



**INSTRUCTION MANUAL**

**“CLUB”**

**OMNI-DIRECTIONAL  
ULTRA WIDE-BAND  
ANTENNA**

**MODEL EM-6857**

**20 MHz - 40 GHz**

# INSTRUCTION MANUAL

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## OMNI-DIRECTIONAL ULTRA WIDEBAND ANTENNA

20 MHz - 40 GHz

ELECTRO-METRICS

MODEL EM-6857

SERIAL NO: 473

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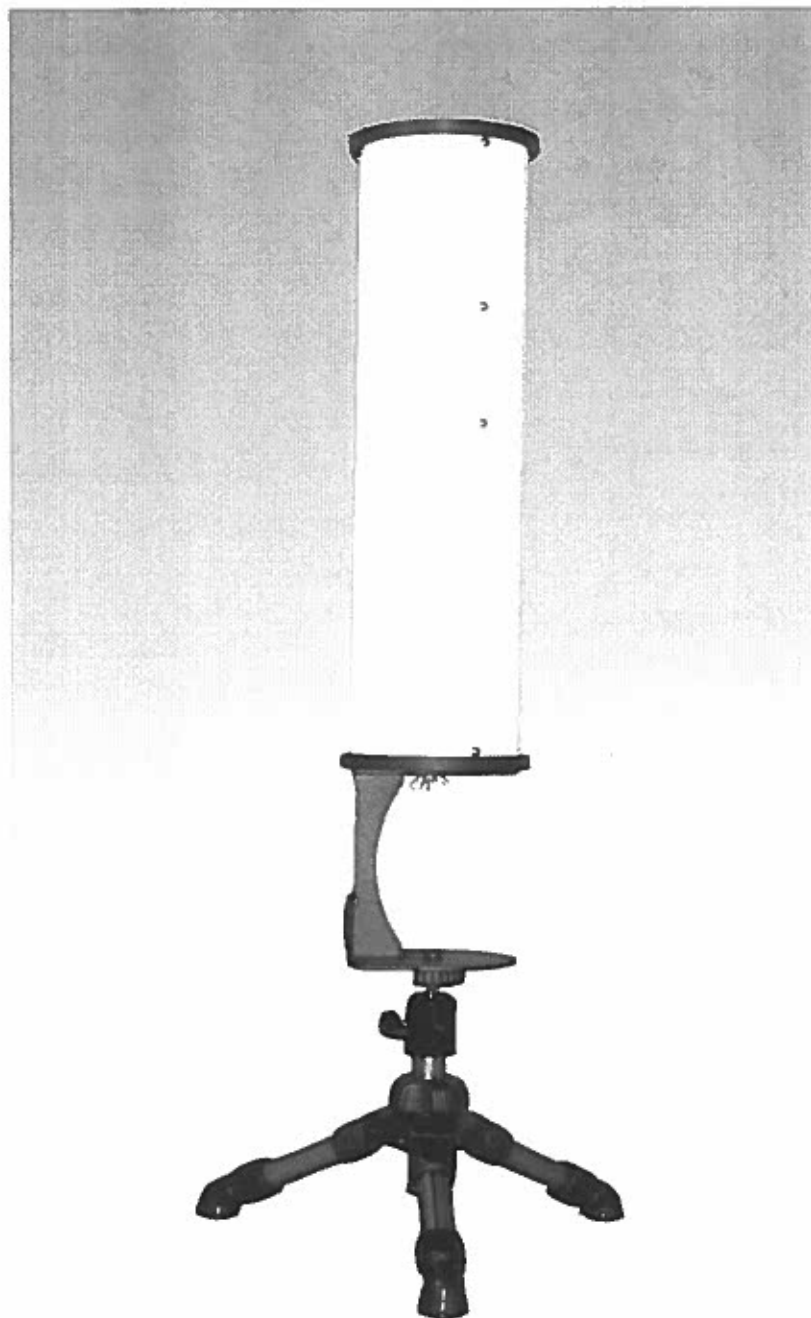
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## **WARRANTY**

**This Model EM-6857 Omni-Directional Ultra 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-6857 'CLUB'  
OMNI-DIRECTIONAL, ULTRA-WIDEBAND ANTENNA**



(EM6857-1)

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**1.0 Description**

The Model EM-6857 Omni-directional Ultra-wideband Antenna is a vertically-polarized broadband antenna operating from 20 MHz to 40 GHz and above. The antenna is capable of operating as either a transmitting or receiving antenna with an omni-directional pattern, and a flat frequency response over the majority of the specified frequency range.

