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.

4-1-2. 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. 			
	E19/22B45***			E26/32B45***
	Lamp(Backlight) Off, power indicator LED on?	No		Change the power cable or IP board
Diagnostics	¥es Does proper Stand-By DC A5V_PW and A13V_PW appear? 19"/22" : TP1108, TP1109 (A5V), TP7 (A13V) 26"/32" : TP2004 (A5V)	No Change the IP Boar		Change the IP Board
	↓ res Does proper Main B12VS_PW, B13V_ PW, B5V_PW appear? 19"/22" : IC1022 Pin #5,6 (B5V), IC1023 Pin #7,8 (B13V) 26"/32" : TP2007,8 (B12VS), TP2020~2 (B13V), TP2013~6 (B5V)	Nc		
	↓ 103 Does proper A3.3V_PW appear? 19"/22": IC1009 Pin #2 (A3.3V) 26"/32": IC2001 Pin #2 (A3.3V)	No	·	Change the Main Board
	Yes Does proper B3.3V_PW, B1.9V_PW, B1.25V_PW appear? 19"/22": TP1000 (B3.3V), IC2004 Pin #2 (B1.9V), TP1001 (B1.25V) 26"/32": C2607 (B3.3V), IC2004 Pin #2 (B1.9V), C2105 (B1.25V)	Nc		
	Yes		Г	
	Does proper PANEL_VCC_PW appear at LVDS connector Pin #1~5 of T-con b'd?	No		Change the LVDS cable.
		No		Change the T-con b'd
	A power is supplied to set?	No		Check a other function (No picture part) Replace a LCD Panel
Caution	Make sure to disconnect the power before	re workin	g on the II	P board.

LE19/22B45***















LE26/32B45***

4-4

Symptom	- Audio is normal but no picture is displayed on the screen.			
Major checkpoints	 Check the PC source Check the Arsenal, Check the Chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
	EE19/22B45***	EE26/32B45***		
Diagnostics	Power indicator LED is off. Lamp(Backlight) on, no video Yes Check the PC source and check the connection of D-SUB Yes	No No No No No Check a set in the 'Stand-by mode' or 'DPMS mode' Input the analog PC signal properly.		
	Does the signal appear at TP5002, 5003, 5004, 5006, 5008?	No Check CN5001, PC cable. Change the Main Assy		
	Does the digital data appear at Pin #16, 17 (LVDS data clk) of LVDS connector?	No Check IC4010 (SEMS12) Change the main board.		
	Check the LVDS cable? Check the T-Con B'd? Replace the LCD panel?	No Please, Contact Tech support.		
Caution	Make sure to disconnect the power before we	orking on the IP board.		

4-1-3. No Video (Analog PC signal)

LE19/22B45***



LE26/32B45***



PC inpu	ıt (V-sink , H-sin	k , R/G/B)		
DKDGAWA + 2008;12;08:23:30:28 Stopped 2009	Vari 1625 M	Normal (2.245%) H-Position J0mcd/m(smc/dr) -0.7230.dir H_sync 200ml V_sync 0FF V_sync H/V H_V H	YOKOGANA 2008/12/08/22:24:30 Stopped	21:25 M R/G/B data
		20us/div H_sync V_sync Pattern#/Mark ○ ro.280 div Auto Scroll Setup Pattern#/Mark ○ Ro match		File Path V_sync
2.00 V/dw 10:1 //// 200 V/dw 10:1 /// 10:1 /// 10:1 /// 10:1 ///	utput	2.01¥ DC OFF ₩	2.00 V/dw S00nV/dw 10:1 10:1	SDINY DC OFF #
	TJ	Normal O IntP 25GS/s		
Stored		Data_clk		
Zoom		Data_clk FRC_HSYNC Data_clk Corr to FRC_HSYNC Corr to File FRC_HSYNC Corr to File Corr True Color FRC_HSYNC FRC_HSYNC Atta_clk FILe File File File File File File File Fil		

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

Symptom	 Audio is normal but no picture is displayed on the screen. 			
Major checkpoints	 Check the HDMI source. Check the HDMI switch, Check the Chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
	E19/22B45***		LE26/32B45***	
	Power Indicator is off. Lamp(Backlight) Off, no video? Yes Check the HDMI source and check	No (Check a set in the 'Stand-by mode'.	
Diagnostics			Input the HDMI signal properly	
	 Does the signal appear at CN6009 (Pin#12, #7)(HDMI1) CN6002 (Pin#12, #7)(HDMI2) CN6004 (Pin#12, #7)(HDMI3) (HDMI RX_Clk, RX_Data)? 19"/22" : CN6009 only 	No	Check CN6009, CN6002, CN6004 Check HDMI cable Change the Main Assy	
	Yes			
	Does the digital data appear at Pin #16, 17 (LVDS data clk) of LVDS connector?	No	Check IC4010 (SEMS12) Change the Main Assy	
	Yes	L		
	Check the LVDS cable? Check the T-Con B'd? Replace the LCD panel?	No	Please, Contact Tech support	
Caution	Make sure to disconnect the power before	working on the IP	board.	

