



LED TV

Chassis : U8JA

Model : UN40HU6950F
UN50HU6950F
UN55HU6950F

SERVICE Manual

LED TV



UN**HU6950F

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2. Product specifications
3. Disassembly and Reassembly
4. Troubleshooting
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1. Precautions

1-1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1-1. Warnings



For continued safety, do not attempt to modify the circuit board.
Disconnect the AC power and DC power jack before servicing.

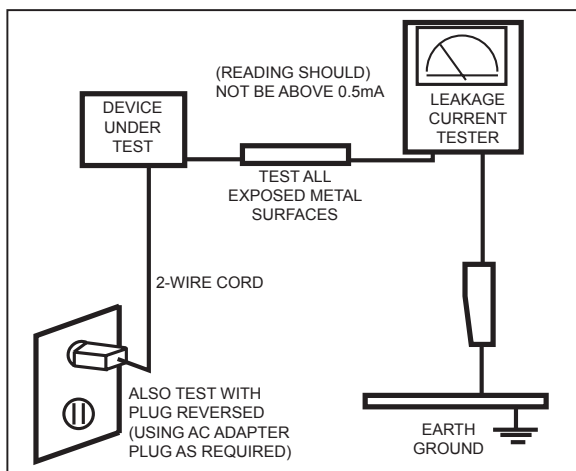
1-1-2. Servicing the LED TV

1. When servicing the LED TV, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3. Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor/capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check:



Do not use an isolation transformer during this test.

Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts.
The current measured should not exceed 0.5 milliamp.
Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safetyrelated characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by  on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2. Servicing Precautions



An electrolytic capacitor installed with the wrong polarity might explode.



Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.



If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1. General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to: (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3. Static Electricity Precautions

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

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.



Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4. Installation Precautions

1. For safety reasons, more than a people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (0.4m) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.
8. If an equipment is provided with a replaceable battery, and if replacement by an incorrect type could result in an explosion (for example, with some lithium batteries), the following applies:

**CAUTION**

- Risk of explosion if battery is replaced by an incorrect type dispose of used batteries according to the instructions.
- Do not dispose of batteries in a fire.
- Do not short circuit, disassemble or overheat the batteries.
- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
- Do not be exposed to excessive heat such as sunshine, fire or the like.

2. Product Specifications

2-1. Product information

Model	UN**HU6950F		
Front View	 * W : Width H : High D : Depth		
Detail View			
Front Color	Clear / Black		
Dimensions (W x H x D)	40"	Body	916.9 X 538.4 X 68.4 mm
		With stand	916.9 X 585.9 X 258.0 mm
	50"	Body	1127.9 X 657.2 X 69.0 mm
		With stand	1127.9 X 703.1 X 275.1 mm
	55"	Body	1239.7 X 719.2 X 69.0 mm
		With stand	1239.7 X 765.0 X 275.1 mm
Weight	40"	Body	8.7 kg
		With stand	11.4 kg
	50"	Body	14.0 kg
		With stand	17.0 kg
	55"	Body	16.8 kg
		With stand	19.8 kg
Panel Type	Black		
Internal Memory	4GB		
DDR	2GB		
Feature	Instant On, TTS/Zoom, History Digital Clean View, PIP, USB HID, TV soundConnect, One Connect (Ready)		

2-2. Product specification

2-2-1. Detailed Specifications


NOTE

Design and specifications are subject to change without prior notice.

Item		UN**HU6950FXZA
General Information	Product	LED
	Series	6
	Country	UNITED STATES
Display	Inch	40" / 50" / 55"
	Resolution	3,840 x 2,160
	Ultra Clear Panel	Yes
Video	Clear Motion Rate	240
	Micro Dimming	Micro Dimming Pro
	Precision Black (Local Dimming)	N/A
	Wide Color Enhancer (Plus)	Yes
	Color Accuracy	N/A
	Auto Depth Enhancer	N/A
	Auto Motion Plus	60HzHz
	Film Mode	Yes
Audio	Dolby MS10 / MS110	MS11
	DTS Studio Sound / DNSe+	DTS Studio Sound
	DTS Premium Sound / DTS Premium Sound 5.1	DTS Premium Sound 5.1
	3D Sound	N/A
	Auto Volume Leveler	Yes
	Sound Customizer	No
	Sound Output (RMS)	20W (Left 10W, Right 10W)
	Speaker Type	Down Firing
	Woofer	N/A
	HD Audio	N/A
Smart TV	Smart Hub	Yes
	Samsung SMART TV	Yes
	On TV	Yes
	Movies & TV Shows	Yes
	Multimedia	Yes
	Apps	Yes
	Game	Yes(US)
	Multi-Screen (Dual / Quad Screen)	Quad
	Web Browser	Yes

Item		UN**HU6950FXZA
Smart Interaction	Voice Interaction	Yes
	Camera Built-in	N/A
	Motion control	Ready
Smart Convergence	Contents Streaming	Yes
	Screen Mirroring	Yes
	ISP Bound Service	No
	RUI	No
	RVU	Yes (US Only, DIRECTV Ready)
	Samsung SMART View	Yes
	Smart Home	Yes
Tuner/Broadcasting	DTV Tuner	ATSC / Clear QAM
	Analog Tuner	Yes
Connectivity	HDMI	4 (HDMI 2.0 / HDCP2.2)
	USB	3
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	2(1Common Use for Component Y)
	Ethernet (LAN)	Yes
	Headphone	No
	Audio Out (Mini Jack)	Yes
	Digital Audio Out (Optical)	1
	PC In (D-sub)	N/A
	PC/DVI Audio In (Mini Jack)	N/A
	RF In (Terrestrial / Cable input)	1/1(Common Use for Terrestrial)/0
	Ex-Link (RS-232C)	1
	One Connect (Jack)	Yes
	WiFi Direct	Yes
	MHL	Yes
	HDMI 1.4 3D Auto Setting	N/A
	HDMI 1.4 A/Return Ch. Support	Yes
	Wireless LAN Built-in	Yes
	Anynet+ (HDMI-CEC)	Yes
Design	Design	T-shape
	Bezel Type	NNB
	Light Effect (Deco)	N/A
	Stand Type	T-Shape
	Swivel (Left/Right)	No
	Camera Type	N/A
Additional Feature	Samsung 3D	N/A

2. Product specifications

Item		UN**HU6950FXZA
Additional Feature	3D Converter	N/A
	Instant On	Yes
	Quad Core+	No
	Digital Clean View	Yes
	Auto Channel Search	Yes
	Auto Power Off	Yes
	Clock&On/Off Timer	Yes
	Sleep Timer	Yes
	BD Wise Plus	Yes
	Caption (Subtitle)	Yes
	AC/DC TV	N/A
	Embedded POP	Yes
	EPG	Yes
	Game Mode	Yes
	History	N/A
	IP Video Closed Caption	Yes
	OSD Language	English, Spanish, French
	Picture-In-Picture	Yes
	Multi Tasking	Yes
	BT HID Built-in	Yes
	USB HID Support	Yes
	Smart Evolution Support	Yes
	TV SoundConnect	Yes
	Teletext (TTXT)	No
	Time Shift	No
	V-Chip	Yes
Eco Feature	Eco Label	N/A
	Eco Sensor	Yes
Accessory	3D Active Glasses (Included)	N/A
	Remote Controller Model	TM1460A
	Batteries (for Remote Control)	Yes
	Samsung Smart Touch Control (Included)	Yes
	Ultra Slim Wall Mount Supported	Yes
	Mini Wall Mount Supported	Yes
	Vesa Wall Mount Supported	Yes
	IR Extender Cable (Included)	Yes
	Wireless Keyboard (Included)	No
	User Manual	Yes

Item		UN**HU6950FXZA
Accessory	E-Manual	Yes
	Power Cable	Yes
	Slim Gender Cable	N/A

2-2-2. Feature & Specifications

■ Feature

- Digital-TV, RF, 4-HDMI, 1-Component, 1-A/V, 3-USB (2-USB 2.0, 1-USB3.0) : Media Play, LAN, WIFI
- PIP(in HDMI 1, 2, 3, 4 Component and Sub picture is available only in TV mode(DTV/ATV))
- CMR 240
- Dolby MS11, DTS Premium Sound 5.1, DTS Studio Sound

■ Specifications

Model	UN**HU6950F		
Item	Description		
Screen Size (Diagonal)	40 inch	50 inch	55 inch
LCD Panel	UHD 60Hz		
Scanning Frequency	Horizontal : 60 kHz ~ 136 kHz Vertical : 56 Hz ~ 75 Hz		
Display Resolution	3840 X 2160		
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω , internally terminated		
Input Sync Signal	H/V Separate, TTL, P. or N.		
Maximum Pixel Clock Rate	138 MHz		
AC Power Voltage & Frequency	AC110-120V 50/60Hz		
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -4°F ~ 113°F (-20°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing		
Sound (Output)	10W X 2		
Note : AllShare, SMART Guide, Web Browser, USB HID, IR Blaster, Smart Control			

2-3. Accessories



NOTE

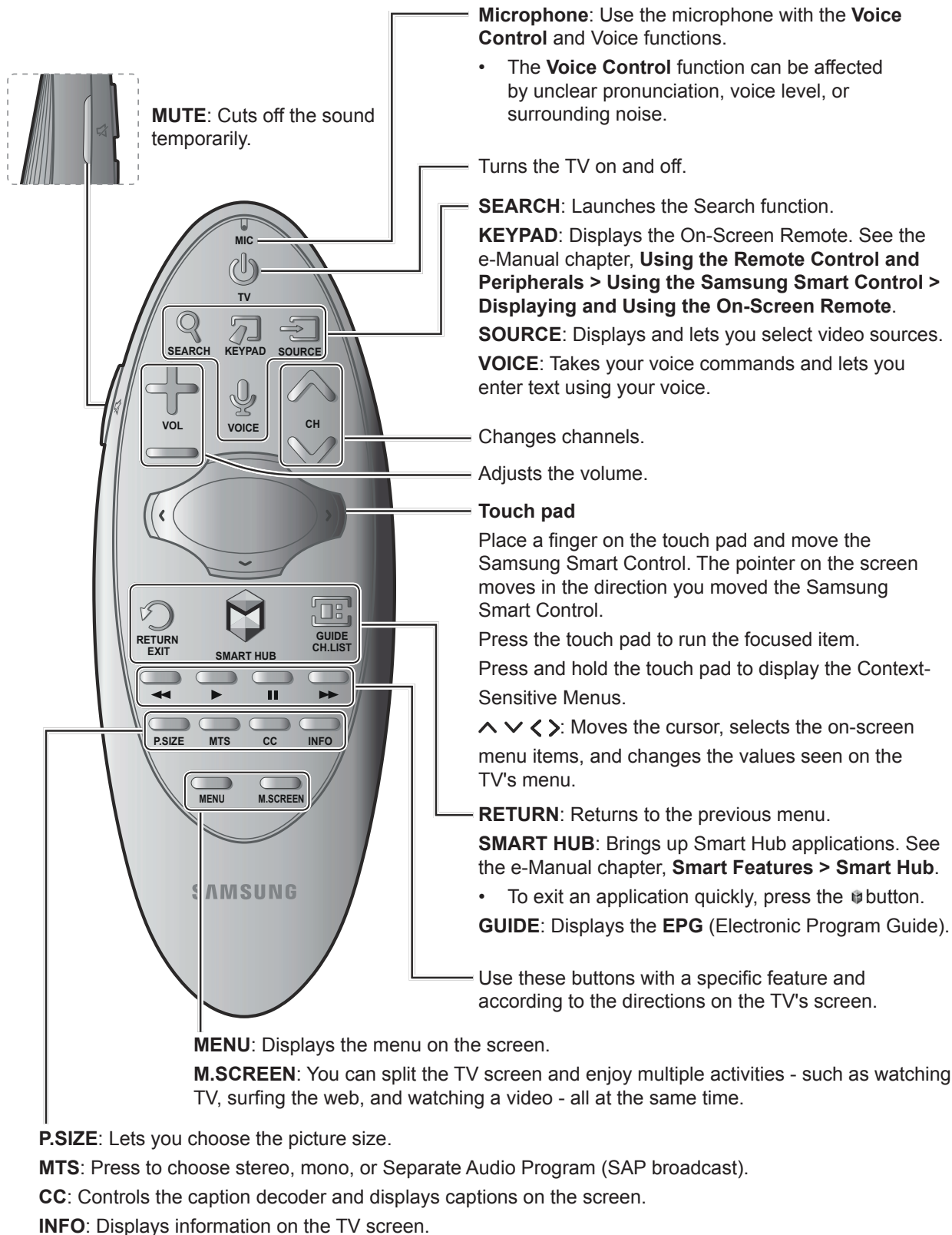
- The items' colors and shapes may vary depending on the model.
- Cables not included in the package contents can be purchased separately.
- The part code for some accessories may differ depending on your region.

Product	Code. No	Product	Code. No
• Samsung Smart Control	BN59-01185F	• Power Cord	3903-000853
• Batteries (AA x 2)	4301-000101	• User Manual	BN68-06501A

Image	Product	Code. No
	• IR Extender Cable	BN96-31644A

2-4. Viewing the Functions

■ Samsung Smart Control



3. Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the LED TV.



This UHD TV contains electrostatically sensitive devices. Use caution when handling these components.

3-1. Disassembly and Reassembly

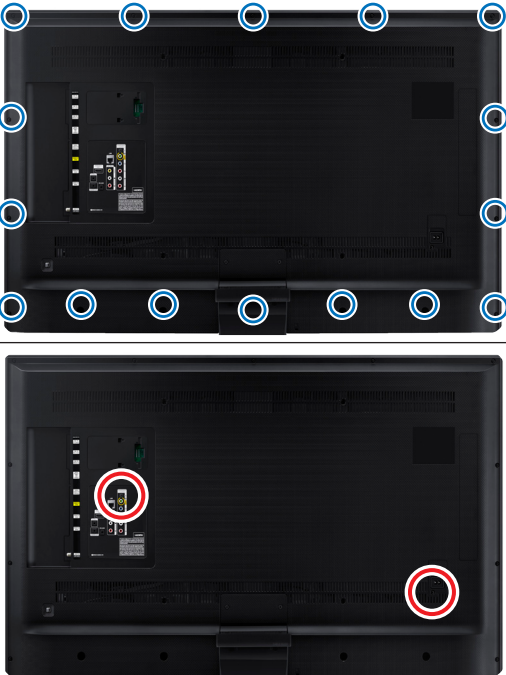
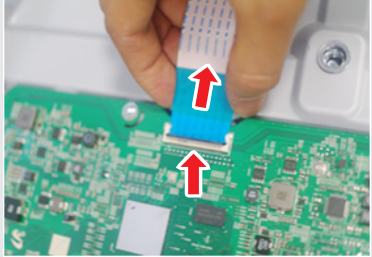


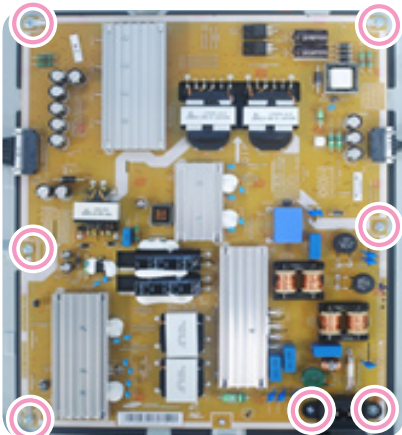
1. Disconnect the UHD TV from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.
3. If there is no additional coment, it is same for all inches.

