SHARP SERVICE MANUAL

No. S8523TQH17W//

DIGITAL MOBILE PHONE

MODEL GX17

INTERNAL MODEL NAME	SELECTION CODE	DESTINATION	INTERNAL MODEL NAME	SELECTION CODE	DESTINATION
TQH17CAW	A	Australia	TQH17CLW	L	Malta
TQH17CBW	B	Hungary	TQH17PPW	PP	Portugal (Prepaid)
TQH17CCW	C	Switzerland	TQH17CQW	Q	Egypt
TQH17CDW	D	Greece	TQH17CRW	R	Ireland
TQH17CEW	E	U.K.	TQH17CSW	S	Spain
TQH17PEW	EP	U.K. (Prepaid)	TQH17CTW	T	Italy
TQH17CFW	F	France	TQH17CUW	U	Belgium
TQH17CGW	G	Germany	TQH17CVW	V	Slovenia
TQH17PGW	GP	Germany (Prepaid)	TQH17CWW	W	Sweden
TQH17CHW	H	Netherlands	TQH17CXW	X	South Africa
TQH17CKW	K	Austria	TQH17CZW	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.

CONTENTS

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.

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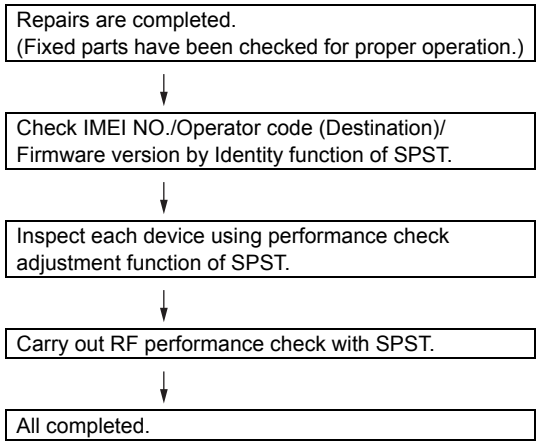
SERVICING CONCERNS

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.



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 window for display. Wear fingerstalls to avoid this.
   Also, ensure not to leave fingerprints on the surface of display panel.
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:

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 40ºC 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.

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CHAPTER 1. GENERAL DESCRIPTION

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

[1] Specifications

General:	Tri - band (GSM 900 MHz/DCS 1800 MHz/ PCS 1900MHz) GPRS-enabled WAP, MMS, SMS
Dimensions (folded, excluding the aerial) (H x W x D):	106.5 x 45.5 x 17.4 mm
Weight:	85 g
Battery operating temperature:	0°C - 40°C
Display:	Display dimensions: 160 x 120 pixels LCD display: TFT 65,536 colours with backlight LCD back light: LED back light white colour LEDs
Camera:	CMOS 350K pixels built-in camera Zoom: Wide and zoom mode [4 x zoom supported (when image size is 160 x 120 pixels)] Lens: F2.8, f = 3.55 mm
Sound:	40-chord melodies
External DC supply voltage:	5.2 V
Battery:	3.7 V, 780 mAh, Li-Ion
Standby time:	Up to 290 hours
Talk time:	Up to 230 minutes
Others:	Side key Infrared port 1.2 L/P (maximum distance 20 cm) Connector for AC charger and data cable Standard hands free connector (ø2.5)

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

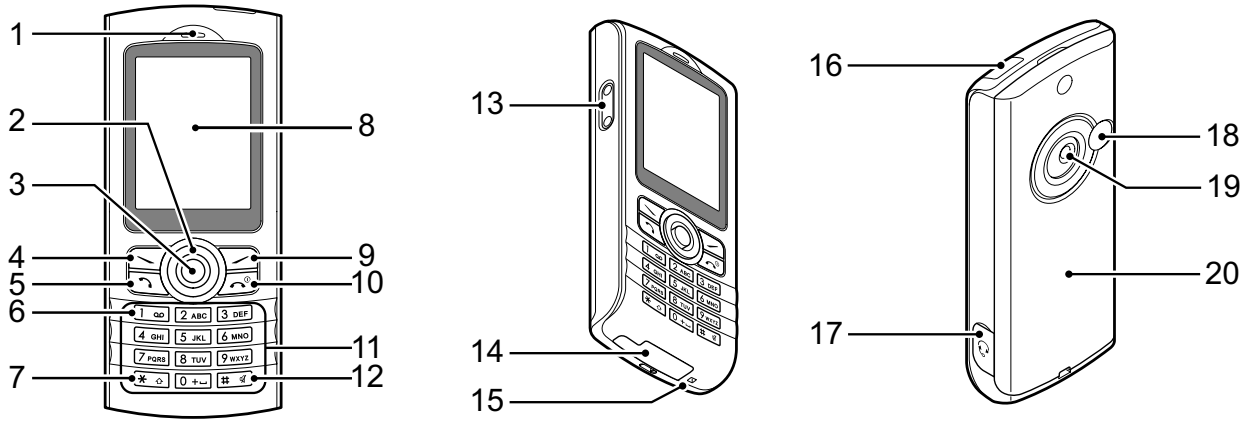
Specifications for this model are subject to change without prior notice.

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.

This product is licensed under the MPEG-4 Systems Patent Portfolio License for encoding in compliance with the MPEG-4 Systems Standard, except that an additional license and payment of royalties are necessary for encoding in connection with (i) data stored or replicated in physical media which is paid for on a title by title basis and/or (ii) data which is paid for on a title by title basis and is transmitted to an end user for permanent storage and/or use. Such additional license may be obtained from MPEG LA, LLC. See http://www.mpegla.com for additional details.

[2] Names of parts

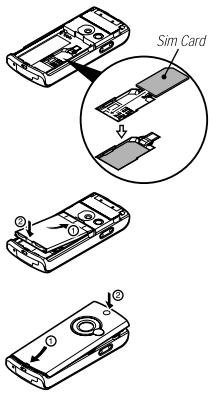


1. **Earpiece**
2. **Navigation Keys (Arrow Keys):**
   Moves cursor to select menu items, etc.
   Up/Down arrow keys: Displays Contacts List entries in standby mode. ▲ and ▼ indicate in this manual these keys.
   Left arrow key: Displays list of Applications in standby mode. ◀ indicates in this manual this key.
   Right arrow key: Displays list of Saved Pictures in standby mode. ▶ indicates in this manual this key.
3. **Centre Key:** Displays Main menu in standby mode and executes functions.
4. **Left Soft Key:** Executes the function at the bottom left of the screen.
5. **Send Key:** Makes or accepts calls, views the call log in standby mode.
6. **Voice Mail Key:** Press and hold this key to connect to the Voice mail centre automatically. (Depends on the SIM card.)
7. *** /Shift Key:** Switches character case among four modes: Abc, ABC, 123 and abc.
8. **Display**
9. **Right Soft Key:** Executes the function at the bottom right of the screen. Used to access "Vodafone live!" by opening the browser in standby mode.
10. **End/Power Key:** Ends a call, turns power on/off.
11. **Keypad**
12. **# Key:** Switches symbol screens. Press and hold this key on the text entry screen to shift text input method between multi-tap and T9 mode. Press and hold this key during standby to switch Profiles settings between Normal and Silent mode. Press ●, then # during standby to activate Voice Recorder.
13. **Side-Up/Side-Down Keys:** Moves cursor to select menu items, adjusts earpiece volume, etc.
14. **External Connector:** Used to connect either the charger or USB Data Cable.
15. **Microphone**
16. **Infrared Port:** Sends and receives data via infrared.
17. **Handsfree Kit Connector**
18. **RF Connector**
19. **Camera**
20. **Battery Cover**

THE SHARP GX17 QUICK START GUIDE

In just a few minutes we'll show you how easy it is to use many of the new features of your Sharp GX17 (customised for Vodafone live!).

You'll see how quickly you can take pictures and video clips with its built-in digital camera, send photos, sounds and video clips in multimedia messages, and connect to Vodafone live!. You'll also be able to personalise your phone by simply downloading new ringtones, games and wallpapers.



Getting started

1. Insert your SIM card:
Slide your Vodafone SIM card (with the gold contacts facing downwards) into its holder, making sure that the cut-out corner is aligned.

2. Insert the battery:
Insert the battery (gold contact edge first), and slide the cover on until it clicks shut. The battery should be charged for at least 2 hours before you first use your phone.

3. Turn it on:
Press and hold the red key. (You do the same to turn it off again.)

1. THE PHONE

Keys & navigation

● **Centre key:** press to OK an action or select whichever option is highlighted. (In standby mode it opens the main **Menu**.).

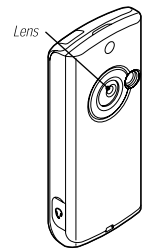
Navigation: Use the edge of the centre key to move around icons and item lists. In standby mode ▲ or ▼ opens **Contacts list**, ▶ opens **Saved Pictures** and ◀ opens **Applications**.

Soft keys: Select the icon or command shown in the bottom left or right of the screen. The ● key selects icons in the middle. In standby mode, goes to **Messages**, connects to **Vodafone live!**.

Call key: [When ringing] Answers a call. In standby mode it brings up **All Calls** (numbers called, received and missed).

End key: [During a call] Ends a call. Press and hold to turn the phone on and off. At all other times it takes you straight back to standby mode.

2. THE CAMERA



With the built-in digital camera it's easy to take photos and video clips. These can also be sent to other people as a picture or video message (see next page).

Take and send a photo or video clip

1. Take a photo:
Press ● in standby mode to go to the main Menu, press ● again to select **Camera**, then select **Take Picture**. Press ● to take the photo.

Tips: use ▲▼ for brightness, and ◀▶ for zoom (depending on photo size). To change photo size or quality, press [Options].

2. Save your photo:
Press [Cancel] to try again, or press [Save] to save it (in **Menu/My Items/Pictures/ Saved Pictures**). Or press ● [ ] to save and send it as a **Multimedia** message (see next page). If necessary, photos will be automatically compressed for sending.

3. Take a video clip:
Press ● in standby mode to go to the main Menu. Press ● again to select **Camera**, then select **Record Video**. Press ● [ ] to start, and again to stop. Choose **Save**, **Preview** or **Save and Send** (in a video message).

3. PICTURE AND VIDEO MESSAGING

Predictive text (T9)

To turn T9 off and on while entering text, press and hold the key. Use ▼ to cycle through the alternative words, then to select the one you want.

With multimedia messaging (MMS) you don't have to just send a text message. Now it's as easy to send pictures, video clips and sounds as well! Your GX17 is already enabled to send and receive MMS.

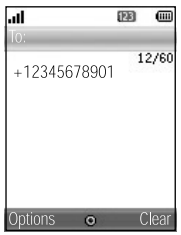
Create and send a new multimedia message

1. Start a new message:
Select **Messages** in the main Menu (or press the key in standby mode). Select **Create Message**, then **Multimedia**.

2. Write your message:
Use the keypad to write your text. **Tips:** to enter punctuation or other characters, press the key and select the symbol you want. For a space, press . Press the key to cycle through capitals, numeric, etc. (shown at the top of the screen).

3. Add a photo, sound or video clip:
Press [Options] and select **Picture, Sound** or **Video**. Choose **Saved Pictures, Saved Sounds** or **Saved Videos**, and select the photo, sound or video clip you want (or record new ones using the **Take Picture**, **Record Voice** or **Record Video** options). Press ● to attach it, then press ● again to return to the Create screen.

4. Preview your message:
Press [Options], and select **Preview Message** to see (and hear) your message. Then select [Back].



5. Address your message:
Press ● (or [Options]/**OK**). Choose to enter a mobile number or an email address (press the 1 ∞ key once for a [.] and three times for an [@] symbol), or add a number or email address from your Contacts list.

6. Send your message:
Press ●, then choose **Send** [●].

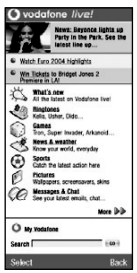
Multimedia messaging tips

Sending a video clip: If you're sending a video clip you may not be able to attach anything else.

Adding a new slide: To add more than one picture, sound or piece of text to your message, choose [Options]/**Add Slide**.

Sending to a mobile: Try sending one to yourself to see how it works – you'll find it in **Messages/Multimedia/Inbox**. If the receiving phone isn't picture or video message compatible, they'll be sent a web address to view your message on.

4. VODAFONE *live!*



Browsing

Use the navigation keys to highlight the item you want to select, then press ● to open that page. Press [Back] to go back a page. Press [Options] for the Browser Option menu.

Vodafone live! brings your mobile to life: full of information, downloads, games, music and services. It's easy to use, and the connection can be 'always on' so there's no wait for dialling up.

Connect to vodafone *live!*

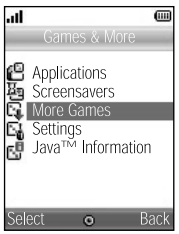
Simply press [live!] (in standby mode) to connect you to the Vodafone live! main menu. To exit, press the key. Alternatively, you can link directly to Vodafone live! services:

In the main Menu, open the **Vodafone live!** section. This menu is offline, so you won't be connected until you choose a link. Here are some of the services you can choose:

Vodafone live!: connect to Vodafone live!.
Games: online fun and games to download…
Ringtones: download music, sounds and ringtones.
Pictures: download images, animations and background wallpaper.
News: get the latest news reports and weather forecasts…
Sport: news, results and latest scores (with pictures).

Tip: Vodafone live! is growing and changing all the time, so these options may vary. Keep checking it out to see what's new.

5. DOWNLOADS



*Personalise your new phone by downloading new ringtones, images, games and background wallpaper from Vodafone live!. You can download from the Vodafone live! portal or the phone shortcuts (see previous page), or use the **More** menus:*

Download more

1. Download a new ringtone, video clip or background wallpaper:
Go main **Menu/My Items**, choose **Sounds**, **Videos** or **Pictures** and then **More Sounds**, **More Videos** or **More Pictures**. Choose a ringtone, video clip or wallpaper image and follow the instructions to download it.

Tips: To activate your ringtone, go to **Menu/Settings/Profiles**, select **Normal**, then choose [Options]/**Personalise/Assign Ringtone/My Sounds**, then select your downloaded ringtone. To set your wallpaper, go to **My Items/Pictures/Saved Pictures**, select your downloaded image and choose [Options]/**Set as Wallpaper**.

2. Download new games:
To add more arcade quality games to your phone, go to to **Menu/Games & More/More Games**. Choose a game to download, and you'll find it in **Games & More/Applications**. Your phone already comes with some amazing demo games that you can try – and then download the full version.

6. OTHER FEATURES

Postcard

Now you can send a picture message as an actual postcard. Go to **Menu/Messages/Create Message**, and select **Postcard**. Add the picture and text as prompted, then press ●.

Enter the name and address you want to send it to, then press [Options]/**Send**. Vodafone will have it printed on a postcard and sent by mail. (**Note:** the Postcard service is not available in every country.)

1. Silent mode:
To go into Silent mode (if you're in a meeting, say), press and hold the # key (in standby mode). Do the same again to return to Normal mode.

2. Handset closed:
Press one of the volume keys to display the time, and again for the date. Press and hold a volume key to turn the camera light on and off.

3. live! Studio:
Now you can upload selected pictures to an online album (part of Vodafone live!) where you and your friends can access them remotely. Go to **My Items/Pictures**, select or take the picture you want and choose [Options]**/Send/To live! Studio**. (You can also upload MMS messages from your Inbox or Sent items folder in the **Messages** menu.)

To see your album on the Vodafone live! portal, go to **Menu/Messages/live! Studio**. You can also log in to your homepage on your local Vodafone website and select the **live! Studio** option. (Note: the Media Album service is not available in every country.)

[4] Optional Accessories

- Li-ion Spare Battery (XN-1BT30)
- Cigarette Lighter Charger (XN-1CL30)
- USB Data Cable (XN-1DC30)
- AC Charger (XN-1QC30, XN-1QC31, XN-1QC32)
- Personal Hands-free Kit (XN-1ER20)

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. System requirements

- IBM PC compatible personal computer (standard COM1 115,200 bps serial port and USB required)
  Recommended OS: Windows 2000/XP
  Operable OS: Windows 98/98SE/ME (Downloader supports Windows 2000/XP only)
  Incompatible OS: Windows 95/NT
  (English, German, Italian, Spanish, French and Chinese versions)
- Data cable

<During RF adjustment>

- GSM tester: CMU200
- GPIB interface: National Instruments USB-GPIB cable (Model No.: NI GPIB-USB-B)

2. Introduction

2.1. Functions

SPST offers seven key functions:

1) Firmware download
2) User data transfer (processes all data at once but not individually.)
3) RF calibration check and test
4) Default setting
5) Identification
6) Performance check and adjustment
7) User password reset

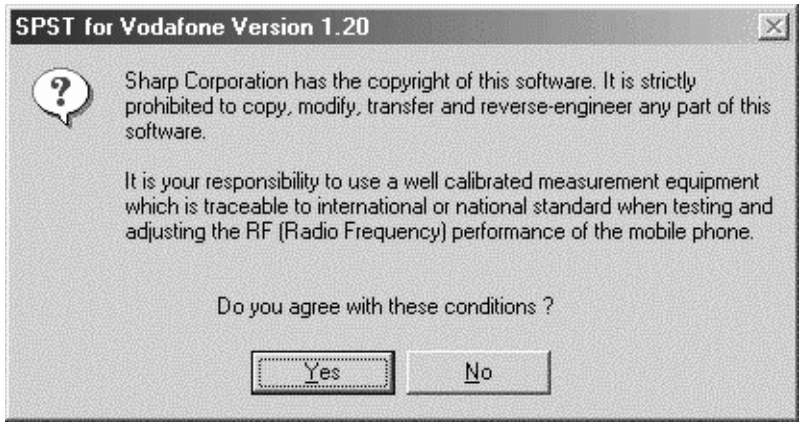
2.2. Installation

1. Use Windows Explorer to execute the “setup.exe” file on the CD-ROM.
2. The SPST GX series setup wizard appears. Follow the installation instructions.
3. After the installation is complete, shortcuts to SPST are created on the desktop and under the “Start” — “Programs” — “GX series” menu. Start SPST from the shortcuts.

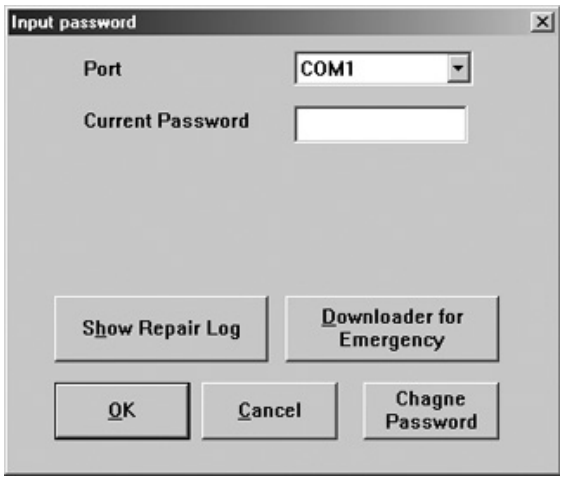
2.3. Starting up

Connect GX series to an operable serial port of the PC with the supplied data cable. Connect the AC charger to the data cable.
Start SPST from the desktop.

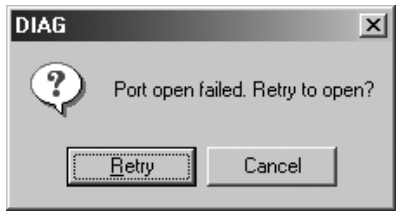
1. The following message box appears after startup. Check the message and click “Yes”. Click “No” to exit.



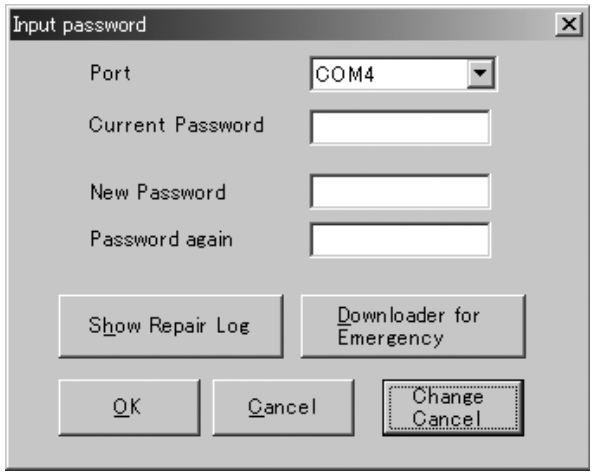
2. The Input password dialogue box appears. Enter the password, select “GX series” from Port list box (a connected port is automatically detected), and click “OK”. If you do not know SPC, click “Cancel” to exit.



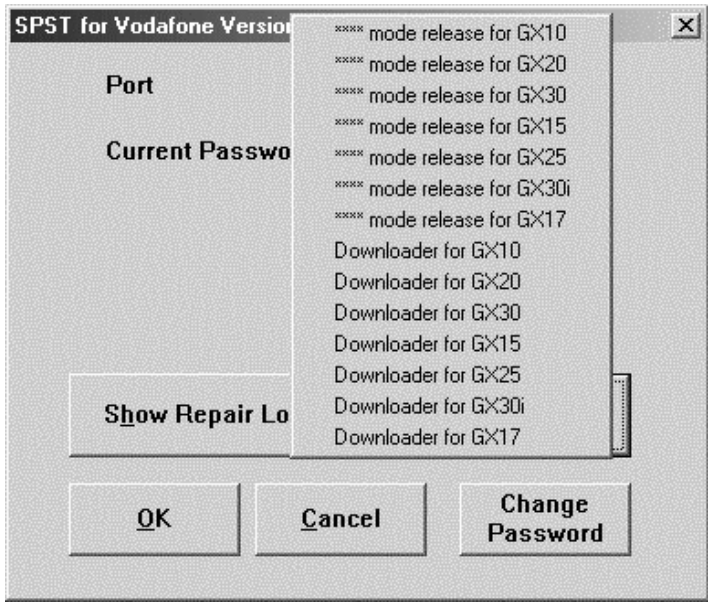
When using SPST for the first time, the driver installation starts and the following dialogue box appears.
After the installation is complete, press "Retry".



3. To change the password, enter the current password in step 2, and then click “Change Password”.

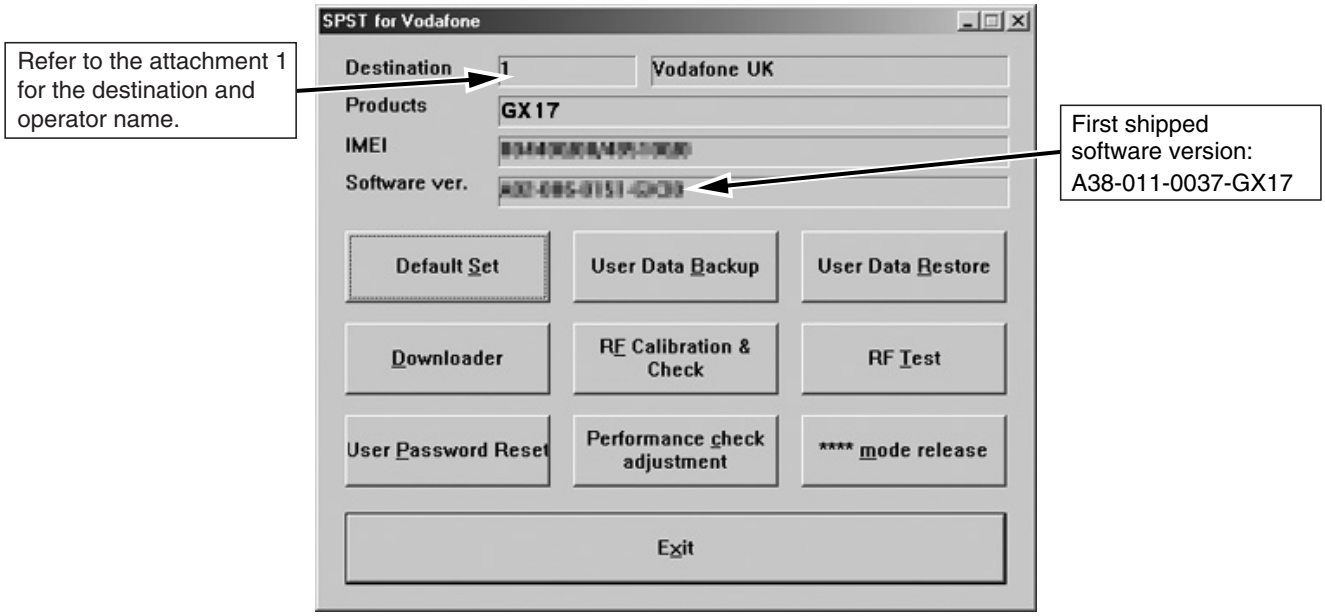


4. To check the usage status of tools, click “Show Repair Log” in step 2.
5. Click “Downloader for Emergency”.



The above screen appears. Select a model to use and execute the Downloader. (Use this to initialise the flash, etc.)

6. When the password is correct, a connection is established and the following screen appears.



Buttons

Default Set	Refer to “4.1. Default setting”. (see page 2-5)
User Data Back-up	Refer to “4.2. User data back-up”. (see page 2-6)
User Data Restore	Refer to “4.3. User data restore”. (see page 2-7)
Downloader	Refer to “4.4. Downloader”. (see page 2-8)
RF Calibration & Check	Refer to “4.5. RF calibration & check”. (see page 2-19)
RF Test	Refer to “4.6. RF test tool”. (see page 2-27)
User Password Reset	Refer to “4.7. Password reset”. (see page 2-33)
Performance check adjustment	Refer to “4.8. Performance check and adjustment”. (see page 2-34)
**** mode release	Refer to “4.9. ****mode release”. (see page 2-38)
Exit	End SPST.

Attachment 1 Destination and operator name list

No.	Operator name		Country	Model name
01	Vodafone UK	Post-Paid	UK	A4TQH17CEW
02	Airtel	Post-Paid	Spain	A4TQH17CSW
03	SFR	Post-Paid	France	A4TQH17CFW
04	Vodafone Omnitel	Post-Paid	Italy	A4TQH17CTW
05	Vodafone D2	Post-Paid	Germany	A4TQH17CGW
06	Vodafone Netherlands	Post-Paid	Netherlands (Holland)	A4TQH17CHW
08	Vodafone Ireland	Post-Paid	Ireland	A4TQH17CRW
09	Vodacom	Post-Paid	South Africa	A4TQH17CXW
10	Vodafone Greece	Post-Paid	Greece	A4TQH17CDW
11	Vodafone Hungary	Post-Paid	Hungary	A4TQH17CBW
12	Vodafone Australia	Post-Paid	Australia	A4TQH17CAW
13	Vodafone New Zealand	Post-Paid	New Zealand	A4TQH17CZW
14	Vodafone Sweden	Post-Paid	Sweden	A4TQH17CWW
15	Vodafone Egypt	Post-Paid	Egypt	A4TQH17CQW
16	Vodafone Malta	Post-Paid	Malta	A4TQH17CLW
17	Swisscom	Post-Paid	Switzerland	A4TQH17CCW
18	mobilkom austria	Post-Paid	Austria	A4TQH17CKW
19	Belgacom	Post-Paid	Belgium	A4TQH17CUW
20	Si. Mobil	Post-Paid	Slovenia	A4TQH17CVW
45	Vodafone D2	Pre-Paid	Germany	A4TQH17PGW
48	Vodafone Portugal	Pre-Paid	Portugal	A4TQH17PPW
50	Vodafone UK	Pre-Paid	UK	A4TQH17PEW

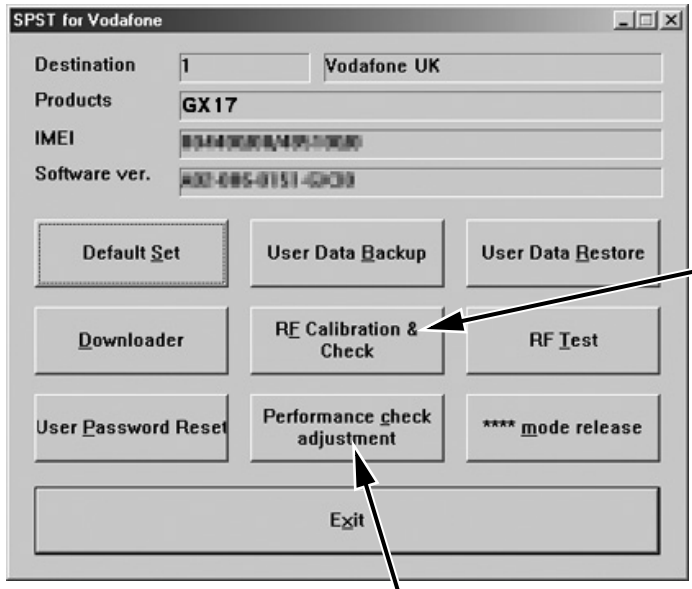
3. Adjustments for GX17

1. Adjustments are required after replacing the following parts. (○)

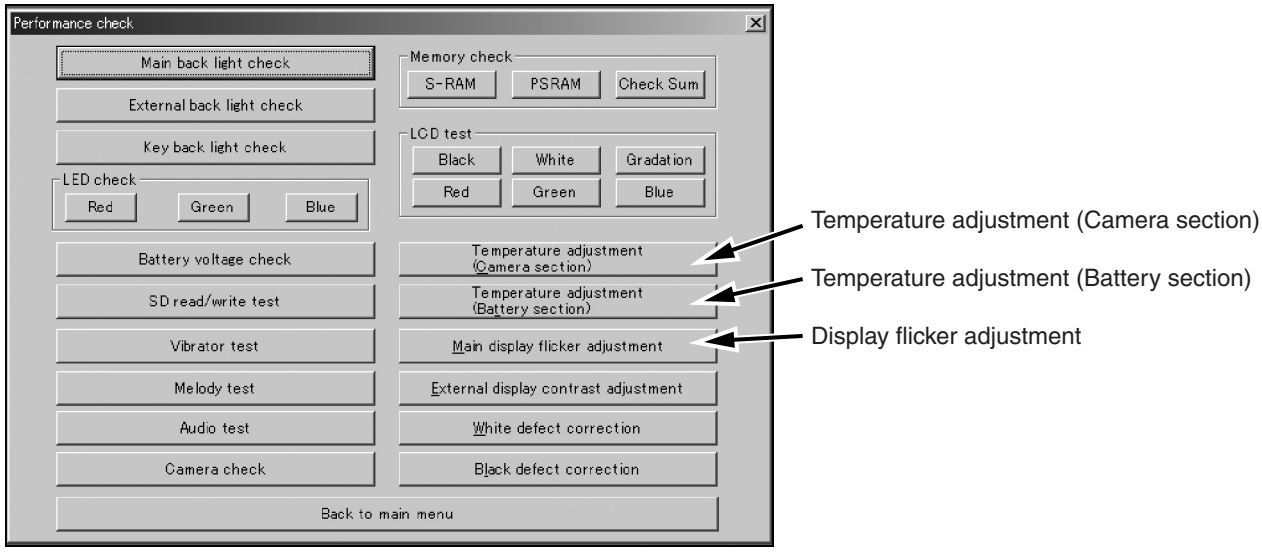
Parts	Temperature adjustment (Camera)	Temperature adjustment (Battery)	Display flicker adjustment
TH102	○	×	×
Display unit	×	×	○
Camera unit	×	×	×

When replacing other parts in the RF section, carry out RF calibration.

2. Click the buttons on the SPST screen for adjustments.



3. The following screen appears.



4. Functions

4.1. Default setting

SPST can restore the factory settings.

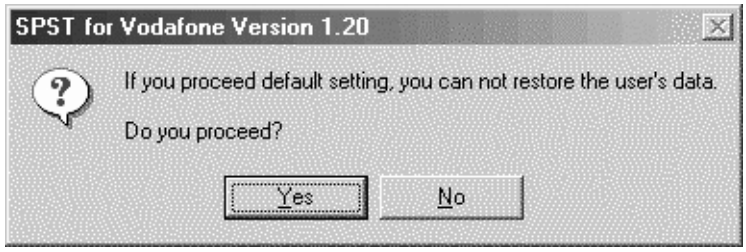
This function

1. Deletes all user data in the file system;
2. Restores all WAP settings to default; and
3. Restores the values set by the user to default.

   (MEPLOCK settings, the destination and operator name do not change.)

<Operation>

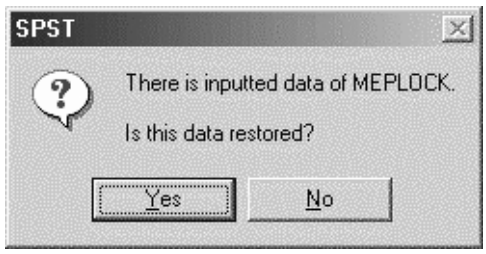
1) Set the COM port on the SPST initial screen and click “Default Set”.
2) Click “Yes” to proceed. Click “No” to exit.



3) Click “No” to back-up the MEPLOCK data. Click “Yes” to restore default settings.

4) Communication starts.

5) The following appears when you select “Yes” in step 3 and MEPLOCK data exists. Click “Yes” to restore the data.

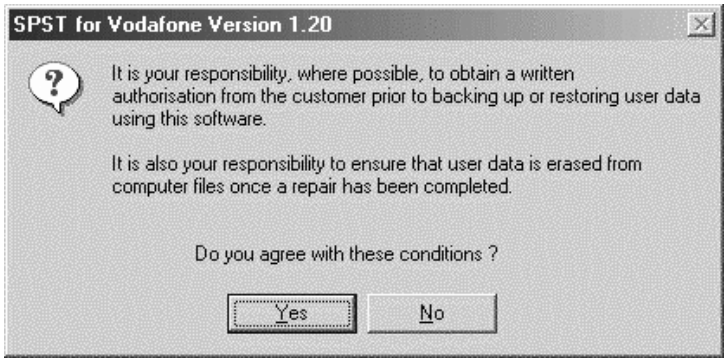


6) After the handset (phone) is turned on, the initialisation is complete.

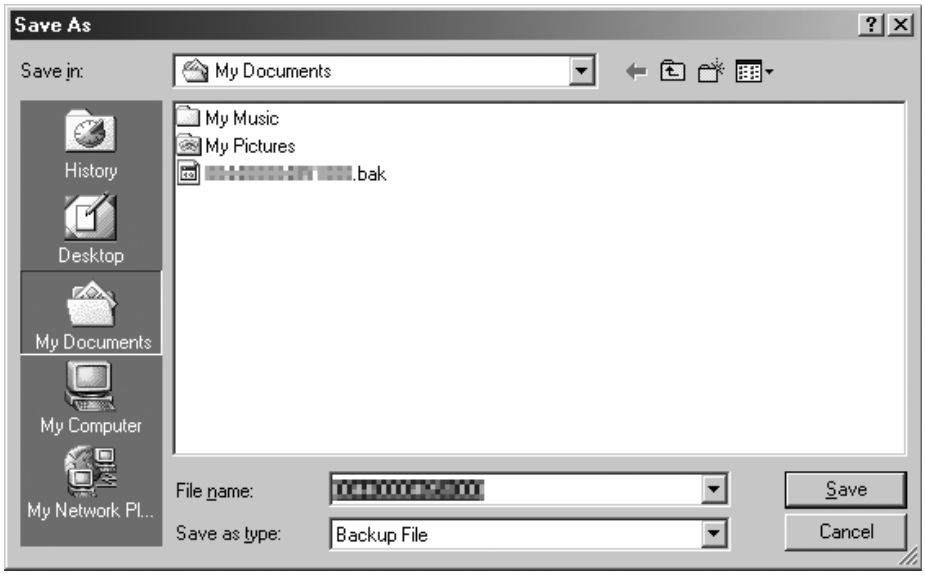
4.2. User data back-up

SPST saves all the data stored on the handset (phone).

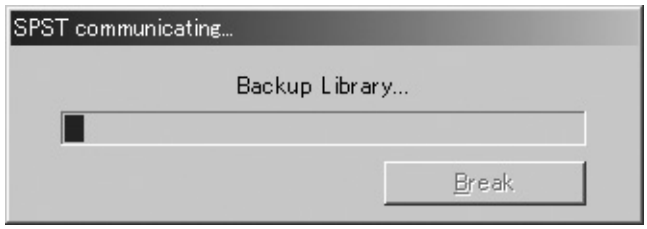
1. Set the COM port on the SPST initial screen and click “User Data Backup”.
2. The following message box appears. Check the message and click “Yes”. Click “No” to exit.



3. Specify the file name in the following dialogue box and click “Save”.



4. The communicating dialogue box appears whilst processing.

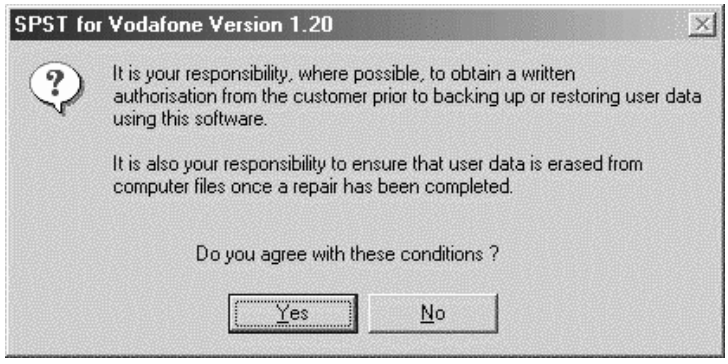


5. When completed, the following message appears. Click “OK”.

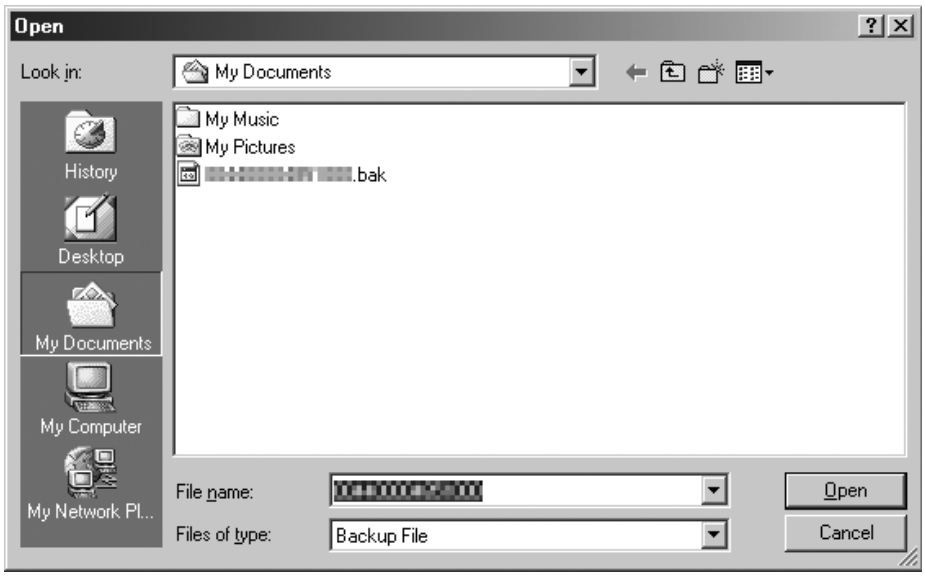
4.3. User data restore

SPST completely restores the backed up data.

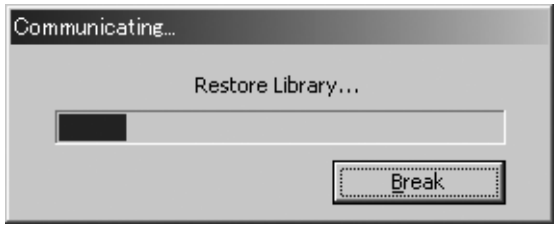
1. Set the COM port on the SPST initial screen and click “User Data Restore”.
2. The following message box appears. Check the message and click “Yes”. Click “No” to exit.



3. Specify the file name in the following dialogue box and click “Open”.



4. The communicating dialogue box appears whilst processing.



5. When the restore is complete, click “OK”.

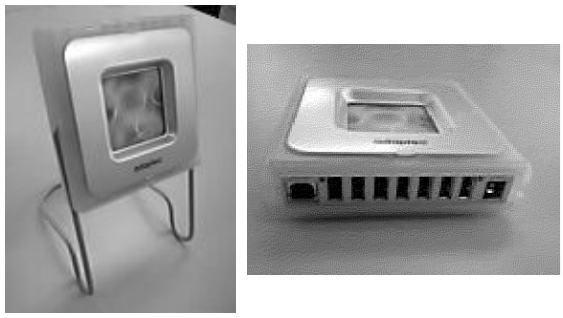
4.4. Downloader

4.4.1 Introduction

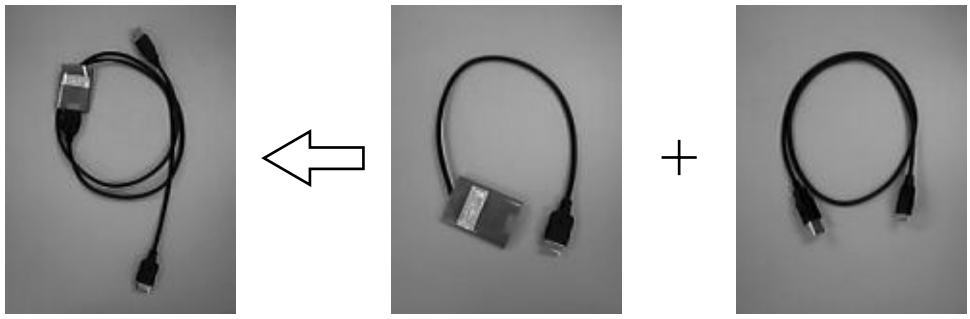
Downloader allows you to upgrade the firmware.

1) Required devices

- PC (Operating System: Windows 2000, XP)
- GX17 handset (phone)
- USB hub
  You can use a USB hub to download data to multiple handsets (phones) at a time.
  (Recommended product) USB hub from Adaptec: XHUB7PLUS



- USB download cable



USB download cable　　USB download adaptor cable　　USB data cable

* The USB download cable consists of the USB download adaptor cable and a USB data cable.

* A USB data cable is not the existing download cable.

* The USB download cable is exclusively for download, not for any other purpose.

2) Precautions

Please read the following before use.

* This Upgrading Tool is designed for GX17. Make sure that you have chosen the correct handset (phone) and MOT file before you start the download.

  Please note that use with another model may cause damage to handsets (phones).
* Download may fail depending on the version of Windows.

  It is recommended to update Windows to the latest version before you start.
* Make sure to remove the handset (phone) battery.

  (Download must be performed without a battery inserted.)
* Handsets (Phones) may not be recognised depending on the PC.

  Disconnect the USB download cable from the handset (phone) and reconnect it.

  If the handset (phone) is still not recognised, repeat this a few times or disconnect the cable and restart the PC.
* Do not start/restart a PC with a handset (phone) connected.
* If a PC is set to the power saving mode, disable it before download.
* If using a USB hub for download, do not use the remaining ports for other devices. Download may fail.
* When the Upgrading Tool does not work properly, uninstall and reinstall it.

4.4.2 Installation of the device driver

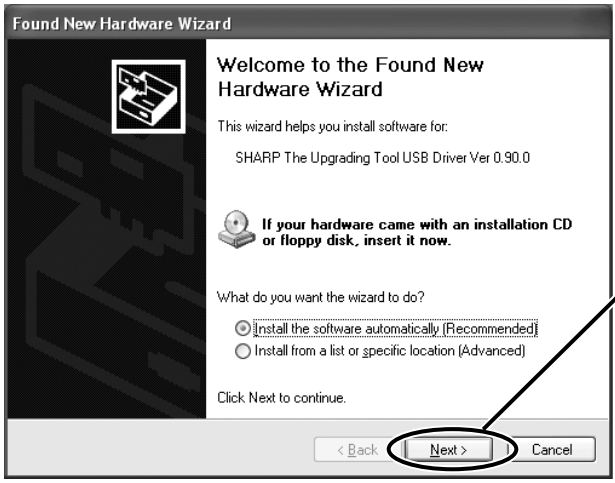
Install the device driver (SHARP The Upgrading Tool USB Driver Ver 0.90.0) on your PC.

1. Connect a PC and GX17 handset (phone) with the USB download cable.

   [Make sure to remove the handset (phone) battery before connecting them.]

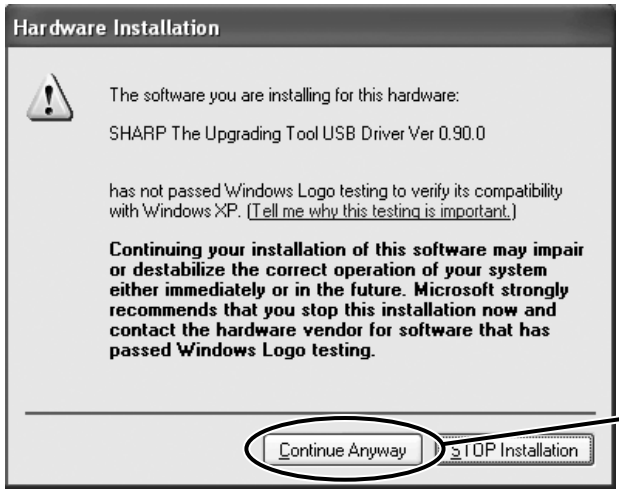
2. For Windows XP, follow the Hardware Wizard prompts to install the device driver.

   (For Windows 2000, the driver is automatically installed.)



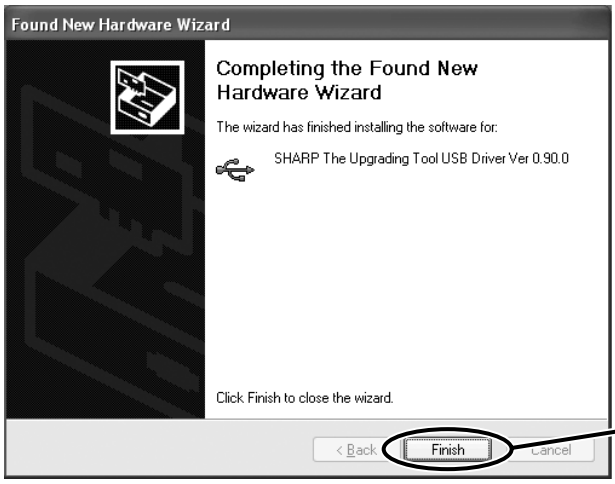
Press "Next >" button.

* If you click [Cancel] or cancel the wizard, the device driver cannot be installed properly. In such case, reinstall the driver manually.



Press "Continue Anyway" button.

Screen during installation.



Press "Finish" button.

Screen after installation

* Install the device driver for each handset connected to a PC.
For example, if five handsets are connected to PC using a USB hub, the install wizard of the device driver will appear five times. Install the device driver each time, following the instruction.

* If a handset (phone) is not recognised when connected to a PC:
Disconnect and reconnect the USB download cable.
[If the handset (phone) is still not recognised, repeat this a few times or restart the operation system.]

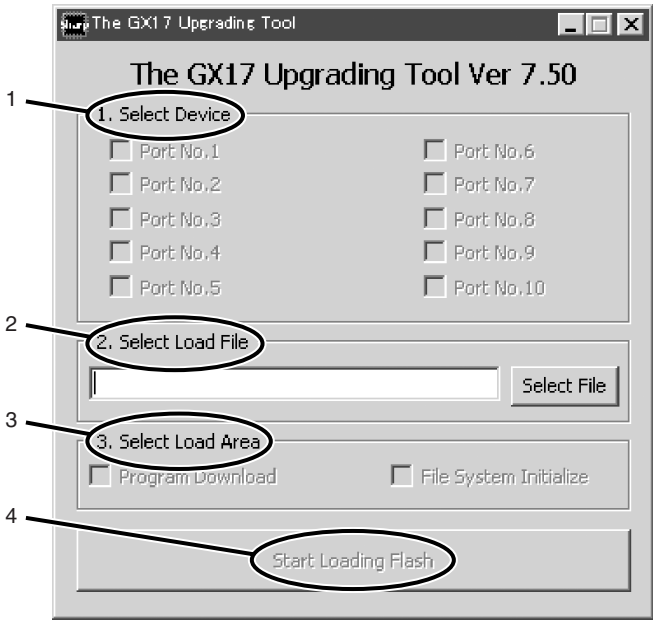
4.4.3 Download

This section describes how to initialise user data and write data to the handset (phone).

