LED TV

Chassis: U71G

Model: UE32EH4003W
UE32EH4004W

SERVICE MANUAL

LED TV

UE32EH400*W

Contents

Refer to the service manual in the GSPN (see the rear cover) for more information.

Contents

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.

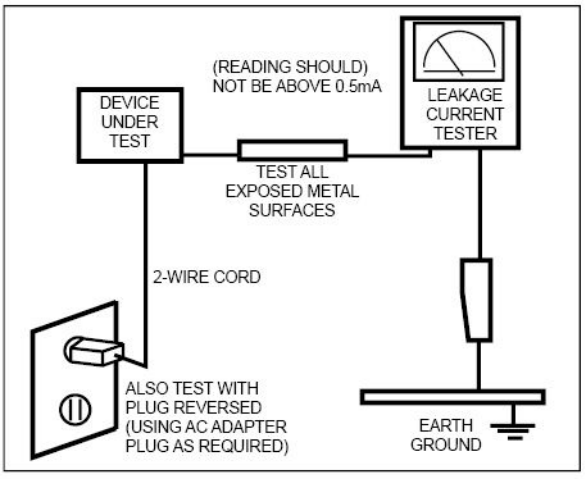
1-1-2. Servicing the LED TV

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

An electrolytic capacitor installed with the wrong polarity might explode.

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

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

1-2-1. General Servicing Precautions

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

2-1-1. Model Comparison

Model	UE32EH4003 / 4004		
Front View			
Detail View			
Front Color	Black (Panel)		
Dimensions Set(W x D x H)	32"	Set with Stand	29.1 x 19.6 x 7.5 inches / 738.4 x 497.7 x 191.7 mm
		Set without Stand	29.1 x 17.5 x 3.7 inches / 738.4 x 441.7 x 93.2 mm
Weight (Set)	32"	Set with Stand	13.2 lbs / 6.0 kg
		Set without Stand	11.9 lbs / 5.4 kg
Panel Type	Anti Glare		
Internal Memory	None		
DDR	128 Mbtye		
Feature	Media Play(Movie)		

2-1-2. Feature & Specifications

Model	UE32EH4003 / 4004

Feature

- Digital-TV, RF, 1-HDMI, 1-SCART, 1-USB2.0(Media Play)
- Brightness : 300 cd/m^2
- Response Time : 8 ms
- CMR : 60

Specifications		
Item	**Description**	
LCD Panel	32 inch HD 60 Hz	
Scanning Frequency	Horizontal : 39.4 kHz ~ 55 kHz (Automatic) Vertical : 47 Hz ~ 65 Hz (Automatic)	
Display Colors	16.7M colors	
Maximum Resolution	Horizontal : 1366 Pixels Vertical : 768 Pixels	
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, internally terminated	
Input Sync Signal	H/V Separate	
Maximum Pixel Clock Rate	74.25 MHz	
Active Display (H x V)* * Horizontal x Vertical	28.5 (H) x 16.0 (V) Inches (697.7 (H) x 391.3 (V) mm)	
AC Power Voltage & Frequency	AC 100 V ~ 240 V, 50 / 60 Hz	
Power Consumption	54 W (Under 0.3 W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/T2/C, PAL , SECAM , NT4.43
	Sound	NTSC-M, Dolby Digital Plus/Pulse
Environmental Considerations	Operating Temperature: 32°F ~ 122°F (0°C ~ 50°C) Operating Humidity: 20% ~ 90% Storage Temperature: -4°F ~ 140°F (-20°C ~ 60°C) Storage Humidity: 10% ~ 90%	
Audio Specifications	MAX Internal Audio Output Power : Each 5 W(Left/Right) Equalizer : 5 Band Output Frequency : • RF : 20 Hz ~ 15.4 kHz • AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note: Dolby Digital Plus/Pulse, SRS TheaterSound, USB2.0, Film mode		

2-1-3. Specification Comparison to Old Models

Model	UE4J(UE32EH4003 / 4004)		UD4N(UE32D4003)	
Design				
Diplay Type	LED TV		LED TV	
Built-in Tuner	O		O	
Resolution	1366 x 768		1366 x 768	
LCD Panel	TFT LCD Panel 60 Hz		TFT LCD Panel 60 Hz	
Picture ratio	16 : 9		16 : 9	
Power Consumption	32"	54 W (Under 0.3 W, Stand by)	32"	80 W (Under 0.3 W, Standby)
Contrast Ratio	MEGA		MEGA	
Picture Enhancer	HyperReal Engine (Novatek)		HyperReal Engine (Saturn4)	
Equalizer	5 Band		5 Band	
Auto Volume Control	O		O	
Surround Sound	SRS TheaterSound		SRS TruSurround HD	
Function	Jog function		Touch function	
Speaker Output	5W + 5W		5W + 5W	
PIP	X		X	
Caption	O		O	
Network	X		X	
Antenna	1 (Cable/Air)		1 (Cable/Air)	

2.2. Detail Factory Option

NOTE

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

Model Name			UE32EH4003 / 4004
Panel		Vendor	BOE
		Code	BN95-00707A
		Spec.	HV320WX2-26
SMPS		Vendor	DONGYANG
		Code	BN44-00554A
		Spec.	PD32GV0_CDY
Byte	Item	Chassis Ass'y	BN91-09525R
0	Factory Reset	PBA Ass'y code	BN94-05848R
1	Type		32B6AH0D
2	Model		UE4003
3	SVC Model		4003
4	Local Set		EU_**
5	Tuner		SI_ATC_2176
6	Ch Table		-
7	Front Color		-

2.3. Accessories

Product	Description	Code. No	Remark
	Remote Control & Batteries (AAA x 2)	AA59-00602A	
	Power Cord	3903-000603	
	Holder-Wire stand	BN61-05491A	

3. Disassembly and Reassembly

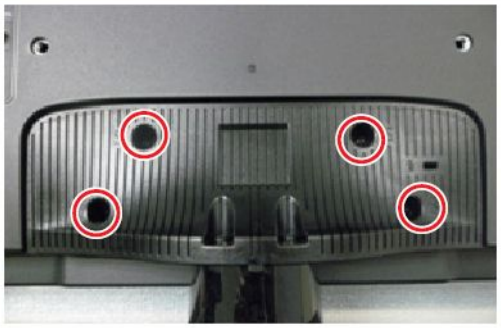
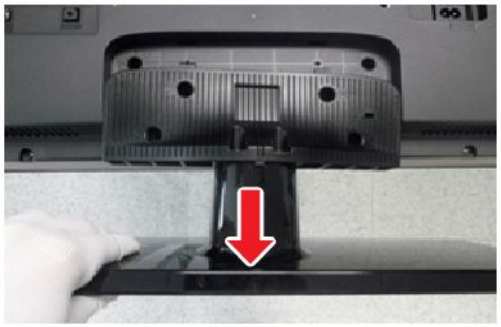
This section of the service manual describes the disassembly and reassembly procedures for the LED TV.

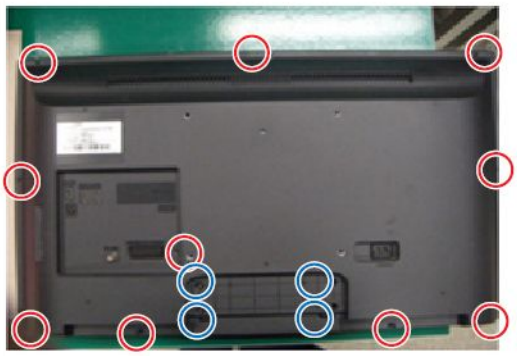
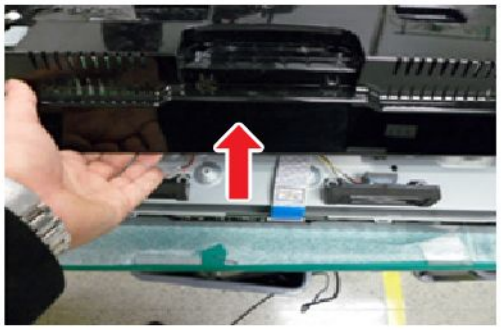
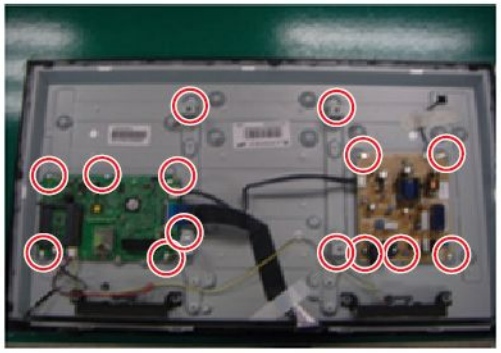
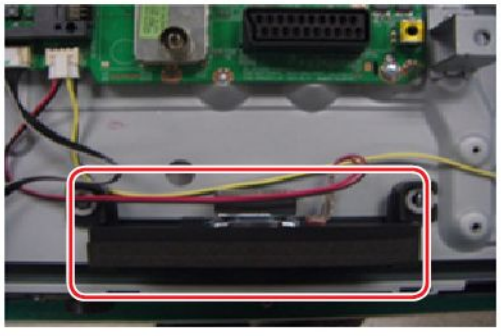
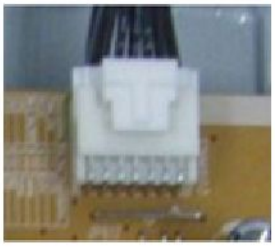
WARNING This LED TV contains electrostatically sensitive devices. Use caution when handling these components.

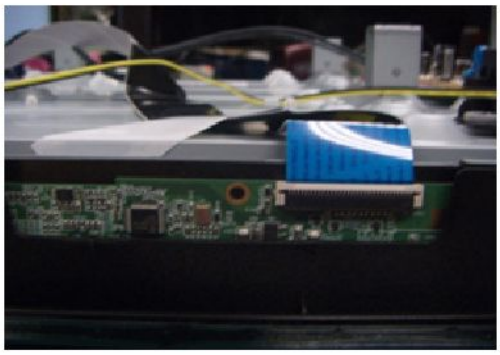
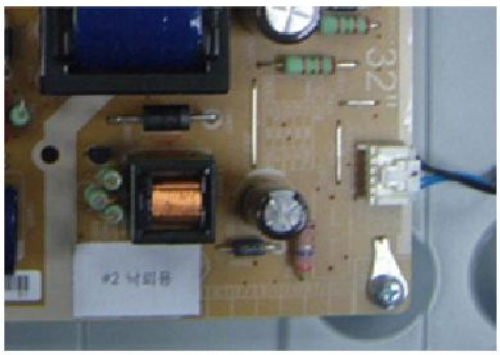
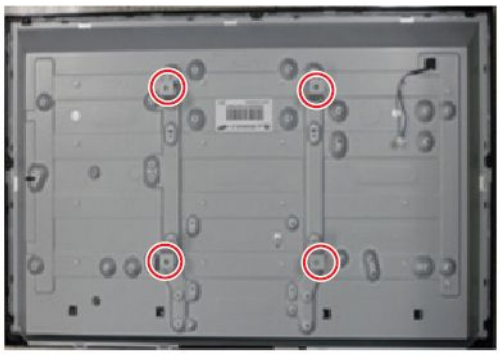
3.1. Disassembly and Reassembly

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.

