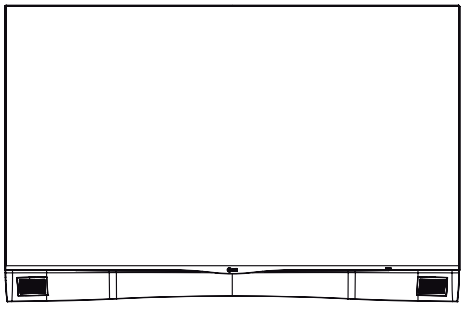
LG
Life's Good

OLED TV
SERVICE MANUAL

CHASSIS : EA34D

MODEL : 55EA9800 55EA9800-UA

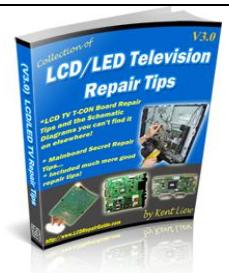
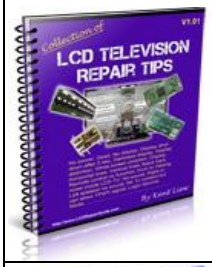
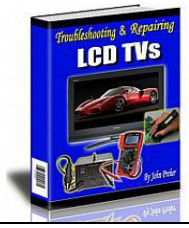
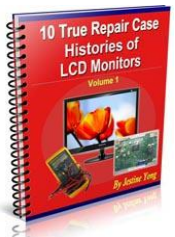
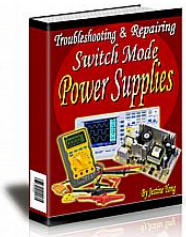
CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL67840104(1308-REV01)

Printed in Korea

Recommended Troubleshooting & Repairing Guide:

	V3.0 –LED & LCD TV Repair Tips ebook "More information on T-con Board & Mainboard Secret Repair Tips!"
	V2.0- LCD TV Repair Tips & Case Histories
	V1.0- Collection of LCD TV Repair Tips
	Vol-3 LCD/LED Monitor Repair Case Histories by Jestine Yong
	LCD/LED & 3D TV Repair Membership Site
	Plasma & 3D TV Repair Membership Site
	Projection TV & DLP/LCD Projector Repair Membership Site
	Troubleshooting & Repairing LCD TV Guide
	Plasma TV Repair Guide-Display Fault Troubleshooting Basic
	LCD TV Repair Secrets Revealed
	LCD Monitor Repair Guide
	Vol .1- 10 Trus Repair Case Histories of LCD Monitor
	SMPS-Switch Mode Power Supply Repair Guide
	Testing Electronic Components like a Pro-For Beginner

Please visit: http://lcd-television-repair.com/newsletter/Recommend.html

CONTENTS

SAFETY PRECAUTIONS

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 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 it's 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,

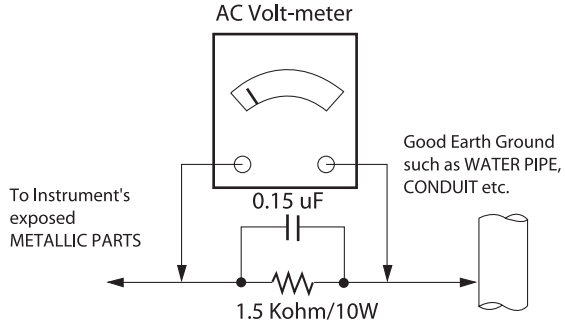
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

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 MΩ and 5.2 MΩ.
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 uF 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 is 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 in 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 or 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 LED TV with (LA34N) chassis

2. Test condition

Each part is tested as below without special notice.

1) Temperature : 25 ºC ± 5 ºC(77 ± 9 ºF) , CST : 40 ºC±5 ºC
2) Relative Humidity: 65 % ± 10 %
3) Power Voltage

Market	Input voltage	Frequency	Remark
USA	110~240V	50/60Hz	Standard Voltage of each product 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	Market	1) North America		
2	Broad casting System	1) ATSC / NTSC-M		
3	Receiving System	1) ATSC / NTSC-M		
4	Input Voltage	AC 100 - 240V ~ 60Hz		
5	Available Channel	1) VHF : 02~13 2) UHF : 14~69 3) DTV : 02-69 4) CATV : 01~135 5) CADTV : 01~135		
7	Aspect Ratio	16:9		
8	Tuning System	FS		
9	LCD Module	LC550LUD-MFP2	LGD	55EA9800-UA
10	Operating Environment	1) Temp : 0 ~ 40 deg 2) Humidity : ~ 80 %		
11	Storage Environment	1) Temp : -20 ~ 60 deg 2) Humidity : ~ 85 %		

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.(kHz)	Pixel clock	Proposed
1.	720*480	15.73	60.00	13.5135	SDTV ,DVD 480I
2.	720*480	15.73	59.94	13.50	SDTV ,DVD 480I
3.	720*480	31.50	60.00	27.027	SDTV 480P
4.	720*480	31.47	59.94	27.00	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	67.50	60.00	148.50	HDTV 1080P
10.	1920*1080	67.432	59.94	148.352	HDTV 1080P
11.	1920*1080	27.00	24.00	74.25	HDTV 1080P
12.	1920*1080	26.97	23.94	74.176	HDTV 1080P
13.	1920*1080	33.75	30.00	74.25	HDTV 1080P
14.	1920*1080	33.71	29.97	74.176	HDTV 1080P

5.1.2. HDMI Input 1 (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	X
2	720*400	31.469	70.08	28.32	DOS	O
3	640*480	31.469	59.94	25.17	VESA(VGA)	O
4	800*600	37.879	60.31	40.00	VESA(SVGA)	O
5	1024*768	48.363	60.00	65.00	VESA(XGA)	O
6	1152*864	54.348	60.053	80.00	VESA	O
7	1280*1024	63.981	60.020	108.00	VESA (SXGA)	O
8	1360*768	47.712	60.015	85.50	VESA (WXGA)	O
9	1920*1080	67.5	60	148.5	WUXGA(Reduced Blanking)	O
	HDMI-DTV					
1	720*480	31.47	60	27.027	SDTV 480P	
2	720*480	31.47	59.94	27.00	SDTV 480P	
3	1280*720	45.00	60.00	74.25	HDTV 720P	
4	1280*720	44.96	59.94	74.176	HDTV 720P	
5	1920*1080	33.75	60.00	74.25	HDTV 1080I	
6	1920*1080	33.72	59.94	74.176	HDTV 1080I	
7	1920*1080	67.500	60	148.50	HDTV 1080P	
8	1920*1080	67.432	59.939	148.352	HDTV 1080P	
9	1920*1080	27.000	24.000	74.25	HDTV 1080P	
10	1920*1080	26.97	23.976	74.176	HDTV 1080P	
11	1920*1080	33.75	30.000	74.25	HDTV 1080P	
12	1920*1080	33.71	29.97	74.176	HDTV 1080P	

5.2. 3D Mode

5.2.1. RF Input

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1920*1080	45.00	60	74.25	HDTV 1080I	Side by Side, Top & Bottom
2	1280*720	45.00	60	74.25	HDTV 720P	Side by Side, Top & Bottom

5.2.2. HDMI Input

5.2.2.1. HDMI 1.3 - DTV (3D supported mode manually)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1280*720p	45.00	60.00	74.25		Side by Side , Top & Bottom, Single Frame Sequential
2	1920*1080i	33.75	60.00	74.25		Side by Side, Top & Bottom
3	1920*1080p	67.50	60.00	148.50		Side by Side , Top & Bottom Checkerboard, Single Frame Sequential Row Interleaving, Column Interleaving
4	1920*1080p	27.00	24.000	74.25		Side by Side , Top & Bottom Checkerboard
5	1920*1080p	33.75	30.000	74.25		Side by Side, Top & Bottom Checkerboard

5.2.2.2. HDMI 1.3 - DTV (3D supported mode manually)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1280*720p	89.91 / 90.00	59.94 / 60.00	148.35 / 148.50	Mandatory	Frame Packing,
2	1280*720p	44.96 / 45.00	59.94 / 60.00	74.18 / 74.25	Mandatory	Top & Bottom
3	1920*1080i	33.72 / 33.75	59.94 / 60.00	74.18 / 74.25	Mandatory	Side by Side (Half)
4	1920*1080p	43.94 / 54.00	23.97 / 24.00	148.35 / 148.50	Mandatory	Frame Packing,
5	1920*1080p	26.97 / 27.00	23.97 / 24.00	74.18 / 74.25	Mandatory	Top & Bottom
6	1280*720p	44.96 / 45.00	59.94 / 60.00	74.18 / 74.25	Primary	Side by Side (Half)
7	1920*1080i	67.432 / 67.50	59.94 / 60.00	148.35 / 148.50	Primary	Frame Packing
8	1920*1080p	67.43 / 67.50	59.94 / 60.00	148.35 / 148.50	Primary	Top & Bottom
9	1920*1080p	26.97 / 27.00	23.97 / 24.00	74.18 / 74.25	Primary	Side by Side (Half)
10	1920*1080p	67.432 / 67.50	29.976 / 30.00	148.35 / 148.50	Primary	Frame Packing,
11	1920*1080p	33.716 / 33.75	29.976 / 30.00	74.18 / 74.25	Primary	Top & Bottom
12	1920*1080i	33.72 / 33.75	59.94 / 60.00	74.18 / 74.25	Secondary	Top & Bottom
13	1920*1080p	67.43 / 67.50	59.94 / 60.00	148.35 / 148.50	Secondary	Side by Side (Half)
14	1920*1080p	33.716 / 33.75	29.976 / 30.00	74.18 / 74.25	Secondary	Side by Side (Half)
15	720*480p	62.938 / 63.00	59.94 / 60.00	54.00 / 54.054	Secondary (16:9)	Frame Packing,
16	720*480p	31.469 / 31.50	59.94 / 60.00	27.00 / 27.027	Secondary (16:9)	Top & Bottom
17	720*480p	31.469 / 31.50	59.94 / 60.00	27.00 / 27.027	Secondary (16:9)	Side by Side (Half)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
18	720*480p	62.938 / 63.00	59.94 / 60.00	54.00 / 54.054	Secondary (4:3)	Frame Packing,
19	720*480p	31.469 / 31.50	59.94 / 60.00	27.00 / 27.027	Secondary (4:3)	Top & Bottom
20	720*480p	31.469 / 31.50	59.94 / 60.00	27.00 / 27.027	Secondary (4:3)	Side by Side (Half)
21	640*480p	62.938 / 63.00	59.94 / 60.00	50.35 / 50.40	Secondary	Frame Packing,
22	640*480p	31.469 / 31.50	59.94 / 60.00	25.175 / 25.20	Secondary	Top & Bottom
23	640*480p	31.469 / 31.50	59.94 / 60.00	25.175 / 25.20	Secondary	Side by Side (Half)
24	1280*720p	89.91 / 90.00	59.94 / 60.00	148.35 / 148.50		Line Alternative
25	1280*720p	44.96 / 45.00	59.94 / 60.00	148.35 / 148.50		Side by Side (Full)
26	1920*1080i	67.432 / 67.50	59.94 / 60.00	148.35 / 148.50		Field Alternative
27	1920*1080i	33.72 / 33.75	59.94 / 60.00	148.35 / 148.50		Side by Side (Full)
28	1920*1080p	43.94 / 54.00	23.97 / 24.000	148.35 / 148.50		Line Alternative
29	1920*1080p	26.97 / 27.00	23.97 / 24.000	148.35 / 148.50		Side by Side (Full)
30	1920*1080p	67.432 / 67.50	29.976 / 30.00	148.35 / 148.50		Line Alternative
31	1920*1080p	33.716 / 33.75	29.976 / 30.00	148.35 / 148.50		Side by Side (Full)
32	720*480p	62.938 / 63.00	59.94 / 60.00	54.00 / 54.054	16:9	Line Alternative
33	720*480p	31.469 / 31.50	59.94 / 60.00	54.00 / 54.054	16:9	Side by Side (Full)
34	720*480p	62.938 / 63.00	59.94 / 60.00	54.00 / 54.054	4:3	Line Alternative
35	720*480p	31.469 / 31.50	59.94 / 60.00	54.00 / 54.054	4:3	Side by Side (Full)
36	640*480p	62.938 / 63.00	59.94 / 60.00	50.35 / 50.40		Line Alternative
37	640*480p	31.469 / 31.50	59.94 / 60.00	50.35 / 50.40		Side by Side (Full)

5.2.3. HDMI-PC Input (3D supported mode manually)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1024*768	48.363	60.004	65.000		Side by Side, Top & Bottom
2	1360*768	47.712	60.015	85.500		Side by Side, Top & Bottom
3	1920*1080	67.50	60.00	148.50		Side by Side, Top & Bottom Checkerboard, Single Frame Sequential Row Interleaving, Column Interleaving

5.2.4. USB Input

5.2.4.1. USB Input (3D supported mode automatically)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1920*1080	33.75	30.000	74.25	HDTV 1080p	Side by Side, Top & Bottom, Checkerboard, MPO (Photo)

5.2.4.2. USB Input (3D supported mode manually)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1920*1080	33.75	30.000	74.25	HDTV 1080p	Side by Side, Top & Bottom Checkerboard, Single Frame Sequential, Row Interleaving, Column Interleaving (Photo : Side by Side, Top & Bottom)

5.2.5. DLNA Input

5.2.5.1. DLNA Input (3D supported mode automatically)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1920*1080	33.75	30.000	74.25	HDTV 1080p	Side by Side, Top & Bottom, Checkerboard, MPO (Photo)

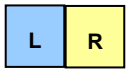
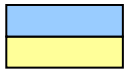
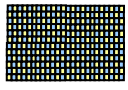
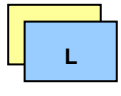
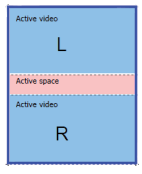
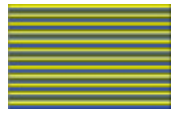
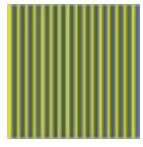
5.2.5.2. DLNA Input (3D supported mode manually)

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1920*1080	33.75	30.000	74.25	HDTV 1080p	Side by Side, Top & Bottom Checkerboard, Single Frame Sequential, Row Interleaving, Column Interleaving (Photo : Side by Side, Top & Bottom)

5.2.6. Component Input

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1	1280*720	44.96	59.94	74.176	HDTV 720P	Side by Side, Top & Bottom
2	1920*1080	33.75	60.00	74.25	HDTV 1080I	Side by Side, Top & Bottom
3	1920*1080	33.72	59.94	74.176	HDTV 1080I	Side by Side, Top & Bottom
4	1920*1080	67.500	60	148.50	HDTV 1080P	Side by Side, Top & Bottom
5	1920*1080	67.432	59.94	148.352	HDTV 1080P	Side by Side, Top & Bottom
6	1920*1080	27.000	24.000	74.25	HDTV 1080P	Side by Side, Top & Bottom
7	1920*1080	26.97	23.976	74.176	HDTV 1080P	Side by Side, Top & Bottom
8	1920*1080	33.75	30.000	74.25	HDTV 1080P	Side by Side, Top & Bottom
9	1920*1080	33.71	29.97	74.176	HDTV 1080P	Side by Side, Top & Bottom

● ***Remark: 3D Input mode***

No	Side by Side	Top & Bottom	Checkerboard	Single Frame Sequential	Frame Packing	Line Interleaving	Column Inter-leaving
1							

ADJUSTMENT INSTRUCTION

1. Application

This spec. sheet applies to EA34D Chassis applied LED TV all models manufactured in TV factory

2. Specification

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25 ±5 ºC of temperature and 65±10% of relative humidity if there is no specific designation
(4) The input voltage of the receiver must keep 100~240V, 50/60Hz
(5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15 ºC
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.

※ Caution
When still image is displayed for a period of 20 minutes or longer (especially where W/B scale is strong.
Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area

3. Adjustment items

3.1. Main PCBA Adjustments

(1) ADC adjustment: Component 480i, 1080p
(2) EDID downloads for HDMI

※ Remark
- Above adjustment items can be also performed in Final Assembly if needed. Adjustment items in both PCBA and final assembly tages can be checked by using the INSTART Menu -> 1.ADJUST CHECK

3.2. Final assembly adjustment

(1) White Balance adjustment
(2) RS-232C functionality check
(3) Factory Option setting per destination
(4) Shipment mode setting (In-Stop)
(5) GND and HI-POT test

3.3. Appendix

(1)Tool option menu, USB Download (S/W Update, Option and Service only)
(2) Manual adjustment for ADC calibration and White balance.
(3) Shipment conditions, Channel pre-set

4. MAIN PCBA Adjustments

4.1. ADC Calibration

- An ADC calibration is not necessary because MAIN SoC (LGExxxx) is already calibrated from IC Maker
- If it needs to adjust manually, refer to appendix.

4.2. MAC Address, ESN Key and Widevine Key download

4.2.1. Equipment & Condition

1) Play file: keydownload.exe

4.2.2. Communication Port connection

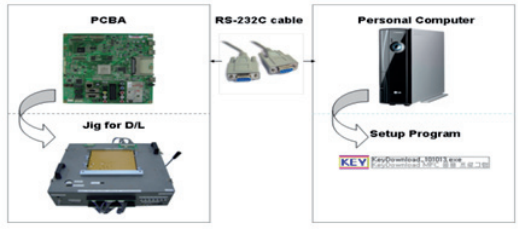
1) Key Write: Com 1,2,3,4 and 115200 (Baudrate)
2) Barcode: Com 1,2,3,4 and 9600 (Baudrate)

4.2.3. Download process

1) Select the download items.
2) Mode check: Online Only
3) Check the test process
- US, Canada models: DETECT -> MAC_WRITE -> WIDEVINE_WRITE
- Korea, Mexico models: DETECT -> MAC_WRITE -> WIDEVINE_WRITE
4) Play : START
5) Check of result: Ready, Test, OK or NG
6) Printer out (MAC Address Label)

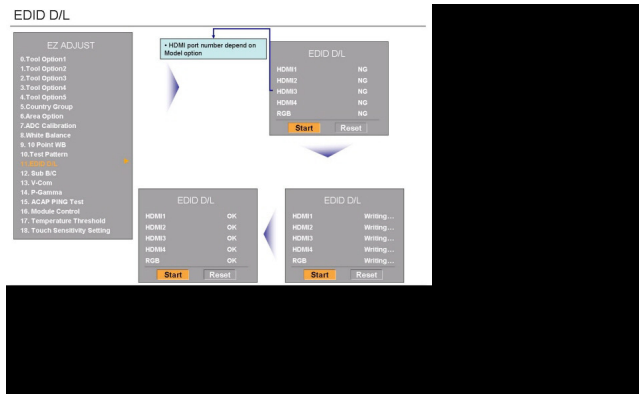
4.2.4. Communication Port connection

1) Connect: PCBA Jig -> RS-232C Port == PC -> RS-232C Port



4.2.5. Download

1) US, Canada models (13Y LCD TV + MAC + Widevine + ESN Key + DTCP Key + HDCP1.4 and HDCP2.0)



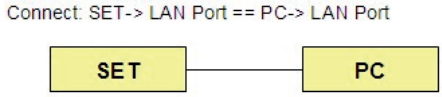
4.2.6. Inspection

- In INSTART menu, check these keys.

4.3. LAN port Inspection (Ping Test)

4.3.1. Equipment setting

1) Play the LAN Port Test PROGRAM.
2) Input IP set up for an inspection to Test Program.
   - IP number: 12.12.2.2



4.3.2. LAN PORT inspection (PING TEST)

1) Play the LAN Port Test Program.
2) Connect each other LAN Port Jack.
3) Play Test (F9) button and confirm OK Message.
4) Remove LAN CABLE

4.4. EDID Download

4.4.1 Overview

- 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”.

4.4.2 Equipment

- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.
- Adjust remocon

4.4.3 Download method

1) Press Adj. key on the Adj. R/C,
2) Select EDID D/L menu.
3) By pressing Enter key, EDID download will begin
4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
5) If Download is failure, Re-try downloads.

※ Caution) When EDID Download, must remove RGB/HDMI Cable.

4.4.4. EDID DATA(PCM)

(1)DTS

HDMI 1(C/S : E8 36)

EDID Block 0, Bytes 0-127 [00H-7FH]

	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	17	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	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E8

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	34	F1	48	90	22	20	05	04	03	02	01	29	3d	06
10	C0	15	07	50	09	57	07	78	03	0C	00	10	00	B8	2D	20
20	C0	0E	01	4F	00	FE	08	10	06	10	18	10	28	10	38	10
30	E3	05	03	01	02	3A	80	18	71	38	2D	40	58	2C	45	00
40	40	84	63	00	00	1E	01	1D	80	18	71	1C	16	20	58	2C
50	25	00	40	84	63	00	00	9E	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	36

HDMI 2(C/S : E8 26)

EDID Block 0, Bytes 0-127 [00H-7FH]

	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	17	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	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E8

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	34	F1	48	90	22	20	05	04	03	02	01	29	3D	06
10	C0	15	07	50	09	57	07	78	03	0C	00	20	00	B8	2D	20
20	C0	0E	01	4F	00	FE	08	10	06	10	18	10	28	10	38	10
30	E3	05	03	01	02	3A	80	18	71	38	2D	40	58	2C	45	00
40	40	84	63	00	00	1E	01	1D	80	18	71	1C	16	20	58	2C
50	25	00	40	84	63	00	00	9E	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	26

HDMI 3(C/S : E8 16)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
      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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
      0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 34 F1 48 90 22 20 05 04 03 02 01 29 3D 06
10 | C0 15 07 50 09 57 07 78 03 0C 00 30 00 B8 2D 20
20 | C0 0E 01 4F 00 FE 08 10 06 10 18 10 28 10 38 10
30 | E3 05 03 01 02 3A 80 18 71 38 2D 40 58 2C 45 00
40 | 40 84 63 00 00 1E 01 1D 80 18 71 1C 16 20 58 2C
50 | 25 00 40 84 63 00 00 9E 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 16
```

HDMI 4(C/S : E8 06)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
      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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
      0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 34 F1 48 90 22 20 05 04 03 02 01 29 3D 06
10 | C0 15 07 50 09 57 07 78 03 0C 00 40 00 B8 2D 20
20 | C0 0E 01 4F 00 FE 08 10 06 10 18 10 28 10 38 10
30 | E3 05 03 01 02 3A 80 18 71 38 2D 40 58 2C 45 00
40 | 40 84 63 00 00 1E 01 1D 80 18 71 1C 16 20 58 2C
50 | 25 00 40 84 63 00 00 9E 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 06
```

(2)AC3
HDMI 1(C/S : E8 3F)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
      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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
      0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 31 f1 48 90 22 20 05 04 03 02 01 26 15 07
10 | 50 09 57 07 78 03 0c 00 10 00 b8 2d 20 c0 0e 01
20 | 4f 00 fe 08 10 06 10 18 10 28 10 38 10 e3 05 03
30 | 01 02 3a 80 18 71 38 2d 40 58 2c 45 00 40 84 63
40 | 00 00 1e 01 1d 80 18 71 1c 16 20 58 2c 25 00 40
50 | 84 63 00 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55
60 | 00 40 84 63 00 00 1e 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 3f
```

HDMI 2(C/S : E8 2F)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
      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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
      0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 31 f1 48 90 22 20 05 04 03 02 01 26 15 07
10 | 50 09 57 07 78 03 0c 00 20 00 b8 2d 20 c0 0e 01
20 | 4f 00 fe 08 10 06 10 18 10 28 10 38 10 e3 05 03
30 | 01 02 3a 80 18 71 38 2d 40 58 2c 45 00 40 84 63
40 | 00 00 1e 01 1d 80 18 71 1c 16 20 58 2c 25 00 40
50 | 84 63 00 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55
60 | 00 40 84 63 00 00 1e 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 2f
```

HDMI 3(C/S : E8 1F)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
       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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
       0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 31 f1 48 90 22 20 05 04 03 02 01 26 15 07
10 | 50 09 57 07 78 03 0c 00 30 00 b8 2d 20 c0 0e 01
20 | 4f 00 fe 08 10 06 10 18 10 28 10 38 10 e3 05 03
30 | 01 02 3a 80 18 71 38 2d 40 58 2c 45 00 40 84 63
40 | 00 00 1e 01 1d 80 18 71 1c 16 20 58 2c 25 00 40
50 | 84 63 00 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55
60 | 00 40 84 63 00 00 1e 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 1f
```

HDMI 4(C/S : E8 0F)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
       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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
       0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 31 f1 48 90 22 20 05 04 03 02 01 26 15 07
10 | 50 09 57 07 78 03 0c 00 40 00 b8 2d 20 c0 0e 01
20 | 4f 00 fe 08 10 06 10 18 10 28 10 38 10 e3 05 03
30 | 01 02 3a 80 18 71 38 2d 40 58 2c 45 00 40 84 63
40 | 00 00 1e 01 1d 80 18 71 1c 16 20 58 2c 25 00 40
50 | 84 63 00 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55
60 | 00 40 84 63 00 00 1e 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 0f
```

(3)PCM
HDMI 1(C/S : E8 B1)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
       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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
       0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 2e f1 48 90 22 20 05 04 03 02 01 23 09 57
10 | 07 78 03 0c 00 10 00 b8 2d 20 c0 0e 01 4f 00 fe
20 | 08 10 06 10 18 10 28 10 38 10 e3 05 03 01 02 3a
30 | 80 18 71 38 2d 40 58 2c 45 00 40 84 63 00 00 1e
40 | 01 1d 80 18 71 1c 16 20 58 2c 25 00 40 84 63 00
50 | 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55 00 40 84
60 | 63 00 00 1e 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 b1
```

HDMI 2(C/S : E8 A1)
EDID Block 0, Bytes 0-127 [00H-7FH]

```
       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 17 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 00 00 00 FC
70 | 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 01 E8
```

EDID Block 1, Bytes 128-255 [80H-FFH]

