WILLIAMS SOUND ®

Hearing Helper™
Wireless FM Listening System

MANUAL AND USER GUIDE

Transmitter Model T800
Optional Receiver Model R863

MAN 143C

Hearing Helper™ T800 Transmitter

Manual and User Guide

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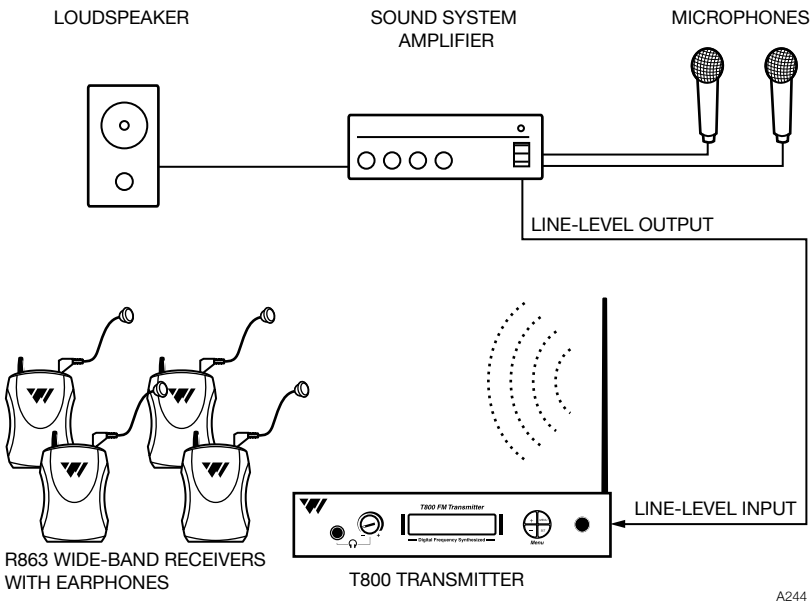
System Overview

Thank you for purchasing the Hearing Helper™ T800 transmitter from Williams Sound. This wide-band FM transmitter operates on the 863 MHz bandwidth and connects directly to your facility's sound system; alternatively, it can used with a microphone as a stand-alone system. The T800 is designed for use with the optional R863 FM receiver to provide hearing assistance or language interpretation to a listening audience.

The T800 transmitter operates much like an FM radio station. First, the transmitter receives the audio from the facility's mic or sound system, then the transmitter broadcasts the audio as an FM signal to the listening audience. Listeners use the R863 receivers equipped with headsets or earphones to pick up the FM broadcast up to 400 feet away.

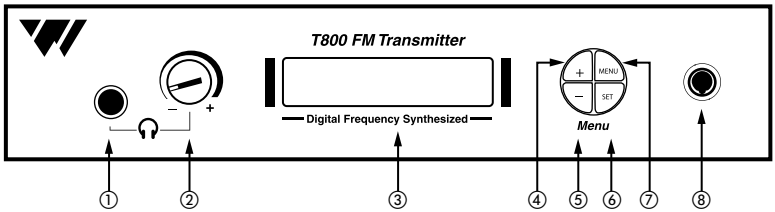
To avoid difficulties, please read through these instructions as you begin to use the system. Then save the manual for questions that arise as you continue to use your system. If at any time you are having problems with this product, please contact Williams Sound for assistance: +1 952 943 2252.

Fig. 1: Overall System Diagram



Setting up the T800

Fig. 2: Features & Controls



1. HEADPHONE JACK
2. HEADPHONE VOLUME CONTROL
3. FREQUENCY DISPLAY (LCD)
4. UP BUTTON
5. DOWN BUTTON
6. SET BUTTON
7. MENU CONTROL
8. POWER ON/OFF CONTROL

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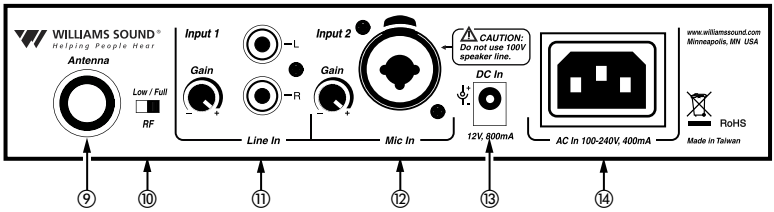

9. ANTENNA CONNECTOR
10. RF POWER OUTPUT SWITCH
11. AUDIO INPUT JACK, RCA TYPE (LINE-LEVEL, UNBALANCED) WITH GAIN CONTROL
12. MIC INPUT JACK, COMBO 3-PIN XLR OR 1/4" TRS (BALANCED/UNBALANCED) WITH GAIN CONTROL
13. DC POWER IN JACK
14. AC POWER IN JACK

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Step 1: Select Location

Position the T800 transmitter near the audio source (i.e. sound system, mixer) from which it will receive audio.

