**ULTRAMAX™ MIMO 2-in-1**

High Performance External Antenna

ULTRAMAX MIMO 2-in-1 is a full outdoor antenna equipped with two ports, designed specifically to provide high performance connectivity for Fleet and Public Safety vehicles and assets connecting to almost any vehicular router or modem. This antenna is configurable and offers up to two high gain cellular/LTE/MIMO antennas, which include support for LTE Band 14 for FirstNet antenna inside a single robust and compact housing.

- 2 x Wideband Cellular/LTE Elements (MIMO)
- Two embedded antenna technologies that operate over multiple bands in one housing
- Leading LTE performance while in coexistence with multiple other embedded antenna technologies
- Lower profile and smaller footprint than competing solutions
- High gain provides bigger cellular footprint
- Must be mounted on metal
- Available in black or white
- US Patent 10109918

**Descriptions/Applications**
The ULTRAMAX MIMO antenna builds on the best in class RF performance, leading design features, and extended operational life of our highly successful Fleet and Public Safety Antenna products. Like all our antennas, this product has been designed to be robust to withstand the natural hazards a vehicle faces including vibration, hot, cold, ice, salt, dirt, car washes, and tree branch sweeps. Our antennas typically outlast the life of a vehicle.

**Standard Configurations**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP-CC-M-S22-BL-15</td>
<td>MIMO Cell/LTE x 2, Magnetic Mount, SMA on Cell/LTE, Black, 15ft coax</td>
</tr>
<tr>
<td>AP-CC-A-S22-BL-15</td>
<td>MIMO Cell/LTE x 2, Adhesive Mount, SMA on Cell/LTE, Black, 15ft coax</td>
</tr>
<tr>
<td>AP-CC-Q-S22-BL-15</td>
<td>MIMO Cell/LTE x 2, Threaded Bolt Mount, SMA on Cell/LTE, Black, 15ft coax</td>
</tr>
</tbody>
</table>

*Also available in color white, customizable cable lengths up to 35 feet, and other connector variations.*
### Electrical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Elements 1 &amp; 2</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td></td>
<td>698-960/1700-2700 MHz</td>
</tr>
<tr>
<td>Operational Bands</td>
<td></td>
<td>LTE/Cellular</td>
</tr>
<tr>
<td>Peak Gain: Isotropic</td>
<td>Elements 1 &amp; 2</td>
<td>698-960 MHz 4.9 dBi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1710-2700 MHz 7 dBi</td>
</tr>
<tr>
<td>Isolation</td>
<td>Elements 1 &amp; 2</td>
<td>&gt; 10 dB</td>
</tr>
<tr>
<td>Correlation Co-efficient</td>
<td>Elements 1 &amp; 2</td>
<td>&lt; 0.1</td>
</tr>
</tbody>
</table>

### Environmental Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Substances</td>
<td>RoHS Compliant</td>
</tr>
<tr>
<td>Temperature</td>
<td>-40°C to 65°C (-40°F to + 149°F) Operating and Storage conformance to IEC 60068</td>
</tr>
<tr>
<td>Humidity (Non-Condensing)</td>
<td>5% to 96% Operating and Storage conformance to IEC 60068</td>
</tr>
<tr>
<td>Military Spec</td>
<td>MIL-STD 810 conformance to vibration</td>
</tr>
</tbody>
</table>

### Mounting Data

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>2.220” (56.4mm)</td>
</tr>
<tr>
<td>Width</td>
<td>3.831” (97.3mm)</td>
</tr>
<tr>
<td>Length</td>
<td>7.000” (178.3mm)</td>
</tr>
<tr>
<td>Color</td>
<td>Black (BL) or White (WH)</td>
</tr>
</tbody>
</table>

### Cable Data

<table>
<thead>
<tr>
<th>Cell/LTE</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>CFD195 Low Loss</td>
</tr>
<tr>
<td>Diameter</td>
<td>0.195” (4.953 mm)</td>
</tr>
<tr>
<td>Length</td>
<td>1 feet (0.3 m)</td>
</tr>
<tr>
<td>Termination</td>
<td>SMA Male</td>
</tr>
</tbody>
</table>
The Perfect All-In-One Solution for your In-Vehicle Mobile Access Router

The AP-Double Cell/LTE~GPS Antenna is the all-in-one, low profile housing that provides 2 high gain Multiple-In, Multiple-Out (MIMO) Cellular/LTE antennas and a GPS antenna. This can come with a threaded bolt mount, permanent adhesive mount or magnetic mount; color choices of black or white.

