



FHD TV

Chassis : UWK60

Model : UN40K6500AG
UN49K6500AG
UN55K6500AG

SERVICE Manual

FHD TV



UN**K6500AG

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2. Product specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. Wiring Diagram

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ANNEX. Exploded View & Part List [UN55K6500AGXPR FA01] ANNEX-1

1-1. Exploded View..... ANNEX-1

1-1-1. Parts List..... ANNEX-1

2-1. Electrical Parts List..... ANNEX-2



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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.

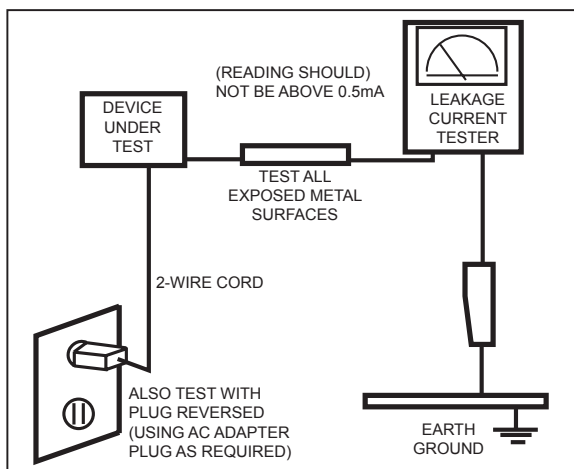
1-1-2. Servicing the LED TV

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**K6500AG		
Front View	 <p>* W : Width H : High D : Depth</p>		
Detail View			
Front Color	Dark Titan		
Dimension (WxHxD)	40"	Body	916.5 x 540.6 x 89.1 mm
		with Stand	916.5 x 607.5 x 250.7 mm
	49"	Body	1102.3 x 646.4 x 104.4 mm
		with Stand	1102.3 x 712.2 x 293.0 mm
	55"	Body	1240.0 x 722.7 x 98.0 mm
		with Stand	1240.0 x 788.6 x 293.0 mm
Weight	40"	without Stand	9.0 kg
		with Stand	10.1 kg
	49"	without Stand	12.2 kg
		with Stand	13.9 kg
	55"	without Stand	15.4 kg
		with Stand	17.1 kg

2-2. Detail Specification

	Item	UN40K6500AGXPR
General Information	Product	LED
	Series	6
	Country	PARAGUAY
	Platform(TV)	SoC HAWK-MF
Display	Screen Size	40"
	Resolution	1,920 × 1,080
	Ultra Black	N/A
	Quantum Dot Display	N/A
	Screen Curvature	3,000R
	10 bit Support	N/A
Video	Picture Engine	HyperReal
	Motion Rate	60
	PQI (Picture Quality Index)	600
	HDR (High Dynamic Range)	N/A
	Dynamic Contrast Ratio	Mega Contrast
	Micro Dimming	M/D Pro
	Precision Black (Local Dimming)	N/A
	Quantum Dot Color	N/A
	Active Crystal Color	N/A
	Wide Color Enhancer (Plus)	Yes
	PurColor	N/A
	Auto Depth Enhancer	Yes
	Contrast Enhancer	N/A
	Auto Motion Plus	N/A
	Film Mode	Yes
	Peak Illuminator	N/A
Audio	Dolby Digital Plus	Yes
	DTS Codec	Yes
	Sound Output (RMS)	20W
	Speaker Type	2CH(Down Firing + Bass Reflex)
	Woofer	N/A
	Wallmount Sound Mode	Yes
	Multiroom Link	Yes
	TV SoundConnect	Yes
	BT Headset Support	Yes

Item		UN40K6500AGXPR
Smart TV	Samsung SMART TV	Yes
	Apps	Yes
	Games	N/A
	Cloud Game	Yes
	Billing	Yes
	EXTRA	Yes
	TV Plus	N/A
	Automated Content Recognition (ACR)	N/A
	Web Browser	Yes
Smart Interaction	Voice Recognition	N/A
Convergence	TV to Mobile - Mirroring	Yes
	Mobile to TV - Mirroring, DLNA	Yes
	Samsung SMART View	Yes
	Bluetooth Low Energy	Yes
	RVU	N/A
	WiFi Direct	Yes
IoT Service	TV as Hub Support	N/A
	TV as Things Support	N/A
	IoT Client Application	N/A
Differentiation	Sound Mirroring	N/A
	Dongle Compatibility (3G / LTE / WiFi)	N/A
	Analog Clean View	Yes
	Cricket Prediction	N/A
	Sports Mode	Advanced
	Sports Mode Auto Highlight Support	Yes (Digital RF/Analog RF/Composite)
	Senior Mode	N/A
	All Care Protection	N/A
	Image Booster	N/A
	Family TV 2.0	N/A
	Local Cinema Mode	N/A
Tuner/Broadcasting	Digital Broadcasting	ISDB-T
	Analog Tuner	Yes (Trinorma)
	2 Tuner	N/A
	CI (Common Interface)	N/A
	Data Broadcasting	GINGA

2. Product specifications

Item		UN40K6500AGXPR
Connectivity	HDMI	3
	USB	2
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	1 (Common Use for Component Y)
	Ethernet (LAN)	1
	Headphone	N/A
	Audio Out (Mini Jack)	N/A
	Digital Audio Out (Optical)	1
	RF In (Terrestrial / Cable input / Satellite input)	1/1(Common Use for Terrestrial)/0
	Ex-Link (RS-232C)	N/A
	CI Slot	N/A
	Scart	N/A
	MHL	N/A
	HDMI A / Return Ch. Support	Yes
	HDMI Quick Switch	N/A
	Wireless LAN Adapter Support	N/A
	Wireless LAN Built-in	Yes
	Anynet+ (HDMI-CEC)	Yes
Design	Design	FHD Slim
	Bezel Type	VNB
	Slim Type	Step-Up Slim
	Front Color	Blue Black
	Light Effect (Deco)	N/A
	Stand Type	Quad
	Swivel (Left/Right)	N/A
Additional Feature	Instant On	Yes
	Processor	Quad-Core
	SCSA Support	N/A
	Salatuna Mode	N/A
	Party Mode	Yes (v1.0)
	Accessibility	Voice guide/ Enlarge/ High contrast
	Digital Clean View	Yes
	One Connect (Jack)	N/A
	Auto Channel Search	Yes
	Auto Power Off	Yes
	BD Wise Plus	N/A
	Caption (Subtitle)	Yes
	Channel List USB-Clone	N/A

Item		UN40K6500AGXPR
Additional Feature	Connect Share™ (HDD)	Yes
	ConnectShare™ (USB 2.0)	Yes
	Connect Share™ Transfer	N/A
	Embedded POP	Yes
	EPG	Yes
	Extended PVR	Yes
	Game Mode	Yes
	OSD Language	Local Languages
	Picture-In-Picture	Yes
	BT HID Built-in	Yes
	USB HID Support	Yes
	Teletext (TTX)	N/A
	Time Shift	Yes
	V-Chip	N/A
	MBR Support	N/A
	Ultra Clean View	Yes
	Triple Protector	N/A
Eco Feature	Eco Sensor	Yes
	Energy Efficiency Class	N/A
	Mercury Content	0.0 mg
	Lead Presence	Yes
Power	Power Supply	AC 100-240V 50/60Hz
	Power Consumption (Max)	95 W
	Power Consumption (Stand-by)	0.5W W
	Power Consumption (Energy Saving Mode)	. W
	Power Consumption (Typical)	N/A
	Peak Luminance Ratio	N/A
	Yearly Power Consumption (EU standard)	N/A

2. Product specifications

Item		UN49K6500AGXPR
General Information	Product	LED
	Series	6
	Country	PARAGUAY
	Platform(TV)	SoC HAWK-MF
Display	Screen Size	49"
	Resolution	1,920 × 1,080
	Ultra Black	N/A
	Quantum Dot Display	N/A
	Screen Curvature	3,000R
	10 bit Support	N/A
Video	Picture Engine	HyperReal
	Motion Rate	60
	PQI (Picture Quality Index)	600
	HDR (High Dynamic Range)	N/A
	Dynamic Contrast Ratio	Mega Contrast
	Micro Dimming	M/D Pro
	Precision Black (Local Dimming)	N/A
	Quantum Dot Color	N/A
	Active Crystal Color	N/A
	Wide Color Enhancer (Plus)	Yes
	PurColor	N/A
	Auto Depth Enhancer	Yes
	Contrast Enhancer	N/A
	Auto Motion Plus	N/A
	Film Mode	Yes
	Peak Illuminator	N/A
Audio	Dolby Digital Plus	Yes
	DTS Codec	Yes
	Sound Output (RMS)	20W
	Speaker Type	2CH(Down Firing + Bass Reflex)
	Woofer	N/A
	Wallmount Sound Mode	Yes
	Multiroom Link	Yes
	TV SoundConnect	Yes
	BT Headset Support	Yes

Item		UN49K6500AGXPR
Smart TV	Samsung SMART TV	Yes
	Apps	Yes
	Games	N/A
	Cloud Game	Yes
	Billing	Yes
	EXTRA	Yes
	TV Plus	N/A
	Automated Content Recognition (ACR)	N/A
	Web Browser	Yes
Smart Interaction	Voice Recognition	N/A
Convergence	TV to Mobile - Mirroring	Yes
	Mobile to TV - Mirroring, DLNA	Yes
	Samsung SMART View	Yes
	Bluetooth Low Energy	Yes
	RVU	N/A
	WiFi Direct	Yes
IoT Service	TV as Hub Support	N/A
	TV as Things Support	N/A
	IoT Client Application	N/A
Differentiation	Sound Mirroring	N/A
	Dongle Compatibility (3G / LTE / WiFi)	N/A
	Analog Clean View	Yes
	Cricket Prediction	N/A
	Sports Mode	Advanced
	Sports Mode Auto Highlight Support	Yes (Digital RF/Analog RF/Composite)
	Senior Mode	N/A
	All Care Protection	N/A
	Image Booster	N/A
	Family TV 2.0	N/A
	Local Cinema Mode	N/A
Tuner/Broadcasting	Digital Broadcasting	ISDB-T
	Analog Tuner	Yes (Trinorma)
	2 Tuner	N/A
	CI (Common Interface)	N/A
	Data Broadcasting	GINGA

2. Product specifications

Item		UN49K6500AGXPR
Connectivity	HDMI	3
	USB	2
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	1 (Common Use for Component Y)
	Ethernet (LAN)	1
	Headphone	N/A
	Audio Out (Mini Jack)	N/A
	Digital Audio Out (Optical)	1
	RF In (Terrestrial / Cable input / Satellite input)	1/1(Common Use for Terrestrial)/0
	Ex-Link (RS-232C)	N/A
	CI Slot	N/A
	Scart	N/A
	MHL	N/A
	HDMI A / Return Ch. Support	Yes
	HDMI Quick Switch	N/A
	Wireless LAN Adapter Support	N/A
	Wireless LAN Built-in	Yes
	Anynet+ (HDMI-CEC)	Yes
Design	Design	FHD Slim
	Bezel Type	VNB
	Slim Type	Step-Up Slim
	Front Color	Blue Black
	Light Effect (Deco)	N/A
	Stand Type	Quad
	Swivel (Left/Right)	N/A
Additional Feature	Instant On	Yes
	Processor	Quad-Core
	SCSA Support	N/A
	Salatuna Mode	N/A
	Party Mode	Yes (v1.0)
	Accessibility	Voice guide/ Enlarge/ High contrast
	Digital Clean View	Yes
	One Connect (Jack)	N/A
	Auto Channel Search	Yes
	Auto Power Off	Yes
	BD Wise Plus	N/A
	Caption (Subtitle)	Yes
	Channel List USB-Clone	N/A

Item		UN49K6500AGXPR
Additional Feature	Connect Share™ (HDD)	Yes
	ConnectShare™ (USB 2.0)	Yes
	Connect Share™ Transfer	N/A
	Embedded POP	Yes
	EPG	Yes
	Extended PVR	Yes
	Game Mode	Yes
	OSD Language	Local Languages
	Picture-In-Picture	Yes
	BT HID Built-in	Yes
	USB HID Support	Yes
	Teletext (TTX)	N/A
	Time Shift	Yes
	V-Chip	N/A
	MBR Support	N/A
	Ultra Clean View	Yes
	Triple Protector	N/A
Eco Feature	Eco Sensor	Yes
	Energy Efficiency Class	N/A
	Mercury Content	0.0 mg
	Lead Presence	Yes
Power	Power Supply	AC 100-240V 50/60Hz
	Power Consumption (Max)	110 W
	Power Consumption (Stand-by)	0.5W W

2. Product specifications

Item		UN55K6500AGXPR
General Information	Product	LED
	Series	6
	Country	PARAGUAY
	Platform(TV)	SoC HAWK-MF
Display	Screen Size	55"
	Resolution	1,920 × 1,080
	Ultra Black	N/A
	Quantum Dot Display	N/A
	Ultra Clear Panel	N/A
	Screen Curvature	4,200R
	10 bit Support	N/A
Video	Picture Engine	HyperReal
	Motion Rate	60
	PQI (Picture Quality Index)	600
	HDR (High Dynamic Range)	N/A
	Dynamic Contrast Ratio	Mega Contrast
	Micro Dimming	M/D Pro
	Precision Black (Local Dimming)	N/A
	Quantum Dot Color	N/A
	Active Crystal Color	N/A
	Wide Color Enhancer (Plus)	Yes
	PurColor	N/A
	Auto Depth Enhancer	Yes
	Contrast Enhancer	N/A
	Auto Motion Plus	N/A
	Film Mode	Yes
	Natural Mode Support	Yes
	Peak Illuminator	N/A
Audio	Dolby Digital Plus	Yes
	DTS Codec	Yes
	Sound Output (RMS)	20W
	Speaker Type	2CH(Down Firing + Bass Reflex)
	Woofer	N/A
	Wallmount Sound Mode	Yes
	Multiroom Link	Yes
	TV SoundConnect	Yes
	BT Headset Support	Yes

