3 Alignments and Adjustments

3-1 Service Instruction

1. Usually, a color TV-VCR 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 aganist shock hazard, use an isolation transform.

3-2 How to Access Service Mode

3-2-1 Entering Factory Mode

1. 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

PICTURE ON → DISPLAY → FACTORY

- The buttons are active in the service mode.

1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left
   Arrow Right, Menu, Enter, Number Key(0~9)
2. Function - Control Key : Power, CH +, CH -, VOL +, VOL -, Menu, TV/VIDEO(Enter)

3-2-2 Panel Check

Specially for LE32S8**, You have to check Panel Maker Because of different adjustments as follows.
First of all, Check the label rating!

1) Label Rating File

If Panel Mark is "A", Set the factory mode indicating as follows.

Panel BOM(Bill of material) : BN07-00421A
Connector between Panel and Power Unit
: BN39-00603L (250mm)

* Option Byte
1. Gamma "AUO"
2. Panel Option "AUO"

If Panel Mark is "S" or not printed.
Set the factory mode indicating as follows.

Panel BOM(Bill of material) : BN07-00453A
Connector between Panel and Power Unit
: BN39-00603G (300mm)
* Option Byte
1. Gamma "AMLCD"
2. Panel Option "AMLCD_INT"

If Panel Mark is "C" , Set the Factory mode indicating as follows.
Panel BOM(Bill of Material) : BN07-00348A
Connecotor between Panel and Powe Unit : BN39-00603L (250mm)
* Option Byte
1. Gamma " CMO "
2. Panel Option " CMO "

Others are same shown below.

3-3 Factory Data

1. Calibration
2. Option Byte XXXX XXXX
3. W/B
4. W/B Movie
5. MTK8202
6. FBE2 option
7. Sound
8. YC Delay
9. Adjust
10. Bus Stop
11. Password 70 80 75 88
12. Checksum XXXX
13. Dynamic Contrast
14. Spread Spectrum
15. Reset

HDCP Write Success..(or Failure..)
T_JSMMPEU-1017 (Main Micom Ver) Month/ Day / Year / Hour/ Min./Sec.
Panel On Time(Hour) XXXXX

1. Calibration
   1) AV Calibration
   2) DTV Calibration
   3) PC Calibration
   4) HDMI Calibration

2. Option Byte

			26
		Vendor	
NO	**item**	**Code**	**BN07-00364A**
		SPEC	**V315B1-L01(5V,TN,72%)**
1	Panel Inch	23"/26"/27"/32"/37"/40"/46"	26"
2	Panel Vender	AMLCD_INT,AMLCD_EXT,AUO_EXT_P,AUO_ EXT_N,AUO_INT,CMO_EXT,CMO_INT	CMO_INT
3	Panel Type	32CMO,40AUO,37CPT,46AMLCD,26CMOTN,26AUO, 23AUOTN,32AMLCD,40AMLCD,32CPT,32AUO,37AUO, 32CMO,40AUO,37CPT,46AMLCD,26CMOTN,26AUO, 23AUOTN,32AMLCD,40AMLCD,32CPT,32AUO,37AUO,	26CMOTN
4	Gamma	off, 0.85, 0.90, 0.92, 0.94, 0.98, 1.07, 1.10, S1, S2, S3, S4, S5, S6, S7	off
5	Auto Power	Off<->On	On
6	Hotel Mode	Off<->On	Off
7	Shop Mode	Off<->On	Off
8	High Devi	Off<->On	Off
9	Carrier Mute	Off<->On	Off
10	TTX	Off<->On	On
11	TTX List	Flof, List	Flof
12	TTX Group	UserOSD, WestEurope, EastEurope, Russian ,Greek, Turkey, Arab/Hbrw, Farsian Arablic	UserOSD
13	TTX ATM	off<->on	Off
14	Side Jack	off<->on	On
15	Volume Table	Small, Large	Small
16	Sound Wattage	LCD 10W, PDP 10W, PDP 15W	LCD 10W
17	HP Position	Side Rear	Side
18	Language	English, Germany, French, Italian, Swedish, Spain, Netherlands, Portuguese, Greek, Czech, Serbian, Croatian, Romanian, Hungarian, Polish, Russian, Bulgarian, Turkish, Norwgian, Danish, Finnish	English
19	HP Detect	Active High, Active Low	Active High
20	PC Ident	Off<->On	On
21	WM Calib	Off<->On	Off
22	Uart Select	Normal<->Debug/DL	Debug/DL
23	Sub MCU PW Down	Off<->On	Off
24	Sub MCU Use	Off<->On	Off