Step 2: Install the Antenna

Gently thread the antenna onto the connector recessed on the back of the transmitter. To use a remote antenna, contact your dealer or Williams Sound.

Step 3: Connect the Audio Source

On the back of the T800, two audio input jacks are available: an RCA-type jack for line-level, unbalanced audio sources; and a combo XLR (3-pin) and 1/4" TRS jack for connecting an unbalanced/balanced audio source. Note: Microphone must be dynamic (no phantom power supplied). If both inputs are used simultaneously, audio will be mixed. Connect the desired audio source to the T800 transmitter.

Step 4: Connect the Power

Locate the power supply cord equipped with the 3-pin connector, then plug the connector into the "AC Power In" jack located in the back of the T800. Plug the power supply into the AC outlet. Alternatively, the T800 can be powered by a 12VDC power supply for portable applications (not included). Note: Only one power source should be used at one time.

Press the "Power ON/OFF" control on the front of the unit. On power up, "Williams Sound T800" will appear briefly while the system initializes. The system will then display the current operating "CHANNEL" (1-16).

Step 5: Select the Frequency

The T800 operates on the 863-864 MHz bandwidth with sixteen selectable preset channels. **Channels 1-3 are standard** and coincide with channels 1-3 on the R863 (optional) receiver:

CH 1 = 863.250 MHz, **CH 2** = 863.750 MHz, **CH 3** = 864.750 MHz

Additional operating channels (4-16) available are:
CH 4 = 863.050 MHz, **CH 5** = 863.400 MHz, **CH 6** = 863.550 MHz
CH 7 = 864.000 MHz, **CH 8** = 864.150 MHz, **CH 9** = 864.300 MHz
CH 10 = 864.450 MHz, **CH 11** = 864.600 MHz, **CH 12** = 864.950 MHz
CH 13 = 863.150 MHz, **CH 14** = 863.650 MHz, **CH 15** = 863.900 MHz,
CH 16 = 864.850 MHz

The T800 is set at the factory to Channel 1 (863.250 MHz). To change the channel, press and hold the "Set" button for 3 seconds (cursor will flash), then press the "+" Up or "-" Down button until the desired channel (1-16) is displayed. No further action is required, the selection will be saved into memory after 3 seconds.

To view the current operating frequency (i.e. "863.250 MHz") on the T800, press the "MENU" button once.

Step 6: Adjust the audio Level

Locate the "Gain Control" on the rear of the T800. With the audio source playing, rotate the "Gain Control" clockwise "+" to increase or counterclockwise "-" to decrease gain. Monitor the audio indicator "bars" on the display as you make your adjustments. As a general guideline:

No audio indicator bars present = Audio source is TOO LOW.
Some audio indicator bars present = Audio source is ACCEPTABLE
"Limiting" message is displayed = Audio source is TOO HIGH.

Ensure the audience is receiving the highest quality audio: listen to the audio through the headphone jack on the front of the T800 (FIG. 2).

Step 7: Listen with an FM Receiver

IMPORTANT: The FM receiver being used with the T800 transmitter will need to be on the same frequency as the transmitter!

Install the receiver batteries, plug in the earphone, turn on the receiver and walk around the listening area. The signal should be clear and quite loud when the volume is turned up. See page 9 for detailed operating instructions on the R863 receiver.

Safety Information

HEARING SAFETY:

⚠ CAUTION!

The R863 receiver is designed to amplify sounds to a high volume level which could potentially cause hearing damage if used improperly.

To protect your hearing and the hearing of others:

1. Make sure the volume is turned down on the receiver before putting on the earphone or headphone. Then adjust the volume to a comfortable level.

2. Set the volume level at the minimum setting that you need to hear.

3. If you experience feedback (a squealing or howling sound), reduce the volume setting and move away from the microphone being used with the T800 transmitter.

4. Do not allow children or other unauthorized persons access to the receiver.

BATTERY SAFETY AND DISPOSAL:

⚠ CAUTION!

