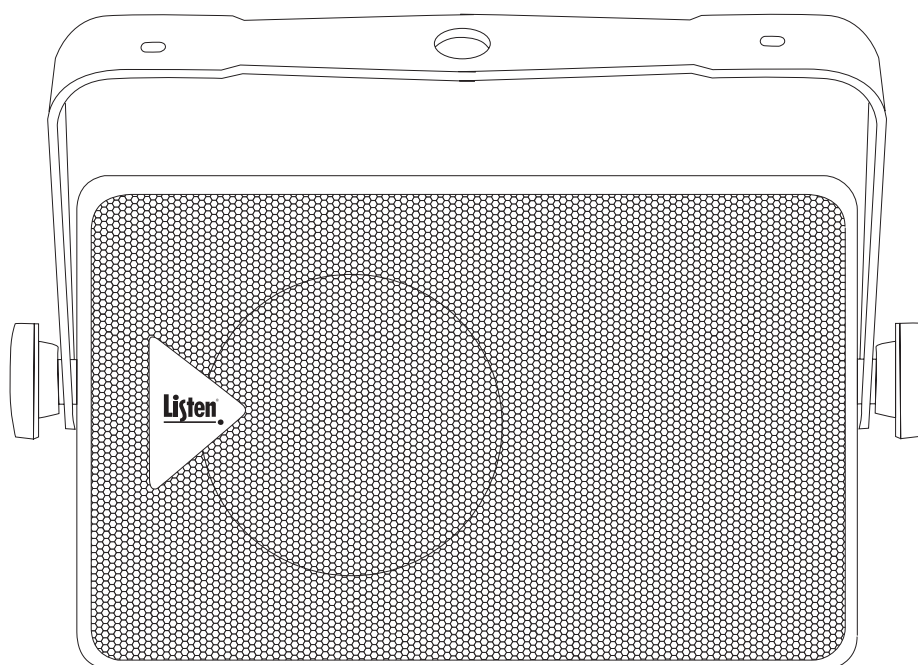


User's Manual

LR-600 Wireless Speaker / Receiver



Don't miss a single sound. Listen.

Listen[®]
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Dear Valued Customer,

Thank you for choosing Listen! All of us at Listen are dedicated to providing you the highest quality products and prompt, efficient customer care. Our products are manufactured in an ISO-9000 factory that has been independently certified to the highest quality standards. We stand ready to answer any questions you might have during installation or in the operation of our products. Should there be any problems with your Listen products, we are ready to help you in any way we can. Should you have any comments on how we might improve our products or our service, we're here to listen. Here's how to reach us:

Telephone: +1.801.233.8992

Fax: 1.801.233.8995

Toll Free (North America): 1.800.330.0891

E-Mail: support@ListenTech.com

Web: www.ListenTech.com

Thank you... and enjoy your listening experience!

Best regards,

The Listen Team



LT-800 Package Contents

- LR-600 Wireless Speaker / Receiver (72MHz or 216MHz)
- Adjustable/removable handle/mounting bracket with leatherette cover
- LA-201 Power Supply
- (2) .18 in (4.5mm) x 1.38 in (35mm) screws with hollow wall anchors
- (1) 16mm nut for mounting the LR-600 on a microphone stand
- Warranty Card
- User Manual

Listen Part Number

72 MHz: LR-600-072

216 MHz: LR-600-216

Optional Accessories

See page 26-27



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Specifications

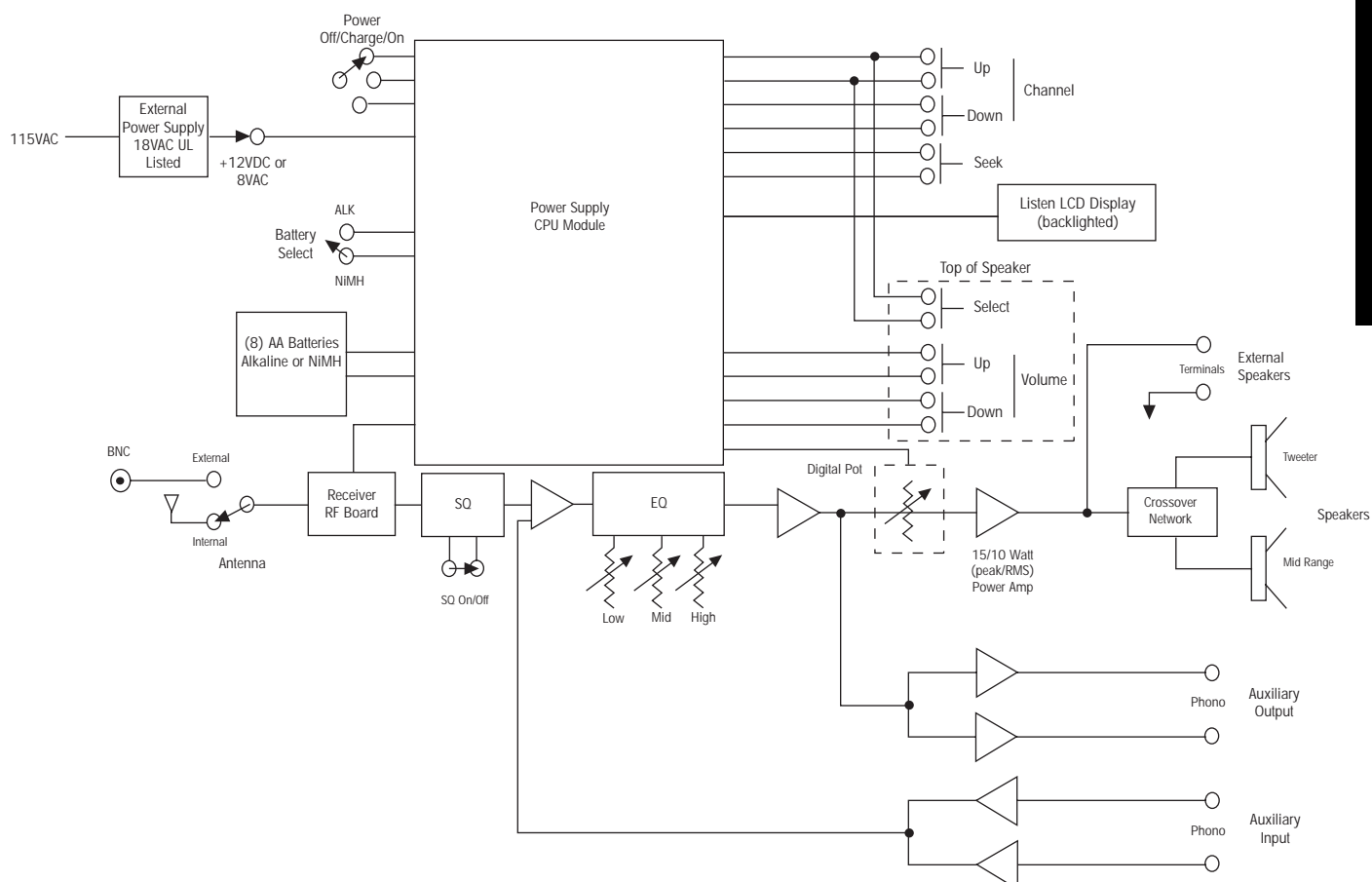
Architectural Specifications

The FM speaker/receiver shall be capable of receiving on 57 wide and narrow band channels. The speaker/receiver shall have 10 watts output power and have a frequency response of 50Hz to 15KHz, ± 3 dB at 72MHz, or of 50Hz to 10kHz, ± 3 dB at 216MHz. The signal to noise ratio shall be 80dB or greater. The device shall have an adjustable squelch and three-band equalizer. The device will incorporate a backlit LCD Display that indicates channel and RF signal strength, as well as be used for channel selection programming. The unit shall be programmable to display only used channels. It shall also incorporate an electronically lockable volume and channel controls. Controls should be found on the top and rear of the unit. The device shall incorporate a power supply (120VAC, 60Hz, 43 Watts), with output DC 12V 2500 mA tip negative. It will alternately use an internal battery pack using eight AA alkaline or NiMH Rechargeable batteries and include recharging components for said NiMH batteries. The speaker should have a minimum SPL of 110dB (± 3 dB). An included bracket will be able to be used as a handle for carrying, or be adjustable up to 360 degrees around the unit for mounting. The Listen LR-600 is specified.

