




Model UHF-R™ Wireless User Guide



Model UHF-R™ Wireless User Guide

! IMPORTANT SAFETY INSTRUCTIONS !

1. READ these instructions.
2. KEEP these instructions.
3. HEED all warnings.
4. FOLLOW all instructions.
5. DO NOT use this apparatus near water.
6. CLEAN ONLY with dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. DO NOT defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. PROTECT the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. ONLY USE attachments/accessories specified by the manufacturer.
12.  USE only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. UNPLUG this apparatus during lightning storms or when unused for long periods of time.
14. REFER all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. DO NOT expose the apparatus to dripping and splashing. DO NOT put objects filled with liquids, such as vases, on the apparatus.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.



This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

WARNING: Voltages in this equipment are hazardous to life. No user-serviceable parts inside. Refer all servicing to qualified service personnel. The safety certifications do not apply when the operating voltage is changed from the factory setting.

Contents

Important Safety Instructions	3
Feature Overview	6
System Components	7
Receiver Controls and Connectors	8
Receiver LCD Interface	9
Receiver Parameters	9
Automatic Frequency Selection	11
Networking Receivers	12
Handheld and Bodypack Transmitter Controls and Connectors	13
Transmitter LCD Interface	13
Transmitter Batteries	13
Transmitter Parameters	14
Setting Transmitter Gain	14
RF Safety Mode	14
Automatic Transmitter Sync	15
Troubleshooting	16
Specifications	17
Replacement Parts and Accessories	19
UHF-R Wireless System Compatibility Guide	69

Feature Overview

The UHF-R™ Wireless Microphone System uses the latest wireless technology, delivers outstanding audio clarity, and is rugged and reliable. It is easy to set up and operate with advanced features for professional installations requiring multiple wireless microphone systems.

Frequency Band Selection

Shure offers wireless systems in a selection of *bands* that conform to the different government regulations of specific nations or geographic regions. These regulations help limit radio frequency (RF) interference among different wireless devices and prevent interference with local public communications channels, such as television and emergency broadcasts.

The system's band and frequency range are identified on the face of the receiver and transmitter. For example, "H4 518–578 MHz."

For information on bands available in your area, consult your local dealer or phone Shure. More information is also available at Shure's website (www.shure.com).

Groups and Channels

To transmit audio through a wireless system, the transmitter and receiver must be set to the same radio frequency, or *channel*. A wide selection of channels allows more microphones to be used at the same time, since each microphone must operate on a different channel. It also provides a greater choice of *open channels*—those that are free from interference from television broadcasts, electronic devices, or other wireless systems.

A *group* is a selection of compatible channels. Wireless microphones work better together when set to channels in the same group.

Automatic Frequency Selection

The following features scan the RF environment to find the best group and channel settings for a particular installation.

- **Group Scan**—finds the group with the most open channels, then sets all networked receivers to channels in that group.
- **Channel Scan**—finds the first open channel in the currently selected group and sets the receiver to that channel.

Follow the steps on page 11 for instructions on using these features.

Automatic Transmitter Sync

This feature automatically transfers the group and channel settings from a receiver to a transmitter. You can also program other transmitter settings on a receiver and transfer those settings too. See page 15.

Interface Lock

This feature locks the receiver and transmitters so that users cannot change settings. The transmitter power switch can also be disabled so that the transmitter remains on if the power switch is accidentally toggled during a performance.

Audio Gain Structure

The following settings allow you to adjust audio gain throughout the system:

- **Sensitivity** (bodypack only). A 25 dB range of gain adjustment at the bodypack transmitter input.
- **Transmitter Gain**. A 30dB range of audio gain adjustment within the transmitter (affects audio level at the receiver, as indicated by the **Audio** LEDs.)
- **Output Level**. 32 dB of attenuation at the receiver output, plus a mute setting.
- **Mic/Line switch**. –30 dB pad for matching audio levels at the receiver XLR output.

Networking

Each receiver has an RJ-45 port on the back for connecting to other receivers over an Ethernet network. Networking receivers allows you to automatically set channels for all the receivers with a single group scan command. You can also control and monitor all networked receivers through the Shure Wireless Workbench PC software.

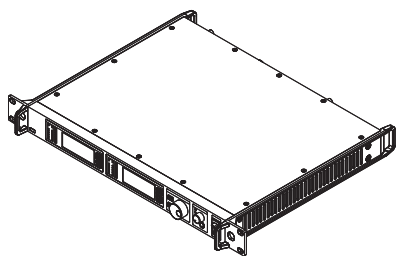
Shure Wireless Workbench Software

The Shure Wireless Workbench software on the supplied CD includes a variety of useful tools for installing and managing multiple wireless systems. Simply install the software on your computer and connect it to a network of receivers to monitor and control receivers and transmitters throughout the network. (See page 12 for more information on networking.)

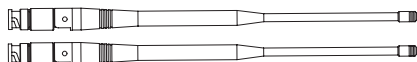
Instructions on using the Wireless Workbench software are available in the online help files after you install the software.

System Components

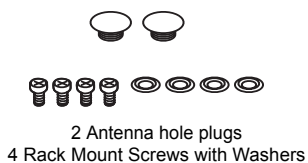
All systems include:



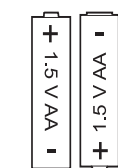
UR4S or UR4D Receiver
(UR4D pictured)



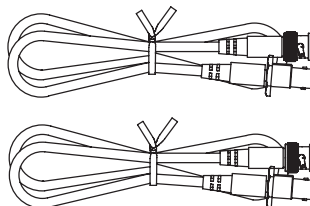
Two 1/2 Wave Antennas



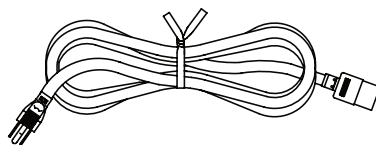
2 Antenna hole plugs
4 Rack Mount Screws with Washers



