



LED TV

Chassis : U5BB

Model : HG32EB690QBXXC
HG40EB690QBXXC
HG46EB690QBXXC
HG55EB690QBXXC

SERVICE Manual

LED TV



HG**EB690QB

Contents

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

Contents

1. Precautions	1-1
1-1. Safety Precautions	1-1
1-1-1. Warnings.....	1-1
1-1-2. Servicing the LED TV	1-1
1-1-3. Fire and Shock Hazard	1-1
1-1-4. Product Safety Notices	1-2
1-2. Servicing Precautions.....	1-3
1-2-1. General Servicing Precautions	1-3
1-3. Static Electricity Precautions	1-4
1-4. Installation Precautions	1-5
2. Product Specifications	2-1
2-1. Product Specifications	2-1
2-2. Detailed Specifications	2-7
2-2-1. Model Comparison	2-7
2-2-2. Feature & Specifications.....	2-8
2-3. Accessories	2-12
2-4. Viewing the Functions	2-13
2-4-1. Auto Motion Plus 120 Hz	2-13
2-4-2. Supported Formats.....	2-14
2-4-3. SMART Interaction (The camera is sold separately.)	2-17
2-4-4. SMART HUB.....	2-20
3. Disassembly and Reassembly	3-1
3-1. Disassembly and Reassembly	3-1
3-1-1. 32"/40"/46"	3-1
3-1-2. 55"	3-8
4. Troubleshooting	4-1
4-1. Troubleshooting.....	4-1
4-1-1. Previous Check	4-1
4-1-2. Simple flow chart of malfunction.....	4-3
4-2. How to Check Fault Symptom.....	4-4
4-2-1. No Power	4-4
4-2-2. No Video (HDMI 1, 2, 3 - Digital Signal)	4-7
4-2-3. No Video (Tuner_CVBS)	4-10
4-2-4. No Vido (Tuner DTV).....	4-13
4-2-5. No Video (Video AV)	4-16
4-2-6. No Video (COMPONENT)	4-19
4-2-7. No Sound (1.Speaker 2.Monitor_out 3.Optical).....	4-22
4-3. Factory Mode Adjustments	4-25
4-3-1. Detail Factory Option	4-25
4-3-2. Entering Factory Mode	4-26
4-3-3. Factory Data	4-27

4-4. White Balance	4-42
4-4-1. Calibration	4-42
4-4-2. Service Adjustment	4-42
4-4-3. Adjustment	4-43
4-5. RS-232C	4-44
4-6. AV Control Tab	4-45
4-7. Software Upgrade	4-51
4-7-1. By USB	4-51
4-7-2. By Online	4-51
4-7-3. Alternative Software (Backup)	4-51
4-7-4. Sub Software Upgrade	4-52
4-8. The Dimension	4-53
5. Wiring Diagram	5-1
5-1. Wiring Diagram	5-1
5-2. Connector	5-2
5-3. Connector Functions	5-4
5-4. Cables	5-5
5-5. The types of module	5-6
A. Exploded View & Part List [HG32EB690QB]	A-1
A-1. Exploded View	A-1
Part List	A-1
A-2. Electrical Parts List	A-2
B. Exploded View & Part List [HG40EB690QB]	B-1
B-1. Exploded View	B-1
Part List	B-1
B-2. Electrical Parts List	B-2
C. Exploded View & Part List [HG46EB690QB]	C-1
C-1. Exploded View	C-1
Part List	C-1
C-2. Electrical Parts List	C-2
D. Exploded View & Part List [HG55EB690QB]	D-1
D-1. Exploded View	D-1
Part List	D-1
D-2. Electrical Parts List	D-2



**This Service Manual is a property of Samsung Electronics Co.,Ltd.
Any unauthorized use of Manual can be punished under applicable
International and/or domestic law.**

**© 2013 Samsung Electronics Co.,Ltd.
All rights reserved.
Printed in Korea**

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.

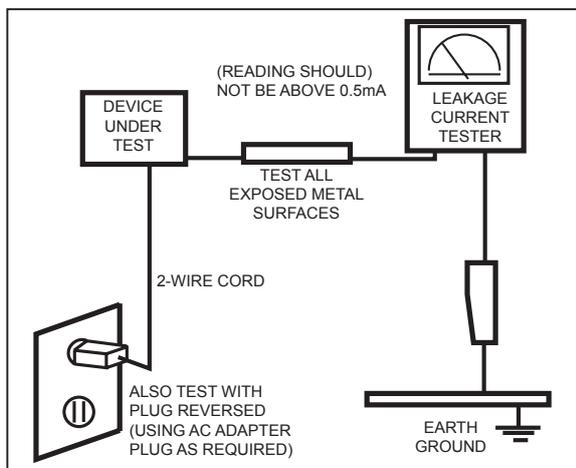
1-1-2. Servicing the LED TV

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 safety-related 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.

2. Product Specifications

2-1. Product Specifications

	Item	HG**EB690QB
General Information	Product	LED
	Cabinet Basic Code	FQ
	Series	6
	Series Name	LED F6400
	Country	EU
	Platform(TV)	Mstar X12
Display	Inch	32 / 40 / 46 / 55
	Resolution	1,920 x 1,080
	Ultra Clear Panel	No
	Lvds Format	JEIDA
	HV Flip	ON
Video	Picture Engine	-
	Clear Motion Rate	480
	Dynamic Contrast Ratio	Mega Contrast
	Micro Dimming	Micro Dimming
	Precision Black (Local Dimming)	No
	Wide Color Enhancer (Plus)	Yes
	Auto Motion Plus 120/240Hz	120Hz
	Film Mode	Yes
	Brightness	300nits
	Contrast Ratio	5000:1
	Picture	Film Mode,HDMI Black Level
	Detail Resolution	60Hz
	Response Time	8ms
	Viewing Angle (H/V)	178/178
	Natural Mode Support	Yes

2. Product specifications

	Item	HG**EB690QB
Audio	Dolby	Dolby Digital Plus / Dolby Pulse
	SRS / DNSe+	SRS Theater Sound HD
	dts 2.0+Digital Out / DTS Premium Audio	DTS Premium Audio
	3D Sound	Yes
	Sound Customizer	No
	Speaker Type	Down Firing + Full Range
	Sound Output (RMS)	10W x 2
	Woofers	No
	Sound Amp IC	TI TAS5745
	Speaker	10W x 2
	Woofers Speaker	No
	Analog	2Ch
	Digital	Optical
	SMART TV Functionality	Smart Hub
Apps		Yes
Music, Photos & Clip		Yes
Samsung SMART View		Yes(Clone View only)
Your Video 2.0		NO
Samsung Sports Experience (SSE)		N/A
Samsung Apps		N/A
Smart Scene		17 EU Countries
Skype™ on Samsung TV		N/A
Web Browser		Yes
AllShare Control		N/A
VESA Standard	Screw Size	M8
Smart Interaction	Camera Built-in	No
	Face Recognition	Ready
	Hand Gesture Recognition	Ready
	Voice Recognition (Embedded)	No
	Voice Recognition (Server)	No
	NLU (Natural Language Understanding)	No
	Camera App	Ready (32 / 40) NO (46 / 55)
	Samsung TV Apps supported	Yes

	Item	HG**EB690QB
Feature	Samsung 3D	No
	3D Converter	No
	Dual View	N/A
	History	Yes
	Smart Phone Remote support	Yes
	Smart Evolution Support	No
	Extended PVR	Yes
	Time Shift	Yes
	Allshare Play	Yes
	ConnectShare™ (USB2.0)	Movie
	AllShare Cast	Yes
	RUI	NO
	RVU	N/A
	WiFi Direct	Yes
	Wireless LAN Built-in	Yes
	Wireless LAN Adaptor Support	No
	BT HID Built-in	Yes
	USB HID Support	Yes
	Network Speaker Support	N/A
	OSD Language	26 European Languages
	Samsung IR Blaster Support	No
	User Interface	Golden Bridge
	Digital Noise Filter	Yes
	Analog Noise Filter	N/A
	MHL	No
	Sound Share	Yes
	WiDi	N/A
	InstaPort S (HDMI quick switch)	No
	HDMI 1.4 3D Auto Setting	No
	HDMI 1.4 A/Return Ch. Support	Yes
EPG	Yes	
Teletext (TTX)	Yes	

2. Product specifications

	Item	HG**EB690QB
Feature	Triple Protector	N/A
	Miracast	Yes
	Anynet+ (HDMI-CEC)	Yes
	BD Wise Plus	Yes
	Auto Channel Search	Yes
	Auto Power Off	Yes
	Auto Volume Leveler	Yes
	Caption (Subtitle)	Yes
	2 Tuner	No
	Clock&On/Off Timer	Yes
	Game Mode	Yes
	Picture-In-Picture	Yes
	Sleep Timer	Yes
	V-Chip	Yes
	Embedded POP	Yes
	Channel	Auto Store,Signal Level,Fine Tune
	Plug&Play	Yes
	Child Lock	Yes
	Soccer Mode	Yes
	Kids Lock	N/A
	Media Play(USB & DLNA)	Yes
	Bluetooth	Yes
ACS	N/A	
IP Video Closed Caption	No	
Additional Feature	Self Diagnosis	Yes
	Software Upgrade	Yes
	HD Connection Guide	Yes
	Contact Samsung	Yes
S/W	MCU	X12
	OS	Linux
System	DTV Tuner	T2CS2
	Analog Tuner	Yes
	CI/ CI+	CI+ (1.3)
	Broadcast System	T2/C/S2 PAL, SECAM, NT4.4
	ATV Sound System	BK , DK , NICAM , MPEG1
	DTV Video System	T2/C/S2 PAL, SECAM, NT4.4
	DTV Sound System	Dolby
	Tuner Vendor & Model	T2CS2 - SEM DNTS243EH105A

	Item	HG**EB690QB
Input & Output	HDMI	3
	Resolution	1920 x 1080
	DVI Support Port	Port1 Type
	PC Max Resolution	1920 x 1080 60 Hz
	USB	1
	Port 1 Type	Host
	OS	Linux
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	1 (Common Use for Component Y)
	Ethernet (LAN)	1
	Headphone	1
	Digital Audio Out (Optical)	1
	Audio Out (Mini Jack / LR)	No
	PC In (D-sub)	Yes
	PC Audio In (Mini Jack)	Yes
	DVI Audio In (Mini Jack)	Yes
	RF In (Terrestrial/Cable Input)	1
	RF In (Satelite Input)	1
	RS232C (AV CONTROL)	No
	SCART	1
	CI Slot	1
	Coaxial	No
	EX-Link	No
	Monitor Output	No
	DVI	
	Resolution	1920 x 1080i 60
	DVI Support Port	Port1 Type
	PC Max Resolution	1920 x 1080 60 Hz
	Design	Design
Bezel Type		NNB
Slim Type		Slim 1
Front Color		Black
Light Effect (Deco)		No
Stand Type		Quad
Swivel (Left/Right)		Yes
Design type		ToC
Front Resin		PC+G/F
Stand Packing Type		Bundle

2. Product specifications

Item		HG**EB690QB
Eco	Eco Mark	EU Ecolabel
	Eco Label	Yes
	Eco Sensor	Yes
Power	Power Supply (V)	AC220-240V 50/60Hz
	Power Consumption (Rated)	92W
	Power Consumption (Stand-by)	Under 0.5W
	Power Consumption (Typical)	52W
	Power Frequency(Hz)	60Hz
	SMPS/IP Board	SEM (32 / 55) HANSOE (46 / 46)
Security	Kensington Lock	Yes
Accessory	3D Active Glasses (Included)	No
	IR Blaster (Included)	No
	Wireless LAN Adaptor (Included)	No
	Network Speaker (Included)	No
	MOIP Camera (Included)	No
	Wireless Keyboard (Included)	No
	Remote Controller Model	TM1240
	Battery (for Remote Control)	Yes
	Mini Wall Mount Support	Yes
	Ultra Slim Wall Mount Support	No
	VESA Wall Mount Support	Yes
	Slim Gender Cable	No
	ANT-Cable	No
	Power Cable	Yes
	User Manual	Yes
	E-Manual	No
Floor Stand Support	No	

2-2. Detailed Specifications

2-2-1. Model Comparison

Model	HG**EB690QB		
Front View	 <p>* W : Width H : High D : Depth</p>		
Detail View			
Front Color	Clear / Black		
Dimensions (W x D x H)	32"	Set without Stand	738.2 x 49.5 x 437 mm
		Set with Stand	738.2 x 264.8 x 510.2 mm
	40"	Set without Stand	928.2 x 49.6 x 543.8 mm
		Set with Stand	928.2 x 264.8 x 617.3 mm
	46"	Set without Stand	1059.8 x 49.6 x 617.7 mm
		Set with Stand	1059.8 x 306.9 x 704.6 mm
55"	Set without Stand	1250.4 x 48.8 x 724.6 mm	
	Set with Stand	1250.4 x 306.9 x 808.4 mm	
Weight	32"	Set without Stand	4.6 kg
		Set with Stand	5.6 kg
	40"	Set without Stand	7.5 kg
		Set with Stand	8.6 kg
	46"	Set without Stand	11.1 kg
		Set with Stand	12.7 kg
55"	Set without Stand	16.7 kg	
	Set with Stand	18.3 kg	
Panel Type	Black		
Internal Memory	4G		
DDR	1G		
Feature	SMART GUIDE / USB HID DLNA / Full browsing / Miracast		

2-2-2. Feature & Specifications

Model	HG32EB690QB	
Feature		
<ul style="list-style-type: none"> • Digital-TV, RF, 3-HDMI, 1-Component,1-A/V, 1-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3 Component and Sub picture is available only in TV mode(DTV/ATV)) • CMR 480(6400) / 240(6300) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound 		
Specifications		
Item	Description	
LCD Panel	LSF320HJ01-A, 1920 x 1080 @ 120HZ, LCD Cell	
Display Colors	1.07B	
Active Display (H x V)* * Horizontal x Vertical	698.4(H) X 392.85(V) (mm)	
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels	
Input Signal	RGB Analog 0.7 Vp-p \pm 5% positive at 75 Ω , internally terminated	
Input Signal Frequency	Horizontal : 31~80 kHz Vertical : 56 ~ 75 Hz	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	138 MHz	
AC Power Voltage & Frequency	AC220-240V 50/60Hz	
Power Consumption	92 W (Under 0.5W, Stand by)	
TV System	Tuning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/C/S2 (UK and Nordic : T2/C/S2),PAL, SECAM, NT4.4
	Sound	BK , DK , NICAM , MPEG1, Dolby Digital +
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 10 W (Left/Right) Equalizer : 5 Band Output Frequency : RF : 20 Hz ~ 15.4 kHz AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note : AllShare, SMART Guide, Web Browser, USB HID		

Model	HG40EB690QB	
Feature		
<ul style="list-style-type: none"> • Digital-TV, RF, 3-HDMI, 1-Component,1-A/V, 1-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3 Component and Sub picture is available only in TV mode(DTV/ATV)) • CMR 480(6400) / 240(6300) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound 		
Specifications		
Item	Description	
LCD Panel	LSF400HJ01-A,1920 x 1080 @ 120HZ,LCD Cell	
Display Colors	1.07B	
Active Display (H x V)* * Horizontal x Vertical	885.6(H) X 498.15(V) (mm)	
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels	
Input Signal	RGB Analog 0.7 Vp-p \pm 5% positive at 75 Ω , internally terminated	
Input Signal Frequency	Horizontal : 31~80 kHz Vertical : 56 ~ 75 Hz	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	138 MHz	
AC Power Voltage & Frequency	AC220-240V 50/60Hz	
Power Consumption	122W (Under 0.5W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/C/S2 (UK and Nordic : T2/C/S2),PAL, SECAM, NT4.4
	Sound	BK , DK , NICAM , MPEG1, Dolby Digital +
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 10 W (Left/Right) Equalizer : 5 Band Output Frequency : RF : 20 Hz ~ 15.4 kHz AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note : AllShare, SMART Guide, Web Browser, USB HID		

2. Product specifications

Model	HG46EB690QB	
Feature		
<ul style="list-style-type: none"> • Digital-TV, RF, 3-HDMI, 1-Component,1-A/V, 1-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3 Component and Sub picture is available only in TV mode(DTV/ATV)) • CMR 480(6400) / 240(6300) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound 		
Specifications		
Item	Description	
LCD Panel	LSF460HJ02-A,1920 x 1080 @ 120HZ,LCD Cell	
Display Colors	1.07B	
Active Display (H x V)* * Horizontal x Vertical	1018.08(H) X 572.67(V) (mm)	
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels	
Input Signal	RGB Analog 0.7 Vp-p \pm 5% positive at 75 Ω , internally terminated	
Input Signal Frequency	Horizontal : 31~80 kHz Vertical : 56 ~ 75 Hz	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	138 MHz	
AC Power Voltage & Frequency	AC220-240V 50/60Hz	
Power Consumption	128W (Under 0.5W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/C/S2 (UK and Nordic : T2/C/S2),PAL, SECAM, NT4.4
	Sound	BK , DK , NICAM , MPEG1, Dolby Digital +
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 10 W (Left/Right) Equalizer : 5 Band Output Frequency : RF : 20 Hz ~ 15.4 kHz AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note : AllShare, SMART Guide, Web Browser, USB HID		

Model	HG55EB690QB	
Feature		
<ul style="list-style-type: none"> • Digital-TV, RF, 3-HDMI, 1-Component,1-A/V, 1-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3 Component and Sub picture is available only in TV mode(DTV/ATV)) • CMR 480(6400) / 240(6300) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound 		
Specifications		
Item	Description	
LCD Panel	LSF550HJ02-A,1920 x 1080 @ 120HZ,LCD Cell	
Display Colors	1.07B	
Active Display (H x V)* * Horizontal x Vertical	1209.6(H) X 680.4(V) (mm)	
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels	
Input Signal	RGB Analog 0.7 Vp-p \pm 5% positive at 75 Ω , internally terminated	
Input Signal Frequency	Horizontal : 31~80 kHz Vertical : 56 ~ 75 Hz	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	138 MHz	
AC Power Voltage & Frequency	AC220-240V 50/60Hz	
Power Consumption	150W (Under 0.5W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/C/S2 (UK and Nordic : T2/C/S2),PAL, SECAM, NT4.4
	Sound	BK , DK , NICAM , MPEG1, Dolby Digital +
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 10 W (Left/Right) Equalizer : 5 Band Output Frequency : RF : 20 Hz ~ 15.4 kHz AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note : AllShare, SMART Guide, Web Browser, USB HID		

2-3. Accessories

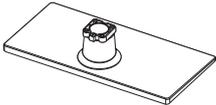
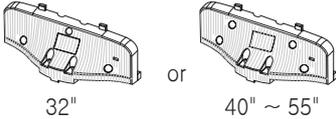


NOTE

- The part code for some accessories may differ depending on your region.
- The items' color and shape may vary, depending on the model.
- The stand and stand screw may not be included, depending on the model.
- The Data Cable may not be included, depending on the SI Vendor.

- Remote Control : AA59-00818A
- Batteries (AAA x 2) : 4301-000121
- Quick Set up Guide : BN68-05023C
- Power Cord : 3903-000849
- Data Cable : BN39-00864A
- Safety Guide (Not available in all locations) : BN68-03019A
- CI Card Adapter : 3709-001791

■ LED TV Stand

<p>1 EA</p> 	<p>1 EA</p> 	<p>32"</p>  x7 (M4 X L12) <p>40" ~ 55"</p>  x8 (M4 X L12)
Stand (Stand shape is depending on the model)	Guide Stand	Screws

2-4. Viewing the Functions

2-4-1. Auto Motion Plus 120 Hz

■ Function Naming

- 120 Hz FRC + MJC : Auto Motion Plus 120 Hz

■ Detail Specifications

Function (OSD)	120 Hz FRC	Judder reduction (only 24p source)	Blur reduction
Off	Off (repeat)	Off	Off
Clear	ON (interpolation)	Off	High
Standard	ON (interpolation)	Medium	Medium
Smooth	ON (interpolation)	High	High
Custom	Level variable (0~10)		
Demo	Demo (Standard / Off)		

■ 120 Hz Motion Enhancement



Off



Low / Medium / High



Demo

2-4-2. Supported Formats

■ Supported Subtitle Formats

Exterminal

Name	File Extension
MPEG-4 Timed text	Timed text .txt
SAMI	.smi
SubRip	.srt
SubViewer	.sub
Micro DVD	.sub or .txt
SubStation Alpha	.ssa
Advanced SubStation Alpha	.ass
Powerdivx	.psb

Internal

Name	File Extension
Xsub	AVI
SubStation Alpha	MKV
Advanced SubStation Alpha	MKV
SubRip	MKV
MPEG-4 Timed text	MP4

■ Supported Music File Formats

File Extension	Type	Codec	Comments
*.mp3	MPEG	MPEG1 Audio Layer 3	
*.m4a	MPEG4	AAC	
*.mpa			
*.aac			
*.flac	FLAC	FLAC	Supports up to 2 channel
*.ogg	OGG	Vorbis	Supports up to 2 channel
*.wma	WMA	WMA	WMA 10 Pro supports up to 5.1 channel. WMA lossless audio is not supported. Supports up to M2 profile (except LBR mode)
*.wav	wav	wav	
*.mid *.midi	midi	midi	type 0, type 1 are supported.
*.ape	ape	ape	

■ Supported Video Formats

File Extension	Container	Video Codec	Resolution	Frame rate (fps)	Bit rate (Mbps)	Audio Codec		
*.avi *.mkv *.asf *.wmv *.mp4 *.3gp *.vro *.mpg *.mpeg *.ts *.tp *.trp *.mov *.flv *.vob *.svi *.m2ts *.mts	AVI MKV ASF MP4 3GP MOV FLV VRO VOB PS TS SVAF	Divx 3.11 / 4 / 5 / 6	1920 x 1080	6~30	30	AC3 LPCM ADPCM(IMA, MS) AAC HE-AAC WMA DD+ MPEG(MP3) G.711(A-Law, μ -Law)		
MPEG4 SP/ASP								
H.264 BP/MP/HP								
			Motion JPEG		640 x 480		8	
			Microsoft MPEG-4 v3		1280 x 720			
			Window Media Video v7,v8		1920x1080		30	
			Window Media Video v9					
			MPEG2					
			MPEG1					
*.divx			MVC		640 x 480		24/25/30	60
			VP6				6~30	4
*.webm	WebM	VP8	1920 x1080		20	Vorbis		

■ Other Restrictions

Codecs may not function properly if there is a problem with the content data. Video content does not play or does not play 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 data transmission speeds." Some USB/digital camera devices may not be compatible with the player.