	32	32	32
	CMO	AUO V9	AMLCD VE
item	BN07-00348A	BN07-00421A	BN07-00453A
	V315B1-L01(5V,SMVA72%)	T315XW02(V9), 8bit, 5V	5V,SMVA 72%,
Panel Inch	32"	32"	32"
Panel Vender	CMO_INT	AUO_INT	AMLCD_INT
Panel Type	32CMO	32AUO	32AMLCDV
Gamma	off	off	0.9
Auto Power	On	On	On
Hotel Mode	Off	Off	Off
Shop Mode	Off	Off	Off
High Devi	Off	Off	Off
Carrier Mute	Off	Off	Off
TTX	On	On	On
TTX List	Flof	Flof	Flof
TTX Group	UserOSD	UserOSD	UserOSD
TTX ATM	Off	Off	Off
Side Jack	On	On	On
Volume Table	Small	Small	Small
Sound Wattage	LCD 10W	LCD 10W	LCD 10W
HP Position	Side	Side	Side
Language	English	English	English
HP Detect	Active High	Active High	Active High
PC Ident	On	On	On
WM Calib	Off	Off	Off
Uart Select	Debug/DL	Debug/DL	Debug/DL
Sub MCU PW Down	Off	Off	Off
Sub MCU Use	Off	Off	Off

	37	37
	CPT	AUO
item	BN07-00366A	BN07-00393A
	CLAA370WA03(5V,MVA,72%)	T370XW02(12V,AMVA 72%)
Panel Inch	37"	37"
Panel Vender	CPT_INT	AUO_EXT_P
Panel Type	37 CPT	37 AUO
Gamma	off	off
Auto Power	On	On
Hotel Mode	Off	Off
Shop Mode	Off	Off
High Devi	Off	Off
Carrier Mute	Off	Off
TTX	On	On
TTX List	Flof	Flof
TTX Group	UserOSD	UserOSD
TTX ATM	Off	Off
Side Jack	On	On
Volume Table	Small	Small
Sound Wattage	LCD 10W	LCD 10W
HP Position	Side	Side
Language	English	English
HP Detect	Active High	Active High
PC Ident	On	On
WM Calib	Off	Off
Uart Select	Debug/DL	Debug/DL
Sub MCU PW Down	Off	Off
Sub MCU Use	Off	Off

40	40	40	40
AUO	AMLCD	AMLCD VE	AUO VE
BN07-00370A	BN07-00387A	BN07-00451A	BN07-00448A
T400XW02(5V,AMVA,72%)	LTA400WT-L06(12V,SPVA 72%)	12V,SMVA 72%,	5V,SMVA 72%,
40"	40"	40"	40"
AUO_INT	AMLCD INT	AMLCD INT	AUO_INT
40AUO	40 AMLCD	40 AMLCDV	40 AUO
off	off	0.9	0.92
On	On	On	On
Off	Off	Off	Off
Off	Off	Off	Off
Off	Off	Off	Off
Off	Off	Off	Off
On	On	On	On
Flof	Flof	Flof	Flof
UserOSD	UserOSD	UserOSD	UserOSD
Off	Off	Off	Off
On	On	On	On
Small	Small	Small	Small
LCD 10W	LCD 10W	LCD 10W	LCD 10W
Side	Side	Side	Side
English	English	English	English
Active High	Active High	Active High	Active High
On	On	On	On
Off	Off	Off	Off
Debug/DL	Debug/DL	Debug/DL	Debug/DL
Off	Off	Off	Off
Off	Off	Off	Off

