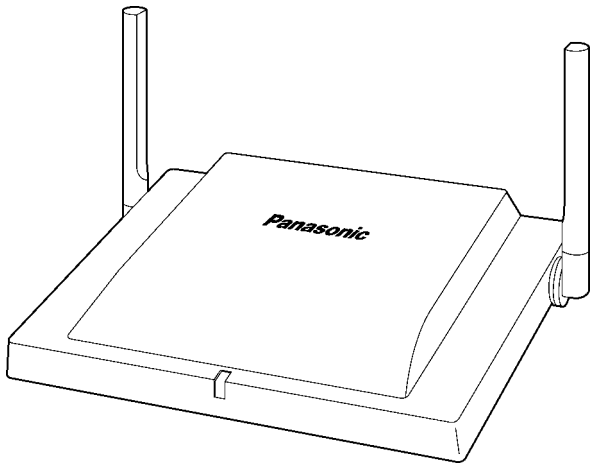
ORDER NO. KMS1411116CE

Service Manual

DECT 4-Channel IP Cell Station Unit

Model No. KX-NS0154

(for , U.S.A., Canada, Mexico)



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING

If lead free solder was used in the manufacture of this product, the printed circuit boards will be marked PbF. Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.

When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

When you note the serial number,write down all 11 digits. The serial number may be found on the bottom of the unit.

Panasonic®

KX-NS0154

TABLE OF CONTENTS

1 Safety Precautions

1. Before servicing, unplug the AC power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to perform the following insulation resistance test to prevent the customer from being exposed to shock hazards.

1.1. For Service Technicians

- **Repair service shall be provided in accordance with repair technology information such as service manual so as to prevent fires, injury or electric shock, which can be caused by improper repair work**.
  1. When repair services are provided, neither the products nor their parts or members shall be remodeled.
  2. If a lead wire assembly is supplied as a repair part, the lead wire assembly shall be replaced.
  3. FASTON terminals shall be plugged straight in and unplugged straight out.

- **ICs and LSIs are vulnerable to static electricity.**
  When repairing, the following precautions will help prevent recurring malfunctions.
  1. Cover plastic parts boxes with aluminum foil.
  2. Ground the soldering irons.
  3. Use a conductive mat on worktable.
  4. Do not grasp IC or LSI pins with bare fingers.

1.2. Caution

When you note the serial number, write down all of the 11 digits.
The serial number may be found on the label affixed to the bottom of the unit.

2 Warning

2.1. About Lead Free Solder (PbF: Pb free)

Note:

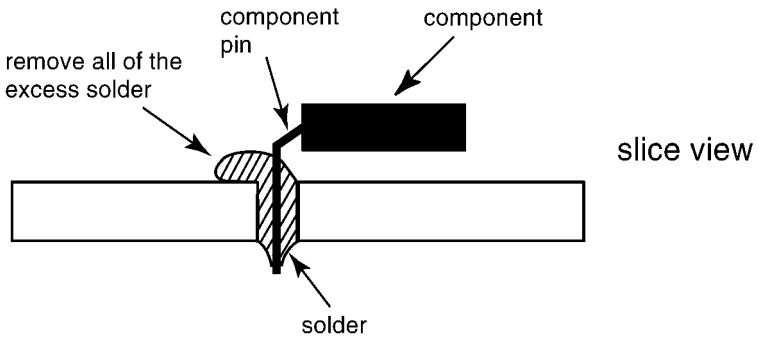
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF when discussing the lead free solder used in our manufacturing process which is made from Tin, (Sn), Silver, (Ag), and Copper, (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder.

Caution

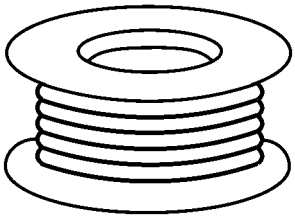
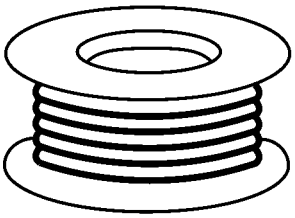
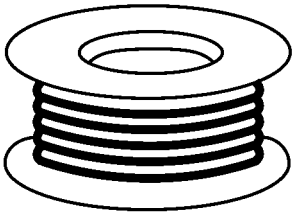
- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C).
  Exercise care while using higher temperature soldering irons.:
  Do not heat the PCB for too long time in order to prevent solder splash or damage to the PCB.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).



2.1.1. Suggested PbF Solder

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufac turer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

2.2. Discarding of P. C. Board

When discarding P. C. Board, delete all personal information such as telephone directory and caller list or scrap P. C. Board.

3 Specifications

IP-CS Specification

Items	Description
Type	4 channel CS
Supported Audio	Narrowband
Radio Method	DECT
VoIP Signalling Protocol	MGCP
IP Port Number Flexible Setting	Yes
Local Setting	Yes (through Web application)
Site Survey Mode	Yes (through Web application)
Initialisation	Yes (through Web application)
Maximum Simultaneous Calls	4 (8 with Activation key)
Power Supply	PoE (IEEE 802.3af) Optional AC adaptor KX-A239 (PQLV206)/KX-A239X (PQLV206)
VoIP Audio Codec	G.722, G.711, G.729A, G.726
LAN Port	10 BASE-T 100 BASE-TX
VLAN	Yes (802.1Q)
IP Addressing	DHCP Static IP Address Setting
Software Upgrade	Yes
Built-in VPN	No
Weight	330 g
Size	(W) 190 mm x (H) 133.9 mm x (D) 39.3 mm

RF Specification

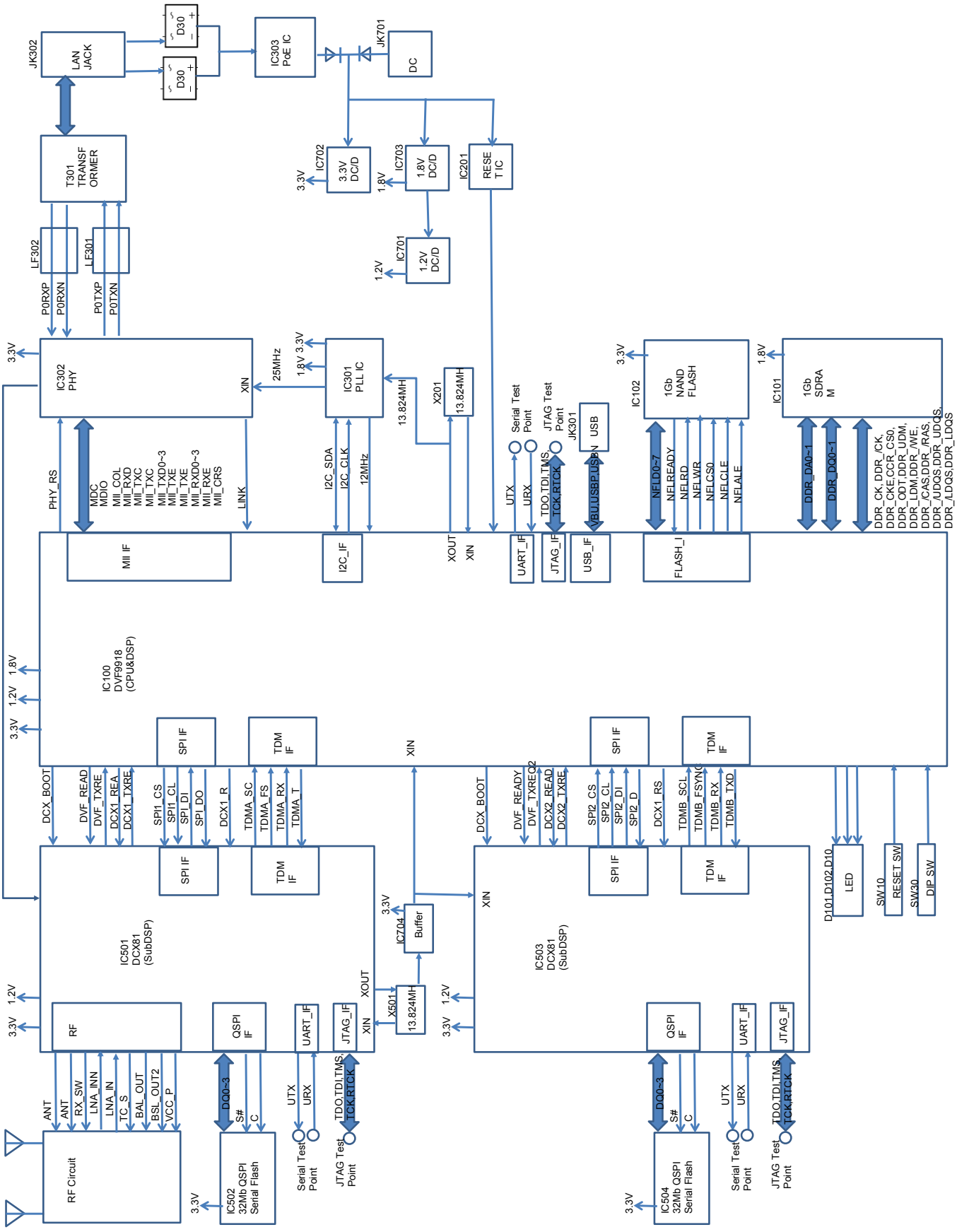
Items	Description
Radio Access Method	MultiCarrier TDMA-TDD
Frequency Band	1920 ~ 1930 MHz
Number of Carriers	5
Carrier Spacing	1728 kHz
Transmission Output	Peak 125 mW

CAUTION

- The IP-CS should be kept free of dust, moisture, high temperature (more than 40 °C), low temperature (less than 0 °C), and vibration, and should not be exposed to direct sunlight.
- The IP-CS should not be placed outdoors (use indoors).
- The IP-CS should not be placed near high-voltage equipment.
- The IP-CS should not be placed on a metal object.

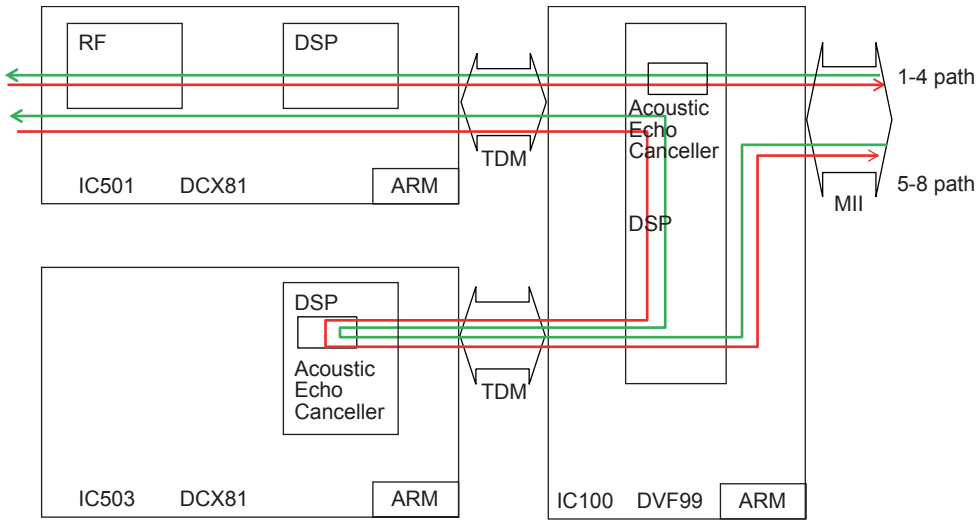
4 Technical Descriptions

4.1. Block Diagram



4.2. Main Processer

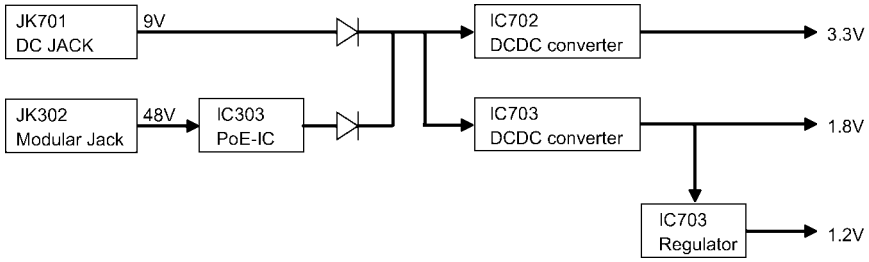
IC100 (DVF99) is main IC which controls almost IC's in this system.
And it has the acoustic echo canceller for 4 voice path.
IC503 (DCX81) is used for only echo canceller for another 4 voice path.
IC501 (DCX81) runs as DSP and RF circuit.



4.3. Power Supply Circuit

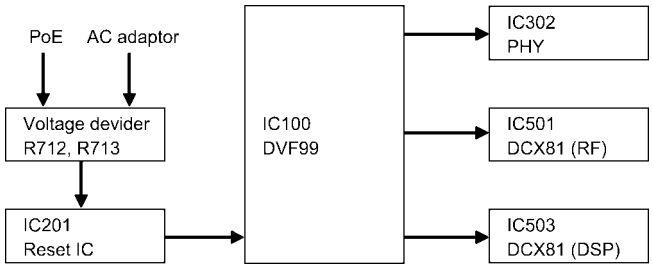
KX-NS0154 support 2 way power supply; AC adaptor and PoE (Power over Ethernet).
9V is supplied from AC adaptor through JK701.
48V is supplied from ethernet through JK302, and it is converted to 12V by IC303.
9V or 12V is converted 3.3V by IC702 (DCDC converter) and 1.8V by IC703 (DCDC converter).
IC701(Voltage regulator) regulates 1.2V from 1.8V.

3.3V is used for Login and RF.
1.8V is used for DDR2 memory.
1.2V is used for core voltage of IC100, IC501 and IC503.

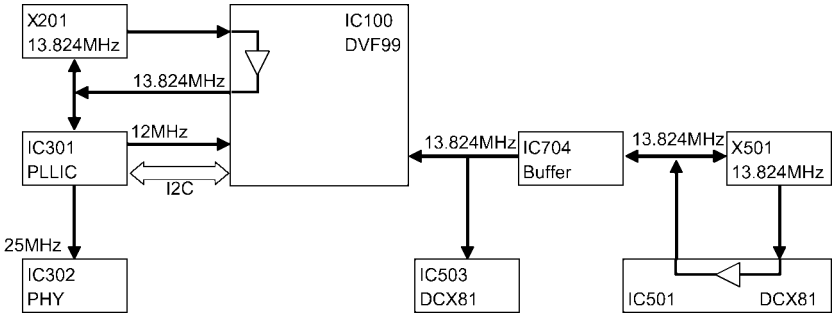


4.4. Reset circuit

IC201 (Reset IC) detects supplied voltage from AC adaptor or PoE output, and it supplies Power-On-Reset signal to IC100 (DVF99).
IC100 supplies reset signal from GPIO to RSTN pin of IC501(DCX81 for RF) and IC503 (DCX81 for DSP).
Also IC100 supplies reset signal to IC302 (PHY).



4.5. Clock Circuit



4.5.1. System Clock

Main system clock (13.824MHz) is generated from X501, and Oscillation circuit consists of X501 and IC501.
This clock is used for basic clock of IC501's all internal clock and RF.
This clock is supplied to IC100 and IC503 via buffer IC (IC704).
This enables synchronization among IC100, IC501 and IC503.
X201 is used by IC100 during its boot sequence and basic clock for PLLIC (IC301).

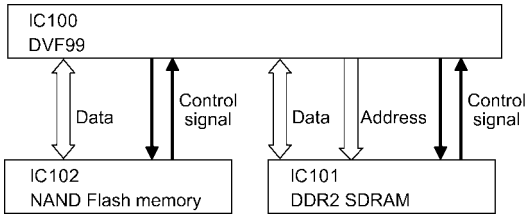
4.5.2. PLLIC

PLLIC (IC302) is controlled by IC100 with I2C bus.
PLLIC generate 12MHz and 25MHz clock.
12MHz is supplied to IC100 and used for USB circuit for maintenance.
25MHz is supplied to PHY for Ethernet communication.

4.6. Memory Access Circuit

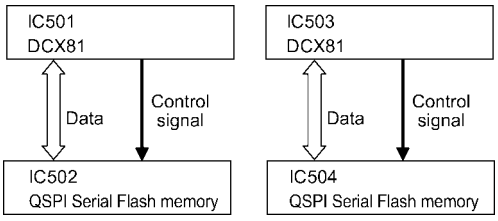
4.6.1. IC100

IC100 (DVF99) has separated memory access port for NAND Flash memory (IC102) and DDR2 SDRAM (IC101).
The program for IC100 has been stored in IC102.

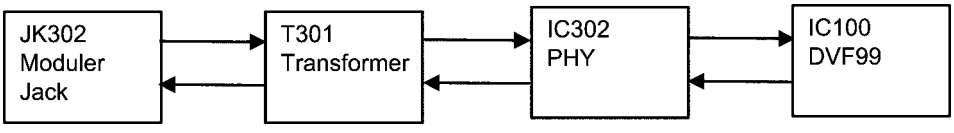


4.6.2. IC501 and IC503

IC501(DCX81 for RF) and IC503 (DCX81 for DSP) have the QSPI Serial Flash access port.
The program for IC501 has been stored in IC502, and the program for IC503 has been stored in IC504.



4.7. Ethernet Circuit



Ethernet signals from JK302 are transfered to IC302(PHY) through T301.
IC302 transfers singal to DVF99(IC100)

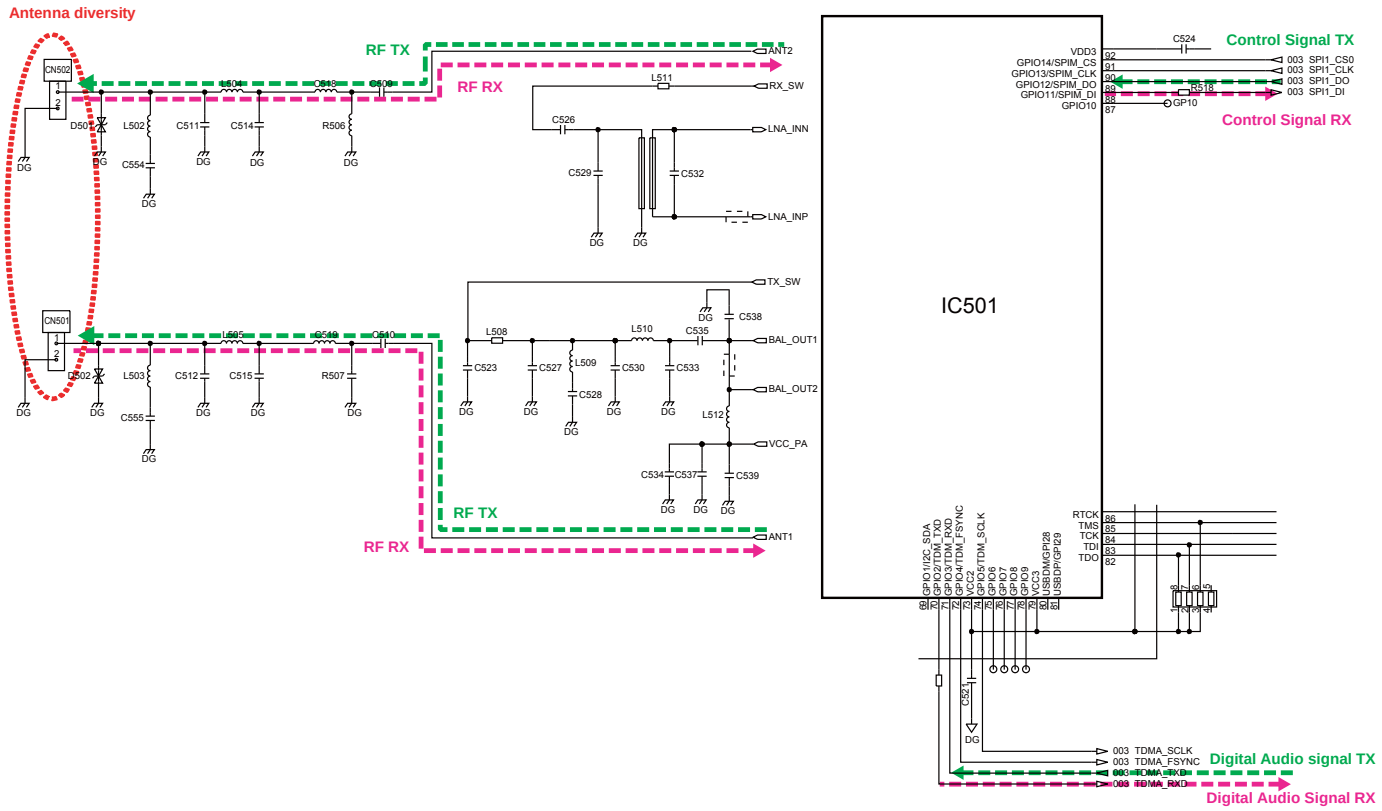
4.8. RF Circuit

RF Transmission

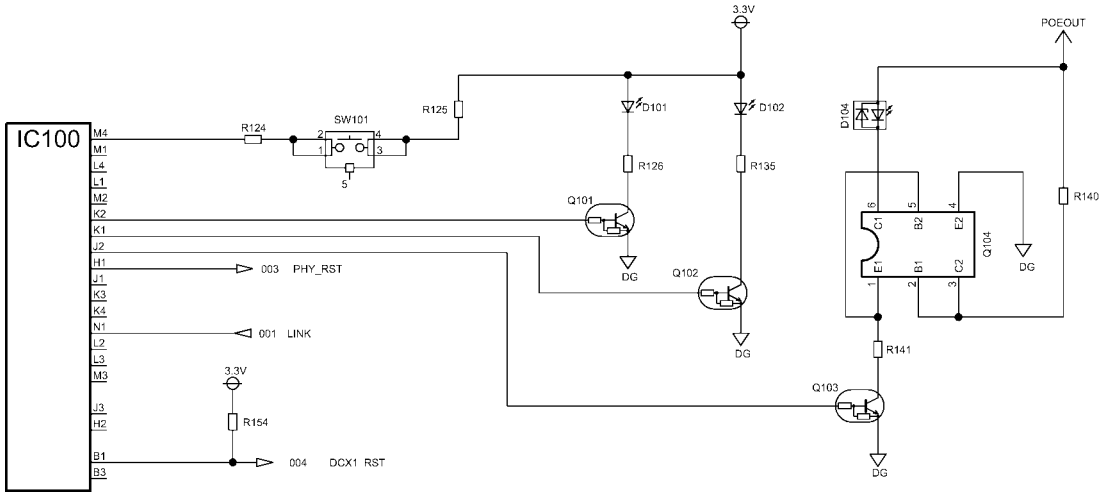
A digital audio signal and control signal from LAN is received by DVF99 (IC100) in a cell station.
Then data goes to RFIC (IC501) through SPI and TDM signal, and it's modulated to 1.9 GHz RF signal. The RF signal is amplified and fed to a selected antenna by antenna diversity.

RF Reception

As for a cell station, RF signal is received in two antennas.
RFIC(IC501) of cell station compares RF signal levels from portable station and selects the antenna to be used.
RX signal in the selected antenna is amplified and down-converted to 864 kHz IF signal, then demodulated to digital data.
Control signal is output to IC100 on SPI signal, and digital audio signal is output to IC100 on TDM signal.
DVF99 (IC100) receives these data and outputs it to LAN.



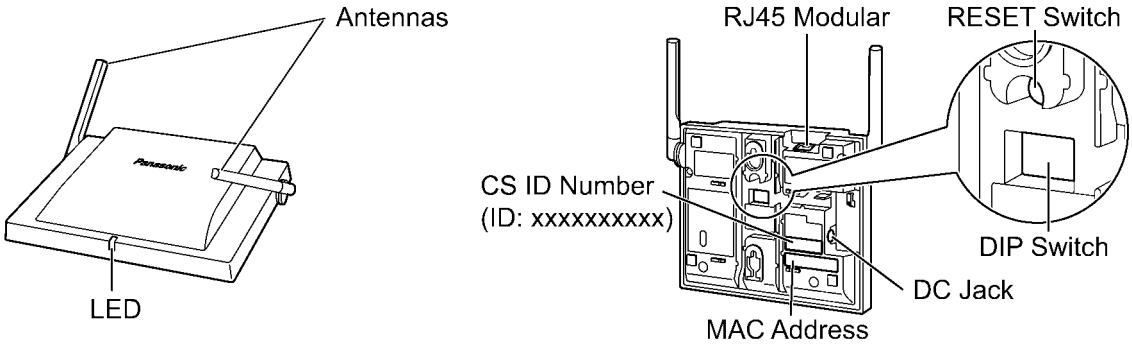
4.9. LED Circuit



D101(Green LED) and D102(Red LED), D104(Blue LED) are controlled by IC100(DVF99).
Q104 is used for constant current circuit.

5 Location of Controls and Components

5.1. Names and Locations



6 Installation Instructions

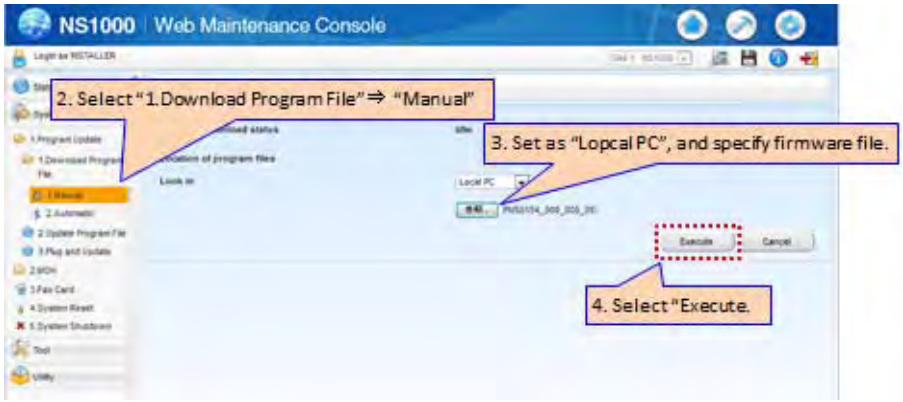
Refer to 16. Appendix (P.61).