Item		UN55K6500AGXPR
Smart TV	Samsung SMART TV	Yes
	Apps	Yes
	Games	N/A
	Cloud Game	N/A
	Billing	N/A
	EXTRA	Yes
	TV Plus	N/A
	Automated Content Recognition (ACR)	N/A
	Skype™ on Samsung TV	N/A
	Web Browser	Yes
Smart Interaction	Voice Recognition	N/A
Convergence	TV to Mobile - Mirroring	Yes
	Mobile to TV - Mirroring, DLNA	Yes
	Family Square with S-Cloud	N/A
	Together Play	Yes
	Easy Setup	Yes
	Samsung SMART View	Yes
	App Casting	Yes
	Wireless TV On - Samsung WOL	Yes
	Wired TV On - Samsung WOL	Yes
	Bluetooth Low Energy	Yes
	Briefing On TV	Yes
	RVU	N/A
	WiDi	N/A
	WiFi Direct	Yes
IoT Service	TV as Hub Support	N/A
	TV as Things Support	N/A
	IoT Client Application	N/A
Tuner/Broadcasting	Digital Broadcasting	ISDB-T
	Analog Tuner	Yes (Trinorma)

2. Product specifications

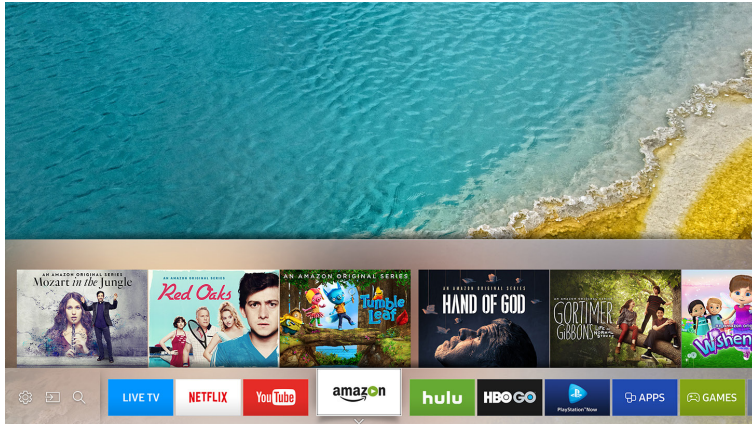
Item		UN55K6500AGXPR
Connectivity	HDMI	3
	USB	2
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	1 (Common Use for Component Y)
	Ethernet (LAN)	1
	Headphone	N/A
	Audio Out (Mini Jack)	N/A
	Digital Audio Out (Optical)	1
	RF In (Terrestrial / Cable input / Satellite input)	1/1(Common Use for Terrestrial)/0
	Ex-Link (RS-232C)	N/A
	CI Slot	N/A
	Scart	N/A
	MHL	N/A
	HDMI A / Return Ch. Support	Yes
	HDMI Quick Switch	N/A
	Wireless LAN Adapter Support	N/A
	Wireless LAN Built-in	Yes
	Anynet+ (HDMI-CEC)	Yes
Design	Design	FHD Slim
	Bezel Type	VNB
	Slim Type	Step-Up Slim
	Front Color	Dark Titan
	Light Effect (Deco)	N/A
	Stand Type	Quad
	Swivel (Left/Right)	N/A
Additional Feature	Samsung 3D	N/A
	Instant On	Yes
	Processor	Quad-Core
	SCSA Support	N/A
	Accessibility	Enlarge/ High contrast
	Digital Clean View	Yes
	One Connect (Jack)	N/A
	Auto Channel Search	Yes
	Auto Power Off	Yes
	BD Wise Plus	N/A
	Caption (Subtitle)	Yes
	Channel List USB-Clone	N/A
	Connect Share™ (HDD)	Yes

Item		UN55K6500AGXPR
Additional Feature	ConnectShare™ (USB 2.0)	Yes
	Embedded POP	Yes
	EPG	Yes
	Extended PVR	Yes
	Game Mode	Yes
	OSD Language	Local Languages
	BT HID Built-in	Yes
	USB HID Support	Yes
	Smart Evolution Support	N/A
	Teletext (TTX)	N/A
	Time Shift	Yes
	V-Chip	N/A
	MBR Support	N/A
	Ultra Clean View	Yes
Eco Feature	Energy Star	N/A
	Eco Sensor	Yes
	Energy Efficiency Class	N/A
Power	Power Supply	AC100-240 50/60Hz
	Power Consumption (Max)	115 W

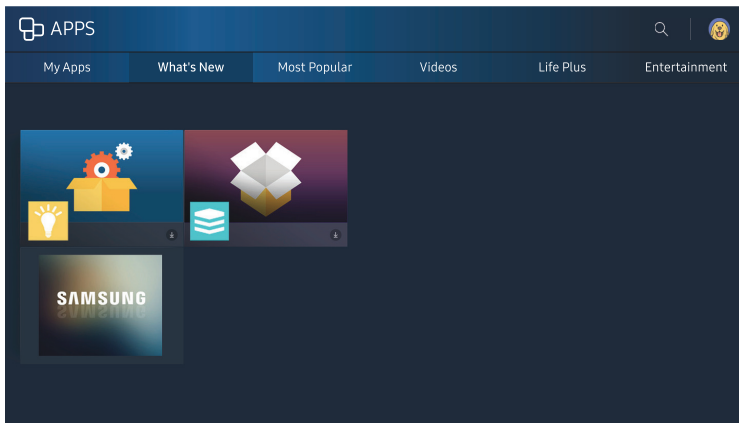
2-3. NEW Key Features

2-3-1. 16" New UI

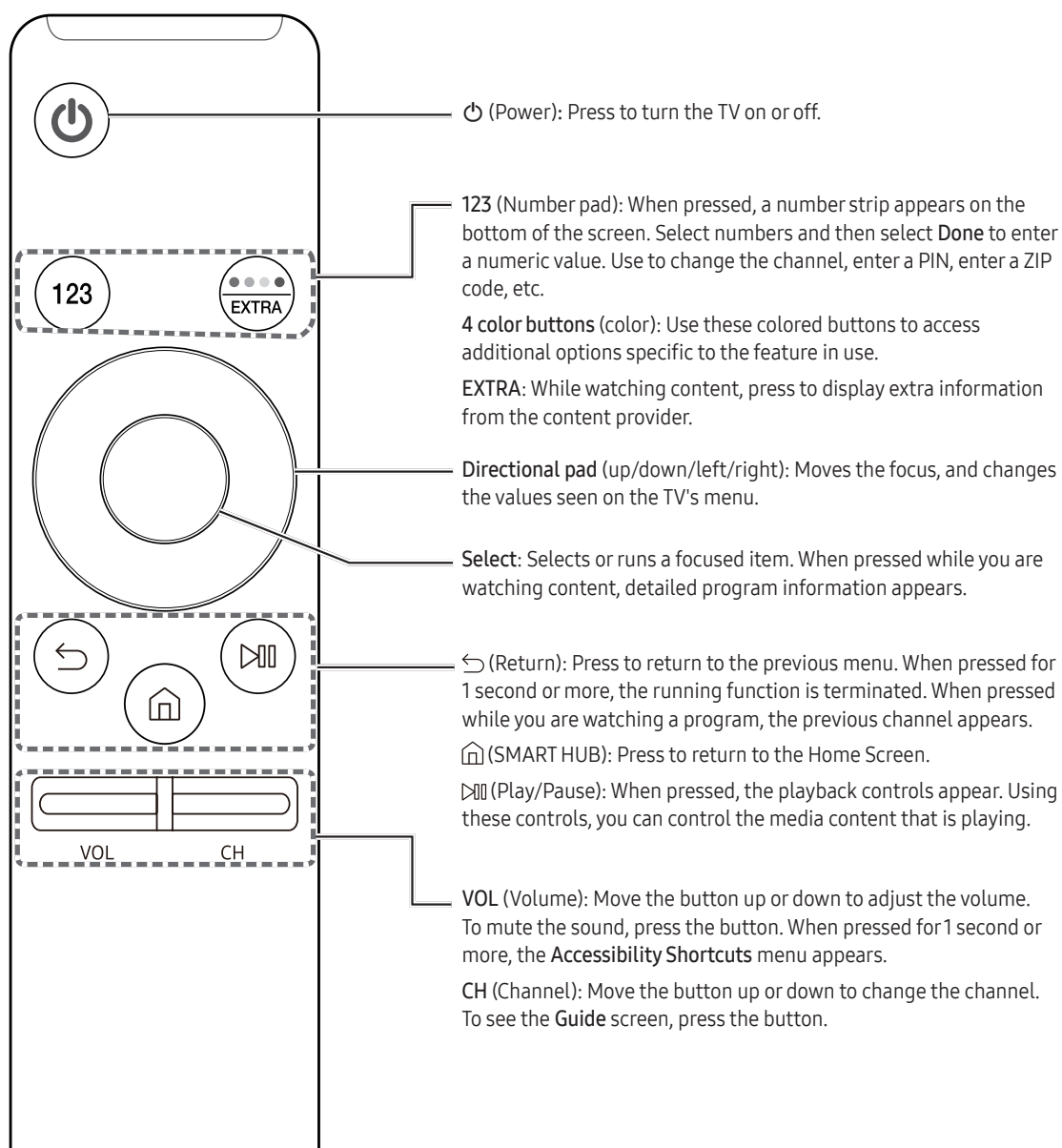
■ Smart Hub



■ APPS Service



2-4. Samsung Smart Remote



2-5. Supported Formats

2-5-1. Supported image formats and resolutions

File Extension	Type	Resolution
*.jpg *.jpeg	JPEG	15360x8640
*.png	PNG	4096x4096
*.bmp	BMP	4096x4096
*.mpo	MPO	15360x8640

2-5-2. Supported music formats and codecs

File Extension	Type	Codec	Note
*.mp3	MPEG	MPEG1 Audio Layer 3	-
*.m4a *.mpa *.aac	MPEG4	AAC	
*.flac	FLAC	FLAC	Supports up to two channels.
*.ogg	OGG	Vorbis	Supports up to two channels.
*.wma	WMA	WMA	WMA 10 Pro supports up to 5.1 channels. WMA lossless audio is not supported. Supports up to M2 profile.
*.wav	wav	wav	
*.mid *.midi	midi	midi	Supports type 0 and type 1. Seek is not supported. Supports USB device only.
*.ape	ape	ape	
*.aif *.aiff	AIFF	AIFF	
*.m4a	ALAC	ALAC	

2-5-3. Supported video codecs

File Formats	Container	Video Codecs	Resolution	Frame rate (fps)	Bit rate (Mbps)	Audio Codec
*.avi *.mkv *.asf *.wmv *.mp4 *.mov *.3gp *.vro *.mpg *.mpeg *.ts *.tp *.trp *.mov *.flv *.vob *.svi *.m2ts *.mts *.divx	AVI MKV ASF MP4 3GP MOV FLV VRO VOB PS TS SVAF	H.264 BP/MP/HP	1920x1080	60	20	Dolby Digital LPCM ADPCM(IMA, MS) AAC HE-AAC WMA Dolby Digital Plus MPEG(MP3) DTS(Core, LBR) G.711(A-Law, μ-Law)
		HEVC(H.265 - Main Profile only)				
		Motion JPEG		30		
		MVC		60		
		DivX 3.11 / 4 / 5 / 6				
		MPEG4 SP/ASP				
		Window Media Video v9 (VC1)				
		MPEG2				
		MPEG1				
		Microsoft MPEG-4 v1, v2, v3		30		
		Window Media Video v7 (WMV1), v8 (WMV2)				
		H.263 Sorrenson				
		VP6				
*.webm	WebM	VP8		60		Vorbis

Other Restrictions



NOTE

- Codecs may not function properly if there is a problem with the content data.
- Video content does not play or does not correctly if there is an error in the content or container.
- Sound or video may not work if they have standard bit rates/frame rates above the TV's compatibility.ratings
- If the Index Table is wrong, the Seek(Jump) function does not work.
- When playing video over a network connection, the video may not play smoothly because of datatransmission speeds.
- Some USB/digital camera devices may not be compatible with the player.
- HEVC codec is only available in MKV / MP4 / TS containers.

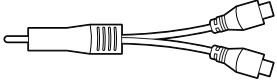
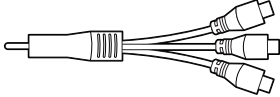
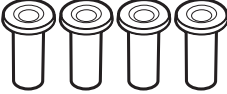
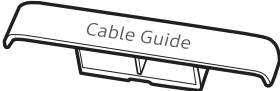
2-6. Accessories



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
• Smart Touch Control	BN59-01259B	• User Manual	BN68-07903A
• Batteries (AA x 2)	4301-000101	• Regulatory Guide	BN68-04972E
• Power Cord	3903-001081		




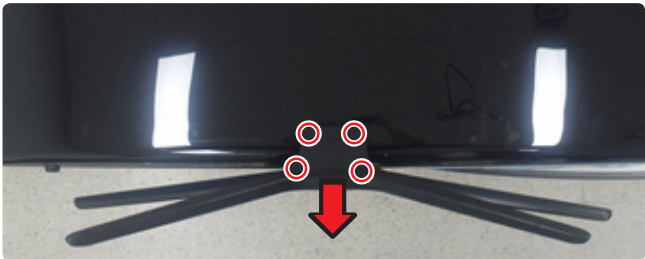
Image	Product	Code. No
	• Component In	BN39-02190A
	• AV IN Adapter	BN39-02189A
	• Wall Mount Adapter x 4EA	BN61-13518A
	• Cable Guide	BN61-13777A

