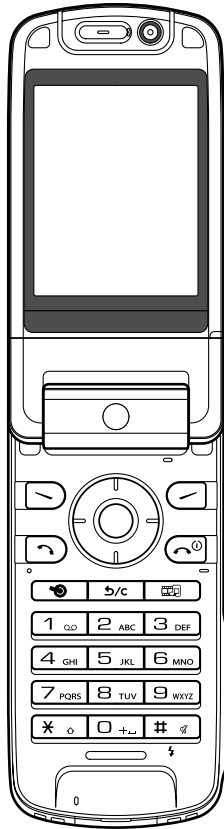


# SHARP SERVICE MANUAL

No. S0422JNJ300/W

## 3G(UMTS)/GSM/GPRS PHONE MODEL 902SH



INTERNAL MODEL NAME	SELECTION CODE	DESTINATION	INTERNAL MODEL NAME	SELECTION CODE	DESTINATION
JNJ300BW	B	Hungary	JNJ300KW	K	Austria
JNJ300CW	C	Switzerland	JNJ300PW	P	Portugal
JNJ300DW	D	Greece	JNJ301PW	PP	Portugal (Prepaid)
JNJ300EW	E	U.K.	JNJ300RW	R	Ireland
JNJ301EW	EP	U.K. (Prepaid)	JNJ300SW	S	Spain
JNJ300FW	F	France	JNJ300TW	T	Italy
JNJ300GW	G	Germany	JNJ300UW	U	Belgium
JNJ301GW	GP	Germany (Prepaid)	JNJ300WW	W	Sweden
JNJ300HW	H	Netherlands	JNJ300ZW	Z	New Zealand

• In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified should be used.

• Caution  
Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instruction.

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##### Parts Guide

Parts marked with "▲" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

**SERVICING CONCERNS**

1. When requested, back up user's handset data using SPST (SHARP Programme Support Tool). Otherwise, before servicing, warn the user that data in the memory may be lost during repairs.
2. Upgrade the firmware to the latest version using SPST before returning the handset to the customer.
3. After repairs, inspect the handset (phone) according to the following flowchart.

Repairs are completed.  
(Fixed parts have been checked for proper operation.)



Check IMEI NO./Operator code (Destination)/  
Firmware version by Identity function of SPST.



Inspect each device using performance check  
adjustment function of SPST.



Carry out RF performance check with SPST.



All completed.

4. When storing or transporting a PWB, put it into a conductive bag or wrap it in aluminum foil. (C-MOS IC may be damaged by electrostatic charges.)
5. Do not leave fingerprints, etc. on ornamental parts including a cabinet, especially clear windows for main and sub displays. Wear fingerstalls to avoid this.  
Also, ensure not to leave fingerprints on the surface of main and sub display panels.
6. To prevent oxidation which causes connection problems, do not touch any terminals on the electric board, microphone, vibrator, earpiece and speaker.  
When handling these parts, wear fingerstalls. Should you touch these parts, clean them with a soft dry cloth.  
Always wear fingerstalls when handling a shield case on the electric board. Otherwise oxidation may occur causing handset performance deterioration.
7. The FPC is a precision device. Handle it carefully to prevent any damages.
8. Do not expose the moisture sensor to liquids.  
If the sheet gets wet, red ink runs. In this case, replace the sheet with a new one.  
Be careful about your perspiration.
9. Before you disassemble or reassemble handset, make sure to remove the Li-Ion battery.
10. Be sufficiently careful with static electricity of integrated circuits and other circuits. Wear static electricity prevention bands whilst servicing.

## PRECAUTIONS FOR USING LEAD-FREE SOLDER

**① Employing lead-free solder**

This model employs lead-free solder.

This is indicated by the "LF" symbol printed on the PWB and in the service manual.

The suffix letter indicates the alloy type of the solder.

Example:

**LF**a  
Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

**② Using lead-free solder**

When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)

As the melting point of lead-free solder is approximately 40°C higher than tin/lead alloy solder, it is recommended that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

**③ Soldering**

As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved.

The high content of tin in lead free solder will cause premature corrosion of the bit.

To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.

Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult.

It will be necessary to clean and replace bits more often when using lead-free solder. To reduce bit wear, care should be taken to clean the bit thoroughly after each use.

**CHAPTER 1. GENERAL DESCRIPTION**

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

**[1] Specifications**

<b>General:</b>	Quad - band (W-CDMA/GSM 900 MHz/ DCS 1800 MHz/PCS 1900MHz) GPRS-enabled WAP, MMS, SMS
<b>Dimensions (folded, excluding the aerial)</b>	
<b>(W x H x D):</b>	50 x 102 x 26 mm
<b>Weight:</b>	149 g
<b>Battery operating temperature:</b>	0°C - 40°C
<b>Main display:</b>	Display dimensions: 2.4 inch Resolution: 240 x 320 pixels LCD display: TFT 262,144 colours with backlight LCD back light: LED back light white colour LEDs
<b>Sub display:</b>	Resolution: 72 x 12 pixels LCD display: STN B/W LCD with back light
<b>Camera:</b>	CCD 2M pixels built-in camera Zoom: Wide and zoom mode [Supported 40 (when image size is 160 x 320 pixels) x zoom] Lens: (Wide) F3.3, f = 4.85 mm (Tele) F4.9, f = 9.7 mm
<b>Sub Camera:</b>	CMOS 110K pixels built-in camera Lens: F2.8, f = 1.7 mm

<b>Sound:</b>	64-polyphonic ring melodies Stereo Speakers
<b>Mobile light:</b>	3 colours (RGB)
<b>External DC supply voltage:</b>	5.2 V
<b>Battery:</b>	3.7 V, 870 mAh, Li-Ion
<b>Standby time:</b>	Up to 240 hours (3G mode) Up to 250 hours (GSM mode)
<b>Talk time:</b>	Up to 150 minutes (3G mode) Up to 240 minutes (GSM mode)
<b>Others:</b>	Side key Infrared port 1.2 L/P (maximum distance 20 cm) Connector for AC charger and data cable

Battery running time depends on the battery and SIM card as well as the network conditions and usage.

Specifications for this model are subject to change without prior notice.

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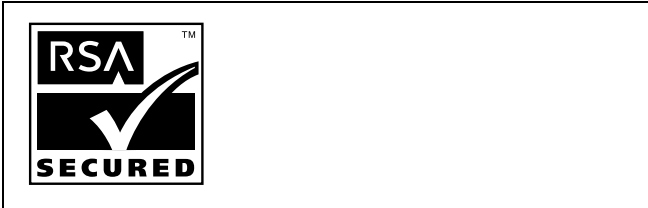
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4,901,307	5,490,165	5,056,109	5,504,773	5,101,501
5,506,865	5,109,390	5,511,073	5,228,054	5,535,239
5,267,261	5,544,196	5,267,262	5,568,483	5,337,338
5,600,754	5,414,796	5,657,420	5,416,797	5,659,569
5,710,784	5,778,338			

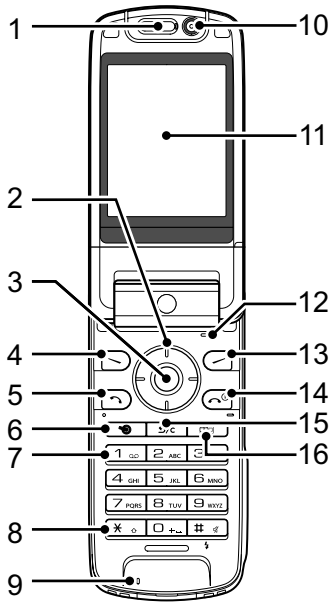









CP8 PATENT






This product is licensed under the MPEG-4 Visual Patent Portfolio License for the personal and non-commercial use of a consumer to (i) encode video in compliance with the MPEG-4 Video Standard ("MPEG-4 Video") and/or (ii) decode MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a licensed video provider. No license is granted or implied for any other use. Additional information may be obtained from MPEG LA. See <http://www.mpegla.com>.

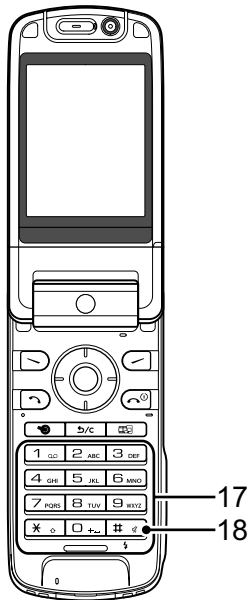
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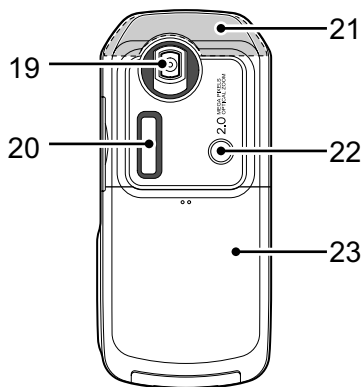
**[2] Names of parts**



- 1. Earpiece**
- 2. Navigation Keys (Arrow Keys):**  
 Moves cursor to highlight a menu item, etc.  
 Up/Down arrow keys: Displays the Contacts List when pressed during stand-by.  
 Left arrow key: Displays the message inbox when pressed during stand-by.  
 Right arrow key: Displays the monthly calendar when pressed during stand-by.
- 3. Centre Key:**  
 Displays Main menu when pressed during stand-by, then executes a function highlighted.
- 4. Left Soft Key:**  
 Executes a function at the bottom left of the screen. Press during stand-by to display the Messaging screen.
- 5. Send/Redial Key:**  
 Makes or accepts calls, displays the All Calls screen in stand-by mode.
- 6. Shortcut Key:**  
 Press to open the shortcut menu to access the desired applications.
- 7. Voice Mail Key:**  
 Press and hold to connect to the Voice mail centre automatically. (Depending on the SIM card.)
- 8. \* /Shift Key:**  
 Switches character case between four modes: Abc, ABC, 123 and abc on the text entry screen. Press to enter P, ?, - or \* in stand-by mode.

- 9. Microphone**
- 10. Sub Camera (Internal Camera)**
- 11. Main Display**
- 12. Microphone (for the viewer style of the display)**
- 13. Right Soft Key:**  
 Executes the function at the bottom right of the screen. Shortcut to "Vodafone live!" by opening the browser. Press during stand-by.
- 14. End/Power Key:**  
 Ends a call and turns power on/off.
- 15. Clear/Back Key:**  
 Clears the characters before the cursor, returns to the previous screen, etc.
- 16. Multimedia Key:**  
 Opens the Media Player screen.
- 17. Keypad:**  
 1 key: Shortcut to the Voice mail centre. (Depending on the SIM card.) Press and hold during stand-by.  
 2-9 keys: Press and hold during stand-by to display each speed dial phone number.  
 0 key: Press and hold to enter +.
- 18. #/Flash Light Key:**  
 Switches symbol screens on the text entry screen. Press and hold to switch languages on the text entry screen.  
 Turns the flash/auxiliary light on or off in camera mode. Press and hold during stand-by to switch Profiles settings between the mode most recently activated and Silent mode.





**19. Camera (External Camera)**

**20. Sub Display**

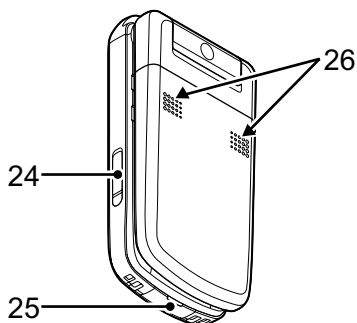
**21. Built-in Aerial:**

Warning: Do not cover the top of the phone with your hand when in use as this may interfere with the performance of the built-in aerial.

**22. Mobile Light:**

Used as a flash or an auxiliary light in camera mode.

**23. Battery Cover**



**24. VIDEO OUT/Handsfree Microphone Connector**

**25. External Connector:** Used to connect either the charger or a USB data cable.

**26. Stereo Speakers**

**27. Infrared Port:**

Sends and receives data via infrared.

**28. Memory Card Slot Cover**

**29. Small Light:**

Used as a battery charge indicator.

**30. Side Keys (Side-Up/Side-Down/Camera/Cancel):**

Side-Up/Side-Down: (These two keys work in reverse with the viewer position of the display.)

Moves the highlight up or down.

Press during stand-by or during a call to increase or decrease the earpiece volume.

Press in camera mode to increase or decrease the zooming ratio.

Camera Key:

Displays the Main menu when pressed during stand-by, then executes a highlighted function. Press and hold to activate the camera.

Press and hold to display the Options menu.

Press during an incoming call to answer the call.

Press during a call to display the Call options.

Press halfway to lock the focus in camera mode.

Press (and hold) to take a picture with the camera.

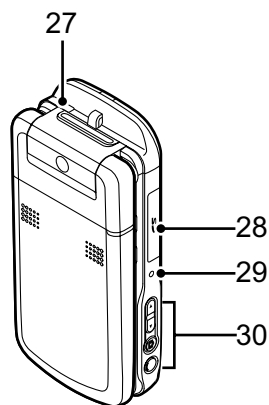
Cancel Key:

Press to return to the previous screen.

Press and hold to reject an incoming call.

Press during an incoming call to send a busy tone to the caller.

Press to end the call.



**[3] List of Menu Functions**

Menu No./ Main Menu	Menu No./ Sub Menu1
1 Games & More	1 Games 2 Screensavers 3 Settings 4 Java™ Information
2 Vodafone live!	
3 Media Player	
4 Messages	1 Create New 2 Inbox 3 Drafts 4 Templates 5 Sent 6 Outbox 7 live! Studio 8 Messenger 9 Voice Mail 10 Cell Broadcasts 11 Area Info 12 Settings 13 Memory Status
5 Camera	
6 My Items	1 Pictures 2 Videos 3 Sounds & Ringtones 4 Games & More 5 Bookmarks 6 My Saved Page 7 Text Templates 8 Other Documents

Menu No./ Main Menu	Menu No./ Sub Menu1
7 Organiser	1 Calendar 2 Alarms 3 Calculator 4 Voice Recorder 5 Scanner 6 Stopwatch 7 Tasks 8 World Clock 9 Countdown Timer 10 Expenses Memo 11 Phone Help
8 Contacts	1 Contacts List 2 Manage Group 3 Speeddial List 4 My Contact Details 5 Advanced
9 SIM Application	
10 Connectivity	1 Bluetooth 2 Infrared 3 Network Settings 4 Internet Settings 5 Backup/Restore
11 Call Log	1 All Calls 2 Missed Calls 3 Received Calls 4 Dialed Numbers 5 Call Timers 6 Call Costs
12 Settings	1 Profiles 2 Display Settings 3 Sound Settings 4 Time & Date 5 Language 6 Call Settings 7 Video Call Settings 8 Security Settings 9 Memory Settings 10 Master Reset

**[4] Optional Accessories**

- Lithium Ion Battery (XN-1BT90)
- Cigarette Lighter Charger (XN-1CL30)
- USB Data Cable (XN-1DC30)
- AC Charger (XN-1QC30, XN-1QC31, XN-1QC32)
- External Antenna Cable (XN-1AT90)
- Audio Remote-Controller (XN-1AR90)
- Car Holder (XN-1CH90)
- Desktop Holder (XN-1DH90)
- Stereo Headset (XN-1HS90)
- Handsfree Microphone Unit (XN-1HU90)
- Video Cable (XN-1VC90)

The above accessories may not be available in all regions.

For details, please contact your dealer.



# CHAPTER 2. ADJUSTMENTS, PERFORMANCE CHECK, AND FIRMWARE UPGRADE

SPST (SHARP Programme Support Tool) allows you to adjust settings, conduct performance checks, and upgrade the firmware.

## [1] SHARP Programme Support Tool (SPST)

### 1. Installation/uninstallation

- Do not change the installation structures (see “2. Structure”).
- SPST cannot be installed on a PC if Windows Installer is not supported.
- The SPST installer does not include MFC that is required to run SPST. If not already installed, install MFC (DLLs including MFC42.DLL).

#### 1.1. System requirements

The following are required for installation.

- OS: Windows 2000 Professional (SP3 or SP4) or Windows XP Home/Professional (SP1) \*1
- PC: IBM/PC compatible \*2
- HDD: 200 MB available space (or more)
- RAM: 256 MB or more (512 MB recommended)
- COM port: Windows compatible serial port
- Display resolution  
XGA or higher  
Basically use the default settings in Display Properties, however, small system font size is recommended. \*3  
(Display Properties → Settings → Advanced → General → Display → Font size)
- Recommended devices for serial connection between a PC and handsets (phones): \*4, \*5  
The PC's serial port  
PCI serial expansion card  
USB-UART serial conversion cable \*6

#### Note

- \*1: SPST does not run on Windows 95, 98, 98 SE, and Me. The behaviour is not guaranteed on Windows XP Media Center Edition/Tablet Edition and in the Virtual PC environment. Also, its compatibility with upcoming operating systems and service packs is not guaranteed.
- \*2: A brand name product is recommended. Minimum requirements: 1 GHz Pentium III processor and 256 MB of RAM, and compatibility with USB 2.0 specification for use of USB-UART serial conversion cables.
- \*3: Depending on the font size, the screen layout may change or some portions and characters may not be displayed on a XGA screen.
- \*4: Use only the specified PCI serial expansion card and USB-UART cables. Currently, no specific PCMCIA card is recommended.
- \*5: Transfer rate is 115 Kbps when using a PC's standard serial port. When using a PCI/PCMCIA card or USB-UART conversion cable, its maximum transfer rate (115 Kbps, 230 Kbps or 460 Kbps) can be selected.
- \*6: Use cables of either manufacturer only.

**[Important]** Restrictions for stable operation of Windows/PC (IBM/PC compatible)

When using multiple USB-UART conversion cables, do not connect more than 2 cables (IO-DATA) or 3 cables (NEC) to a USB-HUB/BUS, and do not change the connection of cables.

Do not connect other USB devices to the PC.

Whilst the PC is in use, avoid connecting/disconnecting cables and USB devices for stable serial communication for Windows/driver.

**\* SPST may run in other environments, however, the system may become unstable.**

### 1.2. Procedure

#### 1.2.1 Installing SPST

Execute the “SPST.msi”.



Figure 1

#### [Caution]

When an older version of SPST has already been installed, uninstall it first as follows:

Through “Add/Remove Programs” in the Control Panel, remove the “SPST for 902SH/802SH”.

## 1) Setup screen



Figure 2

- Click "Next" to proceed.
- To cancel the installation, click "Cancel".

## 2) Location selection screen

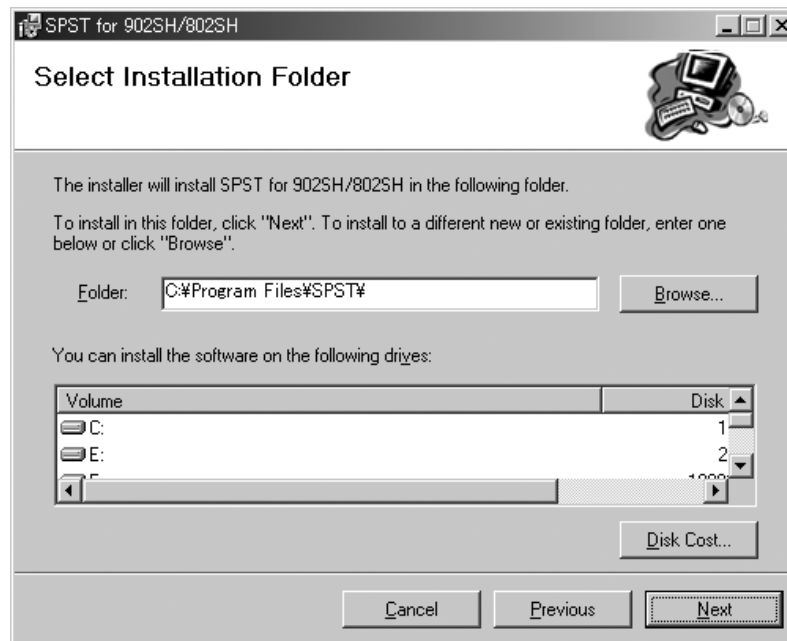


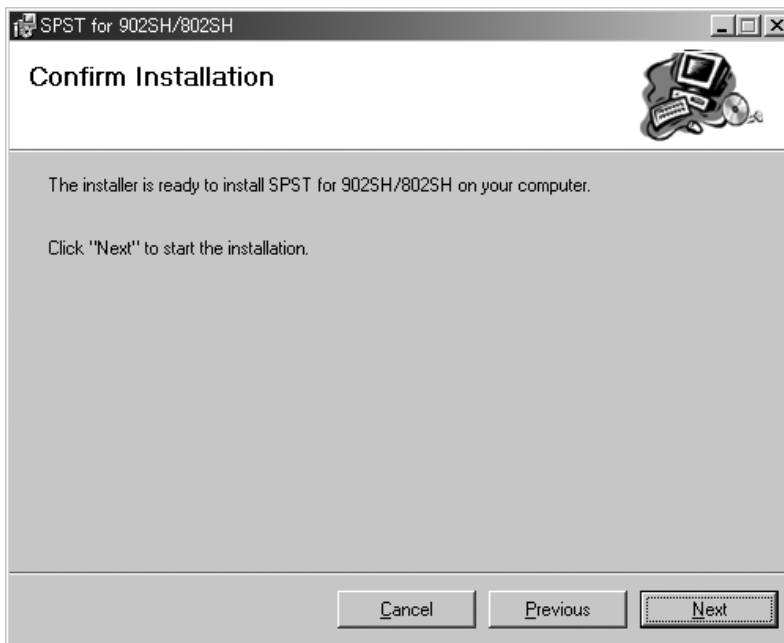
Figure 3

- Click "Next" to proceed.
- To cancel the installation, click "Cancel".

**[Caution]**

Do not change the folder.

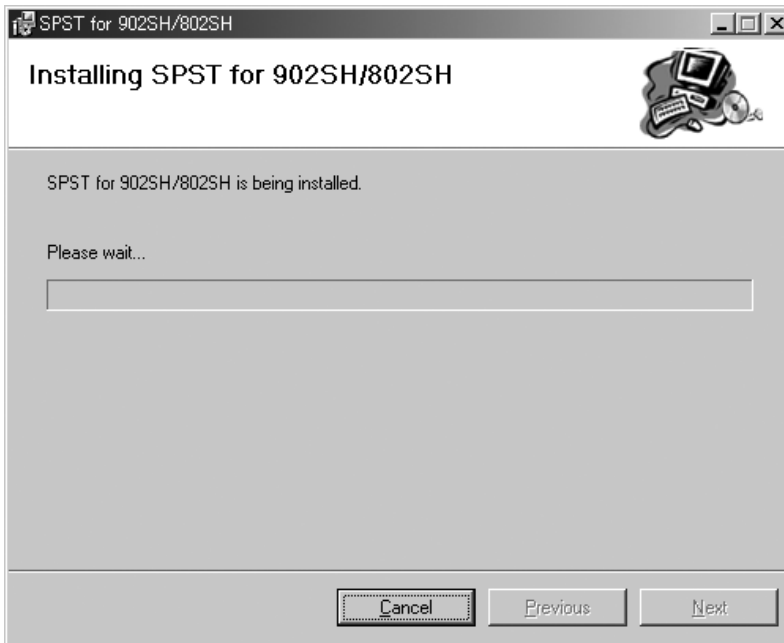
**3) Confirmation screen**



**Figure 4**

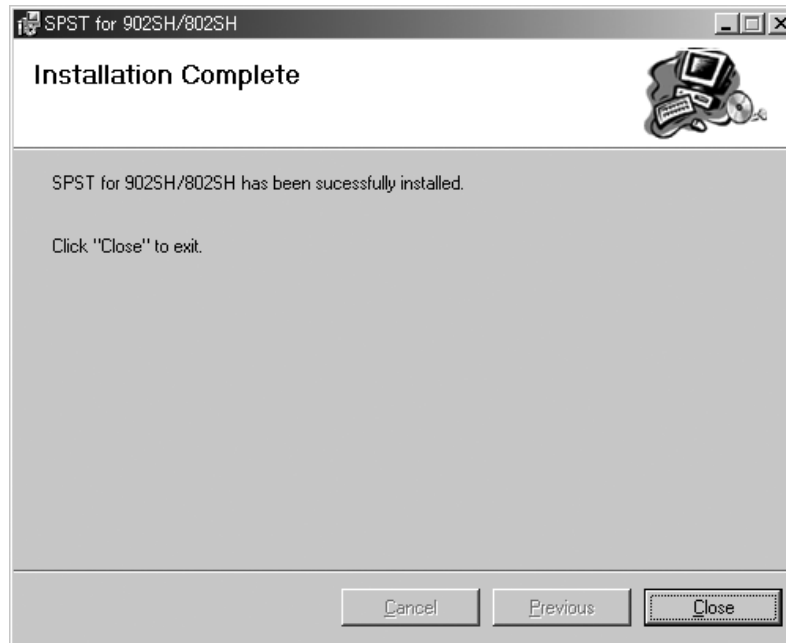
- Click "Next" to proceed.
- To cancel the installation, click "Cancel".

**4) Progress screen**



**Figure 5**

- Wait until the installation is completed.
- To cancel the installation, click "Cancel".

**5) Complete screen****Figure 6**

- The above screen appears when the installation has been successfully completed.
- Click "Close" to exit.

**1.2.2 Starting SPST**

- When the installation has been completed, the shortcut icon shown below is created on your desktop.

**Figure 7**

- Double-click the icon to start SPST.

**2. Structure**

- Tool structure

SPST Ver.1.0:	Main application
SHDownloader Ver.3.0:	Handset (Phone) software and data update utility
SHDiag Ver.1.0:	Handset (Phone) adjustment and inspection utility
SHInfoView Ver.1.0:	Handset (Phone) information display utility
SHPwdReset Ver.1.0:	Handset (Phone) password reset utility

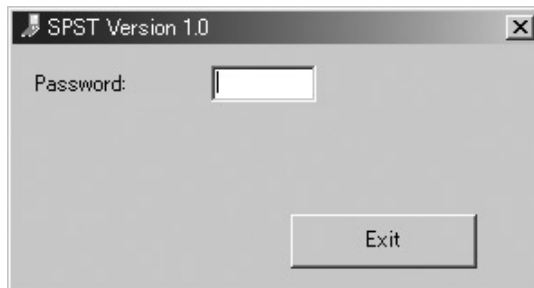
**3. Start-up**

Connect a dongle to the PC.

Double-click the icon "SPST for 902SH/802SH" to launch.

#### 4. Function (screen example)

##### 4.1. Password entry screen (after SPST start-up)



**Figure 8**

- Type in the specified password and press “Enter” on the keyboard.
- Click “Exit” on the screen to quit.

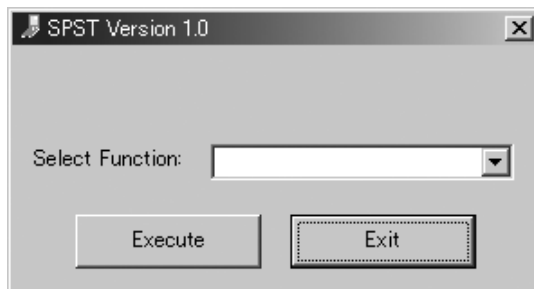
The screen below appears if the password is incorrect. Click “OK” and enter the password again.



**Figure 9**

##### 4.2. Function selection (after entering SPST password)

- Function selection screen.



**Figure 10**

- Select one of the following functions from the combo box and click “Execute”.

Selecting “SHDownloader”	See page 2-6
Selecting “SHDiag”	See page 2-10
Selecting “SHInfoView”	See page 2-13
Selecting “SHPwdReset”	See page 2-15
Selecting “Change Password”	See page 2-17

- Click “Exit” to quit.

**4.3. Functions**

**4.3.1 SHDownloader**

**1) Basic functions**

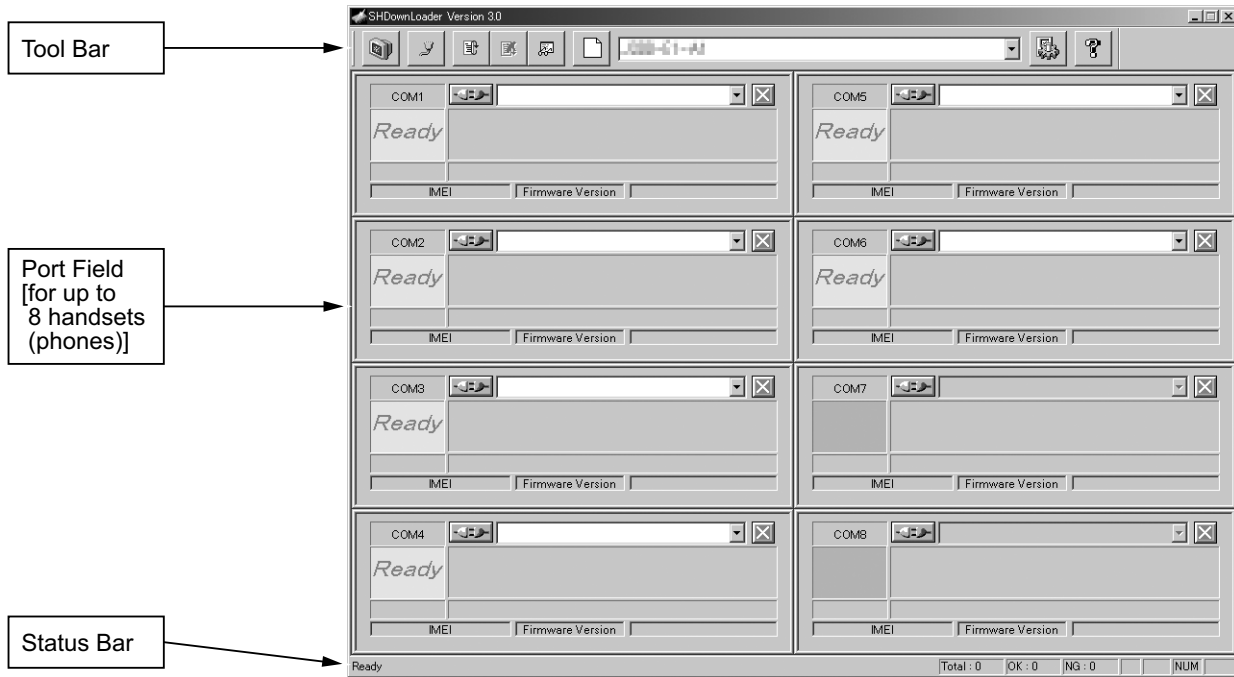
- SHDownloader is the updating tool that is supported in Windows 2000/XP and designed for 902SH.
- SHDownloader allows simultaneous updating operation via serial communication for up to 8 handsets (phones). \*1
- A PC and handsets (phones) can be connected via serial connection by using the PC's serial port, serial ports added by using PCI/PCMCIA cards or USB-UART serial conversion cables.
- Batteries can be used to power handsets (phones), however, we recommend that you use chargers.

**Note**

\*1: The maximum number of handsets (phones) may vary depending on the PC's performance, devices used to add serial ports, etc. For details, refer to the restrictions in "Important" below.

**2) Screen description**

2) - 1. Main screen



**Figure 11**

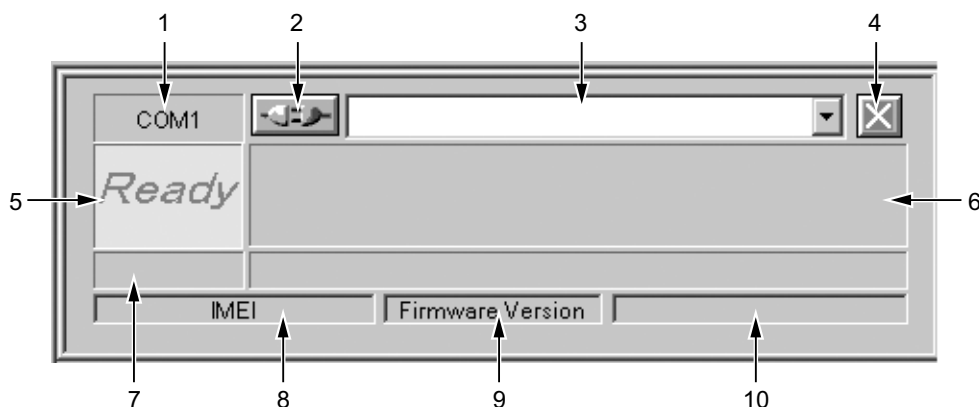
2) - 2. Tool bar



**Figure 12**

- |                                  |  |
|----------------------------------|--|
| 1. Exit Application:             | Close SHDownloader.                            |
| 2. Setup Option:                 | Adjust optional settings.                      |
| 3. Start All Ports:              | Start the operation for all the ports at once. |
| 4. Stop All Ports:               | Stop the operation for all the ports at once.  |
| 5. View Actual Result:           | The operation result appears.                  |
| 6. Create Profile:               | Create a new profile.                          |
| 7. Select Profile:               | Select a profile.                              |
| 8. Edit Profile:                 | Edit a profile.                                |
| 9. View Application Information: | Show the version of SHDownloader, etc.         |

2) - 3. Port field



**Figure 13**

- 1. Port Name: The (logical) port name appears.
- 2. Connect: Execute a selected function for the port only.
- 3. Select Function: Select a function for the port only.
- 4. Stop: Terminate an ongoing operation for the port only.
- 5. Status: The operation status appears (see below).



- 6. Information: Show details of the operation, error, etc.
- 7. Rate/Progress: The progress bar appears with %.
- 8. IMEI: IMEI of the handset (phone) appears.
- 9. Firmware Version: Show information for handset (phone) identification.
- 10. Profile: The last executed profile name appears whilst a profile is in progress. When the profile is completed, the display changes to its name.

2) - 4. Status bar



**Figure 14**

- 1. Move the mouse cursor to "Tool Bar" items to see Tips (descriptions).
- 2. Show the total number of updated handsets (phones).
- 3. Show the total number of successfully updated handsets (phones).
- 4. Show the total number of handsets (phones) with update failure.

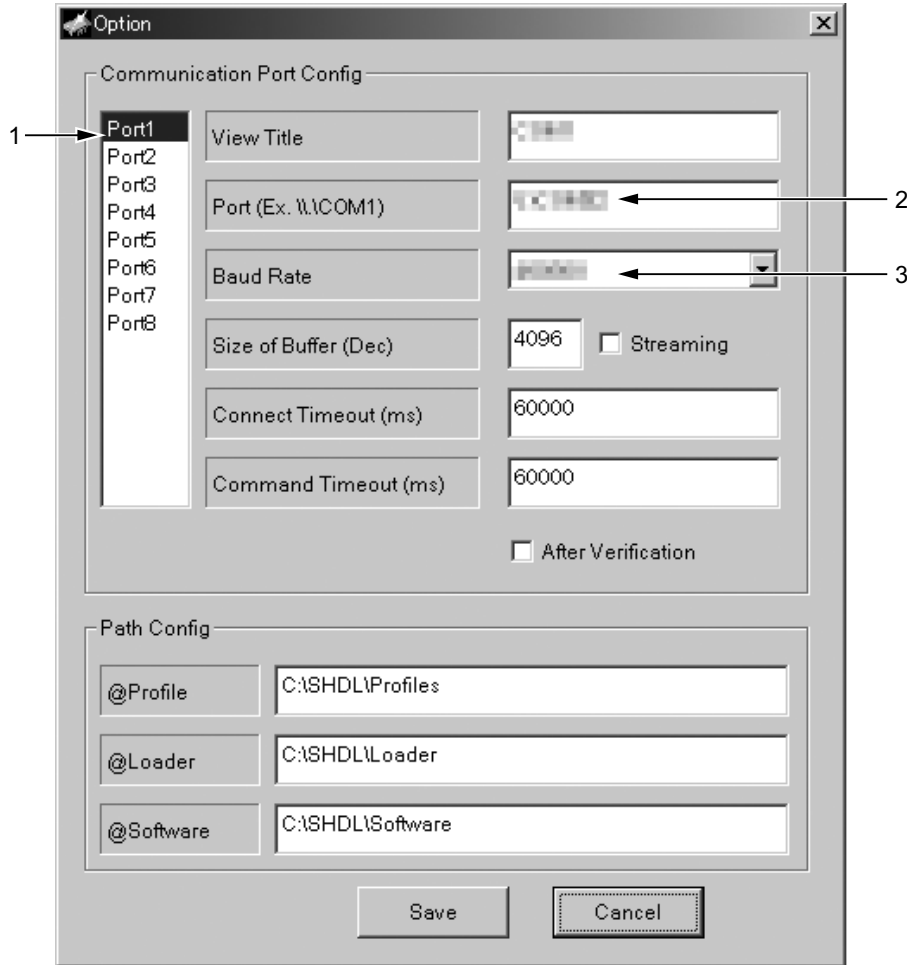
**3) Option Settings**

Adjust settings in Option when you use SHDownloader for the first time or when the serial port connection is changed. Click “Setup Option” on “Tool Bar” to open the screen and follow the procedures below.

1. Select a port from the list on the left.
2. In the field next to “Port (Ex. \\.\COM1)”, enter the corresponding serial port name.
3. Set a value for “Baud Rate” according to the serial port.

After performing these procedures for all the required ports, click “Save” to save the settings.

\* Do not change settings in other fields.



**Figure 15 Option Screen**

When the settings are correct, “Ready” appears in the corresponding Port Field on Main Screen.

\* When a USB-UART serial conversion cable is in use, assigned COM ports may vary as the system environment changes.

**4) Procedures**

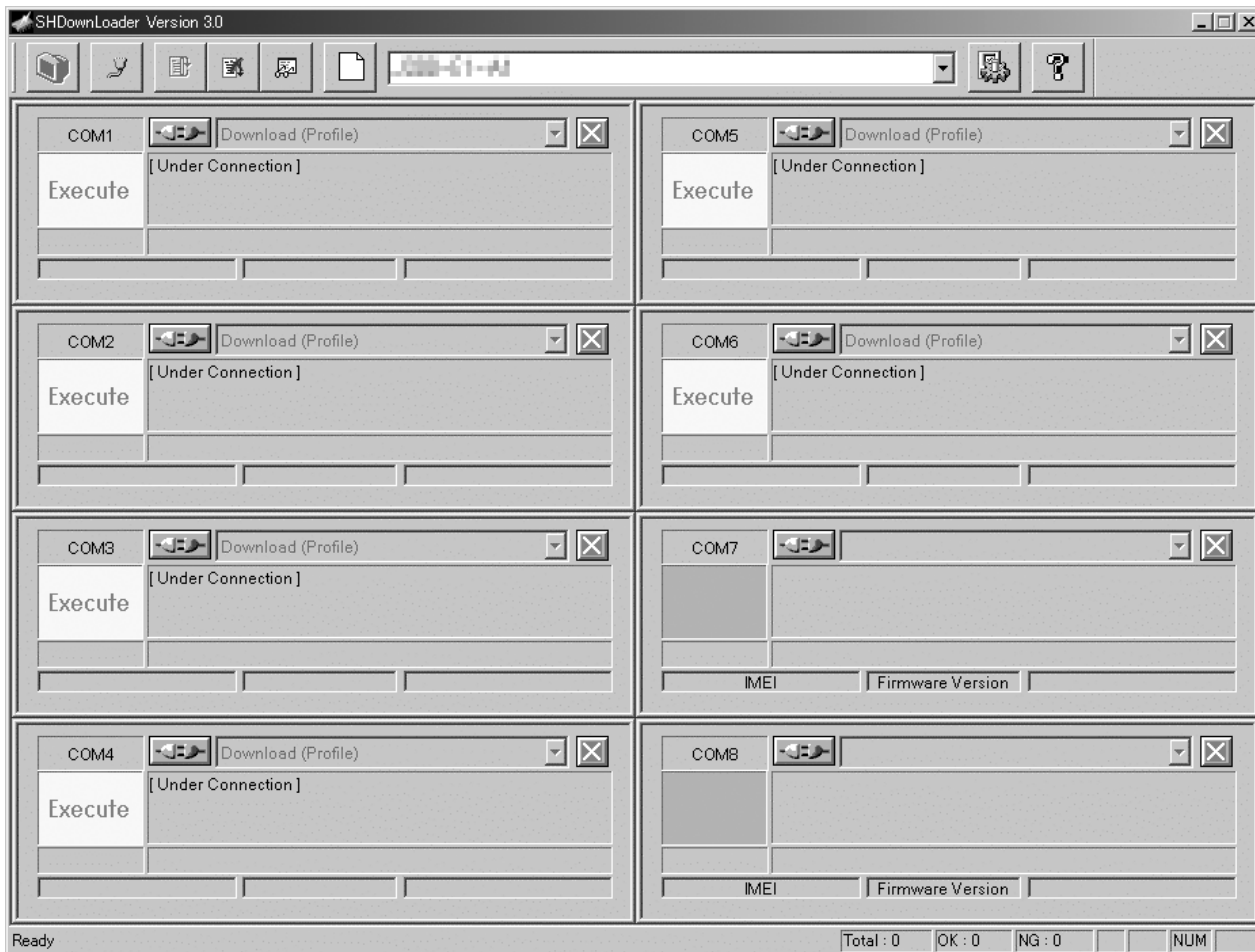
**Updating handsets (phones)**



**Figure 16**

- From the “Select Profile” (combo box) on “Tool Bar”, select a profile.
- Click “Start All Ports” on “Tool Bar”. According to the selected profile, all handsets (phones) will be updated via the corresponding ports set up in “Option”.
- When you select a function from “Select Function” in “Port Field” and click “Connect”, handsets (phones) will be updated according to the profile specified for the port.





**Figure 17**

- When you start updating, “Status/Information” in “Port Field” changes to “Execute/Under Connection” as shown above, and then handsets (phones) become ready for connection or power-on. Connect chargers to the handsets (phones).
- To stop updating all at once, click “Stop All Ports” on “Tool Bar”.
- To stop updating individually, click “Stop” in “Port Field”.

**Note**

- \* Depending on the handset (phone) status, it may take up to 1 minute before updating stops after you click “Stop All Ports” / “Stop” button.
- \* To restart updating for ports disabled due to an error, etc., follow the procedure above (click “Start All Ports” on “Tool Bar” and click “Connect” in “Profile Field”).

**5) Basic rewriting procedure for handset (phone)**

**1. Preparation**

<When you start SHDownloader for the first time>

- 1) Add a serial port to a PC.
- 2) Start SHDownloader and adjust settings of serial ports in “Option”.

**2. Rewriting procedure**

<Preparation>

- 1) Start a PC after connecting all the necessary cables and other devices.
  - \* When using a USB-UART conversion cable, make sure not to change the connection port. Otherwise the corresponding COM port will also change.
  - \* Communication may be disrupted if you connect cables or devices after starting a PC.
- 2) Start SHDownloader.
  - \* Always select the latest profile.

## &lt;Rewriting&gt;

- 1) Remove batteries from all the handsets (phones).
- 2) Connect communication cables to all the handsets (phones).
- 3) Click "Start All ME" to start rewriting for all the handsets (phones).
- 4) Connect a charger to all the handsets (phones).
- 5) After the rewriting is completed, disconnect the chargers and communication cables from the handsets (phones).

## &lt;Initialisation&gt;

After the rewriting operation, initialise each handset (phone).

- 1) Install a battery to the handset (phone).
- 2) Press the "End/Power" key for approx. 2 seconds.
- 3) The display indicates initialisation is in progress, and in approx. 8 minutes, indicates the completion.
- 4) Press the "End/Power" key until the display turns off.
- 5) Press the "End/Power" key for approx. 2 seconds.
- 6) Wait until the stand-by screen appears.
- 7) Press the "End/Power" key until the display turns off.

## &lt;After completing the operation&gt;

- When this application is finished, the SPST function selection screen returns.
- Turn off the PC and disconnect the cables and other devices.  
If you disconnect them before turning off the PC, Windows may not shut down.

**4.3.2 SHDiag****1) Overview**

SHDiag allows you to perform various adjustments for handsets (phones) and to protect/unprotect the handset (phone) to be adjusted.

**2) Operation screen**

1. Connection confirmation window



**Figure 18**

At the start-up of SHDiag, the above window prompts you to connect a handset (phone) (ME). Connect a handset (phone) to be adjusted to a PC.

**[User action]**

- 1) Turn on a handset (phone) and set it to the stand-by mode. \*1
- 2) Connect the handset (phone) to a PC.
- 3) Click "OK" on the window.

\* When SHDiag is started unintentionally, click "OK" on the above window, and then click "Cancel" on the next COM port settings window.

**[Caution]**

**Once a handset (phone) is connected, never disconnect/operate the handset (phone) or let the battery run out before exiting SHDiag.**

\*1: In the stand-by mode, one of the following screens appears.

- The main screen that appears after the start-up animation (Vodafone logo and Openwave logo), including the clock setting screen and the network setup screen.
- The white background screen with "TEST PROGRAM" displayed.

2. COM port settings window

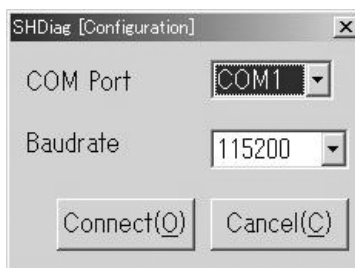


Figure 19

After the connection confirmation window, the above window appears. From the list boxes, select a transfer rate (set to 115200 by default) and the PC COM port that is connected to the handset (phone).

**[User action]**

- 1) Select the COM port connected to the handset (phone) from the "COM Port" list box.
- 2) Select a transfer rate for the PC to handset (phone) communication from the "Baudrate" list box (set to 115200 by default).
- 3) Click "Connect".
- \* When SHDiag is started unintentionally, click "Cancel".

3. Main window

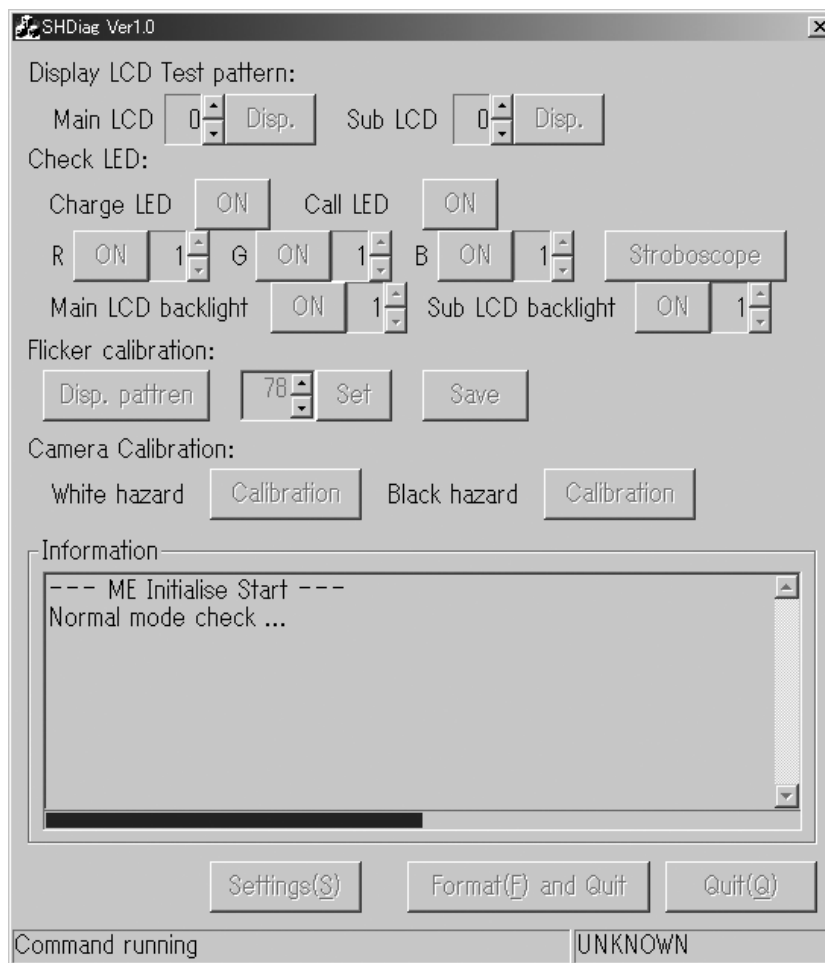
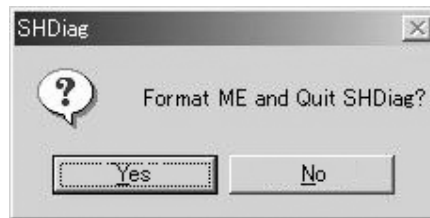


Figure 20

After the COM port settings window, the main window above appears. The handset (phone) initial settings are performed, adjustment values are obtained, and then adjustments are performed.

**[User action]**

- 1) Wait until “--- ME Initialise Complete ---” is displayed.
- 2) Carry out adjustments.
  - [Display LCD Test pattern]: Displays a test pattern on the handset (phone) display. “Main LCD” is for the [main display] display, and “Sub LCD” for the [sub display] display. Click the spin button (up or down arrow) to select a test pattern number. Click “Disp.” to display the test pattern on the handset (phone) display.
  - [Check LED]: Turns on/off or controls brightness of the charge LED [red light on the side of the handset (phone)], call LED [green light on the side of the handset (phone)], three-colour LED, and the display backlight. To turn on/off the charge LED or call LED, click “ON” / “OFF” next to “Charge LED” or “Call LED” respectively. For the three-colour LED, use “R”, “G”, or “B” to control each colour. To turn on/off the LED, click “ON” / “OFF”. To change the brightness, click the spin button (up or down arrow). To check the strobe light, click “Stroboscope” with the three-colour LED illuminated. As for the display backlight, “Main LCD backlight” is for the main display, and “Sub LCD backlight” for the sub display. To turn on/off the backlight, click “ON” / “OFF”. To change the brightness, click the spin button (up or down arrow).
  - [Flicker Calibration]: Adjusts the flicker of the main display. Click “Disp. Pattern” to display the flicker calibration screen. Click the spin button to change the flicker calibration value. Click “Set” to temporarily use the value for the handset (phone). Click “Save” to apply the value.
  - [Camera Calibration]: Automatically corrects bright and dark defects. To perform the bright defect correction, click “Calibration” next to “White hazard”. To perform the dark defect correction, click “Calibration” next to “Black hazard”.
- 3) To initialise the handset (phone) and exit SHDiag after completing adjustments, click “Format and Quit”.
  - To change handsets (phones), click “Settings”. After the necessary operation on the handset (phone) change confirmation window, the connection confirmation window appears. Change handsets (phones) here.
  - To exit SHDiag without handset (phone) initialisation, click “Quit”.
4. Quit confirmation window 1

**Figure 21**

The above window appears when “Format and Quit” is clicked on the main window. Handset (Phone) initialisation starts and SHDiag closes.

**[User action]**

- 1) To initialise the handset (phone) and exit SHDiag, click “Yes”.
  - Click “No” not to exit SHDiag.
  - When “Yes” is clicked, initialisation starts and SHDiag closes. Now, disconnect the handset (phone) and the PC.
5. Quit confirmation window 2

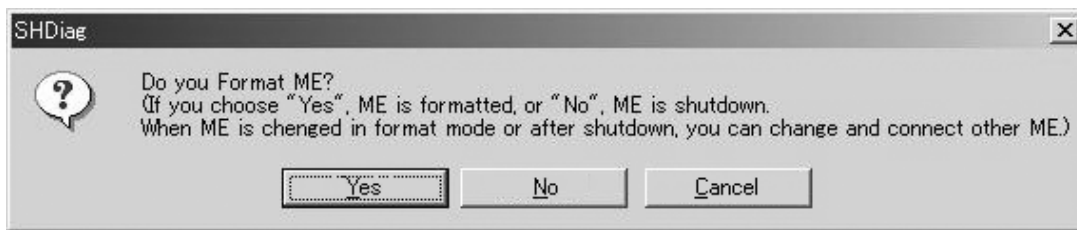
**Figure 22**

The above window appears when “Quit” is clicked on the main window. The handset (phone) turns off and SHDiag closes.

**[User action]**

- 1) To turn off the handset (phone) and exit SHDiag, click “Yes”.
  - Click “No” not to exit SHDiag.
  - When “Yes” is clicked, the handset (phone) turns off and SHDiag closes. Now, disconnect the handset (phone) and the PC.

6. Handset (Phone) change confirmation window



**Figure 23**

The above window appears when "Settings" is clicked on the main window. Before changing handsets (phones), specify whether to initialise the handset (phone) or not. After initialisation or handset (phone) change, make communication settings again.

**[User action]**

- 1) Click "Yes" to initialise the handset (phone) and make communication settings again.
  - Click "No" to turn off the handset (phone) and make communication settings again.
  - Click "Cancel" not to make communication settings.
  - When "Yes" is clicked, initialisation starts and the connection confirmation window appears. Now, disconnect the handset (phone) and the PC, and connect another handset (phone).
  - When "No" is clicked, the handset (phone) turns off and the connection confirmation window appears. Now, disconnect the handset (phone) and the PC, and connect another handset (phone).
  - When this application is finished, the SPST function selection screen returns.

