

# **PulseLARSEN** *Antennas*

**Multi-band Antennas for Vehicle,  
IoT and M2M Applications**



**YOUR INTRODUCTION TO PULSELARSEN MULTI-BAND ANTENNAS.**  
Want to learn more? Visit our website at [pulselarsenantennas.com](http://pulselarsenantennas.com)

PULSELARSEN MULTI-BAND ANTENNAS

Whether your need is for antennas for police, utility trucks, ambulances, agricultural or recreational vehicles, public transportation or remote monitoring and control PulseLarsen has your multi-band solution. For over 50 years we have produced vehicular/outdoor ruggedize antennas. Our expertise covers 3G/4G(LTE), WiFi, GPS(GNSS), ISM, and other Technologies.

For precise navigation our solutions cover all satellite navigation types including GPS, GLONASS, Beidou/

Compass, and Galileo. Plus we have products that combine navigation with data transmission for complete telematics requirements. Our navigation antennas are designed for use in trucking, commercial fleets, utility, public safety, search and rescue, GPS and mapping markets.

For utility applications we offer extensive ruggedized, tamper-proof and aesthetically pleasing solutions. Our offering includes antennas with lowest profile, steel mounting studs with steel nuts, UV-Rated plastics and other features to keep idle hands from tampering with the antenna.

MULTI-BAND ANTENNA SUMMARY

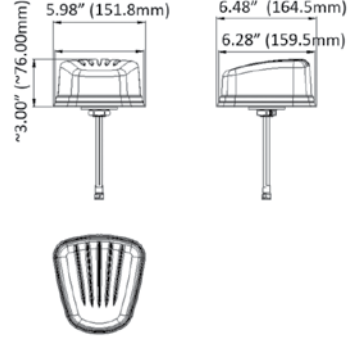


|  |                                                                                               | Panther                                                                                                                                                 | Jaguar                                                                                                                     | Armadillo                                                                                                                                                | Razorback (Spring 2017)                                                                                                        | FIN                                                                                                 | DISC                                                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                                                   |                                                                                               | <ul style="list-style-type: none"><li>• Best Performance</li><li>• Low Cost</li><li>• Best Gain, Efficiency, VSWR, and Port-to-Port Isolation</li></ul> | <ul style="list-style-type: none"><li>• Low profile</li><li>• Good Performance</li><li>• Various Install Methods</li></ul> | <ul style="list-style-type: none"><li>• Low Profile</li><li>• Good Performance</li><li>• Tamper-proof steel stud</li><li>• 'Narrowest Package'</li></ul> | <ul style="list-style-type: none"><li>• Best Performance</li><li>• Narrow Profile,</li><li>• Tamper-proof steel stud</li></ul> | <ul style="list-style-type: none"><li>• Best Performance</li><li>• Aesthetically pleasing</li></ul> | <ul style="list-style-type: none"><li>• Good Performance, ISM Options</li></ul> |
| No. of Ports                                                                      | Baseline Configuration                                                                        |                                                                                                                                                         |                                                                                                                            |                                                                                                                                                          |                                                                                                                                |                                                                                                     |                                                                                 |
| 6                                                                                 | LTE - (2x)<br>WiFi -Dual Band (3x)<br>GPS -full GNSS (1x)                                     | ✓                                                                                                                                                       |                                                                                                                            |                                                                                                                                                          |                                                                                                                                |                                                                                                     |                                                                                 |
| 5                                                                                 | LTE - (2x)<br>WiFi -Dual Band (2x)<br>GPS -full GNSS (1x)                                     | ✓                                                                                                                                                       | ✓                                                                                                                          |                                                                                                                                                          | ✓                                                                                                                              |                                                                                                     |                                                                                 |
| 4                                                                                 | LTE - (2x)<br>WiFi -Dual Band (1x)<br>GPS -full GNSS (1x)                                     | ✓                                                                                                                                                       | ✓                                                                                                                          | ✓                                                                                                                                                        | ✓                                                                                                                              |                                                                                                     |                                                                                 |
| 3                                                                                 | LTE - (2x)<br>GPS -full GNSS (1x) or<br>LTE (1x)<br>WiFi-Dual Band (1x)<br>GPS-full GNSS (1x) | ✓                                                                                                                                                       | ✓                                                                                                                          | ✓                                                                                                                                                        | ✓                                                                                                                              | ✓                                                                                                   | ✓                                                                               |
| 2                                                                                 | 3G - or ISM - (1x)<br>GPS -Full GNSS (1x) or<br>LTE (1x)<br>GPS-full GNSS (1x) or<br>LTE (2x) |                                                                                                                                                         |                                                                                                                            | ✓                                                                                                                                                        | ✓                                                                                                                              | ✓                                                                                                   | ✓                                                                               |
| Color Options                                                                     |                                                                                               | Black, White                                                                                                                                            | Black                                                                                                                      | Black, White                                                                                                                                             | Black                                                                                                                          | Black, White                                                                                        | Black                                                                           |
| Ideal Placement                                                                   |                                                                                               | Either: On Ground Plane;<br>or On Non-Metal Surface                                                                                                     | Either: On Non-Metal Surface; or On Ground Plane if base used.                                                             | On Ground Plane                                                                                                                                          | Either: On Ground Plane ;<br>or On Non-Metal Surface                                                                           | On Ground Plane                                                                                     | Either: On Ground Plane ;<br>or On Non-Metal Surface                            |
| Package Available Mounting                                                        |                                                                                               | Direct Mount Stud (Magnetic Mount available)                                                                                                            | Adhesive Mount (Magnetic Mount and Fixed Mount Adapters available)                                                         | Direct Mount Stud (Magnetic Mount versions available)                                                                                                    | Direct Mount Stud (Magnetic Mount versions available)                                                                          | Direct Mount Stud                                                                                   | Direct Mount Stud (Magnetic Mount Versions Available)                           |