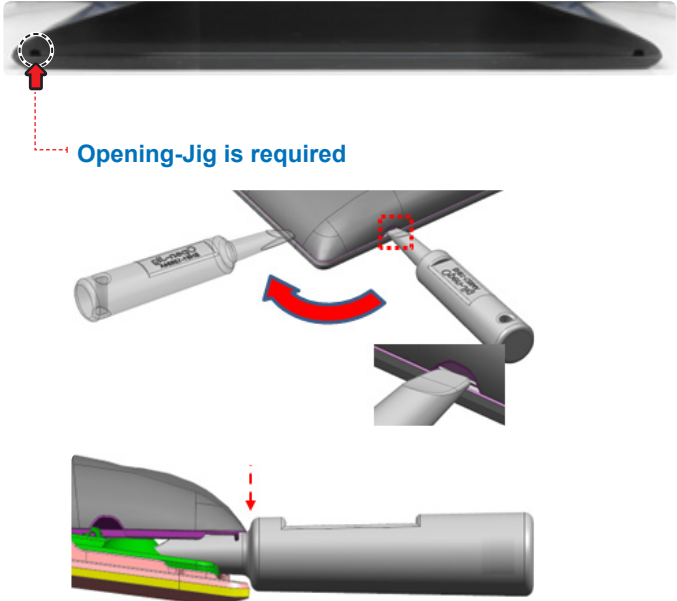
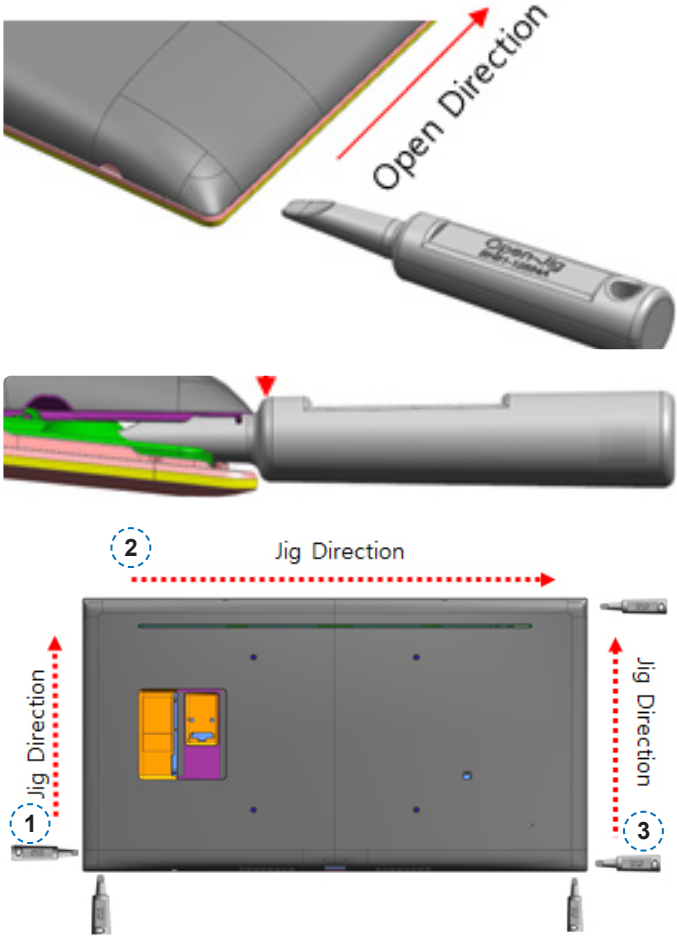
3. Disassembly and Reassembly

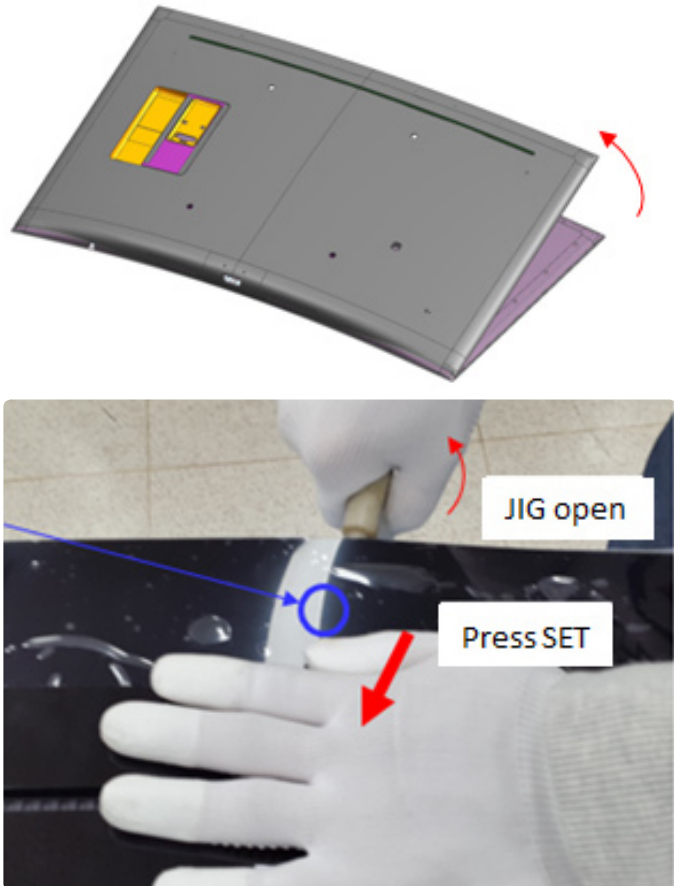

3-1. Disassembly and Reassembly

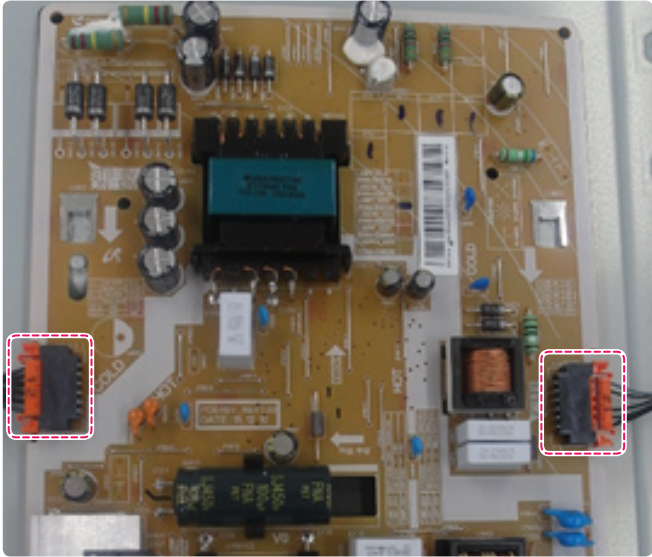
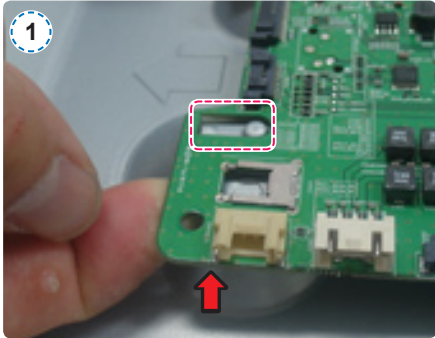

Require Parts

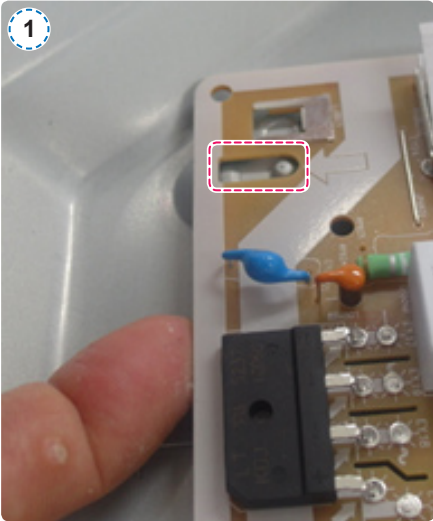

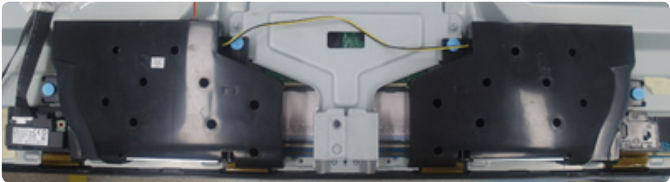
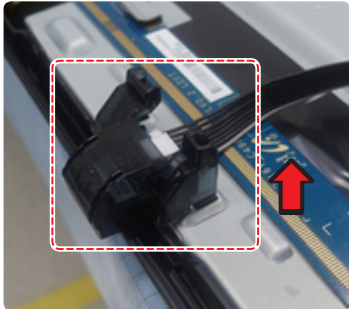
Required Jigs & Tools		
	<ul style="list-style-type: none">• Open Jig Tool	BN81-12884A
	<ul style="list-style-type: none">• Protective Cushion	BN81- 10739A


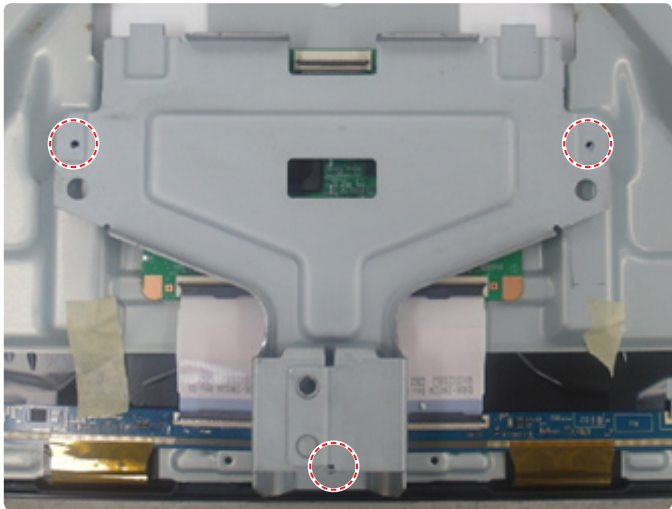

Description	Picture Description
<p>1 Place TV facing down on the table with a curved cushion.</p>	 
<p>2 Remove the stand screws(4ea) and then pull out the stand.</p> <p>Screws</p> <p> BN96-40988A x 4EA TORQUE : 7~13 lbf</p>	

Description	Picture Description
<p>3 Insert the Opening-Jig at the indicated positions to release bottom left corners of the rear cover.</p>	
<p>4 Open-Jig should be fully inserted and then pry to release the rear cover mounting clips. Move indicated direction.</p>	

Description	Picture Description
<p>5 Gently lift up the Rear Cover as shown in the picture. (It can be opened when the 3 edges are disassembled.)</p>	
<p>6 Remove the function cable, wi-fi cable, speaker cable, SMPS cable and LVDS cable.</p>	

Description	Picture Description
<div>7</div> <div>Remove the SMPS cable and BLU cable.</div>	 A photograph of a yellow printed circuit board (PCB) with various electronic components. Two connectors are highlighted with red dashed boxes: a multi-pin connector on the left and a similar one on the right, both with orange and black wires attached.
<div>8</div> <div>Removing Main board.<ul style="list-style-type: none">Gently lift up (Bottom Right corner) to release the lockUse both hands to hold the board and slide UP to release the board</div>	<div><div>1</div>A close-up photograph of a green PCB being lifted from a grey housing. A red dashed box highlights a small metal latch. A red arrow points upwards from the bottom edge of the board.</div> <div><div>2</div>A photograph of the green PCB being inserted into the grey housing. Two red arrows at the bottom point upwards, indicating the direction of insertion.</div>

Description	Picture Description
<div data-bbox="183 286 215 336">9</div> <div data-bbox="252 286 699 448"><p>Removing SMPS board.</p><ul style="list-style-type: none">• Gently lift up (Bottom Left corner) to release the lock• Use both hands to hold the board and slide UP to release</div>	<div data-bbox="868 286 1303 804"><div data-bbox="874 295 916 340">1</div></div> <div data-bbox="868 826 1303 1453"><div data-bbox="874 835 916 880">2</div></div>
<div data-bbox="172 1467 231 1516">10</div> <div data-bbox="252 1467 622 1500"><p>Remove the speaker and function.</p></div>	<div data-bbox="750 1467 1422 1648"></div> <div data-bbox="909 1664 1259 1971"></div>

Description	Picture Description
<div>11</div> <div>Remove Bracket-Stand Link.</div> <div>Screws</div> <div> 6001-003016 x 3EA TORQUE : 4~5 lbf</div>	
<div>12</div> <div>Completed disassembly.</div>	



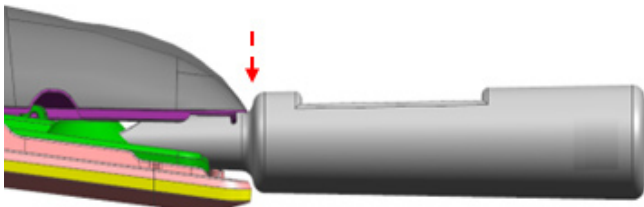
- Be careful during disassembly at Parting(must glove).
- Be careful during disassembly at corner ribs.
- Hooks can be damaged when disassembling is done by hands or tools which is bigger than Opening-Jig.
- Be careful the damage of Chassis-Front and Cover-Rear



NOTE

Reassembly procedures are in the reverse order of disassembly procedures.

Insert Opening-Jig as shown in the picture.



3-2. PTC Disassembly

3-2-1. Caution

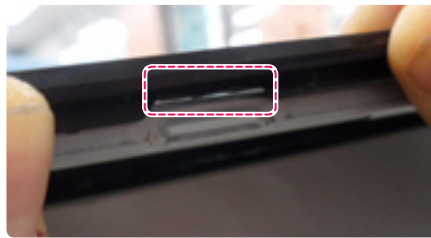


CAUTION

- Because A and B are assembled in HOOK (locking step) method, when the rotational force, This may result in damage to the PTC HOOK.
- Please use the JIG & turn off the HOOK LOCK as shown below.



when the rotational force



This may result in damage to the PTC HOOK.



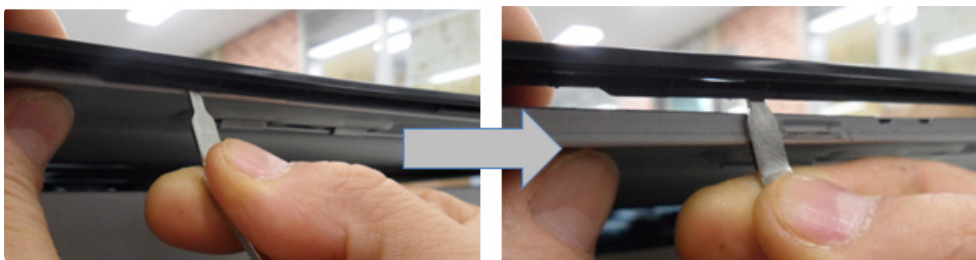
CAUTION

- Around the OPEN-CELL COF there is no HOOK, Do not insert JIG. It can damage the CoF of OPEN-CELL.