LE19/22B45***



LE26/32B45***



3	HDMI input (RX_Data, RX_Clk)
10/00/04/14	
Stopped	15 22 500 k 20 yrs dir 20 yrs dir RX_Data HV V How/216/21/22 1/k 0FF ON HV V How/216/21/k/ 0FF ON
COUNTROL DC Full 1.00 V/div 10:1	RX_CIk RX_CIk Auto Saroll Setup Patterni/Mark OF ON DC Full 10.0 V/dr 10.0 V/dr
2	LVDS output
YOKOGAWA + 20 Stopped	000/12/09 19:24:21 4 20xy/dr FRC_HSYNC File File File File File File
Zoo	Data_clk Color True Color Data_clk Color True Color Data_clk Color True Color
	FRC_HSYNC File Path 4 Auto Fame Data_cik Fambering
DC Full 5.00 V/div 10:1	DC Full 5 900mV/dw 2.20 V (0:1 DC OFF M

Symptom	- Audio is normal but no picture is displayed on the screen.			
Major checkpoints	 Check the Tuner CVBS source. Check the Tuner, Check the Chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
	E19/22B45***	E26/32B45***		
	Power indicator LED is off. Lamp(Backlight) on, no video? Yes	No Check a set in the 'Stand-by mode'.		
	✓ Does the DC TU5V_PW, TU33V_PW appear at #3, #5 Pin of Tuner? Yes	No Input the RF source properly.		
Diagnostics	Does the CVBS data appear at #9 pin of Tuner?	No Change the Main Assy		
	Ves Does the CVBS data appear at	No Check Tuner		
	#9 pin of Tuner? Yes	Change the Main Assy		
	 ✓ Does the digital data appear at Pin #16, 17 (LVDS data clk) of LVDS connector? 	No Check IC4010 (SEMS12) Change the Main Assy		
	Yes			
	Check the LVDS cable? Check the T-Con B'd? Replace the LCD panel?	No Please, Contact Tech support		
Caution	Make sure to disconnect the power before wo	orking on the IP board.		

4-1-5. No Video (Tuner_CVBS)

LE19/22B45***



LE26/32B45***



CVBS	OUT (Grey Bar)			
YCHCOGNAA > 2008/12/06 Stopped	23:52:27	Normal Intel 1005/s Subjects		
2 LVDS	output			
VCROGAWA Stopped Zoom To Control Control Contr	D 19:24:22 Mu 5 5 2 1 5 2 4 2 1 5 5 5 2 1 5 5	Processor Processor		

4-1-6. No Video (Tuner DTV)

Symptom	 Audio is normal but no picture is displayed on the screen. 			
Major checkpoints	 Check the DTV source. Check the Tuner, Check the Chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
	E19/22B45***		E26/32B45***	
	Power indicator LED is off. Lamp(Backlight) on, no video Yes	No	Check a set in the 'Stand-by mode'.	
	Check the connection of RF cable	No	Input the RF cable properly.	
Diagnostics	Check the 'signal strength' in Self Diagnosis menu Strength is enough?	No	Check the D-TV source.	
	Yes Does the DC B5V_VCCT_PW, B1.25VT_PW, B3.3V_PW appear at #3, #15, #12 Pin of Tuner? Yes	No	Change the Main Assy	
	 Does the digital data appear at Pin #16, 17 (LVDS data clk) of LVDS connector? 	No	Check IC4010 (SEMS12) Change the main board.	
	Yes			
	Check the LVDS cable? Check the T-Con B'd? Replace the LCD panel?	No	Please, Contact Tech support	
Caution	Make sure to disconnect the power before	working on the IP	board.	