■ Video Decoders

- Supports up to H.264, Level 4.1 (does not support FMO/ASO/RS)
- VC1 AP L4 is not supported.
- All video codecs excluding WMV v7, v8, MSMPEG4 v3, MVC, and VP6:
 - Below 1280 x 720: 60 frame max
 - Above 1280 x 720: 30 frame max
- GMC is not supported.
- Supports SVAF top/bottom and left/right only.
- Supports Blu-ray/DVD MVC specs only.

■ Audio Decoders

- WMA 10 Pro supports up to 5.1 channels. Supports up to M2 profile. (Excluding M0 LBR mode)
- WMA lossless audio is not supported.
- Vorbis is supported for up to 2 channels.
- DD+ is supported for up to 5.1 channels.

2-4-3. SMART Interaction (The camera is sold separately.)

This Smart TV is enabled with SMART Interaction, a facial- and movement-recognition feature that allows users to control the TV without the need for a remote control. To use SMART Interaction, you will need to purchase and install a separate camera. SMART Interaction makes it possible to configure settings and access features with ease. It takes approximately 15 seconds for motion recognition to come online after turning on the TV.

■ Face recognition

This product saves thumbnail images of users' faces for use during the Face Login. Logging into the Smart Hub via face recognition may be less secure than logging in using an ID and password.

Users can register their faces and log into their Smart Hub accounts through Face Recognition. One face may be registered per account. Depending on the ambient brightness level and the user's skin tone, the TV may have difficulty recognizing the user's face.

Face Registration

A Smart Hub login is required to register a face. Log into the Smart Hub. Create a new account if you already have one.

Face Recognition Login

Select Face Recognition Mode from the login window. The TV automatically recognizes a user's face.

If recognition fails, try again. If the password entry option has been enabled under Change account information, you need to enter your password as well in order to log into the Smart Hub.

■ TV Camera Use

Before using the TV Camera, you should be aware that under some circumstances and under certain legal conditions your misuse of the TV Camera can result in legal liability for you, and that you may be subject to the obligations of local privacy laws regarding protection of individuals with regard to the processing of personal data and on the free movement of such data, and possible other laws (including criminal laws) regulating camera surveillance both in the workplace and elsewhere. By using the TV Camera, you agree that you will not use the camera (i) in locations where cameras are generally prohibited (such as bathrooms, locker rooms or changing rooms), (ii) in any manner that will result in an invasion of a person's privacy or (iii) in violation of any applicable laws, regulations or statutes.

You should check to see whether there is a sticker attached to the rear of the TV Camera.

In order to adjust the TV Camera angle, you must first remove the sticker.

When you are finished using and don't want to use the TV Camera anymore, we recommend rotating the TV Camera lens and tucking it into the bezel of the TV. This will prevent any inadvertent and unintentional TV Camera functionalities and Face Recognition and Motion Control will not be functional.

■ Motion Control

Screen Menu → Smart Features → Motion Control

Use Motion Control to change the channel, adjust the volume, move the pointer, and control other TV functions.

Some applications may not support Motion Control.

Operating Environment

Users should be located between 1.5m and 4m from the camera. The actual recognition range may vary depending on the camera angle and other factors.

Motion Control relies on the TV camera and therefore will not function if the camera is pointed up or down. Adjust the camera to the correct angle. Do not point the camera directly at the sun or any other light source or obstruct its view.

In order for the camera to recognize movement, the user has to stand out from the background.

The appropriate ambient brightness is between 50 to 500 lux.

Avoid direct sunlight when using Motion Control.

Run Motion Control Environment Test before using Motion Control to determine the camera's recognition range.

Motion Control Environment Test

Screen Menu → Smart Features → Motion Control → Motion Control Environment Test

Run this test before using Motion Control to ensure proper functionality.

1. Run Motion Control Environment Test and select Start within 4.9ft and 13.1ft of the TV. If light reflects on the TV screen, user can be difficult to use Motion Control.
2. Adjust the camera angle so that you appear inside the square displayed on the screen. Once you have finished adjusting the camera angle, wave one hand slowly from left to right. Spread your hand out with the palm facing the TV. An arrow cursor appears on the screen when the TV recognizes the action. If recognition fails, try again.

Motion Control Options

- Motion Control: Activates/deactivates Motion Control.
- Animated Motion Guide: Displays an animated guide when user motion is detected.

Motion Control Activation

Raise your hand with the palm facing the TV. Hold it for a moment and slowly wave your arm and hand from side to side three or four times. When your hand is successfully recognized, the Motion Control is activated and an arrow cursor is displayed on the screen.

Using the Basic Motion Controls

The following basic motion control commands are available:

- Pointing Navigation : Moves the cursor to the position you want.



Action: Spread your hand and guide the cursor to position you want.

- Run / Select : Selects an item or executes a command that is indicated by the cursor or is highlighted.



Action: Clench your fist.

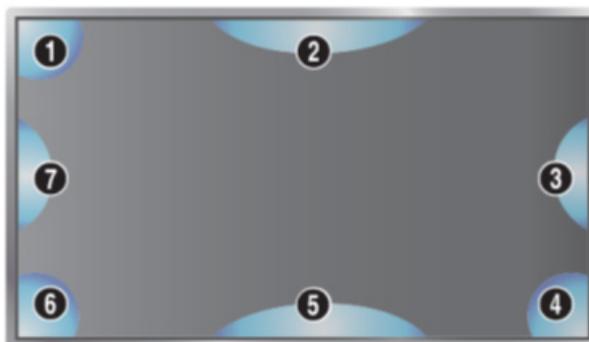
- Return : Return to the previous menu.



Action: Spread your hand and rotate counterclockwise.

Motion Control Screen

Reference the diagram to move the on-screen pointer and then wait. The following menu appears at the pointer's location:



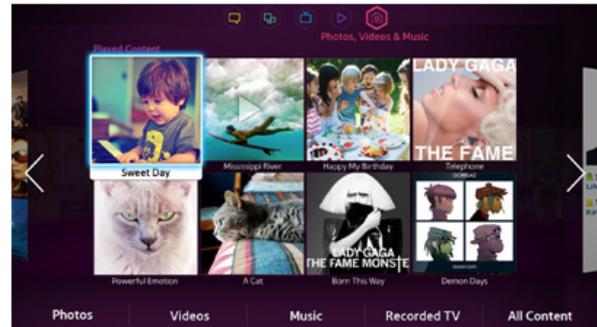
1. **Return:** Return to the previous menu or cancel a function.
2. **Notification Banner:** Enable/disable the notification banner.
3. **Channel:** Change the channel.
4. **Help:** Help information appears at the bottom of the screen, allowing you to see all available commands and launch the Motion Control Guide. Select Enable. You can turn on or off the Animated Motion Guide.
5. **Recommended:** Check the recommended program information and air times. Select a program from the list to view detailed information about that program.
History: Displays a list of recently accessed channels, media content and applications. You can then select the items from the list to access them again.
6. **Smart Hub:** Launch Smart Hub.
Remote Playback: The number buttons appear while watching TV, allowing you to change the channel by entering the channel number. While playing back media content, color buttons and playback controls appear.
Source: Change the source.
Power: Turn off the TV.
7. **Volume:** Adjust the volume.

2-4-4. SMART HUB

This TV features Smart Hub, a multi-purpose entertainment and family center. With Smart Hub, users can surf the web, download applications, and stay in touch with family and friends through social networking services. In addition, you can enjoy photo, video, and music files stored on external storage devices.

■ Content Type

Apps, Photos, Videos and Music



Apps

Download and install applications such as WebBrowser and Family Tree.

Samsung Apps offers an extensive collection of free and paid news, sports, weather, and gaming content you can directly download to and enjoy on your TV. First, check the network and make sure the TV is connected to the Internet. Your TV needs to be connected to the Internet in order to use Apps.



Samsung Apps

Samsung Apps offers various free and paid news, sports, weather, and gaming applications. Samsung Apps lets you search for applications and install them directly on your TV. Read and agree to the terms and conditions of use and then browse through the categories or directly search for applications.

Fitness

Fitness is an application that helps you stay fit. Create a profile, set up an exercise plan, and start exercising according to a structured regimen. Read and agree to the terms and conditions before using Fitness.

Kids

This is a quick launcher and recommended list for applications and content that is suitable for children and even provides services not currently installed on your TV. Using Kids, you can download applications and content for your children to your TV. Certain services, however, are fee-based.

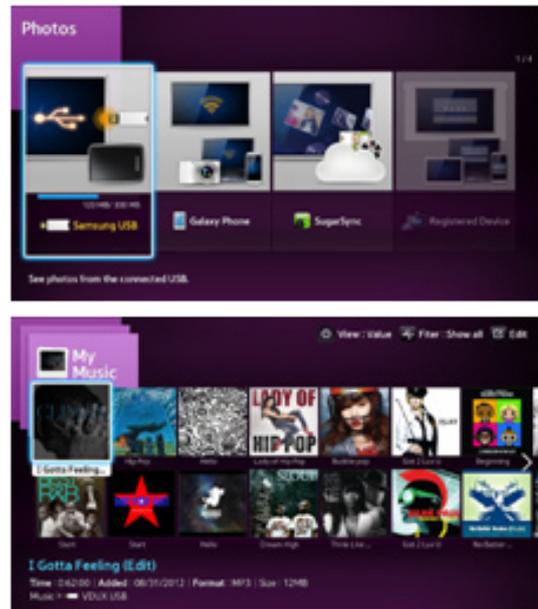
WebBrowser

WebBrowser is a web-browsing application. Using WebBrowser, you can browse the Internet on your TV as you would on your computer and even watch TV while you surf the web. The browsing experience, however, may not be the same as it is on your computer. Use a keyboard and mouse for a more convenient web browsing experience.

Photo, Video and music

Play back photo, video, and music files from an external storage device.

Enjoy photo, video and music files from an external storage device directly on your TV. Back up important files before connecting an external storage device to the TV. Samsung will not be held responsible for damaged or lost files.



3. Disassembly and Reassembly

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



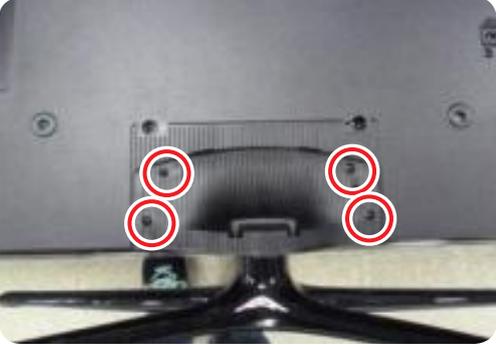
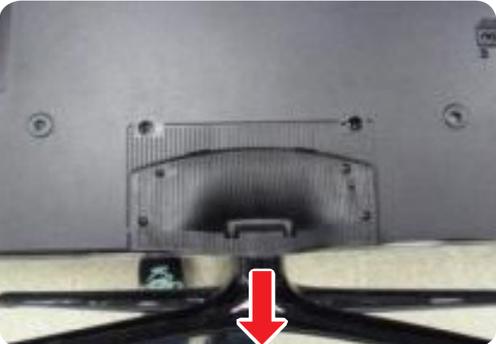
This LED TV contains electrostatically sensitive devices. Use caution when handling these components.

3-1. Disassembly and Reassembly

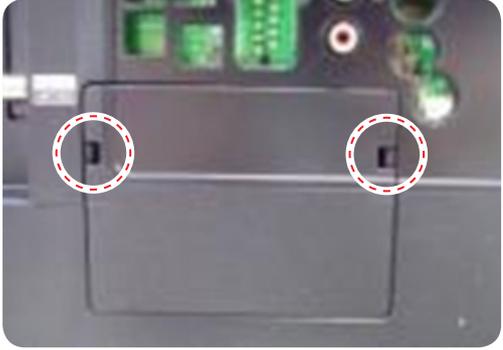


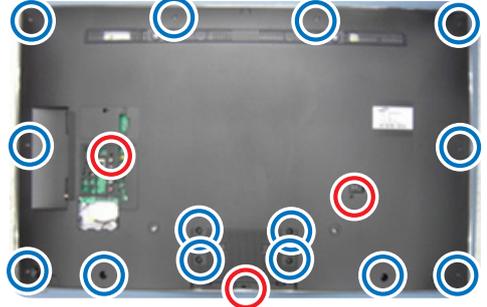
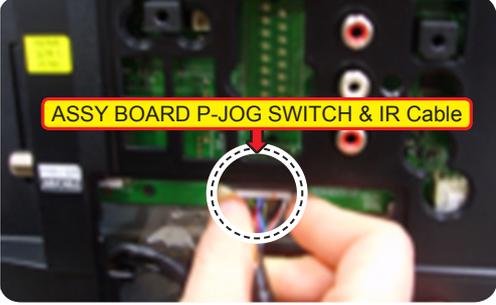
1. Disconnect the LED TV from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.
3. If there is no additional coment, it is same for all inches.

3-1-1. 32"/40"/46"

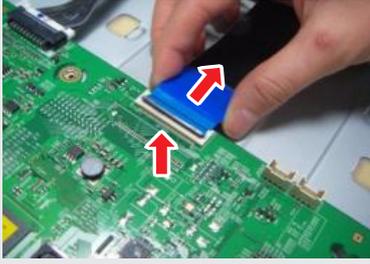
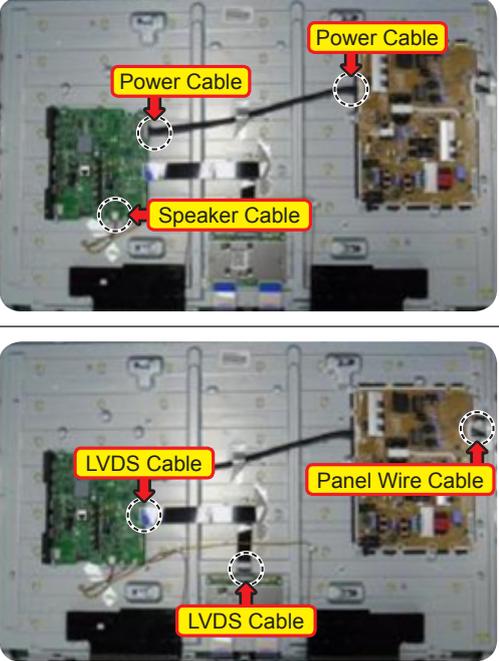
Description	Picture Description	Screws
<p>1 Place TV face down on cushioned table.</p>		
<p>2 Remove 4 screws from the ASSY GUIDE P-STAND.</p>		<div style="text-align: center;">  <p>6001-001782 SCREW-MACHINE M4.0, L12.0 BLK</p> </div>
<p>3 Remove STAND.</p>		

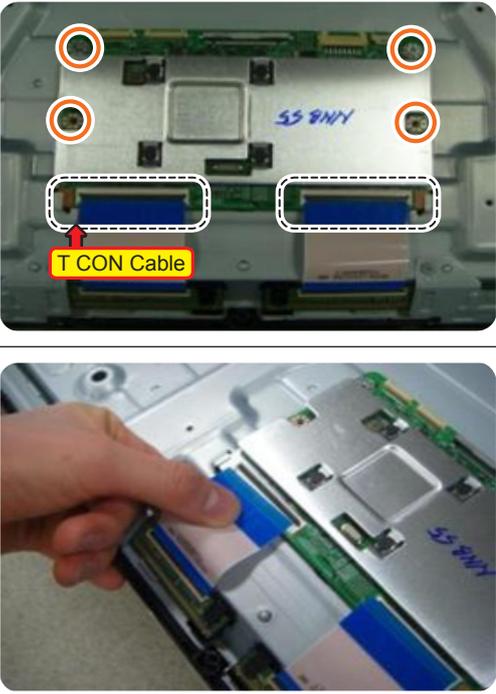
3. Disassembly and Reassemble

Description	Picture Description	Screws
<p>4 Remove the IR-Cover after push the locking in both sides.</p>		
		
		

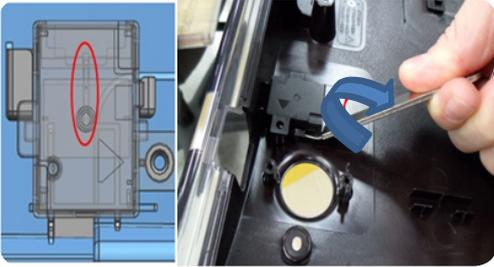
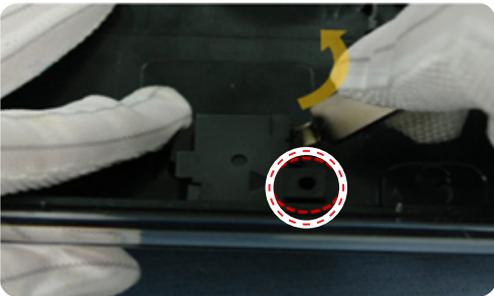
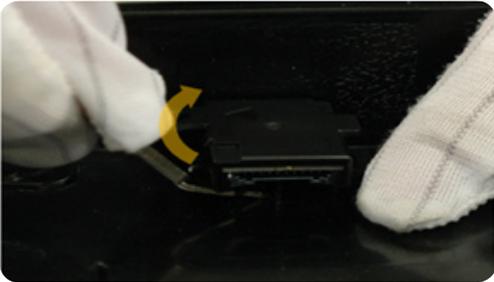
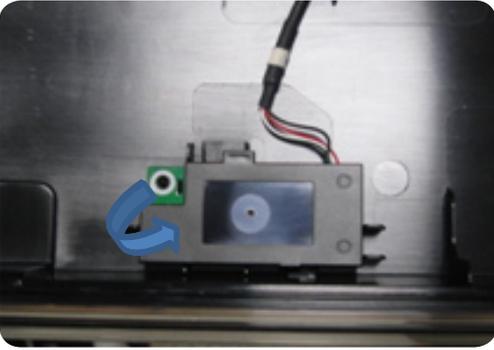
Description	Picture Description	Screws
<p>5 Remove the screws of rear-cover. (In this step, Two types of screws are used.)</p> <ul style="list-style-type: none"> • 32" : 9EA / 2EA • 40" : 14EA / 2EA • 46" : 14EA / 3EA 		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;">   </div> <p style="text-align: center;">6001-002755 SCREW-MACHINE M3.0, L6.0 BLK</p> <div style="display: flex; align-items: center; margin-bottom: 10px;">   </div> <p style="text-align: center;">6001-001782 SCREW-MACHINE M4.0, L12.0 BLK</p> </div>
<p>6 Disconnect the ASSY BOARD P-JOG SWITCH & IR Cable.</p> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p> NOTE</p> <p>First remove the cable before you remove the ASSY COVER P-MIDDLE, REAR.</p> </div>	 	
<p>7 Remove the ASSY COVER P-MIDDLE, REAR.</p>		

3. Disassembly and Reassemble

Description	Picture Description	Screws
<p>8 Remove the Power Cables and Speaker Cables. Remove the LVDS Cable and Panel Wire Cable.</p> <p> NOTE Applied to Double locking.</p> <ol style="list-style-type: none"> 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. 		
<p>9 Remove the screws of ASSY PCB MAIN.</p>		 <p>6001-002756 SCREW-MACHINE M3.0, L6.0 WHT</p>
<p>10 Remove the screws of DC VSS-LED TV PD BD.</p>		 <p>6001-002756 SCREW-MACHINE M3.0, L6.0 WHT</p>

Description	Picture Description	Screws
<p>11 Remove the ASSY SPEAKER (L/R).</p>		
<p>12 Remove the 4 screws of ASSY T CON and unlock the locking of T CON Cable.</p>		<p>Torque : 7~8Kgf.cm.</p>  <p>6001-002653 SCREW-MACHINE M3.0, L6.0 WHT</p>
<p>13 Completed disassembly. • Panel.</p>		

3. Disassembly and Reassemble

Description	Picture Description	Screws
<p>14 Remove the B/T module.</p> <p> NOTE Preparation : BH81-00001A (Registered in Jig material)</p>  <ul style="list-style-type: none"> Twist the jig after inserting B/T module and rear cover. 	  	
<p>15 Remove the Wi-Fi module.</p>		

 **NOTE**

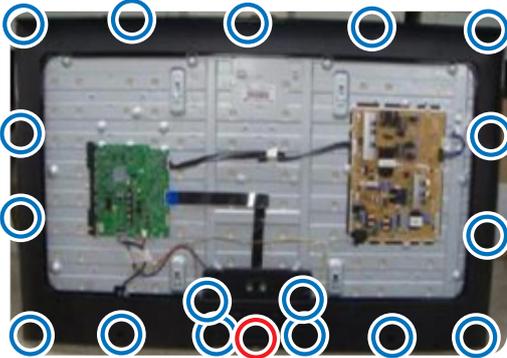
Reassembly procedures are in the reverse order of disassembly procedures.

