
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 against 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



- If you have Factory remote - control



- 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 LE26,32R7**, 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) : BN07-00289A
Connector between Panel and Power Unit
: BN39-00603M (300mm)

* 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) : BN07-00247A
Connector between Panel and Power Unit
: BN39-00603M (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) : BN07-00207A
Connecotor between Panel and Powe Unit :
BN39-00659A(200mm)

* Option Byte

1. Gamma " CMO "
2. Panel Option " CMO "

Others are same shown below.

3-3_01 Factory Data (SVP-PX)

1. Calibration
 2. Option Table XXXX XXXX
 3. White Balance
 4. SVP-FX
 5. Option Block
 6. STV8257/STA323W
 7. YC Delay
 8. Adjust
 9. I2C Check
 10. W/B MOVIE
 11. Checksum
 12. Reset
 13. Spread Spectrum
 T-MILMPEU-1006 (Main Micom Ver)
 T-MILMPEUS-1002 (Sub Micom Ver)
 Month / Day / Year / Hour / Min. / Sec.

1. Calibration
- 1) AV Calibration
 - 2) DTV Calibration
 - 3) PC Calibration

2. Option Table XXXX XXXX

Inch Option	32"	Carrier Mute	ON	TTX Group	Auto
Gamma	OFF	Language	English	Auto Power	ON
Panel Option	AMLCD_INT	Auto FM	ON	----	OFF
2HDMI	OFF	High Deviation	OFF	----	G
Brt.Sensor	OFF	TTX	ON	----	OFF
EnergySave	ON	TTX List	ON	Debug	OFF
LBE/FBE	OFF	ACR	OFF	Ch.Table	SUWON
FRC(Micronas)	OFF	Dynamic CE	ON	iDTV_Cntry	UK
FRC(Samsung)	OFF	Dynamic Dimming	ON	Dynamic Contrast	OFF
LNA	OFF	Tuner TOP	10		

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3. White Balance

No	Item	Range	TV/AV	Component	PC	DVI(HDMI)
1	Sub-Brightness	0~255	80	115	128	140
2	R-offset	0~255	120	130	128	129
3	G-offset	0~255	128	128	128	128
4	B-offset	0~255	113	128	128	128
5	Sub-Contrast	0~63	36	32	32	28
6	R-Gain	0~255	140	129	128	130
7	G-Gain	0~255	128	128	128	128
8	B-Gain	0~255	150	129	128	120

4. SVP-EX

1) Comb Filter

No	Item	Range	EEPROM	NTSC	PAL	SECAM		Control IC	Remark
1	Y-Filter	0~255		80h					X

2) Peaking

No	Item	Range	EEPROM	TV	AV	Component		Control IC	Remark
1	Y-Peaking	0~255		80h					X
2	Peaking Delay	0~255		80h					X
3	Peaking Gain	0~255		80h					X
4	Peaking Width	0~255		80h					X
5	Peaking f0	0~255		80h					X

3) NR

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC		Control IC	Remark
1	Y-NR-Off	0~255		80h					X
2	C-NR-Off	0~255		80h					X
3	Y-NR-ON	0~255		80h					X
4	C-NR-ON	0~255		80h					X

4) DeInterlace

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC		Control IC	Remark
1	Monitor	0~255		80h					X

5) Picture Gain Adjust

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC	DVI/HDMI
1	TCD3 Contrast	0~255		AV Calibration(78h)	78h	78h	78h
2	TCD3 Brightness	0~255		AV Calibration(20h)	20h	20h	20h
3	TCD3 CR Saturation	0~255		78h	78h	78h	78h
4	TCD3 CB Saturation	0~255		78h	78h	78h	78h
5	TCD3 YC Delay	0~15		00h	00h	00h	00h
6	Analog Y offset	00~255		40h	3	40h	40h
7	Analog PB offset	00~255		80h	DTV Calibration(80h)	80h	80h
8	Analog PR offset	00~255		80h	DTV Calibration(80h)	80h	80h
9	Analog Y Gain	00~255		D6h	DTV Calibration(D6h)	D6h	D6h
10	Analog PB Gain	00~255		FEh	FEh	FEh	FEh
11	Analog PR Gain	00~255		FEh	FEh	FEh	FEh
12	Black Level Setting	00~255		00h			
13	Brightness (SVP)	0~255		00h			

