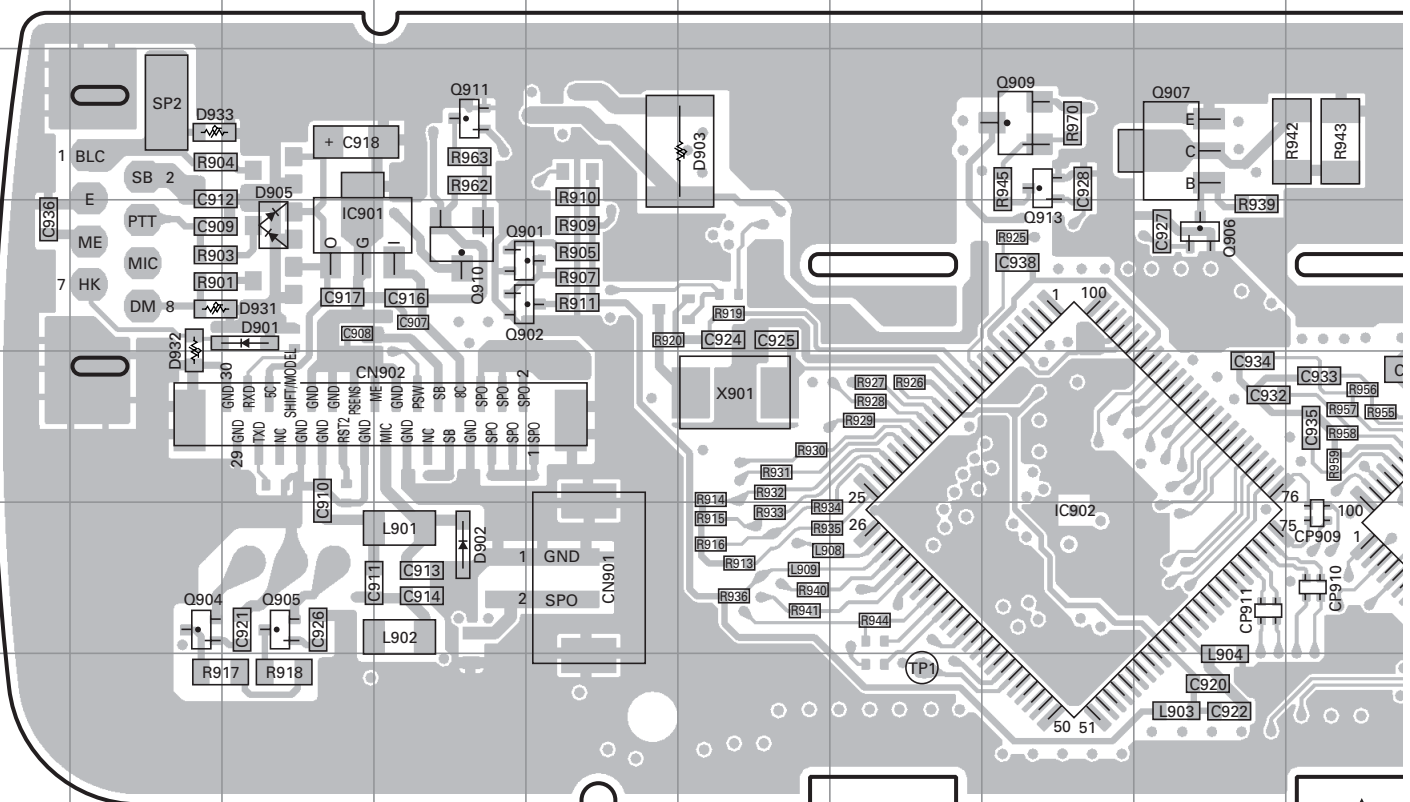
DISPLAY UNIT (X54-3480-10) : TK-7180H

Component side view (J72-0932-19)



DISPLAY UNIT (X54-3480-10) : TK-7180H

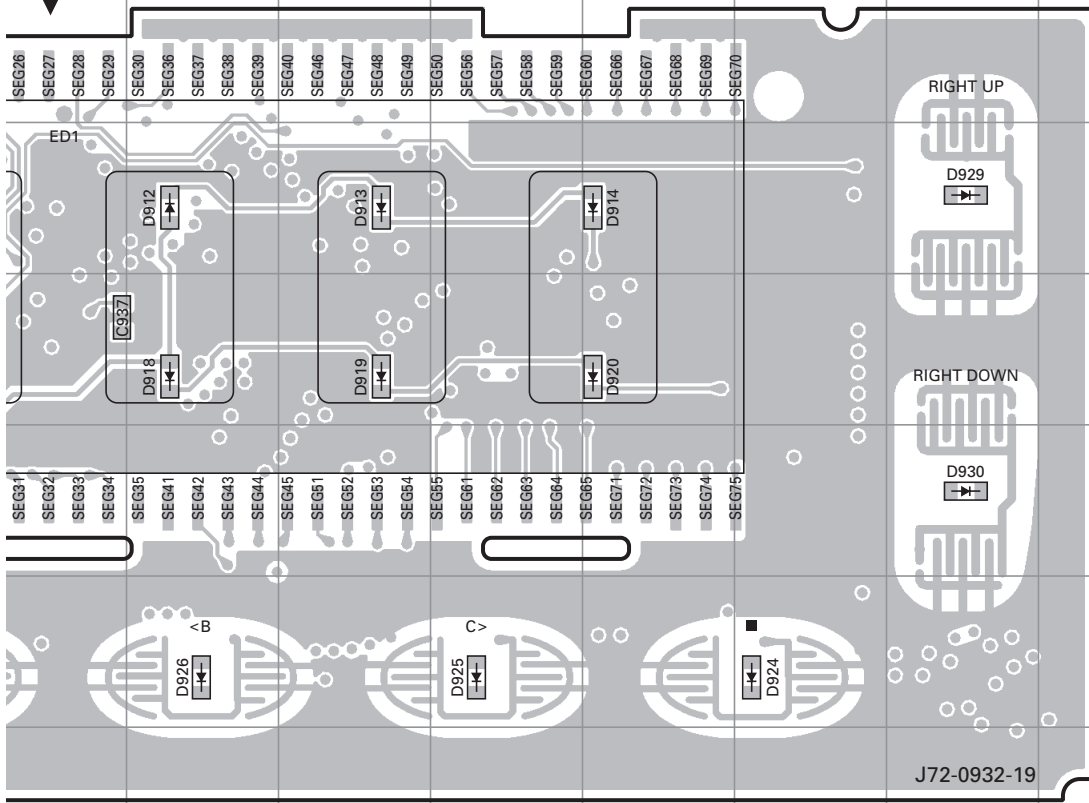
Foil side view (J72-0932-19)



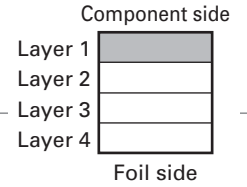


# PC BOARD TK-7180H/7182H

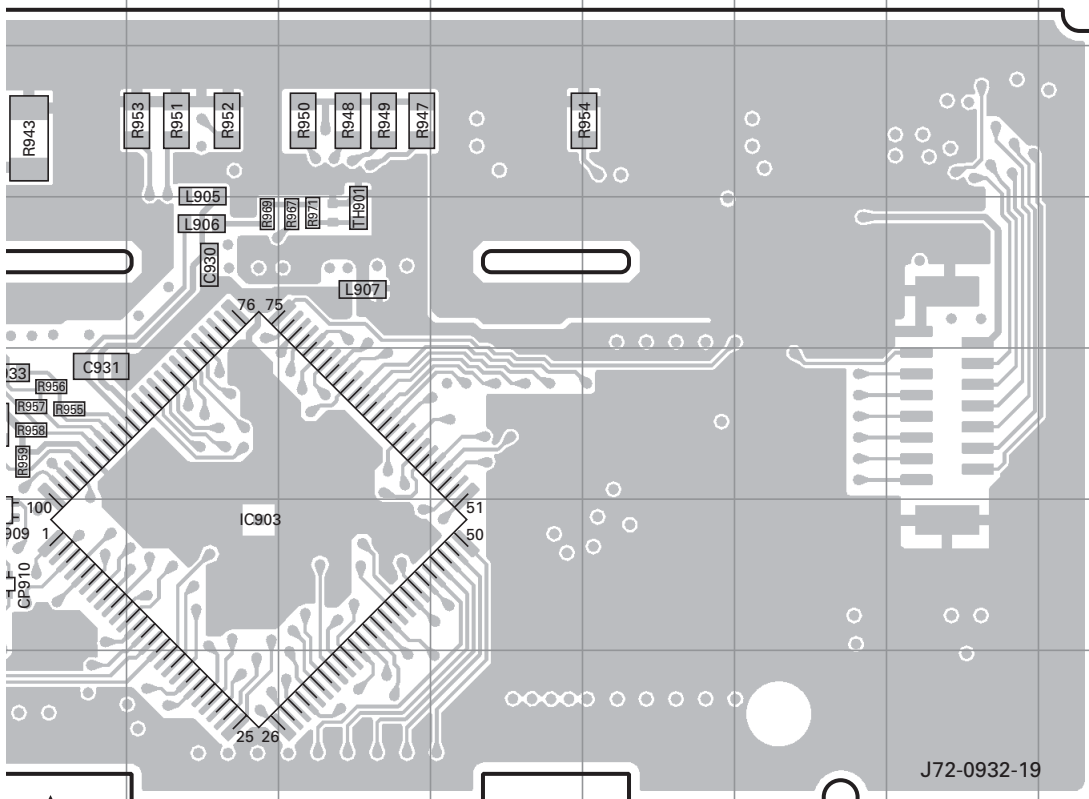
## DISPLAY UNIT (X54-3480-10) : TK-7180H Component side view (J72-0932-19)



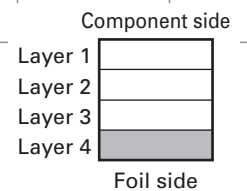
Ref. No.	Address	Ref. No.	Address
D907	3C	D920	4N
D909	3G	D921	6F
D910	3H	D922	6G
D911	3I	D923	6I
D912	3K	D924	6O
D913	3L	D925	6M
D914	3N	D926	6K
D915	4G	D927	3D
D916	4H	D928	5D
D917	4I	D929	3P
D918	4K	D930	5P
D919	4L		



## DISPLAY UNIT (X54-3480-10) : TK-7180H Foil side view (J72-0932-19)

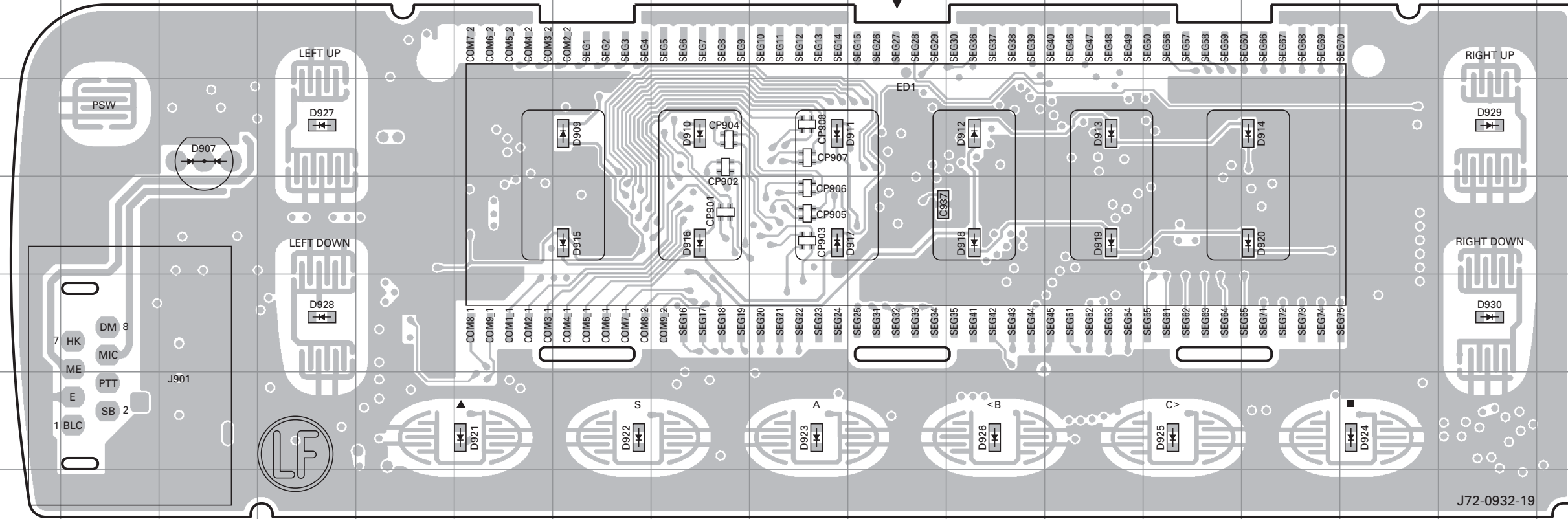


Ref. No.	Address	Ref. No.	Address
IC901	10C	Q910	10D
IC902	12H	Q911	9D
IC903	12K	Q913	9H
Q901	10D	D901	10C
Q902	10D	D902	12D
Q904	12B	D903	9F
Q905	12C	D905	10C
Q906	10I	D931	10B
Q907	9I	D932	10B
Q909	9H	D933	9B



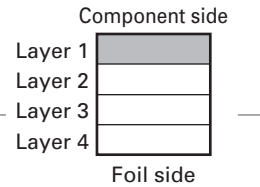
# TK-7180H/7182H PC BOARD

DISPLAY UNIT (X54-3480-10) : TK-7180H  
Component side view (J72-0932-19)

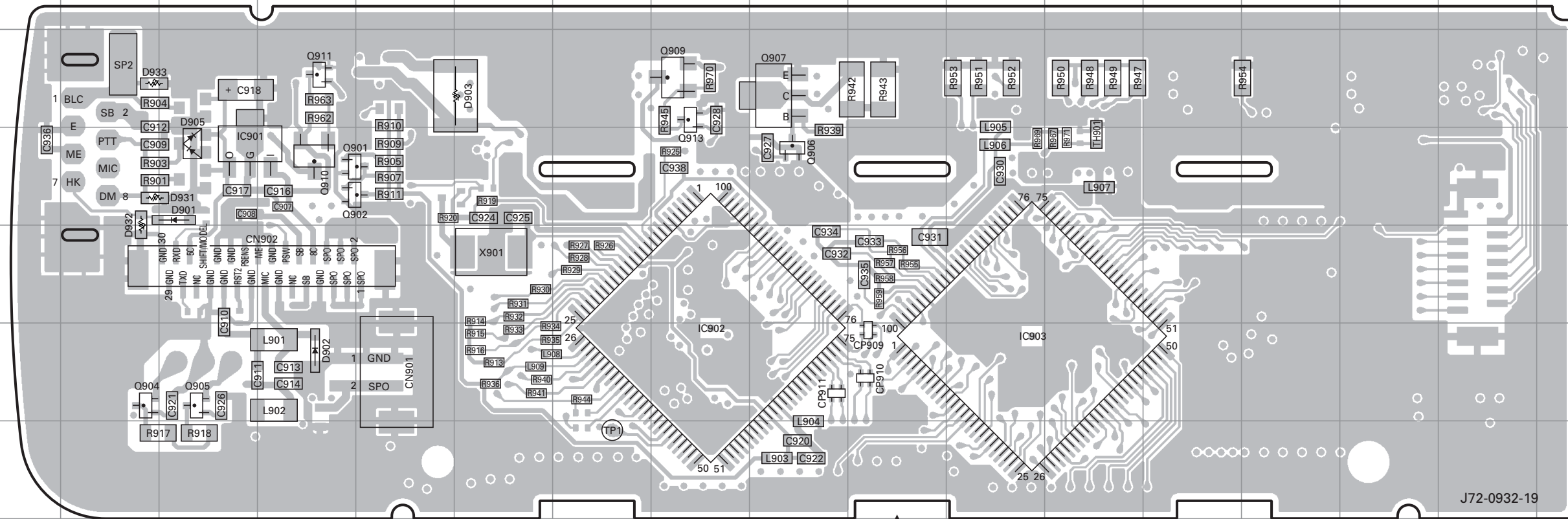


DISPLAY UNIT (X54-3480-10) : TK-7180H  
Component side view (J72-0932-19)

Ref. No.	Address	Ref. No.	Address
D907	3C	D920	4N
D909	3G	D921	6F
D910	3H	D922	6G
D911	3I	D923	6I
D912	3K	D924	6O
D913	3L	D925	6M
D914	3N	D926	6K
D915	4G	D927	3D
D916	4H	D928	5D
D917	4I	D929	3P
D918	4K	D930	5P
D919	4L		

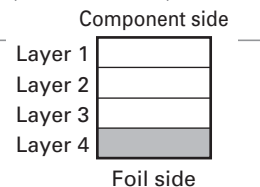


DISPLAY UNIT (X54-3480-10) : TK-7180H  
Foil side view (J72-0932-19)



DISPLAY UNIT (X54-3480-10) : TK-7180H  
Foil side view (J72-0932-19)

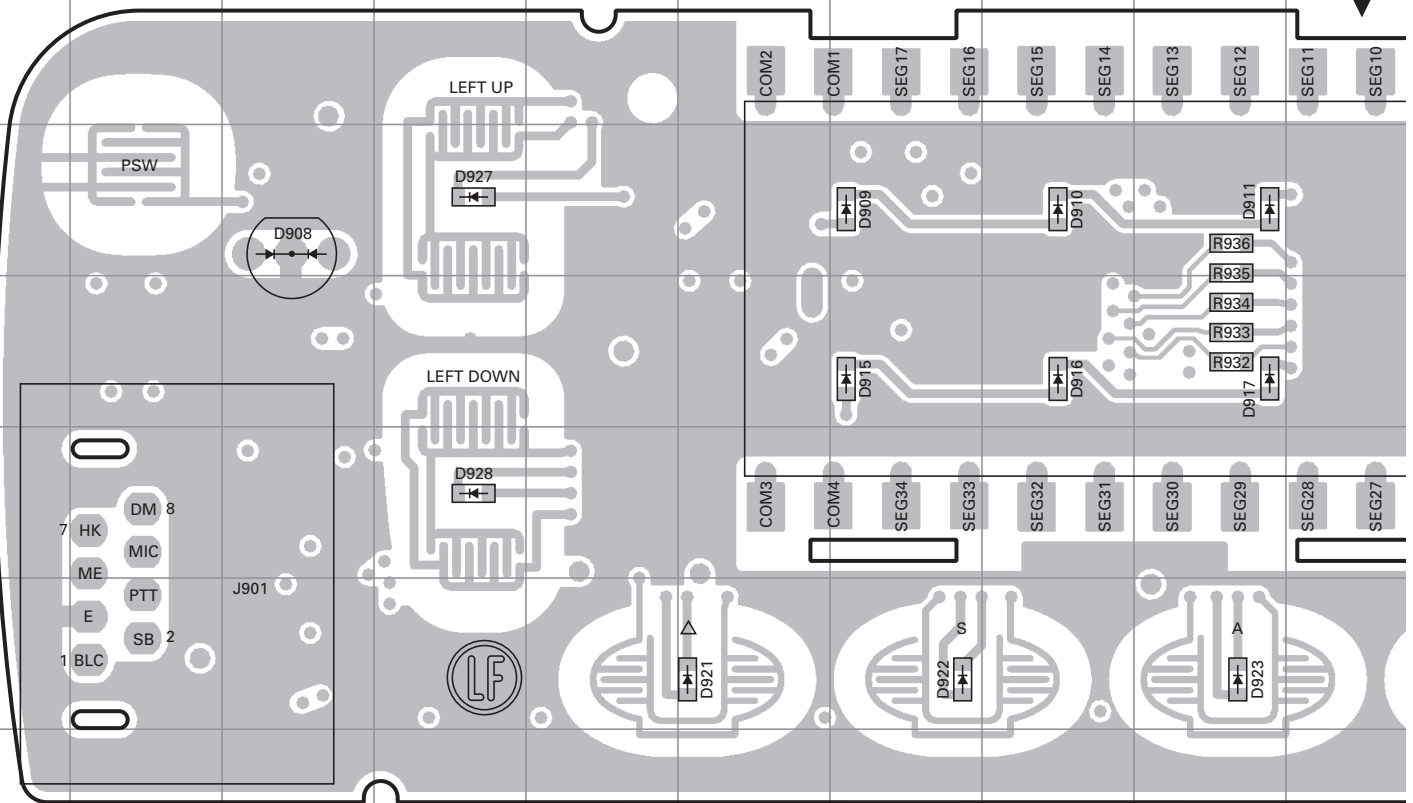
Ref. No.	Address	Ref. No.	Address
IC901	10C	Q910	10D
IC902	12H	Q911	9D
IC903	12K	Q913	9H
Q901	10D	D901	10C
Q902	10D	D902	12D
Q904	12B	D903	9F
Q905	12C	D905	10C
Q906	10I	D931	10B
Q907	9I	D932	10B
Q909	9H	D933	9B



# TK-7180H/7182H PC BOARD

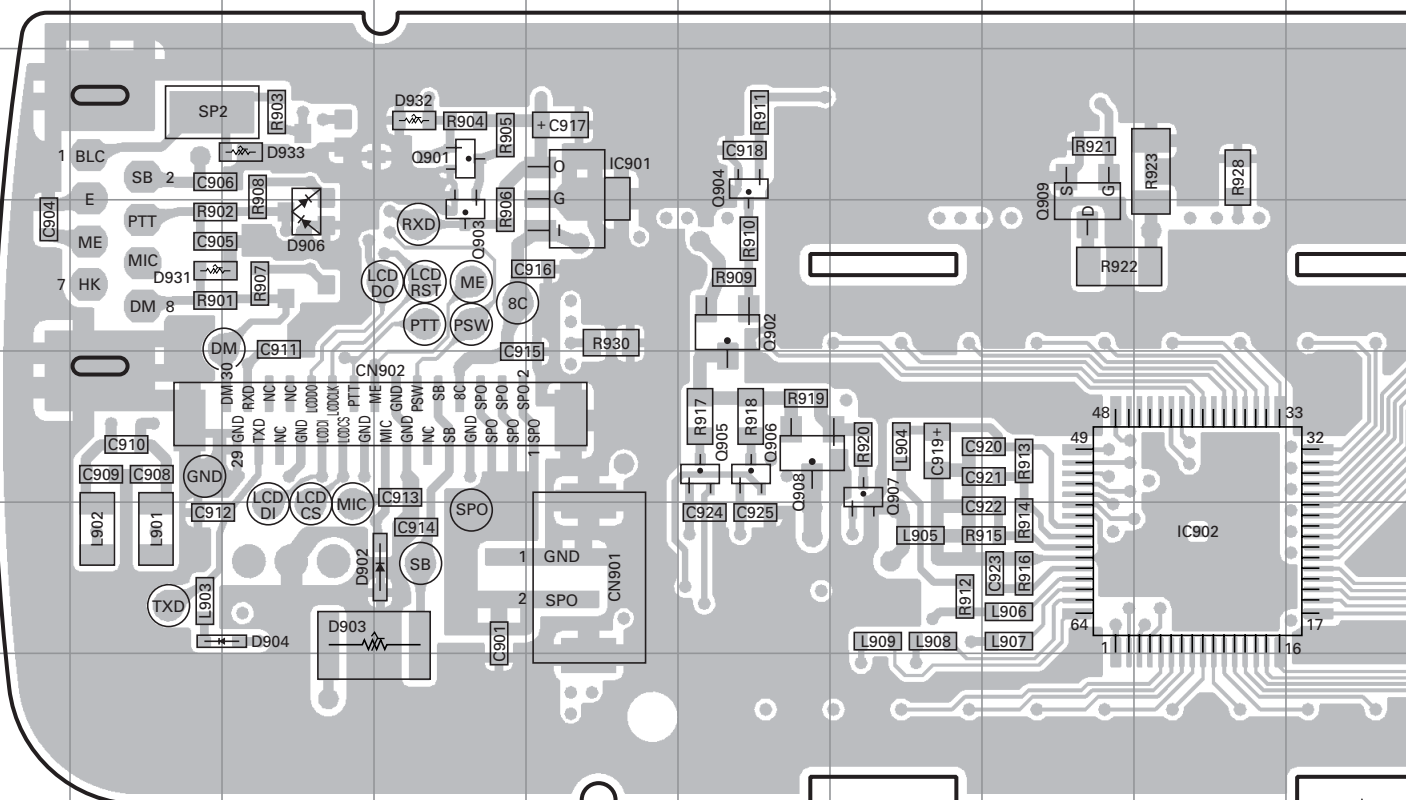
DISPLAY UNIT (X54-3540-10) : TK-7182H

Component side view (J79-0001-09)