```
       0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
-------------------------------------------------------------------------------
0 | 02 03 2e f1 48 90 22 20 05 04 03 02 01 23 09 57
10 | 07 78 03 0c 00 20 00 b8 2d 20 c0 0e 01 4f 00 fe
20 | 08 10 06 10 18 10 28 10 38 10 e3 05 03 01 02 3a
30 | 80 18 71 38 2d 40 58 2c 45 00 40 84 63 00 00 1e
40 | 01 1d 80 18 71 1c 16 20 58 2c 25 00 40 84 63 00
50 | 00 9e 01 1d 00 72 51 d0 1e 20 6e 28 55 00 40 84
60 | 63 00 00 1e 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 A1
```

HDMI 3(C/S : E8 91)
EDID Block 0, Bytes 0-127 [00H-7FH]

	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	17	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	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E8

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	2e	f1	48	90	22	20	05	04	03	02	01	23	09	57
10	07	78	03	0c	00	30	00	b8	2d	20	c0	0e	01	4f	00	fe
20	08	10	06	10	18	10	28	10	38	10	e3	05	03	01	02	3a
30	80	18	71	38	2d	40	58	2c	45	00	40	84	63	00	00	1e
40	01	1d	80	18	71	1c	16	20	58	2c	25	00	40	84	63	00
50	00	9e	01	1d	00	72	51	d0	1e	20	6e	28	55	00	40	84
60	63	00	00	1e	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	91

HDMI 4(C/S : E8 81)
EDID Block 0, Bytes 0-127 [00H-7FH]

	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	17	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	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E8

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	2e	f1	48	90	22	20	05	04	03	02	01	23	09	57
10	07	78	03	0c	00	40	00	b8	2d	20	c0	0e	01	4f	00	fe
20	08	10	06	10	18	10	28	10	38	10	e3	05	03	01	02	3a
30	80	18	71	38	2d	40	58	2c	45	00	40	84	63	00	00	1e
40	01	1d	80	18	71	1c	16	20	58	2c	25	00	40	84	63	00
50	00	9e	01	1d	00	72	51	d0	1e	20	6e	28	55	00	40	84
60	63	00	00	1e	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	81

5. Final Assembly Adjustment

5.1. White Balance Adjustment

5.1.1. Overview

5.1.1.1. W/B adj. Objective & How-it-works

(1) Objective: To reduce each Panel's W/B deviation

(2) How-it-works: When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.

(3) Adj. condition: normal temperature

- Surrounding Temperature: 25±5 °C
- Warm-up time: About 5 Min
- Surrounding Humidity: 20% ~ 80%
- Before White balance adjustment, Keep power on status, don't power off

5.1.1.2. 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 (80°~ 100°)

(3) Aging time

- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.1.2. Equipment

(1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12 / LED: CH14 / OLED : CH : 17)

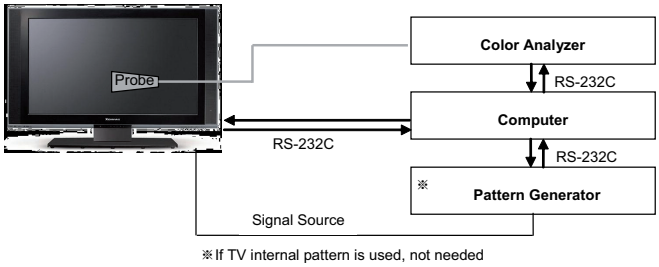
(2) Adj. Computer (During auto adj., RS-232C protocol is needed)

(3) Adjust Remocon

(4) Video Signal Generator MSPG-925F 720p/204-Gray (Model: 217, Pattern: 49)

※ Color Analyzer Matrix should be calibrated using CS-1000

5.1.3. Equipment connection



※If TV internal pattern is used, not needed

5.1.4. Adjustment Command (Protocol)

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

RS-232C COMMAND			Explanation
CMD	DATA	ID	
Wb	00	00	Begin White Balance adj.
Wb	00	ff	End White Balance adj. (internal pattern disappears)

(2) Adjustment Map

	Adj. item	Command (lower caseASCII)		Data Range (Hex.)	
		CMD1	CMD2	MIN	MAX
Cool	R Gain	j	g	00	C0
	G Gain	j	h	00	C0
	B Gain	j	i	00	C0
Medium	R Gain	j	a	00	C0
	G Gain	j	b	00	C0
	B Gain	j	c	00	C0
Warm	R Gain	j	d	00	C0
	G Gain	j	e	00	C0
	B Gain	j	f	00	C0

5.1.5. Adjustment method

5.1.5.1. Auto WB calibration

(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

5.1.5.2. OLED White balance table

(1) Cool Mode

- Purpose : Especially B-gain fix adjust leads to the luminance enhancement. Adjust the color temperature to reduce the deviation of the module color temperature.
- Principle : To adjust the white balance without the saturation, Adjust the B gain more than 192 (If R gain or G gain is more than 255 , G gain can adjust less than 192) and change the others (R/G Gain).
- Adjustment mode : mode – Cool

(2) Medium / Warm Mode

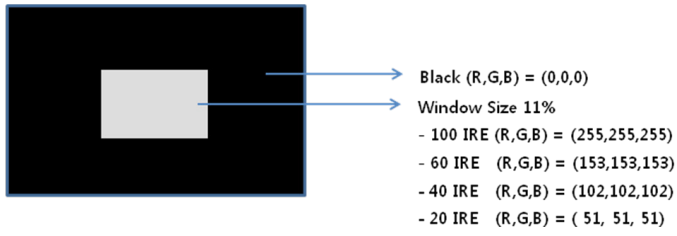
- Purpose : Adjust the color temperature to reduce the deviation of the module color temperature
- Principle : To adjust the white balance without the saturation, Fix the B gain to 192 (default data) and decrease the others
- Adjustment mode : mode – Medium

(3) Warm

- 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 W gain to 192 (default data) and decrease the others.
- Adjustment mode : mode – Warm

(4) THX(Warm)

- 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 W gain to 192 (default data) and decrease the others.
- Adjustment mode : mode – Warm
- Auto White balance 4 point
- Adjust 100 IRE White Balance
- Adjust Gamam 2.2 each IRE (60, 40, 20). Using max luminance
- Complete 4 point gamma, W/B.



Picture is H 1/3, V 1/3
fixed Center Window size
Outer Black Picture do not need change Contrast / Brightness
Center Level can change Contrast / Bright
Window pattern of Center 0~255 level

5.1.6. Reference (White Balance Adj. coordinate and color temperature)

(1) Luminance: 204 Gray, 80IRE
(2) Standard color coordinate and temperature using CS-1000 (over 26 inch)

5.1.7. Reference (White Balance Adj. coordinate and color temperature)

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

Mode	Coordinate		Temp	△uv
	X	Y		
Cool	0.271	0.270	13,000K	0.0000
Medium	0.285	0.293	9,300K	0.0000
Warm	0.313	0.329	6,500K	0.0000

- Standard color coordinate and temperature using CA-210(CH-14)

Mode	Coordinate		Temp	△uv
	X	Y		
Cool	0.271±0.002	0.270±0.002	13,000K	0.0000
Medium	0.285±0.002	0.293±0.002	9,300K	0.0000
Warm	0.313±0.002	0.329±0.002	6,500K	0.0000

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

5.2. Tool Option setting & Inspection per countries

5.2.1. Overview

(1) Tool option selection is only done for models in Non-USA North America due to rating
(2) Applied model: EA34D Chassis applied to CANADA and MEXICO

5.2.2. Country Group selection

(1) Press ADJ key on the Adj. R/C, and then select Country Group Menu
(2) Depending on destination, select US, then on the lower Country option, select US, CA, MX.
Selection is done using +, - KEY

5.2.3. Tool Option inspection

- Press Adj. key on the Adj. R/C, then select Tool option

Model	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5	Tool 6	Tool 7
55EA9800-UA	32791	21777	5085	61837	55446	1432	47147

※ Tool option can be reconstructed by Software

5.3. Magic Motion remote controller Check

5.3.1. Test equipment

- RF-remote controller for check, IR-KEY-CODE remote controller.
- Check AA battery before test. A recommendation is that a tester change battery every lots.

5.3.2. Test

(1) Make pairing with TV set by pressing “Start key(Wheel key)” on RCU.
(2) Check a cursor on screen by pressing ‘Wheel key” of RCU
(3) Stop paring with TV set by pressing “Back+ Home” key of RCU

5.3.3. Applied models

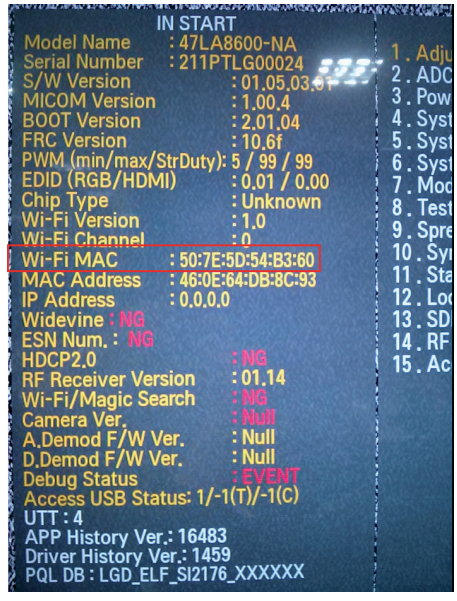
Chassis	Model Name	Magic RF receiver
EA34D	55EA8800-UA	Built-in
	55EA9800-UA	

5.4. Wi-Fi MAC Address Check

5.4.1. Using RS232 Command

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

5.4.2. Check the menu on in-start



5.5. 3D pattern test (Only for 3D models)

5.5.1. Test equipment

(1) Pattern Generator MSHG-600 or MSPG-6100 (HDMI 1.4 support)