■ 40" / 50" / 55"

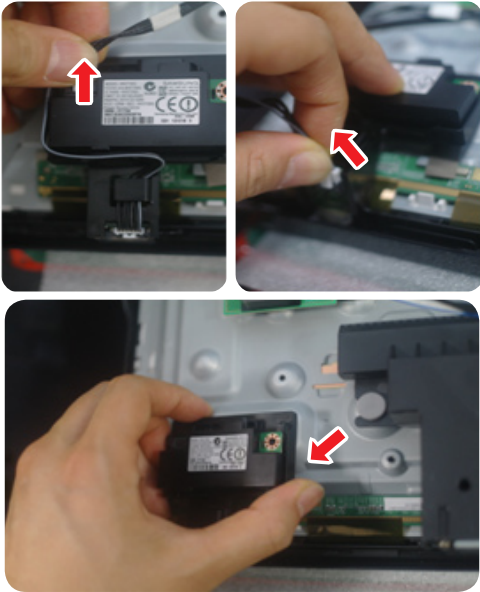
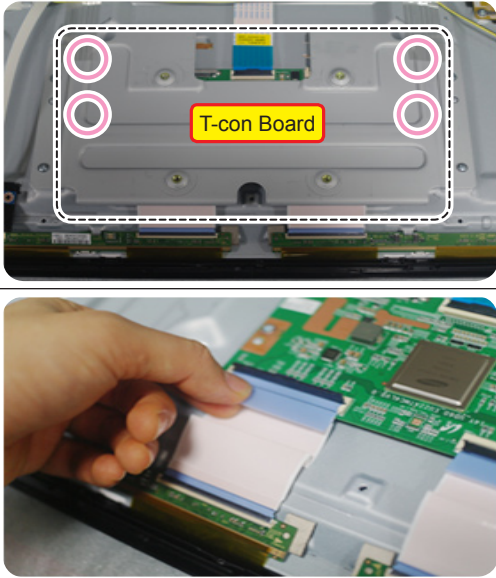
Description	Picture Description	Screws
1 Remove screws from the Stand. Remove stand.	 	 6003-001208

3. Disassembly and Reassemble

Description	Picture Description	Screws
2 Remove the screws of rear-cover. (In this step, Two types of screws are used.) • 40" : 11EA / 2EA • 50" : 16EA / 2EA • 55" : 16EA / 2EA		Torque : 7~8Kgf.cm.  6001-002755 Torque : 9~11Kgf.cm.  6003-001782
3 Remove the Main Board and the Power Board.  NOTE Applied to Double locking. 1. Flip up the locking tab on top of the connector. 2. Squeeze the edge of the connector to release the second tab lock and gently pull the connector away. 		

Description	Picture Description	Screws
4 Remove the screws of main board. Remove the screws of IP board. Remove the IP board.		Torque : 7~8Kgf.cm  6001-003016
		
5 Remove the BT Module.		

3. Disassembly and Reassemble

Description	Picture Description	Screws
6 Remove the Wi-Fi module.		
7 Remove the Speakers.(R/L)		
8 Remove the screws of T-con. Unlock the locking of T-con cable.		Torque : 7~8Kgf.cm  6001-003016

Description	Picture Description	Screws
9 Completed disassembly. • Panel		



NOTE

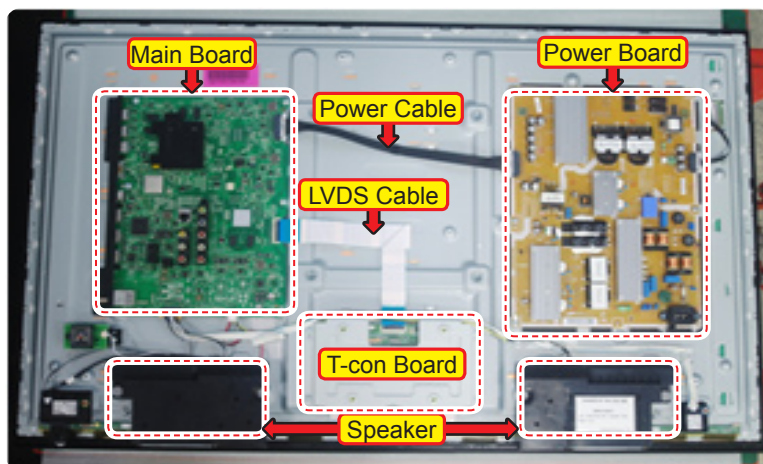
Reassembly procedures are in the reverse order of disassembly procedures.

4. Troubleshooting

4-1. Troubleshooting

4-1-1. Previous Check

1. Check the various cable connections first.
 - Check to see if there is a burnt or damaged cable.
 - Check to see if there is a disconnected or loose cable connection.
 - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.



3. How to distinguish if the problem is caused by **Main Board** or **T CON**

- No Video

If the problem is No Video but BLU is on and Indication LED is blinking repeatedly and faster than normal booting, replace the T-CON board.

- Distorted Picture

Check the inner patterns.

- For All mode

NT14U	NT72323BG FRC	Picture	Problem
OK	OK	NG	Main Board or Signal Source
NG	OK	NG	Main Board
NG	NG	NG	Main Board or LVDS cable or T CON or Panel

- Only for HDMI mode (additional check)

HDMI	Picture	Problem
OK	NG	There is no problems after HDMI IC check HDMI source or HDMI jack.
NG	NG	There is no problems before HDMI IC check X12 pattern or LVDS cable or T CON

■ **How to check inner pattern?**

1. Enter the service mode → Choose 'SVC' → Check the 'internal pattern.'

2. Enter 'Service Mode.'

- If you do not have Factory remote control



- If you have Factory remote control



3. Choose 'SVC → Test pattern'.

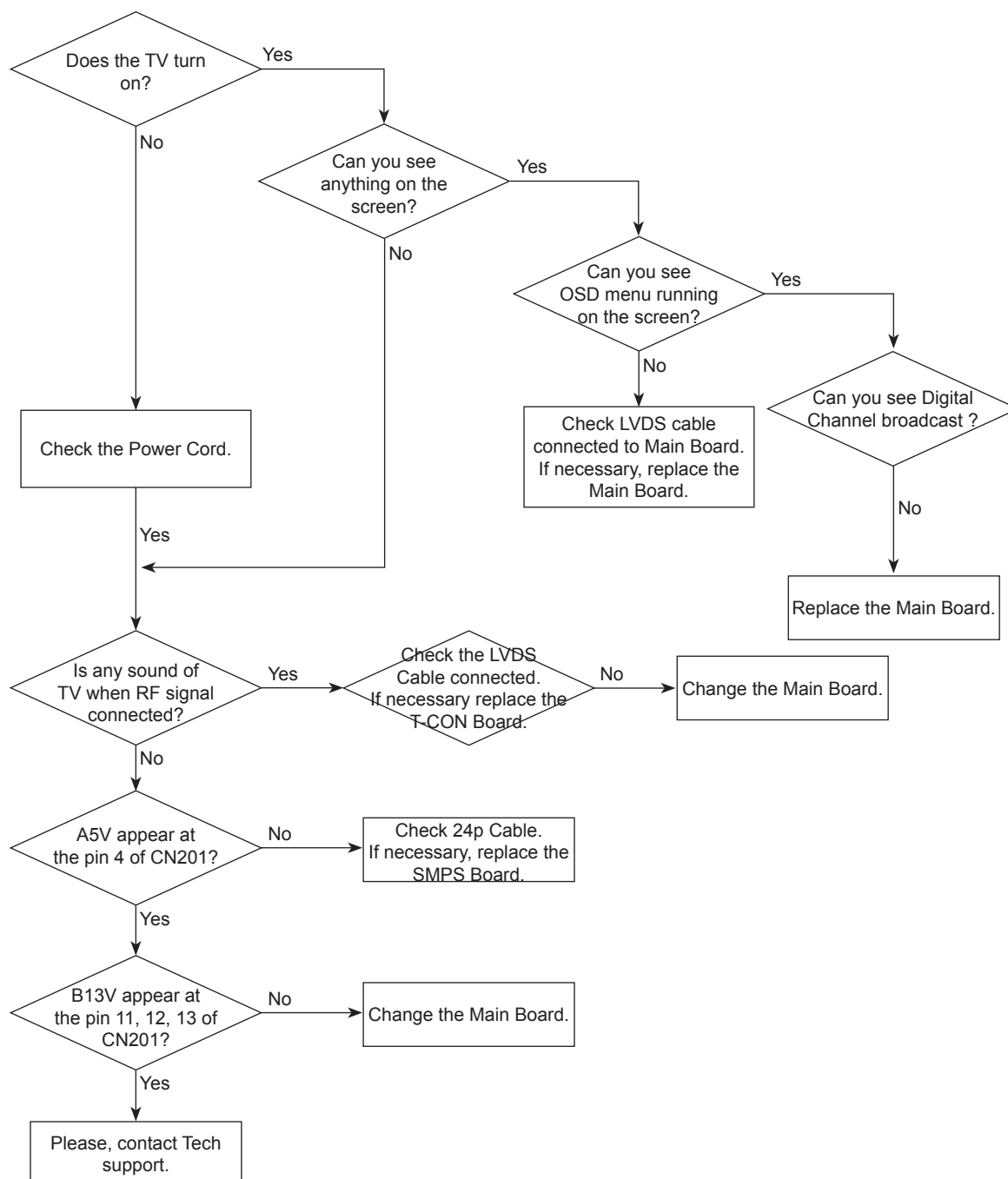
Option
Control
Debug
SVC
ADC/WB
Advanced

Test Pattern

Test Pattern Sel.

4. Check inner patterns.

4-1-2. Simple flow chart of malfunction



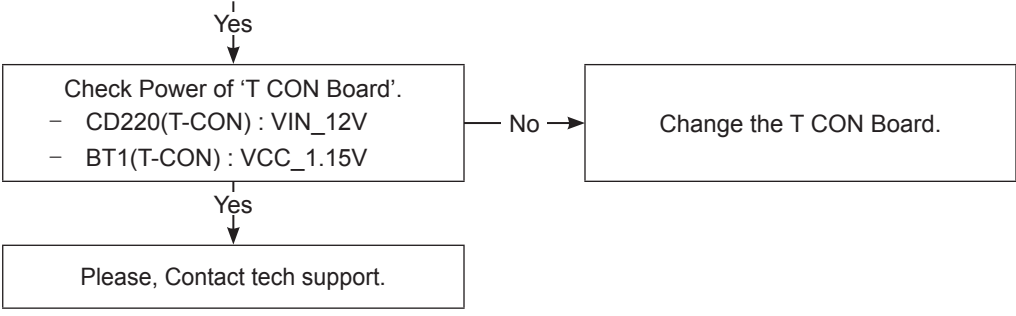
4-2. How to Check Fault Symptom

4-2-1. NO Power

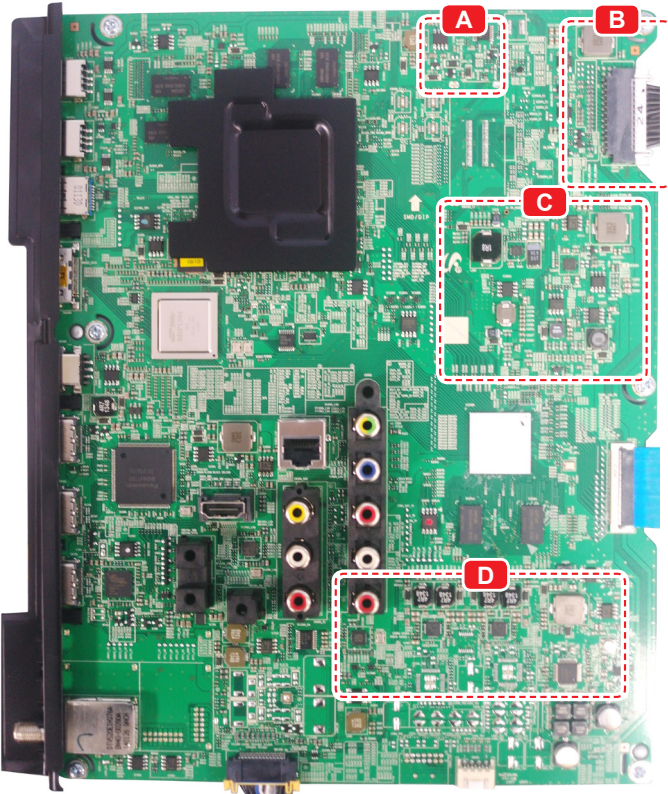
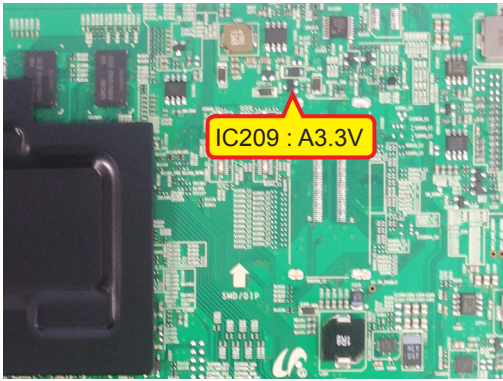
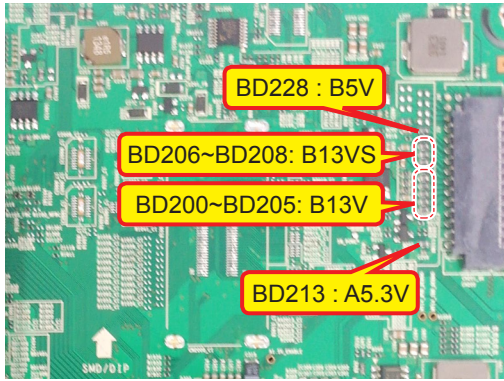
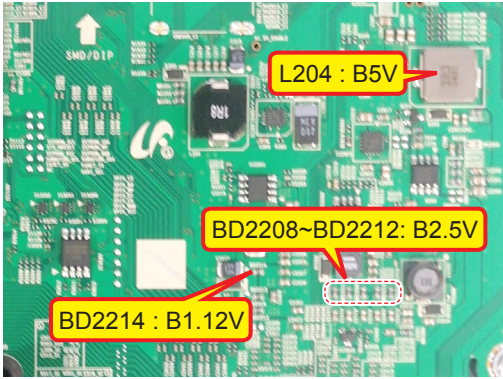
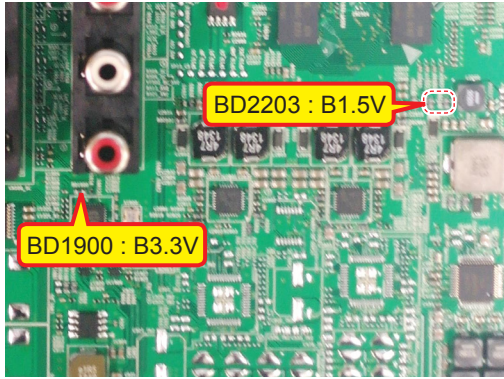

Note

Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	- The LEDs on The front panel do not work when connecting The power cord. - The SMPS relay does not work when connecting The power cord. - The units appears to be dead.
Major checkpoints	The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: - Check the internal cable connection status inside the unit. - Check the fuses of each part. - Check the output voltage of SMPS. - Replace the Main Board.
Diagnostics	<pre> graph TD Q1[Power indicator LED is on?] -- No --> A1[Check the power cord connection.] Q1 -- Yes --> Q2[Check the backlight on, when 24p cable unconnected ?] Q2 -- No --> A2[Replace 24p Power Cable. Replace Main Power Ass'y.] Q2 -- Yes --> Q3[Check 'Stand-By 5V' ? - BD213 : A5.3V] Q3 -- No --> A2 Q3 -- Yes --> Q4[Check 'Power input of Main Ass'y' ? - BD206~BD208 : B13VS - BD200~BD205 : B13V - BD228 : B5V] Q4 -- No --> A2 Q4 -- Yes --> Q5[Check 'Power IC output of Main Ass'y' ? - IC209 : A3.3V - BD2208~BD2212 : B2.5V / L204 : B5V - BD1900, BD2206 : B3.3V / BD2203~BD2205 : B1.5V - BD2214~BD2216 : B1.12V] Q5 -- No --> A3[Change the Main Ass'y.] Q5 -- Yes --> Q6[Check Input power of 'T CON Board' ? - F1(T-CON) : PANEL_13V_PW] Q6 -- No --> A4[Reconnect or Change. the LVDS cable.] </pre>