Specifications

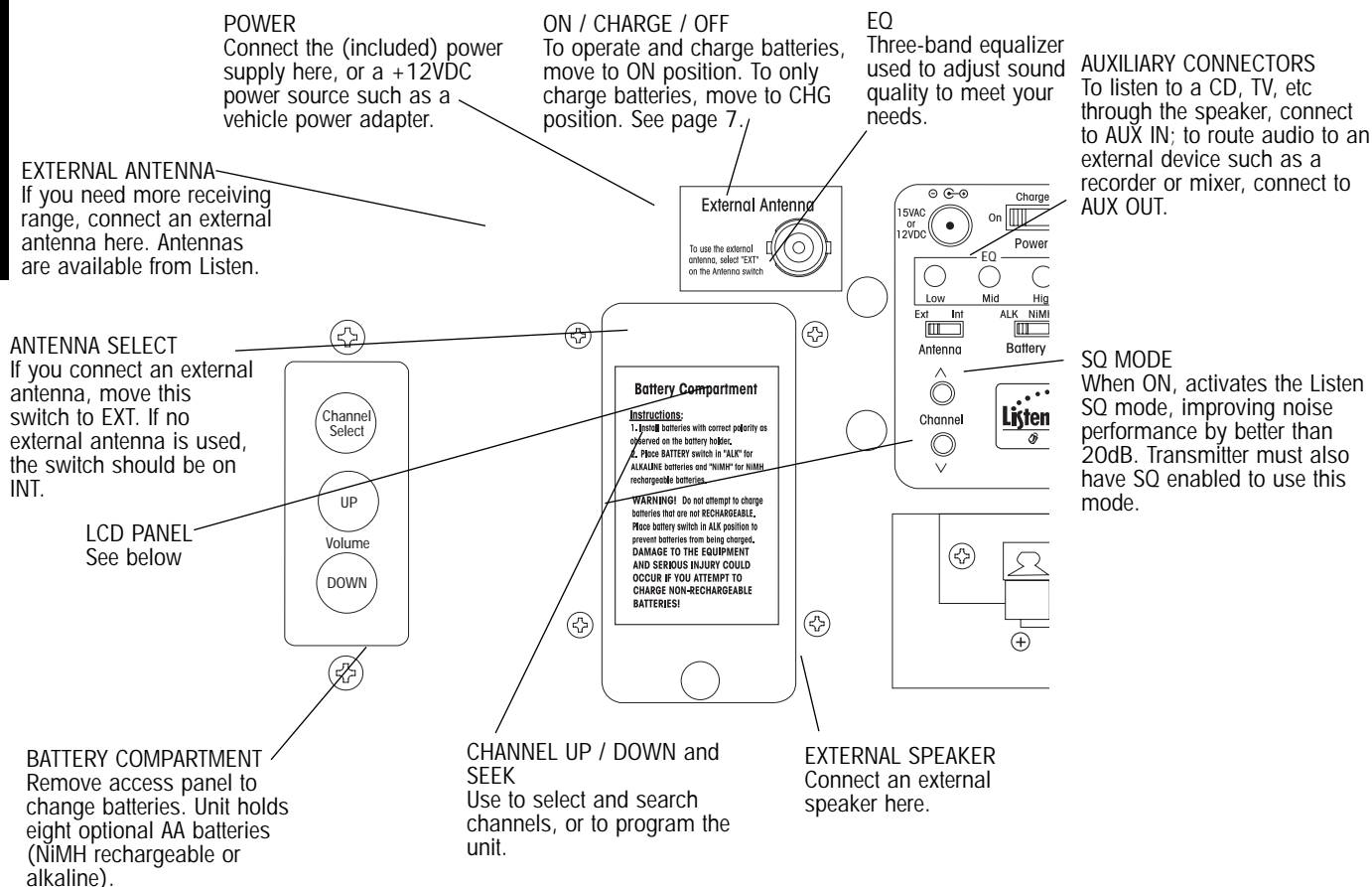
| Specification | | LR-600-072 | LR-600-216 |
|----------------------------------|---|--|--|
| RF | RF Frequency Range | 72.025 - 75.950 MHz | 216.025 - 216.975 MHz |
| | Number of Channels | 57 (17 wide, 40 narrow) | 57 (19 wide, 38 narrow) |
| | Sensitivity | .6uV typical, 1 uV maximum for 12dB SINAD | |
| | Frequency Accuracy | ± .005% stability -10° to 40° C (14° to 104° F) | |
| | Antenna | Internal | |
| | Optional Antennas | Several available. See www.ListenTech.com for details | |
| | External Antenna Connector | BNC | |
| | Squelch | Programmable in 20 steps | |
| Compliance | FCC Part 15, Industry Canada | | |
| Audio | ** All system specifications are wireless end-to-end | | |
| | System Frequency Response | 72MHz: 50Hz - 15kHz (± 3dB) | 216MHz: 63Hz - 10kHz (± 3dB) |
| | System Signal to Noise Ratio (A-weighted) | SQ enabled: 80dB; SQ disabled 60dB at 72 MHz | SQ enabled: 80dB; SQ disabled 50dB at 216 MHz |
| | System Distortion | <2% total harmonic distortion (THD) at 80% deviation | |
| | Equalizer | Three band, continuously adjustable via rear panel trim pots. | |
| | Unbalanced Auxiliary Input | Two phono connectors, unbalanced, -10dBu nominal input level adjustable, +11dBu maximum, impedance 100k Ohms | |
| | Unbalanced Output | Two phono connectors, unbalanced, 0dBu nominal output level, +11dBu maximum, impedance 1k Ohms | |
| Internal/External Speaker Output | 15/10 Watts (peak/RMS) continuous power with 4 Ohm load | | |
| Controls | Set-up Controls, Back Panel | Internal/External Antenna, Alkaline/NiMH Batteries, SQ Enabled/Disabled | |
| | User Controls, Top Panel | Volume UP/DOWN, Channel UP (lockable) | |
| | User Controls, Back Panel | Power/Charging, channel UP/DOWN, SEEK (channel, SEEK and volume are lockable) | |
| | Programming | Unit can be programmed so that only desired channels are displayed. Squelch can be adjusted for sensitivity. Channel and volume can be locked. | |
| Indicators | LCD Display | Backlit, indicates channel, RF signal strength, lock status, programming | |
| Power | Power Supply Type | In-line power supply, Listen part number LA-201 | |
| | Power Supply Input | 120VAC, 60 Hz, 19 Watts (maximum continuous) | |
| | Power Supply Output | 15VAC, 1A | |
| | Power Supply Connector | .02 in OD x .01 in ID (5.0mm x 2.5 mm), barrel type | |
| | Compliance | UL Listed | |
| | Optional Battery | Eight AA batteries, alkaline or NiMH. | |
| | Optional Battery Charging | Fully automatic, 14 hours | |
| Battery Life (Listen batteries) | 12+ hours alkaline (LA-361), 10+ hours NiMH rechargeable (LA-362), mid volume, music programming (volume and audio type will effect battery life) | | |
| Physical | Dimensions (with bracket/handle in up position) | 11.0 in x 9.0 in x 7.0 in WxDxH (27.9cm x 22.9cm x 17.8cm) Handle stands off unit 2.0 in (5.1cm) | |
| | Dimensions (without bracket/handle) | 9.0 in x 7.0 in x 7.0 in WxDxH (22.9cm x 17.8cm x 17.8cm) | |
| | Unit Weight | 6.2 lbs (2.8kg) | |
| | Unit Weight with LA-201 Power Supply | 7.6 lbs (3.5kg) | |
| | Unit Weight with eight AA batteries | 6.8 lbs (3.1kg) | |
| | Shipping Weight | 10 lbs (2.8kg) | |
| | Microphone Stand Mounting Nut | 16mm | |
| Environmental | Temperature - Operation | -10° to +40°C (14° to 104° F) | |
| | Temperature - Storage | -20° to +50°C (-4° to 122° F) | |
| | Humidity | 0 to 95% relative humidity, non-condensing | |