**Key Benefits:**

**Faster Data Speeds.** With the AP-Double Cell/LTE~GPS Antenna, you will get superior Cellular/LTE data throughput speeds with the Multiple-In, Multiple-Out dual antennas. Our double Cellular/LTE antenna design takes advantage of the fastest speeds that the 4G/LTE network offers.

**GLONASS and US GPS Together:** Antenna Plus now provides antennas for both GPS systems. When used together the two satellite GPS systems have 55 combined satellites providing more ubiquitous GPS coverage in rural areas as well as dense downtown urban areas with skyscrapers. The level of accuracy is also superior compared to just the US GPS system.

**Bigger Wireless Footprint:** By using the AP-Double Cell/LTE~GPS Antenna, you can be farther away from a cell site and still connect; up to 25% more wireless coverage, depending on the geography you travel in.

**One Simple Installation:** All antennas are built into one physical housing so that you only have to drill one hole for a fast and tidy installation. This reduces the need for multiple antennas on top of the vehicle.

**Long Product Life:** Our rugged, low profile design gives you protection against all of the natural hazards a vehicle faces including vibration, hot, cold, ice, salt, dirt, car washes, and tree branch sweeps. Our antennas typically outlast the life of vehicle.

**Connects to mobile data wireless routers with TWO Cellular/LTE ports and a GPS port.**
**Electrical Specifications**

**Frequencies:**
- Cellular/LTE = 824-896 MHz; 1850-1995 MHz;
  698-798 MHz; 1710-1770 MHz;
  2110-2170 MHz; 2570-2620 MHz
- GPS = 1575.42 MHz - 1602 MHz

**VSWR:** 1.5:1 or less at resonant point

**Gain:**
- 698-896 MHz: 3 dBi
- 1710-2620 MHz: 4 dBi

**Radiation Pattern:**
- OMNI Directional
- Hemispherical (GPS)

**Polarization:**
- Vertical

**Mechanical Specifications**

**Radome:**
- Glass Filled Polypropylene

**Cable Length:**
- 15 feet (4.5 m) (Adhesive and Bolt Mount)
- 10 feet (3 m) (Magnet Mount)
- Optional cable length to 35 feet

**Connectors:**
- The AP-Double Cell/LTE~GPS Antenna can come with any RF connectors you need to connect to your modem.

**Environmental Specifications**

**Temperature:**
- -40 °C to 85 °C (-40 °F to +185 °F) operating and storage

**Humidity:**
- (non-condensing) - 5% to 95% operating and storage

**Military Spec MIL-STD 810 conformance to thermal, mechanical shock, and humidity.**

**GPS Antenna Specifications**

**Frequency Range**
- 1575.42 MHz - 1602 MHz

**Gain**
- 28 dB min.

**Polarization**
- R.H.C.P. (Right Hand Circular Polarization)

**Noise Figure**
- 2.0 max.

**Arial Ratio**
- 3 dB max.

**Bandwidth**
- 2 MHz min.

**VSWR**
- 2.0 max.

**Output Impedance**
- 50 Ohms

**Voltage**
- 2.7-5.6 Volts

**Current**
- 10 mA ± 0.8 mA

---

**Dimensions**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.220” (56.4 mm)</td>
<td>3.831” (97.3 mm)</td>
<td>7.000” (177.8 mm)</td>
</tr>
</tbody>
</table>

**Built-in Metal Ground Plane**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.183” (55.5 mm)</td>
<td>7.074” (179.7 mm)</td>
<td>7.650” (194.3 mm)</td>
</tr>
</tbody>
</table>

**Mounting Styles**

- Threaded Bolt
- Magnetic
- Permanent Adhesive

**AP-DOUBLE CELL/LTE~GPS**

Copyright 2016 Antenna Plus LLC. Version 3 (04/18/16)
The Perfect All-In-One Solution for your In-Vehicle Mobile Access Router

The AP-MultiMax MIMO Antenna is the all-in-one, low profile housing that provides 2 high gain Multiple-In, Multiple-Out (MIMO) Cellular/LTE antennas, 1 high gain WiFi antenna (802.11 abgn,ac), and a GPS antenna. This can come with a threaded bolt mount, permanent adhesive mount or magnetic mount; color choices of black or white.

Key Benefits:

Faster Data Speeds. With the AP-MultiMax MIMO Antenna, you will get superior Cellular/LTE data throughput speeds with the Multiple-In, Multiple-Out dual antennas. Our double Cellular/LTE antenna design takes advantage of the fastest speeds that the 4G/LTE network offers. Top WiFi speeds are achieved with our Single-WiFi antenna to off-load large amounts of data or to push software updates to your computer from your WiFi hotspot.

