



SERVICE MANUAL

MODEL : N10(N10E ONE/N10E EU/N10Z EU)

# PORTABLE NAVIGATION SERVICE MANUAL

## CAUTION

Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type.

## SUPPORT - HOTLINE

[www.lge.com/support/software.jsp](http://www.lge.com/support/software.jsp)

For questions on products please visit our  
site or contact the Support Team.

Monday-Fridays : 09:00 am - 6:00 pm



**MODEL : N10(N10E ONE/N10E EU/N10Z EU)**



# [CONTENTS]

## ○ SECTION 1. GENERAL

- SAFETY PRECAUTIONS ..... 1-2
- SPECIFICATIONS ..... 1-3
- ACCESSORIES ..... 1-4
- NAME OF EACH PART ..... 1-5
- SUPPORT-HOTLINE ..... 1-7
- SOFTWARE UPGRADE METHOD (OS IMAGE) ..... 1-8
- TROUBLESHOOTING GUIDE ..... 1-9

## ○ SECTION 2. ELECTRICAL SECTION

- BLOCK DIAGRAMS ..... 2-1
- SCHEMATIC DIAGRAMS ..... 2-3
- WIRING DIAGRAM ..... 2-25
- PRINTED CIRCUIT DIAGRAM ..... 2-27

## ○ SECTION 3. EXPLODED VIEW

- CABINET & MAIN FRAME SECTION ..... 3-1

## ○ SECTION 4. REPLACEMENT PARTS LIST ..... 4-1

# SECTION 1. GENERAL

## □ SAFETY PRECAUTIONS

### Electrostatically Sensitive Devices (ESD)



Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.**

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).








### CAUTION. GRAPHIC SYMBOLS

	THE LIGHTNING FLASH WITH APOWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

## SPECIFICATIONS

ITEM	SPECIFICATION	REMARK
<b>OS</b>	Win CE 5.0	
<b>CPU</b>	ARM9 400 MHz	
<b>MEMORY</b>	512MB/1GB/2GB (It depends on models.)	Built-in Memory
<b>DISPLAY</b>	3.5inch TFT LCD Resolution 320 X 240 LED type Backlight Touch Screen	Analog resistive type
<b>AUDIO</b>	Mono, Internal Speaker	Typical 1.0W (1EA)
<b>GPS</b>	SiRF star III, Internal Antenna	
<b>NAVI</b>	EU (It depends on models.) (TMC : FM Traffic Receiver)	Voice Guidance
<b>MAP</b>	Navteq	
<b>POWER</b>	DC 5V/1A	Vehicle Power Cigar-jack Input (12-24V)
<b>TEMPERATURE</b>	Operating : -10 °C to 60 °C Storing : -30 °C to 80 °C	
<b>Built-in BATTERY</b>	DC 3.7 V (Li-Ion), 1100mAh - MP3 : 5 hours [Brightness: Minimum, Volume: 5 (Center)] - Navigation : 4.5 hours [Brightness: 5 (Center) , Volume: 5 (Center)] - Photo : 5 hours [Brightness: 5 (Center) , Volume: 5 (Center)]	
<b>INTERFACE</b>	Mini-USB Port External GPS Jack	USB 2.0
<b>Multimedia</b>	Image Audio	JPG MP3

## ❑ ACCESSORIES

				
Main Body	(801) Quick Reference Guide	(825) USB Cable	(827) Car charger with TMC antenna	(830) Windshield mount
				
(835) Installation CD	(836) GPS Antenna (Optional)			

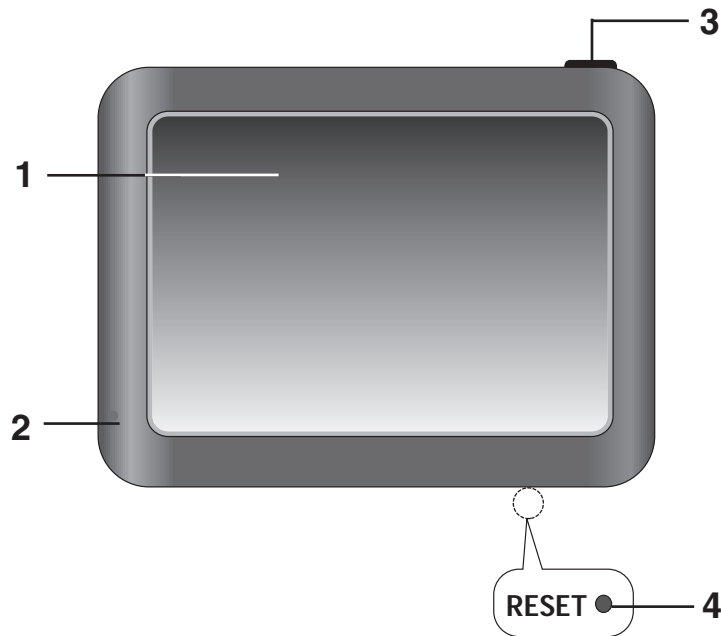
Contents may be changed without notices.

### Option table by models

Model	Bluetooth	TMC	TTS
N10E	X	X	X
N10T	X	X	O
N10R	X	O	X
N10B	O	X	X
N10Z	X	O	O
N10Y	O	O	O
N10S	O	X	O
N10Q	O	O	X

## □ NAME OF EACH PART

### • Front panel



#### 1. LCD

#### 2. Microphone (for only with Bluetooth wireless technology)

#### 3. POWER (⏻)

- Power on: Press and hold this button in power off status.
- Power off: Press this button for about 2 seconds in power on status.
- Handy setup: Press this button briefly in power on status.

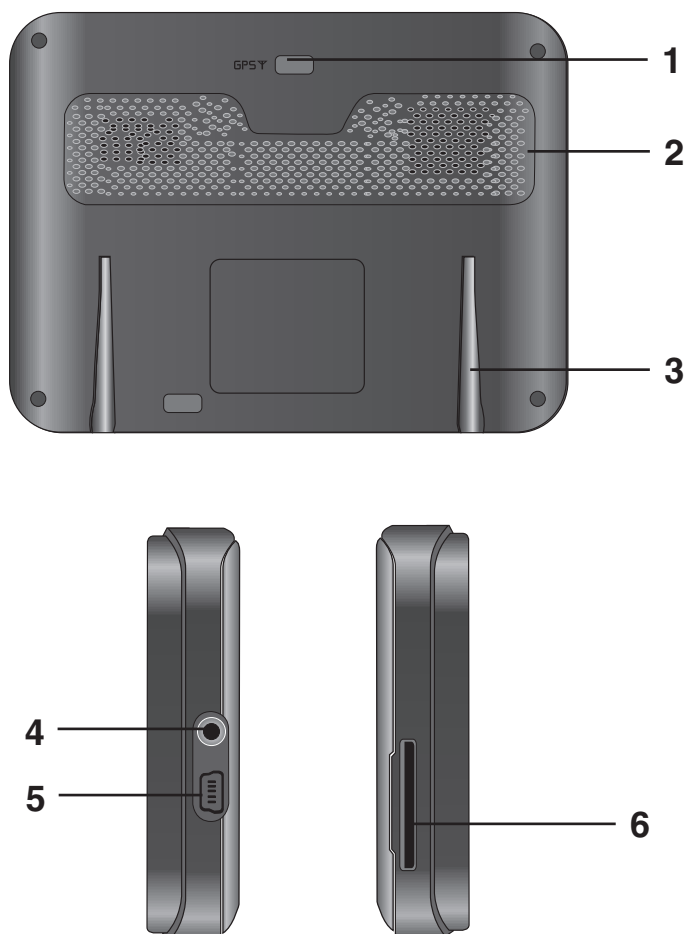
#### 4. RESET hole

If the unit does not respond, press the RESET hole using a ball point pen or a similar tool.



- To activate the menu function on LCD screen, touch the LCD screen with your finger.
- If you cut the external power supply or the battery level is too low, the device will be turned off after a few seconds.

- **Rear / Side panel**



**1. External GPS Antenna Port**

**2. Speaker**

**3. Docking connector**

**4. Earphone jack**

**5. USB port/ Power supply connector (DC5V)**

**6. Memory Card Slot**  
Insert a SD Memory Card.



Deleting or altering the map data in the built-in memory may cause problems in the navigating operation.

## SUPPORT-HOTLINE

If you have other questions about the Navigation Device, please contact your supplier or  
Technical Support:

**[www.lge.com/support/software.jsp](http://www.lge.com/support/software.jsp)**

For questions on products please visit our  
site or contact the Support Team.

Monday-Fridays : 09:00 am - 6:00 pm

LG Subsidiary	Country	Service Number
LG Electronics ESPANA S.A.	SPAIN	902 500 234
LG Electronics U.K. Ltd	U.K. / IRELAND	0870 873 5454
LG Electronics France	FRANCE	0825-825-592
LG Electronics Deutschland GmbH	GERMANY	01805 4737 84
LG Electronics Italia S.p.A	ITALY	39 199600099
LG Electronics Hellas S.A	GREECE	801-11-200-900
LG Electronics Benelux B.V	BELGIUM LUXEMBOURG Netherlands	015-200-255 +32-15-200-255 0900-543-5454
LG ELECTRONICS MAGYAR KFT	HUNGARY Bulgaria	0640-545454 0700-1-5454
LG Electronics Polska Sp. z.o.o	POLAND	801 54 54 54
LG Electronics Portugal, S,A	PORTUGAL	808-78-5454
LG Electronics Nordic AB	SWEDEN DENMARK FINLAND NORWAY	0771 41 4379 8088 5758 0800 116 587 800 18 740
Austria	AUSTRIA SWITZERLAND	0810 144131 0848 543 543
RUMANIA	RUMANIA	40 31 228 3542
CZECH REPUBLIC	CZECH SLOVAKIA	420 810 555 810 421 850 111 154



# ❑ SOFTWARE UPGRADE METHOD (OS IMAGE)

## 1. Copy N10 OS images to SD Card.

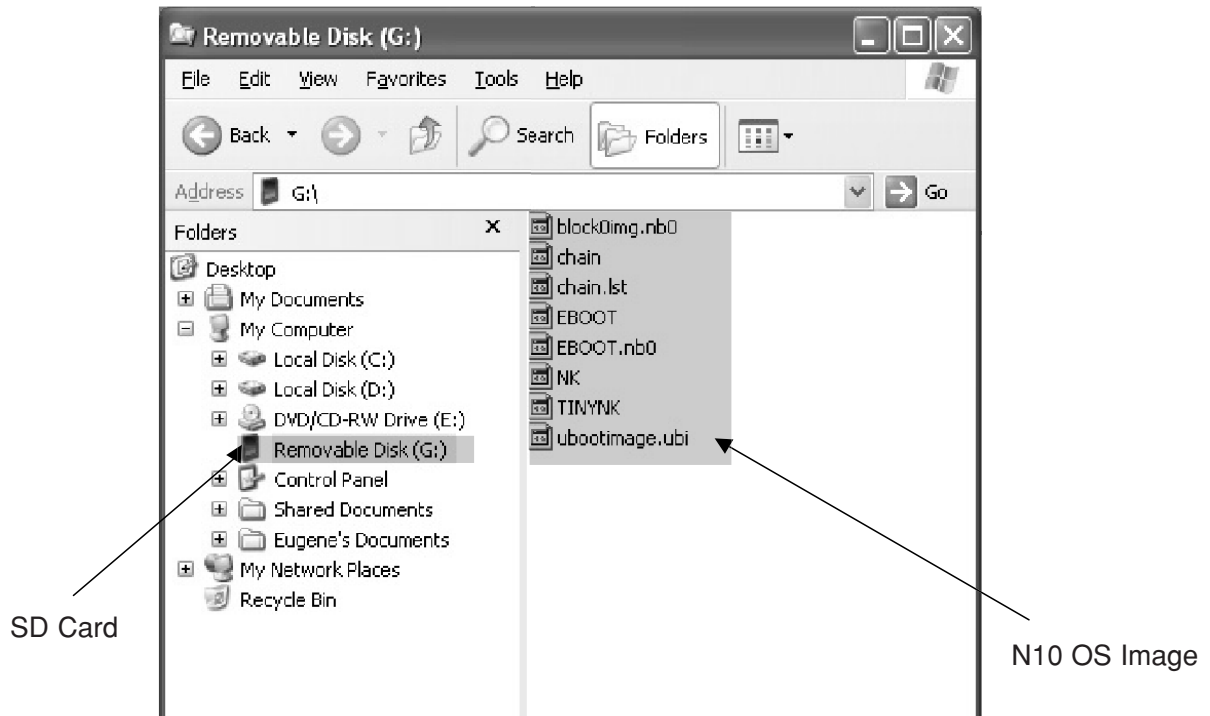


Fig1.OS Image

## 2. Insert SD Card to N10 then Power ON.

## 3. OS Downloading screen is displayed.

## 4. When OS Downloading is completed N10 reboot automatically.

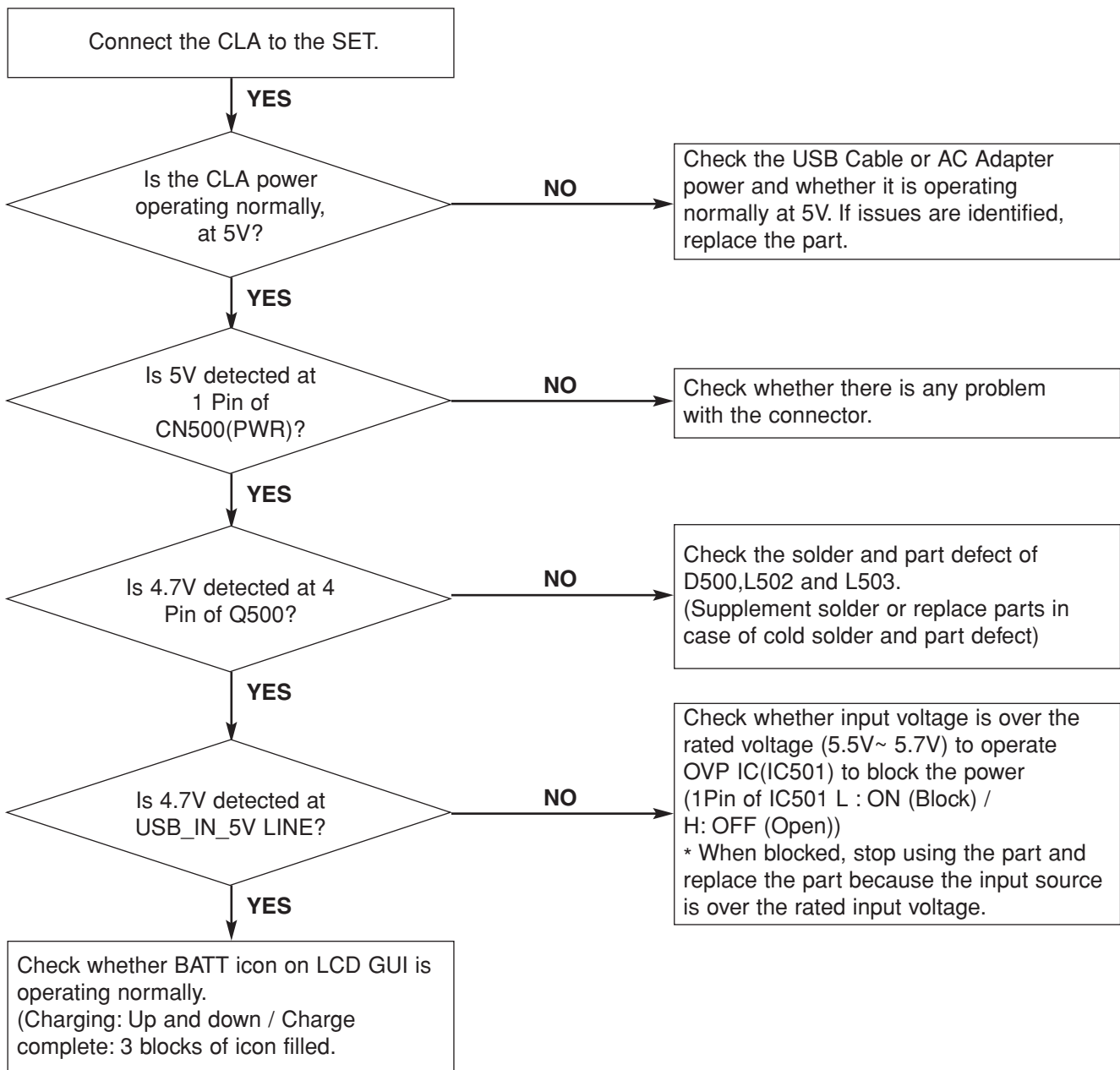
## 5. Eject SD Card from N10.