Screw Size

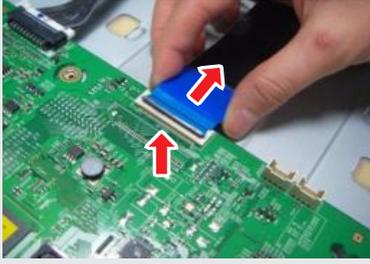
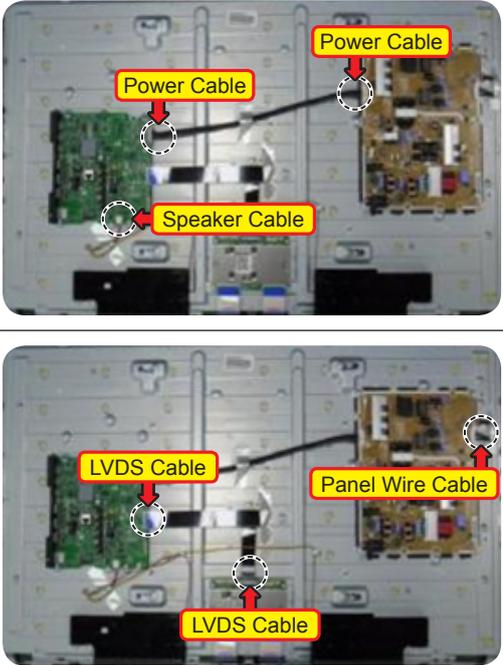
Code No.	COLOR	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Screw Image
6001-001782	BLACK	7.80~8.20	1.85~1.95	3.81~3.91	11.4~12.0	-	<p>CROSS #2(3.56) RECESS B 8.0R * C 0.6 ± 0.1 M4.0 x 1.8 TAPPING Δ B-TYPE</p>
6001-002755	BLACK	7.1~7.5	1.9~2.0	2.98~3.02	5.7~6.0	4.4~5.4	<p>CROSS #2(3.08) 母寸 Punch D:7.5 M3 x 0.5 PITCH SCALOCK TRAP 드로</p>
6001-002756	WHITE	5.6~6.0	1.15~1.25	2.92~2.98	3.7~4.0	4.4~5.4	<p>CROSS #2(3.0F) RECESS M3 x 0.5 PITCH SCALOCK TRAP 드로</p>

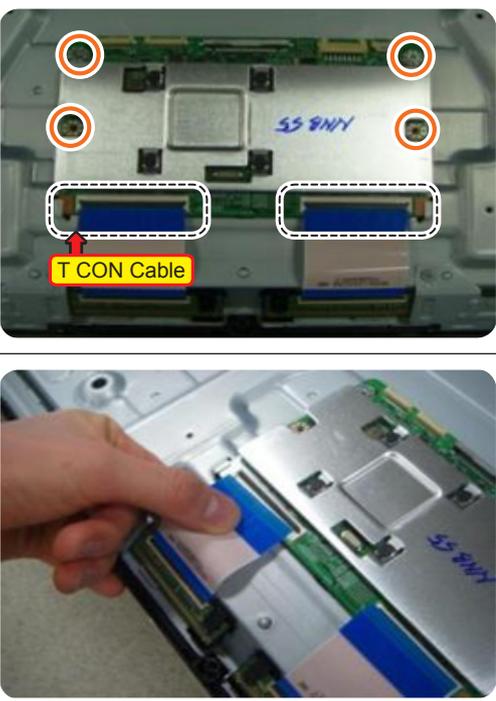
3-1-2. 55"

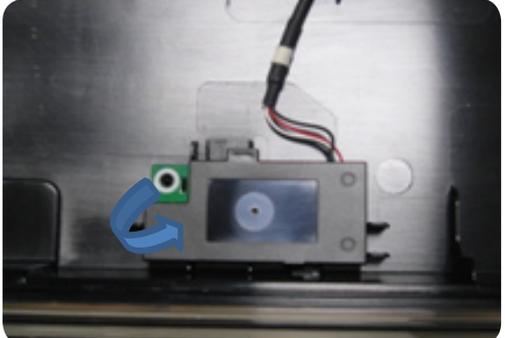
Description	Picture Description	Screws
<p>1 Place TV face down on cushioned table.</p>		
<p>2 Remove 4 screws from the ASSY GUIDE P-STAND.</p>		<div style="text-align: center;">  <p>Torque : 9~11Kgf.cm.</p> </div> <p>6001-001782 SCREW-MACHINE M4.0, L12.0 BLK</p>
<p>3 Remove STAND.</p>		

Description	Picture Description	Screws
<p>4 Remove the screws of rear-cover. (In this step, Two types of screws are used.)</p>		<p>Torque : 7~8Kgf.cm.</p>  <p>6001-002755 SCREW-MACHINE M3.0, L6.0 BLK</p> <p>Torque : 9~11Kgf.cm.</p>  <p>6001-001782 SCREW-MACHINE M4.0, L12.0 BLK</p>
<p>5 Lift up and remove the rear-cover and remove the screws of the middle-cover. (In this step, Two types of screws are used.)</p> <p>! CAUTION First remove the cable before you remove the ASSY COVER P-MIDDLE, REAR.</p>		<p>Torque : 7~8Kgf.cm.</p>  <p>6001-002755 SCREW-MACHINE M3.0, L6.0 BLK</p> <p>Torque : 9~11Kgf.cm.</p>  <p>6001-001782 SCREW-MACHINE M4.0, L12.0 BLK</p>
<p>6 Lift up and remove the ASSY COVER P-MIDDLE, REAR.</p> <p>! CAUTION You have to disconnect the function connector before the ASSY COVER P-MIDDLE, REAR.</p>		

3. Disassembly and Reassemble

Description	Picture Description	Screws
<p>7 Remove the Power Cables and Speaker Cables. Remove the LVDS Cable and Panel Wire Cable.</p> <p> NOTE Applied to Double locking.</p> <ol style="list-style-type: none"> 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. 		
<p>8 Remove the screws of ASSY PCB MAIN.</p>		 <p>6001-002756 SCREW-MACHINE M3.0, L6.0 WHT</p>
<p>9 Remove the screws of DC VSS-LED TV PD BD.</p>		 <p>6001-002756 SCREW-MACHINE M3.0, L6.0 WHT</p>

Description	Picture Description	Screws
<p>10 Remove the ASSY SPEAKER (L/R).</p>		
<p>11 Remove the 4 screws of ASSY T CON and unlock the locking of T CON Cable.</p>		<div data-bbox="1246 640 1410 819">  <p>Torque : 7-8Kgf.cm.</p> </div> <div data-bbox="1230 835 1422 913"> <p>6001-002653 SCREW-MACHINE M3.0, L6.0 WHT</p> </div>

Description	Picture Description	Screws
14 Remove the Wi-Fi module.		

**NOTE**

Reassembly procedures are in the reverse order of disassembly procedures.

3. Disassembly and Reassemble

Screw Size

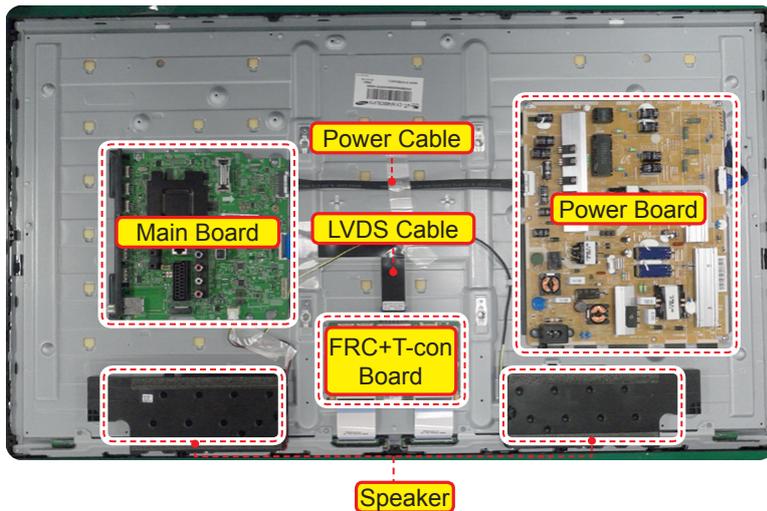
Code No.	COLOR	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Screw Image
6001-001782	BLACK	7.80~8.20	1.85~1.95	3.81~3.91	11.4~12.0	-	<p>CROSS #2(3.56) RECESS B 8.0R * C 0.6 ± 0.1 M4.0 x 1.8 TAPPING Δ B-TYPE</p>
6001-002755	BLACK	7.1~7.5	1.9~2.0	2.98~3.02	5.7~6.0	4.4~5.4	<p>CROSS #2(3.08) 母寸 Punch D:7.5 M3 x 0.5 PITCH SCALOCK TRAP 드로</p>
6001-002756	WHITE	5.6~6.0	1.15~1.25	2.92~2.98	3.7~4.0	4.4~5.4	<p>CROSS #2(*M3.0F) RECESS M3 x 0.5 PITCH SCALOCK TRAP 드로</p>

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

X12	FOX_FT1 FRC Post	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. Move to Factory mode.

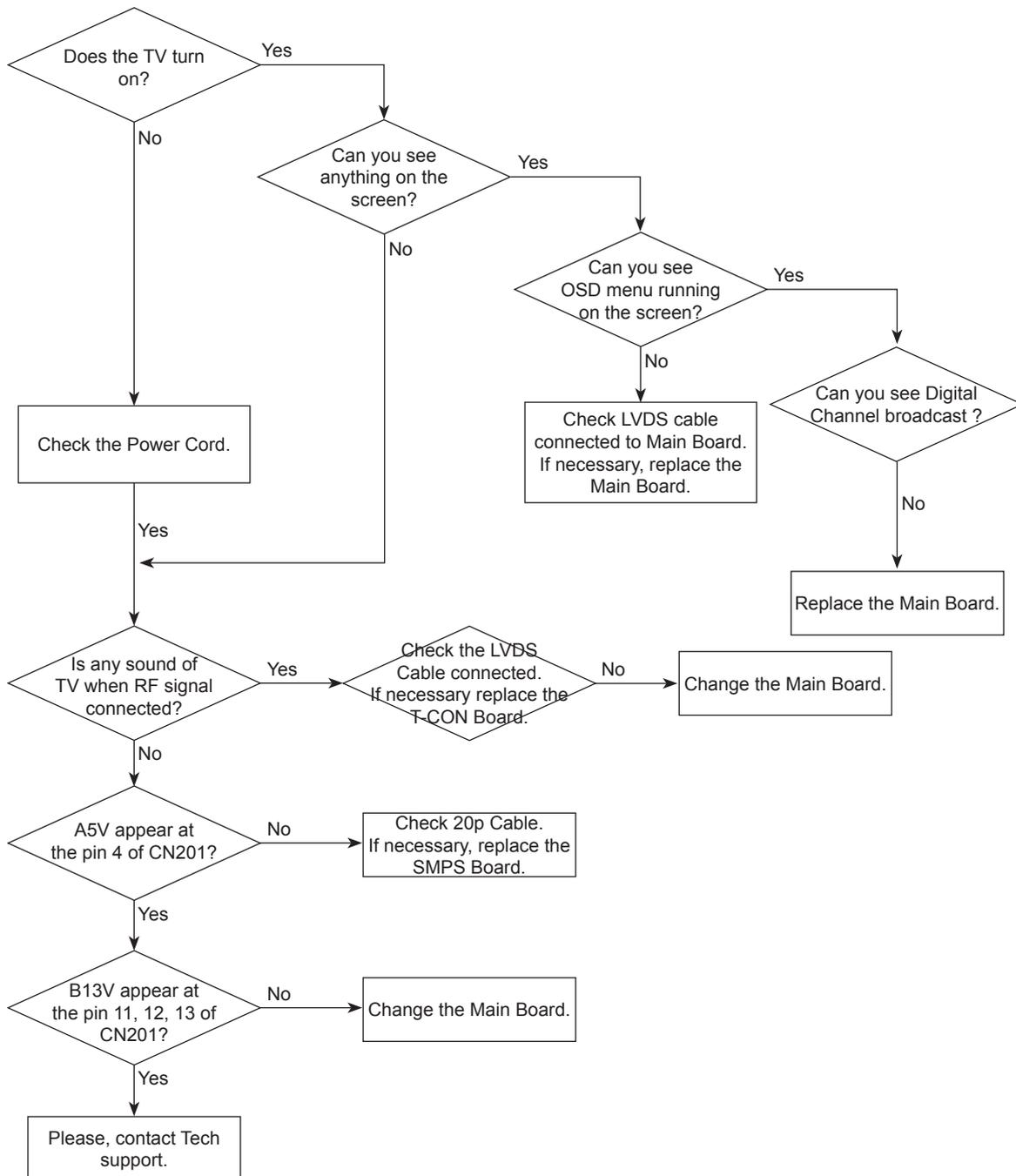


2. Move to 'Service Mode.'
3. Move to 'Test pattern'.



4. Check inner patterns.

4-1-2. Simple flow chart of malfunction



4-2. How to Check Fault Symptom

4-2-1. No Power



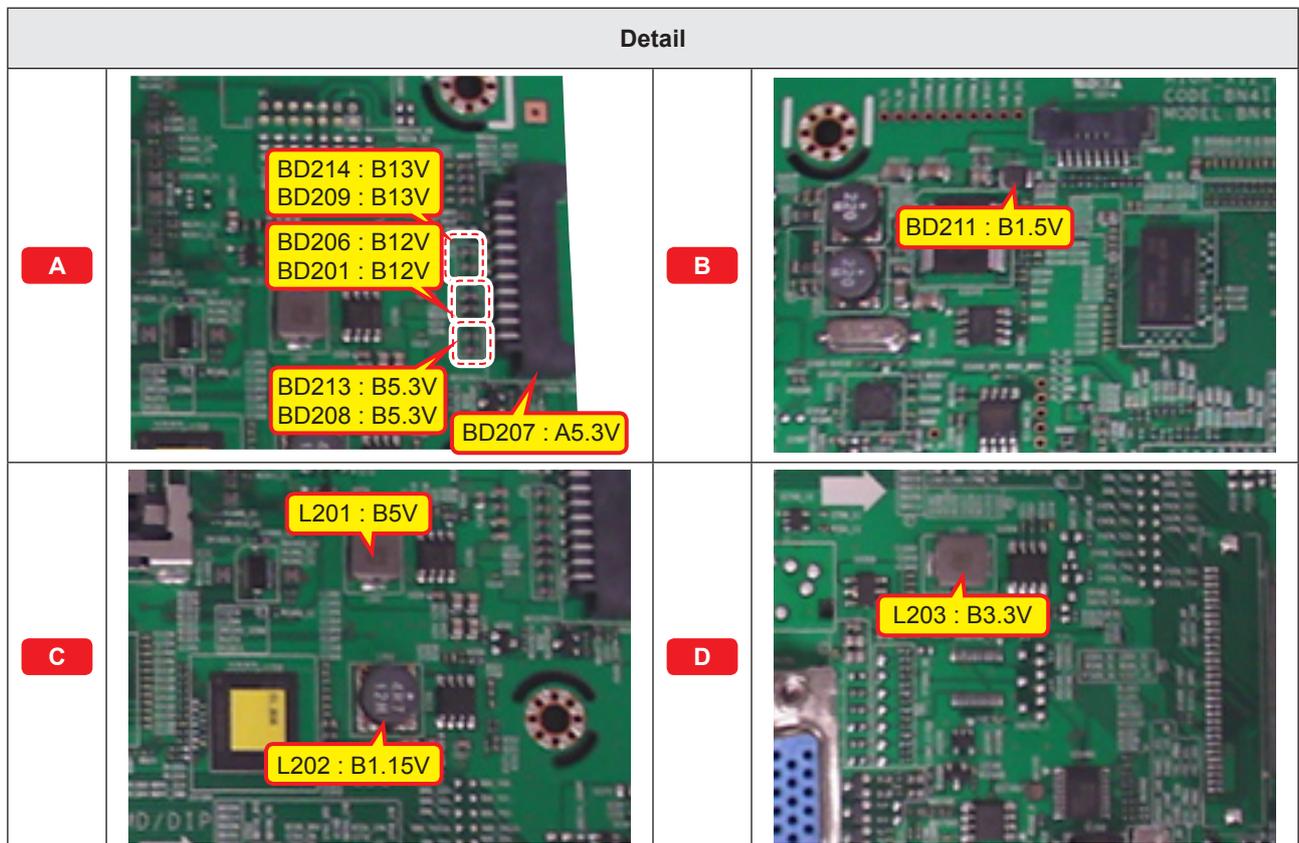
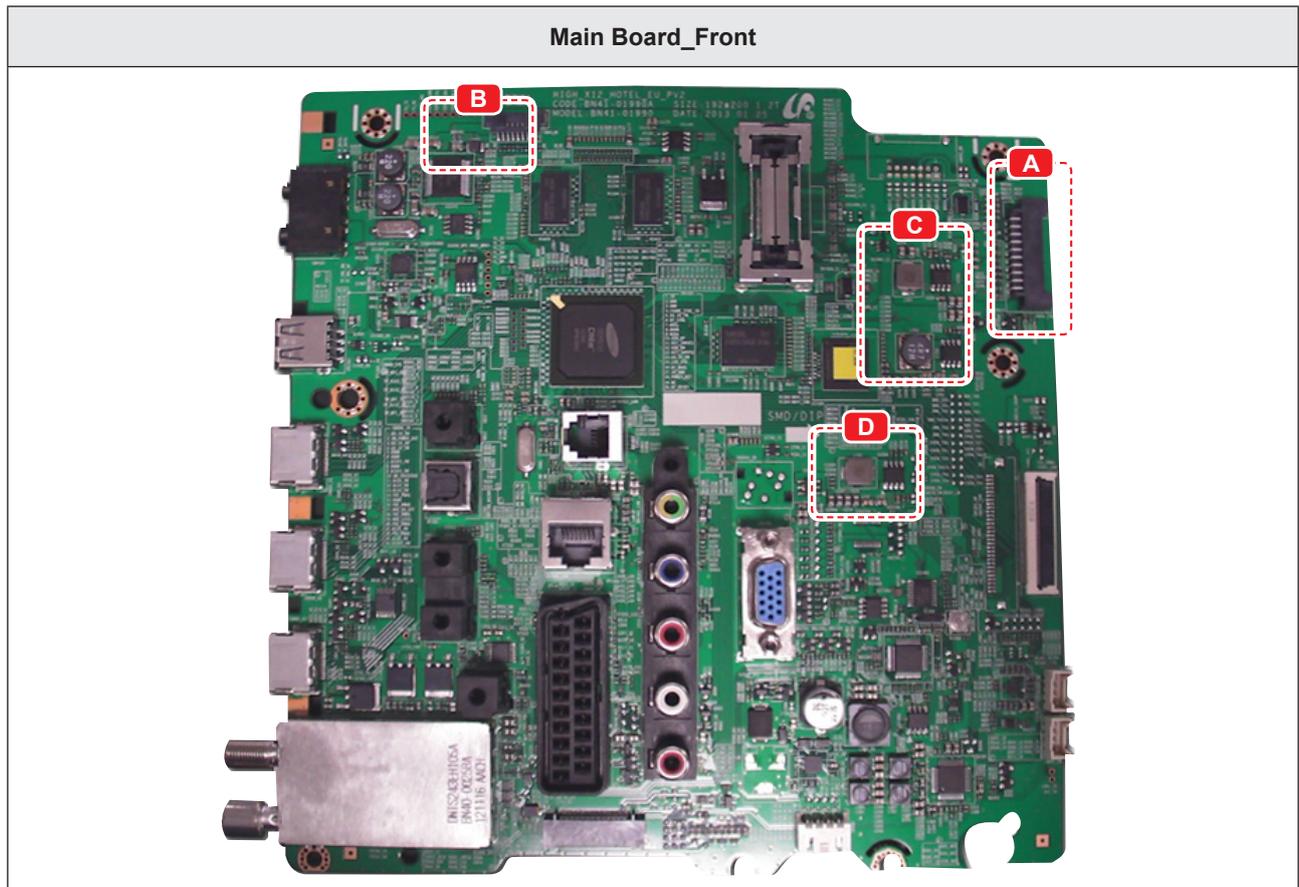
Note

