How to use the

Adjustment Remote Controller

SVC Mode Menus

EZ ADJUSTMENT MENUS

1. You need an LG ADJUST Remote P/N 105-201M (new Service remote MKJ39170828)
2. Press: “ADJ”
3. Default password to enter the SVC menu: “0413” (or else try: “0000”)

LG ADJUST REMOCON 105-201M

EZ ADJUST

The EZ-ADJUST menu displays up to 18 sub-menus for the engineer to check and adjust final TV settings. Please note that we show only the LCD related items and that the ADJ menus may be different per each model.

EZ ADJUST

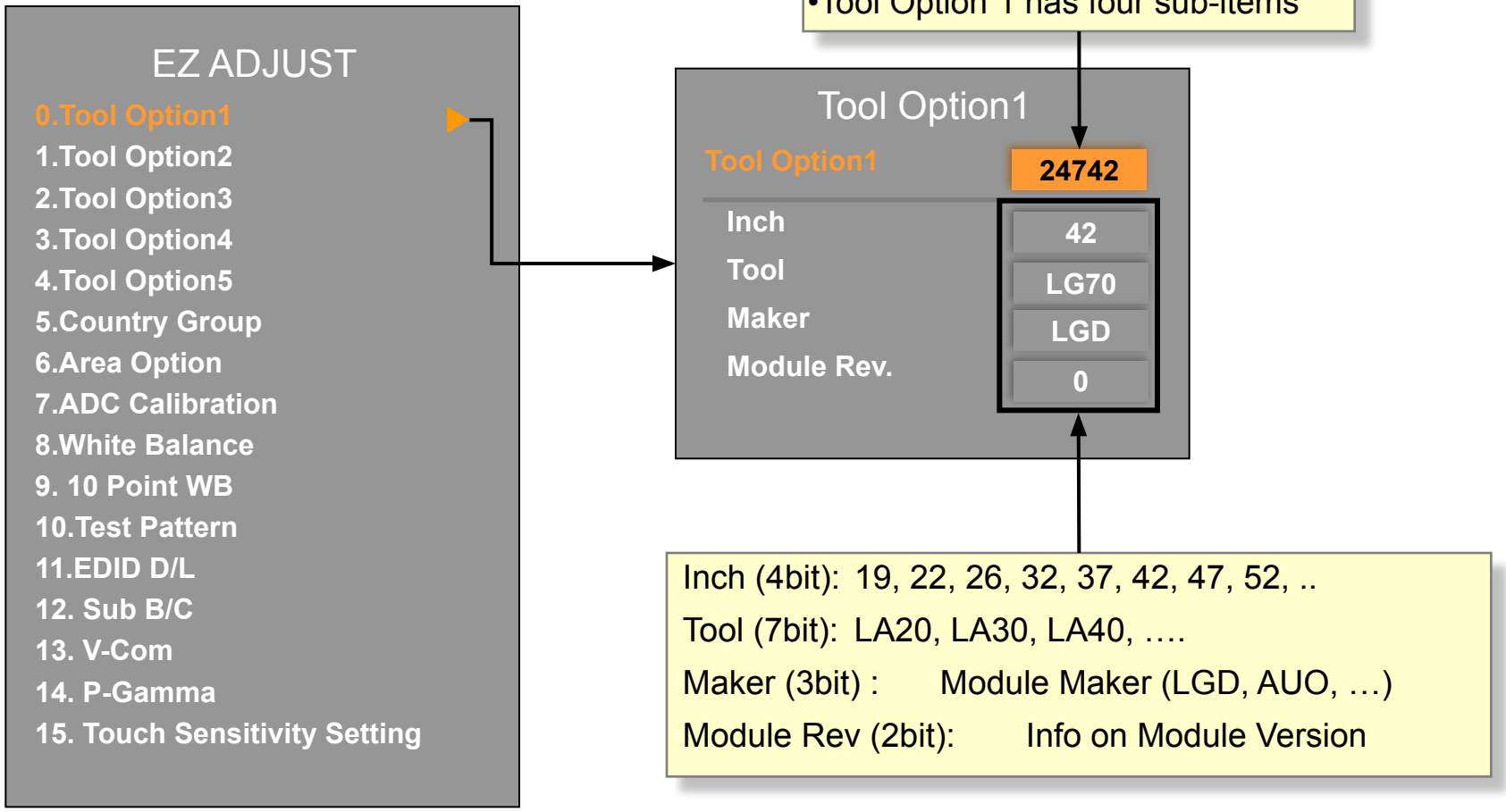
0.Tool Option1
1.Tool Option2
2.Tool Option3
3.Tool Option4
4.Tool Option5
5.Country Group
6.Area Option → Analog only*
7.ADC Calibration
8.White Balance
9. 10 Point WB
10.Test Pattern
11.EDID D/L
12. Sub B/C
13. V-Com
14. P-Gamma
15. ACAP PING Test → Korea only*
16. Module Control
17. Temperature Threshold → PDP models only*
18. Touch Sensitivity Setting

** We will not show these items any more after this slide.*

Tool Option1

The SVC Tool Option 1 menu displays a number of items that generally describe the TV model:

- A number of five digits
- Tool Option 1 has four sub-items

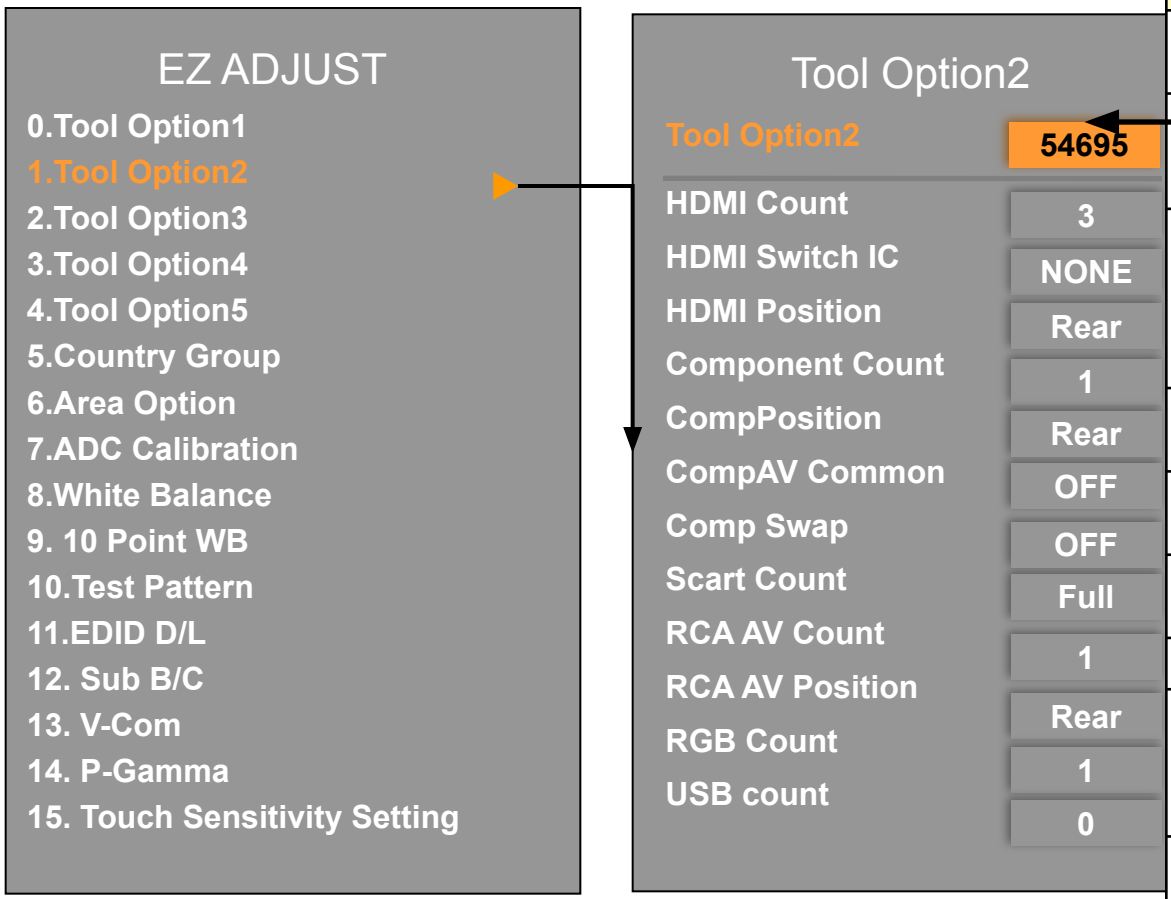


You can return to the EZ ADJUST main menu by pressing the ADJ button

Tool Option2

The SVC Tool Option 2 menu displays the input and output jacks and their location.

- A number of five digits
- Tool Option 2 has a number of sub-items

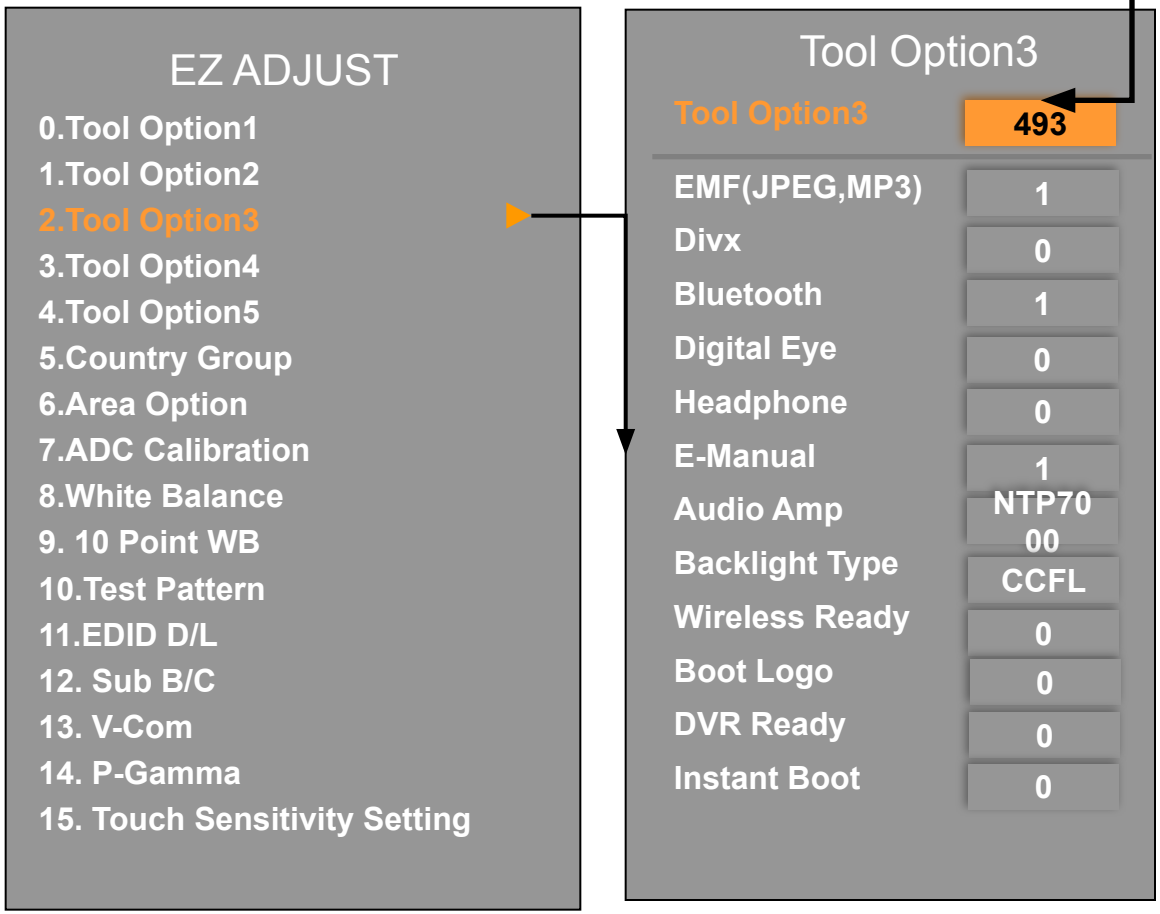


Tool Option	bits	Range	Remark (UI display)
HDMI Count	2	0/1/2/3	HDMI input number. Minimum 1 unit 1:1 EA 2:2EA 3:3EA 4:4EA
HDMI Switch IC	1	0/1/2/3/4	Type of HDMI Switch IC. 0:None 1:GPIO 2:PS 3:TDA 4: SI
HDMI Position	1	Rear/ Side	HDMI Position (Rear/Side) HDMI 1 : rear or side HDMI 2 : rear or side HDMI 3 : rear or side HDMI 4: always on side
Component Count	2	0/1/2/3	Number of Component inputs
Comp Position	1	0/1	Jack position (Rear/Side) in case of 1 Component input
Comp AV Common	1	OFF/ON	Component/AV jack or not (Component 2 only)
Comp Swap	1	OFF/ON	Component 1, 2 : Swap classification
SCART Count	1	None/ Full/	SCART input No.. AV1,2,3 input name are assigned the SCART prior to RCA AV. (None : Full)
RCA AV Count	2	0/1/2/3	Number of RCA input jacks except for SCART
RCA AV Position	1	Rear/ Side	AV Jack position (Rear/Side)
RGB Count	1	0/1	Number of RGB inputs
USB Count	1	1/2	Number of USB ports

Tool Option3

The SVC Tool Option 3 menu displays a number of capabilities of the TV.

- A number of three digits
- Tool Option 3 has a number of sub-items

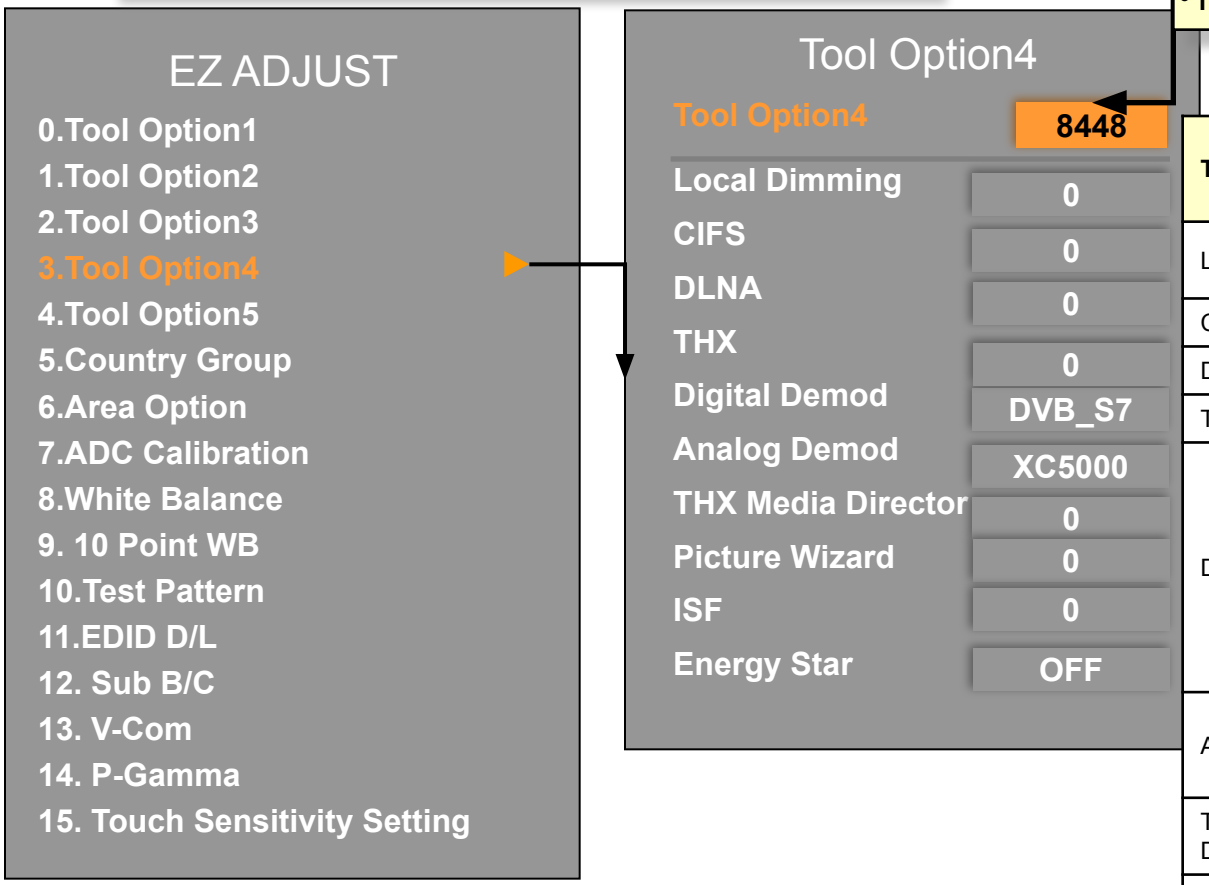


Tool Option	bits	Range	Remark(UI display)
EMF (JPEG,MP3)	1	0/1	EMF(JPEG,MP3) function support 0: no 1: yes
Divx	1	0/1	Divx function support
Bluetooth	1	0/1	Bluetooth function support
Digital Eye	1	0/1	Digital Eye function support
Headphone	1	0/1	Headphone function support
E-Manual	1	0/1	E-manual function support
Audio Amp	3	0/1/2	Type of Audio Amp IC 0:NTP7000 1:TAS5713 2:NTP3AMP, 3 :TAS3AMP, 4: NTP2AMP
Backlight Type	3	0/1/2	Backlight type 0:CCFL 1:NOR_LED 2:EDG_LED, 3: IOP_LED
Wireless Ready	1	0/1	Wireless Ready function support
Boot Logo	1	0/1	Boot logo function support
DVR Ready	1	0/1	DVR Ready function support
Instant Boot	1	0/1	Instant Boot function support

Tool Option4

The SVC Tool Option 4 menu displays more capabilities of the TV.

