



LG
Life's Good

North/Latin America
Europe/Africa
Asia/Oceania

Internal Use Only

<http://aic.lgservice.com>
<http://eic.lgservice.com>
<http://biz.lgservice.com>

LED TV

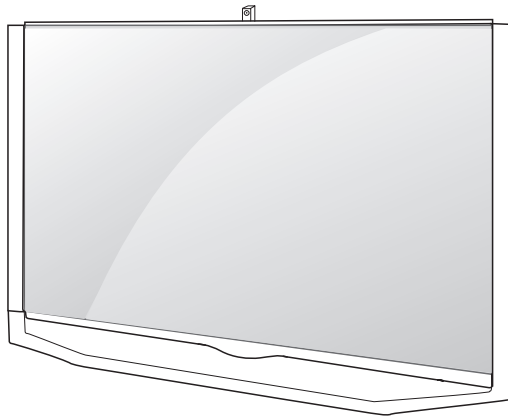
SERVICE MANUAL

CHASSIS : LA41F

MODEL : 98UB9800/9810 98UB9800/9810-UB

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



CONTENTS

CONTENTS	2
PRODUCT SAFETY	3
SPECIFICATION	6
ADJUSTMENT INSTRUCTION	13
EXPLODED VIEW	25
SCHEMATIC CIRCUIT DIAGRAM	

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by $\triangle$ in the Schematic Diagram and Exploded View.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 M Ω and 5.2 M Ω .

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

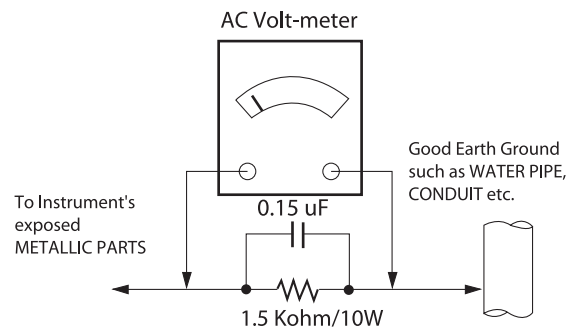
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 μ F capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5 mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω

*Base on Adjustment standard

SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS** on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.**CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10 % (by volume) Acetone and 90 % (by volume) isopropyl alcohol (90 % - 99 % strength)
CAUTION: This is a flammable mixture.
Unless specified otherwise in this service manual, lubrication of contacts is not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
Always remove the test receiver ground lead last.
8. Use with this receiver only the test fixtures specified in this service manual.
CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES 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 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 to prevent potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES 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 ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES 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 handling unpackaged replacement ES 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 ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500 °F to 600 °F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
 - a. Allow the soldering iron tip to reach normal temperature. (500 °F to 600 °F)
 - b. Heat the component lead until the solder melts.
 - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
 - a. Allow the soldering iron tip to reach a normal temperature (500 °F to 600 °F)
 - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
 - c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.
 - d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor

Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device

Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor

Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.

3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.

Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This spec sheet is applied to the LED TV used LA41F chassis

2. Test condition

Each part is tested as below without special notice.

- 1) Temperature : $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($77 \pm 9^{\circ}\text{F}$), CST : $40^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- 2) Relative Humidity: $65\% \pm 10\%$
- 3) Power Voltage
Standard input voltage (100~240V@ 50/60Hz)
* Standard Voltage of each products is marked by models.
- 4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
- 5) The receiver must be operated for about 20 minutes prior to the adjustment.

3. Test method

- 1) Performance: LGE TV test method followed
- 2) Demanded other specification
 - Safety : UL, CSA, CE, IEC specification
 - EMC : FCC, ICES, CE, IEC specification
 - Wireless : Wireless HD Specification (Option)

4. General Specification

No	Item	Specification		Remark
1.	Display Screen Device	98" wide color display module		LC980DQD-FGF1(Flat T240)
2.	Aspect Ratio	16:9		All
3.	LCD Module	98" QWUXGA TFT LCD		LC980DQD-FGF1(Flat T240)
4.	Operating Environment	TFT	1) Temp. : 0 ~ 40 deg 2) Humidity : 0 ~ 85%	LGE SPEC
5.	Storage Environment	ALEF	1) Temp. : 0 ~ 50 deg 2) Humidity : 20 ~ 90%	
6.	Input Voltage	AC100 ~ 240V, 50/60Hz		
7.	Power Consumption(Max) = LCD(Module) Backlight(LED)	458.6W		Flat Edge LED : LC980DQD-FGF1
8.	LCD Module	2187.8 x1242.8 x 31.0(Size)		LC980DQD-FGF1
		0.5622 x 0.5622(Pixel Pitch)		
9.	Display Colors	1.06 B (10-bit)		Except FHD 60Hz models
		16.7 M (8-bit)		Only FHD 60Hz models
	Surface Treatment	Hard coating (2H), Anti-glare		

5. External input format

5.1. 2D Mode

5.1.1. Component input(Y, CB/PB, CR/PR)

No	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed
1	720*480	15.73	60	13.5135	SDTV ,DVD 480I
2	720*480	15.73	59.94	13.5	SDTV ,DVD 480I
3	720*480	31.50	60	27.027	SDTV 480P
4	720*480	31.47	59.94	27.0	SDTV 480P
5	1280*720	45.00	60.00	74.25	HDTV 720P
6	1280*720	44.96	59.94	74.176	HDTV 720P
7	1920*1080	33.75	60.00	74.25	HDTV 1080I
8	1920*1080	33.72	59.94	74.176	HDTV 1080I
9	1920*1080	67.500	60	148.50	HDTV 1080P
10	1920*1080	67.432	59.94	148.352	HDTV 1080P

5.1.2. HDMI Input (PC/DTV)

No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed	
	HDMI-PC				DDC	
1	640*350	31.468	70.09	25.17	EGA	
2	720*400	31.469	70.08	28.32	DOS	
3	640*480	31.469	59.94	25.17	VESA(VGA)	
4	800*600	37.879	60.31	40.00	VESA(SVGA)	
5	1024*768	48.363	60.00	65.00	VESA(XGA)	
6	1152*864	54.348	60.053	80.00	VESA	
7	1280*1024	63.981	60.02	108.00	VESA (SXGA)	Support to HDMI-PC
8	1360*768	47.712	60.015	85.50	VESA (WXGA)	
9	1920*1080	67.5	60	148.5	WUXGA(Reduced Blanking)	
10	3840*2160	54	24.00	297.00	Only UD Model	UHD only
11	3840*2160	56.25	25.00	297.00	Only UD Model	UHD only
12	3840*2160	67.5	30.00	297.00	Only UD Model	UHD only
13	4096*2160	53.95	23.97	296.703	Only UD Model, Port3	UHD only
14	4096*2160	54	24.00	297.00	Only UD Model	UHD only

	HDMI-DTV					
1	640 * 480	31.469	59.94	25.125	SDTV 480P	
2	640 * 480	31.5	60	25.125	SDTV 480P	
3	720 * 480	15.73	59.94	13.500	SDTV 480I	
4	720 * 480	15.75	60.00	13.514	SDTV 480I	
5	720 * 480	31.5	60	27.027	SDTV 480P	
6	720 * 480	31.47	59.94	27.00	SDTV 480P	
7	1280*720	45	60.00	74.25	HDTV 720P	
8	1280*720	44.96	59.94	74.176	HDTV 720P	
9	1920*1080	33.75	60.00	74.25	HDTV 1080I	
10	1920*1080	33.72	59.94	74.176	HDTV 1080I	
11	1920*1080	26.97	23.976	63.296	HDTV 1080P	
12	1920*1080	27.00	24.00	63.36	HDTV 1080P	
13	1920*1080	33.71	29.97	79.120	HDTV 1080P	
14	1920*1080	33.75	30.00	79.20	HDTV 1080P	
15	1920*1080	67.432	59.94	148.350	HDTV 1080P	
16	1920*1080	67.5	60.00	148.50	HDTV 1080P	
17	3840*2160	53.95	23.98	296.703	UDTV 2160P	UHD only
18	3840*2160	54	24.00	297.00	UDTV 2160P	UHD only
19	3840*2160	56.25	25.00	297.00	UDTV 2160P	UHD only
20	3840*2160	61.43	29.97	296.703	UDTV 2160P	UHD only
21	3840*2160	67.5	30.00	297.00	UDTV 2160P	UHD only
22	3840*2160	135	60.00	594	UDTV 2160P	UHD only(Port3)
23	3840*2160	135	59.94	593.407	UDTV 2160P	UHD only(Port3)
24	4096*2160	53.95	23.98	296.703	UDTV 2160P	UHD only
25	4096*2160	54	24.00	297	UDTV 2160P	UHD only
26	4096*2160	56.25	25.00	297	UDTV 2160P	UHD only
27	4096*2160	61.43	29.97	296.703	UDTV 2160P	UHD only
28	4096*2160	67.5	30.00	297	UDTV 2160P	UHD only
29	4096*2160	135	60.00	594	UDTV 2160P	UHD only(Port3)
30	4096*2160	135	59.94	593.407	UDTV 2160P	UHD only(Port3)

5.2. 3D Mode

5.2.1. 3D Supported mode (Only for models that support 3D)

Video, which is input as below media contents is switched into the 3D screen automatically.

The method for 3D digital broadcast may differ depending on the signal environment.

If video is not switched automatically into 3D, manually convert the settings to view 3D images.

For models supporting Miracast / Intel® WiDi, you can set the 3D mode

Input	Signal	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Playable 3D video format
HDMI	480p	31.469 / 31.5	59.94 / 60	Top & Bottom, Side by Side(Half), Side by Side(Full)
		62.938 / 63		Frame Packing, Line Alternative
	720p	44.96 / 45	59.94 / 60	Top & Bottom, Side by Side(Half), Side by Side(Full)
		89.91 / 90		Frame Packing, Line Alternative
	1080i	33.72 / 33.75	59.94 / 60	Top & Bottom, Side by Side(Half), Side by Side(Full)
		67.432 / 67.5		Frame Packing, Line Alternative
	1080p	26.97 / 27	23.97 / 24	Top & Bottom, Side by Side(Half), Side by Side(Full)
		28.125	25	
		33.716/33.75	29.976 / 30	Frame Packing, Line Alternative
		43.94 / 54	23.97 / 24	
		56.25	25	
		67.432 / 67.5	29.976 / 30	
		67.432 / 67.5	59.94 / 60	Top & Bottom, Side by Side(Half)
DTV	Frame Compatible	-	-	Side by Side(Half), Top & Bottom

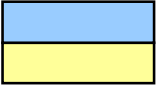
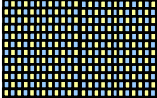
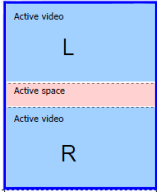
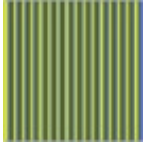
5.2.2. 3D Supported mode manually(Only for models that support 3D)

Video, which is input as below media contents is switched into the 3D screen automatically.

Input	Signal			Playable 3D video format
	Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	
DTV	HD / SD	-	-	2D to 3D, Side by Side(Half), Top & Bottom
ATV(CVBS/ SCART)	SD	-	-	
Component	1280 x 720p	45	60	
		44.96	59.94	
	1920 x 1080i	33.75	60	
		33.72	59.94	
	1920 x 1080p	67.5	60	
		67.432	59.94	
		27	24	
		28.12	25	
		26.97	23.976	
		33.75	30	
		33.71	29.97	

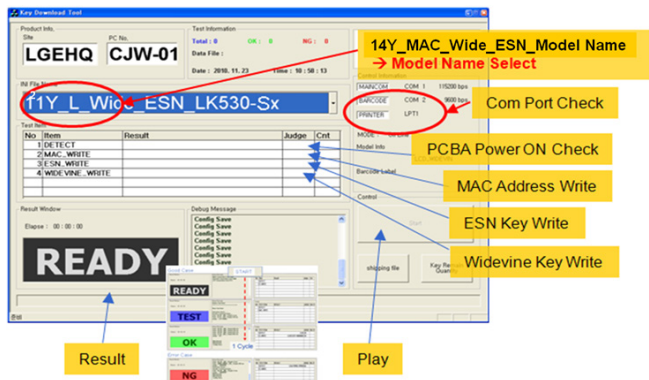
Input	Signal			Playable 3D video format
	Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	
HDMI-PC	1024 x 768p	48.36	60	2D to 3D, Side by Side(Half), Top & Bottom
	1360 x 768p	47.71		
	1920 x 1080p	67.5		2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Single Frame Sequential, Row Interleaving, Column Interleaving
	3840 x 2160p (Ultra HD model only)	54	24	2D to 3D, Top & Bottom(Half), Side by Side(Half)
		56.25	24	
		67.5	30	
	4096 x 2160p (Ultra HD model only)	54	24	
	Others	-	-	2D to 3D, Side by Side(Half), Top & Bottom
HDMI-DTV	480P	31.5	60	2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Frame Sequential, Row Interleaving, Column Interleaving
	720p	45	60	
	1080i	33.75	60	2D to 3D, Side by Side(Half), Top & Bottom
	1080p	27	24	2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving
		28.12	25	
		33.75	30	
		67.5	60	2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Frame Sequential, Row Interleaving, Column Interleaving
	3840 x 2160p 4096 x 2160p (Ultra HD model only)	53.95	23.976	2D to 3D, Top & Bottom(half), Side by Side(half),
		54	24	
		56.25	25	
		61.43	29.97	
		67.5	30	
		135	60(HDMI3 only)	
USB(Movie)	Under 704x480	-	-	2D to 3D
	Over 704x480 interlaced under 1080p	-	-	2D to 3D, Side by Side(Half), Top & Bottom
	Over 704x480 progressive under 1080p	-	60	2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving, Frame Sequential
	Over 704x480 progressive under 1080p	-	others	2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving
	Over 2160p (Ultra HD model only)	-	24 / 25 / 30 / 60	2D to 3D, Side by Side(Half), Top & Bottom
USB(Photo)	Under 320x240	-	-	2D to 3D
	Over 320x240	-	-	2D to 3D, Side by Side(Half), Top & Bottom
Miracast/Intel® WiDi	1024 x 768p	-	30 / 60	2D to 3D, Side by Side(Half), Top & Bottom
	1280x720p	-	30 / 60	
	1920 x 1080p	-	30 / 60	
	Others	-	-	2D to 3D

****Remark: 3D Input mode**

No.	Side by Side	Top & Bottom	Checkerboard	Single Frame Sequential	Frame Packing	Line Interleaving	Column Interleaving
1							

4.2.2. Download process (14Y ULTRA HD TV + MAC + WIDEVINE + ESN)

- 1) Execute "keydownload.exe" on PC
- 2) Select the download items.
- 3) Mode check : Online only
- 4) Check the test process
 - DETECT -> MAC_WRITE -> ESN_WRITE (only Colombia/ Panama) -> WIDEVINE_WRITE
- 5) Play: START
- 6) Check of result: Ready, Test, OK or NG



4.2.3. Inspection : ININSTART menu, check these keys

4.3. PING Test(LAN Operating Test)

4.3.1. Check PCBA

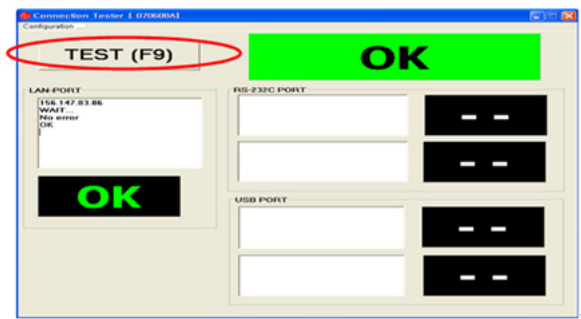
- 1) Connect LAN to PCBA & Power On. (Default IP can be set to automatic setting. When power ON, IP can be automatically achieved from the router)
- 2) Push ADJ key on Adjust remote-controller.
- 3) Enter "13. ACAP PING TEST" & check Network.

4.3.2. Check Set(Manufacturer)

- 1) Connect TV-Set & PC with Cross LAN cable. (PC IP : 12.12.2.3)
- 2) Execute "PINT Test program", Check setting data of program. (TV-Set IP : 12.12.2.2)



- 3) Push Power Only key on Adjust remote-controller.
- 4) Click "RUN", Check "OK" or "NG"

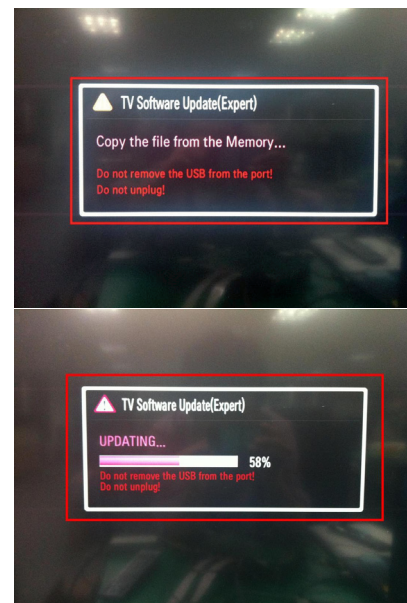


4.4. Main S/W program download

4.4.1. Using the Memory Stick

** USB DOWNLOAD : Service Mode

- 1) Insert the USB memory Stick to the USB port
- 2) Automatically detect the SW Version.
-> S/W download process is executed automatically.
- 3) Show the message "Copy the file from the Memory"



- 4) After Finished the Download, Automatically DC Off -> On



- 5) If the TV IS Turn On, Check the updated SW Version and Tool Option.

4.5. EDID D/L method

Recommend that don't connect HDMI and RGB(D-SUB) cable when downloading the EDID.

If not possible, recommend that connect the MSPG equipment. There are two methods of downloading the edid data

It is a VESA regulation. A PC or a MNT will display an optimal resolution through information Sharing without any necessity of user input. It is a realization of "Plug and Play"

4.5.1. 1st Method

EDID data's are automatically downloaded when adjusting the Tool Options.

Automatically downloaded when pushing the enter key in the EDID D/L menu.

It takes about 2seconds

4.5.2. 2st Method

=> Caution : Must be checked that the tool option is right or not. If tool option is wrong, HDMI edid data could not be downloaded well.

- 1) Press the ADJ key
- 2) Move to the 13. EDID D/L and Press the right direction key(▶)
- 3) Press the right direction key(▶) at Start.
- 4) After about a few seconds, appear "Waiting.." => "OK", then complete.

4.5.3. RS-232C command Method

- 1) Command : AE 00 10

=> Caution : Don't connect HDMI and RGB(D-SUB) cable when downloading the EDID. If the cables are connected, Downloading of edid could be failed.

4.5.4. EDID DATA

- Reference
- HDMI1 ~ HDMI3
- In the data of EDID, bellows may be different by Input mode

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0x01	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26		
0x02	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
0x05	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	20	01	E7
0x07	02	03	3A	F1	4E	10	9F	04	13	05	14	03	02	12	20	21
0x08	22	15	01	29	3D	06	C0	15	07	50						
0x09																
0x0A																
0x0B																
0x0C																
0x0D																
0x0E																
0x0F																

① Product ID

② Serial No: Controlled on production line.

③ Month, Year: Controlled on production line:

ex) Monthly : '01' -> '01'

Year : '2014' -> '18'

④ Model Name(Hex): LGTV

⑤ Checksum(LG TV): Changeable by total EDID data.

⑥ Vendor Specific(HDMI)

4.5.4.1. EDID

#DTS HDMI1 (C/S: E7 82)

EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	20	01	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	42	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	29	3D	06	C0	15	07	50	09	57	07	7C	03	0C
20	00	10	00	88	3C	20	C0	8E	01	02	03	04	01	4F	00	FE
30	08	10	06	10	18	10	28	10	38	10	E3	05	03	01	E3	0E
40	61	66	01	1D	80	18	71	1C	16	20	58	2C	25	00	40	84
50	63	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00
60	40	84	63	00	00	1E	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	82

#DTS HDMI2 (C/S: E7 72)

EDID Block 0, Bytes 0-12

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	20	01	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	42	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	29	3D	06	C0	15	07	50	09	57	07	7C	03	0C
20	00	20	00	88	3C	20	C0	8E	01	02	03	04	01	4F	00	FE
30	08	10	06	10	18	10	28	10	38	10	E3	05	03	01	E3	0E
40	61	66	01	1D	80	18	71	1C	16	20	58	2C	25	00	40	84
50	63	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00
60	40	84	63	00	00	1E	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	72

#DTS HDMI3 (C/S: A1 81)

EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
40	8A	00	40	84	63	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	88	3C	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	A1

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	4C	F1	50	90	22	20	05	04	03	02	01	61	5D	5E
10	5F	66	62	63	64	29	3D	06	C0	15	07	50	09	57	07	7C
20	03	0C	00	30	00	B8	3C	20	C0	8E	01	02	03	04	01	4F
30	00	FE	08	10	06	10	18	10	28	10	38	10	67	D8	5D	C4
40	01	78	80	03	E3	05	03	01	E3	0F	00	11	66	21	50	B0
50	51	00	18	30	40	70	36	00	40	84	63	00	00	1E	01	1D
60	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	81

DTS HDMI4 (C/S: E7 52)

EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	42	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	29	3D	06	C0	15	07	50	09	57	07	7C	03	0C
20	00	40	00	B8	3C	20	C0	8E	01	02	03	04	01	4F	00	FE
30	08	10	06	10	18	10	28	10	38	10	E3	05	03	01	E3	0E
40	61	66	01	1D	80	18	71	1C	16	20	58	2C	25	00	40	84
50	63	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00
60	40	84	63	00	00	1E	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	52

AC3 HDMI1 (C/S: E7 8B)

EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3F	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	26	15	07	50	09	57	07	7C	03	0C	00	10	00
20	B8	3C	20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06
30	10	18	10	28	10	38	10	E3	05	03	01	E3	0E	61	66	01
40	1D	80	18	71	1C	16	20	58	2C	25	00	40	84	63	00	00
50	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	40	84	63
60	00	00	1E	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	8B

AC3 HDMI2 (C/S: E7 7B)

EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3F	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	26	15	07	50	09	57	07	7C	03	0C	00	20	00
20	B8	3C	20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06
30	10	18	10	28	10	38	10	E3	05	03	01	E3	0E	61	66	01
40	1D	80	18	71	1C	16	20	58	2C	25	00	40	84	63	00	00
50	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	40	84	63
60	00	00	1E	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	7B

AC3 HDMI3 (C/S: A1 8A)
EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
40	8A	00	40	84	63	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	88	3C	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	01	01	A1

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	4C	F1	50	90	22	20	05	04	03	02	01	61	5D	5E
10	5F	66	62	63	64	26	15	07	50	09	57	07	7C	03	0C	00
20	30	00	88	3C	20	C0	8E	01	02	03	04	01	4F	00	FE	08
30	10	06	10	18	10	28	10	38	10	67	D8	5D	C4	01	78	80
40	03	E3	05	03	01	E3	0F	00	11	66	21	50	B0	51	00	18
50	30	40	70	36	00	40	84	63	00	00	1E	01	1D	00	72	51
60	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	8A

AC3 HDMI4 (C/S: E7 5B)
EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	01	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3F	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	26	15	07	50	09	57	07	7C	03	0C	00	40	00
20	B8	3C	20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06
30	10	18	10	28	10	38	10	E3	05	03	01	E3	0E	61	66	01
40	1D	80	18	71	1C	16	20	58	2C	25	00	40	84	63	00	00
50	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	40	84	63
60	00	00	1E	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	5B

PCM HDMI1 (C/S: F7 FD)
EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	FC
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	01	01	E7

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3C	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	23	09	57	07	7C	03	0C	00	10	00	B8	3C	20
20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06	10	18	10
30	28	10	38	10	E3	05	03	01	E3	0E	61	66	01	1D	80	18
40	71	1C	16	20	58	2C	25	00	40	84	63	00	00	9E	01	1D
50	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FD

PCM HDMI1(C/S: E7 ED)

EDID Block 0, Bytes 0-127																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	01	01	E7
EDID Block 1, Bytes 128-255																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3C	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	23	09	57	07	7C	03	0C	00	20	00	B8	3C	20
20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06	10	18	10
30	28	10	38	10	E3	05	03	01	E3	0E	61	66	01	1D	80	18
40	71	1C	16	20	58	2C	25	00	40	84	63	00	00	9E	01	1D
50	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	ED

PCM HDMI3 (C/S: A1 FC)
EDID Block 0, Bytes 0-127

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
40	8A	00	40	84	63	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	88	3C	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	A1

EDID Block 1, Bytes 128-255

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	46	F1	50	90	04	05	03	02	20	22	01	61	5D	5E
10	5F	66	62	63	64	23	09	57	07	7C	03	0C	00	30	00	B8
20	3C	20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06	10
30	18	10	28	10	38	10	67	D8	5D	C4	01	78	80	03	E3	05
40	03	01	E3	0F	00	11	66	21	50	80	51	00	1B	30	40	70
50	36	00	40	84	63	00	00	1E	01	1D	00	72	51	D0	1E	20
60	6E	28	55	00	40	84	63	00	00	1E	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

PCM HDMI4 (C/S: E7 CD)

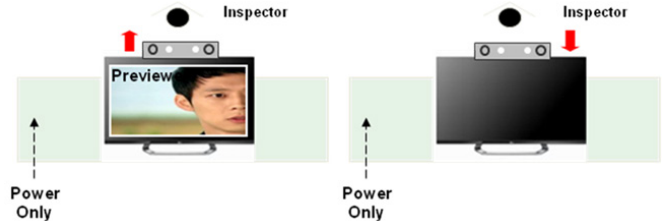
EDID Block 0, Bytes 0-127																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	18	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	80	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E7
EDID Block 1, Bytes 128-255																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	3C	F1	4E	90	22	20	05	04	03	02	01	5D	5E	5F
10	62	63	64	23	09	57	07	7C	03	0C	00	40	00	B8	3C	20
20	C0	8E	01	02	03	04	01	4F	00	FE	08	10	06	10	18	10
30	28	10	38	10	E3	05	03	01	E3	0E	61	66	01	1D	80	18
40	71	1C	16	20	58	2C	25	00	40	84	63	00	00	9E	01	1D
50	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	CD

* Checksum (3D HDMI 1/2/3/4)

Input	DTS FFh		AC3 FFh		PCM FFh	
HDMI1	E7	82	E7	8B	E7	FD
HDMI2	E7	72	E7	7B	E7	ED
HDMI3	A1	81	A1	8A	A1	FC
HDMI4	E7	52	E7	5B	E7	CD

4.6. Camera Port Inspection

- (1) Objective : To check how it connects between Camera and PCBA normally, and their Function
- (2) Test Method : This Inspection is available only Power-Only Status.
 - i) Push Camera Up
 - ii) Camera's Preview picture appears on TV Set
 - iii) Push Camera Down



- (3) RS-232C Command

RS-232C COMMAND			Explanation
CMD	DATA	ID	
Ai	00	23	Camera Function Start.
Ai	00	24	Camera Function End.

5. SET assembly adjustment method

5.1. Input Area-Option

- (1) Profile : Must be changed the Area option value because being different of each Country's Language and signal Condition.
- (2) Equipment : adjustment remote control.
- (3) Adjustment method
 - The input methods are same as other chassis.(Use IN-START Key on the Adjust Remocon.)

Refer to Job Expression of each main chassis ass'y (EBTxxxxxxx) for Option value.

5.2. Adjustment of White Balance

- In case of keeping module is in the circumstance of 0°C, it should be placed in the circumstance of above 15°C for 2 hours
- In case of keeping module is in the circumstance of below -20°C, it should be placed in the circumstance of above 15°C for 3 hours.

- Purpose : Adjust the color temperature to reduce the deviation of the module color temperature.
- Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to 192 (default data) and decrease the others.
- Adjustment mode : Three modes – Cool / Medium / Warm

* Required Equipment

▪ Remote controller for adjustment

▪ Color Analyzer : CA100+ or CA-210 or same product (should be used in the calibrated ch by CS-1000)

- LCD TV : CH-9

- PDP TV : CH-10

- White LED TV : CH-14

- ALEF : CH-18

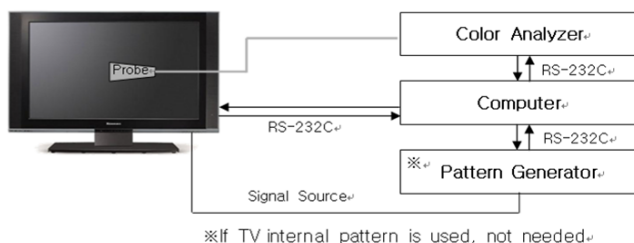
- RGB LED(MNT) : CH-16

▪ Auto W/B adjustment instrument(only for Auto adjustment)

5.2.1. Adjustment of White Balance :

(For Automatic Adjustment)

Connecting diagram of equipment for measuring (For Automatic Adjustment)



- 1) Set TV in ADJ mode using P-ONLY key (or POWER ON key)
- 2) Place optical probe on the center of the display
- It need to check probe condition of zero calibration before adjustment.
- 3) Connect RS-232C Cable
- 4) Select mode in ADJ Program and begin a adjustment.
- 5) When WB adjustment is completed with OK message, check adjustment status of pre-set mode (Cool, Medium, Warm)
- 6) Remove probe and RS-232C cable.

▪ W/B Adj. must begin as start command "wb 00 00" , and finish as end command "wb 00 ff", and Adj. offset if need

(1) RS-232C Command used during auto-adj.

RS-232C COMMAND			Explanation
CMD	DATA	ID	
wb	00	00	Begin White Balance adj.
wb	00	10	Gain adj.(internal white pattern)
wb	00	1f	Gain adj. completed
wb	00	20	Offset adj.(internal white pattern)
wb	00	2f	Offset adj. completed
wb	00	Ff	End White Balance adj. (internal pattern disappears)

5.2.2. Adjustment of White Balance

(For Automatic Adjustment)

5.2.2.1. Adj. condition and cautionary items

- 1) Lighting condition in surrounding area surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.
- 2) Probe location: Color Analyzer (CA-210) probe should be within 10cm and perpendicular of the module surface (90+/- 2.5°)
- 3) Aging time
 - A. After Aging Start, Keep the Power ON status during 5 Minutes.
 - B. In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.2.2.2. Equipment

- 1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12 / LED: CH14)
- 2) Adj. Computer (During auto adj., RS-232C protocol is needed)
- 3) Adjust Remocon
- 4) Video Signal Generator MSPG-925F 720p/216-Gray (Model: 217, Pattern: 78)

5.2.2.3. Adjustment

- 1) Set TV in Adj. mode using POWER ON
- 2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface.
- 3) Press ADJ key -> EZ adjust using adj. R/C > 6. White-Balance then press the cursor to the right (KEY▶). When KEY(▶) is pressed 216 Gray internal pattern will be displayed.
- 4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.
- 5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

▪ If internal pattern is not available, use RF input. In EZ Adj. menu 6.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 216 Gray pattern.

** R-fix adjustment

Adjust modes (Cool), Fix the R gain to 210 (default data) and change the others (G/B Gain).

- Adjust the R gain more than 210 (If G gain or B gain is less than 0 , R gain can adjust more than 210) and change the others (G/B Gain). Adjust two modes(Medium / Warm), Fix the one of R/G/B gain to 192 (default data) and decrease the others.

5.2.3. LED White balance table

5.2.3.1. Cool Mode

- 1) Purpose : Especially G-gain fix adjust leads to the luminance enhancement. Adjust the color temperature to reduce the deviation of the module color temperature.
- 2) Principle : To adjust the white balance without the saturation, Adjust the G gain more than 172 (If R gain or G gain is more than 255 , G gain can adjust less than 172) and change the others (R/B Gain).
- 3) Adjustment mode : mode – Cool

5.2.3.2. Medium / Warm Mode

- 1) Purpose : Adjust the color temperature to reduce the deviation of the module color temperature.
- 2) Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to 192 (default data) and decrease the others.
- 3) Adjustment mode : Two modes – Medium / Warm

- Luminance: 204 Gray
- Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Coordinate		Temp	Δuv
	X	Y		
Cool	0.271	0.270	13,000K	0.0000
Medium	0.286	0.289	9,300K	0.0000
Warm	0.313	0.329	6,500K	0.0000

* Change reason : When vivid mode, more detail than other company set.

- Standard color coordinate and temperature using CA-210(CH-14) – by aging time

- (1) Normal line in Korea (From January to February) : LGD (UB98xxx, UB95/93xxx, UB85xxx, UB83xxx, UC97 Series models)

	Aging time (Min)	Cool		Medium		Warm	
		X	Y	X	Y	X	Y
		271	270	286	289	313	329
1	0-2	286	295	301	314	328	354
2	3-5	284	290	299	309	326	349
3	6-9	282	287	297	306	324	346
4	10-19	279	283	294	302	321	342
5	20-35	276	278	291	297	318	337
6	36-49	274	275	289	294	316	334
7	50-79	273	272	288	291	315	331
8	80-119	272	271	287	290	314	330
9	Over 120	271	270	286	289	313	329

- Standard color coordinate and temperature using CA-210(CH-14) – by aging time

- (2) Normal line in Korea (From March to December) : : LGD (UB98xxx, UB95/93xxx, UB85xxx, UB83xxx, UC97 Series models)

* Normal line in Mexico : LGD (UB98xxx, UB95/93xxx, UB85xxx, UB83xxx, UC97 Series models)

	Aging time (Min)	Cool		Medium		Warm	
		X	Y	X	Y	X	Y
		271	270	286	289	313	329
1	0-2	282	289	297	308	324	348
2	3-5	281	287	296	306	323	346
3	6-9	279	284	294	303	321	343
4	10-19	277	280	292	299	319	339
5	20-35	275	277	290	296	317	336
6	36-49	274	274	289	293	316	333
7	50-79	273	272	288	291	315	331
8	80-119	272	271	287	290	314	330
9	Over 120	271	270	286	289	313	329

(3) O/S Module(AUO, INX, Sharp, CSOT, BOE)

	Cool		Medium		Warm	
	X	Y	X	Y	X	Y
spec	271	270	286	289	313	329
target	278	280	293	299	320	339

-. To check the Coordinates of White Balance, you have to measure at the below conditions.

Picture Mode : select Vivid and change

Dynamic Contrast : Off ,

Dynamic Colour : Off,

Clear White : Off

-> Picture Mode change : Vivid -> Vivid(User)

(If you miss the upper condition, the coordinates of W/B can be lower than the spec.)

5.3. Model name & Serial number D/L

5.3.1. Notice

- 1) Serial number D/L is using of scan equipment.
- 2) Setting of scan equipment operated by Manufacturing Technology Group.
- 3) Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0
- 4) Check the model name In-start menu -> Factory name displayed (ex 42LV5500-DD)
- 5) Check the Diagnostics (DTV country only) -> Buyer model displayed (ex 42LV5500-DD)

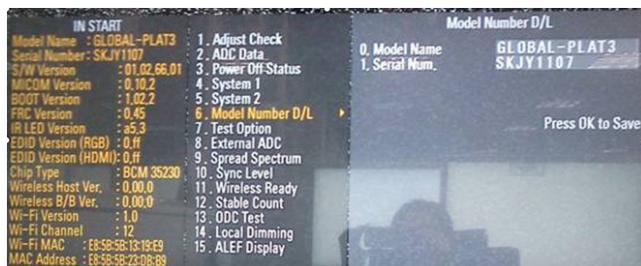
5.3.2. Method : Auto

- 1) Press "Power on" key of service remocon.(Baud rate : 115200 bps)
- 2) Connect RS232 Signal Cable to RS-232 Jack
- 3) Write Serial number by use RS-232.
- 4) Must check the serial number at Instart menu.

5.3.3. Method : Manual

* If the TV set is downloaded By OTA or Service man, Sometimes model name or serial number is initialized.
(Not always) It is impossible to download by bar code scan, so It need Manual download.

- 1) Press the 'instart' key of ADJ remote controller.
- 2) Go to the menu '6.Model Number D/L' like below photo.
- 3) Input the Factory model name or Serial number like photo.

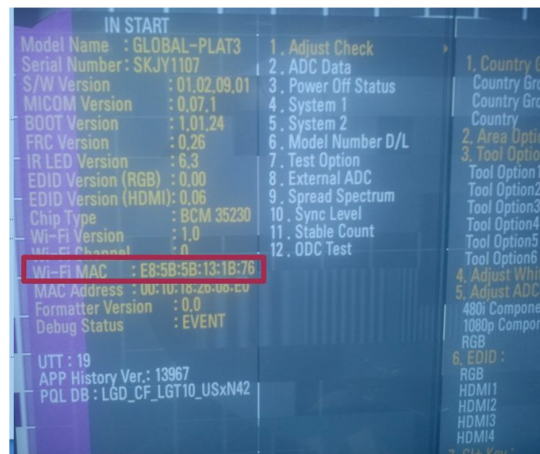


5.4. Wi-Fi MAC Address Check

5.4.1. Using RS232 Command

	Command	Set ACK
Transmission	[A][][][Set ID][][20][Cr]	[O][K][x] or [N][G]

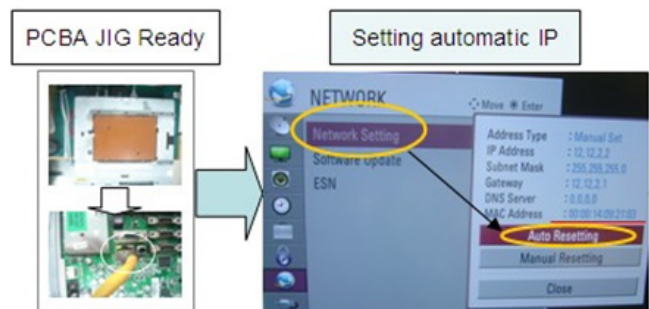
5.4.2. Check the menu on in-start



5.5. LAN Inspection

5.5.1. LAN Port connection with PCB

- 1) Network setting at MENU Mode of TV
- 2) Setting automatic IP
- 3) Setting state confirmation
- 4) If automatic setting is finished, you confirm IP and MAC Address



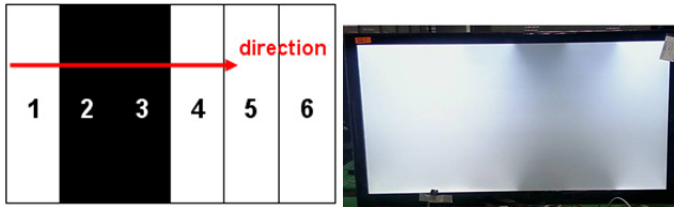
5.6. WIDEVINE Key Inspection

- 1) Confirm Key input Data at the "IN START" MENU Mode



5.7. Local Dimming Inspection (Optional)

- 1) Press 'TILT' key of the Adj. R/C and check moving patterns. The black bar patterns moves from top left to bottom right. If local dimming function does not work, a whole screen shows full white.



5.8. Motion Remote controller Inspection

- 1) Equipment : Motion remote controller for test, IR-KEY-CODE remote controller for test Check battery before test. (Recommend : Change battery for every Lot.)
- 2) Process
 - If you select the 'start key(wheel)' on the controller, you can pairing with the TV SET.
 - You can check the cursor on the TV Screen, when select the 'Wheel Key' on the controller
 - You must remove the pairing with the TV Set by select 'Back + Home Key' on the controller

5.9. 3D function test

- 1) Equipment : Pattern Generator MSHG-600, MSPG-6100 [SUPPORT HDMI1.4, HDMI mode 872, pattern No. 83]
- 2) Process
 - (A) Please input 3D test pattern like below (HDMI mode NO. 872 , pattern No.83)

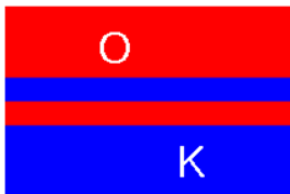


Fig.1
<HDMI Mode 872번, Pattern No. 83>

- (B) When 3D OSD appear automatically , then select green button.



Fig.3
<OK Key>

- (C) Don't wear a 3D Glasses, Check the picture like below.



Fig.2
<3D Mode 진입 후 화면>
* 안경을 착용하지 않은 상태임.

5.10. HDMI ARC Function Inspection

5.10.1. Test equipment

- Optic Receiver Speaker
- MSHG-600 (SW: 1220 ↑)
- HDMI Cable (for 1.4 version)

5.10.2. Test method

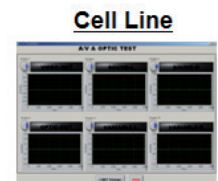
- (1) Insert the HDMI Cable to the HDMI ARC port from the master equipment (HDMI1)



- (2) Check the sound from the TV Set



- (3) Check the Sound from the Speaker or using AV & Optic TEST program (It's connected to MSHG-600)



- * Remark: Inspect in Power Only Mode and check SW version in master equipment



5.11. Eye-Q Green Inspection Guide (Change to Motion EYE care)

- 1) Turn on the TV set.
- 2) Press "EYE" button on the Adjustment remote controller.



Green Eye-Check	
Luminance	: 122
Red	: 25
Green	: 45
Blue	: 34
Backlight	:100

- 3) Block the Intelligent Sensor module on the front C/A about 6 seconds. When the "Sensor Data" is lower than 20, you can see the "OK" message
=> If it doesn't show "OK" message, the Sensor Module is defected one. You have to replace that with a good one.



Green Eye-Check	
Luminance	: 122
Red	: 25
Green	: 45
Blue	: 34
Backlight	:100

- 4) After check the "OK" message come out, take out your hand from the Sensor module.
=> Check "Sensor Data" value change from "0" to "300" or not. If it doesn't change the value, the sensor is also defected one. You have to replace it.

5.12. AUDIO

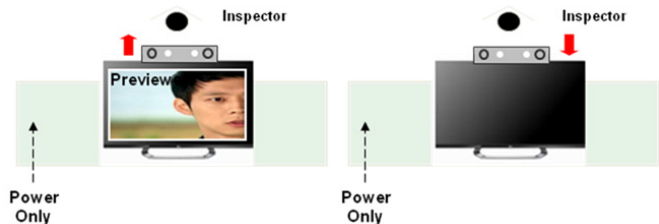
No	Item	Min	Typ	Max	Unit	Remark
1	Audio practical max Output, L/R (Distortion=10% max Output)	9.0	10.0	12.0	W	Measurement condition
		8.5	8.9	9.8	Vrms	
2	Speaker (8Ω Impedance)		10.0	15.0	W	Measurement condition

*Measurement condition:

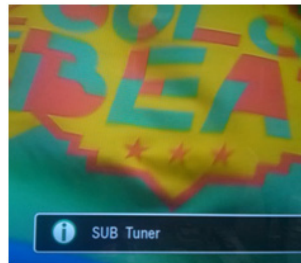
- (1) RF input: Mono, 1KHz sine wave signal, 100% Modulation
- (2) CVBS, Component: 1KHz sine wave signal (0.4Vrms)
- (3) RGB PC: 1KHz sine wave signal (0.7Vrms)

5.13. Camera Function Inspection

- (1) Objective : To check how it connects between Camera and PCBA normally, and their Function
- (2) Test Method : This Inspection is available only Power-Only Status.
 - i) Slide Camera Up
 - ii) Camera's Preview picture appears on TV Set
 - iii) Slide Camera Down



5.14. PIP/ W&R Function Inspection

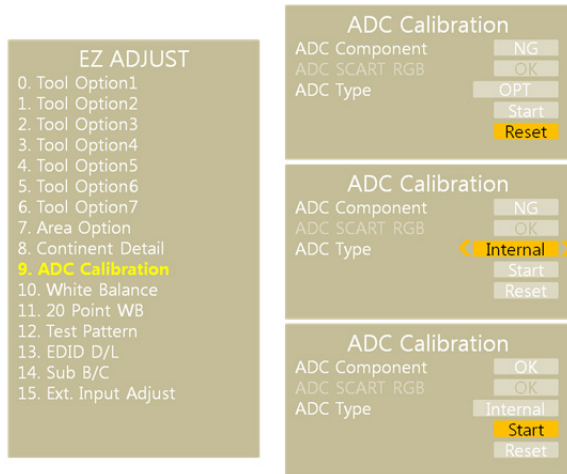


- (1) Objective : To check the connection between sub tuner and PCBA, and their Function
- (2) Test Method : This Inspection is available only Power-Only Status.
 - 1) Press exit key of the Adj. R/C and Press PIP key.
 - 2) Check that the SUB TUNER pop up window on the TV Set.
 - 3) Check that the normal operation (picture, sound) of DTV on the TV Set.

5.15. Manual ADC Calibration(Optional)

5.15.1. Adjust method

- (1) Enter Service Mode by pushing "ADJ" key
- (2) Enter ADC Calibration by pushing "▶" key at "9. ADC Calibration"
- (3) Select [Reset] button by pressing Enter key
- (4) Change "OTP" to "Internal" by pushing "▶" key
- (5) Select [Start] button by pressing Enter key, then it will operate ADC adjustment.



5.16.3. Check point

- 1) Test voltage
 - (A) 3 Poles
 - GND: 1.5KVac/min at 100mA
 - SIGNAL: 3KVac/min at 100mA
- 2) TEST time: 1 second
- 3) TEST POINT
 - (B) 3 Poles
 - GND Test = POWER CORD GND and SIGNAL CABLE GND.
 - Hi-pot Test = POWER CORD GND and LIVE & NEUTRAL.
- 4) LEAKAGE CURRENT: At 0.5mArms

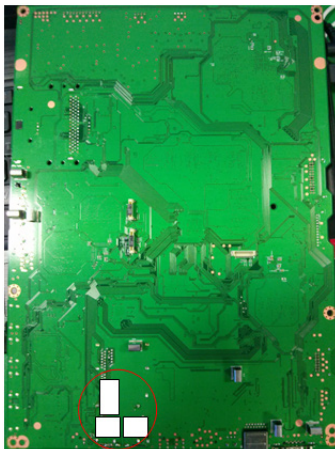
5.16. GND and Hi-Pot test

5.16.1. GND & HI-POT auto-check preparation

- 1) Check the POWER CABLE and SIGNAL CABLE insertion condition

5.16.2. GND & HI-POT auto-check

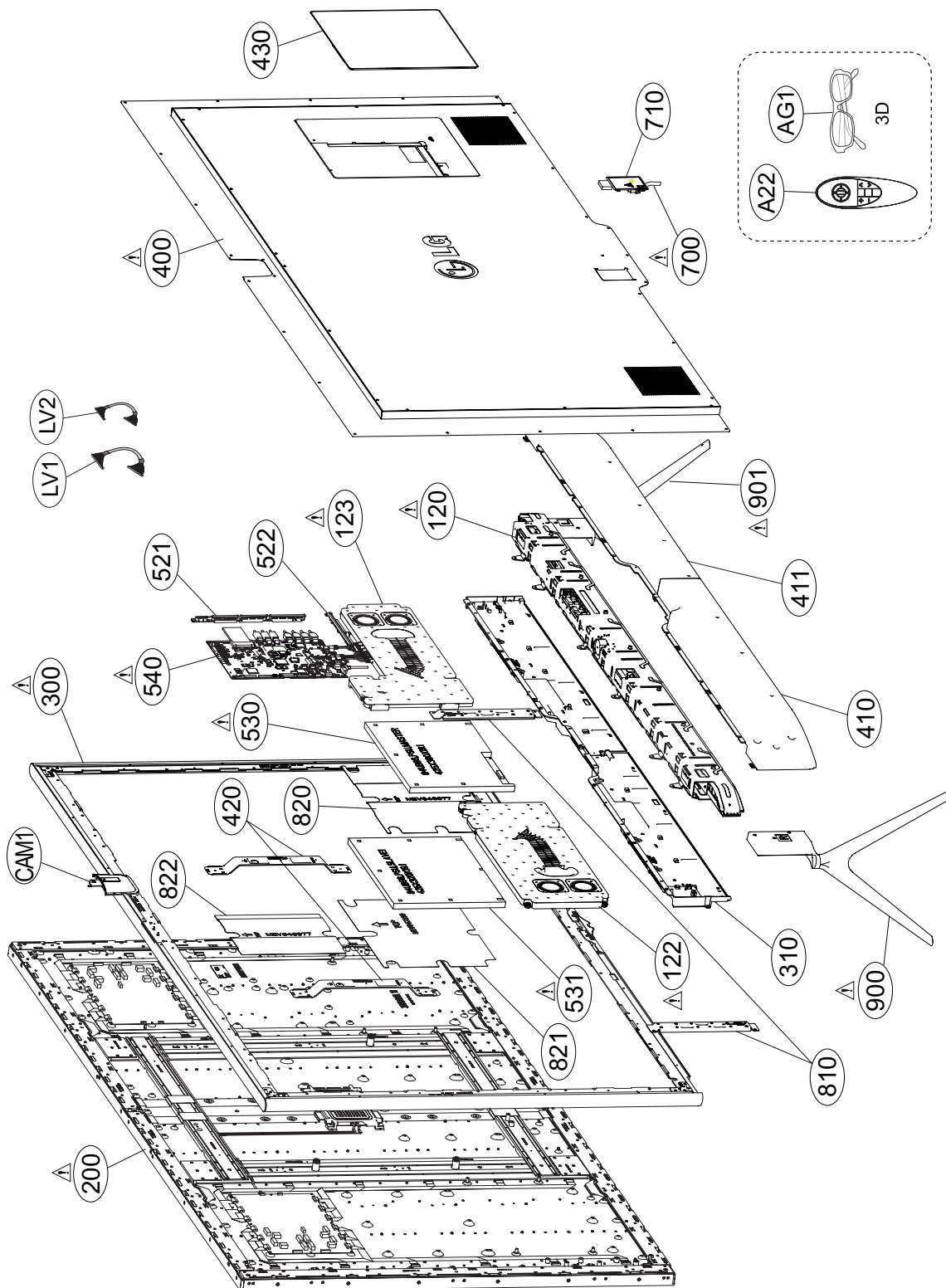
- 1) Pallet moves in the station. (POWER CORD / AV CORD is tightly inserted)
- 2) Connect the AV JACK Tester.
- 3) Controller (GWS103-4) on.
- 4) GND Test (Auto)
 - If Test is failed, Buzzer operates.
 - If Test is passed, execute next process (Hi-pot test). (Remove A/V CORD from A/V JACK BOX)
- 5) HI-POT test (Auto)
 - If Test is failed, Buzzer operates.
 - If Test is passed, GOOD Lamp on and move to next process automatically.



EXPLODED VIEW

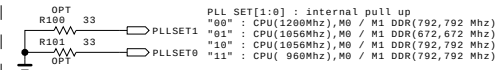
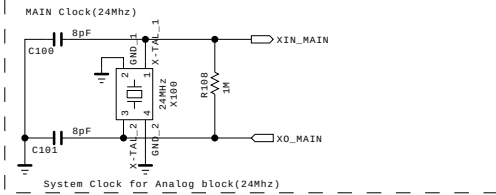
IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by  in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.

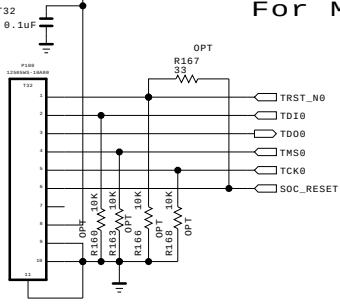


System Configuration

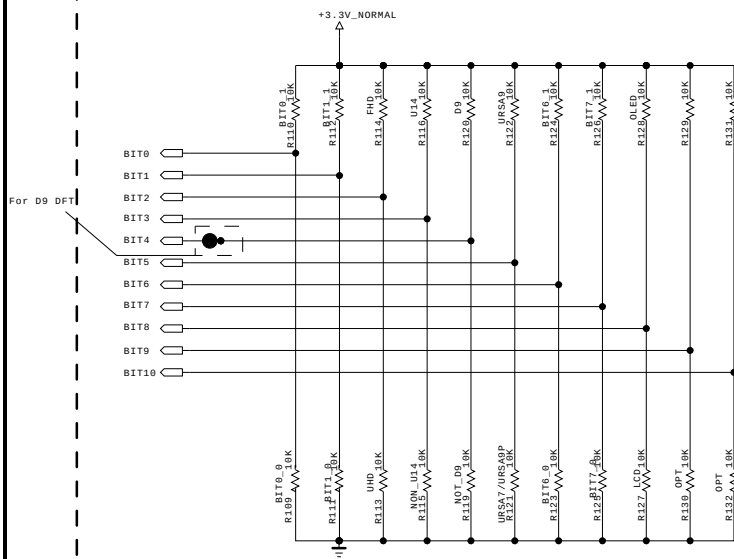
Clock for LG1154D



Jtag I/F For Main



WebOS UHD HW Option



20131016 version

BIT(0/1)	DVB	ATSC	JP
00	TW/COL	North.AM.	
01	CN/HK	KR	JP
10	EU	BR	
11	AJJA		

		High	Low
BIT2	Resolution	FHD	UHD
BIT3	Support U14	U14	Non_U14
BIT4	D9 Model	D9	Non_D9
BIT5	URSA7/URSA9	URSA9	URSA7/URSA9P

BIT(6/7)	EU/CIS	AJJA	TW/COL	CN/HK	KR	North.AM	BR	JP
	T/C	T/C	T/C	Default	ATSC_PIP	ATSC_PIP	ISDB_PIP	Default
01	T2/C/S2/ATV_EXT	T2/C_PIP	T2/C_PIP		ATV_SOC	ATV_SOC	ISDB	
10	T2/C	T2/C	T2/C		ATV_EXT	ATV_EXT		
11	T2/C/S2/AT	T2/C/S2						

