



**INSTRUCTION MANUAL**

**OMNI-DIRECTIONAL  
WIDEBAND ANTENNA**

**MODEL EM-6865**

**2 GHz - 18 GHz**

# INSTRUCTION MANUAL

**THIS INSTRUCTION MANUAL AND ITS ASSOCIATED INFORMATION IS PROPRIETARY. UNAUTHORIZED REPRODUCTION IS FORBIDDEN.**

**© 2016 ELECTRO-METRICS CORP.**

## **OMNI-DIRECTIONAL WIDEBAND ANTENNA**

**2 GHz - 18 GHz**

**ELECTRO-METRICS**

**MODEL EM-6865**

**SERIAL NO:**

**ELECTRO-METRICS CORPORATION**

**231 Enterprise Road, Johnstown, New York 12095  
Phone: (518) 762-2600 Fax: (518) 762-2812**

**EMAIL: [info@emihq.com](mailto:info@emihq.com)**

**WEB: <http://www.electro-metrics.com>**

**MANUAL REV. NO: EM6865-1016**

**ISSUE DATE: OCTOBER 17 2016**

## **WARRANTY**

**This Model EM-6865 Omni-Directional Wideband Antenna is warranted for a period of 12 months (USA only) from date of shipment against defective materials and workmanship. This warranty is limited to the repair of or replacement of defective parts and is void if unauthorized repair or modification is attempted. Repairs for damage due to misuse or abnormal operating conditions will be performed at the factory and will be billed at our commercial hourly rates. Our estimate will be provided before the work is started.**

## DESCRIPTION AND USE ELECTRO-METRICS MODEL EM-6865 OMNI WIDEBAND ANTENNA

### 1.0 Description

The Model EM-6865 Omni Wideband Antenna is a vertically-polarized broadband antenna operating from 2 to 18 GHz. The antenna is capable of operating as either a transmitting or receiving antenna with a flat frequency response and omni-directional response over the stated frequency range.

The EM-6865 consists of two brass conical elements connected point-to-point to form an hourglass shaped antenna element. The center conductor of a rigid coaxial cable is connected to the upper cone while the shield is connected to the lower cone. The cable connects to a Type "N" (female) connector fastened to a phenolic base plate. A plastic shield tube encloses the elements to protect them from damage and the environment.

A 254 mm (10") support rod provides a means for mounting the antenna to any tripod with a 1/4-20 mount. A threaded 1/4-20 hole is located at the end of the rod.

The length of the support rod allows a microwave amplifier to be connected directly to the output connector of the antenna. This reduces the potential signal loss compared to an amplifier connected at another point in the signal path..

The antenna is calibrated at 1 meter with the calibration data included in the manual as gain and antenna factors vs frequency. The EM-6865 is rated for a maximum power level of 5 W.

## 2.0 Specifications

### 2.1 Electrical

Frequency Range:	2 to 18 GHz.
Polarization:	Vertical.
Output Impedance:	50Ω, nominal.
VSWR:	< 2:1.
Gain:	0 dBi, typical.
Continuous Power:	5 W.
Connector:	Type "N" Female.

