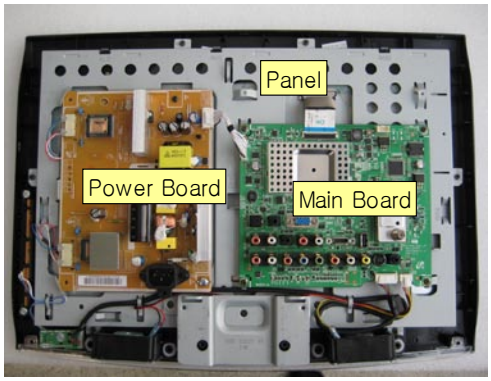
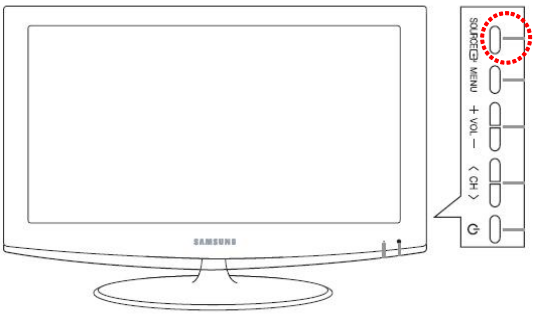
4. Troubleshooting

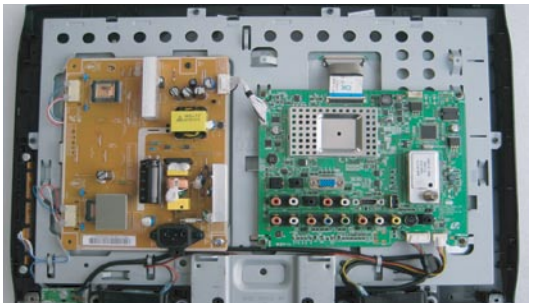
4-1. Troubleshooting

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.

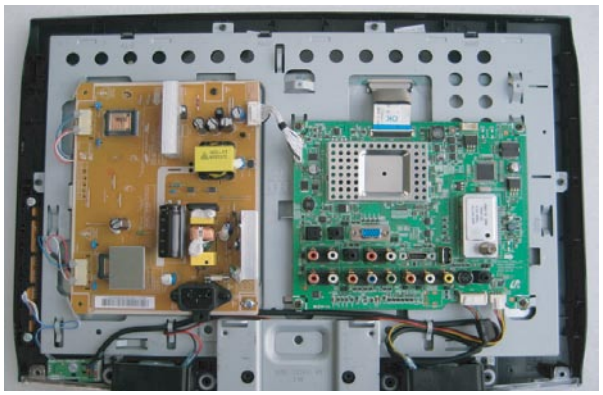




4-1-1. No Power

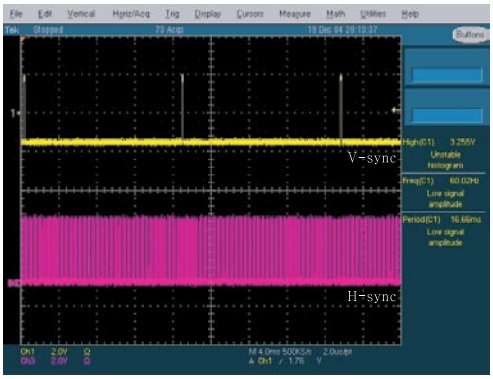
Symptom	– The LEDs on the front panel do not work when connecting the power cord. – The SMPS relay does not work when connecting the power cord. – The units appears to be dead.
Major checkpoints	The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are 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.

4-1-2. No Video (Analog PC signal)

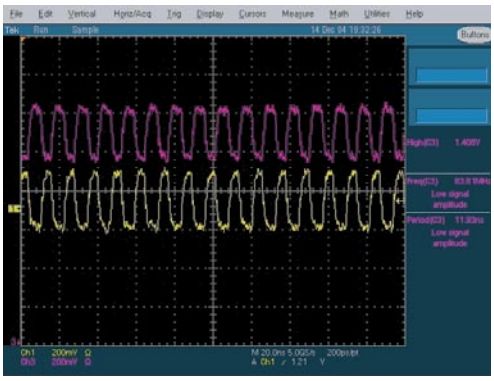
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the PC source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