		High	Low
BIT6	Display	OLED	LCD
BIT9	Reserved		
BIT10	Reserved		

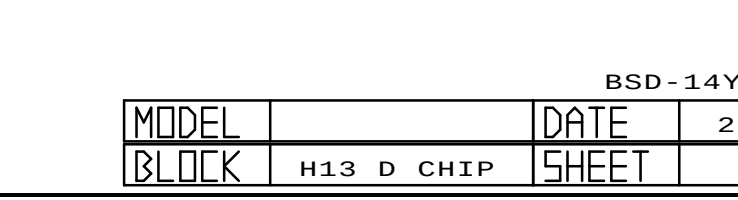
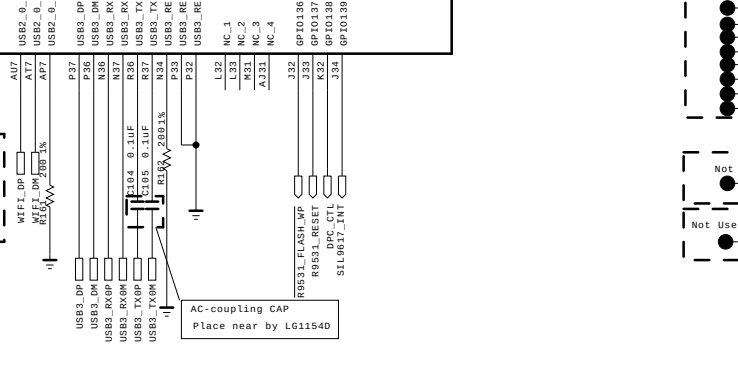
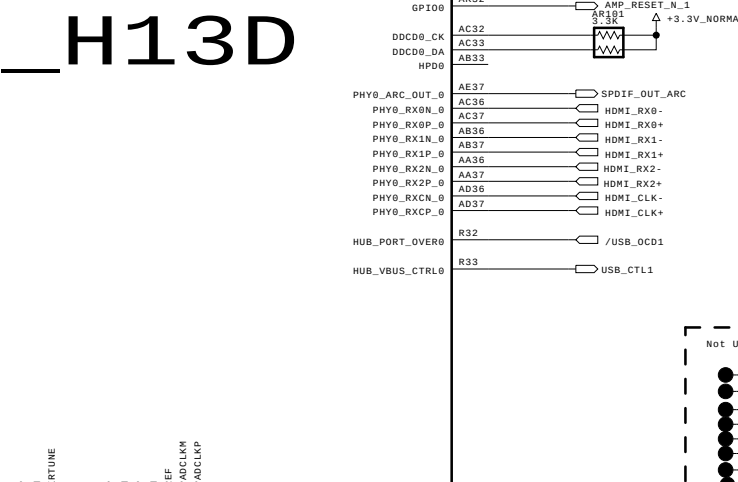
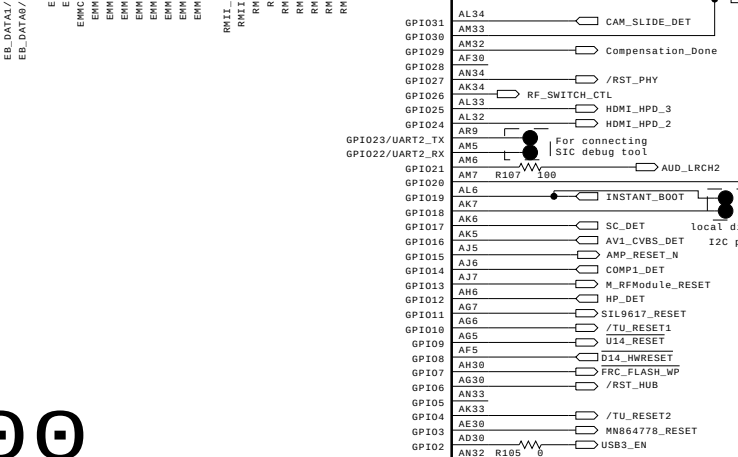
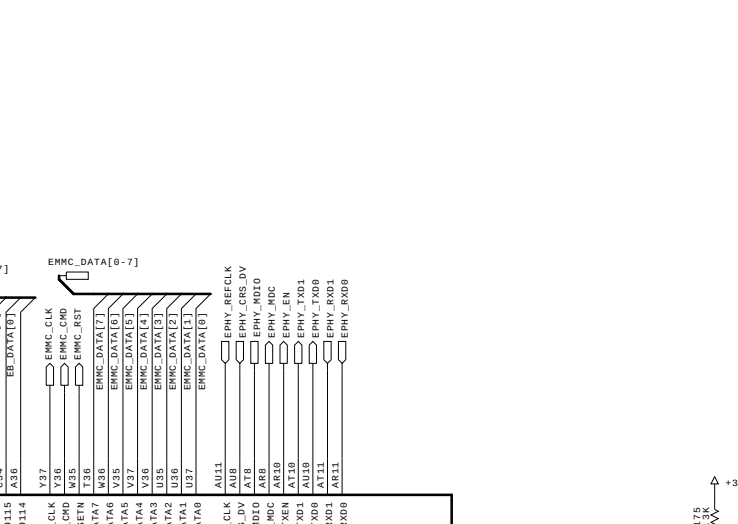
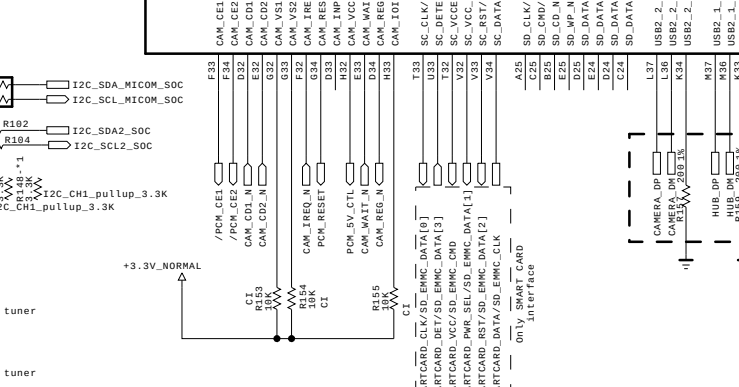
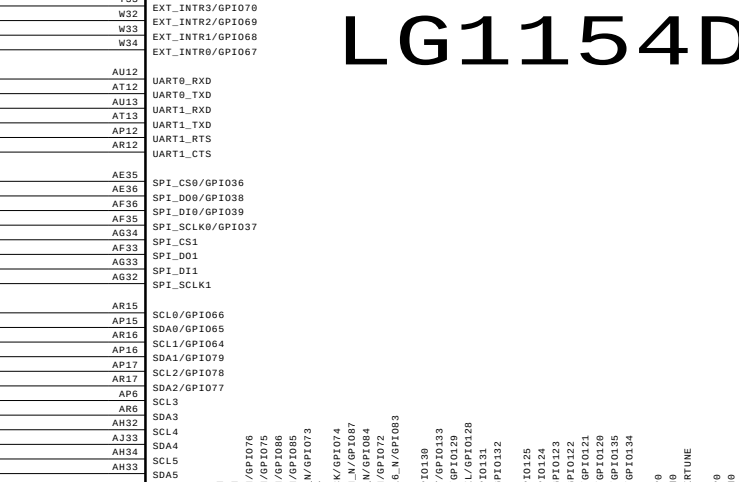
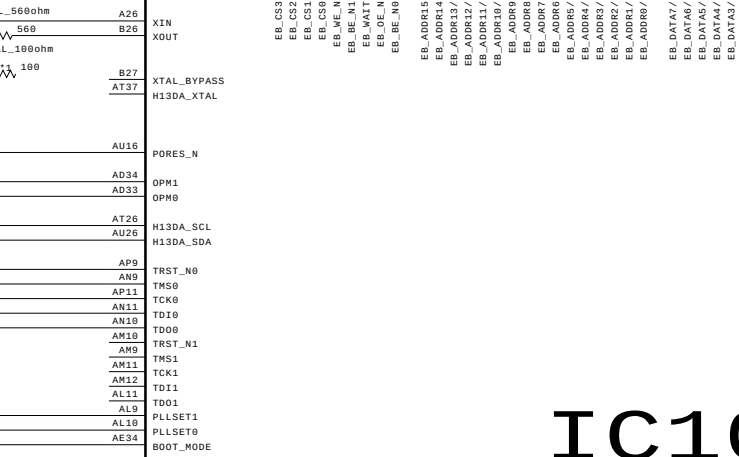
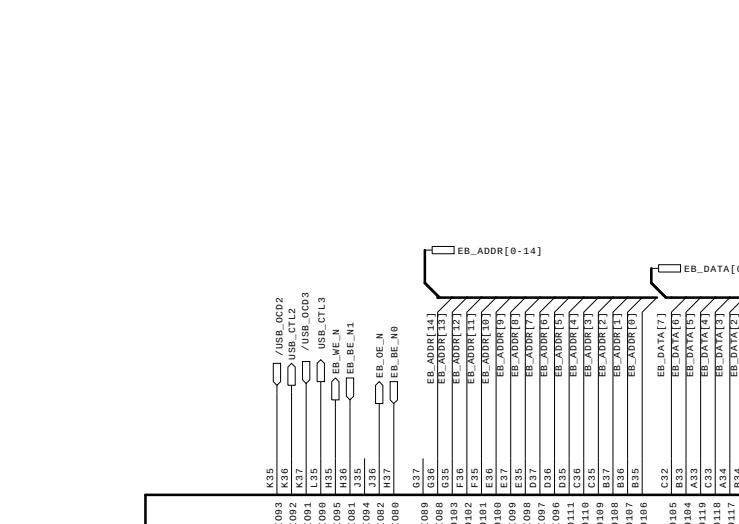
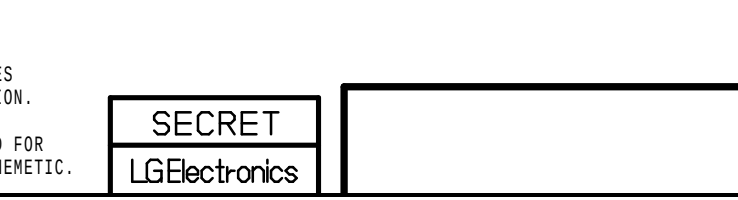
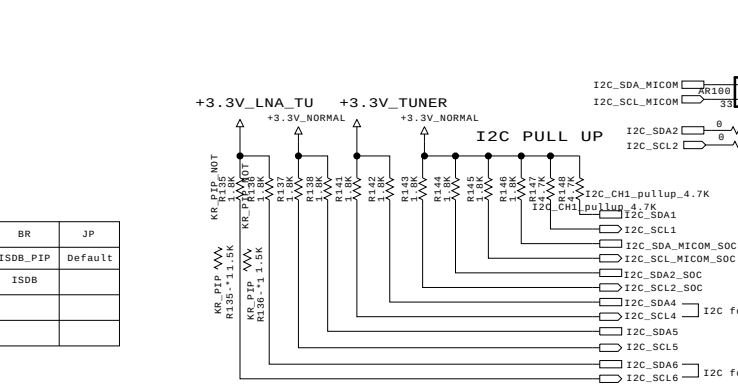
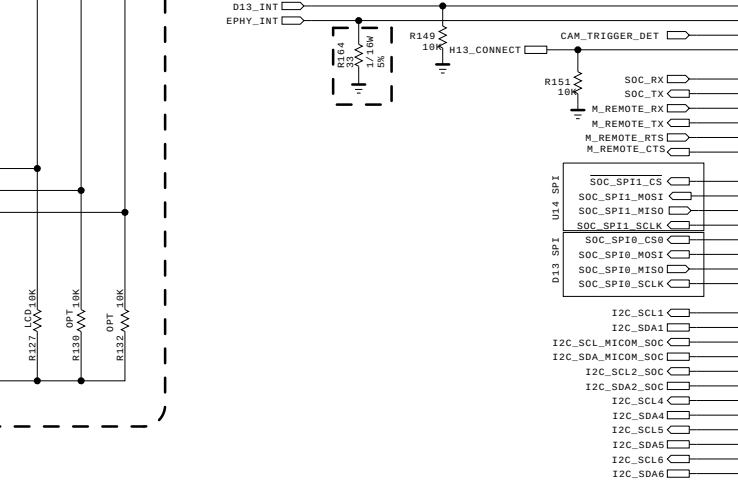
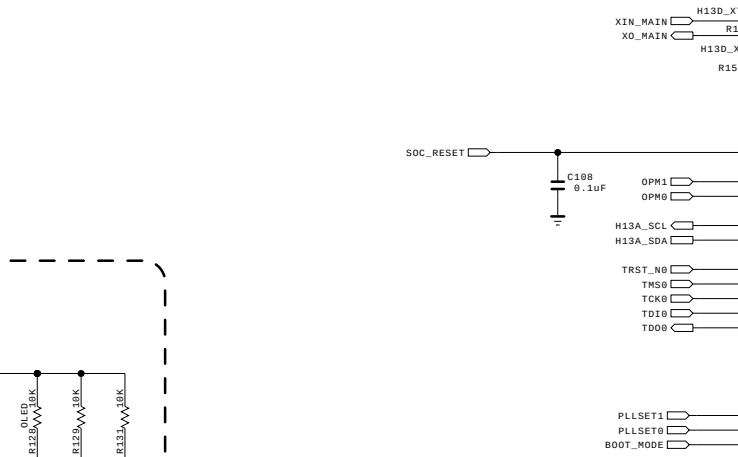
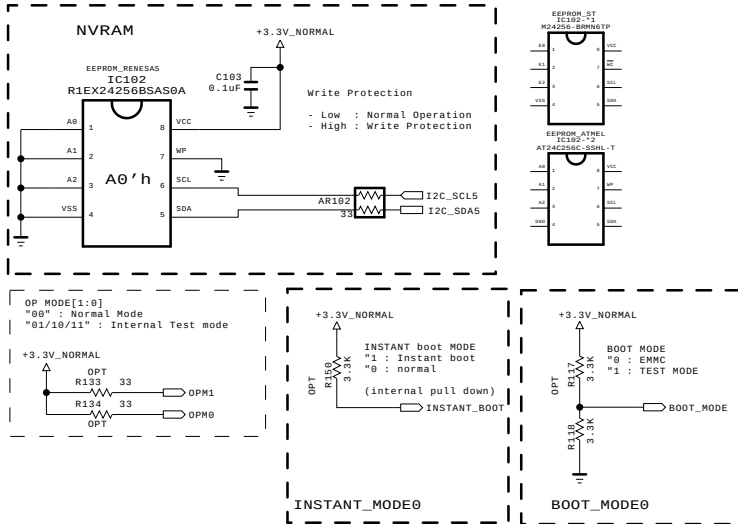
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

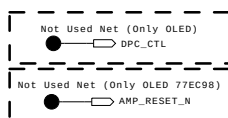
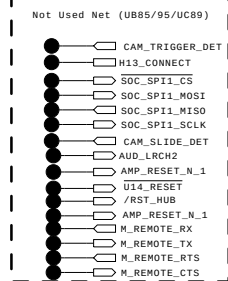
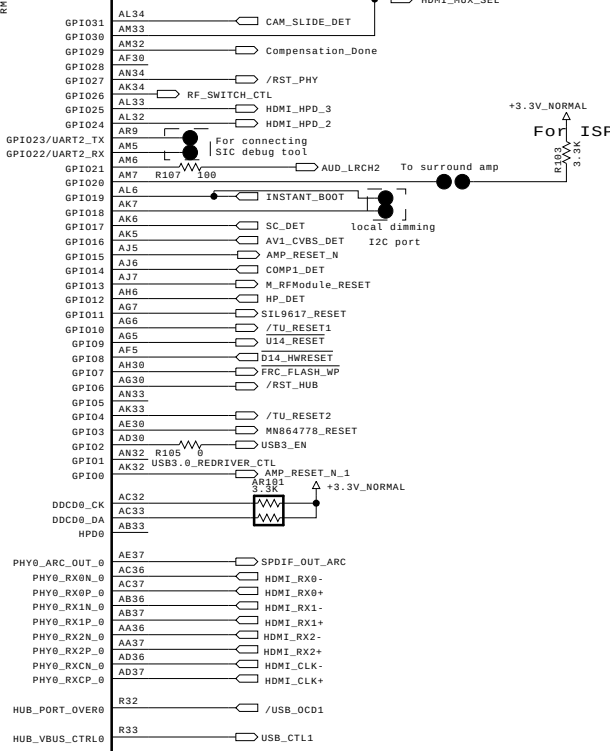
LG ELECTRONICS

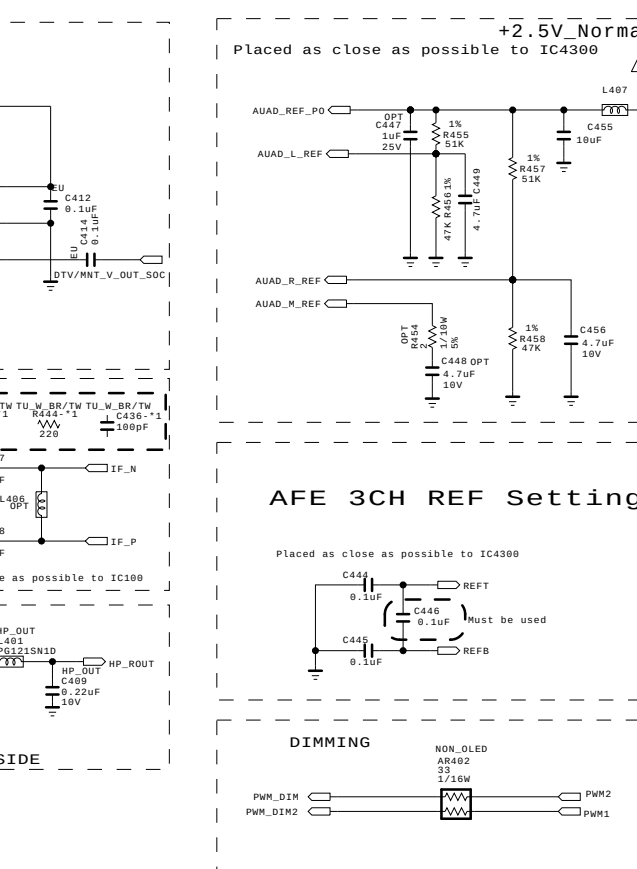
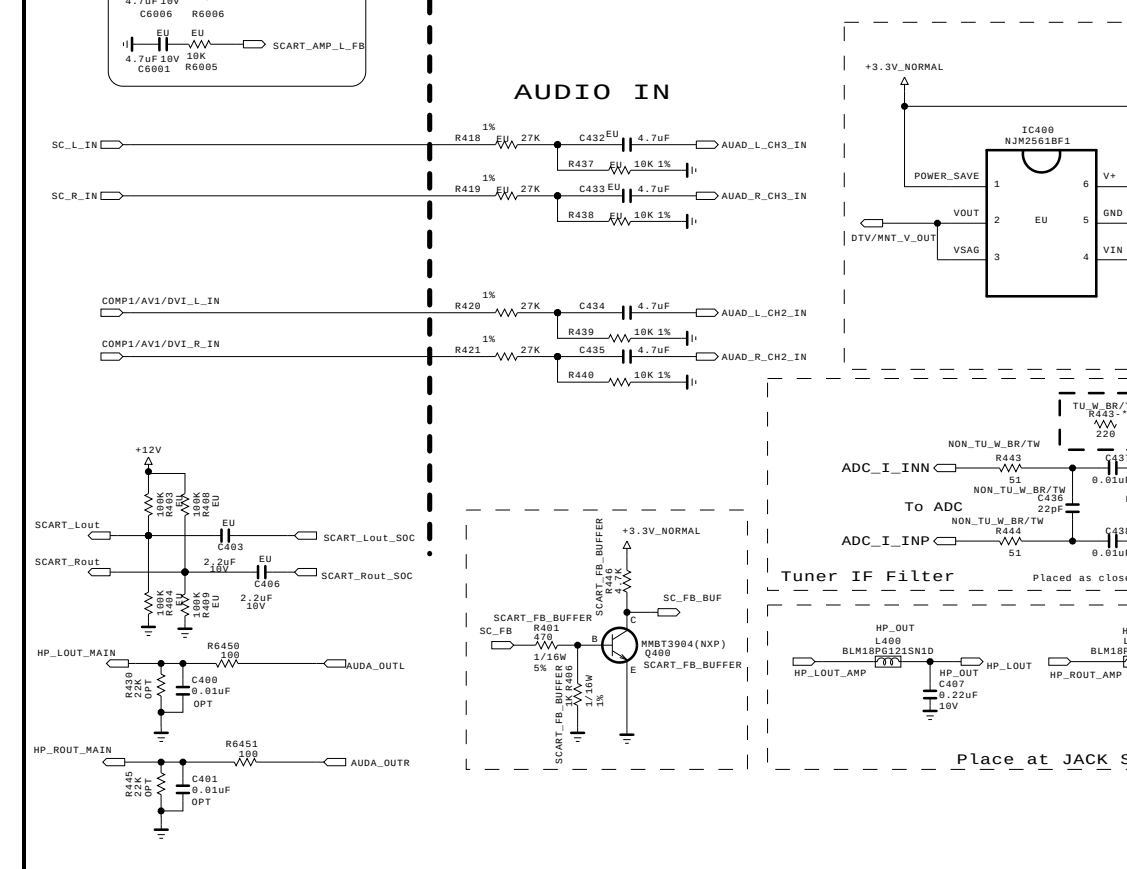
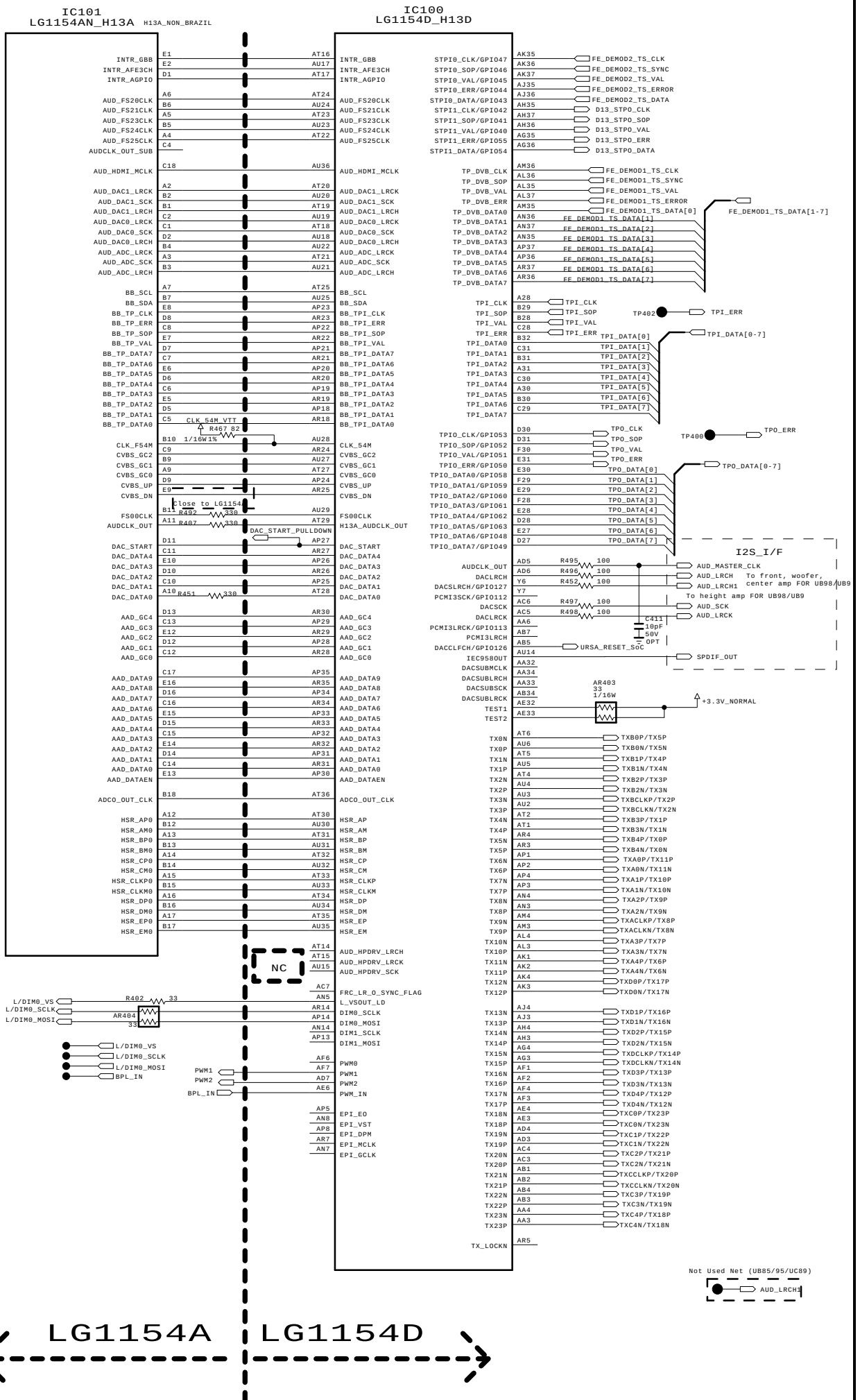
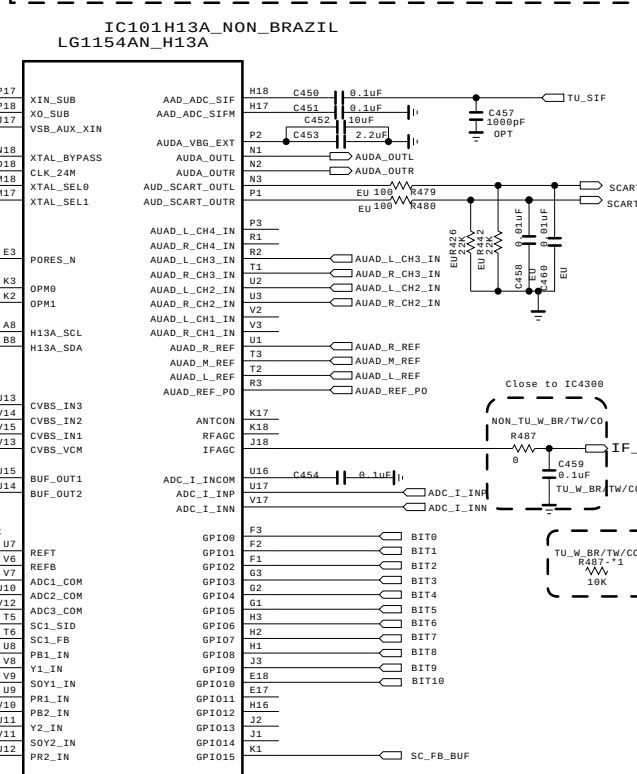
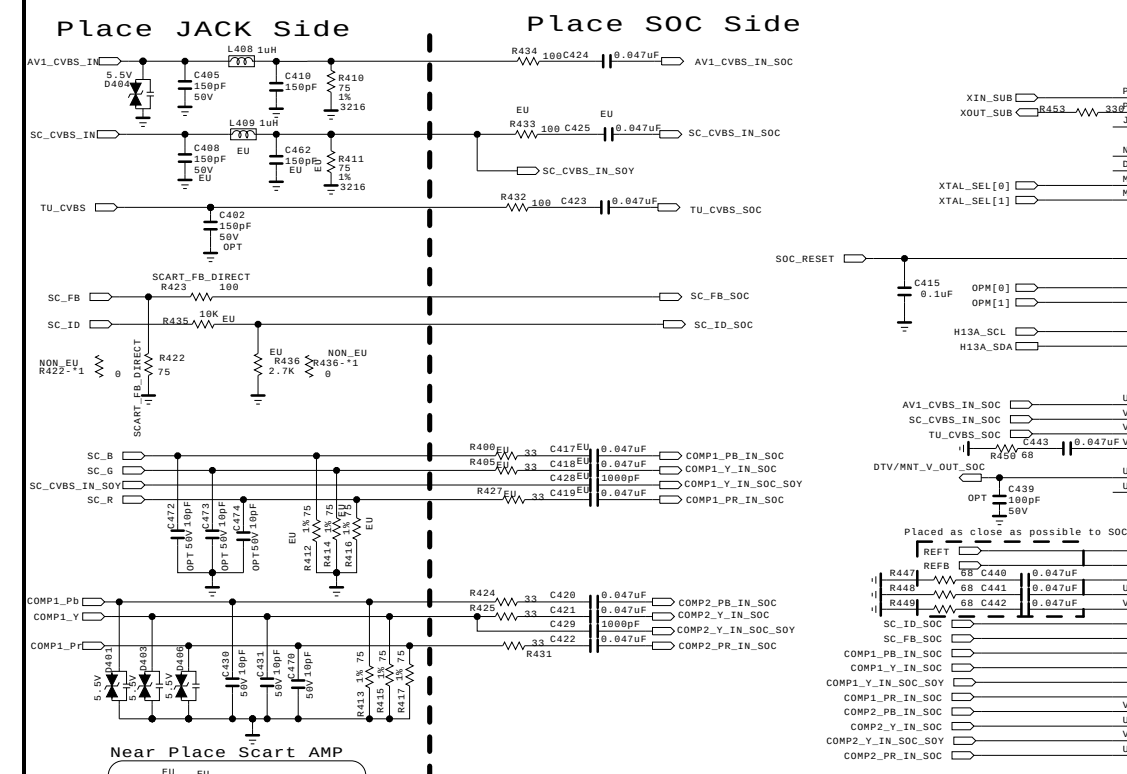
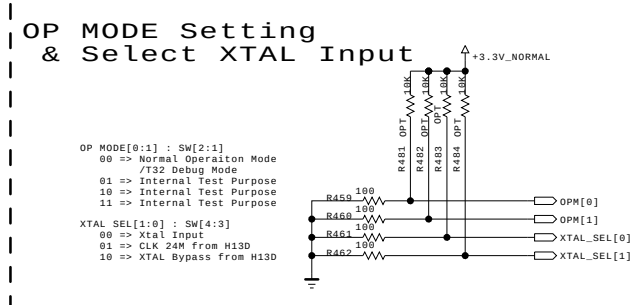
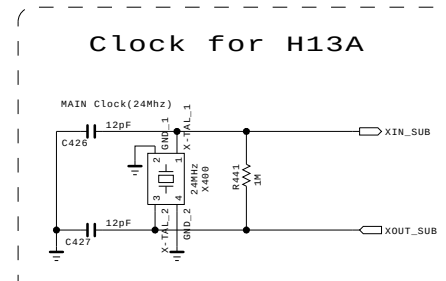
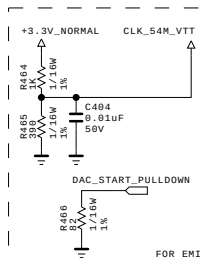
BSD-14Y-UD-001-HD

MODEL	DATE
BLOCK	2013-12-17
H13 D CHIP	SHEET

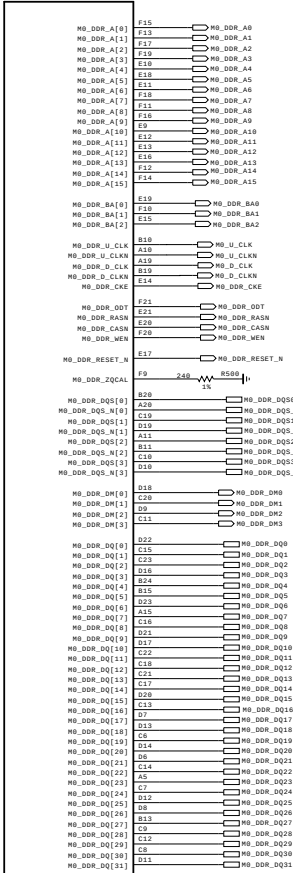


IC100 LG1154D_H13D

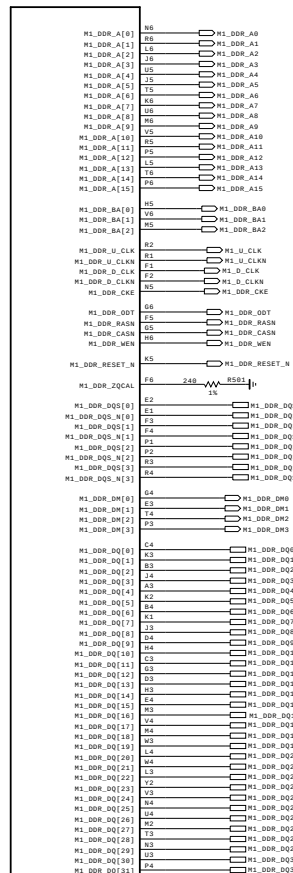




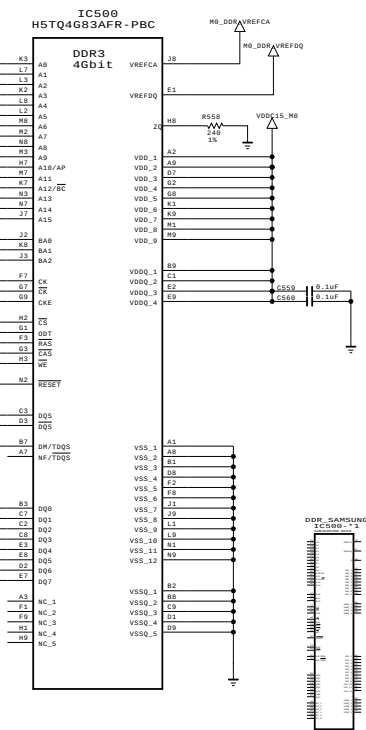
IC100
LG11540_H13D



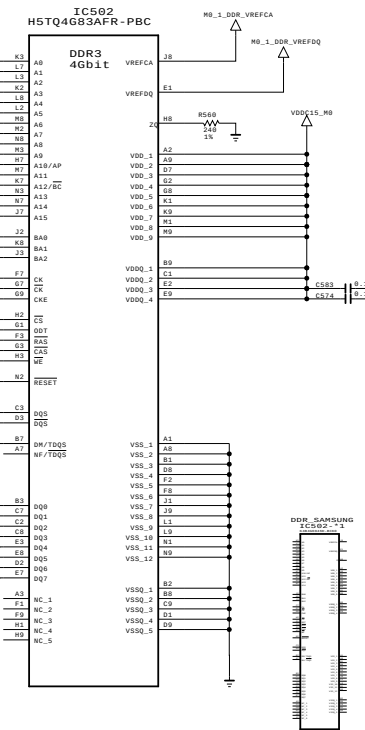
IC100
LG11540_H13D



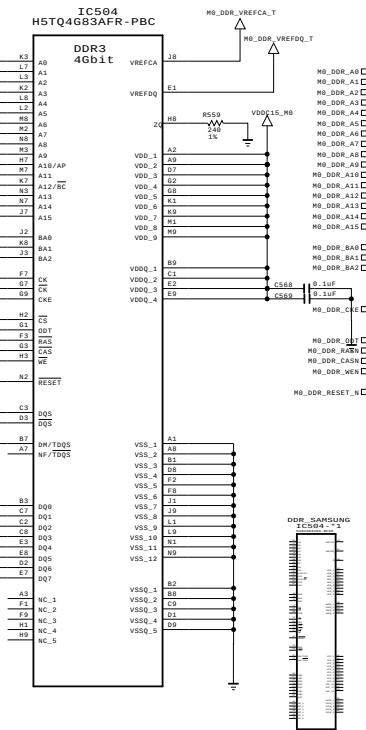
DDR_HYNIX



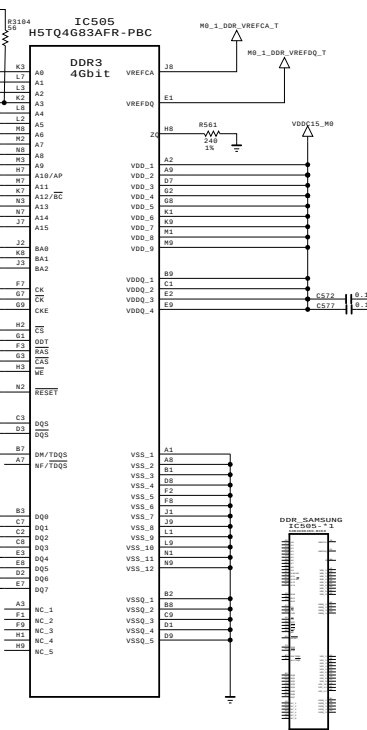
DDR_HYNIX



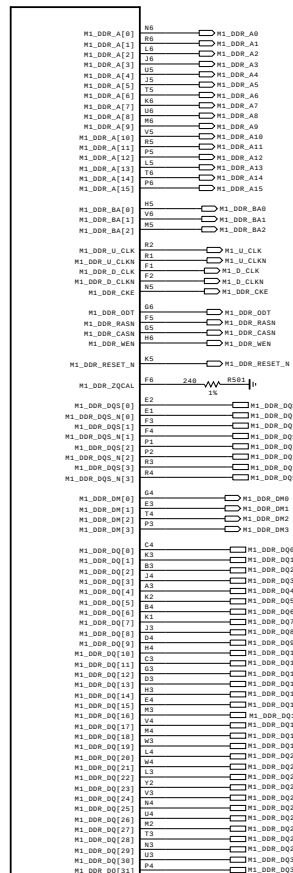
DDR_HYNIX



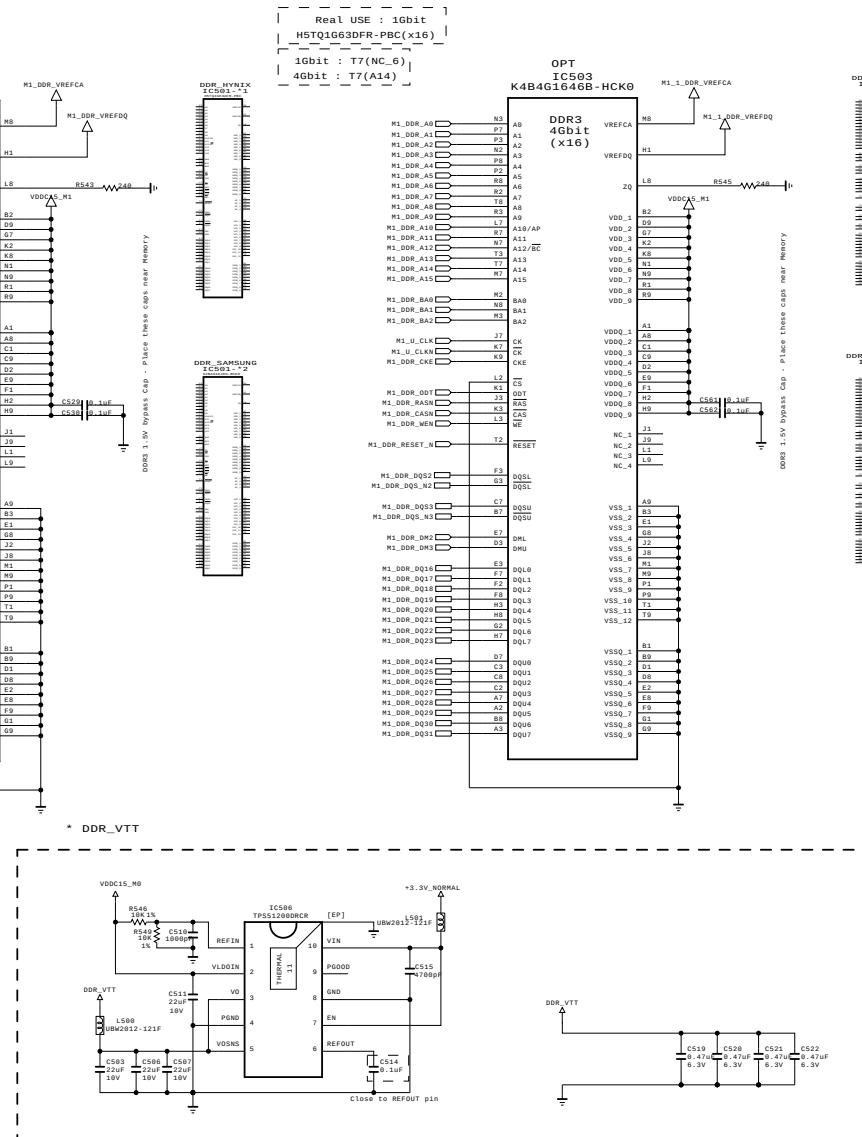
DDR_HYNIX



IC100
LG11540_H13D



Place at the bottom side



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

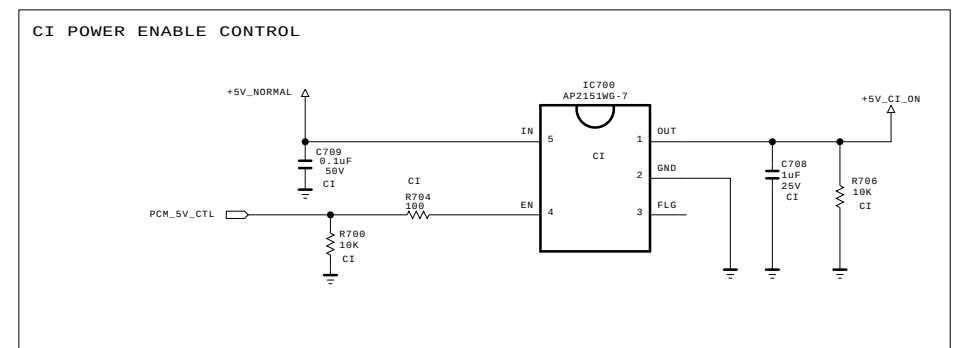
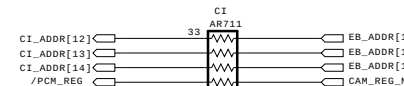
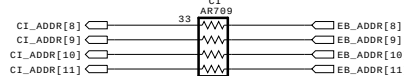
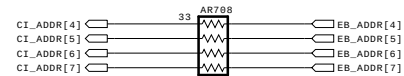
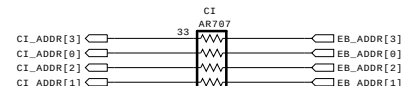
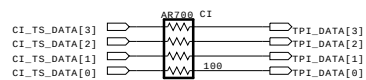
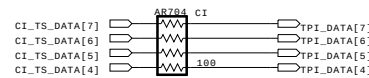
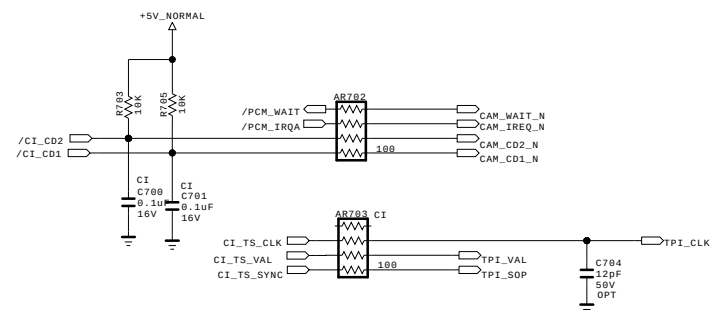
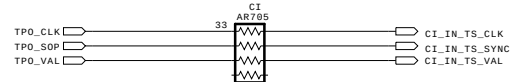
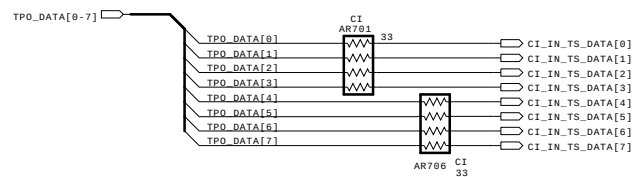
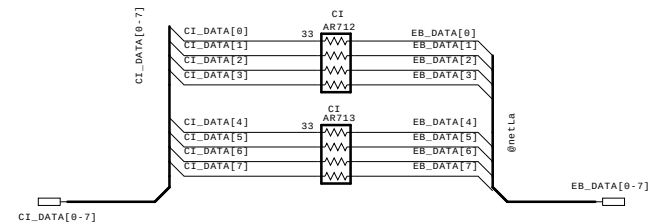
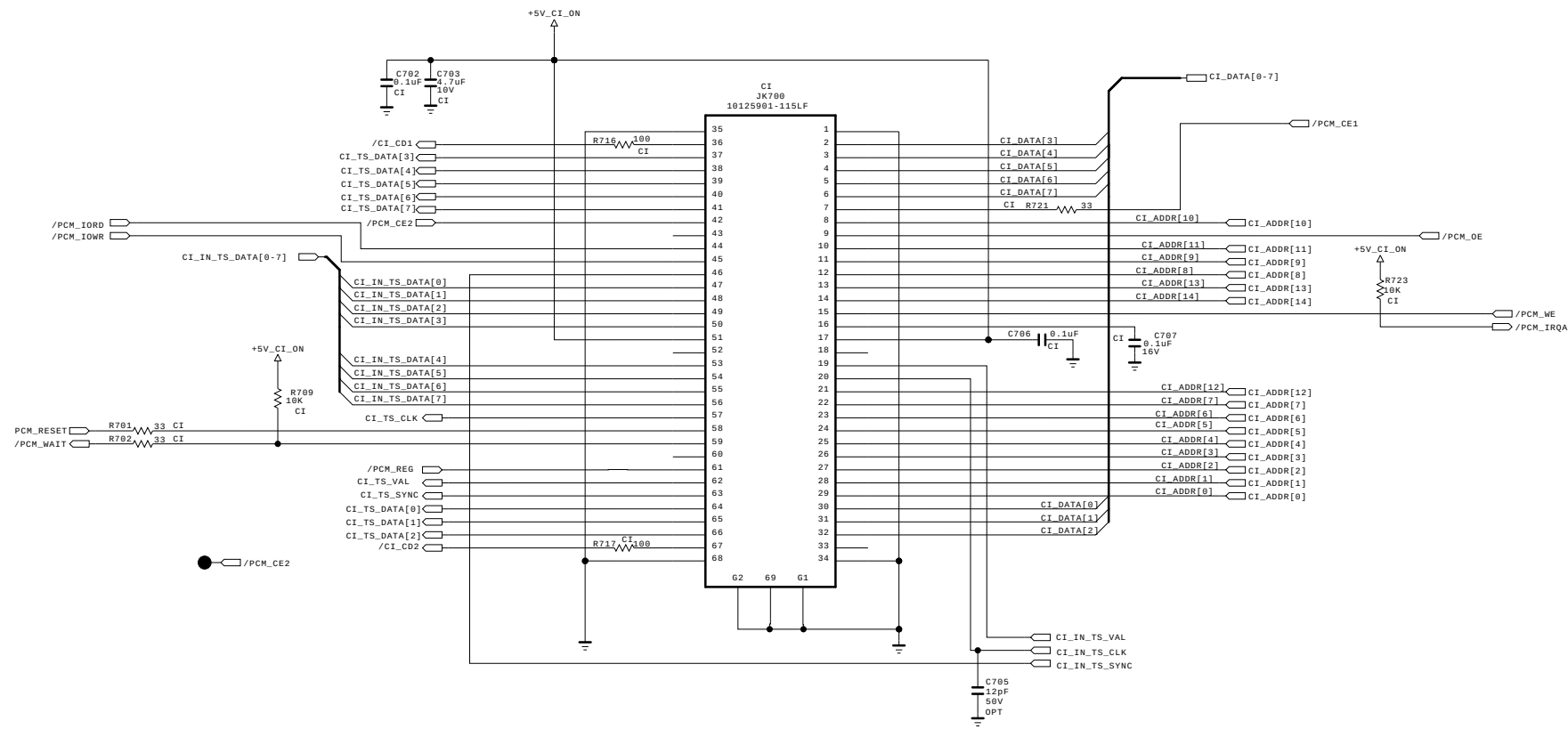
SECRET
LGElectronics

LG ELECTRONICS

MODEL
BLOCK
MAIN DDR
DATE
SHEET
2013-12-17

BSD-14Y-UD-005-HD

LGE Internal Use Only



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

 LG ELECTRONICS

MODEL
BLOCK

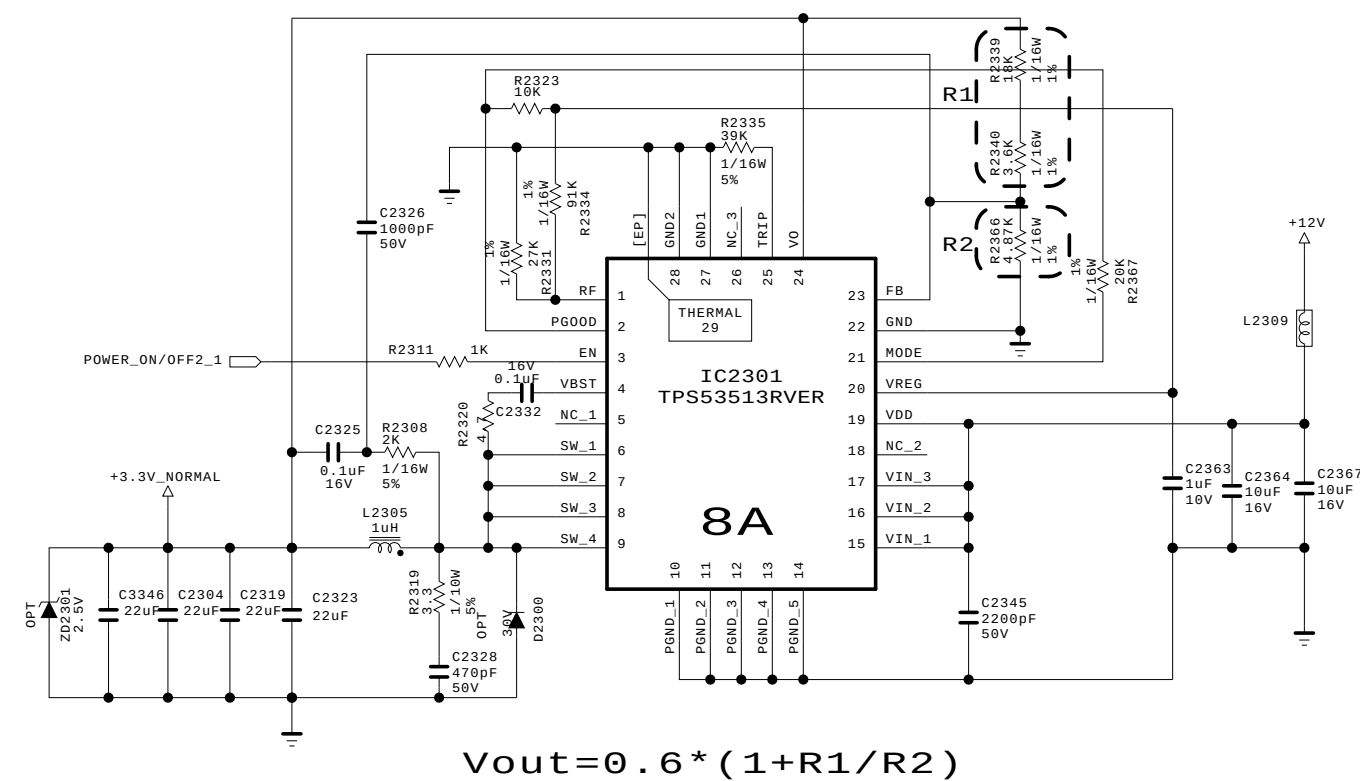
PCMCIA

DATE
SHEET

2013-12-17

BSD-14Y-UD-007-HD

+3.3V_NORMAL for UB98, UC9



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

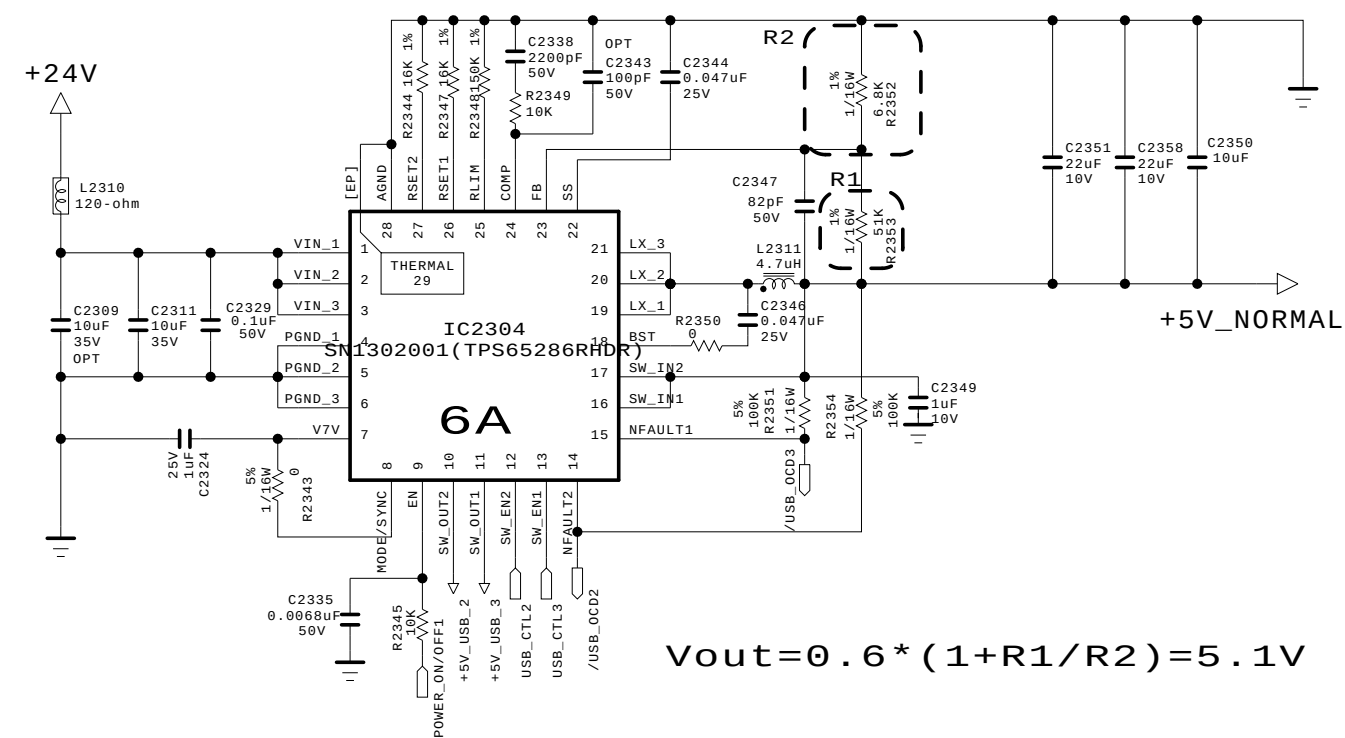
SECRET

LGElectronics

 LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	/

+5.0V normal & USB for UB model

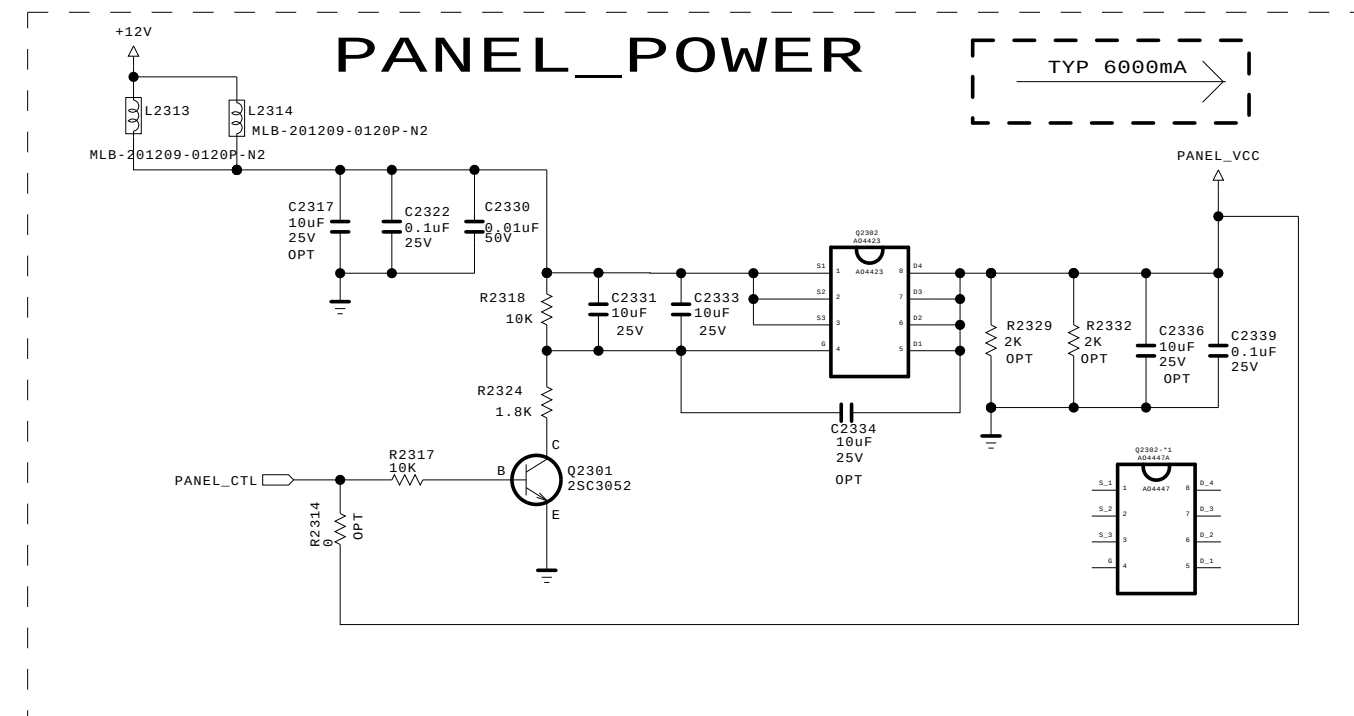
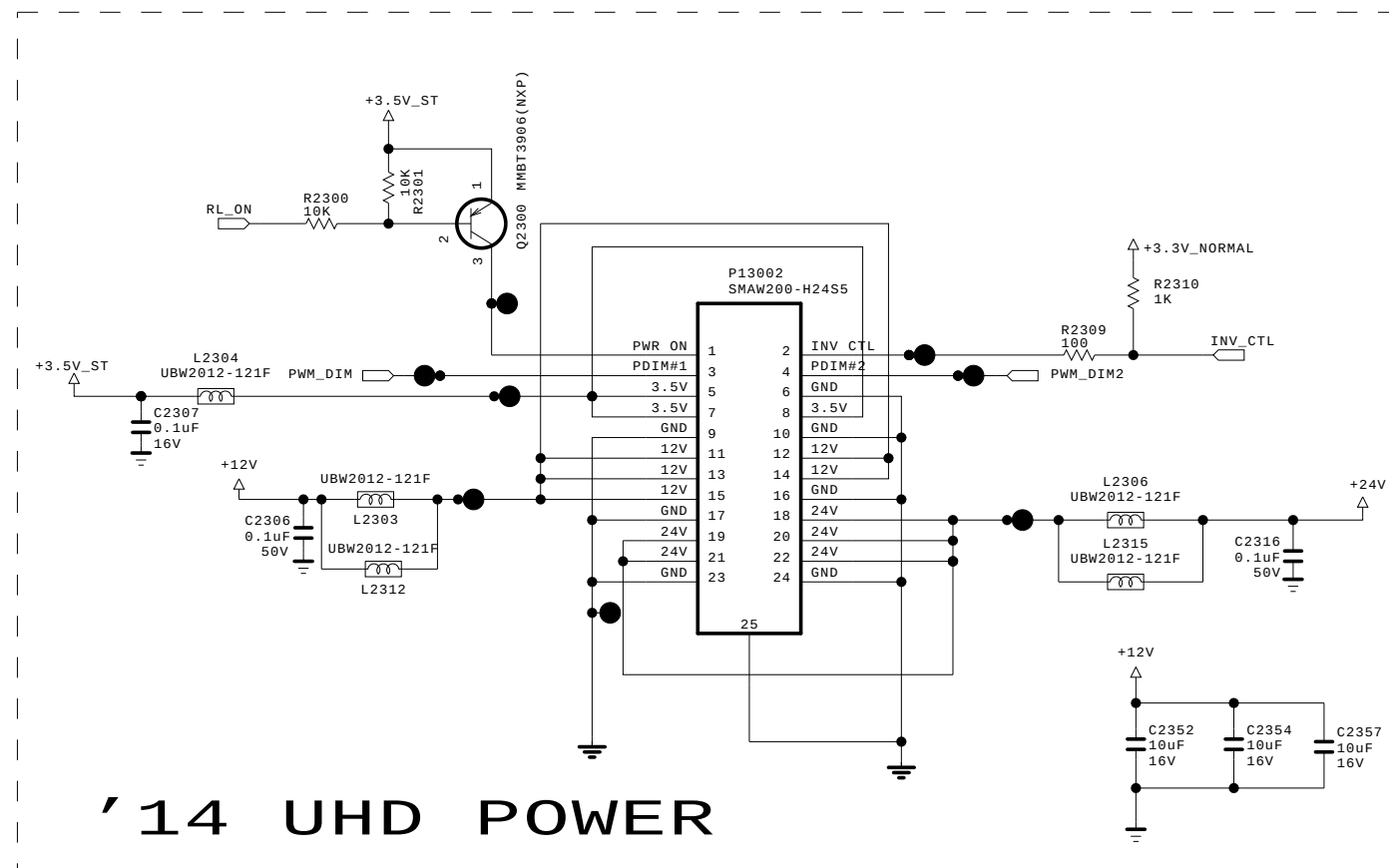


THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES
SPECIFIC FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

 LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	/

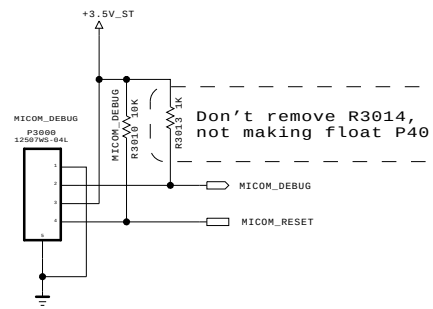


THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.