7 Firmware update

7.1. Firmware update

The firmware of NS0154 is stored in NS1000

1. Log in to WEB MC of NS1000.
2. Select “Maintenance” → “System Control”
   → “1.Program Update” → “1.Download Program File”
   → “1.Manual”
3. The item of “Look in” is set as “Local PC”, and a firmware file name is specified.
4. Select “Execute”.
5. Choose “Yes”, if the confirmation screen of firmware transmission is displayed.



Update firmware (Manual)

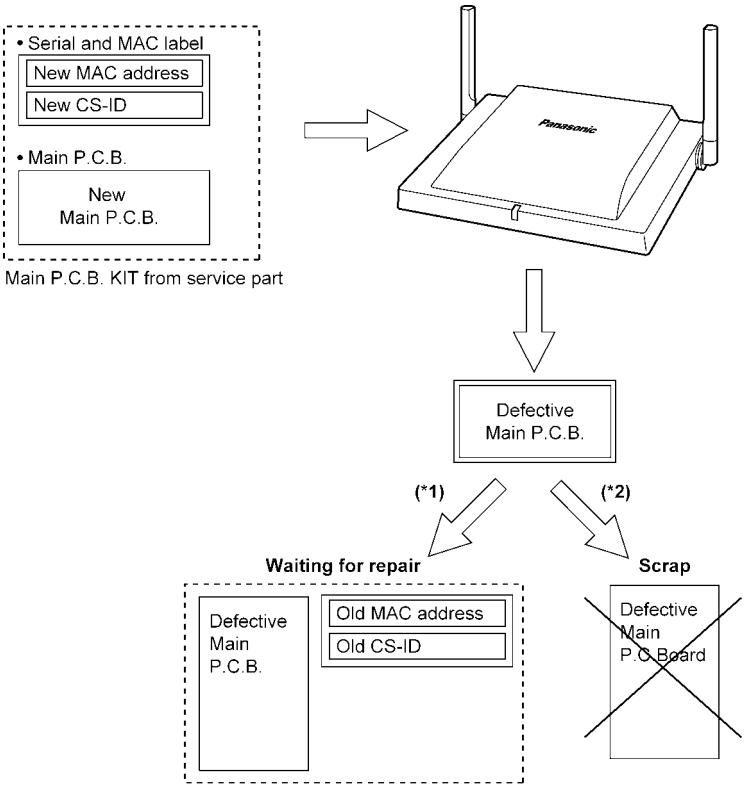
1. Select “System Control” → “1.2 Update Program File”
2. Choose the timing of Firmware update.
3. Choose the terminal for updating
4. Select “Apply”, and select “Execute”.
5. Since the confirmation screen of Firmware update is displayed, choose “Yes”.

8 Service Mode

8.1. How to Change MAC Address Label (Procedure after Replacing the Main P.C.B.)

When replacing the Main P.C.B., customer data shall be renewed before sticking the included MAC/Address.

8.1.1. Replacing Main P.C.B.



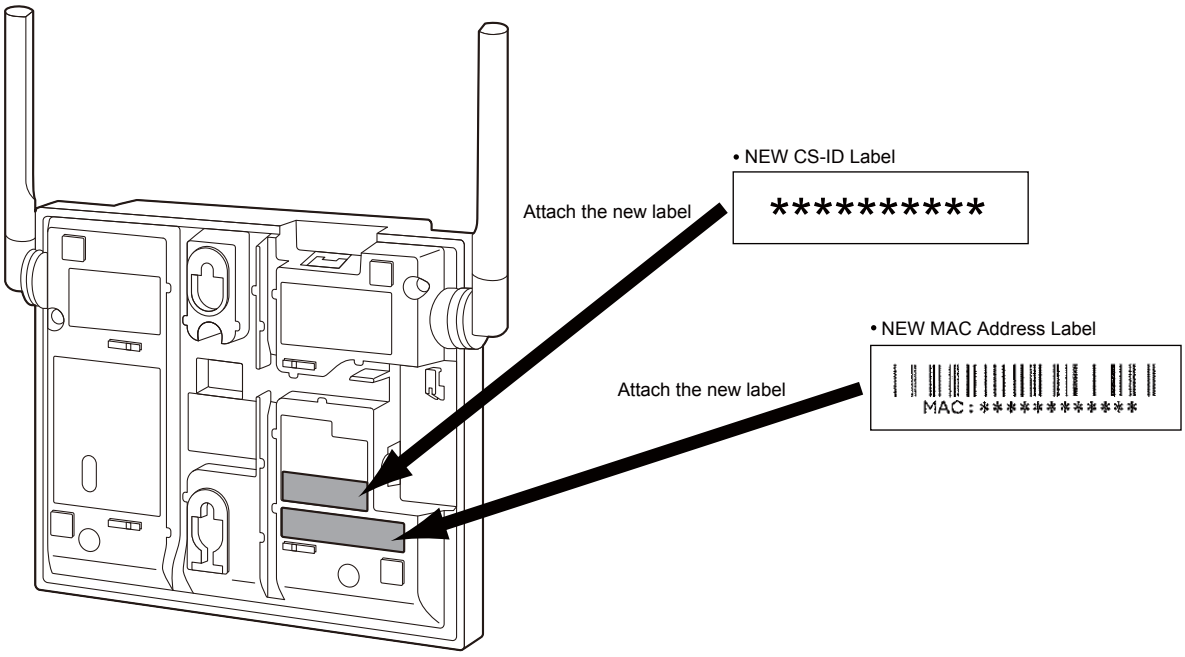
Note:

(*1) : If you reuse defective P.C.B. for another repairing unit by repairing. Peel off the CS-ID and MAC address label on original bottom cabinet and keep them with defective P.C.B..

(*2) : If you do not reuse the defective P.C.B. by repairing, scrap the P.C.B. to prevent the leak of customer's information in flash ROM.

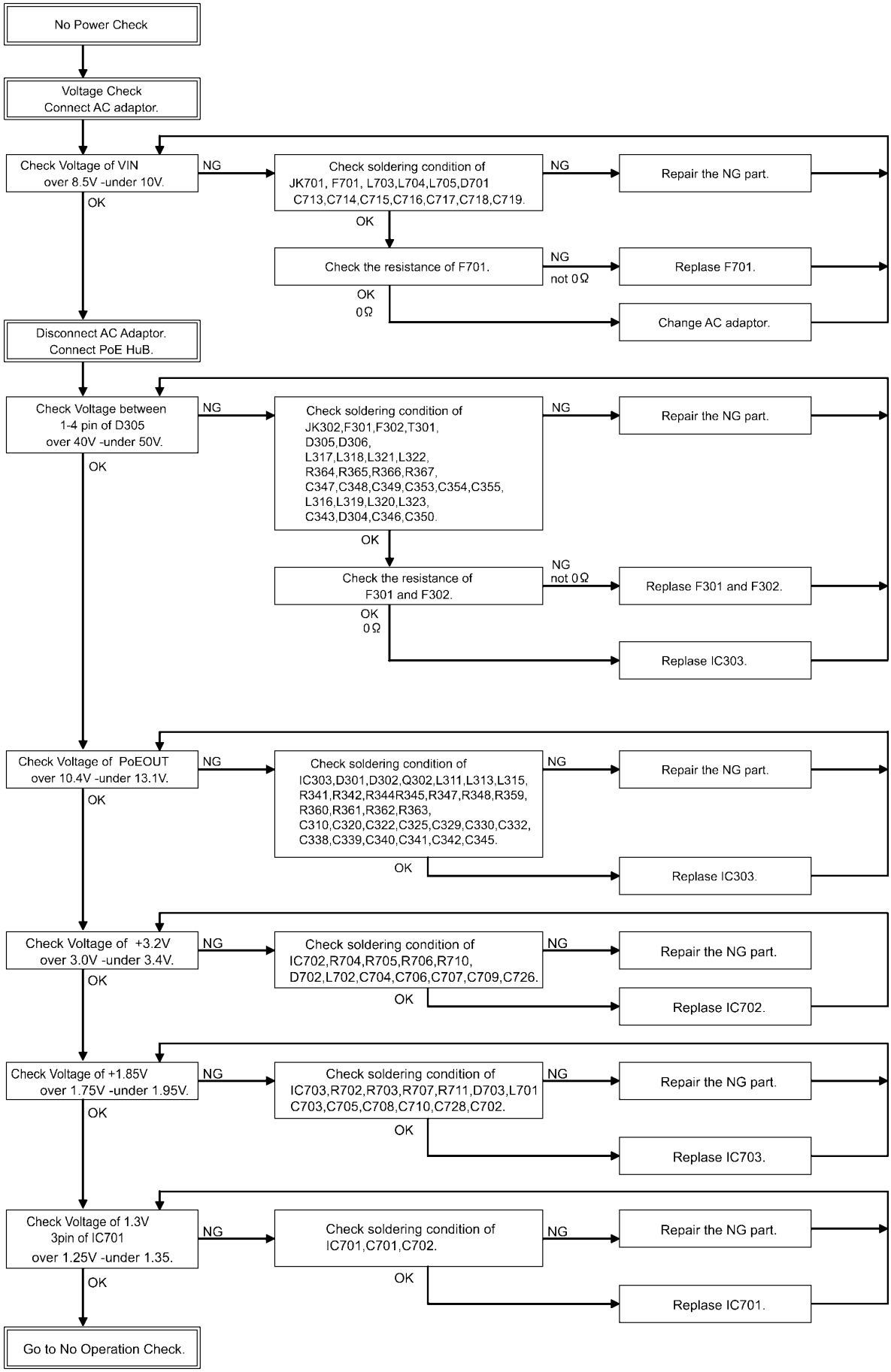
8.1.2. Attaching MAC Address Label

Attach the new MAC address label to the unit by placing over the old label.

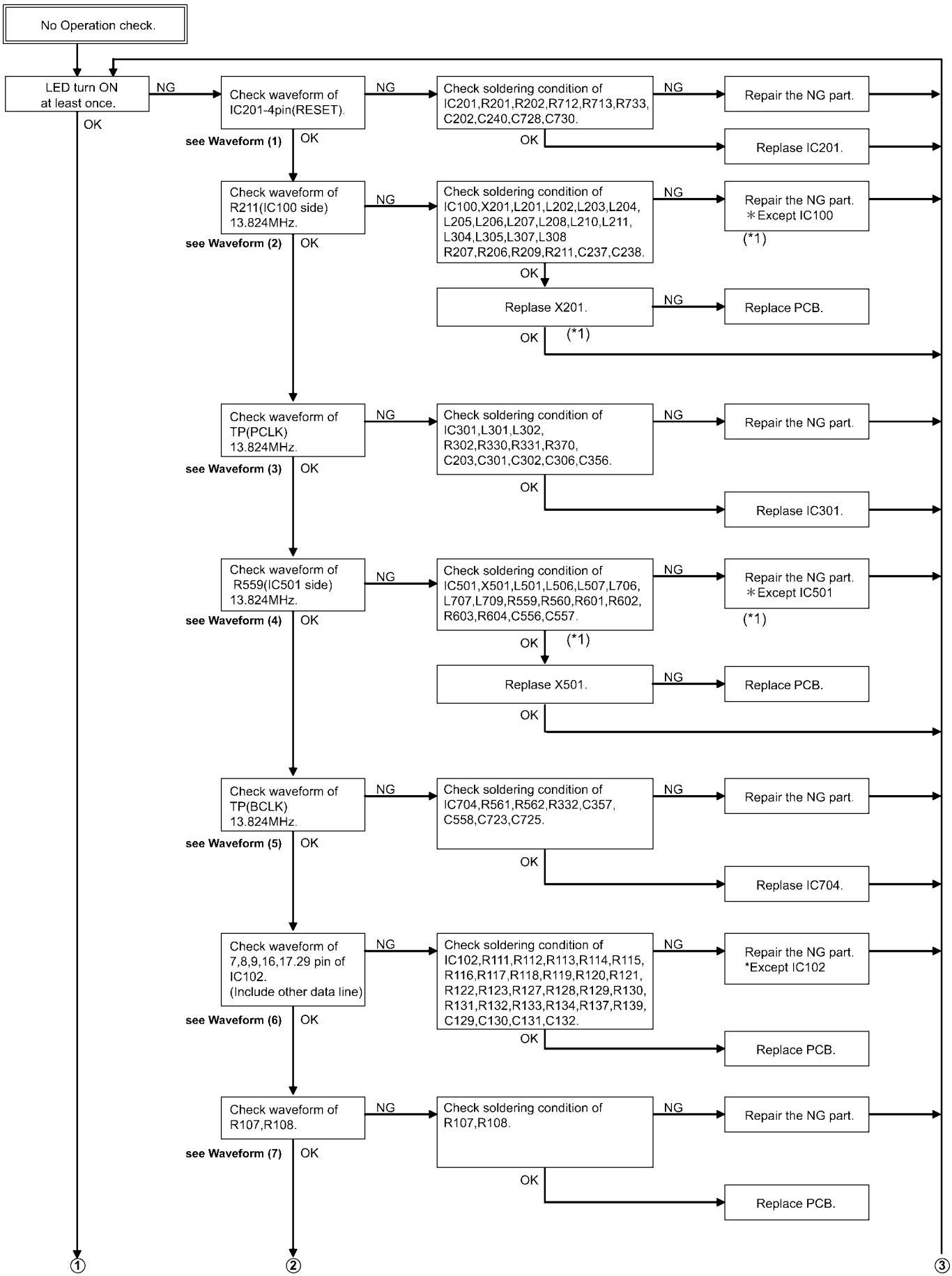


9 Troubleshooting Guide

9.1. No Power



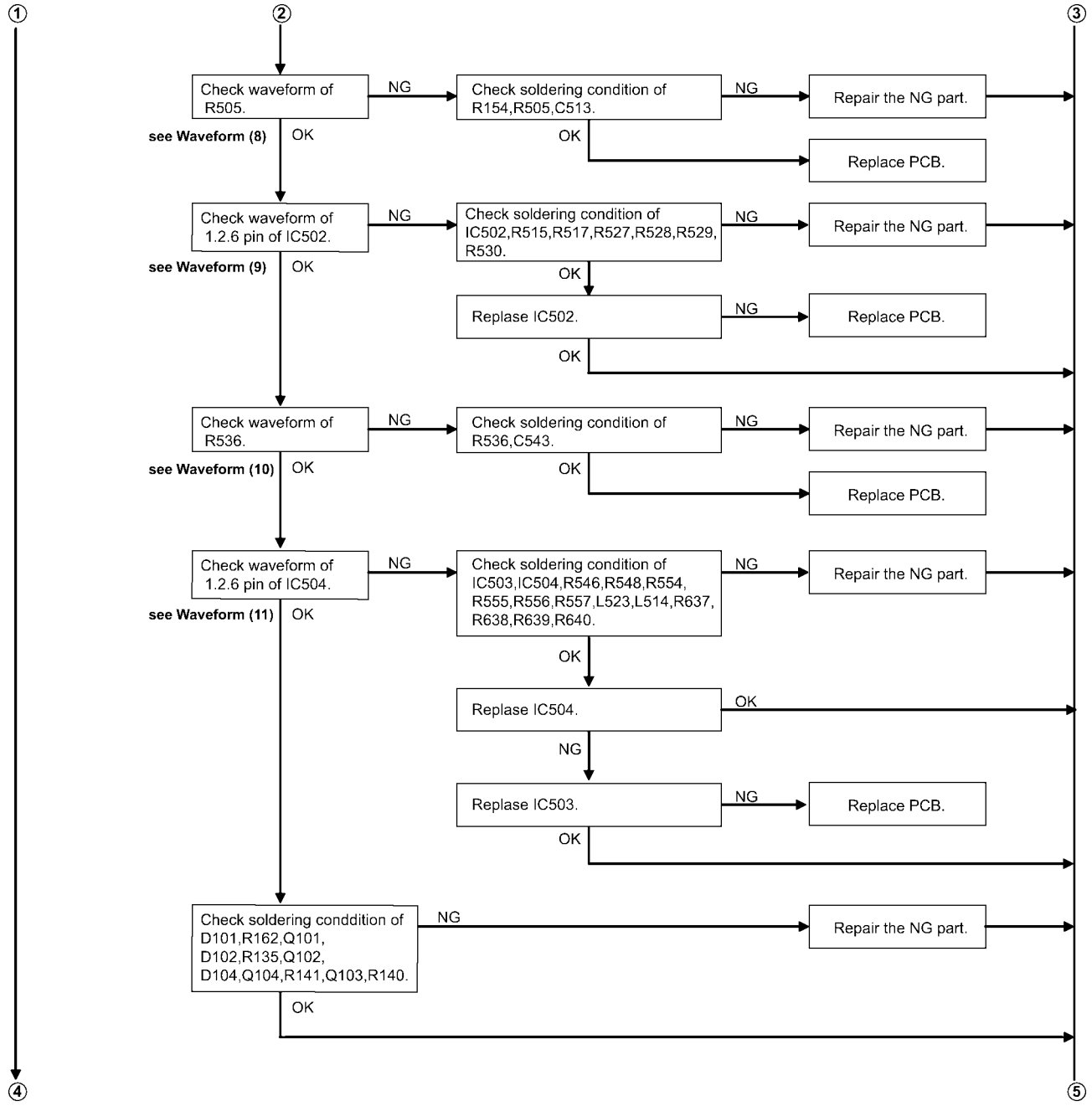
9.2. No Operation



Note:

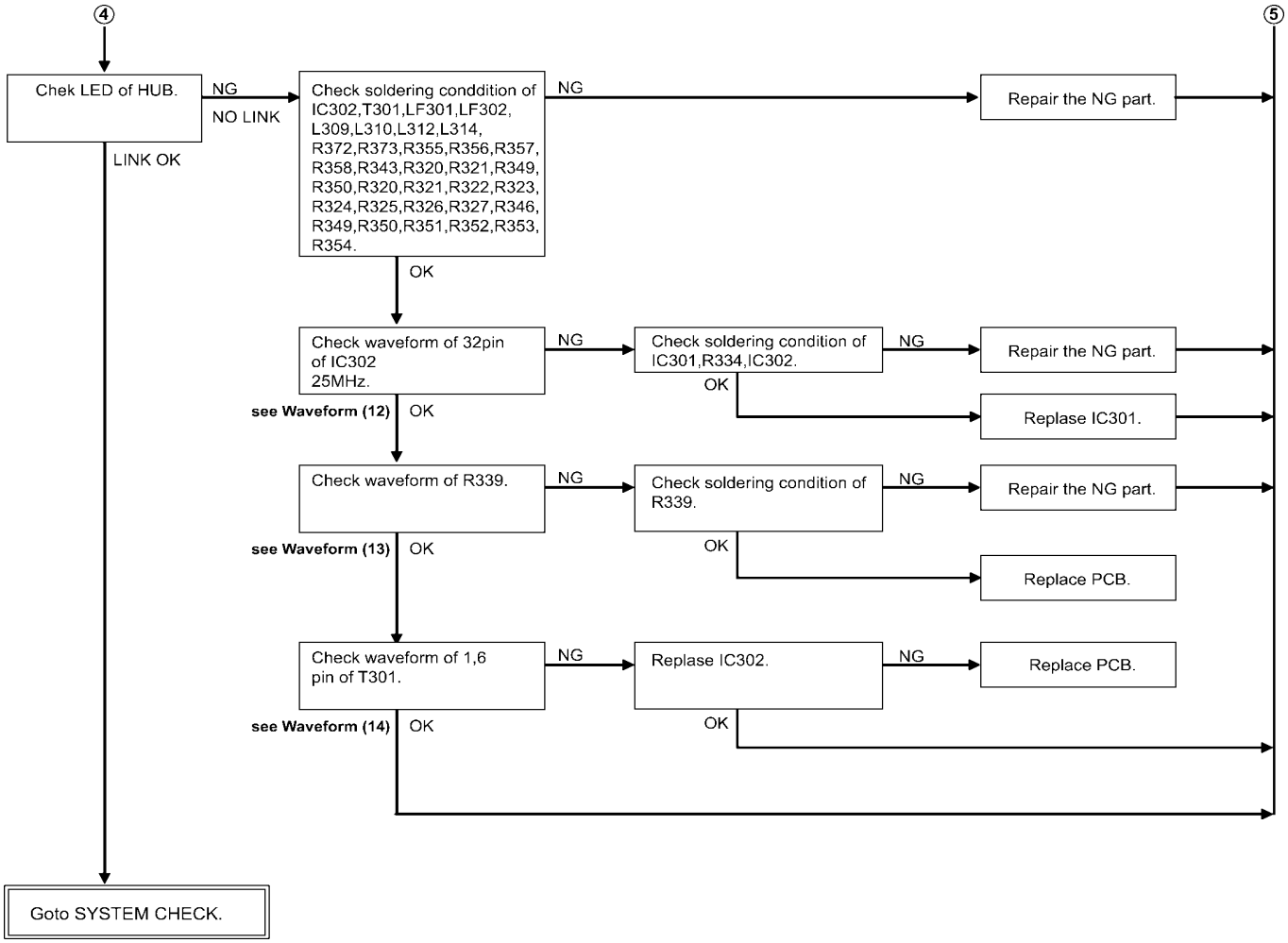
Refer to **waveform** (1) - (7) in **Waveform** (P.32) .

(*1) Adjust clock after changing X201, X501, C237, C238, C556, C557. Refer to 11. Measurements and Adjustments (P.19)



Note:

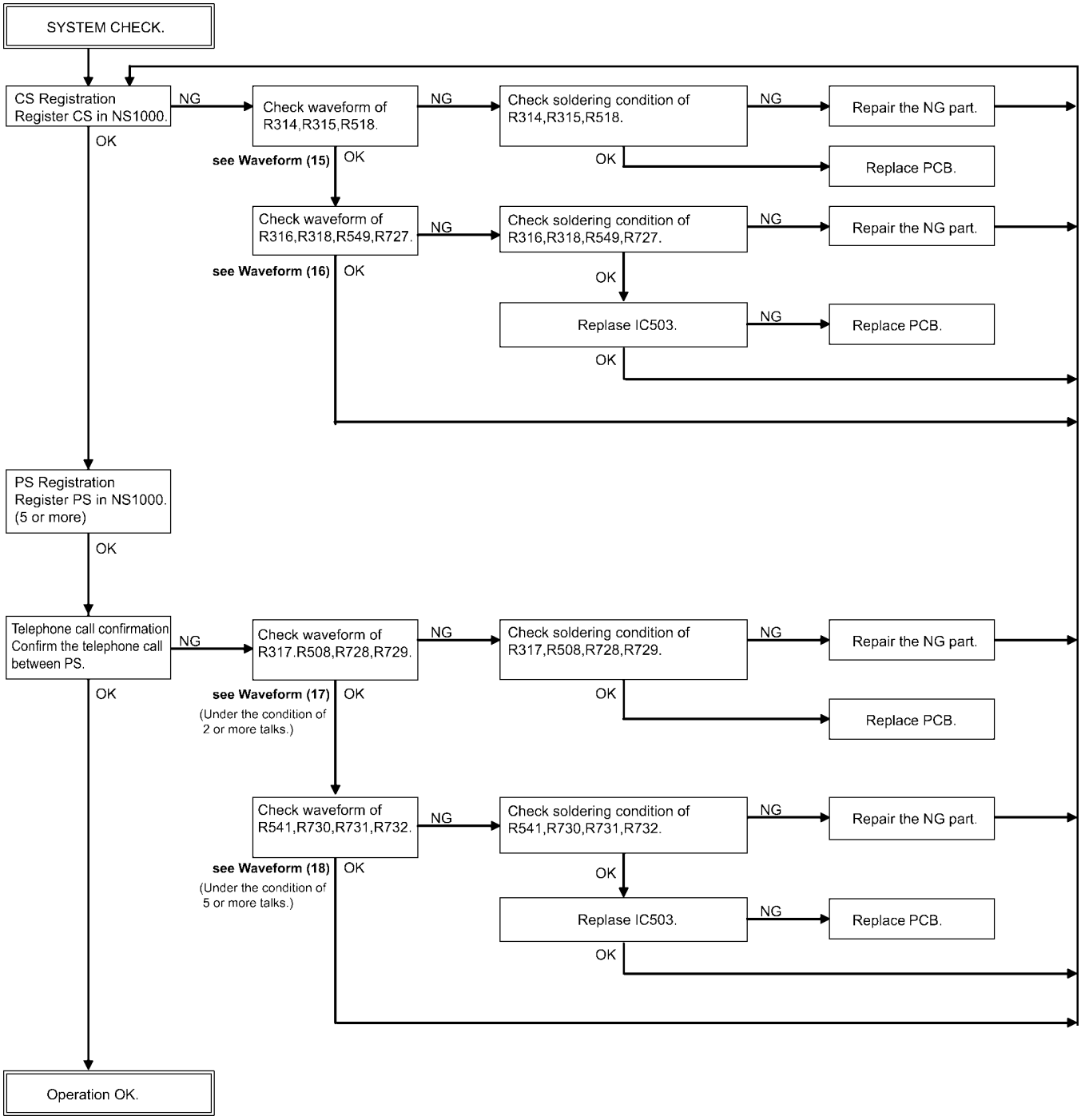
Refer to **waveform** (8) - (11) in **Waveform** (P.33) .



