SHURE®

LEGENDARY
PERFORMANCE™

ULX-D

ULX-D Digital Wireless Microphone System

©2013 Shure Incorporated
27A16234 (Rev. 2)

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. Allow sufficient distances for adequate ventilation and install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as open flames, radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not place any open flame sources on the product.
9. DO NOT defeat the safety purpose of the polarized or groundingtype 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.
16. The MAINS plug or an appliance coupler shall remain readily operable.
17. The airborne noise of the Apparatus does not exceed 70dB (A).
18. Apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.
19. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
20. Do not attempt to modify this product. Doing so could result in personal injury and/or product failure.
21. Operate this product within its specified operating temperature range.

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

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

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

General Description

Shure ULX-D Digital Wireless offers uncompromising audio quality and RF performance, with intelligent, encryption-enabled hardware and advanced rechargeability options for professional sound reinforcement.

A breakthrough in wireless audio quality, Shure digital processing enables ULX-D to deliver the purest reproduction of source material ever available in a wireless system. Extended 20 Hz – 20 KHz frequency range and totally flat response captures every detail with clarity, presence, and incredibly accurate low-end and transient response. At greater than 120 dB, ULX-D delivers wide dynamic range for excellent signal-to-noise performance. For added convenience, proprietary Shure Gain Ranging optimizes the system's dynamic range for any input source, eliminating the need for transmitter gain adjustments.

In RF performance, ULX-D sets the bar for wireless channel efficiency and signal stability. Minimized intermodulation allows more transmitters to operate simultaneously over one TV channel than any other system. Rock-solid RF signal with no audio artifacts extends over the entire 100 meter line-of-sight range, even using standard dipole antennas. For applications where secure transmission is required, ULX-D offers Advanced Encryption Standard (AES) 256-bit encrypted signal for unbreachable privacy.

Advanced Lithium-ion rechargeability provides extended transmitter battery life over alkaline batteries, battery life metering in hours and minutes accurate to within 15 minutes, and detailed tracking of battery health status.

Generations ahead of any other available system in its class, ULX-D brings a new level of performance to professional sound reinforcement.

Features

Uncompromising Professional Digital Wireless

- 24-bit/48 KHz digital audio that exceeds all other systems in accurate reproduction of the source material
- 20 Hz – 20 KHz frequency range with flat response
- Greater than 120 dB dynamic range for excellent signal-to-noise performance
- Advanced Encryption Standard (AES-256) for any application where secure transmission is needed:
  - AES algorithm used in Shure ULX-D™ Wireless has been validated (validation no: 2552) by the National Institute of Standards and Technology (NIST) as conforming to the Advanced Encryption Standard (AES) Algorithm, as specified in Federal Information Processing Standard (FIPS) Publication 197, Advanced Encryption Standard
  - Enabled via front panel menu and IR sync
  - Added benefit of eliminating stray RF interference by allowing only encrypted signal through to the receiver
- Built-in limiter circuitry prevents digital audio clipping from excessive signal levels.
- 60 dB of adjustable system gain easily accessible from the receiver front panel
- No transmitter gain adjustments needed - optimized for any input source
- Wide selection of trusted Shure Microphones

Extremely Efficient and Reliable RF Performance

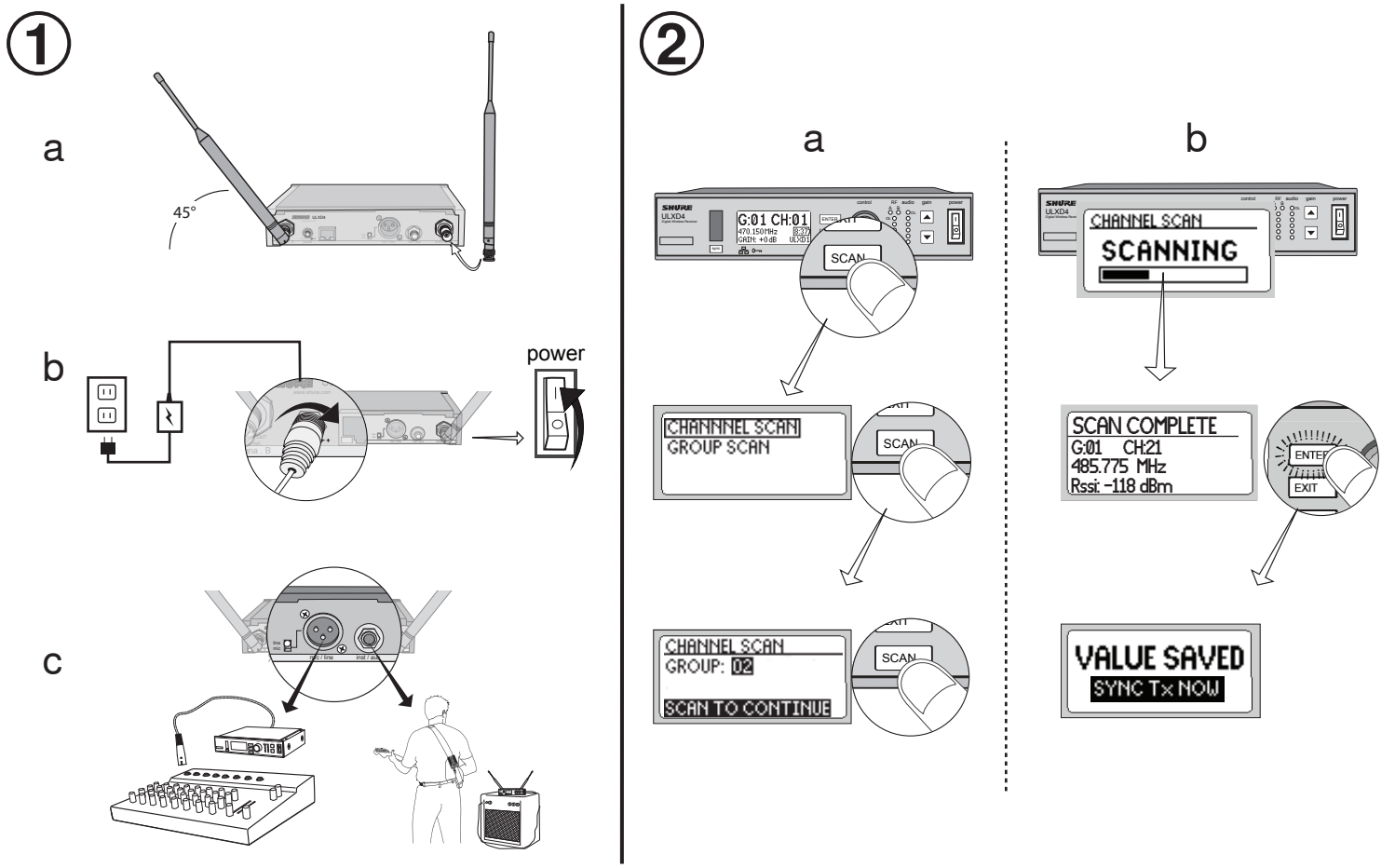
- Up to 64 MHz overall tuning range (region dependent)
- Minimized intermodulation distortion results in significantly more channels on air, setting the bar for wireless performance in crowded RF environments
  - 17 active transmitters in one 6 MHz TV channel
  - 22 active transmitters in one 8 MHz TV channel
  - High Density mode enables up to 47 active transmitters in one 6 MHz TV channel (63 in one 8 MHz TV channel), with no audio quality degradation
  - Over 60 compatible channels on one frequency band
- Rock-solid signal stability with no audio artifacts extends over the entire 100 meter line-of-sight range using standard supplied dipole antennas
- Selectable 1, 10, and 20 mW transmitter RF output power (region dependent)
- Optimized scanning automatically finds, prioritizes, and selects the cleanest frequencies available