MODEL		DATE	
BLOCK		SHEET	

```
For Debug
```



```

graph TD
    A[POWER_ON/OFF!] --> B[POWER_ON/OFF2_1]
    B --> C[POWER_ON/OFF2_2]
    C --> D[POWER_ON/OFF2_3]
    D --> E[POWER_ON/OFF2_4]
    E --> F[SOC_RESET]
  
```

[illegible]

MICOM MODEL OPTION

	0	1	
MODEL_OPT_0	NON LOGO	LOGO	For LOGO LIGHT
MODEL_OPT_1	LCD / UHD	OLED	Need to Assign ADC port
MODEL_OPT_2	NON_EPI	EPI	
MODEL_OPT_3	M14	H13 / H14	
MODEL_OPT_4	NON_GED	GED	

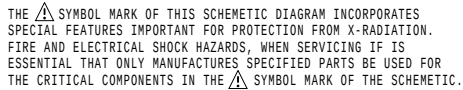
	MODEL_OPT_1	MODEL_OPT_3
M14 FHD LCD	0	0
M14 FHD OLED	1	0
H13/H14 UHD LCD	0	1
H13/H14 UHD OLED	1	1

MODEL_OPT_1	
Pull Up	MICOM_OLED
Pull Down	MICOM_LCD/UHD
Pull up + pull down	98UB98_Moving_SPK

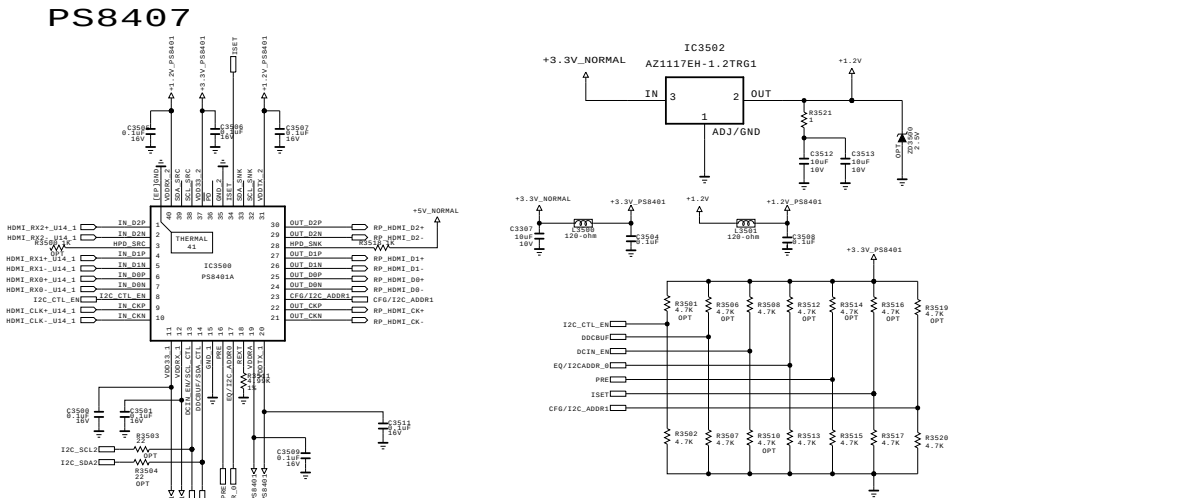
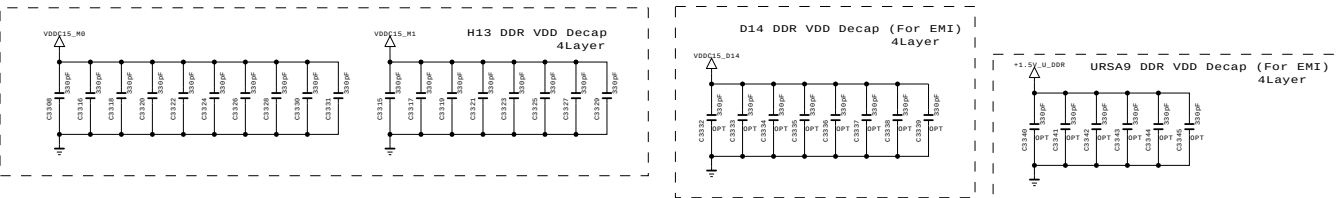
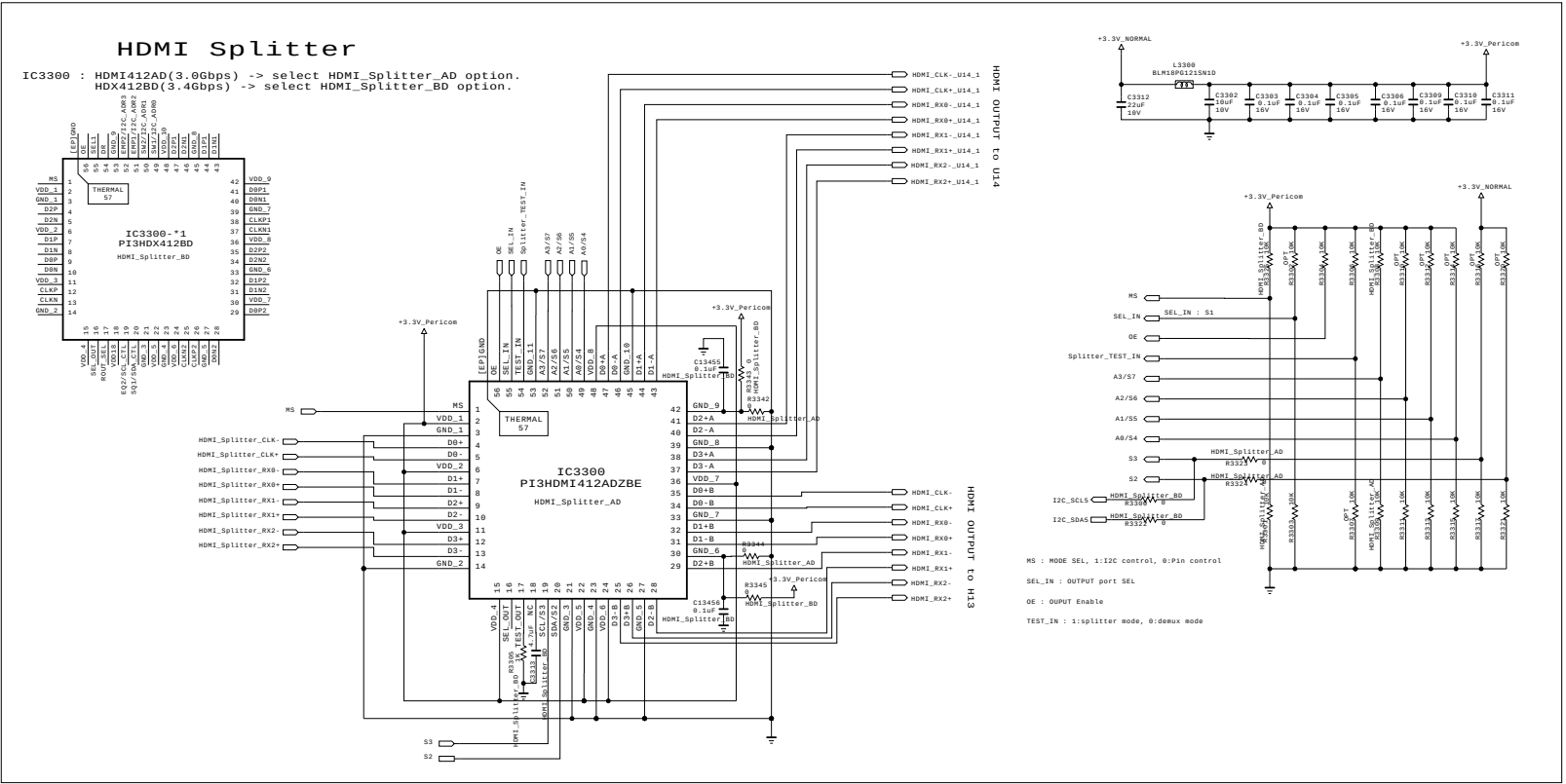
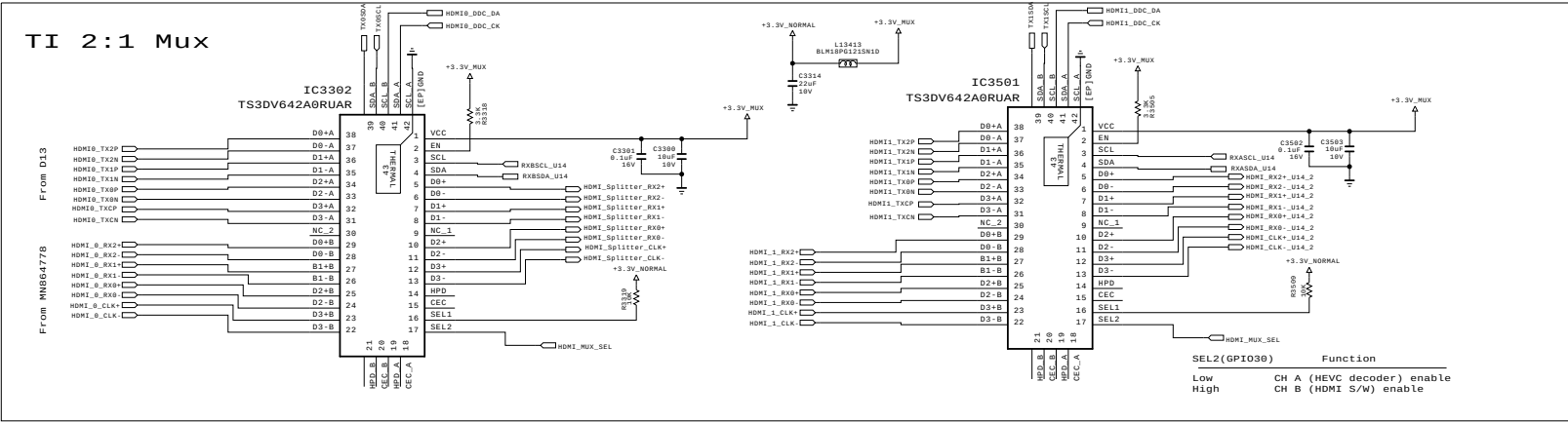
LG Electronics

Schematic diagram of the Q3800 USB-to-serial module. The module is represented as a black box with pins for CEC_REMOTE, BATS4_SUZHO, GND, and HDMI_CEC. A +3.5V_ST supply is connected to the module. A 27K resistor (R3024) connects the +3.5V_ST supply to the BATS4_SUZHO pin. A 120K resistor (R3025) connects the +3.5V_ST supply to the HDMI_CEC pin. The BATS4_SUZHO pin is also connected to the GND pin. The module is labeled Q3800 RUE603N02.

MODEL		DATE	2014.03.11
BLOCK	MICOM	SHEET	30 /



UB98/UC9 only



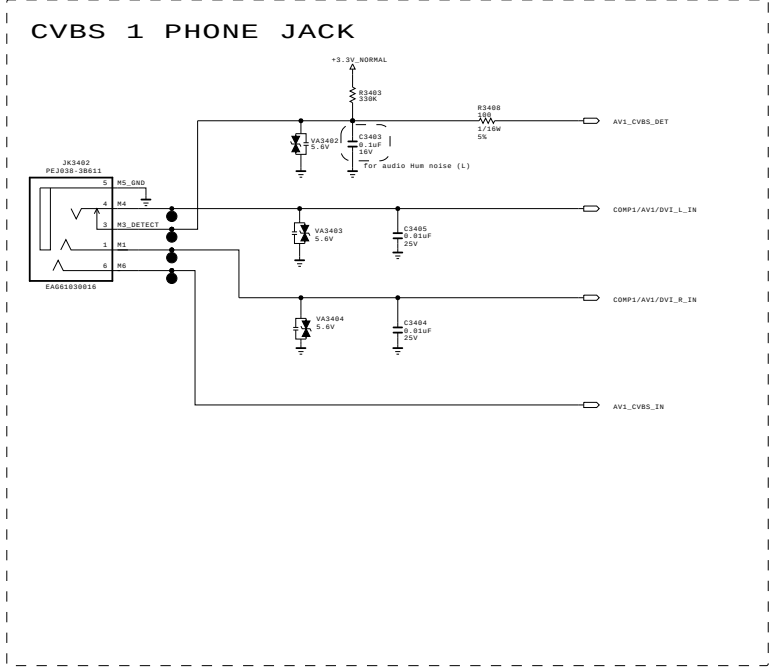
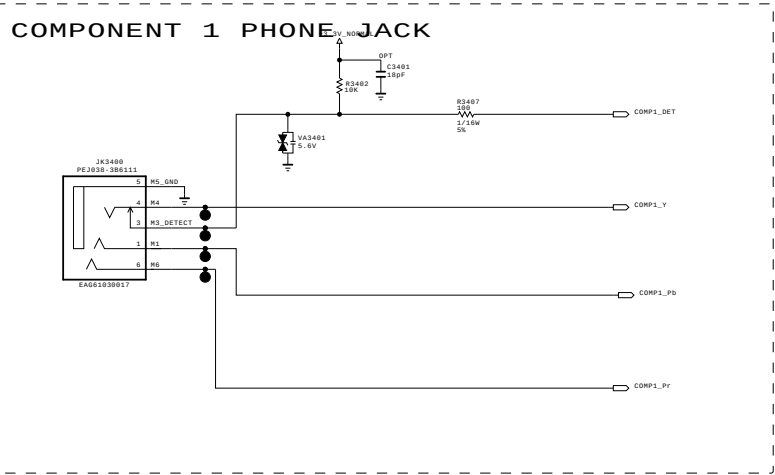
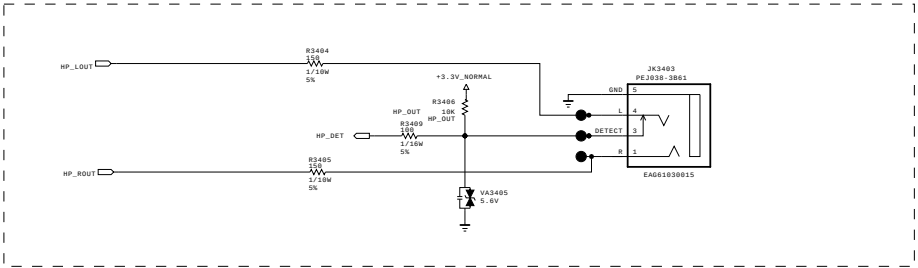
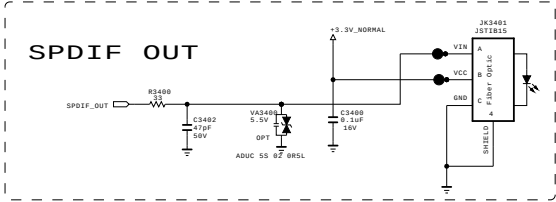
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

LG ELECTRONICS

BSD-14Y-UD-033_01-HD

MODEL		DATE	2013.12.17
BLOCK	HDMI	SHEET	/



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

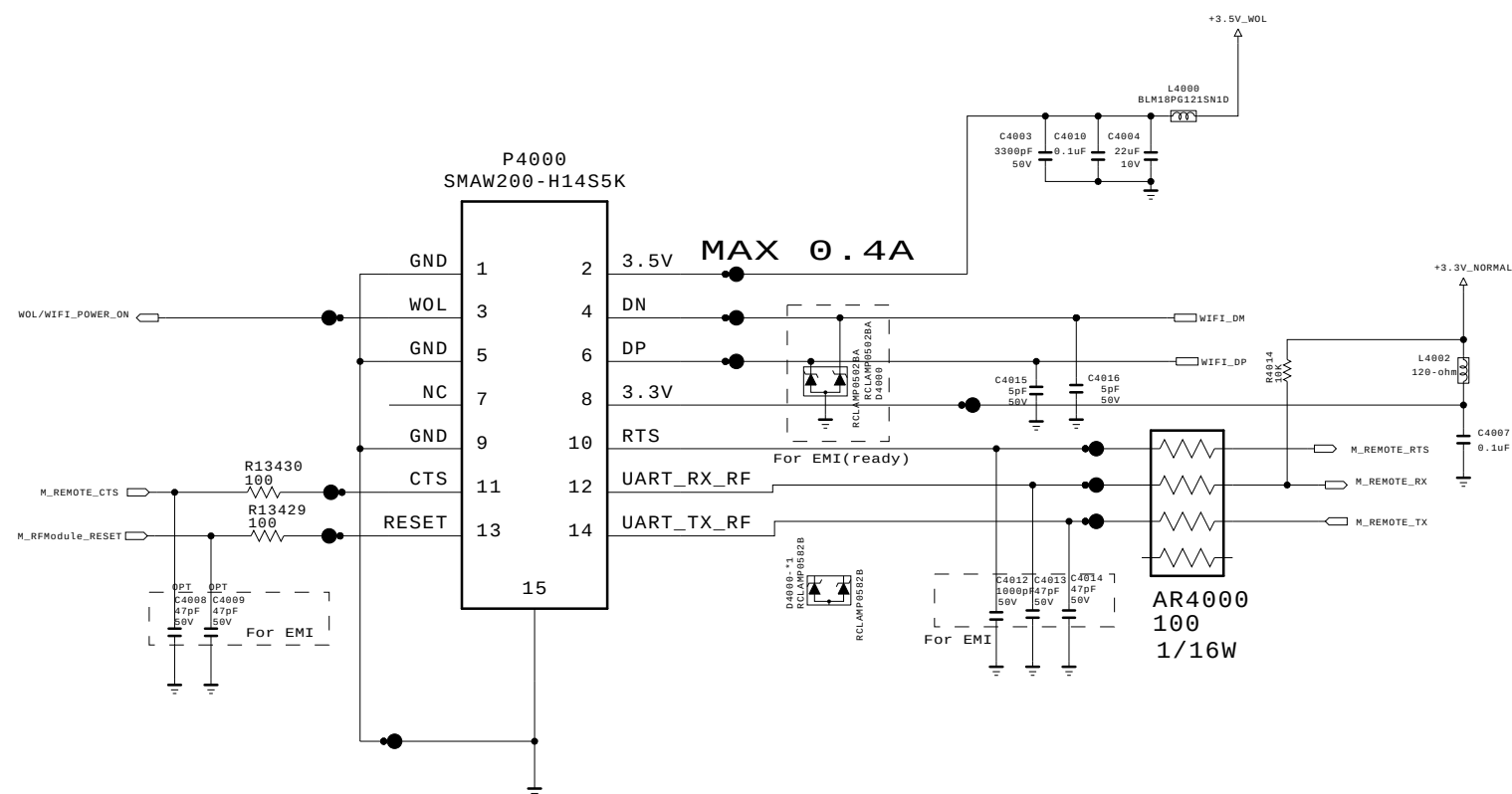
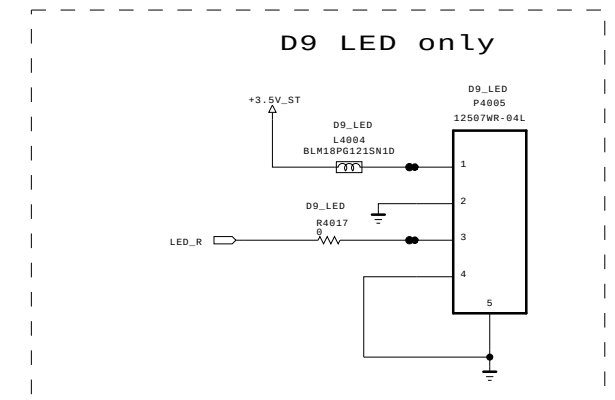
SECRET
LGElectronics



BSD-14Y-UD-034-HD			
MODEL	JACK HIGH/MID	DATE	2013.12.17
BLOCK		SHEET	/

The schematic diagram illustrates the internal circuitry of the P4004 module. Key components include:

- Power Section:** A +3.5V_ST input is connected to a network of resistors (R4001, R4002, R4003, R4004, R4005, R4006, R4007, R4008, R4009, R4010, R4011) and capacitors (C4001, C4002, C4003, C4004, C4005, C4006, C4007, C4008, C4009, C4010, C4011, C4012, C4013, C4014, C4015, C4016, C4017, C4018, C4019, C4020, C4021, C4022, C4023, C4024, C4025, C4026, C4027, C4028, C4029, C4030, C4031, C4032, C4033, C4034, C4035, C4036, C4037, C4038, C4039, C4040, C4041, C4042, C4043, C4044, C4045, C4046, C4047, C4048, C4049, C4050, C4051, C4052, C4053, C4054, C4055, C4056, C4057, C4058, C4059, C4060, C4061, C4062, C4063, C4064, C4065, C4066, C4067, C4068, C4069, C4070, C4071, C4072, C4073, C4074, C4075, C4076, C4077, C4078, C4079, C4080, C4081, C4082, C4083, C4084, C4085, C4086, C4087, C4088, C4089, C4090, C4091, C4092, C4093, C4094, C4095, C4096, C4097, C4098, C4099, C4100, C4101, C4102, C4103, C4104, C4105, C4106, C4107, C4108, C4109, C4110, C4111, C4112, C4113, C4114, C4115, C4116, C4117, C4118, C4119, C4120, C4121, C4122, C4123, C4124, C4125, C4126, C4127, C4128, C4129, C4130, C4131, C4132, C4133, C4134, C4135, C4136, C4137, C4138, C4139, C4140, C4141, C4142, C4143, C4144, C4145, C4146, C4147, C4148, C4149, C4150, C4151, C4152, C4153, C4154, C4155, C4156, C4157, C4158, C4159, C4160, C4161, C4162, C4163, C4164, C4165, C4166, C4167, C4168, C4169, C4170, C4171, C4172, C4173, C4174, C4175, C4176, C4177, C4178, C4179, C4180, C4181, C4182, C4183, C4184, C4185, C4186, C4187, C4188, C4189, C4190, C4191, C4192, C4193, C4194, C4195, C4196, C4197, C4198, C4199, C4200, C4201, C4202, C4203, C4204, C4205, C4206, C4207, C4208, C4209, C4210, C4211, C4212, C4213, C4214, C4215, C4216, C4217, C4218, C4219, C4220, C4221, C4222, C4223, C4224, C4225, C4226, C4227, C4228, C4229, C4230, C4231, C4232, C4233, C4234, C4235, C4236, C4237, C4238, C4239, C4240, C4241, C4242, C4243, C4244, C4245, C4246, C4247, C4248, C4249, C4250, C4251, C4252, C4253, C4254, C4255, C4256, C4257, C4258, C4259, C4260, C4261, C4262, C4263, C4264, C4265, C4266, C4267, C4268, C4269, C4270, C4271, C4272, C4273, C4274, C4275, C4276, C4277, C4278, C4279, C4280, C4281, C4282, C4283, C4284, C4285, C4286, C4287, C4288, C4289, C4290, C4291, C4292, C4293, C4294, C4295, C4296, C4297, C4298, C4299, C4300, C4301, C4302, C4303, C4304, C4305, C4306, C4307, C4308, C4309, C4310, C4311, C4312, C4313, C4314, C4315, C4316, C4317, C4318, C4319, C4320, C4321, C4322, C4323, C4324, C4325, C4326, C4327, C4328, C4329, C4330, C4331, C4332, C4333, C4334, C4335, C4336, C4337, C4338, C4339, C4340, C4341, C4342, C4343, C4344, C4345, C4346, C4347, C4348, C4349, C4350, C4351, C4352, C4353, C4354, C4355, C4356, C4357, C4358, C4359, C4360, C4361, C4362, C4363, C4364, C4365, C4366, C4367, C4368, C4369, C4370, C4371, C4372, C4373, C4374, C4375, C4376, C4377, C4378, C4379, C4380, C4381, C4382, C4383, C4384, C4385, C4386, C4387, C4388, C4389, C4390, C4391, C4392, C4393, C4394, C4395, C4396, C4397, C4398, C4399, C4400, C4401, C4402, C4403, C4404, C4405, C4406, C4407, C4408, C4409, C4410, C4411, C4412, C4413, C4414, C4415, C4416, C4417, C4418, C4419, C4420, C4421, C4422, C4423, C4424, C4425, C4426, C4427, C4428, C4429, C4430, C4431, C4432, C4433, C4434, C4435, C4436, C4437, C4438, C4439, C4440, C4441, C4442, C4443, C4444, C4445, C4446, C4447, C4448, C4449, C4450, C4451, C4452, C4453, C4454, C4455, C4456, C4457, C4458, C4459, C4460, C4461, C4462, C4463, C4464, C4465, C4466, C4467, C4468, C4469, C4470, C4471, C4472, C4473, C4474, C4475, C4476, C4477, C4478, C4479, C4480, C4481, C4482, C4483, C4484, C4485, C4486, C4487, C4488, C4489, C4490, C4491, C4492, C4493, C4494, C4495, C4496, C4497, C4498, C4499, C4500, C4501, C4502, C4503, C4504, C4505, C4506, C4507, C4508, C4509, C4510, C4511, C4512, C4513, C4514, C4515, C4516, C4517, C4518, C4519, C4520, C4521, C4522, C4523, C4524, C4525, C4526, C4527, C4528, C4529, C4530, C4531, C4532, C4533, C4534, C4535, C4536, C4537, C4538, C4539, C4540, C4541, C4542, C4543, C4544, C4545, C4546, C4547, C4548, C4549, C4550, C4551, C4552, C4553, C4554, C4555, C4556, C4557, C4558, C4559, C4560, C4561, C4562, C4563, C4564, C4565, C4566, C4567, C4568, C4569, C4570, C4571, C4572, C4573, C4574, C4575, C4576, C4577, C4578, C4579, C4580, C4581, C4582, C4583, C4584, C4585, C4586, C4587, C4588, C4589, C4590, C4591, C4592, C4593, C4594, C4595, C4596, C4597, C4598, C4599, C4600, C4601, C4602, C4603, C4604, C4605, C4606, C4607, C4608, C4609, C4610, C4611, C4612, C4613, C4614, C4615, C4616, C4617, C4618, C4619, C4620, C4621, C4622, C4623, C4624, C4625, C4626, C4627, C4628, C4629, C4630, C4631, C4632, C4633, C4634, C4635, C4636, C4637, C4638, C4639, C4640, C4641, C4642, C4643, C4644, C4645, C4646, C4647, C4648, C4649, C4650, C4651, C4652, C4653, C4654,

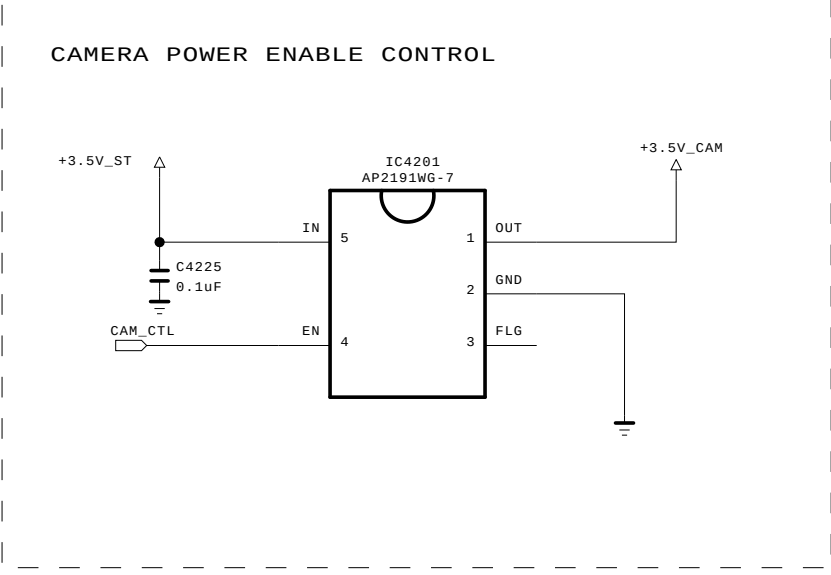
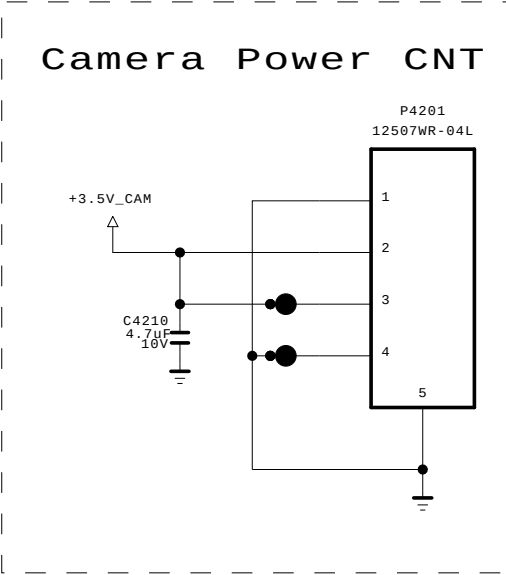
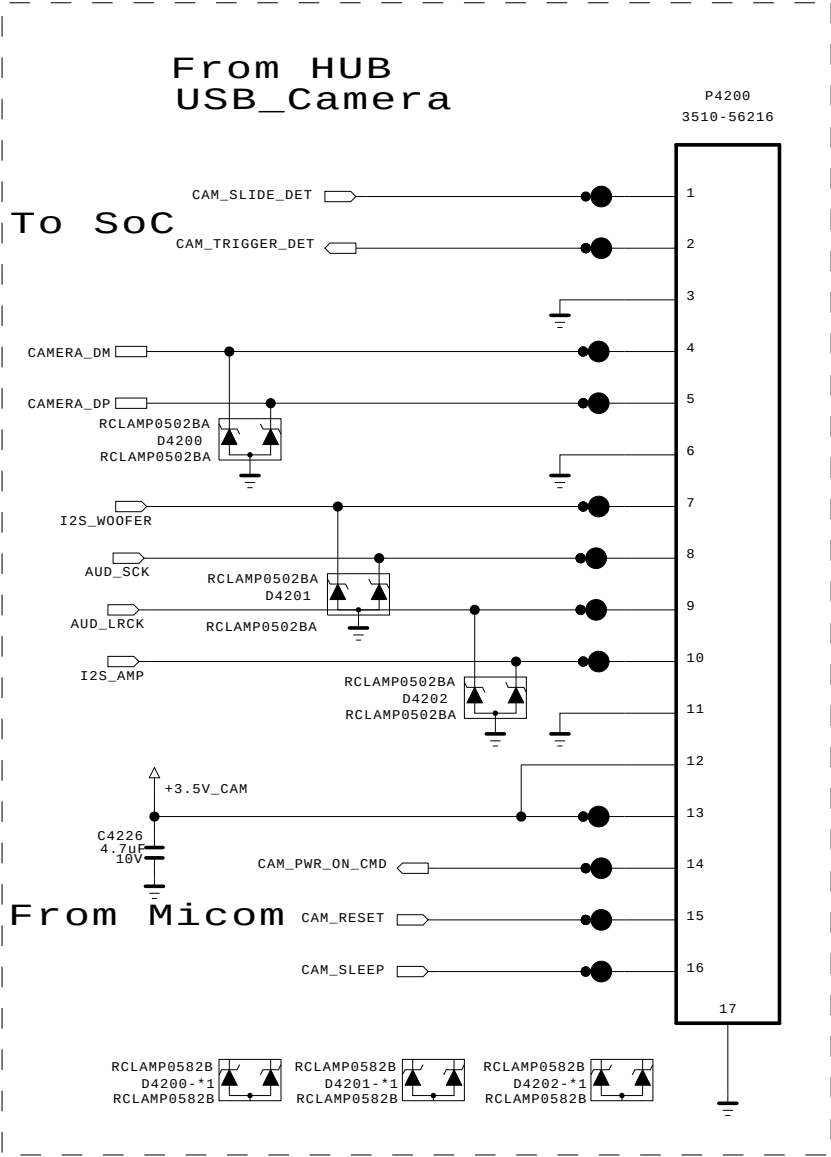
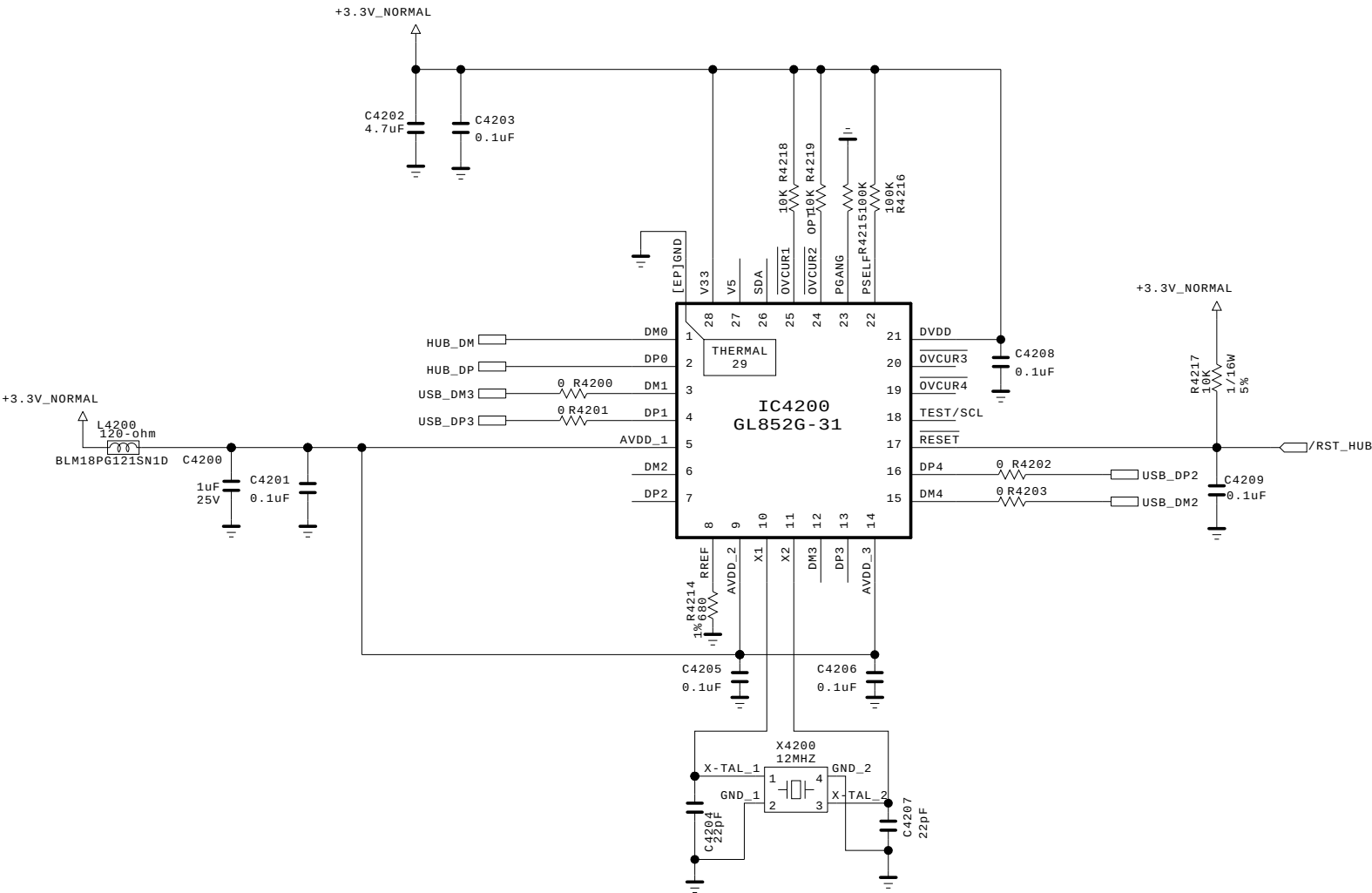


SECRET
LGElectronics



MODEL	IR / KEY	DATE	2013.12.17
BLOCK		SHEET	/

UB98/D9 only



THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

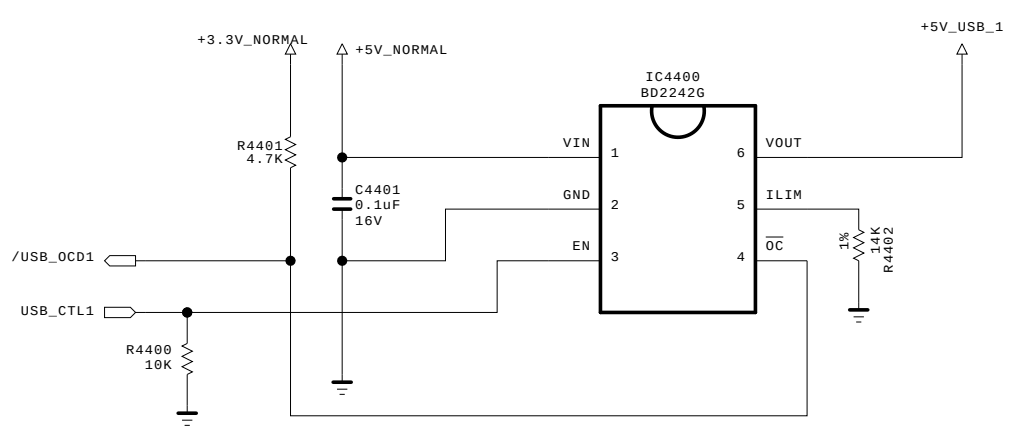
SECRET

LG Electronics

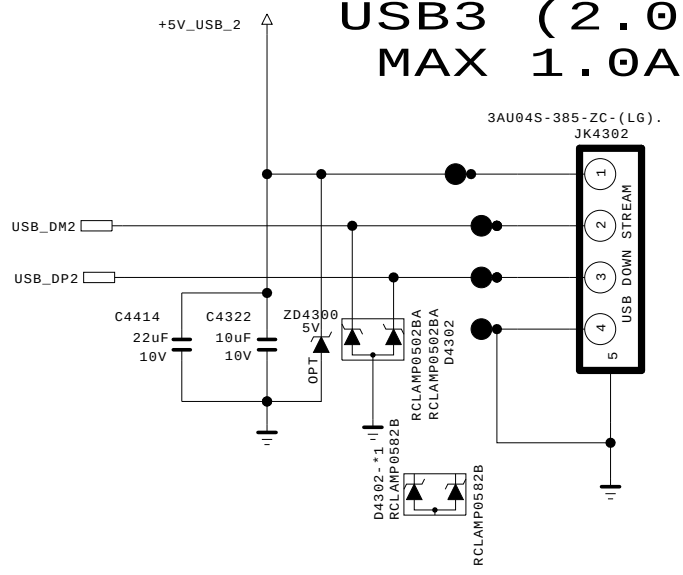
LG ELECTRONICS

MODEL	USB3_HUB	DATE	2013.12.17
BLOCK		SHEET	/

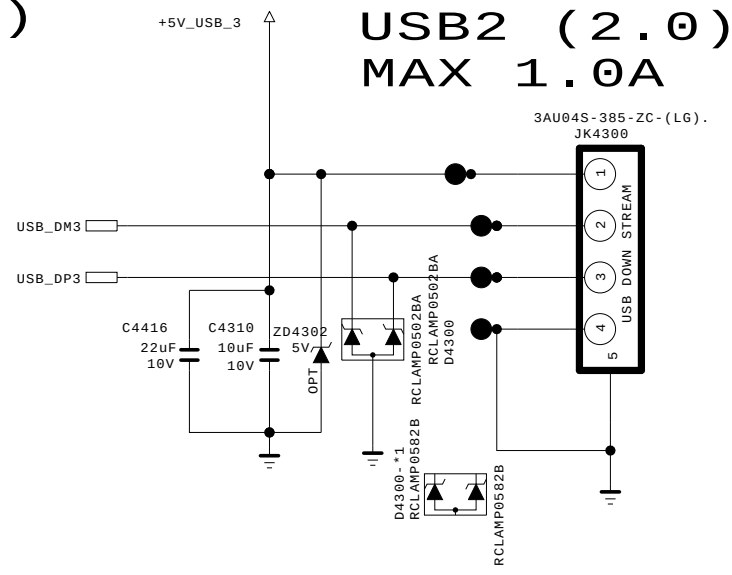
OCP USB1



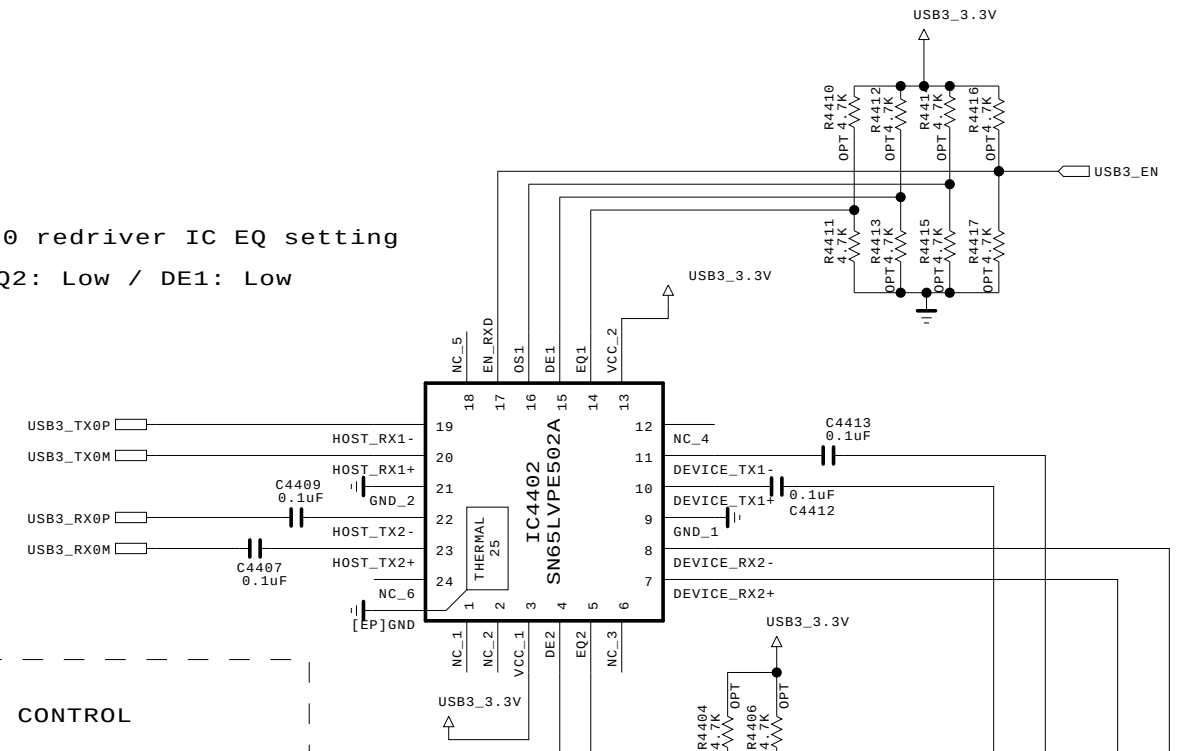
USB3 (2.0)
MAX 1.0A



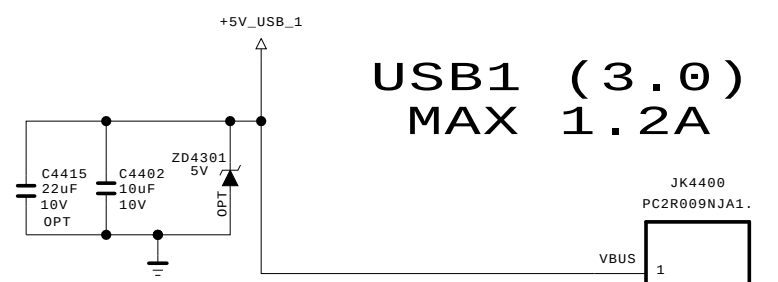
USB2 (2.0)
MAX 1.0A



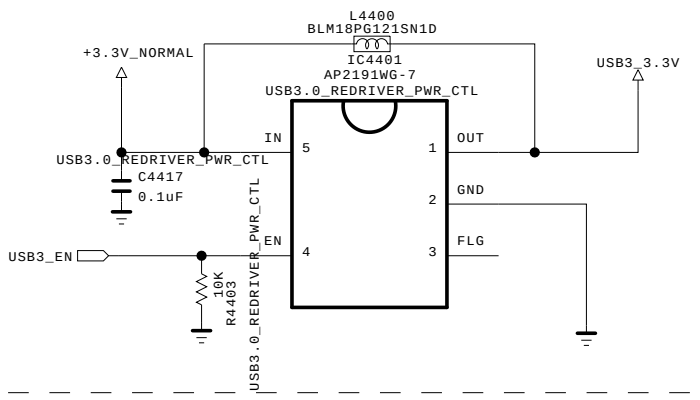
USB3.0 redriver IC EQ setting
-> EQ2: Low / DE1: Low



USB1 (3.0)
MAX 1.2A



USB REDRIVER POWER ENABLE CONTROL



Place under DUT Near SN65LVPE502CP PIN VCC

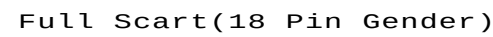
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

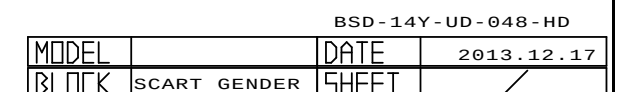


MODEL		DATE	2013-12-17
BLOCK	USB JACK	SHEET	/

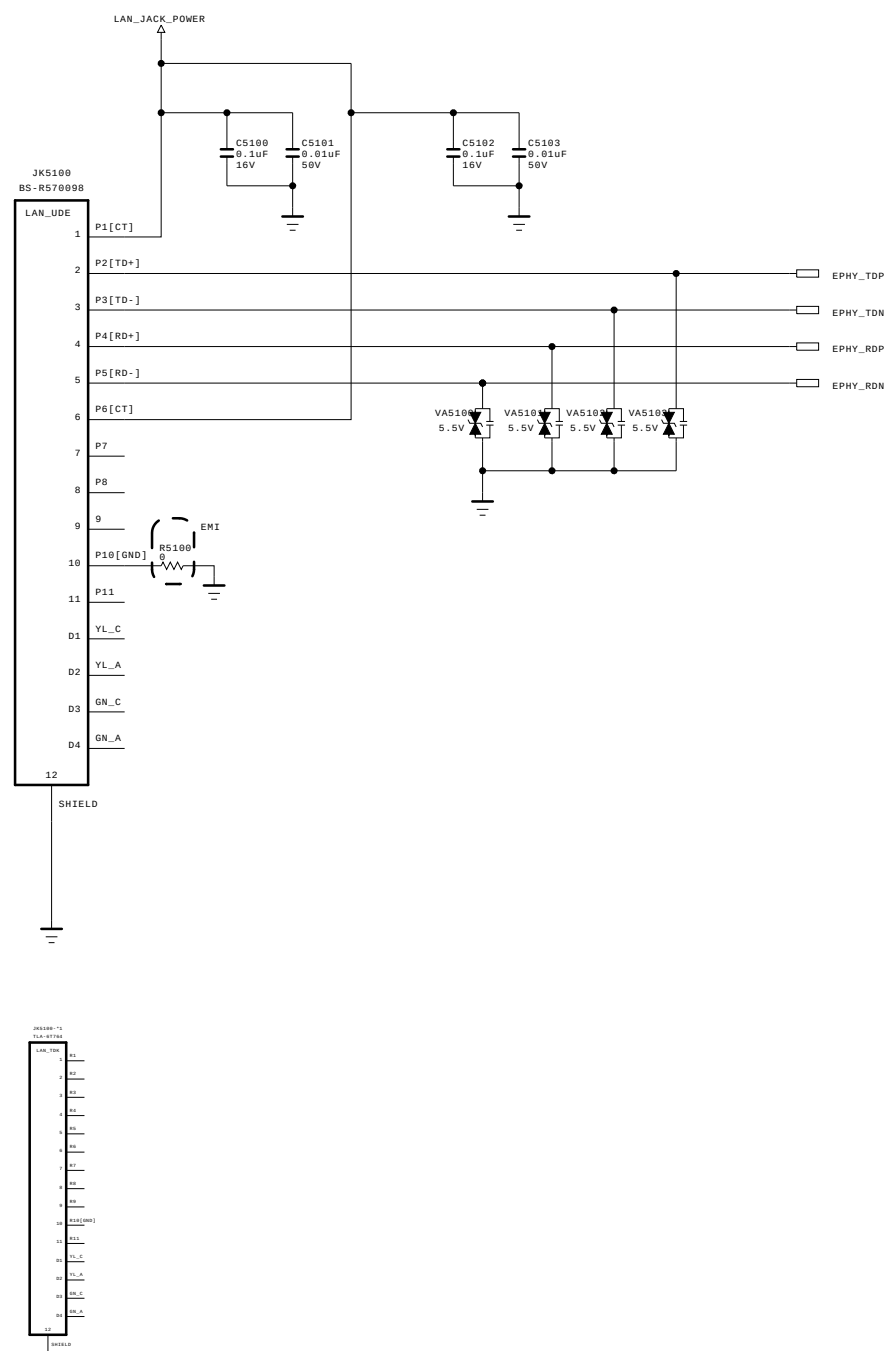
BSD-14Y-UD-044-HD



SECRET
LGElectronics



Ethernet Block



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

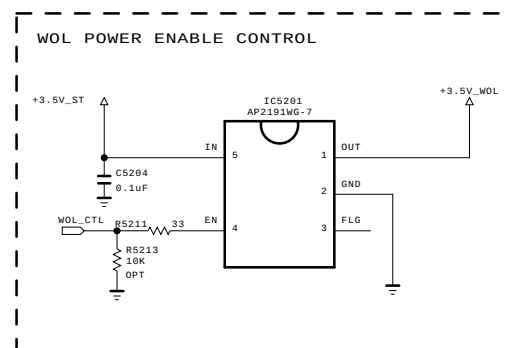
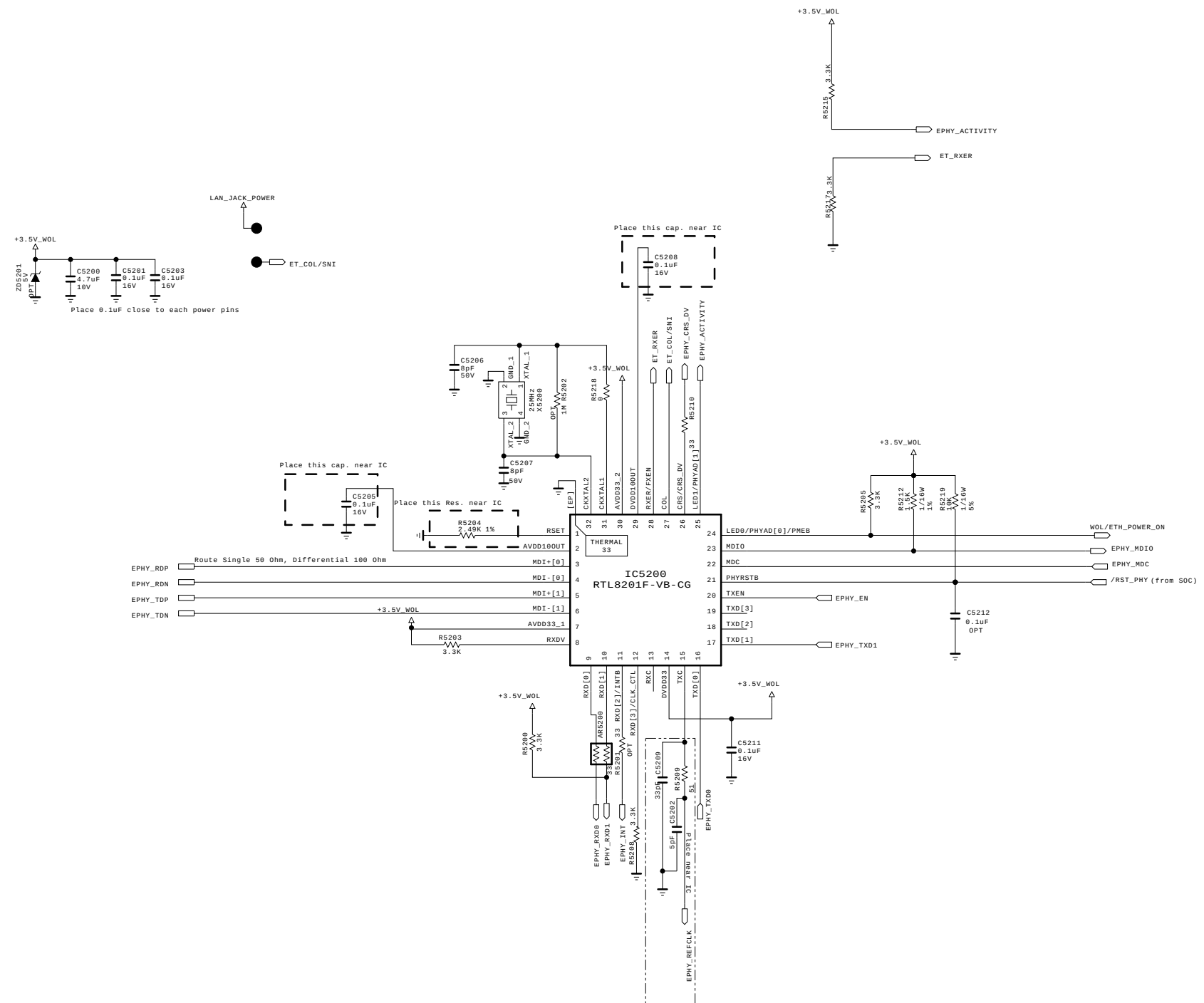
SECRET
LGElectronics



MODEL	LAN_VERTICAL	DATE	2012.12.17
BLOCK		SHEET	51 /

BSD-14Y-UD-051-HD

Ethernet Block



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
G Electronics

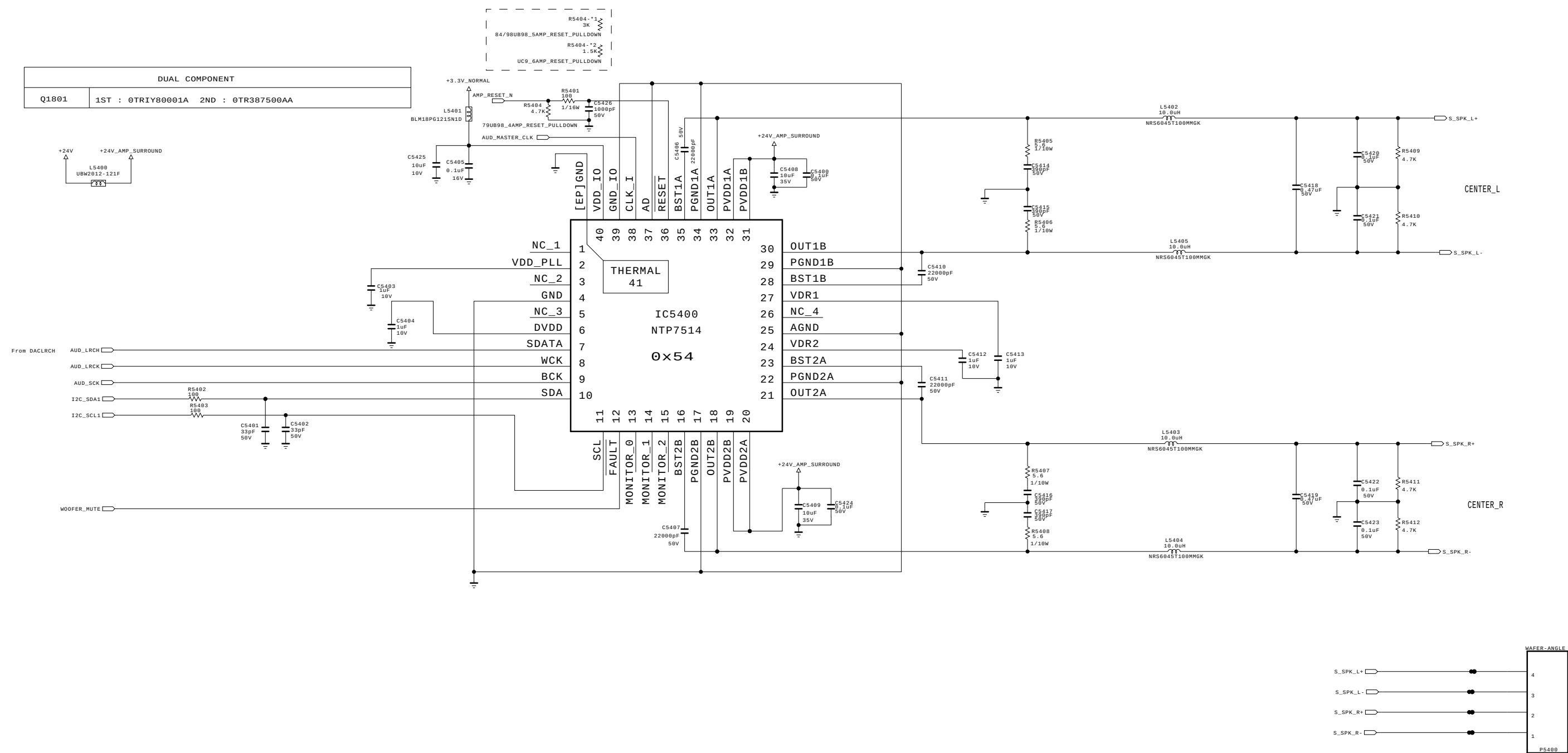


BSD-14Y-UD-052-HD

MODEL		DATE	2013-12-17
BLOCK	ETHERNET	SHEET	/

Center speaker for 79UB98, UC9

Option name : 79UB98&UC9



THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

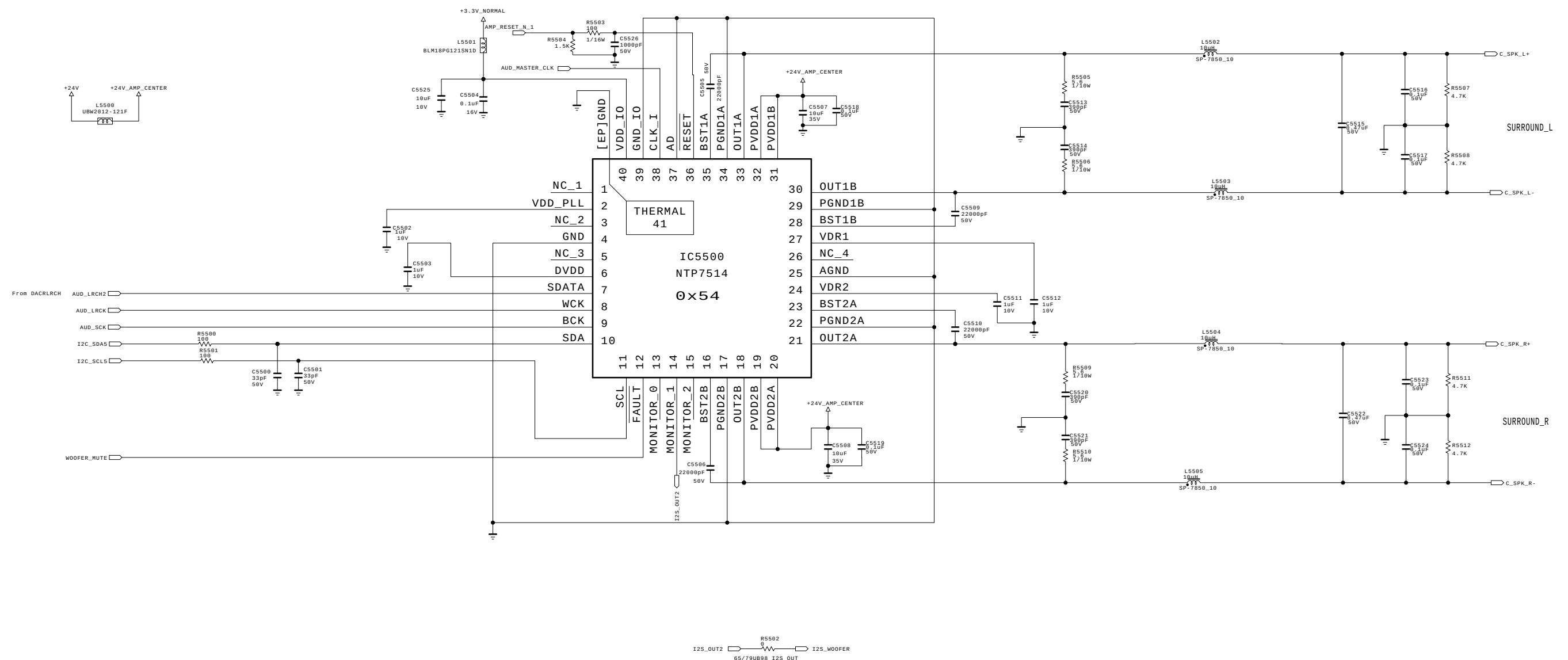
SECRET
LGElectronics



MODEL		DATE	2013.12.17
BLOCK		SHEET	/

Amp name will change based on the applied model.