Note:

Refer to **waveform** (12) - (14) in **Waveform** (P.33) .

9.3. System Check



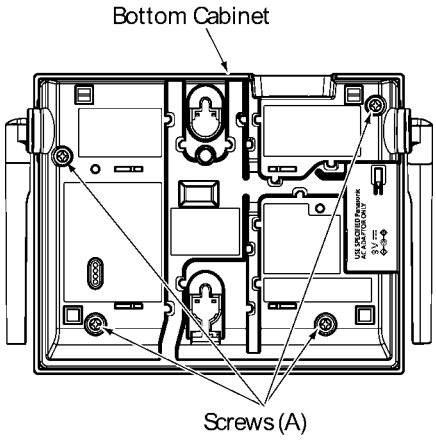
Note:

Refer to **waveform** (15) - (18) in **Waveform** (P.33 and P.34) .

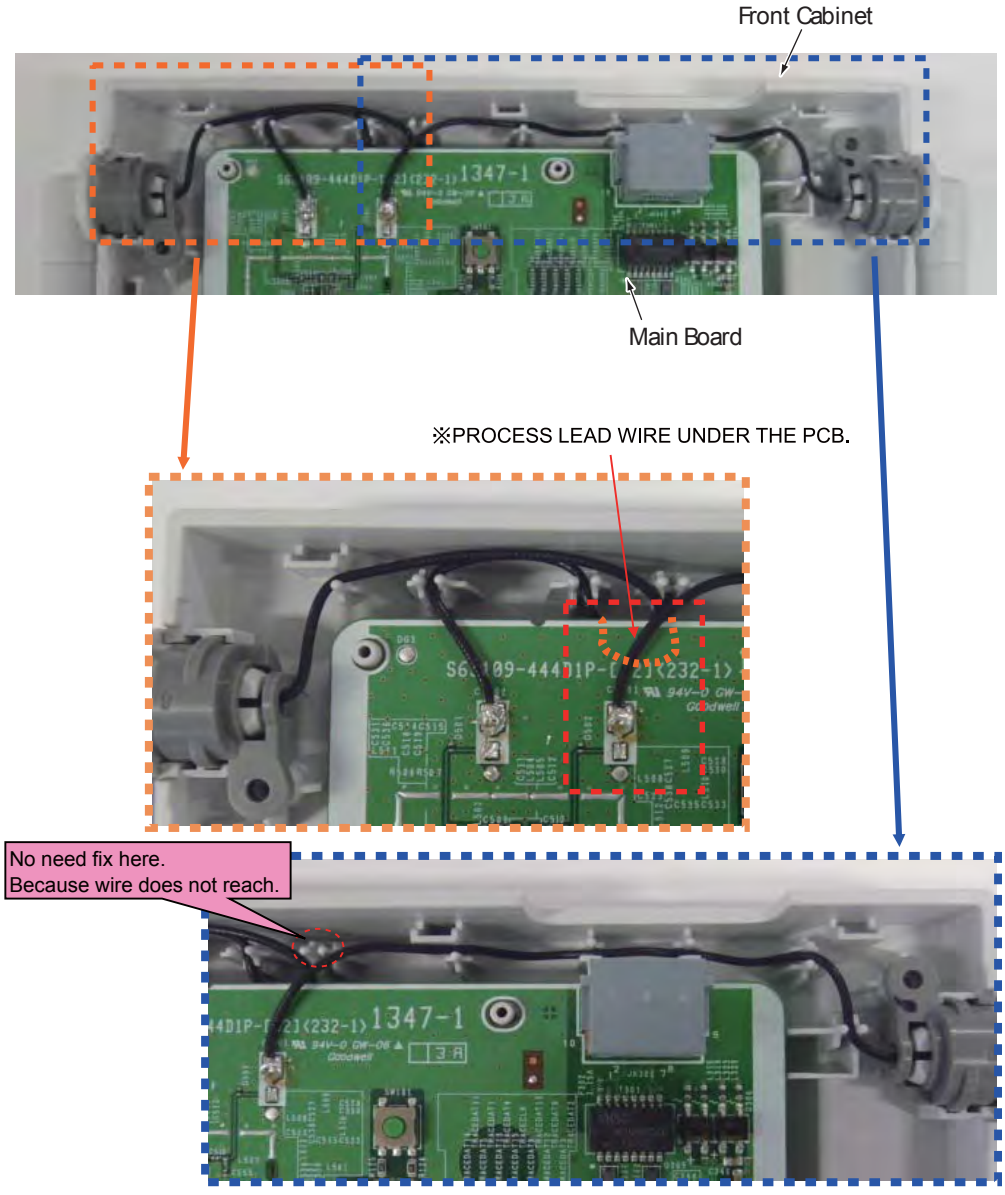
10 Disassembly and Assembly Instructions

10.1. Disassembly Instructions

1. Remove the 4 screws (A), and remove the Bottom Cabinet.



2. Remove the Solder on Cable of the Main Board by the Soldering iron.
3. Remove the Main Board from the Top Cabinet.



11 Measurements and Adjustments

11.1. USB Test Mode

The various tests are avialbale by using USB communication with your PC.
Following tests are described in this service manual.

- **Clock Adjustment** (P.22)

Note:
Make sure that you have installed USB driver on your Windows PC before starting test mode.

Supported Operating Systems
This application software operation has been confirmed under the following Operating Systems
- Windows XP
- Windows Vista
- Windows 7

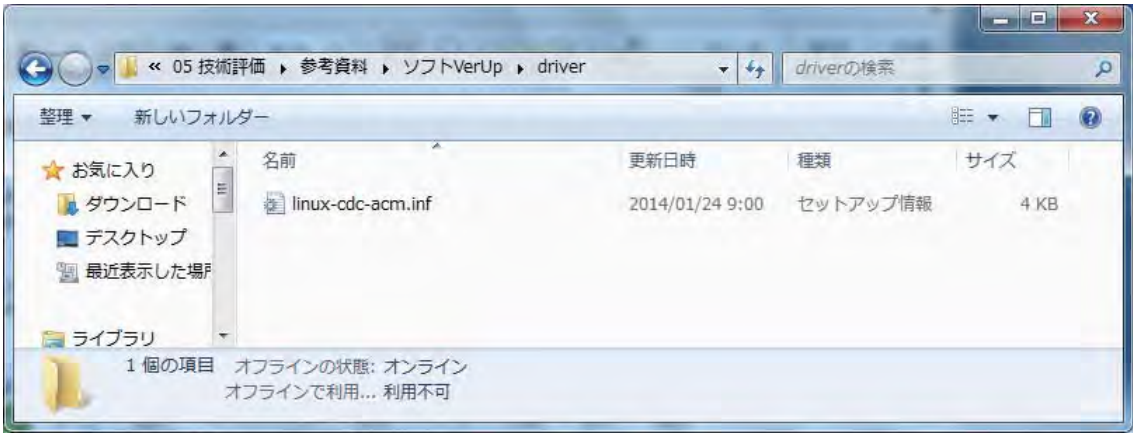
Note:
Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries. Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows 7 are trademarks and trade names of Microsoft Corporation in the United States and/or other countries.

11.1.1. How to Install the Application for Test Mode

PC is required to measure the characteristics and check the function. USB driver needs to be installed on it.

11.1.1.1. USB Driver Installation

Preparation:
- **USB-miniB cable.**
- **copy the USB driver "linux-cdc-acm.inf" to your PC.**
- **Refer to the following URL for a USB driver.**
  https://www.kernel.org/doc/Documentation/usb/linux-cdc-acm.inf



11.1.1.2. USB Driver installation

- **Connect USB-miniB cable to your PC.**
- **Open device manager, and select USB device of USB cable.**
- **Select "linux-cdc-acm.inf" as USB driver.**

11.1.1.3. PC Setting

Preparation:

- **PC**
- **Base Unit / Handset**

1. Install the TeraTerm

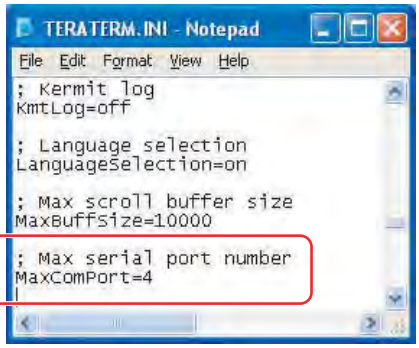
Install the "teraterm-x.xx.exe" (x.xx = version) to your PC from internet site. Refer to the "readme" of the TeraTerm for installation process etc.

2. Setting the TeraTerm

Before setting the TeraTarm:

USB ports 3 to 16 are available but Teraterm (version 2.3) sets to use only the USB ports 3 and 4 by default.
In case that the port number now you investigated is 5 or more.

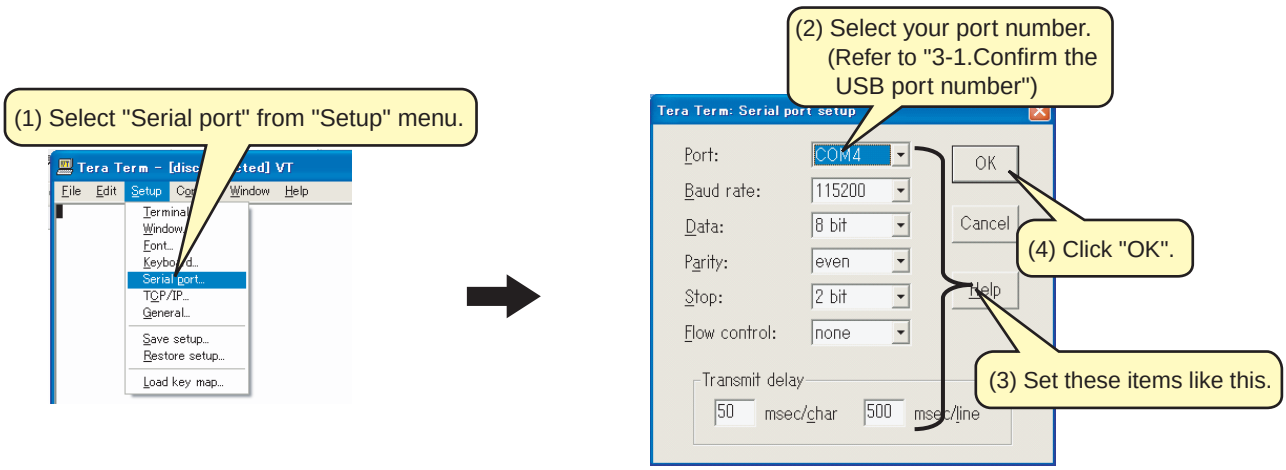
- Open "TERATERM.INI" in installed folder.
  Ex) c:\Program Files\teraterm
- Search the word "MaxComPort".
- Change the number to your port number.
  Ex) If your port number is 6, then Change to "MaxComPort=6".
- Then save and quit.



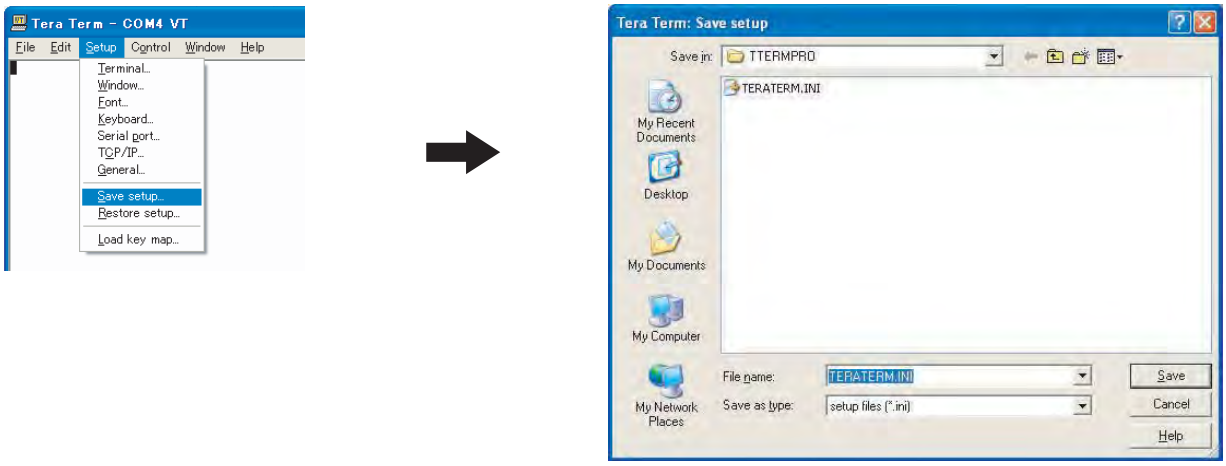
2-1. Teraterm will be activated automatically if connect a PC and the base unit by a USB cable. Please restart Teraterm after USB cable is reconnected.

2-2. Select "Serial port" from "Setup" menu.

- Change the settings of "Serial port setup" as follows. Then click OK.



2-3. Select "Save setup" from "Setup" menu and overwrite TERATERM.INI.



Note:

- Once you install USB driver and test mode application, it is unnecessary to do it again.

11.2. Clock Adjustment

1. Supply power fom AC adaptor. *Fig.1
2. Connect a USB cable to PC and KX-NS0154** after 10 seconds from Power on ... from Power on, then execute Teraterm on PC.
3. Input User ID and Password.
   User ID : root
   Password : P!1230!N
4. Enter Test Mode and Unlock protect.
   Command : “ts”
   “wpw 00”
5. Read clock adjustment value.
   Command :
   PCLK .... ”nc” (enter) (4 digit Hex value is displayed)
   BCLK .... ”sfr” (enter) (4 digit Hex value is displayed)
6. Check the value of frequency at the test points (PCLK or BCLK). *Fig.2
7. Adjust the value of frequency to become less than 13.824000MHz±15Hz and Lock protect.
   Command
   PCLK .... ”nc xx” (enter) xx : 00-3F (hex)
   “nc” (enter)
   BCLK .... ”sfr xx xx” (enter) xx xx : 00 00-01 FF (hex)
   “sfr” (enter)
   “wpw 02”

Note:

2 commands (“nc xx” and “nc” / “sfr xx xx” and “sfr”) are necessary to fix the value.
If frequency is higher than 13.824000MHz, then increse adjustment value.
If frequency is lower than 13.824000MHz, then decrese adjustment value.

Fig.1 Configuration

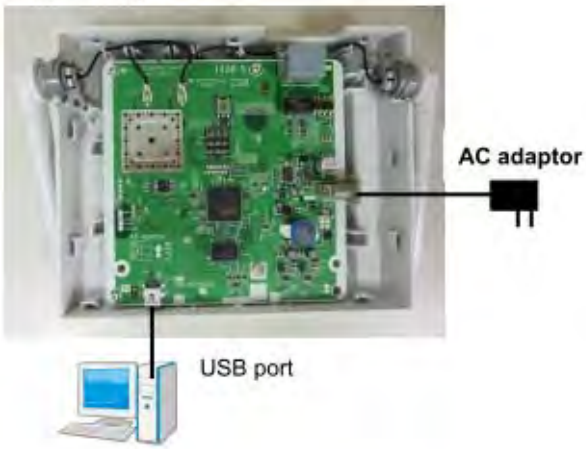
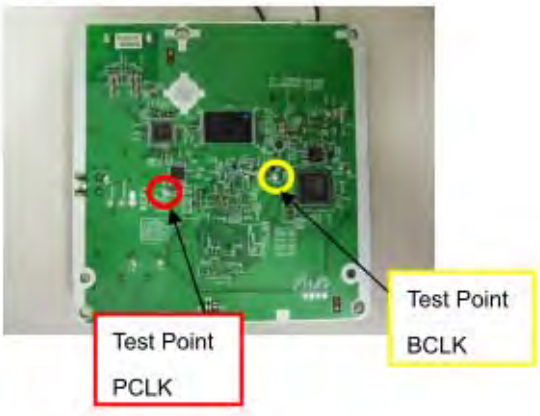


Fig.2 Test Points



12 Miscellaneous

12.1. Terminal guide of ICs, Transistors and Diodes

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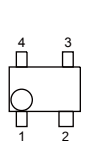
<td> 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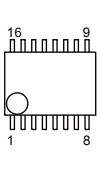
<td> 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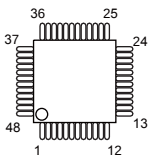
<td> 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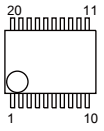
<td> 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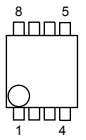
<td> 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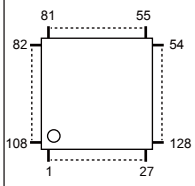
<td> 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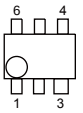
<td> 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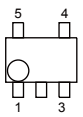
<td> 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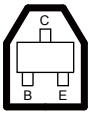
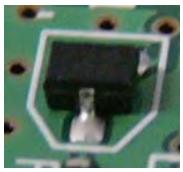
<td> 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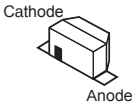
<td> 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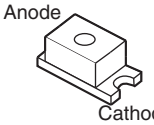
<td> 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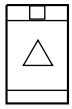
<td> 

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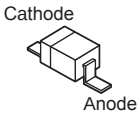
<td> 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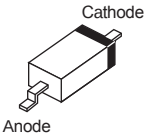
<td> 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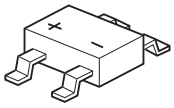
<td> 

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12.2. How To Replace a Flat Package IC

Even if you do not have the special tools (for example, a spot heater) to remove the Flat IC, with some solder (large amount), a soldering iron and a cutter knife, you can easily remove the ICs that have more than 100 pins.

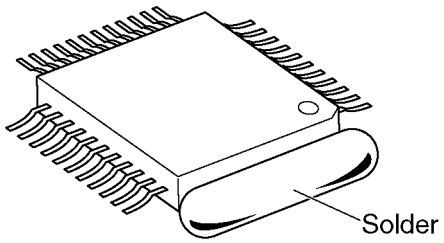
12.2.1. Preparation

- PbF (: Pb free) Solder
- Soldering Iron
  Tip Temperature of 700°F ± 20°F (370°C ± 10°C)
  Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.
- Flux
  Recommended Flux: Specific Gravity → 0.82.
  Type → RMA (lower residue, non-cleaning type)

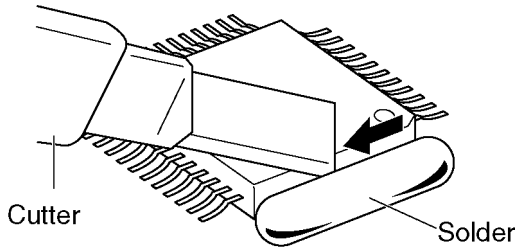
Note: See **About Lead Free Solder (PbF: Pb free)** (P.3).

12.2.2. Removal Procedure

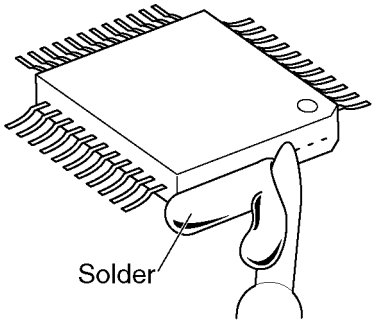
1. Put plenty of solder on the IC pins so that the pins can be completely covered.
   Note:
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.



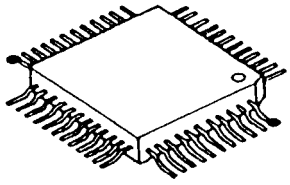
3. While the solder melts, remove it together with the IC pins.



When you attach a new IC to the board, remove all solder left on the land with some tools like a soldering wire. If some solder is left at the joint on the board, the new IC will not be attached properly.

12.2.3. Procedure

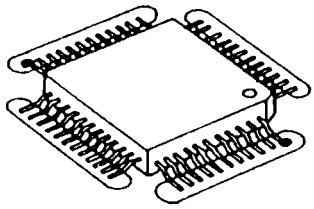
1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.



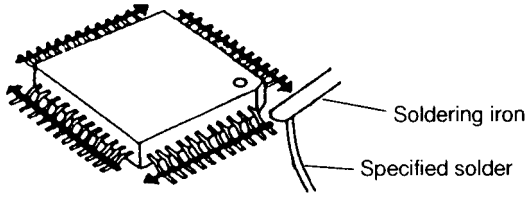
● - - - - - - Temporary soldering point.

Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.

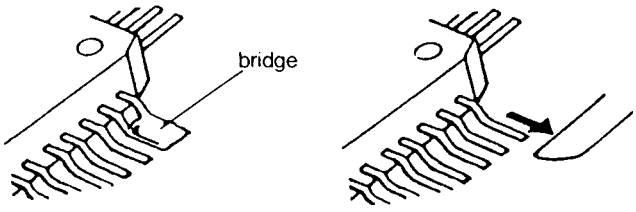


3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.



12.2.4. Removing Solder From Between Pins

1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.



12.3. How to Replace the LLP (Leadless Leadframe Package) IC and IC ground plate

12.3.1. Preparation

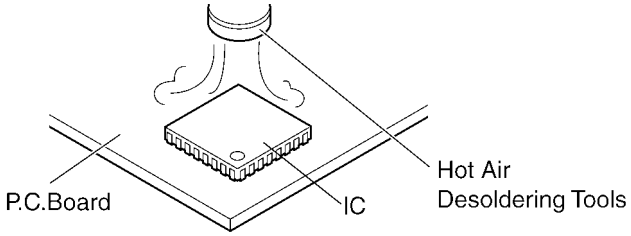
- PbF (: Pb free) Solder
- Soldering Iron
  Tip Temperature of 700 °F ± 20 °F (370 °C ± 10 °C)
  Note:
  We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.
- Hot Air Desoldering Tool
  Temperature: 608 °F ± 68 °F (320 °C ± 20 °C)

12.3.2. Caution

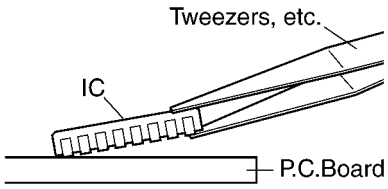
- To replace the IC efficiently, choose the right sized nozzle of the hot air desoldering tool that matches the IC package.
- Be careful about the temperature of the hot air desoldering tool not to damage the PCB and/or IC.

12.3.3. How to Remove the IC

1. Heat the IC with a hot air desoldering tool through the P.C.Board.



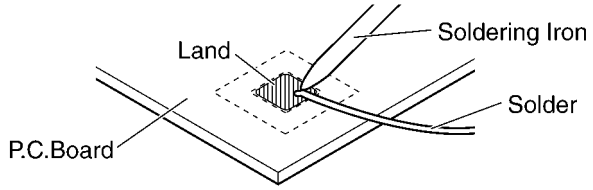
2. Pick up the IC with tweezers, etc. when the solder is melted completely.
   Note:
   • Be careful not to touch the peripheral parts with tweezers, etc. They are unstable.



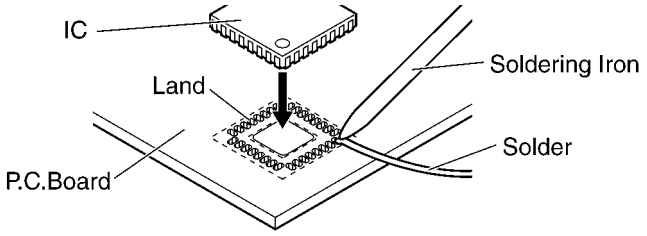
3. After removing the IC, clean the P.C.Board of residual solder.

12.3.4. How to Install the IC

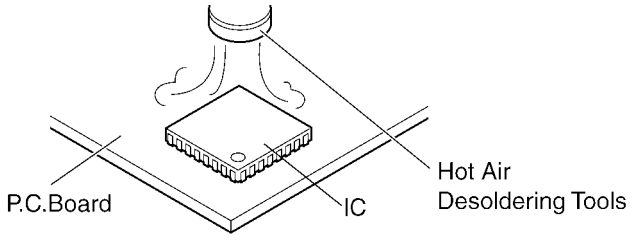
1. Place the solder a little on the land where the radiation GND pad on IC bottom is to be attached.



2. Place the solder a little on the land where IC pins are to be attached, then place the IC.
   Note:
   • When placing the IC, the positioning should be done very carefully.



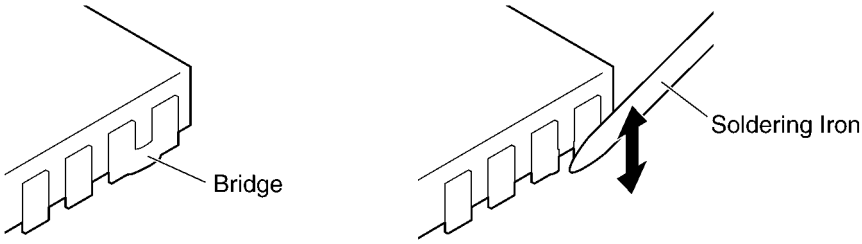
3. Heat the IC with a hot air desoldering tool through the P.C.Board until the solder on IC bottom is melted.
   Note:
   • Be sure to place it precisely, controlling the air volume of the hot air desoldering tool.