- A number of four digits
- Tool Option 4 has a number of sub-items

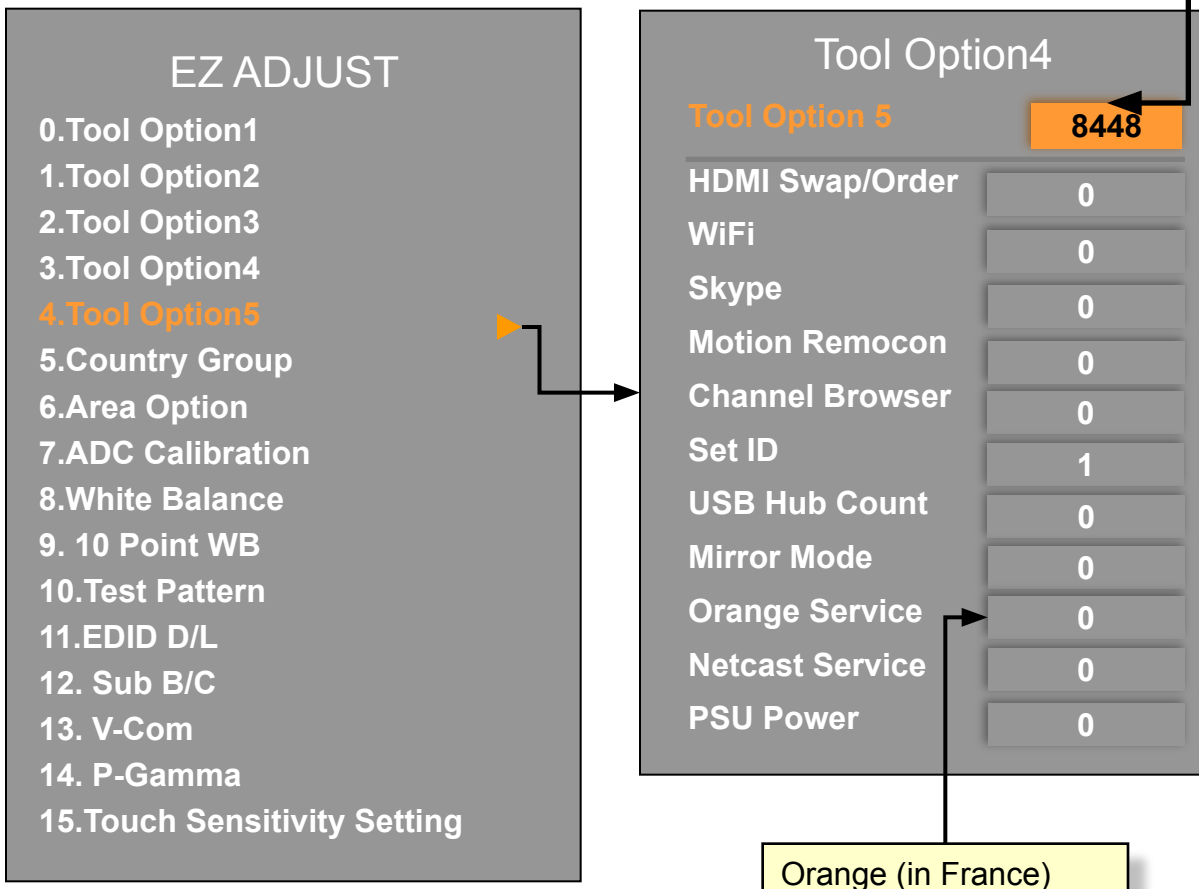


Tool Option	bits	Range	Remark(UI display)
Local Dimming	1	0/1	Local Dimming function support 0: no, 1: yes
CIFS	1	0/1	CIFS function support
DLNA	1	0/1	DLNA function support
THX	1	0/1	THX function support
Digital Demod	5	0/1/2/3/4/. .	Type of Digital Demodulator 0:Default,1:AT_S7, 2:AT_BCM, 3:AT_LGDT3305, 4:BR_MN884433, 5: BR_TC90517, 6:CN_LGDT3900, 7: CN_LGDT3911, 8:CN_LGS8G85, 9: DVB_DRXK,10: DVB_SONY_T2, 11: DVB_SONY_TC,12: DVB_BCM, 13: DVB_S7,14: NO_DEMOD
Analog demod	3	0/1/2/3/4	Type of Analog Demodulator 0:Default, 1: LGT10, 2:XC5000, 3: SANYO, 4:CHB
THX Media Director	1	0/1	THX Media Director function support
Picture Wizard	1	0/1	Picture Wizard function support
ISF	1	0/1	ISF mode function support
Energy Star	1	0ff /On	Energy Star function support

Tool Option 5

The SVC Tool Option 5 menu displays more capabilities of the TV.

- A number of four digits
- Tool Option 5 has a number of sub-items



Orange (in France)

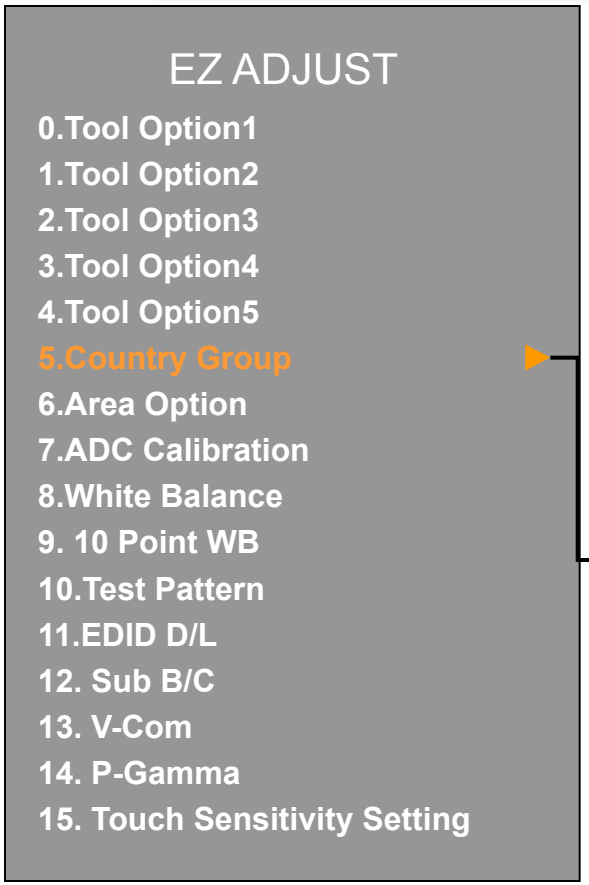
Power board: 2 types possible including PSU power

PSU = Power Supply Unit

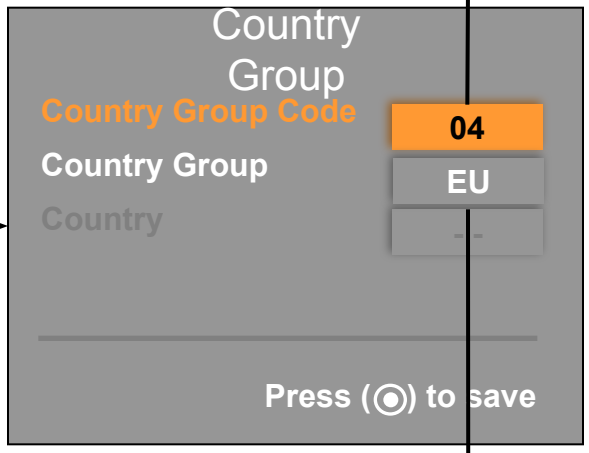
Tool Option	bits	Range	Remark(UI display)
HDMI Swap/Order	1	4 digits order 1-2-3-4 1-3-2-4 2-1-4-3 1-2-4-3	Order of HDMI input port switching to Main Chip
WiFi	1	0/1	1:Wifi function support 0:No support
Skype	1	0/1	1:Skype function support 0:No support
Motion Remote control	1	0/1	1: Motion R/C support 0: No support
Channel Browser	1	0/1	1: channel browser function 0: no support
Set ID	1	0/1	1: Set ID function support 0: no support
USB Hub Count	1	0/1	1: USB hub support 0: no support
Mirror Mode	1	0/1	1: Mirror mode support 0: no support
Orange Service	1	0/1	1:Orange contents support 0: no support
Netcast Service	1	0/1	1:Netcast support 0: no support
PSU Power	1	0/1	1:PSU support 0: no support

Country Group

The SVC Tool Option 5 menu displays the assigned country group.



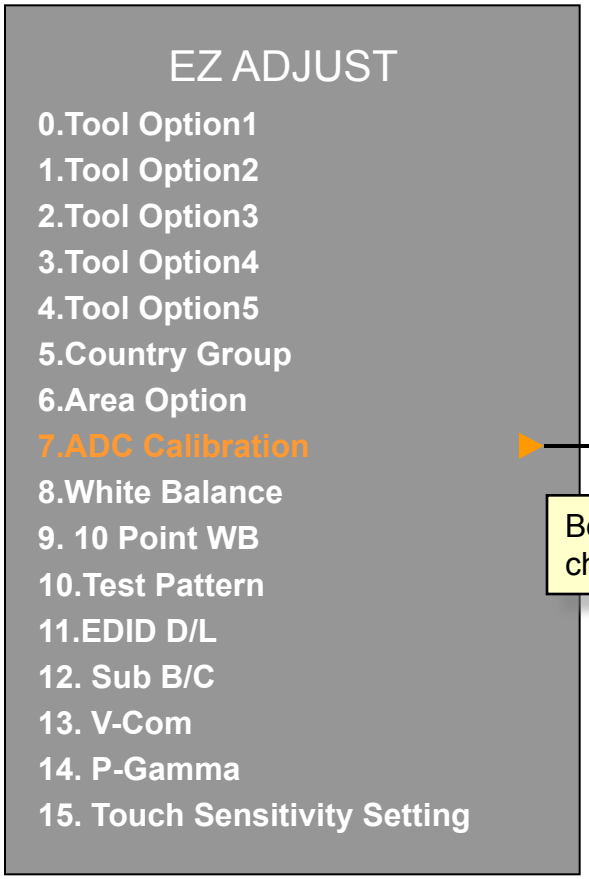
In Europe we use Country Group Code 4 that corresponds to “EU”
(Note: this value will only change if the Country Group is changed)

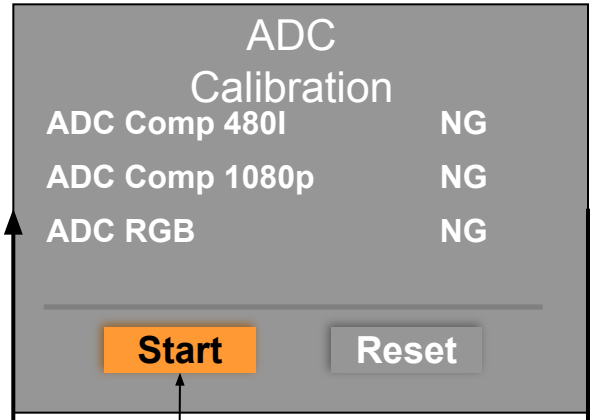


The EU includes 36 different countries (UK, FR, DE, IT, SE,…. etc)

ADC Calibration

- **Mstar model:** uses internal pattern for ADC calibration via this menu
- **BCM model:** needs external pattern for ADC Calibration so this menu is not activated. Use "External ADC" menu and connect a color pattern signal to the Component 1 input.

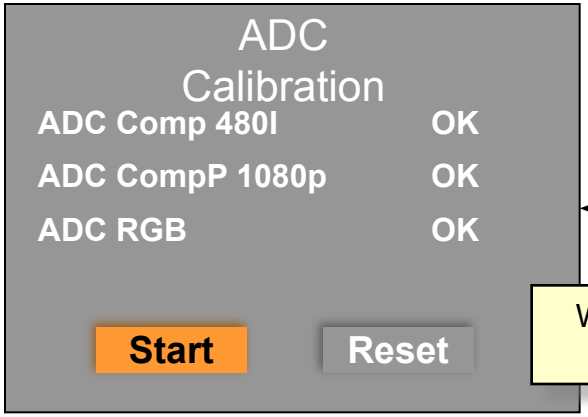




Before pressing the 'Start' button, check if all input jacks are unplugged

ADC Comp Success!!!

ADC RGB Success!!!

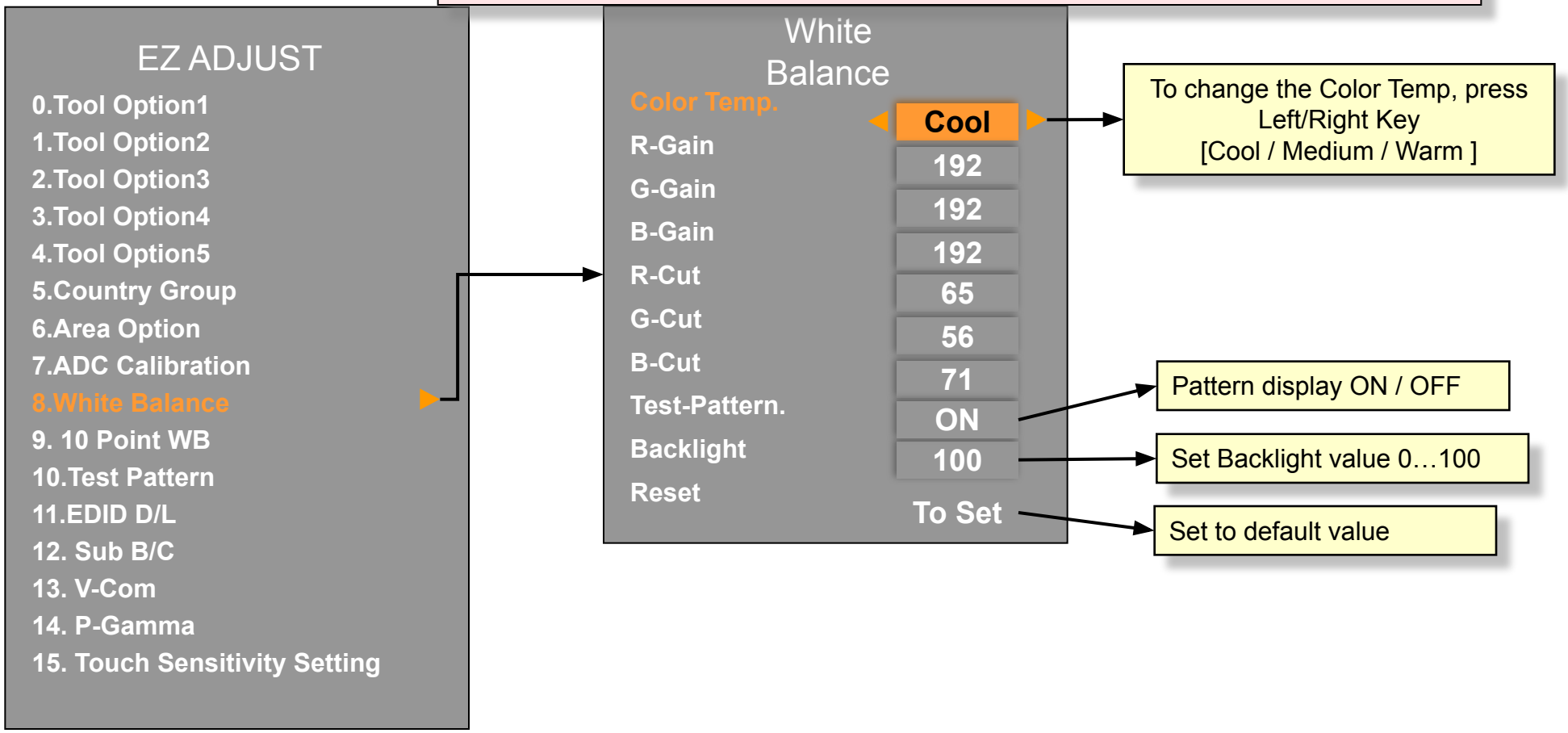


When calibration has finished, this message box will be displayed

ADC = Analog-to-Digital Converter
RGB = Red-Green-Blue color coding
Comp = composite

White Balance

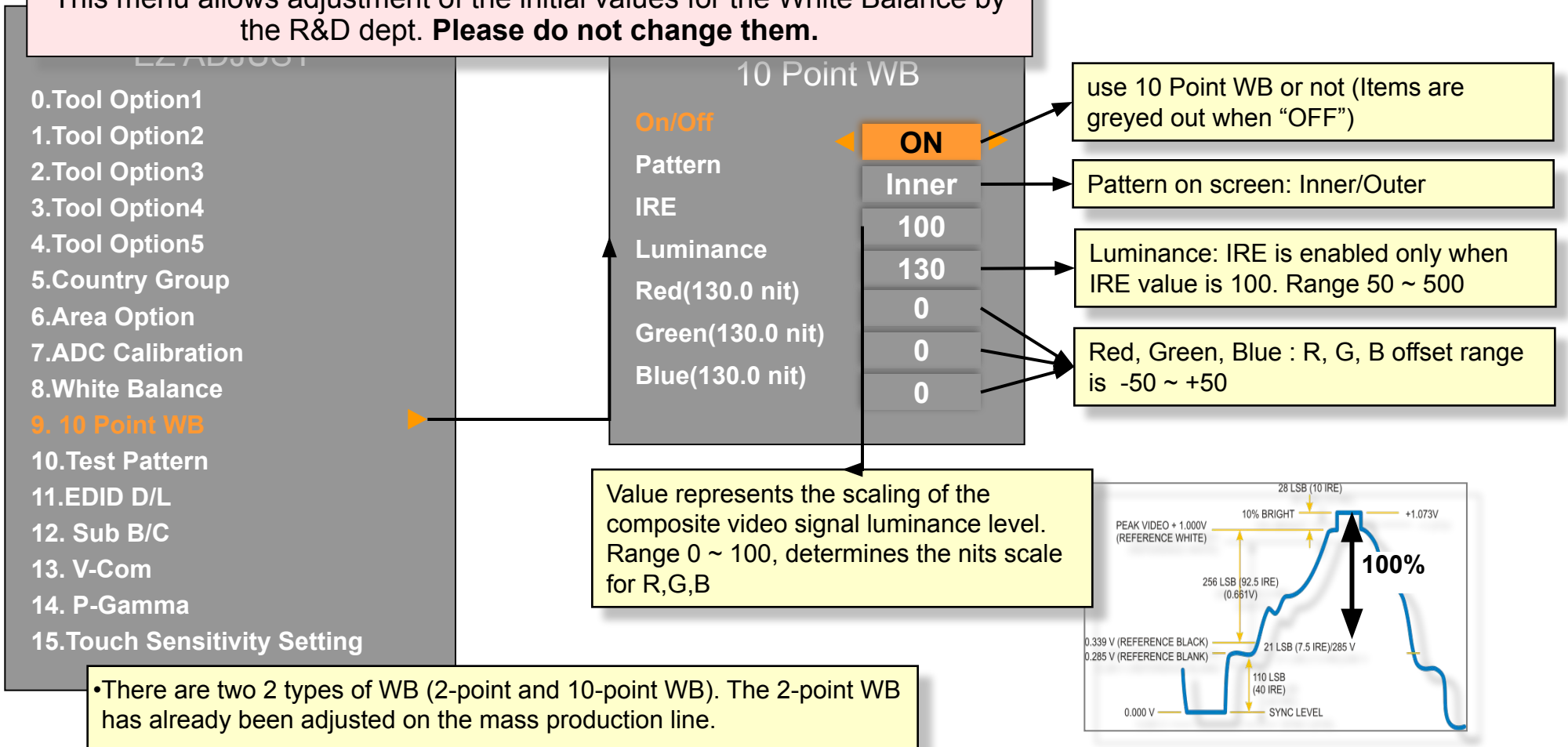
This menu allows you to adjust the RGB values that belong to each of the three color temperatures. **It strongly advised not to change WB data** because you would need special measurement equipment



TV Mode (or Input mode) is changed to analog channel mode automatically when you enter WB function. You do not need to analog channel.