	46	46
	AMLCD	AMLCD VE
item	BN07-00389A	BN07-00452A
	LTA460WT-L11(12V,SPVA72%)	LTA460WT-L12(12V,SMVA,72%)
Panel Inch	46"	46"
Panel Vender	AMLCD_INT	AMLCD_INT
Panel Type	46AMLCD	46AMLCDV
Gamma	off	0.9
Auto Power	On	On
Hotel Mode	Off	Off
Shop Mode	Off	Off
High Devi	Off	Off
Carrier Mute	Off	Off
TTX	On	On
TTX List	Flof	Flof
TTX Group	UserOSD	UserOSD
TTX ATM	Off	Off
Side Jack	On	On
Volume Table	Small	Small
Sound Wattage	LCD 10W	LCD 10W
HP Position	Side	Side
Language	English	English
HP Detect	Active High	Active High
PC Ident	On	On
WM Calib	Off	Off
Uart Select	Debug/DL	Debug/DL
Sub MCU PW Down	Off	Off
Sub MCU Use	Off	Off

3. White Balance

No	item	RF/AV	HDMI
1	SubBright	128	
2	Roffset	128	
3	Goffset	128	
4	Boffset	130	
5	SubContrast	145	
6	RGain	120	
7	GGain	128	
8	BGain	146	

4. W/B Movie

NO	item	RF/AV/S_video
1	W/B MOVIEOn/Off	Off
2	Service P Mode	Movie
3	Service Color Tone	Warm2
4	MSub Brightness	128
5	MSub Contrast	128
6	Warm1 Red Gain	166
7	Warm1 Blue Gain	54
8	Warm1 Red Offset	128
9	Warm1 Blue Offset	126
10	Warm2 Red Gain	171
11	Warm2 Blue Gain	36
12	Warm2 Red Offset	127
13	Warm2 Blue Offset	129
14	Normal Red Gain	137
15	Normal Blue Gain	91
16	Normal Red Offset	129
17	Normal Blue Offset	127
18	Cool2 Red Gain	114
19	Cool2 Blue Gain	146
20	Cool2 Red Offset	128
21	Cool2 Blue Offset	127
22	Mov. Contrast	80
23	Mov. Brightness	45
24	Mov. Color	55
25	Mov. Sharpness	45

5. MTK8202

1) Cal. Adjustment

NO	item	value
1	R_Offset	30
2	G_Offset	32
3	B_Offset	23
4	R_Gain	77
5	G_Gain	85
6	B_Gain	89
7	Y_Offset	21
8	Cb_Offset	39
9	Cr_Offset	41
10	Y_Gain	41
11	Cb_Gain	41
12	Cr_Gain	41
13	CVBS Offset	55
14	CVBS Gain	52
15	CVBS U	0
16	CVBS V	0
17	HDMI R_Gain Ref.	229
18	HDMI G_Gain Ref.	229
19	HDMI B_Gain Ref.	229
20	HDMI R_Offset Ref.	16
21	HDMI G_Offset Ref.	16
22	HDMI B_Offset Ref.	16
23	2nd Cal Error AV	2
24	2nd Cal Error DTV	2
25	LVDS Control	55

2) Cal. Target

NO	item	value
1	Black Target	1
2	White Target	235

3) Scart RGB

NO	item	ALL Mode
1	SC1_R_Offset	115
2	SC1_G_Offset	115
3	SC1_B_Offset	115
4	SC1_R_Gain	70
5	SC1_G_Gain	70
6	SC1_B_Gain	70

4) Picture enhance 1

NO	item	value
1	Dynamic Contrast	on
2	Dynamic CE	on
3	Dynamic Dimming	on
4	Black_Min	14
5	Black_Middle	26
6	Black_Max	36
7	Cut Off	4
8	Upper	28
9	Center L Lmt	6
10	Center R Lmt	26
11	Ugain Max	16
12	Lgain Max	8

5) Picture enhance 2

NO	item	value
1	PreLGain_Main	64
2	PreMGain_Main	64
3	PreHGain_Main	64
4	PreLGain_Sub	64
5	PreMGain_Sub	64
6	PreHGain_Sub	64
7	LocalLGain	72
8	LocalMGain	80
9	LocalHGain	64
10	PostLGain	72
11	PostMGain	72
12	PostHGain	84
13	Vgain	0
14	Sub Color	28