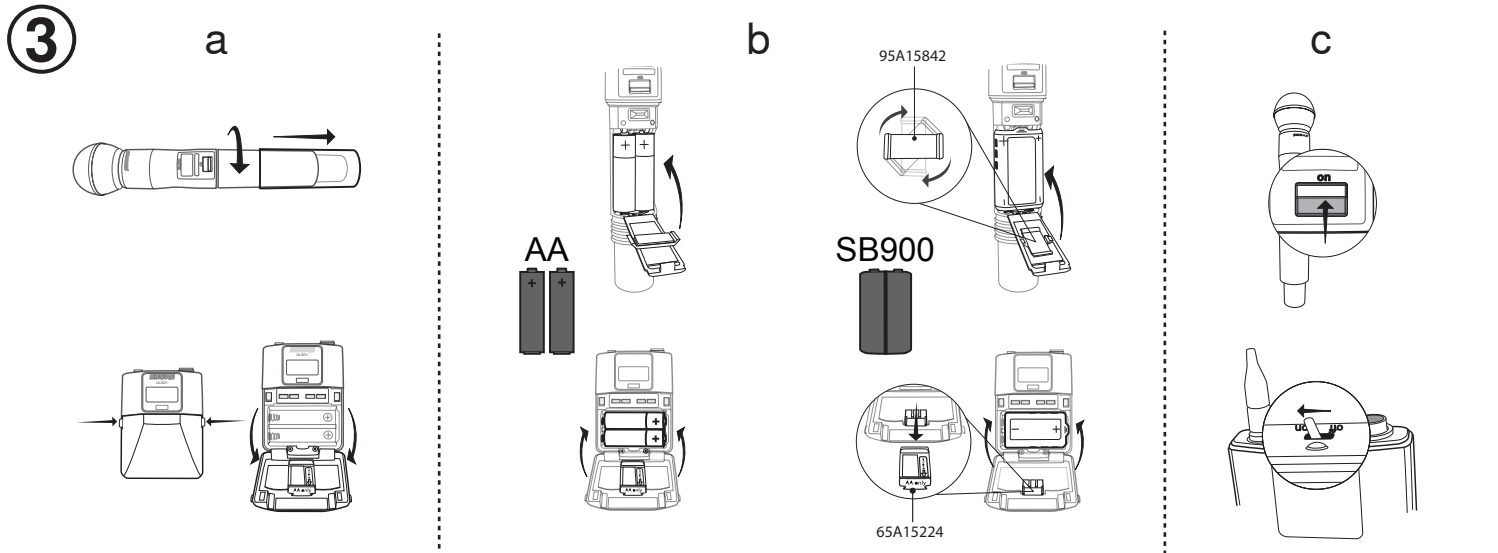
Rugged, Intelligent Hardware

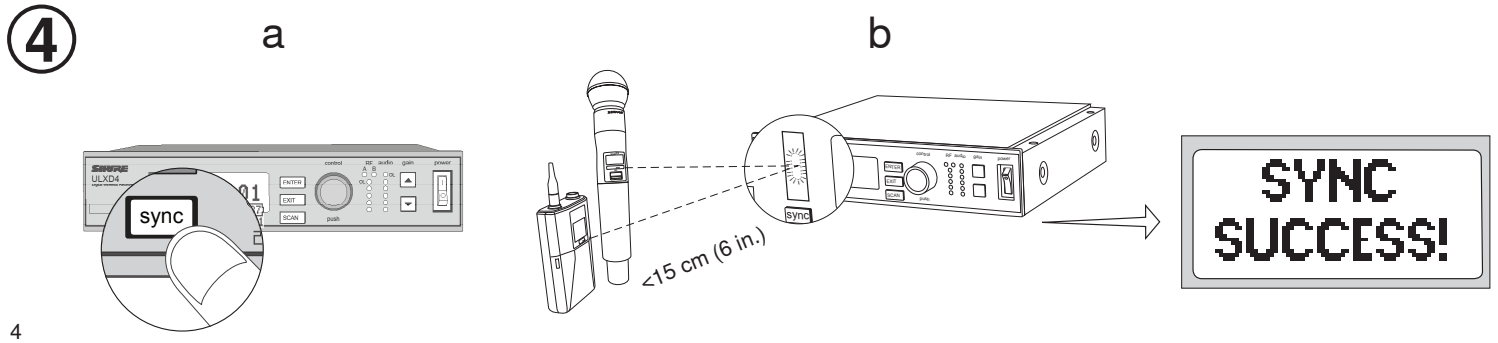
- Optimized scanning automatically finds and deploys the cleanest frequencies available
- Proprietary Shure Gain Ranging optimizes system dynamic range for any input source, eliminating the need for transmitter gain adjustments
- Up to 60 dB of adjustable system gain is easily accessible from the receiver front panel
- Networkable receiver simplifies setup across multiple channels
- Compatible with external controllers such as AMX and Creston. Cross-subnet control enabled for management between multiple facilities or venues.
- Rugged metal housing on both transmitters and receiver
- Interference detection and alerts provide instant confirmation when interference is present
- Upgraded LCD screens with adjustable contrast and brightness on both transmitters and receivers

Advanced Rechargeability - SB900 Shure Rechargeable Battery

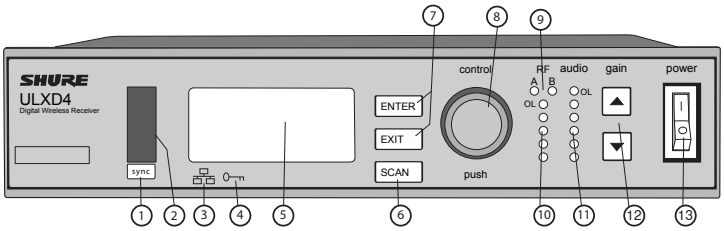
- Lithium-Ion chemistry and intelligent Shure battery circuitry results in rechargeable batteries with no memory effect. The battery can be recharged at any time; a complete discharge is never necessary
- Adapted from industry-leading Axient® rechargeable technology
- Lithium-Ion chemistry and intelligent Shure battery circuitry results in rechargeable batteries with zero memory effect and precision metering
- Provides ULX-D™ transmitters with greater than 11 hours of continuous use
- Transmitters and receivers display remaining battery life in hours and minutes accurate to within 15 minutes
- The SBC200 Dual Docking Charger recharges batteries while in transmitters or out
- The SBC800 Eight-Bay Charger brings up to eight SB900 batteries to full charge within three hours and 50% charge in one hour, with charge status LEDs for each battery
- AA alkaline backwards compatibility
- Both chargers fit in a standard-size rack drawer for easy transport and storage


①
a
45°
b
power
c
②
a
b
G:01 CH:01
SCAN
CHANNEL SCAN
GROUP SCAN
CHANNEL SCAN
GROUP: 02
SCAN TO CONTINUE
CHANNEL SCAN
SCANNING
SCAN COMPLETE
G:01 CH:21
485.775 MHz
Rssi: -118 dBm
ENTER
EXIT
VALUE SAVED
SYNC Tx NOW


③
a
b
AA
95A15842
SB900
65A15224
c
on


④
a
b
sync
<15 cm (6 in.)
SYNC
SUCCESS!

Front Panel



① Sync Button
Press the **sync** button while the receiver and transmitter IR windows are aligned to transfer settings from the receiver to the transmitter

② Infrared (IR) Sync Window
Sends IR signal to the transmitter for sync

③ Network Icon
Illuminates when the receiver is connected with other Shure devices on the network. IP Address must be valid to enable networked control

④ Encryption Icon
Illuminates when AES-256 encryption is activated: **Utilities** > **Encryption**

⑤ LCD Panel
Displays settings and parameters

⑥ Scan Button
Press to find the best channel or group

⑦ Menu Navigation Buttons
Use to select and navigate through parameter menus

⑧ Control Wheel
Push to select menu items for editing, turn to edit a parameter value

⑨ RF Diversity LEDs
Indicate antenna status:

- Blue = normal RF signal between the receiver and transmitter
- Red = interference detected
- Off = No RF connection between the receiver and transmitter

Note: the receiver will not output audio unless one blue LED is illuminated

⑩ RF Signal Strength LEDs
Indicate the RF signal strength from the transmitter:

- Amber = Normal (-90 to -70 dBm)
- Red = Overload (greater than -25 dBm)

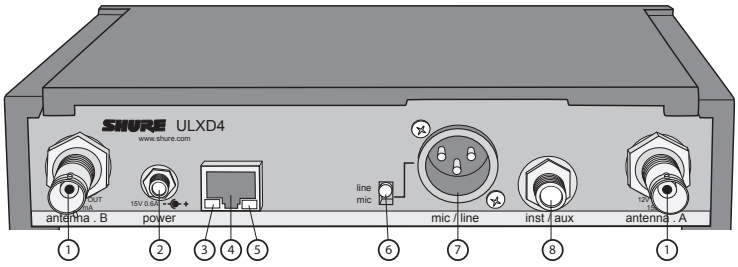
⑪ Audio LEDs
Indicate average and peak audio levels:

LED	Audio Signal Level	Description
Red (6)	-0.1 dBFS	Overload/ limiter
Yellow (5)	-6 dBFS	Normal peaks
Yellow (4)	-12 dBFS	
Green (3)	-20 dBFS	Signal Present
Green (2)	-30 dBFS	
Green (1)	-40 dBFS	

⑫ Gain Buttons
Adjust channel gain

⑬ Power Switch
Powers the unit on or off

Back Panel



① RF Antenna Diversity Input Jack (2)
For antenna A and antenna B.

② Power Supply Jack
Connect the supplied 15 V DC external power supply

③ Network Speed LED (Amber)

- Off = 10 Mbps
- On = 100 Mbps

④ Ethernet Port
Connect to an Ethernet network to enable remote control and monitoring

⑤ Network Status LED (Green)

- Off = no network link
- On = network link active
- Flashing = network link active, flash rate corresponds to traffic volume

⑥ Mic/Line Switch
Applies a 30 dB pad in **mic** position (XLR output only)

⑦ Balanced XLR Audio Output
Connect to a mic or line level input

⑧ Balanced 1/4" (6.35 mm) TRS Audio Output
Connect to a mic or line level input

Transmitters

① Power LED

- Green = unit is powered on
- Red = low battery or battery error (see Troubleshooting)
- Amber = power switch is disabled

② On/Off Switch

Powers the unit on or off.

③ SMA Connector

Connection point for RF antenna.

④ LCD Display:

View menu screens and settings. Press any control button to activate the backlight.

⑤ Infrared (IR) Port

Align with the receiver IR port during an IR Sync for automated transmitter programming.