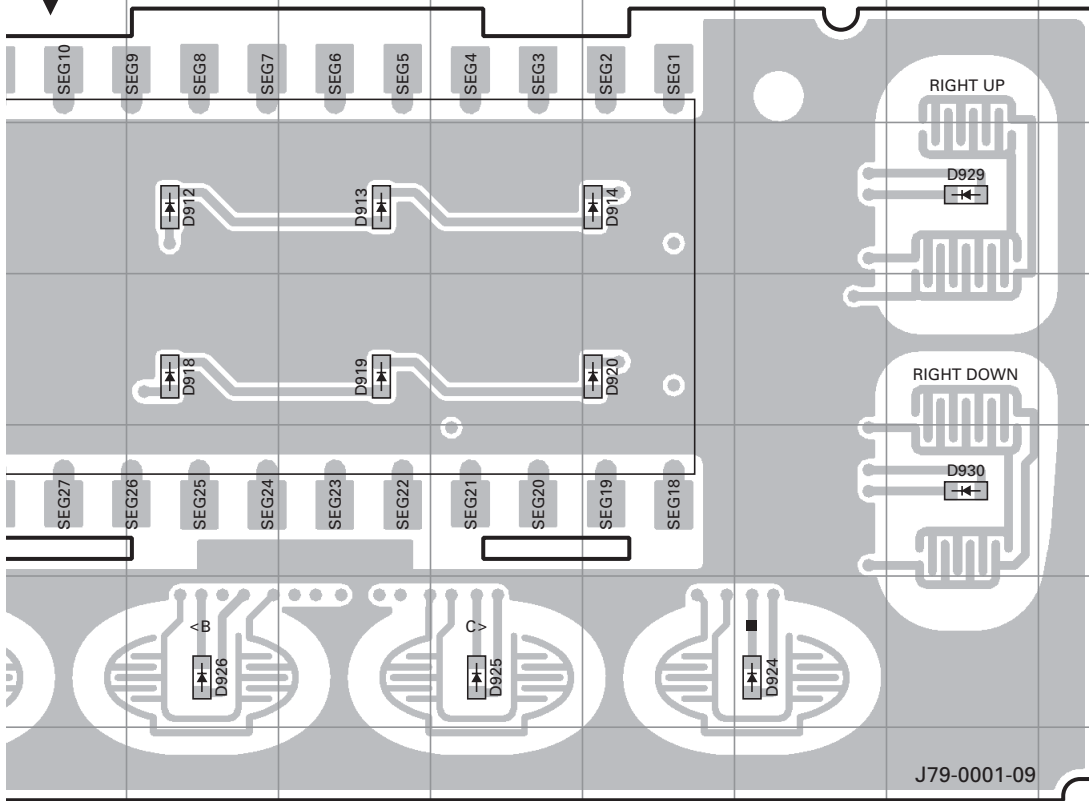
DISPLAY UNIT (X54-3540-10) : TK-7182H

Foil side view (J79-0001-09)

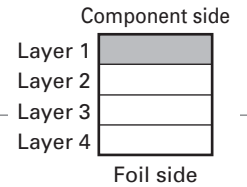


# PC BOARD TK-7180H/7182H

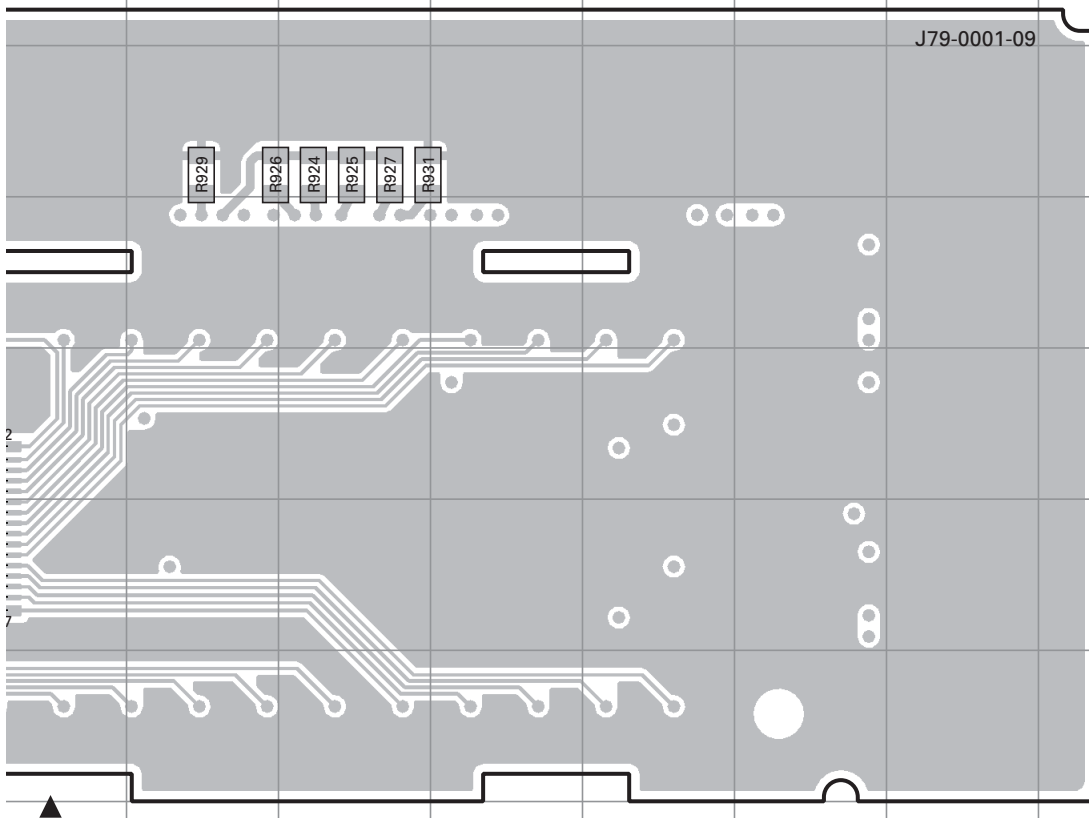
## DISPLAY UNIT (X54-3540-10) : TK-7182H Component side view (J79-0001-09)



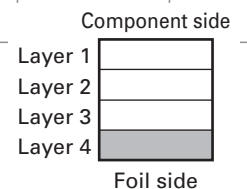
Ref. No.	Address	Ref. No.	Address
D908	3C	D920	4N
D909	3G	D921	6F
D910	3H	D922	6G
D911	3I	D923	6I
D912	3K	D924	6O
D913	3L	D925	6M
D914	3N	D926	6K
D915	4G	D927	3D
D916	4H	D928	5D
D917	4I	D929	3P
D918	4K	D930	5P
D919	4L		



## DISPLAY UNIT (X54-3540-10) : TK-7182H Foil side view (J79-0001-09)

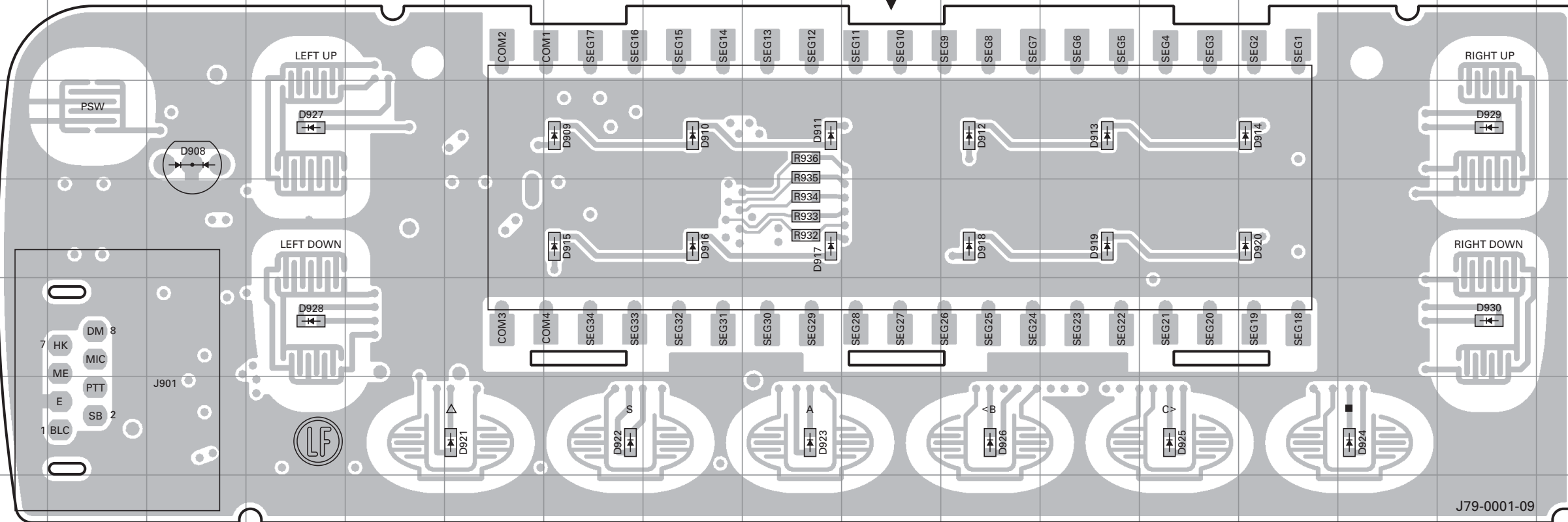


Ref. No.	Address	Ref. No.	Address
IC901	9E	Q908	11F
IC902	12I	Q909	10H
Q901	9D	D902	12D
Q902	10F	D903	12C
Q903	10D	D904	12C
Q904	9F	D906	10C
Q905	11F	D931	10B
Q906	11F	D932	9D
Q907	11G	D933	9C

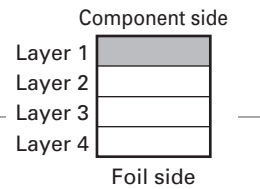


# TK-7180H/7182H PC BOARD

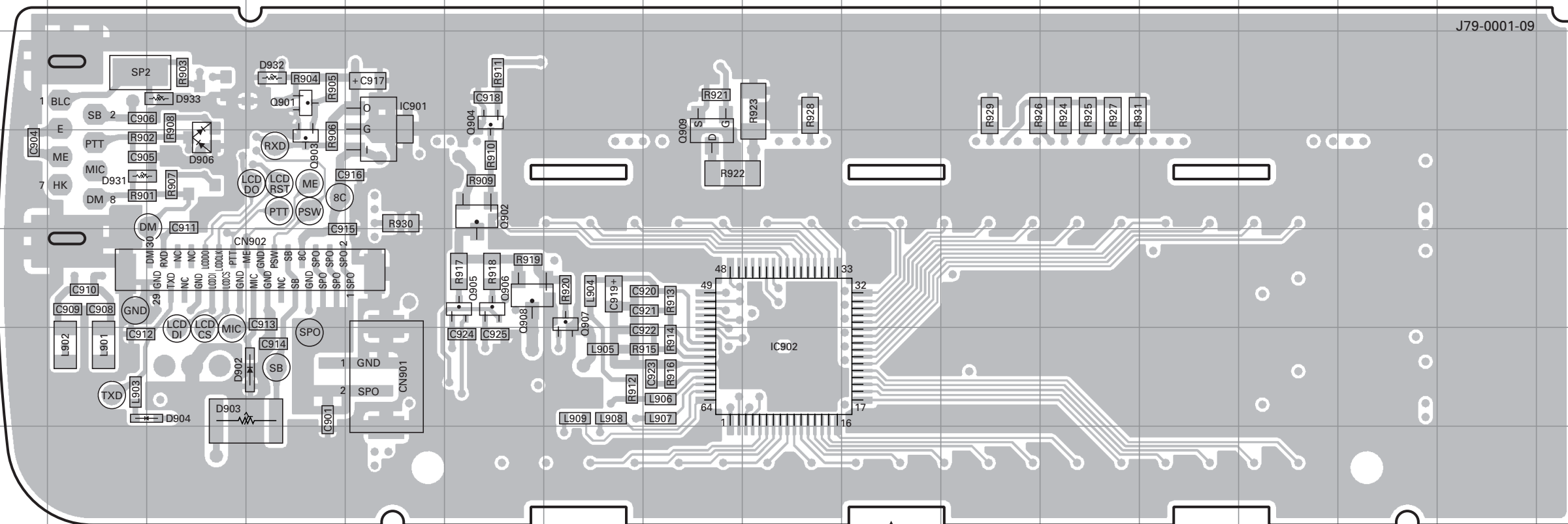
DISPLAY UNIT (X54-3540-10) : TK-7182H  
Component side view (J79-0001-09)



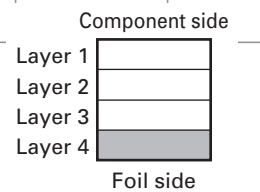
Ref. No.	Address	Ref. No.	Address
D908	3C	D920	4N
D909	3G	D921	6F
D910	3H	D922	6G
D911	3I	D923	6I
D912	3K	D924	6O
D913	3L	D925	6M
D914	3N	D926	6K
D915	4G	D927	3D
D916	4H	D928	5D
D917	4I	D929	3P
D918	4K	D930	5P
D919	4L		



DISPLAY UNIT (X54-3540-10) : TK-7182H  
Foil side view (J79-0001-09)



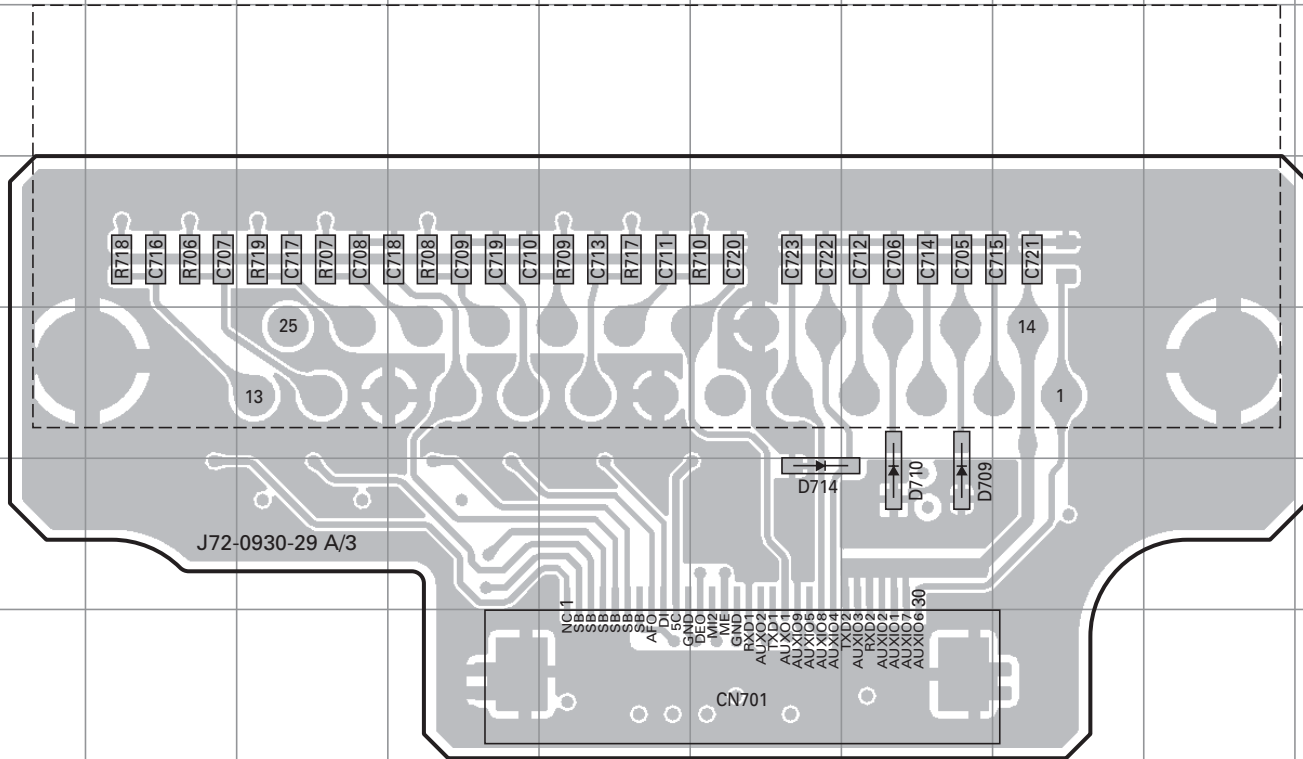
Ref. No.	Address	Ref. No.	Address
IC901	9E	Q908	11F
IC902	12I	Q909	10H
Q901	9D	D902	12D
Q902	10F	D903	12C
Q903	10D	D904	12C
Q904	9F	D906	10C
Q905	11F	D931	10B
Q906	11F	D932	9D
Q907	11G	D933	9C



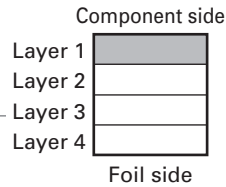


# TK-7180H/7182H PC BOARD

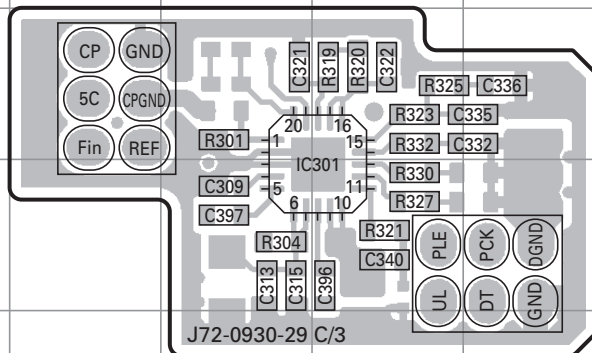
**TX-RX UNIT (X57-6980-XX) (A/3) -12 : TK-7180H(K) -13 : TK-7182H(K)**  
**Component side view (J72-0930-29 A/3)**



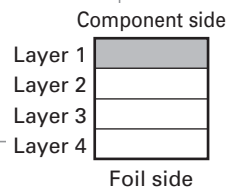
Ref. No.	Address
D709	6G
D710	6G
D714	6F



**TX-RX UNIT (X57-6980-XX) (C/3)**  
**-12 : TK-7180H(K) -13 : TK-7182H(K)**  
**Component side view (J72-0930-29 C/3)**

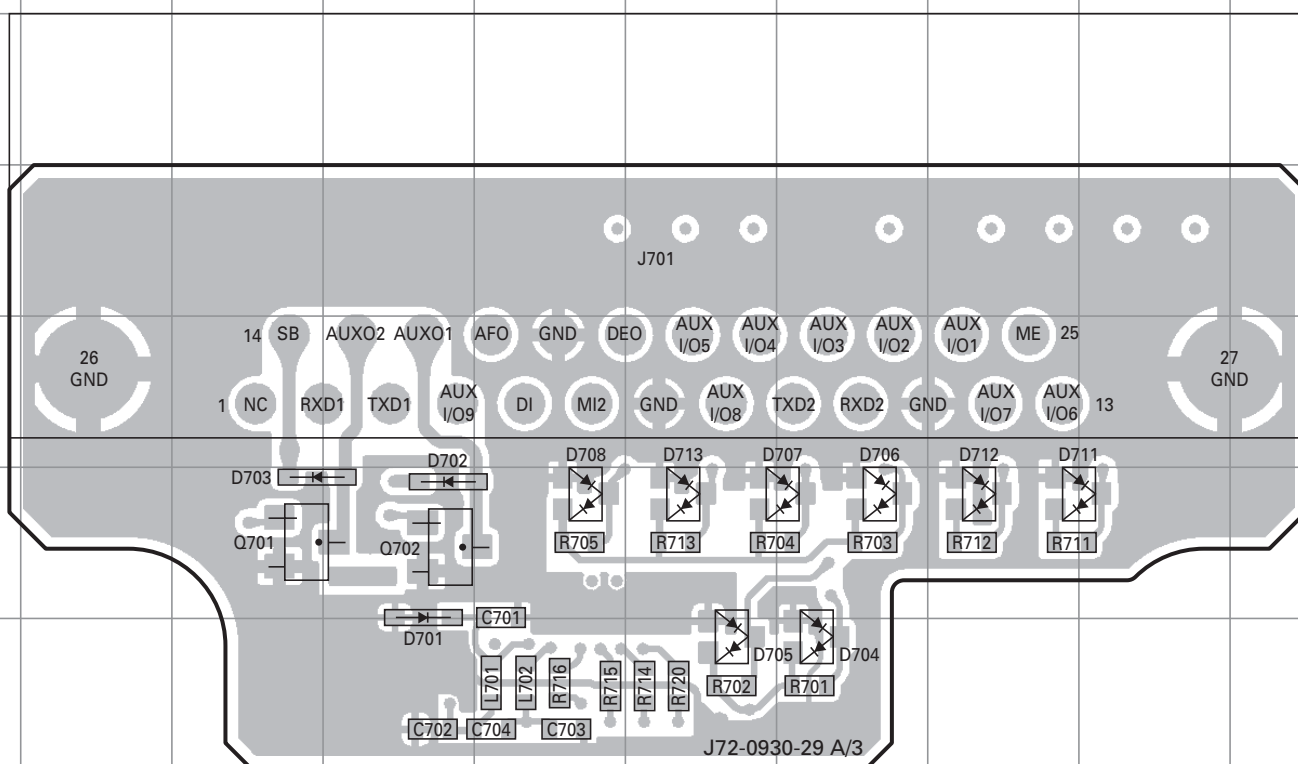


Ref. No.	Address
IC301	12E

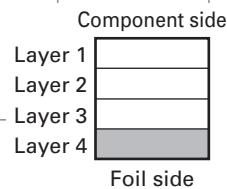


# PC BOARD TK-7180H/7182H

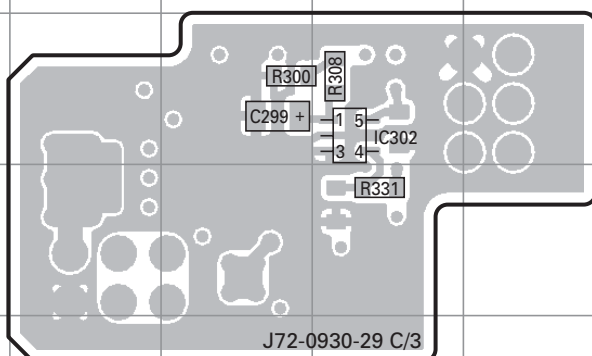
## TX-RX UNIT (X57-6980-XX) (A/3) -12 : TK-7180H(K) -13 : TK-7182H(K) Foil side view (J72-0930-29 A/3)



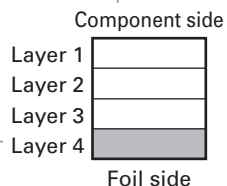
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q701	6C	D704	7G	D711	6H
Q702	6D	D705	7F	D712	6H
D701	7D	D706	6G	D713	6F
D702	6D	D707	6G		
D703	6C	D708	6E		



## TX-RX UNIT (X57-6980-XX) (C/3) -12 : TK-7180H(K) -13 : TK-7182H(K) Foil side view (J72-0930-29 C/3)



Ref. No.	Address
IC302	11E

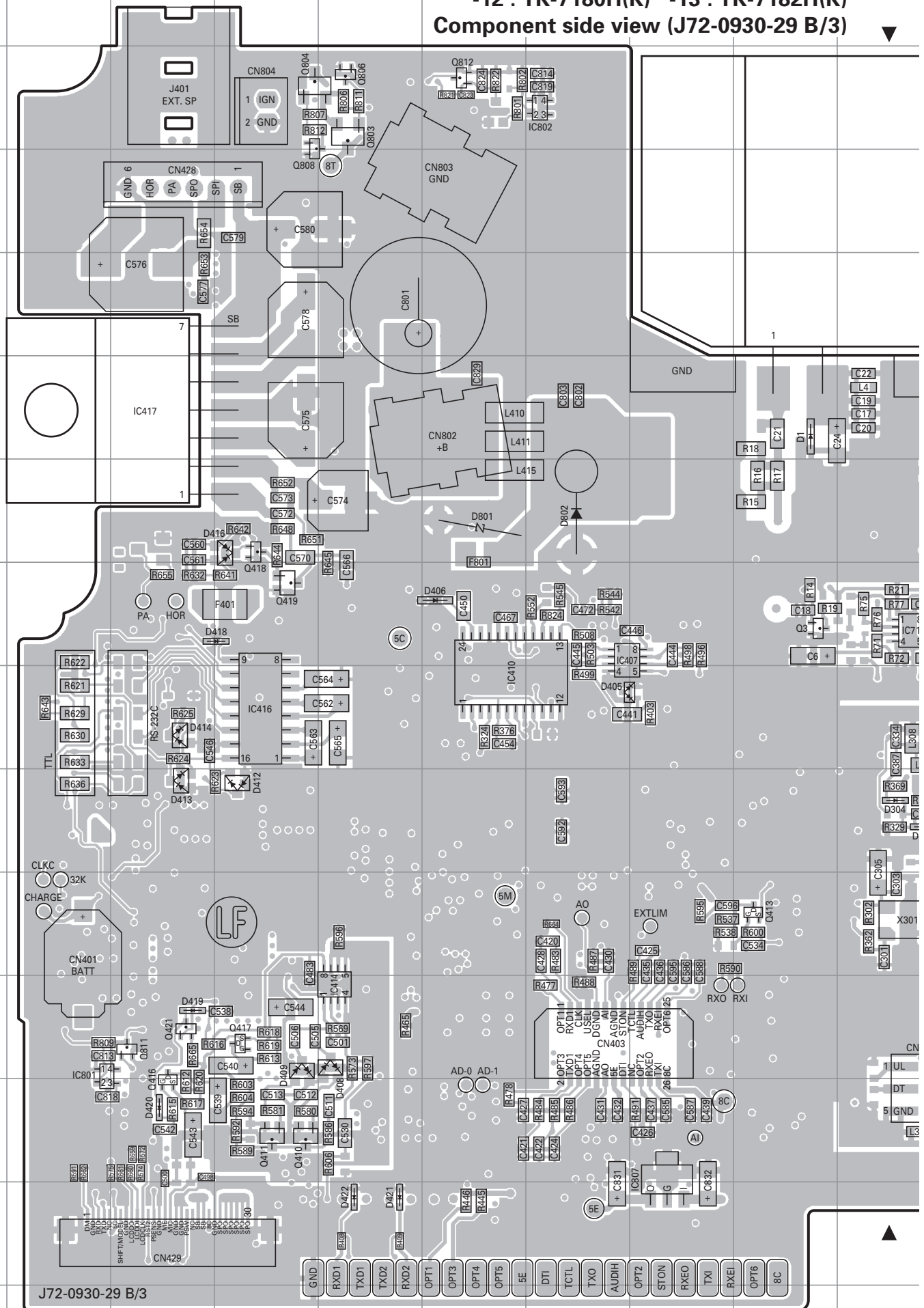


# TK-7180H/7182H PC BOARD

TX-RX UNIT (X57-6980-XX) (B/3)

