Sound Plus™ Infrared Transmitter, Model WIR TX90

Description:

The TX90 two channel IR transmitter combines modulator and emitter technology into a single operating unit, which reduces operating cost and eliminates precious rack space. The TX90 transmitter produces a wide-angle infrared signal that concentrates the IR energy efficiently in the listening area. Operating on the 2.3-3.8 MHz bandwidth, the TX90 is less susceptible to radio and lighting interference. Each TX90 transmitter can cover up to 28,000 sq ft (2,600 sq m) in single-channel operation. The coverage area can be easily increased by connecting additional TX9 emitters. A wall/ceiling omnidirectional mount is included, and stand kits are available for portable operation.

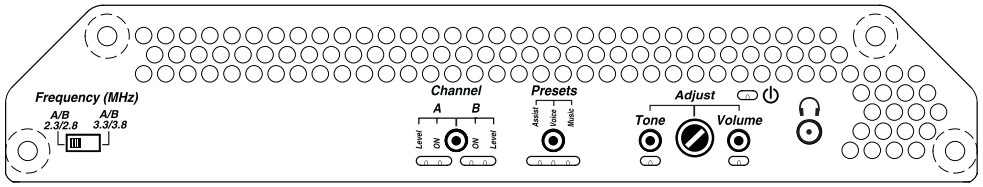
Applications:

Cinemas • Simultaneous Interpretation • Audio Description • Conferences • Multi-Media Rooms
Boardrooms • Courtrooms • Schools • Universities • Churches

WIR TX90 Transmitter

Dimensions, Weight:	11.25" W x 6.25" H x 2.125" D (28.6 cm x 15.9 cm x 5.4 cm), 1.8 lbs (0.8 kg)
Color:	Black with white legends, black acrylic lens
Power Supply:	Wall Transformer, 24 VAC, 50-60 Hz, 35 VA, 3-pin MOLEX Connector North America: TFP 010, UL/CSA Europe: TFP 027-01, 2-pin Schuko plug, CE UK: TFP 027-02, 3-pin UK plug, CE
Power Cable:	NEC Class 2 wiring, two-conductor, 18 ga., 200' (61m) max. length
Modulation:	FM Wideband, ±50kHz deviation max., 50uS pre-emphasis
Carrier Frequency:	Channel A: Selectable, 2.3/2.8 MHz, Channel B: Selectable, 3.3/3.8 MHz
Emitter IR Power:	3.5 watts
Coverage Area:	28,000 ft² (2,600 m²) in single-channel mode when using the RX12-4 Receiver 18,000 ft² (1,670 m²) in four-channel mode when using the RX12-4 Receiver 3,500 ft² (325 m²) in single-channel mode when using the RX14-2 Receiver 3,063 ft² (285 m²) in single-channel mode when using the RX16 Receiver (See coverage area diagrams)
Signal-to-Noise Ratio:	>75 dB, ±3dB
Frequency Response:	80 to 15,000 Hz, electrical response
Total Harmonic Distortion:	Less than .2%, electrical response at 1kHz
Compression:	Music preset 1:1, Voice preset 1.5:1, Hearing Assist preset 2:1
Auto Carrier Shut-Off:	20 minute timer shuts off carrier when no audio is present

Fig. 1: TX90 Bottom View



Power Indicator:	Red LED
Audio Volume Level Controls:	CHA and CHB Input Level, press to select, 28 dB adjustable range
Audio Indicators:	CHA and CHB Audio Level, yellow LED, flash
Carrier LEDs:	2 green LED carrier "on" indicators
Phones Output:	3.5mm TRS headphone jack. CH A tip, CH B ring on jack, 32 ohm headphone (min)
Application Preset:	Music, Voice, Hearing Assist. Frequency response; Music: Flat; Voice: Mid-range boost; Hearing Assist: High frequency boost
Tone Control:	Press to select, 21 dB adjustable range (1 kHz between low boost/hi-cut and low cut/hi boost).

