

UHF/700/800/900
Multi-Band LMR Poly Pro Flexible Low Profile Antenna
450-520 / 746-960 MHz
Patent NO. US 9,520,640

Technical Bulletin EMW-006

Key Words: AAR, Broadband, Directivity, Electromagnetically Coupled, EPDM, LMR, Monopole, Multi-Band, MIL-STD-810E, Xenoy™

Innovative Design Architecture

E/M Wave continues the mission to provide customers with “*more antenna value*”. Innovative design architectures are created from unique antenna topologies, specifically designed for traditional NMO applications commonly used in Land Mobile Radio (LMR), TETRA and DMR systems. This latest design incorporates a patented design with self-resonant impedance matching for broader band performance covering the professional UHF and 700/800/900 bands, specifically 450-520 MHz and 746-960 MHz.

RF Performance / Bandwidth

The EM-M22001 Multi-band performance includes the upper UHF professional bands from 450-520 MHz and the 700 MHz Public Safety bands, extending through traditional Cellular (806-894 MHz) and 900 MHz (ISM, SCADA) operation. This innovative technology provides a broadband impedance match achieving less than 2:1 VSWR for all operating bands. The design performs as a low profile, efficient monopole, delivering greater than 2 dBi Directivity for all bands. As with all E/M Wave mobile products, optimized efficiency is achieved with a continued commitment for providing the highest quality materials, including stainless steel and solid machined brass radiators, finished with a premium conductive black chrome plating. The antenna includes an electromagnetically coupled feed characterized with low insertion loss, augmenting a 25% reduction in overall height when compared to traditional UHF quarter-wave antennas. The low loss feed and high quality conductive radiator materials meet the requirements for high power applications, where LMR radios are typically transmitting 50-100W of RF power.

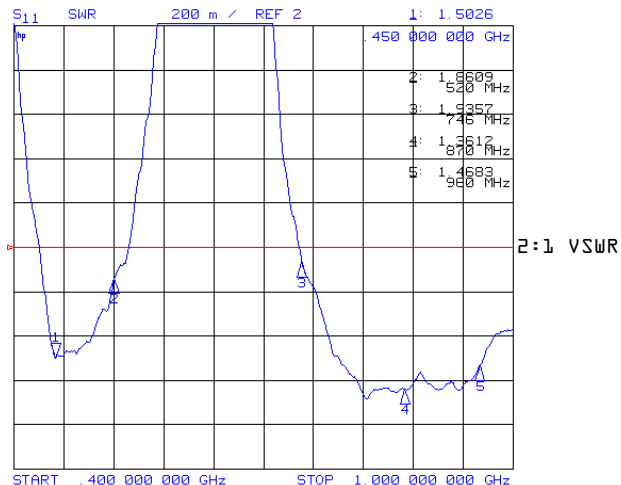
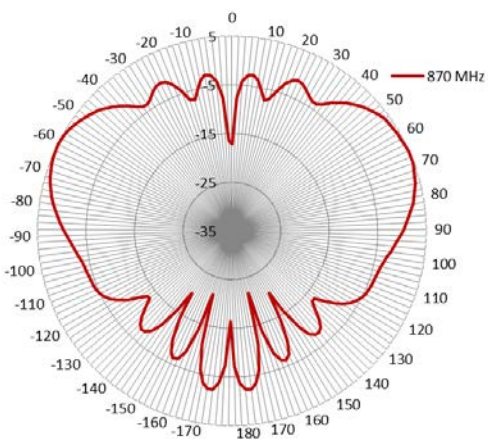
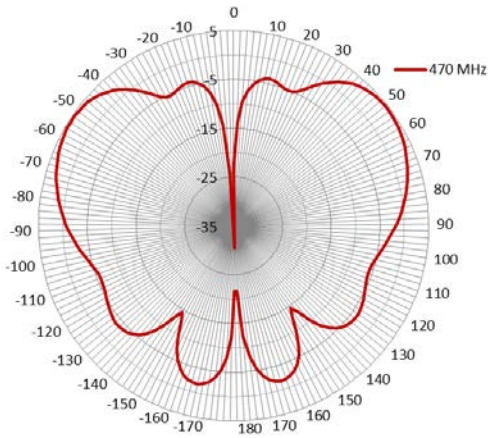
Mechanical Performance / Environmental Resistance

Typical features incorporated with the EM-M22001 antenna include silver plated RF contacts and black chrome plating to maximize conductivity and environmental 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 feature of this design is the unique flexibility incorporated within the protective support enclosure, which houses the coupled feed and the upper band radiator. The enclosure incorporates a proprietary EPDM material which permits an impervious flexible housing, eliminating antenna failure due to inadvertent strikes or impacts from foreign objects such as flying debris, tree limbs, overhead garage doors and unnecessary vandalism. The EPDM housing also provides an IP66 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 under normal and extreme operating environments where it is required to perform durably with impenetrable water ingress, salt, automotive fluid resistance, harsh chemicals and potential catastrophic impact from debris at all vehicle speeds and high vibration configurations. The design is topped with a Xenoy radome enclosure, maximizing protection for the upper radiator section. These characteristics combined with exceptional RF efficiency, establish the EM-M22001 as the industry's first UHF/700/800/900 multi-band antenna product, achieving durable requirements for the professional Land Mobile Radio and associated communications sectors operating within these operating bands.

Radiation Pattern Performance Data

Magnitude (dBi) vs. Elevation (deg)

EM-M22001 Antenna



Applications

The EM-M22001 has been chosen by users operating heavy truck and mobile fleets, including railroad and data telemetry for oil, gas and utility applications. Typical users requiring dual band or multi-band operation under extreme conditions have chosen the EM-M22001 for its rugged performance characteristics in vehicular or fixed mount applications required to withstand a variety of outdoor 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-M22001 – Industry’s First UHF/700/800/900 MHz Multi-Band Antenna Design Features

- Patented Broadband/Multi-Band Architecture
- Excellent Directivity/Gain Characteristics
- 100 Watt Power Handling
- Flexible Polymer/Composite Radome- Xenoy™ and EPDM for Environmental Resistance
- Stainless Steel and Solid Brass Radiator Components - High Conductivity Black Chrome Finish
- IP66 Rated – Maximum Dust and High Pressure Water Ingress Resistance
- Meets AAR Railway Guidelines for Vibration per MIL-STD810E