LE19/22B45***



LE26/32B45***



2	LVDS output		
)Kogawa 🔶 200	8/12/09 19:24:21	Normal	
Stopped	4 Nat 5 M	IntP 25GS/s 20us/dw PRINT	
T		FRC_HSYNC	
.		 Format JPEG 	
		Data_clk Color True Color	
Zoo		200ns/div	
		FRC_HSYNC	
	athanan ann an a	Auto Name	
mmmmm	កម្មនេះអាចជាអ្នកពិភពលោកក្មេរបាត្តសេត្តសេត្តសេត្	Data_cik	
CH1 INPUT DC Full 5.00 V/div 10:1	DC Full S00mV/div 10:1	Edge Coll 5 2.20 V DC OFF A	

Symptom	- Audio is normal but no picture is displayed on the screen.			
Major checkpoints	 Check the Video CVBS source Check the Chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
	EE19/22B45**		Image: Notestand stateE26/32B45***	
	Power indicator LED is off. Lamp(Backlight) on, no video?	No	Check a set in the 'Stand-by mode'.	
Diagnostics	Check the video source and check the connection of video cable?	No	Input the video source properly.	
	Yes			
	Does the CVBS data appear at TP - 7045?	No	Check CN7005 Change the Main Assy	
	Yes			
	 Does the digital data appear at Pin #19,20,34,35 (LVDS Data clk) of LVDS connector? 	No	Check IC4010 (SEMS12) Change the Main Assy	
	Yes			
	Check the LVDS cable? Check the T-Con B'd? Replace the LCD panel?	No	Please, Contact Tech support	
Caution	Make sure to disconnect the power before	working on the IF	board.	

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





LE26/32B45***

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Normal InP 1002/s District Constant Elon Core A	
Nermal ImP 2005/h Sate for Pictoria Pictoria Pictoria Pictoria Data_clk * File Path * File Path Data_clk * File Path Data_clk * Data_clk * Data_clk * File Path * Auto Name Namber kg Data_clk * Edge path	
	Image: Distribution of the Position Image: Distret of the Position

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 chelsea. This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. 			
Diagnostics	This hey heppen which the LYDS cable connectang the Main Doard and the France is disconnected.			
Caution	Make sure to disconnect the power before working on the IP board.			



LE26/32B45***



LE19/22B45***



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 				
	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				
	Check the source and check the connection of sound cable (Comp/PC/DVI to HDMI).				
Diagnostics	Yes Does the sound data appear at CN5002(COMP), CN5011(PC, DVI), CN7005(AV), JA3201_EU(SCART)? No Check CN5002(COMP), CN7005(AV), CN7005(AV), JA3201_EU(SCART) Change the Main Assy				
Diagnostics	↓ Yes Does the B12VS_PW appear at TP2007~8? Change the Main Assy				
	Yes Yes No Check IC903 (Audio CODEC)				
	Yes				
	Does the sound data appear at TP - L-, L+, R-, R+? No No Check IC4010 (SEMS12) Check IC9002 (Sound AMP) Change the Main Assy				
	Yes Replace speaker BN96-09463A Please, Contact Tech support				
Caution	Make sure to disconnect the power before working on the IP board.				





6 I2C Data	
YXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Speaker out	
Ele Edit Ventoal Hpic/Acq Jrig Ditplay Cutoris Mague Meh Ublies Heip Tak Stopped 206 Acqs 19 Dec 04 19 40 60 Image: Cutoris Im	

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



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 INFO MUTE 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

OPTION
ADC/WB
Control
Advanced
Expert
T-CRLPEUC-XXXX
T-CRLPEUFC-XXXX
T-CRLPEUS-XXXX
DTP-LP-XXXX-XX
DTP-LP-App-XXXX-XX
OPTION : F100 00
ADC : HDMI X COMP X PC X AV X
EDID : SUCCESS
HDCP : SUCCESS
Build Date : XX-XX-XXXX
Date Of Purchase : XX/XX/XX

- * How to enter the hidden factory mode.
- a. into the factory mode
- b. move the tap to Advanced
- c. key input : 0 + 0 + 0 + 0
- ** hidden menu : Advanced

6. 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

OPTION	Factory Name	Data	Range
	Factory Reset		
	Туре		19D6THOC, 19I6THOC (PANEL, INCH), 19A6THOC
	Model	LB450	LB530 / LB540 / LB550 / LB460 / LB360 / LB650 / LB530S
	TUNER	AUTO	ALPS
	Region	EU	
	DDR	SAMSUNG	SAMSUNG / Etron
	Light Effect	Off	On / Off
	Ch Table	SUWON	SUWON/SESK/SEH/TTSEC/SDMA/ SERK/SEINSAVIA/SIEL/TSE
	Medialink type		
	Local Set	Other	Others/Russia
	PDP GROUP		

