LEADER

LG 3850SER02

ISDB-T SOFTWARE

INSTRUCTION MANUAL

LEADER
ELECTRONIC MEASURING INSTRUMENTS

TABLE OF CONTENTS

1. INTRODUCTION

Thank you for purchasing this LEADER instrument. To use this instrument safely, read this instruction manual thoroughly, and make sure that you know how to use the instrument properly.

If some point about the operation of this instrument is still unclear after you have read this instruction manual, refer to the contact information on the back cover of the manual to contact LEADER, or contact your local LEADER agent.
After you have finished reading this manual, keep it in a convenient place so that you can refer to it when necessary.

1.1 About Licenses

This software can only be used after its license key has been activated. After you have installed this software on a PC, connect the PC to an LG 3850, and then enter the license key from the PC. For details on installing the software and entering the license key, see the LG 3850 instruction manual.

The license key for this software can only be used on one LG 3850. You cannot install this software on multiple LG 3850s.

1.2 Operating Precautions

1.2.1 About Turning the Power OFF

<u>When a PC and an LG 3850 are connected by a USB cable and you want to turn the devices off, be sure to turn the LG 3850 OFF before you turn the PC OFF.</u>

1.2.2 About the PC Setting

When you are controlling the LG 3850 from a PC, do not set the PC to power saving mode.

1.2.3 About External TS Playback

If you play back an external TS from a PC that is handling an excessive load, the video or audio may be interrupted.

1.2.4 About the USB Connection

While the program is being transferred from the PC to the LG 3850, do not disconnect the USB connection between the PC and the LG 3850. If a disconnection of the USB cable or other problem causes the program transfer to be interrupted, use the initialization application to initialize the LG 3850 to its factory default settings, and then transfer the program to the LG 3850 again.
See chapter 6, "INITIALIZATION APPLICATION."

If, while the LG 3850 is being controlled from a PC, the USB connection is mistakenly disconnected, an error message is displayed on the PC screen. If this happens, re-connect the USB connection, and then click the play button on the control application to begin transmitting the signal again.

1.3   Trademarks

The company and product names in this document are trademarks or registered trademarks of their respective holders.

2. SPECIFICATIONS

2.1 General

This product is a software application that can be used to transfer broadcast systems to the LG 3850 and control the LG 3850 from a PC. After a broadcast system has been transferred to the LG 3850, the LG 3850 can be used as an ISDB-T signal generator.

2.2 Features

- **USB connection**

  Connect the LG 3850 to a PC through USB to transfer broadcast systems, play back external transport streams, and configure transmission parameters.

- **Still-image output**

  Output four different still-image patterns seamlessly.

- **Audio signal output**

  Output audio signals with separate frequencies of 400 Hz or 1 kHz to the left and right channels.

2.3 PC Operating Environment

OS	Microsoft Windows XP SP3, Vista, Windows 7
CPU	Intel® Celeron® M, 1.4 GHz or higher
Memory	512 MB or more
HDD	1 GB or more of free space
USB Port	1 USB 2.0 port

2.4 Specifications

2.4.1 Broadcast System

Digital Terrestrial Television Broadcasting

ISDB-T (ARIB-STD-B31)

* In accordance with the operation conditions (ARIB-TR-B14), only MODE2 and MODE3 are supported.

2.4.2 External TS Input Specifications

Input Packet Format	188, 204 bytes
Supported Stream	MPEG-2 TS (ISO/IEC13818-1)
Input Data Rate	0.2 to 40 Mbps

2.4.3 Standalone Operation of the LG 3850

Function	By transferring a broadcast system to the LG 3850, the LG 3850 can be used as a standalone ISDB-T signal generator.

RF Signal Generator
  Frequency

Channel	Channels 1 to 62 for Japan
Offset	1/7 MHz offset fixed to on

  Output

Band Width	6 MHz
Range	10 to 99 dBμV (*1)
Resolution	1 dB
Impedance	75 Ω

Internal Signal

Pseudo Random Signal	PN23, PN15 (*2)
Still-Image Pattern (*3)	Colorbar (simple animation), ramp, monoscope, natural picture
Format (*3)	1920×1080i (HDTV), 320×180p (1seg)
Audio (Tone)	1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)

Presets

Recall/Store	Stores and recalls presets (*4)
Alarm Display	Shown on the 7-segment display

*1   This is the operating range. The optimal range is 39 to 99 dBμV (75 Ω termination).If signals in the range of 10 to 38 dBμV (75 Ω termination) will be generated, we recommend that an external attenuator be connected to the LG 3850.

*2   The pseudo random signal can be transmitted when the LG 3850 is connected to a PC. (It can also be transmitted when the LG 3850 is not connected to a PC if presets have been stored through the use of the control application.)

*3   The still-image patterns and formats may be changed.

*4   If a preset recall range has been set through the use of the control application, presets from within that range are recalled.

2.4.4 Control Application Operations

Function	Controls the LG 3850 from a PC over a USB connection
System Switching	LG 3850s that are configured to use different broadcast systems can be immediately switched to ISDB-T.

RF Signal Generator
  Frequency

Range	50 to 900 MHz
Resolution	1 MHz (when setting the frequency)
Channel	Channels 1 to 62 for Japan, channels 7 to 69 for Brazil, channels 4 to 13 and 21 to 69 for South Africa
Offset	1/7 MHz offset can be turned on and off.

  Output

Range	10 to 99 dBμV (*1)
Resolution	1 dB
Impedance	75 Ω

Output Control	Output can be turned on and off
Transmission Parameters	
Band Width	6 MHz, 7MHz, 8MHz
Layers	A, B, C
Mode	MODE2, MODE3
Guard Interval	1/4, 1/8, 1/16, 1/32
Carrier Modulation	DQPSK, QPSK, 16QAM, 64QAM
Convolutional Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
Time Interleaving Length	0 to 8
Number of Segments	The number of segments can be specified for each layer, but the total number of segments cannot exceed 13.
Partial Reception	Can be specified (*2)
Internal Signal	
Pseudo Random Signal	PN23, PN15
Still-Image Pattern (*3)	Colorbar (simple animation), ramp, monoscope, natural picture
Format (*3)	1920×1080i (HDTV), 320×180p (1seg)
Audio (Tone)	1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)
External TS Operations	Select, playback, stop, etc.
Presets	
Recall/Store	Stores and recalls presets
Begin/End	Sets the beginning and ending preset numbers on the LG 3850
Load/Save	Collectively stores and writes 99 presets
Alarm Displays	Can't connect to USB device, etc.

* Use the application software LG 3850SER02 ISDB-T Remote Control to control the LG 3850. In this manual, this software is referred to as the "control application."

*1 This is the operating range. The optimal range is 39 to 99 dBμV (75 Ω termination).If signals in the range of 10 to 38 dBμV (75 Ω termination) will be generated, we recommend that an external attenuator be connected to the LG 3850.

*2 If the PCR packets in the TS are not independent, the partial receiver's PCR cannot be updated.

*3 The still-image patterns and formats may be changed.

2.4.5 Licenses

This product can only be used on one LG 3850.
It cannot be installed on multiple LG 3850s.

2.4.6 General Specifications

Environmental Conditions	Same as the LG 3850
Contents	License key (A4 sheet) 1
	CD-ROM 1
	Instruction manual...1

3.   INSTALLATION

To use this software, follow the procedure below. For details, see the LG 3850 instruction manual.

1. **Install the encoding software and initialization application.**

    Install the encoding software, LG3850SER02Installer Package, and the initialization application, LG3850InitializeToolInstallerPackage, on your PC from the CD-ROM.
    To update the encoding software and the initialization application, uninstall the old versions, and then install the new versions.

2. **Install the USB driver.**

    Install the USB driver on your PC.
    This software supports Microsoft Windows XP SP3, Windows Vista, and Windows 7.
    Follow the procedure below to install the USB driver on these operating systems.

    The installation procedure explained here is for Windows XP SP3. Depending on your PC, your screens may differ slightly from the screen captures shown in this procedure, but the procedure remains the same.

    a) **Turn on the LG 3850.**

    b) **Use a USB cable to connect the LG 3850 rear-panel USB port to a USB port on your PC.**

        Do not connect devices other than the LG 3850 to the other USB ports on your PC.

    c) **When the installation window appears, select** "**Install from a list or specific location,**" **and click Next.**

Figure 3-1   Found New Hardware Wizard

d)   When the following screen appears, select "Search for the best driver in these locations," and click Browse.
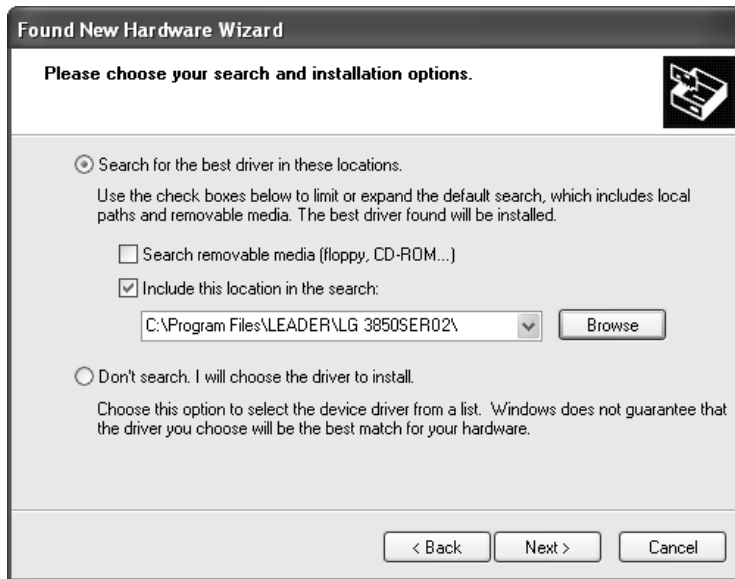

Figure 3-2   Driver search window

e)   Select the wxp folder of the encoding software that was installed during step 1, "Install the encoding software and initialization application," and then click OK.