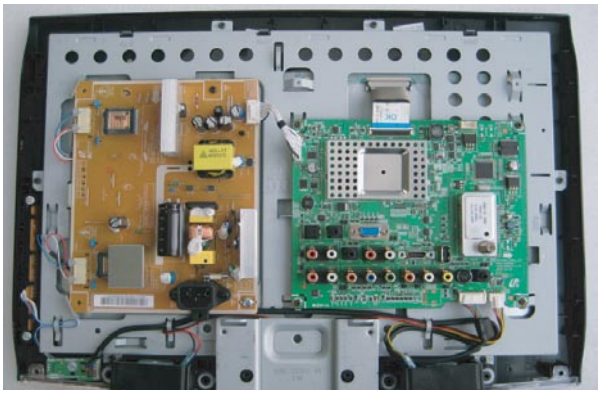
❶ ❷	PC Input (V-Sync, H-Sync)



❸	LVDS Out (CLK + / -)

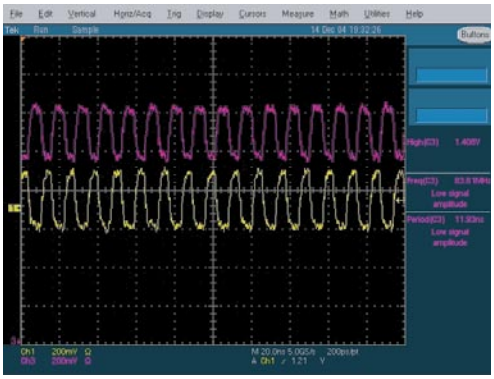


4-1-3. No Video (HDMI - Digital Signal)

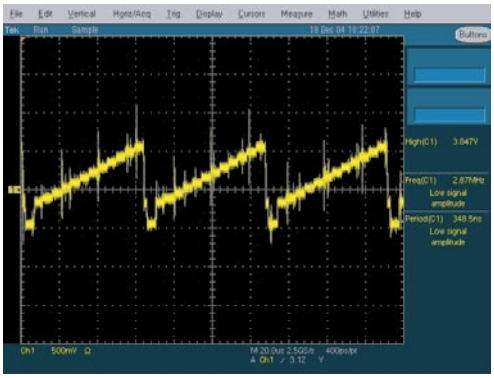
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the HDMI source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

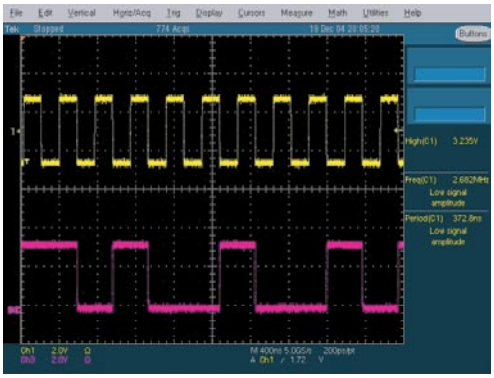
❹ ❺	**HDMI Input (CLK + / -)**



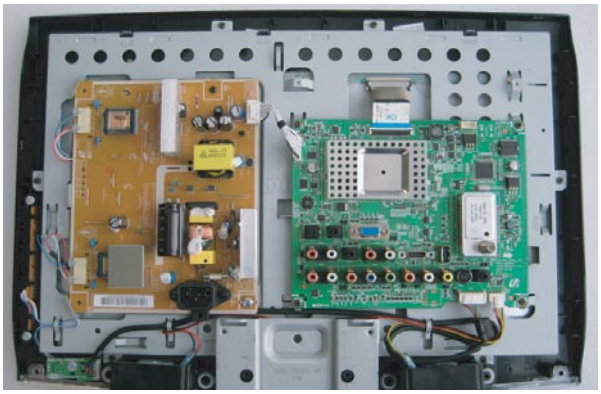
❻	**Tuner CVBS Out (Pattern: Grey Bar)**



❼	**TS DATA Out (Clk, Data [0])**

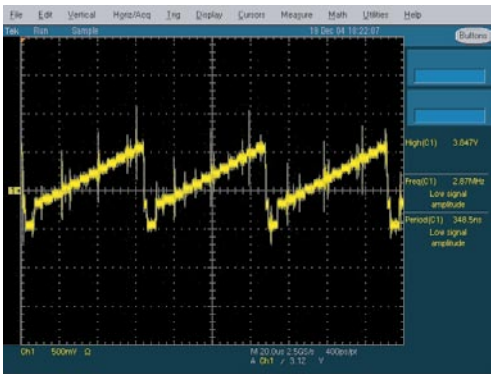


4-1-4. No Video (Tuner_CVBS)