3-2-2. How to disassemble

1. Place OPEN-CELL Face up, and Unlock the HOOK using the JIG.



2. The bottom, Where there is no COF, there is a HOOK. Unlock the HOOK using the JIG.



4. Troubleshooting

4-1. How to Check Fault Symptom

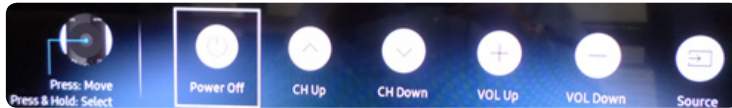
4-1-1. Power

■ TV POWER STANDBY

1. TV in Standby
 - √ **Standby LED Indicator**
2. If Not Lit:
 - √ AC 120Vac Line
3. If missing:
 - √ 120Vac Source and Power Cord
4. If OK:
 - √ Resistance on SMPS **Fuse** after first removing AC power cord.
5. If fuses are open replace SMPS.
6. If fuses are OK:
 - √ **Standby: A13V** (Always On) to Main Board. Should all be approx. 9 VDC
7. If any missing remove the SMPS connector to Main Board .
 - √ Standby A13V again for 9VDC.
 - If OK replace **Main Board**.
 - If still missing replace **SMPS**.

■ FUNCTION/IR Control

1. TV in Standby
 - ✓ **LED Status**
2. If **LED** is **OFF**
 - ✓ LED 1.7Vdc (pin 8) and VCC for 3.3Vdc (pin 3)
 - If missing suspect Function Assy/Cable/Main board.
3. If **LED** is **ON**
 - ✓ Switch Operation activates on screen display.

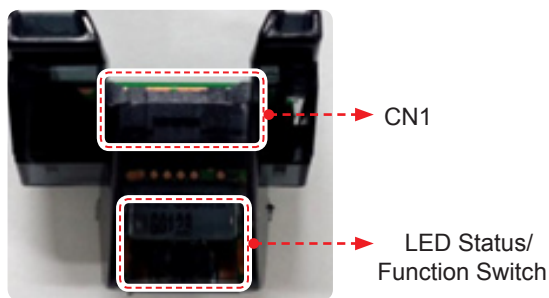


<On Screen Selections with Function Control>

If missing:

- **Key_Input1 Pin 6** change to 0V with a command.
- If wrong voltage or no change: Switch for stuck or miss-operation.

Function/IR

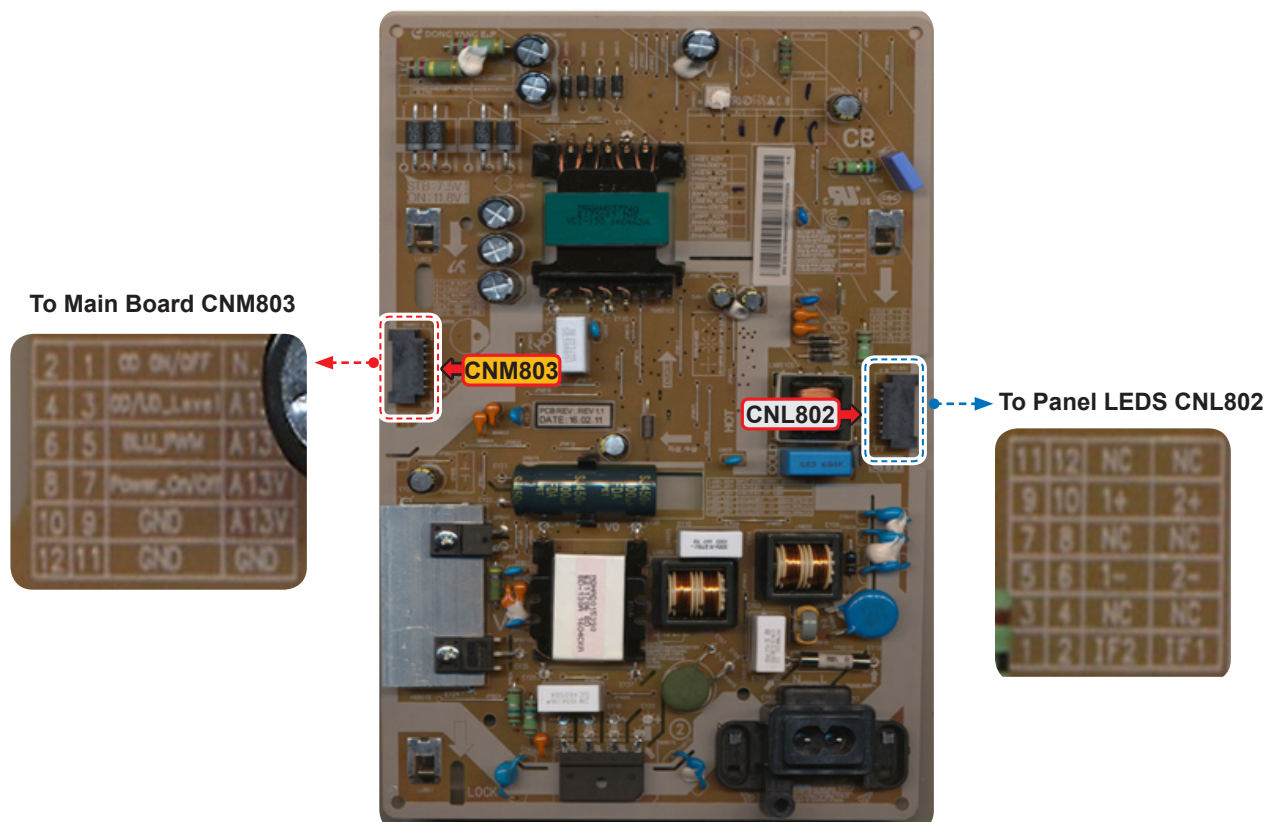


CN1 (FUNCTION/IR)			
1	IR 3.3Vdc to 2.5Vdc (Effective DC)	2	GND
3	A3.3V_PW	4	AMP_SCL_I2C 3.3Vdc (effective DC)
5	AMP_SDA_I2C 3.3 Vdc (effective DC)	6	KEY_INPUT1 1.8dc to 0V with PWR On command
7	KEY_INPUT2 1.8Vdc to command Voltage	8	LED_STB_OUT 1.7Vdc STBY

4. Check **IR** operation with Standard Remote command changes. (3.3V to 2.5V effective DC)
5. **SDA, SCL** for effective 3.3Vdc (after power on)
6. If missing suspect Function Assy/Cable Assy./Main Assy.

■ SMPS POWER

1. **A13V** Standby to Main Board: Approx 9Vdc
2. **Power_On/Off: 3.3Vdc** Power ON/OFF
3. **A13V**: to steady 12.7 Vdc
4. **OD/UD : 3.3Vdc** Over & Under Drive
5. **BLU_PWM: .9V~3.3Vdc** also labeled "BLU On/Off" Backlight On/Off & Backlight (PWM signal) Level Control.



■ BACKLIGHTS



1. Activate Backlights Test:

- Disconnect Lead Cable from Main Board to Power Supply. (CN202)
- ✓ TV Screen for active backlight LEDs.

2. If NO BACKLIGHTS

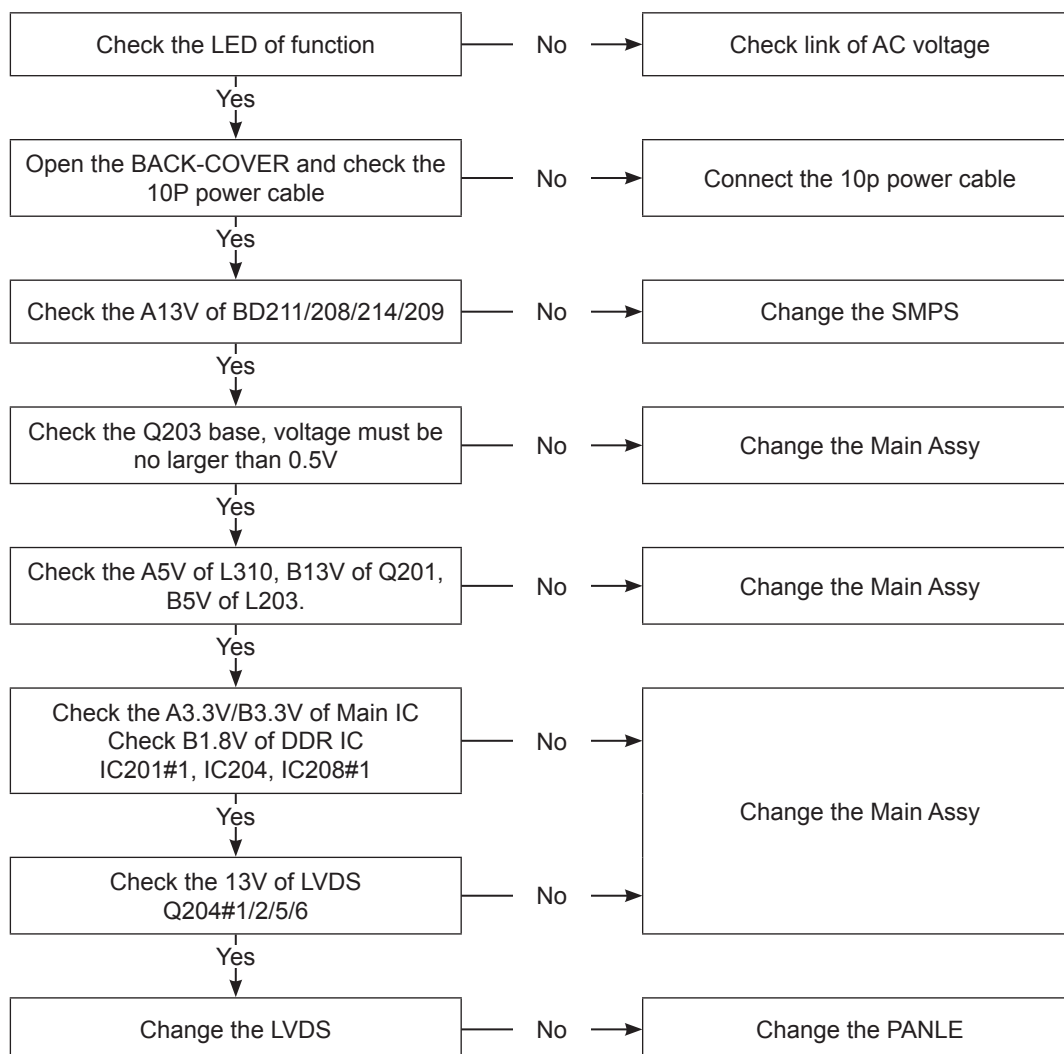
- ✓ Plus (+) & Minus (-) pin voltages on the Panel Connector.
- If no pin voltages replace **SMPS**.
- If voltages exist but no backlight:
 - ✓ The highest pin voltage (**BL Drive Supply**)
 - **Remove Panel connector** and measure again to compare.
 - **If the voltage was high** and stays the same high reading a string of Panel LEDs are open. Replace the **Panel**.
 - If the **voltage was low** and remains low the **SMPS** is defective.
 - If the voltage was low and goes high a string of panel LEDs are shorted replace the **Panel**.

For BACKLIGHT DIMMING PROBLEMS:

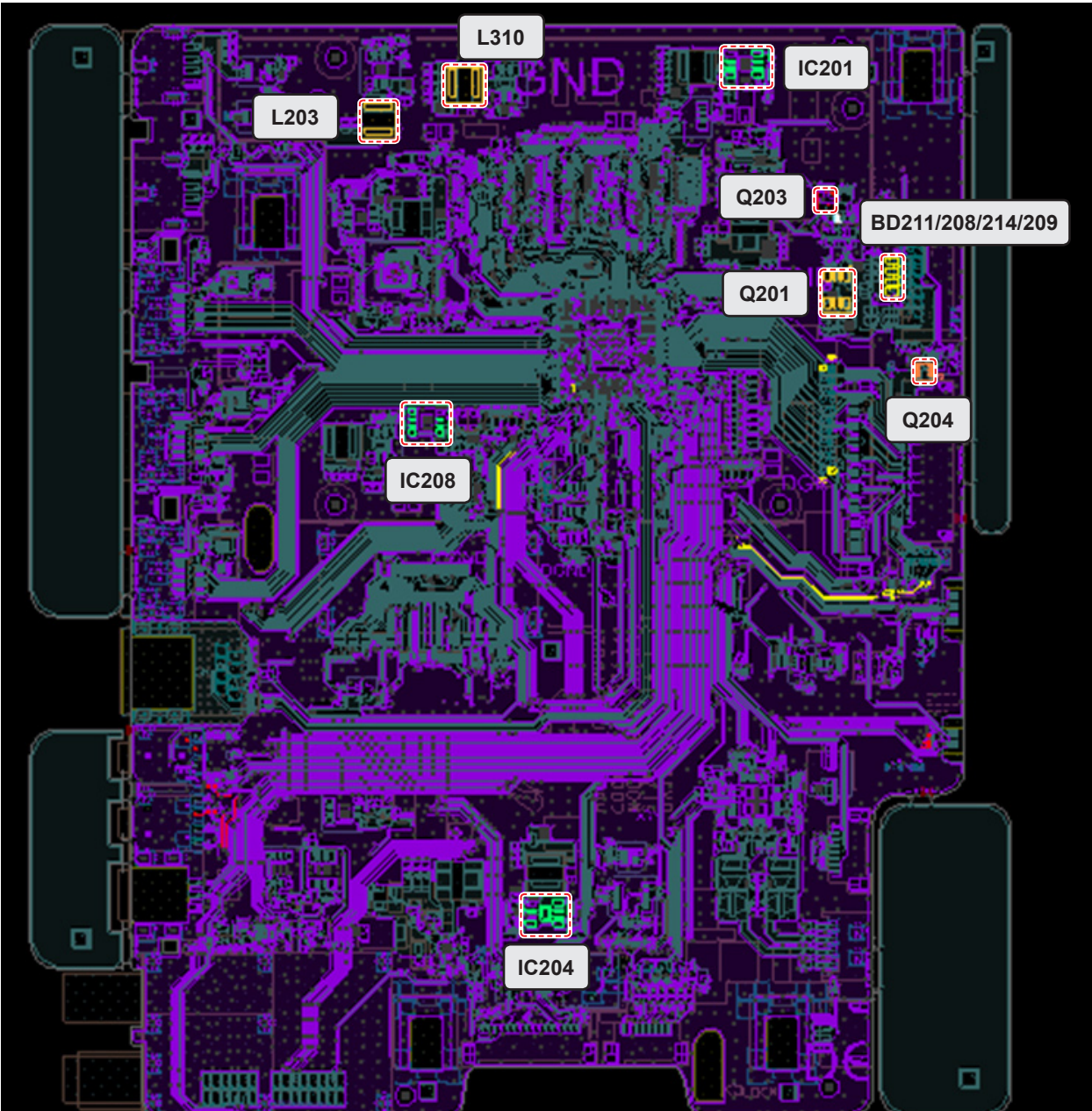
- Go to **Menu** → **Picture** → **Backlight** and vary level (0 – 20)
- If no backlight changes observed:
 - ✓ Panel Connector pin voltages and BLU_PWM voltages (CNM801) while changing backlight level.
- If Panel voltages don't change, and BLU_PWM changes, replace **SMPS**.
- If BLU_PWM doesn't change replace **Main/T-Con Board**.