On Windows Vista or Windows 7, select the wlh folder.

Figure 3-3   Browse For Folder dialog box

f) Check that the full path displayed here is the folder that you selected in step e, and then click Next.

When you click Next, the PC searches for and installs the driver. This process may take some time.
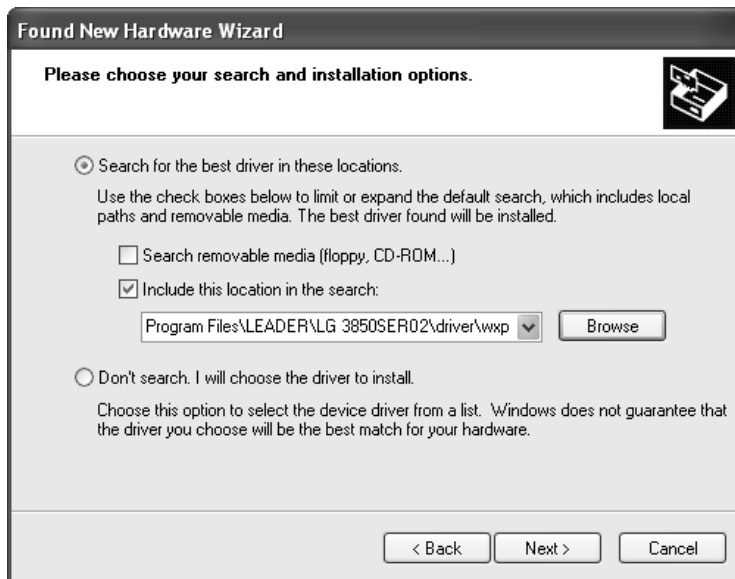

Figure 3-4   Driver folder confirmation window

g) If any warnings that are related to the hardware installation appear, click Continue Anyway.

This dialog box may not appear.

Figure 3-5   Hardware installation warning dialog box

h) When the following window appears, the installation is complete. Click Finish.

If the USB driver is not installed correctly, see the LG 3850 instruction manual.

Figure 3-6   Installation complete window

3. Activate the license and transfer the program to the LG 3850.

Connect the LG 3850 to your PC, activate the license, and transfer the program from your PC to the LG 3850.

See • License and • Transfer Program in section 5.3.5, "LG 3850."

After the program has been transferred to the LG 3850, you can use the LG 3850 as a stand-alone ISDB-T signal generator.

See chapter 4, "STAND-ALONE OPERATION OF THE LG 3850."

You can also control the LG 3850 from a PC. This enables you to play back external TS files and configure the LG 3850 in detail.

Use the application software LG 3850SER02 ISDB-T Remote Control to control the LG 3850. In this manual, this software is referred to as the "control application."

See chapter 5, "CONTROL APPLICATION."

4. STAND-ALONE OPERATION OF THE LG 3850

This chapter will explain how to operate the LG 3850 in a stand-alone manner. To operate the LG 3850 in this manner, you must first connect the PC to the LG 3850 and transfer the ISDB-T signal generator program to the LG 3850.
See chapter 3, "INSTALLATION."

4.1 Panel Settings

4.1.1 PATTERN

Press each of the front-panel PATTERN keys to play back the internal still-image patterns.
See section 5.3.2, "Pattern."

COLOR BAR:	A colorbar (simple animation) signal is transmitted.
RAMP:	A ramp signal is transmitted.
MONOSCOPE:	A monoscope signal is transmitted.
OTHERS:	A natural picture or pseudo random signal is transmitted (PN23/PN15). To transmit a pseudo random signal, store it to a preset using the control application, and then recall the preset.

The transmission parameters for the still-image patterns are shown below. If you load a preset that was saved through the control application, these settings take on the values that were in use when the preset was saved.

Table 4-1   Transmission parameters

Parameters	Mode	Mode3	
	Guard Interval	1/8	
	Band Width	6MHz	
	Partial Reception	On	
	EMG Bit	Off	
		Layer-A	Layer-B
	Segments	P(1)	12
	Modulation	QPSK	64QAM
	Code Rate	2/3	3/4
	Time IL	4	2

4.1.2 AUDIO

Each time that you press the front-panel AUDIO key, the output audio switches between the settings listed below.
The audio-display LED that corresponds to the selected audio lights.

L:1kHz R:400Hz:	A tone signal (left: 1 kHz and right: 400 Hz) is generated.
L/R:1kHz:	A tone signal (left and right both 1 kHz) is generated.
L/R:400Hz:	A tone signal (left and right both 400 Hz) is generated.

4.1.3   CHANNEL

Press the front-panel CHANNEL key to select the output channel. When the channel is being selected, "CH" lights, and the output channel is displayed on the 7-segment LED.

Press the ▼ and ▲ keys to select the output channel. Press and hold the ▼ or ▲ key to switch the setting quickly.

You can select Japan channels 1 to 62.
If you used the control application to set presets, you can also generate output on the following channels.

    Brazil: Channels 7 to 69
    South Africa: Channels 4 to 13 and 21 to 69

When the LG 3850 is connected to the control application, you can select the channels from all three countries.
See section 7.1, "Channel Table."

If you hold down the CHANNEL key for 3 seconds or more, the code of the country that you have specified is displayed on the 7-segment LED.

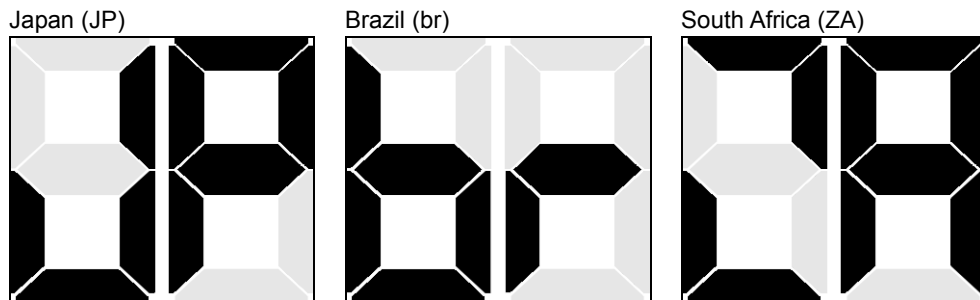Japan (JP)   Brazil (br)   South Africa (ZA)

Figure 4-1   Country codes as shown on the 7-segment LED

4.1.4   LEVEL

Press the front-panel LEVEL key to set the output level. When the level is being set, "dBμV" lights, and the output level is displayed on the 7-segment LED.

Press the ▼ and ▲ keys to select the output level. Press and hold the ▼ or ▲ key to switch the setting quickly. You can set the output level to a value that is in the range of 10 to 99 dBμV (75 Ω termination) in steps of 1 dB.

4.1.5 STORE/RECALL

You can save and recall 99 preset configurations (stored in preset addresses 01 to 99). For details, see the LG 3850 instruction manual.

If you use the control application to set the range of presets that can be recalled, you can only recall the presets within the range that you set.

After you recall a preset, you can reset the settings to their default values by pressing the PATTERN keys, the AUDIO key, the CHANNEL key followed by the ▼ key, or the CHANNEL key followed by the ▲ key.

Table 4-2   Default settings

Country		Japan	
Channel		13ch	
Format		1920x1080i (HDTV), 320x180p (1seg)	
Parameters	Mode	Mode3	
	Guard Interval	1/8	
	Band Width	6MHz	
	Partial Reception	On	
	EMG Bit	Off	
		Layer-A	Layer-B
	Segments	P(1)	12
	Modulation	QPSK	64QAM
	Code Rate	2/3	3/4
	Time IL	4	2

4.2   Panel Settings at Power ON

When the LG 3850 turns on, it uses the settings that are stored in preset address 00. It also uses these settings if the connection with the PC is disconnected while you are using the control application. Immediately after the program transfer is complete, the settings of preset address 00 are as follows.

Table 4-3   Factory-default settings of preset address 00

Item	Factory Default
PATTERN	COLOR BAR
AUDIO	L:1kHz R:400Hz
CHANNEL	13CH (Japan)
LEVEL	60 dBµV (75 Ω termination)

You can also change the settings in preset address 00. For details, see the LG 3850 instruction manual.

5. CONTROL APPLICATION

This chapter will explain the control application LG 3850SER02 ISDB-T Remote Control that you use to control the LG 3850 from a PC. To control the LG 3850 from a PC, you must first transfer the ISDB-T signal generator program to the LG 3850 from a PC.
See chapter 3, "INSTALLATION."

5.1 Starting and Ending Remote Control

- **Starting the control application**

  Use a USB cable to connect the PC and LG 3850, and then follow the procedure below to start the control application.
  On the taskbar, click Start, All Programs, LEADER, LG 3850SER02, and then click LG 3850SER02 Remote Control.

- **Starting remote control**

  When one LG 3850 is connected to the PC, the LG 3850 is automatically detected by the control application when the application starts, and you can immediately control this LG 3850.

  When more than one LG 3850 is connected to the PC, carry out the procedure below to select the LG 3850 to control. To control multiple LG 3850s from a single PC, run multiple control applications.

  Controlling the first LG 3850

  - If you have previously controlled one of the connected LG 3850s, that LG 3850 will be automatically detected.

  - If you have not controlled any of the connected LG 3850s previously, the Connect list on the Main window will display Select. Select the serial number of the LG 3850 that you want to control to begin controlling it.
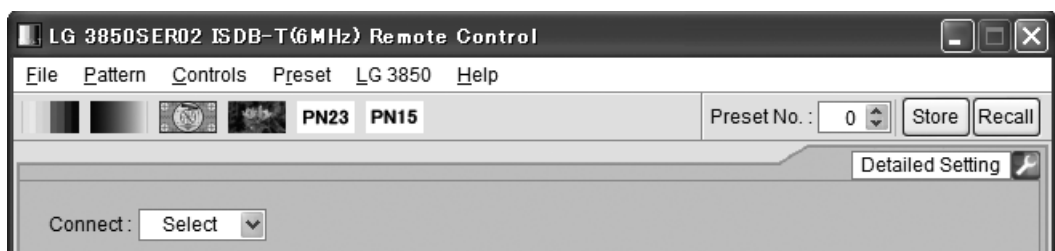

Figure 5-1   Main window

Controlling the other LG 3850s

For the other LG 3850s, the Connect list on the Main window will display Select again, and the serial numbers of LG 3850s that are not controlled will be displayed. Select the serial number of the LG 3850 that you want to control from the list.