1) Application startup and screen descriptions

The icon below is created on your desktop after installation. Double-click it to start the Upgrading tool. You can also start the application by selecting "The GX17 UpgradingTool" from the Start menu.

The download setup screen appears after starting the application.

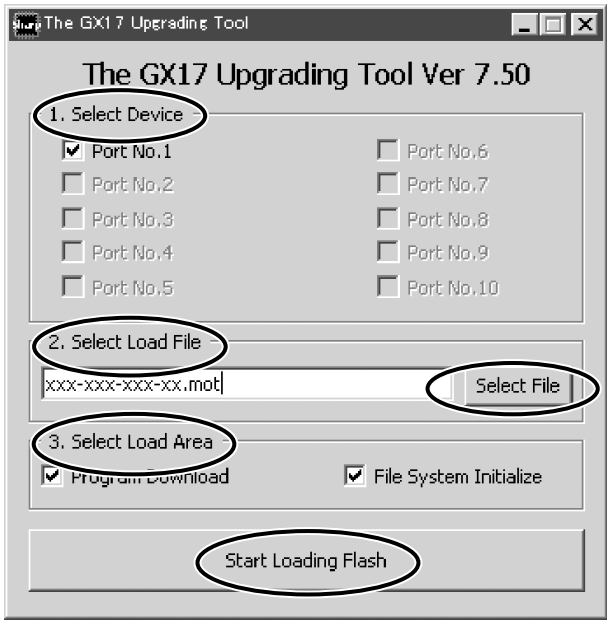


1. Select Device: Displays port numbers assigned to handsets (phones) that are recognised by the PC.
2. Select Load File: Specify a file to download.
3. Select Load Area: Select data space to store files.
4. Start Loading Flash: Press to start download.

2) Download

<<Make sure the following before starting download>>

- Make sure to download an MOT file to GX17 handset (phone).
- The handset (phone) battery is removed.
- The device driver is installed on your PC.
- Handset (Phone) is connected to a PC with the USB download cable.



<< Easy steps for download>>

1. Selecting a handset (phone)
   When handset (phone) is recognised as a device, the corresponding Port No. box is checked.
   The photo above shows that a handset (phone) is connected to a PC via the USB download cable, and the connection status is recognised.
   [If the box is unchecked, data will not be downloaded to handset (phone).]
2. Selecting an MOT file
   Select an MOT file to download.
3. Selecting download area
   <Example>
   Check “Program Download” and “File System Initialize” and start download.
4. Starting download
   Press “Start Loading Flash” button to start download.
5. Completing download
   When download is successfully completed, “O” appears in the corresponding Port No. boxes. Click “OK” to exit.

• Estimated download time:
Approximately 13 minutes to download the file to one handset (phone).

2). 1 Selecting device

Check the corresponding Port No. box for the handset (phone) you want to download data to.

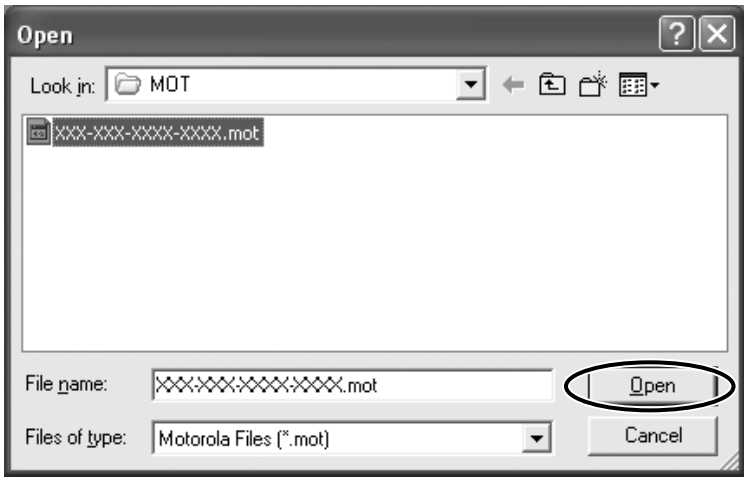
1. When a handset (phone) and the PC are connected with the USB download cable, the box of port number is automatically checked.
2. If the box remains unchecked, the handset (phone) may not be recognised correctly. Remove the USB download cable and reconnect it to the PC.

2). 2 Selecting MOT file.
Select an MOT file to download.

Make sure to choose an MOT file for GX17.

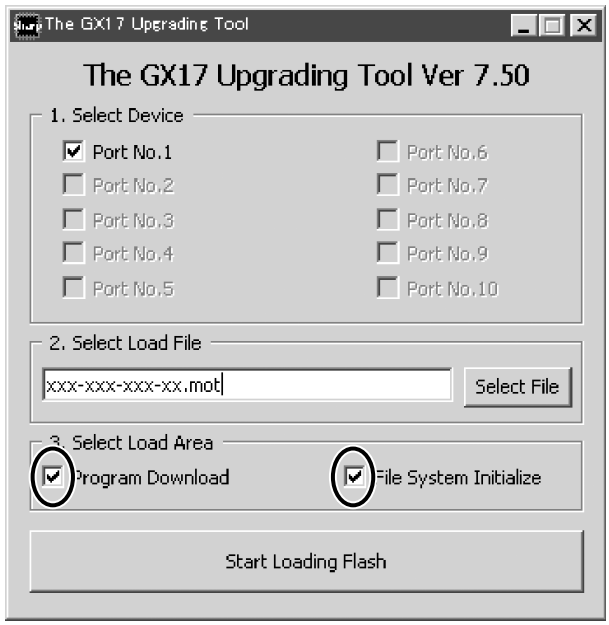
1. Press “Select File” button in “2. Select Load File”. The file selection screen appears.
2. Select a file to download and press “Open” button.
3. When you select a file, the file name appears in the text box. Proceed to “3. Select Load Area”.

- Only Motorola format (.mot) file can be downloaded.
- You can select a file by entering a file name in the text box (without pressing “Select File” button). In this case, enter the file location together.



File selection screen

2). 3 Selecting download area
Usually select both “Program Download” and “File System Initialize”.



<“Program Download” and “File System Initialize”>
When both are selected, programme data is downloaded and user data area is initialised. Note that selecting “File System Initialize” (for initialisation) deletes images and other saved data.

2). 4 Starting download

Remove the handset (phone) battery before starting download.

Make sure that only GX17 handset(s) [phone(s)] is (are) connected to the PC/USB hub.

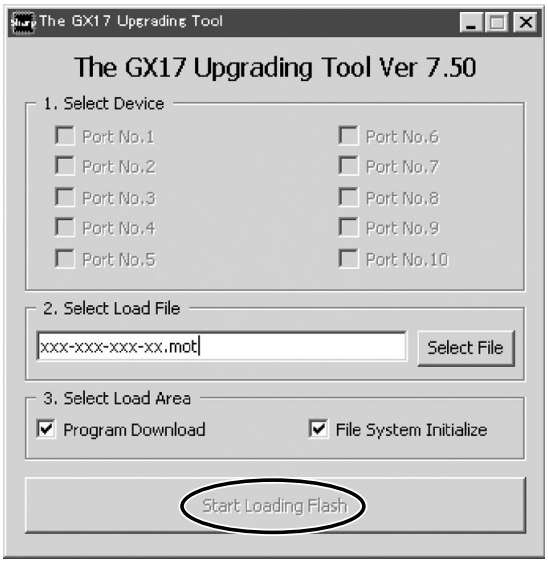
- "Start Loading Flash" button is disabled when handset (phone) is not connected to a PC.

  Connect the PC and handset (phone) with the USB download cable.

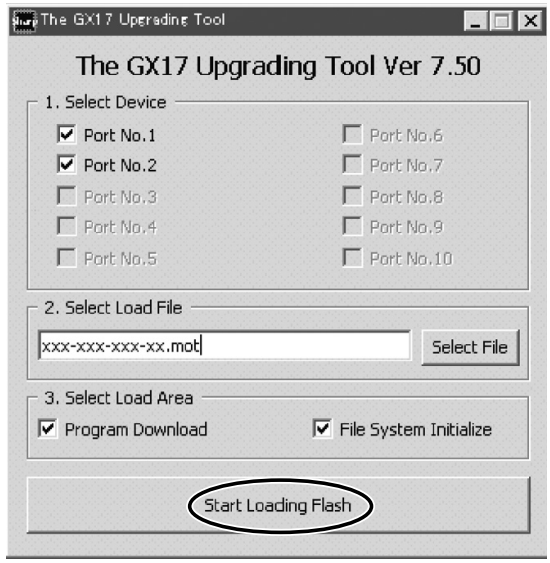
- If "Start Loading Flash" button is disabled after connecting the handset (phone):

  Case 1: Handset (Phone) is not recognised by the PC.
  Reconnect the PC or USB hub and handset (phone) with the USB download cable.

  Case 2: Some items are not selected on the download setup screen.
  Make sure items of 1 - 3 are checked.



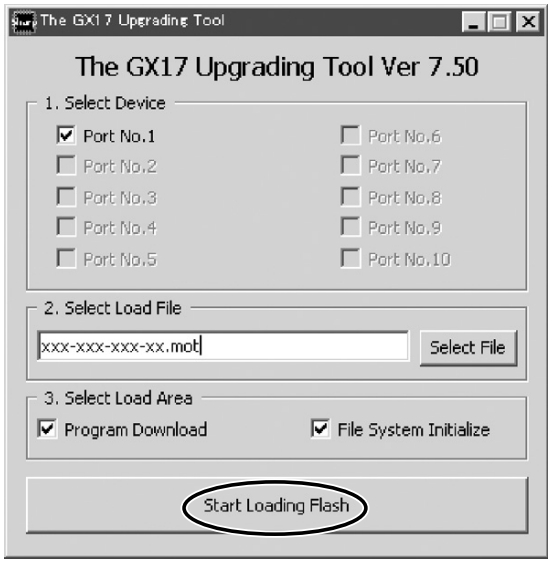
No handsets (phones) are connected.

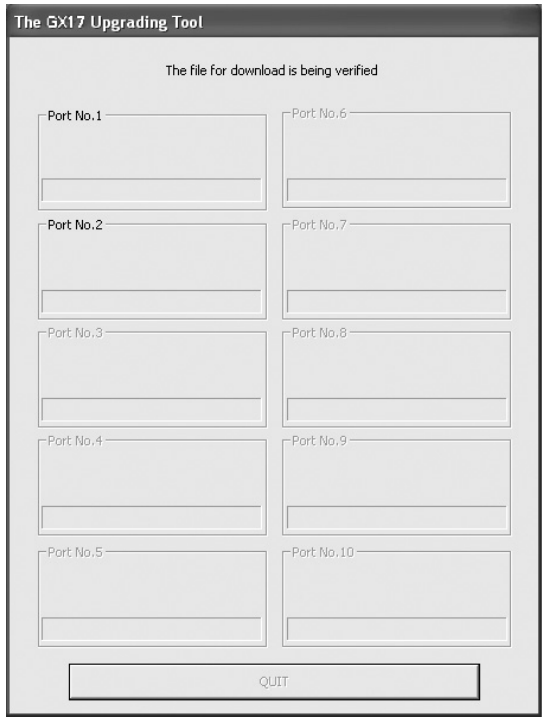


Two handsets (phones) are connected.

Press "Start Loading Flash" button to start download.

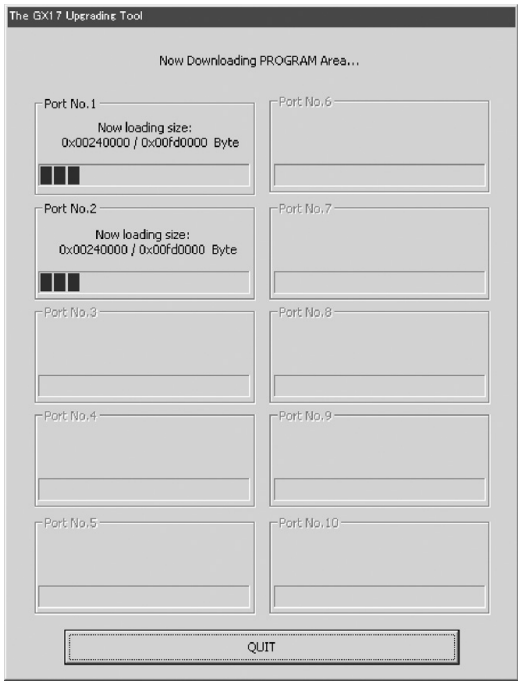
The following shows two handsets (phones) connected to a USB hub.



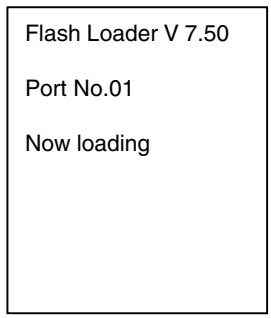


Download progress is shown on the PC and handset (phone).

The following shows the process when two handsets (phones) are connected to a PC via a USB hub.



Display on PC



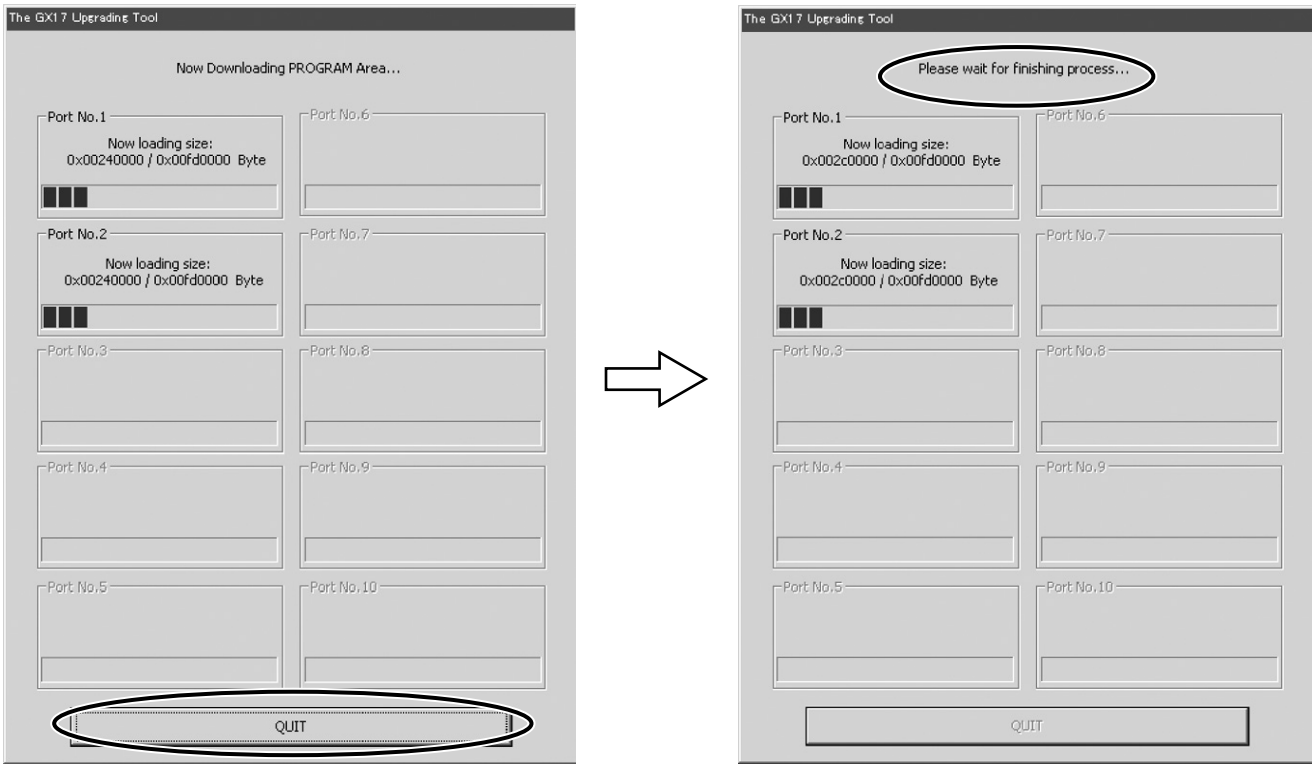
Display on handset (phone)

Screen during download

<< Aborting download>>

Press “Quit” button on the PC screen to stop download.

“Please wait for finishing process...” is displayed during the process. Do not disconnect the USB download cable until the message disappears.

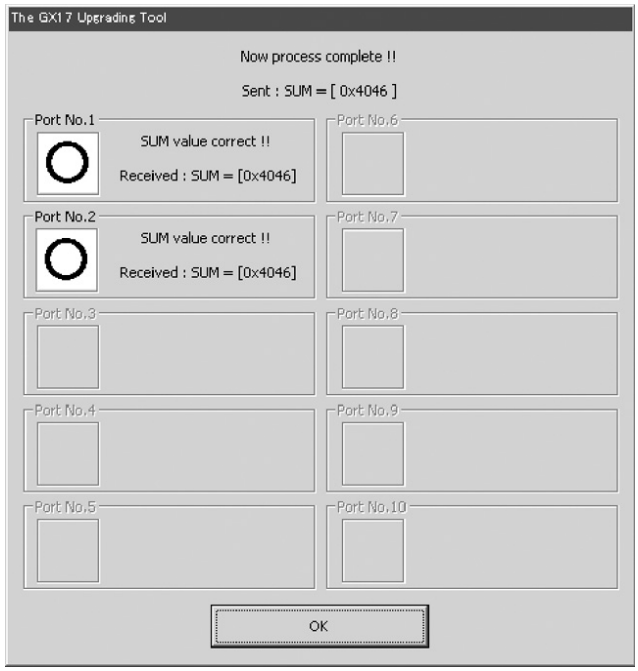


To resume the download after aborting it, make sure to check “File System Initialize” first.

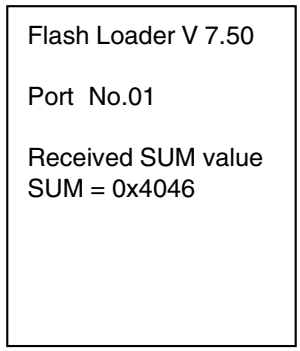
2). 5 Completing download

Press “OK” button.
"Please wait for finishing process..." appears in the dialog box. Leave the USB download cable connected until the message disappears.

When download is successfully completed, “O” appears as shown below.
In the screen shot, downloaded data are written to the handset (phone) correctly.



Display on PC



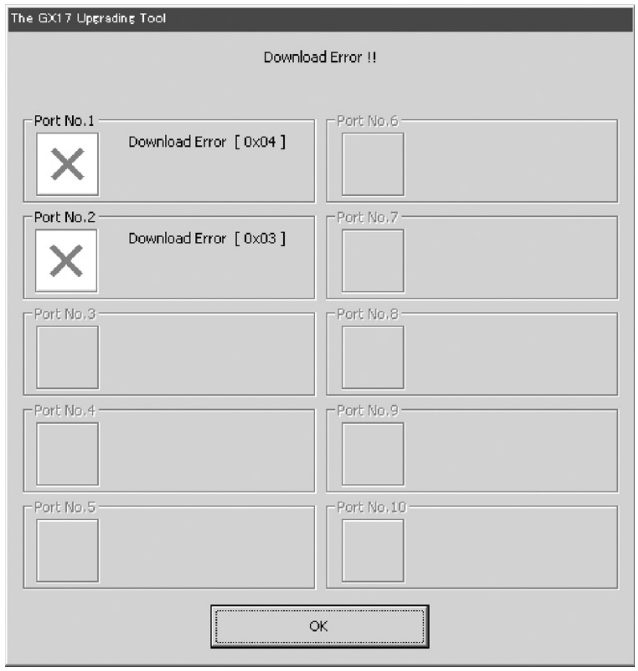
Display on handset (phone)

Screen after download

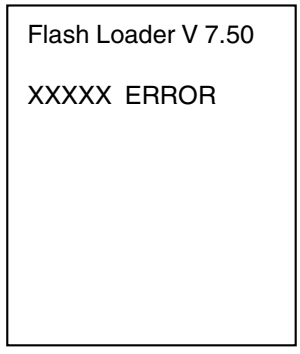
<<Download errors>>

If download fails, a message appears on the PC and handset (phone).

1. Disconnect and reconnect the USB download cable, and try to download again.
2. Before you start the download, check "File System Initialize".



Display on PC



Display on handset (phone)

3) Download via a USB hub

Use a USB hub to download data to multiple handsets (phones) at a time.
[Up to 10 handsets (phones) at a time]

* (Recommended product) USB hub from Adaptec: XHUB7PLUS (operation checked)

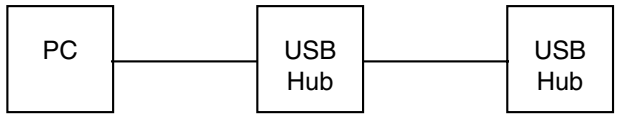
1. A USB hub is required. Use more according to the number of ports.
   *When using more than one hub, connect them as shown in the section **4.4.3.3).1**.
2. Connect the USB hub to a PC.
3. Into the USB hub, insert the same number of USB download cables as handsets (phones).
4. Connect the USB download cables to handsets (phones).
5. Install the device driver (SHARP The Upgrading Tool USB Device Ver 0.90.0).
   (For Windows 2000, the driver is automatically installed.)
6. On the download setup screen, port numbers become selectable for recognised handsets (phones).
   Refer to the section "**2) Download**" to perform download.

Note:
Do not connect other devices to the remaining ports if downloading via a USB hub. Download may fail.

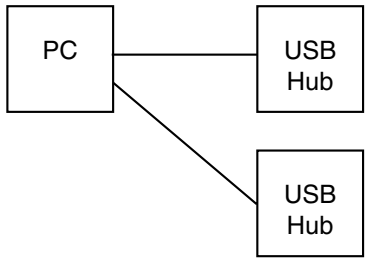
3). 1 Using multiple USB hubs

Connect multiple USB hubs according to the following.

1. Connection in series (recommended)



2. Connection in parallel



* When using more than one USB hubs, refer to the manuals to interconnect them.

4.4.4 Troubleshooting

This section describes error messages, solutions, and other important information.
* Error messages appear on the PC screen.

1) Error message list

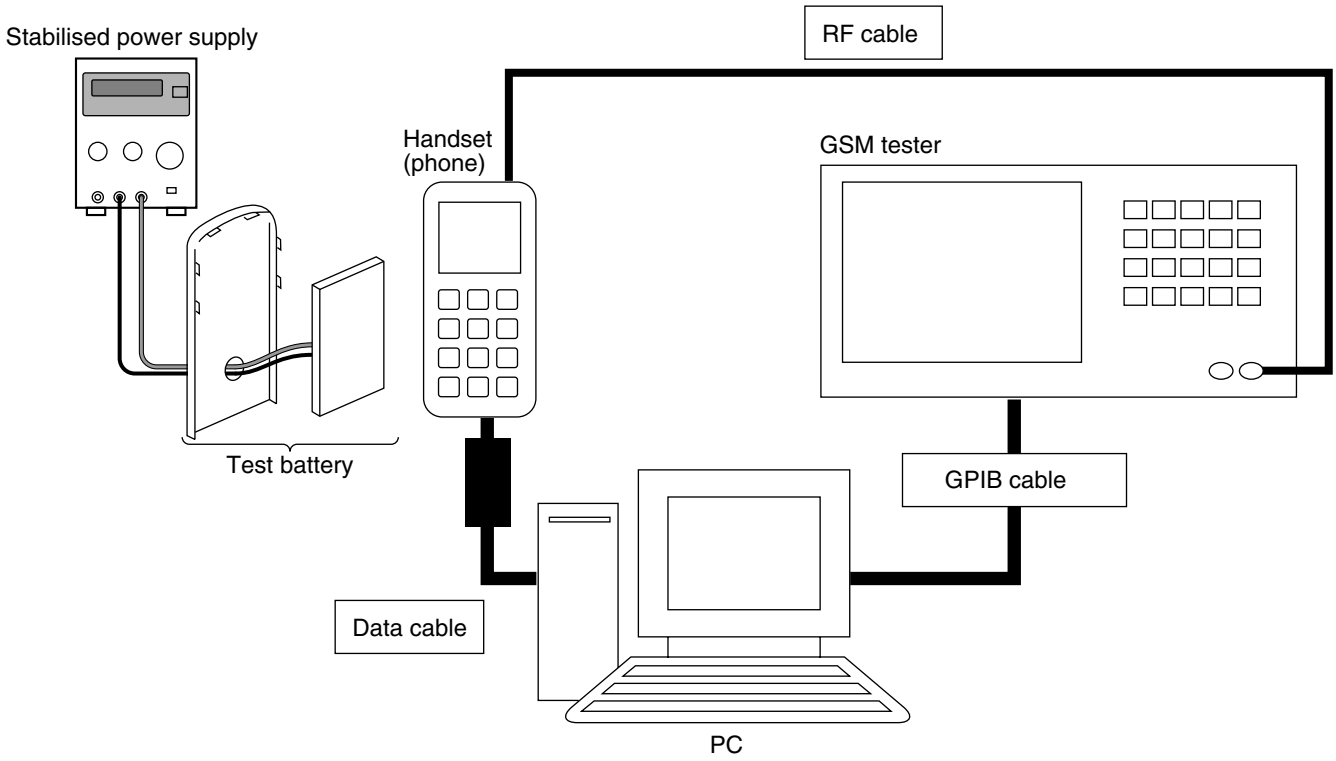
No.	Displayed message	Cause/Solution
1	Unable to open file	Failed to open the MOT file to download. The following are possible causes: - The file path contains special characters. Special characters: ~ ¥/:,;*?"<>|~ - The extension of the file is not ".mot". - The file is in use. - The file path contains more than 257 bytes of characters. - There is no drive letter in the file path. - The file path is entered, but the file name is not. - The file cannot be found. - The file is located on a CD-ROM, removal disk, RAM disk or network drive.
2	Unable to Setup Device	Check that the USB download cable is correctly connected to PC and handset (phone).
3	The file you selected is unsuitable for Upgrading.	The file is not downloadable. Select a GX17 MOT file.
4	Download Error !!	- Close running resident programmes. - Close all other running applications. - Reconnect the USB download cable and retry. - Install Windows updates (see "**4.4.1.2) Precoutions**")

* If an error occurs, disconnect and reconnect the USB download cable before you download again.

2) Other important information

- Do not start /restart a PC with a handset (phone) connected.
  (PC may freeze depending on the type.)
- If the power saving mode is set on the PC, disable it before download.
  (Download fails if the power saving mode is activated during the process and the PC may freeze.)

4.5. RF calibration & check

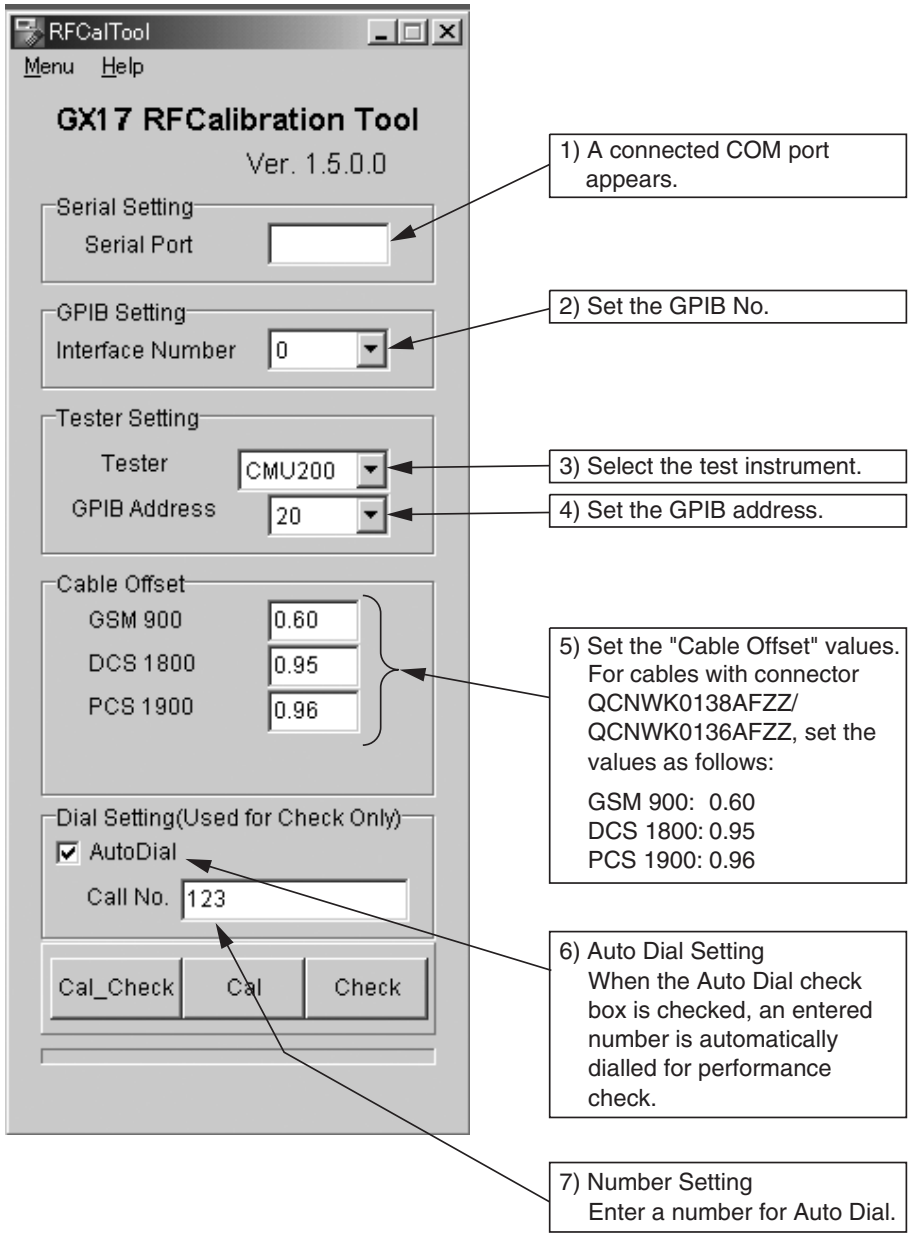


4.5.1 Preparation

- Connect PC and GSM tester with a GPIB cable.
- Connect PC and handset (phone) with a data cable. (Use a test battery or similar.)
- Connect an RF cable of GSM tester to handset (phone).

4.5.2 Default setting for the programme.

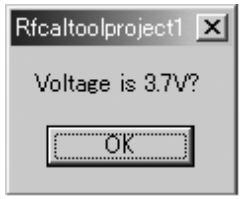
- Activate the programme and set defaults.



4.5.3 RF calibration

1. Apply 4 V using a stabilised power supply and turn on the handset (phone).
2. Start “RF calibration & check” on SPST and click “Cal”.
3. When initialisation is complete, the following message appears. Lower the stabilised power supply voltage to 3.7 V and click “OK”.

4. Make sure the voltage is set properly and press “OK”.
   (Calibration starts.)



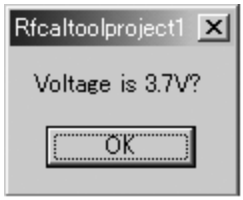
5. Click “OK”.

6. The initial screen returns.

4.5.4 RF performance check

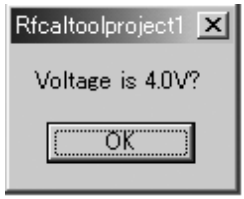
1. Apply 4 V using a stabilised power supply and turn on the handset (phone).
2. Start “RF calibration & check” on SPST and click “Check”.
3. When initialisation is complete, the following message appears. Lower the stabilised power supply voltage to 3.7 V and click “OK”.

4. Make sure the voltage is set properly and press “OK”.
   (RF performance check starts.)

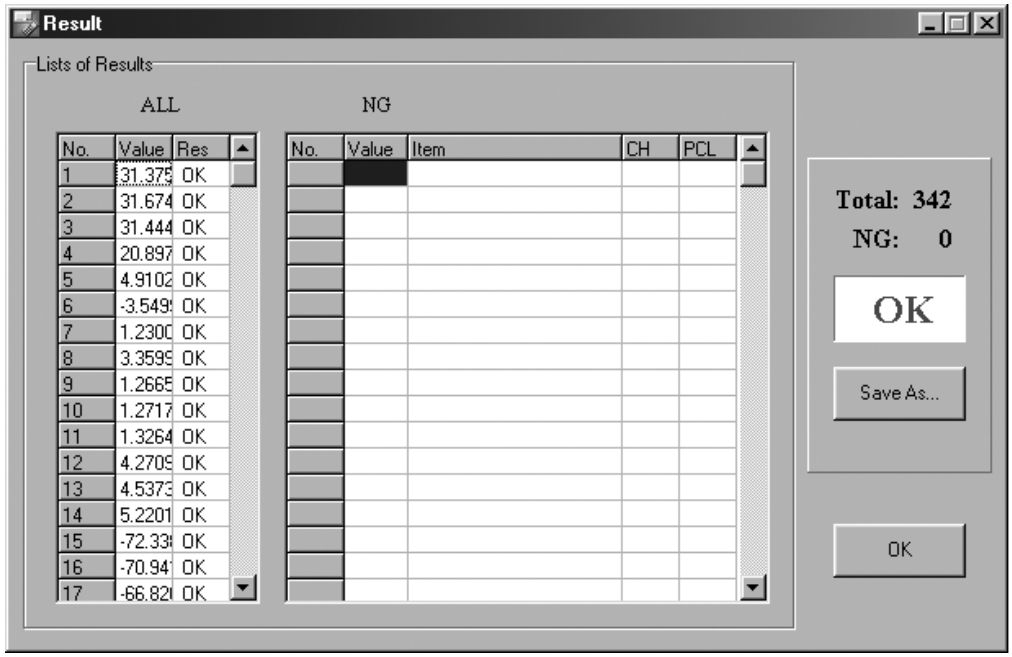


5. The following dialogue box appears after the check. Increase the stabilised power supply voltage to 4.0 V and click “OK”.

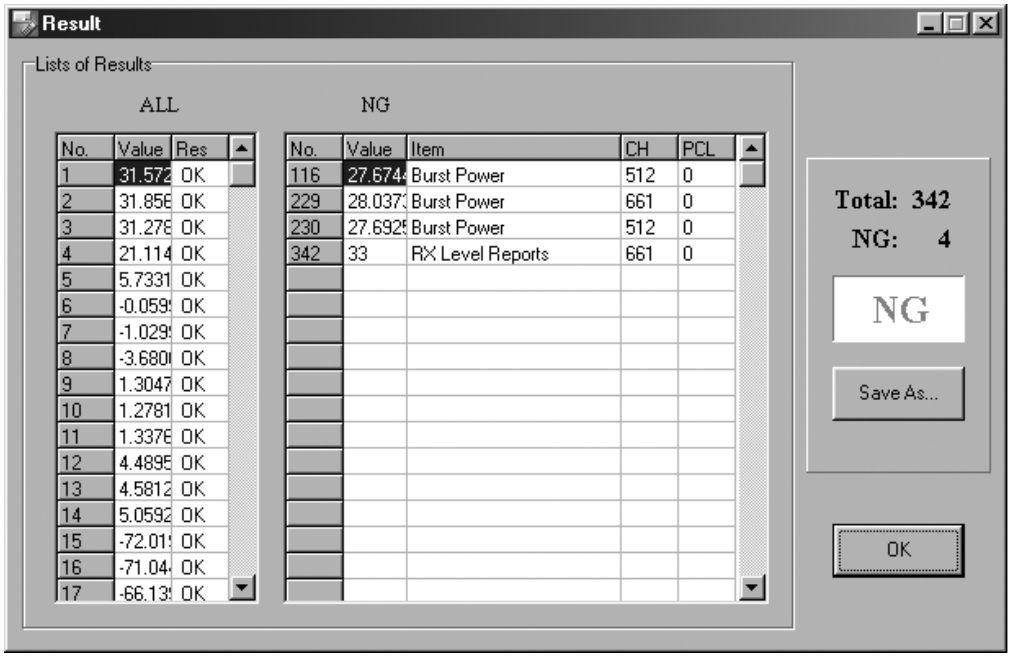
6. Make sure the voltage is set properly and press “OK”.



7. RF performance check is complete. Click “Save As...” and name the file to save the result. Click “OK” to exit.



The following will be displayed in case of failure.
See the attachment 2 for troubleshooting.



8. Click “OK”.

9. The initial screen returns.

Note:
The RF calibration tool allows the calibration but not the check when the terminal fails to catch signals from the GSM tester (unable to access a network with “no service” displayed). There is a possibility that CMU200 did not start properly. Turn off CMU200 and restart.

4.5.5 RF calibration & RF performance check

Pressing the “Cal_Check” button initiates RF calibration and RF performance check in succession.
Since some operations are skipped, this is handier than executing calibration (“Cal” button) and performance check (“Check” button) separately.

1. Set the stabilised power supply voltage to 4 V and turn on the handset (phone).
2. Start “RF calibration & check” on SPST and press “Cal_Check”.
3. Lower the stabilised power supply voltage to 3.7 V and press “OK”.
4. Make sure the voltage is set properly and press “OK”.
5. After the calibration and check, increase the stabilised power supply voltage to 4.0 V and press “OK”.
6. Make sure the voltage is set properly and press “OK”.
7. To save the results, press “Save As...” and enter a file name. To exit, press “OK”.
8. Press “OK”.
9. The initial screen returns.

(Steps 1 - 4 and 5 - 9 are respectively equivalent to RF calibration by the “Cal” button and RF performance check by the “Check” button.)

Attachment 2

Whole inspection list by RF performance check.

Band	Send-ing/ Receive	No.	Item to be inspected	Chan-nel	PCL
GSM	Tx	1	Burst Power	37CH	PCL5
GSM	Tx	2	Burst Power	975CH	PCL5
GSM	Tx	3	Burst Power	124CH	PCL5
GSM	Tx	4	Burst Power	37CH	PCL11
GSM	Tx	5	Burst Power	37CH	PCL19
GSM	Tx	6	Frequency Error	37CH	PCL5
GSM	Tx	7	Frequency Error	975CH	PCL5
GSM	Tx	8	Frequency Error	124CH	PCL5
GSM	Tx	9	Phase Error (RMS)	37CH	PCL5
GSM	Tx	10	Phase Error (RMS)	975CH	PCL5
GSM	Tx	11	Phase Error (RMS)	124CH	PCL5
GSM	Tx	12	Phase Error (Peak)	37CH	PCL5
GSM	Tx	13	Phase Error (Peak)	975CH	PCL5
GSM	Tx	14	Phase Error (Peak)	124CH	PCL5
GSM	Tx	15	Mod_spectrum –800	37CH	PCL5
GSM	Tx	16	Mod_spectrum –600	37CH	PCL5
GSM	Tx	17	Mod_spectrum –400	37CH	PCL5
GSM	Tx	18	Mod_spectrum –250	37CH	PCL5
GSM	Tx	19	Mod_spectrum –200	37CH	PCL5
GSM	Tx	20	Mod_spectrum +200	37CH	PCL5
GSM	Tx	21	Mod_spectrum +250	37CH	PCL5
GSM	Tx	22	Mod_spectrum +400	37CH	PCL5
GSM	Tx	23	Mod_spectrum +600	37CH	PCL5
GSM	Tx	24	Mod_spectrum +800	37CH	PCL5
GSM	Tx	25	Mod_spectrum –800	975CH	PCL5
GSM	Tx	26	Mod_spectrum –600	975CH	PCL5
GSM	Tx	27	Mod_spectrum –400	975CH	PCL5
GSM	Tx	28	Mod_spectrum –250	975CH	PCL5
GSM	Tx	29	Mod_spectrum –200	975CH	PCL5
GSM	Tx	30	Mod_spectrum +200	975CH	PCL5
GSM	Tx	31	Mod_spectrum +250	975CH	PCL5
GSM	Tx	32	Mod_spectrum +400	975CH	PCL5
GSM	Tx	33	Mod_spectrum +600	975CH	PCL5
GSM	Tx	34	Mod_spectrum +800	975CH	PCL5
GSM	Tx	35	Mod_spectrum –800	124CH	PCL5
GSM	Tx	36	Mod_spectrum –600	124CH	PCL5
GSM	Tx	37	Mod_spectrum –400	124CH	PCL5
GSM	Tx	38	Mod_spectrum –250	124CH	PCL5
GSM	Tx	39	Mod_spectrum –200	124CH	PCL5
GSM	Tx	40	Mod_spectrum +200	124CH	PCL5
GSM	Tx	41	Mod_spectrum +250	124CH	PCL5
GSM	Tx	42	Mod_spectrum +400	124CH	PCL5
GSM	Tx	43	Mod_spectrum +600	124CH	PCL5
GSM	Tx	44	Mod_spectrum +800	124CH	PCL5
GSM	Tx	45	Mod_spectrum –800	37CH	PCL11
GSM	Tx	46	Mod_spectrum –600	37CH	PCL11
GSM	Tx	47	Mod_spectrum –400	37CH	PCL11
GSM	Tx	48	Mod_spectrum –250	37CH	PCL11
GSM	Tx	49	Mod_spectrum –200	37CH	PCL11
GSM	Tx	50	Mod_spectrum +200	37CH	PCL11
GSM	Tx	51	Mod_spectrum +250	37CH	PCL11
GSM	Tx	52	Mod_spectrum +400	37CH	PCL11
GSM	Tx	53	Mod_spectrum +600	37CH	PCL11
GSM	Tx	54	Mod_spectrum +800	37CH	PCL11
GSM	Tx	55	Mod_spectrum –800	37CH	PCL19
GSM	Tx	56	Mod_spectrum –600	37CH	PCL19
GSM	Tx	57	Mod_spectrum –400	37CH	PCL19
GSM	Tx	58	Mod_spectrum –250	37CH	PCL19
GSM	Tx	59	Mod_spectrum –200	37CH	PCL19
GSM	Tx	60	Mod_spectrum +200	37CH	PCL19
GSM	Tx	61	Mod_spectrum +250	37CH	PCL19
GSM	Tx	62	Mod_spectrum +400	37CH	PCL19
GSM	Tx	63	Mod_spectrum +600	37CH	PCL19
GSM	Tx	64	Mod_spectrum +800	37CH	PCL19
GSM	Tx	65	Switch_Spectrum –1800	37CH	PCL5
GSM	Tx	66	Switch_Spectrum –1200	37CH	PCL5
GSM	Tx	67	Switch_Spectrum –600	37CH	PCL5
GSM	Tx	68	Switch_Spectrum –400	37CH	PCL5
GSM	Tx	69	Switch_Spectrum +400	37CH	PCL5
GSM	Tx	70	Switch_Spectrum +600	37CH	PCL5
GSM	Tx	71	Switch_Spectrum +1200	37CH	PCL5
GSM	Tx	72	Switch_Spectrum +1800	37CH	PCL5
GSM	Tx	73	Switch_Spectrum –1800	975CH	PCL5
GSM	Tx	74	Switch_Spectrum –1200	975CH	PCL5
GSM	Tx	75	Switch_Spectrum –600	975CH	PCL5
GSM	Tx	76	Switch_Spectrum –400	975CH	PCL5
GSM	Tx	77	Switch_Spectrum +400	975CH	PCL5
GSM	Tx	78	Switch_Spectrum +600	975CH	PCL5
GSM	Tx	79	Switch_Spectrum +1200	975CH	PCL5
GSM	Tx	80	Switch_Spectrum +1800	975CH	PCL5
GSM	Tx	81	Switch_Spectrum –1800	124CH	PCL5
GSM	Tx	82	Switch_Spectrum –1200	124CH	PCL5
GSM	Tx	83	Switch_Spectrum –600	124CH	PCL5
GSM	Tx	84	Switch_Spectrum –400	124CH	PCL5
GSM	Tx	85	Switch_Spectrum +400	124CH	PCL5
GSM	Tx	86	Switch_Spectrum +600	124CH	PCL5
GSM	Tx	87	Switch_Spectrum +1200	124CH	PCL5
GSM	Tx	88	Switch_Spectrum +1800	124CH	PCL5
GSM	Tx	89	Switch_Spectrum –1800	37CH	PCL11
GSM	Tx	90	Switch_Spectrum –1200	37CH	PCL11
GSM	Tx	91	Switch_Spectrum –600	37CH	PCL11
GSM	Tx	92	Switch_Spectrum –400	37CH	PCL11
GSM	Tx	93	Switch_Spectrum +400	37CH	PCL11
GSM	Tx	94	Switch_Spectrum +600	37CH	PCL11
GSM	Tx	95	Switch_Spectrum +1200	37CH	PCL11
GSM	Tx	96	Switch_Spectrum +1800	37CH	PCL11
GSM	Tx	97	Switch_Spectrum –1800	37CH	PCL19
GSM	Tx	98	Switch_Spectrum –1200	37CH	PCL19
GSM	Tx	99	Switch_Spectrum –600	37CH	PCL19
GSM	Tx	100	Switch_Spectrum –400	37CH	PCL19
GSM	Tx	101	Switch_Spectrum +400	37CH	PCL19
GSM	Tx	102	Switch_Spectrum +600	37CH	PCL19
GSM	Tx	103	Switch_Spectrum +1200	37CH	PCL19
GSM	Tx	104	Switch_Spectrum +1800	37CH	PCL19
GSM	Tx	105	Burst Timing	37CH	PCL5
GSM	Tx	106	Burst Timing	975CH	PCL5
GSM	Tx	107	Burst Timing	124CH	PCL5
GSM	Tx	108	Burst Timing	37CH	PCL11
GSM	Tx	109	Burst Timing	37CH	PCL19
GSM	Rx	110	Rx Sensitivity	37CH	PCL5
GSM	Rx	111	Rx Sensitivity	975CH	PCL5
GSM	Rx	112	Rx Sensitivity	124CH	PCL5
GSM	Rx	113	Usable Receiver Level	37CH	PCL5
GSM	Rx	114	Rx Level Reports	37CH	PCL5
DCS	Tx	115	Burst Power	699CH	PCL0
DCS	Tx	116	Burst Power	512CH	PCL0
DCS	Tx	117	Burst Power	885CH	PCL0
DCS	Tx	118	Burst Power	699CH	PCL5
DCS	Tx	119	Burst Power	699CH	PCL15
DCS	Tx	120	Frequency Error	699CH	PCL0
DCS	Tx	121	Frequency Error	512CH	PCL0