Diagnostics	 <pre>graph TD; Start(()) --> Yes1[Yes]; Yes1 --> Check[Check Power of 'T CON Board'. - CD220(T-CON) : VIN_12V - BT1(T-CON) : VCC_1.15V]; Check -- No --> Change[Change the T CON Board.]; Check -- Yes --> Support[Please, Contact tech support.];</pre>
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

Main Board_Front			
			
Detail			
A		B	
C		D	

4-2-2. No Video (HDMI 1, 2, 3, 4 - Digital Signal)

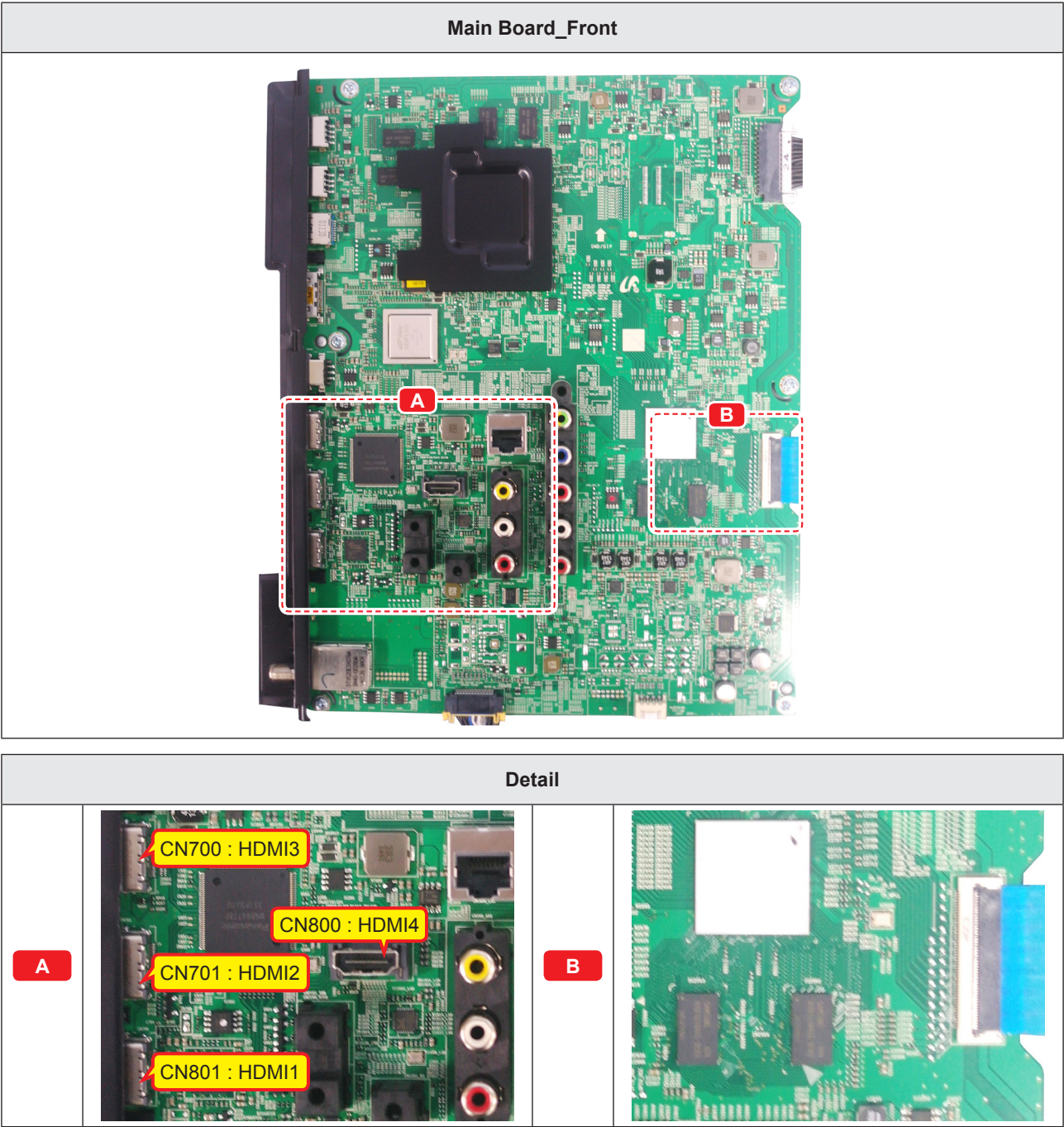


Note

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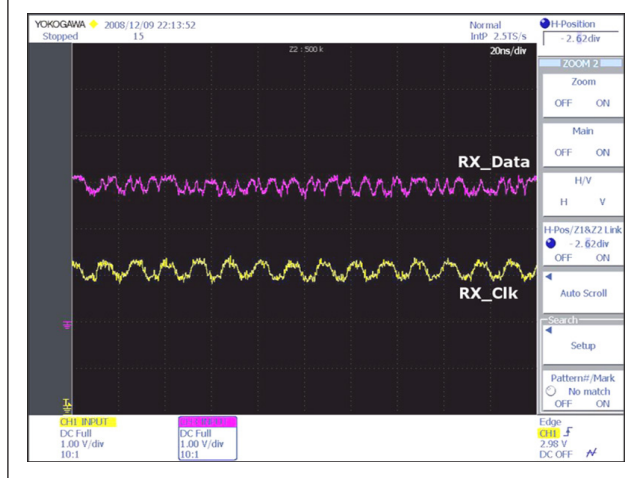
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the HDMI source. - Check the HDMI switch. - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	Power indicator LED is off. Lamp(Backlight) on, no video ? No → Check a set in the 'Stand-by mode'. Yes ↓ Check the HDMI source and check the connection of HDMI cable ? No → Input the HDMI signal properly. Yes ↓ Check the signal at Input of Main Board ? HDMI1 Clk Pin #10, #12 of CN801 - DATA Pin #7, #9, #4, #6, #1, #3 of CN801 HDMI2 Clk Pin #10, #12 of CN701 - DATA Pin #7, #9, #4, #6, #1, #3 of CN701 HDMI3 Clk Pin #10, #12 of CN700 - DATA Pin #7, #9, #4, #6, #1, #3 of CN700 HDMI4 Clk Pin #10, #12 of CN800 - DATA Pin #7, #9, #4, #6, #1, #3 of CN800 No → Check CN700,701,800,801 Check HDMI cable. Change the Main Ass'y or Check IC1400(NT14U). Change the Main Ass'y. Yes ↓ Check the Vby1 signal at output of Main board.(TX) - TX6_CLK : TCON SDA - TX8_DATA : TCON SCL No → Check IC1400(NT14U). Change the Main Ass'y. Yes ↓ Check the LVDS cable? Replace the T CON / LCD panel? No → Please, Contact tech support.
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

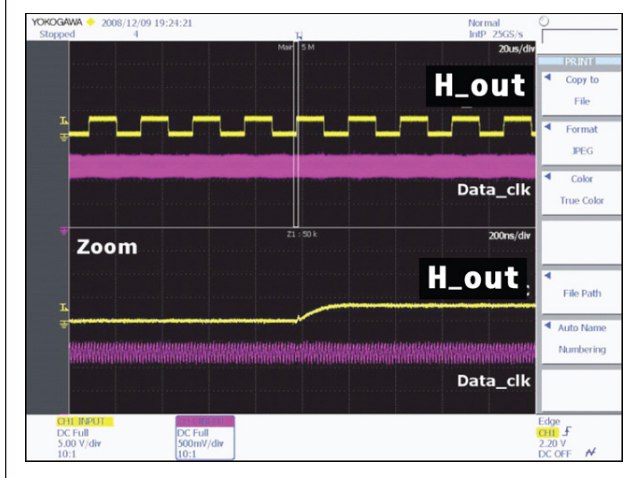


Waveforms

① HDMI input (RX_Data, RX_Clk)



② LVDS output



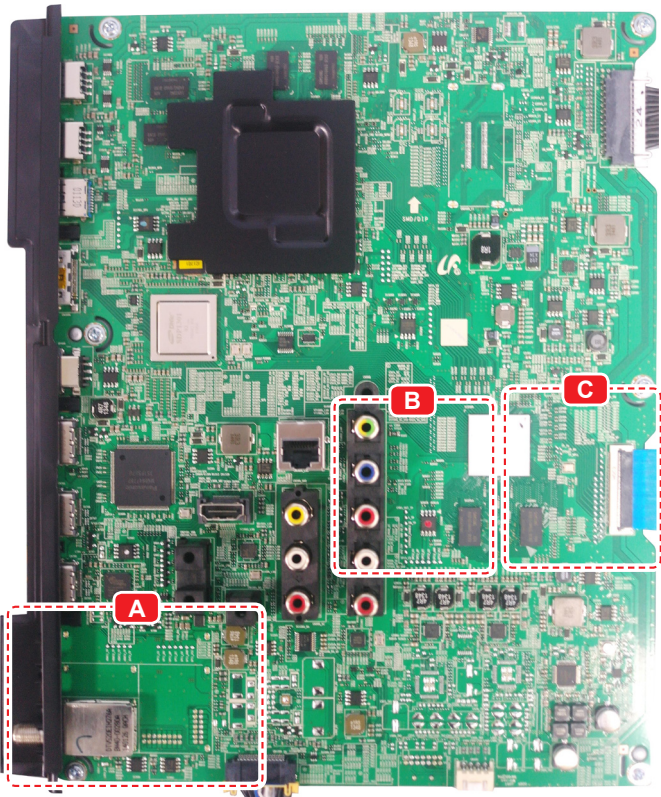
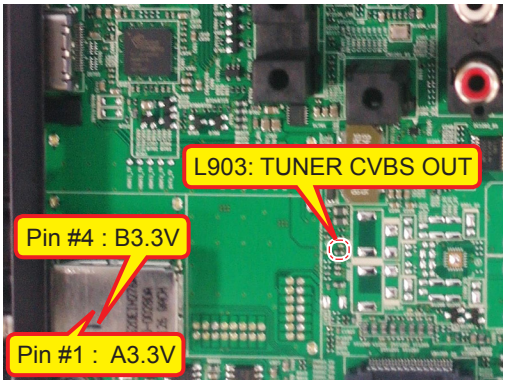
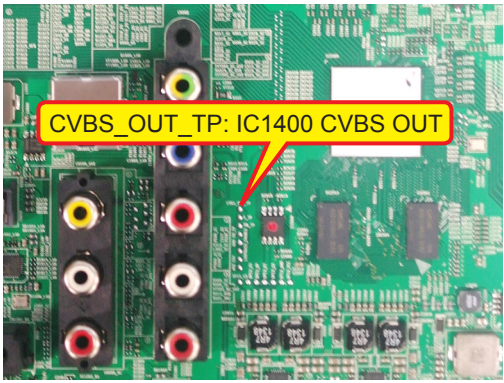
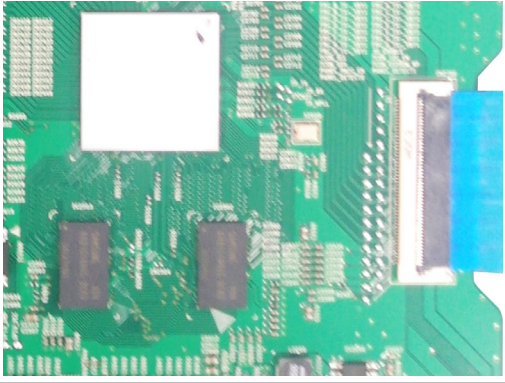
4-2-3. No Video (Tuner_CVBS)


Note

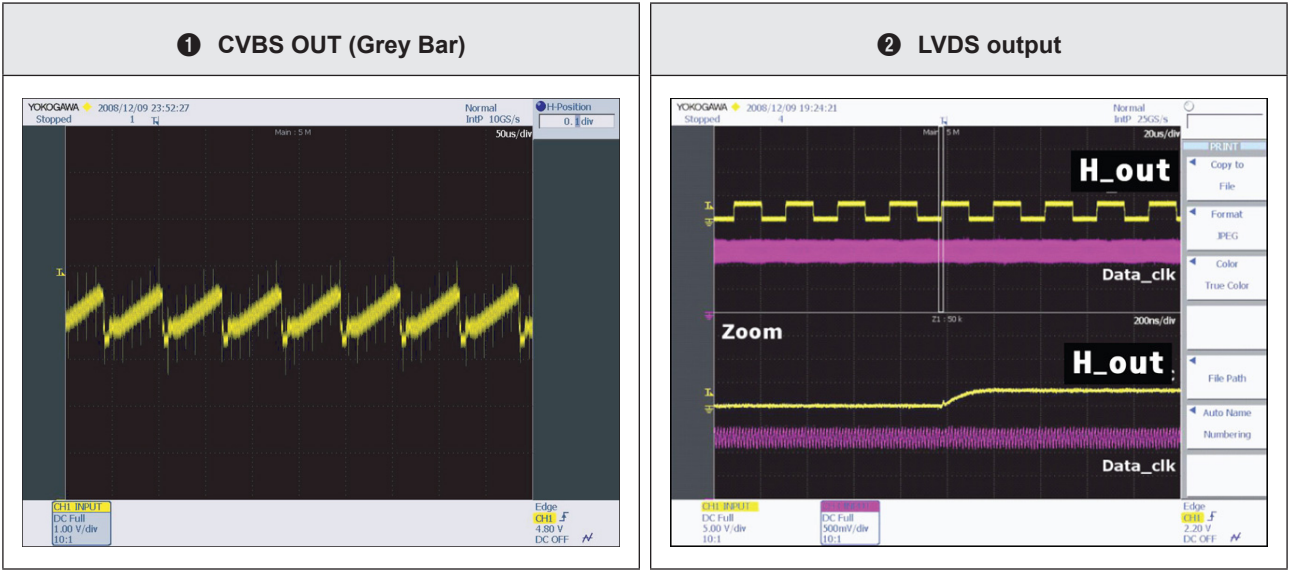
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Tuner CVBS source. - Check the Tuner. - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	<pre> graph TD Q1[Power indicator LED is off. Lamp(Backlight) on, no video ?] -- No --> A1[Check a set in the 'Stand-by mode'.] Q1 -- Yes --> Q2[Check the RF source and check the connection of RF cable.] Q2 -- No --> A2[Input the RF source properly.] Q2 -- Yes --> Q3[Check the Power of Tuner ? - Pin #1 of Tuner : A3.3V_Tuner - Pin #4 of Tuner : A1.8V_Tuner] Q3 -- No --> A3[Change the Main Ass'y.] Q3 -- Yes --> Q4[Check the CVBS data out of IC1400 ? - L903 : Tuner CVBS_OUT - CVBS_OUT_TP : IC1400 CVBS_OUT] Q4 -- No --> A4[Check IC1400(NT14U). Change the Main Ass'y.] Q4 -- Yes --> Q5[Check the LVDS clk signal at output of Main board. (TX) - TX6_CLK : TCON SDA - TX8_DATA : TCON SCL] Q5 -- No --> A5[Check IC1400(NT14U). Change the Main Ass'y.] Q5 -- Yes --> Q6[Check the LVDS cable? Replace the T CON / LCD panel?] Q6 -- No --> A6[Please, Contact tech support.] </pre>
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

Main Board_Front			
			
Detail			
A		B	
			

■ Waveforms



4-2-4. No Video (Tuner DTV)