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

Symptom	<ul style="list-style-type: none"> 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	<p>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:</p> <ul style="list-style-type: none"> 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 20p cable unconnected?] Q2 -- No --> A2[Change 20p cable. Change Main Power Ass'y.] Q2 -- Yes --> Q3[Check 'Stand-By 5V' ? BD207 : A5.3V] Q3 -- No --> A2 Q3 -- Yes --> Q4[Check 'Power input of Main Ass'y' ? - BD206 / BD201 : B12VS - BD214 / 209 : B13V - BD208 / BD213 : B5V] Q4 -- No --> A2 Q4 -- Yes --> Q5[Check 'Power IC output of Main Ass'y' ? - IC202 : A3.3V - L202 : B1.15V / L201 : B5V - L203 : B3.3V / BD211 : B1.5V] Q5 -- No --> A3[Change the Main Ass'y.] Q5 -- Yes --> Q6[Check Input power of 'T CON Board' ? - F1(T CON) : B13V] Q6 -- No --> A4[Reconnect or Change. the LVDS cable.] Q6 -- Yes --> Q7[Check Power of 'T CON Board'. - BD1(T CON) : Panel_12V - B1.1V(T CON-TP) : FT1_1.1V_PW] Q7 -- No --> A5[Change the T CON Board.] </pre>

Diagnostics	<p style="text-align: center;">↓ Yes ↓</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;">Please, Contact tech support.</div>
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts



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

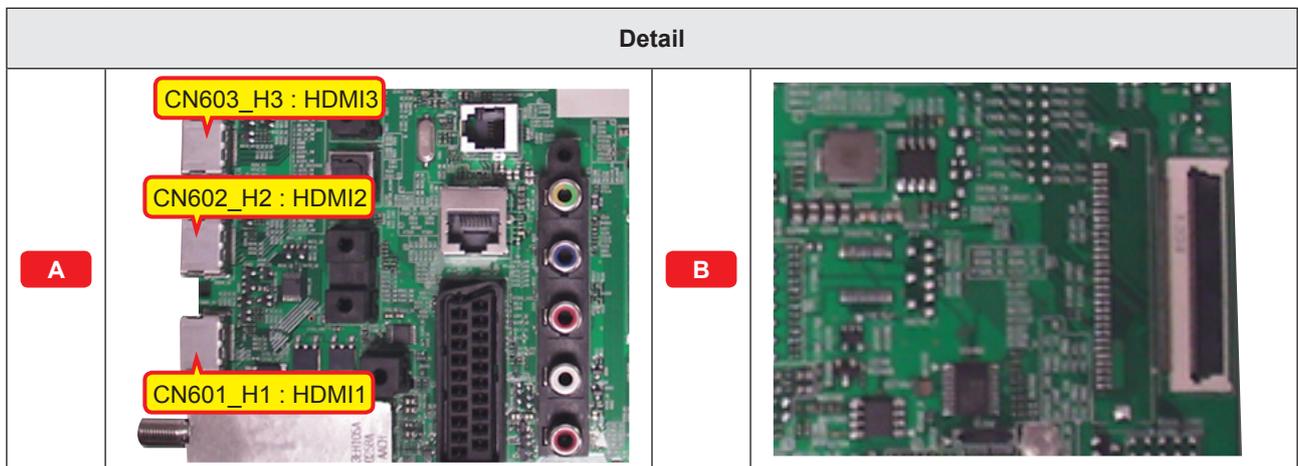
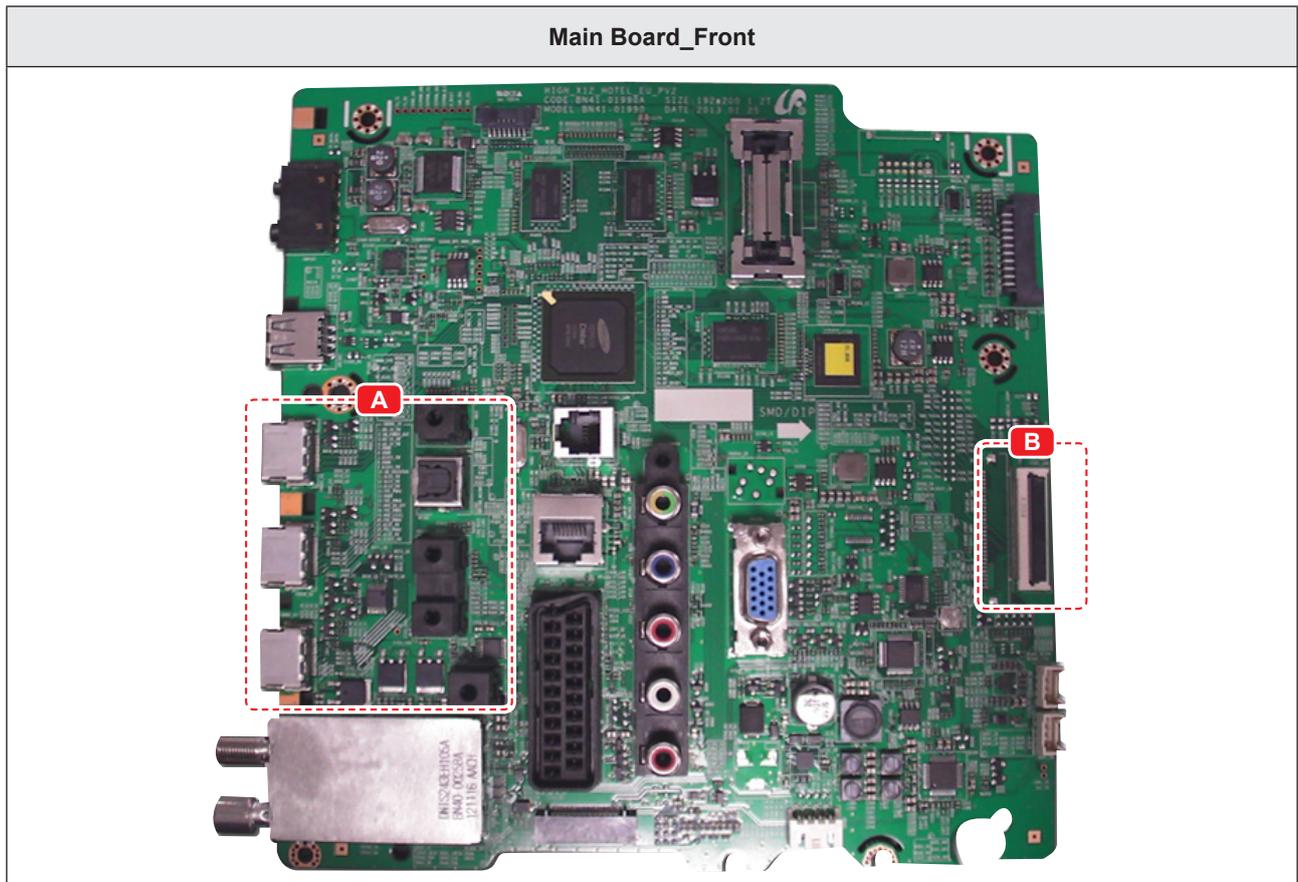


Note

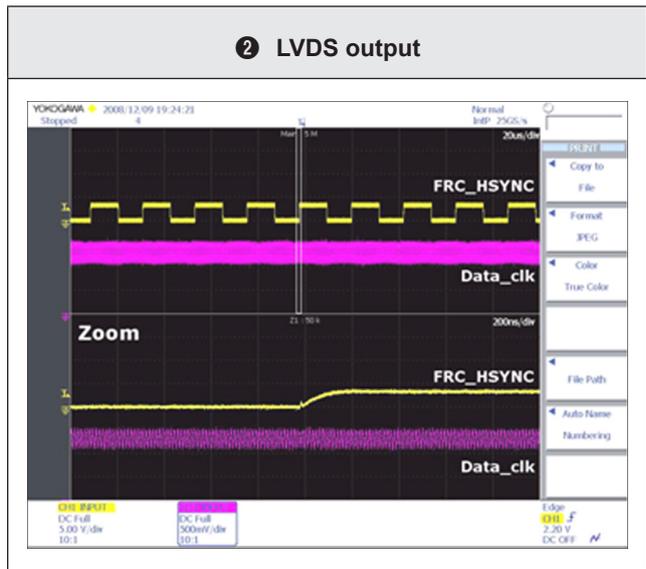
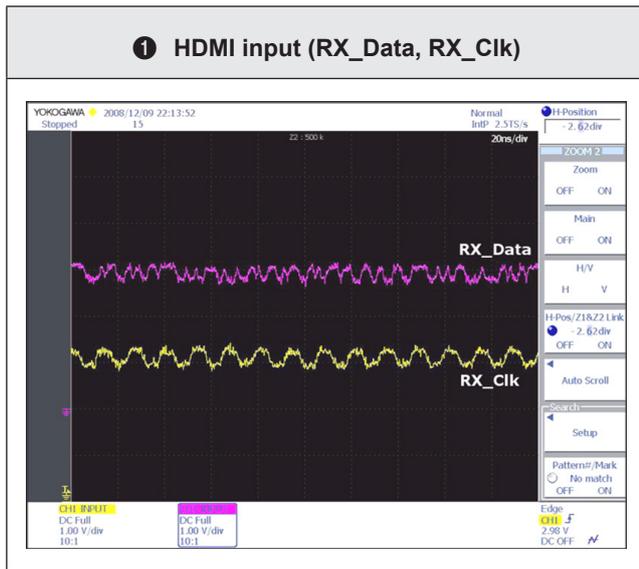
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	<ul style="list-style-type: none"> • Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> • 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	<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 HDMI source and check the connection of HDMI cable ?] Q2 -- No --> A2[Input the HDMI signal properly.] Q2 -- Yes --> Q3[Check the signal at Input of Main Board ? - HDMI1 Clk Pin #10, #12 of CN601_H1 • DATA Pin #7, #9, #4, #6, #1, #3 of CN601_H1 - HDMI2 Clk Pin #10, #12 of CN602_H2 • DATA Pin #7, #9, #4, #6, #1, #3 of CN602_H2 - HDMI3 Clk Pin #10, #12 of CN603_H3 • DATA Pin #7, #9, #4, #6, #1, #3 of CN603_H3] Q3 -- No --> A3[Check CN601~3. Check HDMI cable. Change the Main Ass'y. or Check IC1001(X12). Change the Main Ass'y.] Q3 -- Yes --> Q4[Check the LVDS clk signal at output of Main Board. (TX) - TX2_CLK : ODD_TXCLK_DN/DP - TX4_CLK : EVEN_TXCLK_DN/DP] Q4 -- No --> A4[Check IC1001(X12). Change the Main Ass'y.] Q4 -- Yes --> Q5[Check the LVDS cable? Replace the T CON / LCD panel?] Q5 -- No --> A5[Please, Contact tech support.] </pre>
Caution	<p>Make sure to disconnect the power before working on the IP Board.</p>

■ Location of Parts



■ Waveforms



4-2-3. No Video (Tuner_CVBS)

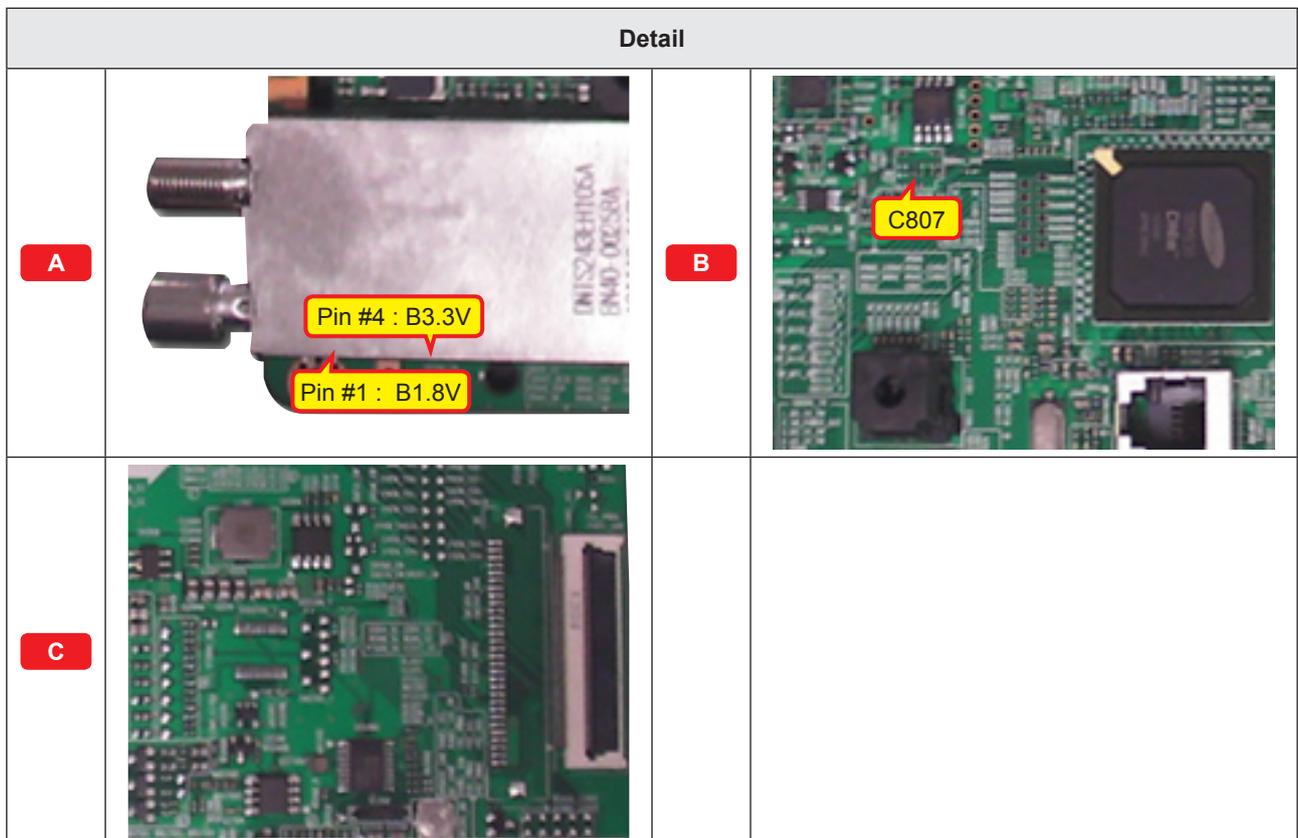
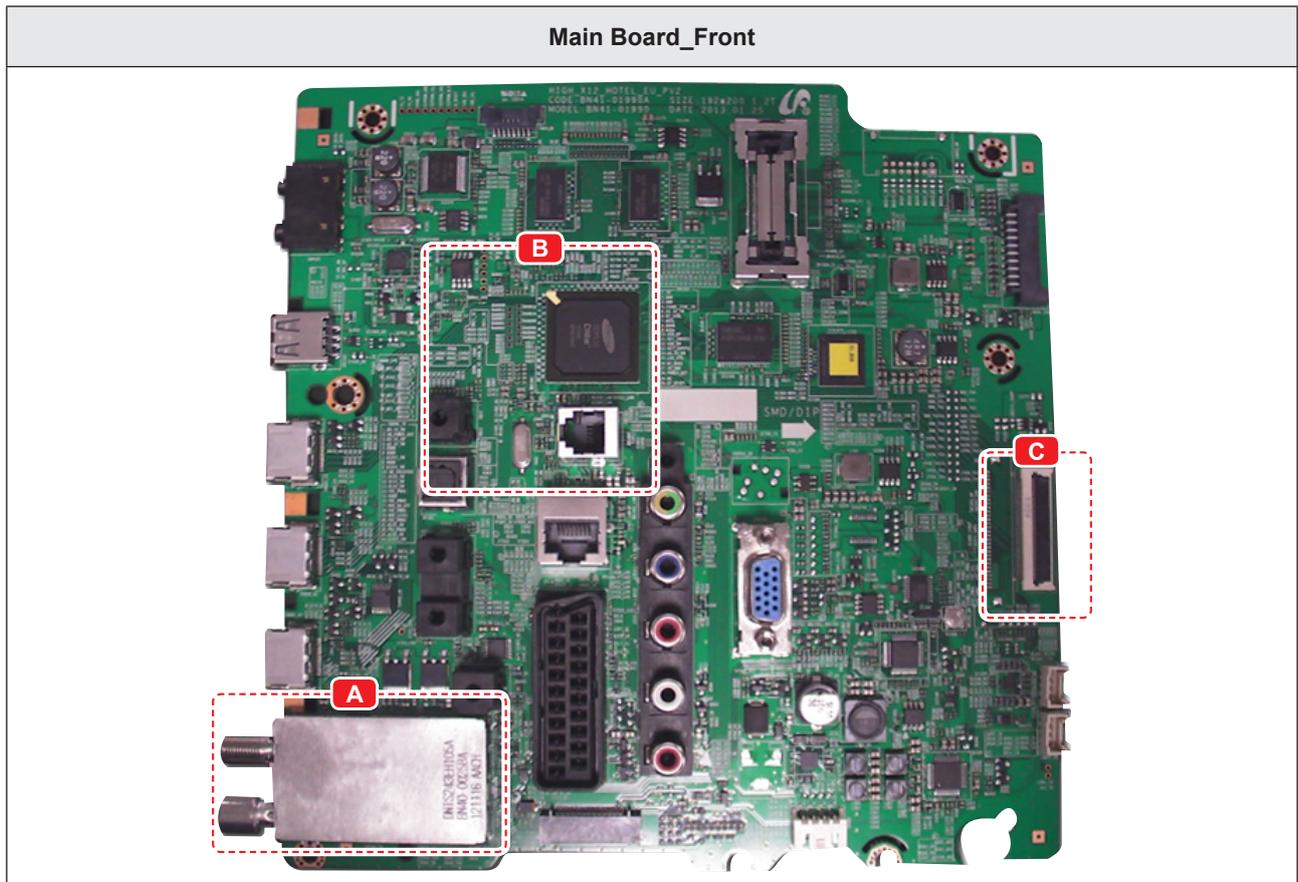


Note

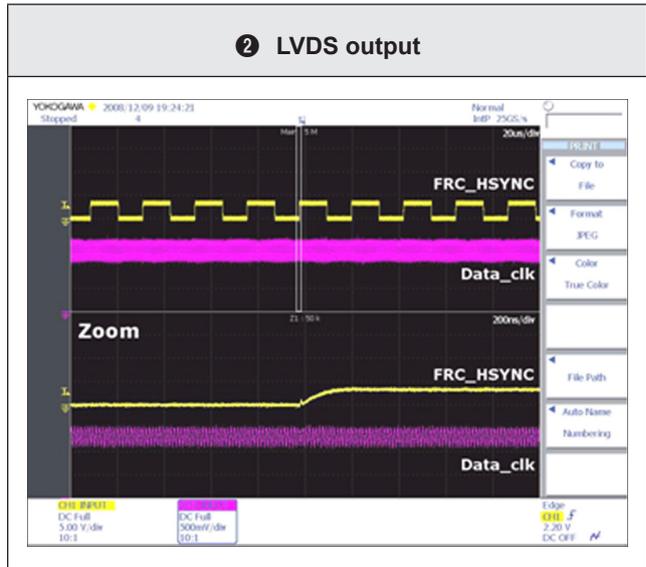
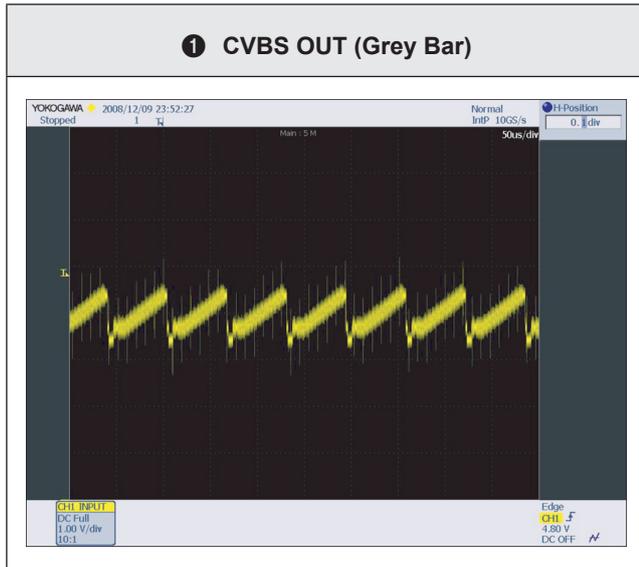
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	<ul style="list-style-type: none"> • Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> • 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[1 Check the Power of Tuner ? - Pin #4 of Tuner : B3.3V_Tuner - Pin #1 of Tuner : B1.8V_Tuner] Q3 -- No --> A3[Change the Main Ass'y.] Q3 -- Yes --> Q4[2 Check the CVBS data out of IC1001 ? C807 : Tuner CVBS] Q4 -- No --> A4[Check IC1001(X12). Change the Main Ass'y.] Q4 -- Yes --> Q5[2 Check the LVDS clk signal at output of Main board. (TX) - TX2_CLK : ODD_TXCLK_DN/DP - TX4_CLK : EVEN_TXCLK_DN/DP] Q5 -- No --> A5[Check IC1001(X12). 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	<p>Make sure to disconnect the power before working on the IP Board.</p>