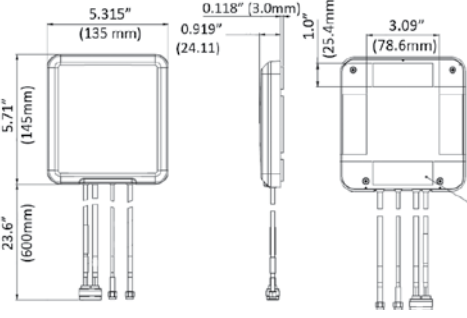
On Ground Plane: Best if installed on metal vehicle roof, metal utility box, or other metal structure.  
On Non-Metal: Best if installed on fiberglass, plastic, or other non-metallic surface.  
Contact factory if any concerns about installation methods.



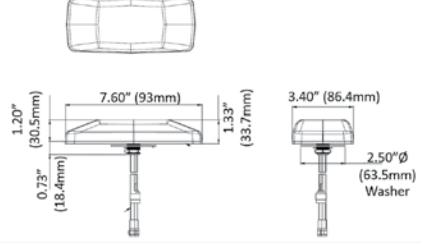
PANTHER FAMILY



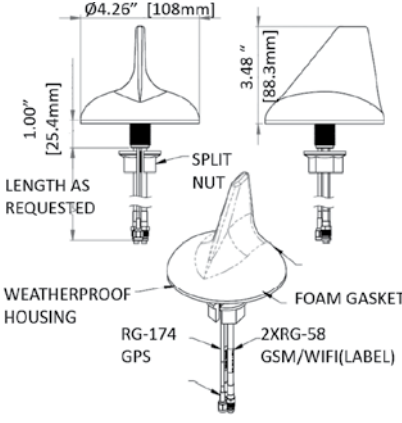
JAGUAR FAMILY



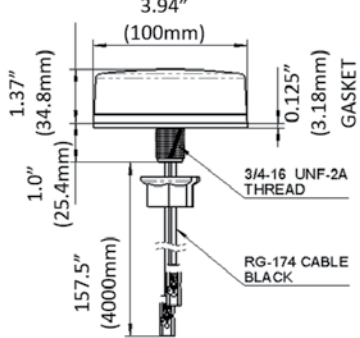
ARMADILLO FAMILY



FIN FAMILY

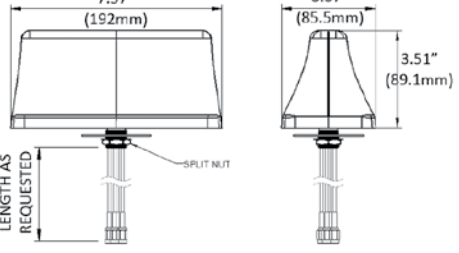


DISC FAMILY



RAZORBACK FAMILY

COMING SOON!