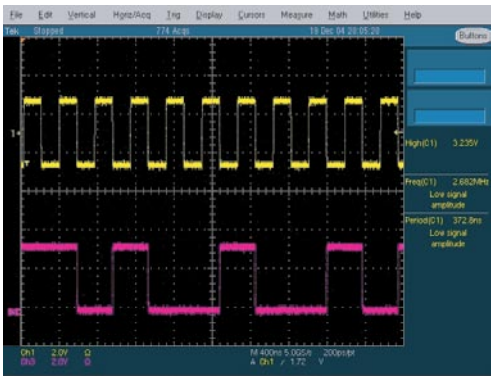
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the Tuner CVBS source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

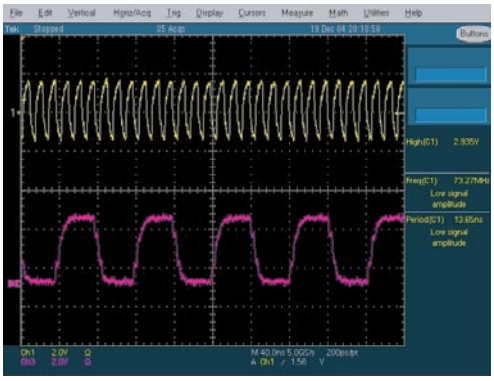
❻	**Tuner CVBS Out (Pattern: Grey Bar)**



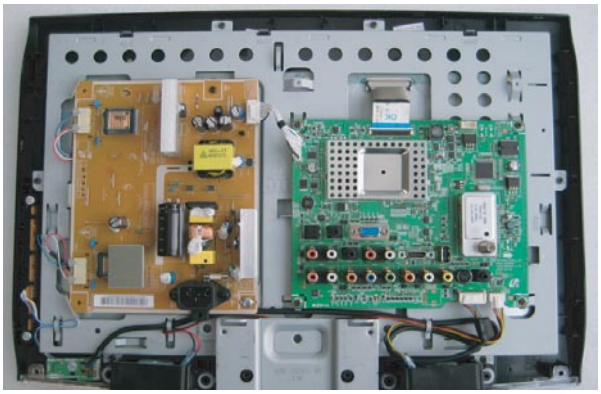
❼	**TS DATA Out (Clk, Data [0])**



❽	**Eagle+ Out (Clk, H-Sync)**

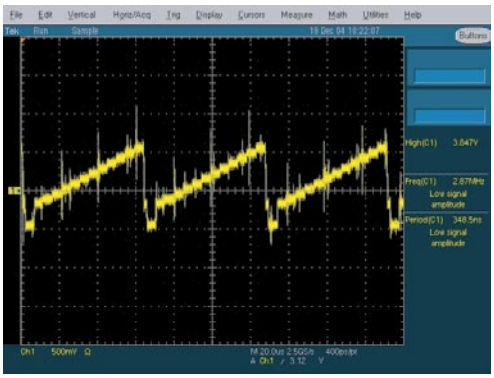


4-1-5. No Video (Tuner DTV)

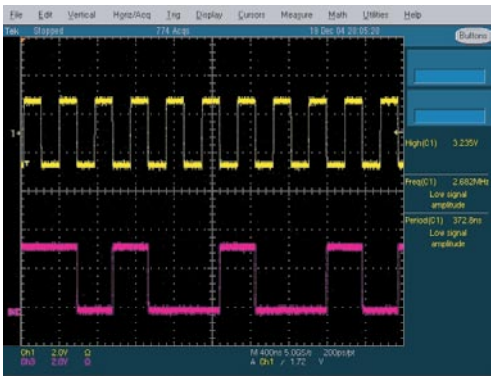
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the DTV source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

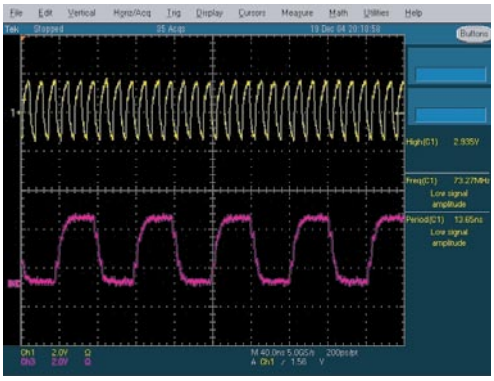
❻	**Tuner CVBS Out (Pattern: Grey Bar)**