	Description	Picture Description	Screws
1	Place TV face down on cushioned table.		
2	Remove 4 screws from the Stand.		 6003-001782
3	Remove Stand.		

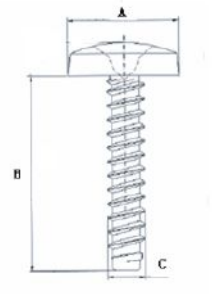
Description	Picture Description	Screws
4 Remove the screws of Rear-Cover. • 32" : 10 EA, 4EA		 6003-001782  6003-002755
5 Remove the Rear-Cover.		
6 Remove 14 screws of main board and IP board and Panel.		 6001-002756
7 Remove the speakers and Power Cables.		
	 	

Description	Picture Description	Screws
8 Remove the LVDS Cable and Panel Drive Cable.	 	
9 Remove the 4screws of bracket wall. And remove 4 bracket walls.		 6001-002756
10 Completed disassembly.		

NOTE

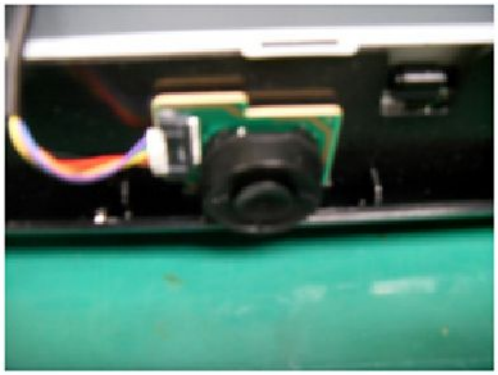
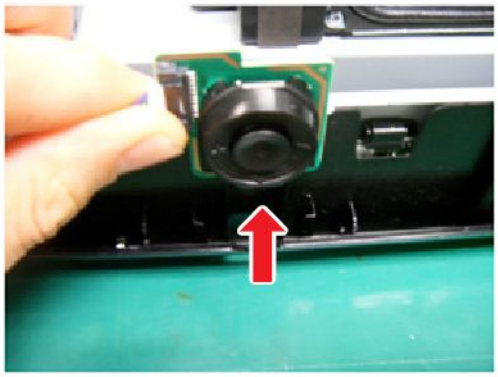
Reassembly procedures are in the reverse order of disassembly procedures.

■ Screw Size

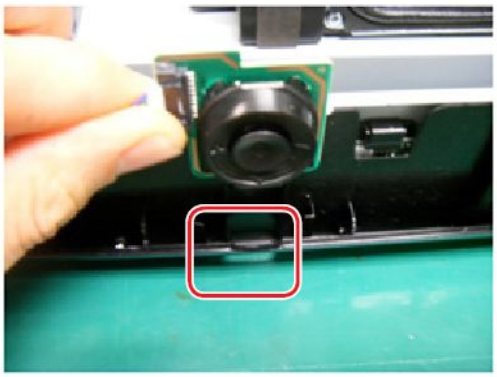
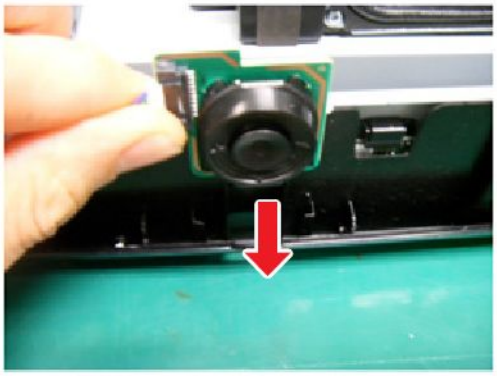
Code No.	COLOR	A (mm)	B (mm)	C (mm)	Q'ty	
6003-001782	BLACK	7.80~8.30	11.20~12.00	3.81~3.91	32" : 14 EA	
6001-002755	BLACK	7.1~7.5	5.7~6.0	2.98~3.02	32" : 4 EA	
6001-002756	WHITE	7.1~7.5	5.7~6.0	2.98~3.02	32" : 14 EA	

3.2. Assy Board P-Jog Switch & Ir

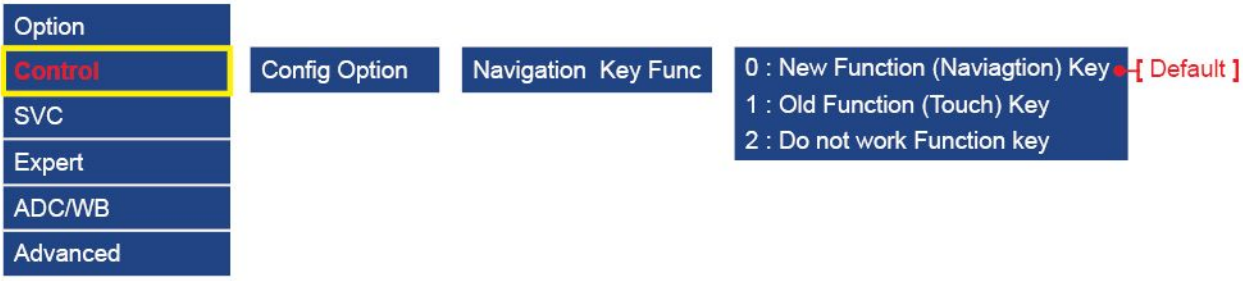
■ How to disassembly Function Assy

Description	Picture Description	Refer
1 Check the function.		
2 Remove the function Assy.		

■ How to assembly Function Assy

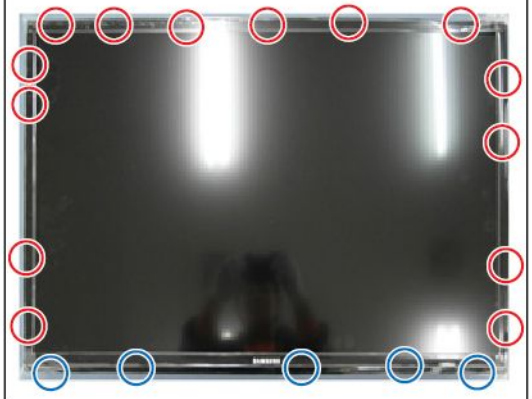
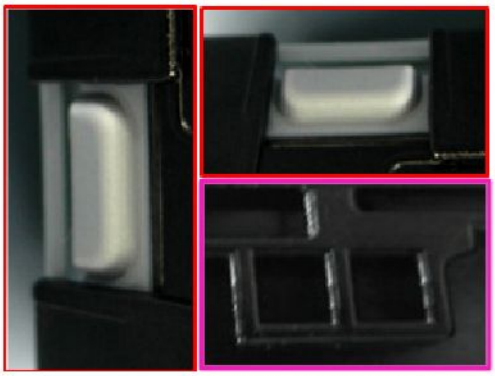
	Description	Picture Description	Refer
1	Check the locking hole.		
2	Combine the function assy to locking hole.		
3	Press the function assy to TV.		

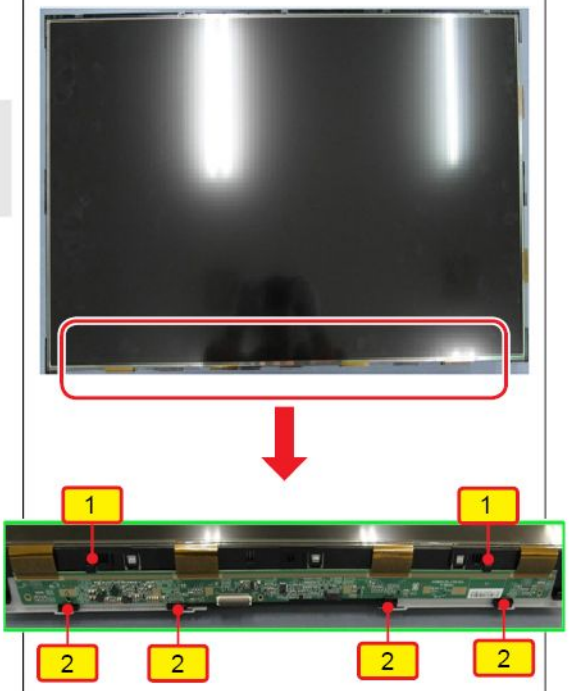
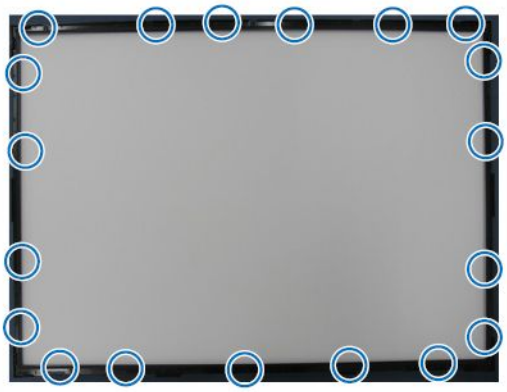
When you want to ignore the funtion key actions



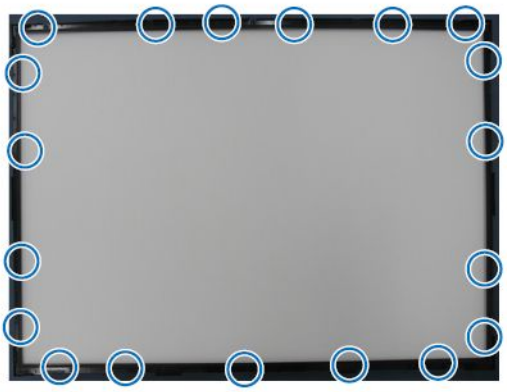
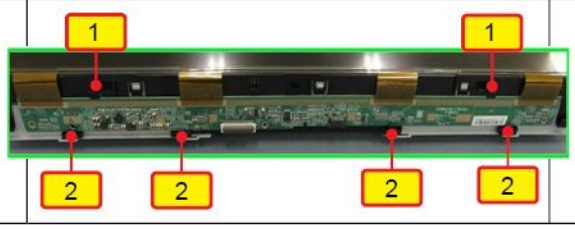
3.3. Disassembly(PTC)

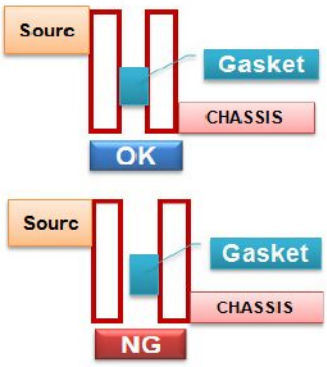
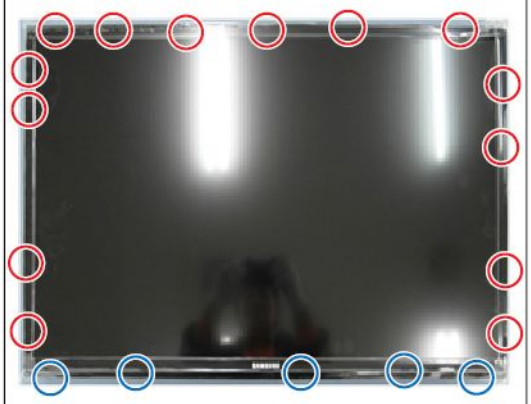
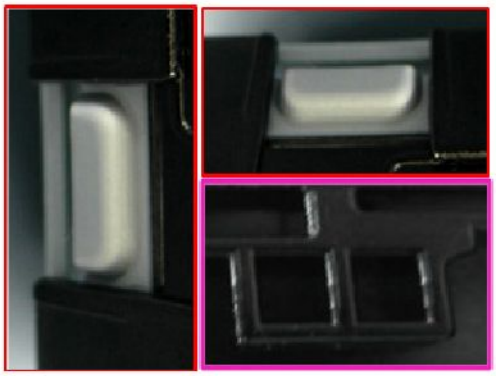
■ How to disassembly

Description	Picture Description	Refer
1 Place TV face up on cushioned table.		
2 Separate ASSY MISC P-CHASSIS TOP(L/R) and ASSY MISC P-CHASSIS TOP(U/D) from the hook. *HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point		
		

Description	Picture Description	Refer
3 Separate Assy MISC P-Open Cell frome the FRAME-MOLD MIDDLE GUIDE as direction in picure. **CAUTION** Do not bend or break the COF Film.		
4 Raise the PCT Bottom after divide ASSY MISC P-CHASSIS TOP(L/R) and ASSY MISC P-CHASSIS TOP(U/D) frome the hook. * HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point **CAUTION** Check whether the hooks are completely disassembled.	 	
5 Disassembly is Complete.		