### 2.2 Mechanical

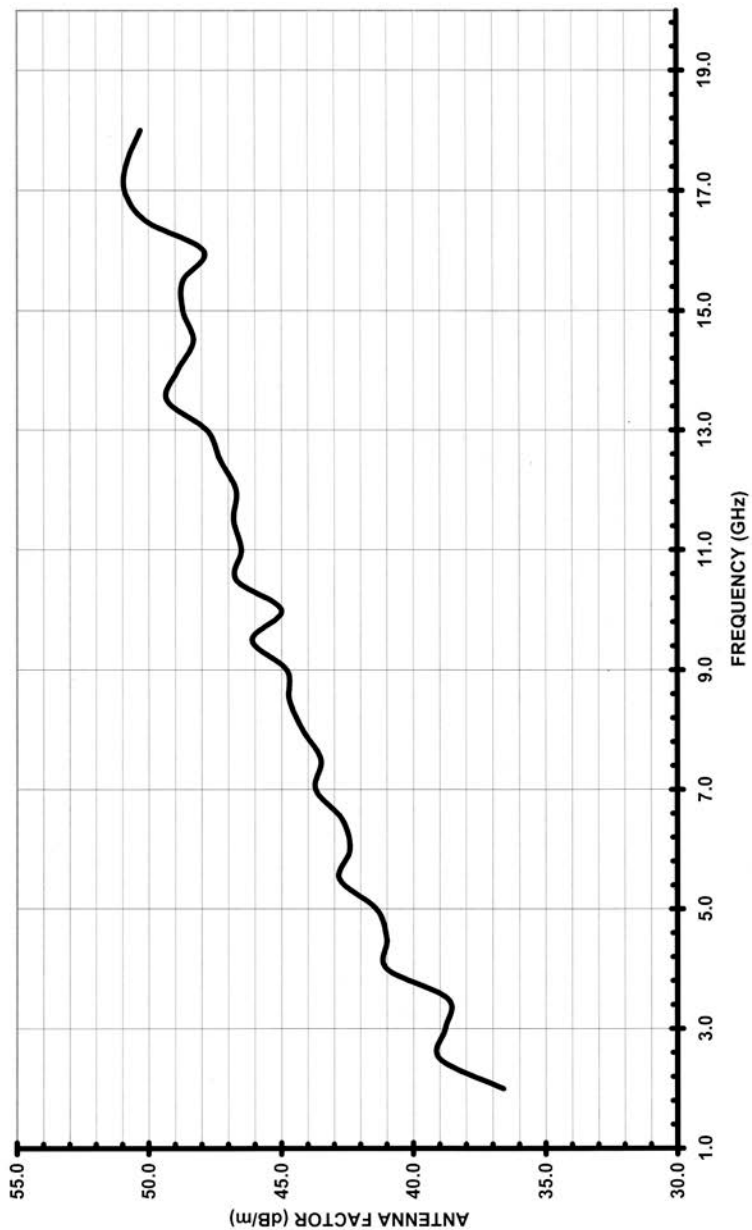
Diameter:	102 mm (4").
Height, Shield Tube:	76 mm (3").
Length, Support Rod:	254 mm (10").
Overall Height: (Antenna + Support Rod)	330 mm (13").
Weight:	454 g (1 lbs).

## 3.0 Typical Performance Data

The Electro-Metrics Model EM-6865 Omni-directional Ultra-wideband Antenna can be calibrated at 1 meter, when purchased with optional calibration. The data presented on the following pages is typical performance data, and is to be used for reference only. Use of the data shown here to obtain accurate signal level determination is not recommended. Each individual antenna will have variations in performance from the typical data, and errors in the measured signal level may occur if typical data is used.

**Figure 1**  
**Gain And Antenna Factors**  
**Model EM-6865**  
**Omni-Directional Wideband Antenna**  
**1 Meter Calibration**  
**Page 3A**

EM-6865 ANTENNA FACTORS  
TYPICAL



SERIAL NUMBER TYPICAL DATA	ELECTRO-METRICS GAIN AND ANTENNA FACTORS MODEL EM-6865	1 METER CALIBRATION	
FREQUENCY MHZ	ANTENNA FACTOR dB/m	GAIN NUMERIC	GAIN dBi
2000	36.6	0.92	-0.3
2500	39.0	0.83	-0.8
3000	38.8	1.27	1.0
3500	38.7	1.74	2.4
4000	41.0	1.35	1.3
4500	41.0	1.72	2.3
5000	41.4	1.92	2.8
5500	42.8	1.66	2.2
6000	42.4	2.19	3.4
6500	42.7	2.37	3.8
7000	43.7	2.23	3.5
7500	43.5	2.65	4.2
8000	44.2	2.60	4.1
8500	44.7	2.57	4.1
9000	44.8	2.81	4.5
9500	46.1	2.37	3.7
10000	45.0	1.95	2.9
10500	46.7	2.48	3.9
11000	46.5	2.85	4.5
11500	46.8	2.95	4.7
12000	46.7	3.25	5.1
12500	47.3	3.05	4.8
13000	47.8	2.97	4.7
13500	49.3	2.28	3.6
14000	48.9	2.67	4.3
14500	48.3	3.31	5.2
15000	48.7	3.21	5.1
15500	48.7	3.45	5.4
16000	47.9	4.38	6.4
16500	50.1	2.82	4.5
17000	50.9	2.49	4.0
17500	50.8	2.73	4.4
18000	50.3	3.21	5.1