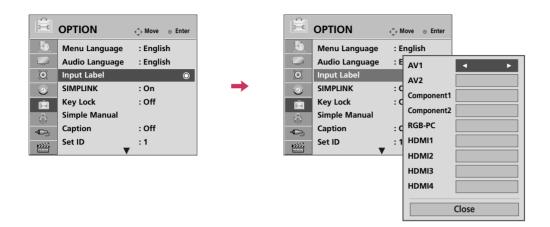
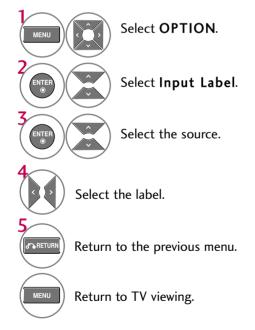
# **INPUT LABEL**

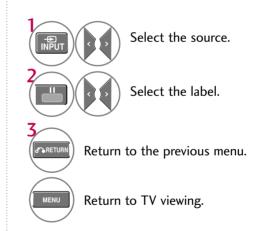
You can set a label for each input source when it's not in use.



# With using OPTION menu



# With using INPUT button

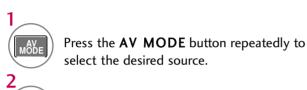


# WATCHING TV / CHANNEL CONTROL

### **AV MODE**

AV Mode toggles through preset Video and Audio settings.





- If you select "Cinema" in AV mode, Cinema will be selected both for "PIC-TURE menu - Picture Mode" and "AUDIO menu - Sound Mode" respectively.
- If you select "Off" in AV mode, the "Picture Mode" and "Sound Mode" return to previous selected value.
- Off: Disables the AV MODE.
- Cinema: Optimizes video and audio for watching movies.
- **Sport**: Optimizes video and audio for watching sports events.
- Game: Optimizes video and audio for playing games.

### SIMPLE MANUAL

You can easily and effectively access the TV information by viewing a simple manual on the TV. During the Simple Manual operation, audio will be muted.







Select **OPTION**.





Select the part of the manual you want to see.

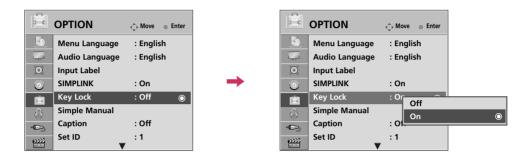


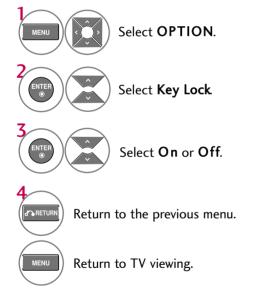
# **KEY LOCK**

The TV can be set up so that it can only be used with the remote control.

This feature can be used to prevent unauthorized viewing by locking out the front panel controls.

This TV is programmed to remember which option it was last set to even if you turn the TV off.





In Key Lock 'On', if the TV is turned off, press the ∅/I, INPUT, CH (▲▼ or ∧ ∨) button on the TV or POWER, INPUT, CH (∧ ∨) or NUMBER buttons on the remote control.
 With the Key Lock On, the display '▲ Key Lock' appears on the screen if any button on the front panel is pressed

while viewing the TV.

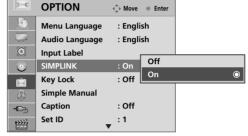
# WATCHING TV / CHANNEL CONTROL

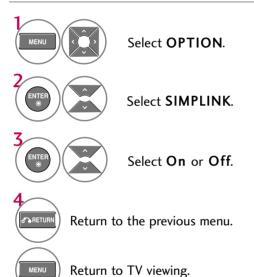
# **SIMPLINK**

SIMPLINK allows you to control and play other AV devices connected with HDMI cable without additional cables and settings. This TV may work with devices with HDMI-CEC support, but only devices with the Simplink logo are fully supported.

SIMPLINK can be turned on and off in the user menus.







#### NOTE

- ► Connect the HDMI/DVI IN or HDMI IN terminal of the TV to the rear terminal (HDMI terminal) of the SIMPLINK device with the HDMI cable.
- ▶ When you switch the Input source with the INPUT button on the remote control, the SIMPLINK device will stop.
- ▶ When you select a device with home theater functionality, the sound output automatically switches to the home theater speakers and the TV speakers are turned off.
- ▶ If a connected SIMPLINK home theater system doesn't play the audio from the TV, connect the DIGITAL AUDIO OUT terminal on the back of the TV to the DIGITAL AUDIO IN terminal on the back of the SIMPLINK device with an OPTICAL cable.

#### **SIMPLINK Functions**

- **Direct Play:** After connecting AV devices to the TV, you can directly control the devices and play media without additional settings.
- Select AV device: Enables you to select one of the AV devices connected to TV.
- **Disc playback:** Control connected AV devices by pressing the  $\land \lor \lor \lor$ , **ENTER**,  $\blacktriangleright$ ,  $\blacksquare$ ,  $\blacksquare$ ,  $\blacksquare$ , and  $\blacktriangleright \blacktriangleright$  buttons.
- Power off all devices: When you power off the TV, all connected devices are turned off.
- **Switch audio-out:** Offers an easy way to switch audio-out.
- Sync Power on: When the equipment with Simplink function connected HDMI terminal starts to play, The TV will change automatically to turn on mode.

(A device, which is connected to the TV through a HDMI cable but does not support SIMPLINK, does not provide this function)

Note: To operate SIMPLINK, an HDMI cable over Version 1.3 with \*CEC function should be used. (\*CEC: Consumer Electronics Control).

#### SIMPLINK Menu



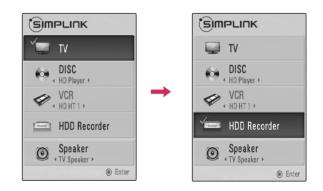
Display SIMPLINK menu.



Select the desired device.



Control connected AV devices.



- TV viewing: Switch to the previous TV channel regardless of the current mode.
- DISC playback: Select and play discs. When multiple discs are available, the titles of discs are conveniently displayed at the bottom of the screen.
- **3 VCR playback**: Control the connected VCR.
- **4 HDD Recordings playback:** Control recordings stored in HDD.
- S Audio Out to Home Theater speaker/Audio Out to TV: Select Home Theater speaker or TV speaker for Audio Out.



- ► When no device is connected (displayed in gray)
- ► Selected Device
- When a device is connected (displayed in bright color)

# **USB**

### **ENTRY MODES**

When you connect a USB device, this pop up menu is displayed automatically. When the Pop Up menu does not appear, you can select Photo List or Music List in the USB menu. In USB device, you can not add a new folder or delete the existing folder.

1 Connect the USB device to the USB IN jacks on the TV.







■ This TV supports JPG and MP3 files.

When removing the USB device

Select the **USB Device** menu before removing the USB device.





#### Precautions when using the USB device

- ▶ Only a USB storage device is recognizable.
- ► If the USB storage device is connected through a USB hub, the device is not recognizable.
- ➤ A USB storage device using an automatic recognition program may not be recognized.
- ➤ A USB storage device which uses its own driver may not be recognized.
- ► The recognition speed of a USB storage device may depend on each device.
- ▶ Please do not turn off the TV or unplug the USB device when the connected USB storage device is working. When such device is suddenly separated or unplugged, the stored files or the USB storage device may be damaged.
- Only use a USB storage device which has normal music files or image files.
- ▶ Please use only a USB storage device which was formatted as a FAT 32 or NTFS file system provided with the Windows operating system. In case of

- a storage device formatted as a different utility program which is not supported by Windows, it may not be recognized.
- ▶ Please connect power to a USB storage device (over 0.5A) which requires an external power supply. If not, the device may not be recognized.
- ▶ Please connect a USB storage device with cable is offered by USB maker. If connected with cable is not offered by USB maker or an excessively long cable, the device may not be recognized.
- ➤ Some USB storage devices may not be supported or operate properly.
- ▶ Please backup important files because data on USB device may be damaged. Data management is consumer's responsibility and as a result, the manufacturer does not cover data damage.
- ▶ If your USB memory device has multiple partitions, or if you use a USB multi-card reader, you can use up to 4 partitions or USB memory devices.

# **PHOTO LIST**

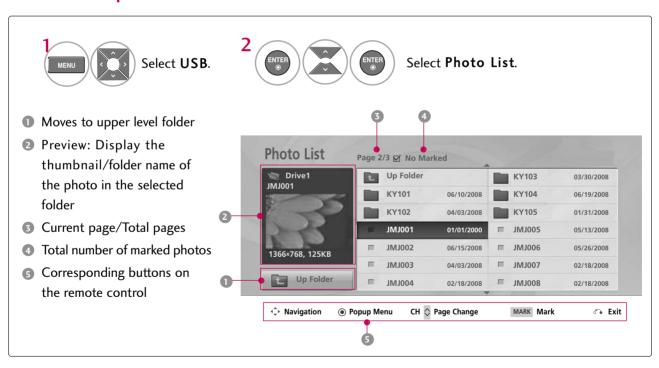
You can view .JPG files from USB storage devices.

The On Screen Display on your model may be slightly different.

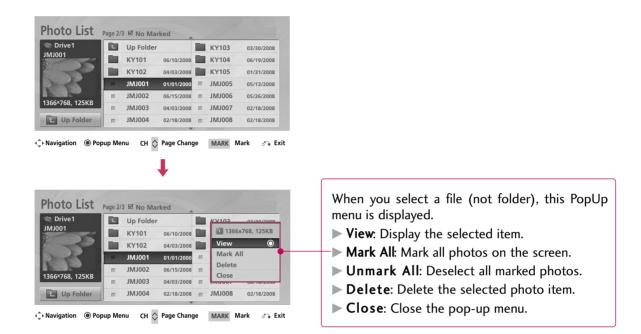
#### Supported photo file: \*.JPG

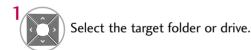
- You can play JPG files only.
- Only baseline scan is supported among JPG.

# **Screen Components**



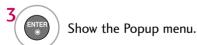
### Photo Selection and Popup Menu

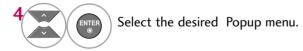






Select the desired photos.





- Use the **CH** ∧ ∨ button to navigation in the photo page.
- Use the MARK button to mark or unmark a photo. When one or more photos are marked, you can view individual photos or a slide show of the marked photos. If no photos are marked, you can view all photos individually or all photos in the folder in a slide show.

#### **Full Screen Menu**

You can change the Photo List view so that it fills the screen. More operations are available in full screen mode.



The aspect ratio of a photo may change the size of the photo displayed on the screen in full size.



