LED TV

Chassis : U85A

Model : UE40F6650SS
UE46F6650SS
UE55F6650SS
UE50F6650SS

SERVICE Manual

LED TV

UE**F6650SS

Contents

Contents

Printed in Korea

3. Disassembly and Reassembly

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

WARNING

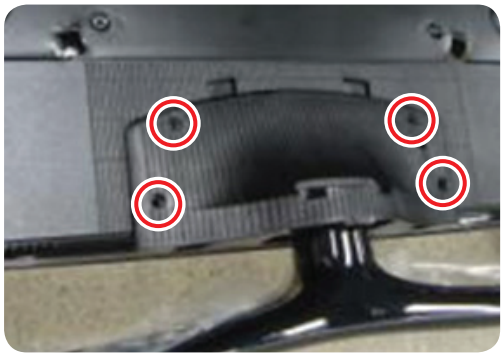
This LED TV contains electrostatically sensitive devices. Use caution when handling these components.

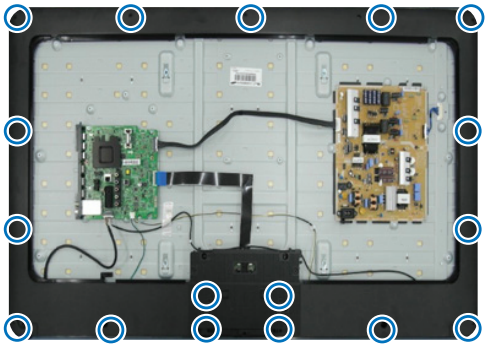
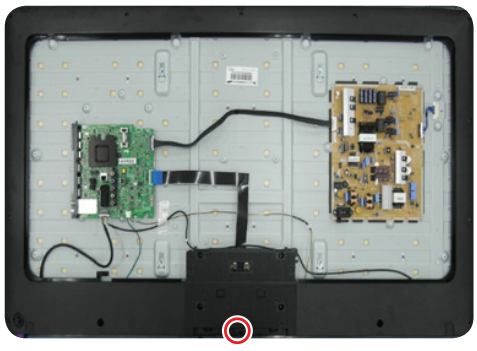
3-1. Disassembly and Reassembly

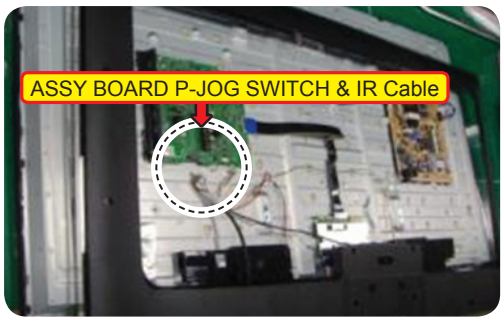
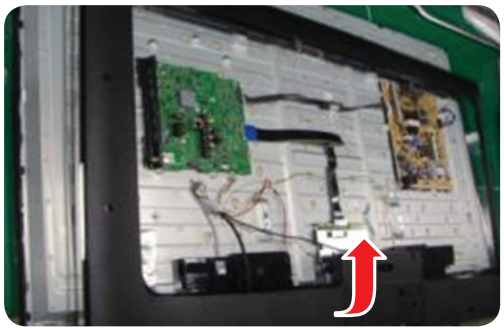
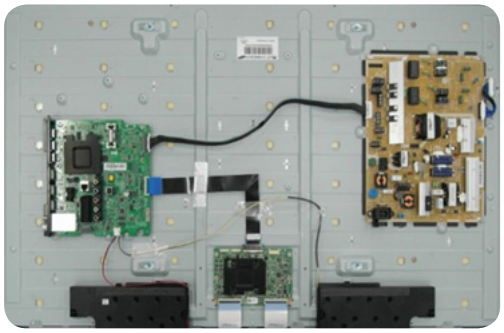
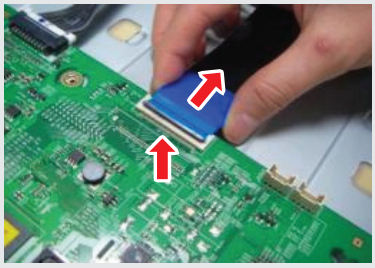
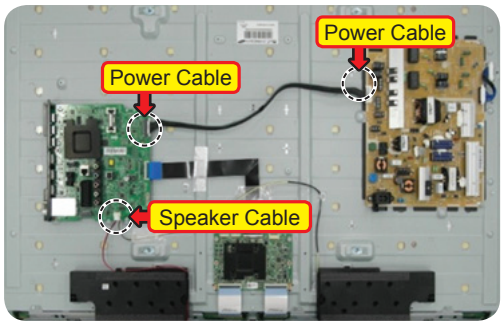
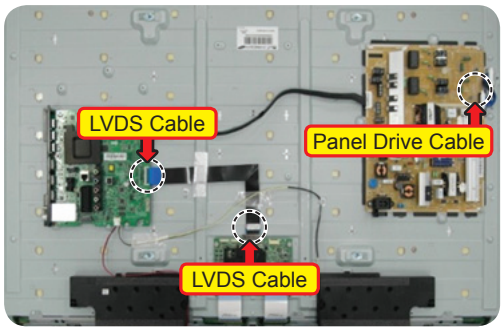
CAUTION

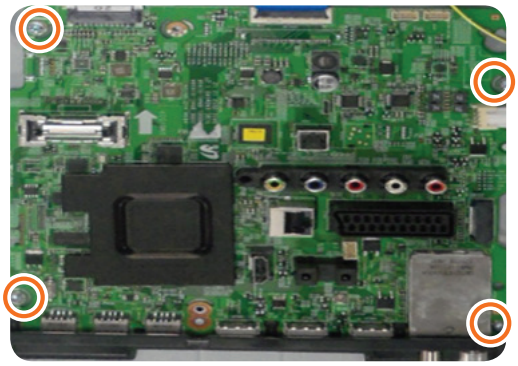
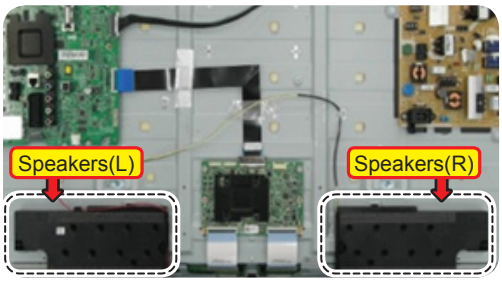
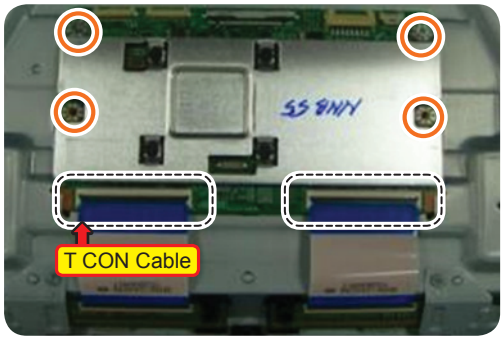
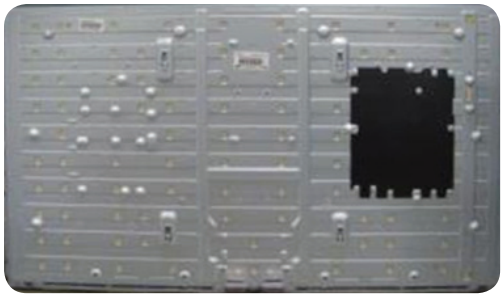
1. Disconnect the LED TV from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.
3. If there is no additional coment, it is same for all inches.

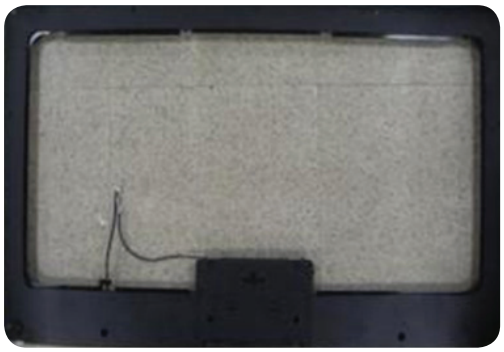
3-1-1. LED TV

Description	Picture Description	Screws
1 Place TV face down on cushioned table.		
2 Remove 4 screws from the ASSY GUIDE P-STAND.		 6003-001782 SCREW-MACHINE M4.0, L12.0 BLK
3 Remove STAND.		

Description	Picture Description	Screws
4 Remove screws of ASSY COVER P-REAR. • 40 inch : 4 EA • 46 inch : 4 EA • 55 inch : 4 EA		 6001-002755 SCREW-MACHINE M3.0, L6.0 BLK
• 40 inch : 3 EA • 46 inch : 4 EA • 55 inch : 4 EA		 6003-001782 SCREW-MACHINE M4.0, L12.0 BLK
5 Remove screws of ASSY COVER P-MIDDLE. • 40 inch : 14 EA • 46 inch : 14 EA • 55 inch : 17 EA		 6001-002755 SCREW-MACHINE M3.0, L6.0 BLK
Remove 1 screws of ASSY COVER P-MIDDLE. **CAUTION** Becareful when you lift up the ASSY COVER P-MIDDLE, It's really sharp.		 6003-001782 SCREW-MACHINE M4.0, L12.0 BLK

Description	Picture Description	Screws
6 Disconnect the ASSY BOARD P-JOG SWITCH & IR Cable. **NOTE** First remove the cable before you remove the ASSY COVER P-MIDDLE.		
7 Lift up the ASSY COVER P-MIDDLE.		
8 Remove the ASSY COVER P-MIDDLE.		
9 Remove the Power Cables and Speaker Cables. Remove the LVDS Cable and Panel Drive Cable. **NOTE** Applied to Double locking. **1.** Flip up the locking tab on top of the connector. **2.** Squeeze the edge of the connector to release the second tab lock and gently pull the connector away. 	 	

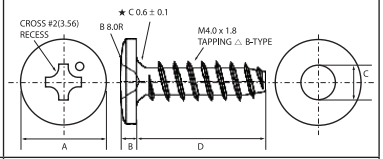
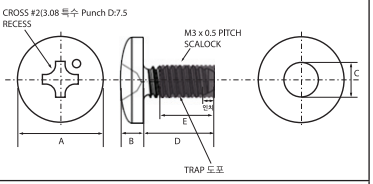
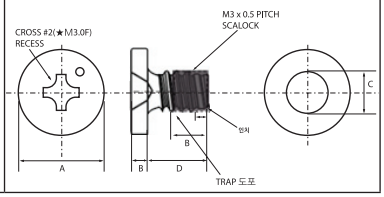
Description	Picture Description	Screws
10 Remove the screws of ASSY PCB MAIN.		 6001-002756 SCREW-MACHINE M3.0, L6.0 WHT
11 Remove the screws of DC VSS-LED TV PD BD.		 6001-002756 SCREW-MACHINE M3.0, L6.0 WHT
12 Remove the ASSY SPEAKER (L/R).		
13 Remove the 4 screws of ASSY T CON and unlock the locking of T CON Cable.		 6001-002756 SCREW-MACHINE M3.0, L6.0 WHT
14 Completed disassembly. • Panel.		

Description	Picture Description	Screws
• ASSY COVER P-MIDDLE.		

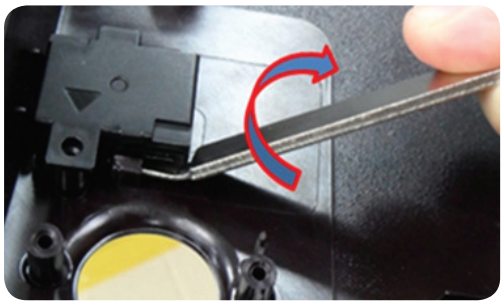
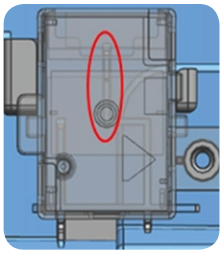
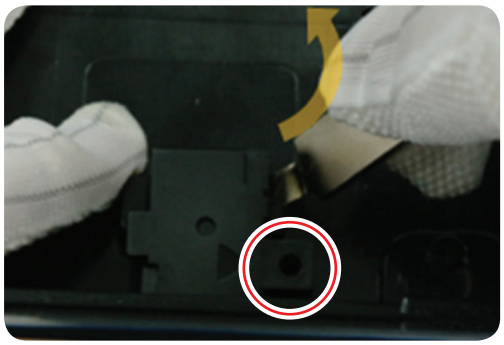
NOTE

Reassembly procedures are in the reverse order of disassembly procedures.

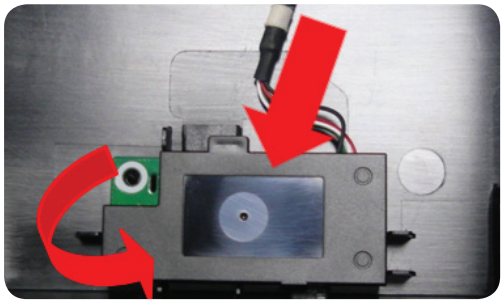
Screw Size

Code No.	COLOR	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Screw Image
6003-001782	BLACK	7.80~8.20	1.85~1.95	3.81~3.91	11.4~12.0	-	
6001-002755	BLACK	7.1~7.5	1.9~2.0	2.98~3.02	5.7~6.0	4.4~5.4	
6001-002756	WHITE	5.6~6.0	1.15~1.25	2.92~2.98	3.7~4.0	4.4~5.4	

3-1-2. ASSY BOARD P-RF-MODULE

Description	Picture Description	Refer
1 Preparation : BN81-00001A (Registered in Jig material) 		
2 Twist the jig after inserting ASSY BOARD P-RF-MODULE(B/T module) and ASSY COVER P-MIDDLE,REAR.		
		

3-1-3. NETWORK

Description	Picture Description	Refer
1 Remove the NETWORK(Wi-Fi module).		

NOTE

Reassembly procedures are in the reverse order of disassembly procedures.

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

WARNING

For continued safety, do not attempt to modify the circuit board.

Disconnect the AC power and DC power jack before servicing.

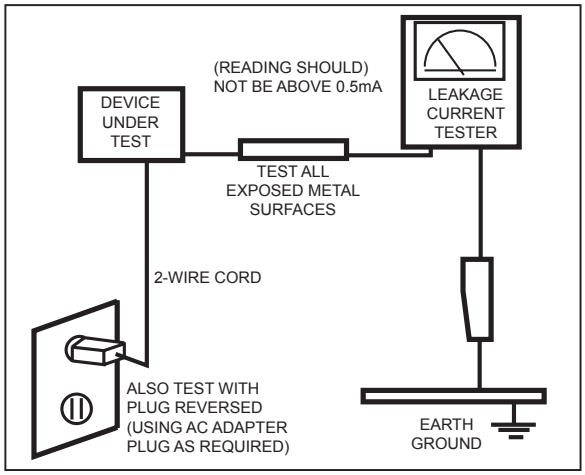
1-1-2. Servicing the LED TV

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 resistorcapacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check:



WARNING

Do not use an isolation transformer during this test.

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

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

1-1-4. Product Safety Notices

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

1-2. Servicing Precautions

WARNING

An electrolytic capacitor installed with the wrong polarity might explode.

CAUTION

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

NOTE

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 theblades 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.

CAUTION

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 information

Model	UE**F6650SS		
Front View	 * W : Width H : High D : Depth		
Detail View			
Front Color	Clear / Black		
Dimensions (W x H x D)	40"	Set with Stand	910 x 597.3 x 265 mm
		Set without Stand	910 x 534.1 x 47 mm
	46"	Set with Stand	1042.4 x 682.4 x 307.2 mm
		Set without Stand	1042.4 x 608.5 x 47 mm
	50"	Set with Stand	1120.2 x 726.2 x 307.2 mm
		Set without Stand	1120.2 x 651.5 x 47.2 mm
	55"	Set with Stand	1234 x 790.9 x 307.2 mm
		Set without Stand	1234 x 716.3 x 47.2 mm
Weight	40"	Set with Stand	9.8 kg
		Set without Stand	8.7 kg
	46"	Set with Stand	12.7 kg
		Set without Stand	11.1 kg
	50"	Set with Stand	14 kg
		Set without Stand	12.4 kg
	55"	Set with Stand	18 kg
		Set without Stand	16.4 kg
Panel Type	Black		
Internal Memory	4 G		
DDR	1 G		
Feature	3D / SMART GUIDE / USB HID / DLNA / Full Browsing / Miracast		

2-2. Product specification

2-2-1. Product Specifications

NOTE

Design and specifications are subject to change without prior notice.