⑥ Menu Navigation Buttons

Use to navigate through parameter menus and change values.

exit	Acts as a 'back' button to return to previous menus or parameters without confirming a value change
enter	Enters menu screens and confirms parameter changes
▼▲	Use to scroll through menu screens and to change parameter values

⑦ Battery Compartment

Requires Shure SB900 rechargeable battery or 2 AA batteries.

⑧ AA Battery Adapter

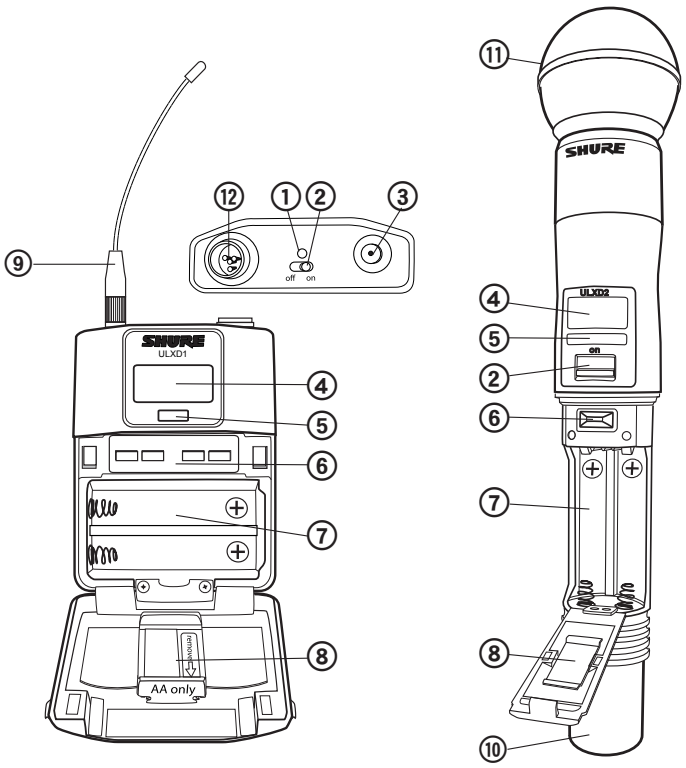
- Handheld: rotate and store in the battery compartment to use a Shure SB900 battery
- Bodypack: remove to accommodate a Shure SB900 battery

⑨ Bodypack Antenna

For RF signal transmission.

⑩ Integrated Antenna

For RF signal transmission.



⑪ Microphone Cartridge

See Optional Accessories for a list of compatible cartridges.

⑫ TA4M Input Jack

Connects to a 4-Pin Mini Connector (TA4F) microphone or instrument cable.

Advanced Transmitter Features

RF MUTE

Use this to turn on a transmitter without interfering with the RF spectrum.

Press and hold the **exit** button during power-on until **RF MUTED** is displayed. To un-mute, restart the transmitter.

Transmitter Input Clip

The following warning displays on the receiver LCD panel when the transmitter input is clipped:

To correct, set **MIC.OFFSET** to 0 dB and if necessary, attenuate the signal source.

If the source cannot be attenuated while using a bodypack transmitter, select **INPUT PAD** from the main menu to attenuate the input signal by 12 dB.

MIC.OFFSET

MIC.OFFSET compensates for signal level differences between transmitters that share the same receiver channel.

Set the offset gain on a low signal level transmitter to match a louder transmitter: **UTILITY** > **MIC.OFFSET**

Note: For normal gain adjustments, use the receiver gain buttons.

Transmitter Audio Mute Mode

Mute Mode reconfigures the transmitter power switch to act a mute switch for the audio. Using the switch, the audio can be easily turned on or muted by presenters, sports referees, or anyone who periodically needs to speak. When the audio is muted, the transmitter RF signal remains on and ready at all times.

Note: Mute Mode can be selected as an **IR PRESET** option.

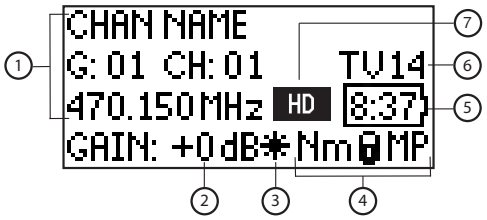
To set a transmitter to Mute Mode:

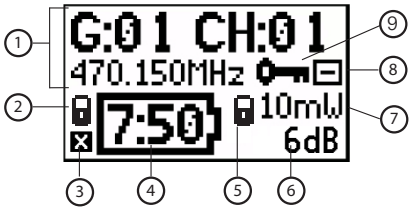
1. From the transmitter menu: **UTILITY** > **MUTE MODE**
2. Use the arrows to select **ON** or **OFF**.
3. Press **enter** to save.

Tip: The transmitter LED turns red when audio is muted and turns green when audio is enabled. The display of the transmitter will show **AUDIO MUTED** and the receiver display will show **Tx Muted**.

Note: Mute Mode must be set to **OFF** in order to use the power switch to turn off the transmitter.

Home Screens





Receiver

① Receiver Information
Use **UTILITIES** > **HOME INFO** to change the home screen display

② Gain Setting
-18 to +42 dB, or Mute

③ Mic. Offset Indicator
Indicates offset gain is added to the transmitter

④ Transmitter Settings
The following information cycles when a transmitter is tuned to the receiver's frequency:

- Transmitter Type
- Input Pad (Bodypack only)
- RF Power Level
- Transmitter Lock Status
- Transmitter Mute Status

⑤ Battery Runtime Indicator

- Shure SB900 battery: runtime is displayed in hours:minutes remaining
- AA Batteries: runtime is displayed with a 5-bar indicator

⑥ TV Channel
Displays the TV channel that contains the tuned frequency

⑦ High Density Mode Icon
Displayed when High Density mode is enabled.

Transmitter Status
The following text or icons report transmitter status to the receiver screen:

Display Icon	Transmitter Status
⊟	Bodypack input is attenuated 12 dB
✳	Offset gain is added to the transmitter
Lo	1 mW RF power level
Nm	10 mW RF power level
Hi	20 mW RF power level
M	Menu is locked
P	Power is locked
TxMuted	Displayed when the transmitter audio is set to off using the **MUTE MODE** feature
-No Tx-	No RF connection between a receiver and transmitter or transmitter OFF

Adjusting Receiver Display Brightness and Contrast

Adjust **BRIGHTNESS** and **CONTRAST** settings to improve visibility in challenging lighting environments.

1. From the receiver menu: **DEVICE UTILITIES** > **DISPLAY**
2. Press the control wheel to select **CONTRAST** or **BRIGHTNESS**.
3. Turn the control to adjust the selected parameter.
4. Press ENTER to save changes.

Transmitter

① Transmitter Information
Scroll ▲▼ at the home screen to change the display

② Power Lock Indicator
Indicates power switch is disabled

③ Transmitter Audio Muted Indicator
Displayed when the transmitter audio is set to off using the **MUTE MODE** feature.

④ Battery Runtime Indicator

- Shure SB900 battery: runtime is displayed in hours:minutes remaining
- AA Batteries: runtime is displayed with a 5-bar indicator

⑤ Menu Lock Indicator
Indicates menu navigation buttons are disabled

⑥ Mic. Offset
Displays microphone offset gain value

⑦ RF Power
Displays RF power setting

⑧ Bodypack Input Pad
The input signal is attenuated 12 dB

⑨ Encryption Icon
Indicates encryption is enabled on the receiver and has been transferred to the transmitter from a sync

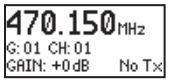
Home Screen Display Options

Receiver

The **HOME INFO** menu provides options to change the information shown on the receiver home screen:

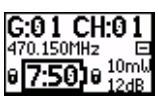
DEVICE UTILITIES > **HOME INFO**

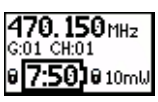
Use the control wheel to select one of the following screen displays.



Transmitter

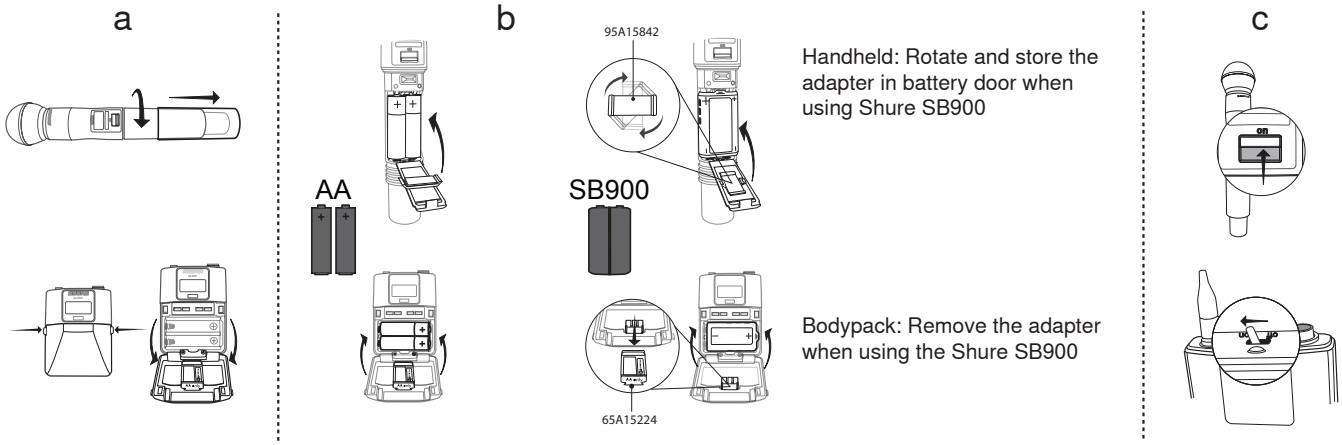
Home Screen: Press the ▲▼ arrows at the home menu to display one of the following screens:





Batteries

The transmitter runs on two AA batteries or the Shure SB900 rechargeable battery. Use the included AA battery adapter when using batteries other than the Shure SB900.