Select the target folder or drive.





Select the desired photos.



Show the Popup menu.

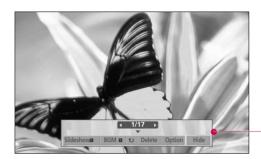


Select View.



The selected photo is displayed in full size.

■ Use the **CH** ∧ ∨ button to navigation in the photo page.





Select the Slideshow, BGM, U (Rotate), Delete, Option, or Hide.

- Use < > button to select the previous or next photo.
- Use ∧ ∨ < > button to select and control the menu on the full-sized screen.

- ➤ **Slideshow**: Selected photos are displayed during the slide show. If no photo is selected, all photos in the current folder are displayed during slide show.
  - Set the time interval of the slide show in **Option**.
- ▶ **BGM**: Listen to music while viewing photos in full size.
  - Set the BGM device and album in **Option**.
- ► (Rotate): Rotate photos.
  - Rotates the photo 90°, 180°, 270°, 360° clockwise.
- ▶ **Delete**: Delete photos.
- ▶ Option: Set values for Slide Speed and Music Album
  - Use ∧ ∨ < > button and ENTER button to set values. Then go to Enter and press ENTER to save the settings.
  - You cannot change Music Album while BGM is playing.
- ▶ **Hide** : Hide the menu on the full-sized screen.
  - To see the menu again on the full-sized screen, press **ENTER** button to display.



#### NOTE

➤ This TV will not be able to decode most JPG images saved using the Progressive option.

# **MUSIC LIST**

You can use the Music List menu to play MP3 files form a USB storage device.

This TV cannot play back copy-protected files.

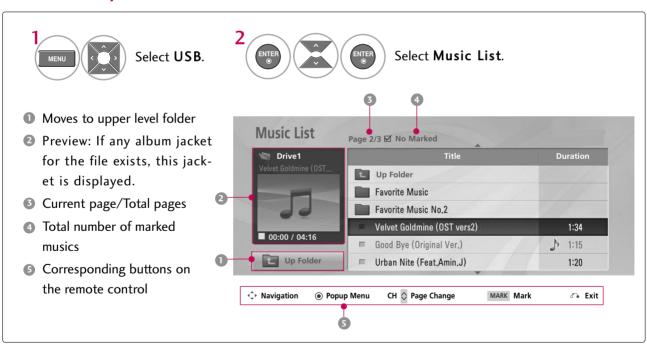
The On Screen Display on your model may be slightly different.

#### Supported music file: \*.MP3

Bit rate range 8Kbps ~ 320Kbps

Sampling rate (Sampling Frequency)
 MPEG1: 32000, 44100, 48000Hz
 MPEG2: 16000, 24000, 22050Hz
 MPEG2.5: 8000, 12000, 11025Hz

# **Screen Components**



### Music Selection and Popup Menu









- ▶ Play (During stop): Play the selected music. Once a song finishes playing, the next selected one will be played. When there are no selected musics to play, the next one in the current folder will be played. If you go to a different folder and press the ENTER button, the current music in playback will stop.
- Play Marked: Play the selected musics. Once a music finishes playing, the next selected one will be played automatically.
- ➤ **Stop Play** (During playback): Stop the playing musics.
- ▶ Play with Photo: Start playing the selected musics and then move to the Photo List.
- ► Mark All: Mark all musics in the folder.
- ► Unmark All: Deselect all marked music.
- ▶ **Delete**: Delete the selected music.
- ► Close: Close the pop-up menu.



Select the target folder or drive.



Select the desired musics.



Show the Popup menu.



Select the desired Popup menu.



- Use the **CH** ∧ ∨ button to navigation in the music page.
- Use MARK button to mark or unmark a music file. If no music is marked, all the music in the folder will be played in sequence. When one or more music files are marked, the marked music files will be played in sequence. If you want to listen to only one song repeatedly, just mark that one file and play.

The play information box (as shown below) will automatically move across the screen when there is no user input to prevent a fixed image remaining on the screen for a extended period of time.



### NOTE

- ▶ When music is playing, 🌓 is displayed in front of the music play time.
- ▶ A damaged or corrupted music file that does not play displays 00:00 as the play time.
- ▶ Music files with copy-protection will not play.
- ▶ Press ENTER, , or RETURN button to stop the screen saver.

# **MOVIE LIST**

The movie list is activated once USB is detected. It is used when playing movie files on TV.

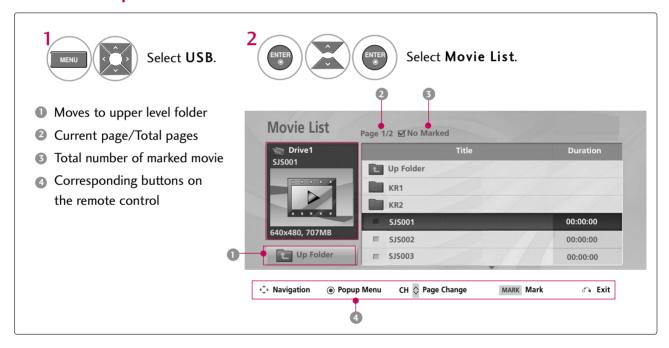
Displays the movies in the USB folder and supports play.

Allows playback of all movies in the folder and user desired files.

Editing such as delete and add is not allowed.

It is a movie list that displays folder information and Divx file.

# **Screen Components**



#### NOTE

- A video file name and its subtitle file name must be identical for it to be displayed.
- ▶ Use the < > button to move to a specific frame forward or backward while playing a movie.
  - ( < > button may not work properly for some files while playing a movie.)

File Extension	Container	Video Codec	Spec	Note	
DAT, MPG, MPEG	DAT, MPG, MPEG, DVI	D Mpeg1,2	720X480@30P		
mpg	MPEG-1	MPEG-1	720X480@30P		
VOB	MPEG2 -PS	Mpeg1, 2	720X480@30P	Microsoft MPEG4-v2, v3 is not supported.  WMV serise is not supported.  Spec resolution means up to max supporting resolution.	
mp4	AVI, MP4	MPEG4 Divx 3.11, Divx 4.12, Divx 5.x, Divx 6, Xvid 1.00, Xvid 1.01, Xvid 1.02, Xvid 1.03, Xvid 1.10-beta1/2	800x432@30P		
MKV	MKV	MPEG-1,2,4	720X480@30P		
divx, avi	AVI(1.0, 2.0), DMF0,1,2	MPEG2, MPEG4 Divx 3.11, Divx 4.Divx 5, Divx 6, Xvid 1.00, Xvid 1.01, Xvid 1.02, Xvid 1.03, Xvid 1.10-beta1/2	720X480@30P 800x432@30P		

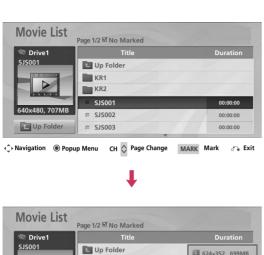
#### Audio Codec

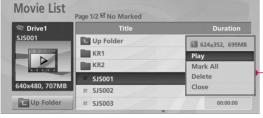
MP3	MP3	32kbps - 320kbps (Bit rate), 32kHz -48kHz (Sample rate)
AC3	AC3	32kbps - 640kbps (Bit rate), 32kHz, 44.1kHz, 48kHz (Sample rate)
MPEG	MPA	32kbps - 448kbps (Bit rate), 32kHz - 48kHz (Sample rate)
LPCM	-	64Kbps - 1.5Mbps (Bit rate), 8KHz - 48KHz (Sample rate)

### Trick play

- a. Pause & Resume
- b. Fast forward (2x, 4x, 8x, 16x, 32x)
- c. Fast backward (2x, 4x, 8x, 16x, 32x)

### Movie Selection and Popup Menu









Select the target folder or drive.



Select the desired movies.



Show the Popup menu.



Select the desired Popup menu.

Return to the previous menu.

▶ Play (During stop): Play the selected movie titles.

If you go to a different folder and press the **ENTER** button, the current movie in playback will stop.

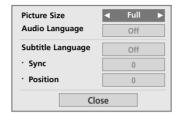
- ▶ Play Marked: Play the selected movie titles. Once a movie finishes playing, the next selected one will be played automatically.
- ▶ **Stop Play** (During playback): Stop the playing movies.
- ► Mark All: Mark all movies in the folder.
- ► Unmark All: Deselect all marked movies.
- ▶ **Delete**: Delete the selected movie.
- ► Close: Close the pop-up menu.

#### Using the remote control

You can adjust various method during movie play.

- ◀◀ / ▶▶: Increases the fast forward/reverse speed.
- II: Displayed the still screen.
- < >: A cursor indicating the position can be viewed on the screen.
- ►: Return to normal playback.
- Use the **CH** ∧ ∨ button to navigation in the movie page.
- Use MARK button to mark or unmark a movie file. When one or more movie files are marked, the marked movie files will be played in sequence. If you want to see only one movie repeatedly, just mark that one file and play.

# DivX Audio Language & Subtitle Language





Press the **RED** button when DivX is playing.



Select Picture Size, Audio Language, Subtitle Language, Sync or Position.



Select the desired option.



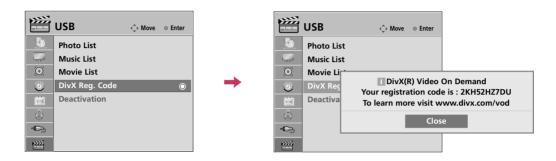
Return to the previous menu.



### **DIVX REGISTRATION CODE**

Confirm the DivX registration code number of the TV. Using the registration number, movies can be rented or purchased at www.divx.com/vod.

With a DivX registration code from other TV, playback of rented or purchased DivX file is not allowed (Only DivX files matched with the registration code of the purchased TV are playable).







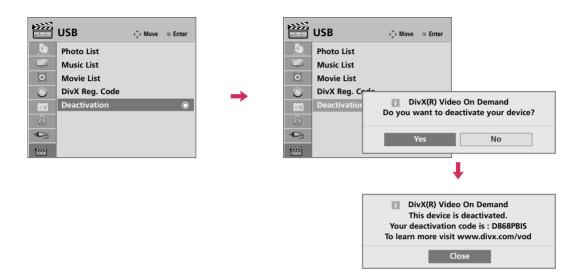
- Official DivX® Certified Product
- DivX® Certified Products: "DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license."