Item		UE**F6650SSXXH
General Information	Product	LED
	Series	6
	Country	HUNGARY
Display	Inch	40" / 46" / 55"(50")
	Resolution	1,920 x 1,080
	Ultra Clear Panel	No
Video	Clear Motion Rate	600
	Micro Dimming	Micro Dimming
	Precision Black (Local Dimming)	No
	Picture Engine	3D HyperReal Engine
	Dynamic Contrast Ratio	Mega Contrast
	Motion Judder Canceller	N/A
	Wide Color Enhancer (Plus)	Yes
	Film Mode	Yes
	Natural Mode Support	Yes
Audio	3D Sound	Yes
	Sound Output (RMS)	10W x 2
	Dolby	Dolby Digital Plus / Dolby Pulse
	SRS / DNSe+	DTS Studio Sound
	dts 2.0 + Digital Out / DTS Premium Audio	DTS Premium Audio 5.1
	Speaker Type	Down Firing + Full Range
	Sound Customizer	No
	Woofer	No
Smart TV 2.0	Smart Hub	Yes
	On TV	Yes (AT,BE,CH,DE,DK,ES,FI,FR,UK,IR,IT,LU, NL,NO,PL,PT,SE)
	Movies & TV Shows	No
	Apps	Yes
	Social	Yes
	Photos, Videos & Music	Yes
	Fitness	Yes
	Kids	Yes

Item		UE**F6650SSXXH
Smart TV 2.0	ACR (Advertisement)	N/A
	Samsung Sports Experience (SSE)	N/A
	Samsung SMART View	Yes (Clone View only)
	Smart Appliance	N/A
	S Recommendation	Yes (AT,BE,CH,DE,DK,ES,FI,FR,UK,IR,IT,LU, NL,NO,PL,PT,SE)
	Prism Screen	No
	Web Browser	Yes
Smart Interaction 2.0	Camera Built-in	No
	Face recognition	N/A
	Motion control	N/A
	Voice Control (Embedded)	Yes (Only Smart Touch Control)
	Voice Control (Server)	Yes (Only Smart Touch Control)
	Voice Interaction	No
	Camera App	No
	Samsung TV Apps supported	Yes
System	DTV Tuner	DVB-T/C/S2
	Analog Tuner	Yes
	MHP / MHEG (version)/ ACAP / GINGA	N/A
	CI/CI+	CI+ (1.3)
Input&Output	Audio Out (Mini Jack)	No
	Component In (Y/Pb/Pr)	1
	Composite In (AV)	1 (Common Use for Component Y)
	Digital Audio Out (Optical)	1
	DVI Audio In (Mini Jack)	No
	Ethernet (LAN)	1
	HDMI	4
	PC Audio In (Mini Jack)	No
	PC In (D-sub)	No
	RF In (Terrestrial/Cable Input)	1
	RF In (Satellite Input)	1
	RS-232C (AV CONTROL)	No
	USB	3
	Headphone	1
	Scart	1
	CI Slot	1
	IR Out	1
Design	Design	One Design
	Slim Type	Slim

Item		UE**F6650SSXXH
Design	Bezel Type	Super Narrow
	Front Color	Titan Silver
	Light Effect (Deco)	No
	Swivel (Left/Right)	Yes
	Stand Type	Quad
	Push & Pull Camera	N/A
Feature	3D Converter	Yes
	ConnectShare™ (USB 2.0)	Movie
	Samsung 3D	Yes
	History	Yes
	MultiTasking	No
	Smart Evolution Support	No
	Wireless LAN Built-in	Yes
	Wireless LAN Adapter Support	No
	OSD Language	26 European Languages
	EPG	Yes
	HbbTV	Yes (CZ, PL, DE, AT, CH, BE, NL, LU, PT, FR, ES)
	HDMI 1.4 3D Auto Setting	Yes
	HDMI 1.4 A/Return Ch. Support	Yes
	Time Shift	Yes
	AllShare (Content Sharing, Screen Mirroring)	Yes
	Teletext (TTXT)	Yes
	InstaPort S (HDMI quick switch)	No
	Anynet+ (HDMI-CEC)	Yes
	Auto Channel Search	Yes
	Auto Power Off	Yes
	Auto Volume Leveler	Yes
	Caption (Subtitle)	Yes
	Clock&On/Off Timer	Yes
	Game Mode	Yes
	Sports Mode	Advanced
	Picture-In-Picture	Yes
	Sleep Timer	Yes
	Extended PVR	Yes
	Smart Phone Remote support	Yes
	WiFi Direct	Yes
	ISP Bound Service	Yes

Item		UE**F6650SSXXH
Feature	BT HID Built-in	Yes
	USB HID Support	Yes
	Network Speaker Support	N/A
	Sound Share	Yes
	Regional EQ	N/A
	Digital Clean View	Yes
	Analog Clean View	N/A
	MHL	No
	Twin Tuner	No
	BD Wise Plus	Yes
	USB Copy	N/A
	ACS	N/A
	IP Video Closed Caption	N/A
	Embeded POP	Yes
Eco	Energy Efficiency Class	A+
	Eco Sensor	Yes
Accessory	3D Active Glasses (Included)	2 (SSG-5100GB)
	IR Extender Cable (Included)	Yes
	Wireless LAN Adaptor (Included)	No
	Network Speaker (Included)	No
	MoIP Camera	No
	Wireless Keyboard	No
	Remote Controller Model	TM1360A, TM1240
	Batteries (for Remote Control)	Yes
	Ultra Slim Wall Mount Supported	No
	Mini Wall Mount Supported	Yes
	Vesa Wall Mount Supported	Yes
	Slim Gender Cable	No
	Power Cable	Yes
	ANT-Cable	No
	User Manual	Yes
	E-Manual	Yes
	Floor Stand Support	No

2-2-2. Feature & Specifications

Model	UE40F6650SS
Feature	
• Digital-TV, RF, 4-HDMI, 1-Component,1-A/V, 3-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3, 4 Component and Sub picture is available only in TV mode(DTV/ATV)) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound	

Specifications	
Item	**Description**
LCD Panel	40 inch FHD 120 Hz
Display Colors	1.07 B
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	Analog 0.7 Vp-p ± 5% positive at 75Ω, 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 0.1 W, Stand by)
Environmental Considerations	Operating Temperature : 50˚F ~ 104˚F (10˚C ~ 40˚C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -4˚F ~ 113˚F (-20˚C ~ 45˚C) Storage Humidity : 5% ~ 95%, non-condensing
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, IR Blaster, Smart Control	

Model	UE46F6650SS
Feature	
• Digital-TV, RF, 4-HDMI, 1-Component,1-A/V, 3-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3, 4 Component and Sub picture is available only in TV mode(DTV/ATV)) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound	

Specifications	
Item	**Description**
LCD Panel	46 inch FHD 120 Hz
Display Colors	1.07 B
Active Display (H x V)* * Horizontal x Vertical	1021.0 (H) x 575.6 (V) mm
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, 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	122 W (Under 0.1 W, Stand by)
Environmental Considerations	Operating Temperature : 50˚F ~ 104˚F (10˚C ~ 40˚C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -4˚F ~ 113˚F (-20˚C ~ 45˚C) Storage Humidity : 5% ~ 95%, non-condensing
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, IR Blaster, Smart Control	

Model	UE50F6650SS
Feature	
• Digital-TV, RF, 4-HDMI, 1-Component,1-A/V, 3-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3, 4 Component and Sub picture is available only in TV mode(DTV/ATV)) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound	

Specifications	
Item	**Description**
LCD Panel	50 inch FHD 120 Hz
Display Colors	1.07 B
Active Display (H x V)* * Horizontal x Vertical	1098.8 (H) x 619.4 (V) mm
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, 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	128 W (Under 0.1 W, Stand by)
Environmental Considerations	Operating Temperature : 50˚F ~ 104˚F (10˚C ~ 40˚C) Operating Humidity : 10% ~ 80%, non-condensing Storage Temperature : -4˚F ~ 113˚F (-20˚C ~ 45˚C) Storage Humidity : 5% ~ 95%, non-condensing
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, IR Blaster, Smart Control	

Model	UE55F6650SS
Feature	
• Digital-TV, RF, 4-HDMI, 1-Component,1-A/V, 3-USB2.0(Media Play), LAN, WIFI • PIP(in HDMI 1, 2, 3, 4 Component and Sub picture is available only in TV mode(DTV/ATV)) • Dolby Digital Plus Pulse, DTS Premium Sound 5.1, DTS Studio Sound	

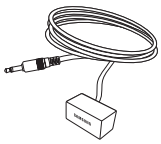
Specifications	
Item	**Description**
LCD Panel	55 inch FHD 120 Hz
Display Colors	1.07 B
Active Display (H x V)* * Horizontal x Vertical	1212.6 (H) x 683.4 (V) mm
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, internally terminated
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	150 MHz
AC Power Voltage & Frequency	AC220-240V 50/60Hz
Power Consumption	150 W (Under 0.1 W, Stand by)
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, IR Blaster, Smart Control	

2-3. Accessories

NOTE

- The items' colors and shapes may vary depending on the model.
- Check that there is no accessory hidden behind packing materials when you open the box.
- The part code for some accessories may differ depending on your region.

Product	Code. No	Product	Code. No
• Smart Touch Control	AA59-00773A	• User Manual	BN68-04779D
• Remote Control	AA59-00786A	• 3D Active Glasses	BN96-25614A
• Batteries (AAA x 4)	4301-000103	• Warranty Card	BN68-00514K
• Power Cord	3903-000849		

Image	Product	Code. No
	• Holder-Wire stand	BN61-08370A
	• Holder-Ring	BN61-07295A
	• CI Card Adapter	3709-001791
	• IR Extension Cable	BN96-26652B

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)		

■ 120Hz Motion Enhancement

Off

Low / Mudium / High

Demo

2-4-2. Supported Formats

■ Supported Subtitle Formats

Exterminal

Name	File Extension
MPEG-4 Timed text	.ttxt
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

<table>
<tr><th>File Extension</th><th>Container</th><th>Video Codec</th><th>Resolution</th><th>Frame rate (fps)</th><th>Bit rate (Mbps)</th><th>Audio Codec</th></tr>
<tr><td rowspan="15">*.avi
*.mkv
*.asf
*.wmv
*.mp4
*.3gp
*.vro
*.mpg
*.mpeg
*.ts
*.tp
*.trp
*.mov
*.flv
*.vob
*.svi
*.m2ts
*.mts</td><td rowspan="14">AVI
MKV
ASF
MP4
3GP
MOV
FLV
VRO
VOB
PS
TS
SVAF</td><td>Divx 3.11 / 4 / 5 / 6</td><td rowspan="3">1920 x 1080</td><td rowspan="12">6~30</td><td rowspan="3">30</td><td rowspan="13">AC3
LPCM
ADPCM(IMA, MS)
AAC
HE-AAC
WMA
DD+
MPEG(MP3)
G.711(A-Law, µ-Law)</td></tr>
<tr><td>MPEG4 SP/ASP</td></tr>
<tr><td>H.264 BP/MP/HP</td></tr>
<tr><td>Motion JPEG</td><td>640 x 480</td><td rowspan="2">8</td></tr>
<tr><td>Microsoft MPEG-4 v3</td><td rowspan="2">1280 x 720</td></tr>
<tr><td>Window Media Video v7,v8</td><td rowspan="4">30</td></tr>
<tr><td>Window Media Video v9</td><td rowspan="3">1920x1080</td></tr>
<tr><td>MPEG2</td></tr>
<tr><td>MPEG1</td></tr>
<tr><td rowspan="2">*.divx</td><td>MVC</td><td rowspan="2">640 x 480</td><td>24/25/30</td><td>60</td></tr>
<tr><td>VP6</td><td rowspan="2">6~30</td><td>4</td></tr>
<tr><td>*.webm</td><td>WebM</td><td>VP8</td><td>1920 x1080</td><td>20</td><td>Vorbis</td></tr>
</table>

■ 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 Decorders

- 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 Decorders

- 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.

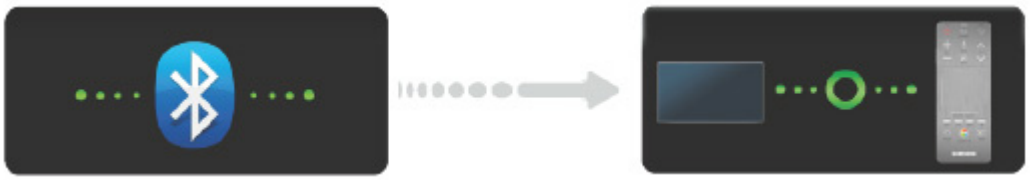
2-4-3. Smart Control

The Smart Touch Control makes it easier and more convenient to use the TV. For example, you can use the remote control's built-in touchpad to move the focus and make selections as you would on a computer using a mouse. In addition, you can use the virtual control panel displayed on the screen to change channels, play media files, and access favorites.

■ Connecting to the TV

In order to operate the TV using a Smart Touch Control unit, you must first pair it to the TV via Bluetooth.

1. To turn on the TV, point the Smart Touch Control at the remote control receiver of the TV and press the TV button. The remote control receiver's location may vary depending on the model.
2. A Bluetooth icon will appear at the bottom left of the screen as shown below. The TV will then attempt to connect to the Smart Touch Control unit automatically



<Attempting to connect and completion icons>

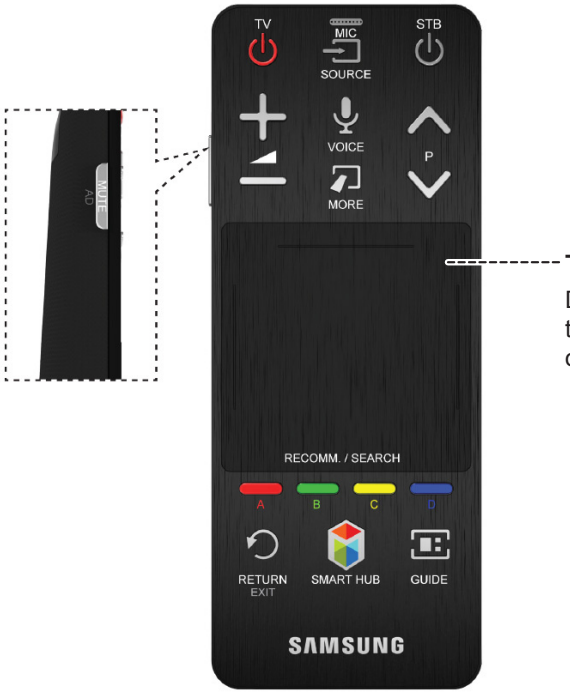
■ Reconnecting the Smart Touch Control Unit

If you need to reestablish the connection between the TV and the Smart Touch Control unit, press the pairing button at the back of the Smart Touch Control unit.

<The Smart Touch Control unit's pairing button>

The pairing button can be accessed by removing the control unit's battery cover. Pressing the pairing button automatically reestablishes the connection between the control unit and the TV.

■ Buttons and Descriptions



Touchpad

Drag your finger on the touchpad as you would on the touchpad of a laptop to move the focus displayed on the screen. To select item, press the touchpad.

<The Smart Touch Control>

TV
Turns the TV on/off.

∧ P ∨
Changes the channel.

SOURCE
Changes the source.

MORE
Displays a virtual remote control on the screen. The virtual remote control consists of a number panel, a playback control panel, and a quick access panel. Use the touchpad to select numbers and buttons.

STB
Turns on and off the satellite or cable set-top box connected to the TV. For this, the Smart Touch Control must be configured as a universal remote control.

The colour buttons work differently, depending on the function that the TV is currently performing.

VOL
Adjusts the volume.

RETURN/EXIT
Returns to the previous menu.

VOICE
Run Voice Recognition. To speak a voice command, press and hold the **VOICE** button and say a voice command.

SMART HUB
Launch Smart Hub. While an application is running, pressing the Smart Hub button terminates the application.

MUTE / AD
Turns the TV sound on/off.

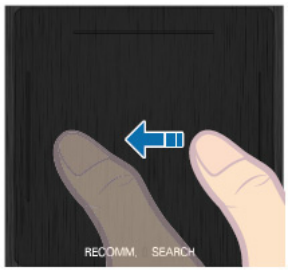
GUIDE
Check the digital channel broadcasting schedule.

■ Reconnecting the Smart Touch Control Unit

Use the touchpad to perform various commands. Navigate to Guide (**System → Device Manager → Smart Touch Control Settings → Guide**) to view an on-screen guide to using the Smart Touch Control.

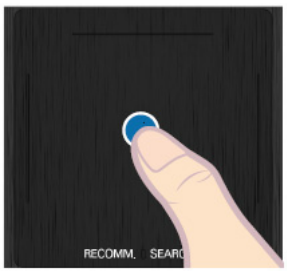
- Dragging

  Drag on the touchpad in the desired direction. Move the focus or the pointer in the direction the finger is dragging.



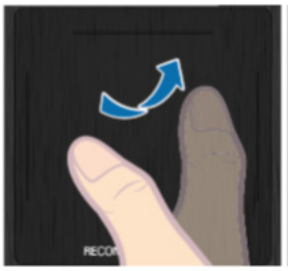
- Tap

  Tap on the touchpad. This selects the focused item.



- Flicking

  Flick on the touchpad in the desired direction. This moves the focus or scrolls the screen based n the direction and speed of the flick.



- Tapping and Holding

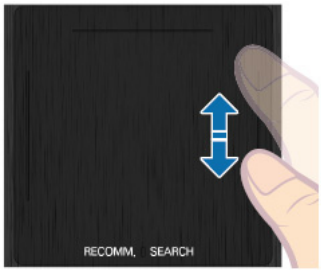
  Tap and hold on the touchpad for at least 3 seconds. This gives you access to hidden features included in certain applications.

- Tapping and Dragging

  Tap on the touchpad, drag and release. This moves the selected web item in a webpage or your current location on a map.

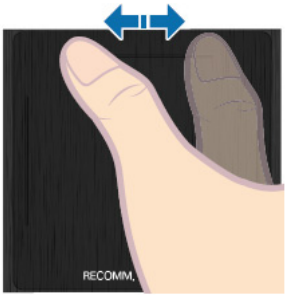
- Scrolling Up/Down

  Scroll up/down the line on either the left or right edge of the touchpad. This scrolls a webpage or a list up/down. This scrolling feature easily accommodates both right-handed and left-handed users.



- Scrolling Left/Right

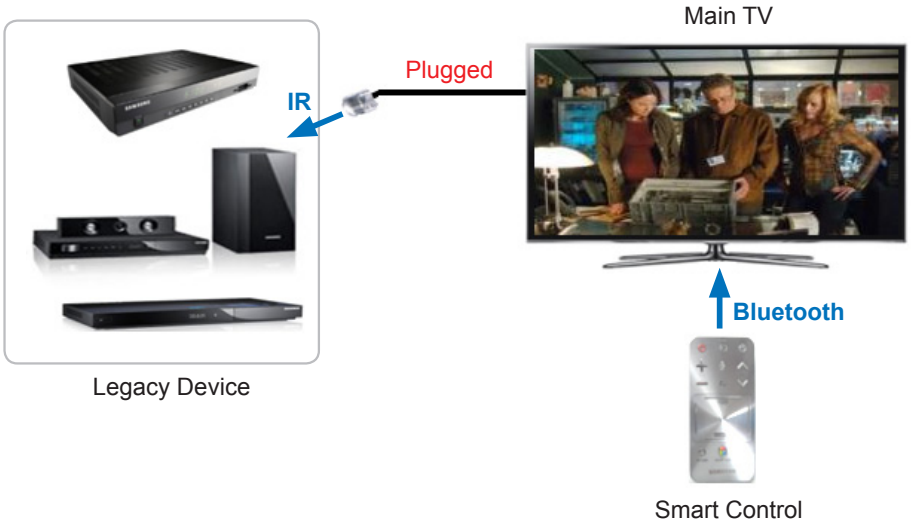
  Scroll left/right on the line at the top or bottom edge of the touchpad. This scrolls a horizontal webpage or the Smart Hub panel to the left/right.