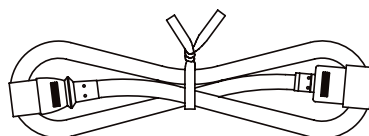
AA Batteries



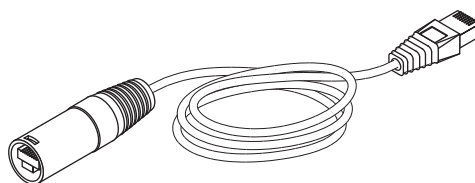
Two Antenna Cables



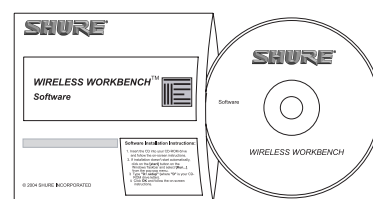
IEC Power Cable



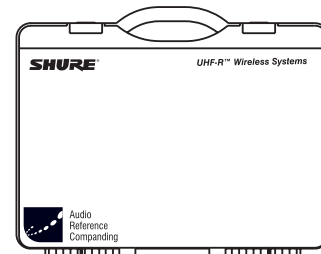
IEC Power Extension Cable



Ethernet Network Cable with "Ruggedized" plug



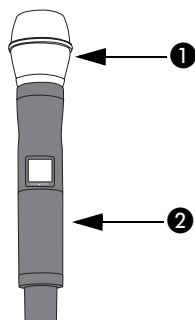
Shure's Wireless Workbench Software



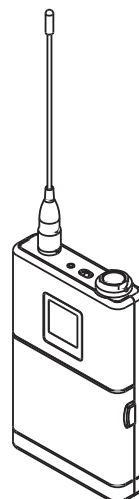
Transmitter Carrying Case

Handheld Systems Include:

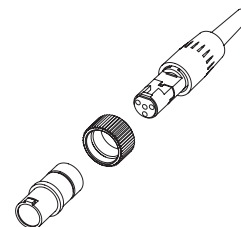
- ① Microphone Head (choice of SM58®, SM86, Beta 58A®, Beta 87A™, or Beta 87C™)
- ② UR2 handheld transmitter
- ③ Microphone clip



Bodypack Systems Include:

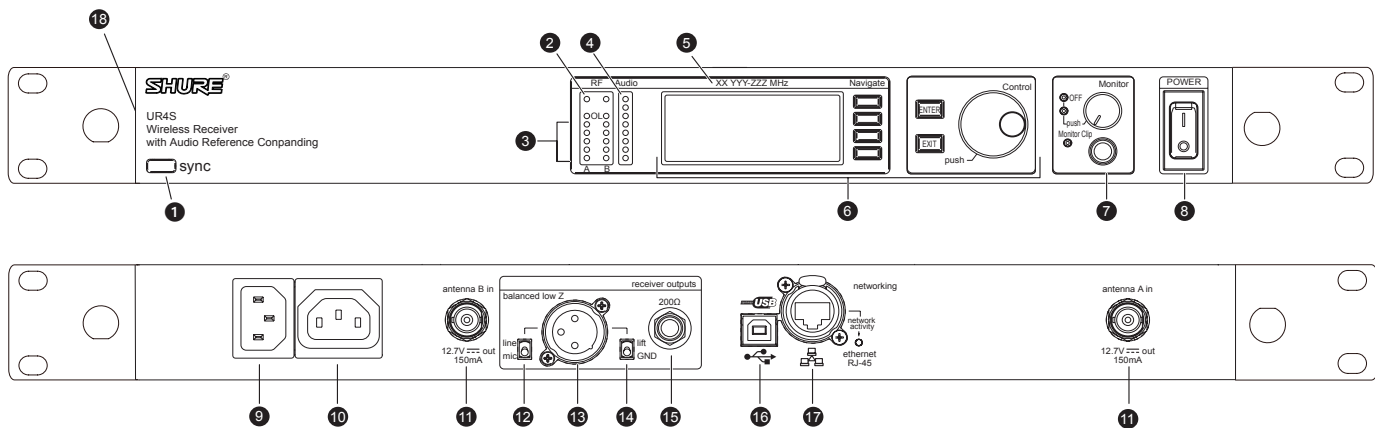


UR1 Bodypack Transmitter



Threaded TA4F Adapter

Receiver Controls and Connectors



❶ **SYNC** Infrared (IR) port. Transmits group, channel, and other settings to a transmitter. See page 15.

❷ **Squelch LEDs**.

- Blue (On) = Transmitter signal detected
- Off = no signal or signal squelched because of poor reception or no tonekey

NOTE: The receiver will not output audio unless at least one blue LED is illuminated.

❸ **RF** LEDs. Indicate RF signal strength from the transmitter at each antenna and diversity condition.

- Amber = normal
- Red = overload (greater than -25 dBm)

❹ **Audio** LEDs. Indicate audio signal strength from transmitter.

- Green = signal present
- Yellow = normal peak
- Red = overload

To correct this level, adjust the transmitter gain.

❺ Indicates the name and range of receiver frequency band.

❻ LCD Interface. Provides a convenient way to program the receiver from the front panel (see detail on next page).

❼ **Monitor**. 1/4" output jack and volume knob for headphones.

• **Monitor Clip** LED indicates headphone audio is clipping.

• **Dual models:** Push the knob to switch from receiver one to receiver two.

❽ **Power** switch. Powers the unit on and off.

❾ AC mains power input, IEC connector. 100–240 Vac.

❿ AC mains power passthrough (unswitched). Use with an IEC extension cable to supply AC power to another device.

⓫ Diversity antenna inputs A and B.

Note: Antenna inputs are DC biased. Use only antenna combiners and accessories listed in page 19. Some types of antenna splitters or other products may short the DC power and damage the receiver.

⓬ **Mic/Line** switch. Changes output level -30 dB (XLR output only).

⓭ Electrically balanced XLR output jack

⓮ **Lift/GND** switch. Lifts ground from Pin 1 of the XLR connector (default = **GND**).

⓯ Impedance balanced 1/4" output jack (200Ω)

⓰ USB jack for computer interface.