Band	Sending/ Receive	No.	Item to be inspected	Channel	PCL
DCS	Tx	122	Frequency Error	885CH	PCL0
DCS	Tx	123	Phase Error (RMS)	699CH	PCL0
DCS	Tx	124	Phase Error (RMS)	512CH	PCL0
DCS	Tx	125	Phase Error (RMS)	885CH	PCL0
DCS	Tx	126	Phase Error (Peak)	699CH	PCL0
DCS	Tx	127	Phase Error (Peak)	512CH	PCL0
DCS	Tx	128	Phase Error (Peak)	885CH	PCL0
DCS	Tx	129	Mod_spectrum –800	699CH	PCL0
DCS	Tx	130	Mod_spectrum –600	699CH	PCL0
DCS	Tx	131	Mod_spectrum –400	699CH	PCL0
DCS	Tx	132	Mod_spectrum –250	699CH	PCL0
DCS	Tx	133	Mod_spectrum –200	699CH	PCL0
DCS	Tx	134	Mod_spectrum +200	699CH	PCL0
DCS	Tx	135	Mod_spectrum +250	699CH	PCL0
DCS	Tx	136	Mod_spectrum +400	699CH	PCL0
DCS	Tx	137	Mod_spectrum +600	699CH	PCL0
DCS	Tx	138	Mod_spectrum +800	699CH	PCL0
DCS	Tx	139	Mod_spectrum –800	512CH	PCL0
DCS	Tx	140	Mod_spectrum –600	512CH	PCL0
DCS	Tx	141	Mod_spectrum –400	512CH	PCL0
DCS	Tx	142	Mod_spectrum –250	512CH	PCL0
DCS	Tx	143	Mod_spectrum –200	512CH	PCL0
DCS	Tx	144	Mod_spectrum +200	512CH	PCL0
DCS	Tx	145	Mod_spectrum +250	512CH	PCL0
DCS	Tx	146	Mod_spectrum +400	512CH	PCL0
DCS	Tx	147	Mod_spectrum +600	512CH	PCL0
DCS	Tx	148	Mod_spectrum +800	512CH	PCL0
DCS	Tx	149	Mod_spectrum –800	885CH	PCL0
DCS	Tx	150	Mod_spectrum –600	885CH	PCL0
DCS	Tx	151	Mod_spectrum –400	885CH	PCL0
DCS	Tx	152	Mod_spectrum –250	885CH	PCL0
DCS	Tx	153	Mod_spectrum –200	885CH	PCL0
DCS	Tx	154	Mod_spectrum +200	885CH	PCL0
DCS	Tx	155	Mod_spectrum +250	885CH	PCL0
DCS	Tx	156	Mod_spectrum +400	885CH	PCL0
DCS	Tx	157	Mod_spectrum +600	885CH	PCL0
DCS	Tx	158	Mod_spectrum +800	885CH	PCL0
DCS	Tx	159	Mod_spectrum –800	699CH	PCL5
DCS	Tx	160	Mod_spectrum –600	699CH	PCL5
DCS	Tx	161	Mod_spectrum –400	699CH	PCL5
DCS	Tx	162	Mod_spectrum –250	699CH	PCL5
DCS	Tx	163	Mod_spectrum –200	699CH	PCL5
DCS	Tx	164	Mod_spectrum +200	699CH	PCL5
DCS	Tx	165	Mod_spectrum +250	699CH	PCL5
DCS	Tx	166	Mod_spectrum +400	699CH	PCL5
DCS	Tx	167	Mod_spectrum +600	699CH	PCL5
DCS	Tx	168	Mod_spectrum +800	699CH	PCL5
DCS	Tx	169	Mod_spectrum –800	699CH	PCL15
DCS	Tx	170	Mod_spectrum –600	699CH	PCL15
DCS	Tx	171	Mod_spectrum –400	699CH	PCL15
DCS	Tx	172	Mod_spectrum –250	699CH	PCL15
DCS	Tx	173	Mod_spectrum –200	699CH	PCL15
DCS	Tx	174	Mod_spectrum +200	699CH	PCL15
DCS	Tx	175	Mod_spectrum +250	699CH	PCL15
DCS	Tx	176	Mod_spectrum +400	699CH	PCL15
DCS	Tx	177	Mod_spectrum +600	699CH	PCL15
DCS	Tx	178	Mod_spectrum +800	699CH	PCL15
DCS	Tx	179	Switch_Spectrum –1800	699CH	PCL0
DCS	Tx	180	Switch_Spectrum –1200	699CH	PCL0
DCS	Tx	181	Switch_Spectrum –600	699CH	PCL0
DCS	Tx	182	Switch_Spectrum –400	699CH	PCL0
DCS	Tx	183	Switch_Spectrum +400	699CH	PCL0
DCS	Tx	184	Switch_Spectrum +600	699CH	PCL0
DCS	Tx	185	Switch_Spectrum +1200	699CH	PCL0
DCS	Tx	186	Switch_Spectrum +1800	699CH	PCL0
DCS	Tx	187	Switch_Spectrum –1800	512CH	PCL0
DCS	Tx	188	Switch_Spectrum –1200	512CH	PCL0
DCS	Tx	189	Switch_Spectrum –600	512CH	PCL0
DCS	Tx	190	Switch_Spectrum –400	512CH	PCL0
DCS	Tx	191	Switch_Spectrum +400	512CH	PCL0
DCS	Tx	192	Switch_Spectrum +600	512CH	PCL0
DCS	Tx	193	Switch_Spectrum +1200	512CH	PCL0
DCS	Tx	194	Switch_Spectrum +1800	512CH	PCL0
DCS	Tx	195	Switch_Spectrum –1800	885CH	PCL0
DCS	Tx	196	Switch_Spectrum –1200	885CH	PCL0
DCS	Tx	197	Switch_Spectrum –600	885CH	PCL0
DCS	Tx	198	Switch_Spectrum –400	885CH	PCL0
DCS	Tx	199	Switch_Spectrum +400	885CH	PCL0
DCS	Tx	200	Switch_Spectrum +600	885CH	PCL0
DCS	Tx	201	Switch_Spectrum +1200	885CH	PCL0
DCS	Tx	202	Switch_Spectrum +1800	885CH	PCL0
DCS	Tx	203	Switch_Spectrum –1800	699CH	PCL5
DCS	Tx	204	Switch_Spectrum –1200	699CH	PCL5
DCS	Tx	205	Switch_Spectrum –600	699CH	PCL5
DCS	Tx	206	Switch_Spectrum –400	699CH	PCL5
DCS	Tx	207	Switch_Spectrum +400	699CH	PCL5
DCS	Tx	208	Switch_Spectrum +600	699CH	PCL5
DCS	Tx	209	Switch_Spectrum +1200	699CH	PCL5
DCS	Tx	210	Switch_Spectrum +1800	699CH	PCL5
DCS	Tx	211	Switch_Spectrum –1800	699CH	PCL15
DCS	Tx	212	Switch_Spectrum –1200	699CH	PCL15
DCS	Tx	213	Switch_Spectrum –600	699CH	PCL15
DCS	Tx	214	Switch_Spectrum –400	699CH	PCL15
DCS	Tx	215	Switch_Spectrum +400	699CH	PCL15
DCS	Tx	216	Switch_Spectrum +600	699CH	PCL15
DCS	Tx	217	Switch_Spectrum +1200	699CH	PCL15
DCS	Tx	218	Switch_Spectrum +1800	699CH	PCL15
DCS	Tx	219	Burst Timing	699CH	PCL0
DCS	Tx	220	Burst Timing	512CH	PCL0
DCS	Tx	221	Burst Timing	885CH	PCL0
DCS	Tx	222	Burst Timing	699CH	PCL5
DCS	Tx	223	Burst Timing	699CH	PCL15
DCS	Rx	224	Rx Sensitivity	699CH	PCL0
DCS	Rx	225	Rx Sensitivity	512CH	PCL0
DCS	Rx	226	Rx Sensitivity	885CH	PCL0
DCS	Rx	227	Usable Receiver Level	699CH	PCL0
DCS	Rx	228	Rx Level Reports	699CH	PCL0
PCS	Tx	229	Burst Power	661CH	PCL0
PCS	Tx	230	Burst Power	512CH	PCL0
PCS	Tx	231	Burst Power	810CH	PCL0
PCS	Tx	232	Burst Power	661CH	PCL5
PCS	Tx	233	Burst Power	661CH	PCL15
PCS	Tx	234	Frequency Error	661CH	PCL0
PCS	Tx	235	Frequency Error	512CH	PCL0
PCS	Tx	236	Frequency Error	810CH	PCL0
PCS	Tx	237	Phase Error (RMS)	661CH	PCL0
PCS	Tx	238	Phase Error (RMS)	512CH	PCL0
PCS	Tx	239	Phase Error (RMS)	810CH	PCL0
PCS	Tx	240	Phase Error (Peak)	661CH	PCL0
PCS	Tx	241	Phase Error (Peak)	512CH	PCL0
PCS	Tx	242	Phase Error (Peak)	810CH	PCL0
PCS	Tx	243	Mod_spectrum –800	661CH	PCL0
PCS	Tx	244	Mod_spectrum –600	661CH	PCL0
PCS	Tx	245	Mod_spectrum –400	661CH	PCL0

Band	Send-ing/ Recei ve	No.	Item to be inspected	Chan-nel	PCL
PCS	Tx	246	Mod_spectrum –250	661CH	PCL0
PCS	Tx	247	Mod_spectrum –200	661CH	PCL0
PCS	Tx	248	Mod_spectrum +200	661CH	PCL0
PCS	Tx	249	Mod_spectrum +250	661CH	PCL0
PCS	Tx	250	Mod_spectrum +400	661CH	PCL0
PCS	Tx	251	Mod_spectrum +600	661CH	PCL0
PCS	Tx	252	Mod_spectrum +800	661CH	PCL0
PCS	Tx	253	Mod_spectrum –800	512CH	PCL0
PCS	Tx	254	Mod_spectrum –600	512CH	PCL0
PCS	Tx	255	Mod_spectrum –400	512CH	PCL0
PCS	Tx	256	Mod_spectrum –250	512CH	PCL0
PCS	Tx	257	Mod_spectrum –200	512CH	PCL0
PCS	Tx	258	Mod_spectrum +200	512CH	PCL0
PCS	Tx	259	Mod_spectrum +250	512CH	PCL0
PCS	Tx	260	Mod_spectrum +400	512CH	PCL0
PCS	Tx	261	Mod_spectrum +600	512CH	PCL0
PCS	Tx	262	Mod_spectrum +800	512CH	PCL0
PCS	Tx	263	Mod_spectrum –800	810CH	PCL0
PCS	Tx	264	Mod_spectrum –600	810CH	PCL0
PCS	Tx	265	Mod_spectrum –400	810CH	PCL0
PCS	Tx	266	Mod_spectrum –250	810CH	PCL0
PCS	Tx	267	Mod_spectrum –200	810CH	PCL0
PCS	Tx	268	Mod_spectrum +200	810CH	PCL0
PCS	Tx	269	Mod_spectrum +250	810CH	PCL0
PCS	Tx	270	Mod_spectrum +400	810CH	PCL0
PCS	Tx	271	Mod_spectrum +600	810CH	PCL0
PCS	Tx	272	Mod_spectrum +800	810CH	PCL0
PCS	Tx	273	Mod_spectrum –800	661CH	PCL5
PCS	Tx	274	Mod_spectrum –600	661CH	PCL5
PCS	Tx	275	Mod_spectrum –400	661CH	PCL5
PCS	Tx	276	Mod_spectrum –250	661CH	PCL5
PCS	Tx	277	Mod_spectrum –200	661CH	PCL5
PCS	Tx	278	Mod_spectrum +200	661CH	PCL5
PCS	Tx	279	Mod_spectrum +250	661CH	PCL5
PCS	Tx	280	Mod_spectrum +400	661CH	PCL5
PCS	Tx	281	Mod_spectrum +600	661CH	PCL5
PCS	Tx	282	Mod_spectrum +800	661CH	PCL5
PCS	Tx	283	Mod_spectrum –800	661CH	PCL15
PCS	Tx	284	Mod_spectrum –600	661CH	PCL15
PCS	Tx	285	Mod_spectrum –400	661CH	PCL15
PCS	Tx	286	Mod_spectrum –250	661CH	PCL15
PCS	Tx	287	Mod_spectrum –200	661CH	PCL15
PCS	Tx	288	Mod_spectrum +200	661CH	PCL15
PCS	Tx	289	Mod_spectrum +250	661CH	PCL15
PCS	Tx	290	Mod_spectrum +400	661CH	PCL15
PCS	Tx	291	Mod_spectrum +600	661CH	PCL15
PCS	Tx	292	Mod_spectrum +800	661CH	PCL15
PCS	Tx	293	Switch_Spectrum –1800	661CH	PCL0
PCS	Tx	294	Switch_Spectrum –1200	661CH	PCL0
PCS	Tx	295	Switch_Spectrum –600	661CH	PCL0
PCS	Tx	296	Switch_Spectrum –400	661CH	PCL0
PCS	Tx	297	Switch_Spectrum +400	661CH	PCL0
PCS	Tx	298	Switch_Spectrum +600	661CH	PCL0
PCS	Tx	299	Switch_Spectrum +1200	661CH	PCL0
PCS	Tx	300	Switch_Spectrum +1800	661CH	PCL0
PCS	Tx	301	Switch_Spectrum –1800	512CH	PCL0
PCS	Tx	302	Switch_Spectrum –1200	512CH	PCL0
PCS	Tx	303	Switch_Spectrum –600	512CH	PCL0
PCS	Tx	304	Switch_Spectrum –400	512CH	PCL0
PCS	Tx	305	Switch_Spectrum +400	512CH	PCL0
PCS	Tx	306	Switch_Spectrum +600	512CH	PCL0
PCS	Tx	307	Switch_Spectrum +1200	512CH	PCL0
PCS	Tx	308	Switch_Spectrum +1800	512CH	PCL0
PCS	Tx	309	Switch_Spectrum –1800	810CH	PCL0
PCS	Tx	310	Switch_Spectrum –1200	810CH	PCL0
PCS	Tx	311	Switch_Spectrum –600	810CH	PCL0
PCS	Tx	312	Switch_Spectrum –400	810CH	PCL0
PCS	Tx	313	Switch_Spectrum +400	810CH	PCL0
PCS	Tx	314	Switch_Spectrum +600	810CH	PCL0
PCS	Tx	315	Switch_Spectrum +1200	810CH	PCL0
PCS	Tx	316	Switch_Spectrum +1800	810CH	PCL0
PCS	Tx	317	Switch_Spectrum –1800	661CH	PCL5
PCS	Tx	318	Switch_Spectrum –1200	661CH	PCL5
PCS	Tx	319	Switch_Spectrum –600	661CH	PCL5
PCS	Tx	320	Switch_Spectrum –400	661CH	PCL5
PCS	Tx	321	Switch_Spectrum +400	661CH	PCL5
PCS	Tx	322	Switch_Spectrum +600	661CH	PCL5
PCS	Tx	323	Switch_Spectrum +1200	661CH	PCL5
PCS	Tx	324	Switch_Spectrum +1800	661CH	PCL5
PCS	Tx	325	Switch_Spectrum –1800	661CH	PCL15
PCS	Tx	326	Switch_Spectrum –1200	661CH	PCL15
PCS	Tx	327	Switch_Spectrum –600	661CH	PCL15
PCS	Tx	328	Switch_Spectrum –400	661CH	PCL15
PCS	Tx	329	Switch_Spectrum +400	661CH	PCL15
PCS	Tx	330	Switch_Spectrum +600	661CH	PCL15
PCS	Tx	331	Switch_Spectrum +1200	661CH	PCL15
PCS	Tx	332	Switch_Spectrum +1800	661CH	PCL15
PCS	Tx	333	Burst Timing	661CH	PCL0
PCS	Tx	334	Burst Timing	512CH	PCL0
PCS	Tx	335	Burst Timing	810CH	PCL0
PCS	Tx	336	Burst Timing	661CH	PCL5
PCS	Tx	337	Burst Timing	661CH	PCL15
PCS	Rx	338	Rx Sensitivity	661CH	PCL0
PCS	Rx	339	Rx Sensitivity	512CH	PCL0
PCS	Rx	340	Rx Sensitivity	810CH	PCL0
PCS	Rx	341	Usable Receiver Level	661CH	PCL0
PCS	Rx	342	Rx Level Reports	661CH	PCL0

Troubleshooting list

Test item		Check parts for GSM	Check parts for DCS	Check parts for PCS
Tx	Burst Power	IC802, IC803, FL905	IC802, IC803, FL905	IC802, IC803, FL905
	Frequency Error	–	–	–
	Phase Error	–	–	–
	Mod_spectrum	–	–	–
	Switch_Spectrum	IC802	IC802	IC802
	Burst Timing	IC802	IC802	IC802
Rx	Rx Sensitivity	IC803, FL902, FL905	IC803, FL902, FL905	IC803, FL903, FL905
	Usable Receiver Level	–	–	–
	Rx Level Reports	IC803, FL902, FL905	IC803, FL902, FL905	IC803, FL903, FL905

4.6. RF test tool

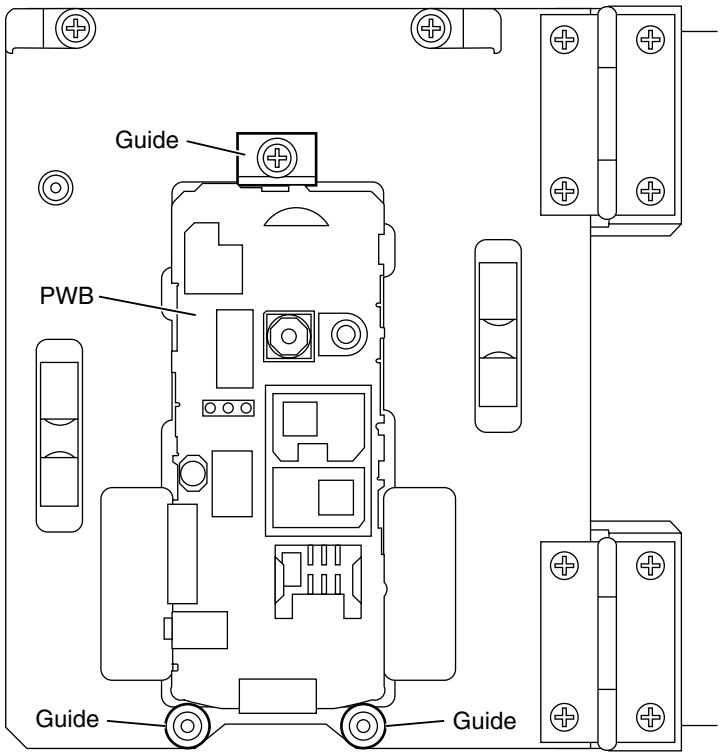
4.6.1 Requirements

For repairs, this test checks the condition of an electric board (especially the RF section).

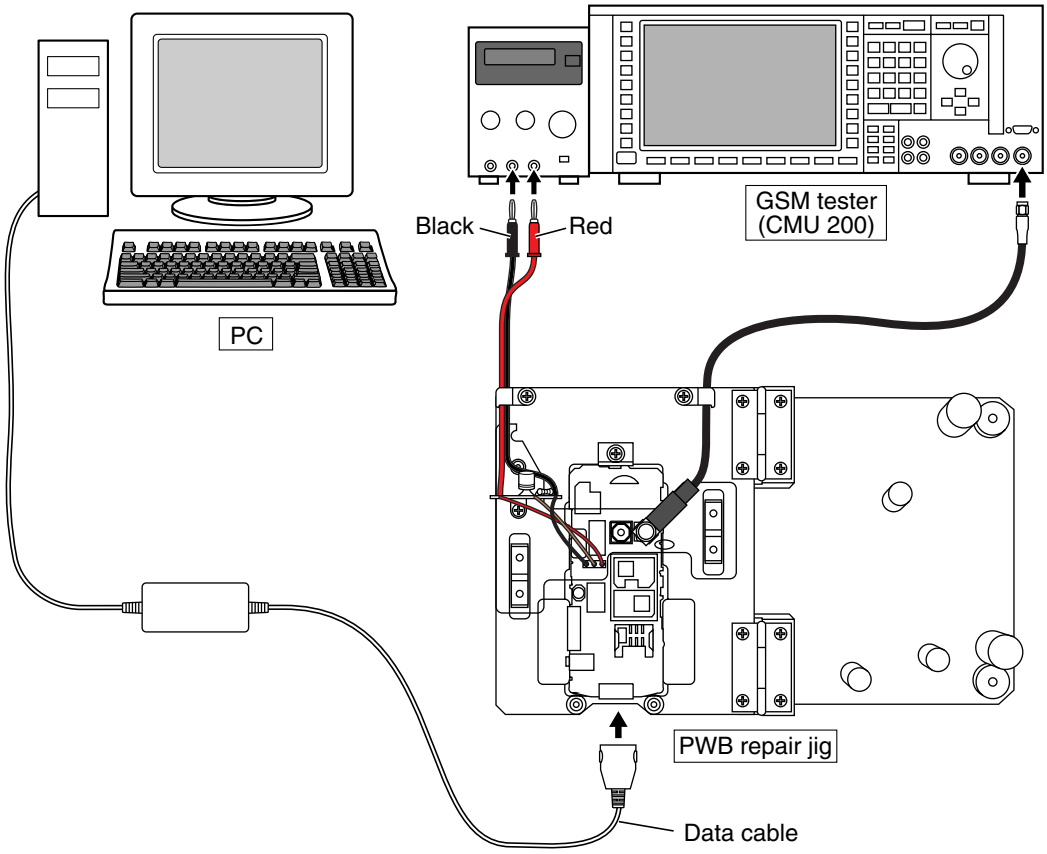
- PC with USB port
- GX17 data cable
- PWB repair jig
- GSM tester (CMU200)

4.6.2 Setup

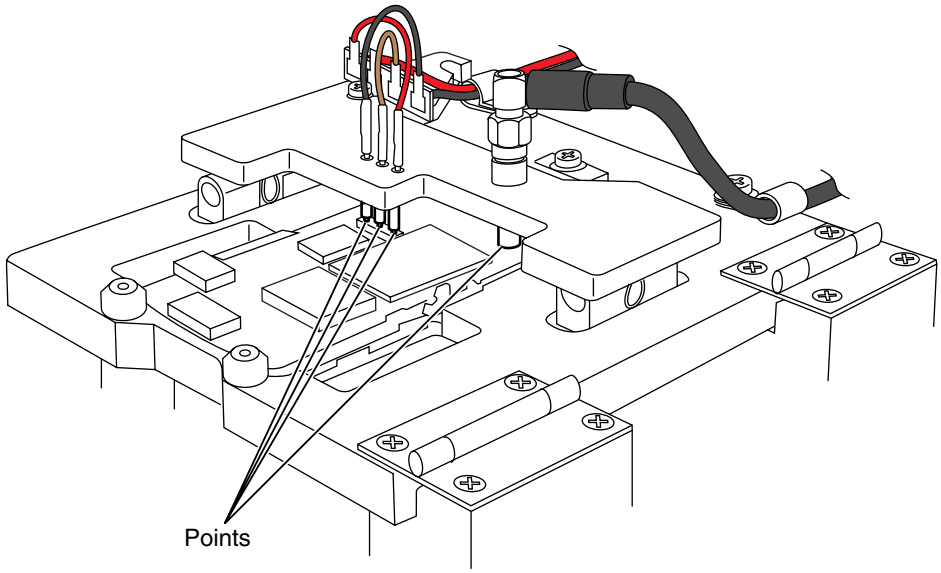
1. Install GX17 USB driver from CD-ROM, if it is not installed.
2. Set PWB and make connections as shown in “PWB installation” and “Connections”.
   Make sure connections are correct at the points shown in “Contact points”.



PWB installation

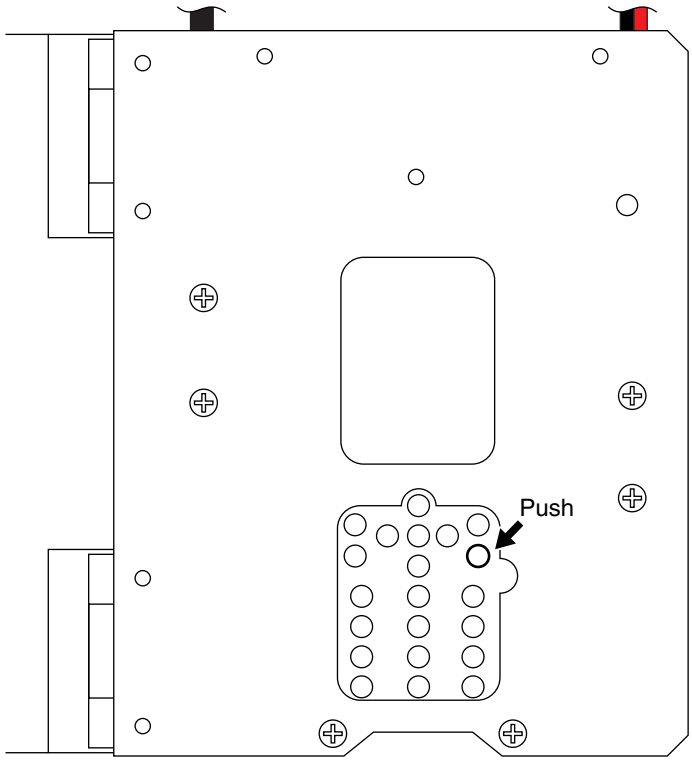


Connections



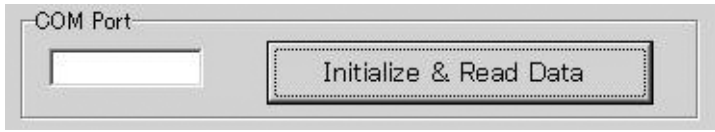
Contact points

3. Apply 4 V using a stabilised power supply and turn on the handset (phone).



Turning power on

4. Start RF test tool.
5. Press the “Initialize & Read Data” button. (COM port is automatically selected.)

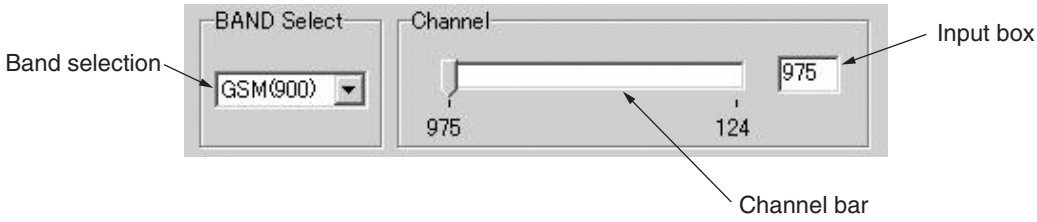


6. Change the voltage, if you need.
7. Click “OK” to proceed.

4.6.3 Tests

1) BAND Select & Channel

Select a band and a channel to test. Settings are applied to all tests.

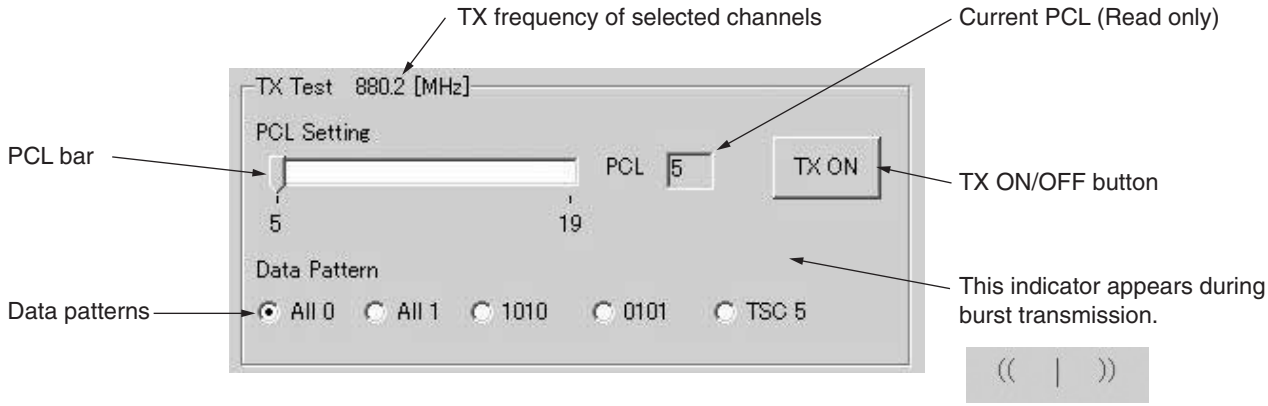


[Procedure]

1. Select a band. (GSM, DCS or PCS)
2. Select or enter a channel using channel bar or input box.

2) TX test

Test burst transmission.



[Procedure]

1. Select a band and channel. [see **4.6.3.1)**]
2. Select PCL (Power Control Level) using PCL bar.
3. Select a data pattern.
4. Click TX ON to start burst transmission.
   (You can check each part in this state.)
5. Click TX OFF to end burst transmission.

* Data pattern (TSC 5) includes Training Sequence GSM 5, and other part is pseudo random data.

GX17 TX power Table (25°C, voltage: 3.7[V])

GSM Band

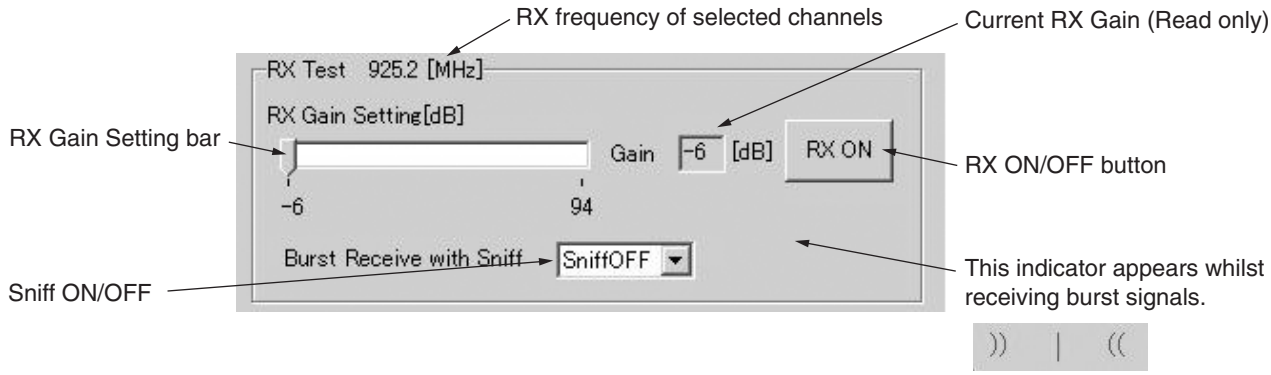
PCL	GSM [dBm]	Tolerance
5	33	+/–2 dB
6	31	+/–3 dB
7	29	+/–3 dB
8	27	+/–3 dB
9	25	+/–3 dB
10	23	+/–3 dB
11	21	+/–3 dB
12	19	+/–3 dB
13	17	+/–3 dB
14	15	+/–3 dB
15	13	+/–3 dB
16	11	+/–5 dB
17	9	+/–5 dB
18	7	+/–5 dB
19	5	+/–5 dB

DCS/PCS Band

PCL	DCS/PCS [dBm]	Tolerance
0	30	+/–2 dB
1	28	+/–3 dB
2	26	+/–3 dB
3	24	+/–3 dB
4	22	+/–3 dB
5	20	+/–3 dB
6	18	+/–3 dB
7	16	+/–3 dB
8	14	+/–3 dB
9	12	+/–4 dB
10	10	+/–4 dB
11	8	+/–4 dB
12	6	+/–4 dB
13	4	+/–4 dB
14	2	+/–5 dB
15	0	+/–5 dB

3) RX test

The handset (phone) receives burst signals in this test.



[Procedure]

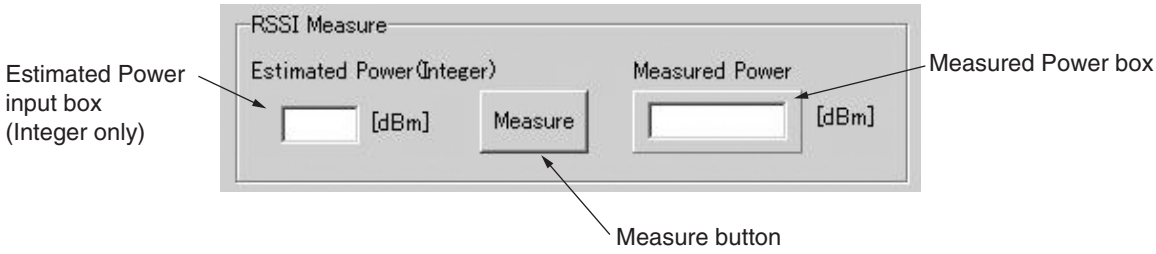
1. Select a channel and band. [see **4.6.3.1)**]
2. Select RX Gain using RX Gain Setting bar.
3. Choose Sniff ON or OFF.
4. Click “RX ON” to receive burst signals.
5. From GSM tester, send burst signals in the specified channel.
   (You can check each part in this state.)
6. Click “RX OFF” to stop burst signals.

* In this test, the reception timing cannot be synchronised with burst signals from Signal Generator or GSM tester.

* The standard RX Gain Setting is:
(Input power at the aerial connector of the handset (phone)) + (RX Gain) = –16 dBm
Excessive input power or RX Gain may cause damage to the handset (phone).

4) RSSI Measure

The handset (phone) notifies you of input power value at the aerial connector.



[Procedure]

1. Connect the handset (phone) and GSM tester (or Signal Generator) with RF cable.
2. Select a band and channel. [see **4.6.3.1)**]
3. Send signals (*) from GSM tester.
4. Enter the value of input power from GSM tester in integers (from –10 to –110) considering RF cable loss.
5. Press the “Measure” button.
6. The result appears in Measured Power box.

* The signal type from GSM tester must be either of the following:

1. Continuous sine wave (without modulation) with the following frequency.
   (Frequency of the measured channel) + 67.708 kHz
   (e.g. channel: GSM 37ch → the result: 942.467708 MHz)
   Power: –110 to –10 dBm
2. BCCH signal of the measured channel
   Power: –110 to –10 dBm

Result

When the handset (phone) is properly calibrated, the error between “Estimated Power” and “Measured Power” is less than 3 dB.

4.6.4 Termination

Turn off the handset (phone) to ensure proper operations.

4.6.5 Trouble information

When switching DCS and PCS, change the channel number as well. Or the band does not change properly.

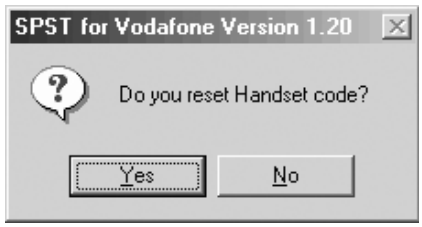
Example: If you change DCS 512 CH to PCS 512 CH, the band remains DCS.

4.7. Password reset

SPST resets the password [handset (phone) code is set to “0000”].

<Operation>

1) Set the COM port on the SPST initial screen and click “User Password Reset”. Click “Yes” to reset. Click “No” to exit.



2) When completed, the following appears.

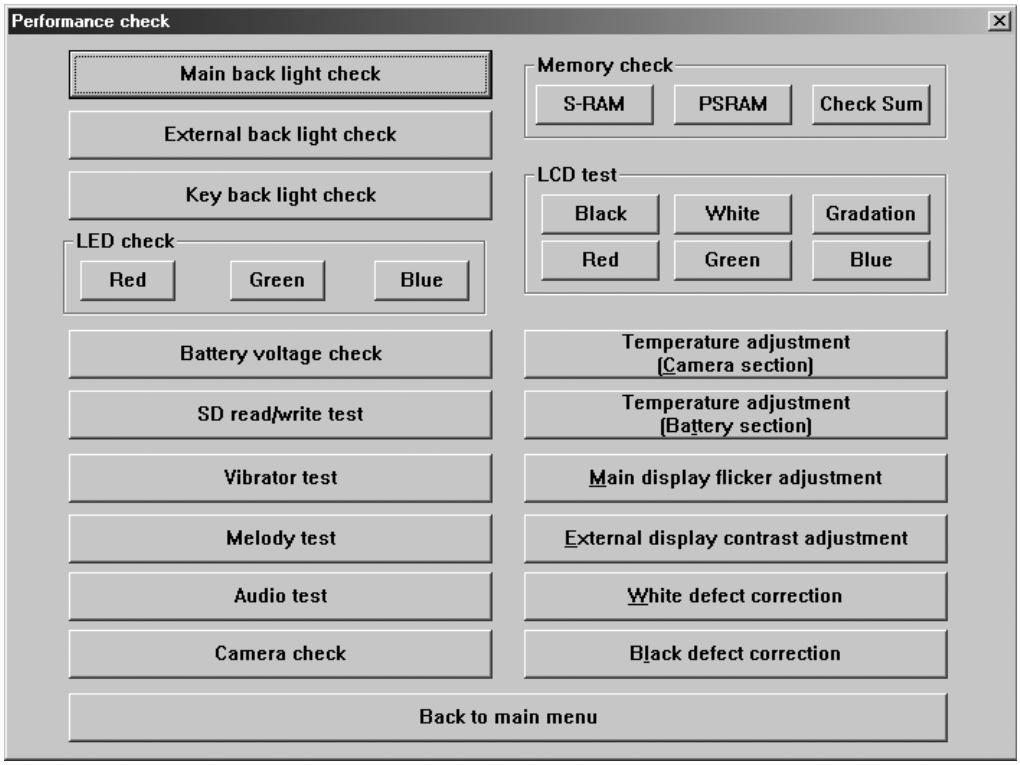
4.8. Performance check and adjustment

With this function, SPST checks the performance of the handset (phone) and makes adjustments.

<Operation>

1) Set the COM port on the SPST initial screen and click “Performance check and adjustment”. The following dialogue box appears whilst processing.

2) When completed, the following is displayed. Click “Back to main menu” to exit.



The functions of each button are described below.

4.8.1 Back light check

The display back light turns on and the message appears on the PC.

Check the back light and press “OK”.

• If a failure occurs, see “9. Back Light does not turn on.” in [3] Troubleshooting.

4.8.2 Key back light check

The keypad back light turns on and the message appears on the PC. Check the back light and press “OK”.

4.8.3 Battery voltage check

Click to display the current battery voltage.
• If a failure occurs, see “1. Power does not turn on.” in [3] Troubleshooting.

4.8.4 Vibrator test

Click to vibrate the handset (phone). Click “OK” to exit.
• If a failure occurs, see “5. Vibrator does not work.” in [3] Troubleshooting.

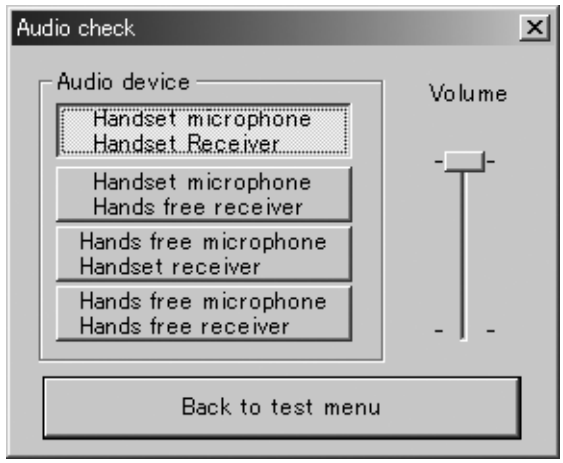
4.8.5 Melody test

A message describes test items. Click “Yes” to proceed and “No” to exit.
The order of the test items:
Earpiece → Hands free → Hands free (stereo) → Earpiece (analogue melody)

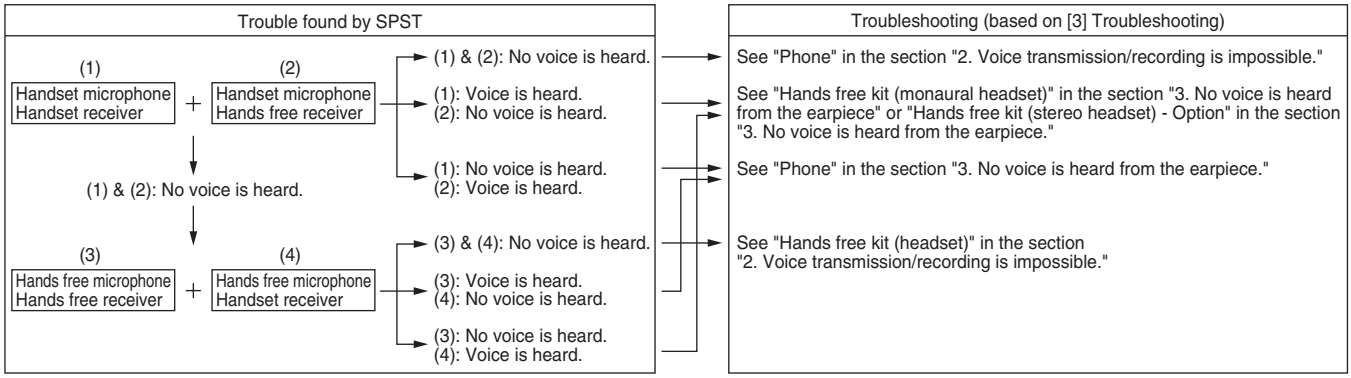
Trouble found by SPST		Troubleshooting (based on [3] Troubleshooting)
(1) Earpiece		See "7. Earpiece (for loud speaker) does not work."
(2) Hands free	Sound is heard in audio test.	Parts between IC105 pin 10 and IC103 pin 93 are defective, or IC103 is defective.
	No sound is heard in audio test.	See "Hands free kit (monaural headset)" in the section "3. No voice is heard from the earpiece."
(3) Hands free (stereo)	Sound is heard in audio test.	Parts between IC105 pin 10 and IC103 pin 93; IC105 pin 11 and IC103 pin 94 are defective. Otherwise IC103 is defective.
	No sound is heard in audio test.	See "Hands free kit (stereo headset) - Option" in the section "3. No voice is heard from the earpiece."
(4) Earpiece (analogue melody)		See "8. Video/Voice Recorder playback is impossible." Otherwise parts between IC105 pin 10 and IC103 pin 93 are defective, or IC103 is defective.

4.8.6 Audio test

The following appears.

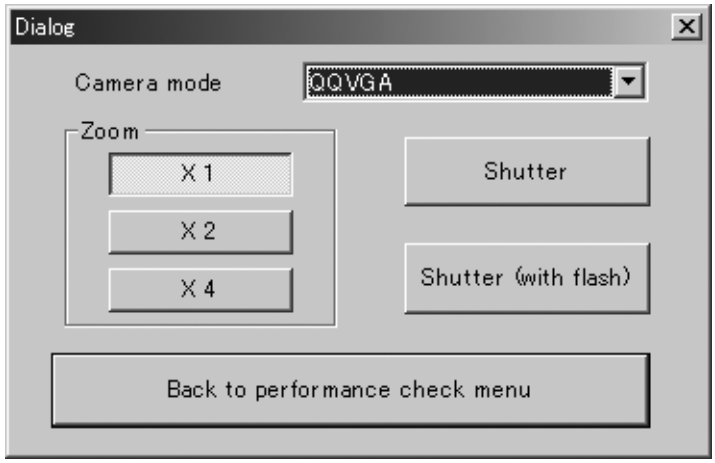


Select a test item from Audio device. Check the output sound from the receiver by speaking to the microphone, etc. Click “Back to test menu” to return to the previous screen.



4.8.7 Camera check

The following appears.



Select a Camera mode from the list box. Click “Shutter” to check that the camera operates properly. Click “Back to performance check menu” to return to the previous screen.

• If a failure occurs, see “12. Pictures cannot be taken.” in [3] Troubleshooting.

4.8.8 Memory check

Click “S-RAM” and “PSRAM” to see each test result.
For “Check Sum”, the calculation appears after the SPST communicating dialogue box.

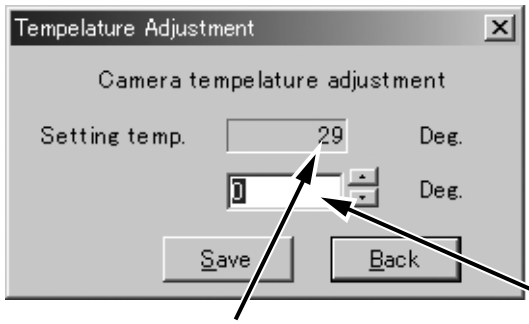
4.8.9 LCD test

Check that the specified colour appears on the main display.
• If a failure occurs, see “10. The display does not appear on Display.” in [3] Troubleshooting.

4.8.10 Temperature adjustment

The following appears.
Setting temp. indicates the current temperature. The relative temperature is displayed in the text box below.
(Only the relative temperature is adjustable.)

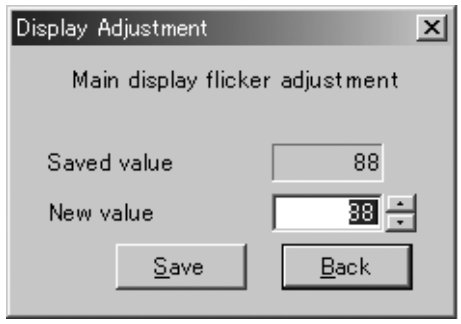
If displayed Setting temp. value differs from the current temperature, click “ ▲ ” or “ ▼ ” to set a correction value in the range of –99 to +99 and click “Save”.



Correction value = (Setting temp.) – (current temp.) + (displayed correction value)

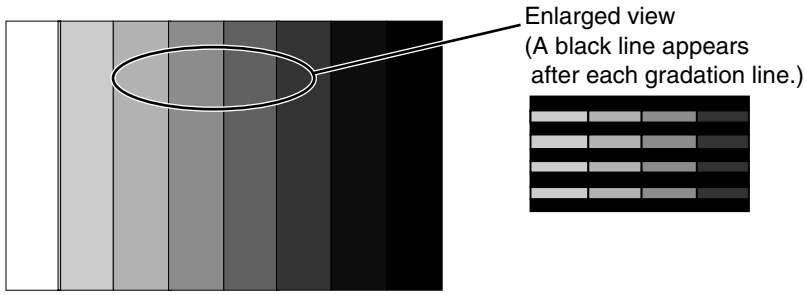
4.8.11 Display flicker adjustment

The following is displayed.



Check a main display visually within a distance of 20 cm from a fluorescent light, and adjust the value to minimise flicker on the display with the “ ▲ ” and “ ▼ ” buttons. Click “Save” and confirm that the main display does not flicker.

(Fine adjustment for DC voltage between display electrodes)



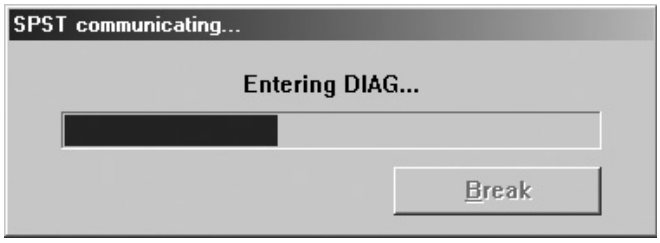
8-level gradation pattern with alternate black and gradation lines (black and white)

4.9. ****mode release

When the handset (phone) does not turn on and enter the normal mode, use this function to change ****mode to the normal mode.

<Operation>

1) Select the COM port on the SPST initial screen and click "****mode release". The following dialogue box appears.



2) If SPST cannot communicate with the handset (phone), the following message is displayed. Make sure the handset (phone) is turned on and click "Retry". To exit, click "Cancel".

3) When complete, the following message appears.

5. Other tests

SPST does not provide tests of Bluetooth/USB communication. Check them according to the following instructions.

5.1. Bluetooth

1) Connect GX17 to the network and check that a conversation (talking and listening) is possible using a Bluetooth headset.

   Recommended Bluetooth headset:

   JABRA BT200

   PLANTRONICS M1000

   PLANTRONICS M3000

2) Connect GX17 to another Bluetooth built-in handset (phone) or PC and check that text data can be transmitted and received properly via Bluetooth.

5.2. USB

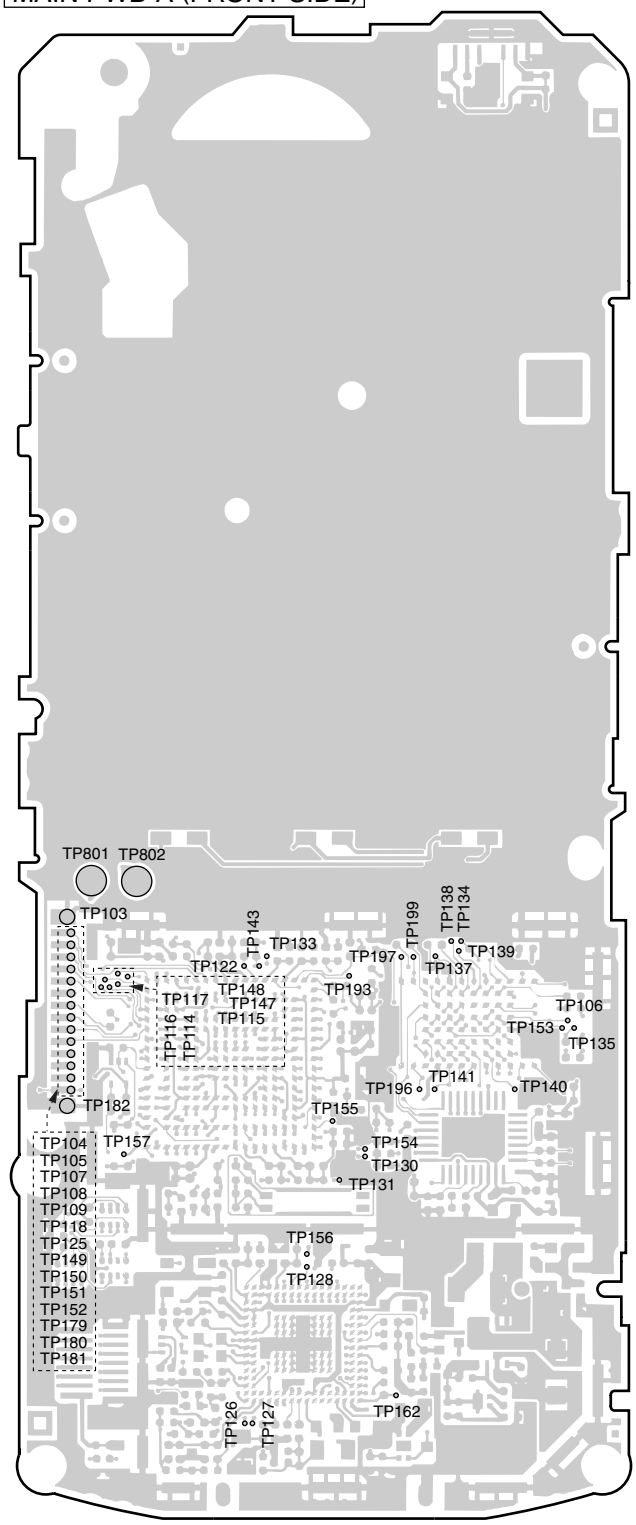
Connect GX17 and a PC with a USB cable. Check that GX17 is recognised as a device.