■ Location of Parts



■ Waveforms



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

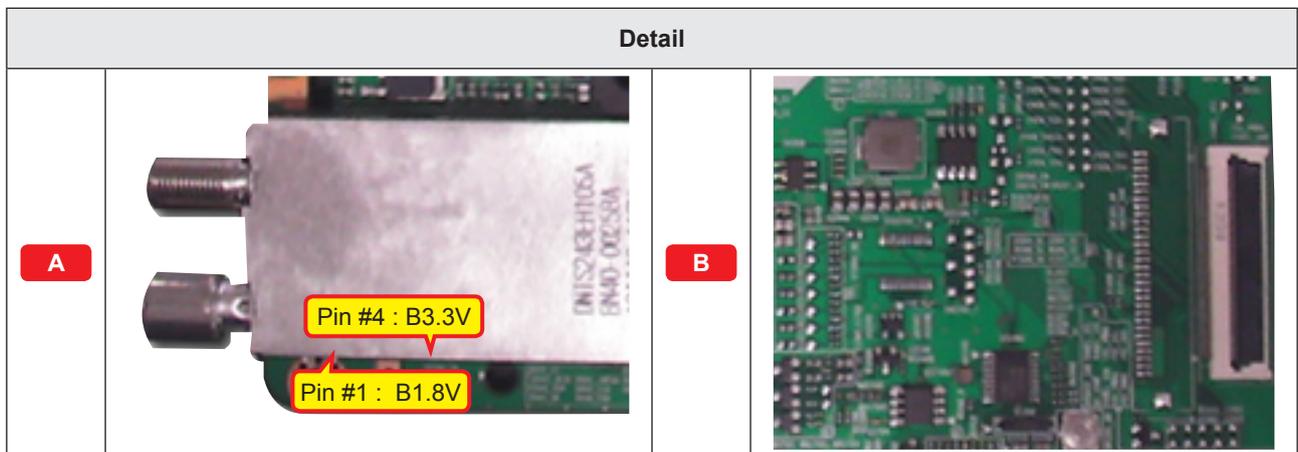
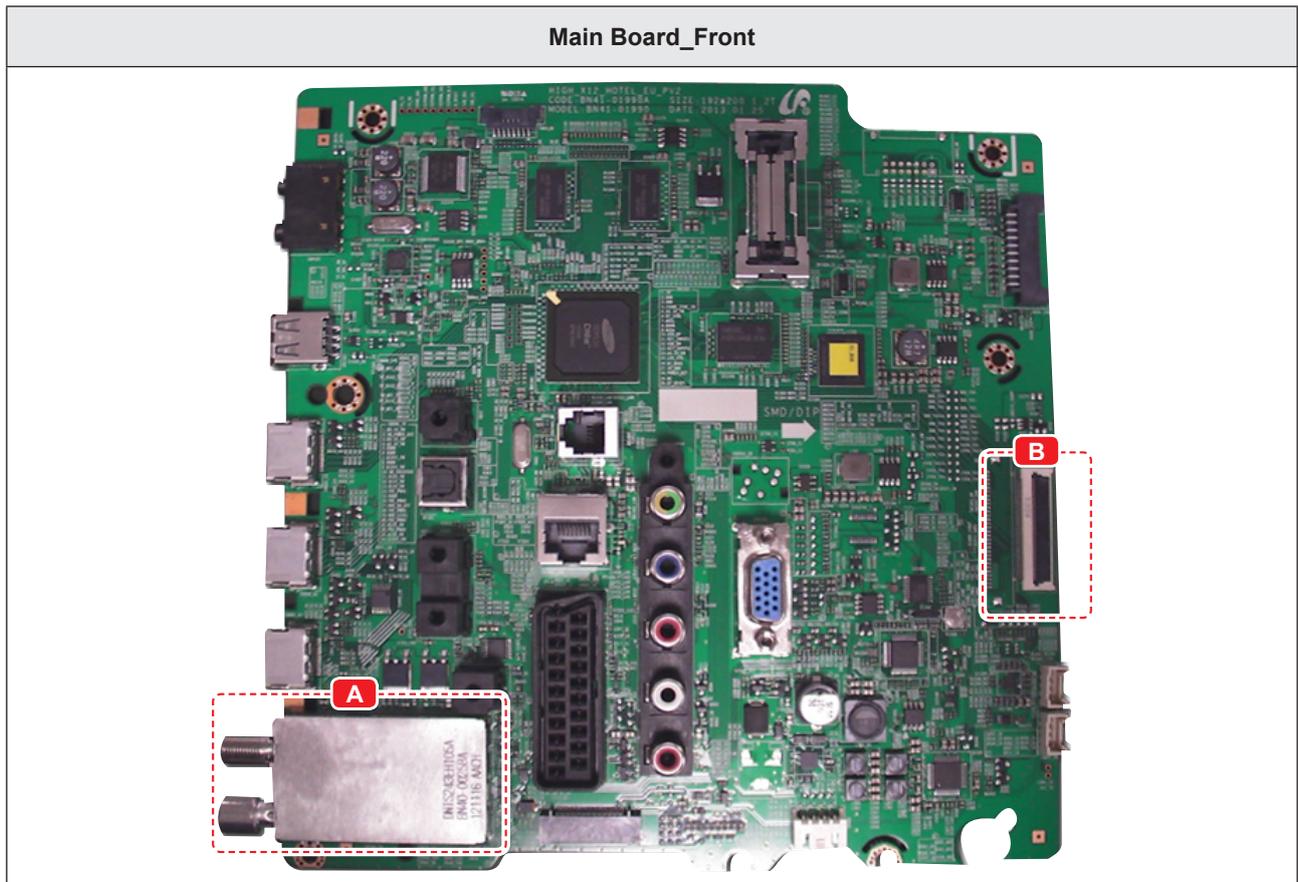


Note

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

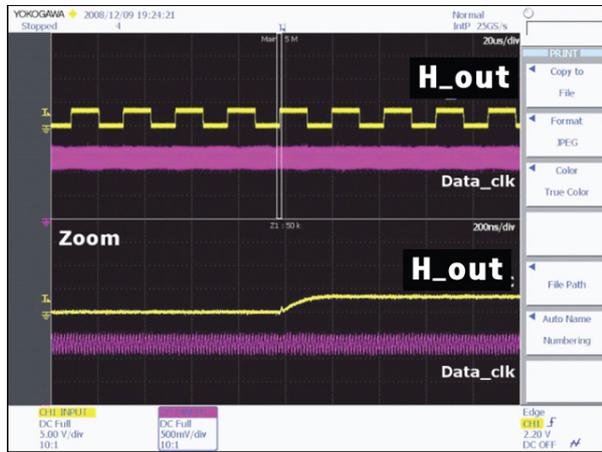
Symptom	<ul style="list-style-type: none"> • Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> • Check the DTV source. • Check the Tuner. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	<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 #4 of Tuner : B3.3V_Tuner - Pin #1 of Tuner : B1.8V_Tuner] Q4 -- No --> A4[Change the Main Ass'y.] Q4 -- Yes --> Q5[2 Check the LVDS clk signal at output of Main board. (TX) - TX2_CLK : ODD_TXCLK_DN/DP - TX4_CLK : EVEN_TXCLK_DN/DP] Q5 -- No --> A5[Check IC1001(X12) 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	<p>Make sure to disconnect the power before working on the IP Board.</p>

■ Location of Parts

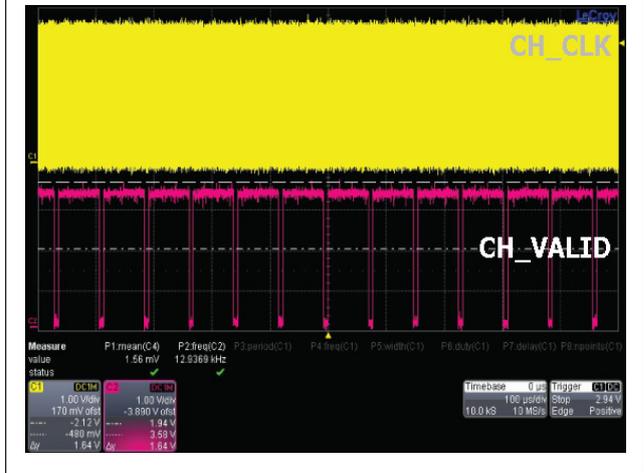


■ Waveforms

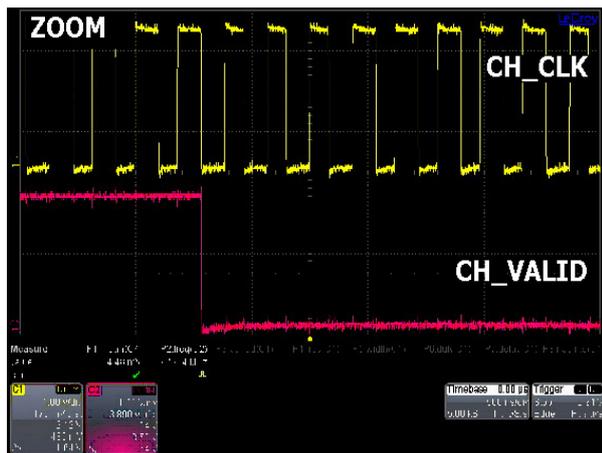
① CVBS OUT (Grey Bar)



② CH_CLK, CH_VALID



② CH_CLK, CH_VALID



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

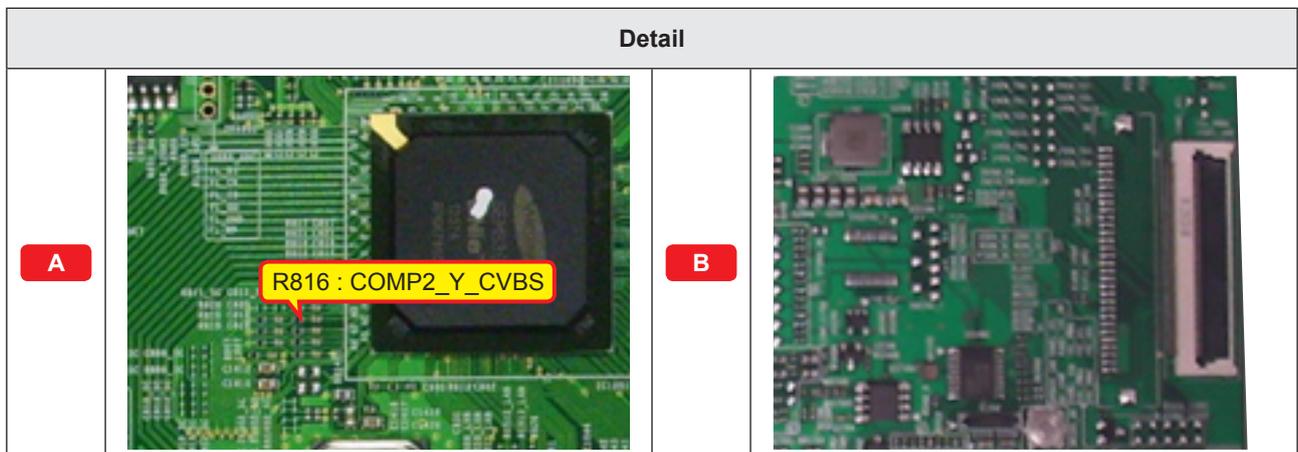
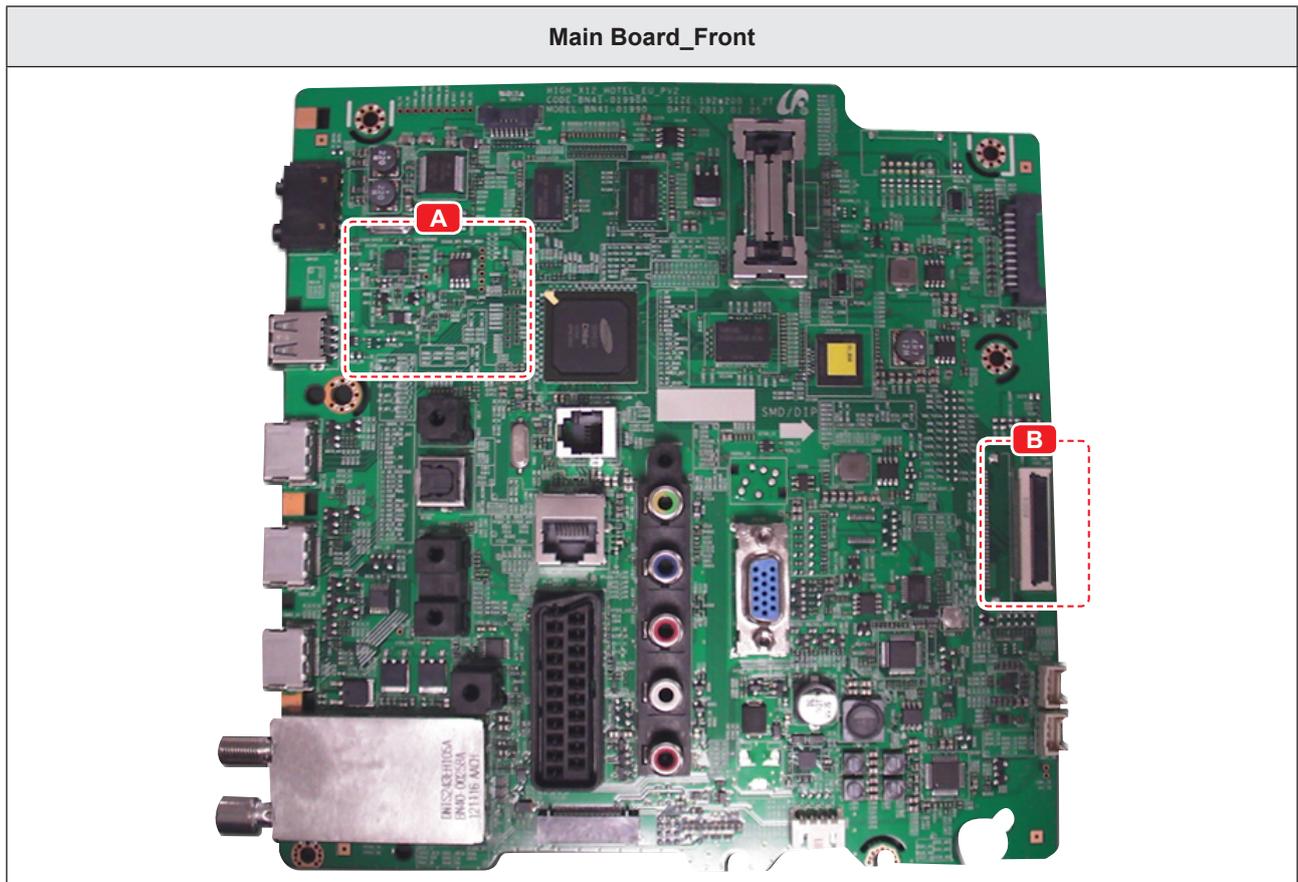


Note

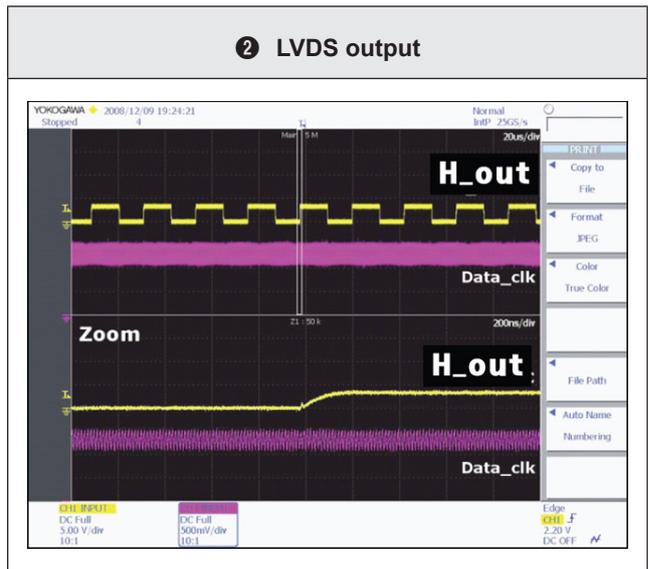
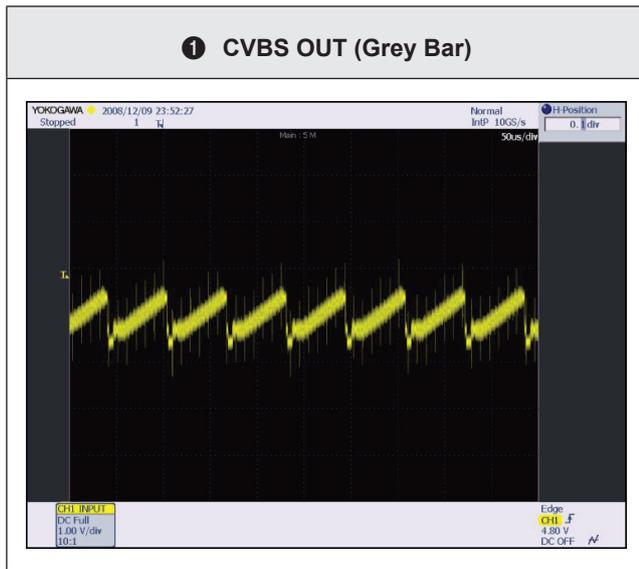
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	<ul style="list-style-type: none"> • Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> • Check the Video CVBS source. • 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 video source and check the connection of video cable?] Q2 -- No --> A2[Input the video source properly.] Q2 -- Yes --> Q3[Check the LVDS clk signal at output of Main board. (TX) ② - TX2_CLK : ODD_TXCLK_DN/DP - TX4_CLK : EVEN_TXCLK_DN/DP] Q3 -- No --> A3[Check IC1001(X12) Change the Main Ass'y.] Q3 -- Yes --> Q4[Check the LVDS cable? Replace the T CON / LCD panel?] Q4 -- No --> A4[Please, Contact tech support.] </pre>
Caution	<p>Make sure to disconnect the power before working on the IP Board.</p>

■ Location of Parts



■ Waveforms



4-2-6. No Video (COMPONENT)

