Contents

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 7 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 11.

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 accidently 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.
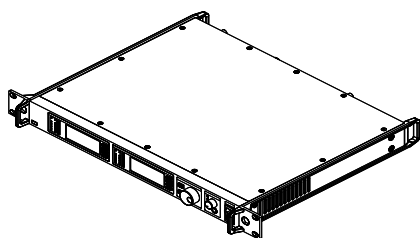
Shure Wireless Workbench Software

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 8 for more information on networking.)
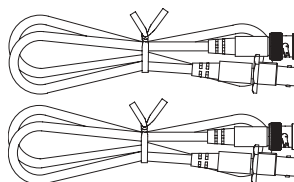
Instructions on using the Wireless Workbench software are available in the online help files after you install the software.
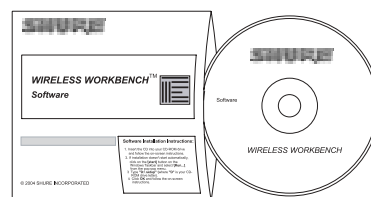
System Components

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
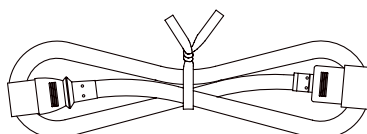
IEC Power Cable

IEC Power Extension Cable
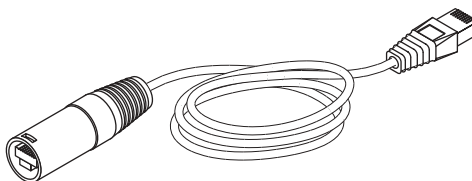
Ethernet Network Cable with "Ruggedized" plug

Shure's Wireless Workbench Software

Transmitter Carrying Case

Handheld Systems Include:

❶ Microphone Head (choice of SM58®, SM86, Beta 58A®, Beta 87A™, or Beta 87C™)

❷ UR2 handheld transmitter

❸ Microphone clip
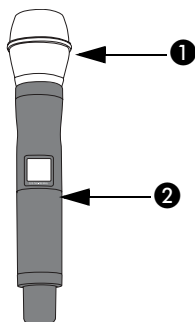
Bodypack Systems Include:

Threaded TA4F Adapter
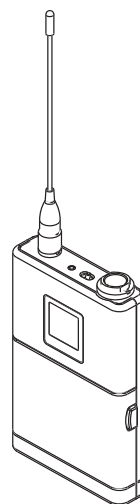
UR1 Bodypack Transmitter

Receiver Controls and Connectors
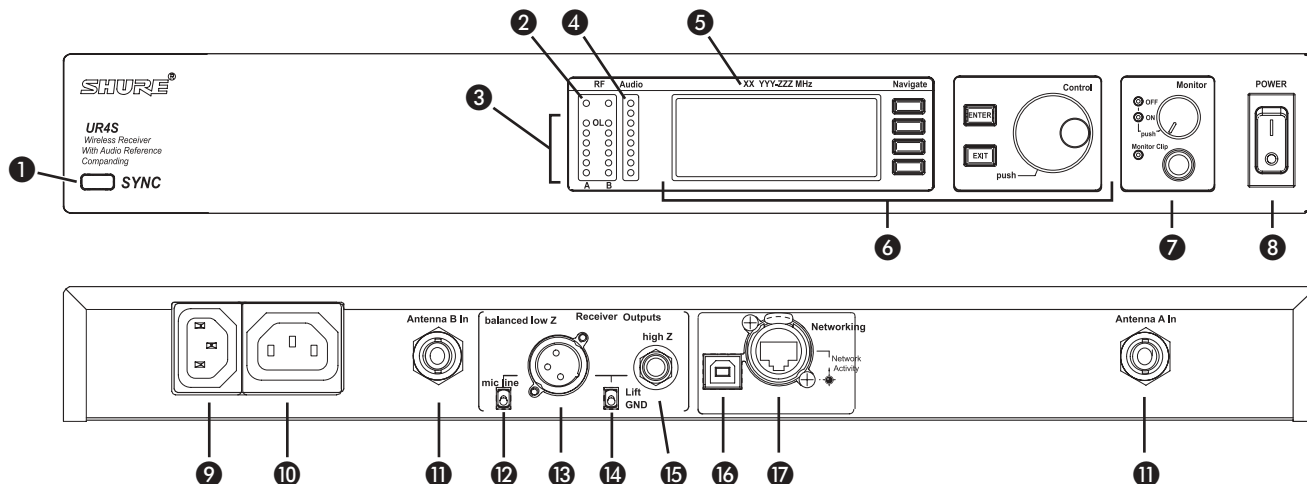
❶ **SYNC** Infrared (IR) port. Transmits group, channel, and other settings to a transmitter. See page 11.