If all the LG 3850s are being controlled and you start another control application, the following error message appears: "No Connection." If this happens, close the control application.

You cannot play back external TS files with the same file name on multiple control applications.

- **During remote control**

  During remote control, The LG 3850 7-segment LED displays "PC." When the LG 3850 is in this state, you cannot perform panel operations.

- **Ending Remote Control**

  Exit the control application on the PC to enable panel operations on the LG 3850. After the LG 3850 is disconnected from the control application, the LG 3850 uses the settings that are stored in preset address 00.

5.2 Window Explanations

The control application window is explained below.
The part containing the elements labeled 1 to 13 is referred to as the Main window. The part containing the elements labeled 15 to 21 is referred to as the Sub window. The Sub window is not displayed when you start the control application. To display the Sub window, click ⬍ (No. 14) in the lower right of the screen.
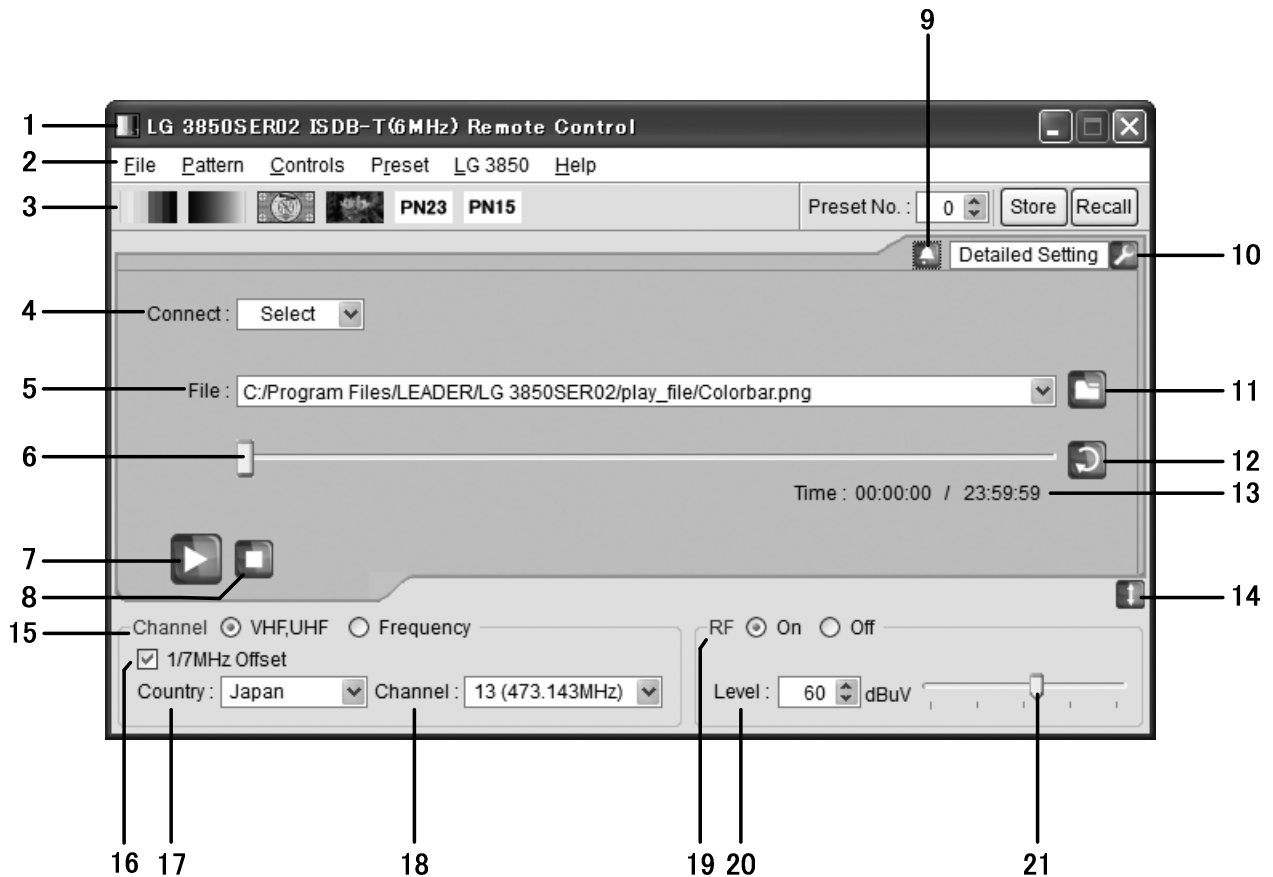

Figure 5-2   Window explanation

1   Title

The title of the control application is displayed here. As shown in the above figure, you can see that this is an ISDB-T (6 MHz bandwidth) application. The display of the bandwidth varies as shown below according to the settings made in the ISDB-T Parameters dialog box.

When the bandwidth is 6 MHz: LG 3850SER02 ISDB-T(6MHz)Remote Control
When the bandwidth is 7 MHz: LG 3850SER02 ISDB-T(7MHz)Remote Control
When the bandwidth is 8 MHz: LG 3850SER02 ISDB-T(8MHz)Remote Control

2   Menu bar

The menus that are used to configure various settings are displayed here.
See section 5.3, "Menu Bar."

Table 5-1   List of menus

Menu	Description
File	Click to select the playback file or to exit the application.
Pattern	Click to select the output pattern.
Controls	Click to select the LG 3850 that you want to control or to configure file playback settings.
Preset	Click to collectively store and write presets.
LG 3850	Click to perform license authentication, program transfer, preset-recall-range configuration, and to display information about the controlled LG 3850.
Help	Click to display the information about the application.

3   Tool bar

Select the output pattern, and store and recall presets.

See section 5.4, "Tool Bar."

4   Connect

Select the serial number of the LG 3850 that you want to control. If no LG 3850 is selected, "Select" is displayed.

See section 5.5.1, "Connect."

5   File

The selected file is displayed here. You can also enter the full path directly.

See section 5.5.2, "File."

6   Playback slider

The playback status of the selected file is displayed here. You can skip parts of the file by moving the slider.

See section 5.5.3, "Loop/Slider/Time."

7   Play button

Starts the playback of the selected file. During file playback, this button switches to the pause button. You can operate the play button when an external TS file has been selected.

See section 5.5.4, "Play/Pause/Stop."

8   Stop button

Stops the playback of the selected file. You can operate the stop button when a broadcast TS file has been selected.

See section 5.5.4, "Play/Pause/Stop."

9   Alarm button

This is displayed when any problem, such as an improper USB disconnection, occurs. Click this button to display a message. When you solve the problem, this button disappears.

10 Detailed Setting

Click to configure various settings for the selected file. The settings that you can configure differ depending on the selected file.

See section 5.5.5, "Detailed Setting."

11 File button

Click to select the playback file. You can also enter the full path in the text box directly or drag the file to the control application window.

See section 5.5.2, "File."

12 Loop button

Click to set the loop mode (repeat or only once) for the selected file.
You can operate the loop button when an external TS file has been selected.

See section 5.5.3, "Loop/Slider/Time."

13 Time

The selected file's playback time and total playback time are displayed here.

See section 5.5.3, "Loop/Slider/Time."

14 Sub-window show/hide button

Shows or hides the sub window.

15 Channel

Select how the frequency is set. Figure 5-2 shows the window when the channel is being selected. You can set the frequency when you select Frequency.

See section 5.5.3, "Loop/Slider/Time," 5.6.4, "Channel," 5.6.5, "Frequency."

16 1/7MHz Offset

Turn the frequency offset on or off.

See section 5.6.2, "1/7MHz Offset."

17 Country

Select which country's output channel will be set: Japan's, Brazil's, or South Africa's.

See section 5.6.3, "Country."

18 Channel

Select the output channel.

See section 5.6.4, "Channel."

19 RF

Turn signal output On or Off.

See section 5.6.6, "RF."

20 Level

Set the output level.

See section 5.6.7, "Level."

21 Level slider

Move the slider to set the output level.

See section 5.6.7, "Level."

5.3   Menu Bar

5.3.1   File

Click the File menu to select the playback file or to exit the application.
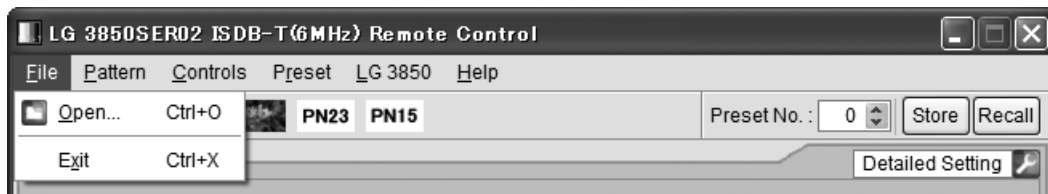

Figure 5-3   File menu

- **Open**

    Displays the Open File dialog box. Select the playback file on this dialog box.
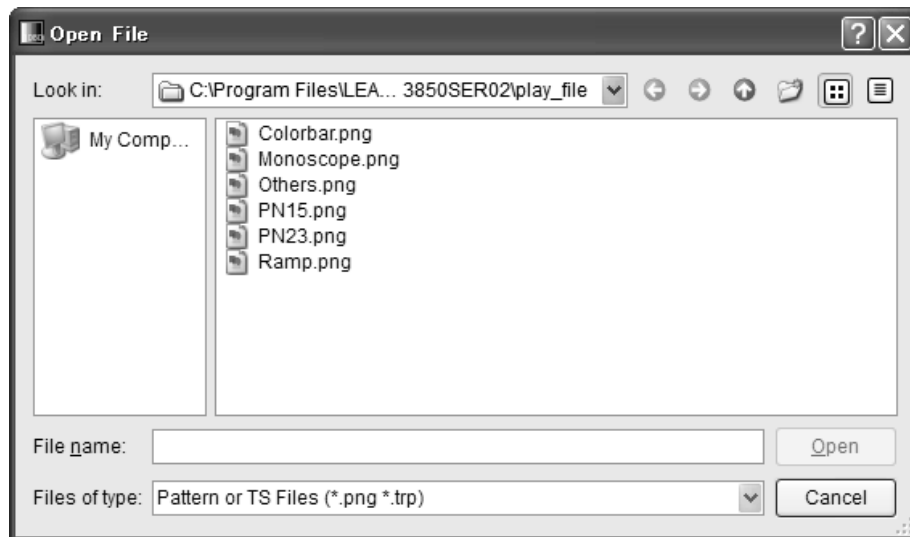   After you select the file, click Open to start playback.