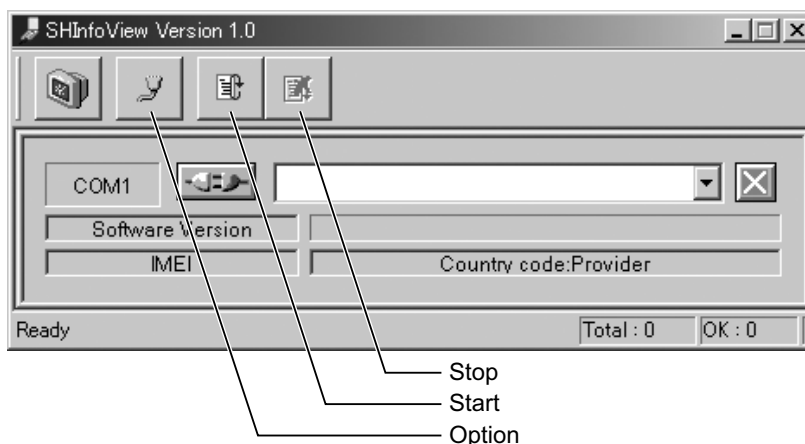
**4.3.3 SHInfoView**

**1) Function**

Handset (Phone) information appears on the screen.

- Displayed information:
  - IMEI
  - Software version
  - Country code
  - Provider name
- \* For a screen example, refer to "Appendix 1: Handset (Phone) information".
- Batteries can be used to power handsets (phones), however, we recommend that you use chargers.

**2) Operation**



**Figure 24**

\* The initial setting file and the option file are created during the start-up process if they do not exist.

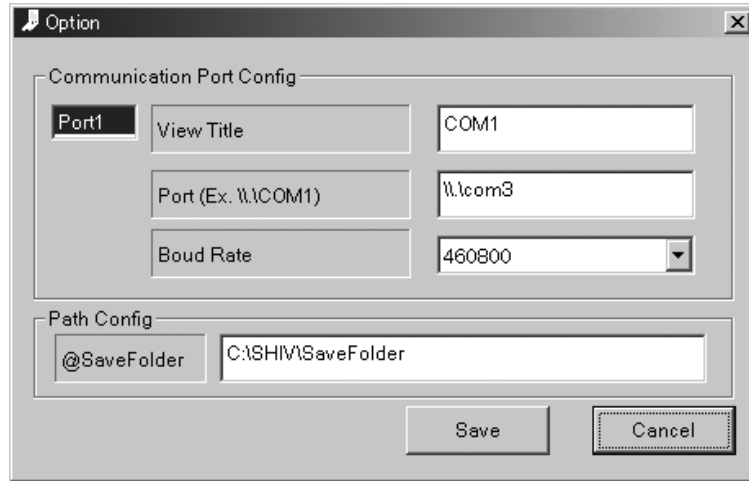
1. Change the option settings if necessary.

Default settings, when the tool is started for the first time, are as follows:

Port1  
 View Title            COM1  
 Port  
 Baud Rate            115200bps

Make sure to set the "Port" at the first start after the installation.

Example: COM3 port at 460,800 bps



**Figure 25**

\* Set following to restore the PC settings.

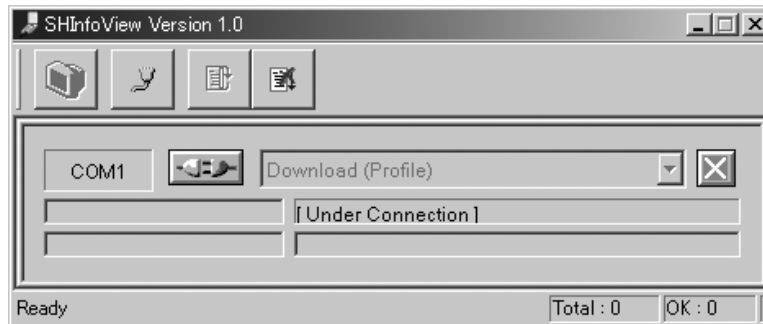
Port                    \\.\COM1  
 Baud Rate            115200

After completing changes, click "Save".

2. Connect the communication cable to the handset (phone).

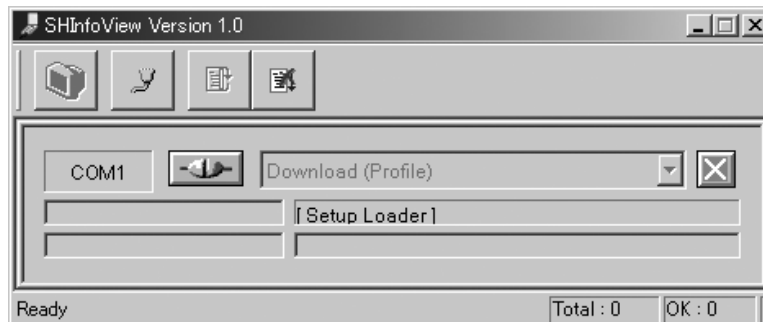
\* 10-pin flat cable which connects the PC's serial port and the handset's (phone's) handsfree microphone connector.

3. Click "Start".



**Figure 26 Waiting for connection**

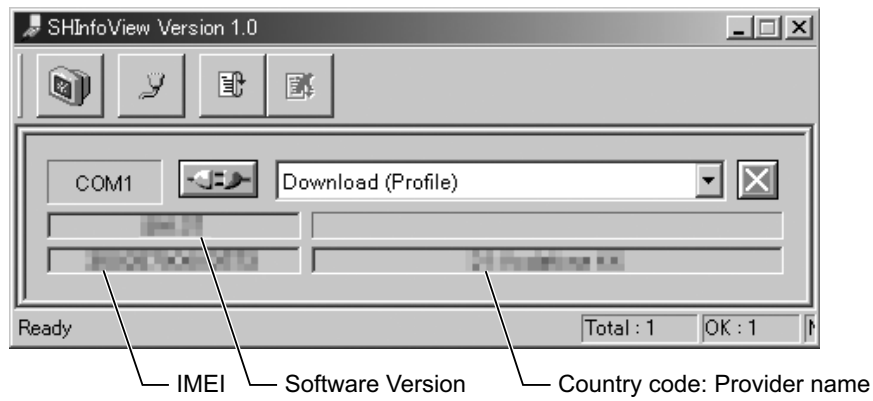
4. Supply power to the handset (phone).



**Figure 27 Loading information**

Refer to Appendix 1 for the display after loading information.

5. When this application is finished, the SPST function selection screen returns.



**Figure 28** Screen example

**4.3.4 SHPwdReset**

**1) Overview**

SHPwdReset allows you to reset all the handset (phone) passwords to the factory defaults.

**2) Operation Screen**

1. Connection Confirmation Window



**Figure 29**

At the start-up of SHPwdReset, the above window prompts you to connect a handset (phone) (ME). Connect a handset (phone) to be adjusted to a PC.

**[User Action]**

- 1) Turn on a handset (phone) and set it to the stand-by mode. \*1
- 2) Connect the handset (phone) to a PC.
- 3) Click "OK" on the window.

\* When SHPwdReset is started unintentionally, click "OK" on the above window, and then click "Cancel" on the next COM port settings window.

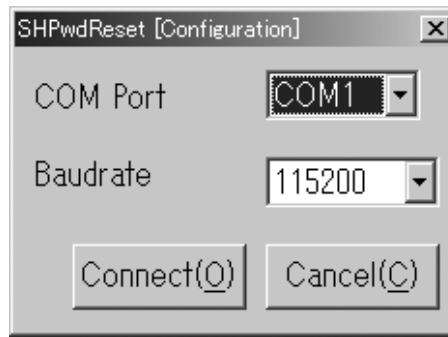
**[Caution]**

**Once a handset (phone) is connected, never disconnect/operate the handset (phone) or let the battery run out before exiting SHPwdReset.**

\*1: In the stand-by mode, one of the following screens appears.

- The main screen that appears after the start-up animation (Vodafone logo and Openwave logo), including the clock setting screen and the network setup screen.
- The white background screen with "TEST PROGRAM" displayed.

## 2. COM port settings window

**Figure 30**

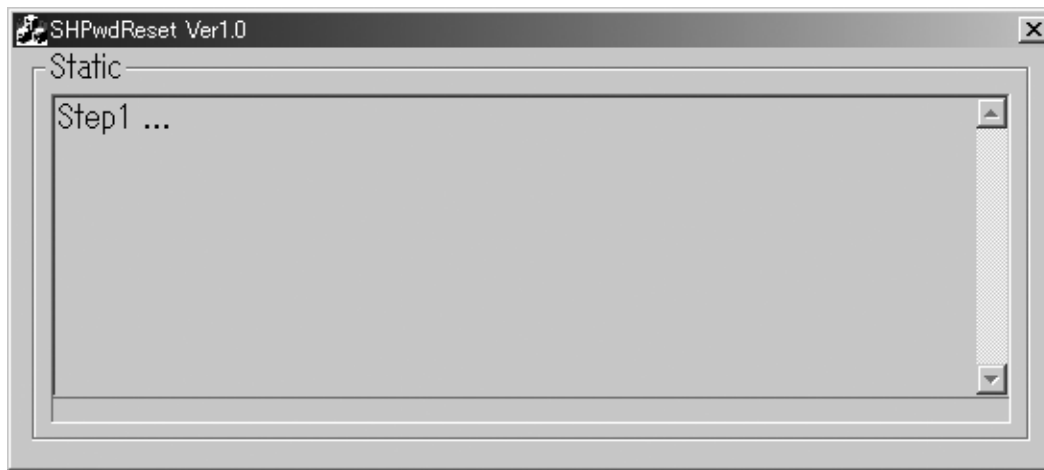
After the connection confirmation window, the above window appears. From the list boxes, select a transfer rate (set to 115200 by default) and the PC COM port that is connected to the handset (phone).

**[User Action]**

- 1) Select the COM port connected to the handset (phone) from the "COM Port" list box.
- 2) Select a transfer rate for the PC to handset (phone) communication from the "Baudrate" list box (set to 115200 by default).
- 3) Click "Connect".

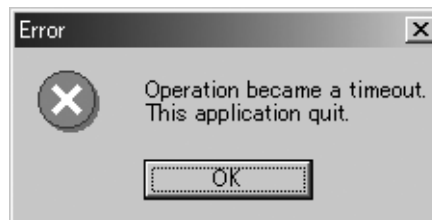
\* When SHPwReset is started unintentionally, click "Cancel".

## 3. Main Window

**Figure 31**

When the COM port settings window closes, SHPwReset starts to reset the handset (phone) passwords immediately.

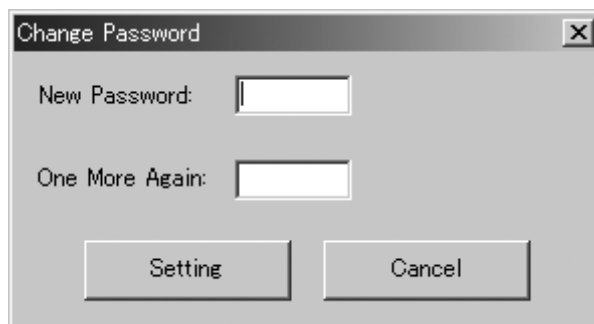
If the connection fails, the error message below appears.

**Figure 32**

On the above window or when the operation is successfully completed, click "OK" to exit SHPwReset and return to the SPST function selection screen.



### 4.3.5 Change Password



**Figure 33 Password change screen**

- Enter a new password, enter it again for confirmation, and click “Setting”.
  - Click “Cancel” to quit.
  - After completing or cancelling the operation, the SPST function selection screen returns.
- \* For allowable symbols and alphanumeric characters, see “Password entry screen (after SPST start-up)”.

**[2] Test points****Main PWB**

No.	Checker	Ref.	Name	$\phi$	Output		Input	Function	Remarks
1		TP1002	BANDSEL_1	0.3	IC1000	→		Band switching	Back-up
2	O	TP1003	VRTC15	1.2	IC1204	→	IC1000	RTC 1.5 V power supply	
3		TP1004	PCMDATA-B	0.3	IC1001, IC1200	→	IC1000	PCM data	
4		TP1005	PCMDATA-A	0.3	IC1000	→	IC1001, IC1200	PCM data	
5	O	TP1006	RTCCLK	1.2	IC1000	→	IC1001, IC1200, IC1400	32.768 kHz output	
6	O	TP1007	SYSClk2	1.2	IC1000	→		13MHz	
7		TP1008	M_LCD_I2CCLK	0.3	IC1000	→	IC3000	I2C clock	
8		TP1009	SYSClk0	1.2	IC1000	→	IC1001	13MHz	Back-up
9		TP1010	M_LCD_I2CDAT	0.3	IC1000	↔	IC3000	I2C data	
10		TP1011	PCMCLK	0.3	IC1000	→	IC1001, IC1200	PCM clock	
11		TP1012	PCMSYN	0.3	IC1000	→	IC1001, IC1200	PCM sync	
12	O	TP1013	TP-IN	1.2		→	IC1000	Mandatory test mode	
13	O	TP1014	SYSClk1	1.2	IC1000	→	IC1500, IC1502, IC1600	13MHz	
14		TP1015	UARTRX3	0.3	IC1001	→	IC1000	Bluetooth UART Rx	
15		TP1016	UARTTX3	0.3	IC1000	→	IC1001	Bluetooth UART Tx	
16		TP1017	UARTCTS3	0.3	IC1001	→	IC1000	Bluetooth UART CTS	
17		TP1018	UARTRTS3	0.3	IC1000	→	IC1001	Bluetooth UART RTS	
18		TP1019	KeyCK1	1.2	CN1000	→	Key FPC unit	Check for the key unit insertion	
19		TP1020	KeyCK2	1.2	CN1000	→	Key FPC unit	Check for the key unit insertion	
20	O	TP1021	VBT29	1.2	IC1002	→	IC1001	Bluetooth IC power supply (2.9 V)	
21		TP1022	RRESOUT2	0.3	IC1000	→	IC1001	Bluetooth IC reset	
22		TP1023	CLKREQ	0.3	IC1000	→	IC1001, IC1200, IC1400	CLK request signal	
23		TP1024	WP_N	1.2	IC1000	→	IC1100	VPP	Back-up
24	O	TP1200	VBATT	1.2	CN1200	→		Handset (Phone) power supply (battery terminal)	
25	O	TP1201	VBATT	1.5	CN1200	→		Handset (Phone) power supply (battery terminal)	
26	O	TP1202	VBATT	1.5	CN1200	→		Handset (Phone) power supply (battery terminal)	
27	O	TP1203	PRGDET	1.2	JK1600	→	Q1204, Q1205	Action trigger (Insert the socket to turn on the power.) ONSWB_N	
28		TP1204	VCHG	1.2	Q1212	→	Q1206	External supply power (at normal voltage)	
29		TP1205	CHPEG	1.2	IC1200	→	Q1200	FET gate signal	
30	O	TP1206	SERVICE_N	1.2	Q1205	→	IC1000	Rewrite mode and log mode	
31		TP1207	BDATA	1.2	CN1200	→	IC1200	Battery sense terminal	
32	O	TP1209	GND	1.2	GND	→		Earth	
33	O	TP1210	GND	1.5	GND	→		Earth	
34	O	TP1211	VBATIB	1.2	CN1200, IC1202	→		Handset (Phone) power supply (BB)	
35	O	TP1212	GND	1.5	GND	→		Earth	
36	O	TP1213	ONSWB_N	0.5	Q1204, Q1215	→	IC1200	Action trigger (Insert the socket to turn on the power.)	
37	O	TP1215	BEARP	1.2	IC1200	→	TP3055	Earpiece	
38	O	TP1216	BEARN	1.2	IC1200	→	TP3054	Earpiece	
39	O	TP1217	PWRRST_N	1.2	IC1200	→	IC1000	Power reset signal	
40	O	TP1218	SIMVCC	1.2	IC1200	→	CN1201	Power supply for USIM	

No.	Checker	Ref.	Name	φ	Output		Input	Function	Remarks
41	O	TP1219	SIMVCC	1.2	IC1200	→	CN1201	Power supply for USIM	
42	O	TP1220	SIM I/O	1.2	IC1200	↔	CN1201	USIM data	
43	O	TP1221	SIM CLK	1.2	IC1200	→	CN1201	USIM clock	
44	O	TP1222	SIM RESET	1.2	IC1200	→	CN1201	USIM reset	
45	O	TP1223	VSRAM18	1.2	IC1206	→	IC1101	SRAM power supply (1.8 V)	
46	O	TP1225	GND	1.2	GND	→		Earth	
47	O	TP1226	VCCR	1.2	IC1206	→	CN3003	Back-up power supply	
48	O	TP1227	VANA15	1.2	IC1205	→		Analogue power supply (1.5 V)	
49	O	TP1228	ONSWA_N	1.2	Key FPC unit	→	IC1200	Action trigger (Switch the key to turn on the power.)	
50	O	TP1229	LEDR	1.2	LED1200	→	IC1200	Charge LED	
51	O	TP1230	LEDG	1.2	LED1200	→	IC1200	Incoming notifications LED	
52	O	TP1231	VMEM18	1.2	IC1200	→	IC1100, IC1101	Power supply for memory (1.8 V)	
53	O	TP1232	VDIG275	1.2	IC1200	→		Digital power supply (2.75 V)	
54	O	TP1233	VDDDB	1.2	IC1200	→		RF power supply (2.75 V)	
55	O	TP1234	VDDA	1.2	IC1200	→		RF power supply (2.75 V)	
56	O	TP1235	VCORE15	1.2	IC1200	→		Core power supply (1.5 V)	
57	O	TP1236	LED1	1.2	LED1200	→	IC1200	Charge LED	
58	O	TP1237	LED2	1.2	LED1200	→	IC1200	Incoming notifications LED	
59	O	TP1301	VDCIO	1.2	CN1300	→	Q1212	External supply power	
60		TP1302	CTS (Rx voice)	1.2	CN1300	→	IC1300	CTS (hands free Rx voice)	
61	O	TP1303	Manufacture Specific	1.5	CN1300	→	Q1301	UART detection signal	
62		TP1304	RTS (Tx voice)	1.2	IC1300	→	CN1300	RTS (hands free Tx voice) Synchronisation Clock	
63	O	TP1305	TXD USB D-	1.2	IC1300	→	CN1300	UART1 Tx USB D- line	
64	O	TP1306	RXD USB D+	1.2	CN1300	→	IC1300	UART1 Rx USB D+ line	
65	O	TP1307	VBUS	1.2	CN1300	→	IC1303	External USB VBUS	
66	O	TP1308	VUSB33	1.2	IC1303	→	IC1300, IC1000	USB power supply (3.3 V), USB detection signal	
67		TP1400	TSFRM	0.3	IC1500	→		TS I/F frame sync signal GPIO	Back-up
68	O	TP1500	VDCDC	1.2	IC1504	→	IC1504	DCDC power supply (1.5 to 2.5 V)	
69	O	TP1501	VTRAM25	1.2	IC1504	→	IC1500	T4G RAM power supply (2.5 V)	
70	O	TP1502	VTRAM15	1.2	IC1504	→	IC1500	T4G RAM power supply (1.5 V)	
71	O	TP1503	VDIG29	1.2	IC1504	→		Digital power supply (2.9 V)	
72	O	TP1504	VTLVDS25	1.2	IC1504	→	IC1500	T4G LVDS power supply (2.5 V)	
73	O	TP1505	VTLVDS15	1.2	IC1504	→	IC1500	T4G LVDS power supply (1.5 V)	
74	O	TP1506	T4G NC1	1.2	IC1500	→	IC1500	Check for peeling of T4G	
75	O	TP1507	T4G NC2	1.2	IC1500	→	IC1500	Check for peeling of T4G	
76		TP1600	A0	0.3		→		Adress 0	Back-up
77	O	TP1601	MIC2+	1.2	MIC200	→	IC1200	Mic bias2	
78	O	TP1602	MIC-	1.2	MIC201	→		Mic earth	
79	O	TP1603	MIC1+	1.2	Key FPC unit	→	IC1200	Mic bias1	
80	O	TP1604	JMIC	1.2	JK1600	→	IC1200	Connector microphone	
81	O	TP1605	JEARR	1.2	IC1600	→	JK1600	Connector EAR R-ch	
82	O	TP1606	JEARL	1.2	IC1600	→	JK1600	Connector EAR L-ch	
83	O	TP1607	VAMP	1.2	IC1701	→	JK1600	TV signal output	
84	O	TP1608	SP-L1	1.2	IC1603	→	CN3003	Speaker 1 L-ch	
85		TP1609	VVIB	1.2	IC1601	→	VIB1600	Vibrator power supply	
86	O	TP1610	SP-R1	1.2	IC1603	→	CN3003	Speaker 1 R-ch	
87	O	TP1611	SP-L2	1.2	IC1603	→	CN3003	Speaker 2 L-ch	
88	O	TP1612	SP-R2	1.2	IC1603	→	CN3003	Speaker 2 R-ch	
89	O	TP1613	UART0TX	1.2	IC1000	→	JK1600	UART Tx software rewrite and log	
90	O	TP1614	UART0RX	1.2	JK1600	→	IC1000	UART Rx software rewrite and log	
91	O	TP1800	BECLK	1.2	IC1500	→	IC1800	27MHz clock output	

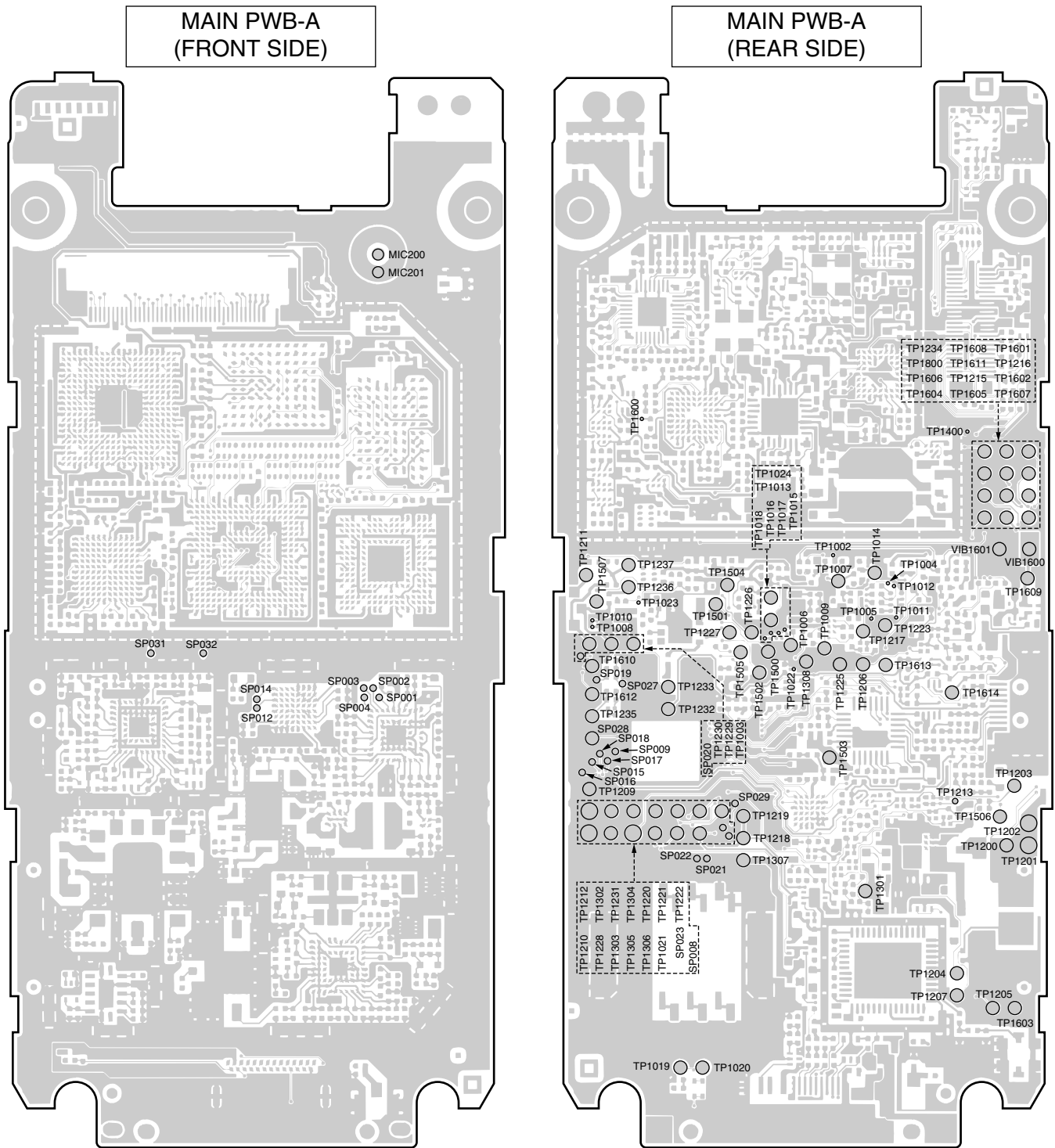


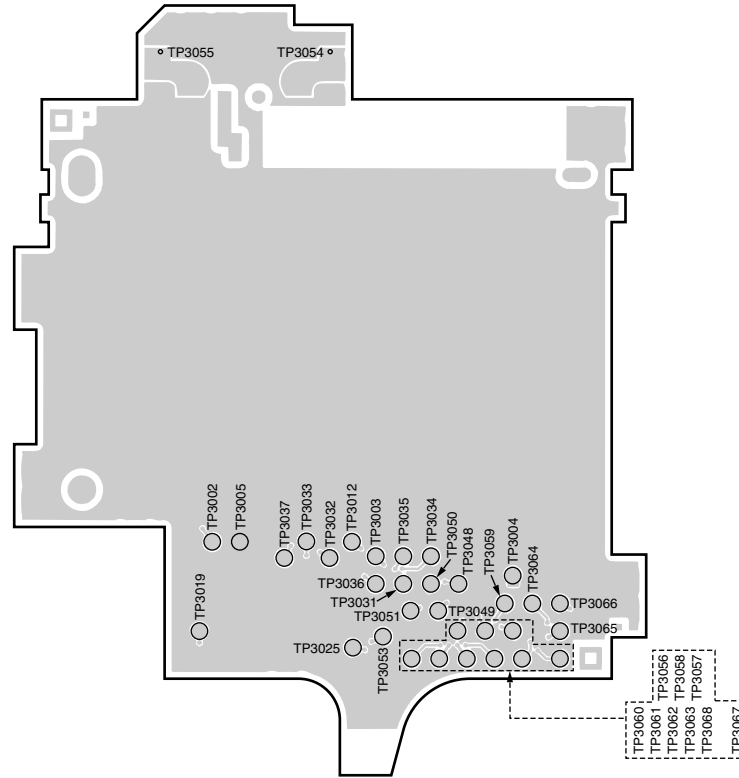
Figure 34 TEST POINT

**Display PWB**

No.	Checker	Ref.	Name	φ	Output		Input	Function	Remarks
1		TP3002	VDON	1.2	IC1500	→	IC3000	VD-LINK ON/OFF setting	
2		TP3003	LCDCLK	1.2	IC1500	→	IC3000	Display clock (6.5 MHz)	
3		TP3004	VBATIB	1.2	CN1200, IC1202	→		Handset (Phone) power supply (BB)	
4		TP3005	GND	1.2	GND	→		Earth	
5		TP3007	GND	0.3	GND	→		Earth	
6		TP3008	BLED+	1.2	IC2005	→	TP3008	Main display/Sub display backlight +, white LED boost output	
7		TP3009	BLED –	1.2	TP3009	→	IC2005	Main display backlight –, white LED feedback circuit	
8		TP3010	DUMMY1	0.3	IC3000	→	IC3000	Check for peeling of LCDC	
9		TP3011	DUMMY2	0.3	IC3000	→	IC3000	Check for peeling of LCDC	
10		TP3012	LVSYN	1.2	IC3000	→	IC1500	VSYNC output signal	
11		TP3018	VDD2	0.3	Main display	→		DC/DC convertor output	
12		TP3019	VCCR	1.2	IC1206	→	CN3003	Back-up power supply	
13		TP3024	FLIP_R	0.3	CN3003	→	IC1000	Rotation detection	
14		TP3025	BLED+	1.2	IC2005	→	TP3008	Main display/Sub display backlight +, white LED boost output	
15	O	TP3026	VUDIG29	0.3	IC3001	→		Digital power supply (2.9 V)	
16	O	TP3027	VUDIG18	0.3	IC3002	→		Digital power supply (1.8 V)	
17	O	TP3028	VUDIG25	0.3	IC3004	→		Digital power supply (2.5 V)	
18		TP3031	VDWAIT	1.2	IC3000	→	IC1500	WAIT signal	
19		TP3032	M_LCD_I2CDATA	1.2	IC1000	↔	IC3000	I2C data	
20		TP3033	M_LCD_I2CDCLK	1.2	IC1000	→	IC3000	I2C clock	
21		TP3034	PDW_ECO	1.2	IC1000	→	IC3001, IC3002, IC3004	REG ECO mode signal	
22		TP3035	PDW_CE	1.2	IC1200	→	IC3001, IC3002, IC3004	REG enable signal	
23		TP3036	LCDRST	1.2	IC1500	→	IC3000	Display RST signal	
24		TP3037	LCDINT	1.2	IC3000	→	IC1500	Display INT signal	
25		TP3048	TXDTP	1.2	IC1500	→	IC3000	VD-LINK operational data input	
26		TP3049	TXDTN	1.2	IC1500	→	IC3000	VD-LINK operational data input	
27		TP3050	TXCKP	1.2	IC1500	→	IC3000	VD-LINK operating clock input	
28		TP3051	TXCKN	1.2	IC1500	→	IC3000	VD-LINK operating clock input	
29	O	TP3053	BLED –	1.2	TP3009	→	IC2005	Display backlight –, white LED feedback circuit	
30		TP3054	BEARN	0.3	IC1200	→	TP3054	Earpiece	
31		TP3055	BEARP	0.3	IC1200	→	TP3055	Earpiece	
32		TP3056	CDAT0	1.2	SUB CAMERA	→	IC1500	Sub camera DATA0	
33		TP3057	CDAT1	1.2	SUB CAMERA	→	IC1500	Sub camera DATA1	
34		TP3058	CDAT2	1.2	SUB CAMERA	→	IC1500	Sub camera DATA2	
35		TP3059	CDAT3	1.2	SUB CAMERA	→	IC1500	Sub camera DATA3	
36		TP3060	CDAT4	1.2	SUB CAMERA	→	IC1500	Sub camera DATA4	
37		TP3061	CDAT5	1.2	SUB CAMERA	→	IC1500	Sub camera DATA5	
38		TP3062	CDAT6	1.2	SUB CAMERA	→	IC1500	Sub camera DATA6	
39		TP3063	CDAT7	1.2	SUB CAMERA	→	IC1500	Sub camera DATA7	
40		TP3064	VSYNC	1.2	IC1500	→	SUB CAMERA	Horizontal sync signal	
41		TP3065	HSYNC	1.2	IC1500	→	SUB CAMERA	Vertical sync signal	

No.	Checker	Ref.	Name	$\phi$	Output		Input	Function	Remarks
42		TP3066	PCLK	1.2	IC1500	→	SUB CAMERA	Sub camera clock	
43		TP3067	I2CCLKA	1.2	IC1500	→	SUB CAMERA	I2C clock	
44		TP3068	I2CDATA	1.2	IC1500	↔	SUB CAMERA	I2C data	

DISPLAY PWB-B  
(FRONT SIDE)



DISPLAY PWB-B  
(REAR SIDE)

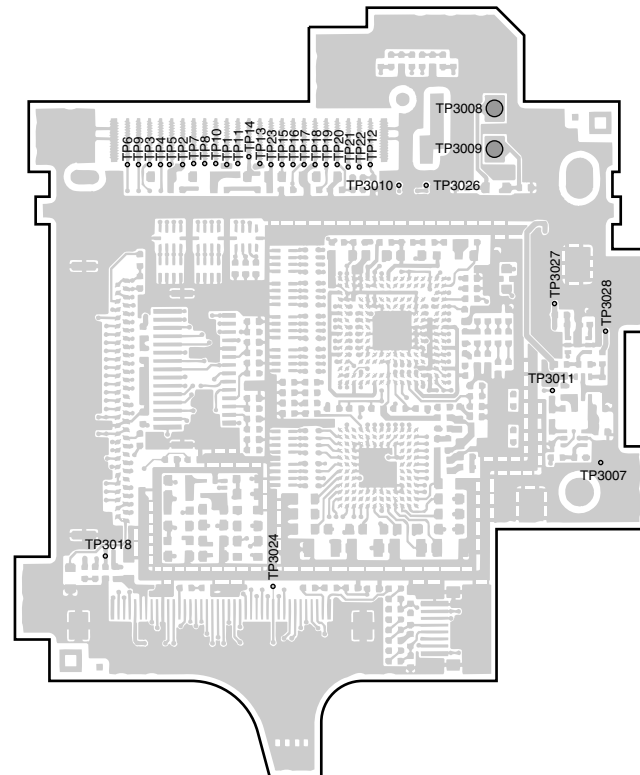
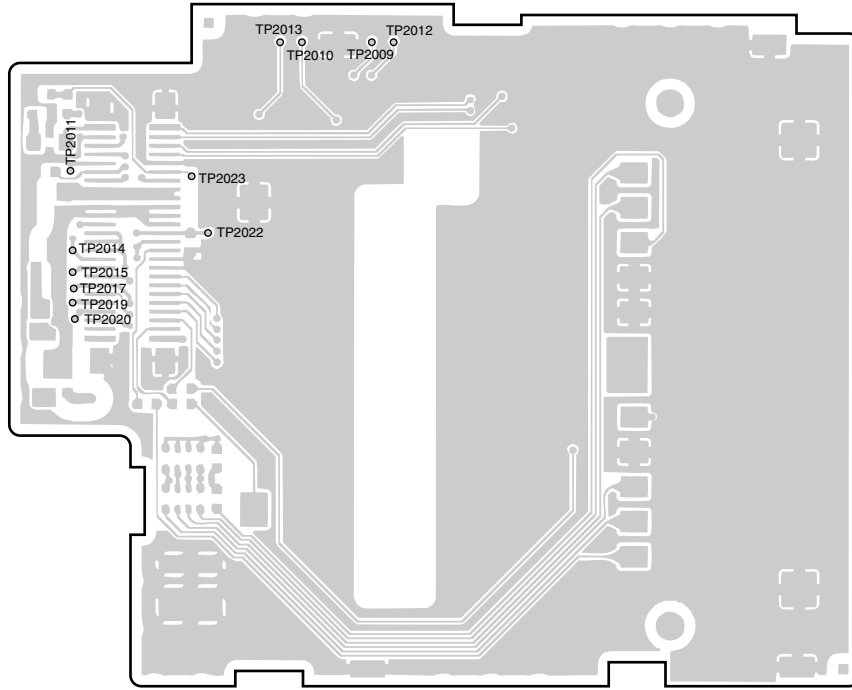


Figure 35 TEST POINT

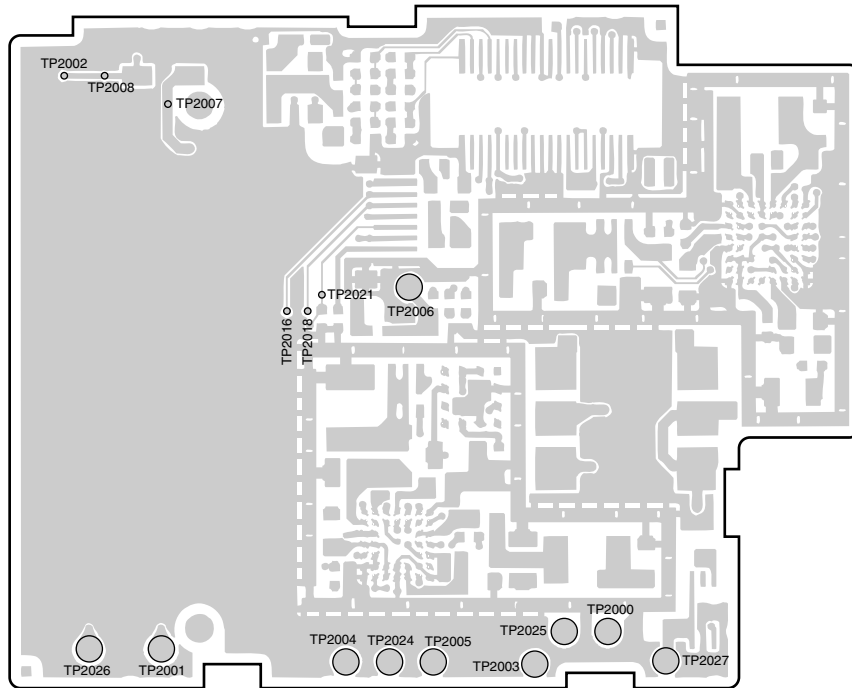
SD PWB

No.	Checker	Ref.	Name	φ	Output		Input	Function	Remarks
1	O	TP2000	VPLUS2	1.2	IC2005	→	LED2005	Three-colour LED power supply anode	
2	O	TP2001	VPLUS1	1.2	IC2005	→	IC2005	White LED boost output	
3		TP2002	BLED –	0.3	TP3009	→	IC2005	Sub display backlight –, white LED feedback circuit	
4	O	TP2003	VDD3	1.2	IC2002	→	CN2002	Camera power supply (15 V)	
5	O	TP2004	VOOUT2	1.2	IC2002	→	CN2002	Digital power supply (1.8 V)	
6	O	TP2005	VDD4	1.2	IC2002	→	CN2002	Camera power supply (–8 V)	
7	O	TP2006	VGIG29	1.2	IC2002	→	CN2002	Digital power supply (2.9 V)	
8		TP2007	BLED+	0.3	IC2005	→	TP3008	Main display/Sub display backlight +, white LED boost output	
9		TP2008	BLED –	0.3	TP3009	→	IC2005	Sub display backlight –, white LED feedback circuit	
10		TP2009	I2CCLKB	0.3	IC1500	→	CN2002	I2C clock	
11		TP2010	I2CDATB	0.3	IC1500	→	CN2002	I2C data	
12		TP2011	TXON	0.3	IC1000	→	IC2005	LED control signal	
13		TP2012	FLOW	0.3	IC1500	→	CN2002	FLOW control signal	
14		TP2013	GAINT	0.3	CN2002	→	IC1500	Camera INT signal	
15		TP2014	LEDLD	0.3	IC1500	→	IC2005	LED control select signal	
16		TP2015	SEOO	0.3	IC1500	→	IC2002, IC2005	Data	
17		TP2016	SECLK	0.3	IC1500	→	IC2002, IC2005	Clock	
18		TP2017	SL_CDCE	0.3	IC1500	→	Sub Display	Sub display chip enable signal	
19		TP2018	SL_CDDC	0.3	IC1500	→	Sub Display	Sub display data/command select signal	
20		TP2019	BDRST	0.3	IC1500	→	IC2002	Camera power supply, reset signal	
21		TP2020	BDCE	0.3	IC1500	→	IC2002	Camera power supply, control select signal	
22		TP2021	SLCDRST	0.3	IC1500	→	Sub Display	Sub display reset signal	
23		TP2022	LEDRST	0.3	IC1500	→	IC2005	LED reset	
24		TP2023	RSTGA	0.3	IC1500	→	CN2002	Camera reset signal	
25	O	TP2024	VOOUT1	1.2	IC2002	→	CN2002	Digital power supply (3.0 V)	
26	O	TP2025	LEDR	1.2	LED2005	→	IC2005	Three-colour LED red cathode	
27	O	TP2026	VDDD	1.2	IC2004	→	CN2002	Camera driver power supply (3.1 V)	
28	O	TP2027	VSD29	1.2	IC2001	→	CN2001	SD power supply (2.9 V)	

**SD PWB-C  
(FRONT SIDE)**



**SD PWB-C  
(REAR SIDE)**



**Figure 36 TEST POINT**

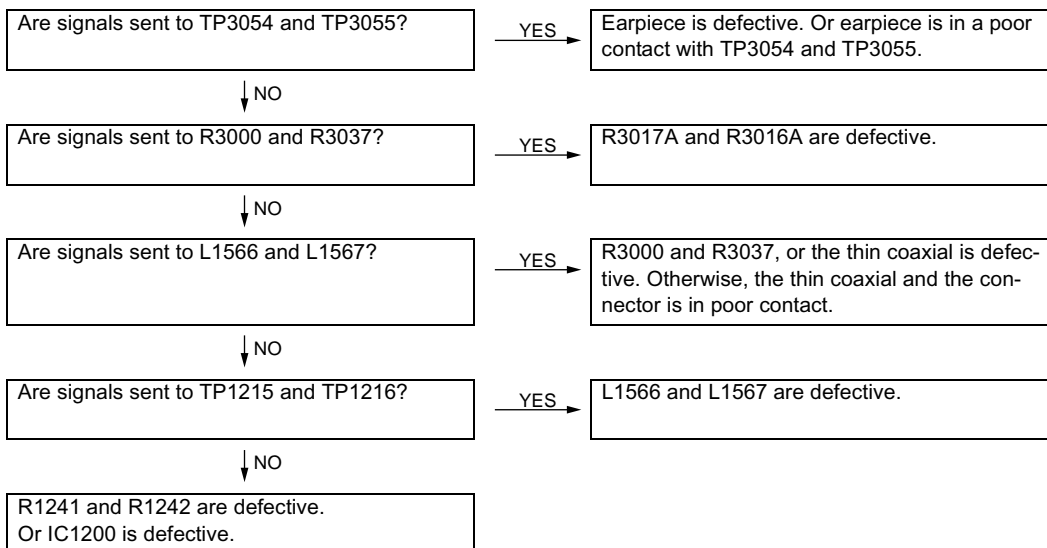


### [3] Troubleshooting

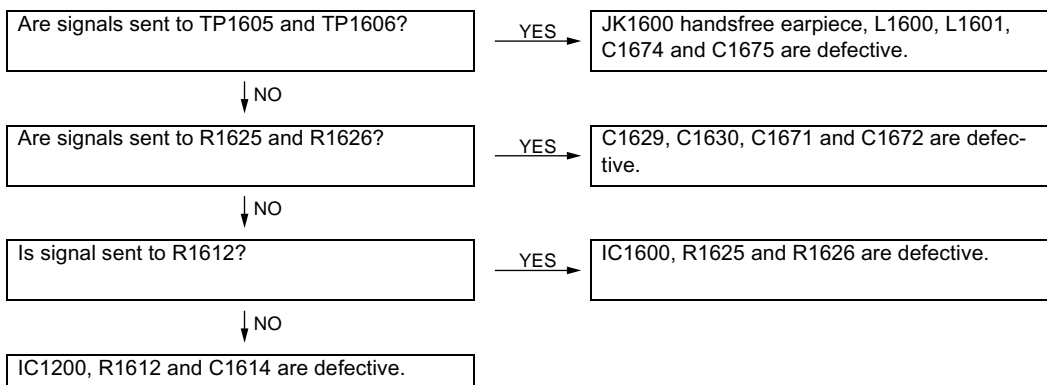
1. No voice is heard and playback is impossible.	See page 2-25
2. Voice transmission/recording is impossible.	See page 2-26
3. Power dose not turn on.	See page 2-26
4. Battery does not charge/Charging does not complete.	See page 2-27
5. System settings are reset.	See page 2-28
6. Clock settings are reset.	See page 2-28
7. Vibrator does not work.	See page 2-29
8. Speaker does not work.	See page 2-29
9. The display does not appear on Main Display.	See page 2-30
10. The display does not appear on Sub Display.	See page 2-31
11. Camera does not operate.	See page 2-31
12. Sub Camera does not operate.	See page 2-32
13. The display backlight does not turn on.	See page 2-32
14. The Key backlight does not turn on.	See page 2-33
15. Mobile Light does not turn on.	See page 2-33
16. Out-of-range appears and no transmission/reception is available.	See page 2-33
17. SD memory card is not recognised.	See page 2-39
18. Music on SD memory card cannot be played.	See page 2-39
19. USIM card is not recognised.	See page 2-40
20. Bluetooth communication is impossible.	See page 2-40