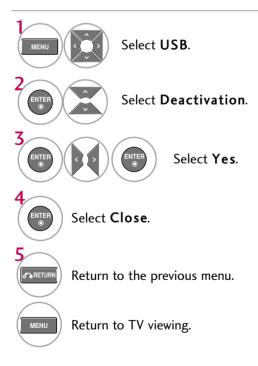
#### NOTE

- ▶ When loading, some buttons may not work.
- ▶ If you use the DivX registration code of another device, the rented or purchased DivX file cannot be played. Therefore always use the DivX registration code assigned to this product.

# **DEACTIVATION**

Delete the existing authentication information to receive a new DivX user authentication for TV. Once this function is executed, a DivX user authentication is required again to see DivX DRM files.

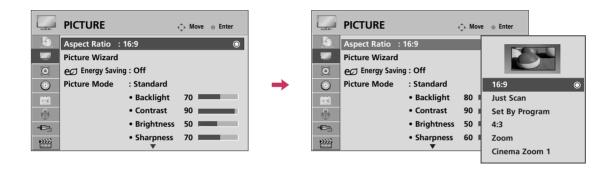


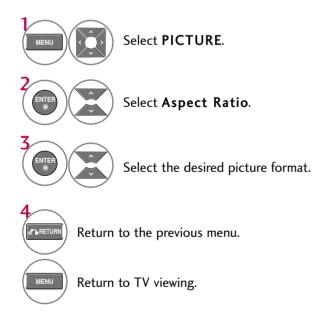


# PICTURE SIZE (ASPECT RATIO) CONTROL

This feature lets you choose the way an analog picture with a 4:3 aspect ratio is displayed on your TV. 

RGB-PC input source use 4:3 or 16:9 aspect ratio.





You can also adjust Aspect Ratio in the Q.MENU.

#### 16:9

Adjust the picture horizontally, in a linear proportion to fill the entire screen.



#### **Just Scan**

Normally the edges of video signals are cropped 1-2%. Just Scan turns off this cropping and shows the complete video.

Notes: If there is noise on the edges of the original signal, it will be visible when Just Scan is activated.

Just Scan operates only in

DTV/CADTV/Component/HDMI-DTV/DVI-DTV (720p/1080i/1080p) input source.



#### **Set By Program**

Selects the proper picture proportion to match the source's image.

$$(4:3 \to 4:3)$$



 $(16:9 \rightarrow 16:9)$ 



#### 4:3

Choose 4:3 when you want to view a picture with an original 4:3 aspect ratio.



#### Zoom

Choose Zoom when you want to view the picture without any alteration. However, the top and bottom portions of the picture will be cropped.

- When adjusting in Q.MENU menu,
  - a. ◀ or ▶ button: Adjust proportion of Zoom.
  - b. ▲ or ▼ button: Move the image on the screen.



#### Cinema Zoom

Choose Cinema Zoom when you want to enlarge the picture in correct proportion.

Note: When enlarging or reducing the picture, the image may become distorted.

- or button: Adjust proportion of Cinema Zoom. The adjustment range is 1-16.
- ▲ or ▼ button: Move the image on the screen.

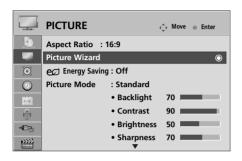


### **PICTURE WIZARD**

This feature lets you adjust the picture quality of the original image.

Use this to calibrate the screen quality by adjusting the Black and White Level etc. You can calibrate the screen quality by easily following each step.

When you adjust the image to Low, Recommended or High, you can see the example of the changes you made.



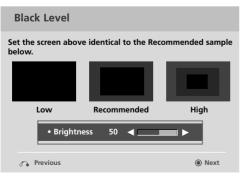




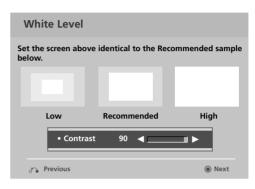
Next



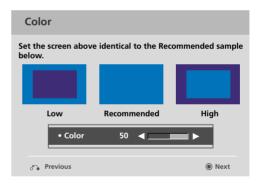
Previous



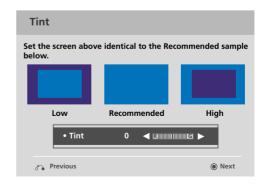




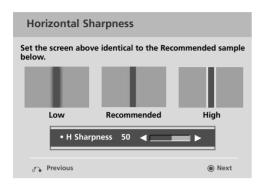




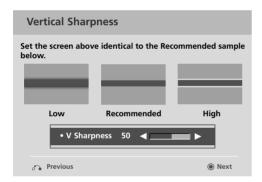








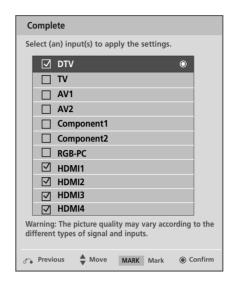








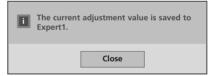






Select input source to apply the settings.





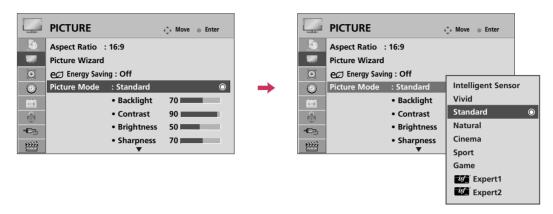


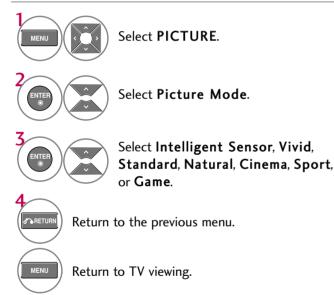
Finish the Picture Wizard.

If you stop the setting before the final step, the changes will not be saved to the TV.

# PRESET PICTURE SETTINGS (PICTURE MODE)

There are factory presets for picture settings available in the user menus. You can use a preset, change each setting manually, or use the Intelligent Sensor.





- When selecting Intelligent Sensor, Energy Saving is changed to Auto automatically.
- When selecting Intelligent Sensor, it is changed contrast, brightness, sharpness, color and tint automatically.
- Vivid, Standard, Natural, Cinema, Sport, and Game Settings are preset for the optimum picture quality at the factory.
- Intelligent Sensor: The most suitable picture is automatically adjusted according to the surrounding conditions.
- **Vivid**: This is the mode to maximize the effect of the video in the retail store. Strengthen the contrast, brightness, color and sharpness for vivid picture.
- Standard: This is the mode to realize optimum viewing condition for the general user.
- Natural: This is the mode to display the most natural screen status.
- Cinema: This mode optimizes video for watching movies.
- **Sport**: This is the video mode to emphasize dynamic video and primary color (e.g, white, uniform, grass, sky blue etc.) by realizing the optimal screen for sports.
- **Game**: This is the mode to realize fast response speed in a fast gaming screen.
- Expert: This is the mode to adjust the video in detail for video quality expert and general user.
- You can also adjust Picture Mode in the Q.MENU.

# MANUAL PICTURE ADJUSTMENT - USER MODE

Adjust the picture appearance to suit your preference and viewing situations.





Select PICTURE.



Select Picture Mode.



Select Vivid, Standard, Natural, Cinema, Sport, or Game.



Select Backlight, Contrast, Brightness, Sharpness, Color, or Tint.



Make appropriate adjustments.



Return to the previous menu.

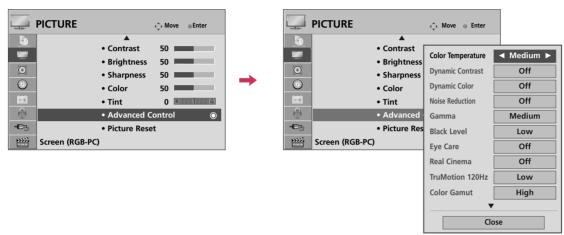


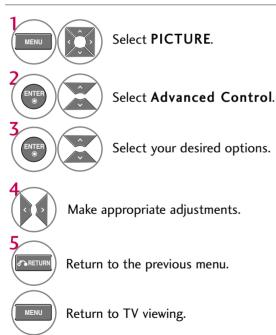
- When adjusting Energy Saving, Backlight function is disabled.
- Backlight: This function adjusts the brightness of LCD panel, to control the brightness of the screen. Adjusting the backlight is recommended when setting the brightness of the set. When decreasing the backlight, the brightness of the black becomes darker without any loss in video signal and the power consumption is reduced.
- Contrast: Increase or decrease the gradient of the video signal. You may use Contrast when the bright part of picture is saturated.
- Brightness: Adjusts the base level of the signal in the picture. You may use Brightness when the dark part of the picture is saturated.
- **Sharpness**: Adjusts the level of crispness in the edges between the light and dark areas of the picture. The lower the level, the softer the image.
- Color: Adjusts intensity of all colors.
- **Tint**: Adjusts the balance between red and green levels.

# PICTURE IMPROVEMENT TECHNOLOGY

You can calibrate the screen for each Picture Mode or set the video value according to the special video screen. You can set the video seeing differently for each input.

To reset to the factory default after making adjustments to each input source, execute the **Picture Reset** function for each Picture Mode.

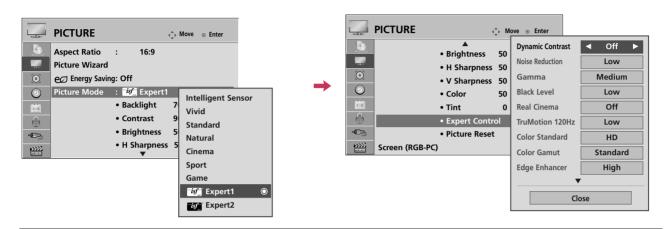


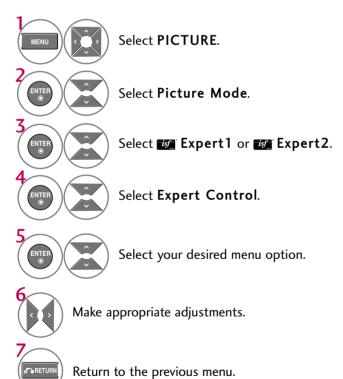


### **EXPERT PICTURE CONTROL**

By segmenting categories, **Expert1** and **Expert2** provide more categories which users can set as they see fit, offering the optimal picture quality for users.

This may also be used be a professional to help optimize the TV performance in the environment the TV is in.