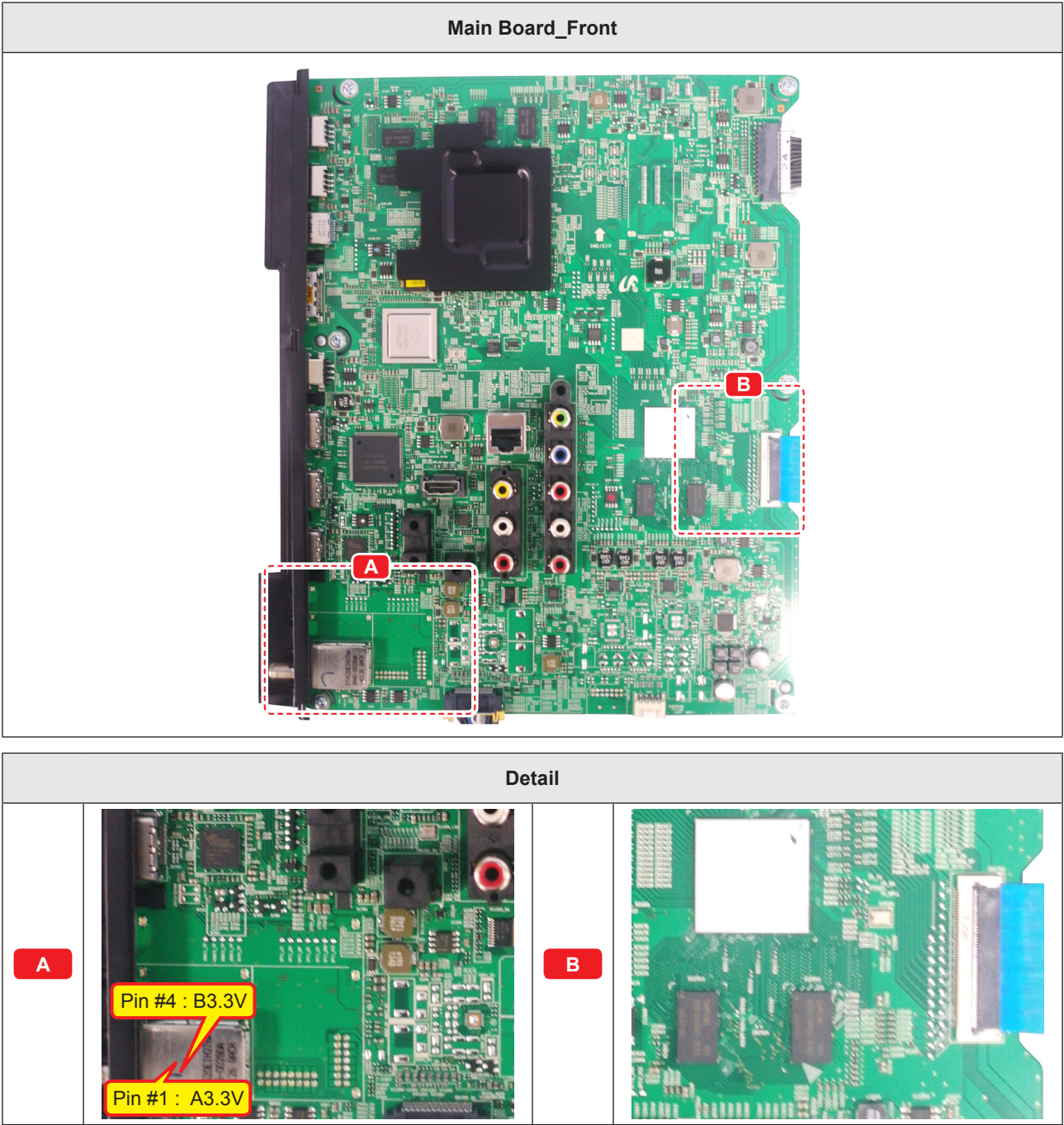


Note

Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

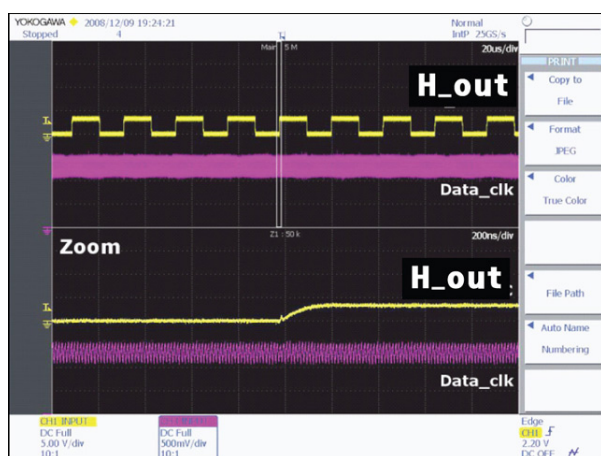
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the DTV source. - Check the Tuner. - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	<pre> graph TD Q1[Power indicator LED is off. Lamp(Backlight) on, no video ?] -- No --> A1[Check a set in the 'Stand-by mode'.] Q1 -- Yes --> Q2[Check the RF source and check the connection of RF cable.] Q2 -- No --> A2[Input the RF source properly.] Q2 -- Yes --> Q3[1 Check the 'signal strength' in Self Diagnosis menu Strength is enough ?] Q3 -- No --> A3[Check the D-TV source.] Q3 -- Yes --> Q4[2 Check the Power of Tuner ? - Pin #1 of Tuner : A3.3V_Tuner - Pin #4 of Tuner : A1.8V_Tuner] Q4 -- No --> A4[Change the Main Ass'y.] Q4 -- Yes --> Q5[2 Check the LVDS clk signal at output of Main board. (TX) - TX6_CLK : TCON SDA - TX8_DATA : TCON SCL] Q5 -- No --> A5[Check IC1400(NT14U) Change the Main Ass'y.] Q5 -- Yes --> Q6[Check the LVDS cable? Replace the T CON / LCD panel?] Q6 -- No --> A6[Please, Contact tech support.] </pre>
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts



Waveforms

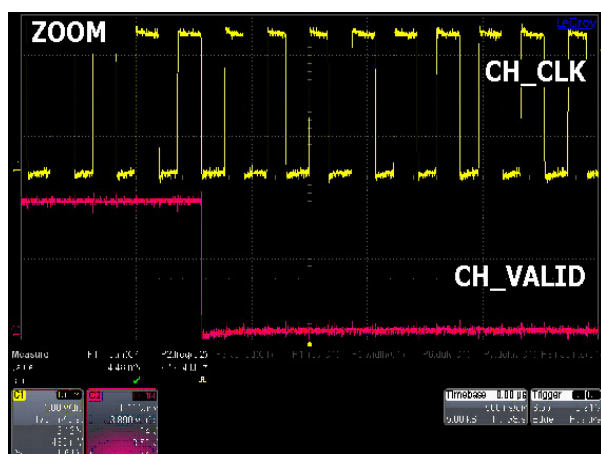
① LVDS output



② CH_CLK, CH_VALID



② CH_CLK, CH_VALID



4-2-5. No Video (Video AV)



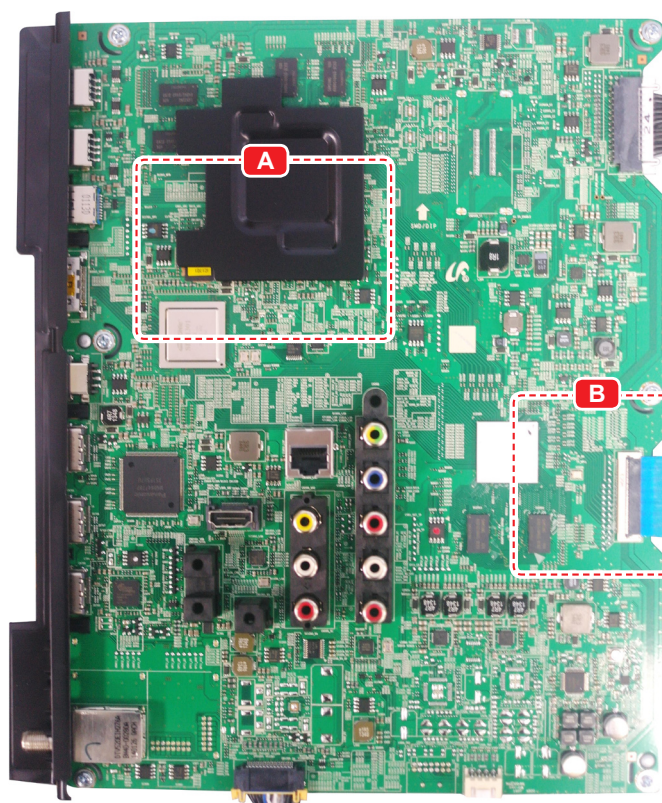
Note

Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Video CVBS source. - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	Power indicator LED is off. Lamp(Backlight) on, no video ? No → Check a set in the 'Stand-by mode'. Yes ↓ Check the video source and check the connection of video cable? No → Input the video source properly. Yes ↓ 2 Check the LVDS clk signal at output of Main board. (TX) - TX6_CLK : TCON SDA - TX8_DATA : TCON SCL No → Check IC1400(NT14U). Change the Main Ass'y. Yes ↓ Check the LVDS cable? Replace the T CON / LCD panel? No → Please, Contact tech support.
Caution	Make sure to disconnect the power before working on the IP Board.

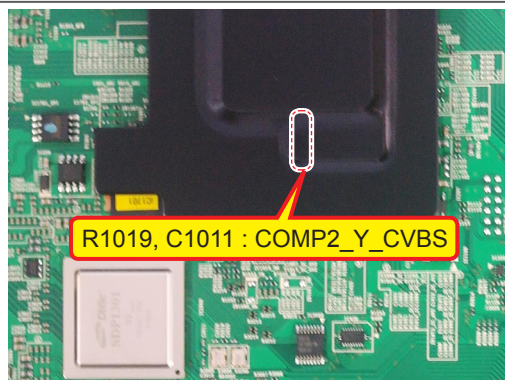
■ Location of Parts

Main Board_Front



Detail

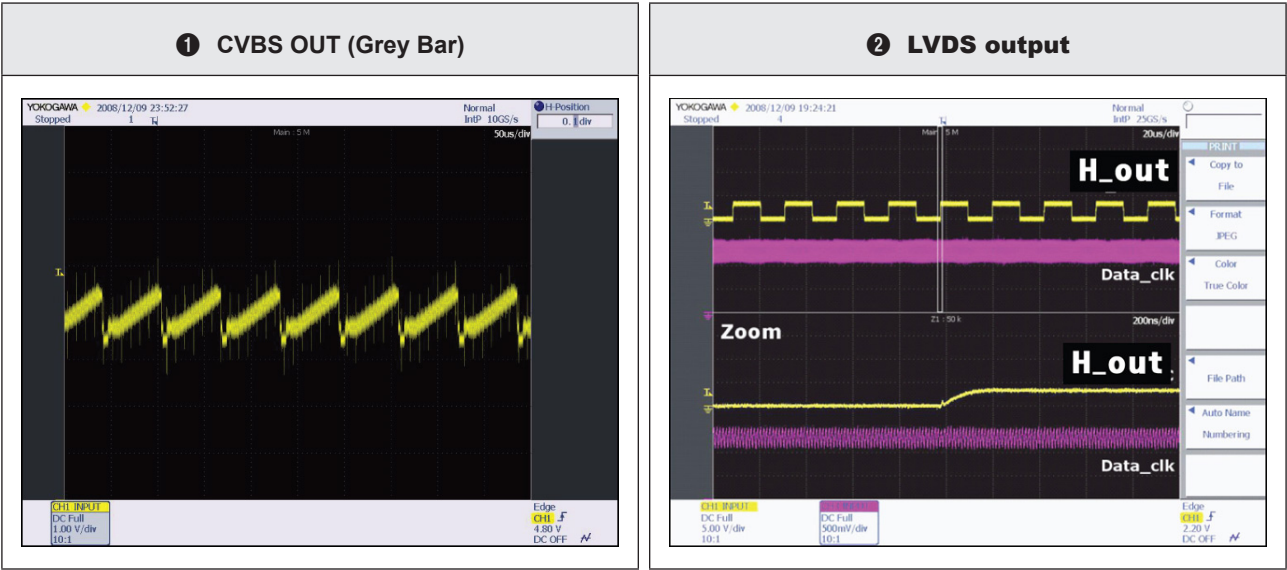
A



B



■ Waveforms



4-2-6. No Video (COMPONENT)

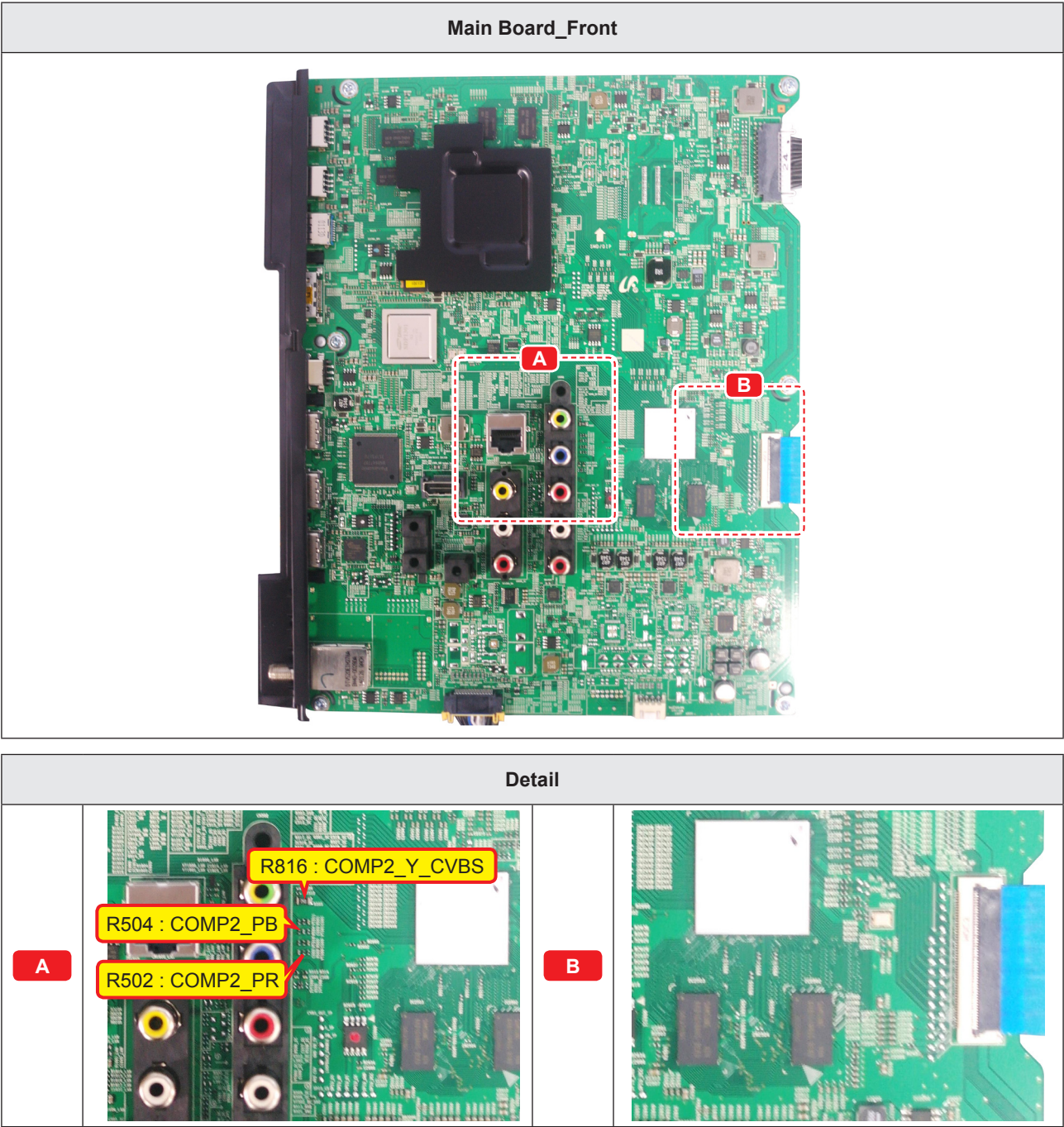


Note

Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

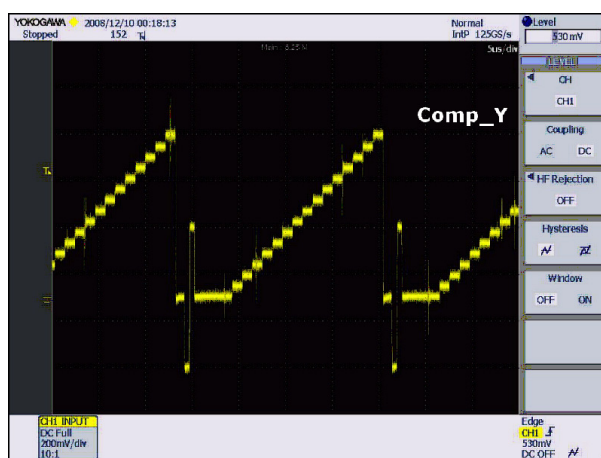
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Component source - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	Power indicator LED is off. Lamp(Backlight) on, no video ? No → Check a set in the 'Stand-by mode'. Yes ↓ Check the component source and check the connection of component cables ? Y, Pb, Pr No → Input the component source properly. Yes ↓ ① Does the component data appear at ? - COMP2_Y_CVBS : R505 - Pb : R504 - Pr : R502 No → Check CN502. Change the Main Ass'y. Yes ↓ ② Check the LVDS clk signal at output of Main Board. (TX) - TX6_CLK : TCON SDA - TX8_DATA : TCON SCL No → Check IC1400(NT14U). Change the Main Ass'y. Yes ↓ Check the LVDS cable? Replace the T CON / LCD panel? No → Please, Contact tech support.
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