GLONASS and US GPS Together: Antenna Plus now provides antennas for both GPS systems. When used together the two satellite GPS systems have 55 combined satellites providing more ubiquitous GPS coverage in rural areas as well as dense downtown urban areas with skyscrapers. The level of accuracy is also superior compared to just the US GPS system.

Bigger Wireless Footprint: By using AP-MultiMax MIMO Antenna, you can be farther away from a cell site or WiFi hotspot and still connect; up to 25% more wireless coverage, depending on the geography you travel in.

One Simple Installation: All antennas are built into one physical housing so that you only have to drill one hole for a fast and tidy installation. This reduces the need for multiple antennas on top of the vehicle.

Long Product Life: Our rugged, low profile design gives you protection against all of the natural hazards a vehicle faces including vibration, hot, cold, ice, salt, dirt, car washes, and tree branch sweeps. Our antennas typically outlast the life of vehicle.

Connects to mobile data wireless routers with TWO Cellular/LTE ports, ONE WiFi port and a GPS port.

<table>
<thead>
<tr>
<th>Product</th>
<th>Cell/LTE Antenna</th>
<th>WiFi Antenna</th>
<th>GPS Antenna</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP-CCWG</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Antenna Plus LLC
8350 E. Evans Road, Suite D-2, Scottsdale, AZ 85260
Phone: 480.657.7354 - Fax: 480.657.0204 - orders@antennaplus.com

Copyright 2016 Antenna Plus LLC, Version 3 04/18/16

www.antennaplus.com
**AP-MULTIMAX MIMO**

### Electrical Specifications

**Frequencies:**
- Cellular/LTE = 824-896 MHz; 1850-1995 MHz; 698-798 MHz; 1710-1770 MHz; 2110-2170 MHz; 2570-2620 MHz
- WiFi = 2.4 & 5 GHz (802.11 a,b,g,n, ac)
- GPS = 1575.42 MHz - 1602 MHz

**VSWR:** 1.5:1 or less at resonant point

**Gain:**
- 698-896 MHz: 3 dBi
- 1710-2620 MHz: 4 dBi

**Radiation Pattern:**
- OMNI Directional
- Hemispherical (GPS)

**Polarization:**
- Vertical

### Mechanical Specifications

**Radome:**
- Glass Filled Polypropylene

**Cable Length:**
- 15 feet (4.5 m) (Adhesive and Bolt Mount)
- 10 feet (3 m) (Magnet Mount)
- Optional cable length to 35 feet

**Connectors:**
- The AP-MultiMax MIMO Antenna can come with any RF connectors you need to connect to your modem.

### Environmental Specifications

**Temperature:** -40 °C to 85 °C (-40 °F to +185 °F) operating and storage

**Humidity:** (non-condensing) - 5% to 95% operating and storage

**Military Spec** MIL-STD 810 conformance to thermal, mechanical shock, and humidity.

### GPS Antenna Specifications

- **Frequency Range** . . . . . . . 1575.42 MHz - 1602 MHz
- **Gain** . . . . . . . . . . . . . . . 28 dB min.
- **Polarization** . . . . . . . . . . R.H.C.P. (Right Hand Circular Polarization)
- **Noise Figure** . . . . . . . . . . 2.0 max.
- **Aerial Ratio** . . . . . . . . . 3 dB max.
- **Bandwidth** . . . . . . . . . . . 2 MHz min.
- **VSWR** . . . . . . . . . . . . . . 2.0 max.
- **Output Impedance** . . . . . . . . 50 Ohms
- **Voltage** . . . . . . . . . . . . . . . 2.7-5.6 Volts
- **Current** . . . . . . . . . . . . . . . 10 mA ± 0.8 mA

### Dimensions

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.220” (56.4 mm)</td>
<td>3.831” (97.3 mm)</td>
<td>7.000” (177.8 mm)</td>
</tr>
</tbody>
</table>

### Built-in Metal Ground Plane

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.183” (55.5 mm)</td>
<td>7.074” (179.7 mm)</td>
<td>7.650” (194.3 mm)</td>
</tr>
</tbody>
</table>

### Mounting Styles

- Threaded Bolt
- Magnetic
- Permanent Adhesive

**www.antennaplus.com**

Copyright 2016 Antenna Plus LLC. Version 3 (04/18/16)
The AP-Double Cell/LTE~Double WiFi~GPS Antenna is the all-in-one, low profile housing that provides 2 high gain Multiple-In, Multiple-Out (MIMO) Cellular/LTE antennas, 2 high gain WiFi antennas (802.11 abgn,ac), and a GPS antenna. This can come with a threaded bolt mount, permanent adhesive mount or magnetic mount; color choices of black or white.