LR-600 Block Diagram

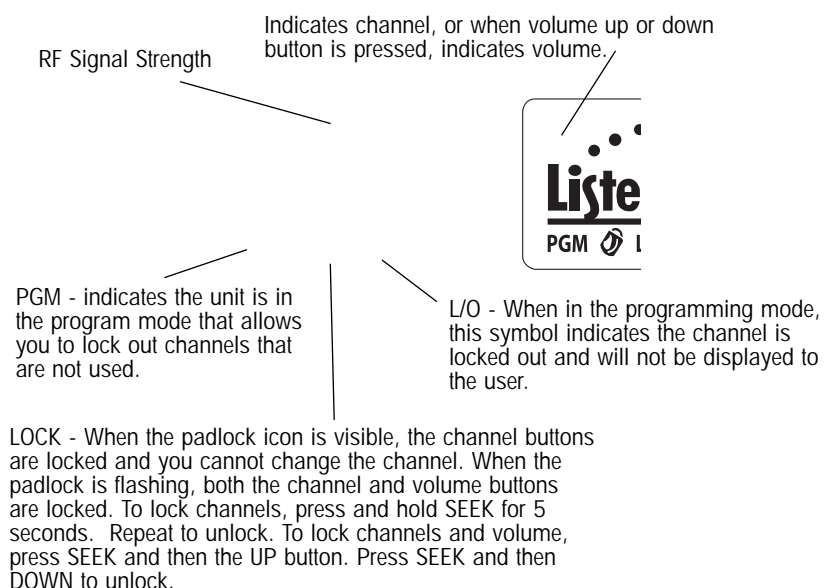


Quick Reference

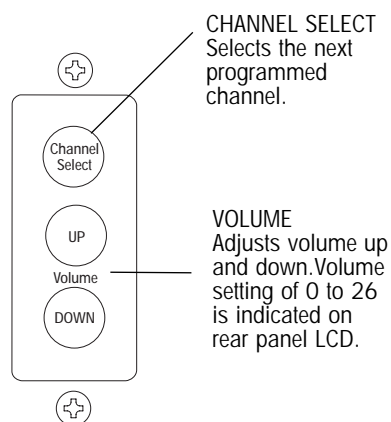
LR-600 Rear Panel: Connections and Controls



LR-600 LCD Panel Details



LR-600 Top Panel Details



LR-600 Powering Instructions

There are three options for powering your LR-600:

- Supplied power supply
- External +12VDC Battery or Power Supply
- Internal Batteries

Power Supply (included with unit)

If you are using the LR-600 with the external power supply, connect the power supply to the LR-600 and plug the power supply into a 115VAC/60 Hz outlet.



External +12VDC Source

If you are using the LR-600 with an external +12VDC battery or power supply, obtain a power connector with following dimensions:

- 0.098 in (2.5 mm) inside diameter
- 0.217 in (5.5 mm) outside diameter
- 0.374 in (9.5 mm) length

Wire the connector so the tip is positive. Connect to a 12VDC battery or +12VDC output of a power supply.

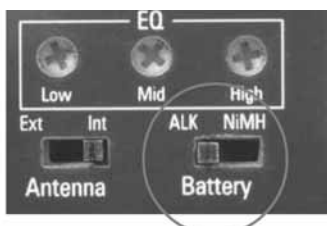
LR-600 Internal Batteries

Internal Batteries

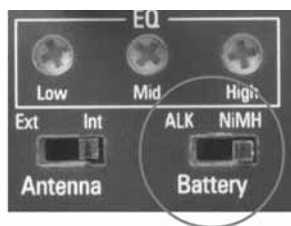
If you are using the LR-600 with internal batteries, do the following:

- Open the battery compartment by removing the thumbscrew and then removing the cover.
- Slide the battery holder out of the battery compartment.
- Install eight AA alkaline or NiMH batteries with polarity noted on the battery holder.
- Replace the battery holder and secure the battery compartment cover.

IMPORTANT: Slide the battery switch to the alkaline or NiMH battery position depending on the battery type you are using.



Place the Battery switch in the ALK position if you are using alkaline batteries.



Place the Battery switch in the NiMH position if you are using rechargeable NiMH batteries.

IMPORTANT: You must place the Battery switch in the appropriate position for the type of batteries you will be using. If you are using alkaline batteries and the switch is in the NiMH position, the unit will attempt to charge the batteries when connected to a power supply or external battery. Attempting to charge alkaline batteries can result in permanent damage to the unit, and the batteries may explode.

LR-600 Internal Batteries continued

For NiMH battery operation, you must charge the batteries for 13 hours before use. To charge the batteries, plug the unit into the power supply or external +12VDC supply and move the power switch to either CHG or ON. The batteries will charge in either position.



In Charge mode, the battery symbol will cycle between low, mid and full.



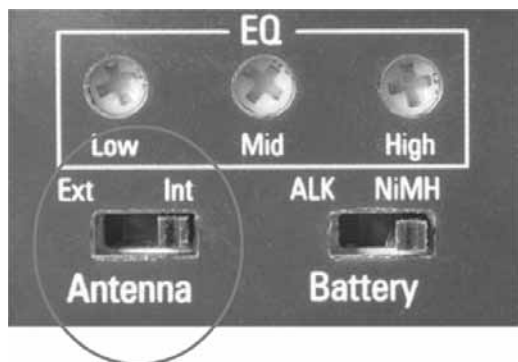
Powering the unit ON

Turn the unit on by sliding the power switch to the ON position. The LCD will activate; if using the LR-600 on the power supply, the LCD backlight will activate and remain on. If you are using the unit on batteries, the LCD backlight will operate for 12 seconds after any button is pressed, and then dim to conserve battery life.



LR-600 Antenna Options

The LR-600 has two antenna options: internal or external. To use the internal antenna, move the antenna switch to INT. To use the external antenna, move the switch to EXT.



Internal antenna

As shipped, your LR-600 is set up for use with its internal antenna. The internal antenna will work well for a large number of uses, but it cannot be positioned for best coverage. When using the LR-600's internal antenna, make sure the antenna switch is in the INT position. If your receive signal is noisy or weak, you may need to use an external antenna.

External antenna

There are three options for the external antenna:

1 Quarter wave helical antenna

This antenna mounts directly to the back of the LR-600. Order these part numbers from Listen:

- LA-123 (72 mHz)
- LA-124 (216 mHz)

2 Remote antenna

See page 17, RF Reception Maximization Strategies. With a remote antenna, you'll be able to get the best reception by strategically placing the antenna.