(2) Pattern: HDMI mode (model No. 872, pattern No. 83)

5.5.2. Test method

(1) Input 3D test signal as Fig.1.

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

(2) Press 'OK" key as a 3D input OSD is shown.
(3) Check pattern as Fig2 without 3D glasses. (3D mode without 3D glasses)

Fig.2
<OK in 3D mode without 3D glasses>

Fig.3
<NG in 3D mode without 3D glasses>

5.6. HDMI ARC Function Inspection

5.6.1. Test equipment

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

5.6.2. 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

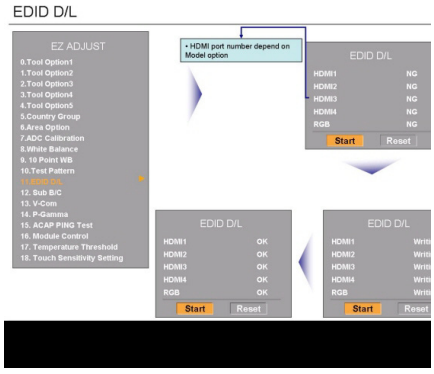
(3) Check the Sound from the Speaker or using AV & Optic TEST program (It's connected to MSHG-600)

Flow Line

Cell Line

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

5.7. 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.

5.8. Ship-out mode check (In-stop)

▪ After final inspection, press In-Stop key of the Adj. R/C and check that the unit goes to Stand-by mode

6. AUDIO output check

6.1. Audio input 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)

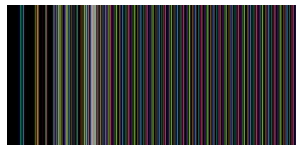
6.2. Specification

No	Item	Min	Typ	Max	Unit	Remark
1	Audio practical max Output, L/R (Distor-tion=10% max Output)	9.0 8.5	10.0 8.9	12.0 9.9	W Vrms	(1) Measurement condition - EQ/AVL/Clear Voice: Off (2) Speaker (8Ω Impedance)

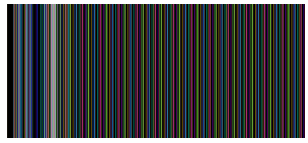
6.3. Audio Output Inspection

(1) INPUT CHECK –S KEY OF ADJUST REMOTE CONTROLLER TO INSPECT SPEAKER

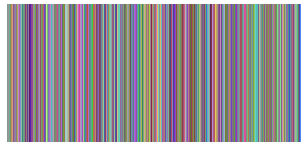
(2) When you click the first, the output volume of left & right main speakers must be 50



(3) When you click the second, the output volume of left & right main speakers must be 80.

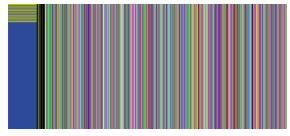


(4) When you click the third, the output volume of left & right main speakers must be 100.

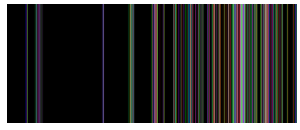


(5) When you click the fourth, the output volume of left main speaker must be 50.

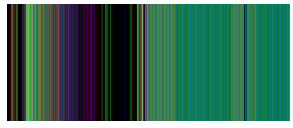
(6) When you click the fifth, the output volume of right main speaker must be 50.



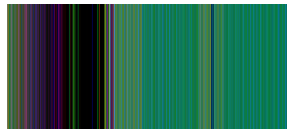
(7) When you click the sixth, the output volume of left sub speaker must be 100.



(8) When you click the seventh, the output volume of right sub speaker must be 100.



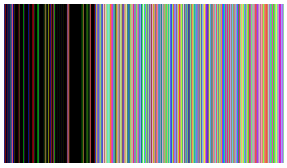
(9) When you click the eighth, the output volume of all speakers (left & right main speaker and left & right sub speaker) must be 30.



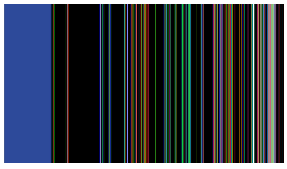
7. Soft Touch Key Check

- Before you start a test, you must run a 'Power Only Mode'. AFTER Touch SOFT TOUCH KEY OF SET, LOCAL KEY CHECK DISPLAY WILL START

(1) Tab Test : Touch SOFT TOUCH KEY OF SET quickly

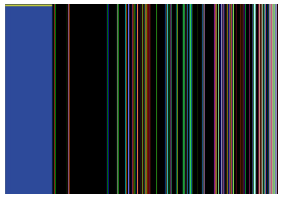


(2) Left Test : Touch SOFT TOUCH KEY OF SET to the left side.



(3) Right Test : Touch SOFT TOUCH KEY OF SET to the right side

(4) Long Tab Test : Touch SOFT TOUCH KEY OF SET long.

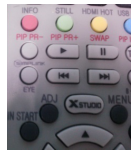


- Don't need to run a test with this sequence. For example, the sequence such as 'Right → Tab → Long Tab → Left' is allowed.

8. EYE Q Green Inspection

(1) Turn on TV

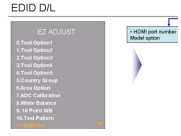
(2) Press EYE key of Adj. R/C



(3) Cover the Eye Q sensor on the front of the using your hand and wait for 6 seconds

(4) Confirm that value is lower than 100 of the "Raw Data (Sensor data, Back light)" If after 6 seconds, value is not lower than 100, replace Eye Q sensor

(5) Remove your hand from the Eye Q sensor and wait for 6 seconds



(6) Confirm that "ok" pop up. If change is not seen, replace Eye Q sensor

9. GND and HI-POT Test

9.1. GND & HI-POT auto-check preparation

(1) Check the POWER CABLE and SIGNAL CABE insertion condition

9.2. 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.

9.3. Checkpoint

(1) Test voltage
- GND: 1.5KV/min at 100mA
- SIGNAL: 3KV/min at 100mA

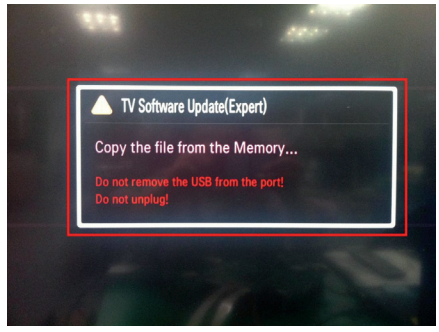
(2) TEST time: 1 second
(3) TEST POINT
- GND Test = POWER CORD GND and SIGNAL CABLE GND.
- Hi-pot Test = POWER CORD GND and LIVE & NEUTRAL.

(4) LEAKAGE CURRENT: At 0.5mArms

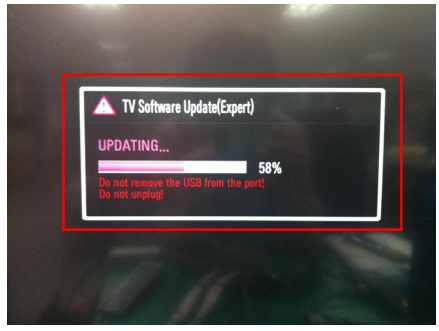
10. USB S/W Download (optional, Service only)

(1) Put the USB Stick to the USB socket
(2) Automatically detecting update file in USB Stick
- If your downloaded program version in USB Stick is lower than that of TV set, it didn't work. Otherwise USB data is automatically detected.

(3) Show the message "Copying files from memory"



(4) Updating is staring



(5) Updating Completed, The TV will restart automatically

(6) If your TV is turned on, check your updated version and Tool option.

* If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. If all channel data is cleared, you didn't have a DTV/ ATV test on production line.

* After downloading, TOOL OPTION setting is needed again.
(1) Push "IN-START" key in service remote controller.
(2) Select "Tool Option 1" and Push "OK" button.
(3) Punch in the number. (Each model has their number.)

11. Optional adjustments

11.1. Manual ADC Calibration

11.1.1. Equipment & Condition

(1) Adjustment Remocon
(2) 801GF (802B, 802F, 802R) or MSPG925FA Pattern Generator
- Resolution: 480i Comp1 (MSPG-925FA: model-209, pattern-65)
- Resolution: 1080p Comp1 (MSPG-925FA: model-225, pattern-65)
- Resolution : 1080p RGB (MSPG-925FA: model-225, pattern-65)
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level: 0.7±0.1 Vp-p

11.1.2. Equipment & Condition

11.1.2.1. ADC 480i/1080p Comp

(1) Check connected condition of Comp cable to the equipment
(2) Give a 480i Mode, Horizontal 100% Color Bar Pattern to Comp1. (MSPG-925FA → Model: 209, Pattern: 65)
(3) Change input mode as Component1 and picture mode as “Standard”
(4) Press the In-start Key on the ADJ remote after at least 1 min of signal reception. Then, select 7.External ADC. And Press OK or Right Button for going to sub menu.
(5) Press OK in Comp 480i menu
(6) Give a 1080p Mode, Horizontal 100% Color Bar Pattern to Comp1. (MSPG-925FA → Model: 225, Pattern: 65)
(7) Press OK in Comp 1080p menu
(8) If ADC Comp is successful, “ADC Component Success” is displayed. If ADC calibration is failure, “ADC Component Fail” is displayed.
(10) If ADC calibration is failure, after rechecking ADC pattern or condition, retry calibration
(11) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration

11.2. Manual White balance Adjustment

11.2.1. 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 (80°~ 100°)
(3) Aging time
- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern

11.2.2. Equipment

(1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12 / LED: CH14/ OLED : CH17)
(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)

11.2.3. Adjustment

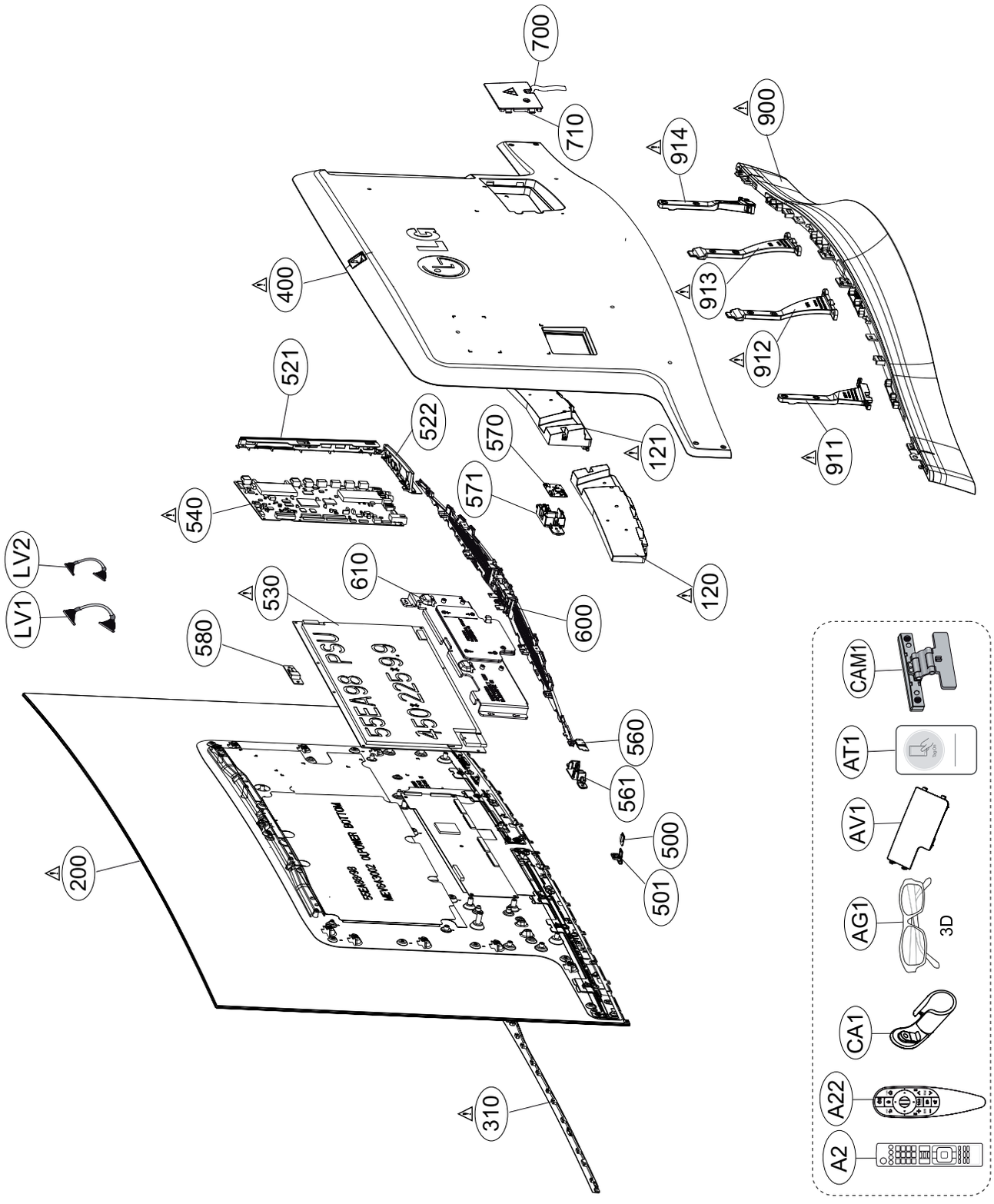
(1) Set TV in Adj. mode using POWER ON
(2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface.
(3) Press ADJ key → EZ adjust using adj. R/C → 6. White-Balance then press the cursor to the right (KEY►).
When KEY(►) is pressed 216 Gray internal 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.

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

MAIN Clock(24Mhz)