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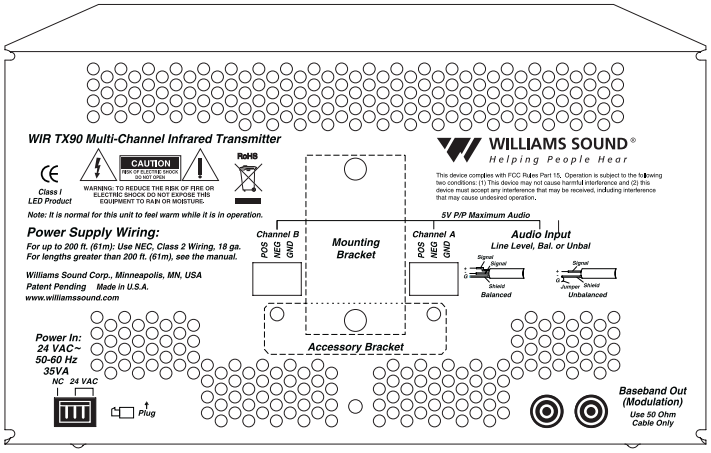
Fig. 2: TX90 Rear View



Power Input:	3-Pin Molex, 24 VAC, 50-60 Hz, 35 VA
Audio Input Connector:	CHA and CHB, 3 wire Phoenix
Input Level:	Balanced or unbalanced, 316 mVRMS (-10dBV) nominal, 5.7k input impedance; max input (over volume range) -21 to +7 dBV.
Baseband Output:	BNC, 50 Ω, for use with TX9 only
Baseband Cable:	RG 58 Coax, BNC connectors, maximum 1000' (300m) length
Operating Requirements:	0-50° C (+32°F to 122°F) ambient temperature, non-condensing, non-corrosive atmosphere
Mounting Kits:	Wall or Ceiling Mount: BKT 024 Omnidirectional mount; Optional: Mic Stand Kit: SS-10; or Tripod Stands: SS-11 or SS-6
Warranty:	5 years on transmitter, 90 days on accessories
Approvals:	CE, FCC, RoHS, WEEE
Compatible Receivers:	WIR RX12-4 Four-Channel Receiver, WIR RX22-4 Four-Channel Receiver, WIR RX14-2 Two-Channel Receiver, WIR RX16 Two-Channel Receiver
Notes:	Specifications: Single end input, volume & tone controls at mid point, 1 kHz, "Music" Preset

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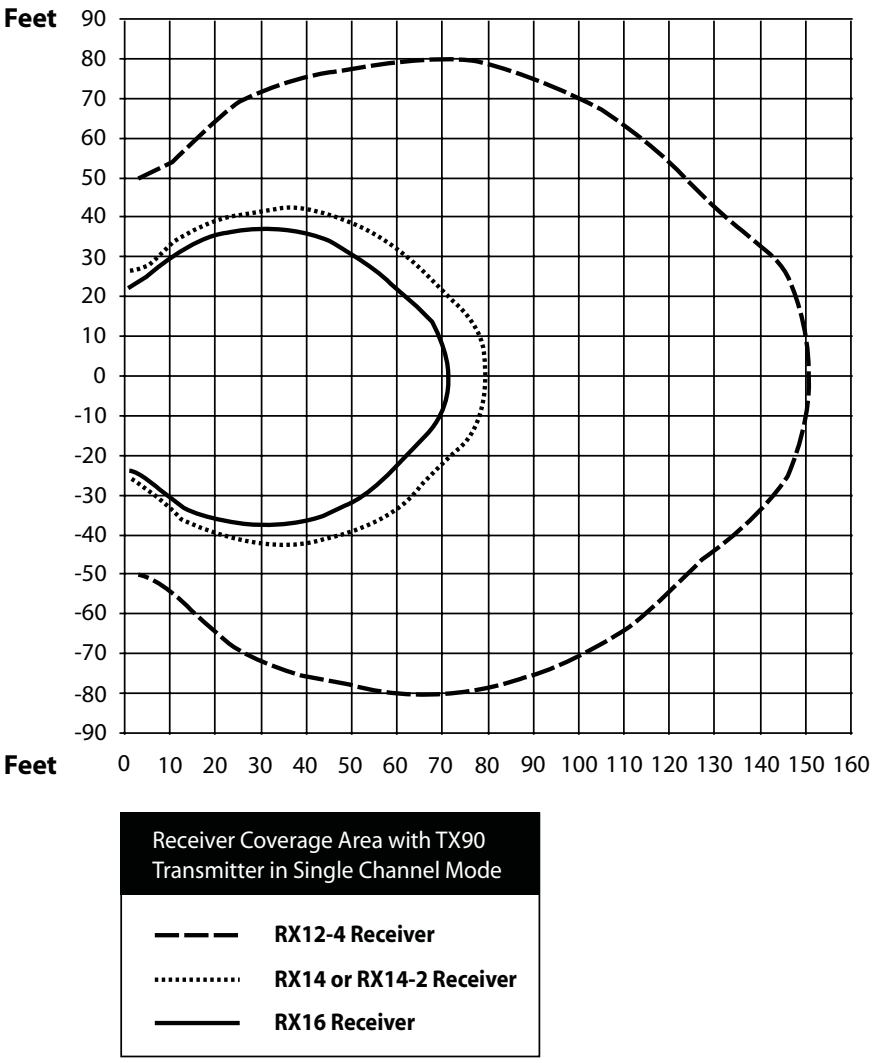
Coverage Patterns:

