COM-POWER CORPORATION

Active Monopole Antenna
AM-741

Features

- **Frequency Range**
  9 kHz to 30 MHz (useable up to 60 MHz)
- **Amplified Matching Network**
- **Battery Operated**
- **Individual Calibration Included**
- **Three-year Standard Warranty**

Description

The AM-741 is an Active Monopole Antenna operating over the frequency range of 9 kHz to 60 MHz. Its removeable, telescoping rod element is adjustable from 23 to 105 cm (approximately). Most standards require the rod length to be 104 cm (41 inches) for the test.

Due to the high impedance of the rod element, a 50Ω matching network is needed to match the input impedance of the measurement equipment. In the case of the AM-741, the matching network is active, in that it also incorporates a low-noise preamplifier, which increases sensitivity and overall signal to noise ratio.

The preamplifier can be powered by its internal, rechargeable 6V NimH battery pack or the supplied charger/power adapter. The front panel has indicators for power, battery low and amplifier saturation.

The matching network enclosure is secured to the bottom side of the of a 60.5 cm square polished aluminum counterpoise. The [N-type] antenna port connector protrudes through a hole in the center of the counterpoise. The [N-type] 50Ω output port connector is bonded to the enclosure of the matching network.

Mounting

The AM-741 has a 1/4 inch x 20 threaded hole on the bottom of the matching network enclosure, which is used to secure the antenna to a tripod.

Com-Power's ***AT-220 Tripod*** *is the recommended support for this antenna. Using this tripod, the antenna height can be adjusted so that the counterpoise is level with the ground plane height (80-90 cm, or 100 cm above the floor, depending on the standard); or, the antenna can be lowered so that the center point of the rod element is 120 cm above the chamber floor, as required by MIL-STD-461F.*

Application

The AM-741 Active Monopole Antenna is used for radiated emissions measurements, typically below 30 MHz. It is commonly used for tests according to RE102 of MIL-STD-461(A-F), Section 21 of RTCA DO-160(A-E), CISPR 25 (automotive), and other various standards.

It is required per most test procedures, that the counterpoise be bonded directly to the ground plane on (or over) which the Equipment Under Test (EUT) is installed.

However, for MIL-STD-461F, bonding of the counterpoise is not allowed, and the antenna is grounded only through the shield of the output cable, which is bonded to the chamber floor, directly below the antenna. The output cable is also fitted with a ferrite, centered between the bonding point and antenna output, having an impedance of 20-30Ω at 20 MHz. Com-Power's ***AMS-741 Monopole Grounding Kit****, which includes the output cable (with ferrite), elbow adapter and grounding bracket, is available separately.*

Calibration

The antenna is individually calibrated per SAE ARP958 using NIST traceable equipment. The data, along with certificate, are provided. Recognized ISO 17025 accredited calibration is also available upon request.

Calibration of the matching network is performed using the Equivalent Capacitance Substitution Method (ECSM). The RF voltage from a 50Ω source is delivered to one leg of a "tee" connection, with the second leg terminated with 50Ω, and the third leg connected to the antenna input port through a 10 pF capacitor, which acts as a "dummy antenna", simulating the high impedance of the rod. Com-Power's ***AMC-10pF Calibration Capacitor*** *is available separately. See diagram on next page.*

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Specifications

Product Name	**Active Monopole Antenna**
Frequency Range	**9 kHz to 30 MHz** (useable to 60 MHz)
Polarization	**Vertical**
Nominal Impedance	**50Ω** (output port)
Battery Type	**6 V_{DC} NimH** (rechargeable)
Average Battery Life	**10-12 hours**
Antenna Factors	*[see graph below]*
Antenna Factor Variation	**±1 dB** (9 kHz to 30 MHz)
VSWR/Return Loss	*[see graphs below]*
Impedance/Phase	*[see graphs below]*
RF Connectors	**N-type (female)**
Specifications	**MIL-STD-461, RTCA DO-160, CISPR 25** (automotive), etc.
Dimensions (L x W x D)	**23.8" x 23.8" x 2.75"** [60.5 x 60.5 x 7 cm]
Weight	**9.5 lbs.** [4.3 kg]

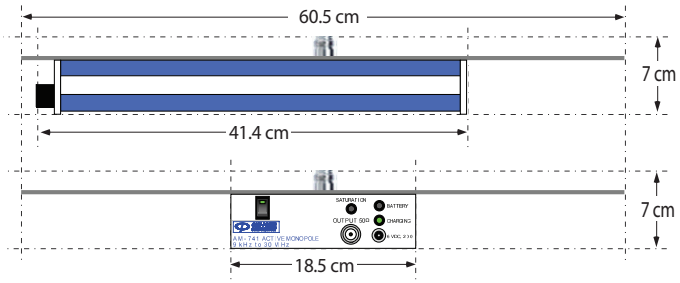
All specifications are subject to change without notice.
All values are typical, unless specified.

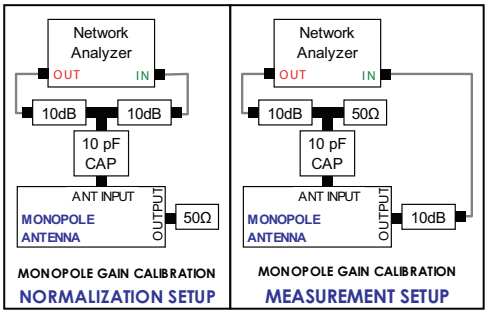
Accessories available from Com-Power:

AMC-10pF Dummy Antenna

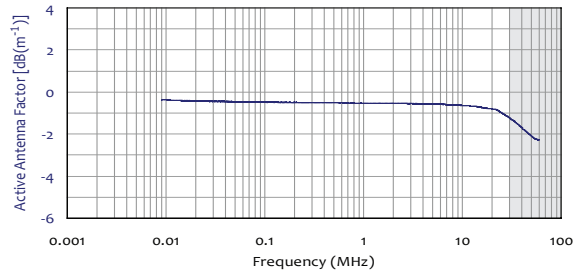
AMS-741 Grounding Kit (for MIL-STD-461F)

AT-220 Antenna Tripod

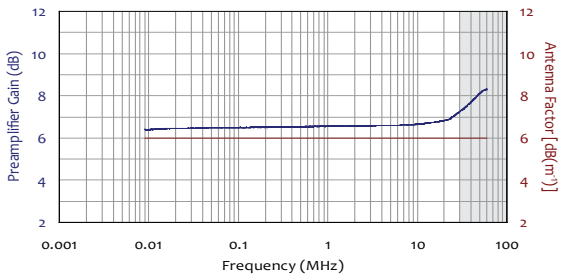




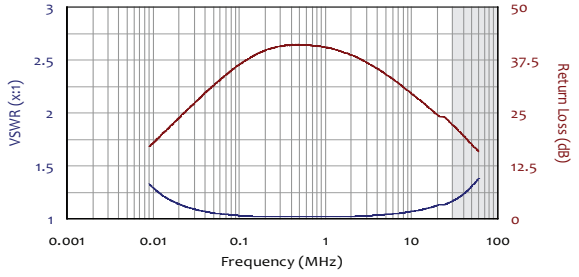
Active Antenna Factor



Preamplifier Gain / Antenna Factor (w/o amp)



VSWR / Return Loss (output port)



Impedance / Phase (output port)