10 Point WB

This menu allows adjustment of the initial values for the White Balance by the R&D dept. **Please do not change them.**



- There are two 2 types of WB (2-point and 10-point WB). The 2-point WB has already been adjusted on the mass production line.
- 10 Point WB Adjust Menu values are stored in the PSM (Program Status Memory) for the Expert mode or THX mode
- The stored value is composed of:
  - Value from adjust menu and
  - Value of 10 point WB in Picture menu

WB = White Balance
PSM = Program Status Memory
IRE = Institute of Radio Engineers
THX = Theater mode
Nit = Luminance value = 1Cd/m^2 (old)

Additional information about WB

1. WB (White Balance) means equality of white in the low and high brightness areas on the screen

2. Equipment: for WB measurement you need a pattern generator (for white pattern), color analyzer etc

3. Measurement

- Condition: white pattern and APL 100% status
- Measurement : you should determine in the center of the screen the color coordinates [X,Y]
- Condition : adjust APL to 15 [Nits]
- Measurement : determine the color coordinates [X,Y]
- Calculate color temperature in the CIE (Commission International De L'Eclairage)

4. Color temperature *See also: http://en.wikipedia.org/wiki/Color_temperature*

- This temperature is the nearest the source light and black body temperature
- Unit is [˚K] (Kelvin Degree)

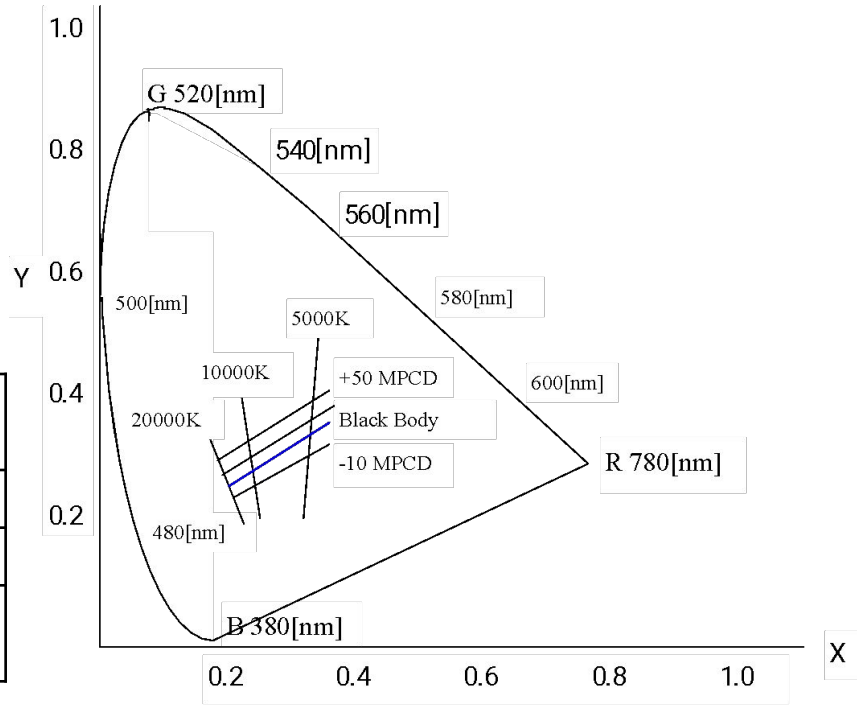
5. White standard temperature

- CIE : 9300[˚K] + 27MPCD (Minimum Perceptible Color Difference).
- or [X,Y] color coordinates (0.281, 0.311)

6.LG management specification:

region	Korea	Japan	N. America	M/S America	**Europe**	Asia
X coordinate	0.266	0.281	0.282	0.268	**0.281**	0.281
Y coordinate	0.280	0.288	0.288	0.274	**0.288**	0.288
Color temperature	13000 K	10000 K	10000K	13000K	**10000K**	10000K

Coordinate deviation : ±0.008, color temperature deviation : ±1000K.

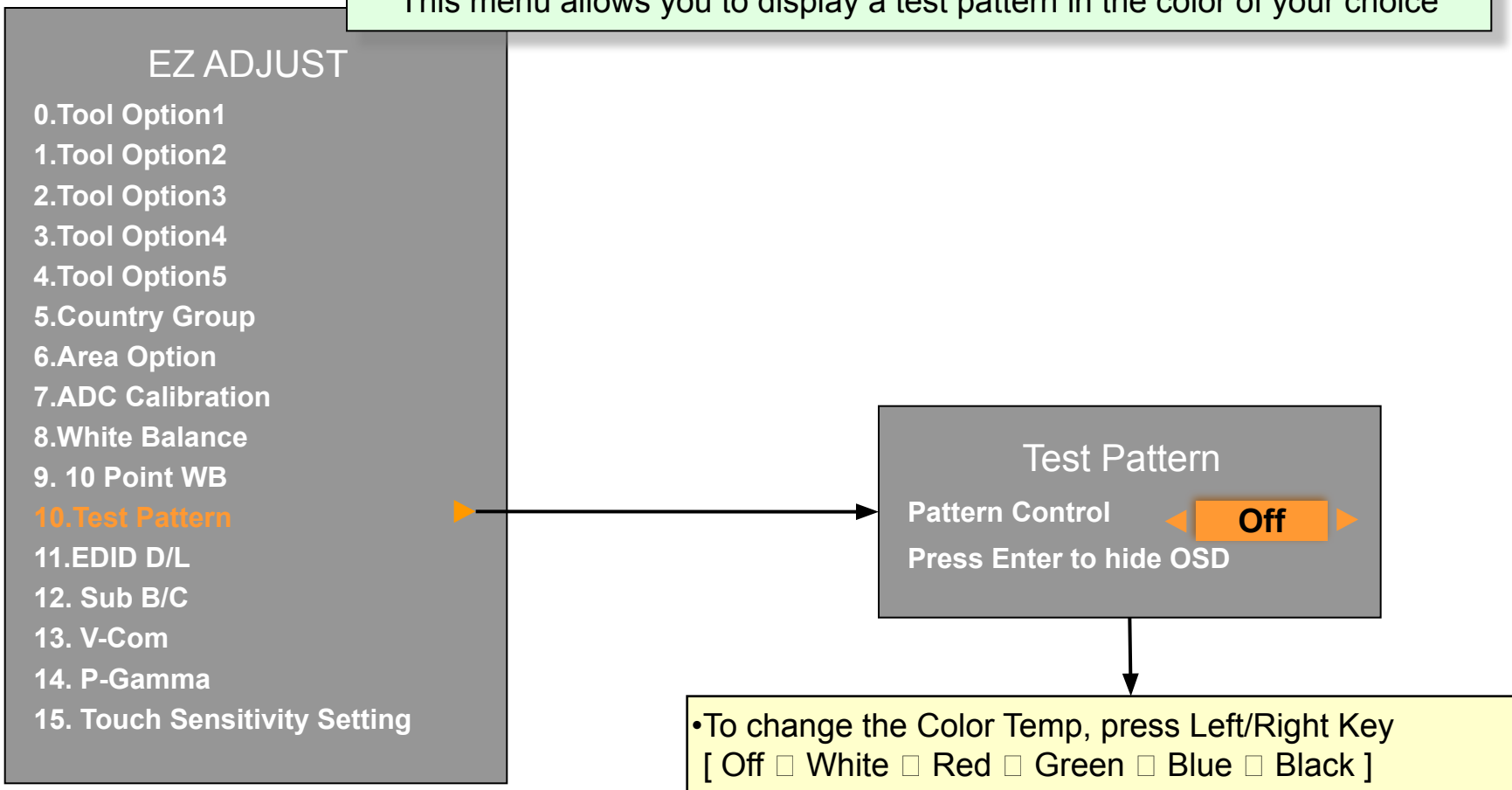


<⊠ ⊠ 5> CIE Chromatic Diagram

APL = Average Picture Level

Test Pattern

This menu allows you to display a test pattern in the color of your choice



- To change the Color Temp, press Left/Right Key
  [Off □ White □ Red □ Green □ Blue □ Black]

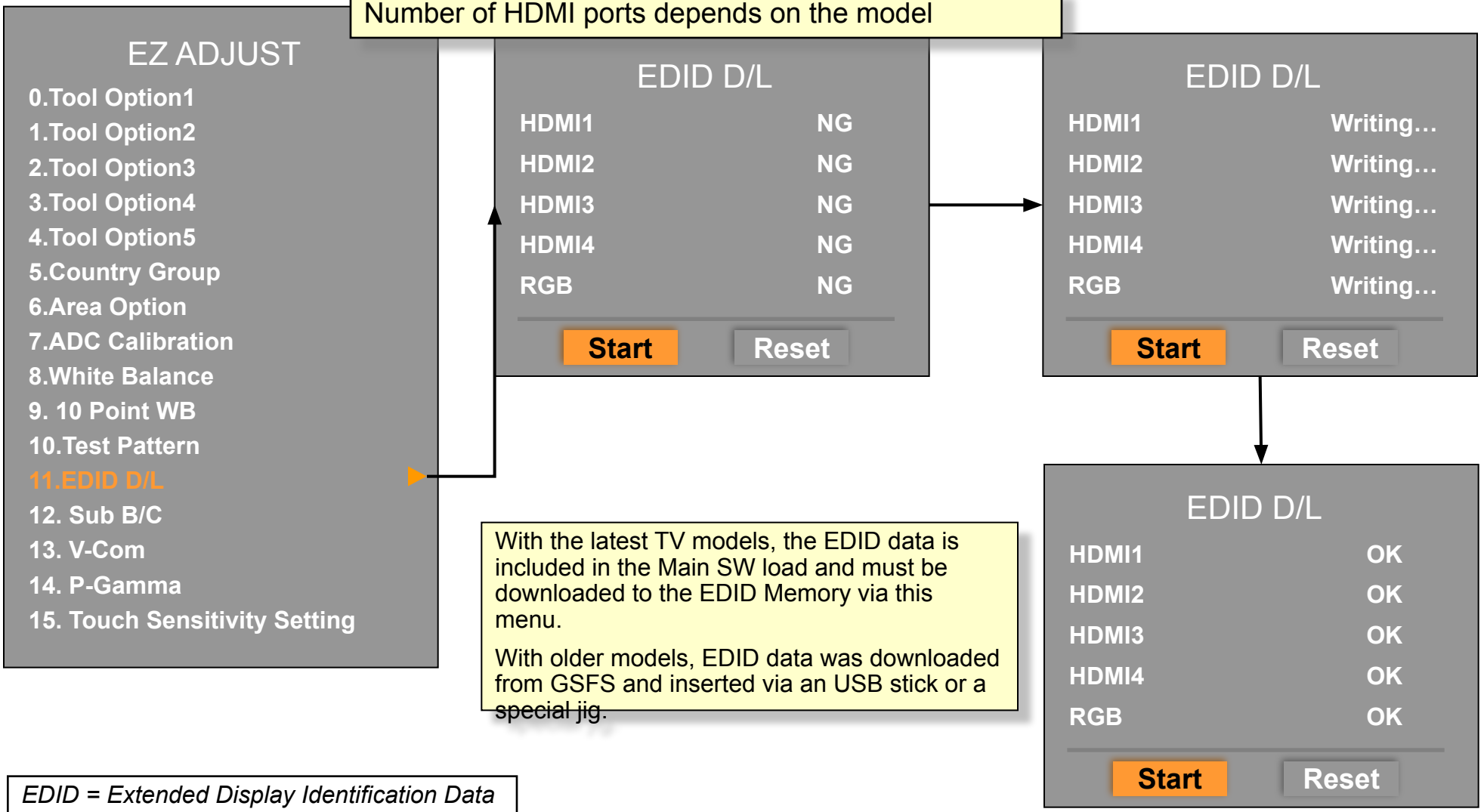
- Aspect ratio is changed to 16:9 during display of the Test Pattern (fills whole screen)

OSD = On-Screen Display

EDID D/L

This menu allows you to download EDID data for each of the ports

Number of HDMI ports depends on the model



With the latest TV models, the EDID data is included in the Main SW load and must be downloaded to the EDID Memory via this menu.

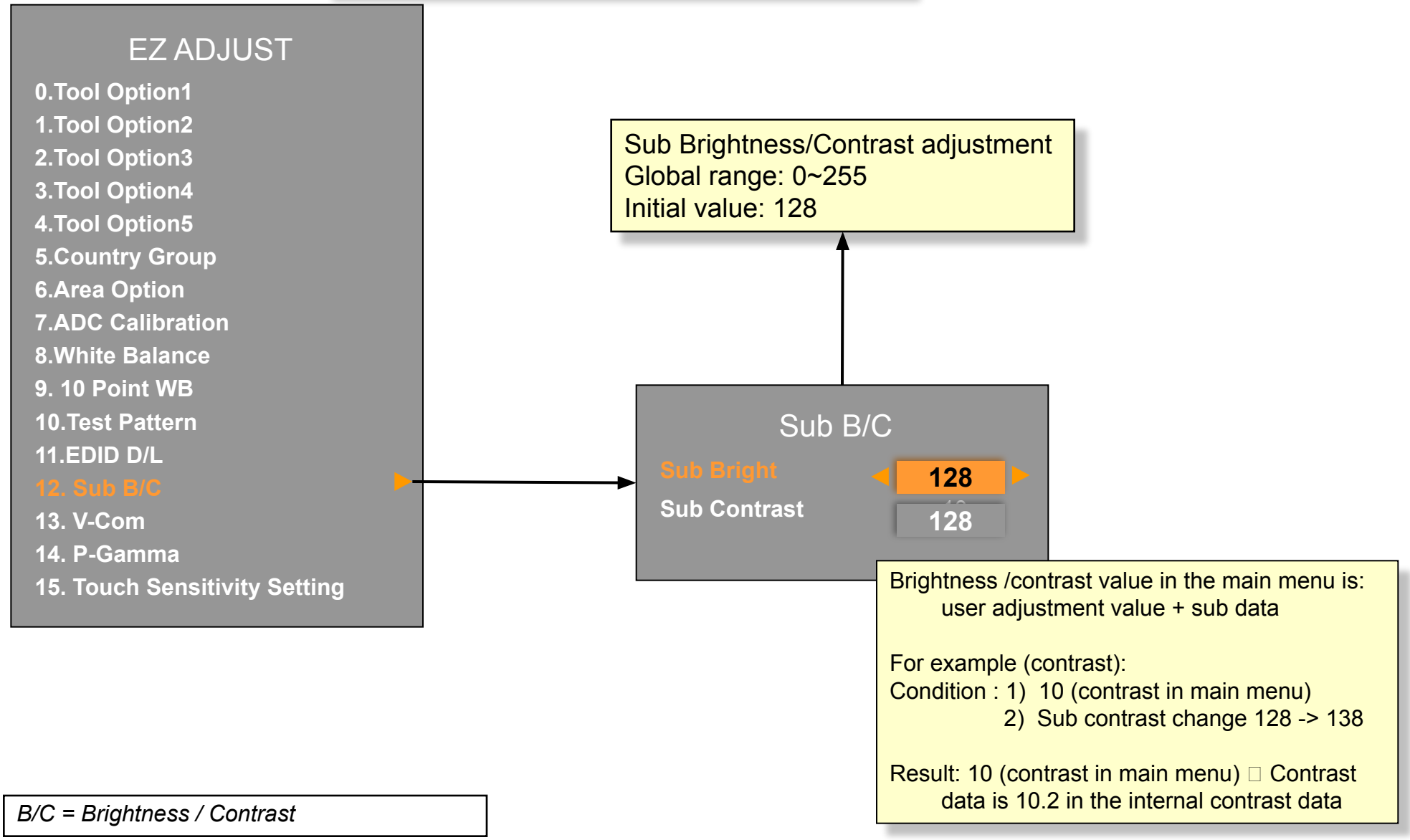
With older models, EDID data was downloaded from GSFS and inserted via an USB stick or a special jig.

EDID = Extended Display Identification Data

D/L = Download

Sub B/C

This menu allows you to adjust the brightness and contrast control range



B/C = Brightness / Contrast

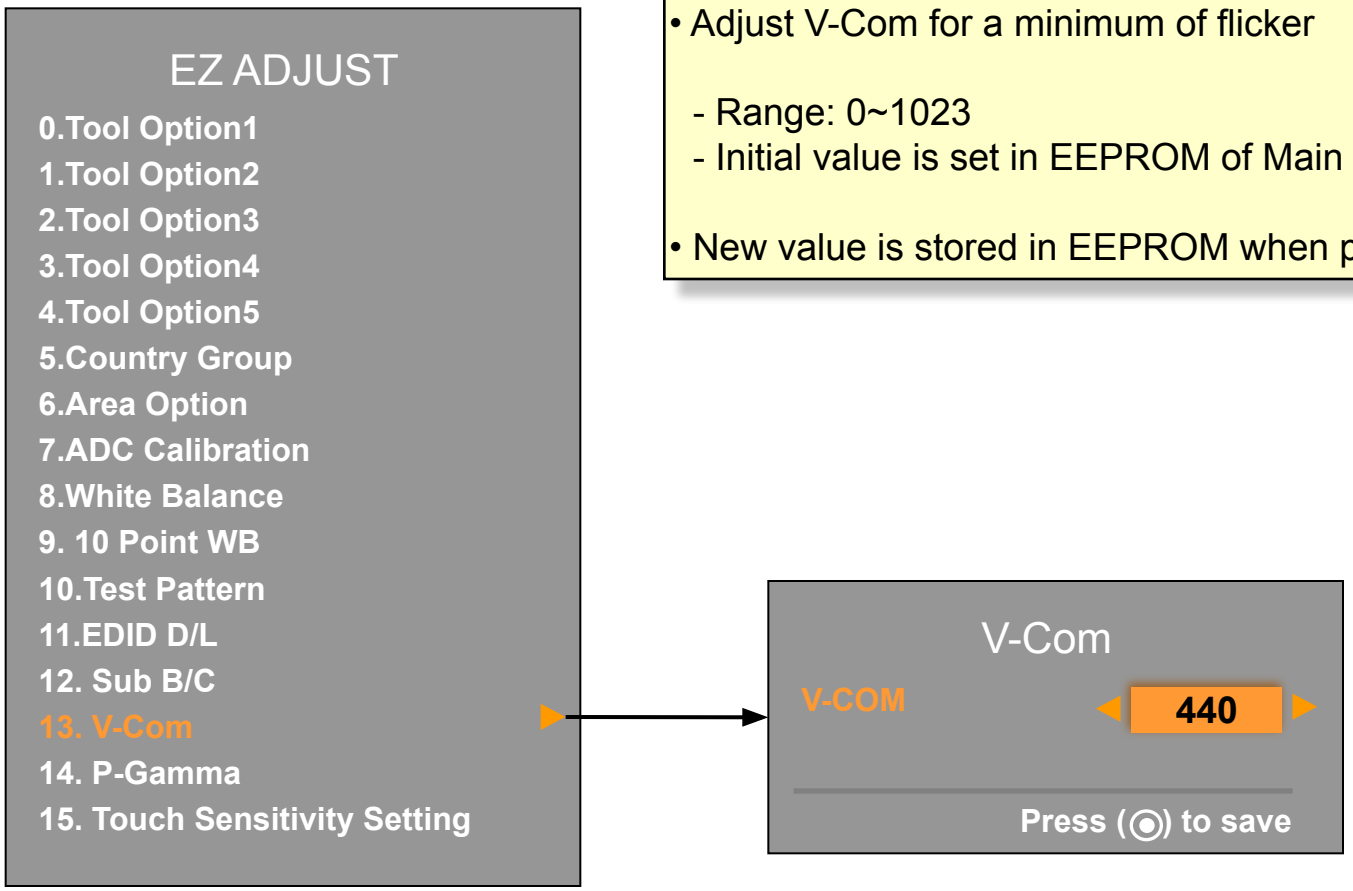
V-Com – *only for models that have their T-CON function on the Main Bd*