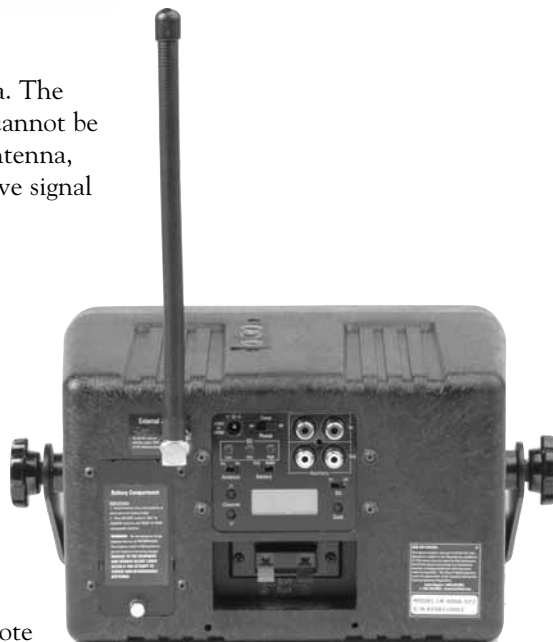
Antenna options available from Listen:

- LA-122 Universal Antenna Kit (72 and 216 mHz)
- LA-123/LA-124 (72/216 mHz) to be mounted remotely
- LA-107 Ground plane antenna (216 mHz).

3 Wire antenna

You can build a wire antenna by soldering a wire to the center conductor on a BNC connector. Recommended lengths for wire antennas:

- 72 mHz: 39 in (1 m)
- 216MHz: 13 in (0.32 m)



LR-600 Setup and Programming

Channel Selection

Using the channel select buttons (UP and DOWN buttons on the rear panel) or the SEEK button, select the desired receive channel. For more information, see Channel Selection on page 19.



Use Channel UP / DOWN or Seek to select a receive channel.

Locking Channel Selection

If you don't want the user to have the ability to change the channel, it is highly recommended that you lock the channel select function. This is accomplished as follows:

- Press and hold the SEEK button for 5 seconds.
- The padlock icon will appear in the display.
- To unlock the channel selection function, press and hold the SEEK button until the padlock icon goes out.



A padlock in the display means the channel is locked and a new channel cannot be selected. If the padlock icon is flashing, both the channel and volume settings are locked (see below).

Locking Both Volume and Channel Selection

Once the channel and desired volume have been set, you can lock both functions as follows:

- Press the SEEK button and then the UP button on the rear panel.
- The PADLOCK icon will flash.
- To unlock both the volume and the channel selection function press the SEEK button and then the DOWN button on the rear panel.



Setting the SQ

Press Seek, and then the Channel UP button to lock volume and channel.
Press Seek, then DOWN to unlock.

LR-600 Setup and Programming continued

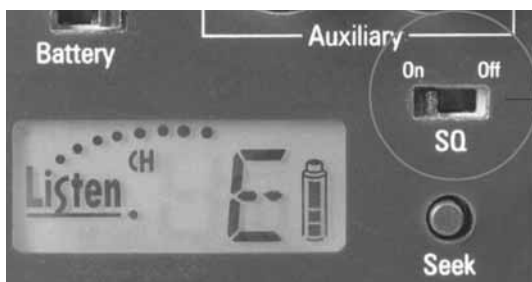
Setting the SQ Switch

For more information on SQ, see Listen SQ™ on page 18.

The SQ function improves the noise performance of the LR-600 by at least 20dB. To use this function, the transmitter must also be a Listen brand transmitter with SQ.

To use the SQ function, do the following:

- Verify the transmitter has SQ and the SQ function is turned on.
- Move the SQ switch on the back of the unit to the ON position.
- If you are using the LR-600 with another brand transmitter or if you don't want to use the SQ function, move the SQ switch to the OFF position.



To use Listen SQ™, slide the switch to the ON position. Your transmitter's SQ function must also be on.

Programming the Channel Select Button

The channel select button on the top of the unit is designed to give users the ability to choose between different channels. If you don't want to give users this function, it is recommended that you lock this feature as described on page 9.

If you want to use this function, you must program the unit for the channels you are using. For example, you are using 72 MHz channels A, E and I. You would only want the LR-600 to receive on channels A, E, and I. When the Channel Select button has been programmed, the

unit will select A the first time the user presses the button; when the user presses the button successively, E will be selected, then I, then A again.

Note: The UP button on the rear panel and Channel Select button on the top of the unit perform the same function for end users. To program the unit so that it only receives on certain channels, do the following:

- Press the UP and DOWN buttons together and release. The PGM icon is displayed.
- Press the UP or DOWN button to select channels.
- When you get to a channel that you don't want displayed, press the SEEK button.
- The L/O icon will be displayed indicating the channel is locked out and will not be displayed.
- Repeat for all channels that you want locked out.
- When done, don't press a button for 10 seconds and the unit will return to normal operation.

In the example above, only three channels are used. Therefore, you will need to lock out 54 channels from use.

Press the Channel UP and DOWN buttons at the same time to enter Program mode (shown by the PGM icon).

While in Program mode, press SEEK to lock out a channel that you do not want available to the end user. L/O will show on the display.



LR-600 Squelch Adjustment

When the transmitter is not turned on, the squelch function mutes the audio so that random noise is not heard through the speaker.

The squelch function can be programmed for more or less sensitivity. When the squelch function is programmed for more sensitivity, you sacrifice transmission range in exchange for more reliability of the squelch function. When the squelch function is programmed for less sensitivity, you achieve greater transmission range in exchange for less reliability of the squelch function. This means that even if the transmitter is off, you may hear noise in the speaker. You can try different squelch settings for your application.

Examples for setting the squelch sensitivity high

- You absolutely don't want the unit to have noise when the transmitter is off.
- The transmitter is close to the LR-600.

Examples for setting the squelch sensitivity low

- It doesn't matter if the user hears the noise if the transmitter is turned off.
- The transmitter is located a long distance from the LR-600.

The adjustable squelch can be programmed from 0 (no squelch) to a maximum of 20 (highest sensitivity). The default setting is 3.

To program the squelch setting, do the following

- Turn the unit off.
- Press and hold the SEEK button.
- Turn the unit on.
- Release the SEEK button.
- The squelch setting is shown on the display. Default is 3.
- Use the UP and DOWN buttons on the rear panel to select the setting you want. Note the RF meter still operates, giving you relative RF power from the transmitter.
- When you are done, press SEEK to store the new squelch setting.

While in Squelch programming mode, channel UP / DOWN buttons are used to change squelch sensitivity. 03 is the factory default.



Use Seek to enter Squelch programming mode and to save settings (see instructions above).

LR-600 External Speaker

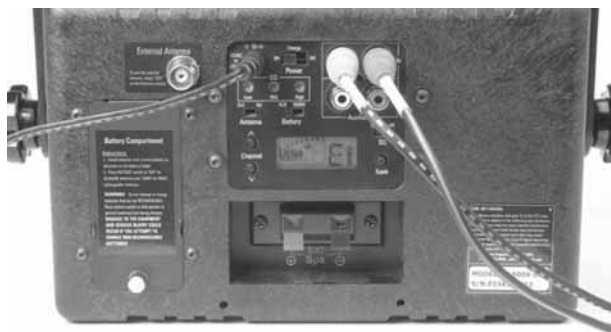
You can connect an external speaker to the LR-600. Make sure that the speaker is 4 Ohms or greater. The Listen LA-316 speaker provides the same look as the LR-600.

An external speaker (4 Ohms or greater) may be connected to the speaker terminals below the LCD panel.



LR-600 Auxiliary Input and Output

Additional audio can be mixed with the receive audio from the transmitter. To accomplish this, use the Auxiliary Input connectors. Simply take the audio output of your device (such as a CD player, TV or computer) and connect it to the two phono connectors on the rear panel of the LR-600.



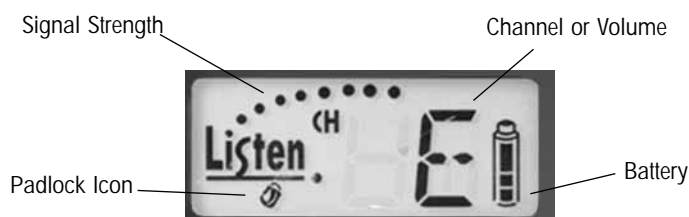
If you want to take the audio out of the LR-600 and record it or send it to a mixer, use the Auxiliary Output phono connectors to connect to your recorder or mixer.

