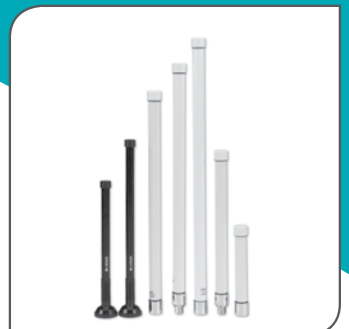
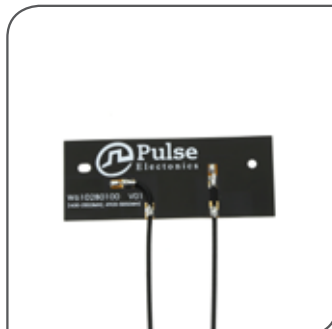
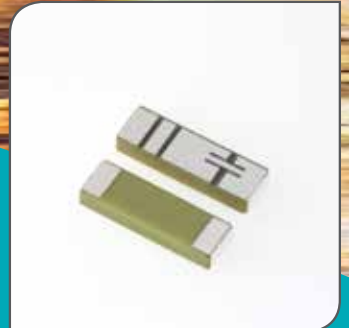
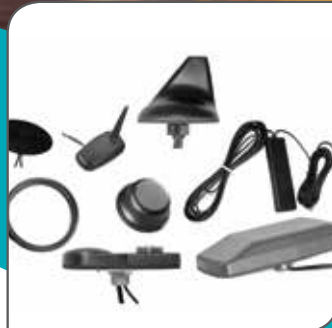
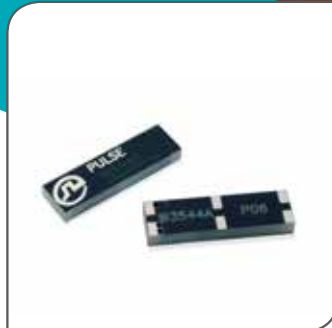


PulseLARSEN *Antennas*

SourceBook® Version 13

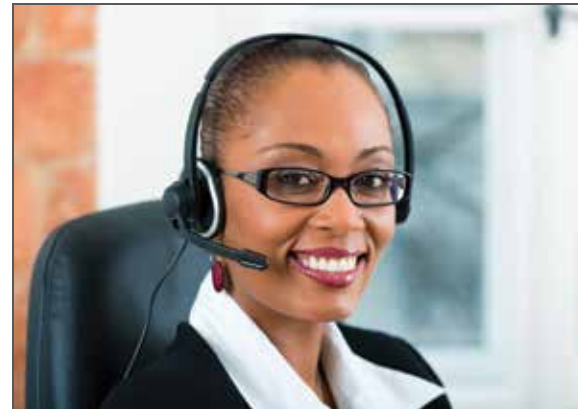





PulseLarsen Antennas is pleased to bring you the new, improved Antenna SourceBook (ASB), Volume 13. The goal of the ASB is to provide you with a “go to” source for all your antenna needs.

As the demand for wireless connectivity flourishes Pulse/Larsen is here with the needed solutions. We offer a unique far-reaching understanding of antenna and RF technology and have become the partner of choice for leading industry innovators. Pulse offers excellent value and outstanding quality products delivered from our high-volume production facilities. We offer a wide array of antennas covering 2G/ 3G/ 4G/5G , LTE, MiMo applications, WiFi, 2.4GHz, 5GHz, Zigbee, Bluetooth, GPS/ Glonass/ Beidou / Compass/ Galileo, any ISM frequency bands (169, 315, 433, 450, 868, 915, 2.4GHz), UHF, VHF, FM, DSRC, V2X, UWB and other applications.

You can rely on PulseLarsen to be your trusted antenna partner. We have been in the antenna business over 50 years and have exceeded over 2 Billion antennas shipped during that time. We supply consistent high-quality products by owning and fully controlling our own factories in both China and the United States. On the following pages you will find our more popular antennas. For an up-to-the-minute view of our offering visit our website at www.pulselarsenantennas.com.

CONTACT US TODAY!

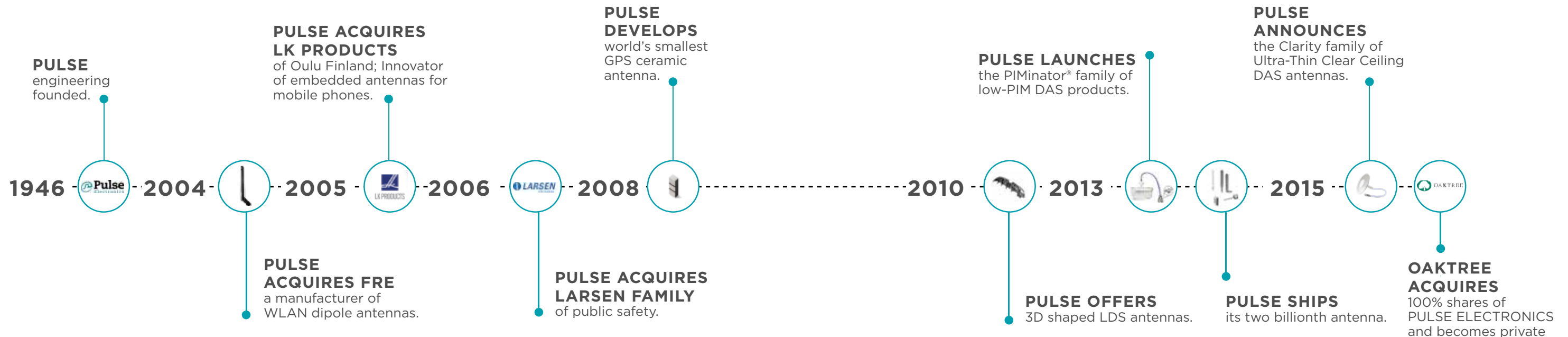


-  Call us at **+1.800.ANTENNA**
-  Visit our website at **pulselarsenantennas.com**
-  Connect with us on twitter **[PulseLarsen1](https://twitter.com/PulseLarsen1)**

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Pulse continues as an Innovative Leader!





Distribution

PulseLarsen has partnered with the industry's leading wireless product distributors and sales representatives throughout the World. Our antennas are as close as a phone call away. Please find a list of our distributor and their live inventory on our website at: www.pulselarsenantennas.com and experience our "BUY NOW" button features.

Please find a list of our sales representatives and their dedicated territories at the following address:

1-800-ANTENNA (268-3662)

When you need an antenna, what better way than to remember 1-800-ANTENNA (268-3662). Our knowledgeable Customer Support staff is available to assist you.

For our international customers:

PHONE +1 - 360-944-7551

EMAIL

Americas: antennas.us@pulseelectronics.com

Europe: antennas.eu@pulseelectronics.com

Asia: antennas.as@pulseelectronics.com

Ordering

At Pulse/Larsen we understand managing your business in today's rapidly changing wireless communications market can be complicated. We want to make the process of doing business with us as easy as possible.

Whether it's your first order or you've been doing business with us for a while, each and every customer is equally important to us. From our experienced customer service associates to the latest in communications technologies, Pulse/Larsen strives to exceed your expectations with every transaction.

To order products, contact one of our authorized distributors. For a list of distributors, visit our web site at www.pulselarsenantennas.com.



PULSE No-Nonsense™ Warranty

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.

Manufacturing Capabilities - Available Traditional Technologies

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

State of the Art - 3D Technologies

- Laser Direct Structuring (LDS): 3D techniques using LPKF laser processing and Plating.
- Pulse FLUIDWRITER Technology: In-House 3d patented technology based on 3d deposition of conductive ink directly on plastic surface followed by low temperature curing process. Ideal process to build identical samples and mass production parts.

Prototyping Abilities Worldwide (AMERICAS, EMEA, ASIA)

- 3D printing plastic parts, FR4 or Stamping parts using LPKF machines, CNC, Plastisol 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
- Acoustic Parameters (THD, SPL)
- S.A.R. using Daisy 4 & 5
- Body Loading using phantom Hands and Heads
- 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 loading/ Embedded in device or in Free Space

MECHANICAL

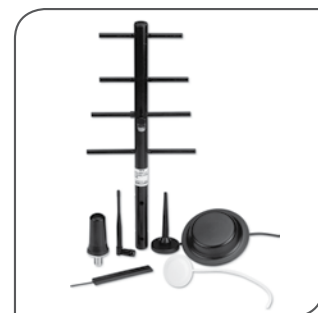
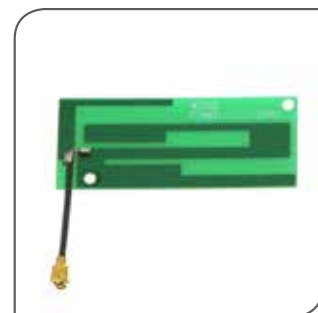
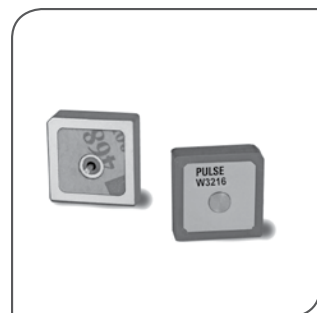
- Ability to use Solidworks, Catia VS, Pro E, ProgeCAD
- 3d fitting and rendering
- Mechanical Shock
- Solderability
- Tensile Strength
- Pull Force
- Torque testing
- Surface Profilometer

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.



Embedded

Any antenna that can be surface mounted on the customer's PCB. In that category fall the helices, the Ceramic HTC antennas, the coils, and the composite material antennas.

Internal

Any antenna that are embedded in the customer's device but not visible from the outside, such as the cabled solutions based of FR4 and FPC, the active GPS modules & the NFC antennas.

External

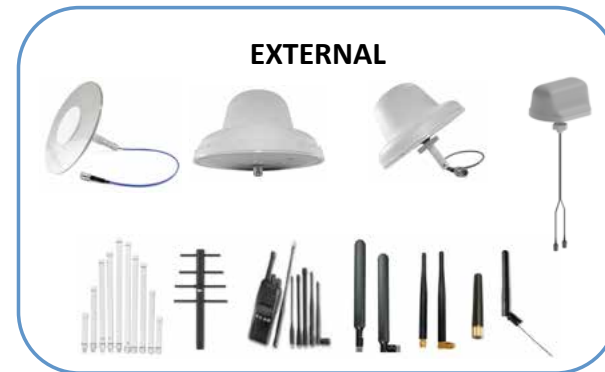
That category is represented by the DAS antennas, the YAGI family, the Radome Omni family and the portables antennas.

Outdoor/Vehicular

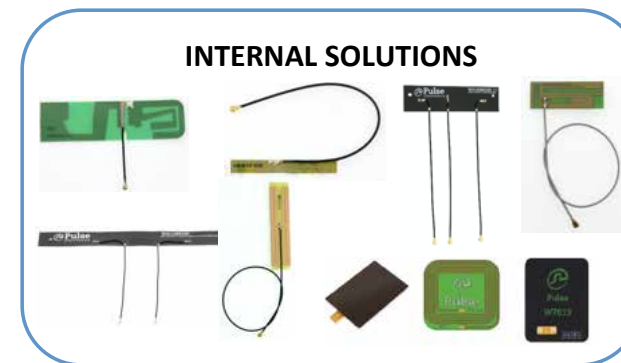
Any antenna that can be mounted on top of a vehicle using connectors or a cable assembly with various types of connectors.



EMBEDDED SOLUTIONS



EXTERNAL



INTERNAL SOLUTIONS



VEHICULAR

NMO CABLE ASSEMBLIES

| | | | |
|---------------------------|---|---|--------------------------|
| SMD / MINIATURE SOLUTIONS | Embedded Applications | External Applications | DAS DUCKIES & OUTDOOR |
| | <p>Helical Antennas: High Efficiency 3D molded antennas for SMD process. Ideal for Key-FOB products and other small PCB footprint areas (ISM 315MHz, 2.4GHz, 1.575GHz, ISM 433MHz).</p> <p>Ceramic Antennas: In-house ceramic manufacturing process allowing world smallest and most efficient compact antennas. All frequencies available such as: WiFi, BT, BLE, Zigbee, ISM, GPS, WiFi & GPS, GPS/GNSS/Beidou, Dual Band GSM.</p> <p>Composite Antennas: Ideal for cellular type of applications (2G/3G/4G) requiring compact and efficient antenna form factors.</p> | <p>DAS Family: Indoor LTE MIMO & SISO World Class Solutions (CLARITY: ultra thin 8.3mm height, translucent, high cosmetic finish) & (TRADITIONAL: Bulky Products) available with N, 4.3-10, mini-DIN connectors.</p> <p>Traditional Blade Antennas, Outdoor Radome Omnis and Yagis are available. Weather Proof IP65/67 Products, Direct Mount with or w/o Bracket, Dipoles (Straight, Right angles), Radome Omni. All frequency bands available from 600MHz to 6GHz (Wlan, WiFi, GPS, 2G, 3G, 4G, LTE, UHF, VHF, Multi bands).</p> | |
| CABLED SOLUTIONS | <p>Cabled Antenna Solutions: Embedded within the device using lossless RF cables and standard connectors of your choice. Antenna substrate is based on FR4 and FPC. Antennas are mechanically fit within the design using snap-in features, adhesive, ribs or hooks.</p> <p>2G/3G Solutions: </p> <p>WiFi Solutions: </p> <p>2G/4G Solutions: </p> <p></p> <p></p> <p></p> | <p>Pulse/Larsen develops all types of mounting, cables and connector solutions for vehicular applications. Any requirements from OEM, ODM or after market customers are available from 50MHz to 6GHz. Any Mounting solutions (Direct, Magnet, Adhesive). Any cable type and length & any connector types are available upon request.</p> <p>NMO Mount: Pulse/Larsen is the patent holder of the world renowned NMO MOUNT facilitating the antenna installation for vehicular applications.</p> | VEHICULAR NMO MOUNT |
| | <p>NFC Solutions: Wide Range of 13.56MHz antennas with various shapes and dimensions on FPC substrate.</p> | | |



IoT

A massive market consisting of a network of physical devices.



Transportation

The Solution to Vehicle Communication.



DAS

Wireless Office Networking.



Public Safety

Communication antennas for the public safety sector.



Critical Comm.

Digital hand-held and mobile communications

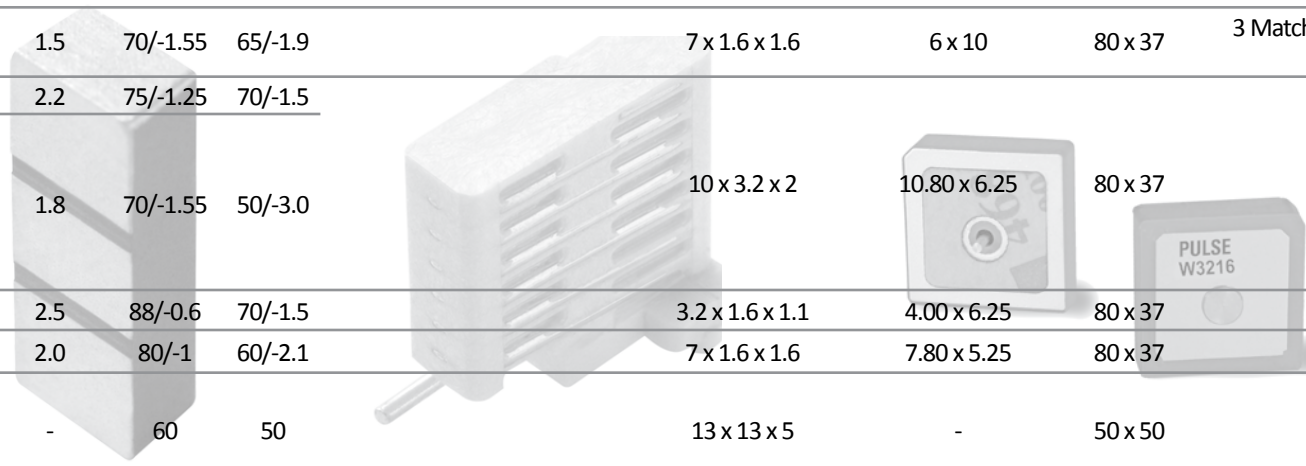
| App. | Type | Pulse Part number | Frequency range (MHz) | RL Min. (dB) | Peak Gain (dBi) | | | RF Performance Efficiency (%) | | Antenna DIM. (LxWxH,mm) | ME requirement | | Note | Availability |
|--------------------------------------|--------------|-------------------|-----------------------|--------------|-----------------|------------|------|-------------------------------|--------------------|-------------------------|----------------------------------|---|--------------------------------|--------------|
| | | | | | Peak | Band edges | Peak | Band edges | GC-area (L x W,mm) | | Evaluation Board Size (L x W,mm) | | | |
| 868MHz (868MHz-870MHz) | Ceramic chip | W3000 | 868-870 | -15 | -1.4 | -1.5 | 30 | 29 | 7 x 1.6 x 1.6 | 20 x 9.50 | 40 x 20 | Vertical, tuned by stripline on PCB | Stock | |
| | | W3013 | 868-870 | -11 | 1.5 | 1.4 | 65 | 64 | 10 x 3.2 x 4.0 | 10.80 x 8.25 | 80 x 37 | Center edge | Stock | |
| | | W3016 | 868-870 | -19 | -2.2 | -2.5 | 25 | 23 | 10 x 3.2 x 4.0 | 11.50 x 7 | 25 x 25 | Corner, Small GC-area and PCB | Stock | |
| 915MHz (902MHz-928MHz) | Helical | W3117 | 869-894 | -9 | 0 | -1.3 | 56 | 40 | 12.4 x 8 x 2.5 | 8 x 40 | 100 x 40 | Horizontal, Center top | Leadtime | |
| | | W3118A | 869-894 | -9 | 0 | -1.4 | 52 | 38 | 2.5 x 8 x 8 | 6 x 11 | 100 x 40 | Vertical, Corner | Leadtime | |
| | Ceramic chip | W3012 | 902-928 | -6 | 2 | 0.5 | 70 | 50 | 10 x 3.2 x 4 | 10.80 x 8.25 | 100 x 37 | Center edge | Stock | |
| W3014 | | 880-960 | -7 | -0.5 | -1 | 45 | 40 | 10 x 3.2 x 1.5 | 40 x 16 | 96 x 40 | Center Top | Stock | | |
| Combo 868/915MHz and 2.4GHz | Helical | W3112A | 902-928 | -10 | 0.9 | -0.3 | 67 | 50 | 2.5 x 8 x 8 | 6 x 11 | 100 x 40 | Vertical, Corner | Stock | |
| | | W3113 | 902-928 | -10 | 0.8 | -0.3 | 66 | 51 | 12.4 x 8 x 2.5 | 8 x 40 | 100 x 40 | Horizontal, Center top | Stock | |
| | Direct PCB | W3331 | 863-928 | -6 | 1.7 | 0.9 | 64 | 53 | 45 x 10 x 0.8 | 45 x 4.5 | 119 x 102 | Corner, Small GC-area and PCB, Dual feeds | Contact to sales for datasheet | |
| | | | 2400-2500 | -12 | 4 | 1.5 | 85 | 69 | | | | | | |
| | Direct PCB | W3333 | 863-928 | -8 | 2.4 | 1.8 | 75 | - | 40 x 15 x 0.8 | 40 x 4.5 | 119 x 102 | Corner, Small GC-area and PCB, Dual feeds | Contact to sales for datasheet | |
| | | | 2400-2500 | -12 | 4.5 | 3.0 | 85 | 66 | | | | | | |
| 433MHz | Ceramic chip | W3015 | 433 +/- 1 | -10 | 1.6 | - | 78 | - | 10 x 3.2 x 4.0 | 10.60 x 14 | 200 x 37 | Center edge | Leadtime | |
| | | W3127 | 433-435 | -15 | -2.9 | - | - | - | 35.35 x 9.90 | 8 x 40 | 100 x 40 | Center Top | Stock | |
| 315 MHz | Helical | W3126 | 315 | -10 | -5 | - | - | - | 35.35 x 9.90 | 8 x 40 | 100 x 40 | Center Top | Stock | |
| 169 MHz | Helical | W3100 | 169MHz | -10 | -4 | - | 55 | - | 91 x 9.8 | - | 95 x 45 | coil on free space | Leadtime | |

Note: 1. ISM application for 902MHz-928MHz band (center frequency 915MHz). 2. Applications from ECA chart for 862MHz-890MHz. (a) Alarms: 868.6-869.7MHz, (b) RFID: 865-868MHz, (c) Tracking, tracing, and data acquisition: 870-875.6MHz, and (d) Wireless audio/ multimedia: 863-865MHz. 3. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

| App. | Type | Pulse Part Number | Operating Frequency (MHz) | RF Performance | | | | | ME requirement | | | Note | Availability |
|--------------------------------------|--------------|-------------------|---------------------------|----------------|-----------------|------------|----------------|----------------------|-------------------------|---------------------------|----------------------------------|--|--------------------------------|
| | | | | RL Min. (dB) | Peak Gain (dBi) | | Efficiency (%) | | Antenna DIM. (LxWxH,mm) | GC-area (L x W,mm) | Evaluation Board Size (L x W,mm) | | |
| | | | | | Peak | Band edges | Peak | Band edges | | | | | |
| Single WiFi, BT, Zigbee | Ceramic chip | W3000 | 2400-2483.5 | -18 | 2.5 | 2.1 | 65 | 55 | 7x1.6x1.6 | 6.00x11.00 | 40x11 | 3 Matching components Horiz. mount | Stock |
| | | | | -12 | 2.2 | 1.5 | 53 | 45 | | 6.00x20.00 | 30x20 | | |
| | | W3001 | | -6 | 1.5 | 0.5 | 75 | 60 | 10x3.2x4.0 | 10.80x6.25 | 80x37 | On Ground solution | Stock |
| | | W3008 | | -8 | 1.7 | 0.7 | 70 | 55 | 3.2x1.6x1.1 | 4.00x4.25 | 80x37 | | Stock |
| | | W3008C | | -11 | 2.2 | 1.9 | 75 | 70 | 3.2x1.6x1.1 | 4.00x6.25 | 80x37 | | Stock |
| | | W3043 | | -12 | 4 | | 70 | | 3.2x1.6x1.1 | 12x20 | 37x20 | Small PCB size | Leadtime |
| | | W3092 | | -6 | 2 | 0 | 60 | 43 | 2x1.2x0.55 | 8x2.5 | 110x55 | Small antenna size | Contact to sales for datasheet |
| | Helical | W3108 | | -8 | 1.5 | | 50 | | 5.0x2.5x5.5 | 7.50x5.50 | 100x40 | Vertical SMD Corner @ | Stock |
| Dual WiFi | Ceramic chip | W3006 | 2400-2483.5 | -8 | 3.2 | 2.7 | 70 | 65 | 10x3.2x1.5 | 11.60x6.00 | 80x37 | | Stock |
| | | | 5150-5850 | -10 | 4.2 | 3.0 | 80 | 70 | | | | | |
| | | W3078 | 2400-2483.5 | -10 | 1.7 | 1.0 | 65 | 55 | 3.2x1.6x1.1 | 11.15x6.40 | 80x37 | @ Corner | Stock |
| | | | 4950-5850 | -6 | 4.3 | 3.7 | 80 | 55 | | | | | |
| | | W3079 | 2400-2483.5 | -13 | 2.5 | 1.3 | 72 | 60 | 3.2x1.6x1.1 | 11x6 | 80x37 | Center | Stock |
| | | | 4950-5850 | -8 | 5.7 | 3.3 | 78 | 55 | | | | | |
| | | W3056 | 2400-2483.5 | -8 | 3.2 | 2.5 | 80 | 70 | 10x3.2x1.5 | 10.80x6.25 (Notch) | 100x40 | Single feed and 2.4GHz WiFi | Stock |
| | 1575.42+10 | -10 | 2.5 | 1.5 | 75 | 65 | | | | | | | |
| W3064C | 2400-2483.5 | -11 | -0.7 | -1.7 | 80 | 70 | 10x3.2x1.5 | 10.80x6.40 (Divided) | 96x45 | Dual feed and 2.4GHz WiFi | Contact to sales for datasheet | | |
| | 1575.42+10 | -15 | | -2.0 | 70 | 60 | | | | | | | |
| | 2400-2483.5 | -11 | 2.5 | 1.5 | 85 | 80 | | | | | | | |
| | | 4950-5850 | -6 | 3.5 | 1.0 | 70 | 50 | | | | | | |
| Combo GPS+WiFi or ISM 868/915 + WiFi | Ceramic chip | W3095 | 1559-1610.5 | -10 | 1.5 | 0.8 | 75 | 60 | 10x3.2x1.5 | 17.80x6.45 | 70x35 | Dual feed and Dual WiFi+GPS/Glonass/Beidou | Stock |
| | | | 863-928 | -8 | 1.5 | 0.8 | 67 | 55 | | | | | |
| | | W3320 | 2400-2500 | -6 | 3.4 | 1.4 | 61 | 45 | 10x3.2x2 | 4.6x3.95 | 120x50 | Center, Dual feed | Leadtime |

*NOTE: 1. Recommended minimum GND dimensions of PIFA type and Monopole's are roughly 40x20mm and 30x20mm (or 40x11mm), respectively. Need to construct matching values to optimize antenna performance on surrounding mechanics and materials. 2. Pulse offers very unique GPS+WiFi combo antennas on single ceramic chip (10x3.2x1.5mm). There are three different types of combo antennas. W3056 (2.4G Wifi +GPS, single feed), W3064C (2.4G WiFi+GPS, dual feed), and W3095 (2.4G and 5G Wifi +GPS/Glonass/Beidou, dual feed). 3. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

| App. Type | Pulse Part number | Operating Frequency (MHz) | RF Performance | | | | | | ME requirement | | | Note | Availability | | |
|------------------------|--------------------|---|----------------|------------------|------------|-------------------|------------|---------------------|-----------------|-------------------------|--------------------|------------------------|--|---|--------------------------------|
| | | | RL Min. (dB) | RHCP Gain (dBic) | | Linear Gain (dBi) | | Efficiency (%)/(dB) | | Antenna DIM. (LxWxH,mm) | GC-area (L x W,mm) | | | Evaluation Board Size (L x W,mm) | |
| | | | | Peak | Band edges | Peak | Band edges | Peak | Band edges | | | | | | |
| GPS Only | Ceramic chip | 1575.42 +/-10 | W3000 | -15 | -3.9 | -4.1 | 0.3 | 0 | 50/-3 | 45/-3.5 | 7 x 1.6 x 1.6 | 6 x 20 | 30 x 20 | 3 Matching components | Stock |
| | | | | -12 | -3.5 | -3.9 | 0.1 | -0.2 | 50/-3 | 45/-3.5 | | 6 x 11 | 40 x 11 | | |
| | | | W3009 | -11 | 0.2 | -0.6 | 3 | 2.3 | 83/-0.8 | 70/-1.5 | 10 x 3.2 x 4.0 | 10.80 x 6.25 | 80 x 37 | On Ground shunt 3.3pF | Stock |
| | W3011 | -12 | 0.85 | 0.5 | 3.4 | 3 | 85/-0.7 | 80/-1 | 3.2 x 1.6 x 1.1 | 4.00 x 4.25 | 80 x 37 | w/o matching | Stock | | |
| | Patch | W3099 | -14 | 3.5 | - | - | - | - | - | 25 x 25 x 4 | - | 70 x 70 | AR: 3, V01; A | Contact to sales for datasheet | |
| | W3213 | -13 | -1.5 | - | - | - | - | - | 13 x 13 x 4 | - | 30 x 30 | AR: 3, V02; C | Stock | | |
| GPS, Glonass, & Beidou | Helical | 1559-1591 1575.42 +/-10 and 1598-1610 | W3110 | -16 | -2.1 | -2.4 | 1.3 | 0.7 | 47/-3.3 | 43/-3.7 | 5.0 x 2.5 x 5.5 | 7.50 x 5.50 | 100 x 40 | Vertical SMD, @ Corner | Stock |
| | | | W3000 | -18 | -0.2 | - | 2.4 | 1.5 | 70/-1.55 | 65/-1.9 | 7 x 1.6 x 1.6 | 6 x 10 | 80 x 37 | 3 Matching components, Horiz. Mount + @Corner | Stock |
| | Ceramic chip | W3010 | -12 | 1 | 0 | 3 | 2.2 | 75/-1.25 | 70/-1.5 | 10 x 3.2 x 2 | 10.80 x 6.25 | 80 x 37 | @ Position1 shunt 3.3pF | Stock | |
| | | W3011A | -12 | 1.5 | 0.4 | 3 | 1.8 | 70/-1.55 | 50/-3.0 | 3.2 x 1.6 x 1.1 | 4.00 x 6.25 | 80 x 37 | @ Position2 shunt 2.2pF | Stock | |
| | | W3062A | -16 | 1 | -0.4 | 3.7 | 2.5 | 88/-0.6 | 70/-1.5 | 7 x 1.6 x 1.6 | 7.80 x 5.25 | 80 x 37 | Shunt 1.8pF | Stock | |
| | Patch | W3216 | -10 | 0 | -0.5 | 2.5 | 2.0 | 80/-1 | 60/-2.1 | 13 x 13 x 5 | - | 50 x 50 | Shunt 2.2pF | Stock | |
| | WiFi and GPS Combo | Ceramic chip | W3056 | -7 | -2 | - | - | - | 60 | 50 | 10 x 3.2 x 1.5 | 10.80 x 6.25 (Notch) | 100 x 40 | Shunt 1.5pF V02; C | Stock |
| W3056 | | | 2400-2483.5 | -8 | - | - | 3.2 | 2.5 | 80 | 70 | 10 x 3.2 x 1.5 | 10.80 x 6.25 (Notch) | 100 x 40 | Single feed and 2.4GHz +GPS | Stock |
| Ceramic chip | | W3064C | 1575.42 + 10 | -10 | - | - | 2.5 | 1.5 | 75 | 65 | 10 x 3.2 x 1.5 | 10.80 x 6.40 (Divided) | 96 x 45 | Dual feed and 2.4GHz +GPS | Contact to sales for datasheet |
| | | W3064C | 2400-2483.5 | -11 | - | - | -0.7 | -1.7 | 80 | 70 | 10 x 3.2 x 1.5 | 10.80 x 6.40 (Divided) | 96 x 45 | Dual feed and 2.4GHz +GPS | Contact to sales for datasheet |
| | | W3095 | 1575.42 + 10 | -15 | - | - | -2.0 | 70 | 60 | 10 x 3.2 x 1.5 | 17.80 x 6.45 | 80 x 50 | Dual feed and Dual WiFi + GPS/Glonass/Beidou | Stock | |
| W3095 | 2400-2483.5 | -10 | - | - | 2.7 | 1.5 | 85 | 80 | | | | | | | |
| W3095 | 4950-5850 | -6 | - | - | 3.7 | 1.0 | 73 | 53 | | | | | | | |
| W3095 | 1559-1610.5 | -8 | - | - | 1.7 | 0.7 | 75 | 62 | | | | | | | |



