

### General Description

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 signals to up to 4 receivers. A pair of wideband cascade ports supply wideband RF signals to Spectrum Managers or additional antenna distribution amplifiers. Networking allows Wireless Workbench to control filtering ranges and attenuation. For added flexibility, Axient Antenna Distribution Systems are compatible with Shure ULX-D and UHF-R receivers.

To maximize use of the RF spectrum, Antenna Distribution Systems are available in the following frequency ranges:

- **AXT630** (470-698 MHz)
- **AXT631** (606-814 MHz)
- **AXT632** (470-510 MHz and 630-787 MHz)

**Note:** Instructions in this system guide apply all models of Axient Antenna Distributions Systems.

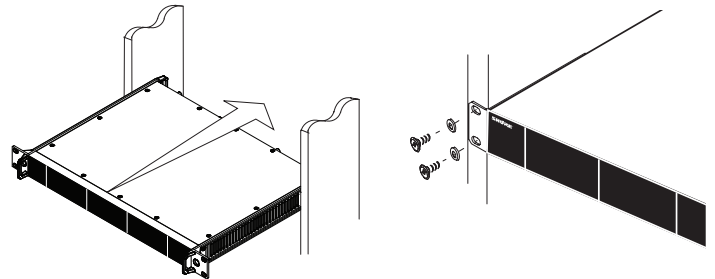
### Features

- 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

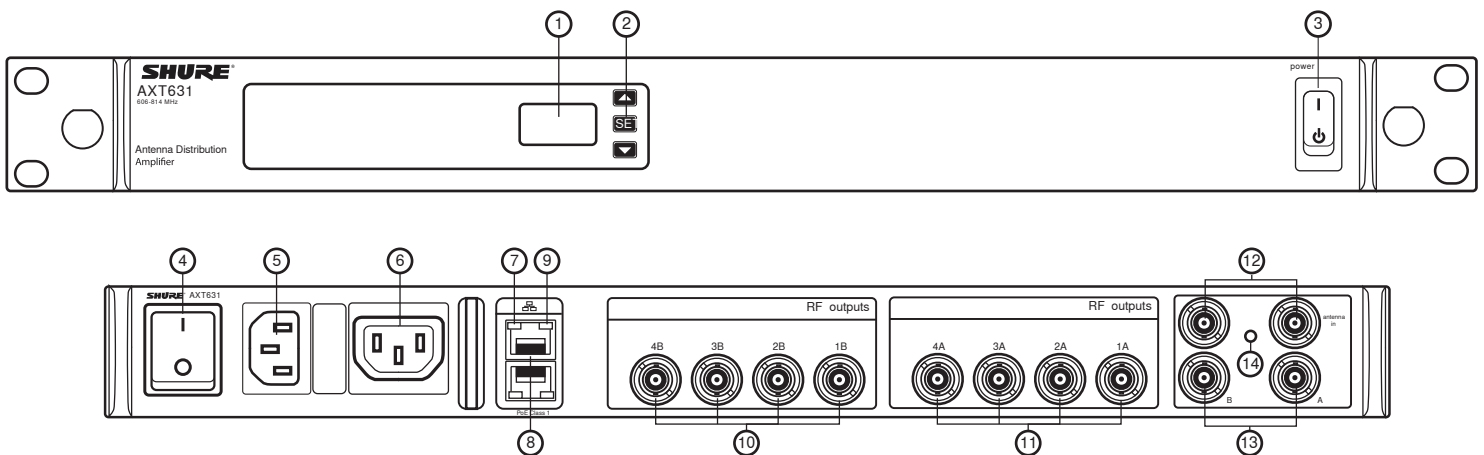
### Mounting Instructions

This component is designed to fit into an audio rack.

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



### 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

**Tip:** Press and hold the Set button for 1 second to activate the Hardware Identify feature in Wireless Workbench.

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 Antenna Distribution Systems are compatible with front-mounted antennas or with remote-mounted antennas.

**Note:** 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.

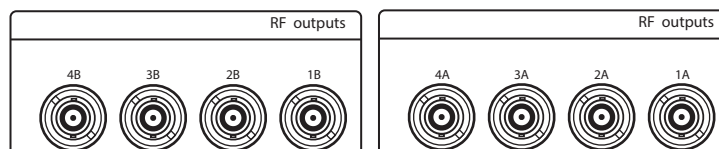
2. Connect the supplied antennas cables to the antenna input BNC connectors.
3. Install the antenna onto the bulkhead adapters.