Battery Runtime Charts

A 5-segment icon on the receiver and transmitter menu screens indicates battery charge.

For accurate battery runtime monitoring, set the transmitter to the appropriate battery type: **UTILITY** > **BATTERY** > **SET.AA.TYPE**.

The tables display the approximate hours and minutes remaining (h:mm).

Alkaline

Battery Indicator	RF Power Setting	
	10 mW	20 mW
	>11:00 to 9:35	5:45 to 5:15
	9:35 to 6:00	5:15 to 4:00
	6:00 to 2:30	4:00 to 2:00
	2:30 to 1:00	2:00 to 0:50
	1:00 to 0:20	0:50 to 0:10
	0:20 to 0:00	0:10 to 0:00

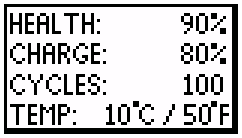
NiMH

Battery Indicator	RF Power Setting	
	10 mW	20 mW
	>13:00 to 11:10	9:00 to 7:40
	11:10 to 7:00	7:40 to 5:15
	7:00 to 2:50	5:15 to 2:05
	2:50 to 1:25	2:05 to 1:00
	1:25 to 0:20	1:00 to 0:15
	0:20 to 0:00	0:15 to 0:00

Shure SB900 Rechargeable Battery

When using an SB900 rechargeable battery, the receiver and transmitter home screens display the number of hours and minutes remaining.

Detailed information for the SB900 is displayed in the receiver **BATTERY INFO** menu and the transmitter menu: **UTILITY** > **BATTERY** > **BATT. STATS**



HEALTH: Displays battery health as a percentage of the charge capacity of a new battery.

CHARGE: Percentage of a full charge

CYCLES: Number of times the battery has been charged

TEMP: Battery temperature in Celsius and Fahrenheit

Note: For additional rechargeable battery information, visit www.shure.com.

Shure SB900 Runtime

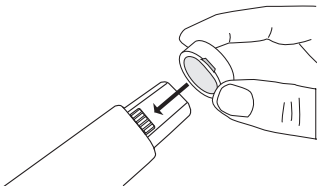
1 mW	10 mW	20 mW
>11 hours	>11 hours	>7 hour

Installing the Battery Contact Cover

Install the included battery contact cover (65A15947) on the handheld transmitter to prevent light reflection in broadcast and performance situations.

1. Align the cover as shown.
2. Slide the cover over the battery contacts until it is flush with the transmitter body.

Note: Slide the cover off before inserting the transmitter in the battery charger.



Scan and Sync

Use this procedure to tune a receiver and transmitter to the best open channel.

Important! Before you begin:

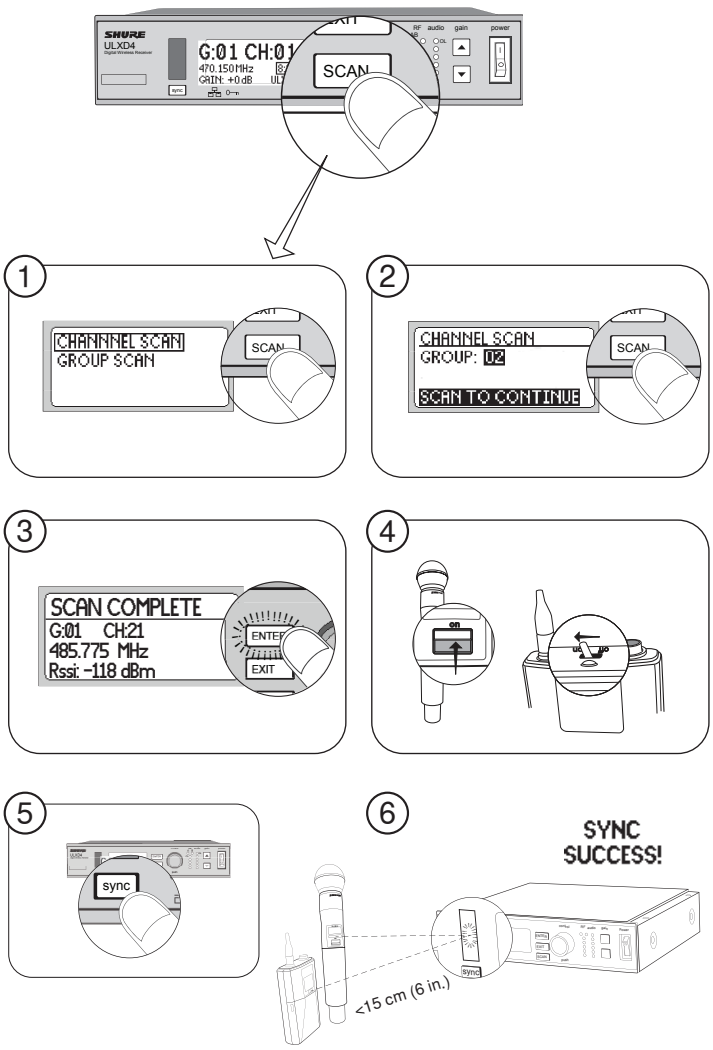
Turn off all transmitters for the systems you are setting up. (This prevents them from interfering with the frequency scan.)

Turn on the following potential sources of interference so they are operating as they would be during the presentation or performance (the scan will detect and avoid any interference they generate).

- Other wireless systems or devices
- Computers
- CD players
- Large LED panels
- Effects processors

1. Press the **SEL** button to select a receiver channel.
2. Perform a group scan on the receiver: **SCAN** > **GROUP SCAN**.
3. Press **SCAN** to start the scan. **SCANNING** appears on the LCD during the scan.
4. After the scan completes, the receiver displays the group with the most available frequencies. Press the flashing **ENTER** button to deploy frequencies to each receiver channel.
5. Power on the ULXD transmitter.
6. Press the **sync** button on the receiver.
7. Align the IR windows until the receiver IR port illuminates red.

When complete, **SYNC SUCCESS!** appears. The transmitter and receiver are now tuned to the same frequency.



Manual Frequency Selection

To manually adjust group, channel or frequency:

1. Select **RADIO** from the receiver menu.
2. Use the control wheel to select and adjust the group, channel, or frequency.
3. Press **ENTER** to save.

Multiple System Setup

A setup using networked receivers is the fastest and easiest way to distribute the best open channel to each system. See Networking ULX-D Receivers for networking details.

Note: Networked receivers must all be within the same frequency band.

Networked Receivers

1. Turn on all receivers.
2. Conduct a group scan on the first receiver to find available frequencies in each group: **SCAN** > **GROUP SCAN**.
3. Press **ENTER** to accept the group number and automatically assign the next best channel to each receiver on the network. The receiver LEDs will flash when a frequency has been assigned.
4. Turn on a transmitter and sync to the receiver.

   Important! Leave the transmitter on and repeat this step for each additional system.

Non-networked Receivers

1. Turn on all receivers.
2. Conduct a group scan on the first receiver to find available frequencies in each group: **SCAN** > **SCAN** > **GROUP SCAN** > **SCAN**
3. When the scan is complete, use the control wheel to scroll through each group. Press **ENTER** to select a group that has enough available frequencies for all channels in the system.
4. Sync a transmitter to each receiver channel.

Important! Leave all transmitters on use the following steps to set up additional receiver channels:

1. Set each additional receiver channel to the same group as the first receiver: **RADIO** > **G:**
2. Conduct a channel scan to find available frequencies within the group: **SCAN** > **SCAN** > **CHANNEL SCAN** > **SCAN**
3. When the scan is complete, press **ENTER** to assign frequencies to each receiver channel.
4. Sync a transmitter to each receiver channel.

Setting Receiver Gain

The receiver gain control sets the audio signal level for the entire receiver and transmitter system. Changes to the gain settings occur in realtime allowing for adjustments during live performances. When adjusting the gain, monitor the audio meter levels to prevent signal overloads.

Receiver Gain Controls

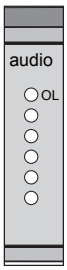
The gain can be adjusted by using the **gain▲▼** buttons or by entering the **AUDIO** menu and using the control wheel.

Tip: To quickly adjust the gain, press and hold a gain button to enable accelerated scrolling.

Reading the Audio Meter

The audio meter displays yellow, green, and red LEDs to indicate the audio signal level. Audio peaks illuminate the LEDs for 2 seconds, while the RMS signal is displayed in realtime.