4-1-2. MAIN

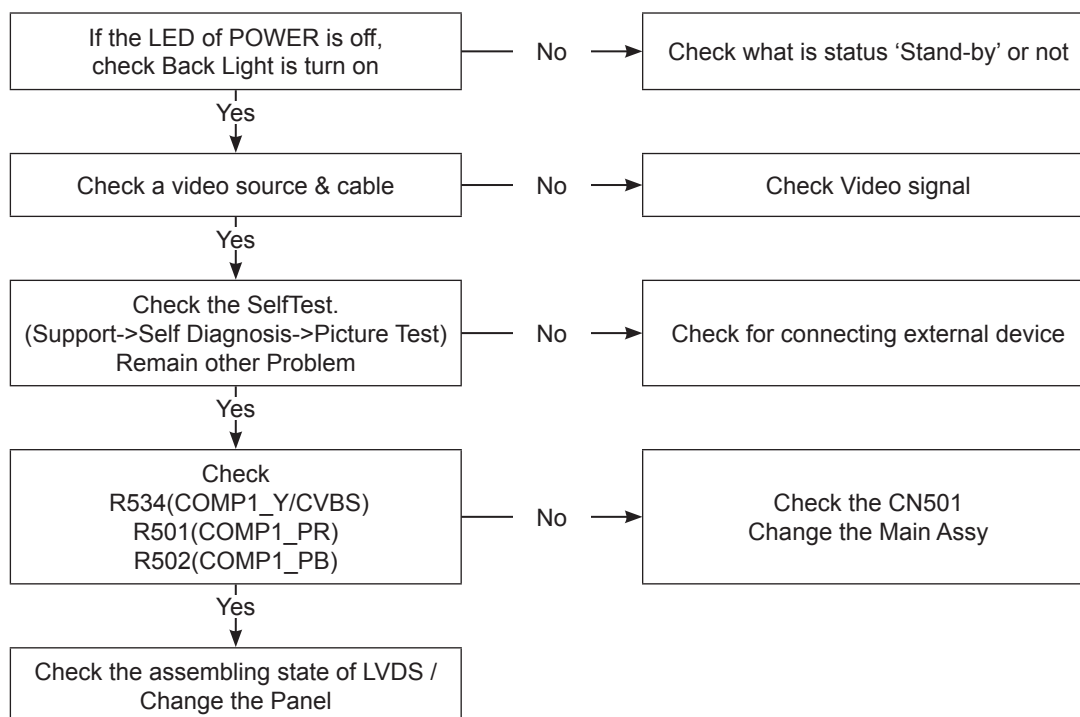
■ No power & no picture



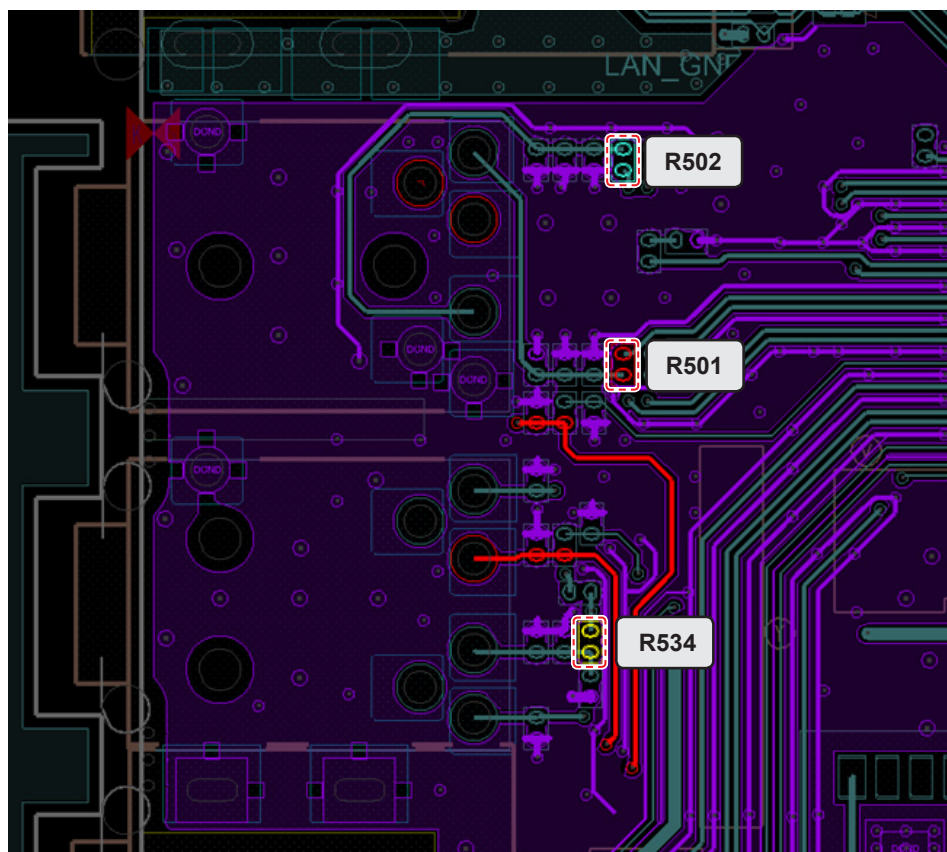
■ Location of Parts



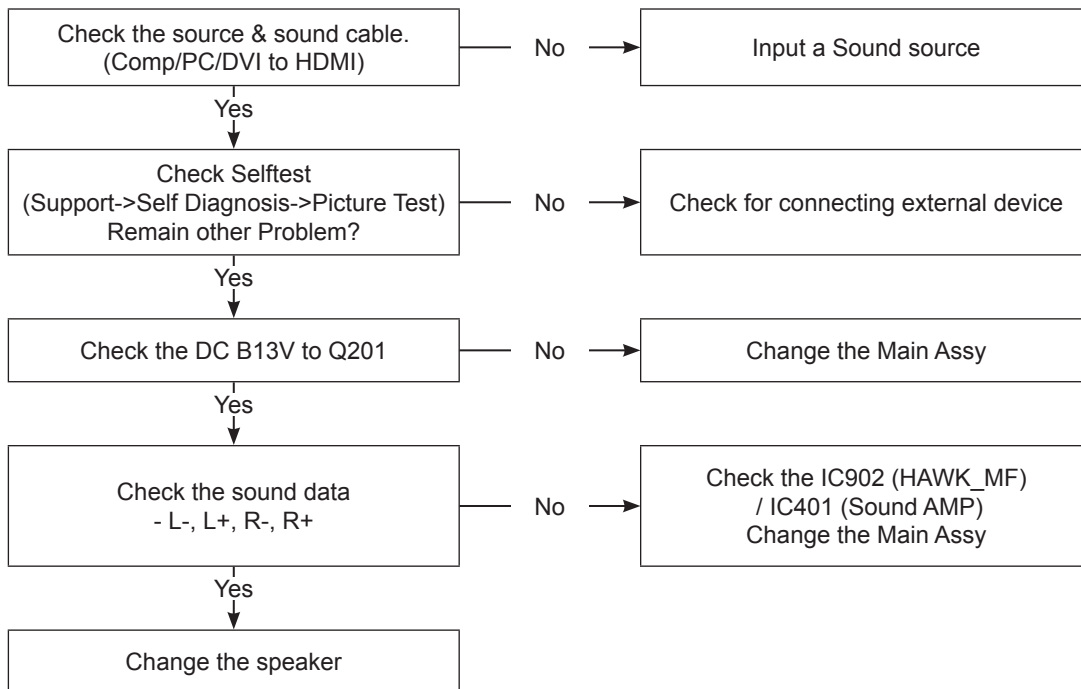
■ No picture (COMPONENT)



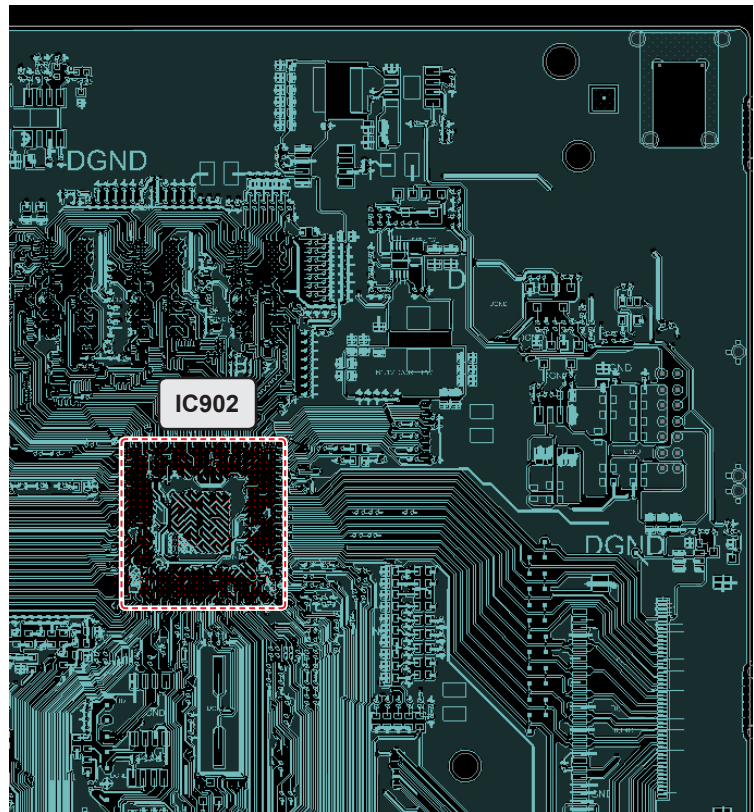
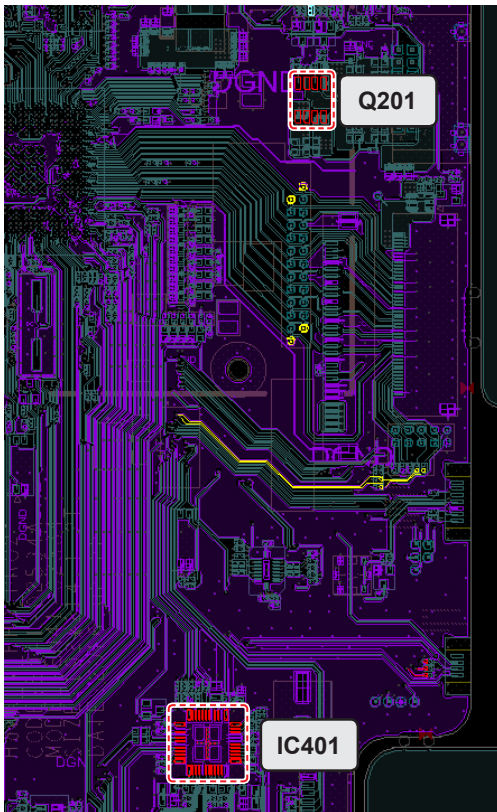
■ Location of Parts



■ No sound



■ Location of Parts



4-1-3. Video

■ MAIN / T-CON Board

1. Main Board Section



Video Operation : **Generated on Main Section.**

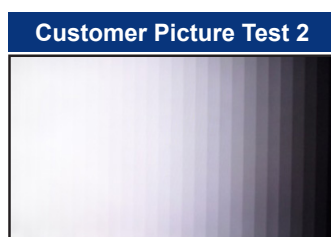
1. If OK:

- ✓ Source & Input Cables.
- ✓ Other inputs.
- ✓ One Connect Cable/Box.

2. If Noisy:

- ✓ T-CON Section Test Patterns.

2. PRE FRC of T-CON Section



Video Operation : **Generated at Pre FRC, of T-CON Section.**

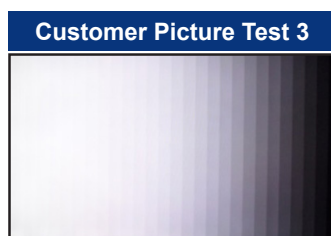
1. If OK:

- ✓ Main Section.

2. If Noisy:

- ✓ Post FRC Pattern.

3. POST FRC of T-CON Section



Video Operation : **Generated at Post FRC of T-CON Section.**

1. If OK:

- ✓ Main / T-CON Board (defective).

2. If Noisy:

- ✓ Mute - 369 - Mute.

4. T-CON Section



NOTE

May not be available for Larger models over 70 inches.

Video Operation : **Generated at T-CON Section.**

1. If OK:

- ✓ Main / T-CON Board (defective).

2. If Noisy:

- ✓ Main / T-CON Board.

■ PANEL

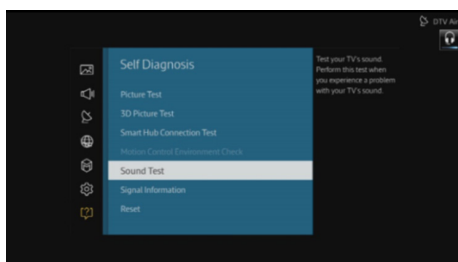


3. If Noisy:

- ✓ Panel (defective).

