

SHURE®

LEGENDARY
PERFORMANCE™

AXIENT



AXT630/AXT631 Antenna Distribution System



IMPORTANT SAFETY INSTRUCTIONS

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



14. REFER all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. DO NOT expose the apparatus to dripping and splashing. DO NOT put objects filled with liquids, such as vases, on the apparatus.
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.



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.

AXT630 and AXT631 Antenna Distribution Systems

Antenna Distribution Systems send the RF signal from a single pair of antennas to multiple receivers. Ultra-linear amplification and adjustable attenuation optimize performance in difficult RF environments. Selectable input filters match the available frequency bands of transmitters, providing extra protection from strong out-of-band signals. BNC antenna output pairs distribute band-filtered signal to up to 4 receivers. A pair of wideband cascade ports supplies a wideband RF signal to Spectrum Managers or additional antenna distribution amplifiers. Networking enables Wireless Workbench® 6 system control of filtering ranges and attenuation. To maximize use of available RF spectrum, two models of the Antenna Distribution System are available. The AXT630 covers a frequency range of 470-698 MHz and the AXT631 covers a frequency range of 606-814 MHz.

Features

- Selectable input filtering provides system-wide protection against strong out-of-band signals
- Wideband filtering option covers multiple bands
- Up to 15 dB of selectable RF attenuation for signal-to-noise optimization
- Front panel interface and Wireless Workbench 6 software control provide easy setup and control of filtering, antenna power, and attenuation
- BNC outputs: 4 antenna output pairs
- Wideband RF cascade port with selectable 3 dB make-up gain for connecting wideband devices
- Ethernet Networking: 2 PoE enabled Ethernet ports
- IEC power ports enable daisy-chaining of AC power

Included Components

2-foot Coaxial Antenna Cable (RG-58) (12)	UA802
IEC AC Power Cable (1)	95A9128
IEC AC Extension Cable (1)	95A9129
Shielded 3-foot Ethernet Cable (1)	C803
Shielded 8-inch Ethernet Jumper Cable (1)	C8006
Hardware Kit (1)	90XN1371
22-inch Coaxial Cable* (1)	95B9023
33-inch Coaxial Cable* (1)	95C9023

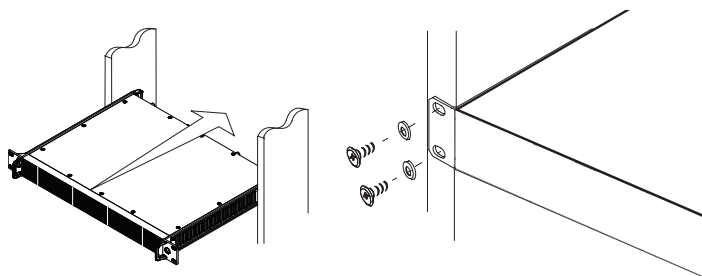
*with integrated bulkhead for front mounting antennas.

Mounting Instructions

This component is designed to fit into an audio rack.



WARNING: To prevent injury this apparatus must be securely attached to the rack.



Optional Accessories

1/2 Wave Antennas

(744-865 MHz)	UA820G
(690-746 MHz)	UA820H4
(554-590 MHz)	UA820J
(606-666 MHz)	UA820K
(638-698 MHz)	UA820L3
(694-758 MHz)	UA820M
(740-814 MHz)	UA820Q
(710-790 MHz)	UA820P8

Cables

25-foot Coaxial Cable RG8/X	UA825
50-foot Coaxial Cable RG8/X	UA850
100-foot (30.4 m) Antenna Extension Cable	UA8100

Antennas

Passive Omnidirectional Antenna (470-1100 MHz)	UA860SWB
Passive Directional Antenna (470-952 MHz)	PA805SWB
PWS Helical Antenna (480-900 MHz)	HA-8089