UC9 : Surround Amp
84/98UB98 : Center Amp
65/79UB98 : Woofer Amp



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

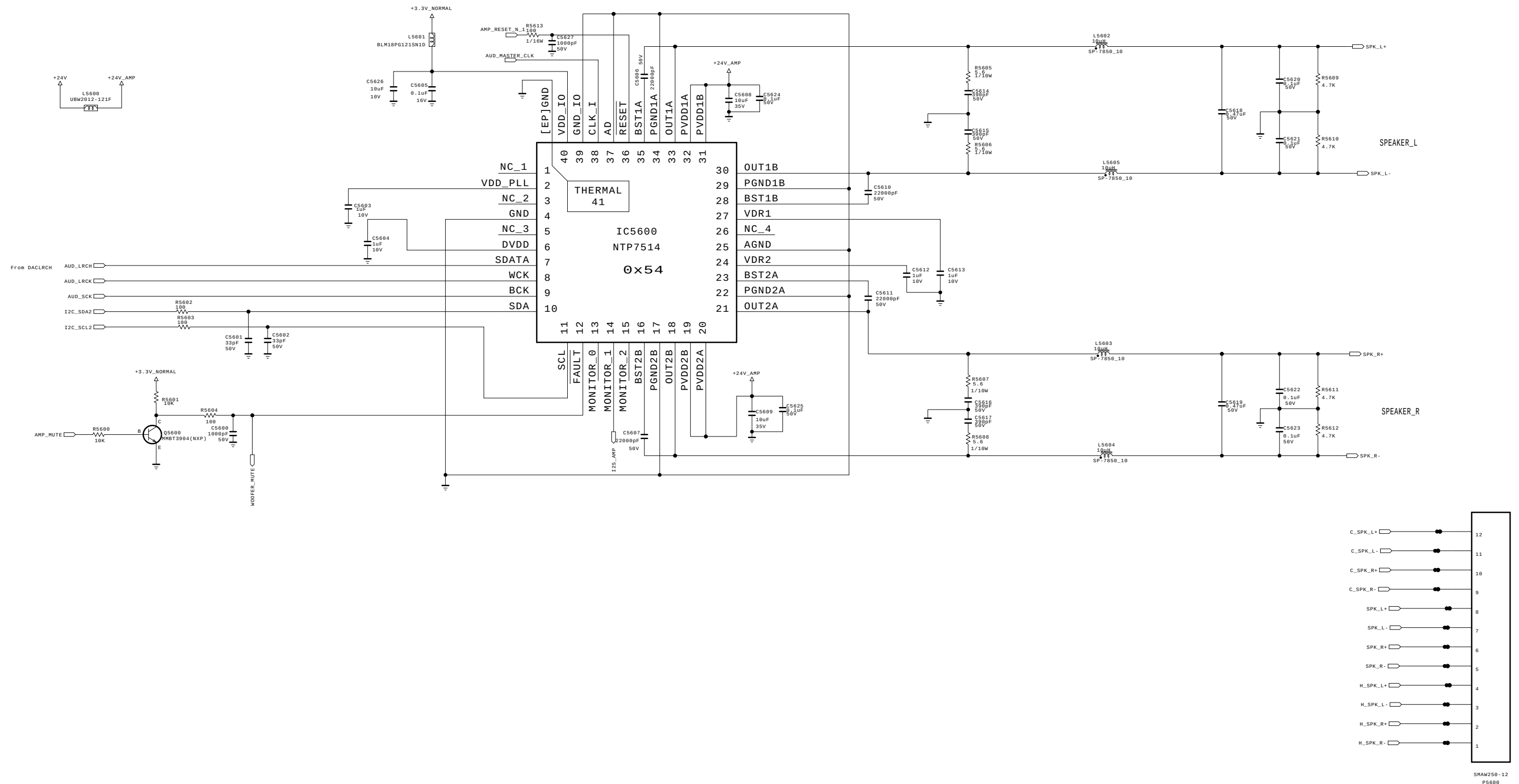


BSD-14Y-UD-055-HD

MODEL		DATE	2013.12.17
BLOCK		SHEET	/

UB98/UC9 only

Front speaker



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

 LG ELECTRONICS

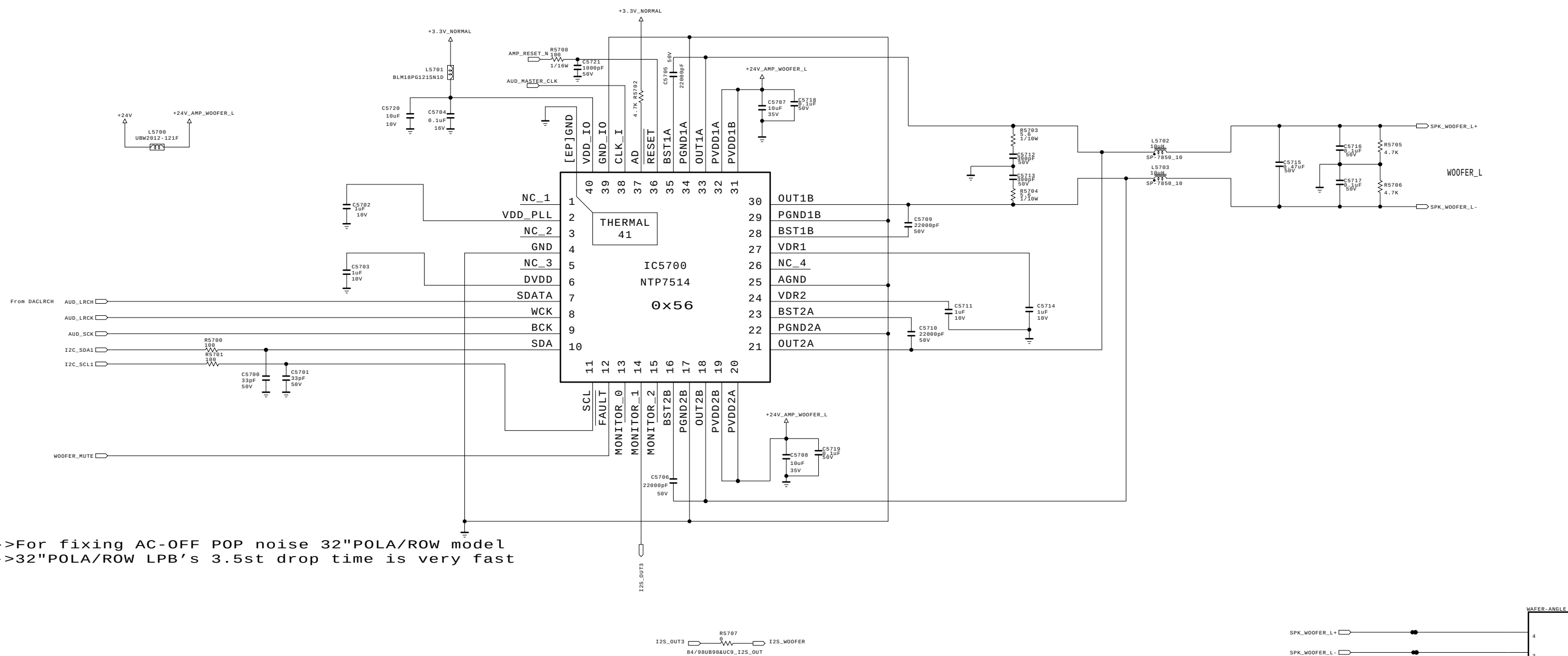
MODEL	DATE
BLOCK	SHEET

BSD-14Y-UD-056-01-HD
2013.12.17

UB98/UC9 only

Wooferspeaker(PBTL) for 84/98UB98, UC9

Option name : 84/98UB98&UC9



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

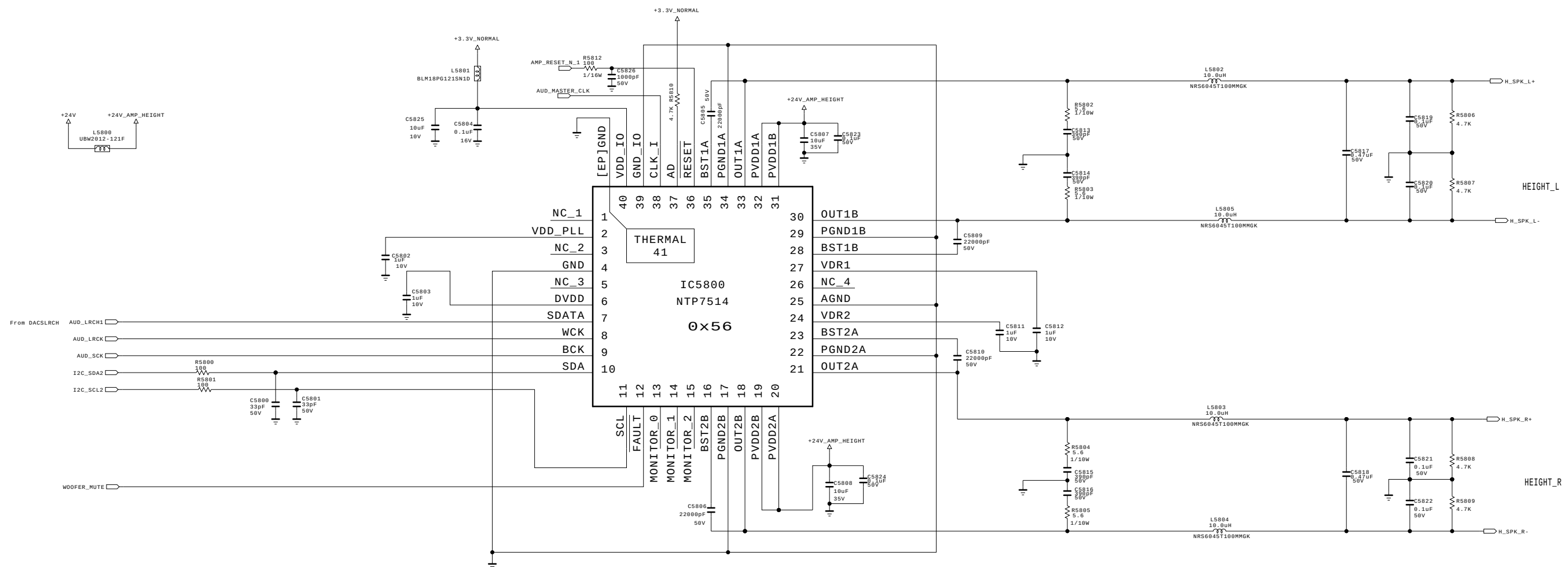
SECRET
LGElectronics



MODEL		DATE	2013.12.17
BLOCK		SHEET	/

BSD-14Y-UD-057-01-HD

Height speaker



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
G Electronics

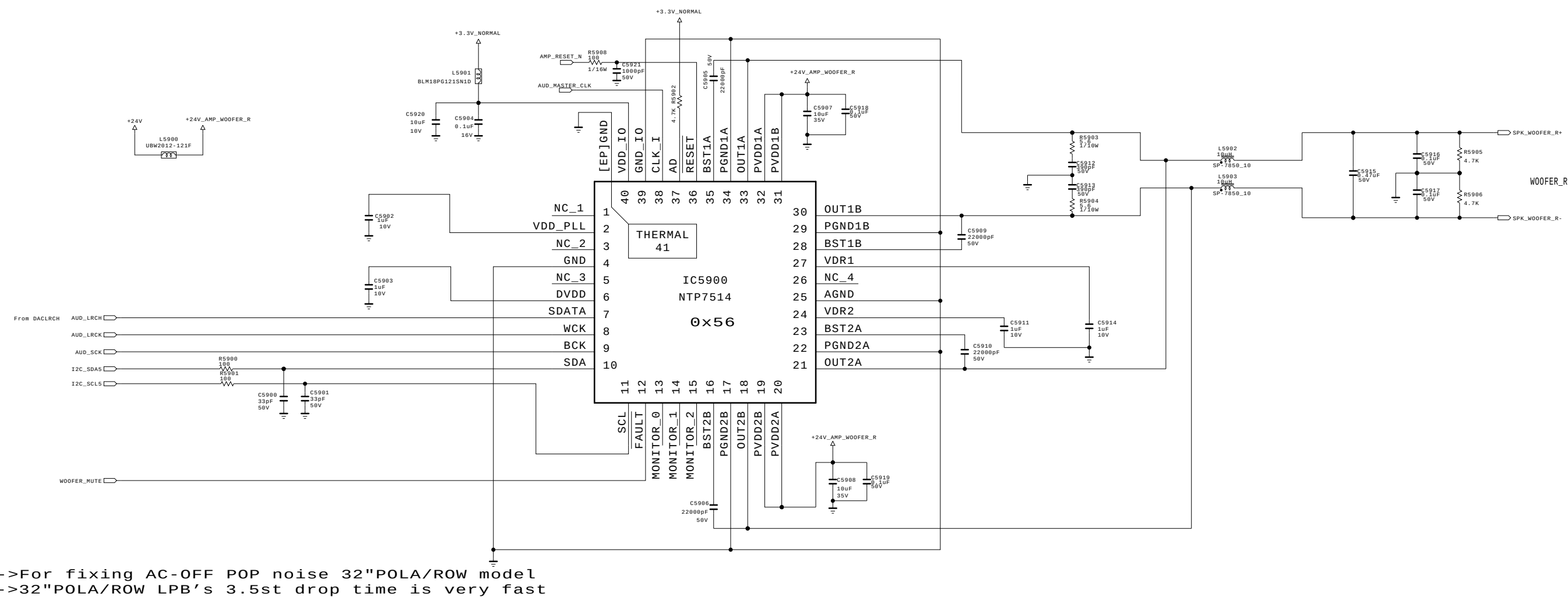


BSD-14Y-UD-057-HD

MODEL		DATE	2013.12.17
BLOCK		SHEET	/

Woofer speaker(PBTL) for 84/98UB98, UC9

Option name : 84/98UB98&UC9



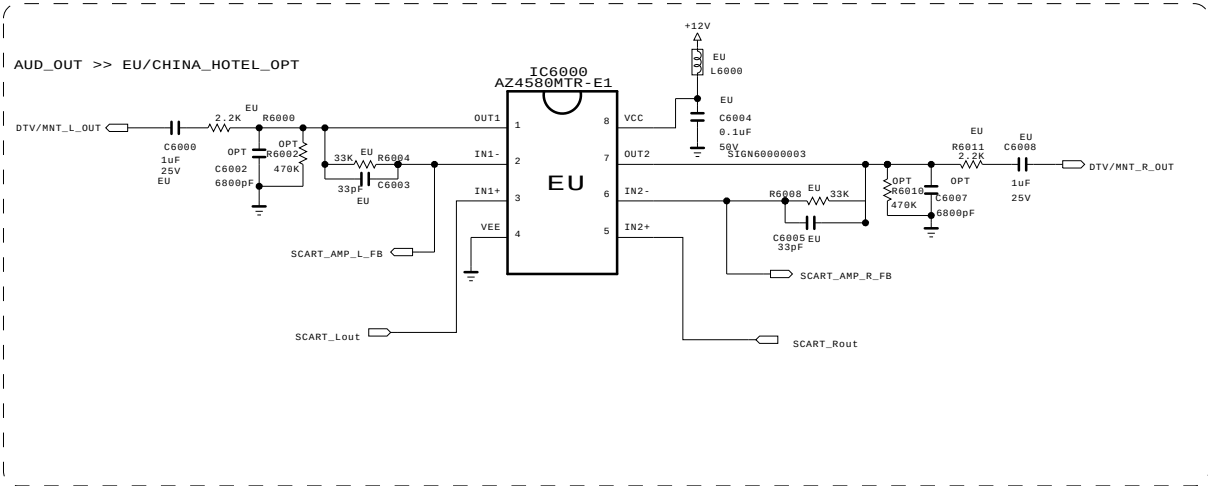
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

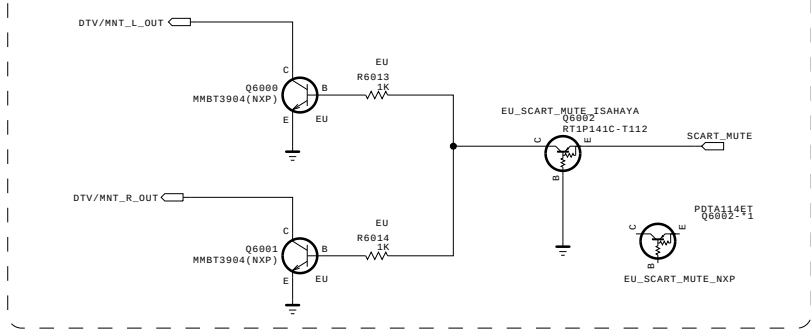


MODEL		DATE	
BLOCK		SHEET	

BSD-14Y-UD-059-HD



[SCART AUDIO MUTE]



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

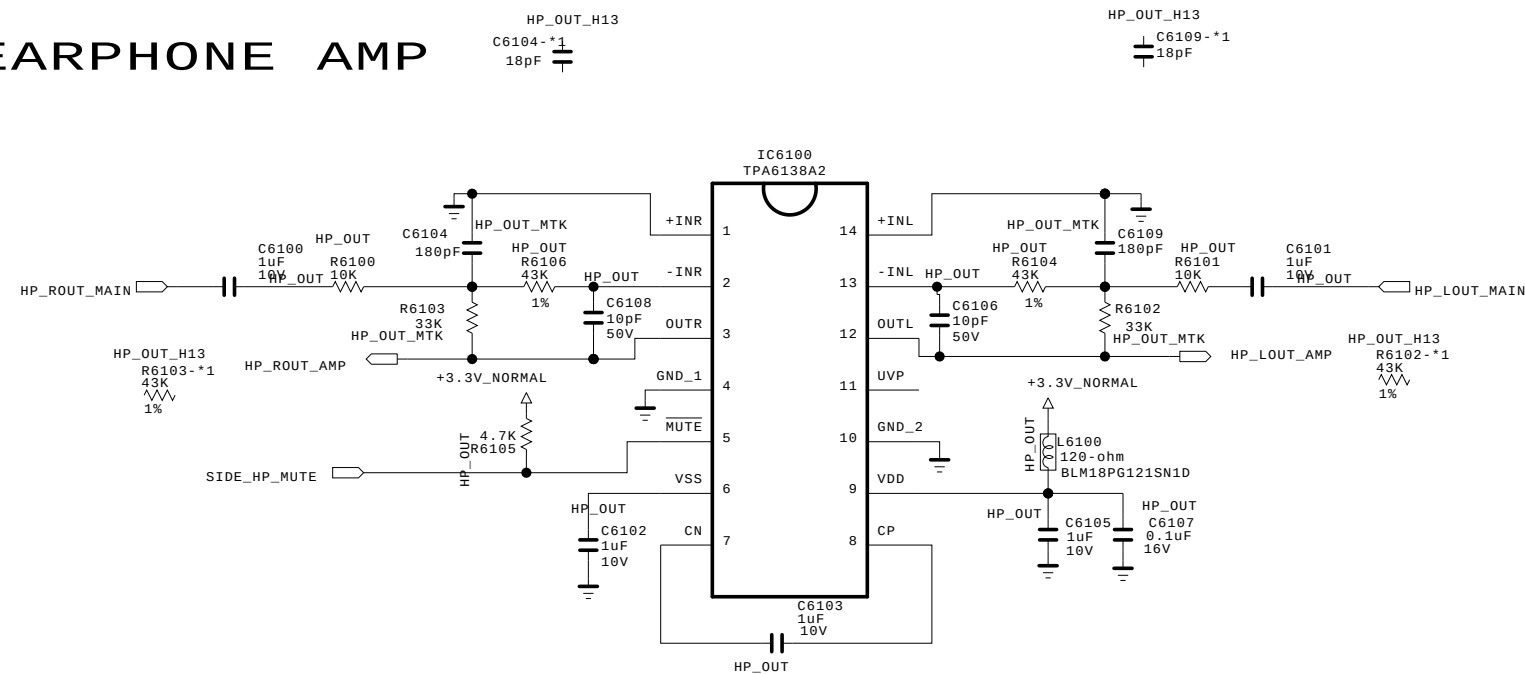
SECRET
LGElectronics



MODEL	SCART AUDIO AMP	DATE	2012.12.17
BLOCK		SHEET	60 /

BSD-14Y-UD-060-HD

EARPHONE AMP



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

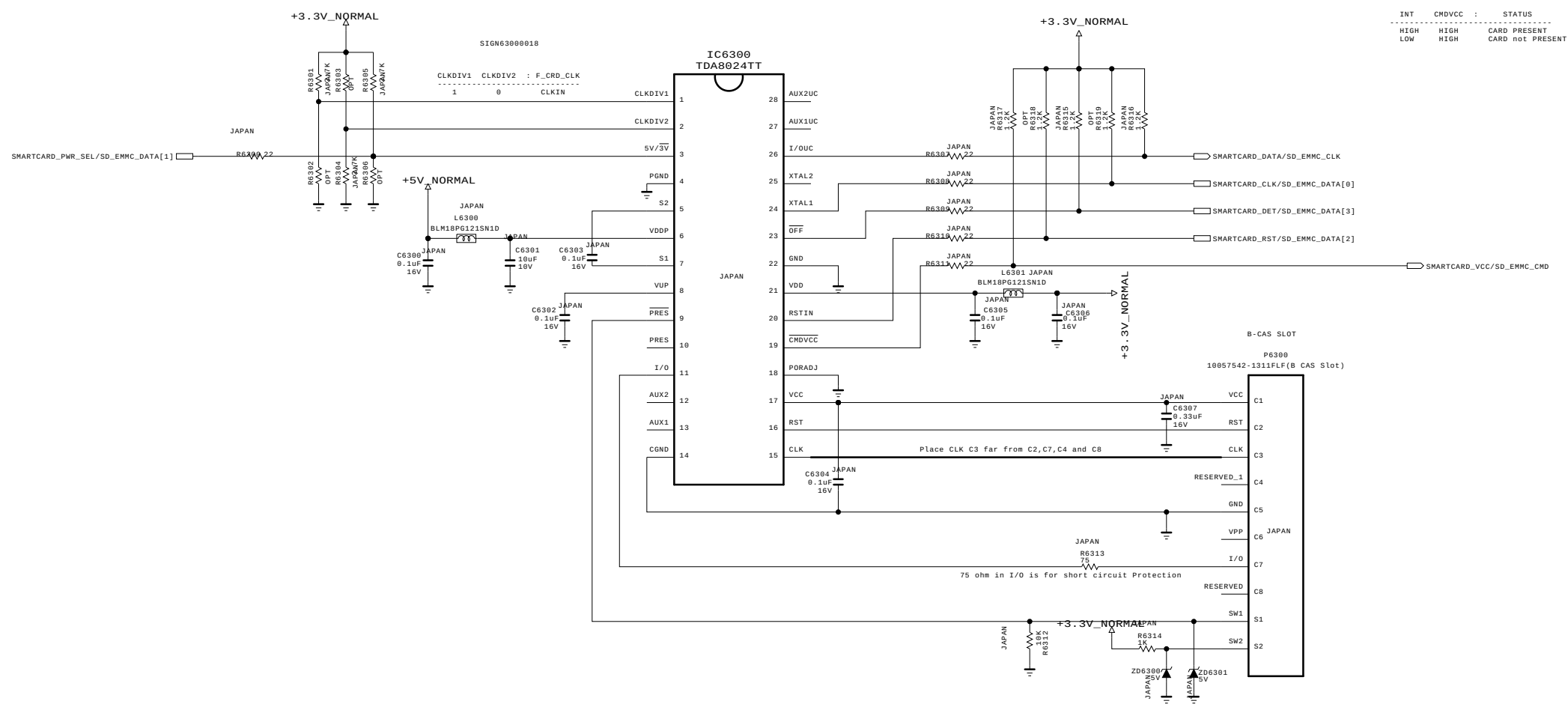
SECRET

LGElectronics

 LG ELECTRONICS

MODEL	HEADPHONE AMP	DATE	2013.12.17
BLOCK		SHEET	61 /

B-CAS (SMART CARD) INTERFACE



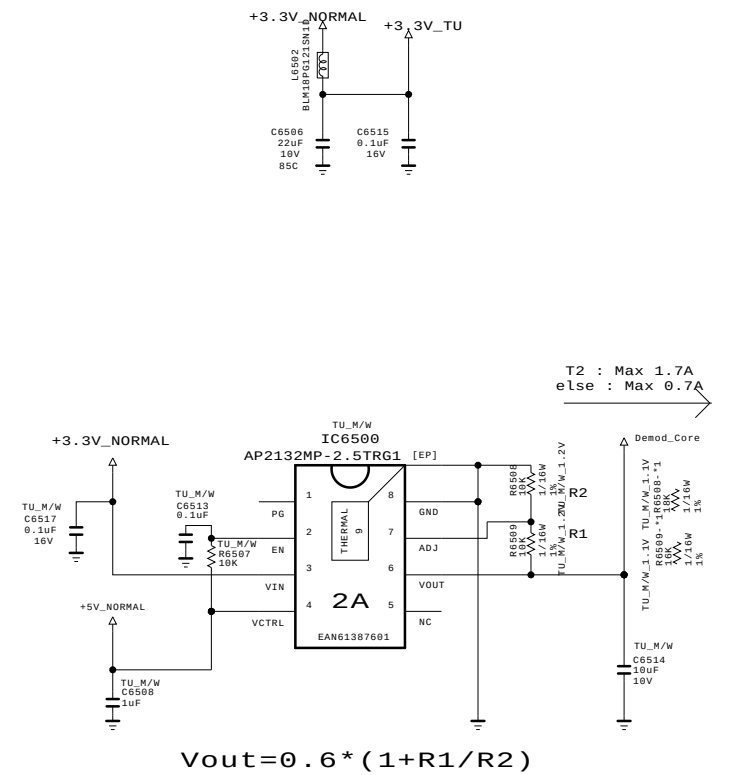
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



MODEL		DATE	2012.12.17
BLOCK	JAPAN_BCAS	SHEET	63

BSD-14Y-UD-063-HD

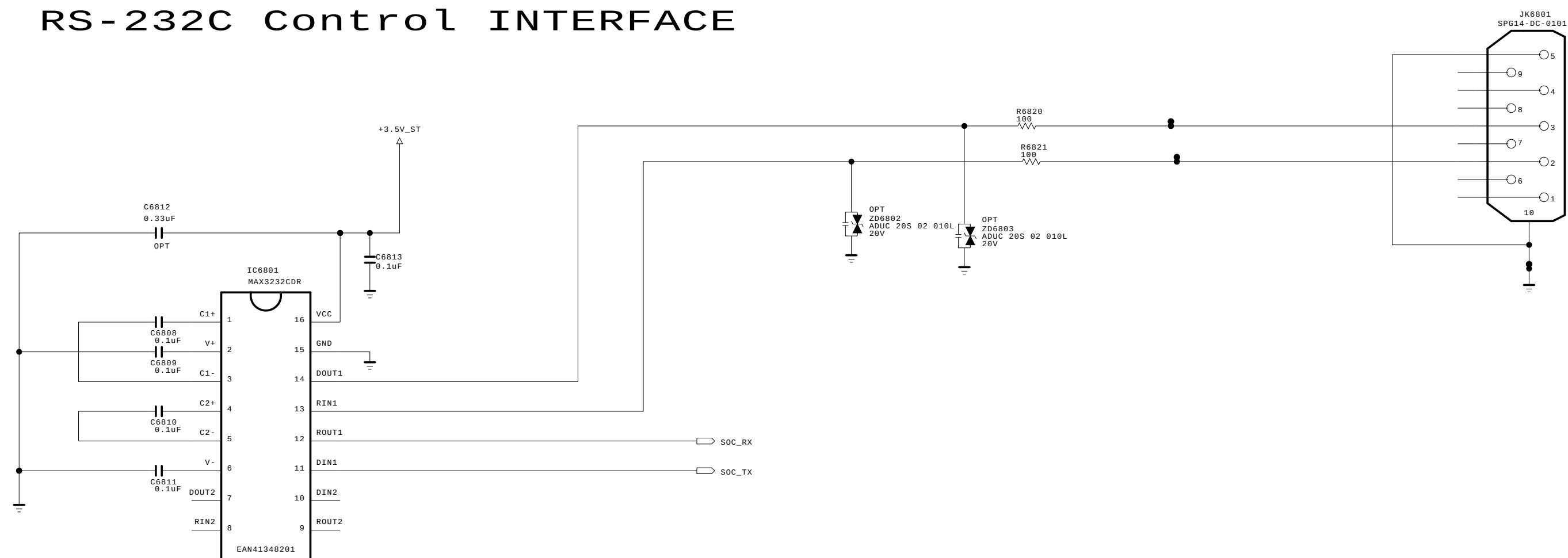


13'	Tuner Type	For Global
TDS'S'-G591D:	T/C Half NIM	Horizontal Type
TDS'Q'-G591D:	T/C/S2 Combo	Horizontal type
TDS'Q'-G601D:	T2/C/S2 Combo	Horizontal Type
TDS'Q'-G651D:	T2/C/S2 Combo	Vertical Type
TDS'M'-C601D:	China NIM with	Isolater Type
TDS'W'-J551F:	Japan Dual NIM	
TDS'W'-B651F:	Brazil 2Tuner	
TDS'W'-A651F:	Taiwan 2Tuner	
TDS'W'-K651F:	Colombia DVB-T2	2Tuner

MODEL	TUNER	DATE	2013.12.17
BLOCK		SHEET	65 /



RS-232C Control INTERFACE



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET

LGElectronics

 LG ELECTRONICS

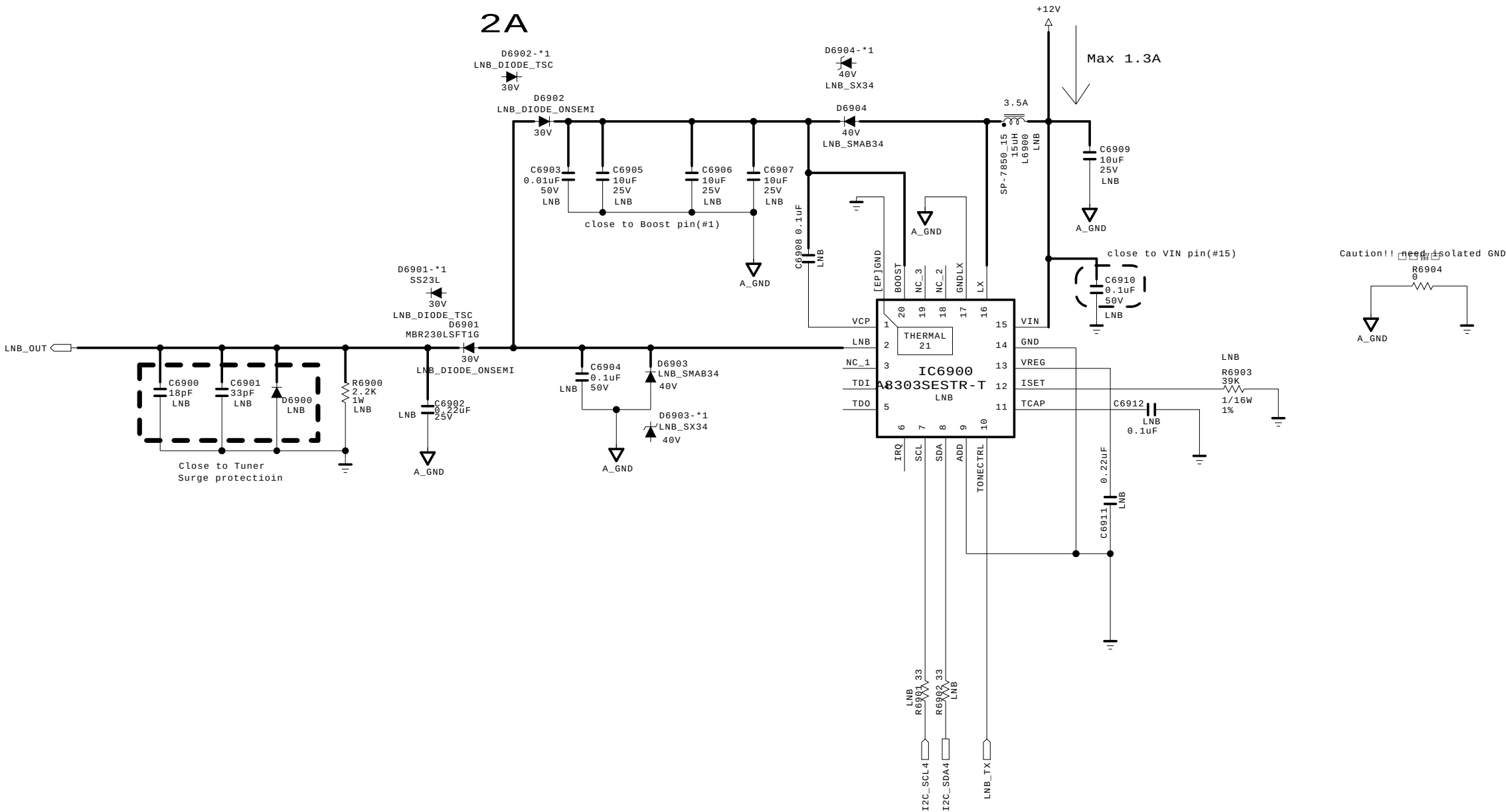
MODEL		DATE	2013.12.17
BLOCK	RS232C	SHEET	68 /

DVB-S2 LNB Part Allegro

(Option:LNB)

3A

Input trace widths should be sized to conduct at least 3A
Ouput trace widths should be sized to conduct at least 2A



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

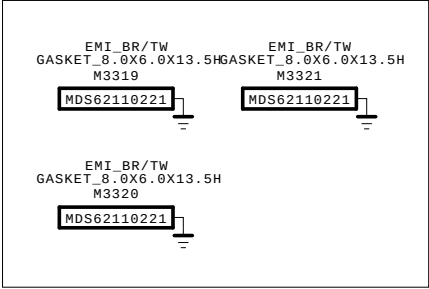
SECRET

LG Electronics

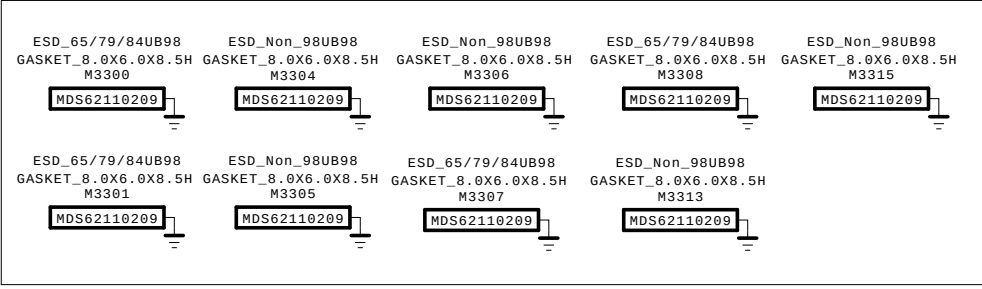
 LG ELECTRONICS

MODEL	LNB	DATE	2013.12.17
BLOCK		SHEET	69 /

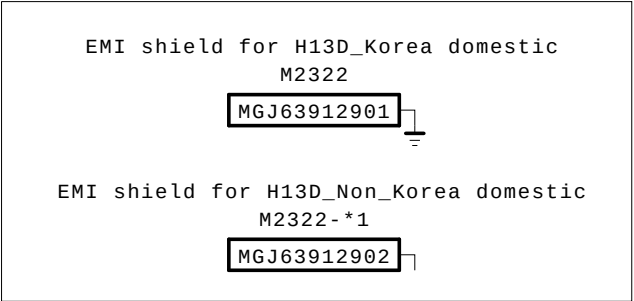
SMD gasket for EMI
(only for BR/TW)



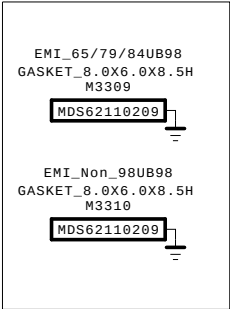
SMD gasket for ESD



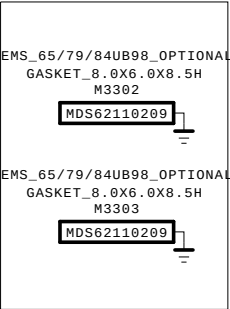
EMI Shield for H13D



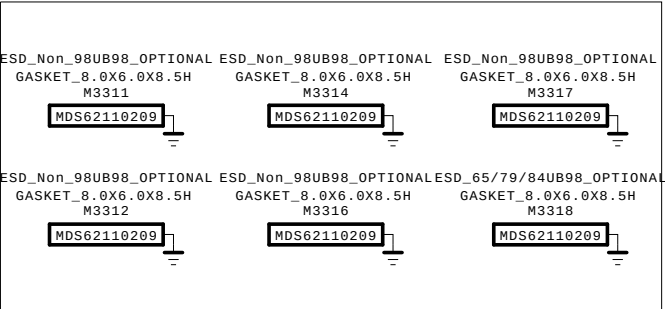
SMD gasket for EMI



SMD gasket for EMS
(optional)

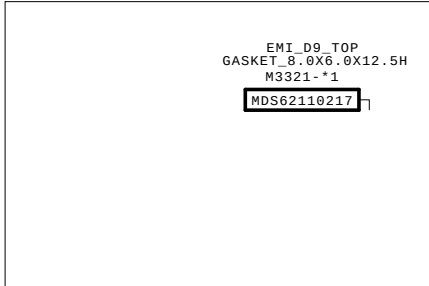


SMD gasket for ESD
(optional)

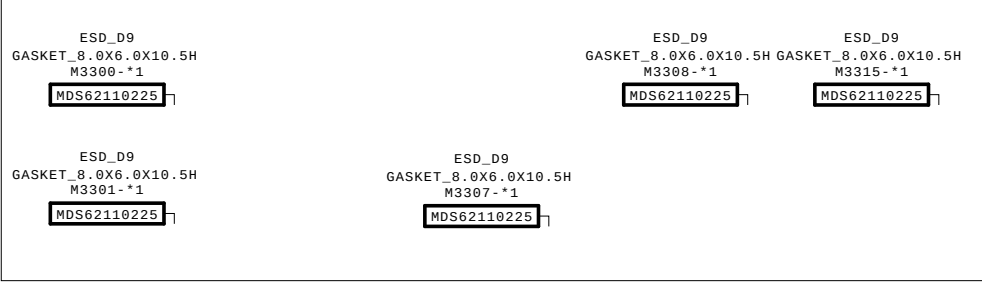


SMD gasket for D9 model

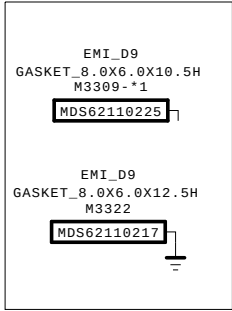
SMD gasket for EMI



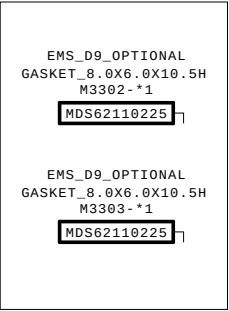
SMD gasket for ESD



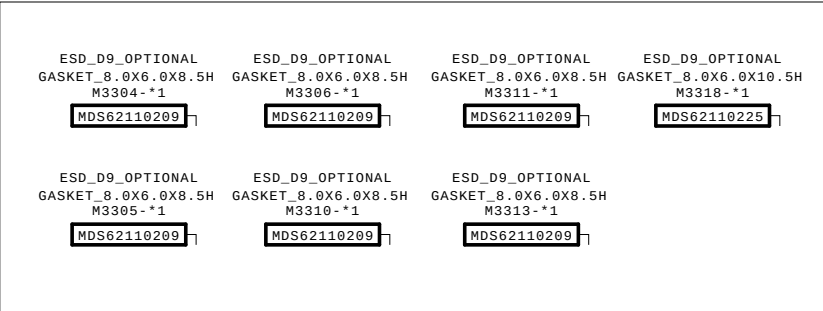
SMD gasket for EMI



SMD gasket for EMS
(optional)

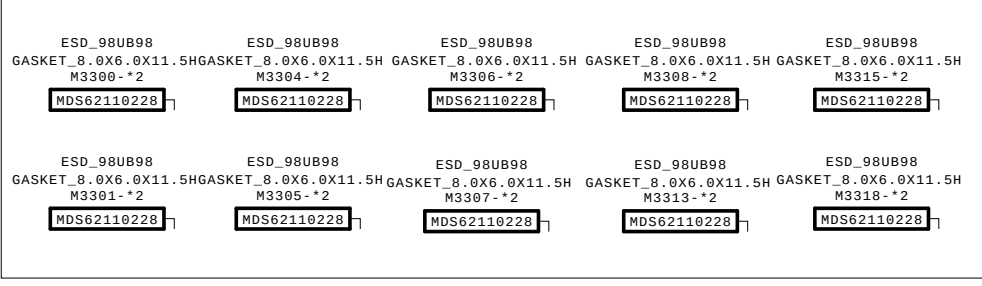


SMD gasket for ESD
(optional)

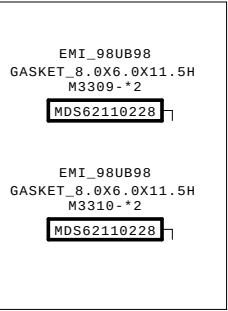


SMD gasket for 98UB98 model

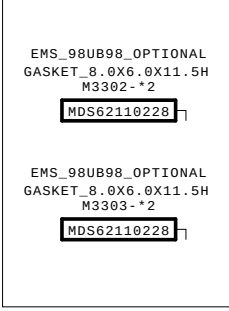
SMD gasket for ESD



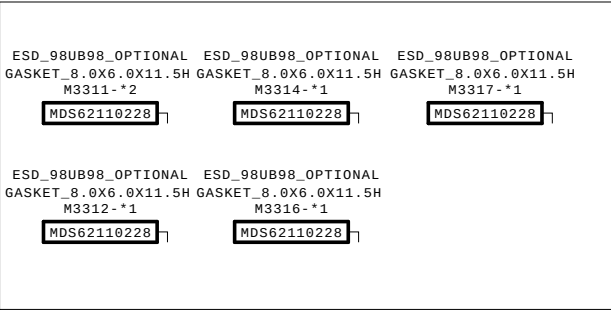
SMD gasket for EMI



SMD gasket for EMS
(optional)



SMD gasket for ESD
(optional)



THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

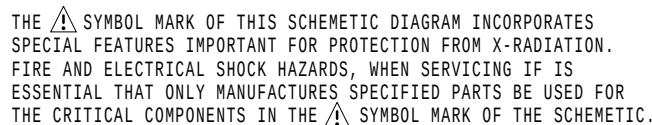
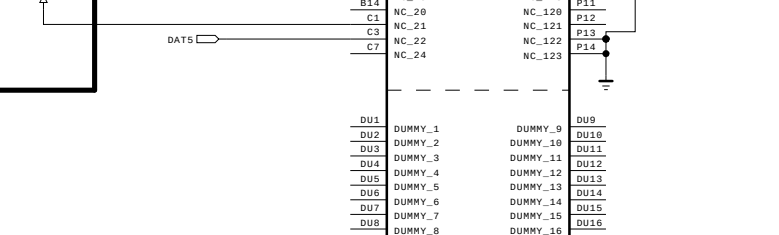


MODEL		DATE	2014.03.18
BLOCK	SMD GASKET	SHEET	/

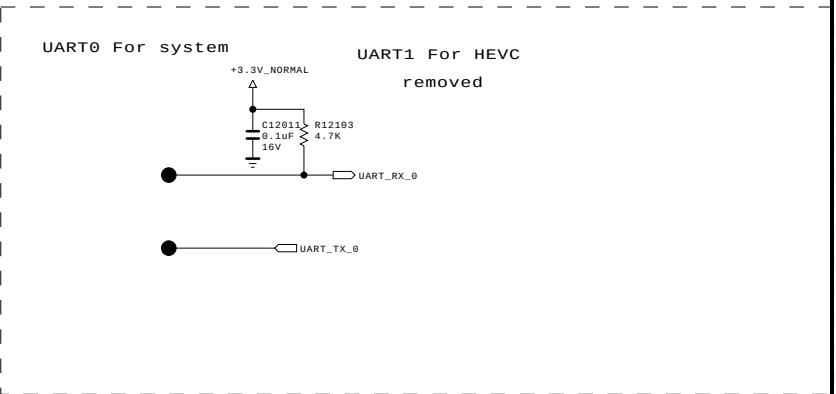
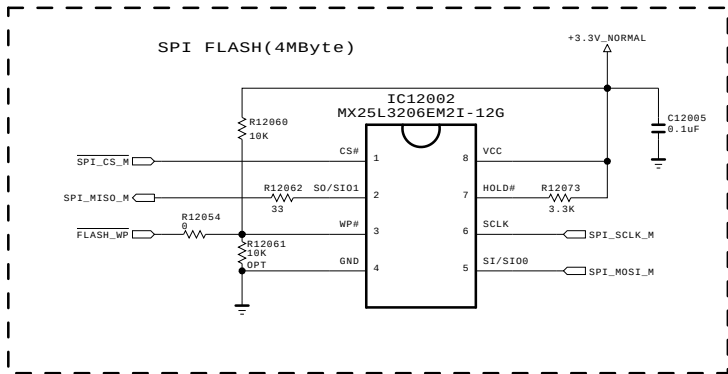
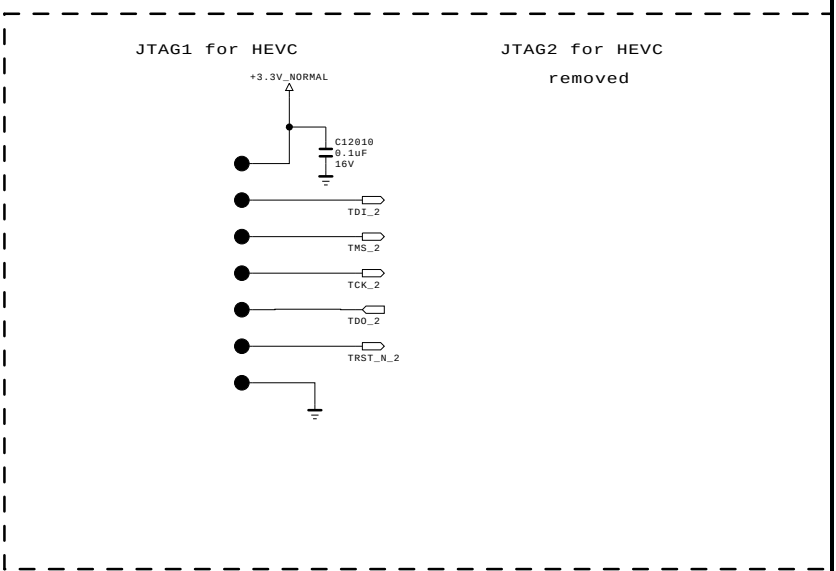
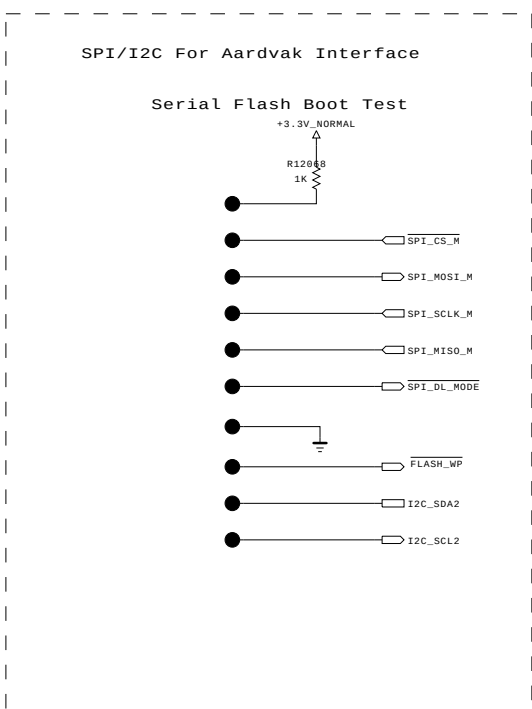
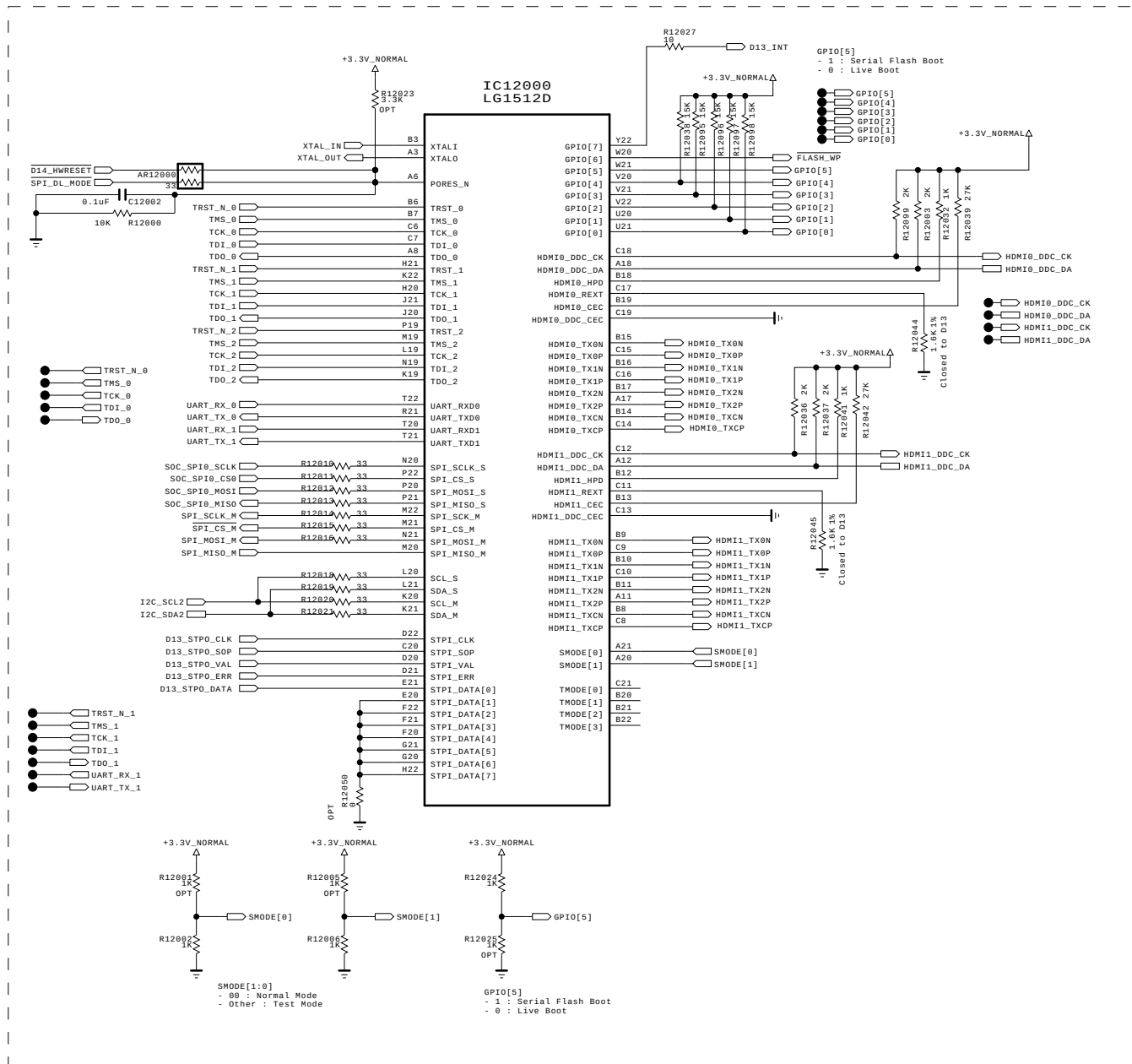
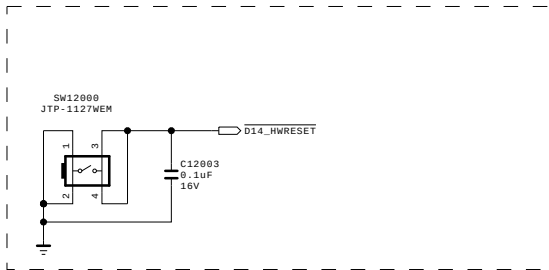
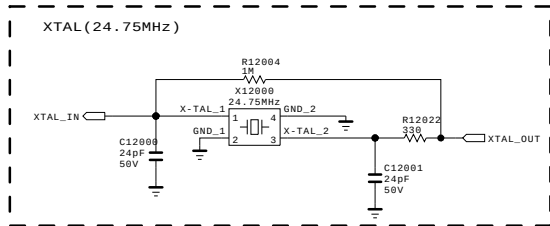
BSD-14Y-UD-071-HD

[illegible]

EMMC_VDDI



MODEL	eMMC	DATE	2013.12.17
BLOCK		SHEET	81 /



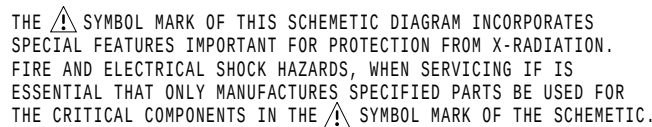
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

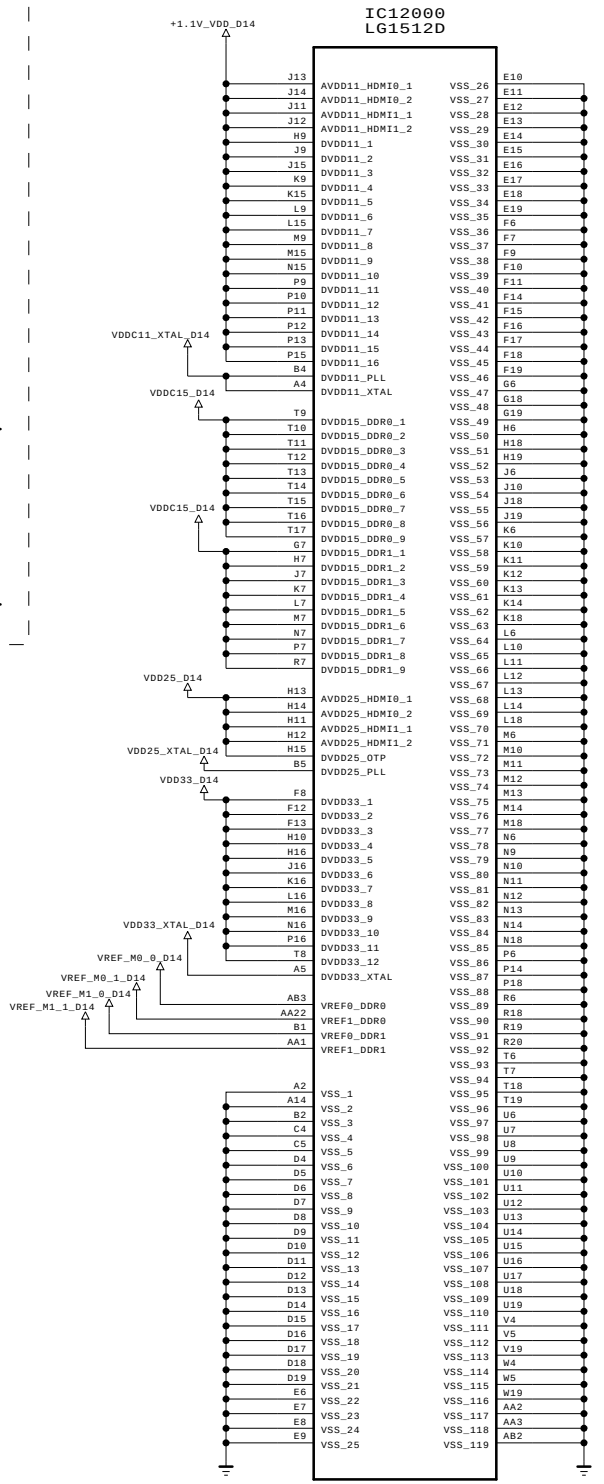
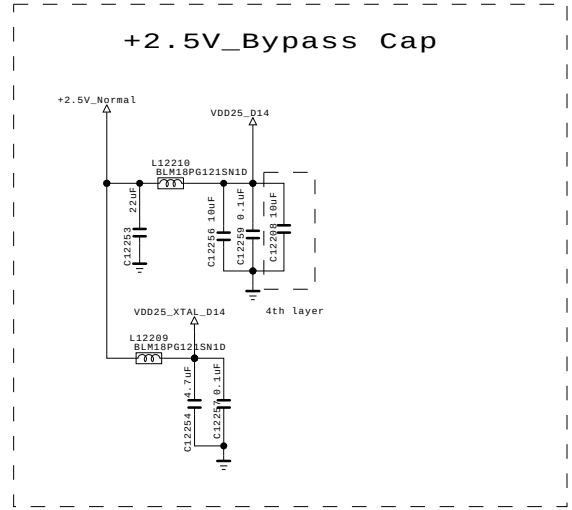
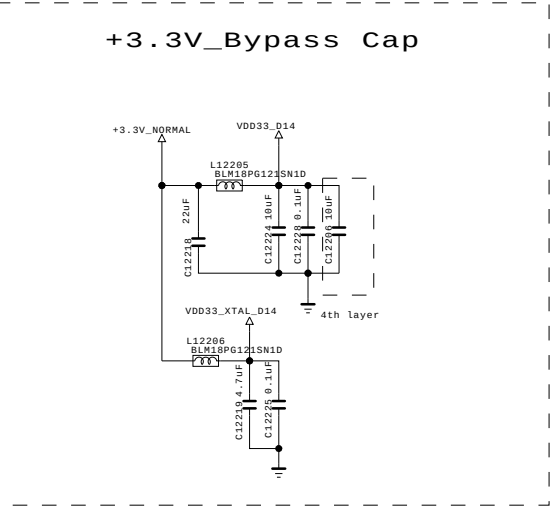
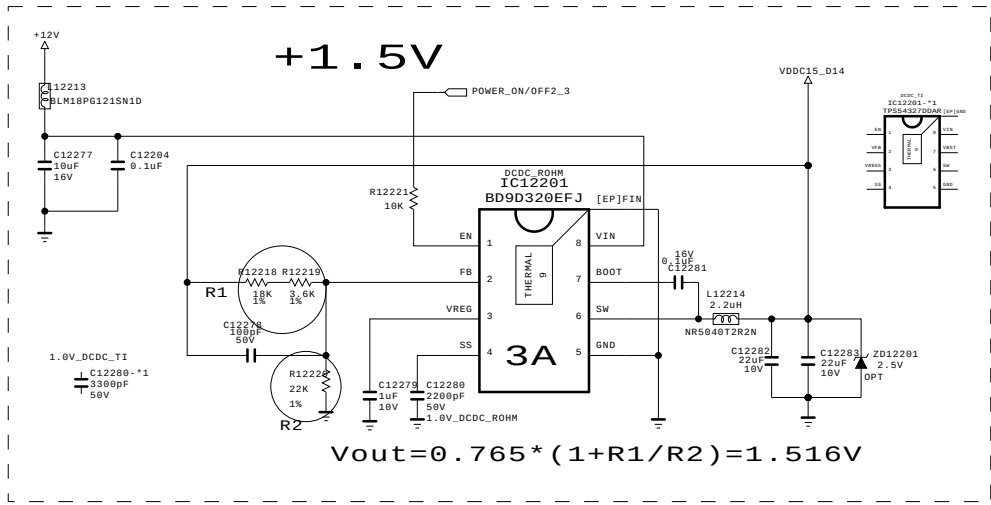
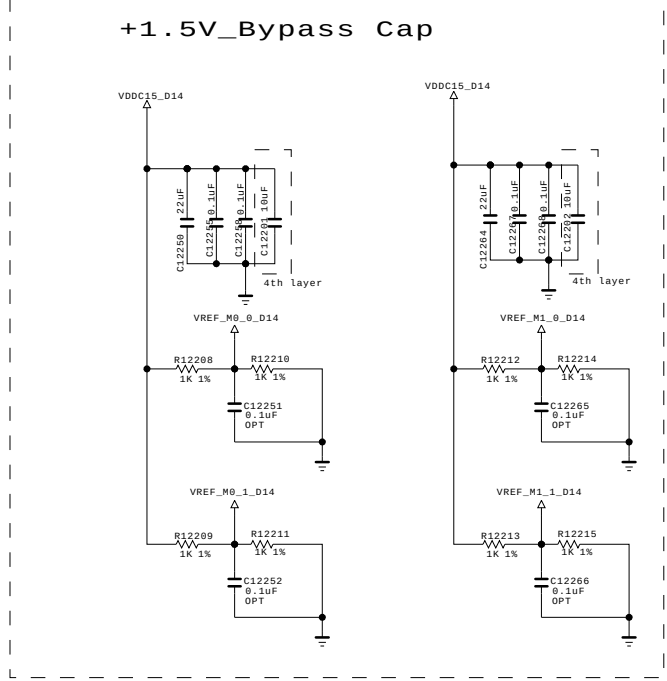
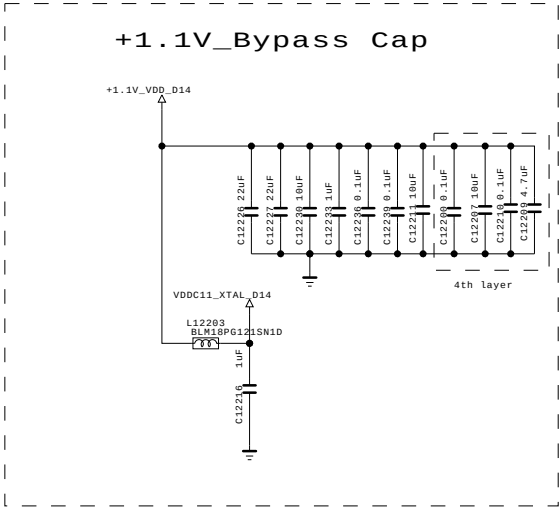
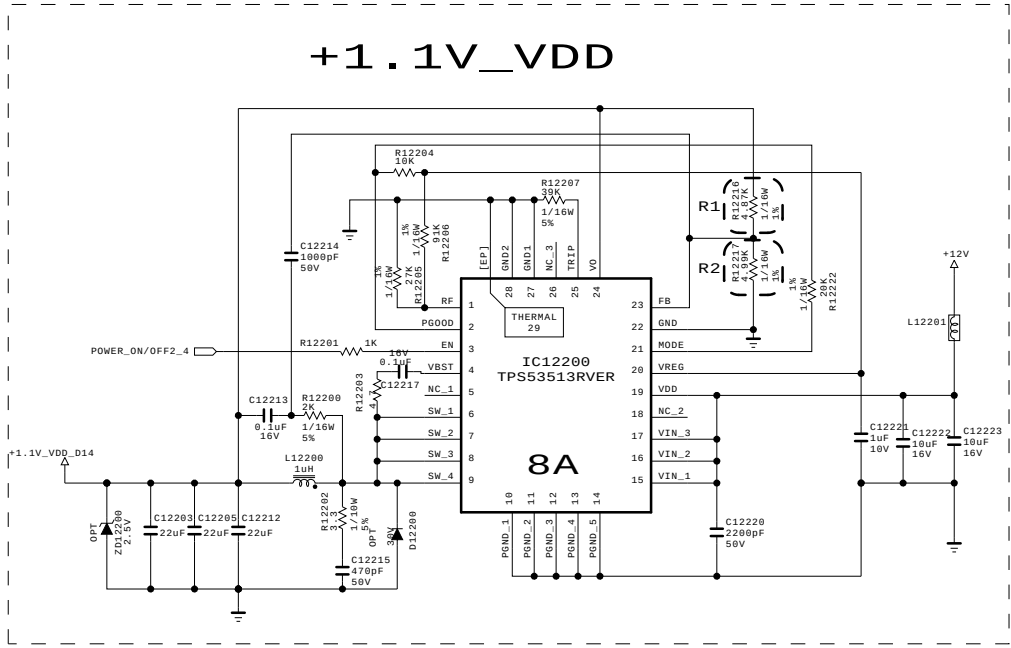
LG ELECTRONICS