5. MST9883

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC	DVI/HDMI
1	R-offset	00~255		151 (SC1 RGB)		PC Calibration(128)	
2	G-offset	00~255		151 (SC1 RGB)		PC Calibration(128)	
3	B-offset	00~255		151 (SC1 RGB)	X	PC Calibration(128)	X
4	R-Gain	00~255		123 (SC1 RGB)		PC Calibration(192)	
5	G-Gain	00~255		123 (SC1 RGB)		PC Calibration(192)	
6	B-Gain	00~255		123 (SC1 RGB)		PC Calibration(192)	

6. MSP34XX/44XX

No	Item	Range	EEPROM	PAL
1	FM-Prescale	00~255		20h
2	NT-M-Prescale	00~255		20h
3	SECAM-L-Prescale	00~255		22h
4	NICAM-Prescale	00~255		42h
5	AV-Prescale	00~255		1Ah
6	12S_1 Prescale	00~255		10h
7	12S_12 Prescale	00~255		10h
8	Carrier Mute	00~255		42h
9	Pilot High	00~255		14
10	Pilot Low	00~255		7

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7. YC Delay

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC	DVI/HDMI
1	RF PAL-B/G	00~255		77h	88h	88h	88h
2	RF PAL-D/K	00~255		88h			
3	PF PAL-I	00~255		66h			
4	RF SECAM-B/G	00~255		88h			
5	PF SECAM-D/K	00~255		77h			
6	RF SECAM-L/L'	00~255		88h			
7	RF NTSC 3.58	00~255		66h			
8	RF NTSC 4.43	00~255		CCh			
9	AV PAL	00~255		77h			
10	AV SECAM	00~255		BBh			
11	AV NTSC 3.58	00~255		66h			
12	AV NTSC 4.43	00~255		CCh			
13	AV PAL60	00~255		77h			

8. Adjust

No	Item	Range	EEPROM	TV/AV/S-Video	Component	PC	DVI/HDMI	Control IC	Remark
1	Video Mute Time			10					
2	Melody Volume	0~20		5					
	Ana_Dimm_Max			FEH					
3	TTX Contrast	0~100		50					
4	TTX Brightness	0~100		50					
5	TTX Color	0~100		50					
6	Dynamic Contrast	0~100		100					Dynamic Mode
7	Dynamic Brightness	0~100		50					
8	Dynamic Color	0~100		55					
9	Dynamic Sharpness	0~100		75					
10	Standard Contrast	0~100		80					Standard Mode
11	Standard Brightness	0~100		50					
12	Standard Color	0~100		50					
13	Standard Sharpness	0~100		50					
14	Movie Contrast	0~100		70					Movie Mode
15	Movie Brightness	0~100		50					
16	Movie Color	0~100		25					
17	Movie Sharpness	0~100		45					
No	Item	Range	EEPROM	TV/AV/S-Video	Component/PC/HDMI				
1	LNA PLUS				X		P4 CVD2 0x7F [07..00]		
2	RFDB_1 Level			1					
3	RFDB_2 Level			5					
4	RFDB_3 Level			10					
5	RFDB_4 Level			16					

9. 12C Check

10. Chip Debugger : OFF

11. Checksum XXXX XXXX

12. Reset

13. Spread Spectrum

1	Spectrum	ON
2	Delta	-3
3	Positive	8
4	Negative	2

3-3_02 Factory Data (MTK)

1. Calibration
2. Option Byte XX XX XX XX
3. W/B
4. W/B Movie
5. MTK8202
6. Sound
7. YC Delay
8. Adjust
9. Bus Stop
10. Password 80 80 80 80
11. Checksum 0000
12. Spread Spectrum
13. Reset

T_SNMMPEU-1000 (Main Micom Ver./iÄª) Month/ Day / Year / Hour/ Min./Sec.

Panel On Time(Hour) XXXXX

0 0

1. Calibration
 - 1) AV Calibration ----- Failure../Success.. ----- Master(MSPG-925F) : model #2, Pattern #24
 - 2) DTV Calibration ----- Failure../Success.. ----- Master(MSPG-925F) : model #6, Pattern #24
 - 3) PC Calibration ----- Failure../Success.. ----- Master(MSPG-925F) : model #21, Pattern #24
 - 4) HDMI Calibration ---- Failure../Success.. ----- Master(MSPG-925F) : model #6, Pattern #24