NOTE: 1. Recommended minimum GND dimensions of PIFA type and Monopole are roughly 40x20mm and 30x20mm (or 40x11mm), respectively. Need to construct matching values to optimize antenna performance on surrounding mechanics and materials. 2. Pulse offers very unique GPS+WiFi combo antennas on single ceramic chip (10x3.2x1.5mm). There are three different types of combo antennas. W3056 (2.4G Wifi +GPS, single feed), W3064C (2.4G Wifi+GPS, dual feed), and W3095 (2.4G and 5G Wifi +GPS/Glonass/Beidou, dual feed). 3. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

| App | Type | Pulse Part Number | RF Performance | | | | ME requirement | | | Note | Availability | | |
|----------------|-----------|-------------------|-----------------------|--------------|----------------------|------------|-----------------------|------------|-------------------------|------------------|--------------|---|----------------------------------|
| | | | Frequency range (MHz) | RL Min. (dB) | Peak Gain (dBi) | | Efficiency (%) / (dB) | | Antenna DIM. (LxWxH,mm) | | | GC-area (L x W,mm) | Evaluation Board Size (L x W,mm) |
| | | | | | Peak | Band edges | Peak | Band edges | | | | | |
| LTE | Composite | W3796 | 698-960 | -6 | 1.5 (Avg. peak gain) | | 65 (Avg.) | | 40 x 7 x 3 | 40.6 x 15 | 120 x 40.6 | - Top mount: Horizontal - Matching: SE3.3nH+SH0.7pF; SH6.8nH | Stock |
| | | | 1427.9-1660.9 | -5.5 | 2 (Avg. peak gain) | | 55 (Avg.) | | | | | | |
| | | | 1695-2200 | -6 | 5.5 (Avg. peak gain) | | 75 (Avg.) | | | | | | |
| | | | 2300-2700 | -6 | 5 (Avg. peak gain) | | 70 (Avg.) | | | | | | |
| Penta Band | Composite | W3544A | 824-960 | -3.7 | 0.5 | 1.8 | 65 | 44 | 7.65 x 26 x 3 | 21x33.5 (W3544A) | 110 x 50 | 1. Corner mount (vertical). 2.matching: *SE12nH | Stock |
| | | | 1710-1880 | -4.6 | 2.9 | 2.3 | 74 | 45 | | | | | |
| | | | 1850-1990 | -8.6 | 2.4 | 1.7 | 74 | 64 | | | | | |
| | | | 1920-2170 | -5.6 | 2.2 | 1.1 | 68 | 60 | | | | | |
| Quad band (US) | Composite | W3544B | 824-960 | -6.5 | 1 | -0.7 | 70 | 53 | 7.65 x 26 x 3 | 50 x 18 (W3544B) | 110 x 50 | 1. Top mount (Horizontal) 2.matching: 10nH | Stock |
| | | | 1710-1880 | -5.7 | 2.7 | 1.7 | 77 | 59 | | | | | |
| | | | 1850-1990 | -9.3 | 2 | 1 | 77 | 69 | | | | | |
| | | | 1920-2170 | -5 | 1.8 | 0.2 | 71 | 58 | | | | | |
| Quad band (EU) | Ceramic | W3073 | 824-894 | -4.7 | 0.4 | -2.6 | 51 | 28 | 10 x 3.2 x 4 | 40 x 10 | 105 x 40 | 1. Matching: SE10nH+ SE12nH+SH12nH. 2.Tuning strip on PCB. | Stock |
| | | | 1710-1880 | -3.5 | 2.3 | 0.7 | 59 | 40 | | | | | |
| | | | 1850-1990 | -5.9 | 2.5 | 1.6 | 59 | 54 | | | | | |
| | | | 1920-2170 | -3.3 | 2.2 | 0.9 | 58 | 46 | | | | | |
| Dual band (EU) | Ceramic | W3070 | 880-960 | -3.8 | 1 | -1.8 | 60 | 34 | 10 x 3.2 x 4 | 40 x 10 | 105 x 40 | 1. Matching: *SE10nH+ *SE10nH+ *SH15nH. 2.Tuning strip on PCB. | Stock |
| | | | 1710-1880 | -4.9 | 2.9 | 2 | 70 | 54 | | | | | |
| | | | 1850-1990 | -8 | 2.9 | 2.5 | 71 | 62 | | | | | |
| | | | 1920-2170 | -4.4 | 2.8 | 2.3 | 67 | 59 | | | | | |
| Dual band (EU) | Ceramic | W3070 | 880-960 | -5.1 | 1.2 | -0.4 | 65 | 47 | 10 x 3.2 x 2 | 40 x 10 | 95 x 40 | Matching: *SE18nH+ *SE10nH | Stock |
| | | | 1710-1880 | -5.7 | 2.5 | 1.5 | 60 | 50 | | | | | |

NOTE: 1. "Stock" Stocked parts are typically available from Pulse distribution partners immediately. 2. * SE = Series and *SH = Shunt

| App. | Type | Pulse Part Number | Operating Frequency (MHz) | RF Performance | | | | Efficiency (%)/(dB) | Antenna DIM. (LxWxH,mm) | ME requirement | | Note | Availability |
|------------------|----------|-------------------|-----------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------|-------------------------|---|---|--------------------------------|
| | | | | RL Min. (dB) | Peak Gain (dBi) Peak | Band edges | Peak | | | Band edges | Cable Length from PCB edge/ Diameter, mm) | | |
| ISM 868/915 | FPC | W3312B0100 | 860-930 | -8 | 2.3 | - | 50 (Avg.) | 75 x 15 | L:100 / D:1.13 | IPEX MHF 20278 | Alternative: W3502, W3538, W3501 | Contact to sales for datasheet | |
| | PCB | W3332B0100 | 863-928 2400-2500 | -5 -10 | 0.2 4.1 | - | 55 (Avg.) 64 (Avg.) | 82 x 15 x 0.56 | L:150 / D:1.13 | IPEX MHF 20278 | ISM 868/915 and 2.4GHz WiFi (two feed cables). Isolation: <-11dB. | Contact to sales for datasheet | |
| ISM WiFi Combo | PCB | W3525B039 | 2400-2483.5 | -10 | 2 | 0.6 | 65 | 48 x 11 x 0.8 | L:100 / D:1.13 | IPEX MHF 20278 | | Stock | |
| | PCB | W3593B0100 | 4900-5850 | -10 | 2 | 0.5 | 70 | 45 x 7 x 0.8 | L:100 / D:1.13 | IPEX MHF 20278 | | Stock | |
| | PCB | W3513B0212 | 2400-2500 4900-5850 | -13 -10 | 2 2.7 | 1.4 0.4 | 70/-1.5 67/-1.8 | 16 x 70 x 0.9 | L:212 / D:1.13 | IPEX MHF 20278 | | Stock | |
| | FPC | W3315B0100 | 2400-2500 4900-5875 | -10 -10 | 2 5 | - | 65 76 | 45 x 6 x 0.1 | L:100 / D:1.13 | IPEX MHF-A13 20428-001R | Measured with 2mm PC/ABS plastic | Stock | |
| WiFi, BT, Zigbee | FPC | W3334B0150 | 2400-2500 4900-5900 | -10 -10 | 4 5 | - | 52 (Avg.) 80 (Avg.) | 14 x 5 x 0.1 | L:150 / D:1.13 | IPEX MHF 20278 | Measured with 1.5mm PC/ABS plastic | Contact to sales for datasheet | |
| | FPC | W6102B0100 | 2400-2500 4900-5900 | -10 -10 | 1 (Avg.) 5 (Avg.) | - | 40 (Avg.) 75 (Avg.) | 50 x 20 x 0.1 | L:100 / D:1.13 | IPEX MHF 20278 | Measured with 1.5mm PC/ABS plastic | Contact to sales for datasheet | |
| | FPC | W6103B0100 | 2400-2500 4900-5900 | -10 -10 | 4.5 (Avg.) 5 (Avg.) | - | 52 (Avg.) 80 (Avg.) | 80 x 20 x 0.1 | L:100 / D:1.13 | IPEX MHF 20278 | Measured with 1.5mm PC/ABS plastic | Contact to sales for datasheet | |
| | PCB | W3502B0020 | 824-960 1710-1990 | -6 -4 | 2 2.4 | 0.8 -0.4 | 78/-1.2 80/-0.95 | 43 x 17 x 0.5 | L:20 / D:1.13 | IPEX MHF 20278 | 80mm ground plane with 5mm gap inside plastic box | Stock | |
| 3G | PCB | W3538B0200 | 824-960 1710-2170 | -6 -6 | - - | - | 57 71 | 40 x 15 x 0.7 | L:200 / D:1.13 | IPEX MHF 20278 | On plastic PC plate with test ground | Stock | |
| | PCB | W3501B0140 | 824-960 1710-1990 | -7 -8 | 1.5 4.2 | 0.8 2.8 | 61 71 | 87 x 25 x 0.2 | L:140 / D:1.13 | IPEX MHF 20278 | Test unit : 150x100x40. W/ adhesive: W3571B0140. | Stock | |
| | FPC | W3554B0140 | 698-798 824-960 1710-2690 | -5 -7 -8 | 1.5 1.8 3.9 | -0.6 0.4 1.9 | 75 80 86 | 120 x 30 x 0.2 | L:140 / D:1.13 | IPEX MHF 20278 | Connected on a test board 120x120 with 10mm gap | Stock | |
| MIMO WiFi | FPC | W6112B0100 | 698-960 1428-2700 3400-3600 | -10 -8 -10 | 4.3 (Avg.) 3.8 (Avg.) 4 (Avg.) | - | 55 (Avg.) 68 (Avg.) 65 (Avg.) | 224 x 20 x 0.1 | L:100 / D:1.13 | IPEX MHF 20278 | Measured with 1.5mm PC/ABS plastic | Contact to sales for datasheet | |
| | 4G (LTE) | FPC | W3554B0140 | 698-798 824-960 1710-2690 | -5 -7 -8 | 1.5 1.8 3.9 | -0.6 0.4 1.9 | 75 80 86 | 120 x 30 x 0.2 | L:140 / D:1.13 | IPEX MHF 20278 | Connected on a test board 120x120 with 10mm gap | Stock |
| | | FPC | W6112B0100 | 698-960 1428-2700 3400-3600 | -10 -8 -10 | 4.3 (Avg.) 3.8 (Avg.) 4 (Avg.) | - | 55 (Avg.) 68 (Avg.) 65 (Avg.) | 224 x 20 x 0.1 | L:100 / D:1.13 | IPEX MHF 20278 | Measured with 1.5mm PC/ABS plastic | Contact to sales for datasheet |

Note: 1. I-PEX MHF connector is U.FL compatible. Receptacle PN of IPEX MHF 20278-112R-13: 20279-001E (3pad), 20441-001E(4pad). Cable length is starting at an edge of PCB. 3. See datasheets for available cable lengths or contact the factory. 4. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

| App. | Pulse Part number | Operating Frequency (MHz) | RF Performance | | | | LNA | | Antenna Dimension (mm) | Overall Dimension (mm) | ME requirement | | Note | Availability |
|--|-------------------|--|-----------------|-----------|-----------|--------------|-----------|----------------|------------------------|------------------------|----------------------------------|---------------|--------------------------------|--------------|
| | | | Antenna Element | Gain (dB) | NF (dB) | Current (mA) | VCC (Vdc) | Connector type | | | Coaxial Cable (Length; Diameter) | | | |
| GNSS (GPS, Glonass, BeiDou, and Galileo) | GPSGB1315 | 1561 +/- 2.046, 1575.42 +/- 10.23, and 1602.5625 +/- 4 MHz | 2 | -1+1 | 15+ -2 | <2.4 | <6 | 3.3-5+ -0.5 | 13x13x5 | 16x17x8.15 | IPEX MHF 20278 | L:100; D:1.13 | Contact to sales for datasheet | Stock |
| | GPSGB1330 | | 2 | -1+1 | 30+ -2 | <2.4 | <6 | 3.3-5+ -0.5 | 13x13x5 | 16x17x8.15 | IPEX MHF 20278 | L:100; D:1.13 | Contact to sales for datasheet | Stock |
| | GPSGB2515 | | 2 | 1+1 | 15+ -2 | <2.4 | <6 | 3.3-5+ -0.5 | 25x25x4 | 30x30x8 | IPEX MHF 20278 | L:100; D:1.13 | Contact to sales for datasheet | Stock |
| | GPSGB230 | | 2 | 1+1 | 30+ -2 | <2.4 | <6 | 3.3-5+ -0.5 | 25x25x4 | 30x30x8 | IPEX MHF 20278 | L:100; D:1.13 | Contact to sales for datasheet | Stock |

Note: 1. Further detailed specs such as 'Out of band rejection' of LNA can be found on a datasheet.



PulseLarsen Antennas

PulseLarsen also provides TS16949 GPS Patches for the Tier 1 automotive business as follows:

W3223: Center Pin, 25x25x4mm

W3224: Surface Mount, 18x18x4 mm

W3225: Surface Mount, 25x25x4mm



INTERNAL ACTIVE GPS MODULES STARTING ON PAGE 27.

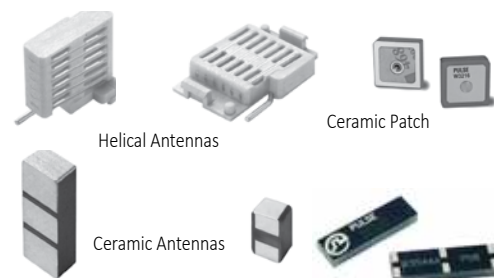
| App. | Type | Pulse Part number | RF Performance | | | | | | | | | Mechanical requirement | | Note | Availability |
|-------|--|------------------------------|-----------------------|-----------------------------|--------------------------------------|-----------------|--------------------------------------|-----------------|------------------|----------|----|--------------------------------------|---|---|--------------|
| | | | With matching network | | | | Without matching network (Bare coil) | | | | | Package type | Dimension (in/mm) | | |
| | | | Frequency (MHz) | Reading distance EMVCo (mm) | Reading Distance Grid Scan (Avg.,mm) | Impedance (ohm) | Self resonant frequency (MHz) | Inductance (uH) | Resistance (ohm) | Q-Factor | | | | | |
| NFC | Flex only | W7001 | 13.56 | 40 | 33 | 50/80 | 100 | 0.9 | 1.55 | 49 | A | 0.98 x 0.98 x 0.005 (25 x 25 x 0.12) | Without a GND near antenna | Stocked | |
| | Flex with Ferrite | W3579 | 13.56 | 40 | 28 | 50/80 | 42 | 1.6 | 3.60 | 37.8 | B | 1.38 x 1.97 x 0.012 (50 x 50 x 0.30) | | Stocked | |
| | | W7013 | 13.56 | 20 | 25 | 50/80 | 71.5 | 1.05 | 2.70 | 33 | C | 1.18 x 0.98 x 0.014 (30 x 25 x 0.36) | On GND solution | Stocked | |
| | Flex with twisted pair cable + connector | W7000 | 13.56 | - | 36 | 50 | 75.5 | 1.27 | 2.20 | 49 | F | 1.69 x 1.34 x 0.005 (43x 34 x 0.11) | Adhesive tape under coil included | Lead time | |
| | WiFi and NFC combo | Wire loop on plastic carrier | W7002 | 13.56 | 40 | 35 | 50/80 | 89 | 0.65 | 0.95 | 57 | D | 3.72 x 2.24 x 0.14 (94.6 x 56.8 x 3.65) | Optimized for metal proximity within the device | Stocked |
| | | Trace on PCB | W5100 | 13.56 2400-2483.5 | - RL Min. (dB): -8 | - | 50 | 65.9 | 0.95 | - | 44 | E | 1.57 x 1.57 x 0.05 (40 x 40 x 1.2) | Test setup over 80x80 mm metal GP | Lead time |
| W5101 | | | 13.56 2400-2483.5 | - RL Min. (dB): -8 | - | 50 | 57.6 | 1.13 | - | 46 | E | 1.77 x 1.77 x 0.05 (45 x 45 x 1.2) | Test setup over 80x80 mm metal GP | Lead time | |

NOTE: 1. Wire assembly option: Picoblade connector with wire. 2. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

| | Type | RF Performance | | | | Mechanical requirement | | | | Note | Availability | | |
|---------------------------|----------------------|--------------------|--|--------------|----------------------|-----------------------------|------------------------|--------------|-----------------------|----------------------------------|--------------|--------------------------------|-------|
| | | Pulse Part number | Frequency range (MHz) | RL Min. (dB) | Peak Gain (dBi) | Height (mm) straight (Bent) | Diameter(mm) Max (Min) | Package type | Connector | | | IP-rate | |
| ISM | Stick/Swivel | W1063 | 868-928 | -7.5 | 3 | 195 (172) | 13 (6) | B | RP-SMA | | Stock | | |
| | | W1063M | 902-928 | -10 | 3 | 195 (172) | 13 (6) | B | SMA (m) | | Leadtime | | |
| | Stick/ no Swivel | W5012 | 868-928 | -8 | 2 | 179 | 10 | A | RP-SMA | | Stock | | |
| | | W5017 | 868-928 | -8 | 2 | 179 | 10 | A | SMA (m) | IP65 | Stock | | |
| | | W5021 | 868-928 | -8 | 2 | 171 | 10 | G | RP-SMA (Right angle) | | Leadtime | | |
| WIFI (2.4GHz) | Stick/Swivel | W1010 | 2400-2500 | -10 | 2 | 108 (86) | 10 (7.8) | B | SMA(m) | | Stock | | |
| | | W1030 | 2400-2500 | -10 | 2 | 108 (86) | 10 (7.8) | B | RP-SMA | | Stock | | |
| | | W1027 | 2400-2500 | -11 | 3.2 | 136 (110) | 10 (6) | C | RP-SMA | | Stock | | |
| | | W1037 | 2400-2500 | -10 | 3.2 | 197 (170) | 13.2 (7.4) | C | RP-SMA | | Stock | | |
| | | W1038 | 2400-2500 | -10 | 3.2 | 197 (170) | 13.2 (7.4) | C | RP-SMA | Color option (Grey) | Stock | | |
| | | W1059 | 2400-2500 | -10 | 5 | 195 (154) | 13 (6) | C | SMA (m) | | Stock | | |
| | Stick/ no Swivel | W5001 | 2400-2500 | -10 | 1.5 | 128 | 10 (6) | G | RP-SMA (Right angle) | | Stock | | |
| | | W5010 | 2400-2500 | -10 | 1.5 | 130 | 10 (6) | A | RP-SMA | IP65 | Stock | | |
| | | W5011 | 2400-2500 | -10 | 1.5 | 130 | 10 (6) | A | SMA (m) | | Stock | | |
| | | W5039 | 2400-2500 | -10 | 2 | 94 | 10 (6) | F | RP-SMA | IP67 | Leadtime | | |
| | | WIFI (5GHz) | Stick/Swivel | W1028B | 5150-5850 | -9 | 2 | 136 (114) | 9.2 (6) | C | RP-SMA | | Stock |
| | | | Blade/ Swivel | W1043 | 2400-2500; 5150-5850 | -10 | 2 | 157 (130) | 17.6 (13) | E | RP-SMA | | Stock |
| W1044 | 2400-2500; 5150-5850 | -10 | | 2 | 157 (126) | 17.6 (13) | E | SMA (m) | | Leadtime | | | |
| SPDA17RP2400/5900 | 2400-2500; 4900-5900 | -10 | | 0.8; 5.9 | 175 (150) | 21.8 (13.7) | H | RP-TNC | | Stock | | | |
| WIFI Dual (2.4GHz + 5GHz) | Stick/ no Swivel | W5028 | 2400-2500; 5150-5850 | -10 | 0 | 128 | 10 (6) | G | RP-SMA (Right angle) | IP65 | Stock | | |
| | Blade/ Swivel | SPDA24850/1900 | 824-894; 1850-1990 | -7.5 | 0; 1.5 | 176 (147) | 21.8 (13.7) | H | SMA (m) | | Leadtime | | |
| SPDA17850/1900 | | 824-894; 1850-1990 | -10 | 0; 1.2 | 176 (147) | 21.8 (13.7) | H | TNC | | Leadtime | | | |
| 2G | Stick/ no Swivel | W1900 | 824-960, 1710-2170 | -4;-6 | 0.5; 2.5 | 49 | 8 | D | SMA (m) (Right angle) | | Stock | | |
| | | W1902 | 824-960, 1710-2170 | -4;-6 | 0.5; 2.5 | 49 | 8 | D | RP-SMA (Right angle) | | Stock | | |
| | | W1910 | 824-960, 1710-2170 | -4;-6 | 0.5; 2.5 | 49 | 10.4 | F | SMA (m) | Tested on ground plane (70x50mm) | Stock | | |
| | | W1911 | 824-960, 1710-2170 | -4;-6 | 0.5; 2.5 | 49 | 10.4 | F | RP-SMA | | Stock | | |
| 3G | Blade/ Swivel | SPDA17806/2170 | 806-960; 1710-2170 | -7.5 | 0.5; 0.5 | 192 (159) | 23.8 (15.7) | H | TNC | MediumGrey | Stock | | |
| | | SPDA24700/2700 | 698-960; 1710-2170; 2500-2700 | -7.5 | 0.6; 1.5; 3.4 | 223 (192) | 23.8 (15.6) | H | SMA (m) | | Stock | | |
| | | W5084K | | -8 | 1.5; 2.5 | 229 (198) | 29 (15.5) | H | SMA (m) | IP65 | W5084 (TNC) | | |
| 4G | Blade/ Swivel | W5095K | 698-960; 1447-1510; 1710-2170; 2500-2700 | -9 | 2.0; 3.0 | 229 (198) | 43 (15.5) | H | SMA (m) | IP65 | W5095 (TNC) | Contact to sales for datasheet | |

EMBEDDED ONTO / SOLDERED TO PCB

- Antenna Technology: Ceramic monopoles, ceramic PIFA, ceramic patch, helical; stamped metal, composite.
- Frequencies: WLAN(Wi-Fi), Zigbee, Bluetooth, ISM, GPS, 3G/4G LTE, Multi bands.
- Applications: OEM equipment, medical devices, security systems, tracking and monitoring devices, handhelds, meter reading, smart devices, sensors, wearables, fitness, beacons, and more.



Pulse offers a wide range of surface mount antennas (SMD) for wireless device applications. Pulse ceramic technology results in robust antenna designs that have outstanding performance. These antennas have an inherent immunity to surrounding antenna signals and hand-effect, which makes them exceptionally suitable solutions for small hand-held or wall-mount devices with multiple antennas. Pulse helical antenna technology provides high-performance antennas in a small package that can be easily deployed. Our composite antennas offer the most frequency bands per embedded technology. These ceramic, helical, and composite antennas require minimal ground plane removal for operation, which means saved board space and economical implementation. The SMD compatibility of Pulse’s antenna products makes them simple and easy to mount.

| CERAMIC | | | | | | | | |
|----------------|----------|------------------------------|------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------|----------------------|
| Application | Part No. | Size ⁴ (mm)/ Type | Mount Type ³ (mm) | Frequency Range (MHz) | RHCP Gain ⁵ (dBic) | Max Gain (dBi) | Efficiency (%/dB) | Return Loss (dB MIN) |
| WiFi | W3001 | 10x3.2x4mm Ceramic | SMD, GC 10.8x6.25 | 2400 | N/A | 1.5 (peak) | 75/-1.25 | -6 |
| WiFi Dualband | W3079 | 3.2x1.6x1.1 Ceramic | SMD, GC area 11.00x6.00 | 2400-2483.5 / 5150-5850 | N/A | 2.4 (peak) / 5.7 (peak) | 72% (peak) / 78% (peak) | -13 / -8 |
| WiFi Dualband | W3006 | 10.0x3.2x1.5 Ceramic | SMD, GC area 11.60x6.00 | 2400-2483.5 | N/A | 3.2 (peak) / 4.2 (peak) | 70% (peak) / 80% (peak) | -8 / -10 |
| Bluetooth/WiFi | W3092 | 2.0x1.2x0.55 Ceramic | SMD, GC area 8.00x2.50 | 2400-2483.5 | N/A | 2,2 (peak) | 75/-1.3 (peak) | -11 |
| Bluetooth/WiFi | W3008C | 3.2x1.6x1.1 Ceramic | SMD, GC area 4.00x6.25 | 2400-2483.5 | N/A | 2,2 (peak) | 75/-1.3 (peak) | -11 |
| GPS | W3009 | 10.0x3.2x4.0 Ceramic | SMD, GC area 10.80x6.25 | 1575.42 ±10 | 0.7 (peak) / 0.3 (band edges) | 3 (peak) | 80/-1.25 (peak) | -10 |
| ISM | W3013 | 10x3.2x4 Ceramic | GC area 10.8x8.25 | 868-870 | -- | 1.5 | 65 | -11 |
| WiFi & GPS | W3056 | 10x3.2x1.5 Ceramic | GC area 10.8x6.25 (Notch) | 2400-2483.5 / 1575.42 | -- | 3.2 / 2.5 | 80 / 75 | -8 / -10 |
| WiFi & GPS | W3064C | 10x3.2x1.5 Ceramic | GC area 10.8x6.4 (Divided) | 2400-2483.5 / 1575.42 | -- | -0.7 / -1 | 80 / 70 | -11 / -15 |
| GPS | W3213 | 13x13x4 Patch | -- | 1575.42 | -1.5 | -- | -- | -13 |
| GPS | W3216 | 13x13x5 Patch | -- | 1575.42 | -2 | -- | 60 | -7 |
| GPS | W3099 | 25x25x4 Patch | -- | 1575.42 | 3.5 | -- | -- | -14 |

1. All antennas are RoHS Compliant
 2. Operating temperature -40°C to +85°C
 3. GC = Ground Clearance, mm
 4. Length x Width x Height
 5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information