4. After soldering, confirm there are no short and open circuits with visual inspection.

12.3.5. How to Remove a Solder Bridge (Doesn't apply to IC ground plate.)

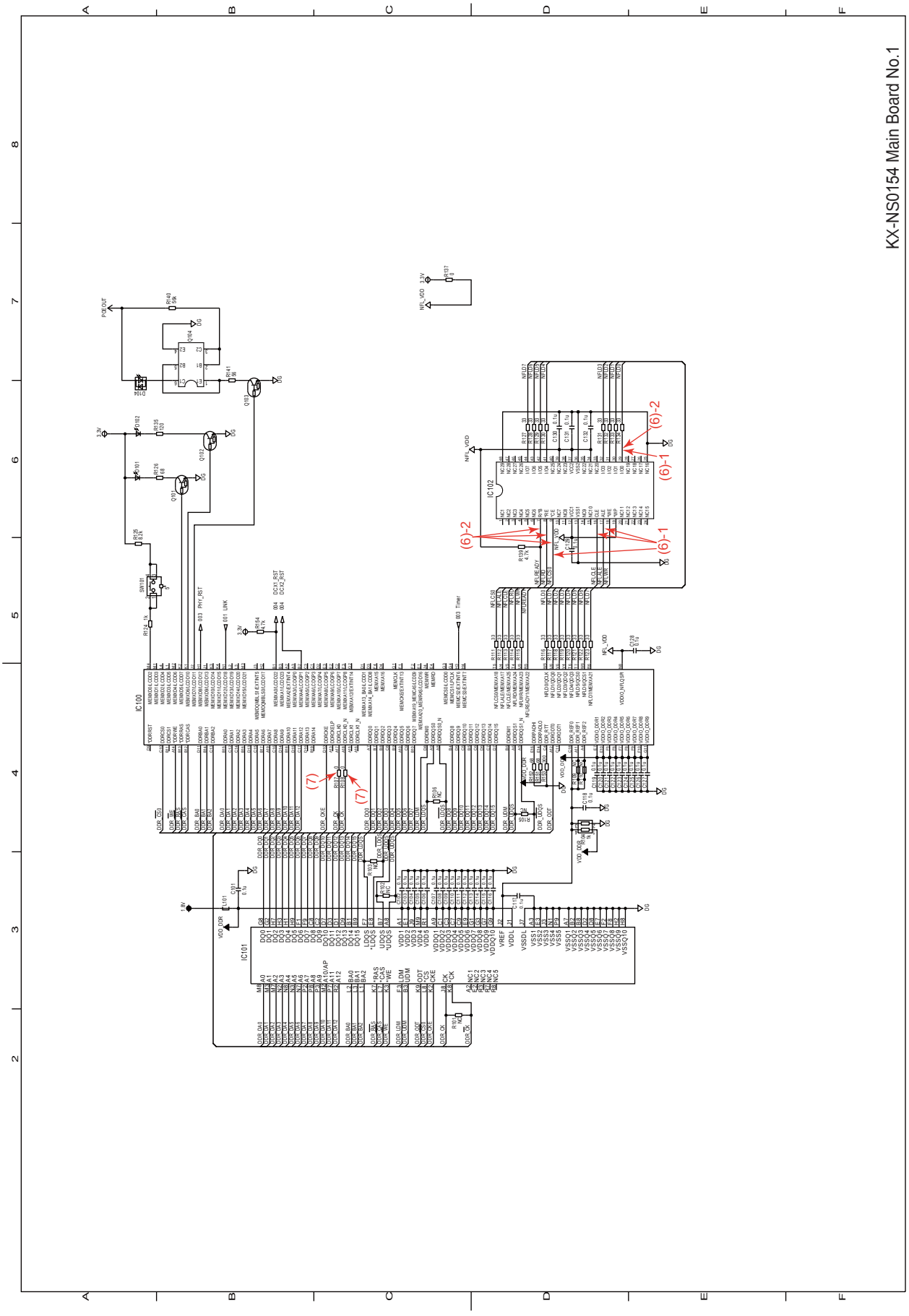
When a Solder Bridge is found after soldering the bottom of the IC, remove it with a soldering iron.



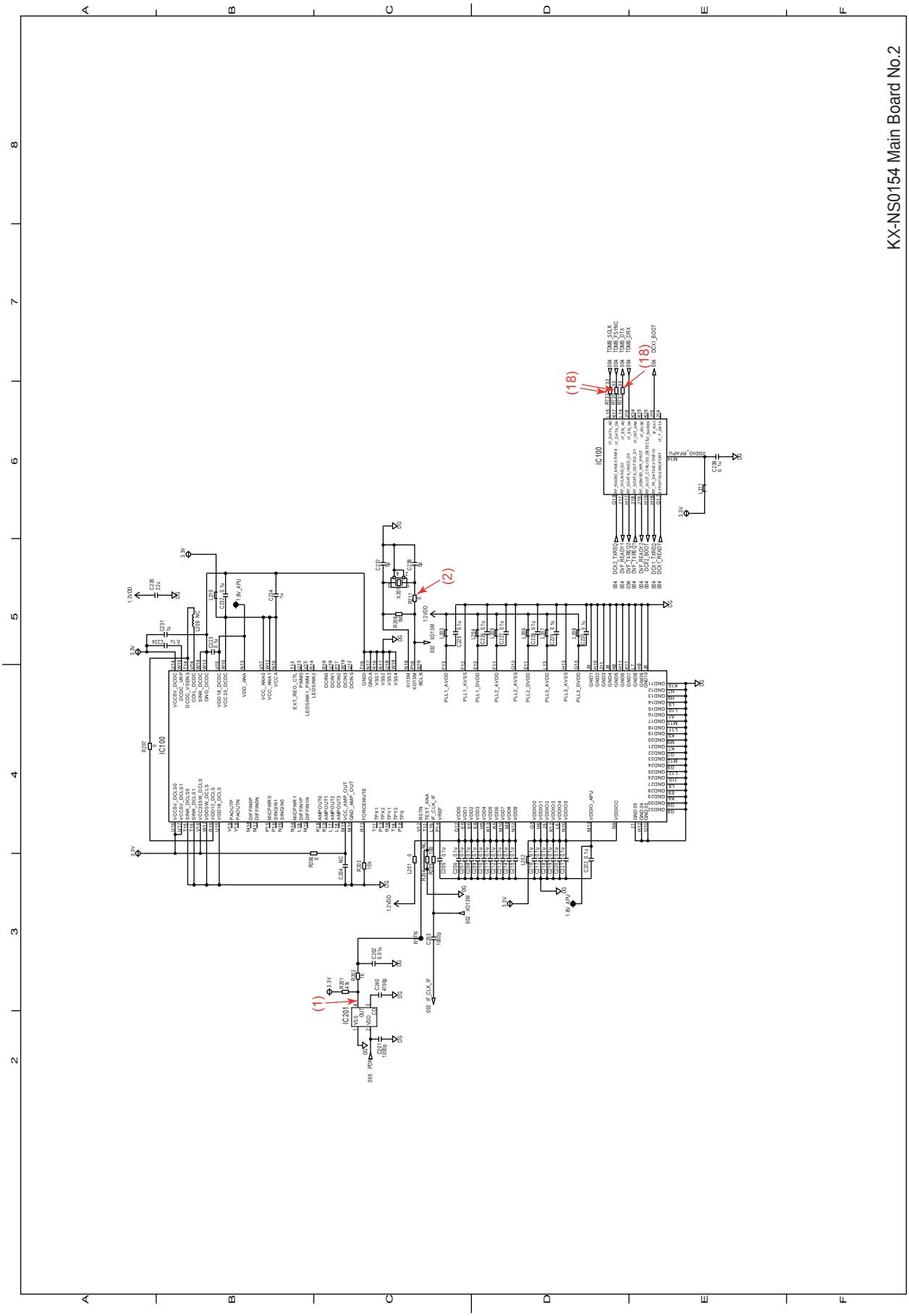
13 Schematic Diagram

13.1. Main Board

13.1.1. No.1



13.1.2. No.2



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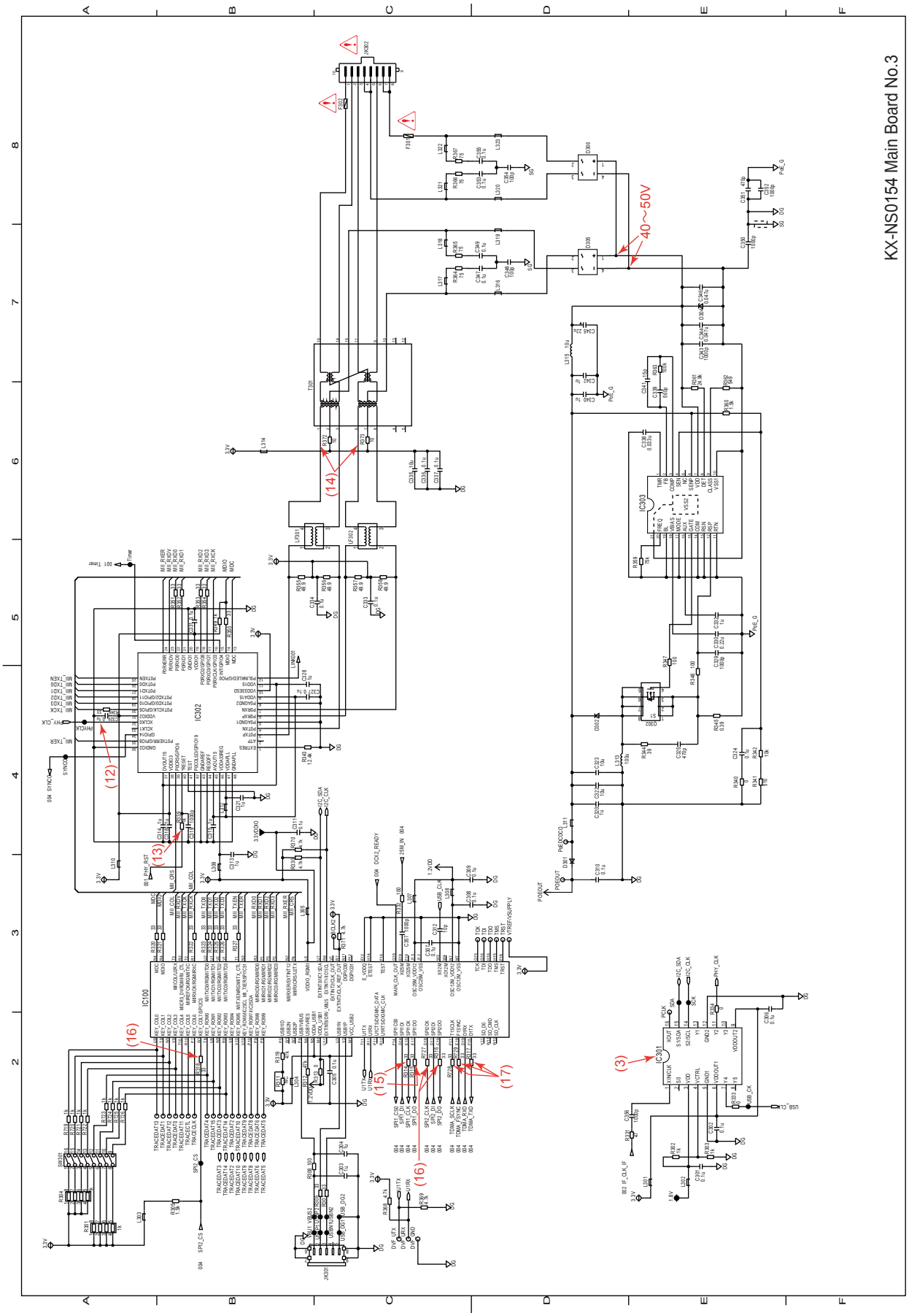
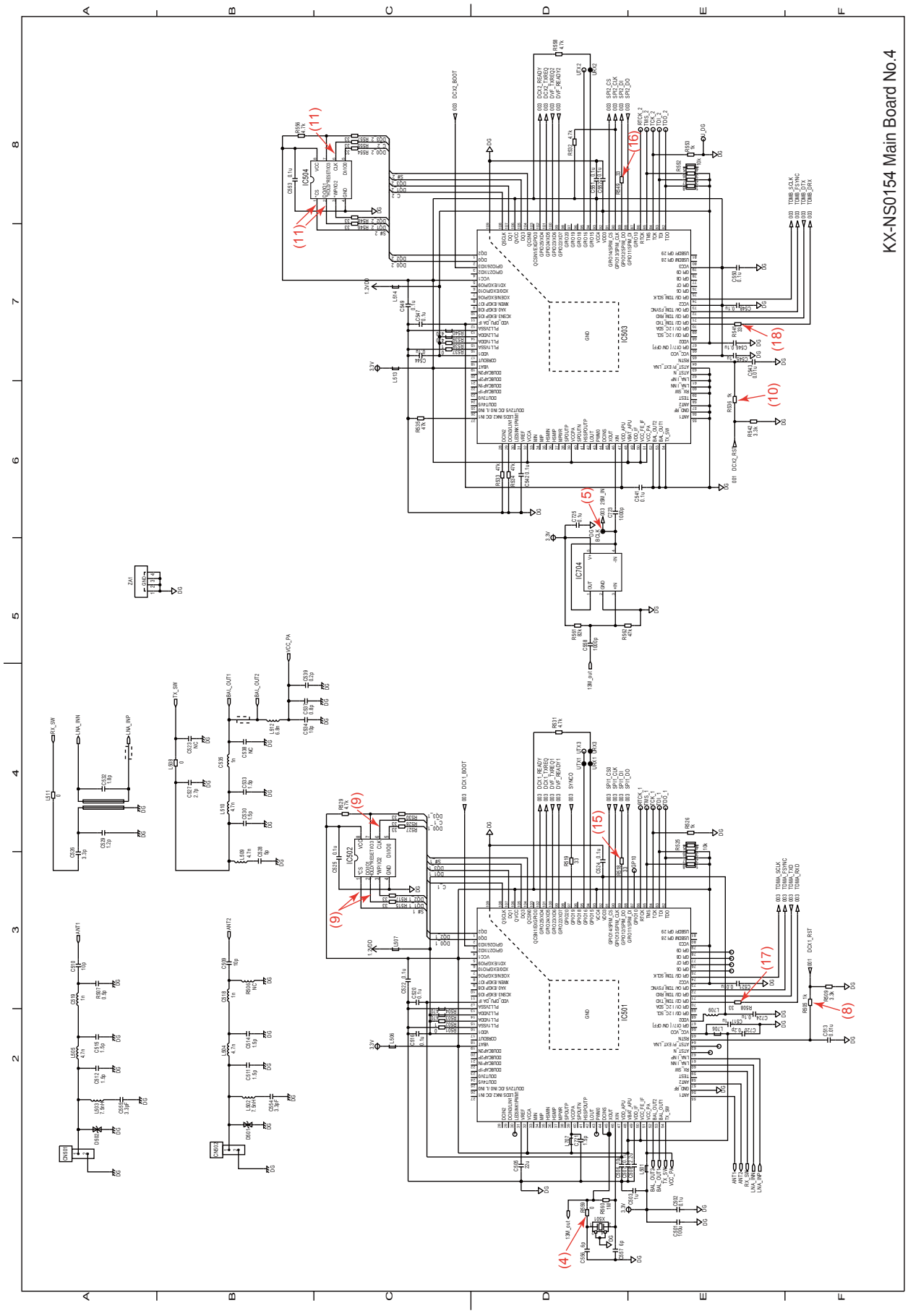

KX-NS0154 Main Board No.3
40~50V
(3)
(12)
(13)
(14)
(15)
(16)
(17)
IC100
IC301
IC302
IC303

13.1.4. No.4



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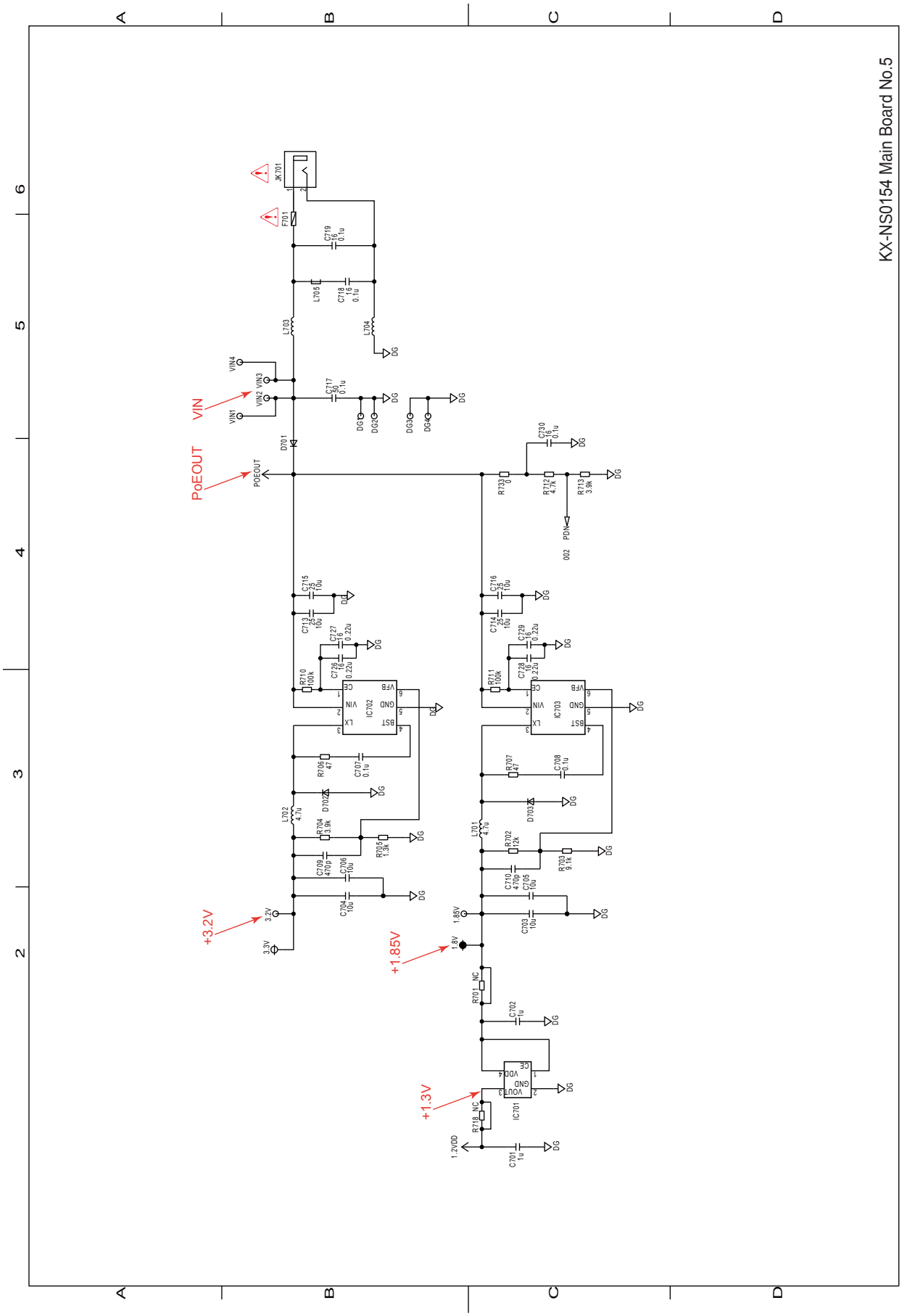
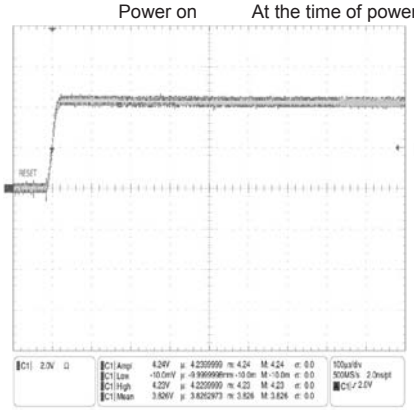

KX-NS0154 Main Board No.5
VIN
PoEOUT
+3.2V
+1.85V
+1.3V
JK701
F701
L703
L704
L705
D701
POEOUT
R733 0
R712 4.7k
R713 3.9k
PDN
002
C730 16 0.1u
C719 16 0.1u
C718 16 0.1u
C717 50 0.1u
VIN4
VIN3
VIN2
VIN1
DG
DG2
DG3
DG4
C715 25 10u
C713 25 10u
C727 16 0.22u
C726 16 0.22u
R710 100k
IC702
VFB
CE
VIN
GND
LX
BST
R706 47
C707 0.1u
D702
L702 4.7u
R704 3.9k
R705 1.3k
C709 470p
C706 10u
C704 10u
3.2V
3.3V
C716 25 10u
C714 25 10u
C729 16 0.22u
C728 16 0.22u
R711 100k
IC703
R707 47
C708 0.1u
D703
L701 4.7u
R702 12k
R703 9.1k
C710 470p
C705 10u
C703 10u
1.85V
1.8V
R701_NC
C702 1u
IC701
VOUT
VDD
R718_NC
1.2VDD
C701 1u

13.2. Waveform

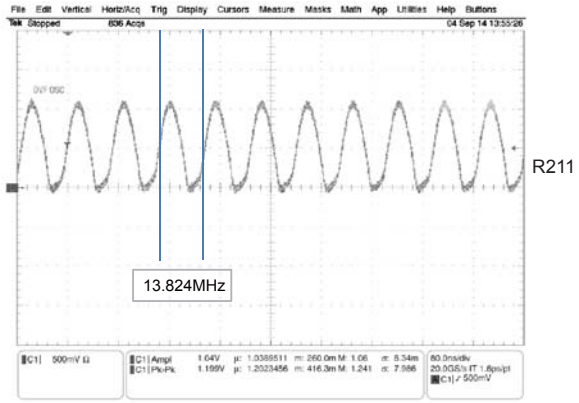
13.2.1. No.(1)-(7)

(1) RESET(IC201)

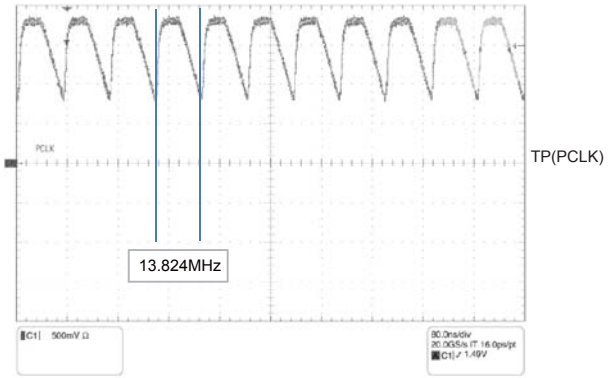
Power on At the time of power supply ON



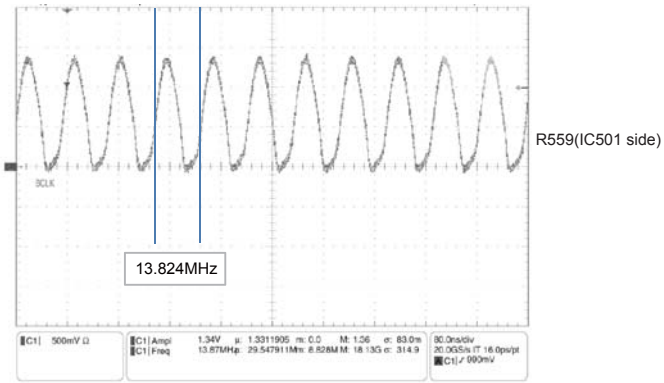
(2) PCLK－DVF OSC=13.824MHz (IC100)



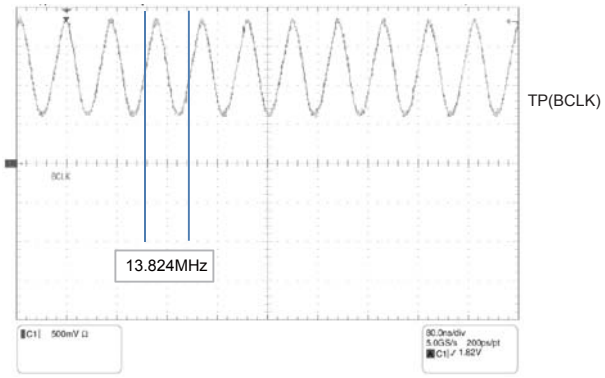
(3) PLL CLK =13.824MHz (IC301)



(4) RF IC CLK = 13.824MHz(IC501)

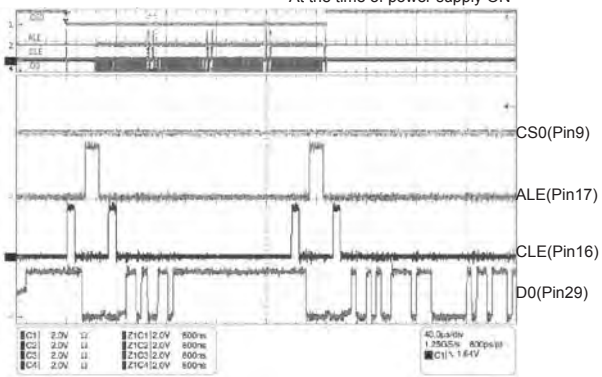


(5) RF OPAMP CLK =13.824MHz(IC704)



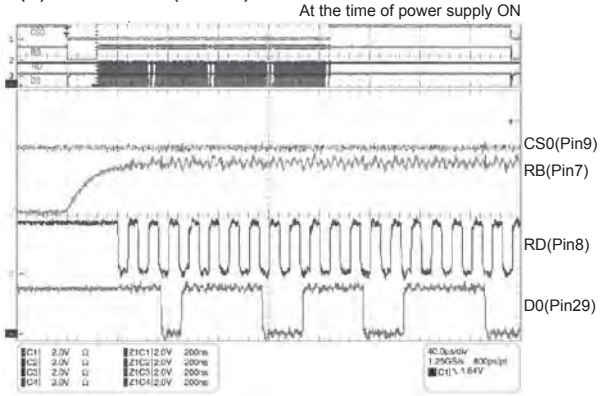
(6)-1 NAND IF(IC102)