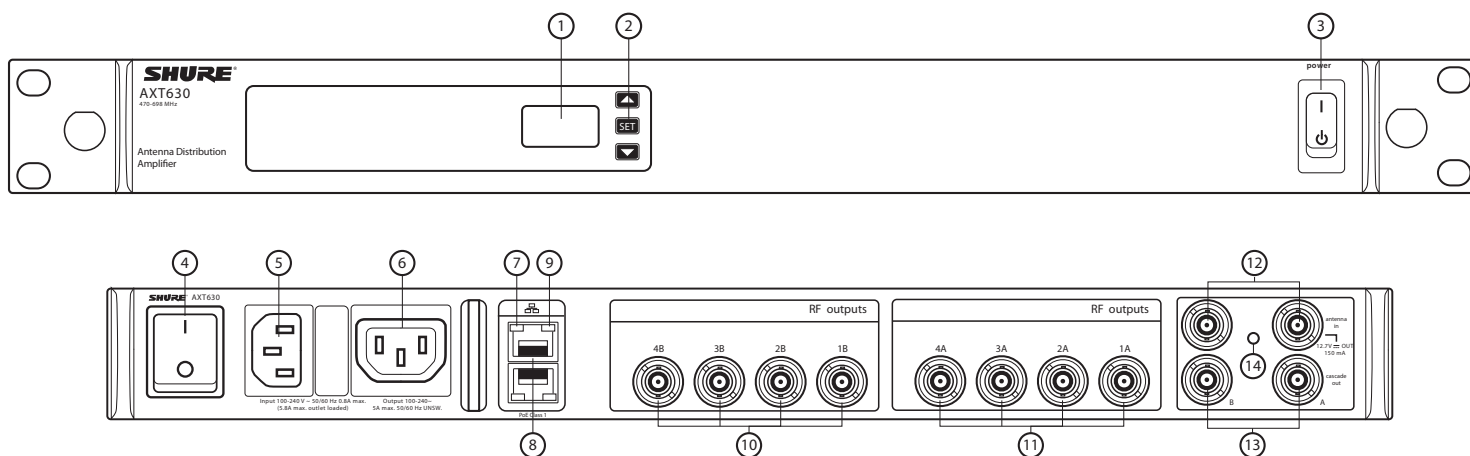
In-Line RF Amplifiers

(470-900 MHz)	UA830WB
(470-698 MHz)	UA830USTV

Active Directional Antennas

(470-900 MHz)	UA870WB
(470-698 MHz)	UA870USTV

Controls and Connectors



① LCD Display

Displays menu and settings.

② Navigation Buttons

- Arrows: Scroll menus and change settings
- SET: Enables menu edits and saves changes

③ Power Switch

Powers the unit on or off

④ AC Power Primary Switch

AC Main Power Switch

⑤ AC Power In

IEC Connector, 100-240 V AC

⑥ AC Power Cascade

Use the IEC extension cables to connect up to 5 devices to a single AC power source.

⑦ Network Speed LED (amber):

- Off = 10 Mbps
- On = 100 Mbps

⑧ Ethernet Ports (2)

PoE Class 1 enabled. Connect to an Ethernet network to enable remote control and monitoring

⑨ Network status LED (green)

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

⑩ RF Output Connectors, Channel B

Distributes RF signal for Channel B

⑪ RF Output Connectors, Channel A

Distributes RF signal for Channel A

⑫ Antenna IN Ports, Channels A and B

Antenna inputs are DC biased for use with active antennas or in-line amplifiers.

⑬ RF Cascade Ports, Channels A and B

Passes the wideband RF signal from one device to the next, allowing up to 5 devices to share a single pair of antennas.

⑭ Antenna Input Status LED

- Green = DC power on
- Off = DC power off
- Red = Antenna fault or over-current condition

Antennas

The AXT630 and AXT631 are compatible with front-mounted antennas or with remote-mounted antennas.

When using the input band filtering function, select an antenna with bandwidth to cover the filter range.

Installing Front-mounted Antennas

Mounting the antennas on the front panel improves system performance by providing a clear signal path for the RF signal. Use the supplied bulkhead adapter kit to install the antennas on the front panel.

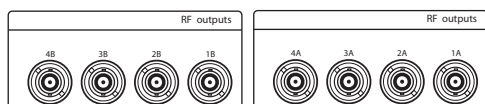
1. Insert the bulkhead adapters on the supplied front-mounting cables through the holes in each bracket and secure them from the front using the supplied hardware.
2. Connect the supplied antennas cables to the antenna input BNC connectors.
3. Install the antenna onto the bulkhead adapters.

Note: To minimize the possibility of signal dropout and optimize performance, point the antennas up and away from each other at 45° from vertical.

Installing Remote Antennas

Remote antennas offer greater flexibility for antenna placements and can improve performance by providing a less obstructed transmission path and extending range. Consult <http://www.shure.com> for tips and best practices for remote mounting antennas.

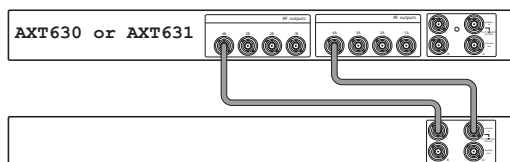
RF Output Distribution



The RF outputs distribute the signal from a pair of antennas to up to 4 receivers or additional antenna distribution systems. Port-to-port isolation reduces interference, making the distribution ports the best option for distributing signal to additional devices.