Figure 5-4   Open File dialog box

You can select an external TS file or pattern file on the Open File dialog box. The six available pattern files are shown in the figure above. You cannot play back pattern files that you create.

You can also enter the full path in the File text box on the Main window to select a file. See section 5.5.2, "File."

- **Exit**

    Exits the application. You can also exit the application by clicking the Close button in the upper right of the window.

5.3.2 Pattern

Click the Pattern menu to select the output pattern. The selected pattern is immediately played back.
You can also select the output pattern from the toolbar.
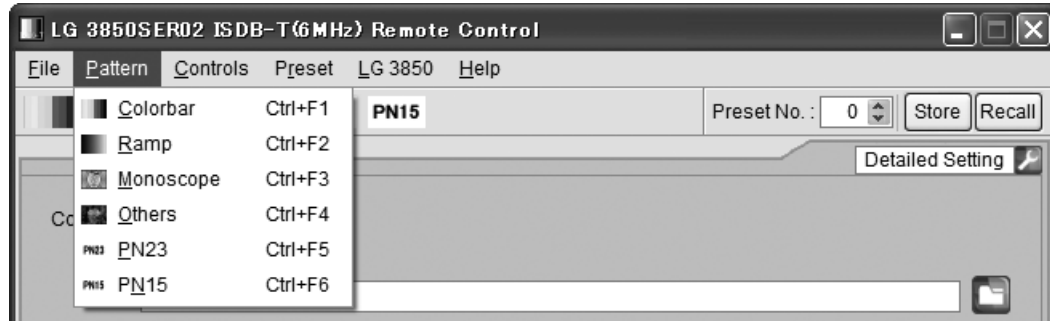See section 5.4.1, "Pattern icon."
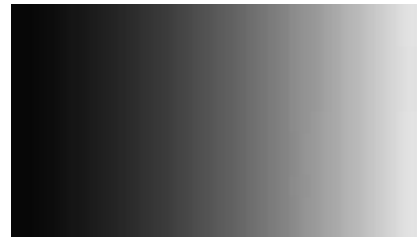

Figure 5-5 Pattern menu

- **Colorbar**

  A colorbar (simple animation) signal is played back.
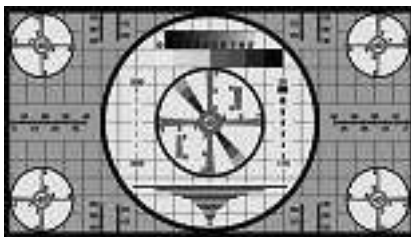

- **Ramp**

  A ramp signal is played back.

- **Monoscope**

  A monoscope signal is played back.

- **Others**

  A natural-picture signal is played back.

- **PN23**

  A pseudo random signal (PN23) is played back.

- **PN15**

  A pseudo random signal (PN15) is played back.

5.3.3   Controls

Click the Controls menu to select the LG 3850 that you want to control or to configure file playback settings.
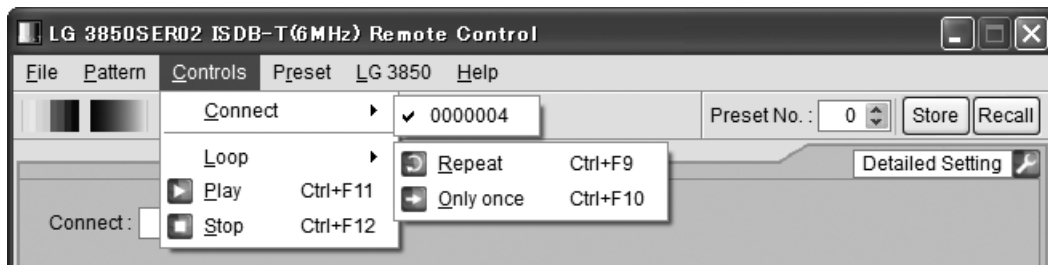You can select the file playback commands when an external TS file has been selected.

Figure 5-6   Controls menu

- **Connect**

  Select the serial number of the LG 3850 that you want to control. A check mark is displayed next to the selected LG 3850.
  You can also select the LG 3850 to connect to from the Connect list on the Main window.
  See section 5.5.1, "Connect."

- **Loop**

  Click to set the loop mode to Repeat or Only once for the selected file. You cannot set the loop mode during file playback. Stop playback, and then set the loop mode.
  You can also click the loop button on the Main window to set the loop mode.
  See section 5.5.3, "Loop/Slider/Time."

- **Play**

  Starts the playback of the selected file. During playback, this command does not appear.
  You can also click the play button on the Main window to play back the selected file.
  See section 5.5.4, "Play/Pause/Stop."

- **Pause**

  Pauses the playback of the selected file. While the playback is paused, this command does not appear.
  You can also click the pause button on the Main window to pause the playback of the selected file.
  See section 5.5.4, "Play/Pause/Stop."

- **Stop**

  Stops the playback of the selected file.
  You can also click the stop button on the Main window to stop the playback of the selected file.
  See section 5.5.4, "Play/Pause/Stop."

5.3.4   Preset

Click the Preset menu to collectively store and write presets.
While an external TS file is being played back, you cannot select these commands.
For an explanation of presets, see the LG 3850 instruction manual.
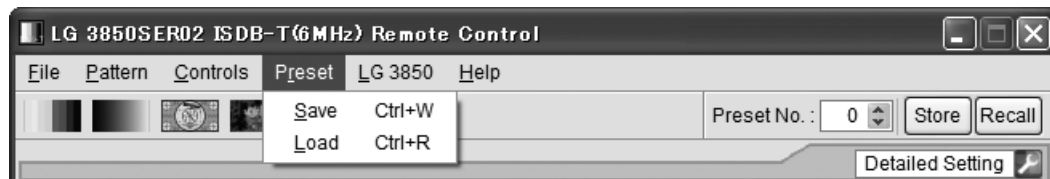

Figure 5-7   Preset menu

- **Save**

    You can store presets 01 to 99 together in a single file. Set the filename and save location on the Save File dialog box, and then click Save.
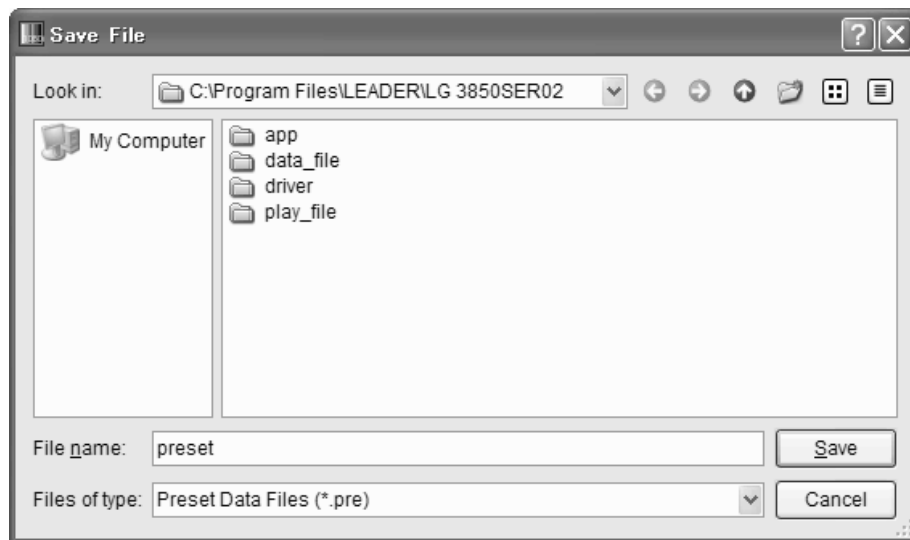

Figure 5-8   Save File dialog box

- **Load**

    Click to load a preset data file (presets 01 to 99) that was previously saved through the Save command to the LG 3850 that you are controlling. Select the file on the Open File dialog box, and then click Open.
    Note that any existing presets on the LG 3850 that you are controlling will be overwritten.
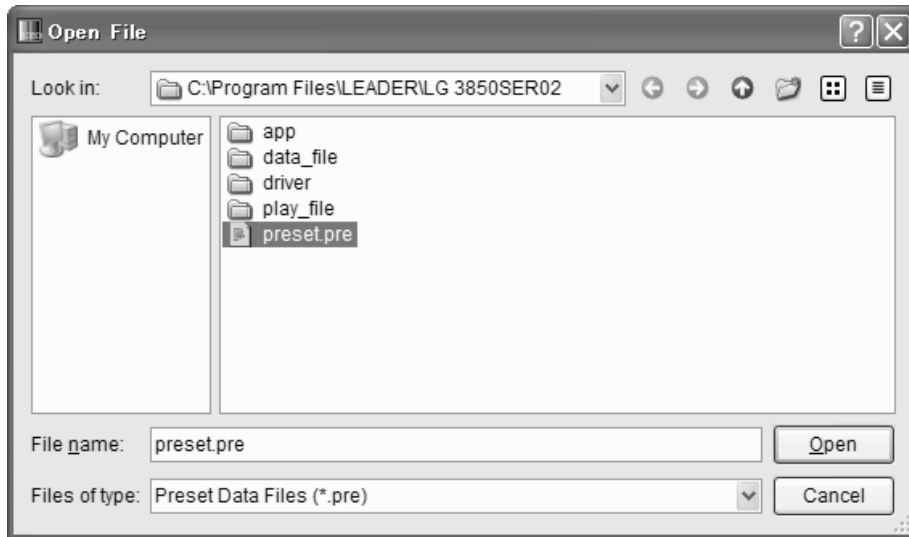
Figure 5-9   Open File dialog box