The EM-6857 consists of two brass elements connected to form asymmetric antenna elements. The center conductor made of a rigid coaxial cable, is connected to the upper element while the shield is connected to the lower element. The cable connects to a Type "k" (female) (2.92mm) connector provides coverage to 40 GHz. Other connector options are available, but they can limit the upper frequency limit of the antenna.

A series of optional mounts are available. The standard mount provides a means of mounting the antenna to a threaded 1/4-20 female tripod stud. A special optional mount is also available which allows the antenna to be mounted to a vehicle roof rack. Ruggedized versions of the antenna can also be provided with outdoor pole mounts.

With nominal gains of 0 dBi or higher over 99.5% of the antenna coverage frequency range, this antenna is the perfect device for SIGINT or any other application where a small, rugged, high performance passive antenna is required.

Optional individual calibration data is available with the EM-6857. This antenna can be individually calibrated with the separate purchase of this option. The calibration data includes gain and antenna factors vs frequency. The EM-6857 can be used as either a receiving or transmitting antenna and is rated for a maximum power level of 5 watts.

**NOTE:** When performing signal amplitude measurements using the EM-6857, always include the attenuation within the measurement system plus coaxial cable losses. This, in addition to the antenna factors, will determine the signal level being measured. The antenna is calibrated at 1 meter with the calibration data included in the manual as gain and antenna factors vs frequency. The EM-6857 handles a maximum power level of 5 W.

## 2.0 Specifications

### 2.1 Electrical

Frequency Range:	20 MHz to 40 GHz.
Polarization:	Vertical.
Output Impedance:	50 $\Omega$ , nominal.
Gain: 200 MHz - 40 GHz @ 100 MHz @ 20 MHz	Nominal 0dBi or Greater Nominal -17 dBi Nominal -40 dBi
Continuous Power:	5 W.
Connector:	Type 2.92mm 'k' Female.

### 2.2 Mechanical

Diameter:	115 mm (4.5").
Height:	445 mm (17.5").
Length, Tripod Mount:	135 mm (5").
Overall Height: (Antenna + Tripod Mount)	580 mm (22.5").
Weight:	1275 g (2.8 lbs).