#### 1. No voice is heard and playback is impossible.

##### Earpiece

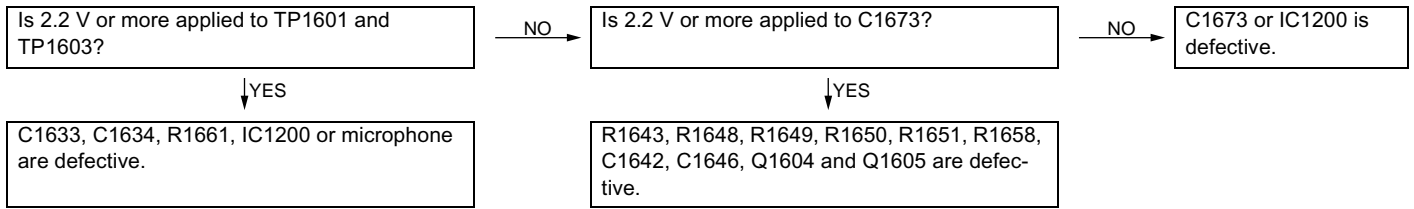


##### Handsfree Microphone Unit

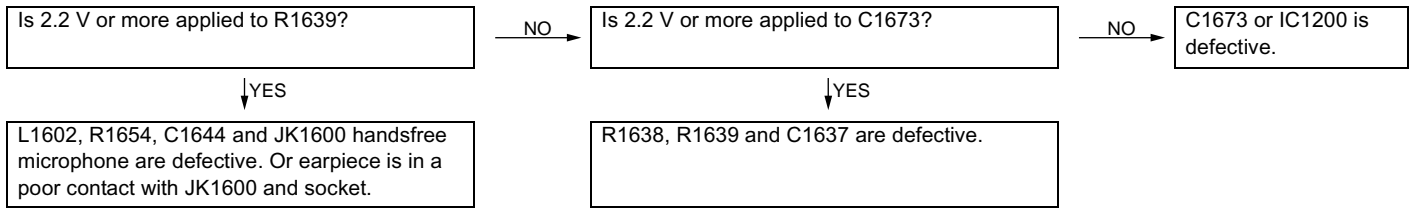


**2. Voice transmission/recording is impossible.**

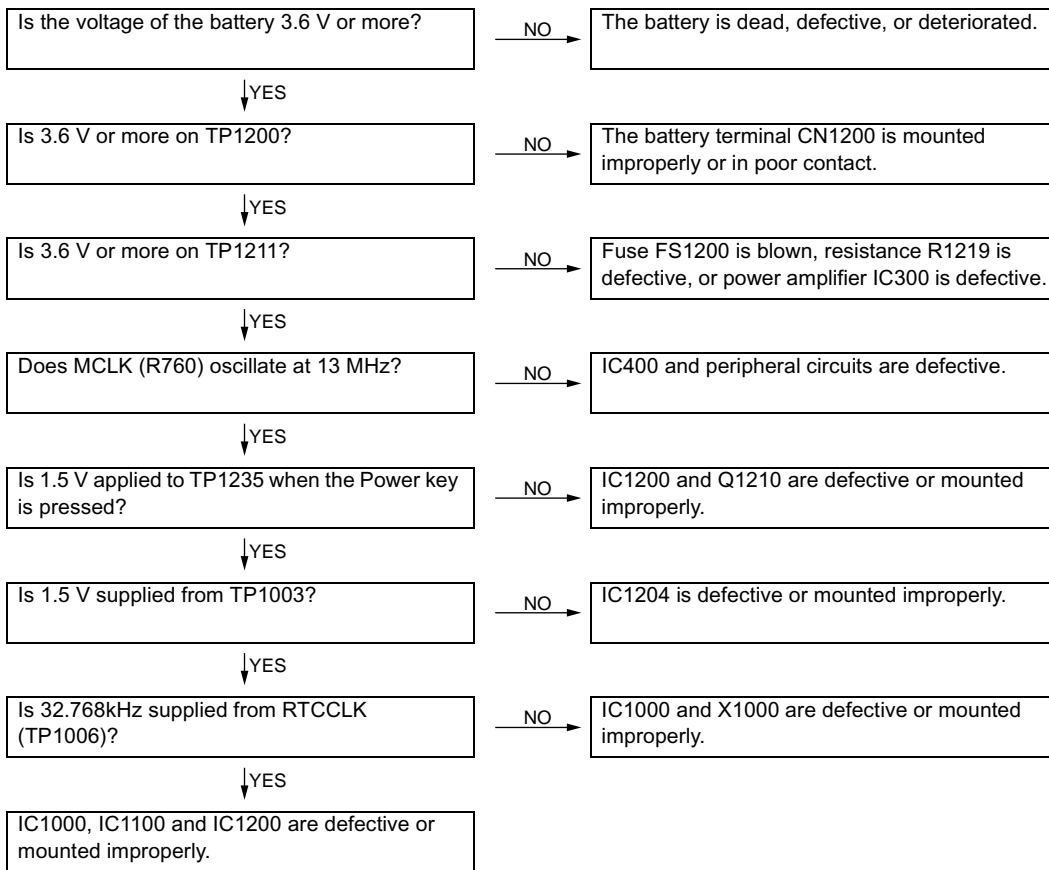
**Built-in microphones 1 and 2**



**Handsfree Microphone Unit**

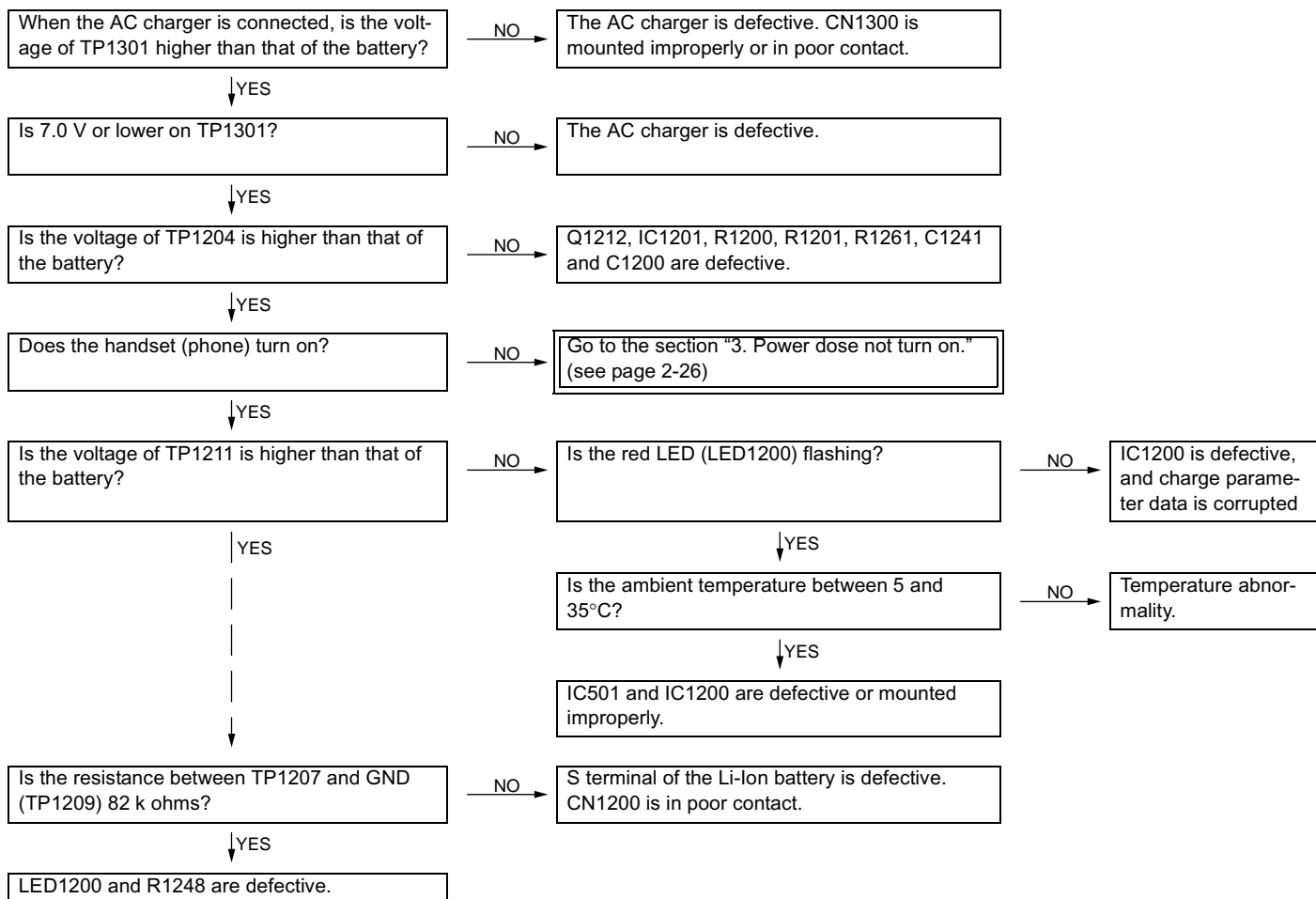


**3. Power dose not turn on.**

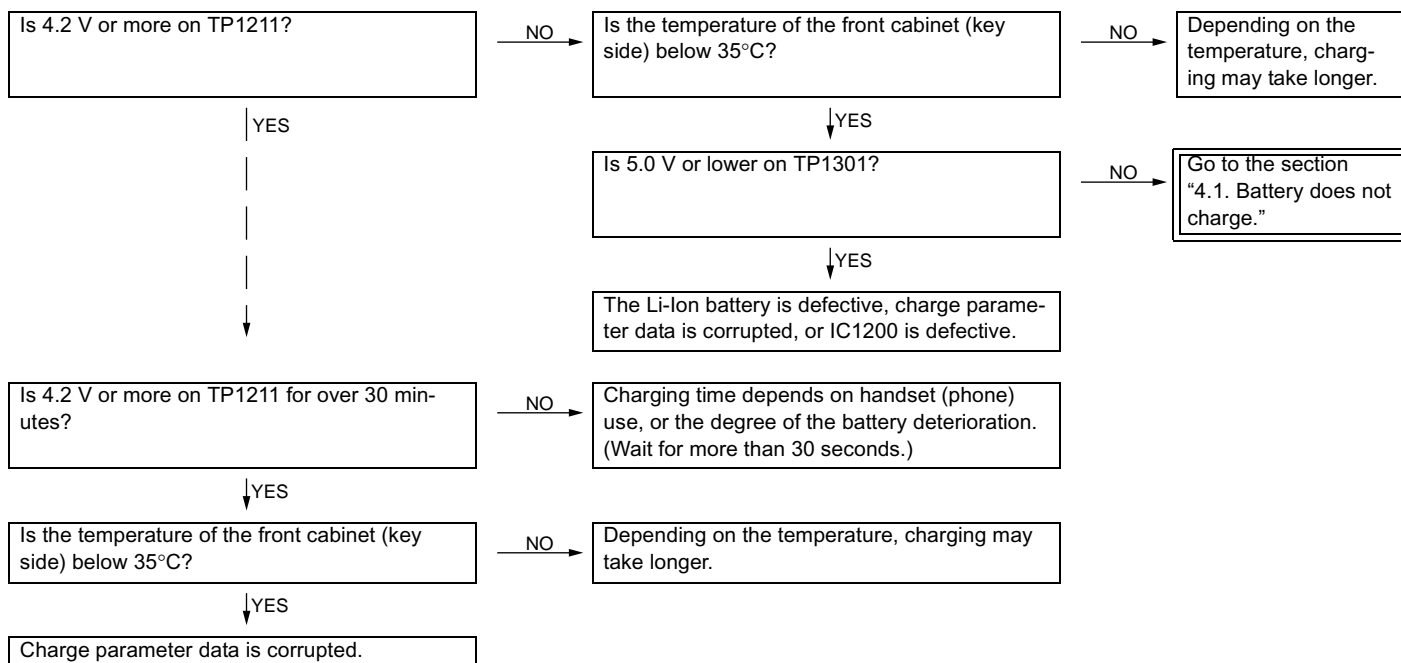


**4. Battery does not charge/Charging does not complete.**

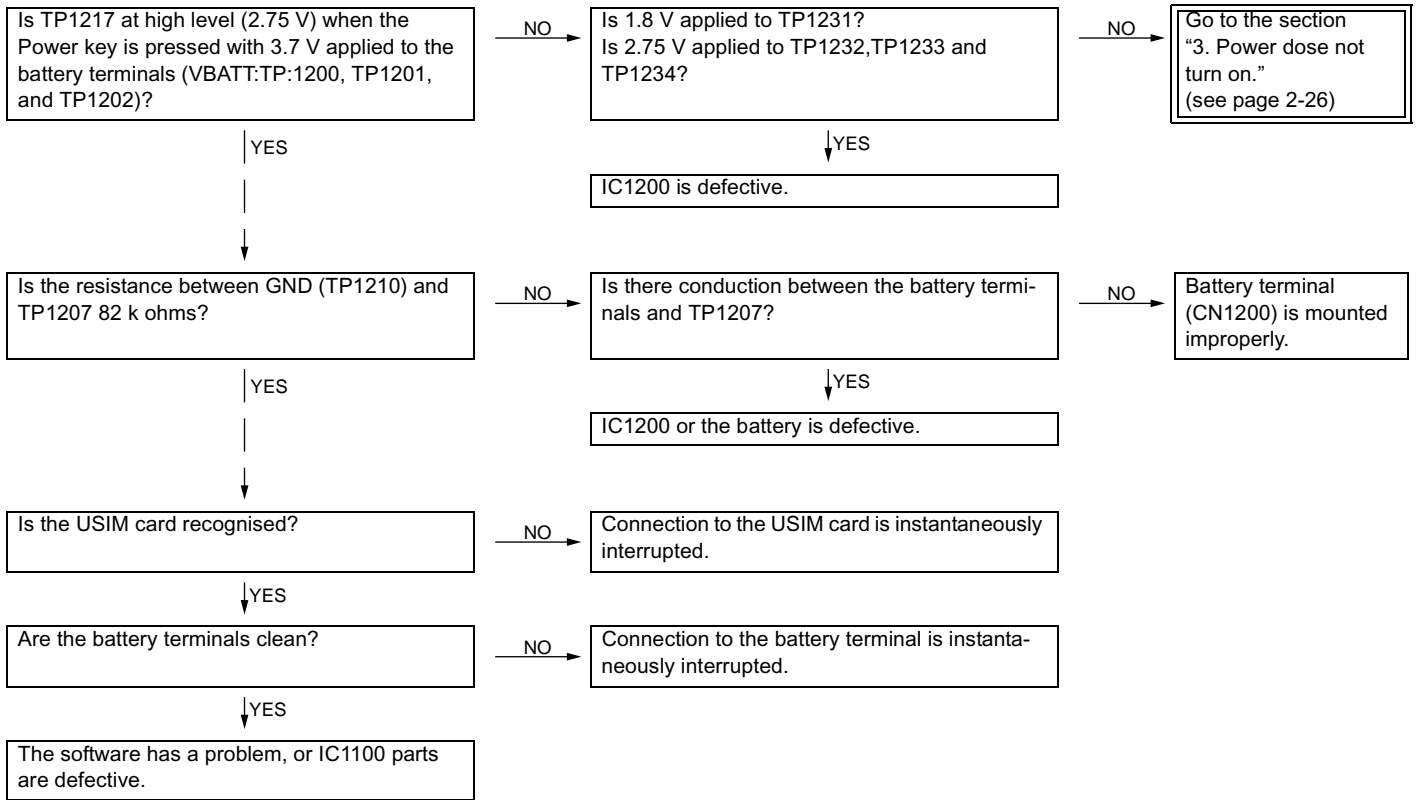
**4.1. Battery does not charge.**



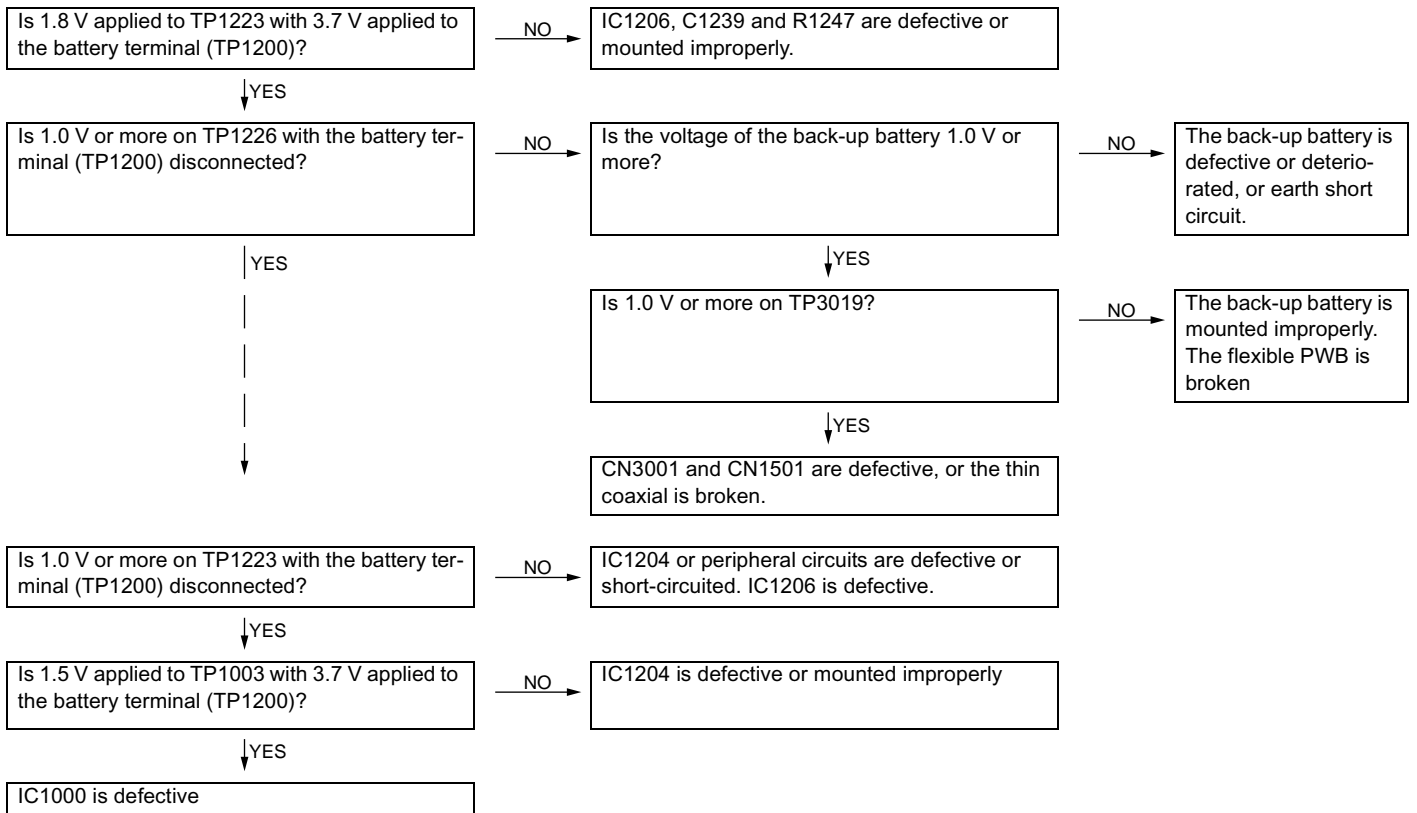
**4.2. Charging does not complete.**



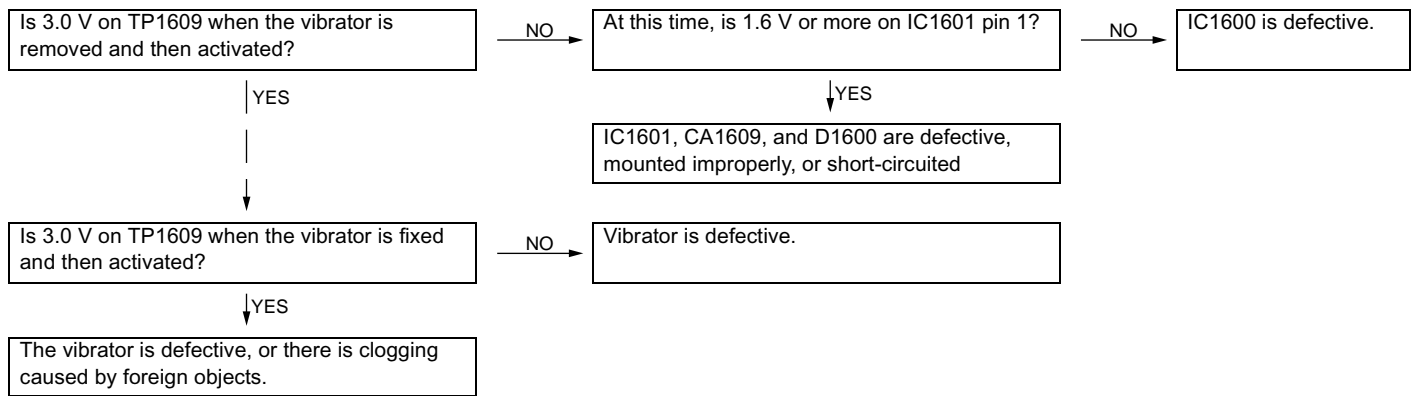
**5. System settings are reset.**



**6. Clock settings are reset.**



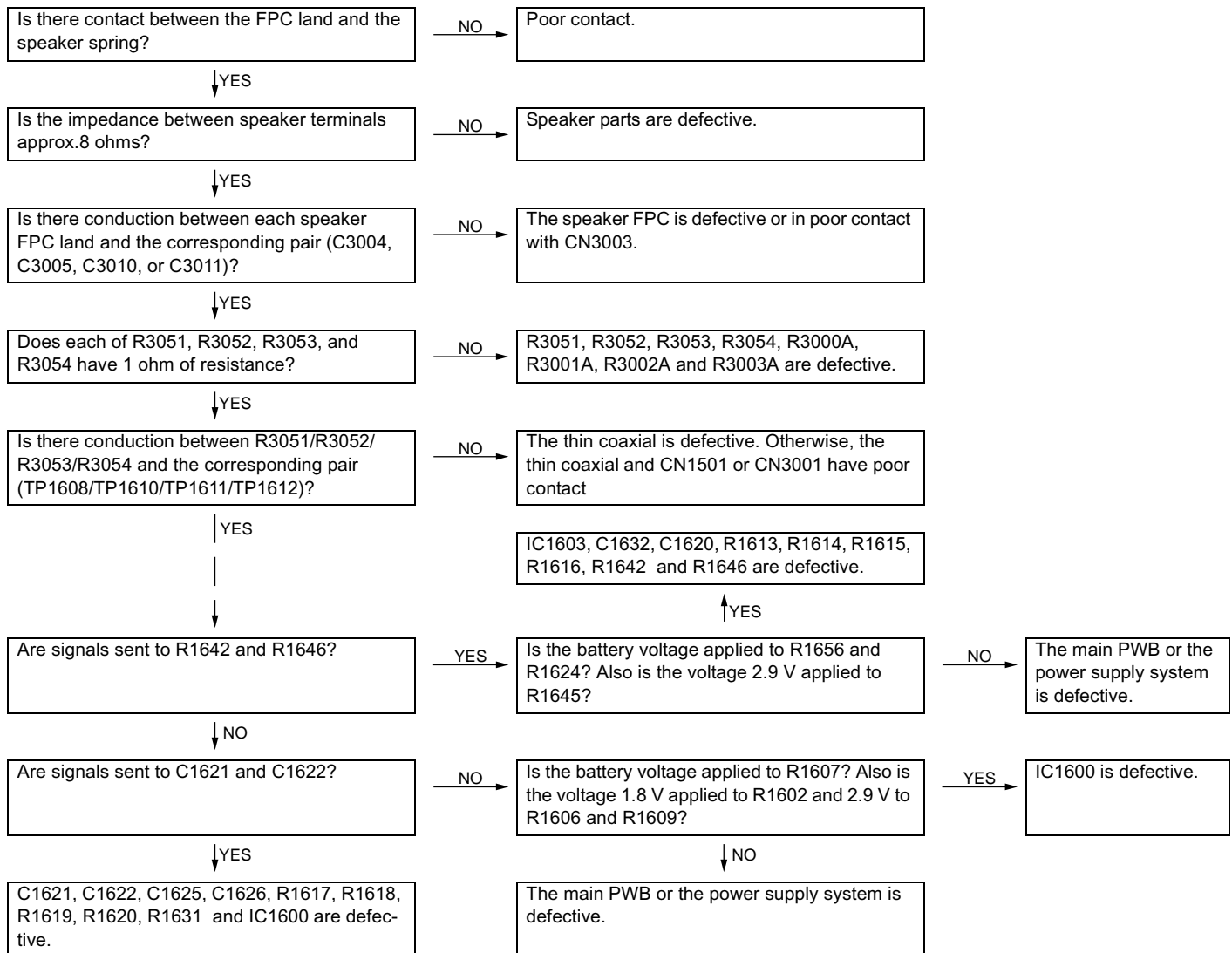
**7. Vibrator does not work.**



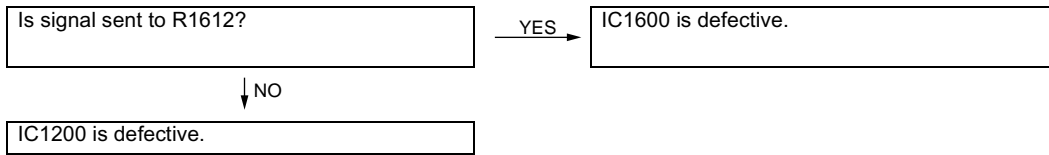
**8. Speaker does not work.**

- When both voice and ring tones are not heard from the speaker, check the items of 8.1.
- When ring tones are heard from the speaker but voice is not, check the items of 8.2.
- When voice is heard from the speaker but ring tones are not, check the items of 8.3.

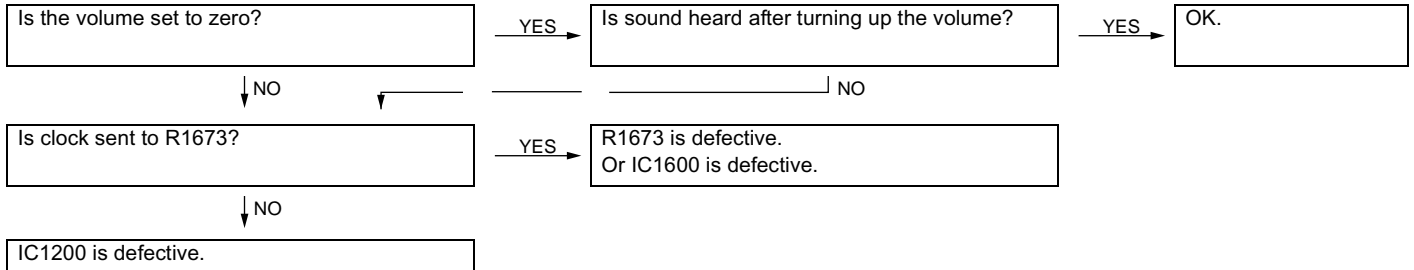
**8.1. Both voice and ring tones are not heard from the speaker.**



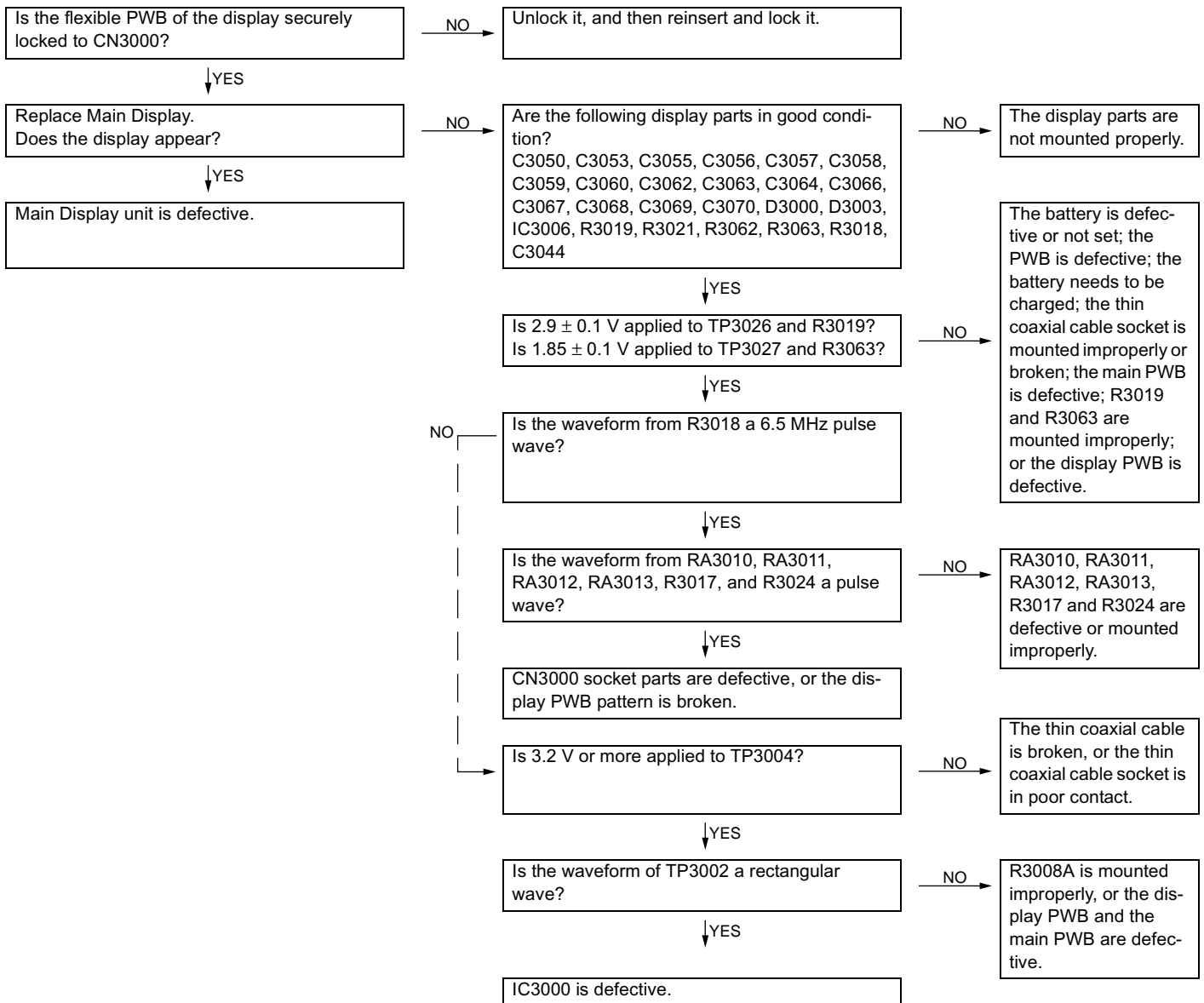
**8.2. Ring tones are heard from the speaker but voice is not.**



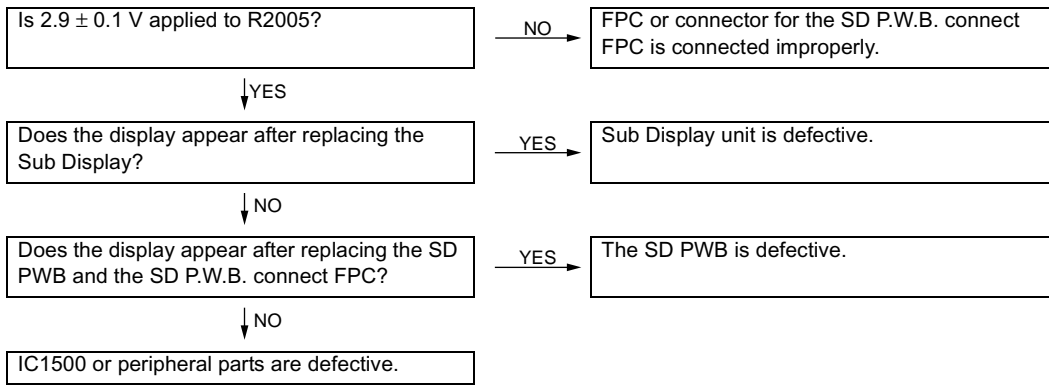
**8.3. Voice is heard from the speaker but ring tones are not.**



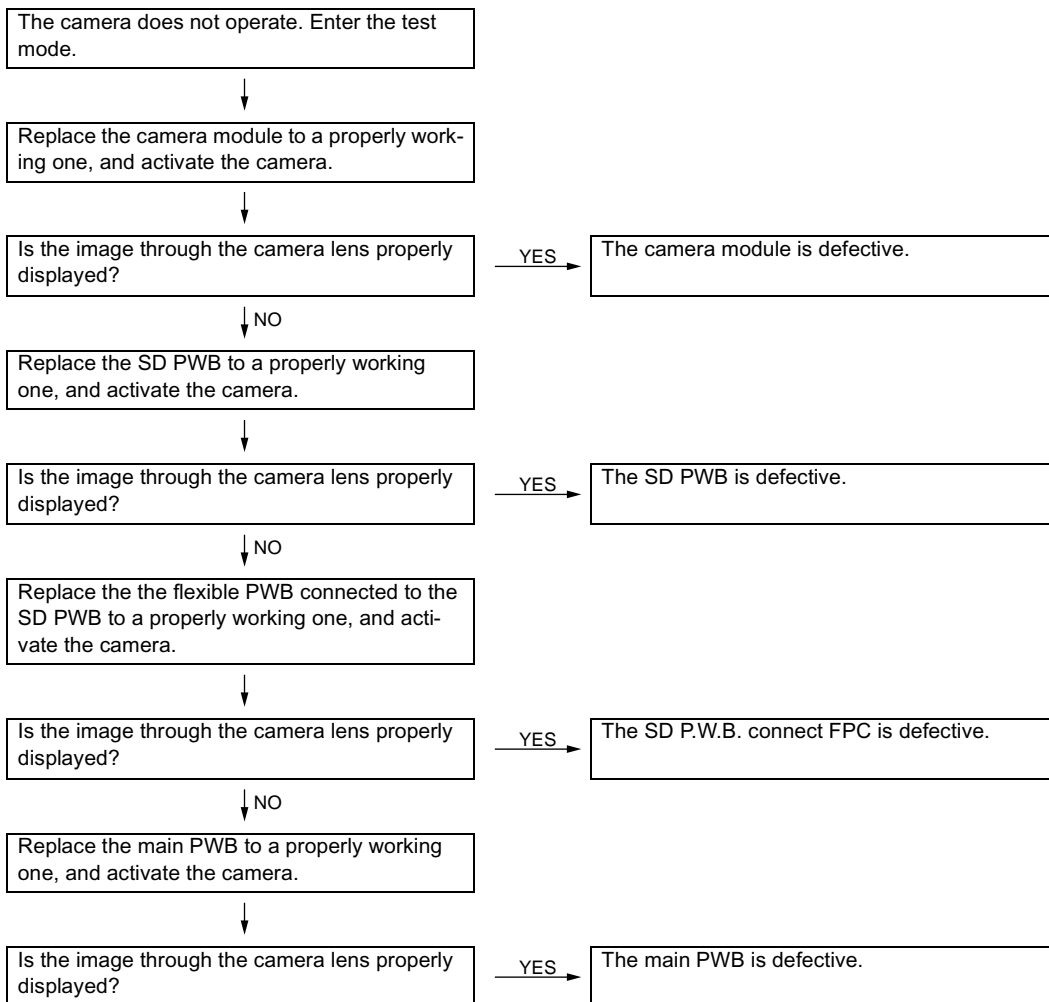
**9. The display does not appear on Main Display.**



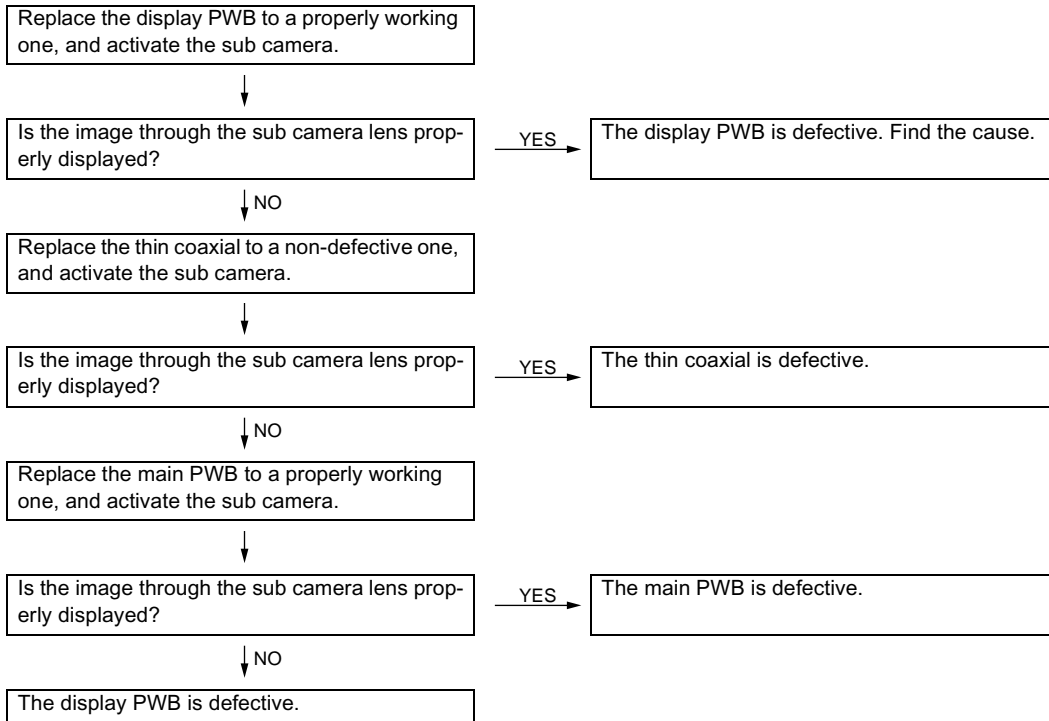
**10. The display does not appear on Sub Display.**



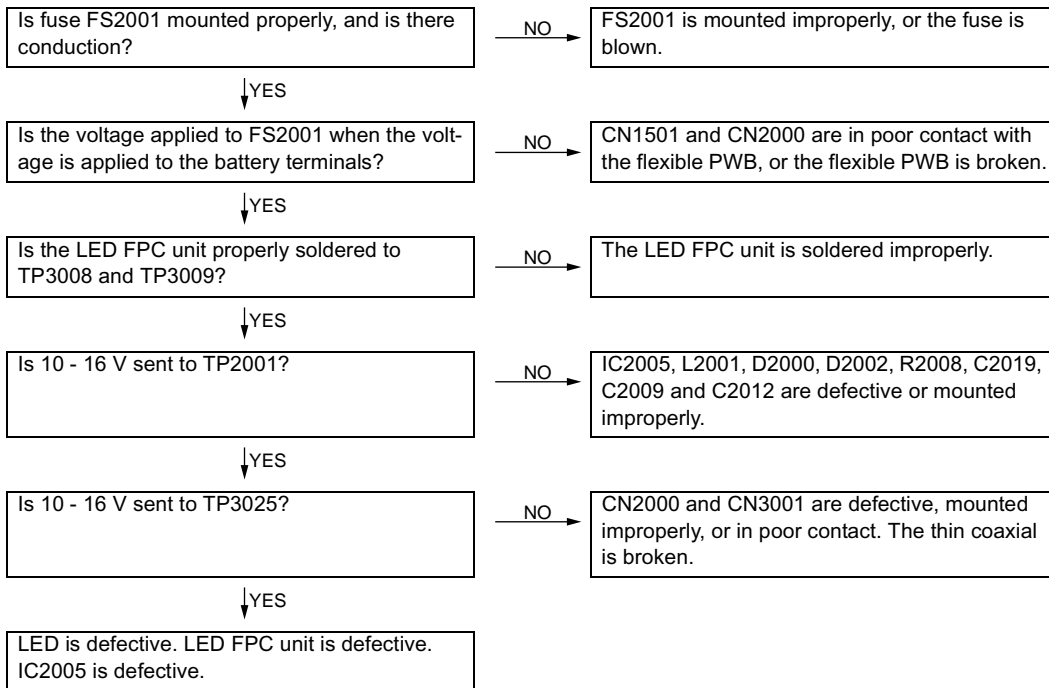
**11. Camera does not operate.**



**12. Sub Camera does not operate.**

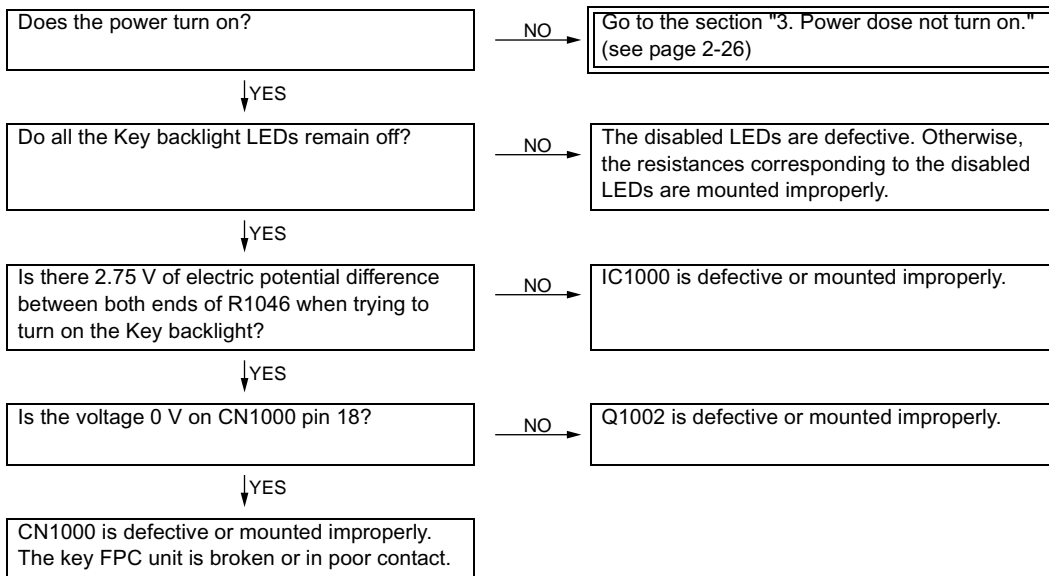


**13. The display backlight does not turn on.**

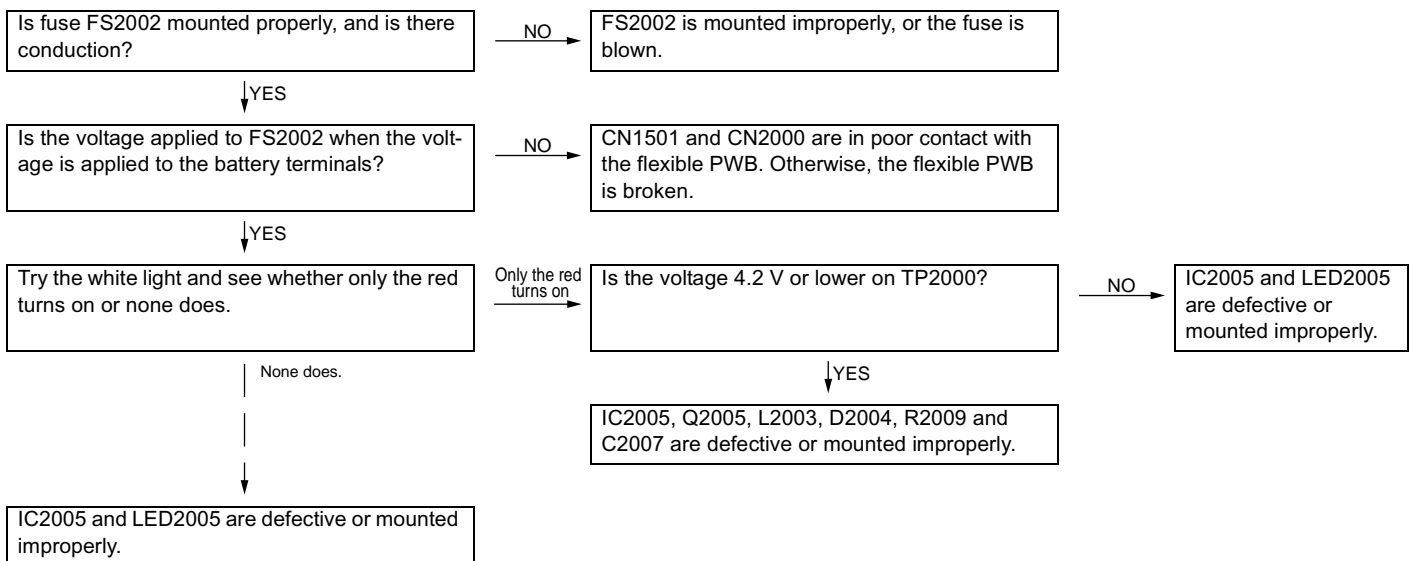




**14. The Key backlight does not turn on.**

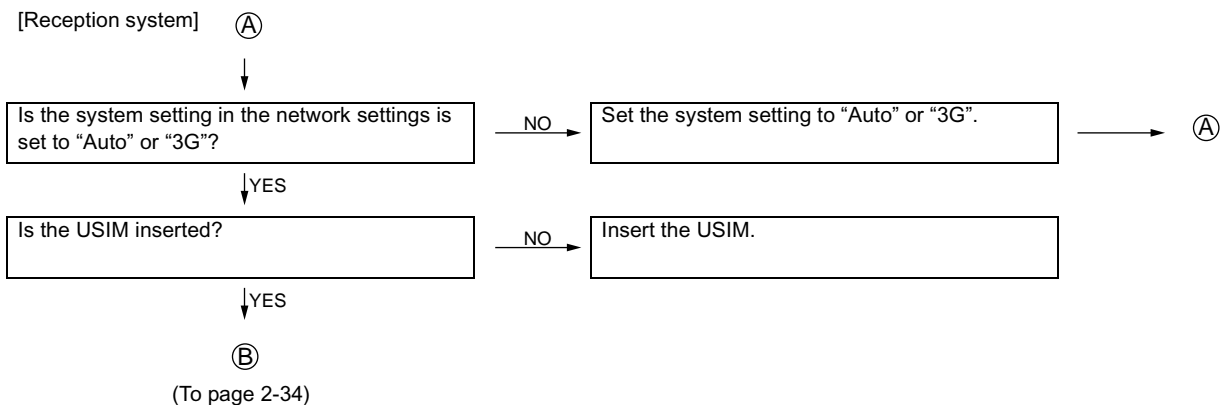


**15. Mobile Light does not turn on.**



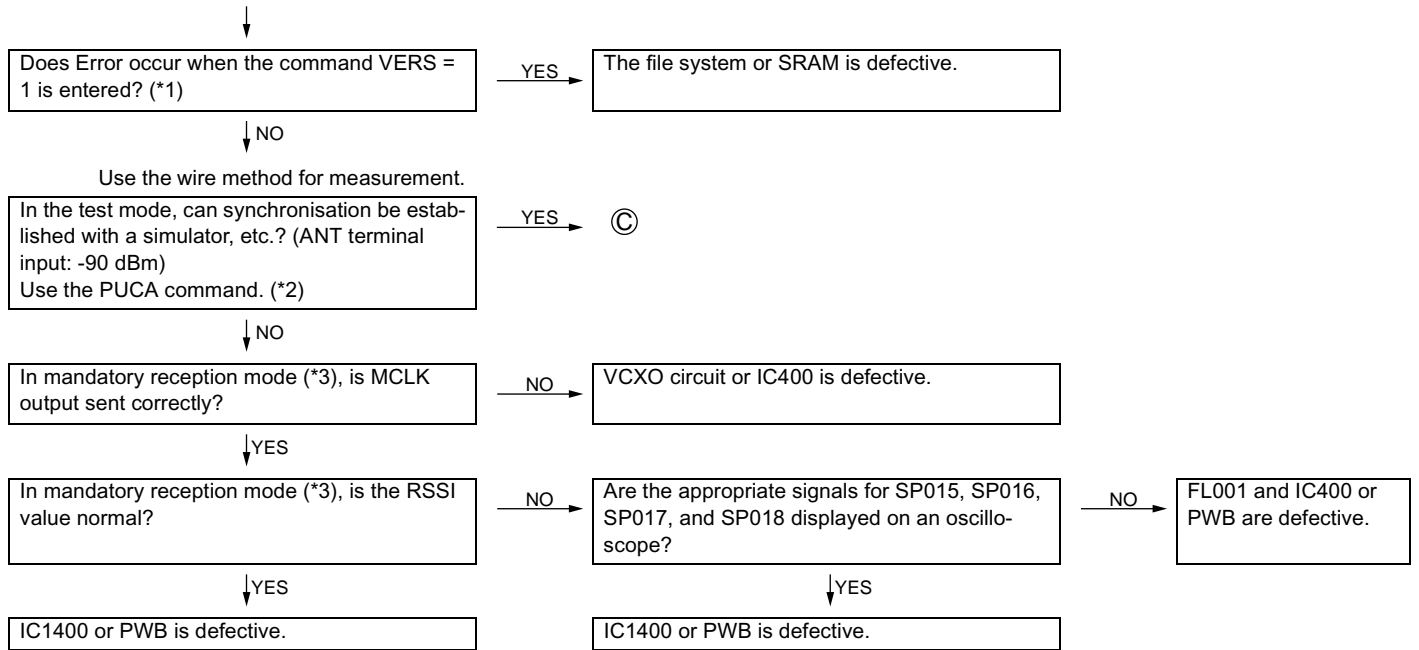
**16. Out-of-range appears and no transmission/reception is available.**

In the Japan mode (W-CDMA), "out-of-range" appears, and no transmission/reception is available.



(From page 2-33)

ⓑ

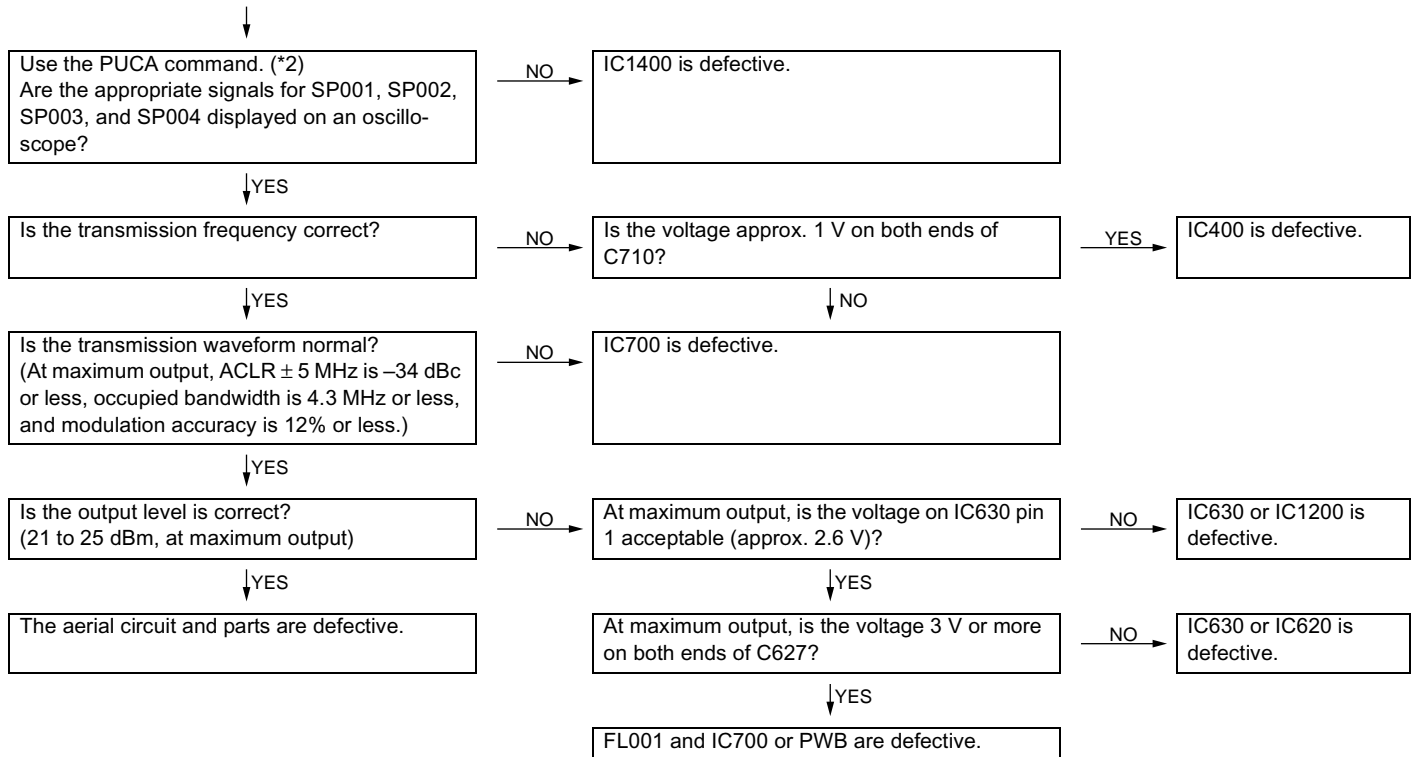


\*1: The command input procedure will be described later.

\*2: Check both "Yes" and "No" items when the PUCA command is not available due to the lack of a simulator (such as MT8820A made by Anritsu) or other necessary devices.

\*3: The command input procedure will be described later.

[Transmission system] ⓒ



Additional information 1: Out-of-range display for W-CDMA  
 <Setting examples for MT8820A>

Parameter group	Parameter	Setting	Remarks
Common	Call Processing	Off	
	Test Loop Mode	Off	
	UL Frequency	9887ch 1977.4MHz	Measurement-dependent
	DL Frequency	10837ch 2167.4MHz	Measurement-dependent
	Frequency Separation	190MHz	
	Input Level	25dBm (at maximum output)	Level is measurement-dependent
	Output Level	-70dBm	Level is measurement-dependent
	AWGN	Off	
	Sequential Output	Off	
	External Loss(Main DL)	On	Offset required
	External Loss(Main UL)	On	Offset required
	External Loss(Aux)	Off	
	Channel Coding	reference measurement channel	
	DTCH Data Pattern	PN9	
	DCCH Data Pattern	PN9	
	Prioritised RABs DL Max. Rate	12.2kbps	
	Physical Channel Parameter	Primary Scramble Code	8
Channel Level Unit		lor	
CPICH Power(CPICH_Ec/Ior)		-3.3dB On	
P-CCPCH Power(P-CCPCH_Ec/Ior)		-5.3dB On	
SCH Power(SCH_Ec/Ior)		-5.3dB On	
PICH Power(PICH_Ec/Ior)		-8.3dB On	
Channelization Code		100	
DPCH Power(DPCH_Ec/Ior)		-10.3dB On	
Secondary Scrambling Code			
Stand Alone DCCH		0	
RAB		0	
Timing Offset		0	
Channelization Code			
Stand Alone DCCH		30	
RAB		5	
S-CCPCH		Off	
AICH		Off	
Uplink Physical Channel			
PRACH Preamble Scrambling Code		0	
DPCH Scrambling Code		1	
Scrambling Code Type	Long		
Call Processing Parameter			OFF
Tx Measurement Setup Parameter	Occupied Bandwidth		
	Detect Mode	Average	
	OBW Ratio	99%	
	Spectrum Emission Mask		
	Detect Mode	Average	
	Template [Template Setup]		
	Level of RBW : 30kHz		
	2.5MHz	-35dBc	
	3.5MHz	-50dBc	
	Level of RBW : 1MHz		
	3.5MHz	-35dBc	
	7.5MHz	-49dBc	
	Lower Limit	-50dBm/3.84MHz	
	Additional limit	Non	
	Modulation Analysis		
	Storage Mode	Latest	
	Long Span Code Search	OFF	
Measuring Object	W-CDMA		

Parameter group	Parameter	Setting	Remarks
Rx Measurement Setup Parameter	Bit Error Rate		
	Number of Sample	10000 bit	
	BER Upper Limit	10%	
	Measurement Input	RF Loopback	
	Ext.BER.Input Polarity		Not used
	Ext.BER.Input Clock		Not used
	Voice Channel		Not used
	Block Error Rate		Not used
	BER/BLER Timeout Length	10sec	
Fundamental Measurement Parameter	Power measurement	On Average count 1	
	Frequency Error	On Average count 1	
	Occupied Bandwidth	On Average count 1	
	Spectrum Emission Mask	On Average count 1	
	Adjacent Channel Power	On Average count 1	
	Modulation Analysis	On Average count 1	
	Peak Code Domain Error	On Average count 1	
	BER	On	
	BLER	Off	

## Additional information 2: Out-of-range display for W-CDMA

## 1) VERS command

<Start the test programme.>  
 VERS = 1  
 <Check the response.>

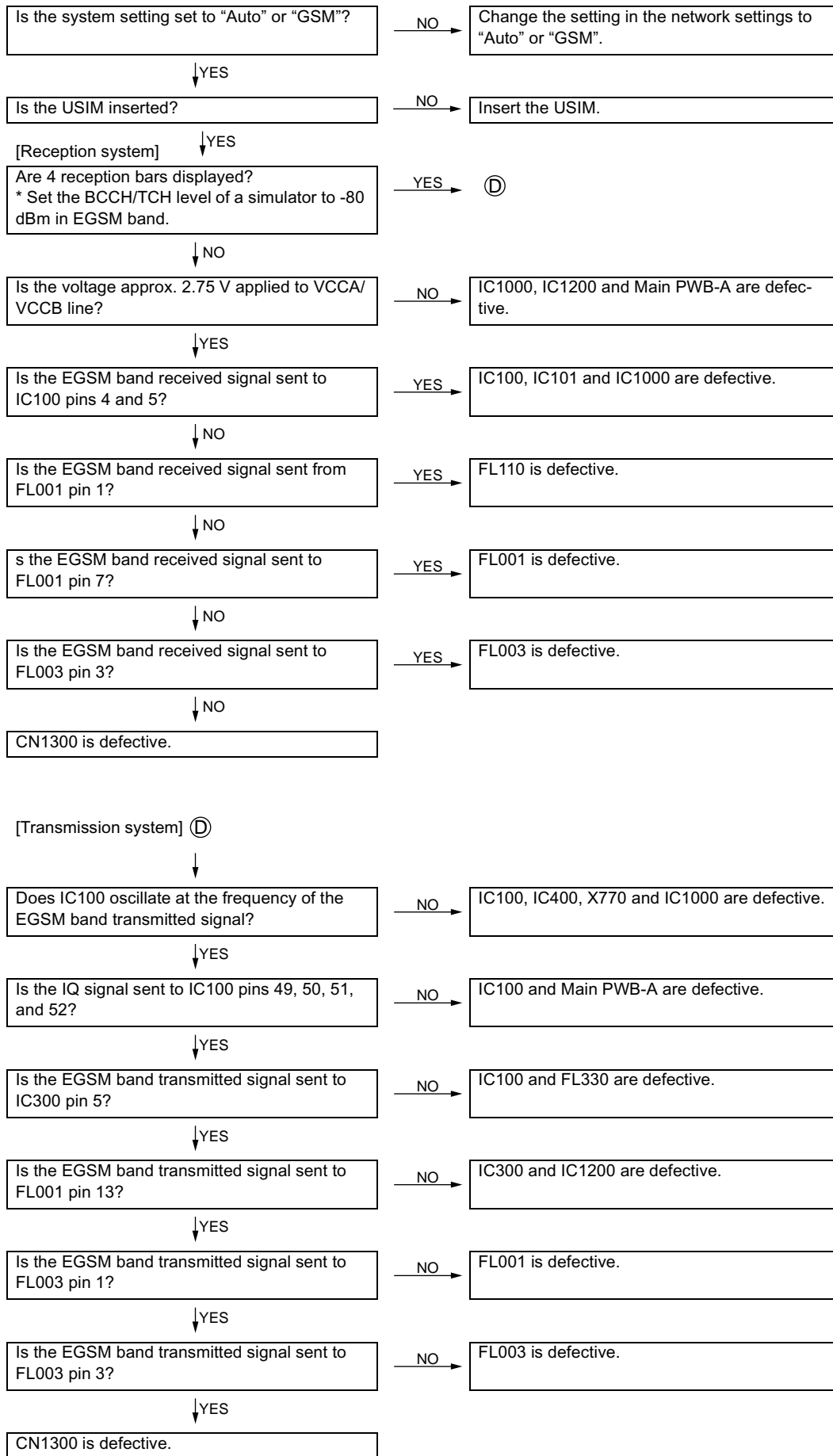
## 2) PUCA command

<Start the test programme.>  
 MODE=4  
 WWDL=0  
 WWDL=1  
 WWDL=2  
 WRST=1  
 PUCA = 1,10837,0,2,5,8,15  
 (\* When MT8820A is used, set up the measurement equipment according to the setting examples for MT8820A.)  
 <Measurement.>  
 PUCA = 0 (Measurement is complete.)  
 WRST = 0  
 POFF  
 <Turn off the power.>

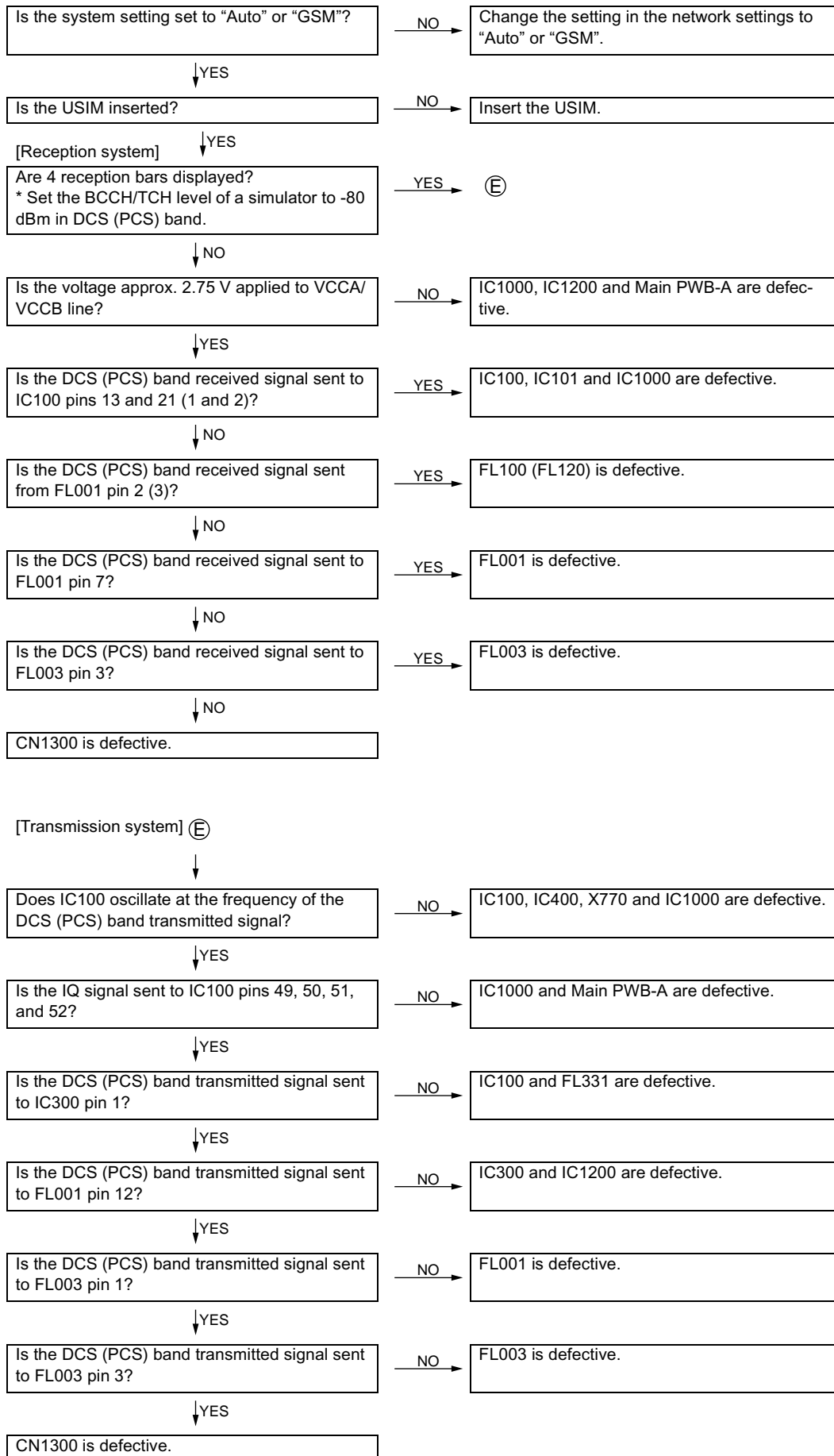
## 3) Mandatory reception mode

<Send CW, 2167.4 MHz from SG.>  
 <Start the test programme.>  
 MODE=4  
 WWDL=0  
 WWDL=1  
 WWDL=2  
 WRXC=10832  
 TCMP=2,0  
 RXPW=0  
 <Check RSSI.>  
 WRST = 0 (Measurement is complete.)  
 POFF  
 <Turn off the power.>

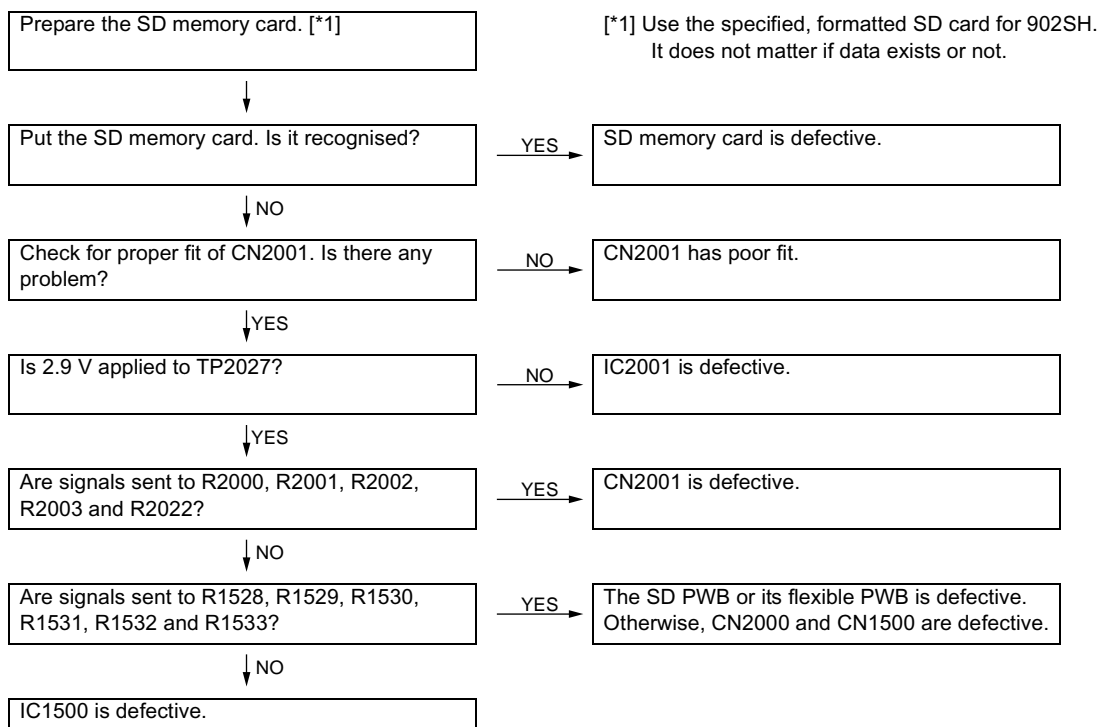
**In the overseas mode (GSM), “out-of-range” appears, and no transmission/reception is available.**



In the overseas mode (DCS/PCS), "out-of-range" appears, and no transmission/reception is available.