At the time of power supply ON

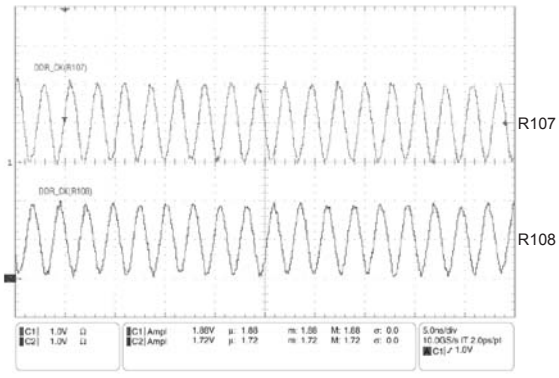


(6)-2 NAND IF(IC102)

At the time of power supply ON

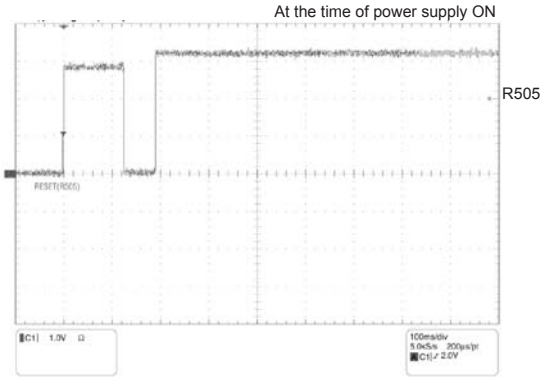


(7)RAM(DDR) IF (IC100)

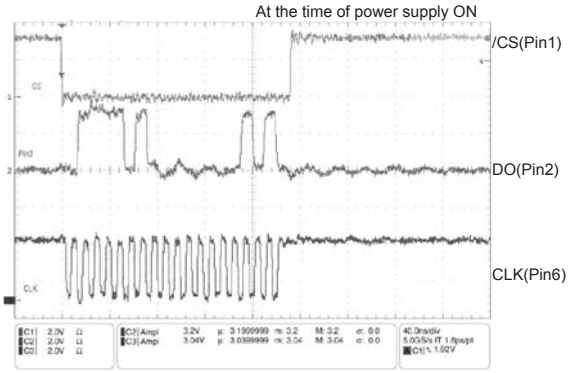


13.2.2. No.(8)-(15)

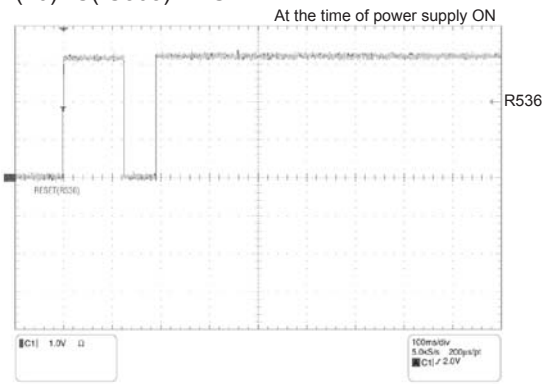
(8)RF(IC501) RESET at Power ON



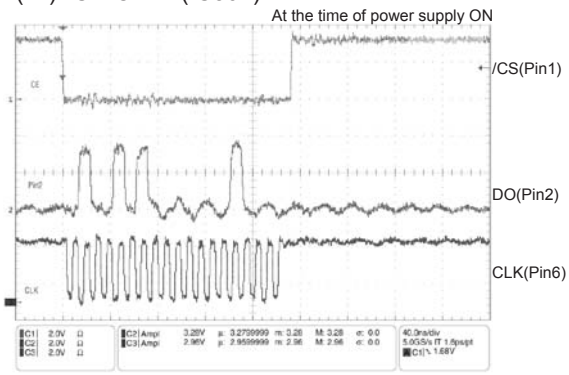
(9)RF ROM IF(IC502)



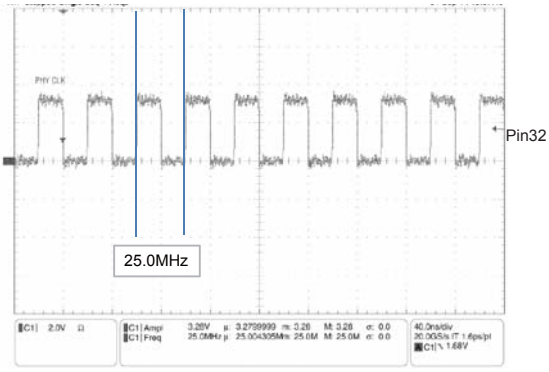
(10)EC(IC503) RESET



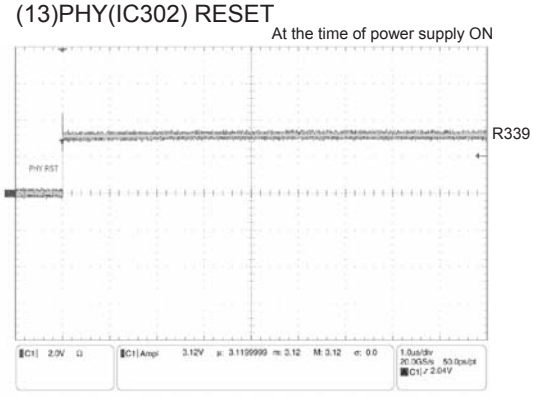
(11)EC ROM IF(IC504)



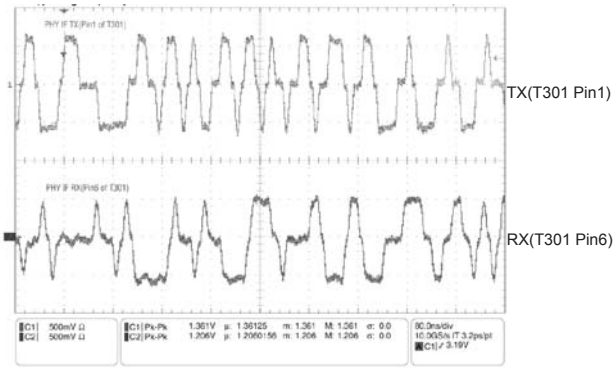
(12)PHY(IC302) CLK = 25MHz



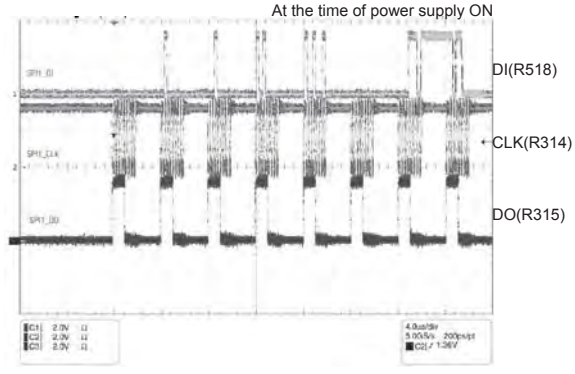
(13)PHY(IC302) RESET



(14)PHY(IC302) IF TX/RX



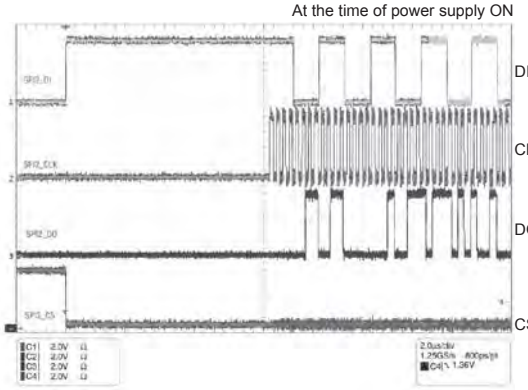
(15)SPI RF(IC501)-DVF(IC100)



13.2.3. No. (16)-(18)

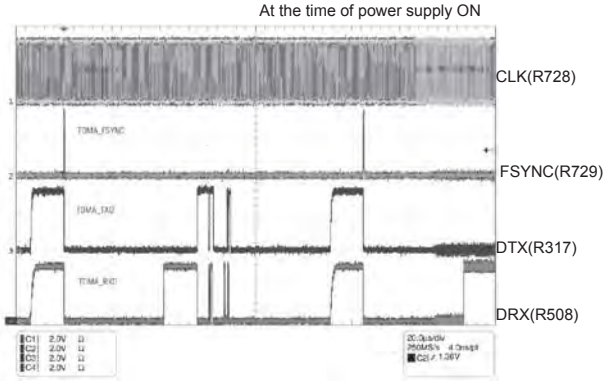
(16)SPI EC(IC503)-DVF(IC100)

At the time of power supply ON

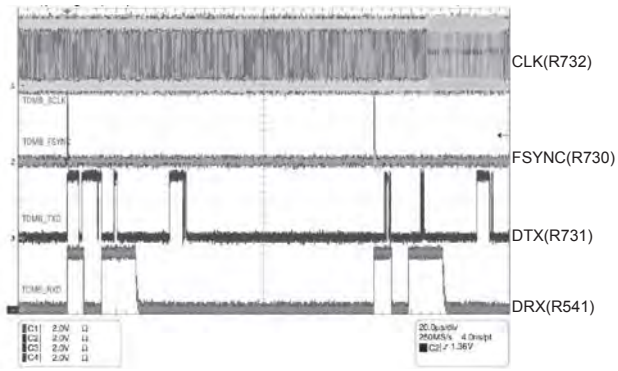


(17)TDM RF(IC501)-DVF(IC100)

At the time of power supply ON

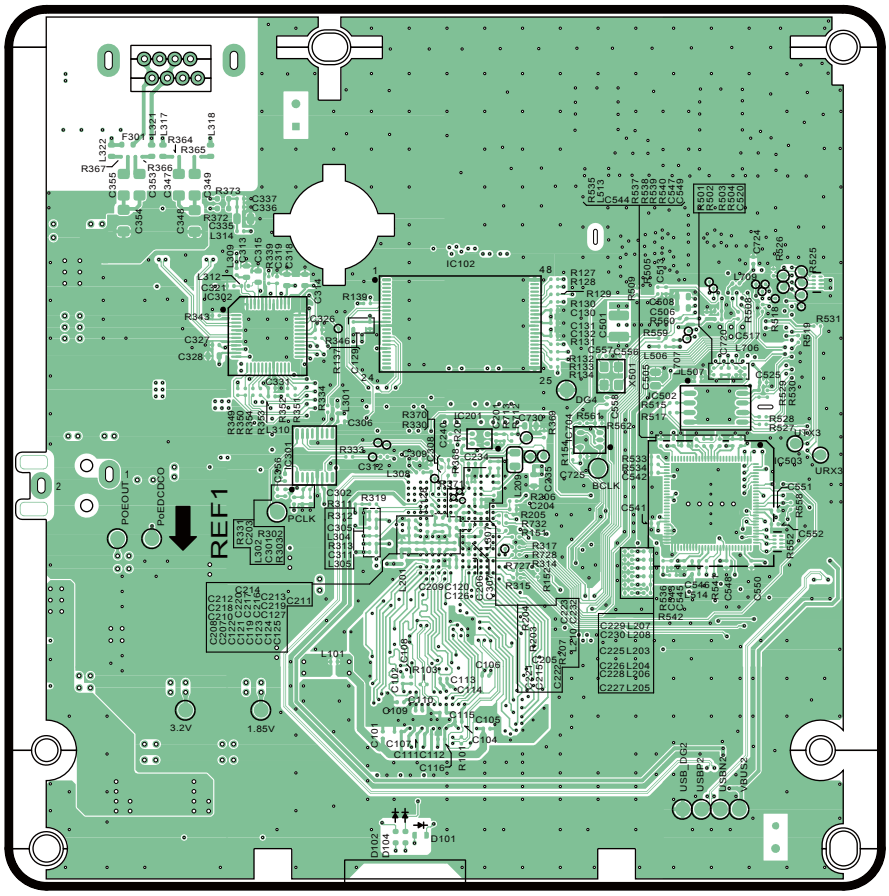


(18)TDM EC(IC503)-DVF(IC100)



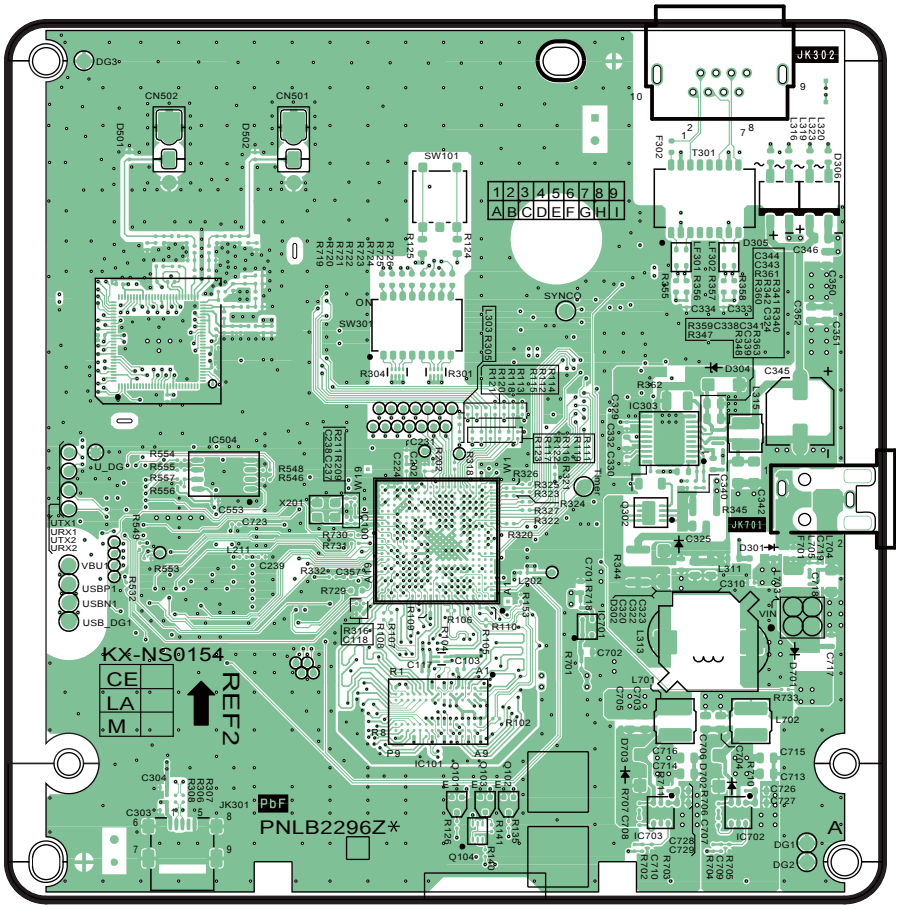
14 Printed Circuit Board

14.1. Component View



KX-NS0154 MAIN BOARD Bottom View

14.2. Bottom View

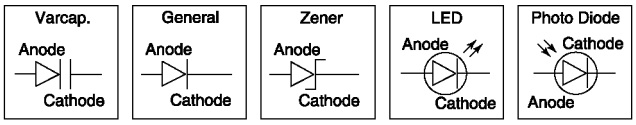


KX-NS0154 MAIN BOARD Component View

15 Appendix Information of Schematic Diagram

Note:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.



Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of there components, use only manufacturer's specified parts.

16 Exploded View and Replacement Parts List

16.1. IC Data

16.1.1. IC100 (DVF99)

Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
A1	GND	GND	GND	
A2	MEMXA2_EXTINT4	not used	O	
A3	MEMXA3_LCDGP0	not used	O	
A4	DDR_REF2	DDR Reference Voltage Input	I	
A5	DDRDQS1_N	DDR Data Strobe 1 Negative	I/O	
A6	DDRDQS1	DDR Data Strobe 1 Positive	I/O	
A7	DDRDQ0	DDR Data	I/O	
A8	DDRDQS0_N	DDR Data Strobe 0 Negative	I/O	
A9	DDRDQS0	DDR Data Strobe 0 Positive	I/O	
A10	DDRDQ5	DDR Data	I/O	
A11	DDR_REF1	DDR Reference Voltage Input	I	
A12	DDRODT0	DDR On-Die Termination	O	
A13	DDRCKELP	DDR Low Power Clock Enable (Not used)	O	
A14	DDRWE_N	DDR Write Enable Active Low	O	
A15	DDRCLK1	DDR Diff Clock 1 Positive (Not used)	O	
A16	DDRCLK1_N	DDR Diff Clock 1 Negative (Not used)	O	
A17	DDRCLK0	DDR Diff Clock 0 Positive	O	
A18	DDRCLK0_N	DDR Diff Clock 0 Negative	O	
A19	DDRA7	DDR Command/Address Bus	O	
B1	MEMXA0_LCDD22	IC501 reset	O	
B2	MEMXA4_LCDGP1	IC502 reset	O	
B3	MEMXA1_LCDD23	not used	O	
B4	DDRDQ8	DDR Data	I/O	
B5	DDRDQ11	DDR Data	I/O	
B6	DDRDM1	DDR Data Mask	O	
B7	DDRDQ1	DDR Data	I/O	
B8	DDRDQ2	DDR Data	I/O	
B9	DDRDQ4	DDR Data	I/O	
B10	DDRDQ7	DDR Data	I/O	
B11	DDRCS1	DDR CS (Not used)	O	
B12	DDRCAS_N	DDR Column Select Active Low	O	
B13	DDRRAS_N	DDR Row Select Active Low	O	
B14	DDRBA1	DDR Bank Address Bus	O	
B15	DDRA0	DDR Command/Address Bus	O	
B16	DDRA3	DDR Command/Address Bus	O	
B17	DDRA6	DDR Command/Address Bus	O	
B18	DDRA10	DDR Command/Address Bus	O	
B19	DDRA14	DDR Command/Address Bus (Not used)	O	
C1	MEMXA6_LCDGP3	not used	O	
C2	MEMXA10_LCDGP7	not used	O	
C3	MEMXA5_LCDGP2	not used	O	
C4	DDR_RTT	DDR Receiver Termination Compensation	I	
C5	DDRDQ10	DDR Data	I/O	
C6	DDRDQ12	DDR Data	I/O	
C7	DDRDQ14	DDR Data	I/O	
C8	DDRDQ3	DDR Data	I/O	
C9	DDRDQ6	DDR Data	I/O	
C10	DDRCS0	DDR CS	O	
C11	DDRODT1	DDR On-Die Termination (Not used)	O	
C12	DDRA1	DDR Command/Address Bus	O	
C13	DDRBA2	DDR Bank Address Bus	O	
C14	DDRA2	DDR Command/Address Bus	O	
C15	DDRA5	DDR Command/Address Bus	O	
C16	DDRA8	DDR Command/Address Bus	O	
C17	DDRA12	DDR Command/Address Bus	O	
C18	DDR_REF0	DDR Reference Voltage Input	I	
C19	SPI2DO	SPI2 Serial Data Out	O	
D1	MEMXA13_BA0_LCDD1	not used	O	
D2	MEMXA7_LCDGP4	not used	O	

Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
D3	MEMXA14_BA1_LCDD8	not used	O	
D4	MEMXA16	not used	O	
D5	DDRDQ9	DDR Data	I/O	
D6	DDRDQ13	DDR Data	I/O	
D7	DDRDQ15	DDR Data	I/O	
D8	DDRDM0	DDR Data Mask	O	
D9	DDRRST_N	DDR Reset Active Low (Not used)	O	
D10	DDRCKE	DDR Clock Enable	O	
D11	DDRBA0	DDR Bank Address Bus	O	
D12	VDD	1.2 V Core	PI	
D13	DDRA4	DDR Command/Address Bus	O	
D14	DDRA9	DDR Command/Address Bus	O	
D15	DDRA11	DDR Command/Address Bus	O	
D16	DDRA13	DDR Command/Address Bus (Not used)	O	
D17	SPI2DI	SPI2 Serial Data In	I	
D18	SPI2CK	SPI2 Clock	O	
D19	D1RX	TDM1 RX Data	I	
E1	MEMXA20_MEMRAS_LCDD16	not used	O	
E2	MEMXA9_LCDGP6	not used	O	
E3	MEMXA8_LCDGP5	not used	O	
E4	MEMRD	not used	O	
E5	VDD	1.2 V Core	PI	
E6	VDD	1.2 V Core	PI	
E7	VDDIO_DDR	DDR I/O	PI	
E8	VDD	1.2 V Core	PI	
E9	GND	GND Connection	GND	
E10	VDDIO_DDR	DDR I/O	PI	
E11	PLL2_DVDD	PLL2 Digital	PI	
E12	E_VDDRQ	2.5 V Power Supply for Filtering (Not usd)	PO	
E13	PLL1_DVDD	PLL1 Digital	PI	
E14	DDRPADLO	DDR Low Drive Strength	I	
E15	SPI1CK	SPI1 Clock	O	
E16	DDRPADHI	DDR High Drive Strength	I	
E17	SPI1DO	SPI1 Serial Data Out	O	
E18	F1SYNC	TDM1 Frame Sync	I	
E19	XI25M	Clock input (13.824MHz for internal clock)	I	
F1	MEMCKE_EXTINT13	not used	O	
F2	MEMXA19_MEMCAS_LCDD9	not used	O	
F3	MEMXA11_LCDGP8	not used	O	
F4	MEMXA15	not used	O	
F5	VDDIO_DDR	DDR I/O	PI	
F6	VDDIO_DDR	DDR I/O	PI	
F7	VDDIO_DDR	DDR I/O	PI	
F8	VDDIO_DDR	DDR I/O	PI	
F9	VDDIO_DDR	DDR I/O	PI	
F10	VDDIO_DDR	DDR I/O	PI	
F11	PLL2_AVDD	PLL2 Analog	PI	
F12	PLL1_AVSS	PLL1 Analog GND	P	
F13	PLL1_AVDD	PLL1 Analog	PI	
F14	SPI1CS0	SPI1 CS	O	
F15	D1TX	TDM1 TX Data	O	
F16	TEST	Test Mode Select (Not used)	I	
F17	T1SCLK	TDM1 SCLK	I	
F18	TRST	JTAG Reset	I	
F19	XO25M	25 MHz Crystal Feedback (Not used)	O	
G1	MEMCLK	Memory Clock (Not used)	O	
G2	MEMXA12_EXTINT14	Memory Address (Not used)	O	
G3	MEMCS0_LCDD0	not used	O	
G4	MEMCS1_LPCLK	not used	O	
G5	VDDIO	General I/O	PI	
G6	GND	GND Connection	P	
G7	GND	GND Connection	P	
G8	GND	GND Connection	P	
G9	GND	GND Connection	P	
G10	GND	GND Connection	P	
G11	VDDIO_DDR	DDR I/O	PI	
G12	PLL2_AVSS	PLL2 Analog GND	P	

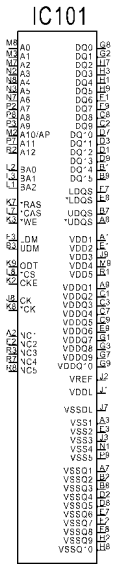
Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
G13	PLL3_DVDD	PLL3 Digital	PI	
G14	SPI1DI	SPI2 Serial Data In	I	
G15	TCK	JTAG Clock	I	
G16	TDI	JTAG Data In	I	
G17	EXTINT15_SYNCPORT	IC501 SPI handshake	I	
G18	RF_RADIO_EN_EXTINT9	IC503 SPI handshake	O	
G19	MAIN_CLK_OUT	DVF-DCX(IC503) handshake for SPI	I	
H1	MEMXD8_LCDD12	PHY RESET	O	
H2	MEMDQMBLS0_LCDD17	not used	O	
H3	MEMCS2_EXTINT6	Timer from PHY	I	
H4	MEMCS3_EXTINT7	not used	O	
H5	VDD	1.2 V Core	PI	
H6	VDDIO	General I/O	PI	
H7	GND	GND Connection	P	
H8	GND	GND Connection	P	
H9	GND	GND Connection	P	
H10	GND	GND Connection	P	
H11	GND	GND Connection	P	
H12	GND	GND Connection	P	
H13	PLL3_AVSS	PLL3 Analog GND	P	
H14	ETEST	EFUSE Test signal (Not used)	I	
H15	TMS	JTAG Mode Select	I	
H16	TDO	JTAG Data Out	O	
H17	RF_SDATA_IN_SD_D3	IC503 SPI handshake	O	
H18	RF_TR_DATA_EXTINT10	IC501 SPI handshake	I	
H19	RF_SLOT_CTRL_SD_DETECT	IC501 SPI handshake	O	
J1	MEMXD9_LCDD13	not used	O	
J2	MEMXD7_LCDD11	Blue LED control	O	
J3	MEMDQMBLS1_EXTINT5	not used	O	
J4	MEMWR	Memory Write (Not used)	O	
J5	VDDIO	General I/O	PI	
J6	GND	GND Connection	P	
J7	GND	GND Connection	P	
J8	GND	GND Connection	P	
J9	GND	GND Connection	P	
J10	GND	GND Connection	P	
J11	GND	GND Connection	P	
J12	OSC25M_VSS	Oscillator 25 MHz GND	P	
J13	OSC25M_VDD12	Oscillator 25 MHz 1.2 V	PI	
J14	IF_T_DATA	GPIO (Not used)	O	
J15	IF_RX1	IC501 SPI handshake	O	
J16	RF_SEN_SD_WR_PROT	IC501 SPI handshake	O	
J17	RF_SCLK_SD_D2	IC501 SPI handshake	O	
J18	RF_SDATA_OUT_SD_D1	IC501 SPI handshake	O	
J19	IF_EN_DA	TDM-DRX for IC503	I	
K1	MEMXD6_LCDD10	Red LED control	O	
K2	MEMXD5_LCDD7	Green LED control	O	
K3	MEMXD10_LCDD14	not used	O	
K4	MEMXD11_LCDD15	not used	O	
K5	VDD	1.2 V Core	PI	
K6	GND	GND Connection	P	
K7	GND	GND Connection	P	
K8	GND	GND Connection	P	
K9	GND	GND Connection	P	
K10	GND	GND Connection	P	
K11	GND	GND Connection	P	
K12	VDDIO	General I/O	PI	
K13	VDD	1.2 V Core	PI	
K14	IF_INT_ANA	GPIO (Not used)	O	
K15	IF_MLSE	GPIO (Not used)	O	
K16	IF_NARES	GPIO (Not used)	O	
K17	IF_DATA_DA	TDM FSYNC for IC503	I	
K18	AMPOUT0	Output of Out Amplifier 0 (Not used)	O	
K19	AMPOUT1	Output of Out Amplifier 1 (Not used)	O	
L1	MEMXD3_LCDD5	Not used	O	
L2	MEMXD13_LCDD19	not used	O	
L3	MEMXD14_LCDD20	not used	O	

Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
L4	MEMXD2_LCDD4	Not used	O	
L5	VDDIO_RGMII	RGMII I/O	PI	
L6	VDDIO	General I/O	PI	
L7	GND	GND Connection	P	
L8	GND	GND Connection	P	
L9	GND	GND Connection	P	
L10	GND	GND Connection	P	
L11	GND	GND Connection	P	
L12	GND	GND Connection	P	
L13	PLL3_AVDD	PLL3 Analog	PI	
L14	IF_EN_AD	TDM-DTX for IC503	O	
L15	IF_DATA_AD	TDM-SCLK for IC503	I	
L16	IF_CLK_IF	RFAPU/APU Interface Clock out (Not used)	O	
L17	AMPOUT2	Output of Out Amplifier 2 (Not used)	O	
L18	AMPOUT3	Output of Out Amplifier 3 (Not used)	O	
L19	DIFFIN1P	Positive Input In Amplifier 0 (Not used)	I	
M1	MEMXD1_LCDD3	Not used	O	
M2	MEMXD4_LCDD6	Not used	O	
M3	MEMXD15_LCDD21	not used	O	
M4	MEMXD0_LCDD2	Reset SW detect	I	
M5	VCC_USB2	USB2 I/O power supply	PI	
M6	VDDL_USB1	USB1 1.2 V	PI	
M7	OSC12M_VSS	Oscillator 12 MHz GND	P	
M8	VDD	1.2 V Core	PI	
M9	GND	GND Connection	P	
M10	VDD	1.2 V Core	PI	
M11	GND	GND Connection	P	
M12	GND	GND Connection	P	
M13	VDDIO_APU	DAIF I/O Voltage 1.8 V	PO	
M14	VDDIO_RFAPU	RFAPU I/O	PI	
M15	VCC_AMP_OUT	VCC for AFE Out Amplifiers	PI	
M16	GND_AMP_OUT	GND for AFE Out Amplifiers	P	
M17	DIFFIN0N	Negative Input In Amplifier 0 (Not used)	I	
M18	DIFFIN0P	sitive Input In Amplifier 0 (Not used)	I	
M19	DIFFIN1N	Negative Input In Amplifier 1 (Not used)	I	
N1	MEMXD12_LCDD18	PHY link signal detect	I	
N2	MIIRXER_EXTINT12	MII Rx Error	I	
N3	MII_TXER_SPI1CS1	MII TX Error	O	
N4	MDC	Management Data Clock	O	
N5	VDDRA_USB1	USB1 3.3 V	PI	
N6	USB1VRES	USB1 Reference Circuit Input	I	
N7	OSC12M_VDD12	Oscillator 12 MHz 1.2 V	PI	
N8	VDDIO_NFLQSPI	QSPI I/O	PI	
N9	VDDIOC	Keyboard I/O	PI	
N10	VDDIO	General I/O	PI	
N11	DGPIO30	GPIO (Not used)	O	
N12	VDD	1.2 V Core	PI	
N13	VDD_ANA	1.8 V Core Analog Output Voltage	PO	
N14	MICPWR1	Microphone Power 1 Output (Not used)	PO	
N15	SINGIN0	Input of Single-ended In Amplifier 0 (Not used)	I	
N16	VCCA	Analog VCC	PI	
N17	GNDA	Analog GND	P	
N18	XI13M	13.824 MHz XTAL Input	I	
N19	BCLK	BCLK output (Not used)	O	
P1	MIIRXD1_RGMIIRD1	MII RX Data	I	
P2	MIIRXD3_RGMIIRD3	MII RX Data	I	
P3	MIIRXD2_RGMIIRD2	MII RX Data	I	
P4	MIIRXCRS_U2TX	MII_RXCRS	I	
P5	USB1ID	USB1 ID	I	
P6	USB1VBUS	USB1 Vbus	PI	
P7	KEY_COL6	Trace (Not used)	O	
P8	KEY_ROW9	Trace (Not used)	O	
P9	KEY_ROW8	Trace (Not used)	O	
P10	KEY_ROW7_IIC2SDA	Trace (Not used)	O	
P11	U1CTS_DIGMIC_DATA	UART1 Clear To Send (Not used)	I	
P12	DGPIO31	GPIO (Not used)	O	
P13	TPX2	Not used	I/O	

Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
P14	VREF	Reference Voltage Powered by VCCA for Filtering	PO	
P15	MICPWR0	Microphone Power 0 Output	PO	
P16	SINGIN1	Input of Single-ended In Amplifier 1 (Not used)	I	
P17	DCIN2	DC A/D Input 2 (Not used)	I	
P18	TPS	Not used	I/O	
P19	XO13M	13.824 MHz XTAL out (NC in external oscillator mode)	O	
R1	MIIRXCK_RGMIIRXC	RX Clock	I	
R2	MIICRS_DV_RGMIIRX_CTL	MII Carrier Sense	I	
R3	MIIRXD0_RGMIIRD0	MII RX Data	I	
R4	MDIO	Management Data I/O Line	I/O	
R5	NFLREADY1_MEMXA22	NFL Ready	I	
R6	NFLD7_MEMXA21	NFL Data	I/O	
R7	EXTINT3_CLK_REF_OUT	STRAP pin	I	
R8	EXTINT1_IIC1SCL	I2C clock	O	
R9	KEY_ROW3	DIP SW detect	I	
R10	KEY_COL5	Trace (Not used)	O	
R11	U1RX	UART1 Serial Data Input	I	
R12	U1RTS_DIGMIC_CLK	UART1 Ready To Send (Not used)	O	
R13	FORCEMUTE	Hardware Force Mute Function	I	
R14	LEDSINK2	LED Sink 2 (Not used)	O	
R15	VDD12_DCLS	Class D Digital 1.2 V (Input)1	PI	
R16	VSS	Digital GND of Analog Blocks	P	
R17	VSS	Digital GND of Analog Blocks	P	
R18	TPY1	Not used	I/O	
R19	DCIN0	DC A/D Input 0 (Not used)	I	
T1	MIITXEN_RGMIITX_CTL	MII TX Enable	O	
T2	MIIREFCK_RGMIITXC	MIITXCK	I	
T3	MIICOL_U2RX	MII Collision	O	
T4	NFLRD_MEMXA24	NFL Read	O	
T5	NFLCS0_MEMXA18	NFL Chip Select	O	
T6	NFLD4_QDQ3	NFL Data	I/O	
T7	NFLD5_QCS0	NFL Data	I/O	
T8	KEY_ROW0	DIP SW detect	I	
T9	KEY_COL1	DIP SW detect	I	
T10	KEY_COL4	Trace (Not used)	O	
T11	U1TX	UART1 Serial Data Output	O	
T12	TEST_ANA	Analog Test Select (Not used)	I	
T13	EXT_REG_CTL	Output Enable for External Regulator (Not used)	O	
T14	DCDC_VSENS	Core DCDC Voltage Sense (Not used)	I	
T15	SINK_DCLS	Class D Power Amplifier Ground	P	
T16	SINK_DCLS	Class D Power Amplifier Ground	P	
T17	TPX1	Not used	I/O	
T18	TPY2	Not used	I/O	
T19	GNDI	GND1 Connection	P	
U1	MIITXD1_RGMIITD1	MII TX Data	O	
U2	MIITXD0_RGMIITD0	MII TX Data	O	
U3	USB1N	USB1 Negative	I/O	
U4	NFLALE_MEMXA17	NFL Address Latch	O	
U5	NFLWR_MEMXA23	NFL Write	O	
U6	NFLD1_QDQ0	NFL Data	I/O	
U7	EXTINT0_IIC1SDA	I2C data	I/O	
U8	KEY_ROW1	DIP SW detect	I	
U9	KEY_COL0	DIP SW detect	I	
U10	KEY_ROW6_IIC2SCL	Trace (Not used)	O	
U11	EXTINT8_DRV_Vbus	Not used	I	
U12	DCINS	DC Power Supply Sense (Not used)	I	
U13	PWM0	PWM Output 0 (Not used)	O	
U14	VCC5V_DCDC	5V Supply Voltage Input to the Core DCDC Regulator	PI	
U15	VDD18_DCLS	Class D Digital 1.8 V (Input)	PI	
U16	VCC5V_DCLS	Class D Supply Voltage (Output Amplifiers)	PI	
U17	VCC5V_DCLS	Class D Supply Voltage (Output Amplifiers)	PI	
U18	VSS	Digital GND of Analog Blocks	P	
U19	DCIN1	DC A/D Input 1 (Not used)	I	
V1	MIITXD3_RGMIITD3	MII TX Data	O	
V2	MIITXD2_RGMIITD2	MII TX Data	O	
V3	USB1P	USB1 Positive	I/O	
V4	NFLD3_QDQ2	NFL Data	I/O	

Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
V5	NFLCLE_MEMXA25	NFL Command Latch	O	
V6	NFLD2_QDQ1	NFL Data	I/O	
V7	EXTINT2_CLK_OUT	GPIO (Not used)	O	
V8	KEY_ROW4	Trace (Not used)	O	
V9	KEY_COL3	DIP SW detect	I	
V10	KEY_ROW5	Trace (Not used)	O	
V11	SD_D0	SDMMC Data (Not used)	I/O	
V12	RSTN	External Reset (extend POR)	I	
V13	LEDSINK1_PWM1	PWM Output 1 (Not used)	O	
V14	COIL_DCDC	Core DCDC Coil	PO	
V15	VDD18_DCDC	DCDC Digital 1.8 V Input	PI	
V16	VCC33SW_DCLS	Class D 3.3 V Switch	PI	
V17	VCC_ANA	VCC Analog Voltage	PI	
V18	PAOUTN	Class D Power Amplifier Negative (Not used)	O	
V19	PAOUTP	Class D Power Amplifier Positive (Not used)	O	
W1	USB2N	USB2 Negative (Not used)	I/O	
W2	USB2P	USB2 Positive (Not used)	I/O	
W3	XI12M	12MHz clock input for USB	I	
W4	XO12M	12 MHz Crystal Feedback (Not used)	O	
W5	NFLD0_QCLK	NFL Data	I/O	
W6	NFLD6_QCS1	NFL Data	I/O	
W7	KEY_COL7_SPI2CS	SPI2 CS	I	
W8	KEY_ROW2	DIP SW detect	I	
W9	KEY_COL2	DIP SW detect	I	
W10	SD_CLK	SDMMC Clock (Not used)	O	
W11	SD_CMD	SDMMC Command (Not used)	I/O	
W12	VCC_ANA	VCC Analog Voltage	PI	
W13	GND_DCDC	DCDC GND	P	
W14	SINK_DCDC	Unique Ground for Core DCDC	P	
W15	DCDC_VRP	DCDC Internal Voltage for External Filter	PO	
W16	VCC33_DCDC	3.3 V Supply Voltage Input	PO	
W17	VDDSW_DCLS	Class D VDD Switch	PI	
W18	VSS	Digital GND of Analog Blocks	P	
W19	DCIN3	DC A/D Input 3 (Not used)	O	

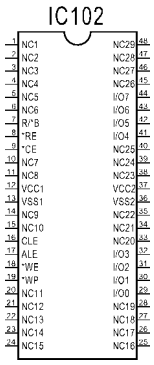
16.1.2. IC101 (DDR2)



Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
A1	VDD	Power Supply	PI	
A2	NC	No connect	-	
A3	VSS	Ground	P	
A7	VSSQ	DQ Ground	P	
A8	#UDQS	Data Store	I/O	
A9	VDDQ	DQ Power Supply	PI	
B1	DQ14	Data Inputs/Outputs	I/O	
B2	VSSQ	DQ Ground	P	
B3	UDM	Input Data Mask	I	
B7	UDQS	Data Store	I/O	
B8	VSSQ	DQ Ground	P	
B9	DQ15	Data Inputs/Outputs	I/O	
C1	VDDQ	DQ Power Supply	PI	
C2	DQ9	Data Inputs/Outputs	I/O	
C3	VDDQ	DQ Power Supply	PI	
C7	VDDQ	DQ Power Supply	PI	
C8	DQ8	Data Inputs/Outputs	I/O	
C9	VDDQ	DQ Power Supply	PI	
D1	DQ12	Data Inputs/Outputs	I/O	
D2	VSSQ	DQ Ground	P	
D3	DQ11	Data Inputs/Outputs	I/O	
D7	DQ10	Data Inputs/Outputs	I/O	
D8	VSSQ	DQ Ground	P	
D9	DQ13	Data Inputs/Outputs	I/O	
E1	VDD	Power Supply	PI	
E2	NC	No connect	-	
E3	VSS	Ground	P	
E7	VSSQ	DQ Ground	P	
E8	#LDQS	Data Store	I/O	
E9	VDDQ	DQ Power Supply	PI	
F1	DQ6	Data Inputs/Outputs	I/O	
F2	VSSQ	DQ Ground	P	
F3	LDM	Input Data Mask	I	
F7	LDQS	Data Store	I/O	
F8	VSSQ	DQ Ground	P	
F9	DQ7	Data Inputs/Outputs	I/O	
G1	VDDQ	DQ Power Supply	PI	
G2	DQ1	Data Inputs/Outputs	I/O	
G3	VDDQ	DQ Power Supply	PI	
G7	VDDQ	DQ Power Supply	PI	
G8	DQ0	Data Inputs/Outputs	I/O	
G9	VDDQ	DQ Power Supply	PI	
H1	DQ4	Data Inputs/Outputs	I/O	

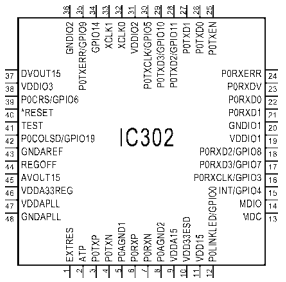
H2	VSSQ	DQ Ground	P	
H3	DQ3	Data Inputs/Outputs	I/O	
H7	DQ2	Data Inputs/Outputs	I/O	
H8	VSSQ	DQ Ground	P	
H9	DQ5	Data Inputs/Outputs	I/O	
J1	VDDL	DLL Power Supply	PI	
J2	VREF	Rference Voltage	PI	
J3	VSS	Ground	P	
J7	VSSDL	DLL Ground	P	
J8	CK	Clock	I	
J9	VDD	Power Supply	PI	
K2	CKE	Clock Enable	I	
K3	#WE	Command Inputs	I	
K7	#RAS	Command Inputs	I	
K8	#CK	Clock	I	
K9	ODT	On Die Termination	I	
L1	NC	No connect	-	
L2	BA0	Bank Address Inputs	I	
L3	BA1	Bank Address Inputs	I	
L7	#CAS	Command Inputs	I	
L8	#CS	Chip Select	I	
M2	A10/AP	Address Inputs	I	
M3	A1	Address Inputs	I	
M7	A2	Address Inputs	I	
M8	A0	Address Inputs	I	
M9	VDD	Power Supply	PI	
N1	VSS	Ground	P	
N2	A3	Address Inputs	I	
N3	A5	Address Inputs	I	
N7	A6	Address Inputs	I	
N8	A4	Address Inputs	I	
P2	A7	Address Inputs	I	
P3	A9	Address Inputs	I	
P7	A11	Address Inputs	I	
P8	A8	Address Inputs	I	
P9	VSS	Ground	P	
R1	VDD	Power Supply	PI	
R2	A12	Address Inputs	I	
R3	NC	No connect	-	
R7	NC	No connect	-	
R8	NC	No connect	-	

16.1.3. IC102 (NAND Flash Memory)



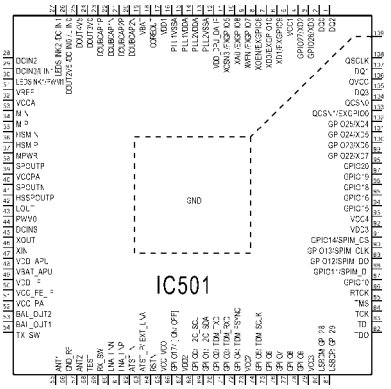
Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
1	NC	No connect	-	
2	NC	No connect	-	
3	NC	No connect	-	
4	NC	No connect	-	
5	NC	No connect	-	
6	NC	No connect	-	
7	R/B#	Ready/Busy	Open-Drain	
8	RE#	Read Enable	I	
9	CE#	Chip Enable	I	
10	NC	No connect	-	
11	NC	No connect	-	
12	Vcc	Core power supply	PI	
13	Vss	Core ground connection	P	
14	NC	No connect	-	
15	NC	No connect	-	
16	CLE	Command Latch Enable	I	
17	ALE	Address Latch Enable	I	
18	WE#	Write Enable	I	
19	WP#	Write Protect	I	
20	NC	No connect	-	
21	NC	No connect	-	
22	NC	No connect	-	
23	NC	No connect	-	
24	NC	No connect	-	
25	Vss*	Core ground connection	P	
26	NC	No connect	-	
27	NC	No connect	-	
28	NC	No connect	-	
29	I/O0	Data inputs/outpus	I/O	
30	I/O1	Data inputs/outpus	I/O	
31	I/O2	Data inputs/outpus	I/O	
32	I/O3	Data inputs/outpus	I/O	
33	NC	No connect	-	
34	Vcc	Core power supply	PI	
35	NC	No connect	-	
36	Vss	Core ground connection	P	
37	Vcc	Core power supply	PI	
38	NC	DNUs must be left unconnected.	-	
39	Vcc	Core power supply	PI	
40	NC	No connect	-	
41	I/O4	Data inputs/outpus	I/O	
42	I/O5	Data inputs/outpus	I/O	
43	I/O6	Data inputs/outpus	I/O	
44	I/O7	Data inputs/outpus	I/O	
45	NC	No connect	-	
46	NC	No connect	-	
47	NC	DNUs must be left unconnected.	-	
48	NC	Core ground connection	P	

16.1.4. IC302 (PHY)



Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
1	EXTRES	Connect to GND via 12.4kÉ¹ resistor	I	
2	ATP	TEST (Not used)	I	
3	P0TXP	LAN Interface Positive Output	O	
4	P0TXN	LAN Interface Negative Output	O	
5	P0AGND1	Analog GND	P	
6	P0RXP	LAN Interface Positive Intput	I	
7	P0RXN	LAN Interface Negative Intput	I	
8	POAGND2	Analog GND for PHY	P	
9	VDDA15	Analog 1.5V power supply for PHY	PI	
10	VDD33ESD	33V input for ESD enhancement	PI	
11	VDD15	1.5V Digital VDD	PI	
12	P0LINKLED	PHY link signal	O	
13	MDC	SMI	I	
14	MDIO	SMI	I/O	
15	INT	Timer Pulse out	O	
16	P0RXCLK	MII	I	
17	PORXD3	MII	O	
18	PORXD2	MII	O	
19	VDDIO	IO power supply	PI	
20	GNDIO1	GND	P	
21	P0RXD1	MII	O	
22	P0RXD0	MII	O	
23	P0RXDV	MII	O	
24	P0RXERR	MII	O	
25	P0TXEN	MII	I	
26	P0TXD0	MII	I	
27	P0TXD1	MII	I	
28	P0TXD2	MII	I	
29	P0TXD3	MII	I	
30	P0TXCLK	MII	O	
31	VDDIO2	IO power supply	PI	
32	XCLK0	Clock input (25MHz)	I	
33	XCLK1	Clock out (Not used)	O	
34	GPIO14	SYNC signal output	O	
35	POTXERR	MII	I	
36	GNDIO2	GND	P	
37	DVOUT15	1.5V output	PO	
38	VDDIO	IO power supply	PI	
39	P0CRS	MII	O	
40	RESETB	RESET	I	
41	TEST	Not used	I	
42	P0COLSD	MII	I	
43	GNDAREF	GND	P	
44	REFGOFF	Regulator control	I	
45	AVOUT15	1.5V output	PO	
46	VDDA33REG	Power supply for regulator	PI	
47	VDDAPLL	Analog 1.5V power supply for PLL	PI	
48	GNDAPLL	Analog GND for PLL	P	

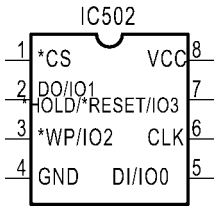
16.1.5. IC501 (DCX81 (RF & DSP))



Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
1	DQ2	QSPI data pin 2	I/O	
2	DQ0	QSPI data pin 0	I/O	
3	GPIO26 / XD3	GPIO Output (Not used)	I/O	
4	GPIO27 / XD2	GPIO Output (Not used)	I/O	
5	VCC	I/O supply voltage	PI	
6	XD1 / EXGPIO9	GPIO Output (Not used)	I/O	
7	XD0 / EXGPIO10	GPIO Output (Not used)	I/O	
8	XOEN / EXGPIO6	GPIO Output (Not used)	O	
9	XWEN / EXGPIO7	GPIO Output (Not used)	O	
10	XA0 / EXGPIO8	GPIO Output (Not used)	O	
11	XCSN3 / EXGPIO5	GPIO Output (Not used)	O	
12	VDD_CPU_DAIF	DAIF supply input voltage	PI	
13	PLL2VSSA	PLL2 analog ground	P	
14	PLL2VDDA	PLL2 supply voltage	PI	
15	PLL1VDDA	PLL1 supply voltage	PI	
16	PLL1VSSA	PLL1 analog ground	P	
17	VDD	Core supply voltage	PI	
18	COREOUT	Internal DPU core power output (1.2V)	PO	
19	VBAT	PMU power input	I	
20	DOUBCAP2N	Analog port (Not used)	Analog	
21	DOUBCAP2P	Analog port (Not used)	Analog	
22	DOUBCAP1N	Analog port (Not used)	Analog	
23	DOUBCAP1P	Analog port (Not used)	Analog	
24	DOUT3V0	Analog port (Not used)	Analog	
25	DOUT4V5	Analog port (Not used)	Analog	
26	DOUT2V5 / DCIN0 / LIN0	Analog port (Not used)	Analog	
27	LEDSINK2 / DCIN1	LED sink2 / DC AD 1	Analog	
28	DCIN2	Analog port (Not used)	I	
29	DCIN3 / LIN1	Analog port (Not used)	I	
30	LEDSINK1 / PWM1	Analog port (Not used)	I	
31	VREF	VCCA reference voltage	PO	
32	VCCA	Analog power	PI	
33	MIN	Analog port (Not used)	I	
34	MIP	Analog port (Not used)	I	
35	HSMIN	Analog port (Not used)	I	
36	HSMIP	Analog port (Not used)	I	
37	MPWR	Analog port (Not used)	O	
38	SPOUTP	Analog port (Not used)	O	
39	VCCPA	Power amplifier supply	PI	
40	SPOUTN	Analog port (Not used)	O	
41	HSSPOUTP	Analog port (Not used)	O	
42	LOUT	Analog port (Not used)	O	
43	PWM0	Analog port (Not used)	O	
44	DCINS	Analog port (Not used)	I	
45	XOUT	Crystal out (13.824MHz)	O	
46	XIN	Crystal feedback (13.824MHz)	I	
47	VDD_APU	Supply	PO	
48	VBAT_APU	Supply	PI	
49	VDD_IF	IF supply	PO	

