TECHNICAL DATA SHEET

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

Features:

- Low profile, only 1.8” tall
- Up to 6-lead Configuration
  - LTE(2x) MIMO
  - WiFi(3x) MIMO-|2.4/5.x GHz
  - GPS/GNSS (1x)
- Frequency of Operation:
  - 698-960MHz, 1710-2690MHz
  - 2400-2500MHz, 5150-5925MHz
  - 1559-1606MHz

Applications:

- Telematics, Navigation
- First Responders (Police, Fire, Ambulance/EMS)
- Energy, Utility, Construction
- Fleet Management
- DSRC (Dedicated Short Range Communications)

Available Configurations:

- Black, White
- Magnetic mount
- For direct mount seep/N: ARMXXXXXDM
**Issue:** 1842  

In the effort to improve our products, we reserve the right to make changes judged to be necessary.  

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**Series:** ARMADILLO  

**Description:** Vehicular Multiband Antenna with Magnetic Mount  

**PART NUMBER:** ARMXXXXXMM  

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**This document covers all product variants of the following product family**

<table>
<thead>
<tr>
<th>Product</th>
<th>Total Cable Leads</th>
<th>LTE Cable Leads</th>
<th>WiFi Cable Leads</th>
<th>GPS Cable Leads</th>
<th>Housing Color</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARM62311MM</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>Black</td>
<td>Magnetic Mount; Pull force: 100N, 22lbf min. (Tested on 3mm thick steel plate.)</td>
</tr>
<tr>
<td>ARM62312MM</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>ARM52211MM</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>ARM52212MM</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>ARM42111MM</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>ARM42112MM</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>White</td>
<td></td>
</tr>
</tbody>
</table>

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**Product Numbering**  

Vehicular Multiband Antenna with Direct Mount  

(Part Number) [ARM X X X X X MM]  

**Product ID:** ARMADILLO  

- Total Number of Cable leads  
- Total Number of LTE Cable Leads  
- Total Number of WiFi Cable Leads  
- Total Number of GPS Cable Leads  
- The Color of the Plastic Housing: 1=Black; 2=White  
- Mounting: Magnetic Mount

---

<table>
<thead>
<tr>
<th>ARMXXXXXMM</th>
<th>CABLE</th>
<th>CABLE LENGTH</th>
<th>CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LTE-1 Cable Assy</td>
<td>LMR-195 *</td>
<td>SMA Male</td>
</tr>
<tr>
<td>2</td>
<td>WiFi-1 Cable Assy</td>
<td>LMR-195</td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>3</td>
<td>WiFi-3 Cable Assy</td>
<td>LMR-195</td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>4</td>
<td>WiFi-2 Cable Assy</td>
<td>LMR-195</td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>5</td>
<td>GPS Cable Assy</td>
<td>LMR-195 *</td>
<td>SMA Male</td>
</tr>
<tr>
<td>6</td>
<td>LTE-2 Cable Assy</td>
<td>LMR-195 *</td>
<td>SMA Male</td>
</tr>
</tbody>
</table>

* or equivalent  

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RoHS COMPLIANT
**Description:** Vehicular Multiband Antenna with Magnetic Mount

**PART NUMBER:** ARMXXXXXMM

### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>698-960MHz, 1710-2690MHz, 2400-2500MHz, 5150-5925MHz</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>VSWR*</td>
<td>698-960MHz &lt;2.5, 1710-2690MHz &lt;2.5, 2400-2500MHz &lt;2.5, 5150-5925MHz &lt;2.5</td>
</tr>
<tr>
<td>Isolation*</td>
<td>698-960MHz, 1710-2690MHz -8dB, 2400-2500MHz, 5150-5925MHz -12dB</td>
</tr>
<tr>
<td>Radiation Pattern</td>
<td>Omni</td>
</tr>
<tr>
<td>Average Peak Gain**</td>
<td>698-960MHz 4.6dBi, 1710-2690MHz 5dBi, 2400-2500MHz 4.1dBi, 5150-5925MHz 6.3dBi</td>
</tr>
<tr>
<td>Polarization</td>
<td>Vertical</td>
</tr>
</tbody>
</table>

*Test on 500mm ground plane with 17ft(5.2m) LMR195 cable

**Test on 500mm ground plane with 1ft(304.8) LMR195 cable**
Series: ARMADILLO

**PART NUMBER: ARMXXXXXXMM**

### ELECTRICAL SPECIFICATIONS

**GPS Antenna**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>1561.098±2.046MHz/1575.42±1.023MHz/1602.5625±4MHz</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>VSWR</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Gain (Radiating Element)</td>
<td>1 dBic±1 dB</td>
</tr>
<tr>
<td>Gain (LNA Gain)</td>
<td>30 dB± 2 dB</td>
</tr>
<tr>
<td>Polarization</td>
<td>RHCP</td>
</tr>
<tr>
<td>Out of Band Rejection</td>
<td></td>
</tr>
<tr>
<td>698 MHz</td>
<td>&gt;70 dB</td>
</tr>
<tr>
<td>960 MHz</td>
<td>&gt;65 dB</td>
</tr>
<tr>
<td>1710 MHz</td>
<td>&gt;60 dB</td>
</tr>
<tr>
<td>2170 MHz</td>
<td>&gt;65 dB</td>
</tr>
<tr>
<td>2400 MHz</td>
<td>&gt;65 dB</td>
</tr>
<tr>
<td>2700 MHz</td>
<td>&gt;65 dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>&lt;2.4 dB</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>3.3 – 5 Vdc</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt;15mA</td>
</tr>
</tbody>
</table>