ANTENNAS FOR EMBEDDED SURFACE MOUNTING APPLICATIONS (continued)

| CERAMIC (CONTINUED) | | | | | | | | |
|--------------------------------|--------------------|-----------------------------|------------------------------|--|------------------|-------------------------|-------------------------------|----------------------|
| Application | Part No. | Size (mm)/ Type | Mount Type ³ (mm) | Frequency Range (MHz) | RHCP Gain (dBic) | Max Gain (dBi) | Efficiency (%/dB) | Return Loss (dB MIN) |
| GPS/Glonass & Beidou | W3062A | 7x1.6x1.6 Ceramic | GC area 7.8x5.25 | 1559-1591 & 1598-1610 | 0 | 2.5 | 80 / -1 | -10 |
| Dual Band (EU) | W3070 | 10x3.2x2 Ceramic | GC area 40x10 | 880-960 / 1710-1880 | -- | 1.2 / 2.5 | 65 / 60 | -5.1 / -5.7 |
| Dual WiFi | W3078 | 3.2x1.6x1.1 ceramic | GC area 11.15x6.4 | 2400-2483.5 / 4950-5850 | -- | 1.7 / 4.3 | 65 / 80 | -10 / -6 |
| WiFi & GPS | W3095 | 10x3.2x1.5 Ceramic | GC area 17.8x6.45 | 2400-2483.5 / 4950-5850 / 1559-1610.5 | -- | 2.7/3.7/1.7 | 85/53/62 | -10/-6/-8 |
| ISM, or GPS, or GPS/Glonass/BD | W3000 ⁵ | 7x1.6x1.6 tuneable monopole | See datasheet | 868-870; 1559-1591 & 1598-1610; 1575.4 | See datasheet | See datasheet | See datasheet | See datasheet |
| GPS | W3010 | 10.0x3.2x2.0 Ceramic | SMD, GC area 10.80x6.25 | 1575.42 ±10 | -0,2 (peak) | 2,8 (peak) | 75/-1,25 (peak) | -18 |
| GPS | W3011/A | 3.2x1.6x1.1 Ceramic | SMD 4x4.25/6.25 | 1575.42 ±10 | 0.85 (peak) | 3.4 (peak) | 85/-0.7 (peak) | -12 |
| ISM 900 | W3012 | 10x3.2x4 Ceramic | SMD GC area 10.80x8.25 | 902-928 | N/A | 2 (peak) | 70/- 1.55 (peak) | -6 |
| ISM 868/915 Monopole | W3014 ⁵ | 10x3.2x1.5 Ceramic | SMD GC area 40x16 | 848-888/ 895-935 | N/A | 1.55 (peak) | 45/- 4.5 (peak) | -6 |
| Zigbee, ISM Monopole | W3043 ⁵ | 3.2x1.6x1.1 Ceramic | SMD GC area, 17x20 | 2400, 1575 and other | N/A | 4 (peak) | 70/-1.55 (peak) | -12 |
| ISM 868/985 2.4 BT/WiFi | W3320 | 10x3.2x2.0 Ceramic | SMD GC area, 9.8x8.8 | 868, 915, 2400 | N/A | 1.5 (peak) / 3.4 (peak) | 66 / - (peak) / 67 / - (peak) | -8 / -6 |

| HELICAL | | | | | | | | |
|-------------|----------|----------------------|------------------------------|-----------------------|---------------------------------|--------------------------------|---|----------------------|
| Application | Part No. | Size (mm)/ Type | Mount Type ³ (mm) | Frequency Range (MHz) | RHCP Gain (dBic) | Max Gain (dBi) | Efficiency (%/dB) | Return Loss (dB MIN) |
| WiFi | W3108 | 5.0x2.5x5.5 Helical | SMD, GC area 7.50x5.50 | 2400-2483.5 | N/A | 1.5 | 50/-3 | -8 |
| GPS | W3110 | 5.0x2.5x5.5 Helical | SMD, GC area 7.50x5.50 | 1575.42 ±10 | -2,1 (peak) / -2,4 (band edges) | 1,3 (peak) / 0,7 (band edges) | 47/-3,3 (peak) / 43/-3,7 (band edges) | -16 |
| ISM | W3112A | 2.5x8.0x8.0 Helical | SMD, GC area 6.00x11.00 | 902-928 | N/A | 0.9 (peak) / -0.3 (band edges) | 67/-1.7 (peak) / 50/-3 (band edges) | -10 |
| ISM | W3113 | 12.4x8.0x2.5 Helical | SMD, GC area 8.00x40.00 | 902-928 | N/A | 0.8 (peak) / -0.3 (band edges) | 66 / -1.8 (peak) / 51/-2.9 (band edges) | -10 |
| ISM (315) | W3126 | 35.35x9.90 Helical | GC area 8x40 | 315 | N/A | -5 | -- | -10 |
| ISM (433) | W3127 | 35.35x9.90 Helical | GC area 8x40 | 433-435 | N/A | -2.9 | -- | -15 |

| COMPOSITE | | | | | | | | |
|-------------|----------|---------------------|------------------------------|--|------------------|----------------|-------------------|----------------------|
| Application | Part No. | Size (mm)/ Type | Mount Type ³ (mm) | Frequency Range (MHz) | RHCP Gain (dBic) | Max Gain (dBi) | Efficiency (%/dB) | Return Loss (dB MIN) |
| 2G/3G | W3544A/B | 26x7.65x3 Composite | SMD | 824-960/1710-2170 | N/A | -1 | 50% | -6 ave |
| 2G/3G | W3073 | 10x3.2x4 Composite | SMD | 824-894/1710-2170 or 880-960/1710-2170 | N/A | 2.9 | 50% | -6 ave |
| 3G / 4G LTE | W3796 | 40 x 7 x 3 | GC area 15 x 40 | 698 - 2700 | N/A | 1.5 / 2 / 5.5 | 55 / 70 | -6 |

1. All antennas are RoHS Compliant
 2. Operating temperature -40°C to +85°C
 3. GC = Ground Clearance, mm
 4. Millimeters (mm)
 5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information



- Located inside the device.
- Often connected by a short cable assembly to customer PCB.
- Technology: Flexible printed circuit (FPC), PCB, Patch.
- Frequencies: WLAN, Bluetooth, Zigbee, ISM, GPS, 3G/4G LTE, Multi bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

| PRINTED CIRCUIT BOARD ANTENNA SOLUTIONS | | | | | | |
|---|------------------------------------|-------------|---|---|-----------------------|----------------|
| Application | Frequency | Part Number | Mechanical Dimensions (in/Mm) | Cable Length (mm) /Connector Type | Gain (dBi) | Efficiency (%) |
| 2G / 3G | 850/900/1800/1900 | W3501 | 0.98 x 3.43 x .008 25 x 87 x 0.2 | 56/ I-PEX Connector | 1.5 / 1.5 / 3.5 / 3.5 | 50 to 55 % |
| 2G / 3G | 850/900/1800/1901 | W3502 | 1.69 x 0.67 x 0.02 43 x 17 x 0.5 | 27.5/ I-PEX Connector | 2 / 1 / 1 / 2 | 40 to 60 % |
| WiFi | 2.4 GHz | W3525Bxxx | 0.42 x 1.88 x .031 10.7 x 47.7 x 0.8 | Various cable lengths/ I-PEX Connector | 2 | 70% |
| WiFi | 2.4 & 5 GHz | W3513 | 0.63 x 2.76 x 0.04 16 x 70 x 0.9 | 250/ I-PEXConnector | 2 | 50 to 72 % |
| WiFi | 2.4 & 5 GHz | W3315B0100 | 0.23 x 1.8in / 6x45 mm | 100, I-PEX, MHF Series | -3.5 / -2.5 | 70% |
| 3G 4G LTE | 698-960 / 1710-2170 / 2300-2700 | W3554B0140 | 120 x 30 x 0.2 | 143 / I-PEX | 2.5 | 60% |
| 5 GHz Dipole | 4900-5850 | W3593B0100 | 45 x 7 x 0.8 | 109mm / I-PEX | 2 | 50% |

| ANTENNAS FOR NEAR FIELD COMMUNICATIONS | | | | | | | | |
|--|-------------|---------------------|--------------------|-------------|-------------------|---------------------|------|---------------|
| Frequency (MHz)* | Part Number | Read Distance (mm)* | Size (mm) | SRF (MHz)** | Inductance (uH)** | Resistance (Ohms)** | Q ** | Matched Q *** |
| 13.56 | W3579 | 40 | 35 x 50 x 0.30 | 42 | 1.6 | 3.6 | 37.8 | 5-30 |
| 13.56 | W7001 | 40 | 25 x 25 x 0.12 | 100 | 0.9 | 1.55 | 49 | 5-30 |
| 13.56 | W7002 | 40 | 94.6 x 56.8 x 3.65 | 89 | 0.65 | 0.95 | 57 | 5-30 |
| 13.56 | W7013 | 20 | 25 x 30 x 0.23 | - | - | - | - | - |

* With Matching Network
 ** Coil Without Matching Network
 *** With Matching Network (adjustable range)

ANTENNA INTEGRATION

- Pulse can assist your engineering team to place/fix the antenna in the housing of the device. Antenna position, orientation, and cable routing can all impact the efficiency of the antenna inside the device.
- PCB-based antennas are best placed on flat surfaces for both physical and RF stability with the surrounding structure. Adhesives, slots, or snap-in features can be designed to hold antennas in place.
- FPC-based antennas are provided with adhesive tape for easy assembly in the device.



GPSGB1315 and GPSGP1330
13 x 13 Active GNSS Module

GPSGB2515 and GPSGP2530
25 x 25 Active GNSS Module

W5100 Pairmate
NFC + BT/WiFi

W5101 Pairmate
NFC + BT/WiFi

PULSE INTERNAL ACTIVE ANTENNAS FOR GNSS (GPS/ GLONASS/BEIDOU, GALILEO) APPLICATIONS

| App. | Type | Pulse Part Number | Operating Frequency (MHz) | RF Performance | | | | ME requirement | | | | | |
|--|---------------|-------------------|--|-----------------|---------------------------|------------------------|------------------------|----------------|----------------------------------|---------|------------|--------------------------|---------------|
| | | | | Antenna Element | LNA (low noise amplifier) | Antenna Dimension (mm) | Overall Dimension (mm) | Connector type | Coaxial Cable (Length; Diameter) | | | | |
| | | | | VSWR | RHCP Gain (dBic) | Gain (dB) | NF (dB) | Current (mA) | VCC (Vdc) | | | | |
| GNSS (GPS, Glonass, BeiDou, and Galileo) | Active Module | GPSGB1315 | 1561 +/- 2.046, 1575.42 +/- 10.23, and 1602.5625 +/- 4 MHz | 2:1 | -1 ± 1 | 15 ± 2 | < 2.4 | < 6 | 3.3-5.0 +/- 0.5 | 13x13x5 | 16x17x8.15 | IPEX MHF 20278 or Equiv. | L:100; D:1.13 |
| | | GPSGB1330 | | 2:2 | -1 ± 1 | 30 ± 2 | | | | 13x13x5 | 16x17x8.15 | | |
| | | GPSGB2515 | | 2:3 | 1 ± 1 | 15 ± 2 | | | | 25x25x4 | 30x30x8 | | |
| | | GPSGB2530 | | 2:4 | 1 ± 1 | 30 ± 2 | | | | 25x25x4 | 30x30x8 | | |

Note: 1. Further detailed specs such as 'Out of band rejection' of LNA can be found on a datasheet.

PAIRMATE ANTENNAS

| Part Number | Frequency | Impedance | Size mm/inches | SRF | Inductance (uH) | Q Factor | BlueTooth Gain, dBi |
|-------------|------------------------------|-----------|------------------------------|------|-----------------|----------|---------------------|
| W5100 | 13.56 + 2400 (NFC + BT/WiFi) | 50 | 40x40x1.3 1.57x1.57x0.051 | 65.9 | 0.95 | 44 | 1.0 |
| W5101 | 13.56 + 2400 (NFC + BT/WiFi) | 50 | 45x45x1.3 1.77x1.77x0.051 | 57.6 | 1.13 | 46 | 1.5 |

PRINTED CIRCUIT BOARD ANTENNA SOLUTIONS - MIMO AND MULTI-BAND

| Application | Type | Pulse Part Number | RF Performance | | | | Mechanical Requirements | | | Note |
|------------------|------|----------------------|---------------------------|----------------|---------------------|-------------------|---|---|--|---|
| | | | Operating Frequency (MHz) | RL Min. (dB) | Peak Gain (dBi Max) | Efficiency, Max % | Antenna DIM. (LxWxH, mm) / Coax Orientation | Cable Length from PCB edge/ Coax Diameter, mm | Connector Type; / Adhesive | |
| ISM WiFi Combo | FPC | W3312B0100 | 860-930 | -8 | 2.3 | 50 (Avg) | 75 x 15 Perpendicular | L:100 / D:1.13 | U.FL compatible / Adhesive Included | Alternative: W3502, W3538, W3501 |
| ISM WiFi Combo | PCB | W3332B0150 | 863-928 | -5 | 0.2 | 55 (Avg) | 82 x 15 x 0.56 Perpendicular | L:150 / D:1.13 | U.FL compatible / Adhesive Included | ISM 868/915 and 2.4GHz WiFi (two feed cables). Isolation: <-11dB. |
| | | | 2400-2500 | -10 | 4.1 | 64 (Avg) | Perpendicular | | | |
| ISM WiFi Combo | PCB | W3525B039 | 2400-2483.5 | -10 | 2 | 65 | 48 x 11 x 0.8 Perpendicular | L:100 / D:1.13 | U.FL compatible / Adhesive Not Incl. | |
| | | | W3593B0100 | 4900-5850 | -10 | 2 | 70 | 45 x 7 x 0.8 Perpendicular | L:100 / D:1.13 | U.FL compatible / Adhesive Not Incl. |
| | PCB | W3513B0212 | 2400-2500 | -13 | 2 | 70 | 16 x 70 x 0.9 Parallel | L:212 / D:1.13 | U.FL compatible / Adhesive Included | |
| | | | 4900-5850 | -10 | 2.7 | 67 | Perpendicular | | | |
| WiFi, BT, Zigbee | FPC | W3334B0150 | 2400-2500 | -10 | 4.8 | 53 | 14 x 5 x 0.1 Parallel | L:150 / D:1.13 | U.FL compatible / Adhesive Included | |
| | | | 4900-5900 | -10 | 5.5 | 90 | Perpendicular | | | |
| | FPC | W3917B0050 | 2400-2500 | -10 | 2.7 | 62 | 42.6 x 8.6 x 0.15 Parallel | L:50 / D:1.13 | U.FL compatible / Adhesive Included | Parallel cable alignment. See W3917BXXXX (for custom cable length) |
| | | | 4900-5925 | -10 | 4.9 | 89 | Perpendicular | | | |
| | FPC | W3918B0050 | 2400-2500 | -10 | 3.8 | 73 | 35.2 x 8.5 x 0.15 Perpendicular | L:50 / D:1.13 | U.FL compatible / Adhesive Included | Perpendicular cable alignment. See W3918BXXXX (for custom cable length) |
| | | | 4900-5925 | -10 | 5.3 | 90 | Perpendicular | | | |
| MIMO WiFi | FPC | W6102B0100 | 2400-2500 | -10 | 2 (Avg.) | 45 (Avg) | 50 x 20 x 0.1 Perpendicular | L:100 / D:1.13 | U.FL compatible / Adhesive Included | Isolation: -20 dB |
| | | | 4900-5900 | -10 | 5 (Avg.) | 75 (Avg) | Perpendicular | | | |
| MIMO WiFi | FPC | W6103B0100 | 2400-2500 | -10 | 4.5 (Avg.) | 70 (Avg) | 80 x 20 x 0.1 Perpendicular | L:100 / D:1.13 | U.FL compatible / Adhesive Included | Isolation: -15 dB |
| | | | 4900-5900 | -10 | 5 (Avg.) | 75 (Avg) | Perpendicular | | | |
| 3G | PCB | W3502B0020 | 824-960 | -6 | 2 | 78 | 43 x 17 x 0.5 Perpendicular | L:20 / D:1.13 | U.FL compatible / Adhesive Included | 80mm ground plane with 5mm gap inside plastic box |
| | | | 1710-1990 | -4 | 2.4 | 80.0 | Perpendicular | | | |
| | PCB | W3538B0200 | 824-960 | -6 | - | 57 | 40 x 15 x 0.7 Perpendicular | L:200 / D:1.13 | U.FL compatible / Adhesive Included | |
| 1710-2170 | | | -6 | - | 71 | Perpendicular | | | | |
| 4G (LTE) | PCB | W3501B0140 | 824-960 | -7 | 1.5 | 61 | 87 x 25 x 0.2 Perpendicular | L:140 / D:1.13 | U.FL compatible / Adhesive Not Incl. | Test unit : 150x100x40. With Adhesive: W3571B0140. |
| | | | 1710-1990 | -8 | 4.2 | 71.0 | Perpendicular | | | |
| | FPC | W3554B0140 | 698-798 | -5 | 1.5 | 75 | 120 x 30 x 0.2 Perpendicular | L:140 / D:1.13 | U.FL compatible / Adhesive Included | Connected on a test board 120x120 with 10mm gap |
| 824-960 | | | -7 | 1.8 | 80 | Perpendicular | | | | |
| MIMO 4G (LTE) | FPC | W6112B0100 (2 leads) | 1710-2690 | -8 | 3.9 | 86 | | | | |
| | | | 698-960 | -6 | isolation: -10 | 55 (Avg) | 224 x 20 x 0.1 Perpendicular | L:100 / D:1.13 | IPEX MHF 20278 or equiv. / Adhesive Included | |
| | FPC | W6113B0100 (3 leads) | 1428-2170 | -7.5 | isolation: -14 | 68 (Avg) | | | | |
| 2300-3600 | | | -10 | isolation: -15 | 65 (Avg) | Perpendicular | | | | |
| MIMO 4G (LTE) | FPC | W6113B0100 (3 leads) | 698-960 | -6 | isolation: -10 | 55 (Avg) | 224 x 20 x 0.1 Perpendicular | L:100 / D:1.13 | IPEX MHF 20278 or equiv. / Adhesive Included | GPS (1575MHZ) |
| | | | 1428-2170 | -7.5 | isolation: -14 | 68 (Avg) | | | | |
| MIMO 4G (LTE) | FPC | W6113B0100 (3 leads) | 2300-3600 | -10 | isolation: -15 | 65 (Avg) | Perpendicular | | | |
| | | | | | | | | | | |



- Radome included - cosmetics may matter.
- Not for outdoor weatherproof environments (not IP67)
- Technology: Dipoles, blades, external patches.
- Cable assemblies or connector options.
- Frequencies: WLAN, 3G/4G LTE, ISM, GPS, Multi-bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

Pulse's new line of wireless access point antennas offers flexible and economical solutions for wireless device OEMs. These antennas offer superior transmission and reception between wireless access points. They are compatible with IEEE 802.11a/b/g/n/ac, Bluetooth, 3G/4G LTE, ZigBee and ISM frequency band applications. All wireless access point antennas are RoHS compliant. For high-volume orders, Pulse can custom design antennas for OEMs. This includes alternative frequencies and a variety of cable and connector options for antenna assemblies.

WIFI (WLAN) ANTENNAS^{1,2}

| Part Number | Frequency | Max Gain (dBi) | Length (inches/mm) | Application/Standard | Connector |
|--------------------|-----------------|----------------|--------------------|-----------------------------------|-----------|
| W1063 | 900 MHz | 3.0 | 6.65 /169 | ISM 868 & 915 MHz | RP SNA |
| W1010 ³ | 2.4 GHz | 2.0 | 3.3/83 | 802.11b/g/n/ac, Bluetooth, ZigBee | SNA Male |
| W1030 | 2.4 GHz | 2.0 | 3.25/82.5 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SMA |
| W1037 | 2.4 GHz | 3.2 | 6.65/169 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SNA |
| W1038 | 2.4 GHz | 4.9 | 6.65/169 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SNA |
| W1027 | 2.4 GHz | 3.2 | 4.88/124 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SMA |
| SB24003 | 2.4 GHz | 2.14 | 2.5/132 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SNA |
| W1043 | 2.4 & 5.8 GHz | 2.0 | 4.59/117 | 802.11b/g/n/ac, Bluetooth, ZigBee | RP SNA |
| W1028B | 5.15 & 5.85 GHz | 2.0 | 4.88/124 | 802.11a/b/g/n/ac, ISM 5.8 GHz | RP SNA |

WIFI BROADBAND

| Model | Frequency (MHz) | Gain (dBi) | Max Height (in) | VSWR | Connector |
|-------------------|-----------------------------------|------------|----------------------------|-------|-----------|
| SPDA17RP2400/5900 | 2400-2500 | 2 | 6 (Bent) | 2.1 | RPTNC |
| | 4900-5900 | 5 | 7 (Straight) | | |
| SPDA17806/2170LAR | 806-960 | .5 | 6 (Bent) | 2.5:1 | TNC |
| | 1710-2170 | .5 | 7.5 (Straight) | | |
| SPDA24700/2700 | 698-960 1710-2170 2500-2700 | 6 | 7.7 (Bent) 9 (Straight) | 2.5:1 | SMA Male |
| | | 1.5 | | | |
| | | 3.4 | | | |



SINGLE-BAND EXTERNAL ANTENNAS WITH I-PEX

| Part Number | Frequency | Mechanical Length | Cable Length | Photo |
|-------------|-----------|-------------------|--------------|-------|
| W1049B030 | 2.4GHz | 3.25/82.5 | 3/76 | |
| W1049B050 | 2.4GHz | 3.25/82.5 | 5/127 | |
| W1049B090 | 2.4GHz | 3.25/82.5 | 9/229 | |
| W1049B120 | 2.4GHz | 3.25/82.5 | 12/305 | |

Pulse offers a wide variety of alternative wireless solutions for applications including machine-to-machine, public safety, hand-held radios, and telematics.

ADDITIONAL 3G/4G LTE, ISM, UHF, VHF, GPS, IP67

| Part Number | Frequency (MHz) | Gain (dBi) | Description | Length (in/mm) | Coax | Connector |
|-------------------|---------------------------------|---------------------|-----------------------------------|----------------|--------------|------------------------|
| SPDA24918 | 863-973 | 0 | Swivel Mount Dipole (E) | 8 / 202 | N/A | SMA Male |
| W1900; W1902 | 824-960/ 1710-1990/ 1920-2170 | 1 / 2 / 2.5 | Penta Rt Angle Stubby (F) | 2.1 / 49.5 | N/A | SMA Male / RP-SMA Male |
| W1910; W1911 | 824-960/ 1710-1990 / 1920-2170 | 1 / 2 / 2.5 | Penta Band Stubby (G) | 2 / 49 | N/A | SMA Male / RP-SMA Male |
| W4000G197 | 1.574 GHz | 1.5 dBiC / 26dB LNA | GPS Ultra Thin (H) | n/a | 200 / 5meter | SMA Male |
| SPDA17RP2400/5900 | 2400-2500/4900-5900 | 1.6/5 | Swivel Mount Dipole (J) | 7/182 | N/A | RPTNC |
| SB450FME3 | 450-470 | 2.14 | Stealth Blade (A) | 10/254 | 3' RG-174 | FME |
| SB8003 | 806-896 | 2.14 | Stealth Blade (A) | 2.5/132 | 3' RG-174 | No Conn |
| SB9003 | 890-960 | 2.14 | Stealth Blade (A) | 2.5/132 | 3' RG-174 | No Conn |
| SPDA24850/1900 | 824-894/1850-1990 | 0/1.2 | Swivel Mount Dipole (J) | 6.75/171 | N/A | SMA |
| SPDA24700/2700 | 698-960 / 1710-2710 / 2500-2700 | .6/1.5/3.4 | LTE Swivel Mount Dipole (J) | 9 / 228 | N/A | SMA Male |
| SPWB23150 | 136-174 | -4.5 | Wideband (D) | 6.75/171 | N/A | SMA F T3 |
| SPWH23832 | 782-882 | 0 | Whip, Standard, ¼ Wave (C) | 3/76 | N/A | SMA F T3 |
| SPHS24832 | 800-864 | 0 | Helical, Standard, ¼ Wave (B) | 3/76 | N/A | SMA F T2 |
| SPDA17806/2170LAR | 806-960/1710-2170 | .5/5 | Pentaband Swivel Mount Dipole (J) | 7.5/190.5 | N/A | TNC Male |
| W1920G0915 | 806-960/1710-2170 | 1.5 | Stealth Blade (A) | 4.3/110 | 3' RG-174 | SMA Male |
| W1920G3658 | 806-960/1710-2170 | 1.5 | Stealth Blade (A) | 4.3/110 | 9' RG-174 | SMA Male |



ICE BLADE (IP67) (XXXX)



Now Available: IceBlade Transparent Antennas

- LTE Model with SMA : Pulse part : ICEBLADELS
- LTE Model with TNC : Pulse part : ICEBLADELT
- WiFi Model with SMA : Pulse part : ICEBLADEWS
- WiFi Model with TNC : Pulse part : ICEBLADEWT

See PulseAntennas website for performance data.

STEALTH BLADES

Stealth Blade antennas have the following specifications:

- Gain: 2.14 dBi
- Maximum Power: 3 Watts
- Polarization: Linear

| Model | Frequency (MHz) | Bandwidth % @1.5/2.1 | Dimensions L x W (in) | Coax | Connector |
|--------------|-----------------------------|----------------------|-----------------------|------------|-----------|
| SB698SMA3 | 698-960/1710-2170/2300-2700 | 50/60 | 4.2 x 1 | 3' RG-316 | SMA |
| SB698SMA12 | 698-960/1710-2170/2300-2700 | 50/60 | 4.2 x 1 | 12' RG316 | SMA |
| SB8003 | 806-896 | 67/90 | 5.2 x .75 | 3' RG-174 | No Conn |
| SB80012 | 806-896 | 67/90 | 5.2 x .75 | 12' RG-174 | No Conn |
| SB800FME3 | 806-896 | 67/90 | 5.2 x .75 | 3' RG-174 | FME |
| SB800FME12 | 806-896 | 67/90 | 5.2 x .75 | 12' RG-174 | FME |
| SB800MPL3 | 806-896 | 67/90 | 5.2 x .75 | 3' RG-174 | MPL |
| SB800MPL12 | 806-896 | 67/90 | 5.2 x .75 | 12' RG-174 | MPL |
| SB800SMA3 | 806-896 | 67/90 | 5.2 x .75 | 3' RG-174 | SMA |
| SB800TNC3 | 806-896 | 67/90 | 5.2 x .75 | 3' RG-174 | TNC |
| SB800TNC12 | 806-896 | 67/90 | 5.2 x .75 | 12' RG-174 | TNC |
| SB9003 | 890-960 | 67/90 | 5.2 x .75 | 3' RG-174 | No Conn |
| SB90012 | 890-960 | 55/70 | 5.2 x .75 | 12' RG-174 | No Conn |
| SB900SMA3 | 890-960 | 55/70 | 5.2 x .75 | 3' RG-174 | SMA |
| SB900SMA12 | 890-960 | 55/70 | 5.2 x .75 | 12' RG-174 | SMA |
| R380.900.323 | 806-960 / 1710-1990 | | 5 X .8 | 10' RG-174 | FME |
| R380.900.334 | 806-960 / 1710-1990 | | 5 X .8 | 10' RG-174 | SMA |



MIMO LTE WALL MOUNT ANTENNA

- Frequencies: 700-960 / 1710-1990 / 2110-2170 / 2500-2700
- Low Band Gain: 2.5 dBi Average
- High Band Gain: 3.5 dBi Average
- Pattern: Omni Directional

| Part Number | Cable Type | Antenna Size (inches/mm) | Cable Length (inches/mm) | Connector |
|-----------------|------------|----------------------------------|--------------------------|----------------------|
| WA700/2700SMA | RG - 174 | 5.85 x 5 x 0.2 / 149 x 127 x 5.1 | 39.4 / 1000 | SMA Male |
| WA700/2700RPSMA | RG - 174 | 5.85 x 5 x 0.2 / 149 x 127 x 5.1 | 39.4 / 1000 | Reverse Polarity SMA |



WA700

The following chart summarizes performance, size and cost parameters for various antenna types.

ANTENNA PERFORMANCE CHART

| Type | Bandwidth | Performance | Length | Connector | Frequency | Pricing |
|----------------------|-----------|---------------|---------|----------------|-----------------|------------|
| Helical Short | 6% | Poor (**) | Short | All | VHF/UHF | \$\$ |
| Helical | 8% | Average (***) | Shorter | All | Low/Mid/VHF/UHF | \$\$ |
| Helical Quarter Wave | 12% | Good (***) | Longer | All except SMA | VHF | \$\$ |
| Whip | 12% | Good (***) | Mid | All | UHF | \$ |
| End Fed Half Wave | 10% | Better (****) | Longer | Coaxial | 800 | \$\$\$ |
| Half Wave Dipole | 10% | Best (*****) | Longer | Coaxial | 800 | \$\$\$\$ |
| Wide Band | 25% | Good (***) | Longer | Coaxial | All | \$\$\$\$\$ |
| Dual Band | 2x8% | Average (***) | Mid | Coaxial | VHF/UHF | \$\$ |

Due to the high variability of use, measurements are difficult to make on portable antennas. All Larsen portable antenna designs are tested for gain and VSWR using a standard fixture for portable antennas. Gain measurements are determined based on range or chamber measurements. Performance ratings are determined using a VSWR standard of less than 2.0:1.



- Call us at **+1.800.ANTENNA**
- Visit our website at **pulselarsenantennas.com**
- Connect with us on twitter **PulseLarsen1**

KuL DUCKIE® FREQUENCY COLOR CODE

| VHF FREQUENCY | COLOR | UHF FREQUENCY | COLOR |
|---------------|--------|---------------|-------|
| 136 - 140 MHz | Blue | 406 - 420 MHz | Black |
| 142 - 149 MHz | Green | 450 - 469 MHz | Black |
| 150 - 160 MHz | Yellow | 470 - 512 MHz | Black |
| 162 - 174 MHz | Red | 150 / 450 MHz | Blue |

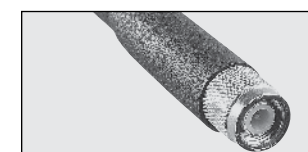
Kulduckie®

All factory tuned KuL DUCKIES® are Exactuned to your specified frequency. To order, replace the FREQ, UHF or VHF designation with your desired center frequency.