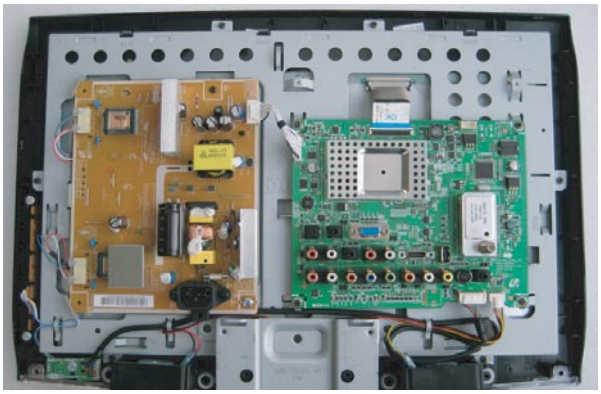
❼	**TS DATA Out (Clk, Data [0])**



❽	**Eagle+ Out (Clk, H-Sync)**

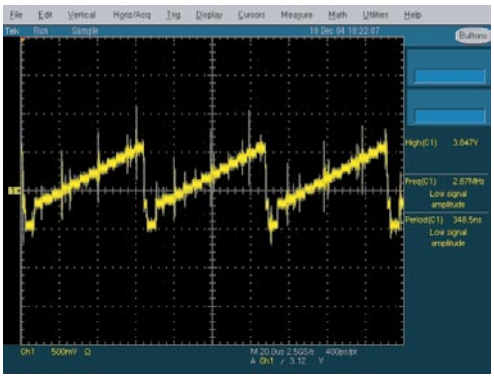


4-1-6. No Video (Video CVBS)

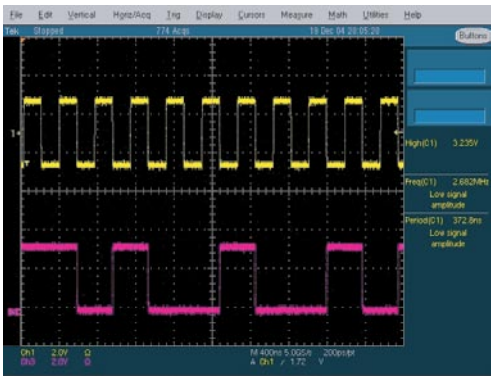
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the Video CVBS source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

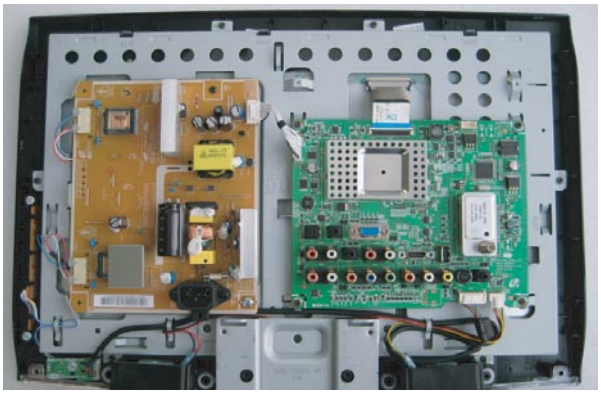
❻	Tuner CVBS Out (Pattern: Grey Bar)



❼	TS DATA Out (Clk, Data [0])

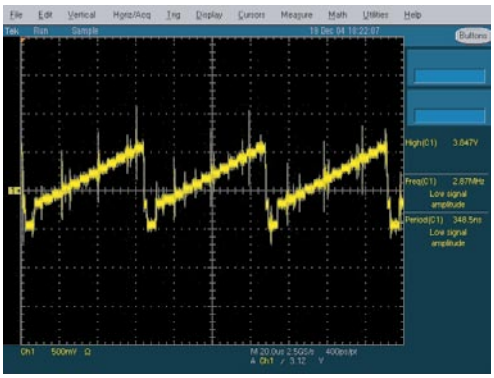


4-1-7. No Video (S-Video)

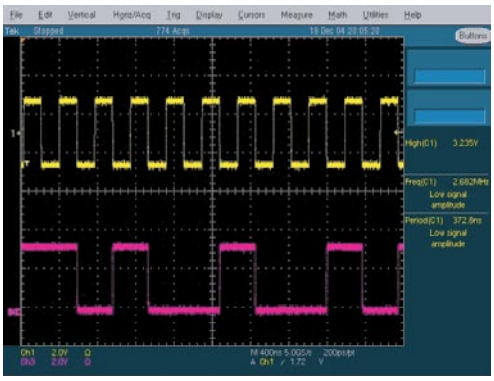
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the S-Video source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

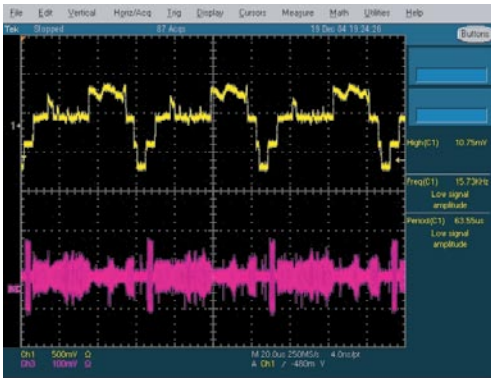
❻	**Tuner CVBS Out (Pattern: Grey Bar)**