When setting up the receiver, adjust the gain so that the average signal LED levels are solid green and occasionally yellow, with only the highest peaks causing the red LED to illuminate.



Tip: If a vocalist is overloading a bodypack transmitter, try lowing the receiver gain. If additional attenuation is needed, use the transmitter menu to set the **INPUT PAD** to **-12dB.**

Note: Illumination of the red **OL** (overload) LED indicates the internal limiter is engaged to prevent digital clipping.

Muting a Receiver Channel Audio Output

The audio output of each receiver channel can be independently muted to prevent audio from passing. Mute status is indicated by **Rx MUTED** message appearing on the receiver display in place of the gain value.

Note: Receiver gain is disabled for muted channels to prevent unexpected changes in audio levels.

To set a receiver channel output to mute:

1. **AUDIO** > **MUTE**
2. Use the control wheel to select **ON** or **OFF**.
3. Press **ENTER** to save.

To unmute the receiver output:

Simultaneously press the ▲▼ buttons or select **OFF** from the **MUTE** menu option.

Tip: Audio mute can be enabled remotely from Wireless Workbench or from an external controller.

Important! A power cycle will reset the receiver and unmute the audio output.

Transmitter Input Clip

The following warning displays on the receiver LCD panel when the transmitter input is clipped:

To correct, attenuate the signal source. If the source cannot be attenuated while using a bodypack transmitter, select **INPUT PAD** from the main menu to attenuate the input signal 12 dB.

Editing Receiver Channel Name

To edit a receiver channel name, choose **EDIT NAME** from the menu.

- Turn the control wheel to edit a highlighted character
- Press the control wheel to advance to the next character
- Press **ENTER** to save changes

Note: The channel name is transferred to a transmitter during a sync.

Receiver Output Level

The following table describes the typical total system gain from the audio input to the receiver outputs:

Receiver Output Gain

Output Jack	System Gain (gain control = 0dB)
1/4" TRS	+18 dB
XLR (line setting)	+24 dB
XLR (mic setting)	-6 dB*

*This setting matches a typical wired SM58 audio signal level.

Networking Receivers

The receiver uses an Ethernet connection to network with other components. For automatic network configuration, use a DHCP enabled Ethernet switch such as the Shure AXT620. Use multiple Ethernet switches to extend the network for larger installations.

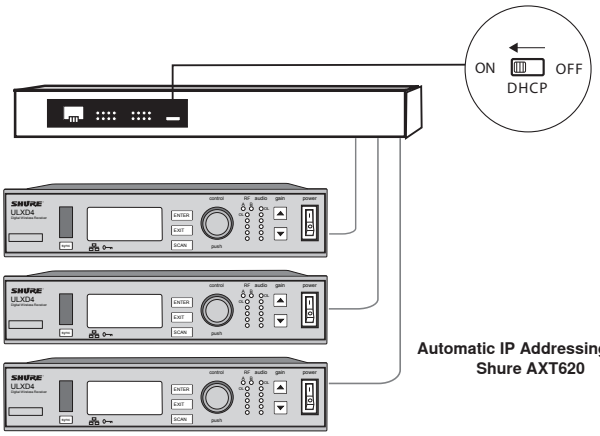
Note: Note use only one DHCP server per network.

Automatic IP Addressing

1. If using a Shure AXT620 Ethernet switch, set the DHCP switch to ON.
2. Set the IP Mode to Automatic for all receivers: **DEVICE UTILITIES** > **NETWORK** > **CTRL NETWORK**

Manual IP Addressing

1. Connect the receivers to an Ethernet switch.
2. Set the IP Mode to Manual for all devices (**DEVICE UTILITIES** > **NETWORK** > **CTRL NETWORK**)
3. Set valid IP addresses for all devices.
4. Set the subnet mask to the same value for all devices.



Automatic IP Addressing with Shure AXT620

Troubleshooting

- Use only one DHCP server per network
- All devices must share the same subnet mask
- All receivers must have the same level of firmware revision installed
- Look for the illuminated network icon on the front panel of each device:

  If the icon is not illuminated, check the cable connection and the LEDs on the network jack.

  If the LEDs are not on and the cable is plugged in, replace the cable and recheck the LEDs and network icon.

To check connectivity of WWB6 to the network:

1. Start WWB6 software and use Inventory view to see devices connected to the network.
2. If not, find the IP address from one of the devices on the network (such as an ULXD receiver) and see if you can ping it from the computer running WWB6.
3. From a WINDOWS/MAC command prompt, type 'ping IPADDRESS' of the device (e.g. "ping 192.168.1.100").
4. If the ping returns success (no packet loss), then the computer can see the device on the network. If the ping returns failure (100% packet loss), then check the IP address of the computer to ensure it's on the same subnet as the Axient device.
5. If the pings are successful and the devices still do not show up in the WWB6 inventory, check to ensure all firewalls are either disabled or allow the WWB network traffic to pass to the application. Check that firewall settings are not blocking network access.

Device ID

Set the receiver Device ID for easy identification within the network or in Wireless Workbench: **DEVICE UTILITIES** > **NETWORK** > **SHURE CONTROL** > **Dev.ID**

Use the control wheel to edit the device ID.

Connecting to an External Control System

The ULX-D receiver is compatible with external control systems such as AMX or Crestron via the Ethernet, using on the same cables used to carry Shure Control (WWB6). Use only one controller per system to avoid messaging conflicts.

- Connection: Ethernet (TCP/IP; ULX-D receiver is the client)
- Port: 2202

For a comprehensive list of ULX-D command strings, visit: http://shure.custhelp.com/app/answers/detail/a_id/4976

Setting the Gateway to Allow Cross Subnet Routing

ULX-D receivers include gateway addressing to support cross-subnet routing. The gateway setting allows a single controller to manage devices assigned to different subnets such as multiple rooms or multiple buildings.

Note: A gateway address is an advanced network setting. In most network configurations, the setting does not need to be changed.

To set the receiver gateway:

1. From the receiver menu: **DEVICE UTILITIES** > **NETWORK** > **SHURE CONTROL** > **NETWORK**
2. Press and turn the control wheel to set the **Mode** to **Manual**.
3. Press the control wheel to navigate to the first digit of the **GW** (gateway) setting.
4. Turn the control wheel to change a value, press the control wheel to advance to the next octet.
5. When finished, press **ENTER** to save.

Note: When setting the gateway address, the IP address and Subnet must be set to valid addresses.

RF

Transmitter RF Power

Reference the following table for setting RF Power:

RF Power Setting	System Range	Application
1 mW	33 m (100 ft.)	For increased channel reuse at close distances
10 mW	100 m (330 ft.)	Typical setups
20 mW	>100 m (330 ft.)	For hostile RF environments or long-distance applications

Note: Using the 20 mW setting decreases the transmitter battery runtime and reduces the number of compatible systems.

Interference Detection

Interference Detection monitors the RF environment for potential sources of interference which can cause audio dropouts.

When interference is identified, the RF LEDs illuminate red and the following warning displays on the receiver LCD panel.

If the warning display persists or the audio drops out repeatedly, perform a Scan and Sync at the first opportunity to find a clear frequency.

Advanced RF

RF Mute

Use this to turn on a transmitter without interfering with the RF spectrum.

Press and hold the **exit** button during power-on until **RF MUTED** is displayed. To un-mute, restart the transmitter.

Antenna Bias

Antenna ports A and B provide a DC bias to power active antennas. Set the DC power to off when using passive (non-powered) antennas.

To turn bias off: **DEVICE UTILITIES** > **ADVANCED RF** > **ANTENNA BIAS** > **OFF**

Custom Groups

Use this feature to create up to six groups of manually selected frequencies that can be exported to networked receivers to simplify system setup.

To create a custom group: **UTILITES** > **ADVANCED RF** > **CUSTOM GROUPS**

Note: Use Wireless Workbench or Wireless Frequency Finder to select the best compatible frequencies. See www.shure.com for more information.

To export a custom group:

1. Go to **UTILITES** > **ADVANCED RF** > **CUSTOM GROUPS** > **EXPORT**. The following screen will display.
2. Press the flashing **ENTER** button to export all custom groups to all receivers on the network.

High Density Mode

High Density mode creates additional bandwidth for more channels in crowded RF environments. Frequency efficiency is optimized by running at 1 mW RF transmit power and narrowing the modulation bandwidth, allowing for the channel spacing to be reduced from 350 kHz to 125 kHz. Transmitters can be positioned on adjacent channels with unsubstantial intermodulation distortion (IMD).

High Density mode is ideal for applications where many channels are needed in a confined area, transmission distances are short, and the number of available frequencies is limited. Up to 30 meters of range is available in High Density mode.

Setting the Receiver to High Density Mode

To set the receiver to High Density mode:

DEVICE UTILITIES > **ADVANCED RF** > **HIGH DENSITY**

Use the control wheel to set **HIGH DENSITY** to **ON**.

When prompted, sync the transmitter and receiver to enable **HIGH DENSITY** mode.