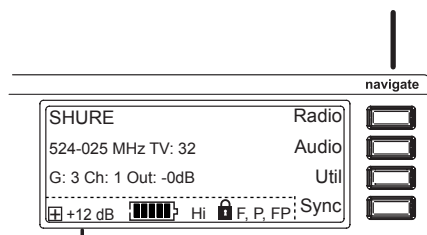
⓱ RJ-45 jack for Ethernet network interface. Accepts both regular and "ruggedized" RJ-45 plugs.

⓲ Temperature-activated fan ensures top performance in high temperature environments. Clean fan screen as needed to

Receiver LCD Interface

Menu Access

Press the **Navigate** key next to the menu item you want to select.

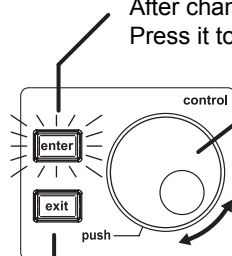


Transmitter Status Display

Everything under the dotted line reflects the settings for the transmitter, if present. (main title screen only).

Accept Changes

After changing a parameter, the **ENTER** button flashes. Press it to save the value.



Cursor Control

Push the **Control** wheel to move the cursor to the next item.

Turn the **Control** wheel to change a parameter value.

Exit/Cancel

Press the **Exit** button to cancel changes and return to the previous menu.

Receiver Parameters

Use the following instructions to set parameters through the LCD interface.

NOTE: After adjusting a parameter, you must press the flashing **ENTER** button to accept the change.

Group and Channel

Menu: **Radio**

- Push the **Control** wheel to move the cursor to the Group (**G**) or Channel (**Ch**) parameter.
- Turn the **Control** wheel to change the parameter.

Frequency

Menu: **Radio**

- Push the **Control** wheel to move the cursor to the integer value (**741.000 MHz**) or fractional value (**741.025**).
- Turn the **Control** wheel to change the value.

Automatic Transmitter Sync

Menu: **Sync**

- See page 15.

Receiver Name

Menu: **Util**

- Turn the **Control** wheel to change the letter.
- Push the **Control** wheel to move to the next letter.

Output Level

Menu: **Audio**

This setting adjusts the signal level at the XLR and 1/4" audio output jacks.

- Turn the **Control** wheel to change the relative level in dB. (0 dB to -32 dB).

- Turn the wheel all the way down to mute the outputs.

Squelch

Menu: **Radio > Squelch**

- Turn the **Control** wheel to change the parameter

Receiver Lock

When locked, the receiver settings cannot be changed from the front panel. However, you can still navigate the LCD menu to view the settings (and turn the lock off).

Menu: **Util > Lock**

- Turn the **Control** wheel to toggle the lock on or off (**ON** or **OFF**).

LCD View

Menu: **Util > Title**

- Turn the **Control** wheel to mark an item for display.
- Push the **Control** wheel to move to the next item.

LCD Contrast

Menu: **Util > Contrast**

- Turn the **Control** wheel to increase or decrease contrast.

Tonekey

Menu: **Radio > Squelch > Tonekey**

Tonekey squelch mutes the outputs unless the receiver detects a transmitter. Tonekey should be left on (**On**) except for certain troubleshooting operations.

Network Parameters

NOTE:

- The receiver reboots after you press **ENTER** to accept network parameter changes
- In dual models (UR4D), these settings affect *both* receivers (the dual receiver is treated as a single network device).

Set the Receiver Network Mode

Menu: `Util > Network`

1. Push the **Control** wheel to move the cursor to the `Mode` parameter.
2. Turn the **Control** wheel to set the receiver to one of the following values:
 - **DHCP**: use this setting when connecting the receiver to a DHCP server.
 - **Manual**: allows you to set the receiver to a specific IP address or subnet.

IP Address and Subnet

Menu: `Util > Network`

NOTE: To change these settings, the network mode must be set to **Manual**.

1. Push the **Control** wheel to move the cursor to any of the following parameters:
 - **IP** (IP address)
 - **Sub** (Subnet mask)
2. Turn the **Control** wheel to change the value.

Device ID

Assists in identifying receivers through the Wireless Workbench Software (has no effect on network identification).

Menu: `Util > Network`

1. Push the **Control** wheel to move the cursor to the `DevID` parameter.
2. Turn the **Control** wheel to set the receiver to change the value.

Custom Groups

This feature allows you to create your own groups of frequencies.

Creating new groups...

Menu: `Radio > Custom`

1. Turn the **Control** wheel to select a custom group number (U1, U2, U3, etc.)
2. Push the **Control** wheel to move to the

Automatic Frequency Selection

Follow these steps to use the channel scan and group scan features.

Before you begin...

- Install the receivers in the location where they will be used and power them on.
- Mute all inputs on mixing devices connected to receivers.
- Turn off all bodypack or handheld transmitters for the systems you are setting up.
- *Turn on potential sources of interference* such as other wireless systems or devices, computers, CD players, effects processors, and digital rack equipment so they are operating as they would be during the presentation or performance.

Single Receiver

1. Select **Radio > Scan > Chan Scan** using the **Navigate** keys on the receiver LCD interface.
2. Turn the **Control** wheel to select a group.
3. Press **Chan Scan**. The display indicates that the receiver is searching. Once it has finished, it displays the selected channel.
4. Press the flashing **ENTER** button to accept the suggested channel.
5. Sync the transmitter (see page 15).

Networked or Dual Receivers

With networked or dual receivers, you can take advantage of the group scan feature to set group and channel settings for all the receivers at the same time. (See page 12 for instructions on networking.)

Perform a group scan from any receiver...

1. Select **Radio > Scan > Group Scan** using the **Navigate** keys on the receiver LCD interface. The display indicates that the receiver is searching (**Scan In Progress**). Once it has finished, it displays the group with the most open channels.
2. If you wish, turn the **Control** wheel to change groups. The number of open channels for each group is displayed.
3. Press the flashing **ENTER** button to set all receivers to open channels in that group.

NOTE: The group scan feature only works for receivers in the same frequency band. For example, if you did a group scan on a “H4” band receiver, all “H4” band receivers would be set up, but not “J5” band receivers.

Multiple Receivers—Not Networked

If your receivers are not networked (or in different bands), the group scan cannot automatically set their group and channel settings. However, you can still take advantage of the group scan feature to find the group with the most open channels and the channel scan feature to find open channels in that group.

