

Low-Cost, Compact Signal Generator for Digital Broadcasts



Upon request



PC connection example

LG 3850 DIGITAL TV SIGNAL GENERATOR

GENERAL

The LG 3850 is a signal generator with switchable, separately sold encoding software that can support the different digital broadcasting methods of various countries. It has a built-in encoder and up converter that enable you to vary channel frequencies and output levels. It is suitable for use in a TV production line or similar location.

FEATURES

- Ability to change the encoding software from a PC connected to the LG 3850 through USB
- Seamless output of still-image and audio patterns
- Variable levels and channels
- Ability to save 99 preset configurations in the internal memory

SPECIFICATIONS

Transmission Encoding

Software Sold Separately: For details, see the specifications for the encoding software.

RF Signal Generator

Frequency
Range: 50 to 900 MHz
Resolution: 1 MHz (an offset of 1/7 MHz is added to ISDB-T and SBTVD-T)

Level
Range: 10 to 99 dB μ V (75 Ω termination)*1
Resolution: 1 dB
Output Connector: BNC
Output Impedance: 75 Ω

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

Input/Output Signal Source

Internal Signal

Software Sold Separately: The details are different depending on the encoding software. For details, see the specifications for the encoding software.

USB Interface

Input Connectors: 1 USB Type B connector (shared with remote control)
Specification: USB 2.0
Input Bit Rate: 0.2 to 40.0 Mbps max.
Input Packet Format: 188 or 204 bytes
Supported Stream: MPEG-2 TS (ISO/IEC13818-1)
Broadcast System Switching:

It takes approximately 30 minutes to reprogram the fixed pattern data on the PLD.
PC Specifications: CPU: Intel (R) Core (TM) 2 Duo, 1.6 GHz or more
 Memory: 1 GB or more
 HDD: 1 GB or more of free space
 OS: Windows(R) XP SP3

Display

Power ON/OFF: Indicated by an LED
Still-Image and Audio Pattern Selection: Indicated by LEDs that correspond to each pattern
Channels: Indicated by the 7-segment LED
Level: Indicated by the 7-segment LED
Illegal Display: Indicated by error codes on the 7-segment LED

Environmental Conditions

Operating Temperature Range: 0 to 40 $^{\circ}$ C
Operating Humidity Range: 85 %RH or less (no condensation)
Operating Environment: Indoors
Elevation: Up to 2000 m
Overvoltage Category: II
Pollution Degree: 2

Power Requirements

Supply Voltage: 90 to 250 VAC (50/60 Hz)
Power Consumption: 20 Wmax.

Dimensions and Weight

Dimensions: 213 (W) \times 44 (H) \times 400 (D) mm (excluding protrusions)
Weight: Approx. 1.7 kg

Accessories

Power cord.....	1
Cover/inlet stopper.....	1
USB cable.....	1
Instruction manual.....	1

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

LG 3850SER02

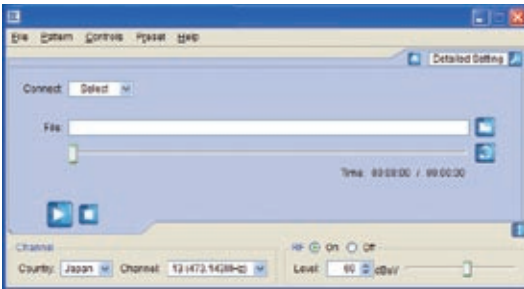
ISDB-T SOFTWARE

When LG 3850SER02 ISDB-T SOFTWARE is installed on the LG 3850, the LG 3850 functions as an ISDB-T signal generator, and the LG 3850 can be configured from a PC.

FEATURES

USB 2.0

Use a USB 2.0 connection between a PC and the LG 3850 to install broadcast-systems, configure the LG 3850, and play back broadcast transport streams on the LG 3850.



Still Images

Output four different still-image patterns seamlessly.

Audio Signal

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

Operating Environment

PC Specifications Required to Use This Product

OS Microsoft Windows XP SP3

CPU Intel (R) Core (TM) 2 Duo, 1.6 GHz (equivalent or superior)

Memory 1 GB or more

HDD 1 GB or more of free space

USB port USB 2.0 (1 port)

The license key must be entered when the software is installed.