LR-600 Operation

To turn the unit on, move the power switch to the ON position.

LCD Display

Once the unit is on, the LCD display will illuminate. Notice that when the unit is in operation on the power supply, the LCD backlight will remain lit continuously. When on battery power, the backlight will remain lit for 10 seconds after any button is pushed. This is designed to save battery life.



Channel/Volume Control

When the volume control is pushed, the number indicates the volume setting between 0 and 26. Otherwise the channel is shown. The channel should be the same as the transmitter.

Battery

The battery icon shows the amount of battery life remaining in full, $\frac{1}{2}$, $\frac{1}{4}$ and flashing increments (indicating low battery). When charging, the battery icon changes through all of these states to show it is charging.

Signal Strength

Just as on your cellular telephone, the dots above the Listen logo show the signal strength coming from the transmitter.

Padlock Icon

If illuminated, indicates the channel selection function is locked. If flashing, indicates the channel selection and volume control functions are locked. See page 12 for more information.

LR-600 Operation

Battery Operation

To set up the unit for battery operation, see page 8.

To operate the unit on batteries, move the Power switch to the ON position.

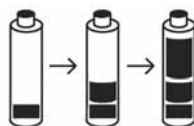


Alkaline battery operation. Note that the power supply is not connected and the Battery switch is in the ALK position.

To charge the optional rechargeable batteries, connect the unit to the power supply or an external battery, then place the power switch in the ON or CHG position. **DO NOT ATTEMPT TO CHARGE ALKALINE BATTERIES.**



Charging mode. Note that rechargeable NiMH batteries are installed and the Battery switch is in the NiMH position. The battery icon cycles through low, mid and high level displays to indicate charging.



IMPORTANT: You must place the Battery switch in the appropriate position for the type of batteries you will be using. If you are using alkaline batteries and the switch is in the NiMH position, the unit will attempt to charge the batteries when connected to a power supply or external battery.

Attempting to charge alkaline batteries can result in permanent damage to the unit, and the batteries may explode.

It takes 13 hours to fully charge the batteries. When the batteries are charging, the battery icon changes from $\frac{1}{4}$ to $\frac{1}{2}$ to full and then repeats to indicate charging.

When not using the unit, it is advisable to leave the unit connected to the power supply to keep the batteries fully charged. This will not damage the batteries.

When the batteries are fully charged, the unit will automatically shut off. To reactivate the unit, turn the unit OFF and then back ON.

During battery operation, if the battery icon begins flashing on the Low level (one bar showing), your batteries are almost exhausted and shutdown is imminent. Connect to a power supply or replace the batteries.

LR-600 Operation

Volume Adjustment

Adjust the volume setting for a comfortable level by pressing the VOLUME UP and DOWN buttons on the top of the unit. The volume setting (a number between 0 and 26) will be shown on the display.

To lock the volume setting see page 9.



Equalization Adjustment

The purpose of the equalizer is to adjust the sound quality to your specific needs and taste. Use a small screwdriver to adjust the LOW, MID and HI positions. These correspond to the following center frequencies: 250 Hz, 1 kHz and 4 kHz.

Adjust to the center position to make the frequency response flat.



Channel Selection

To select a program channel, press the CHANNEL SELECT button on the top of the unit. To program this function see page 14. If channels have not been programmed, the unit will step through all available channels as you repeatedly press the CHANNEL SELECT button. If channels have been programmed, you may wish to use the Seek button on the rear panel instead. Pressing Seek will cause the LR-600 to search for an available transmission. You may also use the Channel UP and DOWN buttons on the rear panel to step through the channels available to the LR-600.



Receive channels may be found using the CHANNEL SELECT button on top of the unit, the Seek button on the rear panel, or the Channel UP / DOWN buttons on the rear panel.

LR-600 Mounting / Carrying Options

The U bracket that comes standard with the LR-600 can be used to permanently mount the unit, set the unit at an angle on a desktop, or be used as a carrying handle.

To change the position of the U bracket, do the following:

- Loosen the two screws (the large knobs) on both sides of the LR-600.
Note that you have to loosen the screws considerably to allow the bracket to swivel. This is because the bracket is keyed to prevent slipping when in use.
- Rotate the bracket to the desired position.
- Retighten the two screws.



The knobs on either side of the unit must be loosened considerably in order to swivel the U bracket to a different position.

LR-600 Mounting Options

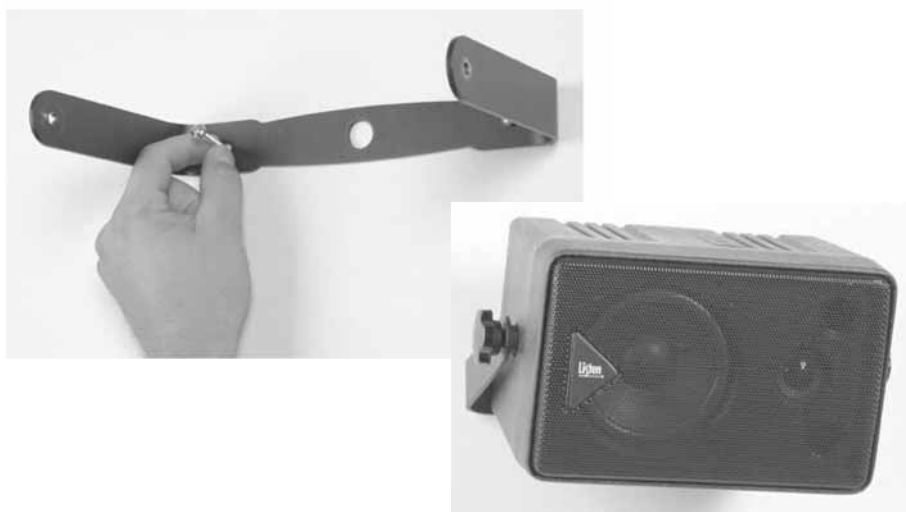
You have the option to mount the LR-600 on a microphone stand, or you can mount the U bracket directly to any vertical or horizontal surface.

Microphone Stand Mounting

- Locate the microphone stand nut in the included poly bag, or use the nut that comes with the microphone stand.
- Remove the leatherette handle cover.
- Position the U bracket so that it will hold the LR-600 upright on the microphone stand.
- Screw the nut onto the stand and tighten with a wrench.

Vertical / Horizontal Permanent Mounting

- Remove the U bracket by loosening the two screws on both sides of the LR-600. Be careful not to lose the washers.
- Using the two self-tapping screws and (if necessary) hollow wall anchors, mount the bracket to any surface.
- Position the LR-600 into the bracket and tighten the two screws.



Maximizing RF Reception Strategies

For proper and dependable operation, the LR-600 should receive a strong and consistent signal from the originating transmitter. The following strategies should be used to maximize this signal:

- a. When designing and installing your system, keep in mind that the location of both the transmitting and receiving antennas is critical to maximizing signal strength.
- b. Eliminate or minimize obstructions between the transmitting antenna and the receiving antenna.
- c. Minimize the distance between the transmitting and receiving antennas.
- d. Move transmitting and receiving antennas away from metal objects.
- e. Consider using a remote antenna instead of the internal antenna. This will allow you to place the antenna at a location with improved line of sight to the transmitting antenna. (You will need to be careful about the type and length of coaxial cable; see the note above.)
- f. Place the transmitting antenna as high as possible.
- g. Orient both transmitting and receiving antennas vertically.
- h. Consider using a gain antenna such as a Yagi type antenna (216 MHz only).