5.3.5   LG 3850

Click the LG 3850 menu to perform license authentication, program transfer, preset-recall-range configuration, and to display information about the controlled LG 3850.
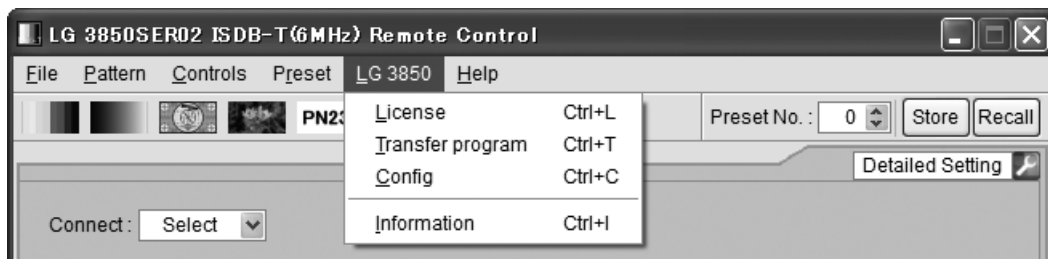

Figure 5-10   LG 3850 menu

- **License**

  Click to activate your license key. To use the features of this product, you must first activate the license key. For details, see the LG 3850 instruction manual.
  If the license key has already been activated on the LG 3850 that you are controlling, you cannot select this command.
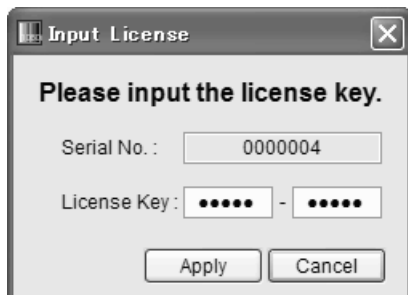

Figure 5-11   Input License dialog box

- **Transfer Program**

  Click to transfer the program to the LG 3850 that you are controlling. After the program has been transferred to the LG 3850, you can use the LG 3850 as an ISDB-T signal generator.

  To begin transferring the program, click Execute on the Transfer Program dialog box. If your PC is connected to multiple LG 3850s, be sure that you have selected the LG 3850 that you want to transfer the program to from the Connect list on the Main window before you begin the program transfer.
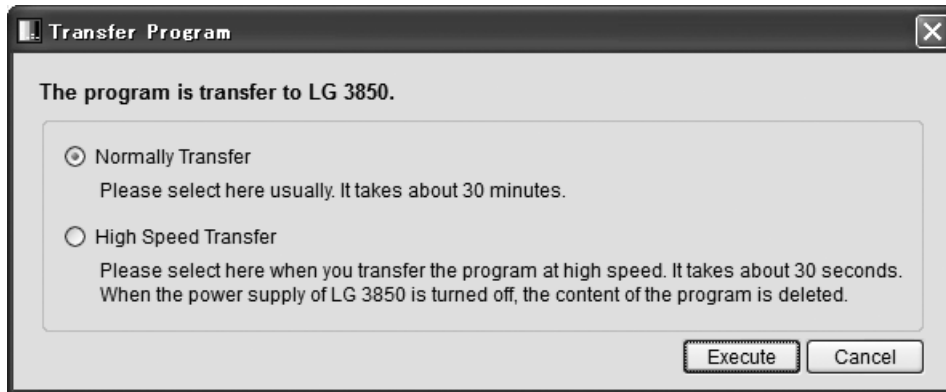
Figure 5-12   Transfer Program dialog box

Transfer Program

Normally Transfer:	The program is transferred normally. After the transfer has completed, the transferred program remains on the LG 3850 even if you turn it off. If the program has already been transferred to the LG 3850 that you are controlling, you cannot select this mode. It takes about 30 minutes to transfer the program.
High Speed Transfer:	The program is transferred at a high speed. After the transfer has completed, leave the control application and the LG 3850 connected to use the program. If the connection is disconnected or the LG 3850 is turned off, the transferred program is deleted from the LG 3850. You can perform the high-speed transfer an unlimited number of times. It takes about 30 seconds to transfer the program.

Do not turn the LG 3850 OFF or disconnect the USB cable while the program is being transferred. If a disconnection of the USB cable or other problem causes the program transfer to be interrupted, use the initialization application to initialize the LG 3850 to its factory default settings, and then transfer the program to the LG 3850 again.
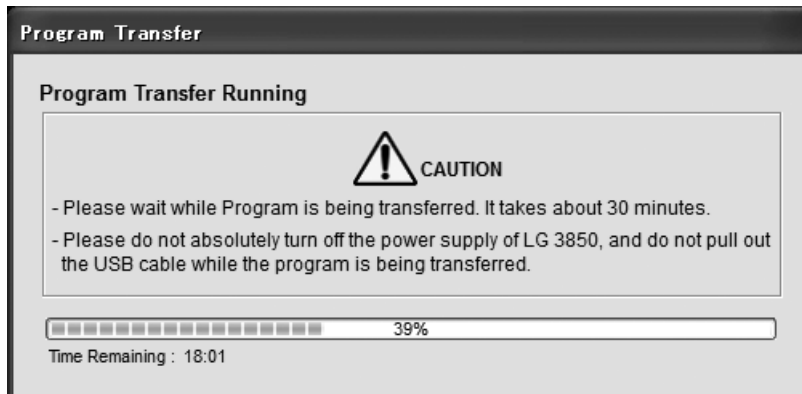
Figure 5-13   Dialog box while the program is being transferred

When you are finished using a program that you transferred to the LG 3850 at a high speed, exit the control application, and then restart the LG 3850.

- **Config**

  Set the preset recall range for when you operate the LG 3850 by itself. Enter the beginning and ending preset numbers in the Config dialog box, and then click OK. The factory default beginning and ending preset numbers are 0 and 99.

  Specify an End No. value that is larger than the specified Begin No. value. If you specify a preset number that is outside of the range, the following error message appears: "Preset Begin/End Input Error." Enter an appropriate number.

  When you use the control application to recall presets, the settings made here are invalid, and you can recall any preset (from 0 to 99).
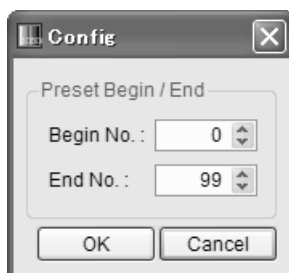
Figure 5-14   Config dialog box

- **Information**

  Displays the information of the LG 3850 that you are controlling
  While an external TS file is being played back, you cannot select this command.
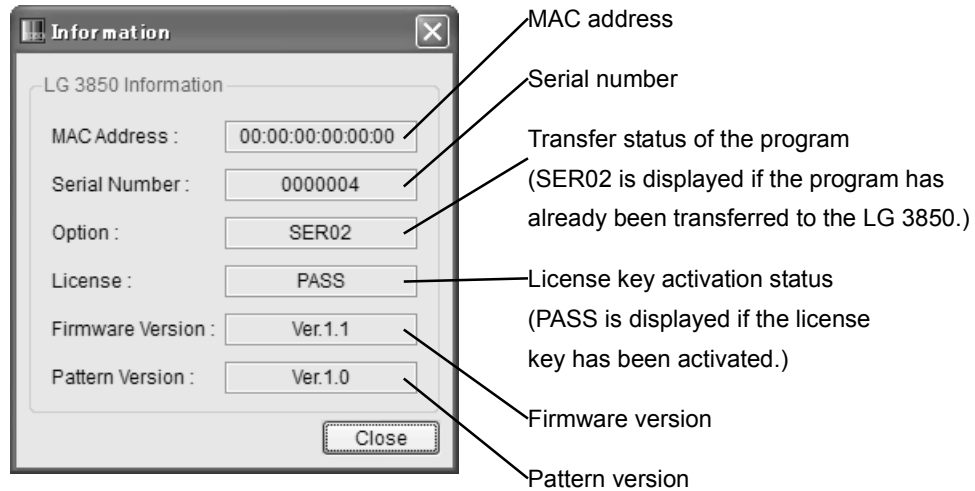
Figure 5-15   Information dialog box

5.3.6   Help

Click the Help menu to display the information about the application.
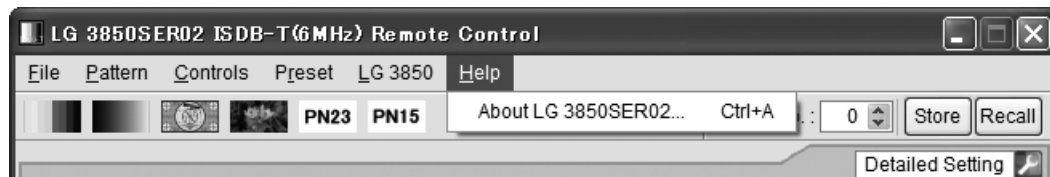
Figure 5-16   Help menu

- **About LG 3850SER02**

  Displays a dialog box that contains information about the application, such as its version.

Figure 5-17   About LG 38SER02 dialog box

5.4 Tool Bar

5.4.1 Pattern Icon

Click the icon that corresponds to the output pattern that you want to select. The selected pattern is immediately played back.

You can also select the output pattern from the Pattern menu.
See section 5.3.2, "Pattern"

Figure 5-18   Pattern icon

5.4.2 Preset No./Store/Recall

You can use the preset toolbar to store and recall presets.

Figure 5-19   Preset tool bar

The settings that are stored and recalled are the Pattern, Fixed Setting, PN Setting, Parameters (*1), Channel (*2), and Level settings. However, the transmission parameters for the still-image patterns are fixed to the values shown in the following table.