Find the group with the most open channels...

Perform a group scan using the steps for a networked receiver (above). However, *make a note of the selected group* before pressing the flashing **ENTER** button to accept it.

Set the receivers to open channels in that group...

Perform a channel scan on the remaining receivers using the steps for a single receiver (above). Make sure to select the same group for each receiver before performing the channel scan.

IMPORTANT: After setting the channel for the first receiver, immediately sync the transmitter for that receiver and leave it on so that the next receiver detects that channel during its channel scan. Otherwise, all the receivers will be set to the same open channel.

NOTE: Receivers in different bands (H4, J5, L3, etc.) do not need to be set to the same group.

Networking Receivers

Basic Network

Connect receivers to an Ethernet router with DHCP service. Use Ethernet switches to extend the network for larger installations.

Use the receiver's default network setting
(`Util > Network > Mode = DHCP`).

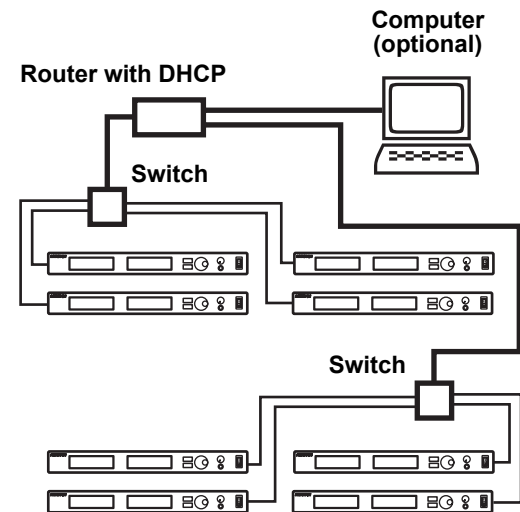
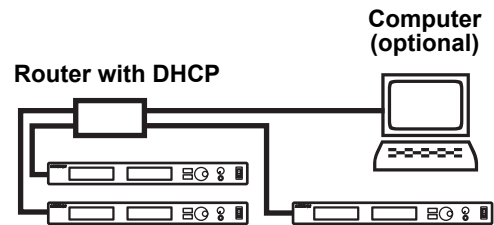
Accessing the Network with a Computer

If you want to use the Wireless Workbench software, connect your computer to the network and install the software from the CD that came with the receiver. Make sure your computer is configured for DHCP (from *Control Panel*, click *Network Connections*. Double-click on *Local Area Connection*. Select *Internet Protocol (TCP/IP)* and click *Properties*. Select *Obtain IP address automatically* and *Obtain DNS server address automatically* and click OK).

NOTE: Some security software or firewall settings on your computer can prevent you from connecting to the receivers. If using firewall software, allow connections on port 2201.

Using USB...

Connect the computer to the USB port on any of the receivers to access the whole network.



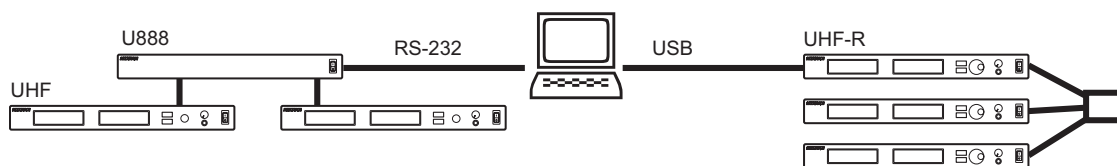
Static IP Addressing

The receiver also supports static IP addressing. Assign your own IP addresses (`Util > Network > Mode = Manual`). See "Network Parameters" on page 10.

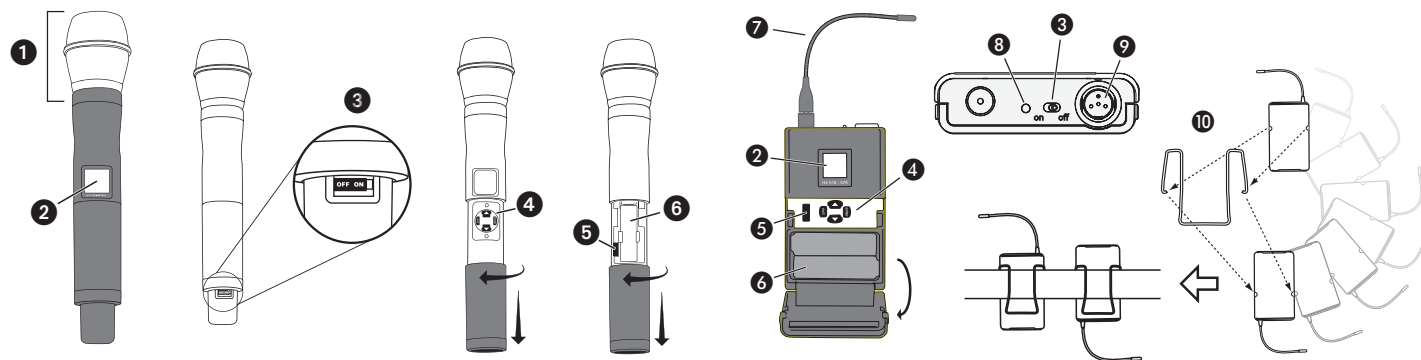
NOTE: Dual receivers use a single IP address, which may be set through either LCD interface.

Existing UHF Network Installations

Both Shure's UHF-R receivers and legacy UHF receivers can be networked to the same PC and accessed using the latest Wireless Workbench software.

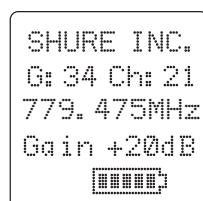


Handheld and Bodypack Transmitter Controls and Connectors



- ① Interchangeable microphone head (BETA 87A pictured).
- ② LCD Panel.
- ③ Power Switch.
- ④ Control buttons for LCD interface.
- ⑤ Infrared (IR) port. See page 15.
- ⑥ Battery compartment.
- ⑦ Flexible Antenna.
- ⑧ Power LED.
- ⑨ 4-Pin Microphone Input Jack.
- ⑩ Reversible Belt Clip.