■ How to reassembly

	Description	Picture Description	Refer
1	Cover the PTC bottom from bottom.		
2	Assemble ASSY MISC P-CHASSIS TOP(L/R) and ASSY MISC P-CHASSIS TOP(U/D) using the hook. * HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point		
			
3	Place the Assy MISC P-Open Cell in FRAME-MOLD MIDDLE GUIDE as direction in picture **CAUTION** Do not bend or break the COF Film.		
			

Description	Picture Description	Refer
4 When place the Source PCB, Matching CHASSIS BOTTOM and Gasket point. 	 	
5 Assemble ASSY MISC P-CHASSIS TOP(L/R) and ASSY MISC P-CHASSIS TOP(U/D) using the hook. * HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point	 	

4. Troubleshooting

4.1. Troubleshooting

■ 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 Board.
   - **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.
   - Service Mode (Using the Factory Remote Control - 'Info'+'Factory')
   - Move to SVC Menu
   - Move toTest Pattern
   - Check inner patterns.

For All mode

Novatek	Picture	Problem
OK	NG	Main board or Signal Source
NG	NG	Main board
NG	NG	Main or LVDS cable or T-con or Panel

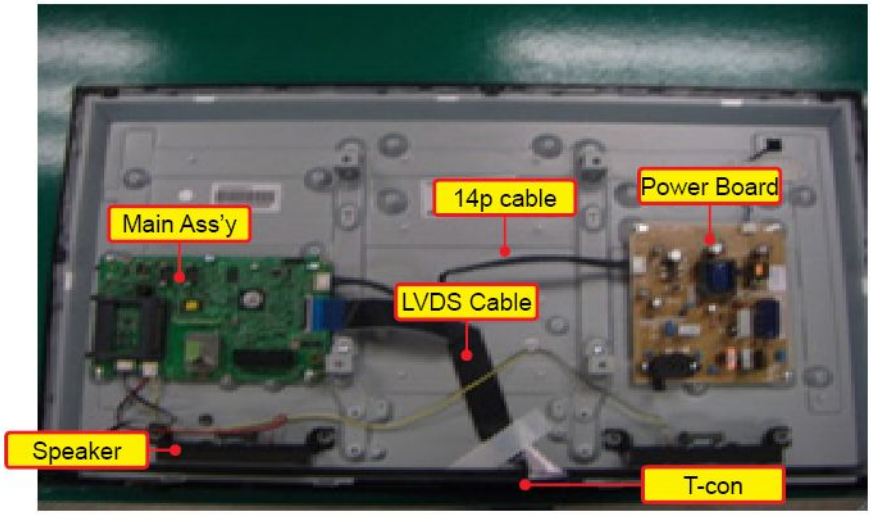
Only for HDMI mode (additional check)

HDMI	Picture	Solution
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. Factory mode(info ► menu ► mute ► Power on when TV is in 'stand-by mode')
2. Move to SVC menu
3. Move to Test Pattern
4. Check inner patterns.

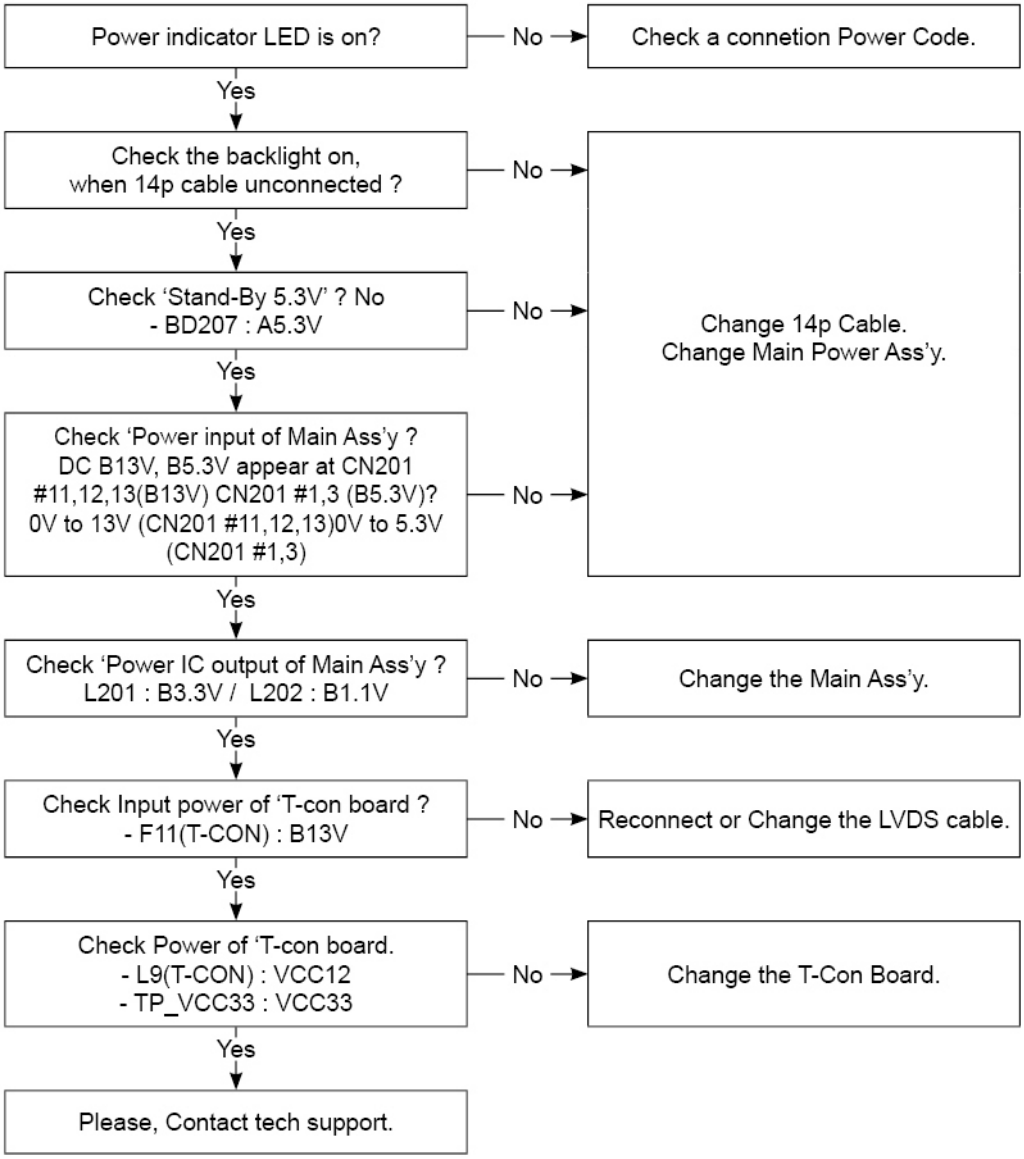
■ Inside View



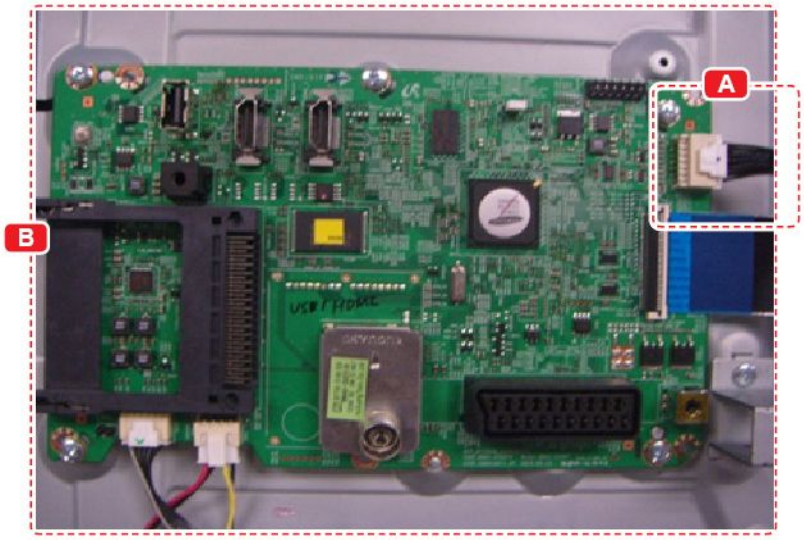
4.2. How to Check Fault Symptom

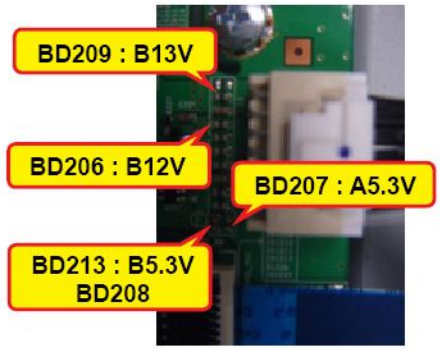
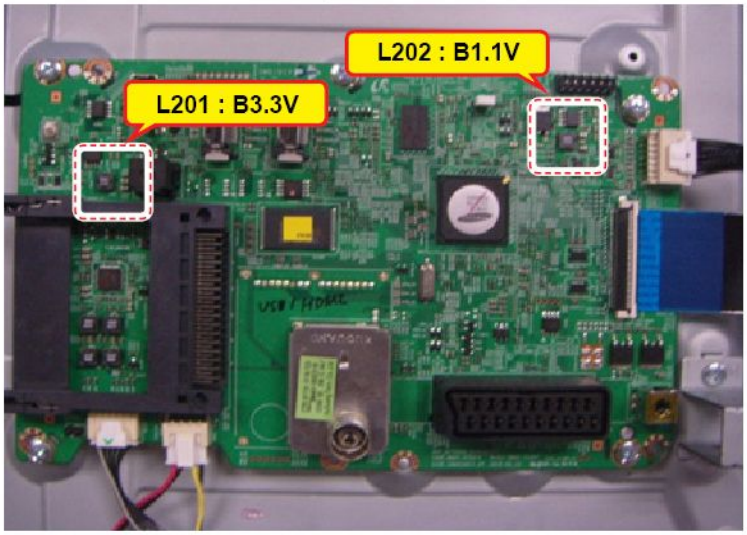
■ NO Power

* Refer to the next page to check the lacation 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	
Caution	Make sure to disconnect the power before working on the IP board.