-12 : TK-7180H(K) -13 : TK-7182H(K)

Component side view (J72-0930-29 B/3)



J72-0930-29 B/3

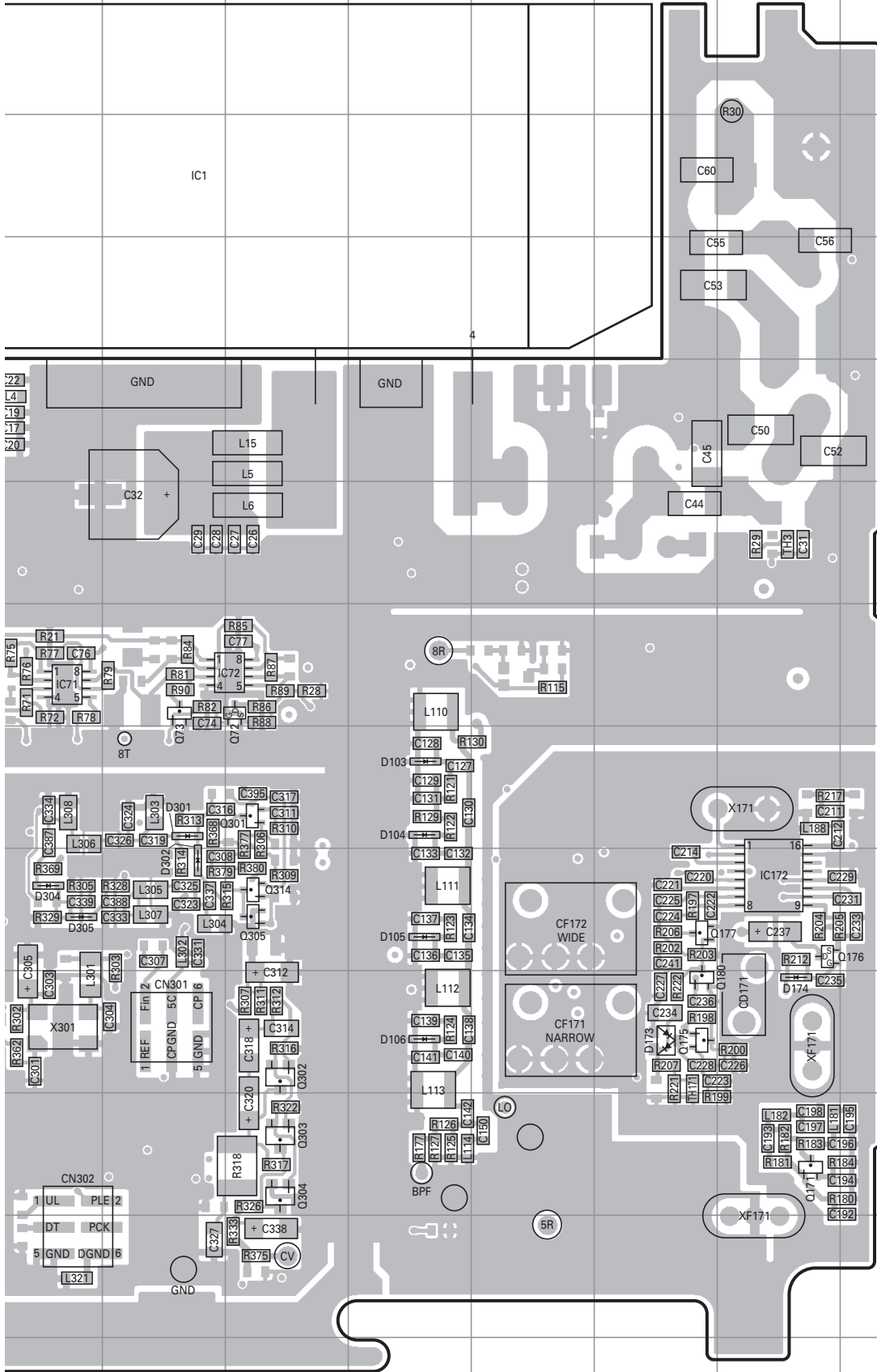
- GND
- RXD1
- TXD1
- TXD2
- RXD2
- OPT1
- OPT3
- OPT4
- OPT5
- 5E
- D11
- TCTL
- TXO
- AUDIH
- OPT2
- STON
- RXEO
- TXI
- RXEI
- OPT6
- 8C



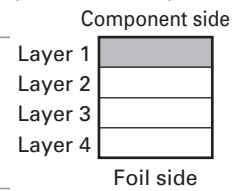
TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)

# PC BOARD TK-7180H/7182H

Component side view (J72-0930-29 B/3)



Ref. No.	Address	Ref. No.	Address
IC1	3K	Q421	11C
IC71	7J	Q803	2E
IC72	7L	Q804	2D
IC172	9P	Q806	2E
IC407	7G	Q808	3D
IC410	8F	Q811	11C
IC414	11E	Q812	2F
IC416	8D	D1	5I
IC417	5C	D103	8M
IC801	11B	D104	8M
IC802	2G	D105	9M
IC807	12H	D106	10M
Q3	7I	D173	10O
Q72	7L	D174	10P
Q73	7K	D301	8K
Q171	11P	D302	9K
Q175	10O	D304	9J
Q176	9P	D305	9J
Q177	9O	D405	8G
Q180	10O	D406	7F
Q301	8L	D408	11E
Q302	10L	D409	11D
Q303	11L	D412	9D
Q304	11L	D413	9C
Q305	9L	D414	8C
Q314	9L	D416	6D
Q410	12D	D418	7D
Q411	12D	D419	11C
Q413	10I	D420	12C
Q416	12C	D421	13E
Q417	11D	D422	13E
Q418	6D	D801	6F
Q419	7D	D802	6G

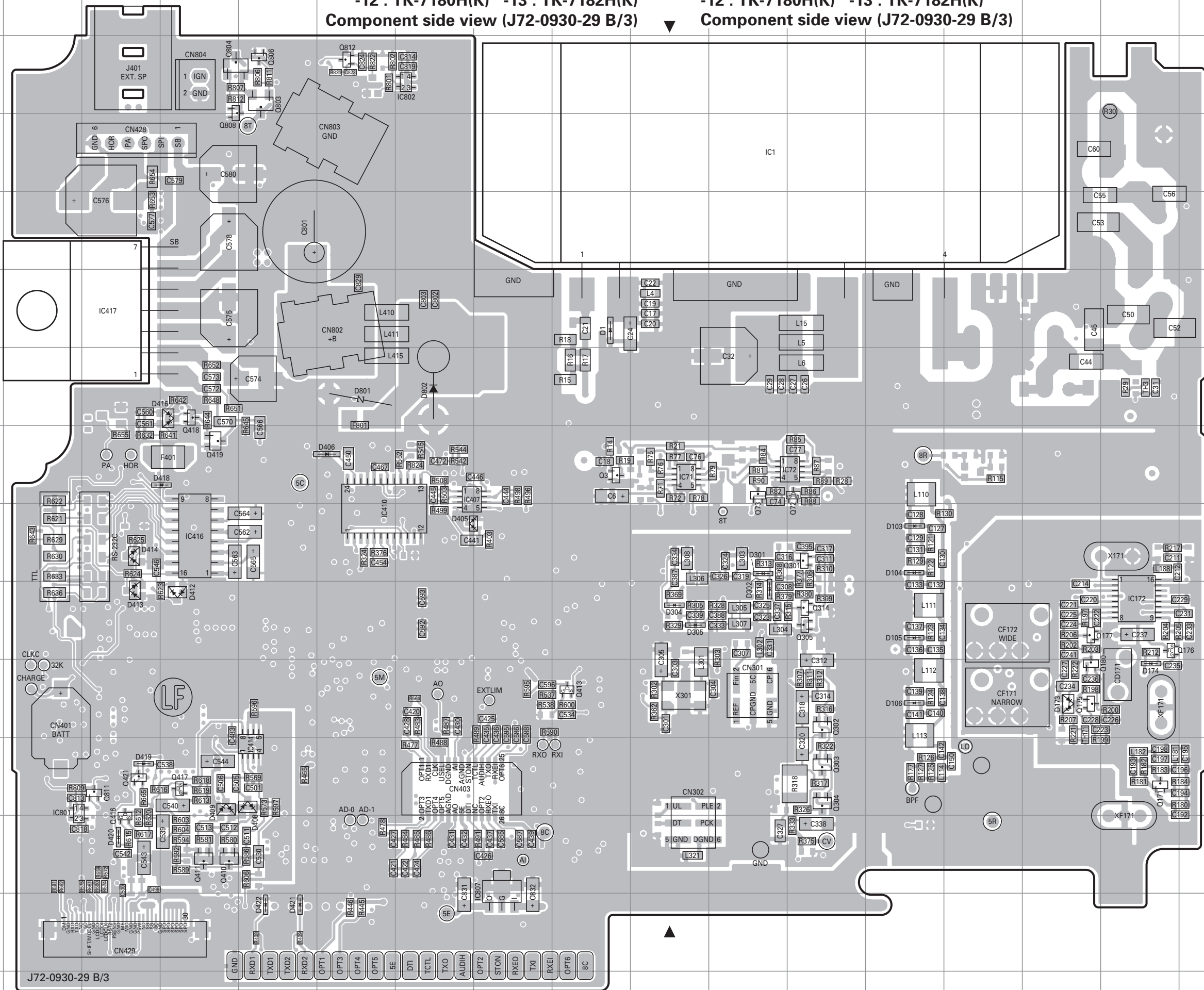


# TK-7180H/7182H PC BOARD

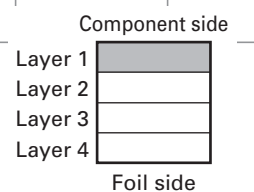
TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)  
 Component side view (J72-0930-29 B/3)

TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)  
 Component side view (J72-0930-29 B/3)

# PC BOARD TK-7180H/7182H



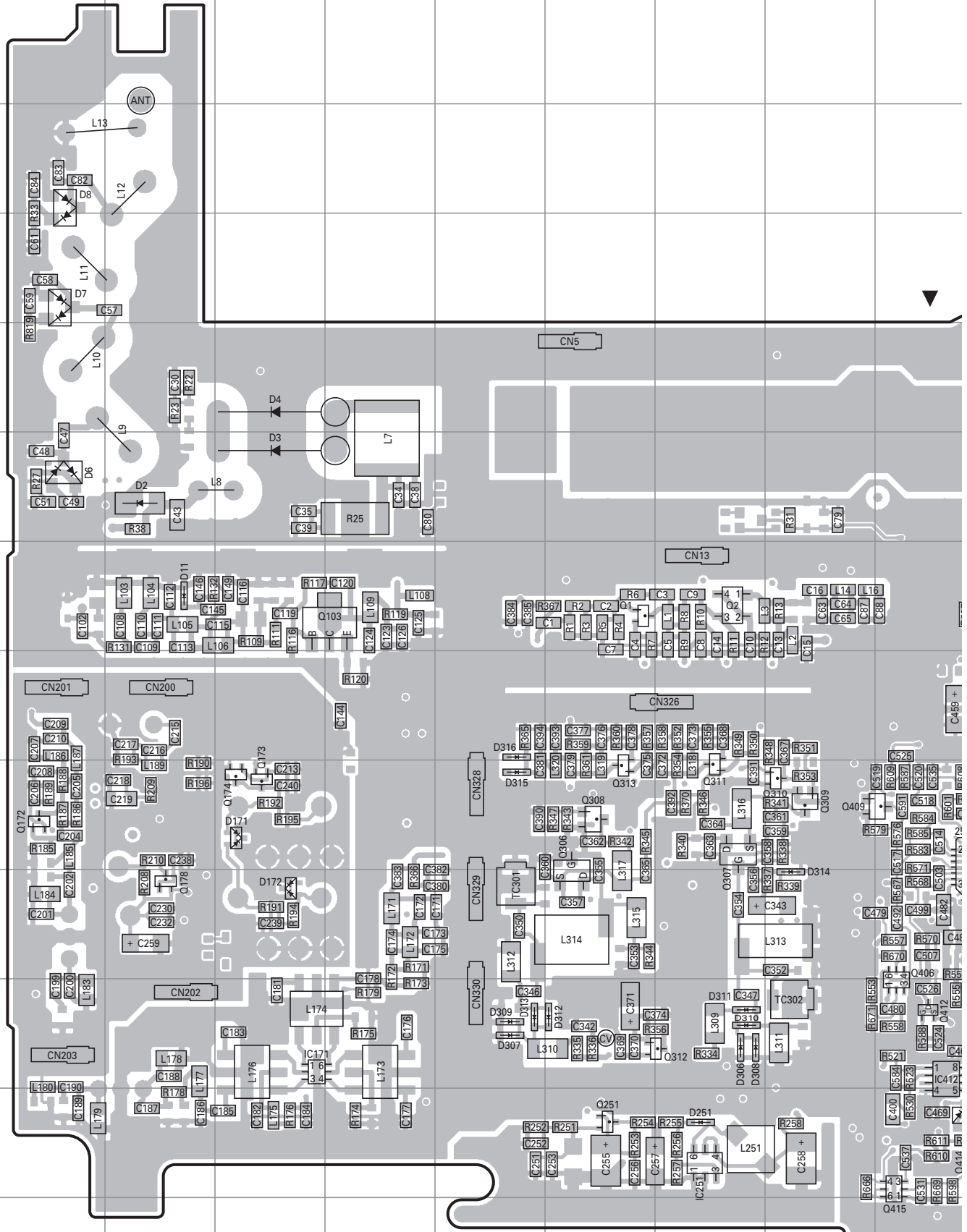
Ref. No.	Address	Ref. No.	Address
IC1	3K	Q421	11C
IC71	7J	Q803	2E
IC72	7L	Q804	2D
IC172	9P	Q806	2E
IC407	7G	Q808	3D
IC410	8F	Q811	11C
IC414	11E	Q812	2F
IC416	8D	D1	5I
IC417	5C	D103	8M
IC801	11B	D104	8M
IC802	2G	D105	9M
IC807	12H	D106	10M
Q3	7I	D173	10O
Q72	7L	D174	10P
Q73	7K	D301	8K
Q171	11P	D302	9K
Q175	10O	D304	9J
Q176	9P	D305	9J
Q177	9O	D405	8G
Q180	10O	D406	7F
Q301	8L	D408	11E
Q302	10L	D409	11D
Q303	11L	D412	9D
Q304	11L	D413	9C
Q305	9L	D414	8C
Q410	12D	D418	7D
Q411	12D	D419	11C
Q413	10I	D420	12C
Q416	12C	D421	13E
Q417	11D	D422	13E
Q418	6D	D801	6F
Q419	7D	D802	6G



J72-0930-29 B/3

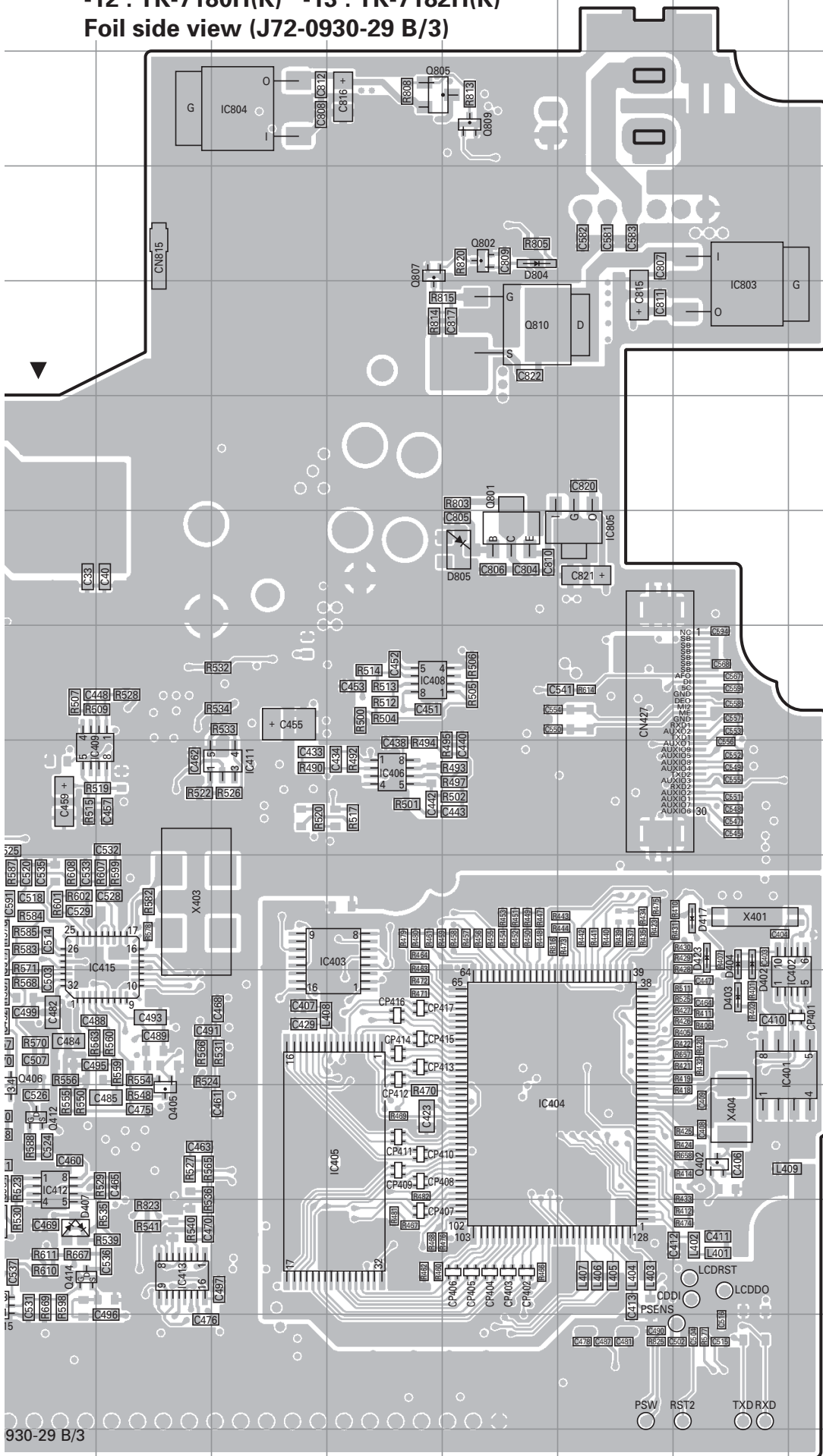
# TK-7180H/7182H PC BOARD

TX-RX UNIT (X57-6980-XX) (B/3)  
-12 : TK-7180H(K) -13 : TK-7182H(K)  
Foil side view (J72-0930-29 B/3)

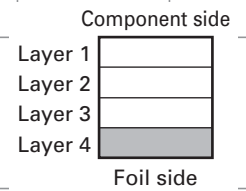


TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)  
 Foil side view (J72-0930-29 B/3)

PC BOARD TK-7180H/7182H



Ref. No.	Address	Ref. No.	Address
IC171	11D	Q414	12J
IC251	12H	Q415	12J
IC401	10P	Q801	6N
IC402	10Q	Q802	3N
IC403	9M	Q805	2M
IC404	11N	Q807	3M
IC405	11M	Q809	2N
IC406	8M	Q810	4N
IC408	7M	D2	6C
IC409	8J	D3	6D
IC411	8L	D4	5D
IC412	11J	D6	6B
IC413	12K	D7	4B
IC415	9K	D8	3B
IC803	4P	D11	7C
IC804	2L	D171	9D
IC805	6O	D172	10D
Q1	7G	D251	12H
Q2	7H	D306	11H
Q103	7E	D307	11F
Q172	9B	D308	11H
Q173	9D	D309	11F
Q174	9D	D310	11H
Q178	10C	D311	11H
Q251	12G	D312	11G
Q306	10G	D313	11F
Q307	9H	D314	10I
Q308	9G	D315	9F
Q309	9I	D316	8F
Q310	9I	D402	9P
Q311	9H	D403	10P
Q312	11H	D404	9P
Q313	9G	D407	12J
Q402	11P	D417	9P
Q405	11K	D423	9P
Q406	11J	D804	3N
Q409	9J	D805	6N
Q412	11J		



930-29 B/3

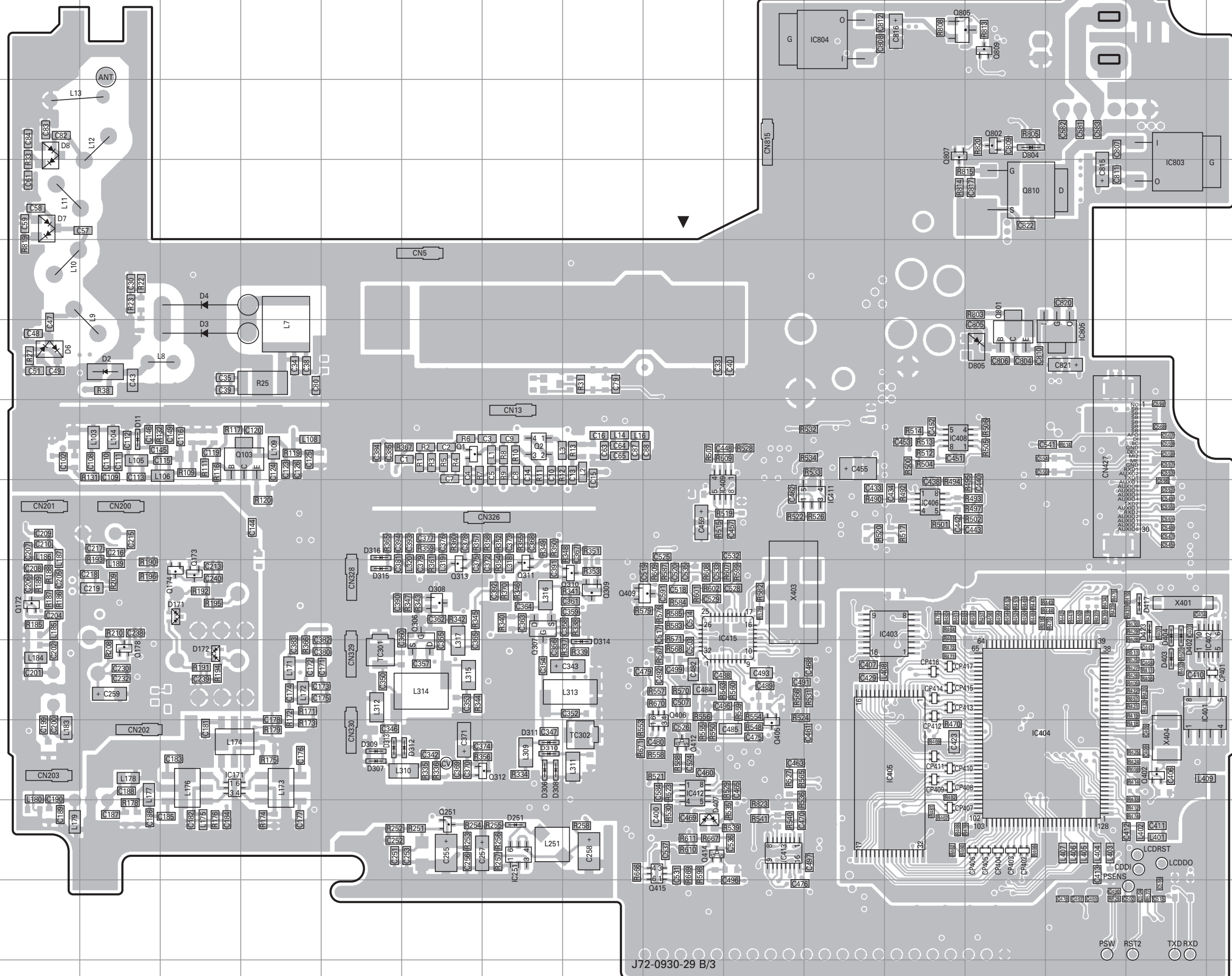


# TK-7180H/7182H PC BOARD

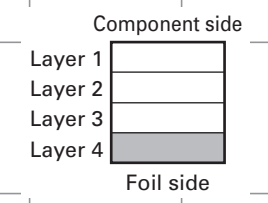
TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)  
 Foil side view (J72-0930-29 B/3)