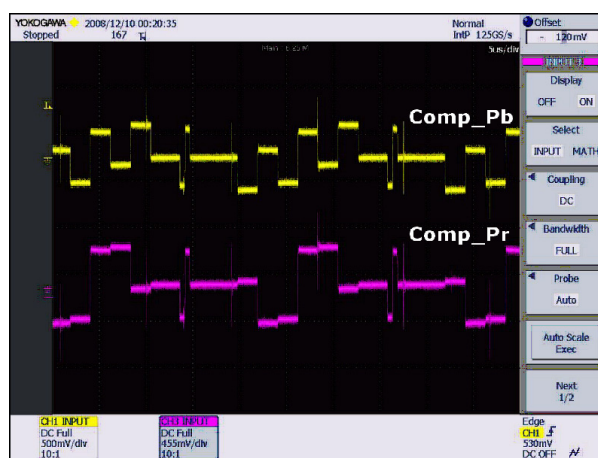


Waveforms

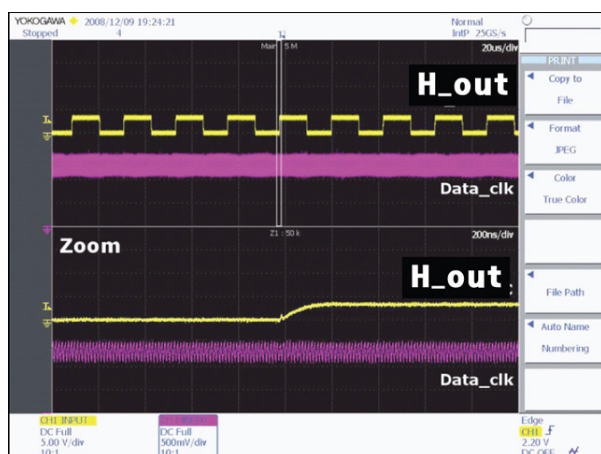
① Component_Y (Gray scale) / Pb / Pr (Color bar)



① Component_Y (Gray scale) / Pb / Pr (Color bar)



② LVDS output



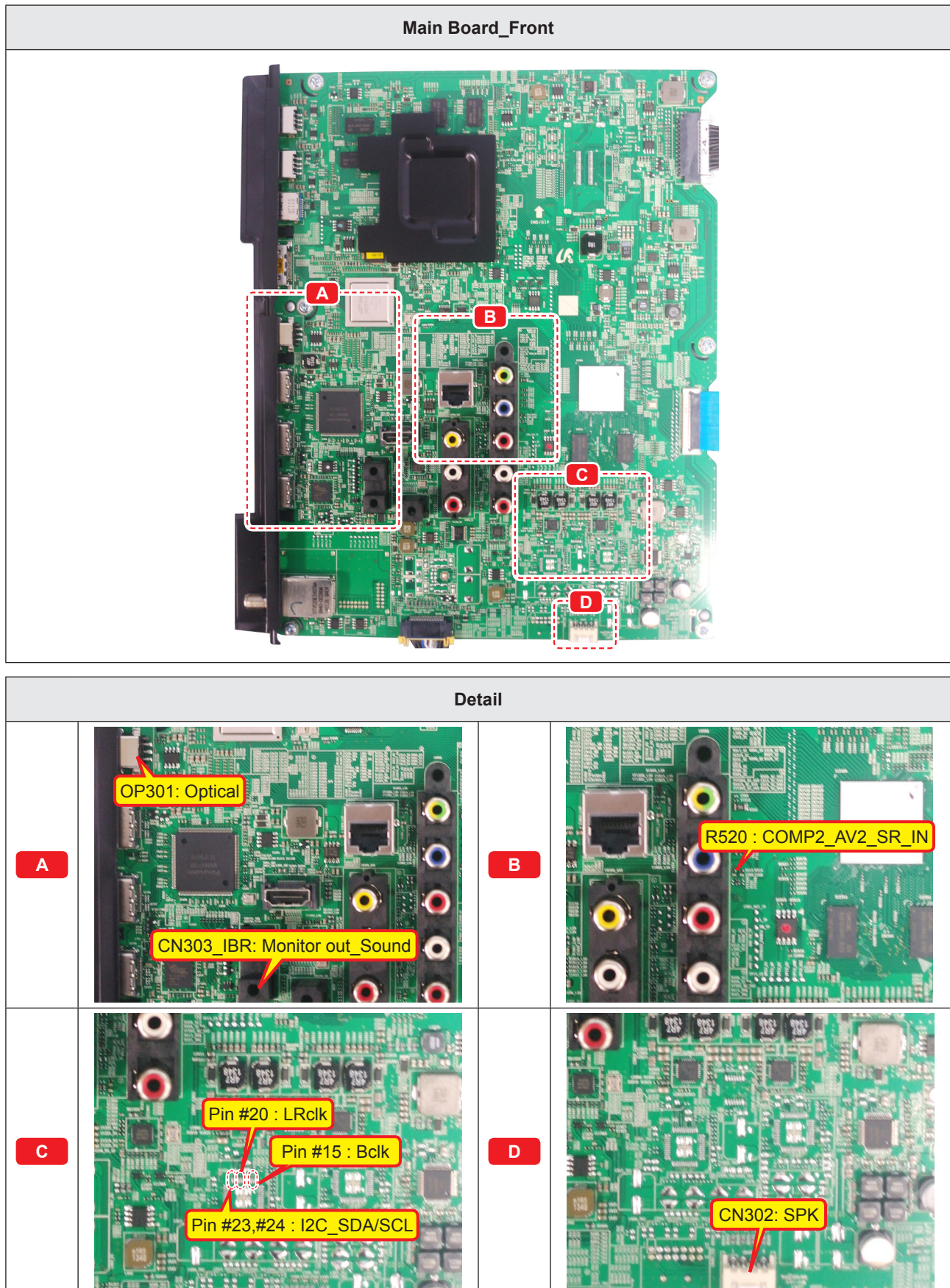
4-2-7. No Sound (1.Speaker 2.Monitor_out 3.Optical)_NT14U

**Note**

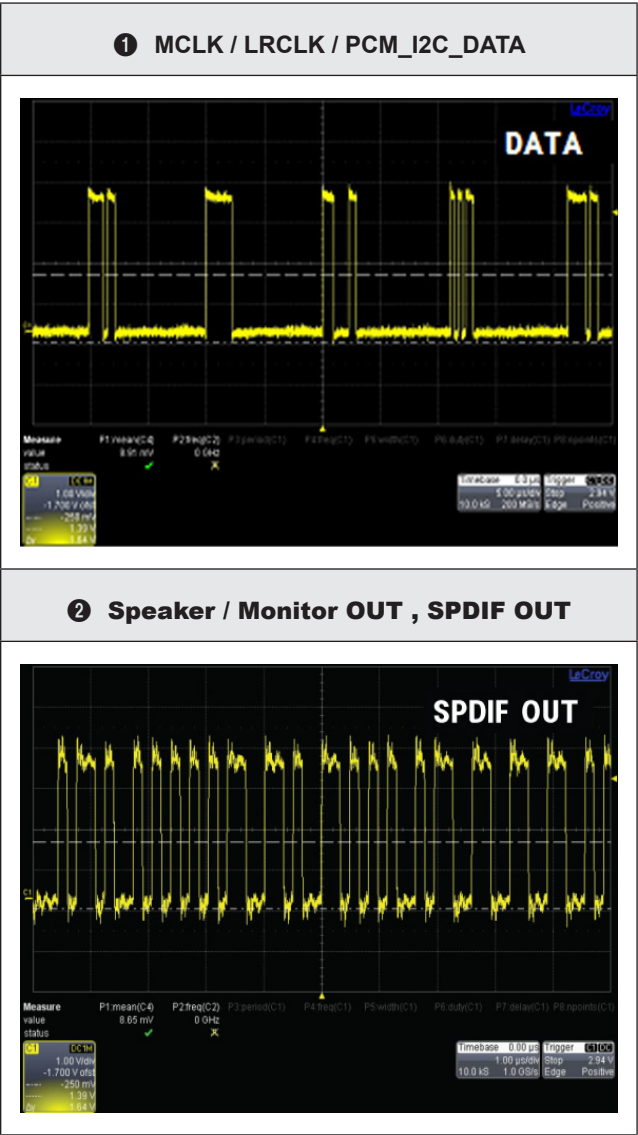
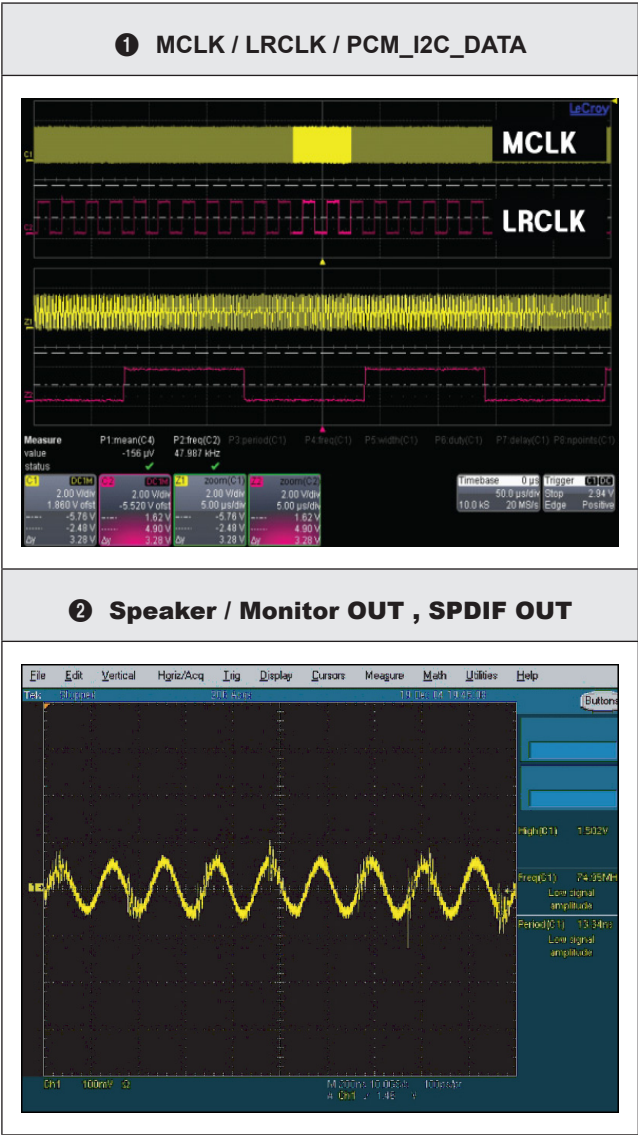
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	Video is normal but there is no sound.
Major checkpoints	- When the speaker connectors are disconnected or damaged. - When the sound processing part of the Main Board is not functioning. - Speaker defect.
Diagnostics	Check the source and check the connection of sound cable ? COMP No → Input the sound source properly. Yes ↓ Check the signal at input of Main board? AV, COMP L/R : R520 No → Check CN502. Change the Main Ass'y. Yes ↓ 1 Check the DATA between the Audio IC's ? - Pin #15 of IC500 : B clk - Pin #20 of IC500 : LR clk - Pin #23,#24 of IC500 : I2C_SDA/ SCL No → Check IC500. Change the Main Ass'y. Yes ↓ 2 - Check the Speaker sound data at ? - CN400 - Check the Monitor out sound data at ? - CN2101_IBR - Does the SODIF OUT sound data appear at ? - OP400 No → Check IC500. Change the Main Ass'y. Yes ↓ Replace speaker ? No → Please, Contact Tech support.
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts



■ Waveforms



4-3. Factory Mode Adjustments

4-3-1. Detail Factory Option



NOTE

If you replace the main board with new one, please change the factory option as well.
The options you must change are "**Type**".

■ UN**HU6950FXZA

Inches		40"	50"	55"
PANEL	Vendor	SDC	INX	SDC
	Code	BN95-01608H	BN95-01607E	BN95-01609G
	Spec.	CY-GH040HGLV8V/H	CY-GH050HGNV3V/H	CY-GH055HGLV7V/H
SMPS BOARD	Vendor	SEM	SEM	SEM
	Code	BN44-00752A	BN44-00755A	BN44-00755A
	Spec.	L40N4_ESM	L55N4_ESM	L55N4_ESM
MAIN BOARD	Chassis Ass'y	BN91-12863R	BN91-12863Q	BN91-12863P
	PBA Ass'y	BN94-07581R	BN94-07581Q	BN94-07581P
Byte	Item			
0	Factory Reset	-	-	-
1	Type	40A6AU7VH	50D6AU7VH	55A6AU7VH
2	Local set	US	US	US
3	SW Model	UHU6950	UHU6950	UHU6950
4	BOM Model	6950	6950	6950
5	Tuner	S_TC	S_TC	S_TC
6	Ch table	NONE	NONE	NONE

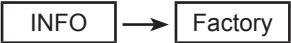
4-3-2. Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote control



- If you have Factory remote control



- Buttons operations within Service Mode

Menu	Full Menu Display / Move to Parent Menu
Direction Keys ▲/▼	Item Selection by Moving the Cursor
Direction Keys ◀/▶	Data Increase / Decrease for the Selected Item
Source	Cycles through the active input source that are connected to the unit

HOW to enter the Advanced menu (Picture)

- ❶ Cursor move to 'Advanced'. → ❷ Push the '0' button 4 times. → ❸ You can see the 'Picture' menu.