The R863 receiver may be supplied with Alkaline batteries. Do not attempt to recharge Alkaline batteries, which may explode, release dangerous chemicals, cause burns, or other serious harm to the user or product. See page 13 for additional battery information.

PACEMAKER SAFETY:

⚠ CAUTION!

1. Before using the R863 receiver with a pacemaker or other medical device, consult your physician or the manufacturer of your pacemaker or other medical device.

2. If you have a pacemaker or other medical device, make sure that you are using this product in accordance with safety guidelines established by your physician or the pacemaker manufacturer.

Recycling Instructions

Help Williams Sound protect the environment! Please take the time to dispose of your equipment properly.

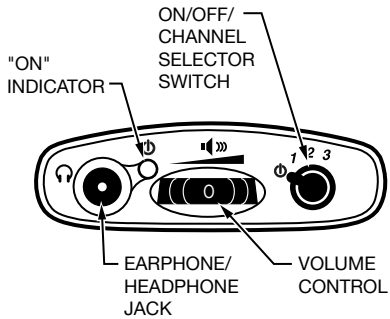
Product Recycling for Customers in the European Union:
Please do NOT dispose of your Williams Sound equipment in the household trash. Please take the equipment to an electronics recycling center; OR, return the product to the factory for proper disposal.

Battery Recycling for Customers in the European Union:
Please do NOT dispose of used batteries in the household trash. Please take the batteries to a retail or community collection point for recycling.

Using the Optional R863 Receiver

FIG. 3: R863 Receiver Views

R863 Top



R863 Front

Using The R863 Receiver, cont.

Note: Rechargeable batteries are shipped in a discharged state and must be charged overnight before using.

1. Make sure there are two alkaline or rechargeable AA batteries in the Receiver. If batteries are not installed, see Battery Information on page 12-13.

2. Plug the earphone or headphone into the "🎧" Jack on top of the Receiver.

3. Put on the earphone or place the headphones over your ears.

4. Turn the unit on: turn the On/Off/Channel switch to position "1" or "2" or "3." The Power "ON" LED indicator should illuminate.

5. Select a desired operating frequency. To operate on 863.25 MHz, turn the On/Off/Channel switch to position "1"; to operate on 863.75 MHz, turn to position "2"; to operate on 864.75 MHz, turn to position "3."

Important: Make sure the receiver is operating on the same frequency as the transmitter! The receiver's channel switch (1-2-3 position) should match the transmitter's channel selection.

6. Adjust the receiver volume control to a comfortable listening level.

   You should be able to hear the audio being provided to the T800 transmitter.

   The receiver can be placed in a pocket, or clipped onto a belt, harness, or waistband.

IMPORTANT: When the R863 receiver is not being used, remember to turn the unit OFF by turning the On/Off/Channel switch to the "⏻" power icon position. The Power "ON" LED indicator should not be lit.

Belt Clip Installation/Removal for the R863 Receiver

To Install:

Position the belt clip on the rear of the R863 receiver as shown in FIG. 4A. Turn the belt clip 180º left or right as shown in FIG. 4B. The belt clip is now installed and ready for use.

To Remove:

Turn the belt clip 180º so the open end of the clip points to the top of the unit as shown in FIG. 4A. Gently pull the belt clip away from the unit to remove.

Fig. 4A

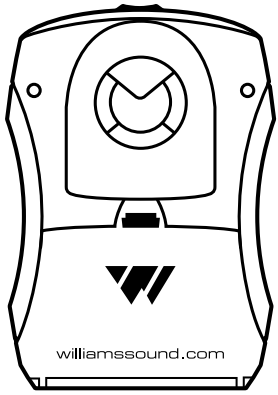
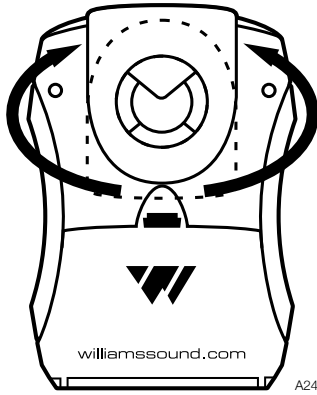


Fig. 4B



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R863 Receiver Battery Information