TX-RX UNIT (X57-6980-XX) (B/3)  
 -12 : TK-7180H(K) -13 : TK-7182H(K)  
 Foil side view (J72-0930-29 B/3)

# PC BOARD TK-7180H/7182H



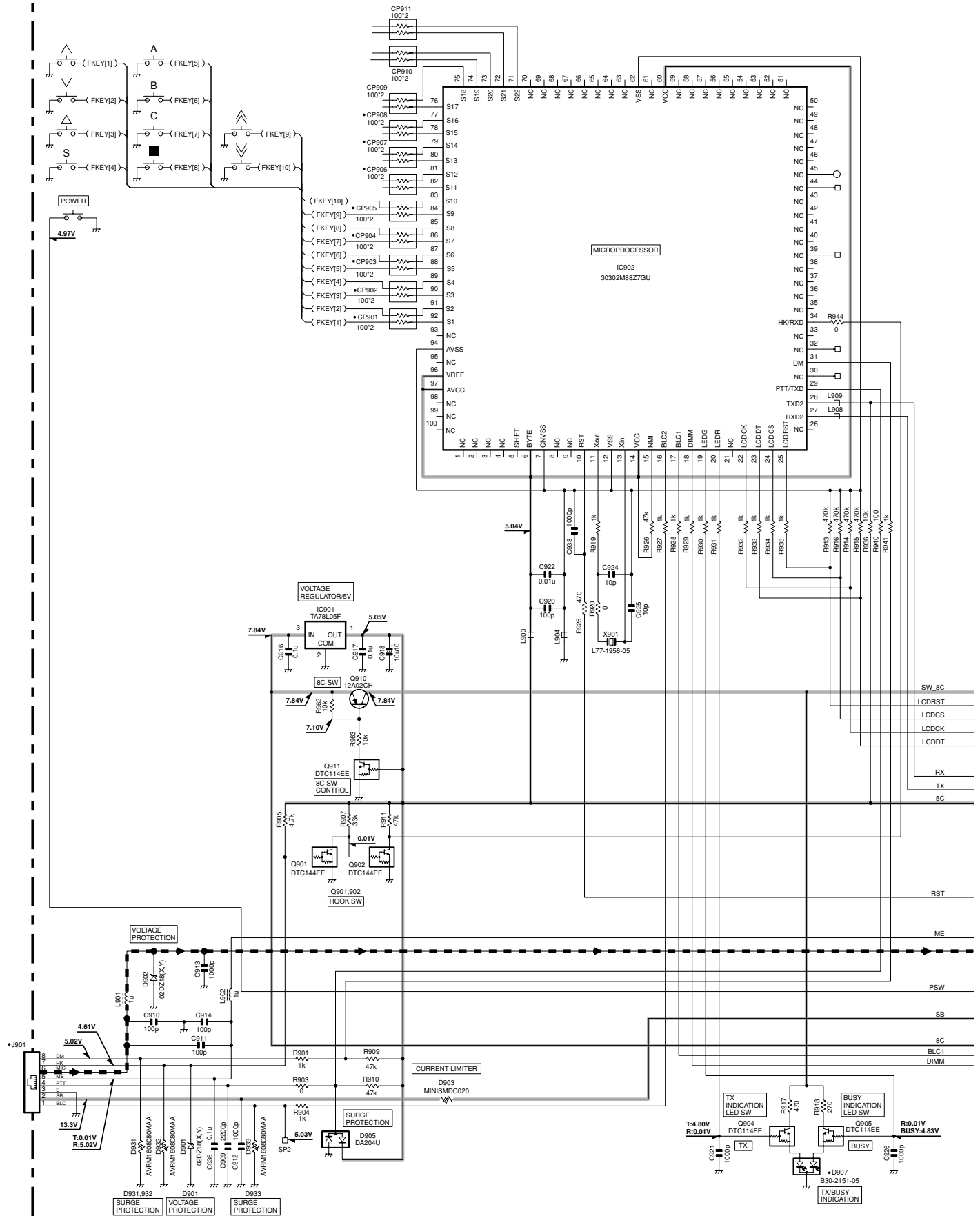
Ref. No.	Address	Ref. No.	Address
IC171	11D	Q414	12J
IC251	12H	Q415	12J
IC401	10P	Q801	6N
IC402	10Q	Q802	3N
IC403	9M	Q805	2M
IC404	11N	Q807	3M
IC405	11M	Q809	2N
IC406	8M	Q810	4N
IC408	7M	D2	6C
IC409	8J	D3	6D
IC411	8L	D4	5D
IC412	11J	D6	6B
IC413	12K	D7	4B
IC415	9K	D8	3B
IC803	4P	D11	7C
IC804	2L	D171	9D
IC805	6O	D172	10D
Q1	7G	D251	12H
Q2	7H	D306	11H
Q103	7E	D307	11F
Q172	9B	D308	11H
Q173	9D	D309	11F
Q174	9D	D310	11H
Q178	10C	D311	11H
Q251	12G	D312	11G
Q306	10G	D313	11F
Q307	9H	D314	10I
Q308	9G	D315	9F
Q309	9I	D316	8F
Q310	9I	D402	9P
Q311	9H	D403	10P
Q312	11H	D404	9P
Q313	9G	D407	12J
Q402	11P	D417	9P
Q405	11K	D423	9P
Q406	11J	D804	3N
Q409	9J	D805	6N
Q412	11J		