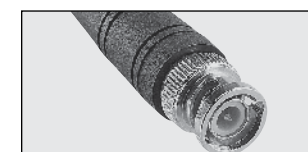
1/4-32X3/16
Male stud type mount with skirt (MX type) KD2/12

| PART NUMBER | ELECTRICAL TYPE | FREQUENCY BAND | APPROX LENGTH |
|--------------------|------------------|----------------|---------------|
| 1/4-32x3/16 | | | |
| KD2FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD2FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD2FREQHQ3 | HQ Helical 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD2FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |



TNC
TNC Male coaxial connector unskirted (TN type) KD3/13

| TNC MALE | | | |
|-----------------|------------------|---------------|----------------|
| KD3FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD3FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD3FREQHQ3 | HQ Helical 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD3FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |
| KD3FREQHQ5 | HQ Helical 1/4 λ | 220 - 222 MHz | 9 1/2" |
| KD13(freq) | 1/4 λ | 406 - 960 MHz | 6" |
| TNCQ | 1/4 λ | 136 - 512 MHz | Varies by freq |



BNC
BNC Male coaxial connector unskirted KD4/14

| BNC MALE | | | |
|-----------------|------------------|---------------|----------------|
| KD4UHF | Helical 1/4 λ | 406 - 512 MHz | 3" |
| KD4VHF1 | Helical 1/4 λ | 136 - 141 MHz | 8" |
| KD4VHF2 | Helical 1/4 λ | 142 - 149 MHz | 8" |
| KD4VHF3 | Helical 1/4 λ | 150 - 161 MHz | 8" |
| KD4VHF4 | Helical 1/4 λ | 162 - 174 MHz | 8" |
| KD4FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD4FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD4FREQHQ3 | HQ Helical 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD4FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |
| KD4150T | Helical 1/4 λ | 130 - 180 MHz | Varies by freq |
| KD14(freq) | 1/4 λ | 406 - 960 MHz | 6" |
| KD14FREQHW1 | HW UHF 1/2 λ | 315 - 409 MHz | 16 1/2" |
| KD14FREQHW2 | HW UHF 1/2 λ | 416 - 504 MHz | 16 1/2" |
| BNCQ | 1/4 λ | 136 - 512 MHz | Varies by freq |

| PART NUMBER | ELECTRICAL TYPE | FREQUENCY BAND | APPROX LENGTH |
|--------------------|------------------|----------------|---------------|
| 5/16-32X3/8 | | | |
| KD7FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD7FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD7FREQHQ3 | HQ Helical 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD7FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |



5/16-32X3/8

Male stud type mount (KR type) KD7

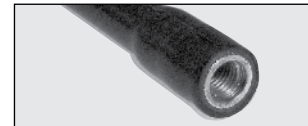
| | | | |
|---------------|------------------|---------------|----------------|
| PL-259 | | | |
| KD9FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD9FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD9FREQHQ3 | HQ Helical 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD9FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |
| KD19(freq) | 1/4 λ | 406 - 512 MHz | 6" |
| PQ | 1/4 λ | 144 - 512 MHz | Varies by freq |



PL-259

Standard UHF Connector Male KD9/19

| | | | |
|----------------------------|------------------|---------------|--------|
| 5/16-24 THDS Female | | | |
| KD22VHF1 | Helical 1/4 λ | 136 - 141 MHz | 8" |
| KD22VHF2 | Helical 1/4 λ | 142 - 149 MHz | 8" |
| KD22VHF3 | Helical 1/4 λ | 150 - 161 MHz | 8" |
| KD22VHF4 | Helical 1/4 λ | 162 - 174 MHz | 8" |
| KD22FREQHQ1 | HQ Helical 1/4 λ | 136 - 140 MHz | 9 1/2" |
| KD22FREQHQ2 | HQ Helical 1/4 λ | 142 - 149 MHz | 9 1/2" |
| KD22FREQHQ3 | HQ vv 1/4 λ | 150 - 161 MHz | 9 1/2" |
| KD22FREQHQ4 | HQ Helical 1/4 λ | 162 - 174 MHz | 9 1/2" |



516-24THDS Female

Female threaded KD22

SPOTS!

SPOTS! FREQUENCY COLOR CODE (SEE COLOR SPOT ON ANTENNA TOP)

| VHF | CENTER FREQUENCY | COLOR |
|-----|------------------|--------|
| 144 | 138 - 150 MHz | Gray |
| 156 | 150 - 162 MHz | Orange |
| 160 | 154 - 166 MHz | Green |
| 167 | 160 - 174 MHz | Red |

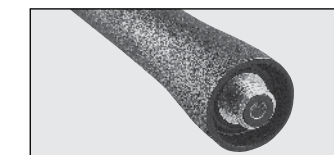
| UHF | CENTER FREQUENCY | COLOR |
|-----|------------------|--------|
| 420 | 403 - 437 MHz | Blue |
| 450 | 432 - 468 MHz | Yellow |
| 470 | 450 - 490 MHz | Red |
| 490 | 470 - 510 MHz | Green |

| 800 / 900 | CENTER FREQUENCY | COLOR |
|-----------|------------------|-------|
| 832 | 795 - 870 MHz | Blue |
| 918 | 872 - 964 MHz | Red |
| 1800 | 1710 - 1850 MHz | Black |
| 1900 | 1850 - 1990 MHz | Black |
| 2400 | 2400 - 2500 MHz | Black |



SPOTS! CODE ANTENNA SELECTION GUIDE BY CONNECTOR TYPE

Determine connector type on the following pages and select the proper antenna based on frequency and type below. Field tunable antennas come with a cutting chart and cap to allow for tuning to exact frequency.



1/4-32X3/16

Male stud type mount with skirt (MX type)

Popular Brands Supported

Motorola, Kenwood, Maxon, Midland, Wilson, G.E., Vertex

1/4-32X3/16 - MALE STUD CONNECTOR (MX TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|---------------|-------------------------|--------------------------|---------------|
| SPHL10156 | 150 - 162 | Helical Standard 1/4 λ | 8" |
| SPHS10156 | 152 - 160 | Helical Short 1/4 λ | 4" |
| SPHL10160 | 154 - 166 | Helical Standard - 1/4 λ | 8" |
| SPHL10160IC** | CC to 157 | Helical Standard 1/4 λ | 8" |
| SPHL10167 | 160 - 174 | Helical Standard 1/4 λ | 8" |
| SPHL10167IC** | CC to 167 | Helical Standard 1/4 λ | 8" |
| SPWH10420 | 395 - 445 | Whip Standard 1/4 λ | 6" |
| SPHS10420 | 403 - 437 | Helical Short 1/4 λ | 3" |
| SPWH10450 | 425 - 475 | Whip Standard 1/4 λ | 6" |
| SPHS10450 | 432 - 468 | Helical Short 1/4 λ | 3" |
| SPWH10470 | 450 - 490 | Whip Standard 1/4 λ | 6" |
| SPHS10470 | 452 - 488 | Helical Short 1/4 λ | 3" |
| SPHL10FT | Field Tunable 136 - 221 | Helical Standard 1/4 λ | 8" |
| SPWH10FT | Field Tunable 400 - 512 | Whip Standard 1/4 λ | 6" |

** This antenna is designed with a longer "skirt" for use with ICOM radios.

SPOTS!

M7 X 1.00 METRIC CONNECTOR (MD TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPEN14832 | 806 - 866 | Whip - 1/2 λ End Fed | 7" |
| SPWH14832 | 782 - 882 | Whip - Standard - 1/4 λ | 3" |
| SPHS14832 | 800 - 865 | Helical - Short - 1/4 λ | 2.75" |
| SPEN14918 | 890 - 960 | Half λ End Fed | 6" |
| SPHL14FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 7" |

BNC CONNECTOR (BN TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPHS15450 | 432 - 468 | Helical - Short - 1/4 λ | 3" |
| SPHL15FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH15FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |

BNC CONNECTOR COVERED TYPE (BNX TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPHL16FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH16FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |

TNC CONNECTOR - STANDARD (TN TYPE) - EXPOSED BRIGHT FINISH

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------------|---------------------------------------|----------------------------|---------------|
| SPDA17806/2170LAR | 806 - 960 / 1710 - 2170 | Center Fed Dipole | 8" |
| SPDA17832 | 824 - 894 | Center Fed Dipole | 8" |
| SPDA17850/1900 | 824 - 894 / 1850 - 1990 | Center Fed Dipole | 7.5" |
| SPDA17918 | 890 - 960 | Center Fed Dipole | 8" |
| SPDA171800 | 1710 - 1850 | Center Fed Dipole | 6.5" |
| SPDA171900 | 1850 - 1990 | Center Fed Dipole | 6.5" |
| SPDA172400 | 2400 - 2500 | Center Fed Dipole | 6" |
| SPDA17RP2400 | 2400 - 2500 | Center Fed Dipole | 6" |
| SPDA17RP2400/5900 | 2400 - 2500 / 4900 - 5900 | Center Fed Dipole | 6" |
| SPDA17RP918 | 890 - 960 | Center Fed Dipole | 8" |
| SPHL17FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH17FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |
| ICEBLADELT | 698 - 960 / 1710 - 2170 / 2500 - 2700 | Multiband | 9" |
| ICEBLADEWT | 698 - 960 / 1710 - 2170 / 2500 - 2700 | Multiband | 9" |

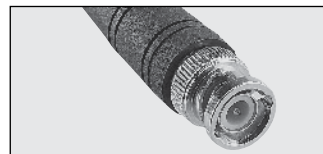


M7.0X1.0

Male stud type connector unskirted (MD type)

Popular Brands Supported

G.E., Ericsson



BNC

BNC Male coaxial connector unskirted

Popular Brands Supported

G.E., Kenwood, Motorola, Maxon, Johnson

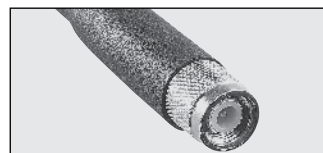


BNC-S

BNC Male coaxial connector fully skirted (BNX type)

Popular Brands Supported

Ericsson



TNC

TNC Male coaxial connector unskirted (TN type)

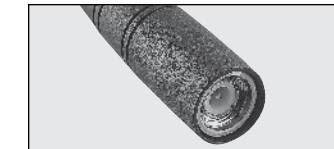
Popular Brands Supported

Icom, Standard

SPOTS!

TNC CONNECTOR - COVERED (TNX TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPHL18FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH18FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |

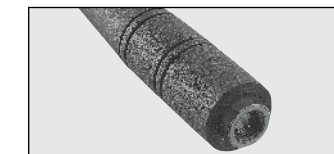


TNC-S

TNC Coaxial connector fully skirted (TNX type)

Popular Brands Supported

Vertex



SMA MALE T1

SMA Male extended base (SMS Type)

Popular Brands Supported

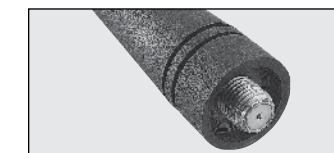
Standard

SMA MALE STANDARD - EXTENDED BASE - T1 (SMS TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPWH20832 | 782 - 882 | Whip - Standard - 1/4 λ | 3" |
| SPHS20832 | 800 - 864 | Helical - Short - 1/4 λ | 2.75" |
| SPWH20918 | 863 - 973 | Whip - Standard - 1/4 λ | 3" |
| SPHS20918 | 872 - 954 | Helical - Short - 1/4 λ | 2.75" |
| SPHL20FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH20FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |

SMA FEMALE - NON STANDARD MOTOROLA TYPE (SF TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPWB21150 | 136 - 174 | Helical - Standard - 1/4 λ | 6.75" |
| SPHL21156 | 150 - 162 | Helical - Standard - 1/4 λ | 8" |
| SPHS21156 | 152 - 160 | Helical - Short - 1/4 λ | 4" |
| SPHL21167 | 160 - 174 | Helical - Standard - 1/4 λ | 8" |
| SPHS21167 | 162 - 172 | Helical - Short - 1/4 λ | 4" |
| SPWH21450 | 425 - 475 | Whip - Standard - 1/4 λ | 6" |
| SPHS21450 | 432 - 468 | Helical - Short - 1/4 λ | 3" |
| SPHS21490 | 475 - 512 | Helical - Short - 1/4 λ | 3" |
| SPWH21832 | 782 - 882 | Whip - Standard - 1/4 λ | 3" |
| SPHS21832 | 800 - 864 | Helical - Short - 1/4 λ | 2.75" |
| SPWH21918 | 863 - 973 | Whip - Standard - 1/4 λ | 3" |
| SPHS21918 | 872 - 954 | Helical - Short - 1/4 λ | 2.75" |
| SPHL21FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH21FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |



SMA F T1

SMA Female flush insulator & partial skirt (SF Type)

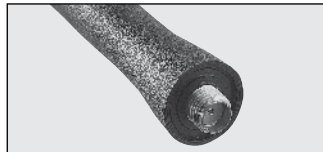
Popular Brands Supported

Motorola

SPOTS!

SMA FEMALE STANDARD - FLUSH BASE - T2 (SFJ TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPWB22150 | 136 - 174 | Helical - Standard - 1/4 λ | 6.75" |
| SPHL22156 | 150 - 162 | Helical - Standard - 1/4 λ | 8" |
| SPHL22167 | 160 - 174 | Helical - Standard - 1/4 λ | 8" |
| SPWH22450 | 425 - 475 | Whip - Standard - 1/4 λ | 6" |
| SPHS22450 | 432 - 468 | Helical - Short - 1/4 λ | 3" |
| SPWH22470 | 450 - 490 | Whip - Standard - 1/4 λ | 6" |
| SPHS22470 | 452 - 468 | Helical - Short - 1/4 λ | 3" |
| SPHS22490 | 475 - 512 | Helical - Short - 1/4 λ | 3" |
| SPWH22832 | 782 - 882 | Whip - Standard - 1/4 λ | 3" |
| SPHS22832 | 800 - 864 | Helical - Short - 1/4 λ | 2.75" |
| SPWH22918 | 863 - 973 | Whip - Standard - 1/4 λ | 3" |
| SPHS22918 | 872 - 954 | Helical - Short - 1/4 λ | 2.75" |
| SPHL22FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH22FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |



SMA F T2

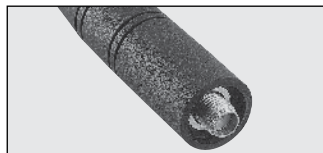
SMA Female recessed insulator & partial (short) skirt (SFJ type)

Popular Brands Supported

EF Johnson, Kenwood

SMA FEMALE STANDARD - HALF SKIRT BASE - T3 (SFU TYPE)

| PART NUMBER | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|-------------|-------------------------|----------------------------|---------------|
| SPWB23150 | 136 - 174 | Helical - Standard - 1/4 λ | 6.75" |
| SPHL23167 | 160 - 174 | Helical - Standard - 1/4 λ | 8" |
| SPWH23450 | 425 - 475 | Whip - Standard - 1/4 λ | 6" |
| SPHS23450 | 432 - 468 | Helical - Short - 1/4 λ | 3" |
| SPWH23470 | 450 - 490 | Whip - Standard - 1/4 λ | 6" |
| SPHS23470 | 452 - 488 | Helical - Short - 1/4 λ | 3" |
| SPWH23490 | 470 - 512 | Whip - Standard - 1/4 λ | 6" |
| SPHS23490 | 475 - 512 | Helical - Short - 1/4 λ | 3" |
| SPWH23832 | 782 - 882 | Whip - Standard - 1/4 λ | 3" |
| SPWH23918 | 863 - 973 | Whip - Standard - 1/4 λ | 3" |
| SPHS23918 | 872 - 954 | Helical - Short - 1/4 λ | 2.75" |
| SPHL23FT | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH23FT | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |



SMA F T3

SMA Female recessed insulator & partial (long) skirt (SFU type)

Popular Brands Supported

Kenwood (2005 and newer models), Uniden, King

SPOTS!

SMA MALE - FLUSH BASE - T2 (SM TYPE)

| PART NUMBER | CONNECTOR | FREQUENCY BAND (MHZ) | ANTENNA TYPE | APPROX LENGTH |
|----------------|-------------|-----------------------------|----------------------------|---------------|
| SPDA24700/2700 | SMA Male | 698-960/1710-2170/2500-2700 | Multiband | 9" |
| SPDA24832 | SMA | 824 - 894 | Center Fed Dipole | 9" |
| SPDA24850/1900 | SMA | 824 - 894 / 1850 - 1990 | Center Fed Dipole | 7.5" |
| SPDA24918 | SMA M T2 | 890 - 960 | Center Fed Dipole | 8" |
| SPDA241800 | SMA M T2 | 1710 - 1880 | Center Fed Dipole | 6.5" |
| SPDA241900 | SMA M T2 | 1850 - 1990 | Center Fed Dipole | 6.5" |
| SPDA242400 | SMA | 2400 - 2500 | Center Fed Dipole | 6" |
| SPDA24RP918 | SMA M T2 RP | 890 - 960 | Center Fed Dipole | 8" |
| SPDA24RP 2400 | SMA M T2 RP | 2400 - 2500 | Center Fed Dipole | 6" |
| SPDP24832 | SMA M T2 | 824 - 894 | Center Fed Dipole | 8" |
| SPDP24918 | SMA M T2 | 890 - 960 | Center Fed Dipole | |
| SPDP242400 | SMA M T2 | 2400 - 2500 | Center Fed Dipole | 3.5" |
| SPEN24815 | SMA M T2 | 760 - 870 | Whip - End Fed - 1/2 λ | 7 |
| SPHS24832 | SMA M T2 | 800 - 864 | Helical - Short - 1/4 λ | 2.75" |
| SPHS24918 | SMA M T2 | 872 - 954 | Helical - Short - 1/4 λ | 2.75" |
| SPWB24150 | SMA M T2 | 136 - 174 | Wideband | 7.5" |
| SPWB24425 | SMA M T2 | 380 - 470 | Wideband | 6.5" |
| SPWB24480 | SMA M T2 | 440 - 520 | Wideband | 6" |
| SPWH24815 | SMA M T2 | 760 - 870 | Whip - Short - 1/4 Wave | 3.5 |
| SPWH24918 | SMA M T2 | 863 - 973 | Whip - Standard - 1/4 λ | 3" |
| SPHL24FT | SMA M T2 | Field Tunable 136 - 221 | Helical - Standard - 1/4 λ | 8" |
| SPWH24FT | SMA M T2 | Field Tunable 400 - 512 | Whip - Standard - 1/4 λ | 6" |
| ICEBLADELT | SMA Male | 698-960/1710-2170/2500-2700 | Multiband | 9" |
| ICEBLADEWS | SMA Male | 2400-2500/4900-5900 | Multiband | 9" |



SMA MALE T2

SMA Male flush base (SM Type)

Popular Brands

G.E., Technophone, Relm



LOW BAND COILS/WHIPS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly/Mount |
|----------|--------------|-----------------|------------|-----------------|----------------------|------------|----------------------|
| NMO27BCO | Loaded 1/4 λ | 27-30 | | 4 | 150 | Coil Only | Order Separately |
| NMO27B | Loaded 1/4 λ | 27-30 | 2 | 52.5 | 150 | Black | Order Separately |
| NMO27C | Loaded 1/4 λ | 27-30 | 2 | 52.5 | 150 | Stainless | Order Separately |
| NMO30BCO | Loaded 1/4 λ | 30-34 | | 4 | 150 | Coil Only | Order Separately |
| NMO30B | Loaded 1/4 λ | 30-34 | 2 | 57.5 | 150 | Black | Order Separately |
| NMO30C | Loaded 1/4 λ | 30-34 | 2 | 57.5 | 150 | Stainless | Order Separately |
| NMO34BCO | Loaded 1/4 λ | 34-40 | | 4 | 150 | Coil Only | Order Separately |
| NMO34B | Loaded 1/4 λ | 34-40 | 2 | 57.5 | 150 | Black | Order Separately |
| NMO34C | Loaded 1/4 λ | 34-40 | 2 | 57.5 | 150 | Stainless | Order Separately |
| NMO40BCO | Loaded 1/4 λ | 40-50 | | 3.5 | 150 | Coil Only | Order Separately |
| NMO40B | Loaded 1/4 λ | 40-50 | 2 | 57.5 | 150 | Black | Order Separately |
| NMO40C | Loaded 1/4 λ | 40-50 | 2 | 57.5 | 150 | Stainless | Order Separately |
| NMOWB40C | Loaded 1/4 λ | 40-50 | 2 | 55 | 150 | Stainless | Order Separately |
| NMO50BCO | Loaded 1/4 λ | 47-54 | | 3.5 | 150 | Coil Only | Order Separately |
| NMO50B | Loaded 1/4 λ | 47-54 | 2 | 52.5 | 150 | Black | Order Separately |
| NMO50C | Loaded 1/4 λ | 47-54 | 2 | 52.5 | 150 | Stainless | Order Separately |
| NMOQ52C | 1/4 λ | 52-88 | 2 | 55 | 150 | Stainless | Order Separately |
| NMOQ88C | 1/4 λ | 88-136 | 2 | 35 | 150 | Stainless | Order Separately |
| Q52 | 1/4 λ | 52-88 | 2 | 55 | 200 | Stainless | Order Separately |
| Q88 | 1/4 λ | 88-136 | 2 | 35 | 200 | Stainless | Order Separately |



NMO Low Band



NMOQ Low Band



NMOWB Low Band



Q Series Low Band

The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

NOTE: Larsen springs (SPRING or SPRINGB) can be added to most mobile antennas.

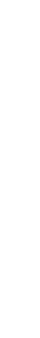


VHF COILS/WHIPS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly/Mount | Connector |
|-------------|----------------|-----------------|------------|-----------------|----------------------|------------|----------------------|-----------|
| MHW150BCO | 1/2 λ | 144-174 | 2 | 2.5 | 200 | Coil Only | Order Separately | |
| MHW150C | 1/2 λ | 144-174 | 2 | 51.5 | 200 | Stainless | Order Separately | |
| NMO150BCO | 5/8 λ | 144-174 | | 2.5 | 200 | Coil Only | Order Separately | |
| NMO150B | 5/8 λ | 144-174 | 5.14 | 51.5 | 200 | Black | Order Separately | |
| NMO150C | 5/8 λ | 144-174 | 5.14 | 51.5 | 200 | Stainless | Order Separately | |
| NMO150BK | 5/8 λ | 144-174 | 5.14 | 51.5 | 200 | Black | 17' RG-58A/U | PL-259 |
| NMO150CK | 5/8 λ | 144-174 | 5.14 | 51.5 | 200 | Stainless | 17' RG-58A/U | PL-259 |
| NMO150HWBCO | 5/8 λ | 144-174 | | 2.5 | 200 | Coil Only | Order Separately | |
| NMO150BHW | 1/2 λ | 144-174 | 2 | 51.5 | 200 | Black | Order Separately | |
| NMO150CHW | 1/2 λ | 144-174 | 2 | 51.5 | 200 | Stainless | Order Separately | |
| NMOU150D | Loaded 1/4 λ | 150-165 | 2 | 18 | 200 | Black | Order Separately | |
| NMOU155D | Loaded 1/4 λ | 155-170 | 2 | 18 | 200 | Stainless | Order Separately | |
| NMOWB150BCO | Wideband 1/2 λ | 135-174 | | 2.75 | 100 | Coil Only | Order Separately | |
| NMOWB150B | Wideband 1/2 λ | 135-174 | 2 | 51.75 | 100 | Black | Order Separately | |
| NMOWB150C | Wideband 1/2 λ | 135-174 | 2 | 51.75 | 100 | Stainless | Order Separately | |
| NMOWB150BK | Wideband 1/2 λ | 135-174 | 2 | 51.75 | 100 | Black | 17' RG-58A/U | PL-259 |
| NMOWBQB | Wideband 1/4 λ | 150-170 | 2 | 20 | 200 | Black | Order Separately | |
| NMOWBQC | Wideband 1/4 λ | 150-170 | 2 | 20 | 200 | Stainless | Order Separately | |
| NMOQW144 | 1/4 λ | 144-152 | 2 | 19 | 200 | Stainless | Order Separately | |
| NMOQW152 | 1/4 λ | 152-162 | 2 | 19 | 200 | Stainless | Order Separately | |
| LM150BCO | 5/8 λ | 144-174 | | 2.75 | 200 | Coil Only | Order Separately | |
| LM150B | 5/8 λ | 144-174 | | 51.75 | 200 | Black | Order Separately | |
| LM150C | 5/8 λ | 144-174 | | 51.75 | 200 | Stainless | Order Separately | |
| LMWBQ | Wideband 1/4 λ | 150-170 | 2 | 18.5 | 200 | Stainless | Order Separately | |
| LMWBQB | Wideband 1/4 λ | 150-170 | 2 | 18.5 | 200 | Black | Order Separately | |
| PO150BCO | 5/8 λ | 144-174 | 2 | 2.5 | 200 | Coil Only | Order Separately | |
| PO150B | 5/8 λ | 144-174 | 2 | 51.5 | 200 | Black | Order Separately | |
| PO150C | 5/8 λ | 144-174 | 2 | 51.5 | 200 | Black | Order Separately | |



MHW



NMO150 / NMOHW



NMOU



NMOWB



NMOWBQ



NMOQW



LMWB



LM



PO

The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

NOTE: Larsen springs (SPRING or SPRINGB) can be added to most mobile antennas.



VHF GLASS MOUNT

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly/ Mount | Connector |
|--------------|-------------------|-----------------|------------|-----------------|----------------------|------------|-----------------------|-----------|
| KGFFREQUDPL2 | VHF Disguise | 140-149 | 2 | 20 | 100 | Black | 14' RG-58/U | PL-259 |
| KGFFREQUDPL3 | VHF Disguise | 150-159 | 2 | 20 | 100 | Black | 14' RG-58/U | PL-259 |
| KGFFREQUDPL4 | VHF Disguise | 160-170 | 2 | 20 | 100 | Black | 14' RG-58/U | PL-259 |
| KG144O/S | 1/2 λ | 144-160 | 2 | 48 | 100 | Black | Order Separately | |
| KG144UD | 1/2 λ | 144-160 | 2 | 48 | 100 | Black | 14' RG-58/U | No Conn |
| KG144UDPL | 1/2 λ | 144-160 | 2 | 48 | 100 | Black | 14' RG-58/U | PL-259 |
| KG160O/S | 1/2 λ | 160-174 | 2 | 47 | 100 | Black | Order Separately | |
| KG160UD | 1/2 λ | 160-174 | 2 | 47 | 100 | Black | 14' RG-58/U | No Conn |
| KG160UDPL | 1/2 λ | 160-174 | 2 | 47 | 100 | Black | 14' RG-58/U | PL-259 |
| KGVHFUDI/S | Inside Cable Unit | 144-174 | | | 100 | | 14' RG-58/U | No Conn |



Glass Mount



Low Profile

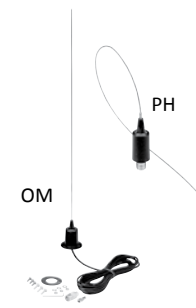
VHF LOW PROFILE

| Model | Frequency (MHz) | Gain (dBi) | Size H x DIA (In) | Power Rating (Watts) | Color | Cable Assembly/ Mount |
|----------|-----------------|------------|-------------------|----------------------|-------|-----------------------|
| LP152NMO | 151.02-152.98 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP154NMO | 152.96-155.04 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP156NMO | 154.42-156.58 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP158NMO | 156.38-158.62 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP160NMO | 158.33-160.67 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP162NMO | 160.29-162.71 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP164NMO | 162.75-165.25 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP167NMO | 165.21-167.79 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP169NMO | 167.68-170.32 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP171NMO | 170.16-172.84 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |
| LP174NMO | 172.14-174.86 | 2 | 3.75 x 4.5 | 60 | Black | Order Separately |

The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

VHF DIRECT MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|-----------|-------|-----------------|------------|-----------------|----------------------|------------|------------------|-----------|
| OM150BCO | 1/2 λ | 144-174 | | 3 | 200 | Coil Only | 17' RB-58A/U | PL-259 |
| OM150CK | 1/2 λ | 144-174 | 2 | 51.75 | 200 | Stainless | 17' RB-58A/U | PL-259 |
| PHW150BCO | 1/2 λ | 144-174 | 2 | 2.5 | 200 | Coil Only | Order Separately | |
| PHW150C | 1/2 λ | 144-174 | 2 | 56.5 | 200 | Stainless | Order Separately | |



OM



MST

VHF MAGNETIC MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|--------|---------------|-----------------|------------|-----------------|----------------------|------------|----------------|-----------|
| MSTFME | Tunable 1/4 λ | 144-965 | 2 | 21 | 50 | Black | 12' RG-174 | FME Crimp |

VHF 220 MHz

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly/ Mount |
|-------------|-------|-----------------|------------|-----------------|----------------------|------------|-----------------------|
| NMO220BCO | 5/8 λ | 220-225 | 5.2 | 2.5 | 200 | Coil Only | Order Separately |
| NMO220B | 5/8 λ | 220-225 | 5.2 | 30 | 200 | Black | Order Separately |
| NMO220C | 5/8 λ | 220-225 | 5.2 | 30 | 200 | Stainless | Order Separately |
| NMO220HWBCO | 1/2 λ | 220-225 | | 3 | 200 | Coil Only | Order Separately |
| NMO220CHW | 1/2 λ | 220-225 | 2 | 30 | 200 | Stainless | Order Separately |



NMOHW

The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

NOTE: Larsen springs (SPRING or SPRINGB) can be added to most mobile antennas.