6) FBE2 option

NO	item	value
1	Patt-Sel	0
2	B-Slope gain	64
3	B-Tilt min	20
4	B-Tilt max	120
5	B-Tilt slpe	128
6	Lfunc-Basis	75
7	Hfunc-Basis	88
8	Mean-Offset1	75
9	Mean-Offset2	150
10	Mean-Slope	41
11	Input-Offset	128
12	Input-gain	128
13	ACR-Offset	30
14	ACR-Th1	30
15	ACR-Th2	100
16	Skin-Enable	On
17	Skin-Tu	22
18	Skin-Tv	22
19	M-Skin-Tu	128
20	M-Skin-Tv	128
21	Sub color	143
22	M-Au-Sub color	128
23	M-Wi-Sub color	128

7) Sound

NO	item	value
1	AM_mute Th_High	9
2	AM_mute Th_Low	8
3	FM Mute	Off
4	FM_mute Th_High	34
5	FM_mute Th_Low	32
6	Correct Threshold	6
7	Sync Loop	201
8	Error Threshold	8
9	Parity Error Thrd	48
10	Every Num Frames	512
11	Num of Check	10
12	Num of Double Chk	10
13	Mono Weight	1
14	Stereo Weight	1
15	Dual Weight	1
16	M2S Threshold	10
17	S2M Threshold	10
18	NICAM FINE VOL	20
19	FM FINE VOL	20
20	AM FINE VOL	19
21	FINE TUNE VOL	20
22	SC1 Fine Vol	21
23	SC2 Fine Vol	21
24	Output Matrix	Bypass
25	Speaker EQ	Off

8) YC Delay

NO	item	TV/AV/S_Video
1	RF PAL-B/G	6
2	RF PAL-D/K	5
3	RF PAL- I	5
4	RF PAL- L/L'	5
5	RF SECAM-B/G	7
6	RF SECAM-D/K	5
7	RF SECAM-I	5
8	RF SECAM-L/L'	5
9	RF NTSC3.58	5
10	RF NTSC4.43	6
11	AV PAL	3
12	AV SECAM	7
13	AV NTSC 3.58	6
14	AV NTSC4.43	6
15	AV PAL60	5

9. Adjust

1) User Control Initial

NO	item	value
1	TTX PWM	30
2	Dyn. Contrast	100
3	Dyn. Brightness	45
4	Dyn. Color	55
5	Dyn. Sharpness	75
6	Std. Contrast	80
7	Std. Brightness	50
8	Std. Color	55
9	Std. Sharpness	50
10	Melody Volume	20
11	Brightness Center	38
12	Contrast Gain	64
13	MTK_Dyn.Contrast	On
14	DSP Recovery	Off
15	Channel Table	Suwon
16	Video Mute Time	10

2) LNA PLUS

NO	item	value
1	LNA Plus	On
2	RF_dB0_TH	5
3	RF_dB1_TH	15
4	RF_dB2_TH	43
5	RF_dB3_TH	64
6	NR1_Coring	16
7	NR2_Coring	32
8	NR3_Coring	32
9	NR4_Coring	32

3) Hotel Option

NO	item	value
1	Power On Channel	1
2	Power On Band	Air
3	Power On Volume	10
4	Max Volume	100
5	Local Key Lock	OFF
6	Power On Source	TV

4) HDMI

NO	item	value
1	Hot Plug	On
2	Clock Control	On
3	Hot Plug Dly	9

5) ????