Connecting Devices

Connect an A and B pair of RF outputs from the Antenna System to the A and B inputs of the device.



Input Band Filtering

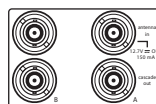
The input band filters act on the RF distribution ports but do not affect the RF cascade ports. The Wideband setting passes 470-698 MHz (AXT630) or 606-814 MHz (AXT631). Select the band filter that most closely matches the tuning range of connected devices to optimize performance.

When a Band filter has been set, operate and tune connected devices within the selected band.

Gain and Attenuation

Use the RF Gain menu to maintain consistent signal levels sent to connected devices. The available adjustment range is -12 to +3 dB when the Cascade ports are off and -15 to 0 dB when the cascade ports are active.

RF Cascade Ports



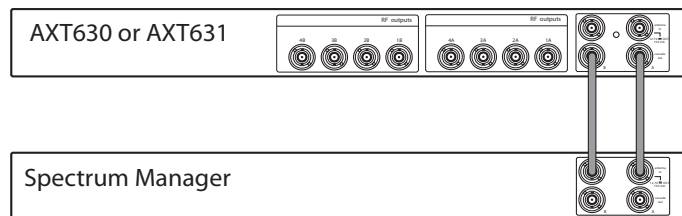
The RF cascade ports extend the Antenna Distribution System by providing a connection point for additional receivers, Spectrum Managers, or Antenna Distribution Systems.

When Antenna Cascade is set to Auto, the Cascade ports automatically activate when 12 V DC from the antenna input of a connected device is sensed at the port connection. When the cascade ports are active, a signal splitting loss occurs of 5 dB (max.).

Receivers with RF cascade outputs can extend the antenna signal to additional receivers within the same band.

Adding an AXT600 Spectrum Manager to an Antenna System

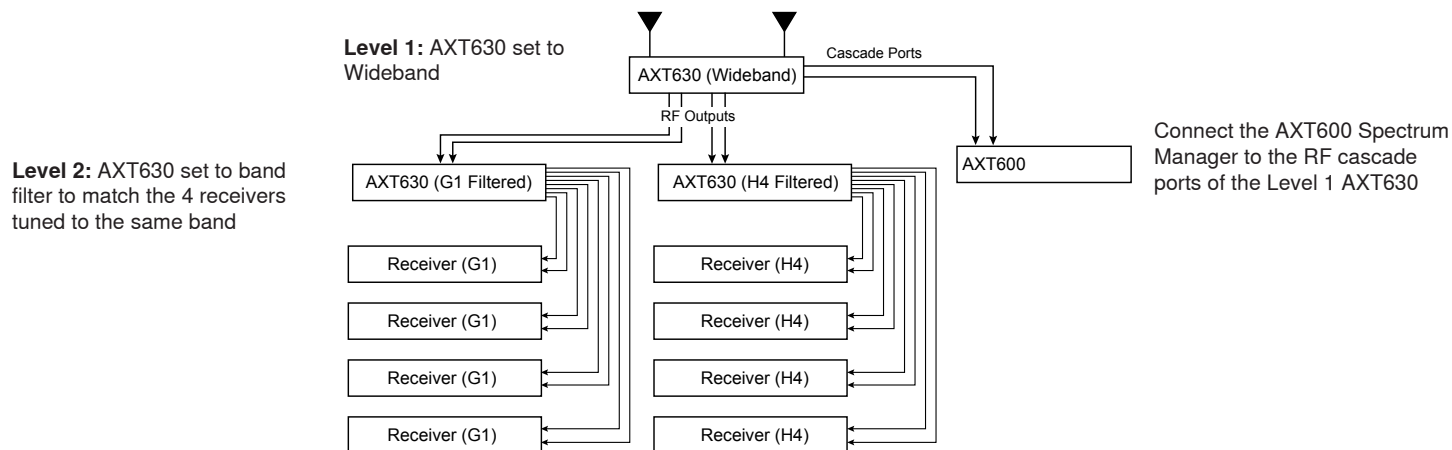
Connect the AXT600 Spectrum Manager to the RF Cascade ports of an AXT630 or AXT631.



Multiple Levels of Antenna Distribution

For large configurations, multiple AXT630s or AXT631s can be layered to support several levels of signal distribution:

- Two levels of antenna distribution are possible if the level 1 and level 2 AXT630 or AXT631 have the Cascade ports activated.
- Up to 3 levels of antenna distribution are possible if only the level 1 AXT630 or AXT631 has the Cascade ports activated.
- For best RF performance, use all the RF outputs on one level before creating additional levels.