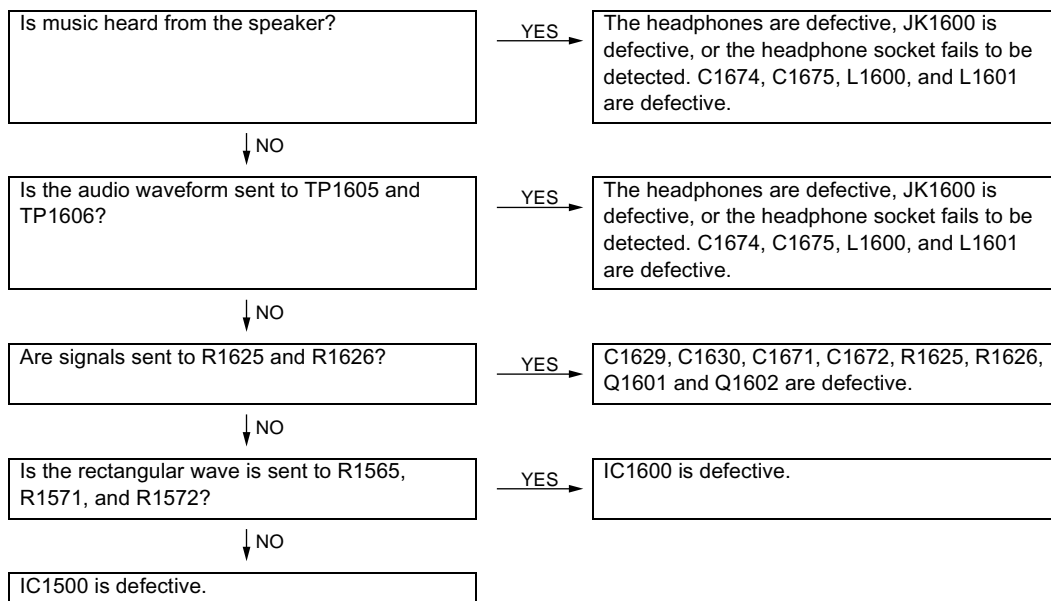


**17. SD memory card is not recognised.**

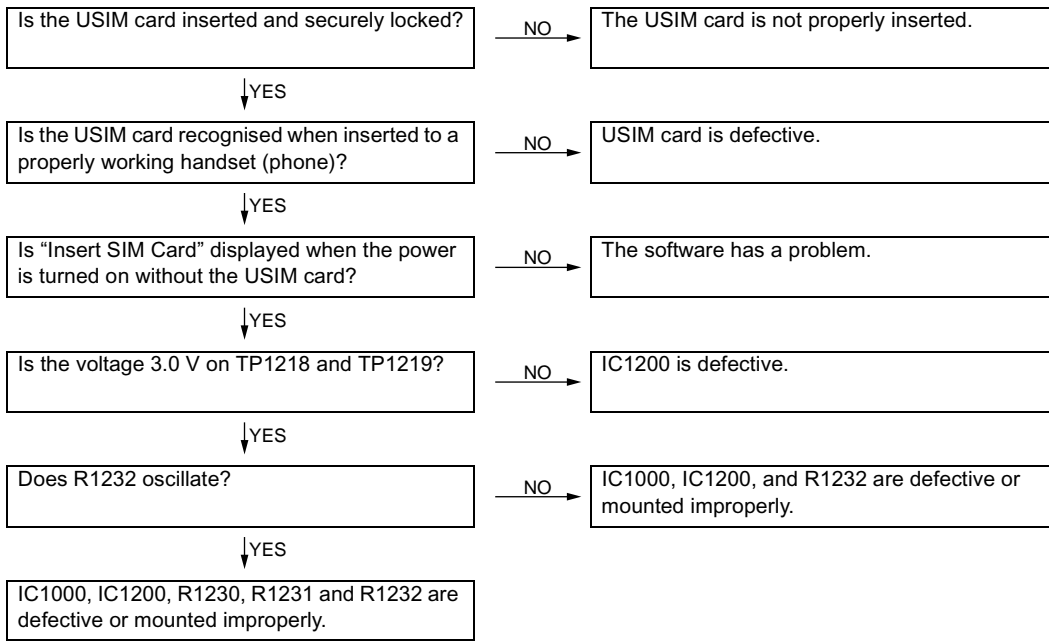


**18. Music on SD memory card cannot be played.**

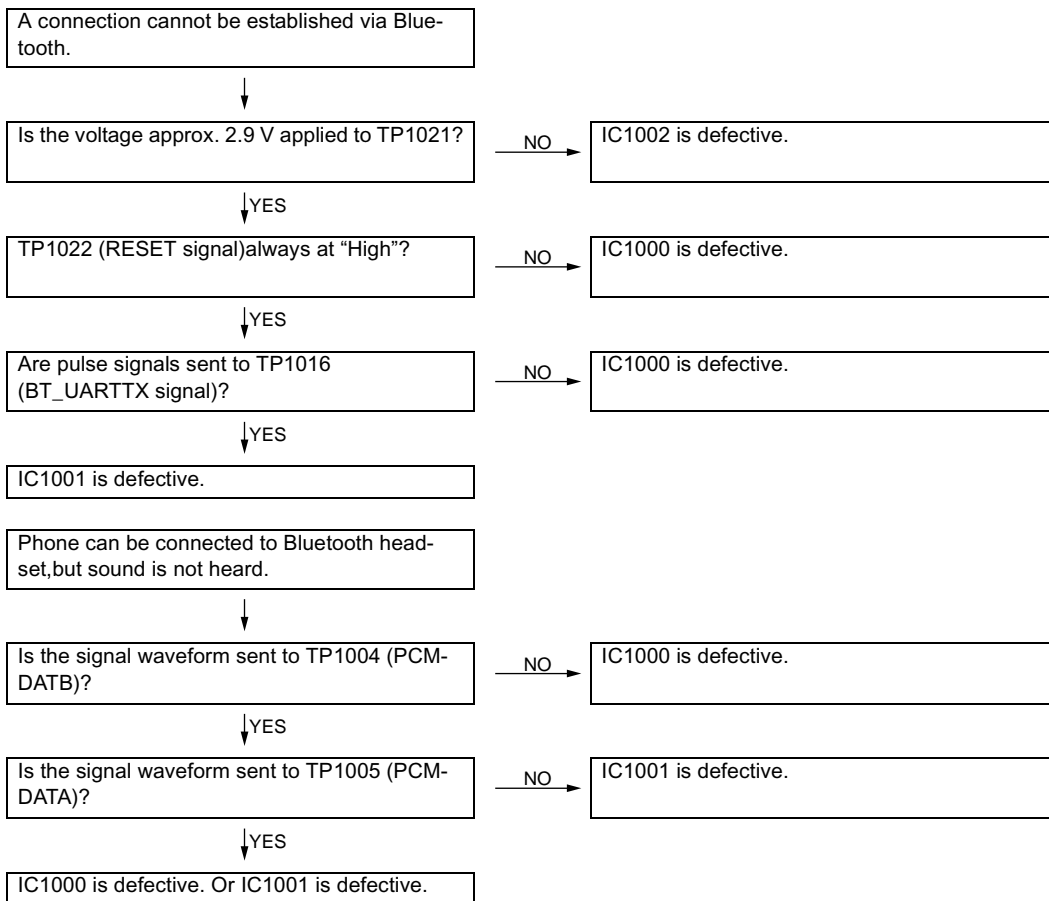
[Music is not heard through the headphones]



**19. USIM card is not recognised.**



**20. Bluetooth communication is impossible.**





# CHAPTER 3. DISASSEMBLY AND REASSEMBLY

## [1] Servicing Concerns

### 1. For disassembling

1. Do not remove the board of baseband section by pulling external interface connector not to damage the board.
2. Shield case is attached on shield case holder with no space. Do not remove together with shield case holder. If you do, you cannot attach it again because they are soldered and in such a case, you should take the electric pattern on the board as well.

### 2. For reassembling

1. Make sure that all ornamental parts have no scratch and clean.
2. Make sure that you can open and close handset (phone) smoothly and hear hinges click.
3. Make sure that display panel is placed in a proper position without inclination.
4. Make sure that all three battery terminals protrude evenly.
5. Make sure that the pawl of aerial is upside.

#### • FASTENING TORQUE (Referential Value)


• Back Cabinet (Key)/ Front Cabinet (Key)	13.8 to 15.7 N • cm (1.4 to 1.6 Kgf • cm)
• Back Cabinet (Display)/ Front Cabinet (Display)	
• Hinge Unit	9.8 to 11.8 N • cm (1.0 to 1.2 Kgf • cm)

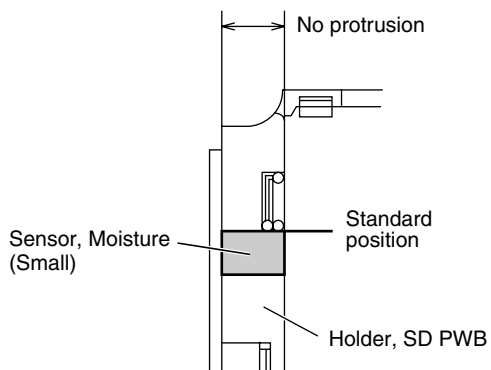
The reference value is measured when an electric screwdriver (HIOS CL4000) is used.

#### • SOLDERING SPECIFICATION

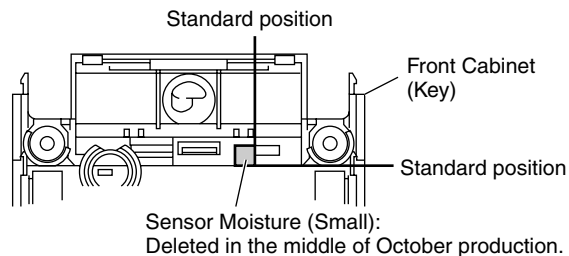
Soldering iron must be set to 380° C for 5 seconds.

#### • STANDARD POSITION OF ATTACHMENT

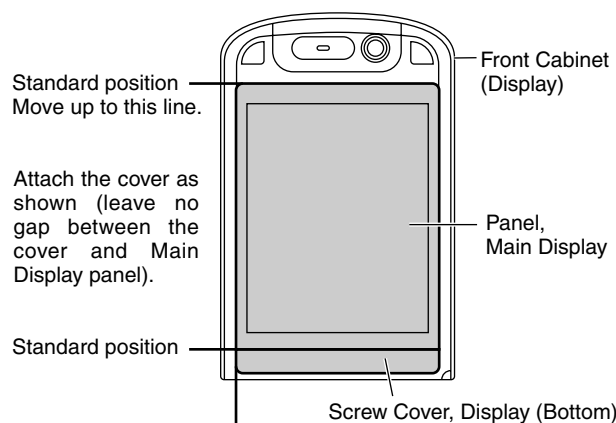
When replacing the following labels (marked with ), be sure to place new ones on the specified positions.



**[Sensor, Moisture (Small)]**

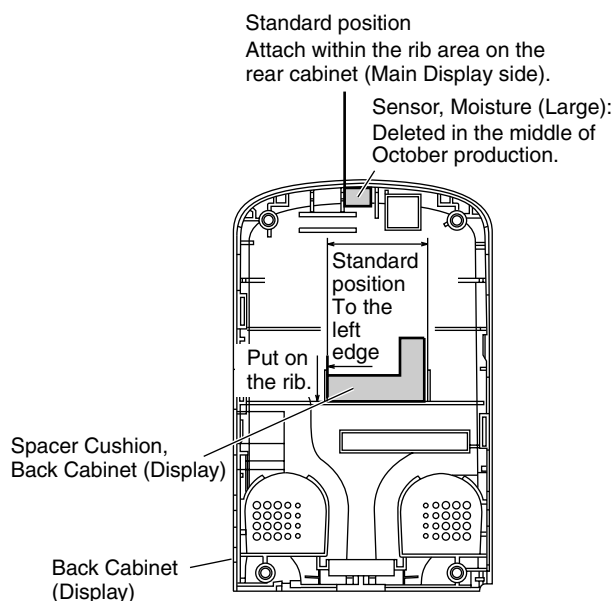


**[Sensor, Moisture (Small)]**

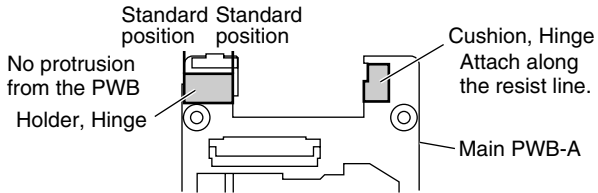


Standard position  
To the left reference position on the front cabinet (Main Display side).

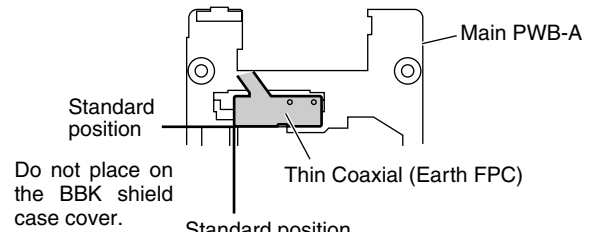
**[Panel, Main Display/Screw Cover, Display (Bottom)]**



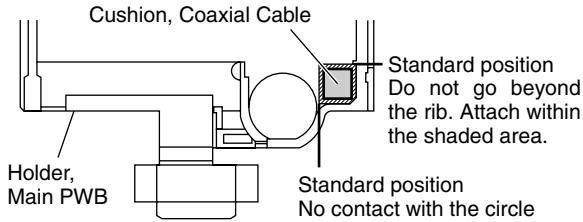
**[Spacer Cushion, Back Cabinet (Display)/  
Sensor, Moisture (Large)]**



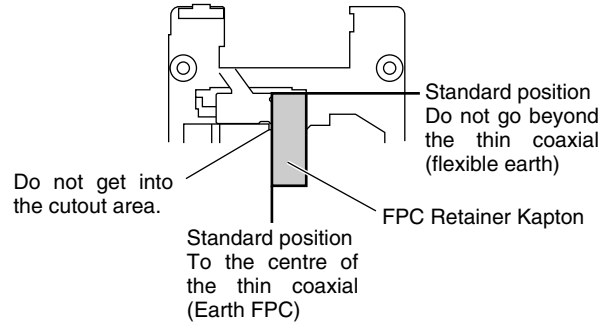
**[Holder, Hinge/Cushion, Hinge]**



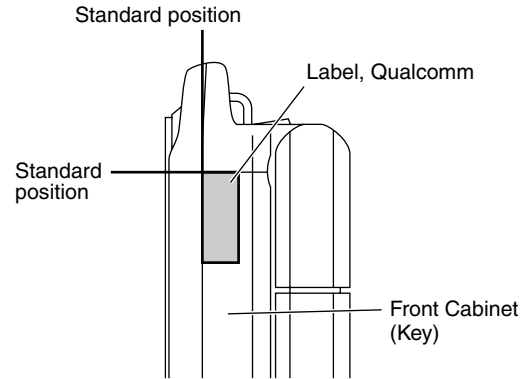
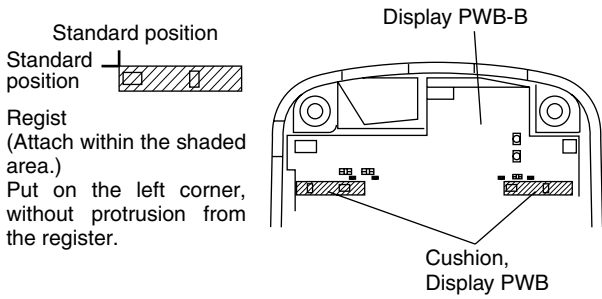
Standard position  
To the centre of the marking on the BBK shield case cover.  
No protrusion from the marking.



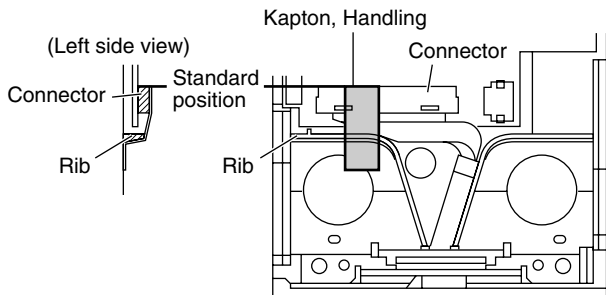
**[Cushion, Coaxial Cable]**



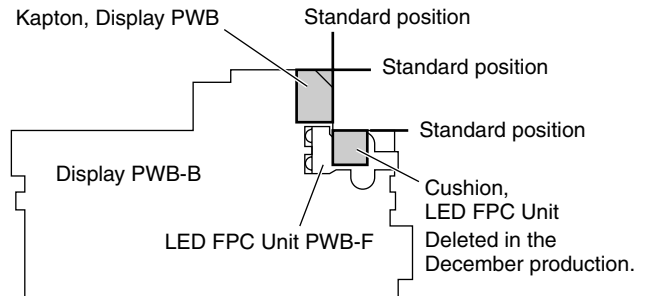
**[Thin Coaxial (Earth FPC)/FPC Retainer Kapton]**



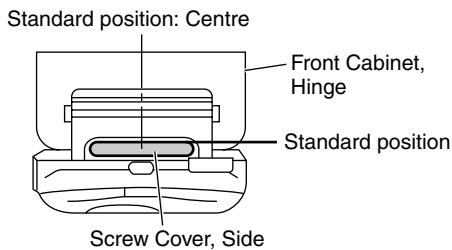
**[Label, Qualcomm]**



**[Cushion, Display PWB/Kapton, Handling]**



**[Kapton, Display PWB/Cushion, LED FPC Unit]**

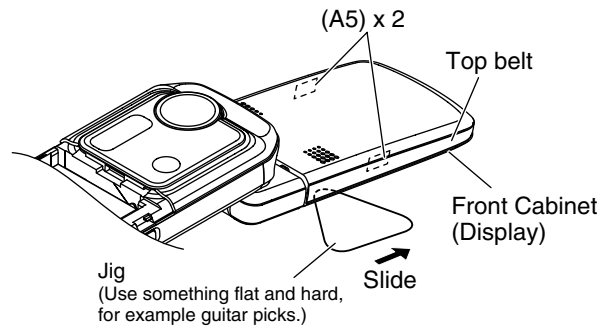


**[Screw Cover, Side]**

**[2] Disassembly and reassembly**

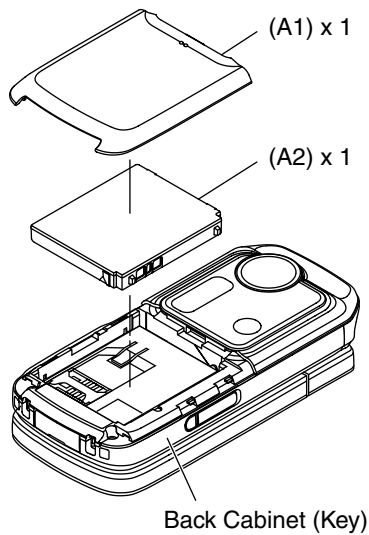
- To reassemble, reverse the procedure.  
Note that the aerial cover needs to be installed after assembling the back cabinet (key side).

STEP	REMOVAL	PROCEDURE	FIGURE
1	Back Cabinet (Display) Assembly	1. Battery Cover..... (A1)x1 2. Li-Ion Battery..... (A2)x1 3. Screw Cover..... (A3)x3 4. Screw..... (A4)x6 5. Hook..... (A5)x2	1 2 3
2	Main Display Holder Unit	1. Socket..... (B1)x1 2. Hook..... (B2)x2	4
3	Display PWB-B	1. Solder..... (C1)x2 2. Flat Cable..... (C2)x2 3. Hook..... (C3)x1 4. Hook..... (C4)x1	5

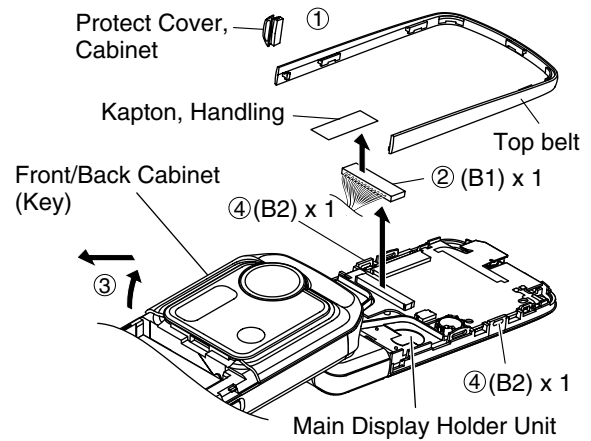


Insert a jig into the gap between the Top belt and front cabinet (Main Display side), and slide it to remove the hook A5.

**Figure 3**

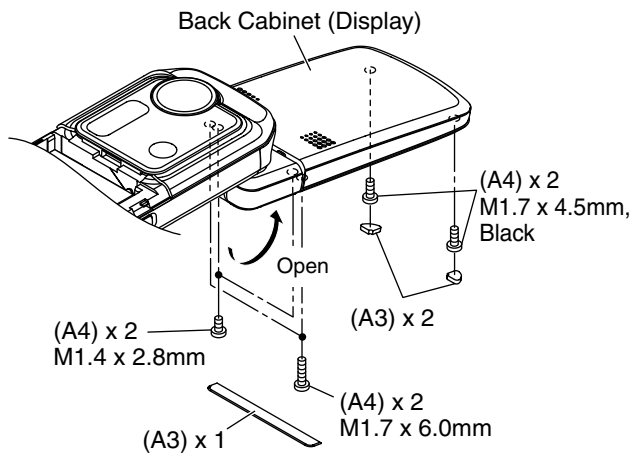


**Figure 1**

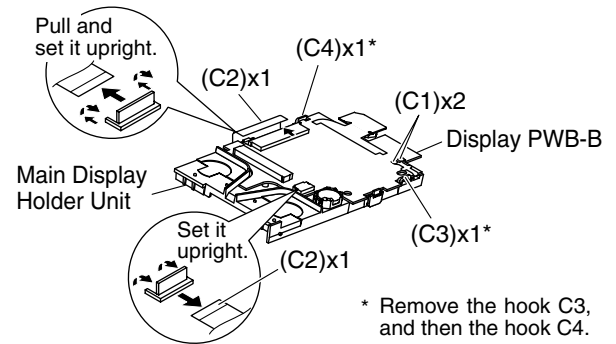


- Remove the cabinet protection and Top belt.
- Remove the handling kapton, and then the socket B1.
- Lift and pull off the front/back cabinet (key side).
- Remove the hook B2.

**Figure 4**



**Figure 2**



**Figure 5**

STEP	REMOVAL	PROCEDURE	FIGURE
4	Hinge Cabinet	1.Screw Cover..... (D1)x2	6
		2.Screw..... (D2)x2	7
		3.Hook..... (D3)x4	8
		4.Hinge Belt Left..... (D4)x1	
		5.Hinge Belt Right.... (D5)x1	
5	Back Cabinet (Key) Assembly	1.Screw Cover..... (E1)x2	9
		2.Screw..... (E2)x4	10
		3.Hook..... (E3)x7	

For removal of the hinge unit, refer to "Precautions for installing the thin coaxial" (3-8).

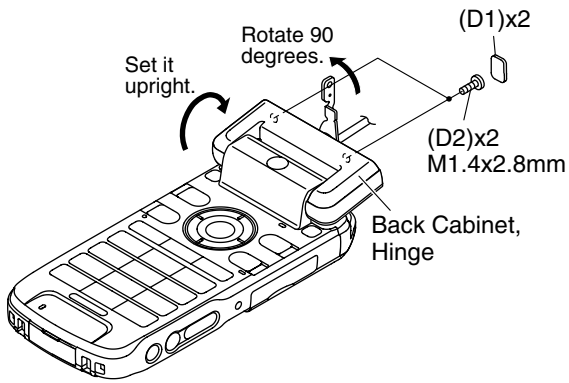


Figure 6

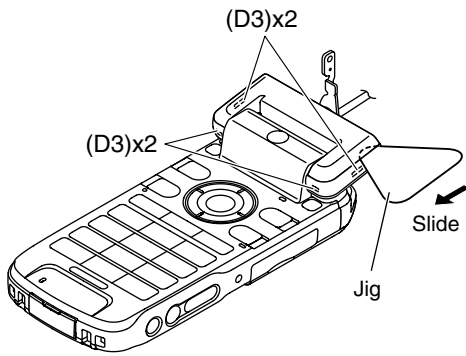
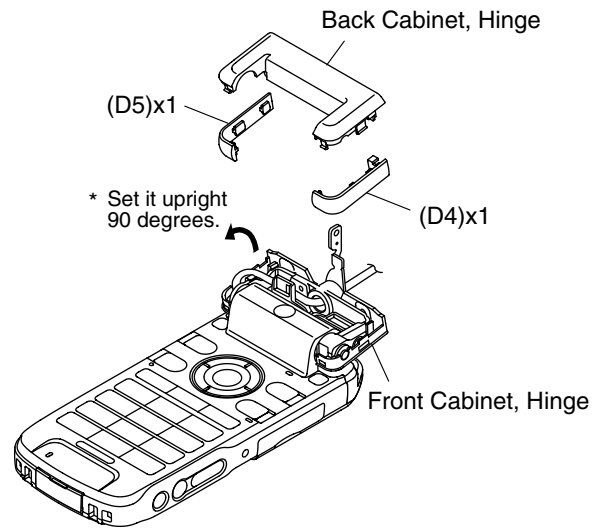


Figure 7

Insert a jig and slide it to remove the hook D3.



\* Set it upright as shown and remove the front cabinet (hinge).

Figure 8

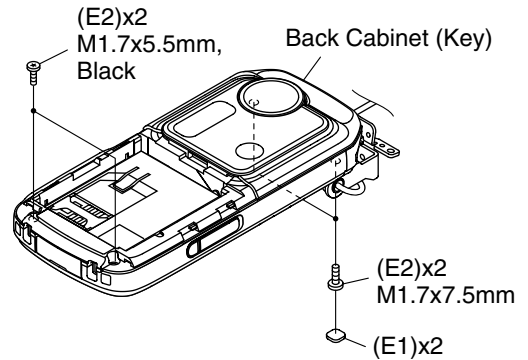


Figure 9

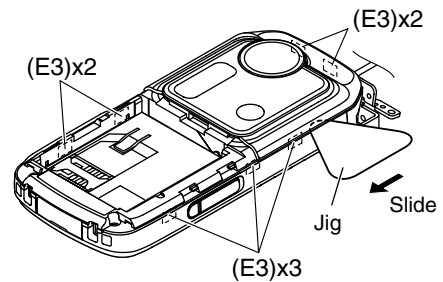


Figure 10

STEP	REMOVAL	PROCEDURE	FIGURE
6	Aerial Cover	1.Screw Cover..... (F1)x1	11
		2.Screw..... (F2)x2	12
		3.Hook..... (F3)x4	
7	Main PWB-A	1.Hook..... (G1)x3	13
8	Sub Display Holder Unit	1.Hook..... (H1)x2 2.Flat Cable..... (H2)x1	14
9	Camera Assembly	1.Socket..... (J1)x1	14
10	Key FPC Unit PWB-E/ Holder, Main PWB	1.Hook..... (K1)x5 2.Flat Cable..... (K2)x1	14
11	Hinge Unit	1.Socket..... (L1)x1	14
12	SD PWB-C	1.Hook..... (M1)x3	15
		2.Socket..... (M2)x1	
		3.Hook..... (M3)x4	

For assembly of the camera, refer to "Assembly procedure for the camera" (3-7).

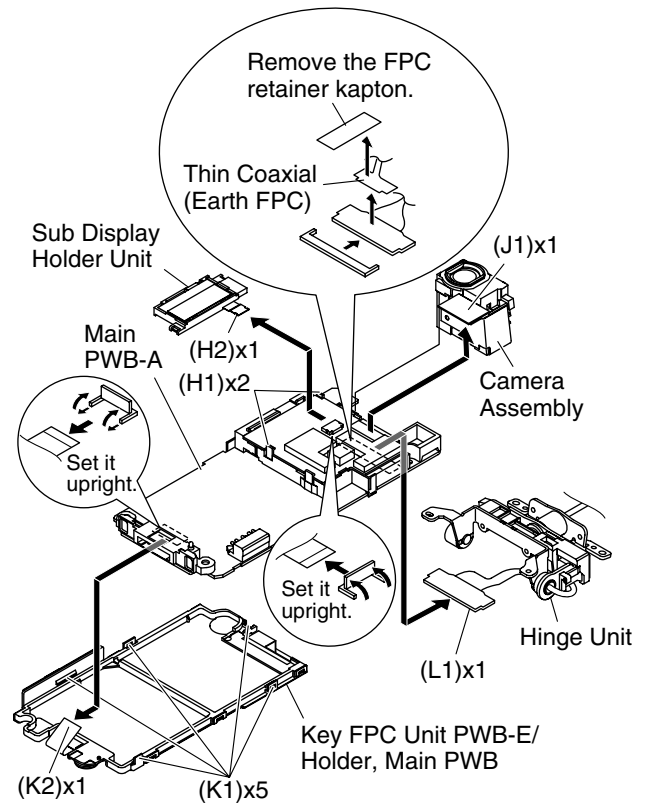


Figure 14

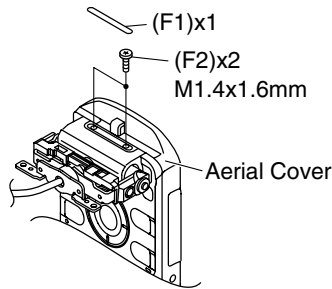


Figure 11

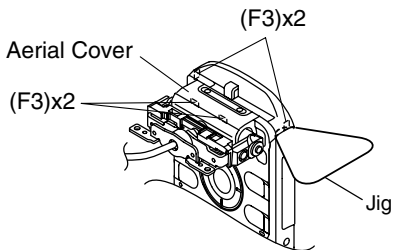


Figure 12

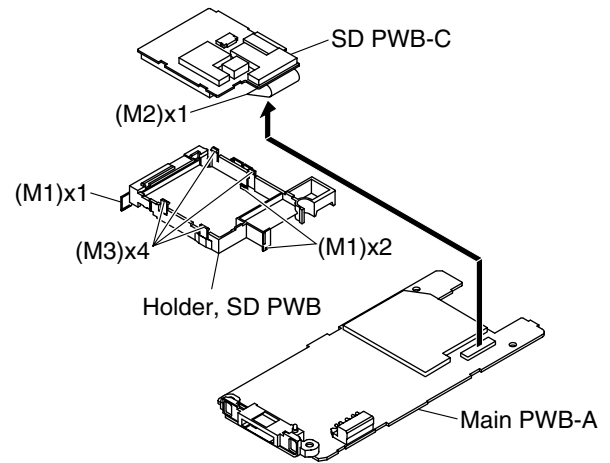


Figure 15

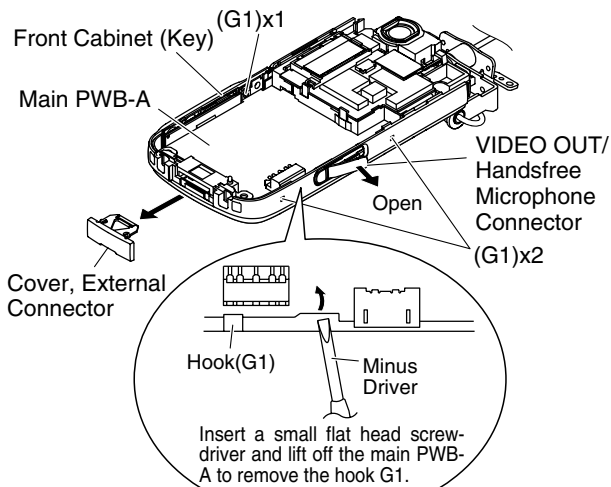
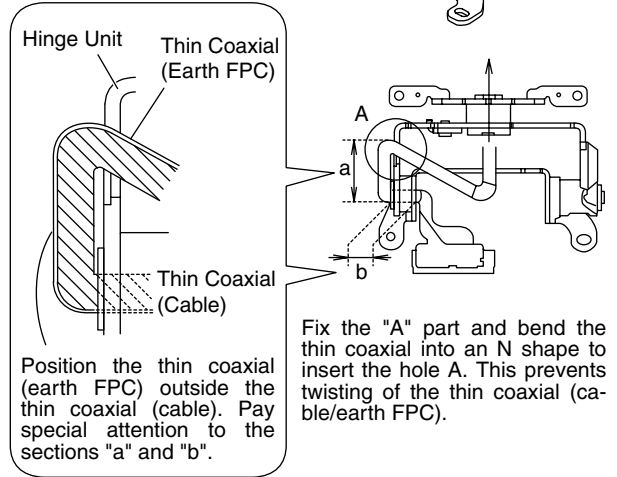
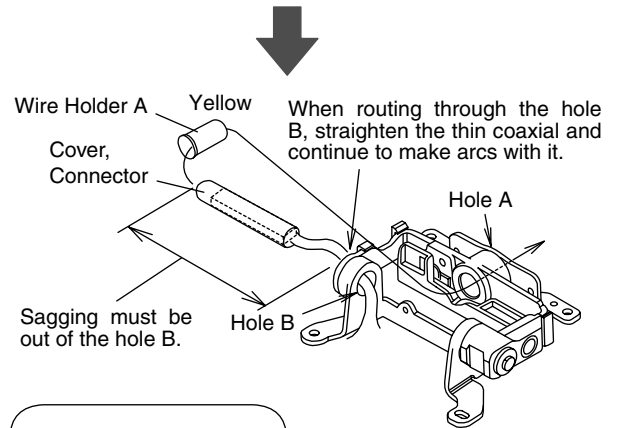
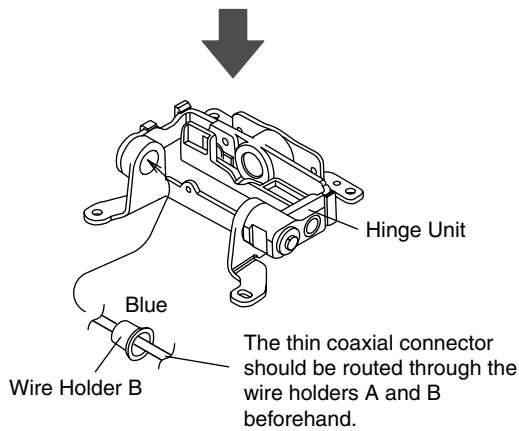
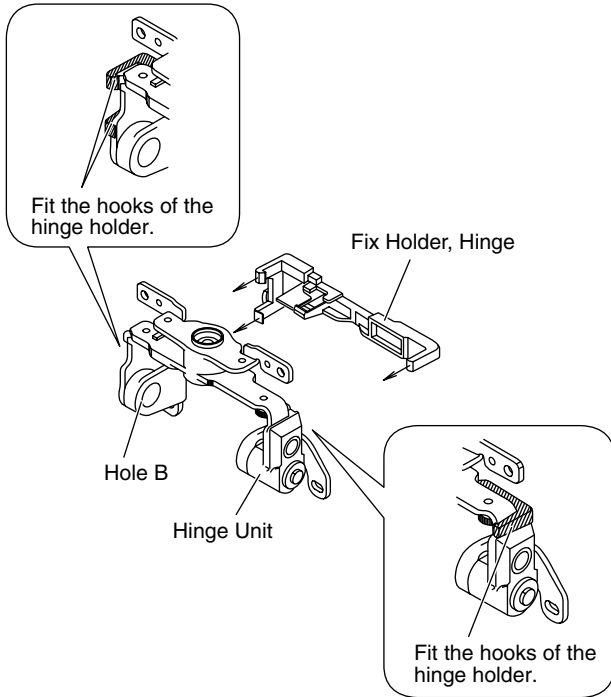


Figure 13

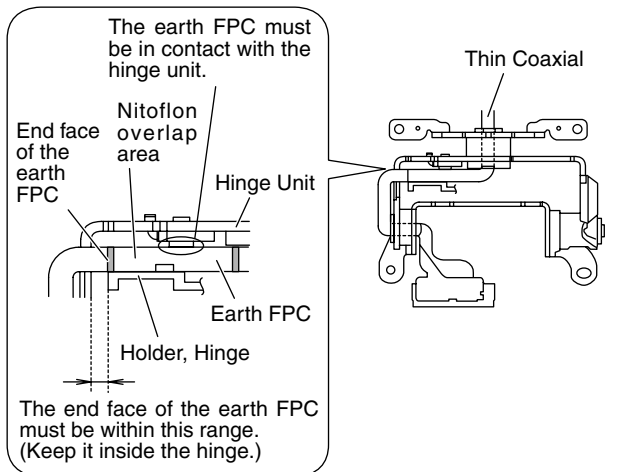
**[3] Precautions for installing the thin coaxial**

Attach the connector cover before installing the thin coaxial.  
After the installation, leave the connector cover off.

Part Code	Description
PCOVPA003AFZZ	Cover, Connector



Adjusting the length, insert the thin coaxial into the hinge holder.









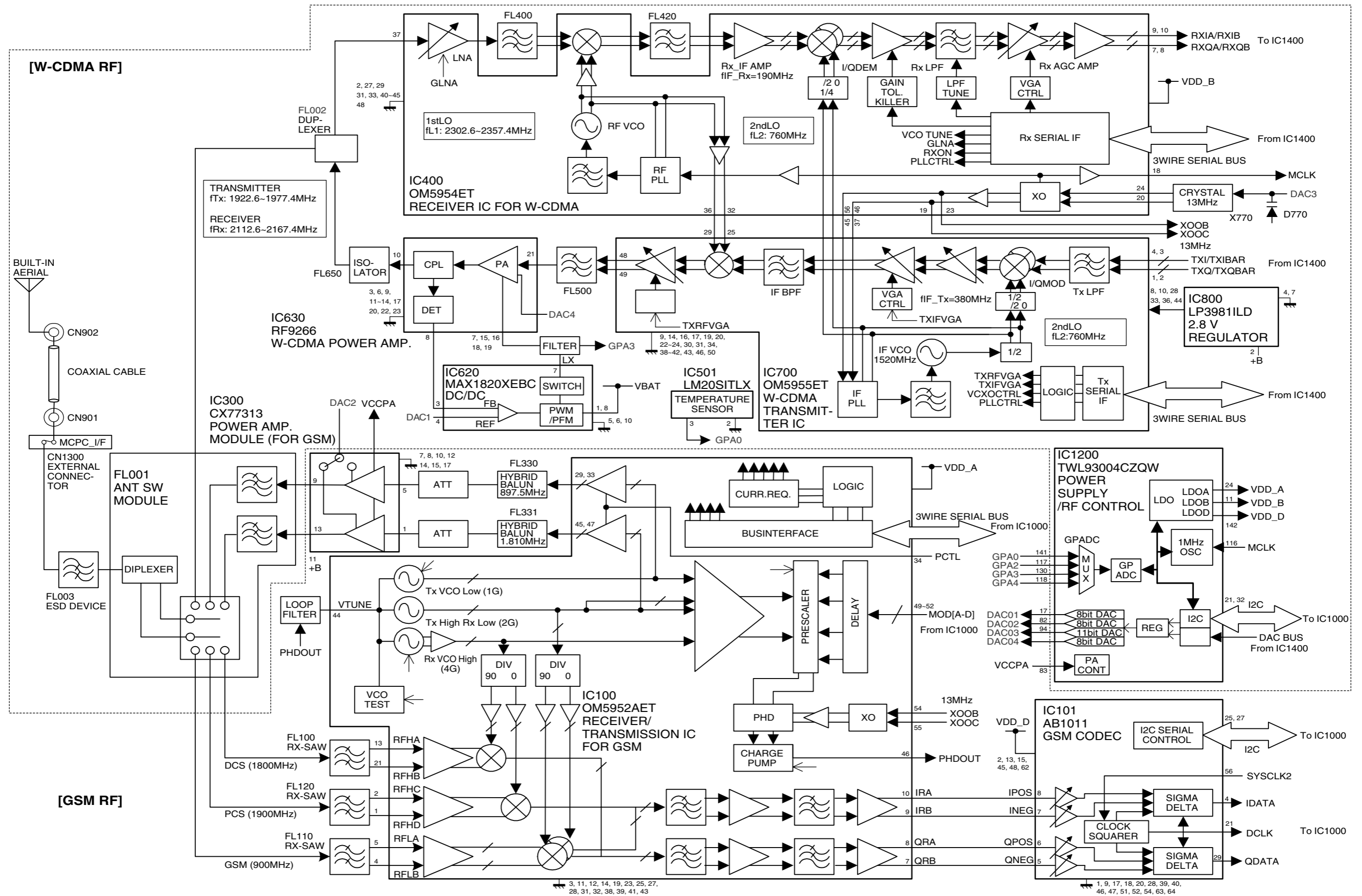


Figure 2 RF BLOCK DIAGRAM

# CHAPTER 5. SCHEMATIC DIAGRAM AND WIRING SIDE OF P.W.BOARD

## [1] Notes on schematic diagram

• Resistor:

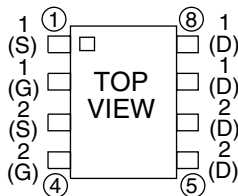
Letters K and M are prefixed to ohm (unit of resistance).  
K means 1000 ohms and M means 1000 kohms.