2-4-4. IR Blaster

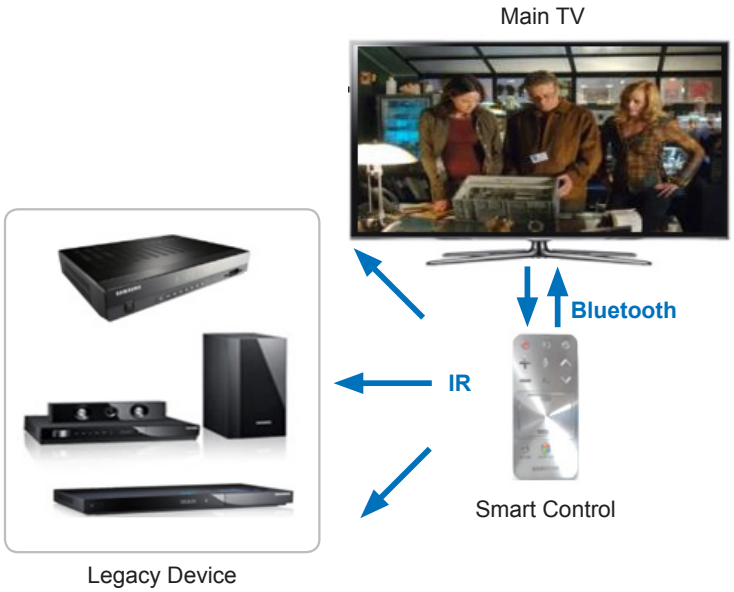
■ Using wired IR Blaster

1. Push the Smart Control Key.
   - Key Data is transmitted to the TV. (Bluetooth)
2. Key Data is transmitted to the IR Blaster MCU.
   - Uart (the internal communication of TV)
3. External Device is operated.
   - IR Transmit . (IR blaster → Device)



■ Not using wired IR Blaster

1. Push the Smart Control Key.
   - Key Data is transmitted to the TV. (Bluetooth)
2. Key Data is transmitted to the Smart Control.
   - Bluetooth
3. External Device is operated.
   - IR Transmit (Smart Control → Device)



2-4-5. 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 do not 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

Under some circumstances and under certain legal conditions, the use/misuse of the TV camera may result in legal liability. There may be obligations under local privacy laws regarding the protection of individuals concerning personal data and on the free movement of such data, and possibly other laws including criminal laws, regulating camera surveillance both in the workplace and elsewhere.

By using the TV camera, users agree that it will not be used (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.

If you are using a camera, first check the back for a sticker Remove the sticker cover before adjusting the TV camera angle. When you are no longer using the camera, rotate the lens downward and secure it in place. This prevents any inadvertent or unintentional camera operation,

■ Motion Control Environment Test

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
2. Adjust the camera angle so that you appear inside the square displayed on the screen. Once you have finished

Motion Control Options

Motion Control: Activates/deactivates Motion Control.

Animated Motion Guide: Displays an animated guide when user motion is detected.

Motion Control Activvation

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:

		
This action moves the cursor to the desired position.	Make a fist to select an option or execute a command. Keeping your fist clenched is like holding down a remote control button.	Make a circle with your hand in the counterclockwise direction to return to the previous menu.

Motion Control Screen

Screen Icons	Explanation
	Adjust the volume.
	Turns the TV sound on/off.
	Changes the channel.
	Launch Smart Hub.
	Check the recommended program information and air times. Select a program from the list to view detailed information about that program.
	Enter a channel number using the number panel to jump to the channel. Use the playback control panel with the on-screen color buttons to control a media file that is currently playing.
	Change the source.
	Turn off the TV.

2-4-6. SMART HUB

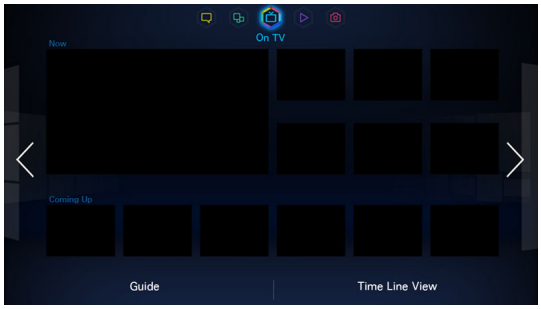
This TV features Smart Hub, a multi-purpose entertainment and family center. With Smart Hub, users can surf the web, download applications, and stay in touch with family and friends through social networking services. In addition, you can enjoy photo, video, and music files stored on external storage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

Social Content | **Apps & Signature SVC** | **Advaced EPG** Watching history baes | **P-VoD** | **User EPG** From AllShare

On TV

This functions is only available on U.S and Canada.

While you watch TV, a list of recommended programs on other channels appears on the screen. You can use this list to change the channel and find out more information about the recommended programs including how much time is left until they air.



Movies & TV Shows

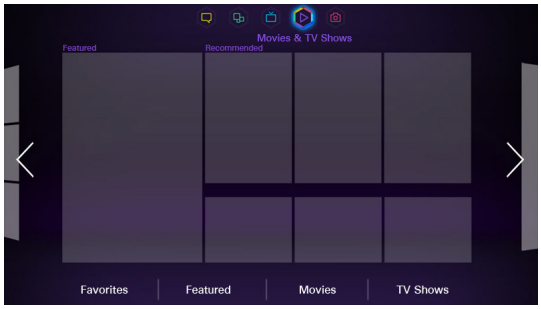
Purchase and watch movies and series without a separate external device.

This functions is only available on U.S and Canada.

Users can buy movies and TV shows online.

Open Smart Hub and select Movies & TV Shows.

This service may be not available depending on the country or region.

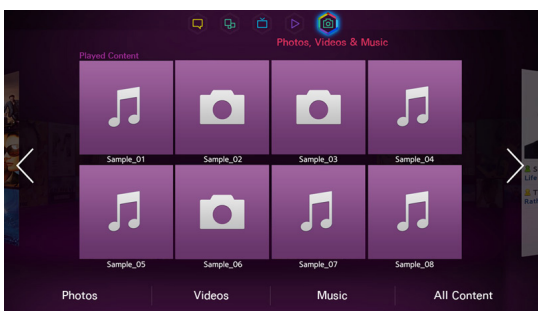


Movies & TV Shows

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

Open Smart Hub and select Photos, Videos & Music.

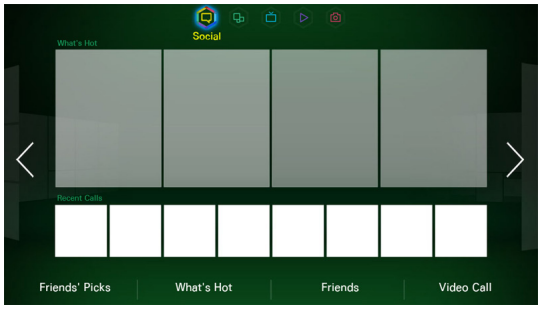
Enjoy photo, video and music files from an external storage device directly on your TV. Back up important files before connecting an external storage device to the TV. Samsung will not be held responsible for damaged or lost files.



Social

Watch the latest YouTube videos and you and your friends' video posts on Facebook and Twitter. You

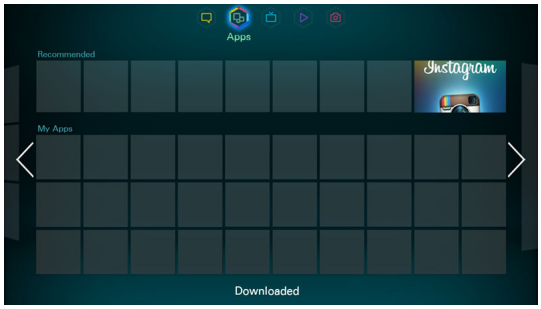
can also make video calls to friends by connecting the TV to a camera (sold separately).



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

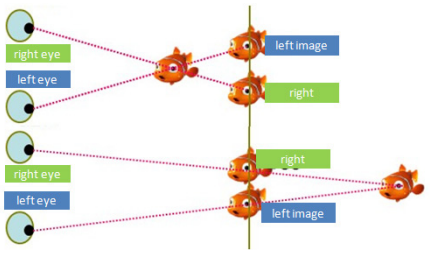
  WebBrowser is a web-browsing application. Using WebBrowser, you can browse the Internet on your TV as you would on your computer and even watch TV while you surf the web. The browsing experience, however, may not be the same as it is on your computer. Use a keyboard and mouse for a more convenient web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

  Share your thoughts and comments about a program on the air through social networking services. Social Networks displays social network services such as Twitter, Facebook, Google Talk, and NateOn on a single screen. You can even post messages and comments in the same manner as you would using a computer. You must first link your Samsung account to the respective SNS accounts before you can access them using Social Networks.

2-4-7. 3D Display

■ What is 3D Display?

This mode is to enables users to view images on the TV/Monitor in 3D by receiving the video signal in 3D format from sources such as 3D games and titles. The human brain constructs a 3 dimensional image from the two images entering both eyes. The depth of a 3 dimensional images is determined by the horizontal difference between the images from both the left and right eyes. 3D is displayed two images alternately on screen equivalent to left and right at TV, and embodies by doing to see each relevant image in left eye and right eye through shutter glasses.



■ 3D Function of Model Series

LCD / LED / PDP TV			LED
Items	Sub Items		120 Hz
	Platform (Main)		X12
	Platform (FRC / Formatter)		Fox-FT1 (SDC) Fox-FT2 (AUO / CMI) Echo-Fs (Sharp 3D) NT7231 2 (Sharp 2D)
3D Feature	2D → 3D Coversion		O
	3D → 2D		O
	3D Perspective		O
	3D Depth		O
	Auto View (Auto Format Detection)		X
	3D Optimize		O
FRC Feature	Auto Motion Plus		O
3D Input Format	ATV / AV, PC	2D → 3D	O
	Component	2D → 3D	O
		SS, TB	O
	HDMI	2D → 3D	O
		SS, TB	O
		FP 1080P 24 / 25 / 30 FP 720P 50 / 60 FP 1080i 50 / 60	O
	HDMI (PC / DVI)	LL, VS, Check ker BD, FS	X
	HDMI (PC / DVI)	2D → 3D	O
		SS, TB	O
		MPO	O
		SVAF IES (SS, BT)	O
		MVC 1080P 24 / 25 /30 MVC 720P 50 / 60 MVC 1080i 50 / 60 MVC 720P 24 / 25 /30	O
	DTV	2D → 3D	O
		SS, TB	O
		DVB_Phasel (SS, BT)	O
		ATSC_KR30	O

■ Surpported 3D Resolutions

These specifications apply to a display ratio of 16:9 only.

- 3D Format: L/R, T/B

Resolution	Frequency (Hz)
1280 x 720p	59.94 / 60
1920 x 1080i	59.94 / 60
1920 x 1080p	23.98 / 24 / 29.97 / 30 / 59.94 / 60

- 3D Format: Frame Packing

Resolution	Frequency (Hz)
1280 x 720p	59.94 / 60
1920 x 1080i	59.94 / 60
1920 x 1080p	23.98 / 24 / 29.97 / 30

- Component

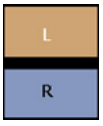
Resolution	Frequency (Hz)
1280 x 720p	59.94 / 60
1920 x 1080i	59.94 / 60
1920 x 1080p	23.98 / 24 / 29.97 / 30 / 59.94 / 60

- Digital Channel

Resolution	Frequency (Hz)
1280 x 720p	59.94 / 60
1920 x 1080i	59.94 / 60

■ 3D Format Test

3D Format : There are several 3D formats existing on how to merge Left and Right images.

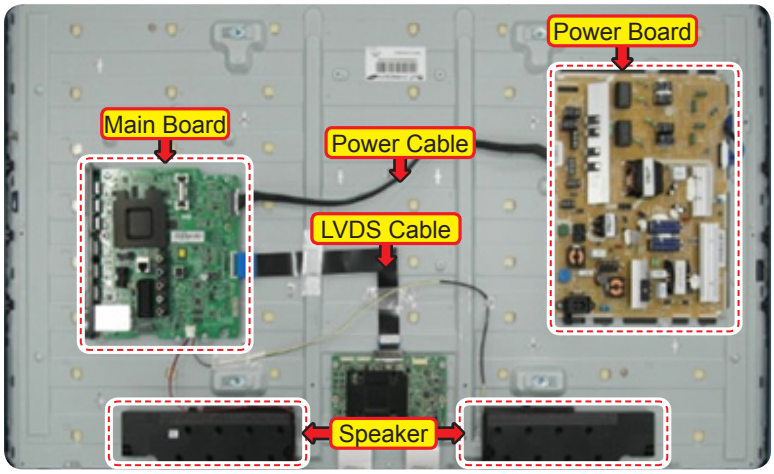
Format	Input images	Test Method
Frame Packin (HDMI 1.4)		Able to test only by HDMI 1.4 BD Player or MSPG-4600MT(Master Device)
Top & Bottom		Using Format_test.bmp • Check in the PC(HDMI) source. PC resolution and format resolution must be same • Wearing 3D glass, left eye sees only ‘L’ letter, right eye sees only ‘R’ letter (close your eyes one by one)
Side by Side		Using Format_test.bmp • Check in the PC(HDMI) source. PC resolution and format resolution must be same • Wearing 3D glass, left eye sees only ‘L’ letter, right eye sees only ‘R’ letter (close your eyes one by one)
2D → 3D		Check in the normal 2D source. Check not in the test pattern but in the actual video. • Left/Right black region will grow more and more as the depth goes higher.

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 nomal 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 X10+ pattern or LVDS cable or T CON

■ How to check inner pattern?

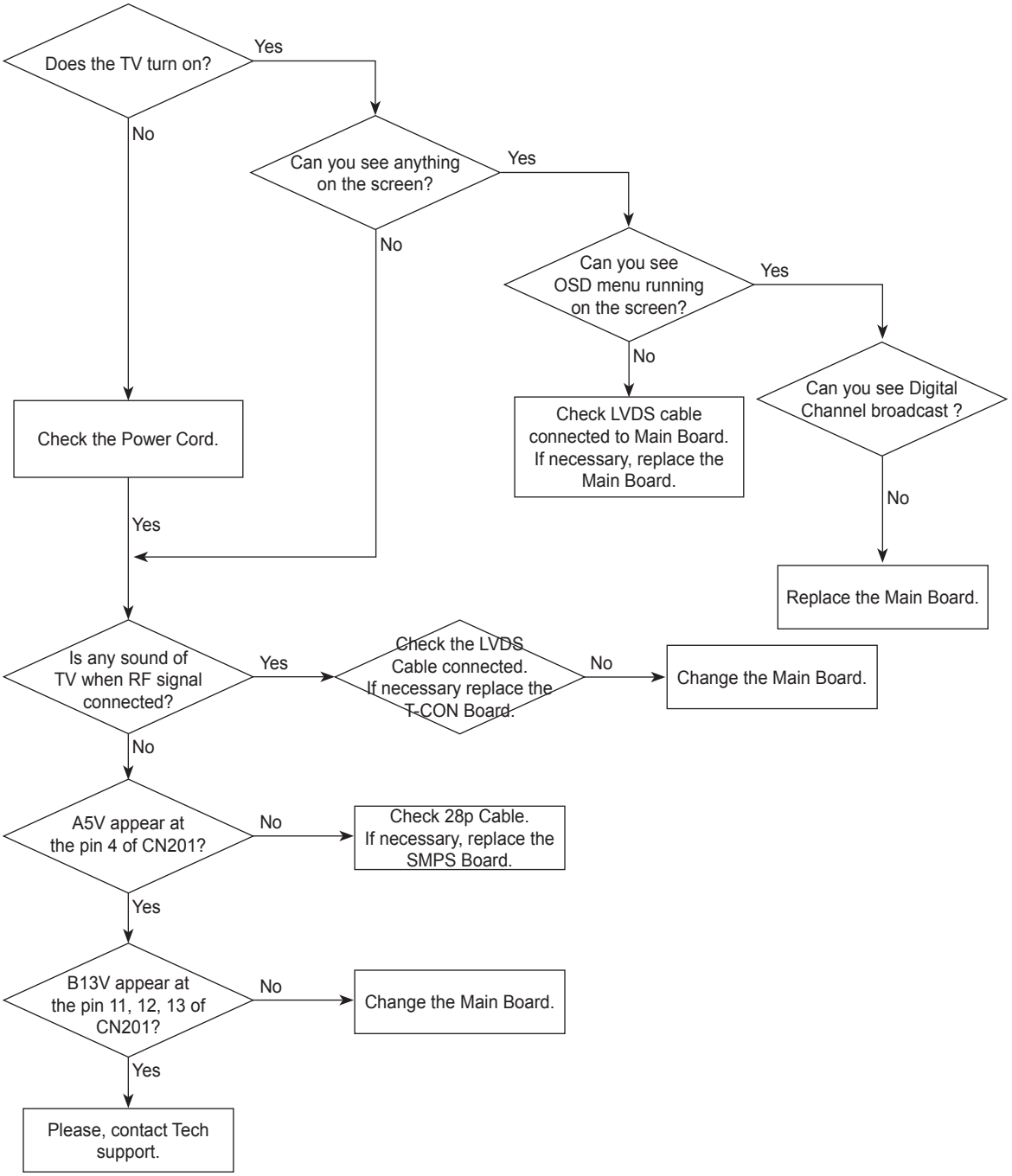
1. Enter the service mode ⋯› Choose ‘SVC’ ⋯› Check the ‘internal pattern.’
2. Enter ‘Service Mode.’
   - If you do not have Factory remote control

     Power OFF → MENU → 1 → 8 → 2 → Power On
   - If you have Factory remote control

     INFO → Factory
3. Choose ‘SVC ⋯› Test pattern’.