Note: When the receiver is in **HIGH DENSITY** mode, the following indicators are shown on the receiver display:

- The **HD** icon will appear on the receiver display
- The receiver band name will be shown with an "HD" added. (example: The G50 band will appear as G50HD)
- The transmitter group and channel are assigned letters instead of numbers (example: G:AA CH:AA)

Best Practices for High Density Mode

- When band planning, position ULX-D High Density channels in a range of frequencies separated from other devices.
- Use a separate RF zone for ULX-D High Density channels to prevent intermodulation distortion from other devices.
- During High Density channel scanning, turn on all other transmitters and move them to their intended position.
- Perform a walk test to verify transmitter range
- If using custom groups, the groups loaded into the receiver must be compatible with High Density mode

Locking Controls and Settings

Use the **LOCK** feature to prevent accidental or unauthorized changes to the hardware. Attempting to access a locked feature will display the following message:

Receiver

Menu path: **UTILITIES** > **LOCK**

MENU: All menu paths are inaccessible. To unlock, press the **EXIT** button, turn the control wheel to select **UNLOCKED** and press **ENTER** to save.

GAIN: Gain adjustment is locked

POWER: Power switch is disabled

SCN/SYC: Cannot perform a Scan and Sync

Transmitter

Menu path: **UTILITY** > **LOCK**

MENU: All menu paths are inaccessible. To unlock, press the **ENTER** button four (4) times to pass through the following screens: **UTILITY** > **LOCK** > **MENU UNLOCK**

POWER: Power switch is disabled

Quick-Lock Option: To turn on the transmitter with its power and menu navigation buttons locked, press and hold the ▲ button during power-on until the locked message is displayed.

To unlock, turn the power switch to the off position, then press and hold the ▲ button while turning the power switch to the on position.

Transmitter IR Presets

Use the **IR PRESETS** receiver menu to quickly configure transmitter settings from the receiver screen. When a sync is performed between the receiver and transmitter, the IR PRESETs automatically configure the transmitter. Each parameter has the default value **KEEP**, which leaves that setting unaffected by a sync.

Feature	Setting
BP PAD	+0 dB, -12 dB
LOCK	**Power**, **Menu**, **All**, **None**
RF POWER	**10mW=Nm** (normal), **1mW=Lo** (low), **20mW=Hi** (high)
BATT	**Alkaline**, **NiMH**, **Lithium**
BP OFFSET	0 dB to +21 dB (in 3 dB increments)
HH OFFSET	0 dB to +21 dB (in 3 dB increments)
MUTE MODE	**OFF**, **ON**
Cust. Group	**OFF**, **ON**

Note: When **Cust. Groups** is set to on, it may take up to 30 seconds to complete an IR sync.

Firmware

Firmware is embedded software in each component that controls functionality. Periodically, new versions of firmware are developed to incorporate additional features and enhancements. To take advantage of design improvements, new versions of the firmware can be uploaded and installed using the Firmware Update Manager tool available in Shure's Wireless Workbench® 6 (WWB6) software. Software is available for download from http://www.shure.com/wwb.

Firmware Versioning

When updating receiver firmware, update transmitters to the same firmware version to ensure consistent operation.

The firmware of all ULX-D devices has the form of MAJOR.MINOR.PATCH (e.g., 1.2.14). At a minimum, all ULX-D devices on the network (including transmitters), must have the same MAJOR and MINOR firmware version numbers (e.g., 1.2.x).

Updating the Receiver

CAUTION! Ensure that receiver power and network connections are maintained during a firmware update. Do not turn off the receiver until the update is complete.

Once the download is complete, the receiver automatically begins the firmware update, which overwrites the existing firmware.

1. From Shure Wireless Workbench software, open the Firmware Update Manager: **Tools** > **Firmware Update Manager**.
2. Click **Check Now** to view new versions available for download.
3. Select the updates and click **download**.
4. Connect the receiver and computer to the same network.
5. Download the latest firmware to the receiver.

Updating the Transmitter

1. To upload the firmware to the transmitter, go to **DEVICE UTILITIES** > **TX FW UPDATE** on the receiver.
2. Place the transmitter on its side and align the IR ports.
3. Press **ENTER** on the receiver to begin the download to the transmitter. IR ports must be aligned for the entire download, which can take 50 seconds or longer.

System Reset

System Reset clears the current receiver settings and restores the factory default settings.

To restore factory default settings:

1. Go to **DEVICE UTILITIES** > **SYSTEM RESET** > **RESTORE**.
2. Scroll to the **DEFAULT SETTINGS** option and press **ENTER**.
3. Press the flashing **ENTER** button to return the receiver to the default settings.

Encryption

AES algorithm used in Shure ULX-D™ Wireless has been validated (validation no: 2552) by the National Institute of Standards and Technology (NIST) as conforming to the Advanced Encryption Standard (AES) Algorithm, as specified in Federal Information Processing Standard (FIPS) Publication 197, Advanced Encryption Standard.

1. Enable encryption on the receiver: **DEVICE UTILITIES** > **ENCRYPTION**. The encryption symbol illuminates green and the LCD displays **SYNC NOW FOR ENCRYPTION**.
2. Sync the transmitter to the receiver. The encryption symbol displays on the transmitter.

Note: Any change to the encryption status on the receiver such as enabling encryption or requesting a new encryption key, requires a sync to send the settings to the transmitter. The Encryption Mismatch warning will display on the receiver LCD panel if they are not on the same setting.

Managing the ULXD Receiver with Wireless Workbench 6

Adding a computer running Wireless Workbench® 6 to the network allows for remote control and monitoring of the receiver.

Visit: www.shure.com/wwb to download Wireless Workbench 6 software.

Managing and Monitoring Receiver Settings

Manage and monitor receiver settings by opening the Monitor tab in Wireless Workbench. Click on the **Settings** button to show or hide the full Properties window.

1. Click on the Monitor tab to view the Device Chooser.
2. From the Device Chooser, click on a channel to select.
3. Click on Properties to open the Properties window.

① **RF and Audio Meters**
Displays: current levels, band, TV, and TX Overload

② **Transmitter Settings**
Displays: RF Power, Tx Type, Tx Offset, Tx Lock

③ **Frequency Settings**
Use drop-down to edit value

④ **Encryption Icon**
Illuminates when Encryption is enabled

⑤ **Receiver Output Mute**
Click on the mute button to enable mute

⑥ **Receiver Gain Setting**
Use drop-down to edit value

⑦ **Custom Groups**
Click to enter custom group settings

⑧ **IR Presets**
Click to configure transmitter IR presets

⑨ **Utilities Tab**
Accesses Utility settings

⑩ **Network Tab**
Set network mode, view: IP address, Subnet, MAC, Firmware version

⑪ **Advanced RF Settings**
Enable High Density mode or Antenna Bias

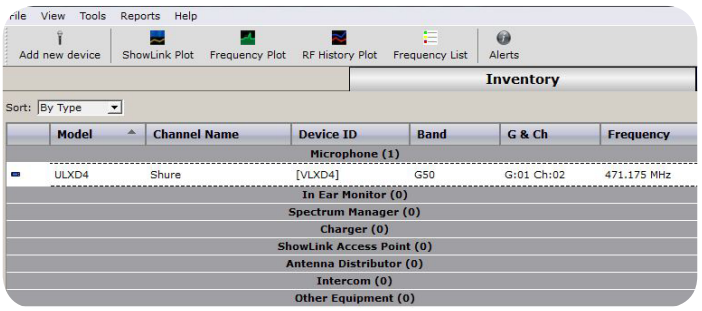
⑫ **Encryption**
Enable/Disable Encryption

⑬ **Locks**
Lock/Unlock: Menu, Gain, Power, Scan/Sync

Viewing the Receiver in WWB6 Inventory

Click on the Inventory tab to view the receiver channels. Double-click on parameters to enable editing.

Tip: Clicking on the receiver Icon next to the Model flashes the front panel LEDs for remote identification.



Hardware Identify

Hardware Identify is a useful feature for remotely discovering and identifying networked components that appear in WWB6 inventory. For example, individual receivers located on a stage can be identified remotely in the WWB6 inventory window by pressing the control wheel on the receiver. When the control wheel is pressed, the corresponding receiver icon in WWB6 will flash to identify the location of the receiver.

Issue	See Solution...
No Sound	Power, Cables, or RF
Faint sound or distortion	Gain
Lack of range, unwanted noise bursts, or dropouts	RF
Cannot turn transmitter off or change frequency settings, or can't program receiver	Interface locks
Encryption error message	Encryption Mismatch

Power

Make sure that the receiver and transmitter are receiving sufficient voltage. Use the 15 V DC power supply furnished with the ULXD4 receiver. Check the battery indicators and replace the transmitter batteries if necessary.

Gain

Adjust the system gain on the front of the receiver. Ensure the output level (XLR output only) on the back of the receiver corresponds to the input of the mixing console, amplifier, or DSP.

Cables

Check that all cables and connectors are working correctly.

Interface Locks

The transmitter and the receiver can be locked to prevent accidental or unauthorized changes. A locked feature or button will produce the **Locked** screen on the LCD panel.

Encryption Mismatch

Re-sync the receiver and transmitter after enabling or disabling encryption.

Radio Frequency (RF)

RF LEDs

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

The amber **RF** Signal Strength 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**. If more than one or two of the amber **RF** LEDs are still illuminated while the transmitter is off, 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 **in the other system**.

Compatibility

- Perform a Scan and Sync to ensure 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 (G50, J50, L50, etc...).

