

**4G/LTE**  
**Broadband/Multi-Band Poly Flex Low Profile Antenna**  
**698-960 / 1710-2500 MHz**  
**Patent No. US 9,520,640**

Technical Bulletin EMW-005

Key Words: 4G LTE, Broadband, Directivity, Electromagnetically Coupled, Flexible EPDM Radome, Impact Resistant, Impedance Match, IP68, LMR, Monopole, Multi-Band, Wi-Fi, Xenoy™

### **Innovative Design Architecture**

E/M Wave's latest multi-band antenna innovation continues to build upon the foundation and corporate mission of continually providing our customers with "more antenna value" through unique and innovatively designed antenna architectures, specifically designed for traditional NMO antenna mounts commonly used in Land Mobile Radio systems. The antenna is designed using a patented architecture that provides self-resonant impedance matching for broadband performance covering the entire 4G/LTE bands including the 2.4-2.5 GHz Wi-Fi band.

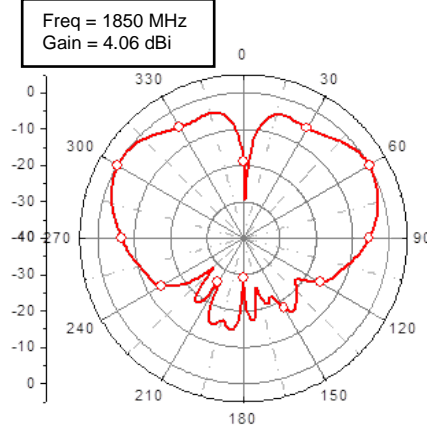
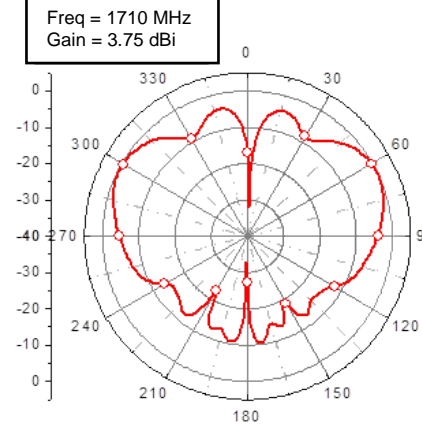
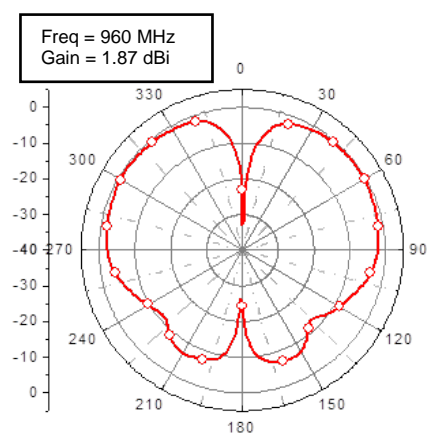
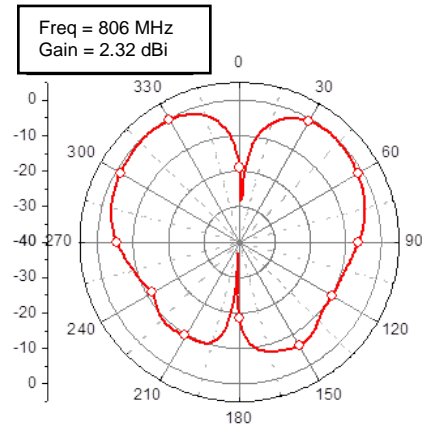
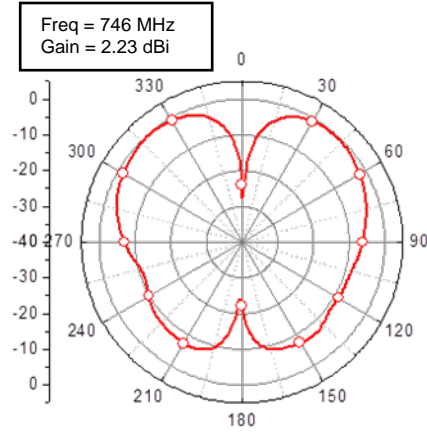
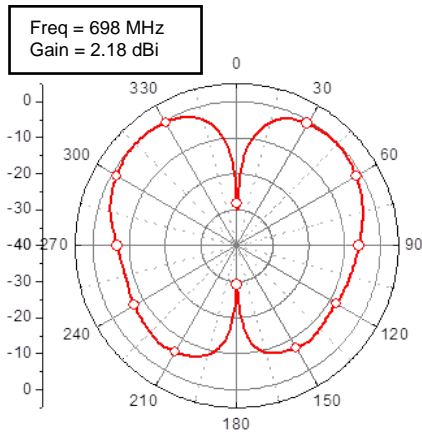
### **RF Performance / Bandwidth**