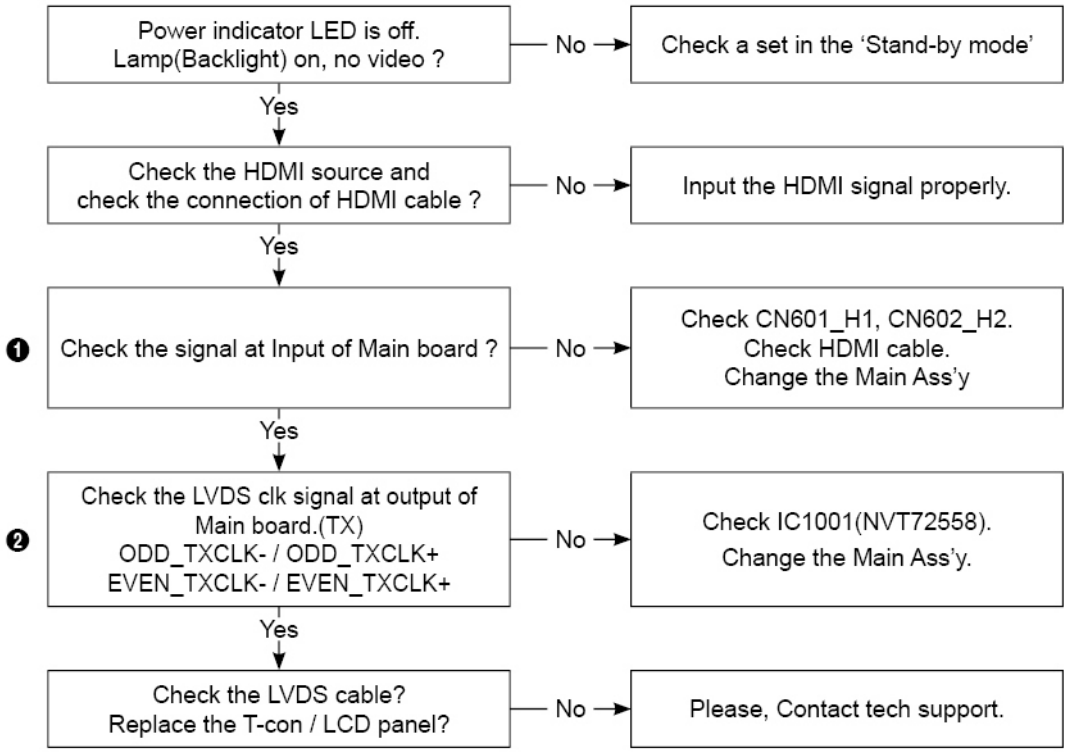
■ Location of Parts

Main Board_Front


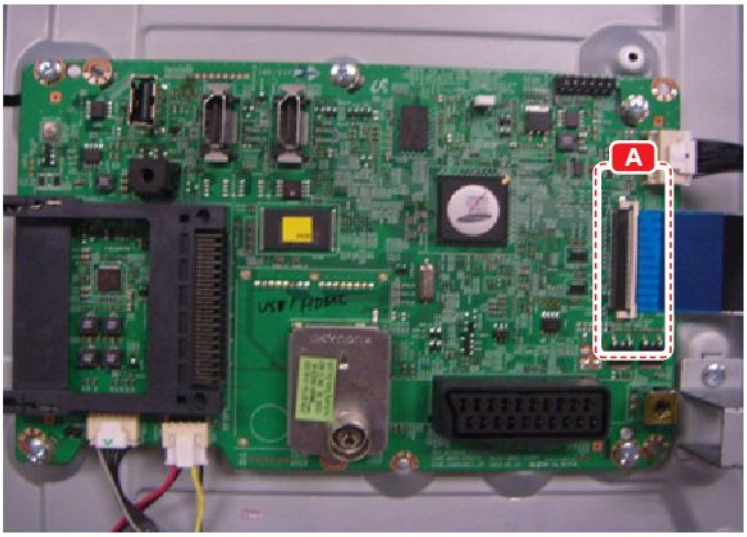
Detail		
A		
B		

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

* Refer to the next page to check the lacation 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	
Caution	Make sure to disconnect the power before working on the IP board.

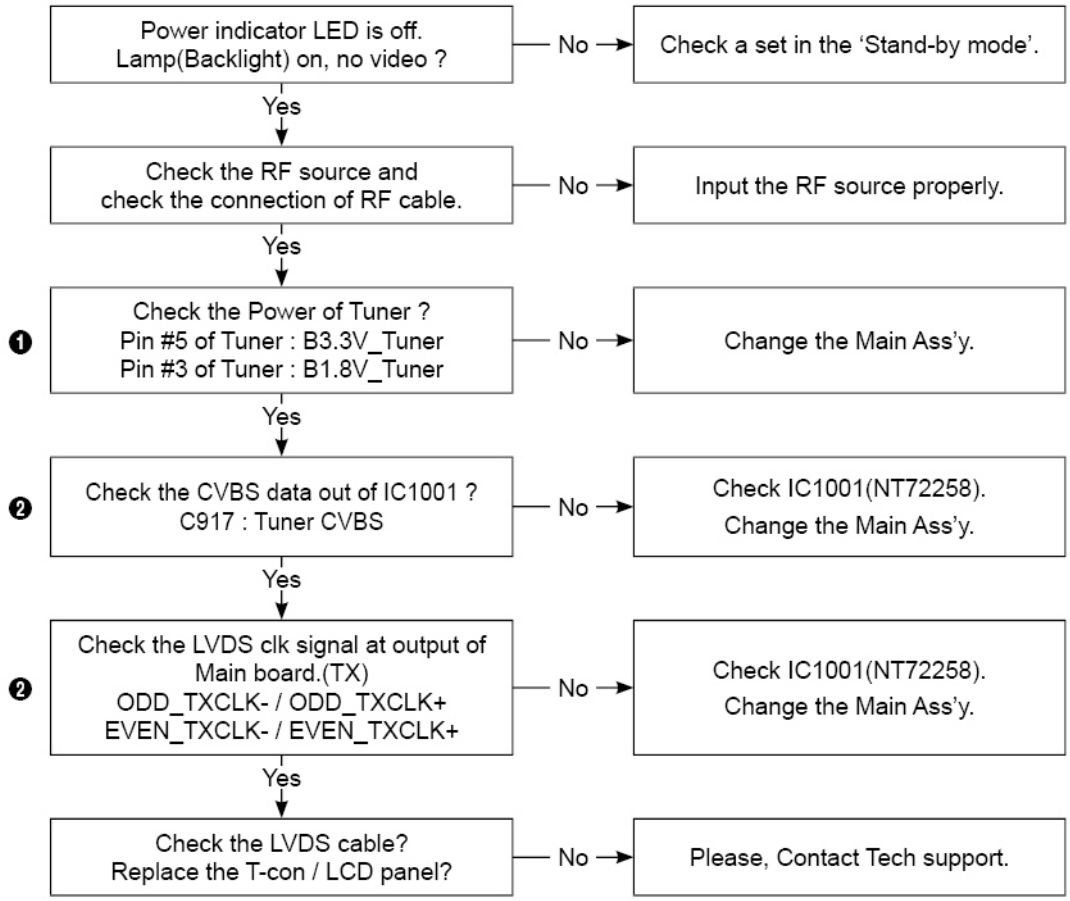
■ Location of Parts

Main Board_Front


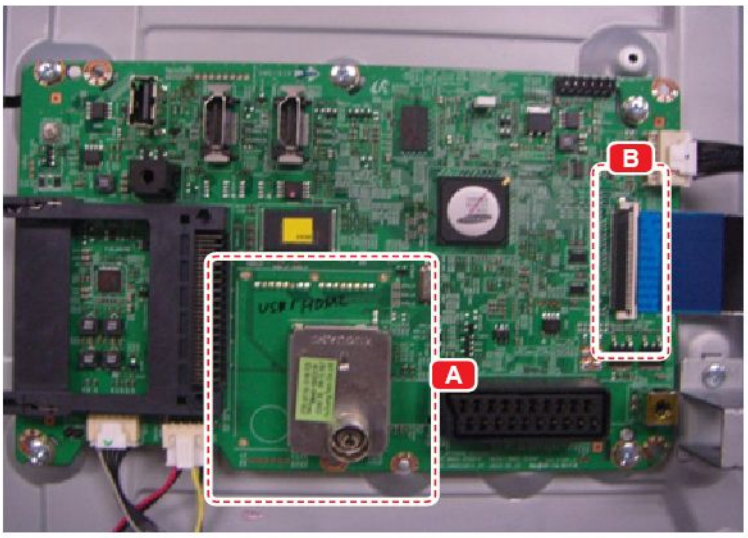
Detail		
A		

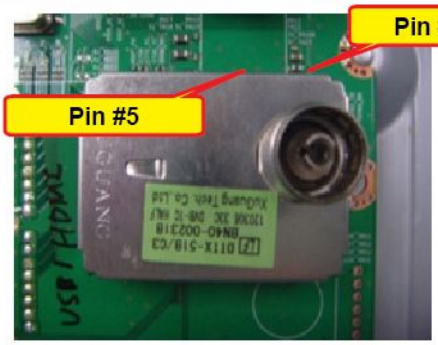
■ No Video (Tuner_CVBS)

* Refer to the next page to check the lacation 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.