MODEL		DATE	2013.12.17
BLOCK		SHEET	/

BSD-14Y-UD-119-HD



MODEL		DATE	2013.12.17
BLOCK	D14_DDR	SHEET	/

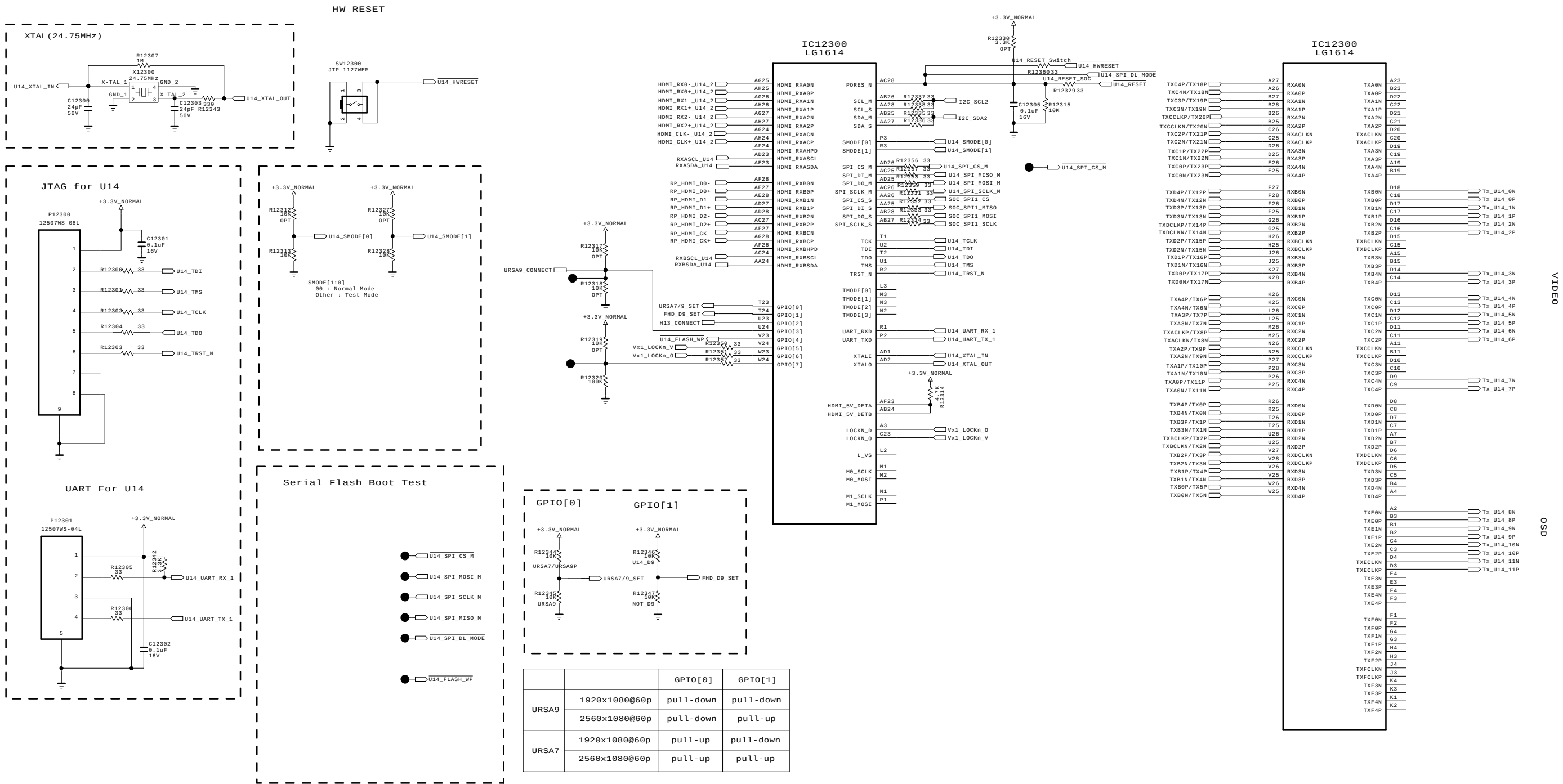


THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



MODEL		DATE	2013.12.17
BLOCK		SHEET	



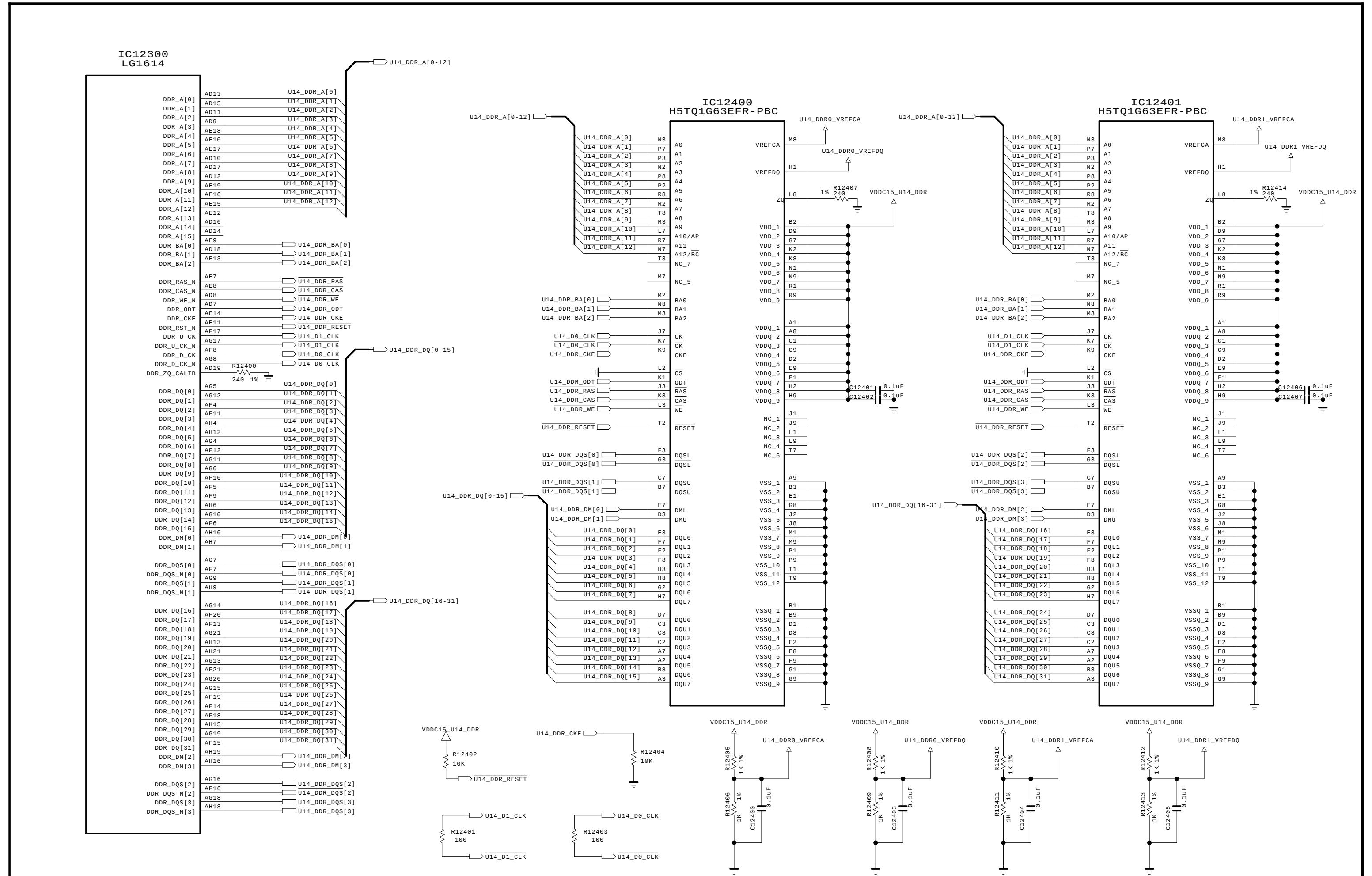
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

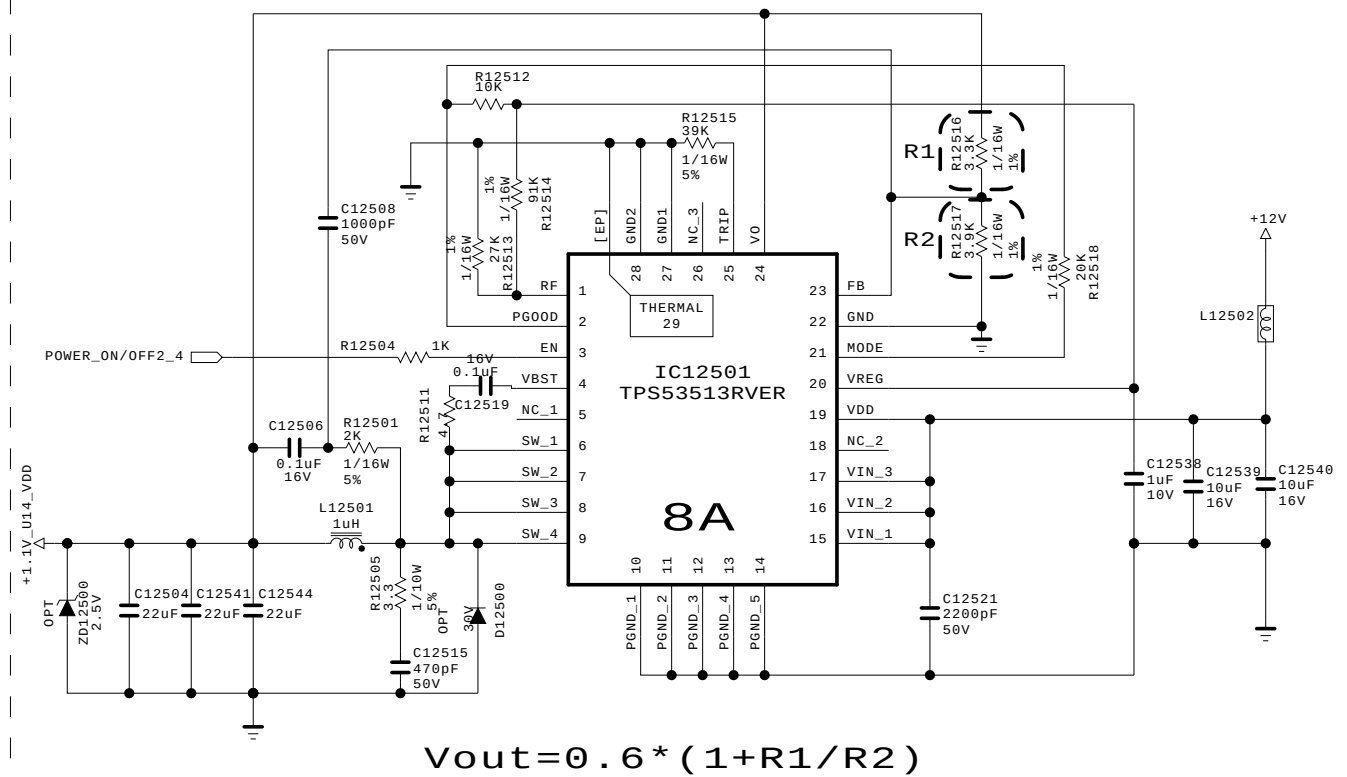
LG ELECTRONICS

MODEL		DATE	2013.12.17
BLOCK	U14	SHEET	/

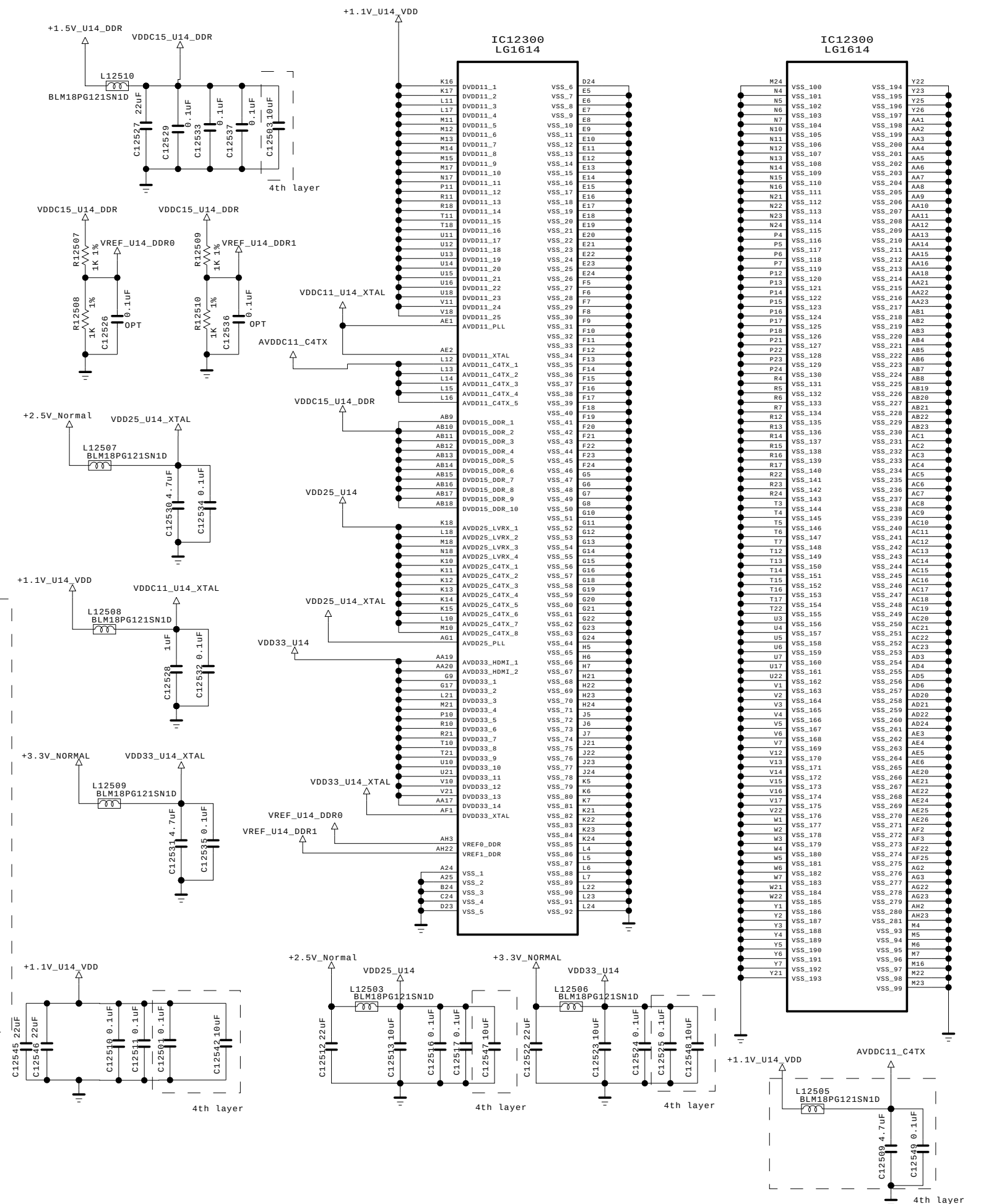
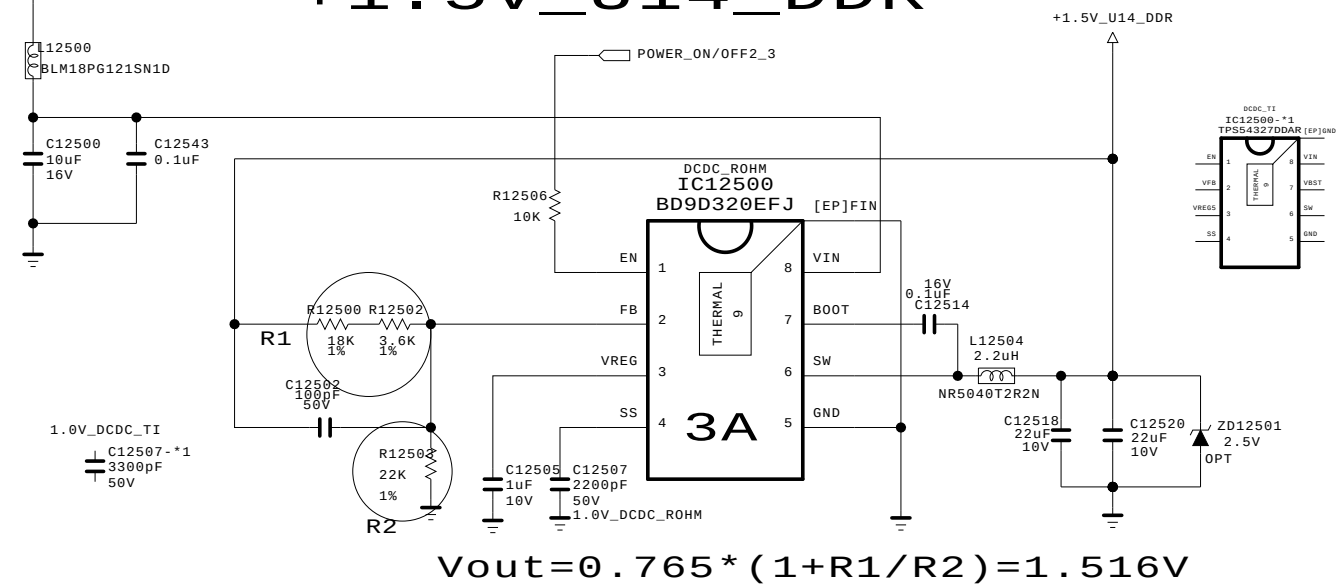
BSD-14Y-UD-123-HD



+1.2V_CORE



+1.5V_U14_DDR



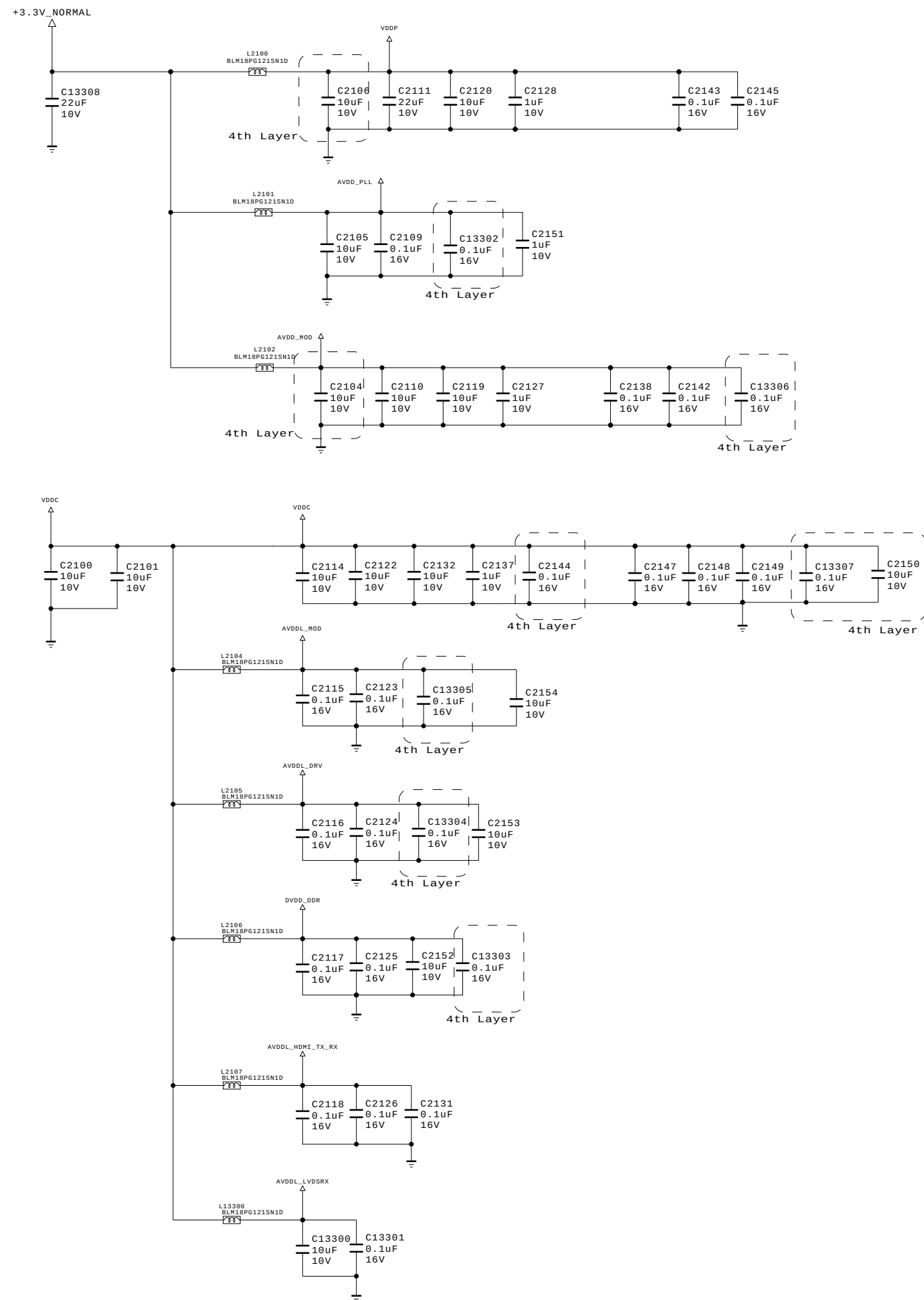
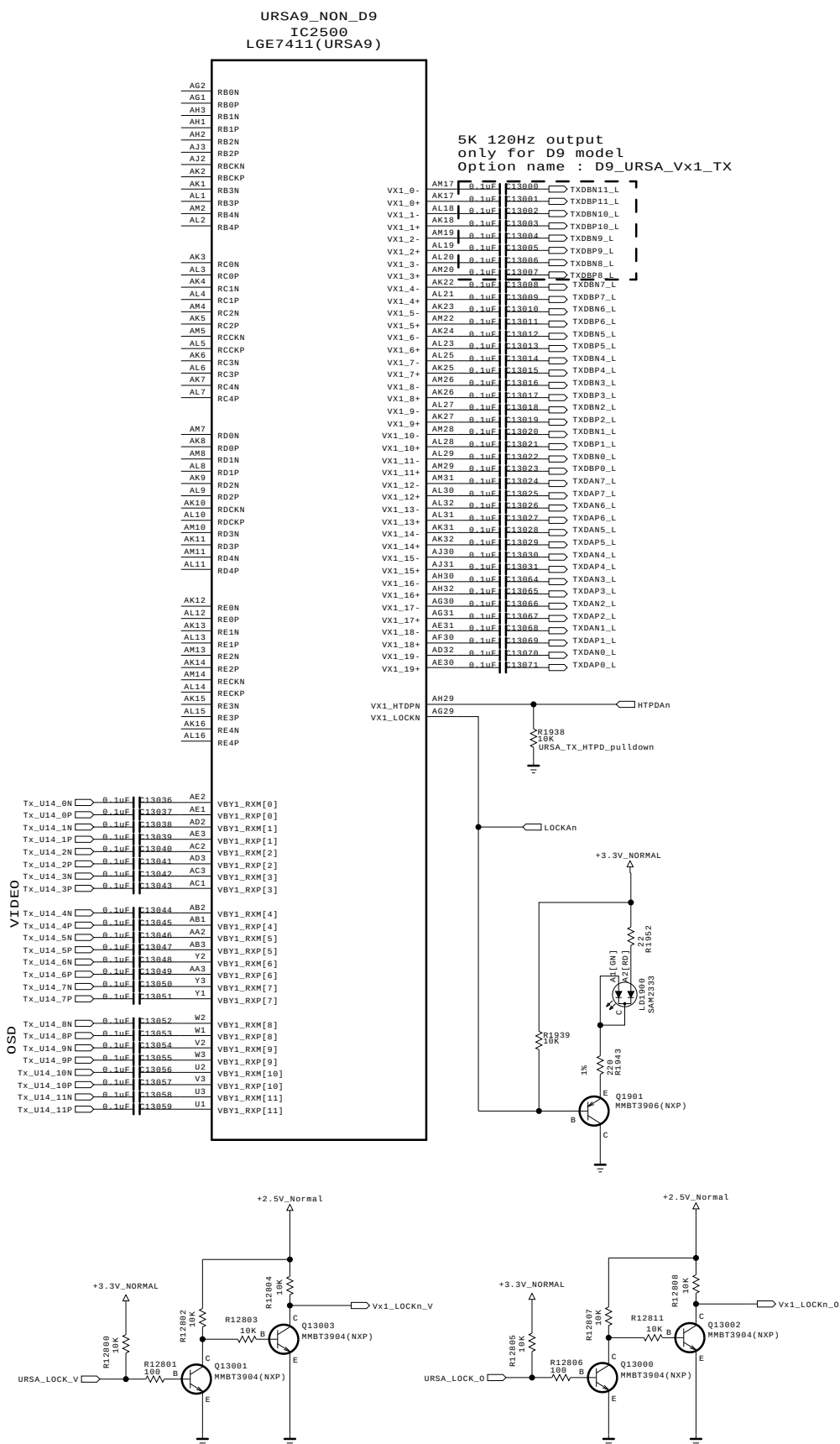
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	DATE	BSD-14Y-UD-125-HD	
BLOCK	SHEET	U14 Power	2013.12.17

UB98/D9 only



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

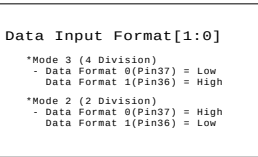
SECRET
G Electronics



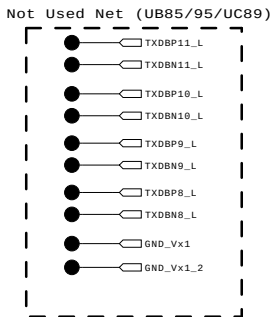
BSD-14Y-UD-128-HD

MODEL		DATE	2013.12.17
БЛОК	U_LVDS INPUT	SHEET	/

51pin_Wafer
P13000
FI-RE51S-HF-J-R1500

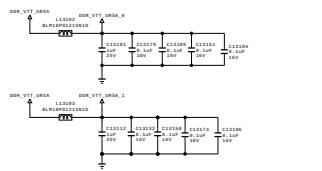
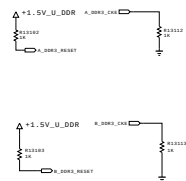


41pin_Wafer
P13001
FI-RE41S-HF-J-R1500



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.









MODEL		DATE	2013.12.1
BLOCK	URSA7_DDR	SHEET	/

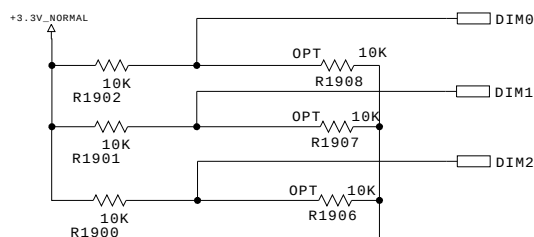
Option Name
UB98/UC9_URSA9_crystalcap

Schematic diagram of the crystal circuit for the UB98/UC9_URSA9 module. The circuit includes a 24MHz crystal (X1900) connected to pins X-TAL_1, X-TAL_2, X-TAL_1, and X-TAL_2. A 50pF capacitor (C1903) is connected to X-TAL_1 and GND_1. A 50pF capacitor (C1904) is connected to X-TAL_2 and GND_2. A 10k resistor (R1925) is connected between X-TAL_1 and X-TAL_2. The output pins are XIN_URSA and XO_URSA.

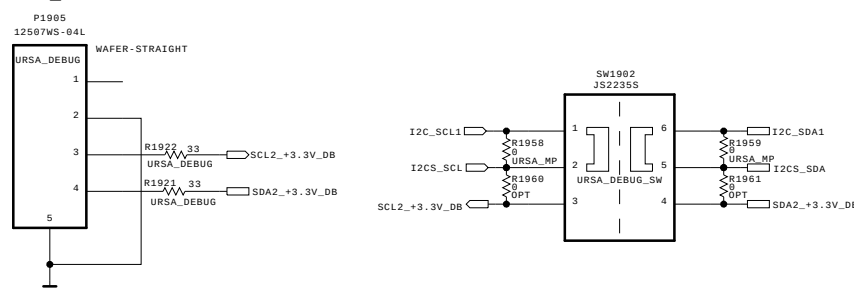
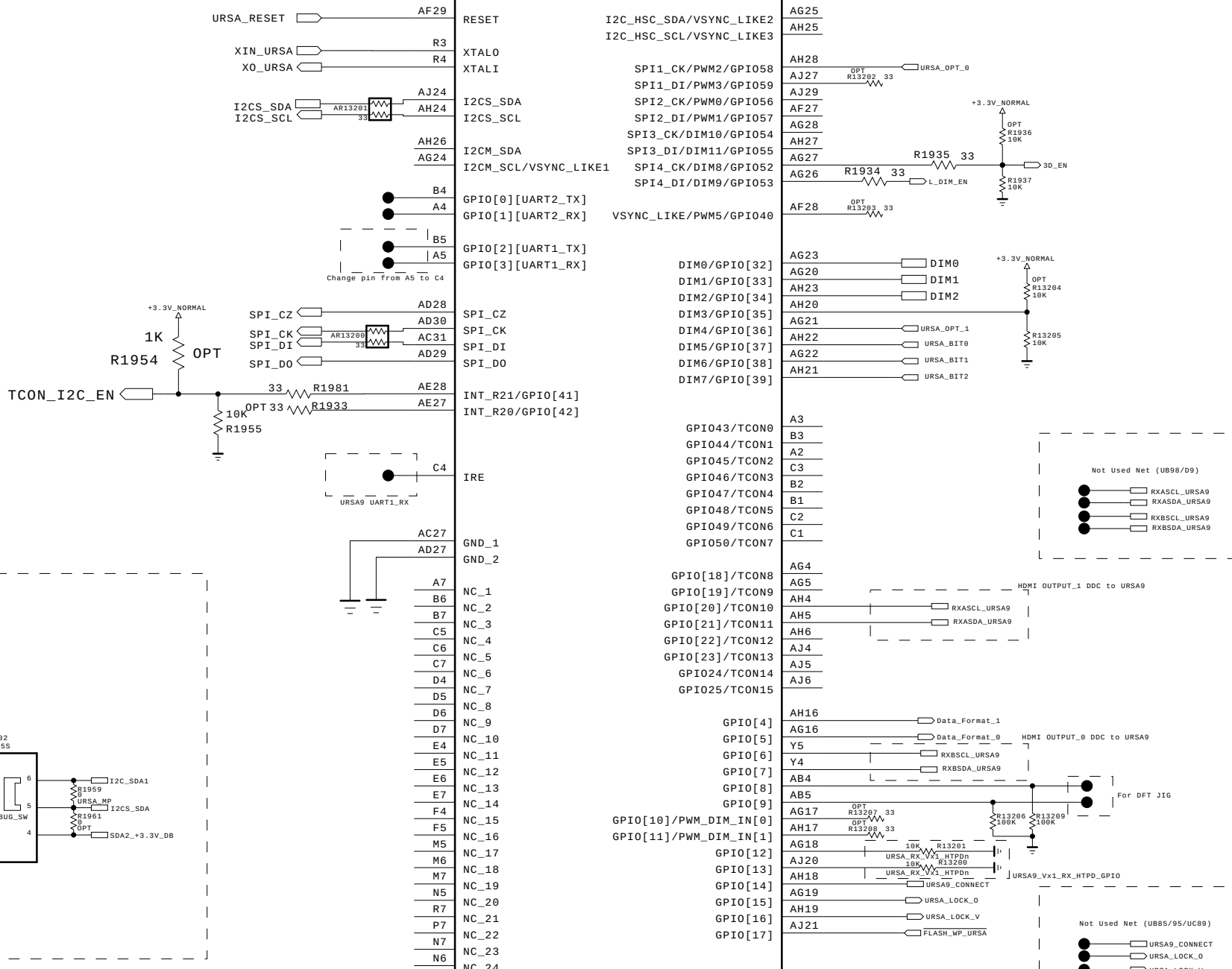
 C1904 - *1 C1903 - *1
 8pF  8pF
 50V  50V

[illegible]

```
Debug/ISP ADDR
Slave (Debug Port:0XB4,ISP:0X98)
CHIP_CONF:{DIM2,DIM1,DIM0}
CHIP_CONF=3'd7:111:boot from SPI Flash
```



I2C_S Port

[illegible][illegible]

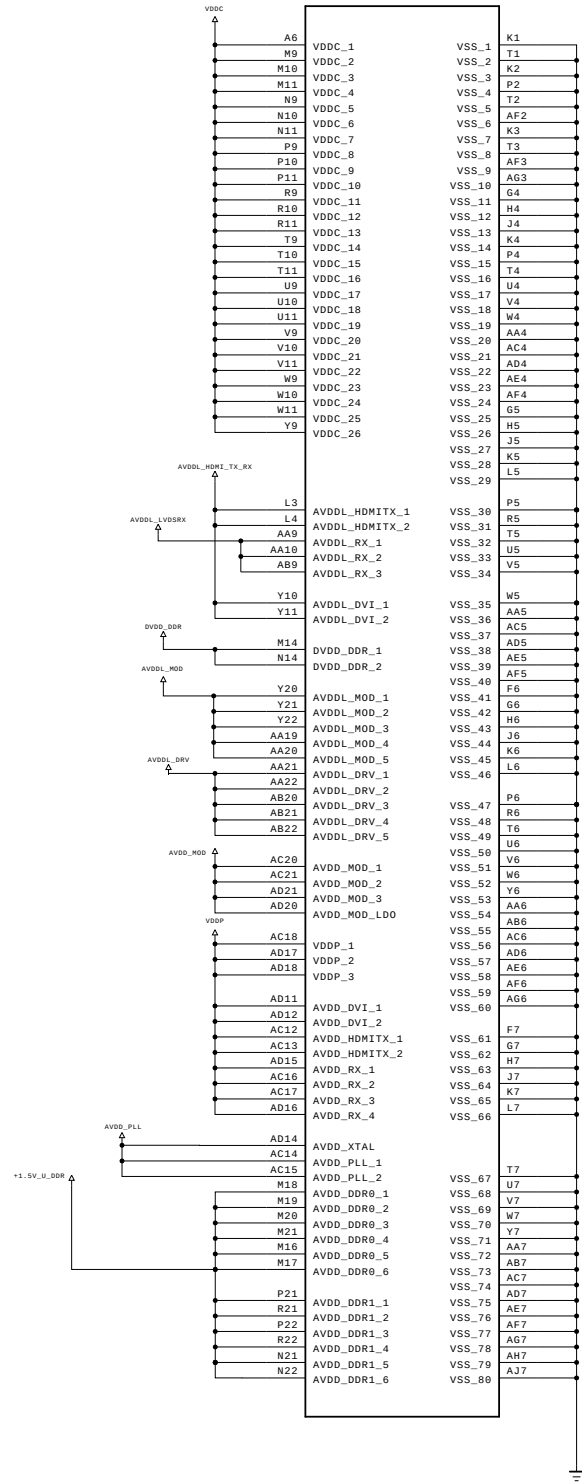
SECRET
G Electronics



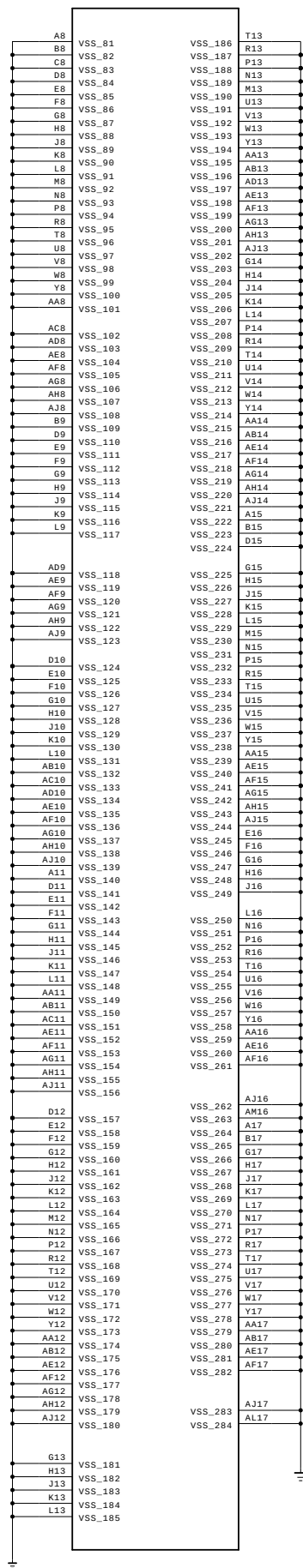
BSD-14Y-UD-132-HD

MODEL		DATE	2013.12.17
BLOCK		SHEET	/

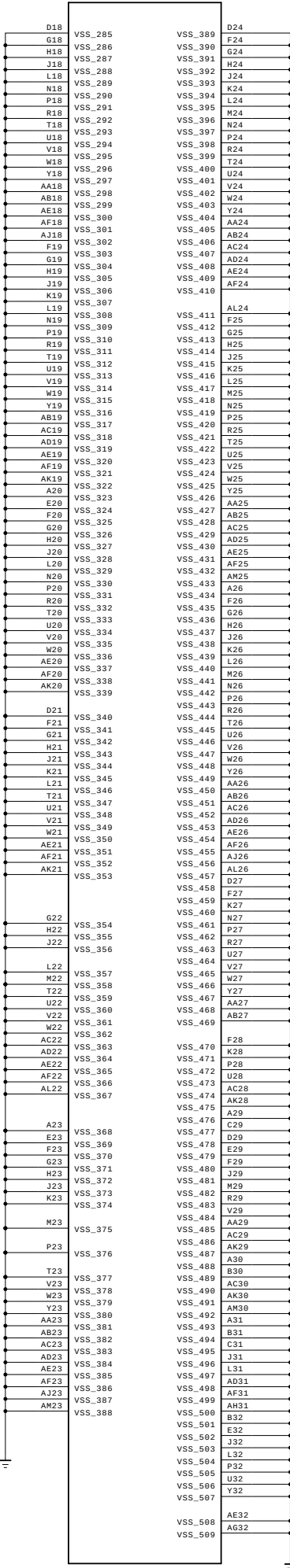
URSA9_NON_D9
IC2500
LGE7411 (URSA9)



URSA9_NON_D9
IC2500
LGE7411 (URSA9)



URSA9_NON_D9
IC2500
LGE7411 (URSA9)



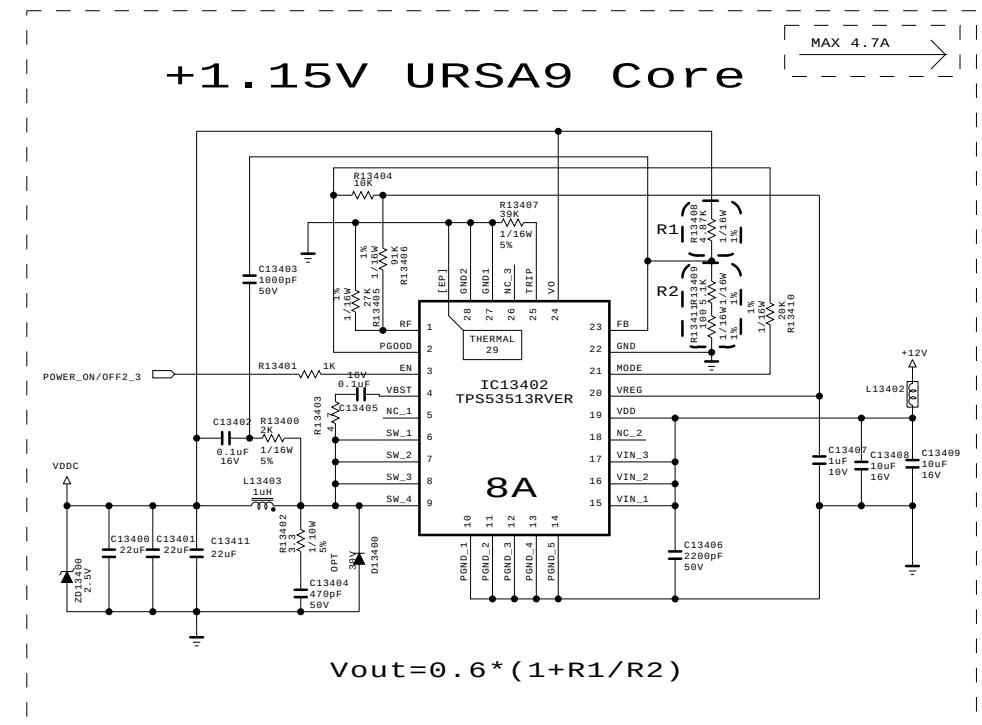
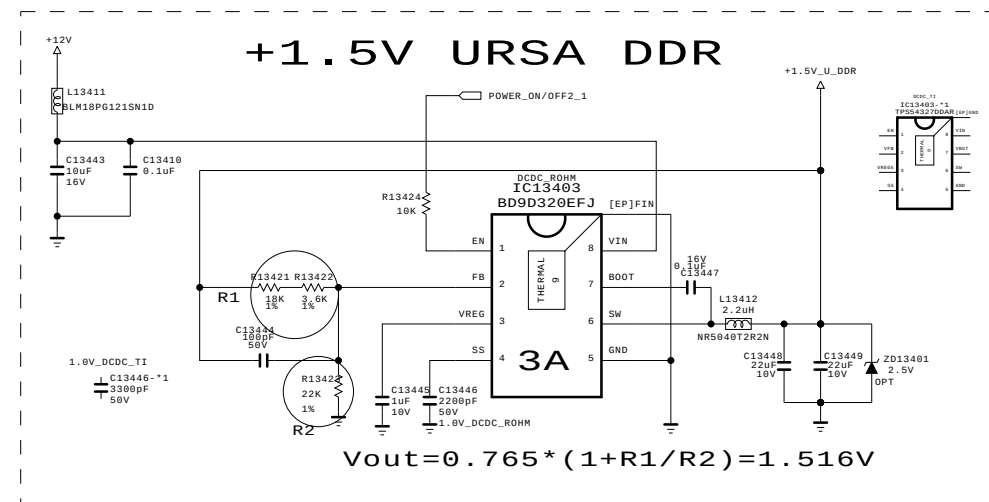
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL		DATE	2013.12.17
BLOCK	U_Power	SHEET	/

BSD-14Y-UD-133-HD



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

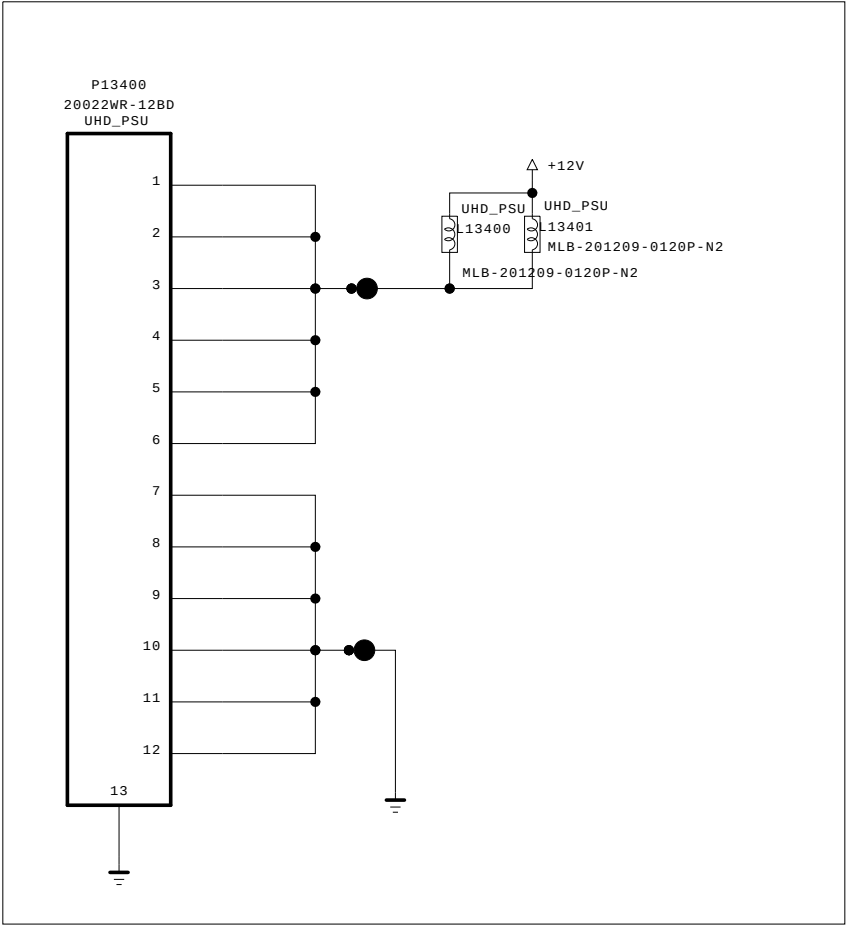
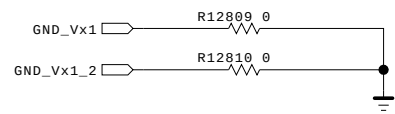
SECRET
LGElectronics



BSD-14Y-UD-134-HD

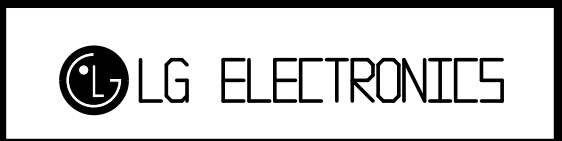
MODEL		DATE	2013.12.17
BLOCK		SHEET	/

GND Connection at Vx1 41pin wafer



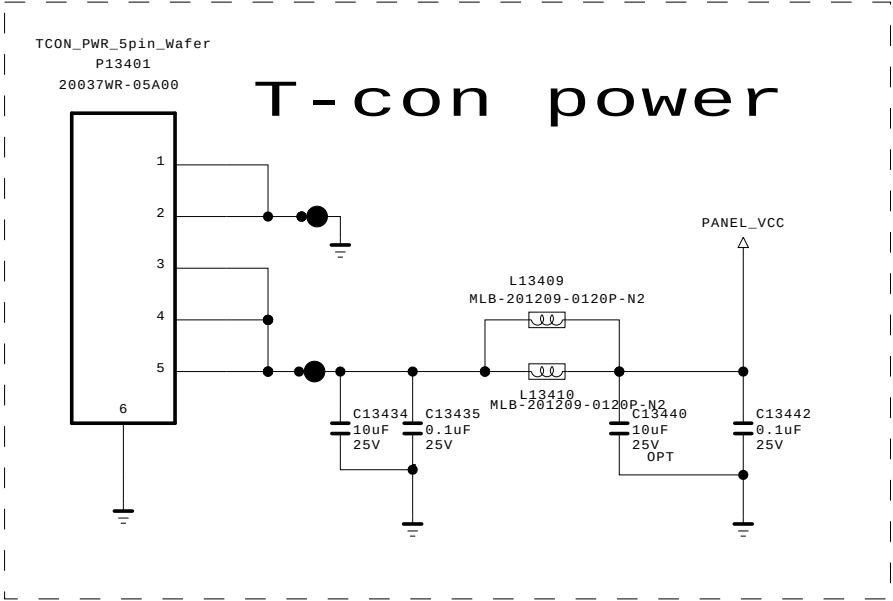
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



MODEL		DATE	2013.12.17
BLOCK		SHEET	/

BSD-14Y-UD-140-HD



THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

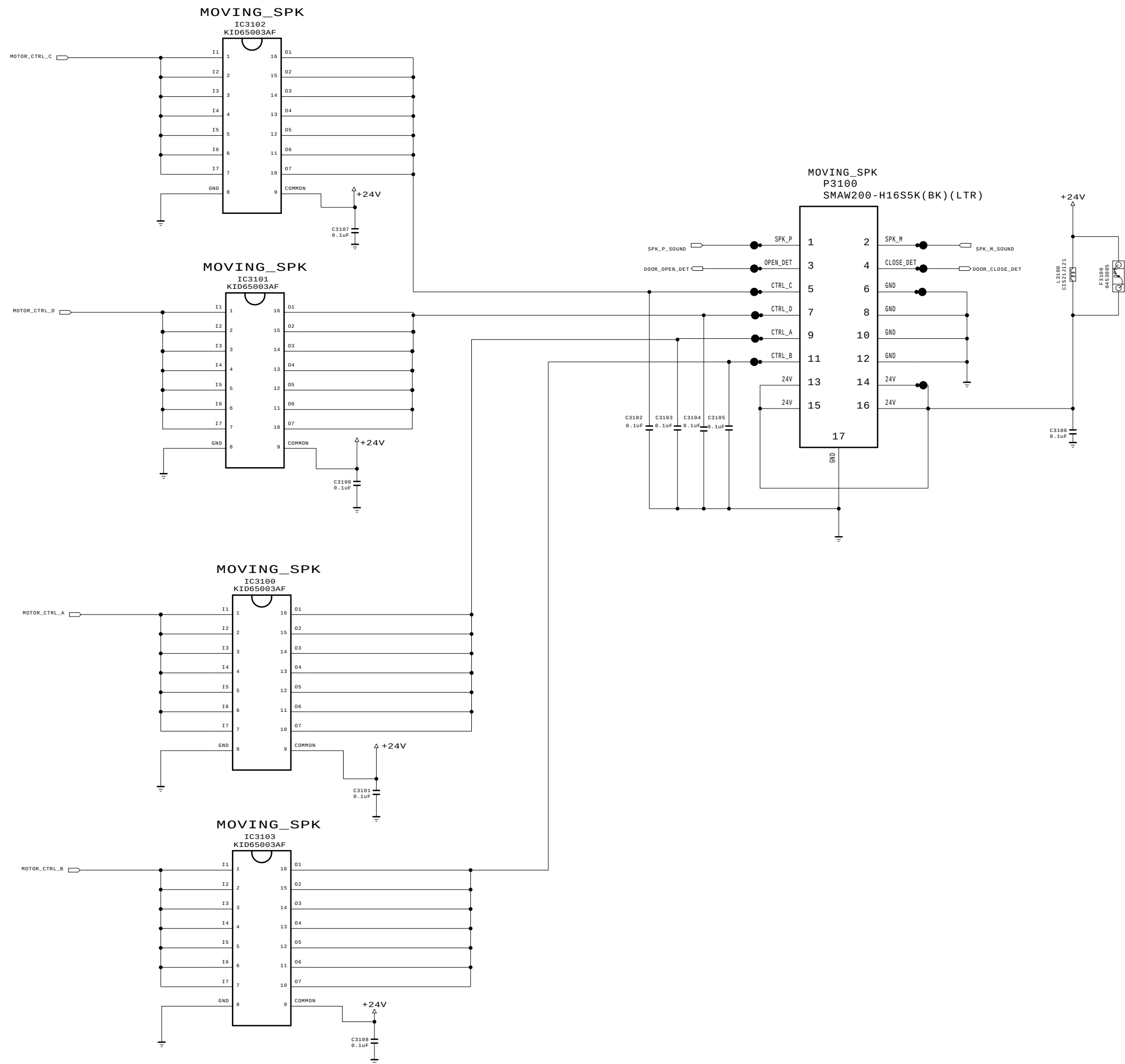
SECRET

LGElectronics

 LG ELECTRONICS

MODEL		DATE	2013.12.17
BLOCK		SHEET	/

BSD-14Y-UD-141-HD



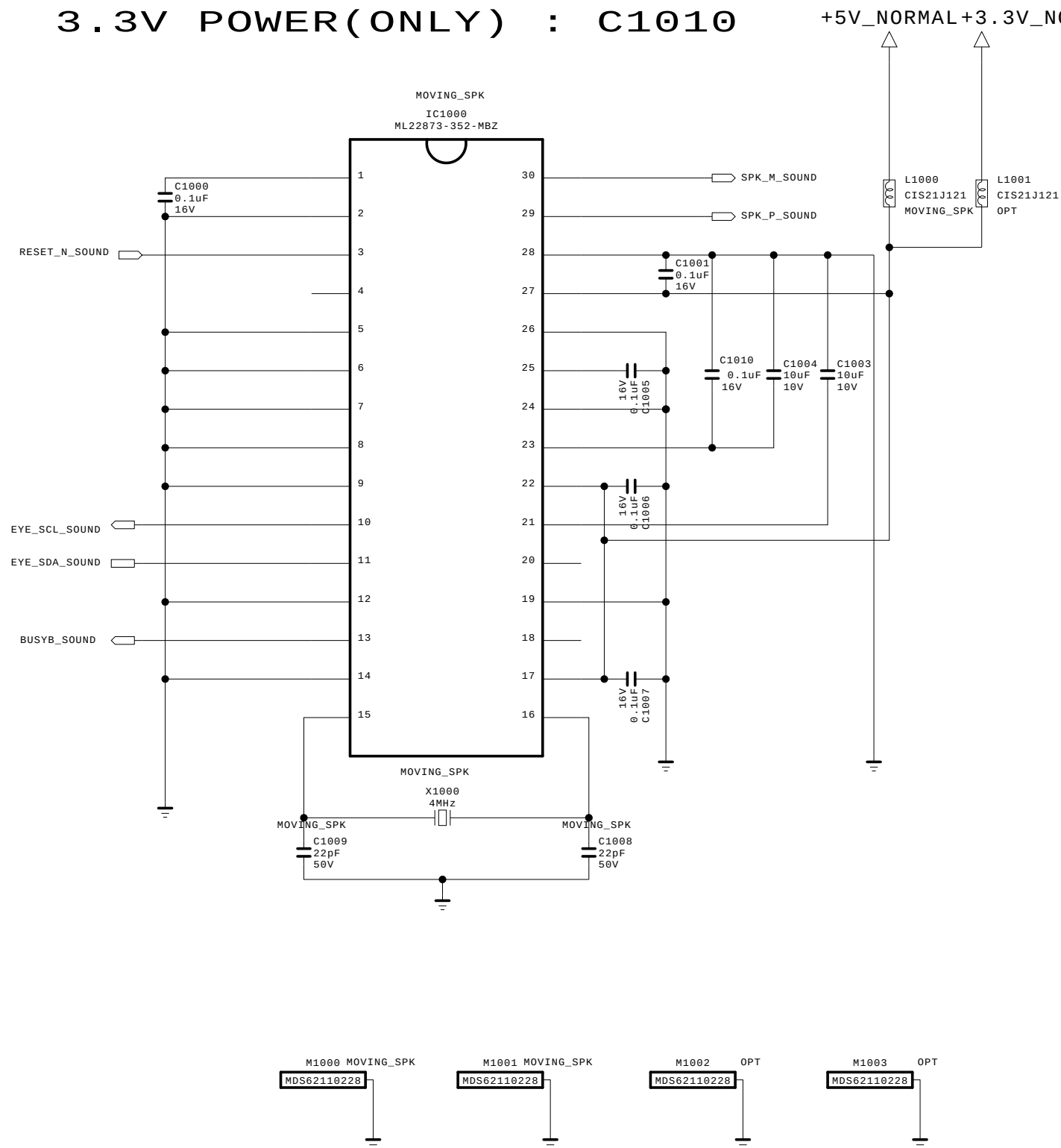
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



MODEL	GP4	DATE	
BLOCK	Motor	SHEET	31 /

```
5V POWER(ONLY): C1004
3.3V POWER(ONLY): C1010
```



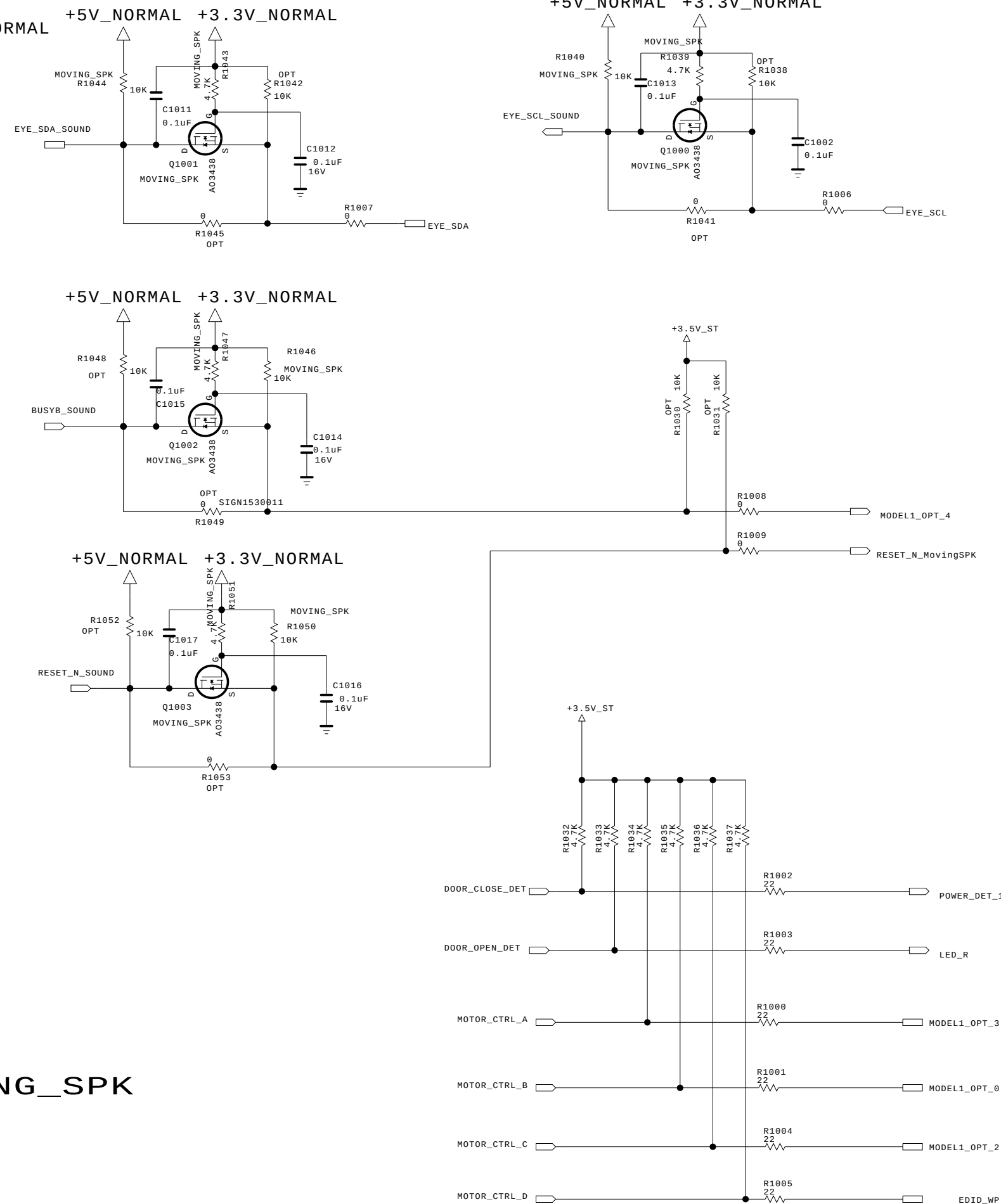
```
DOOR MOTOR Sheet option : MOVING_SPK
Audio Play IC
```

THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LG Electronics



MODEL		DATE	
BLOCK		SHEET	/





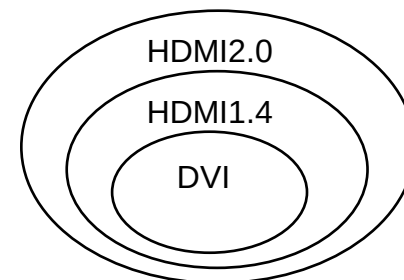
Overview for '14 ULTRA HD Model (Hardware)

`14 ULTRA HD New Feature 1. HDMI

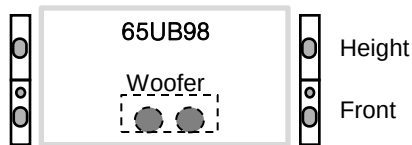
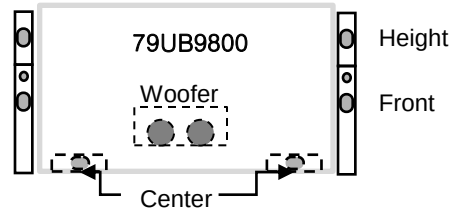
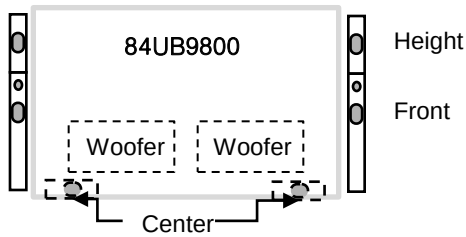
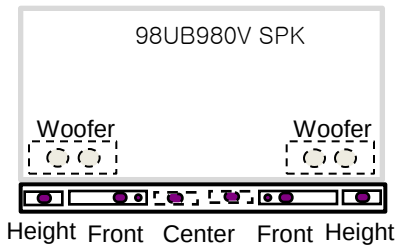
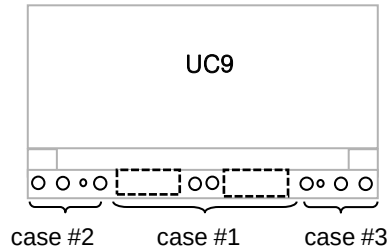
구 분	HDMI1.4	HDMI2.03G	HDMI2.0 6G	HDCP2.2	ARC	MHL2.1	HDMI1.4 Legacy
HDMI 4	○	X	X	X	X	○	X
HDMI 3	○	○	○	X	X	X	○
HDMI 2	○	○	X	X	○	X	○
HDMI 1	○	○	X	○	X	X	△



It is different form each HDMI port spec.
We offer a HDMI cable for HDMI 1.4 legacy issue.