• Capacitor:

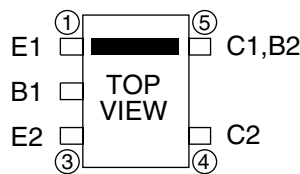
P is an abbreviation for "pico" and a farad (unit of capacitance) without P means "microfarad". Expressions "capacitance/withstand voltage" are used for electrolytic capacitors.  
(CH), (RH), (UJ): Temperature compensation  
(ML): Mylar type  
(S): Styrol type  
(PP): Polypropylene type

- The voltage of each section is obtained by measuring between the section and chassis using a digital multimeter [handset (phone) out of range].
- Conditions: SIM card inserted, power on, in stand-by mode (opened)
- Schematic diagram and Wiring Side of P.W. Board for this model are subject to change for improvement without prior notice.
- Parts marked with "△" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

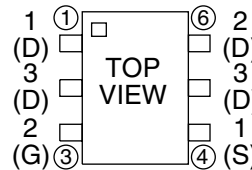
## [2] Types of transistor and LED



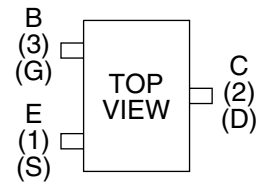
ECH8603



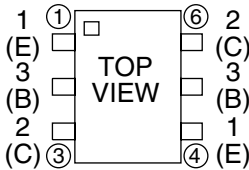
RN47A4 JEF



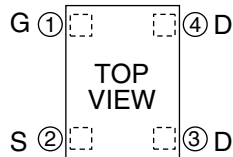
MCH6413



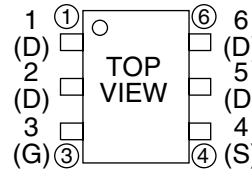
DTC114 YM  
DTC123 EM



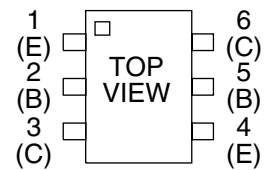
EMT1  
HN1C03 FUZ



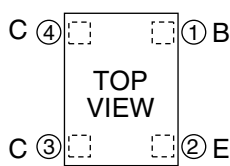
EC4404 C



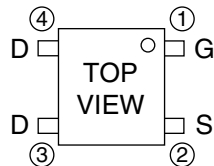
SCH1302  
S11555 DL



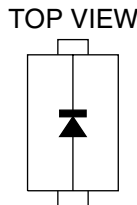
FDG312 P



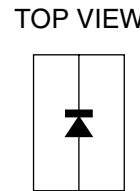
EC3201 C



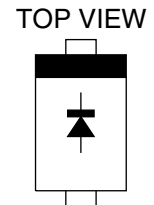
EC4301 C  
EC4401 C



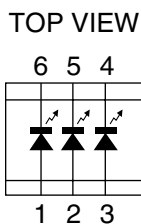
CUS02Z



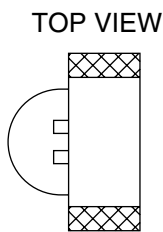
SB0203EJ  
SB0503EJ



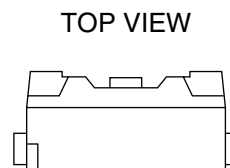
1SS389F  
BBY58-02V  
RB520S30  
RB521G30  
RB521S30  
RB551V30



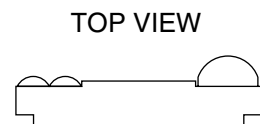
GM56281A



BRPY121F



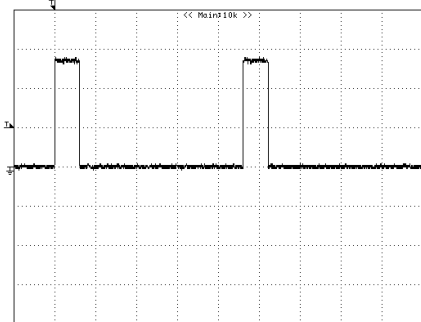
NECW008A



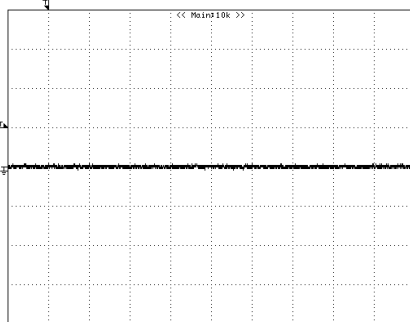
GP2W3240

[3] Waveforms of circuit

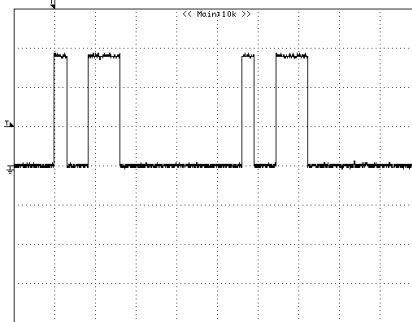
1 C001 EGSM (Talking)  
(CH1=1V, 1ms/div)



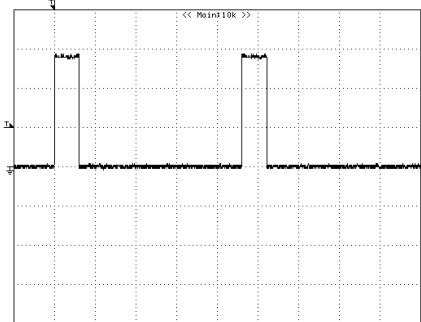
5 C331 EGSM (Talking)  
(CH1=1V, 1ms/div)



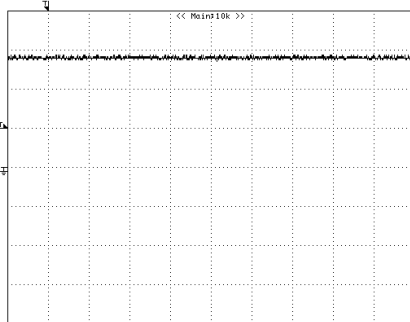
9 SP032 EGSM-DCS-PCS (Stand-by)  
(CH1=1V, 1ms/div)



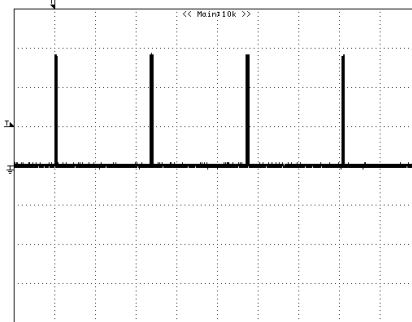
2 C002 DCS (Talking)  
(CH1=1V, 1ms/div)



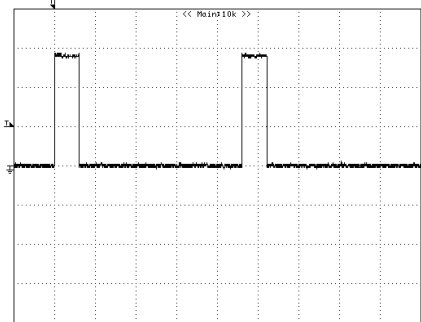
6 C331 DCS/PCS (Talking)  
(CH1=1V, 1ms/div)



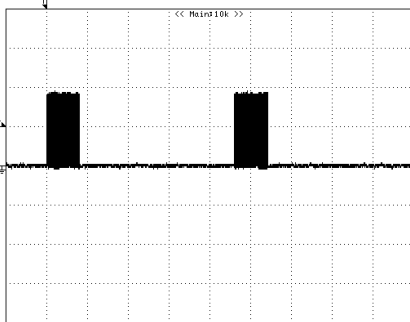
10 SP032 EGSM-DCS-PCS (Out-of-range)  
(CH1=1V, 200ms/div)



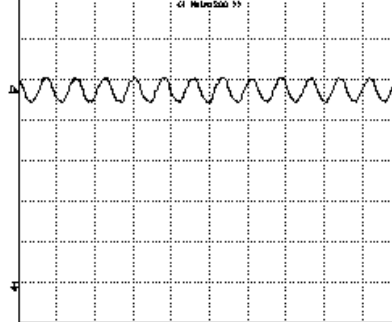
3 C003 DCS (Talking)  
(CH1=1V, 1ms/div)



7 R213 (IC2100 side) EGSM/DCS/PCS (Talking)  
(CH1=1V, 1ms/div)



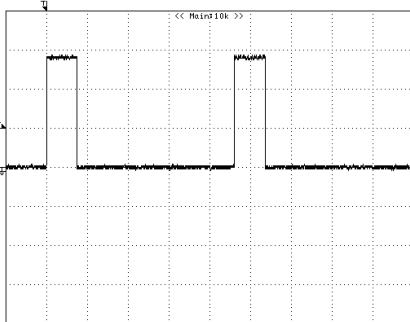
11 R760 MCLK (13MHz)  
(CH1=500mV, 100ns/div)



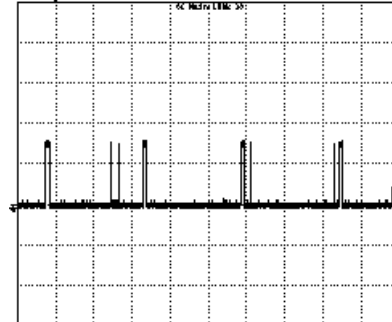
4 C327 EGSM/DCS/PCS (Talking)  
(CH1=1V, 1ms/div)



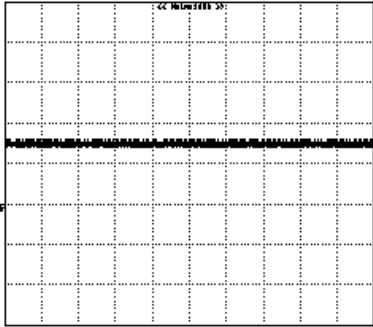
8 SP031 EGSM/DCS/PCS (Talking)  
(CH1=1V, 1ms/div)



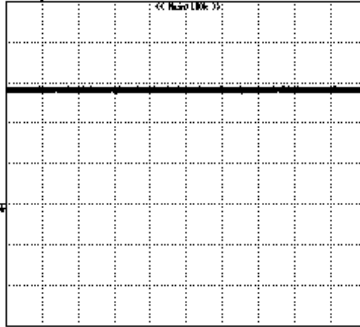
12 TP1023 RF\_CLKREQ (Stand-by)  
(CH1=1V, 1s/div)



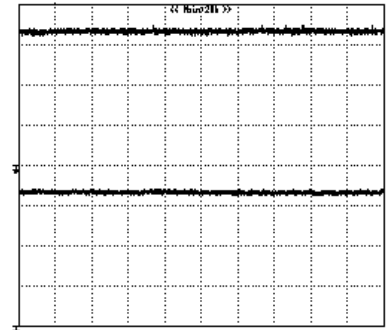
**13** TP1023 RF\_CLKREQ (Talking)  
(CH1=1V, 1s/div)



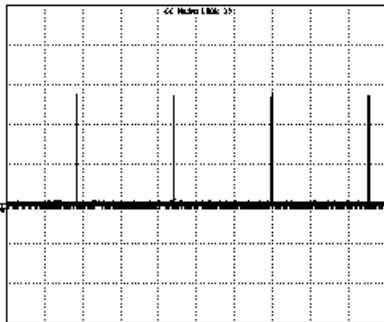
**17** SP029 TX\_ON (Talking)  
(CH1=1V, 1s/div)



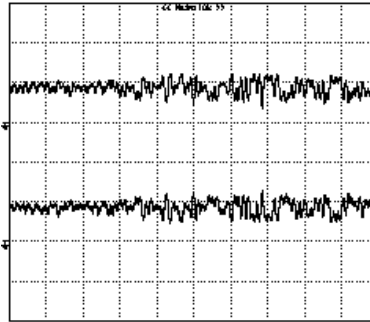
**20** SP001 TXIA  
(Transmitting W-CDMA modulated waves)  
SP002 TXIB  
(Transmitting W-CDMA modulated waves)  
(CH1, CH2=200mV, 10µs/div)



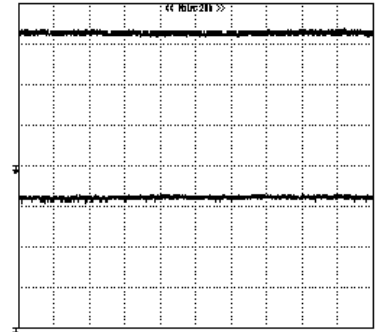
**14** SP023 RX\_ON (Stand-by)  
(CH1=1V, 1s/div)



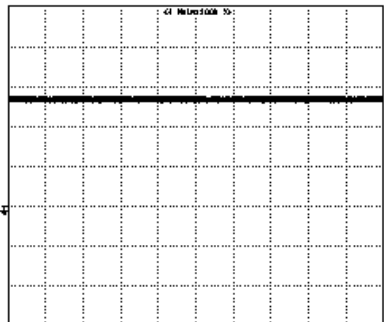
**18** SP015 RXIA  
(Receiving W-CDMA modulated waves)  
SP016 RXIB  
(Receiving W-CDMA modulated waves)  
(CH1, CH2=200mV, 5µs/div)



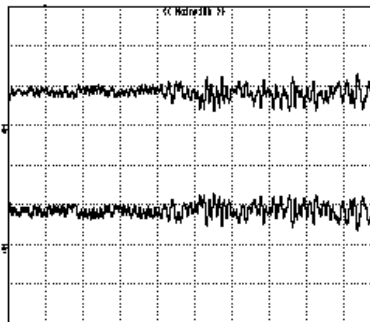
**21** SP003 TXQA  
(Transmitting W-CDMA modulated waves)  
SP004 TXQB  
(Transmitting W-CDMA modulated waves)  
(CH1, CH2=200mV, 10µs/div)



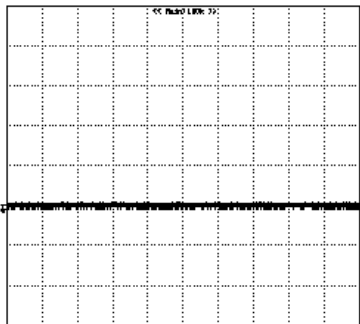
**15** SP023 RX\_ON (Talking)  
(CH1=1V, 1s/div)



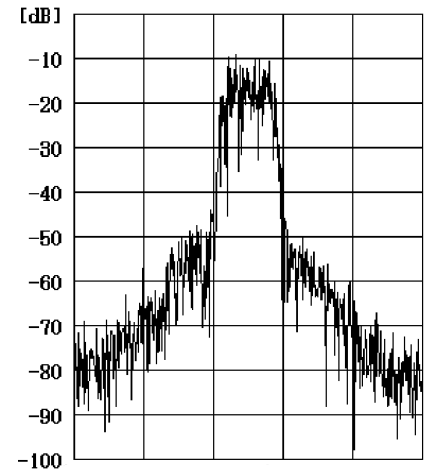
**19** SP017 RXQA  
(Receiving W-CDMA modulated waves)  
SP018 RXQB  
(Receiving W-CDMA modulated waves)  
(CH1, CH2=200mV, 5µs/div)



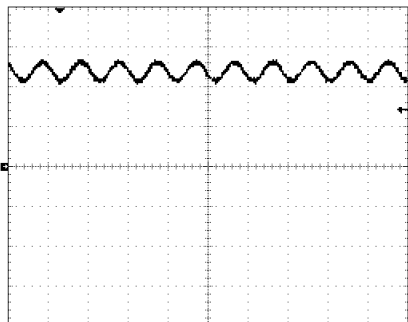
**16** SP029 TX\_ON (Stand-by)  
(CH1=1V, 1s/div)



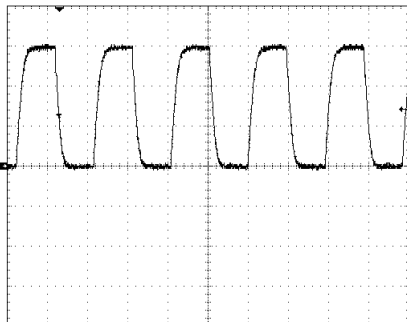
**22** CN1300 (RF output)  
(9862ch, Pout=23dBm)



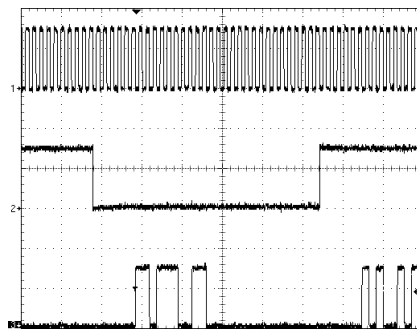
23 C1031 MCLK (Talking)  
(CH1=1V, 80ns/div)



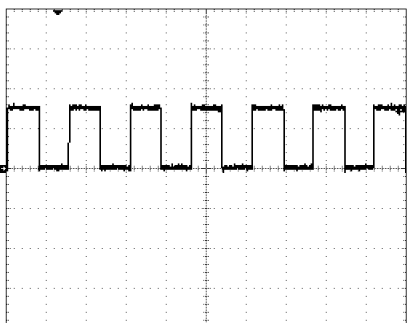
27 R1522 CAMCLK (Camera is active)  
(CH1=1V, 80ns/div)



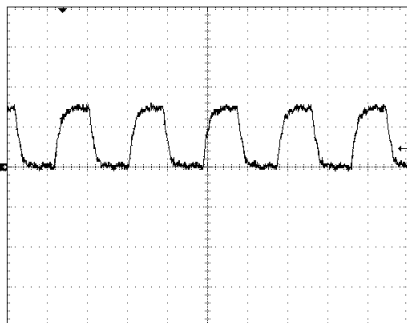
30 R1572 BICK (Playing Music)  
R1571 LRCK (Playing Music)  
R1565 ADSDO (Playing Music)  
(CH1, CH2, CH3=2V, 2µs/div)



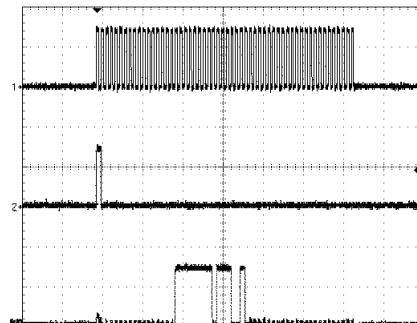
24 TP1006 RTCCLK (Power ON)  
(CH1=1V, 20µs/div)



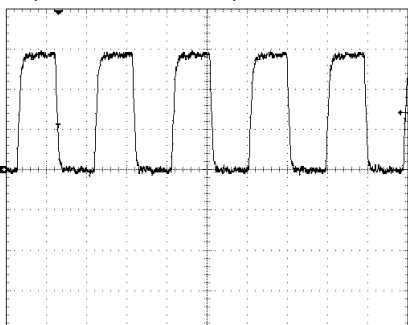
28 TP1800 BECLK (Sending video call image)  
(CH1=2V, 20ns/div)



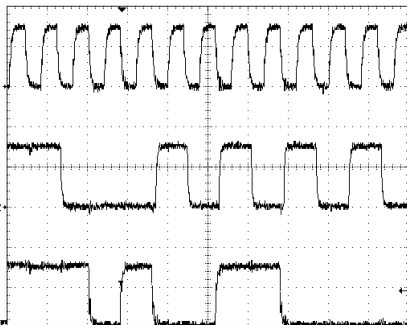
31 R1058 PCMCLK (Talking)  
R1057 PCMSYN (Talking)  
R1025 PCMDATA (Talking)  
(CH1, CH2, CH3=2V, 10µs/div)



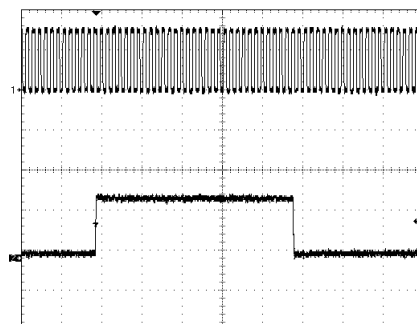
25 TP1014 SYSCLK1 (Display is turned on)  
(CH1=1V, 40ns/div)



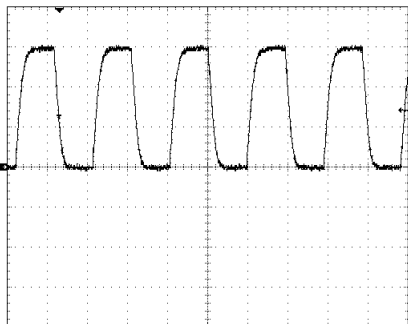
29 R1533 SDCLK (Playing Music)  
R1532 SDDATA0 (Playing Music)  
R1528 SDCMD (Playing Music)  
(CH1, CH2, CH3=2V, 80ns/div)



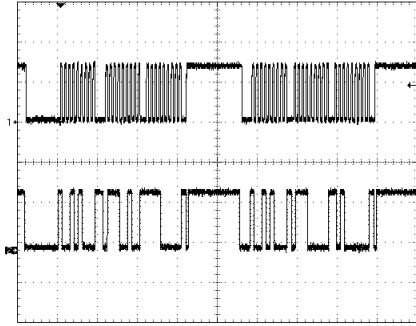
32 TP1221 SIMCLK  
(Accessing SIM after power-on)  
TP1220 SIMDAT  
(Accessing SIM after power-on)  
(CH1, CH2=2V, 2µs/div)



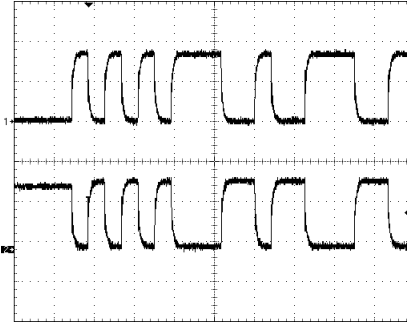
26 R1517 LCDCLK (Display is turned on)  
(CH1=1V, 80ns/div)



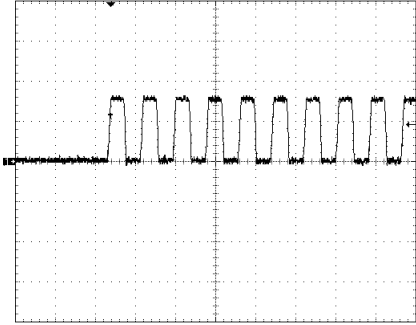
**33** R1041 M\_I2CCLK (Display is turned on)  
R1042 M\_I2CDAT (Display is turned on)  
(CH1, CH2=2V, 2µs/div)



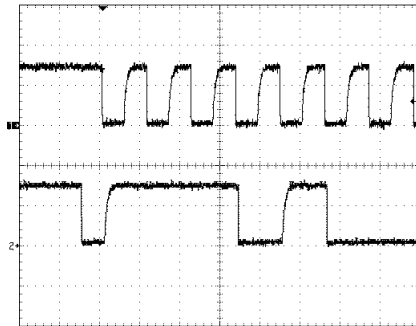
**36** TP1305 USBDM (Connected to PC)  
TP1306 USBDP (Connected to PC)  
(CH1, CH2=2V, 200ns/div)



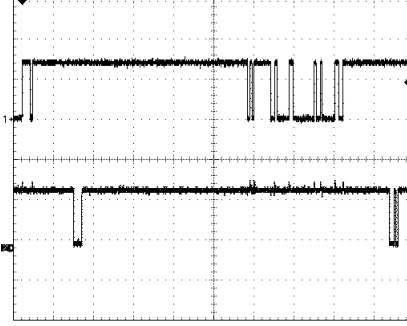
**39** RA1018 HSSLTXCLK (Talking)  
(CH1=1V, 80ns/div)



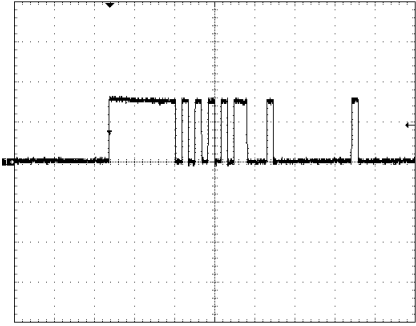
**34** R1544 I2CDATA  
(Video call: Sub camera is active)  
R1545 I2CCLKA  
(Video call: Sub camera is active)  
(CH1, CH2=2V, 4µs/div)



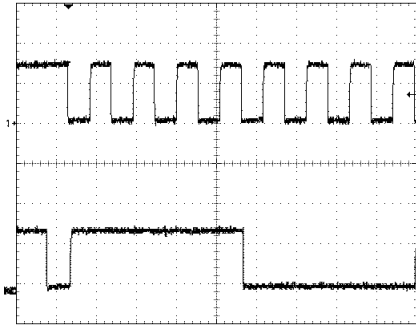
**37** TP1613 UARTOTX  
(Display remote is active)  
TP1614 UARTORX  
(Display remote is active)  
(CH1, CH2=2V, 1ms/div)



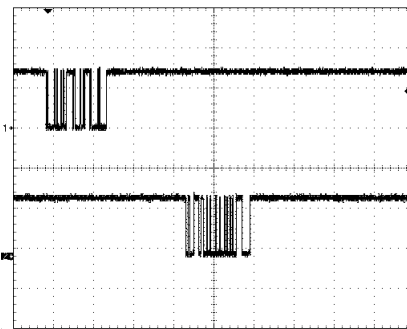
**40** RA1018 HSSLTX (Talking)  
(CH1=1V, 400ns/div)



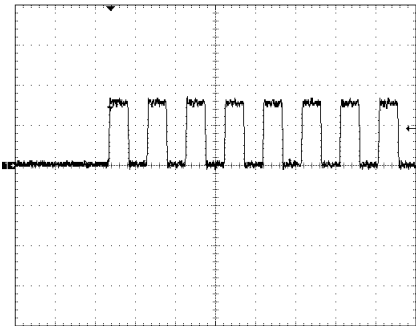
**35** R1542 I2CDATB (Camera is active)  
R1543 I2CCLKB (Camera is active)  
(CH1, CH2=2V, 4µs/div)



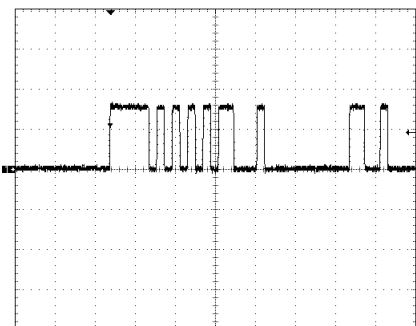
**38** TP1016 BT\_UARTTX  
(Turning on the power)  
TP1015 BT\_UARTRX  
(Turning on the power)  
(CH1, CH2=2V, 400µs/div)



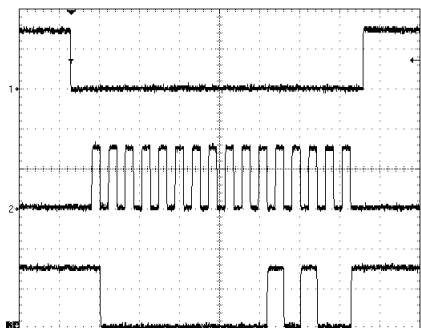
**41** RA1018 HSSLRXCLK (Talking)  
(CH1=1V, 80ns/div)



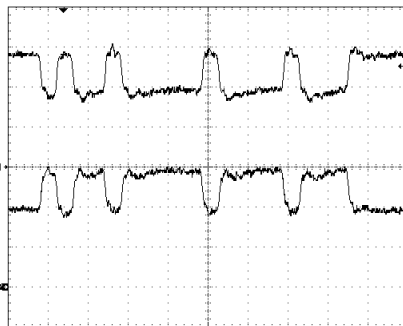
**42** RA1018 HSSLRX (Talking)  
(CH1=1V, 400ns/div)



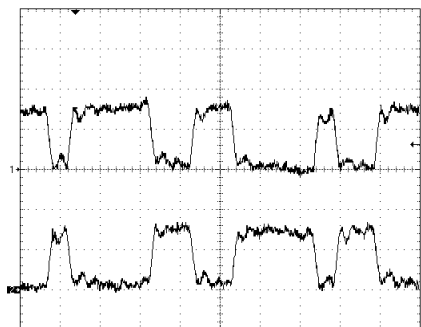
**43** R1506 LEDLD (Backlight ON: Key is pressed)  
 R1503 SECLK (Backlight ON: Key is pressed)  
 R1504 SEDO (Backlight ON: Key is pressed)  
 (CH1, CH2, CH3=2V, 1µs/div)



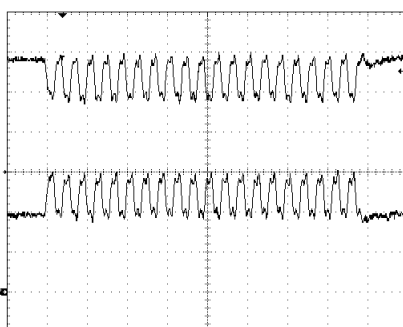
**46** L3009 VTX1DP (Display is turned on)  
 L3010 VTX1DN (Display is turned on)  
 (CH1, CH2=500mV, 20ns/div)



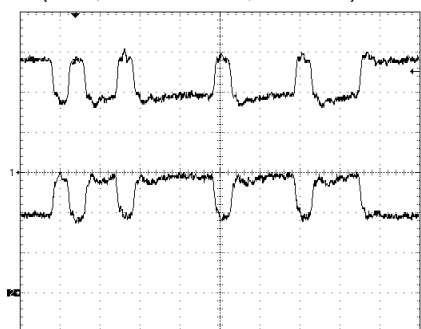
**44** C1555 VRX2DP (Camera is active)  
 C1555 VRX2DN (Camera is active)  
 (CH1, CH2=100mV, 20ns/div)



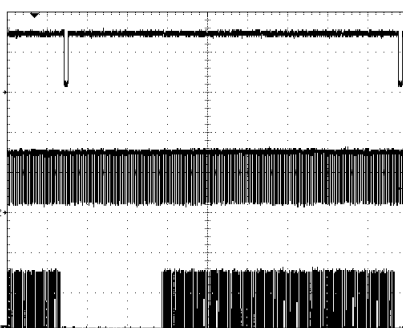
**47** L3011 VTX1CKP (Display is turned on)  
 L3012 VTX1CKN (Display is turned on)  
 (CH1, CH2=500mV, 20ns/div)



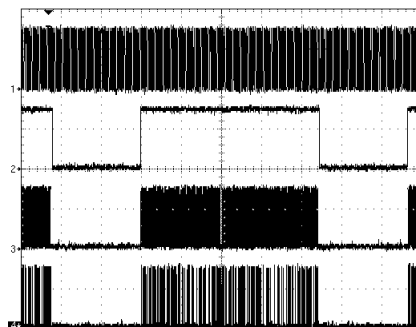
**45** C1554 VRX2CKP (Camera is active)  
 C1554 VRX2CKN (Camera is active)  
 (CH1, CH2=100mV, 20ns/div)



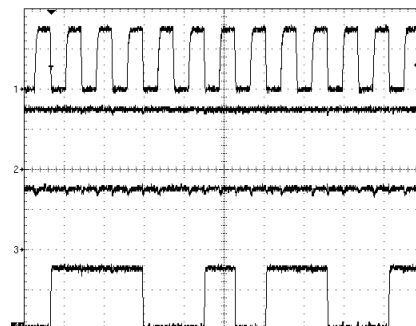
**48** RA1800 BEVSYNC (Sending video call image)  
 RA1800 BEHSYNC (Sending video call image)  
 (CH1, CH2, CH3=2V, 2ms/div)



**49** Pressure-welded flexible PWB of sub camera  
 PCLK (During video call, with sub camera active)  
 VSYNC (During video call, with sub camera active)  
 HSYNC (During video call, with sub camera active)  
 D0 (During video call, with sub camera active)  
 (CH1, CH2, CH3, CH4=2V, 10ms/div)



**50** Pressure-welded flexible PWB of sub camera  
 PCLK (During video call, with sub camera active)  
 VSYNC (During video call, with sub camera active)  
 HSYNC (During video call, with sub camera active)  
 D0 (During video call, with sub camera active)  
 (CH1, CH2, CH3, CH4=2V, 400ns/div)



[4] Schematic diagram/Wiring side of P.W.Board

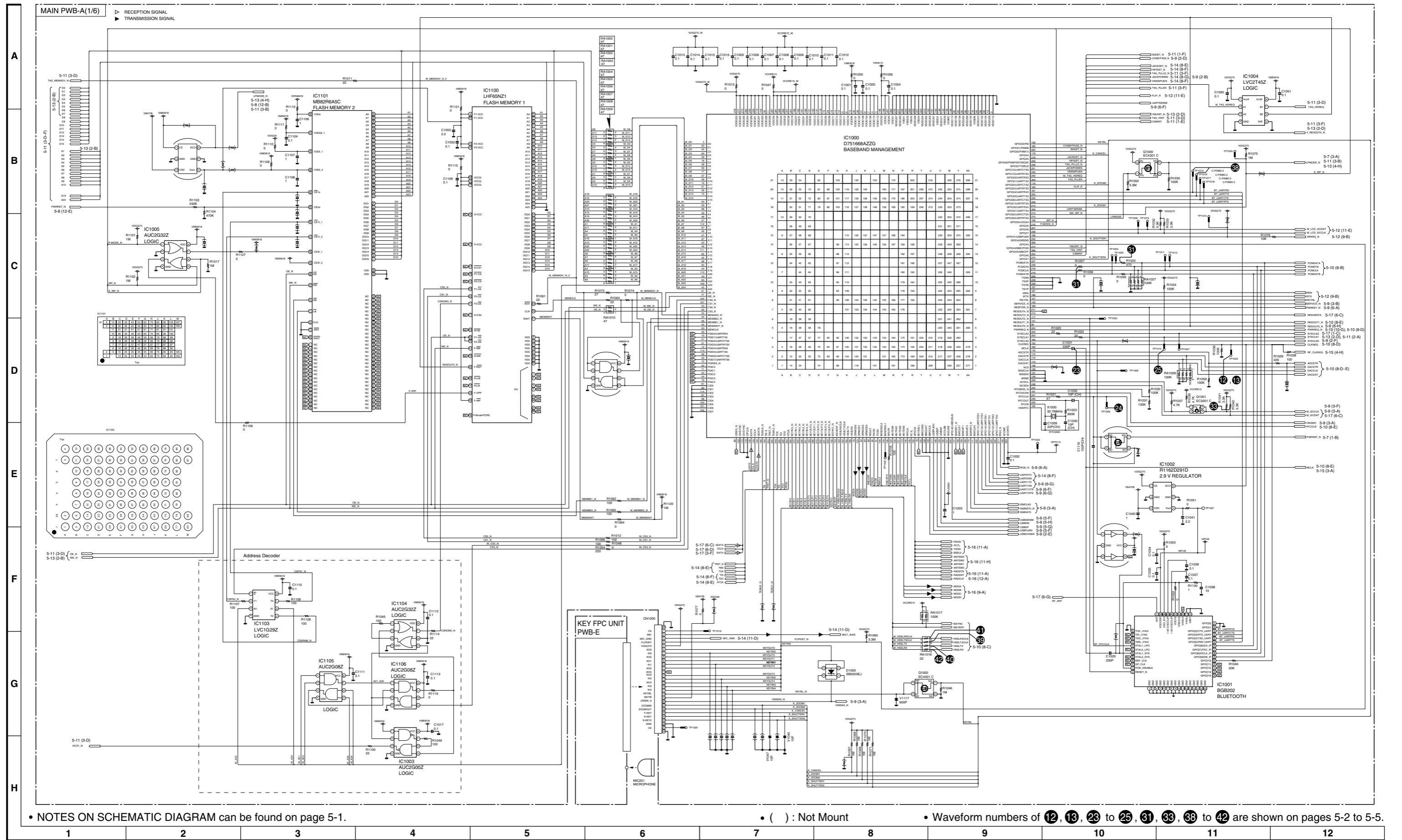


Figure 1 SCHEMATIC DIAGRAM (1/9)





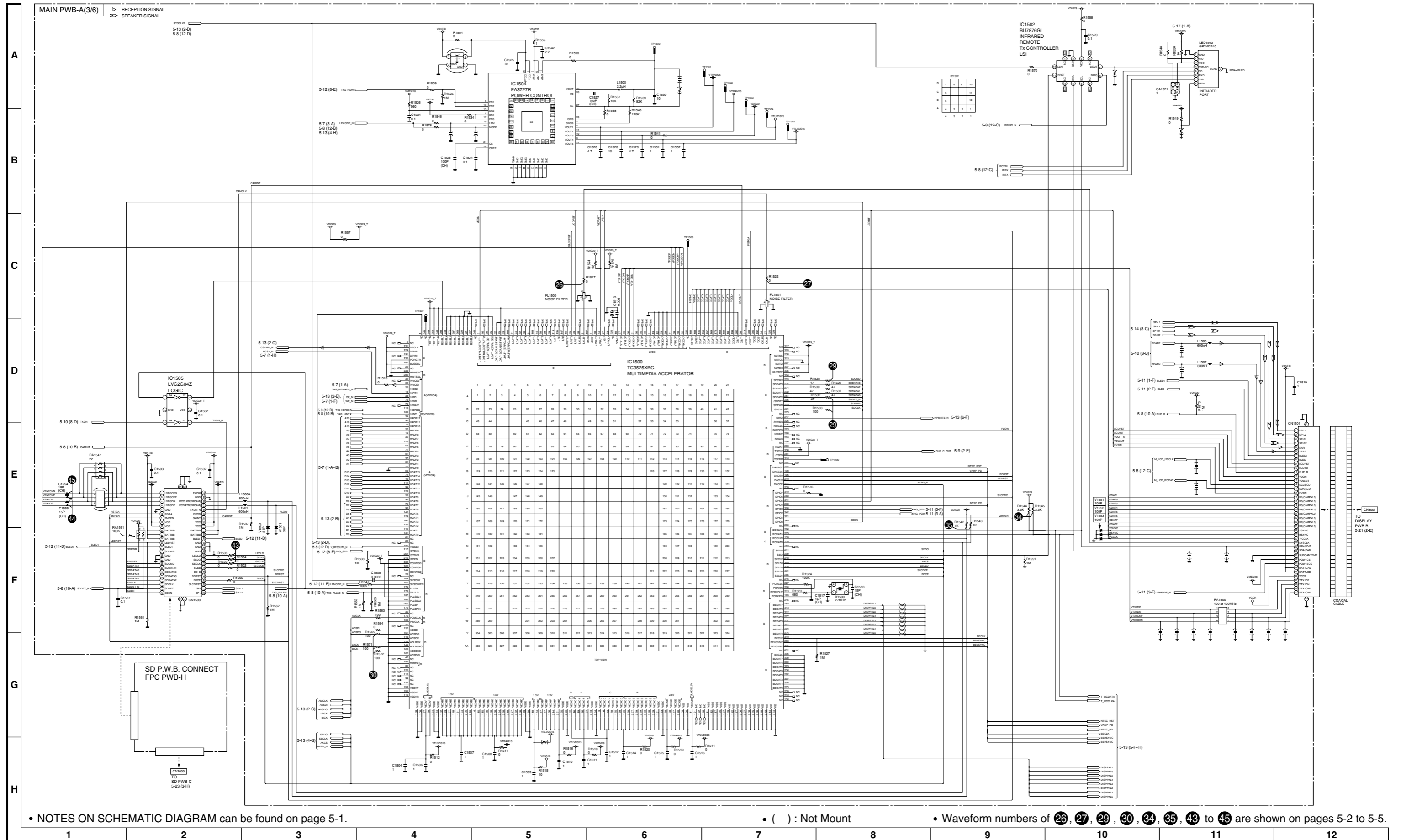
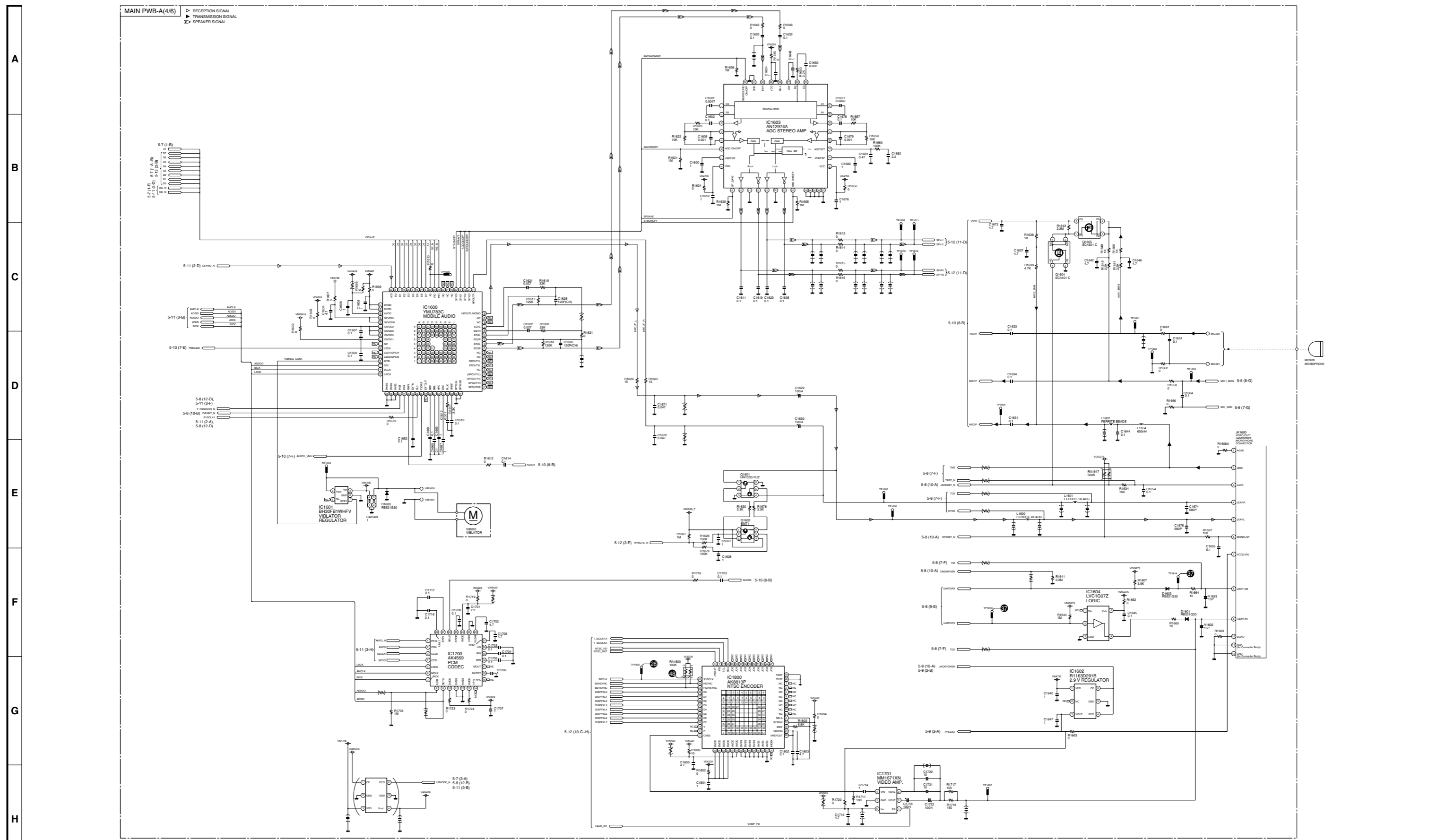


Figure 3 SCHEMATIC DIAGRAM (3/9)

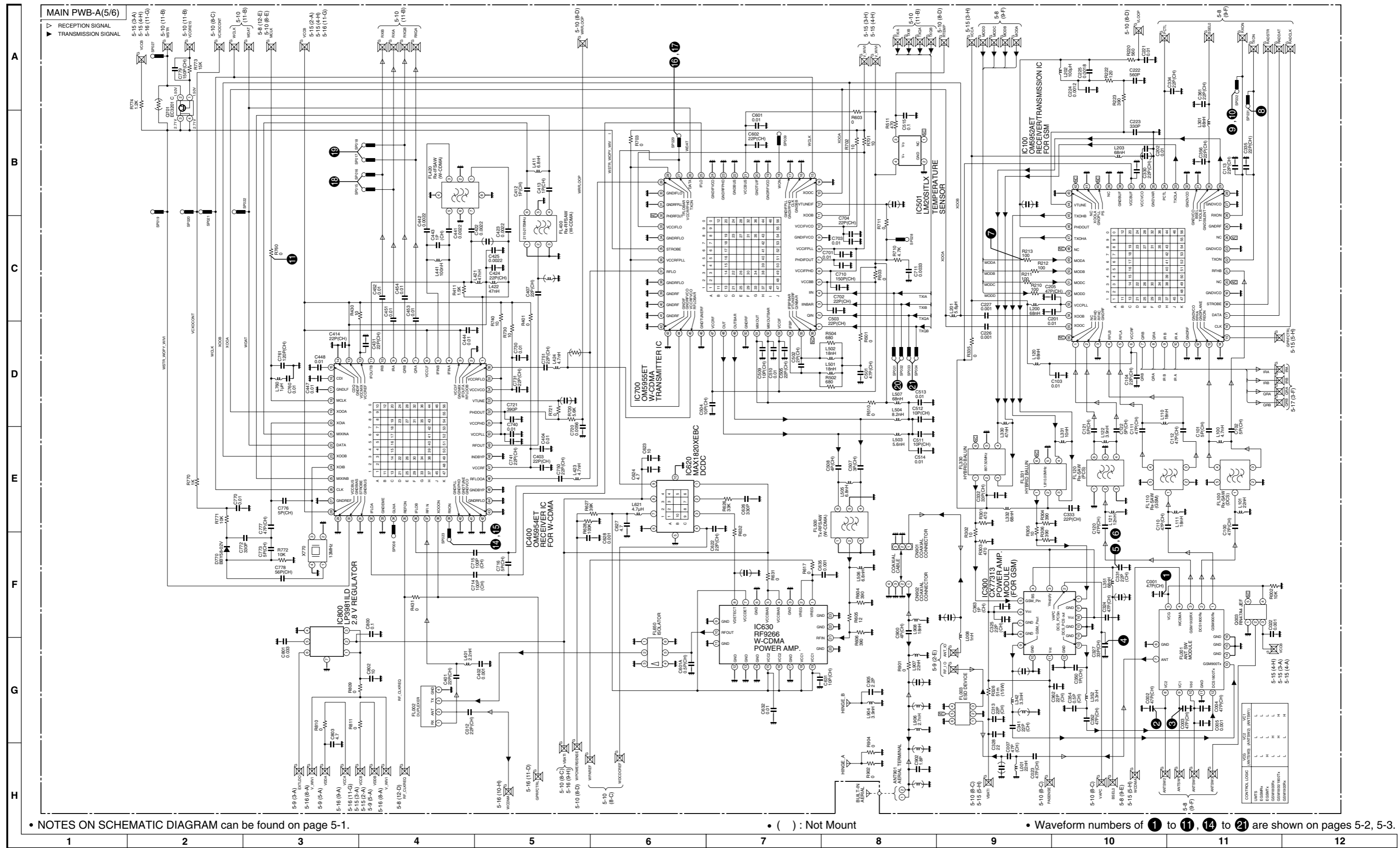


• NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.

• ( ) : Not Mount

• Waveform numbers of 28, 37, 48 are shown on pages 5-4, 5-5.

Figure 4 SCHEMATIC DIAGRAM (4/9)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.

• ( ) : Not Mount

• Waveform numbers of 1 to 11, 14 to 21 are shown on pages 5-2, 5-3.

Figure 5 SCHEMATIC DIAGRAM (5/9)

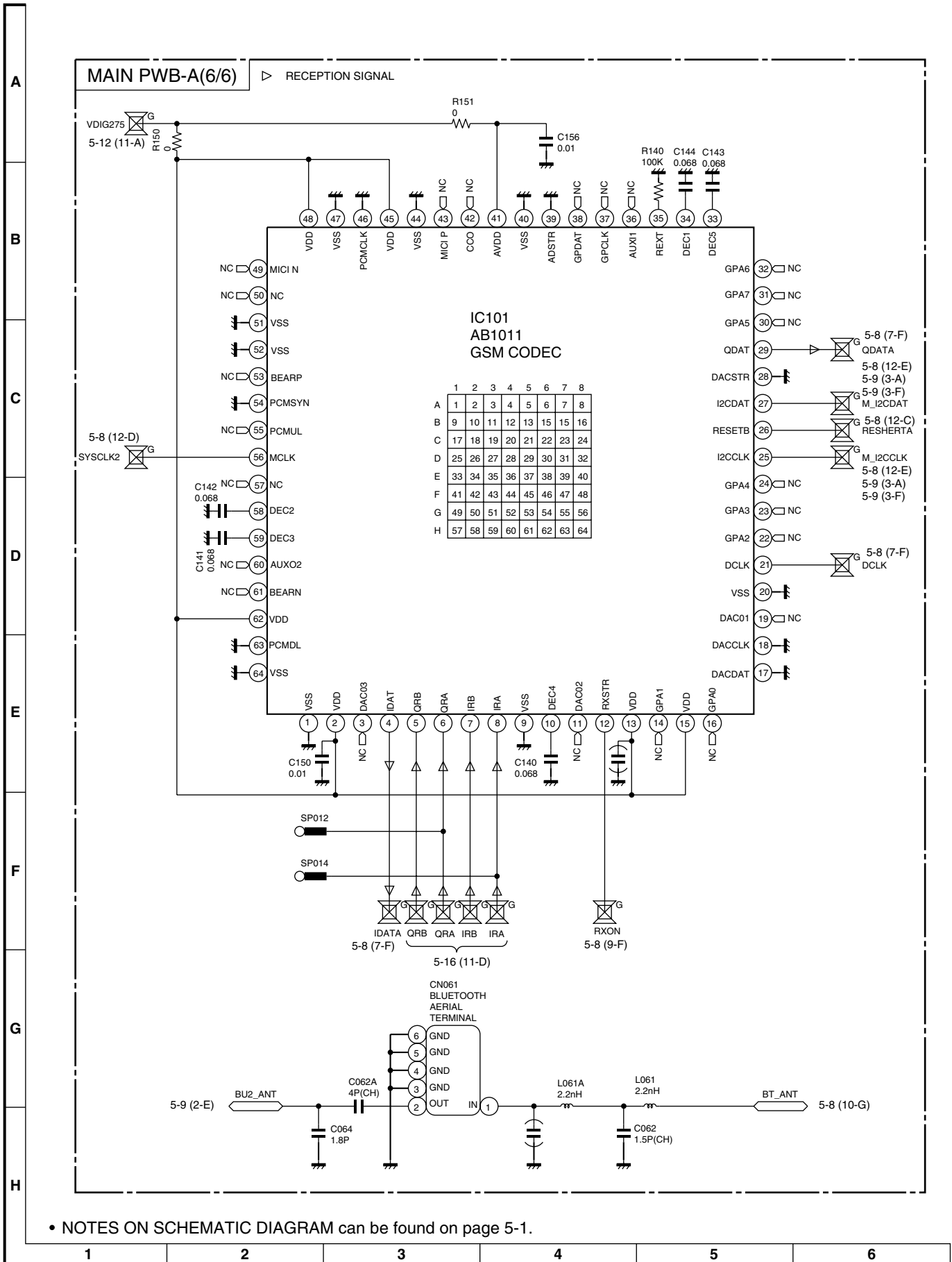
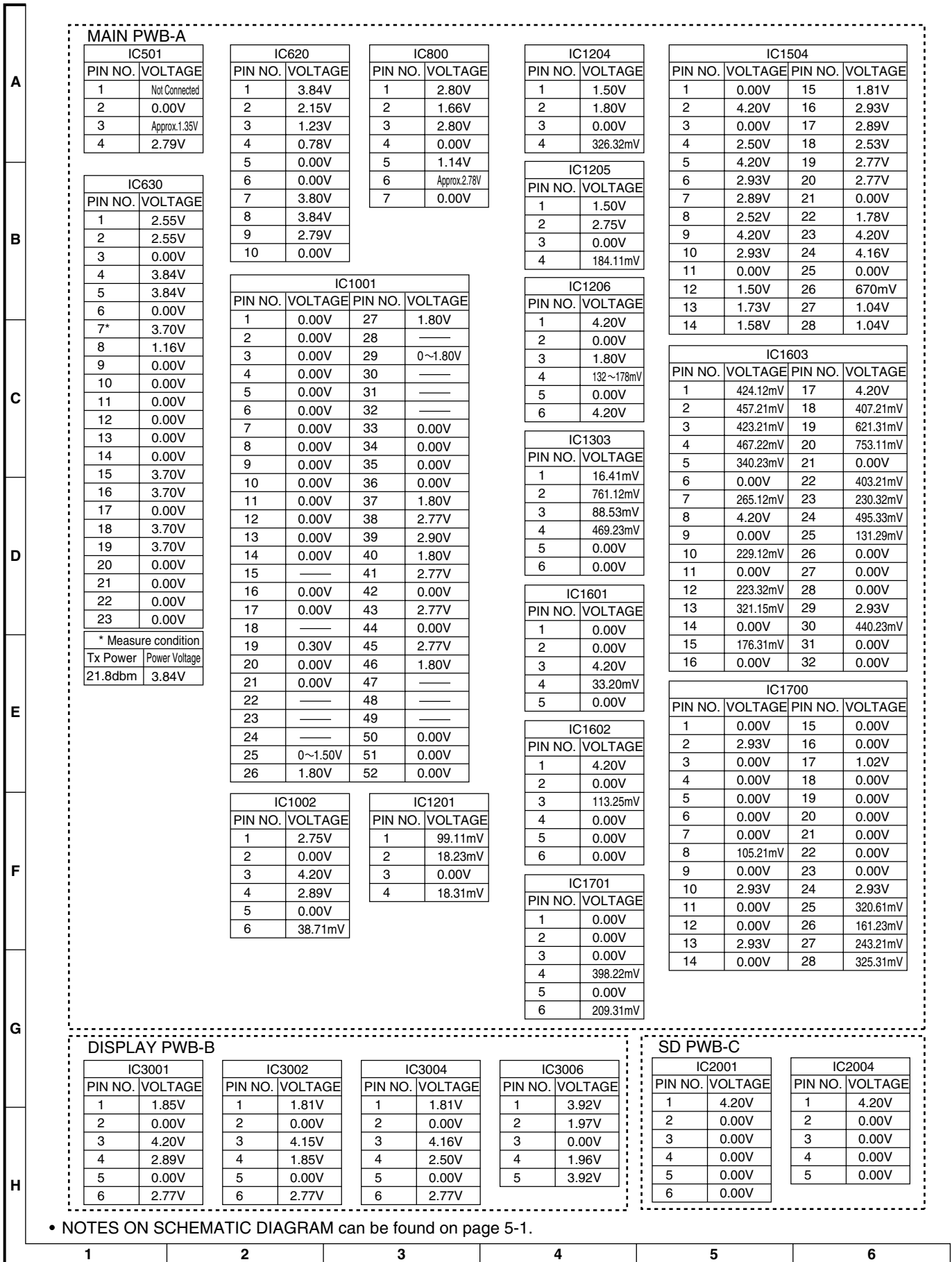
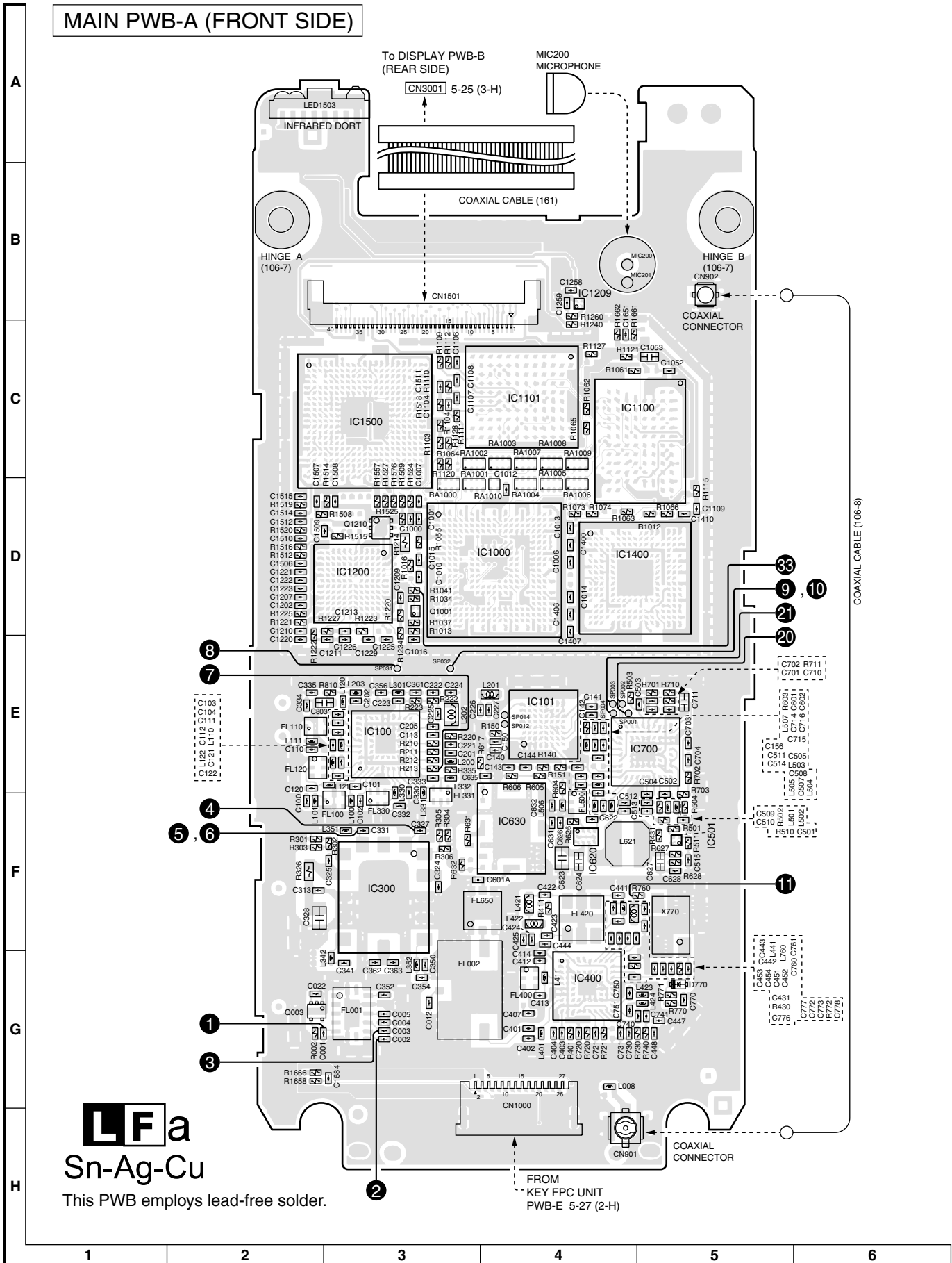


Figure 6 SCHEMATIC DIAGRAM (6/9)

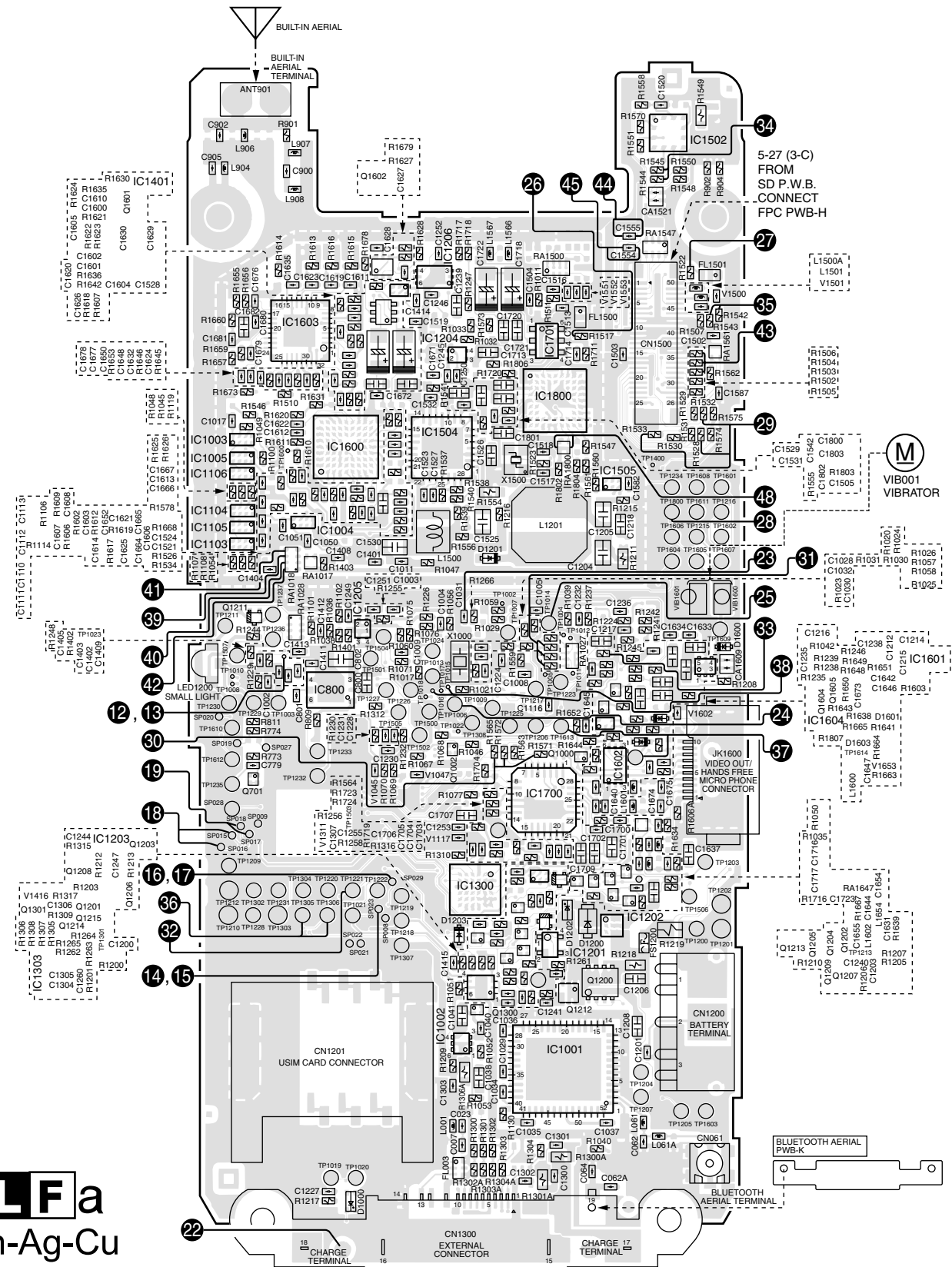


• NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.