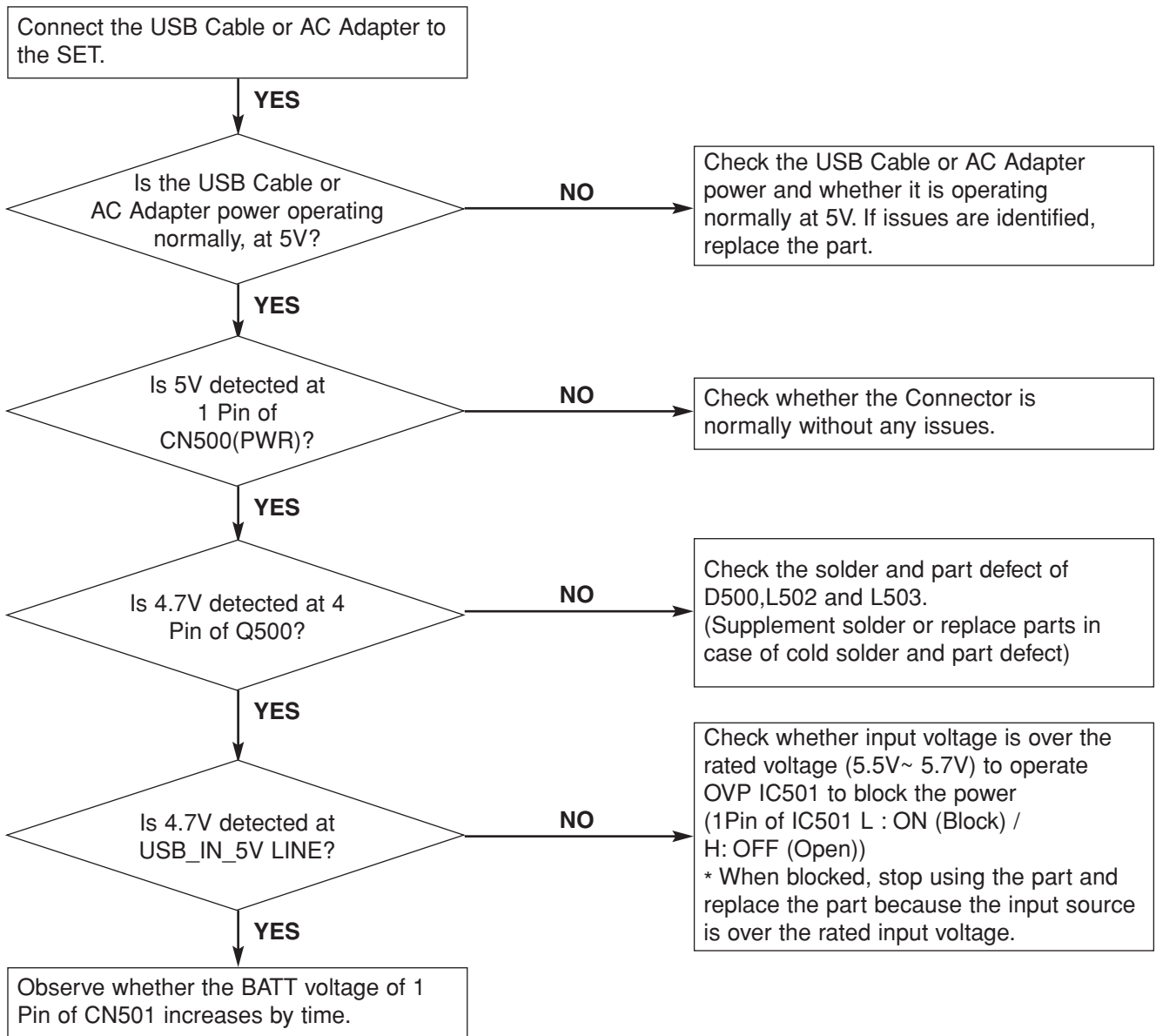
Fig2.OS download

# TROUBLESHOOTING GUIDE

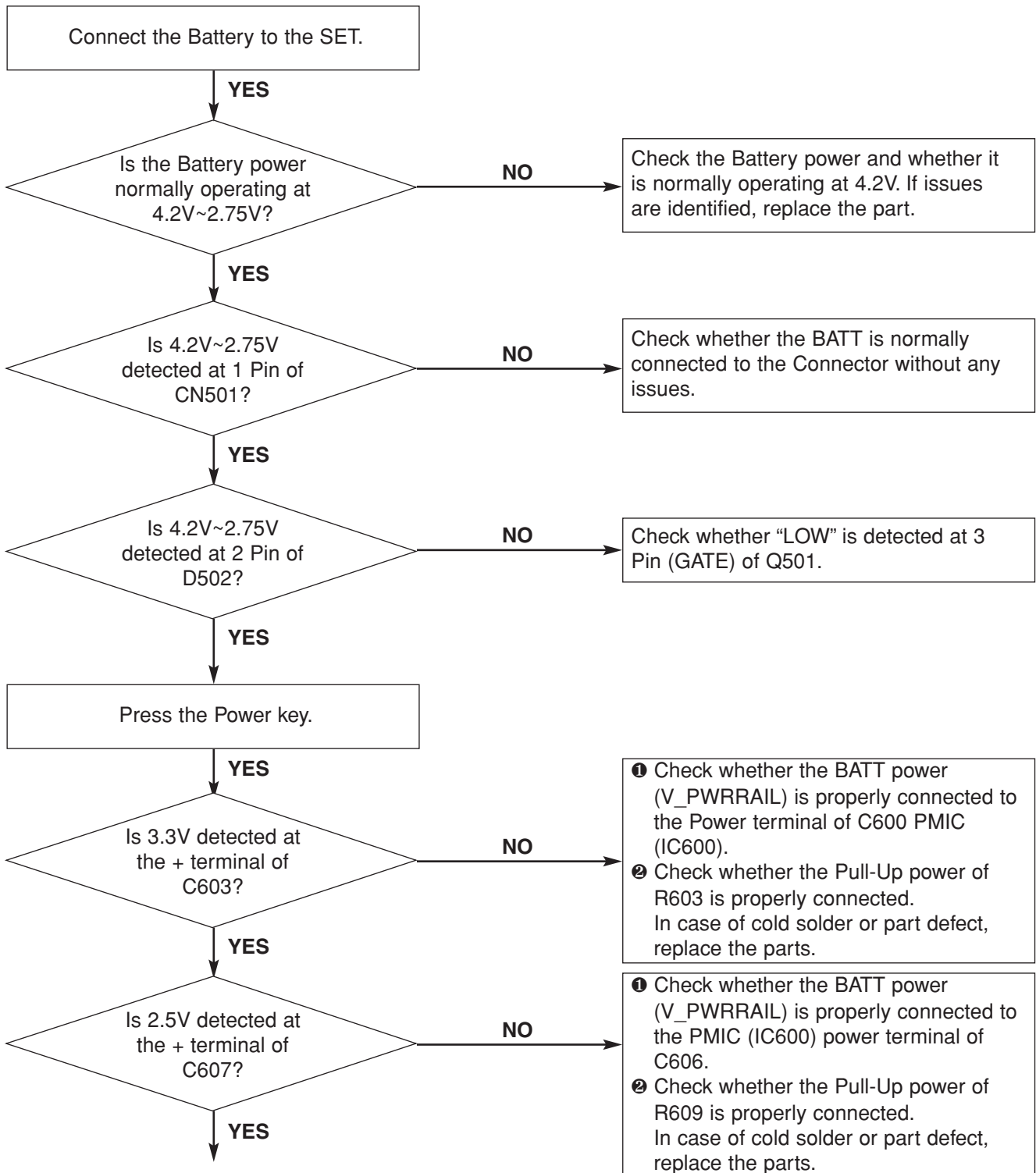
## 1. CHARGING CIRCUIT (CIGARETTE LIGHTER ADAPTER / AC ADAPTER)

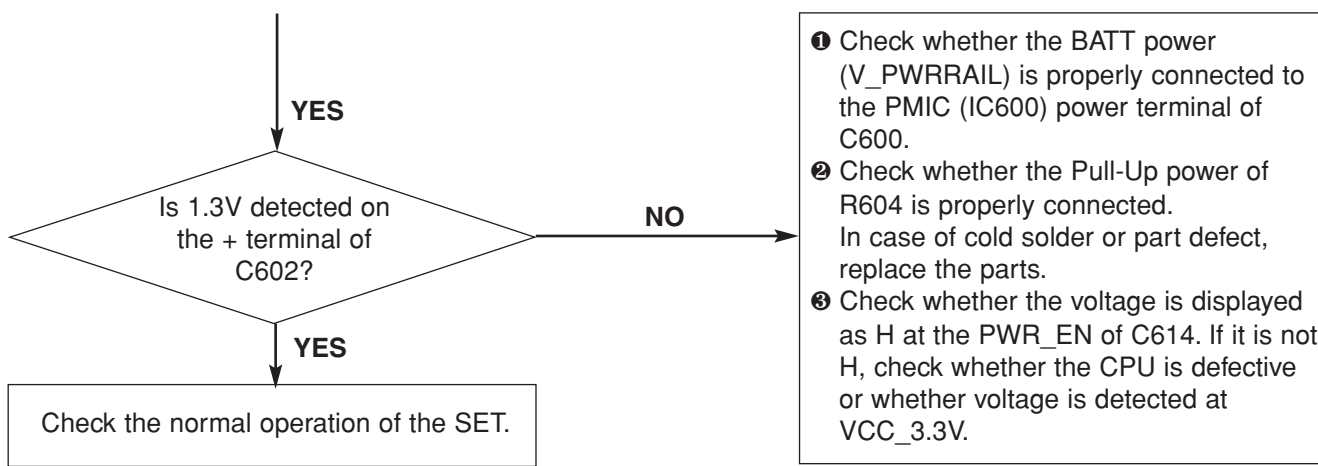


## 1. CHARGING CIRCUIT (USB CABLE)

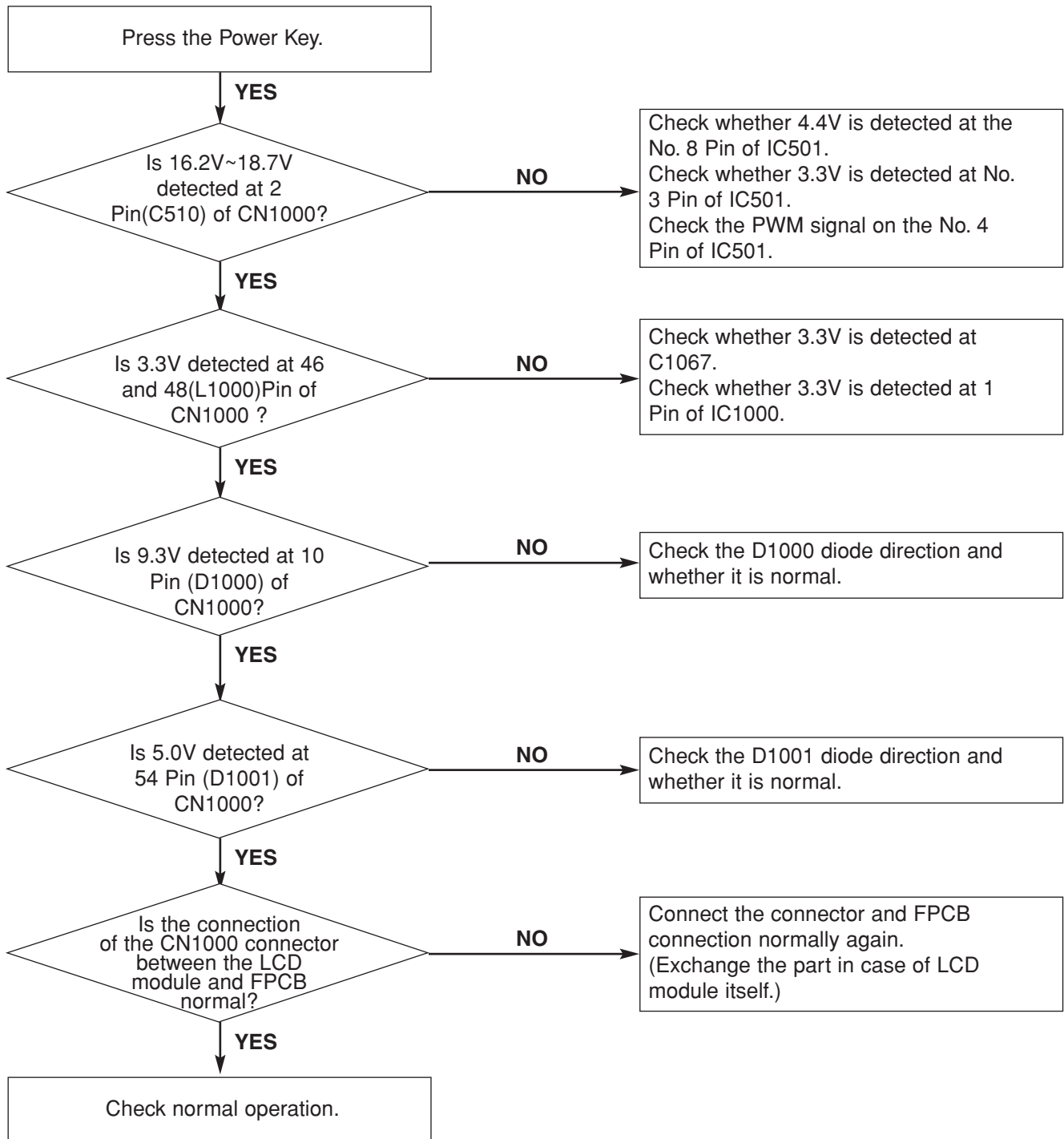


## 2. POWER CIRCUIT (V\_BAT/V\_POWERAIL)

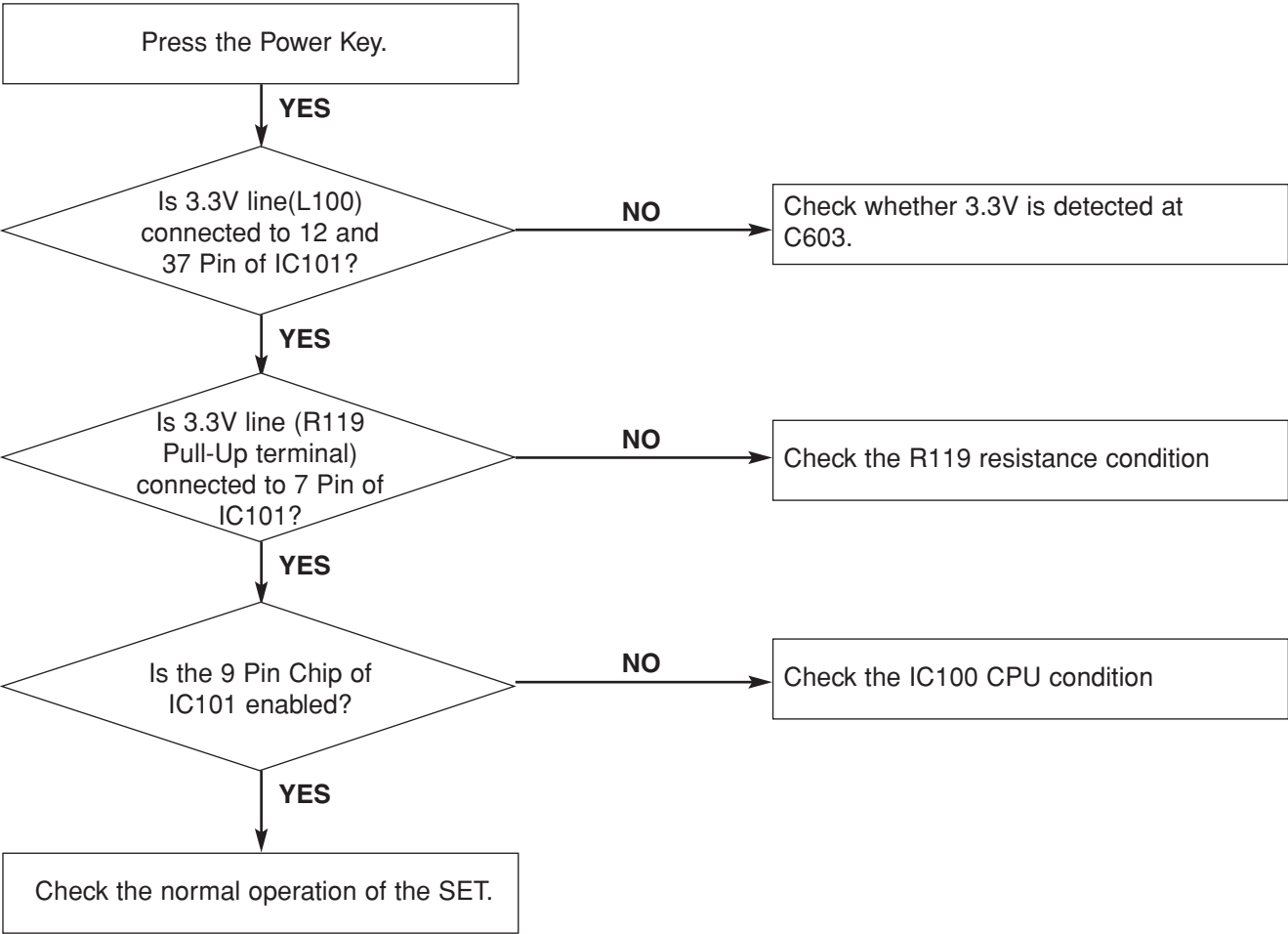




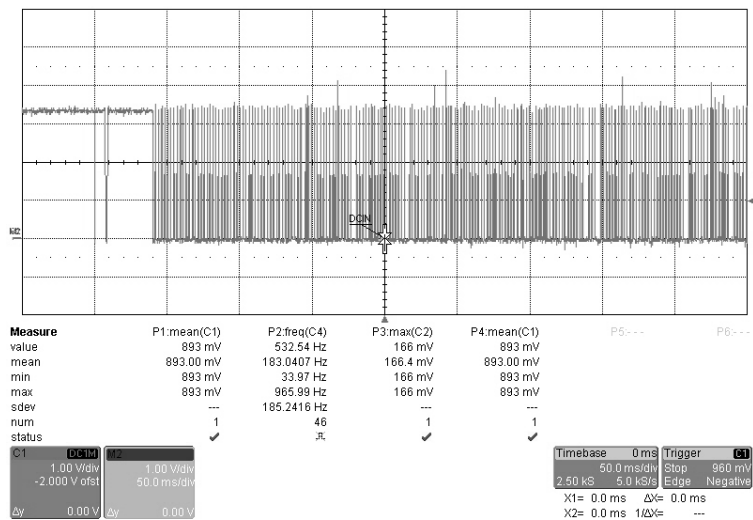
### 3. DISPLAY (LCD)