If the USB driver for GX17 (SHARP GSM GPRS USB Driver) is not installed on the PC, "Found New Hardware" window appears and "Found New Hardware Wizard" starts [the handset (phone) is recognised].

[2] Test points

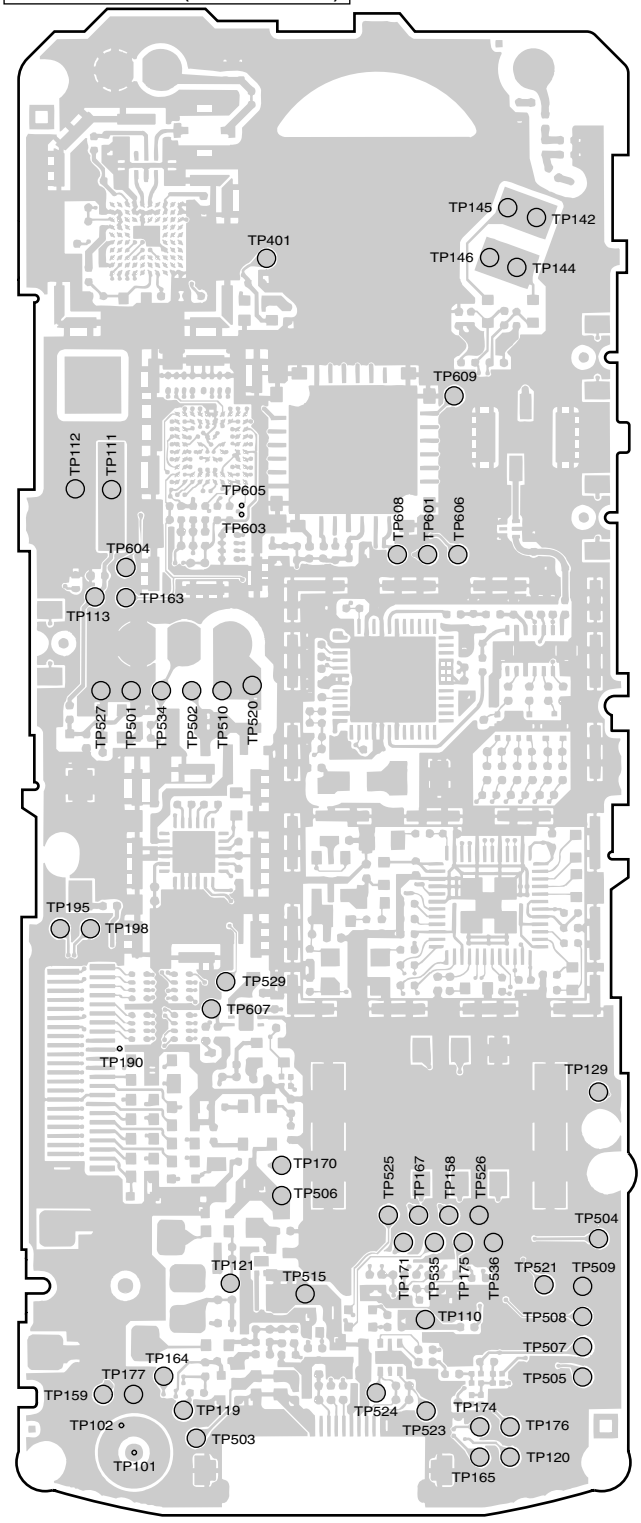
TP No.	Signal name
TP801	VTCXO (2.9V)
TP802	VRF (2.9V)

MAIN PWB-A (FRONT SIDE)



TEST POINT 1

MAIN PWB-A (REAR SIDE)

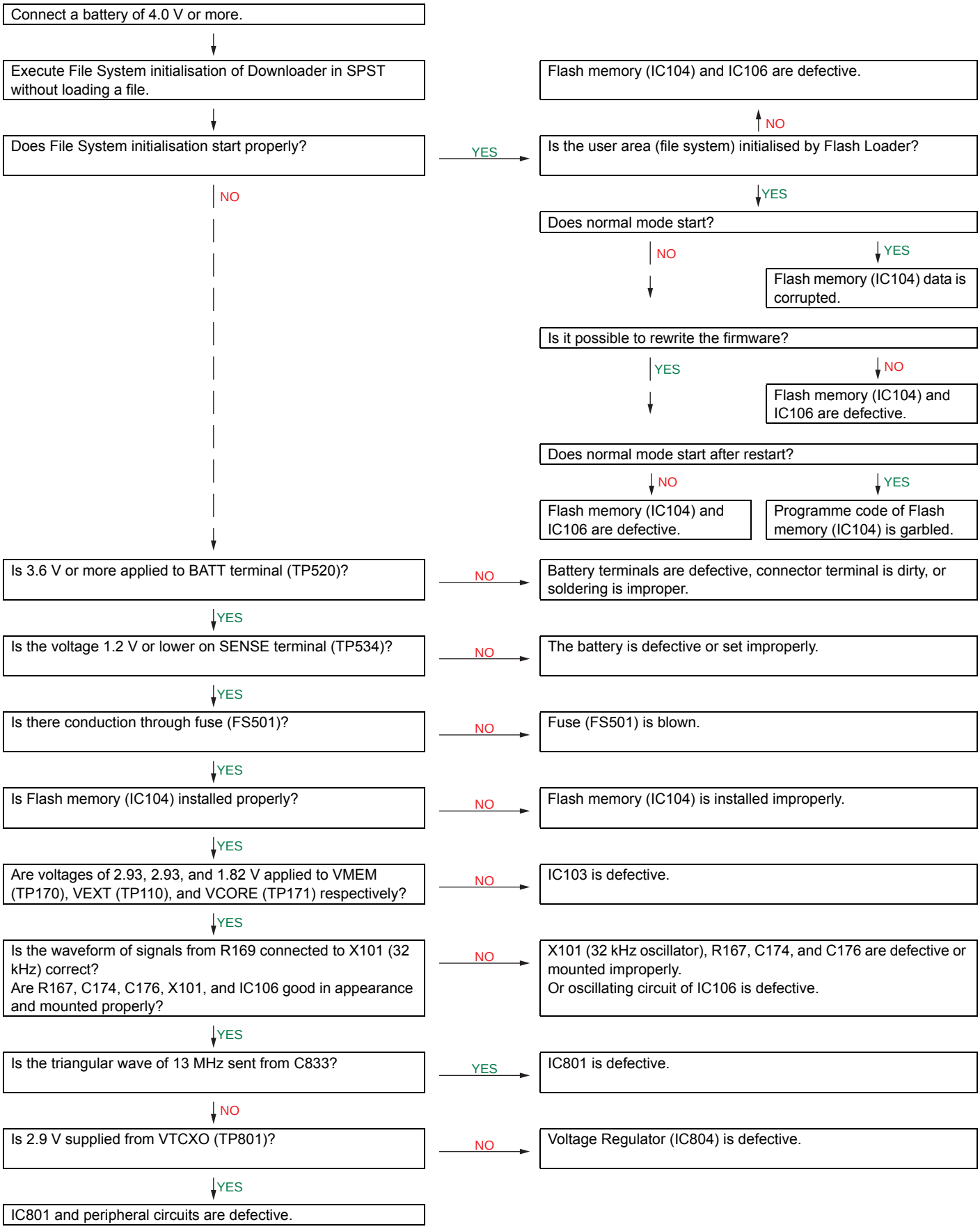


TEST POINT 2

TP No.	Signal name
TP110	VEXT
TP111	VVIB
TP112	DGND
TP113	VVIB
TP119	MIC_INP
TP120	AIN2P_C
TP121	RECEIVER_OUT
TP129	USC [6]
TP142	SPEAKER/RECIVER1
TP144	SPEAKER/RECIVER2
TP145	SPEAKER/RECIVER1
TP146	SPEAKER/RECIVER2
TP158	MODE_SELECT
TP159	CHGIN_A (5.2V)
TP163	13MHZ_CLK
TP164	VABB
TP165	LIGHT1 (KEYLED2)
TP167	VRTC (1.8V)
TP170	VMEM (2.93V)
TP171	VCORE (1.8V)
TP174	LIGHT3 (KEYLED)
TP175	SIM_POWER
TP176	VMIC
TP177	DGND
TP195	Terminal for MEMORY adhesion check 1
TP198	Terminal for MEMORY adhesion check 2
TP401	VSCR (3.0V)
TP501	DGND
TP502	VBAT
TP503	CHGIN
TP504	USC [1]
TP505	USC [2]
TP506	VBAT
TP507	VUSB (3.2V)
TP508	USC [5]
TP509	DGND
TP510	BATT
TP515	VBUS_IN (5.0V)
TP520	BATT
TP521	POWERONKEY
TP523	USB D+
TP524	USB D-
TP525	NC
TP526	DGND
TP527	DGND
TP529	Backlight_Power
TP534	BATT_SENSE
TP535	Manufacture Specific
TP536	DGND
TP601	VCAM (2.8V)
TP604	Terminal for CAMERA_IC adhesion check 1
TP606	Terminal for CAMERA_IC adhesion check 2
TP607	VCAM (1.8V)
TP608	DOUT6
TP609	DOUT0

[3] Troubleshooting

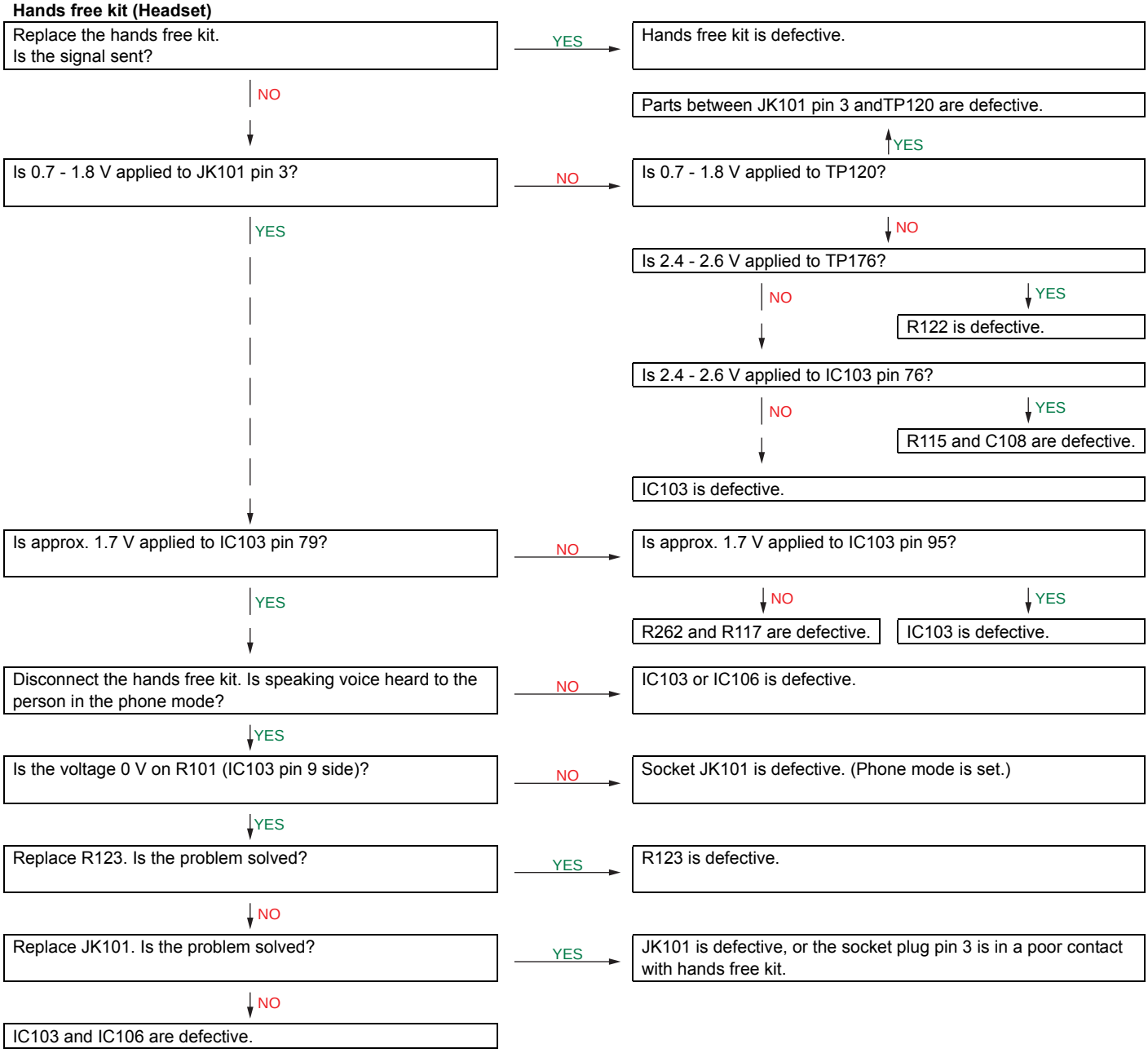
1. Power dose not turn on.



2. Voice transmission/recording is impossible.

Phone (Handset)

Hands free kit (Headset)



3. No voice is heard from the earpiece.

Phone (Handset)

Do keypad tones and melodies sound?
- NO → Go to the section “Earpiece (for loud speaker) does not work”. (see page 2-47)
- YES ↓

Is 0.5 V or more applied to R101 (IC103 pin 9 side)? (Talking)
- YES → IC103 is defective.
- NO ↓

Is 0.5 V or more applied to JK101 pin 5?
- YES → Parts between socket JK101 pin 5 and IC103 pin 9 are defective.
- NO ↓

Is 0.5 V or more applied to JK101 pin 3?
- YES → Socket JK101 is defective.
- NO ↓

Is 0.5 V or more applied to TP120?
- YES → Parts between socket JK101 pin 3 and TP120 are defective.
- NO ↓

Is 2.4 - 2.6 V applied to TP176?
- YES → R122 is defective.
- NO ↓

Is 2.4 - 2.6 V applied to R115 (IC103 pin 76 side)?
- YES → R115 is defective. (Hands free kit mode is set.)
- NO ↓

IC103 is defective.

Hands free kit (Headset)

Inserting hands free kit (handset) does not switch the Phone mode during conversation.
- YES → Ⓐ
- NO ↓

Replace the hands free kit. Is sound produced?
- YES → The hands free kit is defective.
- NO ↓

Is signal sent to JK101 pin 4?
- YES → Socket JK101 is defective, or the hands free kit is in a poor contact with the socket plug.
- NO ↓

Is signal sent to TP121?
- YES → Parts between socket JK101 pin 4 and TP121 are defective.
- NO ↓

Is signal sent to R124 (IC103 pin 60 side)?
- YES → Parts between IC103 pin 60 and TP120 are defective.
- NO ↓

Disconnect the hands free kit. Is voice heard in phone mode?
- YES → IC103 or IC106 is defective.
- YES ↓

Ⓐ

Is the voltage 0 V on R101 (IC103 pin 9 side)?
- YES → IC103 is defective.
- NO ↓

Socket JK101 is defective.

4. Battery does not charge.

Set a battery of 4.0 - 4.2 V. Click the “Performance check adjustment” button on SPST.

* For settings and connections for SPST, refer to the “ADJUSTMENTS, PERFORMANCE CHECK, AND FIRMWARE UPGRADE” on page 2-1.

↓

Click the “Temperature adjustment” button. Is the value of “temp” normal? (Measurement tolerance: ± 5 deg.)

NO → TH102, R102, and IC103 are defective.

↓ YES

Click the “Battery voltage check” button. Is the voltage 4.0 - 4.2 V?

NO → IC103 is defective.

↓ YES

Set a battery of 3.7 - 3.9 V and start in normal mode.

↓

Connect the AC charger to the external connector.
Is the voltage applied to TP503 higher than that of battery?

NO → Q102 and IC107 are defective.

↓ YES

Connect the AC charger to the external connector.
Is the same electric potential applied to IC107 pins 1 and 2?

NO → IC107, R104, and R130 are defective.

↓ YES

Connect the AC charger to the external connector.
Is 4.5 V supplied from IC102 pin 3.

NO → D101, C203, and C233 are defective.

↓ YES

Connect the AC charger to the external connector.
After approx. 15 seconds, do the voltages on TP159 and TP502, and TP506 increase by more than 0.05 V?

NO → IC103, Q101, Q102, D101, D102, R106, R131, and R133 are defective.

↓ YES

The battery is defective, or the battery cycle is shortened.

5. Vibrator does not work.

Are vibrator terminals in contact with the land?
Are terminals and the land clean?
→ NO → Vibrator is deformed and defective. (When vibrator terminals and the land are dirty, clean or replace them.)

↓ YES

Hereafter check with vibrator working.

Is rectangular wave of 3 V sent to between vibrator terminals in sync with the vibration pattern?
→ YES → Vibrator is defective.

↓ NO

Is VBAT voltage applied to IC108 pin 4?
→ NO → IC108 is soldered improperly.

↓ YES

Is signal synchronised with the vibration pattern sent to IC108 pin 3?
→ YES → IC108 is defective.

↓ NO

Is signal synchronised with the vibration pattern sent from IC101 pin 19?
→ YES → IC101 is soldered improperly.

↓ NO

Do ring tones sound from earpiece (for loud speaker)?
→ NO → Go to the section “Earpiece (for loud speaker) does not work”. (see page 2-47)

↓ YES

IC101 is defective.

6. Clock Settings are reset.

Is 1.6 V or more applied to TP167 with a battery in the phone?
→ NO → IC103 is defective.

↓ YES

The back-up battery holder is installed improperly.

↑ NO

Is 1.2 V or more applied to TP167 without a battery in the phone?
→ NO → Is back-up battery holder properly installed to Main PWB?

↓ YES

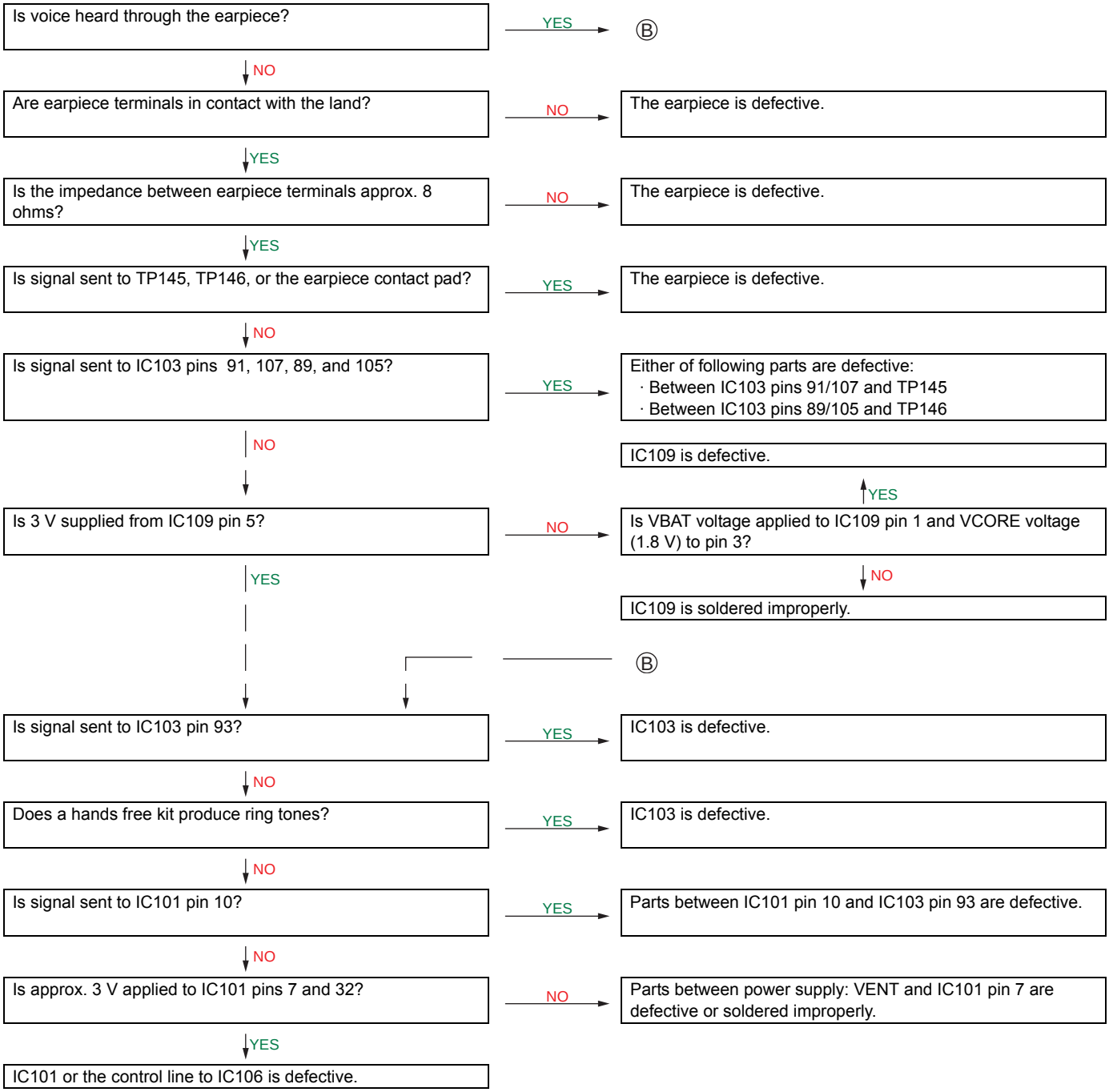
↓ YES

- The remaining power of back-up battery is insufficient.
- Back-up battery is defective.
- Back-up battery holder is defective.
- Main PWB is broken.
- R203 is defective.

X101, C174, and C176 are defective.

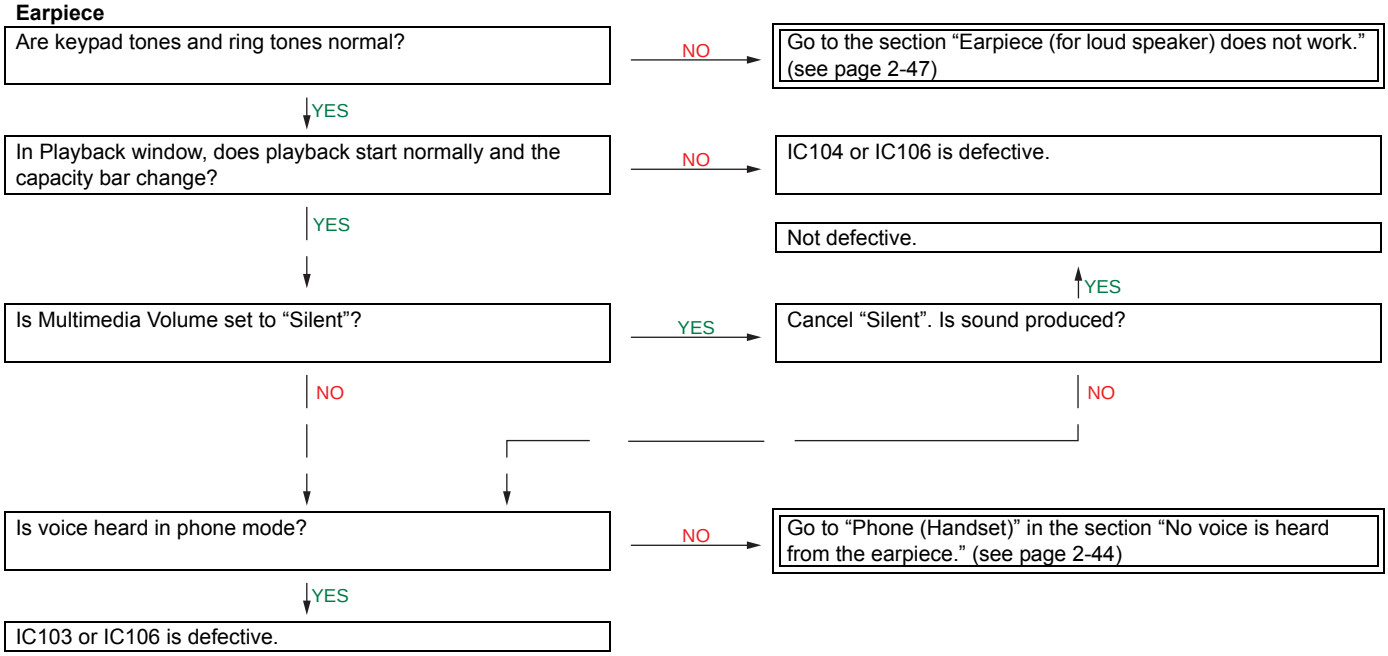
7. Earpiece (for loud speaker) does not work.

* When ring tones sound, but keypad tones do not, “Keypad Tones” is set to Off.
* When only ring tones do not sound, “Ringer Volume” is set to “Silent”.
* Ring tones sound according to “Ringer Volume” settings.

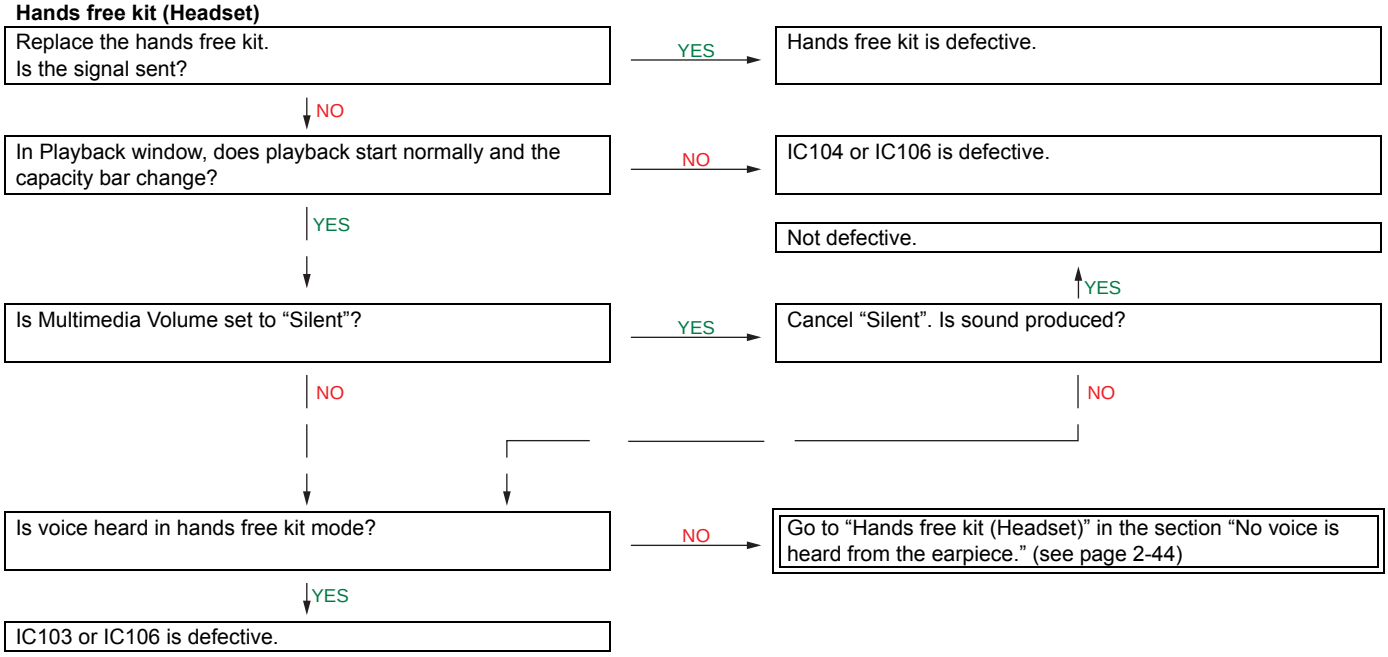


8. Video/Voice Recorder playback is impossible.

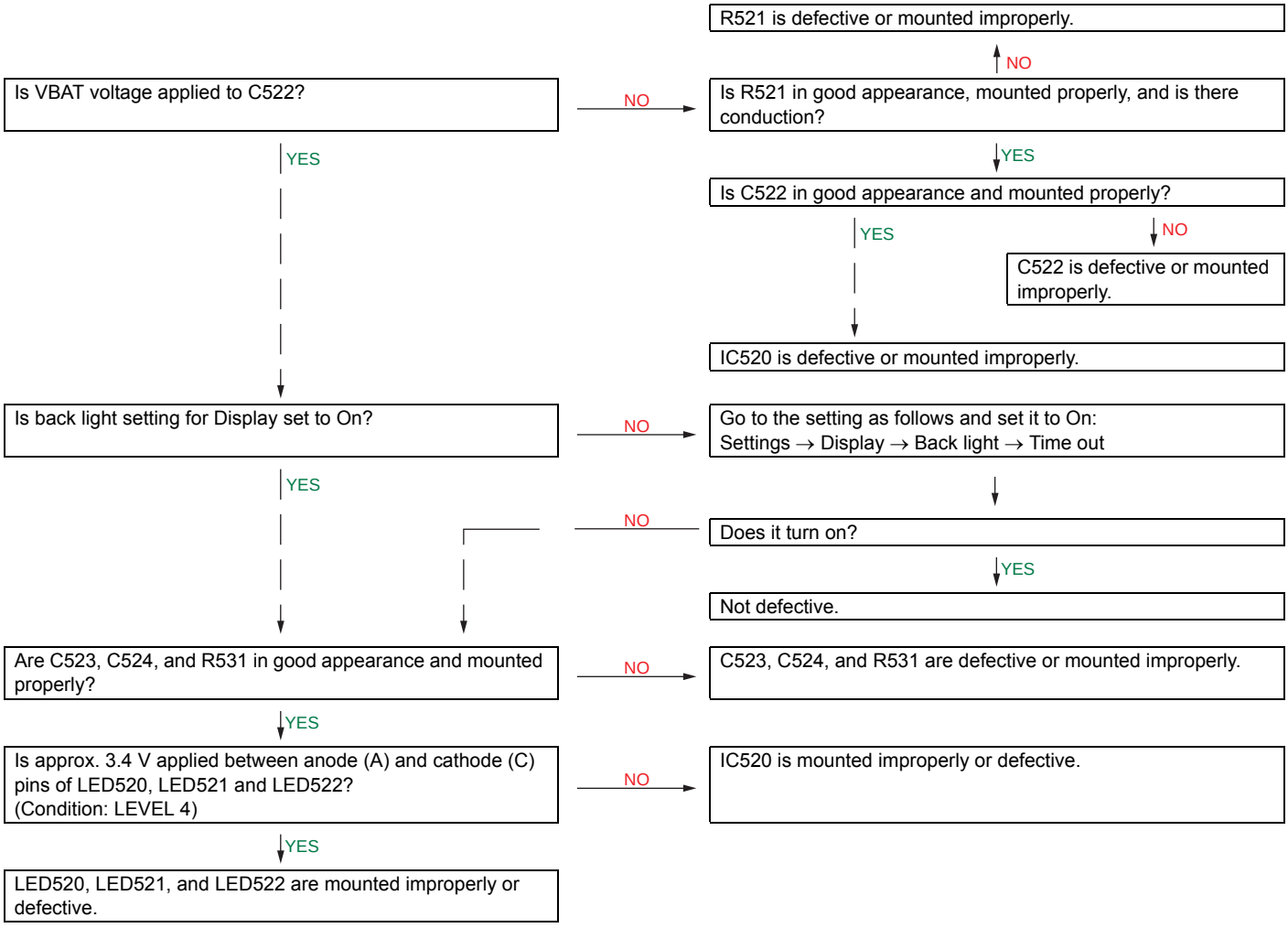
Earpiece



Hands free kit (Headset)



9. Back Light does not turn on.



10. Out of range and incoming/outgoing calls are impossible.

[Checkpoints in RF Test Tool]

Is transmission possible using RF Test Tool?

YES → Go to the section “10.2. Reception system”.

NO ↓

Go to the section “10.1. Transmission system”.

10.1. Transmission system

Is frequency signal sent to IC803?
EGSM900 band ..... IC803 pin 15
DCS1800/PCS1900 bands ..... IC803 pin 13

NO → Main PWB-A is defective.

YES ↓

Is frequency signal supplied to pin 1 of FL905?

NO → IC803 is defective.

YES ↓

Is frequency signal supplied to pin 1 of J801?

NO → FL905 is defective.

YES ↓

J801 is defective.

10.2. Reception system

Is frequency signal sent from FL902 or FL903?
EGSM900 band ..... FL902 pins 6, 7
DCS1800 band ..... FL902 pins 8, 9
PCS1900 band ..... FL903 pins 3, 4

YES → Main PWB-A is defective.

NO ↓

Is frequency signal supplied to FL902 or FL903?
EGSM900 band ..... FL902 pin 4
DCS1800 band ..... FL902 pin 1
PCS1900 band ..... FL903 pin 1

YES → FL902 or FL903 is defective.

NO ↓

Is frequency signal supplied to pin 9 of IC803?

YES → IC803 is defective.

NO ↓

FL905 or J801 is defective.

11. The display does not appear on Display.

Is Display unit fully inserted to CN102?
- NO → Improperly inserted to the connector.
- YES ↓

Clean the contact point of CN102 and insert the unit again. Does the display appear?
- NO → The contact point of the connector is dirty.
- YES ↓

Replace Display. Does the display appear?
- YES → Display unit is defective.
- NO ↓

Is 3.6 or more voltage applied to VBAT terminal (IC110 pin 4) ?
- NO → Go to the section “Power dose not turn on.” (see page 2-41)
- YES ↓

Is 2.93 + 0.37, – 0.53 V applied to VCC2 terminal (CN102 pin 15 to VEXT)?
- NO → Is short terminal (between CN102 pin 15 and VEXT) defective?
  - YES → Short terminal is defective.
  - NO → Go to the section “Power dose not turn on.” (see page 2-41)
- YES ↓

Is 3.0 ± 0.1 V or more applied to VDC terminal (CN102 pin 14 to IC110 pin 3)?
- NO → Are IC110 and short terminal (between IC110 pin 3 and CN102 pin 14) good in appearance and mounted properly?
  - YES → Regulator IC110 is defective.
  - NO → Regulator IC110 is mounted improperly or short terminal is soldered improperly.
- YES ↓

Is voltage on VDD2 terminal (C194) boosted to approx. 6 V?
- NO → Are capacitors C215 (between C1+ and C1-) and C212/C194 (between C2+ and C2-) in good appearance and mounted properly?
  - YES → Display unit is defective.
  - NO → Capacitors C215 (between C1+ and C1-) and C212/C194 (between C2+ and C2-) are defective or mounted improperly.
- YES ↓

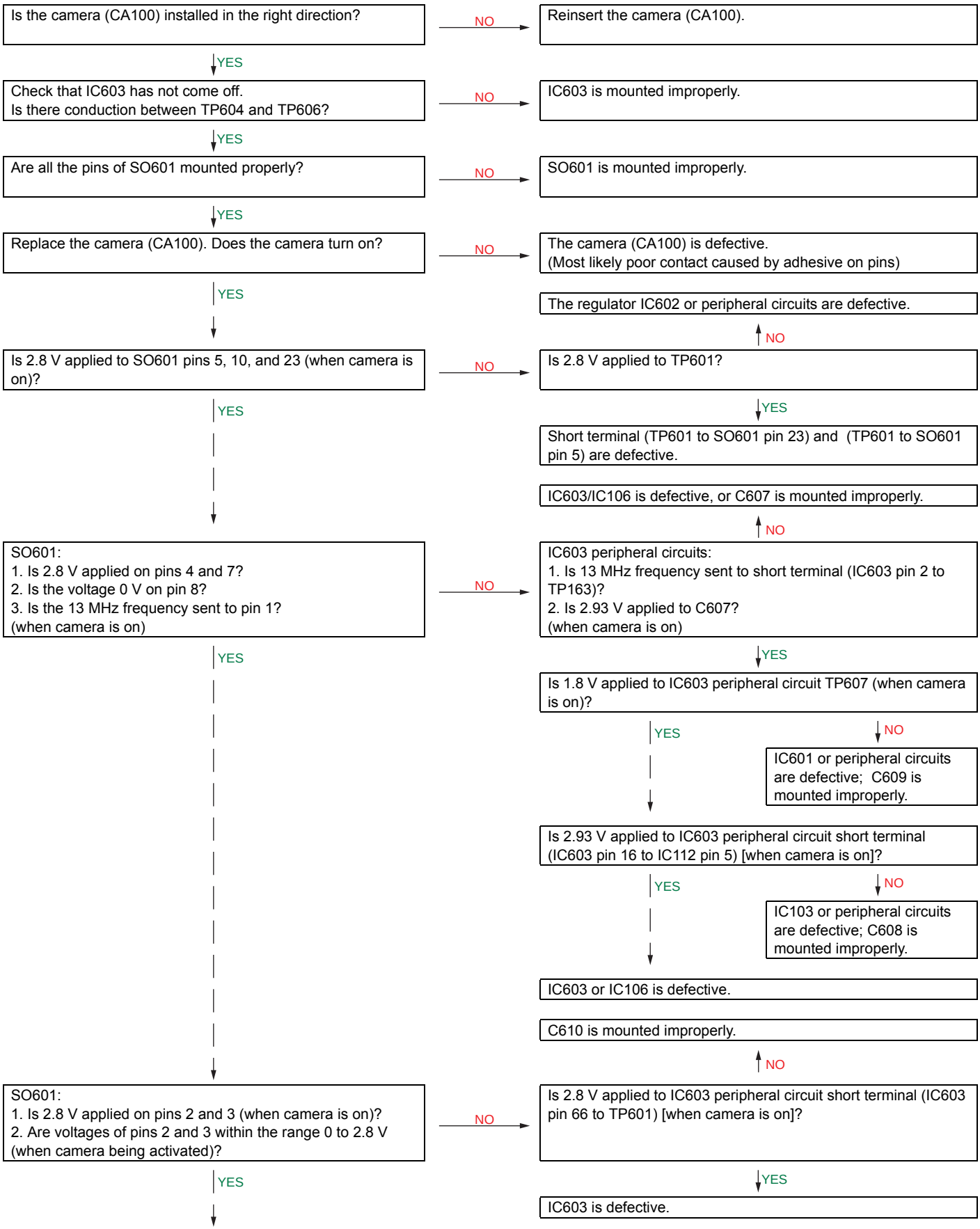
Is the voltage approx. -10 V on VSS2 terminal (C200) and approx. 15 V on VDD1 terminal (C211)? Are capacitors C209, C210, C217, C218, C200, and C211 in good appearance and mounted properly?
- NO → Capacitors C209, C210, C217, C218, C200, and C211 are defective or mounted improperly.
- YES ↓

Is approx. 3 V applied to LCD reset (R178)? Is R178 in good appearance and mounted properly?
- NO → R178 is defective or mounted improperly. Otherwise the digital IC (IC105) is defective.
- YES ↓

Are C216, C218, C221, C222, C223, C227, R176, R186, R197, R142, R151, R152, and R154 good in appearance and mounted properly?
- NO → C216, C218, C221, C222, C223, C227, R176, R186, R197, R142, R151, R152, and R154 are defective or mounted improperly.
- YES ↓

Display unit is defective, or connector CN102 is mounted improperly.

12. Pictures cannot be taken.



(To page 2-53)

(From page 2-52)

Ⓒ

SO601:
Are voltages of the following pins within the range 0 to 2.8 V (when camera is on)?
1. pins 11 - 18
2. pins 20 - 22

NO → R611, R612, and R613 are mounted improperly.

YES ↓

IC603 is defective.

13. SIM card is not recognised.

Replace the SIM card. Is it recognised?

YES → SIM card is defective or not the one specified.

NO ↓

Hereafter, check the signal waveform of each SIM when the power is turned on without a SIM card inserted.
(SIM signal waveform appears for approx. 70 ms after the power is turned on.)

Is 2.85 V applied to CN101 pin 1?

NO → Are R110 and C131 good in appearance and mounted properly?

NO ↑ R110 or C131 is defective.

YES ↓ IC103 is defective.

YES ↓

Is 2.85 V applied to CN101 pin 2?

NO → Is short terminal (CN101 pin 2 to IC106 pin 195) good in appearance and mounted properly?

NO ↑ Short terminal (CN101 pin 2 to IC106 pin 195) is defective.

YES ↓ IC106 is defective.

YES ↓

Is periodic pulse wave sent from CN101 pin 3?

NO → Is short terminal (CN101 pin 3 to IC106 pin 195) good in appearance and mounted properly?

NO ↑ Short terminal (CN101 pin 3 to IC106 pin 195) is defective.

YES ↓ IC106 is defective.

YES ↓

Is 2.85 V supplied from CN101 pin 6?

NO → Are R113 to IC106 pin 196, R113, and short terminal (CN101 pin 6 to IC106 pin 196) good in appearance and mounted properly?

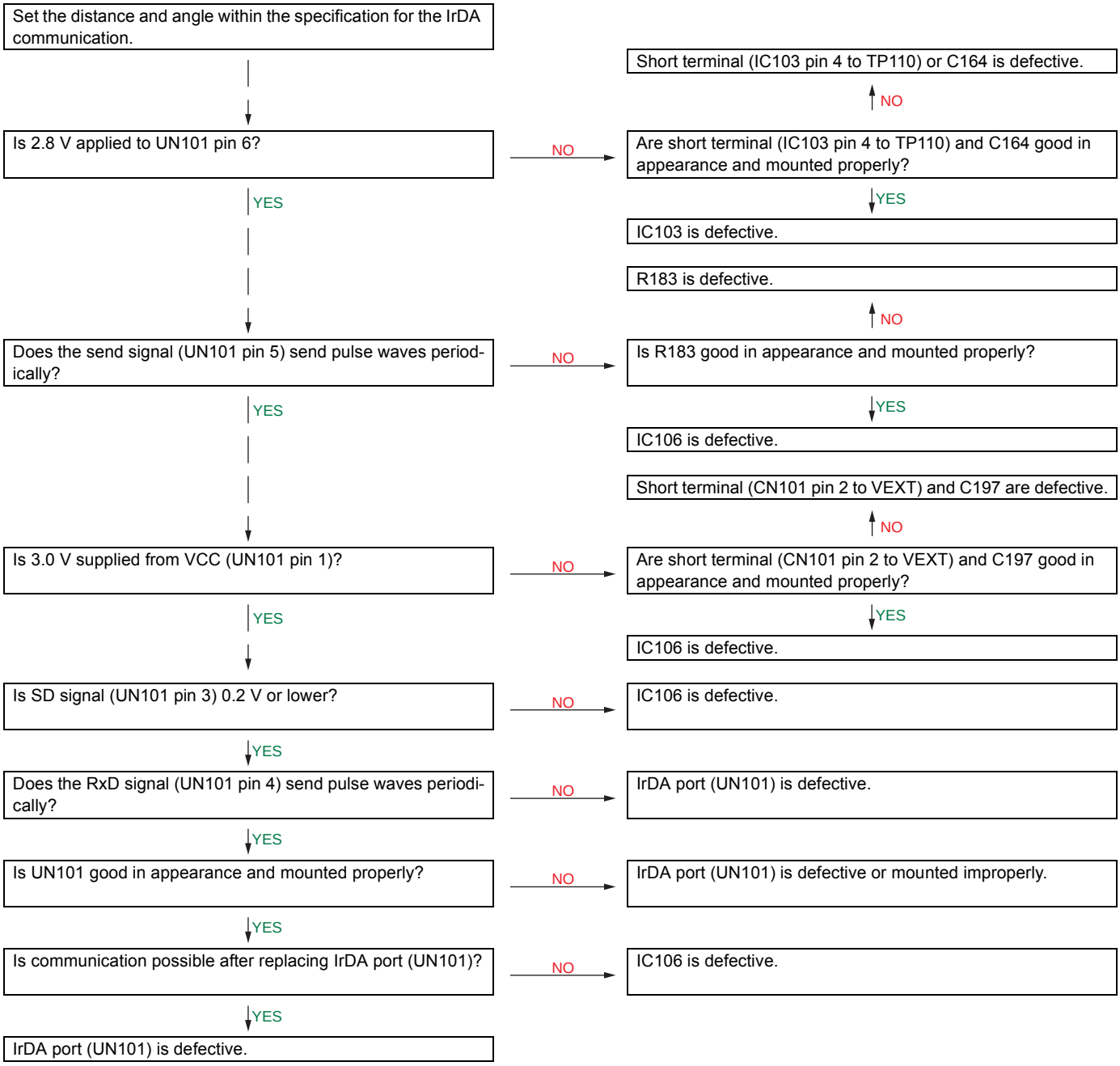
NO ↑ R113 to IC106 pin 196, R113, or short terminal (CN101 pin 6 to IC106 pin 196) is defective.

YES ↓ IC106 is defective.

YES ↓

The contact point of CN101 is deformed. Or foreign matter is adhered.

14. IrDA (Infrared) communication is impossible.



15. Bluetooth communication is impossible.

A connection cannot be established via Bluetooth.

↓

Is 3 V supplied from IC403 pin 3? → NO → IC403 or C402, C409 is defective.

↓YES

Is IC402 pin 34 (RESET signal) always at “H”? → NO → Parts (between IC106 pin 100 and IC401 pin 34) are defective.

↓YES

Are pulse signals sent to IC402 pin 74 (BT_TXD signal)? → NO → IC402 is defective.

↓YES

IC106 is defective.

Phone can be connected to Bluetooth headset, but sound is not heard.