CAUTION: When installing antennas, ensure the antenna is clear of power lines.

NOTES: If the RF signal to the LR-600 is too high, the audio will be distorted. This may happen if you are within 40 feet of the LT-800 transmitter. Consider reducing the output power of the transmitter or optionally removing the antenna on the LR-600 (there is sufficient internal antenna inside the LR-600 to receive an adequate signal from the transmitter).

Coaxial cable, connectors, and optional antenna mounting kits are available from Listen. Visit our website for details.

Listen SQ™ - Improving Your Listening Experience

We are accustomed to listening to low noise, high fidelity audio (delivered via CD, DVD, etc.). FM radio systems, such as those made by Listen, have more inherent noise compared to most sound systems. To reduce noise of our systems, Listen uses a noise reduction technology called ListenSQ™. Both the transmitter and receiver must have the SQ feature enabled to achieve the desired results. SQ is available on new Listen systems, including the system you received in this shipment. If you are planning to use this product with older Listen systems that do not have Listen SQ or equipment not manufactured by Listen, you should disable Listen SQ.

Your Listen equipment has been shipped to you with the SQ feature enabled. You may need to disable the SQ function for one or more of the following reasons:

1. You are using your new Listen system with older version Listen equipment that does not have the SQ function.
2. You are using your new Listen system with equipment supplied by other manufacturers.
3. You expect that end users may bring and use their own receivers that don't have the SQ function.

SQ Summary

- Improves noise performance by at least 20dB
- SQ is NOT compatible with older version Listen products
- SQ is NOT compatible with other manufacturers' products
- SQ is NOT squelch
- To work properly, SQ must be enabled for both the transmitter and receivers
- SQ can be disabled to permit operation with older Listen products or other manufacturers' products

Coaxial Cable

The antenna for the LR-600 can be mounted directly on the unit if desired. However, you may find that the unit will provide better performance when the antenna is located elsewhere. If you plan to mount the antenna in a different location than on the top of the unit, you must use cable and connectors rated at 50 Ohms. Although cable used for cable TV installations looks similar to this cable, it won't work with your Listen system.

If you need to run cable over a greater length than 50 feet for 216MHz applications or greater than 100 feet for 72MHz applications, we recommend that you use RG-8 cable rather than RG-58. It is a lower loss cable, meaning that more of your signal will reach the antenna.

Long cable runs can result in signal degradation due to "loss" characteristics of the cable. At 72MHz, there is an average loss of 2dB per 100 feet of cable and at 216MHz an average* loss of 5 dB per 100 feet of cable. (A 3dB loss means half of your power has been lost.) However, it is better to suffer coaxial power loss than to try to shoot your signal through obstacles! Obstacles, especially metal, can create drop-outs or reflections of your signal that will result in poor listening conditions.

*NOTE: There are many varieties of 50 Ohm, RG58 and RG8 cables. You may purchase a cable that is better or worse than this value. Please check with the cable vendor or manufacturer for exact specifications.

Channel Selection

It is important to choose channels that are free from interference to achieve proper operation of your Listen equipment. This process is trial and error. Before turning on the transmitter, listen to the wide band channels (lettered channels at 72MHz and channels that start with a “2” for 216MHz when using a Listen receiver).

Listen to the audio through the headphone or via the speaker. Choose a channel with the least amount of interference. Unless you are interfacing with an existing narrowband transmission system, always use a wide band channel. If you are using multiple channels follow this process:

- a. **Same Space** If you are using multiple transmitters in the same space, the most number of channels that will work simultaneously is six at 72MHz and three at 216MHz. With all of the transmitters off, listen for interference on all the wide band channels via the headphone jack on a Listen receiver. Using the frequency compatibility tables on pages 12-13, eliminate any channels that have noticeable interference. Now choose the channels with the widest channel spacing. It is recommended that adjacent channels be spaced at least 300KHz. If there is no interference the following channels are recommended: A, C, E, I, J, and H for 72MHz and channels 2A, 2K and 2V at 216MHz.
- b. **Distributed Spacing** If you are using transmitters that are spread out over space, you can achieve more simultaneous broadcast channels. However, it is critical that your receiver(s) be located as close to its transmitter as possible. You can use adjacent channels (see frequency compatibility tables on pages 12-13) in this case as long as the adjacent channel transmitter is at least 50% further away from the receiver as its transmitter. Example: The transmitter for the receiver on channel E is 100 feet from the receiver. The adjacent channel transmitter on channel D should be at least 150 feet away.

It is highly recommended that after channel selection has been achieved, you lock the channel so that it cannot be changed by the user. To accomplish LOCK on the LT-800, press both the UP and DOWN buttons simultaneously for 5 seconds. Repeat the process to unlock.

Notes in regard to using 72MHz and 216MHz systems:

- i. 72MHz is a secondary frequency band. This means that other transmitters are licensed to use these frequencies. Thus, you may experience interference from paging transmitters and other types of transmissions. You will need to find a clear channel by listening to all the wide band channels.
- ii. 216MHz is a primary frequency band and no other types of transmissions are authorized to use it. Thus, you will find the highest probability of clear channels in this band. However, you may experience intermodulation of the TV Channel 13 aural carrier if there is a channel 13 transmitter in your area and you are close to the transmitter. If you cannot find a clear channel in 216MHz band due to channel 13, it is recommended that you switch to a 72MHz system.

Wide Band Recommendation

Listen recommends that you always use a wide band channel unless you need to be compatible with existing narrow band receivers from other manufacturers. Wide band channels have lower noise than their narrow band counterparts.

At 72MHz

The LT-800 at 72MHz operates on 17 wide band channels and 40 narrow band channels.

- Letters= Wide Band Channels (Example: E)
- Numbers= Narrow Band Channels (Example: 32)

At 216MHz

The LT-800 at 216MHz operates on 19 wide band channels and 38 narrow band channels.

- “2” as left digit= Wide Band Channel (Example: 2C)
- “1” and “3” as left digits= Narrow Band Channels (Examples: 1A; 3R)