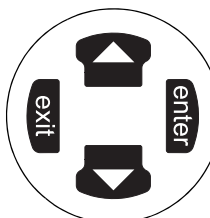
Transmitter LCD Interface



Main Menu

exit Key. Move to the left, or exit without saving changes.

Up Arrow Key. Scroll up or increase a value.



enter Key. Press to select parameters and accept the selected value.

Down Arrow Key. Scroll down or decrease a value.

Transmitter Batteries

Transmitters operate on standard AA batteries. Turn off the transmitter before changing the batteries.

The battery fuel gauge displayed on the transmitter LCD gives an indication of remaining battery life, as shown below.

Transmitter Display	Approximate Hours Remaining (alkaline batteries)	
	Normal Power	High Power*
	7.5 to 9.5	5 to 6
	5.75 to 7.5	4 to 5
	4 to 5.75	3 to 4
	2 to 4	1.5 to 3
	15 minutes to 2 hours	10 minutes to 1.5

* High power setting not available with models sold in countries that prohibit its use.

Transmitter Parameters

Press **ENTER** from the main menu to access the following parameters:



G: 34 Ch: 21
779.475MHZ
Gain +20dB
SHURE INC.

Group (G) and Channel (Ch). Must match the receiver's settings.

Frequency (MHz). Manual frequency selection in 0.025 MHz increments.

Gain (Gain). Adjusts audio level from –10 dB to +20 dB.

Sensitivity (Sens) (bodypack only).

Sets audio input to +15 dB, 0 dB, or –10 dB.

Name Display. 12-digit ASCII.

Use the following key combinations to access additional features and parameters:

hold + tap **LCD Panel**
Changes LCD Panel

hold + tap **Frequency Lock**
Toggles setting. When enabled, frequency cannot be changed, and a transmitter sync *will not* overwrite the frequency setting.

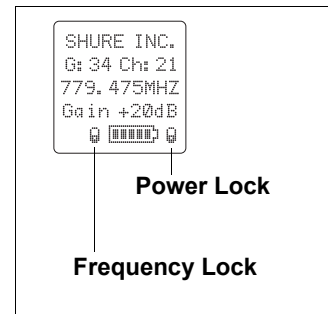
hold + tap **Power Lock**
Toggles power lock. When locked, power switch does not turn off transmitter.

hold + hold **RF power level setting***
Use the arrow keys to select normal (10 mW) or high power (50/100 mW**). Use the normal power setting to conserve batteries or prevent RF overload at the receiver.

* High power setting not available with models sold in countries that prohibit its use.

** High power value varies with model.

Lock Indicators



Setting Transmitter Gain

Adjust the transmitter gain and input sensitivity so that the **Audio** LEDs on the receiver peak within the yellow range during use. On the bodypack transmitter, you can change the sensitivity setting to compensate for different audio levels when connecting different instruments or microphones to the input.

To adjust gain, turn on the transmitter and press the **enter** button. Scroll down to the **Gain** parameter or the **Sens** parameter (bodypack only) and press **enter** again. Use the arrow keys to adjust the setting and press **enter** to save it (**Exit** cancels without saving).

RF Safety Mode

This special feature temporarily mutes RF broadcast. This allows you to change frequency settings on a transmitter without accidentally “cutting in” on a channel being used by another transmitter.

1. Turn the transmitter off.
2. Hold down **exit** key while turning on the transmitter power (for handheld microphones, you need to pull the battery cover off the handle). The LCD flashes while the unit is in RF safety mode.
3. Change group and channel settings as you normally would—the transmitter will not broadcast.
4. Power the transmitter off and on to exit RF safety mode.

Automatic Transmitter Sync

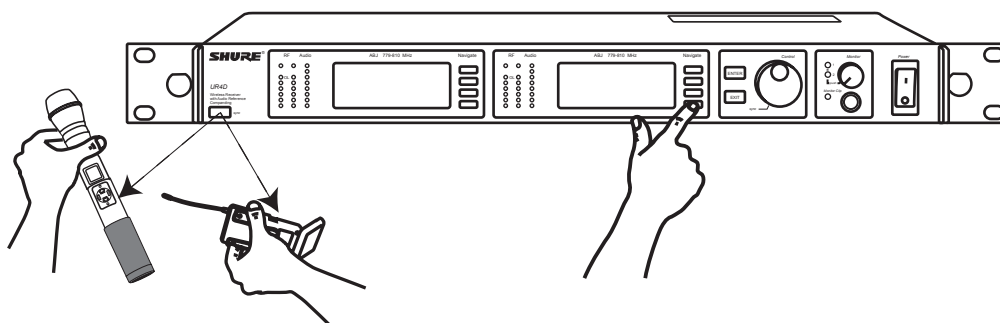
This feature automatically updates a bodypack or handheld transmitter's group and channel settings to match those of a selected receiver.

To perform a transmitter sync...

1. Open the transmitter battery cover to display the infrared (IR) port.
2. With the IR port exposed to the receiver, select **Sync > sync** from the receiver LCD interface.

The display on the receiver indicates whether the sync was successful. If the sync fails, try again, making sure that the IR port on the transmitter is exposed and directly faces the IR port on the receiver.

NOTE: Close the battery door before performing a sync on other transmitters.



To transfer other transmitter settings...

Optionally, you can transfer other transmitter settings from a receiver when you perform a sync. Use the following steps:

1. Select **Sync > Setup** from the receiver LCD interface.
2. Turn the **Control** wheel to change parameter settings.
3. Push the **Control** wheel to move to the next parameter.
4. Push the flashing **ENTER** button to save the settings.

The transmitter settings you set on the receiver remain for future syncs.

NOTE: If you don't want the sync to send a setting, set the parameter to **No Change**.

Available Settings...