↓

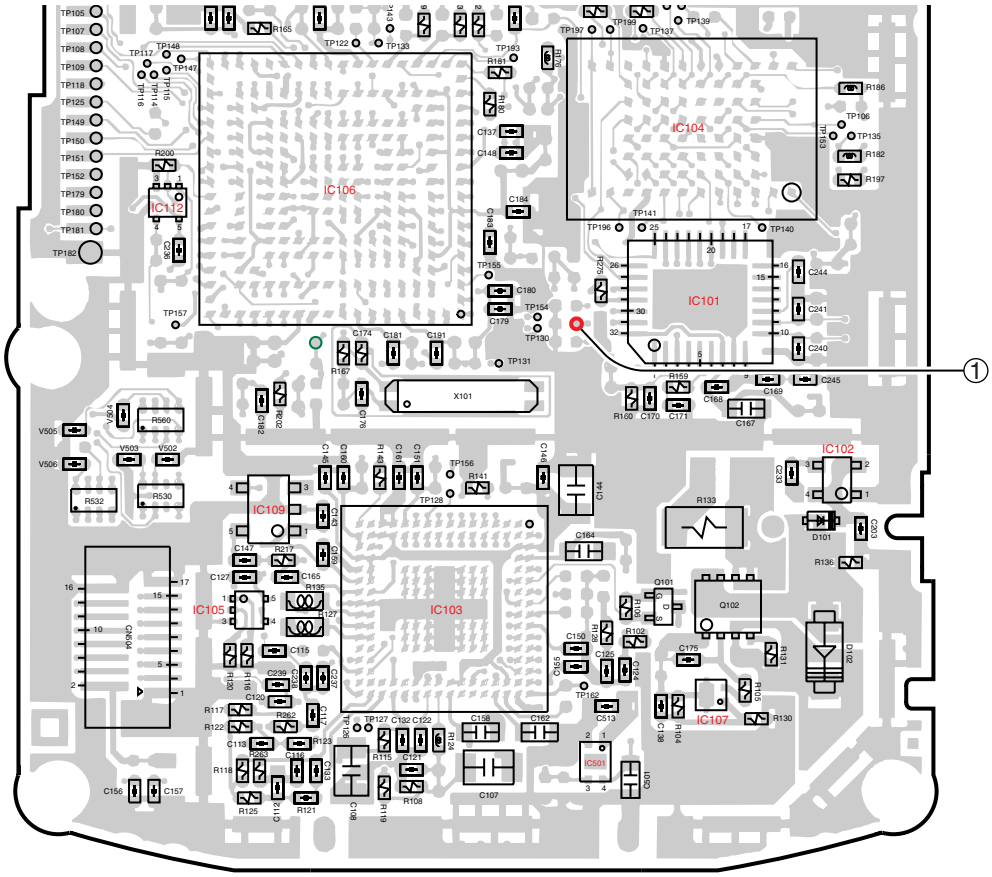
Is waveform of PCMCLK signal (approx. 256 kHz clock) sent from IC106 pin 88 to IC402 pin 64? → NO → IC106 is defective.

↓YES

Are pulse signals sent to BT_PCMOUT signal side of R199 (point ①)? → NO → IC402 is defective.

↓YES

IC106 or IC402 is defective.



MAIN PWB-A (FRONT SIDE)

16. USB connection is impossible.

Connect a properly working phone to the PC/USB cable that is not recognised. Is it recognised?
- NO → Reinstall the driver and replace the USB cable to connect the phone.
- YES ↓

Connect to a PC with the USB cable.

↓

Is 5 V or more applied to TP515?
- NO → CN502 is connected improperly.
- YES ↓

Is Q503 pin 3 at “L”?
- NO → Q503 is defective.
- YES ↓

Is 3 V or more applied to TP507?
- NO → IC501 or IC106 is defective.
- YES ↓

Is 3 V or more applied to TP523?
- NO → IC504, Q504, Q506, R506, and R512 are defective.
- YES ↓

IC106 is defective.

– MEMO –

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 / Front Cabinet	16.66 ± 1 N • cm (1.7 ± 0.1 Kgf • cm)
• Key PWB / Back Cabinet	14.7 ± 1 N • cm (1.5 ± 0.1 Kgf • cm)

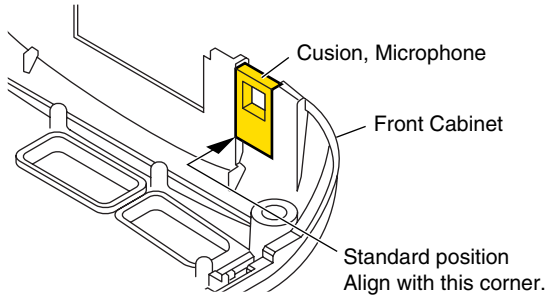
The reference value is measured when an electric screwdriver (HIOS CL4000) is used.

- **SOLDERING SPECIFICATION**

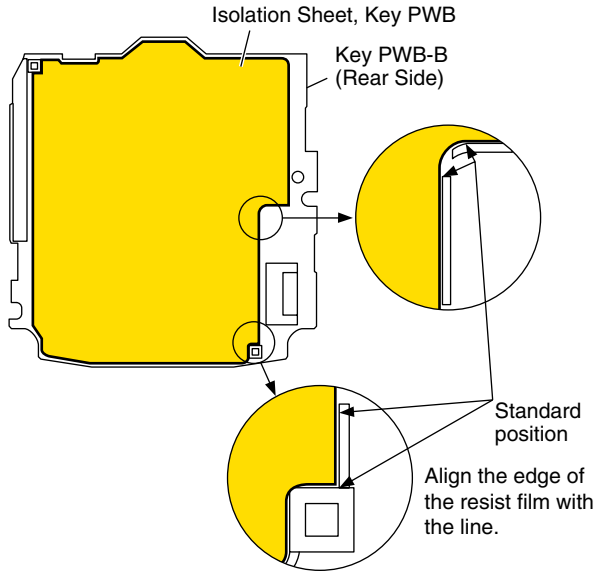
Soldering iron must be set to 350° C for 5 seconds.

- **STANDARD POSITION OF ATTACHMENT**

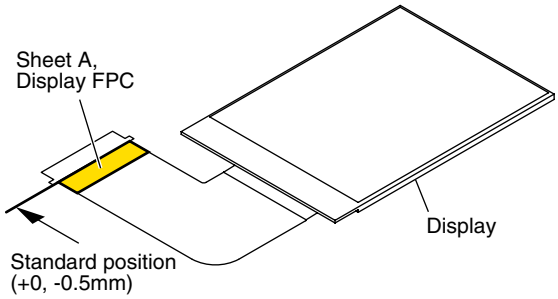
When replacing the following labels (marked with), be sure to place new ones on the specified positions.



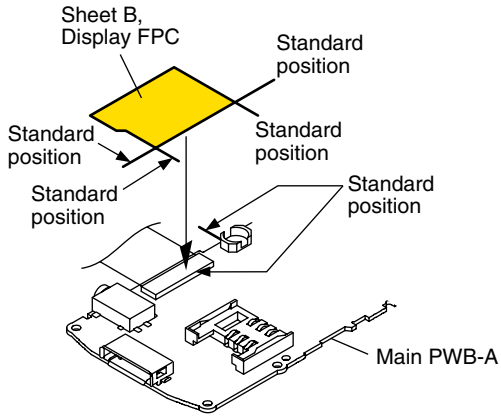
[Cusion, Microphone]



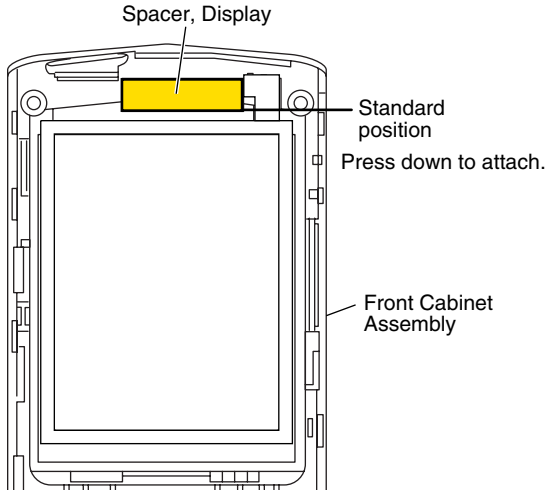
[Isolation Sheet, Key PWB]



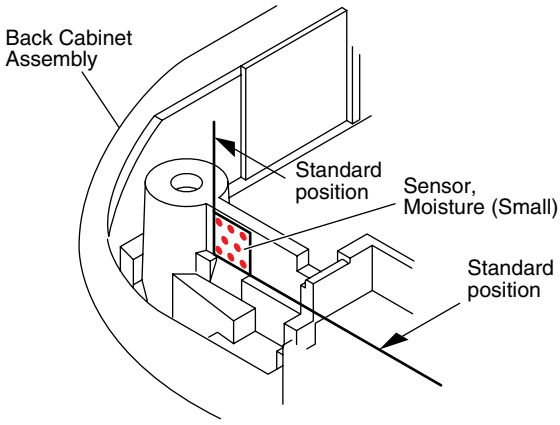
[Sheet A, Display FPC]



[Sheet B, Display FPC]



[Spacer, Display]



[Sensor, Moisture (Small)]

[2] Disassembly and reassembly

- To reassemble, reverse the procedure.

STEP	REMOVAL	PROCEDURE		FIG.
1	Front Cabinet Assembly	1. Battery Cover	(A1)x1	1
		2. Li-Ion Battery	(A2)x1	
		3. Open the External Connector Cover.		
		4. Screw (Silver)	(A3)x4	
		5. Hook	(A4)x3	
2	Back Cabinet Assembly	1. Open the Handsfree Kit Connector Cover.		2
		2. Screw (Silver)	(B1)x1	

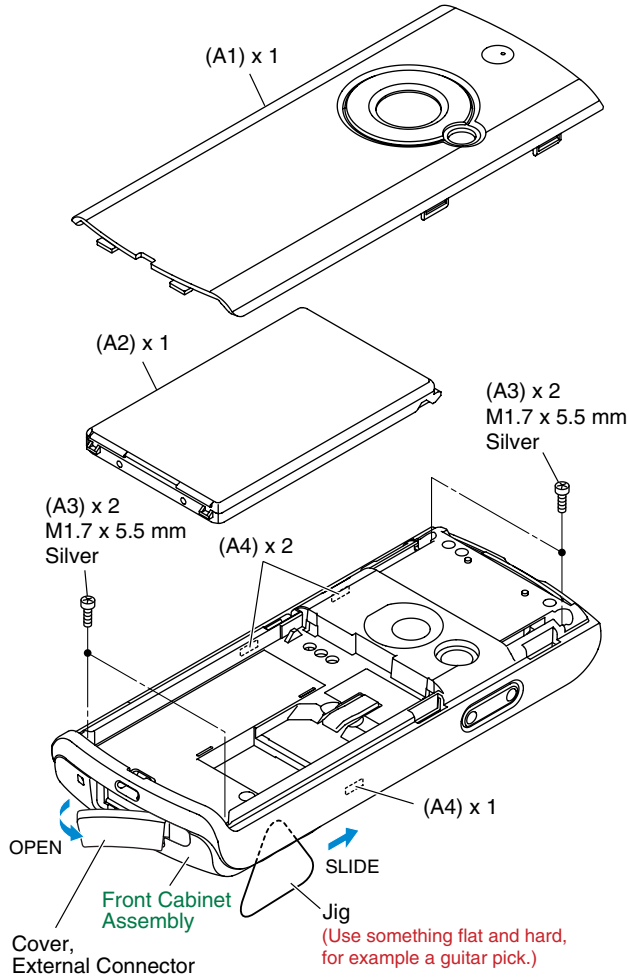


Figure 1

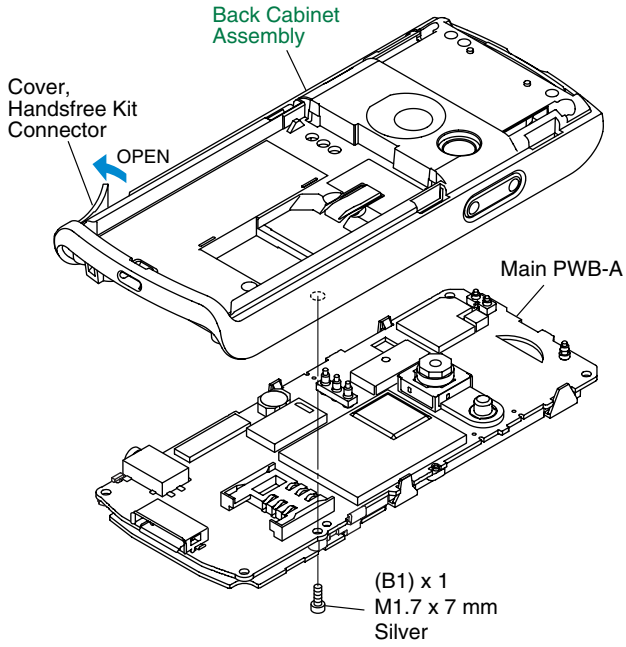


Figure 2

STEP	REMOVAL	PROCEDURE		FIG.
3	Key PWB-B	1. Hook	(C1)x2	3
		2. Flat Cable	(C2)x1	
4	Display/Display Holder Assembly	1. Flat Cable	(D1)x1	3
		2. Hook	(D2)x4	
5	Main PWB-A	1. Hook	(E1)x2	4

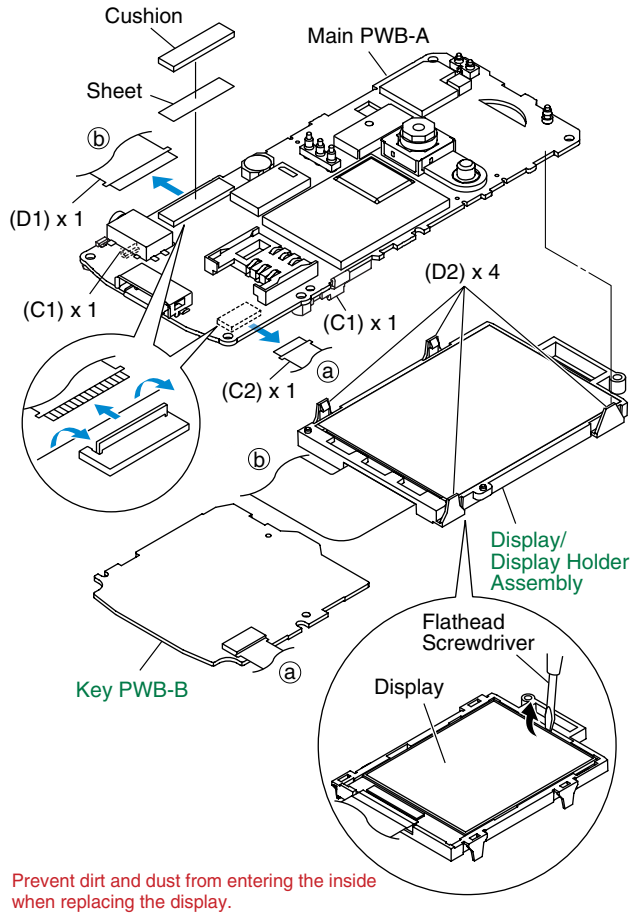


Figure 3

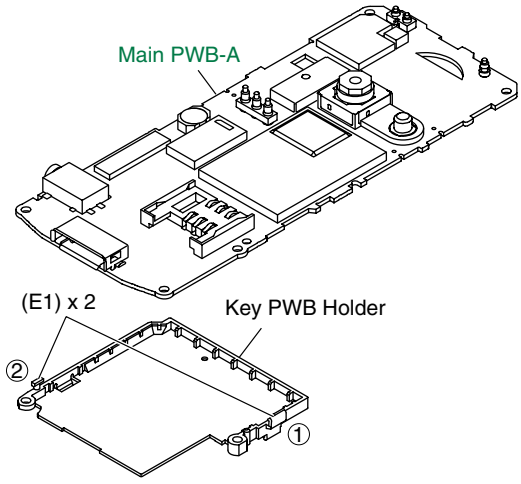


Figure 4

CHAPTER 4. DIAGRAMS

[1] Block diagram

[MAIN]

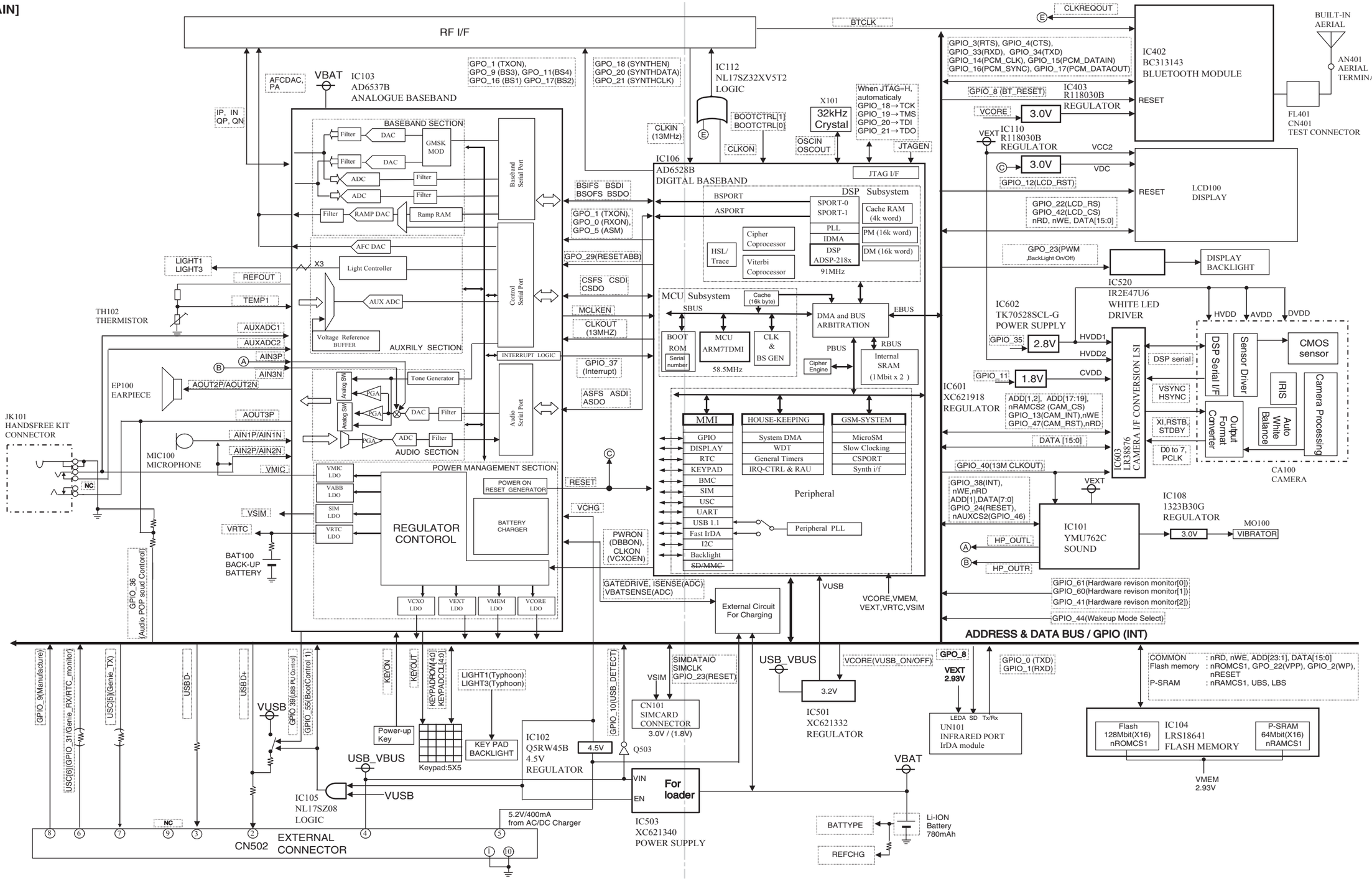


Figure 1 MAIN BLOCK DIAGRAM

[RF]

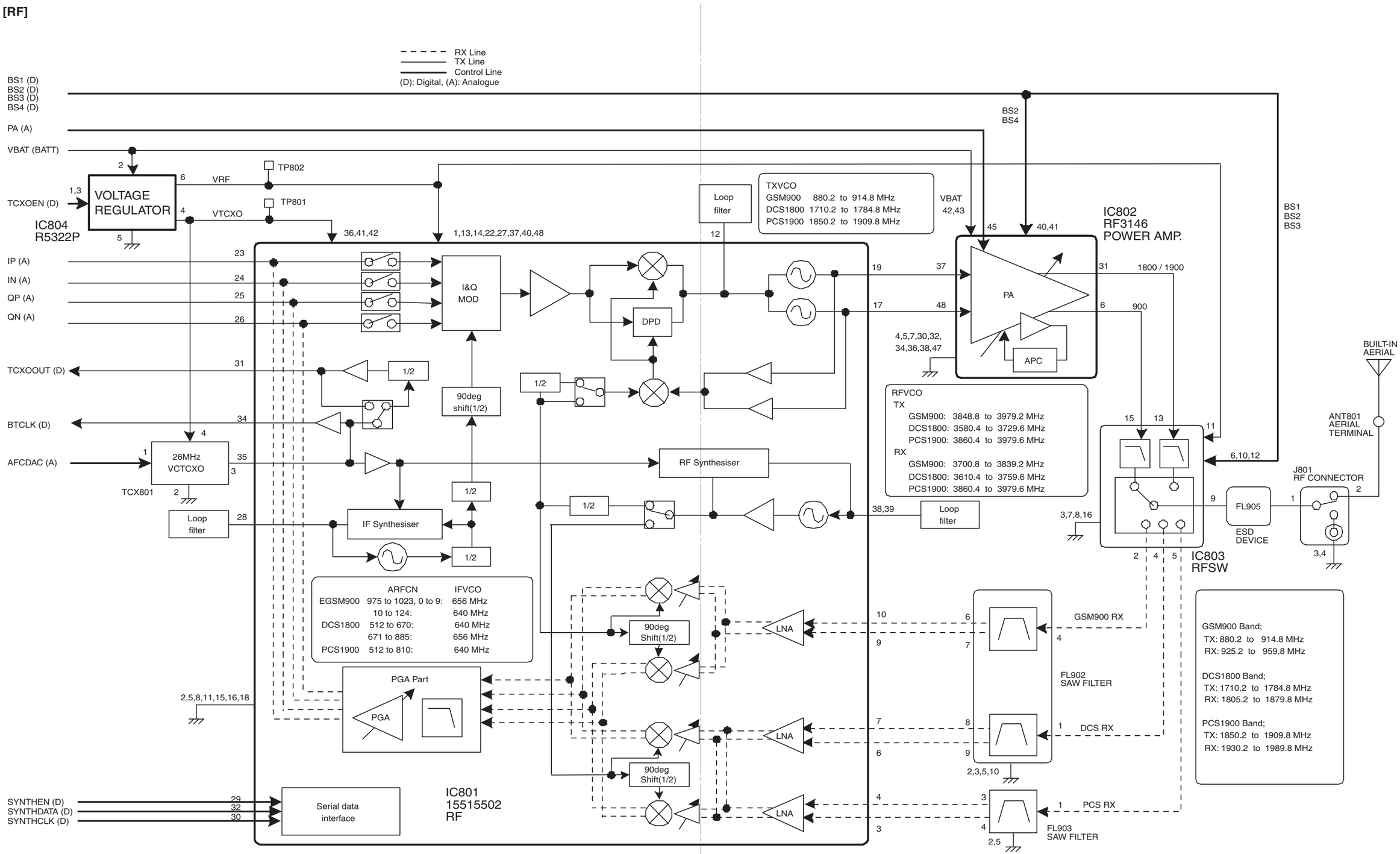


Figure 2 RF BLOCK DIAGRAM

[Power Supply]

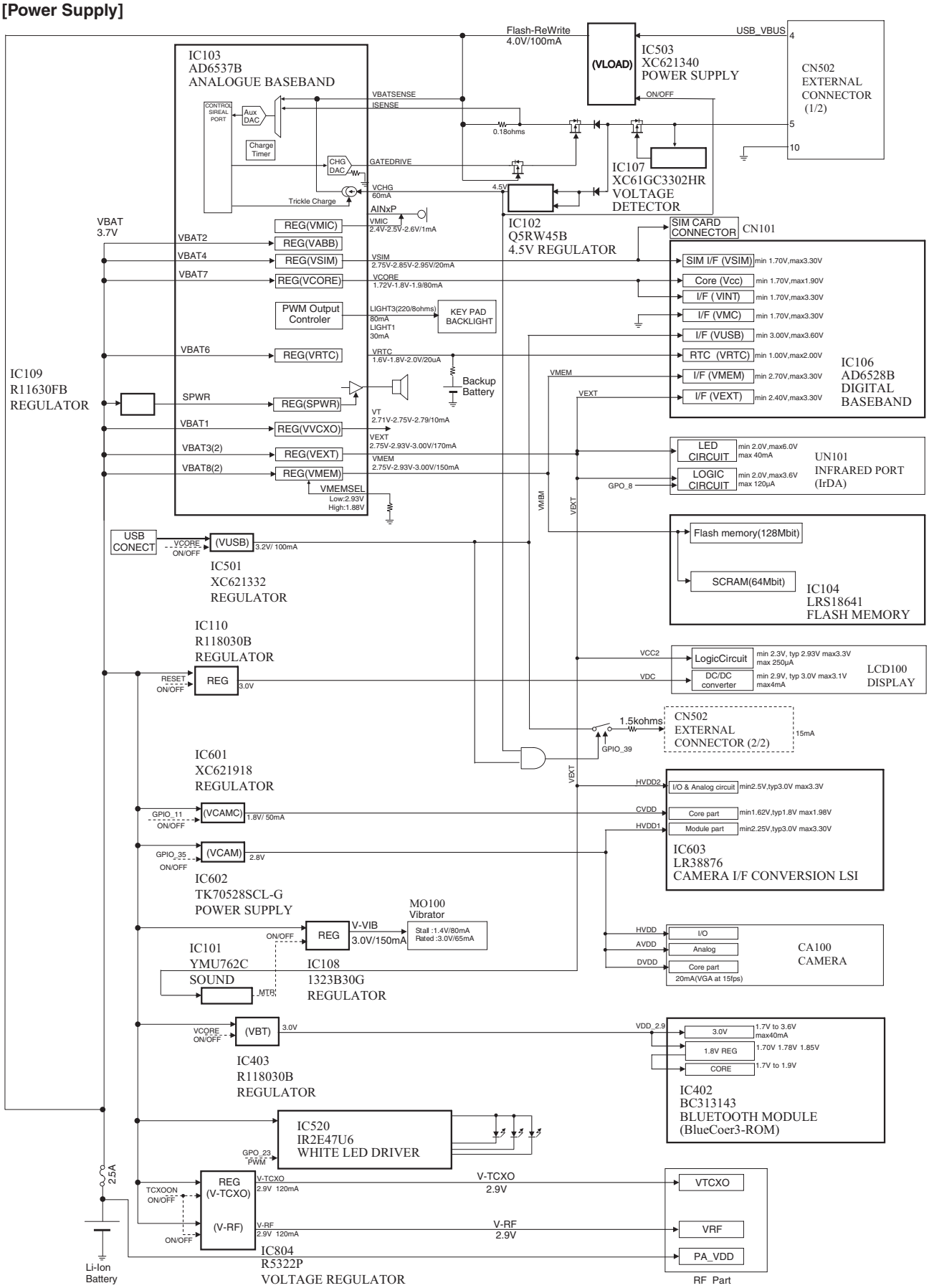


Figure 3 POWER SUPPLY BLOCK DIAGRAM

– MEMO –

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

[1] Notes on schematic diagram

- Resistor:

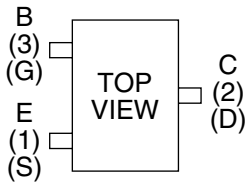
  Letters K and M are prefixed to ohm (unit of resistance).
  K means 1000 ohms and M means 1000 kohms.

- Capacitor:

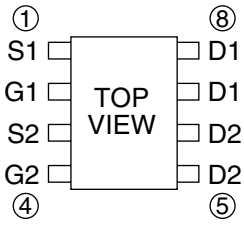
  P is an abbreviation for “pico” and a farad (unit of capacitance) without P means “microfarad”. Expressions “capacitance/withstand voltage” are used for electrolytic capacitors.
  (CH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
  (S): Styrol type
  (PP): Polypropylene type

- 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.

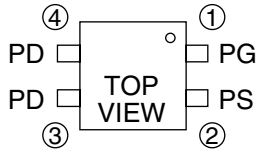
[2] Types of transistor and LED



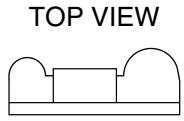
KRC407 E
KTK5132 E



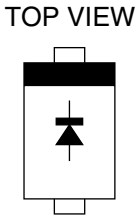
ECH8603



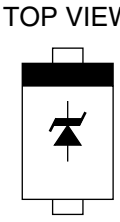
EC4301 C
EC4401 C



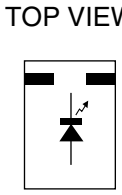
2W0110VY



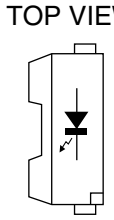
1SS388 F
KDR720E
KDR730E
RB160M30



PG05FBES



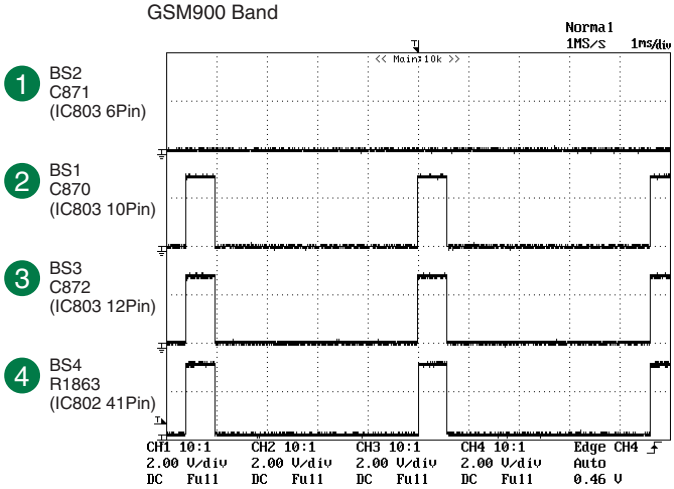
PY1103CF



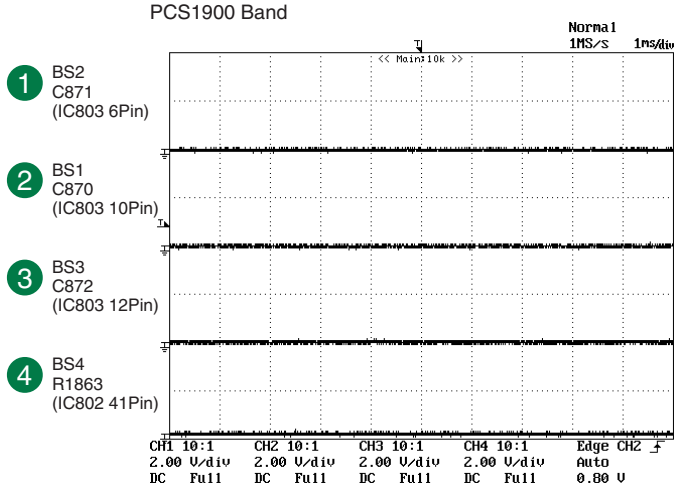
ECW008B2

[3] Waveforms of circuit

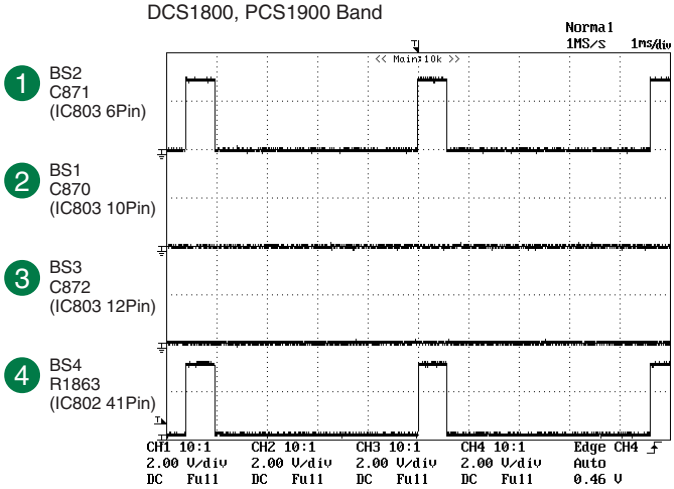
RF Test Tool
Tx test
GSM900 Band



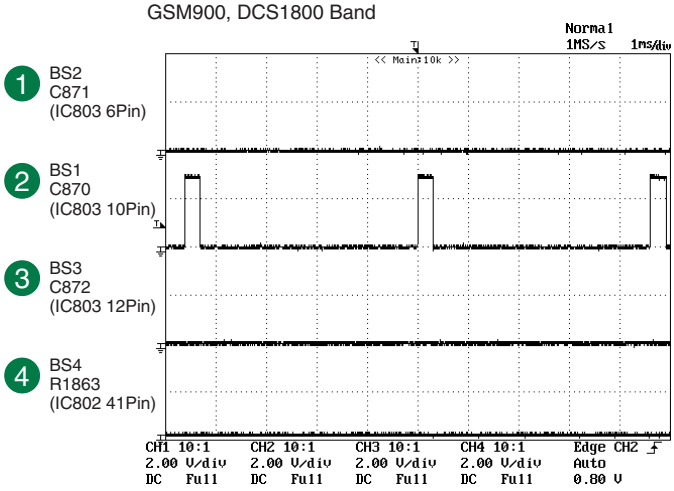
RF Test Tool
Rx test
PCS1900 Band



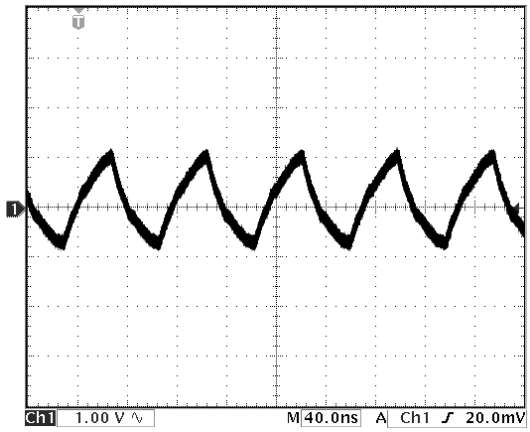
RF Test Tool
Tx test
DCS1800, PCS1900 Band



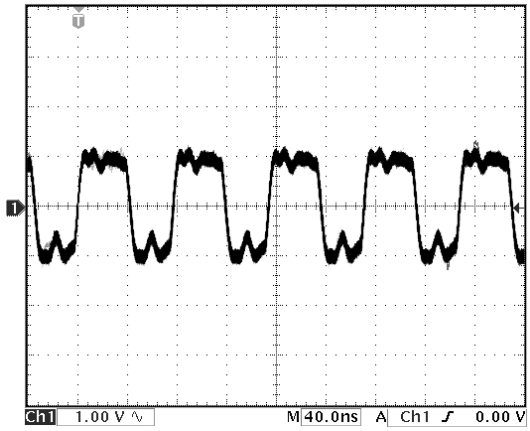
RF Test Tool
Rx test
GSM900, DCS1800 Band



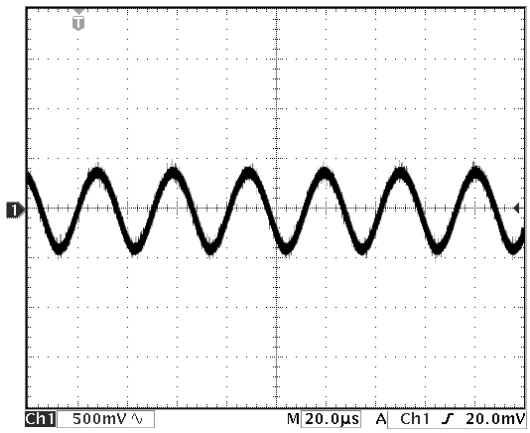
5 13M-IN (CLKIN) C833
Note: Wallpaper must be on the display. (IC106 142 pin)



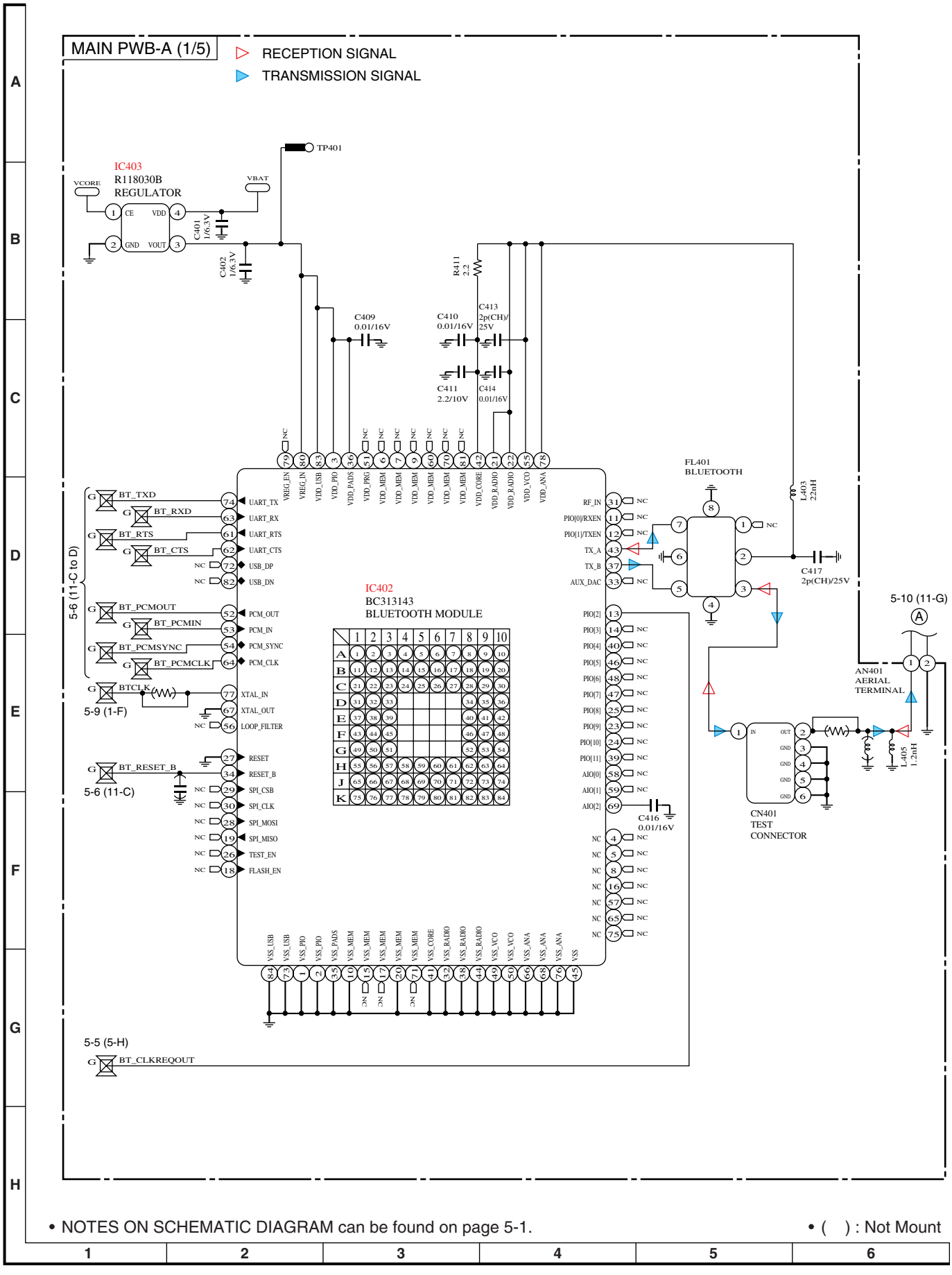
6 13M-OUT (CLKOUT) IC106 84 pin
Note: Wallpaper must be on the display.



7 OSCIN (32 kHz) C174
Note: Wallpaper must be on the display. (IC106 49 pin)



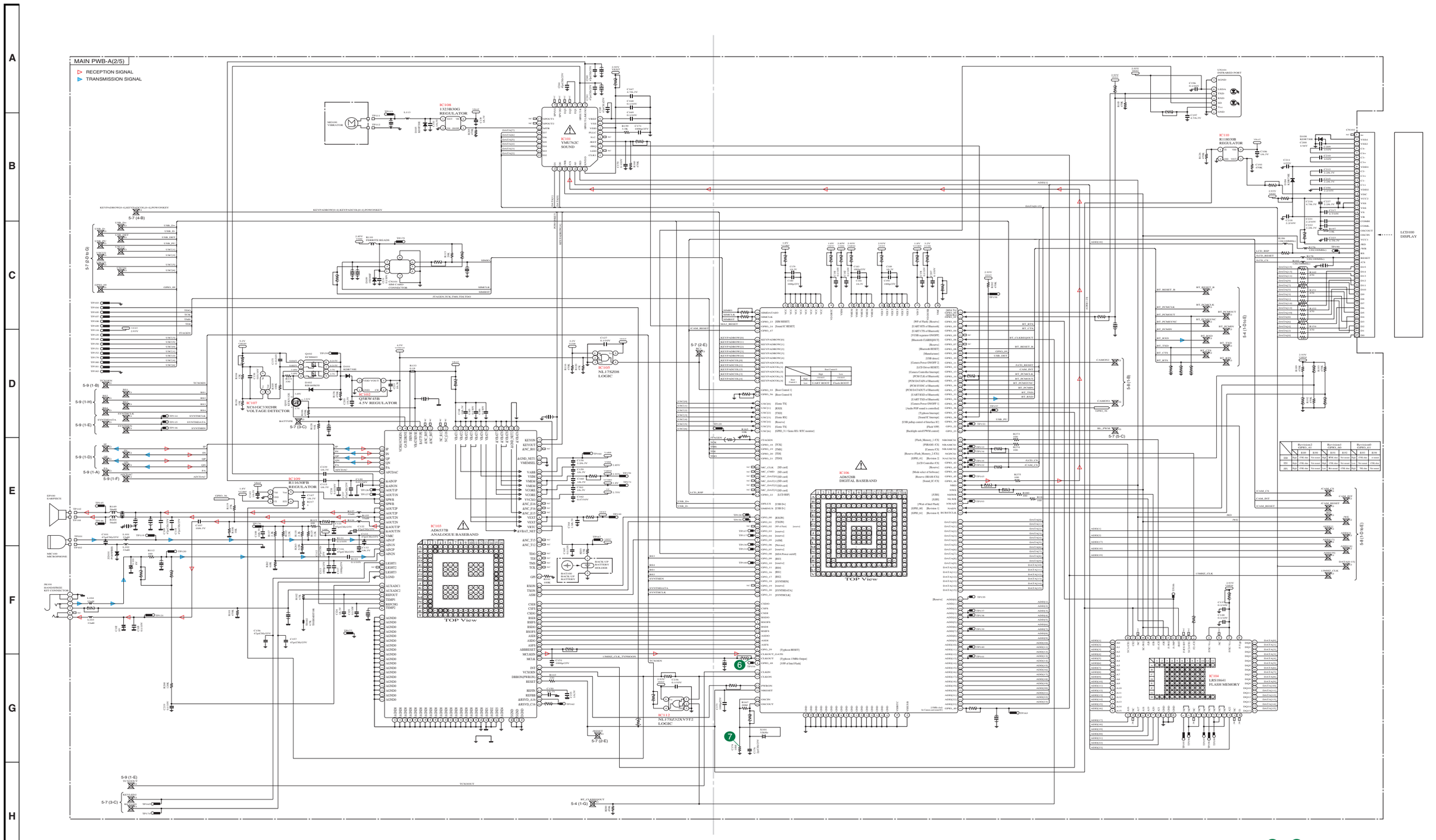
[4] Schematic diagram (Main 1/5)



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

• ( ) : Not Mount

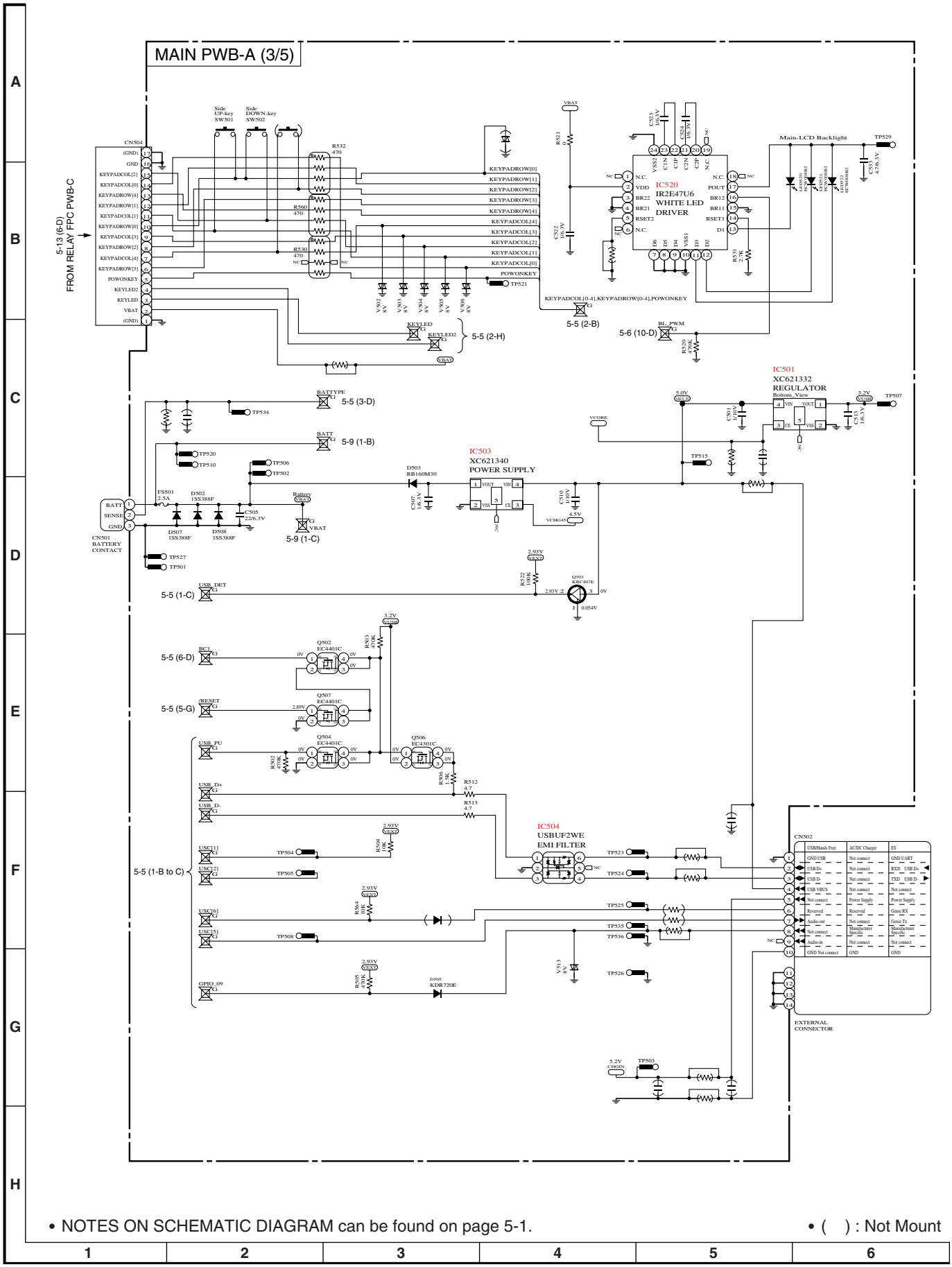
[5] Schematic diagram (Main 2/5)



- NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.
- ( ) : Not Mount
- Waveform numbers of 6, 7 are shown on page 5-3.