This menu allows you to adjust the V-Com value

- Input mode will change to analog input when you enter the V-Com menu
- Screen shows a green pattern.
- Adjust V-Com for a minimum of flicker

  - Range: 0~1023
  - Initial value is set in EEPROM of Main board

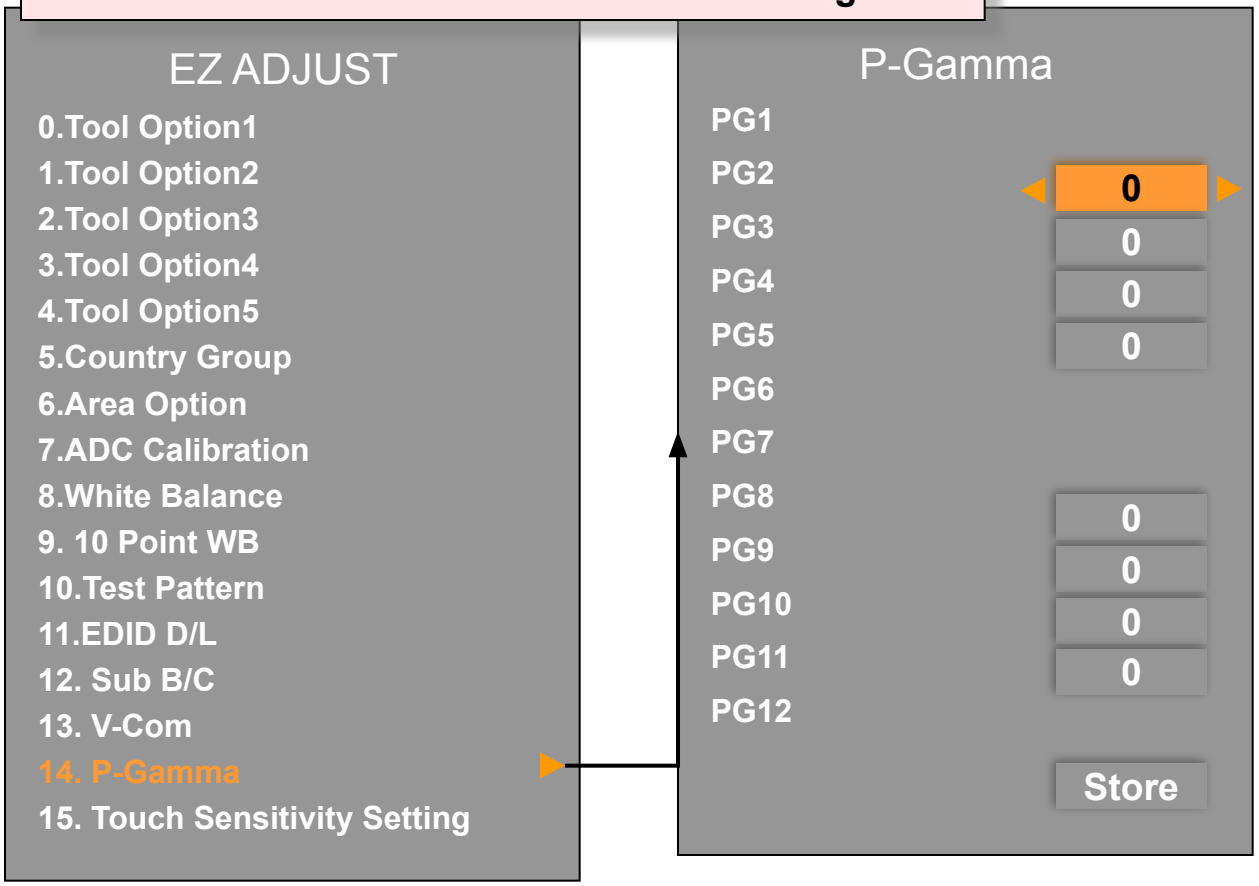
- New value is stored in EEPROM when pressing the “Enter” key



Note: contrast and color saturation will decrease for small and large values of V-COM, for example at 110 and 680

P-Gamma control *(only for >120Hz models and if FRC Chip is not PWIZ (MStar))*

This menu allows adjustment of the Gamma curve and store the new curve in EEPROM. **Don't change it.**



Pattern is default. Please do not change this. Pattern will be changed automatically when you move the cursor.
Pattern change is used for precise Gamma adjustment

P-Gamma adjustment
- range: 0~1023
- initial value is set in EEPROM

P-Gamma values are stored EEPROM when pushing the "Enter" key

< Pattern >
PG1 , PG12 : 255 Gray
PG2, PG11 : 223 Gray
PG3, PG10 : 191 Gray
PG4, PG9 : 64 Gray
PG5, PG8 : 31 Gray
PG6, PG7 : 0 Gray

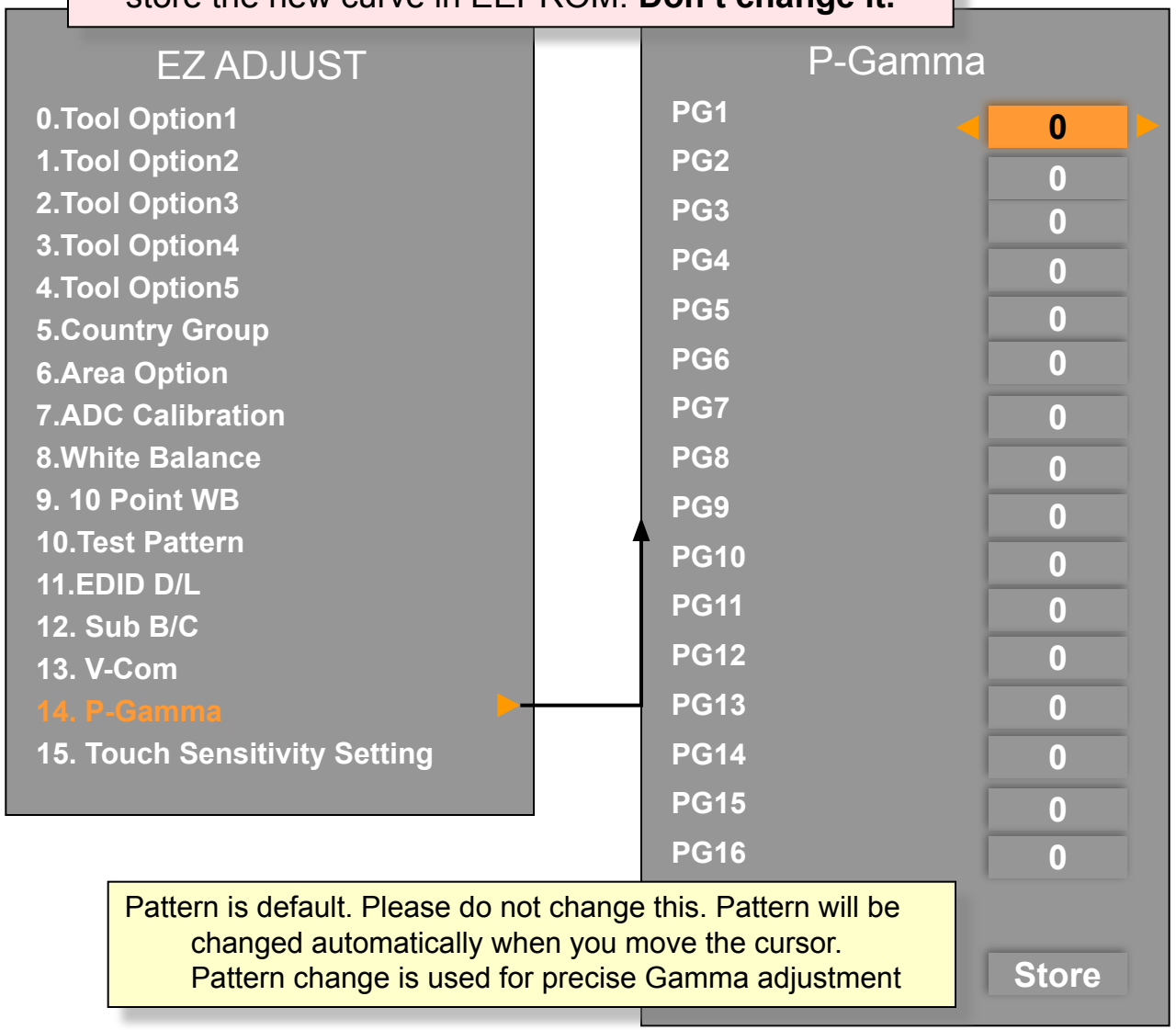
< P-Gamma ID Address >
PG2 : 0x2
PG3 : 0x3
PG4 : 0x4
PG5 : 0x5
PG8 : 0x6
PG9 : 0x7
PG10 : 0xB
PG11 : 0xC

PG1, 6, 7, 12 have been reserved (beyond control)

Gamma : see http://en.wikipedia.org/wiki/Gamma_correction

P-Gamma control *(for >240Hz models in case FRC Chip is PWIZ (MStar))*

This menu allows adjustment of the Gamma curve and store the new curve in EEPROM. **Don't change it.**



Pattern is default. Please do not change this. Pattern will be changed automatically when you move the cursor. Pattern change is used for precise Gamma adjustment

- P-Gamma adjustment
  - range: 0~1023
  - initial value is set in EEPROM of V-Com Bd.

- P-Gamma values are stored EEPROM when pushing the "Enter" key

< Pattern >

PG1 , PG16 : 255 Gray
PG2, PG15 : 254 Gray
PG3, PG14 : 223 Gray
PG4, PG13 : 191 Gray
PG5, PG12 : 127 Gray
PG6, PG11 : 63 Gray
PG7, PG10 : 31 Gray
PG8, PG9 : 0 Gray

< P-Gamma ID Address >

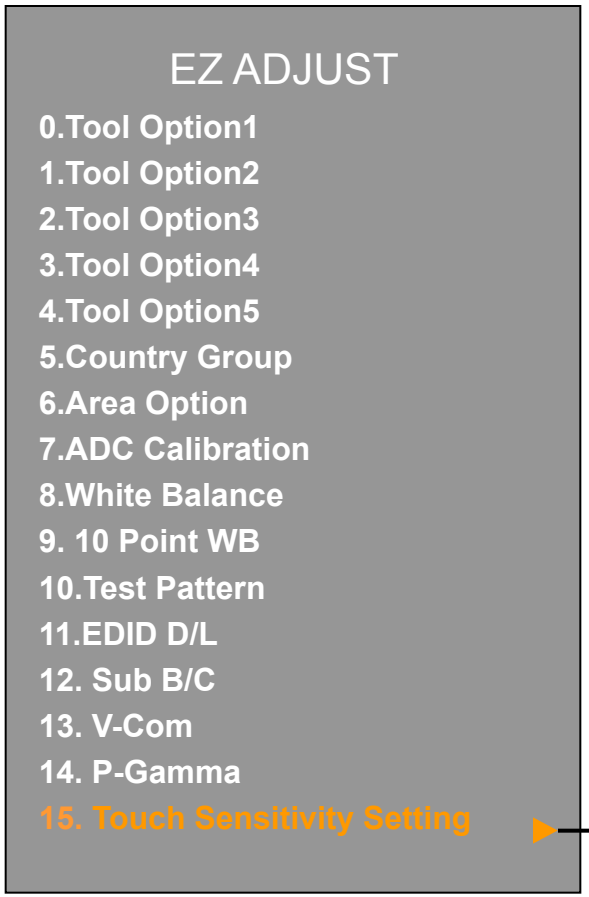
PG1 : 0x0	PG9 : 0x8
PG2 : 0x1	PB10 : 0x9
PG3 : 0x2	PB11 : 0xa
PG4 : 0x3	PB12 : 0xb
PG5 : 0x4	PB13 : 0xc
PG6 : 0x5	PB14 : 0xd
PG7 : 0x6	PB15 : 0xe
PG8 : 0x7	PB16 : 0xf

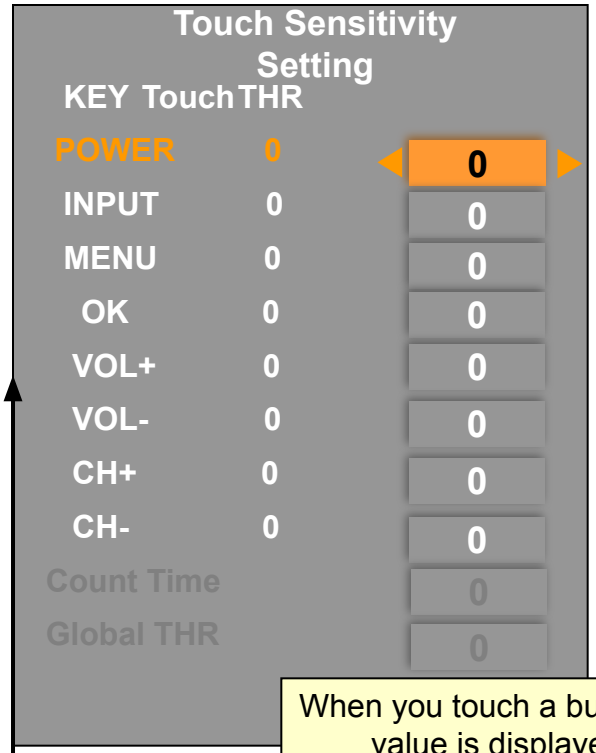
Touch Sensitivity Setting – *Only for models that have touch control*

This menu allows you to adjust the sensitivity of the touch keys. Only for test by engineer.

For LCD

Data range is 0 ~ 255 (1byte)





THR : Threshold

When you touch a button on the front panel, the “Touch” value is displayed in the SVC menu

For example: you touch an input key, input value of the ”Touch” will be displayed, e.g. 20.

.

- Value 0 of the “THR” is the most sensitive and value 20 is the most insensitive
- If you adjust the “THR” value over 20, the touch sensor won’t work

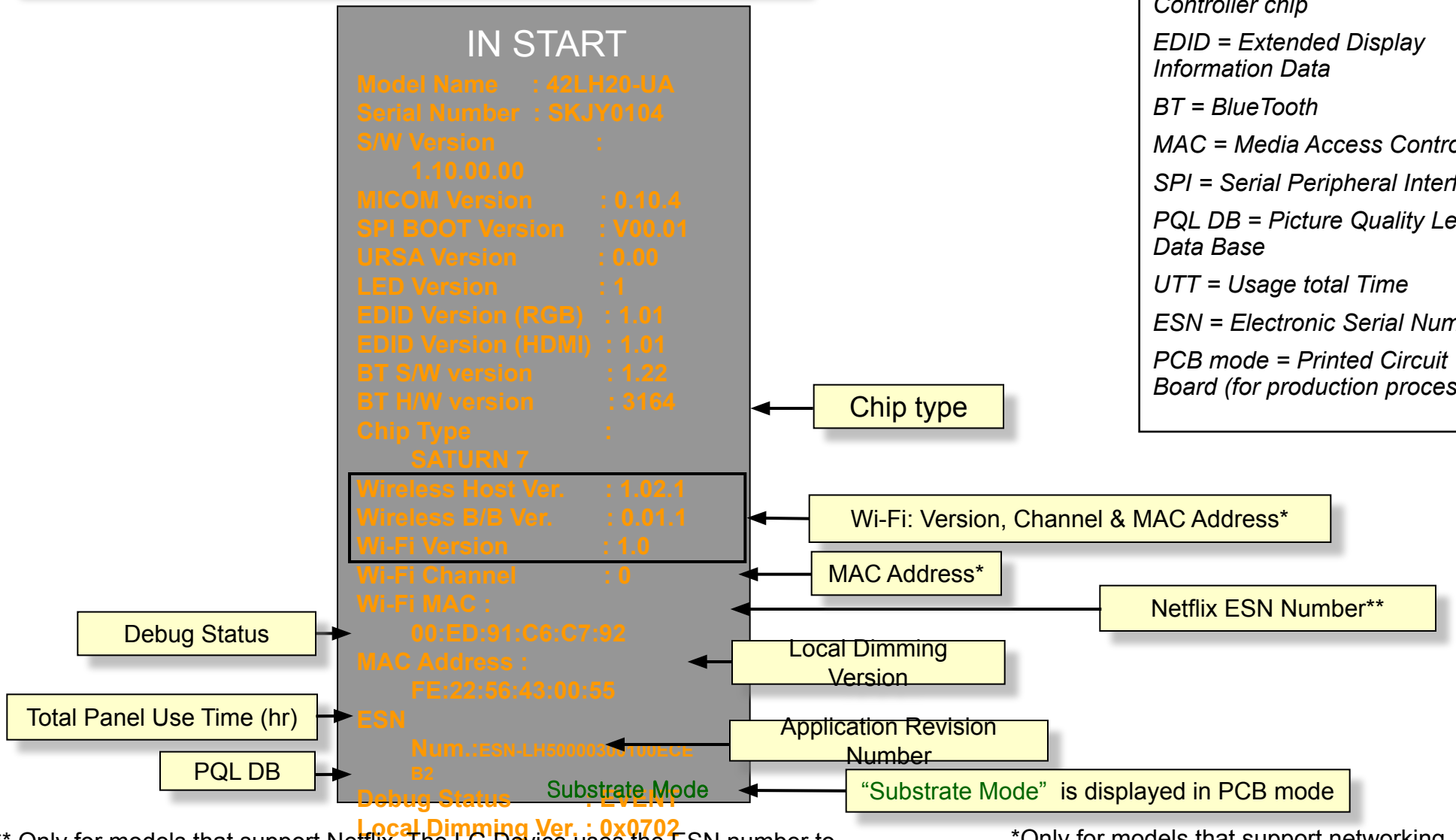
IN-START MENUS

The IN-START menu displays system information and sub-menus for the engineer. Please note that the menus may be different for each model. Please note that we show only the LCD related items and that the menus may be different per each model.