SPECIFICATIONS

Broadcast System

Digital Terrestrial Television Broadcasting ISDB-T (ARIB-STD-B31) (*1)

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

Transmission Parameters

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

External TS Input Specifications

Input Packet Format: 204 bytes

Supported Stream: MPEG-2 TS (ISO/IEC13818-1)

Input Data Rate: 32.507936 Mbps (*3)

Number of PCRs That Can Be Updated: up to 8

Update Parameter: PCR

*3: Only for broadcast TS

Internal Signal

Pseudo Random Signal: PN23 and PN15 (*4)

Still-Image Pattern: Colorbar (simple animation), ramp, monoscope, natural picture

Format: 1920×1080i (HDTV), 320×180p (1seg)

Audio (Tone): 1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)

RF Signal Generator

Output Channel: Japan (channels 1 to 62), Brazil (channels 7 to 69) (*4)

Resolution: 6 MHz (*5)

Output Range: 10 to 99 dBμV (75 Ω termination)(*6)

Frequency Bandwidth: 5.7 MHz

*4: Pseudo random signals and the Brazil output channels can be set from a PC.

*5: Configuration can only be performed through the setting of channels. (Japan channels and Brazil channels include a 1/7 MHz offset.)

*6: This is the guaranteed operating range. The guaranteed performance 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.

Control Application

The following settings can be configured from a PC that is connected to the LG 3850 through USB 2.0.

Broadcast System Installation:

ISDB-T

Output Level: 1 dB steps (10 to 99 dBμV: 75 Ω termination)

Output Channel: Japan (channels 1 to 62), Brazil (channels 7 to 69)

Pseudo Random Signal: PN23 and PN15

Still-Image Pattern: Colorbar (simple animation), ramp, monoscope, natural picture

Audio (Tone): 1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)

Broadcast TS Operations: Select, playback, stop

Recall: 99 selectable preset configurations

Loading and Saving: Preset configurations can be configured, loaded, and saved through LG 3850 panel operations.

Alarm Displays: Can't connect to USB device, etc.

Licenses

This product can only be used on one LG 3850.

It cannot be installed on multiple LG 3850s.

Environmental Conditions

Same as the LG 3850

Contents

License key 1
 CD-ROM
 Includes transfer data and the control application..... 1
 Instruction manual 1

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

LG 3850SER03

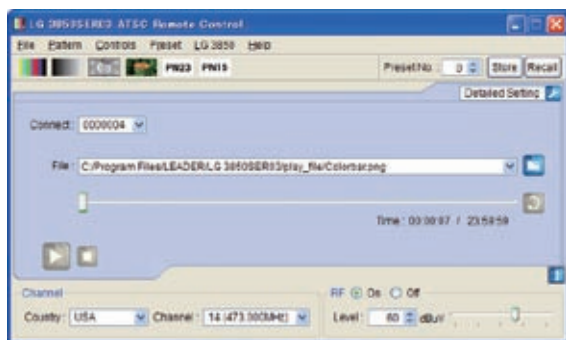
ATSC SOFTWARE

The LG 3850SER03 ATSC software makes it possible to transfer broadcast systems to the LG 3850 and operate it from a PC. After a broadcast system has been transferred to the LG 3850, the LG 3850 can be used as an ATSC signal generator.

FEATURES

■ USB 2.0

Connect the LG 3850 to a PC through USB to perform operations such as transferring broadcast systems and playing back MPEG-2 transport streams.



■ Still Images

Output four different still-image patterns seamlessly.

■ Audio Signal

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

■ Operating Environment

PC Specifications Required to Use This Product

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	USB 2.0 (1 port)

The license key must be entered when the software is installed.

SPECIFICATIONS

Broadcast System

Digital Terrestrial	
Television Broadcasting:	ATSC (A/53B)
Mobile Broadcasting:	ATSC-M/H (A/153)(*1)

Transmission Parameters

Carrier Modulation: 8VSB

External TS Input Specifications

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

Standalone Operation of the LG 3850

Through the transferring of a broadcast system to the LG 3850, the LG 3850 can be used as a standalone ATSC signal generator. When the LG 3850 is used in this manner, the following settings can be configured.

RF Signal Generator(*2)

Frequency	
Channel:	One of the following countries, selected using the control application. Channels 2 to 83 for USA, channels 2 to 12 and 21 to 70 for Korea

Output	
Range:	10 to 89 dBμV(*3)
Resolution:	1 dB

Impedance:	75 Ω
Internal Signal(*4)	
Pseudo Random Signal:	PN23, PN15(*5)
Still-Image Pattern:	Colorbar (simple animation), ramp, monoscope, natural picture
Format:	One of the following formats, selected using the control application. 1920 × 1080i (HDTV), 1280 × 720p (16:9), 704 × 480p (16:9), 704 × 480i (16:9), 704 × 480i (4:3)
Audio (Tone):	1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)
Presets	
Recall/Store:	Stores and recalls presets(*6)
Alarm Display:	Shown on the 7-segment display

Control Application Operations

Function:	Controls the LG 3850 from a PC over a USB connection
Country Setting:	Set the output channels for stand-alone mode by selecting one of the following countries. USA, Korea
System Switching:	LG 3850s that are configured to use different broadcast systems can be immediately switched to ATSC.