4-1-4. Audio

■ AUDIO TEST



Source

- **No TV Sound**
 - ✓ Menu → Audio → Speaker Settings set to **TV Speaker**
- **Noisy / Distorted TV Audio**
 - ✓ Customer Menu → Support → **Sound Test**
- **If **Sound Test** FAILS : (Missing / Noisy Audio)**
 - ✓ Speakers (compare resistance/quality)
 - Compare audio level out to speakers with multi meter.
 - ✓ Replace defective Speakers or Main Board or Cable.
- **IF **Sound Test** OK :**
 - ✓ Audio Source & External Cables.
 - ✓ With external Audio Generator (device or App).
 - ✓ Other Inputs.
 - ✓ One Connect Mini.
- **Optical Digital Out Errors**
 - ✓ Red light from Optical Digital Out.
 - If missing replace One Connect Mini
- **No HDMI Audio**
 - ✓ Source / HDMI Cable & One Connect Mini Connectors.
 - Swap with other HDMI Inputs/Sources.
 - Perform **EDID Write** in Factory Mode (Can restore missing HDMI Audio).
 - ✓ Bulletins and Latest firmware on TV.
 - If not restored replace One Connect Mini/Main.
 - Check Audio Format PCM/Dolby based on external Receiver.
- **ARC Issues**
 - ✓ HDMI Cable is input to the ARC Designated HDMI port.
 - ✓ ARC (HDMI Control) is enabled on the external Receiver.
- **Bluetooth Audio "**Sound Share**" Connection Issues**
 - ✓ Sound Bar is in TV Mode.
 - To Connect, Press & Hold Play Button until Sound Bar pairing mode begins.

4-1-5. Network

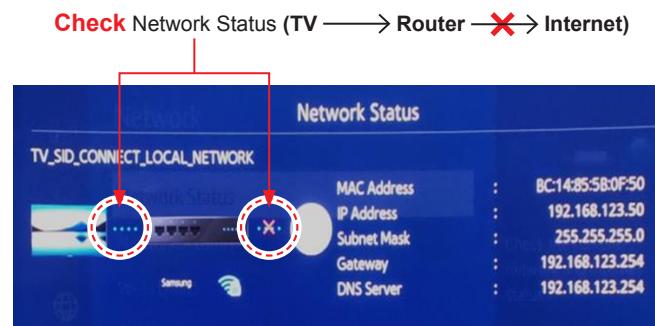


■ TV to Router "Failure"



- **Wired & Wireless MAC Address** in Customer Support Menu.
 - ✓ **No Wired MAC Address:** Replace Main Board.
 - ✓ **No Wireless MAC Address:** Module cabling & voltages from Main Board.
 - ✓ If operating voltages are OK but signal missing.
 - Replace WiFi Module (WiFi/Bluetooth Module).
- Proper **security passcode**
 - ✓ Check Wi-Fi signal strength at TV (use WiFi Analyzer or similar App).
 - Try another source (Hot spot or Test Router).
 - ✓ Check related Bulletins.
 - ✓ Check **Factory Mode** → **SVC** → **Info** → **WiFi Error Count** (replace module for high error counts).

■ Router to Network "Failure"



- Instruct the customer the TV has proper connection to the router and is likely OK.
 - ✓ Check other devices using network are OK. If they test OK this does not mean the TV should be working.
- Try another source (Hotspot) to test/show TV Network operation.

4-1-6. Smart Hub

Go to [Menu > Support > Self Diagnosis > Smart Hub Connection Test](#)



1. Network / Gateway

- **If it Fails:**
 - ✓ TV to Router Connection Test in "[Network Trouble shooting](#)"

2. DNS Test

- **If it Fails:**
 - ✓ DNS setting in "[Network Settings](#)"
- **If DNS is set manually:**
 - ✓ Settings are correct (may be set to 8.8.8.8 to prevent Netflix issues)
- **If it still fails:**
 - ✓ DNS Test with setting to Auto Mode
- If it fails both Manual & Auto problem is ISP or Router.

3. ISP Blocking

- **If it Fails:**
 - ✓ Internet Service Provider is Active.
 - ✓ With DNS setting at 8888.
 - ✓ With Hot Spot.

4. Samsung Server Test

- **If it Fails:**
 - ✓ Network Status.
- **If OK:**
 - ✓ Reset Smart Hub.
 - ✓ Terms of Agreement are accepted.

5. Samsung Apps

- **If it Fails:**
 - ✓ Reset Smart Hub.
 - ✓ Samsung Apps load correctly.
 - ✓ Perform "[Apps Reset](#)" in Factory Mode.
 - ✓ Go to Smart Hub and complete Terms of Agreement and set up information.
 - ✓ Samsung Apps load correctly.
 - ✓ Before selecting an App, allow Apps to load or failure will occur.

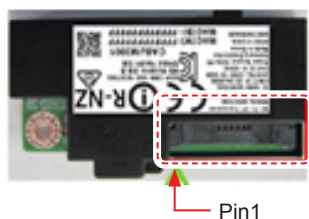
For Netflix Operation/Connection Issues:

- Check Certificate & Netflix ESN Status in Factory Mode.
 - If Certificate and ESN exists, "**CO**", "**Nfo**", change the **DNS** to **8.8.8.8**
 - If Certificate is missing, "**C**" replace the TV's Main Board.
 - If ESN number is missing: **NF**/ do not replace the Main Board.
 - Reset TV Clock and check for correct Time & Date. Netflix relies on correct settings.
 - Reset Smart Hub. / Reset Apps In Factory Mode.

For Streaming Issues:

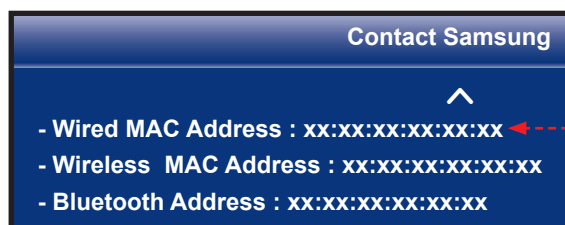
- Go to TV Web Browser / Go to speedof.me / testmy.net
 - ✓ **Check Speed** for at least 5 Mbps(HD streaming) / 25 Mbps (4K Streaming).
 - ✓ **Check Latency** for less than 50ms.

4-1-7. Bluetooth / WiFi Module



	Signal	I/O	Description	Voltage	Active High/Low	Pull up/down
BT	BT_Reset	I	BT Block Reset	3.3	Active Low	Module Pull up
	Power DET	I	Power detect	3.3	TV on : High, TV Off : Low	-
	BT_wake up	O	BT Wake up	3.3	Pulse(wakeup reason pulse)	Module Pull up
	GND	GND	Ground	GND	-	-
	USB DM	I/O	BT USB interface	USB	-	-
	USB DP	I/O	BT USB interface	USB	-	-
	GND	GND	Ground	GND	-	-
	3D_sync_in	I	3D sync input	3.3	Pulse(Panel V sync)	
WIFI	Wifi_USB_suspend	I	WiFi USB PHY On/Off Ctrl	3.3	USB PHY On : High, USB PHY Off : Low	NC (Pull up)
	GND	GND	Ground	GND	-	-
	USB DP	I/O	WiFi USB interface	USB	-	-
	USB DM	I/O	WiFi USB interface	USB	-	-
	GND	GND	Ground	GND	-	-
	VCC	I	5V Power	5	-	-
	Wake up	O	WiFi Wake up	3.3	Pulse(wakeup reason pulse)	Module Pull up
	Reset	I	WiFi Block Reset	3.3	Active Low	Module Pull up

Go to [Menu > Support > Contact Samsung](#)



Missing or Error : Replace **Main Board**.

- If **Bluetooth Address** or **Wireless MAC Address** are missing or errors exist.
- BT & Wi-Fi Connector Voltages.
 - If Voltages are OK but no BT or Wi-Fi Signals voltage(s), replace defective Module.

4-2. Factory Mode Adjustments

4-2-1. Entering Factory Mode

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

■ Factory Remote

1. Power TV ON.
2. Select TV Source.
3. **Info** → **Factory**.
4. Use **MENU** for return.

■ Samsung IR Remote (Limited Operation)

1. TV Power Standby.
2. Press as follows.
 - Remote Button : **INFO** → **MENU** → **MENU** → **Power ON**
 - **Option** (must set Option Bytes when replacing Main Board.)
 - Option → **Factory Reset** (returns TV to out of box condition. Does not reset Apps.)
 - SVC → **Test Patterns**
 - SVC → Info → **ER Count** (Important to check for errors.)
 - Resets to 0 with Factory Reset.

First Screen Appearing in Factory Mode (SAMPLE)

MODE : CATV, RES : NOSIGNAL

Option	Content	Annotation
Control	T-HKMFKUABC_-xxxx (T-HKMFKABC-**** : AG***)	✓ Micom SW Version
Debug	T-HKMFKDEUS_-xxxx	✓ Sub Micom SW Version
SVC	tztv-2.4-main2016-hawk-m-fhd_2016*****	
ADC/WB	BT Version : xxxx	
Advanced	E-Manual : ----	
	Camera Version : Not Support	
	Blaster Version :Not Support	
	E-POP Version :HAWKMFD-****.**	
	EDID SUCCESS	
	HDCP SUCCESS	
	CALIB : AV/COMP/PC/HDMI/	
	Option : xxxx,xxxx,6500,NONE	
	DTCP Not Support	
	TCON Version : -----	
	Model : *****	
	Wired MAC SUCCESS	✓ Wired MAC (Status)
	Wireless MAC SUCCESS	✓ Wireless MAC (Wi-Fi Module)
	WIFI : ***** (3.0.7.107)	
	CO Nf/W/M/D/HO P / AO O S / M RO SC SiX	✓ CO NFO WO. etc.
	Factory Data Ver : 126 EERC Version :	
	CPLD/HD :N/A	
	SmartControl : ****	
	Date of purchase : mm/dd/yyyy	

- Certificate
- Netflix
- Wide Vine
- etc. Status

4-2-2. Detail Factory Op tion



NOTE

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

■ UN49K6500AGXPR

Inches		49"
		FA01
PANEL	Vendor	SDC
	Code	BN95-02618B
	Spec.	CY-VK049BGLV2V/H
SMPS BOARD	Vendor	DYREL
	Code	BN44-00872A
	Spec.	L55E1_KDY,AC/DC
MAIN BOARD	Chassis Ass'y	BN91-17273G
	PBA Ass'y	BN94-10995D
Byte	Item	
0	Factory Reset	-
1	Type	49A6AF0RK
2	Local set	PAR_DTV
3	SW Model	UK6200
4	BOM Model	6500
5	Tuner	-
6	Ch table	NONE

■ UN55K6500AGXPR

Inches		55"
		FA01
PANEL	Vendor	SDC
	Code	BN95-02625B
	Spec.	CY-VK055BGLV2V/H
SMPS BOARD	Vendor	DYREL
	Code	BN44-00872A
	Spec.	L55E1_KDY,AC/DC
MAIN BOARD	Chassis Ass'y	BN91-17274H
	PBA Ass'y	BN94-10996D
Byte	Item	
0	Factory Reset	-
1	Type	55A6AF0RK
2	Local set	PAR_DTV
3	SW Model	UK6200
4	BOM Model	6500
5	Tuner	-
6	Ch table	NONE

4-2-3. Factory Data

■ Option

Factory Menu Name		Data	Range
Factory Reset		-	
Type	49"	49A6AF0RK	
	55"	55A6AF0RK	
Local Set		PAR_DTV	
SW Model		UK6200	
BOM Model		6500	
TUNER		-	
Ch Table		NONE	
MRT Option			

■ Control

Factory Menu Name		Data	Range
EDID			
EDID ON/OFF		OFF	
EDID WRITE ALL		...	
EDID WRITE HDMI		...	
EDID WRITE PC		...	
HDMI EDID Ver		...	
HDMI EDID Port		...	
Sub Option			
RS-232 Jack		UART	
EXT Link Support		ON	
Serial Log On/Off		OFF	
Watchdog		ON	
FRC Monitoring		OFF	
Checksum		0x0000	
Fast Boot In Production		ON	
USB Serial		OFF	
ECO IC TYPE		MC8121	
Info Link Server Type		development	
Info Link Country		None	
TTX Group		UserOSD	
Visual Test		Diable	
OPTION_SWU			

Factory Menu Name	Data	Range
RF Remocon Support	OFF	
CDD mode	...	
DPMS Support	OFF	
T-CON Device	JazzFT	
RM Server Type	Operating	
LMF LEAVE THRESHOLD	160	
LMF TRIM THRESHOLD	120	
LMF TERM THRESHOLD	80	
EOS Click	OFF	
BP PMS Reset	1	
FAnet Thread	2	
CI CPLD Version	1	
ACM_MC	ON	
UNIQUE TRIPLET	ON	
FS_FAV	OFF	
Private Range USE	ON	
SCSA Support	OFF	
OCM Reboot	ON	
SPI Protection		
FKP Server Type	Default	
OCM Support	ON	
Preloading Support	ON	
Multitasking Support	ON	
Browser preloading Support	FULL	
EXT IR Boot Support	OFF	
APP BOOTING SUPPORT	ON	
NagSam Support	OFF	
EWBS Support	OFF	
MVPD MBR Provider	COMCAST	
cloudscan Always Upload	OFF	
FirstScreen Cach Size	300	
Hotel Option		
Hospitality Mode	OFF	
Power On		
Menu OSD		
Operation		
Music Mode		

4. Troubleshooting

Factory Menu Name	Data	Range
External Source		
Eco Solution		
Cloning		
Shop Option		
Exhibition Mode	OFF	
Peak Mode	ON	
Metadata	ON	
Shopmode Picture Reset	ON	
Asia Option		
Unbalance	OFF	
AF Level adjust	0	
TX Power Level	0	
Mono Last Memory	OFF	
H Shaking	0	
SOUND		
High Devi	OFF	*If the broadcast signal is not good, TV will complement the characteristics of the signal (most use when weak signal comes from the growing area countries)
Carrier_Mute	ON	*If the noise comes from weakness-electromagnetic field, TV will be set Mute automatically(Only default on in North America)
Pilot Level High Thld	0x20h	* The High threshold value of stereo signal(If Pilot level is greater than High threshold value, recognize Stereo signal)
Pilot Level Low THLD	0x10h	* The Low threshold value of stereo signal(If Pilot level is less than Low threshold value, recognize Mono signal)
Carrier2 Amp High ThLD	9	
Carrier2 Amp Low THLD	6	
Amp Volume	0xc4h	
Amp Scale	0x3ch	
Amp EQ Check Sum	0x000057B5	
Subwoofer Support	3	
Woofer Type	0	
Woofer Volume	0xc7h	
Woofer Scale	0x3fh	
Woofer Check sum	0x0000A273	
PEQ Inx	76	
PEQ Test	Ready	
Speaker EQ	ON	