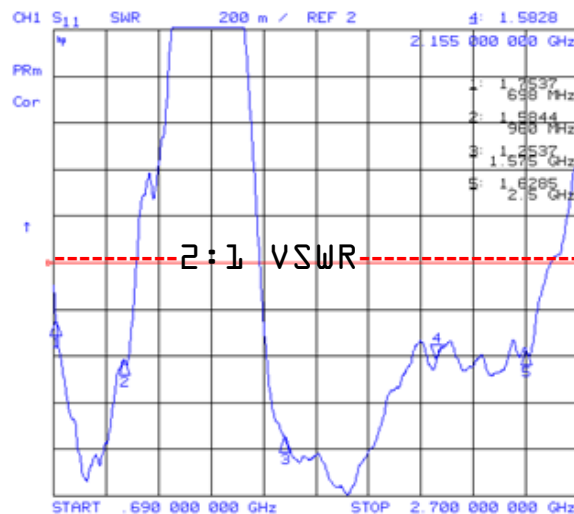
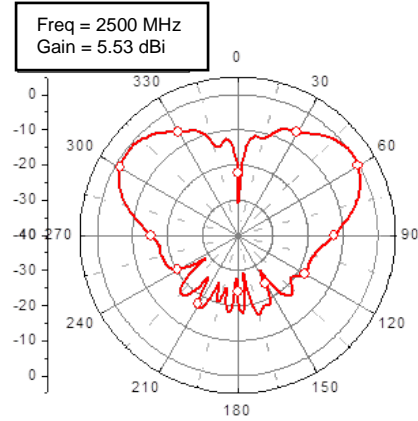
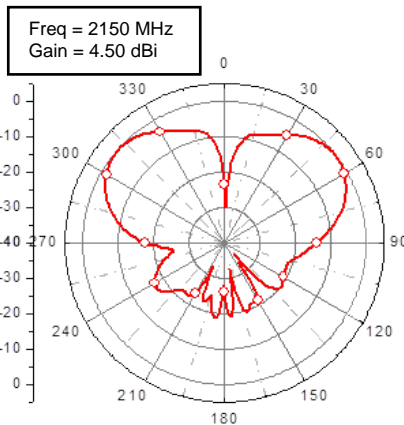
Broadband performance includes the entire spectrum for 4G/LTE and UMTS bands from 698 through 2200 MHz, 700 MHz Public Safety bands, traditional 800 MHz (SMR/Cellular), 900 MHz (ISM, SCADA) and 2400-2500 MHz (Wi-Fi) operation. The innovative technology provides a broadband impedance match achieving less than 2:1 VSWR for all operating bands. The design performs as an efficient monopole with 2 dBi directivity throughout the lower 698-960 MHz range. Increased directivity and gain are achieved in the upper bands exceeding 3 dBi for the 1710-2150 MHz range and 5 dBi for the 2150-2500 MHz range. Efficient radiation characteristics are accomplished by using solid brass finished in a highly conductive black chrome plating incorporating a low insertion loss electromagnetically coupled feed. The coupled feed specifically provides for a low loss broadband resonator. Highly conductive, low loss feed and radiator materials augment high power applications for LMR radios where 45-50W operation is typically required.

### **Mechanical Performance / Environmental Resistance**

Typical features incorporated with all E/M Wave antennas include silver plated RF contacts and black chrome plating to maximize conductivity and corrosion resistance. The NMO base adapter housing includes the same high impact resistant Xenoy™ and TPV dust skirts employed by most of the E/M Wave product line. However, the most significant mechanical/environmental feature of this design is the unique flexibility incorporated into the protective radome housing. The radome enclosure incorporates a proprietary EPDM material which permits an impervious flexible radome, eliminating antenna failure due to inadvertent strikes or impacts from foreign obstructions such as flying debris, tree limbs, overhead garage doors and unnecessary vandalism. The EPDM housing also provides an IP68 class water tight seal without requiring additional O-Rings, gaskets, seals or manufactured application of silicone/epoxy sealants. The antenna is exceptionally well suited for all applications operating under normal and extreme environments where it is required to perform durably with impenetrable water ingress, high vibration, water, salt, automotive fluid resistance, harsh chemicals and potential catastrophic impact from debris at all vehicle speeds. These characteristics combined with the total RF efficiency and performance, establish the EM-M20007 with a distinction as "Best in Industry World Class Design".

**Directivity/Gain and Pattern Performance Data**





## Applications

The EM-M20007 has been chosen by users operating heavy truck and mobile fleets, wireless carriers, railroad and data telemetry for oil, gas and utility applications. Typical users demanding high speed 4G/LTE connectivity under extreme conditions have chosen the EM-M20007 for its rugged broadband performance in mobile, vehicle or fixed mount applications required to withstand a variety of outdoor (or indoor) environments exposing the antenna to extreme temperature variations, humidity, dust, moisture, direct high pressure jet wash equipment and debris impact at very cold temperatures.

## EM-M20007 – Wireless Industry’s Ultimate “Best-in-Class” Multi-Band Design Features

- Patented Broadband/Multi-Band Resonant Structure
- Excellent Directivity/Gain Characteristics for 4G/LTE bands
- 100 Watt Power Handling
- Flexible Polymer/Composite Radome- Xenoy™ and EPDM for Environmental Resistance
- Solid Brass - High Conductivity Black Chrome Finish.
- IP68 Rated – Maximum Dust and Water Ingress Resistance.