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## 3 Alignments and Adjustments

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### 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 Factory Data

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-BRDMPEA-1008 (Main Micom Ver)  
T-BRDMPEAS-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         | AUO     | Language        | English | Auto Power       | ON    |
| Panel Option  | AUO_MVA | Auto FM         | ON      | ----             | OFF   |
| 2HDMI         | OFF     | High Deviation  | OFF     | ----             | G     |
| Brт.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      |                  |       |

- Option Table setting for Panel maker & inch.

| Inch | Panel maker | Panel Spec    | code no     | Factory Option |       |              | W/B          |     |     |
|------|-------------|---------------|-------------|----------------|-------|--------------|--------------|-----|-----|
|      |             |               |             | Inch Option    | Gamma | Panel Option | Sub Contrast | X   | Y   |
| 26   | AUO(A)      | T260XW02      | BN07-00254A | 26             | AUO   | AUO          | 165          | 272 | 278 |
| 27   | CMO(C)      | V27B1-L01     | BN07-00136A | 27             | CMO   | CMO          | 160          | 272 | 278 |
| 32   | AUO(A)      | T315XW02      | BN07-00289A | 32             | AUO   | AUO_AMVA     | 155          | 272 | 278 |
|      |             | T315XW01 V5   | BN07-00253A | 32             | AUO   | AUO_MVA      | 155          | 272 | 278 |
|      | AMLCD(S)    | LTA3200WT-L11 | BN07-00247A | 32             | Off   | AMLCD_INT    | 135          | 272 | 278 |
| 37   | AUO(A)      | T370XW01      | BN07-00255A | 37             | AUO   | AUO          | 160          | 272 | 278 |
| 40   | AMLCD(S)    | LTA400WT-L01  | BN07-00264A | 40             | AMLCD | AMLCD_INT    | 155          | 272 | 278 |
| 40   | AUO         | T400XW02      | BN07-00370A | 40             | AUO   | AUO_INT      | 160          | 272 | 278 |

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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  |

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## 3-4 Service Adjustment

### 3-4-1 White Balance - Calibration

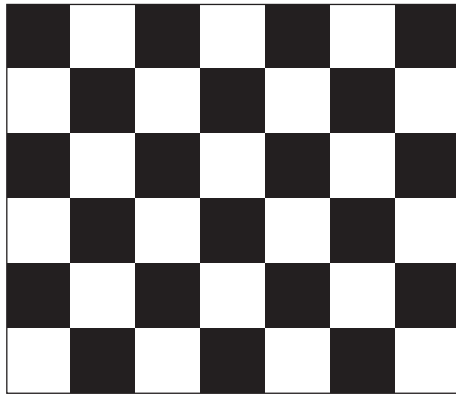
If picture color is wrong, do calibration first.