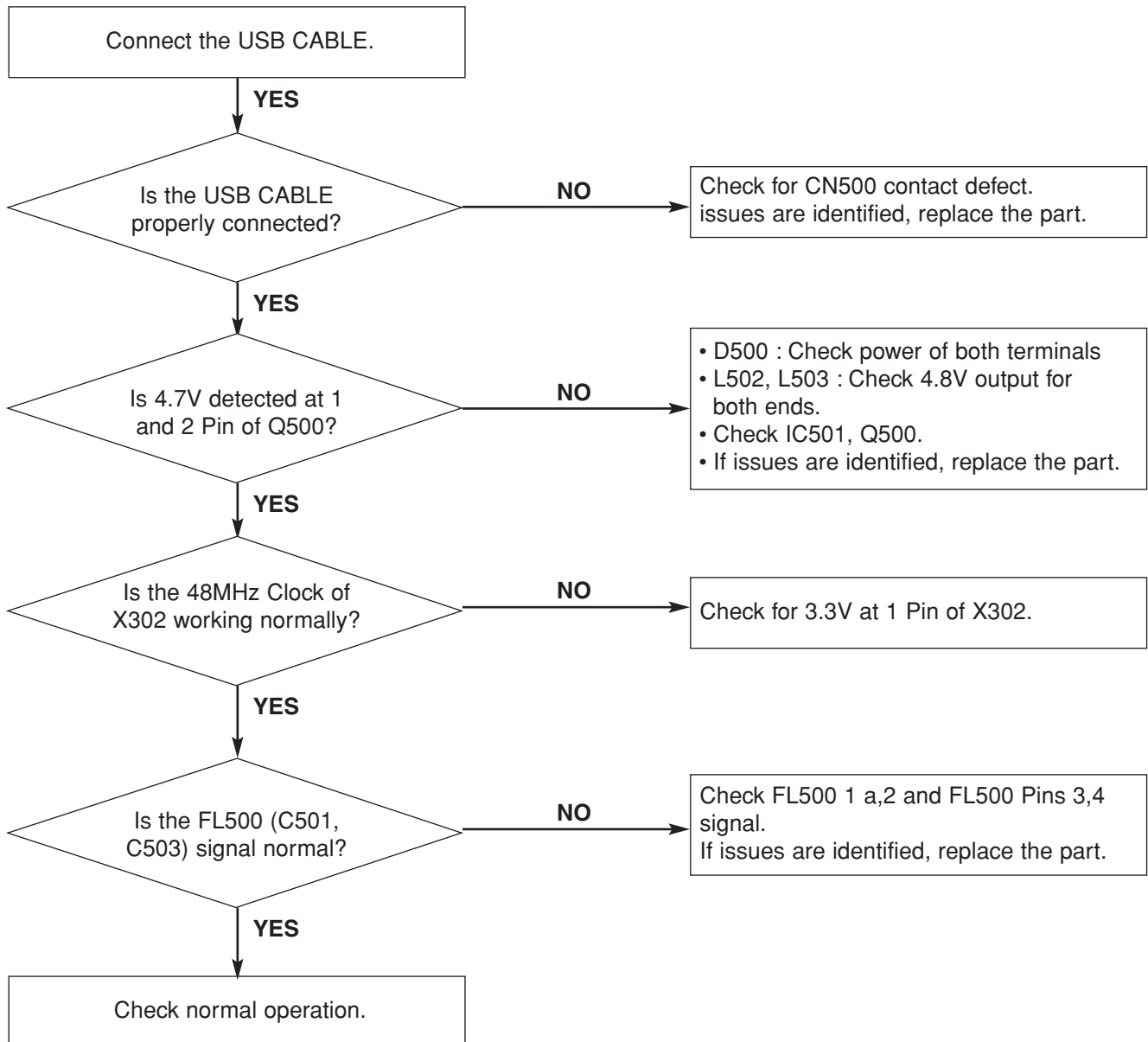
4. NAND



IC101 9 PIN : NAND\_CE0# Chip Enable Signal

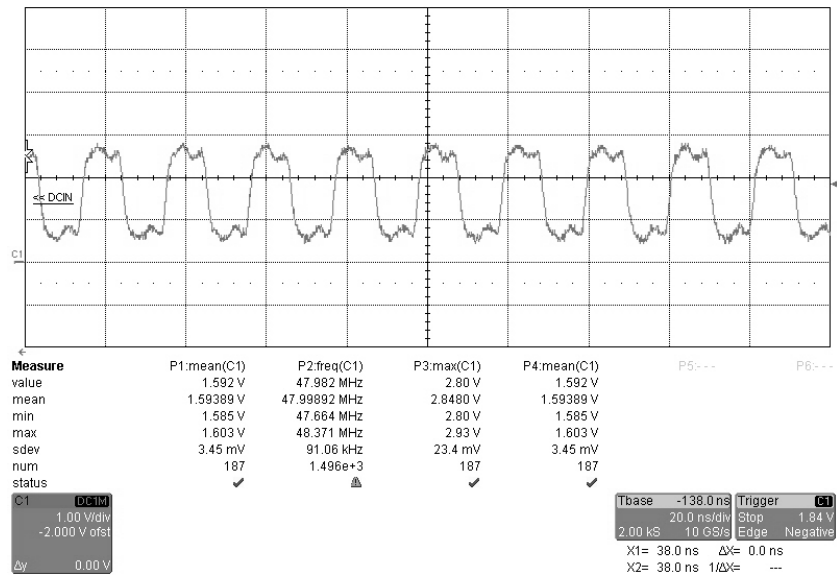


## 5. USB ( SLAVE )

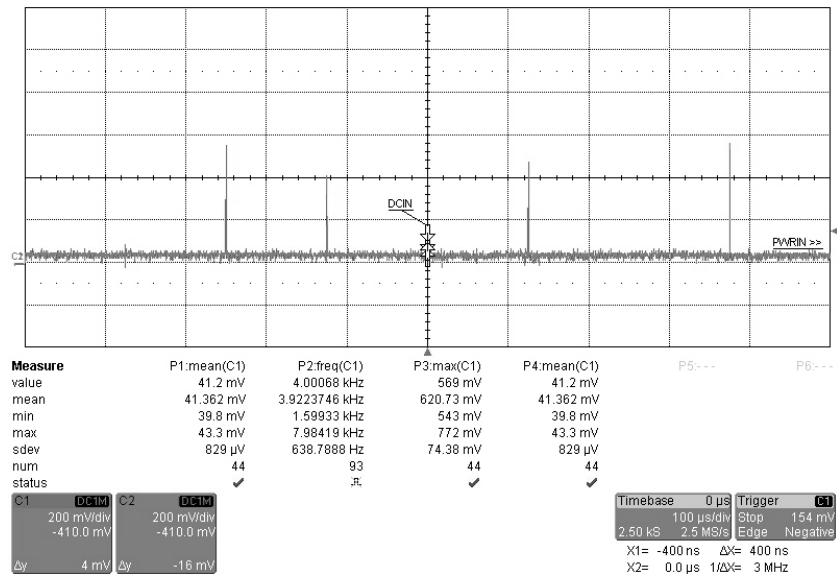




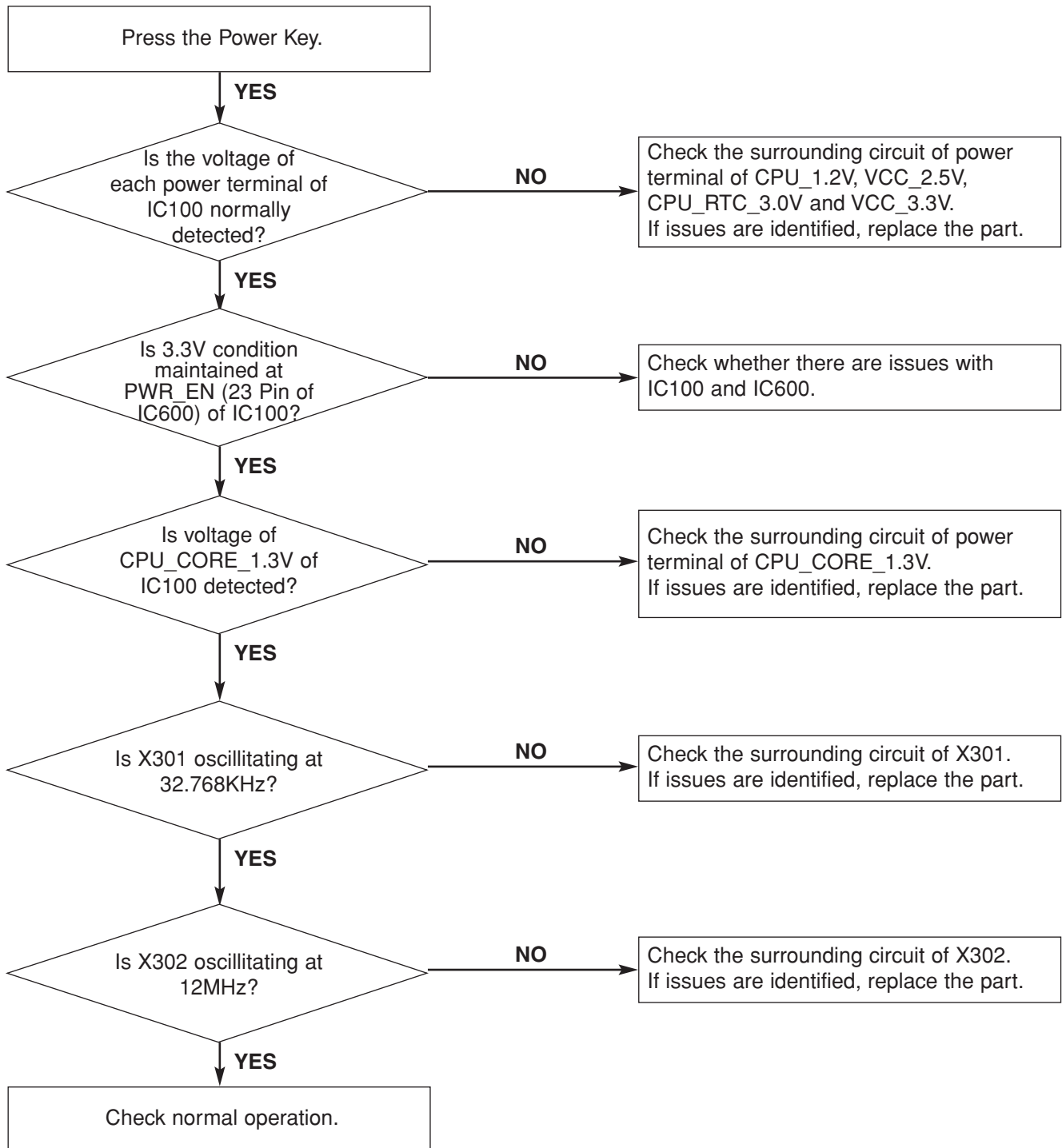
## X302 3 Pin : 48MHz



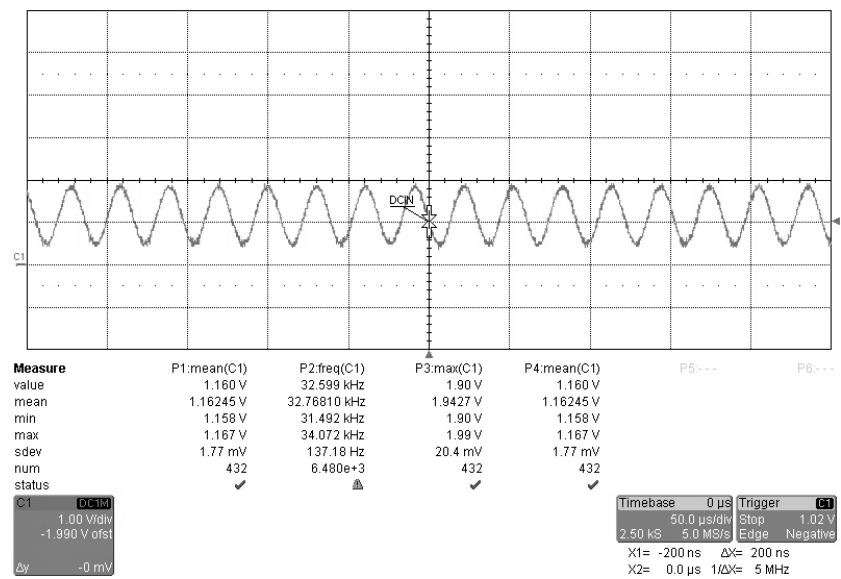
## FL500 : USB\_D+/USB\_D-



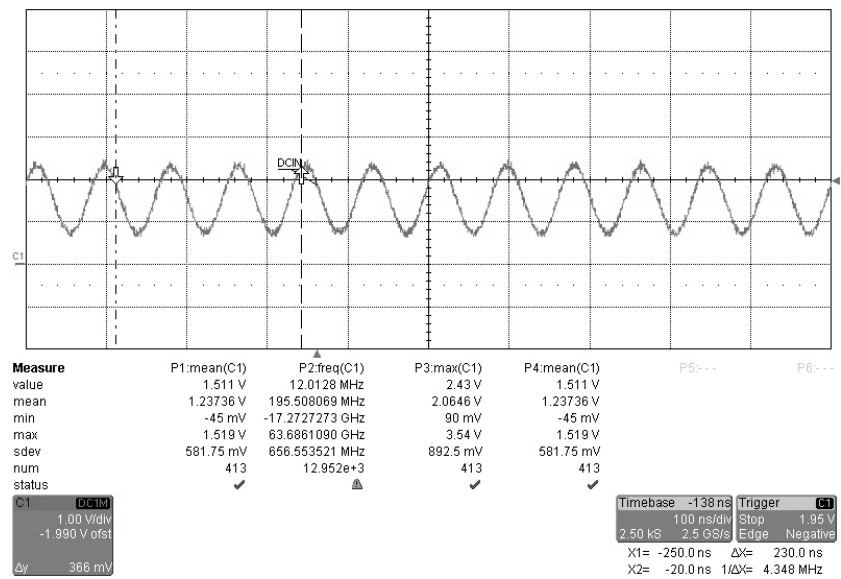
## 6. CPU CIRCUIT.