LG ADJUST REMOCON 105-201M

IN START MENU

This menu allows you to check and change various settings



URSA = MStar Frame Rate Controller chip

EDID = Extended Display Information Data

BT = BlueTooth

MAC = Media Access Control

SPI = Serial Peripheral Interface

PQL DB = Picture Quality Level Data Base

UTT = Usage total Time

ESN = Electronic Serial Number

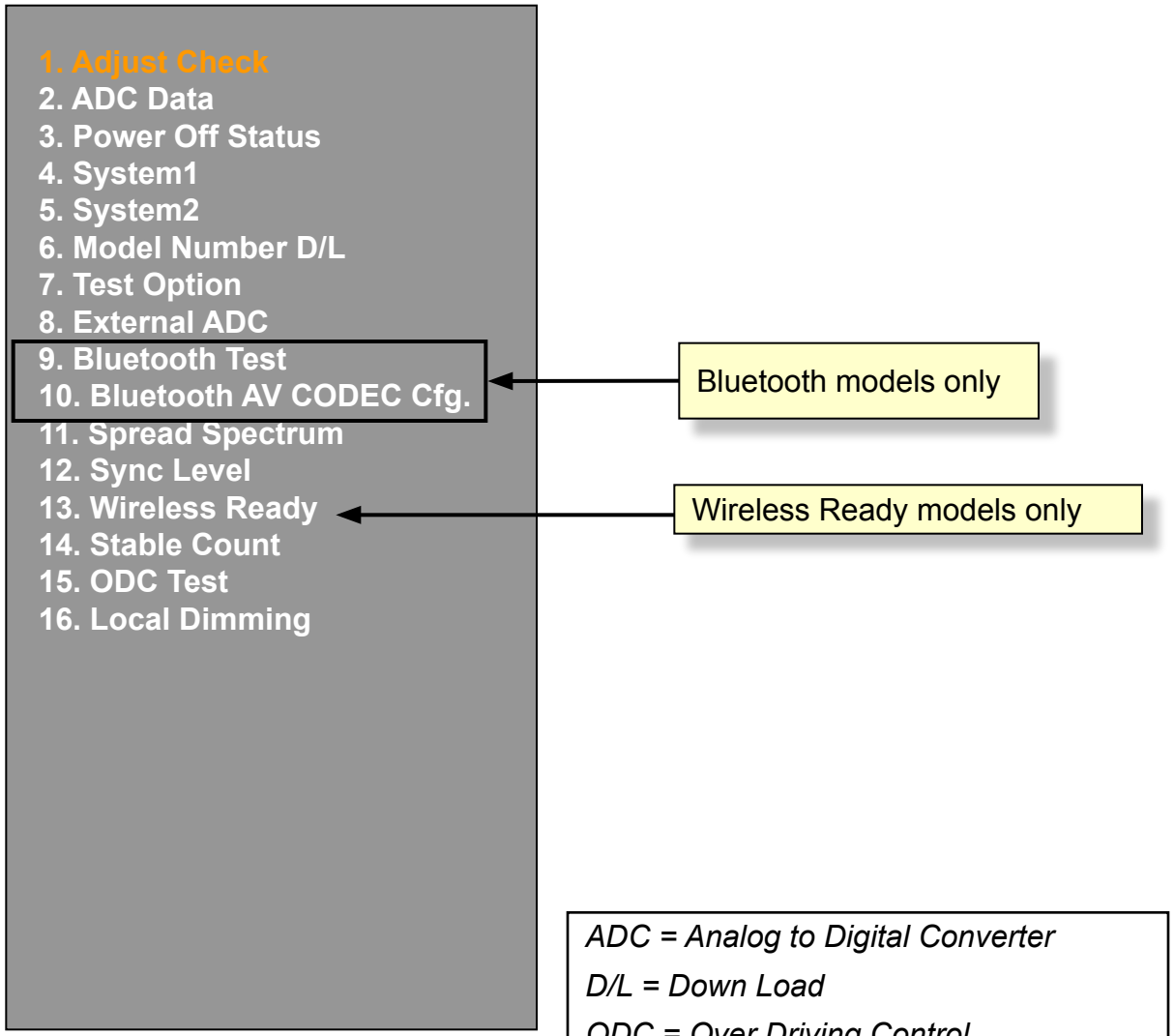
PCB mode = Printed Circuit Board (for production process)

** Only for models that support Netflix. The LG Device uses the ESN number to communicate with the Netflix server. This number is automatically validated during the handshake between the LG Device and Netflix service

*Only for models that support networking

IN START MENU

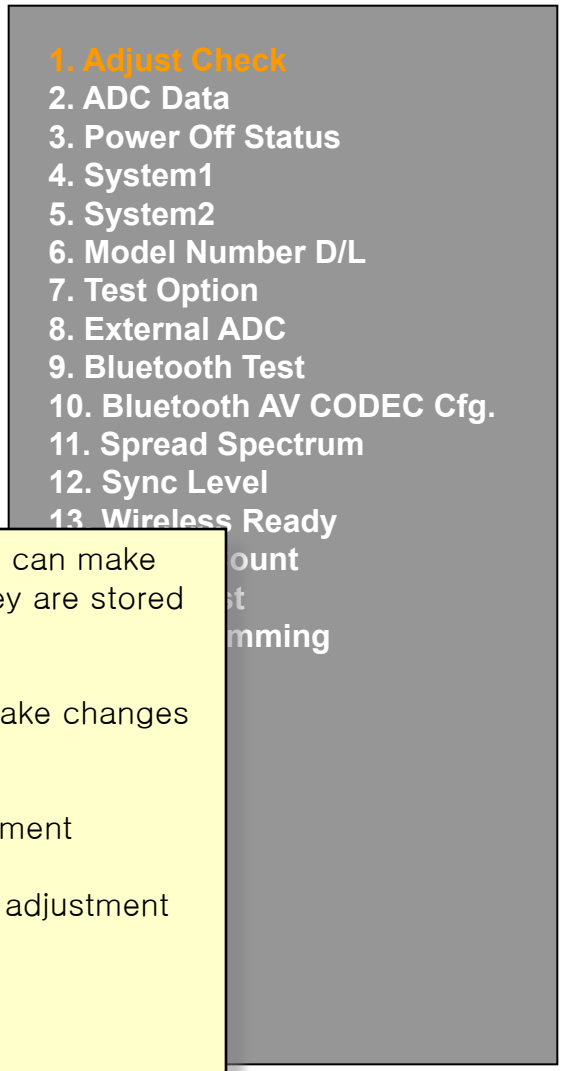
This sub menu allows you to check and change various settings

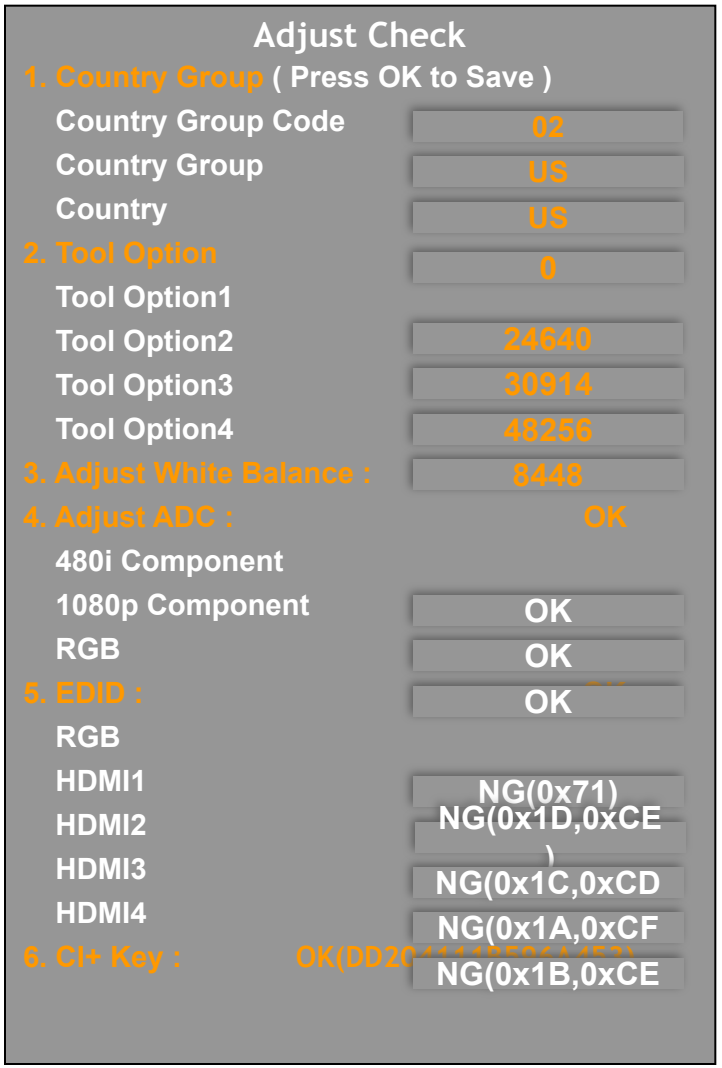


Local Dimming Ver. : 0x0702

Adjust Check

This menu allows you to check and adjust various settings. The orange colored values were inserted during manufacturing

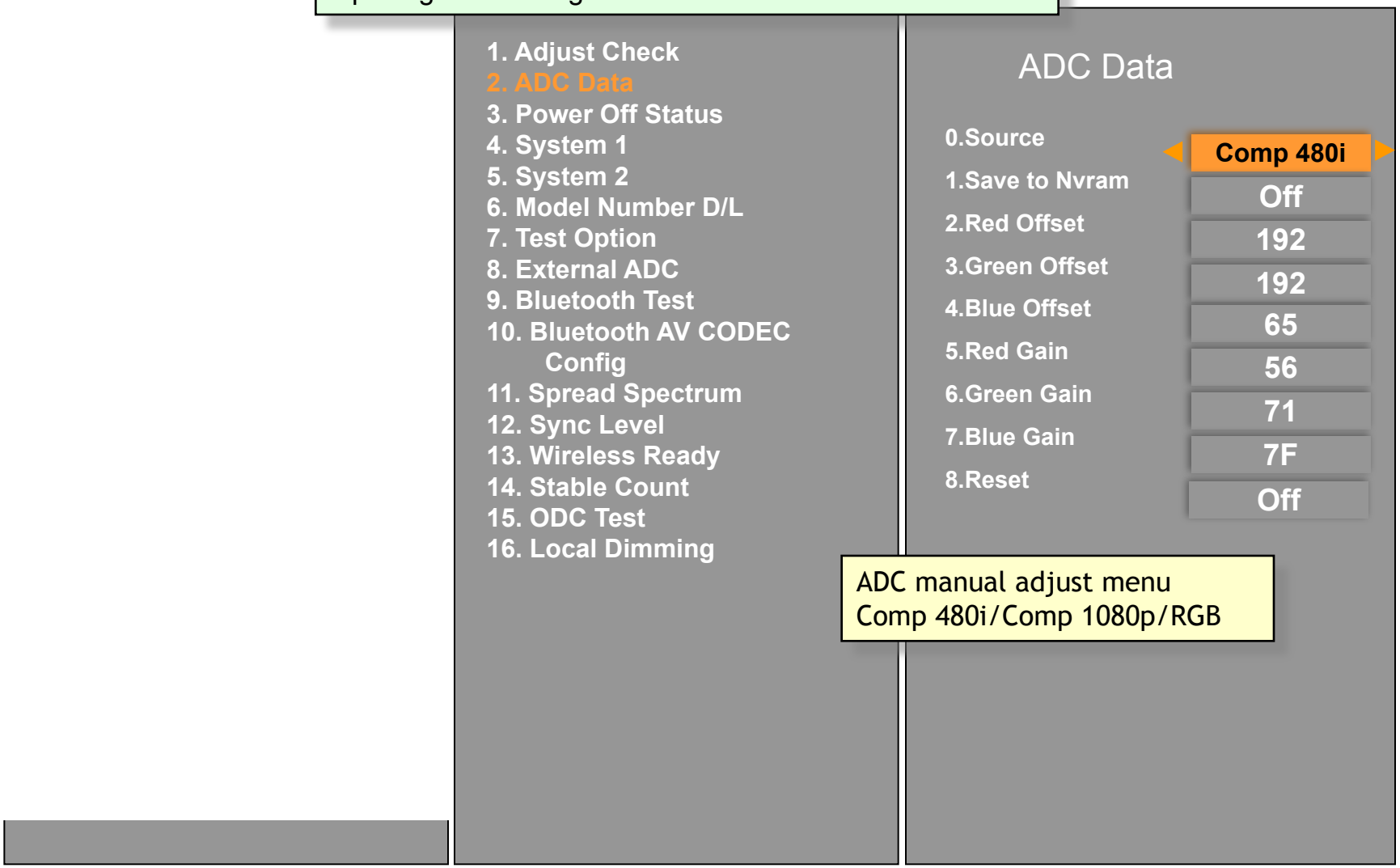




1. "Country Group" selection; you can make changes from here too and they are stored real-time
2. Tool Option values; you can make changes from here
3. Result of White Balance adjustment
4. Adjustment result of auto ADC adjustment for each input mode
5. EDID data loaded or not
6. CI+ key: EU Only

ADC Data

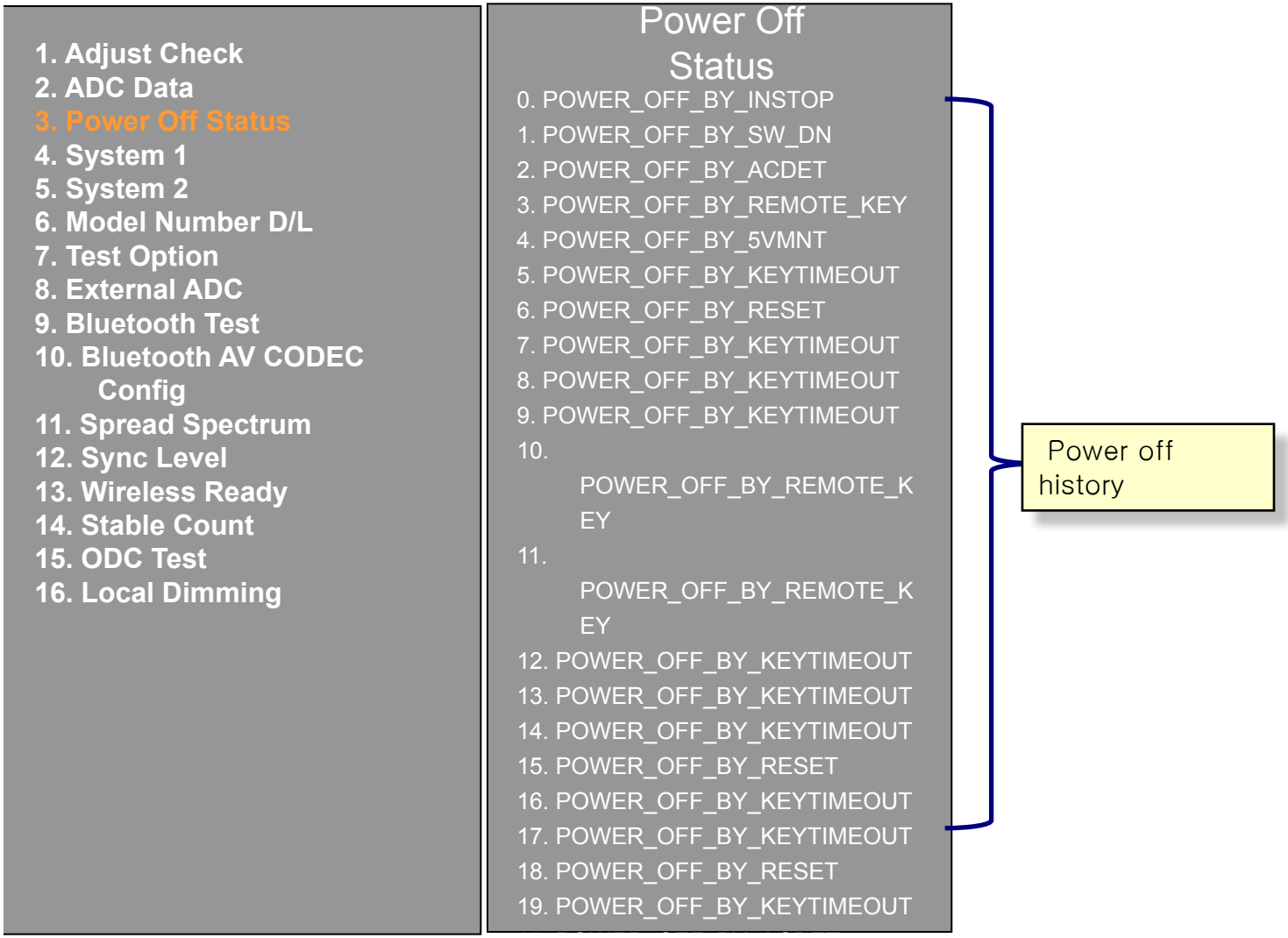
This menu allows you to check and adjust the settings for the Analog-to-Digital converter that converts the analog input signals into digital values.



ADC manual adjust menu
Comp 480i/Comp 1080p/RGB

Power Off Status

This menu shows you the list of occasions when the TV has been switched off. The history is very helpful for trouble shooting in case the TV switched itself off due to an internal failure. Next slide shows more details for each cause.



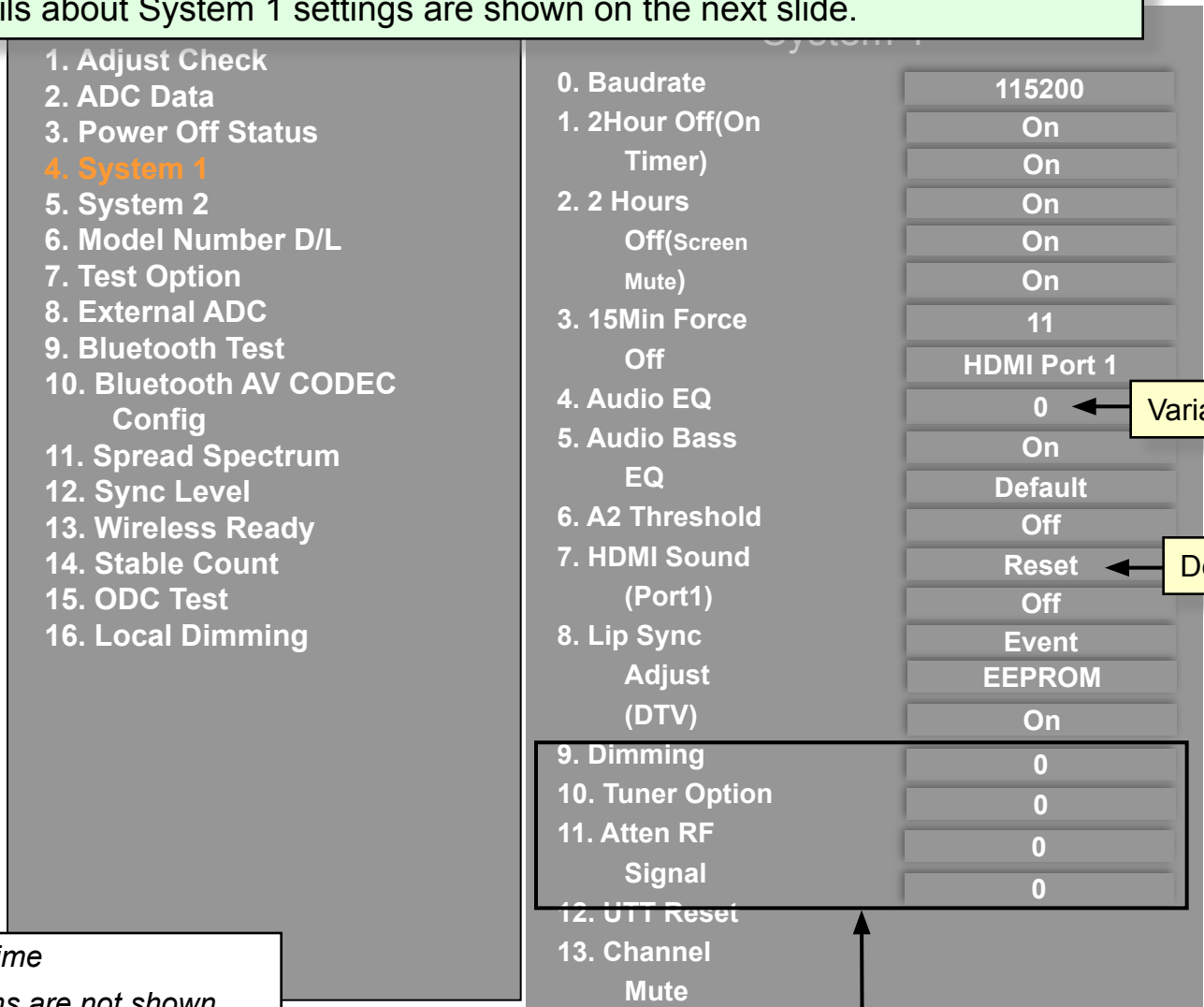
Power Off Status

This list shows possible causes for switching the TV off.