- If you don't have Factory remote control, can't control some menus. (Expert, Advanced menu)

Option

Control

Debug

SVC

ADC/WB

Advanced

T-NT14UAKUC-xxxx
T-NT14UAUSS-xxxx
BT Version : xxxx
E-Manual : xxxx
Camera Version : xxxx
Blaster-version : ----

EDID SUCCESS
CALIB : AV/COMP/PC/HDMI/
Option : xxxx,US,6950,NONE
USB RS232C : OFF

DTP-SDAL-NT14U-MAIN-xxxx-xxxx
RFS : "NT14U 0147" K/2 201x-xx-xx
KERNEL : 142.1214, /
DTP-DTVTD-4612-01
Backend[NT72323]: FW[5xx]
TCON Version : ----

Model : UNxxHU6950
Wired MAC SUCCESS
Wireless MAC SUCCESS
WIFI : ATH6KL(5.0.0.99_0307)
CO Nf/ W/ M/ D/ HO PO AO / S/ N/
Factory Data Ver : 165 / EERC Ver : 56

SmartControl : xxxx
DTP-BP-HAL-4612
DTP-BP-MW-4612-01
DTP-BP-APP-4612-01
POP-FLA-14-UHD_FLAT-008
Date of purchase : mm/dd/yyyy

4-3-3. Factory Data

■ Option

Factory Menu Name	Data	Range
Factory Reset	-	
Type	40A6AU7VH 50D6AU7VH 55A6AU7VH	
Local Set	US	
SW Model	UHU6950	
BOM Model	6950	
TUNER	S_TC	
Ch Table	NONE	
MRT Option		
Front Color		U-WM-HU7K
LVDS FORMAT	JEIDA	
Language_Arabic	US	
Region	USA	
PnP Language	ENG_US	
WIFI REGION	S	
OTN Support	ON	
OTA Support	OFF	
MediaPlay DLNA	-	
TTX	OFF	
China HD	OFF	
NT Conversion	OFF	
Num of DTV DECODER	2	
Num of AV	2	
Num of COMP	1	
Num of HDMI	4	
Num of SCART	0	
Num of USB Port	3	
Num of USB 3.0	1	
Num of RVU	1	
Num of Display	2	
Num of IPTV	0	
Num of RUI	0	
Num of PVR RECORD	0	
TOOLS Support	104	

4. Troubleshooting

Factory Menu Name	Data	Range
LNA Support	OFF	
24Px4 Support	OFF	
BD Wise Support	ON	
Data Service Support	OFF	
JAVA Data Service Support	OFF	
PVR Support	OFF	
CI Support	OFF	
LEDMotionPlus Support	ON	
Natural Mode Support	ON	
Relax Mode Support	OFF	
HDMI/DVI SEL	2	
Select LCD/PDP	LCD	
Wall Mount	OFF	
HV Flip		OFF / HV Flip / H Flip / V Flip
FRC HV Flip		V Flip / OFF
Light Effect	OFF	
e-Pop Default	ON	
CAMERA Support	OFF	
NETWORK Support	Int-Wifi	
EcoSensor Support	ON	
3D Support	OFF	
BT Support	ON	
BT ADDRESS	508569b1285e	
HP LINE		Headphone / Lineout / NONE
Smart Control Support	ON	
Motion Recog	ON	
Voice Recog	ON	
Virtual Remocon Color	1	
Local Dimming Panel	OFF	
Wifi Vendor	QCA	
Engineer Option		
Type Of PANEL KEY	None	
5 Way Function Key	R BACK	
Contents Bar	OFF	
Cable Modulation	QAM	
Standby led on/off	OFF	
Recognition Support		

Factory Menu Name	Data	Range
IF AGC	0	
D AGC	0	
PH BW	0	
FQ BW	0	
PH RATE	0	
PD EN	0	
PEQ Inx	0	
WF Scale		
WF Type	0	
Nu of Network Stream	1	
DP V Size	0	
Backend Device	FOX-FT1	
BT_AUDIO_ON_OFF	OFF	
Config_AV_PATH		
USING_PSI_UPDATE	-	
ECO Standby	OFF	
Fast Logo Delay	0	
Num of PANEL KEY	6	
Panel Detail	0	
Panel Init Time	250	
Tcon Init Time	460	
WRITE MAC Address		

■ Control

Factory Menu Name	Data	Range
EDID		
EDID ON/OFF	OFF	
EDID WRITE ALL	...	
EDID WRITE HDMI	...	
EDID Ver	...	
EDID Port		
Sub Option		
RS-232 Jack	UART	Debug/UART/Logic/FANET
Serial Log On/Off	OFF	
Watchdog	OFF	
FRC Monitoring	OFF	
Checksum	0x0000	

4. Troubleshooting

Factory Menu Name	Data	Range
Fast Boot in Production	OFF	
USB Serial	OFF	
Eeprom Reset		
ECO IC TYPE	NONE	
Info Link Server Type	development	
Info Link Country	None	
TTX Group	-	
Visual Test	-	
MediaPlayDB	-	
OPTION_SWU		
OTN Server Type	operating	
OTN Test Server	OFF	
SWU Reset		
SWU Duration	OFF	
SWU Fail Test	OFF	
OPTION_NUM		
Num of ATV	1	
Num of SVIDEO	0	
Num of PC	0	
Num of DVI	0	
Num of OPTICAL Link	1	
Num of MEDIA	1	
Num of Tuner	1	
Num of ISP	1	
Num of HDMI SW	1	
Num of SII9679	1	
RF Remocon Support	OFF	
CDD mode	-	
DPMS Support	OFF	
Num of IPTV CIP	0	
Num of CI	0	
Num of HYBRID TV	0	
T-CON Device		
BOARD CONTROL	OFF	
RM		
Server Type	Operating	
RTS Mode	OFF	

Factory Menu Name	Data	Range
PSA		
FKP Download1	0	
FKP Download2	0	
LMK threshold	3	
Low threshold	10	
High threshold	15	
CSB	ON	
CLB	ON	
EEPG Enable	0	
Last Screen	OFF	
App Resume	OFF	
BP PMS Reset	1	
Fanet Thread	2	
ACM_MC	OFF	
Support MiniBrowser	OFF	
HotkeyList	7K_NON_3D	
PDP Option		
Pixel Shift Test	OFF	
Logic SW	0	
Panel Temperature	0	
LOGIC Waveform Day	0	
Logic CheckSum	0	
MRT	0	
SAPC Timer		
APC Speed		
Hotel Option		
Hospitality Mode	OFF	
Power On	...	
MyChannel		
Menu OSD	...	
Operation	...	
Music Mode	...	
External Source	...	
Eco Solution	...	
Cloning	...	
Shop Option		
Shop Mode	OFF	

4. Troubleshooting

Factory Menu Name	Data	Range
Exhibition Mode	OFF	
3D Cube	OFF	
Asia Option		
Unbalance	OFF	
AF Level adjust	3	
TX Power Level	0	
Mono Last Memory	OFF	
H Shaking	OFF	
SOUND		
Carrier_Mute	ON	
High Devi	OFF	
Speaker Delay Normal	10	
SPDIF PCM Gain	-9dB	
FM M Prescale	48	
FM Prescale	0x00h	
AM Prescale	0x32h	
NICAM Prescale	0x48h	
BTSC Mono Prescale	15	
BTSC stereo Prescale	29	
BTSC SAP Prescale	29	
A2Ident High THID	36	
A2Ident Low THID	9	
Pilot Level High Thld	0x0Fh	
Pilot Level Low Thld	0x08h	
Carrier2 Amp High THID	4	
Carrier2 Amp Low THID	3	
Carrier2 SNR High THR	16	
Carrier2 SNR Low THR	80	
Sig Error On	35	
Sig Error Off	41	
Amp Model	TAS5745	
Amp Volume	0xc9h	
Amp Scale	0x35h	
Amp Check Sum	0x00F95FB3	
Woofer Type	0	
Woofer Volume	0xc6h	
Woofer Scale	0x30h	

Factory Menu Name	Data	Range
Woofer Check Sum	NONE	
Woofer Local EQ Checksum	0	
Speaker EQ	ON	
PEQ Test	Ready	
Local Speaker EQ	0	
Local EQ Checksum	0	
SRS Tuning Parm	4	
Subwoofer Support	0	
India Sound	OFF	
AudioDock BT delay	50	
Wall Filter Type	1	
Bottom CheckSum	0	
Bottom Local CheckSum	0	
Lipsync Inx	2	
Lipsync CheckSum	NG:0x5248	
Lipsync USB Test	Ready	
Lipsync BT CheckSum	OK:0x0000	

■ Debug

Factory Menu Name	Data	Range
Spread Spectrum		
LVDS Spread	OFF	
DDR Spread	ON	
Period	20K	
Amplitude	0.1	
HD SSC ON/Off	OFF	
HD SSC Value	1	
LVDS SSC ON/Off	OFF	
LVDS SSC Value	0	
DDR SSC ON/Off	OFF	
DDR SSC Value	1	
FRC Vx1 SSC ON/OFF	ON	
FRC LVDS SSC ON/OFF	OFF	
FRC LVDS SSC MFR	1	
FRC LVDS SSC Period	0	
FRC LVDS SSC Modulation	0	
FRC DDR SSC ON/OFF	ON	

4. Troubleshooting

Factory Menu Name	Data	Range
FRC DDR SSC MRR	15	
FRC DDR SSC MFR	1	
FRC DDR SSC Period	0	
FRC DDR SSC Modulation	0	
DDR Margin		
A CTRL_OFFSET_0_3	0x0	
A CTRL_OFFSET_D	0x0	
B CTRL_OFFSET_0_3	0x0	
B CTRL_OFFSET_D	0x0	
MICOM POWER OFF	OFF	
RF Mute Time	6ms	
CI+1.3	OFF	
FRC		
FRC FDISPLAY ON/OFF	0	
3D FDISPLAY ON/OFF	OFF	
PC Mode ON/OFF	OFF	
Home Panel FRC	OFF	
DDR Test	OFF	
Tuner Margin	10	
MPEG Margin	100	
H.264 Margin	100	
CAM Wait Time		
TS Clock deldy	0	
TCON_TEMP READ	0	
TEMP LAST	60	
DCC VERSION	0x0	
DCC CHK SEL	0	
DCC CHECK LOCAL	0x0	
DCC CHECK TOTAL	0x0	
MultACC Checksum	0	
IIC Bus stop	OFF	
Tuner Status		
DVB		
SNR		
BER		
Signal Strength		
Bandwidth		

Factory Menu Name	Data	Range
Frequency		
LNA Status		
FFT		
Modulation		
Code Rate		
GI		
Hier Modulation		
Frequency offset		
Timing offset		
AGC		
UCB		
PLL Type		
DEMODO Type		
TPS Lock		
RS Lock		
SSI		
SQI		
Firmware Version		
ISDB-T		
FFT Size_1		
Guard Interval_1		
Freq. Offset_1		
SNR_1		
IF AGC_1		
TMCC Lock_1		
TS Packet_1		
Master Lock_1		
A_Modulation_1		
A_Code Rate_1		
A_Timer InterLeave_1		
A_Segments Num_1		
A_BER_1		
B_Modulation_1		
B_Code Rate_1		
B_Timer InterLeave_1		
B_Segments Num_1		
B_BER_1		

4. Troubleshooting

Factory Menu Name	Data	Range
C_Modulation_1		
C_Code Rate_1		
C_Timer InterLeave_1		
C_Segments Num_1		
C_BER_1		

■ SVC

Factory Menu Name	Data	Range
Self Test		
Loop Back	OFF	
LAN Test		
AV Audio Test		
AV2 Audio Test		
DVIN Audio Test		
CVBS Test		
CVBS2 Test		
COMP Test		
USB HUB Test		
HDMI Test		
SCART Audio Test		
SCART CVBS Test		
SCART RGB Test		
PC Audio Test		
PC Self Test		
CPU	...	
DDR	...	
FLASH		
EEPROM		
HDMI Switch IC	...	
USB HUB IC		
WIFI		
LVDS		
T-CON/FRC		
PCB Test	...	
MOIP		
App Self Test		
Device Self Test		

Factory Menu Name	Data	Range
Voltage		
EcoSensor		
BT		
EXT Sound Inspection		
Woofer Sound Inspection	NONE	
ATV CH Inspection		
DTV CH Inspection		
Satellite CH Inspection		
UHD OSD TEST		
Aging Line Test		
Tweeter Sound Inspection	NONE	
Info		
SVC Info	0	
LOG(View Log)		
Select Log Type	NVRAM	
Log View	0	
Delete Log		
Debug Log Down		
RM log transmission	OFF	
ER Count		
WD Count	0	
Power Fail Count	236	
AR Count	0	
WIFI ER Count	0	
WIFI NO DETECTION COUNT	0	
WIFI DETACCHMENT COUNT	3	
BT ER Count	0	
BT NO DETECTION COUNT	0	
BT DETACHMENT COUNT	0	
BT MGT OPEN FAIL COUNT	0	
BT MGT DISCONNECT COUNT	1	
Camera ER Count	0	
FRC3D Reboot On/Off	ON	
FRC3D ER Count	0	
Panel Display Time	24Hr	
Factory Entry Number	18	
Factory Execution History		

4. Troubleshooting

Factory Menu Name	Data	Range
Factory Reset History		
Upgrade		
T-CON Usb Download	Failure	
T-CON CheckSum	0x0032	
Logic Usb D/L	...	
SUBMICOM UPGRADE	Ready	
BT UPGRADE		
BT FREPAIRING	ON	
Function Upgrade	Failure	
FRC3D FW Upgrade		
FRC3D LD UPGRADE		
Camera Upgrade		
Mic Upgrade		
CPLD USB Download		
JP MICOM UPGRADE	Failure	
DP MICOM UPGRADE	Failure	
Jump Upgrade	Failure	
IR Blaster Upgrade	Failure	
IR Blaster delay time	50	
CPLD Download		
LDC PROFILE UPGRADE	Failure	
Pic Data USB Update	0	
Audio Data USB Update	0	
Eco Data USB Update	VER:0x0006	
SC ADK Upgrade	Failure	
SC MBR Upgrade	Failure	
Reset		
Apps Reset	0	
EEPROM Rst	0	
SPI Flash Reset	Success	
OPTION_HDMI		
DVI/HDMI SOUND		Auto / DVI
HDMI HOT PLUG		Disable / Enable
HOTPLUG SWITCHING		Boot / Source
HOT PLUG DURATION	1200ms	
CLK TERM DURATION	1200ms	
HDMI FLT CNT SIG	100ms	

Factory Menu Name	Data	Range
HDMI FLT CNT LOS	100ms	
UNSTABLE BAN CNT	5000ms	
HDMI ROBIN	ON	
HDMI Callback	OFF	
HDMI CTS T hld	8	
HDMI CTS Cnt1	1	
HDMI EQ	AUTO	AUTO / Low / Middle / High / Strong
HDMI Write Type	Combine	Combine / Separate
HDMI Switch	NONE	
DVI SET TIME	300ms	
HDMI Sync	DE	
HDMI 3D DET	0	
HOT PLUG OFF HOLD TIME		
HDMI Stable Count	1	
HDCP UPDATE SPI	Failure	
SPI VERSION	0x2025	
DVB CI		
TS Clock delay TC	0	
TS Clock delay S	0	
CI Control Buf On	ON	
TS Clock delay CPU	-1	
Test Pattern		
Pattern Sel	OFF	
Logic Pattern Sel	...	
Logic Level Sel	...	
FRC Pre Test Pattern	0	
FRC Post Test Pattern	0	
SOC TCON Test Pattern	0	
SOC TCON Pattern Level	255	
SOC TCON FRC Pattern	0	
HDMI WB Pattern	OFF	
HDMI Pattern Sel	0	
Parma Pre Test Pattern	0	
Parma Post Test Pattern	0	
FRC OSD PRE PATTERN	0	
FRC OSD POST PATTERN	0	
Other Setting		

4. Troubleshooting

Factory Menu Name	Data	Range
Delete S/N	0	
IPERF	Stopped	
Expert		
CAL Data Backup	...	
CAL Data Restore		
ATV IF AGC SPEED	0	
Auto Power	LAST POWER	
SVC Panel	ORIGINAL	

■ ADC/WB

Factory Menu Name	Data	Range
ADC		
AV Calibration	/	
Comp Calibraion	/	
PC Calibration	/	
HDMI Calibration	/	
ADC Result		
1st_Y_GH	0	
1st_Y_GL	0	
1st_Cb_BH	0	
1st_Cb_BL	0	
1st_Cr_RH	0	
1st_Cr_RL	0	
2nd_R_L	134	
2nd_G_L	134	
2nd_B_L	134	
2nd_R_H	49	
2nd_G_H	49	
2nd_B_H	49	
White Balance		
R-Offset	128	
G-Offset	128	
B-Offset	128	
R-Gain	128	
G-Gain	128	
B-Gain	128	
WB_W2_R_Offset	128	

Factory Menu Name	Data	Range
WB_W2_B_Offset	128	
WB_W2_R_Gain	150	
WB_W2_B_Gain	84	
WB_N_R_Offset	128	
WB_N_B_Offset	128	
WB_N_R_Gain	149	
WB_N_B_Gain	110	
MGA		
MGA On/Off	OFF	
R1_Gain	...	
G1_Gain	...	
B1_Gain	...	
R2_Gain	...	
G2_Gain	...	
B2_Gain	...	
R3_Gain	...	
G3_Gain	...	
B3_Gain	...	
R4_Gain	...	
G4_Gain	...	
B4_Gain	...	
R5_Gain	...	
G5_Gain	...	
B5_Gain	...	
R6_Gain	...	
G6_Gain	...	
B6_Gain	...	
R7_Gain	...	
G7_Gain	...	
B7_Gain	...	
R8_Gain	...	
G8_Gain	...	
B8_Gain	...	
R9_Gain	...	
G9_Gain	...	
B9_Gain	...	
R10_Gain	...	