Figure 7 SCHEMATIC DIAGRAM (7/9)



MAIN PWB-A (REAR SIDE)



**LFA**  
Sn-Ag-Cu

This PWB employs lead-free solder.

• Waveform numbers of 1 to 45, 48 are shown on pages 5-2 to 5-6.

7	8	9	10	11	12
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Figure 9 WIRING SIDE P.W.BOARD (2/5)



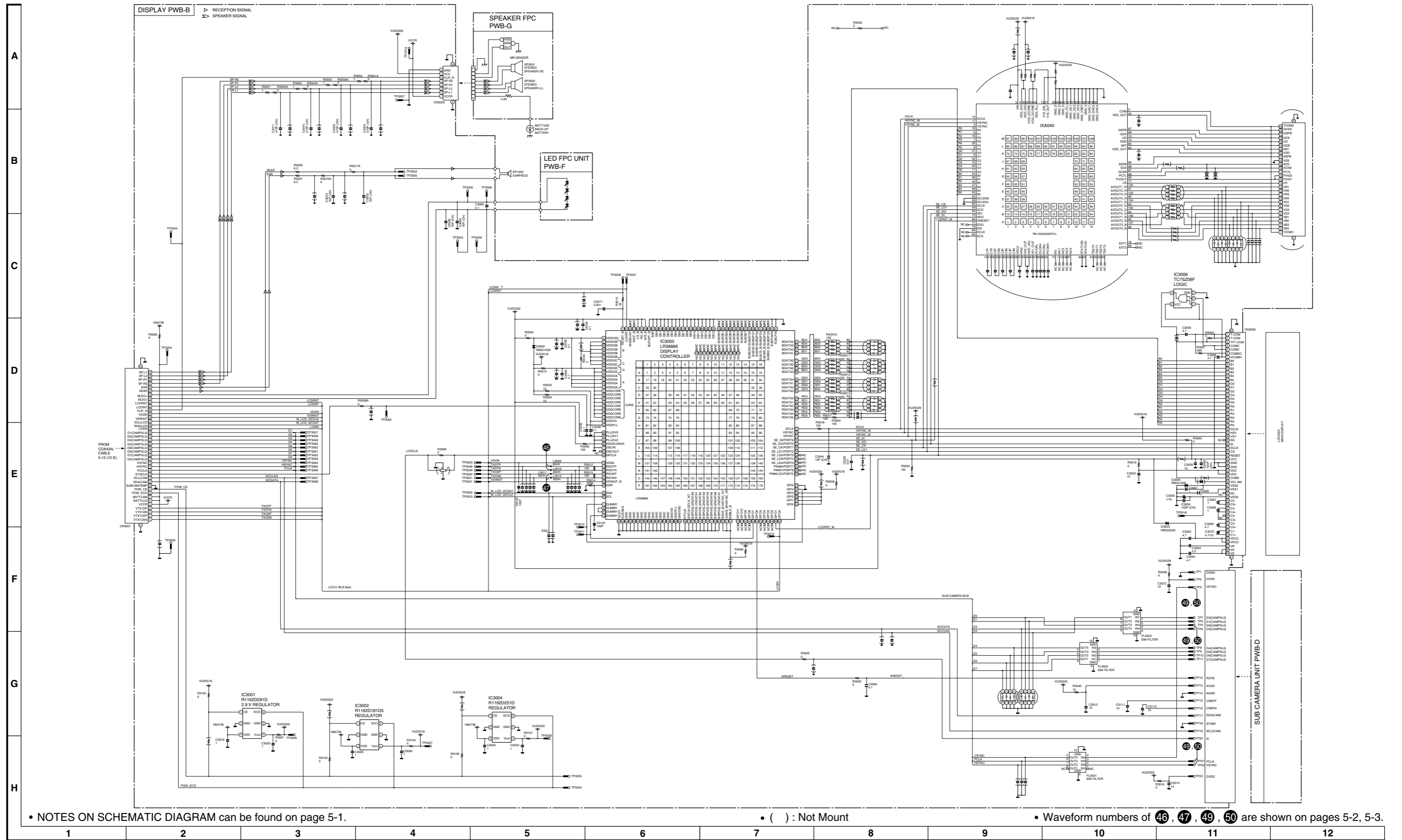


Figure 10 SCHEMATIC DIAGRAM (8/9)

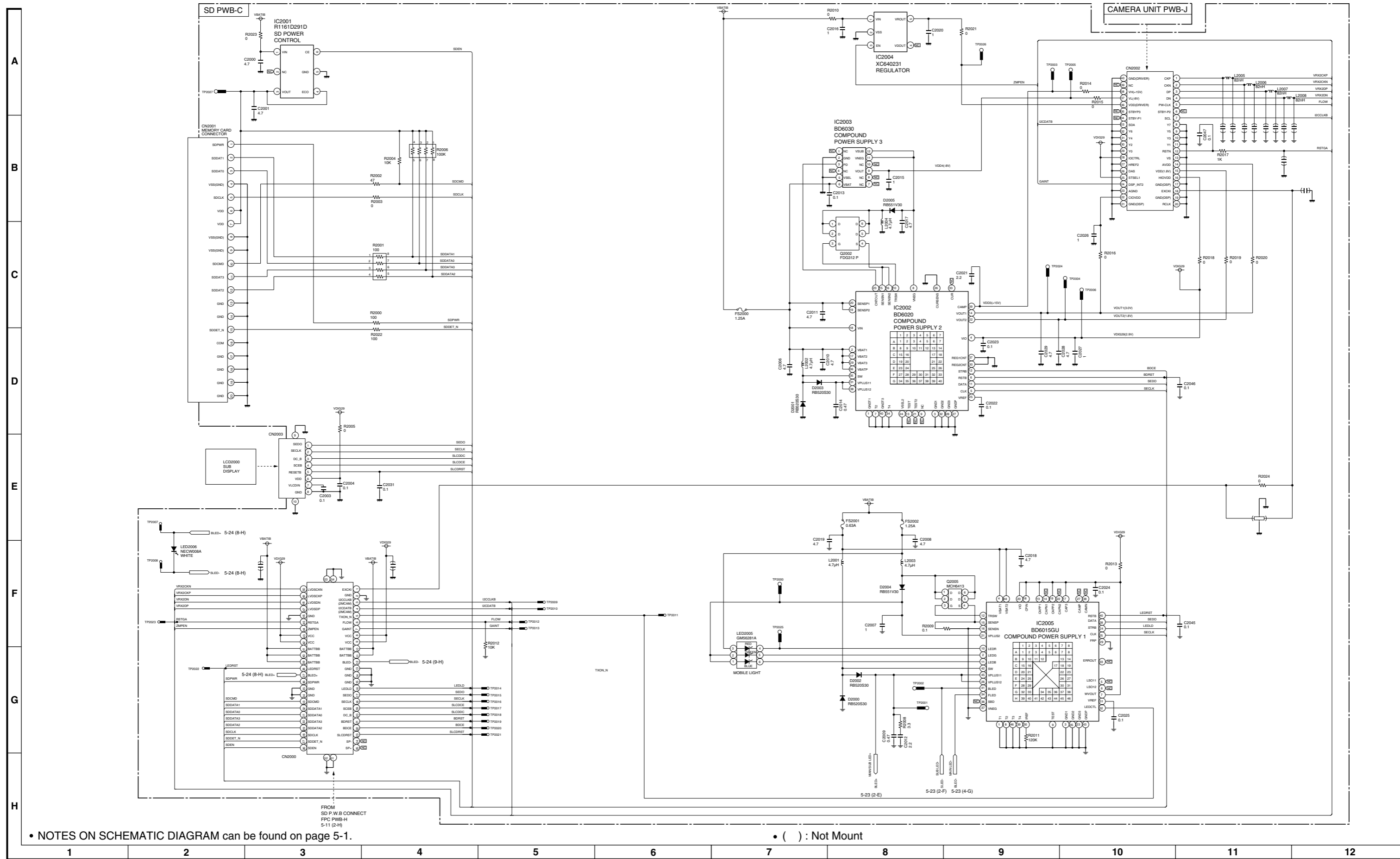


Figure 11 SCHEMATIC DIAGRAM (9/9)

CONFIDENTIAL

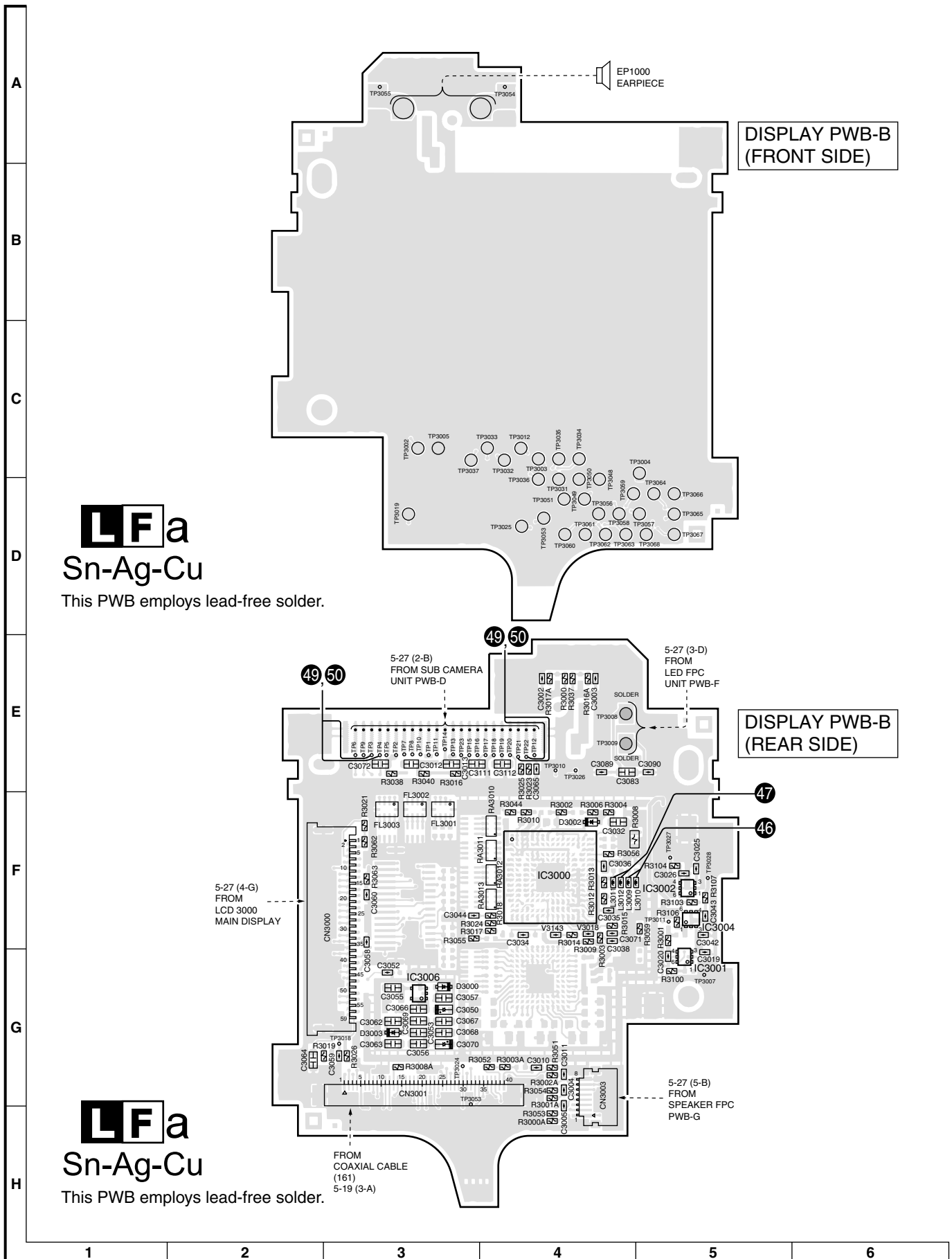
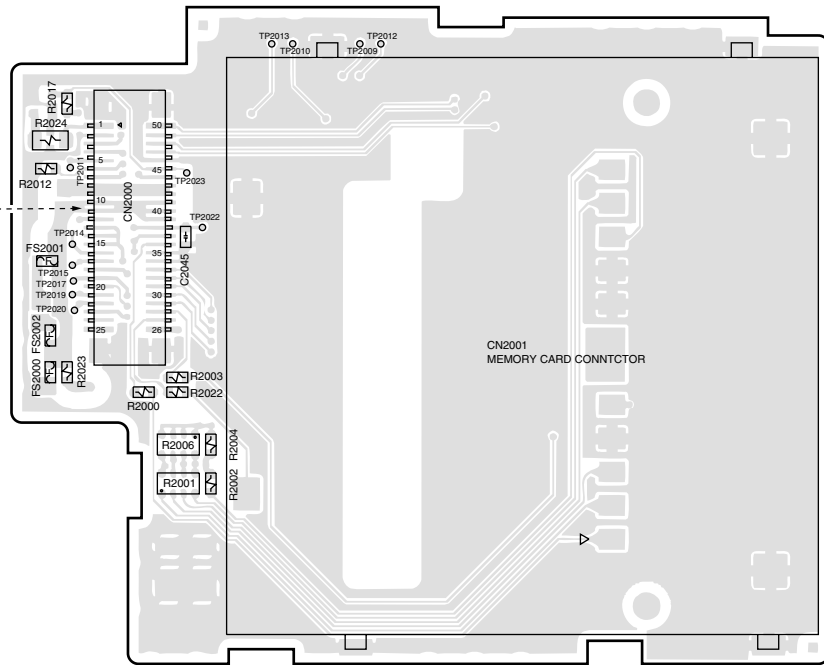


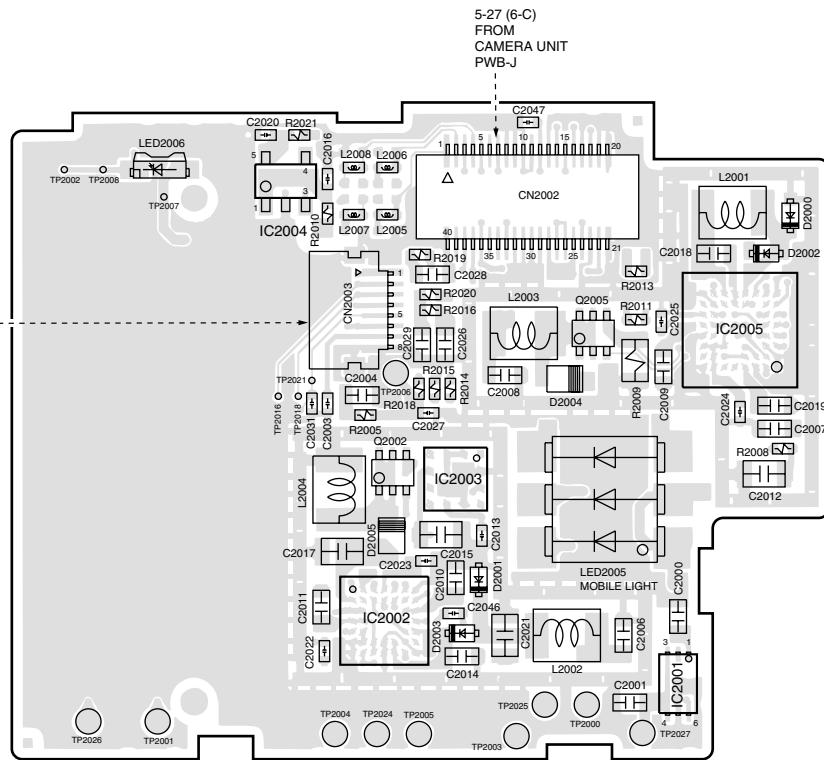
Figure 12 WIRING SIDE P.W.BOARD (3/5)



**SD PWB-C  
(FRONT SIDE)**

**LFa**  
Sn-Ag-Cu

This PWB employs lead-free solder.



**SD PWB-C  
(REAR SIDE)**

**LFa**  
Sn-Ag-Cu

This PWB employs lead-free solder.

• Waveform numbers of 46, 47, 49, 50 are shown on page 5-6.

7	8	9	10	11	12
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Figure 13 WIRING SIDE P.W.BOARD (4/5)

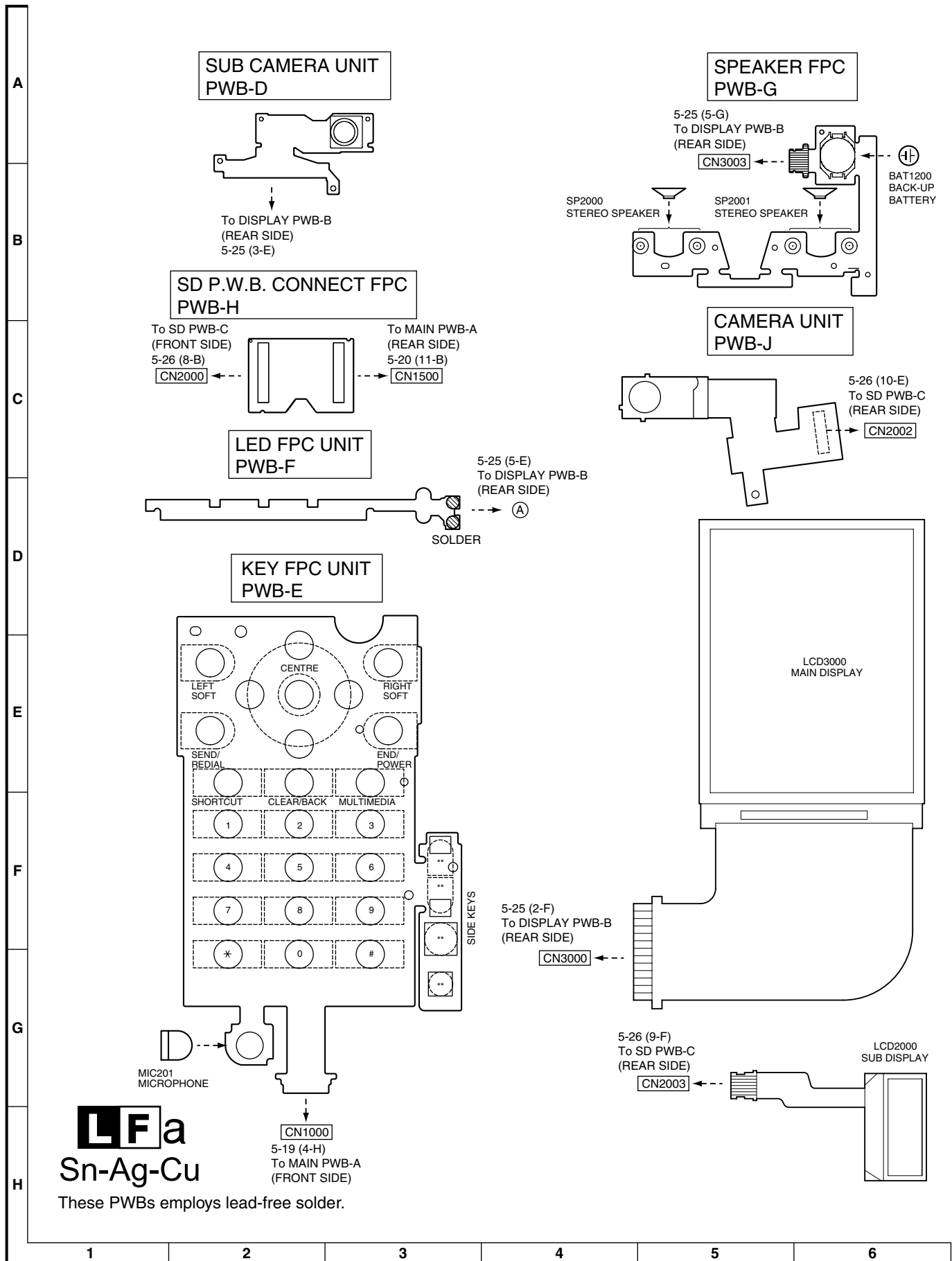


Figure 14 WIRING SIDE P.W.BOARD (5/5)

## CHAPTER 6. OTHERS

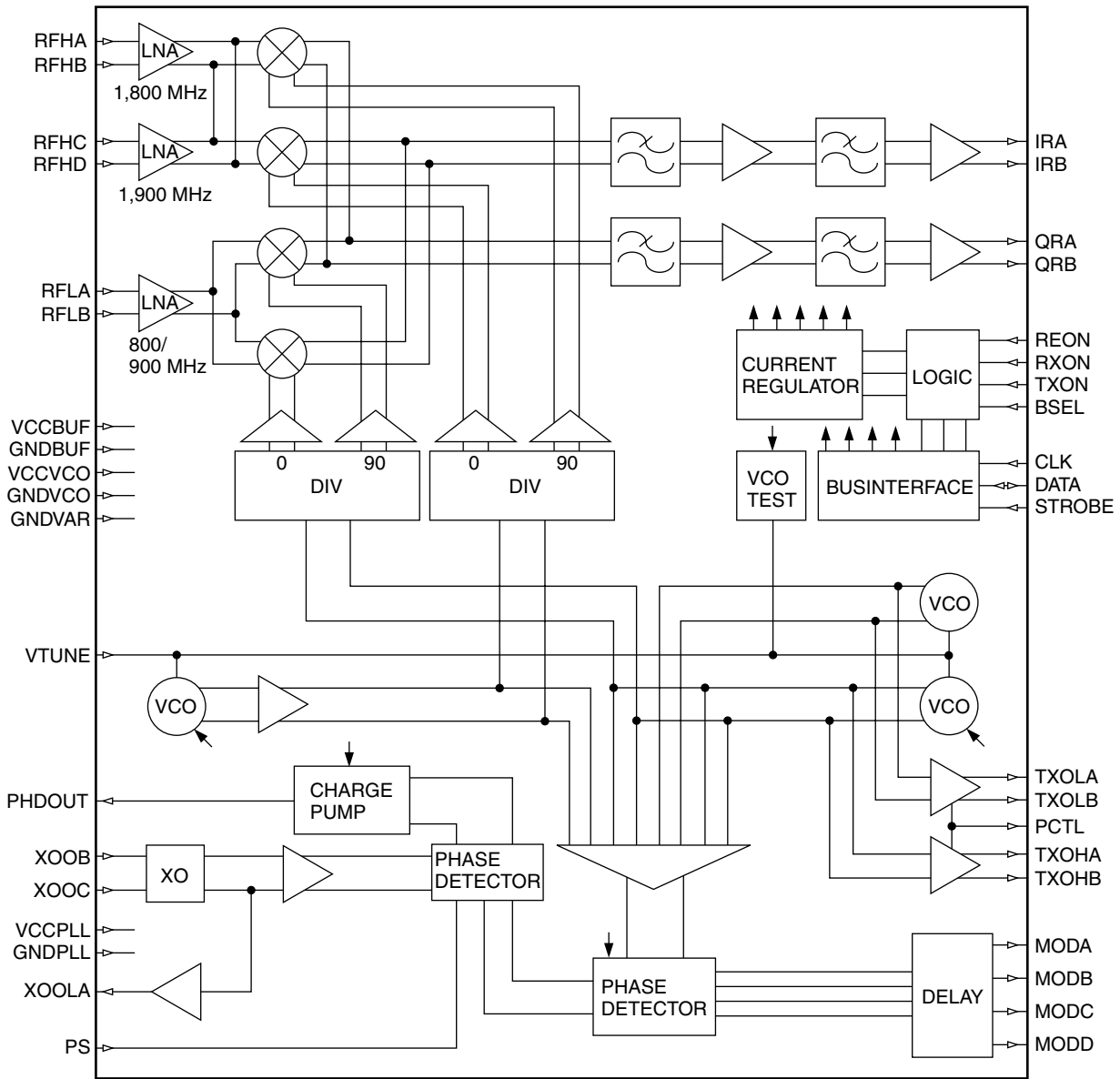
### [1] Function table of IC

IC100 (OM5952AET): RECEIVER/TRANSMISSION IC FOR GSM

Pin No.	Terminal name	Input/Output	Description of terminal
1	RFHD	Input	GSM 1,900 MHz RF input
2	RFHC	Input	GSM 1,900 MHz RF input
3	GNDRF	–	Earth for RF part
4	RFLB	Input	GSM 900 MHz or GSM 800 MHz RF input
5	RFLA	Input	GSM 900 MHz or GSM 800 MHz RF input
6	VCCRF	–	Supply for RF part
7	QRB	Output	Q-channel output
8	QRA	Output	Q-channel output
9	IRB	Output	I-channel output
10	IRA	Output	I-channel output
11	GNDRF	–	Earth for RF part
12	GNDVCO	–	Earth for VCO part
13	RFHA	Input	GSM 1,800 MHz RF input
14	GND PLANE	–	Flex-film earth plane
15	REON	Input	Hardware power on for reference and bus part
16	CLK	Input	Serial bus clock input
17	DATA	Input/Output	Serial bus data input/output
18	STROBE	Input	Serial bus strobe input
19	GNDVCO	–	Earth for VCO part
20*	NC	–	Must not be connected. Bond wire exists. (Not used)
21	RFHB	Input	GSM 1,800 MHz band RF input
22	TXON	Input	Hardware power on for transmit part
23	GNDVCO	–	Earth for VCO part
24*	NC	–	Not used
25	GNDRF	–	Earth for RF part
26	RXON	Input	Hardware power on for receive part
27	GNDVCO	–	Earth for VCO part
28	GNDVCO	–	Earth for VCO part
29	TXOLB	Output	GSM 800/900 MHz Tx output
30	BSEL	Input	Hardware band select control input
31	GNDVCO	–	Earth for VCO part
32	GNDVCO	–	Earth for VCO part
33	TXOLA	Output	GSM 800/900 MHz Tx output
34	PCTL	Output	Tx power control output
35	GNDVAR	–	Earth for varactors
36	VCCVCO	Input	Supply for VCO part
37	VCCBUF	Input	Supply for Tx input part
38	GNDBUF	Input	Earth for Tx input part
39	GND PLANE	–	Connected to flex film earth plane
40*	PS	–	Test output (Not used)
41	GNDPLL	–	Earth for prescaler, phase detector and XO
42*	XOOLA	Output	XO output (Not used)
43	GNDPLL	–	Earth for prescaler, phase detector and XO
44	VTUNE	Input	Tuning input for VCOs
45	TXOHB	Output	GSM 1,800/1,900 MHz Tx output
46	PHDOUT	Output	Phase detector output
47	TXOHA	Output	GSM 1,800/1,900 MHz Tx output
48*	NC	–	Not used
49	MODA	Output	Prescaler modulus control output
50	MODB	Output	Prescaler modulus control output
51	MODC	Output	Prescaler modulus control output
52	MODD	Output	Prescaler modulus control output
53	VCCPLL	Input	Supply for prescaler, phase detector and XO
54	XOOB	Input	XO input A

Pin No.	Terminal name	Input/Output	Description of terminal
55	XOOC	Input	XO input B
56*	NC	-	Not used

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**IC101 (AB1011): GSM CODEC**

Pin No.	Terminal name	Input/Output	Description of terminal
1	VSS	-	Earth (substrate)
2	VDD	-	VCC
3*	DAC03	-	Internally connected, high impedance (floating) (Not used)
4	IDAT	Output	Output from ADC I-channel
5	QRB	Input	Differential input to the ADC Q-channel
6	QRA	Input	Differential input to the ADC Q-channel
7	IRB	Input	Differential input to the ADC I-channel
8	IRA	Input	Differential input to the ADC I-channel
9	VSS	-	Earth
10	DEC4	-	Reference de-coupling
11*	DAC02	-	Internally connected, high impedance (floating) (Not used)
12	RXSTR	Input	Power up for the ADCs
13	VDD	-	VCC

Pin No.	Terminal name	Input/Output	Description of terminal
14*	GPA1	–	Internally connected, high impedance (floating) (Not used)
15	VDD	–	VCC
16*	GPA0	–	Internally connected, high impedance (floating) (Not used)
17	DACDAT	–	Internally connected to earth (pull-down)
18	DACCLK	–	Internally connected to earth (pull-down)
19*	DAC01	–	Internally connected, high impedance (floating) (Not used)
20	VSS	–	Earth
21	DCLK	Output	Output clock from ADCs
22*	GPA2	–	Internally connected, high impedance (floating) (Not used)
23*	GPA3	–	Internally connected, high impedance (floating) (Not used)
24*	GPA4	–	Internally connected, high impedance (floating) (Not used)
25	I2CCLK	Input	Input clock of I2C bus
26	RESETB	Input	Power reset to the AB1011
27	I2CDAT	Input	Bi-directional I2C data
28	DACSTR	–	Internally connected to earth (pull-down)
29	QDAT	Output	Output from ADC Q-channel
30*	GPA5	–	Internally connected, high impedance (floating) (Not used)
31*	GPA7	–	Internally connected, high impedance (floating) (Not used)
32*	GPA6	–	Internally connected, high impedance (floating) (Not used)
33	DEC5	–	Reference de-coupling
34	DEC1	–	Reference de-coupling
35	REXT	–	Reference resistance
36*	AUX11	–	Internally connected, high impedance (floating) (Not used)
37*	GPCLK	–	Internally connected, high impedance (floating) (Not used)
38*	GPDAT	–	Internally connected, high impedance (floating) (Not used)
39	ADSTR	–	Internally connected to earth (pull-down)
40	VSS	–	Earth
41	AVDD	–	VCC
42*	CCO	–	Internally connected, high impedance (floating) (Not used)
43*	MICIP	–	Internally connected, high impedance (floating) (Not used)
44	VSS	–	Earth
45	VDD	–	VCC
46	PCMCLK	–	Internally connected to earth (pull-down)
47	VSS	–	Earth
48	VDD	–	VCC
49*	MICIN	–	Internally connected, high impedance (floating) (Not used)
50*	NC	–	Not used
51	VSS	–	Earth
52	VSS	–	Earth
53*	BEARP	–	Internally connected, high impedance (floating) (Not used)
54	PCMSYN	–	Internally connected to earth (pull-down)
55*	PCMUL	–	Internally connected, high impedance (floating) (Not used)
56	MCLK (SYSCLK2)	Input	System clock input
57*	NC	–	Not used
58	DEC2	–	Reference de-coupling
59	DEC3	–	Reference de-coupling
60*	AUXO2	–	Internally connected, high impedance (floating) (Not used)
61*	BEARN	–	Internally connected, high impedance (floating) (Not used)
62	VDD	–	VCC
63	PCMDL	–	Internally connected to earth (pull-down)
64	VSS	–	Earth

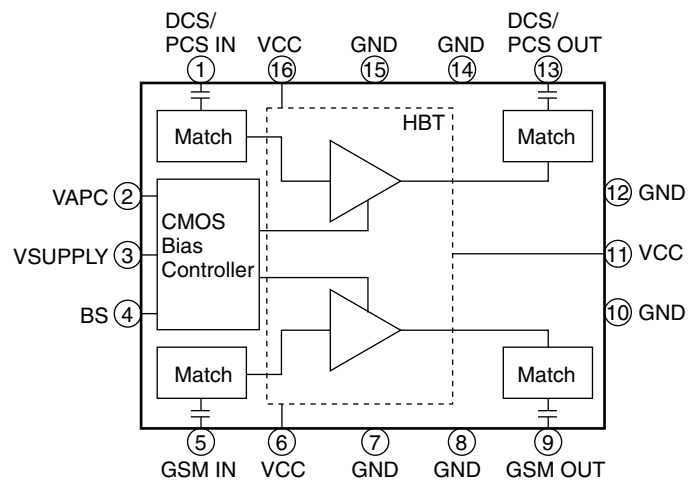
In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



A8 IRA	B8 GPA0	C8 GPA4	D8 GPA6	E8 VSS	F8 VDD	G8 MCLK	H8 VSS
A7 IRB	B7 VDD	C7 GPA3	D7 GPA7	E7 ADSTR	F7 VSS	G7 PCMUL	H7 PCMDL
A6 QRA	B6 GPA1	C6 GPA2	D6 GPA5	E6 GPDAT	F6 PCMCLK	G6 PCMSYN	H6 VDD
A5 QRB	B5 VDD	C5 DCLK	D5 QDAT	E5 GPCLK	F5 VDD	G5 BEARP	H5 BEARN
A4 IDAT	B4 RXSTR	C4 VSS	D4 DACSTR	E4 AUX11	F4 VSS	G4 VSS	H4 AUXO2
A3 DAC03	B3 DAC02	C3 DAC01	D3 I2CDAT	E3 REXT	F3 MICIP	G3 VSS	H3 DEC3
A2 VDD	B2 DEC4	C2 DACCLK	D2 RESETB	E2 DEC1	F2 CCO	G2 NC	H2 DEC2
A1 VSS	B1 VSS	C1 DACDAT	D1 I2CCLK	E1 DEC5	F1 AVDD	G1 MICIN	H1 NC

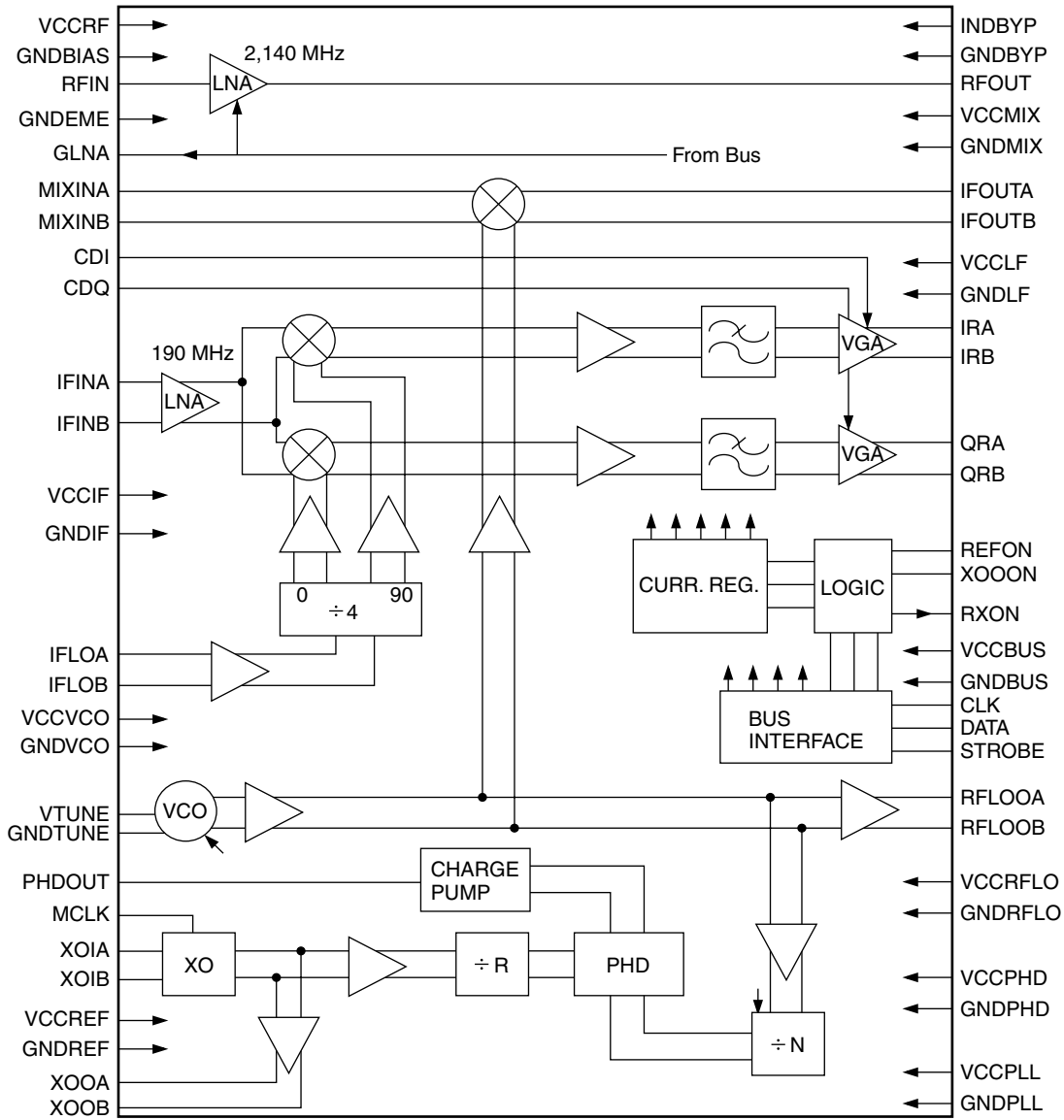
**IC300 RH-IXA038AFZZL (CX77313): POWER AMP. MODULE (FOR GSM)**

Pin No.	Terminal name	Input/Output	Description of terminal
1	DCS/PCS IN	Input	RF input 1,710 to 1,910 MHz
2	VAPC	Input	Power control bias voltage
3	VSUPPLY	—	DC supply to CMOS bias controller
4	BS	Input	Band select
5	GSM IN	Input	RF input 824 to 915 MHz
6	VCC	—	VCC (to GSM 1st stage and DCS 1st stage)
7	GND	—	RF and DC earth
8	GND	—	RF and DC earth
9	GSM OUT	Output	RF output 824 to 915 MHz
10	GND	—	RF and DC earth
11	VCC	—	VCC (to GSM and DCS final stages)
12	GND	—	RF and DC earth
13	DCS/PCS OUT	Output	RF output 1,710 to 1,910 MHz
14	GND	—	RF and DC earth
15	GND	—	RF and DC earth
16	VCC	—	VCC (to DCS 2nd stage)



**IC400 (OM5954ET): RECEIVER IC FOR W-CDMA**

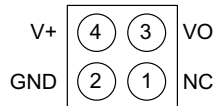
Pin No.	Terminal name	Input/Output	Description of terminal
1	IFOUTA	Output	IF output A (balanced)
2	GNDMIX	–	Earth for RF mixer
3	VCCIF	–	Supply for IF
4	IFINA	Input	IF input A (balanced)
5	IFINB	Input	IF input B (balanced)
6	VCCLF	–	Supply for baseband part
7	QRA	Output	Q-channel output
8	QRB	Output	Q-channel output
9	IRA	Output	I-channel output
10	IRB	Output	I-channel output
11	IFOUTB	Output	IF output B (balanced)
12	VCCREF	–	Supply for reference
13	VCCMIX	–	Supply for RF mixer
14	GNDIF	–	Earth for IF mixer
15	CDQ	–	External capacitor connection for baseband DC compensation loop (Q-channel)
16	CDI	–	External capacitor connection for baseband DC compensation loop (I-channel)
17	GNDLF	–	Earth for baseband part
18	MCLK	Output	XO master clock output
19	XOOA	Output	XO output A (balanced)
20	XOIA	Input	XO input A (balanced)
21	MIXINA	Input	RF mixer input A (balanced)
22	DATA	Input	Serial bus data input
23	XOOB	Output	XO output B (balanced)
24	XOIB	Input	XO input B (balanced)
25	MIXINB	Input	RF mixer input B (balanced)
26	CLK	Input	Serial bus clock input
27	GNDREF	–	Earth for reference
28	VCCBUS	–	Supply for data bus
29	GNDBIAS	–	Earth for bias
30	STROBE	Input	Serial bus strobe input
31	GNDBUS	–	Earth for data bus
32	IFLOA	Input	IFLO input A (balanced)
33	GNDEME	–	Earth for RF LNA
34	GLNA	Output	Gain control output for external RF LNA parts
35	REFON	Input	Hardware power on for ref.
36	IFLOB	Input	IFLO input B (balanced)
37	RFIN	Input	RF LNA input
38	XOOON	Input	Hardware power on for XO output
39	RXON	Output	Hardware power control output for external receiver parts
40	GNDPLL	–	Earth for PLL
41	GNDPHD	–	Earth for phase detector
42	GNDTUNE	–	Earth for varactor
43	GNDVCO	–	Earth for VCO
44	GNDRFLO	–	Earth for RFLO
45	GNDBYB	–	Earth for bypass RF LNA
46	RFLOOA	Output	RFLO output A (balanced)
47	VCCRF	–	Supply for RF LNA
48	INDBYP	–	Earth for RF LNA inductor bypass
49	RFOUT	Output	RF LNA output
50	VCCPLL	–	Supply for PLL
51	VCCPHD	–	Supply for phase detector
52	PHDOUT	Output	Phase detector output
53	VTUNE	Input	Tuning input for VCOs
54	VCCVCO	–	Supply for VCO
55	VCCRFLO	–	Supply for RFLO
56	RFLOBB	Output	RFLO output B (balanced)



**IC501/IC1209 VHILM20SITN-1R (LM20SITLX): TEMPERATURE SENSOR**

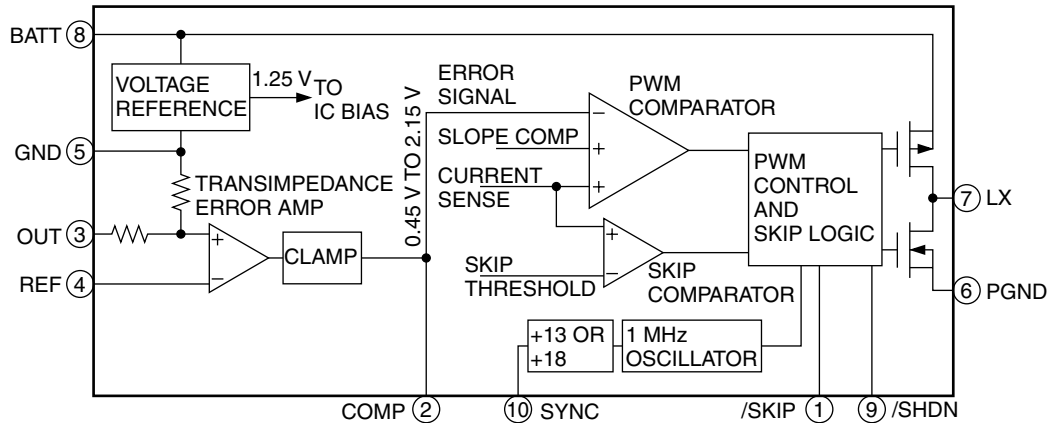
Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	-	Not used
2	GND	-	Earth
3	VO	Output	Output
4	V+	-	Power supply

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



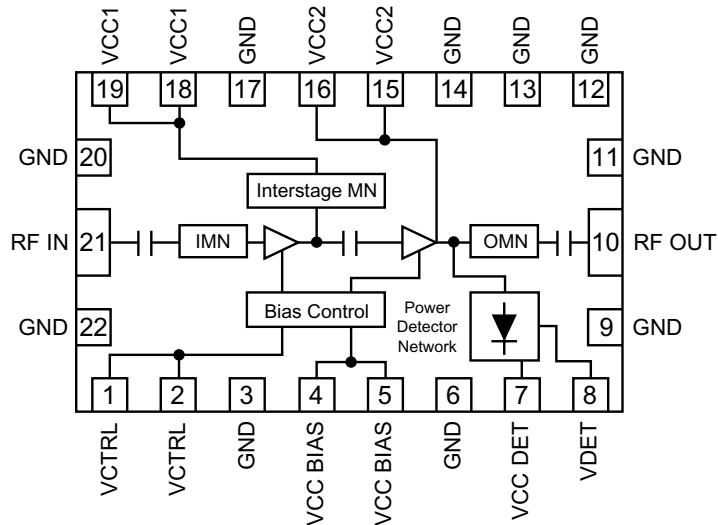
**IC620 VHIM1820XCP-1L (MAX1820XEBC): DCDC**

Pin No.	Terminal name	Input/Output	Description of terminal
1	/SKIP	Input	PWM/Skip-mode input
2	COMP	–	Compensation
3	OUT	Input	Output voltage sense input
4	REF	Input	External reference input
5	GND	–	Earth
6	PGND	–	Power earth
7	LX	Output	Inductor connection
8	BATT	Input	Supply voltage input
9	/SHDN	Input	Active-low, shutdown control input
10	SYNC	Input	Clock synchronisation input



**IC630 RH-IX3045AFZZL (RF9266): W-CDMA POWER AMP.**

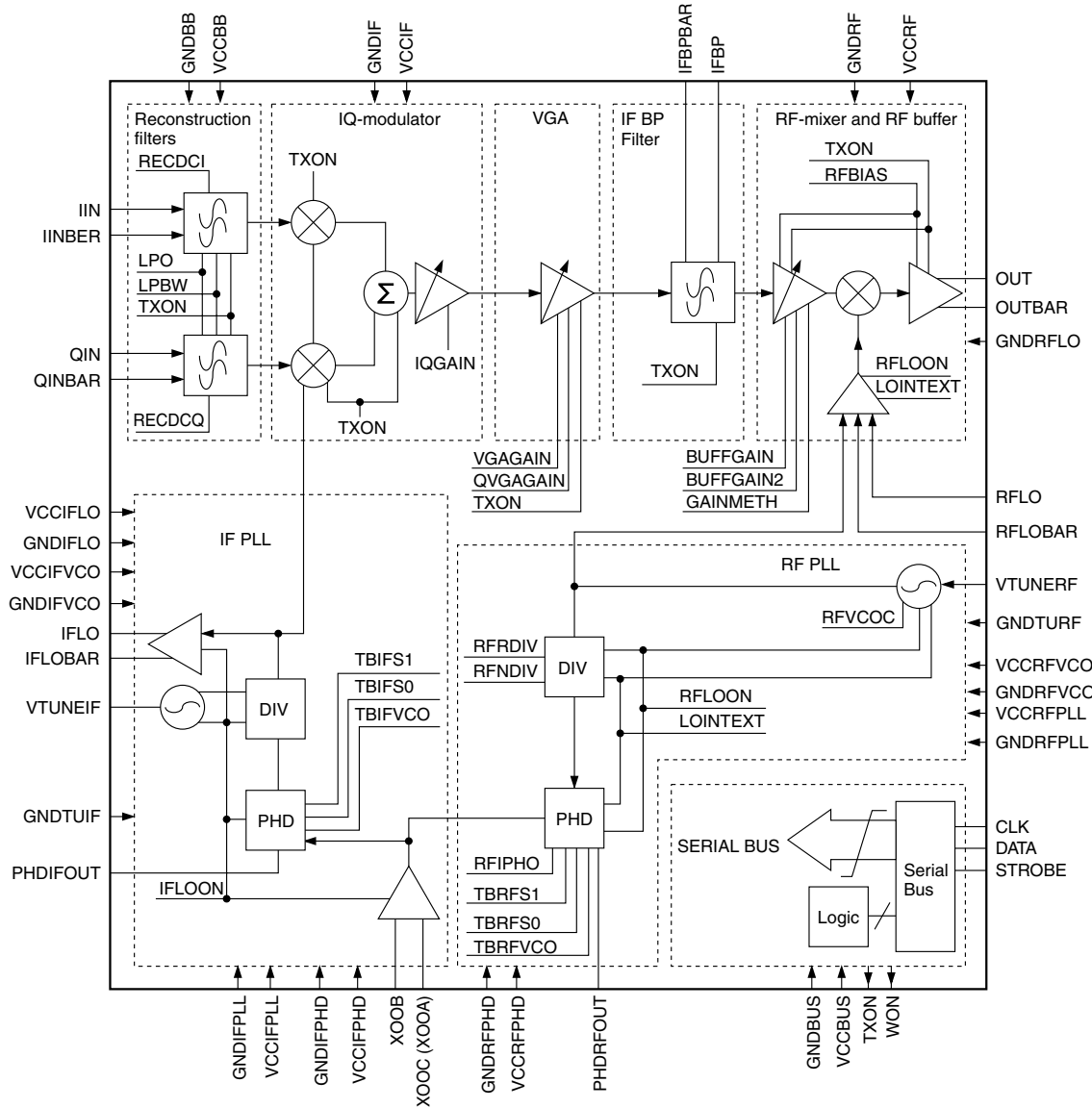
Pin No.	Terminal name
1	V CTRL (VREG)
2	V CTRL (VREG)
3	GND
4	VCC_BIAS
5	VCC_BIAS
6	GND
7	VCC DET
8	V DETECT
9	GND
10	RF OUT
11	GND
12	GND
13	GND
14	GND
15	VCC2
16	VCC2
17	GND
18	VCC1
19	VCC1
20	GND
21	RF IN
22	GND
Pkg Base	GND



**IC700 (OM5955ET): W-CDMA TRANSMITTER IC**

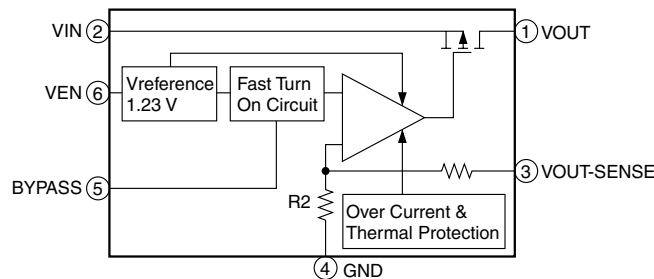
Pin No.	Terminal name	Input/Output	Description of terminal
1	QINBAR	Input	Negative quadrature phase input signal
2	QIN	Input	Positive quadrature phase input signal
3	IINBAR	Input	Negative in phase input signal
4	IIN	Input	Positive in phase input signal
5	VCCBB	–	VCC for baseband blocks
6	VCCIFPHD	–	VCC for IF PLL charge pump
7	PHDIFOUT	Output	IF PLL charge pump output
8	VCCIFPLL	–	VCC for IF PLL
9	GNDIFVCO	–	Earth for IF VCO
10	VCCIFVCO	–	VCC for IF VCO
11	XOOB	Input	Reference frequency input (13 MHz)
12	VTUNEIF	Input	IF VCO voltage tuning input
13	XOOC (XOOA)	Input	Reference frequency input (13 MHz)
14	GNDBB	–	Earth for baseband blocks
15	CLK	Input	Serial bus clock input
16	GNDIFPHD	–	Earth for IF PLL charge pump
17	GNDIFPLL	–	Earth for IF PLL
18	WON	Output	Logic output to control aerial switch
19	GNDIFVCO	–	Earth for IF VCO
20	GNDTUIF	–	Earth for IF VCO varactor
21	VCCBUS	–	VCC for bus and logic blocks
22	GNDBUS	–	Earth for bus and logic blocks
23	GNDRFPHD	–	Earth for RF PHD
24	GNDIFVCO	–	Earth for IF VCO
25	IFLO	Output	Positive IF LO frequency output
26	DATA	Input	Serial bus data input
27	TXON	Output	Hard wired TX ON logic output
28	VCCRFPHD	–	VCC for RF PHD
29	IFLOBAR	Input	Negative IF LO frequency input
30	GNDIFLO	–	Earth for IF LO
31	GNDRFPLL	–	Earth for RF VCO
32*	PHDRFOUT	Output	RF PLL charge pump output (Not used)
33	VCCIFLO	–	VCC for IF LO
34	GNDRFLO	–	Earth for RF LO
35	STROBE	Input	Serial bus strobe input
36	VCCRFPLL	–	VCC for RF VCO
37	RFLO	Input	Positive RF mixer LO input
38	GNDRFLO	–	Earth for RF LO
39	GNDRF	–	Earth for RF parts
40	GNDRF	–	Earth for RF parts
41	GNDRF	–	Earth for RF parts
42	GNDIF	–	Earth for intermediate frequency parts
43	GNDRFVCO	–	Earth for RF VCO
44	VCCRFVCO	–	VCC for RF VCO
45	RFLOBAR	Input	Negative RF mixer LO input
46	GNDTURF	–	Earth for RF VCO varactor
47	VCCRF	–	VCC for RF parts
48	OUT	Output	Positive RF frequency output
49	OUTBAR	Output	Negative RF frequency output
50	GNDRF	–	Earth for RF parts
51	VCCRF	–	VCC for RF parts
52	VCCRF	–	VCC for RF parts
53	VCCIF	–	VCC for intermediate frequency parts
54	IFBP	–	IF filter tank port
55	IFBPBAR	–	IF filter negative tank port
56*	VTUNERF	Input	RF VCO voltage tuning input (Not used)