Factory Menu Name	Data	Range
Bottom Checksum	NONE	
Wall Filter Type	3	
SRS Tuning Parm	0	
SPDIF PCM Gain	-9	
AudioDock BT Delay	90	
3D_Glass BT delay	50	
Mic Scale	OFF	
India Sound	0	
Speaker Delay Normal	0	
NTV CU Delay	NORMAL	
Lipsync Inx	1	
Lipsync Checksum	0x4972	
Lipsync USB Test	Ready	
Lipsync BT Checksum	0x0000	
TP volume	0xc4h	
TP Scale	0x6ch	
TP EQ CheckSum	NONE	

■ Debug

Factory Menu Name	Data	Range
Spread Spectrum		
LVDS Spread	0	
DDR Spread	0	
Period	0	
Amplitude	0	
HD DDR SSC ON OFF	OFF	
HD DDR SSC Value	0	
FHD DDR SSC ON OFF	OFF	
FHD DDR SSC Value	4	
UHD DDR SSC ON OFF	ON	
UHD DDR SSC Value	0	
P eBus SSC ON/OFF	OFF	
P eBus Value	0	
LVDS SSC ON/OFF	OFF	
LVDS SSC Value	0	
AP Vx1 SSC ON/OFF	ON	
AP Vx1 Value	12	

4. Troubleshooting

Factory Menu Name	Data	Range
N Vx1 SSC ON/OFF	ON	
N Vx1 Value	0	
FRC Vx1 SSC ON/OFF	OFF	
FRC Vx1 SSC Period	0	
FRC Vx1 SSC Modulation	0	
FRC LVDS ON/OFF	ON	
FRC LVDS SSC MFR	3	
FRC LVDS SSC MRR	2	
FRC DDR SSC ON/OFF	ON	
FRC DDR SSC Period	1	
FRC DDR SSC Modulation	2	
ADV7619 Data strength	1	
ADV7619 Clock strength	1	
ADV7619 H_V_DE strength	1	
AP DDR SSC ON/OFF	OFF	
AP DDR SSC Value	0	
AP USIT SSC ON/OFF	ON	
AP USIT SSC Value	13	
OCM Vx1 SSC ON/OFF	OFF	
OCM Vx1 SSC Value	0	
TCON USIT SSC ON/OFF	BYPASS	
DDR Margin		
A CTRL_OFFSET_0_3	0	
A CTRL_OFFSET_D	0	
B CTRL_OFFSET_0_3	0	
B CTRL_OFFSET_D	0	
BT_ON_OFF	ON	
RF Mute Time	600ms	
Tuner Margin	3	European specifications
FRC		
FRC FDISPLAY ON/OFF	OFF	
3D FDISPLAY ON/OFF	OFF	
PC Mode ON/OFF	OFF	
FRC VX1 RX EQ SETTING	OFF	
FRC VX1 TX Pre_emphasis setting	0	
Netflix OSD Threshold	179	
TCON		

Factory Menu Name	Data	Range
TCON_TEMP READ	34	
TEMP LAST	6000	
DCC VERSION	0x0	
TCON Demura Bypass	OFF	
TCON FDisplay	OFF	
Panel Code 1		
Panel Code 2		
Panel Revision		
Panel Menu Week		
Panel S/N 1		
Panel S/N 2		
Panel S/N 3		
Panel S/N 4		
MPEG Margin	20	
H.264 Margin	15	
CAM Wait Time	15	
Voice Debug	OFF	
Power Management		
Cert Option	Waiting	
RM_BIST_DTV	0	
RM_BIST_ATV	0	
RM_BIST_CABLE	0	
SerDES Check		
SerDES Tuner	Failure	
HDMI SW	Failure	
HDMI Rx	Failure	
MP	Failure	
Main SerDES	Failure	
Jack SerDES	Failure	
Stress Mode	OFF	
Log Analyzer	ON	
Error Popup On/Off	OFF	
DeadLock KILL	OFF	
CES Option	OFF	
CES Convergence Option	OFF	
CES ATSC 3_0	OFF	
CES OOB MVPD SUPPORT	OFF	

4. Troubleshooting

Factory Menu Name	Data	Range
BT DUT	OFF	
BT Throughput	Failure	
Reproduce Module	ON	
21_9		
L-DETECT STABLE TIME	7	
L-DETECT UNSTABLE TIME	3	
L-DETECT CAPTION THRESHOLD	720	
L-DETECT RAGION THRESHOLD	720	
L-DETECT B-LEVEL THRESHOLD	32	
L-DETECT USB SUPPORT	0	
DB Download		
MRT Option Dump	Failure	
Picture Data Dump	Failure	
VCONF Dump	Failure	
Read Eco Sensor Data	0	
No Signal Power OFF	ON	
Alert Option	ON	
Default HDMI1 Booting	OFF	

■ SVC

Factory Menu Name	Data	Range
Self Test(for HW)		* the Output of test pattern from each IC
Info		
Reset		
Apps Reset		
SVC Reset		
SPI Flash Reset		
Data Sync Reset		
Factory Data Reset		
OPTION_HDMI		
DVI/HDMI SOUND	Auto	
HDMI HOT PLUG	Disable	
HOTPLUG SWITCHING	Auto	
HOT PLUG DURATION	800ms	
CLK TERM DURATION	300ms	
HDMI FLT CNT SIG	0ms	
HDMI FLT CND SIG2		

Factory Menu Name	Data	Range
HDMI FLT CNT LOS	0ms	
UNSTABLE BAN CNT	1250ms	
HDMI ROBIN	0	
HDMI Callback	ON	
HDMI CTS Thld	0	
HDMI CTS Cnt1	0	
HDMI EQ	0	
HDMI Write Type	0	
HDMI Switch	0	
DVI SET TIME	0	
H Write	0	
HDMI Sync	0	
HDMI 3D DET	1	
HOT PLUG OFF HOLD TIME	600ms	
HDMI MUTE TIME	0ms	
HDMI NFST UNMUTE TIME	800ms	
HDMI FST UNMUTE TIME	0ms	
REPEAAUDIO PKT	OFF	
HDMI Stable Count	3	
HDMI HDCP EN	OFF	
HDMI HDCP EN FLAG	85	
POWER ON FLT CNT LOS		
HDCP UPDATE SPI	READY	
SPI VERSION	0	
HdmiRx EQ	0	
HDMI TMDS ERR DET	1	
DVB CI		
TS Clock delay TC	0	
TS Clock delay S	0	
CI Control Buf ON	ON	
TS Clock delay CPU	1	
TS Clock delay TC2	0	
TS Clock delay S2	0	
CI Control Buf ON2	1	
TS Clock delay CPU2	0	
Test Pattern		
Scaler Pattern	OFF	

4. Troubleshooting

Factory Menu Name	Data	Range
US Post Pattern	OFF	
FRC Pre Pattern	0	
FRC Post Pattern	0	
SOC TCON Pattern	0	
SOC TCON Pattern Level	255	
FRC OSD Pre Pattern	0	
FRC OSD Post Pattern	0	
FRC2 Pre Pattern	0	
FRC2 Post Pattern	0	
SOC TCON2 Pattern	0	
SOC TCON2 Pattern Level	255	
Upgrade		
T-CON DATA UPGRADE		
T-CON FW UPGRADE		
T-CON CheckSum		
T-CON2 Usb Download		
T-CON2 CheckSum		
PANEL EEPROM UPGRADE		
PANEL FLASH UPGRADE		
Logic Usb D/L		
SUBMICOM UPGRADE		* Upgrade Sub-Micom Program
SUBMICOM JP USB UPGRADE		
BT UPGRADE		* Upgarde BT(There is upgrade program in Main-Image)
BT FREEPAIRING		
Function Upgrade		
FRC3D FW UPGRADE		
FRC3D SRP UPGRADE		
FRC3D LD UPGRADE		
FRC2 3D FW UPGRADE		
Camera Upgade		* Upgarde Camera module(There is upgrade program in Main-Image)
Mic Upgrade		* Upgarde MIC in Camera module(There is upgrade program in Main-Image)
Jump UPGRADE		
IR Blaster Upgrade		
IR Blaster delay time		
NTV CU UPDATE		
UD LDC PROFILE UPGRADE		

Factory Menu Name	Data	Range
Pic Data USB Update		
Audio Data USB Update		
Eco Data USB Update		
CI CPLD Upgrade		
SC ADK Upgrade		
Other Setting		
Delete S/N		
IPERF	Stopped	
Expert		
CAL Data Backup	...	
CAL Data Restore		
MICOM POWER OFF	ON	
NTV CU FW VER	0	
ATV IF AGC SPEED	0	
Upgrade UHD OSD Test	0	
Main USB Path		
JackP USB Path		
Source Direct On/Off	OFF	
Apps Update		
Auto Power	LAST POWER	
SMCE Control		
Motor Test		
Cube Test		
V APP	OFF	
Picture Direct On/Off	OFF	
SVC Panel	ORIGINAL	
S/N		
Serial number		
Writing S/N		

■ ADC/WB

Factory Menu Name	Data	Range
ADC		
AV Calibration		
Comp Calibration		
PC Calibration		
HDMI Calibration		

4. Troubleshooting

Factory Menu Name	Data	Range
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	128	
2nd_G_L	128	
2nd_B_L	128	
2nd_R_H	69	
2nd_G_H	69	
2nd_B_H	69	
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	
WB_W2_B_Offset	128	
WB_W2_R_Gain	136	
WB_W2_B_Gain	76	
WB_N_R_Offset	128	
WB_N_B_Offset	128	
WB_N_R_Gain	131	
WB_N_B_Gain	119	
MGA		
MGA On/Off	OFF	
R1_Gain		
G1_Gain		
B1_Gain		
R2_Gain		
G2_Gain		
B2_Gain		
R3_Gain		

Factory Menu Name	Data	Range
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		
G10_Gain		
B10_Gain		
SPI White Balance		
SPI White Balance On/Off		
SPI R-Offset		
SPI G-Offset		
SPI B-Offset		
SPI R-Gain		
SPI G-Gain		
SPI B-Gain		
SPI N Rgain		
SPI N Bgain		
SPI N Roffset		
SPI N Boffset		
SPI W2 Rgain		
SPI W2 Bgain		

Factory Menu Name	Data	Range
SPI W2 Roffset		
SPI W2 Boffset		
SPI MGA		
WB Data to SPI		

■ **Advanced**

4-3. White Balance

4-3-1. Calibration

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

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

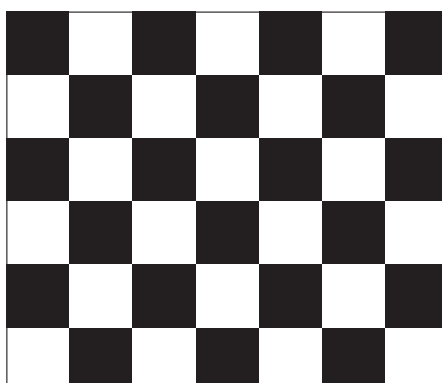
4-3-2. Service Adjustment

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 (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
PC Analog IN (Model_#21)	Perform in VESA XGA (1024x768) 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 (PC)

1. Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port.
2. Press the Source key to switch to "PC" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "PC Calibration" menu.
6. In "PC 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 "PC 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.

4-3-3. Adjustment

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

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

4-4. Updating the TV's Software

View your TV's software version and update it if necessary.

- [Settings](#) → [Support](#) → [Software Update](#)

■ Updating the TV's software to the latest version

- [Settings](#) → [Support](#) → [Software Update](#) → [Update now](#)

You can update your TV's software by downloading the update from the Internet directly to your TV or copying the update from a USB device that contains it to your TV.

- Updating from the Internet requires an active Internet connection.
- To update using a USB flash drive, download the update package from Samsung.com to your computer. Then, save the update package in the USB device's top-level folder. Otherwise, the TV will not be able to locate the update package.



DO NOT turn off the TV's power until the update is complete. The TV will turn off and on automatically after completing the software update. All video and audio settings return to their default settings after a software update.

■ Updating the TV automatically

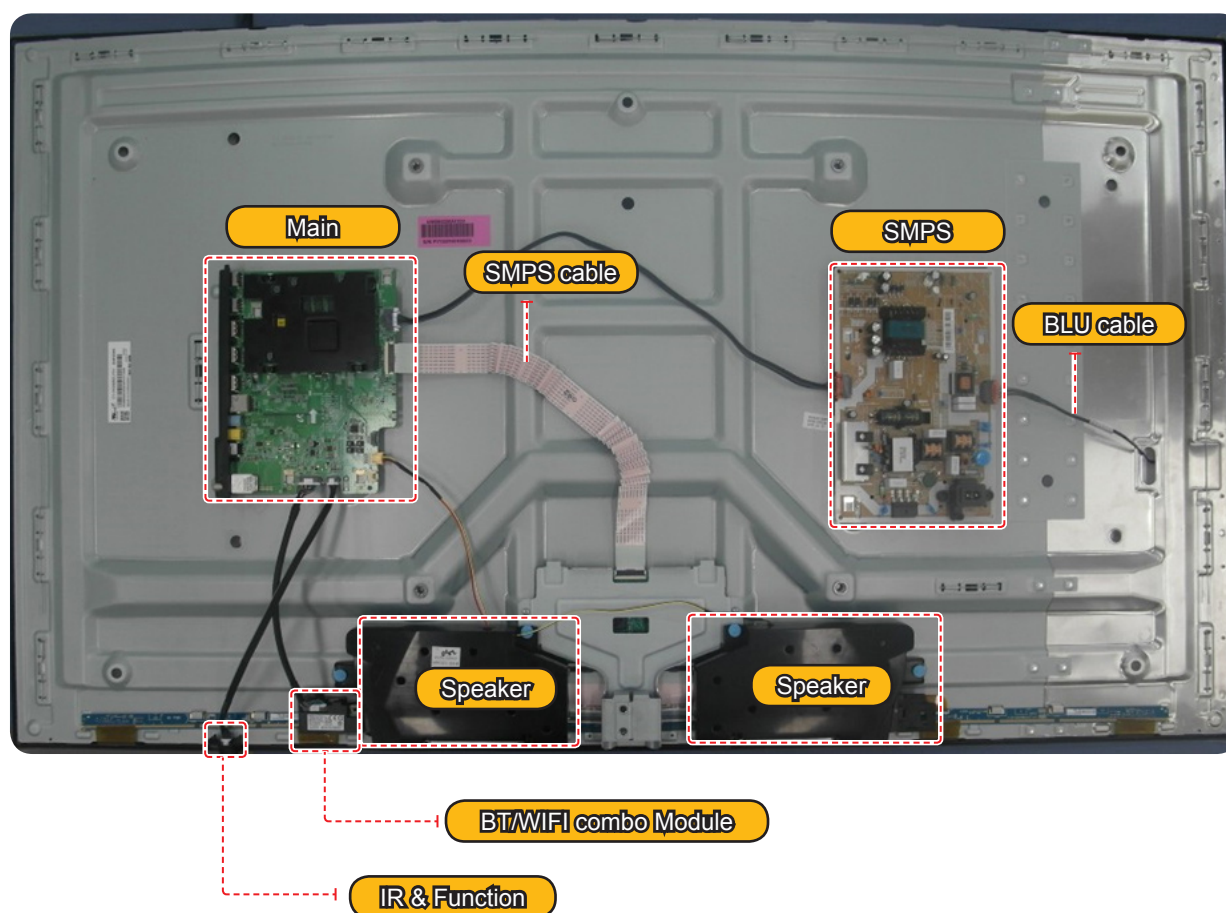
- [Settings](#) → [Support](#) → [Software Update](#) → [Auto Update](#)

If the TV is connected to the Internet, you can have the TV's software update itself automatically while you are watching the TV. When the background update is completed, it is applied the next time the TV is turned on.