C100 10pF — X_TAL_1 — Y101 24.0MHz X100 — R100 1M — XIN_MAIN

C101 10pF — X_TAL_2 — GND_2 — XO_MAIN

System Clock for Analog block(24Mhz)

NVRAM

EEPROM_RENESAS IC102 R1EX24256BASA0A

+3.3V_NORMAL — C103 0.1uF

Write Protection

- Low : Normal Operation
- High : Write Protection

A0 1, A1 2, A2 3, VSS 4, VCC 8, WP 7, SCL 6, SDA 5

A0'h

R139 33 — I2C_SCL5

R140 33 — I2C_SDA5

EEPROM_ST IC102-2 M24256-BRMN6TP

PLL SET

PLL SET[1:0] : internal pull up
"00" : CPU(1200Mhz),M0 / M1 DDR(792,792 Mhz)
"01" : CPU(1056Mhz),M0 / M1 DDR(672,672 Mhz)
"10" : CPU(1056Mhz),M0 / M1 DDR(792,792 Mhz)
"11" : CPU(960Mhz),M0 / M1 DDR(792,792 Mhz)

OPT R100 33 — PLLSET1

R101 33 OPT — PLLSET0

OP MODE

OP MODE[1:0]
"00" : Normal Mode
"01/10/11" : Internal Test mode

+3.3V_NORMAL — OPT R133 33 — OPM1

R134 33 OPT — OPM0

INSTANT_MODE0

+3.3V_NORMAL — R150 3.3K OPT

INSTANT boot MODE
"1 : Instant boot
"0 : normal

(internal pull down) — INSTANT_BOOT

BOOT_MODE0

+3.3V_NORMAL — R117 3.3K OPT — BOOT_MODE

R118 3.3K

BOOT MODE
"0 : EMMC
"1 : TEST MODE

Jtag I/F For Main

TP101 TRST_N0
TP102 TDI0
TP103 TDO0
TP104 TMS0
TP105 TCK0
TP106 SOC_RESET

C106 33pF 50V

+3.3V_NORMAL — TP108

TP109

IC100 LG1154D_H13D

EB_ADDR[0-14] — EB_DATA[0-7] — EMMC_DATA[0-7]

USB_OCD2, USB_CTL2, /USB_OCD3, USB_CTL3, EB_BE_N1, EB_OE_N, EB_BE_N0

EB_ADDR[14], EB_ADDR[13], EB_ADDR[12], EB_ADDR[11], EB_ADDR[10], EB_ADDR[9], EB_ADDR[8], EB_ADDR[7], EB_ADDR[6], EB_ADDR[5], EB_ADDR[4], EB_ADDR[3], EB_ADDR[2], EB_ADDR[1], EB_ADDR[0]

EB_DATA[7], EB_DATA[6], EB_DATA[5], EB_DATA[4], EB_DATA[3], EB_DATA[2], EB_DATA[1], EB_DATA[0]

EMMC_CLK, EMMC_CMD, EMMC_RST, EMMC_DATA[7], EMMC_DATA[6], EMMC_DATA[5], EMMC_DATA[4], EMMC_DATA[3], EMMC_DATA[2], EMMC_DATA[1], EMMC_DATA[0]

EPHY_REFCLK, EPHY_CRS_DV, EPHY_MDIO, EPHY_MDC, EPHY_EN, EPHY_TXD1, EPHY_TXD0, EPHY_RXD1, EPHY_RXD0

XIN_MAIN — R152 560 — XO_MAIN

XIN A26, XOUT B26

XTAL_BYPASS B27, H13DA_XTAL AT37

SOC_RESET — PORES_N AU16

OPM1 AD34, OPM0 AD33

H13A_SCL — H13DA_SCL AT26

H13A_SDA — H13DA_SDA AU26

TRST_N0 — TRST_N0 AP9

TMS0 — TMS0 AN9

TCK0 — TCK0 AP11

TDI0 — TDI0 AN11

TDO0 — TDO0 AN10

TRST_N1 AM10, TMS1 AM9, TCK1 AM11, TDI1 AM12, TDO1 AL11

PLLSET1 — PLLSET1 AL9

PLLSET0 — PLLSET0 AL10

BOOT_MODE — BOOT_MODE AE34

EPHY_INT — R149 33 — EXT_INTR3/GPIO70 Y33

EXT_INTR2/GPIO69 W32

R151 33 — EXT_INTR1/GPIO68 W33

R174 33 — EXT_INTR0/GPIO67 W34

R184 33 1/16W 5%

SOC_RX — UART0_RXD AU12

SOC_TX — UART0_TXD AT12

M_REMOTE_RX — UART1_RXD AU13

M_REMOTE_TX — UART1_TXD AT13

M_REMOTE_RTS — UART1_RTS AP12

M_REMOTE_CTS — UART1_CTS AR12

TP106 IRB_SPI_SS — SPI_CS0/GPIO36 AE35

TP107 IRB_SPI_MOSI — SPI_DO0/GPIO38 AE36

TP110 IRB_SPI_MISO — SPI_DI0/GPIO39 AF36

TP111 IRB_SPI_CK — SPI_SCLK0/GPIO37 AF35

SPI_CS1 AG34, SPI_DO1 AF33, SPI_DI1 AG33, SPI_SCLK1 AG32

I2C_SCL1 — SCL0/GPIO66 AR15

I2C_SDA1 — SDA0/GPIO65 AP15

I2C_SCL_MICOM_SOC — SCL1/GPIO64 AR16

I2C_SDA_MICOM_SOC — SDA1/GPIO79 AP16

I2C_SCL2_SOC — SCL2/GPIO78 AP17

I2C_SDA2_SOC — SDA2/GPIO77 AR17

I2C_SCL4 — SCL3 AP6

I2C_SDA4 — SDA3 AR6

I2C_SCL5 — SCL4 AH32

I2C_SDA5 — SDA4 AJ33

I2C_SCL6 — SCL5 AH34

I2C_SDA6 — SDA5 AH33

CAM_CE1_N F33, CAM_CE2_N F34, CAM_CD1_N D32, CAM_CD2_N E32, CAM_VS1_N/GPIO85 G32, CAM_VS2_N/GPIO86 F32, CAM_IREQ_N/GPIO73 G34, CAM_RESET D33, CAM_INPACK_N/GPIO74 H32, CAM_VCCEN_N/GPIO87 E33, CAM_WAIT_N/GPIO84 D34, CAM_REG_N/GPIO72 H33, CAM_IOIS16_N/GPIO83 H03

SC_CLK/GPIO130 T33, SC_DATA/GPIO133 U33, SC_VCCEN/GPIO129 T32, SC_VCC_SEL/GPIO128 V32, SC_RST/GPIO131 V33, SC_DATA/GPIO132 V34

SD_CLK/GPIO125 A25, SD_CMD/GPIO124 C25, SD_CD_N/GPIO123 B25, SD_WP_N/GPIO122 D25, SD_DATA3/GPIO121 E24, SD_DATA2/GPIO120 D24, SD_DATA1/GPIO135 C24, SD_DATA0/GPIO134 C24

USB2_2_DP0 L37, USB2_2_DM0 L38, USB2_2_TXRTUNE K34

USB2_1_DP0 M37, USB2_1_DM0 M36, USB2_1_TXRTUNE K33

USB2_0_DP A17, USB2_0_DM A7, USB2_0_TXRTUNE AP7

USB3_DP0 P37, USB3_DM0 P36, USB3_RX0P N37, USB3_RX0M N36, USB3_TX0P R36, USB3_TX0M R37, USB3_RXREF N34, USB3_REFPADCLKM P33, USB3_REFPADCLKP P32

NC_1 L32, NC_2 L33, NC_3 M31, NC_4 AJ31

GPIO136 J32, GPIO137 J33, GPIO138 K32, GPIO139 J34

EBI_DATA7/GPIO105 K34, EBI_DATA6/GPIO104 K35, EBI_DATA5/GPIO119 C33, EBI_DATA4/GPIO118 A34, EBI_DATA3/GPIO117 B34, EBI_DATA2/GPIO116 C34, EBI_DATA1/GPIO115 A35, EBI_DATA0/GPIO114 A36

EBI_ADDR15/GPIO89 K36, EBI_ADDR14/GPIO88 K37, EBI_ADDR13/GPIO103 L35, EBI_ADDR12/GPIO102 H35, EBI_ADDR11/GPIO101 H36, EBI_ADDR10/GPIO100 J35, EBI_ADDR9/GPIO99 J36, EBI_ADDR8/GPIO98 H37, EBI_ADDR7/GPIO97 G37, EBI_ADDR6/GPIO96 G36, EBI_ADDR5/GPIO111 C36, EBI_ADDR4/GPIO110 C35, EBI_ADDR3/GPIO109 B37, EBI_ADDR2/GPIO108 B36, EBI_ADDR1/GPIO107 A37, EBI_ADDR0/GPIO106 B35

EBI_CS3/GPIO93, EBI_CS2/GPIO92, EBI_CS1/GPIO91, EBI_CS0/GPIO90, EBI_WE_N/GPIO95, EBI_OE_N/GPIO94, EBI_WAIT/GPIO84, EBI_BE_N1/GPIO81, EBI_BE_N0/GPIO80

EMMC_CLK Y37, EMMC_CMD Y36, EMMC_RSTN W35, EMMC_DATA7 T36, EMMC_DATA6 W36, EMMC_DATA5 V35, EMMC_DATA4 V37, EMMC_DATA3 V36, EMMC_DATA2 U35, EMMC_DATA1 U36, EMMC_DATA0 U37

EPHY_REFCLK AU11, EPHY_CRS_DV AU8, EPHY_MDIO AT8, EPHY_MDC AR8, EPHY_EN AR10, EPHY_TXD1 AT10, EPHY_TXD0 AU10, EPHY_RXD1 AT11, EPHY_RXD0 AR11

XIN_MAIN — R152 560 — XO_MAIN

XIN A26, XOUT B26

XTAL_BYPASS B27, H13DA_XTAL AT37

SOC_RESET — PORES_N AU16

OPM1 AD34, OPM0 AD33

H13A_SCL — H13DA_SCL AT26

H13A_SDA — H13DA_SDA AU26

TRST_N0 — TRST_N0 AP9

TMS0 — TMS0 AN9

TCK0 — TCK0 AP11

TDI0 — TDI0 AN11

TDO0 — TDO0 AN10

TRST_N1 AM10, TMS1 AM9, TCK1 AM11, TDI1 AM12, TDO1 AL11

PLLSET1 — PLLSET1 AL9

PLLSET0 — PLLSET0 AL10

BOOT_MODE — BOOT_MODE AE34

EPHY_INT — R149 33 — EXT_INTR3/GPIO70 Y33

EXT_INTR2/GPIO69 W32

R151 33 — EXT_INTR1/GPIO68 W33

R174 33 — EXT_INTR0/GPIO67 W34

R184 33 1/16W 5%

SOC_RX — UART0_RXD AU12

SOC_TX — UART0_TXD AT12

M_REMOTE_RX — UART1_RXD AU13

M_REMOTE_TX — UART1_TXD AT13

M_REMOTE_RTS — UART1_RTS AP12

M_REMOTE_CTS — UART1_CTS AR12

TP106 IRB_SPI_SS — SPI_CS0/GPIO36 AE35

TP107 IRB_SPI_MOSI — SPI_DO0/GPIO38 AE36

TP110 IRB_SPI_MISO — SPI_DI0/GPIO39 AF36

TP111 IRB_SPI_CK — SPI_SCLK0/GPIO37 AF35

SPI_CS1 AG34, SPI_DO1 AF33, SPI_DI1 AG33, SPI_SCLK1 AG32

I2C_SCL1 — SCL0/GPIO66 AR15

I2C_SDA1 — SDA0/GPIO65 AP15

I2C_SCL_MICOM_SOC — SCL1/GPIO64 AR16

I2C_SDA_MICOM_SOC — SDA1/GPIO79 AP16

I2C_SCL2_SOC — SCL2/GPIO78 AP17

I2C_SDA2_SOC — SDA2/GPIO77 AR17

I2C_SCL4 — SCL3 AP6

I2C_SDA4 — SDA3 AR6

I2C_SCL5 — SCL4 AH32

I2C_SDA5 — SDA4 AJ33

I2C_SCL6 — SCL5 AH34

I2C_SDA6 — SDA5 AH33

CAM_CE1_N F33, CAM_CE2_N F34, CAM_CD1_N D32, CAM_CD2_N E32, CAM_VS1_N/GPIO85 G32, CAM_VS2_N/GPIO86 F32, CAM_IREQ_N/GPIO73 G34, CAM_RESET D33, CAM_INPACK_N/GPIO74 H32, CAM_VCCEN_N/GPIO87 E33, CAM_WAIT_N/GPIO84 D34, CAM_REG_N/GPIO72 H33, CAM_IOIS16_N/GPIO83 H03

SC_CLK/GPIO130 T33, SC_DATA/GPIO133 U33, SC_VCCEN/GPIO129 T32, SC_VCC_SEL/GPIO128 V32, SC_RST/GPIO131 V33, SC_DATA/GPIO132 V34

SD_CLK/GPIO125 A25, SD_CMD/GPIO124 C25, SD_CD_N/GPIO123 B25, SD_WP_N/GPIO122 D25, SD_DATA3/GPIO121 E24, SD_DATA2/GPIO120 D24, SD_DATA1/GPIO135 C24, SD_DATA0/GPIO134 C24

USB2_2_DP0 L37, USB2_2_DM0 L38, USB2_2_TXRTUNE K34

USB2_1_DP0 M37, USB2_1_DM0 M36, USB2_1_TXRTUNE K33

USB2_0_DP A17, USB2_0_DM A7, USB2_0_TXRTUNE AP7

USB3_DP0 P37, USB3_DM0 P36, USB3_RX0P N37, USB3_RX0M N36, USB3_TX0P R36, USB3_TX0M R37, USB3_RXREF N34, USB3_REFPADCLKM P33, USB3_REFPADCLKP P32