Color Temperature	Set to warm to enhance hotter colors such as red, or set to cool to make picture bluish.
Dynamic Contrast	Adjusts the contrast to keep it at the best level according to the brightness of the screen. The picture is improved by making bright parts brighter and dark parts darker.
Dynamic Color	Adjusts screen colors so that they look livelier, richer and clearer. This feature enhances hue, saturation and luminance so that red, blue, green and white look more vivid.
Noise Reduction	■ Reduces screen noise without compromising video quality.
Gamma	Low: Make dark and middle gray level area of the picture brighter.  Medium: Express original picture levels.  High: Make dark and middle gray level area of the picture darker.  You can adjust brightness of dark area and middle gray level area of the picture.
Black Level	Low: The reflection of the screen gets darker.  High: The reflection of the screen gets brighter.  Auto: Realizing the black level of the screen and set it to High or Low automatically.  ■ Set black level of the screen to proper level.  ■ This function enables to select 'Low' or 'High' in the following mode: AV (NTSC-M), HDMI or Component. Otherwise, 'Black level' is set to 'Auto'.
Eye Care	<ul> <li>Adjust the brightness of the screen to prevent the screen from being too bright. Dims extremely bright pictures.</li> <li>This feature is disabled in "Picture Mode-Vivid, Cinema".</li> </ul>
Real Cinema	<ul> <li>Makes video clips recorded in film look more natural by eliminating judder effect.</li> <li>DVD and Blu-ray movies are filmed at 24 frames per second. With LG Real Cinema, every frame is consistently processed 5 times in 1/24 of a second producing 120 fps with TruMotion or 2 times in 1/24 of a second producing 48 fps without TruMotion, thus totally eliminating the judder effect.</li> <li>This function can work when TruMotion is off.</li> </ul>
TruMotion 120Hz/240Hz	<ul> <li>High: Provides smoother picture movement.</li> <li>Low: Provides smooth picture movement. Use this setting for standard use.</li> <li>Off: Use this setting when "High" and "Low" setting result in noise.</li> <li>TruMotion120Hz or 240Hz provides even better quality for movies than 3:2 Pull-Down conversions.</li> <li>TruMotion can reduce the perception of blur on fast moving scenes by displaying 120 or 240 images per second.</li> <li>It is used for the best picture quality without any motion blur or judder when you enter a quick image or Film Source.</li> <li>TruMotion120Hz or 240Hz works with all inputs except PC mode.</li> <li>If you enable "TruMotion 120Hz or 240Hz", noise may appear on the screen.</li> <li>If this occurs, set "TruMotion 120Hz or 240Hz" to "Off".</li> </ul>

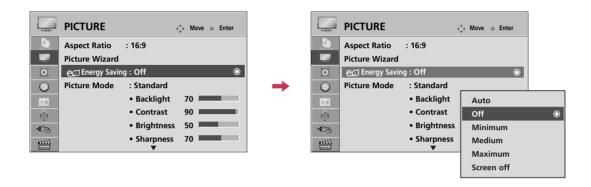
Color Gamut	Standard: Displays standard color area.  Wide: Mode to use and set the rich color area of the display.  Maximize the utilization of color to increase color quality.
Edge Enhancer	■ Show clearer and distinctive yet natural corners of the video.
Color Standard	Convert the color of a different video to HD color.
Color Filter	This is the function to filter the specific colors of the video. You can use the RGB filter to set color saturation and hue accurately.
xvYCC	<ul> <li>This is the function to express richer color.</li> <li>This feature represents rich color as much as conventional video signal.</li> <li>This function is enabled in "Picture mode - Cinema, Expert" when xvYCC signal is inputted through HDMI.</li> </ul>
Expert Pattern	<ul> <li>This is the pattern necessary for expert adjustment.</li> <li>This function is enabled in "Picture Mode - Expert" when you watch DTV.</li> </ul>
White Balance	<ul> <li>■ This is the function to adjust the overall color of the screen to the feeling you want.</li> <li>a. Method: 2 Points</li> <li>- Pattern: Inner, Outer</li> <li>- Red/Green/Blue Contrast, Red/Green/Blue Brightness:         The adjustment range is -50 - +50.</li> <li>b. Method: 10 Point IRE</li> <li>- Pattern: Inner, Outer</li> <li>- IRE (Institute of Radio Engineers) is the unit to display the size of the video signal and can be set among 10, 20, 30 - 100. You can adjust Red, Green or Blue according to each setting.</li> <li>- Luminance: This function displays calculated luminance value for 2.2 gamma. You can input luminance value you want at 100 IRE, than the target luminance value for 2.2 gamma is displayed at every 10 steps from 10 IRE to 90 IRE.</li> <li>- Red/Green/Blue: The adjustment range is -50 - +50.</li> </ul>
Color Management System	<ul> <li>As the tool used by the experts to make adjustments by using the test patterns, this does not affect other colors but can be used to selectively adjust the 6 color areas (Red/Green/Blue/Cyan/Mgt/Yellow).</li> <li>Color difference may not be distinctive even when you make the adjustments for the general video.</li> <li>Adjusts Red/Green/Blue/Yellow/Cyan, Magenta.</li> <li>Red/Green/Blue/Yellow/Cyan, Magenta Color: The adjustment range is -30 - +30.</li> <li>Red/Green/Blue/Yellow/Cyan, Magenta Tint: The adjustment range is -30 - +30.</li> <li>This feature is disable in RGB-PC and HDMI-PC mode.</li> </ul>
OPC	*This feature is not available for all models.  As the technology to reduce the power consumption while keeping the same brightness, this has the effect of reducing power consumption, improvement in contrast.

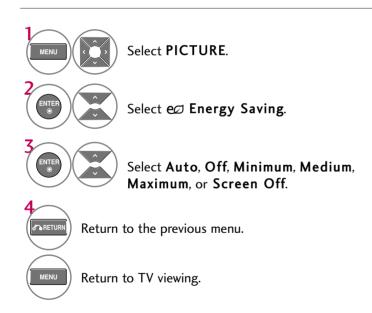
### **ENERGY SAVING**

It reduces the TV's power consumption by lowering the backlight level.

The default factory setting complies with the **Energy Star** requirements and is adjusted to the comfortable level to be viewed at home.

You can increase the brightness of your screen by adjusting the **Energy Saving** level or by setting the **Picture Mode**.

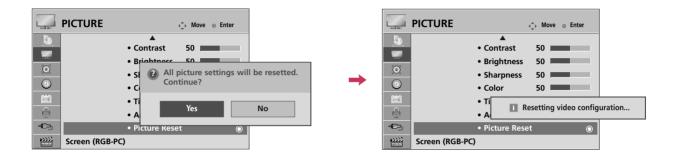


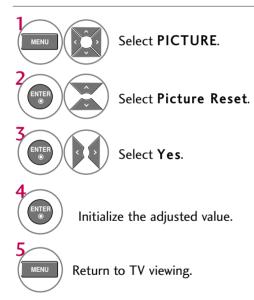


When selecting Screen off, TV turned off after 3 seconds.
 If you adjust "Energy Saving-Auto, Minimum, Medium, Maximum", Backlight feature will not work.
 When selecting Auto, Backlight is automatically adjusted through Intelligent sensor according to the surrounding conditions.
 Press the ENERGY SAVING button repeatedly to select the appropriate Energy Saving setup.

# **PICTURE RESET**

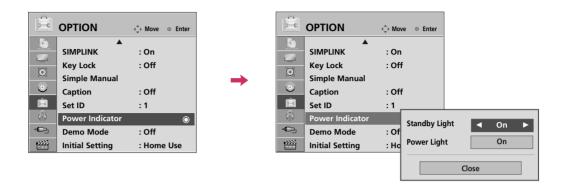
Settings of the selected picture modes return to the default factory settings.





# **POWER INDICATOR**

Adjust the power/standby indicator light of TV front.





Select **OPTION**.



Select Power Indicator.



Select Standby Light or Power Light.

- **Standby Light**: Determines whether to set the indicator light on the front of the TV to **On** or **Off** in standby mode.
- Power Light: Determines whether to set the indicator light on the front of the TV to On or Off when the power turns on.



Select your desired options.

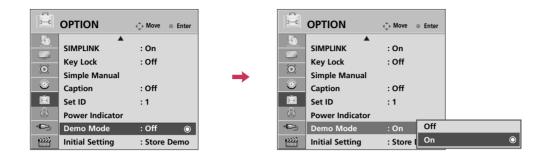


Return to the previous menu.



# **DEMO MODE**

Displays a slide show to explain the various feature of this TV.





Select **OPTION**.



Select **Demo Mode**.



Select **On** to show the various feature of the TV.



Return to TV viewing.

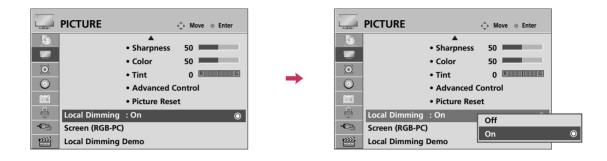
After a while, **Demo Mode** starts.

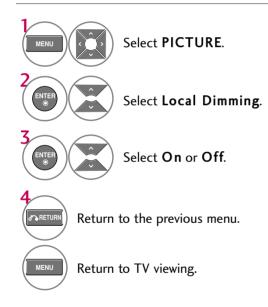
If you want to stop the demo, press any button (Except VOL +, - and MUTE button).

■ This feature is disabled in "Initial Setting-Home Use".

# LOCAL DIMMING - For 55LH95

After analyzing the signal of the input video by areas of the screen, it adjusts the backlight to improve the contrast ratio. This feature is disabled in "Picture Mode-Cinema, Game".



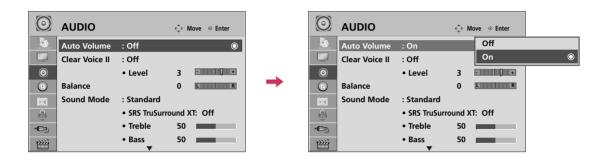


# **SOUND & LANGUAGE CONTROL**

# AUTO VOLUME LEVELER (AUTO VOLUME)

Auto Volume makes sure that the volume level remains consistent whether you are watching a commercial or a regular TV program.

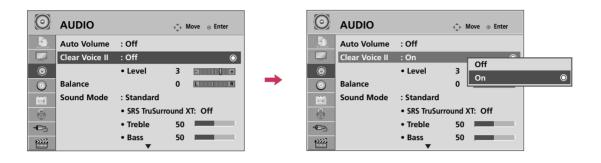
Because each broadcasting station has its own signal conditions, volume adjustment may be needed every time the channel is changed. This feature allows users to enjoy stable volume levels by making automatic adjustments for each program.





# **CLEAR VOICE II**

By differentiating the human sound range from others, it improves the sound quality of voices.





Select AUDIO.



Select Clear Voice II.



Select **On** or **Off**.

# Adjustment for Clear Voice Level With selecting $\mathbf{O}\,\mathbf{n}$



Select Level.