UHF COILS/WHIPS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly |
|-------------|-----------------|-----------------|------------|-----------------|----------------------|------------|------------------|
| LMUHFBASEB | Base Only | 406-512 | | 2 | 200 | Coil Only | Order Separately |
| LM406C | 5/8 over 1/2 λ | 406-420 | 5.6 | 33 | 200 | Stainless | Order Separately |
| LM440C | 5/8 over 1/2 λ | 440-460 | 5.6 | 33 | 200 | Stainless | Order Separately |
| LM450C | 5/8 over 1/2 λ | 450-470 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO4063CS | 5/8 λ | 406-430 | 5.14 | 19 | 200 | Stainless | Order Separately |
| NMO4303CS | 5/8 λ | 430-450 | 5.14 | 19 | 200 | Stainless | Order Separately |
| NMO4503CS | 5/8 λ | 450-470 | 5.14 | 19 | 200 | Stainless | Order Separately |
| NMO4703CS | 5/8 λ | 470-490 | 5.14 | 19 | 200 | Stainless | Order Separately |
| NMO4903CS | 5/8 λ | 490-512 | 5.14 | 19 | 200 | Stainless | Order Separately |
| NMO406B | 5/8 over 1/2 λ | 406-420 | 5.6 | 33 | 200 | Black | Order Separately |
| NMO406C | 5/8 over 1/2 λ | 406-420 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO420B | 5/8 over 1/2 λ | 420-440 | 5.6 | 33 | 200 | Black | Order Separately |
| NMO420C | 5/8 over 1/2 λ | 420-440 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO440B | 5/8 over 1/2 λ | 440-460 | 5.6 | 33 | 200 | Black | Order Separately |
| NMO440C | 5/8 over 1/2 λ | 440-460 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO450B | 5/8 over 1/2 λ | 450-470 | 5.6 | 33 | 200 | Black | Order Separately |
| NMO450C | 5/8 over 1/2 λ | 450-475 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO470C | 5/8 over 1/2 λ | 470-490 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO490B | 5/8 over 1/2 λ | 490-512 | 5.6 | 33 | 200 | Black | Order Separately |
| NMO490C | 5/8 over 1/2 λ | 490-512 | 5.6 | 33 | 200 | Stainless | Order Separately |
| NMO406HWBCO | Base Only | 406-420 | | 2.5 | 200 | Coil Only | Order Separately |
| NMO406CHW | 1/2 λ Collinear | 406-420 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMO420CHW | 1/2 λ Collinear | 420-440 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMO440CHW | 1/2 λ Collinear | 440-460 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMO450HWBCO | Base Only | 420-512 | | 2.5 | 200 | Coil Only | Order Separately |
| NMO450CHW | 1/2 λ Collinear | 450-470 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMOQBASE1B | Base Only | Whip Size .070 | | 2 | 200 | Coil Only | Order Separately |
| NMOQBASE2B | Base Only | Whip Size .100 | | 2 | 200 | Coil Only | Order Separately |
| NMOQBASE3B | Base Only | Whip Size .125 | | 2 | 200 | Coil Only | Order Separately |
| NMOUHBBASEB | Base Only | Whip Size .100 | | 2 | 200 | Coil Only | Order Separately |
| NMOQW406 | 1/4 λ | 406-430 | 2 | 7 | 200 | Stainless | Order Separately |
| NMOQW450 | 1/4 λ | 450-470 | 2 | 7 | 200 | Stainless | Order Separately |
| NMOWB406BCO | Wide Band Coil | 406-512 | | 2.5 | 200 | Coil Only | Order Separately |
| NMOWB406C | Wide Band | 406-430 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMOWB430C | Wide Band | 430-455 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMOWB450C | Wide Band | 450-475 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMOWB470C | Wide Band | 470-495 | 5.5 | 35.5 | 200 | Stainless | Order Separately |
| NMOWB490C | Wide Band | 490-515 | 5.5 | 35.5 | 200 | Stainless | Order Separately |

LM

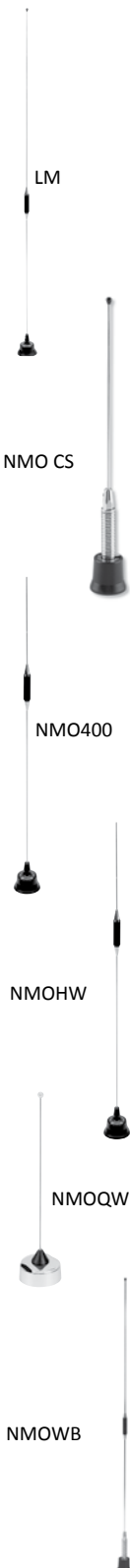
NMO CS

NMO400

NMOHW

NMOQW

NMOWB



UHF GLASS MOUNT

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly/ Mount | Connector |
|------------|---------------------|-----------------|------------|-----------------|----------------------|-------------|-----------------------|-----------|
| KG406O/S | 1/2 λ | 406-420 | 2 | 15 | 100 | Black | Order Separately | |
| KG406UD | 1/2 λ | 406-420 | 2 | 15 | 100 | Black | 14' RG-58/U | No Conn |
| KG406UDPL | 1/2 λ | 406-420 | 2 | 15 | 100 | Black | 14' RG-58/U | PL-259 |
| KG420O/S | 1/2 λ | 420-440 | 2 | 15 | 100 | Black | Order Separately | |
| KG420UDPL | 1/2 λ | 420-440 | 2 | 15 | 100 | Black | 14' RG-58/U | PL-259 |
| KG450O/S | 1/2 λ | 450-470 | 2 | 15 | 100 | Black | Order Separately | |
| KG450UD | 1/2 λ | 450-470 | 2 | 15 | 100 | Black | 14' RG-58/U | No Conn |
| KG450UDPL | 1/2 λ | 450-470 | 2 | 15 | 100 | Black | 14' RG-58/U | PL-259 |
| KG470O/S | 1/2 λ | 470-490 | 2 | 15 | 100 | Black | Order Separately | |
| KG470UD | 1/2 λ | 470-490 | 2 | 15 | 100 | Black | 14' RG-58/U | No Conn |
| KG490O/S | 1/2 λ | 490-512 | 2 | 15 | 100 | Black | Order Separately | |
| KG490UD | 1/2 λ | 490-512 | 2 | 15 | 100 | Black | 14' RG-58/U | No Conn |
| KGUHFUDI/S | Inside Coupler Only | 406-512 | | 100 | | 14' RG-58/U | No Conn | |



UHF LOW PROFILE

| Model | Frequency (MHz) | Gain (dBi) | Size H x DIA (In) | Power Rating (Watts) | Color | Cable Assembly/ /Mount |
|---------------|-----------------|------------|-------------------|----------------------|-------|------------------------|
| LP406NMO | 406-420 | | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP406NMOW | 406-420 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP420NMO | 416-430 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP420NMOW | 416-430 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP450NMO | 450-470 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP450NMOW | 450-470 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP470NMO | 470-490 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP470NMOW | 470-490 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP490NMO | 490-512 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP490NMOW | 490-512 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LPT450NMO | 450-470 | 2 | 4.5 x 1.5 | 100 | Black | Order Separately |
| LPT450/512NMO | 450-520 | 4.6 | 3.5x1.5 | 100 | Black | Order Separately |



The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

NOTE: Larsen springs (SPRING or SPRINGB) can be added to most mobile antennas.



The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

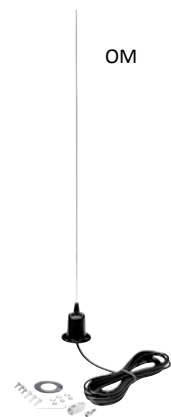
UHF DIRECT MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Size (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|----------|-----------------|-----------------|------------|---------------|----------------------|------------|----------------|-----------|
| LP450 | Low Profile | 450-470 | 2 | 1.25H x 5.25D | 100 | N/A | 17' RG-58/U | No Conn |
| OM406BCO | 1/2 λ | 406-440 | | 4 | 100 | Coil Only | 17' RG-58A/U | PL259 |
| OM450BCO | 1/2 λ | 440-512 | | 4 | 100 | Coil Only | 17' RG-58A/U | PL259 |
| OM406CK | 1/2 λ Collinear | 406-420 | 5.5 | 35.5 | 100 | Stainless | 17' RG-58A/U | PL259 |
| OM420CK | 1/2 λ Collinear | 420-440 | 5.5 | 35.5 | 100 | Stainless | 17' RG-58A/U | PL259 |
| OM450CK | 1/2 λ Collinear | 450-470 | 5.5 | 35.5 | 100 | Stainless | 17' RG-58A/U | PL259 |
| OM470CK | 1/2 λ Collinear | 470-490 | 5.5 | 35.5 | 100 | Stainless | 17' RG-58A/U | PL259 |

LP Direct Mount



OM



MST

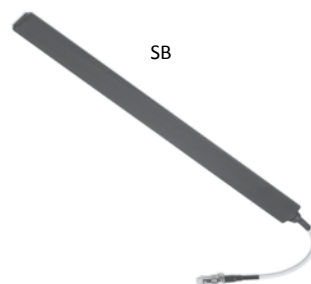
UHF MAGNETIC MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|----------|---------------|-----------------|------------|-----------------|----------------------|------------|----------------|-----------|
| MSTFME | Tunable 1/4 λ | 144-965 | 2 | 21 | 50 | Black | 12' RG-174 | FME Crimp |
| MSTBNCFT | Tunable 1/4 λ | 144-965 | 2 | 21 | 50 | Black | 12' RG-174 | TNC |

UHF STEALTH BLADES

Stealth Blade antennas have a gain of 2.14 dBi, a maximum power of 3 Watts and linear polarization.

| Model | Frequency (MHz) | Bandwidth % @1.5/2.1 | Dimensions L x W (In) | Coax | Connector |
|------------|-----------------|----------------------|-----------------------|------------|-----------|
| SB450FME12 | 450-470 | 20/30 | 10" x 0.75" | 12' RG-316 | FME |



SB

MULTI BAND COILS/WHIPS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly |
|----------------|--------------------------|-----------------------------|------------|-----------------|----------------------|------------|------------------|
| NMO2/70BCO | Dual Band Coil | 144-148 / 440-450 | | | 100 | Coil Only | Order Separately |
| NMO2/70B | VHF: Center Loaded 1/2 λ | 144-148 | 3.8 | 34.5 | 100 | Black | Order Separately |
| | UHF: Collinear | 440-450 | 5.2 | | | | |
| NMO2/70SH | VHF: Center Loaded 1/2 λ | 144-148 | 2.14 | 19 | 200 | Stainless | Order Separately |
| | UHF: Center Loaded 3/4 λ | 440-450 | 4 | | | | |
| NMO150/450C | VHF: Center Loaded 1/2 λ | 150-154 | 3.8 | 37.25 | 100 | Stainless | Order Separately |
| | UHF: Collinear | 450-460 | 5.2 | | | | |
| NMO150/450/800 | Tri Band | 150-165 / 450-470 / 806-940 | 2.14 | 16.5 | 100 | Black | Order Separately |



NMO2/70



NMO2/70SH



NMO150/450C

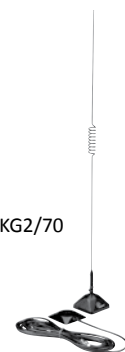


NMO150/450/800

MULTI BAND VHF/UHF GLASS MOUNT

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|-------------|-----------------|-------------------|------------|-----------------|----------------------|------------|----------------|-----------|
| KG2/70CXPL | 1/2 λ Collinear | 144-148 / 442-448 | 2 | 32.75 | 100 | Black | 14' RG-58A/U | PL-259 |
| KG2/70CXFME | 1/2 λ Collinear | 144-148 / 442-448 | 2 | 32.75 | 100 | Black | 14' RG-58A/U | FME |

KG2/70



MULTI BAND VHF/UHF MAGNETIC MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|----------|--------------------------|-----------------|------------|-----------------|----------------------|------------|----------------|-----------|
| MM2/70PL | VHF: Center Loaded 1/4 λ | 144-148 | 2 | 21 | 50 | Black | 12' RG-58A/U | PL-259 |
| | UHF: Center Loaded 3/4 λ | 442-448 | 4 | | | | | |

MM2/70



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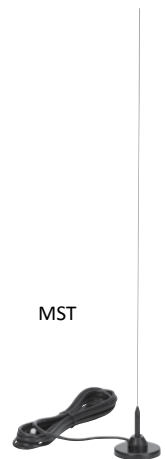
TUNABLE 1/4 WAVE COILS/WHIPS

| Model | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly |
|-----------|-----------------|------------|-----------------|----------------------|------------|------------------|
| NMOQSPEC | 136-960 | 2 | 22 | 200 | Stainless | Order Separately |
| NMOQSPECB | 136-960 | 2 | 22 | 200 | Black | Order Separately |
| NMOQC | 136-512 | 2 | 23 | 200 | Stainless | Order Separately |
| NMOQB | 136-512 | 2 | 23 | 200 | Black | Order Separately |
| PQ | 136-512 | 2 | 22 | 200 | Stainless | Order Separately |
| Q | 136-512 | 2 | 22 | 200 | Stainless | Order Separately |
| QB | 136-512 | 2 | 22 | 200 | Black | Order Separately |



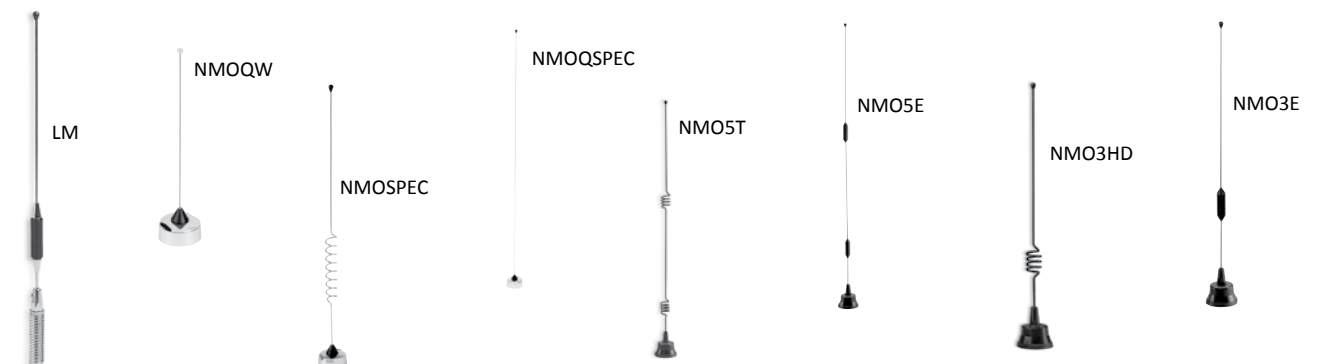
TUNABLE 1/4 WAVE MAGNETIC MOUNTS

| Model | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|--------|-----------------|------------|-----------------|----------------------|------------|----------------|-----------|
| MSTFME | 144-965 | 2 | 21 | 50 | Black | 12' RG-174 | FME Crimp |



700/800/900/1850 MHz COILS/WHIPS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly and Connector |
|--------------|-------------------------|-----------------|------------|-----------------|----------------------|------------|------------------------------|
| LM800 | 5/8 over 1/2 λ | 806-866 | 5.6 | 14.5 | 200 | Stainless | Order Separately |
| LM825 | 5/8 over 1/2 λ | 824-896 | 5.6 | 14.5 | 200 | Stainless | Order Separately |
| LM900 | 5/8 over 1/2 λ | 890-960 | 5.6 | 14.5 | 200 | Stainless | Order Separately |
| NMOQW700 | 1/4 λ | 740-806 | 2 | 3 | 200 | Stainless | Order Separately |
| NMOQW800 | 1/4 λ | 806-896 | 2 | 3 | 200 | Stainless | Order Separately |
| NMOQW900 | 1/4 λ | 890-970 | 2 | 3 | 200 | Stainless | Order Separately |
| NMOQSPEC800B | 1/4 λ | 806-896 | 2 | 4 | 200 | Black | Order Separately |
| NMOQSPEC900B | 1/4 λ | 890-970 | 2 | 4 | 200 | Black | Order Separately |
| NMOQ700B | 1/4 λ | 740-806 | 2 | 4.5 | 200 | Black | Order Separately |
| NMOQ800B | 1/4 λ | 806-896 | 2 | 4.5 | 200 | Black | Order Separately |
| NMOQ900B | 1/4 λ | 890-960 | 2 | 4.5 | 200 | Black | Order Separately |
| NMOSPEC800 | 5/8 over 1/4 λ | 806-866 | 5.4 | 13.5 | 200 | Stainless | Order Separately |
| NMOSPEC825 | 5/8 over 1/4 λ | 824-896 | 5.4 | 13.5 | 200 | Stainless | Order Separately |
| NMOSPEC900 | 5/8 over 1/4 λ | 890-960 | 5.4 | 13.5 | 200 | Stainless | Order Separately |
| NMO3HD800B | 5/8 over 1/4 λ | 806-866 | 5.4 | 13.75 | 200 | Black | Order Separately |
| NMO3HD825B | 5/8 over 1/4 λ | 824-896 | 5.4 | 13.75 | 200 | Black | Order Separately |
| NMO3HD900B | 5/8 over 1/4 λ | 890-960 | 5.4 | 13.75 | 200 | Black | Order Separately |
| NMO3E700B | 5/8 over 1/4 λ | 740-806 | 5.4 | 13.5 | 200 | Black | Order Separately |
| NMO3E800B | 5/8 over 1/4 λ | 806-866 | 5.4 | 13.5 | 200 | Black | Order Separately |
| NMO3E825B | 5/8 over 1/4 λ | 824-896 | 5.4 | 13.5 | 200 | Black | Order Separately |
| NMO3E900B | 5/8 over 1/4 λ | 890-960 | 5.4 | 13.5 | 200 | Black | Order Separately |
| NMO700 | 5/8 over 1/2 λ | 740-806 | 5.6 | 12.75 | 200 | Stainless | Order Separately |
| NMO800 | 5/8 over 1/2 λ | 806-866 | 5.6 | 12.75 | 200 | Stainless | Order Separately |
| NMO825 | 5/8 over 1/2 λ | 824-896 | 5.6 | 12.75 | 200 | Stainless | Order Separately |
| NMO900 | 5/8 over 1/2 λ | 890-960 | 5.6 | 12.75 | 200 | Stainless | Order Separately |
| NMO800B | 5/8 over 1/2 λ | 806-866 | 5.6 | 12.75 | 200 | Black | Order Separately |
| NMO825B | 5/8 over 1/2 λ | 824-896 | 5.6 | 12.75 | 200 | Black | Order Separately |
| NMO900B | 5/8 over 1/2 λ | 890-960 | 5.6 | 12.75 | 200 | Black | Order Separately |
| NMO5T800B | 5/8 over 5/8 over 1/4 λ | 806-866 | 7.2 | 18 | 200 | Black | Order Separately |
| NMO5T825B | 5/8 over 5/8 over 1/4 λ | 824-896 | 7.2 | 18 | 200 | Black | Order Separately |
| NMO5T900B | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 18 | 200 | Black | Order Separately |
| NMO5E825B | 5/8 over 5/8 over 1/4 λ | 824-896 | 7.2 | 19 | 200 | Black | Order Separately |
| NMO5E900B | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 19 | 200 | Black | Order Separately |
| Q800 | 1/4 λ | 806-866 | 2 | 3.5 | 200 | Stainless | Order Separately |
| Q900 | 1/4 λ | 890-960 | 2 | 3.5 | 200 | Stainless | Order Separately |



The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

700/800/900/1850 MHz COILS/WHIPS (CONTINUED)

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (in) | Power Rating (Watts) | Whip Color | Cable Assembly | Conn |
|---------------|----------------|----------------------|------------|-----------------|----------------------|------------|------------------|---------|
| NMOC/P3E | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | Order Separately | |
| NMOC/P3EUD | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | 17' RG-58/U | No Conn |
| NMOC/P3EUDFME | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | 17' RG-58/U | FME |
| NMOC/P3EUDMPL | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | 17' RG-58/U | MPL |
| NMOC/P3EUDSMA | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | 17' RG-58/U | SMA |
| NMOC/P3EUDTNC | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 | 4.7 | 10 | Black | 17' RG-58/U | TNC |



NMOC/P3E



KG3E



KGI

700/800/900/1850 MHz GLASS MOUNT

Optimum glass thickness 0.138" through 0.158"

| Model | Type | Frequency (MHz) | Gain (dBi) | Height (in) | Rating (Watts) | Whip Color | Cable Assembly | Connector |
|--------------|---|----------------------|--------------|-------------|----------------|------------|----------------------|-----------|
| KGI768 | 1/4 λ | 768-896 | 2 | - | 60 | Black | 14' RG-58/U | No Conn |
| KG3E770 | 5/8 over 1/2 λ | 764-869 | - | - | 60 | Black | 14' RG-58/U | No Conn |
| KG3E825UD | 5/8 over 1/2 λ | 806-896 | 5.14 | 13 | 60 | Black | 14' RG-58/U | No Conn |
| KG3E825UDFME | 5/8 over 1/2 λ | 806-896 | 5.14 | 13 | 60 | Black | 14' RG-58/U | FME |
| KG3E825UDMPL | 5/8 over 1/2 λ | 806-896 | 5.14 | 13 | 60 | Black | 14' RG-58/U | MPL |
| KG3E825UDTNC | 5/8 over 1/2 λ | 806-896 | 5.14 | 13 | 60 | Black | 14' RG-58/U | TNC |
| KG3E900UD | 5/8 over 1/2 λ | 890-960 | 5.14 | 13 | 60 | Black | 14' RG-58/U | No Conn |
| KG3E900UDFME | 5/8 over 1/2 λ | 890-960 | 5.14 | 13 | 60 | Black | 14' RG-58/U | FME |
| KG3E900UDMPL | 5/8 over 1/2 λ | 890-960 | 5.14 | 13 | 60 | Black | 14' RG-58/U | MPL |
| KG3E825O/S | 5/8 over 1/2 λ | 806-896 | 5.14 | 13 | 60 | Black | Outside Coupler Only | |
| KG3E900O/S | 5/8 over 1/2 λ | 890-960 | 5.14 | 13 | 60 | Black | Outside Coupler Only | |
| KGI825 | 1/4 λ Dipole | 806-896 | 2 | - | 60 | Black | 14' RG-58/U | No Conn |
| KGC/P3EUD | Cellular: Collinear PCS: 5/8 over 5/8 over 1/2 λ | 824-896 1850-1990 | 5.14 5.14 | 13 | 7 | Black | 15' RB-58/U | No Conn |
| KGC/P3EUDFME | Cellular: Collinear PCS: 5/8 over 5/8 over 1/2 λ | 824-896 1850-1990 | 5.14 5.14 | 13 | 7 | Black | 15' RB-58/U | FME |

700/800/900/1850 MHz NMO MOUNT LOW PROFILE

| Model | Frequency (MHz) | Gain (dBi) | Size H x DIA (in) | Power Rating (Watts) | Color | Cable Assembly |
|-------------------|-----------------------------------|-----------------|-------------------|----------------------|-------------|--|
| LP78NMO | 740-960 | 4 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP800NMO | 806-960 | 2 | 1.5 x 4.5 | 100 | Black | Order Separately |
| LP800NMOW | 806-960 | 2 | 1.5 x 4.5 | 100 | White | Order Separately |
| LPT700/800NMO | 740-866 | 2 | 3.25 x 1.5 | 100 | Black | Order Separately |
| LPT800/900NMO | 806-960 | 2 | 3.25 x 1.5 | 100 | Black | Order Separately |
| LPT825/19NMOHF | 806-960 1710-2170 2400 | 3 3 4 | 3 x 1.75 | 45 | Black | Order Separately Requires NMOHF Mount |
| SLPT698/960NMO | 698-960 | 4.5 | 3 x 1.5 | 45 | Black | Order Separately |
| SLPT698/2170NMOHF | 698-960 1710-2170 2400-2700 | 4.5 5.6 4 | 3 x 1.75 | 45 | Black | Order Separately Requires NMOHF Mount |
| ICEFINLNMOHF | 698-2700 | 3 | 3 x 1.5 | 30 | Transparent | Order Separately |
| ICEFIN698960NMO | 698-960 | 3 | 3 x 1.5 | 30 | Transparent | Order Separately |
| ICEFIN806NMO | 698-960 | 2.9 | 3 x 1.5 | 35 | Transparent | Order Separately |

ICEFIN698-960NMO



LP



LPT



SLPT NMO



700/800/900/1850 MHz DIRECT MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Size (in) | Power Rating (Watts) | Color | Cable Assembly | Connector |
|------------------|----------------|---|-----------------|---------------|----------------------|-------------|------------------|-----------|
| LP800 | Low Profile | 806-960 | 2 | 1.25H x 5.25D | 100 | Black | 17' RG-58/U | No Conn |
| LPT698/2700DMN | | 698-960 1710-2170 2300-2700 | 3.1 4.4 5 | 1.6 x 4.2 | | Black | Order Separately | N Female |
| OM800UD | 5/8 over 1/2 λ | 806-866 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | No Conn |
| OM800UDMPL | 5/8 over 1/2 λ | 806-866 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | MPL |
| OM800UDTNC | 5/8 over 1/2 λ | 806-866 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | TNC |
| OM825UD | 5/8 over 1/2 λ | 824-896 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | No Conn |
| OM825UDMPL | 5/8 over 1/2 λ | 824-896 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | MPL |
| OM825UDTNC | 5/8 over 1/2 λ | 824-896 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | TNC |
| OM900UD | 5/8 over 1/2 λ | 890-960 | 3.2 | 15.5 H | 60 | Black | 14' RG-58/U | No Conn |
| SLPT698/869DMN | Low Profile | 698-869 | 4.5 | 3 x 1.5 | 45 | Black | Order Separately | N Female |
| SLPT806DMN | Low Profile | 806-960 | 4.5 | 3 x 1.5 | 45 | Black | Order Separately | N Female |
| SLPT698/2170DMN | Low Profile | Cellular: 698-960 PCS: 1710-2170 ISM: 2400-2700 | 4.5 5.6 4 | 3 x 1.75 | 45 | Black | Order Separately | N Female |
| ICEFIN698/869DMN | ICEFIN | 698-869 | 2.6 | 3 x 1.5 | 15 | Transparent | Order Separately | N Female |
| ICEFIN698/960NMO | ICEFIN | 806 - 960 | 3.7 | 3 x 1.5 | 20 | Transparent | Order Separately | N Female |

ICEFIN806DMN



OM



SLPT DM



LP Direct Mount



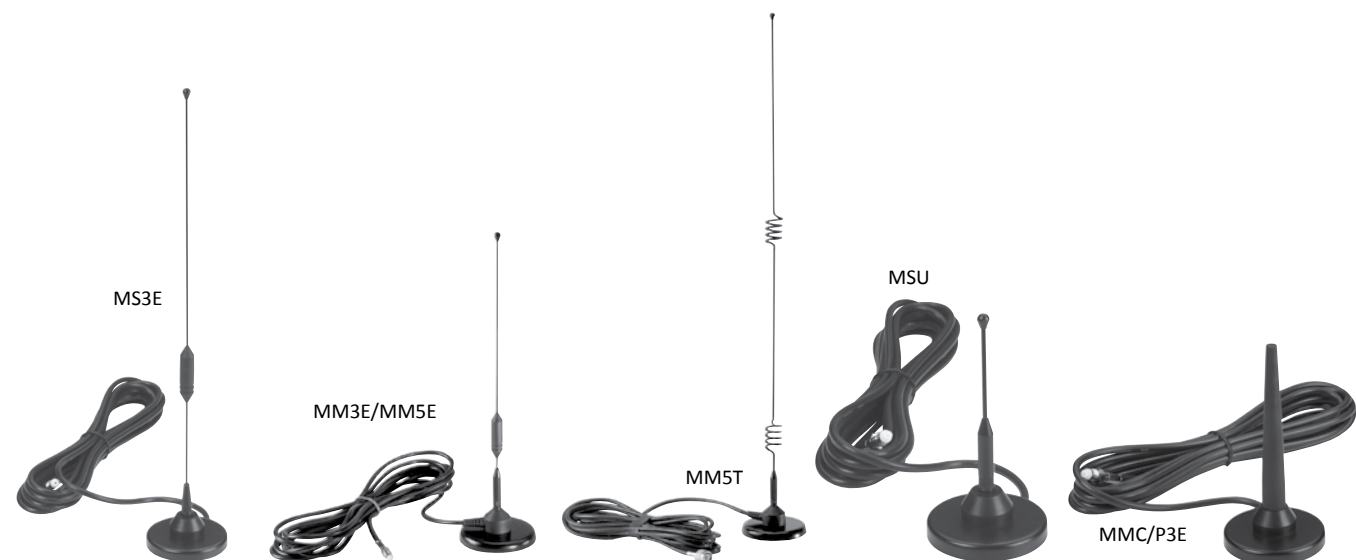
LPT



The most commonly used cable assembly/mount is the NMOKHFUD (27 MHz to 6 GHz) with 17' of UD (RG-58/U Dual Shield).