The following settings are available from the **Sync > Setup** menu:

- Sensitivity (**Sens**) bodypack only
- Gain (**Gain**)
- RF Power (**Pwr**)
- Power and Frequency Lock (**Lock**), which has the following values:
 - Power lock only: (**Pwr Only**)
 - Frequency lock only: (**Freq only**)
 - Both: (**Freq and Pwr**)
 - Neither: (**Unlocked**)
- Custom Groups (**CG**):
 - On (**ON**): Send custom groups to transmitters during sync
 - Off (**OFF**): Do not send custom groups (reduces sync time)

Troubleshooting

Issue	See Solution...
No sound	Power, Cables, or RF
Faint Sound or Distortion	Gain
Lack of range, unwanted noise bursts, or drop outs	RF
Cannot turn transmitter off or change frequency settings, or can't program receiver	Interface Locks
Excessive hum or buzzing	Ground lift

Power

Make sure that the transmitter and receiver are receiving sufficient voltage. The receiver requires at least 90 Vac. Check the battery indicator on the transmitter and replace battery if necessary.

Gain

Adjust the transmitter gain and sensitivity settings (see page 14) or the receiver output level (page 9), or toggle the **mic/line** switch on the back of the receiver.

Cables

Check that all cables and connectors are in working order.

Ground Lift

Lifting the ground on pin 1 of the XLR output on the receiver can sometimes remove hum or buzz in the audio signal. Set the **GND/LIFT** switch on the receiver to **LIFT** if you are using the XLR connector.

Interface Locks

Both the transmitter and receiver can be locked to prevent accidental changes. On transmitters, look for a lock symbol on the LCD and use the key combinations illustrated on page 14 to turn it off.

To turn off the receiver interface lock, see page 9.

Radio Frequency (RF)

Using the RF LEDs

If neither blue **RF** LED is illuminated, then the receiver is not detecting the presence of a transmitter.

The amber **RF** LEDs indicate the amount of signal being received. This signal could be from the transmitter, or it could be from an interfering source, such as a television broadcast. Turn the transmitter off. If more than one or two of the amber **RF** LEDs are still illuminated, then that channel has too much interference, and you should try a different channel.

The red **RF** LED indicates RF overload. This will usually not cause a problem unless you are using more than one system at the same time, in which case, it can cause interference between systems.

Compatibility

- Perform a transmitter sync, or make sure the transmitter and receiver are set to the same group and channel.
- Look at the label on the transmitter and receiver to make sure they are in the same band (H4, J5, L3, etc...).

Reducing Interference

- Use a different channel or perform an automatic group or channel scan (see page 11).
- For multiple systems, check that all systems are set to channels in the same group (systems in different bands do not need to be set to the same group).
- Maintain a line of sight between transmitter and receiver antennas
- Move receiver antennas away from metal objects or other sources of RF interference (such as CD players, computers, digital effects, network switches, network cables and Personal Stereo Monitor (PSM) wireless systems).
- Eliminate RF overload (see below).

Increasing Range

If the transmitter is more than 6 to 60 m (20 to 200 ft) from the receiver antenna, you may be able to increase range by doing one of the following:

- Reduce interference (see above)
- Increase transmitter RF power level (see page 14).
- Use an active directional antenna, antenna distribution system, or other antenna accessory to increase RF range (see page 19).

Eliminating RF Overload

If you see the red **RF** LED on a receiver, reduce the transmitter RF power level (see page 14) or move the transmitter further away from the receiver—at least 6 m (20 ft). If you are using active antennas, reduce antenna or amplifier gain.

Specifications

Frequency Range and Transmitter Output Power

Band	Range	Transmitter power (mW)	
		Handheld	Bodypack
H4E, H4	518-578 MHz	10 / 50 10 / 50	10 / 50 10 / 100
J5E, J5	578-638 MHz (578-608, 614-638)	10 / 50 10 / 50	10 / 50 10 / 100
L3E, L3	638-698 MHz	10 / 50 10 / 50	10 / 50 10 / 100
Q5	740-814 MHz	10 / 50	10 / 50
R9	790-865	10 / 50	10 / 50
Q6	740-752 MHz	10	10
A24	779-788 / 797-806 MHz	10	10
JBX	806-810 MHz	10	10
Q10	740-798 MHz	10 / 50	10 / 50

NOTE

This Radio equipment is intended for use in musical professional entertainment and similar applications.

This Radio apparatus may be capable of operating on some frequencies not authorized in your region. Please contact your national authority to obtain information on authorized frequencies and RF power levels for wireless microphone products.

RF Carrier Frequency Range

518-865 MHz, depending on region

Working Range

UR1, UR2: 150 m (500 ft.), under typical conditions
500 m (1600 ft) **line-of-sight, outdoors**
for a single system

NOTE: Actual working range depends on RF signal absorption, reflection and interference

Audio Frequency Response

40 – 18,000 Hz, ± 1 dB.

NOTE: Overall system frequency response depends on the microphone element

Gain Adjustment Range

UR1: –20 to +35 dB

UR2: –10 to +20 dB

Modulation

FM (45 kHz max. deviation), compander system with pre- and de-emphasis

RF Power Output

See table above.

Dynamic Range

>105 dB, A-weighted

Image Rejection

>110 dB typical

RF Sensitivity

UR4S	UR4D
–110 dBm Typical 12 dB SINAD	–107 dBm Typical 12 dB SINAD
–105 dBm Typical 30 dB SINAD	–102 dBm Typical 30 dB SINAD

Spurious Rejection

>90 dB typical

Ultimate Quieting (ref. 45 kHz deviation)

>100 dB, A-weighted

Signal Polarity

Positive pressure on microphone diaphragm (or positive voltage applied to tip of WA302 phone plug) produces positive voltage on XLR output pin 2 with respect to XLR pin 3 and on the tip of the 1/4-inch output jack.

System Distortion (ref. ± 45 kHz deviation, 1 kHz modulation)

<0.3% Total Harmonic Distortion typical

Power Requirements

UR1, UR2: Two 1.5V AA batteries

UR4: 100 to 240 Vac, 50/60 Hz

Current Drain

UR1, UR2: 180 mA max. (normal RF power setting)

240 mA max. (high RF power setting)

UR4D, UR4S: 0.8 Amps max.

Battery Life (Typical)

UR1, UR2: 9.5 hours (low power)

6 hours (high power)

Operating Temperature Range

–18° to +57° C (0° to +135° F)

NOTE: Battery characteristics may limit this range

NOTE: Electrical safety approval is based on a maximum ambient temperature of 35°C (95°F).