NC_1 L32, NC_2 L33, NC_3 M31, NC_4 AJ31

GPIO136 J32, GPIO137 J33, GPIO138 K32, GPIO139 J34

EBI_DATA7/GPIO105 K34, EBI_DATA6/GPIO104 K35, EBI_DATA5/GPIO119 C33, EBI_DATA4/GPIO118 A34, EBI_DATA3/GPIO117 B34, EBI_DATA2/GPIO116 C34, EBI_DATA1/GPIO115 A35, EBI_DATA0/GPIO114 A36

EBI_ADDR15/GPIO89 K36, EBI_ADDR14/GPIO88 K37, EBI_ADDR13/GPIO103 L35, EBI_ADDR12/GPIO102 H35, EBI_ADDR11/GPIO101 H36, EBI_ADDR10/GPIO100 J35, EBI_ADDR9/GPIO99 J36, EBI_ADDR8/GPIO98 H37, EBI_ADDR7/GPIO97 G37, EBI_ADDR6/GPIO96 G36, EBI_ADDR5/GPIO111 C36, EBI_ADDR4/GPIO110 C35, EBI_ADDR3/GPIO109 B37, EBI_ADDR2/GPIO108 B36, EBI_ADDR1/GPIO107 A37, EBI_ADDR0/GPIO106 B35

EBI_CS3/GPIO93, EBI_CS2/GPIO92, EBI_CS1/GPIO91, EBI_CS0/GPIO90, EBI_WE_N/GPIO95, EBI_OE_N/GPIO94, EBI_WAIT/GPIO84, EBI_BE_N1/GPIO81, EBI_BE_N0/GPIO80

EMMC_CLK Y37, EMMC_CMD Y36, EMMC_RSTN W35, EMMC_DATA7 T36, EMMC_DATA6 W36, EMMC_DATA5 V35, EMMC_DATA4 V37, EMMC_DATA3 V36, EMMC_DATA2 U35, EMMC_DATA1 U36, EMMC_DATA0 U37

EPHY_REFCLK AU11, EPHY_CRS_DV AU8, EPHY_MDIO AT8, EPHY_MDC AR8, EPHY_EN AR10, EPHY_TXD1 AT10, EPHY_TXD0 AU10, EPHY_RXD1 AT11, EPHY_RXD0 AR11

GPIO31 AL34 — CAM_SLIDE_DET

GPIO30 AM33, GPIO29 AM32, GPIO28 AF30

GPIO27 AN34 — /RST_PHY

GPIO26 AK34 — RF_SWITCH_CTL

GPIO25 AL33, GPIO24 AL32

GPIO23/UART2_TX AR9 — UART2_TX

GPIO22/UART2_RX AM5 — UART2_RX

AM6 — AMP_RESET_N

GPIO21 AM7, GPIO20 AP20

GPIO19 AL6 — INSTANT_BOOT

GPIO18 AK7

GPIO17 AK6 — SC_DET

GPIO16 AK5 — AV1_CVBS_DET

GPIO15 AJ5

GPIO14 AJ6 — COMP1_DET

GPIO13 AJ7 — M_RFModule_RESET

GPIO12 AH6 — HP_DET

GPIO11 AG7 — FRC_RESET

GPIO10 AG6 — /TU_RESET1

GPIO9 AG5 — /S2_RESET

GPIO8 AF5 — VCOM_DYN

GPIO7 AH30 — PMIC_RESET

GPIO6 AG30 — /RST_HUB

GPIO5 AN33 — FE_LNA_Ctrl2

GPIO4 AK33 — /TU_RESET2

GPIO3 AE30 — HDMI_S/W_RESET

GPIO2 AD30

GPIO1 AN32 — FE_LNA_Ctrl1

GPIO0 AK32 — HDMI_INT

+3.3V_NORMAL

DDCD0_CK AC32 — R169 3.3K

DDCD0_DA AC33 — R170 3.3K

HPD0 AB33

PHY0_ARC_OUT_0 AE37 — SPDIF_OUT_ARC

PHY0_RX0N_0 AC36 — HDMI_RX0-

PHY0_RX0P_0 AC37 — HDMI_RX0+

PHY0_RX1N_0 AB36 — HDMI_RX1-

PHY0_RX1P_0 AB37 — HDMI_RX1+

PHY0_RX2N_0 AA36 — HDMI_RX2-

PHY0_RX2P_0 AA37 — HDMI_RX2+

PHY0_RXCN_0 AD36 — HDMI_CLK-

PHY0_RXCP_0 AD37 — HDMI_CLK+

HUB_PORT_OVER0 R32 — /USB_OCD1

HUB_VBUS_CTRL0 R33 — USB_CTL1

+3.3V_NORMAL — R103 3.3K — DEBUG

For ISP

SW100 JTP-1127WEM — DEBUG

local dimming

I2C port

Model Option

+3.3V_NORMAL

		HIGH	LOW
MODEL_OPT_0	Area1	Taiwan	non Taiwan
MODEL_OPT_1	FRC	FRC(120Hz)	No FRC(60Hz)
MODEL_OPT_2	Panel	FHD	UD
MODEL_OPT_3	OLED	OLED	NON OLED
MODEL_OPT_4	Module	V13	V12
MODEL_OPT_5	Reserved		Default
MODEL_OPT_6	CP BOX	Enable	Disable
MODEL_OPT_7	T2 Tuner	Support	Not Support
MODEL_OPT_8	S Tuner	Support	Not Support
MODEL_OPT_9	Area2	AJ_JA	non AJ_JA
MODEL_OPT_10	EPI	Support	Not Support

TAIWAN R116 10K, INTERNAL_FRC R115 10K, FHD R114 10K, OLED R116 10K, V13_MODULE R120 10K, OPT R122 10K, CP_BOX R124 10K, DVB_T2_TUNER R126 10K, DVB_S_TUNER R128 10K, AJ_JA R129 10K, EPI R131 10K

HW_OPT_0 AREA option1
HW_OPT_1 FRC option
HW_OPT_2 Pannel Resol
HW_OPT_3 OLED option
HW_OPT_4 EPI PANEL version
HW_OPT_5 reserved
HW_OPT_6 CP BOX
HW_OPT_7 T2 support
HW_OPT_8 satellite support
HW_OPT_9 AREA option2
HW_OPT_10 EPI selection

NON_TAIWAN R100 10K, NO_FRC R117 10K, HD R113 10K, NON_OLED R119 10K, V13_MODULE R121 10K, NON_CP_BOX R123 10K, NON_DVB_T2_TUNER R125 10K, NON_DVB_S_TUNER R127 10K, NON_AJ_JA R130 10K, NON_EPI R132 10K

I2C PULL UP

+3.3V_TU +3.3V_TU — +3.3V_NORMAL +3.3V_NORMAL

KR_PIP R135-1 3.3K, KR_PIP R135-2 3.3K, KR_PIP R135-3 1.5K, KR_PIP R135-4 1.5K

R137 3.3K, R138 3.3K, R141 3.3K, R142 3.3K, R143 3.3K, R144 3.3K, R145 3.3K, R146 3.3K, R147 3.3K, R148 3.3K

I2C_SDA1, I2C_SCL1, I2C_SDA_MICOM_SOC, I2C_SCL_MICOM_SOC, I2C_SDA2_SOC, I2C_SCL2_SOC, I2C_SDA4, I2C_SCL4 — I2C for tuner, I2C_SDA5, I2C_SCL5, I2C_SDA6, I2C_SCL6 — I2C for tuner

I2C_SDA_MICOM 33 R105 33 I2C_SDA_MICOM_SOC

I2C_SCL_MICOM 33 R106 I2C_SCL_MICOM_SOC

I2C_SDA2 33 R102 33 I2C_SDA2_SOC

I2C_SCL2 R104 I2C_SCL2_SOC

+3.3V_NORMAL — R153 10K CI — R154 10K CI — R155 10K CI

/PCM_CE4, /PCM_CE3, CAM_CD1_N, CAM_CD2_N, CAM_IREQ_N, PCM_RESET, CAM_INPACK_N, PCM_5V_CTL, CAM_WAIT_N, CAM_REG_N

SMARTCARD_CLK_EMMC_DATA[0], SMARTCARD_DAT_EMMC_DATA[3], SMARTCARD_CMD_EMMC_CMD, SMARTCARD_PWR_SEL/SD_EMMC_DATA[1], SMARTCARD_RST/SD_EMMC_DATA[2], SMARTCARD_DATA/SD_EMMC_CLK

Only SMART CARD interface

USB2_HUB_IC_IN_DP R91 15K, USB2_HUB_IC_IN_DM R92 15K

USB_DP2 M35 — R97 200 1% — USB_DP2

USB_DM2 K33 — R98 200 1% — USB_DM2

WIFI_DP R95 200 1% — WIFI_DP

WIFI_DM R96 200 1% — WIFI_DM

C104 0.1uF, C105 0.1uF, R135 200 1%

AC-coupling CAP
Place near by LG1154D

IR_B_RESET — TP112 — IR_B_RESET

Debug

+3.3V_NORMAL — R165 3.3K — UART2_RX — UART2_TX

P101 12507WS-04L — DEBUG

BSD-NC4_H001-HD

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

SECRET

LGElectronics

LG ELECTRONICS

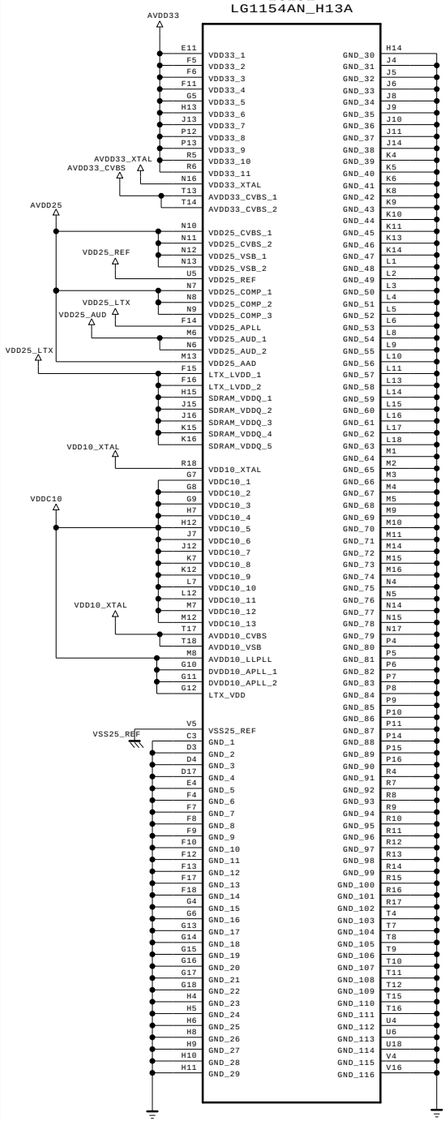
MODEL		DATE	2012-11-14
BLOCK	H13 D CHIP	SHEET	/

LG1154A LG1154D

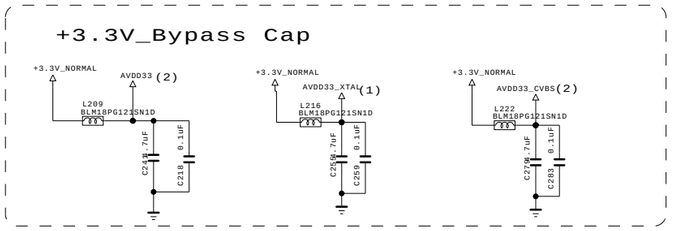
LG1154A

H13A_NON_BRAZIL

IC101
LG1154AN_H13A

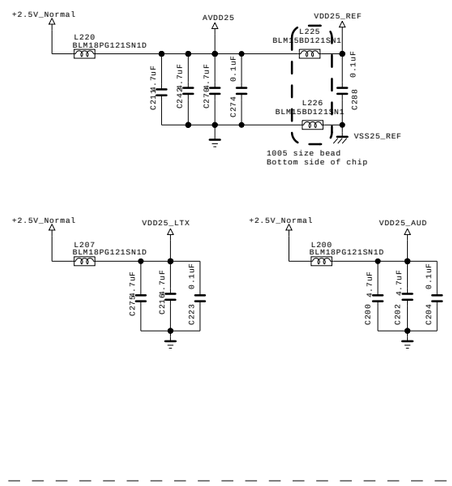


+3.3V_Bypass Cap

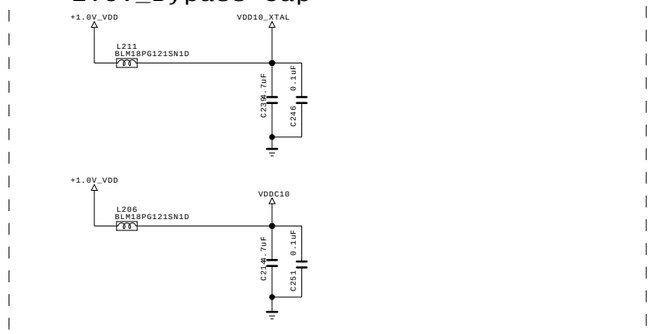


+2.5V_Bypass Cap

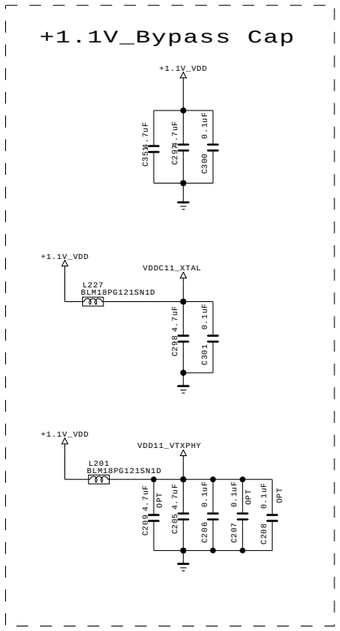
AFE 3CH Power



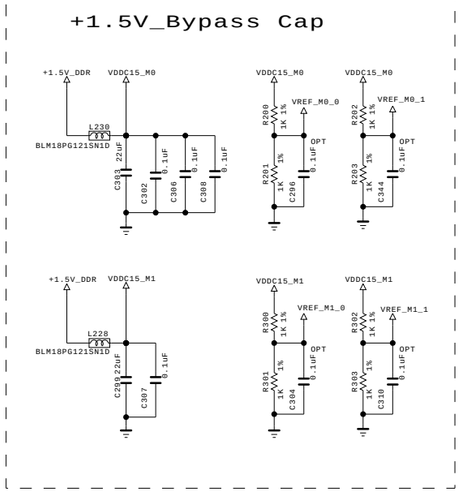
+1.0V_Bypass Cap



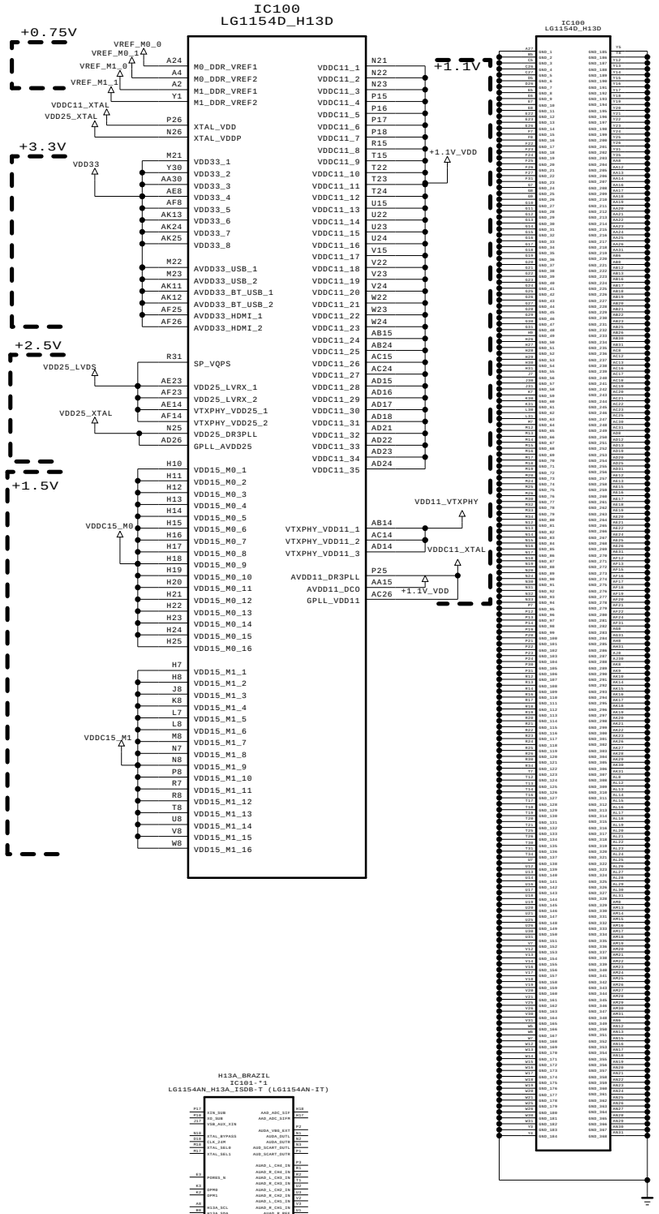
+1.1V_Bypass Cap



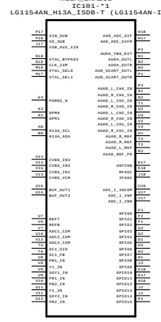
+1.5V_Bypass Cap



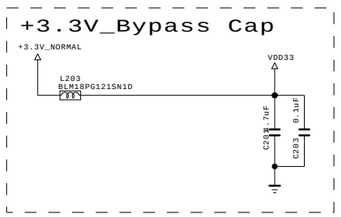
IC100
LG1154D_H13D



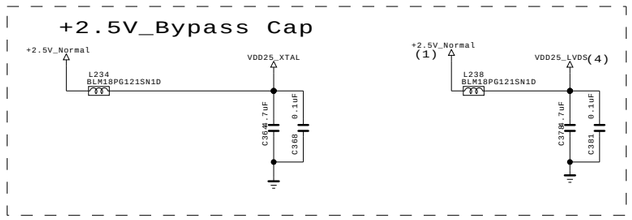
H13A_BRAZIL
IC101-*1
LG1154AN_H13A_ISDB-T (LG1154AN-IT)



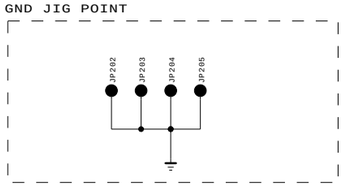
+3.3V_Bypass Cap



+2.5V_Bypass Cap



GND JIG POINT



SMD TOP for EMI

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

SECRET
LGElectronics

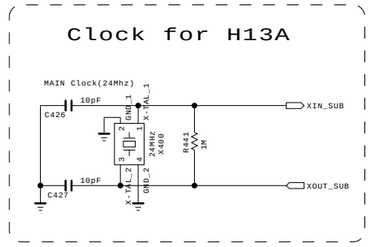
LG ELECTRONICS

BSD-NC4_H002-HD

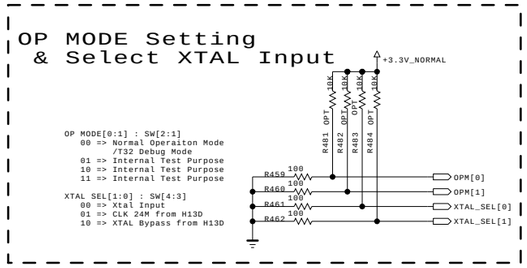
MODEL		DATE	2012-12-24
BLOCK	MAIN POWER	SHEET	/

11/05/31

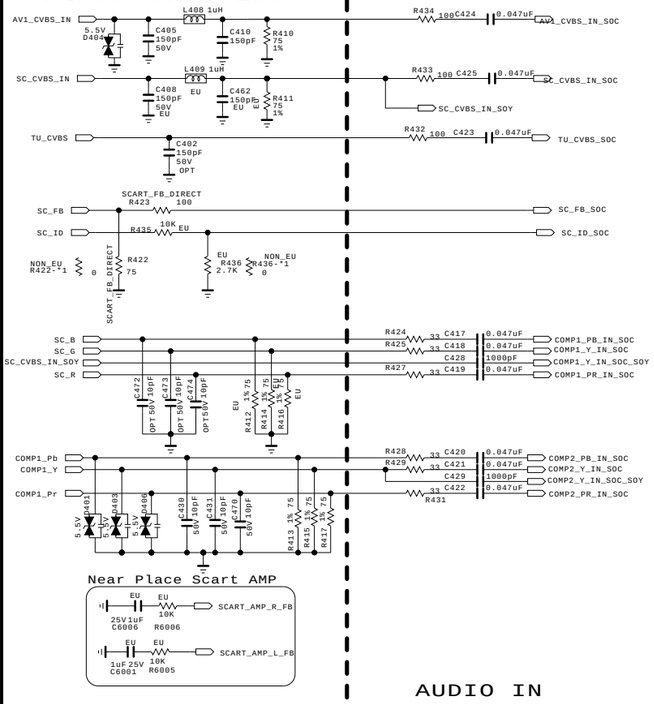
Clock for H13A



OP MODE Setting & Select XTAL Input



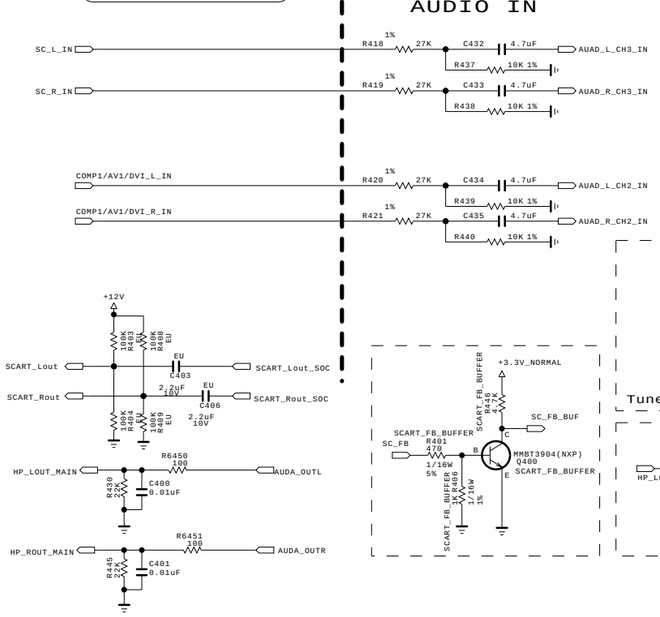
Place JACK Side



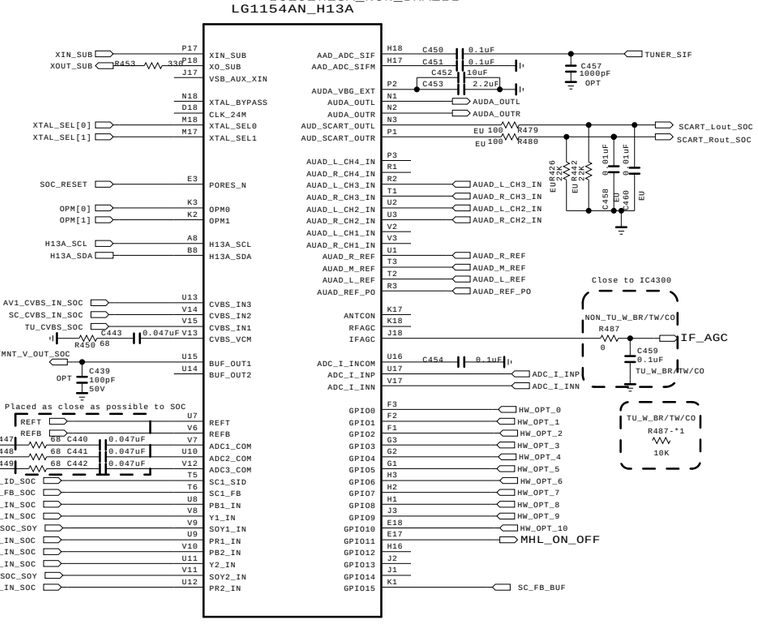
Place SOC Side

Near Place Scart AMP

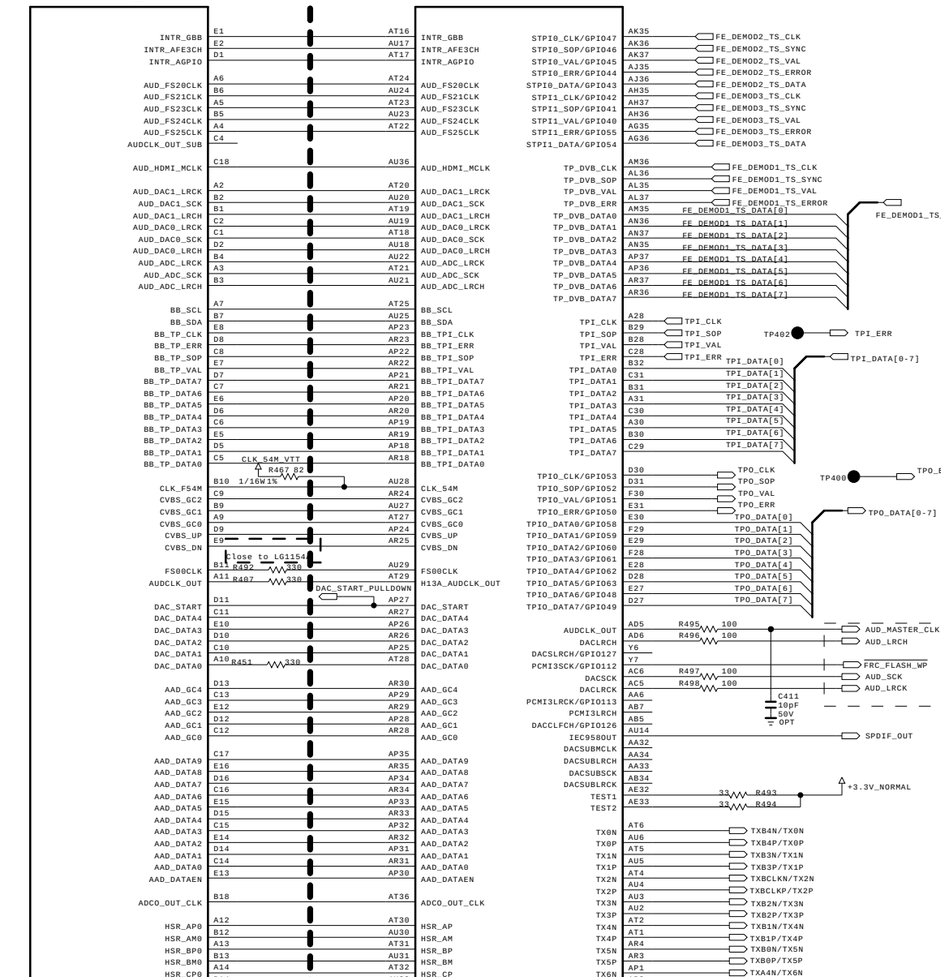
AUDIO IN



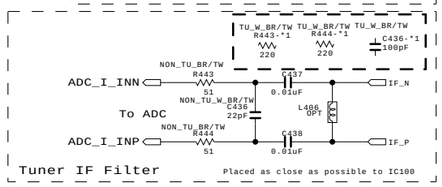
IC101H13A_NON_BRAZIL LG1154AN_H13A



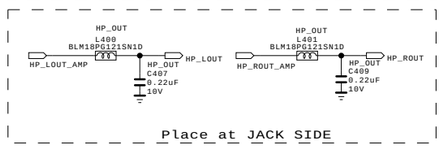
IC100 LG1154D_H13D



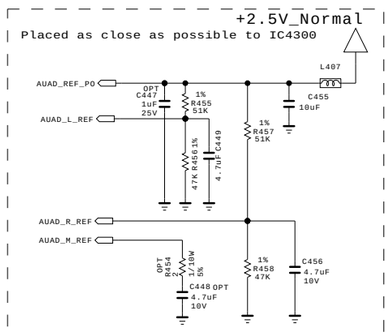
Tuner IF Filter



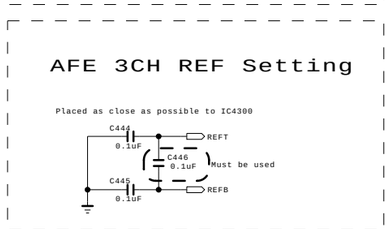
Place at JACK SIDE



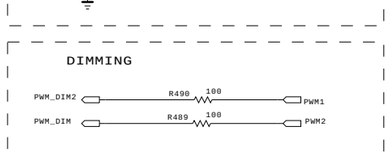
+2.5V_Normal



AFE 3CH REF Setting



DIMMING



LG1154A LG1154D

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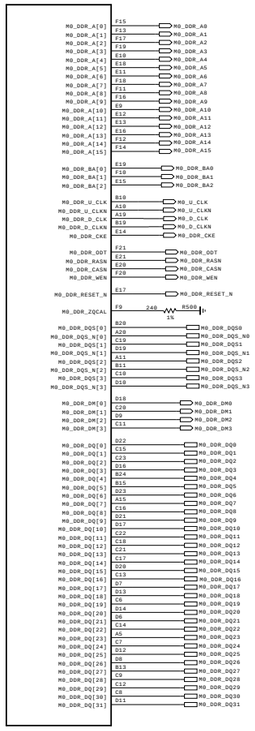
SECRET
LGElectronics

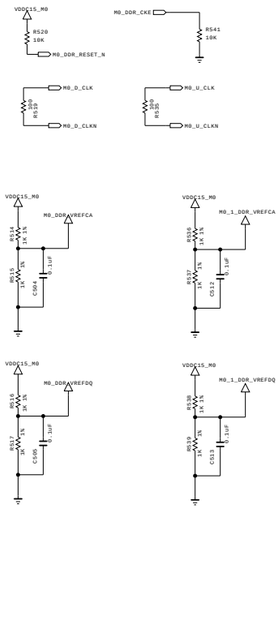
LG ELECTRONICS

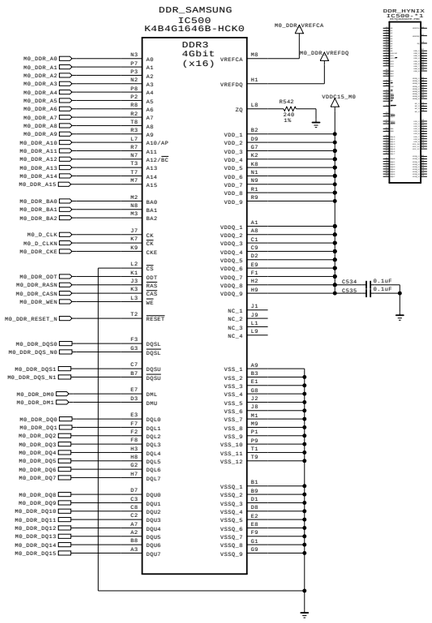
BSD-NC4_H004-HD

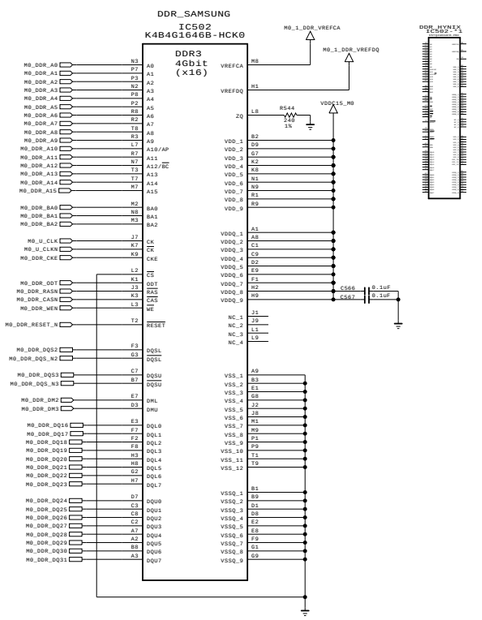
MODEL		DATE	2012-11-13
BLOCK	MAIN AUDIO/VIDEO	SHEET	/

IC100
LG1154D_H13D

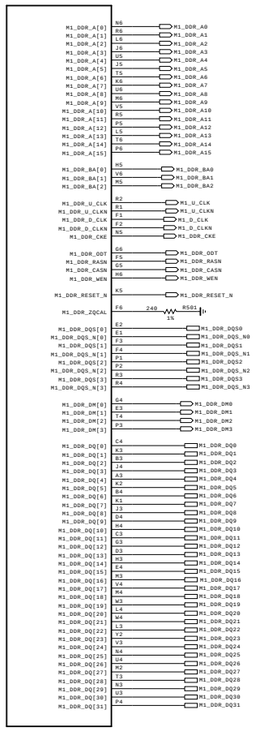


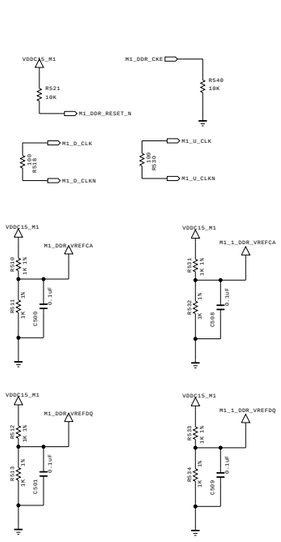


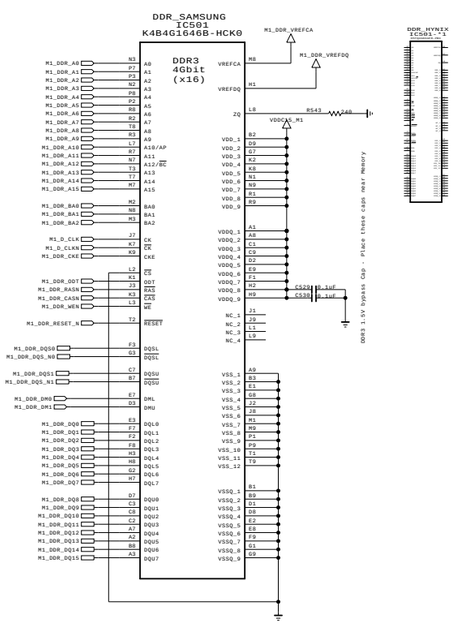


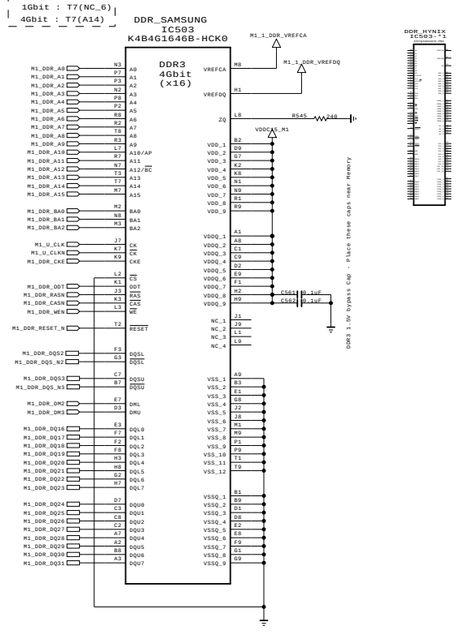


IC100
LG1154D_H13D









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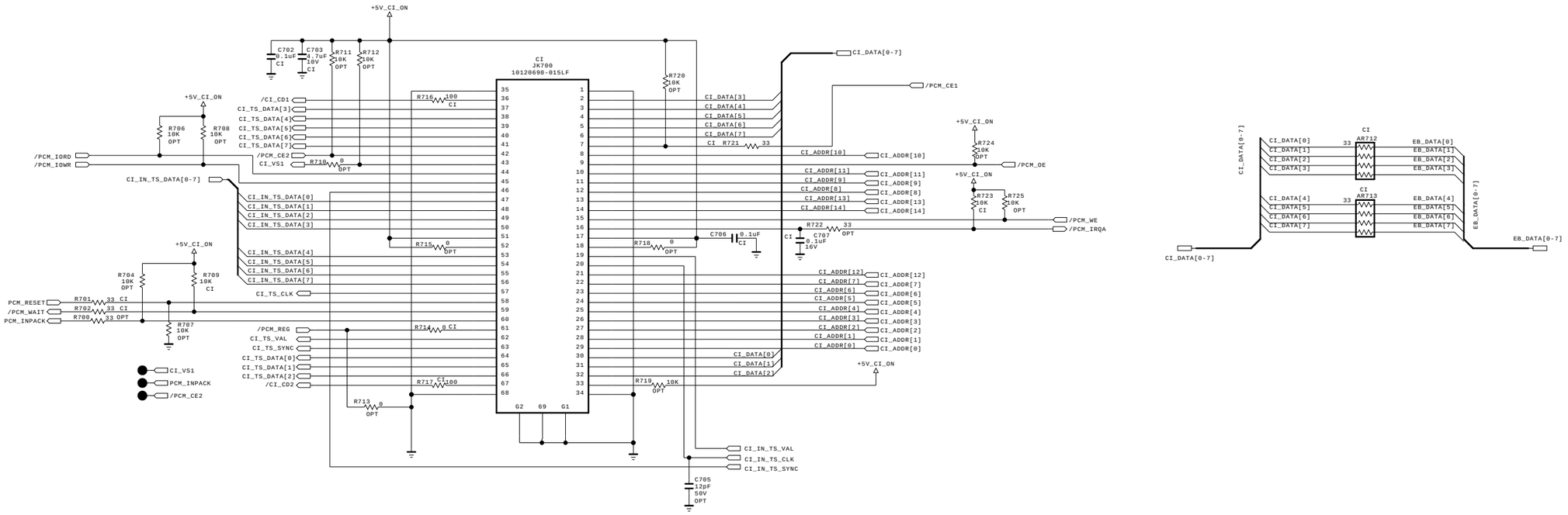