J72-0930-29 B/3

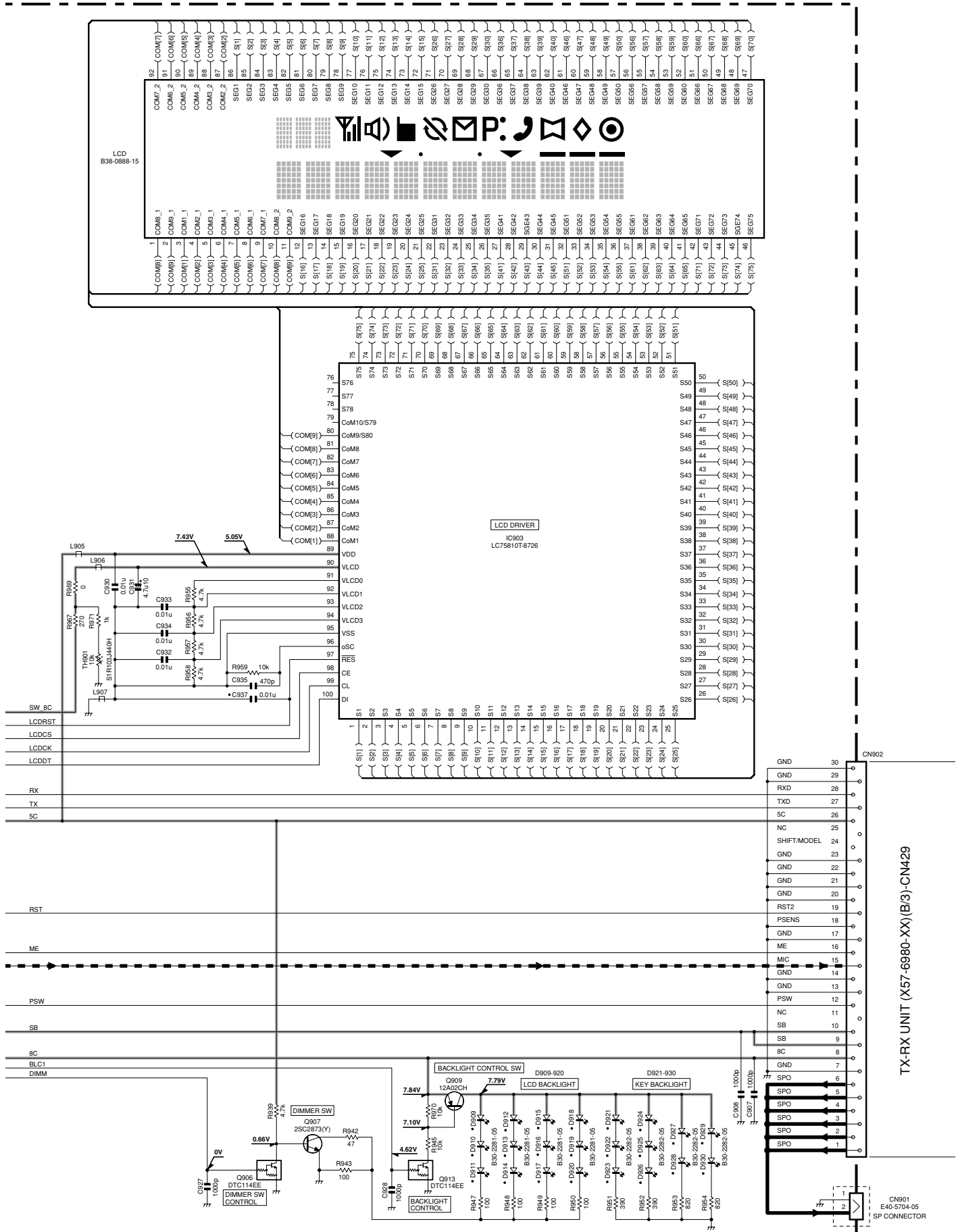
# TK-7180H/7182H SCHEMATIC DIAGRAM

DISPLAY UNIT (X54-3480-10) : TK-7180H



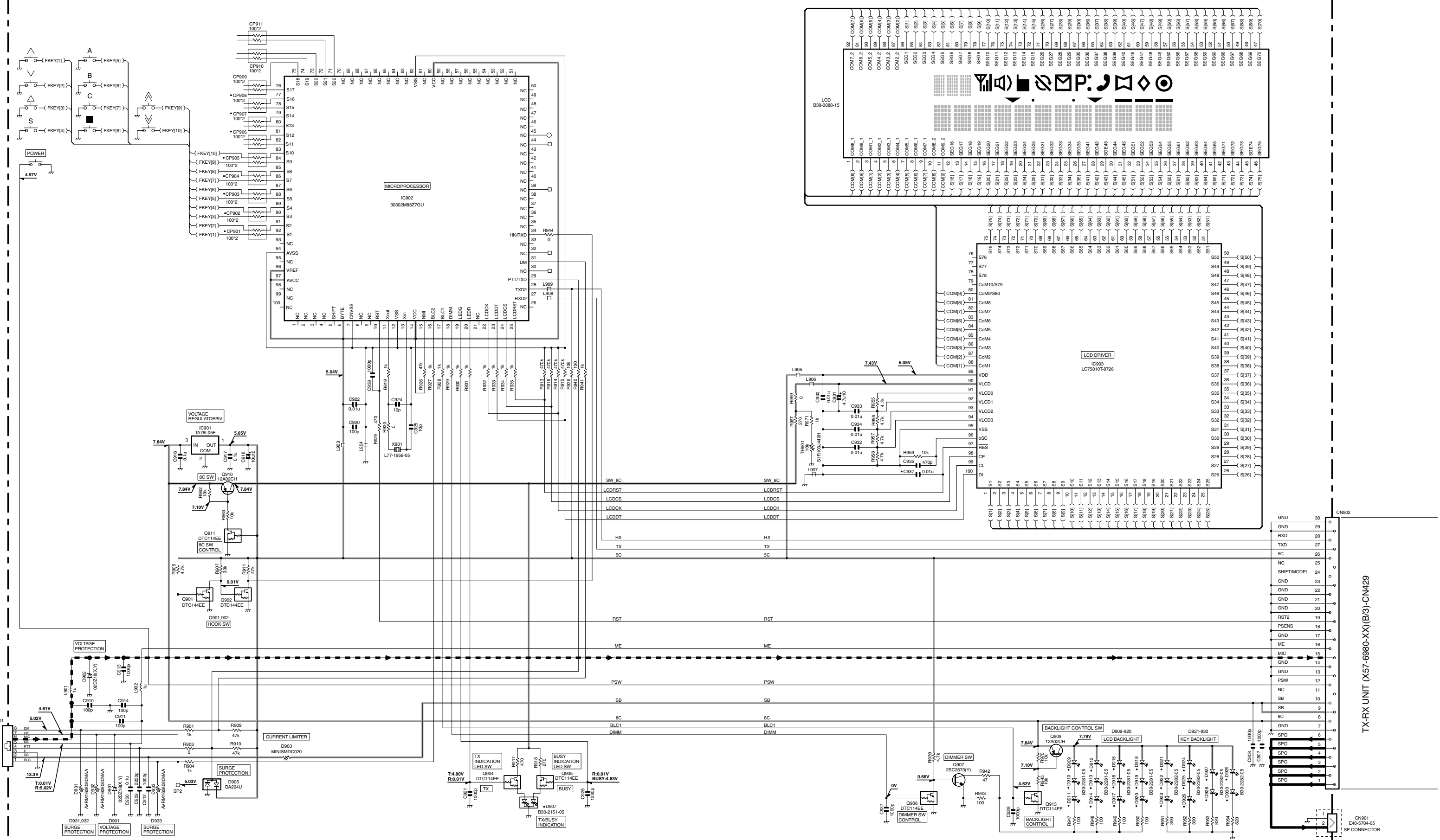
# SCHEMATIC DIAGRAM TK-7180H/7182H

DISPLAY UNIT (X54-3480-10) : TK-7180H



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

DISPLAY UNIT (X54-3480-10) :TK-7180H



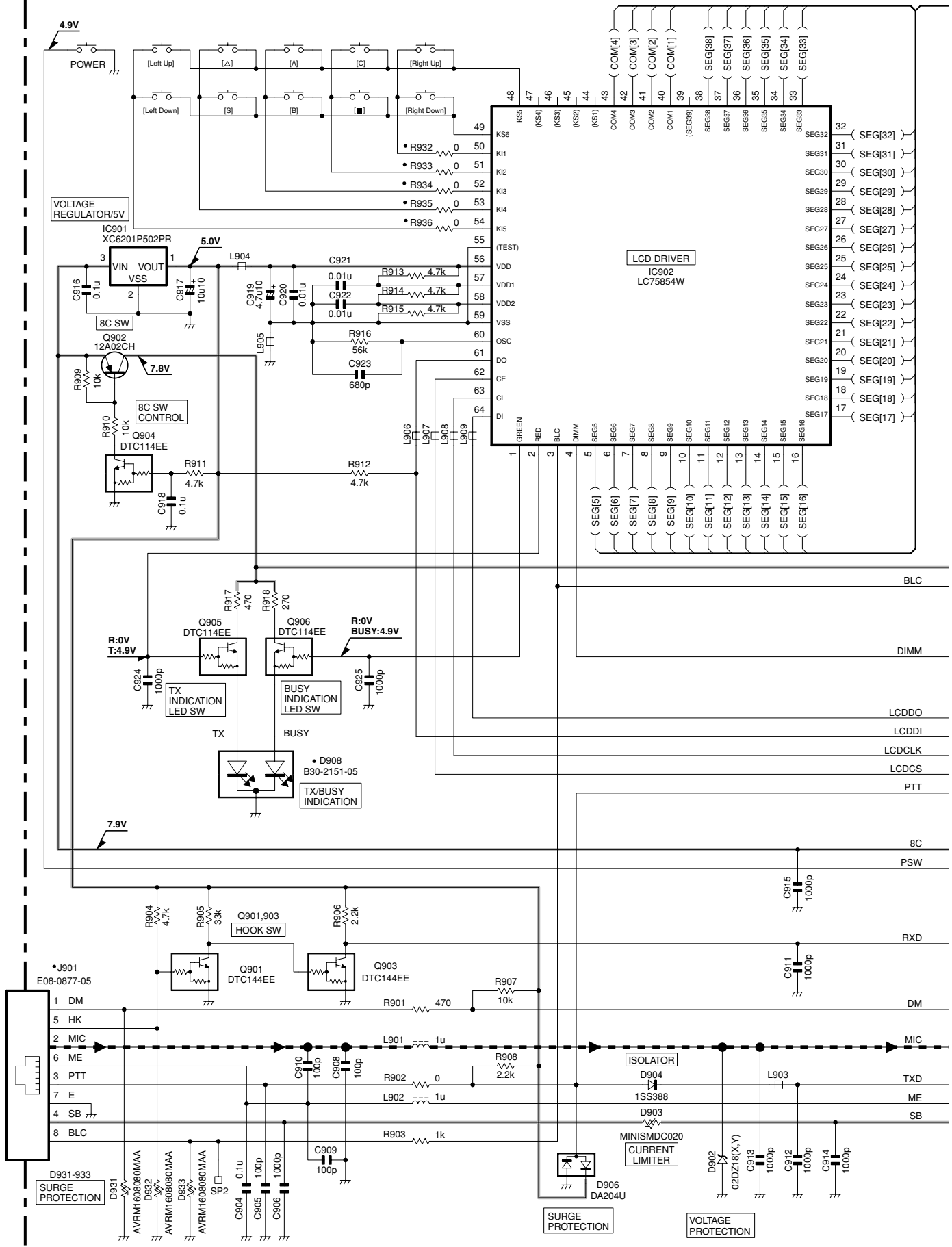
TX-RX UNIT (X57-6980-XX) (B/3)-CN429

SP CONNECTOR



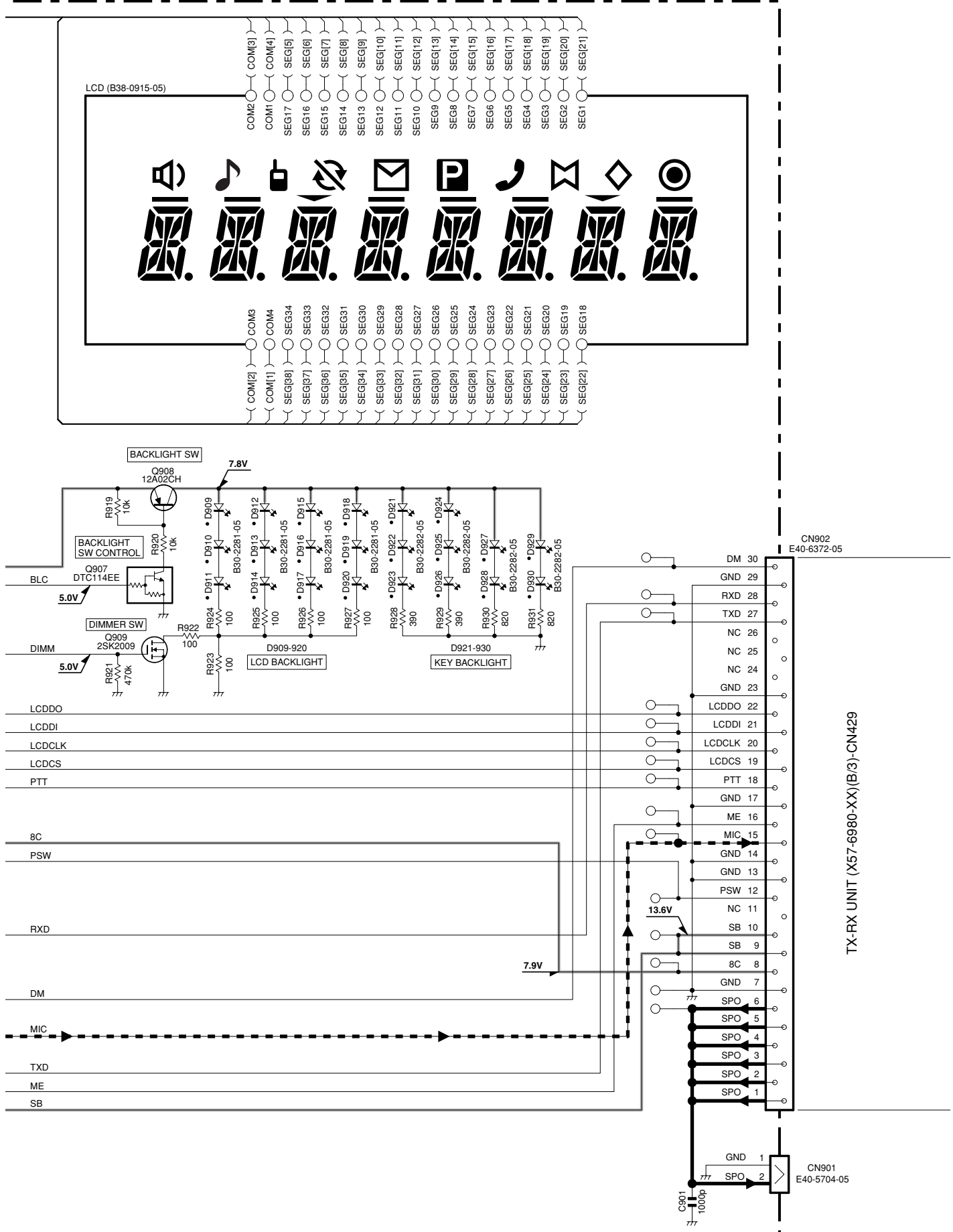
# TK-7180H/7182H SCHEMATIC DIAGRAM

DISPLAY UNIT (X54-3540-10) : TK-7182H



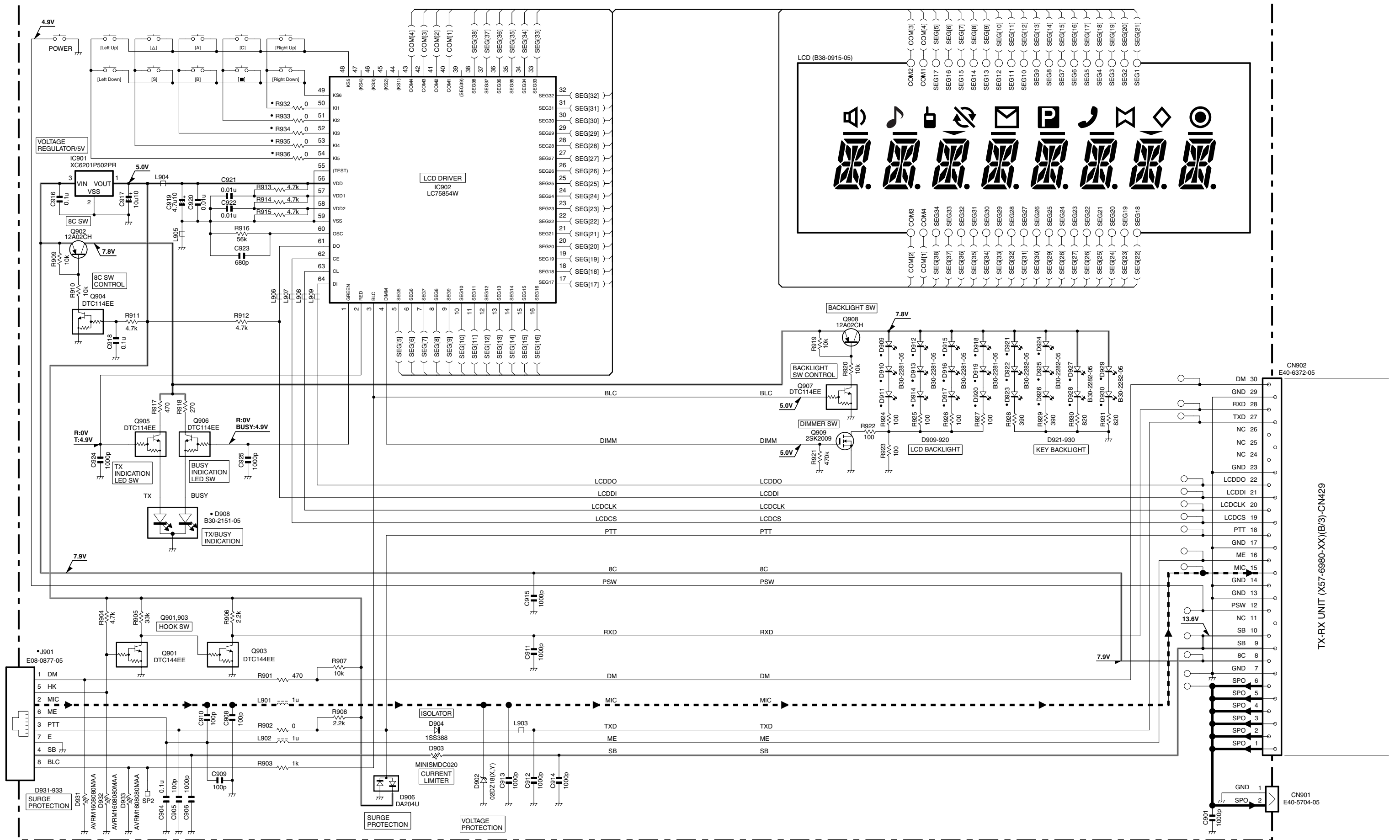
# SCHEMATIC DIAGRAM TK-7180H/7182H

DISPLAY UNIT (X54-3540-10) : TK-7182H



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

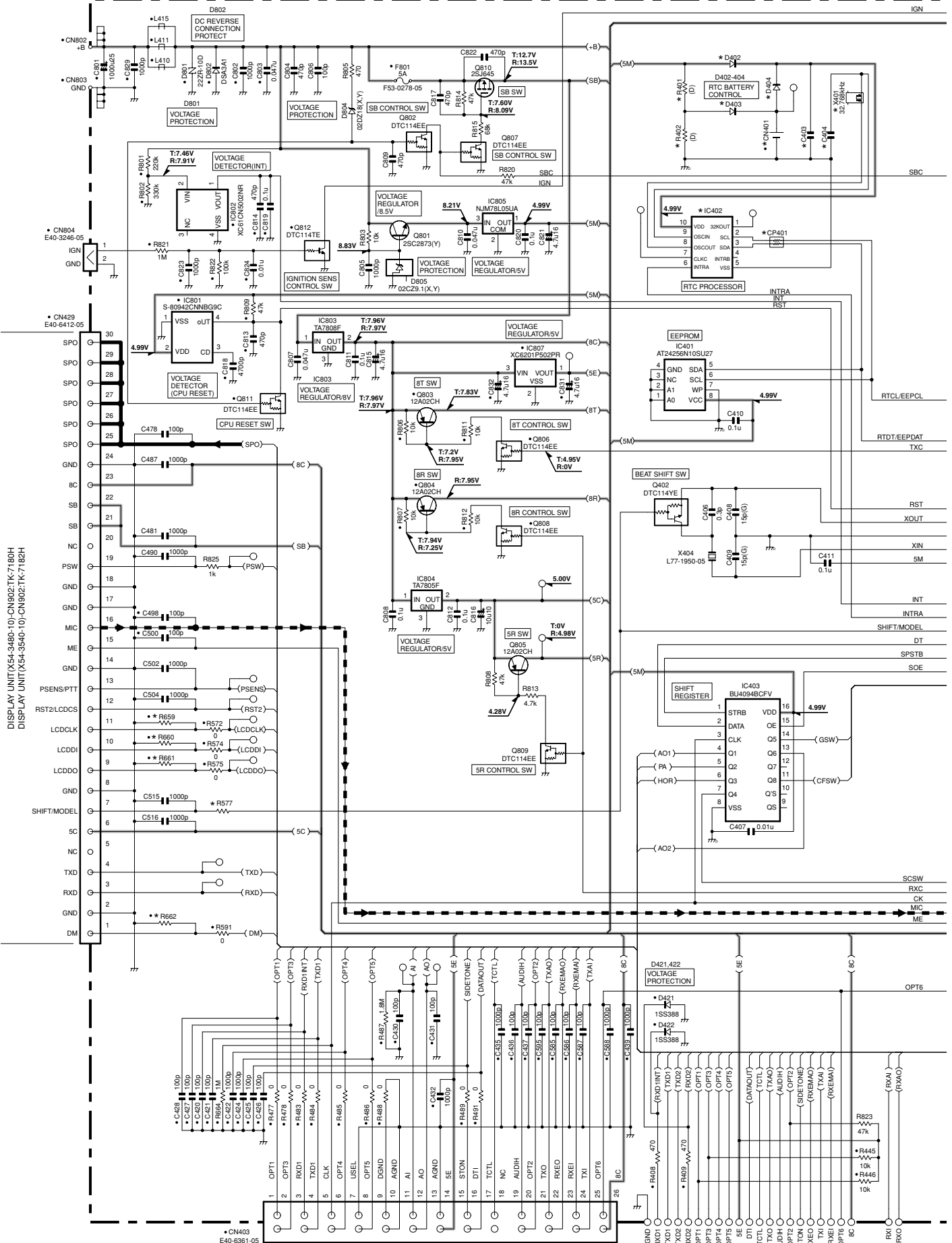
DISPLAY UNIT (X54-3540-10) : TK-7182H



TX-FX UNIT (X57-6980-XX)(B/3)-CN429

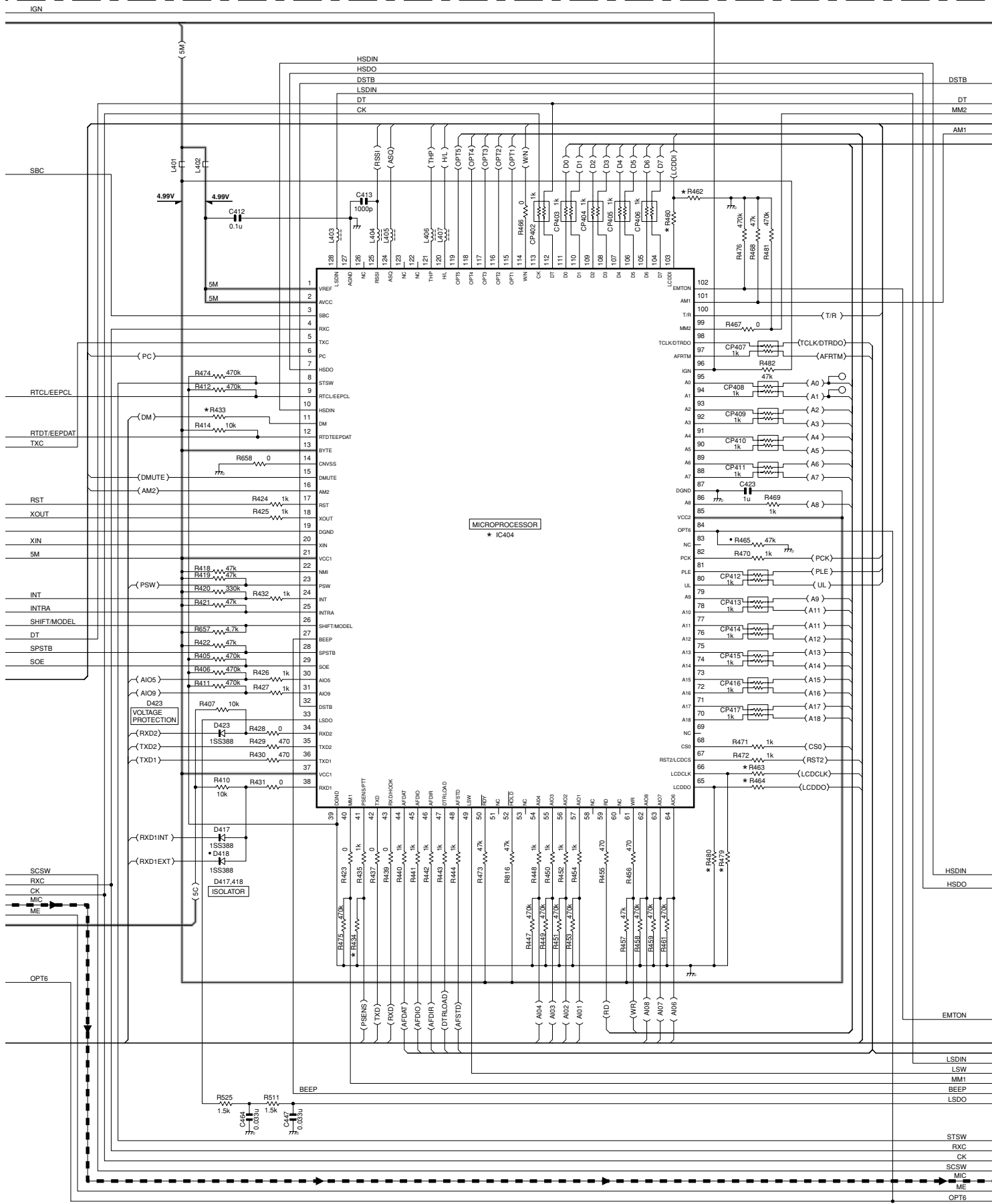
# TK-7180H/7182H SCHEMATIC DIAGRAM

## TX-RX UNIT (X57-6980-XX)(B/3)



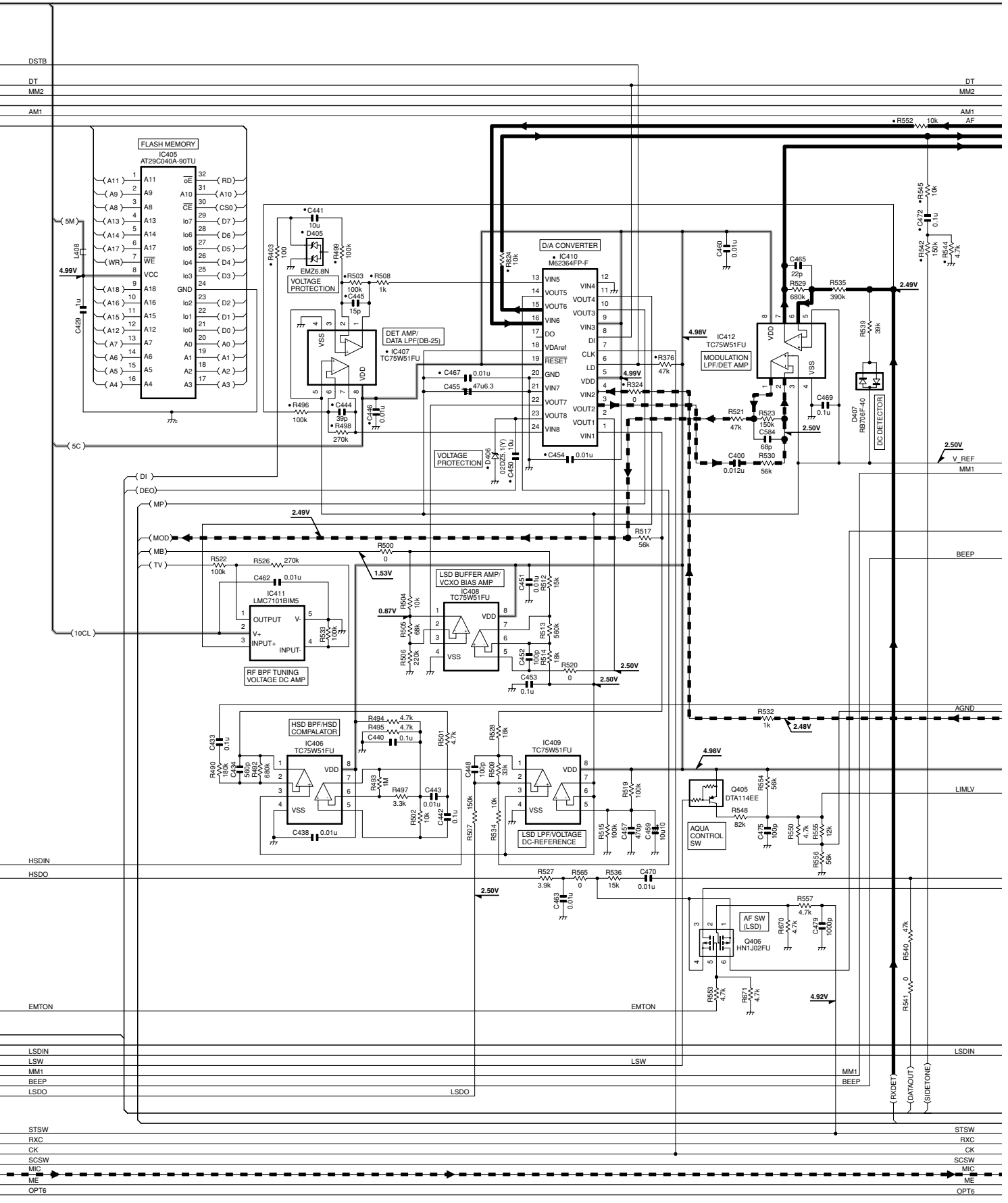
# SCHEMATIC DIAGRAM TK-7180H/7182H

TX-RX UNIT (X57-6980-XX) (B/3)



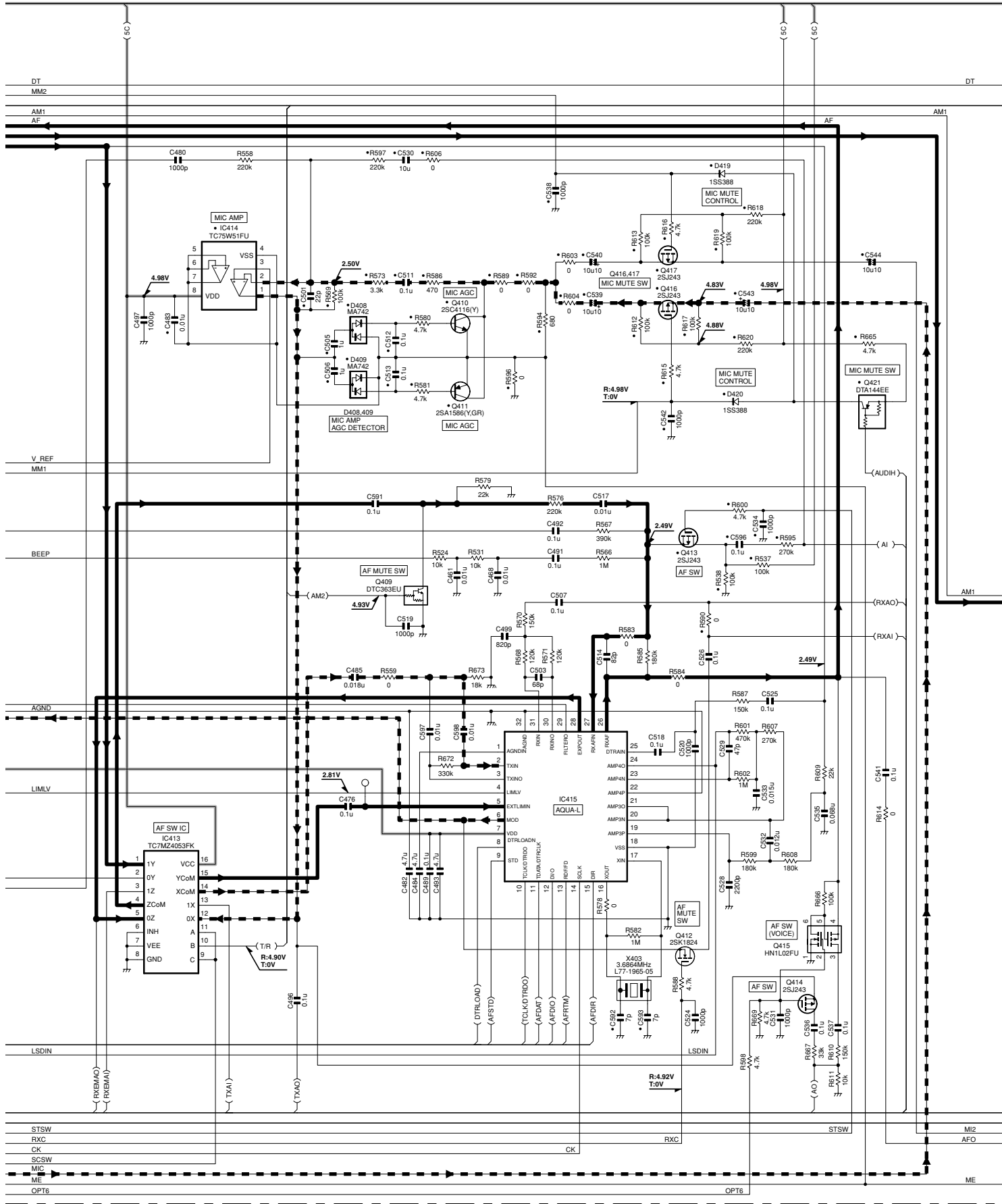
# TK-7180H/7182H SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6980-XX) (B/3)



# SCHEMATIC DIAGRAM TK-7180H/7182H

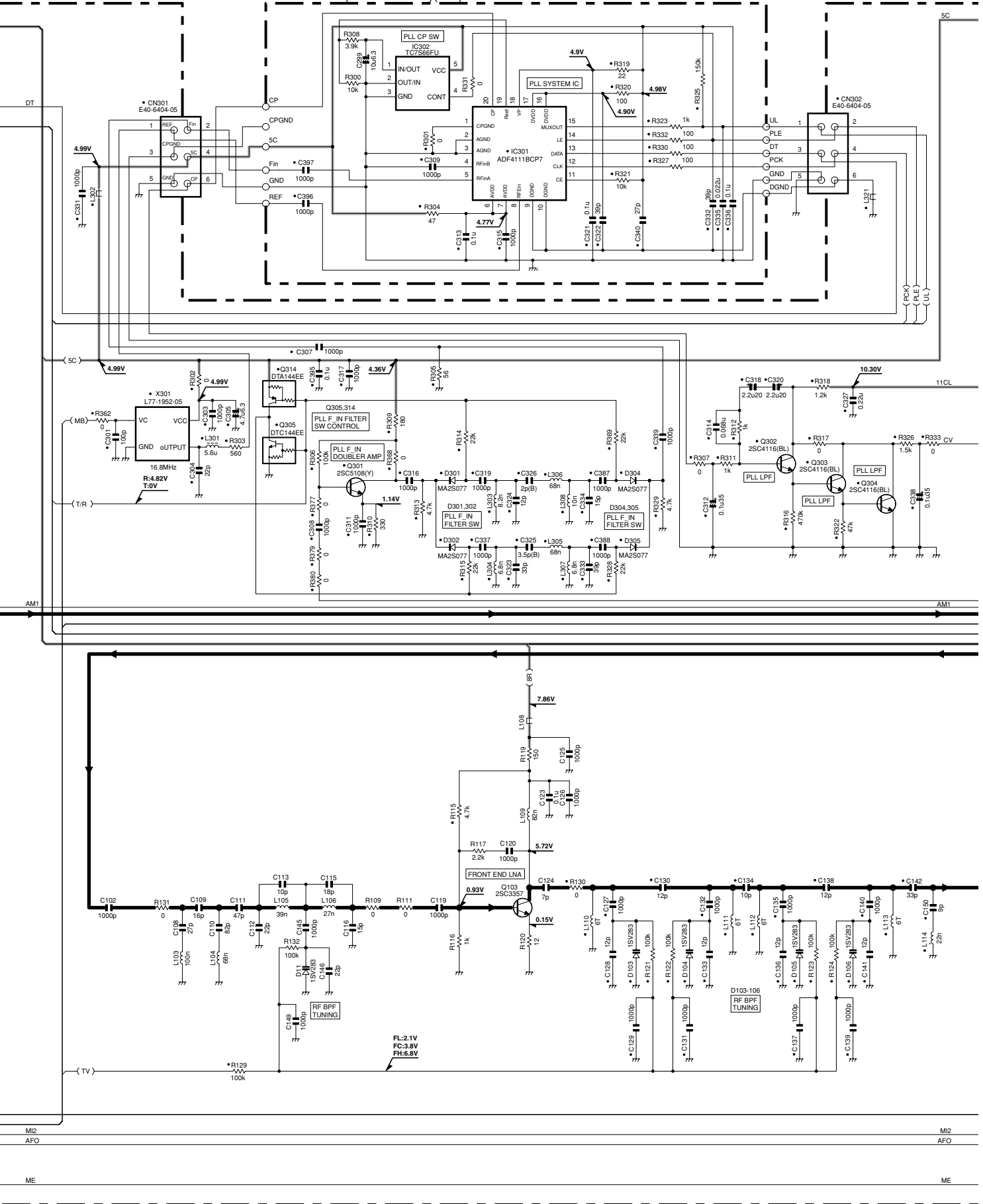
TX-RX UNIT (X57-6980-XX) (B/3)



# TK-7180H/7182H SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6980-XX)(C/3)

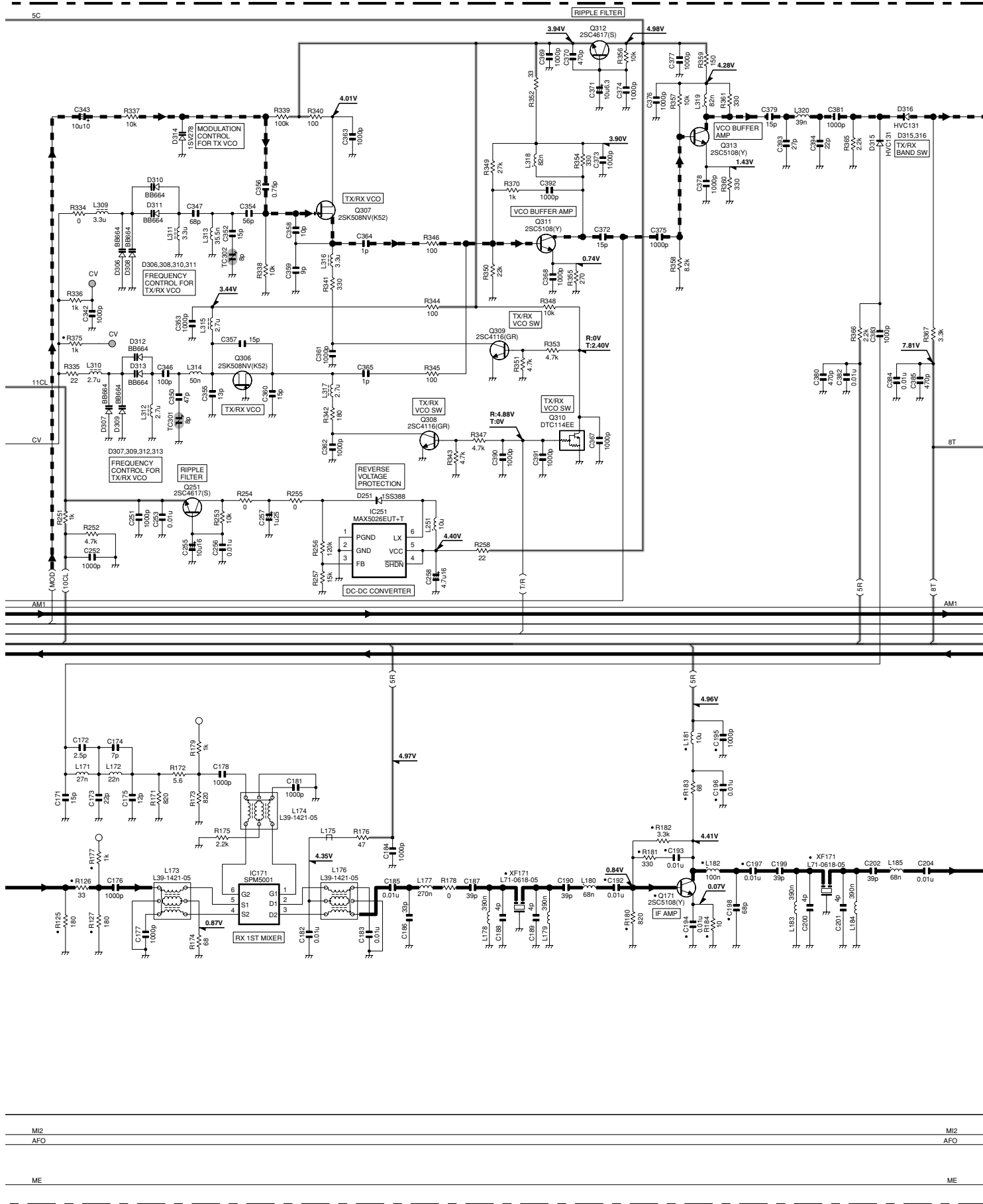
TX-RX UNIT (X57-6980-XX) (B/3)





# SCHEMATIC DIAGRAM TK-7180H/7182H

TX-RX UNIT (X57-6980-XX) (B/3)