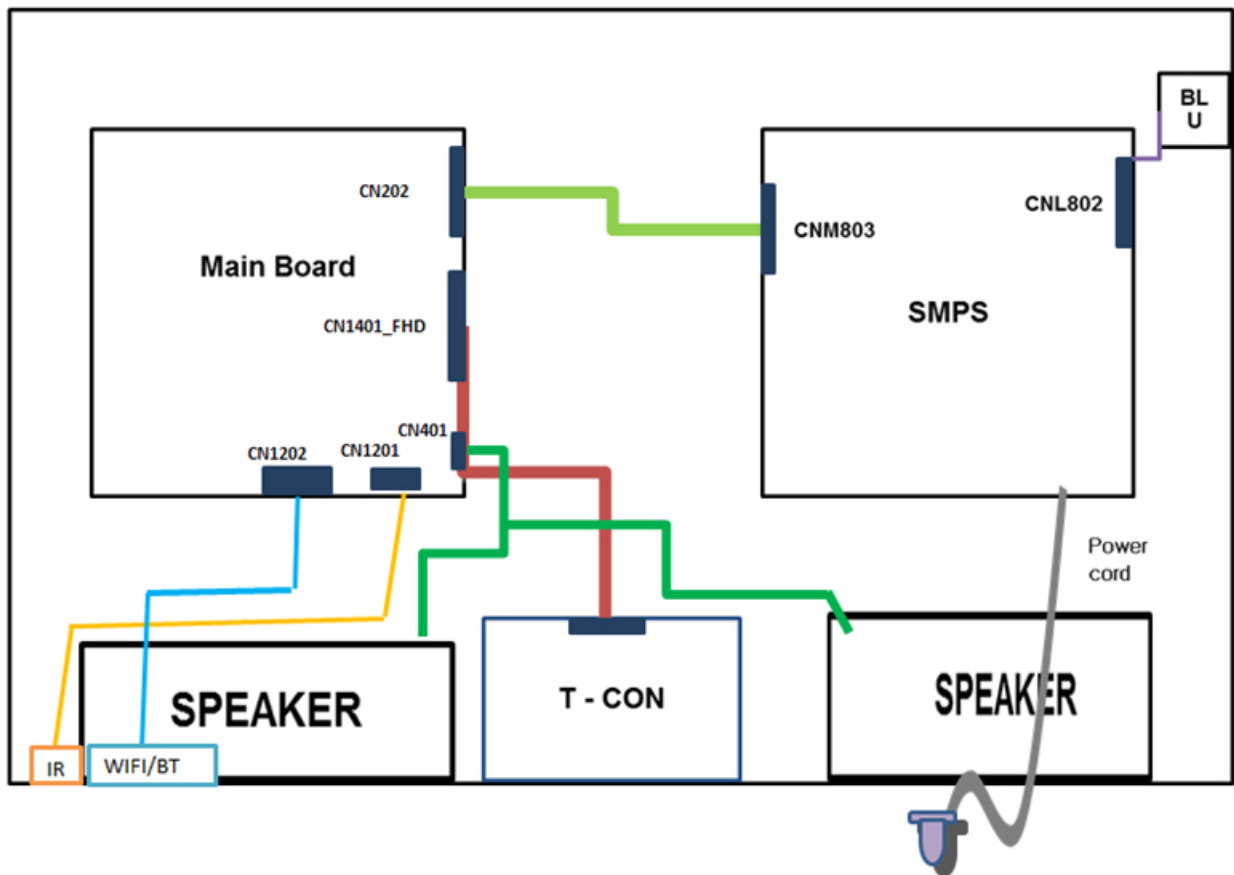
- This function may take a longer time if another network function is running concurrently.
- This function requires an Internet connection.
- If you agree to the Smart Hub terms and conditions, [Auto Update](#) is set to **On** automatically. If you do not want the TV's software to update itself automatically, set [Auto Update](#) to **Off**.

5. Wiring Diagram

5-1. Layout

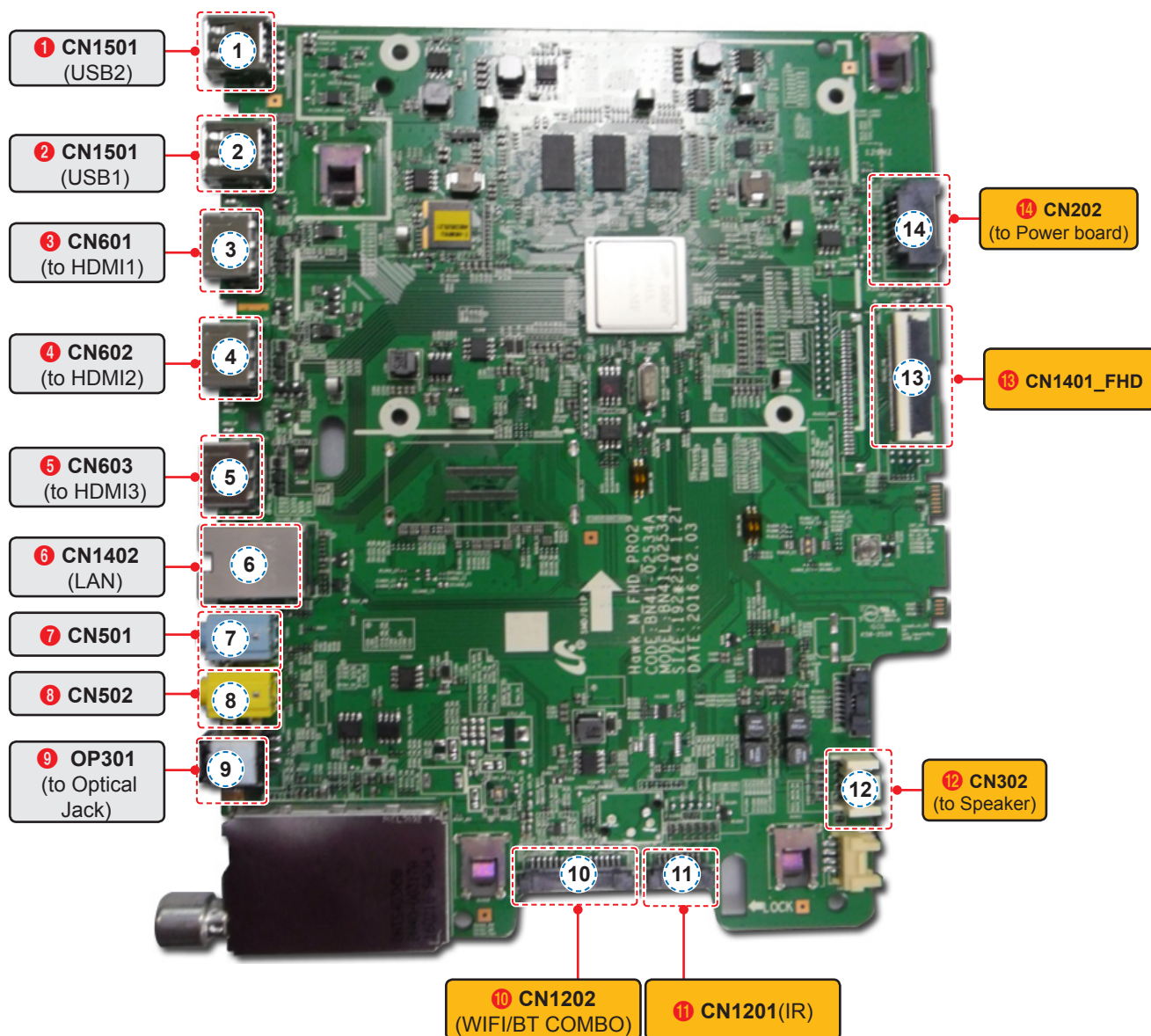


5-2. Wiring Diagram



5-3. Connector

5-3-1. Main Board



5. Wiring Diagram

■ Main Board Pin Map

1 CN1501(USB2)				6 CN1402_LAN			
1	B5V_USB1_PW	3	USB2_DP	1	LAN_TXD+	5	B2.5V
2	USB2_DM	4	GND	2	B2.5V	6	LAN_RXD-
				3	LAN_TXD-	7	NC
				4	LAN_RXD+	8	GND
2 CN1501(USB1)							
1	A5V_USB2_PW	3	USB1_DP				
2	USB1_DM	4	GND				
3 CN601(to HDMI1)				7 CN501			
1	HDMI1_RX2+	10	HDMI1_RXCLK+	1	GND	5	PR
2	GND	11	GND	2	COMP_PB	6	GND
3	HDMI1_RX2-	12	HDMI1_RXCLK-	3	COMP_PR	7	GND
4	HDMI1_RX1+	13	CEC	4	IDENT_COMP		
5	GND	14	NC				
6	HDMI1_RX1-	15	HDMI1_SCL_DDC	8 CN502			
7	HDMI1_RX0+	16	HDMI1_SDA_DDC	1	GND	5	TEST_SR
8	GND	17	GND	2	COMP_Y_CVBS	6	TEST_SL
9	HDMI1_RX0-	18	HDMI1_5V	3	COMP_AV_SR_IN	7	COMP_AV_SL_IN
		19	HDMI1_HOT_PLUG	4	AV1_IDENT(Y)		
4 CN602(to HDMI2)				9 OP301(to Optical Jack)			
1	HDMI2_RX2+	10	HDMI2_RXCLK+	1	SPDIF_OUT	3	GND
2	GND	11	GND	2	B5V_DC_PW		
3	HDMI2_RX2-	12	HDMI2_RXCLK-	10 CN1202(to Component & AV)			
4	HDMI2_RX1+	13	CEC	1	BT_RESET	9	WIFI_USB_SUSPEND
5	GND	14	ARC2_SIGLE	2	POWER_DET	10	GND
6	HDMI2_RX1-	15	HDMI2_SCL_DDC	3	BT_WAKE	11	WIFI+_USB
7	HDMI2_RX0+	16	HDMI2_SDA_DDC	4	GND	12	WIFI-_USB
8	GND	17	GND	5	BT-_USB_BT	13	GND
9	HDMI2_RX0-	18	HDMI2_5V	6	BT+_USB_BT	14	A5V_PW
		19	HDMI2_HOT_PLUG	7	GND	15	WIFI_WOL
5 CN603(to HDMI3)				8	GND	16	WIFI_NRESET
1	HDMI3_RX2+	10	HDMI3_RXCLK+	11 CN1201(to Function/IR)			
2	GND	11	GND	1	IR	5	MSDA
3	HDMI3_RX2-	12	HDMI3_RXCLK-	2	GND	6	KEY_INPUT1
4	HDMI3_RX1+	13	CEC	3	A3.3V_PW	7	KEY_INPUT2
5	GND	14	NC	4	MSCL	8	LED_STB
6	HDMI3_RX1-	15	HDMI3_SCL_DDC	12 CN302(to Speaker)			
7	HDMI3_RX0+	16	HDMI3_SDA_DDC	1	R+	3	L+
8	GND	17	GND	2	R-	4	L-
9	HDMI3_RX0-	18	HDMI3_5V				
		19	HDMI3_HOT_PLUG				

13 CN1401_FHD			
1	NC	27	EVEN_TX0-
2	GND	28	GND
3	FRC_SDA	29	ODD_TX4+
4	FRC_PWM1	30	ODD_TX4-
5	FRC_SCL	31	ODD_TX3+
6	FRC_PWM3	32	ODD_TX3-
7	FRC_PWM2	33	GND
8	TCON_SDA	34	ODD_TXCLK+
9	PANEL_I2C_EN	35	ODD_TXCLK-
10	BT_SYNC	36	GND
11	UPDATE_CHK	37	ODD_TX2+
12	TCON_SCL	38	ODD_TX2-
13	GND	39	ODD_TX1+
14	EVEN_TX4+	40	ODD_TX1-
15	EVEN_TX4-	41	ODD_TX0+
16	EVEN_TX3+	42	ODD_TX0-
17	EVEN_TX3-	43	GND
18	GND	44	GND
19	EVEN_TXCLK-	45	GND
20	EVEN_TXCLK+	46	FRC_PWM4
21	GND	47	PANEL_13V_PW
22	EVEN_TX2+	48	PANEL_13V_PW
23	EVEN_TX2-	49	PANEL_13V_PW
24	EVEN_TX1+	50	PANEL_13V_PW
25	EVEN_TX1-	51	PANEL_13V_PW
26	EVEN_TX0+		

14 CN202(to Power board)			
1	GND	7	A13V_PW
2	GND	8	PWM_DIM
3	A13V_PW	9	A13V_PW
4	GND	10	OVD_LEVEL
5	A13V_PW	11	SMPS_FET_FAIL DETECT
6	SW_POWER_OUT	12	OVD_ON_OFF

5-4. Connector Functions

Connector	Function
CN202 ↔ CNM803	Supply main power and dimming signal from IP board to Main Board.
CN1401 ↔ CON3	The LVDS signal transferred from Main Board to Panel .