Reducing Interference

- Perform a group or channel scan to find the best open frequency. Perform a sync to transfer the setting to the transmitter.
- 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.
- Use an active directional antenna, antenna distribution system, or other antenna accessory to increase RF range.

Eliminating RF Overload

If you see the red RF LED on a receiver, try the following:

- Reduce the transmitter RF power level
- 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.
- Use omnidirectional antennas

ULXD Specifications

RF Carrier Frequency Range
470–937.5 MHz, varies by region (See Frequency Range and Output Power table)

Working Range
100 m (330 ft)

Note: Actual range depends on RF signal absorption, reflection and interference.

RF Tuning Step Size
25 kHz, varies by region

Image Rejection
>70 dB, typical

RF Sensitivity
-98 dBm at 10^{-5} BER

Latency
<2.9 ms

Audio Frequency Response

ULXD1	20 – 20 kHz (±1 dB)
ULXD2	Note: Dependent on microphone type

Audio Dynamic Range
System Gain @ +10
>120 dB, A-weighted, typical

Total Harmonic Distortion
–12 dBFS input, System Gain @ +10
<0.1%

System Audio Polarity
Positive pressure on microphone diaphragm produces positive voltage on pin 2 (with respect to pin 3 of XLR output) and the tip of the 6.35 mm (1/4-inch) output.

Operating Temperature Range
-18°C (0°F) to 50°C (122°F)

Note: Battery characteristics may limit this range.

Storage Temperature Range
-29°C (-20°F) to 74°C (165°F)

Note: Battery characteristics may limit this range.

ULXD4

Dimensions
197 mm x 171 mm x 42 mm (7.75 in. x 6.75 in. x 1.65 in.), H x W x D

Weight
913 g (2.0 lbs), without antennas

Housing
steel

Power Requirements
15 V DC @ 0.6 A, supplied by external power supply (tip positive)

RF Input

Spurious Rejection
>80 dB, typical

Connector Type
BNC

Impedance
50 Ω

Bias Voltage
12 - 13 V DC, 170 mA maximum, per antenna

Audio Output

Gain Adjustment Range
-18 to +42 dB in 1 dB steps (plus Mute setting)

Configuration

1/4" (6.35 mm)	Impedance balanced (Tip=audio, Ring=no audio, Sleeve=ground)
XLR	balanced (1=ground, 2=audio +, 3=audio –)

Impedance

1/4" (6.35 mm)	100 Ω (50 Ω Unbalanced)
XLR	100 Ω

Full Scale Output

1/4" (6.35 mm)	+12 dBV
XLR	LINE setting= +18 dBV, MIC setting= -12 dBV

Mic/Line Switch
30 dB pad

Phantom Power Protection

1/4" (6.35 mm)	Yes
XLR	Yes

Networking

Power Over Ethernet (PoE)
No, protected

Network Interface
Single Port Ethernet 10/100 Mbps

Network Addressing Capability
DHCP or Manual IP address

Maximum Cable Length
100 m (328 ft)

ULXD1

Gain Offset Range
0 to 21 dB (in 3 dB steps)

Battery Type
Shure SB900 Rechargeable Li-Ion or LR6 AA batteries 1.5 V

Battery Runtime
@ 10 mW

Shure SB900	>11 hours
alkaline	>11 hours

See Battery Runtime Chart

Dimensions
86 mm x 66 mm x 23 mm (3.4 in. x 2.6 in. x 0.9 in.) H x W x D

Weight
142 g (5.0 oz.), without batteries

Housing
Cast aluminum

Audio Input

Connector
4-Pin male mini connector (TA4M), See drawing for details

Configuration
Unbalanced

Impedance
1 MΩ, See drawing for details

Maximum Input Level
1 kHz at 1% THD

Pad Off	8.5 dBV (7.5 Vpp)
Pad On	20.5 dBV (30 Vpp)

Preamplifier Equivalent Input Noise (EIN)
System Gain Setting ≥ +20
-120 dBV, A-weighted, typical

RF Output

Connector
SMA

Antenna Type
1/4 wave

Impedance
50 Ω

Occupied Bandwidth
<200 kHz

Modulation Type
Shure proprietary digital

Power
1 mW, 10 mW, 20 mW

See Frequency Range and Output Power table, varies by region

ULXD2

Gain Offset Range
0 to 21 dB (in 3 dB steps)

Battery Type
Shure SB900 Rechargeable Li-Ion or LR6 AA batteries 1.5 V

Battery Runtime
@ 10 mW

Shure SB900	>11 hours
alkaline	>11 hours

See Battery Runtime Chart

Dimensions
256 mm x 51 mm (10.1 in. x 2.0 in.) L x Dia.

Weight
340 g (12.0 oz.), without batteries

Housing
Machined aluminum

Audio Input

Configuration
Unbalanced

Maximum Input Level
1 kHz at 1% THD
145 dB SPL (SM58), typical

Note: Dependent on microphone type

RF Output

Antenna Type
Integrated Single Band Helical

Occupied Bandwidth
<200 kHz

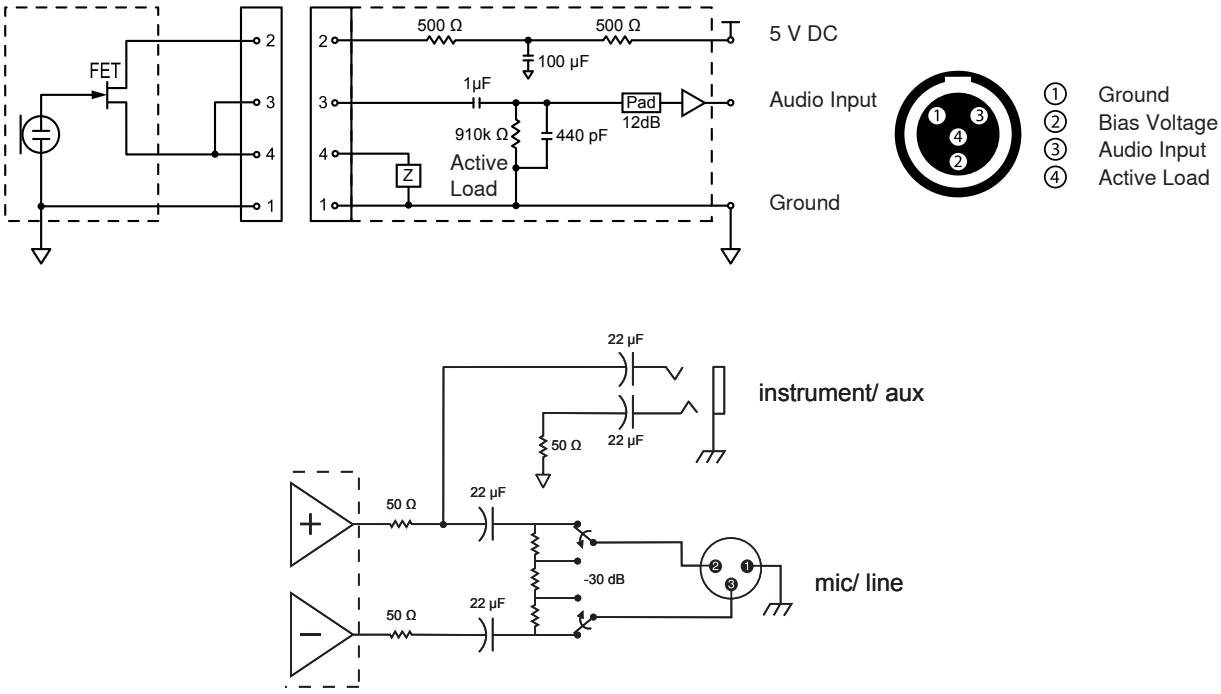
Modulation Type
Shure proprietary digital

Power
1 mW, 10 mW, 20 mW

See Frequency Range and Output Power table, varies by region

Tables and Diagrams

TA4M Connector



Battery Runtime

Battery Type	10 mW	20 mW
SB900	>11 hours	>7 hours
Alkaline	>11 hours	>5 hours
NiMH	>13 hours	>8 hours
Li-primary	12.5-18 hours	9.5-12 hours

The values in this table are typical of fresh, high quality batteries. Battery runtime varies depending on the manufacturer and age of the battery.