4. Check inner patterns.

4-1-2. Simple flow chart of malfunction

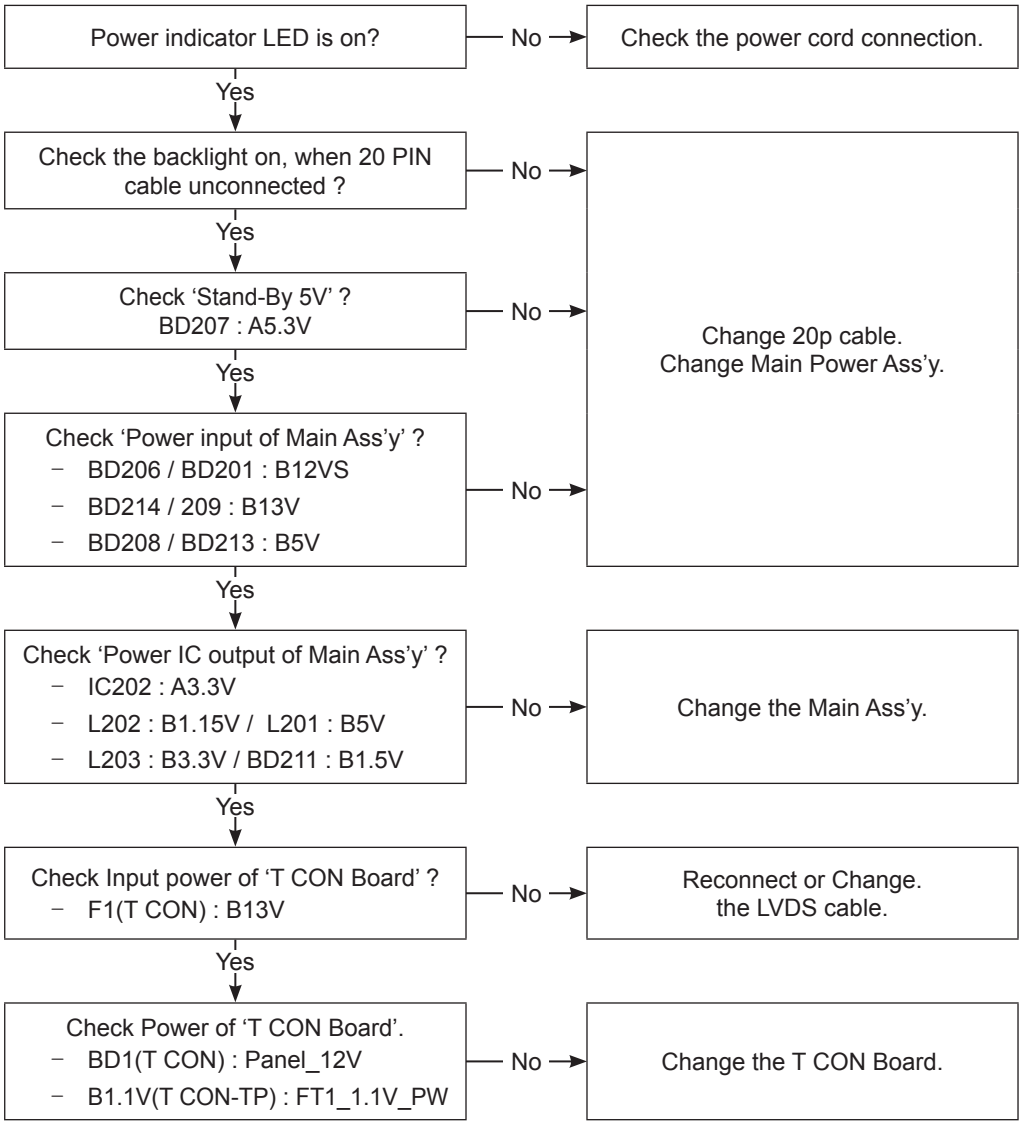


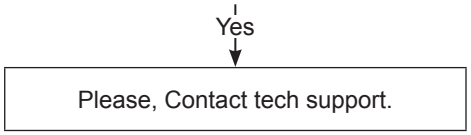
4-2. How to Check Fault Symptom

4-2-1. NO Power

Note

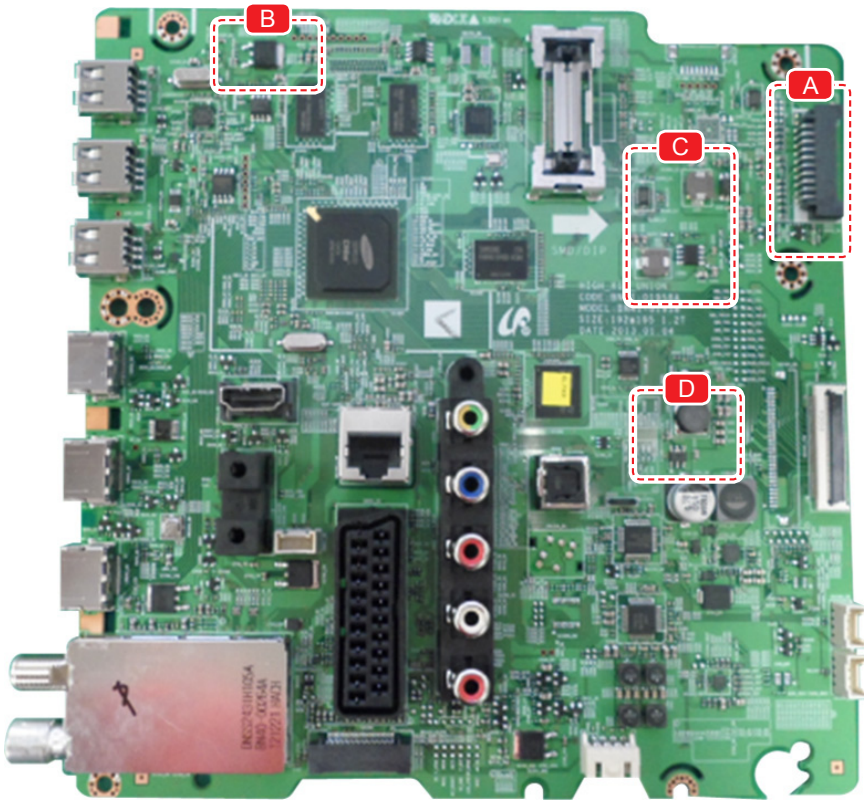
Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

Symptom	• The LEDs on The front panel do not work when connecting The power cord. • The SMPS relay does not work when connecting The power cord. • The units appears to be dead.
Major checkpoints	The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: • Check the internal cable connection status inside the unit. • Check the fuses of each part. • Check the output voltage of SMPS. • Replace the Main Board.
Diagnostics	

Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

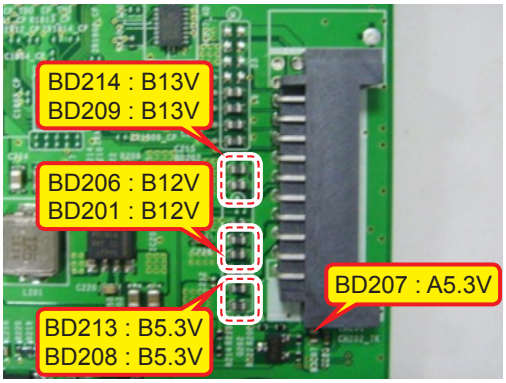
■ Location of Parts

Main Board_Front

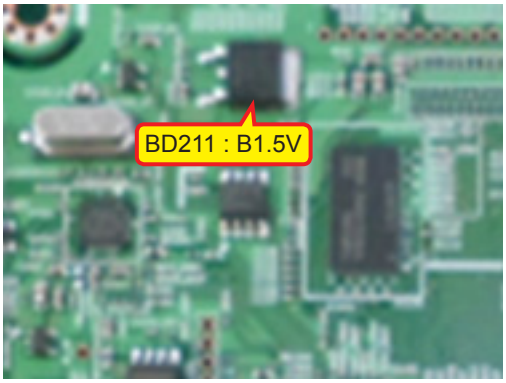


Detail

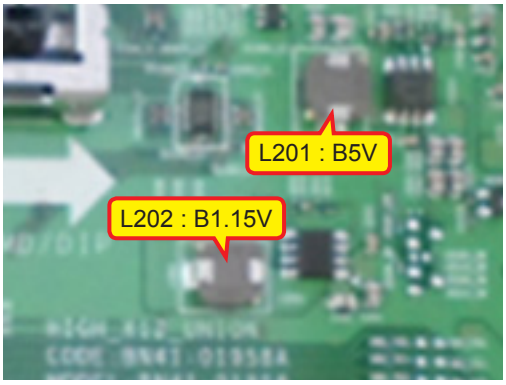
A



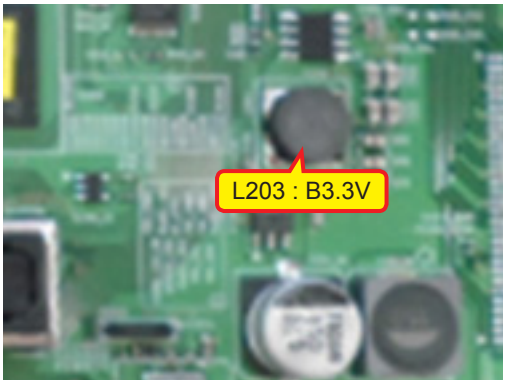
B



C



D



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

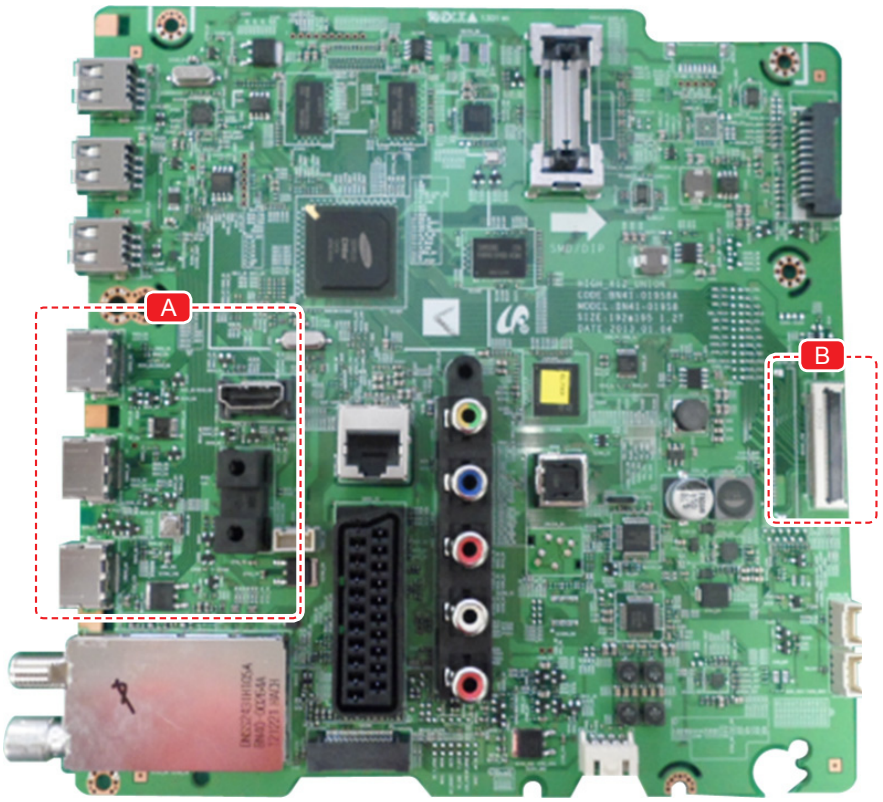
Note

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

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the HDMI source. • Check the HDMI switch. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	Power indicator LED is off. Lamp(Backlight) on, no video ? — No → Check a set in the 'Stand-by mode'. Yes ↓ Check the HDMI source and check the connection of HDMI cable ? — No → Input the HDMI signal properly. Yes ↓ ❶ Check the signal at Input of Main Board ? – **HDMI1 Clk** Pin #10, #12 of CN602_H2 • DATA Pin #7, #9, #4, #6, #1, #3 of CN602_H2 – **HDMI2 Clk** Pin #10, #12 of CN603_H3 • DATA Pin #7, #9, #4, #6, #1, #3 of CN603_H3 – **HDMI3 Clk** Pin #10, #12 of CN604_H4 • DATA Pin #7, #9, #4, #6, #1, #3 of CN604_H4 – **HDMI4 Clk** Pin #10, #12 of CN601_H1 • DATA Pin #7, #9, #4, #6, #1, #3 of CN601_H1 — No → Check CN601~4. Check HDMI cable. Change the Main Ass'y. or Check IC1001(X12). Change the Main Ass'y. Yes ↓ ❷ Check the LVDS clk signal at output of Main Board. (TX) – TX2_CLK : ODD_TXCLK_DN/DP – TX4_CLK : EVEN_TXCLK_DN/DP — No → Check IC1001(X12). Change the Main Ass'y. Yes ↓ Check the LVDS cable? Replace the T CON / LCD panel? — No → Please, Contact tech support.
Caution	Make sure to disconnect the power before working on the IP Board.

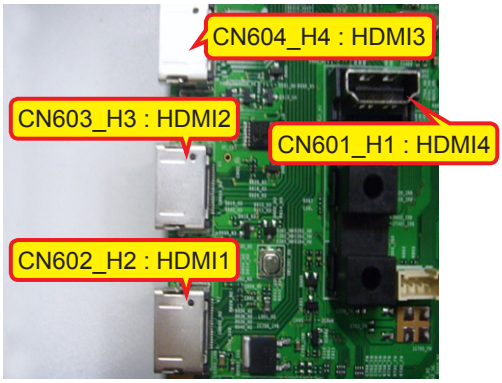
■ Location of Parts

Main Board_Front



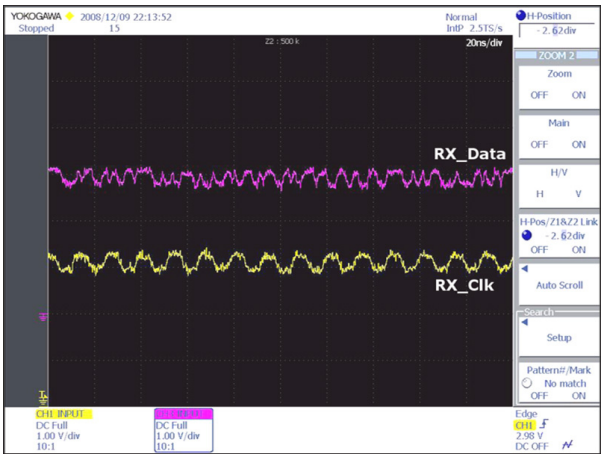
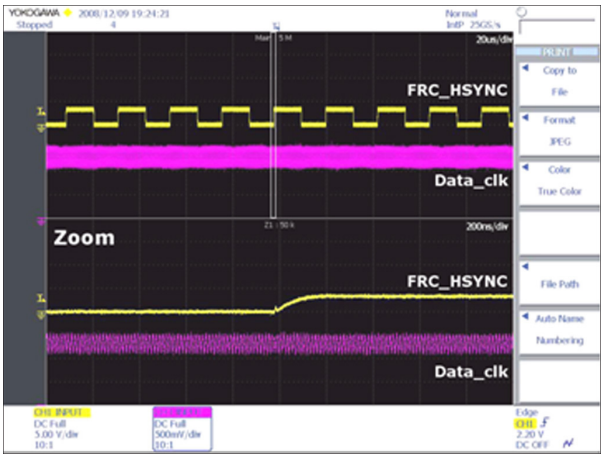
Detail

A



B

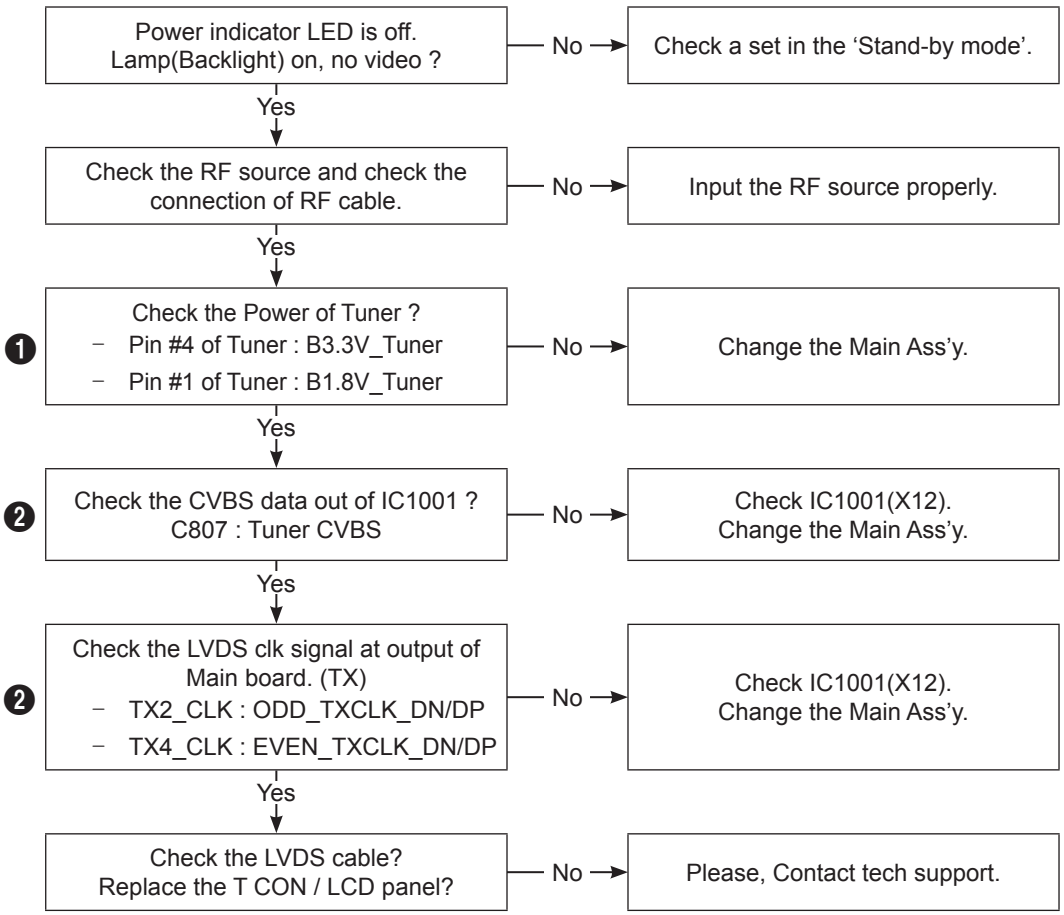
■ Waveforms

❶ HDMI input (RX_Data, RX_Clk)	❷ LVDS output
	

4-2-3. No Video (Tuner_CVBS)