**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 for tips and best practices for remote mounting antennas.

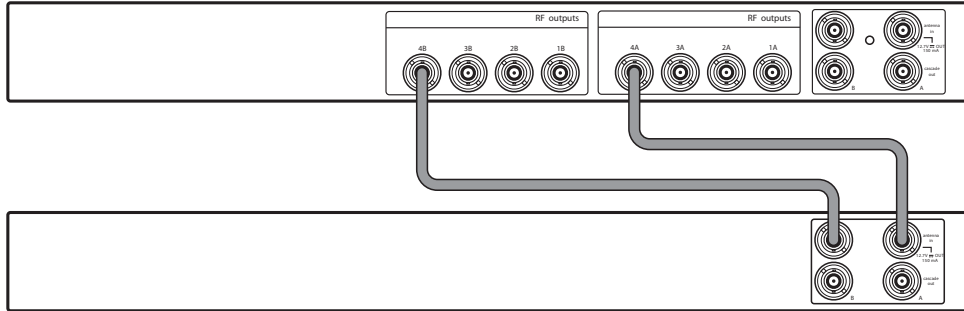
## RF Output Distribution



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

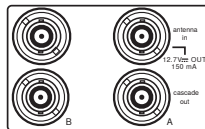
The input band filters act on the RF distribution ports but do not affect the RF cascade ports. The Wideband setting passes the full frequency range of the Antenna Distribution System. Select the band filter that most closely matches the tuning range of connected devices to optimize performance.

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



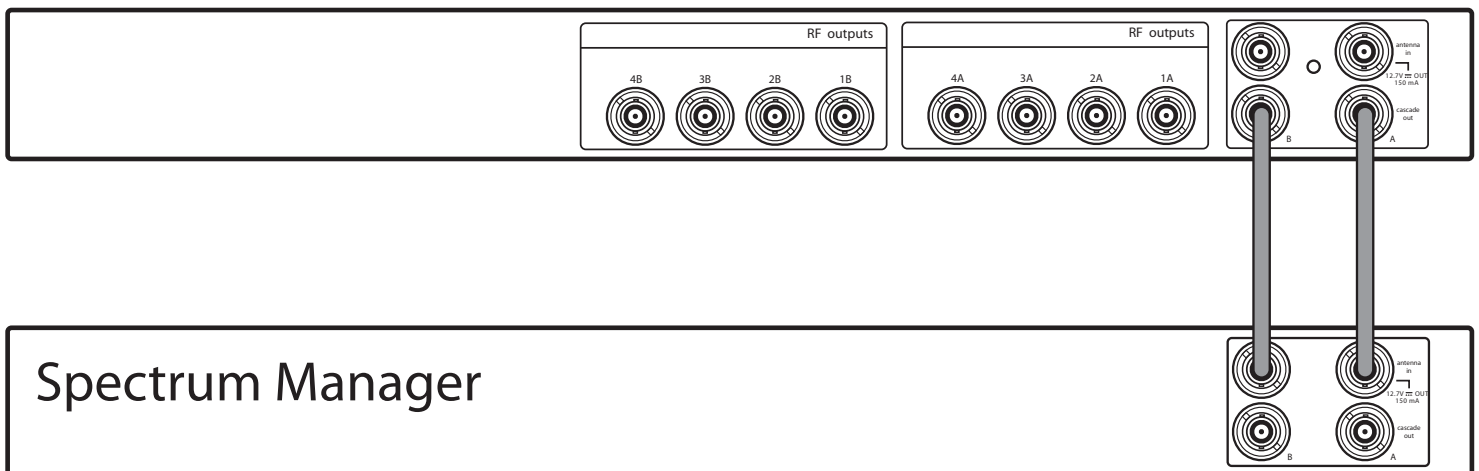
The RF cascade ports extend the Antenna Distribution System by providing a connection point for additional receivers, Spectrum Managers, or Antenna Distribution Systems.

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

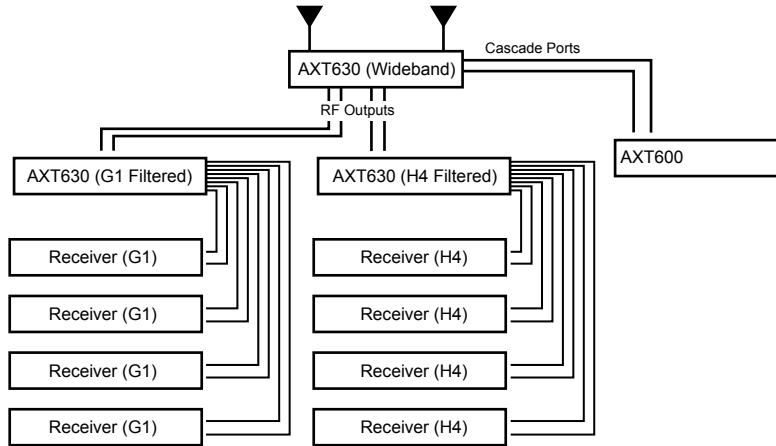
Connect the AXT600 Spectrum Manager to the RF Cascade ports of the Antenna Distribution System.



## Multiple Levels of Antenna Distribution

For large configurations, multiple Antenna Distribution Systems can be layered to support several levels of signal distribution:

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



**Level 1:** Antenna Distribution System set to Wideband

**Level 2:** Antenna Distribution System set to a band filter matching the 4 receivers tuned to the same band

Connect the AXT600 Spectrum Manager to the RF cascade ports of the Level 1 Antenna Distribution System

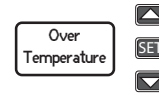
## Troubleshooting

### 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 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
- Select the High Speed setting for the cooling fan

## 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.

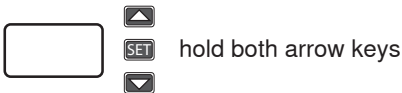
### Inactive

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.