72MHz Compatibility Chart

| Frequency MHz | Listen | Phonic Ear | Comtek | Phonak | Williams* | Gentner | Telex | Drake |
|------------------|--------|---------------|--------|--------|-------------|---------|-------|-------|
| 72.0250 | 1 | 1 | 1 | A1 | (11, 1) | | | |
| 72.0500 | | | | | (2) | 1 | | |
| 72.0750 | 2 | 2 | 2 | A2 | (12, 3) | | | |
| 72.1000 | A | A | A | A | A, (13, 4) | 2 | A | 72.1 |
| 72.1250 | 3 | 3 | 3 | A3 | (14, 5) | | | |
| 72.1500 | | | | | (6) | 3 | | |
| 72.1750 | 4 | 4 | 4 | A4 | (15, 7) | | | |
| 72.2000 | K | K | K | K | K, (8) | 4 | B | 72.2 |
| 72.2250 | 5 | 5 | 5 | K5 | (16, 9) | | | |
| 72.2500 | | | | | (10) | 5 | | |
| 72.2750 | 6 | 6 | 6 | K6 | (17, 11) | | | |
| 72.3000 | B | B | B | B | B, (18, 12) | 6 | C | 72.3 |
| 72.3250 | 7 | 7 | 7 | B7 | (19, 13) | | | |
| 72.3500 | | | | | (14) | 7 | | |
| 72.3750 | 8 | 8 | 8 | B8 | (20, 15) | | | |
| 72.4000 | N | N | N | N | N, (16) | 8 | D | 72.4 |
| 72.4250 | 9 | 9 | 9 | N9 | (21, 17) | | | |
| 72.4500 | | | | | (18) | 9 | | |
| 72.4750 | 10 | 10 | 10 | N0 | (22, 19) | | | |
| 72.5000 | C | C | C | C | C, (23, 20) | 10 | E | 72.5 |
| 72.5250 | 11 | 11 | 11 | C1 | (24, 21) | | | |
| 72.5500 | | | | | (22) | 11 | | |
| 72.5750 | 12 | 12 | 12 | C2 | (25, 33) | | | |
| 72.6000 | O | O | O | O | O, (24) | 12 | F | 72.6 |
| 72.6250 | 13 | 13 | 13 | O2 | (26, 25) | | | |
| 72.6500 | | | | | (26) | 13 | | |
| 72.6750 | 14 | 14 | 14 | 4 | (27) | | | |
| 72.7000 | D | D | D | D | D, (28) | 14 | G | 72.7 |
| 72.7250 | 15 | 15 | 15 | D5 | (29) | | | |
| 72.7500 | | | | | (30) | 15 | | |
| 72.7750 | 16 | 16 | 16 | D6 | (30, 31) | | | |
| 72.8000 | P | P | P | P | P, (32) | 16 | H | 72.8 |
| 72.8250 | 17 | 17 | 17 | P7 | (31, 33) | | | |
| 72.8500 | | | | | (34) | 17 | | |
| 72.8750 | 18 | 18 | 18 | P8 | (32, 35) | | | |
| 72.9000 | E | E | E | E | E, (33, 36) | 18 | I | 72.9 |
| 72.9250 | 19 | 19 | 19 | E9 | (34, 37) | | | |
| 72.9500 | | | | | (38) | 19 | | |
| 72.9750 | 20 | 20 | 20 | E0 | (35, 39) | | | |
| 74.6250 | 33 | 33 | 33 | E3 | (36, 40) | | | |
| 74.6500 | | | | | (41) | 20 | | |
| 74.6750 | 34 | 34 | 34 | E4 | (37, 42) | | | |
| 74.7000 | I | I | I | I | I, (38, 43) | 21 | O | |
| 74.7250 | 35 | 35 | 35 | I5 | (39, 44) | | | |
| 74.7500 | | | | | (45) | 22 | | |
| 74.7750 | 36 | 36 | 36 | I6 | (40, 46) | | | |
| 75.2250 | 37 | 37 | 37 | I7 | (41, 47) | | | |
| 75.2500 | | | | | (48) | 23 | | |
| 75.2750 | 38 | 38 | 38 | I8 | (42, 49) | | | |
| 75.3000 | J | J | J | J | J, (43, 50) | 24 | P | |
| 75.3250 | 39 | 39 | 39 | J9 | (55, 51) | | | |
| 75.3500 | | | | | (52) | 25 | | |
| 75.3750 | 40 | 40 | 40 | J0 | (45, 53) | | | |
| 75.4000 | R | R | R | R | R, (54) | 26 | Q | |
| 75.4250 | 21 | 21 | 21 | R1 | (46, 55) | | | |
| 75.4500 | | | | | (56) | 27 | | |
| 75.4750 | 22 | 22 | 22 | R2 | (47, 57) | | | |
| 75.5000 | F | F | F | F | F, (48, 58) | 28 | J | 75.5 |
| 75.5250 | 23 | 23 | 23 | F3 | (49, 59) | | | |
| 75.5500 | | | | | (60) | 29 | | |
| 75.5750 | 24 | 24 | 24 | F4 | (50, 61) | | | |
| 75.6000 | S | S | S | S | S, (62) | 30 | K | 75.6 |
| 75.6250 | 25 | 25 | 25 | S5 | (51, 63) | | | |
| 75.6500 | | | | | (64) | 31 | | |
| 75.6750 | 26 | 26 | 26 | S6 | (52, 65) | | | |
| 75.7000 | G | G | G | G | G, (53, 66) | 32 | L | 75.7 |
| 75.7250 | 27 | 27 | 27 | G7 | (54, 67) | | | |
| 75.7500 | | | | | (68) | 33 | | |
| 75.7750 | 28 | 28 | 28 | G8 | (55, 69) | | | |
| 75.8000 | T | T | T | T | T, (70) | 34 | M | 75.8 |
| 75.8250 | 29 | 29 | 29 | T9 | (56, 71) | | | |
| 75.8500 | | | | | (72) | 35 | | |
| 75.8750 | 30 | 30 | 30 | T0 | (57, 73) | | | |
| 75.9000 | H | H | H | H | H, (58, 74) | 36 | N | 75.9 |
| 75.9250 | 31 | 31 | 31 | H1 | (59, 75) | | | |
| 75.9500 | | | | | (76) | 37 | | |
| 75.9750 | 32 | 32 | 32 | H2 | (60, 77) | | | |

*Parenthesis indicate T35 and T20 narrowband.
NOTE: Wideband frequencies in highlighted rows.

216MHz Compatibility Chart

| Frequency MHz | Listen | Phonic Ear | Comtek | Phonak | Williams | Gentner | CSI | AVR | Light Speed |
|---------------|--------|------------|--------|--------|----------|---------|-----|-----|-------------|
| 216.0125 | 1A | | 1 | 1 | | | | C01 | N01 |
| 216.0250 | 2A | 41 | 41 | 41 | | 1 | 1 | | |
| 216.0375 | 3A | | 2 | 2 | | | | | |
| 216.0625 | 1B | | 3 | 21 | | | | | |
| 216.0750 | 2B | 42 | 42 | 42 | | 2 | 10 | | |
| 216.0875 | 3B | | 4 | 4 | | | | | |
| 216.1125 | 1C | | 5 | 5 | | | | C05 | |
| 216.1250 | 2C | 43 | 43 | 43 | A | 3 | 6 | | |
| 216.1375 | 3C | | 6 | 22 | | | | | |
| 216.1625 | 1D | | 7 | 23 | | | | | |
| 216.1750 | 2D | 44 | 44 | 44 | B | 4 | 14 | | |
| 216.1875 | 3D | | 8 | 8 | | | | | |
| 216.2125 | 1E | | 9 | 9 | | | | C09 | N09 |
| 216.2250 | 2E | 45 | 45 | 45 | C | 5 | 2 | | |
| 216.2375 | 3E | | 10 | 24 | | | | | |
| 216.2625 | 1F | | 11 | 25 | | | | | |
| 216.2750 | 2F | 46 | 46 | 46 | D | 6 | 11 | | |
| 216.2875 | 3F | | 12 | 12 | | | | C12 | N12 |
| 216.3125 | 1G | | 13 | 13 | | | | | |
| 216.3250 | 2G | 47 | 47 | 47 | E | 7 | 7 | | |
| 216.3375 | 3G | | 14 | 26 | | | | | |
| 216.3625 | 1H | | 15 | 27 | | | | | |
| 216.3750 | 2H | 48 | 48 | 48 | F | 8 | 15 | | |
| 216.3875 | 3H | | 16 | 16 | | | | C18 | N18 |
| 216.4125 | 1J | | 17 | 17 | | | | C21 | |
| 216.4250 | 2J | 49 | 49 | 49 | G | 9 | 18 | | |
| 216.4375 | 3J | | 18 | 18 | | | | | |
| 216.5125 | 1K | | 21 | 61 | | | | | |
| 216.5250 | 2K | 51 | 51 | 29 | H | 10 | 3 | | |
| 216.5375 | 3K | | 22 | 62 | | | | | |
| 216.5625 | 1L | | 23 | 28 | | | | | |
| 216.5750 | 2L | 52 | 52 | 52 | I | 11 | 12 | | |
| 216.5875 | 3L | | 24 | 64 | | | | C24 | N64 |
| 216.6125 | 1M | | 25 | 65 | | | | C25 | |
| 216.6250 | 2M | 53 | 53 | 53 | J | 12 | 8 | | |
| 216.6375 | 3M | | 26 | 81 | | | | | |
| 216.6625 | 1N | | 27 | 82 | | | | | |
| 216.6750 | 2N | 54 | 54 | 54 | K | 13 | 16 | | |
| 216.6875 | 3N | | 28 | 68 | | | | | |
| 216.7125 | 1P | | 29 | 69 | | | | C29 | |
| 216.7250 | 2P | 55 | 55 | 55 | L | 14 | 19 | | |
| 216.7375 | 3P | | 30 | 83 | | | | | |
| 216.7625 | 1R | | 31 | 84 | | | | | |
| 216.7750 | 2R | 56 | 56 | 56 | | 15 | 4 | | |
| 216.7875 | 3R | | 32 | 72 | | | | C32 | N72 |
| 216.8125 | 1S | | 33 | 73 | | | | C33 | |
| 216.8250 | 2S | 57 | 57 | 57 | | | 13 | | |
| 216.8375 | 3S | | 34 | 76 | | | | | |
| 216.8625 | 1T | | 35 | 85 | | | | | |
| 216.8750 | 2T | 58 | 58 | 58 | | | 9 | | |
| 216.8875 | 3T | | 36 | 86 | | | | | |
| 216.9125 | 1U | | 37 | 77 | | | | C37 | N77 |
| 216.9250 | 2U | 59 | 59 | 59 | | | 17 | | |
| 216.9375 | 3U | | 38 | 88 | | | | | |
| 216.9625 | 1V | | 39 | 79 | | | | C39 | |
| 216.9750 | 2V | 60 | 60 | 60 | | | 5 | | |
| 216.9875 | 3V | | 40 | 80 | | | | C40 | N80 |