ADC/WB	Factory Name
	ADC
	ADC Tarhet
	ADC RESULT
	WB

ADC	Factory Name	Data	Range
	AV Calibration	Success	Success / Failure
	Comp Calibration	Success	Success / Failure
	PC Calibration	Success	Success / Failure
	HDMI Calibration	Success	Success / Failure

ADC Target	Factory Name	Data	Range
	1st_AV_Low	18	0 ~ 255
	1st_AV_High	220	0 ~ 255
	1st_AV_Delta	1	0 ~ 255
	1st_COMP_Low	16	0 ~ 255
	1st_COMP_High	235	0 ~ 255
	1st_COMP_Delta	1	0 ~ 255
	1st_PC_Low	2	0 ~ 255
	1st_PC_High	253	0 ~ 255
	1st_PC_Delta	1	0 ~ 255
	2nd_Low	1	0 ~ 255
	2nd_High	235	0 ~ 255
	2nd_Delta	1	0 ~ 255

ADC RESULT			Mode			
	Factory Name	AV / RF	Component	HDMI / DTV / HDMI-PC	PC	Range
	1st_AV_Gain	136	134	136	192	0 ~ 255
	1st_AV_Offset	136	134	136	192	0 ~ 255
	1st_Comp_Gain	136	134	136	192	0 ~ 255
	1st_Comp_Gain_Cb	107	67	100	32	0 ~ 255
	1st_Comp_Gain_Cr	107	67	100	32	0 ~ 255
	1st_Comp_Offset	107	67	100	32	0 ~ 255
	1st_Comp_Offset_Cb	136	134	136	192	0 ~ 255
	1st_Comp_Offset_Cr	136	134	136	192	0 ~ 255
	1st_PC_R_Gain	136	134	136	192	0 ~ 255
	1st_PC_G_Gain	107	67	100	32	0 ~ 255
	1st_PC_B_Gain	136	134	136	192	0 ~ 255
	1st_PC_R_Offset	136	134	136	192	0 ~ 255
	1st_PC_G_Offset	136	134	136	192	0 ~ 255
	1st_PC_B_Offset	107	67	100	32	0 ~ 255
	2nd_R_Offset	107	67	100	32	0 ~ 255
	2nd_G_Offset	107	67	100	32	0 ~ 255
	2nd_B_Offset	136	134	136	192	0 ~ 255
	2nd_R_Gain	136	134	136	192	0 ~ 255
	2nd_G_Gain	136	134	136	192	0 ~ 255
	2nd_B_Gain	107	67	100	32	0 ~ 255

WB	Eastern Name	Mode			
	Factory Name	AV	Component	HDMI / DTV	PC
	Sub Brightness	128	128	128	128
	R_Offset	512	512	512	512
	G_Offset	512	512	512	512
	B_Offset	512	512	512	512
	Sub Contrast	128	128	128	128
	R_Gain	512	512	512	512
	G_Gain	512	512	512	512
	B_Gain	512	512	512	512
	Movie R Offset	128	128	128	128
	Movie B Offset	512	512	512	512
	Movie R Gain	512	512	512	512
	Movie B Gain	512	512	512	512

Control	Factory Name
	EDID
	Sub Option
	PDP Option
	Hotel Option
	Shop Option
	Sound
	Config Option

EDID	Factory Name	Data	Range
	EDID ON/OFF	Off	On / Off
	EDID WRITE ALL	Success	Success / Failure
	EDID WRITE PC	Success	Success / Failure
	EDID WRITE DVI	Success	Success / Failure
	EDID WRITE HDMI1	Success	Success / Failure
	EDID WRITE HDMI2	Success	Success / Failure
	EDID WRITE HDMI3	Success	Success / Failure
	EDID WRITE HDMI4	Success	Success / Failure
	EDID VERSION	HDMI 1.3	HDMI 1.2 / HDMI 1.3