Factor	MODE	Contents
Micom	POWER_OFF_BY_CPUCMD	Power off by CPU Command
	POWER_OFF_BY_ABN	Power off by abnormal status
	POWER_OFF_BY_KEYTIMEOUT	Power off when TV is not turned off during a certain time
	POWER_OFF_BY_ACDET	Power off by not detecting AC (abnormal case)
	POWER_OFF_BY_RESET	Power off by Micom Reset
	POWER_OFF_BY_5VMNT	Power off by not detecting 5V monitoring
	POWER_OFF_BY_NO_POLLING	Power off when receiving no ack
CPU	POWER_OFF_BY_REMOTE_KEY	Power off by remote key
	POWER_OFF_BY_OFF_TIMER	Power off by Off timer
	POWER_OFF_BY_SLEEP_TIMER	Power off by sleep timer
	POWER_OFF_BY_ABNORMAL1 (POWER_OFF_BY_TS_END) – DVR Ready	Power off by abnormal status Power off by time shift end
	POWER_OFF_BY_FAN_CONTROL	Power off by fan control
	POWER_OFF_BY_INSTOP_KEY	Power off by Instop Key
	POWER_OFF_BY_AUTO_OFF	Power off by auto off function
	POWER_OFF_BY_ON_TIMER	Power off by On timer
	POWER_OFF_BY_RS232C	Power off by RS232C command
	POWER_OFF_BY_RESREC	Power off by reserved recording
	POWER_OFF_BY_RECEND	Power off when recording stops
	POWER_OFF_BY_SWDOWN	Power off by software download
	POWER_OFF_BY_LOCAL_KEY	Power off by local key
	POWER_OFF_BY_CPU_ABNORMAL	Power off by CPU Abnormal status
	POWER_OFF_BY_INV_ERROR	Power off by LCD module inverter error
	POWER_OFF_BY_HOMING_COMPLETE	Power off by Cable Card Update (USA only)
	POWER_OFF_BY_OTA	Power off by OTA update
	POWER_OFF_BY_UNKNOWN	Power off by the other causes

System 1

This menu allows you to check and adjust various settings.
More details about System 1 settings are shown on the next slide.



Variable -10…+20

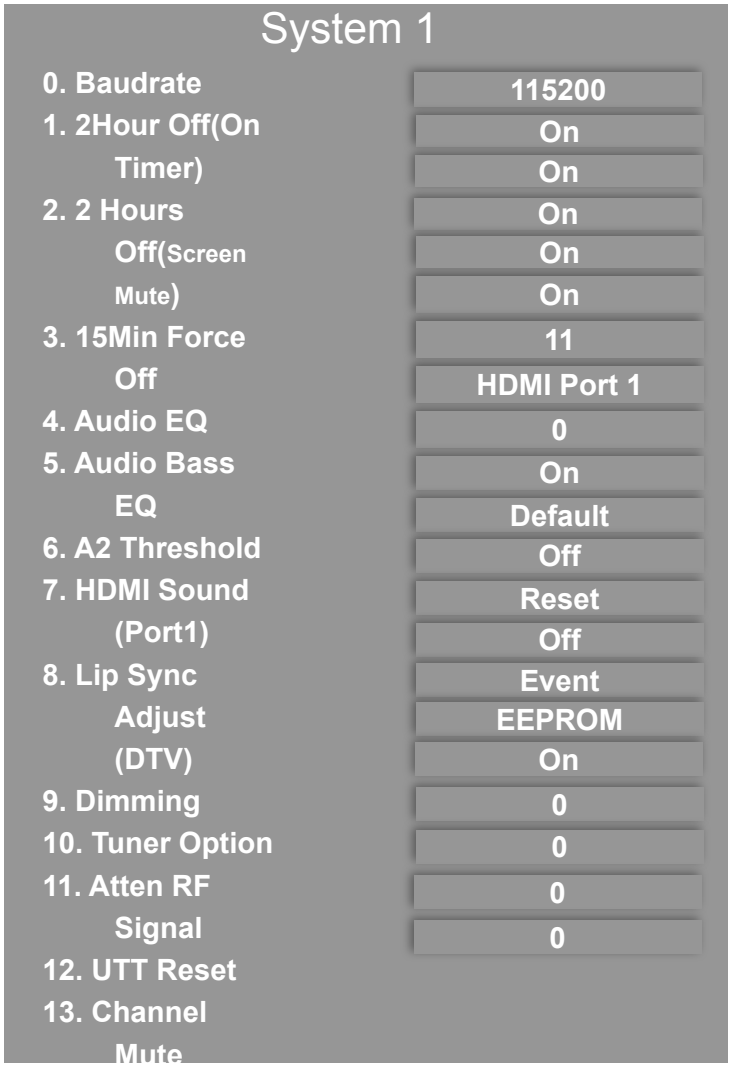
Doing, Reset

UTT = Usage Total Time

Specific Chinese items are not shown.

Only for models that have a booster

System 1



0. Baudrate :
Data Download speed
[2400 / 4800 / 9600 / 14400 / 19200 / 38400 / 57600 / 115200 / 460800]
(Default : 9600 – after Instop)

1. 2 Hours Off(On Timer) :
TV Turns off with no any key input during the 2hours after power on by On timer (Default On)

2. 2 Hours Off(Screen Mute) :
TV Turns off with no any key input during the 2 hours after Screen Mute (Default Off)

3. 15 Min Force Off :
15 forced Power Off . (Default On)

4. Audio EQ:

5. Audio Bass EQ:
Audio (Bass) equalizer setting (Default On)

6. A2 Threshold :
A2 Threshold(0~39, Default 11)
korea only (enable)

7. HDMI Sound(Port1):
HDMI Sound Path Switching용
(HDMI Port1/ RGB Phone Jack)

8. Lip Sync Adjust(DTV):
Audio Lip Sync adjust item
(range : -10 ~ 20)

9. Dimming :
Dimming On/Off Control Function

10. Tuner Option :
DTV Phase/Ghost noise support

11. Atten RF Signal :
Signal down for strong signal of Analog TV

12. UTT Reset :
TV Used Time Reset function

13. Channel Mute :
Video mute or not when changing analog Channel
(On : Mute Enable, Off : Mute Disable)

14. Debug Status :
Changing debug option status of source

15. NVRAM Type:
NVRAM Type (EEPROM, NAND Flash)
Default : EEPROM

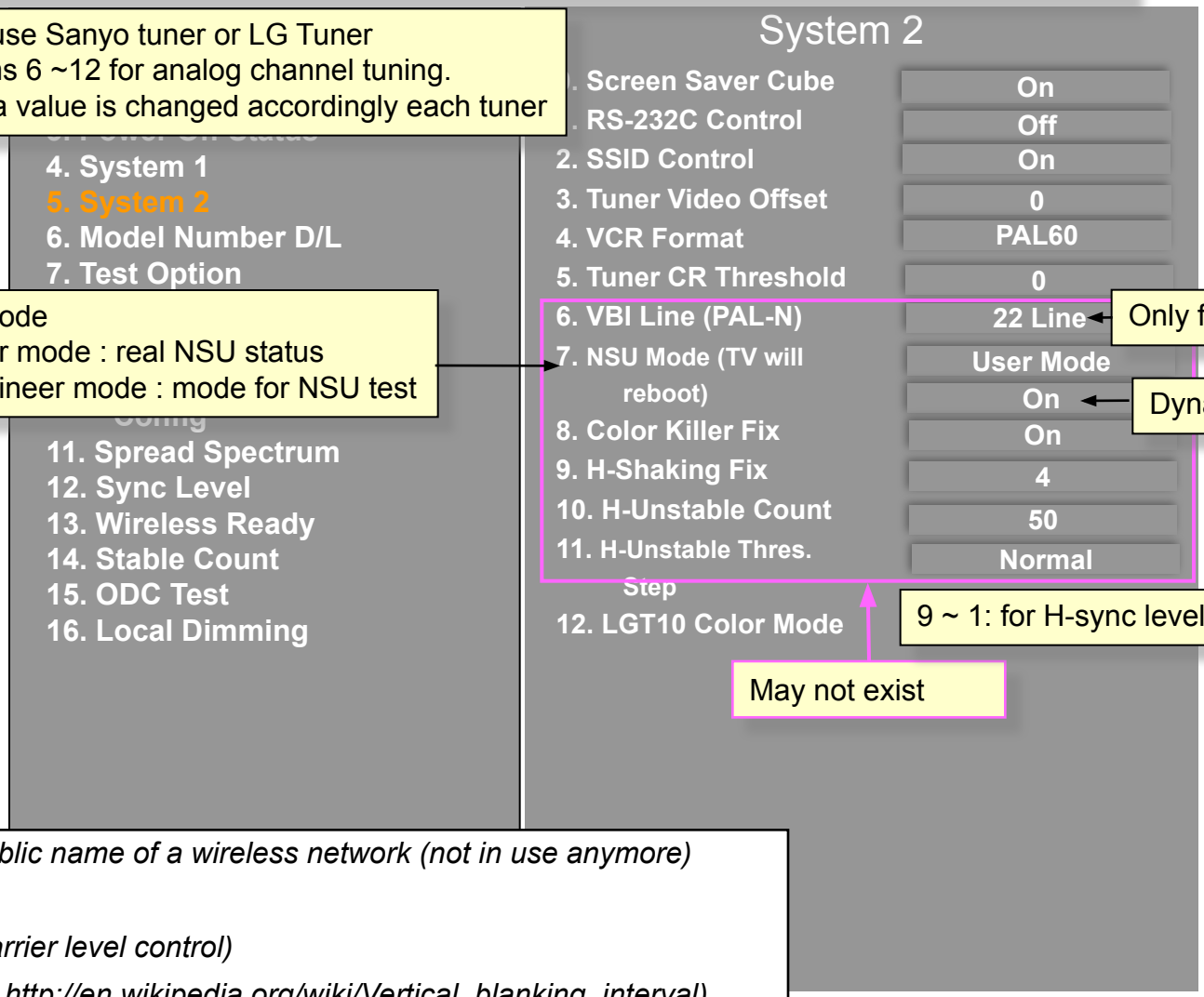
16. HDEV:
High Deviation On/Off control
Default : Off
Country Group : disable (in case of A-ASIA).

17. Booster On (VHF):
18. Booster Off (VHF) :
19. Booster On (UHF) :
20. Booster Off (UHF) :
Booster AGC Gain value setting menu
(Booster supported models only)

System 2

This menu allows you to check and adjust various settings for System 2

We use Sanyo tuner or LG Tuner
Items 6 ~12 for analog channel tuning.
Data value is changed accordingly each tuner



NSU mode
- User mode : real NSU status
- Engineer mode : mode for NSU test

Only for S-America

Dynamic or static

9 ~ 1: for H-sync level adjustment

May not exist

SSID = Service Set IDentifier = Public name of a wireless network (not in use anymore)

VCR = Video Cassette Recorder

CR = CarRier (register value for carrier level control)

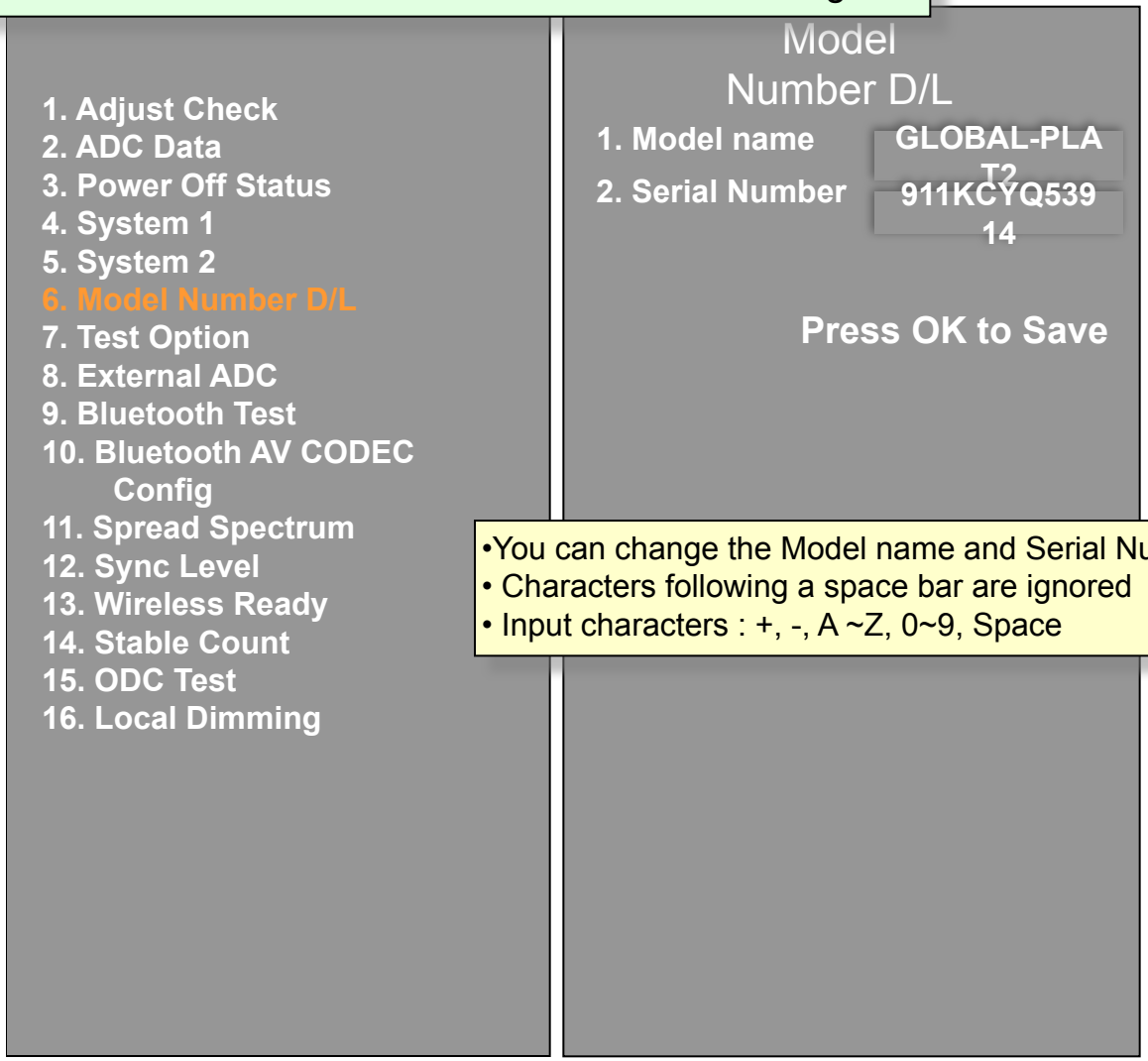
VBI = Video Blanking Interval (see http://en.wikipedia.org/wiki/Vertical_blanking_interval)

NSU = Network Software Update

LGT10 = LG tuner name

Model Number D/L

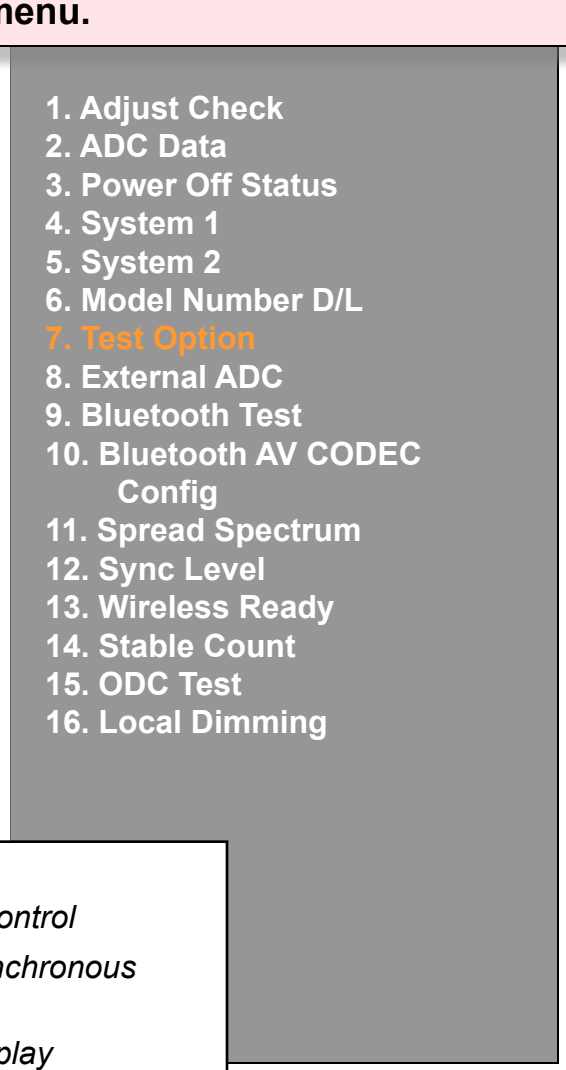
This menu displays the model name and serial number and allows to make changes