M12

AFO

ME

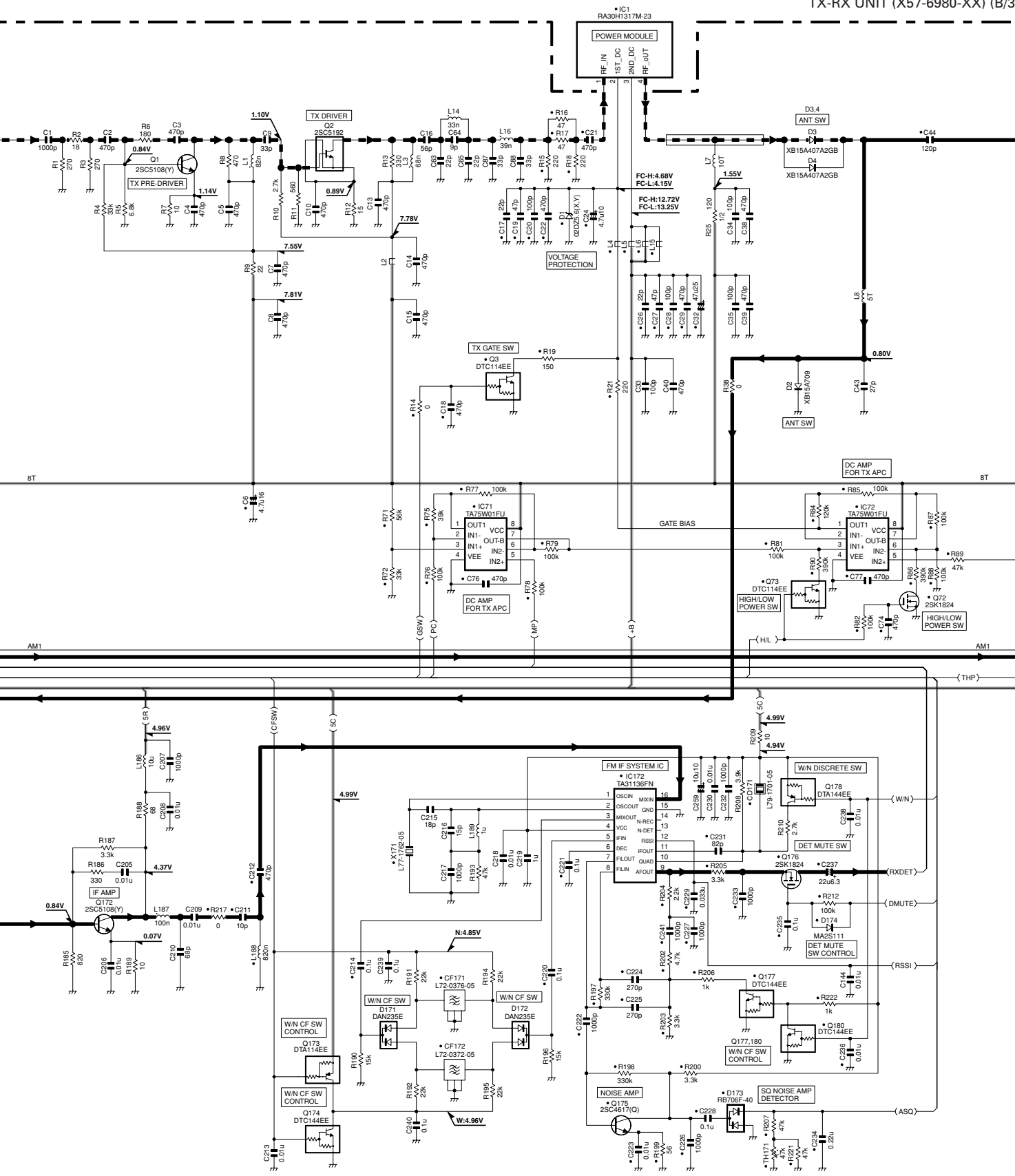
M12

AFO

ME

# TK-7180H/7182H SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6980-XX) (B/3)



M2

AFO

M2

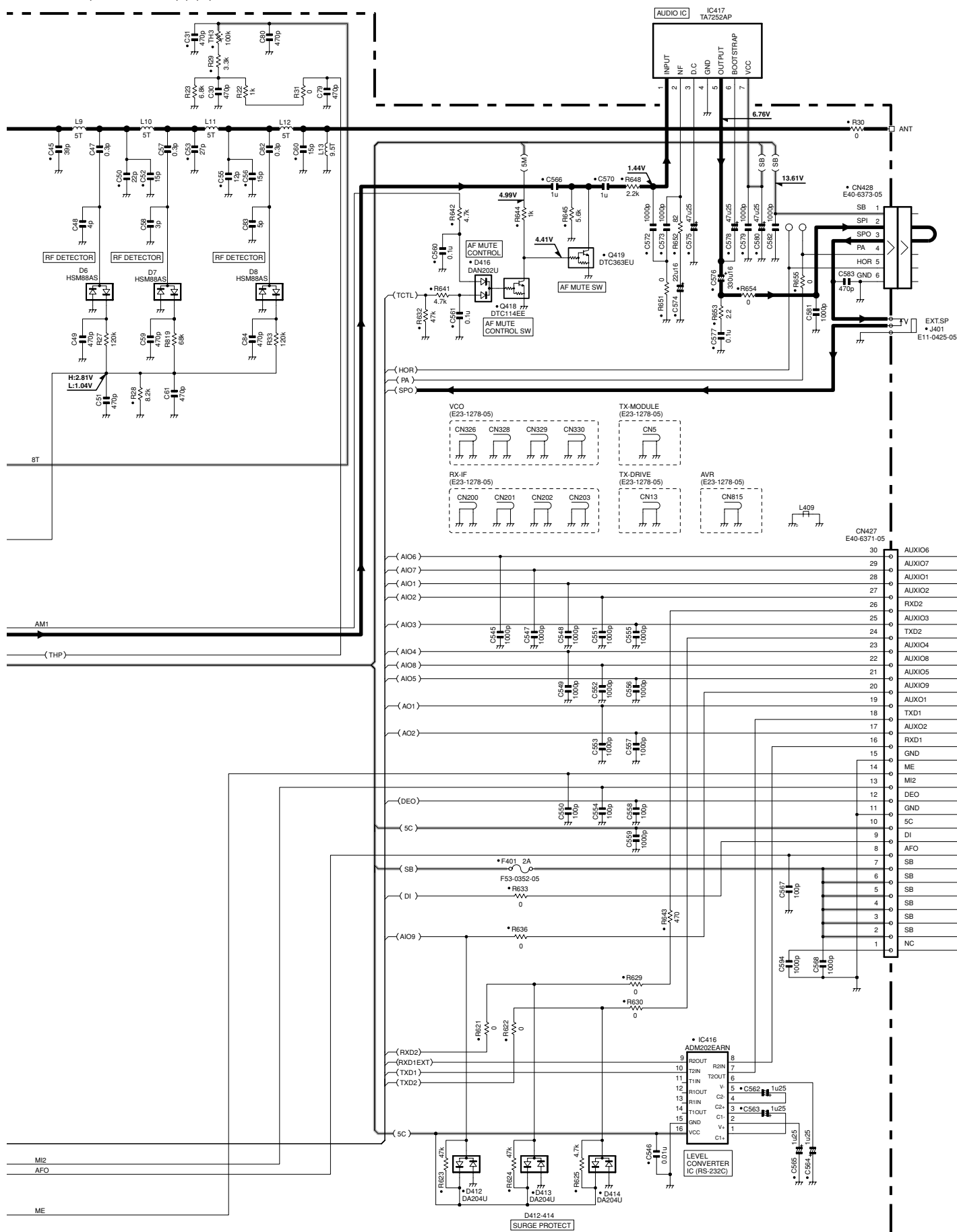
AFO

ME

ME

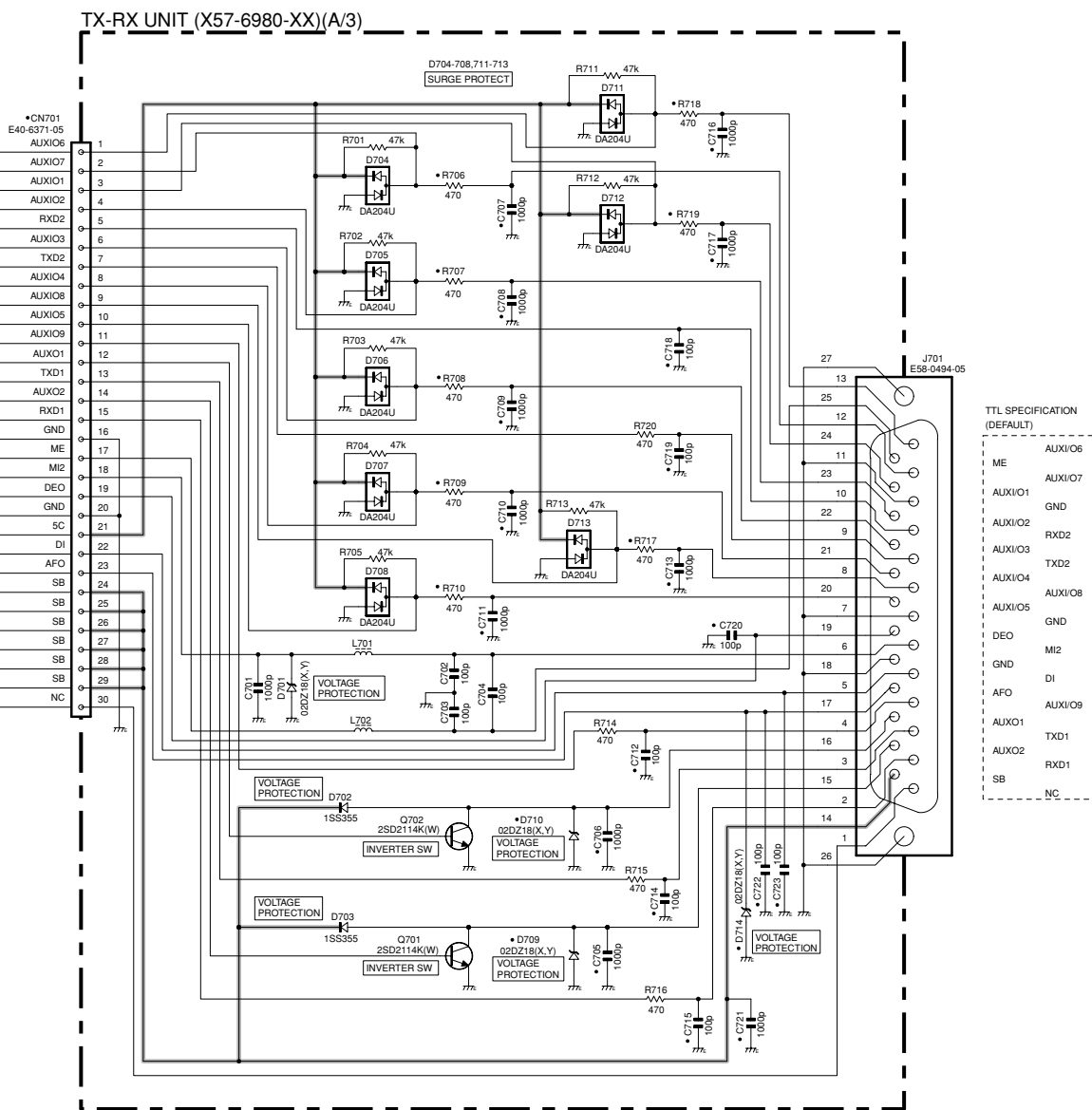
# SCHEMATIC DIAGRAM TK-7180H/7182H

TX-RX UNIT (X57-6980-XX) (B/3)



# TK-7180H/7182H SCHEMATIC DIAGRAM

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



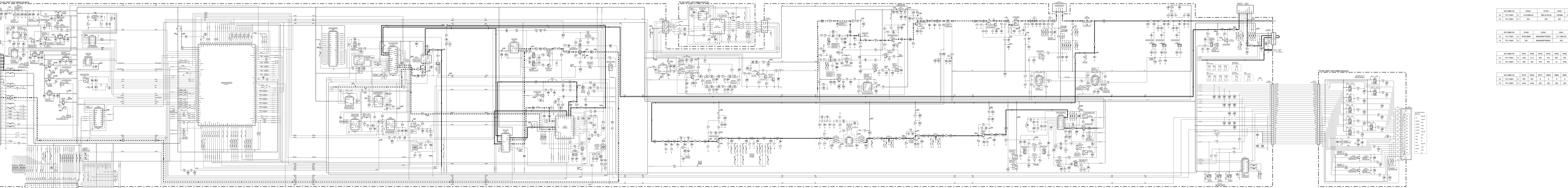
# SCHEMATIC DIAGRAM TK-7180H/7182H

X57-6980-XX			CN401	CP401	D402	D403	D404
-12	TK-7180H	K	J19-5386-05	R90-0740-05	1SS388	1SS388	1SS388
-13	TK-7182H	K	NO	NO	NO	NO	NO

X57-6980-XX			IC402	IC404	X401	C403	C404
-12	TK-7180H	K	RV5C386A	30625MGP169GU	L77-1802-05	0.1u	5p
-13	TK-7182H	K	NO	30625MGP238GU	NO	NO	NO

X57-6980-XX			R401	R402	R433	R434	R460	R462	R463	R464
-12	TK-7180H	K	3.6k	5.1k	NO	47k	NO	NO	NO	NO
-13	TK-7182H	K	NO	NO	470	NO	1k	470k	1k	1k

X57-6980-XX			R479	R480	R577	R659	R660	R661	R662
-12	TK-7180H	K	NO	NO	0	0	0	0	0
-13	TK-7182H	K	470k	470k	NO	NO	NO	NO	NO



X57-6980-XX	CP401	CP401	D402	D403	D404
-12 TK-7192H K	J19-5386-05	R90-0740-05	1S5388	1S5388	1S5388
-13 TK-7182H K	NO	NO	NO	NO	NO

X57-6980-XX	IC402	IC404	X401	C403	C404
-12 TK-7192H K	RV5C386A	30625MP198GU	L77-1802-05	0.1u	5p
-13 TK-7182H K	NO	30625MP238GU	NO	NO	NO

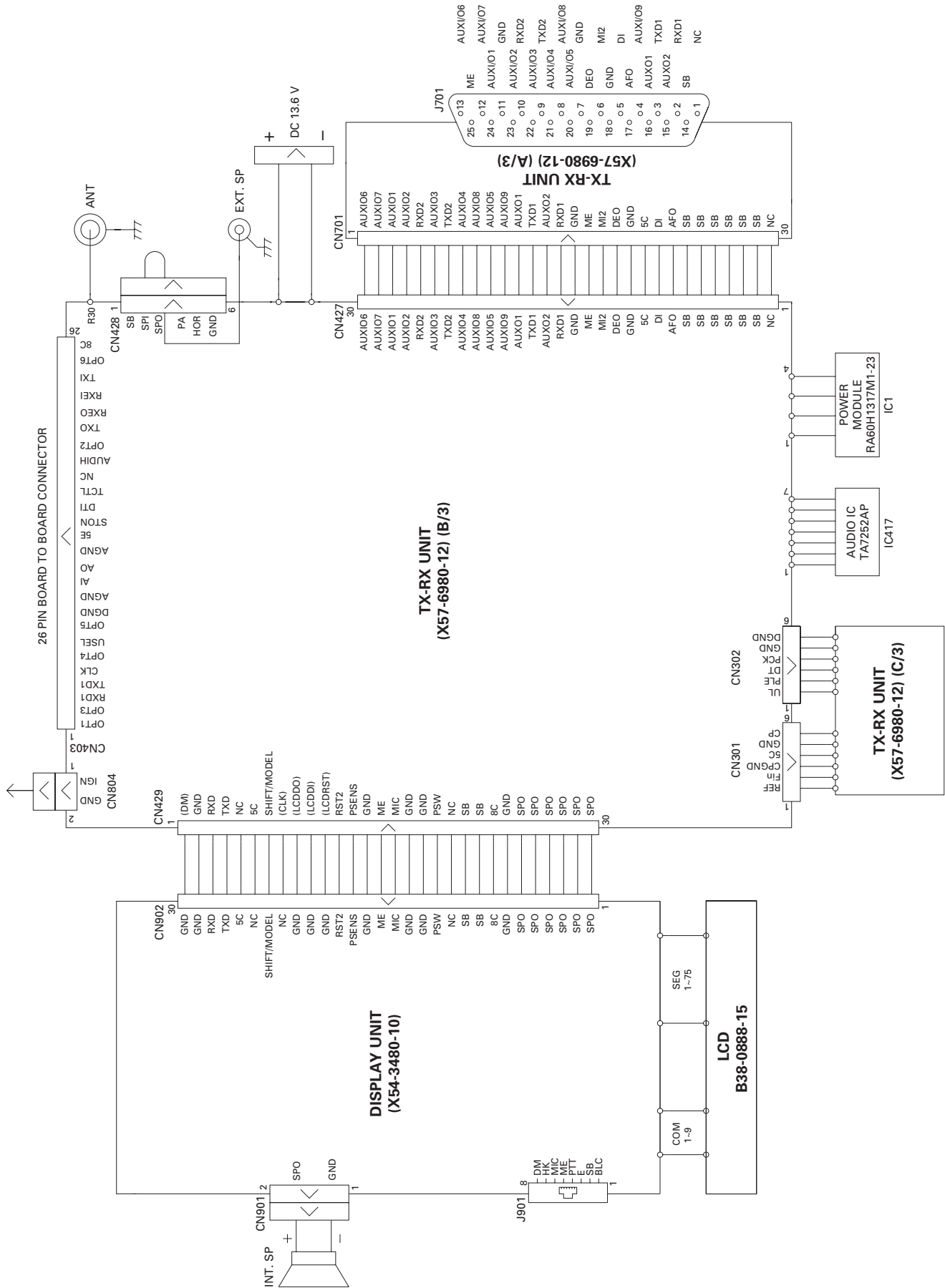
X57-6980-XX	R401	R402	R433	R434	R460	R462	R463	R464
-12 TK-7192H K	3.6k	5.1k	NO	47k	NO	NO	NO	NO
-13 TK-7182H K	NO	NO	470	NO	1k	470k	1k	1k

X57-6980-XX	R479	R480	R677	R659	R660	R661	R662
-12 TK-7192H K	NO	NO	0	0	0	0	0
-13 TK-7182H K	470k	470k	NO	NO	NO	NO	NO

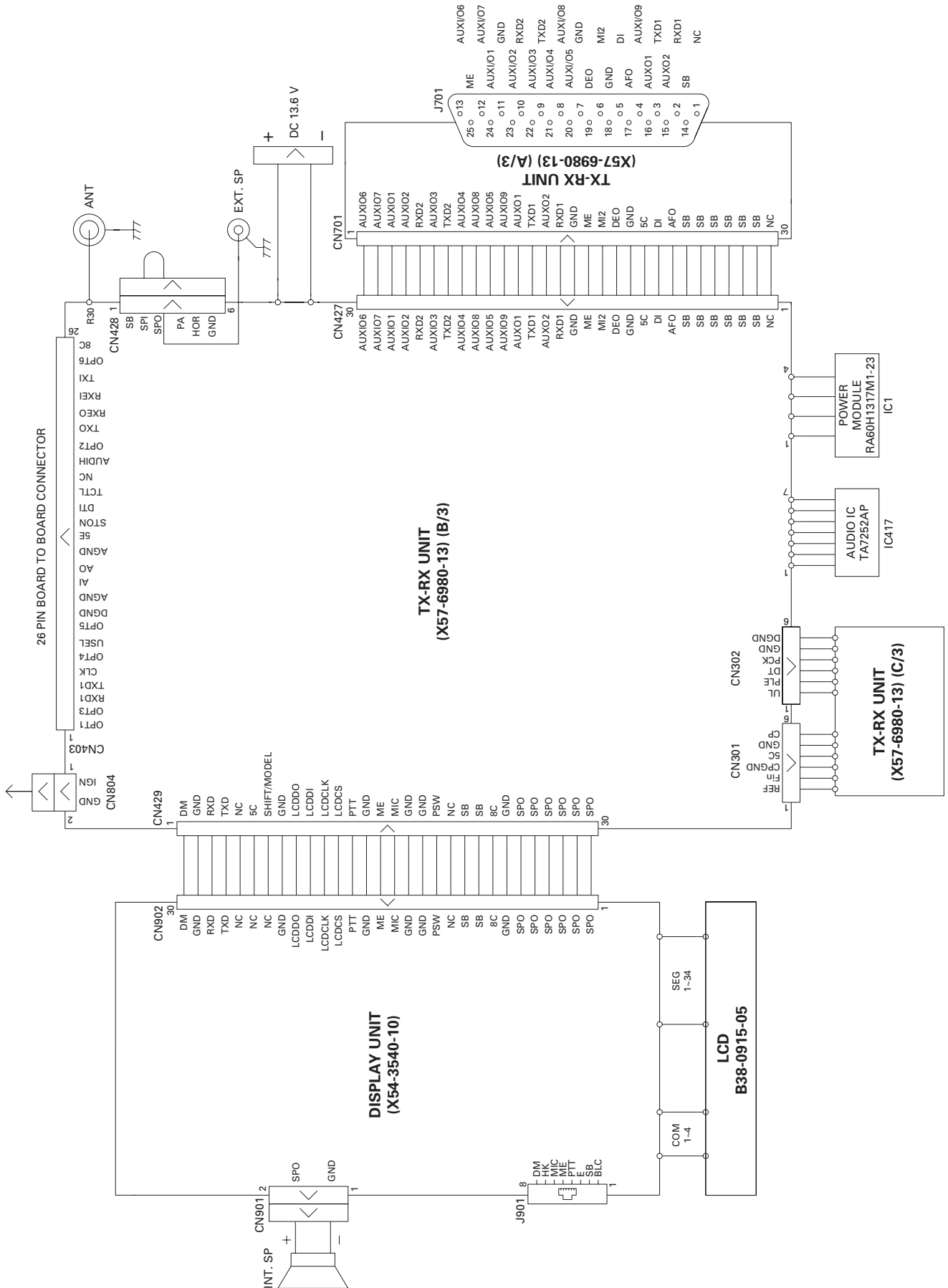
PIN SPECIFICATION	
NO.	FUNCTION
1	AVDD01
2	AVDD02
3	AVDD03
4	AVDD04
5	AVDD05
6	AVDD06
7	AVDD07
8	AVDD08
9	AVDD09
10	AVDD10
11	AVDD11
12	AVDD12
13	AVDD13
14	AVDD14
15	AVDD15
16	AVDD16
17	AVDD17
18	AVDD18
19	AVDD19
20	AVDD20
21	AVDD21
22	AVDD22
23	AVDD23
24	AVDD24
25	AVDD25
26	AVDD26
27	AVDD27
28	AVDD28
29	AVDD29
30	AVDD30
31	AVDD31
32	AVDD32
33	AVDD33
34	AVDD34
35	AVDD35
36	AVDD36
37	AVDD37
38	AVDD38
39	AVDD39
40	AVDD40
41	AVDD41
42	AVDD42
43	AVDD43
44	AVDD44
45	AVDD45
46	AVDD46
47	AVDD47
48	AVDD48
49	AVDD49
50	AVDD50
51	AVDD51
52	AVDD52
53	AVDD53
54	AVDD54
55	AVDD55
56	AVDD56
57	AVDD57
58	AVDD58
59	AVDD59
60	AVDD60
61	AVDD61
62	AVDD62
63	AVDD63
64	AVDD64
65	AVDD65
66	AVDD66
67	AVDD67
68	AVDD68
69	AVDD69
70	AVDD70
71	AVDD71
72	AVDD72
73	AVDD73
74	AVDD74
75	AVDD75
76	AVDD76
77	AVDD77
78	AVDD78
79	AVDD79
80	AVDD80
81	AVDD81
82	AVDD82
83	AVDD83
84	AVDD84
85	AVDD85
86	AVDD86
87	AVDD87
88	AVDD88
89	AVDD89
90	AVDD90
91	AVDD91
92	AVDD92
93	AVDD93
94	AVDD94
95	AVDD95
96	AVDD96
97	AVDD97
98	AVDD98
99	AVDD99
100	AVDD100