CONFIDENTIAL

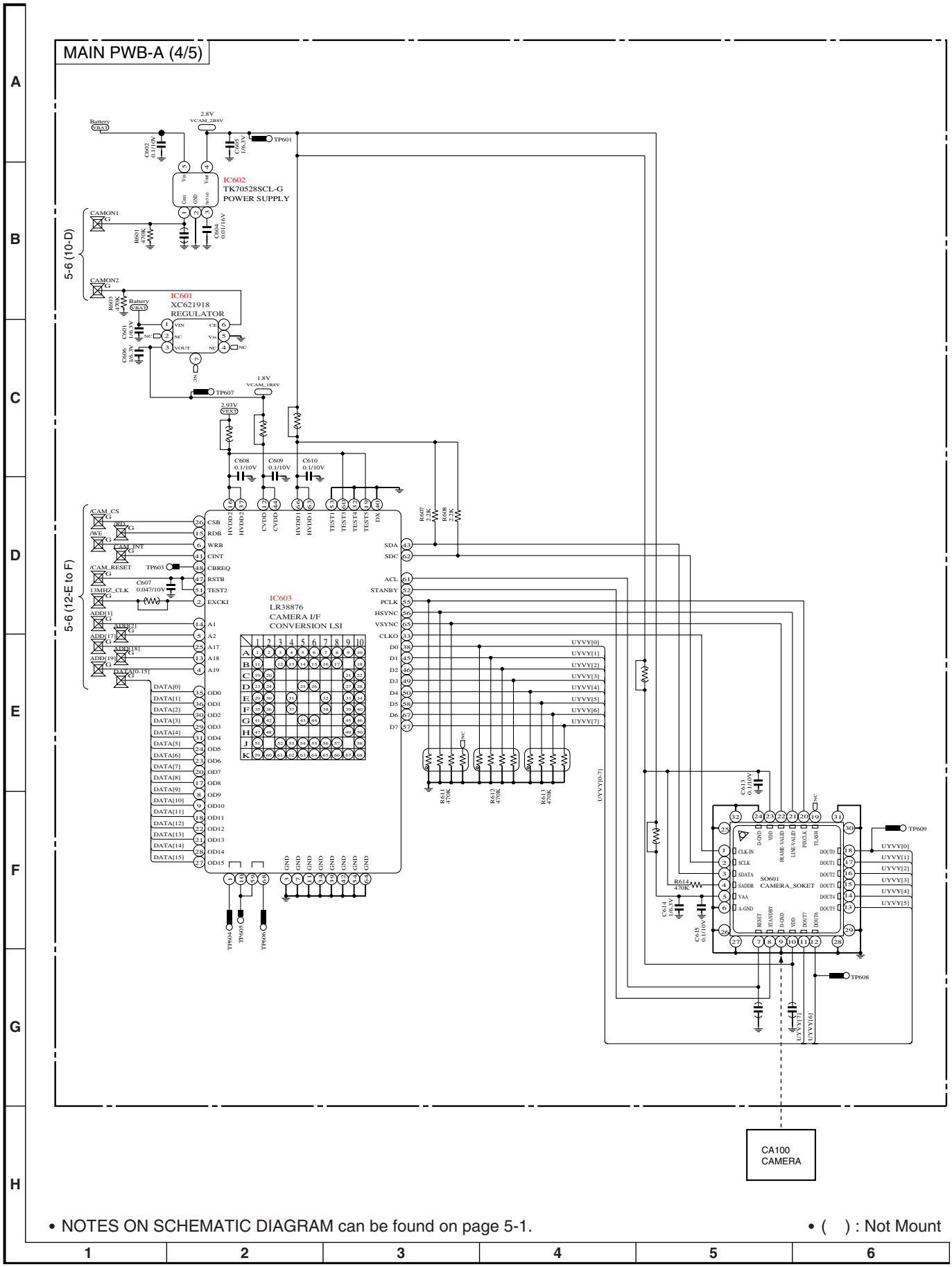
[6] Schematic diagram (Main 3/5)



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

• ( ) : Not Mount

[7] Schematic diagram (Main 4/5)



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

• ( ) : Not Mount

[8] Schematic diagram (Main 5/5)

MAIN PWB-A (5/5)

RECEPTION SIGNAL

TRANSMISSION SIGNAL

IC804
R5322P
VOLTAGE REGULATOR

IC801
15515502
RF

IC802
RF3146
POWER AMP.

IC803
RF SWITCH

FL902
SAW FILTER

FL903
SAW FILTER

FL905
ESD DEVICE

TCX801
26MHz
VCTCXO

J801
RF CONNECTOR

BUILT-IN AERIAL
PWB-D

ANT801
AERIAL
TERMINAL

PowerAmp	BS2	BS4
GSM	LOW	HIGH
DCS	HIGH	HIGH
PCS	HIGH	HIGH

RF-Switch		BS1	BS2	BS3
GSM	TX	HIGH	LOW	HIGH
	RX	HIGH	LOW	LOW
DCS	TX	LOW	HIGH	LOW
	RX	HIGH	LOW	LOW
PCS	TX	LOW	HIGH	LOW
	RX	LOW	LOW	LOW

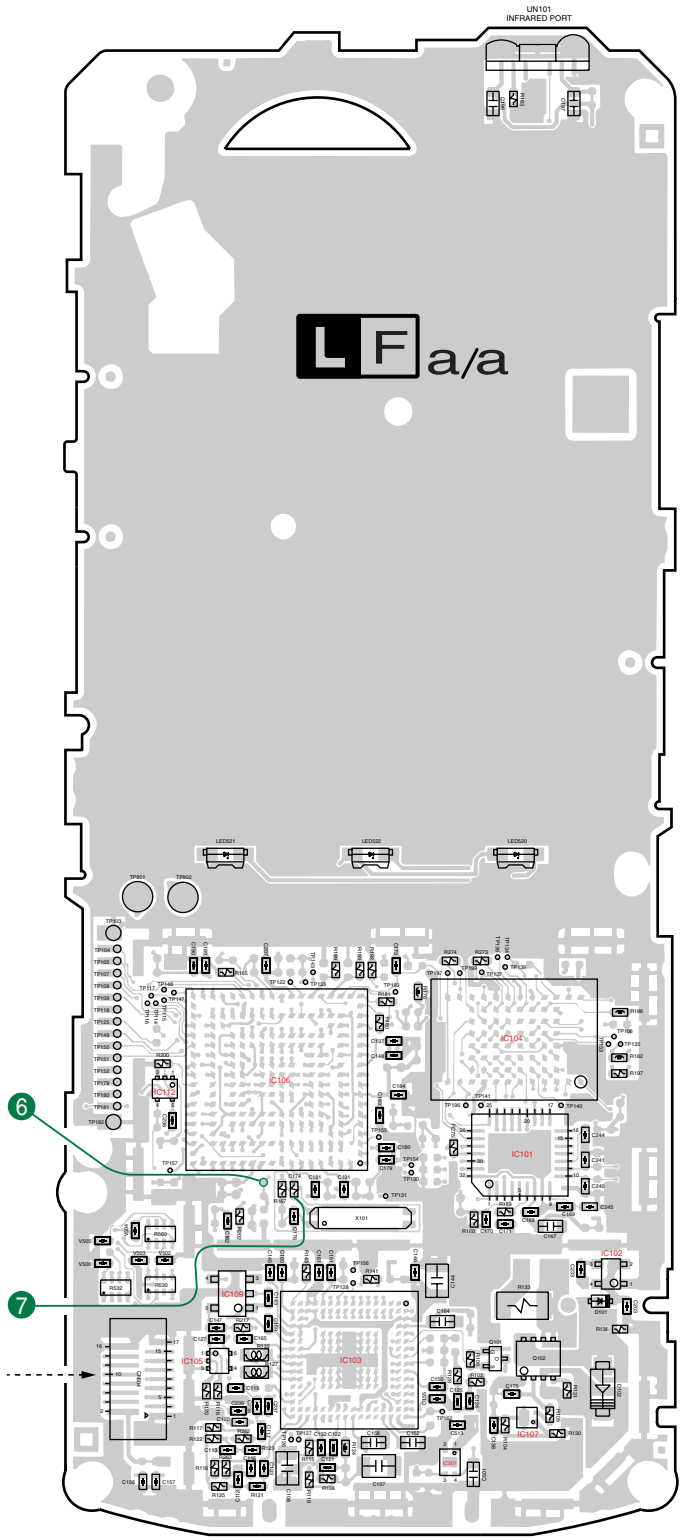
		BS1	BS2	BS3	BS4
GSM 900	TX	HIGH	LOW	HIGH	HIGH
	RX	HIGH	LOW	LOW	LOW
DCS 1800	TX	LOW	HIGH	LOW	HIGH
	RX	HIGH	LOW	LOW	LOW
PCS 1900	TX	LOW	HIGH	LOW	HIGH
	RX	LOW	LOW	LOW	LOW

- NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.
- ( ) : Not Mount
- Waveform numbers of 1 to 5 are shown on pages 5-2, 5-3.

CONFIDENTIAL

[9] Wiring side of P.W.Board (Main)

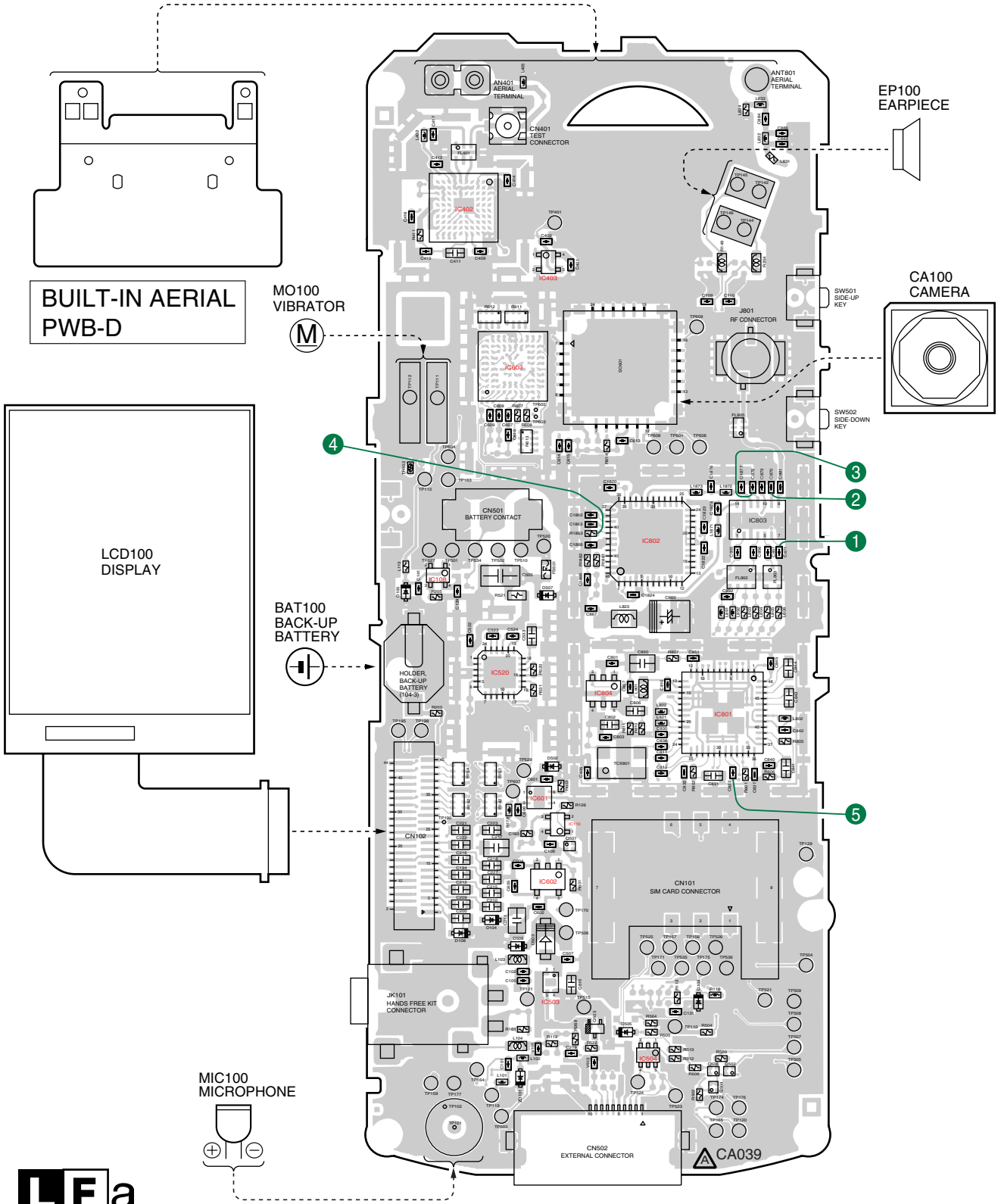
MAIN PWB-A (FRONT SIDE)



LFa
Sn-Ag-Cu

This PWB employs lead-free solder.

MAIN PWB-A (REAR SIDE)



LFa
Sn-Ag-Cu

This PWB employs lead-free solder.

- Waveform numbers of 1 to 7 are shown on pages 5-2, 5-3.

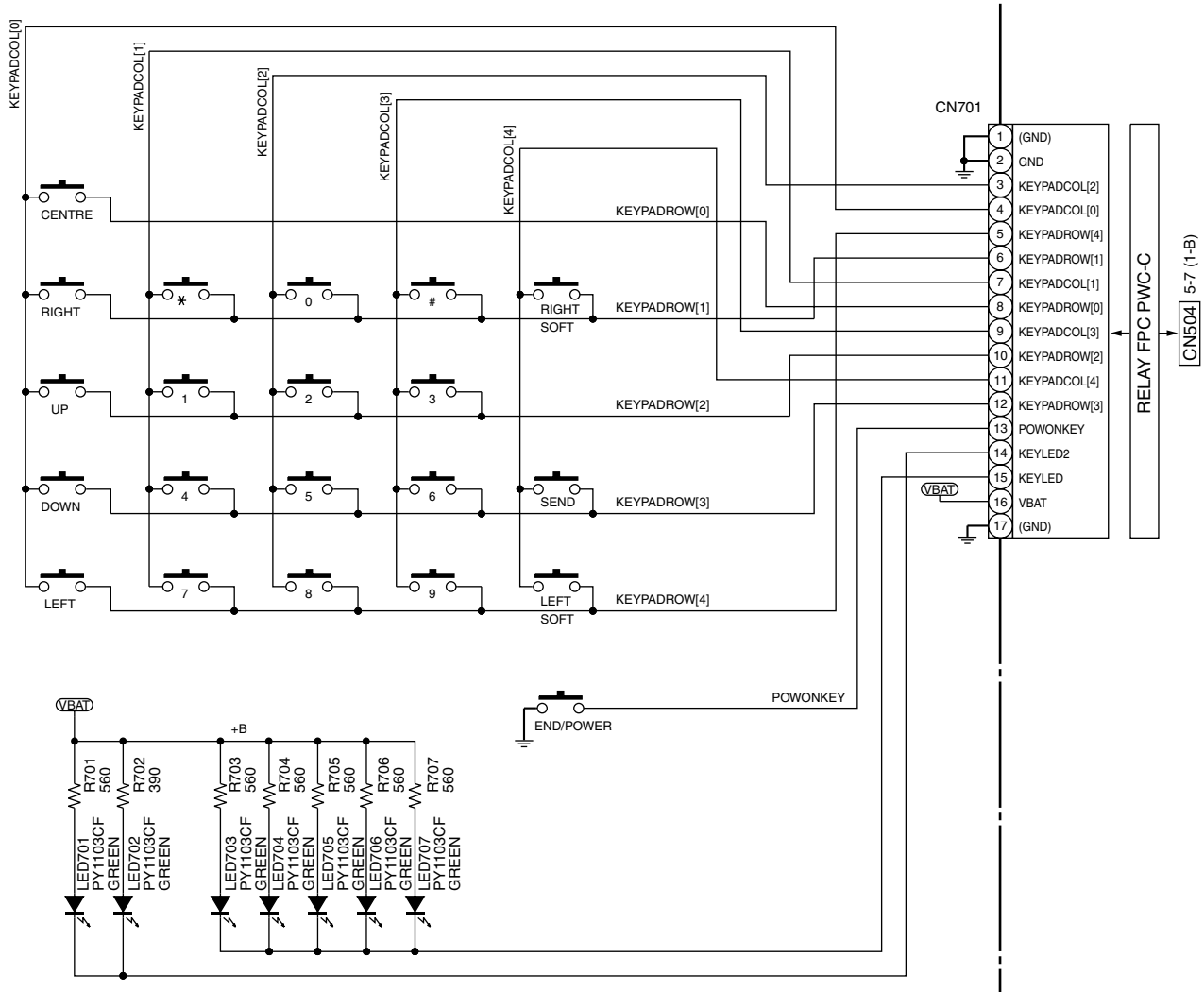
7	8	9	10	11	12

CONFIDENTIAL

[10] Schematic diagram (Key)

KEY PWB-B

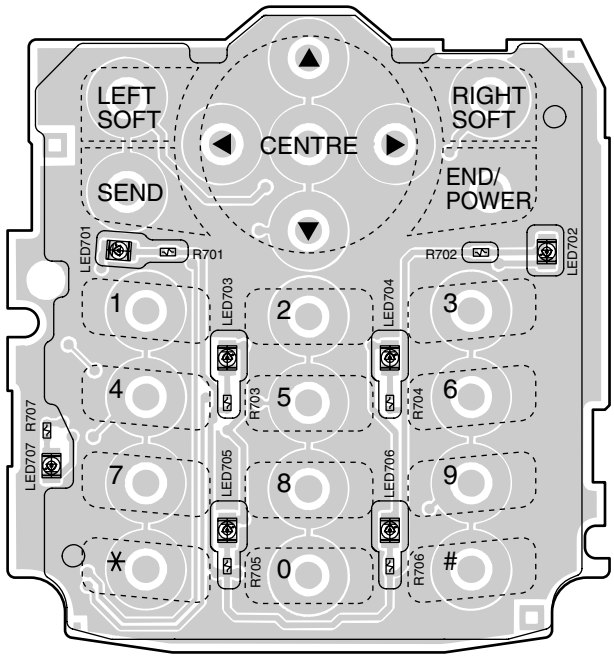
	KEYPADCOL[0]	KEYPADCOL[1]	KEYPADCOL[2]	KEYPADCOL[3]	KEYPADCOL[4]	Ghost
KEYPADROW[0]	CENTRE	SIDE UP	SIDE DOWN	Not	Not	Not
KEYPADROW[1]	RIGHT	*	0	#	RIGHT SOFT	Not
KEYPADROW[2]	UP	1	2	3	CAMERA	Not
KEYPADROW[3]	DOWN	4	5	6	SEND	Not
KEYPADROW[4]	LEFT	7	8	9	LEFT SOFT	END/POWER



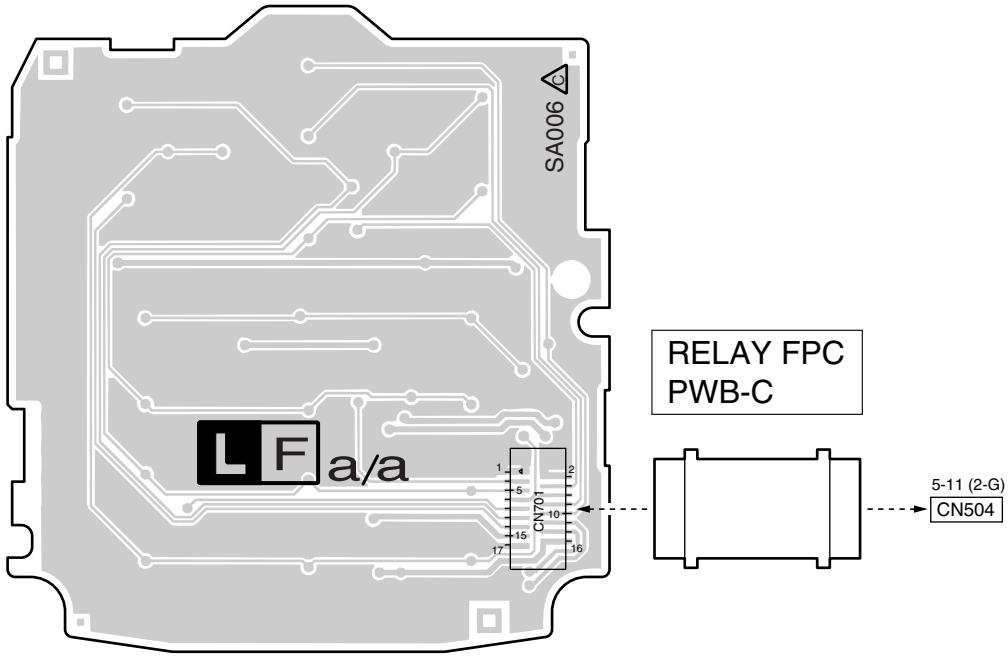
• NOTES ON SCHEMATIC DIAGRAM can be found on page 5-1.

[11] Wiring side of P.W.Board (Key)

KEY PWB-B (FRONT SIDE)



KEY PWB-B (REAR SIDE)



LFa
Sn-Ag-Cu

These PWB employs lead-free solder.

[12] Voltage value

Conditions: SIM card inserted, power on (3.7V battery), in stand-by mode
(No information on the display; with the backlight turned off)
Measuring instrument: Digital multimeter
——: Unmeasurable

IC101	
PIN NO.	VOLTAGE
1	0V
2	NC
3	2.96V
4	2.96V
5	NC
6	0V
7	2.96V
8	0V
9	0V
10	——
11	——
12	——
13	NC
14	NC
15	NC
16	NC
17	NC
18	NC
19	0V
20	——
21	——
22	——
23	——
24	——
25	——
26	——
27	——
28	2.9V
29	2.9V
30	2.9V
31	2.9V
32	2.93V

IC102	
PIN NO.	VOLTAGE
1	0V
2	0.2V
3	0V
4	0.2V

IC105	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	2.96V

IC107	
PIN NO.	VOLTAGE
1	0V
2	0.02V
3	0.015V

IC108	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	3.7V

IC109	
PIN NO.	VOLTAGE
1	3.7V
2	0V
3	1.83V
4	0V
5	3.3V

IC110	
PIN NO.	VOLTAGE
1	——
2	0V
3	——
4	3.7V

IC112	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	2.96V

IC403	
PIN NO.	VOLTAGE
1	1.83V
2	0V
3	2.99V
4	3.7V

IC501	
PIN NO.	VOLTAGE
1	0V
2	0V
3	1.83V
4	0.055V
5	NC

IC503	
PIN NO.	VOLTAGE
1	0.322V
2	0V
3	0V
4	0.05V
5	NC

IC504	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V

IC520	
PIN NO.	VOLTAGE
1	NC
2	——
3	0V
4	0V
5	——
6	——
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	——
15	0V
16	——
17	0V
18	NC
19	NC
20	——
21	——
22	——
23	——
24	0V

IC601	
PIN NO.	VOLTAGE
1	3.7V
2	NC
3	0V
4	NC
5	0V
6	0V
7	NC

IC602	
PIN NO.	VOLTAGE
1	——
2	0V
3	——
4	0.0016V
5	3.7V

IC802	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V
17	0V
18	0V
19	0V
20	0V
21	0V
22	0V
23	0V
24	0V
25	0V
26	0V
27	0V
28	0V
29	0V
30	0V
31	0V
32	0V
33	0V
34	0V
35	0V
36	0V
37	0V
38	0V
39	0V
40	0V
41	0V
42	3.69V
43	3.69V
44	0V
45	0V
46	0V
47	0V
48	0V

IC804	
PIN NO.	VOLTAGE
1	2.96V
2	3.80V
3	2.96V
4	2.89V
5	0V
6	2.89V

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

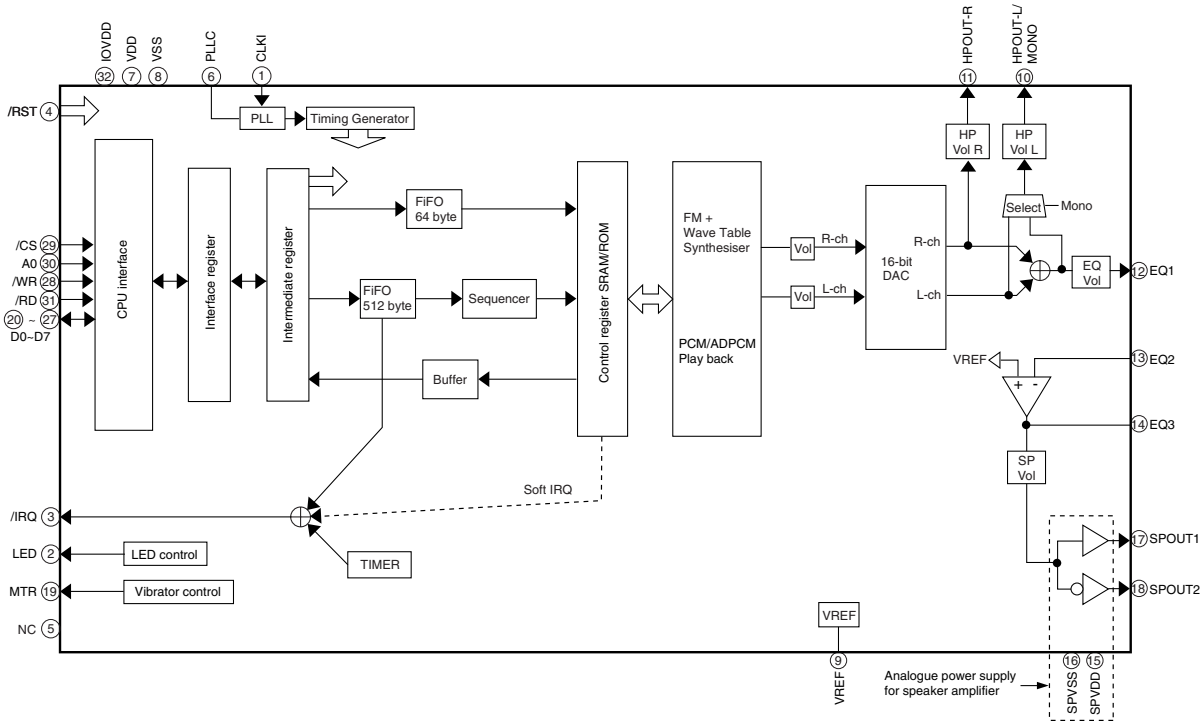
CHAPTER 6. OTHERS

[1] Function table of IC

IC101 VHIYMU762C+-1L (YMU762C): SOUND

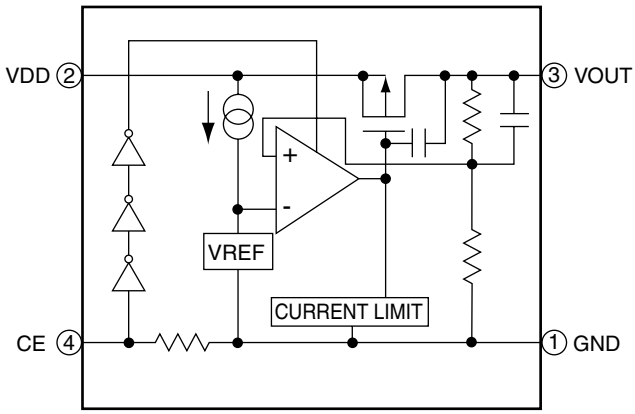
Pin No.	Terminal name	Input/Output	Description of terminal
1	CLKI	Input	Clock input terminal
2*	LED (NC)	Output	External LED control terminal (Not used)
3	/IRQ	Output	Interrupt output terminal
4	/RST	Input	Hardware reset input terminal
5*	NC	–	Not used
6	PLLC	–	Built-in PLL capacitor terminal
7	VDD	–	Power supply (Typ + 3.0 V)
8	VSS	–	Earth
9	VREF	–	Analogue reference voltage terminal
10	HPOUT-L/MONO	Output	Headphone output L-ch
11	HPOUT-R	Output	Headphone output R-ch
12	EQ1	–	Equaliser terminal 1
13*	EQ2 (NC)	–	Equaliser terminal 2 (Not used)
14*	EQ3 (NC)	–	Equaliser terminal 3 (Not used)
15*	SPVDD (NC)	–	Analogue power supply for speaker amplifier (Typ + 3.6 V) (Not used)
16*	SPVSS (NC)	–	Analogue earth for speaker amplifier (Not used)
17*	SPOUT1 (NC)	Output	Speaker terminal 1 (Not used)
18*	SPOUT2 (NC)	Output	Speaker terminal 2 (Not used)
19	MTR	Output	External motor control terminal
20	D7	Input/Output	CPU I/F data bus 7
21	D6	Input/Output	CPU I/F data bus 6
22	D5	Input/Output	CPU I/F data bus 5
23	D4	Input/Output	CPU I/F data bus 4
24	D3	Input/Output	CPU I/F data bus 3
25	D2	Input/Output	CPU I/F data bus 2
26	D1	Input/Output	CPU I/F data bus 1
27	D0	Input/Output	CPU I/F data bus 0
28	/WR	Input	CPU I/F write enable
29	/CS	Input	CPU I/F chip select input
30	A0	Input	CPU I/F address signal
31	/RD	Input	CPU I/F read enable
32	IOVDD	–	Power supply for terminal

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



IC102 VHIQ5RW45BF-1L (Q5RW45B): 4.5 V REGULATOR

Pin No.	Terminal name	Input/Output	Description of terminal
1	GND	–	Earth
2	VDD	–	Power supply
3	VOUT	Output	Output
4	CE	Input	Chip enable



IC103 (AD6537B): ANALOGUE BASEBAND

Pin No.	Terminal name	Input/Output	Description of terminal
1*	TDI	Input	Not used
2	VCXOEN	Input	VCXO supply
3	VBAT3	Input	External interface regulator input
4	VEXT	Output	External interface supply
5	VCHG	Input	Charge supply
6	GATEDRIVE	Output	Charge DAC (FET) output control
7	ISENSE	Input	Charge current sense input
8*	TEMP2	Input	Not used
9	AUXADC2	Input	Auxiliary ADC input for hands free kit (earphone) detection
10	REFBB	Output	Baseband transmit & receive voltage reference
11	AGND2	–	Analogue baseband earth
12	IP	Input/Output	I-channel positive input/output
13	IN	Input/Output	I-channel negative input/output
14	QN	Input/Output	Q-channel positive input/output
15	QP	Input/Output	Q-channel negative input/output
16*	NC_A16	–	Not used
17*	TMS	Input	Not used
18*	TCK	Input	Not used
19	VBAT3	Input	External interface regulator input
20	VEXT	Output	External interface supply
21*	NC_B05	–	Not used
22	BATTYPE	Input	Battery type identification input
23*	NC_B07	–	Not used
24	VBATSENSE	Input	Battery voltage sense input
25	TEMP1	Input	Temperature sensor input
26	AUXADC1	Input	Auxiliary ADC input for temp. sensor adjustment
27	REFOUT	Output	Voltage reference output
28	PA	Output	Power amplifier control output
29	AGND0	–	Analogue earth
30	AFCDAC	Output	Automatic frequency control DAC output
31	REF	Output	Voltage reference
32	AGND1	–	Analogue earth for voltage reference
33*	TDO	Output	Not used
34*	GPI	Input	Not used (Pull down)
35	VBAT1	Input	Voltage controlled crystal oscillator regulator input
36*	NC_C16	–	Not used
37	INT	Output	Digital BB interrupt
38	ASDO	Output	Audio serial port data output
39	REFCHG	Output	Voltage reference output

Pin No.	Terminal name	Input/Output	Description of terminal
40	VVCXO	Output	Voltage controlled crystal oscillator supply 2.71 - 2.79 V (VT)
41	ASDI	Input	Audio serial port data input
42	BSDO	Output	Baseband serial port data output
43*	NC_E15	–	Not used
44*	NC_E16	–	Not used
45	BSIFS	Input	Baseband serial port input framing signal
46	ASFS	Output	Audio serial port framing signal
47	GND_NET2	–	Earth
48*	NC_F16	–	Not used
49	BSOFS	Output	Baseband serial port output framing signal
50	BSDI	Input	Baseband serial port data input
51	VBAT2	Input	Analogue baseband regulator input
52*	NC_G16	–	Not used
53	CSDO	Output	Control serial port data output
54	CSDI	Input	Control serial port data input
55	VBAT2	Input	Analogue baseband regulator input
56	VABB	Output	Analogue baseband supply
57	ASM	Input	Advanced state machine
58	MCLKEN	Output	Master clock enable
59*	AOUT1P	Output	Not used
60	AOUT3P	Output	Headset receiver audio positive output
61	RXON	Input	Baseband receive section control
62	TXON	Input	Baseband transmit section control
63*	AOUT1N	Output	Not used
64	AOUT3N	Output	Headset receiver audio negative output
65	MCLK	Input	Master clock
66	CSFS	Input	Control serial port framing signal
67	AGND3	–	Analogue audio earth
68	LIGHT1	Output	Key-pad LED control 2
69	ABBRESET	Input	Reset input
70	DGND	–	Digital earth
71*	LIGHT2	Output	USB charge enable (Not used)
72	LIGHT3	Output	Key-pad LED control 1
73	VCORE	Output	Digital core supply 1.72 - 1.9 V
74	VBAT7	Input	Digital core regulator input
75	LGND	–	Light driver earth
76	VMIC	Output	Microphone supply 2.4 - 2.6 V
77	VCORE	Output	Digital core supply 1.72 - 1.9 V
78	VBAT8	Input	Memory interface regulator input
79	AIN2P	Input	Headset mic audio positive input
80	AIN1P	Input	Mic audio positive input
81*	NC_R01	–	Not used
82	VBAT8	Input	Memory interface regulator input
83	VMEMSEL	Input	Memory supply voltage selection
84	VBAT5	Input	Back-up battery regulator input
85	VBAT4	Input	SIM interface regulator input
86	VBAT6	Input	Real-time clock regulator input
87	DBBON	Input	Digital BB supply regulator on signal
88	SGND	–	AOUT2P/N supply earth
89	AOUT2N	Output	Speaker with receiver positive output
90	SPWR	Input	AOUT2P/N supply regulator input
91	AOUT2P	Output	Speaker with receiver negative output
92*	NC_R12	–	Not used
93	AIN3P	Input	Sound IC audio positive input
94	AIN3N	Input	Sound IC audio negative input
95	AIN2N	Input	Headset mic audio negative input
96	AIN1N	Input	Mic audio negative input
97	RESET	Output	Reset output
98	VMEM	Output	Memory interface supply 2.75 - 3.05 V
99	VMEM	Output	Memory interface supply 2.75 - 3.05 V
100	VBAT_NET	Input	VBAT supply input
101	GND_NET1	–	Earth
102	VSIM	Output	SIM interface supply 2.75 - 2.95 V
103	VRTC	Output	Real-time clock supply 1.6 - 2.0 V

Pin No.	Terminal name	Input/Output	Description of terminal
104	SGND	–	AOUT2P/N supply earth
105	AOUT2N	Output	Speaker with receiver positive output
106	SPWR	Input	AOUT2P/N supply regulator input
107	AOUT2P	Output	Speaker with receiver negative output
108*	NC_T12	–	Not used
109	KEYOUT	Output	Power-on key output
110	KEYON	Input	Power-on key input
111*	NC_T15	–	Not used
112	AGND4	–	Power management analogue earth
113	AGND0	–	Thermal earth for power supply
114	AGND0	–	Thermal earth for power supply
115	AGND0	–	Thermal earth for power supply
116	AGND0	–	Thermal earth for power supply
117	AGND0	–	Thermal earth for power supply
118	AGND0	–	Thermal earth for power supply
119	AGND0	–	Thermal earth for power supply
120	AGND0	–	Thermal earth for power supply
121	AGND0	–	Thermal earth for power supply
122	AGND0	–	Thermal earth for power supply
123	AGND0	–	Thermal earth for power supply
124	AGND0	–	Thermal earth for power supply
125	AGND0	–	Thermal earth for power supply
126	AGND0	–	Thermal earth for power supply
127	AGND0	–	Thermal earth for power supply
128	AGND0	–	Thermal earth for power supply
129	AGND0	–	Thermal earth for power supply
130	AGND0	–	Thermal earth for power supply
131	AGND0	–	Thermal earth for power supply
132	AGND0	–	Thermal earth for power supply
133	AGND0	–	Thermal earth for power supply
134	AGND0	–	Thermal earth for power supply
135	AGND0	–	Thermal earth for power supply
136	AGND0	–	Thermal earth for power supply
137	AGND0	–	Thermal earth for power supply
138	AGND0	–	Thermal earth for power supply
139	AGND0	–	Thermal earth for power supply
140	AGND0	–	Thermal earth for power supply
141	AGND0	–	Thermal earth for power supply
142	AGND0	–	Thermal earth for power supply
143	AGND0	–	Thermal earth for power supply
144	AGND0	–	Thermal earth for power supply
145	AGND0	–	Thermal earth for power supply
146	AGND0	–	Thermal earth for power supply
147	AGND0	–	Thermal earth for power supply
148	AGND0	–	Thermal earth for power supply

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

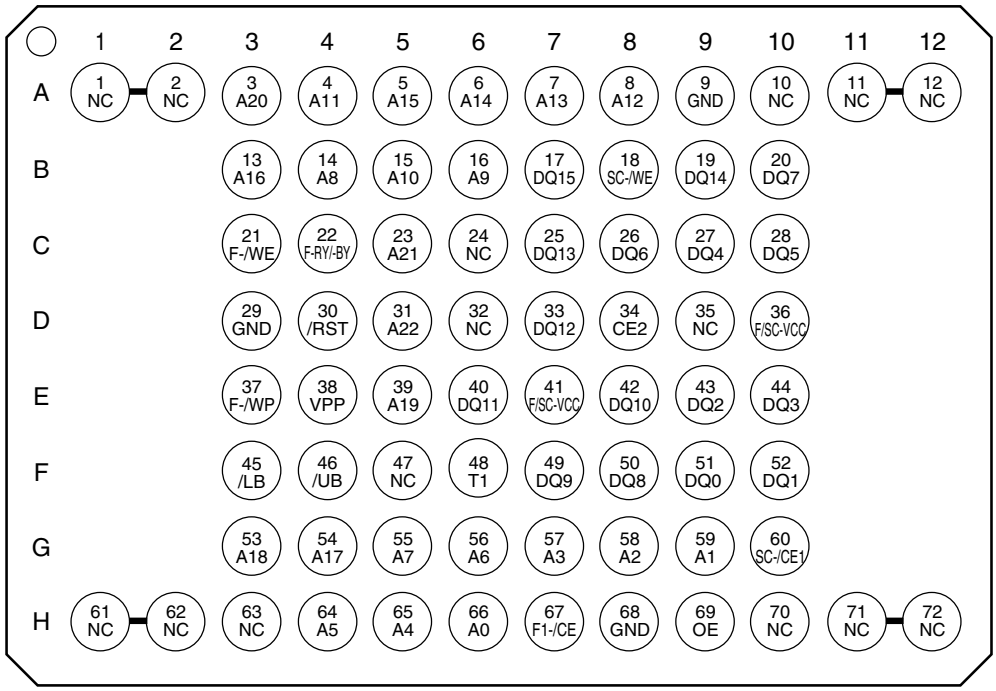
IC104 (LRS18641): FLASH MEMORY

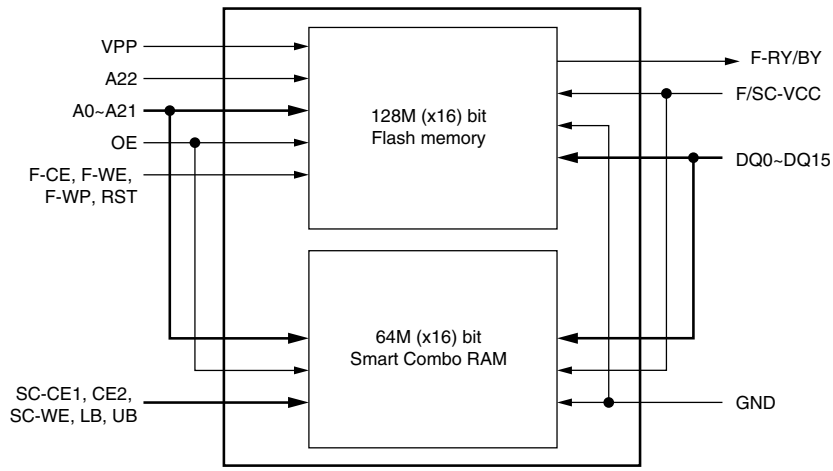
Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2*	NC	–	Not used
3	A20	Input	Address input (common)
4	A11	Input	Address input (common)
5	A15	Input	Address input (common)
6	A14	Input	Address input (common)
7	A13	Input	Address input (common)
8	A12	Input	Address input (common)
9	GND	–	Earth
10*	NC	–	Not used
11*	NC	–	Not used
12*	NC	–	Not used
13	A16	Input	Address input (common)
14	A8	Input	Address input (common)
15	A10	Input	Address input (common)
16	A9	Input	Address input (common)
17	DQ15	Input/Output	Data input/output (common)
18	SC-/WE	Input	Write enable input (Smartcombo RAM)
19	DQ14	Input/Output	Data input/output (common)
20	DQ7	Input/Output	Data input/output (common)
21	F-/WE	Input	Write enable input (Flash)
22*	F-RY/-BY (NC)	Output	Ready busy output (Flash) When deleting/writing: VOL When interrupting block delete/write: High-Z (High impedance) (Not used)
23	A21	Input	Address input (common)
24*	NC	–	Not used
25	DQ13	Input/Output	Data input/output (common)
26	DQ6	Input/Output	Data input/output (common)
27	DQ4	Input/Output	Data input/output (common)
28	DQ5	Input/Output	Data input/output (common)
29	GND	–	Earth
30	/RST	Input	Reset power down input (Flash) When deleting/writing block: VIH When reading: VIH Reset power down: VIL
31	A22	Input	Address input (Flash)
32*	NC	–	Not used
33	DQ12	Input/Output	Data input/output (common)
34	CE2	Input	Sleep state input (Smartcombo RAM)
35*	NC	–	Not used
36	F/SC-VCC	–	Power (common)
37	F-/WP	Input	Write protect input (Flash) When F-/WP is set to VIL, it is prohibited to cancel lock bit of the block that has lock bit down set. Deletion and programme operation are executable for the block that has neither lock bit nor lock down bit set. Disable lock down bit by setting F-/WP to VIH.
38	VPP	Input	Power voltage detect terminal (Flash) When deleting/writing: VPP = VPPH
39	A19	Input	Address input (common)
40	DQ11	Input/Output	Data input/output (common)
41	F/SC-VCC	–	Power (common)
42	DQ10	Input/Output	Data input/output (common)
43	DQ2	Input/Output	Data input/output (common)
44	DQ3	Input/Output	Data input/output (common)
45	/LB	Input	Byte enable input: DQ0 – DQ7 (Smartcombo RAM)
46	/UB	Input	Byte enable input: DQ8 – DQ15 (Smartcombo RAM)
47*	NC	–	Not used
48*	T1 (NC)	–	Test pin (all open) (Not used)
49	DQ9	Input/Output	Data input/output (common)
50	DQ8	Input/Output	Data input/output (common)
51	DQ0	Input/Output	Data input/output (common)
52	DQ1	Input/Output	Data input/output (common)
53	A18	Input	Address input (common)
54	A17	Input	Address input (common)
55	A7	Input	Address input (common)

Pin No.	Terminal name	Input/Output	Description of terminal
56	A6	Input	Address input (common)
57	A3	Input	Address input (common)
58	A2	Input	Address input (common)
59	A1	Input	Address input (common)
60	SC-/CE1	Input	Chip enable input (Smartcombo RAM)
61*	NC	–	Not used
62*	NC	–	Not used
63*	F2-/CE	–	Not used
64	A5	Input	Address input (common)
65	A4	Input	Address input (common)
66	A0	Input	Address input (common)
67	F-/CE	Input	Chip enable input (Flash)
68	GND	–	Earth
69	/OE	Input	Output enable input (common)
70*	NC	–	Not used
71*	NC	–	Not used
72*	NC	–	Not used

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

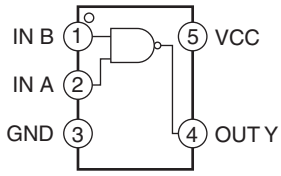
(TOP VIEW)





IC105 VHINL17SZ08-1L (NL17SZ08): LOGIC

Pin No.	Terminal name	Input/Output	Description of terminal
1	IN B	Input	Input
2	IN A	Input	Input
3	GND	–	Earth
4	OUT Y	Output	Output
5	VCC	–	Power supply



IC106 (AD6528B): DIGITAL BASEBAND

Pin No.	Terminal name	Input/Output	Description of terminal
1	ASDO	Output	Audio serial port data output to analogue BB
2	BSDI	Input	Baseband serial port data input from analogue BB
3	BSOFS	Output	Baseband serial port output framing signal output to analogue BB
4*	GPIO_48	Output	Not used
5	VINT	Input	Analogue BB interface power supply 1.7 - 3.3 V (VCORE)
6	GPO_29	Output	Analogue BB reset output (ABBRESET)
7	GPO_5	Output	Advance state machine of analogue BB
8	VDDRTC	Input	RTC power supply 1.0 - 1.9 V (VRTC)
9	VSSRTC	–	RTC earth
10*	MC_DAT[0]	Output	Not used
11	GPIO_22	Output	RSP for main LCD controller
12	GPIO_56	Input	Boot control 0
13	KEYPADCOL[4]	Output	KEYIN signal output 4
14	KEYPADCOL[1]	Output	KEYIN signal output 1
15	KEYPADROW[4]	Input	KEYIN signal input 4
16	KEYPADROW[2]	Input	KEYIN signal input 2
17	GPIO_38	Input	Interrupt input from sound generator IC
18	GPIO_36	Output	AOUT3 bias control
19	ASDI	Input	Audio serial port data input from analogue BB
20	GPIO_35	Output	Camera power control 1
21*	ADD[0]	Output	Not used
22	ASFS	Input	Audio serial port framing signal input from analogue BB
23	BSIFS	Input	Baseband serial port input framing signal input from analogue BB
24	BSDO	Output	Baseband serial port data output to analogue BB
25	CSDI	Input	Control serial port data input from analogue BB
26*	GPO_6	Output	Not used
27	GPO_0	Output	Analogue baseband receive section control (RXON)
28	OSCOUT	Output	32.768 kHz crystal oscillator output
29*	MC_DAT[2]	Output	Not used
30	VMC	Input	Pull down resistor
31	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
32	KEYPADCOL[3]	Output	KEYIN signal output 3
33	KEYPADCOL[2]	Output	KEYIN signal output 2
34	GPIO_39	Output	USB PU control
35	GPIO_37	Input	Interrupt input from analogue BB
36	GPIO_34	Output	UART_TXD for Bluetooth module
37	ADD[4]	Output	Processor address bus 4
38	ADD[2]	Output	Processor address bus 2
39	GND	–	Earth
40	KEYPADROW[0]	Input	KEYIN signal input 0
41	VEXT	Input	System interface power supply 2.4 - 3.3 V (VINT)
42	GPO_23	Output	Backlight ON/OFF with PWM
43	ADD[7]	Output	Processor address bus 7
44	VMEM	Input	Memory power supply 2.7 - 3.3 V (VMEM)
45	ADD[1]	Output	Processor address bus 1
46	CSDO	Output	Control serial port data output to analogue BB

Pin No.	Terminal name	Input/Output	Description of terminal
47	CLKOUT_GATE	Input	Master clock enable from analogue BB (MCLKEN)
48	GPO_1	Output	Analogue baseband transmit section control (TXON)
49	OSCIN	Input	32.768 kHz crystal oscillator input
50*	MC_CMD	Output	Not used
51	GPIO_55	Input	Boot control 1
52	GND	–	Earth
53	KEYPADROW[3]	Input	KEYIN signal input 3
54	KEYPADROW[1]	Input	KEYIN signal input 1
55	GPIO_33	Input	UART_RXD for Bluetooth module
56	GPIO_17	Output	PCM data output for Bluetooth module
57	ADD[11]	Output	Processor address bus 11
58	ADD[9]	Output	Processor address bus 9
59	ADD[5]	Output	Processor address bus 5
60	ADD[3]	Output	Processor address bus 3
61	GND	–	Earth
62	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
63	PWRON	Output	System power control for analogue BB
64*	MC_DAT[1]	Output	Not used
65	GND	–	Earth
66	VEXT	Input	System interface power supply 2.4 - 3.3 V (VINT)
67	KEYPADCOL[0]	Output	KEYIN signal output 0
68	VEXT	Input	System interface power supply 2.4 - 3.3 V (VINT)
69	GPIO_15	Input	PCM data input for Bluetooth module
70	GPIO_16	Output	PCM SYNC output for Bluetooth module
71	ADD[13]	Output	Processor address bus 13
72	ADD[12]	Output	Processor address bus 12
73	ADD[8]	Output	Processor address bus 8
74	ADD[6]	Output	Processor address bus 6
75	GPO_22	Output	VPP control for flash memory 1
76	GPIO_14	Output	PCM clock output for Bluetooth module
77	GPIO_10	Input	USB detection
78	GPIO_12	Output	Reset output for LCD module
79	VMEM	Input	Memory power supply 2.7 - 3.3 V (VMEM)
80	ADD[14]	Output	Processor address bus 14
81	GND	–	Earth
82	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
83	ADD[10]	Output	Processor address bus 10
84	CLKOUT	Output	13 MHz clock output for analogue BB (CLKOUT)
85*	MC_DAT[3]	Output	Not used
86	GND	–	Earth
87	GND	–	Earth
88	GPIO_13	Input	Interrupt input from camera controller
89*	GPIO_7	Input	Not used
90	GPIO_9	Input	Manufacture specific input from I/O connector
91	ADD[19]	Output	Processor address bus 19
92	ADD[17]	Output	Processor address bus 17
93	ADD[18]	Output	Processor address bus 18
94	ADD[15]	Output	Processor address bus 15
95	ADD[16]	Output	Processor address bus 16
96	CSFS	Output	Control serial port framing signal output to analogue BB
97*	MC_CLK	Output	Not used
98	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
99	GPIO_11	Output	Camera power control 2
100	GPIO_8	Output	Reset output for Bluetooth module
101*	GPIO_5	Output	Not used
102	GPIO_6	Input	Bluetooth clock request
103	ADD[22]	Output	Processor address bus 22
104	ADD[21]	Output	Processor address bus 21
105	GPIO_40	Output	13 MHz clock output for camera controller & Sound generator IC
106	ADD[20]	Output	Processor address bus 20
107	GND	–	Earth
108	ADD[23]	Output	Processor address bus 23
109	GND	–	Earth
110	VEXT	Input	System interface power supply 2.4 - 3.3 V (VINT)