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

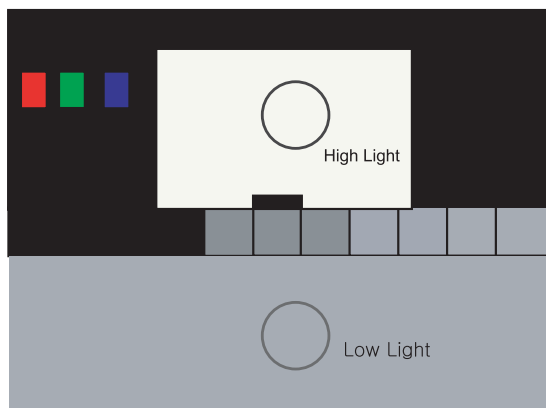
Adjust W/B in Factory Mode

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

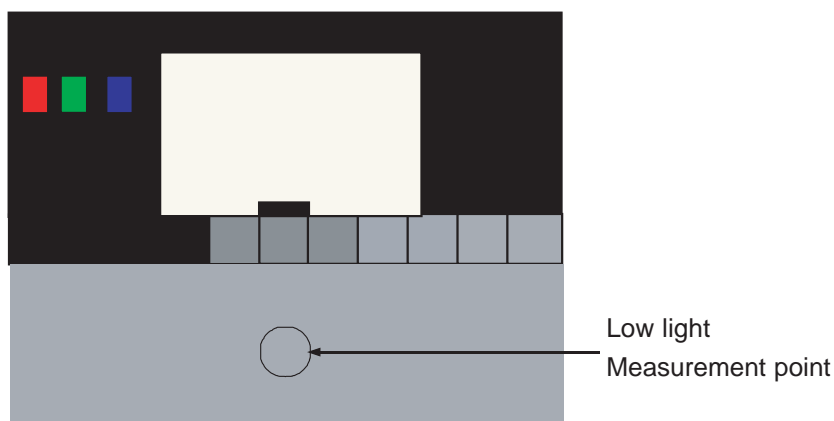
### 3-4-3 Conditions for Measurement

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

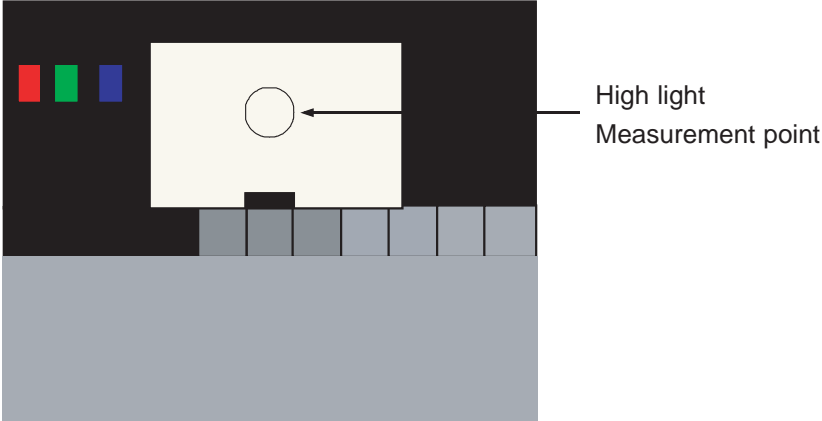


- \* Do not adjust green offset data.
- d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
  - Adjust red gain ('x') and blue gain ('y') to the color coordinates.
  - \* Do not adjust the green gain and sub-contrast (Y) data.

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- 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

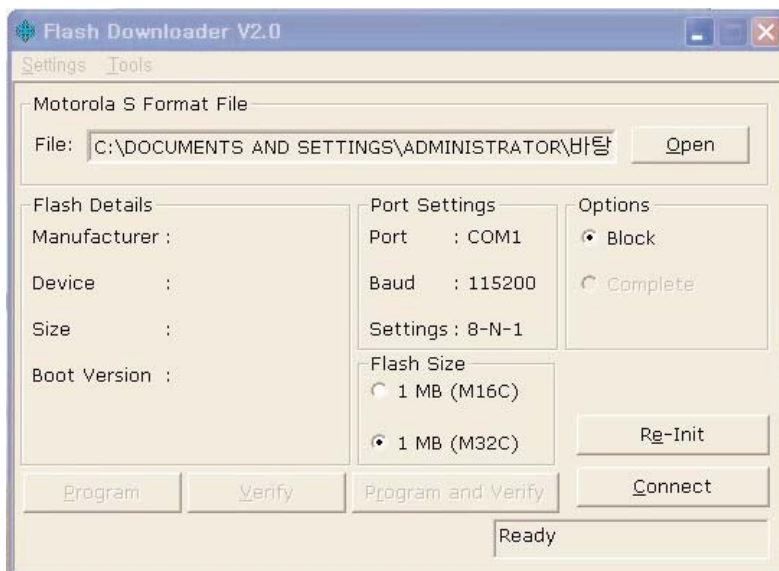
Connect Set (Service Jack) and Jig Cable to execute Program Update.



#### 2. Flash Downloader program update

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

-Turn on the Set.



# Memo