■ **PANTHER - GPSMBXXX**  
■ **FIN - GPSDMXXX**  
■ **DISC - W4165XXX**



GPSMB302



GPSMB301



GPSDM700/5800GGT



W4165



GPSLPMB401

Every effort is made to assure the integrity and long life of each Pulse product. In the unfortunate event a problem does occur, you will find us ready to make it right!

Duration of warranty is one year from date of purchase.

Pulse will repair or replace without charge any Larsen antenna product which fails for any reason during the warranty period. Pulse is not responsible for any incidental or consequential damages due to failure of the antenna under this warranty or any implied warranty. This exclusion may not apply to all areas of the USA or Canada.



| PANTHER (PAN, GPSMB)                                    |                        |                 |                               |        |                                              |                        | PANTHER (PAN, GPSMB)                                           |                                                 |            |                       |           |                         |                             |                           |                    |
|---------------------------------------------------------|------------------------|-----------------|-------------------------------|--------|----------------------------------------------|------------------------|----------------------------------------------------------------|-------------------------------------------------|------------|-----------------------|-----------|-------------------------|-----------------------------|---------------------------|--------------------|
| Model Part Number                                       | Numbers of Cables      | Application     | ELECTRICAL SPECS              |        |                                              |                        | MECHANICAL SPECS                                               |                                                 |            |                       |           | ENVIRONMENTAL SPECS     |                             |                           |                    |
|                                                         |                        |                 | Frequency (MHz)               | VSWR * | Peak Gain*** (dBi, Average)                  | Isolation* (dB)        | Dimension mm (inch)                                            | Mounting Method                                 | Cable Type | Cable Length (ft/ mm) | Connector | Radome color            | Operating Temp.             | Radome                    | Weather Resistance |
| PAN6231IDM (Black radome)<br>PAN62312DM (White)         | 6                      | LTE 1           | 698-960/ 1695-2700/ 2900-3600 | < 1.5  | 4 @698-2170MHz<br>5 @2170-3600MHz            | -15                    | L: 164.5 (6.48")<br>x<br>W: 151.9 (5.98")<br>x<br>H: 76 (3.0") | Direct mount, 7/8" (22mm) threaded through-hole | RG 58      | 17ft / 5180mm         | SMA(m)    | Black or White          | -40C to +85C (MIL-STD 810G) | ABS/PC UV stable, UL-94HB | IP67               |
|                                                         |                        | LTE 2           |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | SMA(m)    |                         |                             |                           |                    |
|                                                         |                        | WLAN 1          | 2400-2500/ 4900-5925          | < 1.5  | 4.5 @ 2.4GHz, 5 @ 5GHz                       | -40                    |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | WLAN 2          |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | WLAN 3          |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.5dB, DC power: 3-5V   |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| GPSMB501 (Black radome)<br>GPSMB502 (White)             | 5                      | LTE 1           | 698-960/ 1695-2700/2900-3600  | < 1.5  | 4 @698-2170MHz<br>5 @2170-3600MHz            | -15                    | L: 164.48 (6.48)<br>W:151.85 (5.98)<br>H: 76 (3)               | Direct mount, 7/8" (22mm) threaded through-hole | RG 58      | 17ft/ 5180mm          | SMA(m)    | Black or White          | -40C to +85C (MIL-STD 810G) | ABS/PC UV stable, UL-94HB | IP67               |
|                                                         |                        | LTE 2           |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | SMA(m)    |                         |                             |                           |                    |