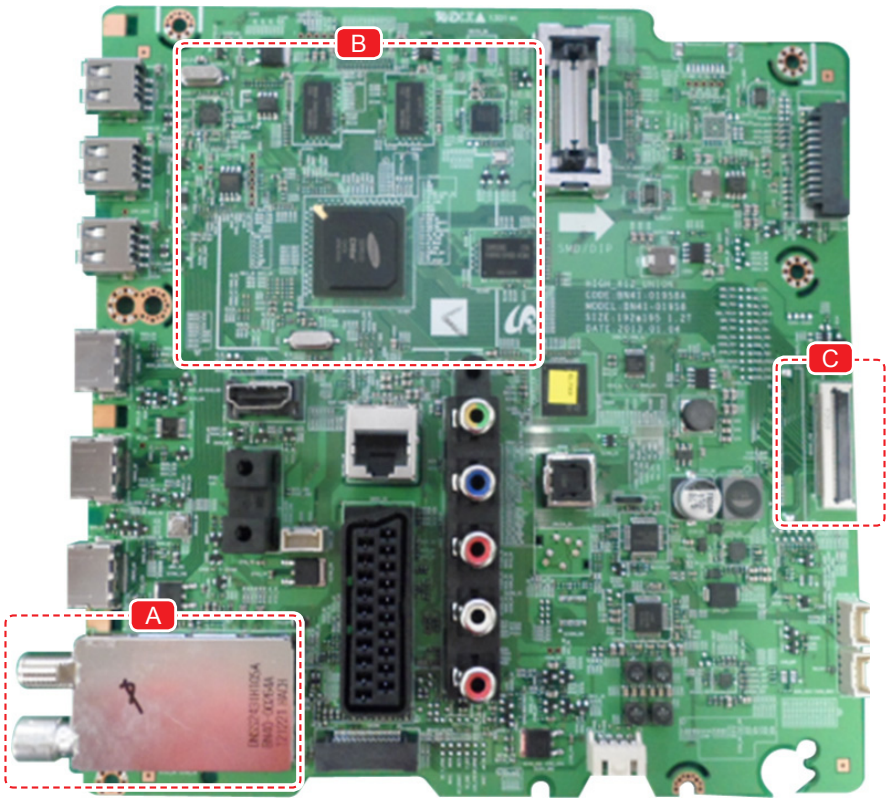
Note

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

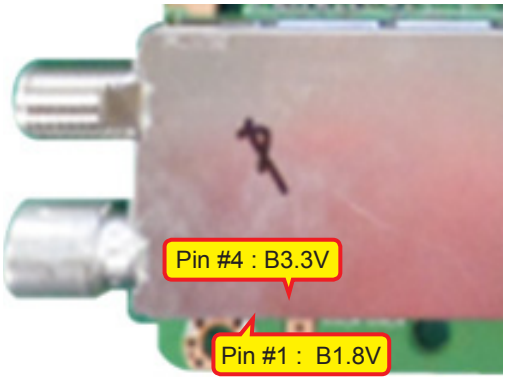
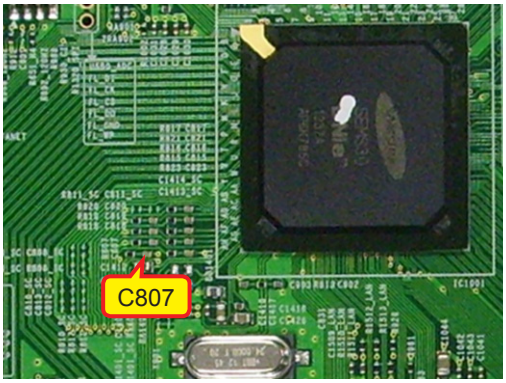
Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the Tuner CVBS source. • Check the Tuner. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

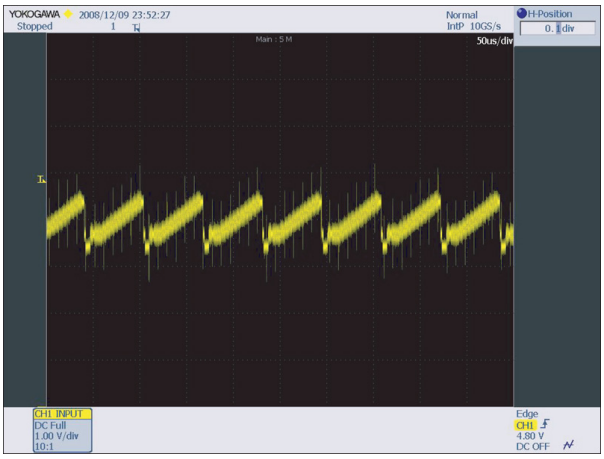
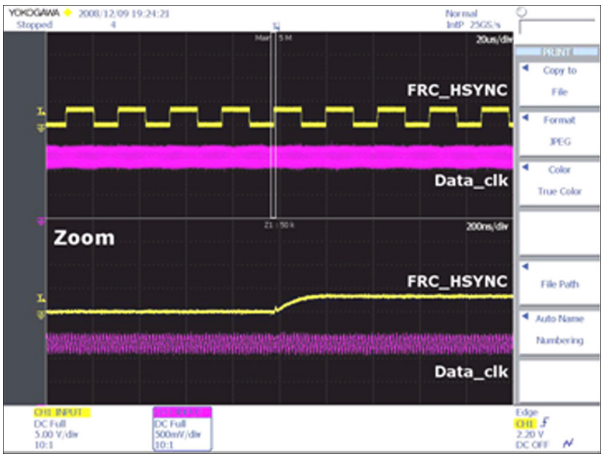
Main Board_Front



Detail

A		B	
C			

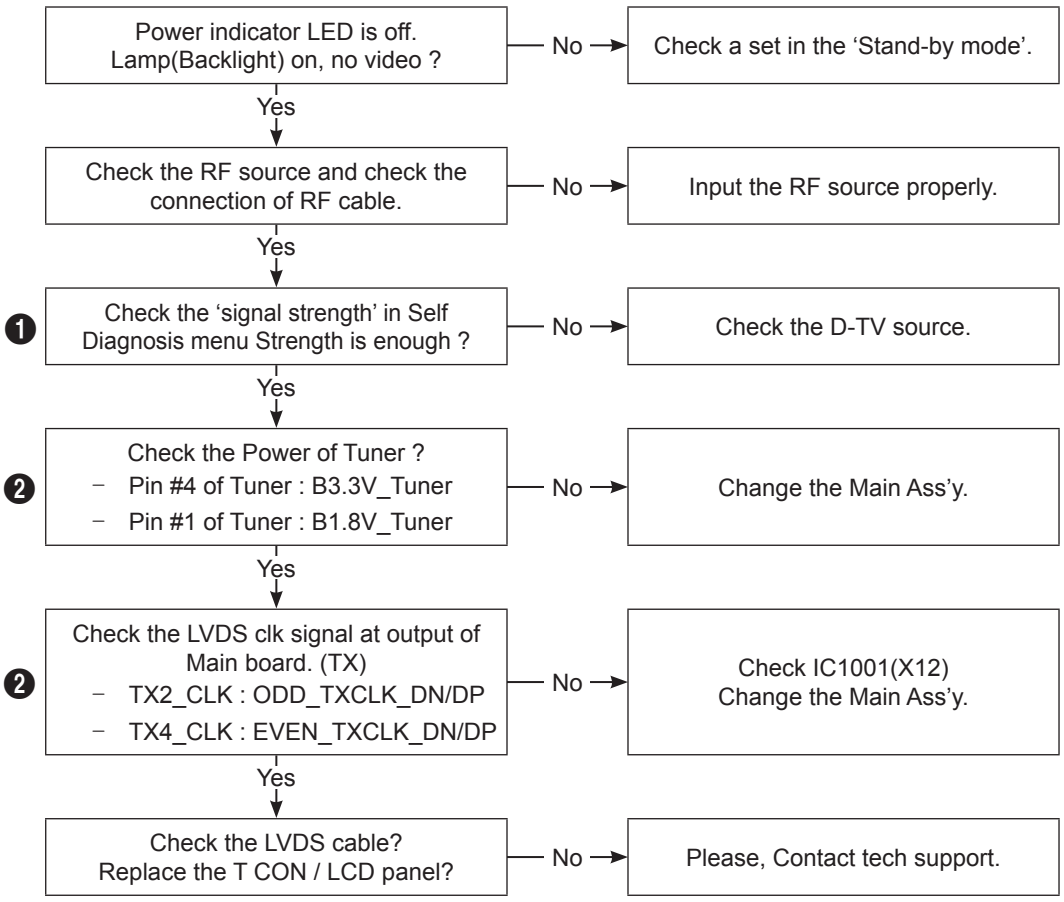
■ Waveforms

❶ CVBS OUT (Grey Bar)	❷ LVDS output
	

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

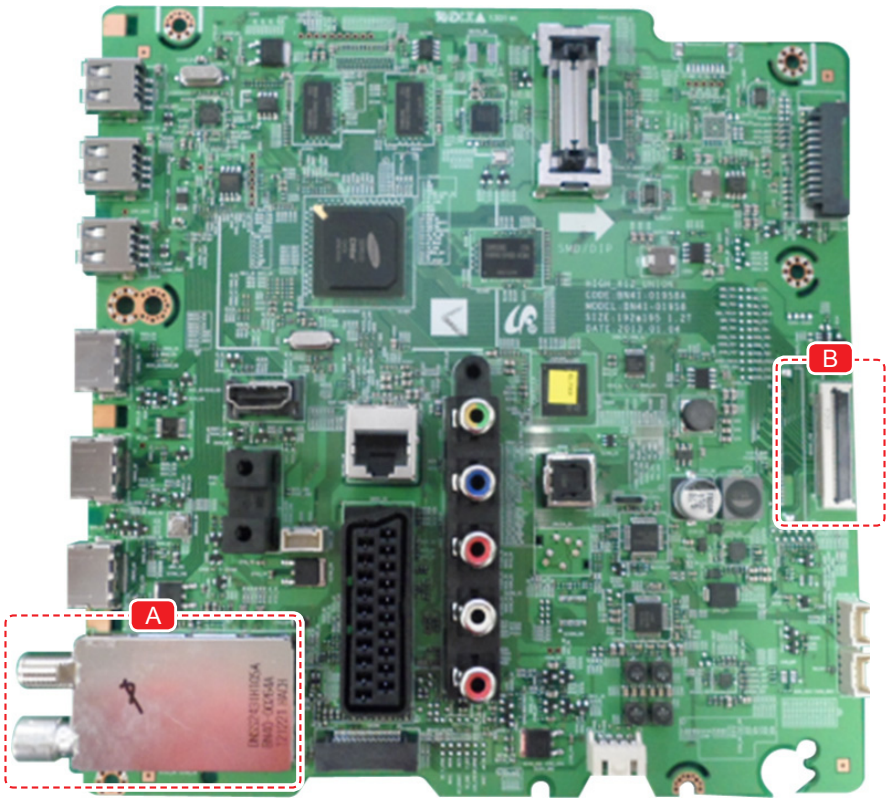
Note

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

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the DTV source. • Check the Tuner. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

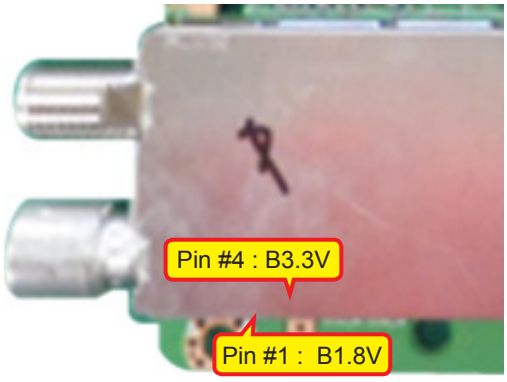
■ Location of Parts

Main Board_Front



Detail

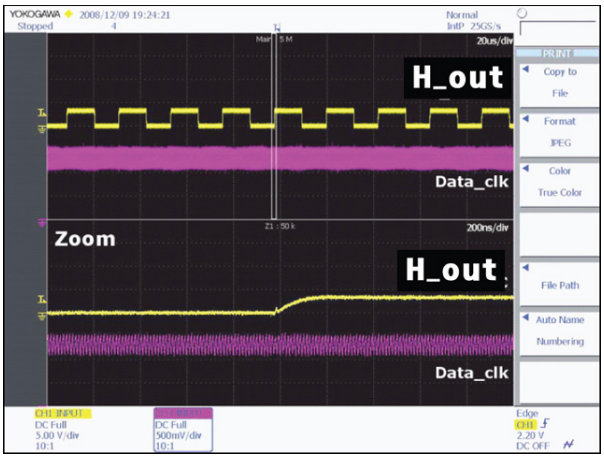
A



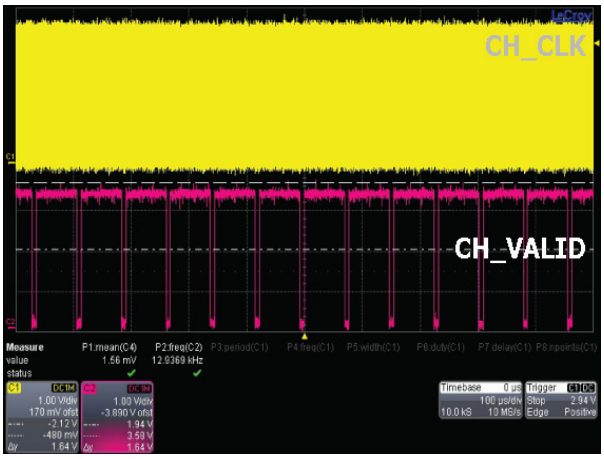
B

■ Waveforms

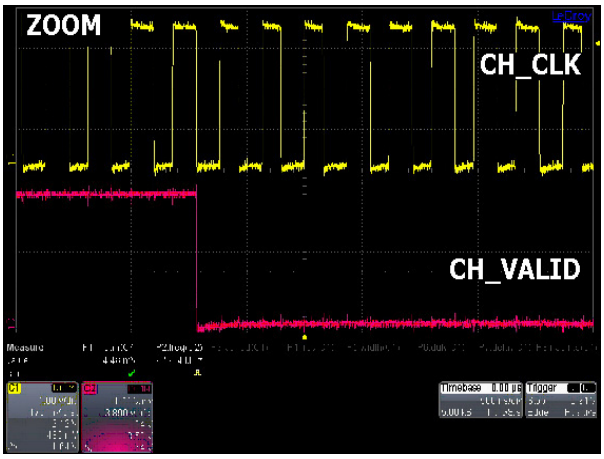
❶ CVBS OUT (Grey Bar)



❷ CH_CLK, CH_VALID



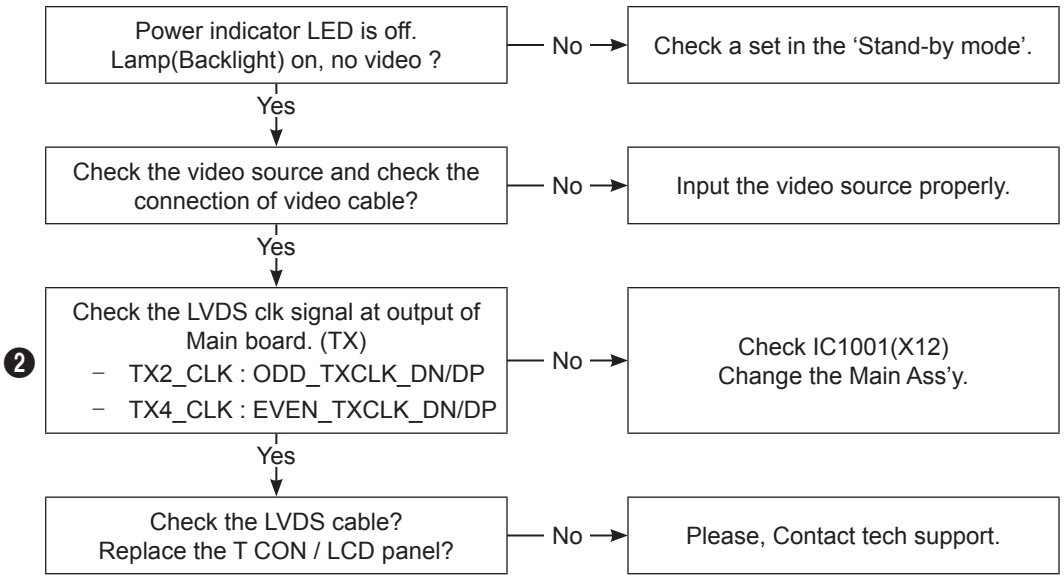
❷ CH_CLK, CH_VALID



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

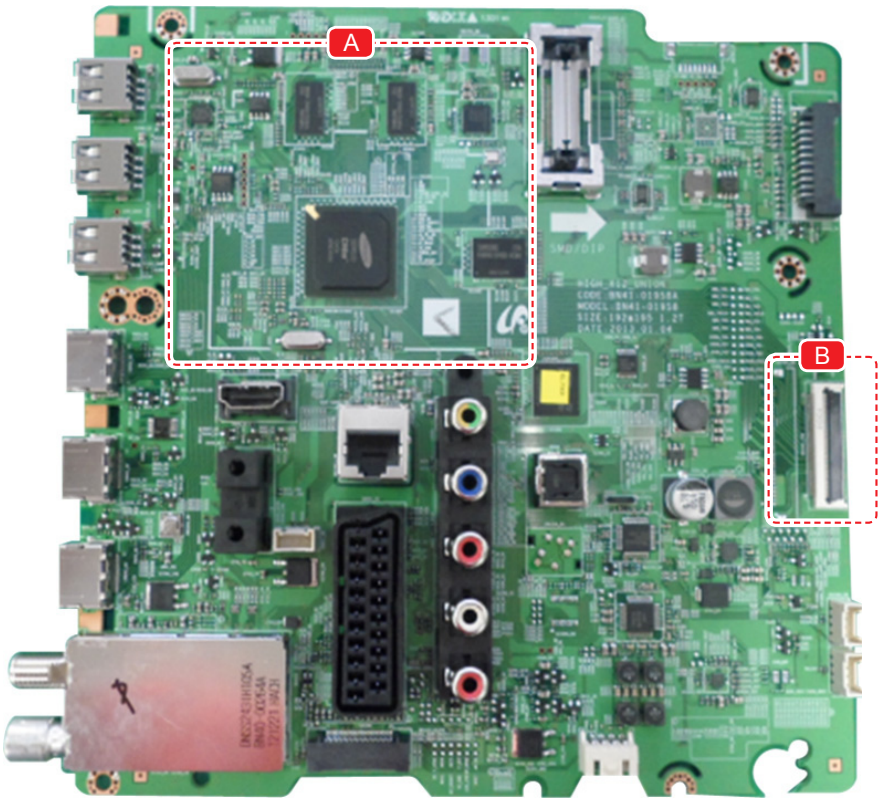
Note

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

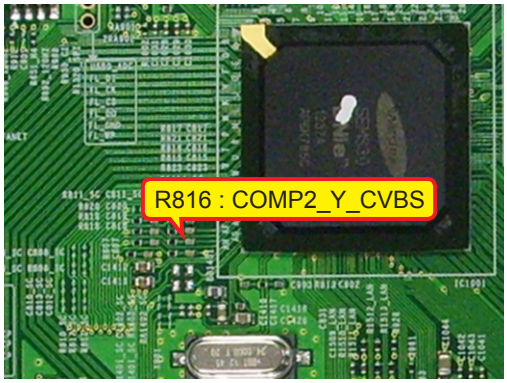
Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the Video CVBS source. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