4. Troubleshooting

Factory Menu Name	Data	Range
G10_Gain	...	
B10_Gain	...	

4-4. White Balance

4-4-1. Calibration

1. Into the Factory Mode.
2. Select **ADC/WB** menu.
3. Select **ADC** menu.

Option	AV Calibration
Control	Comp Calibration
Debug	HDMI Calibration
SVC	
ADC/WB	
Advanced	

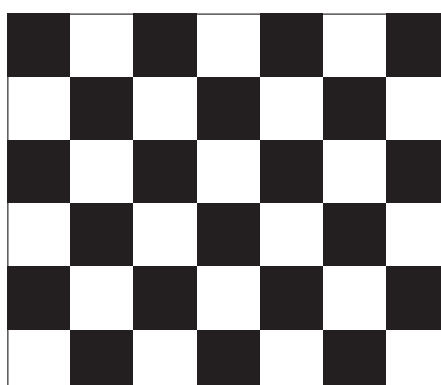
4-4-2. Service Adjustment

You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

- Adjust Specification

Source	Setting Mode	Pattern	Use Equipment
HDMI	1280 x 720@60 Hz	Pattern #24 (Only Chess Pattern)	CA210 & Master MSPG925 Generator



(Chess Pattern)

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
CVBS IN (Model_#1)	Perform in NTSC B&W Pattern #24	Lattice
Component IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice
HDMI IN	Perform in 720p B&W Pattern #24	Lattice

Method of Color Calibration (AV)

1. Apply the NTSC Lattice (N0. 3) pattern signal to the AV IN 1 port.
2. Press the Source key to switch to “AV1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “AV Calibration” menu.
6. In “AV Calibration Off” status, press the “▶” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “AV Calibration” status from Failure to Success.

Method of Color Calibration (Component)

1. Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port.
2. Press the Source key to switch to “Component1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “Comp Calibration” menu.
6. In “Comp Calibration Off” status, press the “▶” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “Comp Calibration” status from Failure to Success.

Method of Color Calibration (HDMI)

1. Apply the 720p Lattice (N0. 6) pattern signal to the HDMI1/DVI IN port.
2. Press the Source key to switch to “HDMI1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “HDMI Calibration” menu.
6. In “HDMI Calibration Off” status, press the “▶” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “HDMI Calibration” status from Failure to Success.

4-4-3. Adjustment

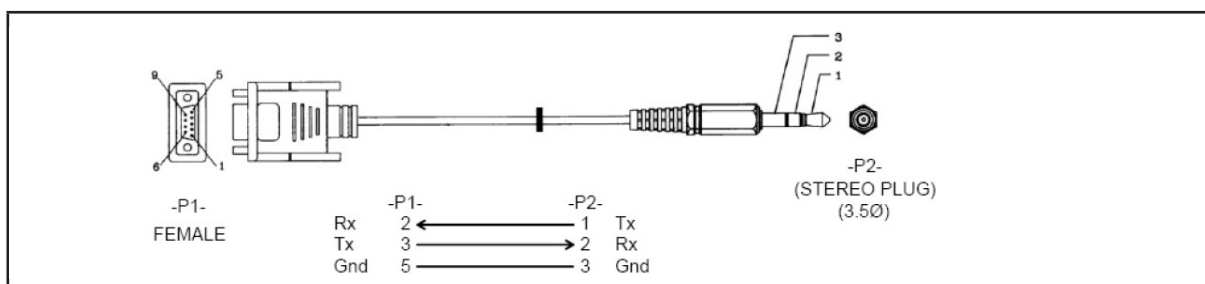
1. Into the Factory Mode.
2. Select **ADC/WB** menu.
3. Select **White Balance** menu.

Option			
Control			
Debug			
SVC			
ADC/WB	White Balance	(Low Light) Sub Brightness R offset G offset B offset	(Hight Light) Sub Contrast R gain G gain B gain
Advanced			

4-5. RS-232C

• RS232C Control

- Port : COM#(Serial)
- Bit rate : 115200(Control)
- Data Bit : 8 bit
- Parity : None
- Stop Bits : 1
- Flow Control : None



• Description of RS232C

Pin#	Name	Full Name	Pin#	Name	Full Name	Pin#	Name	Full Name
1	CD	Carrier Detect	4	DTR	Data Terminal Ready	7	RTS	Request To Send
2	RxD	Received Data	5	GND	Signal Ground	8	CTS	Clear To Send
3	TxD	Transmitted Data	6	DSR	Data Set Ready	9	RI	Ring Indicator

4-6. AV Control Tab

Control Item				Cmd1	Cmd2	Cmd3	Value
General	Power	Power		0x00	0x00	0x00	0x00
		Off					0x01
		On					0x02
	Volume	Direct		0x01	0x00	0x00	(0~100)
		Up				0x01	0x00
		Down				0x02	0x00
	Mute			0x02	0x00	0x00	0x00
		Ch.	Direct	0x04	-		
			Continuous	0x03	0x00	0x01	0x00
			Down			0x02	0x00

Control Item				Cmd1	Cmd2	Cmd3	Value
Input	Source List	TV	TV	0x0a	0x00	0x00	0x00
			AV			0x01	0x00
		AV	AV1				0x01
			AV2				0x01
			AV3				0x02
		S-Video	S-Video1			0x02	0x00
			S-Video2				0x01
			S-Video3				0x02
		Component	Component1			0x03	0x00
			Component2				0x01
			Component3				0x02
		PC	PC1			0x04	0x00
			PC2				0x01
			PC3				0x02
		HDMI	HDMI1			0x05	0x00
			HDMI2				0x01
			HDMI3				0x02
			HDMI4				0x03
		DVI	DVI1			0x06	0x00
			DVI2				0x01
			DVI3				0x02

Control Item				Cmd1	Cmd2	Cmd3	Value
PICTURE	Mode	Dynamic(Entertain)		0x0b	0x00	0x00	0x00
		Standard					0x01
		Movie					0x02
		Natural					0x03

Control Item				Cmd1	Cmd2	Cmd3	Value
PICTURE	Mode	CAL-NIGHT					0x04
		CAL-DAY					0x05
		BD Wise					0x06
		Relax					0x07
	BackLight (CellLight)		0~20		0x01	0x00	(0~20)
	Contrast		0~100		0x02	0x00	(0~100)
	Brightness		0~100		0x03	0x00	(0~100)
	Sharpness		0~100		0x04	0x00	(0~100)
	Color		0~10		0x05	0x00	(0~100)
	Tint	G/R			0x06	0x00	(0~100)
	Advanced Settings	Black Tone	Off		0x07	0x00	0x00
			Dark				0x01
			Darker				0x02
			Darkest				0x03
		Dynamic Contrast	Off			0x01	0x00
			Low				0x01
			Medium				0x02
			High				0x03
		Shadow Detail	-2 ~ 2			0x02	(-2~2)
		Gamma	-3 ~ 3			0x03	(-3~3)
		RGB Only Mode	Off			0x05	0x00
			Red				0x01
			Green				0x02
			Blue				0x03
		Color Space	Auto			0x06	0x00
			Native				0x01
			Custom				0x02
		White Balance	R-Offset(LCD)			0x07	(0~50)
		White Balance	G-Offset(LCD)			0x08	(0~50)
		White Balance	B-Offset(LCD)			0x09	(0~50)
		White Balance	R-Gain(LCD)			0x0a	(0~50)
		White Balance	G-Gain(LCD)			0x0b	(0~50)
		White Balance	B-Gain(LCD)			0x0c	(0~50)
		White Balance	Reset(LCD)			0x0d	0x00
		Flesh Tone	-15 ~ 15			0x0e	(-15~15)
		Edge Enhancement	Off			0x0f	0x00

New function of 12"
(only PDP TV)

Control Item				Cmd1	Cmd2	Cmd3	Value
PICTURE		xvYCC	On				0x01
			Off			0x10	0x00
		Motion Lighting	On				0x01
			Off			0x11	0x00
		LED Motion Plus	On				0x01
			Off		0x0a	0x07	0x00
			On(Normal)				0x01
			Cinema				0x02
			Ticker				0x03
	Picture Option	Color Tone	Cool		0x0a	0x00	0x00
			Standard				0x01
			Warm1				0x02
			Warm2				0x03
		Digital Noise Filter	Off			0x02	0x00
			Low				0x01
			Medium				0x02
			High				0x03
			Auto				0x04
			Auto Visualization				0x05
		MPEG Noise Filter	Off			0x03	0x00
			Low				0x01
			Medium				0x02
			High				0x03
			Auto				0x04
		HDMI Black Level	Normal			0x04	0x00
			Low				0x01
		Film Mode	Off			0x05	0x00
			Auto1				0x01
			Auto2				0x02
			Cinema Smooth				0x03
		Auto Motion Plus	Off			0x06	0x00
			Clear				0x01
			Standard				0x02
			Smooth				0x03
			Custom				0x04

Change Normal → Standard mode

New function of 12" (only PDP TV)

Control Item				Cmd1	Cmd2	Cmd3	Value
PICTURE			Demo				0x05
	Screen Adjustment	Picture Size	16:9	0x0b	0x0a	0x01	0x00
			Zoom1				0x01
			Zoom2				0x02
			Wide Fit				0x03
			4:3				0x04
			Screen Fit				0x05
			Smart View I				0x06
			Smart View II				0x07
			Auto Wide				0x08
			Wide Zoom				0x09
			Zoom				0x0a
	Reset Picture	Reset Picture		0x0b	0x0b	0x00	0x00
	3D	3D Mode	Off	0x0b	0x0c	0x00	0x00
			2D ↔ 3D				0x01
			Side By Side				0x02
			Top Bottom				0x03
			Line By Line				0x04
			Vertical Line				0x05
			Checker BD				0x06
			Frame Sequence				0x07
		3D ↔ 2D	Off			0x01	0x00
			On				0x01
		3D View Point				0x02	(-5~5)
		Depth				0x03	(1~10)
		3D Auto View	Off			0x05	0x00
			Message Notice				0x01
			On				0x02

New function of 12"
(only DVB TV)

Control Item				Cmd1	Cmd2	Cmd3	Value
Sound	Sound Mode	Standard		0x0c	0x00	0x00	0x00
		Music					0x01
		Movie					0x02
		Clear Voice					0x03
		Amplify					0x04

4. Troubleshooting

Control Item				Cmd1	Cmd2	Cmd3	Value
Sound	Equalizer	Balance			0x01	0x00	(0~20)
		100hz				0x01	(0~20)
		300hz				0x02	(0~20)
		1khz				0x03	(0~20)
		3khz				0x04	(0~20)
		10khz				0x05	(0~20)
		Reset				0x06	0x00
	SRS TruSurround HD (echo)	Off			0x02	0x00	0x00
	Virtual Surround (echo)	On					0x01
	SRS TruDialog (echo)	Off			0x03	0x00	0x00
	Dialog Clarify (X9)	On					0x01
	Preferred Language	English			0x04	0x00	0x00
		Spanish					0x01
		French					0x02
		Korean					0x03
		Japanese					0x04
	Multi-Track Sound	Mono			0x05	0x00	0x00
		Stereo					0x01
		SAP					0x02
	Auto Volume	Off			0x06	0x00	0x00
		ON					0x01
		Night					0x02
	Speaker Select	TV Speaker			0x07	0x00	0x00
		External Speaker					0x01
	Sound Select	Main			0x08	0x00	0x00
		Sub					0x01
	Sound Reset	Sound Reset			0x09	0x00	0x00
	3D Audio	Off			0x0a	0x00	0x00
		Low					0x01
		Medium					0x02
		High					0x03

New function of 12"

Control Item			Cmd1	Cmd2	Cmd3	Value
KEY	Key Generation		0x0d	0x00	0x00	refer to table
OSD	Show/Hide Control	Show	0x0e	0x00	0x00	0x00
		Hide				0x01
Get Status	Power (On/Off)		0xf0	0x00	0x00	0x00
	Volume(0~100)		0xf0	0x01	0x00	0x00
	Mute (On/Off)		0xf0	0x02	0x00	0x00
	Channel Number		0xf0	0x03	0x00	0x00
	Source (TV/AV/.../HDMI/...)		0xf0	0x04	0x00	0x00
	Picture Size		0xf0	0x05	0x00	0x00
	3D (On/Off)		0xf0	0x06	0x00	0x00
	Picture Mode		0xf0	0x07	0x00	0x00
	Sound Mode		0xf0	0x08	0x00	0x00

New function of 12"

Key value	Value
Up	96 (0x60)
Down	97 (0x61)
Left	101 (0x65)
Right	98 (0x62)
Menu	26 (0x1A)
Internet	147 (0x93)
Enter(OK)	104 (0x68)
EXIT	45 (0x2D)

4-7. Software Upgrade

Software Upgrade can be performed by downloading the latest firmware from samsung.com to a USB memory device.

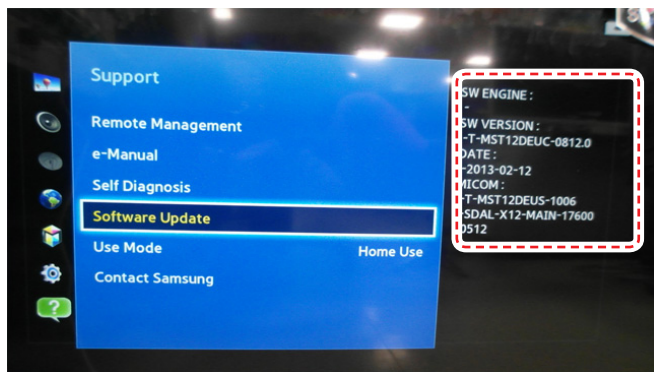
- Current Version - The software already installed in the TV.

Software is represented as 'Year/Month/Day_Version'.

4-7-1. How to Check the Software Version

■ Use the Main Menu

1. Click the "MENU" key in remote controller.
2. Select "Support" menu.
3. Locate the menu cursor "Software Upgrade" menu.
4. Click the "INFO" key.
 - Check the Main SW and Micom version.



■ Use the Factory Mode

Option
Control
Debug
SVC
ADC/WB
Advanced

T-NT14UAKUC-xxxx
 T-NT14UAUSS-xxxx
 BT Version : xxxx
 E-Manual : xxxx
 Camera Version : xxxx
 Blaster-version : ----

EDID SUCCESS
 CALIB : AV/COMP/PC/HDMI/
 Option : xxxx,US,6950,NONE
 USB RS232C : OFF

 DTP-SDAL-NT14U-MAIN-xxxx-xxxx
 RFS : "NT14U 0147" K/2 201x-xx-xx
 KERNEL : 142.1214, /
 DTP-DTVTD-4612-01
 Backend[NT72323]: FW[5xx]
 TCON Version : ----

4-7-2. How to Upgrade Software

1. Insert a USB drive containing the firmware upgrade downloaded from samsung.com into the TV.



NOTE

Please be careful not to disconnect the power or remove the USB drive while upgrades are being applied.

2. The TV will turn off and turn on automatically after completing the firmware upgrade.
3. Please check the firmware version after the upgrades are complete.
 - the new version will have a higher number than the older version.



NOTE

- When software is upgraded, video and audio settings you have made will return to their default (factory) settings.
- We recommend you write down your settings before beginning firmware update.

4. After update is completed, restore your previous settings.

■ Main Software Upgrade

1

Store the sw program named "**T-NT14UAKUC**" in USB memory stick.

2

Click the "**MENU**" key in Remote Controller.

3

Select "**Support - Software Update - Update Now**" menu.

4

- Click the "**ENTER**" key.
- Wait for upgrade complete.
 - Check the Software Version.

■ Sub Software Upgrade

USB Download

1. After Main Software upgrade, Enter the Factory menu by below method.

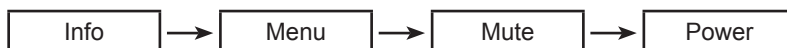
– Factory Remocon

- Click the Remocon button continuedly. (Info key+ Factory key)



– Nomal Remocon

- ❶ Turn off the TV. → ❷ Click the Remocon button continuedly.