|                                                         |                        | WLAN 1          | 2400-2500/ 4900-5925          | < 1.4  | 4.5 @ 2.4GHz, 5 @ 5GHz                       | -40                    |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | WLAN 2          |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.5dB, DC power: 3-5V   |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| GPSMB401 (Black)<br>GPSMB402 (White)                    | 4                      | LTE 1           | 698-960/ 1695-2700/2900-3600  | < 1.5  | 4 @698-2170MHz<br>5 @2170-3600MHz            | -15                    | L: 164.48 (6.48)<br>W:151.85 (5.98)<br>H: 76 (3)               | Direct mount, 7/8" (22mm) threaded through-hole | RG 58      | 17ft/ 5180mm          | SMA(m)    | Black or White          | -40C to +85C (MIL-STD 810G) | ABS/PC UV stable, UL-94HB | IP67               |
|                                                         |                        | LTE 2           |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | SMA(m)    |                         |                             |                           |                    |
|                                                         |                        | WLAN            | 2400-2500/ 4900-5925          | < 1.4  | 4.5 @ 2.4GHz, 5 @ 5GHz                       | N/A                    |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.5dB, DC power: 3-5V   |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| GPSMB301 (Black)<br>GPSMB302 (White)                    | 3                      | LTE 1           | 698-960/ 1695-2700/2900-3600  | < 1.5  | 6 @698-2170MHz<br>5.5 @2170-3600MHz          | -15                    | L: 164.48 (6.48)<br>W:151.85 (5.98)<br>H: 76 (3)               | Direct mount, 7/8" (22mm) threaded through-hole | RG 58      | 17ft/ 5180mm          | SMA(m)    | Black or White          | -40C to +85C (MIL-STD 810G) | ABS/PC UV stable, UL-94HB | IP67               |
|                                                         |                        | LTE 2           |                               |        |                                              |                        |                                                                |                                                 | RG 58      |                       | SMA(m)    |                         |                             |                           |                    |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.5dB, DC power: 3-5V   |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| GPSMBMM                                                 | Magnetic Mount Bracket |                 |                               |        |                                              | Magnetic Mount Bracket |                                                                |                                                 |            |                       |           |                         |                             |                           |                    |
| GPSDM (FIN FAMILY:SKF)                                  |                        |                 |                               |        |                                              |                        | GPSDM (FIN FAMILY: SKF)                                        |                                                 |            |                       |           |                         |                             |                           |                    |
| Model Part Number                                       | Numbers of Cables      | Application     | ELECTRICAL SPECS              |        |                                              |                        | MECHANICAL SPECS                                               |                                                 |            |                       |           | ENVIRONMENTAL SPECS     |                             |                           |                    |
|                                                         |                        |                 | Frequency (MHz)               | VSWR * | Peak Gain ** (dBi, Average)                  | Isolation* (dB, Min.)  | Dimension mm (inch)                                            | Mounting Method                                 | Cable Type | Cable Length (ft/ mm) | Connector | Radome color            | Operating Temp.             | Radome                    | Weather Resistance |
