

## Pulse Larsen Antenna Solutions...

Keep your hands on the RF Pulse...

Choose Pulse Electronics for World Class Design, Test and Manufacturing of High Reliability Antenna Systems to give you the best connectivity between your device and the world. Call and Experience the best customer service.



### Embedded Applications

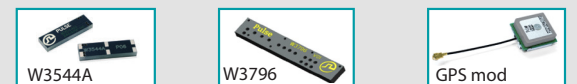
**Helical Antennas:** High Efficiency 3D molded antennas for SMD process. Ideal for KeyFOB products and other small PCB footprint areas (ISM 315MHz, 2.4GHz, 1.575GHz, ISM 433MHz).



**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.



**Composite Antennas:** Ideal for cellular type of applications (2G/3G/4G) requiring compact and efficient antenna form factors.



### External Applications

**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.



**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...).



SMD / MINIATURE SOLUTIONS

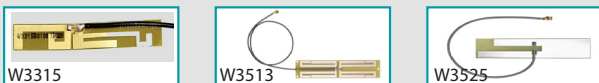
DAS DUCKIES & OUTDOOR

CABLED SOLUTIONS

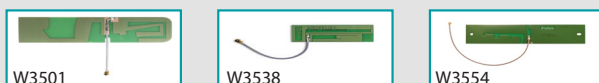
**Cabled Antenna Solutions:** Embedded within the device using low loss RF cables and standard connectors of your choice. Antenna substrate is based on FR4 and FPC. Antennas are mechanically fit within the design using snap-in features, adhesive, ribs or hooks.

2G/3G Solutions:

WiFi Solutions:

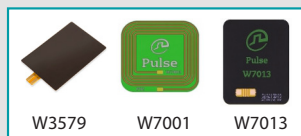


3G/4G Solutions:



NFC Solutions:

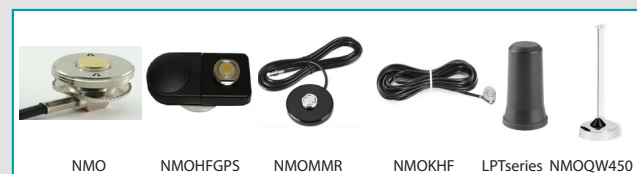
Wide Range of 13.56MHz antennas with various shapes and dimensions on FPC substrate.



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.



**NMOMount:** Pulse/Larsen is the patent holder of the world renowned NMO MOUNT facilitating the antenna installation for vehicular applications.



VEHICULAR

NMO MOUNT

## 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
- Auto Packaging and Labeling
- SMD Process
- Automatic Cable Stripping
- Epoxy resins and Glue deposition process
- Plastic Dipping
- RF Testing
- Any Connector Mounts

## State of the Art - 3D Technologies

- Laser Direct Structuring (LDS): 3D techniques using LPKF laser processing and Plating.
- Pulse FLUIDANT: 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 Dasy 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 Throughput testing using IXIA Chariot.
- Expertise in designing RF Jigs for mass production standards (TS16949 or ISO process)
- Expertise in advanced RF behaviours with/without body loading/ Embedded in device or in Free Space.

### MECHANICAL

- Ability to use Solidworks, Catia V5, 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 and w/o salt mist
- Aging
- Vibrations

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

## EUROPE

### Finland

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### Germany

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## USA

### Business Unit Head Quarter & Manufacturing Site

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Tel: +1.800.268.3662

## CHINA

### ISO Manufacturing Site

No 99. Huo Ju road, Suzhou new District, Jiangsu Province, Suzhou, China, PRC. Tel: +86.512.69206185

### TS-16.949 Manufacturing Site

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