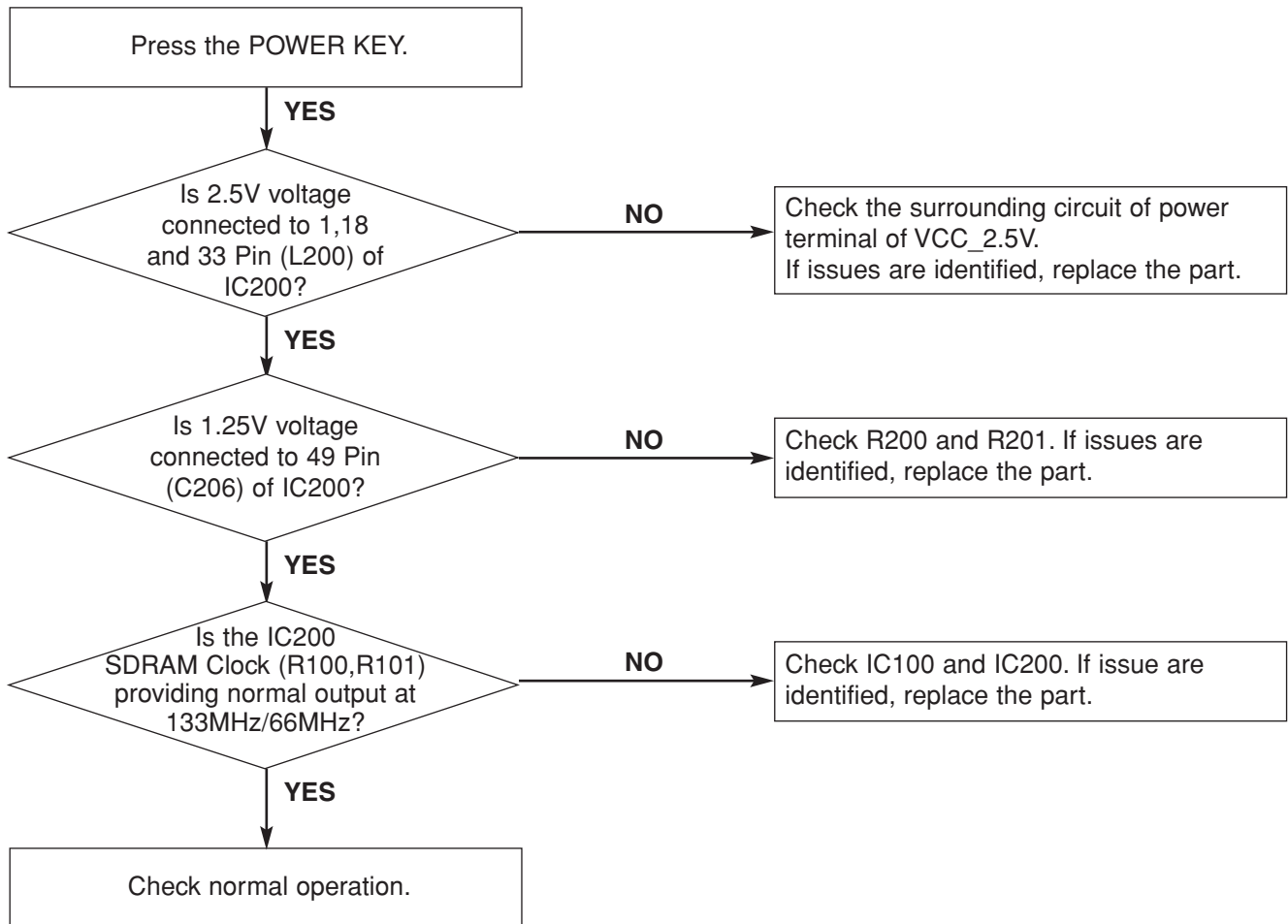
**X301 1 and 4 Pin : 32.768KHz**



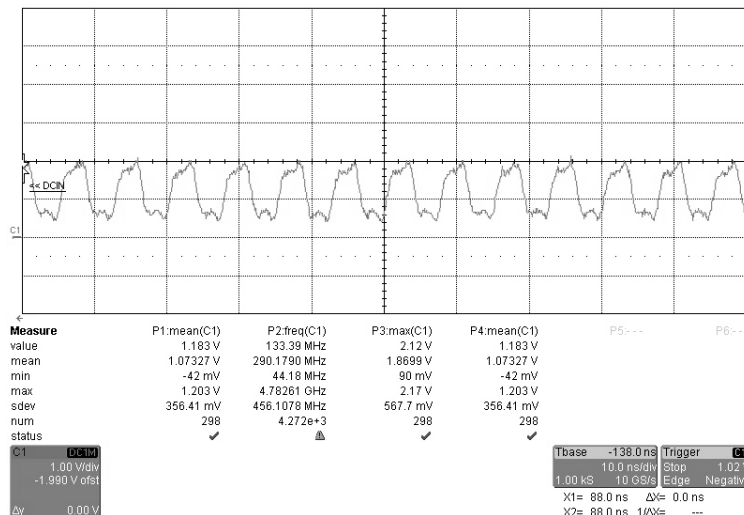
**X302 1 and 3 Pin : 12MHz**



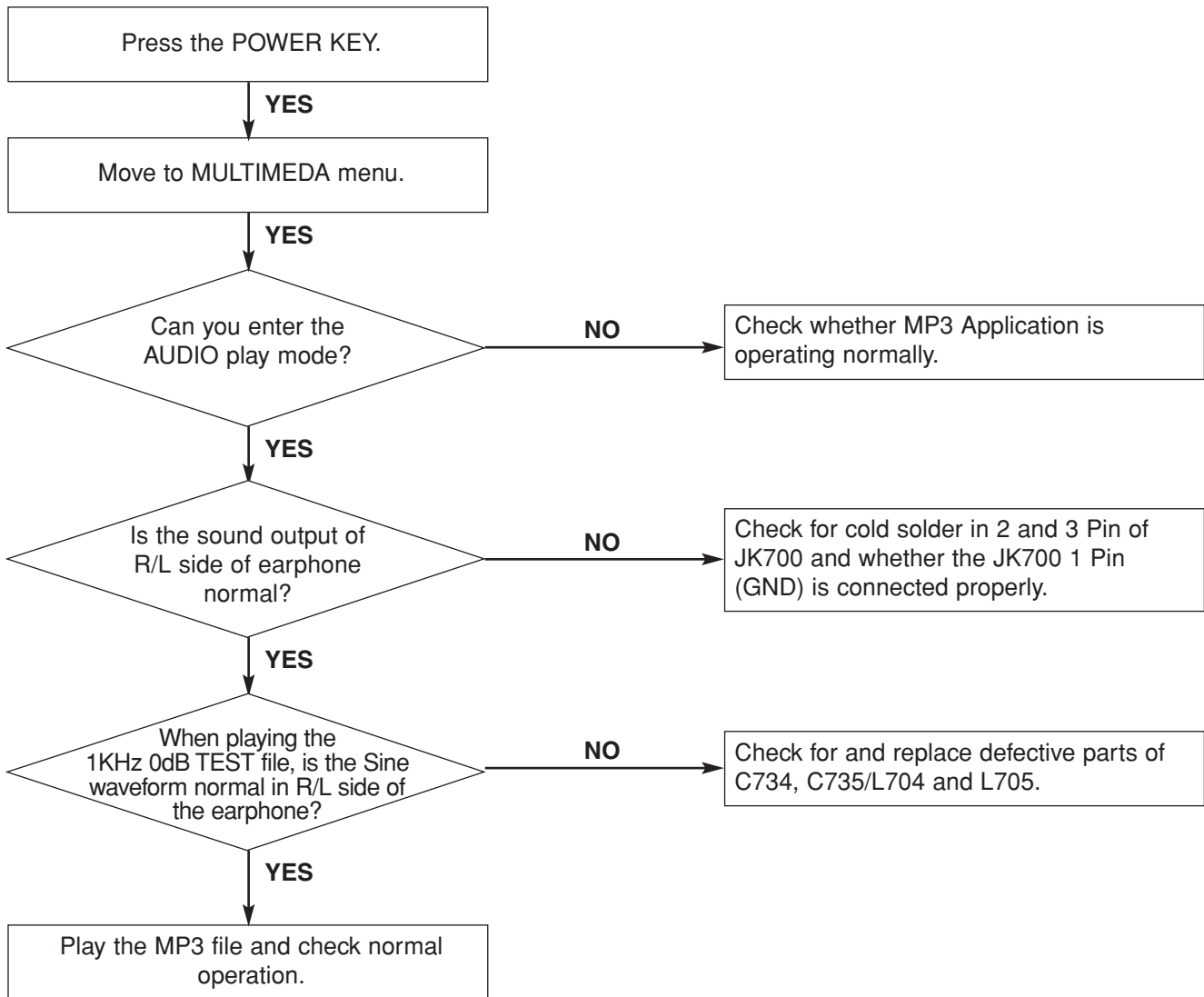
## 7. DDR1 SDRAM CIRCUIT.



IC200 SDRAM\_CK, SDRAM\_CK# : 133MHz/66MHz



## 7. AUDIO RELATED CIRCUIT.



## 8. GPS

### ► GPS Factory Mode description

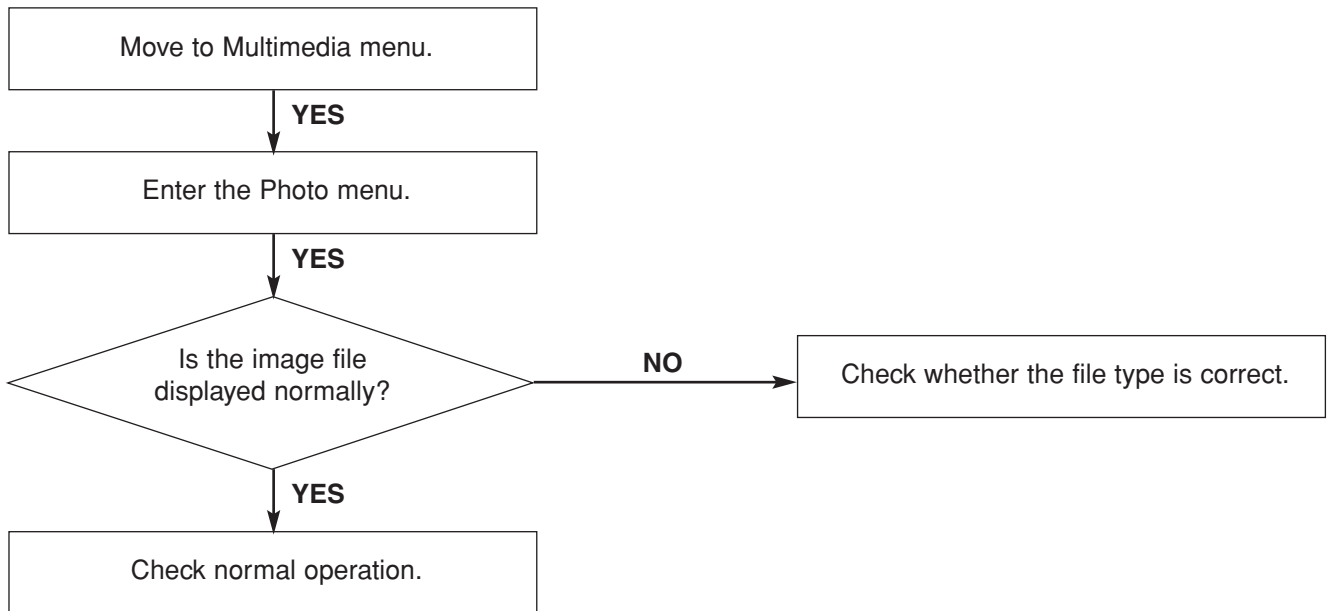
- GPS receiver has 12 channels and can receive up to maximum of 12 satellite signals simultaneously. No. 1 window indicates the signal strength of each satellite, the number on the left side of each bar indicates the unique number of the satellite and the number inside the bar indicates the C/No (Carrier to Noise Ratio) of the satellite signal. Here, green satellite is the satellite for current positioning, can enables positioning when using minimum of 4 satellites. In the above picture, currently 11 satellite signals are received and 9 satellites among these are used for positioning. C/No is normal when the average of the used satellites in the Open Sky environment is about 35.
- No. 2 window refers to the positioning condition of each satellite. Satellite at the center of the circle is the satellite located at 90 degrees to the head and the farther away from the circle indicates the satellite located at the horizon. Also the top of the circle is the north direction and the right side of the circle is the east direction.
- No. 3 window displays the information of UTC (Coordinated Universal Time), latitude, longitude, altitude etc. The following button is the S/W Reset button of the GPS receiver. Each reset has Cold /Warm /Hot. When using the Cold Start that receives the satellite signal again after resetting all saved information, it is normal when the satellite is Re-Positioned within 60 seconds. Re-Positioning is completed when longitude, latitude and altitude information are displayed.



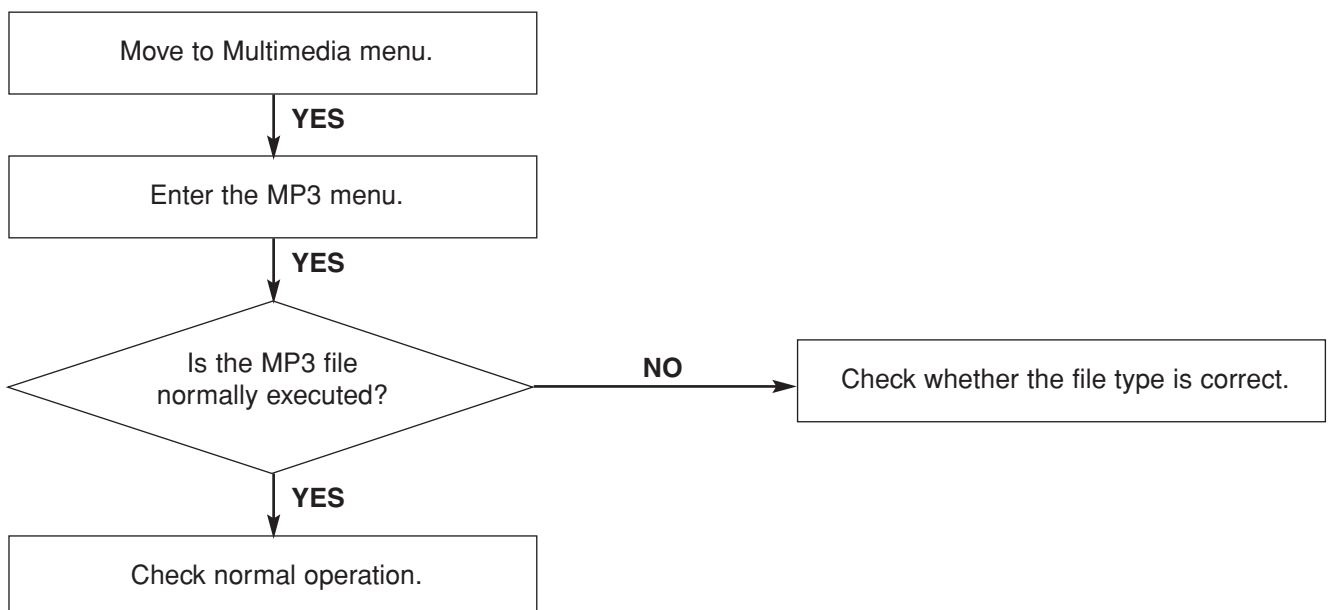
### ► GPS Trouble Shooting

- When there is a problem with the GPS, enter the above Factory Mode to make the judgment of accept/reject. When communication between the GPS Module and CPU is active, the time will be displayed even when the GPS does not detect the satellite. (When Positioning is not achieved, incorrect time will be displayed.) You can check the communication condition with the CPU based on this observation and when the communication is inactive, try exchanging the GPS Module Cable, GPS Module and Main Board in order.
- When the GPS communication is active but GPS cannot detect the satellite in the Open Sky or when the average C/No of the green satellite is below, exchange the GPS Module.

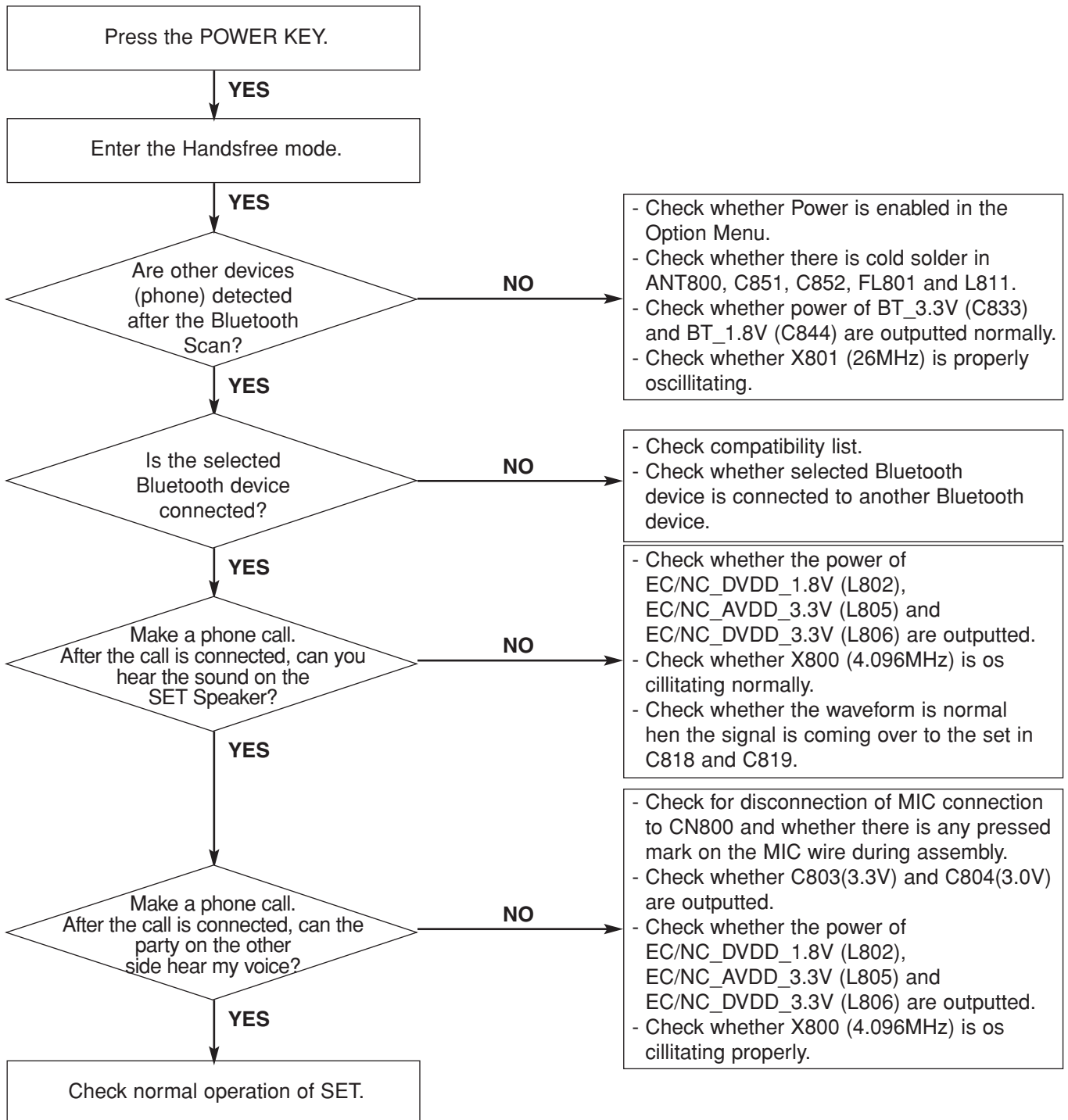
## 9. PHOTO



## 10. MP3

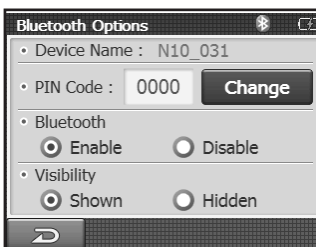
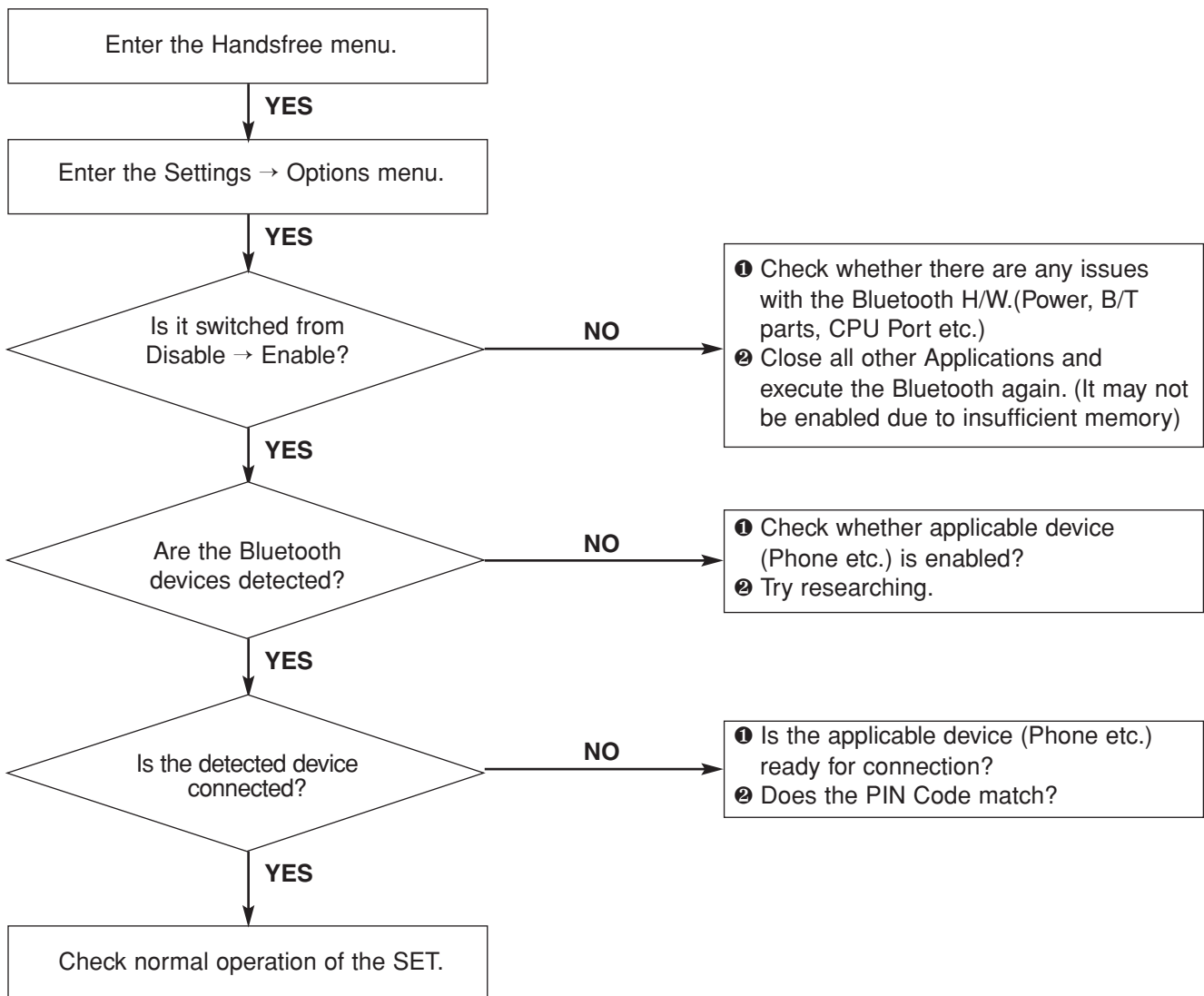


## 11. BLUE-TOOTH





## 12. BLUE-TOOTH (ENABLE AND DETECT DEVICE)



Switch from Disable → Enable.