| GPSDM700/ 5800GGT (Black)<br>GPSDMW 700/5800GGT (White) | 3                      | LTE             | 698-960/ 1710-2700            | < 2.5  | 4.4 @698-960MHz, 6.5 @1710-2690MHz           | -10                    | Dia.: 108 (4.26)<br>H: 88.3 (3.48)                             | Direct mount, ¾" (19.3mm) threaded through-hole | RG 58      | 17ft/ 5180mm          | SMA(m)    | Black or White          | -40C to +85C (MIL-STD 810G) | UV stable, UL-94          | IP67               |
|                                                         |                        | WLAN            | 2400-2485/ 5150-5875          | < 2    | 3 @ 2.4GHz, 5 @ 5GHz                         | -10 (vs LTE)           |                                                                |                                                 | RG 58      |                       | RP-SMA(m) |                         |                             |                           |                    |
|                                                         |                        | GPS             | 1575.42                       | < 2    | LNA gain:28dB, NF: < 1.3dB, DC power: 3.3-5V |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| GPSDM700/ 5900GG                                        | 2                      | LTE             | 698-960/ 1710-2700            | < 2.5  | 4.4 @698-960MHz, 6.5 @1710-2690MHz           | -10                    | Dia.: 108 (4.26)<br>H: 88.3 (3.48)                             | Direct mount, ¾" (19.3mm) threaded through-hole | RG 58      | 17ft/ 5180mm          | SMA(m)    | Black (White available) | -40C to +85C (MIL-STD 810G) | UV stable, UL-94          | IP67               |
|                                                         |                        | GPS             | 1575.42                       | < 2    | LNA gain:28dB, NF: < 1.3dB, DC power: 3.3-5V |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| W4165 (DISC FAMILY: DSC)                                |                        |                 |                               |        |                                              |                        | W4165 (DISC: DSC)                                              |                                                 |            |                       |           |                         |                             |                           |                    |
| Model Part Number                                       | Numbers of Cables      | Application     | ELECTRICAL SPECS              |        |                                              |                        | MECHANICAL SPECS                                               |                                                 |            |                       |           | ENVIRONMENTAL SPECS     |                             |                           |                    |
|                                                         |                        |                 | Frequency (MHz)               | VSWR*  | Peak Gain*** (dBi, Average)                  | Isolation* (dB, Min.)  | Dimension mm (inch)                                            | Mounting Method                                 | Cable Type | Cable Length (ft/ mm) | Connector | Radome color            | Operating Temp.             | Radome                    | Weather Resistance |
| W4165                                                   | 2                      | GSM/UMTS or ISM | 824-960/ 1710-2170            | < 2    | 2 @824-960, 2 @1710-2170MHz                  | -10                    | Dia.: 100 (3.94)<br>H: 34.8 (1.37)                             | Direct mount, ¾" (19mm) Thread hole             | RG 58      | 13.2ft/ 4000mm        | SMA(m)    | Black                   | -40C to +85C                | UV stable, UL-94          | IP67               |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |
| W4165MM                                                 | 2                      | GSM/UMTS or ISM | 824-960/ 1710-2170            | < 2    | 3 @824-960, 4.5 @1710-2170MHz                | -10                    | Dia.: 100 (3.94)<br>H: 34.8 (1.37)                             | Magnetic Mount                                  | RG 58      | 13.2ft/ 4000mm        | SMA(m)    | Black                   | -40C to +85C                | UV stable, UL-94          | IP67               |
|                                                         |                        | GNSS            | 1559-1607                     | < 2    | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V |                        |                                                                |                                                 | RG 174     |                       | SMA(m)    |                         |                             |                           |                    |