NOTE: Wideband frequencies in highlighted rows.

LR-600 Troubleshooting

The unit does not power up, or it has stopped operating.

- Ensure the power supply is connected properly.
- Your batteries may be dead. Replace or recharge the batteries.

The audio is muted occasionally.

- The unit's squelch sensitivity (a smaller number in the squelch setting) may be too high. Either improve the RF signal path (a remote antenna may help) or adjust the squelch setting for less squelch sensitivity.

I hear noise coming from the receiver.

- You may have inadequate RF signal strength. Adjust the positioning of the antennas. Make the transmitter is on high power.
- You may be experiencing interference, try a different channel.
- Make sure the transmitter and receiver are on the same channel.
- The squelch sensitivity may be too low. Try setting it higher. See page 15.

The channel is often accidentally changed.

- Lock the unit on channel by pressing and holding the SEEK button for five seconds. The padlock symbol is illuminated on the LCD.

There is no audio.

- Make sure the transmitter and receiver are on the same channel.
- Make sure the volume is turned up.
- Make sure the squelch adjustment is set correctly.

The audio is distorted.

- Make sure the transmitter and receiver are on the same channel.
- Make sure that the SQ switch is ON or OFF for both the transmitter and receiver.
- Make sure the audio level is not set too high.
- Make sure you are not too close to the transmitter.

The level of my Auxiliary device (CD player, etc.) is low.

- Adjust the output volume at the auxiliary device you are using.

I cannot change channels.

- The unit is locked on channel. Press and hold the SEEK button for five seconds.

I cannot change the unit's volume.

- The volume control is locked (the flashing padlock icon indicates this). Press and hold the SEEK button and then the DOWN button to unlock.

I cannot pick up the transmitter.

- Make sure the antenna switch is in the correct position.
- Make sure the transmitter is on and is operating on the same channel.
- You may need to use an external remote antenna.

I can see that I am receiving a channel on RF signal meter, but I cannot hear any audio.

- The adjustable squelch may be set too high. See page 15.

LR-600 Troubleshooting

When the transmitter is off, I hear noise.

- The adjustable squelch may be set too low. See page 15.

I'm trying to find a channel that does not show up on the display.

- The channel may be "locked" out. See page 12.

Will the unit charge the batteries when the power supply is plugged into the unit?

- Yes, as long as the power switch is in the ON or CHG position.

Can I use this product in a motor vehicle?

- Yes, the LR-600 is designed to work with +12VDC from any vehicle. See page 7 for more information.

The unit does not sound good.

- Make sure SQ is on or off on both the transmitter and the LR-600.
- Verify the equalizer has been adjusted properly. Set to flat (center position) to start with. See page 18 for more information.
- Make sure the transmitter and LR-600 are on exactly the same channel.
- Make sure the LR-600 is not too close to the transmitter.

The rechargeable batteries don't last very long.

- They may need to be replaced if they have been used for over 18 months.
- Make sure the charger stays on for the full 13 hours to fully charge the batteries.
- At high volume levels, the batteries will not last very long.
- Make sure you are using quality, long life NiMH batteries.

I have rechargeable batteries in the unit, but they aren't recharging.

- Make sure the Battery switch is set to NiMH. The unit will not charge batteries when the switch is in the ALK position.

The unit won't work on batteries.

- Make sure you are using charged batteries.
- Check the battery polarity of the batteries in the battery holder.
- Make sure the battery holder connector is secure.

If you are still having problems after checking the above items, call Listen for help. We are available from 8 AM to 5 PM Mountain time, Monday through Friday, at 1.800.330.0891 or 801.233.8992, or you can e-mail us at support@listentech.com.

FCC Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC and IC Rules. In order to maintain compliance with FCC and IC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate this equipment.

Warranty

Listen Technologies Corporation (Listen®) warrants the LT-800 Stationary Transmitter to be free from defects in workmanship and material under normal use and conditions for the useful lifetime of the product from date of purchase. This warranty is only available to the original end purchaser of the product and cannot be transferred. Warranty is only valid if warranty card has been returned within 90 days of purchase. This warranty is void if damage occurred because of misuse or if the product has been repaired or modified by anyone other than a factory authorized service technician. Warranty does not cover normal wear and tear on the product or any other physical damage unless the damage was the result of a manufacturing defect. Listen is not liable for consequential damages due to any failure of equipment to perform as intended. Listen shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it. Listen specifically disclaims and negates any warranty of merchantability or fitness of use of such equipment including, without limitation, any warranty that the use of such equipment for any purpose will comply with applicable laws and regulations. The terms of the warranty are governed by the laws of the state of Utah, USA. Listen will only accept returned products with prepaid shipping and with a return authorization number. To receive a return authorization number call 1.800.330.0891 or +1.801.233.8992. Please see www.ListenTech.com or contact Listen for complete warranty details.

Optional Accessories

Other Stationary Unit Antennas



**LA-122 Universal
Antenna Kit**

The single solution for all of your indoor remote antenna needs.

Includes: 72 and 216MHz components; flexible and rigid dipoles and monopole radials; hardware for multiple mounting configurations; and 25 feet (7.6m) of RG58 coax cable.



90 Degree Helical

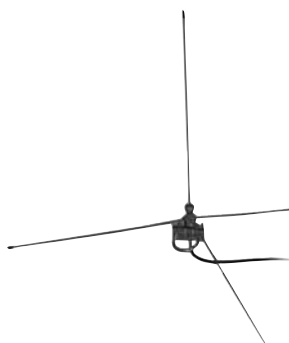
(Rear Mount)

LA-123 for 72MHz or LA-124 for 216MHz



Coaxial Dipole Antenna

LA-116



Ground Plane Antenna

LA-107

Batteries



**NIMH Rechargeable
AA Batteries (pkg of two)**

LA-362



**High Capacity AA
Alkaline Batteries (pkg of two)**

LA-361

Optional Accessories continued



BNC Adapter
LA-121



**BNC Connector
for RG58**
LA-127



**BNC Connector
for RG8**
LA-128



**RG58 Coaxial
Cable**
LA-112



**RG8 Coaxial
Cable**
LA-113



**Installation of
BNC Connectors**
LA-114

Expansion Speaker



Expansion Speaker
LA-316



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