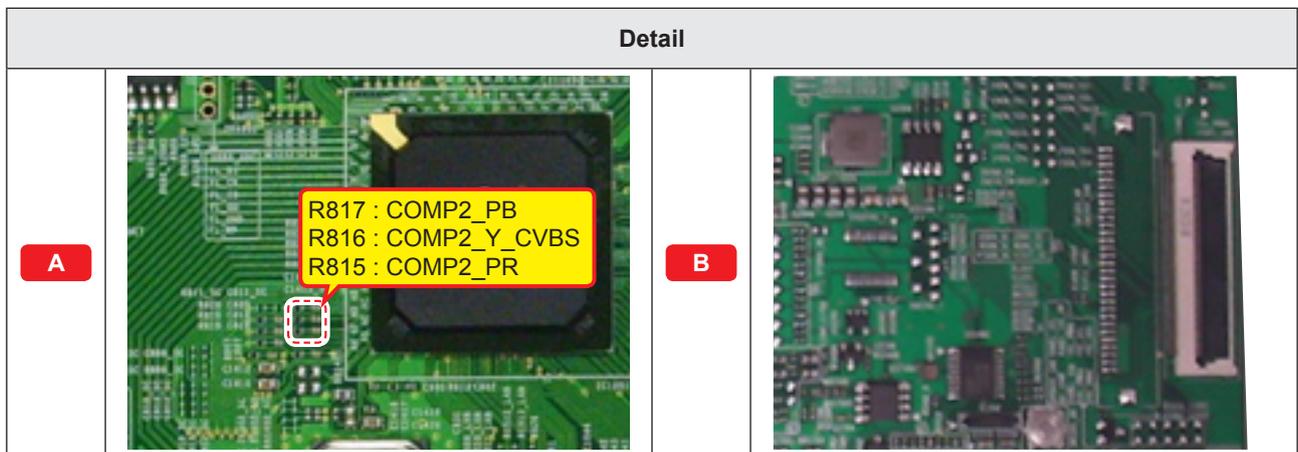
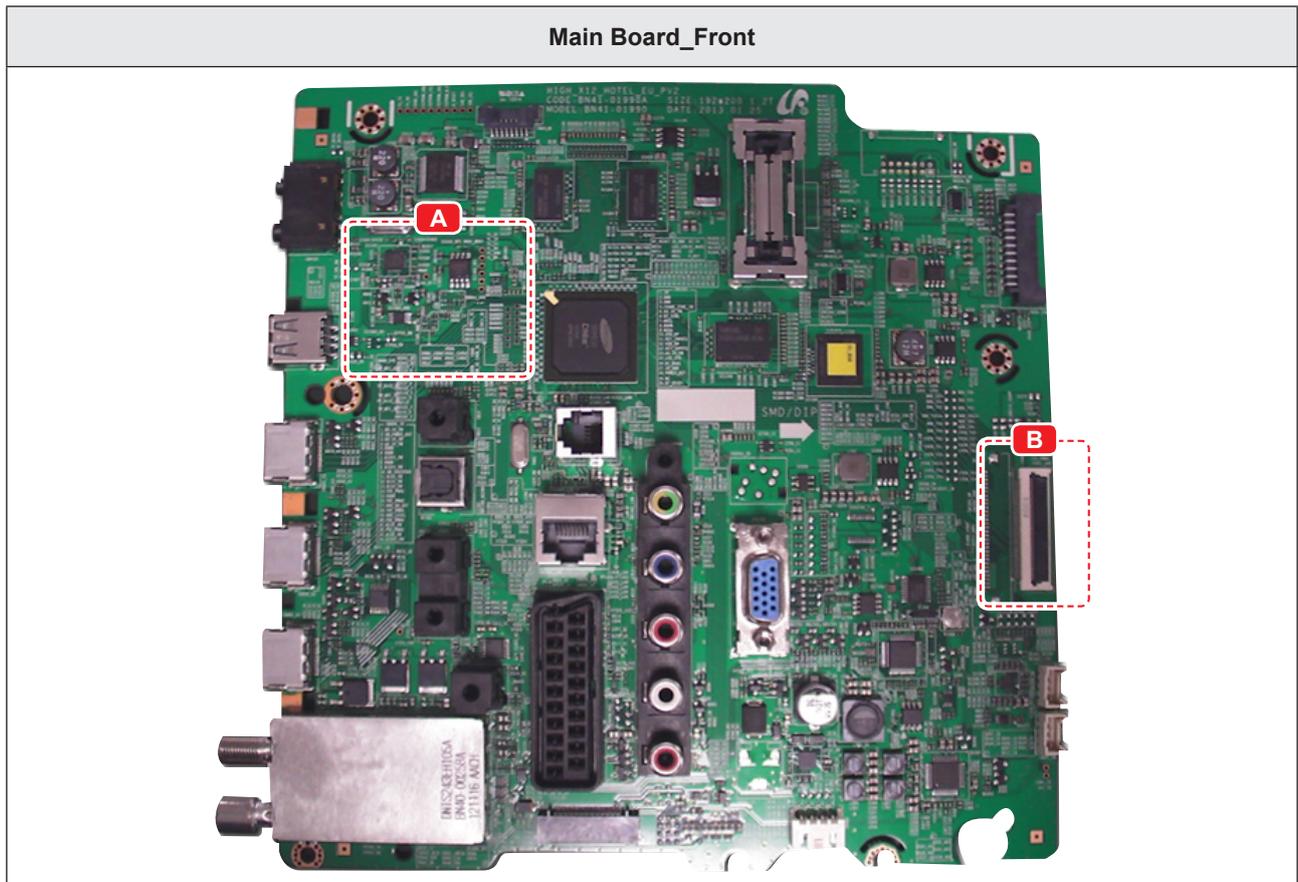


Note

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

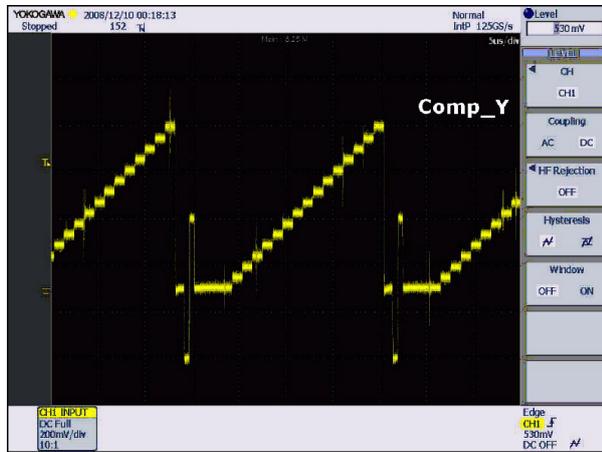
Symptom	<ul style="list-style-type: none"> • Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> • Check the Component source • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	<pre> graph 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 component source and check the connection of component cables ? Y, Pb, Pr] Q2 -- No --> A2[Input the component source properly.] Q2 -- Yes --> Q3[Does the component data appear at ? - COMP2_Y_CVBS : R816 - Pb : R817 - Pr : R815] Q3 -- No --> A3[Check CN502. Change the Main Ass'y.] Q3 -- Yes --> Q4[Check the LVDS clk signal at output of Main Board. (TX) - TX2_CLK : ODD_TXCLK_DN/DP - TX4_CLK : EVEN_TXCLK_DN/DP] Q4 -- No --> A4[Check IC1001(X12). Change the Main Ass'y.] Q4 -- Yes --> Q5[Check the LVDS cable? Replace the T CON / LCD panel?] Q5 -- No --> A5[Please, Contact tech support.] </pre> <p>The flowchart starts with the question: "Power indicator LED is off. Lamp(Backlight) on, no video?". If "No", the action is "Check a set in the 'Stand-by mode'". If "Yes", it proceeds to "Check the component source and check the connection of component cables? Y, Pb, Pr". If "No", the action is "Input the component source properly.". If "Yes", it asks "Does the component data appear at?". If "No", the action is "Check CN502. Change the Main Ass'y.". If "Yes", it asks "Check the LVDS clk signal at output of Main Board. (TX)". If "No", the action is "Check IC1001(X12). Change the Main Ass'y.". If "Yes", it asks "Check the LVDS cable? Replace the T CON / LCD panel?". If "No", the action is "Please, Contact tech support.".</p>
Caution	<p>Make sure to disconnect the power before working on the IP Board.</p>

■ Location of Parts

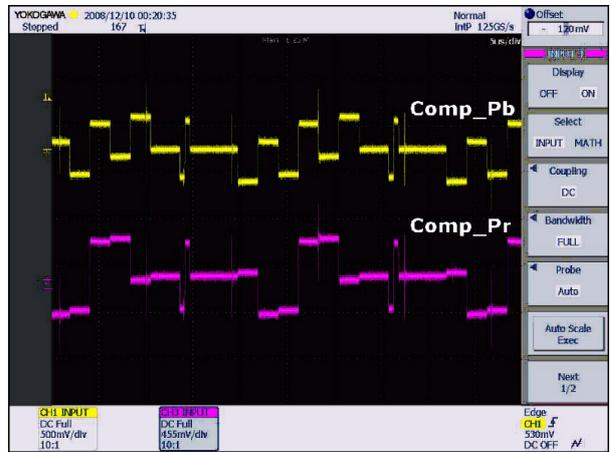


■ Waveforms

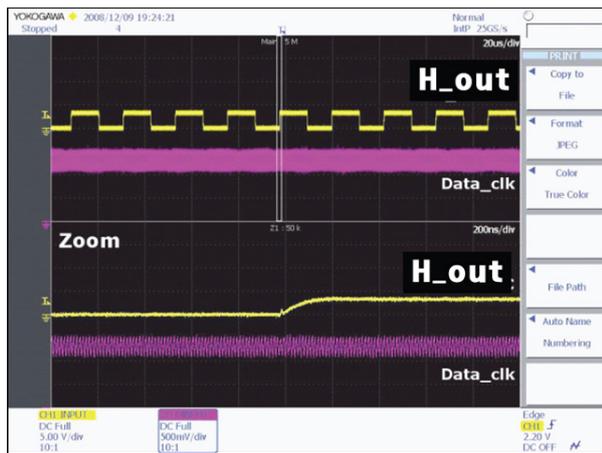
① Component_Y (Gray scale) / Pb / Pr (Color bar)



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



② LVDS output



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

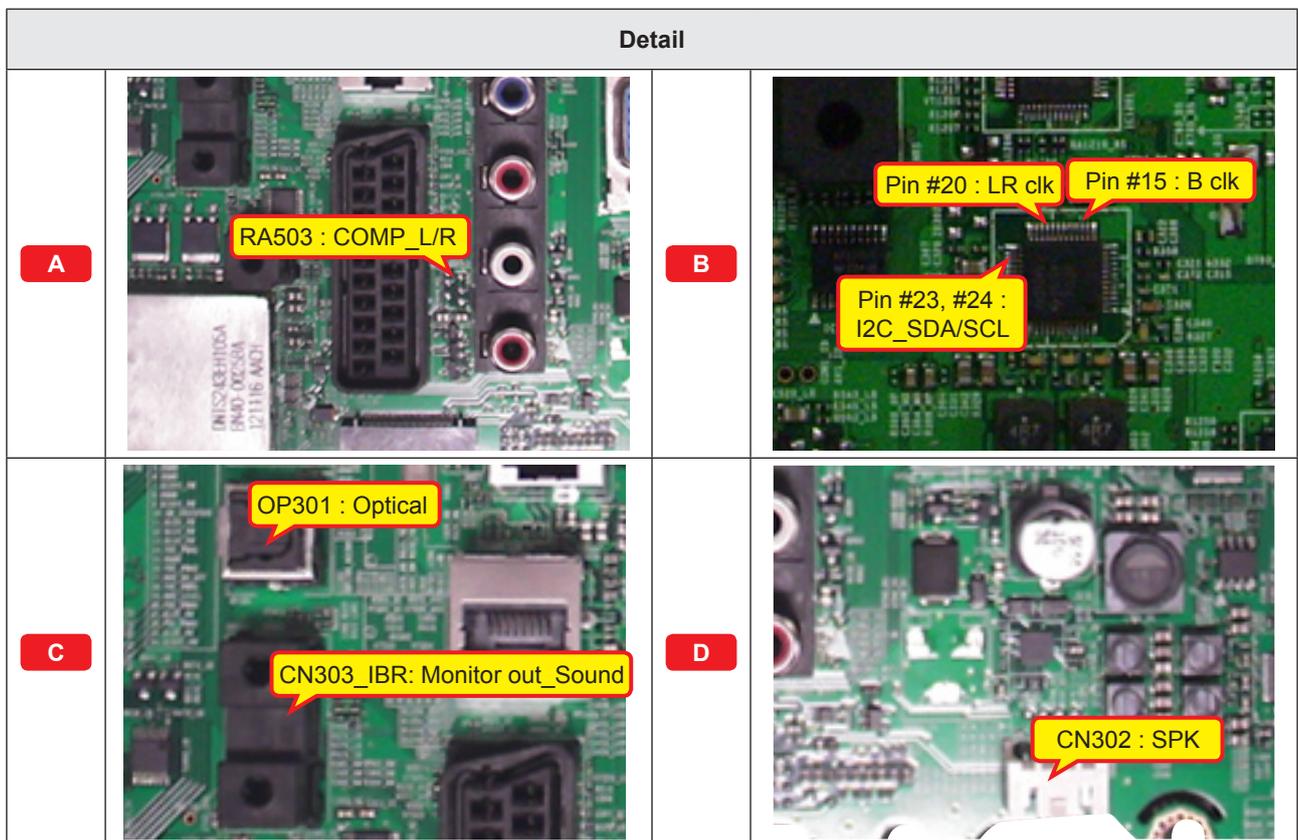
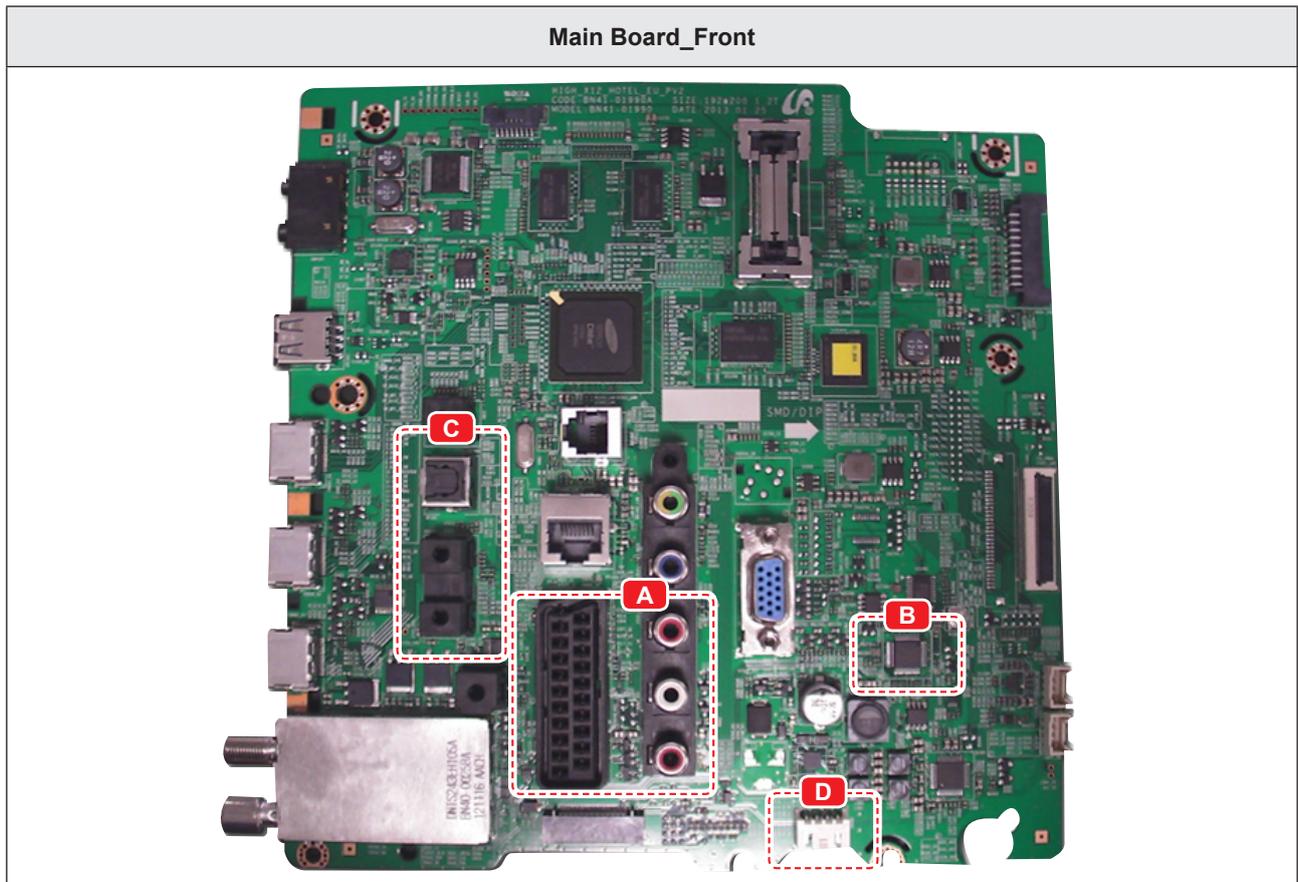


Note

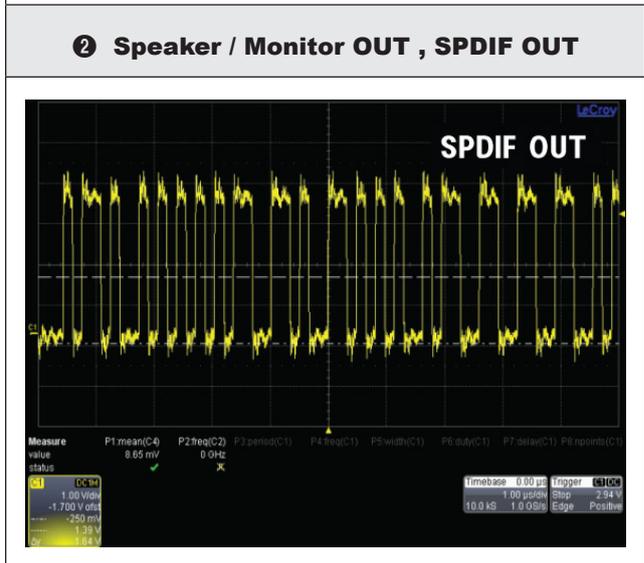
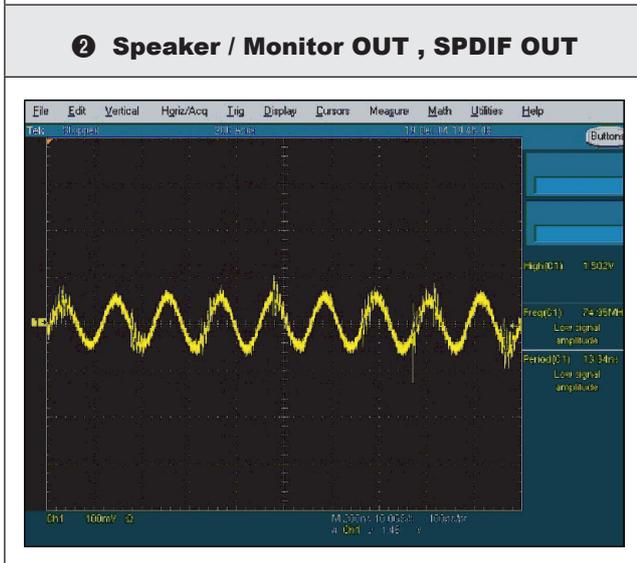
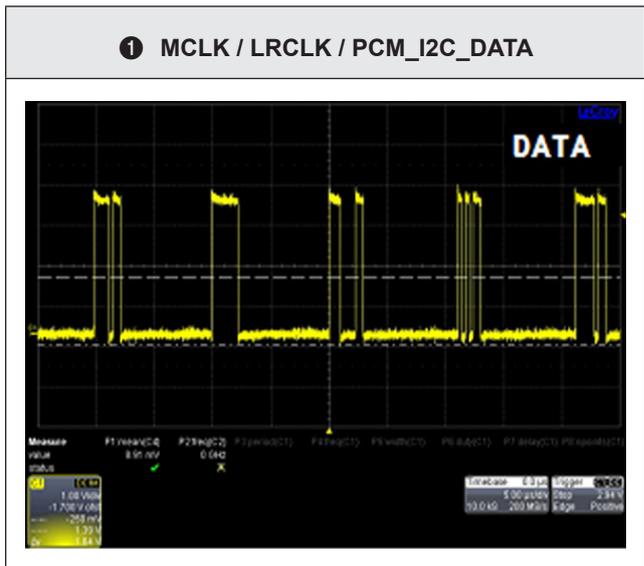
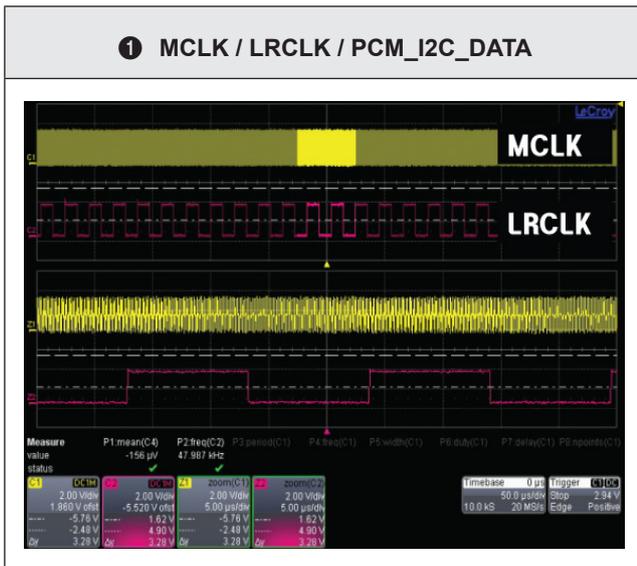
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	<ul style="list-style-type: none"> • Video is normal but there is no sound.
Major checkpoints	<ul style="list-style-type: none"> • When the speaker connectors are disconnected or damaged. • When the sound processing part of the Main Board is not functioning. • Speaker defect.
Diagnostics	<div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">Check the source and check the connection of sound cable ? COMP</p> <p style="text-align: right;">No → Input the sound source properly.</p> <p style="text-align: center;">↓ Yes</p> <p style="text-align: center;">Check the signal at input of Main Board? AV, COMP L/R : RA503</p> <p style="text-align: right;">No → Check CN502. Change the Main Ass'y.</p> <p style="text-align: center;">↓ Yes</p> <p style="text-align: center;">① Check the DATA between the Audio IC's ?</p> <ul style="list-style-type: none"> - Pin #15 of IC301 : B clk - Pin #20 of IC301 : LR clk - Pin #23, #24 of IC301 : I2C_SDA/ SCL <p style="text-align: right;">No → Check IC301. Change the Main Ass'y.</p> <p style="text-align: center;">↓ Yes</p> <p style="text-align: center;">②</p> <ol style="list-style-type: none"> 1. Check the Speaker sound data at ? - CN302 2. Check the Monitor out sound data at ? - CN303_IBR 3. Does the SODIF OUT sound data appear at ? - OP301 <p style="text-align: right;">No → Change the Main Ass'y.</p> <p style="text-align: center;">↓ Yes</p> <p style="text-align: center;">Replace speaker ?</p> <p style="text-align: right;">No → Please, Contact Tech support.</p> </div>
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**".