10. Bus Stop

NO	item	value
1	Main Loop	Off
2	Eeprom	Off
3	Tuner	Off
4	Normal	Off
5	Watch Dog	On

11. Password : 70 80 75 88

12. Dynamic Contrast

NO	item	value
1	Dynamic CE	On
2	Dynamic Dimming	On
3	FBE2 Y_MEAN Read	50

13. Spread Spectrum

NO	input resolution	value
1	Spread Spectrum	On
2	Step_480I/576I	40
3	Range_480I/576I	50
4	Step_480P/576P	30
5	Range_480P/576P	50
6	Step_720P	30
7	Range_720P	45
8	Step_1080I	30
9	Range_1080I	45
10	Step_640_480	40
11	Range_640_480	50
12	Step_800_600	40
13	Range_800_600	55
14	Step_1024_768	40
15	Range_1024_768	55
16	Step_1360_768	40
17	Range_1360_768	55

14. Checksum XXXX

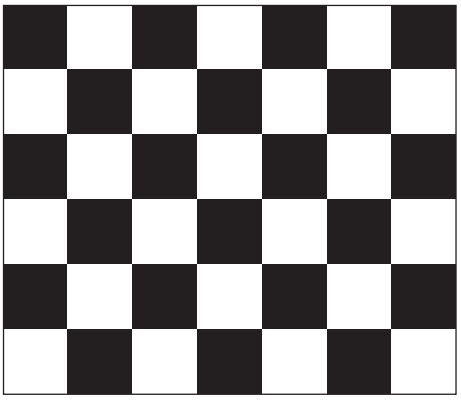
15. Reset

3-4 Service Adjustment

3-4-1 White Balance - Calibration

If picture color is wrong, do calibration first.

Equipment : CA210, Patten : chess pattern
Execute calibration in Factory Mode
Source AV : PAL composite, DTV : 1280*720/60Hz
PC : 1024*768/60Hz, HDMI : 1280*720/60Hz



(chess patten)

3-4-2 White Balance - Adjustment

If picture color is wrong, check White Balance condition.

Equipment : CA210, Patten : Flat W/B Pattern
Adjust W/B in Factory Mode

Sub brightness and R/G/B Offset controls low light region
Sub contrast and R/G/B Gain controls high light region
Source AV : PAL composite, Component : 1280*720/60Hz
HDMI[DVI] : 1280*720/60Hz

Flat W/B Pattern

[Test Pattern : MSPG-945 Series Pattern]

*Color temperature
1500K +/-500, -6 ~-20 MPCD

*Color coordinate
H/L : 272/278 +/- 2 35.0 Ft +/- 2.0Ft
L/L : 272/278 +/- 3 3.5 Ft +/- 0.2Ft

3-4-3 Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)
   - INPUT SIGNAL GENERATOR : MSPG-925LTH
     * Mode NO 2 : 744X484@60 Hz
       NO 6 : 1280X720@60 Hz
       NO 21 : 1024X768@60 Hz
     * Pattern NO 36 : 16 Color Pattern
       NO 92 : Flat W/B ABL Pattern
2. Optical measuring device : CA210 (FL)
   Please use the MSPG-925 LTH generator for model LE26/32/37/40/46S81BX.

3-4-4 Method of Adjustment

1. Adjust the white balance of AV, Component and DVI Modes.

   (AV ⟶ Component)

   a) Set the input to the mode in which the adjustment will be made
   (RF ⟶ DTV ⟶ PC ⟶ DVI).

   * Input signal - VIDEO Mode : Model #2 (744*484 Mode), Pattern #92
   - DTV,DVI Mode : Model #6 (1280*720 Mode), Pattern #92
   - HDMI Mode: Model #6(1280*720 Mode), Pattern #92

   b) Enter factory color control, confirm the data.

   c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
   - Adjust sub - Brightness to set the 'Y' value.
   - Adjust red offset ('x') and blue offset ('y') to the color coordinates.

Picture 4-2 Flat W/B ABL Pattern

   * Do not adjust green offset data.

   d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
   - Adjust red gain ('x') and blue gain ('y') to the color coordinates.
   * Do not adjust the green gain and sub-contrast (Y) data.

d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)

- Adjust red gain ('x') and blue gain ('y') to the color coordinates.

* Do not adjust the green gain and sub-contrast (Y) data.

Picture 4-3 Toshiba ABL Pattern

3-5 Software Upgrade

3-5-1 How to Update Flash ROM

1. Installthe Flash Downloader
   ConnectSet(Service Jack)and Jig Cable to execute Program Update.

2. Flash Downloader program update
   -Before Turning on the set,Click "connect"which is under of OSD Screen!
   -Turn on the Set.