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 –20 dBm)

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

- Green = signal present
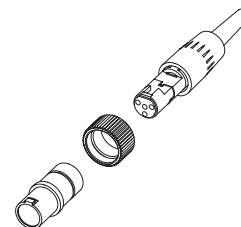
- Yellow = normal peak

- 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.

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.

4

Receiver LCD Interface

Menu Access

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

```
                              Navigate
 ┌─────────────────────────┐
 │ SHURE            Radio  │ ▭
 │ 524-025 MHz TV: 32      │ ▭
 │ G: 3 Ch: 1 Out: -0dB  Util │ ▭
 │ +12 dB ▐▐▐▐▐ 100 mW 🔒 Sync │ ▭
 └─────────────────────────┘
```
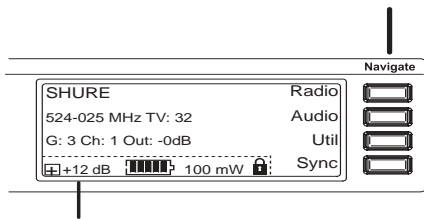
Accept Changes

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

Cursor Control

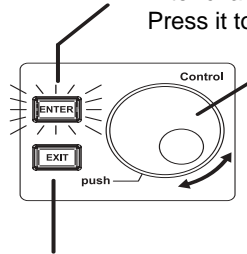Push the **Control** wheel to move the cursor to the next item.

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

Transmitter Status Display

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

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.OOO MHz) or fractional value (741.O25).
- Turn the **Control** wheel to change the value.

Automatic Transmitter Sync

Menu: Sync

- See page 11.

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. <u>Push</u> the **Control** wheel to move the cursor to the Mode parameter.
2. <u>Turn</u> the **Control** wheel to set the receiver to one of the following values:
- Default: sets the receiver to a unique IP address based on its MAC address
- DHCP: use this setting when connecting the receiver to a DHCP server.
- Manual: allows you to set the receiver to a specific IP address, subnet, or gateway

IP Address, Subnet and Gateway

Menu: Util > Network

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

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

Device ID

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

Menu: Util > Network

1. <u>Push</u> the **Control** wheel to move the cursor to the DevID parameter.
2. <u>Turn</u> the **Control** wheel to set the receiver to change the value.

Custom Groups

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

~~Selecting existing custom groups...~~

~~Menu: Radio > Custom~~

- ~~Push the **Control** wheel to move the cursor to the Group parameter.~~
- ~~Turn the **Control** wheel to select a custom group number (C1, C2, C3, etc.)~~

Creating new groups...

Menu: Radio > Custom

1. <u>Turn</u> the **Control** wheel to select a custom group number (C1, C2, C3, etc.)
2. <u>Push</u> the **Control** wheel to move to the Channel parameter and <u>turn</u> it to select a channel (O1, O2, O3, etc.)
3. <u>Push</u> the **Control** wheel to move to the Freq parameter and select a frequency for that channel.
4. Push the NEXT menu key to select a frequency for the next channel in that group.

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. <u>Turn</u> 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 11).

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 8 for instructions on networking.)

Perform a group scan from any receiver...

1. Select `Radio > Auto > Grp 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, <u>immediately</u> sync the transmitter for that receiver and <u>leave it on</u> 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

Ethernet Cable

Ethernet Hub/Switch
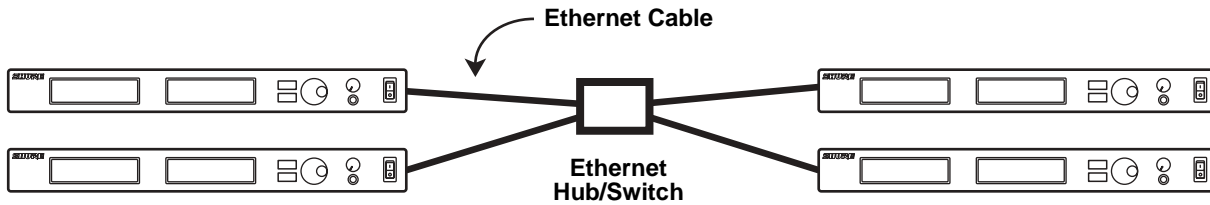
Simply connect the receivers to a network hub, such as an Ethernet switch. No network configuration is required if the receiver is set to the default network setting (Util > Network > Mode = Default).