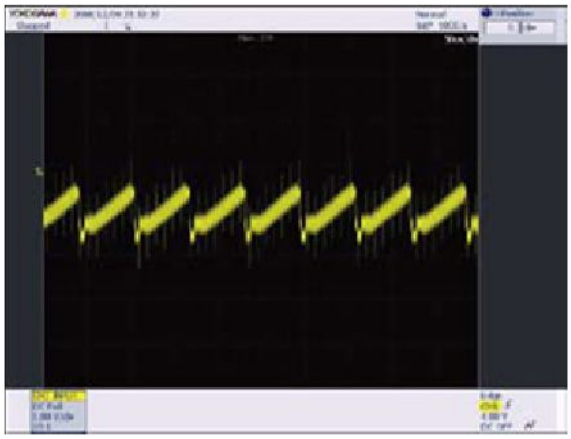
■ Location of Parts

Main Board_Front


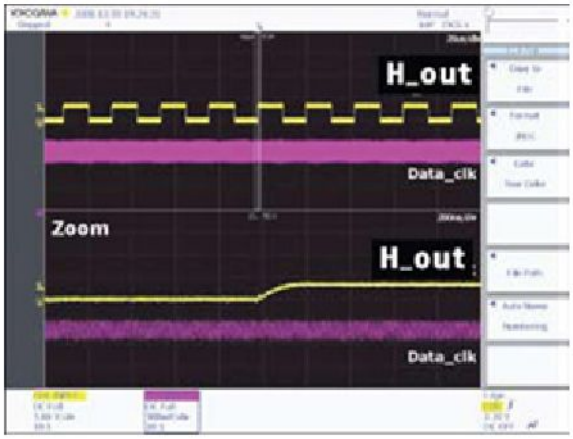
Detail			
A		B	

■ WAVEFORMS

❶	CVBS OUT (Grey Bar)



❷	LVDS output

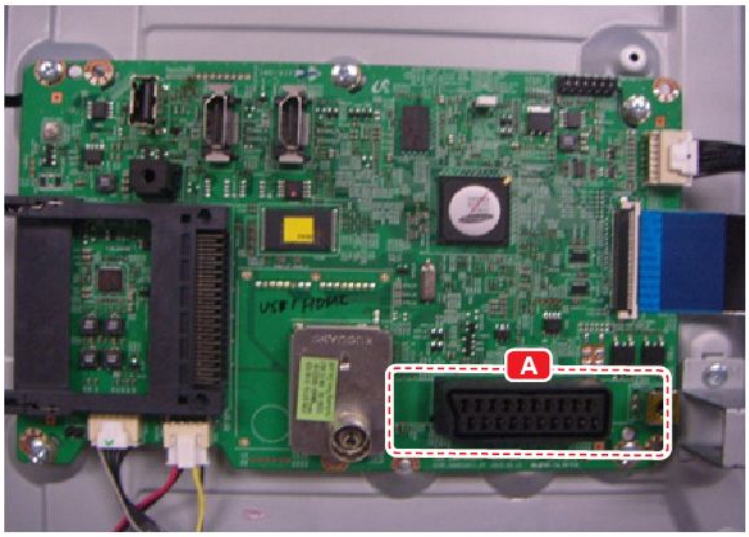


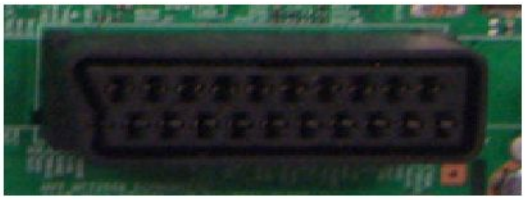
■ No Sound (Speaker)

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

Symptom	• Video is normal but there is no sound.
Major checkpoints	• When the speaker connectors are disconnected or damaged. • When the sound processing part of the Main Board is not functioning. • Speaker defect.
Diagnostics	Check the source and check the connection of sound cable ? — No → Input the sound source properly. Yes ↓ Check the signal at input of Main board? SCART R : R511_SC / L : R512_SC — No → Check CN501_SC. Change the Main Assy. Yes ↓ ❶ Check the DATA between the Audio IC's ? Pin #4 of IC301 : LRclk Pin #3 of IC301 : I2C_DATA — No → Check IC301. Change the Main Assy. Yes ↓ ❷ 1. Check the Speaker sound data at CN301 2. Check the Monitor out sound data at CN302 3. Does the SODIF OUT sound data appear at ? CN303 — No → Check IC301. Change the Main Assy. Yes ↓ Replace speaker ? — No → Please, Contact Tech support.
Caution	Make sure to disconnect the power before working on the IP board.

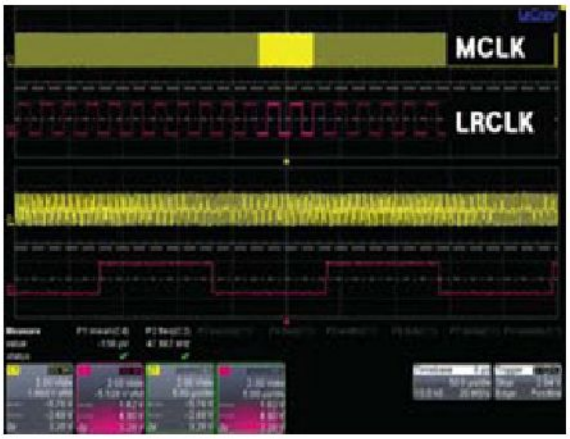
■ Location of Parts

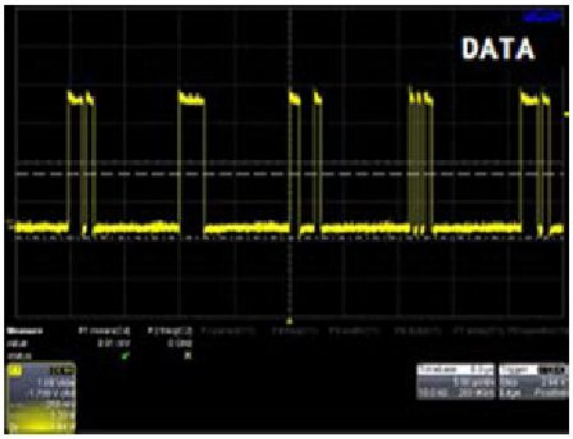
Main Board_Front


Detail		
A		

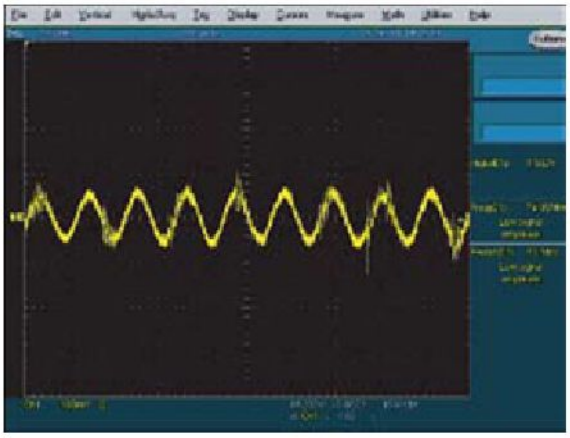
■ WAVEFORMS

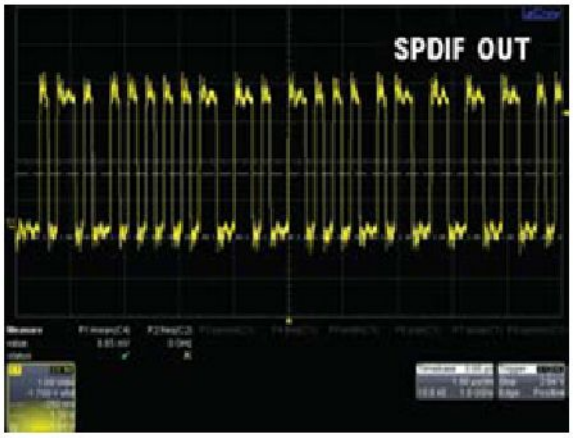
❶	MCLK / LRCLK / PCM_I2C_DATA





❷	Speaker / Monitor OUT , SPDIF OUT





4.3. Factory Mode Adjustments

4-3-1. Entering Factory Mode

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

- If you do not have Factory remote control

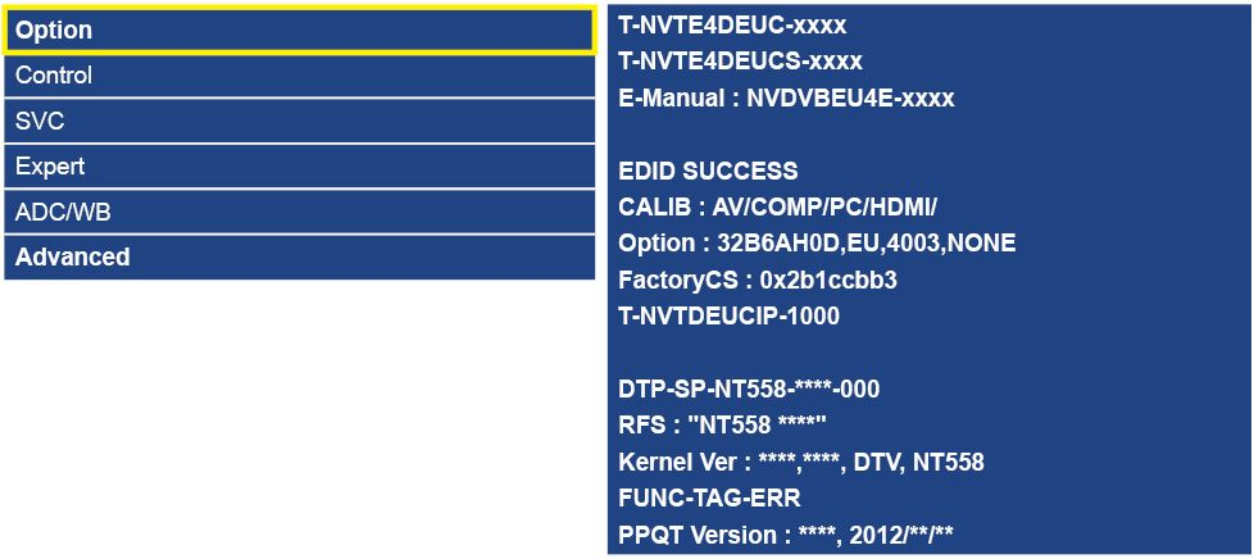
  Power OFF → Info → Menu → Mute → Power On

- If you have Factory remote control

  INFO → Factory

- If you don't have Factory remote control, can't control some menus.

■ Initial SERVICE MODE DISPLAY State



4-3-2. Factory Data

Note

- Version of the software is written in 0002.
- Black : I should not be possible to adjust or change that does not require a change item
  Blue : Adjustment Services for the corresponding
  Red : Items that are secured

■ Option

Factory Menu Name	Data	Range
Factory Reset	-	
Type		32B6AH0D
Local Set	EU	
Model	UE4003	
SVC Model	4003	
Tuner	SI_ATC_2176	
Ch Table	NONE	
Front Color	NONE	

■ Control

Factory Menu Name	Data	Range
EDID		
EDID ON/OFF	Off	
EDID WRITE ALL	…	
EDID WRITE HDMI	…	
EDID WRITE PC	…	
EDID Ver	…	
EDID Port	…	
EDID WRITE DVI	…	
Sub Option		
RF Mute Time	600ms	
RS-232 Jack	UART	Debug/UART
Watchdog	ON	
WD COUNT	0	
Dimm Type	EXT	
LVDS FORMAT	JEIDA	
Lvds Drive Strength	400mv	
Language_Arabic	EU	

Factory Menu Name	Data	Range
TOOLS Support	57	
LNA Support	0	
NETWORK Support	Not Support	
IPERF	Stopped	
Info Link Country	None	
Info Link Server Type	operating	
TTX List	Flof	
TTX Group	UserOSD	
24Px4 Support	OFF	
Power Indicator Support	ON	
BD Wise Support	OFF	
Data Service Support	OFF	
Cable Modulation	Error	
IIC Bus Stop	OFF	
Visual Test	Disable	
Emergency Log Copy		
Checksum	0x0000	
View Log		
Select Log Type	MICOM	
Log View		
Delete Log		
ColorSpace Support	RGB Type	
Gemstar On/Off	OFF	
WSS Support	OFF	
PVR Support	OFF	
Eeprom Reset		
Spread Spectrum		
LVDS Spread	ON	
LVDS Period	40K	
LVDS Amplitude	1%	
DDR Spread	OFF	
DDR Period	20K	
DDR Amplitude	0%	
NT72312 LVDS SSC ON/OFF	ON	
NT72312 LVDS SSC Period	30K	
NT72312 LVDS SSC Modulation	1.00%	
NT72312 DDR SSC ON/OFF	ON	