Fig. 3: Receiver Coverage Area with TX90 Transmitter in Single Channel Mode



The coverage area for the TX90 will vary depending on the receiver being used. The diagram above demonstrates the receiver coverage when operating a single TX90 transmitter in single channel mode. Patterns are direct radiation patterns.

Note: Reflections of the infrared light from walls, ceilings and floors may change these patterns.

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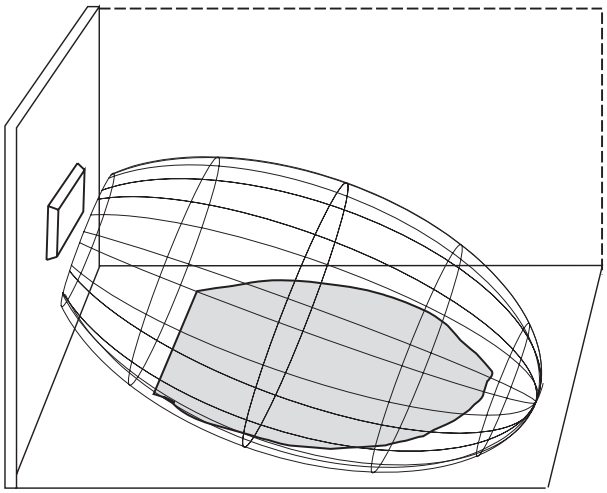
Fig. 4: 3-Dimension Foot Pattern