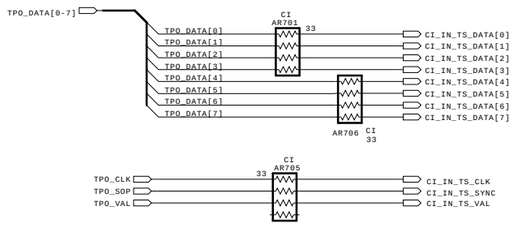
SECRET
LGElectronics

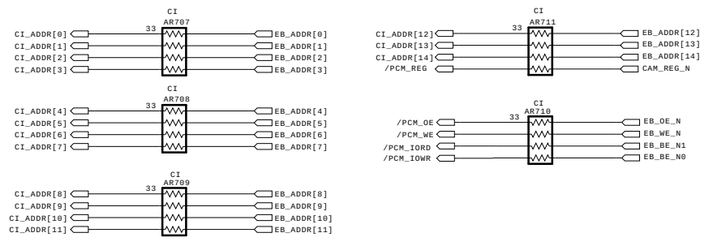
LG ELECTRONICS

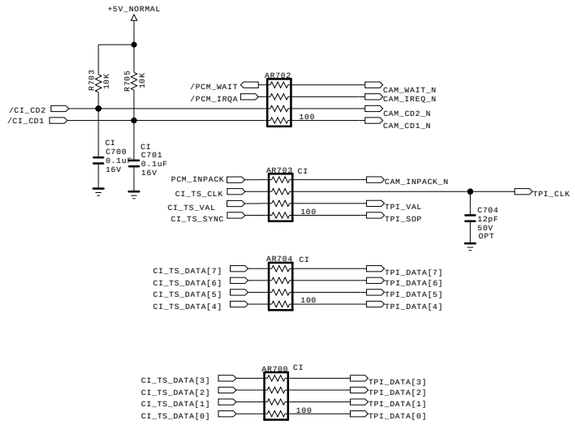
BSD-NC4_H005-HD

MODEL		DATE	2012-09-14
BLOCK	MAIN DDR	SHEET	/









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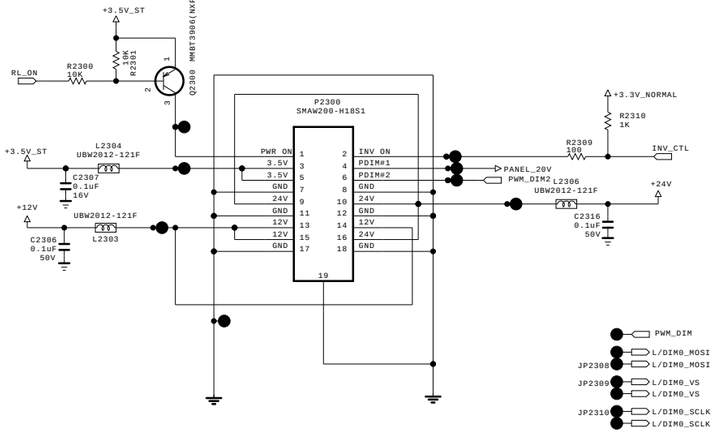
SECRET
LGElectronics

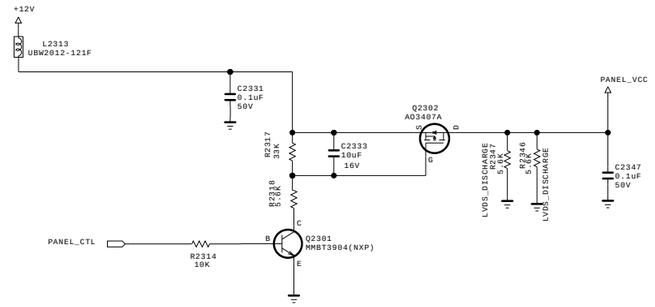
LG ELECTRONICS

BSD-NC4_H007-HD

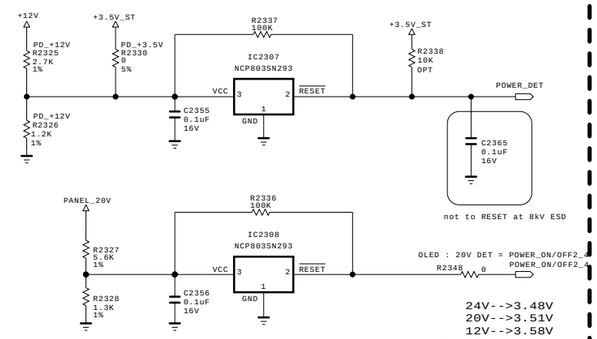
MODEL		DATE	2012-10-20
BLOCK	PCMCIA	SHEET	/



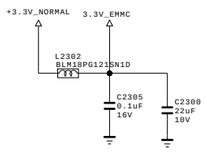
PANEL_POWER



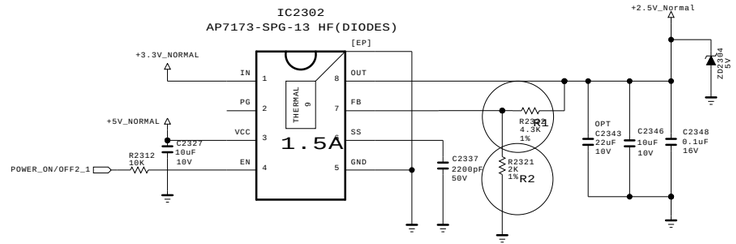
Power_DET



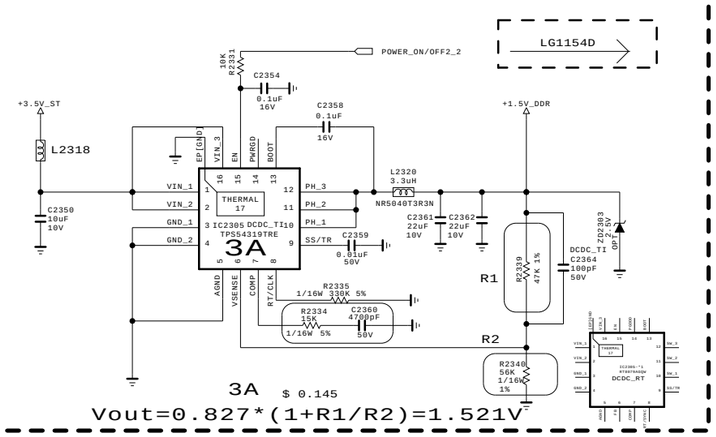
eMMC POWER



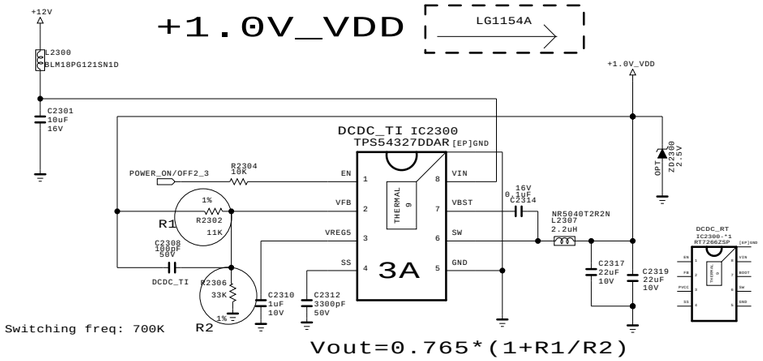
+2.5V



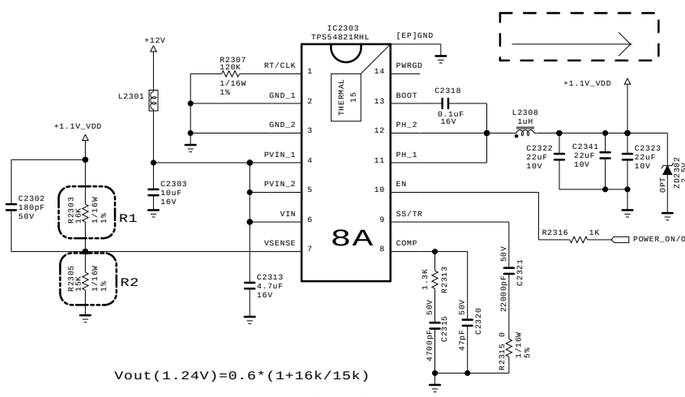
DDR MAIN 1.5V



+1.0V_VDD

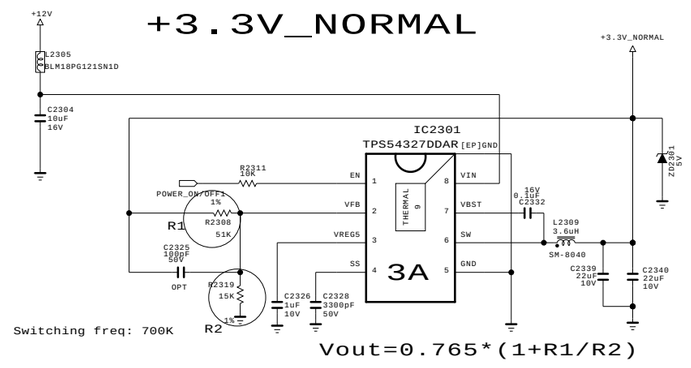


+1.23V_CORE



+5.0V normal & USB

+3.3V_NORMAL



POWER UP SEQUENCE

5V/3.3V->2.5V->1.5V/1.1V->1.0V

LG1154D : 3.3V->2.5V->1.5V->1.1V

LG1154AN : 3.3V->2.5V->1.0V

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SECRET

LGElectronics

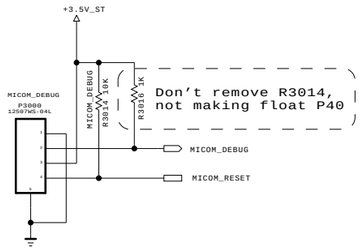
LG ELECTRONICS

BSD-NC4_H039-HD

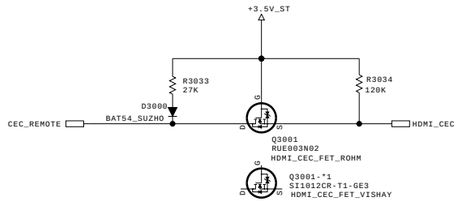
MODEL	NC4_H13	DATE	2013.03.05
BLOCK	POWER_BLOCK(OLED)	SHEET	23 /

Renesas MICOM

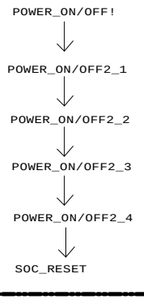
For Debug



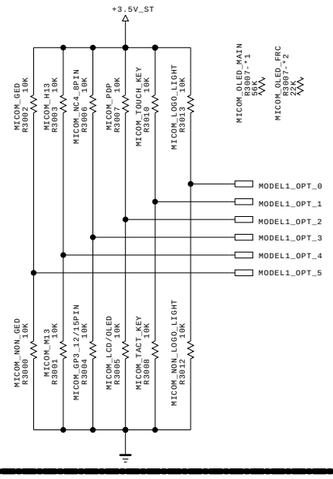
For CEC



GP4 High/MID Power SEQUENCE

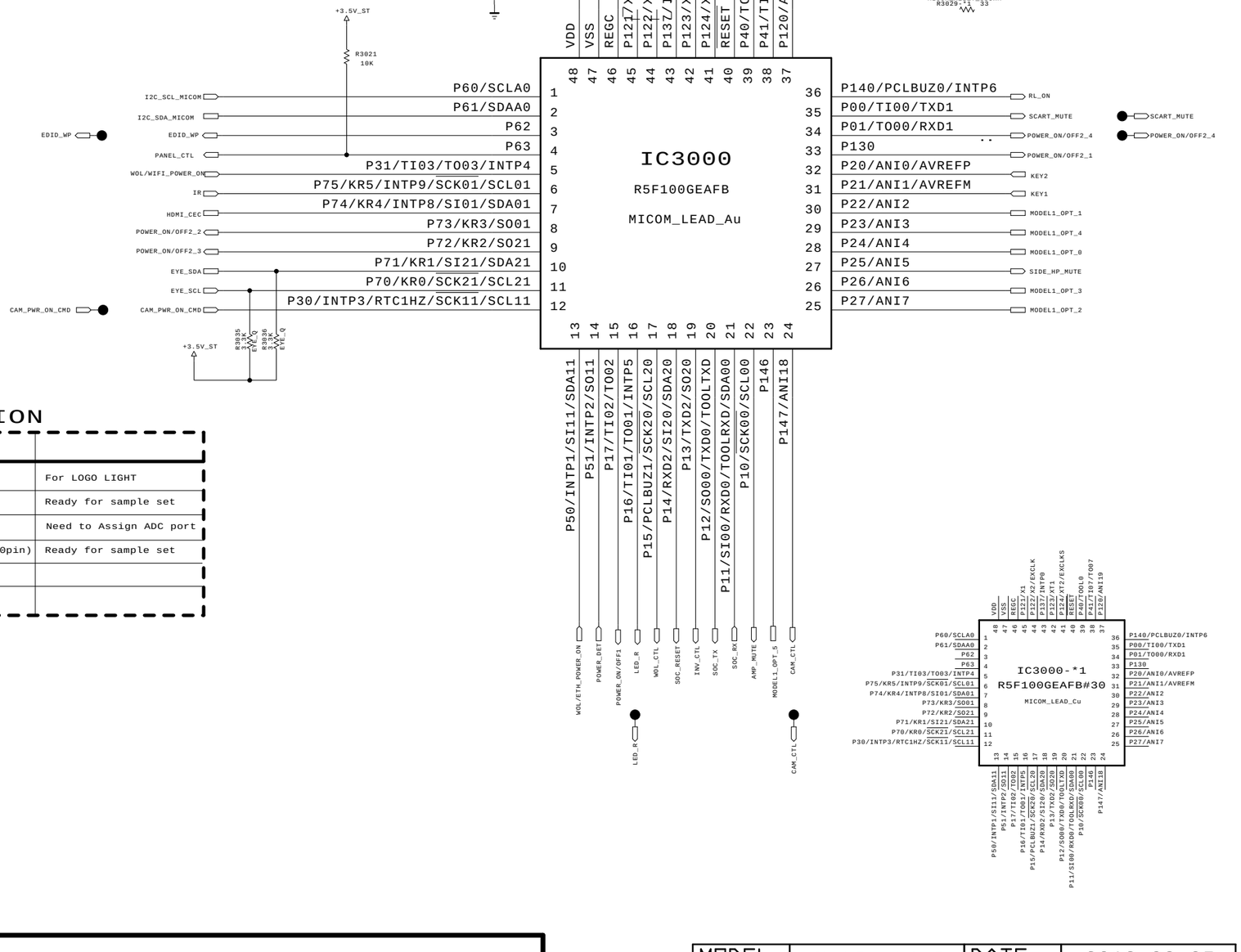


MICOM MODEL OPTION



MICOM MODEL OPTION

	0	1	
MODEL_OPT_0	NON LOGO	LOGO	For LOGO LIGHT
MODEL_OPT_1	TACT_KEY	TOUCH_KEY	Ready for sample set
MODEL_OPT_2	LCD / OLED	PDP	Need to Assign ADC port
MODEL_OPT_3	IR_wafer(12/15)	IR_wafer(10pin)	Ready for sample set
MODEL_OPT_4	M13	H13	
MODEL_OPT_5	NON_GED	GED	



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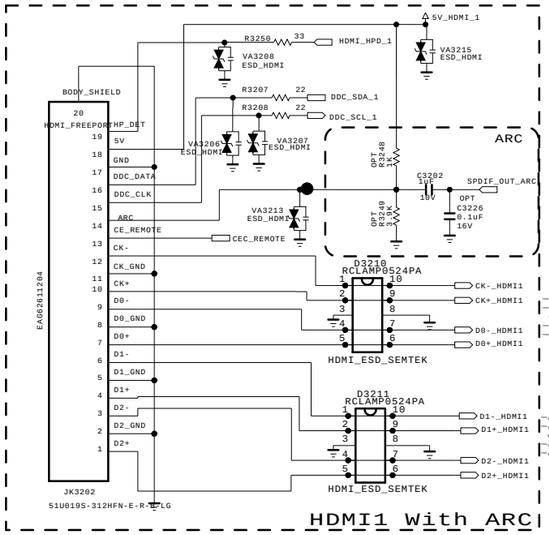
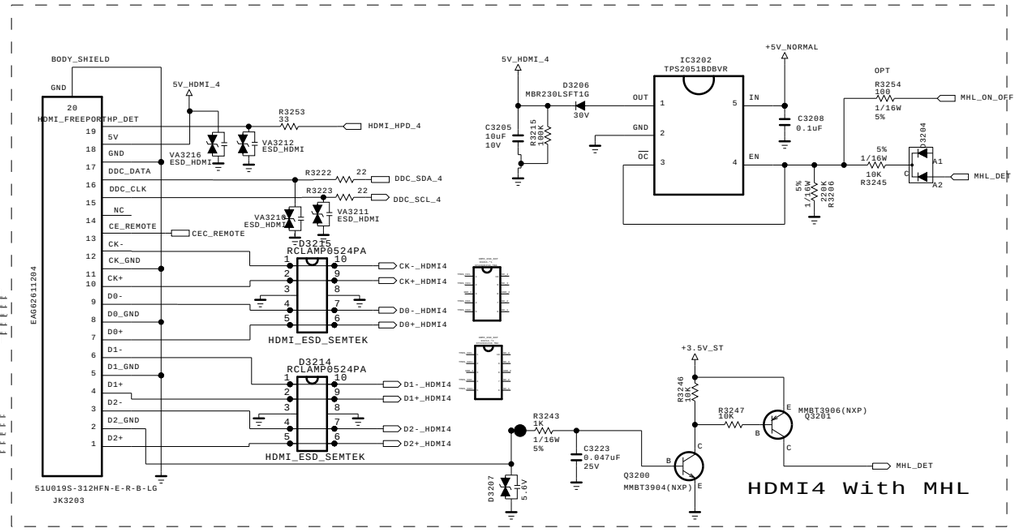
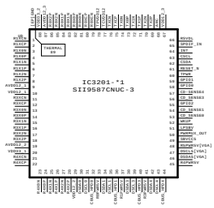
SECRET
LGElectronics

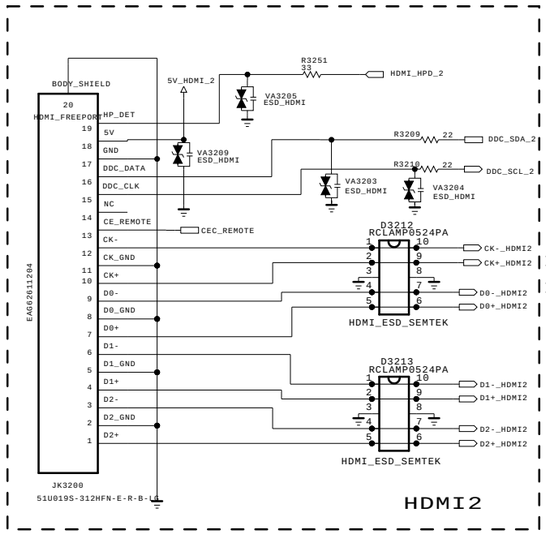
LG ELECTRONICS

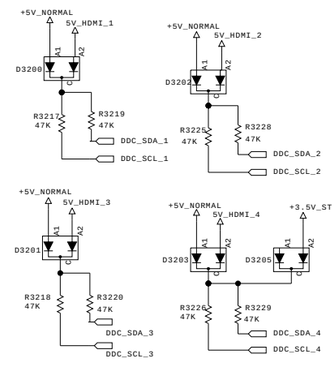
MODEL	NetCast4.0	DATE	2013.02.05
BLOCK	MICOM (RENESAS)	SHEET	30

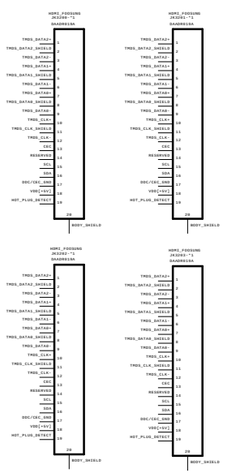


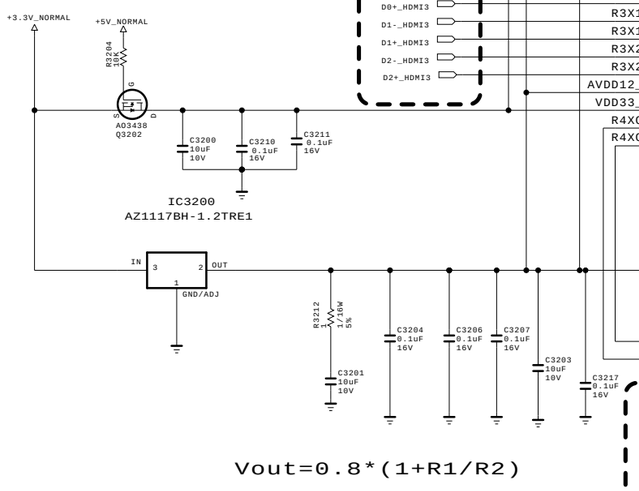












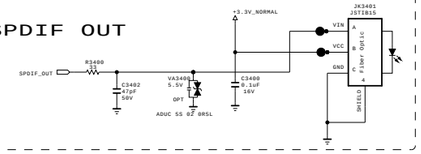
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

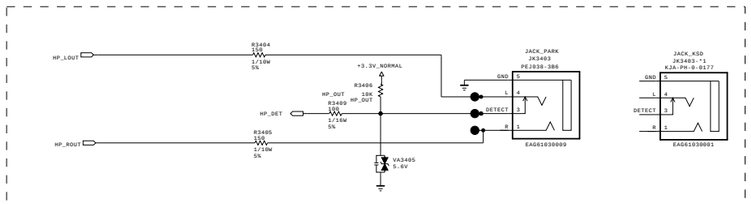
SECRET
LGElectronics

LG ELECTRONICS

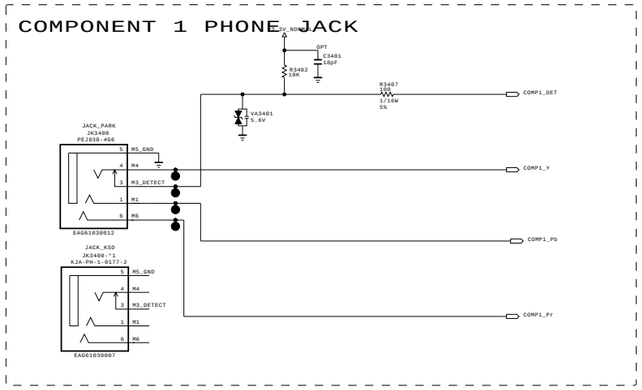
MODEL	GP4	DATE	
BLOCK	HDMI	SHEET	32

SPDIF OUT

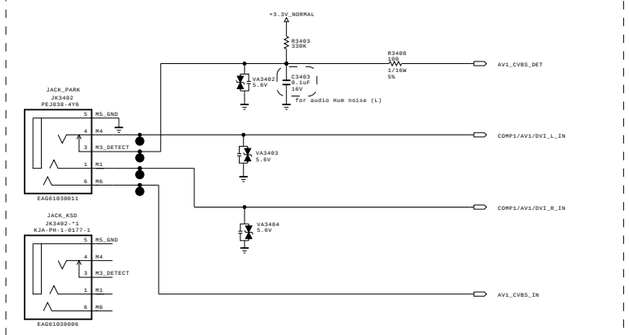


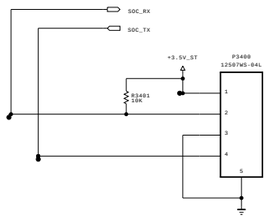


COMPONENT 1 PHONE JACK



CVBS 1 PHONE JACK





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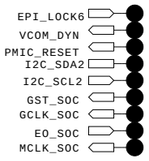
SECRET
LGElectronics

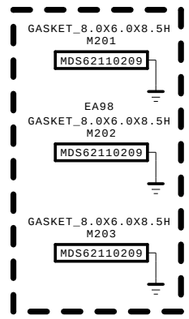
LG ELECTRONICS

BSD-NC4_H034-HD

MODEL	JACK HIGH/MID	DATE	2012.10.09
BLOCK		SHEET	/



SMD TOP for EMI



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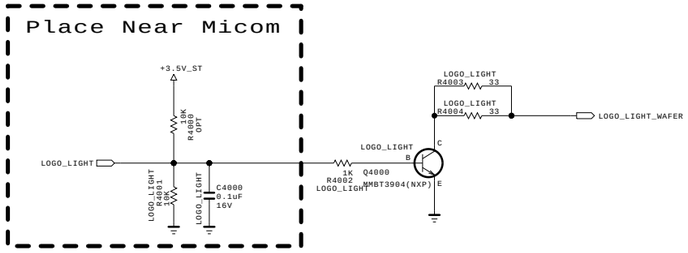
SECRET

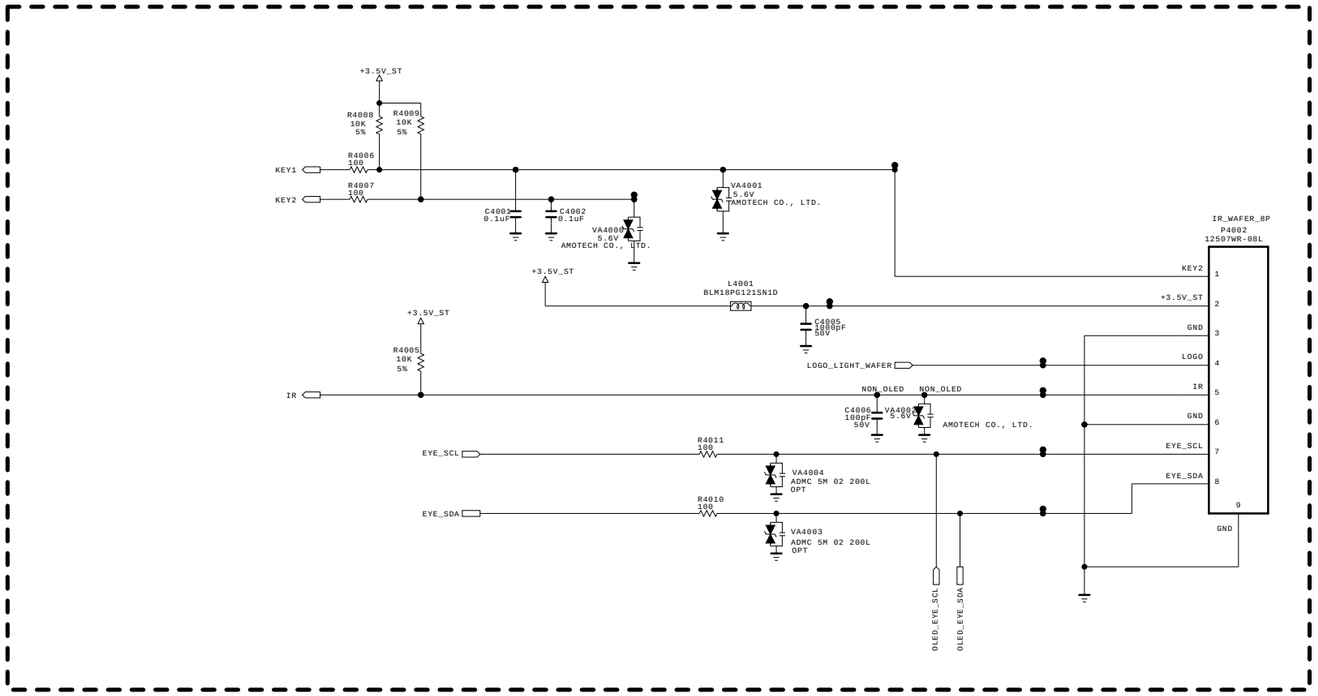
LGElectronics

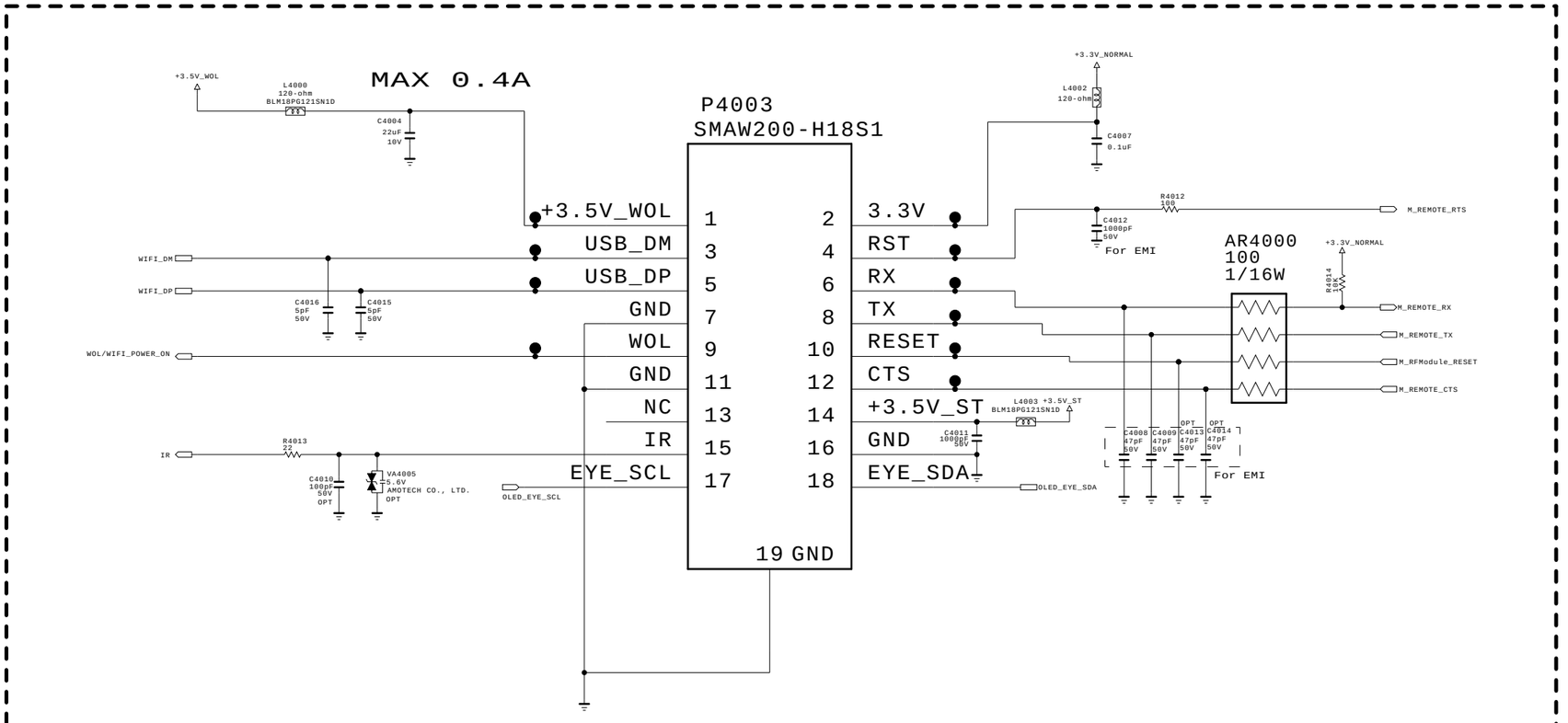
LG ELECTRONICS

BSD-NC4_H036-HD

MODEL	NC4_H13	DATE	2013.02.22
BLOCK	NON_EPI(OLED)	SHEET	36







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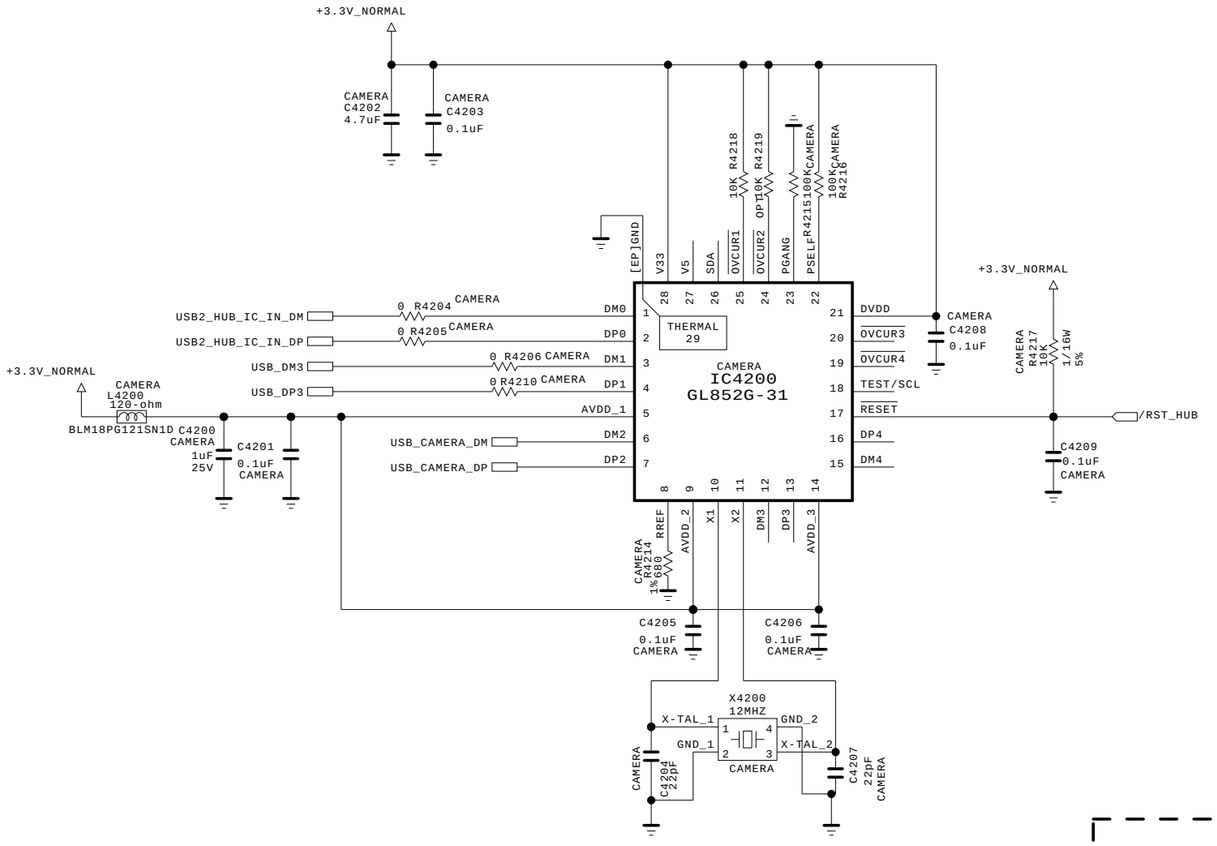
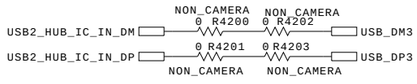
SECRET
LGElectronics

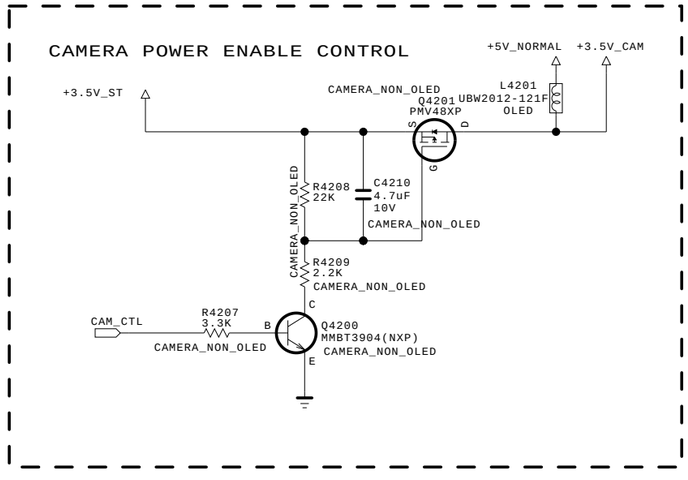
LG ELECTRONICS

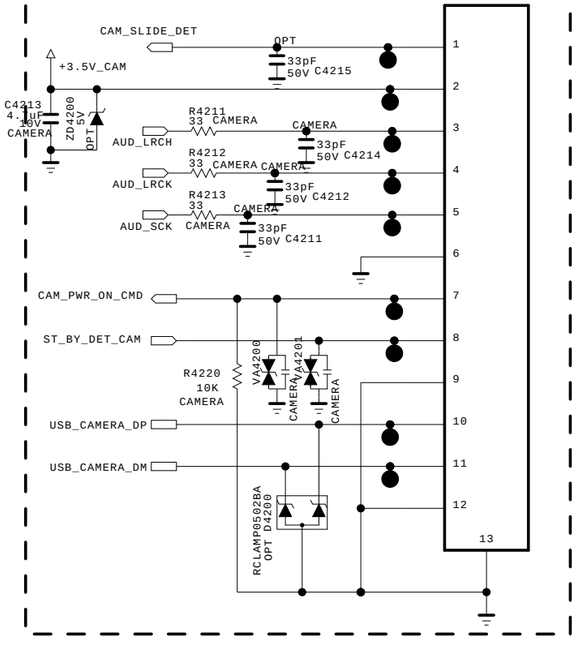
BSD-NC4_H037-HD

MODEL	NC4_H13	DATE	2013.02.25
BLOCK	IR/KEY_OLED	SHEET	40









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SECRET

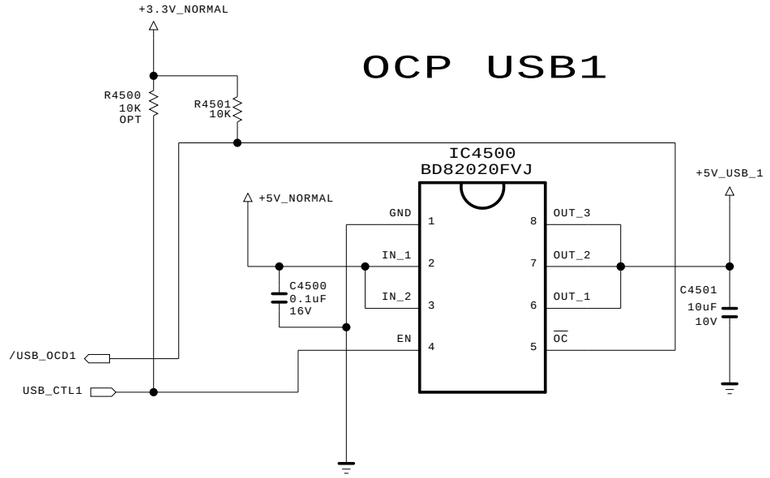
LGElectronics

LG ELECTRONICS

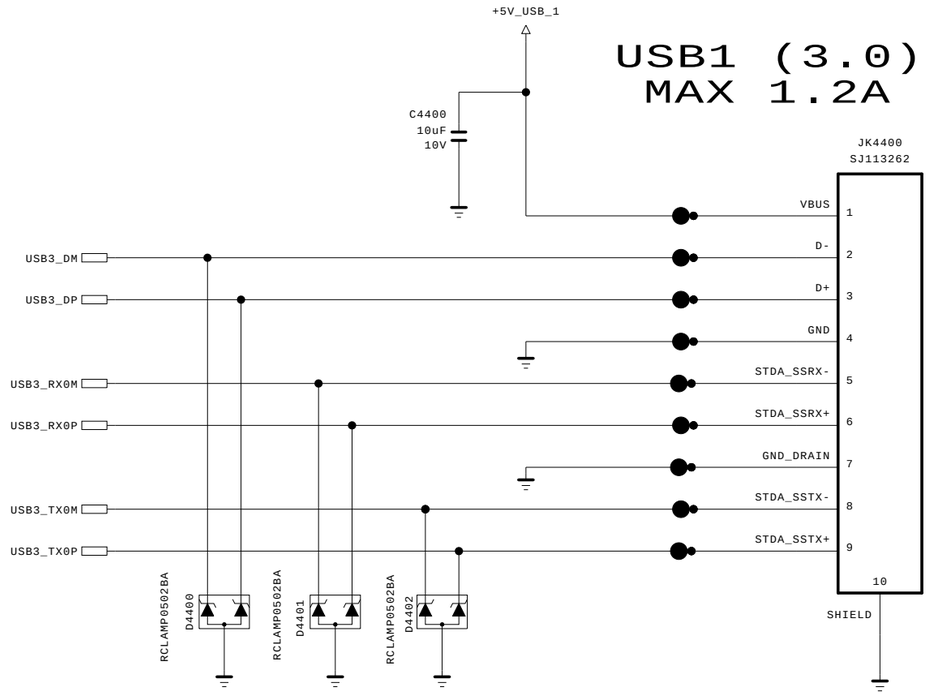
BSD-NC4_H042-HD

MODEL	NC4_H13	DATE	2012.03.04
BLOCK	USB_HUB	SHEET	42

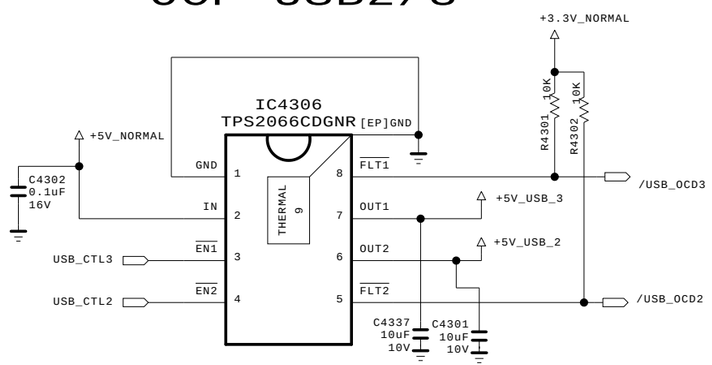
OCP USB1



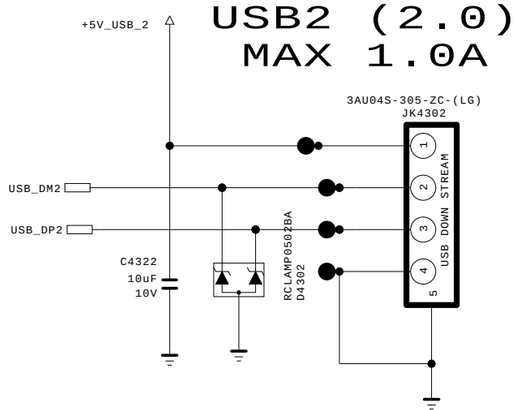
USB1 (3.0) MAX 1.2A



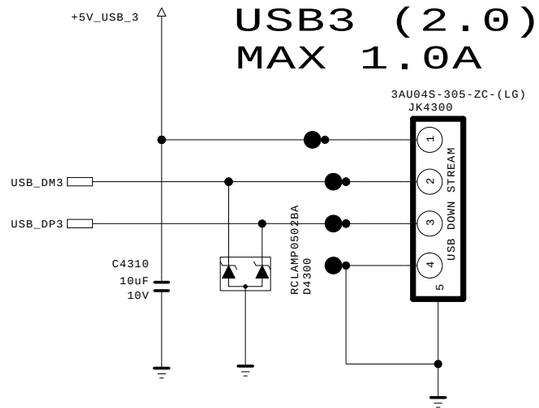
OCP USB2/3



USB2 (2.0) MAX 1.0A



USB3 (2.0) MAX 1.0A



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SECRET

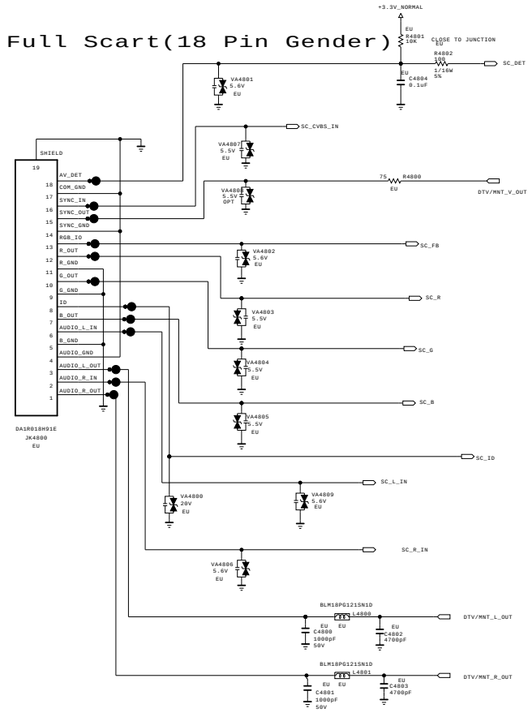
LGElectronics

LG ELECTRONICS

BSD-NC4_H044-HD

MODEL		DATE	2012-11-09
BLOCK	USB JACK	SHEET	/

Full Scart(18 Pin Gender)



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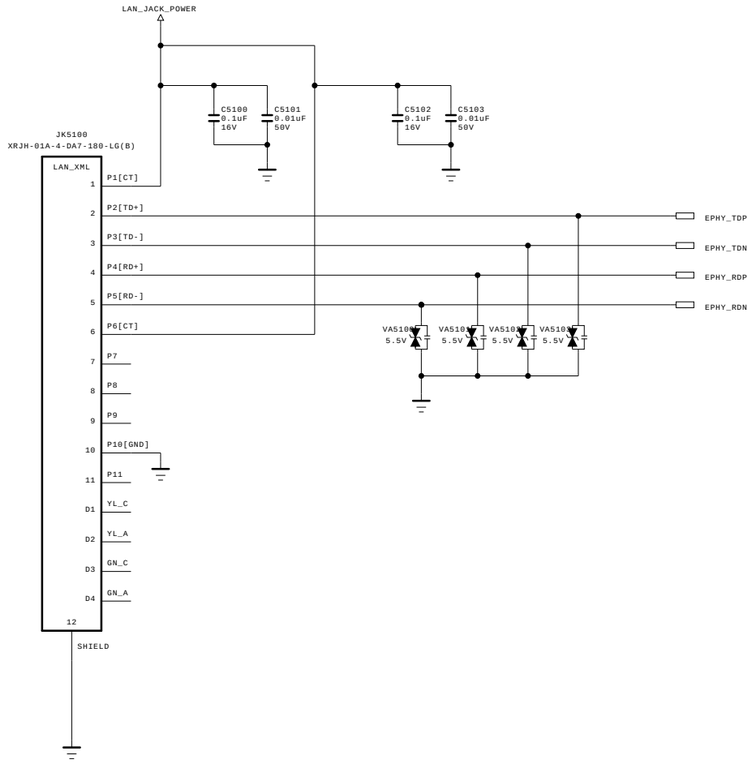
SECRET
LGElectronics

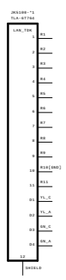
LG ELECTRONICS

BSD-NC4_H048-HD

MODEL		DATE	2012.10.31
BLOCK	SCART GENDER	SHEET	/

Ethernet Block





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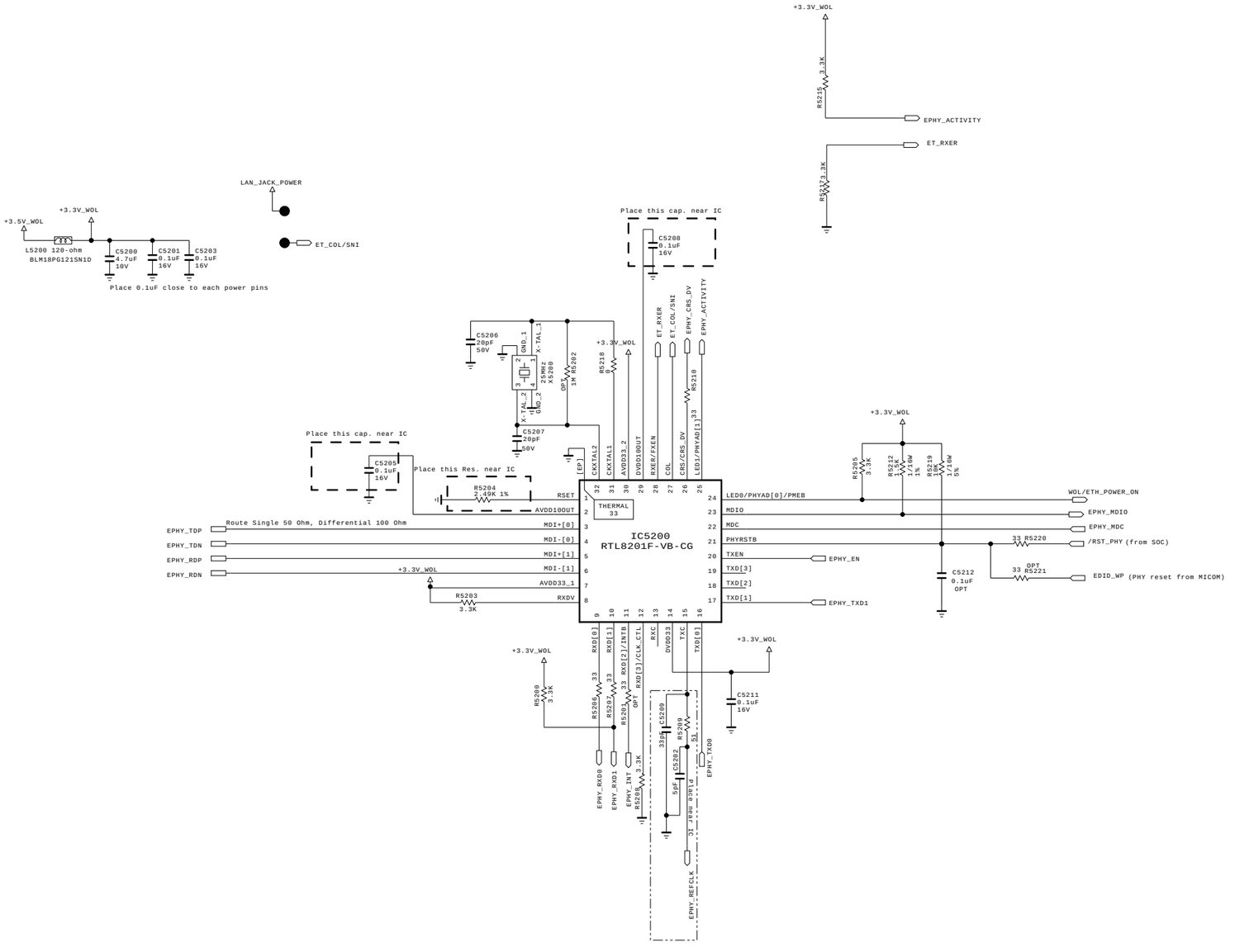
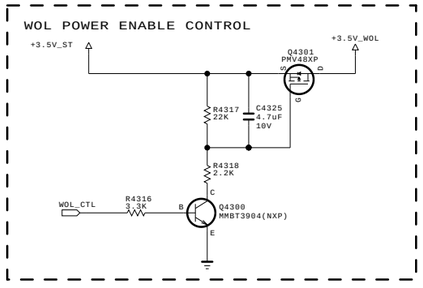
SECRET
LGElectronics

LG ELECTRONICS

MODEL	LAN_VERTICAL	DATE	2011.12.09
BLOCK		SHEET	50

Ethernet Block





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SECRET
LGElectronics

LG ELECTRONICS

BSD-NC4_H052-HD

MODEL		DATE	2012-09-12
BLOCK	ETHERNET	SHEET	/

Separate DGND AND AVSS

R5602
0

This parts are Located
on AVSS area.

+24V
+24V_AMP
L5600
UBW2012-121F
C5601
0.1uF
50V

+3.3V_NORMAL
OPT
ZD5601
5V
L5601
BLM18PG121SN1D
C5603
10uF
10V
C5604
0.1uF
16V

+3.3V_NORMAL
R5601
10K
AMP_MUTE
R5600
10K
Q5600
MMBT3904(NXP)
R5603
100
C5602
1000pF
50V

AUD_MASTER_CLK
R5608 15K A_SEL_FAULT
18K R5607 1% OSC_RES
C5605
4.7uF
10V
C5607
0.1uF

AUD_LRCK
AUD_SCK
AUD_LRCH
I2C_SDA1
I2C_SCL1
33 R5605
33 R5606

AMP_RESET_N
33 R5604
C5606
0.1uF
16V
+3.3V_NORMAL
L5602
BLM18PG121SN1D
C5610
0.1uF
16V

WOOFER_MUTE
WOOFER_MUTE

C5609 4700pF
C5608 0.047uF
R5609 470
C5611 4700pF
R5610 470
C5612 0.047uF
C5613 2200pF 50V
C5616 0.033uF 50V

TAS5733
IC5600

VR_ANA PLL_FLTP PLL_FLTM AVSS PBTL NC_2 SSTIMER NC_1 BST_A PVDD_AB_2 PVDD_AB_1 OUT_A
AVDD MCLK OSC_RES DVSSO VR_DIG PDN LRCLK SCLK SDIN SDA SCL
RESET STEST DVDD DVSS GND AGND VREG BST_D PVDD_CD_1 PVDD_CD_2 OUT_D
25V_GVDD_OUT
THERMAL
[EP]
PGND_AB_2 PGND_AB_1 OUT_B NC_6 NC_5 BST_B BST_C NC_4 NC_3 OUT_C PGND_CD_2 PGND_CD_1

C5614 0.1uF
C5615 1uF 25V
C5617 0.033uF 50V

+24V_AMP
C5618 0.1uF 50V
C5620 10uF 35V
C5622 10uF 35V
C5619 0.1uF 50V
C5621 10uF 35V
C5623 10uF 35V

50V 0.033uF C5624
50V 0.033uF C5625

R5611 18
C5626 330pF 50V
C5627 330pF 50V
R5612 18
R5613 10 1/16W
C5628 330pF 50V
C5629 330pF 50V
R5614 10 1/16W

NRS6045T100MMGK
L5605 10.0uH
L5606 10.0uH NRS6045T100MMGK
NRS6045T100MMGK
L5604 10.0uH
L5603 10.0uH NRS6045T100MMGK

C5630 0.47uF 50V
C5632 0.1uF 50V
C5633 0.1uF 50V
C5631 0.47uF 50V
C5634 0.1uF 50V
C5635 0.1uF 50V

Close to Speaker
C5636 2200pF 50V
C5637 2200pF 50V
C5638 2200pF 50V
C5639 2200pF 50V

SPK_L+
SPK_L-
SPK_R+
SPK_R-
SPEAKER_L
SPEAKER_R

WAFER-ANGLE
SPK_L+ 4
SPK_L- 3
SPK_R+ 2
SPK_R- 1
P5600

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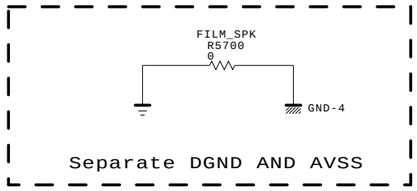
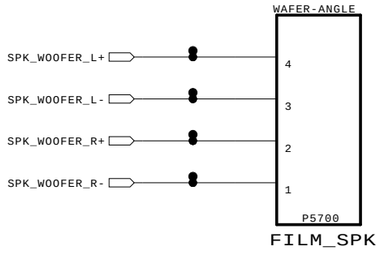
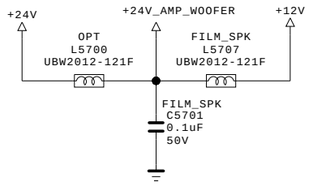
SECRET
LGElectronics

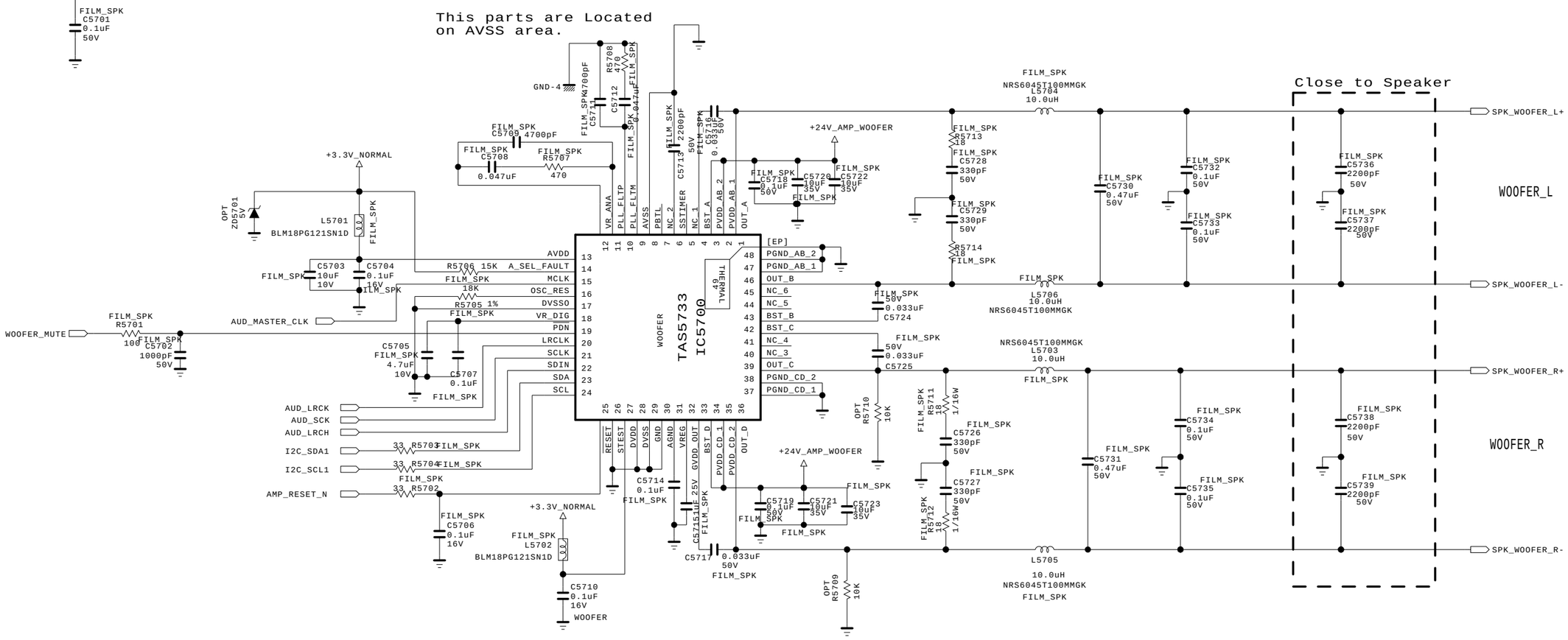
LG ELECTRONICS

MODEL	GP4_MT5369	DATE	2011.11.21
BLOCK	AUDIO[ST]	SHEET	58









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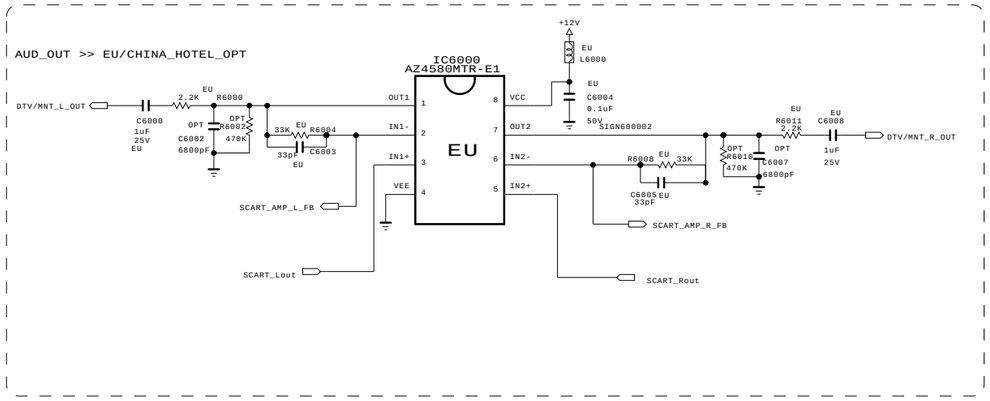
SECRET

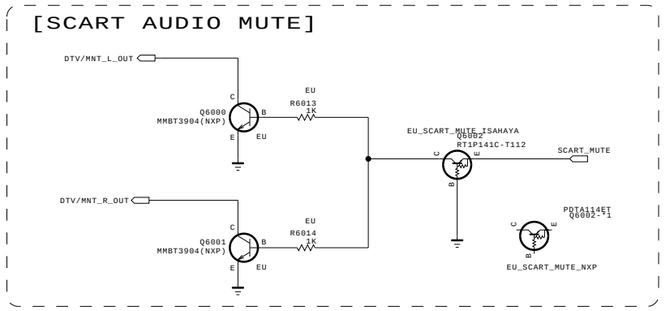
LGElectronics

LG ELECTRONICS

BSD-NC4_H038-HD

MODEL	NC4_H13	DATE	2013.02.01
BLOCK	TI_AMP_FILM_SPK	SHEET	57





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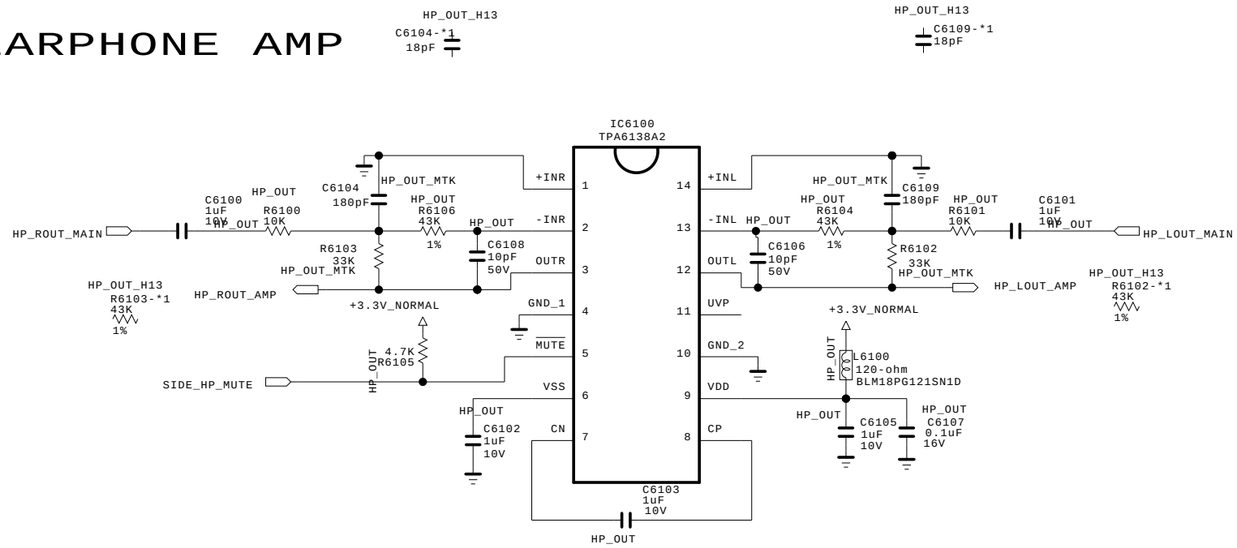