Connecting a PC

USB

To access receivers with the Wireless Workbench software, connect the PC to the USB port of any of the receivers in the network.

Connecting a PC Using Ethernet

ETHERNET

For some installations, you may wish to connect a PC to a receiver network using an Ethernet connection instead of USB.

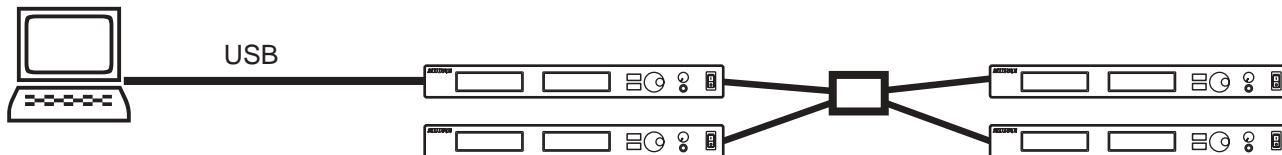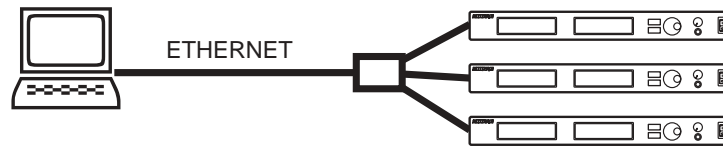1. Connect the PC to the receiver network at the network hub.
2. Set the computer's IP address to 10.0.0.2 and the subnet mask to 255.0.0.0. To do this, go to *Control Panel*, open *Network Connections*, right-click on *Local Area Connection* and select *Properties*. Select *Internet Protocol (TCP/IP)* and click *Properties*.

DHCP Networks

To add receivers to an existing DHCP network, set all the networked receivers to use DHCP (Util > Network > Mode = DHCP, see page 6). You can access the receivers from any computer on the network that is running the Wireless Workbench software.

Other Network Configurations

UHF-R receivers operate on a network just like any other Ethernet device. Both static addressing and DHCP are supported. Each receiver ships with a unique IP address based on its MAC address, so in most situations, you don't need to change the receiver's network settings to connect it to a network.

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.

U888

RS-232

USB

UHF-R

UHF
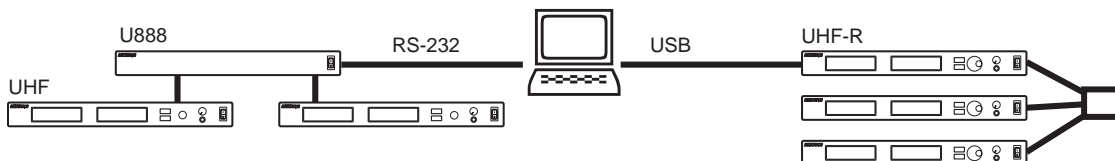
Handheld and Bodypack Transmitter Controls and Connectors
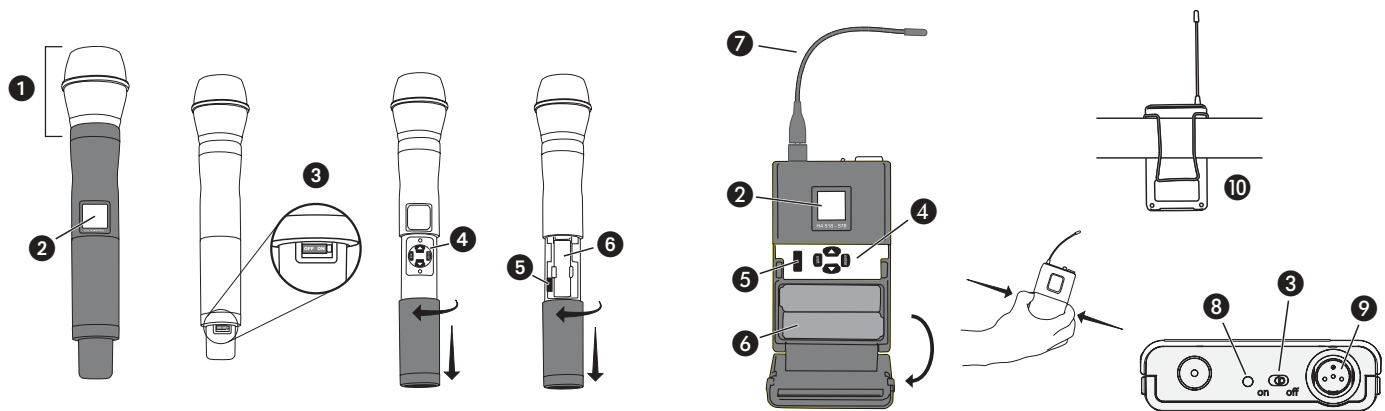
❶ Interchangeable microphone head (BETA 87A pictured).