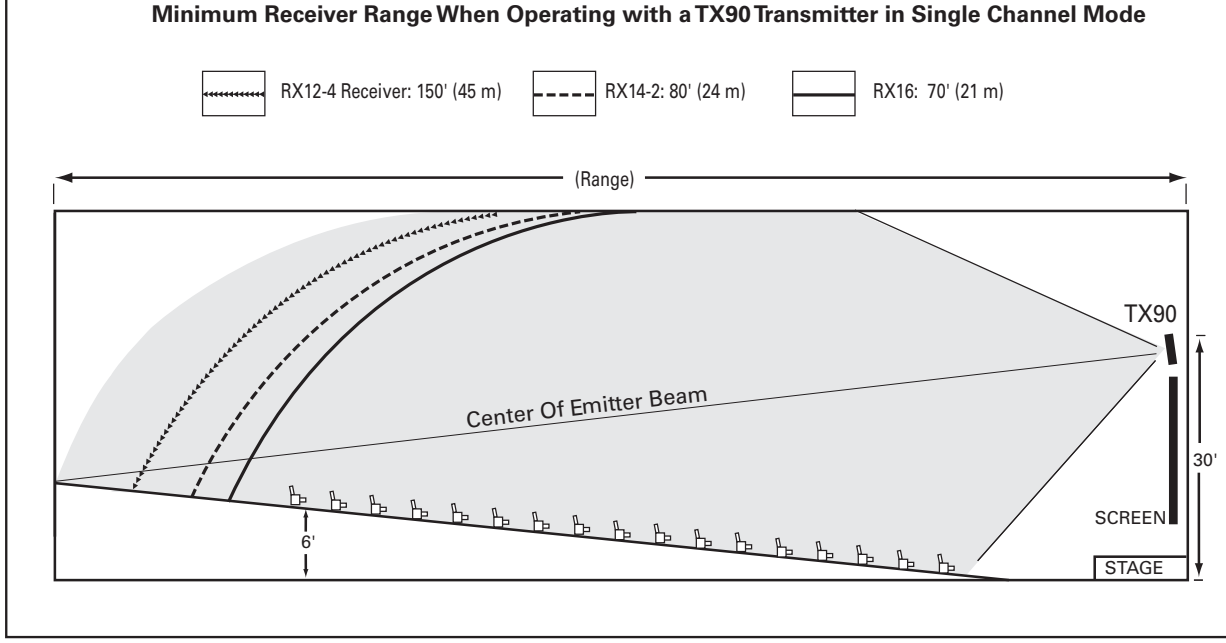
The TX90 floods the listening audience with a cone shape light pattern as shown here.

The path of the cone shape light leaves a pattern on the ground, or "foot print, " and indicates where the strongest receiver reception will occur.

The actual coverage area will vary depending on the sensitivity of the receiver being used. Refer to Figures 3 and 6 to determine how many emitters are required for 100% coverage of the listening area.

To determine the best location for the transmitter, it helps to think of the IR transmitter as an invisible floodlight. You'll want to aim it so the listeners are "flooded" with the infrared light. The transmitter should also be positioned high enough so it won't be blocked by people and other physical obstructions. See Figure 5 below. **Mount the transmitter at least 2 ft. (.61 m) above the audience.** Position the transmitter to face in a slightly downward angle, 20°, that will increase the "throw" of the infrared beam.

Fig. 5: Vertical Beam Spread



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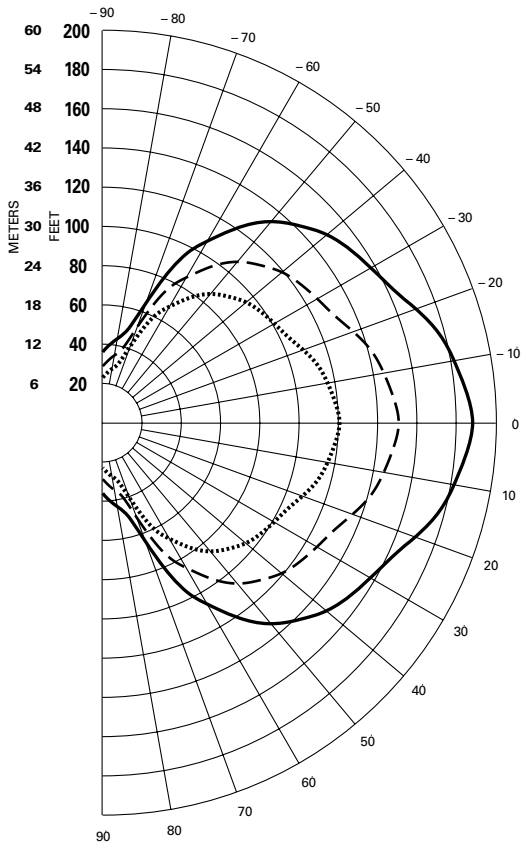
Maximum Range When Using the RX12-4 Infrared Receiver