\* Measured with a default cable length in free space. \*\* Measured with 6inch cable with 40" GP.

\*\*\* Measured with 4" cable with 24" GP. Attenuation of cable assembly with 17' RG58 is 4.6dB @2.7GHz and 7.3dB @6GHz.

- Frequency detail of GNSS: 1561.098MHz±2.046/ 1575.42MHz±1.023/ 1602.5625MHz±4

- Please contact sales for options of customized cable type, cable length, and connector type.

| ARMADILLO (ARM)                                                          |                   |                    |                        |          |                                                |                       | ARMADILLO (ARM)                                             |                                                           |            |                       |                     |                |                 |                  |                    |
|--------------------------------------------------------------------------|-------------------|--------------------|------------------------|----------|------------------------------------------------|-----------------------|-------------------------------------------------------------|-----------------------------------------------------------|------------|-----------------------|---------------------|----------------|-----------------|------------------|--------------------|
| Model Part Number                                                        | Numbers of Cables | Application        | ELECTRICAL SPECS       |          |                                                |                       | MECHANICAL SPECS                                            |                                                           |            |                       | ENVIRONMENTAL SPECS |                |                 |                  |                    |
|                                                                          |                   |                    | Frequency (MHz)        | VSWR *   | Peak Gain ** (dBi, Average)                    | Isolation* (dB)       | Dimension mm (inch)                                         | Mounting Method                                           | Cable Type | Cable Length (ft/ mm) | Connector           | Radome color   | Operating Temp. | Radome           | Weather Resistance |
| ARM42111DM (Black)<br>ARM42112DM (White)                                 | 4                 | LTE 1              | 698-2700               | < 2.5    | 1.5 @698-960MHz                                | -10                   | L: 193 (7.6)<br>W: 87 (3.4)<br>H: 33 (1.32)                 | Direct mount, ¾” (19mm) threaded through-hole             | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 4.5 @1710-2690MHz  |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN               | 2400-2500/ 5150-5900   | < 2      | 3 @ 2.4GHz, 5 @ 5GHz                           | -10 (vs LTE)          |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |
| ARM32011DM (Black)<br>ARM32012DM (White)                                 | 3                 | LTE 1              | 698-2700               | < 2.5    | 1.5 @698-960MHz                                | -10                   | L: 193 (7.6)<br>W: 87 (3.4)<br>H: 33 (1.32)                 | Direct mount, ¾” (19mm) threaded through-hole             | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 4.5 @1710-2690MHz  |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |
| ARM42111MM (Black, Magnet Mount)<br>ARM42112MM (White, Magnet Mount)     | 4                 | LTE 1              | 698-2700               | < 2.5    | 1.5 @698-960MHz                                | -10                   | L: 193 (7.6)<br>W: 87 (3.4)<br>H: 33 (1.32)                 | Magnetic mount                                            | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 4.5 @1710-2690MHz  |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN               | 2400-2500/ 5150-5900   | < 2      | 3 @ 2.4GHz, 5 @ 5GHz                           | -10 (vs LTE)          |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |
| ARM42111AM (Black, Adhesive Mount)<br>ARM42112AM (White, Adhesive Mount) | 4                 | LTE 1              | 698-2700               | < 2.5*   | 1 @698-960MHz                                  | -15*                  | L: 193 (7.6)<br>W: 87 (3.4)<br>H: 33 (1.32)                 | Adhesive mount                                            | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 3.5 @1710-2690MHz* |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN               | 2400-2500/ 5150-5900   | < 2*     | 3 @ 2.4GHz, 5 @ 5GHz*                          | -10 (vs LTE)*         |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |
| JAGUAR (JAG)                                                             |                   |                    |                        |          |                                                |                       | JAGUAR (JAG)                                                |                                                           |            |                       |                     |                |                 |                  |                    |
| Model Part Number                                                        | Numbers of Cables | Application        | ELECTRICAL SPECS       |          |                                                |                       | MECHANICAL SPECS                                            |                                                           |            |                       | ENVIRONMENTAL SPECS |                |                 |                  |                    |
|                                                                          |                   |                    | Frequency (MHz)        | VSWR *   | Peak Gain (dBi, Average)                       | Isolation* (dB, Min.) | Dimension mm (inch)                                         | Mounting Method                                           | Cable Type | Cable Length (ft/ mm) | Connector           | Radome color   | Operating Temp. | Radome           | Weather Resistance |
| GPSLPMB401                                                               | 4                 | LTE 1              | 698-960/ 1710-2690     | < 2.5*   | 4.4 @698-960MHz*                               | -10*                  | L: 145 (5.7)<br>W:135 (5.3)<br>H: 25 (0.98)                 | Adhesive mount                                            | LMR195     | 9.84ft/ 3000mm        | SMA(m)              | Black          | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 5.4 @1710-2690MHz* |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN               | 2400-2500/ 5150-5900   | < 3*     | 3 @ 2.4GHz, 5 @ 5GHz*                          | -10 (vs LTE)*         |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2*     | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V*  |                       |                                                             |                                                           | LMR100     |                       | SMA(m)              |                |                 |                  |                    |