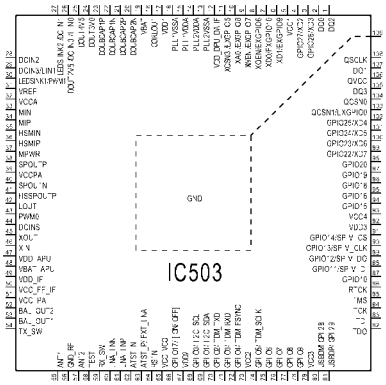
50	VCC_FE_IF	FE & IF supply	PI	
51	VCC_PA	PA supply	PI	
52	BAL_OUT2	Balun output P	O	
53	BAL_OUT1	Balun output N	O	
54	TX_SW	DPDT switch Tx input	I	
55	ANT1	Antenna 1 port	I	
56	GND_RF	RF ground	P	
57	ANT2	Antenna 2 port	I	
58	TEST	Test mode control	I	
59	RX_SW	DPDT switch Rx output	O	
60	LNA_INN	LNA input	I	
61	LNA_INP	LNA input	I	
62	ATST_N	Analog test N (Not used)	Analog	
63	ATST_P / EXT_LNA	Analog test P (Not used)	Analog	
64	RSTN	Enternal reset	I	
65	VCC_VCO	VCO supply	PI	
66	GPIO17 / ON/OFF	Not used	O	
67	VDD	Core supply voltage	PI	
68	GPIO0 / I2C_SCL	I2C Clock	Open Drain	
69	GPIO1 / I2C_SDA	I2C Data	Open Drain	
70	GPIO2 / TDM_TXD	TDM TX Data	O	
71	GPIO3 / TDM_RXD	TDM RX Data	I	
72	GPIO4 / TDM_FSYNC	TDM Flame SYNC	O	
73	VCC	I/O supply voltage	PI	
74	GPIO5 / TDM_SCLK	TDM CLK	O	
75	GPIO6	GPIO Output (Not used)	O	
76	GPIO7	GPIO Output (Not used)	O	
77	GPIO8	GPIO Output (Not used)	O	
78	GPIO9	GPIO Output (Not used)	O	
79	VCC	I/O supply voltage	PI	
80	USBDM / GPI28	USB negative pin / GPIO28 with external interrupt.	I/O	
81	USBDP / GPI29	USB positive pin / GPIO29 with external interrupt.	I/O	
82	TDO	JTAG data out	O	
83	TDI	JTAG data in	I	
84	TCK	JTAG clock	I	
85	TMS	JTAG mode select	I	
86	RTCK	RTCK	O	
87	GPIO10	GPIO Output (Not used)	O	
88	GPIO11 / SPIM_DI	SPI Data Input	I	
89	GPIO12 / SPIM_DO	SPI Data Output	O	
90	GPIO13 / SPIM_CLK	SPI CLK	I	
91	GPIO14 / SPIM_CS	SPI CS	I	
92	VDD	Core supply voltage	PI	
93	VCC	I/O supply voltage	PI	
94	GPIO15	UART RX	I	
95	GPIO16	UART TX	O	
96	GPIO18	Not used	O	
97	GPIO19	Not used	O	
98	GPIO20	Not used	O	
99	GPIO22 / XD7	DVF-DCX handshake for SPI	I	
100	GPIO23 / XD6	DVF-DCX handshake for SPI	I	
101	GPIO24 / XD5	DVF-DCX handshake for SPI	O	
102	GPIO25 / XD4	DVF-DCX handshake for SPI	O	
103	QCSN1 / EXGPIO0	Not used	O	
104	QCSN0	QSPI chip select 0	O	
105	DQ3	QSPI data pin 3	I/O	
106	QVCC	QSPI supply voltage	PI	
107	DQ1	QSPI data pin 1	I/O	
108	QSLK	QSPI serial clock	O	

16.1.6. IC502 (Serial Flash Memory)



Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
1	S#	Chip select	I	
2	DQ1	Serial data	I/O	
3	W# / Vpp / DQ2	Serial data	I/O	
4	Vss	Ground	P	
5	DQ0	Serial data	I/O	
6	C	Clock	I	
7	HOLD#/DQ3	Serial data	I/O	
8	Vcc	Device core power supply	PI	

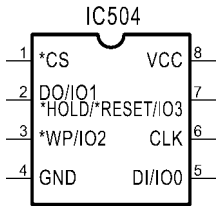
16.1.7. IC503 (DCX81 (DSP))



Pin No.	Terminal Name	Contents of Control	I/O setting	Remark
1	DQ2	QSPI data pin 2	I/O	
2	DQ0	QSPI data pin 0	I/O	
3	GPIO26 / XD3	GPIO Output (Not used)	O	
4	GPIO27 / XD2	GPIO Output (Not used)	O	
5	VCC	I/O supply voltage	PI	
6	XD1 / EXGPIO9	GPIO Output (Not used)	O	
7	XD0 / EXGPIO10	GPIO Output (Not used)	O	
8	XOEN / EXGPIO7	GPIO Output (Not used)	O	
9	XWEN / EXGPIO7	GPIO Output (Not used)	O	
10	XA0 / EXGPIO8	GPIO Output (Not used)	O	
11	XCSN3 / EXGPIO5	GPIO Output (Not used)	O	
12	VDD_CPU_DAIF	DAIF supply input voltage	PI	
13	PLL2VSSA	PLL2 analog ground	P	
14	PLL2VDDA	PLL2 supply voltage	PI	
15	PLL1VDDA	PLL1 supply voltage	PI	
16	PLL1VSSA	PLL1 analog ground	P	
17	VDD	Core supply voltage	PI	
18	COREOUT	Not used	PO	
19	VBAT	PMU power input	I	
20	DOUBCAP2N	Analog port (Not used)	Analog	
21	DOUBCAP2P	Analog port (Not used)	Analog	
22	DOUBCAP1N	Analog port (Not used)	Analog	
23	DOUBCAP1P	Analog port (Not used)	Analog	
24	DOUT3V0	Analog port (Not used)	Analog	
25	DOUT4V5	Analog port (Not used)	Analog	
26	DOUT2V5 / DCIN0 / LIN0	Analog port (Not used)	Analog	
27	LEDSINK2 / DCIN1	LED sink2 / DC AD 1	Analog	
28	DCIN2	Analog port (Not used)	I	
29	DCIN3 / LIN1	Analog port (Not used)	I	
30	LEDSINK1 / PWM1	Analog port (Not used)	I	
31	VREF	VCCA reference voltage	PO	
32	VCCA	Analog power	PI	
33	MIN	Analog port (Not used)	I	
34	MIP	Analog port (Not used)	I	
35	HSMIN	Analog port (Not used)	I	
36	HSMIP	Analog port (Not used)	I	
37	MPWR	Analog port (Not used)	O	
38	SPOUTP	Analog port (Not used)	O	
39	VCCPA	Power amplifier supply	PI	
40	SPOUTN	Analog port (Not used)	O	
41	HSSPOUTP	Analog port (Not used)	O	
42	LOUT	Analog port (Not used)	O	
43	PWM0	Analog port (Not used)	O	
44	DCINS	Analog port (Not used)	I	
45	XOUT	Not used	O	
46	XIN	13.824MHz clock input	I	
47	VDD_APU	Supply	PO	
48	VBAT_APU	Supply	PI	
49	VDD_IF	Not used	PO	
50	VCC_FE_IF	Not used	PI	

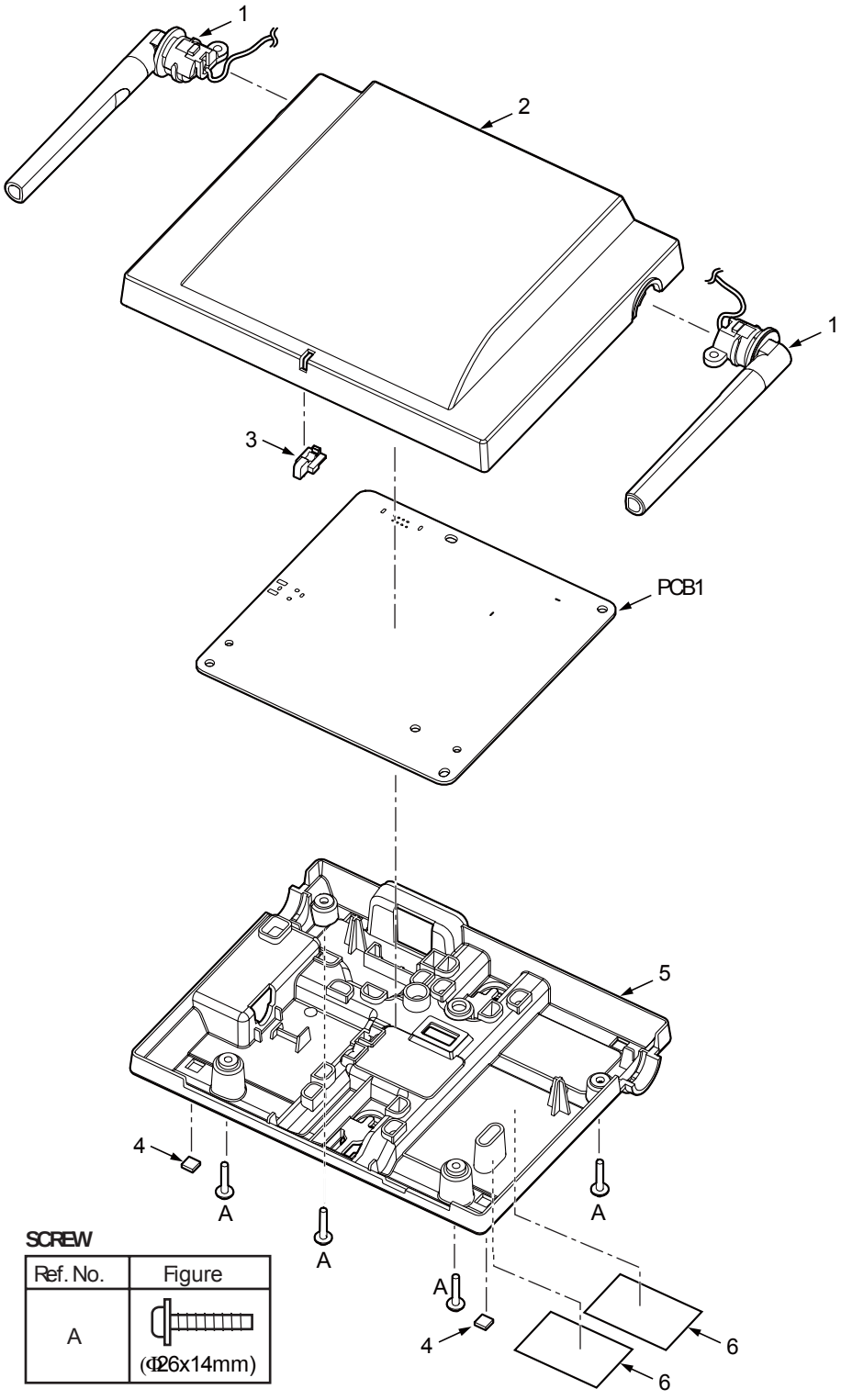
51	VCC_PA	PA Supply	PI	
52	BAL_OUT2	Not used	O	
53	BAL_OUT1	Not used	O	
54	TX_SW	Not used	I	
55	ANT1	Not used	I	
56	GND_RF	RF ground	P	
57	ANT2	Not used	I	
58	TEST	Not used	I	
59	RX_SW	Not used	O	
60	LNA_INN	Not used	I	
61	LNA_INP	Not used	I	
62	ATST_N	Analog test N (Not used)	Analog	
63	ATST_P / EXT_LNA	Analog test P (Not used)	Analog	
64	RSTN	Enternal reset	I	
65	VCC_VCO	VCO supply	PI	
66	GPIO17 / ON/OFF	Not used	O	
67	VDD	Core supply voltage	PI	
68	GPIO0 / I2C_SCL	Not used	Open Drain	
69	GPIO1 / I2C_SDA	Not used	Open Drain	
70	GPIO2 / TDM_TXD	TDM TX Data	O	
71	GPIO3 / TDM_RXD	TDM RX Data	I	
72	GPIO4 / TDM_FSYNC	TDM Flame SYNC	O	
73	VCC	I/O supply voltage	PI	
74	GPIO5 / TDM_SCLK	TDM CLK	O	
75	GPIO6	Not used	O	
76	GPIO7	Not used	O	
77	GPIO8	Not used	O	
78	GPIO9	Not used	O	
79	VCC	I/O supply voltage	PI	
80	USBDM / GPI28	Not used	I/O	
81	USBDP / GPI29	Not used	I/O	
82	TDO	JTAG data out	O	
83	TDI	JTAG data in	I	
84	TCK	JTAG clock	I	
85	TMS	JTAG mode select	I	
86	RTCK	RTCK	O	
87	GPIO10	Not used	O	
88	GPIO11 / SPIM_DI	SPI Data Input	I	
89	GPIO12 / SPIM_DO	SPI Data Output	O	
90	GPIO13 / SPIM_CLK	SPI CLK	I	
91	GPIO14 / SPIM_CS	SPI CS	I	
92	VDD	Core supply voltage	PI	
93	VCC	I/O supply voltage	PI	
94	GPIO15	UART RX	I	
95	GPIO16	UART TX	O	
96	GPIO18	Not used	O	
97	GPIO19	Not used	O	
98	GPIO20	Not used	O	
99	GPIO22 / XD7	DVF-DCX handshake for SPI	I	
100	GPIO23 / XD6	DVF-DCX handshake for SPI	I	
101	GPIO24 / XD5	DVF-DCX handshake for SPI	O	
102	GPIO25 / XD4	DVF-DCX handshake for SPI	O	
103	QCSN1 / EXGPIO0	Not used	O	
104	QCSN0	QSPI chip select 0	O	
105	DQ3	QSPI data pin 3	I/O	
106	QVCC	QSPI supply voltage	PI	
107	DQ1	QSPI data pin 1	I/O	
108	QSLK	QSPI serial clock	O	

16.1.8. IC504 (Serial Flas Memory)



Pin No.	Terminal Name	Contents of Control	I/O setting	
1	S#	Chip select	I	
2	DQ1	Serial data	I/O	
3	W# / Vpp / DQ2	Serial data	I/O	
4	Vss	Ground	P	
5	DQ0	Serial data	I/O	
6	C	Clock	I	
7	HOLD#/DQ3	Serial data	I/O	
8	Vcc	Device core power supply	PI	

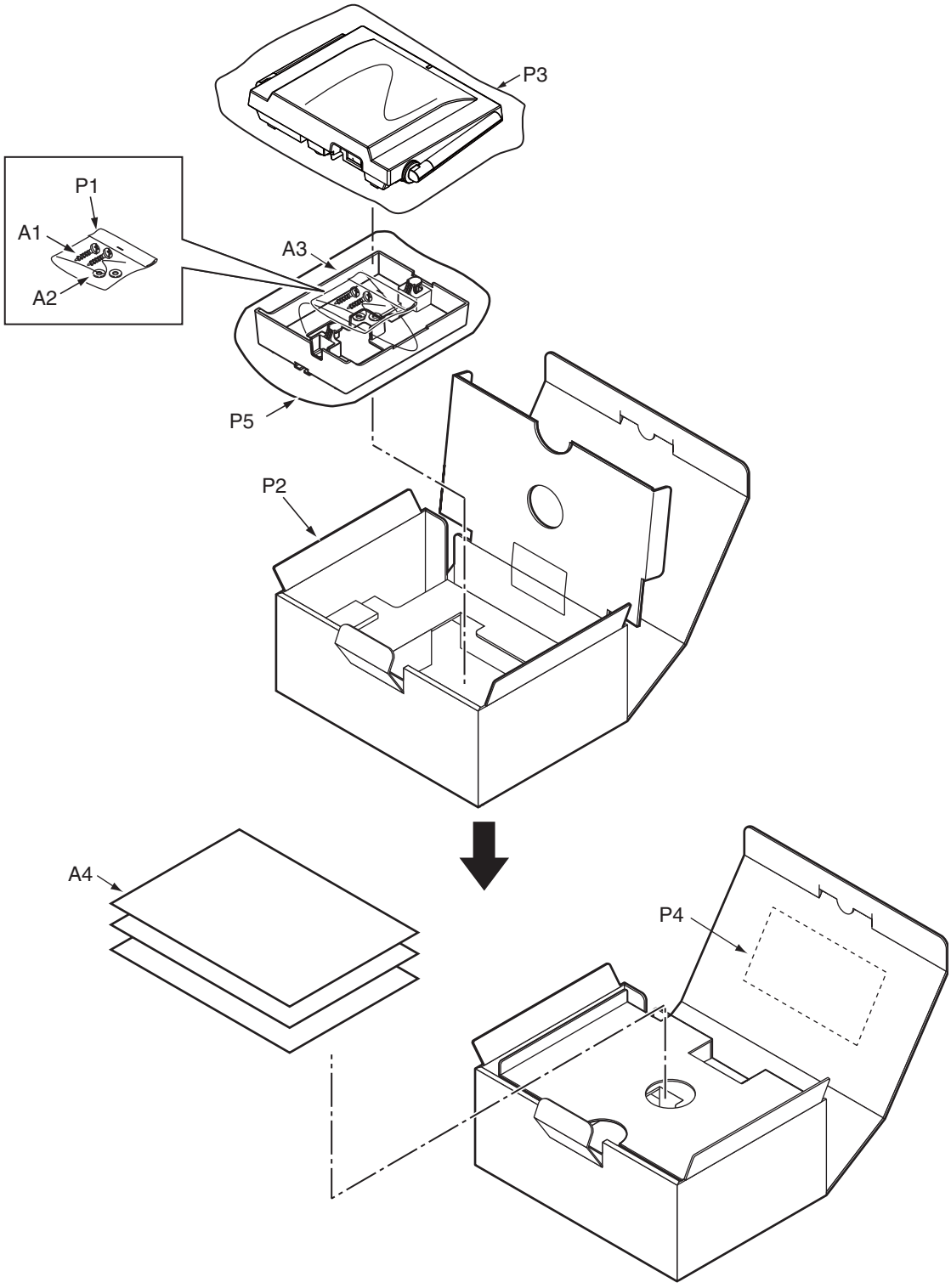
16.2. Cabinet and Electrical Parts Location



SCREW

Ref. No.	Figure
A	(Φ2.6x14mm)

16.3. Accessories and Packing Material



16.4. Replacement Parts List

Note:

1. RTL (Retention Time Limited)
   The marking (RTL) indicates that the Retention Time is limited for this item.
   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.
3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.
4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.
5. RESISTORS & CAPACITORS
   Unless otherwise specified;
   All resistors are in ohms (Ω), k=1000Ω, M=1000kΩ
   All capacitors are in MICRO FARADS (μF), p=μμF
   *Type & Wattage of Resistor

Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyester
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

16.4.1. Cabinet and Electrical Parts

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	1	PFSA1084Z	ANTENNA	
	2	PNKM1215U1	UPPER CABINET	PS UL94 V0
	3	PSGP1113Y1	LED LENS	
	4	PQHA10023Z	FOOT RUBBER	
	5	PNKF1156Y1	LOWER CABINET	PS UL94 V0
⚠	6	PNYEAS0154M	NAME PLATE	
	A	XTW26+14PFJ7	TAPPING SCREW	

16.4.2. Accessory and Packing Materials

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	A1	PQHE5004Y	SCREW	
	A2	XWG35FJ	WASHER	
	A3	PSKL1032Y4	WALL MOUNTING ATTACHMENT	
⚠	A4	PNQW4179Z	LEAFLET,Important Information Guide	
	P1	XZB05X08A03	PROTECTION COVER	
	P2	PSPK2414ZA	GIFT BOX	
	P3	XZB23X35A04	PROTECTION COVER	
	P4	PNYEBS0154M	SET LABEL	
	P5	PNPP1099Z	PROTECTION COVER	

16.4.3. Main Boards Parts

Note:

(1*) Backside of this IC has a ground plate.
(2*) Supplied IC is Flat Package Type.