Fig. 6: Horizontal and Vertical Radiation Polar Plots

HORIZONTAL RADIATION POLAR PATTERNS
DISTANCE FROM EMITTER TO 1 nW/sq cm CONTOUR

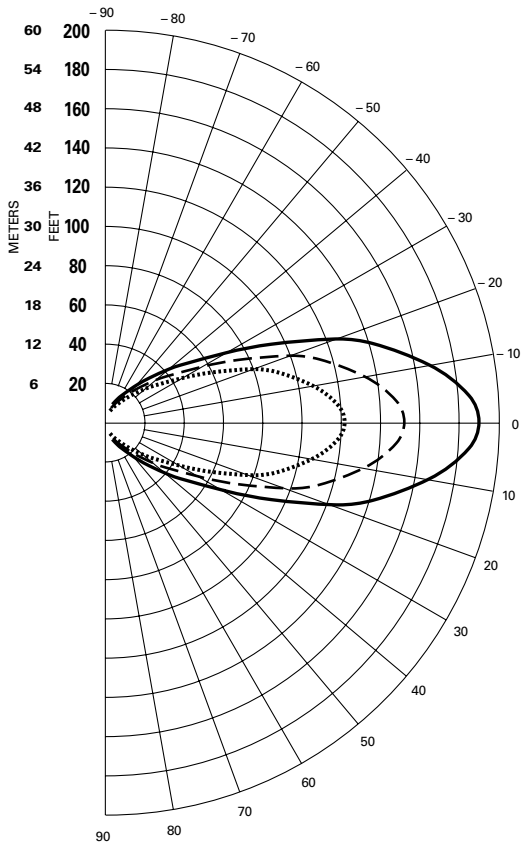


1 Channel, 1 nW/sq cm
(Approx. 28000 sq ft, 2600 sq m)

2 Channel, 1 nW/sq cm per channel
(Approx. 18000 sq ft, 1700 sq m)

4 Channel, 1 nW/sq cm per channel
(Approx. 11000 sq ft, 1000 sq m)

VERTICAL RADIATION POLAR PATTERNS
DISTANCE FROM EMITTER TO 1 nW/sq cm CONTOUR



1 Channel, 1 nW/sq cm

2 Channels, 1 nW/sq cm per channel

4 Channels, 1 nW/sq cm per channel

Reflections of the infrared light from walls, ceilings, and floors may change these patterns.
Important: Remember to point the transmitter towards the listening audience!

If you're not getting sufficient coverage with a single, properly installed TX90 Transmitter, you may need to add additional WIR TX9 Emitters to achieve full coverage of your listening area. Figures 7a and 7b illustrate how multiple emitters can be used for large room installations.

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Multiple Emitters Installed to Maximize Coverage