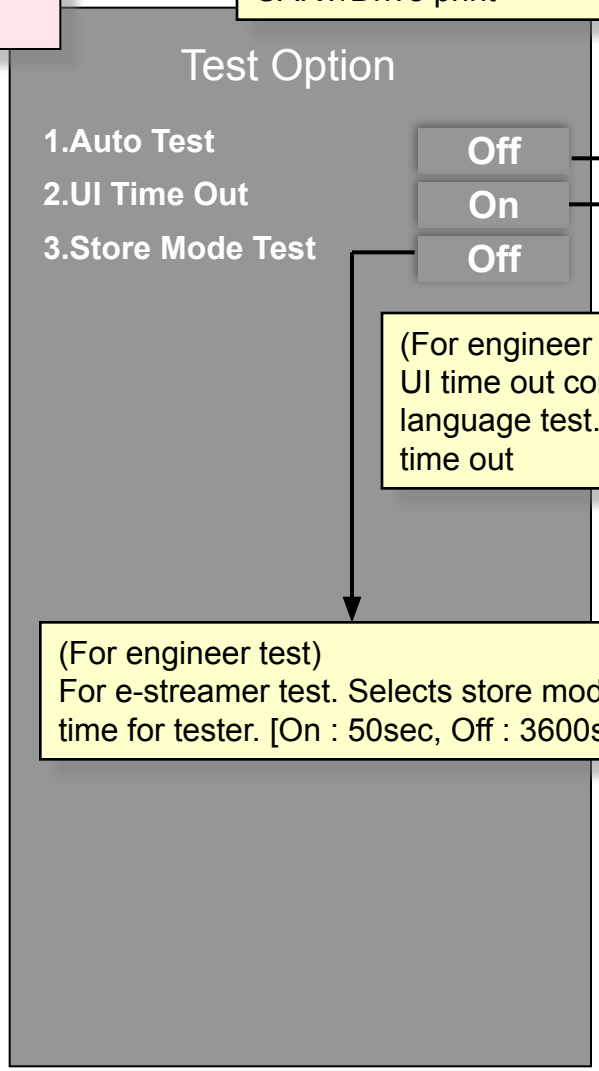


- You can change the Model name and Serial Number
- Characters following a space bar are ignored
- Input characters : +, -, A ~Z, 0~9, Space

Test Option

These Test Options are only for test engineers and the QE test department. **Don't use this menu.**





(For QE department test)
For remote control key value return in the BSI system (BSI is for QE test system) or UART/Drive print

(For engineer and QE department)
UI time out control. For OSD language test. When "off", no OSD time out

(For engineer test)
For e-streamer test. Selects store mode checking time for tester. [On : 50sec, Off : 3600sec]

UI= User Interface

ODC = Over Driving Control

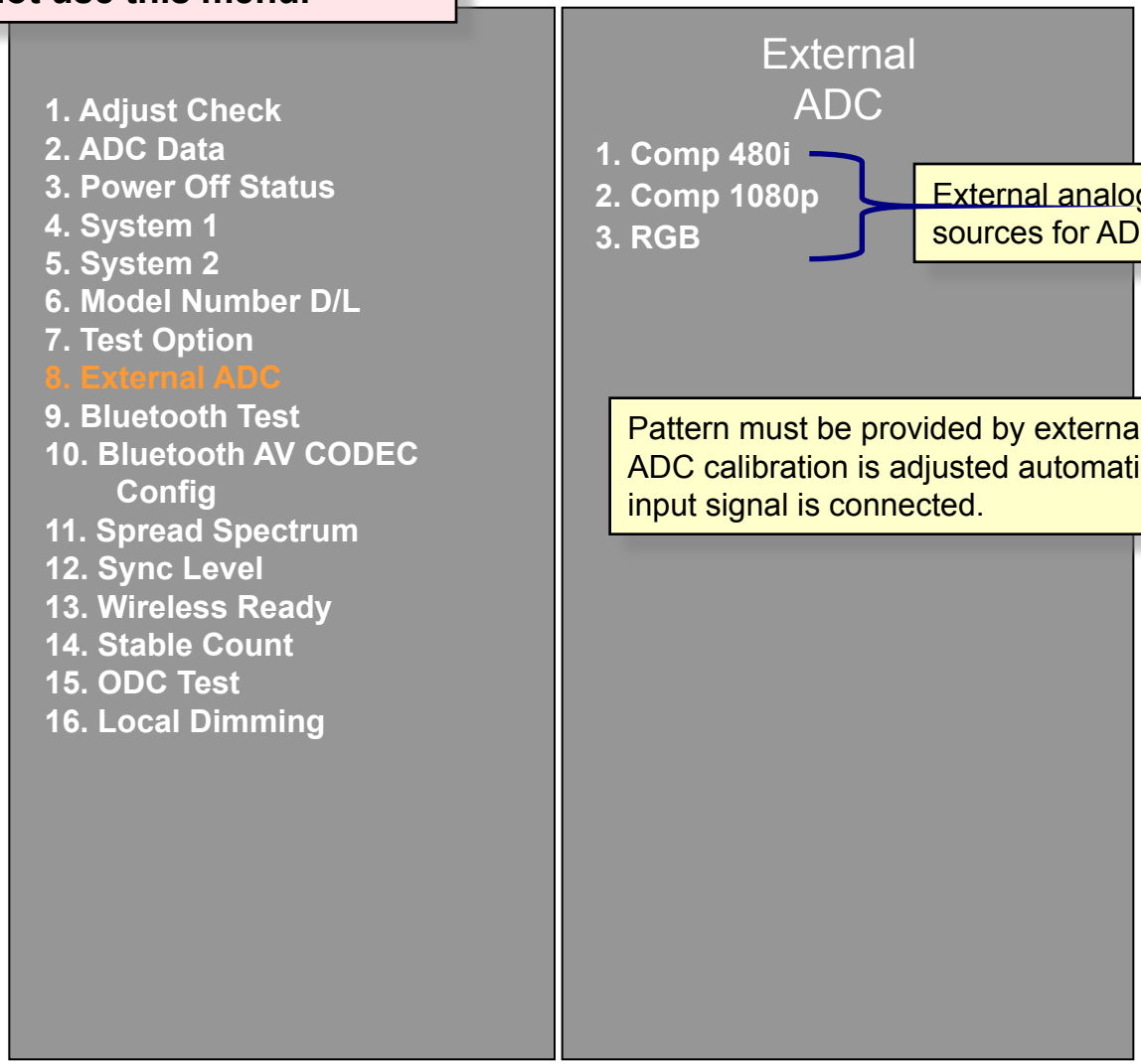
UART= Universal Asynchronous Receiver/Transmitter

OSD = On-Screen Display

AV = Audio Video

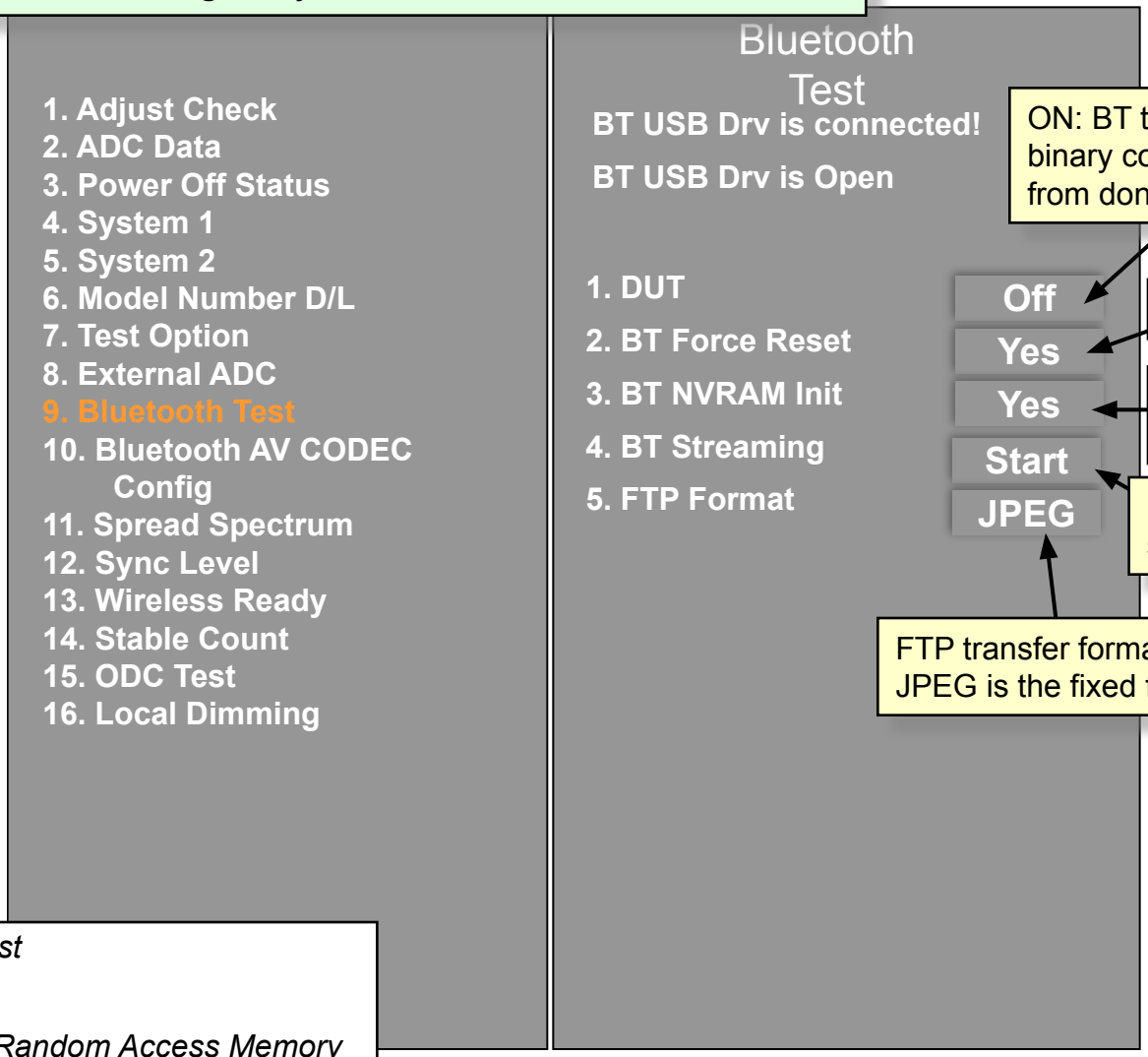
External ADC

This menu allows calibration of the ADC in the BCM chipset. Only for engineers or the production process. **Do not use this menu.**



Bluetooth Test – *only for models that support BT*

This menu allows you to check the settings for the Bluetooth control system. It is recommended not to change any of these items.



ON: BT test mode for binary code downloaded from dongle

Reset of dongle

Initialisation of BT eqt in menu

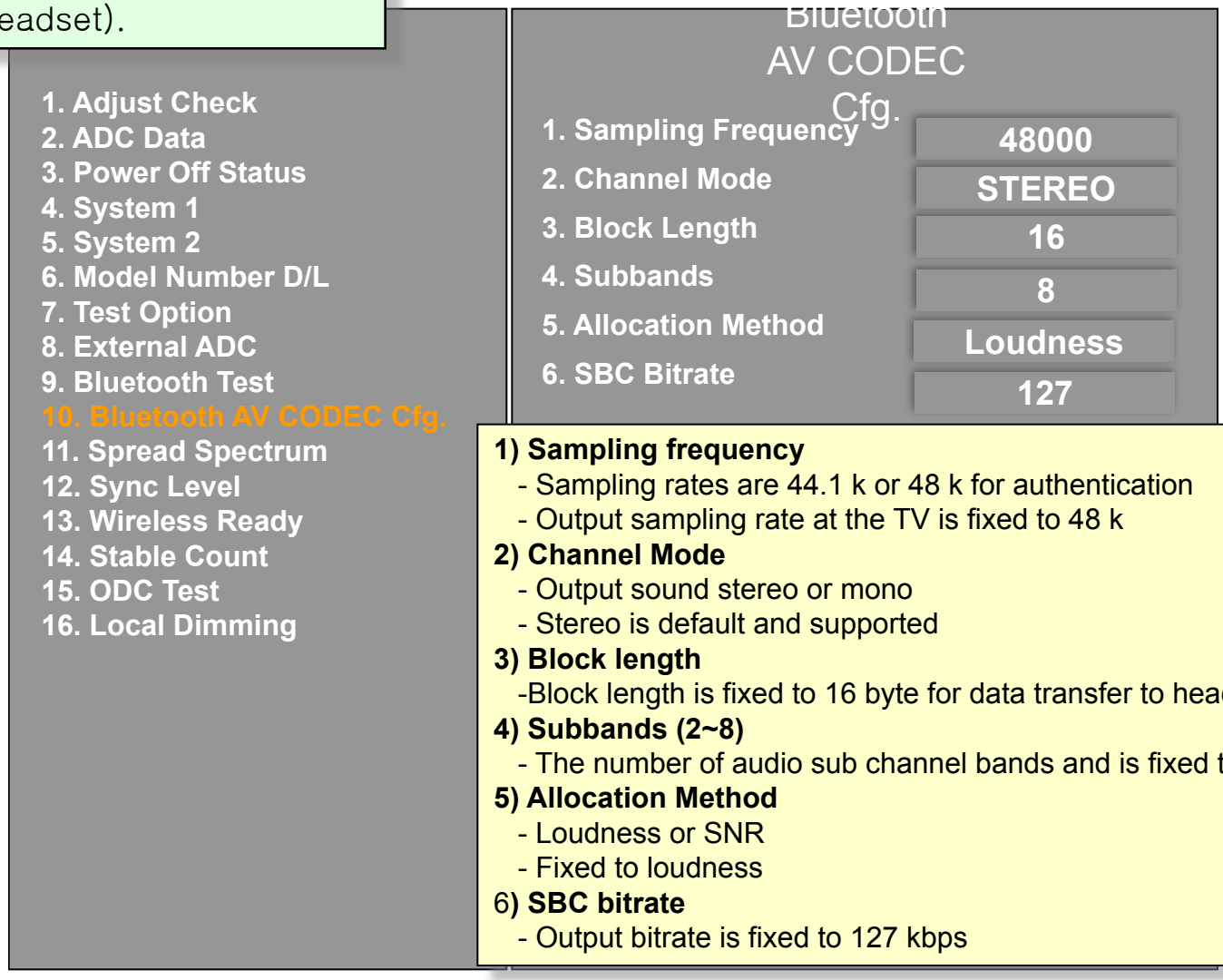
Instant audio stream decoding

FTP transfer format of image files. JPEG is the fixed format for TV

DUT = Device Under Test
BT = BlueTooth
NVRAM = Non-Volatile Random Access Memory
FTP = File Transfer Protocol
Drv = Driver

Bluetooth AV CODEC Config – *only for models that support BT*

This menu allows you to check and change the settings for the audio-video CODEC that is used with Bluetooth (for headset).



1) Sampling frequency
- Sampling rates are 44.1 k or 48 k for authentication
- Output sampling rate at the TV is fixed to 48 k

2) Channel Mode
- Output sound stereo or mono
- Stereo is default and supported

3) Block length
-Block length is fixed to 16 byte for data transfer to headset

4) Subbands (2~8)
- The number of audio sub channel bands and is fixed to 8

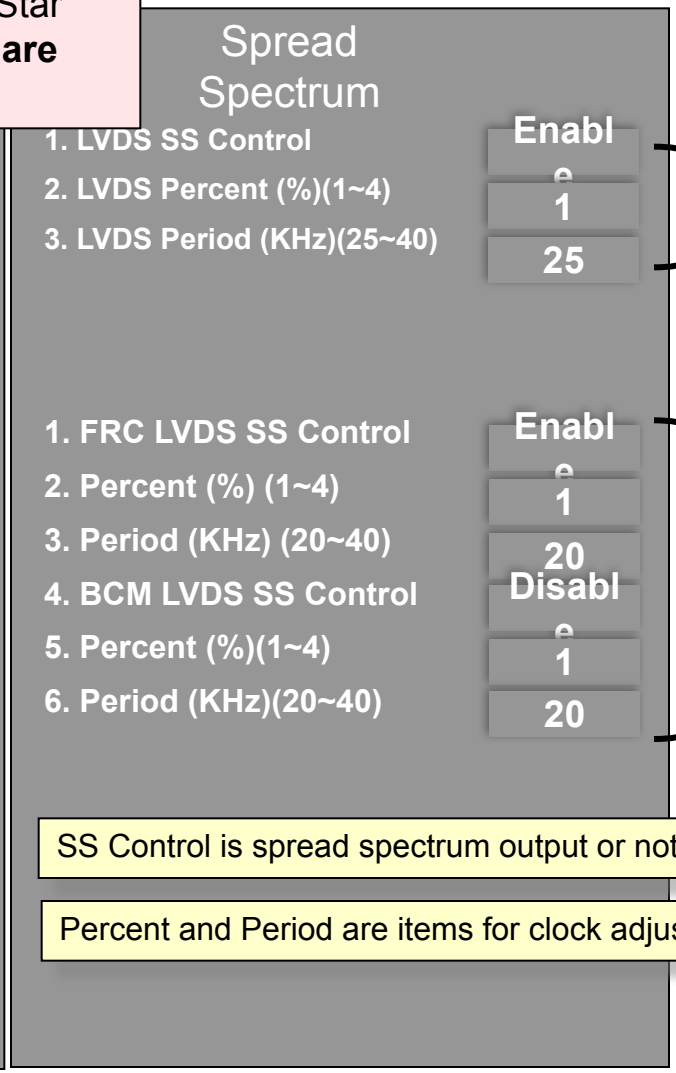
5) Allocation Method
- Loudness or SNR
- Fixed to loudness

6**) SBC bitrate**
- Output bitrate is fixed to 127 kbps

SBC = Sub Band Coding

Spread Spectrum

This menu relates to EMI problem improvement. Either the MStar menu or the BCM menu will be displayed. **These values are optimized so don't change these items**



SS Control is spread spectrum output or not

Percent and Period are items for clock adjustment

EMI : Electro Magnetic Interference

FRC = Frame Rate Controller

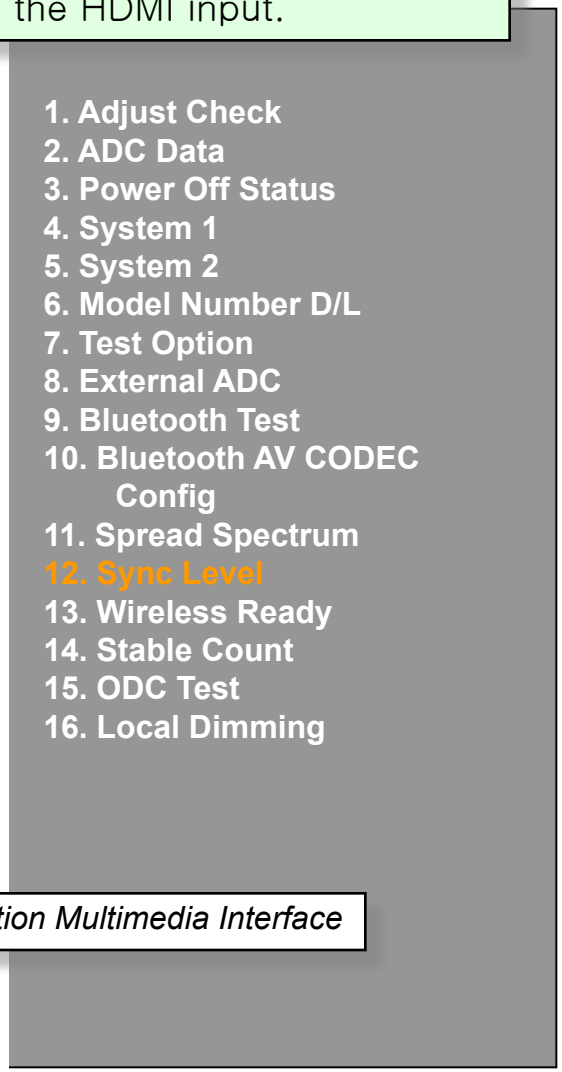
LVDS = Low Voltage Differential System

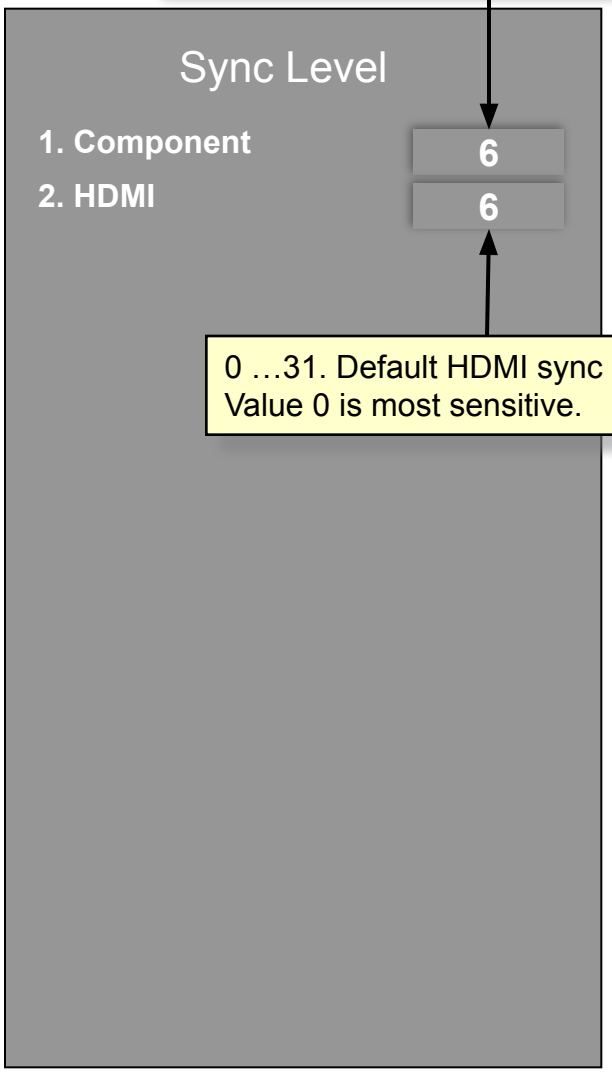
SS = Spread Spectrum

BCM and MStar are two different chipsets

Sync Level

This menu allows you to set the synchronization level for the Component input and the HDMI input.