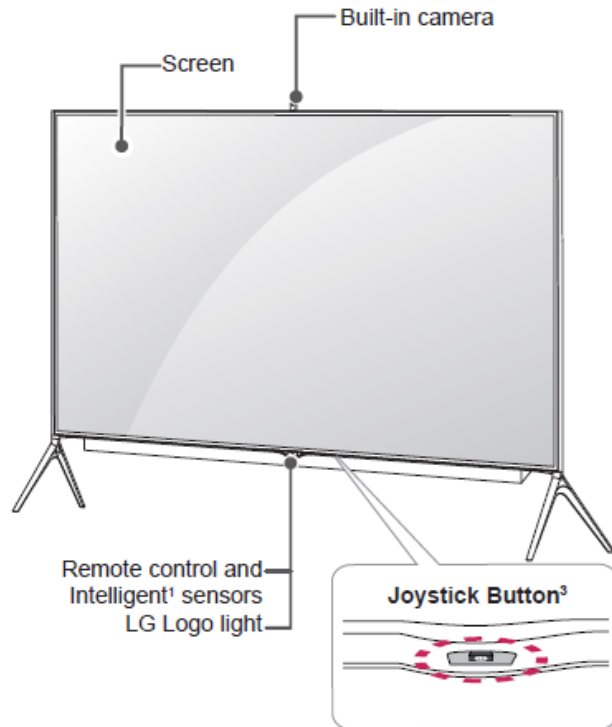


`14 ULTRA HD New Feature 2. Audio



• Total W • ch (inch)	Output & Channel			
	Amp. Output	Output (W)	Amp. Input channel	Amp. Output channel
• 150W • 7.2ch (105")	• L, R • Ls, Rs • Lh, Rh • Center • Woofer	15+15W 10+10W 10+10W 10+10W 30+30W (PBTLx2EA)	• Lf / Rf • Ls / Rs • Lh / Rh • Lf / Rf • Lf / Rf	• Lf / Rf • Ls / Rs • Lh / Rh • Lf / Rf • Lf / Rf
• 120W • 5.2ch (97,84")	• L, R • Lh, Rh • Center • Woofer	10+10W 10+10W 10+10W 30+30W (PBTLx2EA)	• Lf / Rf • Lh / Rh • Lf / Rf • Lf / Rf	• Lf / Rf • Lh / Rh • Lf / Rf • Lf / Rf
• 90W • 5.2ch (79")	• L, R • Lh, Rh • Center • Woofer	10+10W 10+10W 10+10W 15+15W	• Lf / Rf • Lh / Rh • Lf / Rf • Lf / Rf	• Lf / Rf • Lh / Rh • Lf / Rf • (Lf+Rf)/2 / (Lf+Rf)/2
• 70W • 4.2ch (65,55")	• L, R • Lh, Rh • Woofer	10+10W 10+10W 15+15W	• Lf, Rf • Lh, Rh • Lf / Rf	• Lf, Rf • Lh, Rh • (Lf+Rf)/2 / (Lf+Rf)/2

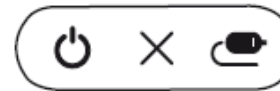
`14 ULTRA HD New Feature 3. Sub Assy (Joy stick button, Color sensor)



1. Joy stick button

This button is located behind the TV screen.

You can adjust the Menu items moving the joystick button.



You can see the UI.

	TV OFF	Turns the power off.
	CLOSE	Clears on-screen displays and return to TV viewing.
	INPUT	Changes the input source.

2. Color sensor

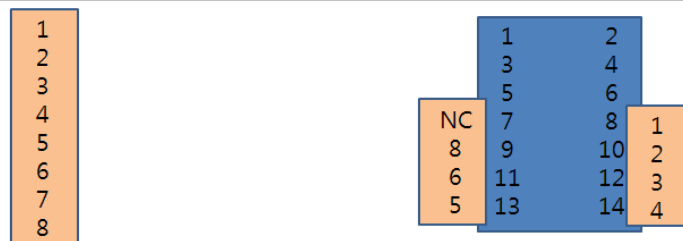
Adjusts the image quality and brightness based on the surrounding environment.

2014 model : Intelligent sensor + Color sensor

`14 ULTRA HD New Feature 3. Sub Assy (WiFi)

UC9	105"	21:9	BT	WiFi
UB98	98"	16:9	'13 Carry Over	802.11ac
	84"			
	79"			
	65"			
	55"			
UB95	65"	16:9	802.11n (BT Combo)	
	55"			
UB85	55"			
	49"			

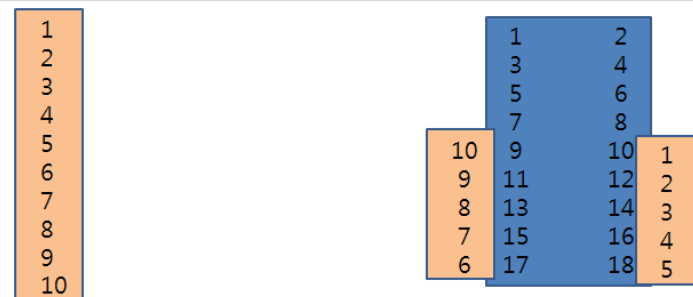
Bluetooth (7p) – Main (14p) 802.11ac + BT



Pin name	Sub Wafer	Color	Main Wafer
3.3V	1	-(Blue)-	8
RTS	2	-(Black)-	10
UART_RX_RF	3	-(Brown)-	12
UART_TX_RF	4	-(Red)-	14
RESET	5	-(Orange)-	13
CTS	6	-(Yellow)-	11
NC (3D_SYNC)	7	NC	NC
GND	8	-(Green)-	9

*Wire Color
13년 LCD BT 동일

IR (10p) – Main (18p) 802.11n combo + IR



Pin name	Sub Wafer	Color	Main Wafer
GND	1	-(Black)-	10
Key1	2	-(Grey)-	12
Key2	3	-(Brown)-	14
3.5V	4	-(Red)-	16
GND	5	-(Orange)-	18
LED/Logo	6	-(Yellow)-	17
IR	7	-(Green)-	15
GND	8	-(Blue)-	13
SCL	9	-(Purple)-	11
SDA	10	-(White)-	9

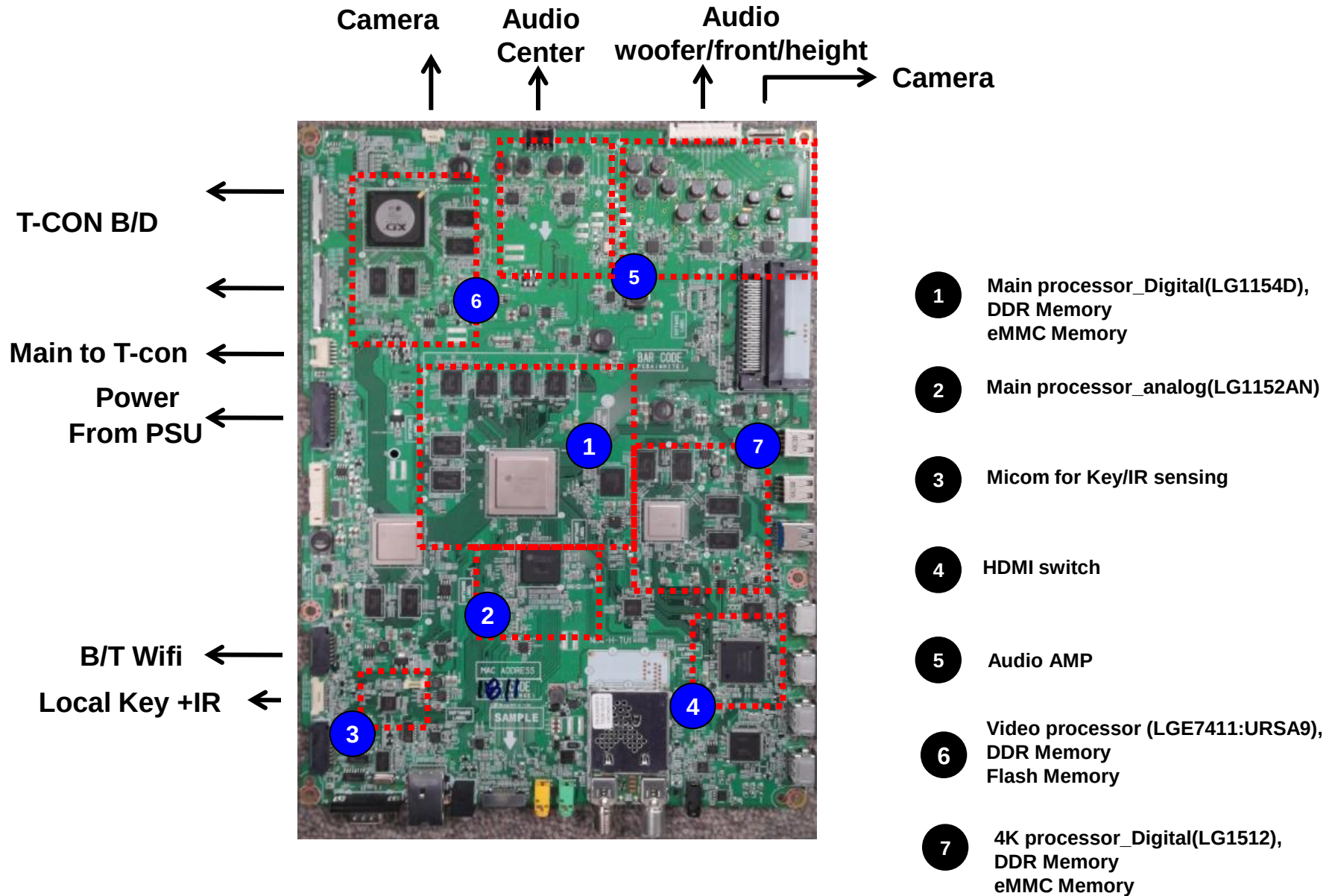
*Wire Color
변경 가능

LGE Internal Use Only

LCD TV Repair Guide

`14 years New Models

Main PCB



`14Y ULTRA HD Block Diagram

목차

0. System Overview (Main External)
1. H13 Block Diagram (External)
2. H13 Block Diagram (Internal)
3. H13 Data Path Diagram
4. D14 Block Diagram (Internal)
5. D14 Block Diagram (External)
6. U14 Block Diagram (Internal)
7. U14 Block Diagram (External)
8. URSA9 Block Diagram
9. Tuner
10. Video & Audio IN/OUT
11. Audio OUT
12. HDMI2.0 Block
13. USB / Wi-Fi / M-REMOTE / UART
14. I2C Map (H13)
15. I2C Map (MICOM)
16. GPIO (H13)
17. GPIO (MICOM)

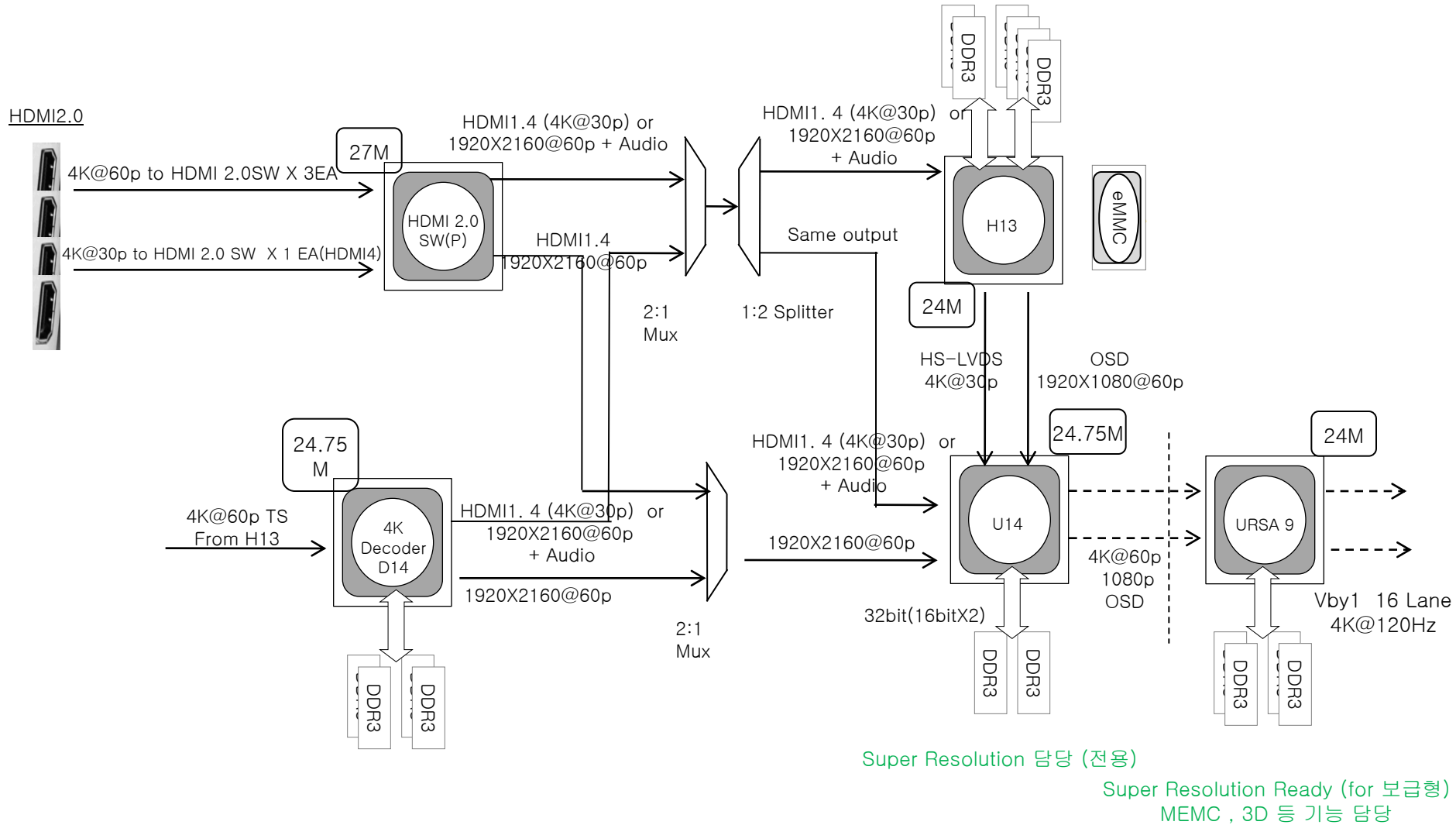
2014년 02월 13일

TV사업부

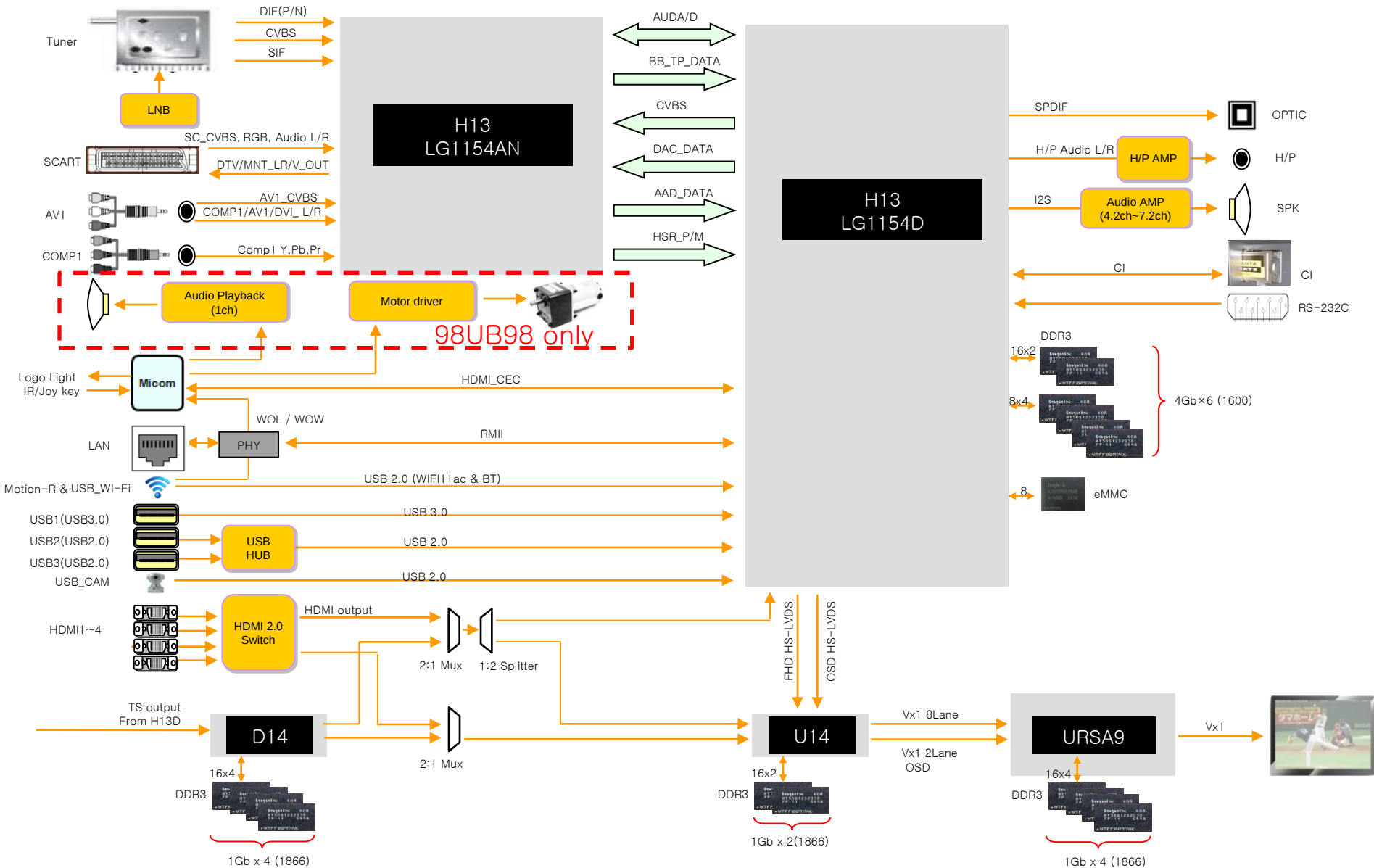
TV제품개발1팀

14Y ULTRA HD Main 보드 구성

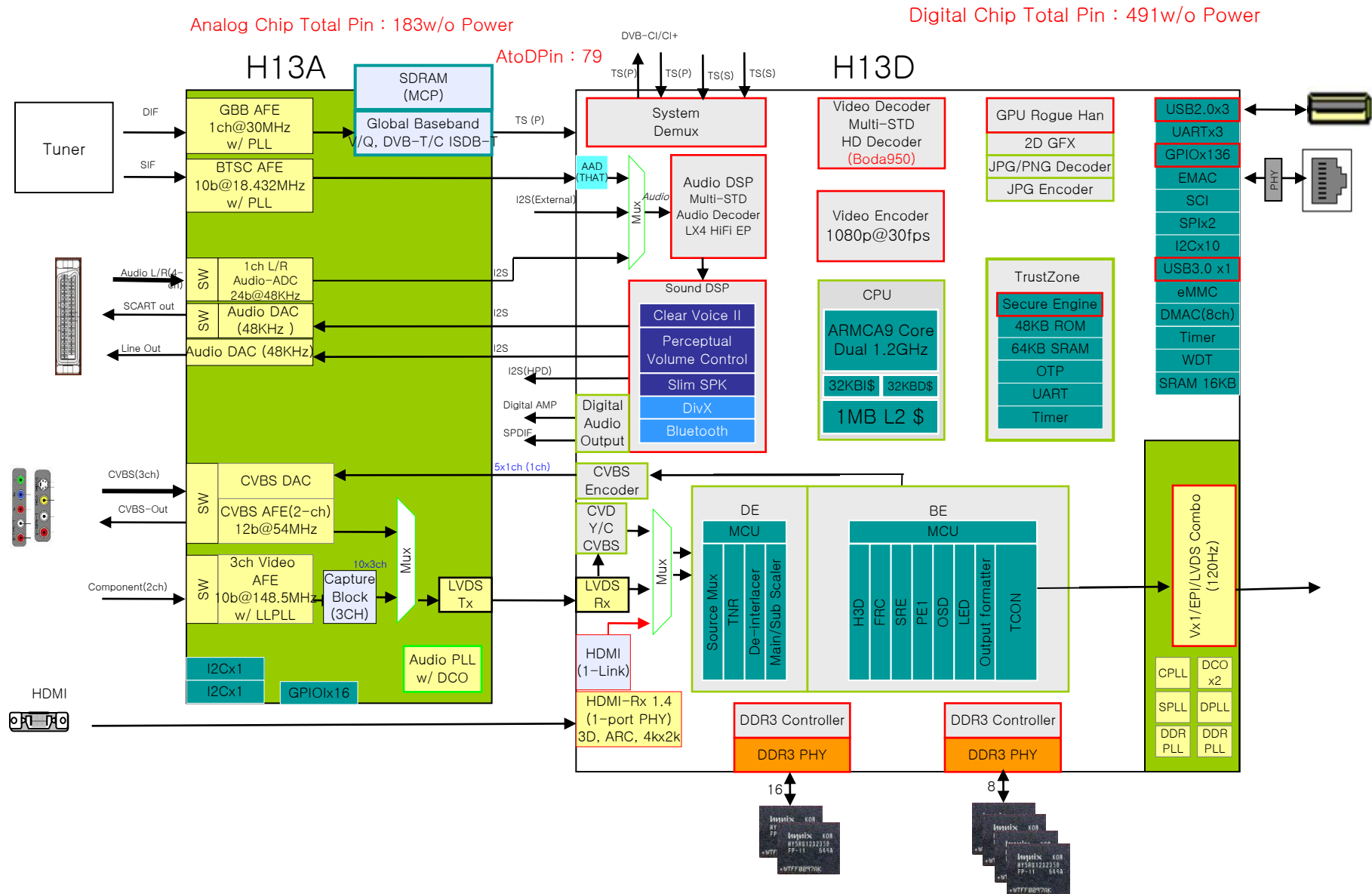
※ Main + Back-End 통합 보드 구성 (Back-End IC 1 chip 적용)



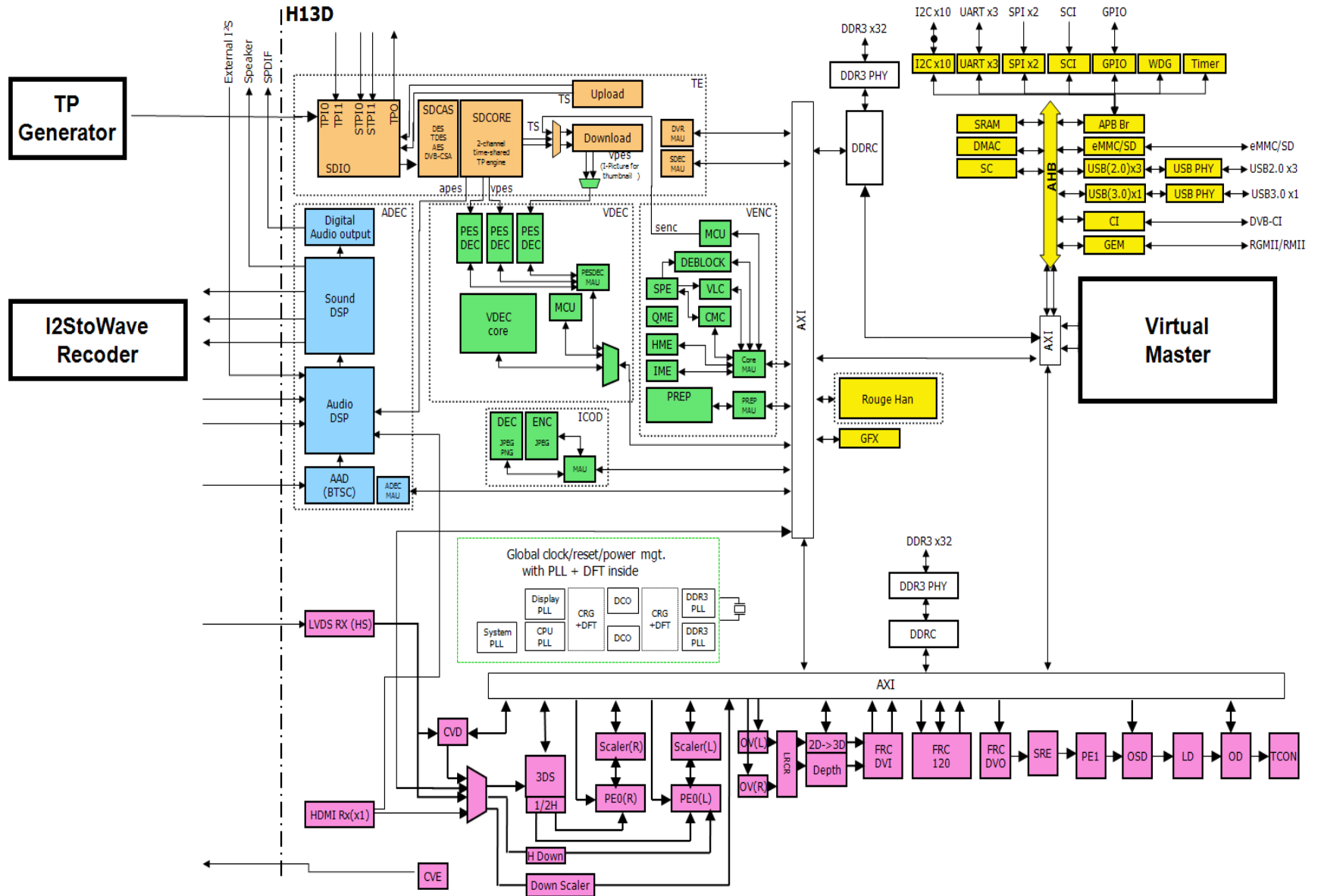
H13 Block Diagram (External)



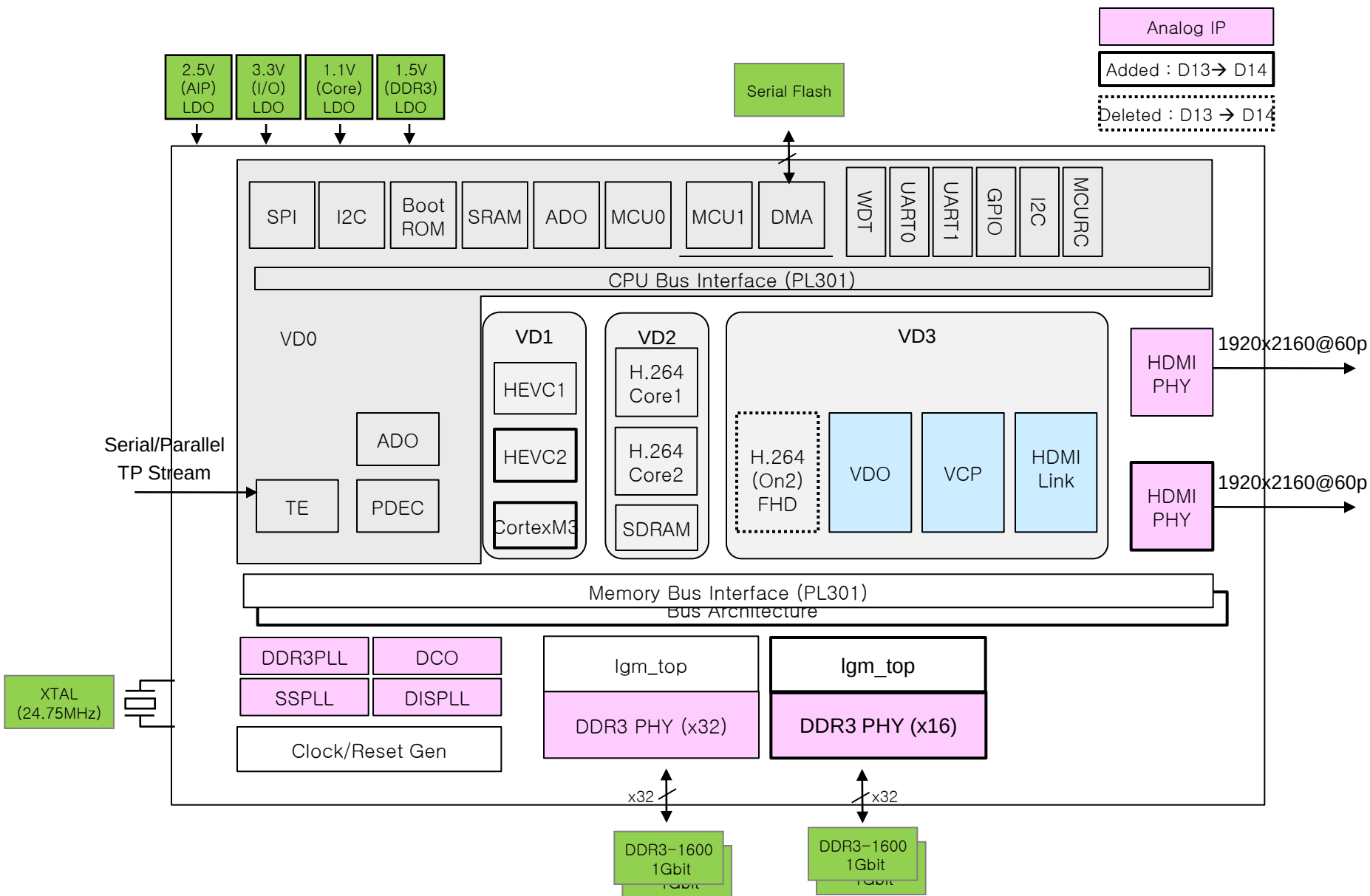
H13 Block Diagram (Internal)



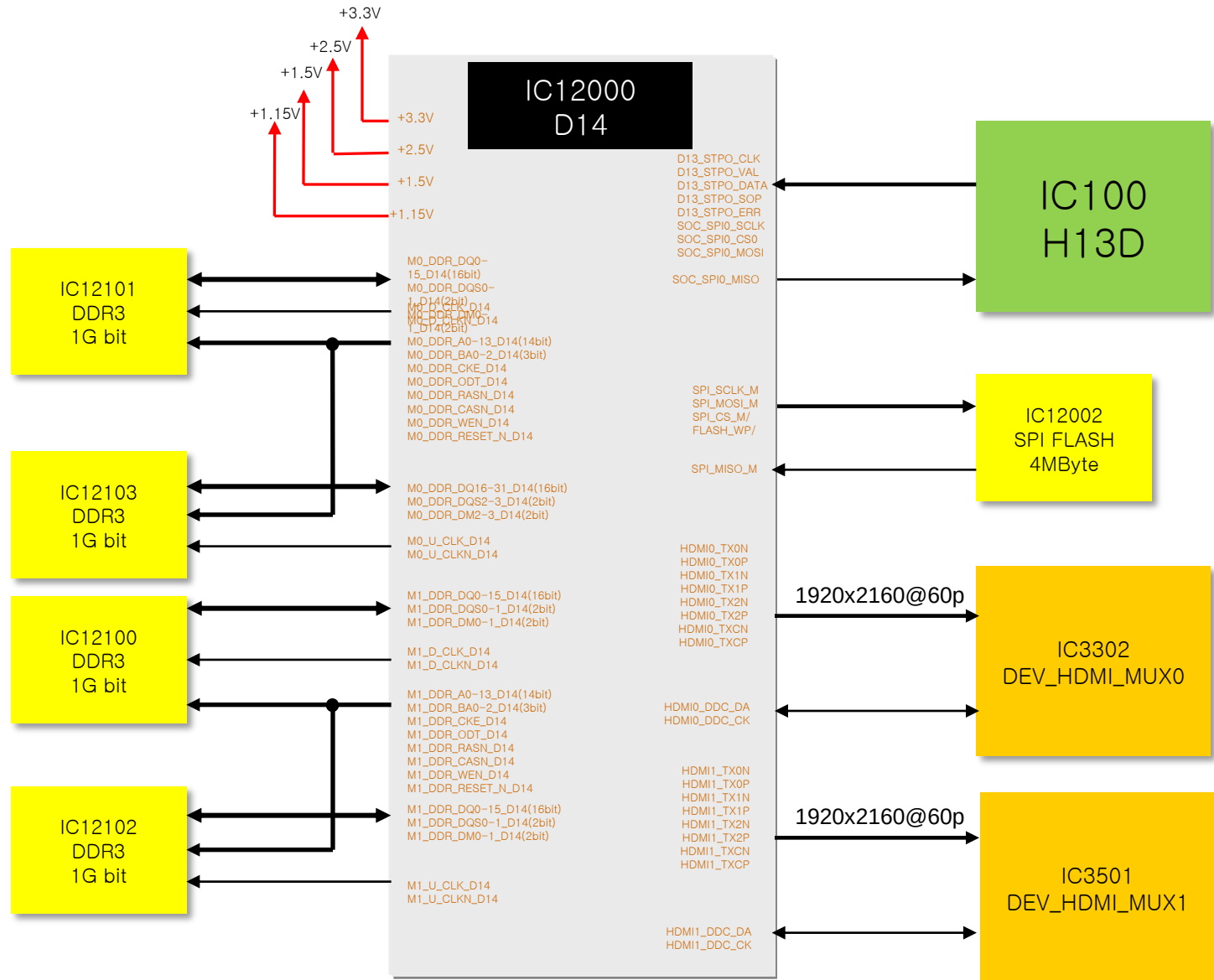
Data Path Diagram



D14 Block Diagram (Internal)

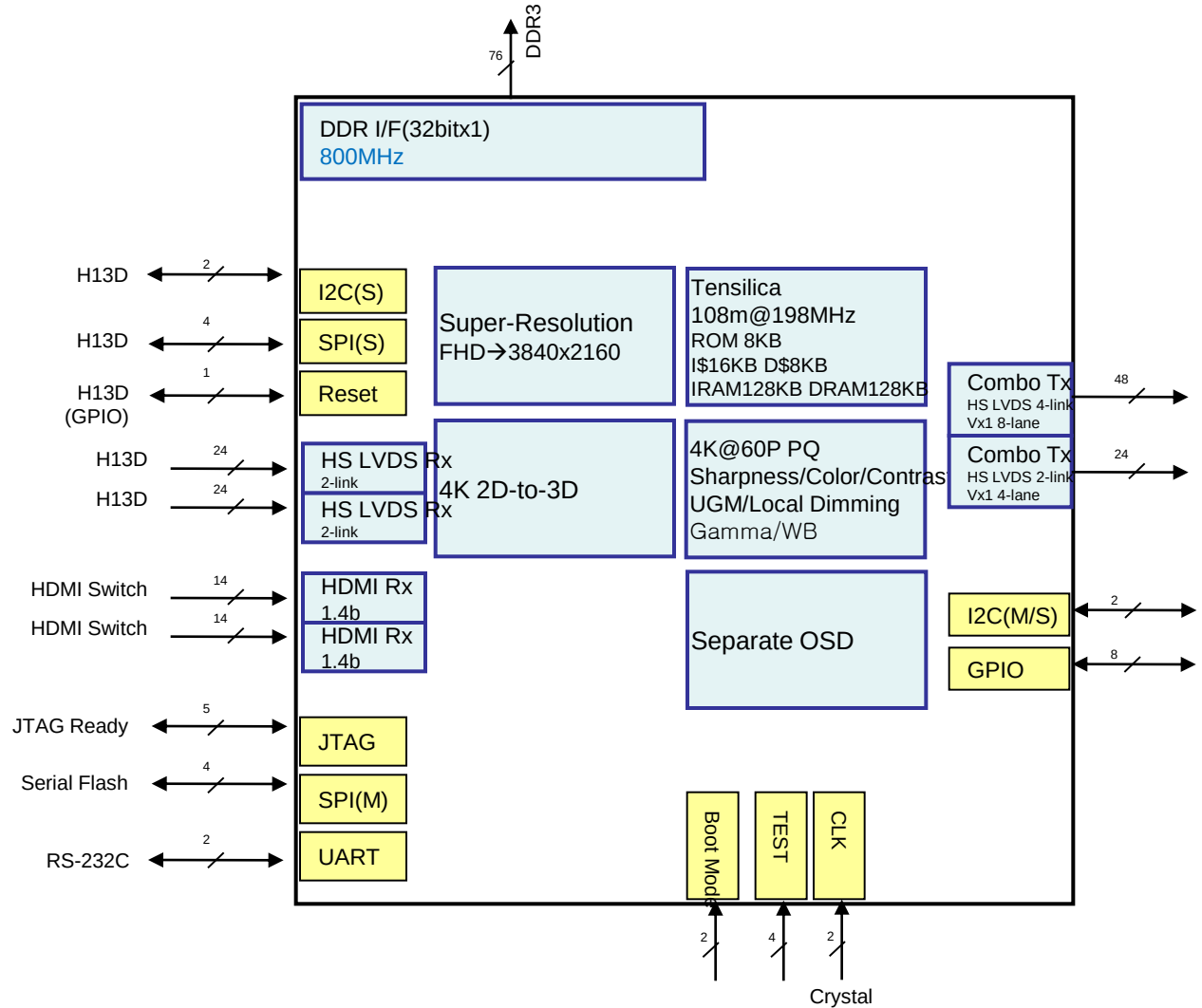


D14 Block Diagram (External)

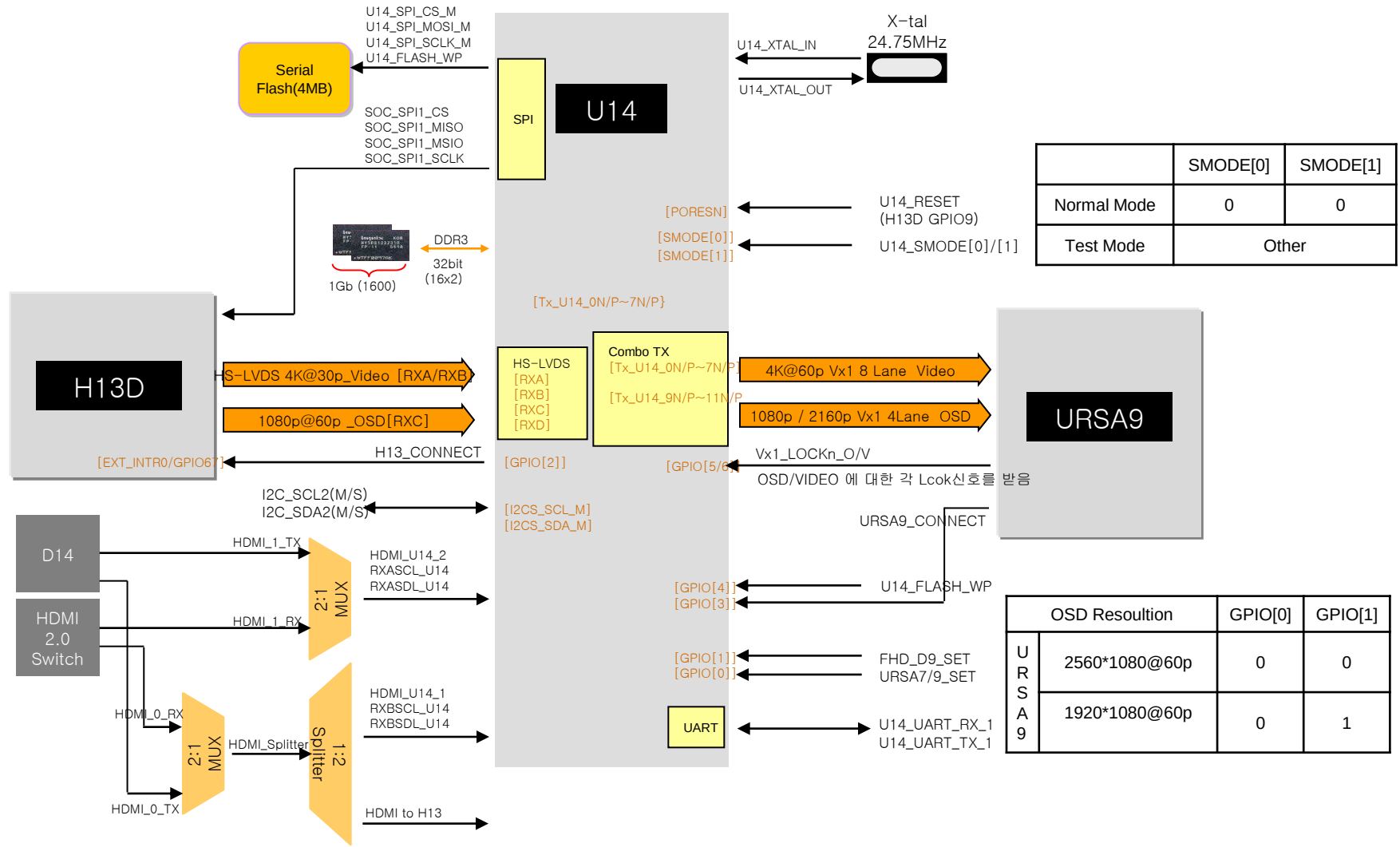


U14 Block Diagram (Internal)

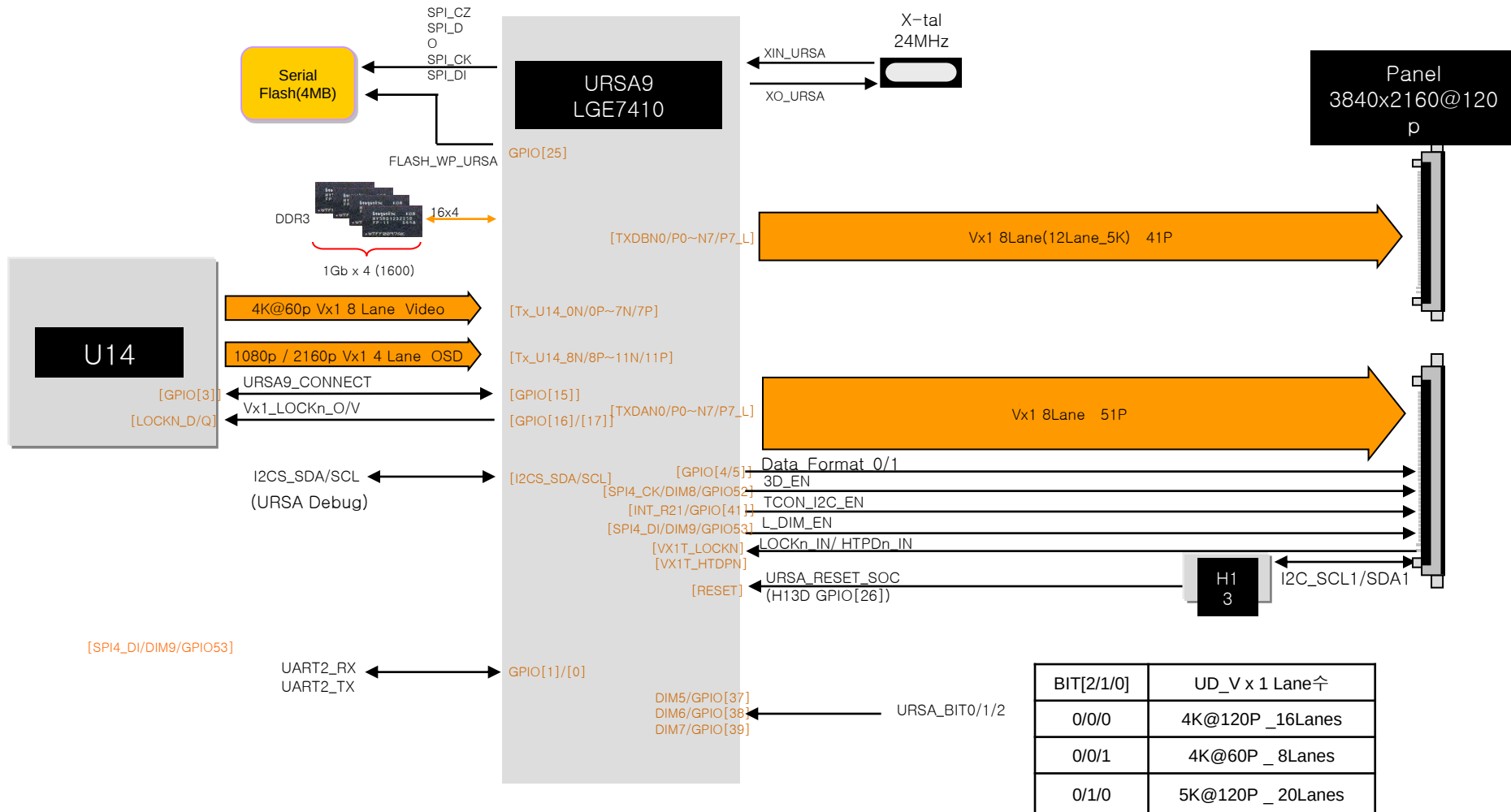
- MCU
 - ✓ Tensilica's 108mini
- Memory
 - ✓ Unified memory architecture
 - ✓ DDR3-1600MHz 32bit
- Interface
 - ✓ Input
 - : HS-LVDS 4-link (2+2)
 - : HDMI1.4 2-port
 - ✓ Output
 - : HS-LVDS 6-link (4+2)
 - : Vx1 12-lane (8+4)
- PKG
 - ✓ 23X23 FcBGA



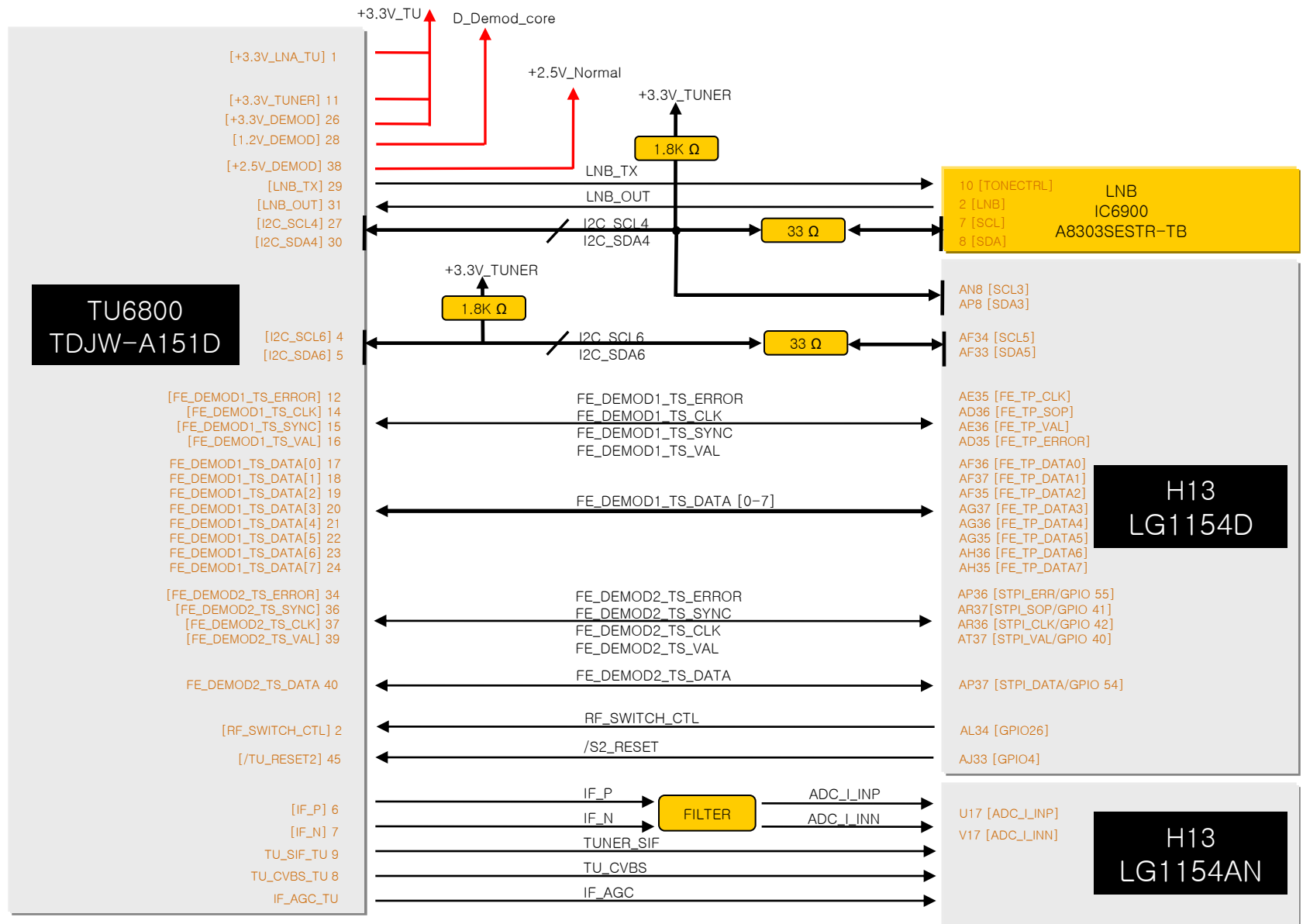
U14 Block Diagram (External)