Table 5-2   Transmission parameters for still-image patterns

Parameters (*1)	Mode	Mode3	
	Partial Reception	On	
	EMG Bit	Off	
		Layer-A	Layer-B
	Segments	P(1)	12
	Modulation	QPSK	64QAM
	Code Rate	2/3	3/4
	Time IL	4	2

*1   The bandwidth is not preset.
*2   The VHF or UHF channel is preset.
The 1/7MHz Offset setting is not preset. When you recall a preset during standalone operation, the 1/7MHz Offset setting is set as shown below for each country's channels.
Japan: 1/7MHz Offset ON
Brazil: 1/7MHz Offset ON
South Africa: 1/7MHz Offset Off

- **Storing Preset Data**

  To store a preset, on the toolbar, enter a preset number next to Preset No., and then click Store. Click OK when the following confirmation message appears. The preset will be stored to the LG 3850.
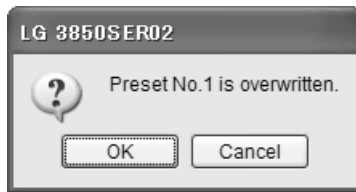
Figure 5-20   Confirmation screen

Notes

- ・ When Pattern is set to a pseudo random signal (PN23/PN15), PN Setting and Parameters are only stored for the last pattern. Therefore, even if you store a pseudo random signal to every address number, all the settings for PN Setting and Parameters will be the same.
- ・ You cannot store presets when an external TS file has been selected.
- ・ Preset contents that are stored in this manner are retained even after the LG 3850 is turned off.

- **Recalling Preset Data**

  To recall a preset, on the toolbar, enter a preset number next to Preset No., and then click Recall. The preset that has been stored to the LG 3850 is recalled, and the settings of the selected preset are displayed in the control application.

5.5   Main Window

5.5.1   Connect

Select the serial number of the LG 3850 that you want to control. The serial numbers of the LG 3850s that are connected to the PC are displayed in the list.

Figure 5-21   Displaying the list of LG 3850s that you can control

5.5.2   File

Select the file to play back. Use one of the following three methods to select the file.
In addition to the methods listed here, you can also click the File menu to select the file.
See section 5.3.1, "File."

- **Click the file button**
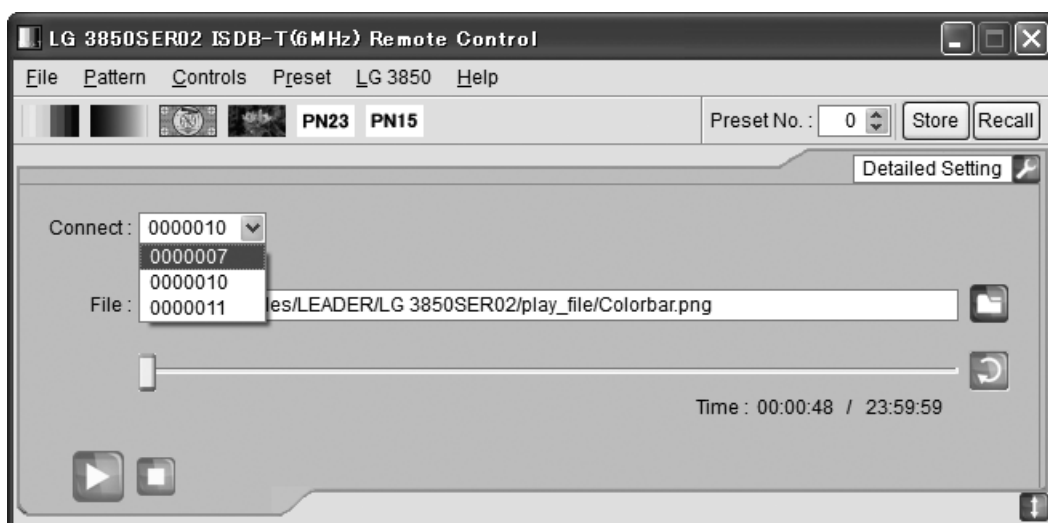

  Click the file button, and then select the file from the Open File dialog box that appears.
  The selected file is immediately played back.

  You can select an external TS file or pattern file on the Open File dialog box. The six
  available pattern files are shown below. You cannot play back pattern files that you
  create.
  Colorbar, Ramp, Monoscope, Others, PN23, PN15

- **Enter the full path directly into the text box**

  You can directly enter the full path to the file in the text box on the Main window.
  If the file specified by the full path that you entered can be played back, it is played
  back immediately.

- **Drag a file to the application**

  You can play back a file by dragging it to the control application window. However, you
  cannot drag files from the Open File dialog box.

5.5.3   Loop/Slider/Time

Use these elements to configure file playback settings.

- **Loop**

  Click to set the loop mode (repeat or only once) for the selected file.
  You cannot set the loop mode during file playback. Stop playback, and then set the
  loop mode.
  You can use the following loop buttons when an external TS file has been selected.

   Repeat

   Only once

- **Slider**

  The playback status of the selected file is displayed here. You can skip parts of the file
  by moving the slider.

- **Time**

  The selected file's playback time and total playback time are displayed here.

5.5.4   Play/Pause/Stop

When an external TS file has been selected, click these buttons to play back the file and pause and stop the playback.

- **Play**

  Click the play button to start the playback of the selected file.
  During file playback, this button switches to the pause button.

   Play button

- **Pause**

  Click the pause button to pause the playback of the selected file.
  While file playback is paused, this button switches to the play button.

   Pause button

- **Stop**

  Click the stop button to stop the playback of the selected file.

   Stop button

5.5.5   Detailed Setting

Click to configure various settings for the selected file. To display the dialog box for the selected settings, click the button in the upper right of the window. The settings that you can configure differ depending on the selected file.
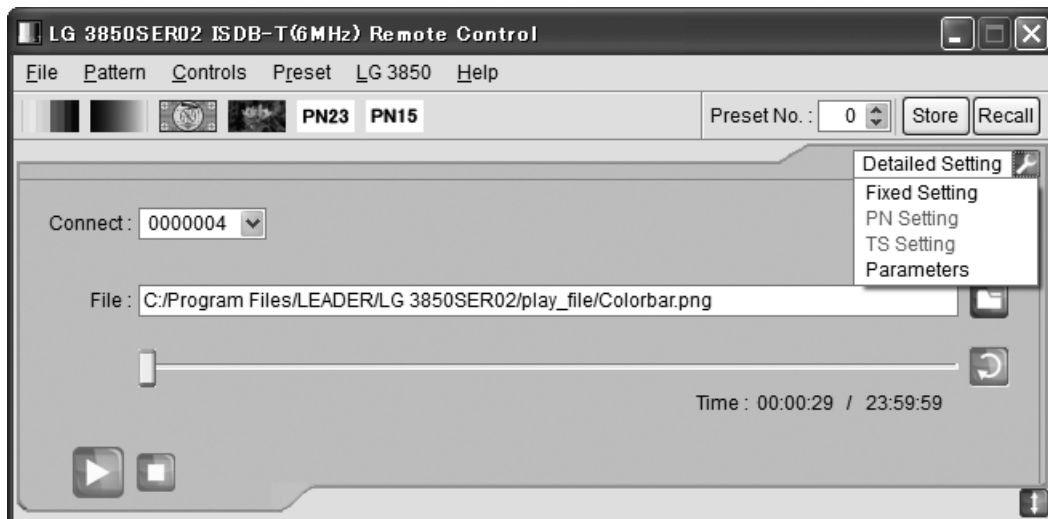
Figure 5-22 Detailed Setting list

- **Fixed Setting**

  When an internal still-image pattern (excluding pseudo random signals) has been selected, use this dialog box to select the output audio. Click Apply to apply the setting.

  Figure 5-23   Fixed Setting dialog box

  Audio

1kHz(L)+400Hz(R):	A tone signal (left: 1 kHz and right: 400 Hz) is generated.
1kHz(L,R):	A tone signal (left and right both 1 kHz) is generated.
400Hz(L,R):	A tone signal (left and right both 400 Hz) is generated.

- **PN Setting**

  When an internal pseudo random signal has been selected, use this dialog box to select its polarity and its packet type.
  Click Apply to apply the settings.
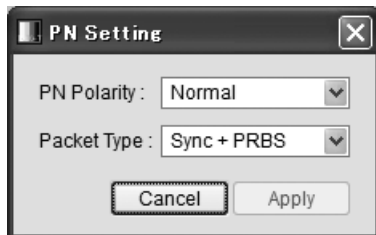
  Figure 5-24   PN Setting dialog box

  PN Polarity

Normal:	A polarity that enables error measurement on generic BER measuring instruments is used.
Inverted:	The inverse of the Normal polarity is used.

  Packet Type

Sync + PRBS:	Sync (47hex) + 187-byte PN
Header + PRBS:	Sync (47 hex) + 1FFF (hex) + 10 (hex) + 184-byte PN

- **TS Setting**

    When an external TS file has been selected, use this dialog box to turn the TOT Overwrite ON and OFF and set the playback range.
    Click Apply to apply the settings.
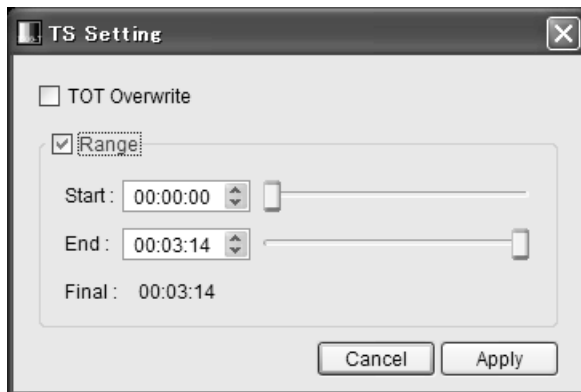
Figure 5-25　TS Setting dialog box

TOT Overwrite (*1)

ON:	Select this check box to overwrite the TOT (Time Offset Table) in the TS according to the PC time settings.
OFF:	Clear this check box to generate the TOT in the TS as is.