Device search



Device connecti on

## 13. GENERAL NAVIGATION

### Navigation program and map data protection

- If you want to operate this product properly, navigation program and map data provided by LGE should be in LGE folder on your navigation device.
- Don't erase or modify any contents in the LGE folder using USB mass storage connection. (All contents are important to operate navigation. Deleting these data may cause navigation to lead to malfunction.)

### Audio streaming

To enjoy high quality music using Bluetooth stereo headsets, we recommend over 16-bit audio with sampling rates of 48KHz and 44.1KHz. (The sound quality depends on sampling rates of audio and your headset.)

### Picture format

- JPG: Image file size should be less than 1600 MP (megapixels).

### Cannot identify the current location. (GPS not receiving)

GPS cannot be used indoors and must be connected to the power with ACC to a vehicle in a location where the sky can be seen well.

When initially connecting the GPS, it usually takes about 10 minutes to operate normally, but the rates of audio and your headset.

connection speed can differ depending on the weather condition, and surrounding obstacles.

If the GPS connection is unstable for a long period of time, try the following.

- Check if the power is connected to the product.
- Check if the back of the GPS product is in a location where the sky can be seen well.
- If there are high buildings or if you are under a tree, move to a location where there aren't any obstacles.
- Check the GPS receiving condition from the GPS menu.

### Cannot hear the voice guide.

You can hear the voice guide when you select "Guidance" in "Setup".

But during actual driving, the voice guide is not heard.

If the volume is too low, adjust the volume on the right unit.

### Cannot see the map.

This is when you cannot see the map even when you have executed the navigation menu.

This happens when the data within the memory is damaged. Delete all the data within the memory and reinstall the data.

If the problem persists after the installation, contact the Customer Service Centre.

### Map data and dangerous area information are not updated.

You must periodically update the map data.

Refer to the homepage for details on how to update the data.

### The path guide can be different from the actual path. (Path guide error)

- When the road is closely parallel.
- When the splitting road angle is very small.
- When there is an adjacent road when turning.
- When driving on a road that is narrowing fast.
- When driving through the mountain or where the road is too curvy.

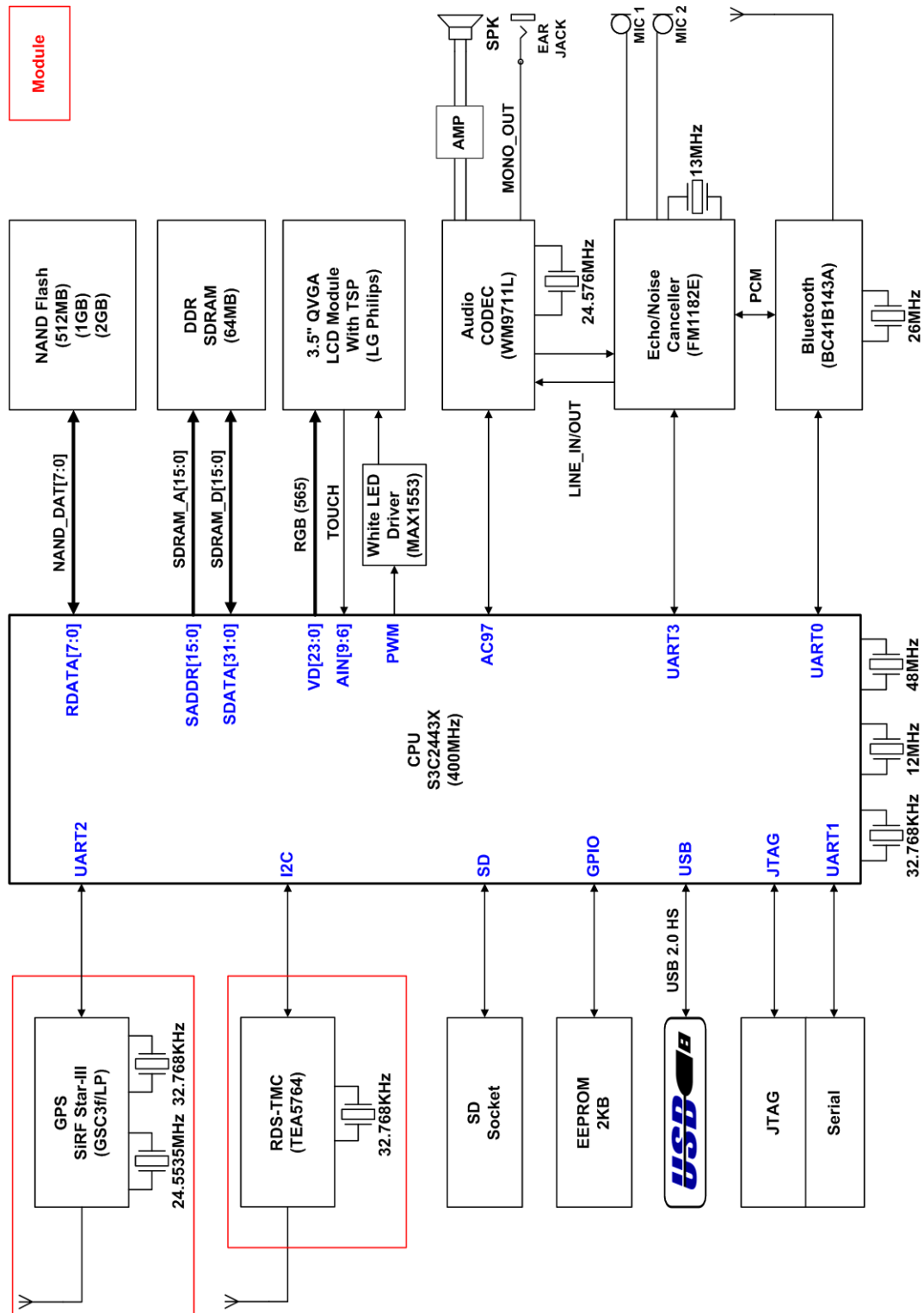
# MEMO

Handwriting practice area consisting of 25 horizontal dotted lines.