Fig. 7a: Overlapping Illumination Patterns to Cover Larger Listening Areas

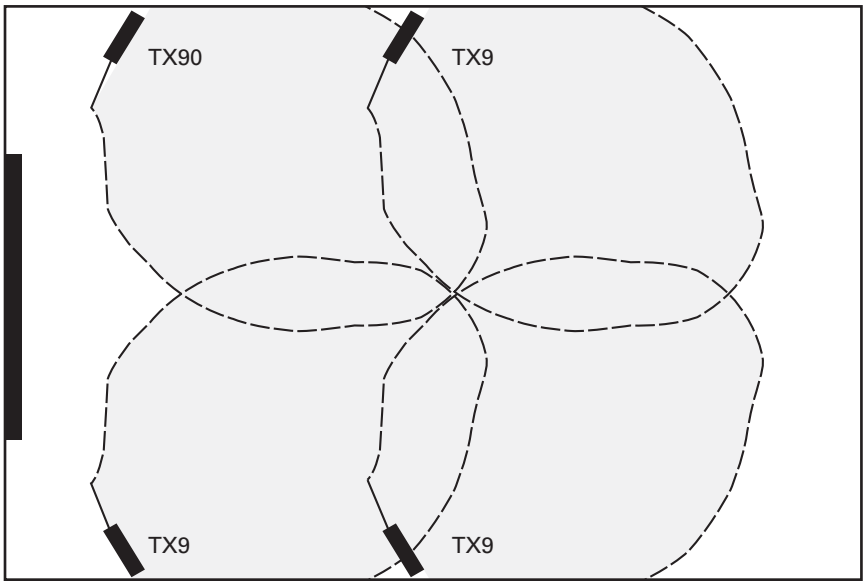
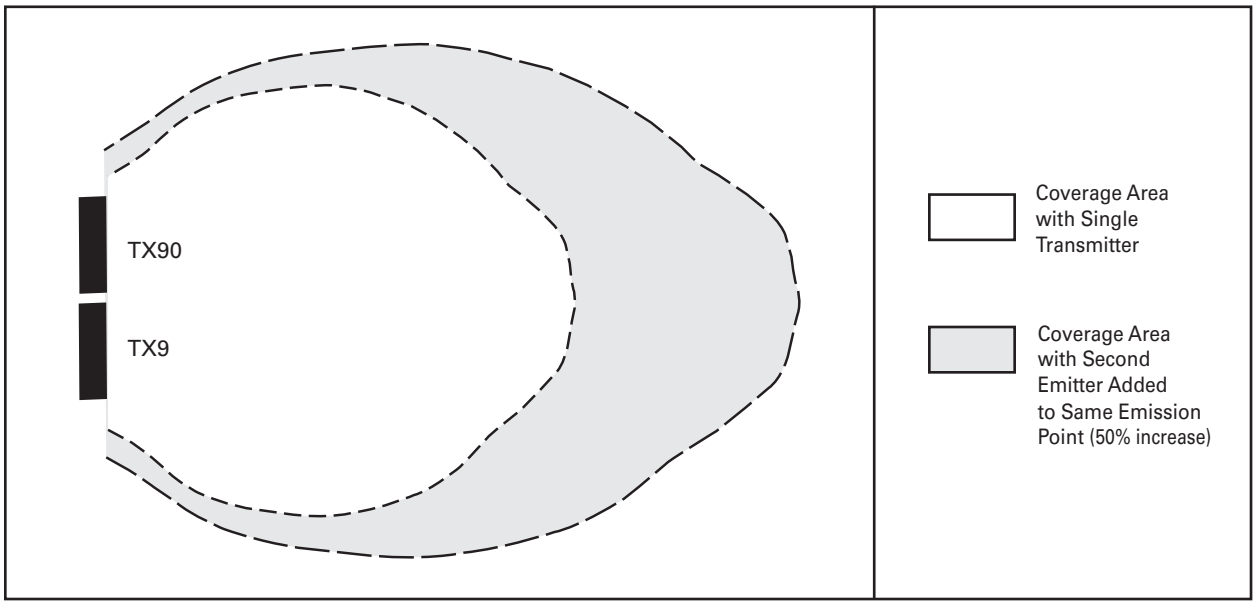


Fig. 7a above is a typical example of how multiple emitters are used to cover larger listening areas. Generally it is desirable for the illumination patterns to overlap. Note: The coverage area will vary depending on the infrared receiver being used; refer to Figures 3 and 6 to determine how many additional emitters are required to achieve full coverage of a listening area.

Fig. 7b: Overlapping Illumination Patterns to Cover Larger Listening Areas



When a TX90 transmitter and TX9 emitter are used at the same emission point in *single channel mode,* the overall coverage area increases 50%. When using an RX12-4 receiver, as a result, the coverage area will increase to an estimated 42,000 ft² (3,902 m²); the RX14-2 will increase to 5,250 ft² (488 m²); the RX16 will increase to 4,590 ft² (426 m²).