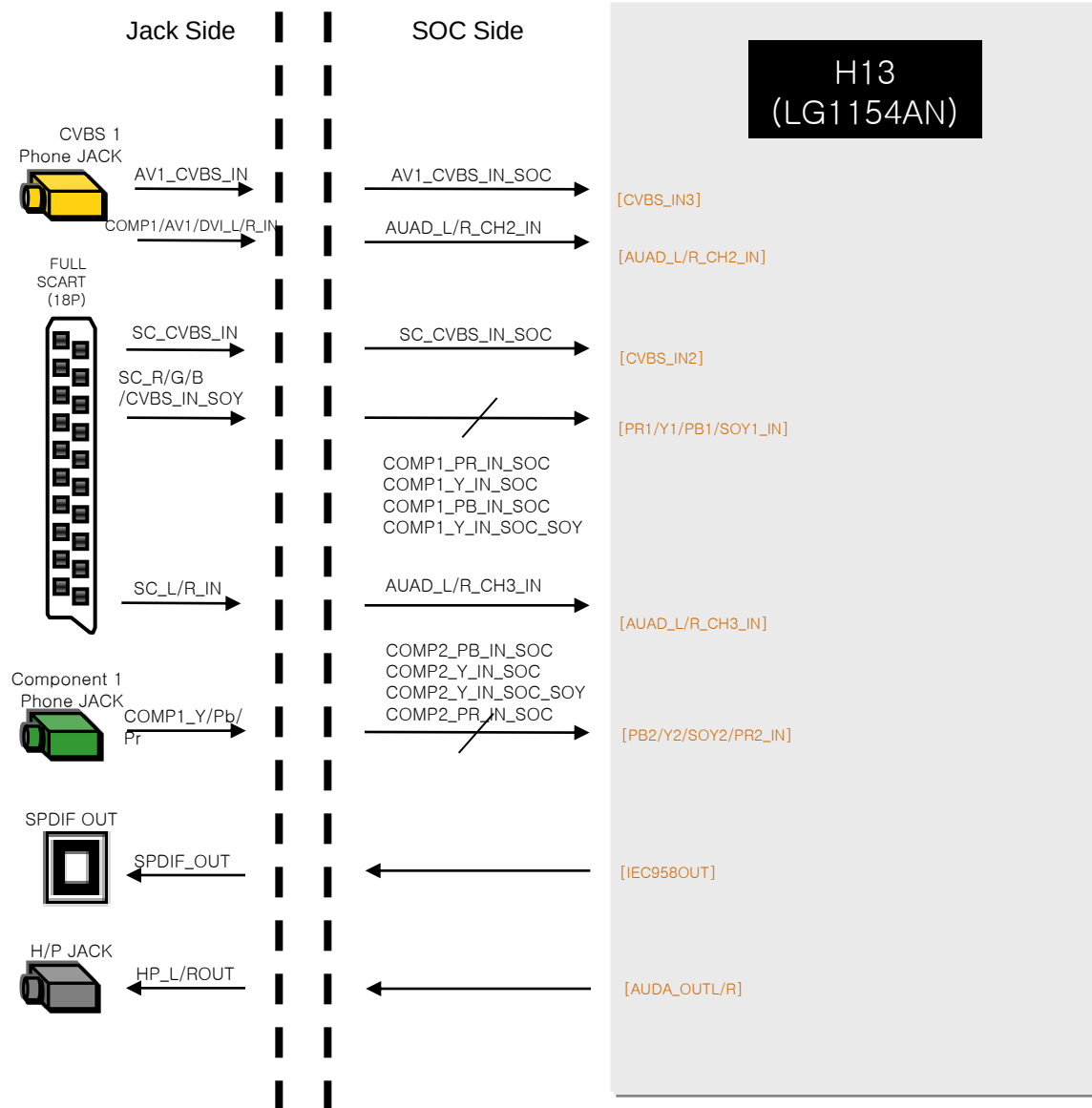
URSA9 Block Diagram



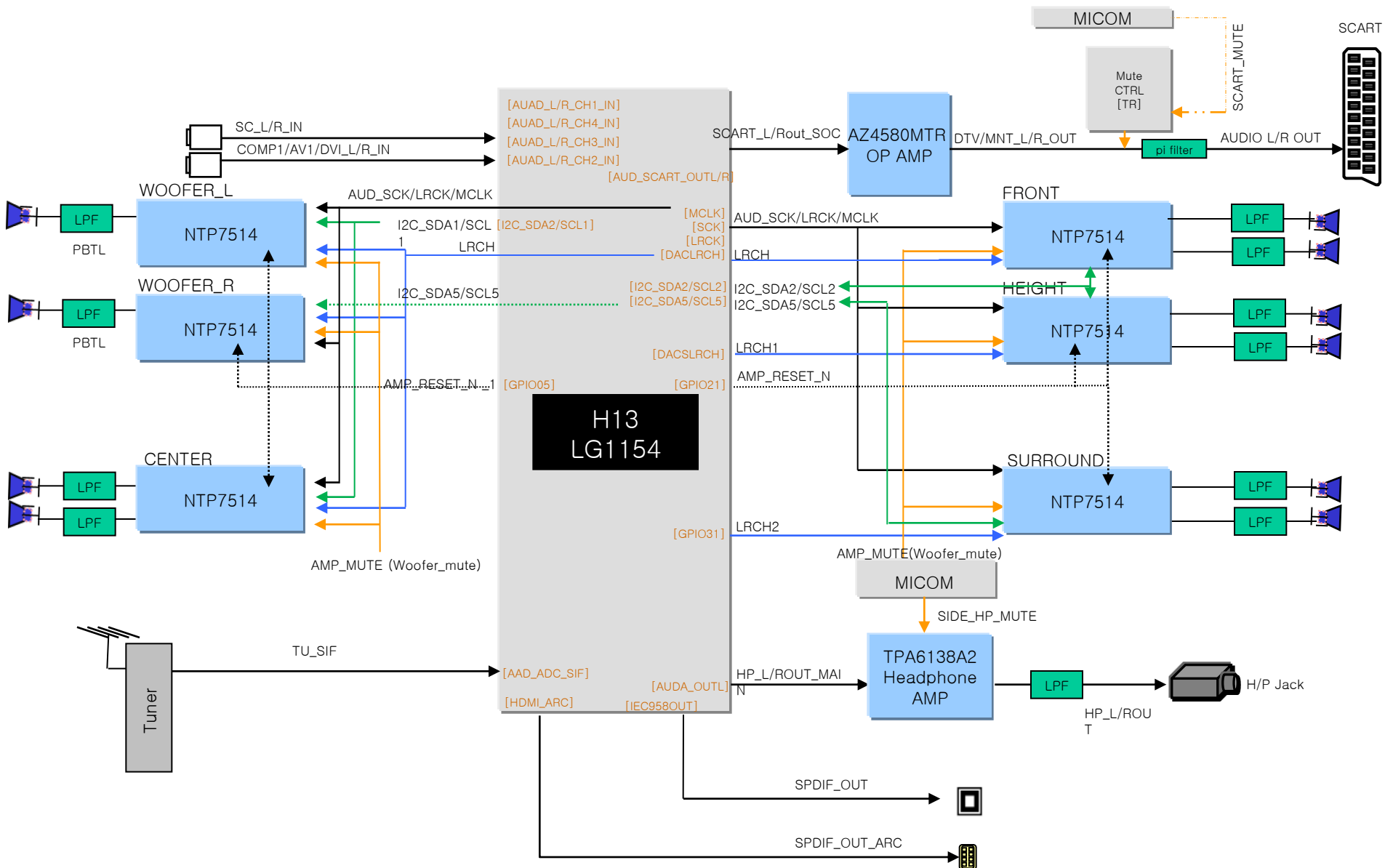
Tuner



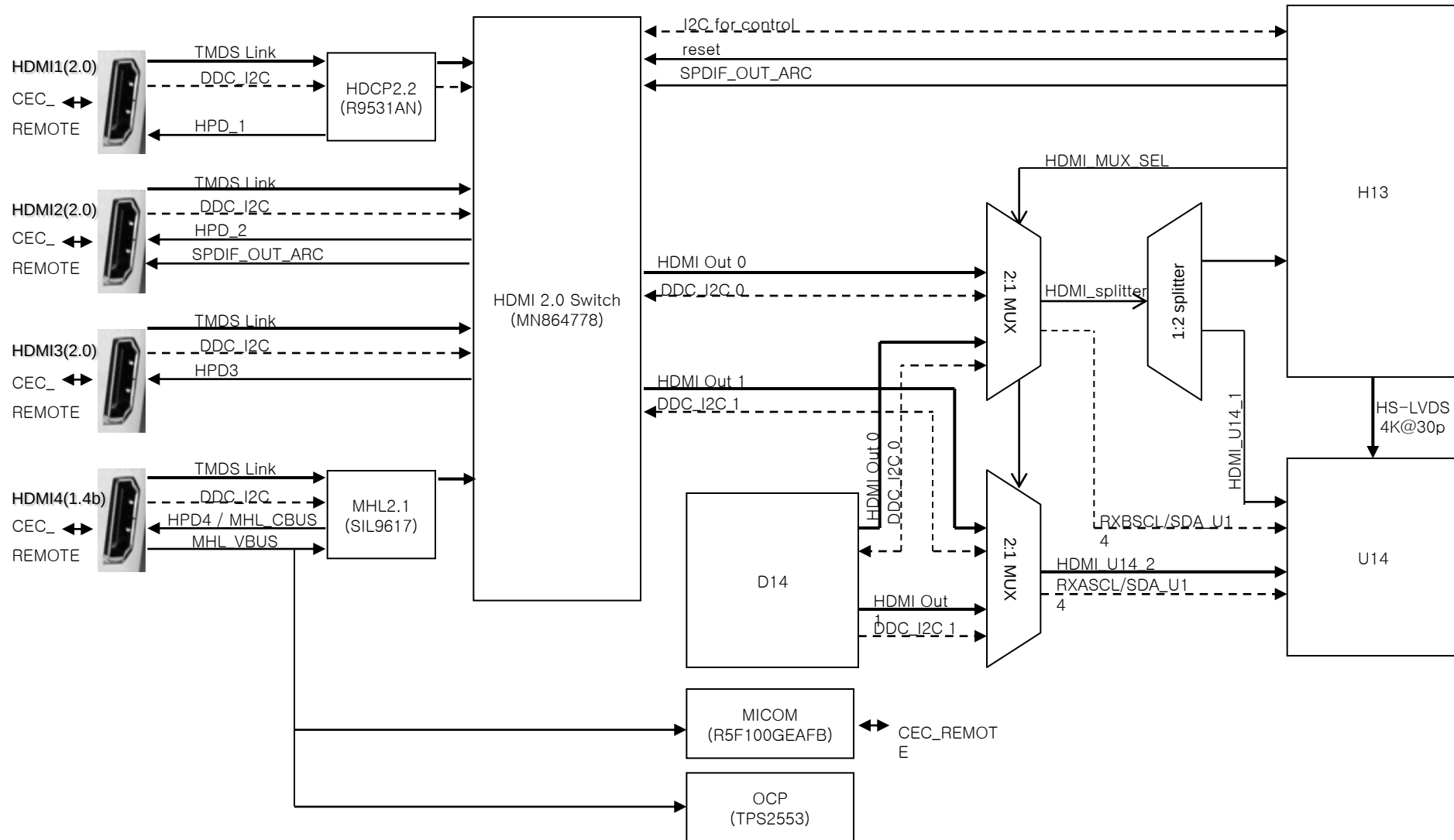
Video & Audio IN/OUT



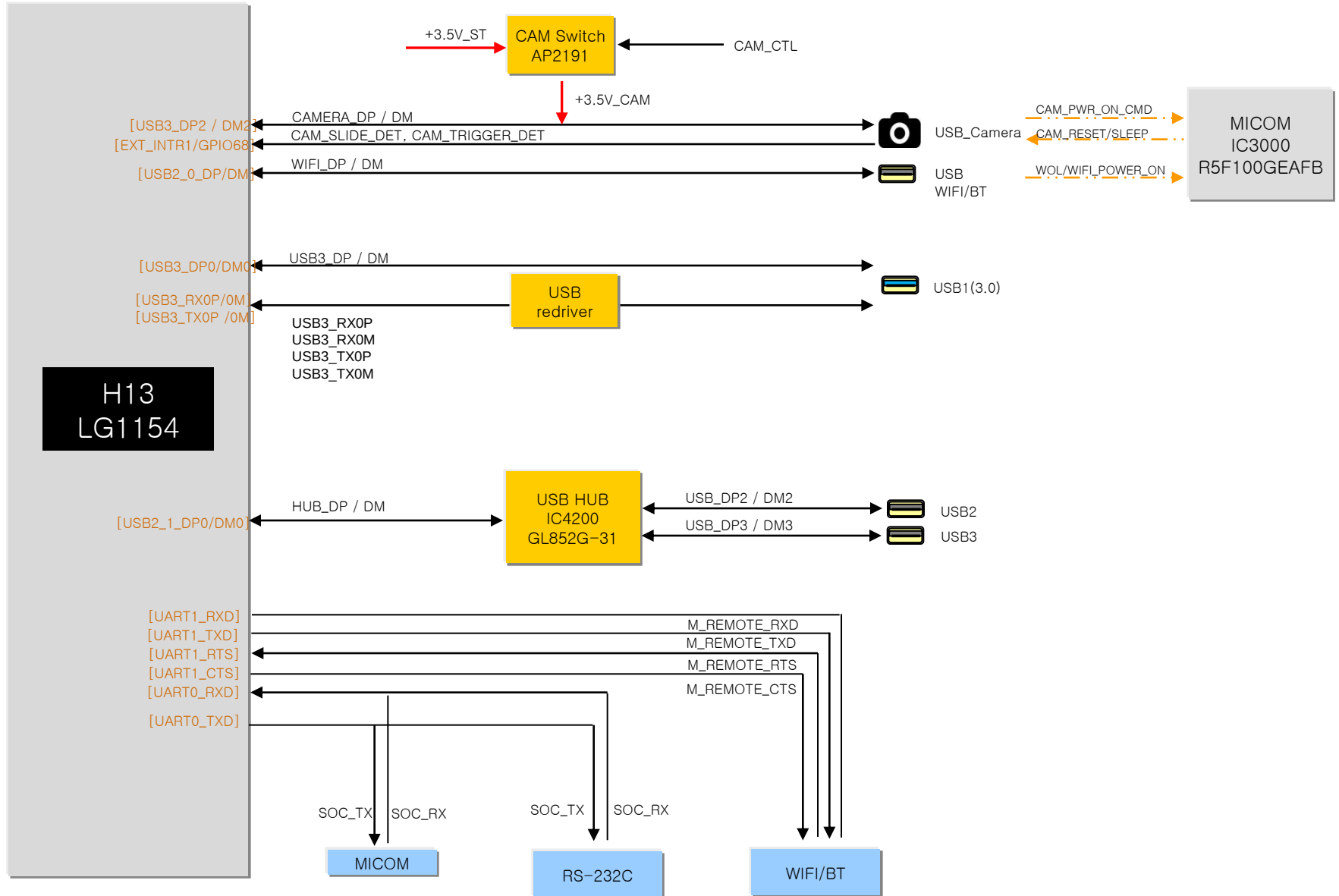
Audio OUT



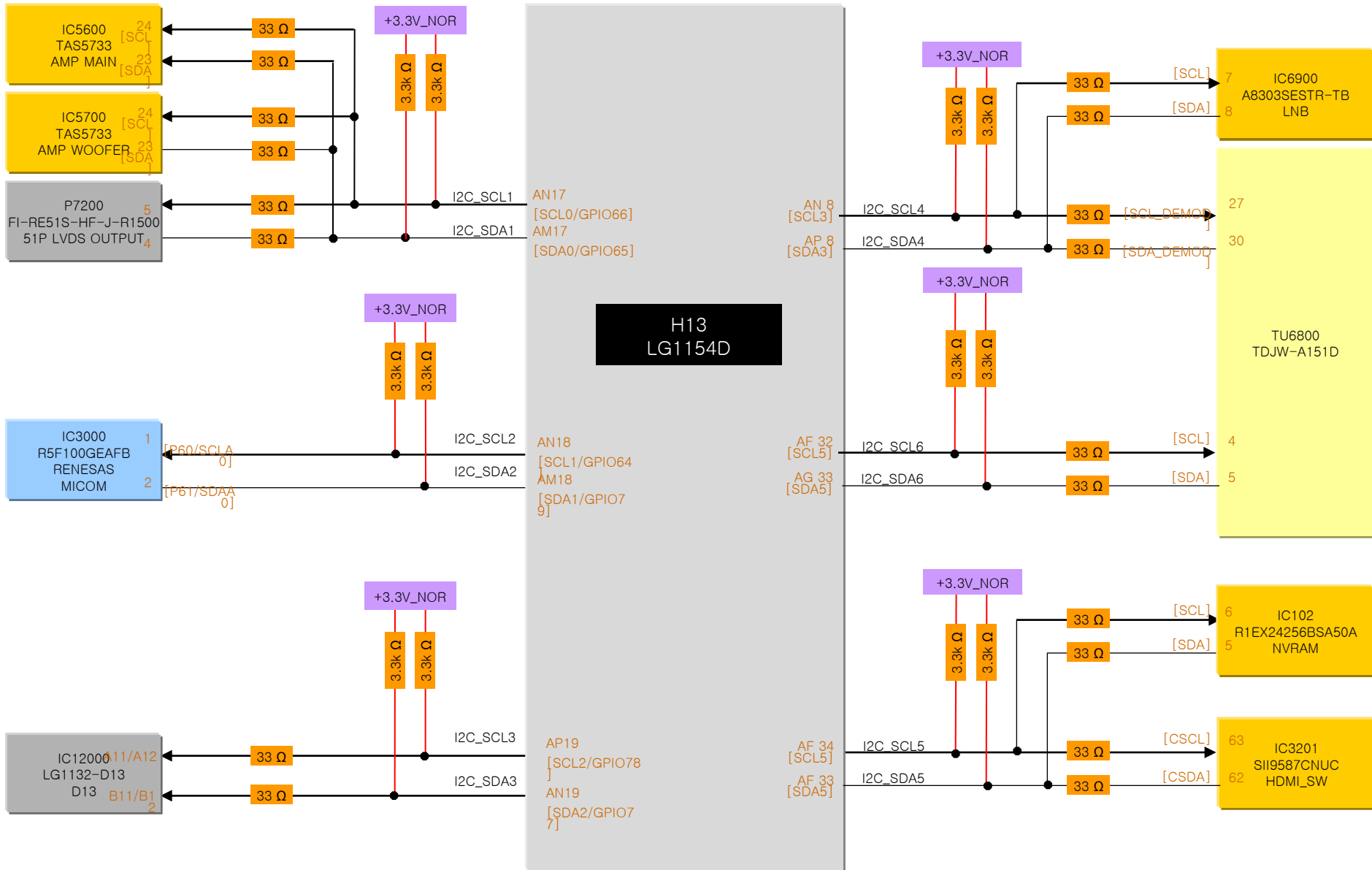
HDMI2.0 Block



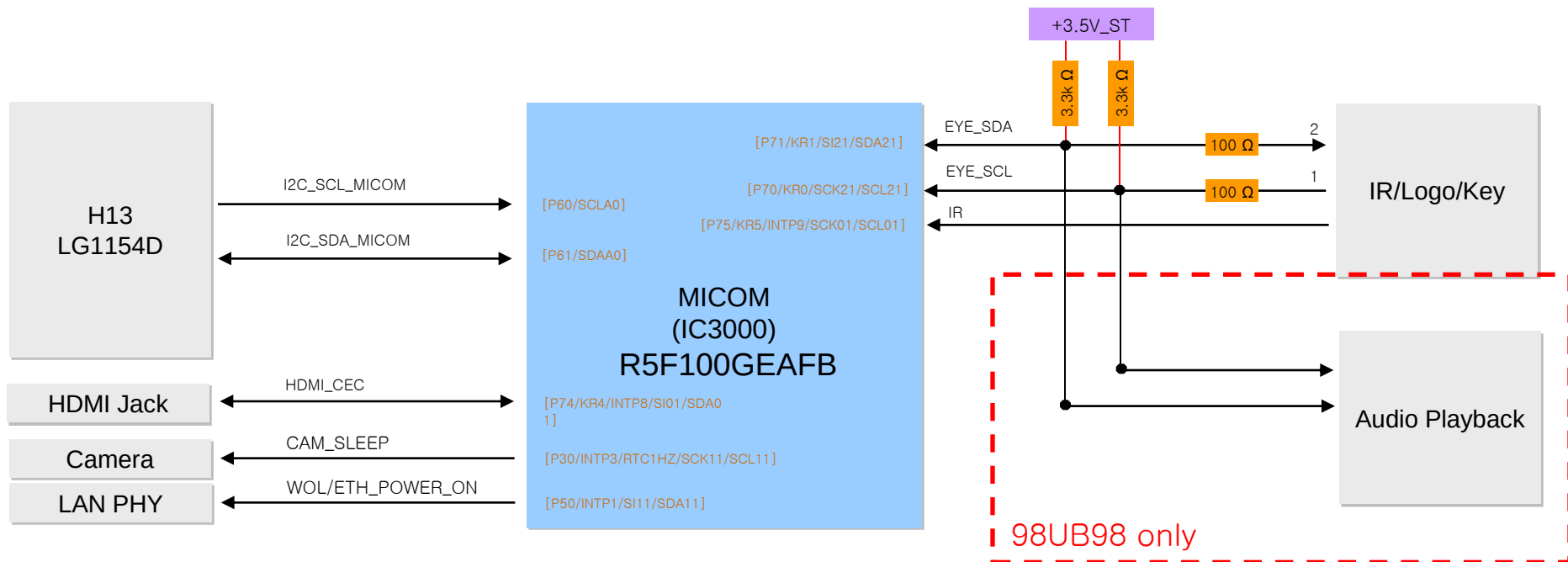
USB / WIFI / M-REMOTE / UART



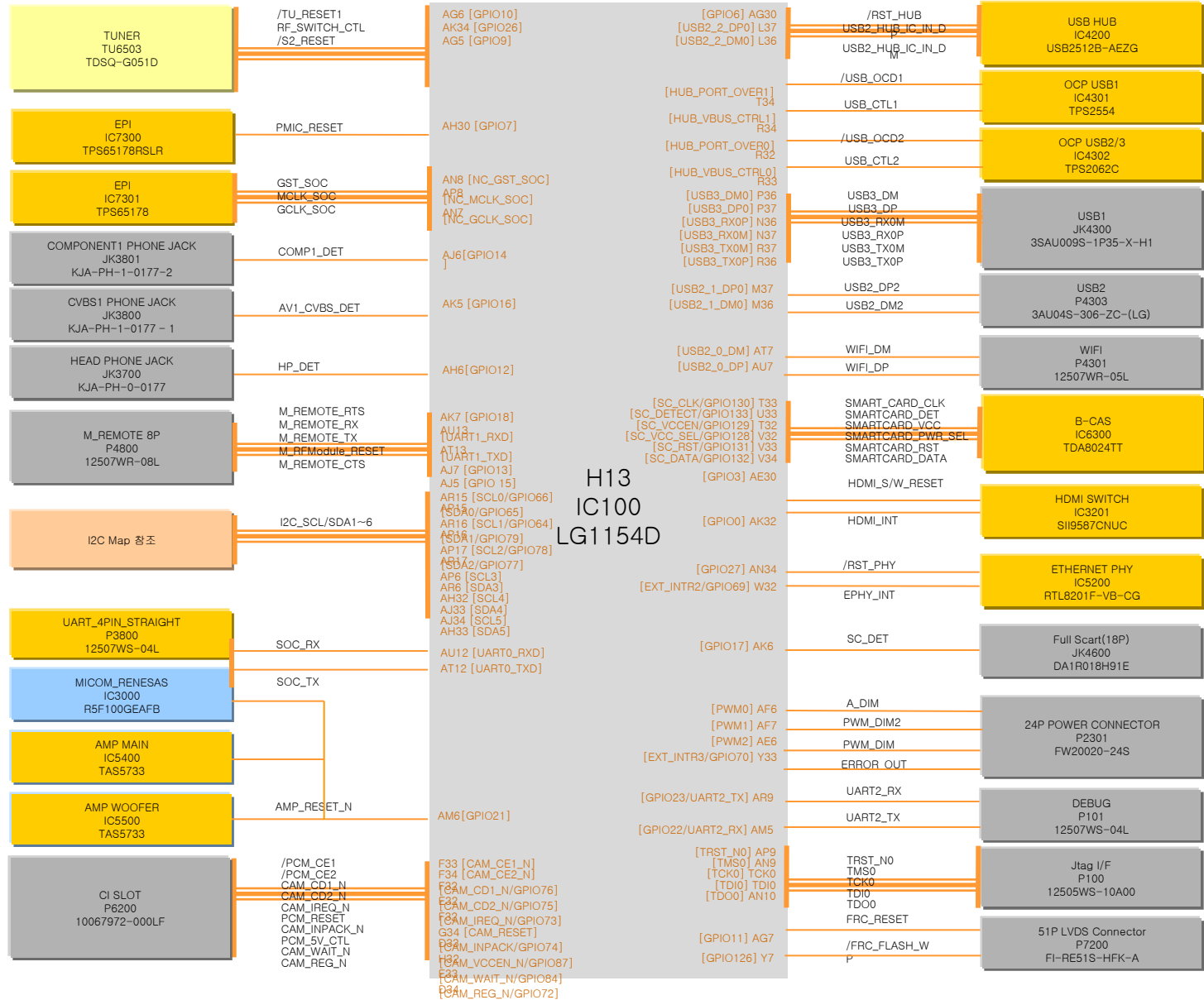
I2C Map (H13)



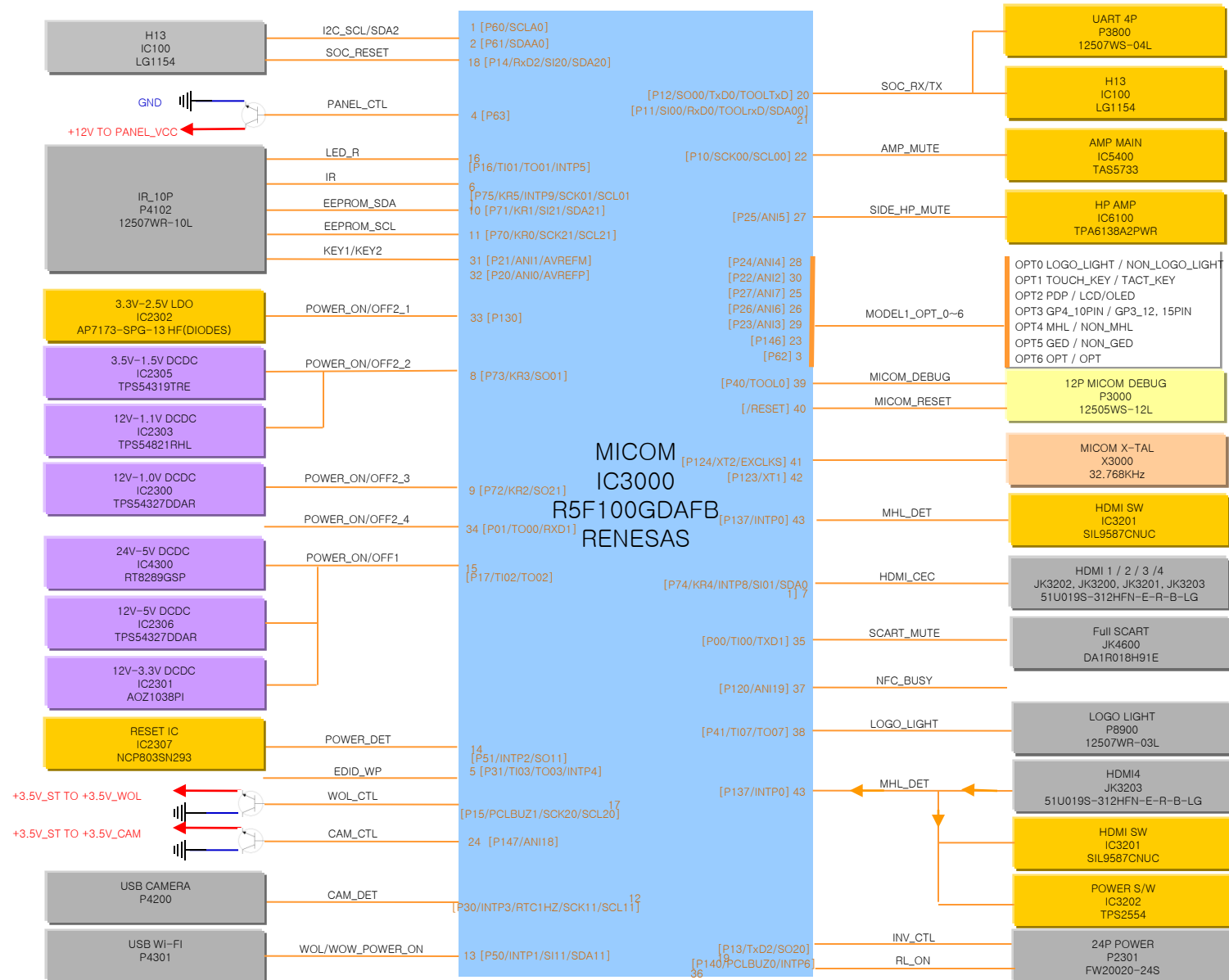
I2C Map (MICOM)



16. GPIO (H13)



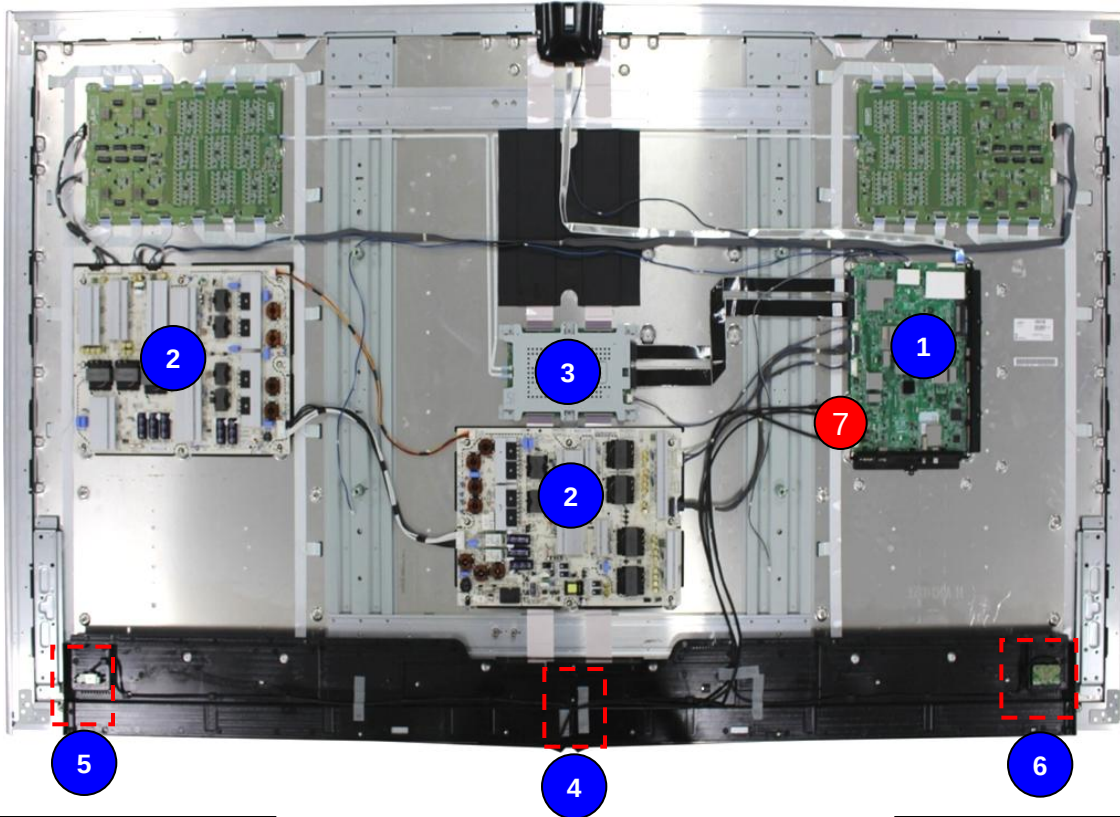
GPIO (MICOM)



Interconnection – sub PCB (98UB98)

[PCBs]

- 1 Main PCB
- 2 PSU
- 3 T - CON
- 4 LOGO + IR Jog Key
- 5 BT MOTION ASSY
- 6 WIFI ASSY



BT MOTION ASSY

WIFI ASSY

7

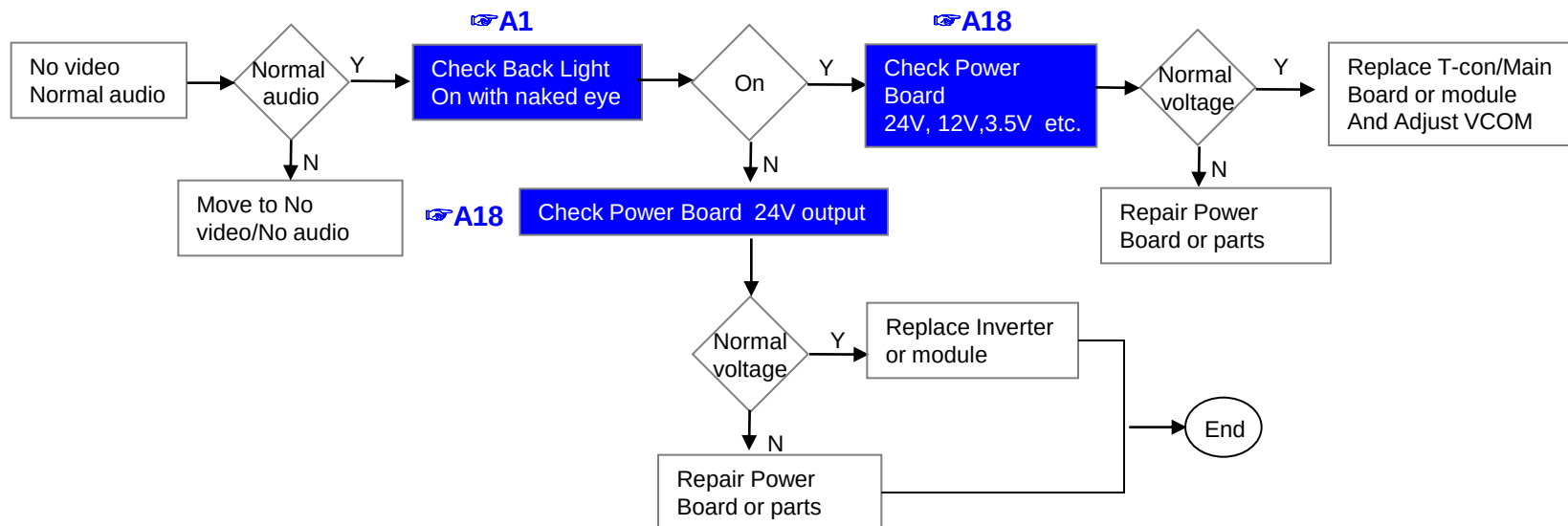
To Main

Contents of LCD TV Standard Repair Process

No.	Error symptom (High category)	Error symptom (Mid category)	Page	Remarks
1	A. Video error	No video/Normal audio	1	
2		No video/No audio	2	
3		Picture broken/ Freezing	3	
4		Color error	4	
5		Vertical/Horizontal bar, residual image, light spot, external device color error	5	
6	B. Power error	No power	6	
7		Off when on, off while viewing, power auto on/off	7	
8	C. Audio error	No audio/Normal video	8	
9		Wrecked audio/discontinuation/noise	9	
10	D. Function error	Remote control & Local switch checking	10	
11		MR13 operating checking	11	
12		Wifi operating checking	12	
13		Camera operating checking	13	
14		External device recognition error	14	
15	E. Noise	Circuit noise, mechanical noise	15	
16	F. Exterior error	Exterior defect	16	

LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		No video/ Normal audio	Revised date		1/16

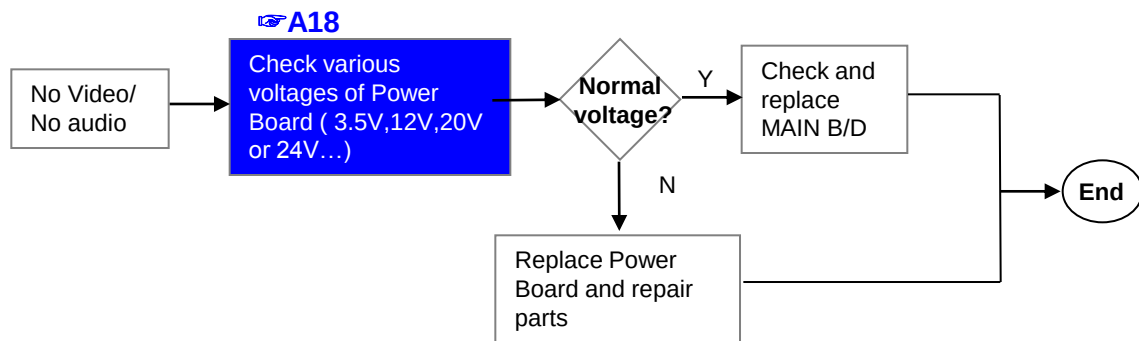
First of all, Check whether all of cables between board is inserted properly or not.
(Main B/D↔ Power B/D, LVDS Cable, Speaker Cable, IR B/D Cable,,)



※Precaution A4 & A2



LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		No video/ No audio	Revised date		2/16



LCD TV

Error
symptom

A. Video error

Established
date

2013.01.31

Picture broken/ Freezing

Revised date

3/16

👉 A3

Check RF Signal level

- . By using Digital signal level meter
- . By using Diagnostics menu on OSD
(Setting → Quick Setting → Programmes → Programme Tuning → Manual Tuning → Check the Signal)
- Signal strength (Normal : over 50%)
- Signal Quality (Normal: over 50%)

Normal
Signal?

Y

Check whether other equipments have problem or not.
(By connecting RF Cable at other equipment)
→ DVD Player ,Set-Top-Box, Different maker TV etc`

N

Check RF Cable
Connection
1. Reconnection
2. Install Booster

Normal
Picture?

N

Contact with signal distributor
or broadcaster (Cable or Air)

Y

Close

Normal
Picture?

Y

👉 A4

Check
S/W VersionSVC
Bulletin?

N

S/W Upgrade

Normal
Picture?

N

Close

Y

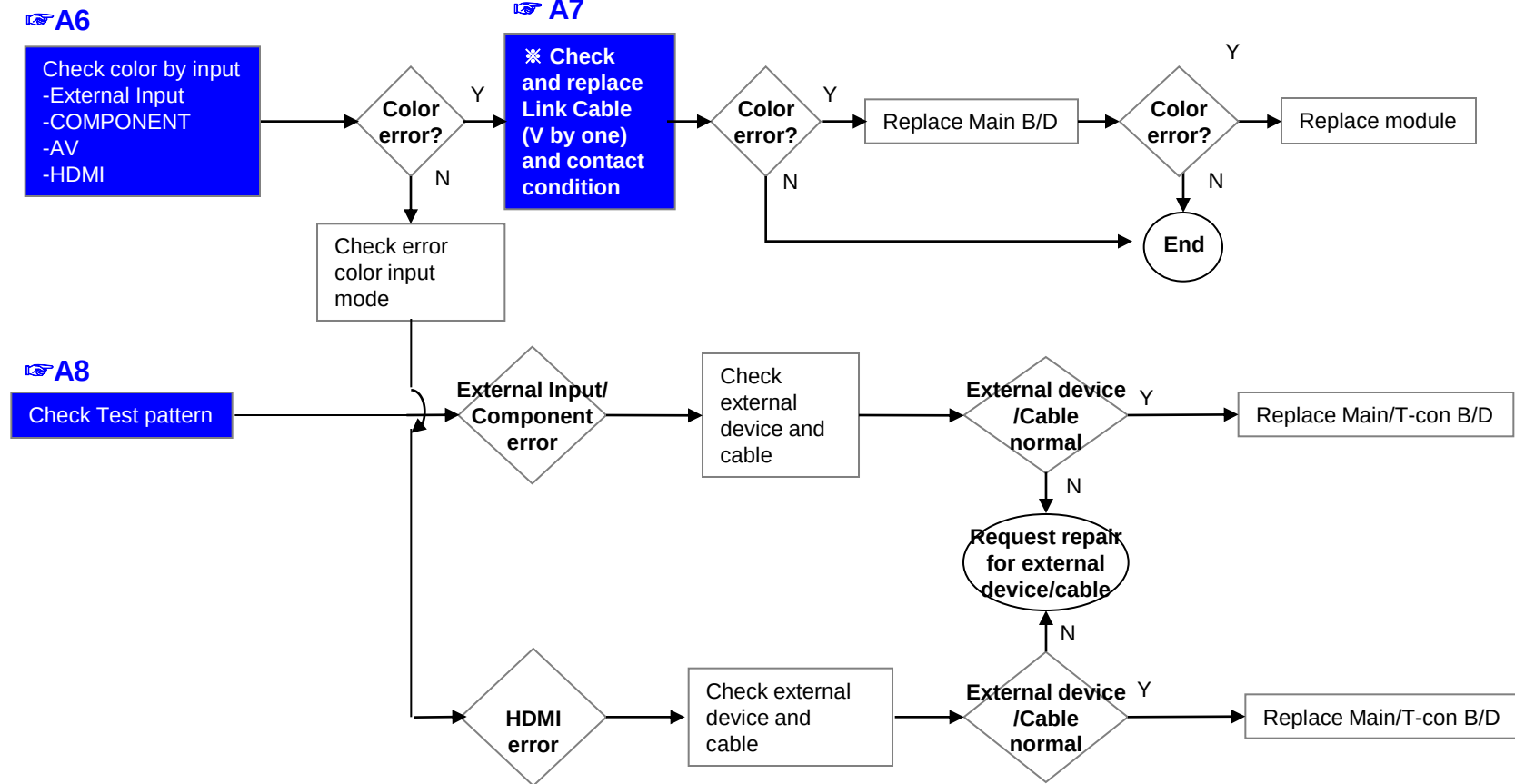
Check
Tuner soldering

N

Replace
Main B/D

Close

LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		Color error	Revised date		4/16



LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		Vertical / Horizontal bar, residual image, light spot, external device color error	Revised date		5/16

Vertical/Horizontal bar, residual image, light spot

A6

Check color condition by input
-External Input
-Component
-HDMI

Screen normal?

Replace module

Check external device connection condition

Normal?

Request repair for external device

A7

Check and replace Link Cable

Screen normal?

End

Replace Main/T-con B/D (adjust VCOM)

For LGD panel

Replace Main B/D

For other panel

Screen normal?

End

Replace Module

A8

Check Test pattern

External device screen error-Color error

Check S/W Version

Check version

S/W Upgrade

Normal screen?

End

Check screen condition by input
-External Input
-Component
-HDMI/DVI

External Input error

Component error

HDMI/DVI

Connect other external device and cable (Check normal operation of External Input, Component, RGB and HDMI/DVI by connecting Jig, pattern Generator, Set-top Box etc.)

Connect other external device and cable (Check normal operation of External Input, Component, RGB and HDMI/DVI by connecting Jig, pattern Generator, Set-top Box etc.)

Screen normal?

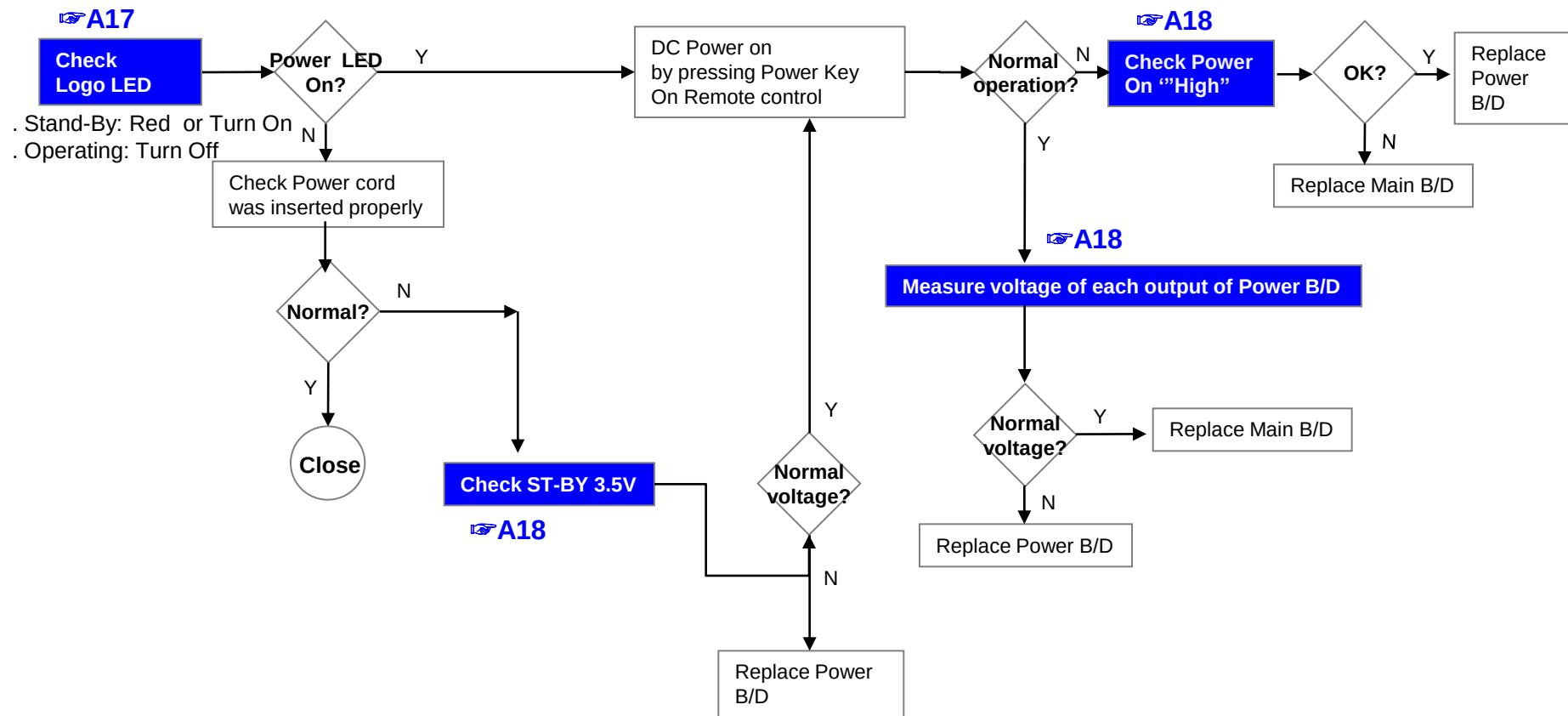
Replace Main/T-con B/D

Request repair for external device

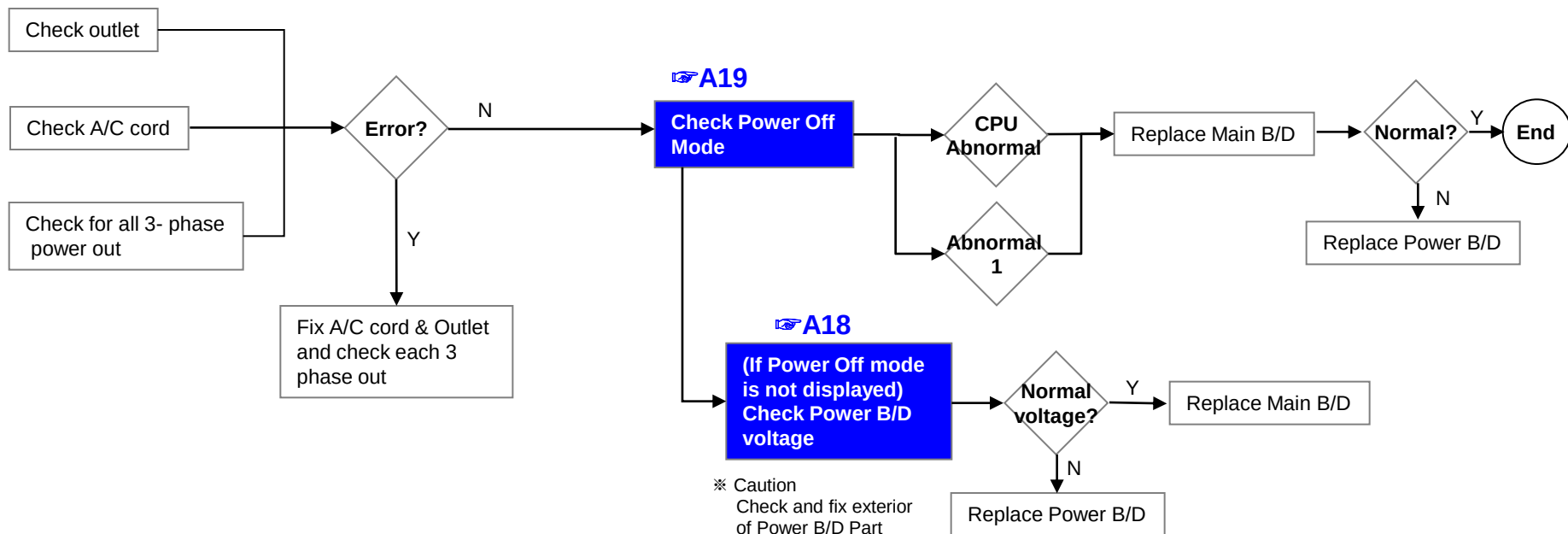
Screen normal?

Replace Main /T-con B/D

LCD TV	Error symptom	B. Power error	Established date	2013.01.31	
		No power	Revised date		6/16



LCD TV	Error symptom	B. Power error	Established date	2013.01.31	
		Off when on, off while viewing, power auto on/off	Revised date		7/16



* Please refer to the all cases which can be displayed on power off mode.

Status	Power off List	Explanation
Normal	"POWEROFF_REMOTEKEY"	Power off by REMOTE CONTROL
	"POWEROFF_OFFTIMER"	Power off by OFF TIMER
	"POWEROFF_SLEEPTIMER"	Power off by SLEEP TIMER
	"POWEROFF_INSTOP"	Power off by INSTOP KEY
	"POWEROFF_AUTOOFF"	Power off by AUTO OFF
	"POWEROFF_ONTIMER"	Power off by ON TIMER
	"POWEROFF_RS232C"	Power off by RS232C
	"POWEROFF_RESREC"	Power off by Reserved Record
	"POWEROFF_RECEND"	Power off by End of Recording
	"POWEROFF_SWDOWN"	Power off by S/W Download
	"POWEROFF_UNKNOWN"	Power off by unknown status except listed case
Abnormal	"POWEROFF_ABNORMAL1"	Power off by abnormal status except CPU trouble
	"POWEROFF_CPUABNORMAL"	Power off by CPU Abnormal

LCD TV

Error
symptom

C. Audio error

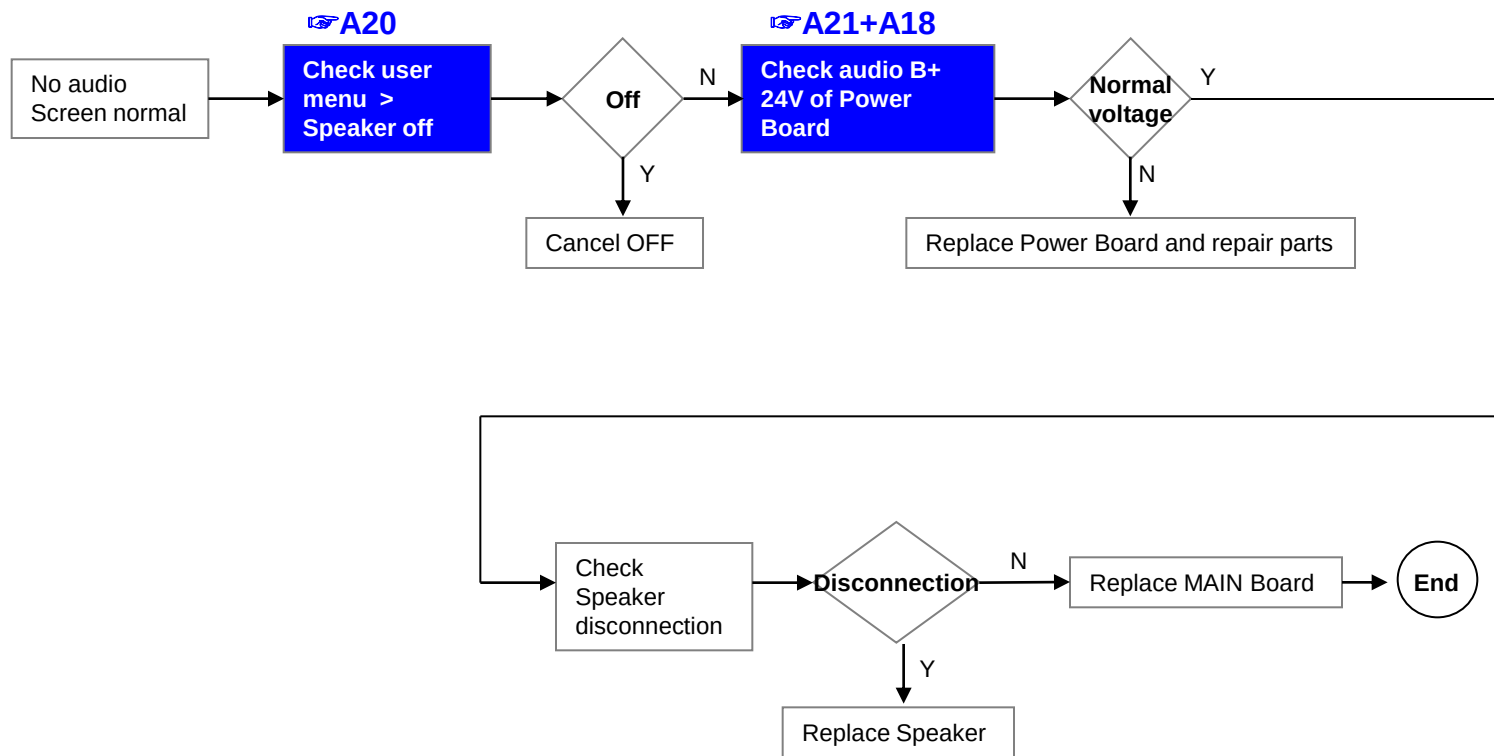
Established
date

2013.01.31

No audio/ Normal video

Revised date

8/16



LCD TV

Error
symptom

C. Audio error

Established
date

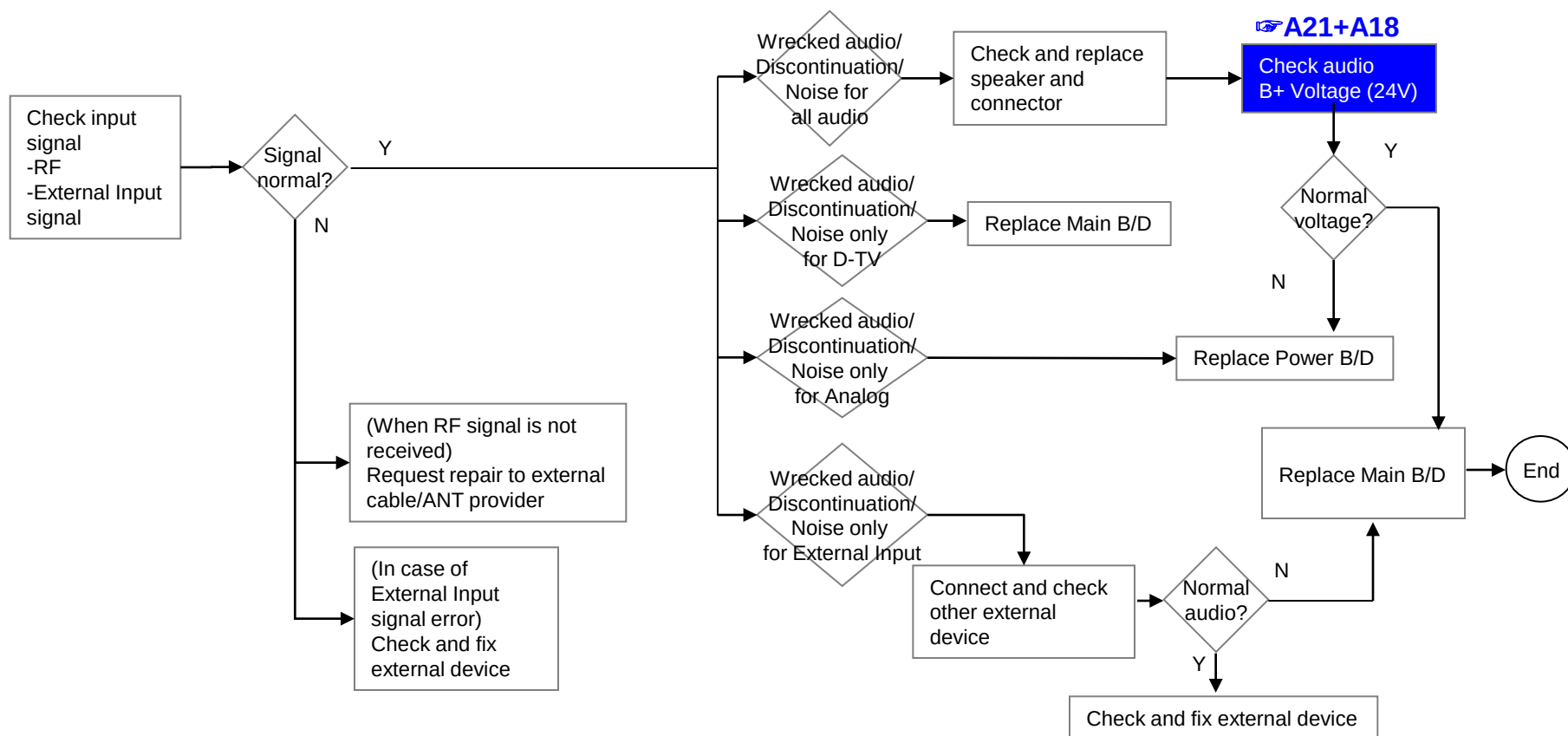
2013.01.31

Wrecked audio/ discontinuation/noise

Revised date

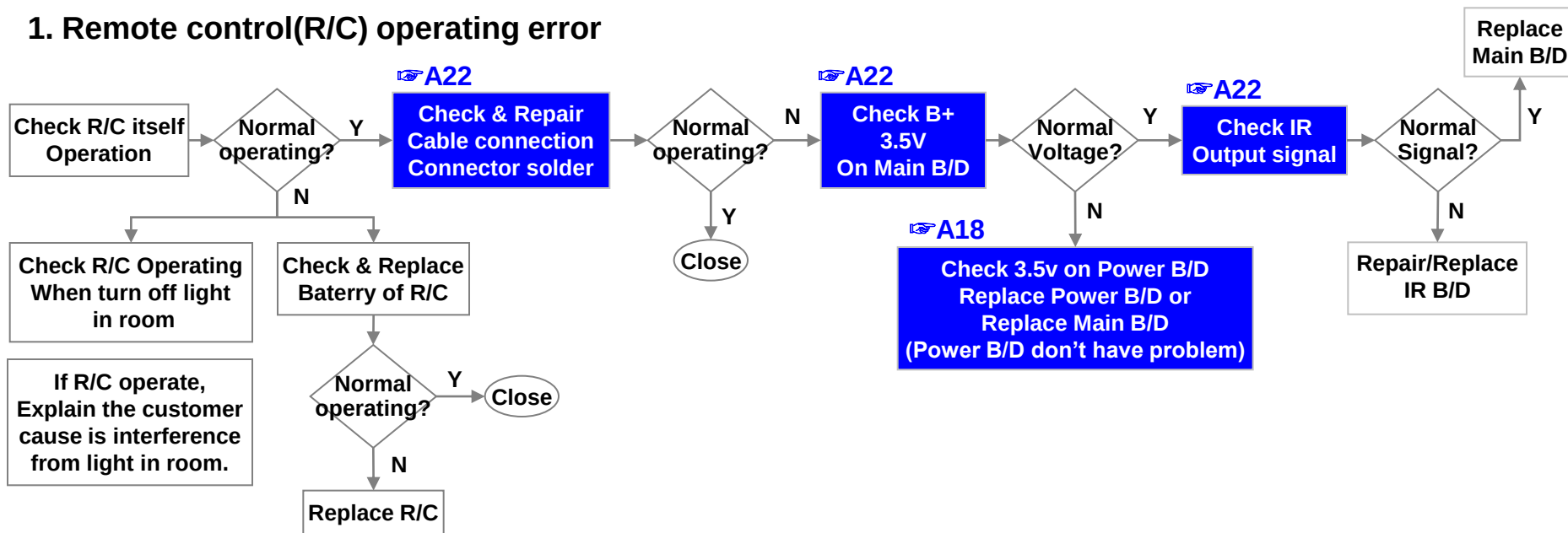
9/16

→ abnormal audio/discontinuation/noise is same after “Check input signal” compared to No audio



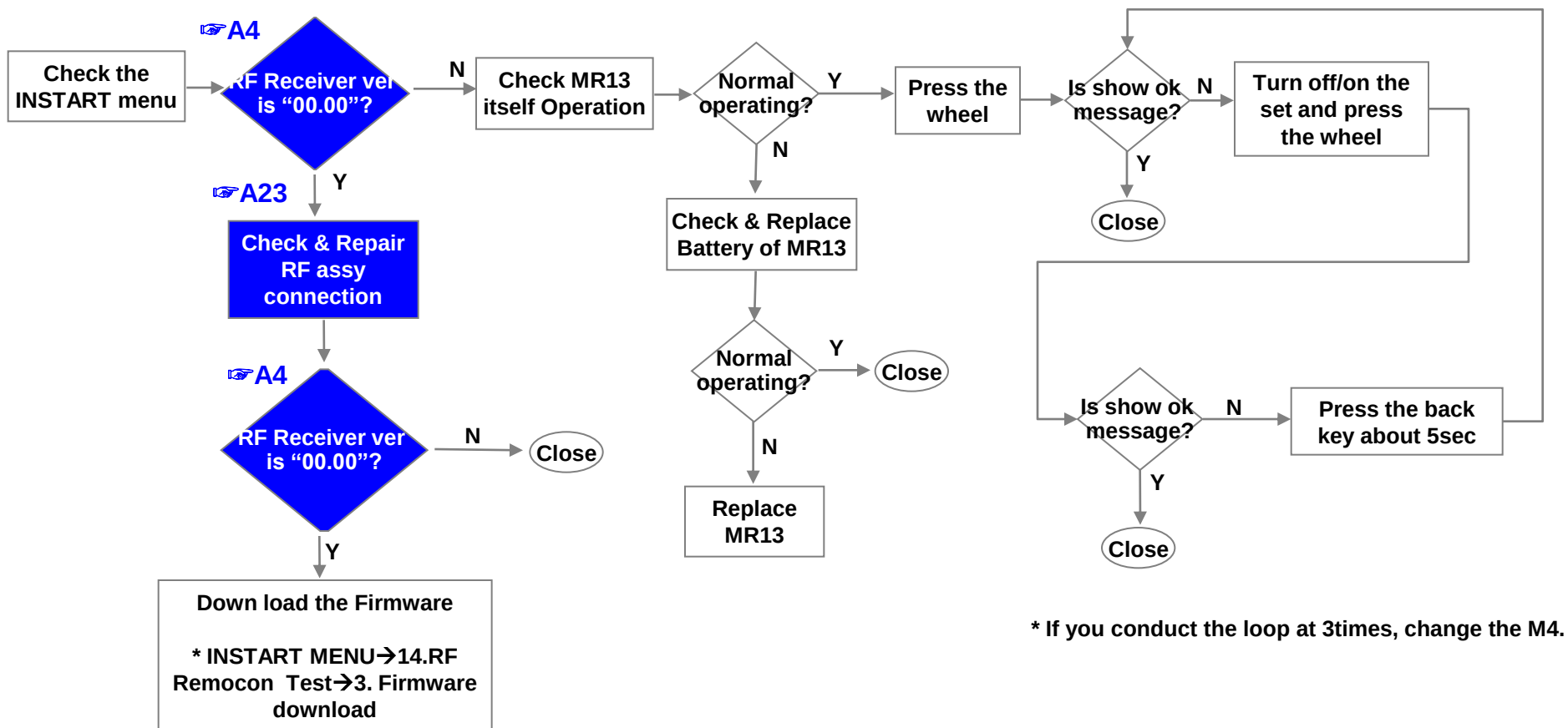
LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		Remote control & Local switch checking	Revised date		10/16

1. Remote control(R/C) operating error



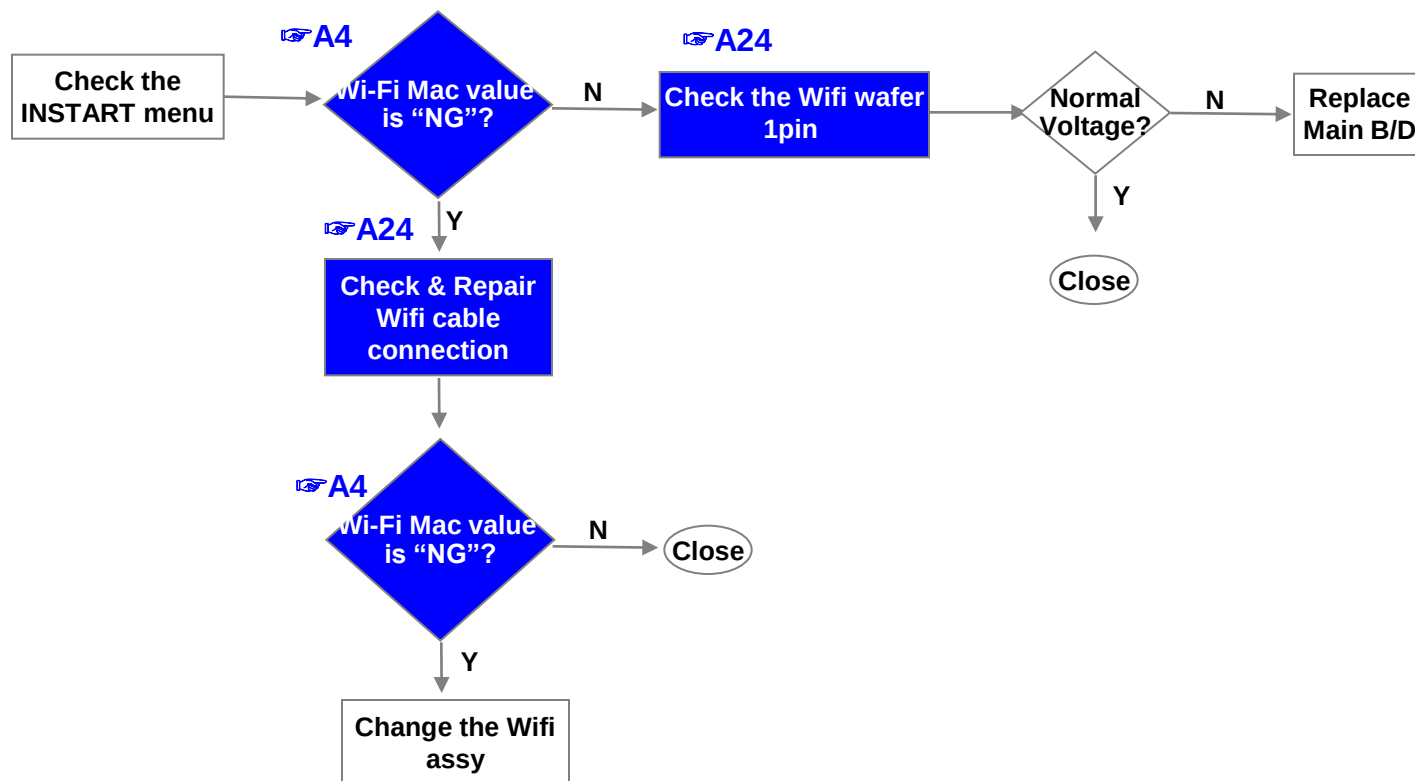
LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		MR13 operating checking	Revised date		

2. MR14(Magic Remocon) operating error



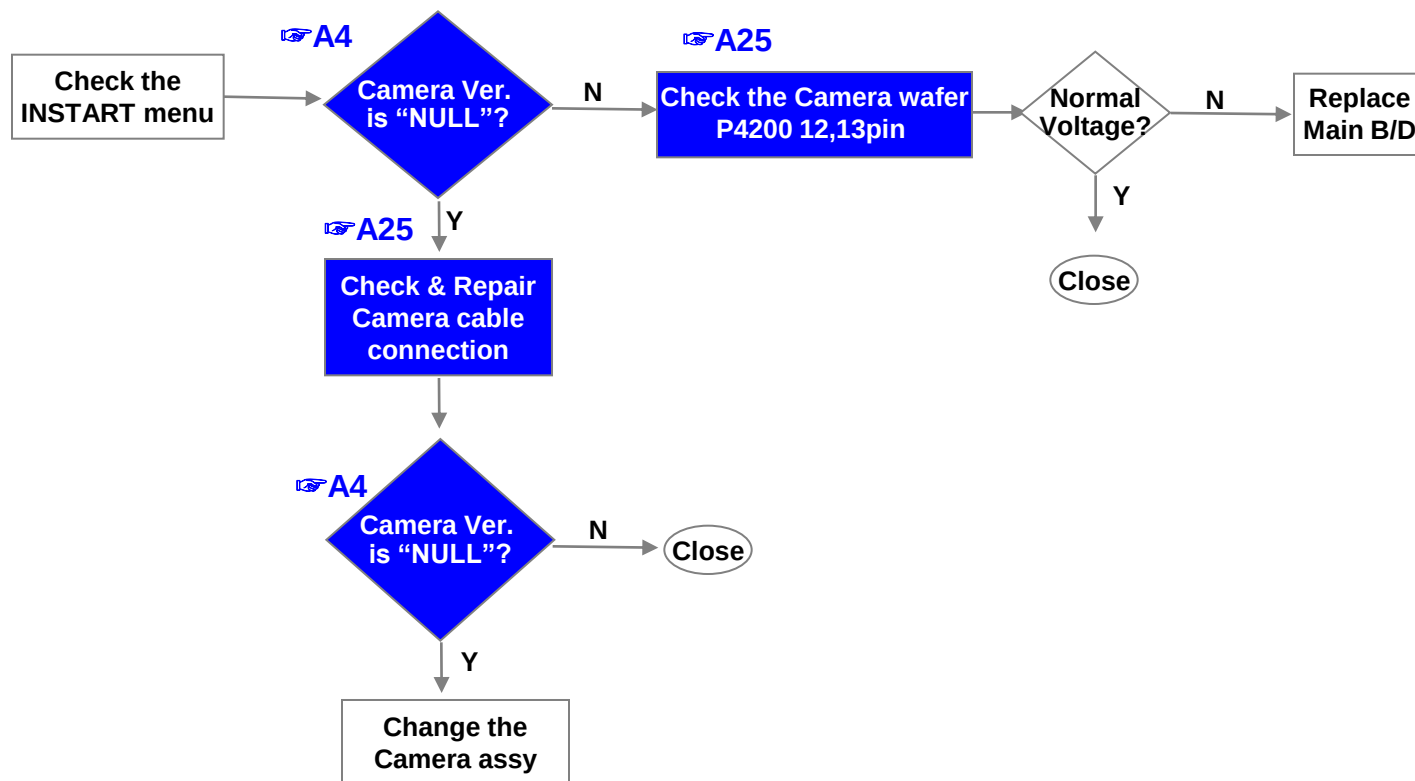
LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		Wifi operating checking	Revised date		12/16