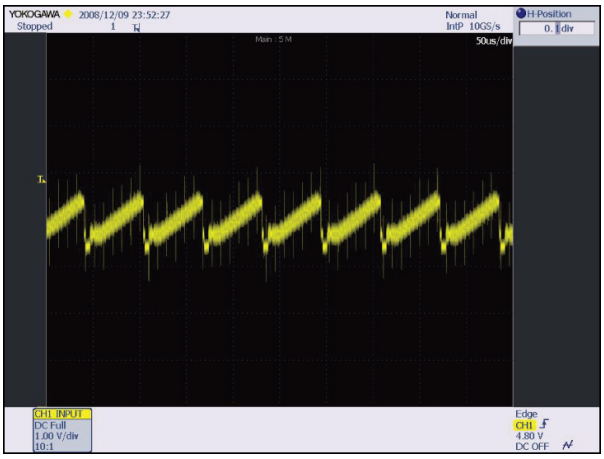
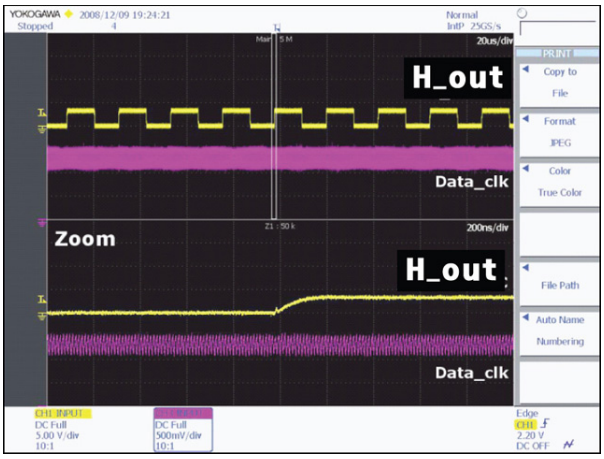
Main Board_Front



Detail

A		B	

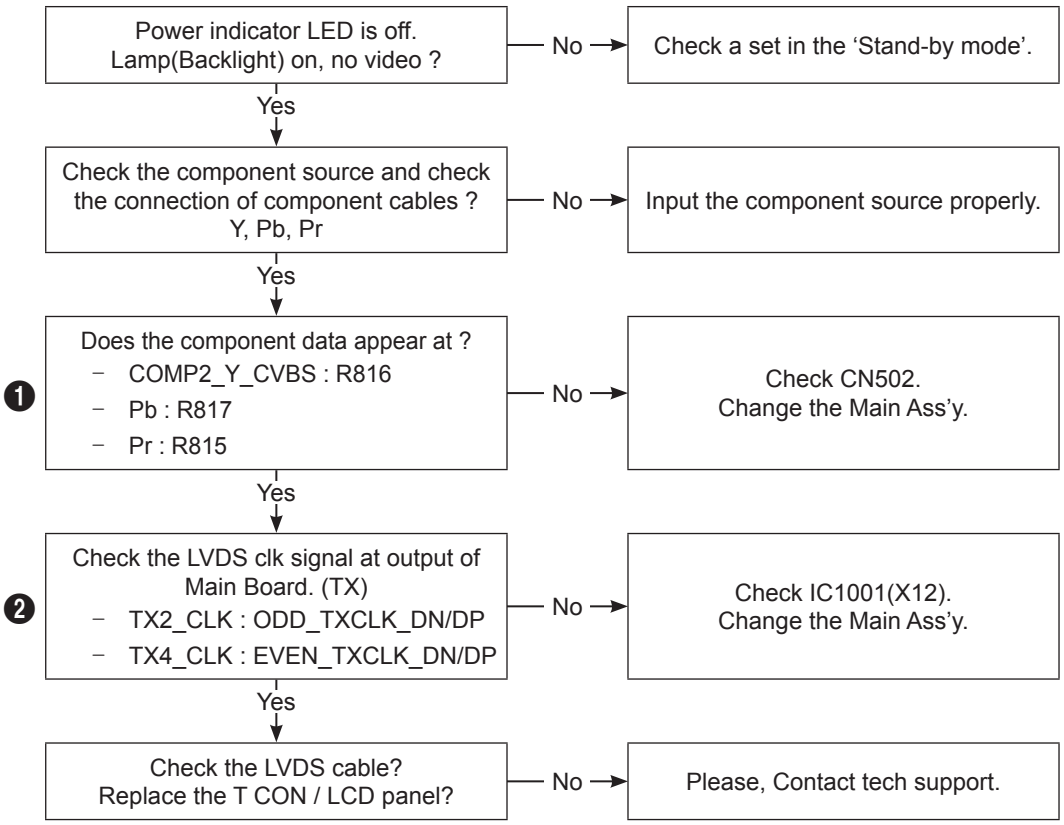
■ Waveforms

❶ CVBS OUT (Grey Bar)	❷ LVDS output
	

4-2-6. No Video (COMPONENT)

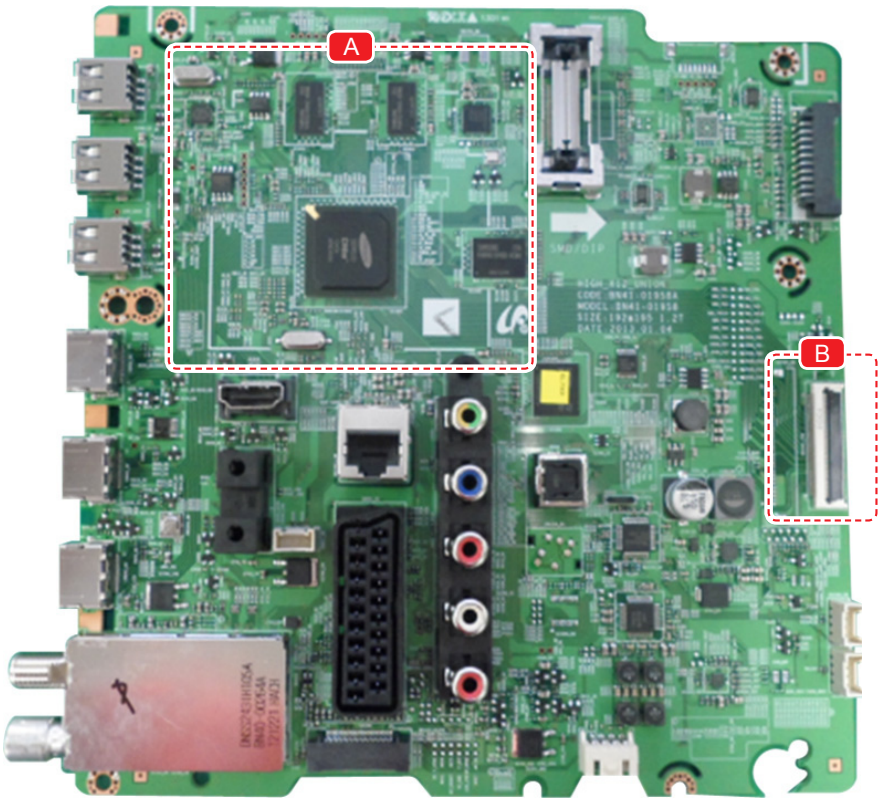
Note

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

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the Component source • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

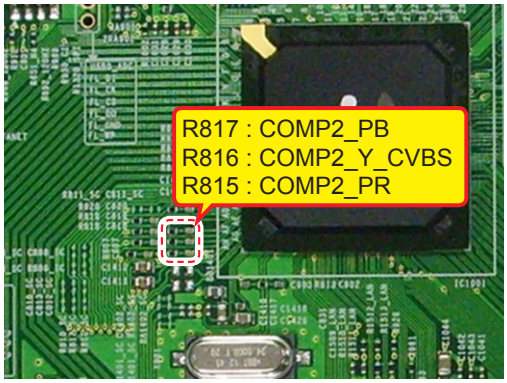
■ Location of Parts

Main Board_Front



Detail

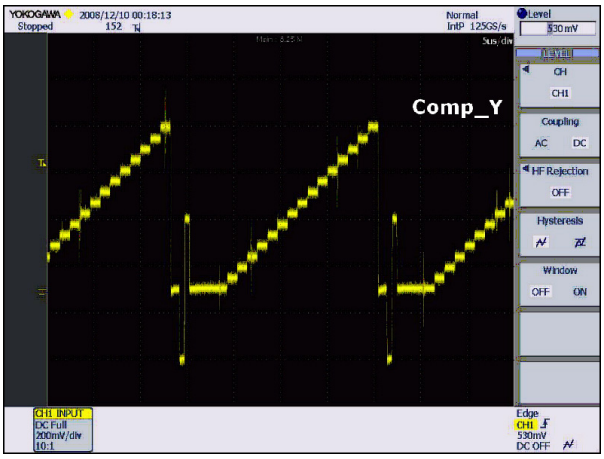
A



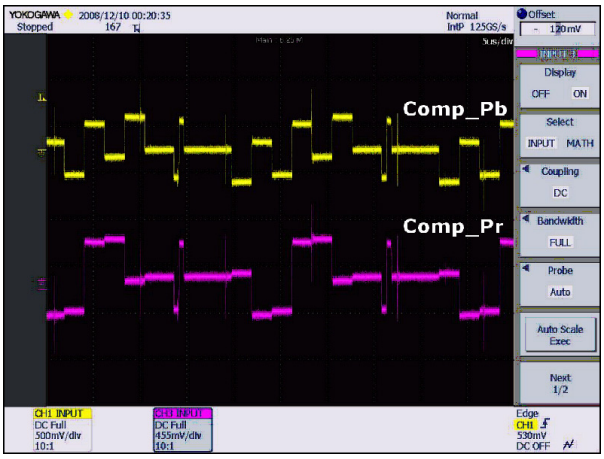
B

■ Waveforms

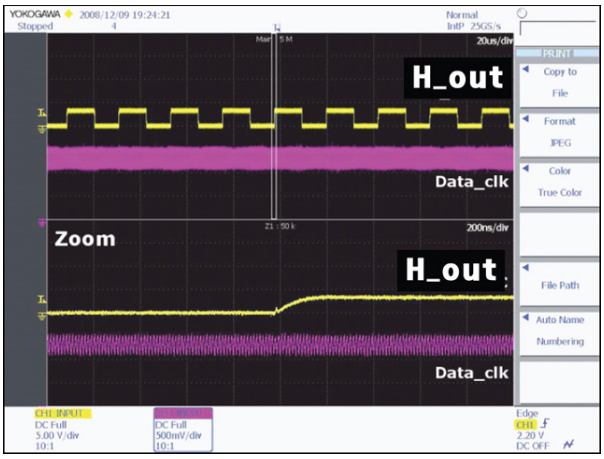
❶ Compnent_Y (Gray scale) / Pb / Pr (Color bar)



❶ Compnent_Y (Gray scale) / Pb / Pr (Color bar)



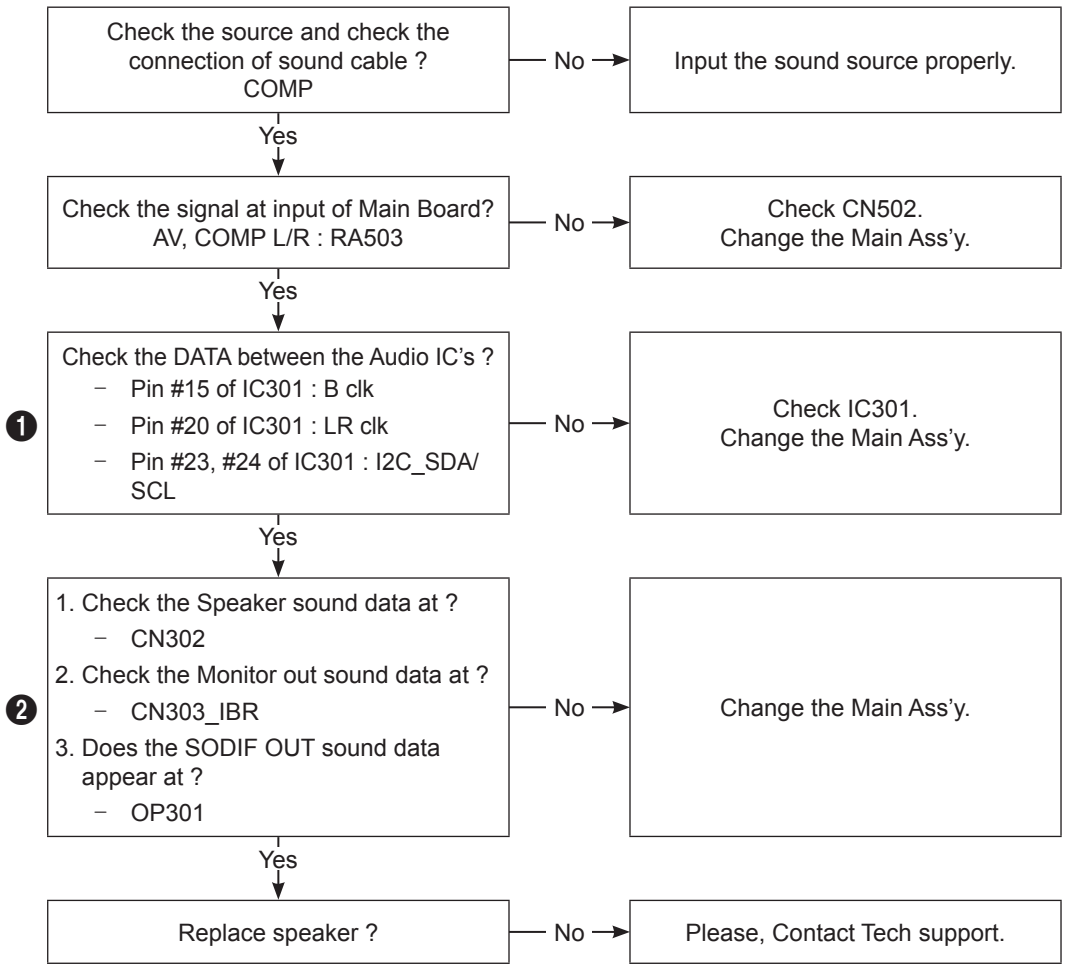
❷ LVDS output



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

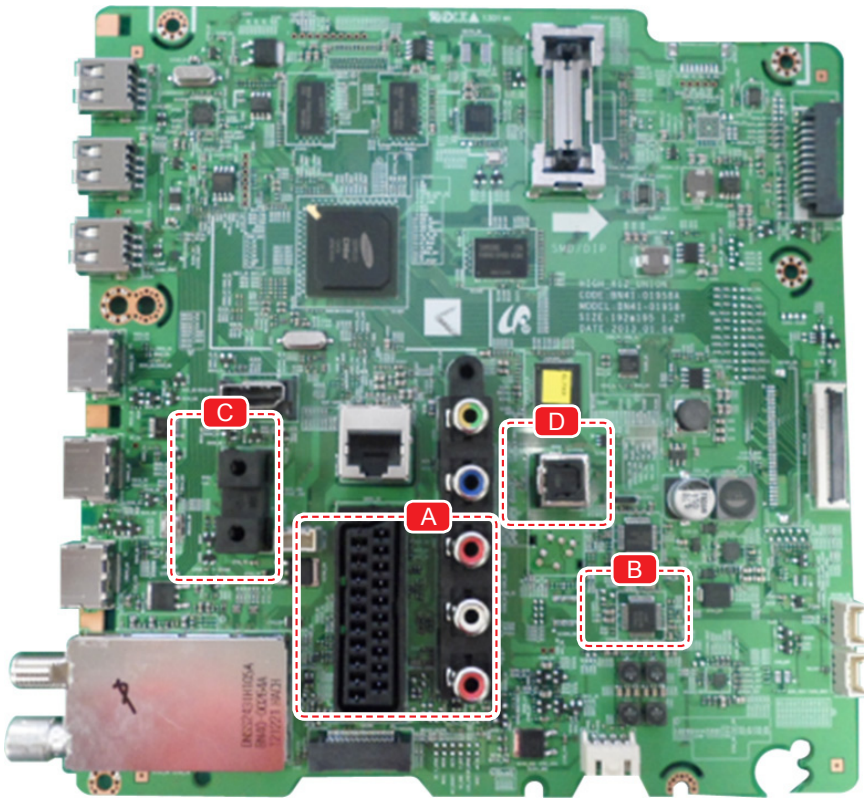
Note

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

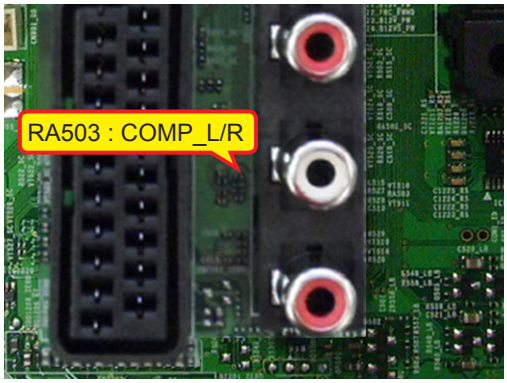
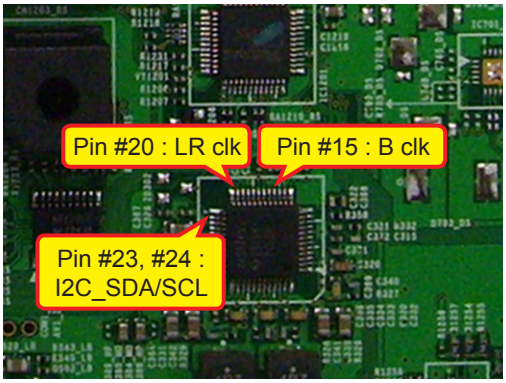
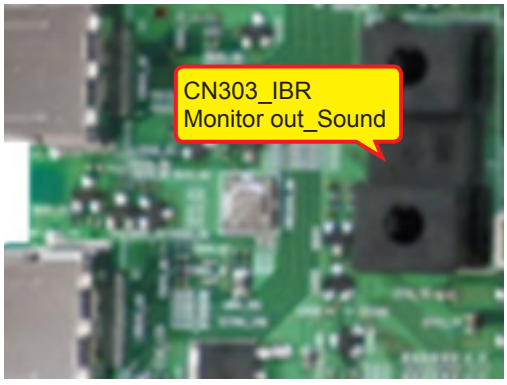
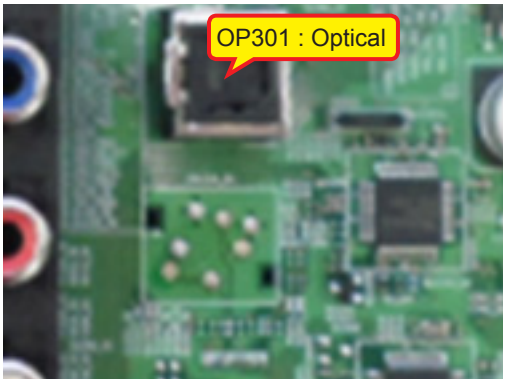
Symptom	• Video is normal but there is no sound.
Major checkpoints	• When the speaker connectors are disconnected or damaged. • When the sound processing part of the Main Board is not functioning. • Speaker defect.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP Board.