Factory Menu Name	Data	Range
NT72312 DDR SSC Period	30K	
NT72312 DDR SSC Modulation	1.00%	
DDR Margin		
A CTRL_OFFSET_0_3	0x0	
A CTRL_OFFSET_D	0x0	
B CTRL_OFFSET_0_3	0x0	
B CTRL_OFFSET_D	0x0	
H.264 Margin	8	
MPEG Margin	1000	
Region	PANEURO	
PnP Language	ENG	
PC Auto Ident	Enable	
OTP Lock	…	
Auto Power	MEMORY	
Key SENSITIVITY	39	
Key Proximity		
OTA Support	General	
FKP Down		
WIFI REGION	E	
e-Pop Default	ON	
OPTION_SWU		
OPTION_MEDIAPLAY		
Energy Star Logo	OFF	
3D OPTIMIZE VALUE	1	
ECO IC TYPE	NLS1006	
Fast USB Booting	ON	
Hotel Option		
Hospitality Mode	OFF	
Power On	…	
Menu OSD	…	
Operation	…	
Music Mode	…	
External Source	…	
Eco Solution	…	
Cloning	…	
Shop Option		
Shop Mode	OFF	

Factory Menu Name	Data	Range
Exhibition Mode	OFF	
Asia Option		
TTX	OFF	
China HD	OFF	
NT Conversion	OFF	
Sepco 120Hz	OFF	
Unbalance	OFF	
FMTransmitter Support	OFF	
FMTransmitter Carrier	OFF	
AF Level adjust	3	
TX Power Level	0	
Mono Last Memory	OFF	
H Shaking	OFF	
Sound		
High Devi	OFF	
Carrier Mute	ON	
Speaker Delay Normal	102	
Pilot Level High Thld	0x11h	
Pilot Level Low Thld	0x0Ah	
Pilot Level High Thld EXT	0x70h	
Pilot Level Low Thld EXT	0x20h	
Pilot_Phase_diff_on_THR	OFF	
FM Prescale	23	
AM Prescale	30	
NICAM Prescale	29	
Amp Volume	0xC7h	
Amp Scale	0x67h	
Amp Check Sum	0x00B5D626	
Woofer Type	0	
Woofer Scale	0x8ah	
Woofer Check Sum		
Speaker EQ	ON	
PEQ Test	0	
Amp Model	NTP7412	
Speaker cut-off Freq	5	
SPDIF PCM Gain	-9	
FM M Prescale	0	

Factory Menu Name	Data	Range
BTSC Mono Prescale	0	
BTSC stereo Prescale	0	
SAP Prescale	0	
A2Ident High Thid	7	
A2Ident Low Thid	3	
Carrier2 Amp High Thld	4	
Carrier2 Amp Low Thld	2	
Carrier2 SNR High THR	16	
Carrier2 SNR Low THR	6	
Audio-IP Test	Ready	
TruBass CheckSum	0xFFFFFFF	
PWM Mode	BD	
Mic Scale	0	
SubWoofer Support	0	
India Sound	OFF	
SAP High Thld	9	
SAP Low Thld	7	
Config Option		
Num of ATV	1	
Num of DTV	1	
Num of AV	0	
Num of SVIDEO	0	
Num of COMP	0	
Num of HDMI	2	
Num of PC	0	
Num of SCART	1	
Num of DVI	0	
Num of OPTICAL Link	0	
Num of MEDIA	1	
Num of PANEL KEY	6	
Num of USB Port	1	
Num of HeadPhone	0	
Num of RVU	0	
Num of IPTV	0	
Num of Display	1	
Num of CI	1	
MFT Offset	62.5	

Factory Menu Name	Data	Range
Select LCD/PDP	LCD	
HDMI/DVI SEL	1	
Indicator Led	OFF	
Wall Mount	OFF	
HV Flip	ON	
BackEnd SEL	2D/3D 60Hz	
DVI/HDMI SOUND	Auto	
HDMI HOT PLUG	Enable	
HOTPLUG SWITCHING	Boot	
HOTPLUG DURATION	200ms	
CLK TERM DURATION	200ms	
HDMI FLT CNT SIG	100ms	
HDMI FLT CNT LOS	100ms	
UNSTABLE BAN CNT	3500ms	
HDMI Err Cnt	1	
HDMI ROBIN	ON	
HDMI Callback	OFF	
HDMI CTS Thld	8	
HDMI CTS Cnt1	1	
HDMI EQ	AUTO	AUTO/Low/Middle/High/Strong
HDMI Write Type	Combine	
HDMI Switch	NONE	
DVI SET TIME	300ms	
Type Of PANEL KEY	Horizontal	
Function Vendor	AUTO	
EcoSensor Support	OFF	
LEDMotionPlus Support	OFF	
Natural Mode Support	OFF	
All Share Support	OFF	
Relax Mode Support	OFF	
BT Support	OFF	
3D Support	OFF	
DVI-I Support	OFF	
H Write		
HDMI Sync	DE	
HeadPhone Port	A Out2	
FANET	OFF	

Factory Menu Name	Data	Range
Support MultiMedia Key	ON	
Config_AV_PATH		
5 Way Function Key	R BOTTOM	
SCC		
SCC Mode	Dynamic	
SCC ON/OFF	OFF	
SCC Input Data		
sSCC Const		
pSCC Const		
SCC Source Data	PBA	
SWAP	PBA	

■ SVC

Factory Menu Name	Data	Range
Test pattern		
LOGIC Pattern Sel	...	
LOGIC Level Sel	...	
NT72312 Pre Test Pattern	0	
NT72312 Post Test Pattern	0	
NT72312 PC mode ON/OFF	OFF	

■ Expert

■ ADC/WB

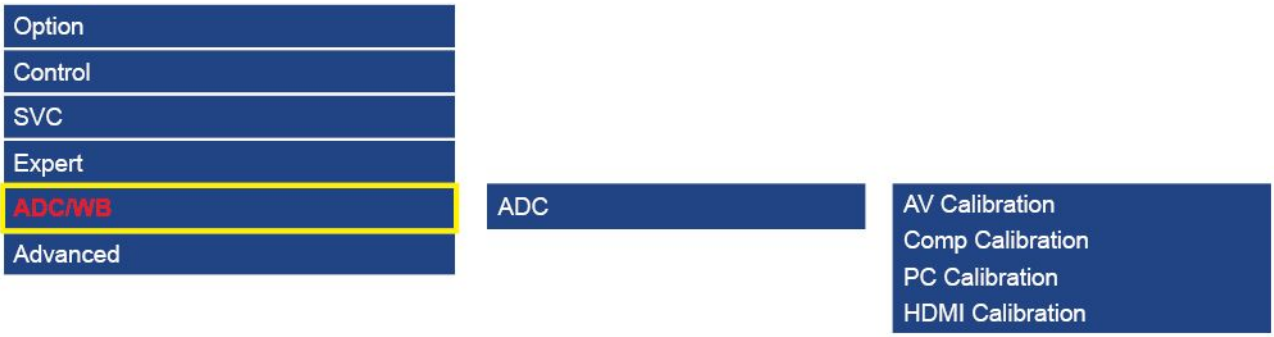
Factory Menu Name	Data	Range
ADC		
AV Calibration	/	
Comp Calibration	/	
PC Calibration	/	
HDMI Calibration	/	
ADC Target		
1st_AV_Low	64	
1st_AV_High	880	
1st_AV_Delta	2	
1st_COMP_Y_Low	64	
1st_COMP_Cb_Low	512	
1st_COMP_Cr_Low	512	
1st_COMP_Y_High	940	

Factory Menu Name	Data	Range
1st_COMP_Cb_High	512	
1st_COMP_Cr_High	512	
1st_COMP_Delta	2	
1st_PC_Low	4	
1st_PC_High	1016	
1st_PC_Delta	2	
2nd_ACH_Low	4	
2nd_ACH_High	940	
2nd_PC_Low	4	
2nd_PC_High	940	
2nd_Delta	2	
ADC Result		
1st_Y_GH	0	
1st_Y_GL	0	
1st_Cb_BH	0	
1st_Cb_BL	0	
1st_Cr_RH	0	
1st_Cr_RL	0	
2nd_R_L	134	
2nd_G_L	134	
2nd_B_L	134	
2nd_R_H	49	
2nd_G_H	49	
2nd_B_H	49	
WB		
Sub Brightness	128	
R-Offset	128	
G-Offset	128	
B-Offset	128	
Sub Contrast	135	
R-Gain	142	
G-Gain	128	
B-Gain	169	
Movie R-Offset	…	
Movie B-Offset	…	
Movie R-Gain	…	
Movie B-Gain	…	

4.4. White Balance

4-4-1. Calibration

1. Into the Factory Mode.
2. Select SVC Menu.
3. Select ADC/WB menu.
4. Select ADC menu.



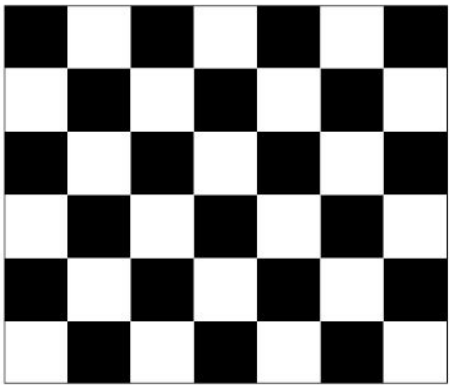
4-4-2. Service Adjustment

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
PC Analog IN (Model_#21)	Perform in VESA XGA (1024x768) B&W Pattern #24	Lattice
HDMI IN	Perform in 720p B&W Pattern #24	Lattice

■ Method of Color Calibration (AV)

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

■ Method of Color Calibration (Component)

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

■ Method of Color Calibration (PC)

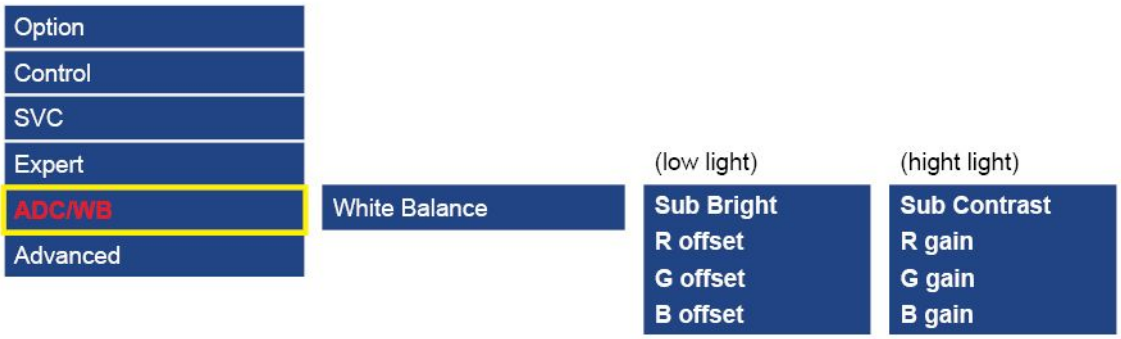
1. Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port.
2. Press the Source key to switch to “PC” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “PC Calibration” menu.
6. In “PC Calibration Off” status, press the “ ►” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “PC Calibration” status from Failure to Success.