Overall Dimensions

UR1: 98 mm L x 60 mm W x 17 mm D (3.84 x 2.38 x 0.66 in.)

UR2/SM58: 261 mm L x 51 mm Dia. (10.27 x 2 in.)

UR2/SM86: 261 mm L x 51 mm Dia. (10.27 x 2 in.)

UR2/SM87A: 254 mm x 51 mm Dia. (10 x 2 in.)

UR2/BETA 58: 258 mm L x 51 mm Dia. (10.15 x 2 in.)

UR2/BETA 87A, UR2/BETA 87C: 254 mm x 51 mm Dia. (10 x 2 in.)

UR4S/UR4D: 44 mm H x 483 mm W x 366 mm D
(1.72 x 19.00 x 14.39 in.)

Net Weight

UR1: 97 g (3.4 oz.) without battery

UR2/SM58: 356 g (12.6 oz.) without battery

UR2/BETA 58: 314 g (11.1 oz.) without battery

UR2/SM86: 317 g (11.2 oz.) without battery

UR2/SM87A: 298 g (10.5 oz.) without battery

UR2/BETA 87A, UR2/BETA 87C: 325 g (11.5 oz.) without battery

UR4S: 4.8 kg (10.6 lbs)

UR4D: 5.0 kg (11.0 lbs)

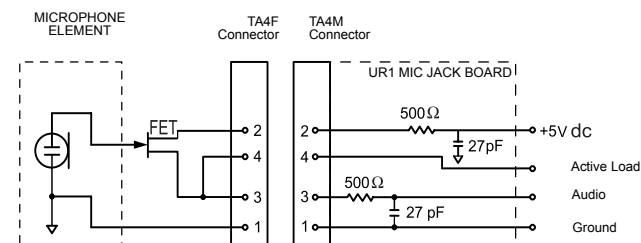
Housing:

UR1: Cast magnesium

UR2: Aluminum die-cast handle and aluminum machined battery cup

UR4S, UR4D: Galvanized steel

Wiring



NOTE: LAVALIER MIC TIES PINS 3 AND 4 TOGETHER—GUITAR CABLE DOES NOT.

Inputs and Outputs

UR1 Transmitter Audio Input

Connector:	4-Pin male mini connector (TA4M)
Input Configuration:	Unbalanced, active
Actual Impedance:	>1 M Ω
Maximum Input Level:	+10 dBu (unpadded) +20 dBu (padded)
TA4M Connector Pin Assignments:	Pin 1: Ground Pin 2: +5 Vdc bias Pin 3: Audio Pin 4: Tied through active load (on main board) to Ground. (On instrument adapter cable, Pin 4 floats)

UR1 Transmitter RF Output

Connector:	SMA
Actual Impedance:	50 Ω
Pin Assignments:	Shell = Ground Center = Signal

UR2 Transmitter Audio Input

Input Configuration:	Unbalanced, active
Actual Impedance:	>1 M Ω
Maximum Input Level:	3 Vp-p (0.5 dBV) for 1% THD at minimum gain setting using 1 kHz signal.

UR2 Transmitter RF Output

Connector:	SMA
Actual Impedance:	50 Ω
Pin Assignments:	Shell = Ground Center = Signal

Receiver Input

	Antenna	Power
Connector Type:	BNC	IEC
Actual Impedance:	50 Ω	-
Nominal Input Level:	-95 to -30 dBm	100-240 VAC, 50/60 Hz
Maximum Input Level:	-20 dBm	240 VAC, + 10%, 50/60 Hz
Pin Assignments:	Shell = Ground Center = Signal	IEC Standard
Bias Voltage*	12.2 Vdc @ 150 mA maximum	N/A

* For remote antenna amplifiers

Receiver Audio Output

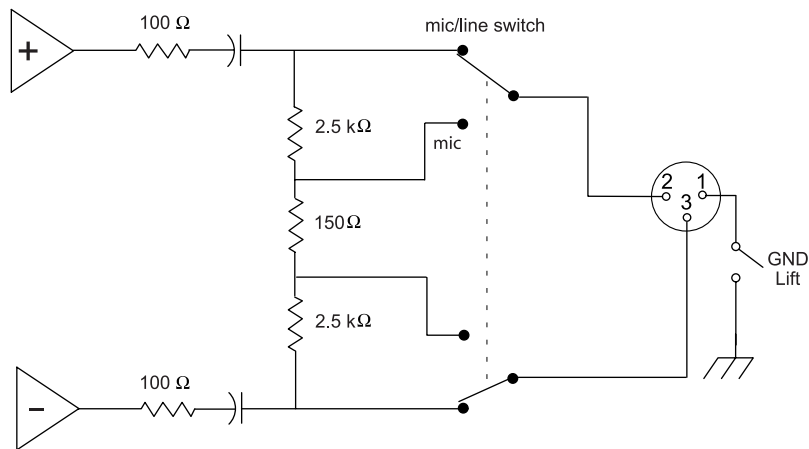
	Monitor (1/4" Headphone)	1/4" Phone	XLR
Output Configuration:	Unbalanced mono, 1/4 inch	Impedance Balanced	Electrically Balanced
Actual Impedance:	50 Ω	200 Ω	200 Ω (active balanced) (150 Ω mic)
Maximum Output Level	1 Watt @ 63 Ω	+18 dBu	+24 dBu (-6 dBu mic) with 100 Hz modulating tone
Pin Assignments:	Tip = Hot Ring = Hot Sleeve = Gnd	Tip = Hot Ring = no signal Sleeve = Gnd	1 = Ground 2 = Audio + 3 = Audio -
Phantom Power Protection?	No	Yes	Yes

Computer/Network Interface

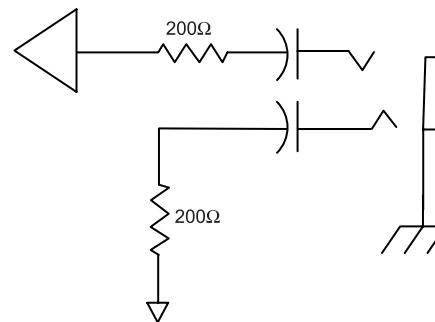
Ethernet	USB*
RJ45	USB Series B Receptacle

* USB-IF logo is a trademark of Universal Serial Bus Implementers Forum, Inc.