**Key Benefits:**

**Faster Data Speeds.** With the AP-Double Cell/LTE~Double WiFi~GPS Antenna, you will get superior Cellular/LTE data throughput speeds with the Multiple-In, Multiple-Out dual antennas. Our double Cellular/LTE antenna design takes advantage of the fastest speeds that the 4G/LTE network offers. Top WiFi speeds are achieved with our Double-WiFi antenna to off-load large amounts of data or to push software updates to your computer from your WiFi hotspot.

**GLONASS and US GPS Together:** Antenna Plus now provides antennas for both GPS systems. When used together the two satellite GPS systems have 55 combined satellites providing more ubiquitous GPS coverage in rural areas as well as dense downtown urban areas with skyscrapers. The level of accuracy is also superior compared to just the US GPS system.

**Bigger Wireless Footprint:** By using AP-Double Cell/LTE~Double WiFi~GPS Antenna, you can be farther away from a cell site or WiFi hotspot and still connect; up to 25% more wireless coverage, depending on the geography you travel in.

**One Simple Installation:** All antennas are built into one physical housing so that you only have to drill one hole for a fast and tidy installation. This reduces the need for multiple antennas on top of the vehicle.

**Long Product Life:** Our rugged, low profile design gives you protection against all of the natural hazards a vehicle faces including vibration, hot, cold, ice, salt, dirt, car washes, and tree branch sweeps. Our antennas typically outlast the life of vehicle.

**Connects to mobile data wireless routers with TWO Cellular/LTE ports, TWO WiFi ports and a GPS port.**

<table>
<thead>
<tr>
<th>Product</th>
<th>Cell/LTE Antenna</th>
<th>WiFi Antenna</th>
<th>GPS Antenna</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP-CCWWG</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Antenna Plus LLC
8350 E. Evans Road, Suite D-2, Scottsdale, AZ 85260
Phone: 480.657.7354 - Fax: 480.657.0204 - orders@antennaplus.com
Copyright 2016 Antenna Plus LLC. Version 3 (04/18/16)
**Electrical Specifications**

**Frequencies:**
- Cellular/LTE = 824-896 MHz; 1850-1995 MHz; 698-798 MHz; 1710-1770 MHz; 2110-2170 MHz; 2570-2620 MHz
- WiFi = 2.4 & 5 GHz (802.11 a,b,g,n, ac)
- GPS = 1575.42 MHz - 1602 MHz

**VSWR:** 1.5:1 or less at resonant point

**Gain:**
- 698-896 MHz: 3 dBi
- 1710-2620 MHz: 4 dBi

**Radiation Pattern:**
- OMNI Directional
- Hemispherical (GPS)

**Polarization:**
- Vertical

**Mechanical Specifications**

**Radome:**
- Glass Filled Polypropylene

**Cable Length:**
- 15 feet (4.5 m) (Adhesive and Bolt Mount)
- 10 feet (3 m) (Magnet Mount)
- Optional cable length to 35 feet

**Connectors:**
The AP-Double Cell/LTE~Double WiFi~GPS Antenna can come with any RF connectors you need to connect to your modem.

**Environmental Specifications**

**Temperature:** -40 °C to 85 °C (-40 °F to +185 °F)
- operating and storage

**Humidity:** (non-condensing) - 5% to 95%
- operating and storage

**Military Spec:** MIL-STD 810 conformance to thermal, mechanical shock, and humidity.

**GPS Antenna Specifications**

- **Frequency Range:** 1575.42 MHz - 1602 MHz
- **Gain:** 28 dB min.
- **Polarization:** R.H.C.P. (Right Hand Circular Polarization)
- **Noise Figure:** 2.0 max.
- **Aerial Ratio:** 3 dB max.
- **Bandwidth:** 2 MHz min.
- **VSWR:** 2.0 max.
- **Output Impedance:** 50 Ohms
- **Voltage:** 2.7-5.6 Volts
- **Current:** 10 mA ± 0.8 mA

**Dimensions**

![Dimensions Image]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.220&quot; (56.4 mm)</td>
<td>3.831&quot; (97.3 mm)</td>
<td>7.000&quot; (177.8 mm)</td>
</tr>
</tbody>
</table>

**Built-in Metal Ground Plane**

![Built-in Metal Ground Plane Image]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.183&quot; (55.5 mm)</td>
<td>7.074&quot; (179.7 mm)</td>
<td>7.650&quot; (194.3 mm)</td>
</tr>
</tbody>
</table>

**Mounting Styles**

- **Threaded Bolt**
- **Magnetic**
- **Permanent Adhesive**