



MFD-2747

A very wide-band antenna for omnidirectional applications



OVERVIEW

Applications such as surveillance, communications and jamming require transmission and reception at widely different frequencies. Battery-operated transceivers in the field demand high efficiencies to prolong their life; narrowband antennas must sacrifice either the receiver or transmitter performance which lowers efficiency. This antenna was designed to provide the excellent performance required by the receiver (for maximum sensitivity) and the transmitter (for highest efficiency). The mechanical design of the antenna insures long life in the harshest environments.

TECHNOLOGY

The solution is a patented AntennaSys design which allows a highly efficient match over a very wide band of frequencies. As an example, a SATCOM uplink is at 401.65 MHz and the downlink is at 465.9875 MHz. Dipole and “whip” antennas tuned to one of these frequencies will exhibit a VSWR of about 4:1 on the other frequency! This antenna is optimized to have a VSWR below 2.5:1 on both frequencies, and typically below 2.5:1 from 270-470 MHz.

MECHANICAL

The antenna is built with strong, stable materials. The radome is made of FR-4 fiberglass cloth epoxy composite. It is painted with a weather-proof urethane paint to withstand years in the weather. The base of the antenna is tough hard-anodized 2024-T6 aluminum. The connector is an o-ring sealed TNC-type. The screws are stainless steel.

Note: newer versions use a military-specification hard coating, which complies with US MIL-A-8625F, Type III, Class 1. This coating is much darker than shown in the photos. It is also considerably more durable.

The universal mounting groove allows a variety of mounting configurations. A rugged mast mount is provided with the antenna. This mount allows tilting the antenna over a 90-degree range at 15-degree increments. The connector is concealed and protected by a slip-on shroud tube. Two o-rings provide a weather seal and a friction fit for the shroud. These o-rings are also used on an optional bulkhead mount to provide positive sealing, even with pressure vessels. This and other mounts are available upon request, please contact AntennaSys for information.



DO NOT remove the screws on the connector flange. They are permanently sealed at the factory.

Please **use silicone lubricant on the o-rings** and the interior of the shroud tube prior to the first use of the protective shroud. Pass your coaxial cable through the shroud prior to connecting it to the antenna's TNC connector. Then push the shroud up over the o-rings. Friction holds the tube in place. The shroud acts as a rain drip edge and a UV shield, protecting your connector. Silicone lube may also be used on the interior of the TNC connectors, if desired.

The supplied kit contains a hex wrench, two extra o-rings, two silicone lubricant packets, and a tube of nickel-based anti-seize compound (not shown in photo). **This anti seize compound should be used on the threads of all the stainless-steel bolts.** This will prevent dissimilar metal corrosion associated with salt-air environments. It will insure that the hardware will remain removable over time. All hardware is size ¼”-20.



The mast mount can accommodate a wide range of mast sizes from approximately 1 to 3 inches. The antenna clamps can also be used to attach the antenna to other flat surfaces. The hole spacing of the symmetric antenna clamps is 1.5-in. (38.1mm). The antenna base accommodates through-bulkhead applications; contact the factory for custom solutions.

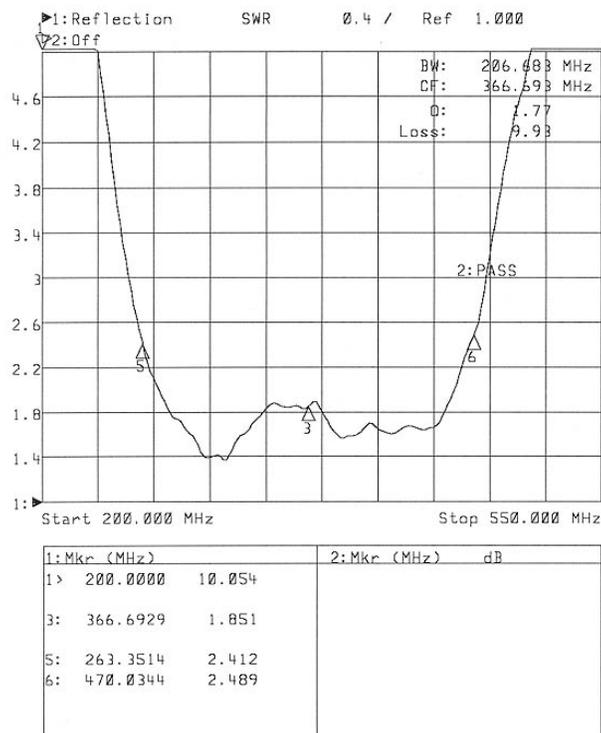


SPECIFICATIONS

The MFD-2747 antenna acts electrically as a vertical dipole. The antenna is effectively decoupled from the feedline and is ground-plane independent. This insures minimal current flow on the outside of the feedline, thus maintaining a consistent antenna pattern. The antenna pattern smoothly varies from a dipole pattern at 470 MHz to a short-dipole pattern at 270 MHz. There are no frequency “suckouts”.

Experience has shown that the dipole pattern is a good compromise for low-earth-orbit (LEO) satellite communications where small size and low-cost are important. The overhead null is where the satellite will not spend much time, and is strongest. The peak radiation near the horizon is where the satellite is furthest away and will spend the most time, from the groundstation’s standpoint.

Frequency	270 – 470 MHz	<i>1.7:1 match bandwidth</i>
VSWR	Less than 2.5:1	
Impedance	50 ohms	
Polarization	Linear	<i>Typically vertical</i>
Gain (270 MHz)	1.5 dBi typ.	<i>Vertical short-dipole pattern</i>
Gain (470 MHz)	2 dBi typ.	<i>Vertical dipole pattern</i>
Half-Power Beamwidth, Vertical	77 degrees typ.	<i>On horizon, omnidirectional</i>
Connector	TNC female	
Length (incl. connector)	24 inches	<i>61 cm</i>
Diameter	1.0 inches	<i>2.54 cm</i>
Weight	15.8 oz.	<i>448 gm</i>
Color	White	<i>Other colors available upon request. White is for UV protection.</i>



A 225-400 MHz version of this antenna is under development.

Contact the factory for other variations of this antenna, or other requirements that you may have:

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