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWPNS0154M	MAIN P.C.BOARD ASS'Y (RTL)	
			(ICS)	
	IC100 IC101 IC102 IC501	IC There is no parts supply of only IC. Please order PCB1.		
	IC201	C0EBE0000444	IC	
	IC301	C1ZBZ0003969	IC	
	IC302	C1CB00004203	IC	
	IC303	C1CB00003680	IC	
	IC502	PNWIAS0154M	IC	
	IC503	C2HBCY000134	IC	
	IC504	PNWIBS0154M	IC	
	IC701	C0DBGYY00905	IC	
	IC702	C0DBAYY00932	IC	
	IC703	C0DBAYY00932	IC	
	IC704	C0ABAA000068	IC	
			(TRANSISTORS)	
	Q101	PQVTDTC123E	TRANSISTOR(SI)	S
	Q102	PQVTDTC123E	TRANSISTOR(SI)	S
	Q103	PQVTDTC123E	TRANSISTOR(SI)	S
	Q104	B1HBCFA00028	TRANSISTOR(SI)	
	Q302	B1CFNN000001	TRANSISTOR(SI)	
			(DIODES)	
	D101	B3ABB0000296	DIODE(SI)	
	D102	B3AAB0000347	DIODE(SI)	
	D104	B3AEB0000153	DIODE(SI)	
	D301	DB2X41400L	DIODE(SI)	
	D302	B0JCML000007	DIODE(SI)	
	D304	B0BC06800004	DIODE(SI)	
	D305	B0EDER000009	DIODE(SI)	
	D306	B0EDER000009	DIODE(SI)	
	D701	B0JCPL000004	DIODE(SI)	
	D702	B0JCNE000008	DIODE(SI)	
	D703	B0JCNE000008	DIODE(SI)	
			(FILTER)	
	D501	EZAEG2A50AX	CERAMIC FILTER	
	D502	EZAEG2A50AX	CERAMIC FILTER	
	L101	J0JBC0000107	IC FILTER	
	L202	J0JBC0000107	IC FILTER	
	L203	J0JBC0000107	IC FILTER	
	L204	J0JBC0000107	IC FILTER	
	L205	J0JBC0000107	IC FILTER	
	L206	J0JBC0000107	IC FILTER	
	L207	J0JBC0000107	IC FILTER	
	L208	J0JBC0000107	IC FILTER	
	L210	J0JBC0000107	IC FILTER	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	L211	J0JBC0000107	IC FILTER	
	L301	J0JBC0000107	IC FILTER	
	L302	J0JBC0000107	IC FILTER	
	L303	J0JBC0000107	IC FILTER	
	L304	J0JBC0000107	IC FILTER	
	L305	J0JBC0000107	IC FILTER	
	L307	J0JBC0000107	IC FILTER	
	L308	J0JBC0000107	IC FILTER	
	L309	J0JBC0000107	IC FILTER	
	L310	J0JBC0000107	IC FILTER	
	L311	J0JYC0000070	IC FILTER	
	L312	J0JBC0000107	IC FILTER	
	L314	J0JBC0000107	IC FILTER	
	L316	J0JGC0000020	IC FILTER	
	L317	J0JGC0000020	IC FILTER	
	L318	J0JGC0000020	IC FILTER	
	L319	J0JGC0000020	IC FILTER	
	L320	J0JGC0000020	IC FILTER	
	L321	J0JGC0000020	IC FILTER	
	L322	J0JGC0000020	IC FILTER	
	L323	J0JGC0000020	IC FILTER	
	L506	J0JBC0000107	IC FILTER	
	L507	J0JBC0000107	IC FILTER	
	L513	J0JBC0000107	IC FILTER	
	L514	J0JBC0000107	IC FILTER	
	L704	J0JGC0000037	IC FILTER	
	L705	J0JCC0000245	IC FILTER	
	LF301	J0MAB0000185	IC FILTER	S
	LF302	J0MAB0000185	IC FILTER	S
	R503	J0JYC0000120	IC FILTER	
	R504	J0JYC0000120	IC FILTER	
	R539	J0JYC0000120	IC FILTER	
	R540	J0JYC0000120	IC FILTER	
			(COILS)	
	C518	PQLQR4C1N0S	COIL	S
	C519	PQLQR4C1N0S	COIL	S
	C535	PQLQR4C1N0S	COIL	S
	L313	G1A101G00012	COIL	
	L315	G1C100MA0395	COIL	
	L501	J0JDC0000103	COIL	
	L502	G1C7N5JA0044	COIL	
	L503	G1C7N5JA0044	COIL	
	L504	PSLQR1S4N7ST	COIL	S
	L505	PSLQR1S4N7ST	COIL	S
	L509	PSLQR1S4N7ST	COIL	S
	L510	PSLQR1S4N7ST	COIL	S
	L512	PQLQR4C6N8J	COIL	S
	L701	G1C4R7ZA0240	COIL	
	L702	G1C4R7ZA0240	COIL	
	L703	G1C6R8MA0203	COIL	
	L706	J0JDC0000103	COIL	
	L707	J0JDC0000103	COIL	
	L709	G1CR15JA0097	COIL	
			(COMPONENTS PARTS)	
	R104	EXB24V102JX	COMPONENTS PARTS	
	R301	D1H810240004	COMPONENTS PARTS	S
	R304	D1H810240004	COMPONENTS PARTS	S
	R525	EXB28V103JX	COMPONENTS PARTS	
	R552	EXB28V103JX	COMPONENTS PARTS	
			(CONNECTORs)	
	JK301	K1FA105E0003	CONNECTOR	
⚠	JK302	K2LC108B0069	JACK/SOCKET	
⚠	JK701	K2ECYB000001	JACK/SOCKET	
			(SWITCHs)	
	SW101	K0H1BA000559	PUSH SWITCH	
	SW301	K0D811A00048	SLIDE SWITCH	
			(TRANSFORMER)	
	T301	G5BYC0000060	TRANSFORMER	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(RESISTORS)	
	L201	ERJ2GE0R00	0	
	L508	ERJ2GE0R00	0	
	L511	ERJ2GE0R00	0	
	R107	ERJ2GE0R00	0	
	R108	ERJ2GE0R00	0	
	R111	ERJ2GEJ330	33	
	R112	ERJ2GEJ330	33	
	R113	ERJ2GEJ330	33	
	R114	ERJ2GEJ330	33	
	R115	ERJ2GEJ330	33	
	R116	ERJ2GEJ330	33	
	R117	ERJ2GEJ330	33	
	R118	ERJ2GEJ330	33	
	R119	ERJ2GEJ330	33	
	R120	ERJ2GEJ330	33	
	R121	ERJ2GEJ330	33	
	R122	ERJ2GEJ330	33	
	R123	ERJ2GEJ330	33	
	R124	PQ4R10XJ102	1k	S
	R125	PQ4R10XJ822	8.2k	S
	R126	ERJ2GEJ680	68	
	R127	ERJ2GEJ330	33	
	R128	ERJ2GEJ330	33	
	R129	ERJ2GEJ330	33	
	R130	ERJ2GEJ330	33	
	R131	ERJ2GEJ330	33	
	R132	ERJ2GEJ330	33	
	R133	ERJ2GEJ330	33	
	R134	ERJ2GEJ330	33	
	R135	ERJ2GEJ121	120	
	R137	ERJ2GE0R00	0	
	R139	ERJ2GEJ472X	4.7k	
	R140	ERJ2GEJ563	56k	
	R141	ERJ2GEJ560X	56	
	R151	ERJ2GEJ680	68	
	R152	ERJ2GEJ680	68	
	R153	ERJ2GEJ301X	300	
	R154	ERJ2GEJ472X	4.7k	
	R201	ERJ2GEJ473	47k	
	R202	ERJ2GEJ102	1k	
	R203	ERJ2GEJ103	10k	
	R206	ERJ2GE0R00	0	
	R207	ERJ2GE0R00	0	
	R209	ERJ2GEJ105X	1M	
	R211	ERJ2GE0R00	0	
	R302	ERJ2GEJ102	1k	
	R305	ERJ2GEJ152	1.5k	
	R306	ERJ2GEJ330	33	
	R307	ERJ2GEJ330	33	
	R308	ERJ2GEJ101	100	
	R312	ERJ2RKF4702	47k	
	R314	ERJ2GEJ330	33	
	R315	ERJ2GEJ330	33	
	R316	ERJ2GEJ330	33	
	R317	ERJ2GEJ330	33	
	R318	ERJ2GEJ330	33	
	R319	ERJ2GEJ473	47k	
	R320	ERJ2GEJ330	33	
	R321	ERJ2GEJ330	33	
	R322	ERJ2GEJ330	33	
	R323	ERJ2GEJ330	33	
	R324	ERJ2GEJ330	33	
	R325	ERJ2GEJ330	33	
	R326	ERJ2GEJ330	33	
	R327	ERJ2GEJ330	33	
	R330	ERJ2GEJ472X	4.7k	
	R331	ERJ2GEJ470	47	
	R332	ERJ2GEJ101	100	
	R333	ERJ2GE0R00	0	
	R334	ERJ2GE0R00	0	
	R339	ERJ2GEJ102	1k	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R341	ERJ2GEJ511	510	
	R342	ERJ2GEJ103	10k	
	R343	ERJ2RKF1242	12.4k	
	R344	ERJ12YJ390H	39	S
	R345	D1BGR390A007	0.39	
	R346	ERJ2GEJ330	33	
	R347	PQ4R18XJ101	100	S
	R348	ERJ2GEJ101	100	
	R349	ERJ2GEJ102	1k	
	R350	ERJ2GEJ330	33	
	R351	ERJ2GEJ330	33	
	R352	ERJ2GEJ330	33	
	R353	ERJ2GEJ330	33	
	R354	ERJ2GEJ330	33	
	R355	ERJ3EKF49R9	49.9	
	R356	ERJ3EKF49R9	49.9	
	R357	ERJ3EKF49R9	49.9	
	R358	ERJ3EKF49R9	49.9	
	R359	ERJ2GEJ753	75k	
	R360	ERJ2GEJ152	1.5k	
	R361	ERJ2RKF2492X	24.9k	
	R362	ERJ14NF5490	549	
	R363	ERJ2RKF1003	100k	
	R364	ERJ2GEJ750	75	
	R365	ERJ2GEJ750	75	
	R366	ERJ2GEJ750	75	
	R367	ERJ2GEJ750	75	
	R368	ERJ2GEJ472X	4.7k	
	R369	ERJ2GEJ472X	4.7k	
	R370	ERJ2GEJ472X	4.7k	
	R372	ERJ3EKF10R0	10	
	R373	ERJ3EKF10R0	10	
	R501	ERJ2GE0R00	0	
	R502	ERJ2GEJ1R0	1	
	R505	ERJ2GEJ102	1k	
	R508	ERJ2GEJ330	33	
	R515	ERJ2GEJ330	33	
	R517	ERJ2GEJ330	33	
	R518	ERJ2GEJ330	33	
	R519	ERJ2GEJ330	33	
	R526	ERJ2GEJ102	1k	
	R527	ERJ2GEJ330	33	
	R528	ERJ2GEJ330	33	
	R529	ERJ2GEJ472X	4.7k	
	R530	ERJ2GEJ330	33	
	R531	ERJ2GEJ472X	4.7k	
	R532	ERJ2GEJ472X	4.7k	
	R533	ERJ2GEJ473	47k	
	R534	ERJ2GEJ473	47k	
	R535	ERJ2GEJ473	47k	
	R536	ERJ2GEJ102	1k	
	R537	ERJ2GE0R00	0	
	R538	ERJ2GEJ1R0	1	
	R541	ERJ2GEJ330	33	
	R546	ERJ2GEJ330	33	
	R548	ERJ2GEJ330	33	
	R549	ERJ2GEJ330	33	
	R553	ERJ2GEJ102	1k	
	R554	ERJ2GEJ330	33	
	R555	ERJ2GEJ330	33	
	R556	ERJ2GEJ472X	4.7k	
	R557	ERJ2GEJ330	33	
	R558	ERJ2GEJ472X	4.7k	
	R559	ERJ2GE0R00	0	
	R560	ERJ2GEJ105X	1M	
	R561	ERJ2GEJ823	82k	
	R562	ERJ2GEJ473	47k	
	R702	ERJ2RKF1202	12k	
	R703	ERJ2RKF9101	9.1k	
	R704	ERJ2RKF3901X	3.9k	
	R705	ERJ2RKF1301	1.3k	
	R706	ERJ2GEJ470	47	
	R707	ERJ2GEJ470	47	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	R710	ERJ2GEJ104	100k	
	R711	ERJ2GEJ104	100k	
	R712	ERJ2RKF4701	4.7k	
	R713	ERJ2RKF3901X	3.9k	
	R719	ERJ3GEYJ102	1k	
	R720	ERJ3GEYJ102	1k	
	R721	ERJ3GEYJ102	1k	
	R722	ERJ3GEYJ102	1k	
	R723	ERJ3GEYJ102	1k	
	R724	ERJ3GEYJ102	1k	
	R725	ERJ3GEYJ102	1k	
	R726	ERJ3GEYJ102	1k	
	R727	ERJ2GEJ330	33	
	R728	ERJ2GEJ330	33	
	R729	ERJ3GEYJ330	33	
	R730	ERJ2GEJ330	33	
	R731	ERJ2GEJ330	33	
	R732	ERJ2GEJ330	33	
	R733	ERJ2GE0R00	0	
			(CAPACITORS)	
	C101	ECUE1C104KBQ	0.1	
	C102	ECUE1C104KBQ	0.1	
	C103	ECUE1C104KBQ	0.1	
	C104	ECUE1C104KBQ	0.1	
	C105	ECUE1C104KBQ	0.1	
	C106	ECUE1C104KBQ	0.1	
	C107	ECUE1C104KBQ	0.1	
	C108	ECUE1C104KBQ	0.1	
	C109	ECUE1C104KBQ	0.1	
	C110	ECUE1C104KBQ	0.1	
	C111	ECUE1C104KBQ	0.1	
	C112	ECUE1C104KBQ	0.1	
	C113	ECUE1C104KBQ	0.1	
	C114	ECUE1C104KBQ	0.1	
	C115	ECUE1C104KBQ	0.1	
	C116	ECUE1C104KBQ	0.1	
	C117	ECUE1C104KBQ	0.1	
	C118	ECUE1C104KBQ	0.1	
	C119	ECUE1C104KBQ	0.1	
	C120	ECUE1C104KBQ	0.1	
	C121	ECUE1C104KBQ	0.1	
	C122	ECUE1C104KBQ	0.1	
	C123	ECUE1C104KBQ	0.1	
	C124	ECUE1C104KBQ	0.1	
	C125	ECUE1C104KBQ	0.1	
	C126	ECUE1C104KBQ	0.1	
	C127	ECUE1C104KBQ	0.1	
	C128	ECUE1C104KBQ	0.1	
	C129	ECUE1C104KBQ	0.1	
	C130	ECUE1C104KBQ	0.1	
	C131	ECUE1C104KBQ	0.1	
	C132	ECUE1C104KBQ	0.1	
	C202	ECUE1C103KBQ	0.01	
	C203	ECUE1H102KBQ	0.001	
	C205	ECUE1C104KBQ	0.1	
	C206	ECUE1C104KBQ	0.1	
	C207	ECUE1C104KBQ	0.1	
	C208	ECUE1C104KBQ	0.1	
	C209	ECUE1C104KBQ	0.1	
	C210	ECUE1C104KBQ	0.1	
	C211	ECUE1C104KBQ	0.1	
	C212	ECUE1C104KBQ	0.1	
	C213	ECUE1C104KBQ	0.1	
	C214	ECUE1C104KBQ	0.1	
	C215	ECUE1C104KBQ	0.1	
	C216	ECUE1C104KBQ	0.1	
	C217	ECUE1C104KBQ	0.1	
	C218	ECUE1C104KBQ	0.1	
	C219	ECUE1C104KBQ	0.1	
	C220	ECUE1C104KBQ	0.1	
	C221	ECUE1C104KBQ	0.1	
	C222	ECUE1C104KBQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C223	ECUE1C104KBQ	0.1	
	C224	ECUE1C104KBQ	0.1	
	C225	ECUE1C104KBQ	0.1	
	C226	ECUE1C104KBQ	0.1	
	C227	ECUE1C104KBQ	0.1	
	C228	ECUE1C104KBQ	0.1	
	C229	ECUE1C104KBQ	0.1	
	C230	ECUE1C104KBQ	0.1	
	C231	ECJ0EB0J105K	1	
	C232	ECUE1C104KBQ	0.1	
	C235	F1H0J226A062	22u	
	C237	ECUE1H5R0CCQ	5	
	C238	ECUE1H5R0CCQ	5	
	C239	ECUE1C104KBQ	0.1	
	C240	ECUE1H472KBQ	0.0047	
	C301	ECUE1A104KBQ	0.1	
	C302	ECUE1A104KBQ	0.1	
	C303	F1G1A105A047	1u	
	C304	F1G1A105A047	1u	
	C305	ECUE1A104KBQ	0.1	
	C306	ECUE1A104KBQ	0.1	
	C307	ECUE1A104KBQ	0.1	
	C308	ECUE1A104KBQ	0.1	
	C309	ECUE1A104KBQ	0.1	
	C310	ECUE1C104KBQ	0.1	
	C311	ECUE1A104KBQ	0.1	
	C312	ECUE1H100DCQ	10p	
	C313	ECUV1A105KBV	1	
	C314	ECUV1A105KBV	1	
	C315	ECUV1A105KBV	1	
	C318	ECUV1A105KBV	1	
	C319	ECUE1H102KBQ	0.001	
	C320	ECUV1C105KBV	1	
	C321	ECJ0EB0J105K	1	
	C322	F1J1C106A224	10u	
	C325	F1J2A471A030	470p	
	C326	ECUE1C104KBQ	0.1	
	C327	ECUE1C104KBQ	0.1	
	C328	ECUV1A105KBV	1	
	C329	ECUE1H102KBQ	0.001	
	C330	ECUE1A224KBQ	0.22	
	C331	ECUE1C104KBQ	0.1	
	C332	F1H1E1050001	1u	
	C333	ECUE1A104KBQ	0.1	
	C334	ECUE1A104KBQ	0.1	
	C335	PQCUV0J106KB	10	
	C336	ECUE1A104KBQ	0.1	
	C337	ECUE1A104KBQ	0.1	
	C338	ECUV1E333KBV	0.033	
	C339	ECUE1H561KBQ	560p	
	C340	F1K2A105A012	1u	
	C341	ECUE1H150JCQ	15p	
	C342	F1K2A105A012	1u	
	C343	F1J2A102A041	1000p	
	C345	F2GZZ220A033	22	
	C346	F1J2A473A072	0.047u	
	C347	F1K2E1040004	0.1u	
	C348	F1K3A101A017	100p	
	C349	F1K2E1040004	0.1u	
	C350	F1J2A102A041	1000p	
	C351	F1J2A471A030	470p	
	C352	F1J2A102A041	1000p	
	C353	F1K2E1040004	0.1u	
	C354	F1K3A101A017	100p	
	C355	F1K2E1040004	0.1u	
	C356	ECUE1H102KBQ	0.001	
	C357	ECUE1H102KBQ	0.001	
	C501	F1L0J107A017	100u	
	C502	ECUE1C104KBQ	0.1	
	C503	ECUE0J105KBQ	1	
	C505	F1J0J2260002	22u	
	C506	F1H0J1060006	10u	
	C507	ECUE1C104KBQ	0.1	

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	C508	ECUV1A225KBV	2.2	
	C509	ECUE1H100DCQ	10p	
	C510	ECUE1H100DCQ	10p	
	C511	ECUE1H1R5CCQ	1.5	
	C512	ECUE1H1R5CCQ	1.5	
	C513	ECUE1C103KBQ	0.01	
	C514	ECUE1H1R5CCQ	1.5	
	C515	ECUE1H1R5CCQ	1.5	
	C516	ECUE1C104KBQ	0.1	
	C517	ECUE0J105KBQ	1	
	C520	ECUE1C104KBQ	0.1	
	C521	ECUE1C103KBQ	0.01	
	C522	ECUE1C104KBQ	0.1	
	C524	ECUE1C104KBQ	0.1	
	C525	ECUE1C104KBQ	0.1	
	C526	F1G1H3R3A798	5p	
	C527	F1G1H2R7A765	2.7p	
	C528	ECUE1H5R0CCQ	5	
	C529	F1G1H1R2A841	1.2p	
	C530	ECUE1H1R5CCQ	1.5	
	C532	F1G1H1R8A765	1.8p	
	C533	ECUE1H1R5CCQ	1.5	
	C534	ECUE1H100DCQ	10p	
	C537	F1G1HR80A801	0.8p	
	C539	F1G1HR20A801	0.8p	
	C541	ECUE1C104KBQ	0.1	
	C542	ECUE1C104KBQ	0.1	
	C543	ECUE1C103KBQ	0.01	
	C544	ECUE1C104KBQ	0.1	
	C545	ECUE0J105KBQ	1	
	C546	ECUE1C104KBQ	0.1	
	C547	ECUE1C104KBQ	0.1	
	C548	ECUE1C104KBQ	0.1	
	C549	ECUE1C104KBQ	0.1	
	C550	ECUE1C104KBQ	0.1	
	C551	ECUE1C104KBQ	0.1	
	C552	ECUE1C104KBQ	0.1	
	C553	ECUE1C104KBQ	0.1	
	C554	F1G1H3R3A765	3.3p	
	C555	F1G1H3R3A765	3.3p	
	C556	ECUE1H6R0DCQ	6	
	C557	ECUE1H6R0DCQ	6	
	C558	ECUE1H102KBQ	0.001	
	C701	ECUV1A105KBV	1	
	C702	ECUV1A105KBV	1	
	C703	F1J1A106A024	10u	
	C704	F1J1A106A024	10u	
	C705	F1J1A106A024	10u	
	C706	F1J1A106A024	10u	
	C707	ECUE1C104KBQ	0.1	
	C708	ECUE1C104KBQ	0.1	
	C709	ECUE1H471KBQ	470p	
	C710	ECUE1H471KBQ	470p	
	C713	F1J1E106A253	25	
	C714	F1J1E106A253	25	
	C715	F1J1E106A253	25	
	C716	F1J1E106A253	25	
	C717	ECUV1H104KBV	0.1	
	C718	ECUE1C104KBQ	0.1	
	C719	ECUE1C104KBQ	0.1	
	C720	F1G1HR20A801	0.2p	
	C721	ECUE1H1R5CCQ	1.5	
	C723	ECUE1H102KBQ	0.001	
	C724	ECUE1C104KBQ	0.1	
	C725	ECUE1C104KBQ	0.1	
	C726	ECUV1C224KBV	0.22	
	C728	ECUV1C224KBV	0.22	
	C730	ECUV1C104KBV	0.1	
	R507	F1G1HR50A801	0.5p	
			(CRYSTAL OSCILLATORS)	
	X201	H0J138500016	CRYSTAL OSCILLATOR	
	X501	H0J138500016	CRYSTAL OSCILLATOR	

KX-NS0154

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
			(FUSES)	
⚠	F301	K5H302Y00003	FUSE	
⚠	F302	K5H302Y00003	FUSE	
⚠	F701	K5H312200002	FUSE	
			(OTHER)	
	E1	PNMC1106Z	MAGNETIC SHIELD	

17 Appendix

The extract from an Operating Instructions.

LED Indications

Color		Status
Green (4 channels — without activation key[*1])	ON	Stand-by (no active calls)
	Slow Flashing	Talking (active calls, channels available)
	Moderate Flashing	All channels busy
Blue (8 channels — with activation key[*1])	ON	Stand-by (no active calls)
	Slow Flashing	Talking (active calls, channels available)
	Moderate Flashing	All channels busy
Amber	ON	Stand-by (unstable air/LAN synchronization [no active calls])
	Slow Flashing	Talking (unstable air/LAN synchronization [active calls])
	Moderate Flashing	All channels busy (unstable air/LAN synchronization)
Red	ON	Fault
	Slow Flashing	Out of service or starting up (from data link establishment to air/LAN synchronization)
	Moderate Flashing	Starting up (communication with the PBX not established)
Red and green	Alternate blinking	Site survey master mode
OFF		Power off or updating the firmware

[*1] Refer to "Optional Accessories".

Note

LED flashing patterns are as follows:

- Slow Flashing: 60 times per minute
- Moderate Flashing: 120 times per minute

RESET Switch

Pressing the RESET switch allows you to return the unit to its factory default settings, perform site survey mode operations or perform advance diagnosis mode operations.

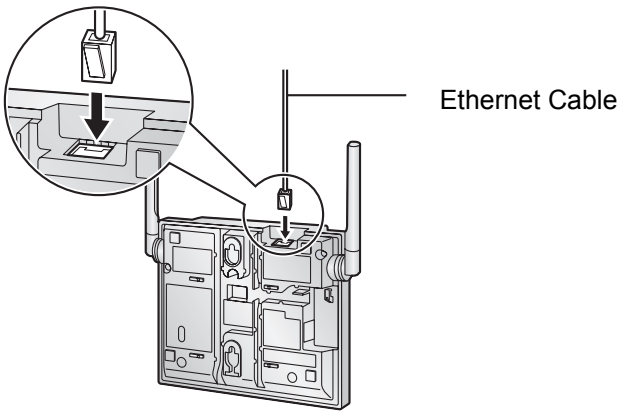
Operation	Description
Pressing and holding the RESET switch for 10 seconds when the unit is on.	Returns the unit to its factory default settings.
Pressing and releasing the RESET switch in site survey mode.	Makes the unit a slave CS for the site survey. Pressing the RESET switch again returns the unit to a Master CS. For details about performing the site survey, refer to "3.3 Site Survey".

Site Planning Tool

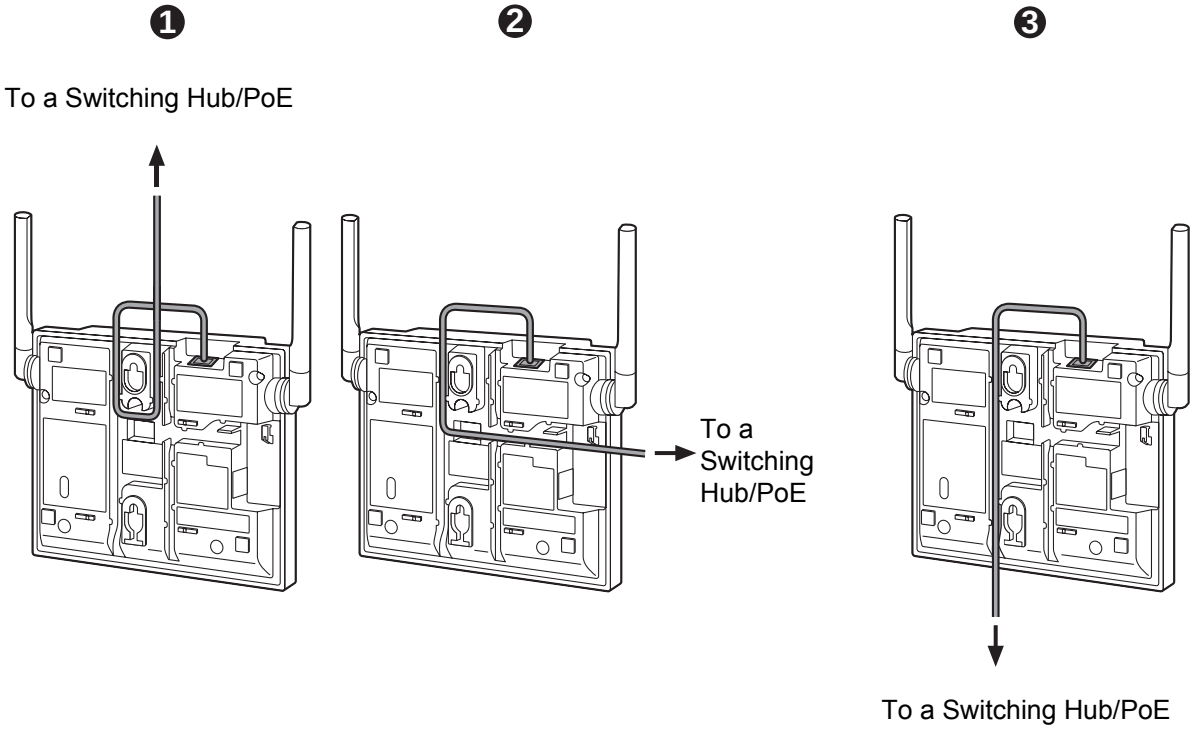
You can download the Site Planning Tool from the following Web site to estimate the number of CSs required for your installation area and their approximate installation locations.
http://panasonic.net/pcc/support/pbx/
The Site Planning Tool for LAN synchronization is different from the Site Planning Tool for Air synchronization. You must use the Site Planning Tool corresponding to synchronization method.

Setting and Installing a CS Temporarily

1. Connect the CS to an AC adaptor, battery, or PoE.
   When connecting to a battery, refer to "5.8 Connecting the Unit to a Battery".
   a. Connecting the Ethernet cable to the unit

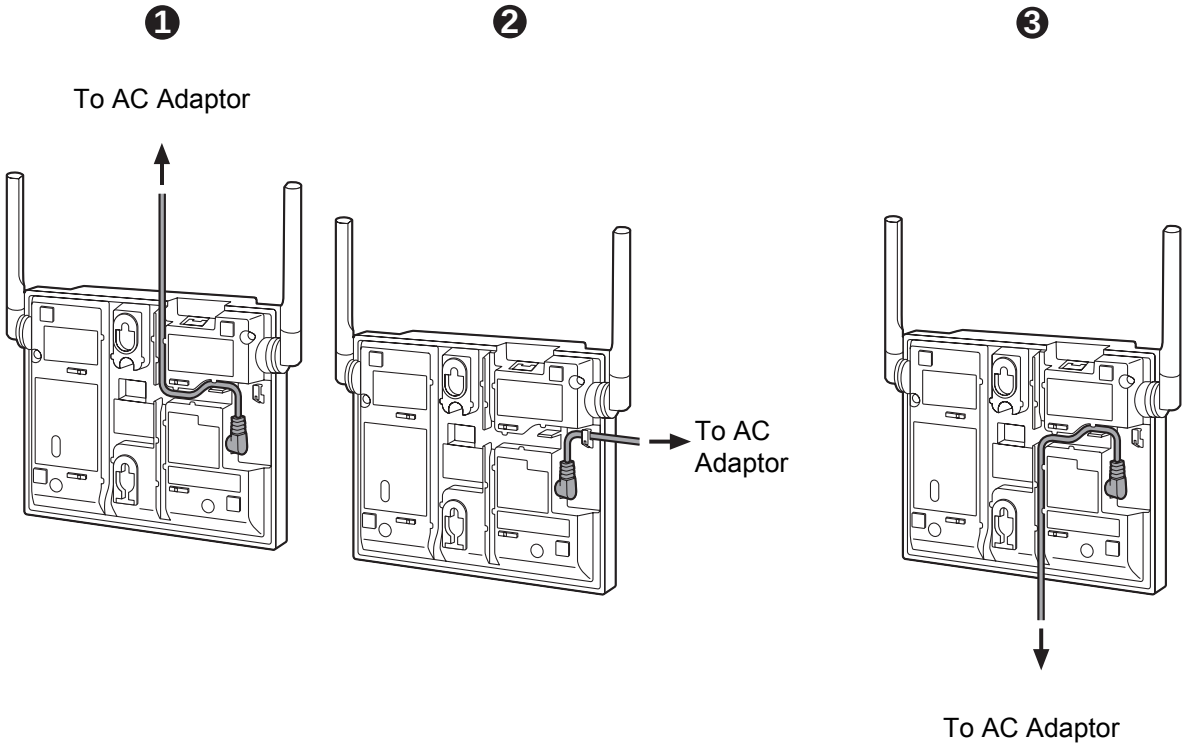


b. Pass the cable through the groove of the unit in one of the following three ways.



c. Connecting the AC adaptor cord to the unit

d. Pass the cord through the groove of the unit in one of the following three ways.



2. Connecting the Unit to the Network
Temporarily install the unit in the best site as defined in Site Planning, connect the unit to a nearby hub.

[LAN Synchronization only]
LAN synchronization should be diagnosed in advance when connecting to a network that does not comply with recommendations 1 and 2 in "5.3 Recommended Network Configuration".
For details about LAN synchronization diagnosis, refer to "5.4 LAN Synchronization Diagnosis".