2. Option Byte

Panel Inch	37	V-Chip	Off
Panel Vender	CPT	Caption	Off
Dimming	ANA-P3	ID TV Mode	Off
Gamma	Off	ID TV Country	UK
Auto Power	On	Memory Type	ETRON
Hotel Mode	Off	Volume Table	Small
Shop Mode	Off		
Auto FM	Off		
High Devi	Off		
Carrier Mute	Off		
TTX	On		
TTX List	Flof		
TTX Group	User OSD		

3. White Balance

ITEM	RF/AV(Initial value)	Component(Initial value)	PC	HDMI(±âÄ¸ °a)
SubBright	128	128	138 (Fixed value)	128
Roffset	128	128	128 (Fixed value)	128
Goffset	128	128	128 (Fixed value)	128
Boffset	128	128	128 (Fixed value)	128
SubContrast	131	128	115 (Fixed value)	128
RGain	128	128	128 (Fixed value)	128
GGain	128	128	128 (Fixed value)	128
BGain	128	128	128 (Fixed value)	128

4. W/B Movie

Service P Mode	Dynamic	Cool1 Blue Offset	128
Service Color Tone	Cool1	Normal Red Gain	134
Mov. Contrast	80	Normal Blue Gain	121
Mov. Brightness	50	Normal Red Offset	127
Mov. Color	25	Normal Blue Offset	126
Mov. Sharpness	45	Warm1 Red Gain	143
Cool2 Red Gain	128	Warm1 Blue Gain	111
Cool2 Blue Gain	134	Warm1 Red Offset	128
Cool2 Red Offset	128	Warm1 Blue Offset	127
Cool2 Blue Offset	128	Warm2 Red Gain	142
Cool1 Red Gain	128	Warm2 Blue Gain	101
Cool1 Blue Gain	128	Warm2Red Offset	127
Cool1 Red Offset	128	Warm2 Blue Offset	128

5. MTK8202

1) Cal. Adjustment

R_Offset	41	CVBS Gain	50
G_Offset	23	CVBS U	0
B_Offset	28	CVBS V	0
R_Gain	92	HDMI R_Gain Ref.	229
G_Gain	96	HDMI G_Gain Ref.	229
B_Gain	92	HDMI B_Gain Ref.	229
Y_Offset	23	HDMI R_Offset Ref.	16
Cb_Offset	28	HDMI G_Offset Ref.	16
Cr_Offset	31	HDMI B_Offset Ref.	16
Y_Gain	43	LVDS control	55
Cb_Gain	43		
Cr_Gain	43		
CVBS Offset	50		

2) Cal. Target

AV_offset Target	15	PC_G_Offset Target	1
AV_offset Delta	1	PC_B_Offset Target	1
AV_Gain Target	220	PC_R_Offset Delta	0
AV_Gain Delta	2	PC_G_Offset Delta	0
Component_Y_Gain Target	234	PC_B_Offset Delta	0
Component_Y_Gain Delta	2	PC_R_Gain Target	254
Component_Y_Offset Target	15	PC_G_Gain Target	254
Component_Pb_Offset Target	128	PC_B_Gain Target	254
Component_Pr_Offset Target	127	PC_R_Gain Delta	0
Component_Y_Offset Delta	1	PC_G_Gain Delta	0
Component_Pb_Offset Delta	0	PC_B_Gain Delta	0
Component_Pr_Offset Delta	0		
PC_R_Offset Target	1		

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3) Scart RGB

SC1_R_Offset	112
SC1_G_Offset	112
SC1_B_Offset	112
SC1_R_Gain	80
SC1_G_Gain	80
SC1_B_Gain	80

4) Picture Enhance

Cut Off	2
Upper	29
Center L Lmt	8
Center R Lmt	24
Ugain Max	40
Lgain Max	40

6. Sound

AM Mute	Off	Num of Double Chk	30
AM_mute Th_High	176	Mono Weight	1
AM_mute Th_Low	144	Stereo Weight	1
FM_mute Th_High	34	Dual Weight	1
FM_mute Th_Low	32	M2S Threshold	10
Carrier Shift	Off	S2M Threshold	10
Saturation Mute	Off	NICAM FINE VOL	20
Correct Threshold	6	FM FINE VOL	20
Sync Loop	201	AM FINE VOL	20
Error Threshold	8	FINE TUNE VOL	20
Parity Error Thrd	48		
Every Num Frames	512		
Num of Check	10		