Pin No.	Terminal name	Input/Output	Description of terminal
111	GND	–	Earth
112	GPIO_4	Output	UART_CTS for Bluetooth module
113	GPIO_2	Output	Write protect control for Frash Memory 1
114	GPIO_3	Input	UART_RTS for Bluetooth module
115	DATA[2]	Input/Output	Processor data bus 2
116	DATA[0]	Input/Output	Processor data bus 0
117	DATA[5]	Input/Output	Processor data bus 5
118	DATA[1]	Input/Output	Processor data bus 1
119	DATA[3]	Input/Output	Processor data bus 3
120	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
121	DMINUS	Input	USB D-
122	GPIO_18	Output	JTAG TCK
123	GND	–	Earth
124	GPIO_1	Input	IrDA receive data
125	USC[5]	Output	USC pin (Ginie_TX)
126	GPIO_0	Output	IrDA transmit data
127	DATA[4]	Input/Output	Processor data bus 4
128	VMEM	Input	Memory power supply 2.7 - 3.3 V (VMEM)
129	GND	–	Earth
130	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
131	USC[6]	Input	USC pin (RTC monitor/Ginie_RX)
132	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
133	USC[2]	Input	USC pin (TXD)
134	USC[4]	Output	Reserve
135	DATA[7]	Input/Output	Processor data bus 7
136	DATA[6]	Input/Output	Processor data bus 6
137	GND	–	Earth
138	DATA[9]	Input/Output	Processor data bus 9
139	DATA[13]	Input/Output	Processor data bus 13
140	NROMCS1	Output	Chip select for flash memory 1
141	GPIO_42	Output	Chip select for LCD module
142	CLKIN	Input	13 MHz clock input
143	VSIM	Input	SIM power supply 1.7 - 3.3 V (VSIM)
144	GND	–	Earth
145	USC[3]	Input	Reserve
146	USC[1]	Input	USC pin (RXD)
147	GND	–	Earth
148	USC[0]	Output	Reserve
149	DATA[10]	Input/Output	Processor data bus 10
150	DATA[8]	Input/Output	Processor data bus 8
151	NRD	Output	Processor read strobe
152	DATA[14]	Input/Output	Processor data bus 14
153	GND	–	Earth
154	NRAMCS2	Output	Chip select for camera controller
155	GPIO_44	Input	Wakeup mode select (Pull up to VEXT)
156	VSSUSB	–	USB earth
157	GPIO_47	Output	Camera controller reset
158	GPIO_20	Output	JTAG TDI
159	CLKON	Output	13 MHz oscillator power control signal (VCXOEN)
160	VCC	Input	Core power supply 1.7 - 1.9 V (VCORE)
161	GPO_18	Output	SYNTH enable for RF (SYNTHEN)
162	GPO_21	Output	SYNTH clock output for RF (SYNTHCLK)
163	DATA[12]	Input/Output	Processor data bus 12
164	DATA[11]	Input/Output	Processor data bus 11
165	NWE	Output	Processor write strobe
166	VEXT	Input	System interface power supply 2.4 - 3.3 V (VINT)
167	GPO_11	Output	Band select 4 for RF (BS4)
168	GPO_20	Output	SYNTH data output for RF (SYNTHDATA)
169	DATA[15]	Input/Output	Processor data bus 15
170	VMEM	Input	Memory power supply 2.7 - 3.3 V (VMEM)
171	NADV	Output	Hardware version select 1
172	NGPCS1	Output	Chip select for flash memory 2
173	VMEM	Input	Memory power supply 2.7 - 3.3 V (VMEM)
174	GPIO_45	Output	Chip select for SRAM

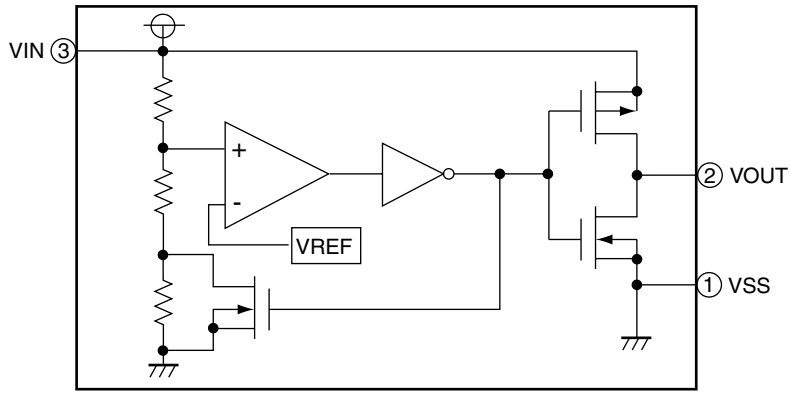
Pin No.	Terminal name	Input/Output	Description of terminal
175	GPIO_46	Output	Chip select for sound generator IC
176	DPLUS	Input	USB D+
177	SIMCLK	Output	SIM interface clock output
178	JTAGEN	Input	JTAG enable
179	VEXT	Input	System Interface power supply 2.4 - 3.3 V (VINT)
180*	GPO_3	Output	Not used
181*	GPO_4	Output	Not used
182*	GPO_7	Output	Not used
183	GPO_16	Output	Band select 1 for RF (BS1)
184	GPO_17	Output	Band select 2 for RF (BS2)
185	NHWR/NUSB	Output	Processor high write strobe
186*	GPO_19	Output	Not used
187	NLWR/NLSB	Output	Processor low write strobe
188*	NWAIT	Input	Not used
189	NRESET	Input	System reset input
190	BURSTCLK	Output	Hardware version select 0
191	NRAMCS1	Output	Chip select for PSRAM 1
192	NAUXCS1	Output	Hardware version select 2
193*	GPIO_43	Output	Not used
194	VDDUSB	Input	USB power supply 2.8 - 3.3 V (VUSB)
195	GPIO_23	Output	SIM interface reset
196	SIMDATAIO	Input/Output	SIM interface data input/output
197	GPIO_24	Output	Sound generator IC reset
198	GPIO_19	Output	JTAG TMS
199	GPIO_21	Output	JTAG TDO
200*	GPO_2	Output	Not used
201	GND	–	Earth
202	GPO_8	Output	IrDA power ON/OFF control
203	GPO_9	Output	Band select 3 for RF (BS3)
204*	GPO_10	Output	Not used

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

IC107 VHIXC61GC33-1L (XC61GC3302HR): VOLTAGE DETECTOR

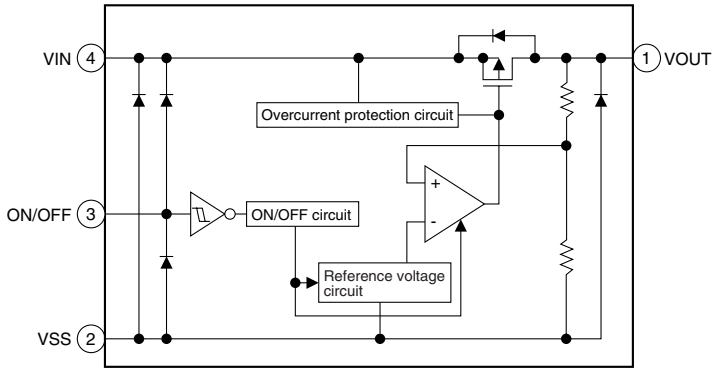
Pin No.	Terminal name	Input/Output	Description of terminal
1	VSS	–	Earth
2	VOUT	Output	Output
3	VIN	Input	Supply voltage input

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



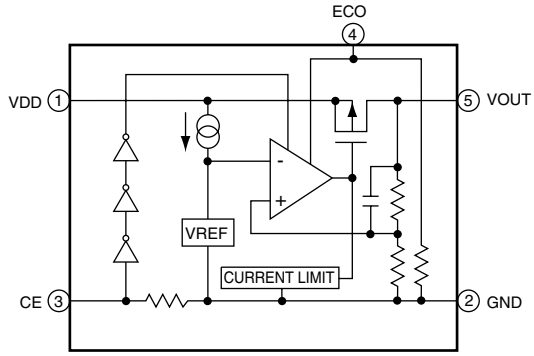
IC108 VHI1323B30G-1R (1323B30G): REGULATOR

Pin No.	Terminal name	Input/Output	Description of terminal
1	VOUT	Output	Voltage output
2	VSS	–	Earth
3	ON/OFF	Input	Power off
4	VIN	Input	Voltage input



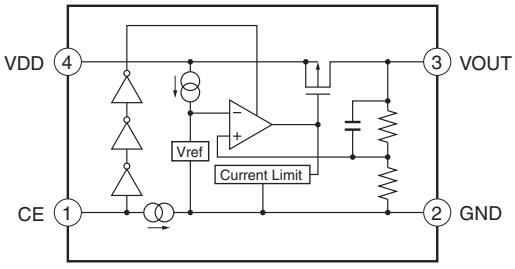
IC109 VHIR11630FB-1L (R11630FB): REGULATOR

Pin No.	Terminal name	Input/Output	Description of terminal
1	VDD	Input	Input
2	GND	–	Earth
3	CE	Input	Chip enable
4	ECO	Input	High speed/low consumption selector switch
5	VOUT	Output	Output



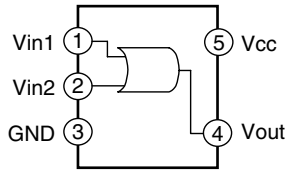
IC110/IC403 VHIR118030B-1L (R118030B): REGULATOR

Pin No.	Terminal name	Input/Output	Description of terminal
1	CE	Input	Chip enable
2	GND	–	Earth
3	VOUT	Output	Output
4	VDD	Input	Input



IC112 VHINL17SZ32-1L(NL17SZ32XV5T2): LOGIC

Pin No.	Terminal name	Input/Output	Description of terminal
1	VIN1	Input	Input power
2	VIN2	Input	Input power
3	GND	–	Earth
4	VOUT	Output	Logic value output
5	VCC	Input	VCC for VRF



IC402 (BC313143): BLUETOOTH MODULE

Pin No.	Terminal name	Input/Output	Description of terminal
1	VSS_PIO	–	Earth connections for PIO and AUX DAC
2	VSS_PIO	–	Earth connections for PIO and AUX DAC
3	VDD_PIO	Input	Positive supply for PIO and AUX DAC (Positive supply for PIO [3:0] and PIO[11:8])
4*	NC	–	Not used
5*	NC	–	Not used
6*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
7*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
8*	NC	–	Not used
9*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
10	VSS_MEM	–	Earth connections for ROM memory and AIO ports
11*	PIO[0]/RXEN (NC)	Input/Output	Control output for external LNA (if fitted) (Not used)
12*	PIO[1]/TXEN (NC)	Input/Output	Control output for external PA, class 1 only (Not used)
13	PIO[2]	Input/Output	Programmable input/output line
14*	PIO[3] (NC)	Input/Output	Programmable input/output line (Not used)
15*	VSS_MEM	–	Earth connections for ROM memory and AIO ports (Not used)
16*	NC	–	Not used
17*	VSS_MEM	–	Earth connections for ROM memory and AIO ports (Not used)
18*	FLASH_EN	Input	Pull high to VDD_MEM (Not used)
19*	SPI_MISO	Output	Serial peripheral interface data output (Not used)
20	VSS_MEM	–	Earth connections for ROM memory and AIO ports
21	VDD_RADIO	Input	Positive supply for RF circuitry
22	VDD_RADIO	Input	Positive supply for RF circuitry
23*	PIO[9]	Input/Output	Programmable input/output line (Not used)
24*	PIO[10]	Input/Output	Programmable input/output line (Not used)
25*	PIO[8]	Input/Output	Programmable input/output line (Not used)
26*	TEST_EN	Input	For test purposes only (leave unconnected) (Not used)
27	RESET	Input	Reset if high. Input debounced, so must be high for >5ms to cause a reset
28*	SPI_MOSI	Input	Serial peripheral interface data input (Not used)
29*	SPI_CSB	Input	Chip select for Serial Peripheral Interface, active low (Not used)
30*	SPI_CLK	Input	Serial peripheral interface clock (Not used)
31*	RF_IN (NC)	Input	Single-ended receiver input (Not used)
32	VSS_RADIO	–	Earth connections for RF circuitry
33*	AUX_DAC (NC)	Output	Voltage DAC output (Not used)
34	RESET_B	Input	Reset if low. Input debounced, so must be low for >5ms to cause a reset
35	VSS_PADS	–	Earth connections for input/output
36	VDD_PADS	Input	Positive supply for all other digital input/output ports (Positive supply for SPI/PCM ports and PIO[7:4])
37	TX_B	Output	Complement of TX_A
38	VSS_RADIO	–	Earth connections for RF circuitry
39*	PIO[11]	Input/Output	Programmable input/output line (Not used)
40*	PIO[4]	Input/Output	Programmable input/output line (Not used)
41	VSS_CORE	–	Earth connection for internal digital circuitry
42	VDD_CORE	Input	Positive supply for Internal digital circuitry
43	TX_A	Input/Output	Transmitter output/switched receiver input
44	VSS_RADIO	–	Earth connections for RF circuitry

Pin No.	Terminal name	Input/Output	Description of terminal
45	VSS	–	Earth connection for internal package shield
46*	PIO[5]	Input/Output	Programmable input/output line (Not used)
47*	PIO[7]	Input/Output	Programmable input/output line (Not used)
48*	PIO[6]	Input/Output	Programmable input/output line (Not used)
49	VSS_VCO	–	Earth connections for VCO and synthesiser
50	VSS_VCO	–	Earth connections for VCO and synthesiser
51*	VDD_PRG (NC)	Input	Positive supply for battery backed memory (Not used)
52	PCM_OUT	Output	Synchronous data output
53	PCM_IN	Input	Synchronous data input
54	PCM_SYNC	Input/Output	Synchronous data sync
55	VDD_VCO	Input	Positive supply for VCO and synthesiser circutry
56*	LOOP_FILTER	–	Connection to external PLL loop filter (Do not connect) (Not used)
57*	NC	–	Not used
58*	AIO[0]	Input/Output	Programmable input/output line (Not used)
59*	AIO[1]	Input/Output	Programmable input/output line (Not used)
60*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
61	UART_RTS	Output	UART request to send active low
62	UART_CTS	Input	UART clear to send active low
63	UART_RX	Input	UART data input active high
64	PCM_CLK	Input/Output	Synchronous data clock
65*	NC	–	Not used
66	VSS_ANA	–	Earth connections for analogue circuitry
67	XTAL_OUT	Output	Drive for crystal
68	VSS_ANA	–	Earth connections for analogue circuitry
69	AIO[2]	Input/Output	Programmable input/output line
70*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
71*	VSS_MEM	–	Earth connections for ROM memory and AIO ports (Not used)
72*	USB_DP	Input/Output	USB data plus with selectable internal 1.5k ohms pull-up resistor (Not used)
73	VSS_USB	–	Earth connections for UART/USB ports
74	UART_TX	Output	UART data output active high
75*	NC	–	Not used
76	VSS_ANA	–	Earth connections for analogue circuitry
77	XTAL_IN	Input	For crystal or external clock input
78	VDD_ANA	Output	Positive supply for analogue circuitry and 1.8 V regulated output
79*	VREG_EN (NC)	Input	If not connected regulator enabled connect to VSS to disable regulator (Not used)
80	VREG_IN	Input	2.2-3.6 V voltage input
81*	VDD_MEM (NC)	Input	Positive supply for ROM memory and AIO ports (Not used)
82*	USB_DN	Input/Output	USB data minus (Not used)
83	VDD_USB	Input	Positive supply for UART/USB ports
84	VSS_USB	–	Earth connections for UART/USB ports

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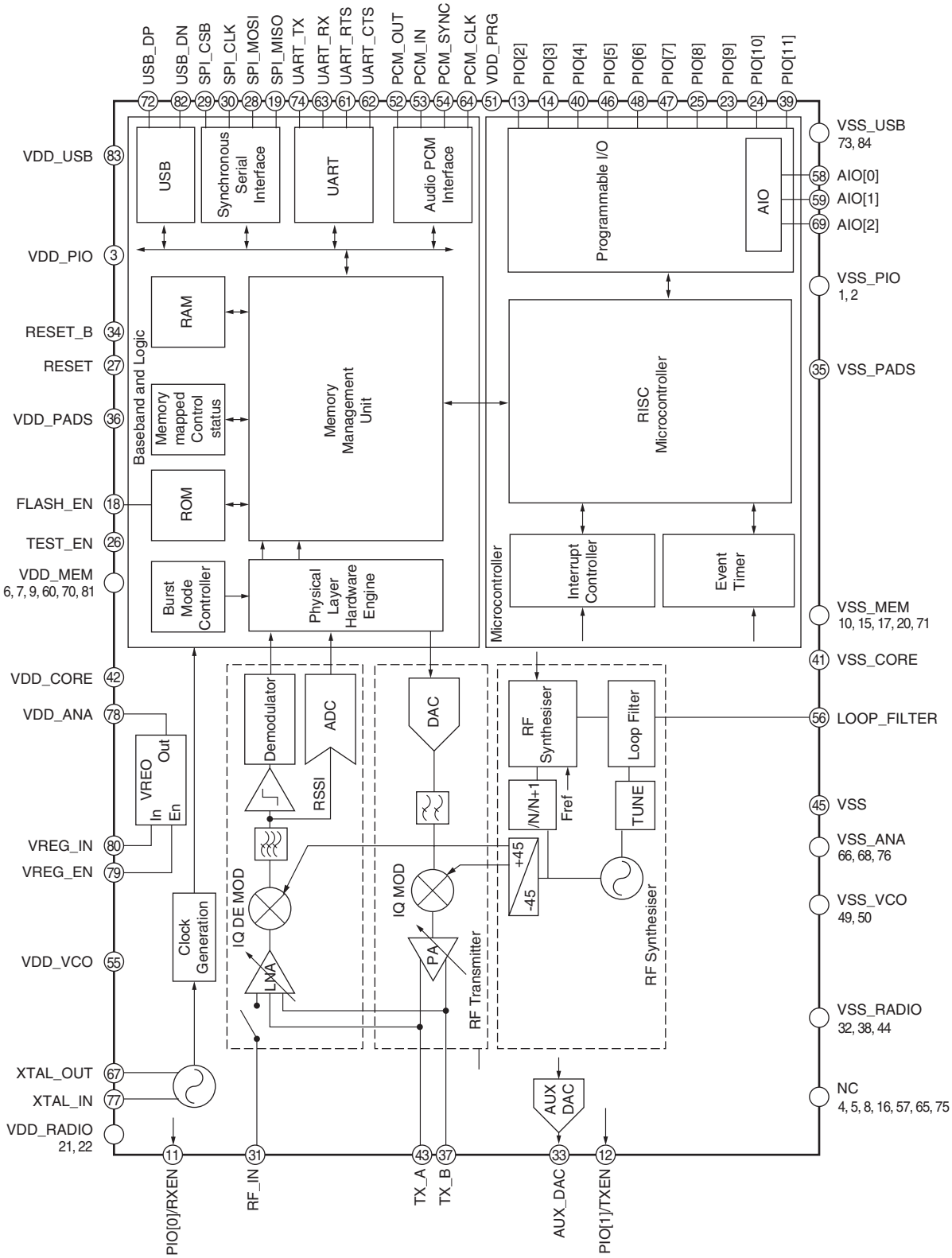
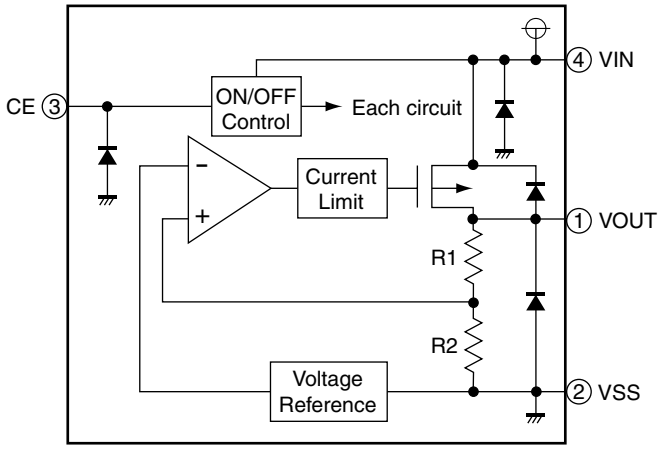


IC501 (XC621332): REGULATOR
IC503 VHIXC621340-1L (XC621340): POWER SUPPLY

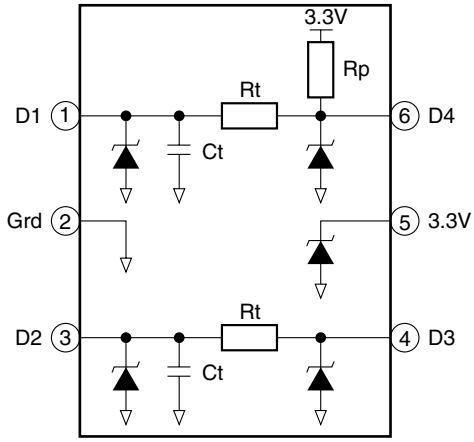
Pin No.	Terminal name	Input/Output	Description of terminal
1	VOUT	Output	Output
2	VSS	–	Earth
3	CE	Input	ON/OFF control
4	VIN	Input	Power input



IC504 VHIUSBUF2WE-1L (USBUF2WE): EMI FILTER

Pin No.	Terminal name	Input/Output	Description of terminal
1	D1	Input/Output	Data Input/Output
2	GND	–	Earth
3	D2	Input/Output	Data Input/Output
4	D3	Input/Output	Data Input/Output
5*	NC	–	Not used
6	D4	Input/Output	Data Input/Output

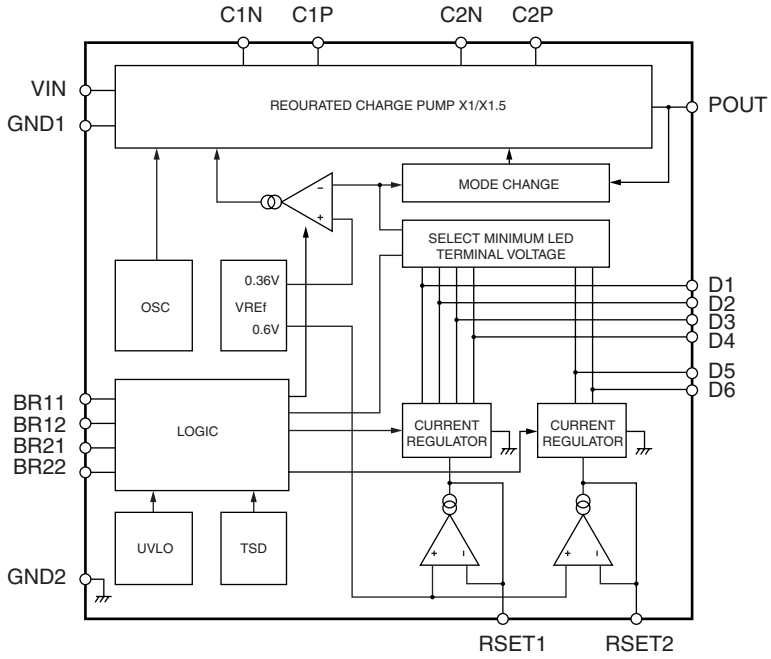
In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.



IC520 VHIIR2E47U6-1L (IR2E47U6): WHITE LED DRIVER

Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	-	Not used
2	VIN	Input	Inputs power supply, and connects the input capacitor between grounds.
3	BR22	Input	Inputs digital signals, and adjusts the value of current between pins D5 and D6. This pin can also input PWM signals.
4	BR21	Input	Inputs digital signals, and adjusts the value of current between pins D5 and D6. Set to "L" to use the dimmer control based on the PWM signal.
5	RSET2	Output	Connects a resistor between grounds to set a value of current between pins D5 and D6.
6*	NC	-	Not used
7	D6	Input	Connects a LED between POUTs. Connects to a ground when not in use.
8	D5	Input	Connects a LED between POUTs. Connects to a ground when not in use.
9	D4	Input	Connects a LED between POUTs. Connects to a ground when not in use.
10	GND1	-	Earth
11	D3	Input	Connects a LED between POUTs. Connects to a ground when not in use.
12	D2	Input	Connects a LED between POUTs. Connects to a ground when not in use.
13	D1	Input	Connects a LED between POUTs. Connects to a ground when not in use.
14	RSET1	Output	Connects a resistor between grounds to set a value of current between pins D1 to D4.
15	BR11	Input	Inputs digital signals, and adjusts the value of current between pins D1 to D4. Set to "L" to use the dimmer control based on the PWM signal.
16	BR12	Input	Inputs digital signals, and adjusts the value of current between pins D1 to D4. Set to "L" to use the dimmer control based on the PWM signal.
17	POUT	Output	Connects a stabilization capacitor between grounds.
18*	NC	-	Not used
19*	NC	-	Not used
20	C2P	-	Connects a capacitor between C2Ps.
21	C2N	-	Connects a capacitor between C2Ns.
22	C1P	-	Connects a capacitor between C1Ps.
23	C1N	-	Connects a capacitor between C1Ns.
24	GND2	-	Earth

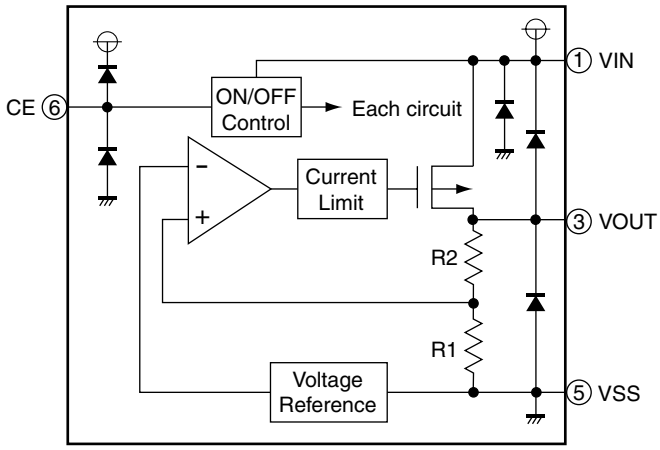
In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.



IC601 VHIXC621918-1L (XC621918): REGULATOR

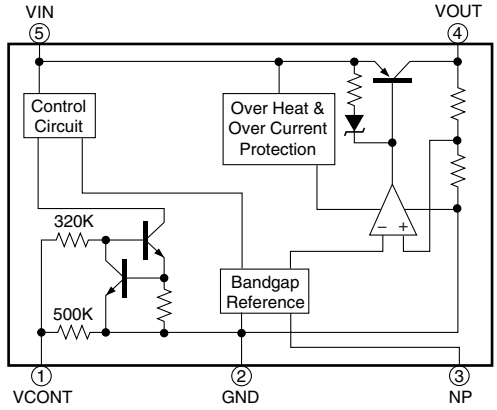
Pin No.	Terminal name	Input/Output	Description of terminal
1	VIN	Input	Input
2*	NC	–	Not used
3	VOUT	Output	Output
4*	NC	–	Not used
5	VSS	–	Earth
6	CE	Input	ON/OFF Control

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



IC602 VHITK70528S-1R (TK70528SCL-G): POWER SUPPLY

Pin No.	Terminal name	Input/Output	Description of terminal
1	VCONT	Input	Control
2	GND	–	Earth
3	NP	–	Capacitor (Vref)
4	VOUT	Output	Output
5	VIN	Input	Input

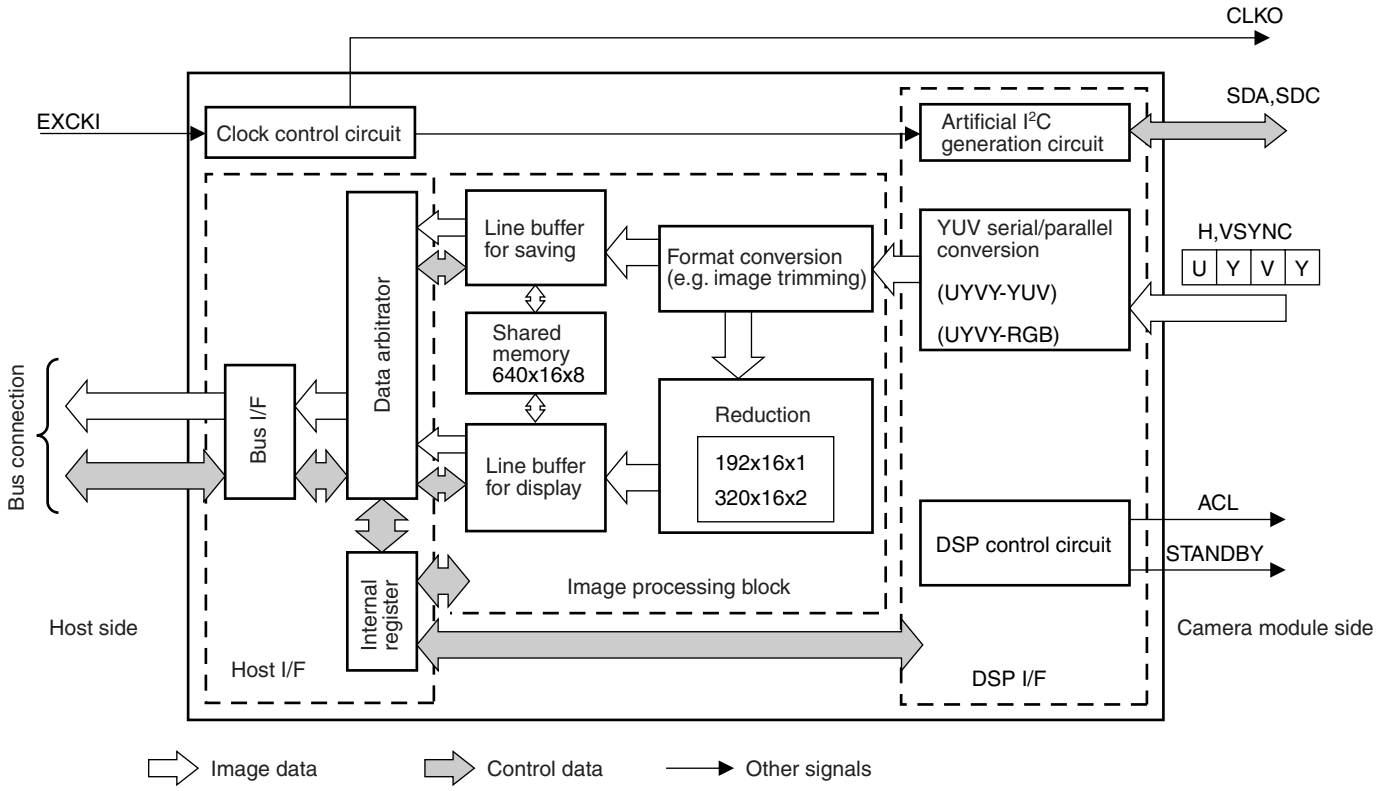


IC603 (LR38876): CAMERA I/F CONVERSION LSI

Pin No.	Terminal name	Input/Output	Description of terminal
1*	–	–	Continuity test terminal (Not used)
2	EXCKI	Input	System clock input
3	GND	–	Earth
4	A19	Input	CPU I/F address
5	A2	Input	CPU I/F address
6	WRB	Input	CPU I/F write signal input
7	GND	–	Earth
8	OD9	Input/Output	CPU I/F data bus, bit 9
9	OD10	Input/Output	CPU I/F data bus, bit 10
10*	–	–	Continuity test terminal (Not used)
11	GND	–	Earth
12	CVDD	–	Internal core power supply (+1.8 V)
13	A18	Input	CPU I/F address
14	A1	Input	CPU I/F address
15	RDB	Input	CPU I/F read signal input
16	HVDD2	–	External digital power supply 2 (+1.8/3.0 V)
17	OD8	Input/Output	CPU I/F data bus, bit 8
18	OD11	Input/Output	CPU I/F data bus, bit 11
19	TEST5	Input	Test terminal 5
20	OD7	Input/Output	CPU I/F data bus, bit 7
21	OD13	Input/Output	CPU I/F data bus, bit 13
22	OD12	Input/Output	CPU I/F data bus, bit 12
23	OD6	Input/Output	CPU I/F data bus, bit 6
24	OD5	Input/Output	CPU I/F data bus, bit 5
25	A17	Input	CPU I/F address
26	CSB	Input	CPU I/F chip select input
27	OD15	Input/Output	CPU I/F data bus, bit 15
28	OD14	Input/Output	CPU I/F data bus, bit 14
29	OD3	Input/Output	CPU I/F data bus, bit 3
30	OD2	Input/Output	CPU I/F data bus, bit 2
31	OD4	Input/Output	CPU I/F data bus, bit 4
32	TEST4	Input	Test terminal 4 (use Low input)
33	CLKO	Output	Output clock to camera module
34	GND	–	Earth
35	OD0	Input/Output	CPU I/F data bus, bit 0
36	OD1	Input/Output	CPU I/F data bus, bit 1
37	HVDD2	–	External digital power supply 2 (+1.8/3.0 V)
38	D0	Input	Image I/F input data, bit 0
39	GND	–	Earth
40	DX	Input	Test terminal (use Low input)
41	CINT	Output	CPU/ I/F interrupt output
42	GND	–	Earth
43	SDA	Input/Output	Artificial I^2C I/F data line
44	CVDD	–	Internal core power supply (+1.8 V)
45	D1	Input	Image I/F input data, bit 1
46	D2	Input	Image I/F input data, bit 2
47	RSTB	Input	Reset input
48*	CBREQ	Output	CPU I/F DMA request output (Not used)
49	D3	Input	Image I/F input data, bit 3
50	D4	Input	Image I/F input data, bit 4
51	TEST2	Input	Test terminal 2
52	STANDBY	Output	Stand-by signal output to camera module
53	TEST1	Input	Test terminal 1
54	GND	–	Earth
55	PCLK	Input	Input pixel clock from camera module
56	HSYNC	Input	Horizontal synchronous signal
57	D7	Input	Image I/F input data, bit 7
58	D5	Input	Image I/F input data, bit 5
59*	–	–	Continuity test terminal (Not used)
60	TEST3	Input	Test terminal 3
61	ACL	Output	Reset signal output to camera module
62	SDC	Input/Output	Artificial I^2C I/F clock line
63	HVDD1	–	External digital power supply 1 (+3.0 V)

Pin No.	Terminal name	Input/Output	Description of terminal
64	GND	–	Earth
65	VSYNC	Input	Vertical synchronous signal
66	HVDD1	–	External digital power supply 1 (+3.0 V)
67	D6	Input	Image I/F input data, bit 6
68*	–	–	Continuity test terminal (Not used)

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



IC801 (15515502): RF

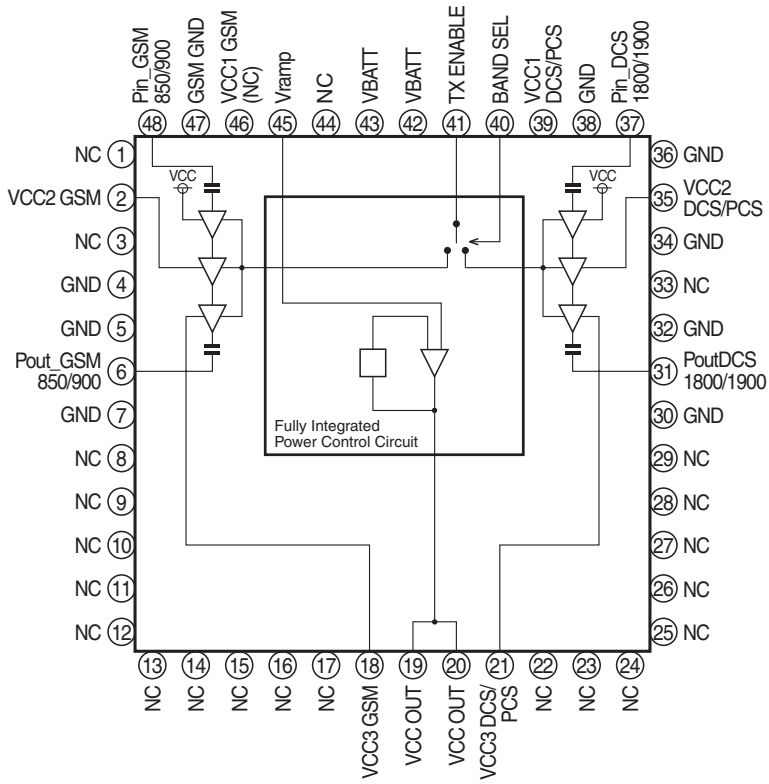
Pin No.	Terminal name	Input/Output	Description of terminal
1	VCCLNA	Input	VCC for LNA transistor and LNA Bias
2	PCSGND	–	Earth for emitter of LNA transistor (PCS)
3	PCSLNAI	Input	Positive input for LNA transistor (PCS)
4	PCSLNAIB	Input	Negative input for LNA transistor (PCS)
5	PCSDCSGND	–	Earth for emitter of LNA transistor (PCS, DCS)
6	DCSLNAI	Input	Positive input for LNA transistor (DCS)
7	DCSLNAIB	Input	Negative input for LNA transistor (DCS)
8	DCSGSMGND	–	Earth for emitter of LNA transistor (DCS, GSM)
9	GSMLNAI	Input	Positive input for LNA transistor (GSM)
10	GSMLNAIB	Input	Negative input for LNA transistor (GSM)
11	GSMGND	–	Earth for emitter of LNA transistor (GSM)
12	PLLOUT	Output	Current output to control and modulate TXVCO
13	VCCOPLL	Input	VCC for OPLL and phase comparator
14	VCCTXVCO		VCC for TXVCO
15	GNDTXVCOD	–	Earth for DCS/PCS TxVCO
16	GNDTXVCODB	–	Earth for DCS/PCS TxVCO
17	TXOUTG	Output	Tx output for GSM
18	COMMONGND	–	Earth for common
19	TXOUTD	Output	Tx output for DCS/PCS
20	TXVCOGB	Input	Negative TxVCO output for GSM
21	TXVCOG	Input	Positive TxVCO output for GSM
22	VCCIQ	Input	VCC for IQ modulator
23	IOUT/IIN	Input/Output	Positive output/input of I channel/modulator
24	IOUTB/IINB	Input/Output	Negative output/input of I channel/modulator
25	QOUT/QIN	Input/Output	Positive output/input of Q channel/modulator
26	QOUTB/QIN	Input/Output	Negative output/input of Q channel/modulator
27	VCCIFSYN	Input	VCC for IFVCO buffer and divider, and IF synthesiser
28	CPIFSYN	Output	Charge pump output of IF synthesiser
29	LE	Input	Load enable for serial data
30	CLK	Input	Clock for serial data
31	VCXOOUT	Output	Output for VCXO
32	SDATA	Input	Serial data
33*	GNDVCXO (NC)	–	Earth for VCXO (Not used)
34	VCXOE	–	Emitter of VCXO transistor
35	VCXOB	Input	Base of VCXO transistor
36	VCCVCXO	Input	VCC for VCXO
37	VCCRFSYN	Input	VCC for RF synthesiser
38	CPRFSYN	Output	Charge pump output of RF synthesiser
39	FLOCK	Output	Fast lock control for RF synthesiser
40	VCCBB	Input	VCC for baseband and state logic
41	VCCRFVCO	Input	VCC for RF VCO
42	DIVON	Output	VCXOOUT divider control input
43	VCCRFLO	Input	VCC for RF local buffer and divider
44	CAPQB	Output	Capacitor for Q channel LPF (Negative output)
45	CAPQ	Output	Capacitor for Q channel LPF (Positive output)
46	CAPIB	Output	Capacitor for I channel LPF (Negative output)
47	CAPI	Output	Capacitor for I channel LPF (Positive output)
48	VCCMIX	Input	VCC for direct conversion mixer
49	GNDLNA	–	Earth for LNA bias

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

IC802 VHIRF3146++-1L (RF3146): POWER AMP.

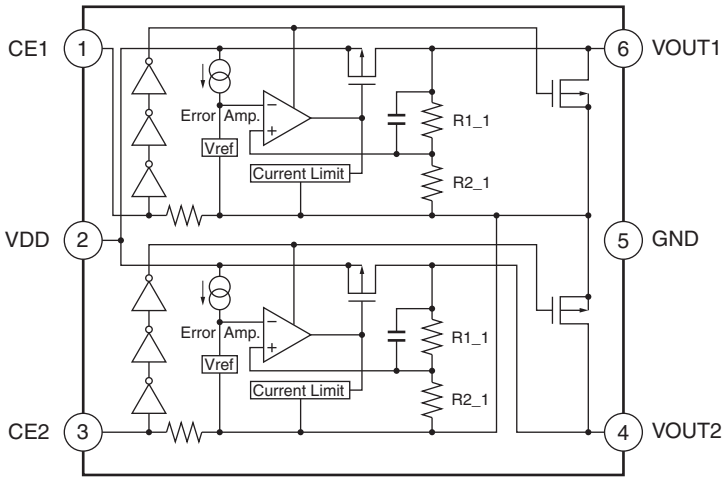
Pin No.	Terminal name	Input/Output	Description of terminal
1*	NC	–	Not used
2	VCC2 GSM	Input	Controlled voltage input the GSM driver stage
3*	NC	–	Not used
4	GND	–	Earth
5	GND	–	Earth
6	Pout_GSM850/900	Output	Output power (GSM850/900)
7	GND	–	Earth
8*	NC	–	Not used
9*	NC	–	Not used
10*	NC	–	Not used
11*	NC	–	Not used
12*	NC	–	Not used
13*	NC	–	Not used
14*	NC	–	Not used
15*	NC	–	Not used
16*	NC	–	Not used
17*	NC	–	Not used
18	VCC3 GSM	Input	Controlled voltage input the GSM driver stage
19	VCC OUT	Output	Controlled voltage output to feed VCC
20	VCC OUT	Output	Controlled voltage output to feed VCC
21	VCC3 DCS/PCS	Input	Controlled voltage input the DCS/PCS driver stage
22*	NC	–	Not used
23*	NC	–	Not used
24*	NC	–	Not used
25*	NC	–	Not used
26*	NC	–	Not used
27*	NC	–	Not used
28*	NC	–	Not used
29*	NC	–	Not used
30	GND	–	Earth
31	PoutDCS1800/1900	Output	Output power (DCS/PCS)
32	GND	–	Earth
33*	NC	–	Not used
34	GND	–	Earth
35	VCC2 DCS/PCS	Input	Controlled voltage input the DCS/PCS driver stage
36	GND	–	Earth
37	Pin_DCS1800/1900	Input	Input power from TXVCO (DCS/PCS)
38	GND	–	Earth
39	VCC1 DCS/PCS	Input	Controlled voltage input the DCS/PCS driver stage
40	BAND SEL	Input	Band select voltage
41	TX ENABLE	Input	This signal enables the PA module
42	VBATT	Input	Power supply
43	VBATT	Input	Power supply
44*	NC	–	Not used
45	Vramp	Input	Power control voltage
46*	VCC1 GSM (NC)	Input	Controlled voltage input the GSM driver stage (Not used)
47	GSM GND	–	Earth
48	Pin_GSM850/900	Input	Input power from TXVCO (GSM850/900)

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



IC804 VHIR5322P++-1L (R5322P): VOLTAGE REGULATOR

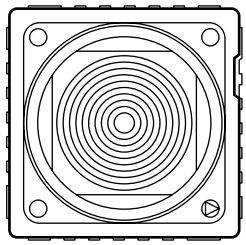
Pin No.	Terminal name	Input/Output	Description of terminal
1	CE1	Input	Chip enable1
2	VDD	Input	Power supply
3	CE2	Input	Chip enable2
4	VOUT2	Output	VCC for VRF
5	GND	–	Earth
6	VOUT1	Output	VCC for VTCXO



[2] Function table of Camera

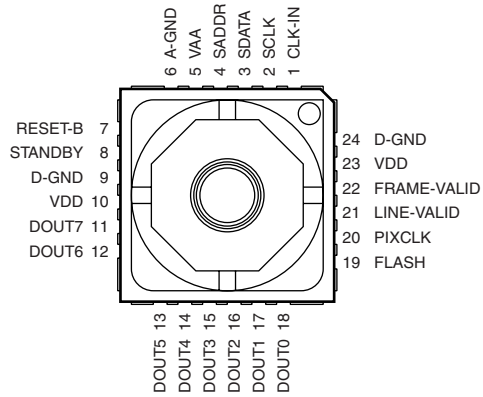
CA100 RUNTZA021AFPZ (LZ0P394B/C/D): CAMERA UNIT

Pin No.	Terminal name	Input/Output	Description of terminal
1	D5	Input/Output	UYVY signal data 5 output
2	D4	Input/Output	UYVY signal data 4 output
3	D3	Input/Output	UYVY signal data 3 output
4	D2	Input/Output	UYVY signal data 2 output
5	D1	Input/Output	UYVY signal data 1 output
6	D0	Input/Output	UYVY signal data 0 output
7	FLASH	Output	Output for strobe
8	RCLK	Output	Clock output synchronised with digital image output
9	HREF	Output	Horizontal blank pulse of digital image output
10	VS	Output	Vertical blank pulse of digital image output
11	DVDD	-	I/O power supply
12	GND	-	Earth
13	CKI	Input	System clock input
14	SDC	Input/Output	DSP serial clock I/O
15	SDA	Input/Output	DSP serial data I/O
16	DAS	Input	DSP serial DAS device address input
17	AVDD	-	Analogue power
18	GND	-	Earth
19	RSTN	Input	Reset input H level: normal operation L level: reset operation
20	STDBY	Input	Stand-by control H level: stand-by L level: normal operation
21	IOCTRL	Input	Input pin to switch I/O functions of D0-7 (image output pin) H level: D0-7 is stopped L level: normal operation (D0-7 output)
22	DVDD	-	I/O power supply
23	D7	Input/Output	UYVY signal data 7 output
24	D6	Input/Output	UYVY signal data 6 output



CA100 RUNTZA021AFPZ (FPDB0Z001A): CAMERA UNIT

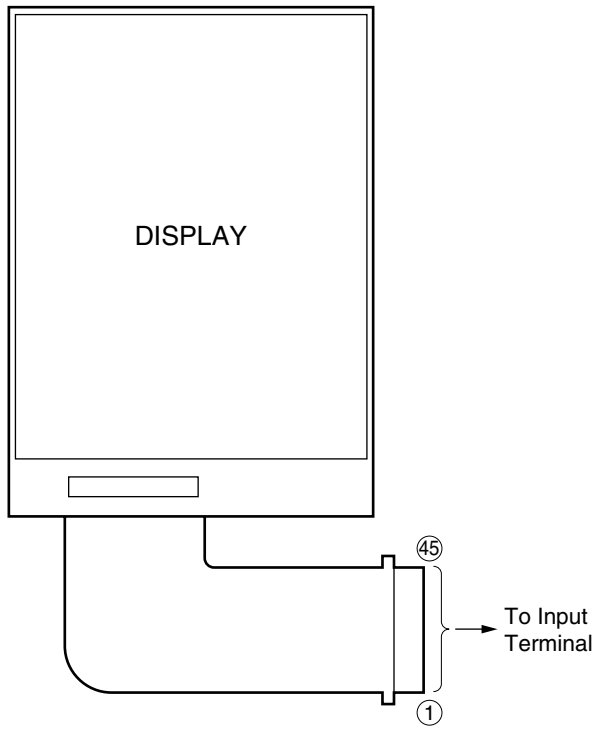
Pin No.	Terminal name	Input/Output	Description of terminal
1	CLK-IN	Input	Master clock into sensor. Default is 12 MHz (27 MHz maximum)
2	SCLK	Input	IIC Serial clock
3	SDATA	Input/Output	IIC Serial data I/O
4	SADDR	Input	Serial interface address select: Reg0xB8 when HIGH (default). Reg0x90 when LOW
5	VAA	Input	Analogue power (2.8 V)
6	A-GND	–	Analogue earth
7	RESET-B	Input	Asynchronous reset of sensor when LOW. All registers assume factory defaults
8	STANDBY	Input	When HIGH disables the imager
9	D-GND	–	Digital earth
10	VDD	Input	Digital power (2.8 V)
11	DOUT7	Output	CCIR656/RGB data bit 7 (MSB)
12	DOUT6	Output	CCIR656/RGB data bit 6
13	DOUT5	Output	CCIR656/RGB data bit 5
14	DOUT4	Output	CCIR656/RGB data bit 4
15	DOUT3	Output	CCIR656/RGB data bit 3
16	DOUT2	Output	CCIR656/RGB data bit 2
17	DOUT1	Output	CCIR656/RGB data bit 1
18	DOUT0	Output	CCIR656/RGB data bit 0
19	FLASH	Output	Flash strobe
20	PIXCLK	Output	Pixel clock out Pixel data output are valid during rising edge of this clock Frequency = Master Clock
21	LINE-VALID	Output	Active HIGH during line of selectable valid pixel data (see Reg0x20 foroptions)
22	FRAME-VALID	Output	Active HIGH during frame of valid pixel data
23	VDD	Input	Digital power (2.8 V)
24	D-GND	–	Digital earth



[3] Function table of Display

LCD100 RLCUBA031AFPZ: DISPLAY

Pin No.	Terminal name	Input/Output	Description of terminal
1	VSS4	Output	DC-DC converter output
2	VSS4	Output	DC-DC converter output
3	VSS2	Output	DC-DC converter output
4	C4–	–	Booster capacitor connection terminal
5	C4+	–	Booster capacitor connection terminal
6	C3–	–	Booster capacitor connection terminal
7	C3+	–	Booster capacitor connection terminal
8	VDD1	Output	DC-DC converter output
9	C2–	–	Booster capacitor connection terminal
10	C2+	–	Booster capacitor connection terminal
11	C1–	–	Booster capacitor connection terminal
12	C1+	–	Booster capacitor connection terminal
13	VDD2	Output	DC-DC converter output
14	VDC	–	DC-DC converter reference power supply
15	VCC2	–	CPU/RGB interface power supply
16	VSS	–	Earth
17	VSS	–	Earth
18	VS	Output	Regulator output
19	VR	Output	Regulator output
20	COMH	Output	Common high level power supply
21	COML	Output	Common low level power supply
22	OSCOUT	Output	Oscillation signal
23	OSCIN	Input	Oscillation signal
24	VCC1	–	Logic power
25	/RD	Input	Read control signal input
26	/WR	Input	Write control signal input
27	RS	Input	Input for command/display data identification signal
28	RESET	Input	Reset signal input
29	/CS	Input	Chip select signal input
30	D15	Input/Output	Data input/output
31	D14	Input/Output	Data input/output
32	D13	Input/Output	Data input/output
33	D12	Input/Output	Data input/output
34	D11	Input/Output	Data input/output
35	D10	Input/Output	Data input/output
36	D09	Input/Output	Data input/output
37	D08	Input/Output	Data input/output
38	D07	Input/Output	Data input/output
39	D06	Input/Output	Data input/output
40	D05	Input/Output	Data input/output
41	D04	Input/Output	Data input/output
42	D03	Input/Output	Data input/output
43	D02	Input/Output	Data input/output
44	D01	Input/Output	Data input/output
45	D00	Input/Output	Data input/output



SHARP PARTS GUIDE

No. S8523TQH17W//

DIGITAL MOBILE PHONE

MODEL GX17

CONTENTS

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.