❷ LCD display Panel.

❸ Power Switch.

❹ Control buttons for LCD interface.

❺ Infrared (IR) port. See page 11.

❻ Battery compartment.

❼ Detachable Flexible Antenna.

❽ Power LED.

❾ 4-Pin Microphone Input Jack.

❿ Belt Clip.

Transmitter LCD Interface

```
SHURE INC.
G: 34 Ch: 21
779.475MHz
Gain +20dB
[IIIIII]
```

Main Menu

Up Arrow Key. Scroll up or increase a value.
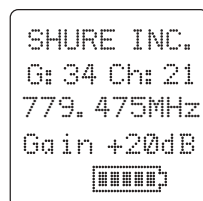
exit Key. Move to the left, or exit without saving changes.
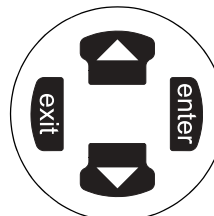
enter Key. Press to select parameters and accept the selected value.

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 approximate indication of remaining battery life, as shown below.

Transmitter Display	Approximate Hours Remaining (alkaline batteries)	
	Normal Power	High Power*
[IIIII]	7.5 to 9.5	5.5 to 6.5
[IIII]	5.75 to 7.5	5. to 5.5
[III]	4 to 5.75	4 to 5
[II]	2 to 4	2.5 to 4
[I]	15 minutes to 2 hours	15 minutes to 2.5 hours