Sub	Factory Name	Data	Range
Option	Mute Time(VIDEO)	4	0 ~ 10
	ready	Failure	Success / Failure
	TTX LIST	FOLF	FLOF / LIST
	TTX	On	On / Off
	TTX Group	Lang OSD	Lang OSD/ W Europe/E Europe/Russia/Greek/Turkey/Arab/Farsi/ArabHbrw
	Hotplug	On	On / Off
	Hotplugcontrol	On	On / Off
	Spread Spectrum		
	Auto Power DDR	On	On / Off
	Arab	Off	On / Off
	NT Conversion	Off	On / Off
	Mirror	On	On / Off
	HDMI EQ1	Middle	Low / Middle / High / Strong
	HDMI EQ2	Middle	Low / Middle / High / Strong
	HDMI EQ3	Middle	Low / Middle / High / Strong
	HDMI EQ4	Middle	Low / Middle / High / Strong
	EER Count		
	WM Calib		
	Panel Enter Key		
	Panel Display Time	XHr	
	CHECKSUM	0x0000	
	View Log		
	Font Data Viewer		
	Dimm Type	EXT	INT / EXT / INT_NEG / INT_POS / EXT_NEG
	Gamma	Off	Off / 0.85 / 0.88 / 0.90 / 0.93 / 0.95 / 0.98
	Carrier Mute	Off	On / Off
	Anynet+	On	On / Off
	HPD Polarity		
	High Devi	Off	On / Off
	Volum Curve	NI	NI/EU/EA
	HotPlug Delay	9	0~63
	HP Ident	LOW	Low / High
		China	ON / ON
		China	
	Watchdog	On	On / Off
	IVDS Format		
	OSD Resolution	1920*1080	
	Bus Ston	1320 1000	
	OTA Code		
	Panel Auto Setting		
	OTA Duration Test		
	Alternate Del		
	Ignore VCT Version	Off	

Spread Spectrum	Factory Name	Data	Range
	Spread Spectrum	On	On / Off
	Period	60K	40K / 50K / 60K
	Amplitude	2	0 / 0.5 / 1 / 1.5 / 2
	DDR Spread	2% Spread	Off / 1% Spread / 2% Spread

PDP Option	Factory Name	Data	Range
	PIXEL SHIFT TEST	Off	On / off
	LOGIC CONNECT	Off	On / off
	PATTERN SELECT	0	0 ~ 31
	PANEL VERSION		
	PANEL INCH		
	PANEL TYPE		
	PANEL TEMPERATURE		
	LOGIC SW VERSION		
	LOGIC SW CHECKSUM		
	SAPC_Timer	On	On / off
	APC_Speed	Slow	Slow / Fast
	LOGIC USB D/L	Failure	Not Match / Match / Failure

Hotel Option	Factory Name	Data	Range
	Hotel Mode	Off	On / Off
	Power On Channel	3	
	Power On Source	TV	TV / S-Video / Comp1 / PC / HDMI1 / HDMI2 / HDMI4
	Power On Volume	10	
	Min Volume	0	
	Max Volume	100	
	Panel Button Lock	Off	On / Off
	Pic Menu Lock	Off	On / Off
	Music Mode (AV)	Off	On / Off
	Music Mode (PC)	Off	On / Off
	Music Mode (Comp)	Off	On / Off
	Music Mode Backlight	Off	On / Off
	Menu Display	On	On / Off
	Power On Option	Last Option	Standby / Power On / Last Option
	Ch Remap On/Off		
	Program Ch		
	Original Ch/Src		
	Auto PC	Off	On / Off
	Energy Saving	Off	Off / Low / Mid / High / Auto
	Cloning : TV to USB		
	Cloning : USB to TV		
	Welcome Message		

Shop Option Factory Name		Data	Range
	Shop Mode USB DEMO ON (SEC) USB DEMO OFF (SEC)	Off	On / Off

Sound	Factory Name	Data	Range
	FM Prescale	20	
	AM Prescale	21	
	Nicam Prescale	20	
	A2 M2S Threshold	10	
	A2 S2M Threshold	10	
	A2 PilotPhaseOn	0	
	A2 PilotPhaseOff	0	
	A2 Identon	0	
	A2 Identoff	0	
	A2 Carr1AmpOnThr	16h	
	A2 Carr1AmpOffThr	14h	
	A2 Carrier1SNRonThr	0	
	A2 Carrier1SNRoffThr	0	
	A2 Carr2AmpOnThr	0	
	A2 Carr2AmpOffThr	0	
	A2 Carrier2SNRonThr	0	
	A2 Carrier2SNRoffThr	0	
	Nicam Sig Error On	16h	
	Nicam Sig Error Off	14h	
	Compression mode	RF	
	Dolby Test Mode	OFF	
	DTV Level	0dB	
	Master Vol	1EH	
	PWM Modulation	FEH	
	DRC1 Threshold	12H	
	DRC2 Threshold	12H	
	Speaker EQ	On	
	SC1 Vol	16	
	SC2 Vol	16	
	Audio Delay	60	
	SUB AMP Master Vol		
	SUB AMP PWM Mod		
	SUB DRC Thresh		
	SUB Speaker EQ		