| GPSLPMB401MM                                                             | 4                 | LTE 1              | 698-960/ 1710-2690     | < 2.5 ** | 7 @698-960MHz**                                | -8**                  | L: 145 (5.7)<br>W:135 (5.3)<br>H: 25 (0.98)<br>H-MM: 25 (1) | Adhesive or Magnetic mount with ‘LPMB-4BracketMM’ bracket | LMR195     | 9.84ft/ 3000mm        | SMA(m)              | Black          | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 8 @1710-2690MHz**  |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN               | 2400-2500/ 5150-5900   | < 3**    | 4.5 @ 2.4GHz, 5.5 @ 5GHz**                     | -10 (vs LTE)**        |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2**    | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V** |                       |                                                             |                                                           | LMR100     |                       | SMA(m)              |                |                 |                  |                    |
| LPMB401                                                                  | 4                 | LTE 1              | 698-960/ 1710-2690     | < 2.5*   | 4.4 @698-960MHz*                               | -10*                  | L: 145 (5.7)<br>W:135 (5.3)<br>H: 25 (0.98)                 | Adhesive mount                                            | LMR195     | 9.84ft/ 3000mm        | SMA(m)              | Black          | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 5.4 @1710-2690MHz* |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN 1             | 2400-2500/ 5150-5900   | < 3*     | 3 @ 2.4GHz*                                    | -15*                  |                                                             |                                                           | LMR100     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | WLAN 2             |                        |          | LMR100                                         |                       |                                                             |                                                           | RP-SMA(m)  |                       |                     |                |                 |                  |                    |
| RAZORBACK (RAZ) • COMING SOON!                                           |                   |                    |                        |          |                                                |                       | RAZORBACK (RAZ) • COMING SOON!                              |                                                           |            |                       |                     |                |                 |                  |                    |
| Model Part Number                                                        | Numbers of Cables | Application        | ELECTRICAL SPECS       |          |                                                |                       | MECHANICAL SPECS                                            |                                                           |            |                       | ENVIRONMENTAL SPECS |                |                 |                  |                    |
|                                                                          |                   |                    | Frequency (MHz)        | VSWR *   | Peak Gain ** (dBi, Average)                    | Isolation* (dB, Min.) | Dimension mm (inch)                                         | Mounting Method                                           | Cable Type | Cable Length (ft/ mm) | Connector           | Radome color   | Operating Temp. | Radome           | Weather Resistance |
| RAZ52211DM (Black)<br>RAZ52212DM (White)                                 | 5                 | LTE 1              | 644-2700<br>3400-3600  | < 2.5    | 3 @698-960MHz                                  | -10                   | L: 194 (7.6)<br>W: 87 (3.4)<br>H: 92 (3.6)                  | Direct mount, 7/8” (22mm) threaded through-hole           | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 4.5 @1710-2690MHz  |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | WLAN 1             | 2400-2500/ 5150-5900   | < 2      | 6 @ 2.4GHz                                     | -15                   |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | WLAN 2             |                        |          | 8.5 @ 5GHz                                     |                       |                                                             |                                                           | LMR195     |                       | RP-SMA(m)           |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607              | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |
| RAZ42111DM (Black)<br>RAZ42112DM (White)                                 | 4                 | LTE 1              | 644-2700<br>3400-3600  | < 2.5    | 3 @698-960MHz                                  | -10                   | L: 194 (7.6)<br>W: 87 (3.4)<br>H: 92 (3.6)                  | Direct mount, ¾” (19mm) threaded through-hole             | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | LTE 2              |                        |          | 4.5 @1710-2690MHz                              |                       |                                                             |                                                           | LMR195     |                       | SMA(m)              |                |                 |                  |                    |
| RAZ32011DM (Black)<br>RAZ32012DM (White)                                 | 3                 | LTE 1              | 644-2700<br>3400-3600  | < 2.5    | “3 @698-960MHz                                 | -10                   | L: 194 (7.6)<br>W: 87 (3.4)<br>H: 92 (3.6)                  | Direct mount, ¾” (19mm) threaded through-hole             | LMR195     | 17ft/ 5180mm          | SMA(m)              | Black or White | -40C to +85C    | UV stable, UL-94 | IP67               |
|                                                                          |                   | 4.5 @1710-2690MHz” |                        |          | LMR195                                         |                       |                                                             |                                                           | SMA(m)     |                       |                     |                |                 |                  |                    |
|                                                                          |                   | GNSS               | 1559-1607<br>1559-1607 | < 2      | LNA gain:30dB, NF: < 2.4dB, DC power: 3.3-5V   |                       |                                                             |                                                           | RG174      |                       | SMA(m)              |                |                 |                  |                    |