■ Method of Color Calibration (HDMI)

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

4-4-3. Adjustment

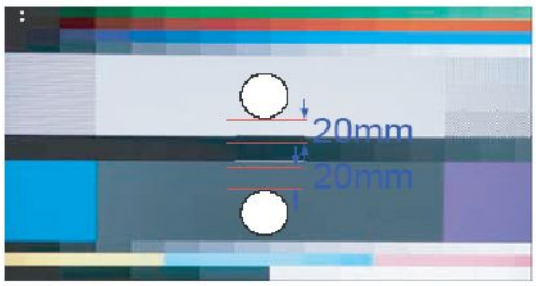
1. Into the Factory Mode.
2. Select SVC Menu.
3. Select ADC/WB menu.
4. Select White Balance menu.



4.5. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Altenate Equipmet : CA200& anyone Master supported pattern#92(refer to right photo)
- Use other Equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60 min



Calibration and Manual setting for WB adjustment

- HDMI : Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- COMP: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- CVBS: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (NTSC)

Note

If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.

White Balance Manual adjustment

- UE32EH4003 / 4004

P-Mode Input source	Section	Adjustment Coordinate CA-210					
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	NA
	W/B Low	Lx	NA	Ly	NA	LY	NA
MOVIE	W/B High	Hx	318	Hy	340	HY	NA
	W/B Low	Lx	NA	Ly	NA	LY	NA

Sub Contrast	135	Sub Bright	128		
R-Gain	AJD	G-Gain	128	B-Gain	AJD
R-Offset	128	G-Offset	128	B-Offset	128

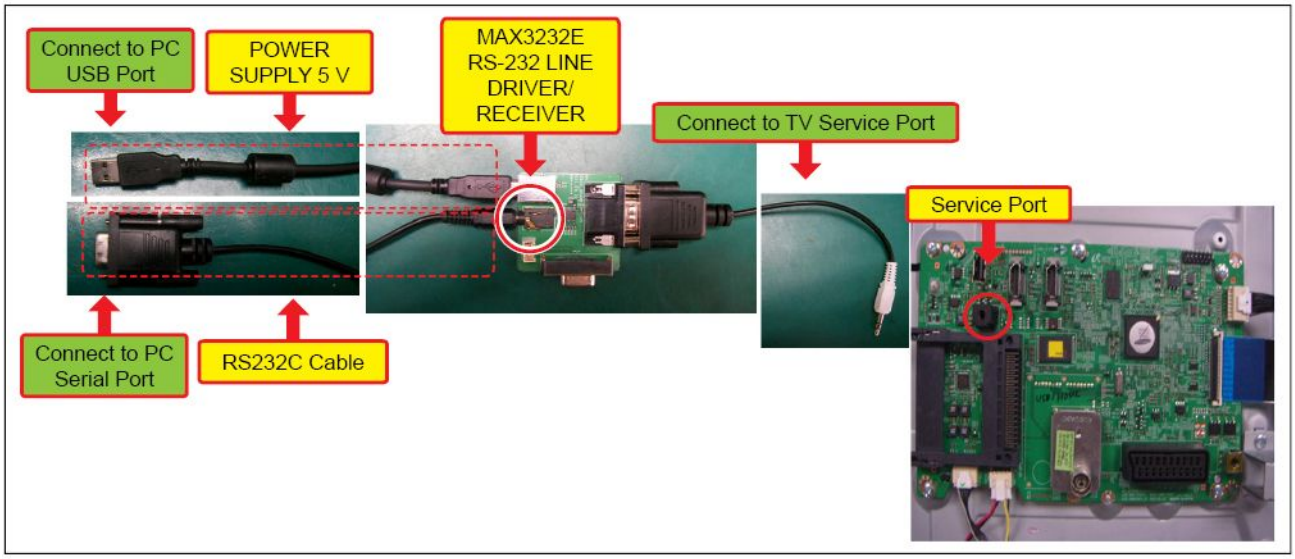
4.6. RS-232C

RS232C Control

- Port : COM#(Serial)
- Bit rate : 38400(Control)
- Data Bit : 8 bit
- Parity : None
- Stop Bits : 1
- Flow Control : None

How to connect to TV set

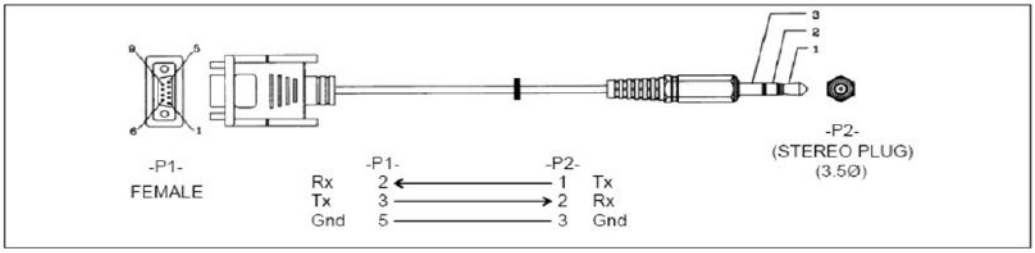
If TV set do not have MAX3232E circuit, you need Jig board and cables. (Refer to below picture and description.)



Gender to connect with JIG Board and TV SET

Power suply Cable (5V)

RS232C Cable



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

4.7. 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	T-NVTE4DEUC-xxxx T-NVTE4DEUS-xxxx E-Manual : NVDVBEU4E-xxxx
Control	
SVC	
Expert	
ADC/WB	
Advanced	

4-7-2. How to Upgade Software and Micom

Insert a USB drive containing the firmware upgrade downloaded from samsung.com into the TV. Please be careful not to disconnect the power or remove the USB drive while upgrades are being applied. The TV will turn off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete (the new version will have a higher number than the older version). When software is upgraded, video and audio settings you have made will return to their default (factory) settings. We recommend you write down your settings before beginning firmware update. After update is completed, restore your previous settings.

■ Main Software Upgrade

1. Store the sw program named "T-NVTE4IBRC" in USB memory stick.
   - Connect the USB.

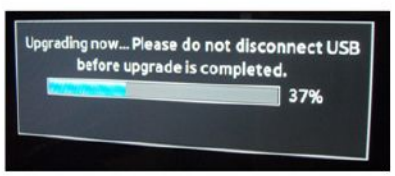
2. Click the "MENU" key in Remote Controler.

3. Select "Support" menu.
   Locate the menu cursor "Software Upgrade" menu.

4. Locate the menu cursor "By USB" menu.

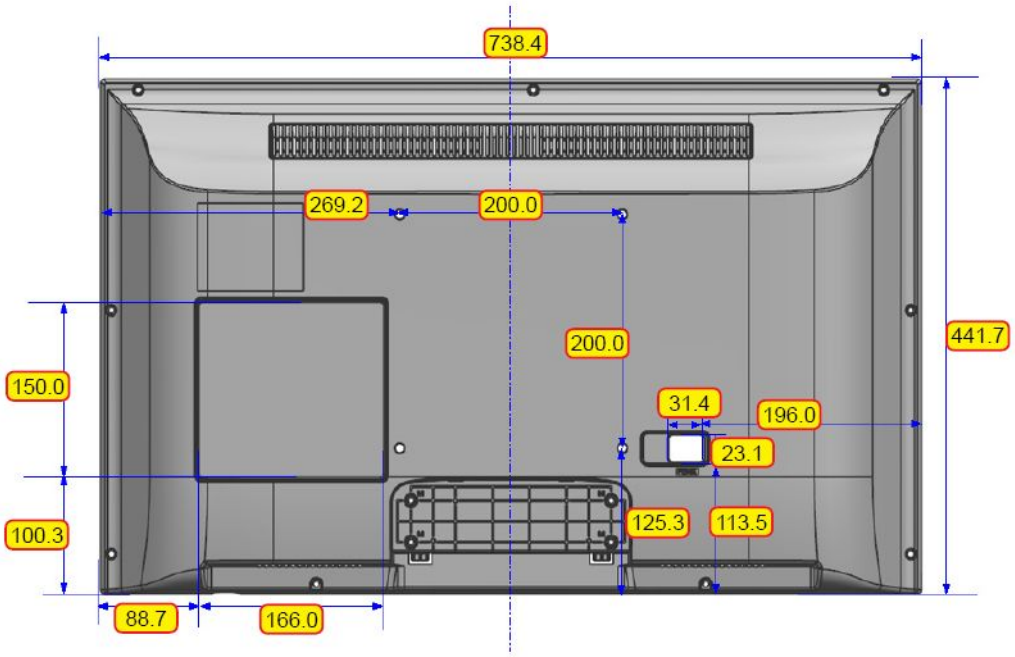
5. Click the "ENTER" key.