700/800/900/1850 MHz MAGNETIC MOUNTS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Cable Assembly | Connector |
|--------------|-------------------------|----------------------|------------|-----------------|----------------------|------------|----------------|-----------|
| MS3E800FME | 5/8 over 1/2 λ | 806-896 | 5.6 | 13 | 60 | Black | 12' RG-58A/U | FME |
| MS3E800MPL | 5/8 over 1/2 λ | 806-896 | 5.6 | 13 | 60 | Black | 12' RG-58A/U | MPL |
| MS3E800TNC | 5/8 over 1/2 λ | 806-896 | 5.6 | 13 | 60 | Black | 12' RG-58A/U | TNC |
| MS3E900MPL | 5/8 over 1/2 λ | 890-960 | 5.6 | 13 | 60 | Black | 12' RG-58A/U | MPL |
| MS3E900TNC | 5/8 over 1/2 λ | 890-960 | 5.6 | 13 | 60 | Black | 12' RG-58A/U | TNC |
| MS3E900SMA | 5/8 over 1/2 λ | 890-960 | 5.6 | 13 | 40 | Black | 12' RG-58A/U | SMA |
| MM5E900BNC | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.12 | 16.5 | 60 | Black | 12' RG-58A/U | BNC |
| MM5T900SMA | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 18 | 60 | Black | 12' RG-58A/U | SMA |
| MM5T900SMARP | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 18 | 60 | Black | 12' RG-58A/U | SMA RP |
| MSU800FME | 1/2 λ | 806-896 | 2 | 4 | 40 | Black | 12' RG-58A/U | FME |
| MSU900FME | 1/2 λ | 890-960 | 2 | 4 | 40 | Black | 12' RG-58A/U | FME |
| MMC/P3EFME | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 4 | 5 | 7 | Black | 12' RG-58/U | FME |
| MMC/P3EMPL | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 4 | 5 | 7 | Black | 12' RG-58/U | MPL |
| MMC/P3ETNC | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 4 | 5 | 7 | Black | 12' RG-58/U | TNC |
| MMC/P3ESMA | 5/8 over 1/4 λ | 824-960 1850-1990 | 4 4 | 5 | 7 | Black | 12' RG-58/U | SMA |



GPS DIRECT MOUNTS

GPS single band direct mount antennas have the following specifications:

Frequency: 1575.4
Gain: 5 dBic
LNA Gain: 28 dB ± 2 dB
Pattern: Hemispherical
Mounting: Direct Feed 5/8" hole
Polarization: Right-Hand Circular
Coax: 17' RG-174
Voltage: 5 V DC
Color: Black
Size: .7" H x 2.5" Dia



| Model | Connector | Color |
|---------|-----------|-------|
| GPSDM02 | MCX | Black |
| GPSDM04 | MMCX | Black |
| GPSDM06 | SMB | Black |
| GPSDM08 | SMA | Black |

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo.

GPS COMBI WHIP DIRECT MOUNTS

GPS combi whip direct mount antennas have the following specifications:

LNA Gain: 26 dB ± 2 dB
Polarization: Right-Hand Circular /Vertical
Mounting: Direct Feed 5/8" hole
Color: Black
Pattern: Hemispherical / Omni
Coax: 16.4' RG-174 / 16.4' RG-174
Voltage: 5 V DC
Base Size: 2" W x 2.3" L x 0.7" H



| Model | Frequency (MHz) | Gain (dBi/dBic) | Whip Length (In) | Connector |
|-------------|-------------------|-----------------|------------------|-----------|
| GPSCW1502 | 136-174 / 1575.42 | 2.14/5 | 22 | SMA/SMB |
| GPSCW4501 | 406-512 / 1575.42 | 2.14/5 | 6.25 | SMA/SMA |
| GPSCW4502 | 406-512 / 1575.42 | 2.14/5 | 6.25 | SMA/SMB |
| GPSCW3E8001 | 806-896 / 1575.42 | 5/5 | 11.5 | SMA/SMA |
| GPSCW3E8003 | 806-896 / 1575.42 | 5/5 | 11.5 | FME/SMA |

GPS DIRECT MOUNT

GPS single band direct mount antennas have the following specifications:

Frequency: 1575.4
Gain: 4 dBic
LNA Gain: 25 dB ± 2 dB
Pattern: Hemispherical
Mounting: Direct Feed 5/8" hole
Polarization: Right-Hand Circular
Coax: LMR-195
Voltage: 3V-5V DC
Color: GRAY (PANTONE 427)
Size: .87" H x 1.97" Dia



| Model | Cable Length | Connector |
|--------------|----------------|-----------|
| GPSDM26B0500 | 19.68" (500mm) | SMA |

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo.

GLASS MOUNT

GPS glass mount single band antennas have the following specifications:

Frequency: 1575.4 MHz **Gain:** 1.5 dBi
Pattern: Hemispherical **LNA Gain:** 26 dB ± 2 dB
Polarization: Right-Hand Circular **VSWR:** 1.5:1
Mounting: Double Sided Tape **Voltage:** 3V or 5V DC

| Model | Size H x L x W (In) | Color | Cable | Connector |
|----------|------------------------|-------|--------------|-----------|
| GPSGMSMA | .2 x 3 x 1.2 | Black | 16.4' RG-174 | SMA |
| GPSGMSMB | .2 x 3 x 1.2 | Black | 16.4' RG-174 | SMB |



GPSGM

GPS LOW PROFILE SINGLE BAND

GPS low profile single band antennas have the following specifications:

Frequency: 1575.4 MHz **Gain:** 5 dBi
Pattern: Hemispherical **LNA Gain:** 28 dB ± 2 dB
Polarization: Right-Hand Circular **VSWR:** 2.0:1
Mounting: NMO Mount **Voltage:** 5V DC

| Model | Size H x D (In) | Color | Cable | Connector |
|----------|--------------------|-------|------------------|------------------|
| GPSNMO01 | 1.3 x 2.9 | White | Order Separately | Order Separately |
| GPSNMO02 | 1.3 x 2.9 | Black | Order Separately | Order Separately |
| GPSNMO07 | 1.3 x 2.9 | White | 17' RG-58/U | SMB |
| GPSNMO08 | 1.3 x 2.9 | Black | 17' RG-58/U | SMB |
| GPSNMO09 | 1.3 x 2.9 | White | 17' RG-58/U | SMA |
| GPSNMO10 | 1.3 x 2.9 | Black | 17' RG-58/U | SMA |



GPS LOW PROFILE



GPS0015

GPS TIMING ANTENNA

| Model | Frequency (MHz) | LNA Gain (± 2 dB) | Dimensions H x W (In) | Polarization | Voltage | Color | Mounting | Connector |
|---------|--------------------|-------------------------|--------------------------|--------------|-----------|-------|----------|-----------|
| GPS0015 | 1575.42 ± 1.023 | 25 | 4 x 4.5 | RHCP | 4V-15V DC | White | Bracket | N Male |

GPS LTE DIRECT MOUNTS

| Model | Frequency (MHz) | Gain (dBi) | Polarization | VSWR | Mounting | Voltage | Size H x Dia (In) | Cable | Conn |
|------------------|-----------------------------|---------------|-----------------|-------|-----------|---------|-------------------------|------------|------|
| GPSDM700/2500FFS | 698-960/1710-2170/2300-2700 | 3 | Linear Vertical | 2.0:1 | 3/4" Hole | 3 or 5 | 3.5 x 4.16 | 17' RG-58 | FME |
| | 2400-2485/5150-5850 | 6 | Linear Vertical | | | | | 17' RG-58 | FME |
| | 1575.42 | 5 dBic | RHCP | | | | | 17' RG-174 | SMA |

| MODEL | LTE | | WIFI | | GPS | |
|-------------------|-----------|-------|-----------|--------|------------|-------|
| | CABLE | CONN. | CABLE | CONN. | CABLE | CONN. |
| GPSDM700/5800SSS | 17' RG-58 | SMA | 17' RG-58 | SMA | 17' RG-174 | SMA |
| GPSDM700/5800GGT | 17' RG-58 | SMA | 17' RG-58 | RP-SMA | 17' RG-174 | SMA |
| GPSDMW700/5800SSS | 17' RG-58 | SMA | 17' RG-58 | SMA | 17' RG-174 | SMA |

GPS & CELLULAR COMBO DIRECT MOUNT

Direct mount antennas have the following specifications:

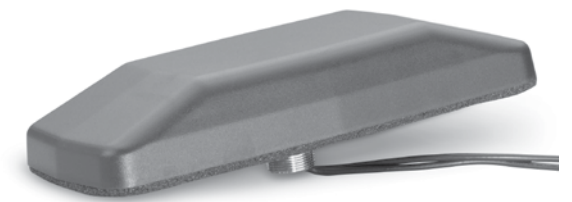
Frequency: 824-960 / 1710-2170 / 1575.4 MHz
VSWR: <2.0:1
Gain: 2 dBi / 2 dBi / 5 dBi
LNA Gain: 26 dB ± 2 dB
Pattern: Omni / Omni / Hemispherical
Voltage: 3V or 5V DC
Polarization: Vertical / Vertical / Right-Hand Circular
Coax: 16.4' RG-174 / 16.4' RG-174
Mounting: Direct Feed 3/4" hole

| Model | Size L x W x D (In) | | Color | Connector |
|-----------|------------------------|-----------|-------|-------------|
| | L | W x D | | |
| GPSCP00 | 7.6 | 3.4 x 1.3 | Black | TNC/SMA |
| GPSCP01 | 7.6 | 3.4 x 1.3 | White | No Conn |
| GPSCP02 | 7.6 | 3.4 x 1.3 | Black | No Conn/SMA |
| GPSCP03 | 7.6 | 3.4 x 1.3 | White | No Conn/SMA |
| GPSCP04 | 7.6 | 3.4 x 1.3 | Black | No Conn/SMB |
| GPSCP05 | 7.6 | 3.4 x 1.3 | White | No Conn/SMB |
| GPSCP06 | 7.6 | 3.4 x 1.3 | Black | SMA/SMA |
| GPSCO07 | 7.6 | 3.4 x 1.3 | White | SMA/SMA |
| GPSCP08 | 7.6 | 3.4 x 1.3 | Black | MPL/SMA |
| GPSCP09 | 7.6 | 3.4 x 1.3 | White | MPL/SMA |
| GPSCP10 | 7.6 | 3.4 x 1.3 | Black | TNC/BNC |
| GPSCWCP00 | 3.9 | 2.3 x 3.2 | Black | TNC/SMA |
| GPSCWCP01 | 3.9 | 2.3 x 3.2 | Black | No Conn/SMA |
| GPSCWCP02 | 3.9 | 2.3 x 3.2 | Black | No Conn/SMB |
| GPSCWCP03 | 3.9 | 2.3 x 3.2 | Black | SMA/MPL |
| GPSCWCP04 | 3.9 | 2.3 x 3.2 | Black | SMA/SMA |
| GPSCWCP05 | 3.9 | 2.3 x 3.2 | Black | TNC/TNC |



GPSDM700/2500FFS

GPSDM700/5800SSS



GPSCP



GPSCW



GPS DIRECT MOUNT

NMOHFGPS mount have the following specifications:

Frequency: 1575.4 - 1576.4 MHz
Polarization: Right-Hand Circular / Vertical
Cable: 16.4' RG-174 (GPS)
 16.4' RG-58 (NMOHF)
Size: .5 x 2 x 4.5
Mounting: 5/8" Hole

Gain: 5 dBic
LNA Gain: 26 dB ± 2 dB
VSWR: Less than 2:1
Voltage: 3V or 5V DC
Color: Black

| Model | Connectors (mount / GPS) | Color |
|------------------|--------------------------|-------|
| NMOHFGPSFMENOCNN | FME/No Connector | Black |
| NMOHFGPSFMESMA | FME/SMA | Black |
| NMOHFGPSNOCNN | No Connectors | Black |
| NMOHFGPSSMASMA | SMA/SMA | Black |

NOTE: Specifications listed refer to GPS performance. Additional antenna specifications are dependent on the antenna mounted on the NMO side.

GPS MAGNETIC MOUNT

GPS single band magnetic mount antennas have the following specifications:

Frequency: 1575.4 MHz
Pattern: Hemispherical
Polarization: Right-Hand Circular
Cable: 17' RG-174

Gain: 5 dBic
LNA Gain: 26 dB ± 2 dB
VSWR: Less than 2:1
Voltage: 5V DC

| Model | Size H x L x W (In) | Color | Connector |
|---------|------------------------|-------|-----------|
| GPS0002 | 0.5 x 1.75 x 1.5 | Black | MCX |
| GPS0006 | 0.5 x 1.75 x 1.5 | Black | SMB |
| GPS0008 | 0.5 x 1.75 x 1.5 | Black | No Conn |
| GPS0010 | 0.5 x 1.75 x 1.5 | Black | SMA |
| GPS0012 | 0.5 x 1.75 x 1.5 | Black | BNC |



GPS Single Band Mag Mount

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo



GPSDM26B0500

GPS DIRECT MOUNT

GPS single band direct mount antennas have the following specifications:

Frequency: 1575.4
Gain: 4 dBic
LNA Gain: 25 dB ± 2 dB
Pattern: Hemispherical
Mounting: Direct Feed 5/8" hole

Polarization: Right-Hand Circular
Coax: LMR-195
Voltage: 3V-5V DC
Color: Gray (Pantone 427)
Size: .87" H x 1.97" Dia

| Model | Cable Length | Connector | Color |
|--------------|----------------|-----------|--------------------|
| GPSDM26B0500 | 19.68" (500mm) | SMA | Gray (Pantone 427) |



GPSSB



W4165



GPSSLMB

GPS & CELLULAR COMBO STEALTH BLADES ADHESIVE MOUNT

| Model | Frequency (MHz) | Gain | Dimensions L x W x D (In) | Polarization | Voltage | Color | Coax | Conn |
|-----------------|-----------------|----------|---------------------------|--------------|------------|-------|--------------|------|
| GPSSB800/2170FS | 806 - 960 | 0 dBi | 5.4 x 1.5 x .6 | Linear Vert | 3V or 5VDC | Black | 16.4' RG-174 | FME |
| | 1710 - 2170 | 0 dBi | | | | | | SMA |
| | 1575.4 | 26 (LNA) | | | | | | |

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo

W4165 SERIES - MULTIBAND DIRECT MOUNT ANTENNAS : GPS + 3G/ISM

GPS, and 3G (or ISM) combination antenna in a low-profile direct mount package.
Size: 3.94" (Dia.) x 1.38" (H) [100mm Dia. x 35mm height] **Mounting:** Direct Feed ; 3/4" dia. hole required. [19mm dia. hole required]

| Model | Application | Frequency (MHz) | Gain (Typical) | Cable | Connection |
|--------------------------|-------------|------------------------|---|--------|---------------|
| W4165 (Direct Mount) | GPS | 1575.42 +/- 1.023 | Antenna RHCP gain: 1 dBic typ. LNA Gain: 26 dB +/- 2dB | RG-174 | See Datasheet |
| | 3G (or ISM) | 824 - 960 1710-2170 | 2 dBi 2 dBi | RG-174 | See Datasheet |
| W4165MM (Magnetic Mount) | GPS | 1575.42 +/- 1.023 | Antenna RHCP gain: 1 dBic typ. LNA Gain: 26 dB +/- 2dB | RG-174 | See Datasheet |
| | 3G (or ISM) | 824 - 960 1710-2170 | 2 dBi 2 dBi | RG-174 | See Datasheet |

Note: Contact factory for additional configurations of LTE, WiFi, and GPS.

Note: Contact factory for models which include Glonass, Beidou/Compass and Galileo navigation.

JAGUAR SERIES - MULTIBAND ANTENNAS : GPS/GNSS + MIMO LTE + WIFI

GPS, LTE and WiFi combination antenna in a low-profile mobile package.
Size: 5.7" (L) x 5.3" (W) x 0.98" (H) [145mm x 135mm x 25mm] **Mounting:** Adhesive Mount

| Model | Application | Frequency (MHz) | Gain | Filtering; LNA Voltage | Connection |
|-------------|-------------|--|---|---|---------------|
| GPSSLPMB401 | GNSS | 1561.098 +/- 2.046 (Beidou) 1575.42 +/- 1.023 (GPS) 1602.563 +/- 4.0 (GLONASS) | Antenna RHCP gain: 1 dBic typ. LNA Gain: 30 dB +/- 2dB | OOB Rej.: 60-70dB LNA Input: 3.3 - 5 Vdc Input | See Datasheet |
| | LTE 1 | 698-960 | 4.4 dBi (peak) | -- | See Datasheet |
| | LTE 2 | 1710 - 2690 | 5.4 dBi (peak) | -- | See Datasheet |
| | | 698-960 | 4.4 dBi (peak) | -- | See Datasheet |
| | WiFi | 2400-2500 | 4.5 dBi (peak) | -- | See Datasheet |
| LPMB401 | LTE 1 | 4900 - 5950 | 6 dBi (peak) | -- | See Datasheet |
| | | 698-960 | 4.4 dBi (peak) | -- | See Datasheet |
| | LTE 2 | 1710 - 2690 | 5.4 dBi (peak) | -- | See Datasheet |
| | | 698-960 | 4.4 dBi (peak) | -- | See Datasheet |
| | WiFi 1 | 2400-2500 | 5 dBi (peak) | -- | See Datasheet |
| WiFi 2 | 4900 - 5950 | 6 dBi (peak) | -- | See Datasheet | |

Note: Contact factory for additional configurations of LTE, WiFi, and GPS. Contact factory for magnetic mount and direct mount configurations.



GPS Multi Band Mag Mount

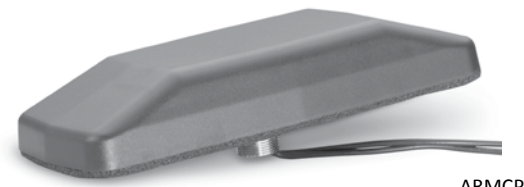
GPS MAGNETIC MOUNT

GPS & Cellular combo magnetic mount antennas have the following specifications:

- Frequency:** 824-960 / 1710-2170 / 1575.4 MHz
- Gain:** 2 dBi / 2 dBi / 5 dBic
- LNA Gain:** 26 dB ± 2 dB
- Pattern:** Omni / Omni / Hemispherical
- Polarization:** Vertical / Vertical / Right-Hand Circular
- VSWR:** Less than 2:1
- Cable:** 17' RG-174
- Voltage:** 3V or 5V DC

| Model | Size H x L x W (In) | Color | Connector |
|----------|---------------------|-------|-------------|
| GPSCPM00 | 1.3 x 7.6 x 3.4 | Black | TNC/SMA |
| GPSCPM02 | 1.3 x 7.6 x 3.4 | Black | No Conn/SMA |

Contact factory for LTE versions.



ARMCP

ARMADILLO SERIES - MULTIBAND VEHICULAR DIRECT MOUNT ANTENNAS : GPS + LTE + WIFI

GPS, LTE and WiFi combination antenna in a low-profile mobile package.

Size: 7.6" (L) x 3.4" (W) x 1.32" (H)

[193mm x 86.4mm x 33.5mm]

Mounting: Direct Feed ; 3/4" hole required.

| Model | Application | Frequency (MHz) | Gain (Typical) | Connection |
|-----------|--------------------|-----------------|---|------------|
| ARMCP402 | GPS/Glonass/Beidou | 1559-1607 | Antenna RHCP gain: 1 dBic typ. LNA Gain: 30 dB +/- 2dB | SMA (m) |
| | LTE1, LTE2 | 698-960 | 2 dBi | SMA (m) |
| | | 1710-2690 | 4 dBi | SMA (m) |
| | WiFi | 2400-2500 | 4 dBi | RP-SMA (m) |
| 5150-5925 | | 6 dBi | | |

Note: Contact factory for additional configurations of LTE, WiFi, and GPS. Contact factory for magnetic mount and adhesive mount configurations. White Housing is available.

GPS LTE WI-FI MULTI BAND DIRECT MOUNTS

| Model | Frequency (MHz) | Gain (dBi) | Polarization | VSWR | Mounting | Voltage | Size H x Dia (In) | Cable | Conn |
|-------------------------------|-----------------------------|------------|-----------------|-------|-----------|---------|-------------------|------------|------|
| GPSDM700/2500FFS (3 CABLE) | 698-960/1710-2170/2300-2700 | 3 | Linear Vertical | 2.0:1 | 3/4" Hole | 3 or 5 | 3.5 x 4.16 | 17' RG-58 | FME |
| | 2400-2485/5150-5850 | 6 | Linear Vertical | | | | | 17' RG-58 | FME |
| | 1575.42 | 5 dBic | RHCP | | | | | 17' RG-174 | SMA |



GPSDM700/2500
GPSDM700/5800

ALTERNATE CABLE/CONNECTOR CONFIGURATIONS

| MODEL (Black) | MODEL (White) | LTE CABLE | LTE CONN. | GPS CABLE | GPS CONN. | CABLE | CONN. |
|------------------|-------------------|-----------|-----------|-----------|-----------|------------|-------|
| GPSDM700/5800SSS | GPSDM700/5800SSW | 17' RG-58 | SMA | 17' RG-58 | SMA | 17' RG-174 | SMA |
| GPSDM700/5800GGT | GPSDM700/5800GGTW | 17' RG-58 | SMA | 17' RG-58 | RP-SMA | 17' RG-174 | SMA |



GPSMB501



GPSMB Panther (White)



GPSMB301

PANTHER SERIES - DIRECT MOUNTS

| Model | Application | Frequency (MHz) | Gain (dBi) | VSWR | Mount | Size (in.) | Cable | Conn. |
|------------------------|--------------|-----------------|--------------------|---------------------|---------------------|------------|------------|--------|
| GPSMB501 (5 CABLES) | LTE1, LTE2 | 698-960 | 4 (LB) 5 (UB) | 1.5:1 | 7/8" Hole (M22 Nut) | 6.5x6x3 | 17' RG-58 | SMA |
| | | 2300-2700 | | | | | | SMA |
| | 2900-3600 | | | | | | | |
| GPSMB301 | WIFI1, WIFI2 | 2400-2500 | 4.5 / 5 | 1.5:1 | 7/8" Hole (M22 Nut) | 6.5x6x3 | 17' RG-58 | RP-SMA |
| | | 4900-5900 | | | | | | RP-SMA |
| | GPS, GLONASS | 1564-1610 | 1.5 (dBic) | 1.5:1 | 7/8" Hole (M22 Nut) | 6.5x6x3 | 17' RG-174 | SMA |
| GPSMB301 | LTE, LTE2 | 698-960 | 6 (LB) 5.5 (UB) | 1.7:1 | 7/8" Hole (M22 Nut) | 6.5x6x3 | 17' RG-58 | SMA |
| | | 1695-2170 | | | | | | SMA |
| | 2300-2700 | | | | | | | |
| GPS, GLONASS | 1575-1609 | 1.5 (dBic) | 1.7:1 | 7/8" Hole (M22 Nut) | 6.5x6x3 | 17' RG-174 | SMA | |

NOTE: GPSMBMM is a magnetic base for GPSMB501 and GPSMB301. White and black colors available.

NOTE: All NMO mount antennas listed in this catalog section require the NMOHF-style (high frequency 27 MHz - 6 GHz) mount.

PUBLIC SAFETY AND WIFI BROADBAND ANTENNAS

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (in) | VSWR | Cable Assembly |
|------------|---------------|-----------------|------------|-----------------|--------|------------------|
| EF2405NMO | Elevated Feed | 2400-2500 | 5 | 16 | <1.5:1 | Order Separately |
| EF4905NMO | Elevated Feed | 4900-5000 | 5 | 12 | <1.5:1 | Order Separately |
| NMO4E4900B | Elevated Feed | 4900-5350 | 4 | 4.5 | 2:1 | Order Separately |
| NMO4E5350B | Elevated Feed | 5350-5925 | 4 | 4.5 | 2:1 | Order Separately |
| NMO5E2400B | Collinear | 2400-2500 | 2.95 | 8.5 | 1.5:1 | Order Separately |



EF



NMO4E



NMO5E



Through its rich history in the Larsen and LK brands, Pulse has over 50 years in the antenna business.

NOTE: All NMO mount antennas listed in this catalog section require the NMOHF-style (high frequency 27 MHz - 6 GHz) mount.

PUBLIC SAFETY 700/800; 2G/3G/4G LTE; WIFI; DSRC – LOW PROFILE

| Model Black | Model White | ICEFIN Model | Frequency (MHz) | Gain (dBi) | Mount | Size Hx DIA (in) | Power Rating (Watts) Black / White / ICEFIN |
|--------------------|--------------------|---------------|--|-----------------|-------------------|------------------|---|
| LPT825/19NMOHF | N/A | NA | Cellular: 806-960 PCS: 1710-2170 ISM: 2400 | 3 3 4 | NMOHF | 3 x 1.75 | 10 / 10 / NA |
| LPT2400NMOHF | LPT2400NMOHFW | NA | 2400-2500 | 5 | NMOHF | 3 x 1.75 | 10 / 10 / NA |
| SLPT698/2170NMOHF | SLPT698/2170NMOHFW | ICEFINLNMOHF | LTE: 698-960 PCS: 1710-2170 ISM: 2400-2700 | 4.5 5.6 4 | NMOHF | 3 x 1.75 | 40 / 40 / 30 |
| SLPT2400NMOHF | SLPT2400NMOHFW | ICEFIN24NMOHF | 2400-2500 | 4.3 | NMOHF | 2.6 x 1.5 | 35 / 35 / 30 |
| SLPT4900NMOHF | SLPT4900NMOHFW | ICEFIN49NMOHF | 4900-5900 | 5.5 | NMOHF | 2.6 x 1.5 | 35 / 35 / 30 |
| SLPT2400/5900NMOHF | SLPT245NMOHFW | ICEFINWNMOHF | 2400-2500 4900-5900 | 4.3 5.5 | NMOHF | 2.6 x 1.5 | 35 / 35 / 30 |
| SLPT698/2170DMN | SLPT698/2170DMNW | ICEFINLDMN | LTE: 698-960 PCS: 1710-2170 ISM: 2400-2700 | 4.5 5.6 4 | Direct (N Female) | 3 x 1.75 | 40 / 40 / 35 |
| SLPT2400DMN | SLPT2400DMNW | ICEFIN24DMN | 2400-2500 | 4.3 | Direct (N Female) | 2.6 x 1.5 | 35 / 35 / 30 |
| SLPT4900DMN | SLPT4900DMNW | ICEFIN49DMN | 4900-5900 | 5.5 | Direct (N Female) | 2.6 x 1.5 | 35 / 35 / 30 |

ICEFIN698-960NMO



ICEFIN806DMN



SLPT NMO



SLPT DM



LPT



WIFI, BROADBAND STEALTH BLADES

Stealth Blade antennas have a gain of 2.14 dBi, a maximum power of 3 Watts and linear polarization

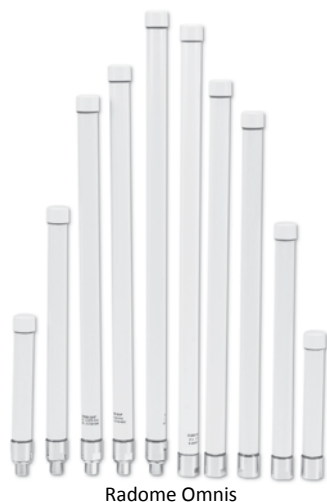
| Model | Frequency (MHz) | Type | Dimensions L x W (in) | Color | Coax | Connector |
|-------------|-----------------|--------|-----------------------|-------|-----------|-----------|
| SB24003 | 2400-2500 | Dipole | 3 x .75 | Black | 3' RG-174 | No Conn |
| SB24006 | 2400-2500 | Dipole | 3 x .75 | Black | 6' RG-174 | No Conn |
| SB2400SMA3 | 2400-2500 | Dipole | 3 x .75 | Black | 3' RG-174 | SMA |
| SB2400SMA6 | 2400-2500 | Dipole | 3 x .75 | Black | 6' RG-174 | SMA |
| SB2400SMB3 | 2400-2500 | Dipole | 3 x .75 | Black | 3' RG-174 | SMB |
| SB2400SMB6 | 2400-2500 | Dipole | 3 x .75 | Black | 6' RG-174 | SMB |
| SB2400MMCX3 | 2400-2500 | Dipole | 3 x .75 | Black | 3' RG-174 | MMCX |
| SB2400MMCX6 | 2400-2500 | Dipole | 3 x .75 | Black | 6' RG-174 | MMCX |



SB2400xx

LTE, 4G, BROADBAND RADOME OMNIS

Radome Enclosure: Pultruded Fiberglass (UV Protected)
VSWR: 2.0:1 Power Rating: 20 Watts
Ingress Protection: IP67 Polarization: Vertical
Suggested mounting brackets for N Female connectors are FB2BRACKET or FB3BRACKET. See Page 53 for FB brackets.



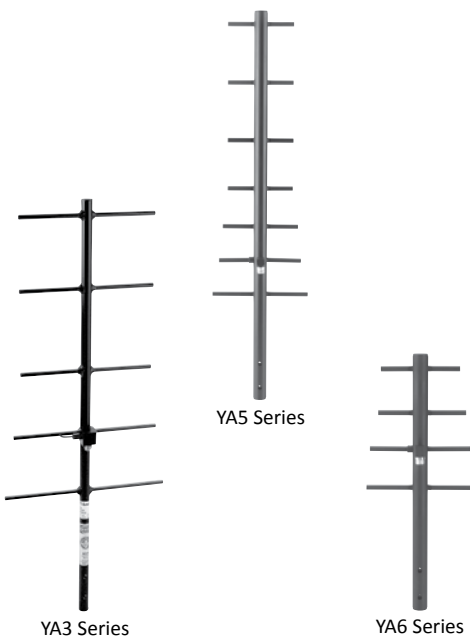
| Model | Frequency (MHz) | Gain (dBi) | Length (In) | Connector |
|--------------------------|-----------------|------------|-------------|-----------|
| W5067 ⁽¹⁾ | 698-960 | 0.7 | 9.1 | N Female |
| | 1710-2170 | 1.0 | | |
| | 2400-2700 | 2.0 | | |
| RO17102NM ⁽²⁾ | 1710-2170 | 2 | 4.5 | N Male |
| RO8605NFC ⁽³⁾ | 860 - 930 | 5.0 | 32 | N Female |
| RO2404NM | 2400-2500 | 4 | 11.5 | N Male |
| RO2406NF | 2400-2500 | 6 | 11.5 | N Female |
| RO2406NM | 2400-2500 | 6 | 11.5 | N Male |
| RO2408NF | 2400-2500 | 8 | 20 | N Female |
| RO2408NM | 2400-2500 | 8 | 20 | N Male |
| RO2408NFD (downtilt) | 2400-2500 | 8 | 20 | N Female |
| RO2408NMD (downtilt) | 2400-2500 | 8 | 20 | N Male |
| RO2408NFU (uptilt) | 2400-2500 | 8 | 20 | N Female |
| RO2408NMU (uptilt) | 2400-2500 | 8 | 20 | N Male |
| RO4910NF | 4940-4990 | 10 | 18 | N Female |
| RO4910NM | 4940-4990 | 10 | 18 | N Male |
| RO5206NF | 5150-5350 | 6 | 6.75 | N Female |
| RO5410NF | 5470-5725 | 10 | 16.5 | N Female |
| RO5210NF | 5150-5350 | 10 | 16.5 | N Female |
| RO5210NM | 5150-5350 | 10 | 16.5 | N Male |
| RO5410NM | 5470-5725 | 10 | 16.5 | N Male |
| RO5805NF | 5150-5825 | 5 | 6.75 | N Female |
| RO5805NM | 5150-5825 | 5 | 6.75 | N Male |
| RO5806NF | 5725-5875 | 6 | 6.75 | N Female |
| RO5810NF | 5725-5875 | 10 | 16.5 | N Female |
| RO5810NM | 5725-5875 | 10 | 16.5 | N Male |
| RO8063/21704NM | 806-960 | 3 | 8.6 | N Male |
| RO8063/21704NF | 1710-2170 | 4 | | N Female |
| RO8061/21702NM | 806-960 | 1 | 16.5 | N Male |
| | 1710-2170 | 2 | | |
| W5030 | 2400-2500 | 4 | 6.8 | N Male |
| | 5150-5875 | 6 | | |
| RO3ISMNM | 430-440 | 2 | 21.3 | N Male |
| | 860-930 | 2.5 | | |
| RO25002NF ⁽²⁾ | 2300-2700 | 2.0 | 5.1 | N Female |

(1) 3 Watt Power (2) PIM Rated to -155 dBc (3) Bracket ROKIT Available. Contact Factory.