SECRET
LGElectronics

LG ELECTRONICS

MODEL	SCART AUDIO AMP	DATE	2011.11.21
BLOCK		SHEET	60

EARPHONE AMP



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

SECRET

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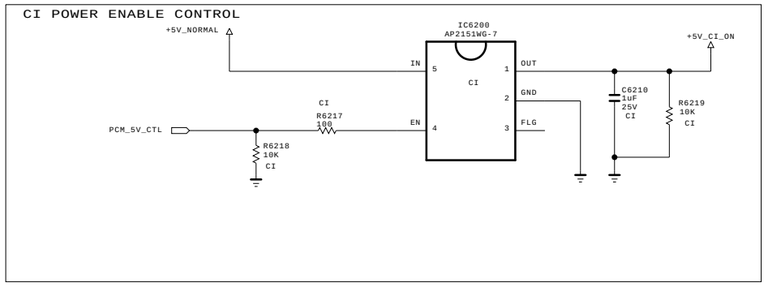
LG ELECTRONICS

MODEL	HEADPHONE AMP	DATE	2011.09.29
BLOCK		SHEET	61

CI POWER ENABLE CONTROL



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SECRET
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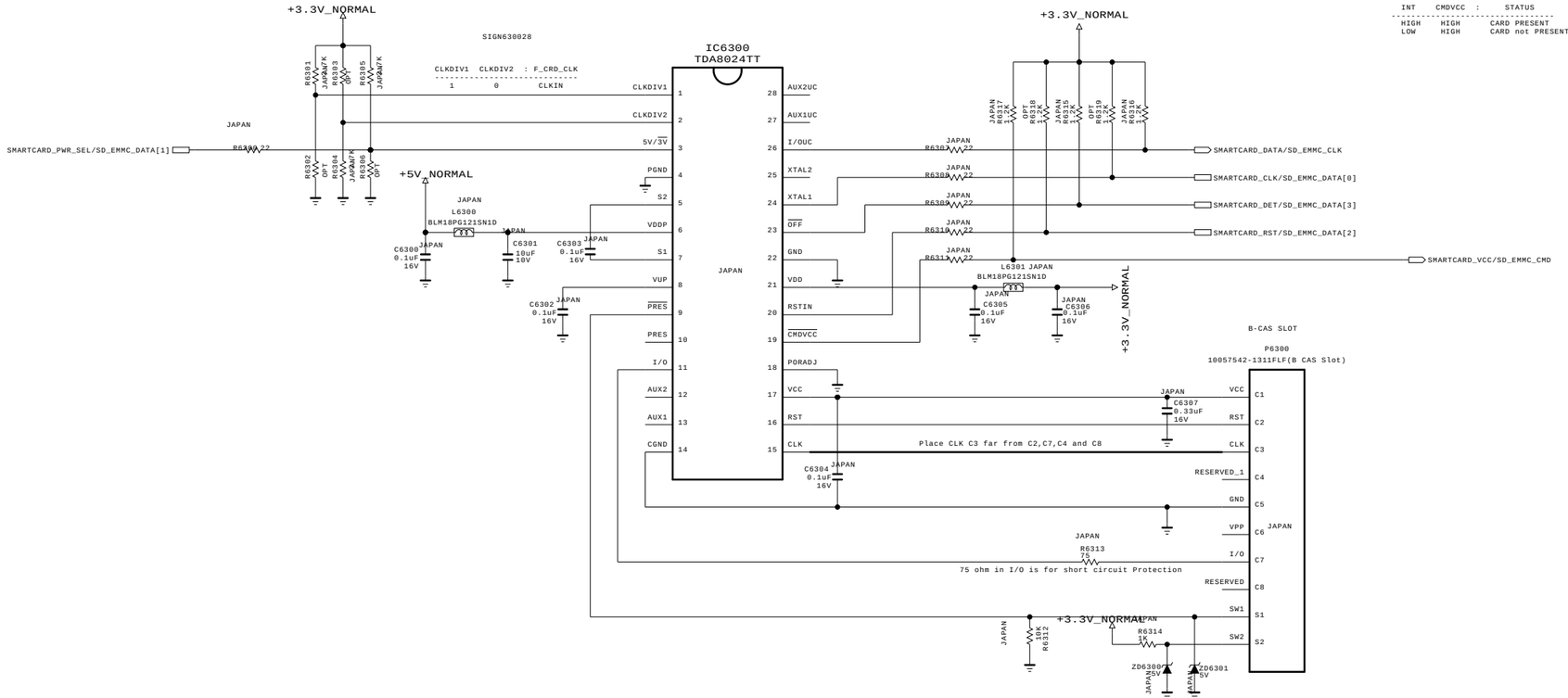
LG ELECTRONICS

MODEL	CI SLOT	DATE	2011.10.31
BLOCK		SHEET	62

B-CAS (SMART CARD) INTERFACE



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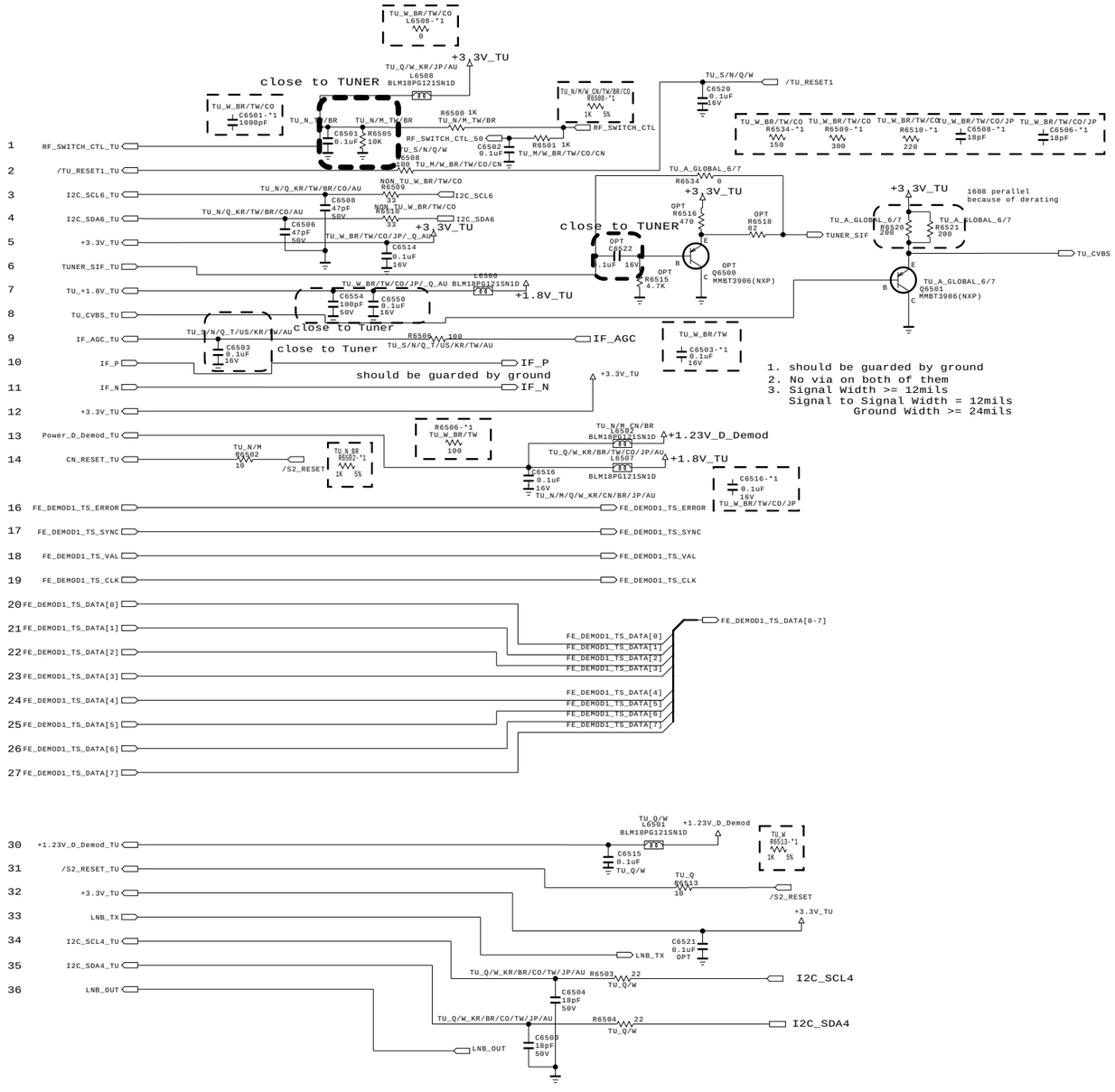
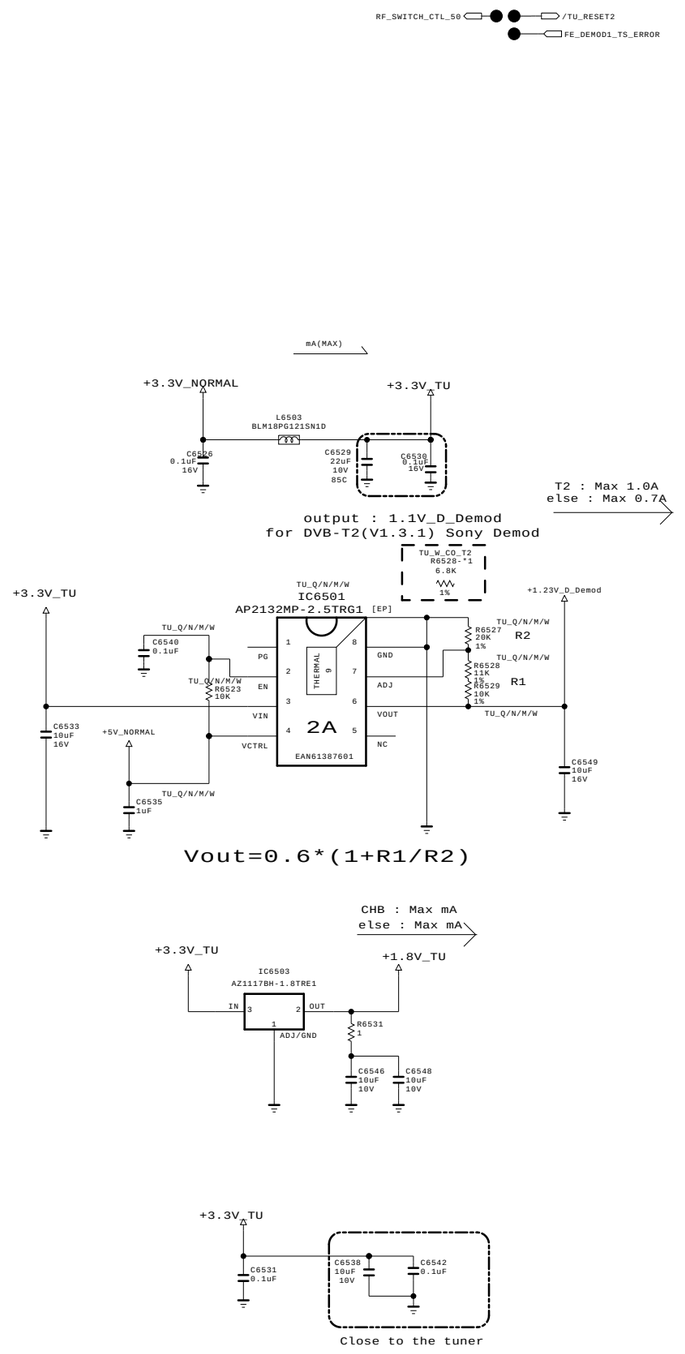
MODEL	CI SLOT	DATE	2011.04.17
BLOCK		SHEET	62

Global F/E Option Name
1. TU
2. Tuner Name = TDS'S',TDS'Q'...
3. Country Name = T,T2,S2,KR,US,BR ...

Example of Option name
TU_Q_T2 = apply TDSQ type tuner and T2 country
TU_M/W = apply TDSM&TDSW Type Tuner

13' Tuner Type for Global
TDS'S'-G501D : T/C Half NIM Horizontal Type
TDS'Q'-G501D : 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





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

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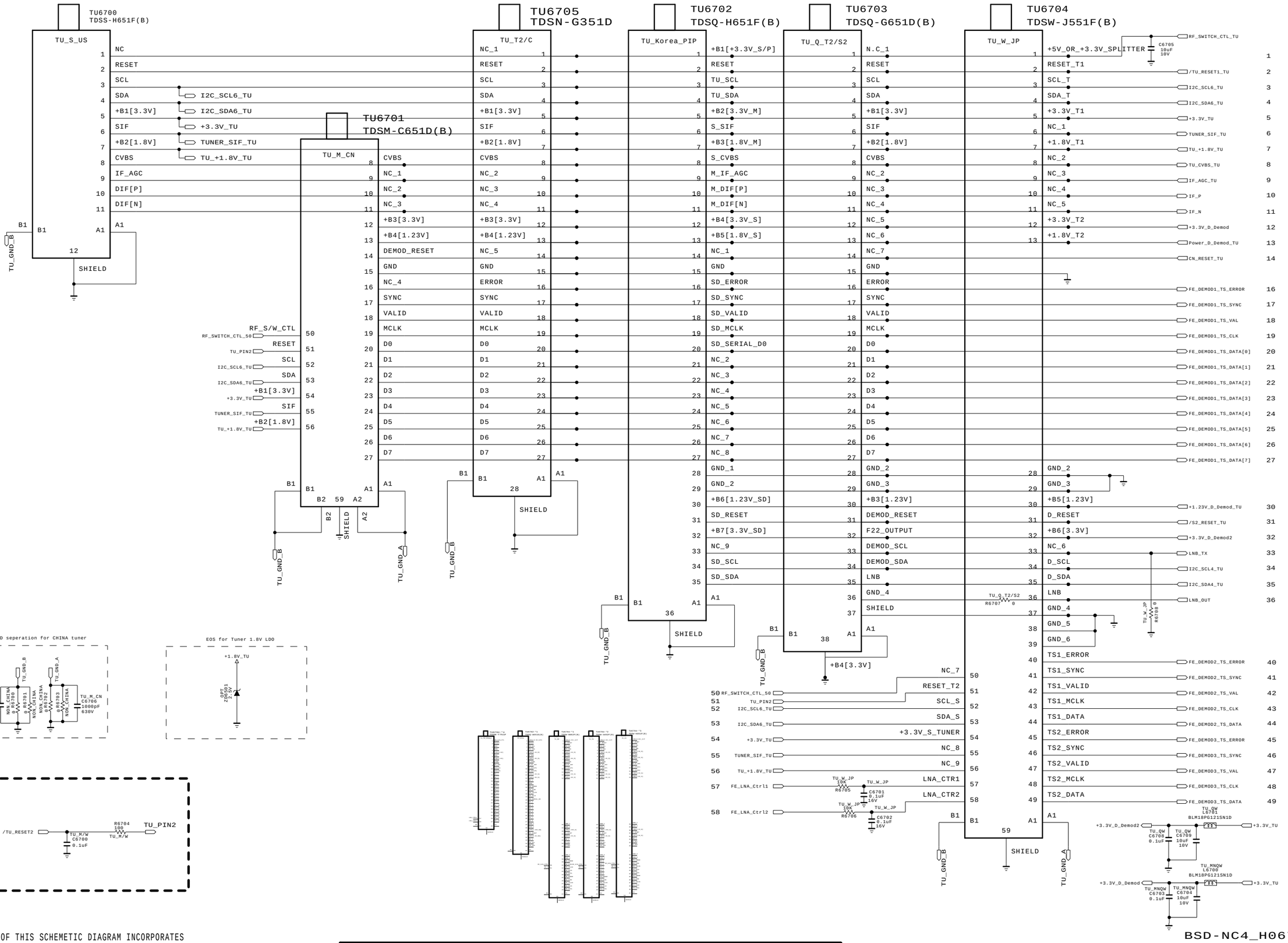
LG ELECTRONICS

MODEL	TUNER	DATE	2012.07.10
BLOCK		SHEET	65

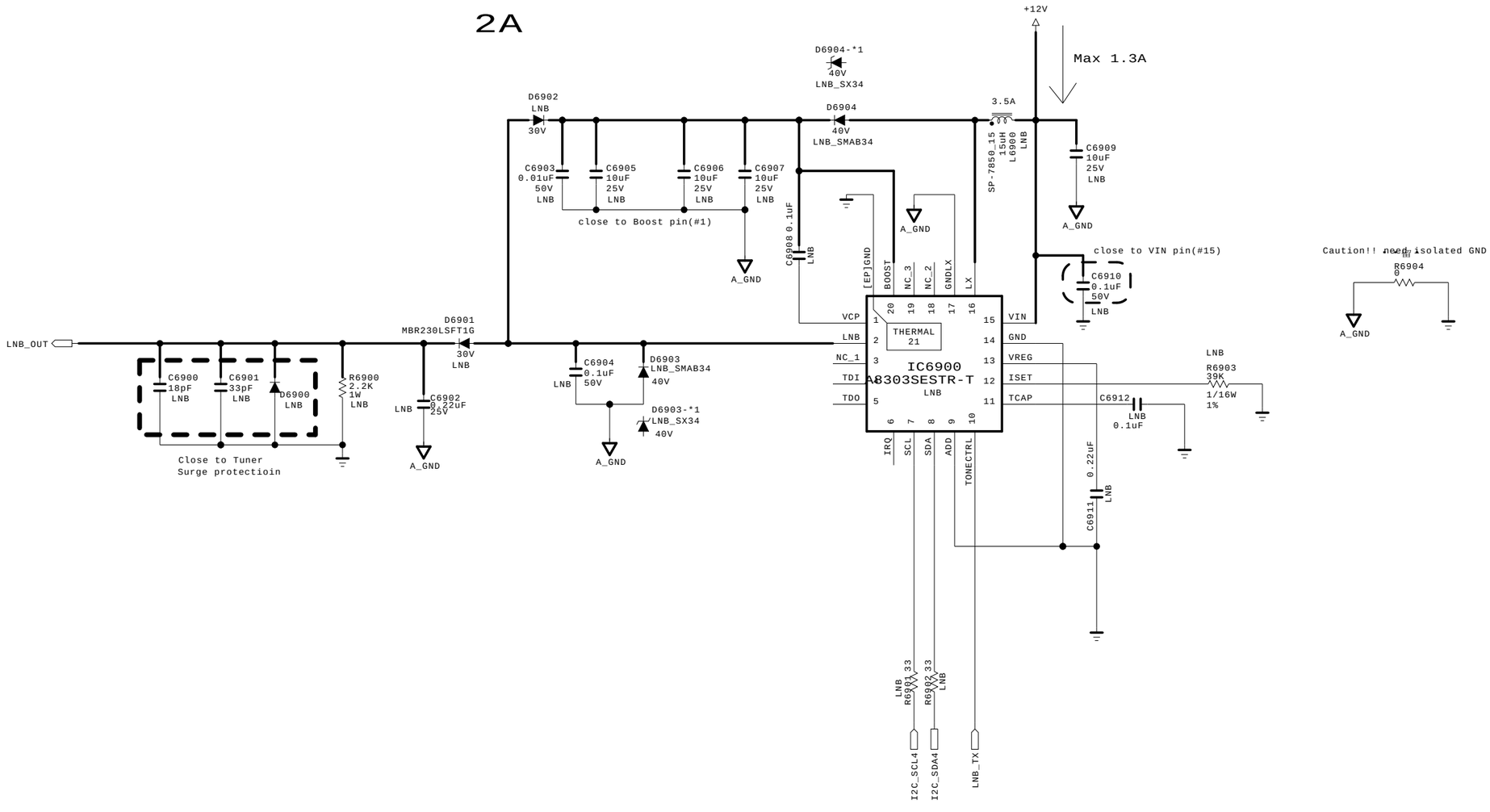


DVB-S2 LNB Part Allegro

(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



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SECRET

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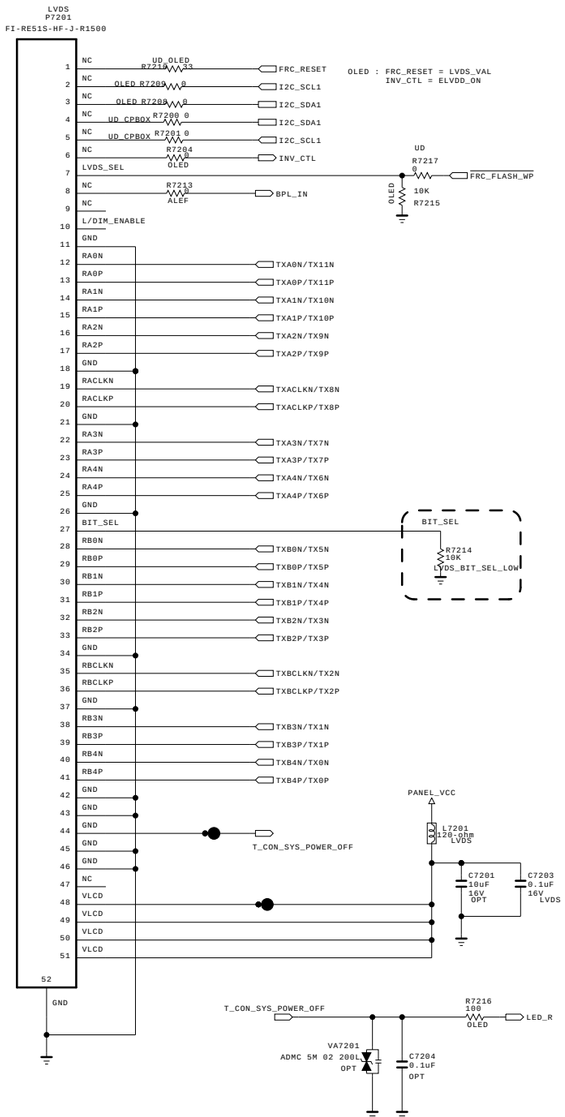
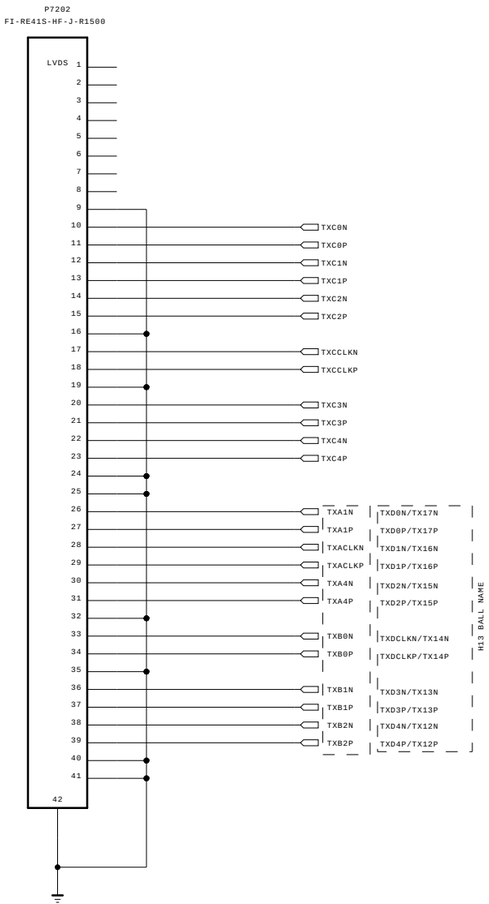
MODEL	LNB	DATE	2012.03.08
BLOCK		SHEET	69

LVDS

[51Pin LVDS OUTPUT Connector]



[41Pin LVDS OUTPUT Connector]



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SECRET

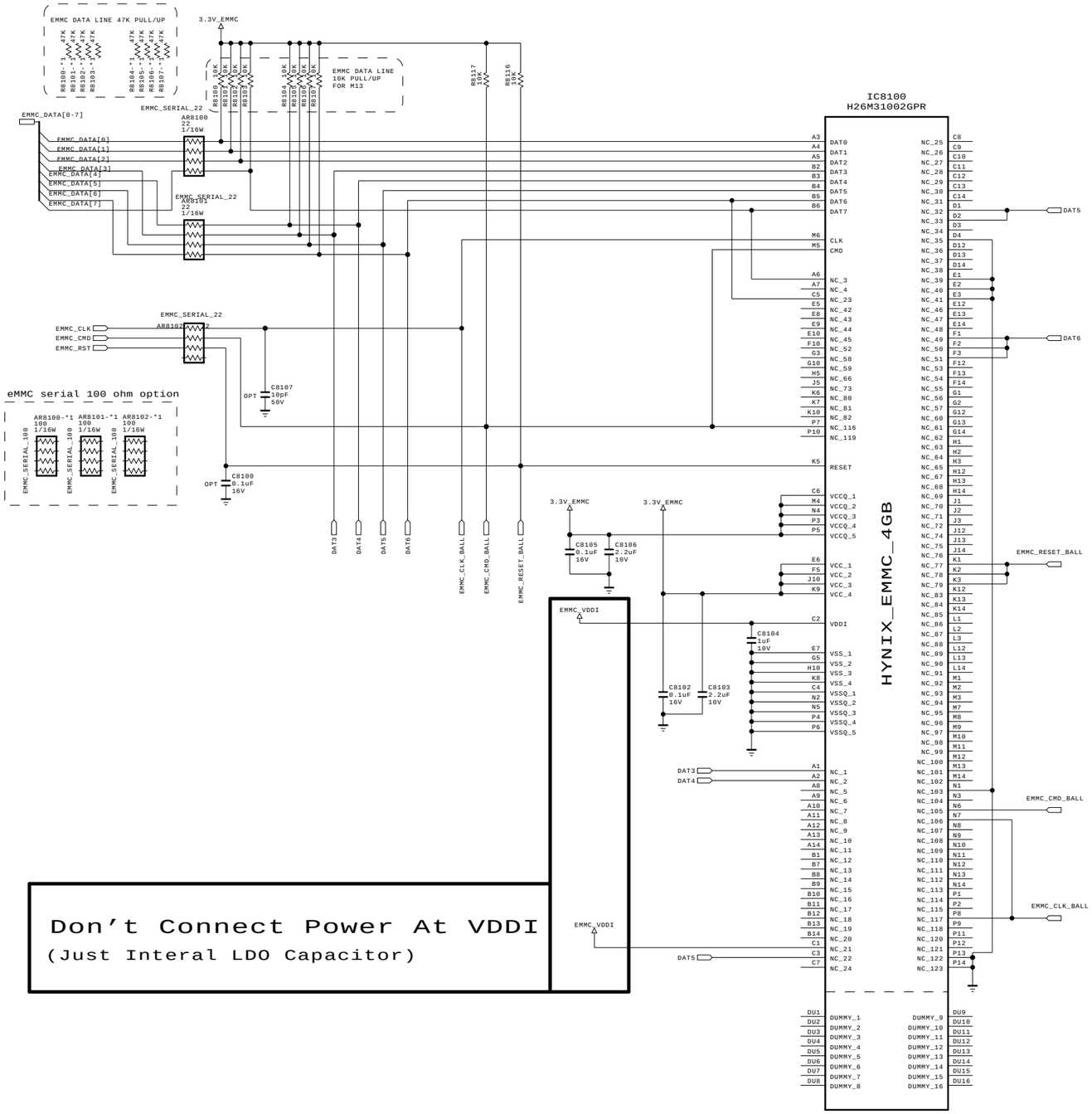
LGElectronics

LG ELECTRONICS

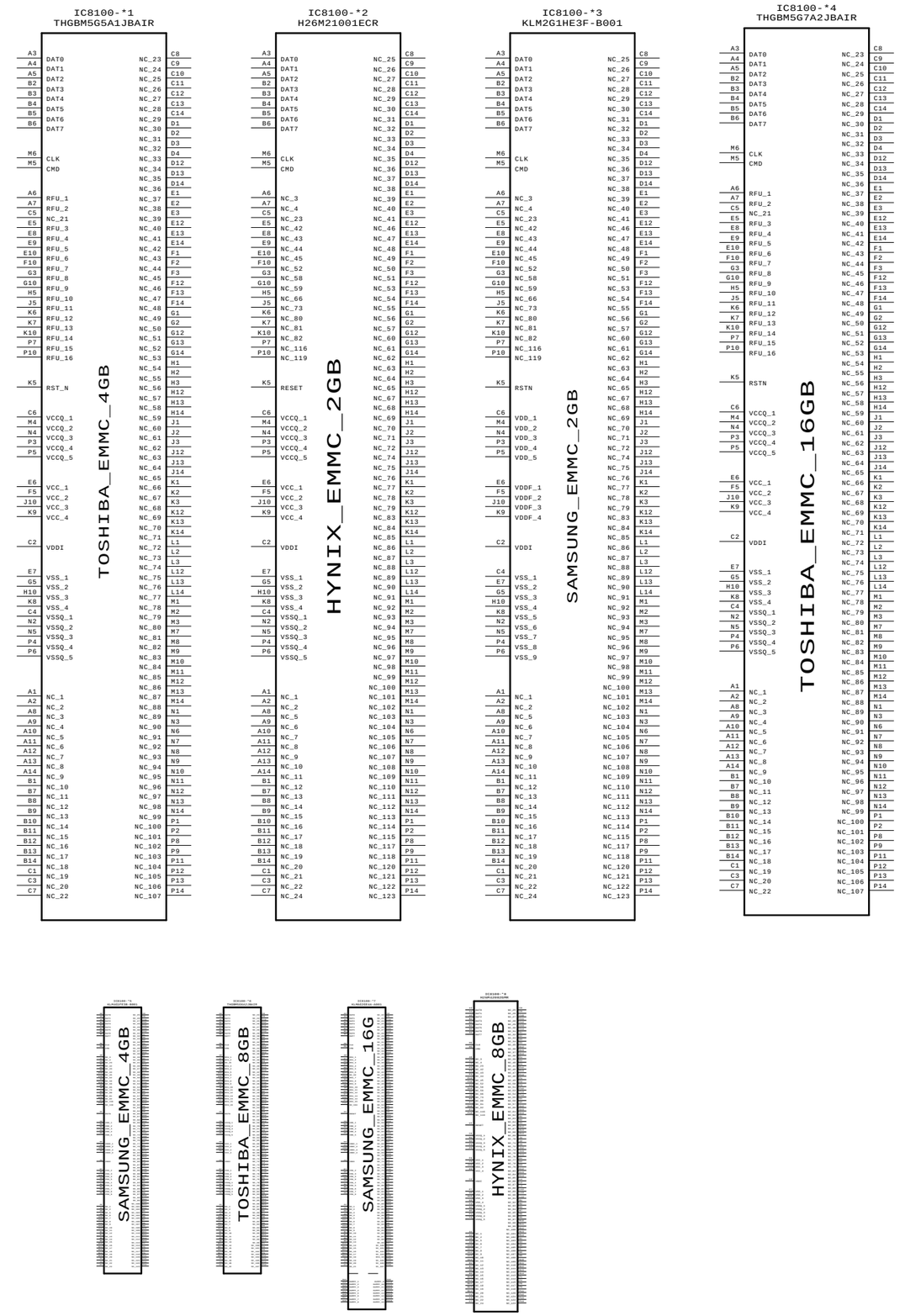
BSD-NC4_H072-HD

MODEL		DATE	2012-10-15
BLOCK	LVDS INTERFACE	SHEET	/

eMMC I/F



Don’t Connect Power At VDDI
(Just Interal LDO Capacitor)



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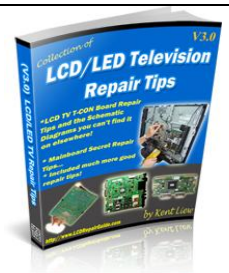
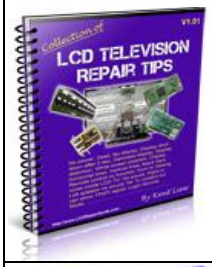
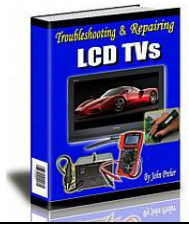
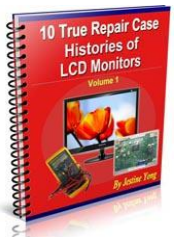
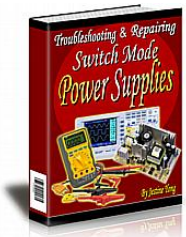
LGElectronics

LG ELECTRONICS

MODEL	eMMC	DATE	11.09.29
BLOCK		SHEET	81

Recommended Troubleshooting & Repairing Guide:

	V3.0 –LED & LCD TV Repair Tips ebook "More information on T-con Board & Mainboard Secret Repair Tips!"
	V2.0- LCD TV Repair Tips & Case Histories
	V1.0- Collection of LCD TV Repair Tips
	Vol-3 LCD/LED Monitor Repair Case Histories by Jestine Yong
	LCD/LED & 3D TV Repair Membership Site
	Plasma & 3D TV Repair Membership Site
	Projection TV & DLP/LCD Projector Repair Membership Site
	Troubleshooting & Repairing LCD TV Guide
	Plasma TV Repair Guide-Display Fault Troubleshooting Basic
	LCD TV Repair Secrets Revealed
	LCD Monitor Repair Guide
	Vol .1- 10 Trus Repair Case Histories of LCD Monitor
	SMPS-Switch Mode Power Supply Repair Guide
	Testing Electronic Components like a Pro-For Beginner

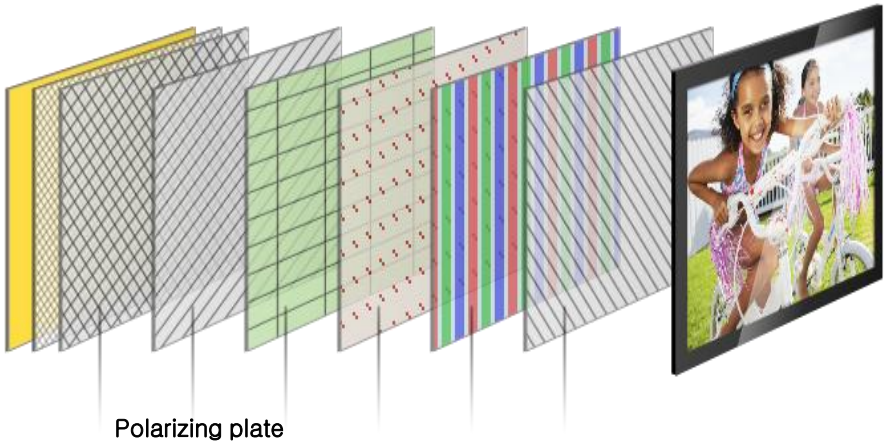
Please visit: http://lcd-television-repair.com/newsletter/Recommend.html


LG
Life's Good

OLED vs. LED

OLED is next generation display which is simple, thin and light. OLED can achieve natural and vivid colors due to self-emitting characteristics

LCD



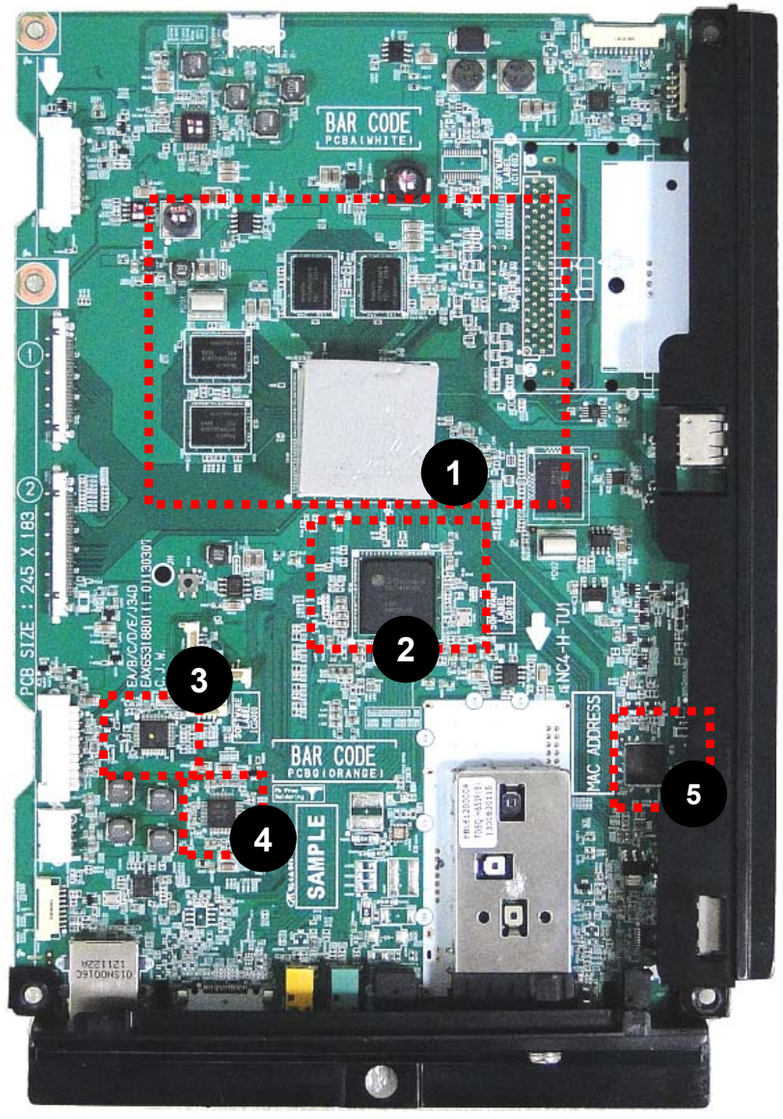
Indirect light source display, which is complex and consists of many components.
Light is supplied from BLU and goes through many layers

OLED

Simple structure with not many components (without BLU) → Paper slim & light
Self-emitting display
→ Better response time / contrast ratio compared to LCD

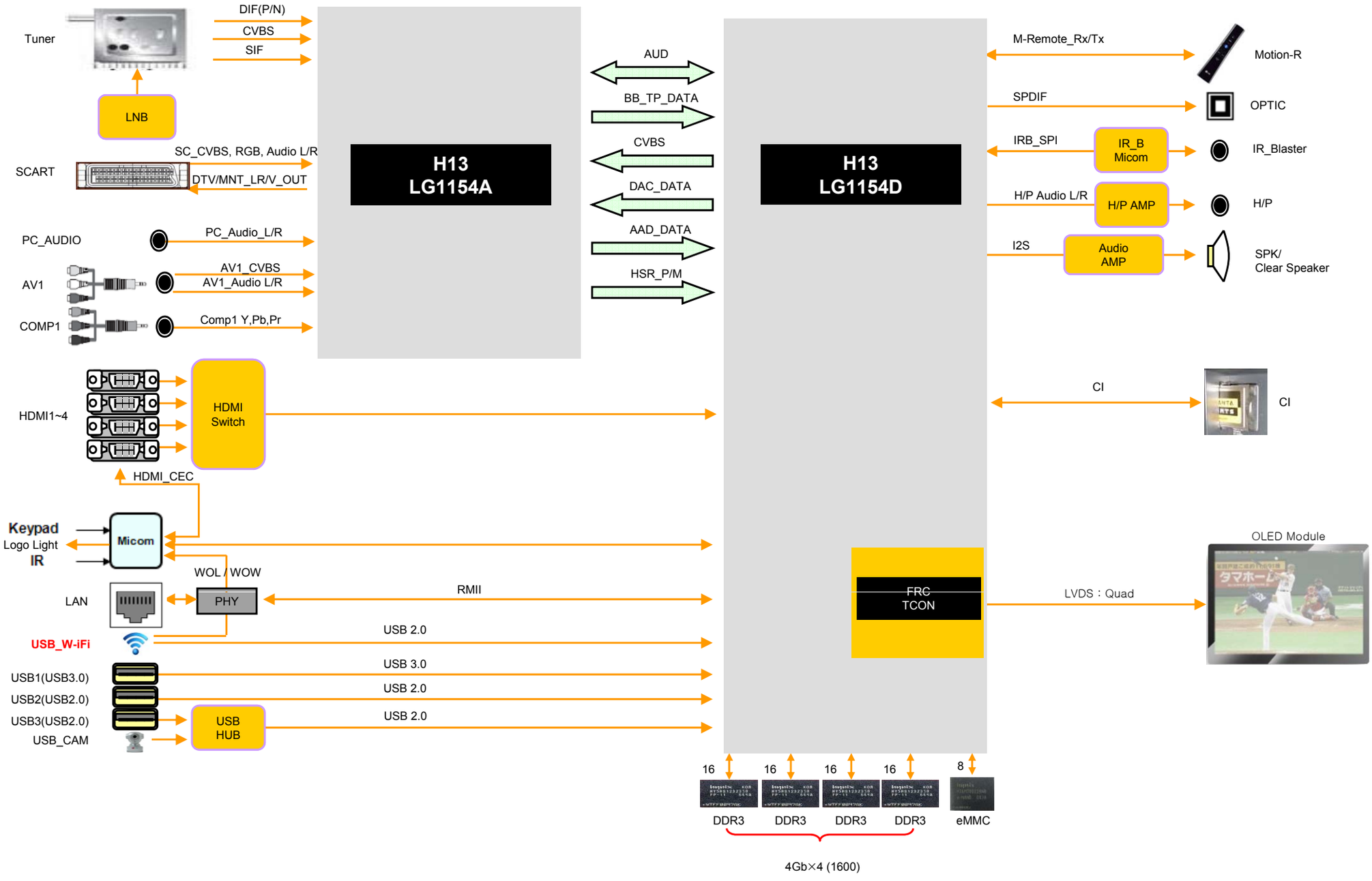
Main PCB for Broadband

55EA9800

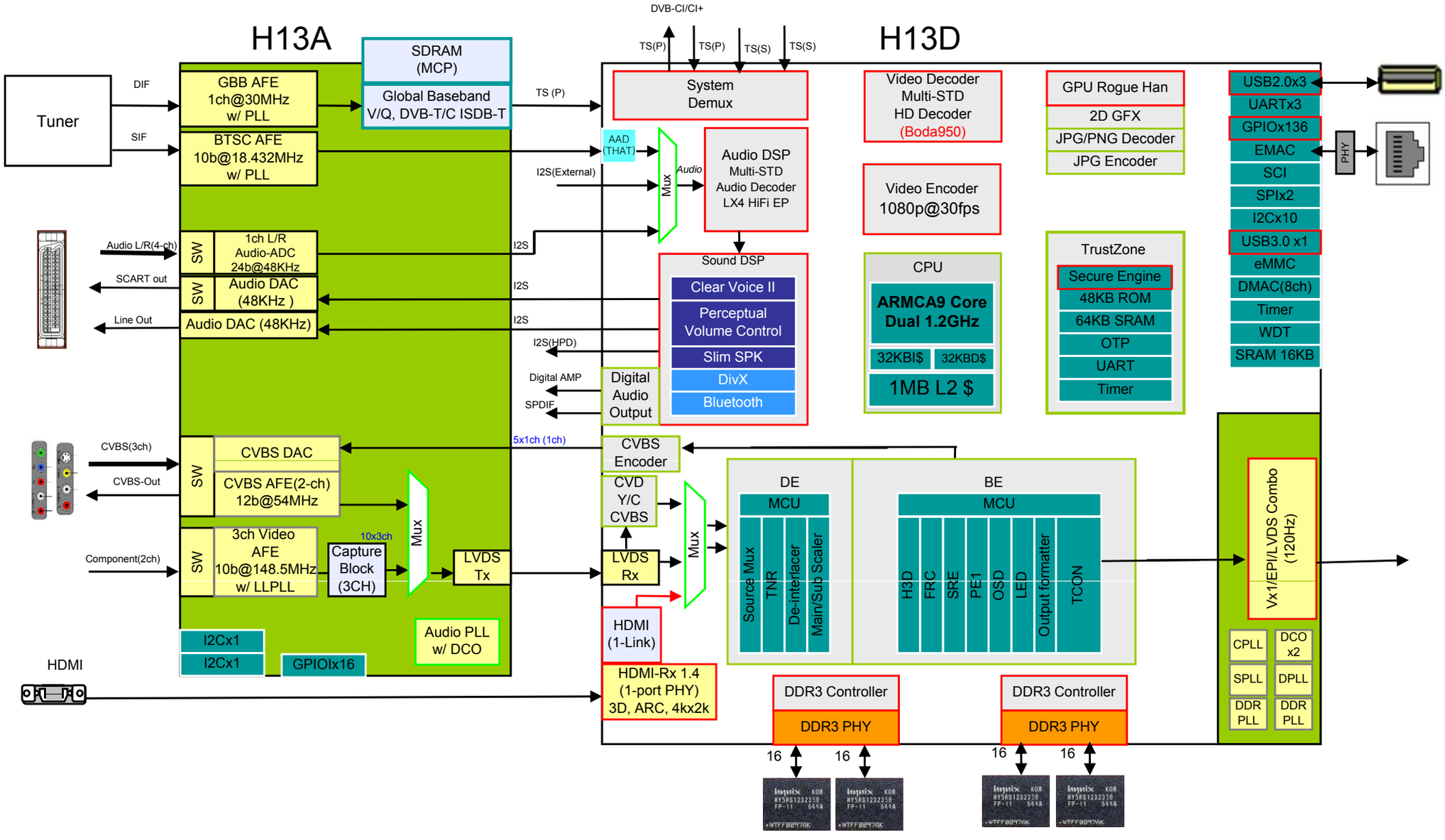


1. Main processor_Digital(LG1152D), DDR Memory, Flash Memory
2. Main processor_analog(LG1152A)
3. Micom for Key/IR sensing
4. Audio AMP (Max 12W)
5. HDMI switch (4:1)

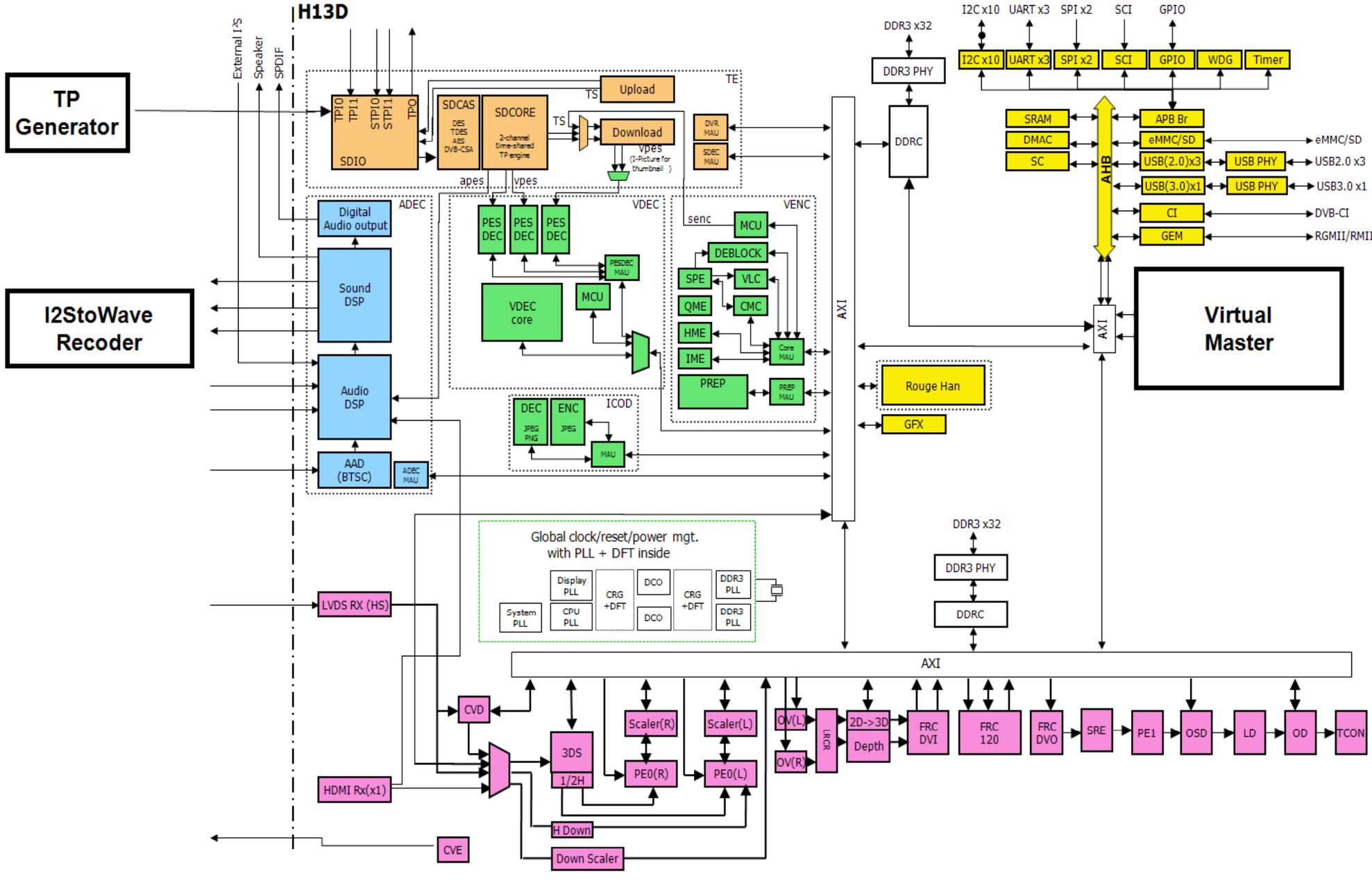
H13 Block diagram



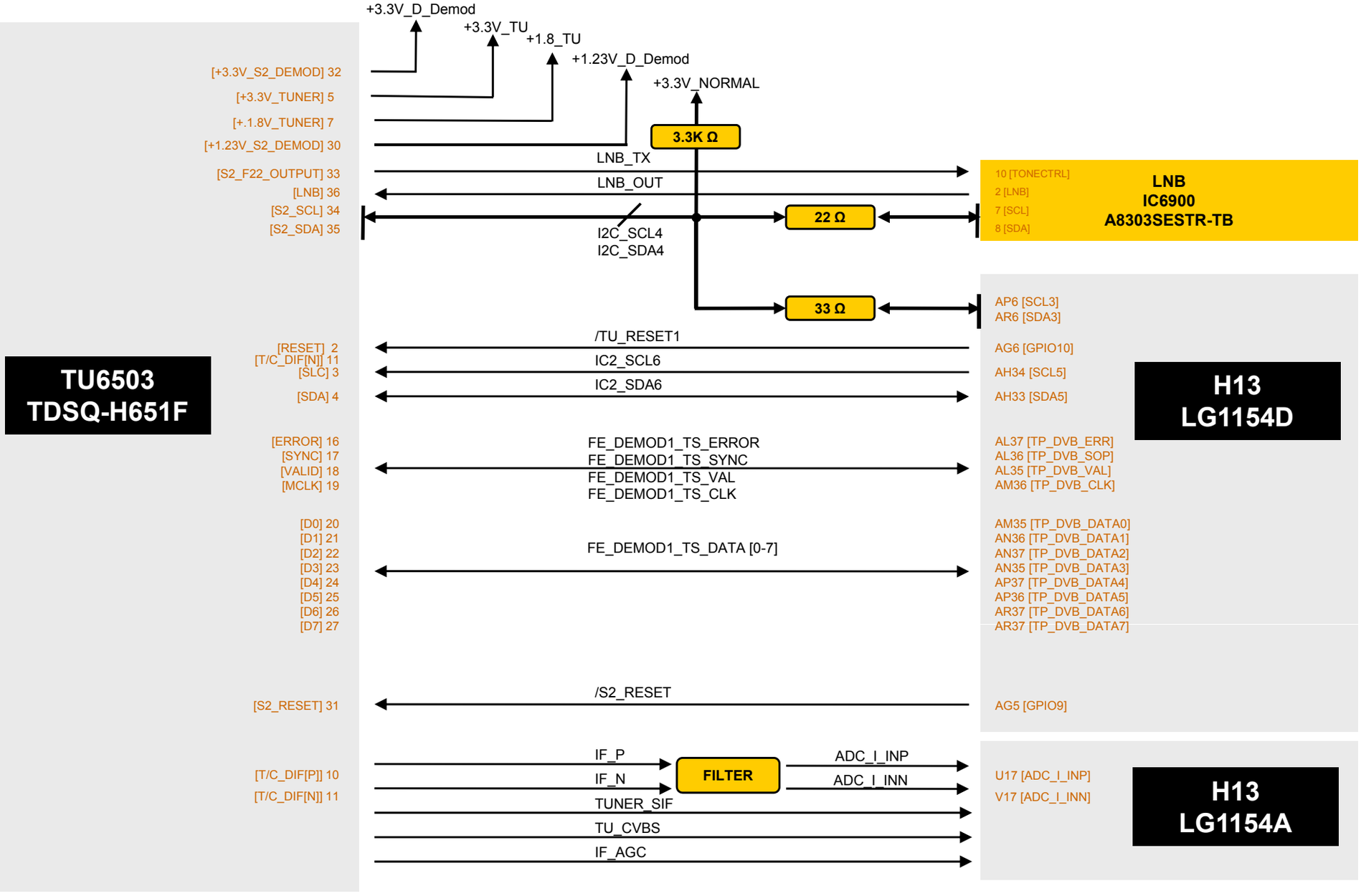
H13 Block diagram



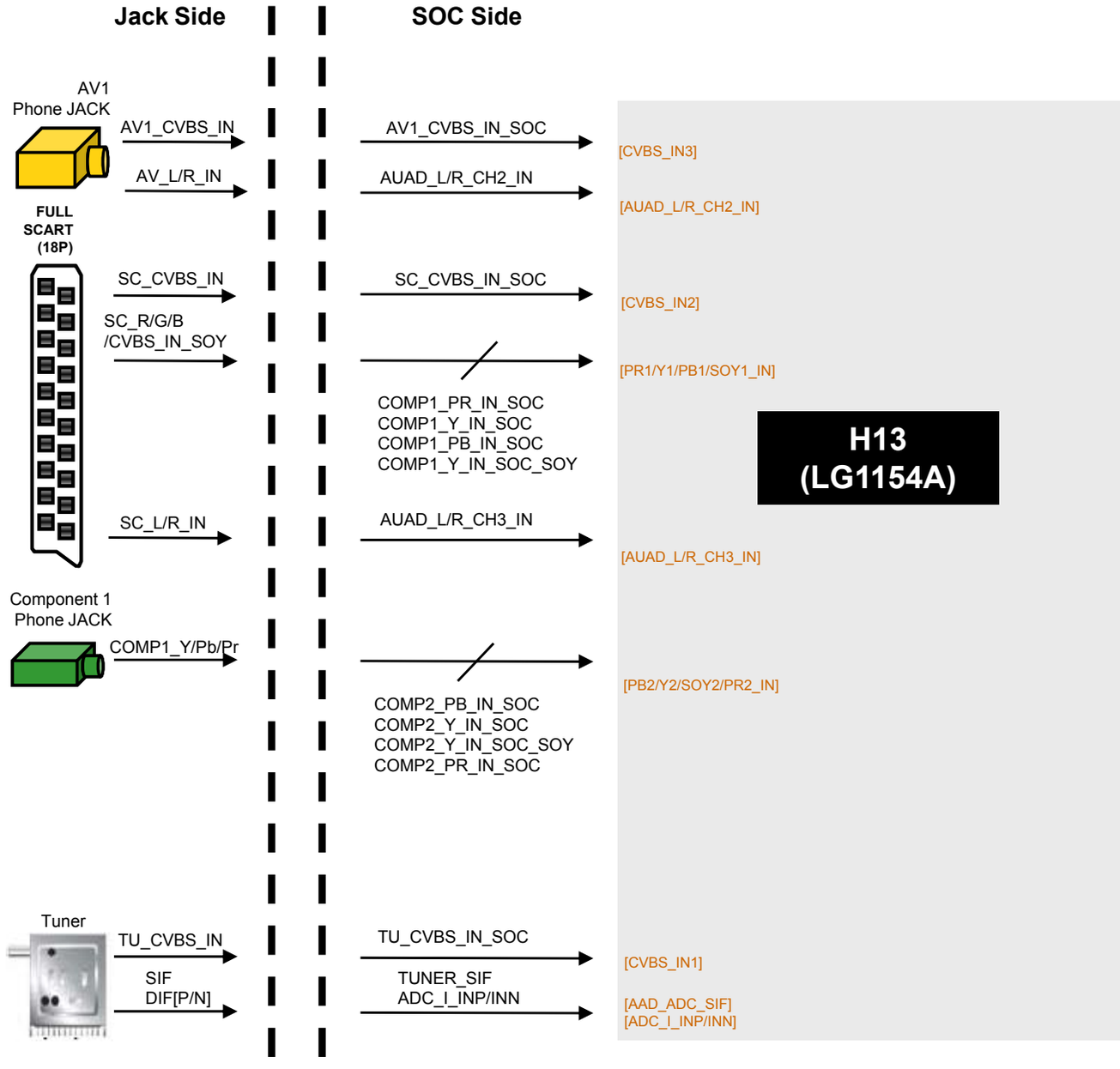
H13 Block diagram



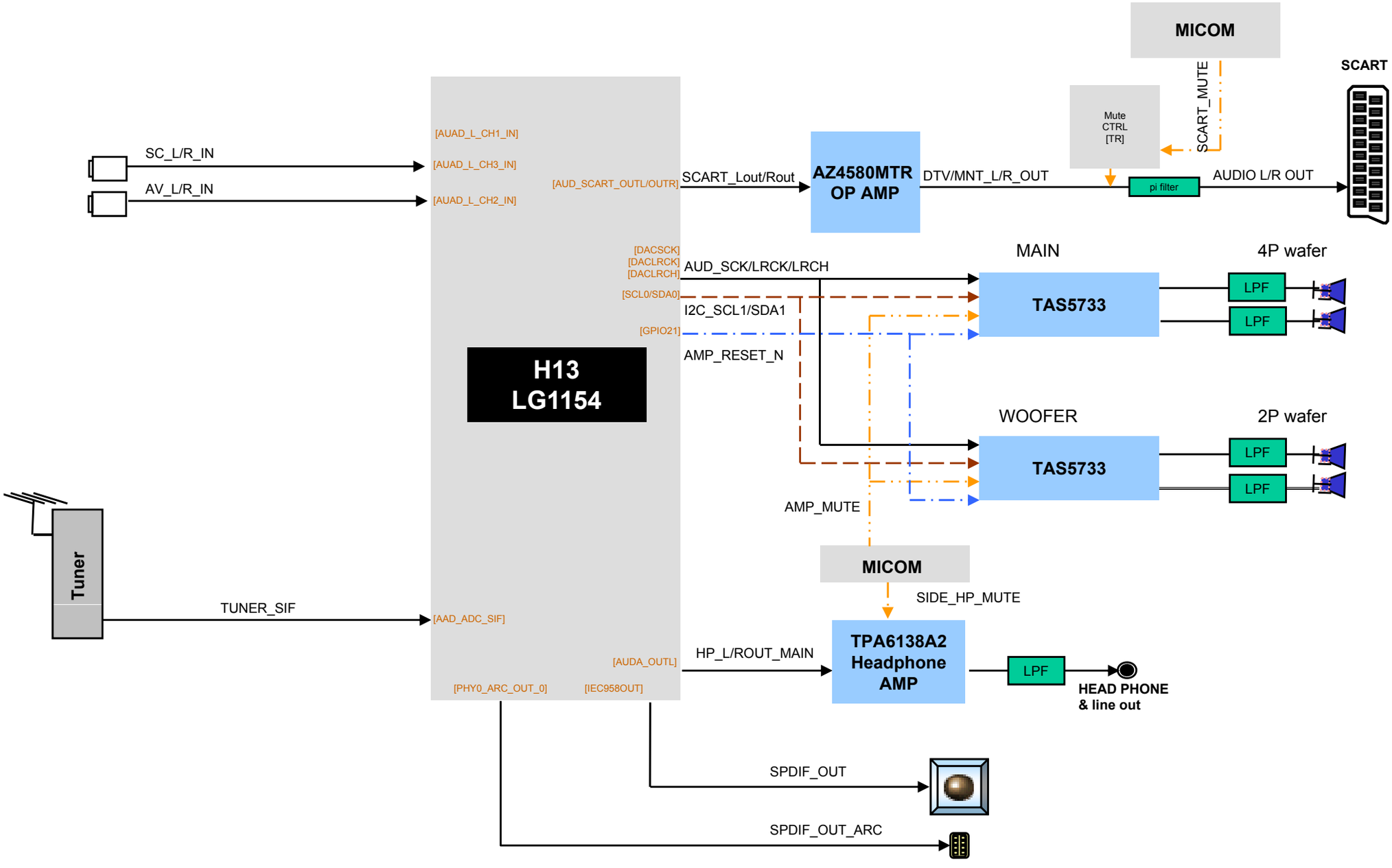
H13 Block diagram



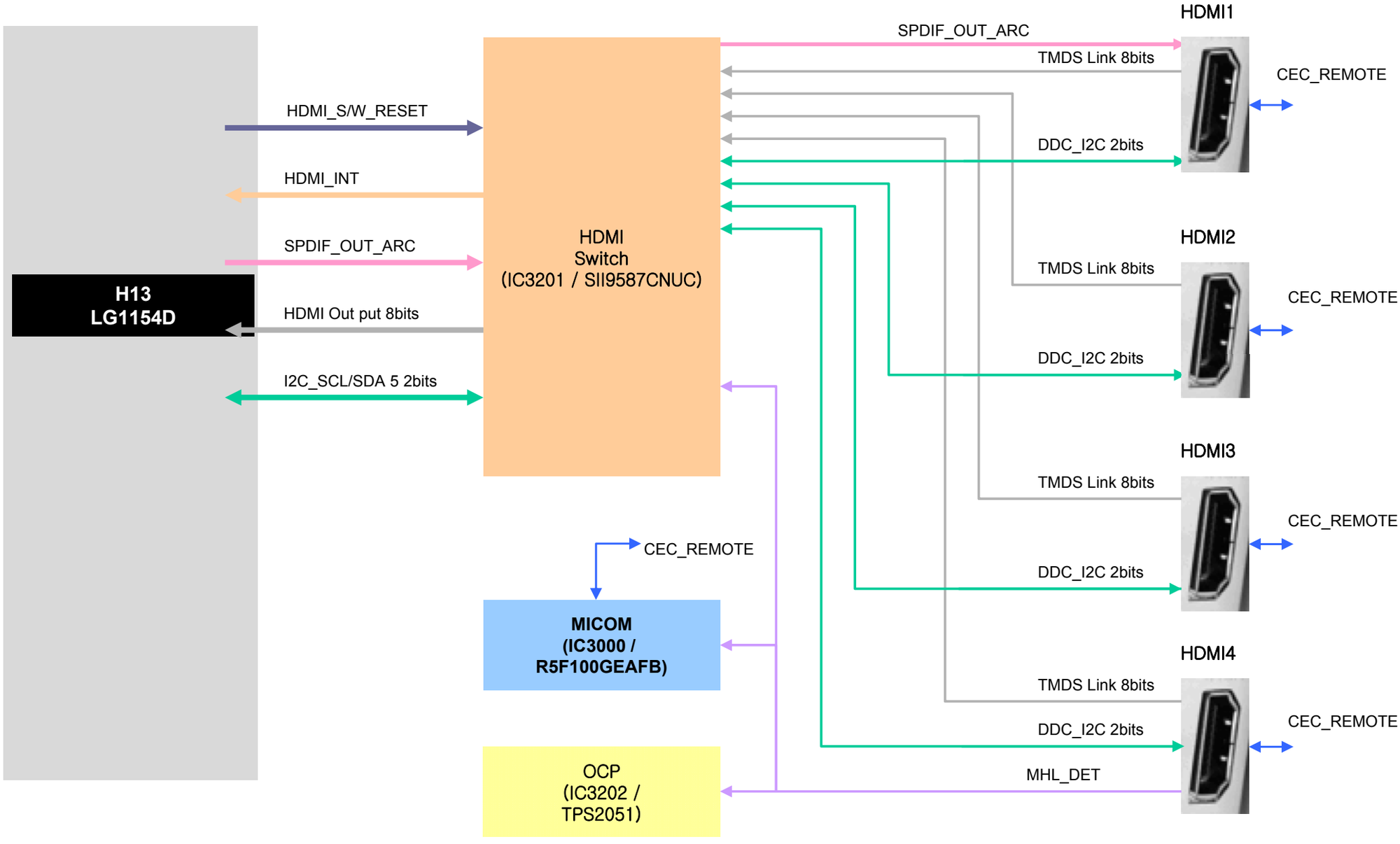
H13 Block diagram



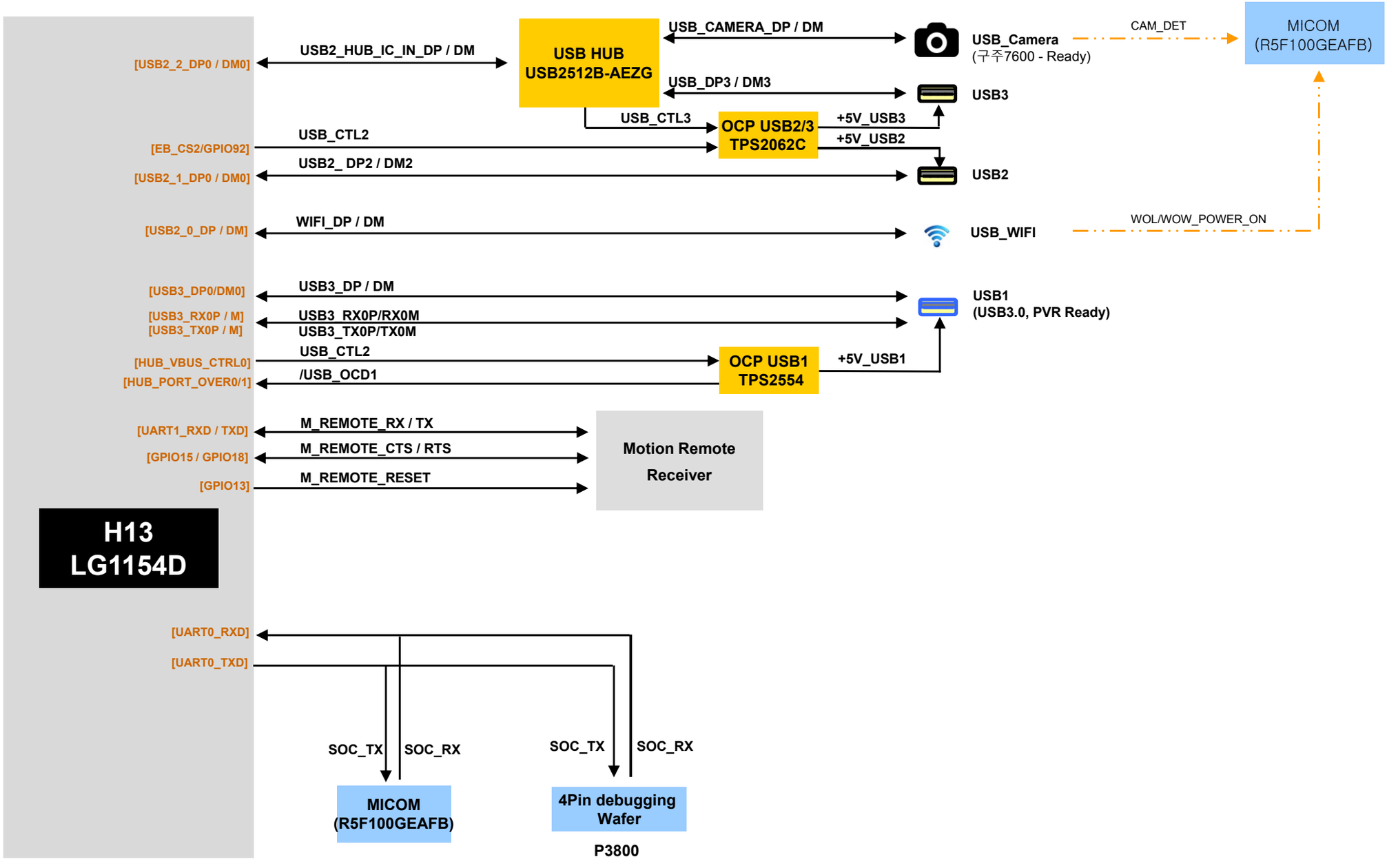
H13 Block diagram



H13 Block diagram

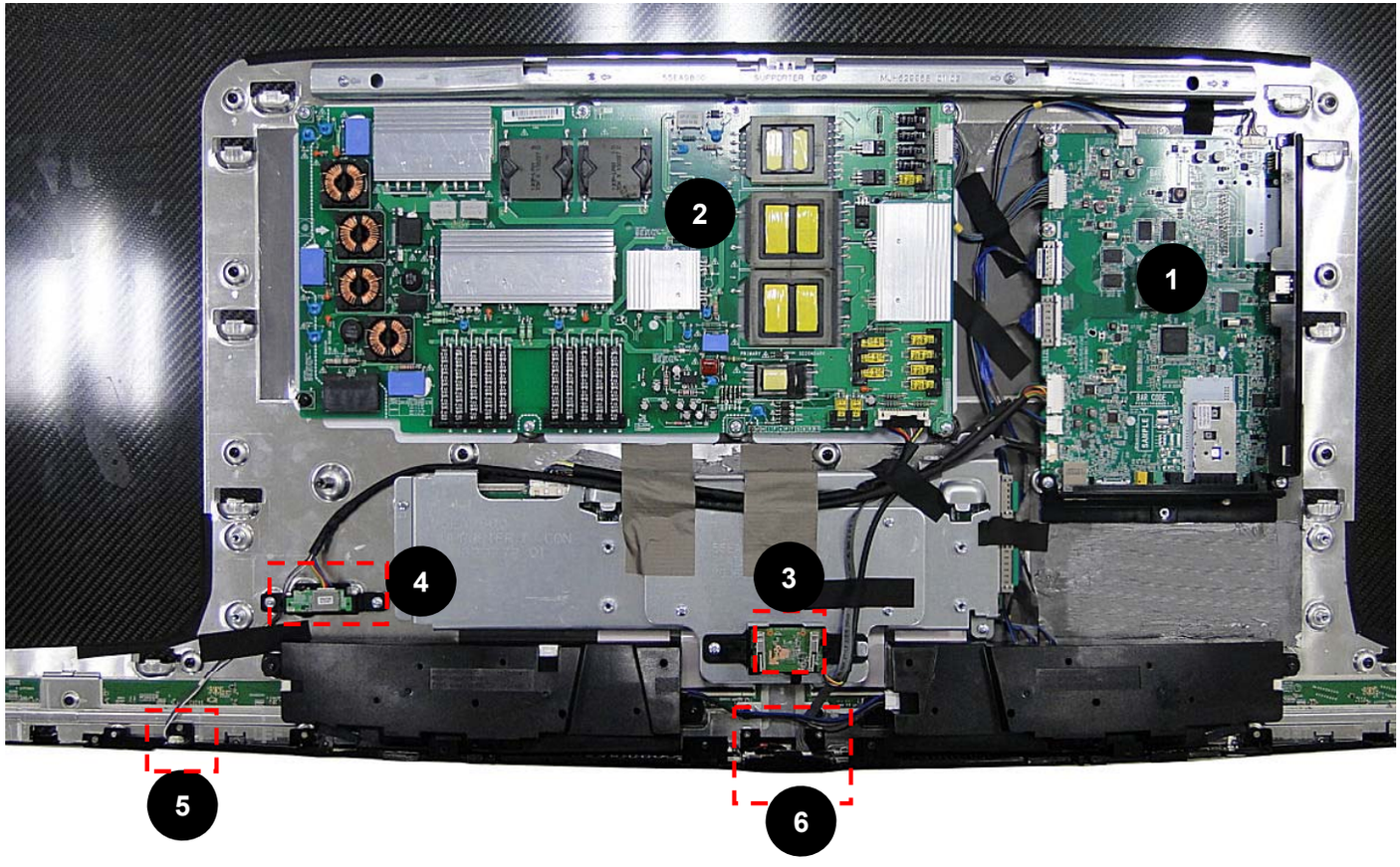


H13 Block diagram



Interconnection - 1

55EA9800



[PCBs]

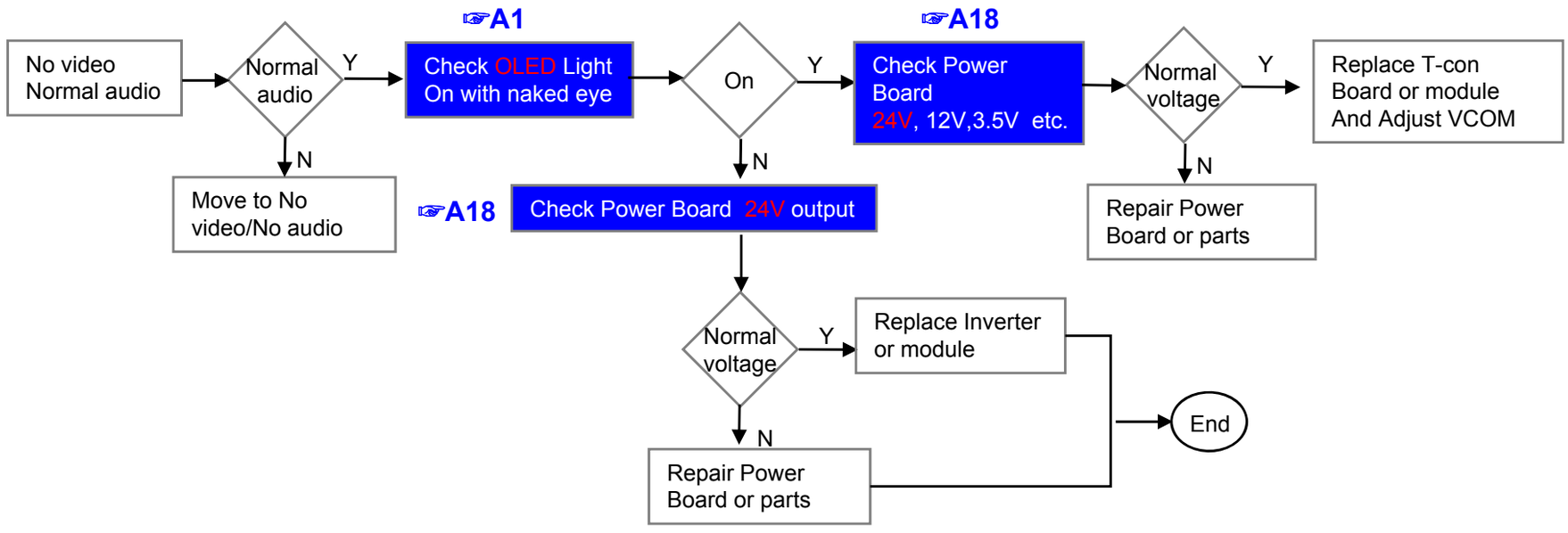
1. Main PCB
2. PSU
3. WIFI ASSY
4. BT MOTION ASSY
5. IR PCB
6. Touch Key / Logo

Contents of LCD TV Standard Repair Process

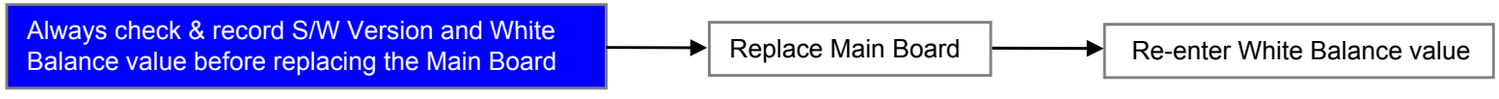
First of all, Check whether there is SVC Bulletin in GCSC System for these model.

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

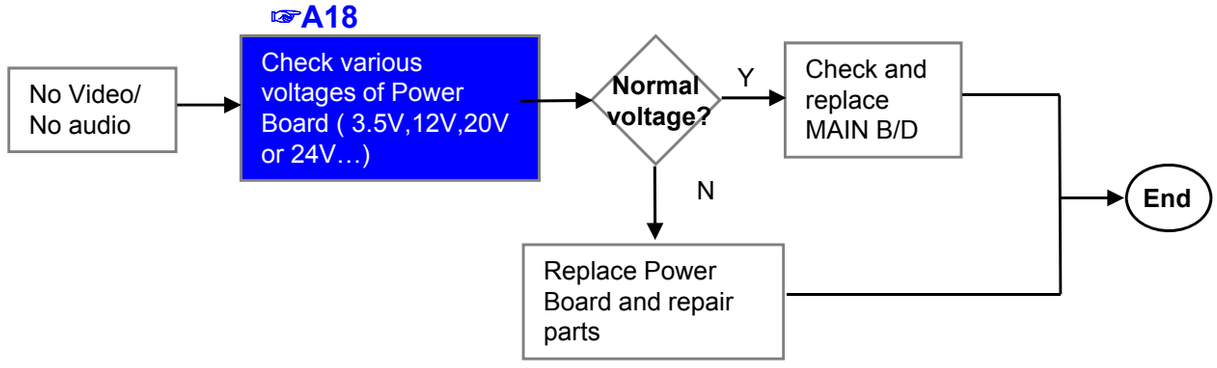
First of all, Check whether all of cables between board is inserted properly or not.
(Main B/D↔ Power B/D, EPI Cable,Speaker Cable,IR B/D Cable,,,)



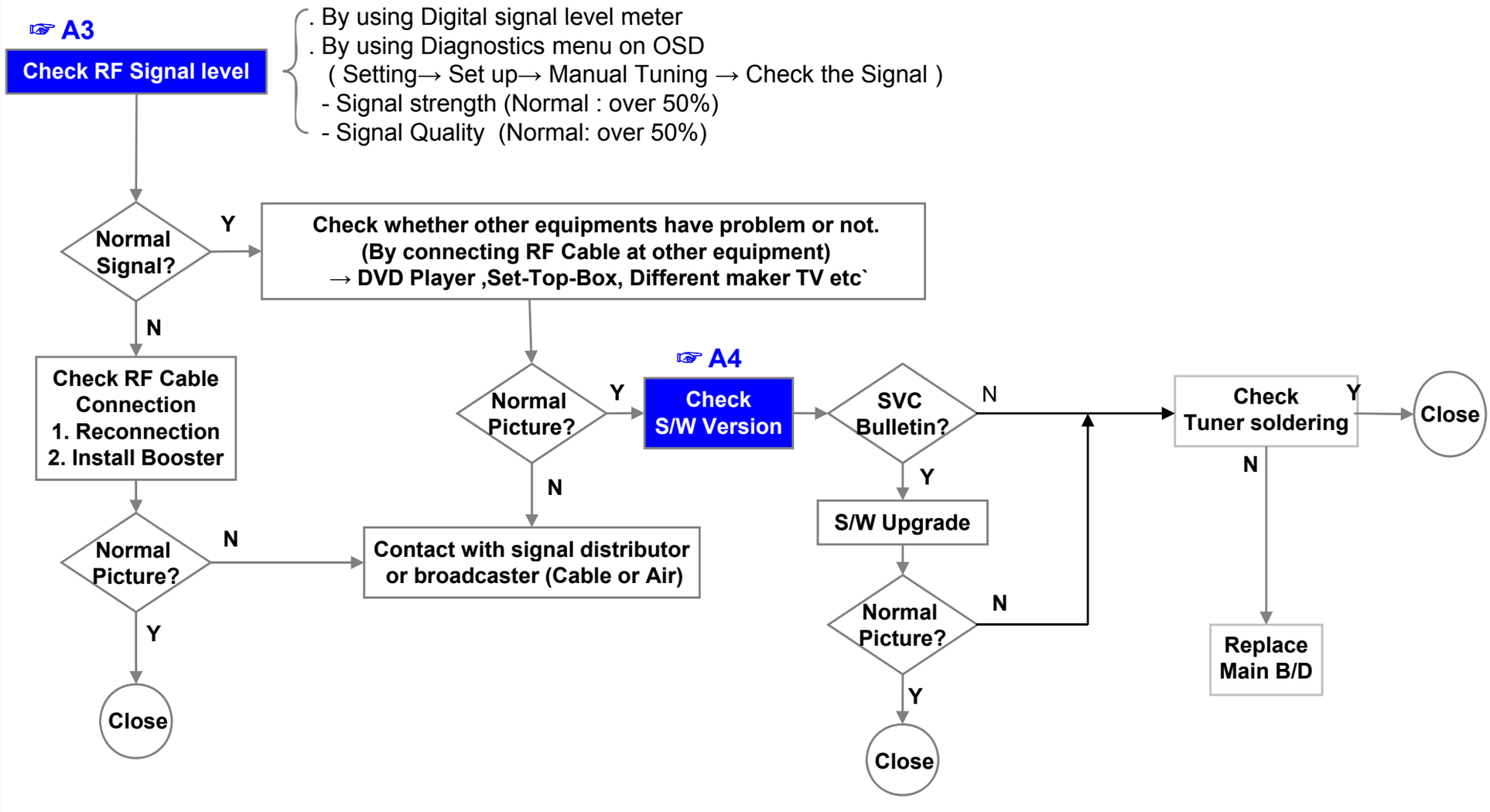
※Precaution ☞A4 & A2

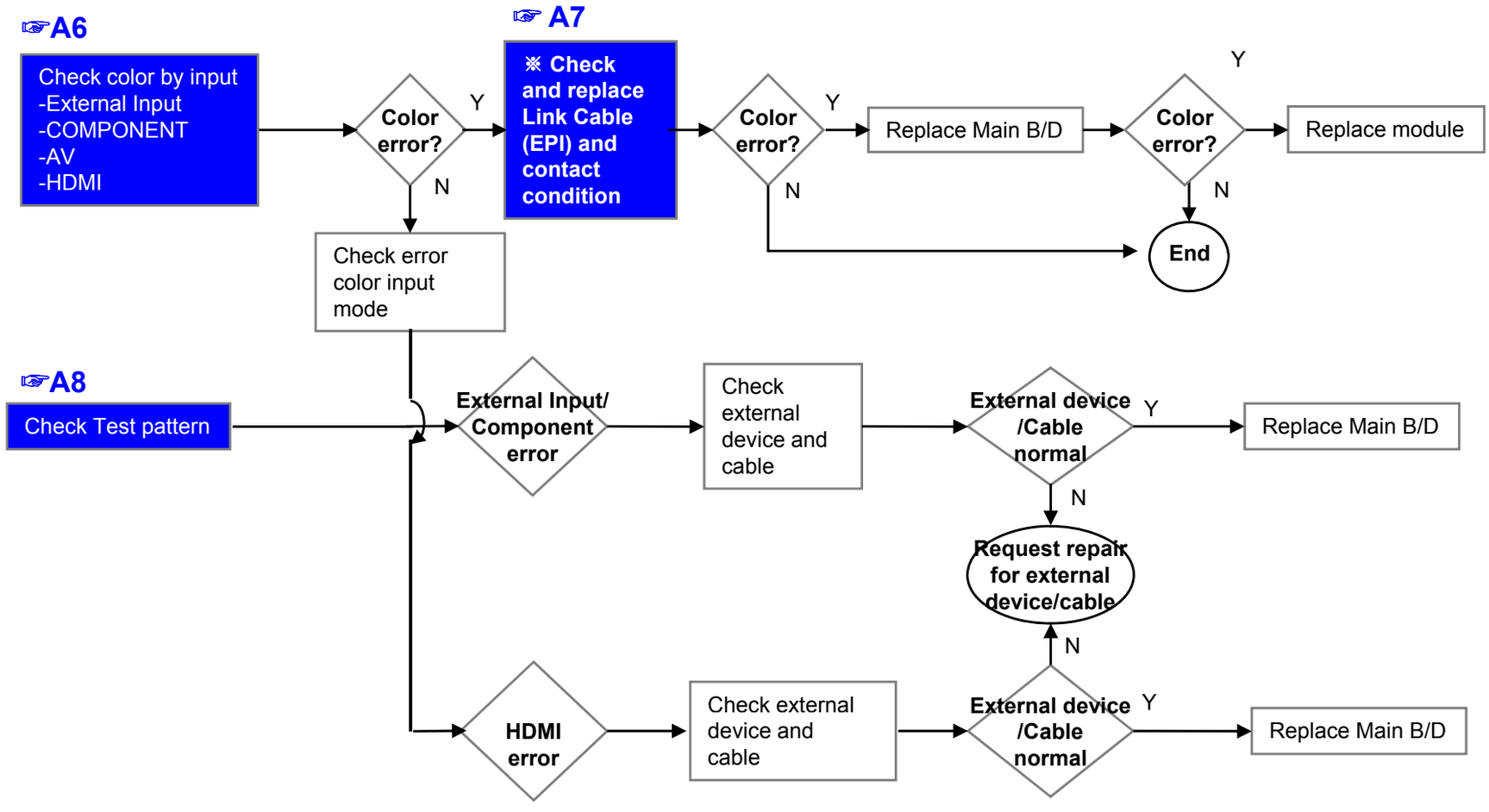


LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		No video/ No audio	Revised date		2/16

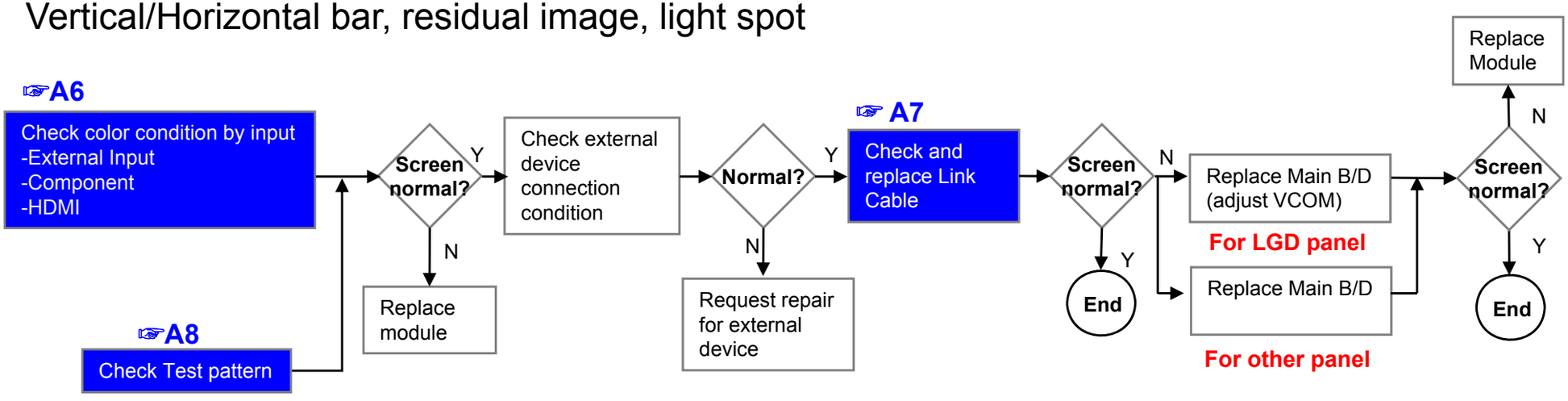


LCD TV	Error symptom	A. Video error	Established date	2013.01.31	
		Picture broken/ Freezing	Revised date		3/16

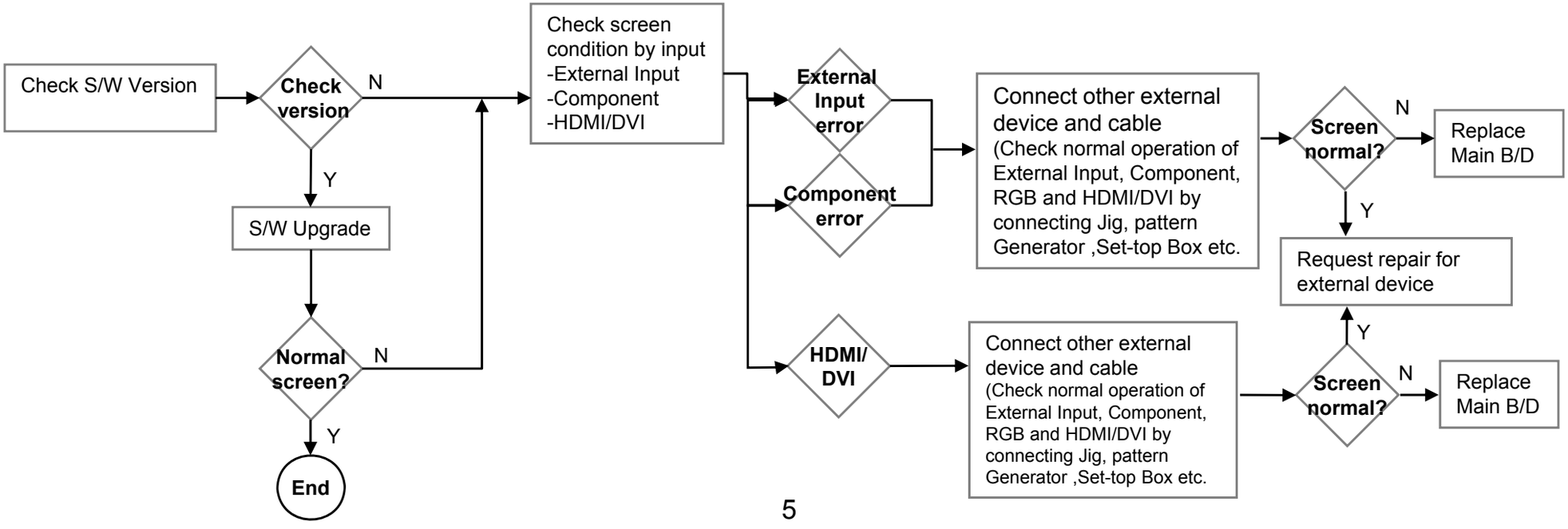




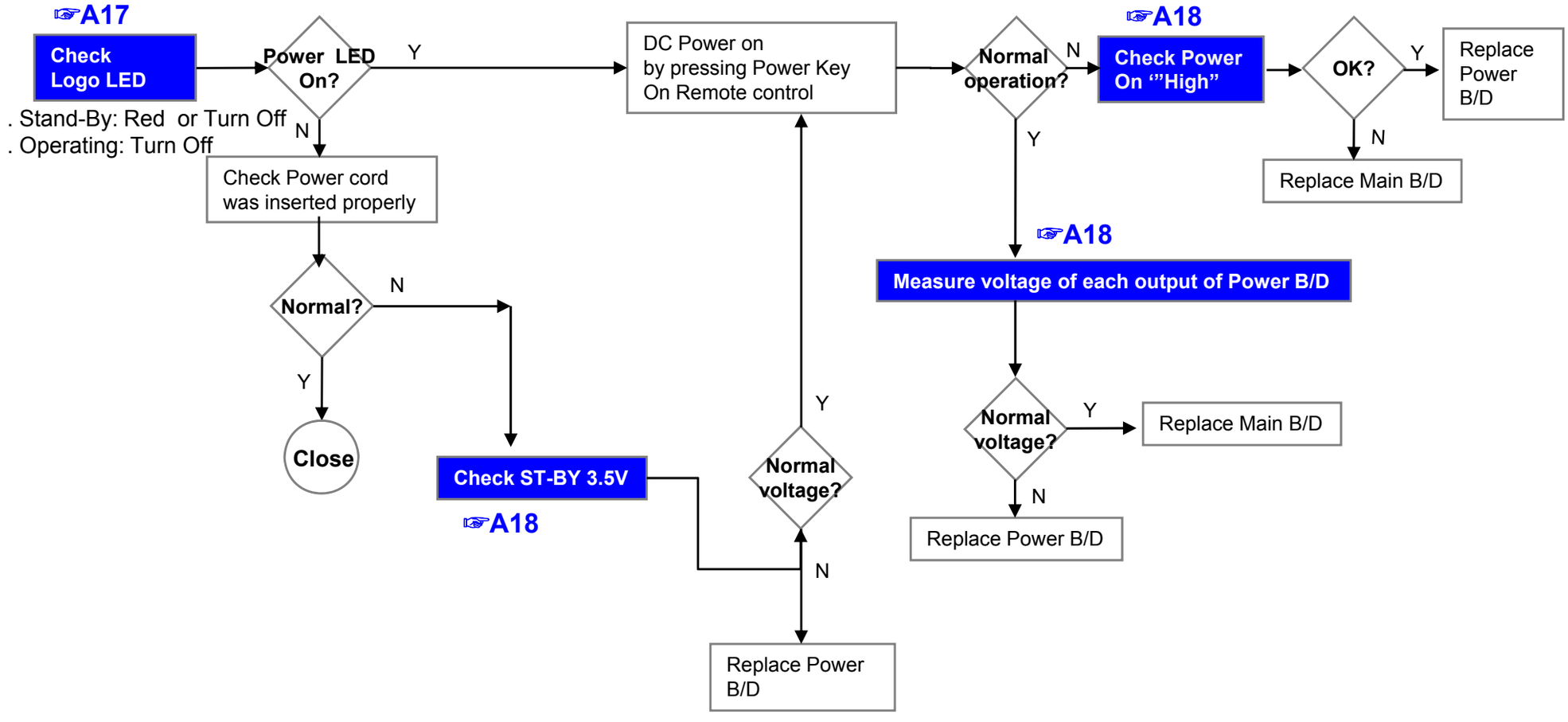
Vertical/Horizontal bar, residual image, light spot



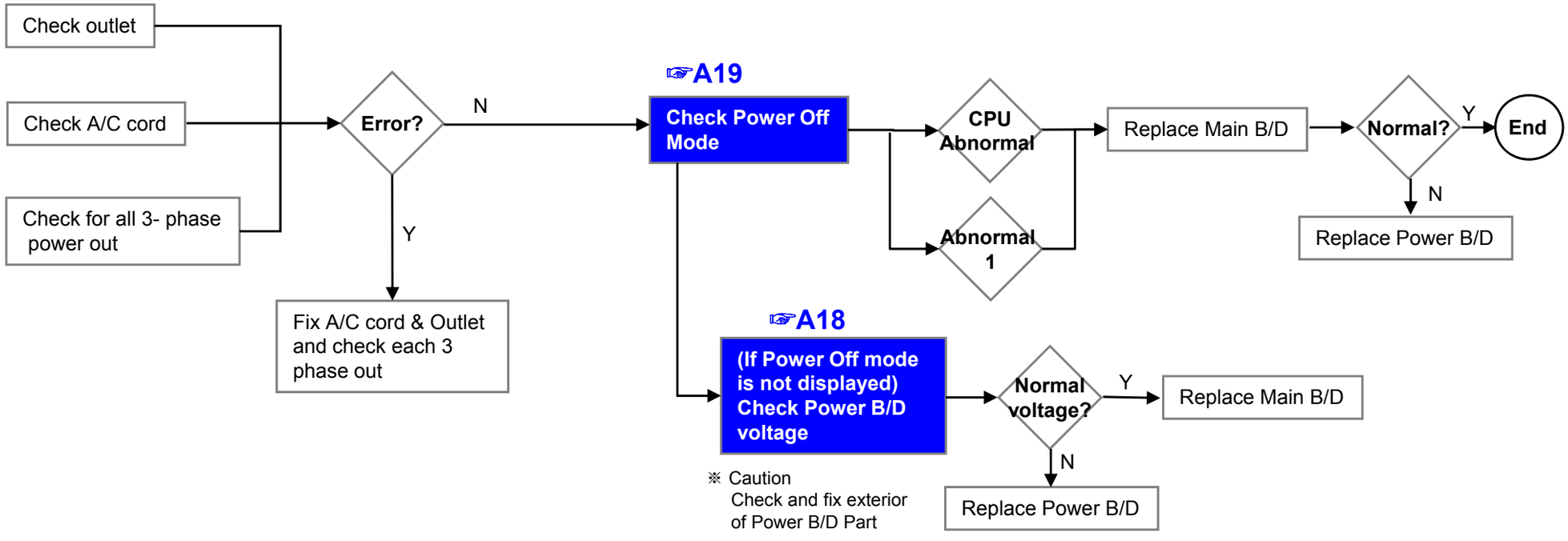
External device screen error-Color error



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



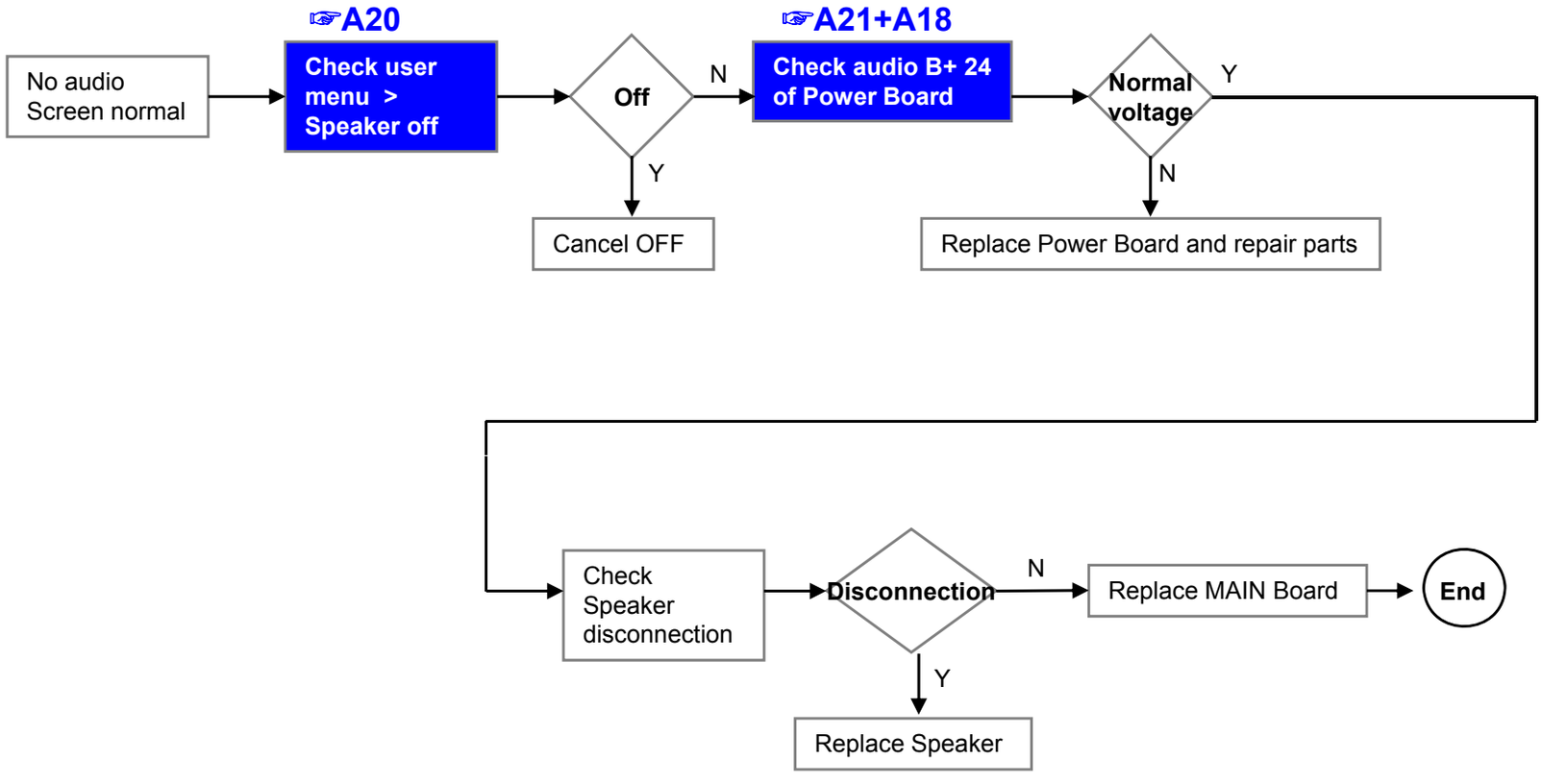
LCD TV	Error symptom	B. Power error	Established date	2013.01.31	
		Off when on, off while viewing, power auto on/off	Revised date		7/16



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

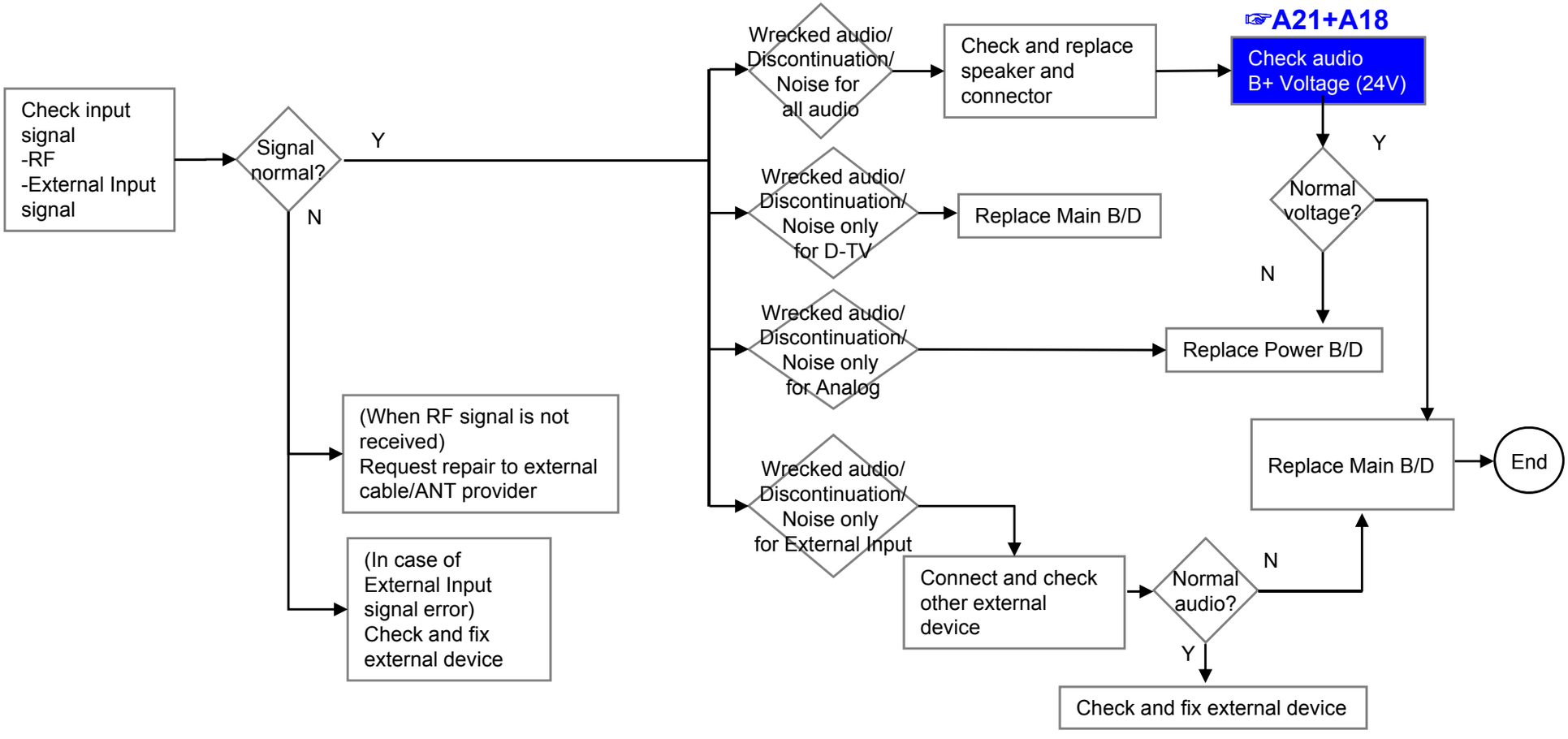
Status	Power off List	Explanation
Normal	"POWEROFF_REMOTEKEY"	Power off by REMOTE CONTROL
	"POWEROFF_OFFTIMER"	Power off by OFF TIMER
	"POWEROFF_SLEEPTIMER"	Power off by SLEEP TIMER
	"POWEROFF_INSTOP"	Power off by INSTOP KEY
	"POWEROFF_AUTOOFF"	Power off by AUTO OFF
	"POWEROFF_ONTIMER"	Power off by ON TIMER
	"POWEROFF_20V_DET"	Power off by AC OFF
	"POWEROFF_RESREC"	Power off by Reservated 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



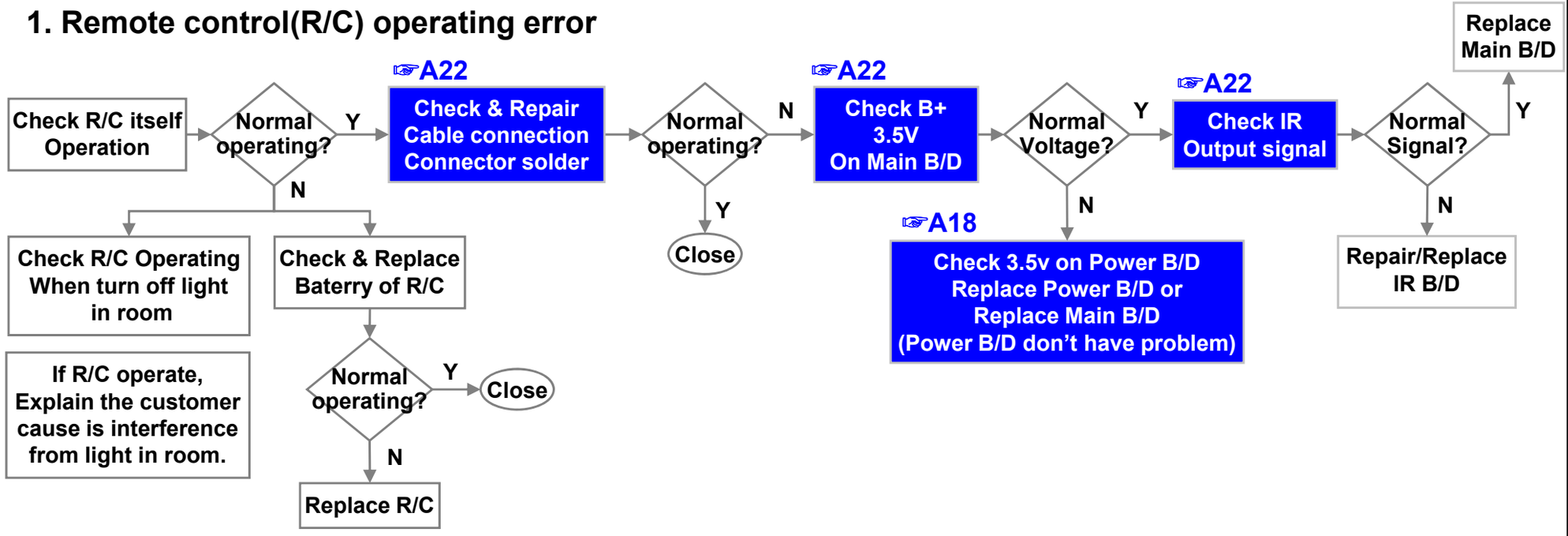
LCD TV	Error symptom	C. Audio error	Established date	2013.01.31	
		Wrecked audio/ discontinuation/noise	Revised date		9/16

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

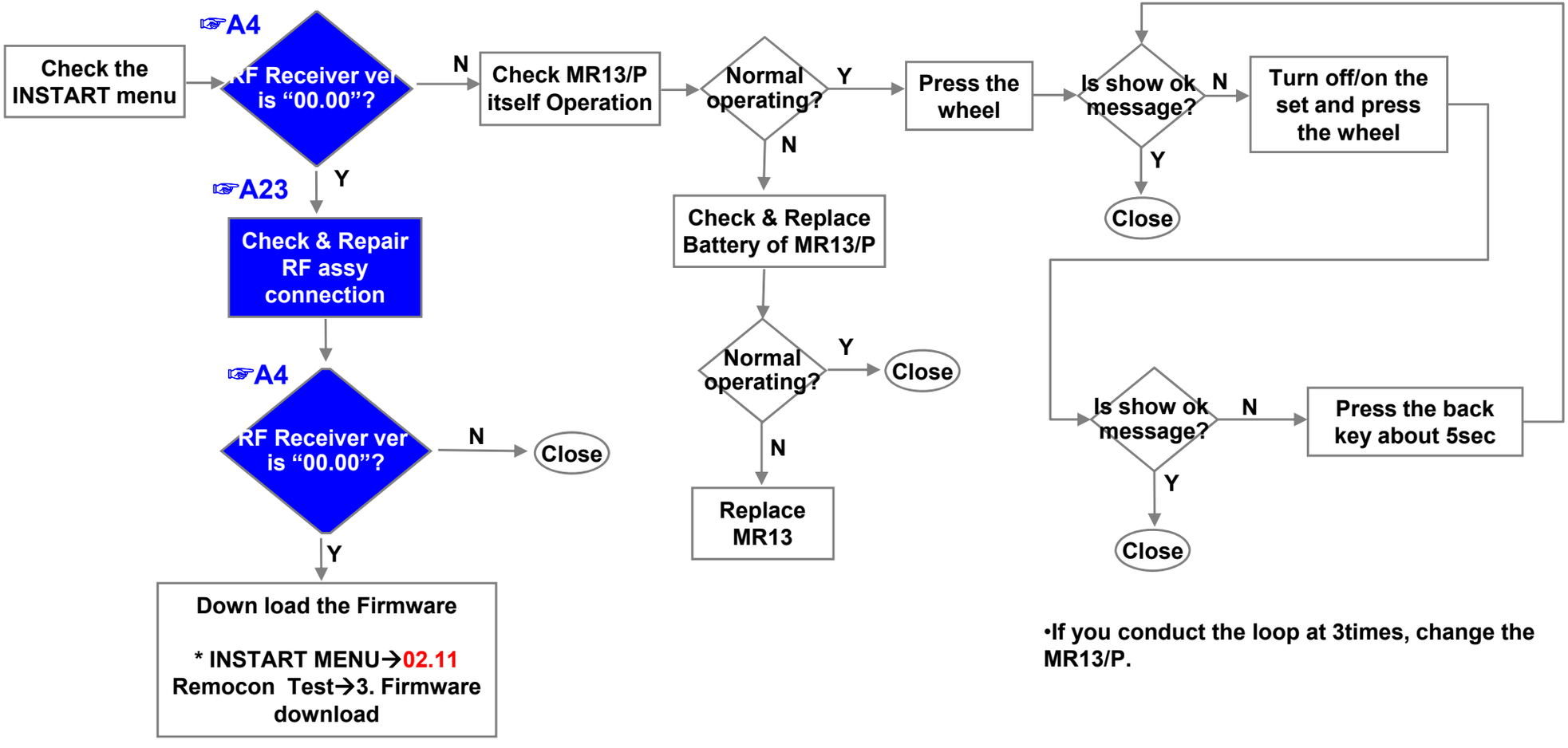


LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		Remote control & Local switch checking	Revised date		10/16

1. Remote control(R/C) operating error

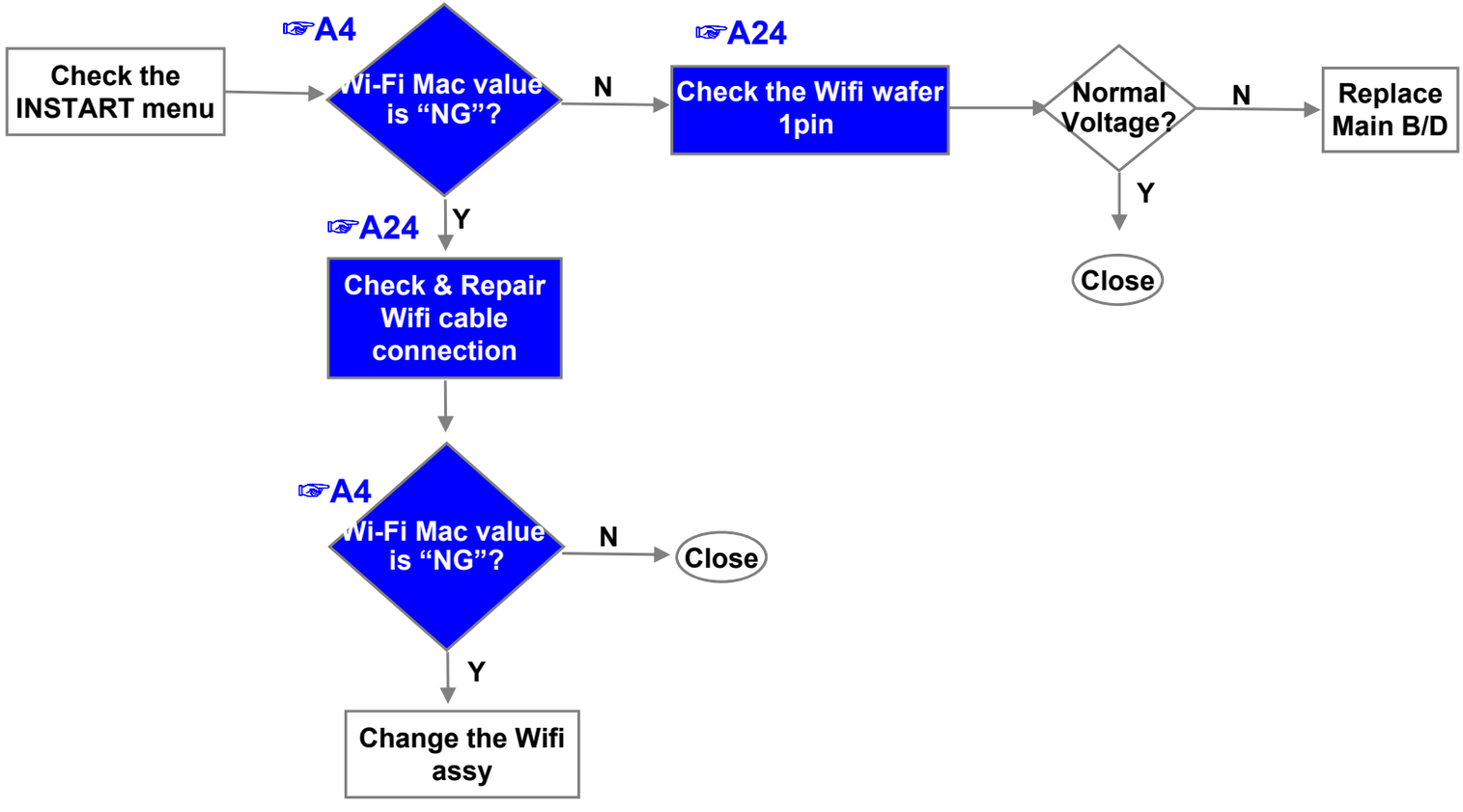


2. MR13/P (Magic Remocon) operating error

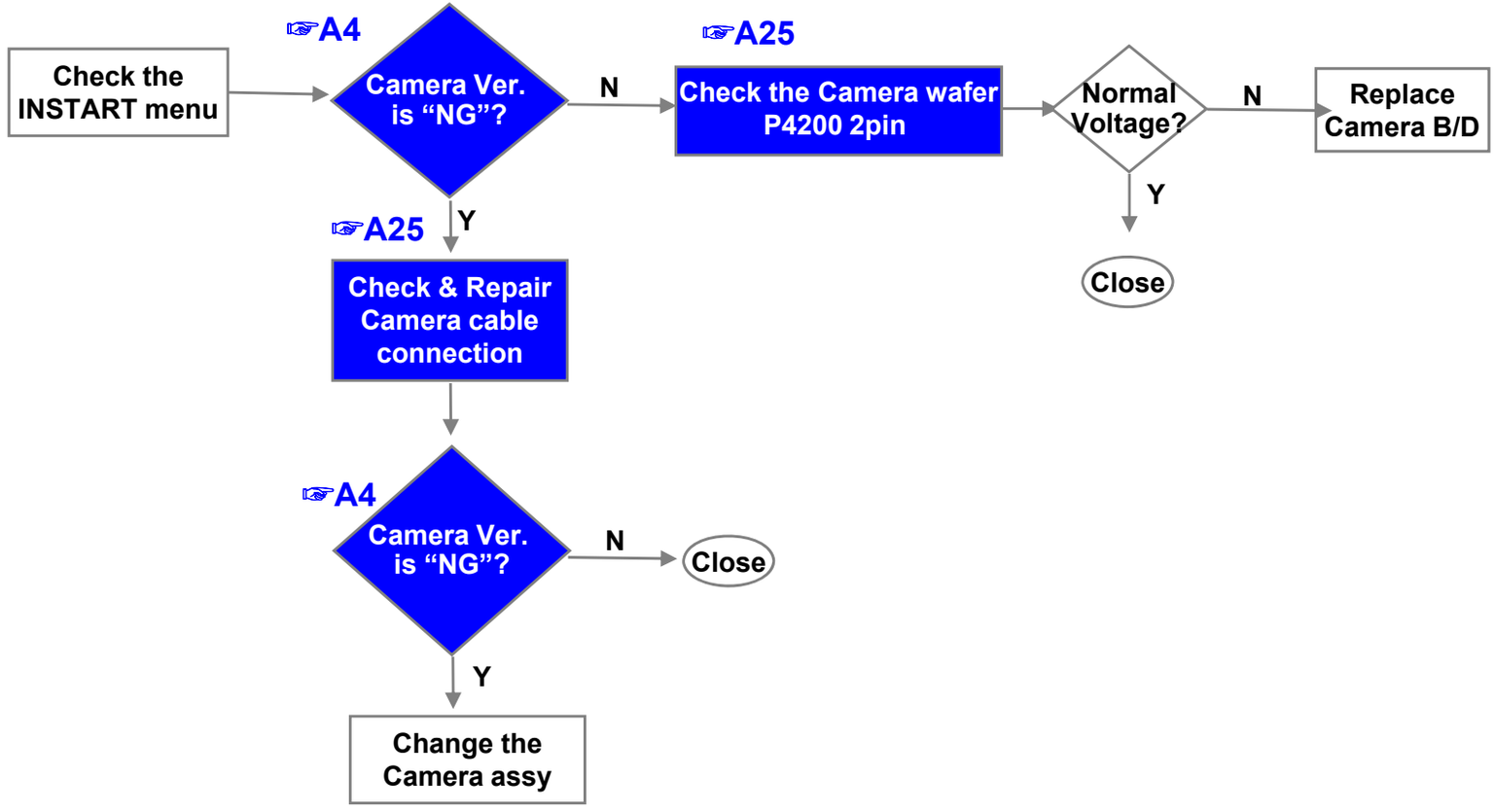


•If you conduct the loop at 3times, change the MR13/P.

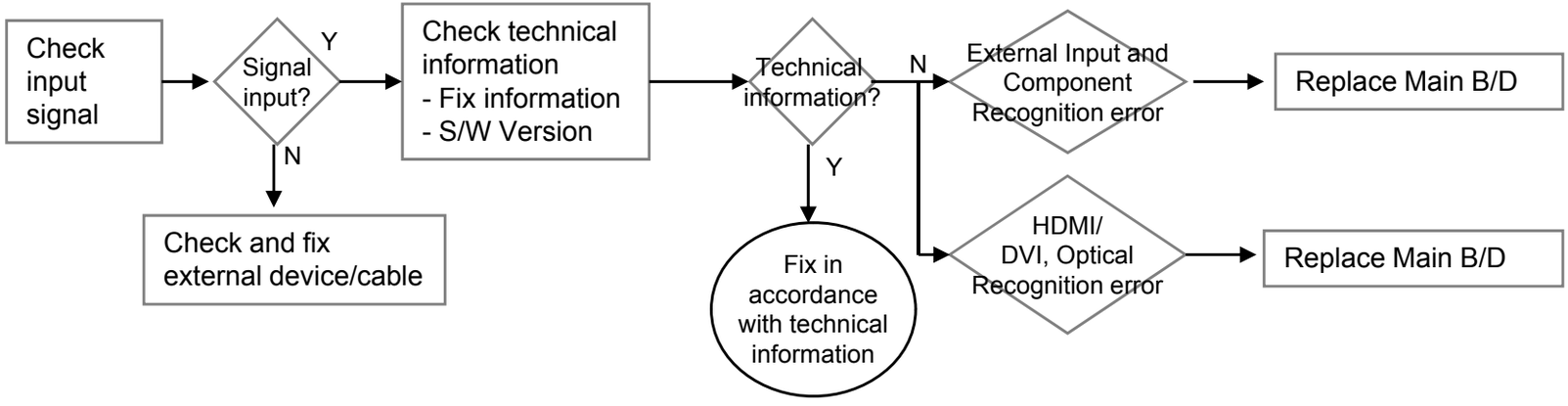
3.Wifi operating error