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### MECHANICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>202.3mm X 88.5mm X 45mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.1 Kg</td>
</tr>
<tr>
<td>Antenna Color / Material</td>
<td>Black or White</td>
</tr>
<tr>
<td>Connector type</td>
<td>Refer to Page 2</td>
</tr>
<tr>
<td>Cable type</td>
<td>Refer to Page 2</td>
</tr>
<tr>
<td>Cable Length</td>
<td>Refer to Page 2</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40 ~ +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 ~ +85°C</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67</td>
</tr>
<tr>
<td>RoHS Compliant</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### OTHER SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-195 @850MHz</td>
<td>2.1dB</td>
</tr>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-100 @1575MHz</td>
<td>5.9dB</td>
</tr>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-195 @1930MHz</td>
<td>3.2dB</td>
</tr>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-195 @2450MHz</td>
<td>3.6dB</td>
</tr>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-195 @2500MHz</td>
<td>3.7dB</td>
</tr>
<tr>
<td>Total cable assembly loss for 5.2m (17’) LMR-195 @5350MHz</td>
<td>5.5dB</td>
</tr>
</tbody>
</table>
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXXMM

MECHANICAL DRAWING

202.3 ± 2.5 [7.96” ± 0.1”]

45 ± 2.5 [1.77” ± 0.1”]

Rubber Gasket

88.5 ± 2.5 [3.48” ± 0.1”]
**Series:** ARMADILLO

**Description:** Vehicular Multiband Antenna with Magnetic Mount

**PART NUMBER:** ARMXXXXXMM

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### MECHANICAL DRAWING

![Diagram of the ARMADILLO Antenna]

**Product Label**

**Pulse Logo Label**

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<td>LTE-1</td>
<td>LMR-195 *</td>
<td>SMA Male</td>
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<td>2</td>
<td>WiFi-1</td>
<td></td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>3</td>
<td>WiFi-3</td>
<td></td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>4</td>
<td>WiFi-2</td>
<td></td>
<td>RP-SMA Male</td>
</tr>
<tr>
<td>5</td>
<td>GPS</td>
<td>LMR-100 *</td>
<td>SMA Male</td>
</tr>
<tr>
<td>6</td>
<td>LTE-2</td>
<td>LMR-195 *</td>
<td>SMA Male</td>
</tr>
</tbody>
</table>

* or equivalent

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**Issue:** 1

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Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

TEST SETUP

Antenna tested on a Φ500mm ground plane.
Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

VSWR (LTE)

Isolation (LTE)

Note: Antenna tested with 5m cable on 500mm (dia) ground plane
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

Radiation Efficiency (LTE)

Peak Gain (LTE)

Note: Antenna tested with 1ft(304.8mm) cable on 500mm (dia) ground plane
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXM

CHARTS

VSWR (WIFI)

Isolation (WIFI)

Note: Antenna tested with 5m cable on 500mm (dia) ground plane
Series: ARMADILLO

**Description:** Vehicular Multiband Antenna with Magnetic Mount

**PART NUMBER:** ARMXXXXXMM

---

**CHARTS**

**Radiation Efficiency (WIFI)**

![Radiation Efficiency Graph]

**Peak Gain (WIFI)**

![Peak Gain Graph]

*Note: Antenna tested with 1ft (304.8mm) cable on 500mm (dia) ground plane*
Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXXMM

CHARTS

LTE1 XY plane radiation pattern

LTE2 XY plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXXXMM

CHARTS

LTE1 ZX plane radiation pattern

LTE2 ZX plane radiation pattern
Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXXMM

Series: ARMADILLO

CHARTS

LTE1 YZ plane radiation pattern

LTE2 YZ plane radiation pattern
Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXMM

CHARTS

LTE1 XY plane radiation pattern

LTE2 XY plane radiation pattern
Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXXMM

CHARTS

LTE1 ZX plane radiation pattern

LTE2 ZX plane radiation pattern
Series: ARMADILLO

PART NUMBER: ARMXXXXXXMM

Description: Vehicular Multiband Antenna with Magnetic Mount

CHARTS

LTE1 YZ plane radiation pattern

LTE2 YZ plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 XY plane radiation pattern

WiFi2 XY plane radiation pattern

WiFi3 XY plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 ZX plane radiation pattern

WiFi2 ZX plane radiation pattern

WiFi3 ZX plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 YZ plane radiation pattern

WiFi2 YZ plane radiation pattern

WiFi3 YZ plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 XY plane radiation pattern

WiFi2 XY plane radiation pattern

WiFi3 XY plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 ZX plane radiation pattern

WiFi2 ZX plane radiation pattern

WiFi3 ZX plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

CHARTS

WiFi1 YZ plane radiation pattern

WiFi2 YZ plane radiation pattern

WiFi3 YZ plane radiation pattern
Series: ARMADILLO

Description: Vehicular Multiband Antenna with Magnetic Mount

PART NUMBER: ARMXXXXXMM

PACKAGING

Each antennas packed in Bubble Bag

6 bags of antennas (Total 6pcs) packed in a cardboard box

1 label on each box with quantity, part number, date code.