■ Location of Parts

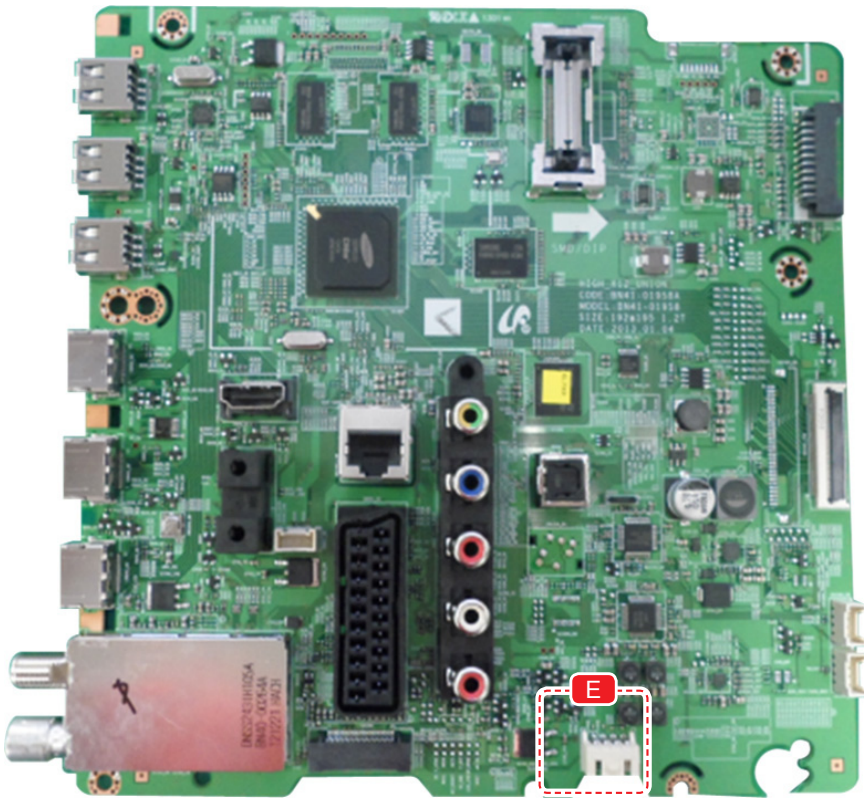
Main Board_Front



Detail

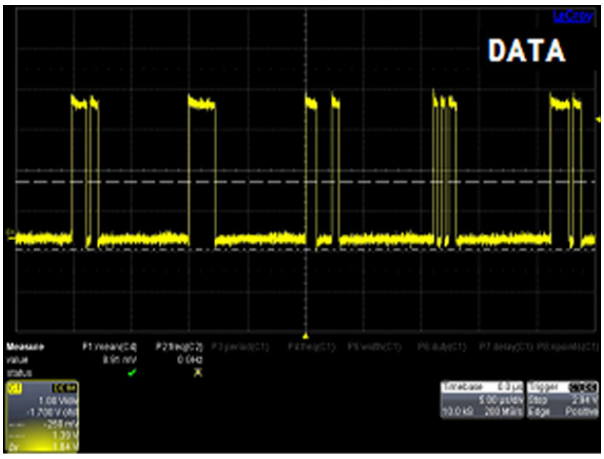
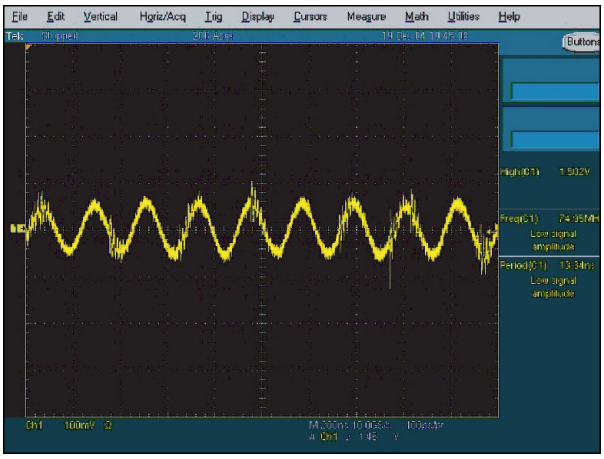
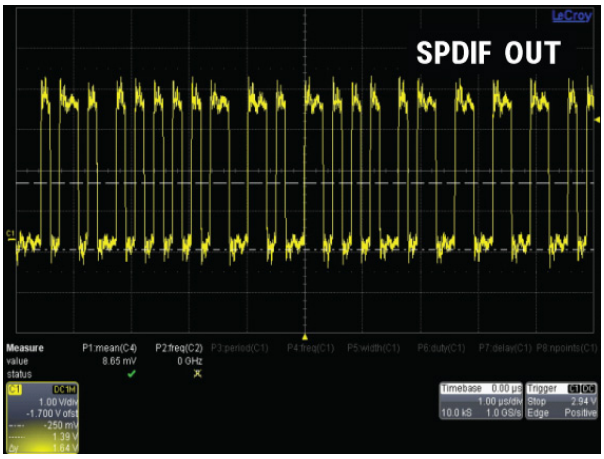
A		B	
C		D	

■ Location of Parts

Main Board_Front


Detail			
E			

■ Waveforms

❶ MCLK / LRCLK / PCM_I2C_DATA	❶ MCLK / LRCLK / PCM_I2C_DATA
	
❷ Speaker / Monitor OUT , SPDIF OUT	**❷ Speaker / Monitor OUT , SPDIF OUT**
	

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**".

■ UE**F6650SSXXH

Inches		40"	46"	50"	55"
PANEL	Vendor	SDC	SDC	AUO	SDC
	Code	BN95-00903A	BN95-00904A	BN07-01280A	BN95-00905A
	Spec.	CY-GF400CSLV1H/V	CY-GF460CSLV1H/V	-	CY-GF550CSLV1H/V
SMPS BOARD	Vendor	HANSOE	HANSOE	DYREL	SEM
	Code	BN44-00622B	BN44-00623B	BN44-00624A	BN44-00625A
	Spec.	L42X1Q_DHS	L46X1Q_DHS	L50X1Q_DDY	L55X1Q_DSM
MAIN BOARD	Chassis Ass'y	BN91-10427W	BN91-10427X	BN91-10427Y	BN91-10427Z
	PBA Ass'y	BN94-06727E	BN94-06727F	BN94-06727G	BN94-06727H
Byte	Item				
0	Factory Reset	-	-	-	-
1	Type	40A1AF6V	46A1AF6V	50A1AF6V	55A1AF6V
2	Local set	EU	EU	EU	EU
3	SW Model	UF6650	UF6650	UF6650	UF6650
4	BOM Model	6650	6650	6650	6650
5	Tuner	AUTO	AUTO	AUTO	AUTO
6	Ch table	NONE	NONE	NONE	NONE

4-3-2. Entering Factory Mode

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

- If you do not have Factory remote control

  Power OFF → INFO → MENU → MUTE → Power On

- If you have Factory remote control

  INFO → Factory

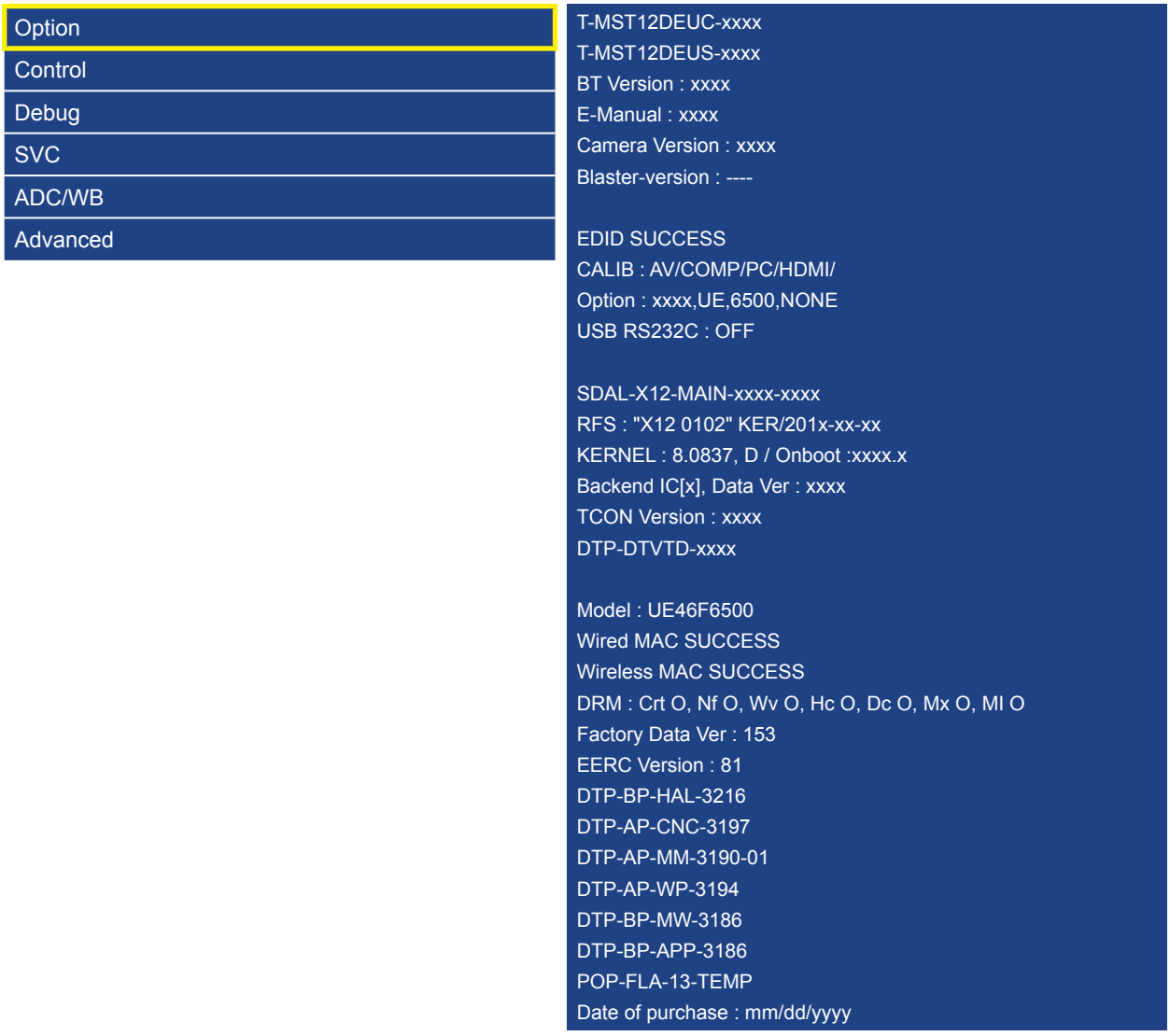
  – Buttons operations within Service Mode

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

HOW to enter the Advanced menu (Picture)

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

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



4-3-3. Factory Data

■ Option

Factory Menu Name	Data	Range
Factory Reset	-	
Type	40A1AF6V / 46A1AF6V / 55A1AF6V / 50A1AF6V	
Local Set	EU	
SW Model	UF6650	
BOM Model	6650	
TUNER	SI_ADI / FOX_T2C / SI_TCS2	
Ch Table	NONE	
MRT Option		
Front Color		
LVDS FORMAT	JEIDA	
Language_Arabic	US	
Region	USA	
PnP Language	ENG_US	
WIFI REGION	S	
OTN Support	ON	
OTA Support	OFF	
TTX	OFF	
China HD	OFF	
NT Conversion	OFF	
Num of DTV	1	
Num of AV	1	
Num of COMP	1	
Num of HDMI	4	
Num of SCART	0	
Num of USB Port	3	
Num of HeadPhone	0	
Num of RVU	1	
Num of Display	2	
Num of IPTV	0	
Num of RUI	0	
Num of PVR RECORD	0	
TOOLS Support	40	
LNA Support	OFF	
24Px4 Support	OFF	

Factory Menu Name	Data	Range
BD Wise Support	ON	
Data Service Support	OFF	
PVR Support	OFF	
CI Support	OFF	
LEDMotionPlus Support	ON	
Natural Mode Support	ON	
Relax Mode Support	OFF	
HDMI/DVI SEL	4	
Select LCD/PDP	LCD	
Wall Mount	OFF	
HV Flip		HV Flip / H Filp / OFF
Light Effect	OFF	
e-Pop Default	1	
CAMERA Support	OFF	
NETWORK Support	3	
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	OFF	
Recognition Support		
IF AGC	0	
D AGC	0	
PH BW	0	
FQ BW	0	
PH RATE	0	
PD EN	0	
PEQ Inx	0	
WF Scale		
WF Type	0	
Nu of Network Stream	1	

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	NONE	
Info Link Server Type	development	
Info Link Country	None	
TTX Group	-	
Visual Test	-	
MediaPlayDB	-	
OPTION_SWU		
OTN Server Type	operating	
OTN Test Server	OFF	
SWU Reset		
SWU Duration	OFF	
SWU Fail Test	OFF	
OPTION_NUM		
Num of ATV	1	

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	3	
Low threshold	10	
High threshold	15	
CSB	ON	
CLB	ON	
PDP Option		
Pixel Shift Test	OFF	
Logic SW	0	
Panel Temperature	0	
LOGIC Waveform Day	0	
Logic CheckSum	0	
MRT	0	
SAPC Timer		
APC Speed		
Hotel Option		

Factory Menu Name	Data	Range
Hospitality Mode	OFF	
Power On	…	
Menu OSD	…	
Operation	…	
Music Mode	…	
External Source	…	
Eco Solution	…	
Cloning	…	
Shop Option		
Shop Mode	OFF	
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	0x6Eh	
SPDIF PCM Gain	-9dB	
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	
A2Ident High THID	31	
A2Ident Low THID	0	
Pilot Level High Thld	0x28h	
Pilot Level Low Thld	0x10h	
Carrier2 Amp High THID	4	
Carrier2 Amp Low THID	3	
Carrier2 SNR High THR	16	

Factory Menu Name	Data	Range
Carrier2 SNR Low THR	80	
Sig Error On	35	
Sig Error Off	41	
Amp Model	TAS5745	
Amp Volume	0xcbh	
Amp Scale	0x35h	
Amp Check Sum	0x000821B2	
Woofer Type	0	
Woofer Scale	0	
Woofer Check Sum	0x8ah	
Woofer Local EQ Checksum	0	
Speaker EQ	ON	
PEQ Test	Ready	
Local Speaker EQ	0	
Local EQ Checksum	0	
Speaker cut-off Ferq	4	
Audio-IP Test		
SRS Tuning Parm	0	
TruBass-CheckSum	0	
Mic Scale	0	
Subwoofer Support	0	
India Sound	OFF	
AudioDock BT delay	50	
Wall Filter Type	0	
Wiselink Delay Menu	90	

■ Debug

Factory Menu Name	Data	Range
Spread Spectrum		
LVDS Spread	ON	
DDR Spread	1.0% Spectrum	
Period	30K	
Amplitude	1	
HD SSC ON/Off	ON	
HD SSC Value	1	
LVDS SSC ON/Off	ON	
LVDS SSC Value	0	

Factory Menu Name	Data	Range
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	1	
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	
Tuner Margin	10	
MPEG Margin	1000	
H.264 Margin	8	
CAM Wait Time		
TS Clock deldy	0	
TCON_TEMP READ	0	
TEMP LAST	60	
DCC VERSION	0x0	
DCC CHK SEL	0	
DCC CHECK LOCAL	0x0	
DCC CHECK TOTAL	0x0	
MulitACC Checksum	0	

Factory Menu Name	Data	Range
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		
A_Modulation_1		
A_Code Rate_1		
A_Timer InterLeave_1		

Factory Menu Name	Data	Range
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		

■ 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	
FRC3D Fdisplay	OFF	
FRC3D PC Mode	OFF	
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	
Upgrade		
T-CON Usb Download	Failute	
T-CON CheckSum	Error	
Logic Usb D/L	…	