7. YC Delay

RF PAL-B/G	10	AV NTSC4.43	10
RF PAL-D/K	10	AV PAL60	10
RF PAL- I	10		
RF PAL- L/L'	10		
RF SECAM-B/G	10		
RF SECAM-D/K	10		
RF SECAM-I	10		
RF SECAM-L/L'	10		
RF NTSC3.58	10		
RF NTSC4.43	10		
AV PAL	10		
AV SECAM	10		
AV NTSC 3.58	10		

8. Adjust

1) User Control Initial

TTX PWM	25	N_Dyn.Contrast	Off
Dyn. Contrast	100	Dynamic CE	Off
Dyn. Brightness	45	Dynamic Dimming	Off
Dyn. Color	55	Channel Table	Suwon
Dyn. Sharpness	75	Video Mute Time	5
Std. Contrast	80	Language	English
Std. Brightness	50		
Std. Color	55		
Std. Sharpness	50		
Melody Volume	10		
Sub Color	50		
Contrast Gain	64		
Dynamic Contrast	Off		

2) LNA PLUS

RF_Db-1	0
RF_Db-2	0
RF_Db-3	0

3) Hotel Option

Power On Channel	1
Power On Band	0
Power On Volume	10
Max Volume	100
Local Key Lock	OFF
Power On Source	Auto

4) HDCP Write

9. Bus Stop

Main Loop	Off
Eeprom	Off
Tuner	Off
Normal	Off
Watch Dog	On

10. Password : 80 80 80 80

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11. Checksum XXXX

12. Spread Spectrum

Spread Spectrum	On	Step_1024_768	90
Step_480I/576I	90	Range_1024_768	43
Range_480I/576I	32	Step_1360_768	90
Step_480P/576P	112	Range_1360_768	43
Range_480P/576P	41		
Step_720P	90		
Range_720P	32		
Step_1080I	90		
Range_1080I	32		
Step_640_480	90		
Range_640_480	43		
Step_800_600	90		
Range_800_600	43		

13. Reset

3-4 Service Adjustment

3-4-1 White Balance - Calibration

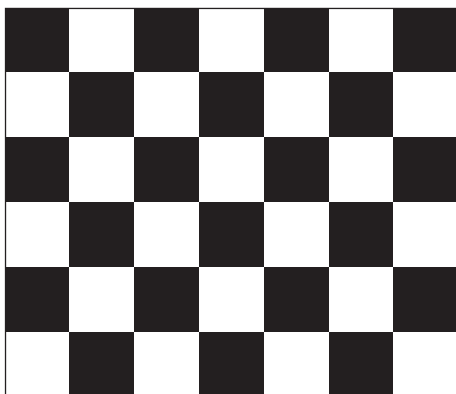
If picture color is wrong, do calibration first.

Equipment : CA210, Patten : chess pattern

Execute calibration in Factory Mode

Source AV : PAL composite, Component : 1280*720/60Hz

PC : 1024*768/60Hz



(chess patten)

3-4-2 White Balance - Adjustment

If picture color is wrong, check White Balance condition.

Equipment : CA210, Patten : Toshiba

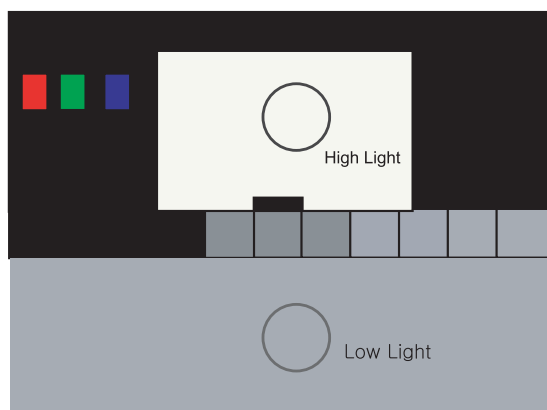
Adjust W/B in Factory Mode

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



[Test Pattern : MSPG-945 Series Pattern #16]