Make appropriate adjustments.

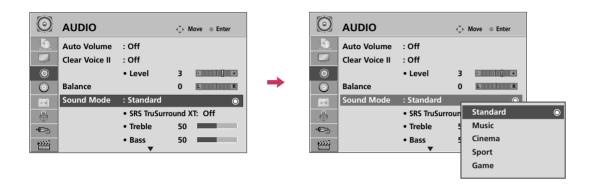


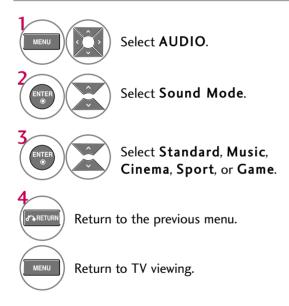
Return to the previous menu.



## PRESET SOUND SETTINGS (SOUND MODE)

Sound Mode lets you enjoy the best sound without any special adjustment as the TV sets the appropriate sound options based on the program content.





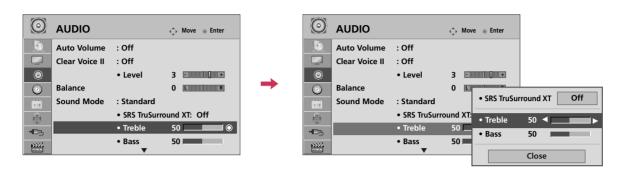
Standard, Music, Cinema, Sport, and Game are preset for optimum sound quality at the factory.
 You can also adjust Sound Mode in the Q.MENU.
 Standard: Offers standard-quality sound.
 Music: Optimizes sound for listening to music.
 Cinema: Optimizes sound for watching movies.
 Sport: Optimizes sound for watching sports events.
 Game: Optimizes sound for playing

games.

## **SOUND & LANGUAGE CONTROL**

## SOUND SETTING ADJUSTMENT - USER MODE

Adjust the sound to suit your taste and room situations.





Select AUDIO.



Select Sound Mode.



Select Standard, Music, Cinema, Sport, or Game.



Select **Treble** or **Bass**.



Make appropriate adjustments.



Return to the previous menu.



Return to TV viewing.

### SRS TRUSURROUND XT

Select this option to sound realistic.



Select AUDIO.



Select SRS TruSurround XT.



Select On or Off.



Return to the previous menu.

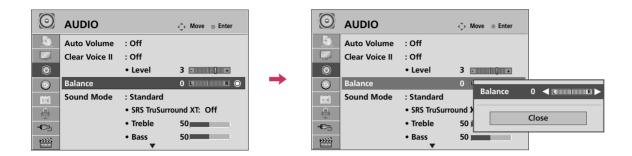


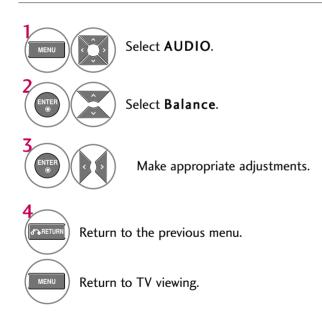
Return to TV viewing.

- If you select "Clear Voice II-On", SRS TruSurround XT feature will not work.
- SRS TruSurround XT: TruSurround XT is a patented SRS technology that solves the problem of playing 5.1 multichannel content over two speakers.

## **BALANCE**

Adjust the left/right sound of speaker to suit your taste and room situations.





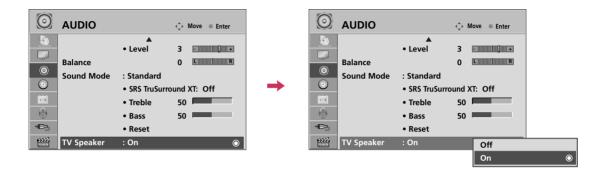
## **SOUND & LANGUAGE CONTROL**

## TV SPEAKERS ON/OFF SETUP

Turn the TV speakers off if using external audio equipment.

In AV, Component, RGB and HDMI with HDMI to DVI cable, the TV speaker can be operational even when there is no video signal.

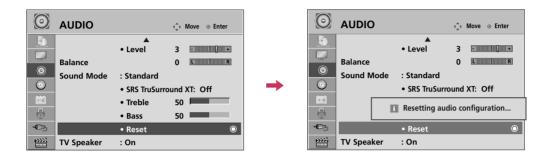
If you wish to use an external Hi-Fi system or a SRS System, turn off the TV's internal speakers.

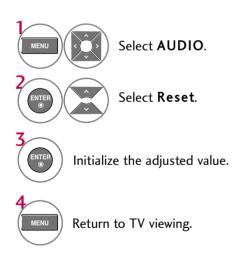




## **AUDIO RESET**

Settings of the selected Sound Mode return to the default factory settings.





## **SOUND & LANGUAGE CONTROL**

## STEREO/SAP BROADCAST SETUP

For Analog only: This TV can receive MTS stereo programs and any SAP (Secondary Audio Program) that accompanies the stereo program if the station transmits an additional sound signal. Mono sound is automatically used if the broadcast is only in Mono.



## **Analog TV**



Select **SAP**.



Select Mono, Stereo, or SAP.



Return to TV viewing.

## **Digital TV**



Select Multi Audio.



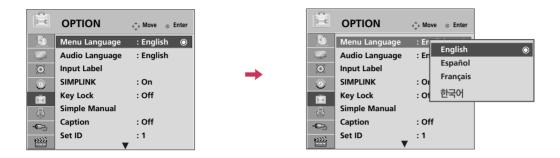
Select other languages.

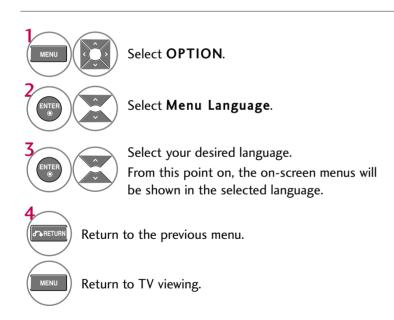


Return to TV viewing.

## **ON-SCREEN MENUS LANGUAGE SELECTION**

The menus can be shown on the screen in the selected language.



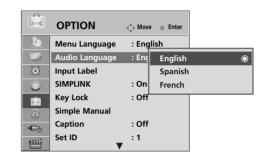


## **SOUND & LANGUAGE CONTROL**

## **AUDIO LANGUAGE**

Other languages may be available if a digital signal is provided by the broadcasting station. This feature operates only in DTV/CADTV mode.



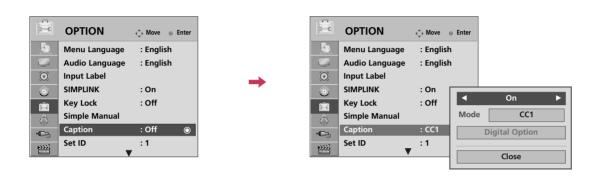


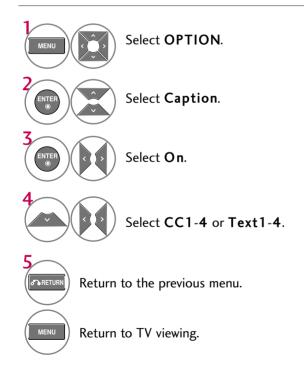


### **CAPTION MODE**

### **Analog Broadcasting System Captions**

Captions are provided to help people with hearing loss watch TV. Select a caption mode for displaying captioning information if provided on a program. Analog caption displays information at any position on the screen and is usually the program's dialog. Caption/Text, if provided by the broadcaster, would be available for both digital and analog channels on the Antenna/Cable. This TV is programmed to memorize the caption/text mode which was last set when you turned the power off. This function is only available when **Caption** Mode is set **On**.





When selecting Off, Sub-menus for Analog, DTV, and Digital Option become disabled.

### **CAPTION**

The term for the words that scroll across the bottom of the TV screen; usually the audio portion of the program provided for the hearing impaired.

### TEXT

The term for the words that appear in a large black frame and almost cover the entire screen; usually messages provided by the broadcaster.

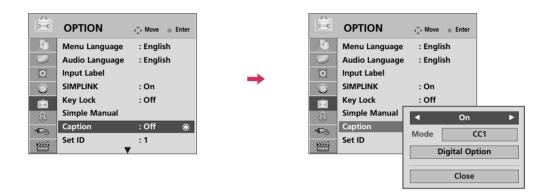
## **SOUND & LANGUAGE CONTROL**

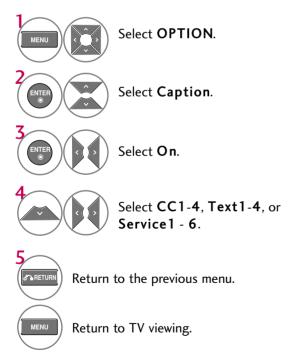
## **Digital Broadcasting System Captions**

Choose the language you want the DTV/CADTV Captions to appear in.

Other Languages can be chosen for digital sources only if they are included on the program.

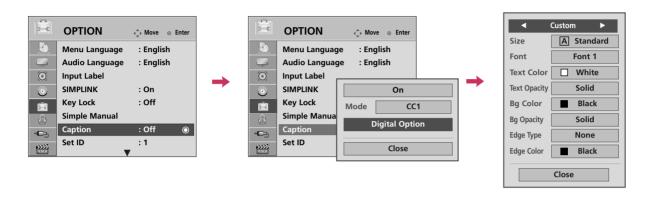
This function in only available when Caption Mode is set On.

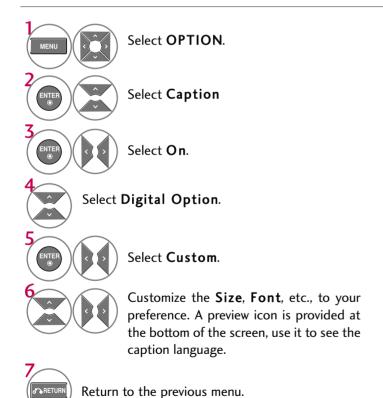




## **Caption Option**

Customize the DTV/CADTV captions that appear on your screen. This function in only available when Caption Mode is set On.





Return to TV viewing.

Size: Set the word size.
Font: Select a typeface for the text.
Text Color: Choose a color for the text.
Text Opacity: Specify the opacity for the text color.
Bg (Background) Color: Select a background color.
Bg (Background) Opacity: Select the opacity for the background color.
Edge Type: Select an edge type.
Edge Color: Select a color for the edges.