0 …31. Default Component sync level is 13.
Value 0 is most sensitive.

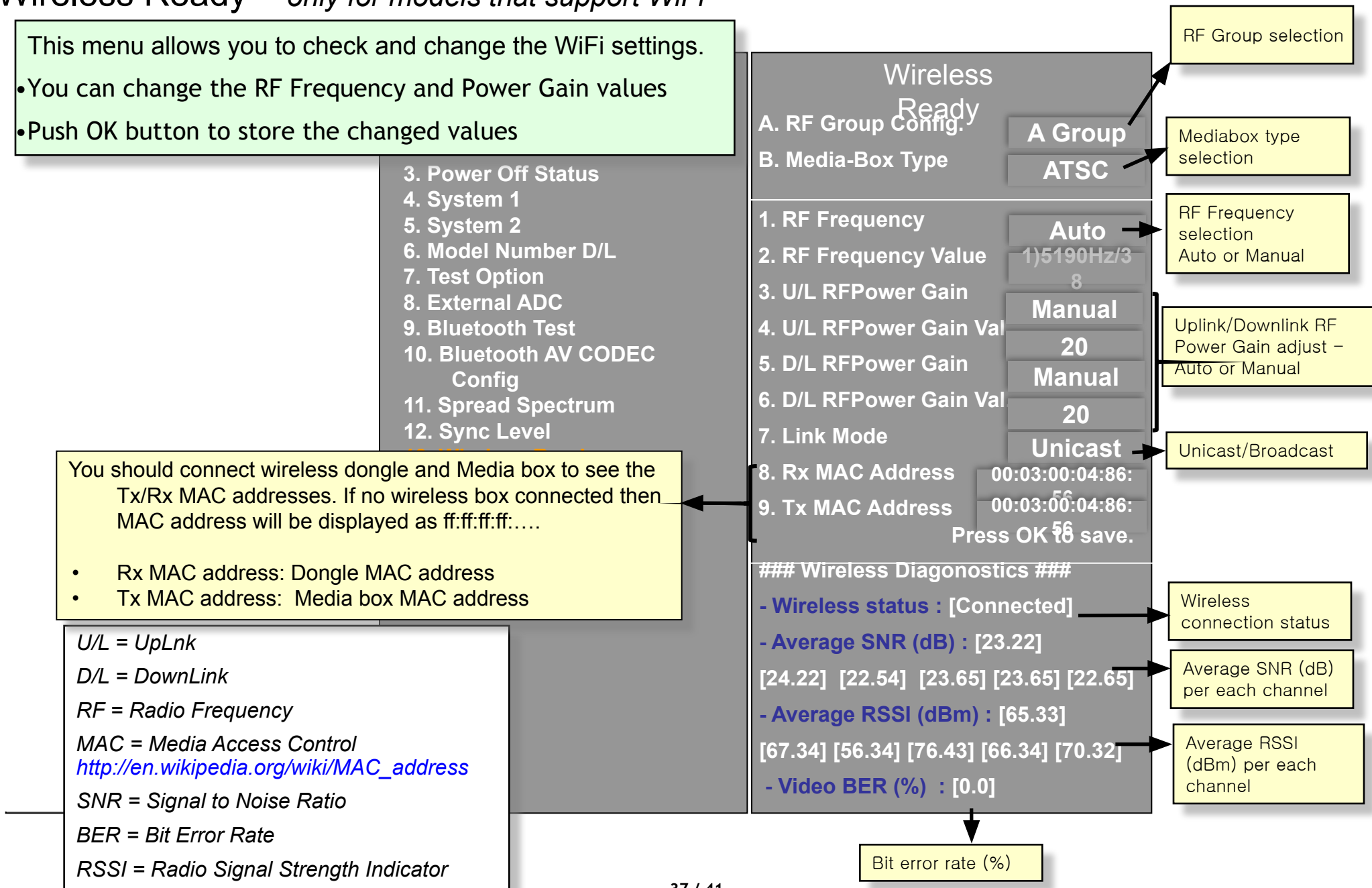
0 …31. Default HDMI sync level is 0.
Value 0 is most sensitive.

HDMI = High Definition Multimedia Interface

Wireless Ready – *only for models that support WiFi*

This menu allows you to check and change the WiFi settings.

- You can change the RF Frequency and Power Gain values
- Push OK button to store the changed values



You should connect wireless dongle and Media box to see the Tx/Rx MAC addresses. If no wireless box connected then MAC address will be displayed as ff:ff:ff:ff:….

- Rx MAC address: Dongle MAC address
- Tx MAC address: Media box MAC address

U/L = UpLnk

D/L = DownLink

RF = Radio Frequency

MAC = Media Access Control
http://en.wikipedia.org/wiki/MAC_address

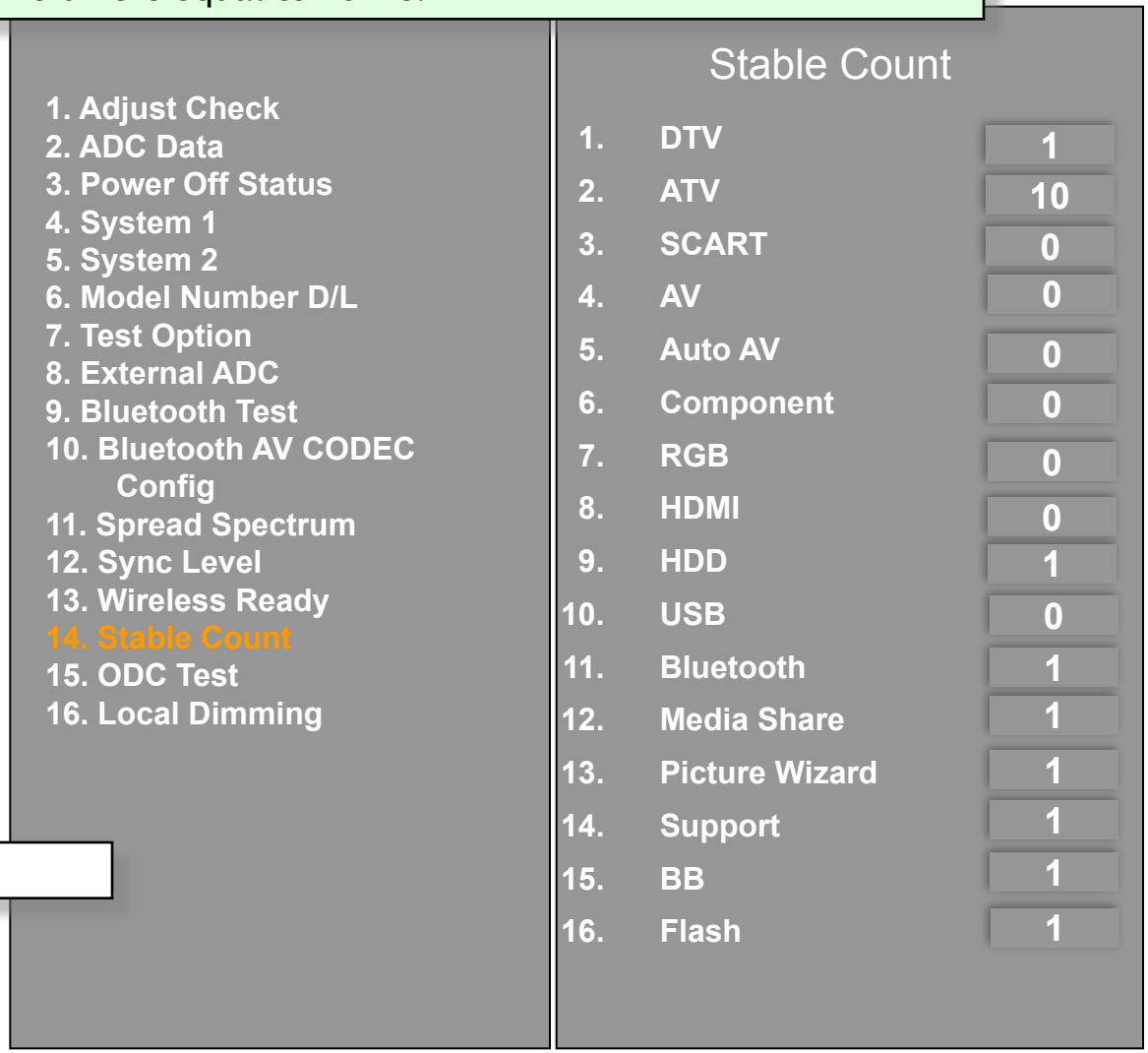
SNR = Signal to Noise Ratio

BER = Bit Error Rate

RSSI = Radio Signal Strength Indicator

Stable Count

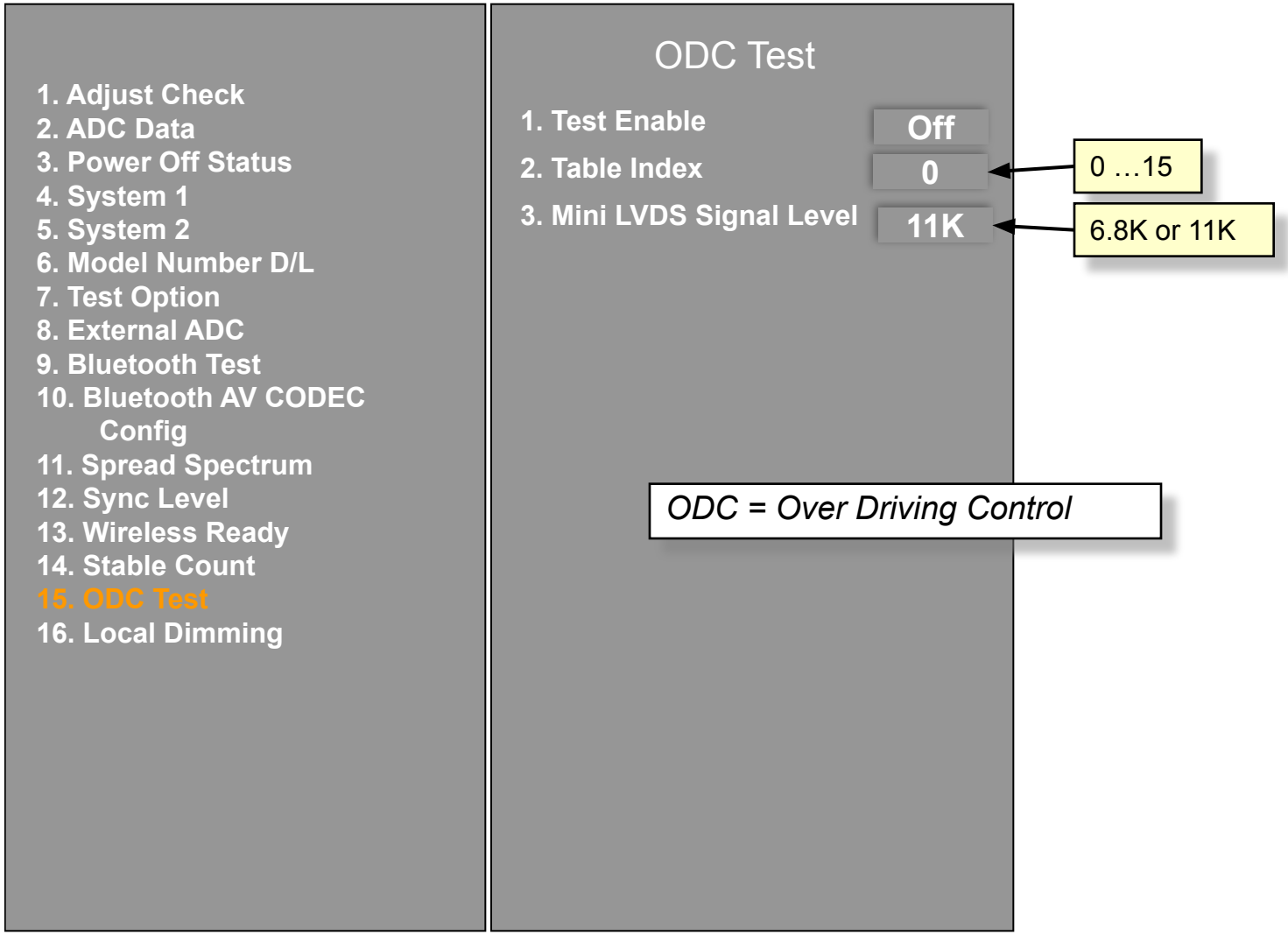
This menu determines how long the signal must be stable (after changing the input mode) before the screen muting stops. One unit is equal to 40 ms.



BB = Broad Band

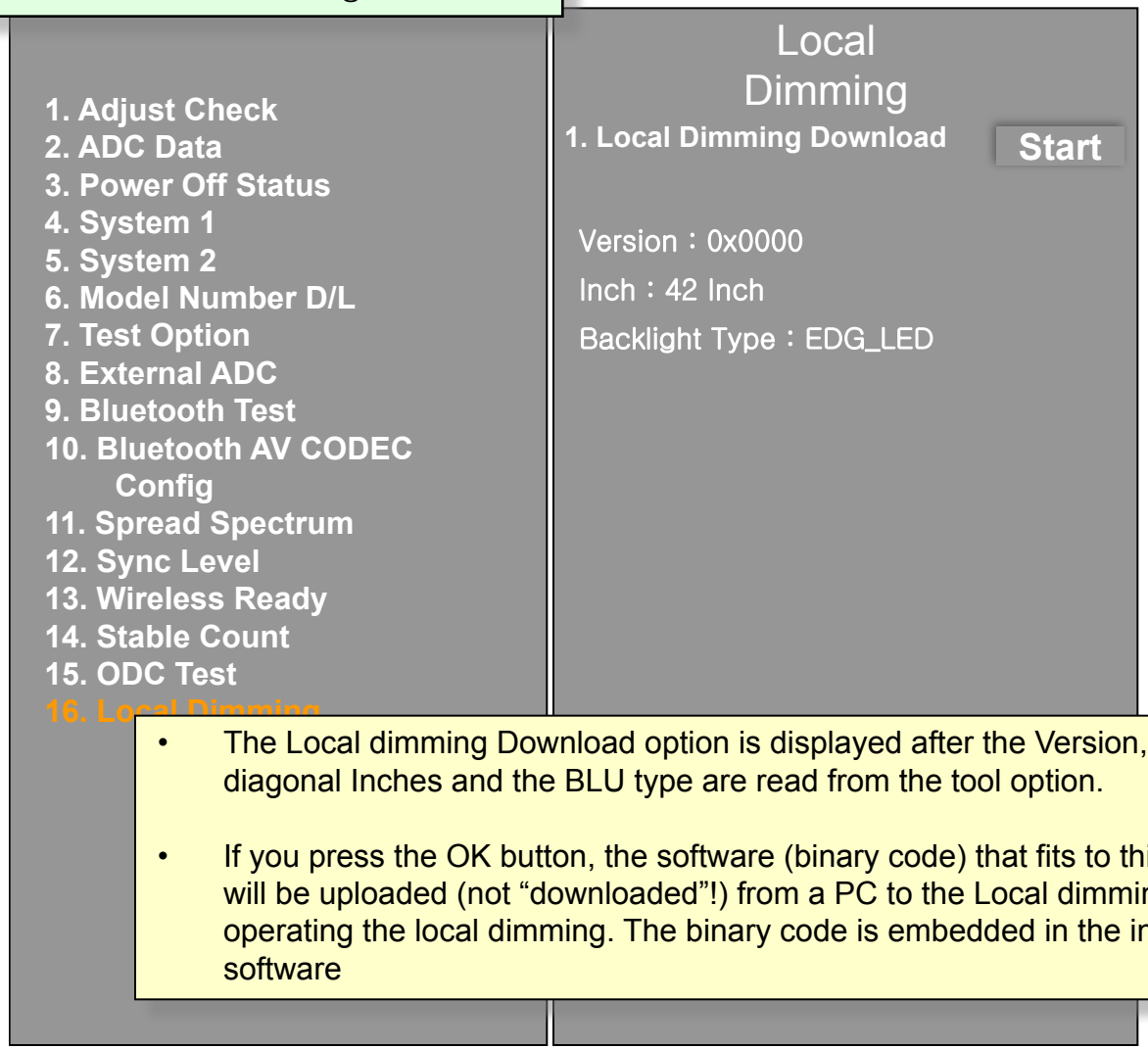
ODC Test

This menu allows you to control the panel response time.



Local Dimming – *only for models that support Local Dimming*

This menu allows you to load the local dimming firmware



- The Local dimming Download option is displayed after the Version, the diagonal Inches and the BLU type are read from the tool option.
- If you press the OK button, the software (binary code) that fits to this option will be uploaded (not “downloaded”!) from a PC to the Local dimming Chip for operating the local dimming. The binary code is embedded in the internal software

BLU = BackLight Unit

The End