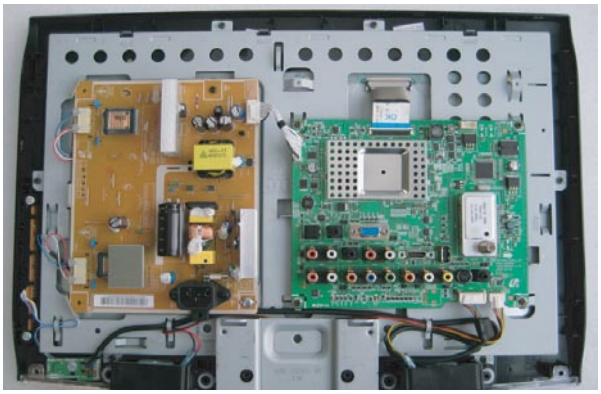
❼	**TS DATA Out (Clk, Data [0])**



❾	**S-VIDEO Input (Y/C)**

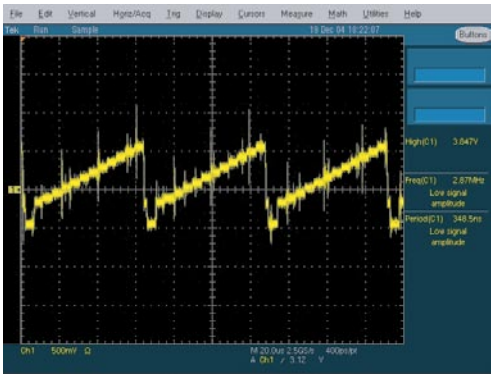


4-1-8. No Video (Component)

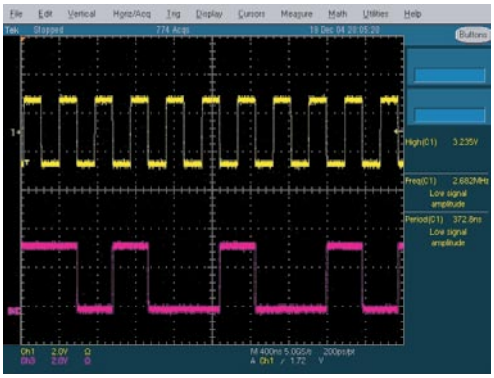
Symptom	– Audio is normal but no picture is displayed on the screen.
Major checkpoints	– Check the Component source – Check the MSD2248AL – This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

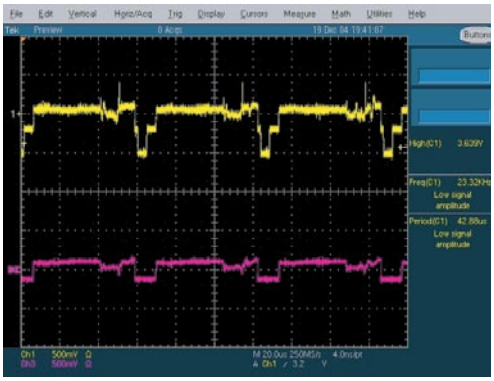
❻	**Tuner CVBS Out (Pattern: Grey Bar)**



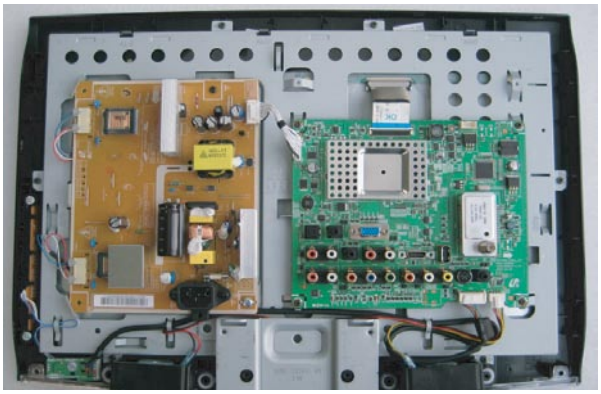
❼	**TS DATA Out (Clk, Data [0])**



❿	**Component Input (Y/Pb)**

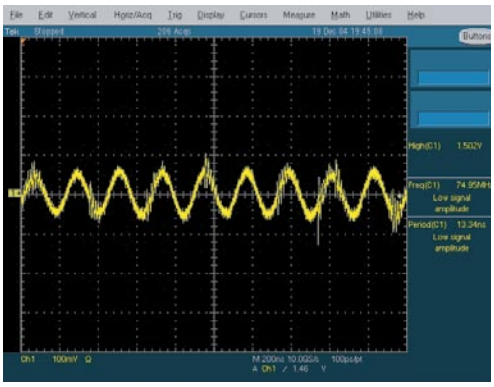


4-1-9. No Sound

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.