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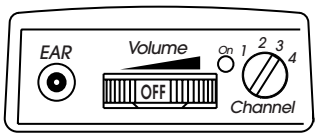
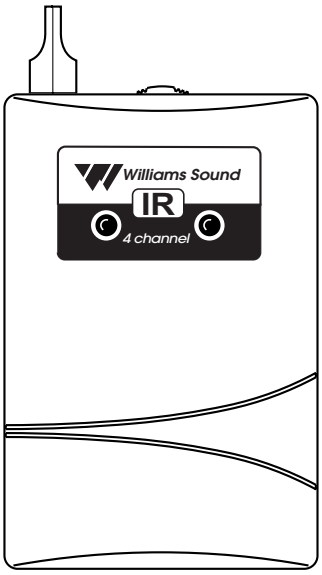
Optional WIR RX12-4 Receiver:

Receiver Style:	Body-Pack, dual-lens detector, lanyard
Size:	3-5/8" L x 2-3/8" W x 7/8" H (9.2 cm x 6 cm x 2.2 cm)
Weight:	4.5 oz (127 g) with batteries
Color and Material:	Gray, shatter-proof polypropylene
Lanyard:	3 ft (.91 m), allows receiver to be worn around the neck
Operating Temperature:	-10° C to +50° C
Battery Type:	2 x AA, alkaline (BAT 001) or NiMH (BAT 026)
Battery Life:	Alkaline: 60 hours, NiMH: 30 hours/charge
Battery Drain:	25 mA, nominal
Charging Contacts:	For use only with CHG 200 and CHG 1600 Chargers
Carrier Frequency:	Channel 1: 2.3 MHz, Channel 2: 2.8 MHz Channel 3: 3.3 MHz, Channel 4: 3.8 MHz
De-Emphasis:	50 uS
FM Deviation:	±50 kHz
Signal-to-Noise Ratio:	60dB min.
Squelch:	Receiver squelches (mutes) at 40 dB S/N ratio
Frequency Response:	25 Hz to 16 KHz, +1 dB, -3 dB, electrical response
Total Harmonic Distortion:	Less than 1%, electrical response
Controls:	ON/OFF/VOLUME: combination thumbwheel knob Channel Selector: four-position rotary switch
Indicators:	Red LED "ON" indicator, flashes to indicate Low battery
Audio Output Jacks:	3.5 mm stereo mini phone jack Accepts 3.5 mm mono or stereo phone plug
Audio Output Power:	15 mW max at 32 Ω
Acoustic Output:	125 dB SSPL90 with HED 002; 110 dB SSPL90 w/ EAR 013
Sensitivity:	Better than 1 nW/cm² for 40 dB signal-to-noise ratio
Approvals:	CE, FCC, WEEE
Warranty:	5 years on receiver, 90 days on accessories
Compatible Headphones/Earphones:	Mono or stereo, 8-32 ohms, 3.5 mm mini phone plug, HED 021, HED 026, EAR 013, EAR 014, EAR 022



RX12-4 Top View



RX12-4 Front View

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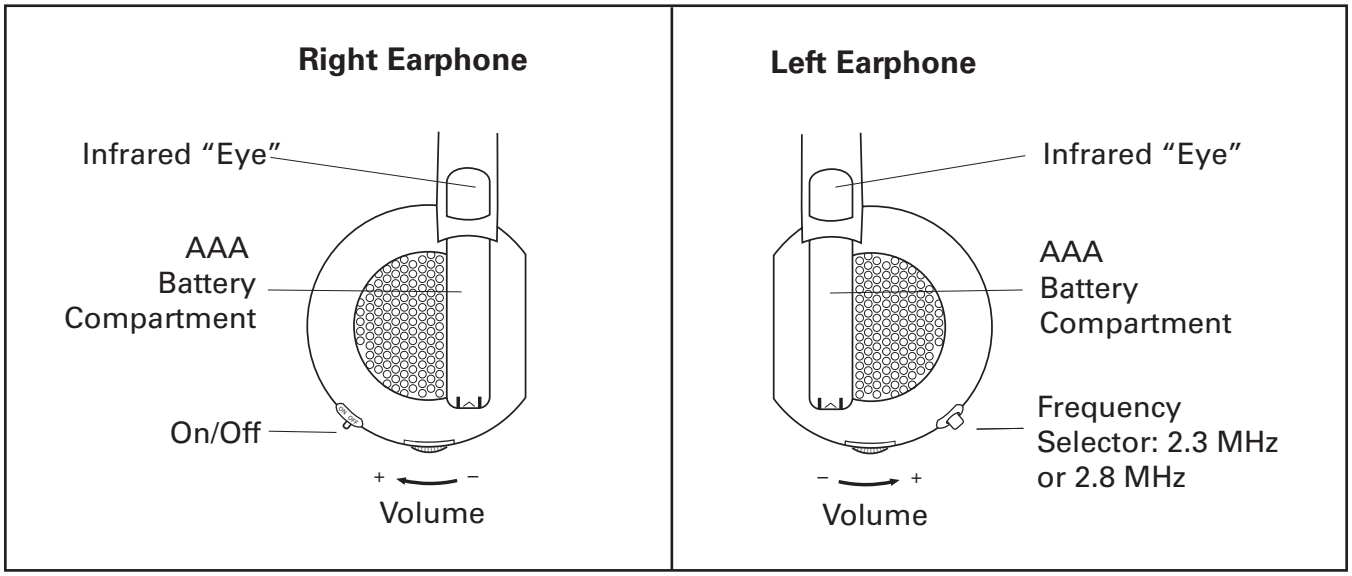
Optional WIR RX14-2 Receiver:

Receiver Style:	Headset
Earpad Size:	2.5" (6.5 cm) diameter, adjustable headband
Weight:	6.7 oz (191 g) without batteries
Color and Material:	Black, plastic
Operating Range:	Up to 3,500 ft² (325 m²) when using a single WIR TX90 Transmitter
Battery Type:	AAA Alkaline batteries (BAT 010). AAA NiMH (BAT 022) optional
Battery Life:	Alkaline: 50 hours, NiMH: 8 hours/charge
Battery Drain:	25 mA, nominal
Controls:	ON/OFF switch
	(2) Thumbwheel volume control knob, left and right
	(1) Frequency push-button selector, 2.3 MHz or 2.8 MHz
Acoustic Output:	118 dB MAX SSPL90, +/- dB with 6 cc coupler
Warranty:	1-year warranty (excludes physical damage)
Approvals:	CE, RoHS



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Sound Plus™ Infrared Transmitter, Model WIR TX90

Bid Specs:

WIR TX90 Transmitter

The Williams Sound Corp. WIR TX90 transmitter shall consist of an all-in-one modulator and emitter operating on switchable carrier frequencies of 2.3/2.8 MHz or 3.3/3.8 MHz. The carrier frequency shall use 50 kHz deviation and 50µs pre-emphasis.

The transmitter shall have a range of 28,000 ft^2 (2,600 m^2) in single channel mode when using hte RX12-4 receiver. The transmitter shall be contained in a metal housing with a durable plastic lens. The transmitter shall be convection cooled without fans. The transmitter shall include an omni-directional mounting bracket for permanent installations. Additional brackets shall be available for different mounting options.

The transmitter shall provide two channels of selectable carrier frequencies: CH A 2.3/2.8 MHz or CH B 3.3/3.8 MHz. Two transmitters used in tandem shall provide up 4 simultaneous channels.

The transmitter shall have two Phoenix connectors on the back for balanced or unbalanced line input. All controls and indicators shall be accessible on the bottom of the panel of the transmitter.

The transmitter shall have three application presets: Music, Hearing Assistance and Voice accessible by thumbscrew adjuster.

There shall be a 3.5mm stereo headphone jack for monitoring the processed audio before being transmitted.

Two BNC (50Ω) baseband output jacks shall be provided on the back panel for more coverage needs. The TX9 emitter panels must be used with the TX90 transmitter via RG58 coax cable.

The transmitter shall be powered by an external 24VAC, 50-60 Hz, 35VA power supply. The power connector shall be a three pin Molex type. Additional emitters shall require individual external power supplies.

The transmitter shall be covered by a five-year warranty on parts and labor. The transmitter shall be the Williams Sound Corp. model WIR TX90.

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Sound Plus™ Infrared Transmitter, Model WIR TX90

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