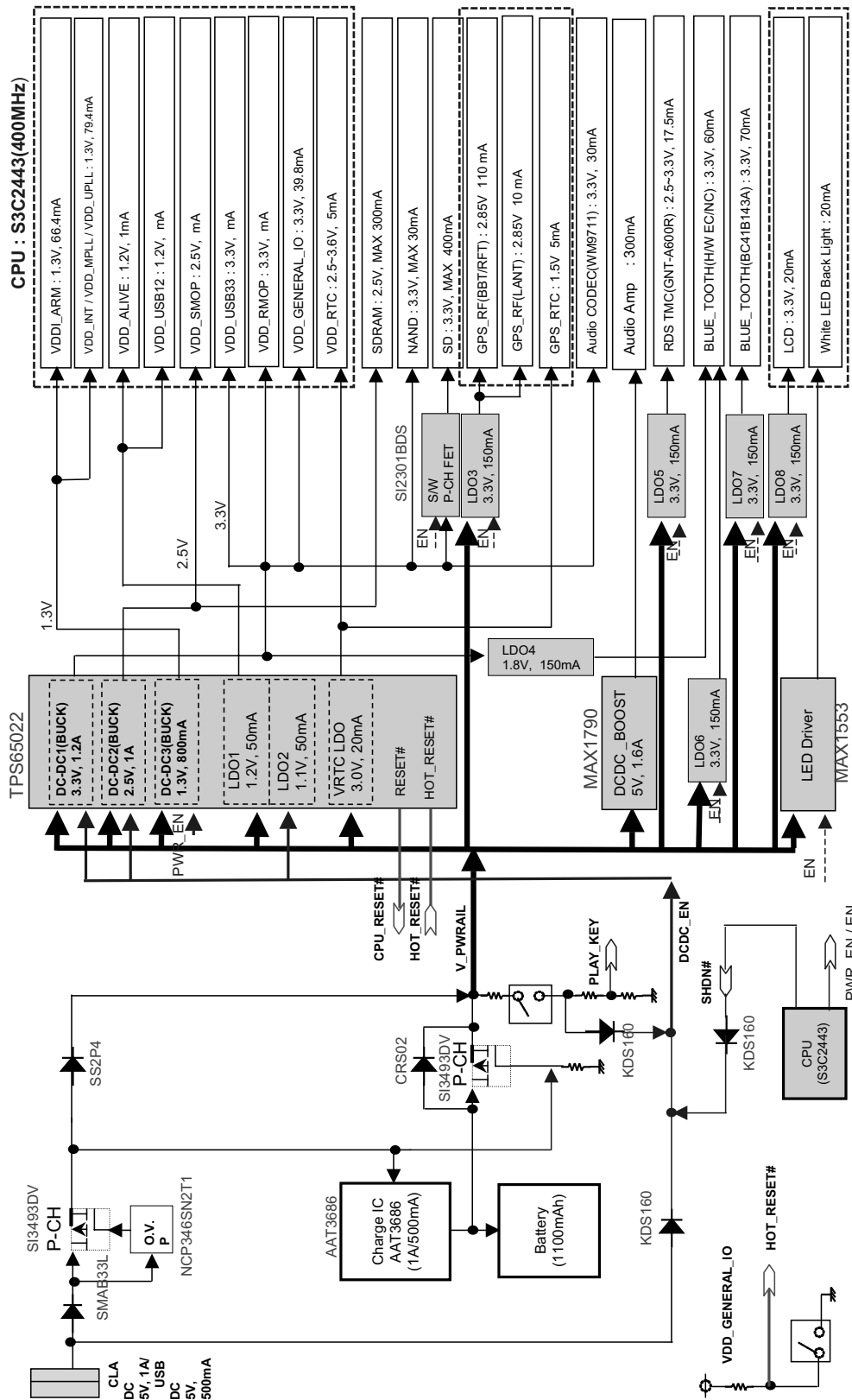
# SECTION 2. ELECTRICAL SECTION

## □ BLOCK DIAGRAMS

### 1. SYSTEM BLOCK DIAGRAM

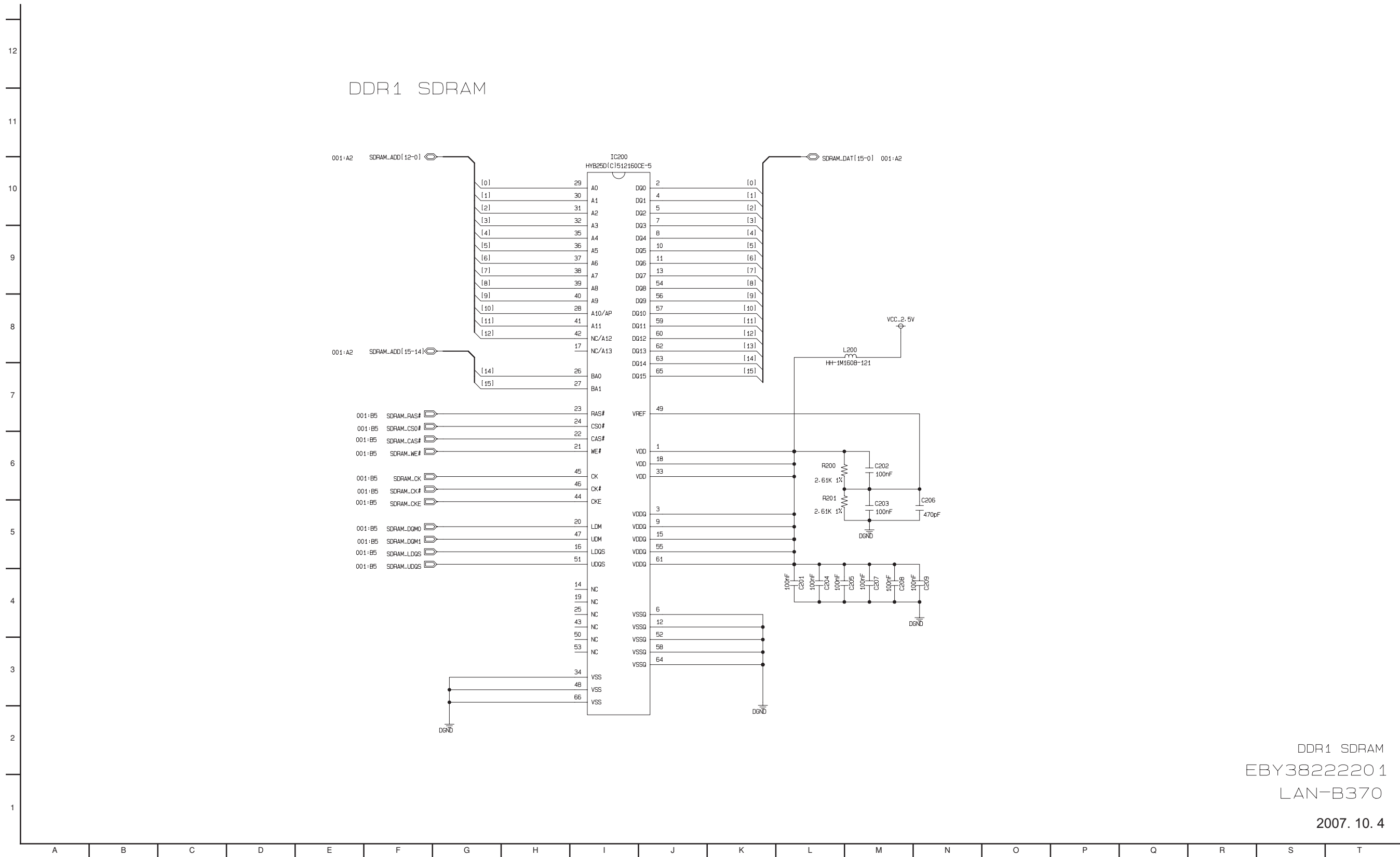


## 2. POWER BLOCK DIAGRAM





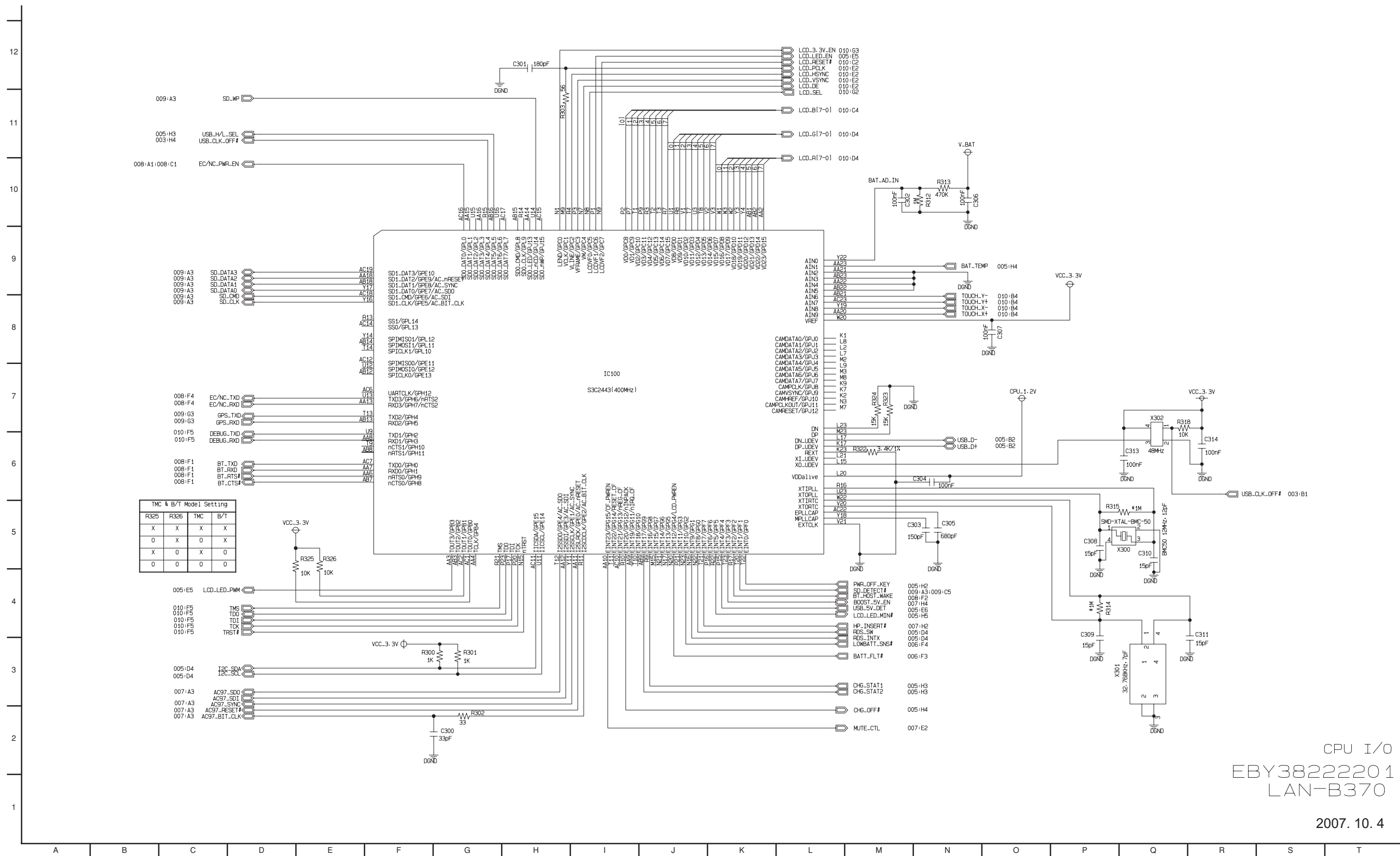
2. DDR1 SDRAM SCHEMATIC DIAGRAM



DDR1 SDRAM  
EBY3822220 1  
LAN-B370

2007. 10. 4

3. CPU I/O SCHEMATIC DIAGRAM

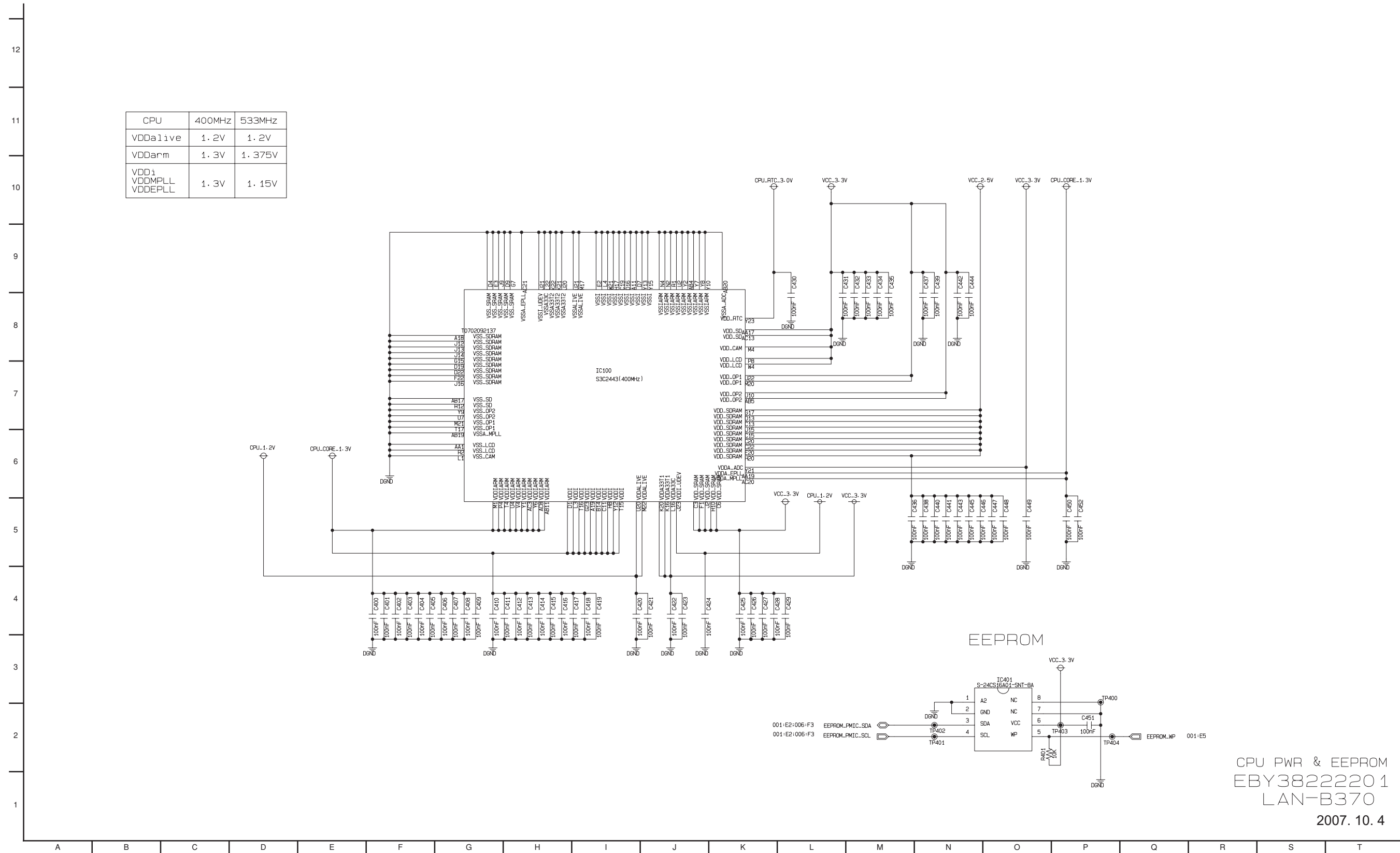


CPU I/O  
EBY38222201  
LAN-B370

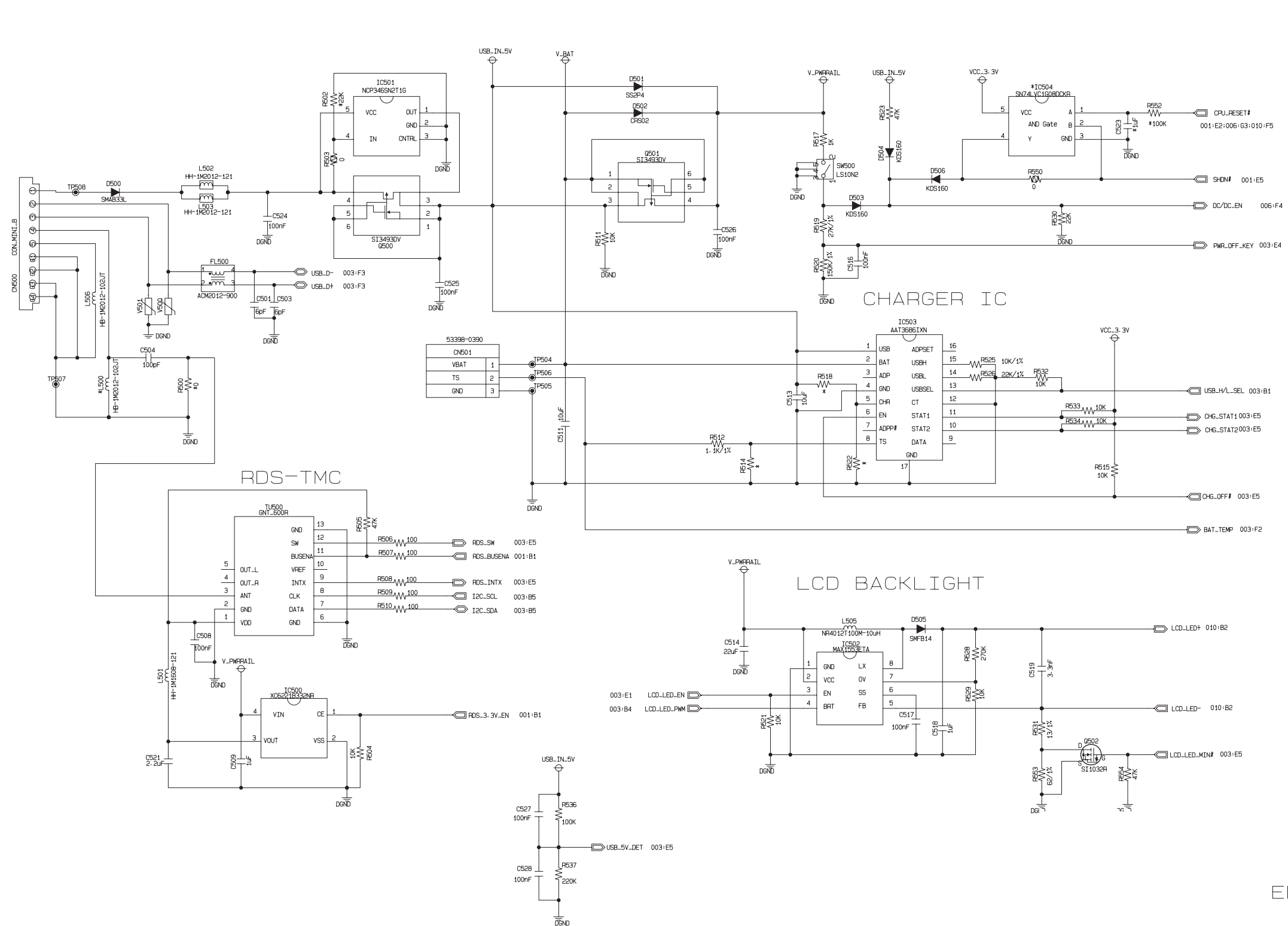
2007. 10. 4



4. CPU PWR & EEPROM SCHEMATIC DIAGRAM



## 5. POWER LOGIC SCHEMATIC DIAGRAM



Power Logic  
EBY38222201  
LAN-B370

2007. 10. 4

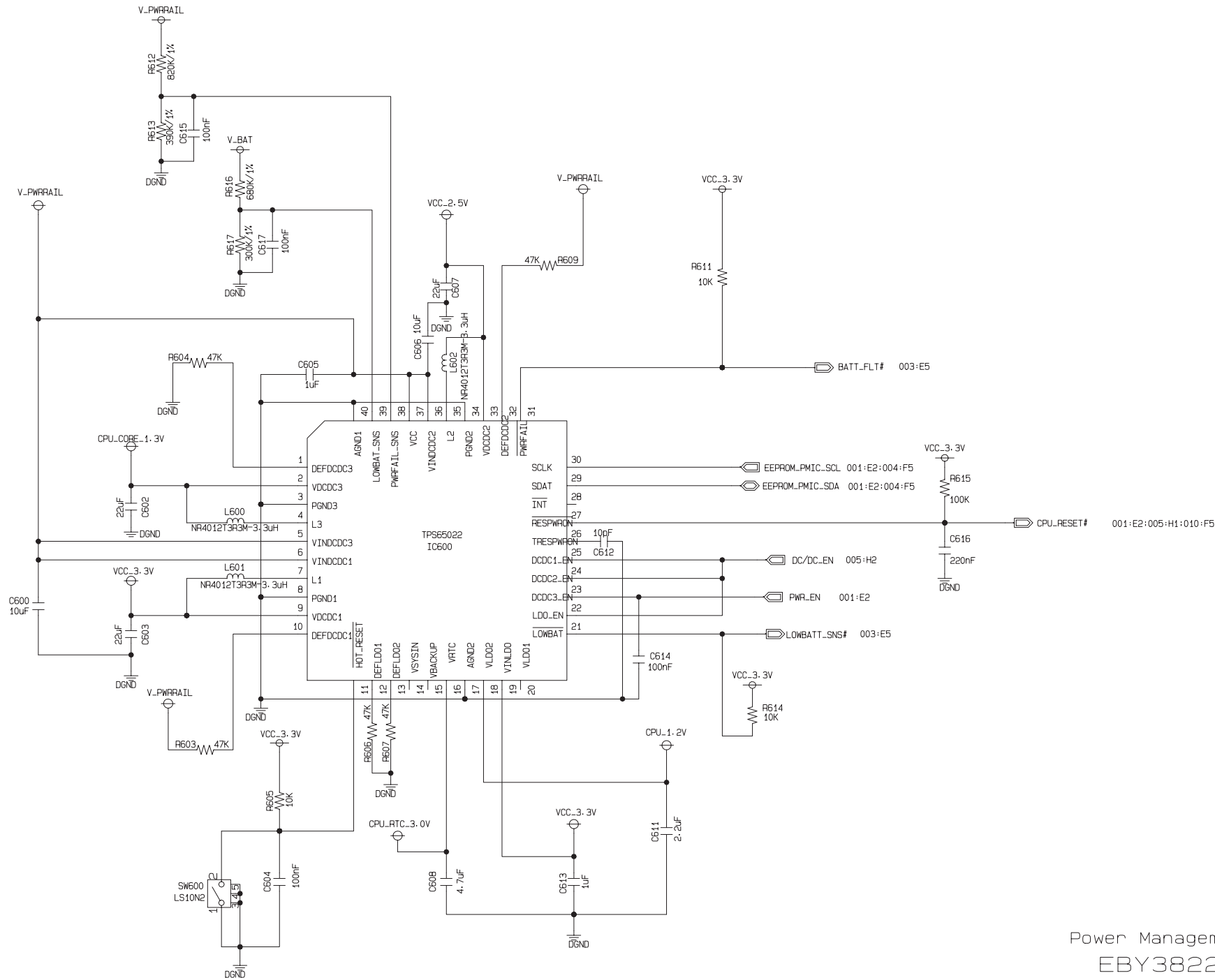
6. POWER MANAGEMENT IC SCHEMATIC DIAGRAM

TPS65022 DCDC OUTPUT VOLTAGE SELECTION

(1) DEFDCDC1 (SW601) 'H' / 'L' ->	3.3V / 3V
(2) DEFDCDC2 (SW605) 'H' / 'L' ->	2.5V / 1.8V
(3) DEFDCDC3 (SW600) 'H' / 'L' ->	1.55V / 1.3V

TPS65022 LDO OUTPUT VOLTAGE SELECTION

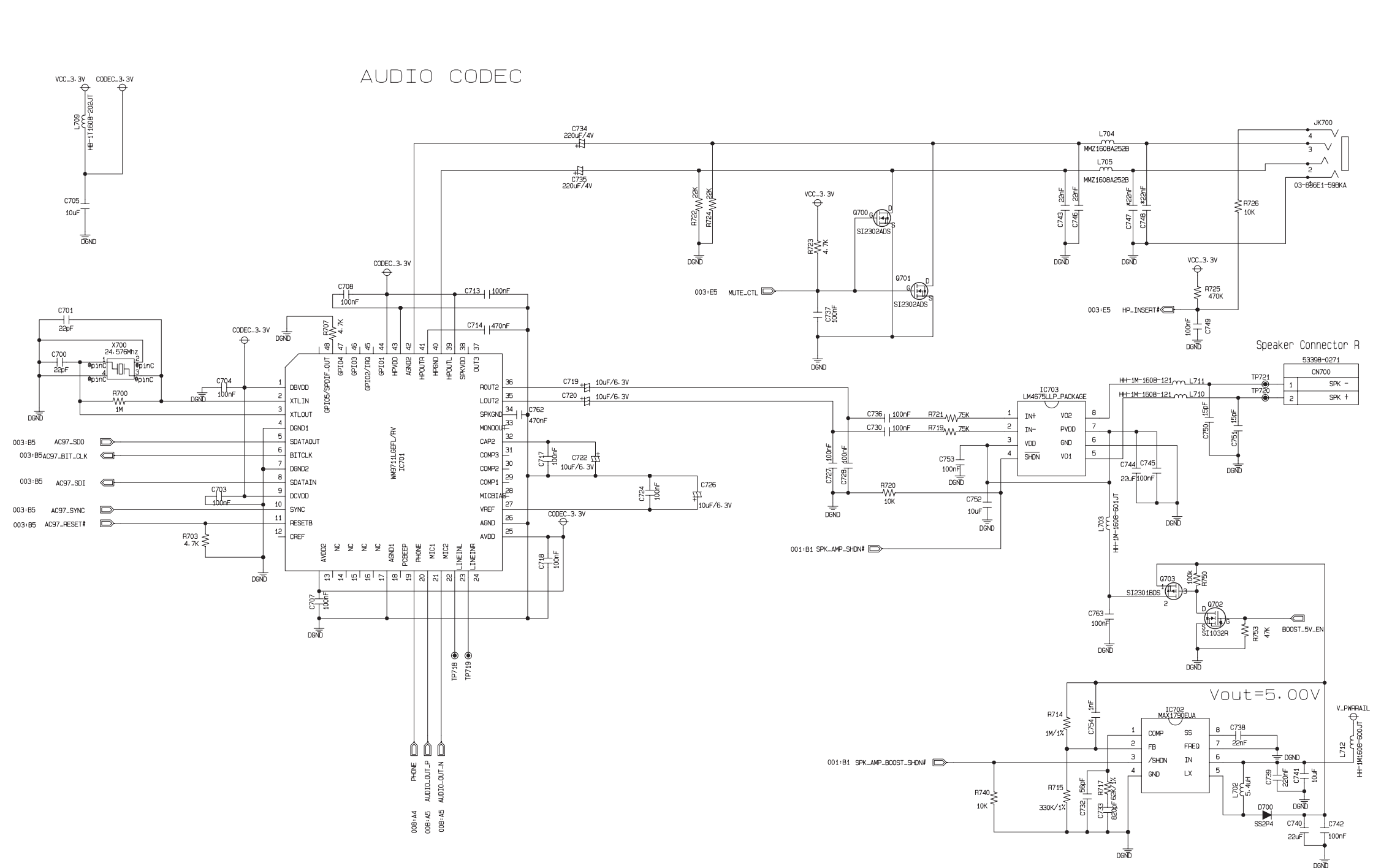
DEFLDO		VOUT	
2	1	LD01	LD02
L	L	1.1V	1.3V
L	H	1.5V	1.3V
H	L	2.6V	2.8V
H	H	3.15V	3.3V