Factory Menu Name	Data	Range
SUBMICOM UPGRADE	Failute	
BT UPGRADE		
BT FREEPAIRING	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	
Smart Hub Reset	0	
ER Count		
WD Count	0	
AR Count	0	
WIFI ER Count	0	
BT ER Count	0	
HDMI Err Cnt	0	
Camera ER Count	0	
LOG(View Log)		
Select Log Type	NVRAM	
Log View	0	
Delete Log		
Debug Log Down		
Emergency Log Copy		
Self Diagnosis		
Loop Back		
LAN Test		
AV Audio Test		
DVIN Audio Test		
CVBS Test		
COMP Test		
USB HUB Test		
HDMI Test		
SCART Audio Test		
SCART CVBS Test		
SCART RGB Test		

Factory Menu Name	Data	Range
CPU		
DDR		
FLASH		
EEPROM		
Sound AMP		
HDMI Switch IC		
USB HUB 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	…	

■ ADC/WB

Factory Menu Name	Data	Range
ADC		
AV Calibration	Success	
Comp Calibraion	Success	
PC Calibration	Success	
HDMI Calibration	Success	
ADC Result		

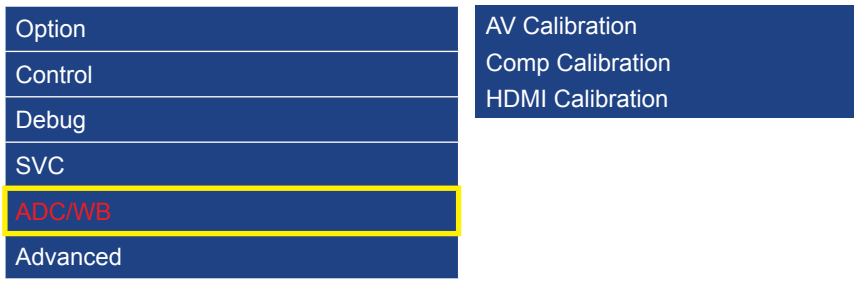
Factory Menu Name	Data	Range
1st_Y_GH	258	
1st_Y_GL	128	
1st_Cb_BH	…	
1st_Cb_BL	…	
1st_Cr_RH	…	
1st_Cr_RL	…	
2nd_R_L	132	
2nd_G_L	132	
2nd_B_L	132	
2nd_R_H	70	
2nd_G_H	70	
2nd_B_H	70	
White Balance		
R-Offset	128	
G-Offset	128	
B-Offset	128	
R-Gain	128	
G-Gain	128	
B-Gain	128	
WB_W2_R_Offset	128	
WB_W2_B_Offset	128	
WB_W2_R_Gain	164	
WB_W2_B_Gain	63	
WB_N_R_Offset	128	
WB_N_B_Offset	128	
WB_N_R_Gain	151	
WB_N_B_Gain	108	
MGA		
MGA On/Off	OFF	
R1_Gain	…	
B1_Gain	…	
G1_Gain	…	
R2_Gain	…	
B2_Gain	…	
G2_Gain	…	
R3_Gain	…	
B3_Gain	…	

Factory Menu Name	Data	Range
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.



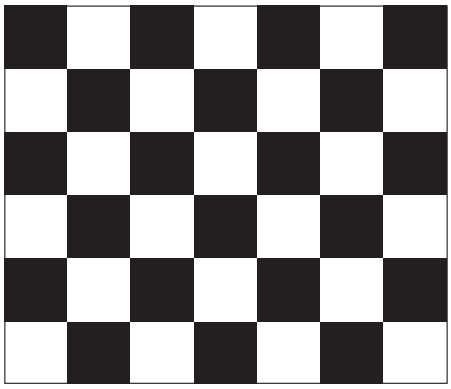
4-4-2. Service Adjustment

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)

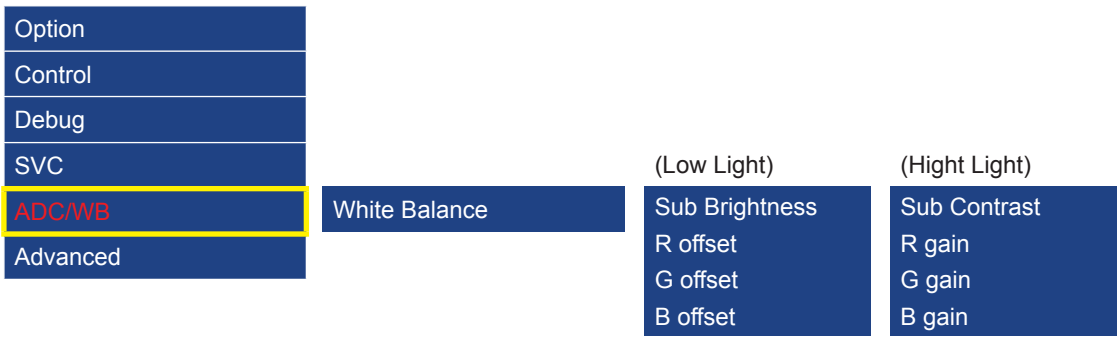
1. Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port.
2. Press the Source key to switch to “Component1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “Comp Calibration” menu.
6. In “Comp Calibration Off” status, press the “ ►” key to perform Calibration.
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.

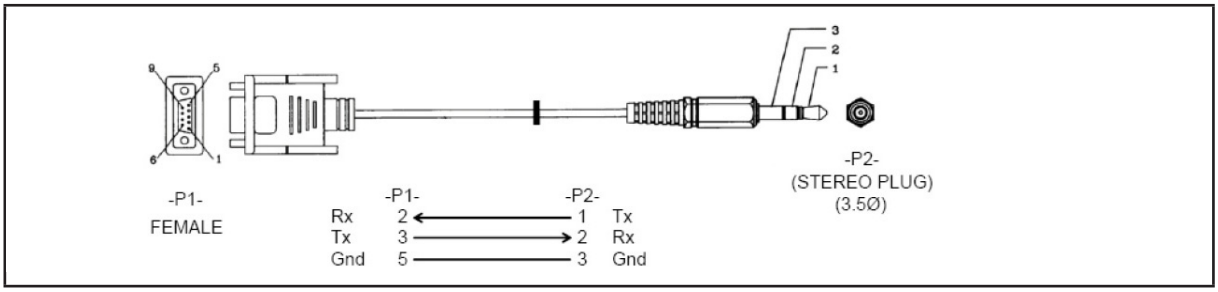
4-4-3. Adjustment

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



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 Tabe

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

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	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	

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	New function of 12" (only DVB TV)
			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	

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 Surrond (echo)	On					0x01	
	SRS TruDialog (echo)	Off			0x03	0x00	0x00	
	Dialog Clarify (X9)	On					0x01	
	Preferred Language	English			0x04	0x00	0x00	
		Spanish					0x01	
		French					0x02	
		Korean					0x03	
		Japanese					0x04	
	Multi-Track Sound	Mono			0x05	0x00	0x00	
		Stereo					0x01	
		SAP					0x02	
	Auto Volume	Off			0x06	0x00	0x00	
		ON					0x01	
		Night					0x02	
	Speaker Select	TV Speaker			0x07	0x00	0x00	
		External Speaker					0x01	
	Sound Select	Main			0x08	0x00	0x00	
		Sub					0x01	
	Sound Reset	Sound Reset			0x09	0x00	0x00	
	3D Audio	Off			0x0a	0x00	0x00	
		Low					0x01	New function of 12"
		Medium					0x02	
		High					0x03	

Control Item			Cmd1	Cmd2	Cmd3	Value	
KEY	Key Generation		0x0d	0x00	0x00	refer to table	
OSD	Show/Hide Control	Show	0x0e	0x00	0x00	0x00	New function of 12"
		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	

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

4-7. Software Upgrade

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

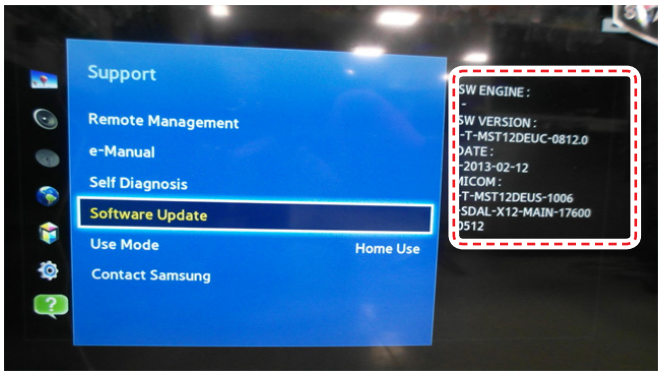
- Current Version - The software already installed in the TV.

Software is represented as ‘Year/Month/Day_Version’.

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

■ Use the Main Menu

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



■ Use the Factory Mode

Option
Control
Debug
SVC
ADC/WB
Advanced

T-MST12DEUC-xxxx
T-MST12DEUS-xxxx
BT Version : xxxx
E-Manual : xxxx
Camera Version : xxxx
Blaster-version : ----

EDID SUCCESS
CALIB : AV/COMP/PC/HDMI/
Option : xxxx,UE,6400,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

4-7-2. How to Upgade Software

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

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

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

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

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

■ Main Software Upgrade

1 Store the sw program named "**T-MST12DEUC**" in USB memory stick.

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

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

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

■ Sub Software Upgrade

USB Download

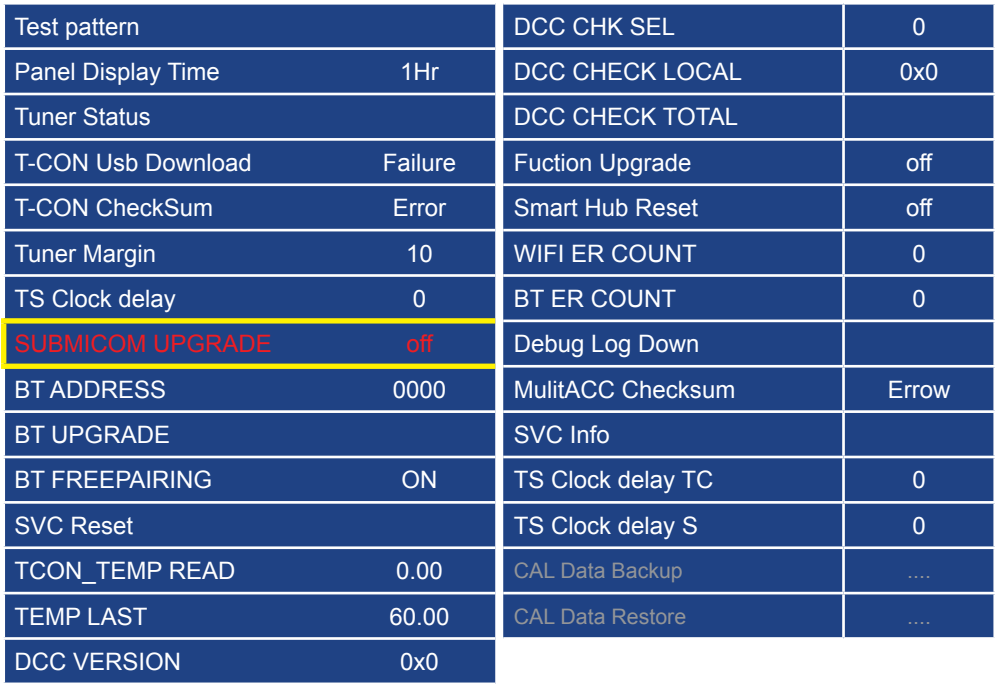
1. After Main Software upgrade, Enter the Factory menu by below method.

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

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

2. Select the “SVC”.

3. Select the “SUBMICOM UPGARADE”.



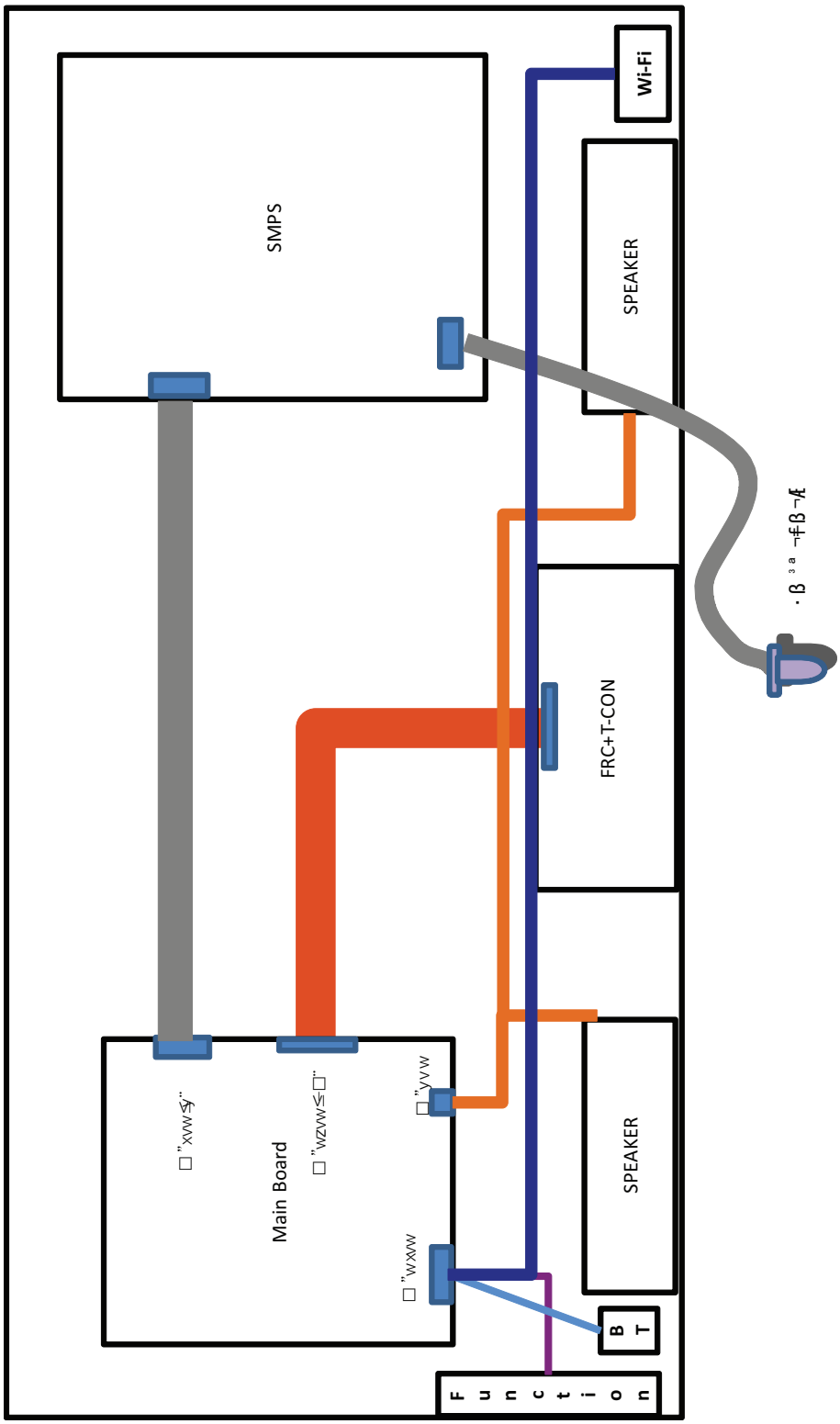
Test pattern		DCC CHK SEL	0
Panel Display Time	1Hr	DCC CHECK LOCAL	0x0
Tuner Status		DCC CHECK TOTAL	
T-CON Usb Download	Failure	Fuction Upgrade	off
T-CON CheckSum	Error	Smart Hub Reset	off
Tuner Margin	10	WIFI ER COUNT	0
TS Clock delay	0	BT ER COUNT	0
SUBMICOM UPGRADE	off	Debug Log Down	
BT ADDRESS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

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

5. Wiring Diagram

5-1. Wiring Diagram



5-2. Connector

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

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+		

CN604(to HDMI4)			
1	HDMI4_RX2+	11	GND
2	GND	12	HDMI4_RXCLK-
3	HDMI4_RX2-	13	CEC
4	HDMI4_RX1+	14	NC
5	GND	15	HDMI4_SCL_DDC
6	HDMI4_RX1-	16	HDMI4_SDA_DDC
7	HDMI4_RX0+	17	GND
8	GND	18	HDMI4_5V
9	HDMI4_RX0-	19	HDMI4_HOT_PLUG
10	HDMI4_RXCLK+		

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

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

CN1501(USB1)			
1	B5V_USB1_PW	3	USB1_DP
2	USB1_DM	4	GND

CN1502(USB2)			
1	B5V_USB2_PW	3	USB2_DP
2	USB2_DM	4	GND

CN1503(USB3)			
1	B5V_USB3_PW	3	USB3_DP
2	USB3_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

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

CN502(to Component&AV)			
1	GND	9	COMP2_PR
2	COMP2_Y_CVBS	10	COMP2_PR
3	INDENT_VIEDO2	11	GND
4	GND	12	COMP2_PB
5	COMP2_PB	13	INDENT_COMP2
6	INDENT_COMP2	14	GND
7	GND	15	COMP2_Y_CVBS
8	COMP2_PR		

CN304_NIRB_1~7 (to Headpune&LR OUT)			
1	GND	5	TEST_SR
2	HP_LINE_SL_ OUT	6	IDENT_HP
3	HP_LINE_SR_ OUT	7	GND
4	TEST_SL		

CN303_IBR_ 1~14			
1	GND	5	TEST_SR
2	HP_LINE_SL_ OUT	6	IDENT_HP
3	HP_LINE_SR_ OUT	7	GND
4	TEST_SL	8	GND
9	IRB	12	NC
10	IRB	13	IPR_JACK_ID
11	NC	14	GND

CN201(to Power board)			
1	B5.3V_PW	11	B13V_PW
2	SW_POWER_ OUT	12	ECO_ON
3	B5.3V_PW	13	B13V_PW
4	A5.3V_PW	14	CPLD_PWM1
5	GND	15	GND
6	GND	16	CPLD_PWM2
7	B12VS_PW	17	OVD_ON_OFF
8	GND	18	CPLD_PWM3
9	GND	19	OVD_LEVEL
10	SW_INVERTER	20	CPLD_PWM4

5-3. Connector Functions

Connector	Function
CN201_3D ↔ IP CNM803	Supply main power and dimming signal from IP Board to Main Board.
CN1401_FHD ↔ FRC+T-CON	The LVDS signal transfered from Main Board to Panel.