Range (*2)

ON:	Select this check box to specify the playback range. Enter the start and end times in the Start and End boxes respectively. You can also use the sliders to change these values. If you set the range, and then select a different TS, Range is reset to OFF.
OFF:	Clear this check box to play the TS file from its start to end.

*1　This setting is not available if there is no TOT in the TS input.
*2　Note the following regarding the TS playback range.
- The displayed time is calculated from the detected bit rate and the file size. Depending on the data, there may be a small degree of error in this calculation.
- The minimum time unit that you can use to specify the time is 1 second. The time setting is automatically calculated for packets.
- If an incomplete data byte exists at the start or end of the data, the LG 3850 ignores this data fraction and plays data back in units of packets.
- The number of packets that are played back is an integer multiple of the number of ISDB-T frame packets.
- When you specify a playback range, if the specified number of packets is not a multiple of the number of frame packets, the LG 3850 automatically rounds down the number of packets to play back to a number of packets that is a multiple of the number of frame packets.
- To play back a TS, set the TS playback range so that 16 MB or more of the TS are played back. The following equation can be used to make a rough calculation of the playback time.
  $t = 16 \times 8/n$ (t: minimum playback time in seconds, n: TS file bit rate in Mbps)

- **Parameters**

 Use this dialog box to configure transmission parameters. Click Apply to apply the settings.

  When you have selected an internal still-image pattern (excluding pseudo random signals) or when you have selected an MPEG TS for the external TS, the Mode and Segment settings are fixed.
  When you have selected a broadcast TS, the transmission parameters are fixed to values that are defined by the broadcast TS.
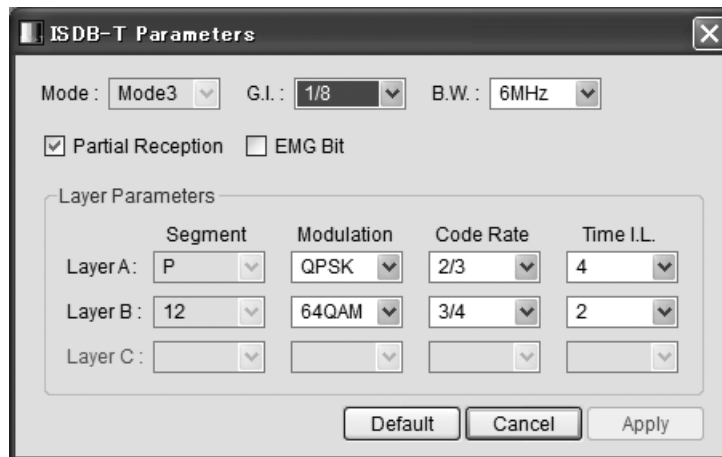
Figure 5-26   ISDB-T Parameters dialog box

Mode

Select the mode. [Mode2 / Mode3]

G.I.

Select the guard interval. [1/4 / 1/8 / 1/16 / 1/32]

B.W.

Select the band width. [6MHz / 7MHz / 8MHz]

Partial Reception

Select this check box to turn the partial reception flag ON. Clear this check box to turn the partial reception flag OFF. [ON / OFF]

EMG Bit

Select this check box to turn the emergency broadcast system flag ON. Clear this check box to turn the emergency broadcast system flag OFF. [ON / OFF]

Segment

Select the number of segments for the layer. [1 (P) to 13]
If you specify 13 segments, only layer A is used. If you specify 12 segments or less, layer B can be specified. Additionally, if the sum of layers A and B is 12 or less, layer C can be specified. If partial reception is enabled, the layer A segment display shows "P," and the number of segments is fixed to 1.

Modulation

Select the carrier modulation method. [DQPSK / QPSK / 16QAM / 64QAM]

Code Rate

Select the code rate. [1/2 / 2/3 / 3/4 / 5/6 / 7/8]

Time IL

Select the time interleaving length.
When Mode is set to Mode2: [0 / 2 / 4 / 8]
When Mode is set to Mode3: [0 / 1 / 2 / 4]

5.6   Sub Window

To display the Sub window, click ⬍ in the lower right of the screen.

5.6.1   Frequency Setup Method

Select how the RF frequency is set.

Channel

VHF,UHF:	Select this to specify the frequency using VHF or UHF channels.
Frequency:	Select this to specify the frequency directly.

Figure 5-27   When VHF,UHF is selected

Figure 5-28   When Frequency is selected

5.6.2   1/7MHz Offset

Use this check box to turn the offset on or off.

1/7MHz Offset

On:	A 1/7 MHz offset is added to the specified channel and frequency.
Off:	A 1/7 MHz offset is not added to the specified channel and frequency.

5.6.3   Country

When Channel is set to VHF,UHF, select which country's output channel will be set:
Japan's, Brazil's, or South Africa's.

33
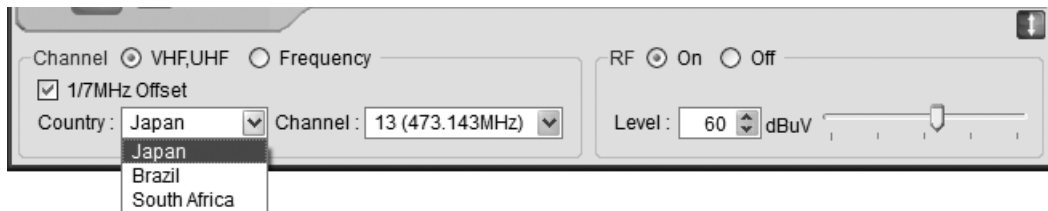
Figure 5-29   List of the countries for setting the channel

5.6.4   Channel

When you set Channel to VHF,UHF, select the output channel. For the channels that you can select, see section 7.1, "Channel Table."
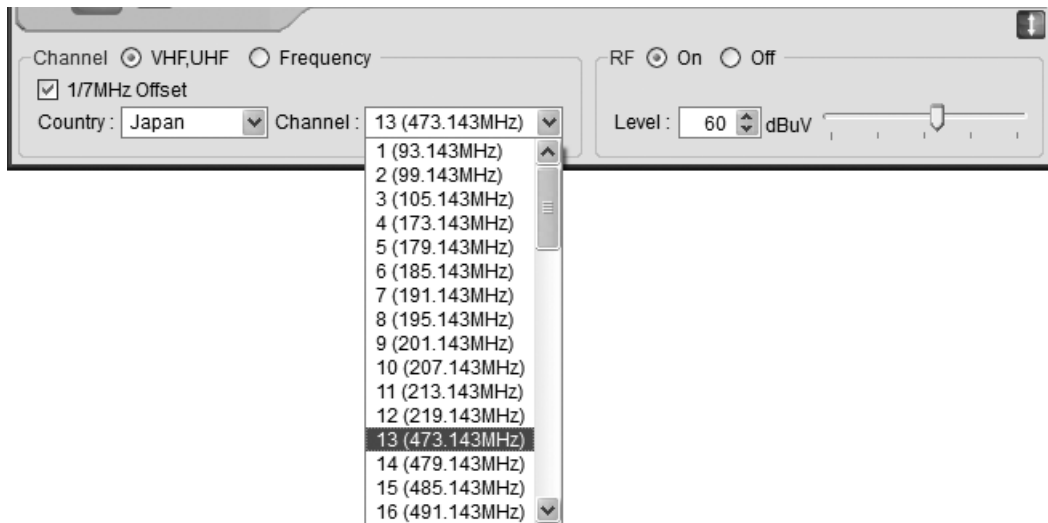
Figure 5-30   List of the Japan channels

5.6.5   Frequency

When you set Channel to Frequency, set the output frequency. You can specify a frequency in the range of 50 to 900 MHz. Enter the value in the spin box, or use the slider to set the frequency.

Figure 5-31   Setting the frequency

5.6.6   RF

Turn signal output On or Off.

5.6.7   Level

Set the level of the output signal.
Enter the value in the spin box, or use the slider to set the level.

6. INITIALIZATION APPLICATION

This chapter will explain the initialization application, LG 3850 Initialize Tool, which is used to initialize the LG 3850 to its factory default settings (with no installed options) from a PC.
To use the LG 3850 Initialize Tool, you must first install the Initialization Application, LG3850InitializeToolInstallerPackage, on your PC from the CD-ROM.
See chapter 3, "INSTALLATION."

Use the initialization application in the following situations:
• If the program transfer is interrupted due to a reason such as the USB cable being pulled out while the program is being transferred to the LG 3850.
• If the control application does not operate correctly when the LG 3850 and the PC are connected.

• **Start the initialization application**

   Use a USB cable to connect the PC and LG 3850, and then follow the procedure below to start the initialization application.
   On the taskbar, click Start, All Programs, LEADER, LG 3850 Tools, and then LG 3850 Initialize Tool.

   If a message asking you to install a USB driver is displayed when you start the initialization application, install the USB driver.
   See chapter 3, "INSTALLATION."

   *   You cannot use the initialization application to initialize multiple LG 3850s simultaneously. Be sure to connect only one LG 3850 to your PC.