Power Management IC  
EBY38222201  
LAN-B370

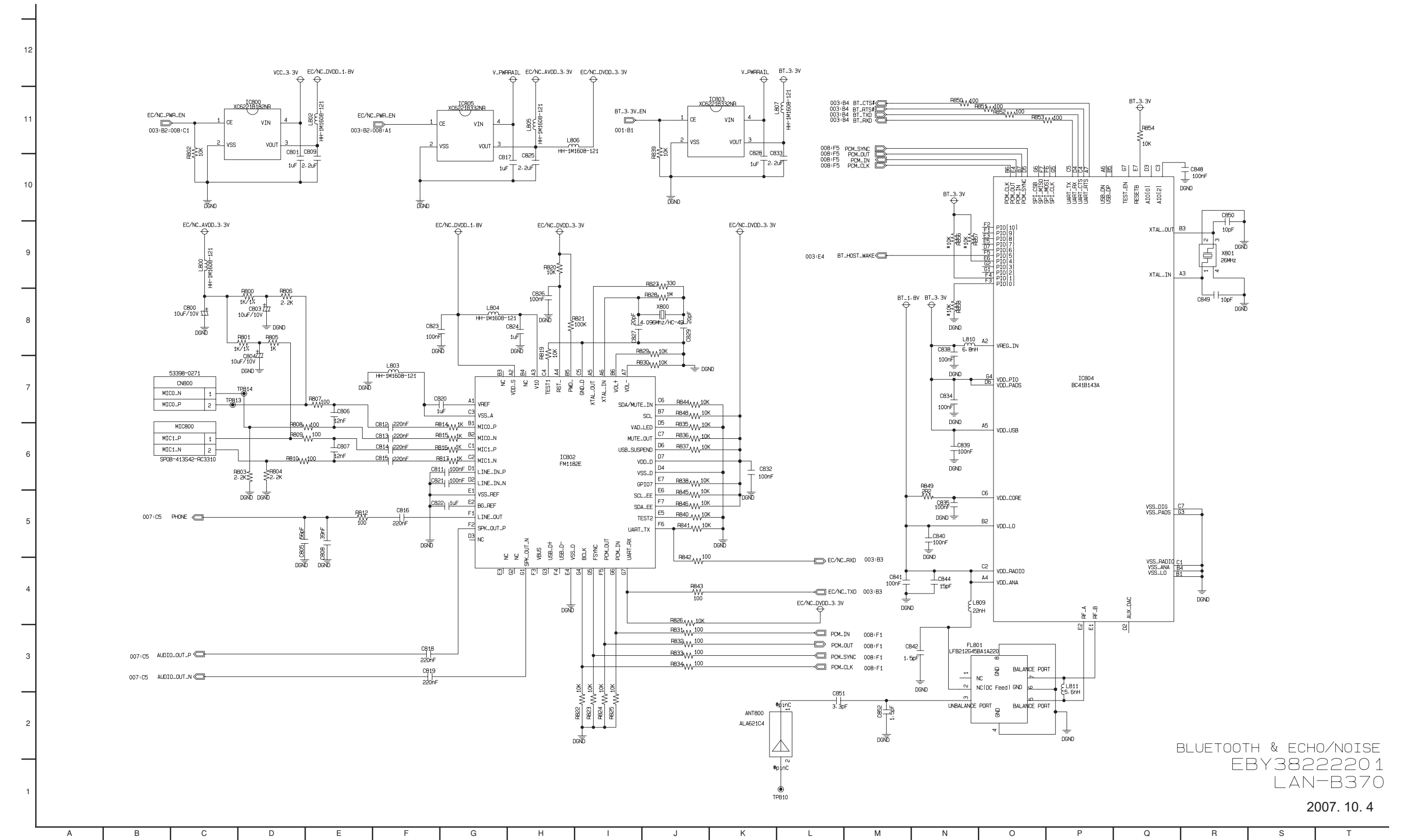
2007. 10. 4

## 7. AUDIO CODEC & SPEAKER AMP SCHEMATIC DIAGRAM

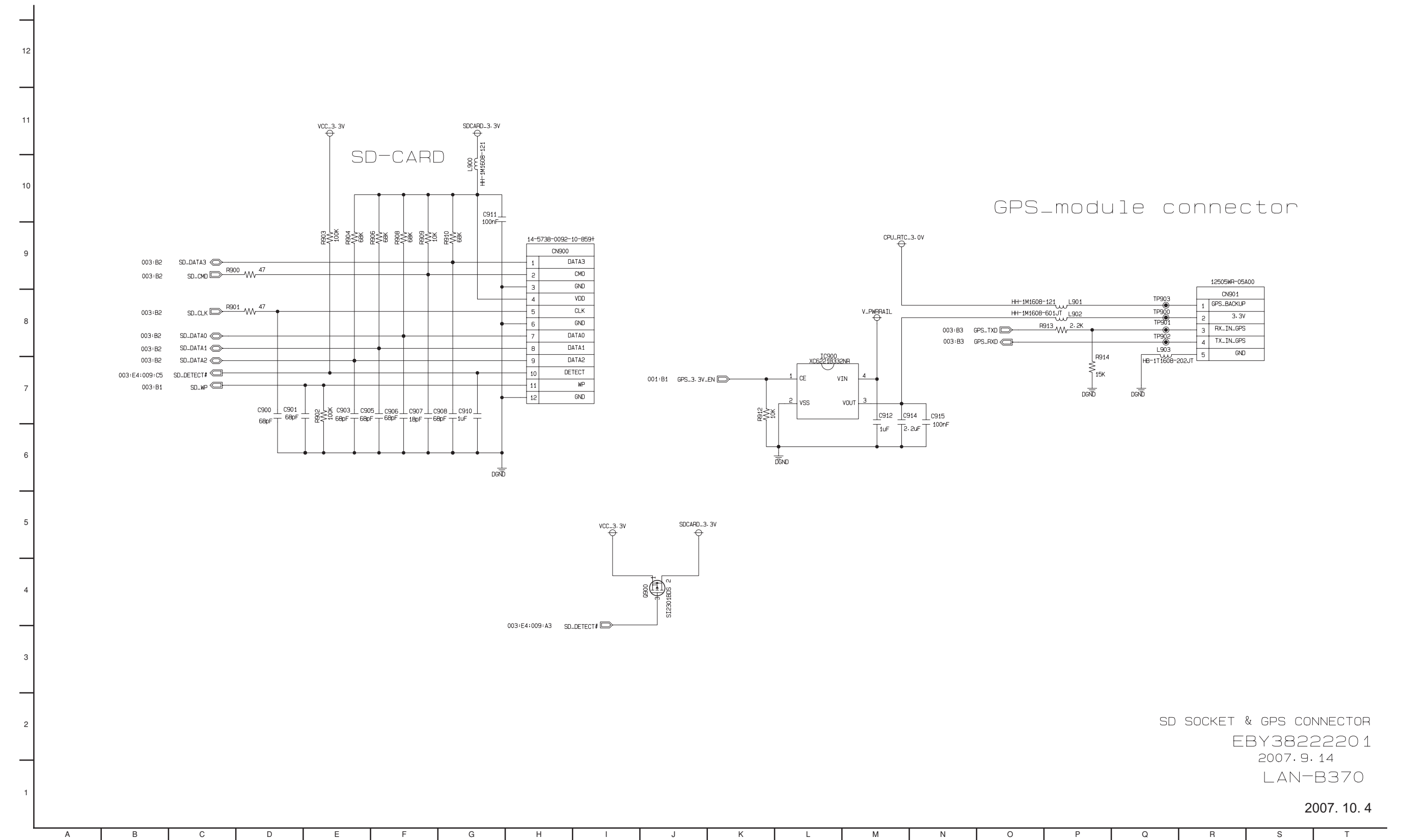


AUDIO CODEC & SPEAKER AMP  
EBY38222201  
LAN-B370  
2007. 10. 4

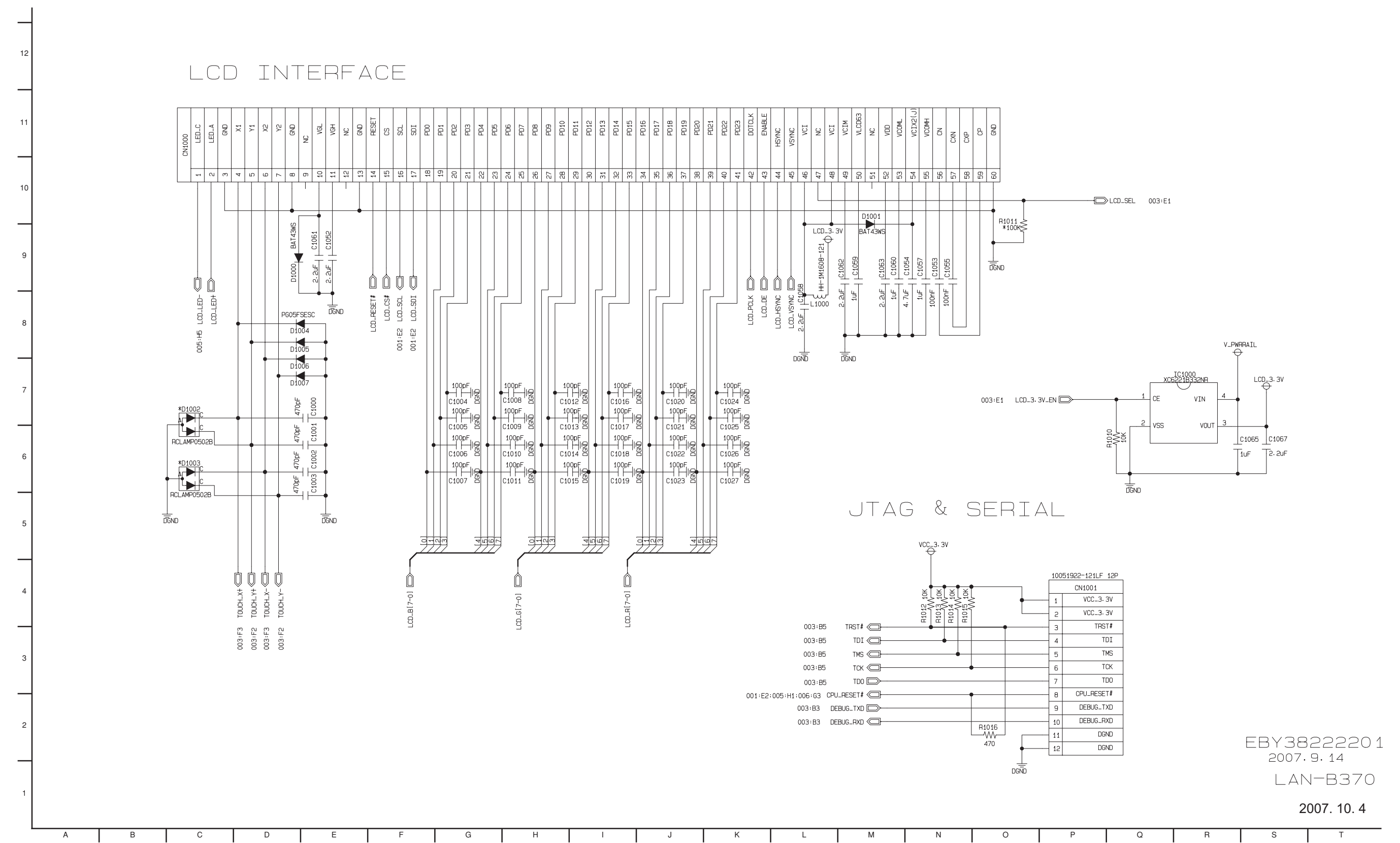
8. BLUETOOTH & ECHO/NOISE SCHEMATIC DIAGRAM



9. SD SOCKET & GPS CONNECTOR SCHEMATIC DIAGRAM

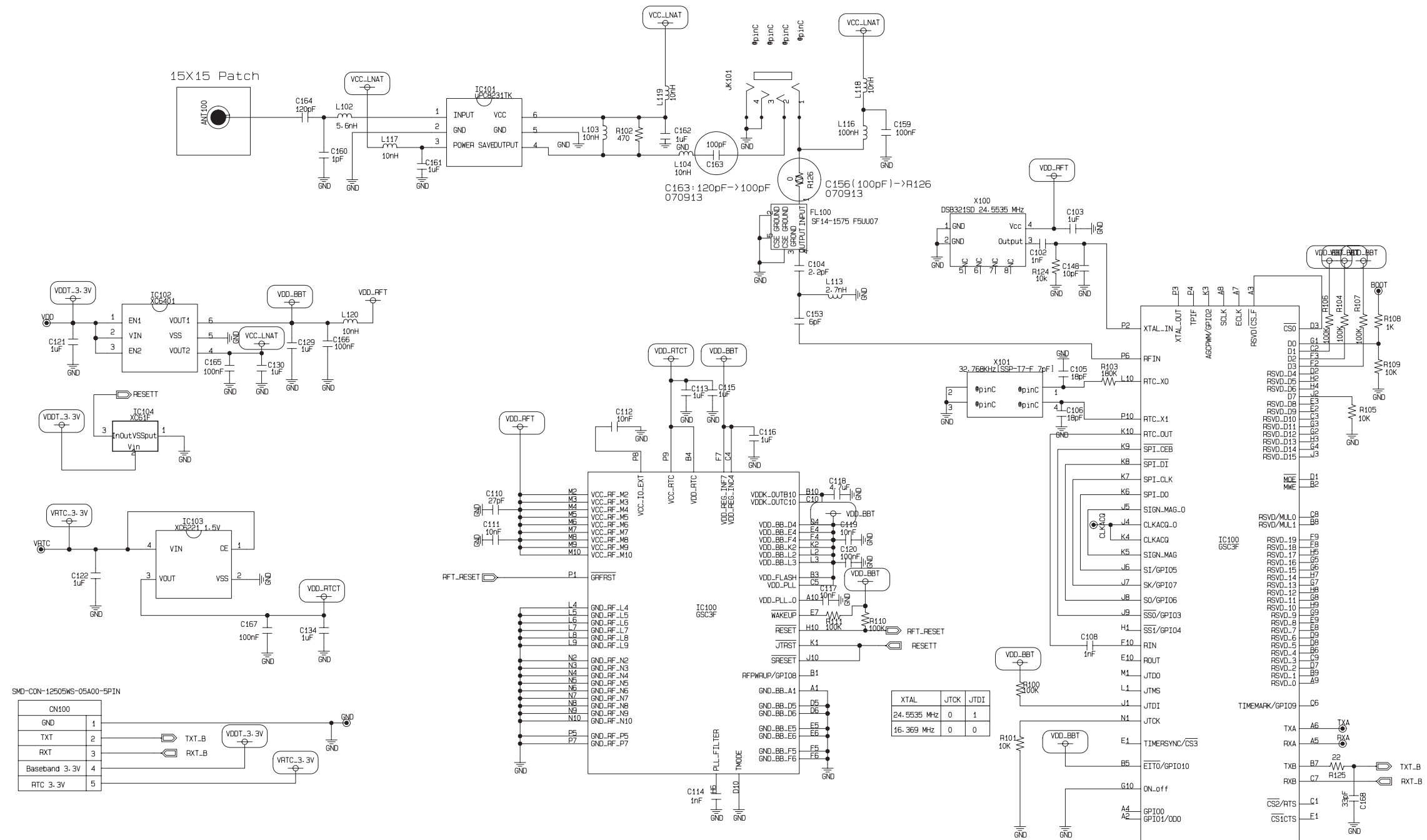


10. LCD & DEBUG CONNECTOR SCHEMATIC DIAGRAM



EBY3822220 1  
2007. 9. 14  
LAN-B370  
2007. 10. 4

## 11. GPS SCHEMATIC DIAGRAM

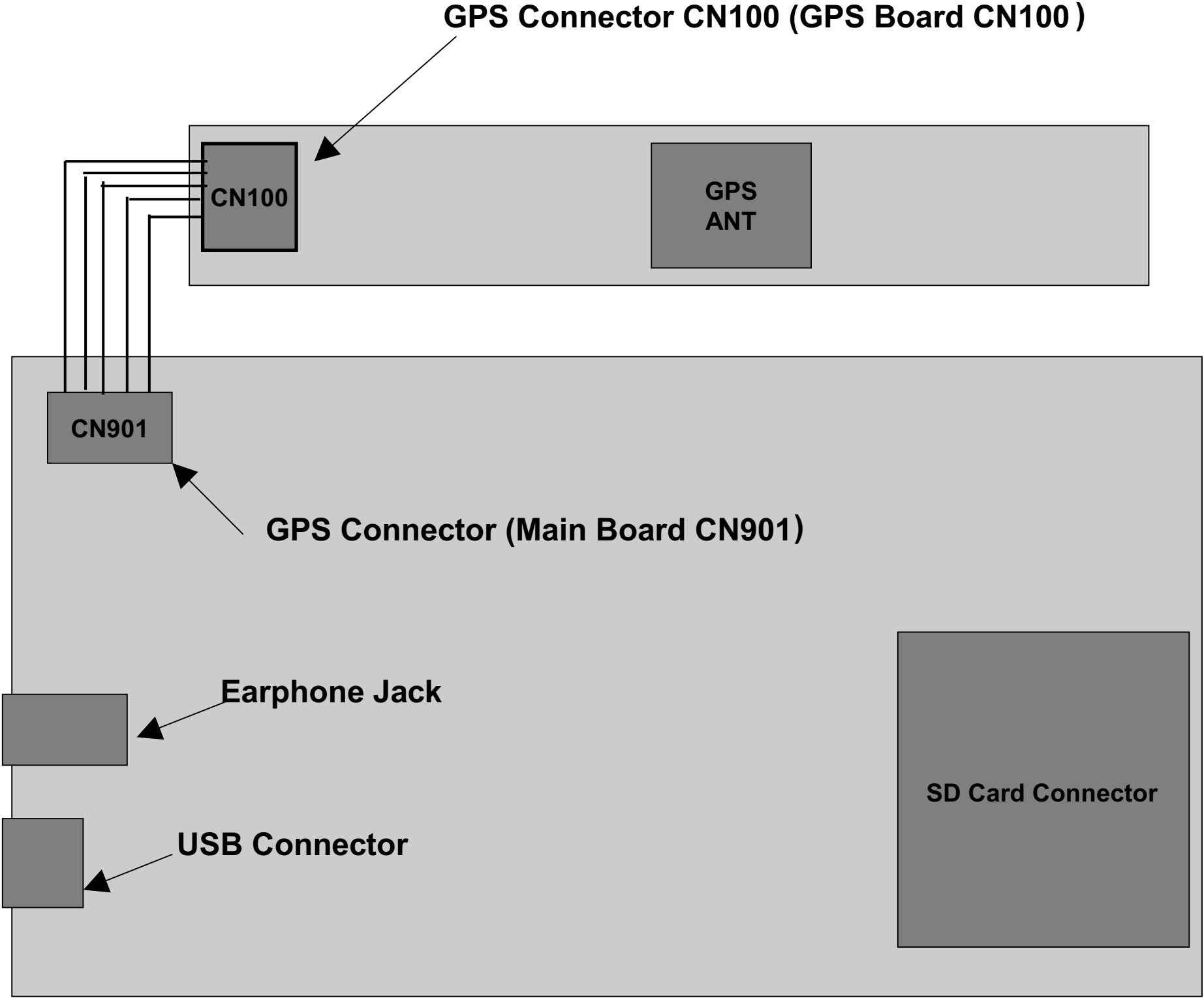


```
GPS (GSC3F)
EBY37813001
LAN-B370 GPS
```

