

## Features

- **Frequency Range**  
9 kHz to 30 MHz (useable up to 60 MHz)
- **Active Matching Network**
- **Battery Operated**
- **Individual Calibration Included**

## Description

The AM-741 is an Active Monopole Antenna operating over the frequency range of 9 kHz to 30 MHz (usable up to 60 MHz). Its removeable, telescoping rod element is adjustable from 23 to 105 cm (approximately). Most standards specify a rod height of 104 cm (41 inch).

Due to the high impedance of the rod element, a matching network with a high input impedance and 50 $\Omega$  output impedance (for connection to the measurement equipment) is needed. In the case of the AM-741, the matching network is active, in that it also incorporates a low-noise preamplifier, thereby increasing the sensitivity and signal to noise ratio of the antenna.

The preamplifier can be powered by its internal, rechargeable 6 V<sub>DC</sub> 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] 50 $\Omega$  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. It allows the antenna height to be adjusted so that its counterpoise is level with the ground plane heights of 80-90 cm, or 100 cm. This tripod also accomodates mounting of the antenna with the center point of its rod element 120 cm above the chamber floor, as per the latest revisions of MIL-STD 461.



## 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, 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, per the latest revisions of MIL-STD 461, the antenna may only be grounded through the shield of the output cable via a metallic bracket bonded to the chamber floor, directly below the antenna. The output cable is also fitted with a ferrite, centered between the bracket and antenna output, having an impedance of 20-30 $\Omega$  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 50 $\Omega$  source is delivered to one leg of a T-connector, with the second leg terminated with 50 $\Omega$ , 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.

### 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 <sub>DC</sub> NimH (rechargeable)
Average Battery Life	10-12 hours (new, fully charged battery)
Active Antenna Factors (typical)	-1.2 to -0.3 (average: -0.5) [dB(m <sup>-1</sup> )]
Antenna Factor Variation (maximum)	±1 dB (9 kHz to 30 MHz)
Dynamic Range	103 dB @ 1 MHz [1 kHz bandwidth]
Lower Limit of Field Strength Measurement	7 dBμV/m (2.2 μV/m) @ 1 MHz [1 kHz bandwidth]
Upper Limit of Field Strength Measurement	110 dBμV/m (0.35 V/m) @ 1 dB compression
VSWR (output port)	1.01 to 1.329 (average: 1.06):1 (typical)
Return Loss (output port)	17.0 to 41.1 (average: 33.1) dB (typical)
RF Connectors (input/output ports)	N-type (female)
Specifications	MIL-STD-461, RTCA DO-160, CISPR 25, etc.
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:



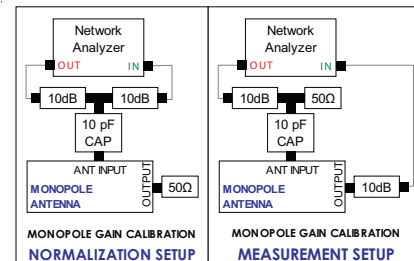
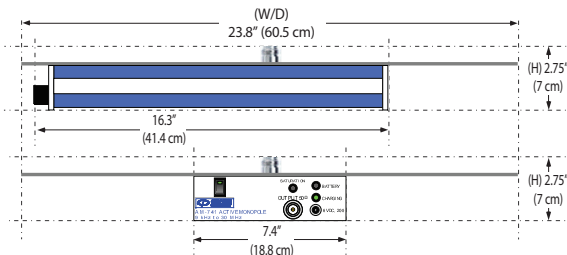
AMC-10pF Calibration Capacitor



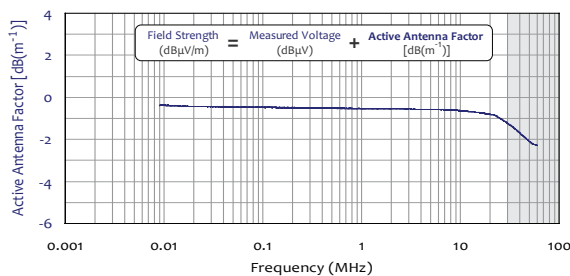
AMS-741 Grounding Kit (for MIL-STD-461)



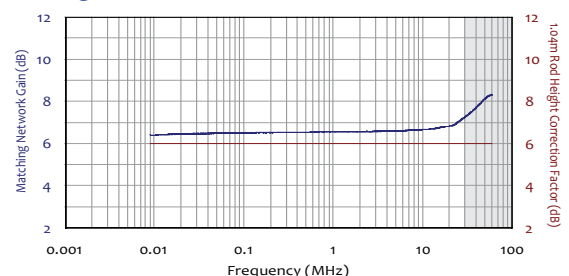
AT-220 Antenna Tripod



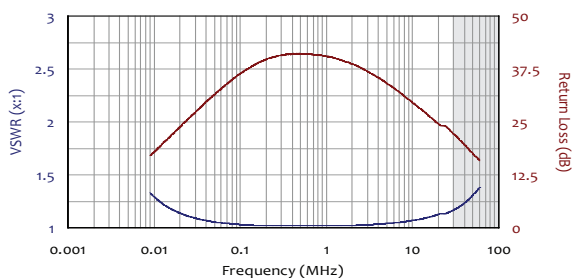
### Active Antenna Factor



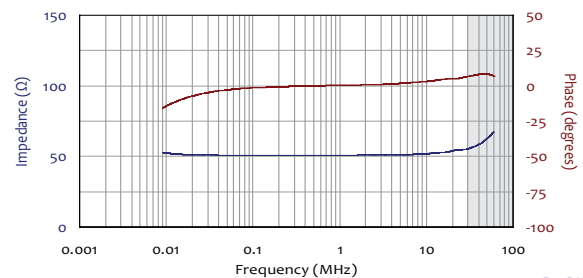
### Matching Network Gain and Rod Factor



### VSWR / Return Loss (output port)



### Impedance / Phase (output port)



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