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



IC800 VHI3981D28N-1R (LP3981ILD): 2.8 V REGULATOR

Pin No.	Terminal name	Input/Output	Description of terminal
1	VOUT	Output	Output Voltage of the LDO
2	VIN	Input	Input Voltage of the LDO
3	VOUT-SENSE	Output	Output. Voltage Sense Pin
4	GND	-	Common Earth
5	BYPASS	-	Optional bypass capacitor for noise reduction
6	VEN	Input	Enable Input Logic, Enable High



## IC1001 VHIBGB202+-1L (BGB202): BLUETOOTH

Pin No.	Terminal name	Input/Output	Description of terminal
1	GND	–	Earth
2	ANT	Input/Output	Aerial input/output
3	GND	–	Earth
4	GND	–	Earth
5	GND	–	Earth
6	GND	–	Earth
7	GND	–	Earth
8	GND	–	Earth
9	GND	–	Earth
10	GND	–	Earth
11	GND	–	Earth
12	GND	–	Earth
13	GND	–	Earth
14	GND	–	Earth
15	GP_CLK	Output	General purpose clock
16	VBAT	Input	Battery measurement voltage input
17	VANLI	Input	8-bit A/D input
18	XTAL2_LPO	Output	Low power crystal oscillator
19	XTAL1_LPO	Input	Low power crystal oscillator
20	GPIO[1]	Input/Output	I2C_SDA
21	GPIO[0]	Input/Output	I2C_SCL
22	VANLO	Output	Analogue voltage source output
23	GPIO[13]	Input/Output	General purpose I/O 13
24	GPIO[11]	Input/Output	General purpose I/O 11
25	GPIO[10]	Input/Output	General purpose I/O 10
26	1.8 V DECOUP	–	VDD18 decoupling
27	POR_DISABLE	Input	Power-On Reset disable input
28	XTAL2_SYS	Output	System clock crystal oscillator
29	XTAL1_SYS	Input	System clock crystal oscillator
30	REF_CLK	Output	Synthesiser reference frequency
31	GPIO[12]	Input/Output	General purpose I/O 12
32	GPIO[14]	Input/Output	General purpose I/O 14
33	GPIO[7] FSC_IP	Input	General purpose I/O 7 PCM/IOM frame sync
34	GPIO[9] DB_IP	Input/Output	General purpose I/O 9 Bidirectional PCM/IOM data line B (default: input)
35	GPIO[6] DA_IP	Input/Output	General purpose I/O 6 Bidirectional PCM/IOM data line A (default: output)
36	GPIO[8] DCLK_IP	Input	General purpose I/O 8 PCM/IOM data clock
37	VDD18	Input	1.8 V I/O supply voltage
38	VDD_IOV	Input	Variable I/O supply voltage
39	VDDIORF	Input	RF supply voltage
40	VREG18	Output	1.8 V regulated output voltage
41	GPIO[3] RTS_UART	Input	General purpose I/O 3 UART request-to-send input
42	GPIO[5] RXD_UART	Input	General purpose I/O 5 UART receive input
43	GPIO[4] TXD_UART	Output	General purpose I/O 4 UART transmit output
44	GPIO[2] CTS_UART	Output	General purpose I/O 2 UART clear-to-send output
45	RESET_N	Input	Reset input (active LOW)
46	1.8 V DECOUP	–	VDD18 decoupling
47	TMS_JTAG	Input	JTAG test mode select
48	TDO_JTAG	Output	JTAG test data output
49	TDI_JTAG	Input	JTAG test data input
50	TCK_JTAG	Input	JTAG test clock

Pin No.	Terminal name	Input/Output	Description of terminal
51	GND	–	Earth
52	GND	–	Earth

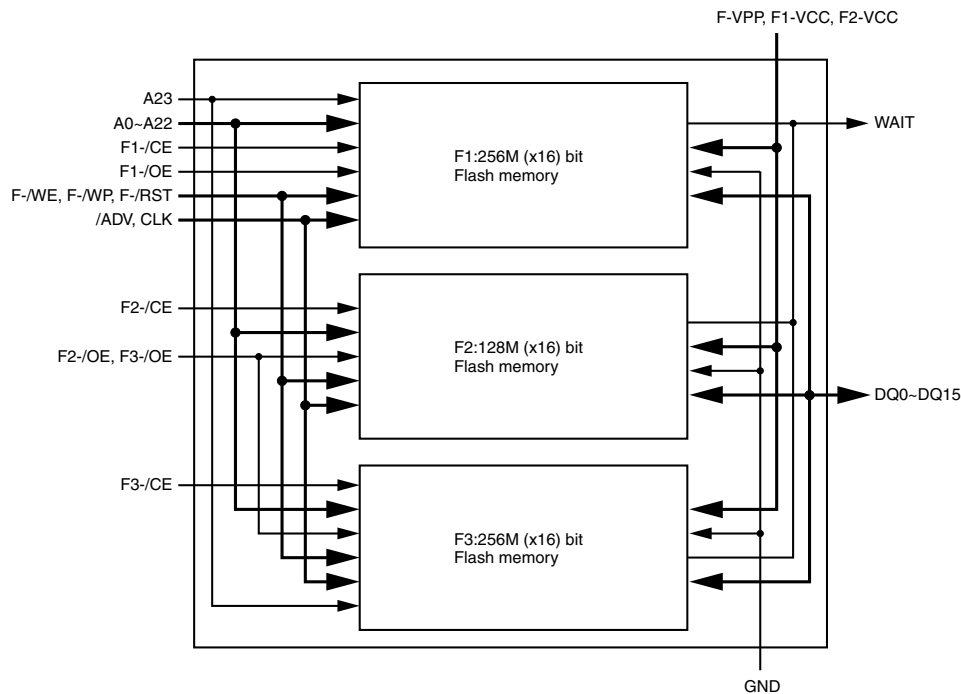
**IC1100 (LHF65NZ1): FLASH MEMORY 1**

Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2*	NC	–	Not used
3*	NC	–	Not used
4*	NC	–	Not used
5	A4	Input	Address input
6	A18	Input	Address input
7	A19	Input	Address input
8	VSS	–	Earth
9	F1-VCC	–	Power supply (flash)
10	F2-VCC	–	Power supply (flash)
11	A21	Input	Address input
12	A11	Input	Address input
13	A5	Input	Address input
14*	/R-LB	Input	(Not used)
15	A23	Input	Address input (flash 1, 3)
16	VSS	–	Earth
17*	S-CS2	Input	(Not used)
18	CLK	Input	Clock input
19	A22	Input	Address input
20	A12	Input	Address input
21	A3	Input	Address input
22	A17	Input	Address input
23	GND	–	Earth
24	F-VPP	Input	Supply voltage detection terminal
25*	/R-/WE	Input	Write enable input (Not used)
26*	/P1-CS	Input	(Not used)
27	A9	Input	Address input
28	A13	Input	Address input
29	A2	Input	Address input
30	A7	Input	Address input
31	GND	–	Earth
32	F-/WP	Input	Write protect input
33	/ADV	Input	Address valid input
34	A20	Input	Address input
35	A10	Input	Address input
36	A15	Input	Address input
37	A1	Input	Address input
38	A6	Input	Address input
39*	/R-UB	Input	(Not used)
40	F-/RST	Input	Reset input (flash)
41	F-/WE	Input	Write enable input
42	A8	Input	Address input
43	A14	Input	Address input
44	A16	Input	Address input
45	A0	Input	Address input
46	DQ8	Input/Output	Data input/output
47	DQ2	Input/Output	Data input/output
48	DQ10	Input/Output	Data input/output
49	DQ5	Input/Output	Data input/output
50	DQ13	Input/Output	Data input/output
51	WAIT	Output	Wait output
52	F2-/CE	Input	Chip enable input (flash)
53*	/R-OE	Input	Output enable input (flash) (Not used)



Pin No.	Terminal name	Input/Output	Description of terminal
54	DQ0	Input/Output	Data input/output
55	DQ1	Input/Output	Data input/output
56	DQ3	Input/Output	Data input/output
57	DQ12	Input/Output	Data input/output
58	DQ14	Input/Output	Data input/output
59	DQ7	Input/Output	Data input/output
60	F2-/OE	Input	Output enable input (flash)
61*	/S-CS1	Input	(Not used)
62	F1-/OE	Input	Output enable input (flash)
63	DQ9	Input/Output	Data input/output
64	DQ11	Input/Output	Data input/output
65	DQ4	Input/Output	Data input/output
66	DQ6	Input/Output	Data input/output
67	DQ15	Input/Output	Data input/output
68	VCCQ	–	Input/output supply
69	F1-/CE	Input	Chip enable input (flash)
70*	/P2-CS	Input	(Not used)
71	F3-/CE	Input	Chip enable input (flash)
72*	S-VCC	–	Power supply (Not used)
73*	P-VCC	–	Power supply (Not used)
74	F2-VCC	–	Power supply (flash)
75	VCCQ	–	Input/output supply
76*	P-MODE/PCRE	Input	(Not used)
77	VSS	–	Earth
78	VSS	–	Earth
79	VCCQ	–	Input/output supply
80	F1-VCC	–	Power supply (flash)
81	VSS	–	Earth
82	VSS	–	Earth
83	VSS	–	Earth
84	VSS	–	Earth
85*	NC	–	Not used
86*	NC	–	Not used
87*	NC	–	Not used
88*	NC	–	Not used

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

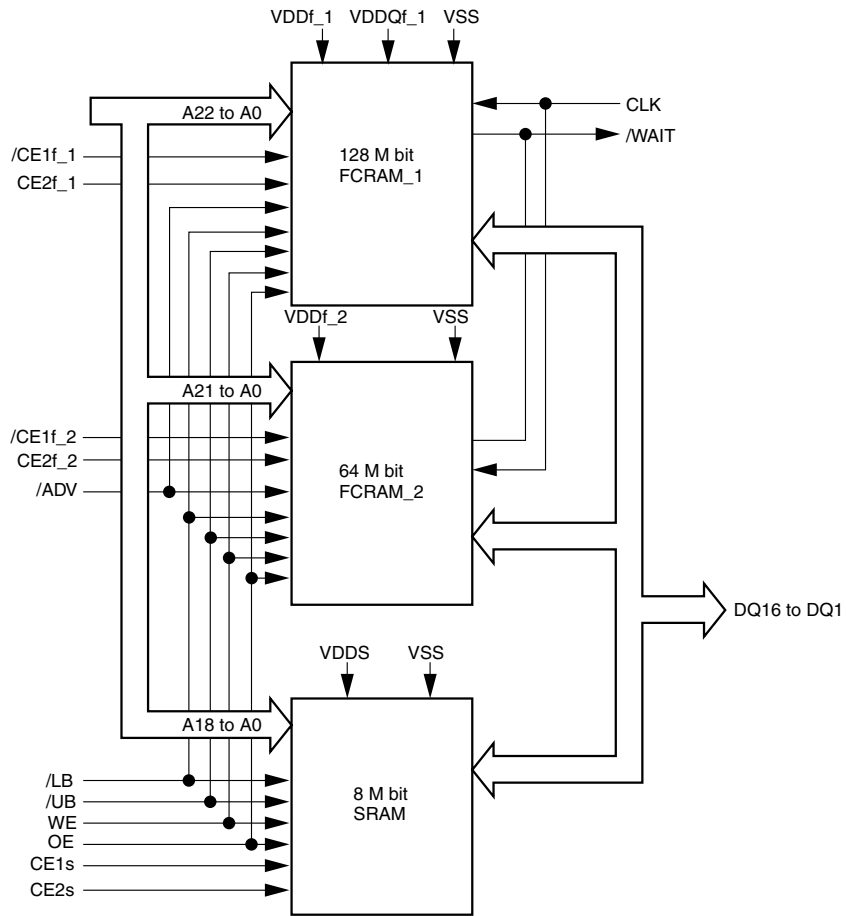


IC1101 (MB82R6A5C): FLASH MEMORY 2

Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2*	NC	–	Not used
3*	NC	–	Not used
4*	NC	–	Not used
5*	NC	–	Not used
6*	NC	–	Not used
7*	NC	–	Not used
8*	NC	–	Not used
9*	NC	–	Not used
10*	NC	–	Not used
11*	NC	–	Not used
12*	NC	–	Not used
13*	NC	–	Not used
14*	NC	–	Not used
15*	NC	–	Not used
16	A7	Input	Address input
17	/LB	Input	Least significant byte control (low active)
18*	/ADV	Input	FCRAM matched address input (low active) (Not used)
19	WE	Input	Write enable (low active)
20	A8	Input	Address input
21	A11	Input	Address input
22*	NC	–	Not used
23*	NC	–	Not used
24*	NC	–	Not used
25	A3	Input	Address input
26	A6	Input	Address input
27	/UB	Input	Most significant byte control (low active)
28	CE2f_1	Input	FCRAM chip enable (high active)
29	CE2f_2	Input	FCRAM chip enable (high active)
30	A19	Input	Address input (FCRAM only)
31	A12	Input	Address input
32	A15	Input	Address input
33*	NC	–	Not used
34*	NC	–	Not used
35	A2	Input	Address input
36	A5	Input	Address input
37	A18	Input	Address input
38*	/WAIT	Output	FCRAM wait output (high active) (Not used)
39	A20	Input	Address input (FCRAM only)
40	A9	Input	Address input
41	A13	Input	Address input
42	A21	Input	Address input (FCRAM only)
43*	NC	–	Not used
44*	NC	–	Not used
45	A1	Input	Address input
46	A4	Input	Address input
47	A17	Input	Address input
48	/CE1s	Input	SRAM chip enable (low active)
49*	NC	–	Not used
50	A10	Input	Address input
51	A14	Input	Address input
52	A22	Input	Address input (FCRAM only)
53*	NC	–	Not used
54*	NC	–	Not used
55	A0	Input	Address input
56	VSS	–	Earth
57	DQ2	Input/Output	Least significant byte data input/output
58	VDD5	–	SRAM supply voltage

Pin No.	Terminal name	Input/Output	Description of terminal
59	CE2s	Input	SRAM chip enable (high active)
60	DQ7	Input/Output	Least significant byte data input/output
61	CLK	Input	FCRAM clock input
62	A16	Input	Address input
63*	NC	–	Not used
64*	NC	–	Not used
65	/CE1f_1	Input	FCRAM chip enable (low active)
66	OE	Input	Output enable (low active)
67	DQ10	Input/Output	Most significant byte data input/output
68	DQ4	Input/Output	Least significant byte data input/output
69	DQ5	Input/Output	Least significant byte data input/output
70	DQ14	Input/Output	Most significant byte data input/output
71	DQ16	Input/Output	Most significant byte data input/output
72*	NC	–	Not used
73*	NC	–	Not used
74*	NC	–	Not used
75	/CE1f_2	Input	FCRAM chip enable (low active)
76	DQ1	Input/Output	Least significant byte data input/output
77	DQ11	Input/Output	Most significant byte data input/output
78	VDDf_1	–	FCRAM supply voltage
79	VDDQf_1	–	FCRAM_1 input/output supply voltage
80	DQ13	Input/Output	Most significant byte data input/output
81	DQ8	Input/Output	Least significant byte data input/output
82	VSS	–	Earth (SRAM only)
83*	NC	–	Not used
84*	NC	–	Not used
85*	NC	–	Not used
86	DQ9	Input/Output	Most significant byte data input/output
87	DQ3	Input/Output	Least significant byte data input/output
88	DQ12	Input/Output	Most significant byte data input/output
89*	NC	–	Not used
90	DQ6	Input/Output	Least significant byte data input/output
91	DQ15	Input/Output	Most significant byte data input/output
92*	NC	–	Not used
93*	NC	–	Not used
94*	NC	–	Not used
95*	NC	–	Not used
96*	NC	–	Not used
97*	NC	–	Not used
98	VDDf_2	–	FCRAM supply voltage
99*	NC	–	Not used
100*	NC	–	Not used
101*	NC	–	Not used
102*	NC	–	Not used
103*	NC	–	Not used
104*	NC	–	Not used
105*	NC	–	Not used
106*	NC	–	Not used
107*	NC	–	Not used

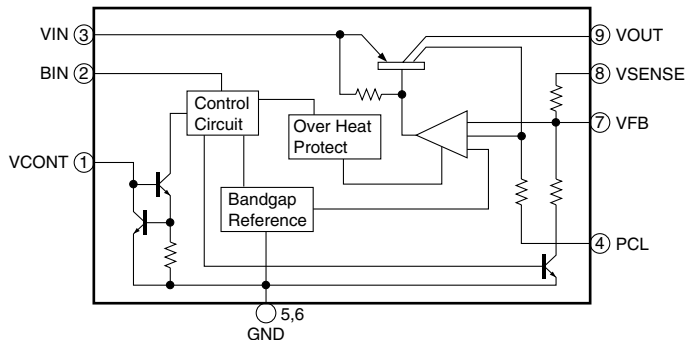
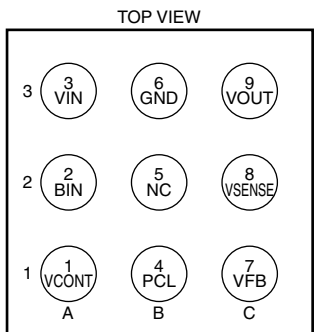
In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**IC1202 VHITK73840G-1L (TK73840BDB): REGULATOR**

Pin No.	Terminal name	Input/Output	Description of terminal
1	VCONT (ON/OFF)	Input	Power control
2	BIN (PE)	Input	Power enable
3	VIN (Vin)	Input	Power supply
4	PCL (ACL)	Input	Current setting
5	NC (GND)	—	Earth
6	GND (GND)	—	Earth
7*	VFB (Vfb)	Input	Not used
8	VSENSE (PC)	Output	Power output
9	VOUT (Vout)	Output	Power output

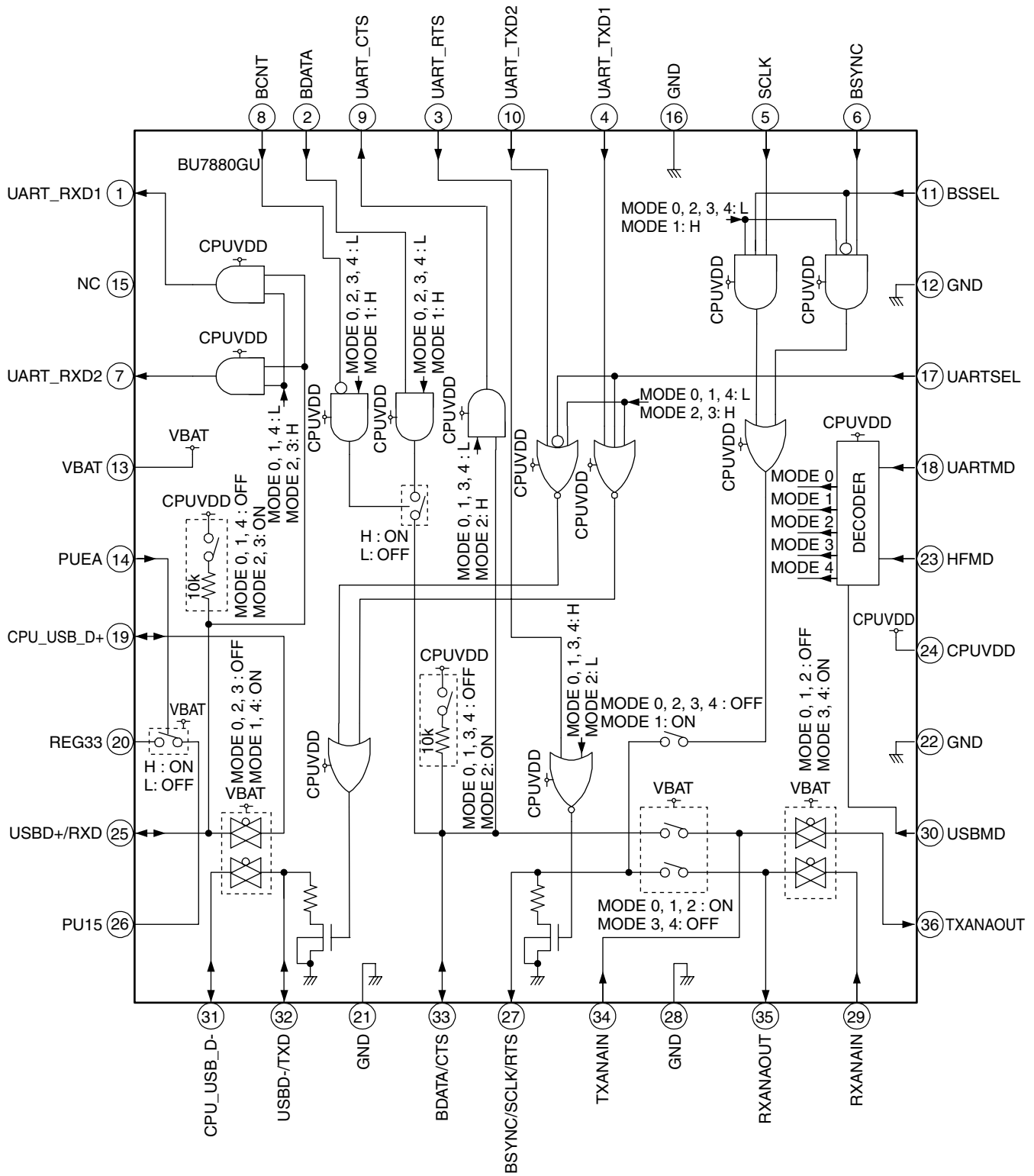
In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**IC1300 VHIBU7880GU-1L (BU7880GU): EXTERNAL INTERFACE**

Pin No.	Terminal name	Input/Output	Description of terminal
1	UART_RXD1	Output	UART_RXD1 output
2	BDATA	Input	BDATA input
3	UART_RTS	Input	UART_RTS input
4	UART_TXD1	Input	UART_TXD1 input
5	SCLK	Input	SCLK input
6	BSYNC	Input	BSYNC input
7*	UART_RXD2	Output	UART_RXD2 output (Not used)
8	BCNT	Input	BDATA input control
9	UART_CTS	Output	UART_CTS output
10	UART_TXD2	Input	UART_TXD2 input
11	BSSEL	Input	BSYNC/SCLK switching control
12	GND	–	Earth
13	VBAT	–	Power supply for switch
14	PUEA	Input	PU15 control input
15*	NC	–	Not used
16*	GND	–	Earth (Not used)
17	UARTSEL	Input	UART 1 and 2 switching terminal input
18	UARTMD	Input	UART mode switching
19	CPU_USB_D+	Input/Output	CPU_USB_D+ input/output
20	REG33	–	USB power supply
21*	GND	–	Earth (Not used)
22*	GND	–	Earth (Not used)
23	HFMD	Input	Hands free mode switching
24	CPUVDD	–	Digital power supply
25	USB D+/RXD	Input/Output	USB D+/RXD switching external input/output
26	PU15	Output	PMOS open drain output
27	BSYNC/SCLK/RTS	Output	BSYNC/SCLK/RTS switching external output
28	GND	–	Earth
29*	RXANAIN	Input	Hands free receiving external input (Not used)
30	USBMD	Input	USB mode switching
31	CPU_USB_D–	Input/Output	CPU_USB_D– inupt/output
32	USB D–/TXD	Input/Output	USB D–/TXD switching external input/output
33	BDATA/CTS	Input/Output	BDATA/CTS switching external input/output
34*	TXANAIN	Input	Hands free sending input (Not used)
35*	RXANAOUT	Output	Hands free receiving output (Not used)
36*	TXANAOUT	Output	Hands free sending external output (Not used)

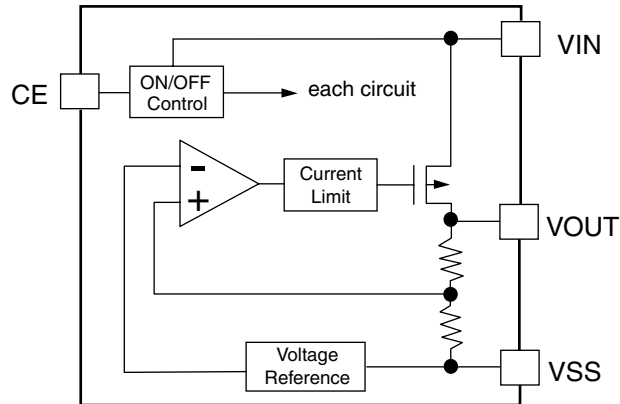
In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**IC1303 VHIXC621933-1L (XC6219C332DR): 3.3 V REGULATOR**

Pin No.	Terminal name	Description of terminal
1	VIN	Power supply input
2*	NC	Not used
3	VOUT	Output
4*	NC	Not used
5	VSS	Earth
6	CE	ON/OFF control

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

**IC1502 VHIBU7876GL-1L (BU7876GL): INFRARED REMOTE Tx CONTROLLER LSI**

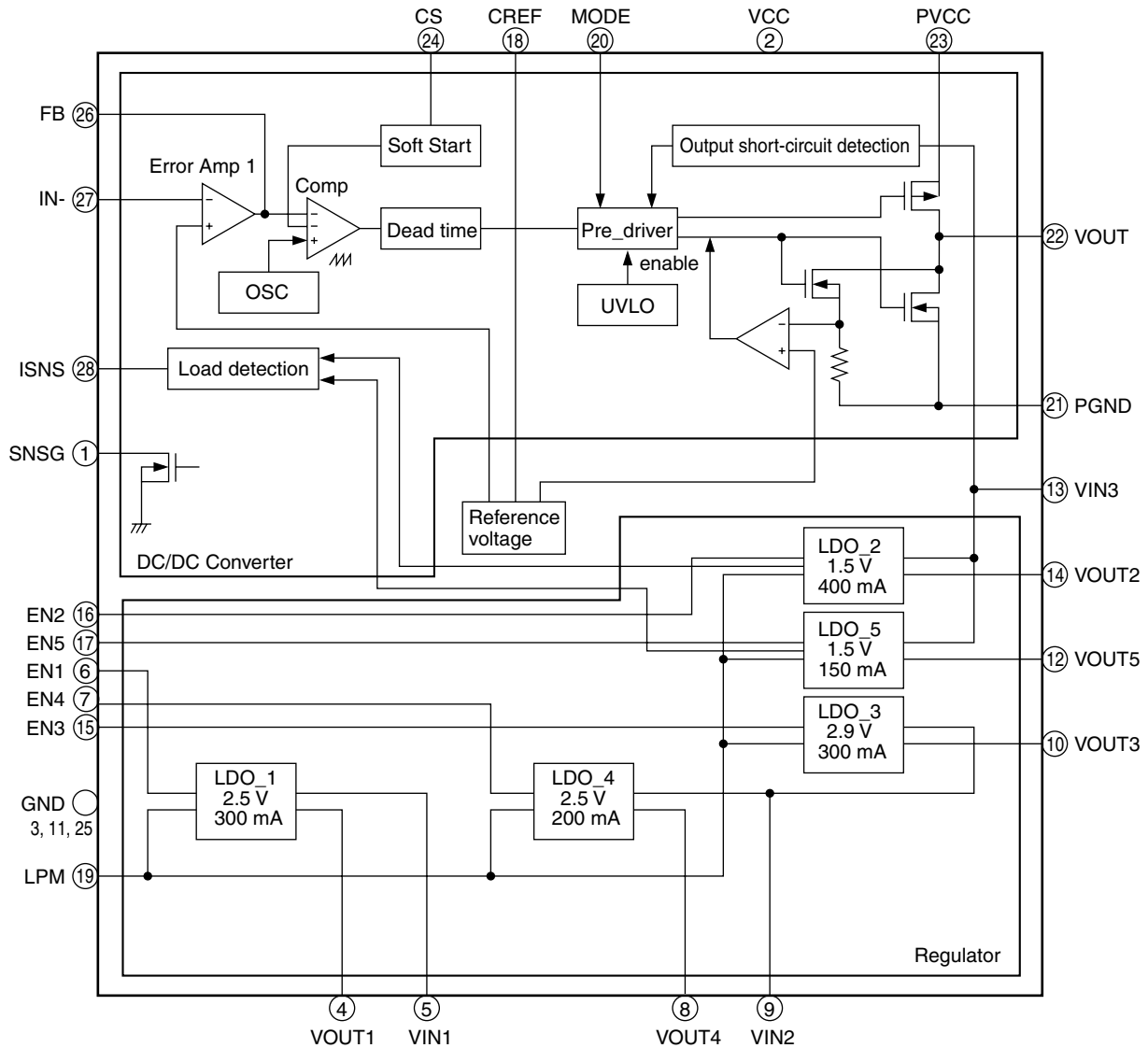
Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Mount reinforcement pin (Not used)
2	GND	–	Earth
3	VDD	–	Power supply
4*	NC	–	Mount reinforcement pin (Not used)
5	DOUT	Output	Data output
6	NIRQ	Output	Interrupt output (LOW: interrupt generation)
7*	NC	–	Mount reinforcement pin (Not used)
8	SCL	Input	IIC bus serial clock (SQL)
9	SDA	Input/Output	IIC bus serial data input/output
10*	NC	–	Mount reinforcement pin (Not used)
11	NRST	Input	Reset pin (LOW: reset)
12	CLK1	Input	Reference clock input

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

**IC1504 VHIFA3727R+-1R (FA3727R): POWER CONTROL**

Pin No.	Terminal name	Input/Output	Description of terminal
1	SNSG	–	DC/DC converter detection resistance earth
2	VCC	–	Circuit system power supply input
3	GND2	–	Earth
4	VOUT1	Output	LDO_1 output
5	VIN1	Input	LDO_1 power supply input
6	EN1	Input	LDO_1 enable terminal
7	EN4	Input	LDO_4 enable terminal
8	VOUT4	Output	LDO_4 output
9	VIN2	Input	LDO_3, LDO_4 power supply input
10	VOUT3	Output	LDO_3 output
11	GND3	–	Earth
12	VOUT5	Output	LDO_5 output
13	VIN3	Input	LDO_2, LDO_5 power supply input
14	VOUT2	Output	LDO_2 output

Pin No.	Terminal name	Input/Output	Description of terminal
15	EN3	Input	LDO_3 enable terminal
16	EN2	Input	LDO_2 enable terminal
17	EN5	Input	LDO_5 enable terminal
18	CREF	-	Reference voltage capacitor connection terminal
19	LPM	Input	Low Power Mode signal input
20	MODE	Input	Output PchMOS slew mode signal input
21	PGND	-	Power earth
22	VOOUT	Output	DC/DC converter driver output
23	PVCC	-	Power system power supply input
24	CS	-	Soft start terminal
25	GND1	-	Earth
26	FB	Output	Error amplifier output
27	IN-	Input	Error amplifier inverting input
28	ISNS	Input	LDO load detection terminal



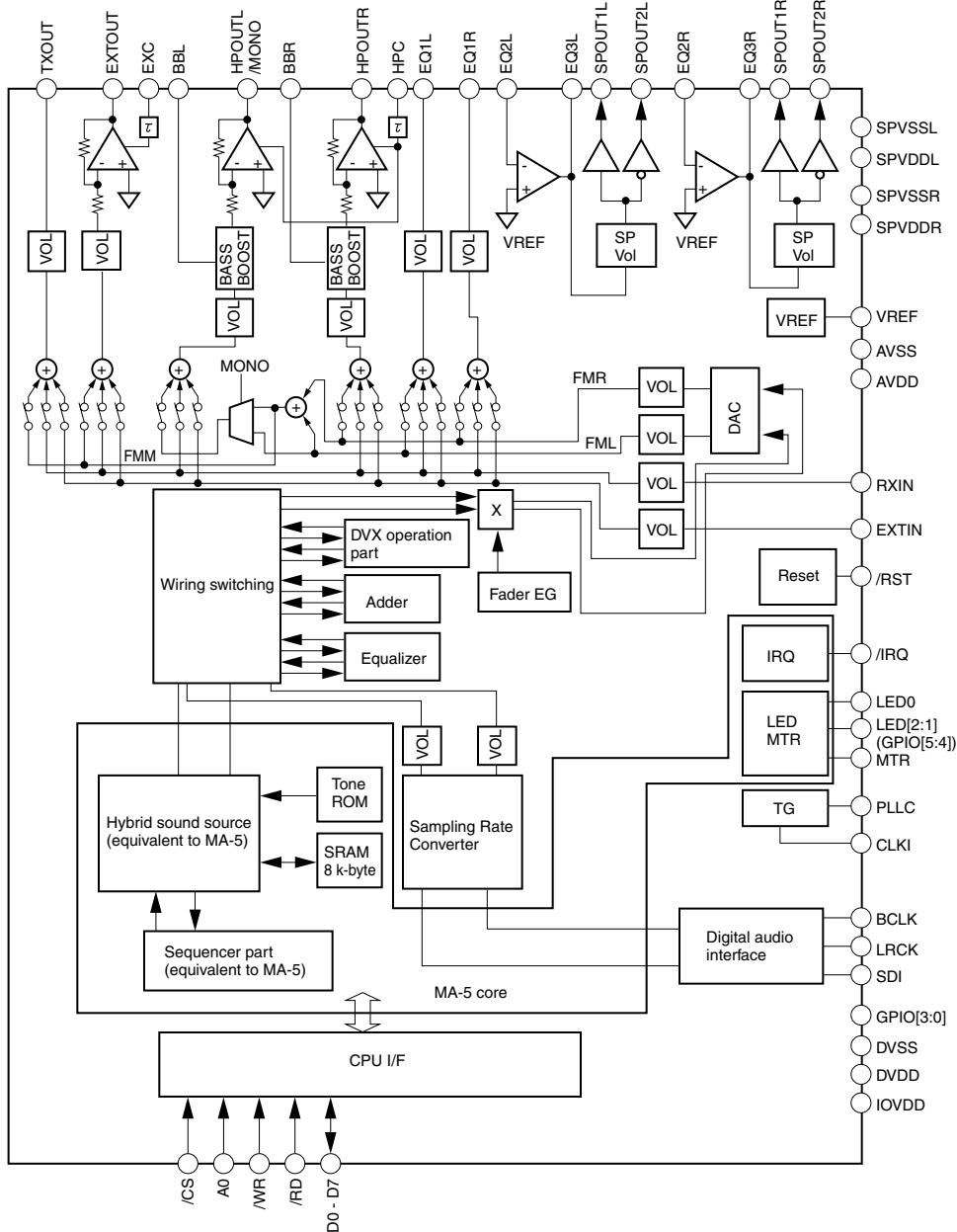


**IC1600 VHIYMU783C+-1L (YMU783C): MOBILE AUDIO**

Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2	GPIO3	Input/Output	GPIO port
3	GPIO1	Input/Output	GPIO port
4	BCLK	Input/Output	BIT clock for external audio input
5	D7	Input/Output	CPU interface data bus 7
6	D4	Input/Output	CPU interface data bus 4
7	D1	Input/Output	CPU interface data bus 1
8	D0	Input/Output	CPU interface data bus 0
9*	NC	–	Not used
10	MTR	Output	External vibrator control terminal
11*	LED1/GPIO4	Input/Output	GPIO port (Not used)
12	GPIO2	Input/Output	GPIO port
13	SDI	Input	External audio input
14	/IRQ	Output	Interrupt output
15	D5	Input/Output	CPU interface data bus 5
16	D2	Input/Output	CPU interface data bus 2
17	IOVDD1	–	Power supply for terminal
18	DVSS	–	Digital earth
19	DVDD	–	Digital core power supply (2.65 to 3.30 V)
20	LED0	Output	External LED control terminal 0
21*	LED2/GPIO5	Input/Output	External LED control terminal 1/GPIO port (Not used)
22	GPIO0	Input/Output	GPIO port
23	LRCK	Input/Output	LR clock for external audio input
24	D6	Input/Output	CPU interface data bus 6
25	D3	Input/Output	CPU interface data bus 3
26	CLKI	Input	Clock input terminal (1.5 to 27 MHz): TCXO compatible
27	DVDD	–	Digital core power supply (2.65 to 3.30 V)
28	DVSS	–	Digital earth
29	IOVDD2	–	Power supply for terminal
30	IOVDD2	–	Power supply for terminal
31	IOVDD2	–	Power supply for terminal
32	A0	Input	CPU interface address signal
33	/CS	Input	CPU interface chip select
34	/WR	Input	CPU interface write enable
35	TXOUT	Output	Transmitted voice analogue output terminal
36	RXIN	Input	Received voice analogue input terminal
37	/RST	Input	Hardware reset input
38*	NC	–	Not used
39	/RD	Input	CPU interface read enable
40	PLL	–	PLL capacitance connection terminal for sound source
41	EQ1L	–	L-ch equaliser terminal 1
42	EQ2L	–	L-ch equaliser terminal 2
43	EXTIN	Input	External analogue input terminal
44*	NC	–	Not used
45	EQ2R	–	R-ch equaliser terminal 2
46	EQ1R	–	R-ch equaliser terminal 1
47	SPVDDL	–	Analogue power supply for L-ch speaker amplifier (AVDD to 4.50 V)
48	EQ3L	–	L-ch equaliser terminal 3
49*	NC	–	Not used
50	HPOUTL/MONO	Output	L-ch headphone output terminal
51*	NC	–	Not used
52	HPC	–	Capacitance connection terminal for preventing headphone pop noise
53*	NC	–	Not used
54	EQ3R	–	R-ch equaliser terminal 3
55	SPVDDR	–	Analogue power supply for R-ch speaker amplifier (AVDD to 4.50 V)
56	SPVSSL	–	Analogue earth for L-ch speaker amplifier
57*	SPOUT1L	–	L-ch speaker connection terminal 1 (Not used)

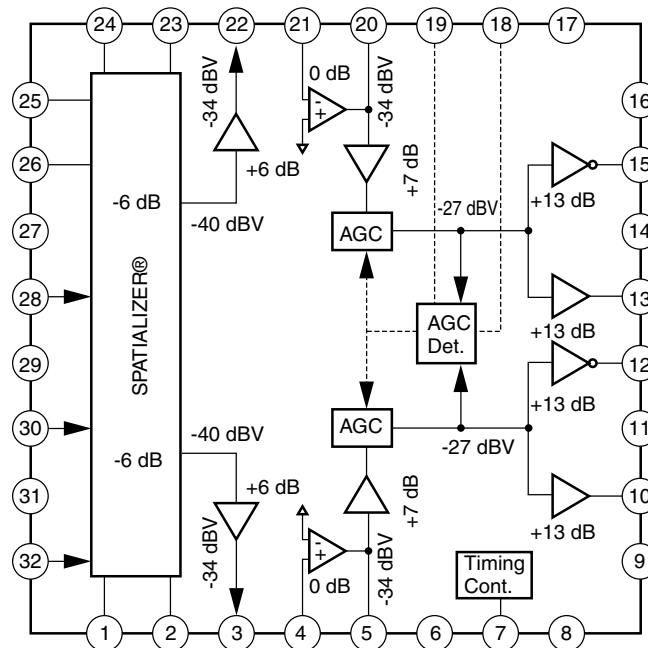
Pin No.	Terminal name	Input/Output	Description of terminal
58*	NC	-	Not used
59	BBR	-	Capacitance connection terminal for R-ch bus boost (0.1 μF)
60	VREF	-	Analogue reference voltage terminal
61*	EXTOUT	Output	External analogue output terminal (Not used)
62*	NC	-	Not used
63*	SPOUT1R	Output	R-ch speaker connection terminal 1 (Not used)
64	SPVSSR	-	Analogue earth for R-ch speaker amplifier
65*	(SPOUT1L)	Output	Internally connected to H2 terminal. H2 terminal is used as SPOUT1L terminal. (Not used)
66*	SPOUT2L	Output	L-ch speaker connection terminal 2 (Not used)
67	BBL	Output	Capacitance connection terminal for L-ch bus boost (0.1 μF)
68	AVDD	-	Analogue power supply (2.65 to 3.30 V)
69	AVSS	-	Analogue earth
70	EXC	-	Capacitance connection terminal for preventing external output pop noise
71	HPOUTR	Output	R-ch headphone output terminal
72*	SPOUT2R	Output	R-ch speaker connection terminal 2 (Not used)
73*	(SPOUT1R)	Output	Internally connected to H8 terminal. H8 terminal is used as SPOUT1R terminal. (Not used)

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



IC1603 (AN12974A): AGC STEREO AMP.

Pin No.	Terminal name	Input/Output	Description of terminal
1	C3	-	Surround filter terminal R-ch 1
2	R3	-	Surround filter terminal R-ch 2
3	- (Analogue signal)	Output	Surround output R-ch
4	- (Analogue signal)	Output	Inverting amplifier output R-ch for gain adjustment
5	- (Analogue signal)	Output	Inverting amplifier output R-ch for gain adjustment
6	AGC ON/OFF	Input	AGC ON/OFF switching
7	VREFSP	-	Precharge timing pin
8	VCC	-	VCC-SP (R-ch)
9	SP-SAVE	Input	Speaker power save ON/OFF switching
10	SPOUTR-	Output	Speaker output R-ch (-)
11	GNDSPR	-	Earth (SP R-ch)
12	SPOUTR+	Output	Speaker output R-ch (+)
13	SPOUTL-	Output	Speaker output L-ch (-)
14	GNDSPL	-	Earth (SP L-ch)
15	SPOUTL+	Output	Speaker output L-ch (+)
16	STB ON/OFF	Input	All standby ON/OFF switching
17	VCC	-	VCC-SP (L-ch)
18	VREFSP	-	1/2 VCC-SP (VREF-SP)
19	AGCDET	-	AGC signal detector
20	- (Analogue signal)	Output	Inverting amplifier output L-ch for gain adjustment
21	- (Analogue signal)	Output	Inverting amplifier output L-ch for gain adjustment
22	- (Analogue signal)	Output	Surround output L-ch
23	R1	-	Surround filter terminal L-ch 2
24	C1	-	Surround filter terminal L-ch 1
25	C2	-	Surround effect adjustment 1
26	R2	-	Surround effect adjustment 2
27	VREF	-	1/2 VCC (VREF)
28	IN-L	Input	Sound input terminal L-ch
29	VCC	-	VCC
30	IN-R	Input	Sound input terminal R-ch
31	GND	-	Earth
32	SURROUND ON/OFF	Input	Surround ON/OFF switching

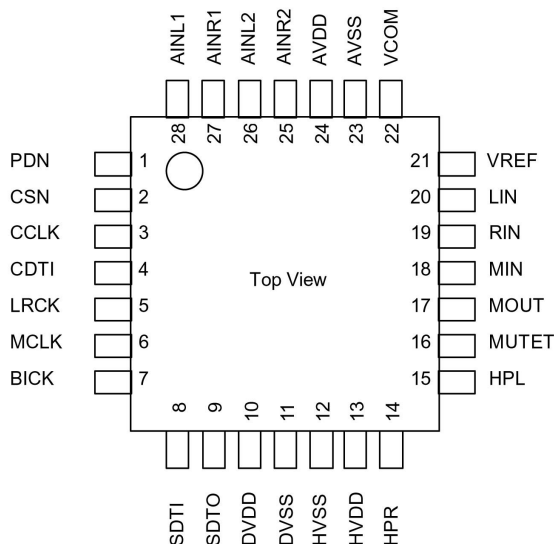


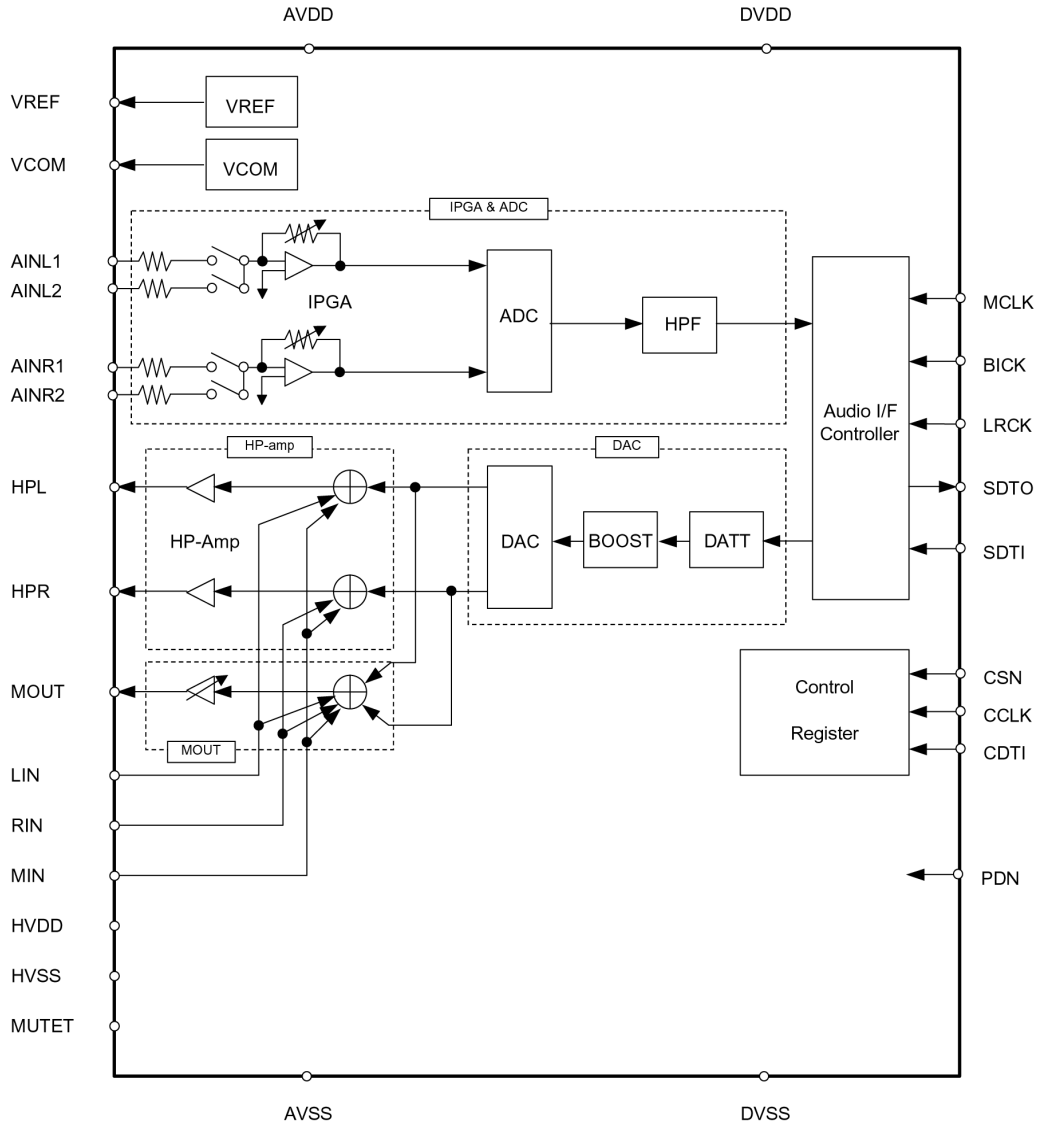
**IC1700 VHIAK4569+-1L (AK4569): PCM CODEC**

Pin No.	Terminal name	Input/Output	Description of terminal
1	PDN	Input	Power down pin When this pin is set at "L", the device is powered down internally and reset. When the power is turned on, input "L" once.
2	CSN	Input	Control data chip select pin
3	CCLK	Input	Control clock input pin
4	CDTI	Input	Control data input pin
5	LRCK	Input	L/R clock pin Determines an audio data channel
6	MCLK	Input	Master clock input pin
7	BICK	Input	Serial bit clock pin Clock for shifting audio data
8	SDTI	Input	Audio data input pin
9	SDTO	Output	Audio data output pin When PMADC bit = "0", pin SDTO is DVSS
10	DVDD	–	Digital power supply pin
11	DVSS	–	Digital earth pin
12	HVSS	–	Earth pin for headphone amplifier
13	HVDD	–	Power supply pin for headphone amplifier
14*	HPR	Output	R-ch HP-Amp output pin (Not used) When PMHPR bit = "0", pin HPR is HVSS
15*	HPL	Output	L-ch HP-Amp output pin (Not used) When PMHPL bit = "0", pin HPL is HVSS
16	MUTET	Output	Mute time constant control pin When PMHPL bit = PMHPR bit = "0", pin MUTET is HVSS
17*	MOUT	Output	Monaural analogue output pin (Not used) When PMMO bit = "0", pin MOUT is Hi-Z
18	MIN	Input	Monaural analogue input pin
19	RIN	Input	R-ch analogue input pin
20	LIN	Input	L-ch analogue input pin
21	VREF	Output	Reference voltage output pin, 2.1 V (referenced to typ. AVSS) When PMVCM bit = "0", pin VREF is AVSS
22	VCOM	Output	Common voltage pin, 1.25 V (referenced to typ. AVSS) When PMVCM bit = "0", pin VCOM is AVSS
23	AVSS	–	Analogue earth pin
24	AVDD	–	Analogue power supply pin
25	AINR2	Input	ADC R-ch analogue input 2 (MIC input)
26	AINL2	Input	ADC L-ch analogue input 2 (MIC input)
27	AINR1	Input	ADC R-ch analogue input 1 (LINE input)
28	AINL1	Input	ADC L-ch analogue input 1 (LINE input)

Note: Keep the digital input pin connected.

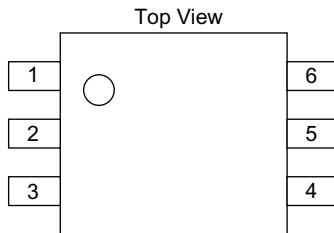
In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.