# TK-7180H/7182H

## INTERCONNECTION DIAGRAM (TK-7180H)

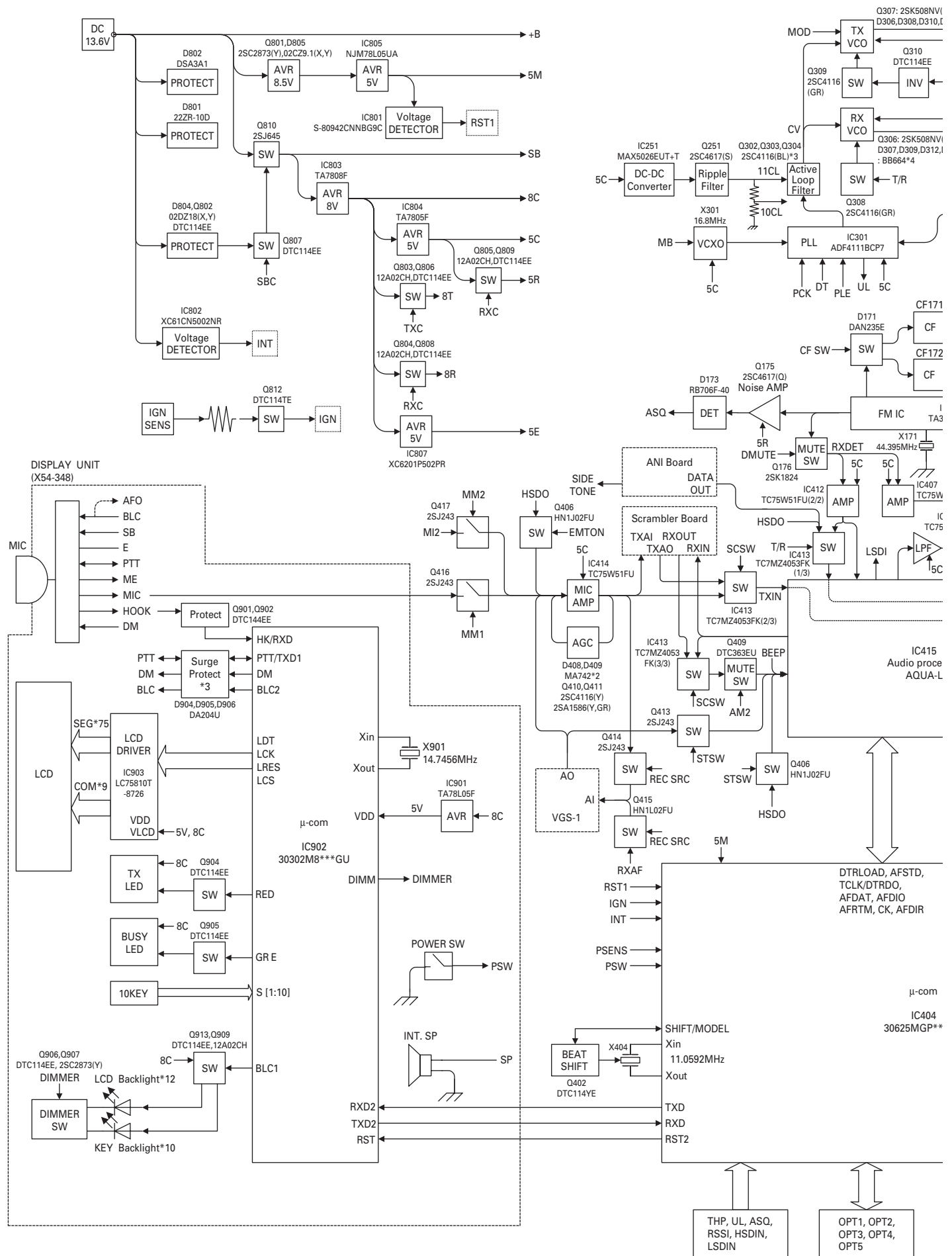


## INTERCONNECTION DIAGRAM (TK-7182H)

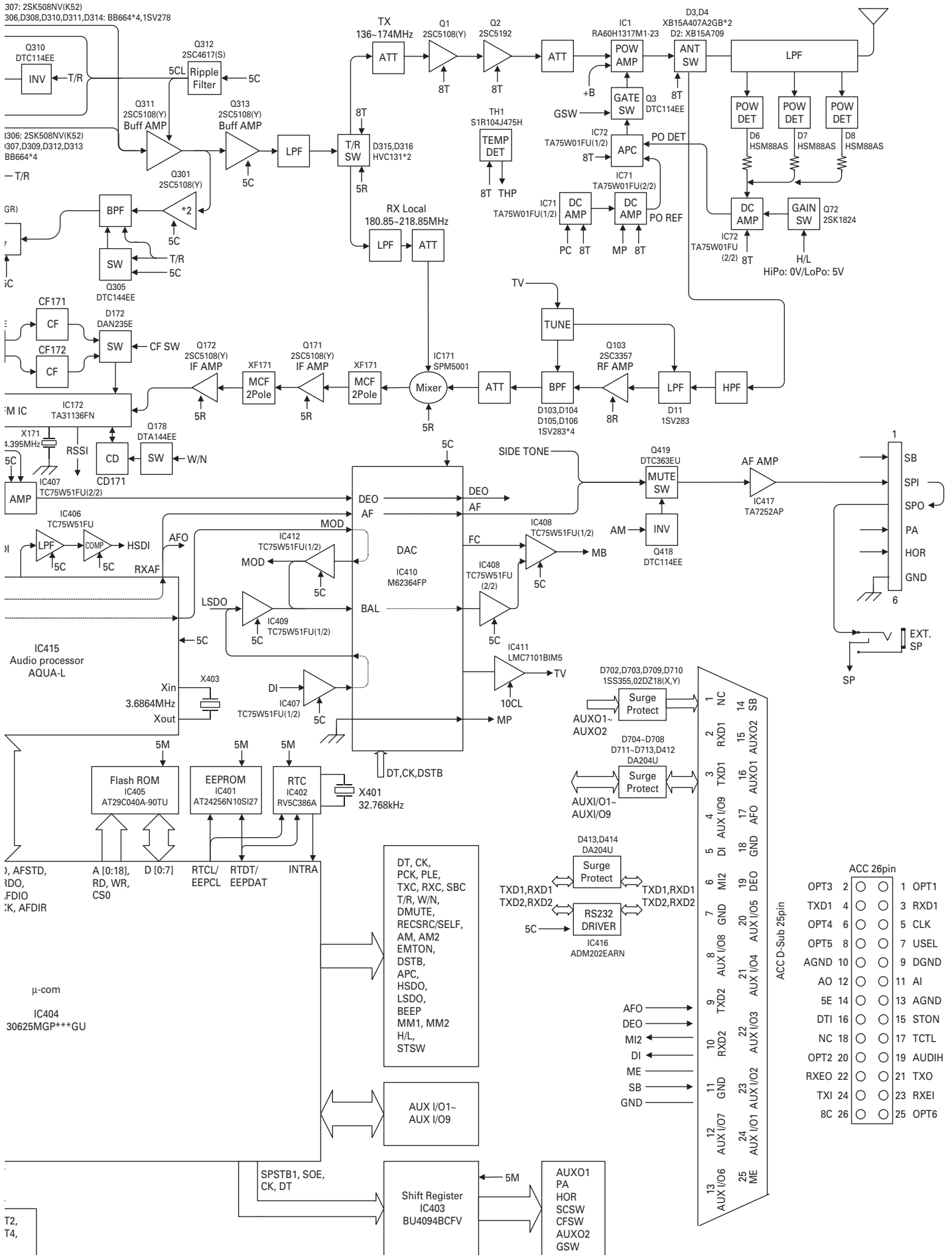




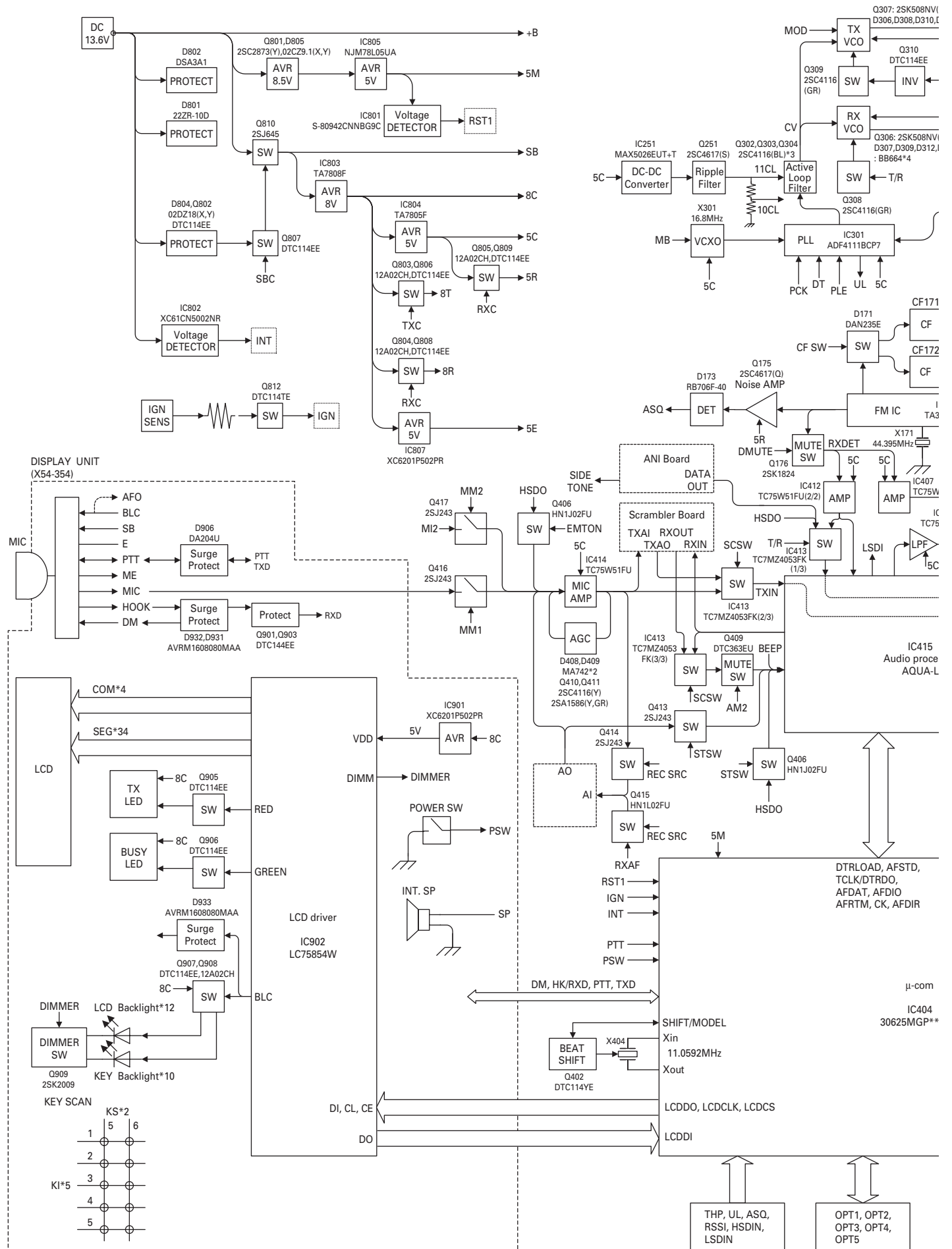
# TK-7180H/7182H BLOCK DIAGRAM (TK-7180H)



# BLOCK DIAGRAM (TK-7180H) TK-7180H/7182H

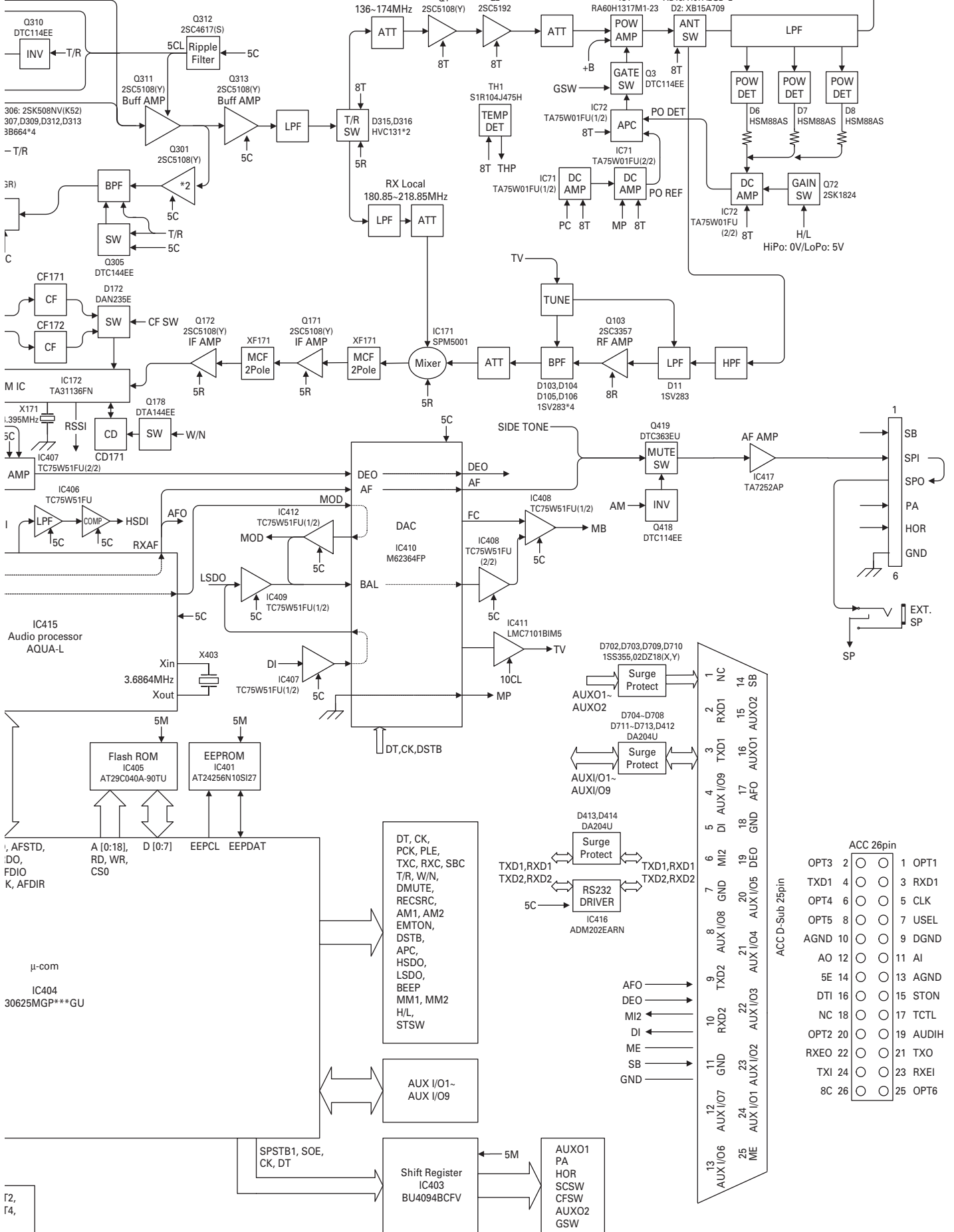


# TK-7180H/7182H BLOCK DIAGRAM (TK-7182H)



# BLOCK DIAGRAM (TK-7182H) TK-7180H/7182H

307: 2SK508NV(K52)  
306:D309,D310,D311,D314: BB664\*4,1SV278



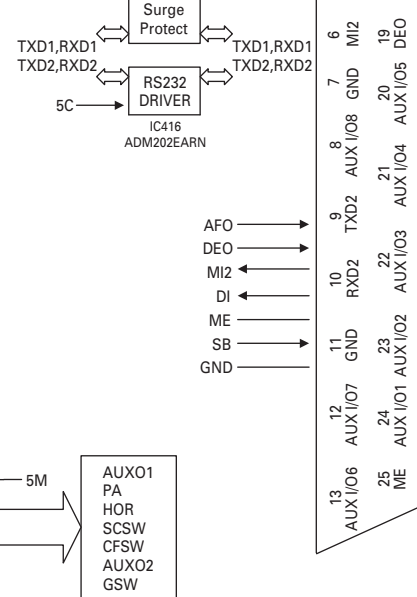
AFSTD, IDO, FDIO, K, AFDIR

μ-com  
IC404  
30625MGP\*\*\*GU

G2,  
G4,

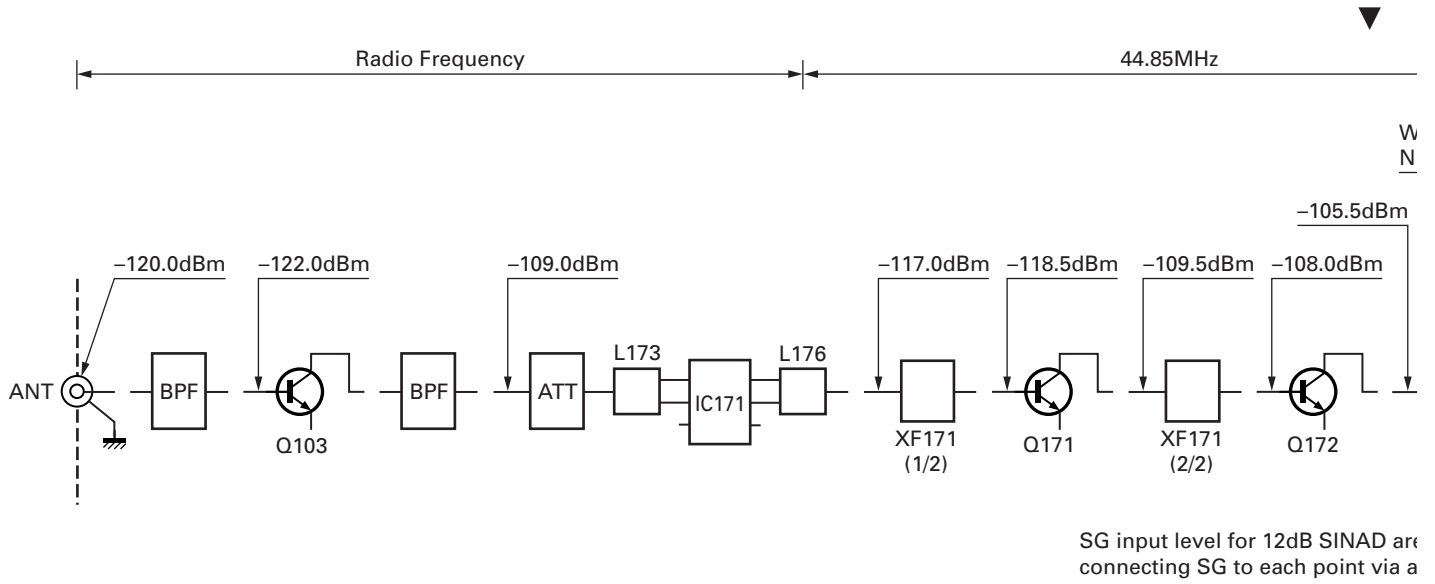
A [0:18], RD, WR, CS0  
D [0:7]  
EEPCL  
EEPDAT  
DT, CK, PCK, PLE, TXC, RXC, SBC  
T/R, W/N, DMUTE, RECSRC, AM1, AM2  
EMTON, DSTB, APC, HSDO, LSDO, BEEP  
MM1, MM2, H/L, STSW

SPSTB1, SOE, CK, DT  
Shift Register IC403  
BU4094BCFV  
AUX01  
PA  
HOR  
SCSW  
CFSW  
AUX02  
GSW

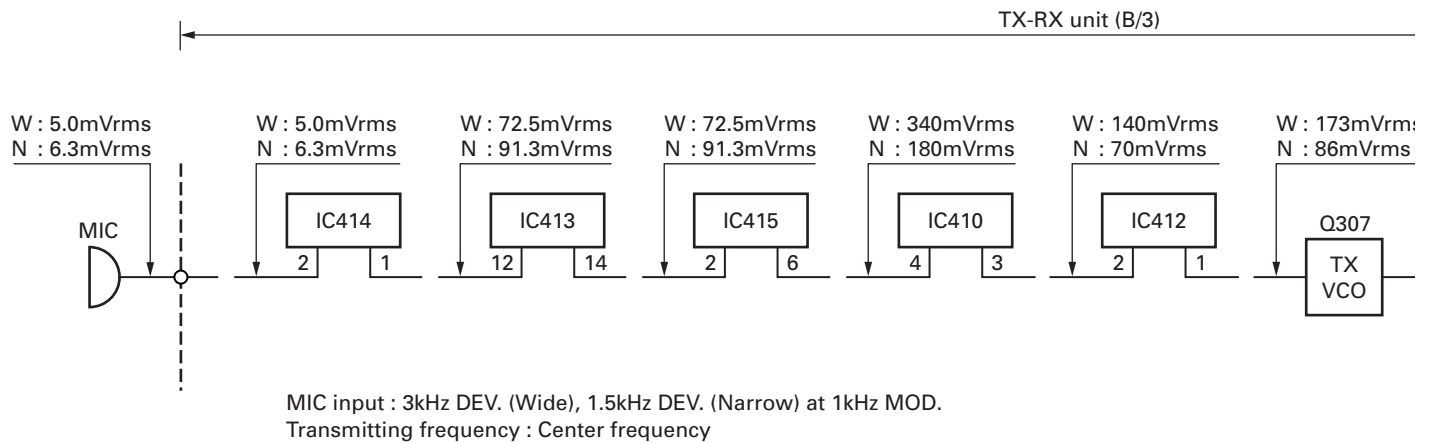


## LEVEL DIAGRAM

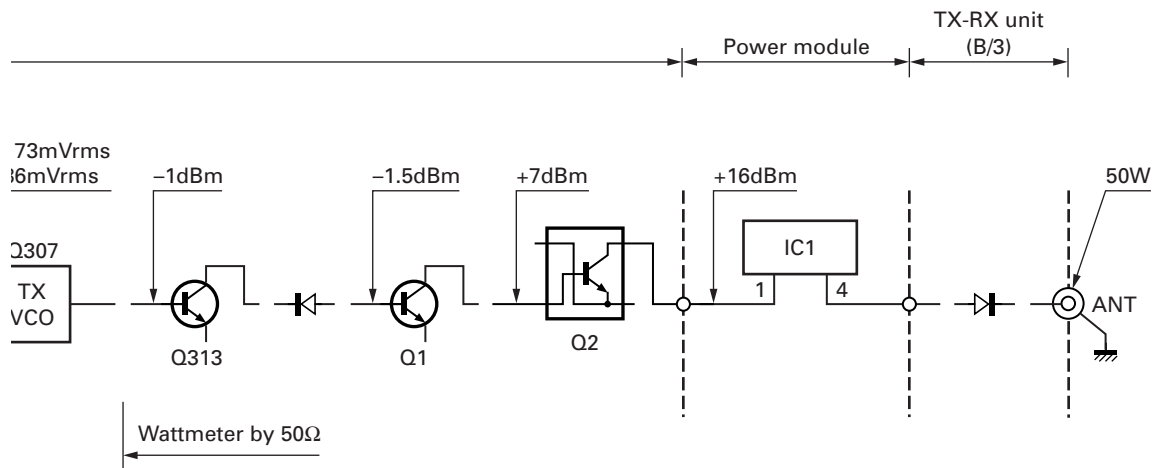
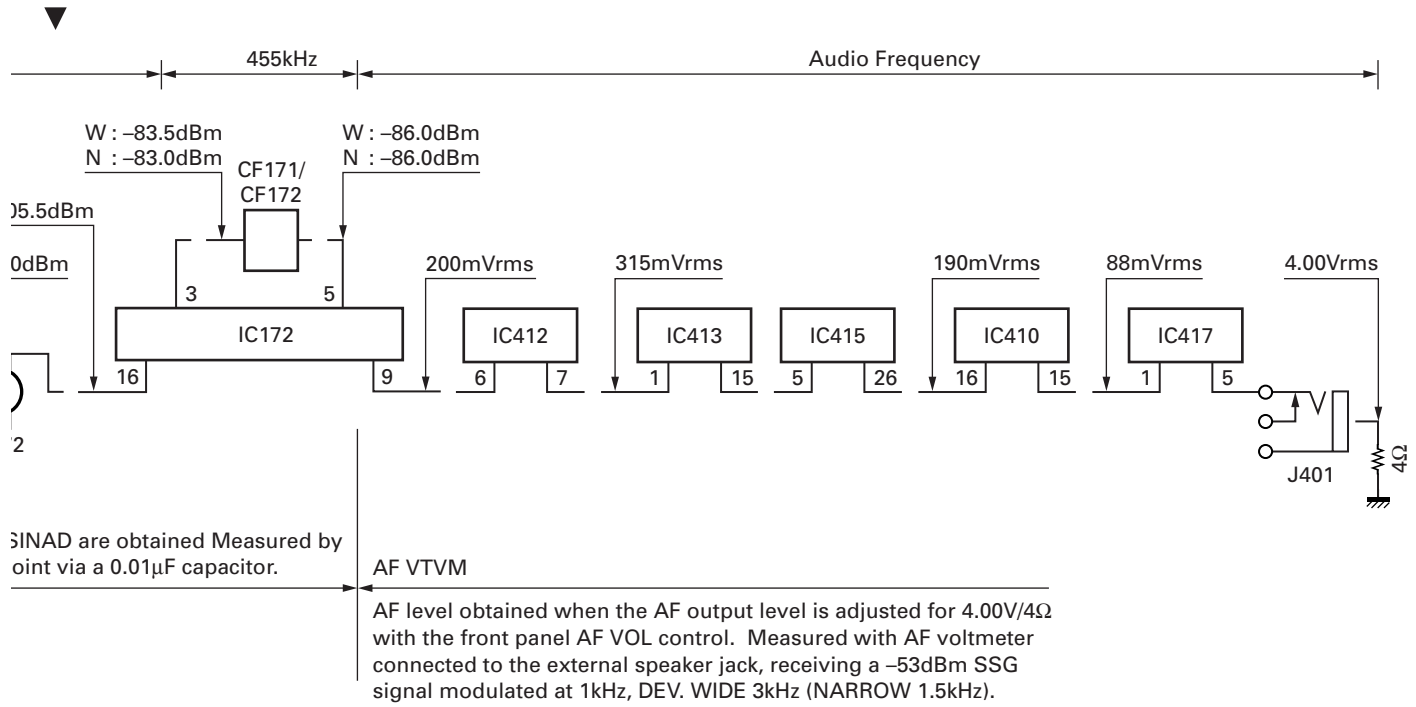
### Receiver Section



### Transmitter Section



## LEVEL DIAGRAM



# TK-7180H/7182H

## OPTIONAL ACCESSORIES: KRK-10 (Control Head Remote Kit: 23ft/7m)

### External View



### Components Description

Ref. No.	Part Name	Description
IC1,2	IC	Buffer amp
D2	Varistor	Current limiter
D3~6	Diode	Surge protect
D9~11	Diode	Surge protect
D12~20	Varistor	Surge protect