\* Measured with a default cable length in free space. + Measured without Ground Plane (GP). ++Measured with 1” bracket and 40” GP.  
\*\* Measured with 6” cable with 40” GP. Attenuation of cable assembly with 17’ LMR195 is 3.8dB @2.7GHz and 5.8dB @6GHz.

- Frequency detail of GNSS: 1561.098MHz±2.046/ 1575.42MHz±1.023/ 1602.5625MHz±4  
- Please contact sales for options of customized cable length and connector type.

## MANUFACTURING CAPABILITIES - AVAILABLE TRADITIONAL TECHNOLOGIES

- Stamping
- Plastic injection molding
- Heatstaking
- Welding (Spot, USW, Induction)
- Plasma Treatment
- Flexible Printed Circuit
- PAD printing, Painting
- In-House Ceramic Process
- Any Cable Assemblies
- Any Connector Mounts
- SMD Process
- Automatic Cable Stripping
- Epoxy resins and Glue deposition
- Plastic Dipping
- RF Testing
- Any Connector Mounts
- Auto Packaging and Labeling

## PROTOTYPING ABILITIES WORLDWIDE (AMERICAS, EMEA, ASIA)

3D printing plastic parts, FR4 or Stamping parts using LPKF machines, CNC, Platisol Dipping techniques, Lathes, Milling machines...

## TESTING SERVICES - TESTING CAPABILITIES FOR PRODUCT QUALIFICATION AND DESIGN VALIDATION

### ELECTRICAL

- S-Parameters using VNA up to 14GHz
- Impedance
- Insertion Losses
- Isolation
- Portable VNA for on-site Tuning with customers
- 3D radiation Patterns using Worldwide anechoic chambers Satimo/ETS)
- 3D RF simulation tools (CST, Optenni, Ibwave, AWR)
- WiFi Throughout testing using IXIA Chariot
- Expertise in advance RF behaviours with/without body

### MECHANICAL

- Ability to use Solidworks, Catia VS, Pro E, ProgeCAD
- 3D fitting and rendering
- Mechanical Shock
- Solderability
- Tensile Strength
- Pull Force
- Torque testing
- Surface Profilometer

### ENVIRONMENTAL

- ESD environment for Production &/or Design
- Humidity (to 90% RH)
- Moisture Resistance
- Thermal Shock
- Thermal Cycling with/without salt mist
- Aging
- Vibrations

NOTE: Full EMC Standards Compliance Testing in Germany for any vehicle size (Truck, Car, Tractor, Escalator, Agricultural machines and IoT).

\*\*\*\*\*

CHANGES / CONDITIONS: Continual research and development make it necessary for Pulse to reserve the right to make exceptions to or changes in policies, specifications and prices without notice.

\*\*\*\*\*

## CONTACT US TODAY!



Call us at **+1.800.ANTENNA**



Visit our website at: **pulselarsenantennas.com**



Connect with us on twitter: **PulseLarsen1**



Worldwide Headquarters  
San Diego, CA, USA  
15255 Innovation Drive #100  
San Diego, CA 92128  
**+1-858-674-8100**

PulseLarsen Antennas Headquarters  
Vancouver, WA, USA  
18110 SE 34th Street  
Suite 250, Building 2  
Vancouver, WA 98683  
Tel: **+1-360-944-7551**  
**antennas.us@pulseelectronics.com**

Europe - Finland  
Automaatitietie 1, FI-90440 Oulunsalo.  
Tel: **+358.20.7935.500**  
**antennas.eu@pulseelectronics.com**

Europe - Germany  
Campus Berliner Allee  
Berliner Allee 65 D-64295  
Darmstadt Germany  
Tel: **+49.73.659.85.21**  
**antennas.eu@pulseelectronics.com**

ISO Manufacturing Site  
No 99. Huo Ju road, Suzhou new District,  
Jiangsu Province, Suzhou, China, PRC.  
Tel: **+86.512.69206053**  
**antennas.as@pulseelectronics.com**

For the best match between our antennas and the latest cellular access devices from Sierra Wireless, Cradlepoint, CalAmp, Digi, Cloudgate and other top manufacturers

## CHECK OUT PULSELARSEN'S CELLULAR MODEM CROSS REFERENCE