Model Name		HG32EB690QB	HG40EB690QB	HG46EB690QB	HG55EB690QB
PANEL	Vendor	SDC	SDC	SDC	SDC
	Code	BN95-00885A	BN95-00889A	BN95-00893A	BN95-00895A
	Spec.	CY-HF320CSLV1V	CY-HF400CSLV1V	CY-HF460CSLV1V	CY-HF550CSLV1V
SMPS	PD Board	BN44-00607A	BN44-00645A	BN44-00611A	BN44-00612A
MAIN ASSY	Chassis Ass'y	BN91-10559Y	BN91-10560B	BN91-10560F	BN91-10560K
	PBA Ass'y	BN94-06303K	BN94-06303N	BN94-06303S	BN94-06303W
Byte	Item				
0	Factory Reset	-	-	-	-
1	Type	32A1AF0S	40A1AF0S	46A1AF0S	55A1AF0S
2	Local set	EU			
3	SW Model	HB690			
4	BOM Model	690			
5	Tuner	TCS2			
6	Ch table	NONE			
7	Country	-			
8	Front Color	U-T-CL-M64			

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



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

Option	T-MST12DEUCB-xxxx
Control	T-MST12DEUSB-xxxx
Debug	BT Version : xxxx
SVC	E-Manual : xxxx
ADC/WB	Camera Version : xxxx
Advanced	Blaster-version : ----
	EDID SUCCESS
	CALIB : AV/COMP/PC/HDMI/
	Option : xxxx,UE,690,NONE
	USB RS232C : OFF
	SDAL-X12-MAIN-xxxx-xxxx
	RFS : "X12 0071" KER/201x-xx-xx
	KERNEL : 8.0837, D / Onboot :xxxx.x
	Backend IC[x], Data Ver : xxxx
	TCON Version : xxxx
	DTP-DTVTD-xxxx
	Model : HGxxEB690
	Wired MAC SUCCESS
	Wireless MAC SUCCESS
	DRM : Crt O, Nf O, Wv O, Hc O, Dc O, Mx O, MI O
	Factory Data Ver : 97
	EERC Version : 51
	DTP-BP-HAL-3183
	DTP-AP-CNC-3151
	DTP-AP-MM-3145
	DTP-AP-WP-3148
	DTP-BP-MW-3156
	DTP-BP-APP-3156
	POP-FLA-13-TEMP
	Date of purchase : mm/dd/yyyy

- How to enter the hidden factory mode.
 - Into the factory mode.
 - Move the tap to Advanced.
 - Key input : 0 + 0 + 0 + 0.



hidden menu : Advanced

4-3-3. Factory Data

■ Option

Factory Menu Name	Data	Range
Factory Reset	-	
Type	32A1AF0S / 40A1AF0S / 46A1AF0S / 55A1AF0S	
Local Set	EU	
SW Model	HB690	
BOM Model	690	
TUNER	NONE	
Ch Table	NONE	
MRT Option		
Front Color	NONE	
LVDS FORMAT	JEIDA	
Language_Arabic	KR	
Region	KOR	
PnP Language	KOR	
WIFI REGION	V	
OTN Support	OFF	
OTA Support	General	
TTX	OFF	
China HD	OFF	
NT Conversion	OFF	
Num of DTV	1	
Num of AV	1	
Num of COMP	1	
Num of HDMI	3	
Num of SCART	0	
Num of USB Port	1	
Num of HeadPhone	1	
Num of RVU	0	
Num of Display	2	
Num of IPTV	1	
Num of RUI	0	
Num of PVR RECORD	0	
TOOLS Support	106	
LNA Support	OFF	
24Px4 Support	OFF	

4. Troubleshooting

Factory Menu Name	Data	Range
BD Wise Support	ON	
Data Service Support	OFF	
PVR Support	OFF	
CI Support	OFF	
LEDMotionPlus Support	OFF	
Natural Mode Support	ON	
Relax Mode Support	OFF	
HDMI/DVI SEL	2	
Select LCD/PDP	LCD	
Wall Mount	OFF	
HV Flip		HV Flip / H Filp / OFF
Light Effect	ON	
e-Pop Default	OFF	
CAMERA Support	OFF	
NETWORK Support	Int-Wifi	
EcoSensor Support	ON	
3D Support	ON	
BT Support	ON	
BT ADDRESS		
Engineer Option		
Auto Power	MEMORY	
Type Of PANEL KEY	None	
5 Way Function Key	R BACK	
Contents Bar	OFF	
Cable Modulation	QAM	
Standby led on/off	ON	
Recognition Support		
IF AGC	0	
D AGC	0	
PH BW	0	
FQ BW	0	
PH RATE	0	
PD EN	0	
PEQ Inx	37	
WF Scale		
WF Type	0	
Nu of Network Stream	1	

Factory Menu Name	Data	Range
DP V Size	0	
Backend Device	FOX-FT1	
BT_AUDIO_ON_OFF	OFF	
Config_AV_PATH		
ECO Standby	OFF	
Fast Logo Delay	0	
Num of PANEL KEY	6	

■ 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
Watchdog	OFF	
Checksum	0x0000	
Fast Boot in Production	OFF	
USB Serial	OFF	
Eeprom Reset		
ECO IC TYPE	CT802FN	
Info Link Server Type	operating	
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	

4. Troubleshooting

Factory Menu Name	Data	Range
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	
RF Remocon Support	OFF	
CDD mode	-	
DPMS Support	OFF	
Num of IPTV CIP	0	
Num of CI	0	
Num of DECODER	0	
T-CON Device		
BOARD CONTROL	OFF	
HP LINE	LineOut	
RM		
Server Type	Operating	
RTS Mode	OFF	
PSA		
FKP Download1	0	
FKP Download2	0	
LMK threshold	0	
Low threshold	10	
High threshold	15	
CSB	ON	
CLB	ON	
Hotel Option		
Hospitality Mode		
SI Vendor		
Power On		
Power On Channel EN		
Power On Channel		
Channel Type		
Power On Volume EN		
Power On Volume		
Min Volume		

Factory Menu Name	Data	Range
Max Volume		
Power On Source		
Power On Option		
Channel		
Channel Setup		
Channel Editor		
Dynamic SI		
Menu OSD		
Picture Menu Lock		
Menu Display		
Operation		
Panel Button Lock		
Clock		
Local Time		
Music Mode		
Music Mode AV		
Music Mode Comp		
Music Mode Backlight		
External Device		
7610 Priority AV		
7610 Priority HDMI		
7610 AV Option		
RJP HDMI Option		
HDMI Music Mode		
Sound Bar Out		
External Source		
USB Media Mode		
External Source Banner		
Auti Source		
Anynet+ Return Source		
Bathroom Speaker		
Sub Amp Mode		
Sub Amp Volume		
Eco Solution		
Energy Saving		
Logo/Message		
Welcome Meassage		

4. Troubleshooting

Factory Menu Name	Data	Range
Edit Welcome Message		
Hospitality Logo		
Hospitality Logo DL		
Logo Display Time		
Cloning		
Clone TV to USB		
Clone USB to TV		
Setting Auto Initialize		
REACH Server		
REACH Server update Time		
REACH Update Immediate		
REACH Server Channel		
REACH Server Version		
REACH Server Group ID		
S-LYNK REACH		
S-LYNK REACH Volume		
IPG Room Type		
TICKER		
Network		
Network Setup		
Hotel ID Setting		
Apps Edit		
Widget		
Widget Mode		
Solution Type		
Server IP Setting		
Server URL Setting		
Virtual Standby		
IPTV Mode		
External Source Browser		
Service		
CAS		
PI AES Date		
Self Diagnosis for HTV		
Self Diagnosis for TV		
PI AES Log		
View PI AES Log		

Factory Menu Name	Data	Range
Upgrade now		
Service Pattern		
ATV Cable AGC Gain		
DTV OpenCable AGC Gain		
TV Reset		
Cloning		
Shop Option		
Shop Mode		
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	OFF	
High Devi	OFF	
Speaker Delay Normal	0x5Ah	
SPDIF PCM Gain	-9 dB	
FM M Prescale	0x30h	
FM Prescale	0x00h	
AM Prescale	0x32h	
NICAM Prescale	0x48h	
BTSC Mono Prescale	0x19h	
BTSC Stereo Prescale	0x2Fh	
BTSC SAP Prescale	0x2Bh	
A2 Ident High THLD	36	
A2 Ident Low THLD	9	
Pilot Level High Thld	0x28h	
Pilot Level Low THLD	0x10h	
Carrier2 Amp High ThLD	4	
Carrier2 Amp Low THLD	3	
Carrier2 SNR High THR	16	
Carrier2 SNR Low THR	80	
Sig Error On	35	

4. Troubleshooting

Factory Menu Name	Data	Range
Sig Error Off	41	
Amp Model	TAS5745	
Amp Volume	0xcbh	
Amp Scale	0x35h	
Amp Check Sum	0x00176DB5	
Woofer Type	0	
Woofer Volume	0xcbh	
Woofer Scale	0x3fh	
Woofer Check sum	0x036326AF	
Woofer Local Check Sum	0	
Speaker EQ	ON	
PEQ Test	Ready	
Local Speaker EQ	0	
Local EQ Checksum	0	
Speaker cut-off Freq	4	
Audio-IP Test		
SRS Tuning Parm	0	
TruBass-Checksum	0	
Mic Scale	0	
Subwoofer Support	2	
India Sound	OFF	
AudioDock BT Delay	50	
Wall Filter Type	1	
Wiselink Delay Menu	150	
Temp Private Range Use		
Bottom CheckSum	0	
Bottom Local CheckSum	0	

■ Debug

Factory Menu Name	Data	Range
Spread Spectrum		
LVDS Spread	ON	
DDR Spread	1.0% Spectrum	
Period	30K	
Amplitude	1.0	
HD SSC ON/Off	ON	
HD SSC Value	1	

Factory Menu Name	Data	Range
LVDS SSC ON/Off	ON	
LVDS SSC Value	0	
DDR SSC ON/Off	ON	
DDR SSC Value	1	
FRC LVDS SSC ON/OFF	ON	
FRC LVDS SSC MRR	10	
FRC LVDS SSC MFR	1	
FRC LVDS SSC Period	0	
FRC LVDS SSC Modulation	1	
FRC DDR SSC ON/OFF	ON	
FRC DDR SSC MRR	15	
FRC DDR SSC MFR	1	
FRC DDR SSC Period	1	
FRC DDR SSC Modulation	1	
DDR Margin		
A CTRL_OFFSET_0_3	0x0	
A CTRL_OFFSET_D	0x0	
B CTRL_OFFSET_0_3	0x0	
B CTRL_OFFSET_D	0x0	
ND ADJ Support	OFF	
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	
Tuner Margin	10	
MPEG Margin	100	
H.264 Margin	100	
CAM Wait Time		
TS Clock deldy	0	
TCON_TEMP READ	48.50	
TEMP LAST	48.54	
DCC VERSION	0x4AA9	
DCC CHK SEL	0	

4. Troubleshooting

Factory Menu Name	Data	Range
DCC CHECK LOCAL	0x0	
DCC CHECK TOTAL	0x0	
MultACC Checksum	0	
IIC Bus stop	OFF	
Tuner Status		
DVB		
SNR		
BER		
Signal Strength		
Bandwidth		
Frequency		
LNA Status		
FFT		
Modulation		
Code Rate		
GI		
Hier Modulation		
Frequency offset		
Timing offset		
AGC		
UCB		
PLL Type		
DEMOD 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 Packer_1		
Master Lock_1		

Factory Menu Name	Data	Range
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		
C_Modulation_1		
C_Code Rate_1		
C_Timer InterLeave_1		
C_Segments Num_1		
C_BER_1		
HHP option	2	
RM_BIST_DTV	0	
RM_BIST_ATV	0	
Voice Debug	OFF	

■ SVC

Factory Menu Name	Data	Range
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	
Panel Display Time	0Hr	
SVC Info	0	
Delete S/N	0	

4. Troubleshooting

Factory Menu Name	Data	Range
Upgrade		
T-CON Usb Download	Failute	
T-CON CheckSum	N/A	
Logic Usb D/L	...	
SUBMICOM UPGRADE	Ready	
BT UPGRADE		
BT FREPAIRING	ON	
Function Upgrade	Failute	
FRC3D FW Upgrade		
Camera Upgrade		
Mic Upgrade		
CPLD USB Download		
JP MICOM UPGRADE	Failute	
DP MICOM UPGRADE	Failute	
Jump Upgrade	Failute	
IR Blaster Upgrade	Failure	
CPLD Download		
Smart Hub Reset	0	
ER Count		
WD Count	0	
AR Count	0	
WIFI ER Count	0	
BT ER Count	0	
Camera ER Count	0	
LOG(View Log)		
Select Log Type	NVRAM	
Log View	0	
Delete Log		
Debug Log Down		
Self Diagnosis		
Loop Back		
LAN Test		
AV Audio Test		
DVIN Audio Test		
CVBS Test		
COMP Test		
USB HUB Test		

Factory Menu Name	Data	Range
HDMI Test		
SCART Audio Test		
SCART CVBS Test		
SCART RGB Test		
PC Audio Test		
PC Self Test		
CPU		
DDR		
FLASH		
EEPROM		
HDMI Switch IC		
WIFI		
LVDS		
T-CON/FRC		
PCB Test		
MOIP		
App Self Test		
Device self Test		
Voltage		
EcoSensor		
BT		
EXT Sound Inspection		
Woofer Sound Inspection	NONE	
ATV CH Inspection		
DTV CH Inspection		
Satellite CH Inspection		
IPERF	Stopped	
OPTION HDMI		
Expert		
DVB CI		
CAL Data Backup	...	
CAL Data Restore	...	
ATV IF AGC SPEED	0	

■ ADC/WB

Factory Menu Name	Data	Range
ADC		
AV Calibration	Success	
Comp Calibraion	Success	
PC Calibration	Success	
HDMI Calibration	Success	
ADC Result		
1st_Y_GH	258	
1st_Y_GL	128	
1st_Cb_BH	...	
1st_Cb_BL	...	
1st_Cr_RH	...	
1st_Cr_RL	...	
2nd_R_L	132	
2nd_G_L	132	
2nd_B_L	132	
2nd_R_H	70	
2nd_G_H	70	
2nd_B_H	70	
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	158	
WB_W2_B_Gain	61	
WB_N_R_Offset	128	
WB_N_B_Offset	128	
WB_N_R_Gain	147	
WB_N_B_Gain	106	
MGA		
MGA On/Off	OFF	
R1_Gain	...	

Factory Menu Name	Data	Range
B1_Gain	...	
G1_Gain	...	
R2_Gain	...	
B2_Gain	...	
G2_Gain	...	
R3_Gain	...	
B3_Gain	...	
G3_Gain	...	
R4_Gain	...	
B4_Gain	...	
G4_Gain	...	
R5_Gain	...	
B5_Gain	...	
G5_Gain	...	
R6_Gain	...	
B6_Gain	...	
G6_Gain	...	
R7_Gain	...	
B7_Gain	...	
G7_Gain	...	
R8_Gain	...	
B8_Gain	...	
G8_Gain	...	
R9_Gain	...	
B9_Gain	...	
G9_Gain	...	
R10_Gain	...	
B10_Gain	...	
G10_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	

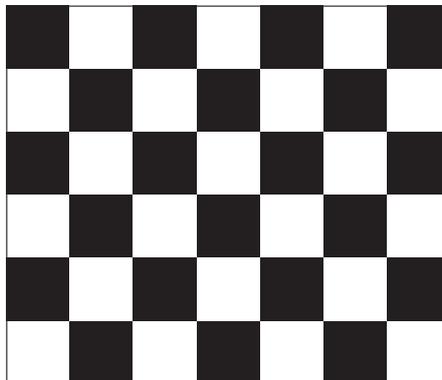
4-4-2. Service Adjustment

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 (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.

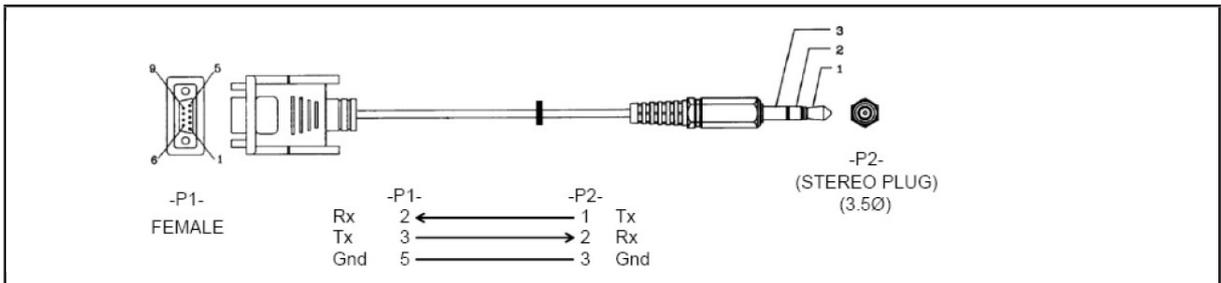
4-4-3. Adjustment

9. Into the Factory Mode.
10. Select **ADC/WB** menu.
11. Select **White Balance** menu.

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

4-5. RS-232C

- **RS232C Control**
 - Port : COM#(Serial)
 - Bit rate : 115200
 - 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	Up		0x03	0x00	0x01	0x00
				Down				0x02	0x00

Control Item				Cmd1	Cmd2	Cmd3	Value
Input	Source List	TV	TV	0x0a	0x00	0x00	0x00
		AV	AV1			0x01	0x00
			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

4. Troubleshooting

Control Item			Cmd1	Cmd2	Cmd3	Value		
PICTURE	Mode	CAL-NIGHT				0x04		
		CAL-DAY				0x05		
		BD Wise				0x06		
		Relax				0x07	New function of 12" (only PDP TV)	
	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		

Control Item			Cmd1	Cmd2	Cmd3	Value	
PICTURE			On			0x01	
		xvYCC	Off		0x10	0x00	
			On			0x01	
		Motion Lighting	Off		0x11	0x00	
			On			0x01	
		LED Motion Plus	Off	0x0a	0x07	0x00	
			On(Normal)			0x01	
			Cinema			0x02	
			Ticker			0x03	
		Picture Option	Color Tone	Cool		0x0a	0x00
	Standard					0x01	Change Normal → Standard mode
	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	New function of 12" (only PDP TV)	
Auto Motion Plus	Off			0x06	0x00		
	Clear				0x01		
	Standard				0x02		
	Smooth				0x03		
	Custom				0x04		

4. Troubleshooting

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

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	New function of 12"
		Low				0x01	
		Medium				0x02	
		High				0x03	

4. Troubleshooting

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

Samsung may offer upgrades for the TV's firmware in the future.

These upgrades can be performed via the TV when it is connected to the Internet, or by downloading the new firmware from samsung.com to a USB memory device.

- Alternative Software (Backup) shows The previous version that will be replaced.
- Software is represented as 'Year/Month/Day_Version'. The more recent the date, the newer the software version Installing the latest version is recommended.



4-7-1. By USB

Insert a USB drive containing the firmware upgrade downloaded. Insert a USB drive containing the firmware upgrade downloaded, disconnect the power or remove the USB drive while upgrades are being applied. The TV will turn off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete (the new version will have a higher number than the older version).

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 so that you can easily reset them after the upgrade.

4-7-2. By Online

Upgrades the software using the Internet.

- First, configure your network. For detailed procedures on using the Network Setting, refer to the 'Setting the Network' instructions.
- If the internet connection doesn't operate properly, connection can be broken, please retry downloading.
- If the problem still happens, download by USB and upgrade.

4-7-3. Alternative Software (Backup)

If there is an issue with the new firmware and it is affecting operation, you can change the software to the previous version.

- If Software was changed, existing Software is displayed.
- You can change current Software to Alternative Software by 'Alternative Software'.