Frequency Range and Transmitter Output Power

Band	Frequency Range (MHz)	Power (mW)
G50	470 to 534	1/10/20
G51	470 to 534	1/10/20
G52	479 to 534	1/10
H50	534 to 598	1/10/20
H51	534 to 598	1/10/20
H52	534 to 565	1/10
J50	572 to 636	1/10/20
K51	606 to 670	1/10
L50	632 to 696	1/10/20
L51	632 to 696	1/10/20
P51	710 to 782	1/10/20
R51	800 to 810	1/10/20
JB (Tx only)	806 to 810	1/10
AB (Rx and Tx)	770 to 810	"A" band (770.250-805.750): 1/10/20 "B" band (806.125-809.750): 1/10
Q51	794 to 806	1/10/20
X51	925 to 937.5	1/10

Furnished Accessories

All Systems

Receiver	ULXD4
Power Supply	95-17019
1/2 Wave Antenna (2)	95T9279
2' BNC Cable (2)	95K2035
BNC Bulkead Adapters (2)	95A8994
Rackmount Kit (1)	90AZ8100
5' Ethernet Cable (1)	95A16941
AA Alkaline batteries (2)	80B8201

Handheld Systems

Handheld Transmitter	ULXD2
Cartridge	see options below
Microphone Clip	95T9279
Zipper Bag	95B2313

Choice of one (1) of the following:

SM58	RPW112
SM86	RPW114
SM87A	RPW116
Beta 58A	RPW118
Beta 87A	RPW120
Beta 87C	RPW122
KSM9	RPW184
KSM9HS	RPW186

Bodypack System

Bodypack Transmitter	ULXD1
Antenna	95G9043
Zipper Bag	95A2313

Choice of one (1) of the following:

Instrument cable	WA302
Instrument Clip-on microphone	Beta 98H/C
Lavalier microphone	MX150, MX153, WL183, WL184, WL185
Headset microphone	WH30TQG

Antennas

Band	1/2-Wave Receiver Antennas	1/4-Wave Transmitter Antennas
G50	95AA9279	95G9043 (Yellow)
G51	95AA9279	95G9043 (Yellow)
G52	95AA9279	95G9043 (Yellow)
H51	95AL9279	95D9043 (Gray)
H52	95AL9279	95D9043 (Gray)
J50	95AK9279	95E9043 (Black)
K51	95AJ9279	95E9043 (Black)
L50	95AD9279	95E9043 (Black)
L51	95AD9279	95E9043 (Black)
P51	95AF9279	95F9043 (Blue)
R51	95M9279	95F9043 (Blue)
AB	95M9279	N/A
Q51	95M9279	N/A

Optional Accessories

Shure Rechargeable Battery	SB900
8-Bay Battery Charger	SBC800
Dual Docking Battery Charger	SBC200
Carrying Case	WA610
Y-Cable for Bodypack Transmitters	AXT652
Active Antenna Spitter	UA845SWB
Passive Antenna Splitter/Combiner Kit	UA221
UHF Line Amplifier	UA830USTV
UHF Antenna Power Distribution Amplifier (U.S.A.)	UA844SWB
UHF Antenna Power Distribution Amplifier (Europe)	UA844SE
In-line Power Supply	UABIAST
Front Mount Antenna Kit (Includes 2 cables and 2 bulkhead	UA600
Remote Antenna Bracket with BNC Bulkhead Adapter	UA505

UHF Powered Directional Antenna	UA874WB
Passive Directional Antenna	PA805SWB
Coaxial Cable, BNC-BNC, RG58C/U type, 50 Ohm, 2 ft length (0.6 m)	UA802
Coaxial Cable, BNC-BNC, RG58C/U type, 50 Ohm, 6 ft length (2 m)	UA806
Coaxial Cable, BNC-BNC, RG8X/U type, 50 Ohm, 25 ft length (7.5 m)	UA825
Coaxial Cable, BNC-BNC, RG8X/U type, 50 Ohm, 50 ft length (15 m)	UA850
Coaxial Cable, BNC-BNC, RG213/U Type, 50 Ohm, 100 ft length (30 m)	UA8100
Rackmount Bracket, Short	53A8611
Rackmount Bracket, Long	53A8612
Link Bar	53B8443

Certifications

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:
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Headquarters Europe, Middle East & Africa
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Certified under FCC Part 74.

Certified by IC in Canada under RSS-123 and RSS-102.

IC: 616A-ULXD1 G50, 616A-ULXD1 H50, 616A-ULXD1 J50, 616A-ULXD1 L50; 616A-ULXD2 G50, 616A-ULXD2 H50, 616A-ULXD2 J50, 616A-ULXD2 L50.

FCC: DD4ULXD1G50, DD4ULXD1H50, DD4ULXD1J50, DD4ULXD1L50; DD4ULXD2G50, DD4ULXD2H50, DD4ULXD2J50, DD4ULXD2L50.

Approved under the Declaration of Conformity (DoC) provision of FCC Part 15.

Certified in Canada by IC to RSS-123.

IC: 616A-ULXD4 G50, 616A-ULXD4 J50, 616A-ULXD4 L50

ULXD4 H50

Complies with and/or is certified to RSS-123, RSS-GEN.

Important Product Information

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 the 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 the receiver.
- Connect the equipment to 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.

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.

Please follow your regional recycling scheme for batteries, packaging, and electronic waste.

FREQUENCIES FOR EUROPEAN COUNTRIES

ULXD-G51 470 - 534 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	470 - 534 MHz *
F, GB, GR, H, I, IS, L, LT	470 - 534 MHz *
NL, P, PL, S, SK, SLO	470 - 534 MHz *
DK, FIN, M, N	*
HR, E, IRL, LV, RO, TR	*
All other countries	*

ULXD-P51 710 - 782 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST, F, GB,	710 - 782 MHz *
GR, H, I, IS, L, LT, NL, P, PL, S, SK, SLO	710 - 782 MHz *
RO	718-719; 726-727; 734-743; 750-751; 758-759 MHz*
DK, E, FIN, HR, IRL, LV, M, N, TR	*
All other countries	*

ULXD-H51 534 - 598 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	534 - 598 MHz *
F, GB, GR, H, I, IS, L, LT	534 - 598 MHz *
NL, P, PL, S, SK, SLO	534 - 598 MHz *
DK, FIN, M, N	*
HR, E, IRL, LV, RO, TR	*
All other countries	*

ULXD-R51 800 - 810 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
N	800 - 810 MHz*
A, B, BG, CH, CY, CZ, D, DK, E, EST	*
F, FIN, GB, GR, H, HR, I, IRL, IS, L, LT	*
LV, M, N, NL, P, PL, S, SK, SLO, TR	*
All other countries	*

ULXD-K51 606 - 670 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	606 - 670 MHz *
F, GB, GR, H, I, IS, L, LT	606 - 670 MHz *
NL, P, PL, S, SK, SLO	606 - 670 MHz *
RO	646-647;654-655;662-663 MHz*
DK, E, FIN, HR, IRL, LV, M, N, TR	*
All other countries	*

* IMPORTANT

NOTE: THIS EQUIPMENT 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 IN YOUR REGION.

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

* WICHTIG

HINWEIS: DIESES GERÄT KANN MÖGLICHERWEISE AUF EINIGEN FREQUENZEN ARBEITEN, DIE IN IHREM GEBIET NICHT ZUGELASSEN SIND. WENDEN SIE SICH BITTE AN DIE ZUSTÄNDIGE BEHÖRDE, UM INFORMATIONEN ÜBER ZUGELASSENE FREQUENZEN UND ERLAUBTE SENDELEISTUNGEN FÜR DRAHTLOSE MIKROFONPRODUKTE IN IHREM GEBIET ZU ERHALTEN.

Zulassung: In einigen Gebieten ist für den Betrieb dieses Geräts u.U. eine behördliche Zulassung erforderlich. Wenden Sie sich bitte an die zuständige Behörde, um Informationen über etwaige Anforderungen zu erhalten.

*IMPORTANT

REMARQUE: IL EST POSSIBLE QUE CE MATÉRIEL SOIT CAPABLE DE FONCTIONNER SUR CERTAINES FRÉQUENCES NON AUTORISÉES LOCALEMENT. SE METTRE EN RAPPORT AVEC LES AUTORITÉS COMPÉTENTES POUR OBTENIR LES INFORMATIONS SUR LES FRÉQUENCES ET NIVEAUX DE PUISSANCE HF AUTORISÉES POUR LES SYSTÈMES DE MICROPHONES SANS FIL LOCALEMENT.

Autorisation d'utilisation : Une licence officielle d'utilisation de ce matériel peut être requise dans certains pays. Consulter les autorités compétentes pour les exigences possibles.

*IMPORTANTE

NOTA: QUESTO APPARECCHIO PUÒ ESSERE IN GRADO DI FUNZIONARE A FREQUENZE NON AUTORIZZATE NELLA REGIONE IN CUI SI TROVA L'UTENTE. RIVOLGERSI ALLE AUTORITÀ COMPETENTI PER OTTENERE LE INFORMAZIONI RELATIVE ALLE FREQUENZE ED AI LIVELLI DI POTENZA RF AUTORIZZATE NELLA PROPRIA REGIONE PER I PRODOTTI MICROFONICI SENZA FILI.

Concessione della licenza all'uso: per usare questo apparecchio, in certe aree può essere necessaria una licenza ministeriale. Per i possibili requisiti, rivolgersi alle autorità competenti.

*IMPORTANTE

NOTA: ES POSIBLE QUE ESTE EQUIPO FUNCIONE EN ALGUNAS FRECUENCIAS NO AUTORIZADAS EN SU REGION. POR FAVOR CONTACTE A LA AUTORIDAD NACIONAL PARA OBTENER INFORMACION ACERCA DE LAS FRECUENCIAS AUTORIZADAS Y LOS NIVELES DE POTENCIA DE RADIOFRECUENCIA PARA PRODUCTOS CON MICROFONOS INALAMBRICOS EN SU ZONA.

Licencia de uso: Se puede requerir una licencia ministerial para utilizar este equipo en algunas áreas. Consulte a la autoridad nacional sobre los posibles requisitos.

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