*Color temperature

1500K +/-500, -6 ~-20 MPCD

*Color coordinate

H/L : 267/263 +/- 2 35.0 Ft +/- 2.0Ft

L/L : 270/260 +/- 3 1.5 Ft +/- 0.2Ft

Toshiba Patten

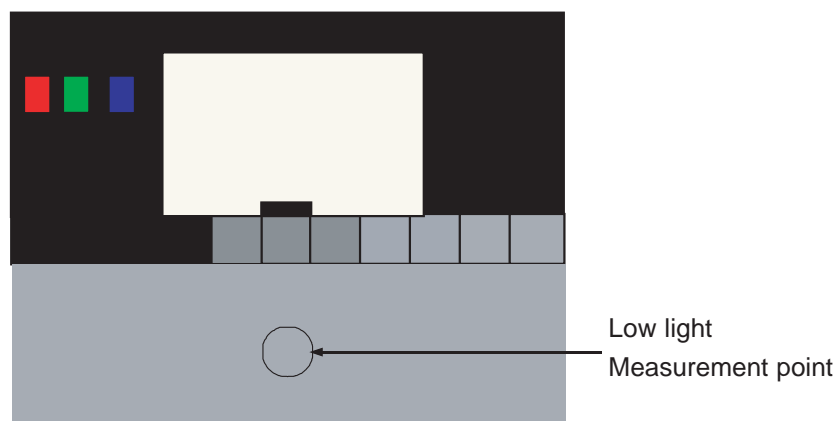
3-4-3 Conditions for Measurement

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 16 : Toshiba ABL Pattern
2. Optical measuring device : CA210 (FL)
Please use the MSPG-925 LTH generator for model LE26M51B/LE32M51B/LE40M51B/LE46M51B.

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 #16
 - DTV,DVI Mode : Model #6 (1280*720 Mode), Pattern #16
 - HDMI Mode: Model #6(1280*720 Mode), Pattern #16
- 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.

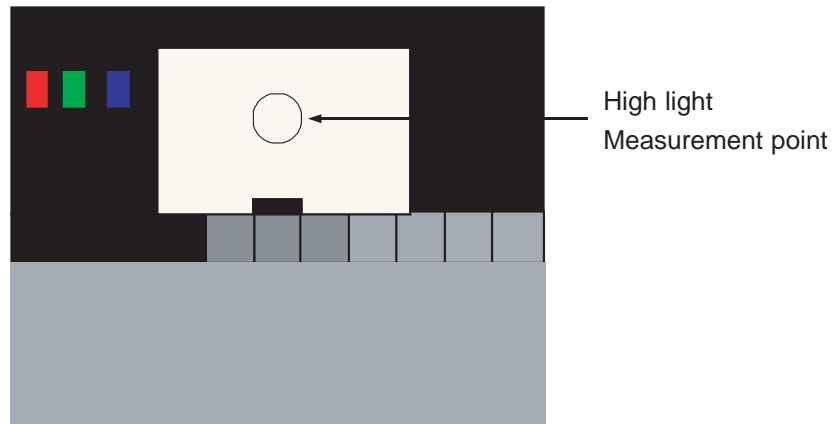
Picture 4-2 Toshiba ABL Pattern



- * 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. Install the Flash Downloader

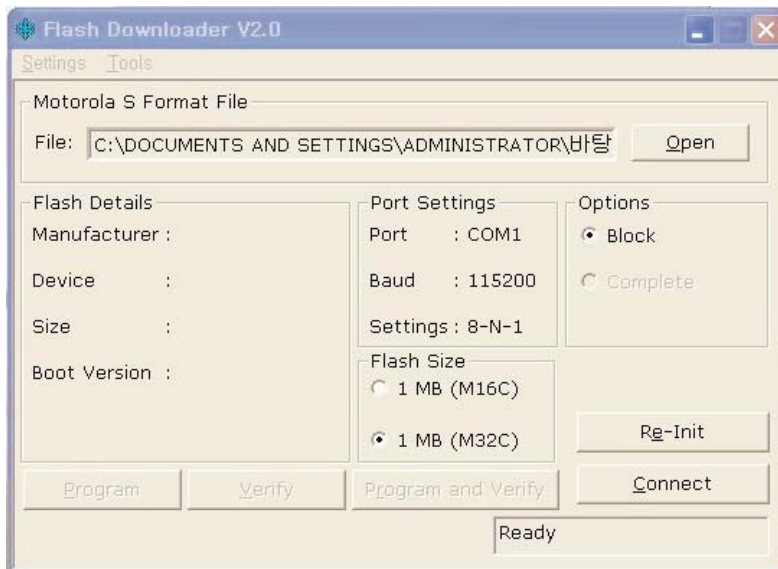
Connect Set (Service Jack) and Jig Cable to execute Program Update.



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2. Flash Downloader program update (SVP-PX)

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



3. Flash Downloader program update (MTK)

- After Turning on the set, Click '1'(reset button) button two or more.
- Click 'Browse' button, and find micom file for update.
- Click 'Upgrade' button.
- Turn on the set.