YAGIS

Construction: Fully Welded Elements **Wind Load: 100 mph**
VSWR: 2.0:1 **Feed Connection: N Female**
Power Rating: 300 Watts **Mounting Hardware: Included**

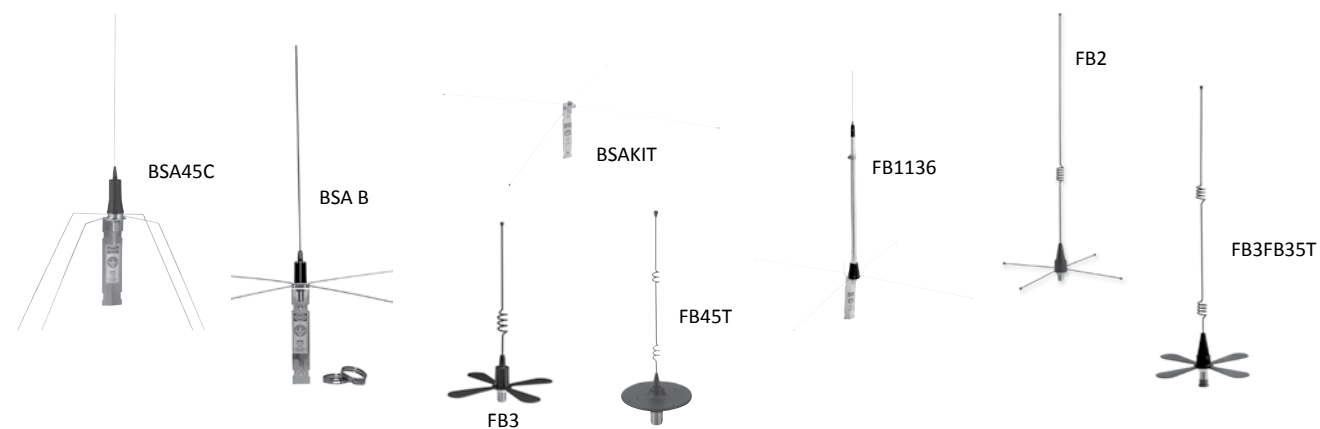
| Model | # of Elements | Frequency (MHz) | Gain (dBi) | Length (In) |
|----------|---------------|-----------------|------------|-------------|
| YA3406WN | 5 | 406-430 | 11 | 42.25 |
| YA3450WN | 5 | 450-470 | 11 | 36.25 |
| YA5740W | 7 | 740-806 | 11 | 32.75 |
| YA6740W | 4 | 740-806 | 8 | 19.25 |
| YA5800W | 7 | 806-866 | 11 | 31.25 |
| YA6800W | 4 | 806-866 | 8 | 17.5 |
| YA5825W | 7 | 824-896 | 11 | 31.25 |
| YA6825 | 4 | 824-896 | 8 | 17.5 |
| YA5900W | 7 | 890-960 | 11 | 30 |
| YA6900W | 4 | 890-960 | 8 | 17.5 |



OMNI BASE STATION ANTENNAS

Omni Base Station part numbers ending in "WA" do not include mounting hardware.
All others includes the appropriate FB2BRACKET or FB3BRACKET for mounting. See Page 78 for FB brackets.

| Model | Type | Frequency (MHz) | Gain (dBi) | Max Height (In) | Power Rating (Watts) | Whip Color | Feed Connection |
|-------------|-------------------------------|-----------------|------------|-----------------|----------------------|------------|-----------------|
| BSA45C | Base Loaded 1/4 λ | 45-50 | 2 | 51.75 | 200 | Stainless | N Female |
| BSA118B | 5/8 λ | 118-121 | 5.2 | 64 | 200 | Black | UHF Female |
| BSA132B | 5/8 λ | 131-135 | 5.2 | 54.5 | 200 | Black | UHF Female |
| BSA150B | 5/8 λ | 144-174 | 5.2 | 51.75 | 200 | Black | UHF Female |
| BSA150C | 5/8 λ | 144-174 | 2.5 | 51.75 | 200 | Black | UHF Female |
| BSA220C | 5/8 λ | 200-225 | 5.2 | 33.75 | 200 | Stainless | UHF Female |
| BSA406C | 5/8 over 1/2 λ | 406-420 | 5.6 | 32 | 200 | Stainless | UHF Female |
| BSA440C | 5/8 over 1/2 λ | 440-460 | 5.6 | 32 | 200 | Stainless | UHF Female |
| BSA450C | 5/8 over 1/2 λ | 450-470 | 5.6 | 32 | 200 | Stainless | UHF Female |
| BSAKIT | Base Station Ground Plane Kit | | | 200 | | | UHF Female |
| FB1136 | 5/8 over 1/2 λ | 136-230 | 5.6 | 96 | 200 | Stainless | UHF Female |
| FB2406 | 5/8 over 1/4 λ | 406-420 | 5.4 | 32.5 | 200 | Black | N Female |
| FB2450 | 5/8 over 1/4 λ | 450-470 | 5.4 | 32.5 | 200 | Black | N Female |
| FB2406W/A | 5/8 over 1/4 λ | 406-420 | 5.4 | 32.25 | 200 | Black | N Female |
| FB2420W/A | 5/8 over 1/4 λ | 420-440 | 5.4 | 32.25 | 200 | Black | N Female |
| FB2450W/A | 5/8 over 1/4 λ | 450-470 | 5.4 | 32.25 | 200 | Black | N Female |
| FB3800 | 5/8 over 1/4 λ | 806-866 | 5.4 | 16 | 150 | Black | N Female |
| FB3825 | 5/8 over 1/4 λ | 824-896 | 5.4 | 16 | 150 | Black | N Female |
| FB3740WA | 5/8 over 1/4 λ | 740-806 | 5.4 | 16 | 150 | Black | N Female |
| FB3800WA | 5/8 over 1/4 λ | 806-866 | 5.4 | 16 | 150 | Black | N Female |
| FB3825WA | 5/8 over 1/4 λ | 824-896 | 5.4 | 16 | 150 | Black | N Female |
| FB35T800 | 5/8 over 5/8 over 1/4 λ | 806-866 | 5.4 | 32 | 150 | Black | N Female |
| FB35T825 | 5/8 over 5/8 over 1/4 λ | 824-896 | 5.4 | 32 | 150 | Black | N Female |
| FB35T800WA | 5/8 over 5/8 over 1/4 λ | 806-866 | 7.2 | 32 | 150 | Black | N Female |
| FB35T825WA | 5/8 over 5/8 over 1/4 λ | 824-896 | 7.2 | 32 | 150 | Black | N Female |
| FB900 | 5/8 over 1/4 λ | 890-960 | 5.4 | 16 | 150 | Black | N Female |
| FB3900WA | 5/8 over 1/4 λ | 890-960 | 5.4 | 16 | 150 | Black | N Female |
| FB35T900 | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 23 | 150 | Black | N Female |
| FB35T900WA | 5/8 over 5/8 over 1/4 λ | 890-960 | 7.2 | 23 | 150 | Black | N Female |
| FB45T2400 | 5/8 over 5/8 over 1/4 λ | 2400-2485 | 7.2 | 16.5 | 100 | Black | N Female |
| FB45T2400WA | 5/8 over 5/8 over 1/4 λ | 2400-2485 | 7.2 | 9 | 100 | Black | N Female |



Maker Of Clarity™ Transparent Antennas!

From Your **PIMinator™** Low-Pim Solutions Expert

Distributed Antenna Systems: As consumers switch to a lifestyle of constant internet connection, the demand on wireless networks increases dramatically. The carrier networks are switching from one of coverage to capacity. Previously coverage came via cellular base stations with tower-mounted antennas with vast reach to many consumers. The future networks need to fulfill capacity demands by bringing those networks closer to the consumer, with greater data throughput reaching customers in smaller coverage areas. To meet these very high data rates it's critical to have high quality innovative components such as Pulse Electronics PIMinator™ line of in-building low-PIM antennas, Pulse clarity™ transparent antennas and accessory components.



Clarity™ Transparent Antenna



Clarity™ White Antenna

ULTRA-THIN CLARITY™ ANTENNAS

| Clarity™ Series | Pulse Part Number | Freq, MHz | PIM Rating, dBc | Connector |
|------------------|-------------------|--|-----------------|---|
| Ultra-Thin Clear | DASUTCC500NF | 608-960/1695-2200/2300-2700MHz, Antenna only | -155 | N Female w/500mm pigtail |
| Ultra-Thin Clear | DASUTCCR500NF | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | N Female w/500mm pigtail |
| Ultra-Thin Clear | DASUTCC500MD | 608-960/1695-2200/2300-2700MHz, Antenna only | -155 | 4.1-9.5 Mini-DIN Female w/500mm pigtail |
| Ultra-Thin Clear | DASUTCCR500MD | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.1-9.5 Mini-DIN Female w/500mm pigtail |
| Ultra-Thin Clear | DASUTCC5004310 | 608-960/1695-2200/2300-2700MHz, Antenna only | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin Clear | DASUTCCR5004310 | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Clarity | DASUTCCACC1 | Reflector | N/A | N/A |
| Ultra-Thin White | DASUTWC500NF | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin White | DASUTWCR500NF | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin White | DASUTWC500MD | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin White | DASUTWCR500MD | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin White | DASUTWC5004310 | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |
| Ultra-Thin White | DASUTWCR500431 | 608-960/1695-2200/2300-2700MHz, with Reflector | -155 | 4.3-10 DIN Female w/500mm pigtail |



DASLTE500NF



DASLTENF



DASSPLIT3WNF

| Antennas | Pulse Part Number | Freq, MHz | PIM Rating, dBc | Connector |
|--------------------|-------------------|---------------------------------------|-----------------|--|
| MIMO Ceiling Mount | DASLTE500NFMIMO | 698-960/1710-2170/2300-2700/4900-5900 | -155 | N Female w/500mm pigtail (2x) |
| MIMO Ceiling Mount | DAS500MDMIMO | 698-960/1710-2170/2300-2700/4900-5900 | -155 | Mini-DIN (4.1/9.5) Female w/500mm pigtail |
| SISO Ceiling Mount | DASLTE500NF | 698-960/1710-2170/2300-2700/4900-5900 | -155 | N Female w/500mm pigtail |
| SISO Ceiling Mount | DASLTENF | 698-960/1710-2170/2300-2700/4900-5900 | -155 | N Female w/500mm pigtail |
| SISO Ceiling Mount | DASLTEMINIDIN | 698-960/1710-2170/2300-2700/4900-5900 | -155 | Mini-DIN (4.1 / 9.5) Female w/ 500mm pigtail |
| SISO Ceiling Mount | DASLTEDIN | 698-960/1710-2170/2300-2700/4900-5900 | -155 | DIN (7 / 16) |

| RF Splitters | Pulse Part Number | Freq, MHz | PIM Rating, dBc | Connector |
|-----------------------------|-------------------|-----------|-----------------|-----------|
| Power Splitter, 2-Way, 300W | DASSPLIT2WDIN | 698-2700 | -155 | DIN |
| Power Splitter, 2-Way, 300W | DASSPLIT2WNF | 698-2700 | -155 | N Female |
| Power Splitter, 3-Way 300W | DASSPLIT3WNF | 698-2700 | -155 | N Female |
| Power Splitter, 4-Way, 300W | DASSPLIT4WNF | 698-2700 | -155 | N Female |



PSIBVHF and PSIBVU78



Installed Condition:
PSIBVHF and PSIBVU78



PSUTWCNF

PUBLIC SAFETY DAS PRODUCTS

| Application | Frequency, MHz | Series | Part Number | PIM Rating | Connector | Color | Size (inches / mm) |
|-----------------|---------------------------|----------------|-------------|------------|-----------|-------|---|
| UHF + 700/800 | 380-570; 698-960 | Clarity™-Pearl | PSUTWCNF | N/A | N-Female | White | 12.3" (311mm) Diameter. 0.37" (9.5mm) Below ceiling |
| VHF | 132-174 | V-Thinity™ | PSIBVHF | N/A | N-Female | White | 15.0x15.0 inch (380x380mm) Below Ceiling: 0.060 inch (1.5mm) |
| VHF+UHF+700/800 | 132-174; 380-570; 700-960 | V-Thinity™ | PSIBVU78 | N/A | N-Female | White | 15.4 x 13.6 inch (391 x 346mm) Below Ceiling: 0.06 inch (1.5mm)" |



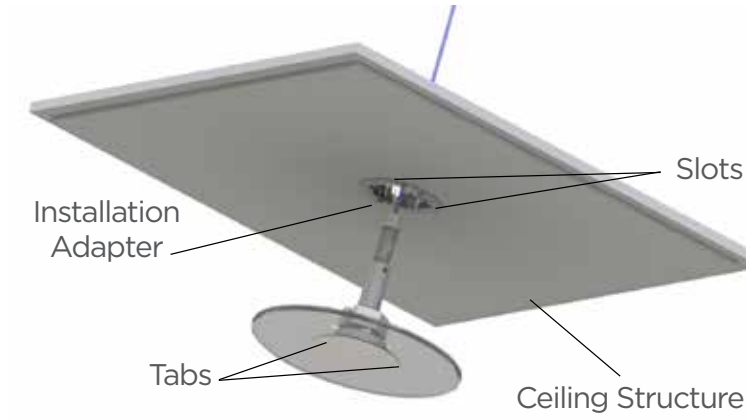
PSDASxx Series Top View



PSDASxx Series Bottom View

PUBLIC SAFETY + CARRIER COMBO DAS PRODUCT

| Application | Frequency, MHz | Series | Part Number | PIM Rating | Connector | Color | Size (inches / mm) |
|-----------------------------------|--|--------|-------------|-----------------------|-----------|-------|---|
| UHF (Tetra) + 3G/4G LTE (or WiFi) | 380-520; 698-960; 1710-2700; 4900-6000 | 5Bar | PSDAS4310F | N/A | 4.3-10 | White | 11.3 Dia x 5.4 Tall (288mm Dia. X 136mm Tall) |
| UHF (Tetra) + 3G/4G LTE (or WiFi) | 380-520; 698-960; 1710-2700; 4900-6000 | 5Bar | PSDAS4310FP | -150dBc (@2x20 watts) | 4.3-10 | White | 11.3 Dia x 5.4 Tall (288mm Dia. X 136mm Tall) |
| UHF (Tetra) + 3G/4G LTE (or WiFi) | 380-520; 698-960; 1710-2700; 4900-6000 | 5Bar | PSDASNF | N/A | N-Female | White | 11.3 Dia x 5.4 Tall (288mm Dia. X 136mm Tall) |
| UHF (Tetra) + 3G/4G LTE (or WiFi) | 380-520; 698-960; 1710-2700; 4900-6000 | 5Bar | PSDASNFP | -150dBc (@2x20 watts) | N-Female | White | 11.3 Dia x 5.4 Tall (288mm Dia. X 136mm Tall) |



Typical Assembly using the Clarity Installation Adapter



Above-Ceiling Antenna Holder



Above-Ceiling Antenna Holder (Shown with Antenna Installed)

| Items | Part Number | Function | Material Size | Comments |
|------------------------------|---------------|--|---|---|
| Above-Ceiling Antenna Holder | DASACHOLDER | Support antennas above ceiling tile rails. | Polycarbonate; 618x192x122 mm (24.4x7.6x4.4 inch) | The holder includes snap-in-place brackets for easy installation onto most standard ceiling tiles rails. Antennas are robustly held in place so the antennas cannot be disturbed when building tenant moves ceiling tiles and impacts the antenna. The plastic construction ensures PIM is not aggravated unlike competitive ferrous metal holders. |
| Clarity Installation Adapter | DASCLINSERT | Blind-hole installation of Clarity Antennas. | 94 mm dia (3.7 inch dia) | The Installation adapter allows one-sided (blind-hole) installation of Clarity antennas when the building construction does not provide access to the backside of the antenna for installation of the provided nut. Ideal for hardpan, drywall, plank and other architectural ceiling types. |
| PIM-Blocker Absorber | DASACABSORBER | System PIM Reduction | (19.7 x 19.7 x 2.0 inch) | The PulseLarsen PIM Blocker absorber bag can reduce PIM by as much as 40dB when placed between antennas and the surrounding structure. The PulseLarsen PIM Blocker can also be used to improve isolation in BDA Repeater applications. See Datasheet for more details. |



DAS PIM-Blocker Absorber



Clarity Installation Adapter



ICEFIN Transparent



ICEFIN White

LOW COST MONOPOLE WITH GROUND PLANE SOLUTION

| Application | Frequency, MHz | SLPT White Series Antenna | | IceFin™ Series Antenna | | Peak Gain* | PIM Rating | Connector | Mechanical Properties |
|------------------|---------------------|---------------------------|------------------|------------------------|------------------|---|------------|-----------|---|
| | | Color | Part Number | Color | Part Number | | | | |
| 700 / 800 | 698-869 | White | SLPT698/869DMNW | Transparent | ICEFIN698/869DMN | 3.3 dBi | None | N-Female | 1.5" dia x 3.1" tall (38mm dia. X 79 mm tall) |
| 2G / 3G / 4G LTE | 698-960 / 1710-2700 | White | SLPT698/2170DMNW | Transparent | ICEFINLDMN | 3.5 dBi (lower band) 4.95 dBi (upper band) | None | N-Female | 1.5" dia x 3.1" tall (38mm dia. X 79 mm tall) |

* Gain when using ground plane



Installed Configuration



Installed Configuration



Frame and Screws



Ground Plane

| Application | Part Number | Mechanical Properties |
|--|-------------|---|
| Ground Plane (for use with above antennas) | ICEFIN-GP | 15.75" Dia. X 0.040" thk (400mm Dia. X 1mm thk) Material: Aluminum" |
| Frame (for use with above antennas) | ICEFIN-F | 2.95" Dia. (74.9mm Dia). |



| IN-BUILDING ANTENNA | FREQUENCY (MHZ) | HEIGHT (IN/MM) | GAIN (DBI) | CONNECTOR |
|-------------------------|---------------------------------------|-----------------|------------|---------------------------|
| Single Band Baton Style | | | | |
| RO17102NM | 1710-2170 | 4.5 / 115 | 2 | N Female w/ 500mm pigtail |
| Multi Band Baton Style | | | | |
| W5067 | 698 - 960 / 1710 - 2170 / 2400 - 2700 | 9.1 / 230 | 1 / 2 | N Female |
| RO8061/21702NF | 806-960/1710-2170 | 8.5 / 216 | 1 / 2 | N Female |
| RO8061/21702NM | 806-960/1710-2170 | 8.5 / 216 | 1 / 2 | N Male |
| RO8063/21704NF | 806-960/1710-2170 | 15.3 / 389 | 3 / 4 | N Female |
| RO8063/21704NM | 806-960/1710-2170 | 15.3 / 389 | 3 / 4 | N Male |
| W5030 | 2.4-2.5/5.15-5.875 GHz | 6.8 / 173 | 4 / 6 | N Male |
| Public Safety Antennas | | | | |
| Donor Yagi | YA34xxWN | 406 thru 512Mhz | 11 dBi | N Female |
| Donor Yagi | YA5xxW | 740 thru 960 | 11 dBi | N Female |
| Donor Yagi | YA6xxW | 740 thru 960 | 8 dBi | N Female |
| Base Station | FB24xx WA | 406 thru 470 | 5.4 dBi | N Female |
| Base Station | FB3xxx | 740 thru 960 | 5.4 dBi | N Female |
| Base Station | FB35T900x | 902 thru 928 | 7.2 dBi | N Female |

**See specific datasheet for Part Number and coverage frequency.

All Larsen NMOHF (high frequency 27 MHz to 6 GHz) mounts convert from low frequency applications to high frequency applications and back by pulling or replacing the center pin and insulator.

NMOHF mounts require a 3/4" hole for mounting and include 17' of coax. NMOHF mounts accommodate roof surfaces from 0.1" to .03". NMOHFTHK (thick) mounts accommodates roof surfaces up to 1/2" thick.

NMO 3/4" HIGH FREQUENCY MOUNTS

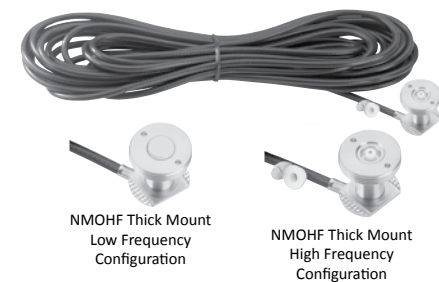
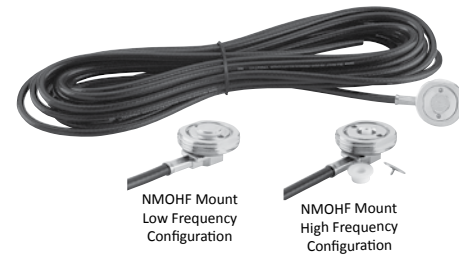
| Model | Coax | Connector |
|---------------|---------------------------|---------------|
| NMOKHFCX | CX (RG-58A/U) | No Conn |
| NMOKHFCXFME | CX (RG-58A/U) | FME CRIMP |
| NMOKHFCXMPL | CX (RG-58A/U) | MPL |
| NMOKHFCXPL | CX (RG-58A/U) | PL-259 |
| NMOKHFDS | DS (RG-58A/U Dual Shield) | No Conn |
| NMOKHFUD | UD (RG-58U Dual Shield) | No Conn |
| NMOKHFUDFME | UD (RG-58U Dual Shield) | FME |
| NMOKHFUDMPL | UD (RG-58U Dual Shield) | MPL |
| NMOKHFUDSMA | UD (RG-58U Dual Shield) | SMA |
| NMOKHFUDTNC | UD (RG-58U Dual Shield) | TNC |
| NMOKHF200SMAI | LMR200 | SMA Installed |

NMO 3/4" HIGH FREQUENCY MID-SIZE MOUNTS

| Model | Coax | Connector |
|-------------|-------------------------------------|-----------|
| NMOKHFMIDCX | CX (RG-58A/U) | No Conn |
| NMOKHFMIDDS | DS (RG-58A/U Dual Shield, Low Loss) | No Conn |
| NMOKHFMIDUD | UD (RG-58U, Dual Shield) | No Conn |

NMO 3/4" HIGH FREQUENCY THICK MOUNTS

| Model | Coax | Connector |
|-------------|---------------------------|-----------|
| NMOKHFCXTHK | CX (RG-58A/U) | No Conn |
| NMOKHFDSTHK | DS (RG-58A/U Dual Shield) | No Conn |



NMO HIGH FREQUENCY MOUNTS

| Model | Thickness | Cable |
|----------|----------------------------------|--------------|
| NMOHF | 0761-2.54 mm Standard | Not included |
| NMOHFMID | 0.761 - 5.90 mm Mid-Thickness | Not included |
| NMOHFTHK | 1.6 - 12.7 mm Greatest Thickness | Not included |

All Larsen NMOHF (high frequency 27 MHz to 6 GHz) mounts convert from low frequency applications to high frequency applications and back by pulling or replacing the center pin and insulator.

NMO HIGH FREQUENCY MAGNETIC MOUNTS

NMOHF round magnetic mounts have the following specifications:

Size: 3.5" Diameter
Cable Length: 12'
Pull Strength: 80 lbs

| Model | Coax | Connector |
|-----------------|---------------------------|-----------|
| NMOMMRNOCONN | CX (RG-58A/U) | No Conn |
| NMOMMR | CX (RG-58A/U) | 58FCP |
| NMOMMRFME | CX (RG-58A/U) | FME Crimp |
| NMOMMRPL | CX (RG-58A/U) | PL-259 |
| NMOMMRMPL | CX (RG-58A/U) | MPL Crimp |
| NMOMMRTNC | CX (RG-58A/U) | TNC Crimp |
| NMOMMRBNC | CX (RG-58A/U) | BNC Crimp |
| NMOMMRN | CX (RG-58A/U) | N Crimp |
| NMOMMRDS | DS (RG-58A/U Dual Shield) | No Conn |
| NMOMMRDSFME | DS (RG-58A/U Dual Shield) | FME |
| NMOMMRDSMPL | DS (RG-58A/U Dual Shield) | MPL Crimp |
| NMOMMRDSN | DS (RG-58A/U Dual Shield) | N Crimp |
| NMOMMRDSSMA | DS (RG-58A/U Dual Shield) | SMA |
| NMOMMRDSSMAR/P | DS (RG-58A/U Dual Shield) | SMARP |
| NMOMMRDSPL | DS (RG-58A/U Dual Shield) | PL-259T |
| NMOMMRDSTNC | DS (RG-58A/U Dual Shield) | TNC |
| NMOMMT200NOCONN | LMR200 | No Conn |
| NMOMMR200SMA | LMR200 | SMA |
| NMOMMR200N | LMR200 | N |

If your antenna has a "tab" or "pin" connector, use the NMOHF mount in the low frequency configuration - leave the center pin and insulator in place as it arrives from the factory.



If your antenna has a "high frequency" (HF) connector, use the NMOHF mount in the high frequency configuration - remove the center pin and insulator.



NMO 3/4" STANDARD MOUNTS

NMO 3/4" standard mounts require a 3/4" hole for mounting and include 17' of coax.

| Model | Coax | Connector |
|------------|---------------------------|-----------|
| NMOKNOCONN | CX (RG-58A/U) | No Conn |
| NMOK | CX (RG-58A/U) | PL-259 |
| NMOKFME | CX (RG-58A/U) | FME |
| NMOKMPL | CX (RG-58A/U) | MPL Crimp |
| NMOKDS | DS (RG-58A/U Dual Shield) | No Conn |
| NMOKDSFME | DS (RG-58A/U Dual Shield) | FME |
| NMOKUD | UD (RG-58U Dual Shield) | No Conn |
| NMOKUDFME | UD (RG-58U Dual Shield) | FME |
| NMOKUDPL | UD (RG-58U Dual Shield) | PL-259T |
| NMOKUDTNC | UD (RG-58U Dual Shield) | TNC |



NMO 3/8" THICK MOUNTS

NMO3/8" mounts have the following specifications:

Mounting: 3/4" hole
Mounting Surface: 0.15" to 0.22" thickness
Cable Length: 17'

| Model | Coax | Connector |
|-------------|---------------------------|-----------|
| NMOKCX38THK | CX (RG-58A/U) | No Conn |
| NMOKUD38THK | DS (RG-58A/U Dual Shield) | No Conn |

All Larsen NMOHF (high frequency 27 MHz to 6 GHz) mounts convert from low frequency applications to high frequency applications and back by pulling or replacing the center pin and insulator.

GPS LTE DIRECT MOUNTS

NMOHFGPS mounts have the following specifications:

Frequency: 1575.4 - 1576.4 MHz **Gain:** 5 dBic
Polarization: Right-Hand Circular / Vertical **LNA Gain:** 26 dB ± 2 dB
Cable: 16.4' RG-174 (GPS) **VSWR:** Less than 2:1
 16.4' RG-58 (NMOHF) **Size:** .5 x 2 x 4.5
Voltage: 3 or 5 V DC **Color:** Black
Mounting: 5/8 " Hole

| Model | Connectors |
|------------------|------------------|
| NMOHFGPSFMENOCNN | FME/No Connector |
| NMOHFGPSFMESMA | FME/SMA |
| NMOHFGPSNOCNN | No Connectors |
| NMOHFGPSSMASMA | SMA/SMA |

NOTE: Specifications listed refer to GPS performance. Additional antenna specifications are dependent on the antenna mounted on the NMO side.