* 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.
Set BL Freq
```

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:

Lock Indicators

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

Power Lock

Frequency Lock

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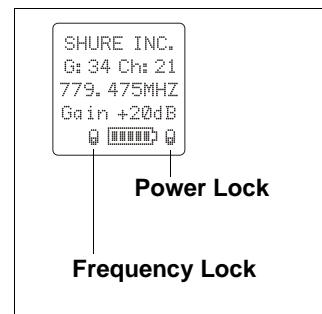
hold   hold   ***RF power level setting****
Use the arrow keys to select normal (10 mW) or high power (50/100 mW**). Use the normal power setting to conserve batteries or prevent RF overload at the receiver.

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

  ** High power value varies with model.

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 intruments 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** > **Send** 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.
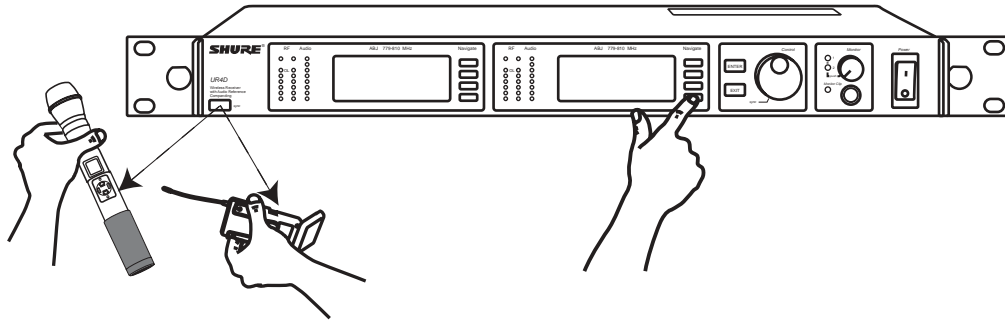
To transfer other transmitter settings...

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: (Unlock)

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 10) or the receiver output level (page 5), 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 10 to turn it off.

To turn off the receiver interface lock, see page 5.

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 7).
- 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, 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 10).
- Use an active directional antenna, antenna distribution system, or other antenna accessory to increase RF range (see page 15).

Eliminating RF Overload

If you see the red `RF` LED on a receiver, reduce the transmitter RF power level (see page 10) 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 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 100 ~~mW~~
J5E, J5	578-638 MHz (578-608, 614-638)	10 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 100 ~~mW~~
L3E, L3	638-698 MHz	10 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~ 10 ~~mW~~ / 100 ~~mW~~
Q5	740-814 MHz	10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~
R9	798-862 MHz	10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~
Q6	740-752 MHz	10 ~~mW~~	10 ~~mW~~
A24	779-788 / 797-806 MHz	10 ~~mW~~	10 ~~mW~~
JBX	806-810 MHZ	10 ~~mW~~	10 ~~mW~~
~~Q9~~	~~740-806 MHz~~	~~10 mW / 50 mW~~	~~10 mW / 50 mW~~
Q10	740-798 MHz	10 ~~mW~~ / 50 ~~mW~~	10 ~~mW~~ / 50 ~~mW~~

> **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
518-862 MHz, depending on region

Working Range
UR1, UR2: 152.4 m (500 ft.) ~~minimum,~~ under typical conditions; ~~487.6 m (1600 ft.) line of sight~~
NOTE: Actual working range depends on RF signal absorption, reflection and interference

Audio Frequency Response
50-18,000 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
~~UR1, UR2: 10/50 mW, 10/100 mW maximum~~ See table above.

Dynamic Range
~~>102 dB or~~ >110dB, ~~depending on region;~~ 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

~~1/4-inch Output~~ 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 ~~of low impedance output~~ and on the tip of the ~~high impedance~~ 1/4-inch output jack. ~~output~~

System Distortion (ref. ± 45 kHz deviation, 1 kHz modulation)
0.3% Total Harmonic Distortion typical

Power Requirements
UR1, UR2: Two 1.5V AA ~~alkaline~~ batteries ~~rechargeable batteries optional~~
UR4: ~~90~~ 100 to ~~230~~ 240 Vac, 50/60 Hz

Current Drain
UR1, UR2: 180 mA max. (normal RF power setting)
240 mA max. (high RF power setting)
UR4D: 0.8 Amps max.
UR4S: 0.8 Amps max.

~~Power Consumption~~
~~UR4S: 9.6 W min., 13.2 W max. 0.8 A max,~~
~~UR4D: 12 W min.,16 W max. 0.8 A max.~~
~~UA845: 15 W min., 16 W max.~~

Battery Life (Typical)
UR1, UR2: 8 hours (low power)

Operating Temperature Range