**IC1701 VHIMM1671XN-1R (MM1671XN): VIDEO AMP.**

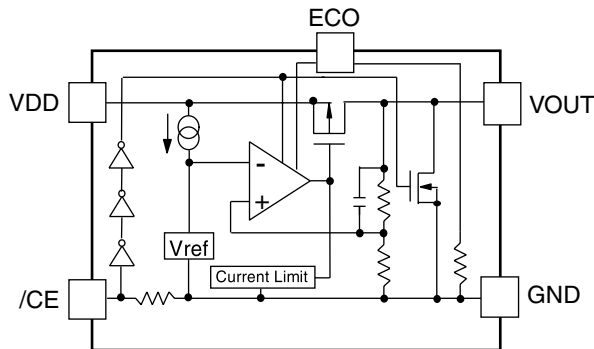
Pin No.	Terminal name	Description of terminal
1	PS	Power save
2	OUT	Signal output
3	SAG	Sag correction
4	IN	Signal input
5	GND	Earth
6	VCC (V+)	Power supply



**IC2001 VHIR116129D-1L (R1161D291D): SD POWER CONTROL**

Pin No.	Terminal name	Description of terminal
1	VDD (VIN)	Input pin
2*	NC	Not used
3	VOUT	Output pin
4	ECO	High speed, low power switch
5	GND	Earth
6	/CE or CE	Chip enable pin

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**IC2002 RH-IX3067AFZZL (BD6020): COMPOUND POWER SUPPLY 2**

Pin No.	Terminal name	Input/Output	Description of terminal
1	GNDT1	–	Test pin (GND internal connection)
2	VBAT1	–	Negative boost DC/DC power supply pin
3	GND1	–	Earth power supply pin
4	VIO	–	CPU I/F constant current driver power supply pin
5	CLK	Input	Three-wire serial clock input
6	RSTB	Input	Reset input
7	T2	–	Test pin (connected to T4)
8	VNEG	Input	Negative boost DC/DC output voltage detection pin
9*	NC	–	Not used
10	TRSW	Output	Switching Tr drive pin of negative boost DC/DC
11	DATA	Input	Three-wire serial data input
12	STRB	Input	Three-wire serial strobe input
13*	TEST1	Input	Test pin (Not used)
14	VOUT1	Output	REG1 output
15	SENSEN1	Input	Switching Tr current sense pin of negative boost DC/DC
16	SENSEN2	Input	Test pin
17	VBAT2B	–	REG1/REG2/VREF power supply pin
18	VBAT2A	–	REG1/REG2/VREF power supply pin (VIN)
19	SENSP2	Input	Test pin
20	SENSP1	Input	Switching Tr current sense pin of negative boost DC/DC
21*	TEST2	Input	Test pin (Not used)
22	VOUT2	Output	REG2 output
23	CNTOUT	Output	External regulator control output
24	VSEL2	Input	REG2 output voltage switching pin
25	VREF	Output	Voltage reference & smoothing capacitor connection pin
26	CURSENS	Input	Current detection pin for constant current drive
27	GNDP	–	Earth
28	GND3	–	Earth
29	VBAT3	–	Boost DC/DC power supply pin
30	REG2CNT	Input	REG2 control pin
31	VPLUS11	Input	REGCP power supply pin
32	GND2	–	Earth
33*	CUR	Output	Transistor drive pin for constant current drive control (Not used)

Pin No.	Terminal name	Input/Output	Description of terminal
34	T4	–	Test pin (connected to T2)
35	SW	Output	Boost DC/DC switching pin
36	VBATP	–	Boost DC/DC driver power supply pin
37	REG1CNT	Input	REG1 control pin
38	VPLUS12	Input	Boost DC/DC voltage detection pin
39	CAMP	Output	REGCP output
40	GNDT3	–	Test pin

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	TOP VIEW			17	18
19	20				21	22
23	24				25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40

#### IC2003 RH-IX3068AFZZL (BD6030): COMPOUND POWER SUPPLY 3

Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2	GND	–	Earth
3	PD	Input	Power control pin
4*	NC	–	Not used
5	VSEL	Input	Output voltage switching pin
6	VBAT	Input	VBAT power supply pin
7*	NC	–	Not used
8*	VREF (NC)	Output	Reference voltage output pin (Not used)
9	VOUT	Output	Negative voltage output
10*	NC	–	Not used
11	VNEG	–	Negative power supply pin
12	VSUB	–	Test pin

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

1	2	3	4
12	TOP VIEW		5
11			6
10	9	8	7

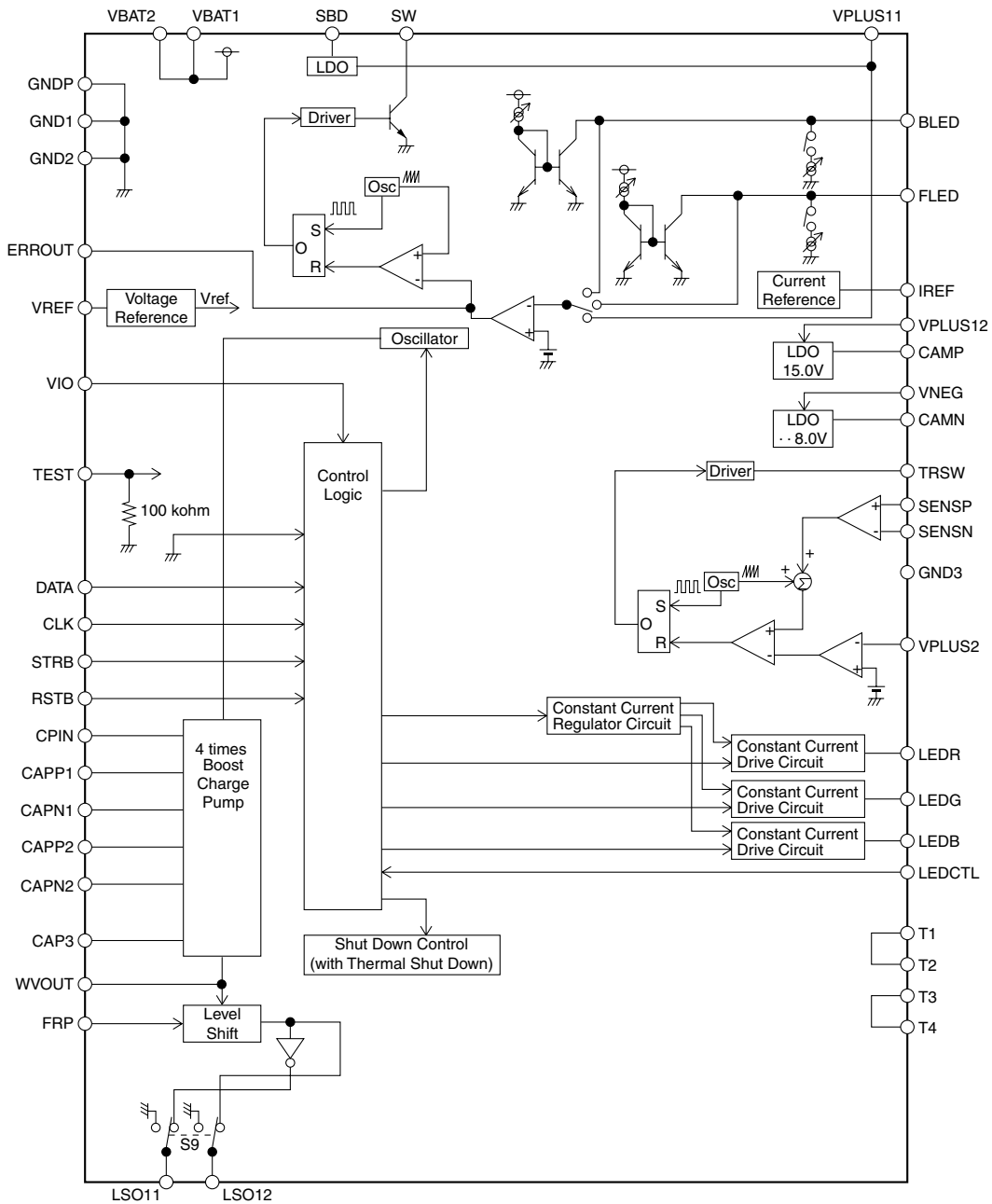
**IC2005 RH-IXA021AFZZL (BD6015GU): COMPOUND POWER SUPPLY 1**

Pin No.	Terminal name	Input/Output	Description of terminal
1	T1	–	Dummy pin
2	LEDG	Output	Green LED drive output pin
3	GND1	–	Earth
4	VBAT1	–	VBAT power supply pin
5*	LSO11	Output	Level shift output 1 (Not used)
6*	LSO12	Output	Level shift output 1 (Not used)
7	WVOUT	Output	2 or 4 times boost charge pump output
8	T2	–	Dummy pin
9	TEST	Input	Test pin
10	LEDR	Output	Red LED drive output pin
11	LEDB	Output	Blue LED drive output pin
12	TRSW	Output	DC-DC switching transistor drive pin for R/G/B LED
13	CAPP1	Output	2 or 4 times boost charge pump C1 connection pin
14*	CAPN1	Output	2 or 4 times boost charge pump C1 connection pin (Not used)
15	SENSP	Input	DC-DC switching transistor current sense pin for R/G/B LED
16	SENSN	Input	DC-DC switching transistor current sense pin for R/G/B LED
17	CAP3	Output	2 or 4 times boost charge pump output pin
18	CPIN	Input	2 or 4 times boost charge pump input pin
19	CAPP2	Output	2 or 4 times boost charge pump C2 connection pin
20	VIO	–	Logic system power supply pin
21	VPLUS2	Input	DC-DC boost voltage feedback input for R/G/B LED
22*	CAPN2	Output	2 or 4 times boost charge pump (Not used)
23	GND3	–	Earth
24	STRB	Input	Three-wire serial strobe input
25	CLK	Input	Three-wire serial clock input
26	VPLUS12	Input	DC-DC boost voltage feedback input for Main Display/Sub Display backlight
27*	CAMP	Output	15 V voltage output pin for camera (Not used)
28	DATA	Input	Three-wire serial data input
29	FRP	Input	Level shift circuit, rectangular wave input pin
30	IREF	Output	Resistance connection pin for current reference
31	VREF	Output	Current reference pin
32	LEDCTL	Input	R/G/B LED On/Off control pin
33*	ERROUT	Output	SWREG1 error detection amplifier output (Not used)
34	FLED	Output	Main Display backlight white LED drive pin
35	GND2	–	Earth
36*	SBD	Input	SBD input pin (Not used)
37	VNEG	Input	Negative power supply pin for camera
38*	CAMN	Output	–8 V voltage output pin for camera (Not used)
39	T4	–	Dummy pin
40	RSTB	Input	Reset input
41	BLED	Output	Sub Display backlight white LED drive pin
42	SW	Output	DC-DC coil switching pin for Main Display/Sub Display backlight
43	GNDP	Output	Earth
44	VBAT2	–	VBAT power supply pin
45	VPLUS11	Input	DC-DC boost voltage feedback input for Main Display/Sub Display backlight
46	T3	–	Dummy pin

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



A	T1 1	LEDG 2	GND1 3	VBAT1 4	LSO11 5	LSO12 6	WVOUT 7	T2 8
B	TEST 9	LEDR 10	LEDB 11	TRSW 12			CAPP1 13	CAPN1 14
C	SENSP 15	SENSN 16	X			CAP3 17	CPIN 18	CAPP2 19
D	VIO 20	VPLUS2 21				CAPN2 22	GND3 23	
E	STRB 24	CLK 25				VPLUS12 26	CAMP 27	
F	DATA 28	FRP 29				IREF 30	VREF 31	
G	LEDCTL 32	ERRROUT 33	FLED 34	GND2 35	SBD 36	VNEG 37	CAMN 38	
H	T4 39	RSTB 40	BLED 41	SW 42	GNDP 43	VBAT2 44	VPLUS11 45	T3 46
	1	2	3	4	5	6	7	8



**IC3000 (LR38866): DISPLAY CONTROLLER**

Pin No.	Terminal name	Input/Output	Description of terminal
1	DUMMY4	–	Dummy 4
2	VDDCORE	–	Power supply
3	BSPIXEL3/NDATA3	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
4	BSPIXEL5/NDATA5	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
5	VDDIOB	–	Power supply
6	BSHS_B/HSYNC_NT	TYBUF03S (O)	BS: external BitStream horizontal sync signal NTSC: horizontal sync signal
7	OSCIN	PDX0E1DG	Oscillating circuit input
8	VDDOSC	–	Power supply
9*	SUBCS_B/ SUBGPO3	TYBUF04P	Sub Display chip select (STN/TFT control)/general purpose output (Not used)
10*	SUBDB4	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
11	VDDIOD	–	Power supply
12*	SUBDB7	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
13*	SUBRS/SUBGPO2	TYBUF04P	Sub Display data recognition signal (STN/TFT control)/general purpose output (Not used)
14	VDDIOD	–	Power supply
15	SUBFLMIN	TYBUF02P	Sub Display FLM signal (STN control)
16	DUMMY3	–	Dummy 3
17	BSPIXEL2/NDATA2	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
18	VDDCORE	–	Power supply
19	BSPIXEL4/NDATA4	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
20	BSPIXEL6/NDATA6	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
21	BSBLK_B	TYBUF03S (A)	External BitStream data valid signal
22	BSVS_B/VSYNC_NT	TYBUF03S (O)	BS: external BitStream vertical sync signal NTSC: vertical sync signal
23*	OSCOUT	PDX0E1DG	Oscillating circuit output (Not used)
24*	GPO8	TYBUF04P	General purpose output (Not used)
25*	SUBDB0	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
26*	SUBDB3	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
27*	SUBDB5	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
28*	SUBCK/SUBGPO1	TYBUF04P	Sub Display clock (STN/TFT control)/general purpose output (Not used)
29*	SUBRD_B/ SUBGPO5	TYBUF04P	Sub Display read signal (STN/TFT control)/general purpose output (Not used)
30	VDDCORE	–	Power supply
31*	SUBCKS/SUBGPO0	TYBUF04P	Clock switching signal for Sub Display (STN/TFT control)/general purpose output (Not used)
32	VDDPLL	–	Power supply
33	VDDIOB	–	Power supply
34	BSPIXEL1/NDATA1	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
35	PLLDIV2	TYBUF04P	PLL multiplication ratio switching signal
36	PLLDIV0	TYBUF04P	PLL multiplication ratio switching signal
37	BSPIXEL0/NDATA0	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
38	NTCLK	TYBUF02S	External supply clock
39*	NC	–	Not used
40	BSPIXEL7/NDATA7	TYBUF03P (A)	BS: external BitStream data bus NTSC: NTSC encoder output
41	BSCLK/DCLK_NT	TYBUF03S (A)	BS: external BitStream data clock NTSC: data sampling clock
42*	GPO9	TYBUF04P	General purpose output (Not used)
43*	SUBWR_B/ SUBGPO4	TYBUF04P	Sub Display write signal (STN/TFT control)/general purpose output (Not used)
44*	SUBDB1	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
45*	SUBDB2	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)

Pin No.	Terminal name	Input/Output	Description of terminal
46*	SUBDB6	TYBUF04P	Sub Display data bus (STN/TFT control) (Not used)
47	SUBLPIN	TYBUF02P	Sub Display LP signal (STN control)
48*	NC	–	Not used
49	PLLDIV1	TYBUF04P	PLL multiplication ratio switching signal
50	XIN/SCANCK	TYBUF02S	External clock input signal
51	BDATA4	TYBUF04P	Main Display panel B output signal
52	BDATA5	TYBUF04P	Main Display panel B output signal
53*	GPO5	TYBUF04P	General purpose output (Not used)
54	GND	–	Earth
55	GND	–	Earth
56	GNDOSC	–	Earth
57*	NC	–	Not used
58*	NC	–	Not used
59	GND	–	Earth
60*	NC	–	Not used
61	GND	–	Earth
62	SCL	TYBUF04S	I2C serial clock pin
63	GPI4	TYBUF02S_PD	General purpose input
64	VDDCORE	–	Power supply
65	VDDIOB	–	Power supply
66	BDATA3	TYBUF04P	Main Display panel B output signal
67	BDATA2	TYBUF04P	Main Display panel B output signal
68	BDATA1	TYBUF04P	Main Display panel B output signal
69	GNDPLL	–	Earth
70	SDA	TYBUF04S	I2C serial data pin
71*	WAIT_B	TYBUF02P	External wait signal (Not used)
72	LCDINT	TYBUF02P	External interruption signal
73	BDATA0	TYBUF04P	Main Display panel B output signal
74*	GPO4	TYBUF04P	General purpose output (Not used)
75	GDATA0	TYBUF04P	Main Display panel G output signal
76	GND	–	Earth
77*	NC	–	Not used
78	DB15	TYBUF03P (A)	Parallel data bus
79	GPI5	TYBUF02S_PD	General purpose input
80	GPO7	TYBUF04P	General purpose output
81	GDATA1	TYBUF04P	Main Display panel G output signal
82	GDATA2	TYBUF04P	Main Display panel G output signal
83	GDATA3	TYBUF04P	Main Display panel G output signal
84*	NC	–	Not used
85	GND	–	Earth
86	DB12	TYBUF03P (A)	Parallel data bus
87	DB14	TYBUF03P (A)	Parallel data bus
88	VDDIOA	–	Power supply
89	VDDIOB	–	Power supply
90	GDATA4	TYBUF04P	Main Display panel G output signal
91	GDATA5	TYBUF04P	Main Display panel G output signal
92	GND	–	Earth
93	TESTI	TYBUF02P_PD	Test signal
94	DB11	TYBUF03P (A)	Parallel data bus
95	DB10	TYBUF03P (A)	Parallel data bus
96	DB13	TYBUF03P (A)	Parallel data bus
97	RDATA0	TYBUF04P	Main Display panel R output signal
98	RDATA1	TYBUF04P	Main Display panel R output signal
99	GPO1	TYBUF04P	General purpose output
100*	NC	–	Not used
101	GND	–	Earth
102*	GPCLK	TYBUF04P	General purpose clock output (Not used)
103	DB9	TYBUF03P (A)	Parallel data bus
104*	GPO6	TYBUF04P	General purpose output (Not used)

Pin No.	Terminal name	Input/Output	Description of terminal
105	RDATA2	TYBUF04P	Main Display panel R output signal
106	RDATA3	TYBUF04P	Main Display panel R output signal
107	RDATA4	TYBUF04P	Main Display panel R output signal
108	GND	–	Earth
109	SCANEN	TYBUF02P_PD	Full scan valid signal
110	DB7	TYBUF03P (A)	Parallel data bus
111	DB8	TYBUF03P (A)	Parallel data bus
112	VDDIOA	–	Power supply
113	VDDIOB	–	Power supply
114	RDATA5	TYBUF04P	Main Display panel R output signal
115	VSYNC	TYBUF02P	Main Display vertical sync signal
116	GND	–	Earth
117*	GPO10	TYBUF04P	General purpose output (Not used)
118	GND	–	Earth
119*	NC	–	Not used
120	GNDVD	–	Earth
121*	NC	–	Not used
122	GND	–	Earth
123*	NC	–	Not used
124	DB5	TYBUF03P (A)	Parallel data bus
125	DB4	TYBUF03P (A)	Parallel data bus
126	DB6	TYBUF03P (A)	Parallel data bus
127	DCLK	TYBUF02P	Main Display data sampling clock
128	HSYNC	TYBUF02P	Main Display horizontal sync signal
129*	NC	–	Not used
130*	SE_LD4/PORT5	TYBUF04P	Four-wire serial IF load signal 4/general purpose output (Not used)
131*	GPO11	TYBUF04P	General purpose output (Not used)
132	GPI3	TYBUF02S_PU	General purpose input
133	GPI1	TYBUF02S_PU	General purpose input
134	RXDTP	RECIVER_V3.4	Differential data input (Positive)
135	RXD TN	RECIVER_V3.4	Differential data input (Negative)
136	VDWAIT_B	TYBUF02P	External wait signal
137	RSP	TYBUF03S (A)	Register select signal
138*	MAGBUSY	TYBUF04P	Magnification circuit LINE direction BUSY output (Not used)
139	DB3	TYBUF03P (A)	Parallel data bus
140	DB2	TYBUF03P (A)	Parallel data bus
141*	GPO3	TYBUF04P	General purpose output (Not used)
142*	GPO2	TYBUF04P	General purpose output (Not used)
143	DB1	TYBUF03P (A)	Parallel data bus
144	VDDIOA	–	Power supply
145	VDDCORE	–	Power supply
146	VDDCORE	–	Power supply
147	SE_DO/PORT0	TYBUF04P	Four-wire serial IF data output/general purpose output
148	SE_LD1/PORT2	TYBUF04P	Four-wire serial IF load signal 1/general purpose output
149*	SE_LD3/PORT4	TYBUF04P	Four-wire serial IF load signal 3/general purpose output (Not used)
150*	PWMLCD/PORT9	TYBUF04P	PWMLCD output/general purpose output (Not used)
151*	PWM0/PORT7	TYBUF04P	PWM output 0/general purpose output (Not used)
152	GPI0	TYBUF02S_PU	General purpose input
153	RXCKP	RECIVER_V3.4	Differential clock input (Positive)
154	RXCKN	RECIVER_V3.4	Differential clock input (Negative)
155	GPO0	TYBUF04P	General purpose output
156	VD0N	TYBUF02P	VD-Link ON/OFF setting
157	CS_B	TYBUS03S (O)	Device select signal
158	WR_B	TYBUF03S (O)	Host write strobe signal
159	VDDCORE	–	Power supply
160	DB0	TYBUF03P (A)	Parallel data bus
161	DUMMY2	–	Dummy 2
162	SE_DI/PORT6	TYBUF04P	Four-wire serial input/general purpose output
163	VDDIOC	–	Power supply

Pin No.	Terminal name	Input/Output	Description of terminal
164	SE_CK/PORT1	TYBUF04P	Four-wire serial IF clock output/general purpose output
165*	SE_LD2/PORT3	TYBUF04P	Four-wire serial IF load signal 2/general purpose output (Not used)
166	VDDIOC	-	Power supply
167*	PWM1/PORT8	TYBUF04P	PWM output 1/general purpose output (Not used)
168	GPI2	TYBUF02S_PU	General purpose input
169	GSR	RECIVER_V3.4	External resistance pin for gain adjustment
170	VDDVD	-	Power supply
171	RESET_B	TYBUF02S	Master reset
172	VDDIOA	-	Power supply
173	BUFOFF_B	TYBUF02P	GATED buffer switching signal for through current protection
174	RD_B	TYBUF03S (O)	Host read strobe signal
175	VDDCORE	-	Power supply
176	DUMMY1	-	Dummy 1

- PDX0E1DG : OSC (Oscillator buffer with oscillation stop function)
- TYBUF04P : IOC2M (I/O buffer. Input: CMOS buffer, Output: Iol = 2 mA)
- TYBUF04S : IOCS2M (I/O buffer. Input: CMOS Schmidt buffer, Output: Iol = 2 mA)
- TYBUF02P : IOC (I/O buffer. Input: CMOS buffer, Output: Iol = 4 mA)
- TYBUF02P\_PD : IOCD (I/O buffer. Input: CMOS buffer with 65 k ohm pull-down resistance, Output: Iol = 4 mA)
- TYBUF02S : IOCS (I/O buffer. Input: CMOS Schmidt buffer, Output: Iol = 4 mA)
- TYBUF02S\_PU : IOCSU (I/O buffer. Input: CMOS Schmidt buffer with 75 k ohm pull-up resistance, Output: Iol = 4 mA)
- TYBUF02S\_PD : IOCS D (I/O buffer. Input: CMOS Schmidt buffer with 65 k ohm pull-down resistance, Output: Iol = 4 mA)
- TYBUF03P (A) : IOCAN6M (I/O buffer. Input: 2 inputs AND type CMOS buffer with through current protection, Output: Iol = 6 mA)
- TYBUF03S (A) : IOCSAN6M (I/O buffer. Input: 2 inputs AND type CMOS Schmidt buffer with through current protection, Output: Iol = 6 mA)
- TYBUF03S (O) : IOCSOR6M (I/O buffer. Input: 2 inputs OR type CMOS Schmidt buffer with through current protection, Output: Iol = 6 mA)
- RECIVER\_V3.4 : VD-Link receiver

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

DUMMY 1	VDD CORE	RD_8	BUFOF F_B	VDD IOA	RESET _B	VDD VD	GSR	GPI2	PWM1/ PORT8	VDD IOC	SE_LD2 /PORT3	SE_CK/ PORT1	VDD IOC	SE_D/ PORT6	DUMMY 2	P		
DB00	VDD CORE	WR_B	CS_B	VDON	GPO0	RXCKN	RXCKP	GPI0	PWM0/ PORT7	PWMLCD /PORT9	SE_LD3 /PORT4	SE_LD1 /PORT2	SE_DO /PORT0	VDD CORE	VDD CORE	O		
VDD IOA	DB01											GPO2	GPO3	N				
DB02	DB03	MAG BUSY	RSP	VDWAIT _B	RXDTN	RXDTP	GPI1	GPI3	GPO11	SE_LD4 /PORT5	NC			HSYNC	DCLK	M		
DB06	DB04	DB05	NC	GND	NC	GNDVD	NC	GND	GPO10	GND	VSYNC			SUBDB 7	MP4_PL LCK	L		
VDD IOA	DB08	DB07	SCANEN								GND	RDATA 4	RDATA 3	RDATA 2	K			
GPO6	DB09	GPCLK	GND								NC	GPO1	RDATA 1	RDATA 0	J			
DB13	DB10	DB11	TESTI								GND	GDATA 5	GDATA 4	VDD IOB	I			
VDD IOA	DB14	DB12	GND								NC	GDATA 3	GDATA 2	GDATA 1	H			
GPO7	GPI5	DB15	NC								GND	GDATA 0	GPO4	BDATA 0	G			
LCD INT	WAIT _B	SDA	GND PLL								RDATA 1	RDATA 2	RDATA 3	VDD IOB	F			
VDD CORE	GPI4	SCL	GND	NC	GND	NC	NC	GND OSC	GND	GND	GPO5			BDATA 5	BDATA 4	E		
XIN/ SCANCK	PLL DIV1	NC	SUB LPIN	SUB DB6	SUB DB2	SUB DB1	SUB WR_B	GPO9	BSCLK	BSPIXE L7	NC			NTCLK	BSPIXE L0	D		
PLL DIV0	PLL DIV2															BSPIXE L1	VDD IOB	C
VDD PLL	SUB CKS	VDD CORE	SUB RD_B	SUB CK	SUB DB5	SUB DB3	SUB DB0	GPO8	OSC OUT	BSVS _B	BSBLK _B	BSPIXE L6	BSPIXE L4	VDD CORE	BSPIXE L2	B		
DUMMY 3	SUBFL MIN	VDD IOD	SUB RS	SUB DB7	VDD IOD	SUB DB4	SUB CS_B	VDD OSC	OSC IN	BSHS _B	VDD IOB	BSPIXE L5	BSPIXE L3	VDD CORE	DUMMY 4	A		

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1  
TOP VIEW

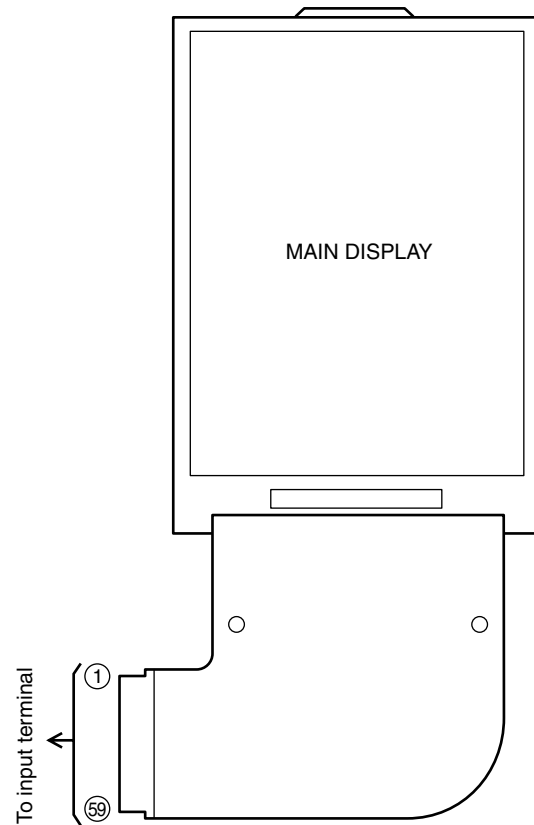
**[2] Function table of Display**

Main Display (LCD3000: RLCUBA017AF02)

Pin No.	Terminal name	Input/Output	Description of terminal
1	T-COM	Input	COM electric potential input for CS
2	T-COM	Input	COM electric potential input for CS
3	TFT-COM	Input	COM voltage input terminal
4	COMC	Output	COM signal output
5	COMC	Output	COM signal output
6	COMDC	Output	COM centre voltage output
7	VCOMH	Output	COM amplitude voltage output
8	B0	Input	Blue data signal (LSB)
9	B1	Input	Blue data signal
10	B2	Input	Blue data signal
11	B3	Input	Blue data signal
12	B4	Input	Blue data signal
13	B5	Input	Blue data signal (MSB)
14	G0	Input	Green data signal (LSB)
15	G1	Input	Green data signal
16	G2	Input	Green data signal
17	G3	Input	Green data signal
18	G4	Input	Green data signal
19	G5	Input	Green data signal (MSB)
20	R0	Input	Red data signal (LSB)
21	R1	Input	Red data signal
22	R2	Input	Red data signal
23	R3	Input	Red data signal
24	R4	Input	Red data signal
25	R5	Input	Red data signal (MSB)
26	DCLK	Input	Data sampling clock
27	HSY	Input	Horizontal sync signal
28	VS	Input	Vertical sync signal
29*	SO	Output	Serial data output (Not used)
30	SI	Input	Serial data input
31	SCLK	Input	Serial clock input
32	CS	Input	Serial interface chip select
33	RESET	Input	Hard reset
34	VCC	–	Logic power supply
35	GND	–	Earth
36	GND	–	Earth
37	VDC	–	Analogue power supply
38	VDC	–	Analogue power supply
39*	COM2	–	Not used
40*	VCLAMP	Output	Not used
41	VSS2	Output	DC/DC converter output
42	VSS1	Output	DC/DC converter output
43*	NC	–	Not used
44	VDD2	Output	DC/DC converter output
45	C5-	–	Booster capacitor connection terminal
46	C5+	–	Booster capacitor connection terminal
47	C4-	–	Booster capacitor connection terminal
48	C4+	–	Booster capacitor connection terminal
49*	C3-	–	Booster capacitor connection terminal (Not used)

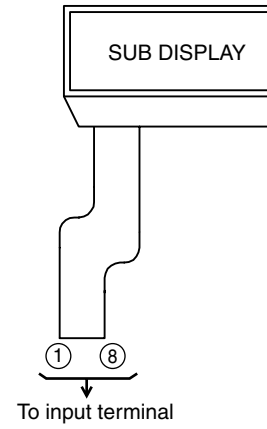
Pin No.	Terminal name	Input/Output	Description of terminal
50	C3+	–	Booster capacitor connection terminal
51	C2-	–	Booster capacitor connection terminal
52	C2+	–	Booster capacitor connection terminal
53	C1-	–	Booster capacitor connection terminal
54	C1+	–	Booster capacitor connection terminal
55	VDC2	Output	DC/DC converter output
56	VDC2	Output	DC/DC converter output
57	VR	Output	Reference power supply output
58	VS	Output	Source power supply output
59	VS	Output	Source power supply output

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.



**Sub Display (LCD2000: RLCUBA016AFZZ)**

Pin No.	Terminal name	Input/Output	Description of terminal
1	SDIN	Input	Serial data input
2	SCLK	Input	Serial clock input
3	DC_B	Input	Data/command selection input
4	SCEB	Input	Chip enable
5	RESET_B	Input	Reset input
6	VDD	–	MPU power supply terminal
7	VLCD	–	LCD drive circuit power supply
8	VSS	–	Earth



# SHARP PARTS GUIDE

No. S0422JNJ300/W

**3G(UMTS)/GSM/GPRS PHONE****MODEL 902SH**

## CONTENTS

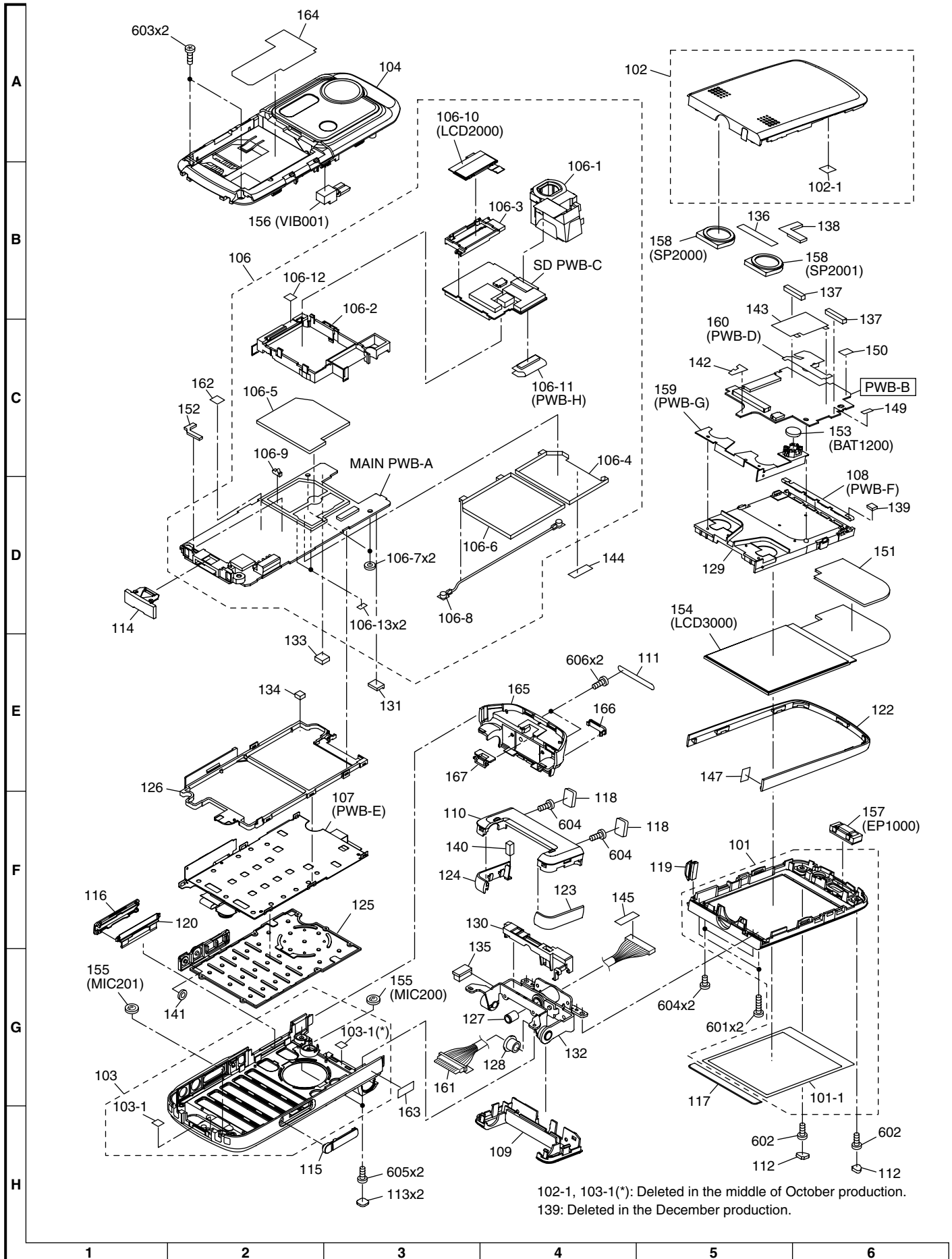
- |                           |                               |
|---------------------------|-------------------------------|
| [1] DIODES                | [4] ACCESSORIES/PACKING PARTS |
| [2] OTHER CIRCUITRY PARTS | [5] P.W.B. ASSEMBLY           |
| [3] CABINET PARTS         | [6] OTHER SERVICE PARTS       |

Parts marked with "△" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[1] DIODES</b>					
LED1200	VHPBRPY121F-1L	AD			LED,Green/Red,BRPY121F
LED2005	VHPGM56281A-1L	AP			LED,Red/Green/Blue,GM56281A
LED2006	VHPNECW008A-1L	AH			LED,White,NECW008A
<b>[2] OTHER CIRCUITRY PARTS</b>					
ANT901	QCNTAA019AFZZN	AF			Terminal,Aerial
BAT1200	RDNTL0017AFZZ	AG			Battery,Back-up
CN061	QCNCW947FAFZZL	AF			Terminal,Bluetooth Aerial
CN901	QCNCW878AAFZL	AE			Connector,Coaxial
CN902	QCNCMA47AAFZZL	AG			Connector,Coaxial
CN1000	QCNCWA023AF27L	AH			Socket,27Pin
CN1200	QCNTAA016AFZZL	AL			Terminal,Battery
CN1201	QSOCZA006AFZZL	AG			Connector,USIM Card
CN1300	-----	-			This Parts is Supplied with Cabinet Parts 106
CN1500	QCNCWA010AF50N	AH			Socket,50Pin
CN1501	QCNCWA020AF40R	AM			Socket,40Pin
CN2000	QCNCWA010AF50N	AH			Socket,50Pin
CN2001	QCNCW953JAFZZL	AK			Connector,Memory Card
CN2002	QCNCWTP40AFZZN	AF			Socket,40Pin
CN2003	QCNCWA022AF08R	AF			Socket,8Pin
CN3000	QCNCWA023AF59L	AM			Socket,59Pin
CN3001	QCNCWA034AF40L	BA			Socket,40Pin
CN3003	QCNCWA056AF08R	AU			Socket,8Pin
EP1000	RPHODA007AFZZ	AK			Earpiece
FS1200	QFS-LA010WJZZY	AC			Fuse,2A
FS2000	QFS-L132HAFZZN	AC			Fuse,1.25A
FS2001	QFS-L631HAFZZN	AC			Fuse,0.63A
FS2002	QFS-L132HAFZZN	AC			Fuse,1.25A
JK1600	QCNCWA017AFZZL	AF			Connector,VIDEO OUT/Handsfree Microphone
LCD2000	RLCUBA016AFZZ	AW			Sub Display
LCD3000	RLCUBA017AF02	BT			Main Display
MiC200	RMiCCA007AFZZ	AK			Microphone
MiC201	RMiCCA007AFZZ	AK			Microphone
SP2000	RSP-ZA009AFZZ	AL			Speaker
SP2001	RSP-ZA009AFZZ	AL			Speaker
ViB001	RMOTVA004AFZZ	AK			Vibrator

[3] CABINET PARTS

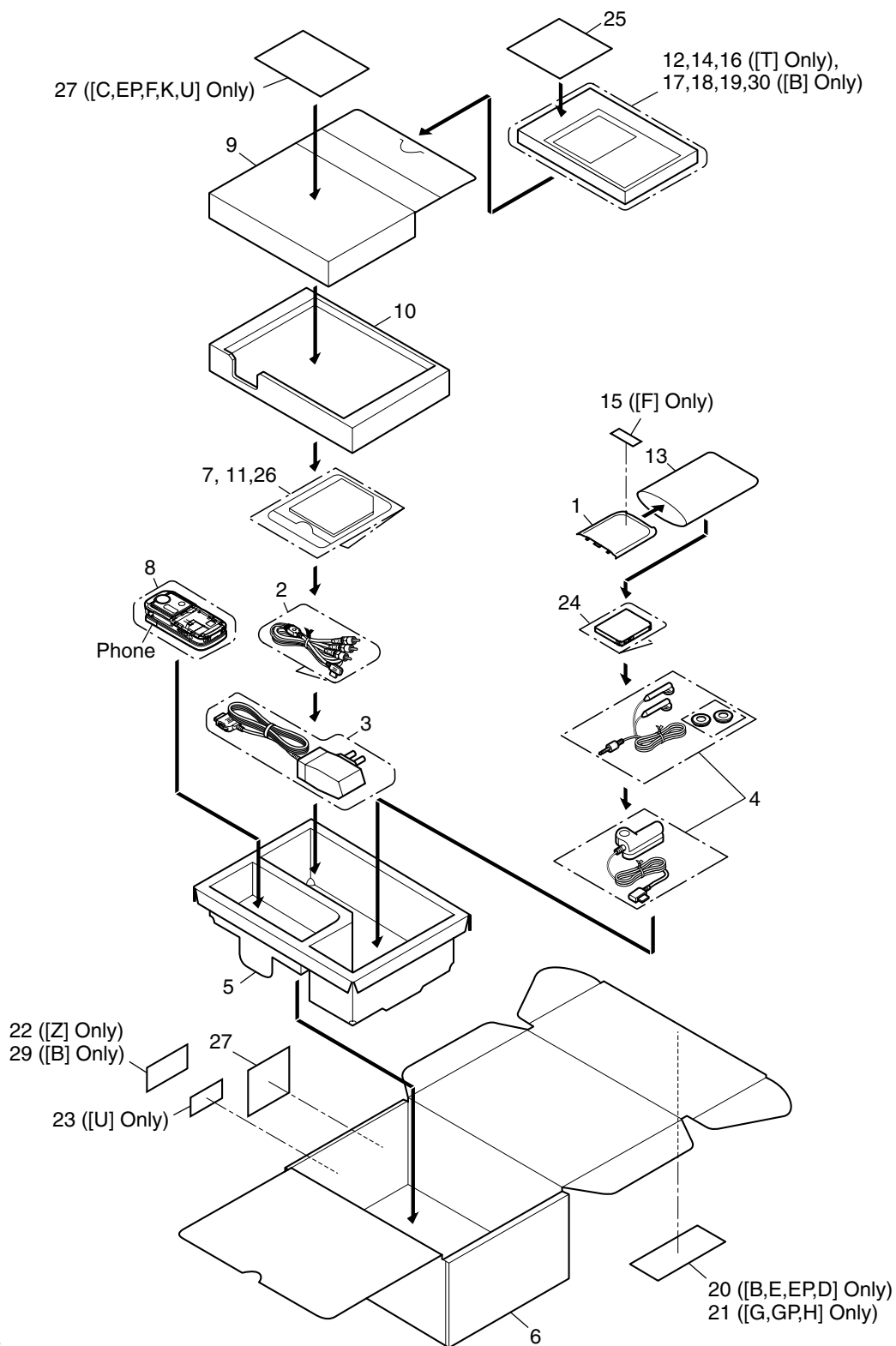


102-1, 103-1(\*): Deleted in the middle of October production.  
139: Deleted in the December production.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[3] CABINET PARTS</b>					
101	DCABAW169AFSE	BB			Front Cabinet (Display) Assembly
101-1	GMADIA049AFSA	AK			Panel,Main Display
102	DCABBW169AFSC	AY			Back Cabinet (Display) Assembly [C]
102	DCABBW169AFSE	AY			Back Cabinet (Display) Assembly(Except for C,F,K,U)
102	DCABBW169AFSF	AY			Back Cabinet (Display) Assembly [F]
102	DCABBW169AFSK	AY			Back Cabinet (Display) Assembly [K]
102	DCABBW169AFSU	AY			Back Cabinet (Display) Assembly [U]
102-1	TLABZ2595AFZZ	AA			Sensor Moisture (Large)
103	DCABCW169AFSC	AY			Front Cabinet (Key) Assembly [C]
103	DCABCW169AFSE	AY			Front Cabinet (Key) Assembly (Except for C,F,K,U)
103	DCABCW169AFSF	AY			Front Cabinet (Key) Assembly [F]
103	DCABCW169AFSK	AY			Front Cabinet (Key) Assembly [K]
103	DCABCW169AFSU	AY			Front Cabinet (Key) Assembly [U]
103-1	TLABZ2783AFZZ	AA			Sensor,Moisture (Small)
104	DCABDW169AFSE	BD			Back Cabinet (Key) Assembly
106	DKENDW169AFSB				Board Unit [B]
106	DKENDW169AFSC				Board Unit [C]
106	DKENDW169AFSD				Board Unit [D]
106	DKENDW169AFSE				Board Unit [E]
106	DKENDW169AFSF				Board Unit [F]
106	DKENDW169AFSG				Board Unit [G]
106	DKENDW169AFSH				Board Unit [H]
106	DKENDW169AFSK	CZ			Board Unit [K]
106	DKENDW169AFSP				Board Unit [P]
106	DKENDW169AFSR	CZ			Board Unit [R]
106	DKENDW169AFSS				Board Unit [S]
106	DKENDW169AFST				Board Unit [T]
106	DKENDW169AFSU				Board Unit [U]
106	DKENDW169AFSW				Board Unit [W]
106	DKENDW169AFSZ	CZ			Board Unit [Z]
106	DKENDW169AFS7				Board Unit [EP]
106	DKENDW169AFS8				Board Unit [GP]
106	DKENDW169AFS9				Board Unit [PP]
106-1	DUNTKW169AFS1	BZ			Camera Assembly
106-2	LHL DFA006AF01	AG			Holder,SD PWB
106-3	LHL DZA091AF01	AH			Holder Unit,Sub Display
106-4	PSLDMA059AFZZ	AF			Cover,BBK Shield Case
106-5	PSLDMA061AFZZ	AK			Cover,BBS Shield Case
106-6	PSLDMA068AFZZ	AH			Cover,RF Shield Case
106-7	QCNTAA017AFZZN	AD			Spacer,Hinge
106-8	QCWNWA009AFZZ	AN			Coaxial,Cable
106-9	QTANZA001AFZZL	AB			Contact,Spring
106-10	RLCUBA016AFZZ	AW			Sub Display (LCD2000)
106-11	RUITKA006AFZZ	AS			SD P.W.B. Connect FPC (PWB-H)
106-12	TLABZ2783AFZZ	AA			Sensor,Moisture (Small)
106-13	PSPAZA035AFZZ	AA			Spacer,CSP
107	CUITKA007AFZZ	BB			Key FPC Unit (PWB-E)
108	CUITKA009AFZZ	AT			LED FPC Unit (PWB-F)
109	GCABEA045AFSB	AL			Front Cabinet,Hinge
110	GCABFA045AFSB	AL			Back Cabinet,Hinge
111	GCOVAA058AFSD	AD			Screw Cover,Side
112	GCOVAA086AFSB	AC			Screw Cover,Display (Top)
113	GCOVAA089AFSB	AC			Screw Cover,Key (Top)
114	GCOVAA092AFSB	AD			Cover,External Connector
115	GCOVAA093AFSB	AD			Connector Cover,VIDEO OUT/Handsfree Microphone
116	GCOVAA094AFSB	AH			Slot Cover,Memory Card
117	GCOVAA134AFSA	AE			Screw Cover,Display (Bottom)
118	GCOVAA114AFSG	AC			Screw Cover,Hinge Cabinet
119	GCOVHA021AFSB	AD			Protect Cover,Cabinet
120	GCOVZA003AFSB	AD			Hinge,Memory Card Slot Cover
122	HDECQA023AFSB	AN			Belt,Top
123	HDECQA024AFSB	AH			Hinge Belt (Left)
124	HDECQA025AFSB	AH			Hinge Belt (Right)
125	JKNBZA046AFSA	AV			Button,10Key
126	LHL DFA005AFZZ	AD			Holder,Main PWB
127	LHL DWA006AFZZ	AC			Wire Holder,A
128	LHL DWA007AFZZ	AC			Wire Holder,B
129	LHL DZA090AF01	AR			Holder Unit,Main Display
130	LHL DZA124AFZZ	AC			Fix Holder,Hinge
131	LHL DZA137AF01	AE			Holder,Hinge
132	MHNG-A006AFZZ	AY			Hinge Unit
133	PCUSSA185AFZZ	AB			Cushion,Hinge
134	PCUSSA199AFZZ	AA			Cushion,Coaxial Cable
135	PCUSSA218AFZZ	AC			Cushion,Grease
136	PCUSSA230AFZZ	AB			Cushion,Connector
137	PCUSSA231AFZZ	AB			Cushion,Display PWB
138	PCUSSA232AFZZ	AC			Spacer Cushion,Back Cabinet (Display)
139	PCUSSA235AFZZ	AB			Cushion,LED FPC Unit
140	PMAGZA004AFZZ	AE			Magnet
141	PSHEGA003AFZZ	AC			Sheet,Side Keys
142	PSHEMA002AFZZ	AC			Leaf,Copper (With Glue)
143	PSHEMA004AFZZ	AE			Leaf,Copper (With Kapton)
144	PSHEZ1416AFZZ	AB			FPC Retainer Kapton
145	PSHEZA381AFZZ	AB			Kapton,Handling

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[3] CABINET PARTS</b>					
147	PSHEZA388AFZZ	AC			Sheet,Top Belt
149	PSHEZA395AFZZ	AB			Sheet,Display PWB
150	PSHEZA396AFZZ	AB			Kapton,Display PWB
151	PSLDMA111AFZZ	AG			Sheet,Shield
152	PSPAZA037AFZZ	AC			Spacer,PWB
153	RDNTL0017AFZZ	AG			Battery,Back-up (BAT1200)
154	RLCUBA017AF02	BT			Main Display (LCD3000)
155	RMiCCA007AFZZ	AK			Microphone (MIC200,201)
156	RMOTVA004AFZZ	AK			Vibrator (VIB001)
157	RPHODA007AFZZ	AK			Earpiece (EP1000)
158	RSP-ZA009AFZZ	AL			Speaker (SP2000,2001)
159	RUiTKA005AFZZ	AP			Speaker FPC (PWB-G)
160	RUiTKA014AFZZ	BB			Sub Camera Unit (PWB-D)
161	RUiTZA023AFZZ	BC			Thin Coaxial Cable
162	TLABZ2595AFZZ	AA			Sensor,Moisture (Large)
163	TLABZA075AF0T	AC			Label,Qualcomm
164	TSPC-A180AFZZ	DH			Label,Specifications
165	GCOVAA088AFSB	AK			Aerial Cover
166	GCOVAA090AFSA	AC			Cover,Infrared Port
167	GCOVZA004AFSB	AD			Cover,Strap
601	LX-EZ0184AFZZ	AB			Screw,M1.7x6mm
602	LX-EZ0193AFZZ	AB			Screw,M1.7x4.5mm,Black
603	LX-EZ0196AFZZ	AB			Screw,M1.7x5.5mm,Black
604	LX-EZA004AFZZ	AB			Screw,M1.4x2.8mm
605	LX-EZA010AFFN	AB			Screw,M1.7x7.5mm
606	LX-EZA011AFF7	AB			Screw,M1.4x1.6mm

**[4] ACCESSORIES/PACKING PARTS**



AC Charger

RADPTA010AF01	RADPTA009AF01	RADPTA011AF01

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[4] ACCESSORIES/PACKING PARTS</b>					
1	GFTABA018AFSB	AH			Battery Cover (Except for [C,F,U])
1	GFTABA028AFSA	AH			Battery Cover [C,F,U]
2	QPLGJA005AFZZ	AT			Video Cable (Except for [C,F,U])
2	QPLGJA006AFZZ	AT			Video Cable [C,F,U]
△	3	RADPTA009AF01	**		AC Charger B,C,D,F,G,GP,H,K,P,PP,S,T,U,W(XN-1QC91)
△	3	RADPTA010AF01	**		AC Charger [E,EP,R] (XN-1QC90)
△	3	RADPTA011AF01	**		AC Charger [Z] (XN-1QC92)
4	RPHOHA004AF01	AY			Handsfree Microphone Unit/Stereo Headset
5	SPAKAA026AFZZ	AH			Packing Add. [F,K]
5	SPAKAA046AFZZ	AL			Packing Add. [C,U]
5	SPAKAA051AFZZ	AK			Packing Add. [B,D,E,EP,G,GP,H,P,PP,R,S,T,W,Z]
6	SPAKCA172AFZZ	AS			Packing Case [B,D,E,P,PP,R,S,W,Z]
6	SPAKCA196AFZZ	AS			Packing Case [G,GP,H,T]
6	SPAKCA198AFZZ	AN			Packing Case [C,EP,F,K,U]
7	SPAKP1236AFZZ	AA			Polyethylene Bag,SD Memory Card
8	SPAKPA014AFZZ	AC			Polyethylene Bag,Phone
9	SPAKPA018AFZZ	AN			Accessories Box [B,D,E,EP,K,P,PP,R,S,W,Z]
9	SPAKPA019AFZZ	AN			Accessories Box [G,GP,H,T]
9	SPAKPA020AFZZ	AN			Accessories Box [F]
9	SPAKPA025AFZZ	AR			Accessories Box [C,U]
10	SPAKXA103AFZZ	AG			Pad,Division (Except for [C,U])
10	SPAKXA147AFZZ	AL			Pad,Division [C,U]
11	SSAKA0232AFZZ	AC			Case,SD Memory Card
12	SSAKAA004AFZZ	AA			Polyethylene Bag,User Guide (Except for [C,U])
12	SSAKA0022AFZZ	AA			Polyethylene Bag,User Guide [C,U]
13	SSAKH0329AFZZ	AA			Polyethylene Bag,Battery Cover
14	TCADHA039AFZZ	AG			Quick Start Guide [E,EP,R,Z]
14	TCADHA050AFZZ	AK			Quick Start Guide [G,GP]
14	TCADHA052AFZZ	AM			Quick Start Guide [T]
14	TCADHA054AFZZ	AN			Quick Start Guide [S]
14	TCADHA057AFZZ	AN			Quick Start Guide [D]
14	TCADHA059AFZZ	AN			Quick Start Guide [P,PP]
14	TCADHA061AFZZ	AM			Quick Start Guide [W]
14	TCADHA071AFZZ	AS			Quick Start Guide [H]
14	TCADHA103AFZZ				Quick Start Guide [B]
15	TCAUHA013AFZZ	AC			Caution Label,Handsfree Microphone Unit ( [F]Only)
16	TCADZ0263AFZZ	AC			Card,Free Service ( [T] Only)
17	TCAUZA013AFZZ	AB			Caution Sheet,Video Cable
18	TGANEA016AFZZ	AB			Guarantee [E,EP]
18	TGANEA019AFZZ	AE			Guarantee [R]
18	TGANEA021AFZZ	AE			Guarantee [Z]
18	TGANGA005AFZZ	AE			Guarantee [K]
18	TGANiA004AFZZ	AC			Guarantee [T]
18	TGANSA001AFZZ	AD			Guarantee [S]
18	TGANZA033AFZZ	AE			Guarantee [D]
18	TGANZA035AFZZ	AD			Guarantee [P,PP]
18	TGANZA037AFZZ	AC			Guarantee [W]
18	TGANZA039AFZZ	AE			Guarantee [H]
18	TGANZA041AFZZ	AD			Guarantee [C]
18	TGANZA042AFZZ	AF			Guarantee [U]
19	TiNSEA037AFZZ	AM			User Guide [E,EP,R]
19	TiNSEA045AFZZ	AY			User Guide [Z]
19	TiNSEA049AFZZ	AP			User Guide [C (English)]
19	TiNSEA050AFZZ	AY			User Guide [U (English)]
19	TiNSFA017AFZZ	AM			User Guide [F]
19	TiNSFA019AFZZ	AY			User Guide [U (French)]
19	TiNSFA027AFZZ	AP			User Guide [C (French)]
19	TiNSGA013AFZZ	AP			User Guide [G,GP]
19	TiNSGA016AFZZ	AY			User Guide [K]
19	TiNSGA024AFZZ	AP			User Guide [C (German)]
19	TiNSHA014AFZZ	AY			User Guide [H]
19	TiNSHA028AFZZ	AY			User Guide [U (Dutch)]
19	TiNSiA011AFZZ	AS			User Guide [T]
19	TiNSiA015AFZZ	AP			User Guide [C (Italian)]
19	TiNSPA023AFZZ	AT			User Guide [P,PP]
19	TiNSSA012AFZZ	AT			User Guide [S]
19	TiNSWA026AFZZ	AS			User Guide [W]
19	TiNSZA018AFZZ	AT			User Guide [D]
19	TiNSZA040AFZZ				User Guide [B]
20	TLABZ2793AFZZ	AA			Sheet,Security ( [B,E,EP,D] Only)
21	TLABZA044AFZZ	AC			Sheet,Transparent ( [G,GP,H]Only)
22	TLABZA053AFZZ	AB			Label,ATIC ( [Z] Only)
23	TLABZA061AFZZ	AC			Label,Battery ( [U] Only)
△	24	UBATiA013AF01	**		Lithium Ion Battery (XN-1BT90)
25	UDSKAA017AF01	AL			CD-ROM [B,D,E,EP,P,PP,R,S,W,Z]
25	UDSKAA023AF01	AL			CD-ROM [G,GP,H,T]
25	UDSKAA024AF01	AL			CD-ROM [C,F,K,U]
26	UiMC-A005AFZZ	BF			SD Memory Card (Except for [C,F,U])
26	UiMC-A006AFZZ	BF			SD Memory Card [C,F,U]
27	-----	-			Label,Bar Code
29	TLABZA079AFZZ				Label,Hungary ( [B] Only)
30	TCADZA066AFZZ				DOC Copy ( [B] Only)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[5] P.W.B. ASSEMBLY</b>					
△ PWB-B/ D	DHA i ZW169AFSE	CA			Display/Sub Camera Unit
PWB-E	CU i TKA007AFZZ	BB			Key FPC Unit
PWB-F	CU i TKA009AFZZ	AT			LED FPC Unit
PWB-G	RU i TKA005AFZZ	AP			Speaker FPC
PWB-H	RU i TKA006AFZZ	AS			SD P.W.B. Connect FPC
<b>[6] OTHER SERVICE PARTS</b>					
	PCOVPA003AFZZ	AD			Cap,Connector

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