3.Wifi operating error

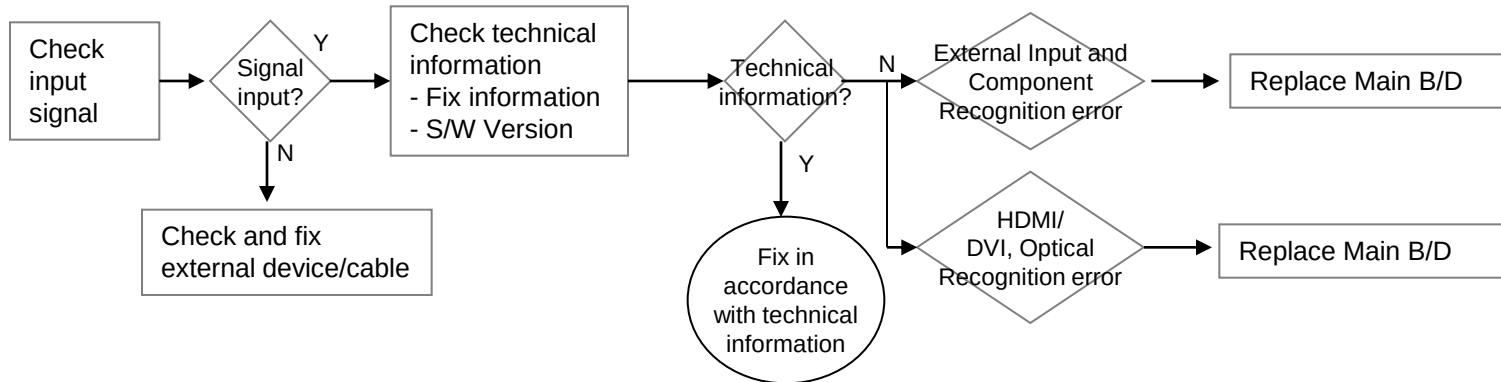


LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		Camera operating checking	Revised date		13/16

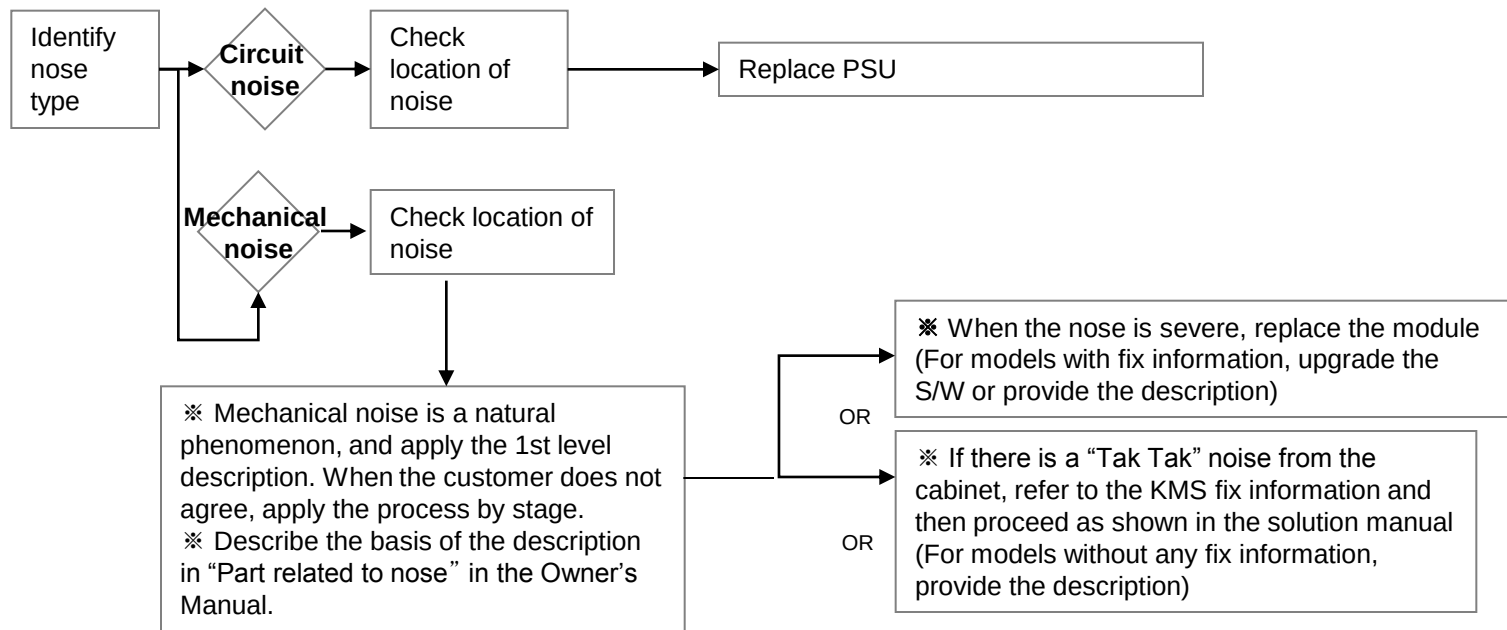
4.Camera operating error



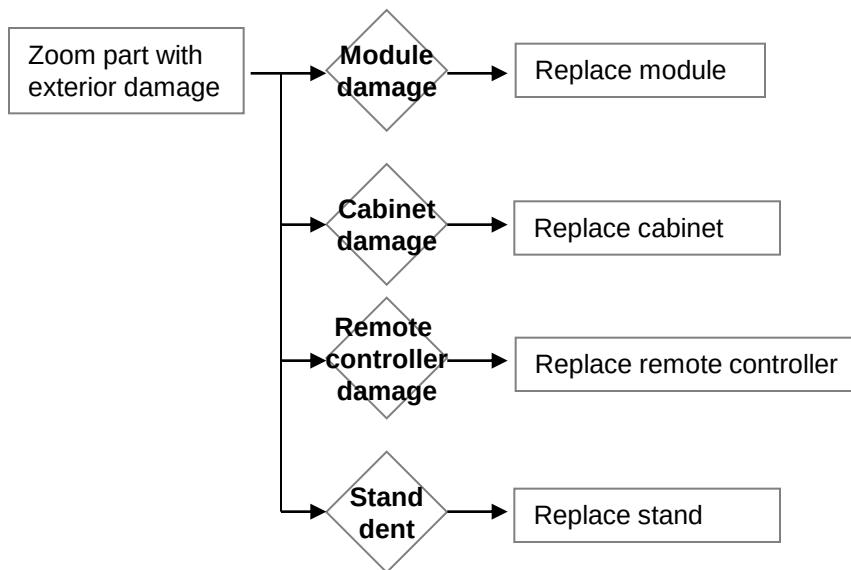
LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		External device recognition error	Revised date		14/16



LCD TV	Error symptom	E. Noise	Established date	2013.01.31	
		Circuit noise, mechanical noise	Revised date		15/16



LCD TV	Error symptom	F. Exterior defect	Established date	2013.01.31	
		Exterior defect	Revised date		16/16



Contents of LCD TV Standard Repair Process Detail Technical Manual

No.	Error symptom	Content	Page	Remarks
1	A. Video error_ No video/Normal audio	Check LCD back light with naked eye	A1	
2		Check White Balance value	A2	
4	A. Video error_ video error /Video lag/stop	TUNER input signal strength checking method	A3	
5		LCD-TV Version checking method	A4	
6		Tuner Checking Part	A5	
7	A. Video error _Vertical/Horizontal bar, residual image, light spot	LCD TV connection diagram	A6	
8	A. Video error_ Color error	Check Link Cable (EPI) reconnection condition	A7	
9		Adjustment Test pattern – ADJ Key	A8	
10	<Appendix> Defected Type caused by T-Con/ Inverter/ Module	Exchange Main Board (1)	A-1/5	
11		Exchange Main Board (2)	A-2/5	
12		Exchange Power Board (PSU)	A-3/5	
13		Exchange Module (1)	A-4/5	
14		Exchange Module (2)	A-5/5	

Continue to the next page

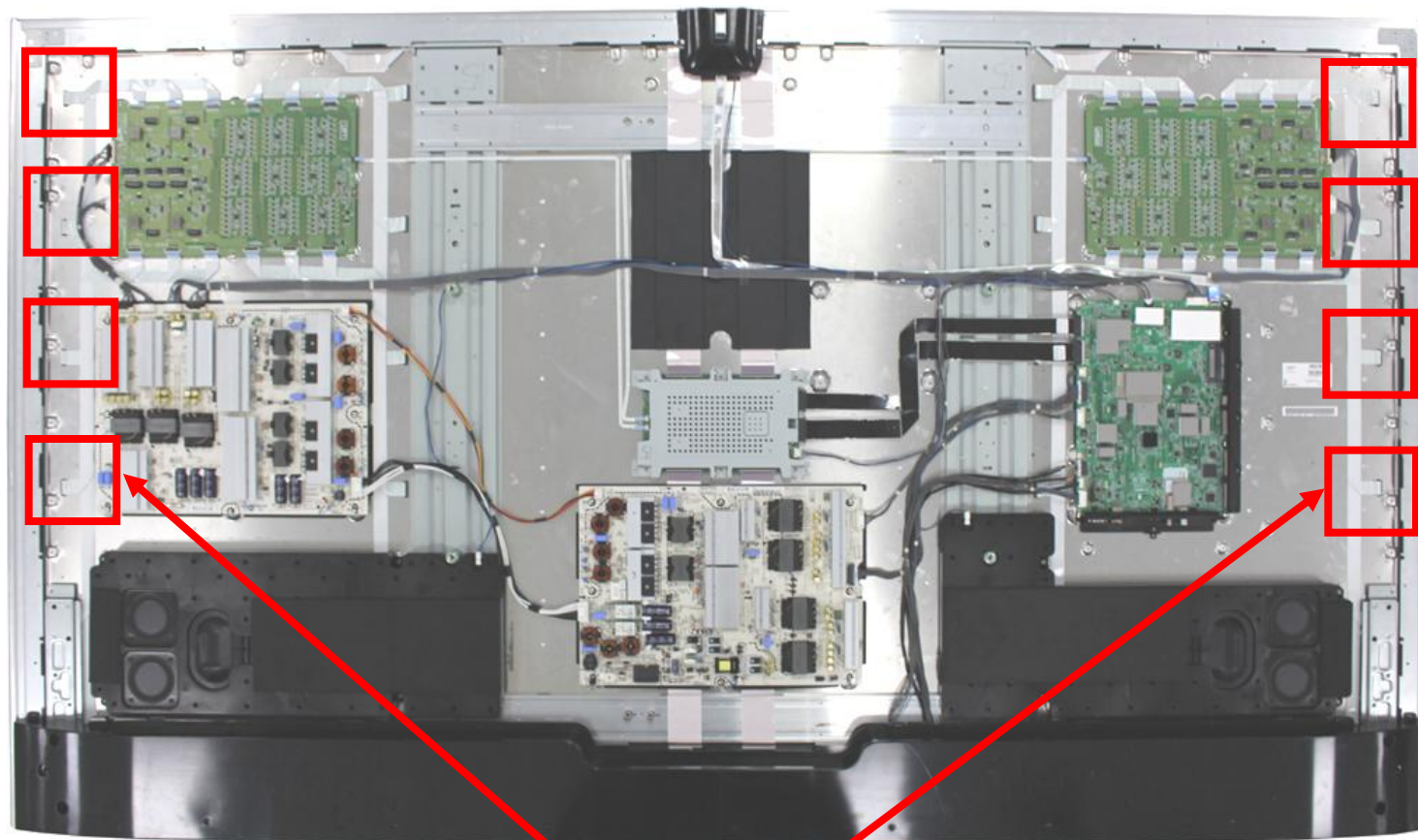
Contents of LCD TV Standard Repair Process Detail Technical Manual

Continued from previous page

No.	Error symptom	Content	Page	Remarks
16	B. Power error_ No power	Check front display LED	A17	
17		Check power input Voltage & ST-BY 3.5V	A18	
18	B. Power error_Off when on, off while viewing	POWER OFF MODE checking method	A19	
19	C. Audio error_ No audio/Normal video	Checking method in menu when there is no audio	A20	
20		Voltage and speaker checking method when there is no audio	A21	
21	D. Function error	Remote controller operation checking method	A22	
22		Motion Remote operation checking method	A23	
23		Wifi operation checking method	A24	
24		Camera operation checking method	A25	Not Used
25	E. Etc	Tool option changing method	A26	

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_No video/Normal audio	Established date	2013.01.31	A1
	Content	Check LCD back light with naked eye	Revised date		

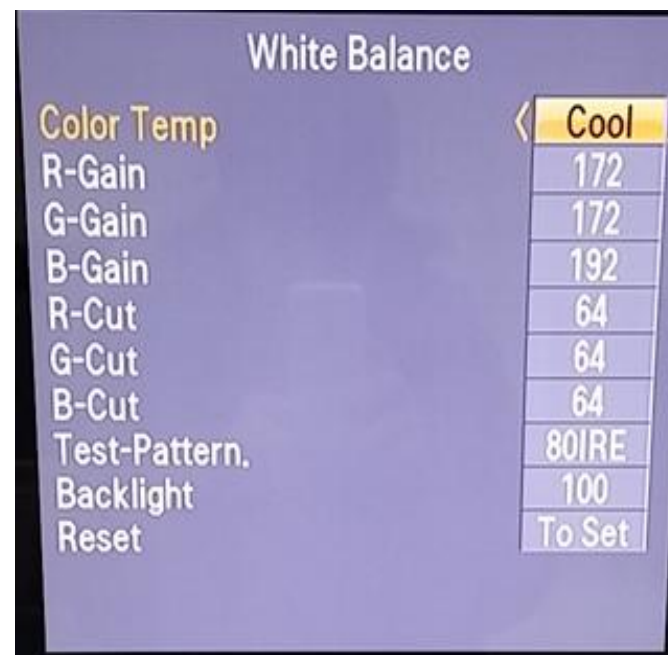
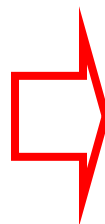
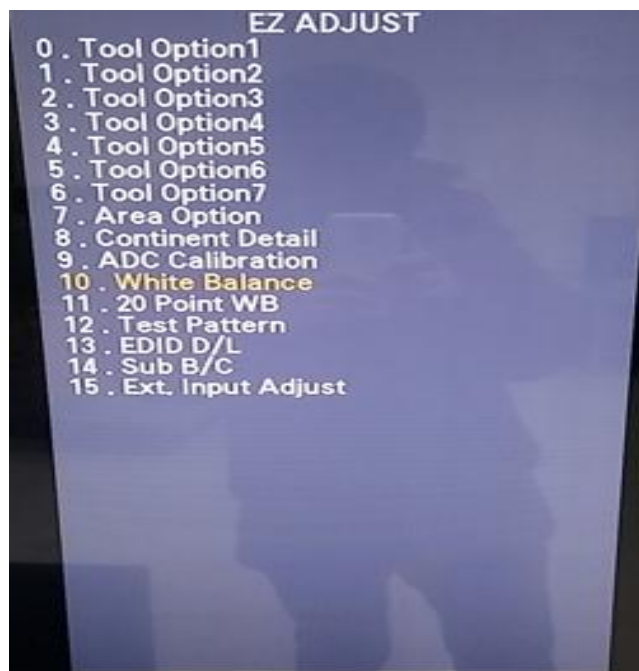


After turning on the power and disassembling the case, check with the naked eye, whether you can see light from locations.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_No video/Normal audio	Established date	2014.02.14	A2
	Content	Check White Balance value	Revised date		

<ALL MODELS>



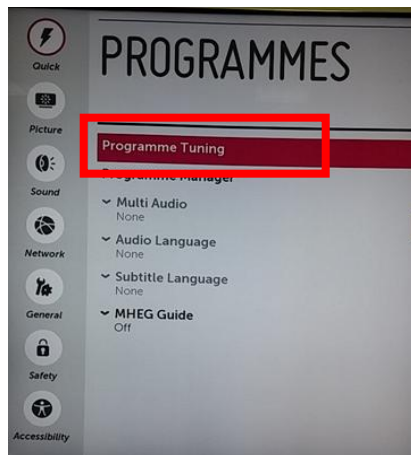
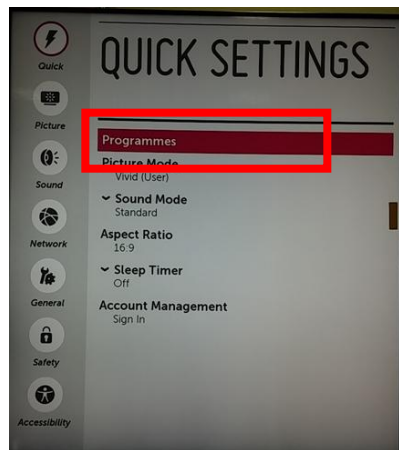
Entry method

1. Press the ADJ button on the remote controller for adjustment.
2. Enter into White Balance of item 10.
3. After recording the R, G, B (GAIN, Cut) value of Color Temp (Cool/Medium/Warm), re-enter the value after replacing the MAIN BOARD.

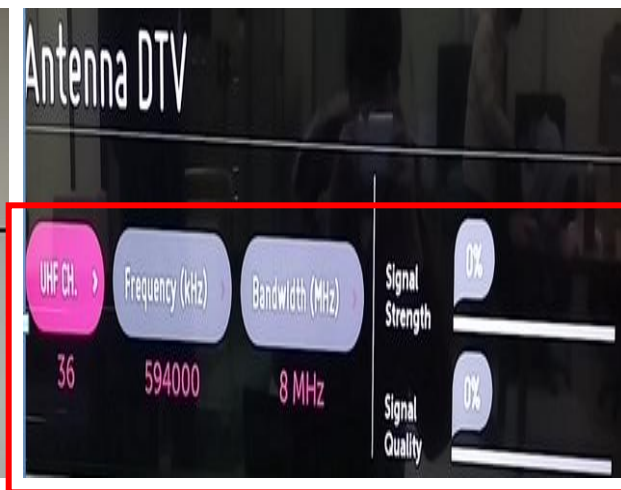
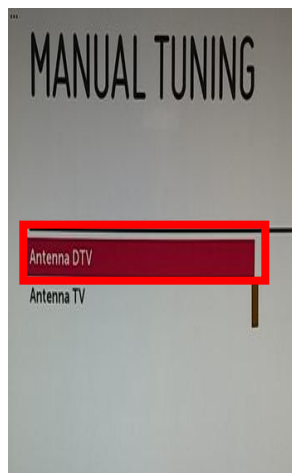
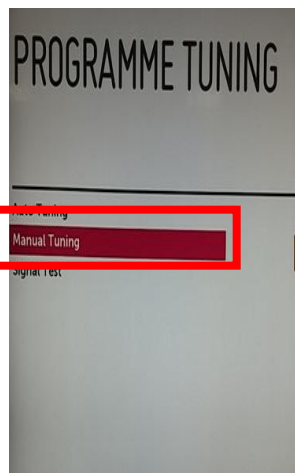
Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2014.02.14	
	Content	TUNER input signal strength checking method	Revised date		A3

<ALL MODELS>



Quick Settings → Programmes → Programme Tuning
→ Manual Tuning



When the signal is strong, use the attenuator (-10dB, -15dB, -20dB etc.)



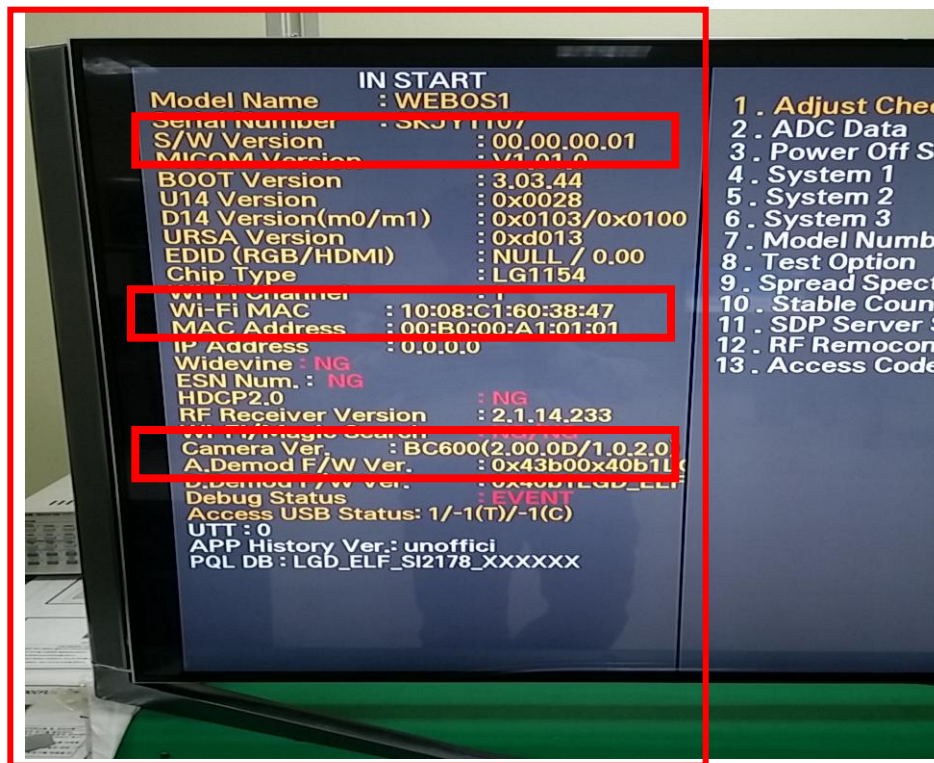
Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2014.02.14	
	Content	LCD-TV Version checking method	Revised date		A4

<ALL MODELS>

1. Checking method for remote controller for adjustment

Version



Press the IN-START with the remote controller for adjustment

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2013.01.31	
	Content	TUNER checking part	Revised date		A5

<ALL MODELS>



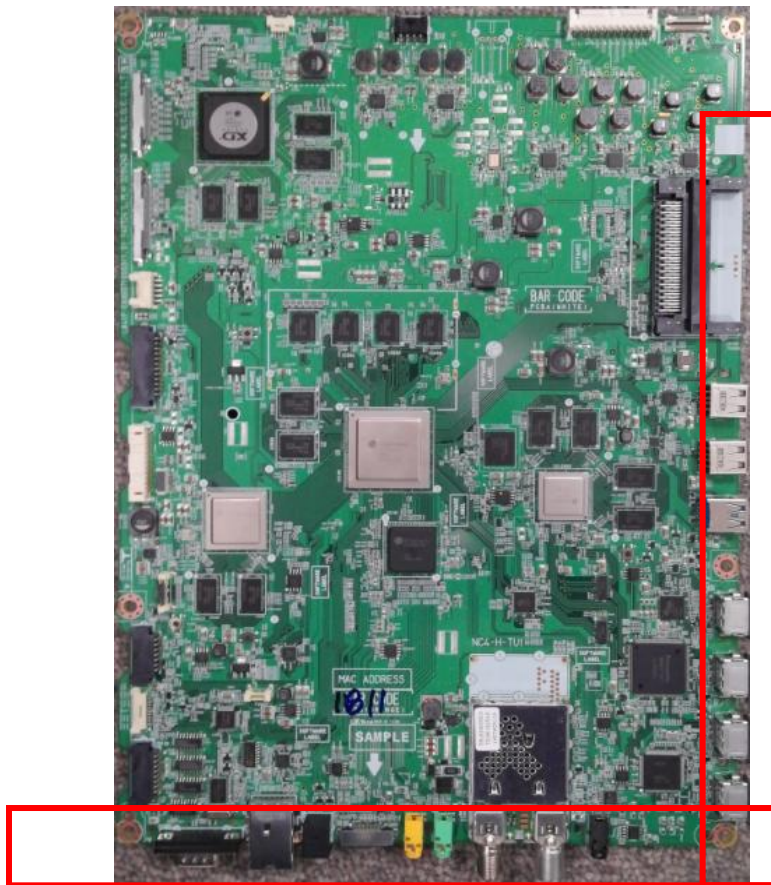
Checking method:

1. Check the signal strength or check whether the screen is normal when the external device is connected.
2. After measuring each voltage from power supply, finally replace the MAIN BOARD.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error _Vertical/Horizontal bar, residual image, light spot	Established date	2013.01.31	
	Content	LCD TV connection diagram (1)	Revised date		A6

<ALL MODELS>

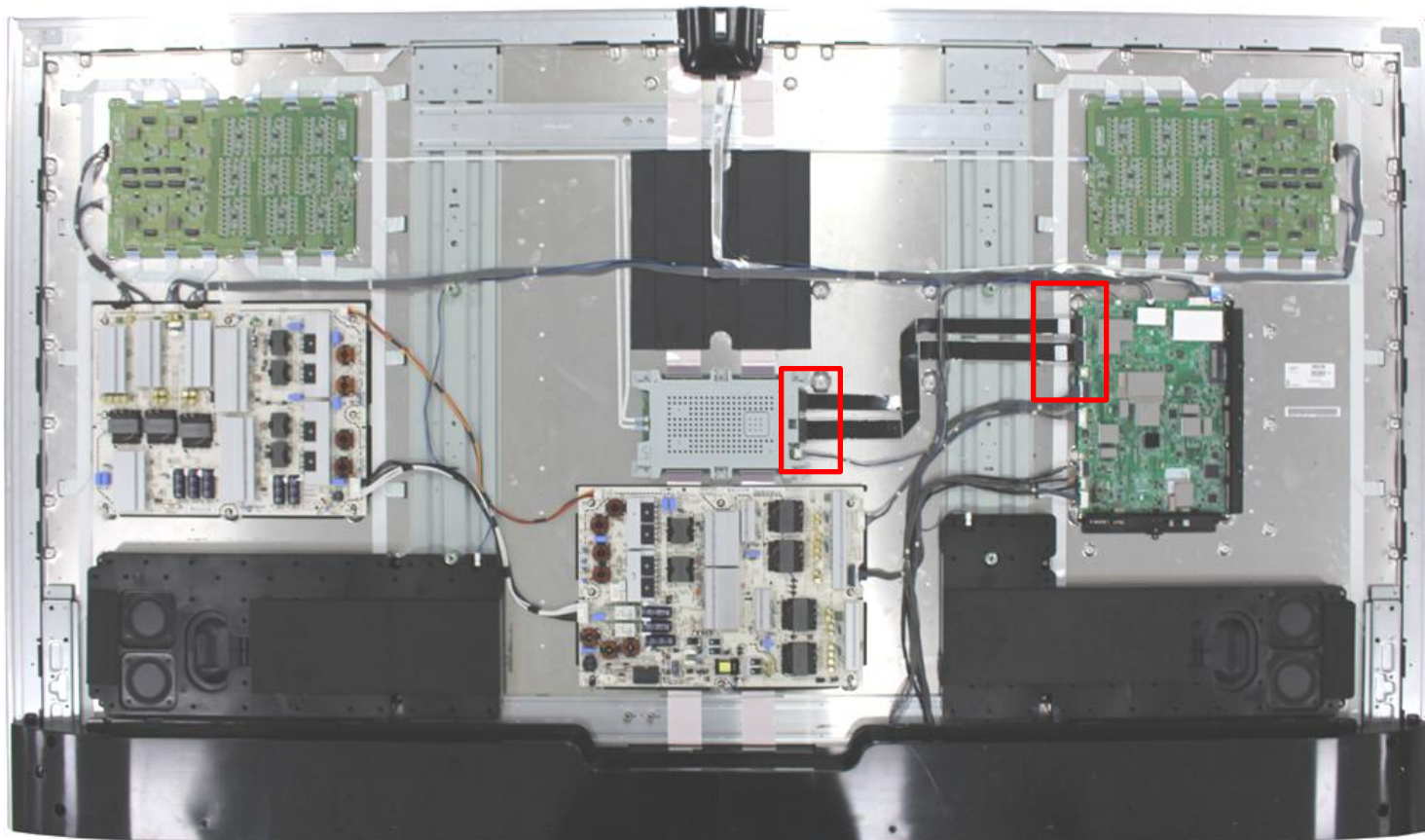


As the part connecting to the external input, check the screen condition by signal

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Color error	Established date	2013.01.31	A7
	Content	Check Link Cable (LVDS) reconnection condition	Revised date		

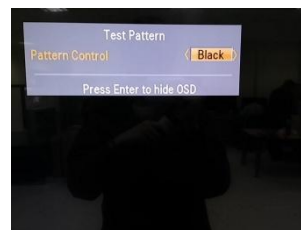
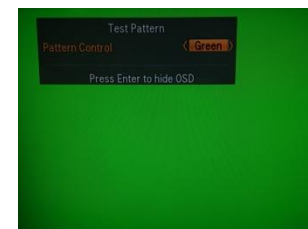
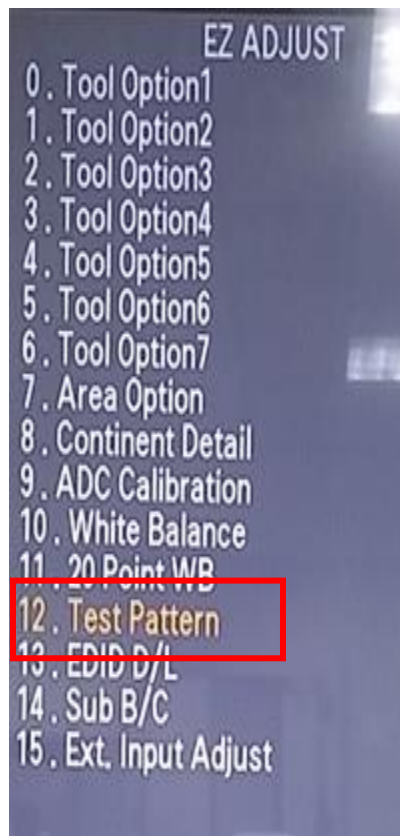
<ALL MODELS>



Check the contact condition of the Link Cable, especially dust or mis insertion.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Color error	Established date	2014.02.14	
	Content	Adjustment Test pattern - ADJ Key	Revised date		A8



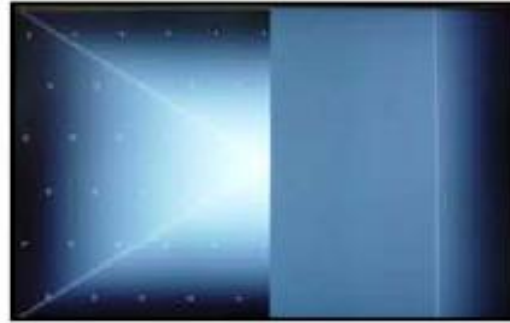
You can view 6 types of patterns using the ADJ Key

Checking item : 1. Defective pixel 2. Residual image 3. MODULE error (ADD-BAR,SCAN BAR..)
4.Video error (Classification of MODULE or Main-B/D!)

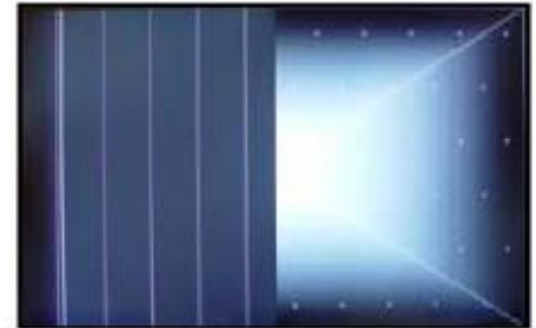
Appendix : Exchange Main Board (1)



Solder defect, CNT Broken



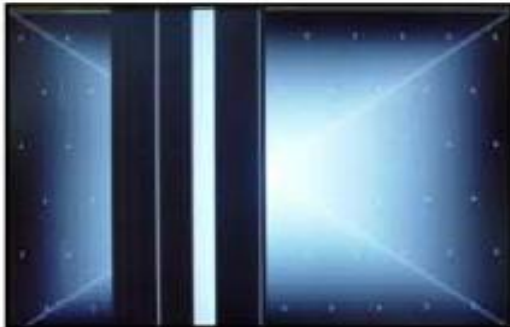
Solder defect, CNT Broken



Solder defect, CNT Broken



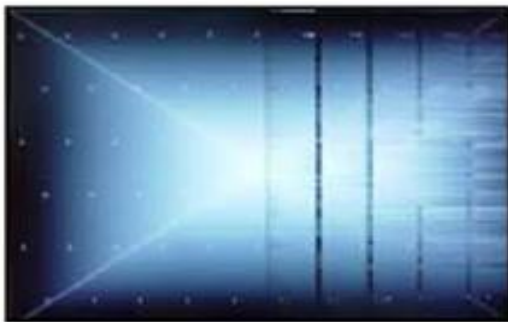
Solder defect, CNT Broken



Solder defect, CNT Broken



Abnormal Power Section



Solder defect, Short/Crack



Abnormal Power Section



Solder defect, Short/Crack

Appendix : Exchange Main Board (2)



Abnormal Power Section



Abnormal Power Section



Solder defect, Short/Crack



Solder defect, Short/Crack



Fuse Open, Abnormal power section



Abnormal Display



GRADATION



Noise

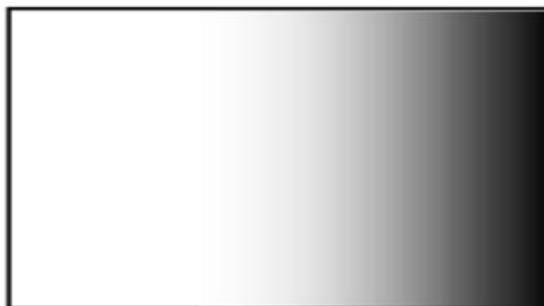


GRADATION

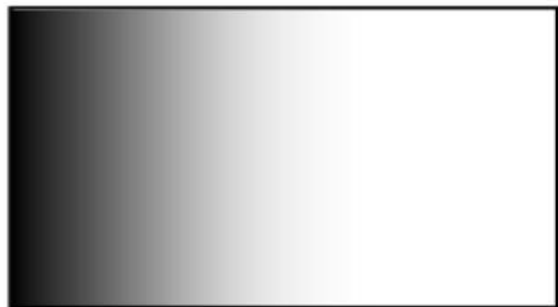
Appendix : Exchange Power Board (PSU)



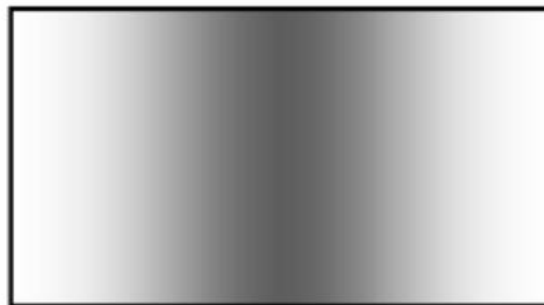
No Light



Dim Light



Dim Light



Dim Light



No picture/Sound Ok

Appendix : Exchange the Module (1)



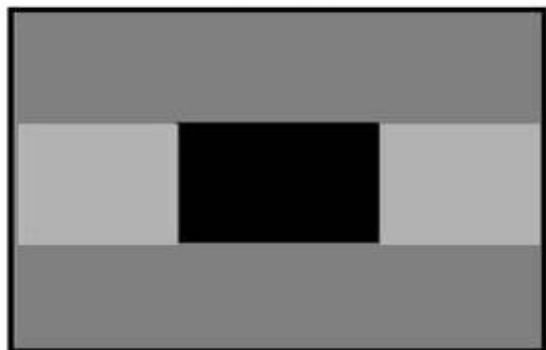
Panel Mura, Light leakage



Panel Mura, Light leakage



Press damage



Crosstalk



Press damage



Crosstalk

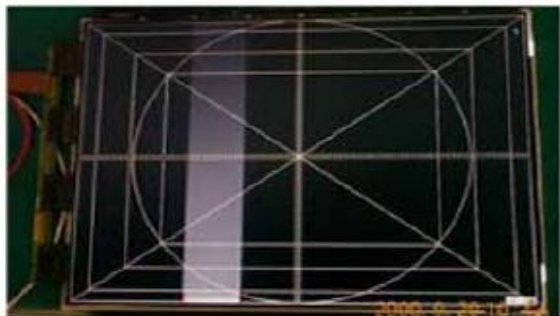


Press damage

Un-repairable Cases

In this case please exchange the module.

Appendix : Exchange the Module (2)



Vertical Block
Source TAB IC Defect



Vertical Line
Source TAB IC Defect



Vertical Block
Source TAB IC Defect



Horizontal Block
Gate TAB IC Defect



Horizontal Block
Gate TAB IC Defect



Horizontal line
Gate TAB IC Defect



Horizontal Block
Gate TAB IC Defect

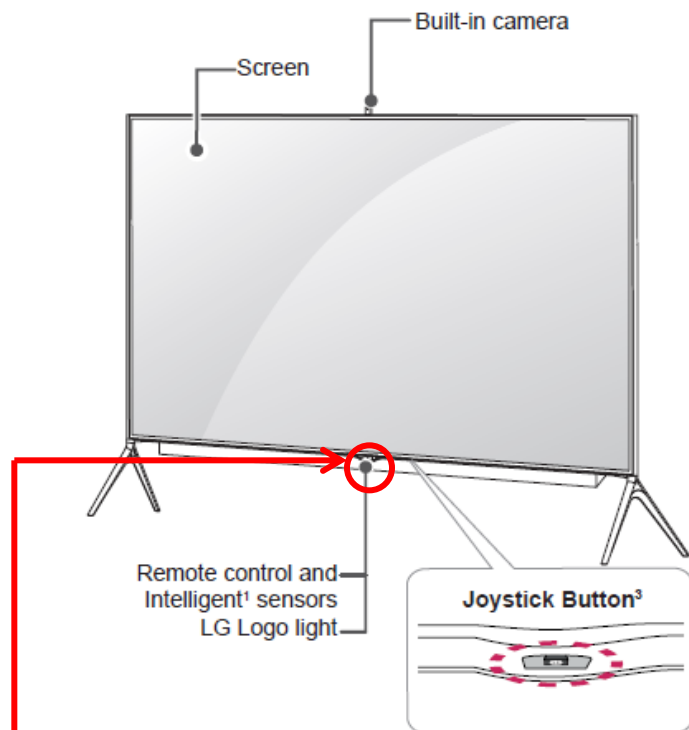
Un-repairable Cases

In this case please exchange the module.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	B. Power error _No power	Established date	2014.02.07	
	Content	Check front Power Indicator	Revised date		A17

<98UB98>



NOTE

- You can set the LG Logo Light or power indicator light to on or off by selecting **GENERAL** in the main menus.

ST-BY condition: On or Off
Power ON condition: Turn Off

Using the joystick button

You can operate the TV by pressing the button or moving the joystick left, right, up, or down.

Basic Functions

	Power On	When the TV is turned off, place your finger on the joystick button and press it once and release it.
	Power Off	When the TV is turned on, place your finger on the joystick button and press it once for a few seconds and release it.
	Volume Control	If you place your finger over the joystick button and move it left or right, you can adjust the volume level you want.
	Programmes Control	If you place your finger over the joystick button and move it up or down, you can scrolls through the saved programmes you want.

NOTE

- When your finger over the joystick button and push it to the up, down, left or right, be careful not to press the joystick button. If you press the joystick button first, you can not adjust the volume level and saved programmes.

Adjusting the Menu

When the TV is turned on, press the joystick button one time.

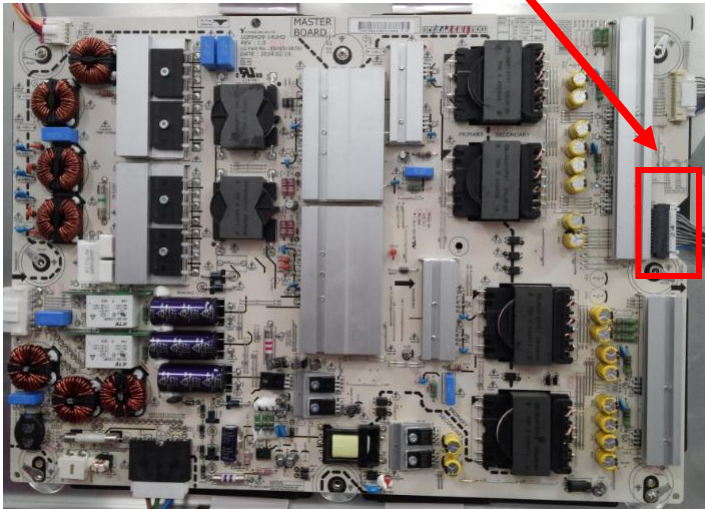
You can adjust the Menu items (⏻, ✕, 📺) moving the joystick button up, down, left or right.

	⏻	TV OFF	Turns the power off.
	✕	CLOSE	Clears on-screen displays and return to TV viewing.
	📺	INPUT	Changes the input source.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	B. Power error _No power	Established date	2014.02.05	A18
	Content	Check power input voltage and ST-BY 3.5V	Revised date		

Check the DC 24V, 12V, 3.5V.



P_main
Maker : Yeonho
24Pin SMAW200-H24S5
'14년 적용 24Pin map (Power)

1	PWR ON	2	DVR_ON
3	P_DIM #1	4	PDIM #2
5	3.5V	6	GND
7	3.5V	8	3.5V
9	GND	10	GND
11	12V	12	12V
13	12V	14	12V
15	12V	16	GND
17	GND	18	24V
19	24V	20	24V
21	24V	22	24V
23	GND	24	GND

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	B. Power error _Off when on, off whiling viewing	Established date	2014.02.05	
	Content	POWER OFF MODE checking method	Revised date		A19

<ALL MODELS>

IN START		Power Off Status
Model Name : WEBOS1	1. Adjust Check	0. POWER_OFF_BY_ACDET
Serial Number : SKJY1107	2. ADC Data	1. POWER_OFF_BY_REMOTE_KEY
S/W Version : 02.06.14.01	3. Power Off Status	2. POWER_OFF_BY_REMOTE_KEY
MICOM Version : V1.00.9	4. System 1	3. POWER_OFF_BY_ACDET
BOOT Version : 3.03.44	5. System 2	4. POWER_OFF_BY_INSTOP_KEY
U14 Version : 0x0026	6. System 3	5. POWER_OFF_BY_UNKNOWN
D14 Version(m0/m1) : 0x0103/0x0100	7. Model Number D/L	6. POWER_OFF_BY_UNKNOWN
URSA Version : 0xa00e	8. Test Option	7. POWER_OFF_BY_UNKNOWN
EDID (RGB/HDMI) : NULL / 0.00	9. Spread Spectrum	8. POWER_OFF_BY_UNKNOWN
Chip Type : LG1154	10. Stable Count	9. POWER_OFF_BY_UNKNOWN
Wi-Fi Channel : N/A	11. SDP Server Selection	10. POWER_OFF_BY_UNKNOWN
Wi-Fi MAC : NG	12. RF Remocon Test	11. POWER_OFF_BY_UNKNOWN
MAC Address : CA:84:B0:E5:E8:44	13. Access Code	12. POWER_OFF_BY_UNKNOWN
IP Address : 0.0.0.0		13. POWER_OFF_BY_UNKNOWN
Widevine : NG		14. POWER_OFF_BY_UNKNOWN
ESN Num. : NG		15. POWER_OFF_BY_UNKNOWN
HDCP2.0 : NG		16. POWER_OFF_BY_UNKNOWN
RF Receiver Version : 0.0.0.0		17. POWER_OFF_BY_UNKNOWN
Wi-Fi/Magic Search : NG/NG		18. POWER_OFF_BY_UNKNOWN
Camera Ver. : NULL		19. POWER_OFF_BY_UNKNOWN
A.Demod F/W Ver. : 0x43b00x40b1L		20. POWER_OFF_BY_UNKNOWN
D.Demod F/W Ver. : 0x40b1LGD_ELF		21. POWER_OFF_BY_UNKNOWN
Debug Status : EVENT		22. POWER_OFF_BY_UNKNOWN
Access USB Status: 1/-1(T)/-1(C)		23. POWER_OFF_BY_UNKNOWN
UTT : 1		24. POWER_OFF_BY_UNKNOWN
APP History Ver.: 509		
PQL DB : LGD_ELF_SI2178_XXXXUo		

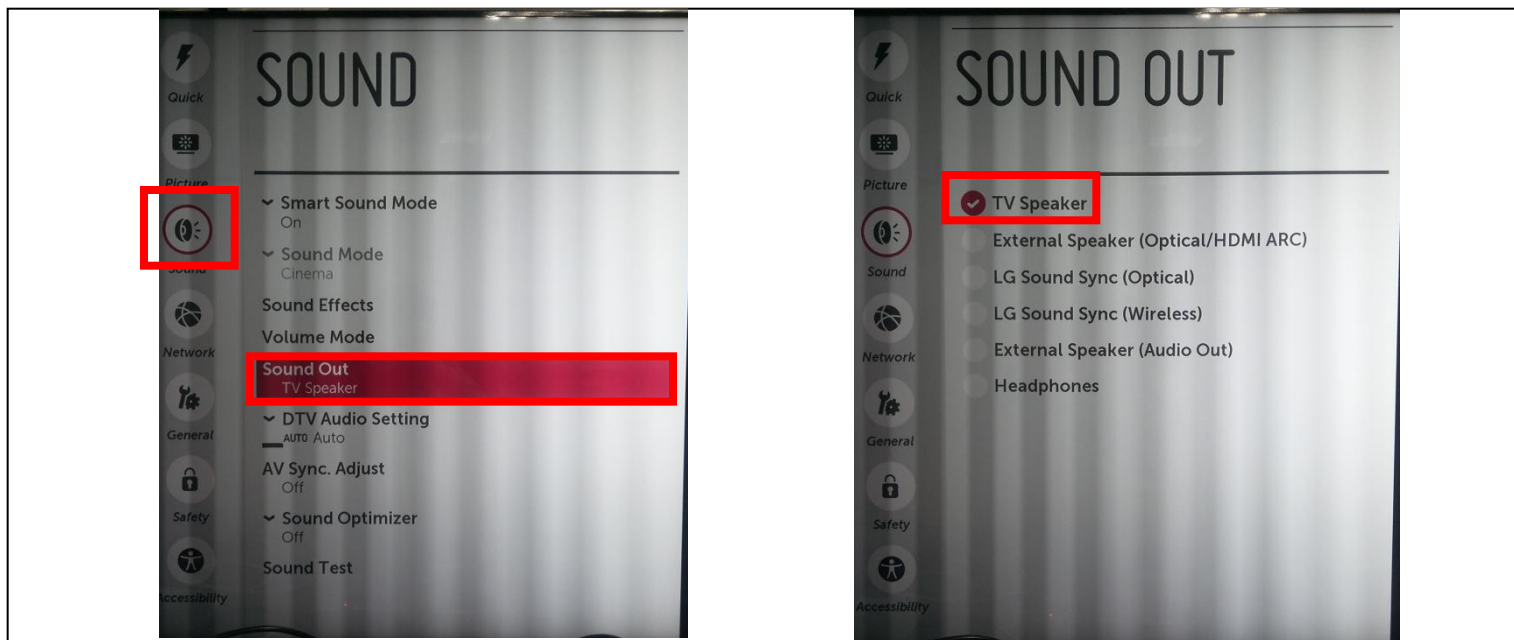
Entry method

1. Press the IN-START button of the remote controller for adjustment
2. Check the entry into adjustment item 3

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	C. Audio error_No audio/Normal video	Established date	2014.02.05	A20
	Content	Checking method in menu when there is no audio	Revised date		

<ALL MODELS>



Checking method

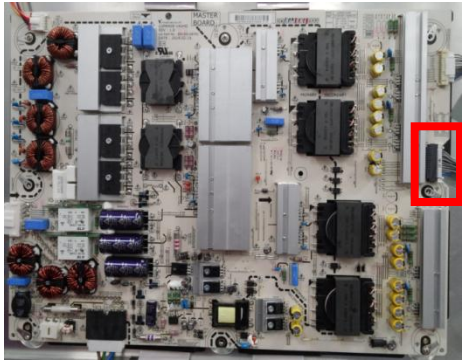
1. Press the Setting button on the remote controller
2. Select the Sound function of the Menu
3. Select the Sound Out
4. Select TV Speaker

Standard Repair Process Detail Technical Manual

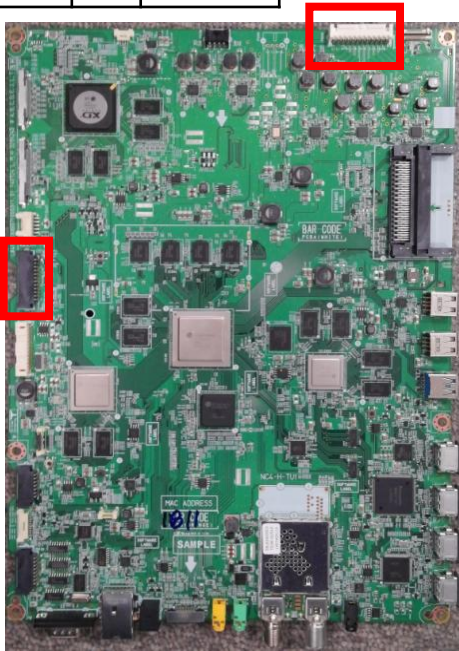
LCD TV	Error symptom	C. Audio error_No audio/Normal video	Established date	2014.02.05	A21
	Content	Voltage and speaker checking method when there is no audio	Revised date		

<98UB98>

1	H_SPK_R-	2	H_SPK_R+
3	H_SPK_L-	4	H_SPK_L+
5	SPK_R-	6	SPK_R+
7	SPK_L-	8	SPK_L+
9	C_SPK_R-	10	C_SPK_R+
11	C_SPK_L-	12	C_SPK_L+



1	PWR ON	2	DVR_ON
3	P_DIM #1	4	PDIM #2
5	3.5V	6	GND
7	3.5V	8	3.5V
9	GND	10	GND
11	12V	12	12V
13	12V	14	12V
15	12V	16	GND
17	GND	18	24V
19	24V	20	24V
21	24V	22	24V
23	GND	24	GND



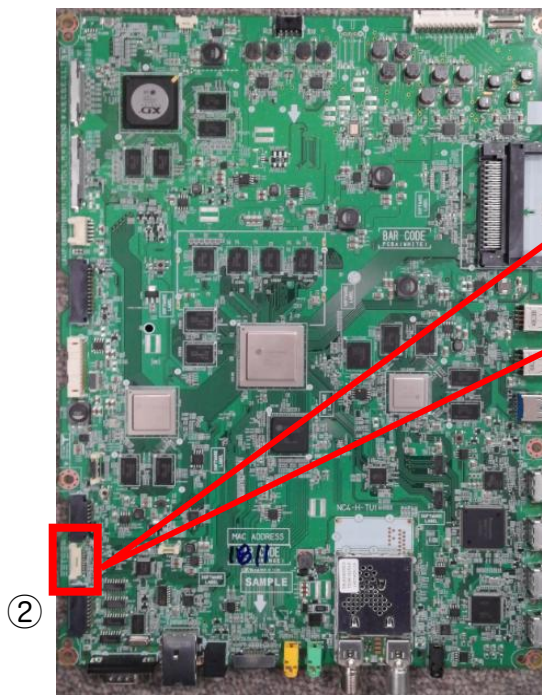
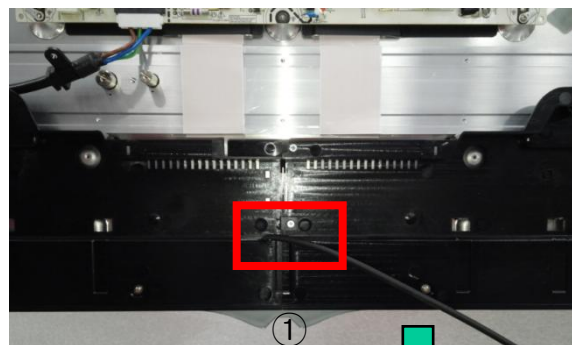
Checking order when there is no audio

- ① Check the contact condition of or 24V connector of Main Board
- ② Measure the 24V input voltage supplied from Power Board
(If there is no input voltage, remove and check the connector)
- ③ Connect the tester RX1 to the speaker terminal and if you hear the Chik Chik sound when you touch the GND and output terminal, the speaker is normal.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	D. Function error	Established date	2014.02.07	A22
	Content	Remote controller operation checking method	Revised date		

<98UB98>



1	GND
2	KEY1
3	KEY2
4	+3.5V_ST
5	LOGO_LIG HT_WAFER
6	C_SPK_L-
7	+3.5V_ST
8	GND
9	EYE_SCL
10	EYE_SDA
11	GND

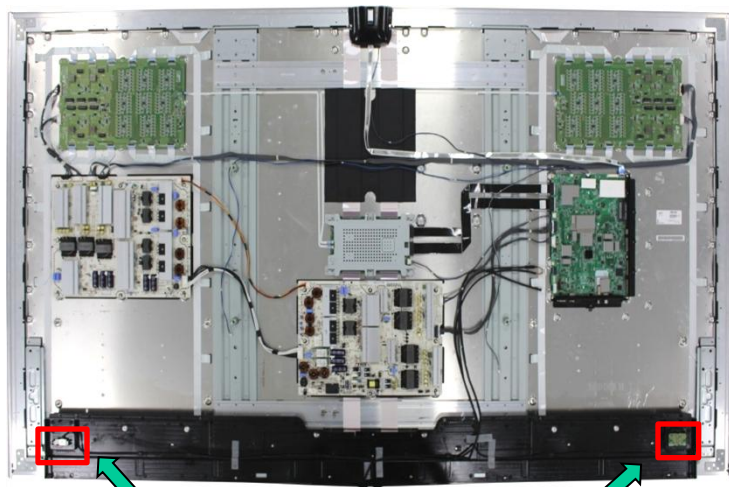
Checking order

- 1, 2. Check IR cable condition between IR & Main board.
3. Check the st-by 3.5V on the terminal 4,7.
4. When checking the Pre-Amp when the power is in ON condition, it is normal when the Analog Tester needle moves slowly, and defective when it does not move at all.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	D. Function error	Established date	2014.02.07	A23
	Content	Motion Remote operation checking method	Revised date		

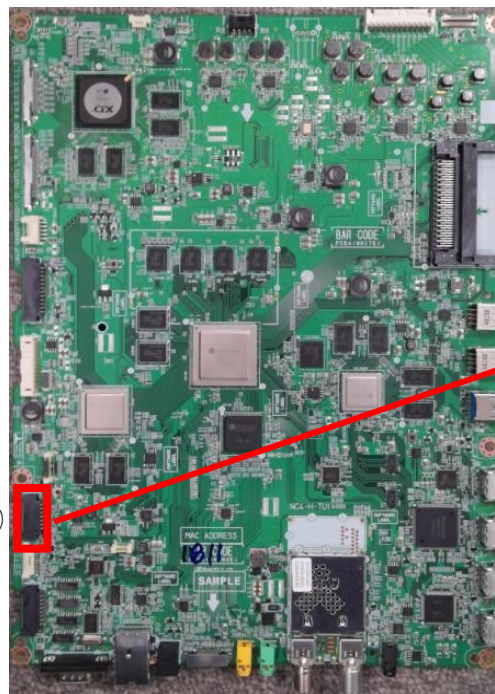
<98UB98>



①



②



③

P4000	
1	GND
2	3.5V
3	WOL
4	DN
5	GND
6	DP
7	NC
8	3.3V
9	GND
10	RTS
11	CTS
12	UART_RX_RF
13	RESET
14	UART_TX_RF
15	GND

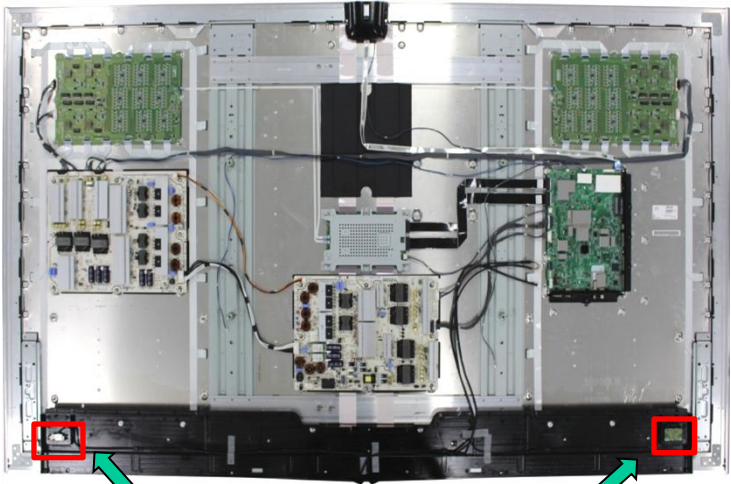
Checking order

- 1, 2. Check Motion cable condition between Motion assy & Main board.
3. Check the 3.3V on the terminal 2.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	D. Function error	Established date	2014.02.07	A24
	Content	Wifi operation checking method	Revised date		

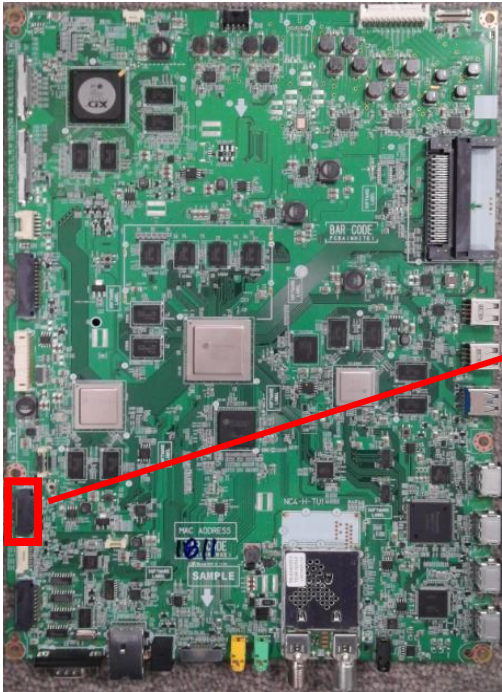
<98UB98>



①



②



③

P4000	
1	GND
2	3.5V
3	WOL
4	DN
5	GND
6	DP
7	NC
8	3.3V
9	GND
10	RTS
11	CTS
12	UART_RX_RF
13	RESET
14	UART_TX_RF
15	GND

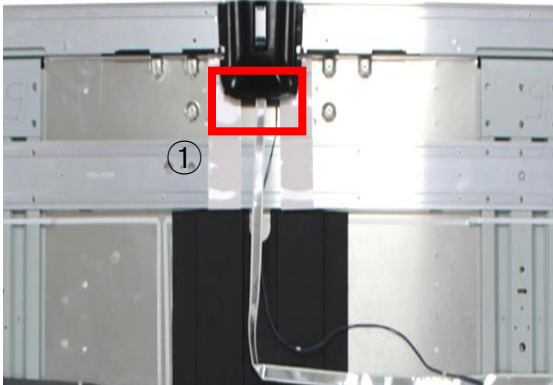
Checking order

- 1, 2. Check Wifi cable condition between Wifi assy & Main board.
3. Check the 3.3V on the terminal 2.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	D. Function error	Established date	2014.02.05	A25
	Content	Camera operation checking method	Revised date		

<98UB98>



P4200	
1	CAM_SLIDE_DET
2	CAM_TRIGGER_DET
3	GND
4	CAMERA_DM
5	CAMERA_DP
6	GND
7	I2S_WOOFER
8	AUD_SCK
9	AUD_LRCK
10	I2S_AMP
11	GND
12	+3.5V_CAM
13	+3.5V_CAM
14	CAM_PWR_ON_CMD
15	CAM_RESET
16	CAM_SLEEP
17	GND

Checking order

- 1, 2. Check Camera cable condition between Camera assy & Main board.
3. Check the 3.5V on the terminal 2.