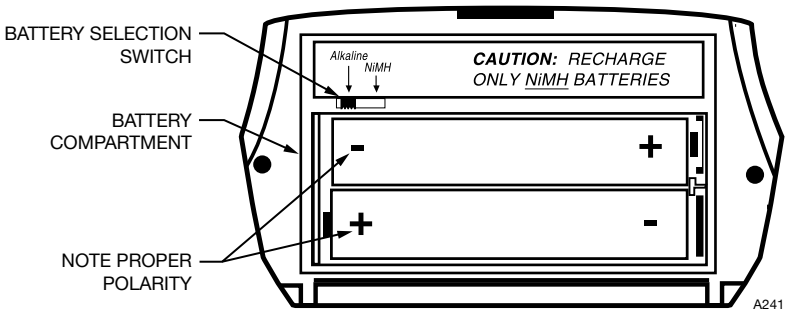
Installation

Open the battery compartment by lifting the tab on the back of the receiver with your finger. To remove depleted batteries, pull up on the fabric strip.

IMPORTANT: If Alkaline (non-rechargeable) batteries are being installed, slide the battery selection switch in the battery compartment to the "Alkaline" position. See FIG. 5 below. If installing NiMH (or rechargeable) batteries, slide the battery selection switch to the "NiMH" position.

Press the batteries into place over the fabric strip. Be sure to observe proper polarity (+/-). Damage due to improper battery installation may void the warranty on the product. Close the battery door. LED will flash when the batteries are getting low; continue to use until the sound becomes weak or distorted, or the unit quits operating, then replace or recharge batteries.

Fig. 5: Battery Installation



Non-rechargeable Batteries

In normal use, two AA 1.5 V alkaline batteries (BAT 001) will last approximately 40 hours in the R863 receiver. If the sound becomes weak or distorted, replace the batteries. Do not leave dead batteries in the receiver. Battery corrosion is not covered by the Williams Sound warranty.

Rechargeable Batteries

The R863 receiver can use rechargeable AA batteries (BAT 026). On an overnight charge, these NiMH batteries are designed to operate for 30 hours in the R863 receiver.

NOTE: The battery installed in the receiver may be recharged in the receiver only if it is a NiMH battery, and only if a Williams Sound CHG 3512, CHG 3512 PRO, or CHG 3502 Multi-Charger is used. Damage from improper charging is not covered by the Williams Sound warranty.

!! IMPORTANT WARNINGS !!

DO NOT ATTEMPT TO RECHARGE ZINC CARBON ("HEAVY DUTY"), ALKALINE, OR LITHIUM BATTERIES!

DO NOT ATTEMPT TO RECHARGE SINGLE-USE BATTERIES!

These batteries may heat up and explode, causing possible injury and damage to the equipment. Avoid shorting the plus and minus battery terminals together with metal objects. Battery damage and burns can result! Use only Williams Sound supplied chargers and rechargeable batteries!

NOTE: Rechargeable batteries are shipped in a discharged condition. They must be charged for a complete charge cycle before the first use. Rechargeable batteries may need to be replaced after 1-2 years of use.

Optional Battery Chargers for the R863 Receiver

Fig: 6A: CHG 3512 / 3512 PRO Multi-Charger

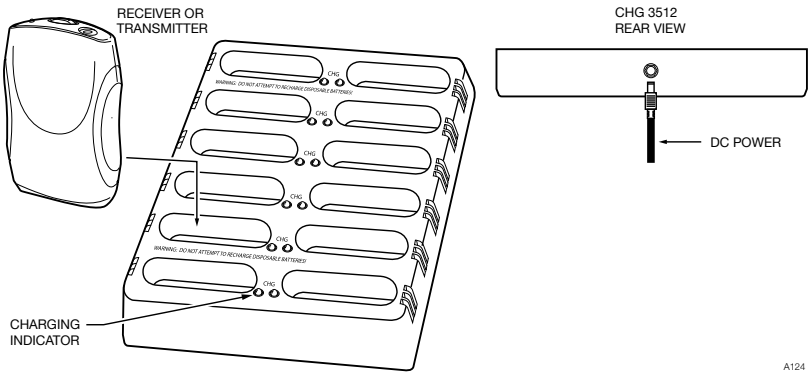
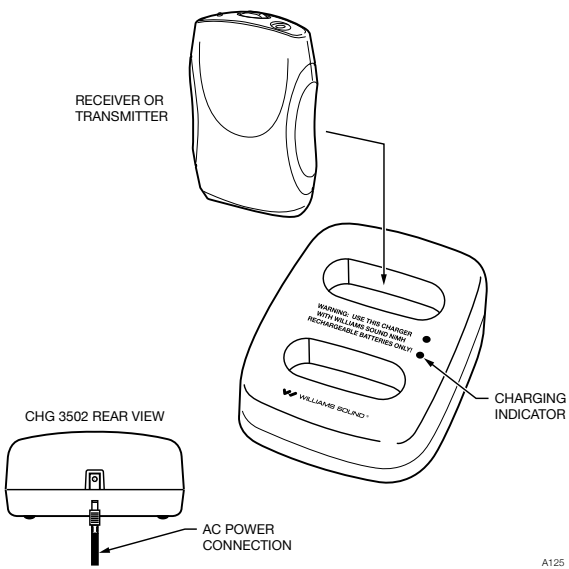