## 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.

## Setting the Fan Speed

The cooling fan has the following speed options:

- Low Speed = fan is always on, at a lower speed for quiet operation
- High Speed = fan is always on, at a higher speed for maximum cooling
- Automatic = fan will operate only when the internal temperature becomes too warm

Note: Speed may switch from Low to High if additional cooling is needed to protect the component.

1. Simultaneously press and hold the ▲ and ▼ buttons to access the utility menu.
2. Use the arrow buttons to scroll to the Fan setting.

3. Press Set to enable editing, and then use the arrow buttons to select a speed option.

4. Press Set to save, and then simultaneously press and hold the ▲ and ▼ buttons to return to the main menu.

## Firmware Updates

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 improve-

ments, 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 .

## Specifications

### Specifications -- AXT630, AXT631, AXT632

#### 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

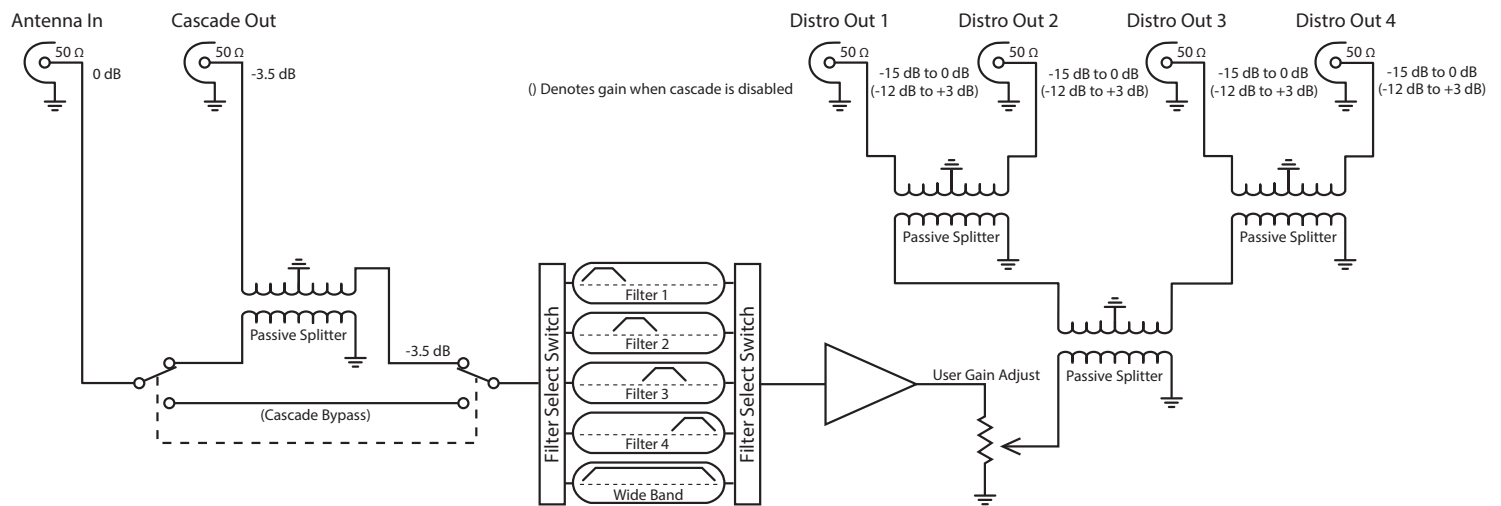
-29°C (-20°F) to 74°C (165°F)

#### Power Requirements

100 to 240 V AC, 50-60 Hz

#### Current Drain

1.0 A RMS (referenced at 120 V AC)



AXT630/AXT631/AXT632 Circuit Diagram

## 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
AXT632	Wideband	470–787 MHz
	Band G7C	470–510 MHz
	Band L3E	638–698 MHz
	Band M8	666–730 MHz
	Band P9	710–787 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
AXT 632	470–787 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

**Accessories**

**Furnished Accessories**

2-foot Coaxial Antenna Cable (RG-58) UA802 (12)	
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.

**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**

470-698 MHz	UA874US
470-790 MHz	UA874E
470-900 MHz	UA874WB
925-952 MHz	UA874X

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

## Certifications

### AXT630, AXT631, and AXT632

Meets essential requirements of the following European Directives:

- WEEE Directive 2002/96/EC, as amended by 2008/34/EC
- RoHS Directive 2011/65/EU

**Note:** Please follow your regional recycling scheme for batteries and electronic waste

Hereby, Shure Incorporated declares that the radio equipment is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.shure.com/eu-ropce/compliance>

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### AXT630

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

Meets Industry Canada RSS-123.

**Industry Canada ICES-003 Compliance Label:** CAN ICES-3 (B)/NMB-3(B)

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.**