• **Check the device**

   When the initialization application starts, it automatically detects the connected device and displays the serial number of the device on the Initialization window.
   Check that the connected device is the LG 3850 that you want to initialize.
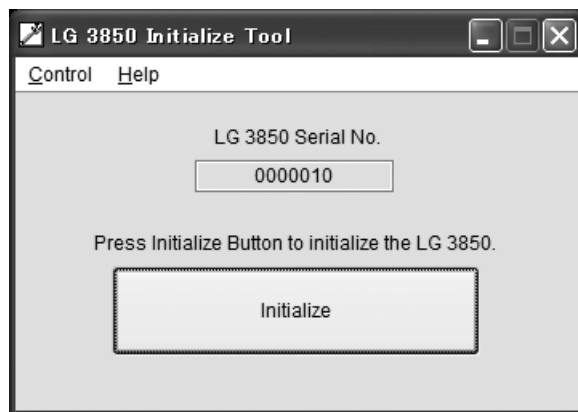
Figure 6-1   Initialization window

- **Start the initialization**

  Click Initialize in the Initialization window. The initialization confirmation dialog box appears. Click OK.
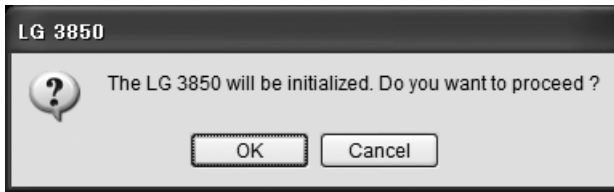
Figure 6-2   Initialization confirmation dialog box

- **During initialization**

  When you click OK in the initialization confirmation dialog box, the initialization begins. During the initialization, the LG 3850's 7-segment LED displays '8.8'. When the LG 3850 is in this state, you cannot perform panel operations.
  During the initialization, do not turn the LG 3850 off or disconnect the USB cable.
  The initialization takes approximately 15 minutes.
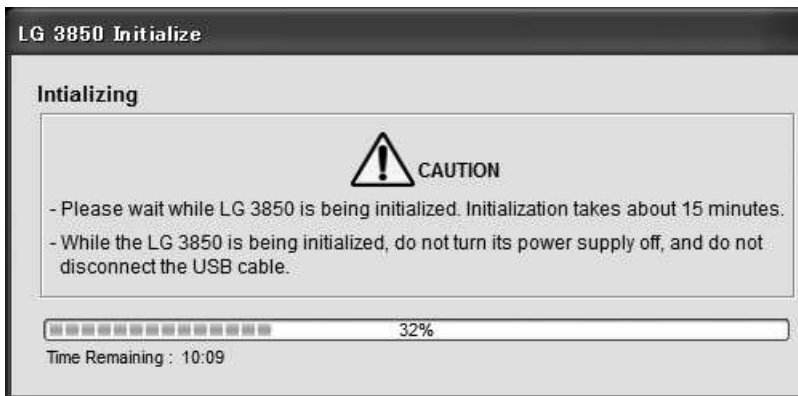
Figure 6-3   During initialization

- **When initialization is complete**

  When the initialization is complete, the initialization complete dialog box appears. Click OK to exit the initialization application.
  After the initialization has been completed, be sure to restart the LG 3850.
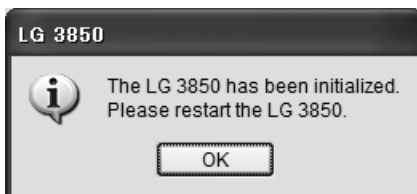
Figure 6-4   Initialization complete dialog box

After an LG 3850 is initialized to its factory default settings, the encoding software will no longer be installed, so the LG 3850 will not function as a signal generator.
Use the control application to transfer the program to the LG 3850.
See • Transfer Program in section 5.3.5, "LG 3850."

7. Appendix

7.1 Channel Table

The channel tables for Japan, Brazil, and South Africa are shown below.

Table 7-1 Channel table (without 1/7 MHz offset)

| Japan				Brazil				South Africa			
CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency
1	93.000	33	593.000	7	177.000	39	623.000	4	178.000	44	658.000
2	99.000	34	599.000	8	183.000	40	629.000	5	186.000	45	666.000
3	105.000	35	605.000	9	189.000	41	635.000	6	194.000	46	674.000
4	173.000	36	611.000	10	195.000	42	641.000	7	202.000	47	682.000
5	179.000	37	617.000	11	201.000	43	647.000	8	210.000	48	690.000
6	185.000	38	623.000	12	207.000	44	653.000	9	218.000	49	698.000
7	191.000	39	629.000	13	213.000	45	659.000	10	226.000	50	706.000
8	195.000	40	635.000	14	473.000	46	665.000	11	234.000	51	714.000
9	201.000	41	641.000	15	479.000	47	671.000	13	250.200	52	722.000
10	207.000	42	647.000	16	485.000	48	677.000	21	474.000	53	730.000
11	213.000	43	653.000	17	491.000	49	683.000	22	482.000	54	738.000
12	219.000	44	659.000	18	497.000	50	689.000	23	490.000	55	746.000
13	473.000	45	665.000	19	503.000	51	695.000	24	498.000	56	754.000
14	479.000	46	671.000	20	509.000	52	701.000	25	506.000	57	762.000
15	485.000	47	677.000	21	515.000	53	707.000	26	514.000	58	770.000
16	491.000	48	683.000	22	521.000	54	713.000	27	522.000	59	778.000
17	497.000	49	689.000	23	527.000	55	719.000	28	530.000	60	786.000
18	503.000	50	695.000	24	533.000	56	725.000	29	538.000	61	794.000
19	509.000	51	701.000	25	539.000	57	731.000	30	546.000	62	802.000
20	515.000	52	707.000	26	545.000	58	737.000	31	554.000	63	810.000
21	521.000	53	713.000	27	551.000	59	743.000	32	562.000	64	818.000
22	527.000	54	719.000	28	557.000	60	749.000	33	570.000	65	826.000
23	533.000	55	725.000	29	563.000	61	755.000	34	578.000	66	834.000
24	539.000	56	731.000	30	569.000	62	761.000	35	586.000	67	842.000
25	545.000	57	737.000	31	575.000	63	767.000	36	594.000	68	850.000
26	551.000	58	743.000	32	581.000	64	773.000	37	602.000	69	858.000
27	557.000	59	749.000	33	587.000	65	779.000	38	610.000		
28	563.000	60	755.000	34	593.000	66	785.000	39	618.000		
29	569.000	61	761.000	35	599.000	67	791.000	40	626.000		
30	575.000	62	767.000	36	605.000	68	797.000	41	634.000		
31	581.000			37	611.000	69	803.000	42	642.000		
32	587.000			38	617.000			43	650.000		

Table 7-2   Channel table (with 1/7 MHz offset)

Japan				Brazil				South Africa			
CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency
1	93.143	33	593.143	7	177.143	39	623.143	4	178.143	44	658.143
2	99.143	34	599.143	8	183.143	40	629.143	5	186.143	45	666.143
3	105.143	35	605.143	9	189.143	41	635.143	6	194.143	46	674.143
4	173.143	36	611.143	10	195.143	42	641.143	7	202.143	47	682.143
5	179.143	37	617.143	11	201.143	43	647.143	8	210.143	48	690.143
6	185.143	38	623.143	12	207.143	44	653.143	9	218.143	49	698.143
7	191.143	39	629.143	13	213.143	45	659.143	10	226.143	50	706.143
8	195.143	40	635.143	14	473.143	46	665.143	11	234.143	51	714.143
9	201.143	41	641.143	15	479.143	47	671.143	13	250.343	52	722.143
10	207.143	42	647.143	16	485.143	48	677.143	21	474.143	53	730.143
11	213.143	43	653.143	17	491.143	49	683.143	22	482.143	54	738.143
12	219.143	44	659.143	18	497.143	50	689.143	23	490.143	55	746.143
13	473.143	45	665.143	19	503.143	51	695.143	24	498.143	56	754.143
14	479.143	46	671.143	20	509.143	52	701.143	25	506.143	57	762.143
15	485.143	47	677.143	21	515.143	53	707.143	26	514.143	58	770.143
16	491.143	48	683.143	22	521.143	54	713.143	27	522.143	59	778.143
17	497.143	49	689.143	23	527.143	55	719.143	28	530.143	60	786.143
18	503.143	50	695.143	24	533.143	56	725.143	29	538.143	61	794.143
19	509.143	51	701.143	25	539.143	57	731.143	30	546.143	62	802.143
20	515.143	52	707.143	26	545.143	58	737.143	31	554.143	63	810.143
21	521.143	53	713.143	27	551.143	59	743.143	32	562.143	64	818.143
22	527.143	54	719.143	28	557.143	60	749.143	33	570.143	65	826.143
23	533.143	55	725.143	29	563.143	61	755.143	34	578.143	66	834.143
24	539.143	56	731.143	30	569.143	62	761.143	35	586.143	67	842.143
25	545.143	57	737.143	31	575.143	63	767.143	36	594.143	68	850.143
26	551.143	58	743.143	32	581.143	64	773.143	37	602.143	69	858.143
27	557.143	59	749.143	33	587.143	65	779.143	38	610.143		
28	563.143	60	755.143	34	593.143	66	785.143	39	618.143		
29	569.143	61	761.143	35	599.143	67	791.143	40	626.143		
30	575.143	62	767.143	36	605.143	68	797.143	41	634.143		
31	581.143			37	611.143	69	803.143	42	642.143		
32	587.143			38	617.143			43	650.143		

*   The values shown in table 7-2 and the frequencies shown on the control application are rounded values.
The actual offset of all values is 0.142857 MHz.
Example: 473.143 MHz is displayed for 473.142857 MHz (the actual value).

7.2   Software Revision History

This manual was written for software version 1.2.
To check the software version number, click About LG 3850SER02 on the control application's Help menu.

● **Ver 1.2**

• A bandwidth selection feature (between 6, 7, and 8 MHz) has been added.
• A high-speed broadcast system transfer feature has been added.
• A feature for entering the frequency directly when you configure the channel settings has been added.
• Additional transmission parameters have been added for still-image patterns and during MPEG TS playback.

所含有毒有害物质信息

部件号码: LG 3850SER02

 此标志适用于在中国销售的电子信息产品, 依据2006年2月28日公布的《电子信息产品污染控制管理办法》以及SJ/T11364-2006《电子信息产品污染控制标识要求》，表示该产品在使用完结后可再利用。数字表示的是环境保护使用期限，只要遵守与本产品有关的安全和使用上的注意事项，从制造日算起在数字所表示的年限内，产品不会产生环境污染和对人体、财产的影响。
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产品中有毒有害物质或元素的名称及含量

部件名称 Parts	有毒有害物质或元素 Hazardous Substances in each Part					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
本体部	×	○	○	○	○	○

备注）

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 规定的限量要求以下。

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标准规定的限量要求。

Ver.1