SHARP CORPORATION

	NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
	[1] INTEGRATED CIRCUITS					
⚠	IC101	VHiYMU762C+-1L	AX			Sound,YMU762C
	IC102	VHiQ5RW45BF-1L	AD			4.5V Regulator,Q5RW45B
⚠	IC103	--------	-			This Parts is Supplied with Cabinet Parts 104
	IC104	--------	-			This Parts is Supplied with Cabinet Parts 104
	IC105	VHiNL17SZ08-1L	AC			Logic,NL17SZ08
⚠	IC106	--------	-			This Parts is Supplied with Cabinet Parts 104
	IC107	VHiXC61GC33-1L	AC	N		Voltage Detector,XC61GC3302HR
	IC108	VHi1323B30G-1R	AD			Regulator,1323B30G
	IC109	VHiR11630FB-1L	AD			Regulator,R11630FB
	IC110	VHiR118030B-1L	AD			Regulator,R118030B
	IC112	VHiNL17SZ32-1L	AC			Logic,NL17SZ32XV5T2
	IC402	--------	-			This Parts is Supplied with Cabinet Parts 104
	IC403	VHiR118030B-1L	AD			Regulator,R118030B
	IC501	--------	-	N		This Parts is Supplied with Cabinet Parts 104
	IC503	VHiXC621340-1L	AD	N		Power Supply,XC621340
	IC504	VHiUSBUF2WE-1L	AF			EMI Filter,USBUF2WE
	IC520	VHiiR2E47U6-1L	AG	N		White LED Driver,IR2E47U6
	IC601	VHiXC621918-1L	AD			Regulator,XC621918
	IC602	VHiTK70528S-1R	AD	N		Power Supply,TK70528SCL-G
	IC603	--------	-			This Parts is Supplied with Cabinet Parts 104
⚠	IC801	--------	-			This Parts is Supplied with Cabinet Parts 104
⚠	IC802	VHiRF3146++-1L	AT			Power Amp.,RF3146
	IC804	VHiR5322P++-1L	AE			Voltage Regulator,R5322P
	[2] TRANSISTORS					
	Q101	VSKTK5132E+-1L	AB	N		FET,KTK5132 E
	Q102	VSECH8603++-1L	AF			Silicon MOS,ECH8603
	Q502	VSEC4401C++-1L	AB			Silicon MOS,EC4401 C
	Q503	VSKRC407E++-1L	AB			Digital,NPN,KRC407 E
	Q504	VSEC4401C++-1L	AB			Silicon MOS,EC4401 C
	Q506	VSEC4301C++-1L	AB			Silicon MOS,EC4301 C
	Q507	VSEC4401C++-1L	AB			Silicon MOS,EC4401 C
	[3] DIODES					
	D101	VHDKDR730E+-1L	AB			Silicon,KDR730E
	D102	VHDRB160M30-1L	AC			Silicon,RB160M30
	D104	VHDKDR730E+-1L	AB			Silicon,KDR730E
	D105	VHDKDR720E+-1L	AB			Silicon,KDR720E
	D108	VHDKDR730E+-1L	AB			Silicon,KDR730E
	D109	VHD1SS388F+-1L	AB			Silicon,1SS388F
	D502	VHD1SS388F+-1L	AB			Silicon,1SS388F
	D503	VHDRB160M30-1L	AC			Silicon,RB160M30
	D505	VHDKDR720E+-1L	AB			Silicon,KDR720E
	D507	VHD1SS388F+-1L	AB			Silicon,1SS388F
	D508	VHD1SS388F+-1L	AB			Silicon,1SS388F
	LED520	VHPECW008B2-1L	AG			LED,ECW008B2
	LED521	VHPECW008B2-1L	AG			LED,ECW008B2
	LED522	VHPECW008B2-1L	AG			LED,ECW008B2
	LED701	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED702	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED703	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED704	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED705	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED706	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	LED707	VHPPY1103CF-1L	AB			LED,Green,PY1103CF
	UN101	VHP2W0110VY-1R	AH			Infrared Port
	ZD101	VHEPG05FBES-1L	AC			Zener, 6.8V,PG05FBES
	[4] FILTERS					
	FL401	RFiLRA017AFPZR	AE			Filter,Bluetooth
	FL902	RFiLRA015AFPZL	AG			SAW Filter
	FL903	RFiLRA014AFPZL	AF			SAW Filter
	FL905	RFiLR0256AFZZL	AE			ESD Device
⚠	IC803	RFiLRA006AFZZL	AF			RF Switch
	L823	RFiLN0020AFZZN	AB			Ferrite Beads
	[5] COILS					
	L101	VPCAMS33J0000-	AA			33 nH
	L102	VPCAMS33J0000-	AA			33 nH
	L103	VPBFMS33JR65MT	AB			33 nH
	L104	VPBFMS33JR65MT	AB			33 nH
	L113	RCiLZA041AFPZN	AB	N		Ferrite Beads
	L403	VPBZNS22J0000-	AA			22 nH
	L405	VPCAMT12S0000-	AB			1.2 nH
	L801	RCiLZ1103YCZZ-	AB			Ferrite Beads
	L802	RCiLZA005AFZZN	AB			Ferrite Beads
	L821	VPCAMT22S0000-	AC			2.2 nH
	L822	VPCAMT22S0000-	AC			2.2 nH
	L832	VPBZNT47S0000-	AA			4.7 nH
	L833	VPCAMS22J0000-	AA			22 nH
	L891	VPCAMT68J0000-	AA			6.8 nH
	L892	VPCAMT68J0000-	AA			6.8 nH
	L1871	VPCAMT33S0000-	AA			3.3 nH
	L1872	VPBZNT33S0000-	AA			3.3 nH

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[5] COILS					
L1873	VPBZNT10S0000-	AA			1 nH
R110	RCiLZA008AFZZN	AB			Ferrite Beads
R124	RCiLZA041AFPZN	AB	N		Ferrite Beads
R127	VPBFMS33JR65MT	AB			33 nH
R135	VPBFMS33JR65MT	AB			33 nH
R149	VPBFMS56J1R0MT	AB			56 nH
R176	RCiLZ0385AFZZN	AB			120 ohms (100 MHz)
R178	RCiLZ0385AFZZN	AB			120 ohms (100 MHz)
R182	RCiLZ0385AFZZN	AB			120 ohms (100 MHz)
R186	RCiLZ0385AFZZN	AB			120 ohms (100 MHz)
R204	VPBFMS56J1R0MT	AB			56 nH
[6] VARIABLE RESISTORS					
C102	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V101	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V502	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V503	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V504	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V505	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V506	VHV10080MBB-1N	AB			Varistor,Voltage:8V
V513	VHV10080MBB-1N	AB			Varistor,Voltage:8V
[7] VIBRATORS					
TCX801	RTCOXA002AFZZL	AN			VCTCXO,26 MHz
X101	RCRSC0065AFZZL	AF			Crystal,32 kHz
[8] THERMISTOR					
TH102	RH-HXA004AFPZN	AB	N		Thermistor,4.7 kohms
[9] ARRAY PARTS					
R133	RR-DZA001AFPZN	AB	N		Array,0.18 ohms
R142	VRS-CG1JF471JT	AA			Array,470 ohms
R151	VRS-CG1JF471JT	AA			Array,470 ohms
R152	VRS-CG1JF471JT	AA			Array,470 ohms
R154	VRS-CG1JF471JT	AA			Array,470 ohms
R530	VRS-CG1JF471JT	AA			Array,470 ohms
R532	VRS-CG1JF471JT	AA			Array,470 ohms
R560	VRS-CG1JF471JT	AA			Array,470 ohms
R611	RMPTR4474ACZZN	AB			Array,470 kohms
R612	RMPTR4474ACZZN	AB			Array,470 kohms
R613	RMPTR4474ACZZN	AB			Array,470 kohms
[10] CAPACITORS					
C101	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C105	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C106	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C107	RC-KZ1315AFZZN	AC			10 µ F,6.3V
C108	RC-KZ1315AFZZN	AC			10 µ F,6.3V
C109	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C110	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C112	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C113	VCKYCZ1EB102KT	AB			0.001 µ F,25V
C115	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C116	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C117	VCKYCZ1EB102KT	AB			0.001 µ F,25V
C120	VCKYCZ1CB103KT	AB			0.01 µ F,16V
C121	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C122	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C124	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C125	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C127	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C131	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C132	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C133	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C137	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C138	VCKYCZ1CB103KT	AB			0.01 µ F,16V
C139	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C141	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C143	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C144	RC-KZ1315AFZZN	AC			10 µ F,6.3V
C145	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C146	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C147	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C148	VCKYCZ1AB104KT	AA			0.1 µ F,10V
C150	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C151	VCKYCZ1EB102KT	AB			0.001 µ F,25V
C155	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C156	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C157	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C158	VCKYCY0JB225KT	AC			2.2 µ F,6.3V
C159	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C160	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C161	VCKYCZ0JB105KT	AB			1 µ F,6.3V
C162	VCKYCY1AB474KT	AC			0.47 µ F,10V

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[10] CAPACITORS					
C164	VCKYCY0JB105KT	AC			1 μ F,6.3V
C165	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C167	RC-KZ1308AFZZT	AD			4.7 μ F,6.3V
C168	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C169	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C170	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C171	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C173	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C175	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C176	VCCCCZ1EH2R0CT	AB			2 pF (CH),25V
C179	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C180	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C181	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C182	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C183	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C184	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C189	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C190	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C191	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C194	VCKYCY1AB225KT	AB			2.2 μ F,10V
C196	VCKYCY1CB104KT	AA			0.1 μ F,16V
C197	RC-KZ1308AFZZT	AD			4.7 μ F,6.3V
C200	RC-KZ1317AFZZN	AB			1 μ F,16V
C203	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C207	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C209	RC-KZ1313AFZZN	AA			1 μ F,10V
C210	RC-KZ1313AFZZN	AA			1 μ F,10V
C211	RC-KZ1311AFZZN	AC			1 μ F,25V
C212	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C215	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C216	RC-KZ1308AFZZT	AD			4.7 μ F,6.3V
C217	RC-KZ2000AFZZT	AC			4.7 μ F,10V
C218	VCKYCY1AB225KT	AB			2.2 μ F,10V
C219	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C221	VCKYCY1AB225KT	AB			2.2 μ F,10V
C222	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C223	RC-KZ1308AFZZT	AD			4.7 μ F,6.3V
C227	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C233	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C236	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C237	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C238	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C239	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C240	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C241	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C244	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C245	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C401	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C402	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C409	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C410	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C411	VCKYCY1AB225KT	AB			2.2 μ F,10V
C413	VCCCCZ1EH2R0CT	AB			2 pF (CH),25V
C414	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C416	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C417	VCCCCZ1EH2R0CT	AB			2 pF (CH),25V
C501	VCKYCY1AB105KT	AB			1 μ F,10V
C505	RC-KZ1321AFZZN	AD			22 μ F,6.3V
C507	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C510	VCKYCY1AB105KT	AB			1 μ F,10V
C513	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C522	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C523	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C524	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C533	RC-KZ1308AFZZT	AD			4.7 μ F,6.3V
C601	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C602	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C604	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C605	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C606	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C607	VCKYCZ1AB473KT	AB			0.047 μ F,10V
C608	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C609	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C610	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C613	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C614	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C615	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C801	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C802	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C803	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C806	VCKYCY0JB225KT	AC			2.2 μ F,6.3V
C807	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C810	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C811	VCCCCZ1EH220JT	AA			22 pF (CH),25V
C812	VCCCCZ1EH220JT	AA			22 pF (CH),25V

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[10] CAPACITORS					
C830	VCKYCZ0JB105KT	AB			1 μ F,6.3V
C831	RC-KZ3009AFZZN	AA			0.0022 μ F,50V
C832	VCCCCZ1EH271JT	AA			270 pF (CH),25V
C833	VCCCCZ1EH270JT	AA			27 pF (CH),25V
C835	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C836	VCCCCZ1EH101JT	AB			100 pF (CH),25V
C837	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C840	VCKYCZ1EB331KT	AA			330 pF,25V
C841	RC-KZ3010AFZZN	AB			0.0033 μ F,50V
C842	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C843	RC-KZ3011AFZZN	AA			0.0018 μ F,50V
C844	RC-KZ3011AFZZN	AA			0.0018 μ F,50V
C845	VCKYCZ1AB104KT	AA			0.1 μ F,10V
C850	RC-CZ3001AFZZN	AB			0.015 μ F,50V
C851	VCKYCZ1EB182KT	AA			0.0018 μ F,25V
C855	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C856	VCCCCZ1EH220JT	AA			22 pF (CH),25V
C857	VCCCCZ1EH220JT	AA			22 pF (CH),25V
C860	RC-SZ3001AFZZL	AE			33 μ F,6.3V,Tantalum,Electrolytic
C867	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C870	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C871	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C872	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C873	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C881	VCCCCZ1EH470JT	AB			47 pF (CH),25V
C883	VCCCCZ1HKR80BT	AB	N		0.8 pF (CH),50V
C884	RC-CZ062CFZZN	AB			1.2 pF,16V
C886	VCCCCZ1HKR80BT	AB	N		0.8 pF (CH),50V
C892	VCCCCZ1EH1R0CT	AA			1 pF (CH),25V
C1820	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C1822	VCKYCZ1CB103KT	AB			0.01 μ F,16V
C1823	VCCCCZ1EH101JT	AB			100 pF (CH),25V
C1824	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C1862	VCKYCZ1EB102KT	AB			0.001 μ F,25V
C1863	VCCCCZ1EH101JT	AB			100 pF (CH),25V
C1865	VCCCCZ1EH820JT	AA			82 pF (CH),25V
C1866	VCCCCZ1EH101JT	AB			100 pF (CH),25V
C1875	VCCCCZ1EH3R0CT	AA			3 pF (CH),25V
C1876	VCCCCZ1HJ2R4BT	AA	N		2.4 pF (CH),50V
C1877	VCCCCZ1HK1R5BT	AA	N		1.5 pF (CH),50V
R121	VCKYCZ1AB104KT	AA			0.1 μ F,10V
R123	VCKYCZ1AB104KT	AA			0.1 μ F,10V
[11] RESISTORS					
C174	VRS-CZ1JB106JT	AA			10 Mohm,1/16W
C193	VRS-CZ1JB474JT	AB			470 kohms,1/16W
L803	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
L804	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
L805	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
L806	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
L831	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
L834	VRS-CZ1JB000JT	AB			0 ohm,Jumper,0.5x1.0mm
R101	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R102	VRS-CZ1JB472JT	AB			4.7 kohms,1/16W
R104	VRS-CZ1JB123DT	AA			12 kohms,1/16W
R105	VRS-CZ1JB104JT	AA			100 kohm,1/16W
R106	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R108	VRS-CZ1JB183JT	AB			18 kohms,1/16W
R112	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R113	VRS-CZ1JB203JT	AA			20 kohms,1/16W
R115	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R116	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R117	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R118	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R119	VRS-CZ1JB273JT	AA			27 kohms,1/16W
R120	VRS-CZ1JB473JT	AA			47 kohms,1/16W
R122	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R125	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R126	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R128	VRS-CZ1JB913JT	AA			91 kohms,1/16W
R130	VRS-CZ1JB153DT	AA			15 kohms,1/16W
R131	VRS-CZ1JB331JT	AB			330 ohms,1/16W
R136	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R141	VRS-CZ1JB104JT	AA			100 kohm,1/16W
R143	VRS-CZ1JB331JT	AB			330 ohms,1/16W
R159	VRS-CZ1JB332JT	AA			3.3 kohms,1/16W
R160	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R165	VRS-CZ1JB103JT	AA			10 kohm,1/16W
R167	VRS-CZ1JB206JT	AA			20 Mohms,1/16W
R180	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R181	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R183	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R189	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R192	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R193	VRS-CZ1JB474JT	AB			470 kohms,1/16W

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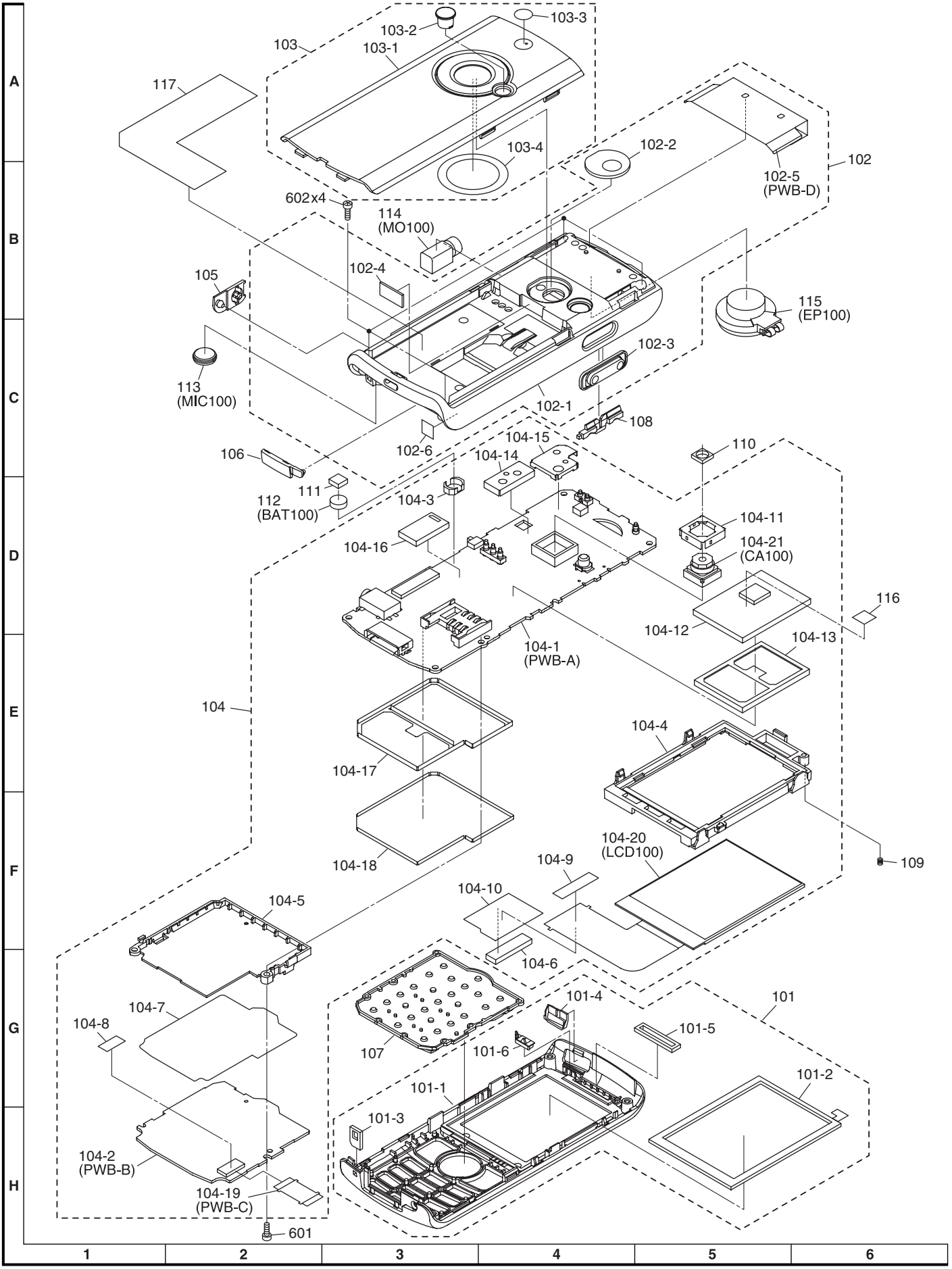
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[11] RESISTORS					
R197	VRS-CZ1JB333JT	AB			33 kohms,1/16W
R200	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R202	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R203	VRS-CZ1JB752JT	AA			7.5 kohms,1/16W
R205	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R217	VRS-CZ1JB1R0JT	AA			1 ohm,1/16W
R262	VRS-CZ1JB682JT	AA			6.8 kohms,1/16W
R263	VRS-CZ1JB682JT	AA			6.8 kohms,1/16W
R268	VRS-CZ1JB124JT	AB			120 kohms,1/16W
R273	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R274	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R275	VRS-CZ1JB101JT	AB			100 ohm,1/16W
R411	VRS-CZ1JB2R2JT	AA			2.2 ohms,1/16W
R502	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R503	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R504	VRS-CZ1JB103JT	AA			10 kohm,1/16W
R505	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R506	VRS-CZ1JB152JT	AA			1.5 kohms,1/16W
R512	VRS-CZ1JB4R7JT	AA			4.7 ohms,1/16W
R513	VRS-CZ1JB4R7JT	AA			4.7 ohms,1/16W
R520	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R521	VRS-CY1JB000JT	AA			0 ohm,Jumper,0.8x1.55mm,Green
R522	VRS-CZ1JB104JT	AA			100 kohm,1/16W
R531	VRS-CZ1JB272JT	AA			2.7 kohms,1/16W
R564	VRS-CZ1JB103JT	AA			10 kohm,1/16W
R601	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R603	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R607	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R608	VRS-CZ1JB222JT	AB			2.2 kohms,1/16W
R614	VRS-CZ1JB474JT	AB			470 kohms,1/16W
R701	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R702	VRS-CZ1JB391JT	AA			390 ohms,1/16W
R703	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R704	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R705	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R706	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R707	VRS-CZ1JB561JT	AA			560 ohms,1/16W
R801	VRS-CZ1JB182JT	AA			1.8 kohms,1/16W
R802	VRS-CZ1JB472JT	AB			4.7 kohms,1/16W
R805	VRS-CZ1JB682JT	AA			6.8 kohms,1/16W
R806	VRS-CZ1JB682JT	AA			6.8 kohms,1/16W
R807	VRS-CZ1JB330JT	AA			33 ohms,1/16W
R810	VRS-CZ1JB1R0JT	AA			1 ohm,1/16W
R811	VRS-CZ1JB1R0JT	AA			1 ohm,1/16W
R1861	VRS-CZ1JB473JT	AA			47 kohms,1/16W
R1862	VRS-CZ1JB104JT	AA			100 kohm,1/16W
R1863	VRS-CZ1JB104JT	AA			100 kohm,1/16W
[12] OTHER CIRCUITRY PARTS					
AN401	QCNTAA013AFPZN	AF			Terminal Aerial
ANT801	QCNTAA012AFPZN	AE			Terminal Aerial
BAT100	RDNTLA002AFPZ	AF			Battery,Back-up
CA100	RUNTZA021AFPZ	BC			Camera
CN101	QSOCZA003AFPZL	AH			Connector,SIM Card
CN102	QCNCWUF45AFZZL	AL			Socket,45Pin
CN401	QCNCWA070AFZZL	AE			Test Connector
CN501	QCNTAA007AFPZN	AF			Contact,Battery
CN502	QSOCNA002AFPZL	AM			Connector,External
CN504	QCNCWTL17AFPZL	AG			Socket,17 Pin
CN701	QCNCWTL17AFPZL	AG			Socket,17 Pin
EP100	RSP-ZA029AFPZ	AR	N		Earpiece
FS501	QFS-L252EAFNZN	AC			Fuse,2.5A
J801	QCNCW927AAFZZR	AG			RF Connector
JK101	QJAKMA002AFPZL	AF	N		Connector,Handsfree Kit
LCD100	RLCUBA031AFPZ	BH	N		Display
MIC100	RMiCC0213AFPZ	AL			Microphone
MO100	RMOTV0557AFZZ	AM			Vibrator
SO601	QCNCWA013AF24L	AG			Socket,Camera
SW501	QSW-KA008AFPZL	AD			Switch,Key Type [Side-Up]
SW502	QSW-KA008AFPZL	AD			Switch,Key Type [Side-Down]

[13] EXPLODED PARTS



[13] EXPLODED PARTS

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
101	DCABAW295CFSC	AU	N		Front Cabinet Assembly [C]
101	DCABAW295CFSE	AU	N		Front Cabinet Assembly (Except for [C,F,K,U])
101	DCABAW295CFSF	AU	N		Front Cabinet Assembly [F]
101	DCABAW295CFSK	AU	N		Front Cabinet Assembly [K]
101	DCABAW295CFSU	AU	N		Front Cabinet Assembly [U]
101-1	--------	-	N		Front Cabinet (Not Replacement Item)
101-2	PCUSSA072AFZZ	AL			Cushion,Display
101-3	PCUSSA350AFZZ	AC	N		Cushion,Microphone
101-4	PFiLWA007AFZZ	AF	N		Filter,Infrared Port
101-5	PSHEZA558AFZZ	AD	N		Mesh,Earpiece
101-6	LHLDZA234AFZZ	AE			Spacer,Infrared Port
102	DCABBW295CFSE	AT	N		Back Cabinet Assembly
102-1	--------	-	N		Back Cabinet (Not Replacement Item)
102-2	GCOVDA012AFSA	AE	N		Lens,Camera
102-3	JKNBZA092AFSA	AF	N		Keys,Side-Up/Side-Down
102-4	PCUSSA073AFZZ	AA			Cushion,Battery
⚠ 102-5	QPWBHA159AFPZ	AG	N		Built-in Aerial (PWB-D)
102-6	TLABZ2783AFZZ	AA			Sensor,Moisture (Small)
103	DCABCW295CFSC	AS	N		Battery Cover Assembly [C]
103	DCABCW295CFSE	AS	N		Battery Cover Assembly (Except for [C,F,K,U])
103	DCABCW295CFSF	AS	N		Battery Cover Assembly [F]
103	DCABCW295CFSK	AS	N		Battery Cover Assembly [K]
103	DCABCW295CFSU	AS	N		Battery Cover Assembly [U]
103-1	--------	-	N		Battery Cover (Not Replacement Item)
103-2	GCOVAA258AFSA	AC	N		Cover,Aerial
103-3	HBDGZA004AFSA	AF			Badge,Vodafone (Except for [C,F,U])
103-3	HBDGZA009AFSA	AN	N		Badge [C,F,U]
103-4	PCUSSA349AFZZ	AC	N		Cushion,Battery Cover
104	DKENDW295CFSA	CD	N		Board Unit [A]
104	DKENDW295CFSB	CD	N		Board Unit [B]
104	DKENDW295CFSC	CD	N		Board Unit [C]
104	DKENDW295CFSD	CD	N		Board Unit [D]
104	DKENDW295CFSE	CD	N		Board Unit [EP]
104	DKENDW295CFSF	CD	N		Board Unit [F]
104	DKENDW295CFSG	CD	N		Board Unit [GP]
104	DKENDW295CFSH	CD	N		Board Unit [H]
104	DKENDW295CFSK	CD	N		Board Unit [K]
104	DKENDW295CFSL	CD	N		Board Unit [L]
104	DKENDW295CFSP	CD	N		Board Unit [PP]
104	DKENDW295CFSQ	CD	N		Board Unit [Q]
104	DKENDW295CFSR	CD	N		Board Unit [R]
104	DKENDW295CFSS	CD	N		Board Unit [S]
104	DKENDW295CFST	CD	N		Board Unit [T]
104	DKENDW295CFSU	CD	N		Board Unit [U]
104	DKENDW295CFSV	CD	N		Board Unit [V]
104	DKENDW295CFSW	CD	N		Board Unit [W]
104	DKENDW295CFSX	CD	N		Board Unit [X]
104	DKENDW295CFSZ	CD	N		Board Unit [Z]
104	DKENDW295CFS1	CD	N		Board Unit [E]
104	DKENDW295CFS2	CD	N		Board Unit [G]
⚠ 104-1	--------	-			Main (Not Replacement Item) (PWB-A)
⚠ 104-2	--------	-			Key (Not Replacement Item) (PWB-B)
104-3	LHLDB1190AFZZL	AE			Holder,Back-up Battery
104-4	LHLDZA209AF01	AN	N		Display Holder Assembly
104-5	LHLDZA228AFZZ	AK	N		Holder,Key PWB
104-6	PCUSSA348AFZZ	AB	N		Cushion,Connector
104-7	PSHEZA176AFZZ	AB			Isolation Sheet,Key PWB
104-8	PSHEZA177AFZZ	AB			Sheet,Connector (CN701)
104-9	PSHEZA246AFZZ	AC			Sheet A,Display FPC
104-10	PSHEZA550AFZZ	AC	N		Sheet B,Display FPC
104-11	PSLDCA006AFZZ	AD			Shield Case (For Camera)
⚠ 104-12	PSLDMA015AFZZ	AE			Case RF,Shield (Cover)
⚠ 104-13	PSLDMA016AFZZL	AE			Case RF,Shield (Frame)
⚠ 104-14	PSLDMA039AFPZL	AD			Case,Camera IC Shield
⚠ 104-15	PSLDMA048AFPZL	AD			Case,Bluetooth Shield
⚠ 104-16	PSLDMA050AFPZL	AD			Case,IC501 Shield
⚠ 104-17	PSLDMA176AFPZL	AH	N		Case BB,Shield (Frame)
⚠ 104-18	PSLDMA177AFPZ	AG	N		Case BB,Shield (Cover)
104-19	QPWBHA039AFPZ	AF			Relay FPC (PWB-C)
104-20	RLCUBA031AFPZ	BH	N		Display (LCD100)
104-21	RUNTZA021AFPZ	BC			Camera (CA100)
105	GCOVHA082AFSA	AD	N		Cover,Handsfree Kit Connector
106	GCOVHA083AFSA	AD	N		Cover,External Connector
107	JKNBZA091AFSA	AS	N		Button,10 key
108	LHLDZA101AFZZ	AC			Spacer,Side-UP/Side-Down Keys
109	MSPRCA002AFZZ	AB			Spring,Earth
110	PCUSSA074AFZZ	AB			Cushion,Camera
111	PCUSSA174AFZZ	AB			Cushion,Back-up Battery (BAT100)
112	RDNTLA002AFPZ	AF			Battery,Back-up (BAT100)
113	RMiCC0213AFPZ	AL			Microphone (MIC100)
114	RMOTV0557AFZZ	AM			Vibrator (MO100)
115	RSP-ZA029AFPZ	AR	N		Earpiece (EP100)
116	TLABZ2595AFZZ	AA			Sensor Moisture (Large)
117	TSPC-A270AFZZ	DD	N		Label,Specifications (Except for [A,X,Z])

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[13] EXPLODED PARTS					
117	TSPC-A271AFZZ	DD	N		Label,Specifications [A,Z]
117	TSPC-A282AFZZ		N		Label,Specifications [X]
601	LX-EZA003AFZZ	AA			Screw (1.7x7),Silver
602	LX-EZ0196AFFN	AB			Screw (1.7x5.5),Silver

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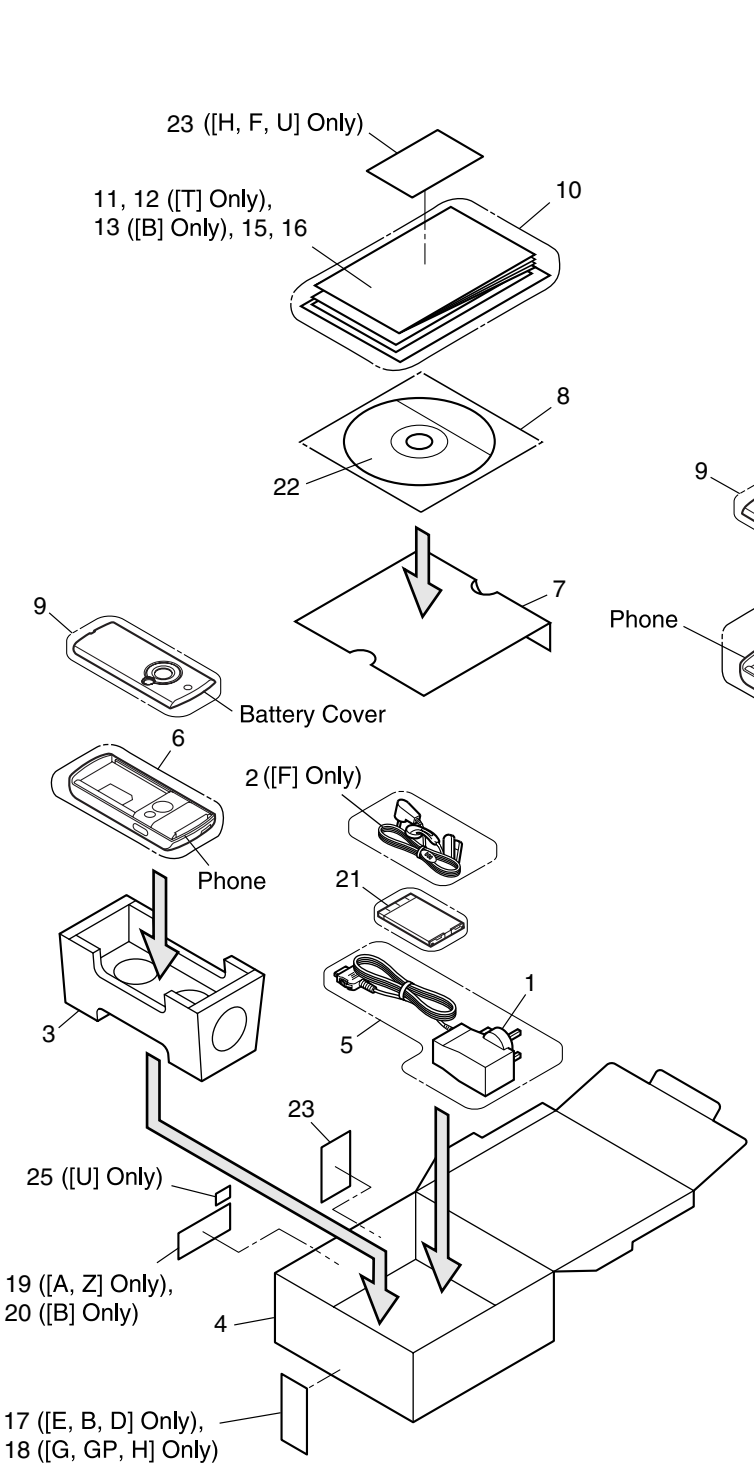
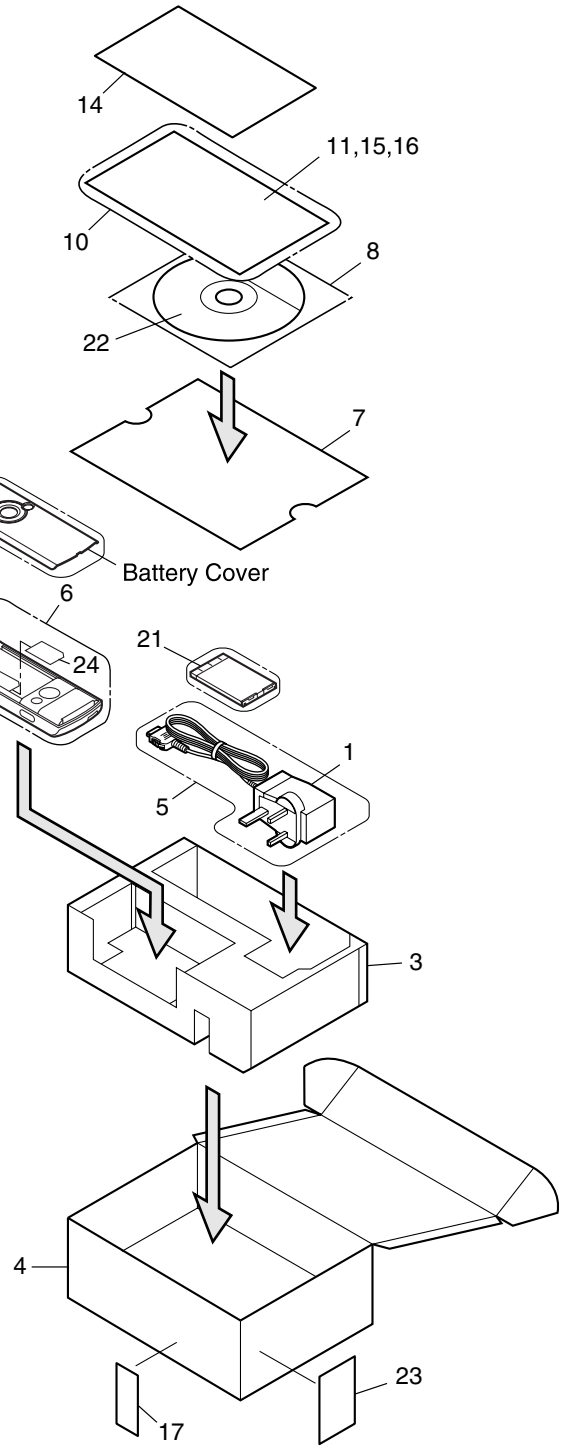
[14] ACCESSORIES/PACKING PARTS

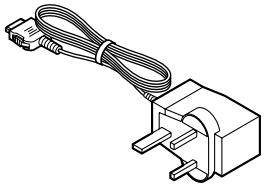
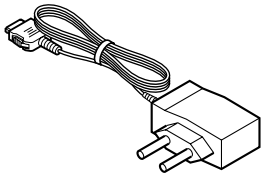
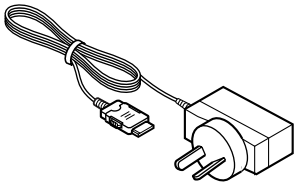


GX17 (Except for [EP])



GX17[EP]

AC Charger

RADPTA019AF01	RADPTA020AF01	RADPTA021AF01
		

	NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
	[14] ACCESSORIES/PACKING PARTS					
⚠	1	RADPTA019AF01	**	N		AC Changer [E,EP,L,R] (XN-1QC40)
⚠	1	RADPTA020AF01	**	N		AC Changer (Except for [A,E,EP,L,R,Z]) (XN-1QC41)
⚠	1	RADPTA021AF01	**	N		AC Changer [A,Z] (XN-1QC42)
	2	RUiTZA006AFP1	**			Hands Free Kit ([F]Only) (XN-IER20)
	3	SPAKAA007AFZZ	AG			Packing Add. (Except for [EP])
	3	SPAKAA039AFZZ	AE			Packing Add. [EP]
	4	SPAKCA083AFZZ	AK			Packing Case [K]
	4	SPAKCA166AFZZ	AK			Packing Case [C/U]
	4	SPAKCA356AFZZ	AL	N		Packing Case (Except for [C,EP,F,K,U])
	4	SPAKCA357AFZZ	AN	N		Packing Case [EP]
	4	SPAKCA383AFZZ	AN	N		Packing Case [F]
	5	SPAKP1252AFZZ	AC			Polyethylene Bag,AC Changer
	6	SPAKP1284AFZZ	AC			Polyethylene Bag,Phone
	7	SPAKXA019AFZZ	AD			Spacer [EP]
	7	SPAKXA098AFZZ	AD			Spacer (Ecxpt for [EP])
	8	SSAKA0233AFZZ	AD			Polyethylene Bag,CD-ROM
	9	SSAKH0329AFZZ	AA			Polyethylene Bag,Battery Cover
	10	SSAKH0337AFZZ	AB			Polyethylene Bag,User Guide
	11	TCADHA159AFZZ	AF	N		Quick Start Guide [A,E,EP,L,Q,R,Z]
	11	TCADHA160AFZZ	AF	N		Quick Start Guide [G,GP]
	11	TCADHA161AFZZ	AH	N		Quick Start Guide [S]
	11	TCADHA162AFZZ	AP	N		Quick Start Guide [T]
	11	TCADHA163AFZZ	AK	N		Quick Start Guide [PP]
	11	TCADHA164AFZZ	AP	N		Quick Start Guide [H]
	11	TCADHA165AFZZ	AL	N		Quick Start Guide [B]
	11	TCADHA166AFZZ	AP	N		Quick Start Guide [W]
	11	TCADHA167AFZZ	AK	N		Quick Start Guide [D]
	12	TCADZ0263AFZZ	AC			Card,Free Service ([T]Only)
	13	TCADZA074AFZZ		N		DOC Copy ([B]Only)
	14	TCTLEA001AFZZ				Collateral ([EP]Only)
	15	TGANEA001AFZA	AG	N		Guarantee [Q]
	15	TGANEA011AFZA	AE	N		Guarantee [A,Z]
	15	TGANEA027AFZA	AE	N		Guarantee [E,EP]
	15	TGANEA028AFZA	AH	N		Guarantee [R]
	15	TGANEA030AFZA	AE			Guarantee [L]
	15	TGANGA008AFZZ	AE			Guarantee [K]
	15	TGANiA008AFZZ	AF	N		Guarantee [T]
	15	TGANSA003AFZA	AG	N		Guarantee [S]
	15	TGANZA016AFZZ	AD			Guarantee [C]
	15	TGANZA051AFZZ	AE	N		Guarantee [PP]
	15	TGANZA052AFZA	AG	N		Guarantee [H]
	15	TGANZA053AFZA	AH	N		Guarantee [W]
	15	TGANZA054AFZA	AC	N		Guarantee [D]
	15	TGANZA057AFZZ	AE			Guarantee [U]
	16	TiNSEA091AFZZ	AP	N		User Guide [E,EP,L,Q,R,V,X]
	16	TiNSEA092AFZZ	AP	N		User Guide [A,Z]
	16	TiNSEA100AFZZ	AS	N		User Guide (English) [C]
	16	TiNSEA101AFZZ	AS	N		User Guide (English) [U]
	16	TiNSFA044AFZZ	AS	N		User Guide [F]
	16	TiNSFA045AFZZ	AS	N		User Guide (French) [C]
	16	TiNSFA046AFZZ	AS	N		User Guide (French) [U]
	16	TiNSGA049AFZZ	AQ	N		User Guide (German) [C]
	16	TiNSGA050AFZZ	AQ	N		User Guide [K]
	16	TiNSGA090AFZZ	AP	N		User Guide [G,GP]
	16	TiNSHA029AFZZ	AS	N		User Guide (Dutch) [U]
	16	TiNSHA086AFZZ	AQ	N		User Guide [H]
	16	TiNSiA030AFZZ	AQ	N		User Guide (Italian) [C]
	16	TiNSiA088AFZZ	AP	N		User Guide [T]
	16	TiNSPA087AFZZ	AQ	N		User Guide [PP]
	16	TiNSSA089AFZA		N		User Guide [S]
	16	TiNSWA084AFZZ	AQ	N		User Guide [W]
	16	TiNSZA083AFZA		N		User Guide [D]
	16	TiNSZA085AFZZ	AQ	N		User Guide [B]
	17	TLABZ2793AFZZ	AA			Sheet,Security ([B,E,EP,D] Only)
	18	TLABZA044AFZZ	AC			Sheet,Transparent ([G,GP,H]Only)
	19	TLABZA053AFZZ	AB			Label,ATIC ([A,Z]Only)
	20	TLABZA100AFZZ	AE	N		Label,Hungary ([B]Only)
⚠	21	UBATiA014AFZZ	**			Rechargeable Li-ion Battery (XN-1BT30)
	22	UDSKAA051AF01	AK	N		CD-ROM
	23	--------	-			Label,Case
	24	UiMC-A008AFZZ				Card,SIM ([EP]Only)
	25	TLABZA061AFZZ	AC			Label,Battery ([U]Only)
	[15] P.W.B. ASSEMBLY					
⚠	PWB-A	--------	-			Main (Not Replacement Item)
⚠	PWB-B	--------	-			Key (Not Replacement Item)
	PWB-C	QPWBHA039AFPZ	AF			Relay FPC
⚠	PWB-D	QPWBHA159AFPZ	AG	N		Built-in Aerial

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SHARP

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Customer Satisfaction Promotion Center
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