Fig: 7A: CHG 3502 Dual-Bay Charger



Trouble Shooting Guide

Read through the manual and user guide carefully to verify proper setup and installation of your system.

Transmitter frequency display (LCD) not lit.

- Make sure the AC power adapter is plugged into the transmitter.
- Make sure the electrical outlet is on.

No sound through receivers.

- If some of the receivers work, but others don't, check for bad batteries or earphones on the receivers that aren't working.
- Verify that the receiver frequency matches the transmitter frequency. See "Select the Frequency" section.
- If none of the receivers work, check to see if the power is connected to the transmitter and the frequency display on the front of the transmitter is illuminated.
- Check to see if the transmitter is connected properly to the sound system.
- Turn the "Gain Control" on the back of the T800 transmitter clockwise to increase the audio level.
- If you are not using an input signal from a sound system, make sure the Williams Sound microphone is plugged into the "Mic Input" jack on the rear of the T800 transmitter.
- Make sure the antenna is installed and connected properly.

Insufficient range, good reception near transmitter, poor at a distance

- Check to see if the antenna was installed correctly. If not, correct or replace the antenna. The signal should be clearly audible at 30 m (100 ft.) line of site of the transmitter.
- Check to make sure no other transmitters (or other devices) are transmitting on the same frequency (channel).

Sound through receivers is loud, but distorted. Noise (room noise or electronic noise) seems to grow after talking stops. "Limiting" appears on LCD display.

- Turn the "Gain Control" on the back of the T800 counterclockwise to decrease the audio level.

Sound through the receivers is weak and noisy.

- Turn the "Gain Control" on the back of the T800 clockwise to increase the input signal strength.
- Increase the input signal level from the sound system.
- Batteries may be depleted. Replace the receivers' batteries.

Buzzing or humming noise in sound system.

- There is nothing wrong with the T800 transmitter. One or more pieces of equipment in the sound system are being disturbed by RF (Radio Frequency) signals produced by the T800. The most likely suspects are your amplifier, mixer, or tape deck. The RF gets into the other equipment primarily through the power cord, speaker wires, or unshielded inputs, all of which can act as antennas. Try the following steps:
- Move the transmitter away from the other sound equipment.
- Make sensitive equipment more immune to RFI/EMI. The manufacturers of your audio equipment may offer application notes for this purpose. Williams Sound offers a document giving suggestions for improving RF immunity in existing audio equipment. (Technical Bulletin: Buzz Or Hum In The Sound System, FRM 531) Unless you have the necessary technical skills, this is best left to a qualified electronics repair technician.