NMO SQUARE MAGNETIC MOUNTS

NMO square magnetic mounts have the following specifications:

Size: 3.5" x 3"
Cable Length: 12'
Pull Strength: 50 lbs

| Model | Coax | Connector |
|-------------|---------------------------|-----------|
| NMOMMNOCONN | CX (RG-58A/U) | No Conn |
| NMOMMMPL | CX (RG-58A/U) | MPL |
| NMOMM | CX (RG-58A/U) | 58FCP |
| NMOMMBNC | CX (RG-58A/U) | BNC |
| NMOMMPL | CX (RG-58A/U) | PL-259 |
| NMOMMFME | CX (RG-58A/U) | FME |
| NMOMMDSFME | DS (RG-58A/U Dual Shield) | FME |

NMO TRUNK LID MOUNTS

NMO trunk lid mounts have the following specifications:

Size: 2.5" x 2"

| Model | Coax | Cable Length | Connector |
|-----------------|---------------|--------------|-----------|
| NMOTLP | CX (RG-58A/U) | 17 ft. | PL-259 |
| NMOTLPFME | CX (RG-58A/U) | 17 ft. | FME |
| NMOHFTLP200NF | LMR-200 | 17 ft. | N-Female |
| NMOHFTLP200NF12 | LMR-200 | 12 ft. | N-Female |



LM MOUNTS

| Model | Coax | Connector |
|-----------|---------------------------|-----------|
| LMKNOCONN | CX (RG-58A/U) | No Conn |
| LMKFME | CX (RG-58A/U) | FME |
| LMK | CX (RG-58A/U) | PL-259 |
| LMKDS | DS (RG-58A/U Dual Shield) | No Conn |
| LMKDSFME | DS (RG-58A/U Dual Shield) | FME |
| LMKUD | UD (RG-58U Dual Shield) | No Conn |
| LMKUDFME | UD (RG-58U Dual Shield) | FME |

LMMM MAGNETIC MOUNTS

LM magnetic mounts have the following specifications:

Size: 3.5" x 3" **Cable Length:** 12'
Type: 5/16" x 24 THDS **Pull Strength:** 50 lbs

| Model | Coax | Connector |
|-----------|---------------------------|-----------|
| LMMMFMFME | CX (RG-58A/U) | FME Crimp |
| LMMMFMPL | CX (RG-58A/U) | MPL Crimp |
| LMMM | CX (RG-58A/U) | 58FCP |
| LMMMNBNC | CX (RG-58A/U) | BNC Crimp |
| LMMMPL | CX (RG-58A/U) | PL-259 |
| LMMMDS | DS (RG-58A/U Dual Shield) | No Conn |
| LMMMDSFME | DS (RG-58A/U Dual Shield) | FME |

LM TRUNK LID MOUNTS

LM trunk lid mounts have the following specifications:

Size: 2.5" x 2" **Cable Length:** 17'
Type: 5/16" x 24 THDS

| Model | Coax | Connector |
|---------|---------------------------|------------------|
| LMTLP | CX (RG-58A/U) | PL-259 |
| LMTLPDS | DS (RG-58A/U Dual Shield) | Order Separately |

PO MOUNTS

| Model | Coax | Connector |
|-----------|---------------|-----------|
| POKNOCONN | CX (RG-58A/U) | No Conn |

PO MAGNETIC MOUNTS

PO magnetic mounts have the following specifications:

Size: 3.5" x 3" **Cable Length:** 12'
Type: SO-239 Female **Pull Strength:** 50 lbs

| Model | Coax | Connector |
|-------|---------------|-----------|
| POMM | CX (RG-58A/U) | 58FCP |

SMA CONNECTORS



| MODEL | DESCRIPTION |
|-------------|---------------------|
| SMACP58 | SMA Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| SMACJ | SMA Crimp Jack 58/U |
| CABLE GROUP | 58 |

BNC CONNECTORS



| MODEL | DESCRIPTION |
|-------------|---------------------|
| BNCCRIMP | BNC Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| BNCCJ58 | BNC Crimp Jack 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|----------------------|
| BNC174 | BNC Crimp Plug 174/U |
| CABLE GROUP | 174 |

N CONNECTORS



| MODEL | DESCRIPTION |
|-------------|-------------------|
| NCRIMP | N Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|------------------|
| N8 | N Clamp Plug 8/U |
| CABLE GROUP | 8 |



| MODEL | DESCRIPTION |
|-------------|-----------------------|
| NCBJ58 | N Crimp Blk Jack 58/U |
| CABLE GROUP | 58 |

TNC CONNECTORS



| MODEL | DESCRIPTION |
|-------------|---------------------|
| TNCCRIMP | TNC Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| TNC | TNC Clamp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| TNCCJ | TNC Crimp Jack 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|-------------------------|
| TNCCBJ | TNC Crimp Blk Jack 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| TNCAP | TNC Angle Plug 58/U |
| CABLE GROUP | 58 |

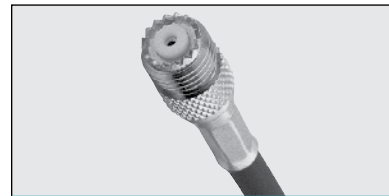
UHF CONNECTORS



| MODEL | DESCRIPTION |
|-------------|-----------------------|
| MPLCRIMP | M/UHF Crimp Plug 58/U |
| CABLE GROUP | 58 |



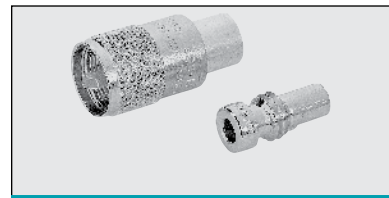
| MODEL | DESCRIPTION |
|-------------|------------------------|
| MPLCP | M/UHF Crimp Plug 174/U |
| CABLE GROUP | 174 |



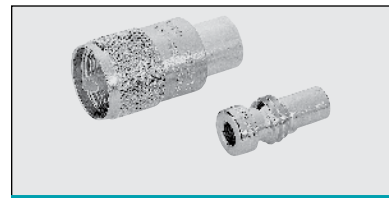
| MODEL | DESCRIPTION |
|-------------|-----------------------|
| MPLCJ58 | M/UHF Crimp Jack 58/U |
| CABLE GROUP | 58 |



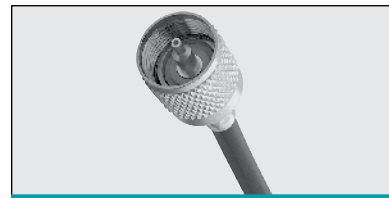
| MODEL | DESCRIPTION |
|-------------|--------------------------|
| PL2598PHN | UHF Solder Plug PL 259/U |
| CABLE GROUP | 8 |



| MODEL | DESCRIPTION |
|-------------|---|
| PL259T | UHF Solder Plug PL259/U with Teflon & Silver UG175 adapter 8/58 |
| CABLE GROUP | 8/58 |



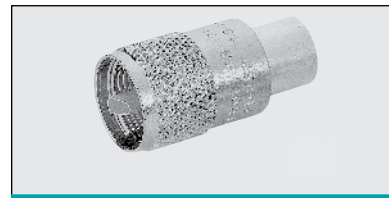
| MODEL | DESCRIPTION |
|-------------|--|
| PL259 | UHF Solder Plug PL259/U with UG 175 adapter 8/58 |
| CABLE GROUP | 8/58 |



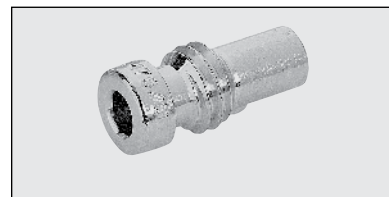
| MODEL | DESCRIPTION |
|-------------|---------------------|
| PLCP | UHF Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|-------------------|
| 58FCP | UHF FCP Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|------------|---|
| PL2598 | UHF Solder Plug PL259/U, Teflon & Silver Plate 8/58 |
| CABLEGROUP | 8/58 |



| MODEL | DESCRIPTION |
|-------------|---------------------------|
| UG175 | UHF Reducing adapter 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------|-----------------|
| PL258 | UHF adapter J/J |



| MODEL | DESCRIPTION |
|--------|--------------|
| UHFBJJ | UHF bulkhead |

FME CONNECTORS



| MODEL | DESCRIPTION |
|-------------|---------------------|
| FMECP58 | FME Crimp Plug 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|---------------------|
| FMECRIMP | FME Crimp Jack 58/U |
| CABLE GROUP | 58 |



| MODEL | DESCRIPTION |
|-------------|----------------------|
| FMECJ174 | FME Crimp Jack 174/U |
| CABLE GROUP | 174 |



| MODEL | DESCRIPTION |
|-------|-------------------------|
| FB | FME adapter to BNC plug |



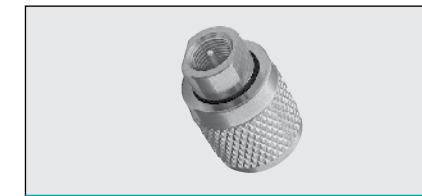
| MODEL | DESCRIPTION |
|-------|-------------------------|
| FT | FME adapter to TNC plug |



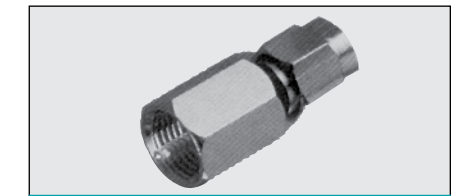
| MODEL | DESCRIPTION |
|-------|------------------------------|
| FM | FME adapter to mini-UHF plug |



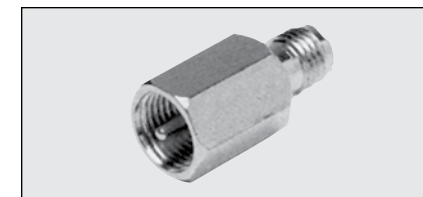
| MODEL | DESCRIPTION |
|-------|-----------------------|
| FN | FME adapter to N plug |



| MODEL | DESCRIPTION |
|-------|-------------------------|
| FP | FME adapter to UHF plug |



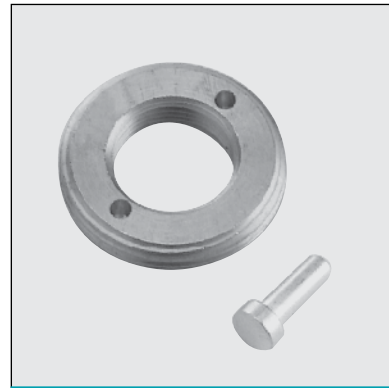
| MODEL | DESCRIPTION |
|-------|-------------------------|
| FSM | FME adapter to SMA plug |



| MODEL | DESCRIPTION |
|-------|-------------------------|
| FSF | FME adapter to SMA jack |



| MODEL | DESCRIPTION |
|--------|-------------|
| 6 x 32 | Set Screws |
| 8 x 32 | Set Screws |



| MODEL | DESCRIPTION |
|-------|------------------------------------|
| A4 | BSA/BA/SO-239 to NMO mount adapter |



| MODEL | DESCRIPTION |
|-------|--------------------------------------|
| BA | Bulkhead mount adapter with hardware |



| MODEL | DESCRIPTION |
|----------|--|
| GROMMETS | Qty 100 plastic grommet secures/ centers coax, 3/4" hole |



| MODEL | DESCRIPTION |
|-------|---------------------------------|
| HP34 | Plastic hole plug for 3/4" hole |
| HP38 | Plastic hole plug for 3/8" hole |



| MODEL | DESCRIPTION |
|-------|--|
| HS1 | 3/4" hole saw fits 3/8" or larger drills |



| MODEL | DESCRIPTION |
|----------|----------------|
| BAHEXNUT | Hex nut for BA |



| MODEL | DESCRIPTION |
|--------|---|
| BALL1B | Black teardrop rod tip for W490, W540 tapered rods |
| BALL2B | Black teardrop rod tip for Q and NMOQ antennas |
| BALL3B | Black teardrop rod tip for .100 diameter non-tapered rods |
| BALL4 | Rod tip WBQ800 antennas |



| MODEL | DESCRIPTION |
|--------------|---|
| BANOHardware | Bulkhead mount adapter without hardware |



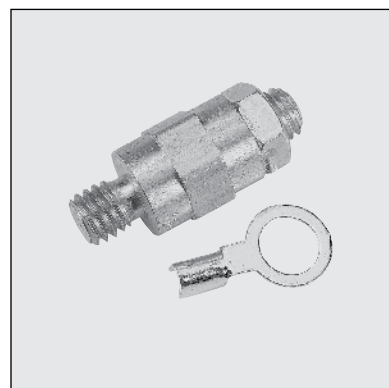
| MODEL | DESCRIPTION |
|---------|----------------------------|
| HSBLADE | Replacement blades for HS1 |



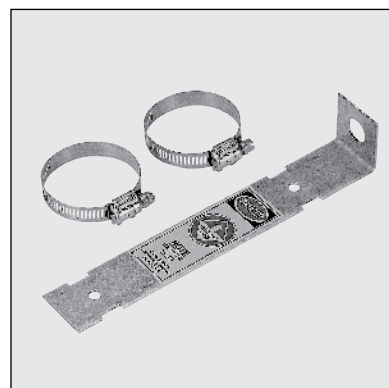
| MODEL | DESCRIPTION |
|-------------|--|
| KGREINSTALL | KG glass mount installation kit die cut tape |



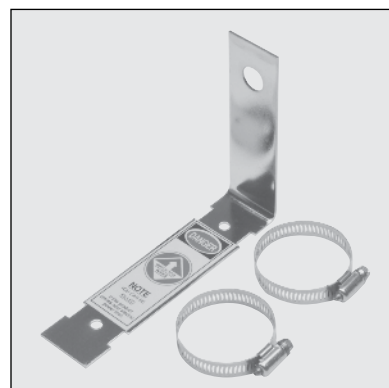
| MODEL | DESCRIPTION |
|---------------|--|
| KGREINSTALLDC | KG glass mount installation kit die cut tape |



| MODEL | DESCRIPTION |
|----------|--|
| BATTBOLT | Battery bolt with terminals, 3/8" ring leads |



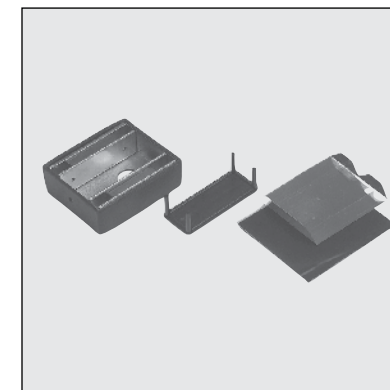
| MODEL | DESCRIPTION |
|------------|--|
| FB2BRACKET | Mounting bracket and hardware for FB2 series |



| MODEL | DESCRIPTION |
|------------|---|
| FB3BRACKET | Mounting bracket and hardware for blade and round FB antennas |



| MODEL | DESCRIPTION |
|--------------|------------------------------------|
| KGSWIVEL.073 | KG swivel mount assembly, .073 dia |
| KGSWIVEL.100 | KG swivel mount assembly, .100 dia |



| MODEL | DESCRIPTION |
|-------|--|
| MM34 | Rectangular mag mount housing, 3/4" hole |



| MODEL | DESCRIPTION |
|--------------|---|
| NMOBRASSRING | Nickel plated brass ring for NMO and NMOHF mounts |



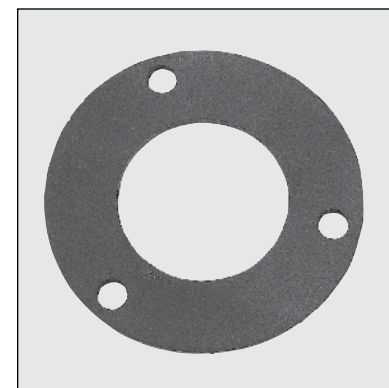
MODEL NMOCAPB
DESCRIPTION Rain cap for NMO mount



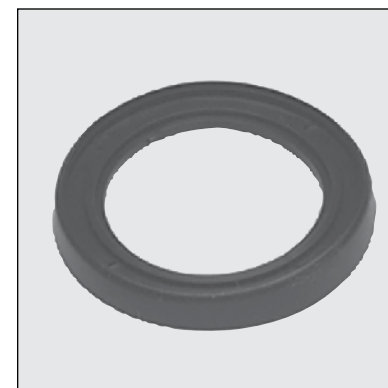
MODEL HFCENTERCONTACT
DESCRIPTION NMOHF Center Contacts and Insulators - 10 each



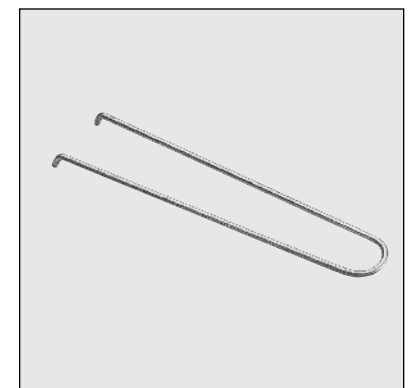
MODEL NMOTEST1
DESCRIPTION Test adapter for NMO mount



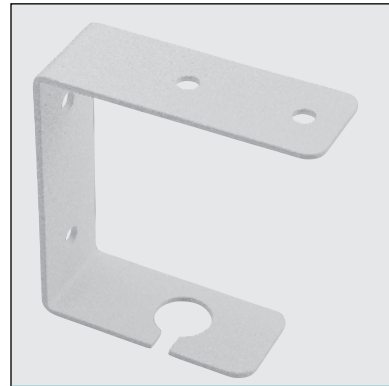
MODEL RGOMANT
DESCRIPTION Rubber gasket for OM bases



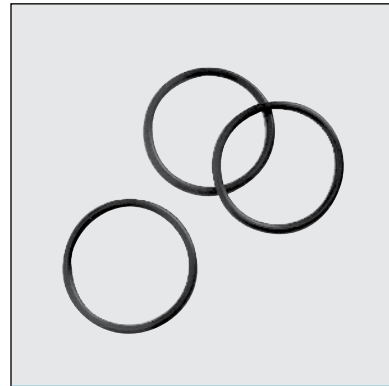
MODEL RGSS
DESCRIPTION Rubber SuperSeal gasket for MakroBlend® coils / bases



MODEL SPANNER
DESCRIPTION Spanner wrench for PO and NMOK mounts



MODEL OCBRACKET
DESCRIPTION 3" Tall bracket for ceiling or wall mount, Cool Grey



MODEL OLMMNT
DESCRIPTION O ring for LM mount

MODEL ONMOANT
DESCRIPTION O ring for NMO antennas/bases

MODEL ONMOMNT
DESCRIPTION O ring for NMO mount

MODEL OPOMNT
DESCRIPTION O ring for PO mount



MODEL QCONE.073
DESCRIPTION Chrome Q cone / Q base, .073 dia.

MODEL QCONE.100
DESCRIPTION Chrome Q cone / Q base, .100 dia.

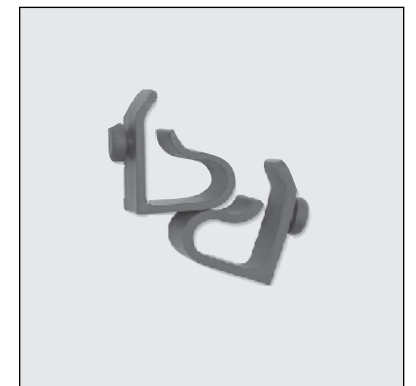
MODEL QCONE.125
DESCRIPTION Chrome Q cone / Q base, .125 dia.



MODEL SPRING
DESCRIPTION Chrome shock spring



MODEL SPRINGB
DESCRIPTION Black shock spring



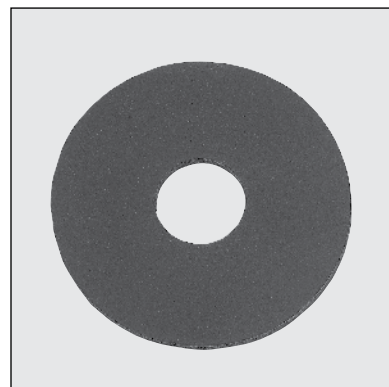
MODEL WACLIP
DESCRIPTION Mounting clips for WA700/2700 Series - 2 per package



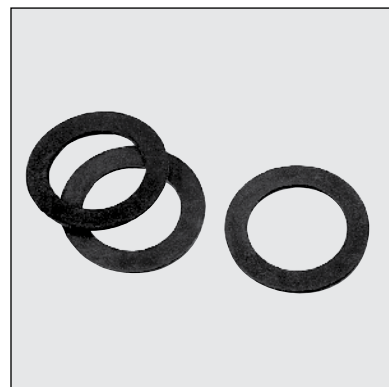
MODEL QCONE.073B
DESCRIPTION Black Q cone / Q base, .073 dia.

MODEL QCONE.100B
DESCRIPTION Black Q cone / Q base, .100 dia.

MODEL QCONE.125B
DESCRIPTION Black Q cone / Q base, .125 dia

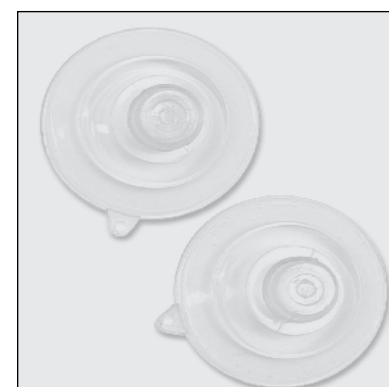


MODEL RGFBIANT
DESCRIPTION Rubber gaskets for FB1 antenna

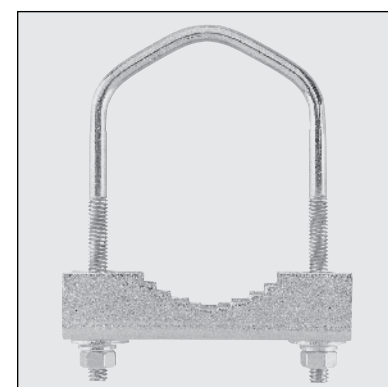


MODEL RGNMOANT
DESCRIPTION Rubber gasket for NMO coil/bases

MODEL RGPOMNT
DESCRIPTION Rubber gasket for PO mounts



MODEL WASUCTIONCUP
DESCRIPTION Suction cup mounts for WA700/2700 Series - 2 per package



MODEL YAGIKITHD
DESCRIPTION Mounting hardware for 2 1/2" pipe for YA3, YA5 and YA6 antennas



MODEL TMB34
DESCRIPTION Trunk Mount Bracket (Black)

MODEL TBM34B
DESCRIPTION Trunk Mount Bracket (Black)

COAX TYPES/PART NUMBERS



RG-174 - Small Diameter Coax

RG-174 is the industry standard for applications requiring a small diameter, highly flexible coax. Frequently used in mobile mag mount applications. Subject to higher losses at higher frequencies. Good performance for environmental variations but lower in overall ruggedness.

Recommended Applications

Mobile/Portable less than 900 MHz where flexibility and small diameter is important.

Larsen Part Number: RG-174
Stocking Lengths: 1000'/Spool
Cut to order



RG-58A/U - CX Standard Coax

The industry standard in quality, value-priced coax. Stranded center conductor offers good flexibility and long-life under most conditions. Not typically recommended for applications above 512 MHz due to higher losses. Uses standard RG-58 connectors.

Recommended Applications

General applications under 512 MHz. First choice for value priced coax.

Larsen Part Number: CX Coax
Stocking Lengths: 1000'/Spool
Cut to order



RG-213 - Stranded Bare Braid - Mil Spec QPI

This RG-8-sized cable uses a stranded center conductor with a polyethylene dielectric and PVC jacket. Built to Mil Specs this cable is used in all Larsen UHF/VHF products targeted for outdoor installation.

Recommended Applications

For lower frequency applications requiring high ruggedness.

Larsen Part Number: RG-213
Stocking Lengths: 500' or 1000'/Spool
Cut to order



RG-58A/U - "Digi-Shield"™ Low Loss Braided Center

Employs two shields, consisting of a full aluminum/mylar wrap covered by a braid. This combination of shields, plus low-loss dielectric material and stranded center conductor makes an excellent choice for mobile applications. Performance features include low-loss and high flexibility. Uses standard RG-58 connectors.

Recommended Applications

Higher performance applications where lower loss and flexibility are important. Recommended for applications above 800 MHz.

Larsen Part Number: DS Coax
Stocking Lengths: 1000'/Spool
Cut to order



RG-58U - Low Loss Dual Shield with Solid Center Conductor (UD)

This is Larsen's premium coax for 800 and 900 MHz applications. The solid center conductor (20 AWG) is easy to use with all connectors. Digital applications benefit from the 100% Duofoil aluminum shield. The shield is not glued to the dielectric making it easier to peel back for connector installation. The braid is 95% coverage. This cable is standard for most mounting kits over 800 MHz and can be special ordered with other frequencies. Uses standard RG-58 connectors.

Recommended Applications

For all applications at 800 MHz and above

Larsen Part Number: UD Coax
Stocking Lengths: 1000'/Spool
Cut to order

COAX SPECIFICATION COMPARISON

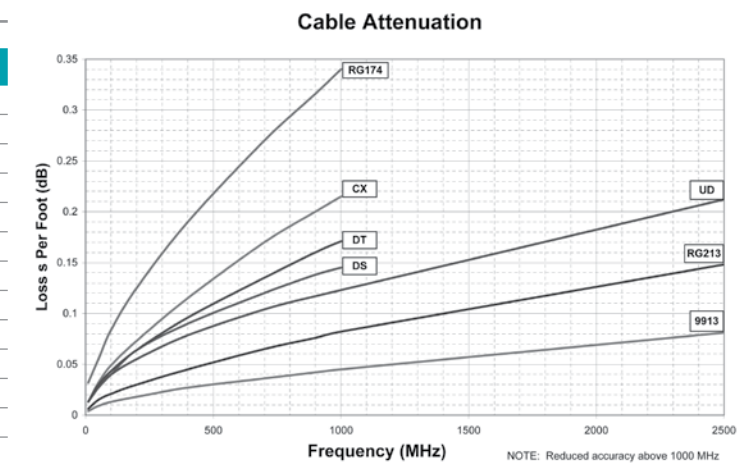
TECHNICAL CHARACTERISTICS OF INSULATION AND JACKET COMPOUNDS

| PVC | POLYETHYLENE (SOLID AND FOAM) | TEFLON |
|---|--|--|
| <p>Sometimes referred to as vinyl or polyvinyl chloride. Extremely high or low temperature properties cannot be found in one formulation. Certain formulations may have -55° C to +105° C rating. Other common vinyls may have -20° C to +60° C. There are many formulations for the variety of different applications. The many varieties of PVC also differ in pliability and electrical properties. The price range can vary accordingly. Typical dielectric constant values can vary from 3.5 to 6.5.</p> | <p>A very good insulation in terms of electrical properties. Low dielectric constant, a stable dielectric constant over all frequencies, very high insulation resistance. In terms of flexibility, polyethylene can be rated stiff to very hard, depending on molecular weight and density — low-density being the most flexible, and high-density, high-molecular weight formulation being very hard. Moisture resistance is rated excellent. Correct Brown and Black formulations have excellent weather resistance. The dielectric constant is 2.3 for solid insulation and 1.64 for foam designs. Flame retardant formulations are available with dielectric constants ranging from about 1.7 for foam flame retardant to 2.58 solid flame retardant polyethylene.</p> | <p>This material has excellent electrical properties, temperature range and chemical resistance. It is not suitable where subjected to nuclear radiation and does not have good high voltage characteristics. FEP Teflon is extrudable in a manner similar to PVC and polyethylene. This means long wire and cable lengths are available. TFE Teflon is extrudable in hydraulic ram-type process. Lengths are limited due to amount of material in the ram, thickness of the insulation and preform size. TFE must be extruded over a silver- or nickel-coated wire. The nickel- and silver-coated designs are rated 260° C and 200° C maximum, respectively. The cost of Teflon is approximately 8 to 10 times more per pound than PVC compounds.</p> |

Comparative Properties of Insulation and Jacket

| | PVC | Low-density Polyethylene |
|--|-----|--------------------------|
| Oxidation Resistance | E | E |
| Heat Resistance | G-E | G |
| Oil Resistance | F | G-E |
| Low Temperature Flexibility | P-G | E |
| Weather, Sun Resistance | G-E | E |
| Ozone Resistance | E | E |
| Abrasion Resistance | F-G | G |
| Electrical Properties | F-G | E |
| Flame Resistance | E | P |
| Nuclear Radiation Resistance | F | G-E |
| Water Resistance | F-G | E |
| Acid Resistance | G-E | G-E |
| Alkali Resistance | G-E | G-E |
| Gasoline, Kerosene, Etc. | | |
| (Aliphatic Hydrocarbons) Resistance | P | G-E |
| Benzol, Toluol, Etc., (Aromatic Hydrocarbons) Resistance | P-F | P |
| Degreaser Solvents (Halogenated Hydrocarbons) Resistance | P-F | G |
| Alcohol Resistance | G-E | E |
| Underground Burial | P-G | G |

P = Poor F = Fair G = Good E = Excellent



Nominal Temperature Range/Insulating and Jacketing Compounds

| Compound | Normal Low | Normal High | Special Low | Special High |
|----------------------|------------|-------------|-------------|--------------|
| Polyethylene - Solid | -60° C | 80° C | -- | -- |
| Polyethylene - Foam | -60° C | 80° C | -- | -- |
| FEP Teflon | -70° C | 200° C | -- | -- |
| PVC | -20° C | 80° C | -55° C | 105° C |
| TFE Teflon | -70° C | 260° C | -- | -- |



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