2007. 10. 4

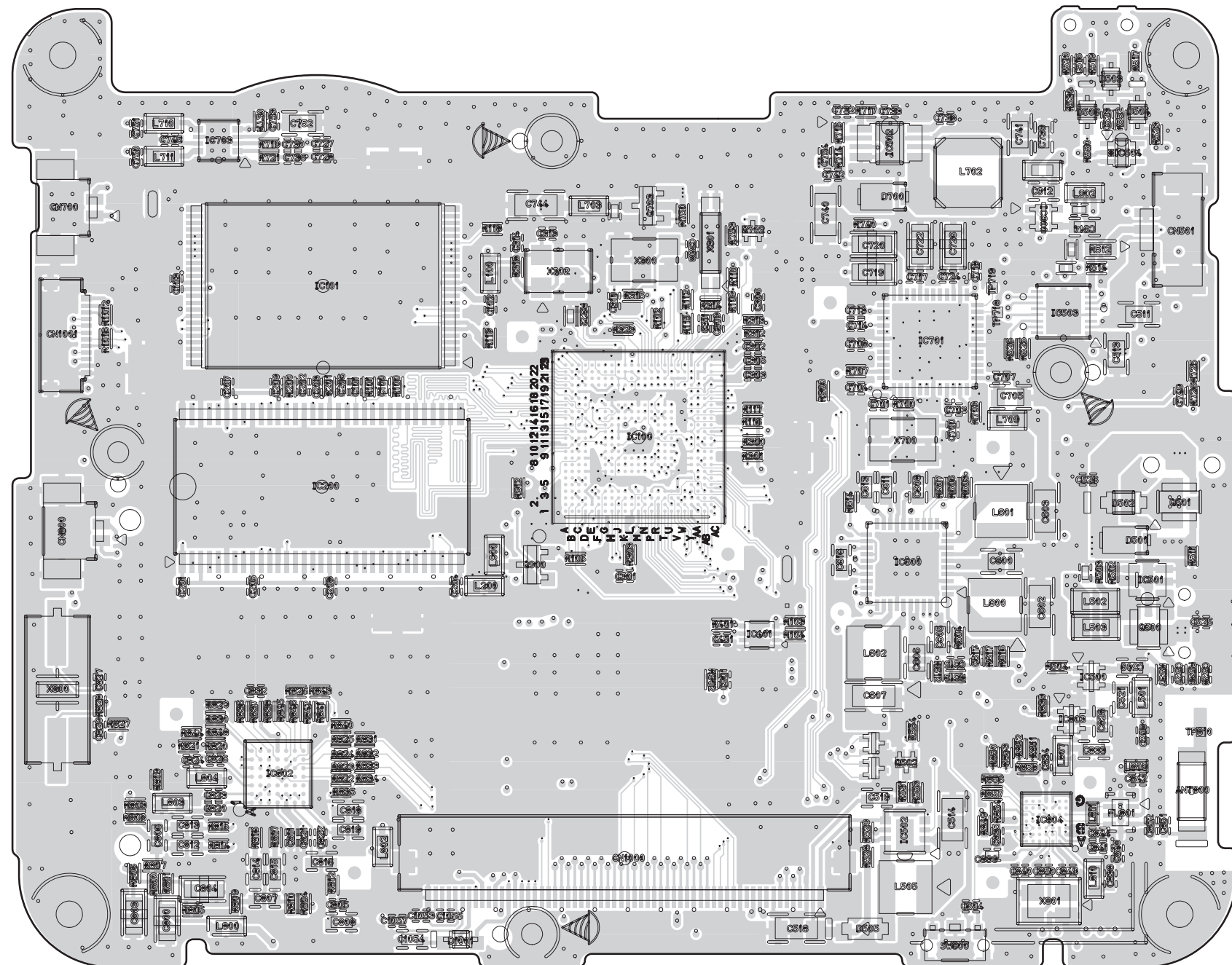


❏ WIRING DIAGRAM

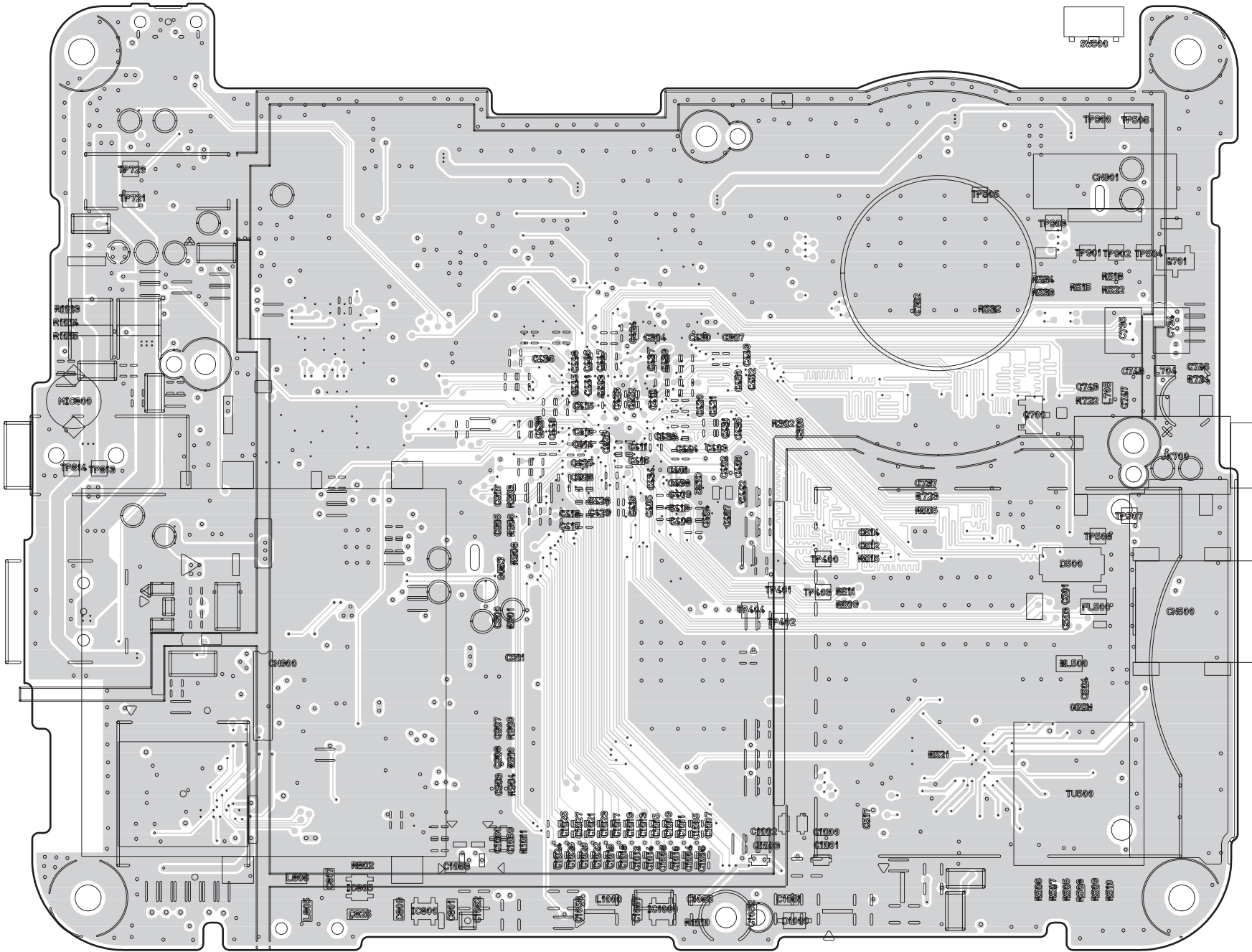


## PRINTED CIRCUIT DIAGRAM

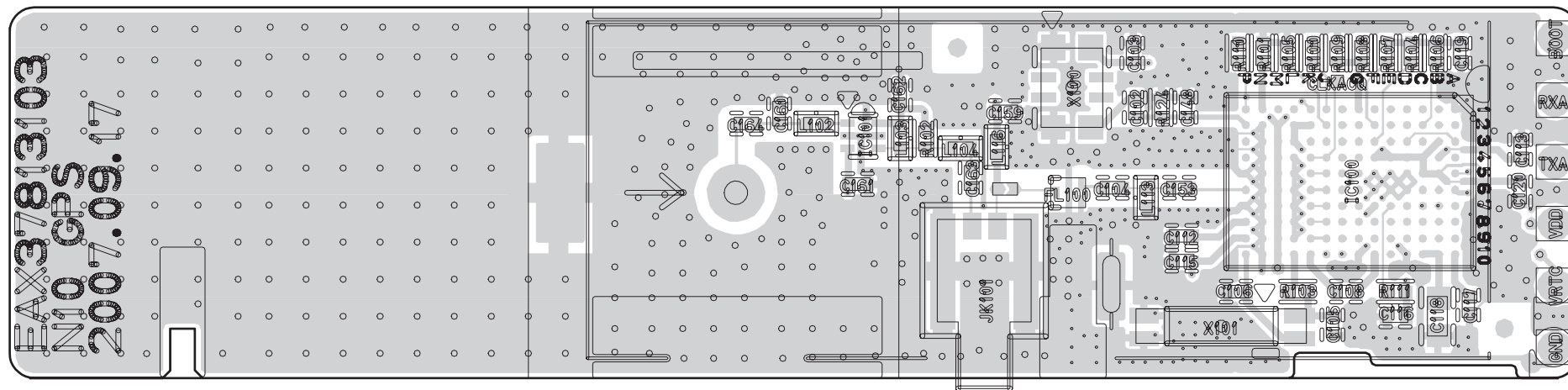
## 1. MAIN P.C BOARD DIAGRAM (TOP SIDE)



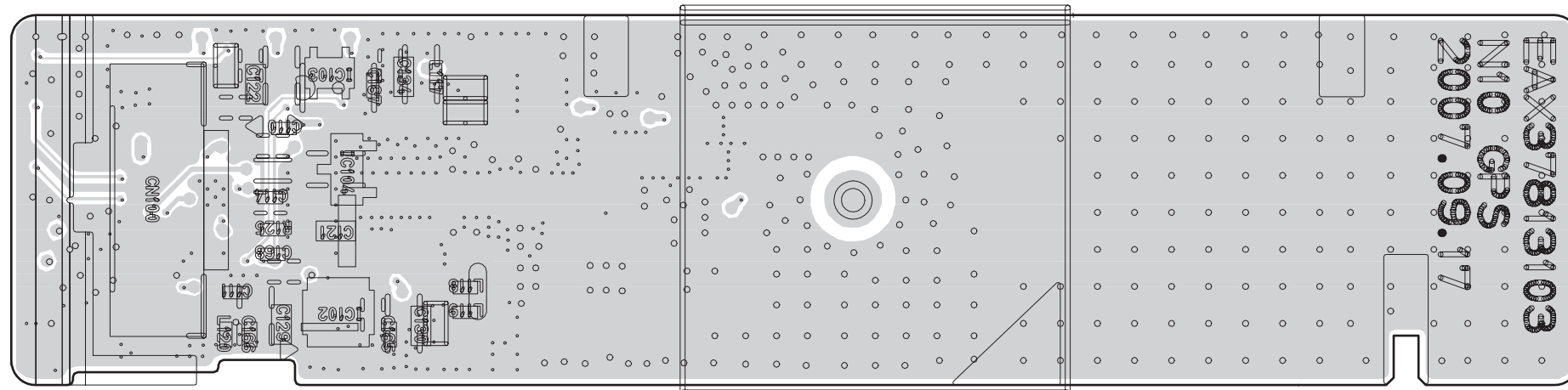
MAIN P.C BOARD DIAGRAM (BOTTOM SIDE)



## 2. GPS P.C BOARD DIAGRAM (TOP SIDE)



### GPS P.C BOARD DIAGRAM (BOTTOM SIDE)



MEMO

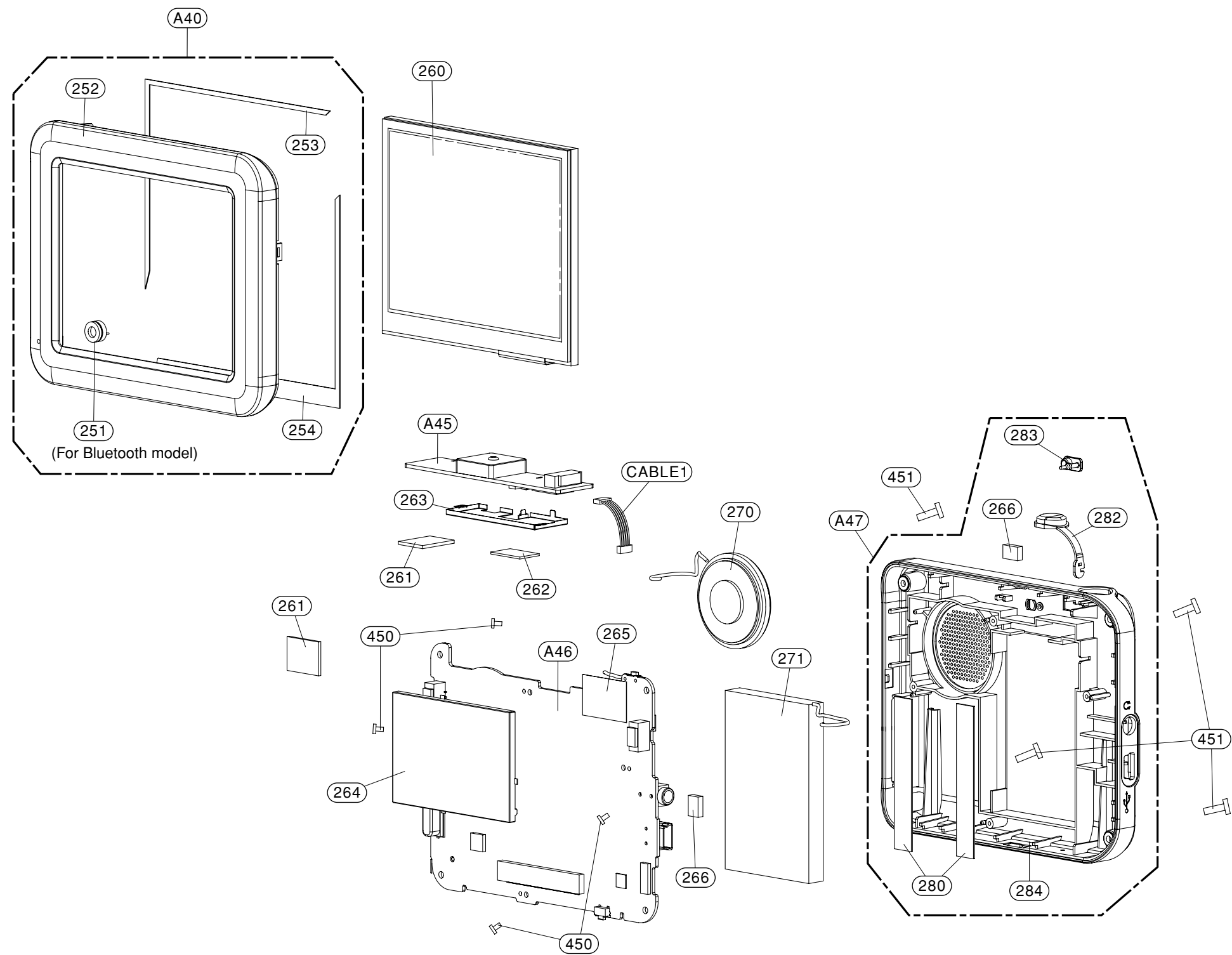
Lined area for writing on page 2-33.

MEMO

Lined area for writing on page 2-34.

# SECTION 3. EXPLODED VIEW

## CABINET & MAIN FRAME SECTION



MEMO

Handwriting practice area for page 3-3, consisting of 25 horizontal dotted lines.

MEMO

Handwriting practice area for page 3-4, consisting of 25 horizontal dotted lines.