RF Signal Generator(*2)

Frequency	
Channel:	Channels 2 to 83 for USA, channels 2 to 12 and 21 to 70 for Korea
Output	
Range:	10 to 89 dBμV(*3)
Resolution:	1 dB
Impedance:	75 Ω
Output Control:	Output can be turned on and off

Internal Signal(*3)

Pseudo Random Signal:	PN23, PN15
Still-Image Pattern:	Colorbar (simple animation), ramp, monoscope, natural picture
Format:	1920 × 1080i (HDTV), 1280 × 720p (16:9), 704 × 480p (16:9), 704 × 480i (16:9), 704 × 480i (4:3)
Audio (Tone):	1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)

MPEG-2 TS Operations: Select, playback, stop, etc.
ATSC MPEG-2 transport streams in which ATSC-M/H IP data is multiplexed can be played back.

Presets	
Recall/Store:	Stores and recalls presets
Begin/End:	Sets the beginning and ending preset numbers on the LG 3850
Load/Save:	Collectively saves and writes 99 presets
Alarm Display:	Can't connect to USB device, etc.

Licenses

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

Contents

License key (A4 sheet)	1
CD-ROM.....	1
Instruction manual.....	1

- *1 Files that contain digital terrestrial television broadcasting (ATSC) MPEG-2 transport streams in which mobile broadcasting (ATSC-M/H) IP data is multiplexed can be played back.
- *2 Image waves are generated for all waves other than the fundamental wave. Therefore, it is desirable to use the LG 3850 signals separately. If you want to mix LG 3850 RF signals with cable television RF signals, you must use a separate filter to delete the image interference waves.
- *3 This is the operating range. The optimal range is 39 to 89 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.
- *4 The still picture patterns and formats may be changed.
- *5 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.)
- *6 If a preset recall range has been set through the use of the control application, presets from within that range are recalled.

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

LG 3850SER04

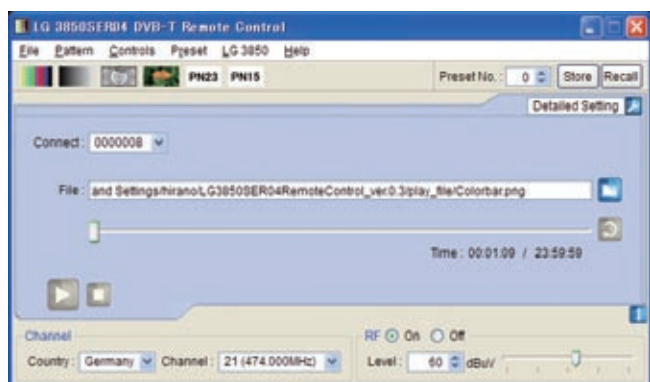
DVB-T SOFTWARE

The LG 3850SER04 DVB-T software makes it possible to transfer broadcast systems to the LG 3850 and operate it from a PC. After a broadcast system has been transferred to the LG 3850, it can be used as a DVB-T signal generator.

FEATURES

■ USB 2.0

Connect the LG 3850 to a PC through USB to transfer broadcast systems, play MPG-2 TSs, and configure transmission parameters.



■ Still Images

Output four different still-image patterns seamlessly.

■ Audio Signal

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

■ Operating Environment

PC Specifications Required to Use This Product

- OS Microsoft Windows XP SP3/Vista/Windows 7
- CPU Intel (R) Core™ 2 Duo, 1.6 GHz or more
- Memory 1 GB or more
- HDD 1 GB or more of free space
- USB port USB 2.0 (1 port)

The license key must be entered when the software is installed.

SPECIFICATIONS

Broadcasting System

Digital terrestrial television broadcasting, DVB-T (DVB EN300744) (*1)

*1 Hierarchy information is not included.

Transmission Parameters

- FFT Mode:** 2 k, 8 k
- Guard Interval:** 1/4, 1/8, 1/16, 1/32
- Carrier Modulation:** QPSK, 16QAM, 64QAM
- Bandwidth:** 6 MHz, 7 MHz, 8 MHz
- Coding Rate:** 1/2, 2/3, 3/4, 5/6, 7/8

External TS Input Specifications

- Packet Length:** 188 or 204 bytes
- Supported Stream:** MPEG-2 TS (ISO/IEC13818-1)
- Bit Rate:** 0.2 to 40 Mbps

Internal Signal(*2)

- Pseudo Random Signal:** PN23 and PN15 (*3)
- Still-Image Pattern:** Colorbar, ramp, monoscope, natural picture
- Format:** 1920×1080i (HDTV), 720×576i (SDTV), 720×480i (SDTV) (*4)
- Frame Rate:** 25 fps, 30 fps (*4)
- Audio (Tone):** 1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R)

*2 The still image patterns and formats may be changed.