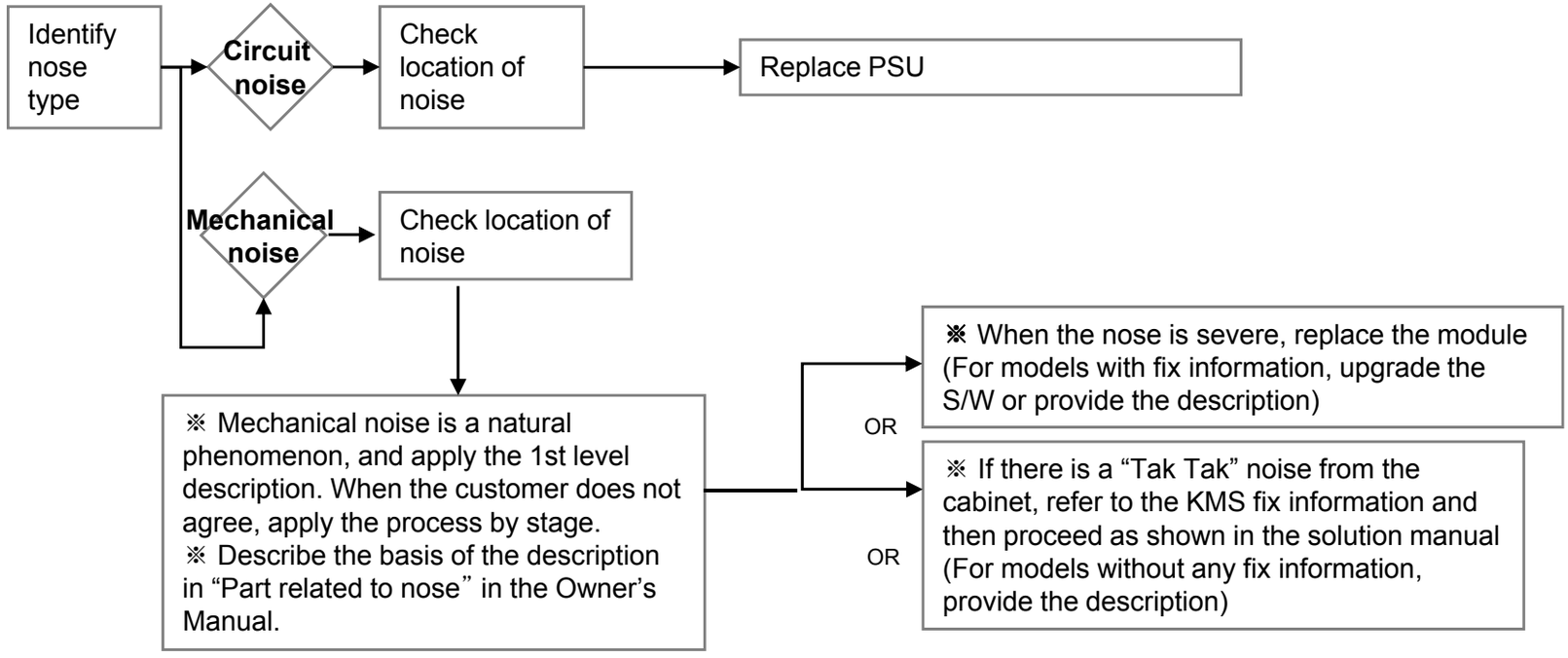
4.Camera operating error



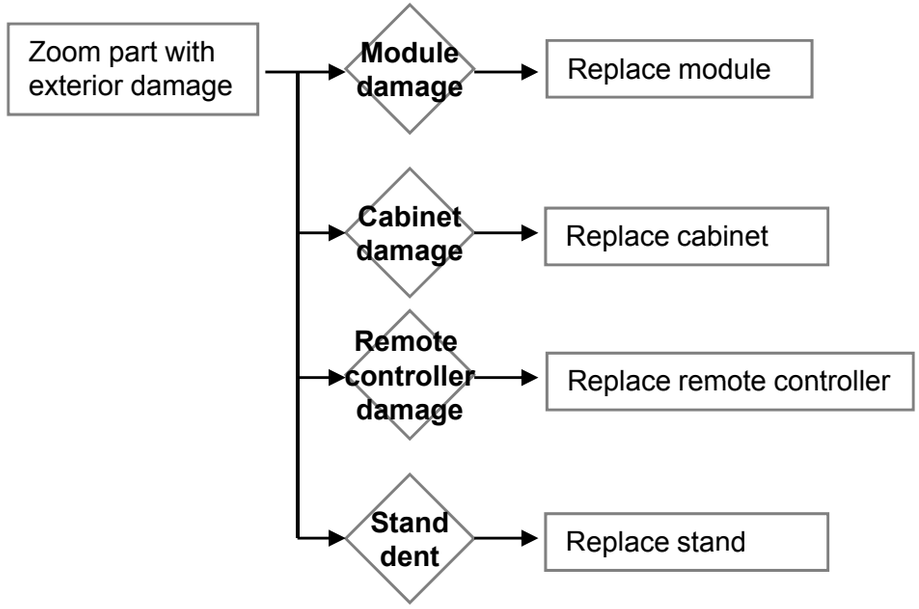
LCD TV	Error symptom	D. Function error	Established date	2013.01.31	
		External device recognition error	Revised date		14/16



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

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Contents of LCD TV Standard Repair Process Detail Technical Manual

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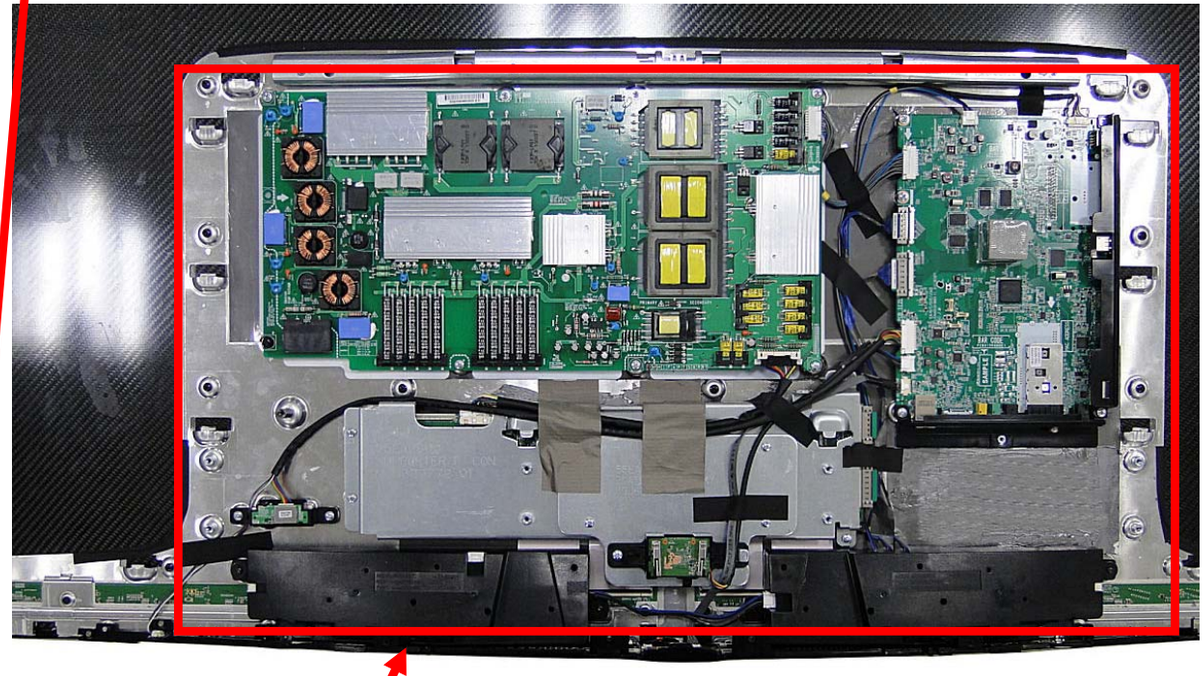
Standard Repair Process Detail Technical Manual

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

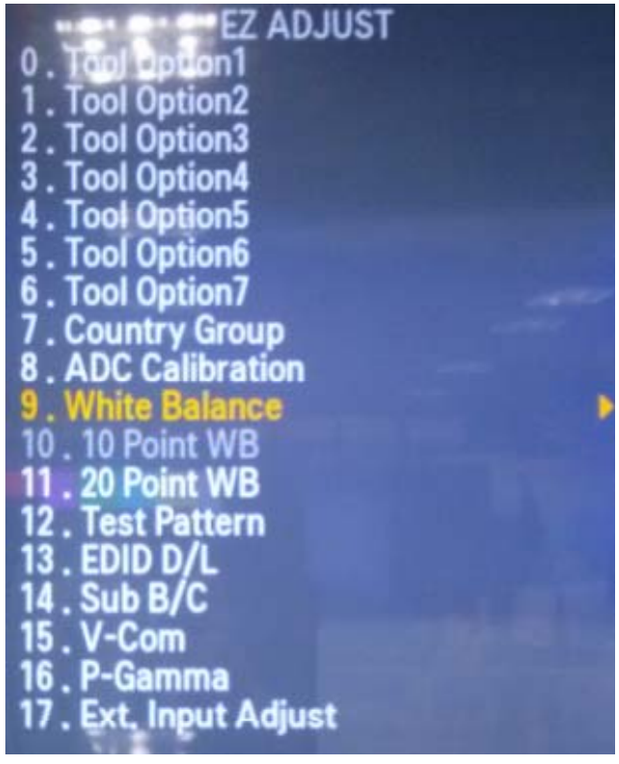


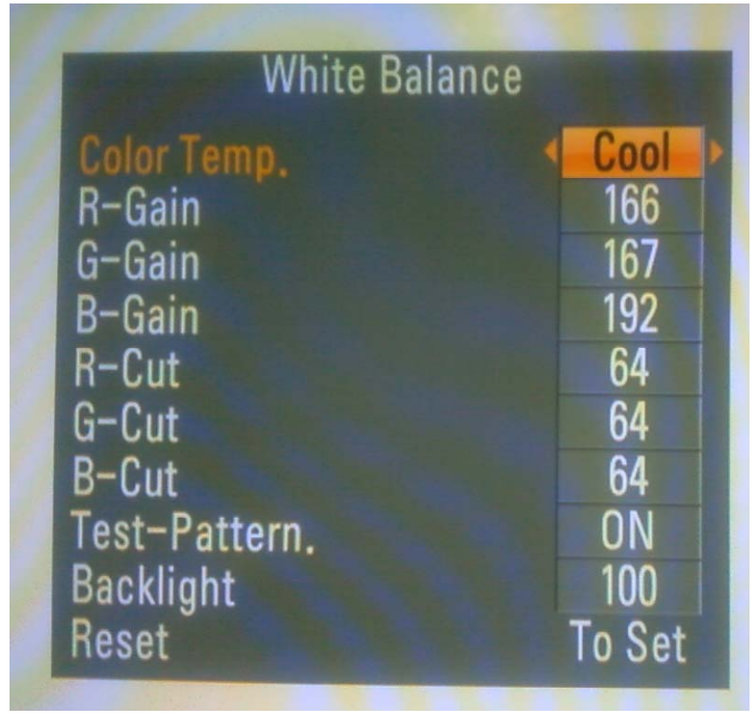
After Remove the Rear Cover, turning on the power and disassembling the case, check with the naked eye.

A1

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_No video/Normal audio	Established date	2013.01.31	
	Content	Check White Balance value	Revised date		A2



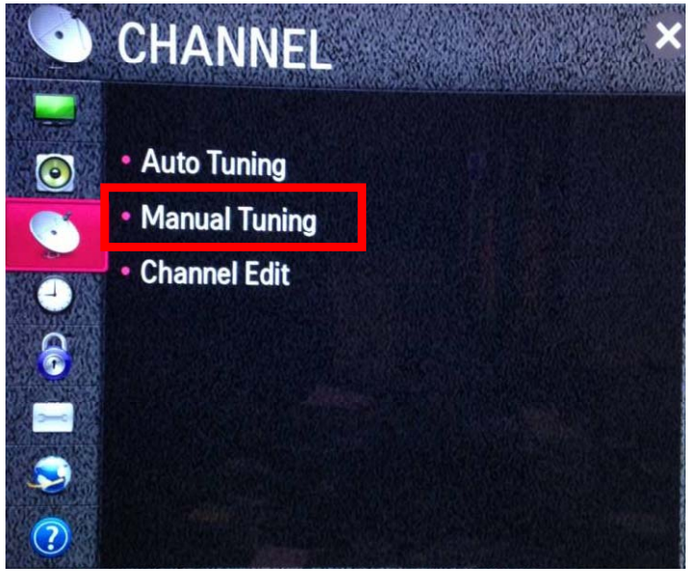


Entry method

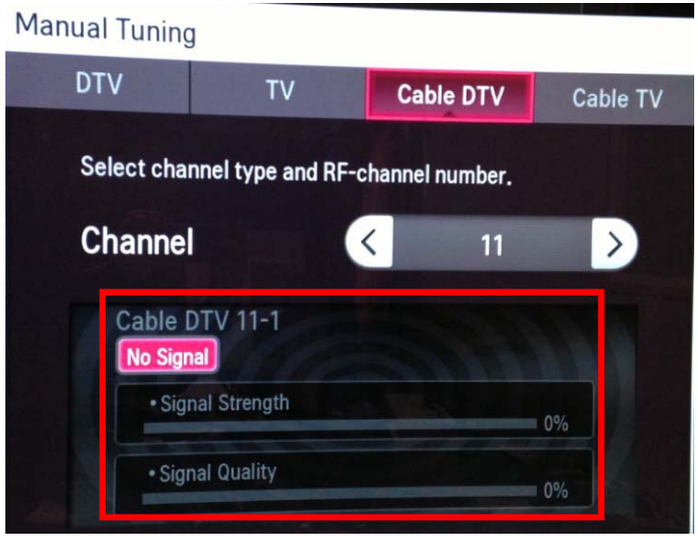
1. Press the ADJ button on the remote controller for adjustment.
2. Enter into White Balance of item 9.
3. After recording the R, G, B (GAIN, Cut) value of Color Temp (Cool/Medium/Warm), re-enter the value after replacing the MAIN BOARD.

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2013.01.31	
	Content	TUNER input signal strength checking method	Revised date		A3



Settings → Channel → Manual Tuning → select channel



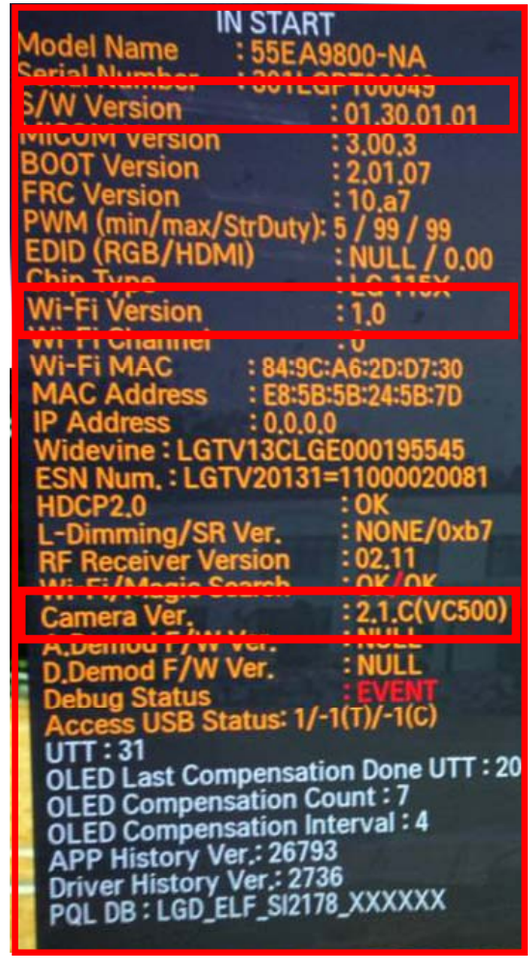
When the signal is strong, use the attenuator (-10dB, -15dB, -20dB etc.)

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2013.01.31	
	Content	LCD-TV Version checking method	Revised date		A4

1. Checking method for remote controller for adjustment

Version

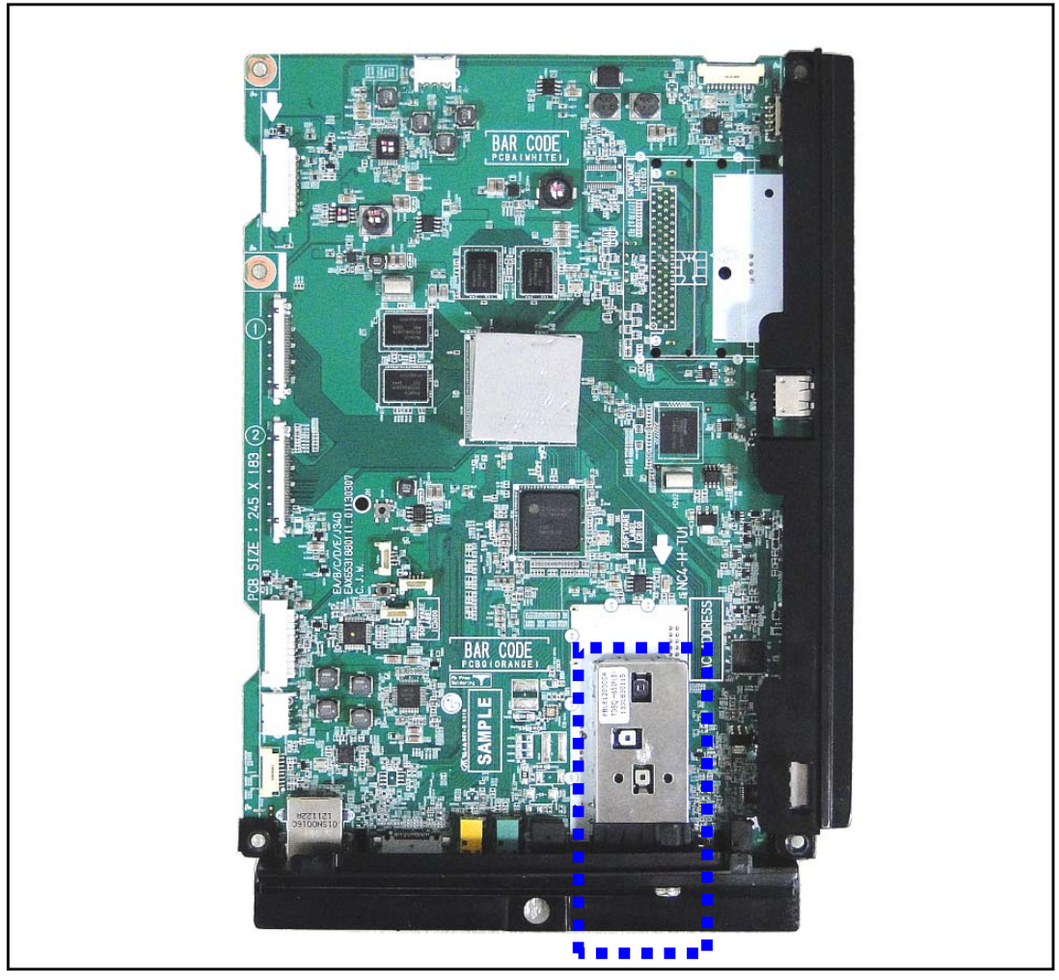


Press the IN-START with the remote controller for adjustment

A4

Standard Repair Process Detail Technical Manual

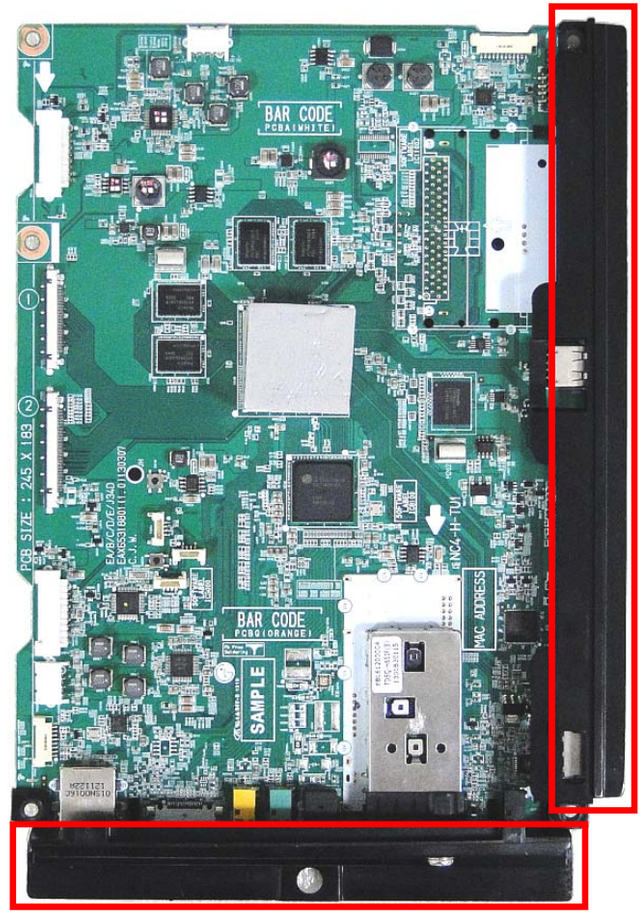
LCD TV	Error symptom	A. Video error_Video error, video lag/stop	Established date	2013.01.31	
	Content	TUNER checking part	Revised date		A5

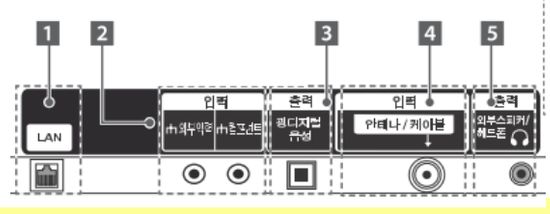


Checking method:
1. Check the signal strength or check whether the screen is normal when the external device is connected.
2. After measuring each voltage from power supply, finally replace the MAIN BOARD.

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



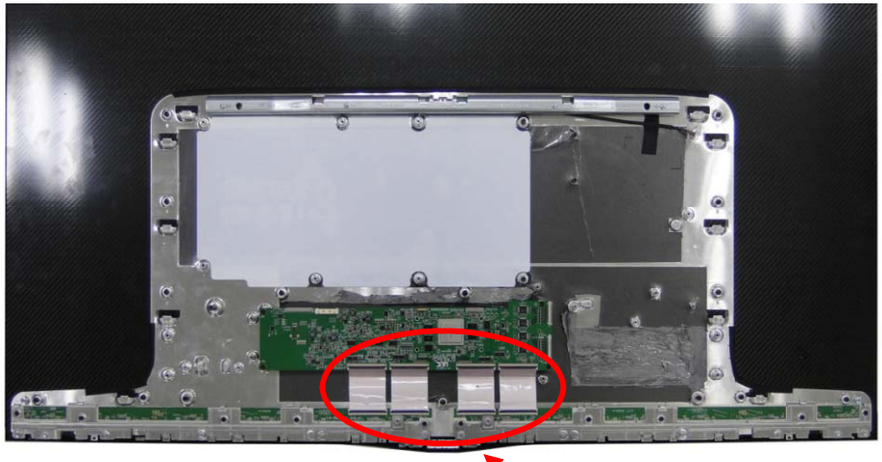


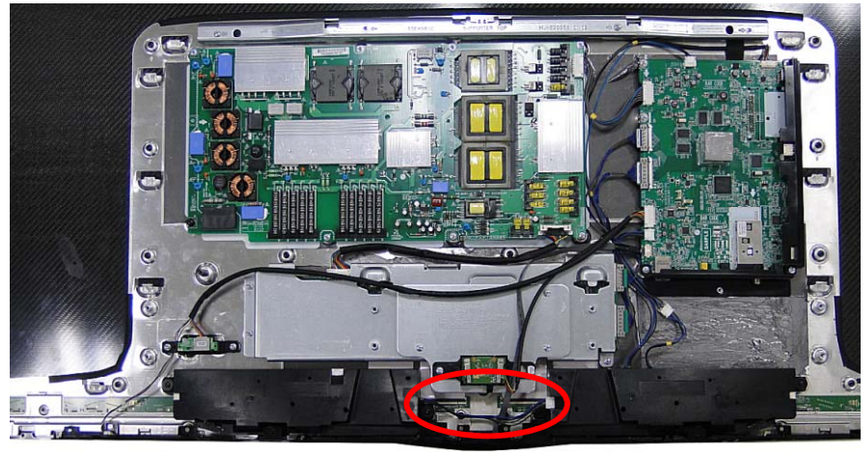
As the part connecting to the external input, check the screen condition by signal

A6

Standard Repair Process Detail Technical Manual

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



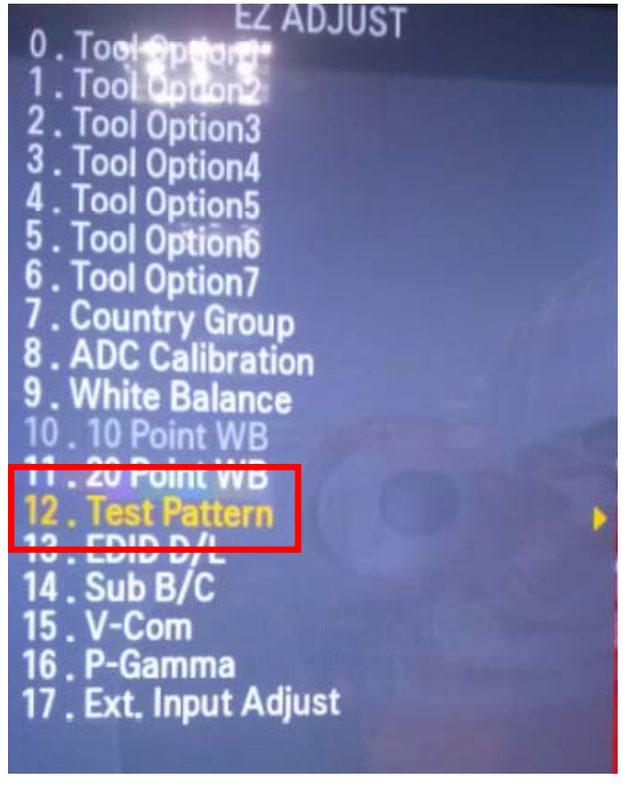


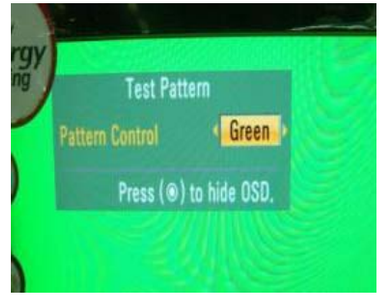
Check the contact condition of the Link Cable, especially dust or mis insertion.

A7

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	A. Video error_Color error	Established date	2013.01.31	
	Content	Adjustment Test pattern - ADJ Key	Revised date		A8



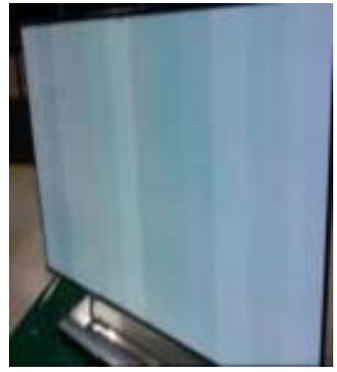


You can view 6 types of patterns using the ADJ Key

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!)

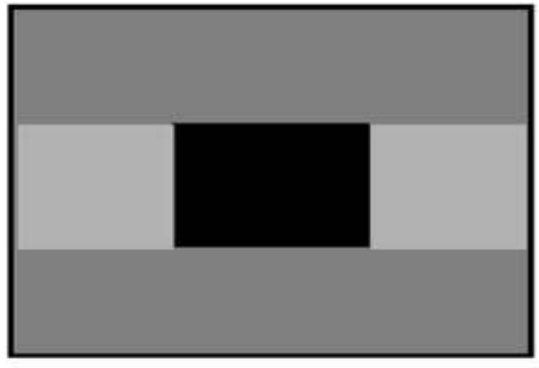
Appendix : Exchange the Module (1)

수직 비내림



Brightness difference

Line Dim



Crosstalk

Press damage

Crosstalk

Burnt

Un-repairable Cases

In this case please exchange the module.

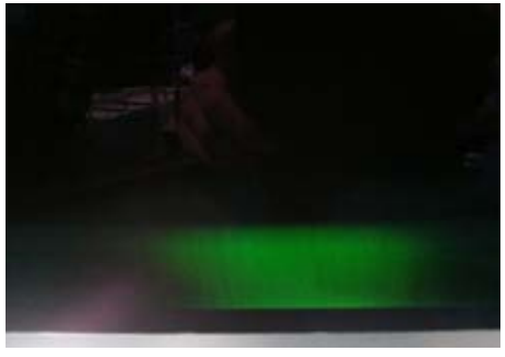
Appendix : Exchange the Module (2)

Angle view Color difference

Brightness dot noise

Half dead

Brightness difference



Green Noise on power on/off time

Line Defect

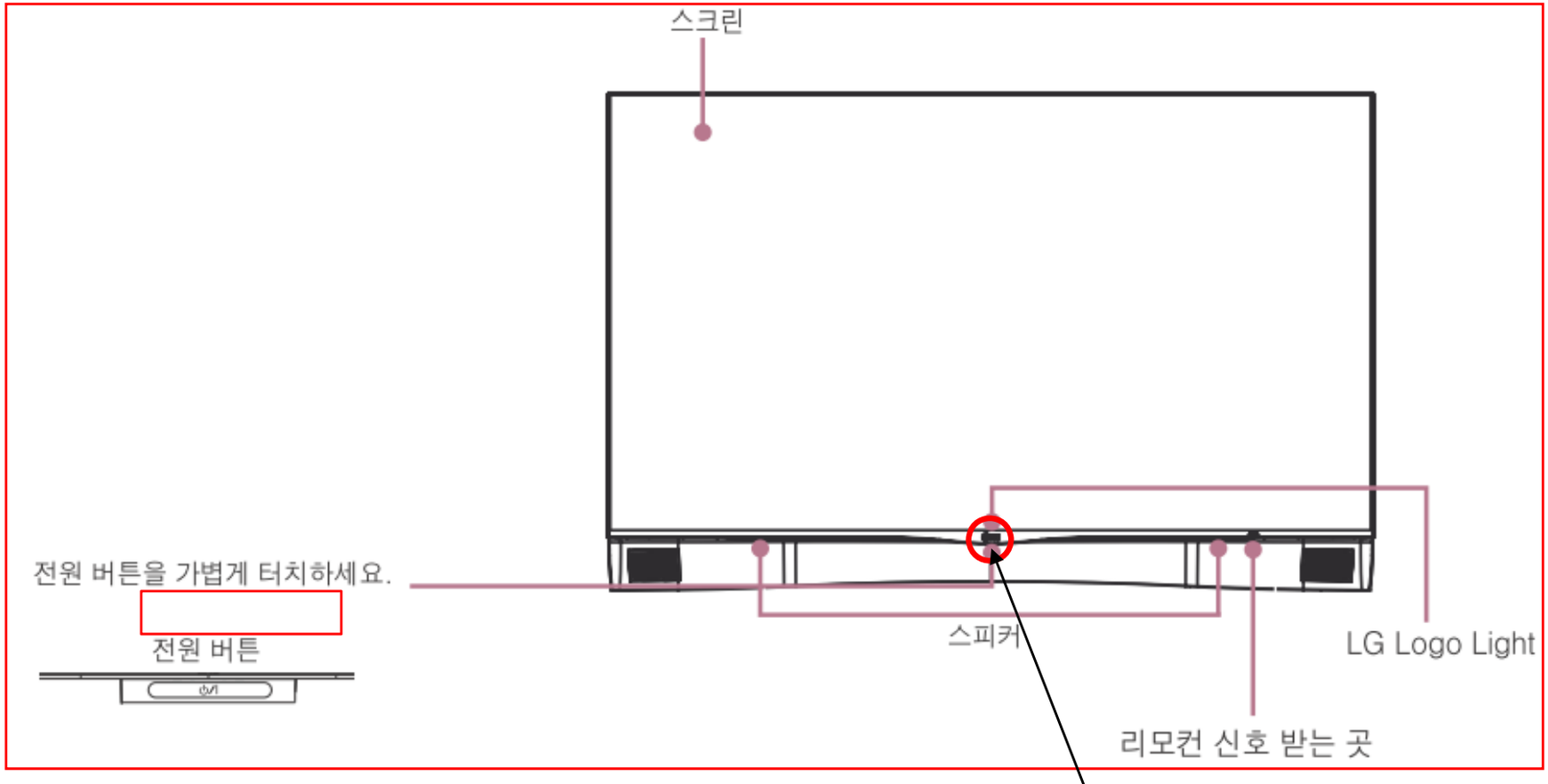
Mura

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	2013.01.31	
	Content	Check front display Logo	Revised date		A17



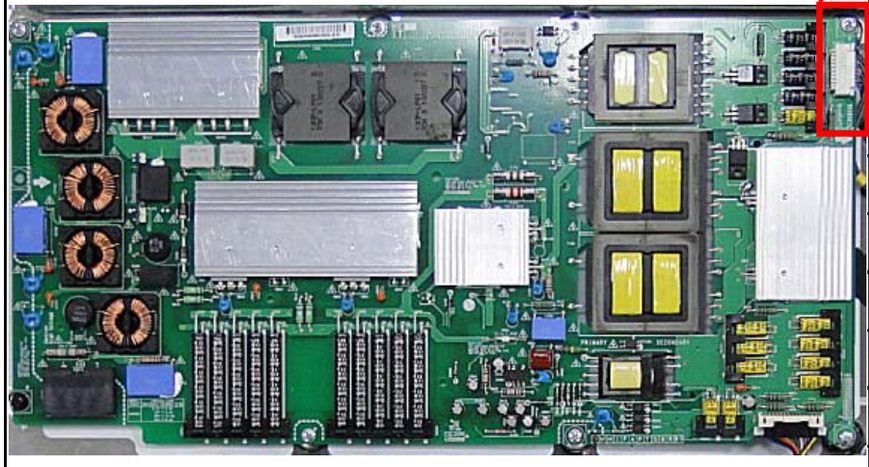
Front LED control :
Menu → Option →
Standby Light
→ ON/ Off

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

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	B. Power error _No power	Established date	2013.01.31	
	Content	Check power input voltage and ST-BY 3.5V	Revised date		A18

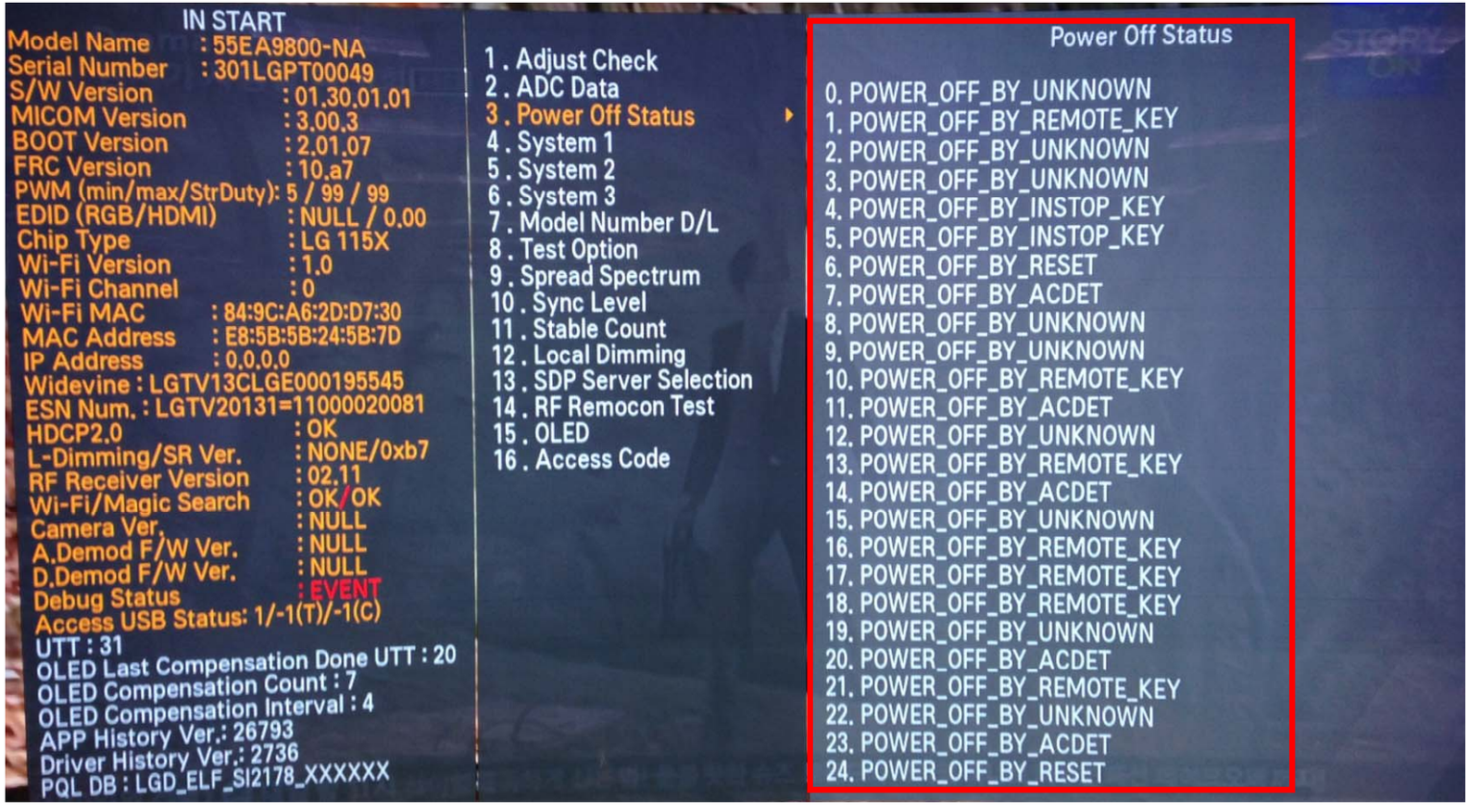
Check the DC 24V, 12V, 3.5V.



18 Pin (Power Board ↔ Main Board)			
1	Power on	2	DRV ON
3	3.5V	4	20V
5	3.5V	6	N.C
7	GND	8	GND
9	24V	10	24V
11	GND	12	GND
13	12V	14	12V
15	12V	16	24V
17	GND	18	GND

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	B. Power error _Off when on, off whiling viewing	Established date	2013.01.31	
	Content	POWER OFF MODE checking method	Revised date		A19



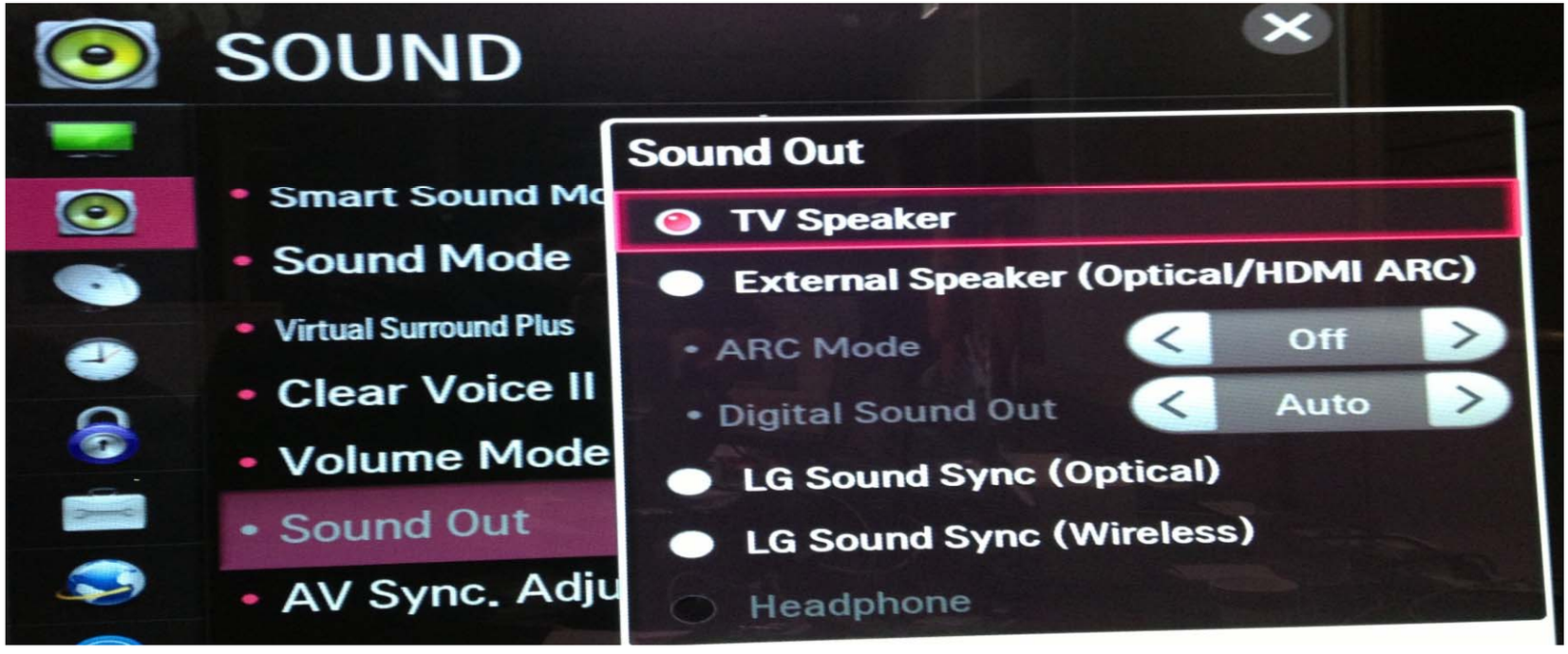
Entry method

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	2013.01.31	
	Content	Checking method in menu when there is no audio	Revised date		A20

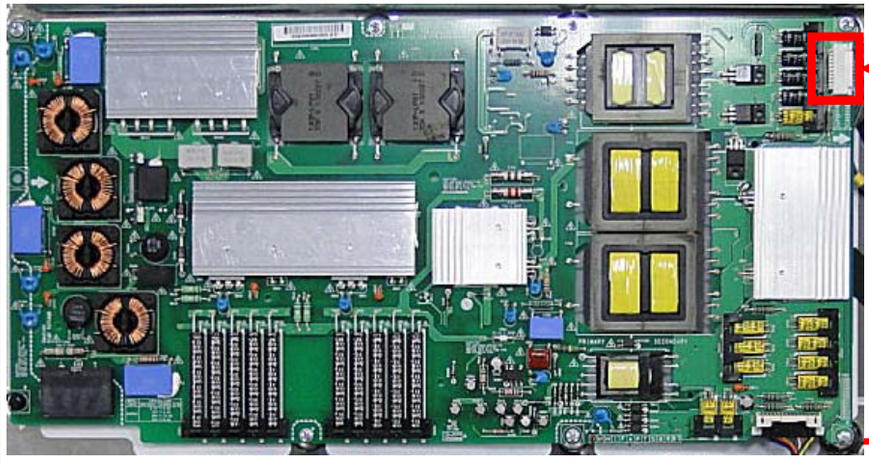


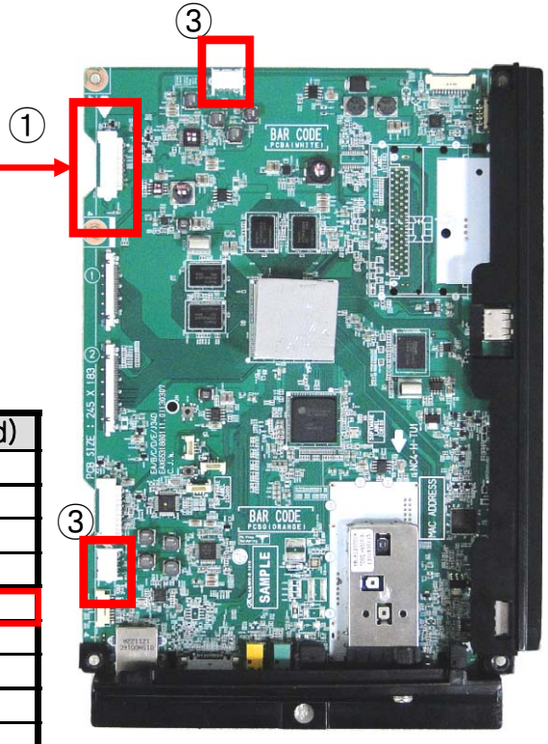
Checking method

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

Standard Repair Process Detail Technical Manual

LCD TV	Error symptom	C. Audio error_No audio/Normal video	Established date	2013.01.31	
	Content	Voltage and speaker checking method when there is no audio	Revised date		A21





24 Pin (Power Board ↔ Main Board)			
1	Power on	2	INV ON
3	3.5V	4	PDIM#1
5	3.5V	6	PDIM#2
7	GND	8	GND
9	24V	10	24V
11	GND	12	GND
13	12V	14	12V
15	12V	16	24V
17	GND	18	GND
19	GND	20	GND
21	GND	22	L/DIM0_V8
23	L/DIM0_MOSI	24	L/DIM0_SCLK

Checking order when there is no audio

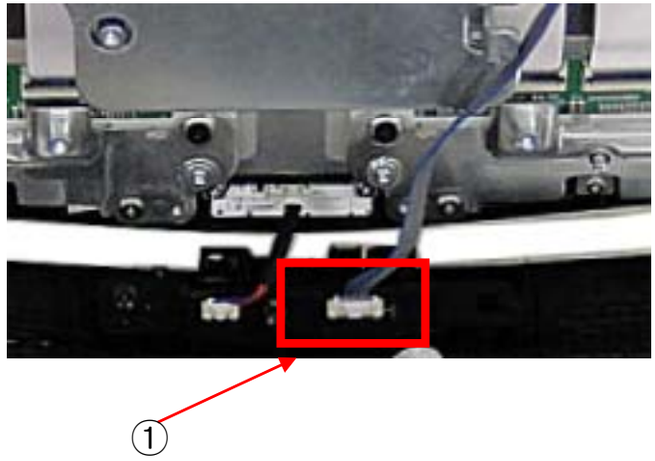
① Check the contact condition of or 24V connector of Main Board

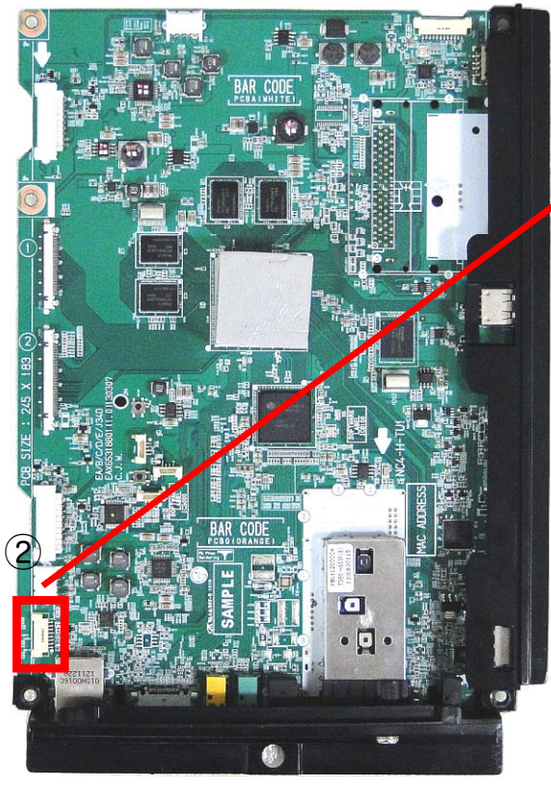
② Measure the 24V input voltage supplied from Power Board
(If there is no input voltage, remove and check the connector)

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	2013.01.31	
	Content	Remote controller operation checking method	Revised date		A22





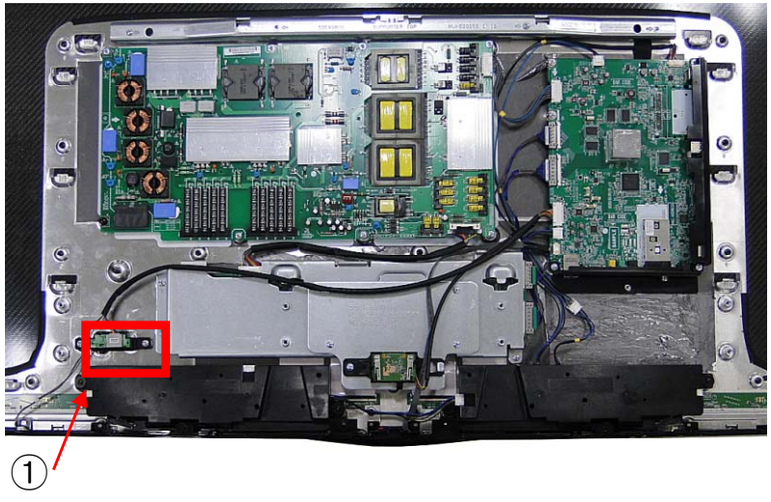
P4002	
1	KEY2
2	+3.5V_ST
3	GND
4	LOGO Light Wafer
5	IR
6	GND
7	EYE SCL
8	EYE SDA

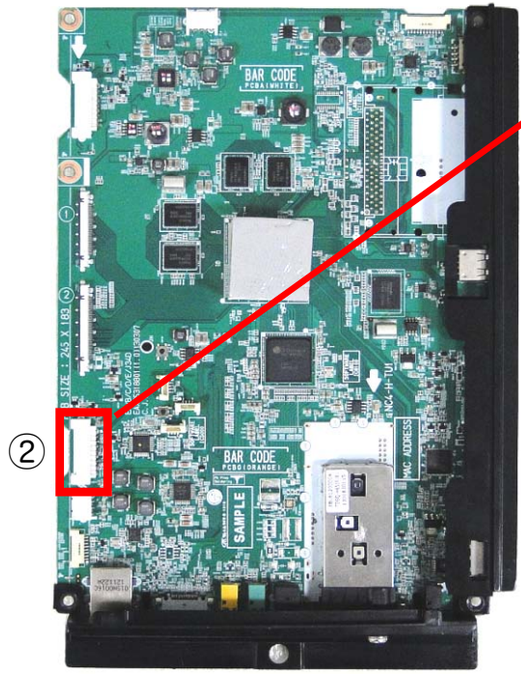
Checking order

1, 2. Check Touch cable condition between Touch & 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	2013.01.31	
	Content	Motion Remote operation checking method	Revised date		A23





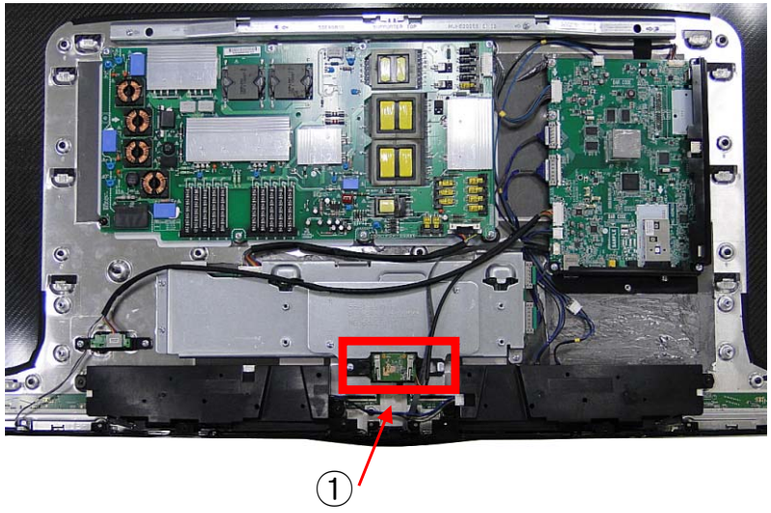
P4003	
1	+3.5V_WOL
2	+3.3V
3	USB_DM
4	RTS
5	USB_DP
6	RX
7	GND
8	TX
9	WOL
10	RESET
11	GND
12	CTS
13	NC
14	+3.5V_ST(OLED)
15	IR(OLED)
16	GND
17	EYE_SCL
18	EYE_SDA

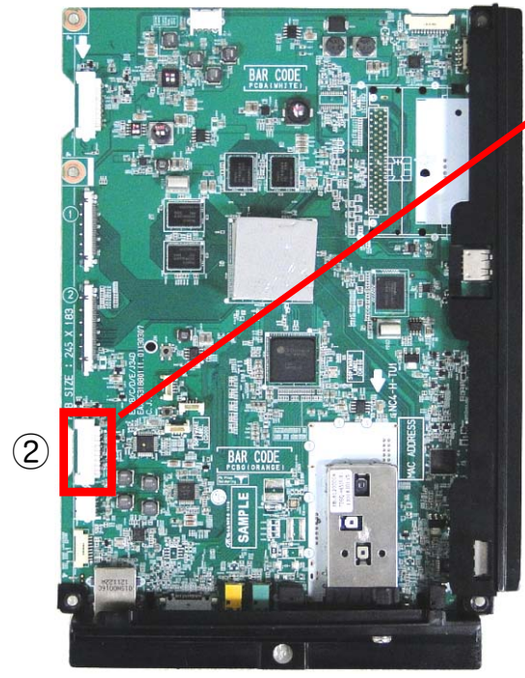
Checking order

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	2013.01.31	
	Content	Wifi operation checking method	Revised date		A24





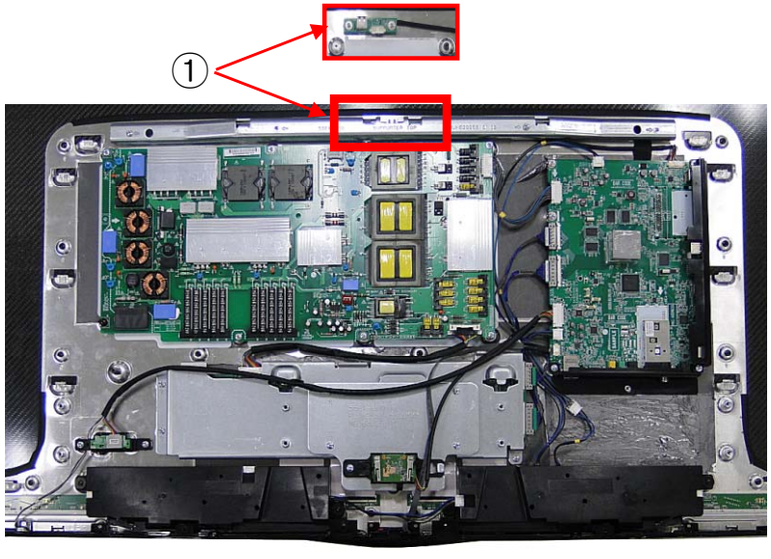
P4003	
1	+3.5V_WOL
2	+3.3V
3	USB_DM
4	RTS
5	USB_DP
6	RX
7	GND
8	TX
9	WOL
10	RESET
11	GND
12	CTS
13	NC
14	+3.5V_ST(OLED)
15	IR(OLED)
16	GND
17	EYE_SCL
18	EYE_SDA

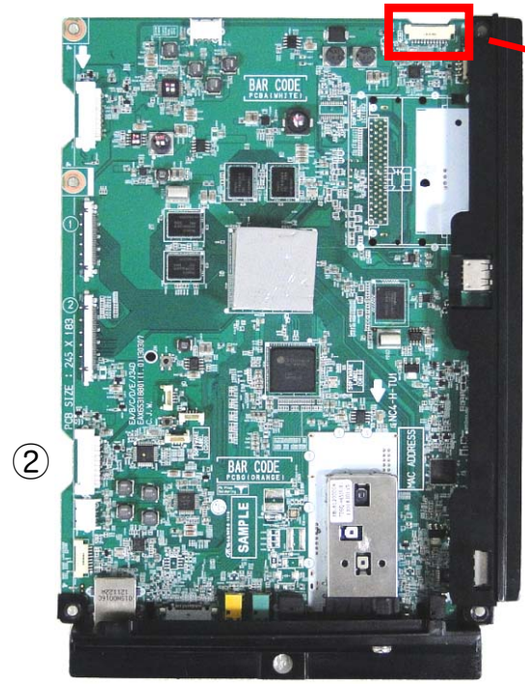
Checking order

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	2013.01.31	
	Content	Camera operation checking method	Revised date		A25





P4200	
1	CAM_SLIDE_DET
2	+3.5V_CAM
3	AUD_LRCH
4	AUD_LRCK
5	AUD_SCK
6	GND
7	CAM_PWR_ON_CMD
8	ST_BY_DET_CAM
9	GND
10	USB_CAMERA_DP
11	USB_CAMERA_DM
12	GND

Checking order

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