2. Select the “SVC”.

Option
Control
SVC
Expert
ADC/WB
Advanced

3. Select the “SUBMICOM UPGRADE”.

Test pattern		DCC CHK SEL	0
Panel Display Time	1Hr	DCC CHECK LOCAL	0x0
Tuner Status		DCC CHECK TOTAL	
T-CON Usb Download	Failure	Fuction Upgrade	off
T-CON CheckSum	Error	Smart Hub Reset	off
Tuner Margin	10	WIFI ER COUNT	0
TS Clock delay	0	BT ER COUNT	0
SUBMICOM UPGRADE	off	Debug Log Down	
BT ADDRESS	0000	MulitACC Checksum	Error
BT UPGRADE		SVC Info	
BT FREEPAIRING	ON	TS Clock delay TC	0
SVC Reset		TS Clock delay S	0
TCON_TEMP READ	0.00	CAL Data Backup	
TEMP LAST	60.00	CAL Data Restore	
DCC VERSION	0x0		

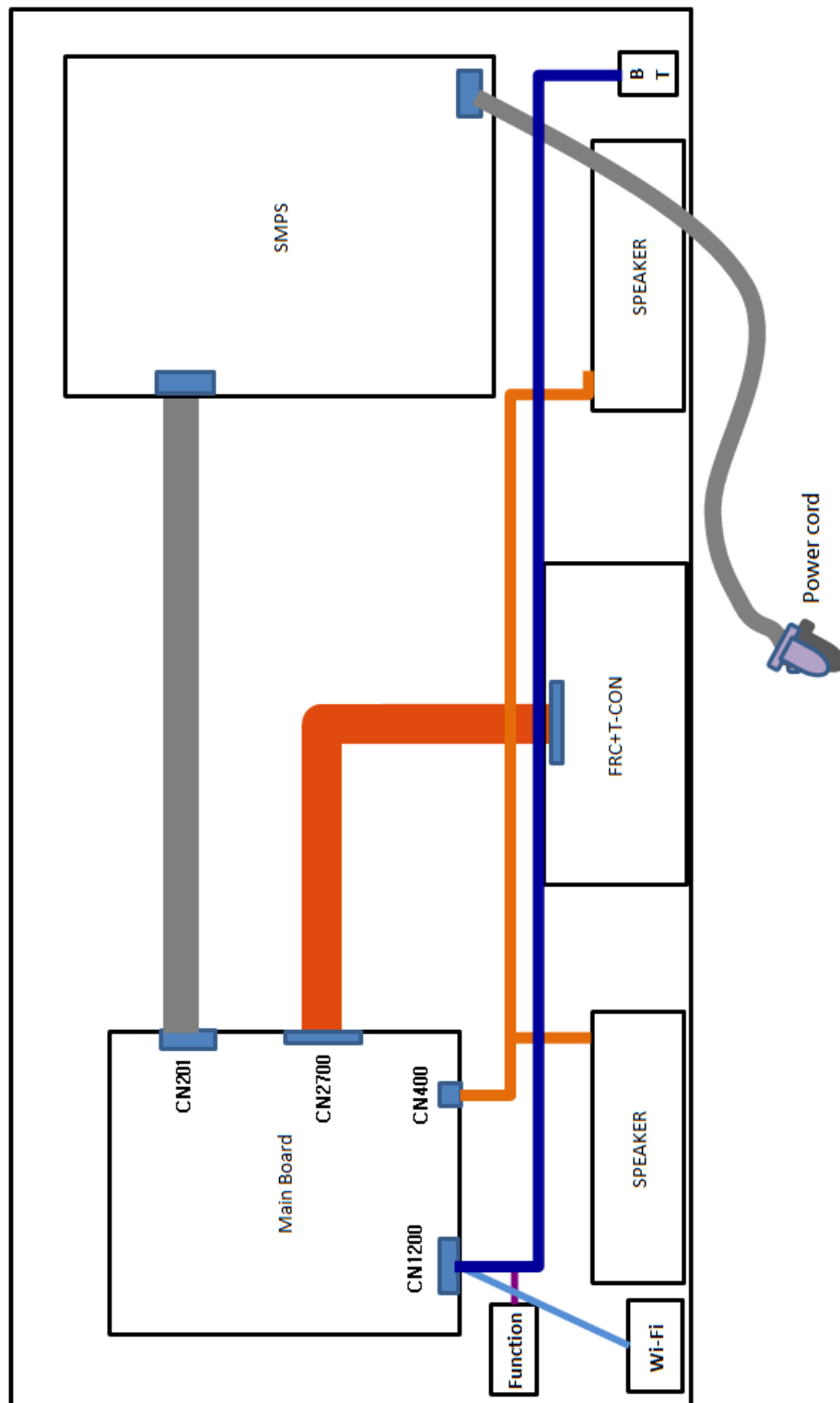
4. Click the “→” remocon key.

SUBMICOM UPGRADE	Wait
-------------------------	-------------

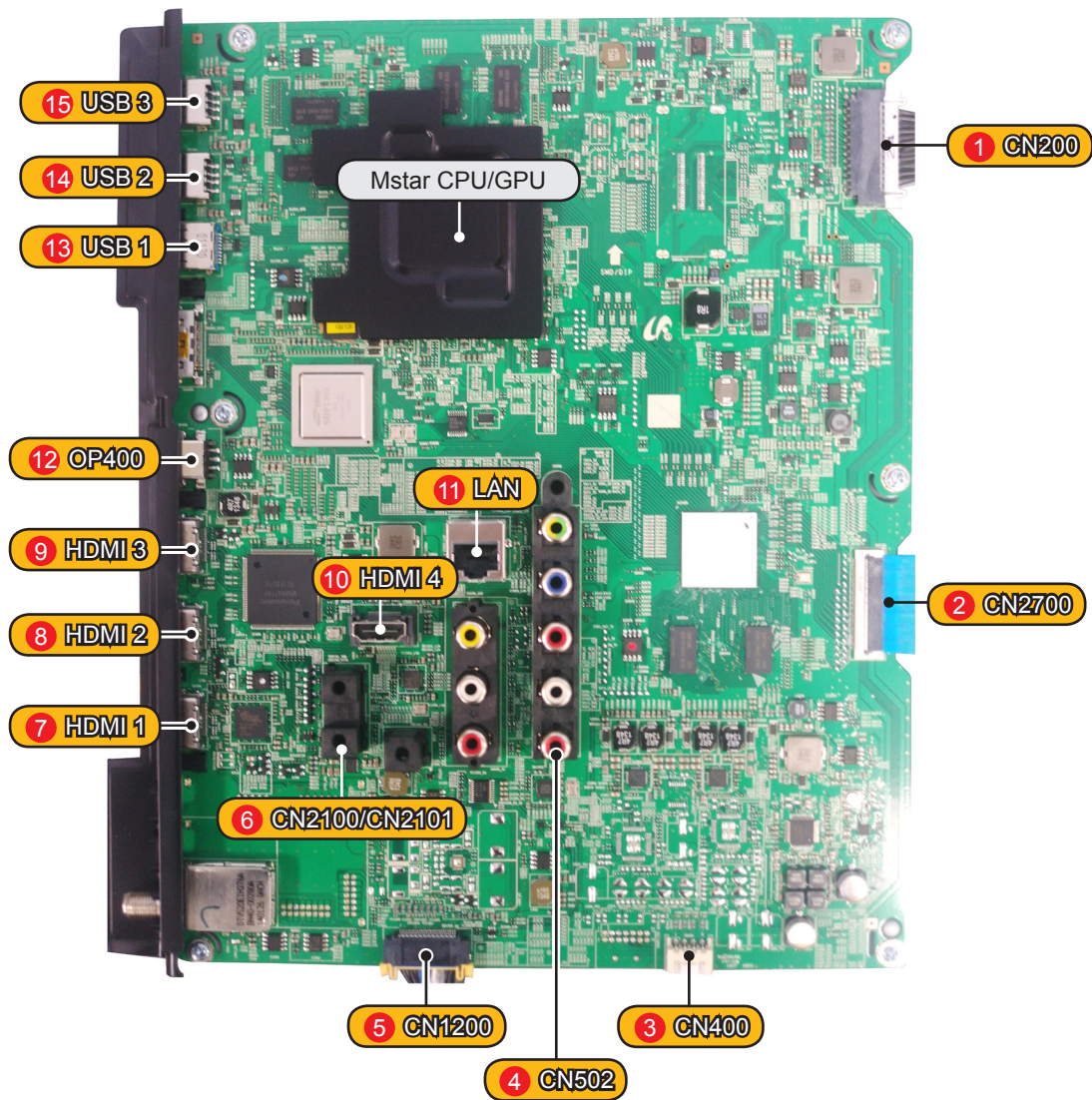
- Wait for upgrade complete.
- Check the Software version.

5. Wiring Diagram

5-1. Wiring Diagram



5-2. Connector



① CN200(to Power board)

1	GND	13	B13V_PW_1
2	SW_POWER_OUT	14	B13V_PW_1
3	A5.3V_PW	15	B13VS_PW
4	A5.3V_PW	16	B13VS_PW
5	GND	17	GND
6	GND	18	B13VS_PW
7	GND	19	OVD_ON_OFF
8	GND	20	B5V_SW_PW
9	B13V_PW_1	21	OVD_LEVEL
10	B13V_PW_1	22	GND
11	B13V_PW_1	23	PWM1
12	B13V_PW_1	24	PWM2

② CN2700

1	PANEL_DETECT0	27	FRC_H_TX+_VBY1
2	PANEL_DETECT1	28	GND
3	NC	29	FRC_H_TX+_VBY1
4	PANEL_PMIC_EN	30	FRC_H_TX+_VBY1
5	TCON_EEPROM_WP	31	GND
6	TCON_SDA	32	FRC_H_TX+_VBY1
7	TCON_I2C_EN	33	FRC_H_TX+_VBY1
8	TCON_SCL	34	GND
9	3D_ENABLE	35	TCON_VB1_LOCKN
10	GND	36	TCON_VB1_HTPDN
11	FRC_H_TX+_VBY1	37	GND
12	FRC_H_TX+_VBY1	38	GND
13	GND	39	GND
14	FRC_H_TX+_VBY1	40	VB1_GND
15	FRC_H_TX+_VBY1	41	NC
16	GND	42	PANEL_13V_PW
17	FRC_H_TX+_VBY1	43	PANEL_13V_PW
18	FRC_H_TX+_VBY1	44	PANEL_13V_PW
19	GND	45	PANEL_13V_PW
20	FRC_H_TX+_VBY1	46	PANEL_13V_PW
21	FRC_H_TX+_VBY1	47	PANEL_13V_PW
22	GND	48	PANEL_13V_PW
23	FRC_H_TX+_VBY1	49	PANEL_13V_PW
24	FRC_H_TX+_VBY1	50	PANEL_13V_PW
25	GND	51	PANEL_13V_PW
26	FRC_H_TX+_VBY1		

③ CN400(to Speaker)

1	R+	3	L+
2	R-	4	L-

④ CN502(to Component&AV)

1	GND	9	TEST_PR
2	COMP2_Y_CVBS	10	GND
3	INDENT_VIEDO2	11	COMP2_AV2_SL_IN
4	GND	12	TEST_SL
5	COMP2_PB	13	GND
6	INDENT_COMP2	14	COMP2_AV2_SR_IN
7	GND	15	TEST_SR
8	COMP2_PR		

⑤ CN1200(to Function/IR)

1	IR	14	A5.3V_PW
2	GND	15	A3.3V_PW
3	GND	16	BT_WAKE
4	REF_SYNC_IN	17	GND
5	A3.3V_PW	18	POWER_DET
6	BT_SYNC_OUT	19	LED_CTRL
7	MSCL	20	BT_RESET
8	GND	21	GND
9	MSDA	22	WIFI_DP_USB
10	BT_DP_USB	23	WIFI_DM_USB
11	KEY_INPUT1	24	B5V_PW
12	BT_DM_USB	25	NC
13	KEY_INPUT2	26	WIFI_NRESET

⑥ CN2101_IBR_1~14

1	GND	8	GND
2	HP_AUD_SR_OUT_JACK	9	IRB
3	HP_AUD_SL_OUT_JACK	10	NC
4	TEST_SL	11	NC
5	TEST_SR	12	NC
6	IDENT_HP	13	IPR_JACK_ID
7	GND	14	GND

5. Wiring Diagram

⑥ CN2100_NIRB_1~7 (to Headphone & LR OUT)			
1	GND	5	TEST_SR
2	HP_AUD_SR_OUT_JACK	6	IDENT_HP
3	HP_AUD_SL_OUT_JACK	7	GND
4	TEST_SL		

⑦ CN700(to HDMI1)			
1	HDMI1_RX2+	11	GND
2	GND	12	HDMI1_RXCLK-
3	HDMI1_RX2-	13	CEC
4	HDMI1_RX1+	14	NC
5	GND	15	HDMI1_SCL_DDC
6	HDMI1_RX1-	16	HDMI1_SDA_DDC
7	HDMI1_RX0+	17	GND
8	GND	18	HDMI1_5V
9	HDMI1_RX0-	19	HDMI1_HOT_PLUG
10	HDMI1_RXCLK+		

⑧ CN701(to HDMI2)			
1	HDMI2_RX2+	11	GND
2	GND	12	HDMI2_RXCLK-
3	HDMI2_RX2-	13	CEC
4	HDMI2_RX1+	14	ARC2_SIGLE
5	GND	15	HDMI2_SCL_DDC
6	HDMI2_RX1-	16	HDMI2_SDA_DDC
7	HDMI2_RX0+	17	GND
8	GND	18	HDMI2_5V
9	HDMI2_RX0-	19	HDMI2_HOT_PLUG
10	HDMI2_RXCLK+		

⑨ CN801(to HDMI3)			
1	HDMI3_RX2+	11	GND
2	GND	12	HDMI3_RXCLK-
3	HDMI3_RX2-	13	CEC
4	HDMI3_RX1+	14	NC
5	GND	15	HDMI3_SCL_DDC
6	HDMI3_RX1-	16	HDMI3_SDA_DDC
7	HDMI3_RX0+	17	GND
8	GND	18	HDMI3_5V
9	HDMI3_RX0-	19	HDMI3_HOT_PLUG
10	HDMI3_RXCLK+		

⑩ CN800(to HDMI4)			
1	HDMI4_RX2+	11	GND
2	GND	12	HDMI4_RXCLK-
3	HDMI4_RX2-	13	CEC
4	HDMI4_RX1+	14	NC
5	GND	15	HDMI4_SCL_DDC
6	HDMI4_RX1-	16	HDMI4_SDA_DDC
7	HDMI4_RX0+	17	GND
8	GND	18	HDMI4_5V
9	HDMI4_RX0-	19	HDMI4_HOT_PLUG
10	HDMI4_RXCLK+		

⑪ CN1800_LAN			
1	TX+_LAN	5	GND
2	GND	6	RX-_LAN
3	TX-_LAN	7	NC
4	RX+_LAN	8	GND

⑫ OP400(to Optical Jack)			
1	SPDIF_OUT	3	GND
2	C5V__PW		

⑬ CN1900(USB1)			
1	C5V_USB1_PW	6	RX_DP_USB1
2	DM_USB1	7	GND
3	DP_USB1	8	TX_DM_USB1
4	GND	9	TX_DP_USB1
5	RX_DM_USB1		

⑭ CN1901(USB2)			
1	C5V_USB2_PW	3	DP_USB2
2	DM_USB2	4	GND

⑮ CN1902(USB3)			
1	B5V_USB3_PW	3	MOIP_DP_USB3
2	MOIP_DM_USB3	4	GND

5-3. Connector Functions

Connector	Function
CN200 ↔ CNM803	Supply main power and dimming signal from IP board to Main Board.
CN2700 ↔ CON_51P_2G	The LVDS signal transferred from Main Board to Panel.