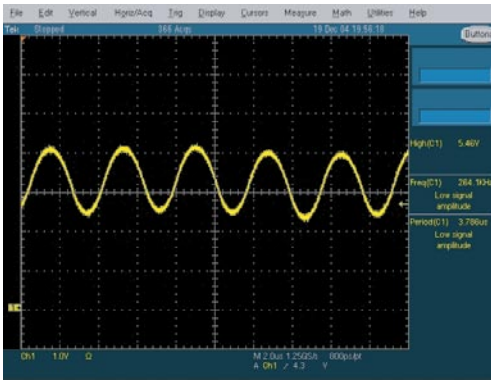
WAVEFORMS

⓫	Audio Input (Sign Wave)



⓬	12S Input (Clk, Data)

⓭	Audio Amp Out (Sign Wave)



4-2. Alignments and Adjustments

4-2-1. General Alignment Instuction

1. Usually, a color LCD-TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect against shock hazard, use an isolation transformer.

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 → MUTE → 1 → 8 → 2 → Power On

4-3-2 How to Access Service Mode

Using the Customer Remote

1. Turn the power off and set to stand-by mode
2. Press the remote buttons in this order; POWER OFF-MUTE-1-8-2-POWER ON to turn the set on.
3. The set turns on and enters service mode. This may take approximately 20 seconds.
4. Press the Power button to exit and store data in memory.
   - If you fail to enter service mode, repeat steps 1 and 2 above.
5. Initial SERVICE MODE DISPLAY State

- **The mother page of Factory mode => Blue letter is a real displayed data**

ADC ADC Target ADC Value Option BYTE ADJUST W/B W/B Movie EPA standard FBE3 VDEC Scaler Sharpness PE Sound Dynamic Contrast PDP Option	Expert Settings Expert D-Settings Expert Gray Scale Expert C-Space Expert Others CHECKSUM RESET
	T-CRLAUSC-00xx 0050 6628 00CD 1510 Micom / VER. / Month/ Day / Year

- "T-PEONAUSC-1000" and "T-PEONASS-1000" are firmware.....
  over version 2000 means Micronas FRC firmware.

1. Buttons operations withn 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

4-3-3 Factory Data

- The sub_page of Factory mode

ADC

Name	Default data
AV Calibration	-
Component Calibration	-
PC Calibration	-
HDMI Calibration	-

ADC Target

Name	Default data
1st_AV_Low	18
1st_AV_High	220
1st_AV_Delta	1
1st_COMP_Low	16
1st_COMP_High	235
1st_COMP_Delta	1
1st_PC_Low	1
1st_PC_High	235
1st_PC_Delta	1
2nd_AV_Low	1
2nd_AV_High	235
2nd_AV_Delta	1
2nd_COMP_Low	1
2nd_COMP_High	235
2nd_COMP_Delta	1
2nd_PC_Low	1
2nd_PC_High	235
2nd_PC_Delta	1
2nd_HDMI_Low	1
2nd_HDMI_High	235
2nd_HDMI_Delta	1

ADC Value

Name	Default data
LUMA_OFFSET	128
LUMA_GAIN	128
RED_CUTOFF	128
GREEN_CUTOFF	128
BLUE_OFFSET	128
RED_GAIN	128
GREEN_GAIN	128
BLUE_GAIN	128
2nd_R offset	128
2nd_G offset	128
2nd_B offset	128
2nd_R gain	128
2nd_G gain	128
2nd_B gain	128

Option Byte

Name	Default data
LCD/PDP	LCD
Inch	xx Inch
Panel Option	xxAM
Dimming	INT
Mirror	OFF
AV Number	2
COMP. Number	2
HDMI Number	3
Light Effect	ON
HeadPhone	ON
Anynet+(HDMI-CEC)	ON
Carrier Mute	OFF
Volume Curve	ON
Caption Level	ON
RS 232C	Auto wall
Gamma	0.85
Mute Time[RF]	600mS
CH Memory	SAMEX
Shop Mode	OFF
PC Mode Ident	Auto
HPD Control	OFF
7.5IRE Set	ON
7.5IRE Offset	0
HDMI 1080p	OFF
PANEL ENTER KEY	ON
EER Count	11
Expert ADJ.	OFF