4-7-4. Sub Software Upgrade

USB Download

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

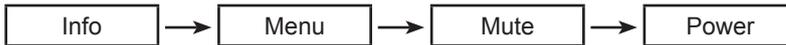
– Factory Remocon

- 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
Debug
SVC
ADC/WB
Advanced

3. Select the “SUBMICOM UPGARADE”.

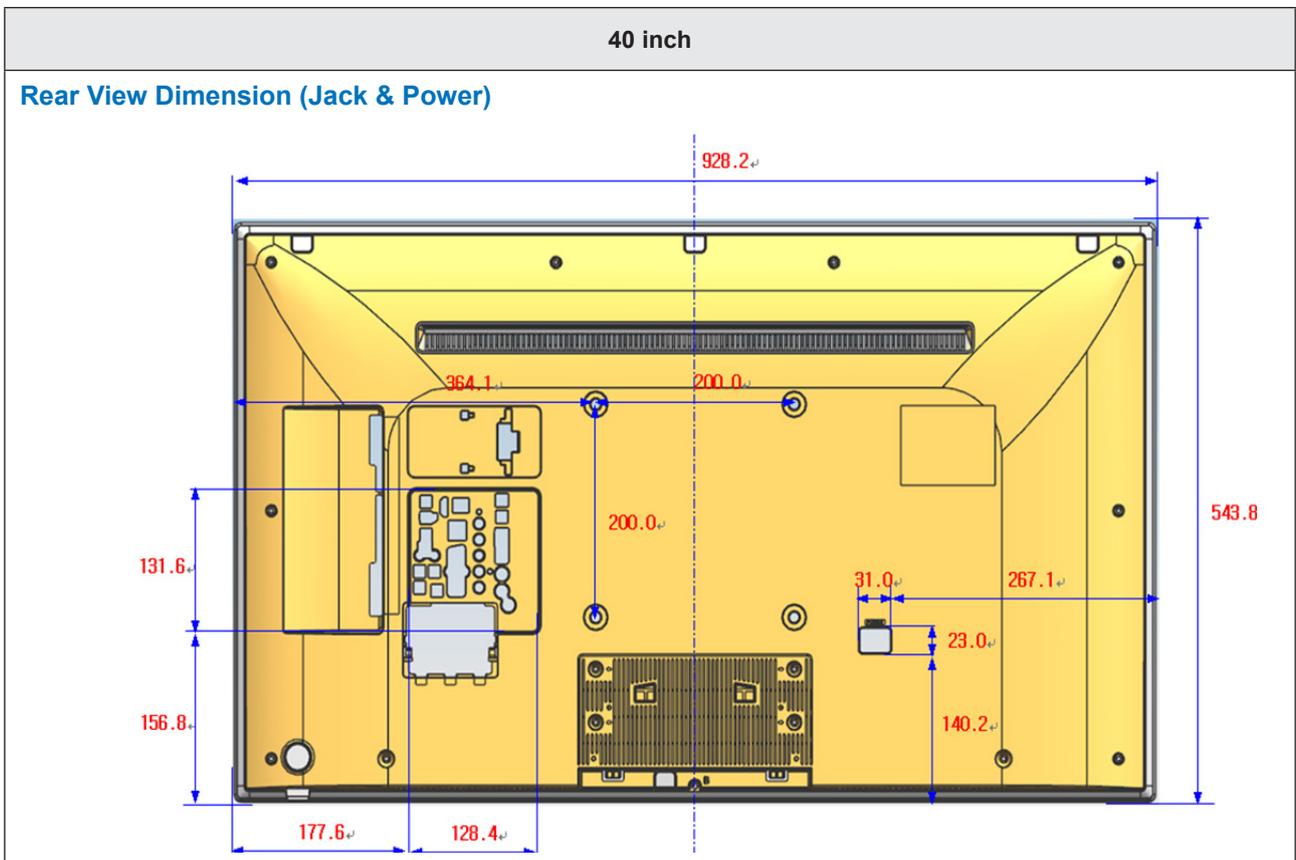
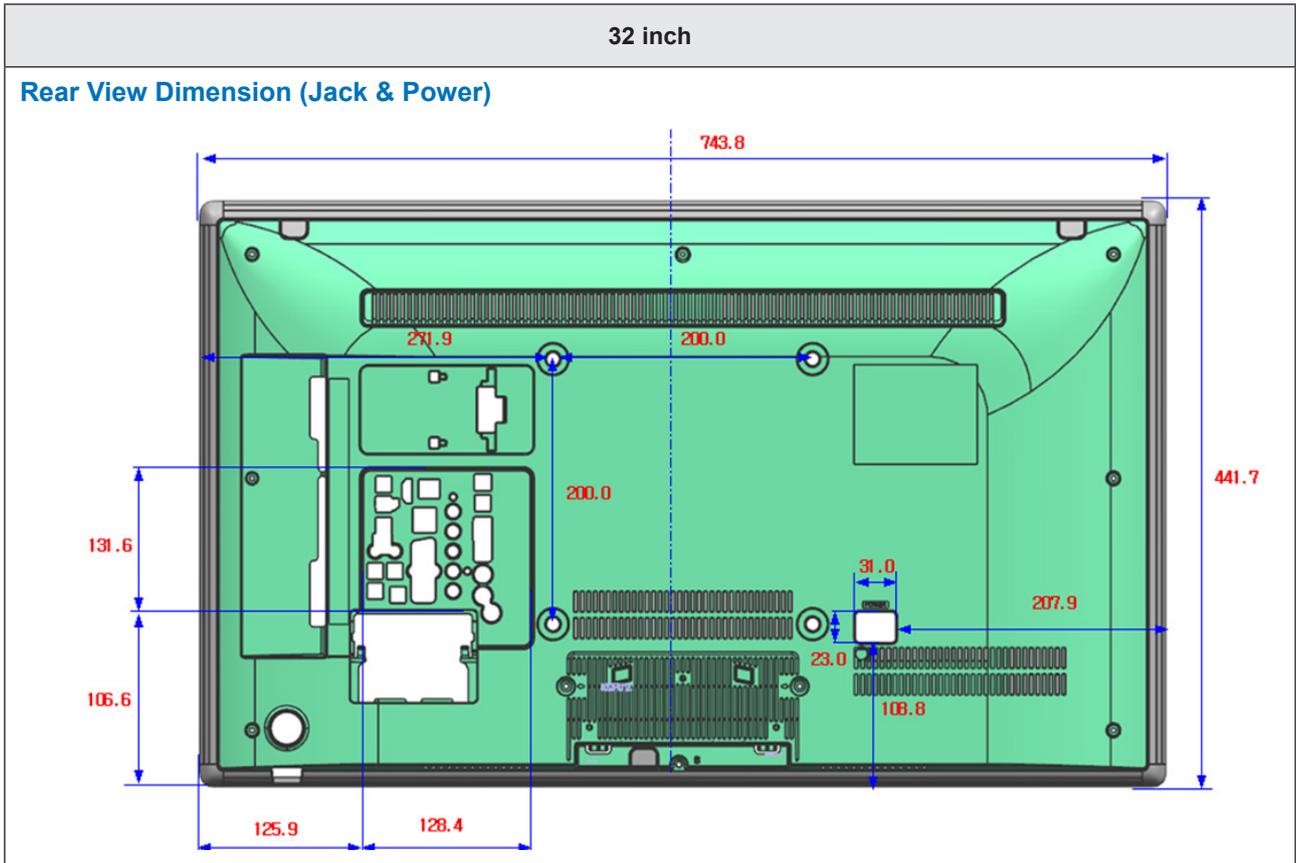
Test pattern		DCC CHK SEL	0
Panel Display Time	1Hr	DCC CHECK LOCAL	0x0
Tuner Status		DCC CHECK TOTAL	
T-CON Usb Download	Failure	Fuction Upgrade	off
T-CON CheckSum	Error	Smart Hub Reset	off
Tuner Margin	10	WIFI ER COUNT	0
TS Clock delay	0	BT ER COUNT	0
SUBMICOM UPGRADE	off	Debug Log Down	
BT ADDRESS	0000	MultACC 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.

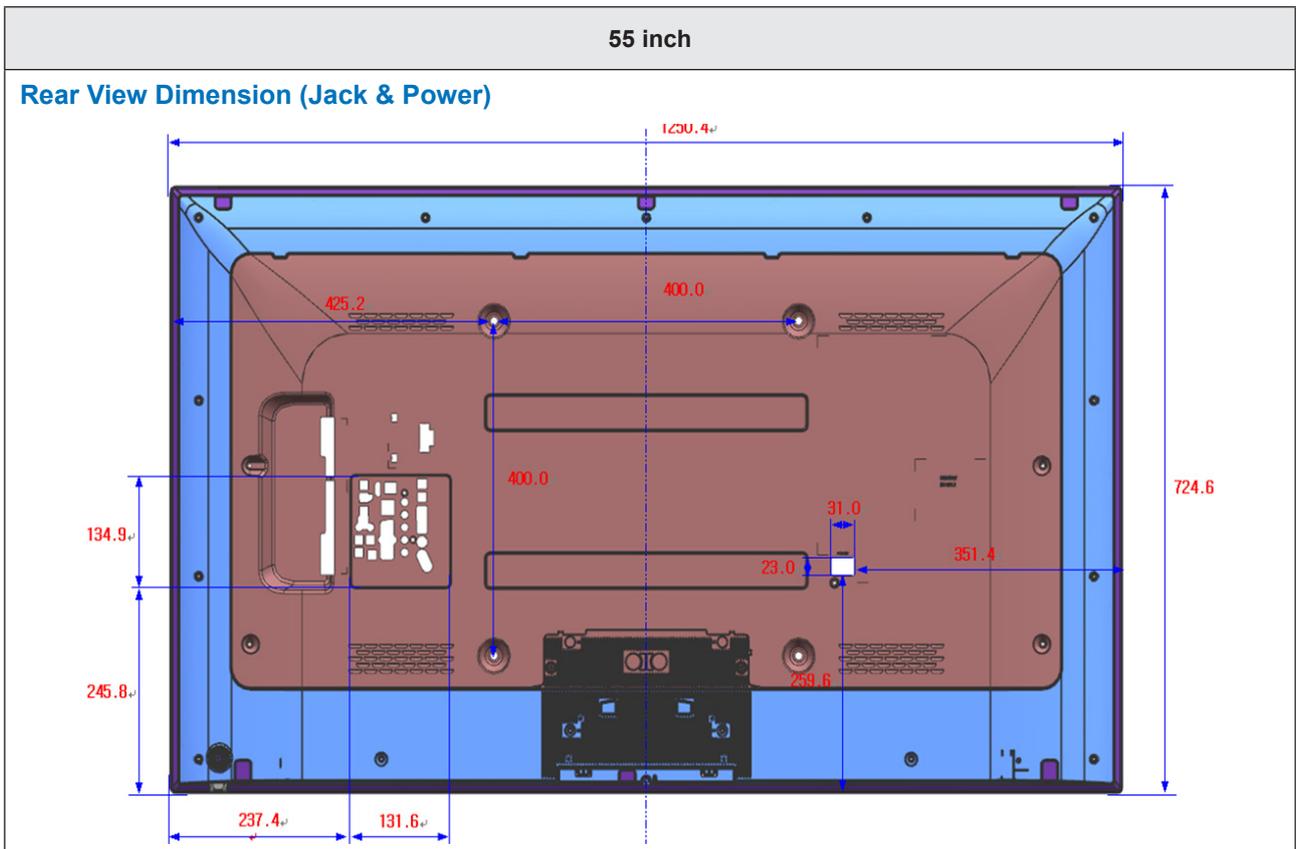
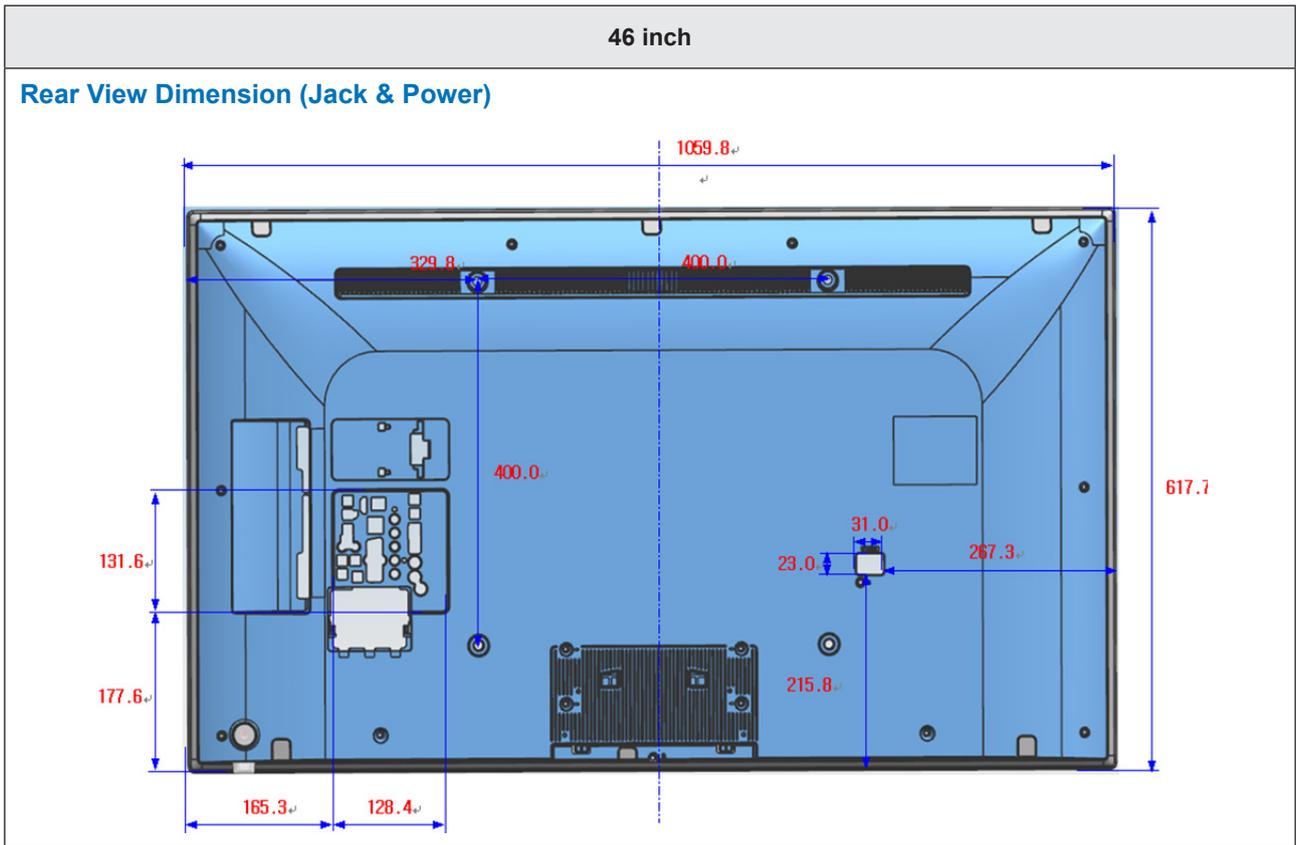
SUBMICOM UPGRADE	Wait
-------------------------	-------------

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

4-8. The Dimension

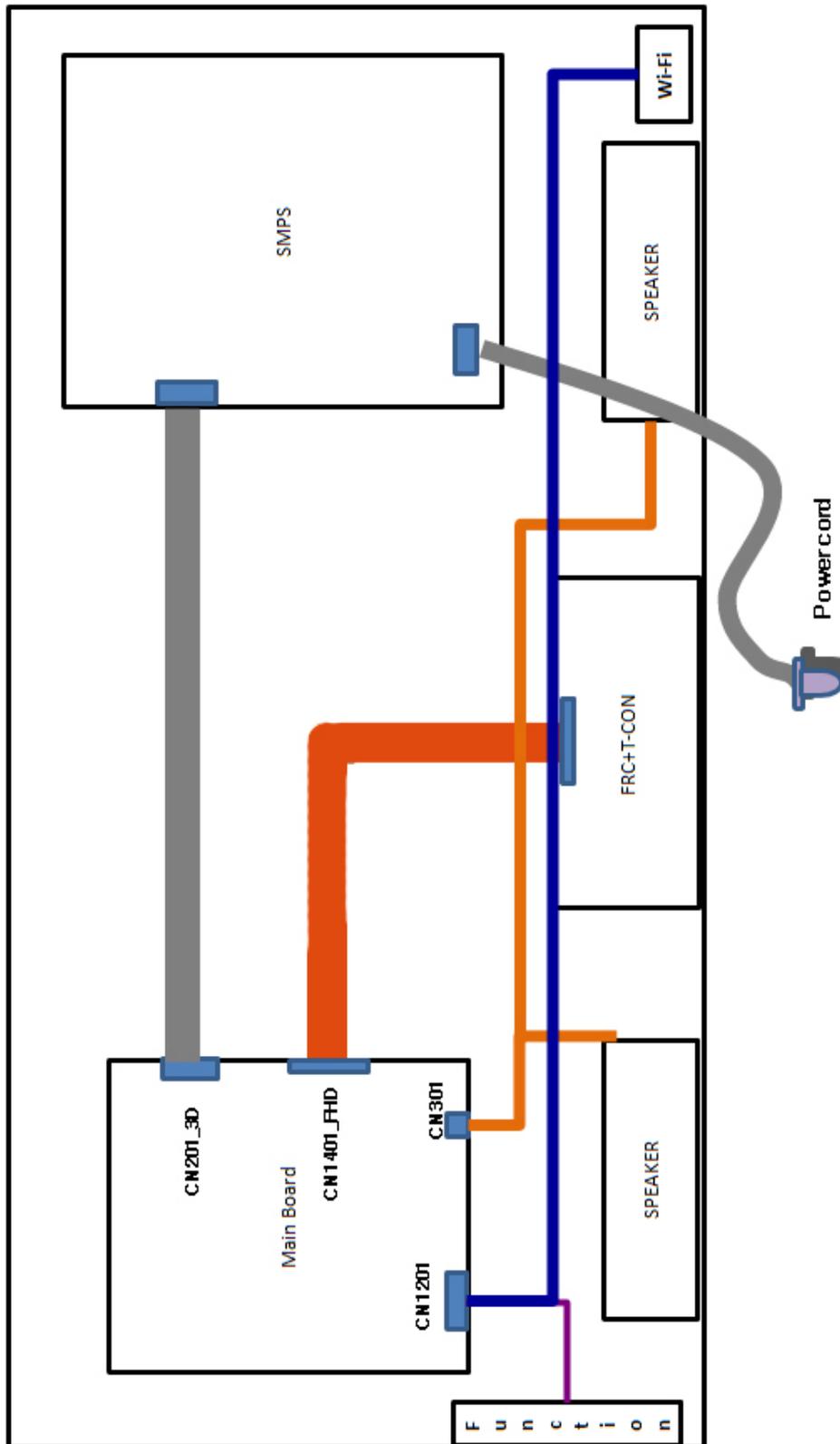


4. Troubleshooting



5. Wiring Diagram

5-1. Wiring Diagram



5-2. Connector

CN1401_FHD			
1	NC	27	EVEN_TX0-
2	DGND	28	GND
3	FRC_SDA	29	ODD_TX4+
4	PWM_DIM1	30	ODD_TX4-
5	FRC_SCL	31	ODD_TX3+
6	PWM_DIM3	32	ODD_TX3-
7	PWM_DIM2	33	GND
8	TCON_SDA	34	ODD_TXCLK+
9	TCON_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+		

CN302(to Speaker)			
1	R+	3	L+
2	R-	4	L-

OP301(to Optical Jack)			
1	SPDIF_OUT	3	GND
2	B5V_DC_PW	4	L-

CN1502(USB1)			
1	B5V_USB2_PW	3	USB2_DP
2	USB2_DM	4	GND

CN1402_LAN			
1	LAN_TXD+	5	B2.5V
2	B2.5V	6	LAN_RXD-
3	LAN_TXD-	7	NC
4	LAN_RXD+	8	GND

CN1402_LAN			
1	LAN_TXD+	5	B2.5V
2	B2.5V	6	LAN_RXD-
3	LAN_TXD-	7	NC
4	LAN_RXD+	8	GND

CN1201(to Function/IR)			
1	IR	14	A5.3V
2	GND	15	LED_STB
3	GND	16	BT_WAKE
4	FRAME_SYNC_IN	17	IR_GND
5	A3.3V	18	POWER_DET
6	BT_SYNC	19	NC
7	MSCL	20	BT_RESET
8	GND	21	NC
9	MSDA	22	NC
10	USB_BT_DP	23	GND
11	KEY_INPUT1	24	WIFI_DP
12	USB_BT_DM	25	WIFI_DM
13	KEY_INPUT2	26	B5V_DC_PW

CN601(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+		

CN602(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+		

CN603(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+		

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		

CN303(AUDIO OUT/DVI AUDIO IN)			
1	GND	8	TEST_SR
2	HP_LINE_SL_OUT	9	DVI_SL_IN
3	HP_LINE_SR_OUT	10	DVI_SR_IN
4	TEST_SL	11	TEST_SL
5	TEST_SR	12	NC
6	IDENT_HP	13	-
7	GND	14	GND

5-3. Connector Functions

Connector	Function
CN201 ↔ CNM803	Supply main power and dimming signal from IP Board to Main Board.
CN1401 ↔ CON3	The LVDS signal transferred from Main Board to Panel .

5-4. Cables

Use	Main-SMPS (20P)		LVDS (Main - panel 30P)		Function-Main	
Code No.	32"	-	32"	-	32"	BN39-01772A
	40"	BN39-01475A	40"	BN96-24278N	40"	BN39-01772B
	46"	BN39-01475C	46"	BN96-24278P	46"	BN39-01772C
	55"	BN39-01475X	55"	BN96-24278Q	55"	BN39-01772D
Image						

5-5. The types of module

Use	Wifi module	Bluetooth module	Function module
Code No.	BN59-01161A	BN96-25376A	BN96-27048A
Standard	IEEE802.11abgn	-	-
Image			