6. Click the "ENTER" key.
   - Wait for upgrade complete
   - Check the SW version



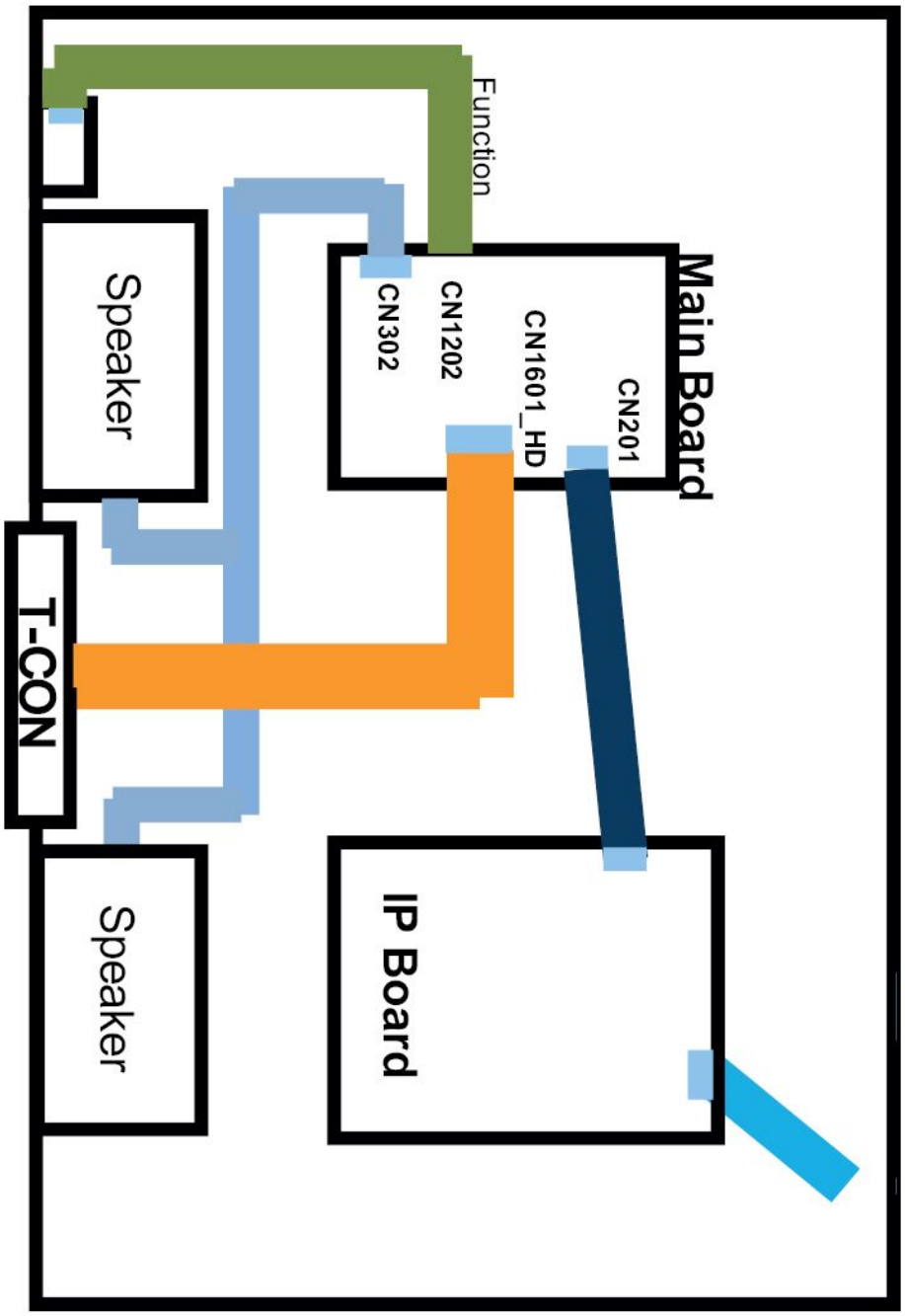
4.8. Rear Cover Dimension

■ UE32EH4003 / 4004



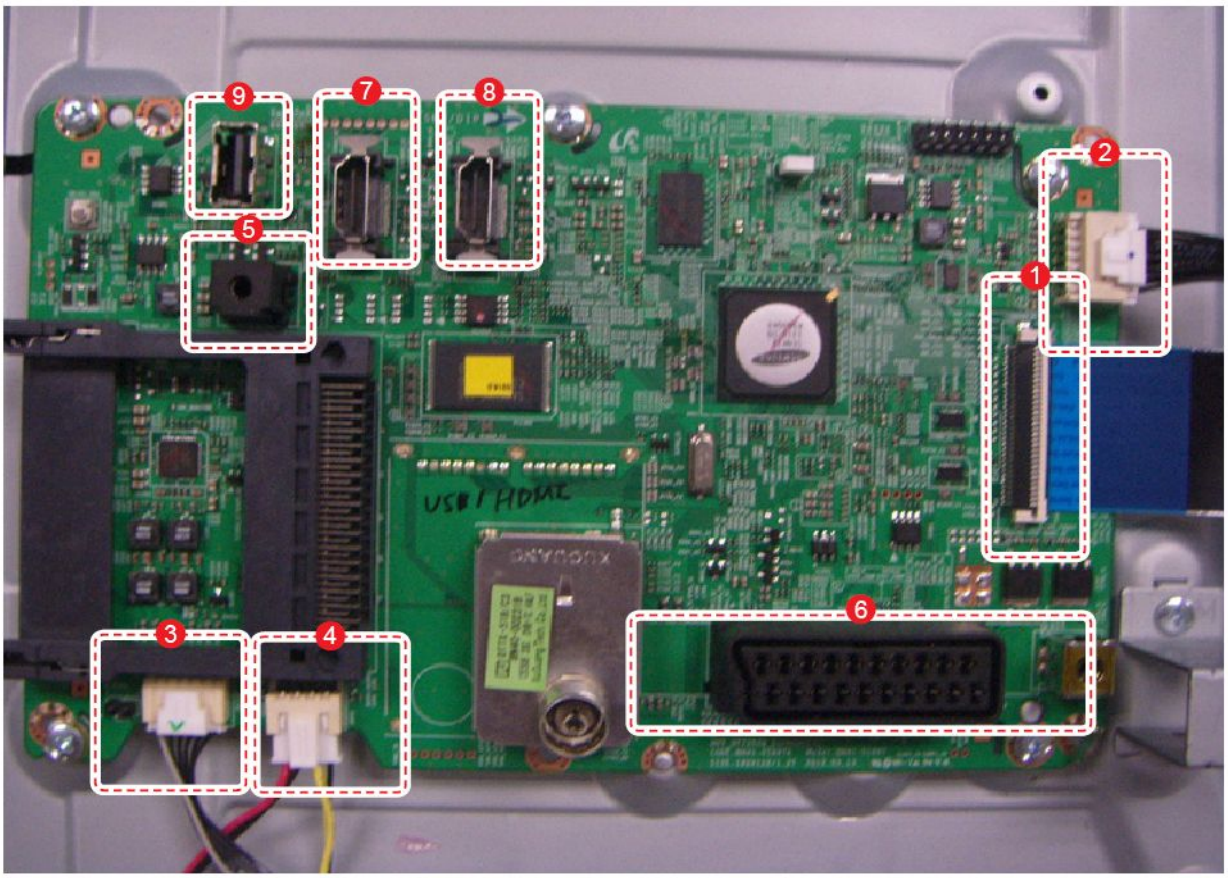
5. Wiring Diagram

5.1. Wiring Diagram



5.2. Connector

■ Main Board



❶ CN1601_HD			
1	PANEL_13V_PW	16	EVEN_TXCLK+_LVDS
2	PANEL_13V_PW	17	EVEN_TXCLK-_LVDS
3	PANEL_13V_PW	18	GND
4	PANEL_13V_PW	19	EVEN_TX2+_LVDS
5	PANEL_13V_PW	20	EVEN_TX2-_LVDS
6	GND	21	GND
7	GND	22	EVEN_TX1+_LVDS
8	GND	23	EVEN_TX1-_LVDS
9	TCON_WP	24	GND
10	PANEL_FORMAT	25	EVEN_TX0+_LVDS
11	NC	26	EVEN_TX0-_LVDS
12	GND	27	GND
13	EVEN_TX3+_LVDS	28	TCON_SDA
14	EVEN_TX3-_LVDS	29	TCON_SCL
15	GND	30	NC

❷ CN201 (to Powr board)			
1	B5.3V	11	B13V
2	SW_POWER_OUT	12	B13V
3	B5.3V	13	B13V
4	A5.3V	14	PWM_DIMM
5	GND	15	GND
6	GND	16	FRC_PWM2
7	B12VS	17	OVD_ON_OFF
8	GND	18	FRC_PWM3
9	B12VS	19	OVD_LEVEL
10	SW_INVERTER	20	FRC_PWM4

❸ CN1202 (FUNCTION)			
1	IR	4	KEY_INPUT1
2	GND	5	KEY_INPUT2
3	A3.3V_PW	6	A3.3V_PW

④ CN302 (SPEAKER)			
1	R+	3	L+
2	R-	4	L-

⑤ CN503_FPC(DEBUG)			
1	RDB_FANET	3	NC
2	TDB_FANET	4	GND

⑥ CN501_SC (SCART)			
1	SC_SR_OUT	12	NC
2	SC_SR_IN	13	GND
3	SC_SL_OUT	14	GND
4	GND	15	SC_R
5	GND	16	SC_FB
6	SC_SL_IN	17	GND
7	SC_B	18	GND
8	IDENT_SC	19	SC_CVBS_OUT
9	GND	20	SC_CVBS_IN
10	NC	21	GND
11	SC_G		

⑦ CN601_H1 (HDMI1)			
1	HDMI1_RX2+	11	GND
2	GND	12	HDMI1_RXCLK-
3	HDMI1_RX2-	13	HDMI_CEC
4	HDMI1_RX1+	14	GND
5	GND	15	SCL
6	HDMI1_RX1-	16	SDA
7	HDMI1_RX0+	17	GND
8	GND	18	5V
9	HDMI1_RX0-	19	HPD
10	HDMI1_RXCLK+		

⑧ CN602_H2 (HDMI2)			
1	HDMI2_RX2+	11	GND
2	GND	12	HDMI2_RXCLK-
3	HDMI2_RX2-	13	HDMI_CEC
4	HDMI2_RX1+	14	GND
5	GND	15	SCL
6	HDMI2_RX1-	16	SDA
7	HDMI2_RX0+	17	GND
8	GND	18	5V
9	HDMI2_RX0-	19	HPD
10	HDMI2_RXCLK+		

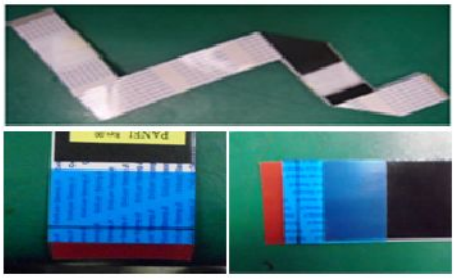
⑨ CN1502_U2 (USB1)			
1	USB_VCC	3	USB_DP
2	USB_DM	4	GND

⑩ CN1801_CI			
1	GND	35	GND
2	EXT_DATA[3]	36	PCM_CD1
3	EXT_DATA[4]	37	TSO_DATA[3]
4	EXT_DATA[5]	38	TSO_DATA[4]
5	EXT_DATA[6]	39	TSO_DATA[5]
6	EXT_DATA[7]	40	TSO_DATA[6]
7	PCM_CE1	41	TSO_DATA[7]
8	EXT_ADDR[10]	42	PCM_CE2
9	PCM_OE	43	NC
10	EXT_ADDR[11]	44	PCM_IORD
11	EXT_ADDR[9]	45	PCM_IOWR
12	EXT_ADDR[8]	46	CH_START
13	EXT_ADDR[13]	47	CH_DATA[0]
14	EXT_ADDR[14]	48	CH_DATA[1]
15	PCM_WE	49	CH_DATA[2]
16	PCM_IRQA	50	CH_DATA[3]
17	CI_VCC	51	CI_VCC
18	CI_VCC	52	CI_VCC
19	CH_VALID	53	CH_DATA[4]
20	CH_CLK	54	CH_DATA[5]
21	EXT_ADDR[12]	55	CH_DATA[6]
22	EXT_ADDR[7]	56	CH_DATA[7]
23	EXT_ADDR[6]	57	TSO_CLK
24	EXT_ADDR[5]	58	PCM_RESET
25	EXT_ADDR[4]	59	PCM_WAIT
26	EXT_ADDR[3]	60	NC
27	EXT_ADDR[2]	61	PCM_REG
28	EXT_ADDR[1]	62	TSO_VALID
29	EXT_ADDR[0]	63	TSO_START
30	EXT_DATA[0]	64	TSO_DATA[0]
31	EXT_DATA[1]	65	TSO_DATA[1]
32	EXT_DATA[2]	66	TSO_DATA[2]
33	CI_VCC	67	GND
34	GND	68	GND

5.3. Connector Functions

Connector	Function
CN201 ↔ IP CN	Supply main power and dimming signal from IP board to Main Board.
CN1302_HD ↔ T-CON CNF1	The LVDS signal transfered from Main Board to Panel .

5.4. Cables

Use	LEAD (Main-IP 14P)	LVDS CALBE (Main - Panel 30P)
Code No.	UE32EH4003 / 4004 : BN39-01449C	UE32EH4003 / 4004 : BN96-20370U
Image		

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