Adjust

Name	Default data
Watchdog Enable	ON
Watchdog Count	10sec
Spread Spectrum	OFF
Shop Mode	OFF
DEBUG MODE	DEBUG OFF
LVDS Format	VESA

White Balance (Available over 26 inches. (With FBE3))

Name	Default data
Sub Brightness	128
R-Offset	128
G-Offset	128
B-Offset	128
Sub Contrast	128
R-Gain	128
G-Gain	128
B-Gain	128

White Balance Available 19 & 22 inches.(Without FBE3)

Name	Default data
Sub Brightness	128
R-Offset	128
G-Offset	128
B-Offset	128
Sub Contrast	128
R-Gain	128
G-Gain	128
B-Gain	128

White Balance Available only PDP.

Name	Default data
Sub Brightness	128
R-Offset	128
G-Offset	128
B-Offset	128
Sub Contrast	128
R-Gain	128
G-Gain	128
B-Gain	128

Adjust

Name	Default data
W/B MOVIE	on
MODE	Dynamic
Color Tone	Cool1
MSub Brightness	128
MSub Contrast	128
W2_Rgain	19
W2_Bgain	-26
W2_Roffset	-1
W2_Boffset	4
W1_Rgain	49
W1_Bgain	-43
W1_Roffset	-4
W1_Boffset	4
NOR_Rgain	7
NOR_Bgain	-11
NOR_Roffset	-2
NOR_Boffset	2
C2_Rgain	-32
C2_Bgain	22
C2_Roffset	5
C2_Boffset	1
Movie Contrast	70
Movie Bright	50
Movie Color	25
Movie Sharpness	45
Movie Tint	0
Movie Backlight	5
Movie Gamma	off

EPA Standard

Name	Default data
Standard Contrast	80
Standard Brightness	45
Standard Sharpness	50
Standard Color	50
Standard Tint	0
Standard Backlight	7

FBE3

Name	Default data
Patt-Sel	0
B-Slope gain	60
B-Tilt min	30
B-Tilt max	110
Lfunc-Basis	75
Hfunc-Basis	80
Mean-Offset1	30
Mean-Offset2	235
Mean-Slope	112
ACR-Offset	10
ACR-Th1	10
ACR-Th2	110
Skin-Enable	ON
Skin-UV	128
Sub color	128
M-Skin-UV	128
M-Sub color	128
Input Format	VESA
Output Format	VESA

VDEC

Name	Default data
Saturation	80
CTI_MD	2
CBCRLP_MD	1

Scaler

Name	Default data
DNR_off	0
DNR_low	2
DNR_mid	3
DNR_high	4
Y_DELAY_EN	1
YC_STEP	1

Sharpness

Name	Default data
H1 Gain	10
H2 Gain	8
H3 Gain	8
H4 Gain	8
V1 Gain	28
V2 Gain	8
H overshoot	FF
V overshoot	60
H undershoot	FF
V undershoot	60
Coring TH2	1
Coring TH1	1
Mid_color_level	AC

PE

Name	Default data
Skin_EN	1
D_Skin	12
M_Skin	12

Sound

Name	Default data
Carrier Mute	1
High DEV	0
CM_TH_HIGH	2990
CM_TH_LOW	20B0
ST_PILOT_TH_HIGH	D00
ST_PILOT_TH_LOW	600
ST_VAR_TH_HIGH	1800
ST_VAR_TH_LOW	1000
SAP_AMP_TH_HIGH	1
SAP_AMP_TH_LOW	4
SAP_NSR_TH_HIGH	4500
SAP_NSR_TH_LOW	3000
AMP_Volume	29
AMP_Limiter_Attack	9
AMP_Limiter_Release	F
AMP_Post-Scale	5C
AMP_Speaker EQ	0
AV Sync.	0

Dynamic Contrast

Name	Default data
Dynamic Contrast Dynamic Dimming Y_MEAN	On off 0

Checksum

Name	Default data
Checksum After execute CHECKSUM CHECKSUM Main : 0xB018 Back: Press Menu Key	0x0000

Reset

4-4. White Balance - Calibration

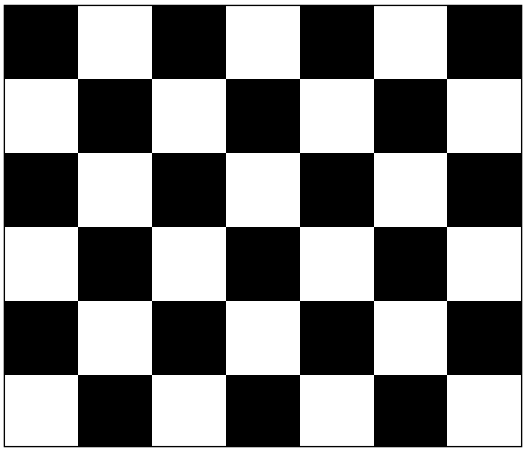
4-4-1 White Balance -Calibration

1. Calibration	→ AV Calibration Comp Calibration PC Calibration HDMI Calibration

4-4-2 Service Adjustment - You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