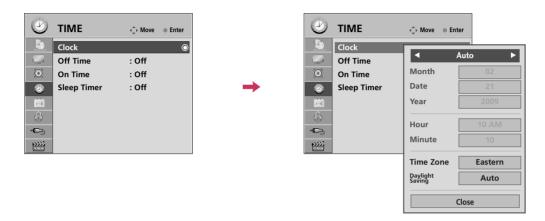
## TIME SETTING

## **CLOCK SETTING**

## **Auto Clock Setup**

The time is set automatically from a digital channel signal.

The digital channel signal includes information for the current time provided by the broadcasting station. Set the clock manually if the current time is set incorrectly by the auto clock function.





Select TIME.



Select Clock.



Select Auto.



Select your viewing area time zone.

- U.S.A: Eastern, Central, Mountain, Pacific, Alaska, or Hawaii.
- Canada: Eastern, Central, Mountain, Pacific, New F.land, or Atlantic.



Select **Auto**, **Off**, or **On** (depending on whether or not your viewing area observes Daylight Saving time).



Return to the previous menu.

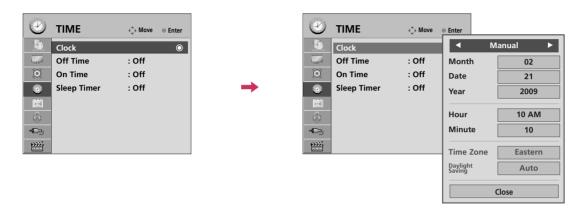


Return to TV viewing.

## **Manual Clock Setup**

If the current time setting is wrong, reset the clock manually.

If this TV is unplugged once or turn off with the AC power control switch on the TV, reset the **Clock** function.





Select TIME.



Select Clock.



Select Manual.



Select the Year, Month, Date, Hour, or Minutes option.



Set the Year, Month, Date, Hour, or Minutes option.



Return to the previous menu.



Return to TV viewing.

## TIME SETTING

## **AUTO ON/OFF TIME SETTING**

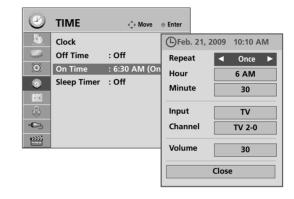
This function operates only if the current time has been set.

The Off Time function overrides the On Time function if they are both set to the same time.

The TV must be in standby mode for the **On Time** to work.

If you do not press any button within 2 hours after the TV turns on with the **On Time** function, the TV will automatically revert to standby mode.

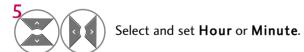


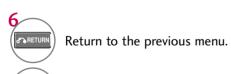


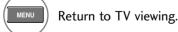


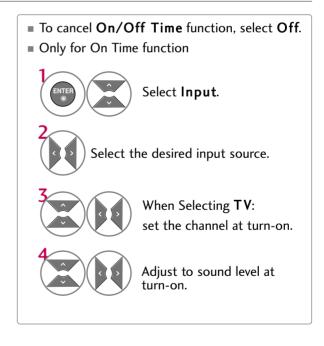






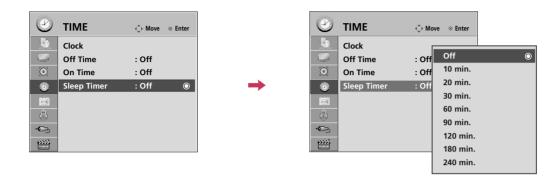


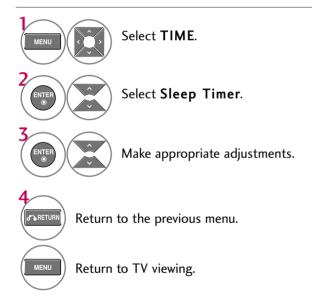




## **SLEEP TIMER SETTING**

The Sleep Timer turns the TV off at the preset time. Note that this setting is cleared when the TV is turned off.





You can also adjust Sleep Timer in the Q.MENU.

## PARENTAL CONTROL / RATINGS

Parental Control can be used to block specific channels, ratings and other viewing sources.

The Parental Control Function (V-Chip) is used to block program viewing based on the ratings sent by the broad-casting station. The default setting is to allow all programs to be viewed. Viewing can be blocked by choosing the type of the program and the categories. It is also possible to block all program viewing for a time period. To use this function, the following must be done:

- 1. Set ratings and categories to be blocked.
- 2. Specify a password
- 3. Fnable the lock

### **V-Chip rating and categories**

Rating guidelines are provided by broadcasting stations. Most television programs and television movies can be blocked by TV Rating and/or Individual Categories. Movies that have been shown at the theaters or direct-to-video movies use the Movie Rating System (MPAA) only.

### Ratings for Television programs including made-for-TV movies:

- TV-G (General audience)
- TV-PG (Parental guidance suggested)
- TV-14 (Parents strongly cautioned)
- TV-MA (Mature audience only)
- TV-Y (All children)
- TV-Y7 (Children 7 years older)

### SET PASSWORD & LOCK SYSTEM

## **Setting up Your Password**

Set up blocking schemes to block specific channels, ratings, and external viewing sources. A password is required to gain access to this menu.





For Canada







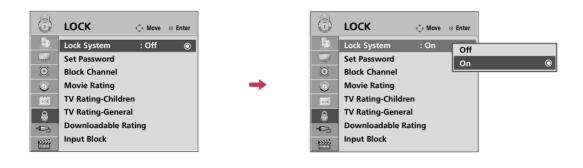


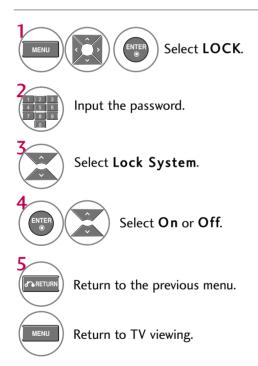
Input the password.

- Enter the password as requested.
- The TV is set up with the initial password "0-0-0-0".

## **Lock System**

Enables or disables the blocking scheme you set up previously.



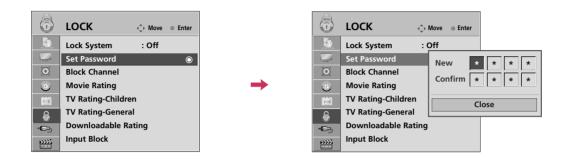


■ When you select **On**, the Lock System is enable.

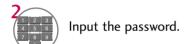
## PARENTAL CONTROL / RATINGS

### **Set Password**

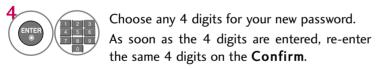
Change the password by inputting a new password twice.

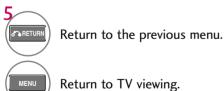






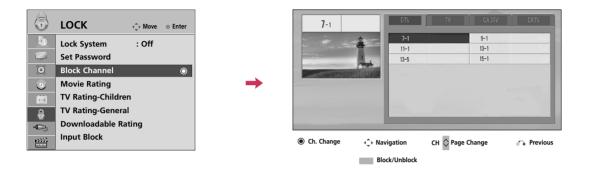




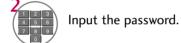


## **CHANNEL BLOCKING**

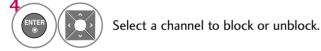
Blocks any channels that you do not want to watch or that you do not want your children to watch.

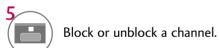


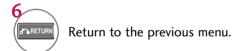


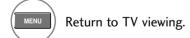












## PARENTAL CONTROL / RATINGS

### **MOVIE & TV RATING**

### Movie Rating (MPAA) - For USA

Blocks movies according to the movie ratings limits specified, so children cannot view certain movies. You can set the ratings limit by blocking out all the movies with the ratings above a specified level. Keep in mind that the movie ratings limit only applies to movies shown on TV, not TV programs, such as soap operas.











Select LOCK.



Input the password.



Select Movie Rating.



Select G, PG, PG-13, R, NC-17, X, or Blocking Off.



Return to the previous menu.



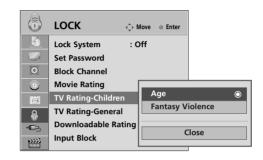
Return to TV viewing.

- G (General audience)
- PG (Parental guidance suggested)
- PG-13 (Parents strongly cautioned)
- R (Restricted)
- NC-17 (No one 17 and under admitted)
- X (Adult only)
- Blocking Off (Permits all programs)
- ▶ If you set PG-13: G and PG movies will be available, PG-13, R, NC-17 and X will be blocked.

### TV Rating Children - For USA

Prevents children from watching certain children's TV programs, according to the ratings limit set. The children rating does not apply to other TV programs. Unless you block certain TV programs intended for mature audiences in the TV Rating - sub menu, your children can view those programs.









Input the password.



Select TV Rating-Children.



Select Age or Fantasy Violence.



Select block options.



Return to the previous menu.



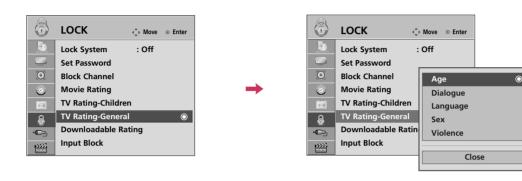
Return to TV viewing.

- Age (applies to TV-Y, TV-Y7)
- Fantasy Violence (applies to TV-Y7)

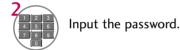
## PARENTAL CONTROL / RATINGS

### TV Rating General - For USA

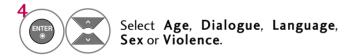
Based on the ratings, blocks certain TV programs that you and your family do not want to view.









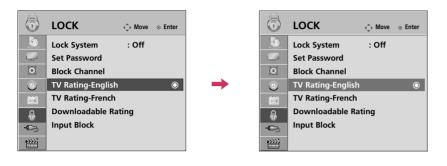


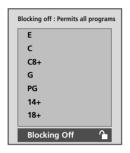
- Select block options.
- Return to the previous menu.
- Return to TV viewing.

- Age (applies to TV-G,TV-PG,TV-14,TV-MA).
   Dialogue-sexual dialogue (applies to TV-PG,TV-14).
- Language-adult language (applies to TV-PG, TV-14, TV-MA).
- Sex-sexual situations (applies to TV-PG, TV-14, TV-MA).
- Violence (applies to TV-PG, TV-14, TV-MA).

## TV Rating English - For CANADA

Selecting Canadian English rating system.









Input the password.



Select TV Rating-English.



Select E, C, C8+, G, PG, 14+, 18+, or Blocking Off.



Return to the previous menu.



Return to TV viewing.