Troubleshooting

Antenna Fault

Antenna Faults

The antenna input status LED flashes red to indicate a short or over-current condition at an antenna port. To isolate the fault, navigate to the DC power menu. The menu displays which antenna port (A, B, or A+B) is the source of the fault. Check the antenna connections to remove the fault condition.

Over Temperature

Over Temperature Message

The **Over Temperature** message is displayed when the fans are unable to cool efficiently, indicating an elevated temperature condition.

- Press any button to suppress the message for 20 seconds
- Increase ventilation to the unit to clear the message

Main Menu

Use the main menu to select the band filter, adjust the RF gain, and configure the antenna ports.

Band

Selecting an input **Band** filter optimizes performance when the components connected to the RF outputs are all within the same band. The selected band filter will only pass frequencies within the range of the connected components. Four selectable input filters are available to match the frequency bands transmitters and receivers. A **Wideband** setting is available to extend frequency support across all 4 bands. This setting allows receivers operating in a variety of bands to use the RF outputs.

To set the Band filter:

1. Navigate to the **Band** menu and press the **SET** button to enable editing.
2. Use the arrows to select a band filter or to select the **Wideband** setting.
3. Press the **SET** button to save changes.

RF Gain

Adjust the RF gain to boost or attenuate the antenna signal to maintain consistent levels and prevent overload. Gain adjustments are made in 1 dB increments.

The gain adjustment range depends on the connection status of the RF cascade ports:

- Cascade ports connected: adjustment range = -15 dB to 0 dB
- Cascade ports not connected: adjustment range = -12 dB to +3 dB

Antenna Cascade

Auto

The ports will activate when a connected device supplies 12-15 V DC to the port.

On

The ports are continuously active, independent of voltage applied by a connected device.

Antenna Power

ON

The antenna ports supply 12-15 V DC to power active antennas.

OFF

Turns off DC voltage at the antenna ports.

Network Status

Active

Indicates connectivity with other devices on the network.

Inactive

No connectivity with other devices on the network.

Note: IP address must be valid to enable networked control.

Utility Menu

Press and hold both arrow keys to enter and exit the utility menu, which is used to access network and display settings.



hold both arrow keys

IP Address Mode: **Automatic**

This is the default setting for use with a DHCP server, which automatically assigns an IP address.

1. Navigate to the IP Mode menu and press the **SET** key.
2. Use the arrow keys to highlight **Automatic**.
3. Press the **SET** key.
4. Use the arrow keys to move the ► to select **OK** to save or **Cancel** to discard, and then press the **SET** key.

IP Address Mode: **Manual**

Use manual IP addressing to set the IP address and subnet mask when a DHCP server is not available.

1. Navigate to the IP mode menu and press the **SET** key.
2. Use the arrow keys to highlight **Manual**.
3. Press the **SET** key to enable editing of the IP address and the subnet mask.
4. Use the arrow keys to move the ► to select **IP:** or **Sub:**
5. Use the arrow keys and the **SET** key to edit the IP address and subnet mask.
6. Use the arrow keys to move the ► to select **OK** to save or **Cancel** to discard, and then press the **SET** key.

MAC (MAC Address)

Displays the MAC address, which is an embedded, uneditable identification number unique to each device. Used by the network and WWB software to identify components.

Device ID

This eight-character name is displayed when this device is detected on other network devices or in WWB software.

1. Press **SET** key to enable editing.
2. Use the arrow keys to change the characters.
3. To finish editing, press the **SET** key until none of the characters are highlighted.

Serial Number

Displays the serial number.

Firmware

Displays the version of firmware installed on this device.

Brightness

Sets the brightness of the LCD to low, medium, or high.

Display Invert

This changes the LCD menu from white text on dark background to dark text on a light background.

Front Panel Lock

Locks or unlocks the navigation buttons to prevent accidental or unauthorized changes to settings.

On

Locks the navigation buttons.

Off

Unlocks the navigation buttons.

Power Switch Lock

Lock the power switch to ensure that power is not accidentally turned off.

On

Locks the power switch.

Off

Unlocks the power switch.

Fan (Cooling Fan Mode)

Automatic

The fan is enabled and adjusts speed based on the internal temperature of the unit.

Always on

The fan runs continuously at maximum speed to provide maximum cooling in warm environments.