Adjust spec.
1. Source : HDMI
2. Setting Mode : 1280*720@60Hz
3. Pattern : Pattern #24 (Chess Pattern)



(Chess Pattern)

4. Use Equipment : CA210 & Master MSPG925 Generator

- 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

<Table 1>

■ 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 “Calibration” 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 “Calibration” 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 “Calibration” 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 “Calibration” 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 White Balance - Adjustment

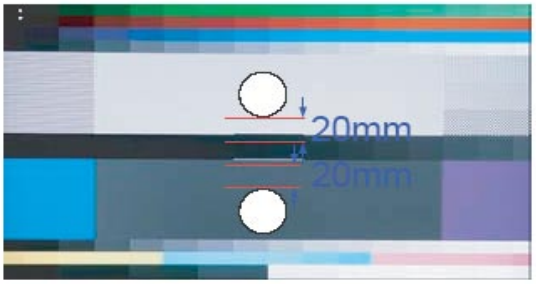
		(low light)	(hight light)
3. W/B	→	Sub Bright R offset G offset B offset	Sub Contrast R gain G gain B gain

(W/B adjustment Condition refer next page)

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. (Refer to Table 1, 2)
   It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min



- Calibration and Manual setting for WB adjustment.

HDMI : Calibration at #24 Chessboard Pattern → Manual adjustment #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)

- If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.
- White Balance Manual Adjustment

	Adjustment Coordinate				
		x	y	Y(L)	T(K) + MPCD
CVBS (NTSC)	H/L	272	287	- (Sub_CT:132)	11,000 (+10)
	L/L	272	287	12.0cd/m² (3.5 Ft)	11,000 (+10)
COMP (720P)	H/L	272	287	- (Sub_CT:132)	11,000 (+10)
	L/L	272	287	12.0cd/m² (3.5 Ft)	11,000 (+10)
HDMI (720P)	H/L	272	287	- (Sub_CT:132)	11,000 (+10)
	L/L	272	287	12.0cd/m² (3.5 Ft)	11,000 (+10)

- Adjustment Specification
  White Balance : High light (±2), Low light (±3)
  Luminance : High light (Don't care), Low light (±0.2 Ft/L)

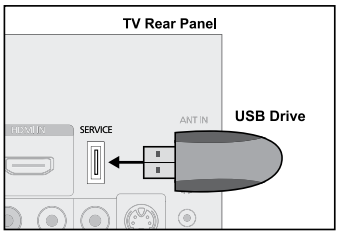
4-6. Servicing Information

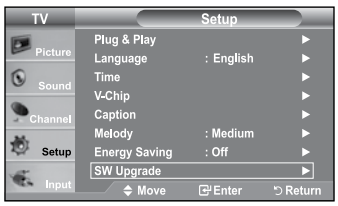
4-6-1 USB Download Method

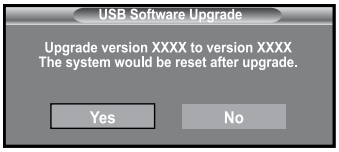
Samsung may offer upgrades for TV's firmware in the future. Please contact the Samsung call center at 1-800-SAMSUNG (7267864) to receive information about downloading upgrades and using a USB drive.
Upgrades will be possible by connecting a USB drive to the USB port located on located on the back of your TV.

1. Insert a USB drive containing the firmware upgrade into the SERVICE port on the rear of the TV.
   Software can not be upgraded through the LAN connection.
2. Press the **MENU** button to display the menu.
   Press the ▲ or ▼ button to select "Setup", then press the **ENTER** button.
3. Press the ▲ or ▼ button to select "SW upgrade", then press the **ENTER** button.
4. Press the **ENTER** button.
   The message "Scanning for USB... It may take up to 30 seconds." is displayed.
5. The message "Upgrade version XXXX to version XXXX The system would be reset after upgrade." is displayed.
   Press the ◄ or ► to select the "Yes", then press the **ENTER** button.

Please be careful to not 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. When software is upgraded, video and audio settings you have made will return to their default (factory) settings. We recommend you write down your settings so that you can easily reset them after the upgrade.







Memo