Config Option	Factory Name	Data	Range
	AV Number	2	0~2
	SVIDEO Number	0	0 ~ 1
	COMP Number	2	0 ~ 2
	HDMI Number		0 ~ 4
	SCART Number		
	DVI Number	1	0 ~ 1
HP Number		1	0 ~ 1
	USB PORT		
	LNA SUPPORT	On	On / Off
	MFT OFFSET		

Advanced	Factory Name
	FBE
	WB Movie
	EPA Standard
	ADJUST
	YC_Delay
	SHARPNESS
	PE
	PQ Others
	Color Space
	EEPROM RESET

WB	Factory Name	Data	Range
Movie	WB Movie	Off	On / Off
	Color Mode		Dynamic / Standard / Movie
	Color Tone		Cool / Normal / Warm1 / Warm2
	Msub Brigh		0 ~ 255
	Msub Contr		0 ~ 255
	W1 RGAIN		0 ~ 255
	W1_BGAIN		0 ~ 255
	W1_ROFFS		0 ~ 255
	W1_BOFFS		0 ~ 255
	W2_RGAIN		0 ~ 255
	W2_BGAIN		0 ~ 255
	W2_ROFFS		0 ~ 255
	W2_BOFFS		0 ~ 255
	N_RGAIN		0 ~ 255
	N_BGAIN		0 ~ 255
	N_ROFFS		0 ~ 255
	N_BOFFS		0 ~ 255
	Movie Contr		3 ~ 100
	Movie Brigh		2 ~ 100
	Movie Color		1 ~ 100
	Movie Sharp		0 ~ 100
	Movie Tint		0 ~ 50
	Movie BkLight		0 ~ 10
	M.Gamma		Off / 0.85 / 0.88 / 0.90 / 0.93 / 0.95 / 0.98 / M1 / M2 / M3 / M4
	M_Sub Gamma		-3 ~ +3

EPA Standard	Factory Name	Data	Range
	Std Contr	95	0 ~ 100
	Std Bright	45	0~100
	Std Sharp	50	0~100
	Std Color	50	0 ~ 100
	Std Tint	50	0 ~ 100
	Std Backlight	7	0~10

ADJUST	Factory Name	Data	Range
	Dynamic Dimming LNA Plus	Off	On / Off
	Power Key Protect	Off	On / Off
	Uart Select	Auto Wall	Auto Wall / Debug / MDC / On1 / On2
	Debug Mode Back End Mute PDP FRC	Debug Off	Debug Off / Debug Smart / Debug RunTime
	Visual Test	Disable	Disable / Enable
	Standby Mode Time	45 Min	2 Min / 45 Min
	Delete alt.ver	2 Flash	
	OTA confirm Time	90 Min	2 Min / 90 Min
	OTA limit Time	3 Hour	3 Min / 3 Hour
	Dynamic CE	Off	On / Off
	FWC	Off	On / Off
	1080p 48Hz	On	On / Off
	PWM Max	100	1 ~ 100
	Quick Start		
	DTV LNA	Auto	Auto / On / Off
	HDCP Download	On	On / Off
	Test Pattern	Off	Off / 1 ~ 13

LNA Plus	Factory Name	Data	Range
	RF dB1 Level RF dB2 Level RF dB3 Level RF dB4 Level	3 6 12 31	0 ~ 255 0 ~ 255 0 ~ 255 0 ~ 255 0 ~ 255

YC_Delay	Factory Name	Data	Range
	PAL BG	1	0~3
	PAL DK	1	0~3
	PAL I	1	0~3
	SECAM BG	4	0 ~ 7
	SECAM DK	4	0 ~ 7
	SECAM I	4	0 ~ 7
	NTSC 358	1	0 ~ 3
	NTSC 443	1	0~3
	AV PAL	1	0 ~ 3
	AV SECAM	4	0 ~ 7
	AV NT358	1	0 ~ 3
	AV NT443	1	0 ~ 3
	AV PAL60	1	0~3

SHARPNESS		Data							
	Factory	Data	Range	comp	onent	н	DMI	D.	τv
	Name	RF	CVBS	SD	HD (720p)	SD	HD (720p)	SD	HD (720p)
	H1 Gain	25	25	25	20	25	20	25	20
	H2 Gain	12	12	12	8	12	8	12	8
	H3 Gain	10	10	C	8	8	8	C	8
	H4 Gain	8	8	8	8	8	8	8	8
	V1 Gain	20	20	20	20	20	20	20	20
	V2 Gain	12	12	12	8	12	8	12	8
	H overshoot	20	20	20	FF	20	FF	20	FF
	V overshoot	20	20	20	20	20	20	20	20
	H undershoot	20	20	20	FF	20	FF	20	FF
	V undershoot	20	20	20	20	20	20	20	20
	Coring TH2	1	1	1	1	1	1	1	1
	Coring TH1	1	1	1	1	1	1	1	1