E (Exempt)
C (Children)
C8+ (Children eight years and older)
G (General programming, suitable for all audiences)
PG (Parental Guidance)
14+ (Viewers 14 years and older)
18+ (Adult programming)

■ Blocking Off (Permits all programs)

## PARENTAL CONTROL / RATINGS

### TV Rating French - For CANADA

Selecting Canadian French rating system.











Input the password.



Select TV Rating-French.



Select E, G, 8ans+, 13ans+, 16ans+, 18ans+, or Blocking off.



Return to the previous menu.



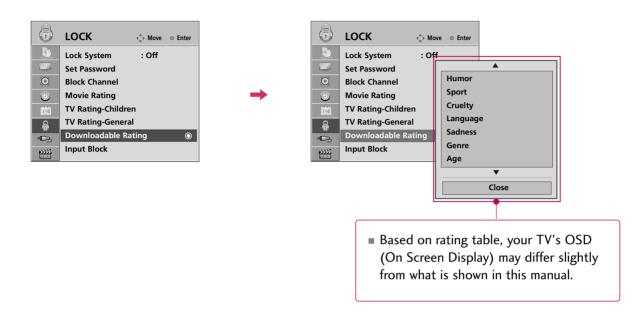
Return to TV viewing.

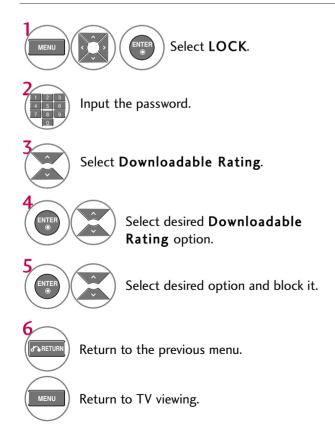
- E (Exempt)
- G (General)
- 8ans+ (General-Not convenient for little children)
- 13ans+ (Not convenient for children of 13 years and younger)
- 16ans+ (Not convenient for children of 16 years and younger)
- 18ans+ (This programs is only for adults)
- Blocking off (Permits all programs)

## **DOWNLOADABLE RATING**

This function is available only for digital channels.

This function operates only when TV has received Region5 Rating data.

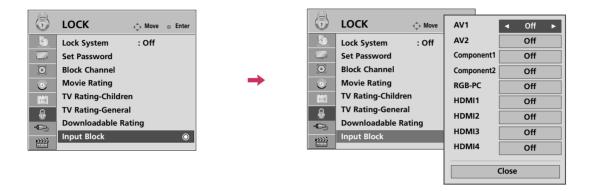


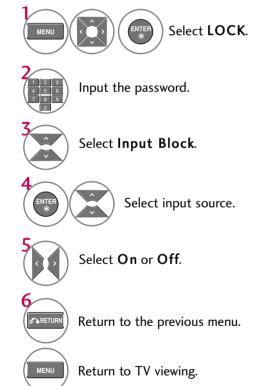


## PARENTAL CONTROL / RATINGS

## **EXTERNAL INPUT BLOCKING**

Enables you to block an input.





# **APPENDIX**

# **TROUBLESHOOTING**

The operation does not	work normally.		
The remote control doesn't work	<ul> <li>Check to see if there is any object between the product and the remote control causing obstruction. Ensure you are pointing the remote control directly at the TV.</li> <li>Ensure that the batteries are installed with correct polarity (+ to +, - to -).</li> <li>Ensure that the correct remote operating mode is set: TV, VCR etc.</li> <li>Install new batteries.</li> </ul>		
Power is suddenly turned off	<ul> <li>Is the sleep timer set?</li> <li>Check the power control settings. Power interrupted.</li> <li>TV will be automatically turned off, in case of no signal for 15 minutes.</li> </ul>		

The video does not wor	k.
No picture &No sound	<ul> <li>Check whether the product is turned on.</li> <li>Try another channel. The problem may be with the broadcast.</li> <li>Is the power cord inserted into wall power outlet?</li> <li>Check your antenna direction and/or location.</li> <li>Test the wall power outlet, plug another product's power cord into the outlet where the product's power cord was plugged in.</li> </ul>
Picture appears slowly after switching on	■ This is normal, the image is muted during the product startup process. Please contact your service center, if the picture has not appeared after five minutes.
No or poor color or poor picture	<ul> <li>Adjust Color in menu option.</li> <li>Keep a sufficient distance between the product and the VCR.</li> <li>Try another channel. The problem may be with the broadcast.</li> <li>Are the video cables installed properly?</li> <li>Activate any function to restore the brightness of the picture.</li> </ul>
Horizontal/vertical bars or picture shaking	■ Check for local interference such as an electrical appliance or power tool.
Poor reception on some channels	<ul> <li>Station or cable product experiencing problems, tune to another station.</li> <li>Station signal is weak, reorient antenna to receive weaker station.</li> <li>Check for sources of possible interference.</li> </ul>
Lines or streaks in pictures	■ Check antenna (Change the direction of the antenna).
No picture when connecting HDMI	Check HDMI cable over version 1.3. The HDMI cables don't support HDMI version 1.3, it cause flickers or no screen display. In this case use the latest cables that support HDMI version 1.3.

# **APPENDIX**

The audio does not work.					
Picture OK & No sound	<ul> <li>Press the VOL or VOLUME button.</li> <li>Sound muted? Press MUTE button.</li> <li>Try another channel. The problem may be with the broadcast.</li> <li>Are the audio cables installed properly?</li> </ul>				
No output from one of the speakers	■ Adjust Balance in menu option.				
Unusual sound from inside the product	A change in ambient humidity or temperature may result in an unusual noise when the product is turned on or off and does not indicate a fault with the product.				
No sound when connecting HDMI/USB	<ul> <li>Check HDMI cable over version 1.3.</li> <li>Check USB cable over version 2.0.</li> <li>Use normal MP3 file.</li> <li>*This feature is not available for all models.</li> </ul>				

There is a problem in Po	C mode. (Only PC mode applied)
The signal is out of range	<ul><li>Adjust resolution, horizontal frequency, or vertical frequency.</li><li>Check the input source.</li></ul>
Vertical bar or stripe on background & Horizontal Noise & Incorrect position	■ Work the Auto configure or adjust clock, phase, or H/V position. (Option)
Screen color is unstable or single color	<ul><li>Check the signal cable.</li><li>Reinstall the PC video card.</li></ul>

### **MAINTENANCE**

Early malfunctions can be prevented. Careful and regular cleaning can extend the amount of time you can enjoy your new TV.

Caution: Be sure to turn the power off and unplug the power cord before you begin any cleaning.

### **Cleaning the Screen**

- Here's a great way to keep the dust off your screen for a while. Wet a soft cloth in a mixture of lukewarm water and a little fabric softener or dish washing detergent. Wring the cloth until it's almost dry, and then use it to wipe the screen.
- 2 Make sure the excess water is off the screen, and then let it air-dry before you turn on your TV.

### **Cleaning the Cabinet**

- To remove dirt or dust, wipe the cabinet with a soft, dry, lint-free cloth.
- Please be sure not to use a wet cloth.

### **Extended Absence**

### **A** CAUTION

▶ If you expect to leave your TV dormant for a long time (such as a vacation), it's a good idea to unplug the power cord to protect against possible damage from lightning or power surges.

## **APPENDIX**

## **PRODUCT SPECIFICATIONS**

٨	MODELS	<b>47LH85</b> (47LH85-UB)	<b>55LH85</b> (55LH85-UB)	
Dimensions (Width x Height	With stand	46.4 x 33.5 x 15.7 inches 1179.0 x 851.4 x 398.8 mm	54.0 x 37.9 x 17.8 inches 1373.0 x 964.3 x 454.2 mm	
x Depth)	Without stand	46.4 x 30.7 x 4.1 inches 1179.0 x 780.6 x 105.9 mm	54.0 x 34.9 x 4.2 inches 1373.0 x 888.5 x 106.9 mm	
Weight	With stand Without stand	55.9 lbs / 25.4 kg 86.4 lbs / 39.2 kg 47.6 lbs / 21.6 kg 74.5 lbs / 33.8 kg		
MODELS		Media Box		
Dimensions (Width x Height x Depth)		16.7 x 9.5 x 2.7 inches 426.0 x 234.5 x 68.6 mm		
Weight		5.0 lbs / 2.3 kg		
Power requirement Television System Program Coverage External Antenna Impedance		AC100-240V ~ 50/60Hz NTSC-M, ATSC, 64 & 256 QAM VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135 75 ohm		
Environment	Operating Temperature Operating Humidity	32 ~ 104°F (0 ~ 40°C) Less than 80%		
condition	Storage Temperature Storage Humidity	-4 ~ 140°F (-20 ~ 60°C) Less than 85%		

<sup>■</sup> The specifications shown above may be changed without prior notice for quality improvement.

### FCC ID: BEJEAX5296, IC: 2703L-EAX5296

Symbol	Parameter	Min.	Туре	Max.	Units
Fc (HRP)	Frequency Range	59.4	60.48	61.56	GHz
BW HRP	HRP Occupied Bandwidth			1.76	GHz
BW LRP	LRP Occupied Bandwidth			92	MHz
P HREIRP	HRP Radiated Power (EIRP)	23	25	27	dBm
P LREIRP	LRP Radiated Power (EIRP)	8	11	21	dBm
G HRTX	HRP Transmit Antenna Gain		15	17	dBi
G LRTX	LRP Transmit Antenna Gain		3	13	dBi

# IR CODES

Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
08	POWER	Remote control Button (Power On/Off)	D6	TV	Discrete IR Code
45	Q.MENU	Remote control Button			(TV Input Selection)
43	MENU	Remote control Button	C4	POWER ON	Discrete IR Code
ОВ	INPUT	Remote control Button			(Only Power On)
10-19	Number Key 0-9	Remote control Button	C5	POWER OFF	Discrete IR Code
4C	- (Dash)/LIST	Remote control Button			(Only Power Off)
1A	FLASHBK	Remote control Button	5A	AV1	Discrete IR Code
09	MUTE	Remote control Button			(AV1 Input Selection)
02	VOL+	Remote control Button	D0	AV2	Discrete IR Code
03	VOL -	Remote control Button			(AV2 Input Selection)
00	CH ^	Remote control Button	BF	COMPONENT1	Discrete IR Code
01	CH Y	Remote control Button			(Component1 Input Selection)
1E	FAV/MARK	Remote control Button	D4	COMPONENT2	Discrete IR Code
40	^	Remote control Button			(Component2 Input Selection)
41	~	Remote control Button	D5	RGB-PC	Discrete IR Code
07	<	Remote control Button			(RGB-PC Input Selection)
06	>	Remote control Button	CE	HDMI1	Discrete IR Code
44	ENTER	Remote control Button			(HDMI1 Input Selection)
28	RETURN	Remote control Button	CC	HDMI2	Discrete IR Code
95	ENERGY SAVING	Remote control Button			(HDMI2 Input Selection)
7E	SIMPLINK	Remote control Button	E9	HDMI3	Discrete IR Code
AA	INFO	Remote control Button			(HDMI3 Input Selection)
30	AV MODE	Remote control Button	DA	HDMI4	Discrete IR Code
72	RED	Remote control Button			(HDMI4 Input Selection)
71	GREEN (■)	Remote control Button	76	Ratio 4:3	Discrete IR Code
63	YELLOW (►)	Remote control Button			(Only 4:3 Mode)
61	BLUE (II)	Remote control Button	77	Ratio 16:9	Discrete IR Code
8F	44	Remote control Button			(Only 16:9 Mode)
8E	<b>&gt;&gt;</b>	Remote control Button	AF	Ratio Zoom	Discrete IR Code
					(Only Zoom Mode)

### **APPENDIX**

## **OPEN SOURCE LICENSE** - This feature is not available for all models.

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Version 2, June 1991

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This license, the Lesser General Public License, applies to some specially designated software packages - typically libraries - of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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O. This license agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this license"). Each license is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this license; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the library does and what the program that uses the library does.