Specifications- AXT630, AXT631 Antenna Distribution System

Dimensions	44 mm x 483 mm x 366 mm (1.7 in. x 19.0 in. x 14.4 in.), H x W x D
Weight	4.6 kg (10.1 lbs),
Housing	Steel; Extruded aluminum
Operating Temperature Range	-18°C (0°F) to 63°C (145°F)
Storage Temperature Range	-29°C (-20°F) to 74°C (165°F)
Power Requirements	100 to 240 V AC, 50-60 Hz
Current Drain	1.0 A RMS (referenced at 120 V AC)

RF Input

Connector Type	BNC	
Configuration	Unbalanced, active	
Band Filters	AXT630:	Wideband: 470–698 MHz Band G1: 470–530 MHz Band H4: 518–578 MHz Band J5: 578–638 MHz Band L3: 638–698 MHz
	AXT631:	Wideband: 606–814 MHz Band K4E: 606–666 MHz Band M8: 666–730 MHz Band P8, P9: 710–790 MHz Band Q5: 740–814 MHz
Impedance	50 Ω	
Bias Voltage	12 V DC, 150 mA (300 mA maximum)	
RF Frequency Range	AXT 630: 470–698 MHz	
	AXT 631: 606–814 MHz	

Distribution Output

Connector Type	BNC (4 pairs)	
Configuration	Unbalanced, active	
Impedance	50 Ω	
Gain Adjustment Range	Cascade Enabled:	-15 dB to 0 dB (In 1 dB steps)
	Cascade Disabled:	-12 dB to +3 dB (In 1 dB steps)
Output Intercept Point	>25 dBm, typical	

Cascade Output

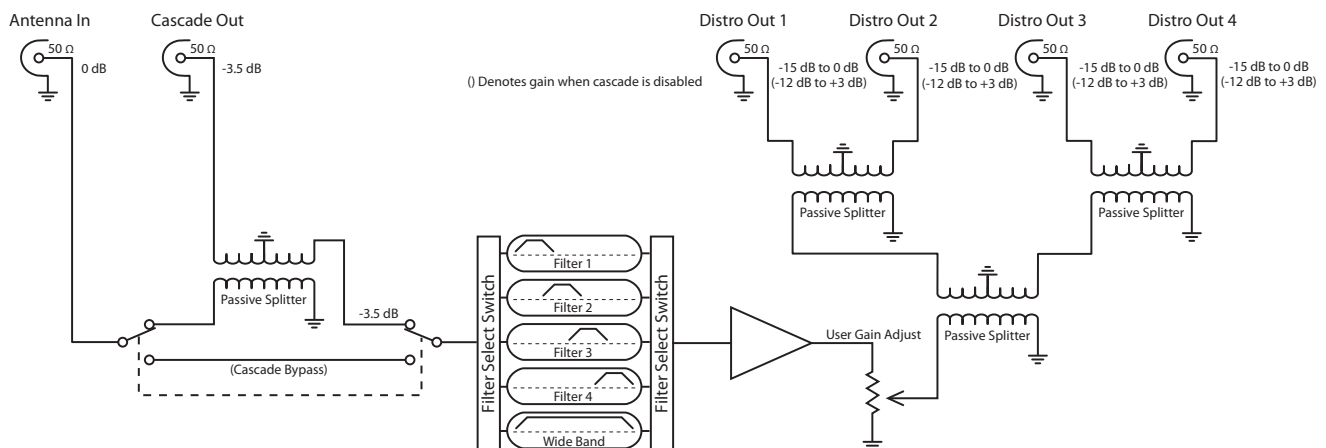
Connector Type	BNC (1 pair)	
Configuration	Unbalanced, wideband	
Impedance	50 Ω	
Insertion Loss	<5 dB	

Networking

Power Over Ethernet (PoE)	50 V DC, Class 1
Network Interface	Dual Port Ethernet 10/100 Mbps
Network Addressing Capability	DHCP or Manual IP address

Firmware Updates

Firmware is embedded software in each component that controls functional-ity. 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 WWB6 software. Firmware is available for download from <http://www.shure.com>.



AXT630/AXT631 Circuit Diagram

Certifications

AXT630 and AXT631

Meets essential requirements of the following European Directives:

- R&TTE Directive 99/5/EC
- Conforms to European Regulation (EC) No. 1275/2008, as amended.
- WEEE Directive 2002/96/EC, as amended by 2008/34/EC
- RoHS Directive 2002/95/EC, as amended by 2008/35/EC

Note: Please follow your regional recycling scheme for electronic waste

Meets requirements of the following standards: EN 300 422 Parts 1 and 2, EN 301 489 Parts 1 and 9, EN60065.

AXT630

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

Meets Industry Canada RSS-123.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada license-exempt RSS standard(s).

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.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The CE Declaration of Conformity can be obtained from Shure Incorporated or any of its European representatives. For contact information please visit www.shure.com

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

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Headquarters Europe, Middle East & Africa

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