SHARPNESS	Data	Data				
	Comp/HDMI/ DTV 720p	PC / HDMI PC	Range			
	20	8	0 ~ 3F			
	8	8	0 ~ 3F			
	8	8	0 ~ 3F			
	8	8	0 ~ 3F			
	20	8	0 ~ 3F			
	8	8	0 ~ 3F			
	FF	0	0 ~ FF			
	20	0	0 ~ FF			
	FF	0	0 ~ FF			
	20	0	0 ~ FF			
	1	0	0 ~ F			
	1	0	0 ~ F			

PE		Data							
	Factory Name	DE		comp	component		עדע	PC /	Range
		КГ	CVBS	SD	HD			HDMI PC	
	Skin x	0	0	0	0	0	0	0	0 ~ 11
	Skin y	0	0	0	0	0	0	0	0 ~ 11
	B slope	A0	A0	A0	A0	A0	A0	80	80~FF
	DEC_ML	60	60	60	60	60	60	60	0~FF
	DLC_MH	70	70	70	70	70	70	70	0~FF
	DLC_H	EB	EB	EB	EB	EB	EB	EB	0~FF
	Skin_SAT	0	0	0	0	0	0	0	0~F
	Skin_HUE	40	40	40	40	40	40	0	0~7F
	M_Skin_HUE	40	40	40	40	40	40	0	0~7F
	M Skin x	0	0	0	0	0	0	0	0 ~ 11
	M_Skin_y	0	0	0	0	0	0	0	0 ~ 11
	Mid_color_level	180	180	180	180	180	180	180	0~255
	M_Mid_color_level	180	180	180	180	180	180	180	0 ~ 255

PQ Others	Factory Name	Data	Range	
	7.5 IRE NTSC	On	On / Off	
	7.5 IRE	0	0 ~ 60	

Color Space	Factory	RF AV	Comp SD HDMI SD DTV SD	COMP HD HDMI HD DTV HD	RF AV	Comp SD HDMI SD DTV SD	COMP HD HDMI HD DTV HD	PC/ HDMI PC	Range
	Name	Native	Native	Native	Auto	Auto	Auto	-	Color Space
	Red Sat	4	4	4	0	0	0	0	0~F
	Red Hue	40	40	40	40	40	40	40	0~7F
	Green Sat	7	7	7	0	0	0	0	0~F
	Green Hue	7F	7F	7F	40	40	40	40	0~7F
	Blue Sat	A	A	A	0	0	0	0	0~F
	Blue Hue	50	50	50	40	40	40	40	0~7F
	Cyan Sat	A	A	A	0	0	0	0	0~F
	Cyan Hue	50	50	50	40	40	40	40	0~7F
	Magenta Sat	4	4	4	0	0	0	0	0~F
	Magenta Hue	40	40	40	40	40	40	40	0~7F
	Yellow Sat	2	2	2	0	0	0	0	0~F
	Yellow Hue	40	40	40	40	40	40	40	0~7F
	FWC CB	15	15	15	15	15	15	15	0~30
	FWC CR	15	15	15	15	15	15	15	0~30

EEPROM RESET	Factory Name	Data
	EEPROM RESET	Enter - Set off
	NVR All Clear	Off/On

Tuner Status	Factory name
(Read Only)	Frequency
	LNA status
	BandWidth
	FFT
	Modulation
	Code Rate
	GI
	Hier Modulation
	Frequency Offset
	AGC
	UCB
	PLL Type
	DEMOD Type
	TPS Lock
	RS Lock

4-4. White Balance - Calibration

4-4-1 White Balance -Calibration

1. Calibration	\rightarrow	AV Calibration
	J	Comp Calibration
		PC Calibration
		HDMI Calibration

4-4-2 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 T
- 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 (PAL)

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



D Modo	Adjustment Coordinate					
F-IVIOUE		х	у	Y (Luminance)	T(K) + MPCD	
CVBS (PAL)	H/L	272	278	- (Sub_CT:130)	12,000 (土0)	
	L/L	272	278	12.6cd/m ² (3.7 Ft)	12,000 (土0)	
COMP (720P)	H/L	272	278	- (Sub_CT:130)	12,000 (±0)	
	L/L	272	278	13.0cd/m ² (3.8 Ft)	12,000 (土0)	
HDMI (720P)	H/L	272	278	- (Sub_CT:130)	12,000 (±0)	
	L/L	272	278	13.0cd/m ² (3.8 Ft)	12,000 (±0)	

- Adjustment Specification

White Balance : High light (±1), 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 (726-7864) 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 your TV.