Hearing Helper™ Specifications

T800 Transmitter

Dimensions:	21.8 cm (8.6") W x 21.8 cm (8.6") D x 4.6 cm (1.8") H
Weight:	1.32 kg (2.9 lbs)
Color:	Black with white legends
Power:	AC: 100 to 240 VAC, 50-60 Hz, 400 mA, power inlet IEC C14 DC: 12 to 13 VDC, 800 mA, 2.1 mm DC input jack
Power Switch:	Push ON - push OFF switch with red light
Temperature Range:	Operating: 0 C to 40 C (+32 F to 104 F) Storage:-20 C to 70 C (-4 F to +158 F)
Operating Frequencies:	Selectable: Ch 1= 863.250 MHz, Ch 2 = 863.750 MHz, Ch 3 = 864.750 MHz, 13 other frequencies available (see manual)
RF Output:	5 to 10 dBm (full power switch)
RF Switch:	Low/ Full power switch on rear panel
LCD Display:	Backlit, Ch #, frequency, user name, audio level VU (indicated by 11 segments total)
Menu Push Buttons:	Menu, +Ch select, -Ch select, SET
Headphone Output:	Mono, 1/4" tip barrel jack, 0.35mW power into 33 ohms, level adjust on front panel
Stability:	+/- .05 MHz (0 C to 40 C)
FM Deviation:	45 kHz (line input, L+R, 1 kHz, 0.5 Vrms)
Pre-Emphasis:	50 µsec
Nominal Range:	Up to122 meters (400 ft.) at RF switch full power with Williams Sound R863 receiver
Frequency Response:	Line input: 25 to 10.0 kHz +- 3 dB Microphone input: 110 to 8.5 kHz +/- 3 dB. Dynamic mic only
Signal/Noise Ratio (1 KHz):	Line input: > 50 dB Microphone input: > 40 dB
%THD + noise (1 KHz):	Line input: < 0.4% Microphone input: < 0.5%
Audio Processing:	2:1 compression (line or microphone input)
Audio Input:	Line input: mono, RCA jack x 2 (labeled left and right) Microphone input: Balanced/ unbalanced, combo XLR (3 pin) or 1/4" TRS jack.
Audio Levels: (at FM deviation)	Line input: 0.5 Vrms (-6 dBV), rotary gain adjust rear panel at maximum Microphone input: 10 mVrms (-40 dBV), rotary gain adjust rear panel at maximum
Common Mode Rejection:	Microphone input: > 22 dB @ 1 kHz, balanced input
Antenna:	22.9 cm (9") long, semi flexible, adjustable, removable, rear panel connector
Compatible Receivers:	R863
Approvals:	CE, RoHS, WEEE, ETSI EN 301 357-1, 2
Warranty:	3 years (excluding accessory products)

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Limited Warranty

Williams Sound products are engineered, designed, and manufactured under carefully controlled conditions to provide you with many years of reliable service. Williams Sound warrants the Hearing Helper™ T800 transmitter against defects in materials and workmanship for THREE (3) years. During the first three years from the purchase date, we will promptly repair or replace the Hearing Helper™ T800 transmitter .

Microphones, earphones, headphones, batteries, cables, carry cases, and all other accessory products carry a 90-day warranty. Chargers carry a 1 year warranty.

WILLIAMS SOUND HAS NO CONTROL OVER THE CONDITIONS UNDER WHICH THIS PRODUCT IS USED. WILLIAMS SOUND, THEREFORE, DISCLAIMS ALL WARRANTIES NOT SET FORTH ABOVE, BOTH EXPRESS AND IMPLIED, WITH RESPECT TO THE Hearing Helper™ T800 transmitter, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WILLIAMS SOUND SHALL NOT BE LIABLE TO ANY PERSON OR ENTITY FOR ANY MEDICAL EXPENSES OR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY ANY USE, DEFECT, FAILURE OR MALFUNCTIONING OF THE PRODUCT, WHETHER A CLAIM FOR SUCH DAMAGES IS BASED UPON WARRANTY, CONTRACT, TORT OR OTHERWISE. THE SOLE REMEDY FOR ANY DEFECT, FAILURE OR MALFUNCTION OF THE PRODUCT IS REPLACEMENT OF THE PRODUCT. NO PERSON HAS ANY AUTHORITY TO BIND WILLIAMS SOUND TO ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE Hearing Helper™ T800 transmitter. UNAUTHORIZED REPAIRS OR MODIFICATIONS WILL VOID THE WARRANTY.

The exclusions and limitations set out above are not intended to, and should not be construed so as to contravene mandatory provisions of applicable law. If any part or term of this Disclaimer of Warranty is held to be illegal, unenforceable, or in conflict with applicable law by a court of competent jurisdiction, the validity of the remaining portions of this Disclaimer of Warranty shall not be affected, and all rights and obligations shall be construed and enforced as if this Limited Warranty did not contain the particular part or term held to be invalid.

If you experience difficulty with your system:
Visit our web site for additional product information, instruction sheets, technical bulletins and application notes: www.williamssound.com

Email us: info@williamssound.com

Telephone: +1 952 943 2252

If it is necessary to return the system for service, your Customer Service Representative will give you a Return Authorization Number (RA) and shipping instruction.

Pack the system carefully and send it to:

Williams Sound
Attn: Repair Dept.
10300 Valley View Rd.
Eden Prairie, MN 55344 USA

Your warranty becomes effective the date you purchase your system. Your returned warranty card is our way of knowing when your warranty begins. Please take a moment to fill out and mail the enclosed card. You may also register your product online: www.williamssound.com/registration.aspx. This information will help us serve you better in the future. Thank you!

WILLIAMS SOUND ®

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