### Parts List

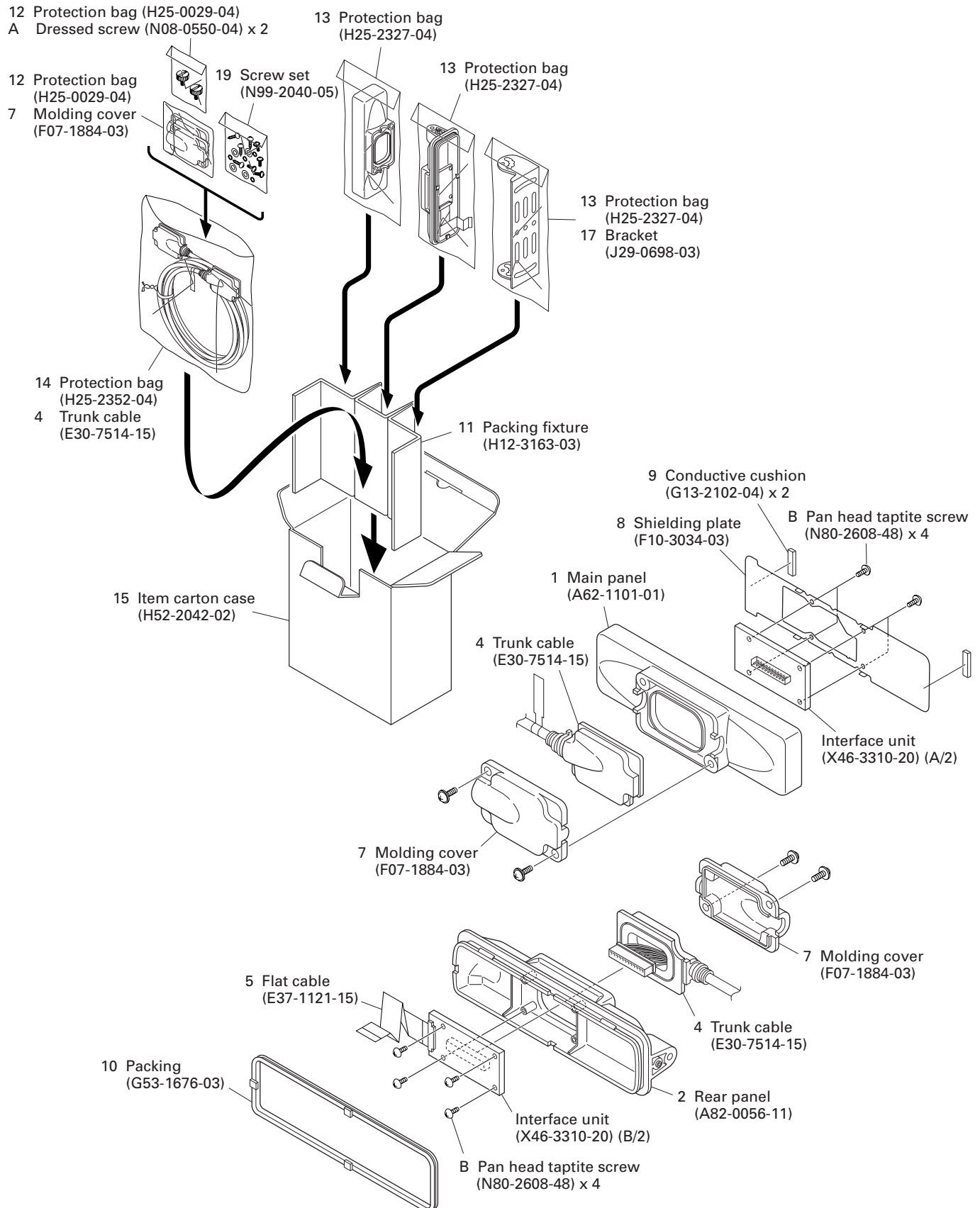
KRK-10 (Y60-4030-20)

\* : New Parts

Ref. No.	Address	New parts	Parts No.	Description
<b>KRK-10</b>				
1			A62-1101-01	MAIN PANEL
2			A82-0056-11	REAR PANEL
4		*	E30-7514-15	TRUNK CABLE
5		*	E37-1121-15	FLAT CABLE
7			F07-1884-03	MOLDING COVER
8			F10-3034-03	SHIELDING PLATE
9			G13-2102-04	CONDUCTIVE CUSHION
10			G53-1676-03	PACKING
11			H12-3163-03	PACKING FIXTURE
12			H25-0029-04	PROTECTION BAG (60/110/0.07)
13			H25-2327-04	PROTECTION BAG (100/250/0.07)
14			H25-2352-04	PROTECTION BAG (250/350/0.07)
15			H52-2042-02	ITEM CARTON CASE
17			J29-0698-03	BRACKET
A			N08-0550-04	DRESSED SCREW
B			N80-2608-48	PAN HEAD TAPTITE SCREW
19			N99-2040-05	SCREW SET
<b>INTERFACE UNIT (X46-3310-20)</b>				
C14			CK73GB1H102K	CHIP C 1000PF K
C41			CK73GB1H102K	CHIP C 1000PF K
CN1			E40-6371-05	FLAT CABLE CONNECTOR
CN2			E40-6412-05	FLAT CABLE CONNECTOR
CN3,4			E40-6377-05	PIN ASSY
L2,3			L40-1091-86	SMALL FIXED INDUCTOR (1.0UH)
L5,6			L40-1091-86	SMALL FIXED INDUCTOR (1.0UH)
R1			RK73GB2A473J	CHIP R 47K J 1/10W
D2		*	MINISMDC075F24	VARISTOR
D3-6			DA204U	DIODE
D9-11			DA204U	DIODE
D12-20			AVRM1608080MAA	VARISTOR
IC1,2			TC7WT125FU	MOS IC

## OPTIONAL ACCESSORIES: KRK-10 (Control Head Remote Kit: 23ft/7m)

### ■ Exploded View and Packing



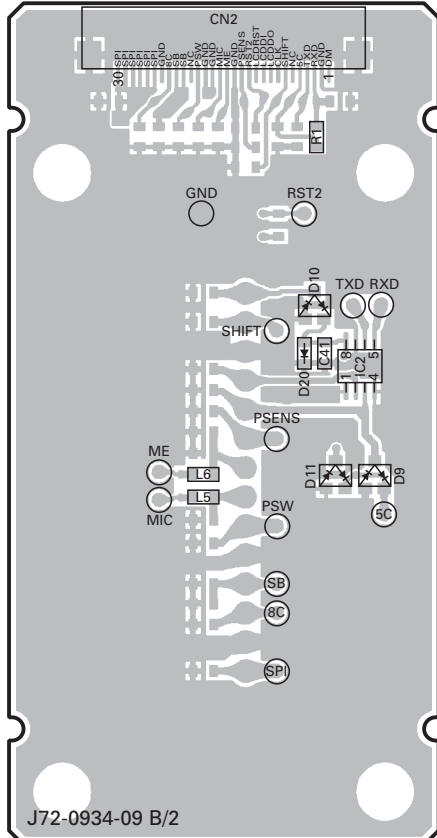


# TK-7180H/7182H

## OPTIONAL ACCESSORIES: KRK-10 (Control Head Remote Kit: 23ft/7m)

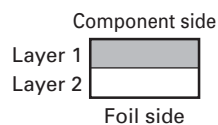
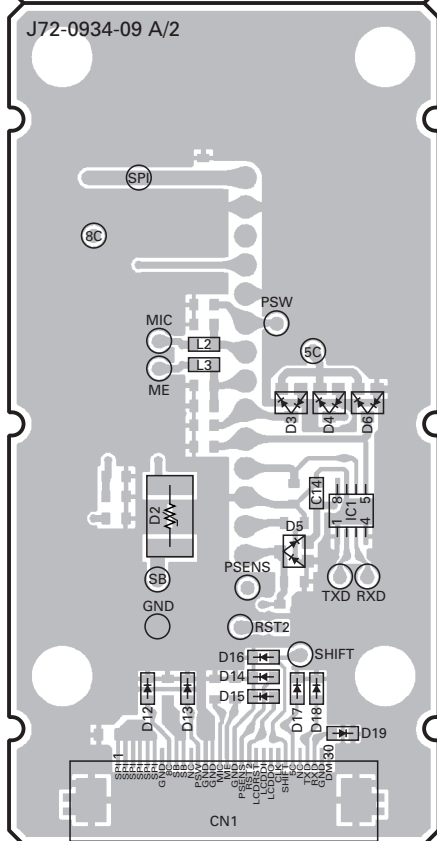
### PC Board

**INTERFACE UNIT (X46-3310-20)**  
Component side view (J72-0934-09)

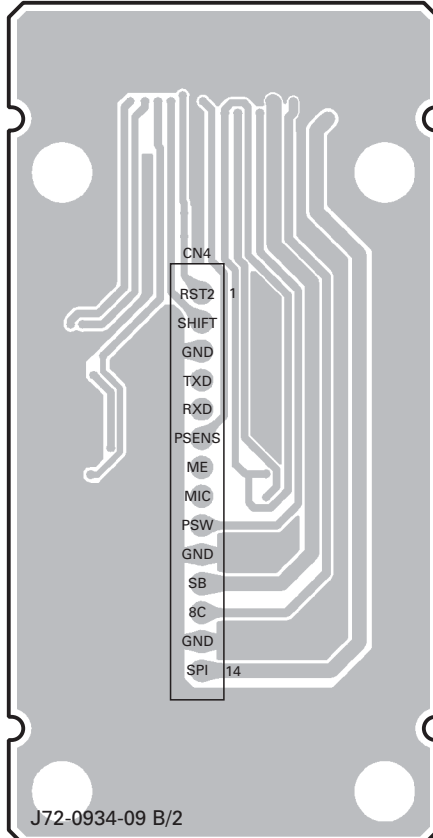


J72-0934-09 B/2

J72-0934-09 A/2

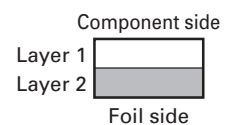
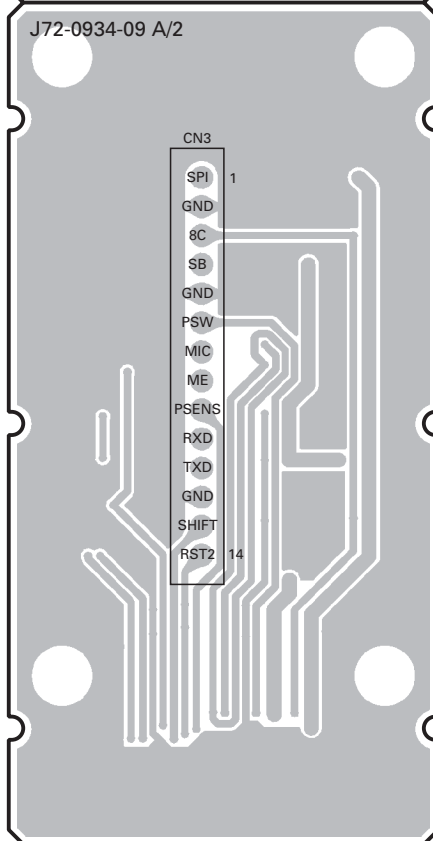


**INTERFACE UNIT (X46-3310-20)**  
Foil side view (J72-0934-09)



J72-0934-09 B/2

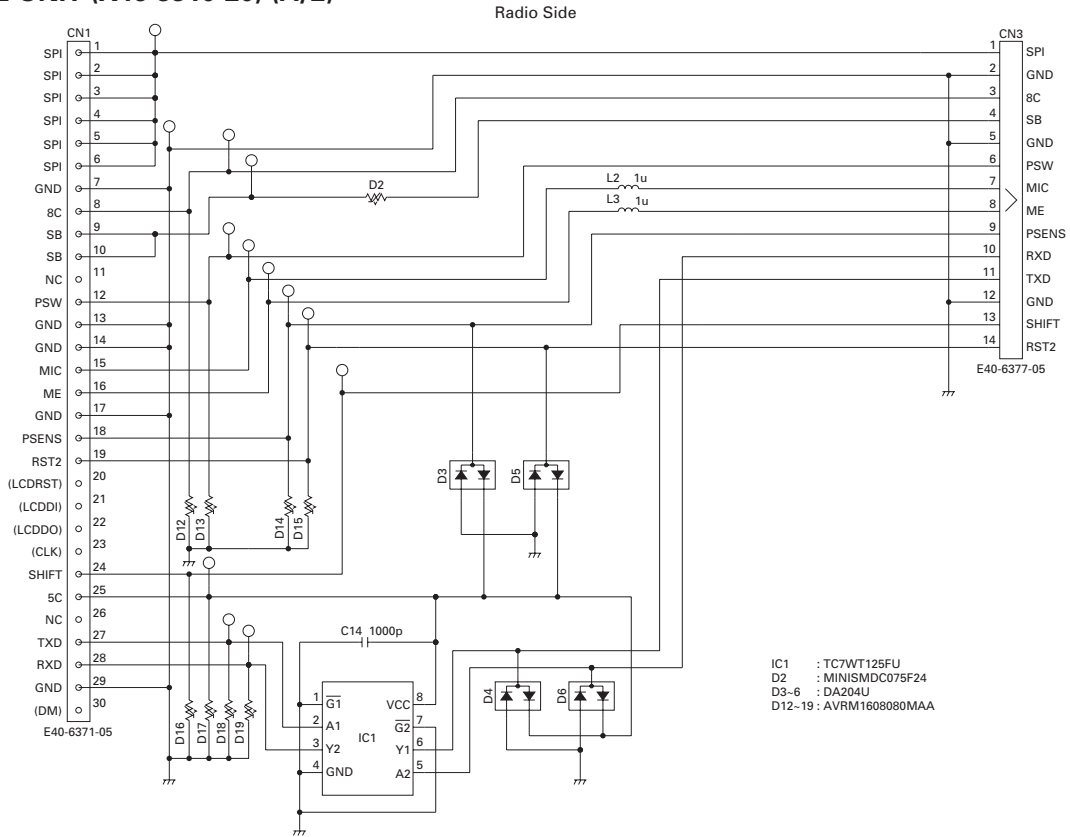
J72-0934-09 A/2



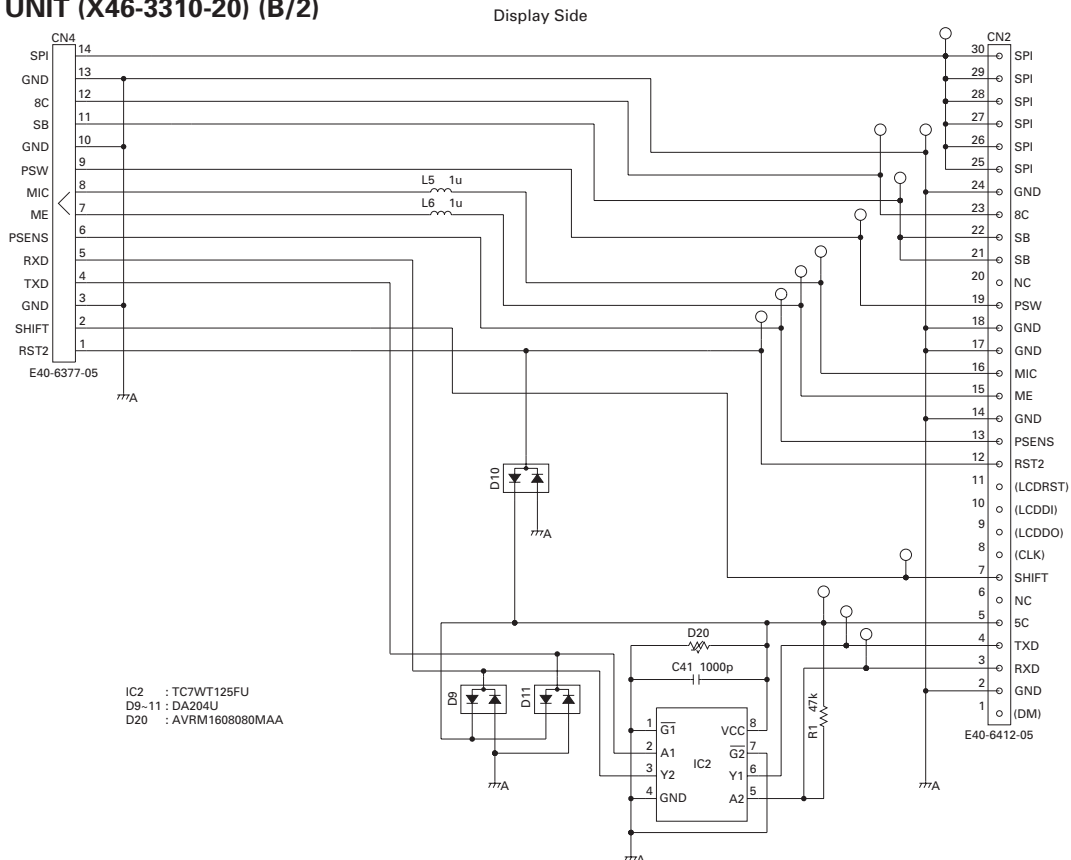
## OPTIONAL ACCESSORIES: KRK-10 (Control Head Remote Kit: 23ft/7m)

### ■ Schematic Diagram

#### INTERFACE UNIT (X46-3310-20) (A/2)



#### INTERFACE UNIT (X46-3310-20) (B/2)



# TK-7180H/7182H

## OPTIONAL ACCESSORIES: KRK-10 (Control Head Remote Kit: 23ft/7m)

### ■ Terminal Function

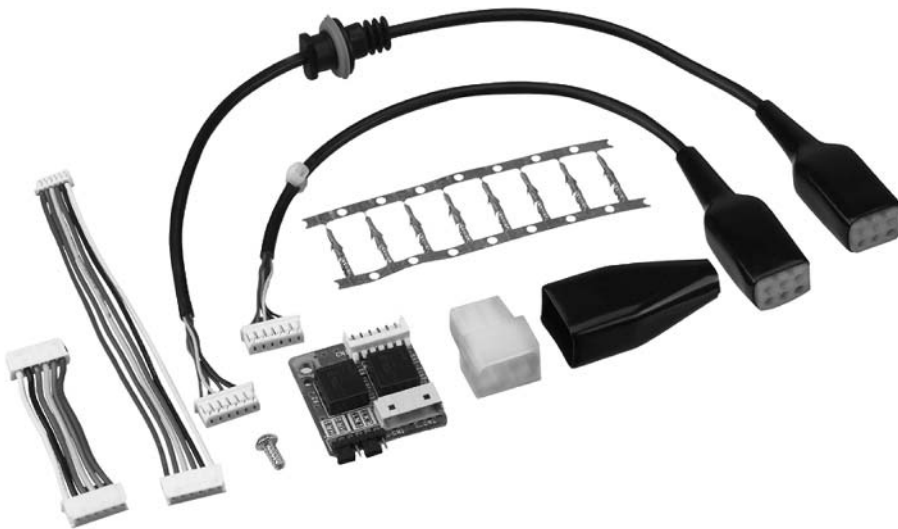
Pin No.	Name	Description
<b>CN1 (Radio side)</b>		
1	SPI	Speaker input
2	SPI	Speaker input
3	SPI	Speaker input
4	SPI	Speaker input
5	SPI	Speaker input
6	SPI	Speaker input
7	GND	Ground
8	8C	8V input
9	SB	Power input of switched power supply
10	SB	Power input of switched power supply
11	NC	No connection
12	PSW	Detection signal output of power switch
13	GND	Ground
14	GND	Ground
15	MIC	MIC signal output
16	ME	MIC ground
17	GND	Ground
18	PSENS	Detection signal output of display unit
19	RST2	Reset signal input
20	(LCDRST)	Reserve
21	(LCDDI)	Reserve
22	(LCDDO)	Reserve
23	(CLK)	Reserve
24	SHIFT	Control signal input of beat-shift function
25	5C	5V input
26	NC	No connection
27	TXD	Serial data signal input
28	RXD	Serial data signal output
29	GND	Ground
30	(DM)	Reserve
<b>CN2 (Display side)</b>		
1	(DM)	Reserve
2	GND	Ground
3	RXD	Serial data signal input
4	TXD	Serial data signal output
5	5C	5V input
6	NC	No connection
7	SHIFT	Control signal output of beat-shift function
8	(CLK)	Reserve
9	(LCDDO)	Reserve
10	(LCDDI)	Reserve
11	(LCDRST)	Reserve
12	RST2	Reset signal output
13	PSENS	Detection signal input of display unit
14	GND	Ground

Pin No.	Name	Description
15	ME	MIC ground
16	MIC	MIC signal input
17	GND	Ground
18	GND	Ground
19	PSW	Detection signal input of power switch
20	NC	No connection
21	SB	Power output of switched power supply
22	SB	Power output of switched power supply
23	8C	8V output
24	GND	Ground
25	SPI	Speaker output
26	SPI	Speaker output
27	SPI	Speaker output
28	SPI	Speaker output
29	SPI	Speaker output
30	SPI	Speaker output
<b>CN3 (Radio side)</b>		
1	SPI	Speaker output
2	GND	Ground
3	8C	8V output
4	SB	Power output of switched power supply
5	GND	Ground
6	PSW	Detection signal input of power switch
7	MIC	MIC signal input
8	ME	MIC ground
9	PSENS	Detection signal input of display unit
10	RXD	Serial data signal input
11	TXD	Serial data signal output
12	GND	Ground
13	SHIFT	Control signal output of beat-shift function
14	RST2	Reset signal output
<b>CN4 (Display side)</b>		
1	RST2	Reset signal input
2	SHIFT	Control signal input of beat-shift function
3	GND	Ground
4	TXD	Serial data signal input
5	RXD	Serial data signal output
6	PSENS	Detection signal output of display unit
7	ME	MIC ground
8	MIC	MIC signal output
9	PSW	Detection signal output of power switch
10	GND	Ground
11	SB	Power input of switched power supply
12	8C	8V input
13	GND	Ground
14	SPI	Speaker input

## OPTIONAL ACCESSORIES

### KAP-2 (Horn Alert/P.A. Relay Unit)

■ External View



### KCT-40 (Radio Interface Cable)

■ External View



### KMC-35 (Microphone)

■ External View



### KMC-36 (Keypad Microphone)

■ External View



### KCT-46 (Ignition Sense Cable)

■ External View



# TK-7180H/7182H

## SPECIFICATIONS

### GENERAL

Frequency range .....	136~174MHz
Number of channels .....	Zone : Max. 128 per radio    Ch/GID : Max. 250 per zone (Max. 512 [Conv. Ch's + GID's] total per radio)
Channel spacing .....	Wide : 25, 30kHz    Narrow : 12.5, 15kHz
Operating voltage .....	13.6V DC $\pm$ 15%
Current drain	
Standby .....	0.4A
Receive .....	1.0A
Transmit.....	13.0A
Duty cycle .....	Transmit : 20%
Operating temperature range .....	-22°F~+140°F (-30°C~+60°C)
Frequency stability .....	$\pm$ 0.00025% (-22°F~+140°F)
Antenna impedance .....	50 $\Omega$
Channel frequency spread .....	38MHz
Dimensions (W x H x D) .....	6-5/16 x 1-3/4 x 6-3/16 in. (160 x 45 x 157 mm) (Projections not included)
Weight (net) .....	3.3 lbs. (1.5 kg)

### RECEIVER (Measurements made per EIA/TIA-603)

Sensitivity (12dB SINAD) .....	Wide : 0.25 $\mu$ V    Narrow : 0.28 $\mu$ V
Selectivity .....	Wide : 80dB    Narrow : 70dB
Intermodulation distortion .....	W/N : 75dB ( $\pm$ 50, 100kHz)
Spurious response .....	90dB
Audio output (4 $\Omega$ impedance) .....	4W with less than 5% distortion

### TRANSMITTER (Measurements made per EIA/TIA-603)

RF power output .....	50 to 10W
Spurious response .....	70dB
Type of emission .....	Wide : 16K0F3E    Narrow : 11K0F3E
FM hum & noise .....	Wide : 50dB    Narrow : 45dB
Audio distortion .....	W/N : 3%
Microphone impedance .....	600 $\Omega$

## Kenwood Corporation

2967-3, Ishikawa-machi, Hachioji-shi, Tokyo, 192-8525 Japan

### Kenwood U.S.A. Corporation

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

### Kenwood Electronics Canada Inc.

6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

### Kenwood Electronics Deutschland GmbH

Rembrücker Str. 15, 63150 Heusenstamm, Germany

### Kenwood Electronics Belgium N.V.

Leuvensesteenweg 248 J, 1800 Vilvoorde, Belgium

### Kenwood Electronics France S.A.

13, Boulevard Ney, 75018 Paris, France

### Kenwood Electronics UK Limited

KENWOOD House, Dwight Road, Watford, Herts., WD18 9EB United Kingdom

### Kenwood Electronics Europe B.V.

Amsterdamseweg 37, 1422 AC Uithoorn, The Netherlands

### Kenwood Electronics Italia S.p.A.

Via G. Sirtori, 7/9 20129 Milano, Italy

### Kenwood Ibérica, S.A.

Bolivia, 239-08020 Barcelona, Spain

### Kenwood Electronics Australia Pty. Ltd.

(A.C.N. 001 499 074)

16 Giffnock Avenue, Centrecourt Estate, North Ryde, N.S.W. 2113 Australia

### Kenwood Electronics (Hong Kong) Ltd.

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

### Kenwood Electronics Singapore Pte Ltd

1 Ang Mo Kio Street 63, Singapore 569110