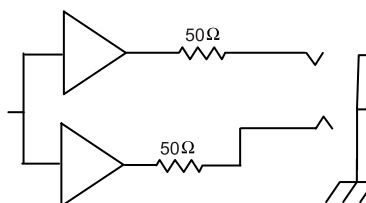
XLR



1/4" Phone



1/4" Monitor/headphone



Replacement Parts and Accessories

Furnished Accessories

Microphone Stand Adapter (UR2)	WA371
Zipper Bag (UR1)	26A13
Zipper Bag (UR2)	26A14
Antenna Extension Cables (2)	95A9023
Hardware Kit, Locking Connector	WA340
Antenna (UR1), 518-578 MHz	UA710
Antenna (UR1), 578-698 MHz	UA720
Antenna (UR1), 740-865 MHz	UA730
Two Antennas (UR4), Band Dependent (see table)	UA820
Transmitter Carrying Case	95A9053

Optional Accessories

SM58 Head with Grille	RPW112
SM86 Head with Grille	RPW114
BETA 58 Head with Grille	RPW118
BETA 87A Head with Grille	RPW120
BETA 87C Head with Grille	RPW122
SM87A Head with Grille	RPW116
Matte Silver Grille (SM58)	RK143G
Matte Silver Grille (SM86)	RPM266
Matte Silver Grille (BETA 58)	RK265G
Black Grille (SM87)	RK214G
Matte Silver Grille (BETA 87A)	RK312
Matte Silver Grille (BETA 87C)	RK312
Black Grille (BETA 58)	RK323G
Black Grille (BETA 87A/BETA 87C)	RK324G
Belt Clip	44A8031
Body-Pack Pouch (Black), UR1	WA580B
Body-Pack Pouch (White), UR1	WA580W

Antenna Combiners and Accessories

- Antennas and receivers must be from the same frequency band.
- The supplied 1/2 wave antennas can be remotely mounted or mounted directly to the UA845.
- Antennas and cables for use with the UA845 can also be used with stand-alone UHF-R receivers.

Passive Antenna/Splitter Combiner Kit (recommended for 2 receivers)	UA221
UHF Antenna Power Distribution Amplifier (recommended for 3 or more receivers)	UA845-
U.S.A.	UA845US
Europe	UA845E
UK	UA845UK
1/2 Wave, Omnidirectional, Wideband Antenna	UA860WB
Active Directional Wideband Antenna	UA870WB
Wideband In-Line RF Amplifier	UA830WB
Passive Unidirectional Wideband Antenna	PA805WB
1/2 wave antennas (2)	
H4E, H4 Bands	UA820H4
J5E, J5 Bands	UA820J
L3E, L3 Bands	UA820L3
Q5, Q6, Q10 Bands	UA820Q
R9, ABJ Bands	UA820A
25' Antenna Cable (RG-8/X)	UA825
50' Antenna Cable (RG-8/X)	UA850
100' Antenna Cable	UA8100

Architects' and Engineers' Specifications

The wireless system shall operate in the UHF band between 518 MHz and 865 MHz, with the specific range being dependent on the user's locale. The system shall include the option of changing the operating frequency in order to avoid RF interference, enabling up to 108 systems to operate simultaneously in the same location. Preconfigured group, channel and frequency setups shall be available to ensure that multiple systems in use do not interfere with one another.

All transmitters shall be powered by 2 AA batteries and shall have a power on/off switch. The bodypack will have an LED indicating that power is on. Available transmitters shall include: a body pack for use with electric guitars, basses, and other electric instruments, and a handheld microphone for vocals. The transmitters shall have a DC/DC converter to ensure consistent performance, even if battery voltages change.

The receiver shall have a user-programmable, menu-driven LCD showing group, channel, frequency, name, squelch level, and locked/unlocked status. The system shall use technology such as MARCAD signal combining circuitry to improve reception, minimize signal dropouts, and achieve the best possible signal-to-noise ratio. An equalizer, tone key squelch, and noise squelch circuitry shall be built into the system to provide optimal sound quality and minimize unwanted noise. The receiver shall include dual RF meters (one for each antenna), an audio level meter, and a Networking Interface connector for computer control and monitoring. The receiver shall have a volume control and an adjustable noise squelch control.

The system shall be the Shure UHF-R Wireless.

Certification

UR1, UR2: Type Accepted under FCC Parts 74 (FCC ID: "DD4UR1" & "DD4UR2"). Certified by IC in Canada under RSS-123 and RSS-102 ("IC: 616A-UR1" and "IC: 616A-UR2"). Meets the essential requirements of the European R&TTE Directive 99/5/EC (ETSI EN 300-422 Parts 1 & 2, EN 301 489 Parts 1 & 9) and is eligible to carry the CE marking. **CE** 0682 ①

UR4S, UR4D: Authorized under the Declaration Of Conformity provision of FCC Part 15. Certified under Industry Canada to RSS-123 ("IC: 616A-UR4"). Meets the essential requirements of the European R&TTE Directive 99/5/EC (EN 301 489 Parts 1 & 9, EN 300 422 Parts 1 and 2). Eligible to carry the CE marking. **CE**

Conforms to Australian EMC requirements and is eligible for C-Tick marking. **C N108**

Have been granted the following Country Safety Approvals:

cULus Mark for US and Canada: Meets UL6500 and CSA/CAN E60065. UL GS-Certified to EN60065.

LICENSING INFORMATION:

Licensing: A ministerial license to operate this equipment may be required in certain areas. Consult your national authority for possible requirements.

Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate the equipment. Licensing of Shure wireless microphone equipment is the user's responsibility, and licensability depends on the user's classification and application, and on the selected frequency. Shure strongly urges the user to contact the appropriate telecommunications authority concerning proper licensing, and before choosing and ordering frequencies.

Information to User

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 Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Note: EMC conformance testing is based on the use of supplied and recommended cable types. The use of other cable types may degrade EMC performance

SHURE®

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