 You may copy and distribute verbatim copies of the library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this license and to the absence of any warranty; and distribute a copy of this license along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

- 2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of section 1 above, provided that you also meet all of these conditions:
  - a) The modified work must itself be a software library.
  - b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
  - c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this license.
  - d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the library, and can be reasonably considered independent and separate works in themselves, then this license, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the library, the distribution of the whole must be on the terms of this license, whose permissions for other licenses extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the library.

In addition, mere aggregation of another work not based on the library with the library (or with a work based on the library) on a volume of a storage or distribution medium does not bring the other work under the scope of this license.

### **APPENDIX**

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the library into a program that is not a library.

4. You may copy and distribute the library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this license.

However, linking a "work that uses the library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the library), rather than a "work that uses the library". The executable is therefore covered by this license. Section 6 states terms for distribution of such executable.

When a "work that uses the library" uses material from a header file that is part of the library, the object code for the work may be a derivative work of the library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessories, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executable containing this object code plus portions of the library will still fall under Section 6.)

Otherwise, if the work is a derivative of the library, you may distribute the object code for the work under the terms of Section 6. Any executable containing that work also fall under Section 6, whether or not they are linked directly with the library itself.

6. As an exception to the sections above, you may also combine or link a "work that uses the library" with the library to produce a work containing portions of the library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the library is used in it and that the Library and its use are covered by this license. You must supply a copy of this license. If the work during execution displays copyright notices, you must include the copyright notice for the library among them, as well as a reference directing the user to the copy of this license. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the library and then relink to produce a modified executable containing the modified library. (It is understood that the user who changes the contents of definitions files in the library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the library together in an executable that you distribute.

- 7. You may place library facilities that are a work based on the library side-by-side in a single library together with other library facilities not covered by this license, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:
  - a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the sections above.
  - b) Give prominent notice with the combined library of the fact that part of it is a work based on the library, and explaining where to find the accompanying uncombined form of the same work.
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11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this license, they do not excuse you from the conditions of this license. If you cannot distribute so as to satisfy simultaneously your obligations under this license and any other pertinent obligations, then as a consequence you may not distribute the library at all. For example, if a patent license would not permit royalty-free redistribution of the library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this license would be to refrain entirely from distribution of the library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a license cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this license.

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- 13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the library specifies a version number of this license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation.

### **APPFNDIX**

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To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

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### **MOZILLA PUBLIC LICENSE**

Version 1.1

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#### 1.Definitions.

- 1.0.1. "Commercial use" means distribution or otherwise making the covered code available to a third party.
- 1.1. "Contributor" means each entity that creates or contributes to the creation of modifications.
- 1.2. "Contributor version" means the combination of the original code, prior modifications used by a contributor, and the modifications made by that particular contributor.
- 1.3. "Covered code" means the original code or modifications or the combination of the original code and modifications, in each case including portions thereof.
- 1.4. "Electronic distribution mechanism" means a mechanism generally accepted in the software development community for the electronic transfer of data.
- 1.5. "Executable" means covered code in any form other than source code.
- 1.6. "Initial developer" means the individual or entity identified as the initial Developer in the Source Code notice required by exhibit A.
- 1.7. "Larger work" means a work which combines covered code or portions thereof with code not governed by the terms of this License.
- 1.8. "License" means this document.
- 1.8.1. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.
- 1.9. "Modifications" means any addition to or deletion from the substance or structure of either the original code or any previous modifications. When covered code is released as a series of files, a modification is:
  - A. Any addition to or deletion from the contents of a file containing original code or previous modifications.
  - B. Any new file that contains any part of the original code or previous modifications.
- 1.10. "Original code" means source code of computer software

- code which is described in the source code notice required by exhibit as original code, and which, at the time of its release under this license is not already covered code governed by this license.
- 1.10.1. "Patent claims" means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process, and apparatus claims, in any patent licensable by grantor.
- 1.11. "Source code" means the preferred form of the covered code for making modifications to it, including all modules it contains, plus any associated interface definition files, scripts used to control compilation and installation of an executable, or source code differential comparisons against either the original code or another well known, available covered code of the contributor's choice. The source code can be in a compressed or archival form, provided the appropriate decompression or de-archiving software is widely available for no charge.
- 1.12. "You" (or "Your") means an individual or a legal entity exercising rights under, and complying with all of the terms of, this license or a future version of this license issued under section 6.1.
  - For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

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  - (b) under patents claims infringed by the making, using or selling of original code, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the original code (or portions there of).

### **APPENDIX**

- (c) the licenses granted in this section 2.1 (a) and (b) are effective on the date Initial developer first distributes original code under the terms of this license.
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- (c) the licenses granted in sections 2.2(a) and 2.2(b) are effective on the date contributor first makes commercial use of the covered code.
- (d) Notwithstanding section 2.2(b) above, no patent license is granted: 1) for any code that contributor has deleted from the contributor version; 2) separate from the contributor version; 3) for infringements caused by: i) third party modifications of contributor version or ii) the combination of modifications made by that contributor with other software (except as part of the contributor version) or other devices; or 4) under patent claims infringed by covered code in the absence of modifications made by that contributor.

#### 3. Distribution Obligations.

#### 3.1. Application of license.

The modifications which You create or to which you contribute are governed by the terms of this license, including without limitation section 2.2. The source code version of covered code may be distributed only under the terms of this license or a future version of this license released under section 6.1, and you must include a copy of this license with every copy of the source code you distribute.

You may not offer or impose any terms on any source code version that alters or restricts the applicable version of this license or the recipients' rights hereunder. However, you may include an additional document offering the additional rights described in section 3.5.

#### 3.2. Availability of source code.

Any modification which you create or to which you contribute must be made available in source code form under the terms of this license either on the same media as an executable version or via an accepted electronic distribution mechanism to anyone to whom you made an executable version available; and if made available via electronic distribution mechanism, must remain available for at least twelve (12) months after the date it initially became available, or at least six (6) months after a subsequent version of that particular modification has been made available to such recipients. You are responsible for ensuring that the source code version remains available even if the electronic distribution mechanism is maintained by a third party.

#### 3.3. Description of modifications.

You must cause all covered code to which you contribute to contain a file documenting the changes You made to create that covered code and the date of any change. You must include a prominent statement that the modification is derived, directly or indirectly, from original code provided by the initial developer and including the name of the initial developer in (a) the source code, and (b) in any notice in an executable version or related documentation in which you describe the origin or ownership of the covered code.

### 3.4. Intellectual property matters

(a) Third party claims.

If contributor has knowledge that a license under a third party's intellectual property rights is required to exercise the rights granted by such contributor under sections 2.1 or 2.2, contributor must include a text file with the source code distribution titled "LEGAL" which describes the claim and the party making the claim in sufficient detail that a recipient will know whom to contact. If contributor obtains such knowledge after the modification is made available as described in section 3.2, contributor shall promptly modify the LEGAL file in all copies contributor makes available thereafter and shall take other steps (such as notifying appropriate mailing lists or newsgroups) reasonably calculated to inform those who received the covered code that new knowledge has been obtained.

#### (b) Contributor APIs.

If contributor's modifications include an application programming interface and contributor has knowledge of patent licenses which are reasonably necessary to implement that API, contributor must also include this information in the LEGAL file.

#### (c) Representations.

contributor represents that, except as disclosed pursuant to section 3.4(a) above, contributor believes that contributor's modifications are contributor's original creation(s) and/or contributor has sufficient rights to grant the rights conveyed by this license.

#### 3.5. Required notices.

You must duplicate the notice in exhibit A in each file of the source code. If it is not possible to put such notice in a particular source code file due to its structure, then You must include such notice in a location (such as a relevant directory) where a user would be likely to look for such a notice. If You created one or more modification(s), you may add your name as a contributor to the notice described in exhibit A. you must also duplicate this license in any documentation for the source code where You describe recipients' rights or ownership rights relating to covered code. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of covered code. However, you may do so only on your own behalf, and not on behalf of the Initial developer or any contributor. You must make it absolutely clear than any such warranty, support, indemnity or liability obligation is offered by you alone, and You hereby agree to indemnify the Initial developer and every contributor for any liability incurred by the Initial developer or such contributor as a result of warranty, support, indemnity or liability terms you offer.

### 3.6. Distribution of executable versions.

You may distribute covered code in executable form only if the requirements of section 3.1-3.5 have been met for that covered code, and if you include a notice stating that the source code version of the covered code is available under the terms of this license, including a description of how and where you have fulfilled the obligations of section 3.2. The notice must be conspicuously included in any notice in an executable version, related documentation or collateral in which you describe recipients' rights relating to the covered code. You may distribute the executable version of covered code or ownership rights under a license of your choice, which may contain terms different from this license, provided that you are in compliance with the terms of this license and that the license for the executable version does not attempt to limit or alter the recipient's rights in the source code version from the rights set forth in this license. If you distribute the executable version under a different license you must make it absolutely clear that any terms which differ from this license are offered by you alone, not by the Initial developer or any contributor. You hereby agree to indemnify the initial developer and every contributor for any liability incurred by the initial developer or such contributor as a result of any such terms You offer.

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You may create a larger work by combining covered code with other code not governed by the terms of this license and distribute the larger work as a single product. In such a case, you must make sure the requirements of this license are fulfilled for the covered code.

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### 6. Versions of the license.

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