*3 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.)

Country-specific settings : *4

When you operate the LG 3850 in stand-alone mode, you can use the control application to set the country and format. The frame rate and transmission parameter combinations vary depending on the selected country as shown in table 1.

Table 1

Country	Format	Frame	B.W.	Mode	G.I.	Mod.	C.R.
Germany	720×576i	25 fps	8 MHz	8 k	1/4	16QAM	2/3
Australia	or		7 MHz	8 k	1/16	64QAM	3/4
UK	1920×1080i		8 MHz	2 k	1/32	16QAM	3/4
Taiwan	720×480i	30 fps	6 MHz	8 k	1/4	16QAM	2/3

(When 25 fps is selected, 720×480i cannot be selected. When 30 fps is selected, the format is fixed at 720×480i. Table 1 does not apply for the preset recall settings. When you connect the LG 3850 to a PC, you can set the country, all the channels, the format, the frame rate, and the transmission parameters.)

RF Signal Generator

Output Channel: Channels 2 to 69 for Germany, channels 6 to 69 for Australia, channels 21 to 68 for the UK, channels 2 to 83 for Taiwan (*5)

Output Range: 10 to 99 dBμV (75 Ω termination) (*6)

*5 The range of channels that corresponds to the selected country can be output.

*6 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.

Stand-Alone Operation of the LG 3850

When this product's broadcast system has been transferred to the LG 3850, the LG 3850 can operate in stand-alone mode as a DVB-T signal generator. When the LG 3850 operates in this way, the following settings can be configured.

RF Signal Generator

- Output Level:** 1 dB steps (10 to 99 dB μ V: 75 Ω termination)
- Output Channel:** One of the following countries, selected using the control application.
Channels 2 to 69 for Germany, channels 6 to 69 for Australia, channels 21 to 68 for the UK, channels 2 to 83 for Taiwan

Internal Signal

- Pseudo Random Signal:** Generated through the saving of a preset using the control application followed by the recall of the preset in stand-alone mode
- Still-Image Pattern:** Colorbar, ramp, monoscope, natural picture
- Audio (Tone):** : 1 kHz (LR), 400 Hz (LR),
1 kHz (L) + 400 Hz (R)

Presets

- Recall/store:** Stores and recalls presets
If a preset recall range has been set through the use of the control application, presets from within that range are recalled.

- Alarm Displays:** 7-segment display

Control Application Operations

When this product's broadcast system has been transferred to the LG 3850 and the LG 3850 is connected to a PC through USB, the following settings can be configured.

Transferring the Program

- Broadcasting System:** DVB-T
- Country Setting:** Set the output channels for stand-alone mode by selecting one of the following countries.
Germany, Australia, UK, Taiwan

Transmission Parameters

- FFT Mode:** 2 k, 8 k
- Guard Interval:** 1/4, 1/8, 1/16, 1/32
- Carrier Modulation:** QPSK, 16QAM, 64QAM
- Bandwidth:** 6 MHz, 7 MHz, 8 MHz
- Coding Rate:** 1/2, 2/3, 3/4, 5/6, 7/8

RF Signal Generator

- Output Level:** 1 dB steps
(10 to 99 dB μ V: 75 Ω termination)
- Output Channel:** Channels 2 to 69 for Germany, channels 6 to 69 for Australia, channels 21 to 68 for the UK, channels 2 to 83 for Taiwan

Internal Signal

- Pseudo Random Signal:** PN23 and PN15
- Still-Image Pattern:** Colorbar, ramp, monoscope, natural picture
- Audio (Tone):** 1 kHz (LR), 400 Hz (LR),
1 kHz (L) + 400 Hz (R)
- Format:** 1920x1080i (HDTV), 720x576i (SDTV),
720x480i (SDTV) (*7)

- Frame Rate:** 25 fps, 30 fps

External TS

- MPEG-2 TS Operations:** Select, playback, stop, set playback range,
set bitrate setting automatically, set bitrate setting manually

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.

*7 When the frame rate is set to 25 fps, 720x480i cannot be selected.
When the frame rate is set to 30 fps, the format is fixed at 720x480i.

Licenses

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

Contents

License key (A4 sheet)	1
CD-ROM	1
Instruction Manual	1

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