- 1. Insert a USB drive containing the firmware upgrade into the USB port on the rear of the TV.
- Press the MENU button to display the menu.
 Press the ▲ or ▼ button to select "Support", then press the ENTER button.
- Press the ▲ or ▼ button to select "SW Upgrade", then press the ENTER button. The message "Scanning for USB. It may take up to 30 seconds." is displayed.
- The message "Upgrade version XXXX to version XXXX? The system will be reset after upgrade." is displayed. Press the ◄ or ► to select the "OK", 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.



4-7. HOW TO UPGRADE WITH JIG

4-7-1. TV Main S/W

Order		ETC.	
1	Open the Flash Downloader.	MStar ISP Utility V4.1.0 New Control Connect Dis Control Cont	
2	Connect Mstar JIG to the TV Set with D-SUB Cable.		One side is USB cable, the another side is D-Sub cable on the JIG.
3	JIG connection is OK	Dialog 🔀 Device Type is MX25L8005	
4	Select the code	Misiar ISP Utility HAL 0 Device Load Load Read Auto Blank Program Venify Erase Config Checksum : Hex files Unused Bytes: 0 0x00 0 0x00 0xFF End Addx. : 0xFFFFF Barch File Elapsed Time: I2C USB 306KHz Flash Status: 00	
5	Choose the S/W	달기	

Order		Description	ETC.
6	Select AUTO button	Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP Utility VALL Image: Misser ISP	
7	Select RUN button	M Biar ISP Utility Vd. J. D Image: Control of Contro	
8	Check the Verify OK, Select DIS Con Button And disconnect the JIG	M Starr ISP Utifity Vol.1.0 Device Config Device Config Source File. D\Desktp\L*idility Vol.1.0 Verify Frase Config Config Source File. D\Desktp\L*idility Vol.1.0 Verify Frase Concet Blank Blank Blank<	

4-8. Mechanical diagram

4-8-1. 19LB450

Size (W×D×H) [mm]

Set [mm]
1) Set with Stand : 477.1 x 180.2 x 374.0

- 2) Set without Stand [mm] : 477.1 x 65.6 x 326.9
- 3) Opening Size [mm] : 409.8 x 230.4
- Package(Outside Dimension) [mm] :
- 554.0 x 481.0 x 175.0

Weight [kg]

Set with Stand	4.8	kg
Stand(Only)	0.6	kg
Package (with SET)	5.8	kg
Cushion		
With-Stand Type	-	g
Without-Stand Type	-	g

4-8-2. 22LB450

Size (W×D×H) [mm]

Set [mm]
1) Set with Stand : 557.8 x 216.0 x 437.4
2) Set without Stand [mm] : 557.8 x 75.0 x 384.1
3) Opening Size [mm] : 477.4 x 268.4
Package(Outside Dimension) [mm] : 766.0 x 644.0 x 183.0

Weight [kg]

Set with Stand	6.5	kg
Stand(Only)	0.6	kg
Package (with SET)	7.8	kg
Cushion		
With-Stand Type	-	g
Without-Stand Type	-	g





4-8-3. 26LB450

Size (W×D×H) [mm]

Set [mm]
1) Set with Stand : 669.7 x 216.0 x 495.1
2) Set without Stand [mm] : 669.7 x 75.3 x 455.0
3) Opening Size [mm] : 525.8 x 323.7
Package(Outside Dimension) [mm] : 750.0 x 623.0 x 152.0

Weight [kg]

Set with Stand	8.4	kg
Stand(Only)	1.4	kg
Package (with SET)	11.8	kg
Cushion		
With-Stand Type	-	g
Without-Stand Type	-	g



Size (W×D×H) [mm]

Set [mm]
1) Set with Stand : 669.7 x 216.0 x 595.1
2) Set without Stand [mm] : 669.7 x 75.3 x 455.0
3) Opening Size [mm] : 697.68 x 392.26
Package(Outside Dimension) [mm] : 750.0 x 623.0 x 152.0

Weight [kg]

Set with Stand	8.4	kg
Stand(Only)	1.4	kg
Package (with SET)	11.8	kg
Cushion		
With-Stand Type	-	g
Without-Stand Type	-	g





4-9. PCB diagram

4-8-1. 19"/22"