–18° to +57° C (0° to +135° F)
NOTE: Battery characteristics may limit this range change

> **NOTE:** Electrical safety approval is based on a maximum ambient temperature of 35°C.

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 49 mm Dia. (10.27 x 2 in.)
UR2/SM87A: 254 mm x 49 mm Dia. (10 x 2 in.)
UR2/BETA 58: 258 mm L x 53 mm Dia. (10.15 x 2 in.)
UR2/BETA 87A, UR2/BETA 87C: 254 mm x 50 mm Dia. (10 x 2 in.)
UR4S/UR4D: 43.5 mm H x 482.6 mm W x 365.38 mm D (1.718 x 19.000 x 14.385 in.)

Net Weight
UR1: 94 g (3 1/4 oz.) without battery
UR2/SM58: 346 g (12 oz.) without battery
UR2/BETA 58: 306 g (11 oz.) without battery
UR2/SM86: 308 g (11 oz.) without battery
UR2/SM87A: 301 g (10.5 oz.) without battery
UR2/BETA 87A, U2/BETA 87C: 315 g (11 oz) without battery
UR4S: 4.34 kg (9.5 lbs)
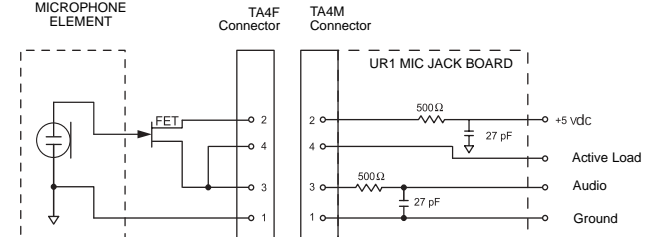UR4D: 4.54 kg (10 lbs)

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.

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Inputs and Outputs

UR1 Transmitter Audio Input

Connector:	4-Pin male mini connector (TA4M)
Input Configuration:	Unbalanced, active
Actual Impedance:	>1 MΩ (active load)
Maximum Input Level: Nominal?????	6 Vp-p (+7 dBV) for 1% THD at minimum gain setting using 1 kHz signal.
TA4M Connector Pin Assignments:	Pin 1: Tied to Ground Pin 2: Tied to +5 Vdc bias Pin 3: Tied to 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 MΩ (active load)
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

| Connector:	Antenna	Power Input
Connector Type:	BNC	IEC
Actual Impedance:	50 Ω	-
Nominal Input Level:	−95 to −30 dBm	100-240 VAC,50/60 Hz
Maximum Input Level:	+6 dBm (−20 dBm recommended)?nominal?	240 VAC, + 10%, 50/60 Hz
Pin Assignments:	Shell = Ground Center = Signal	IEC Standard
Bias Voltage* for Remote Power:	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 (150 Ω mic)
Maximum Output Level	1 Watt @ 63 Ω	+18 dBu	+24 dBu (−6 dBu mic)
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

XLR
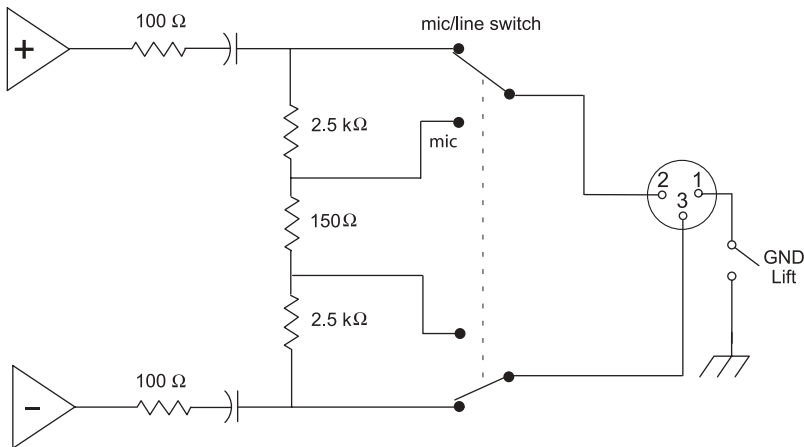
1/4" Phone
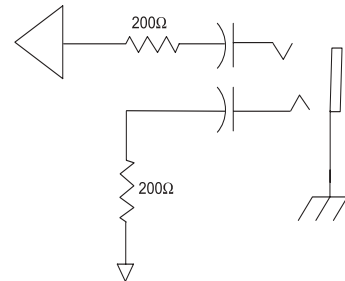
1/4" Monitor/headphone
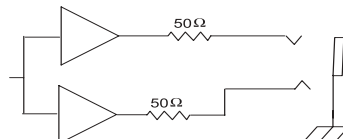
Replacement Parts and Accessories

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), 578-638 MHz	UA720
Antenna (UR1), 638-862 MHz	UA730
Two Antennas (UR4), Band Dependent (see next page 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)	RPM226
Matte Silver Grille (BETA 58)	RK265G
Black Grille (SM87)	RK214
Matte Silver Grille (BETA 87A)	RK313
Matte Silver Grille (BETA 87C)	RK312
Black Grille (BETA 58)	RK323
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 ~~used when~~ remotely mounted or mounted directly to the UA845. ~~If antennas are remotely mounted, 1/2 wave antennas must be used.~~
- 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)	UA845WB
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 Band	UA820H4
J5E, J5 Band	UA820J
L3E, L3 Band	UA820L3
Q5, Q6, ~~Q9~~ Bands	UA820Q
R9, ABJ, Q10 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 862 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 140?? 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 ~~alkaline~~ 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. Certified by IC in Canada under TRC-78.~~

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: UL and cUL Listed to UL 813 and CSA C22.2 No. 1. VDE Certified to EN 60 950. Approved under the Notification provision of FCC Part 15; Certified by IC in Canada under TRC-78.~~

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. $\circlearrowleft$ 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 apparatus complies with Canadian ICES-003. "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