### 3.0 Typical Performance Data

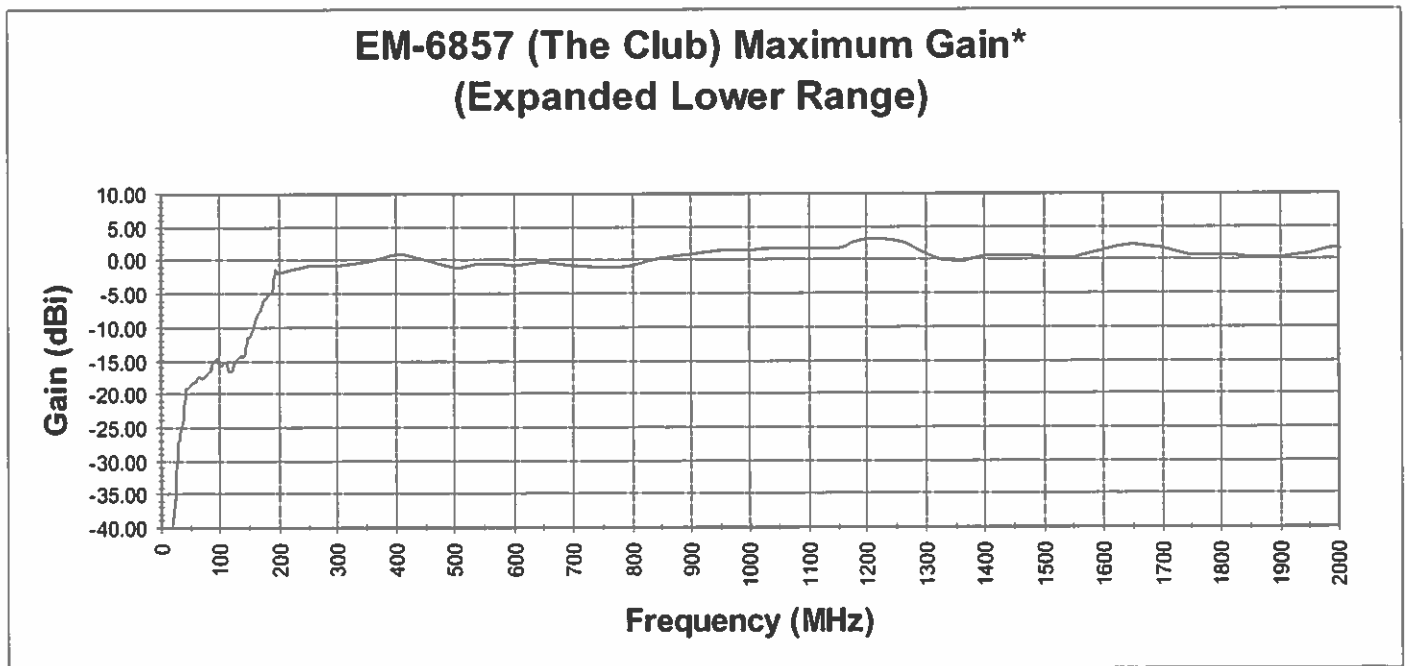
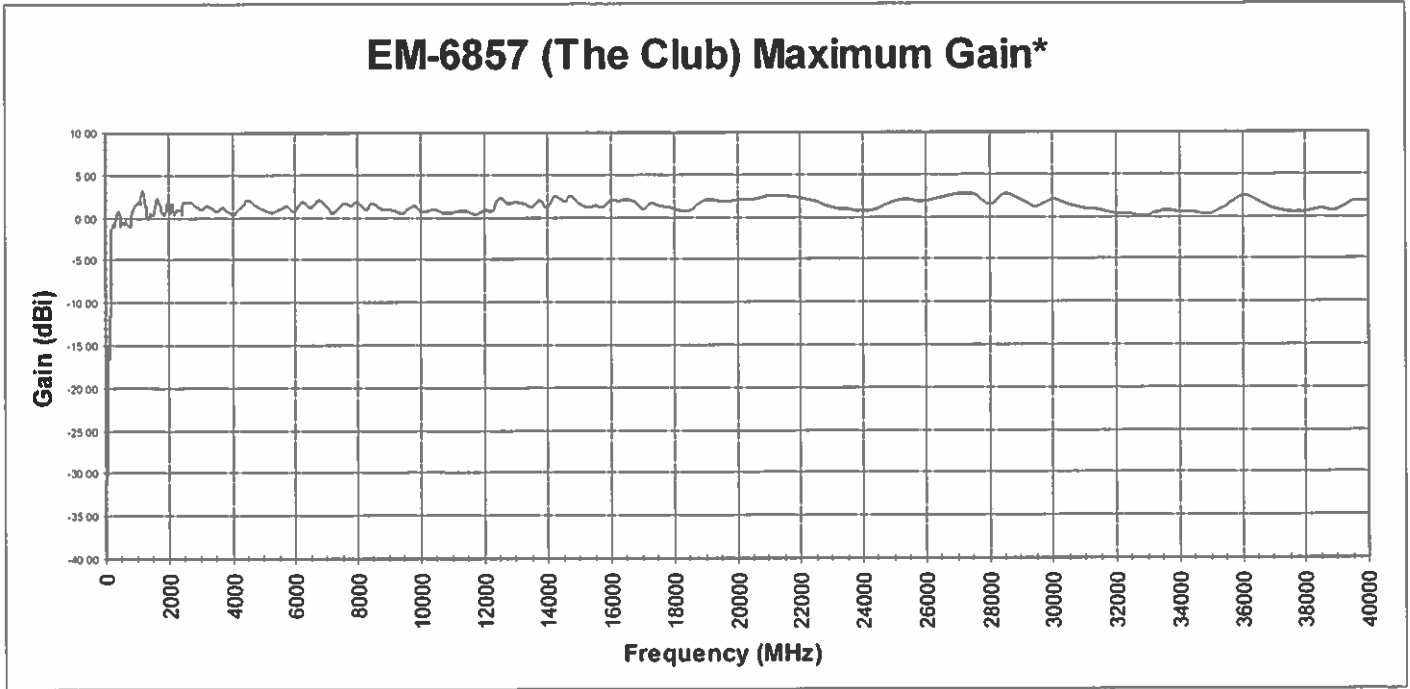
The Electro-Metrics Model EM-6857 Omni-directional Ultra-wideband Antenna can be individually calibrated, if purchased with the optional calibration. The data presented on the following pages is typical performance data, and is to be used for reference only. Use of the data shown here to obtain accurate 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**

(EM6857-2)

Model EM-6857 Omni-Directional Ultra-Wideband Antenna

Typical Maximum Gain Curves



\* Maximum Gain determined from scans at all radiation angles and elevations.  
Figure 2

Model EM-6857 Omni-Directional Ultra-Wideband Antenna

Typical Antenna Factor Curves

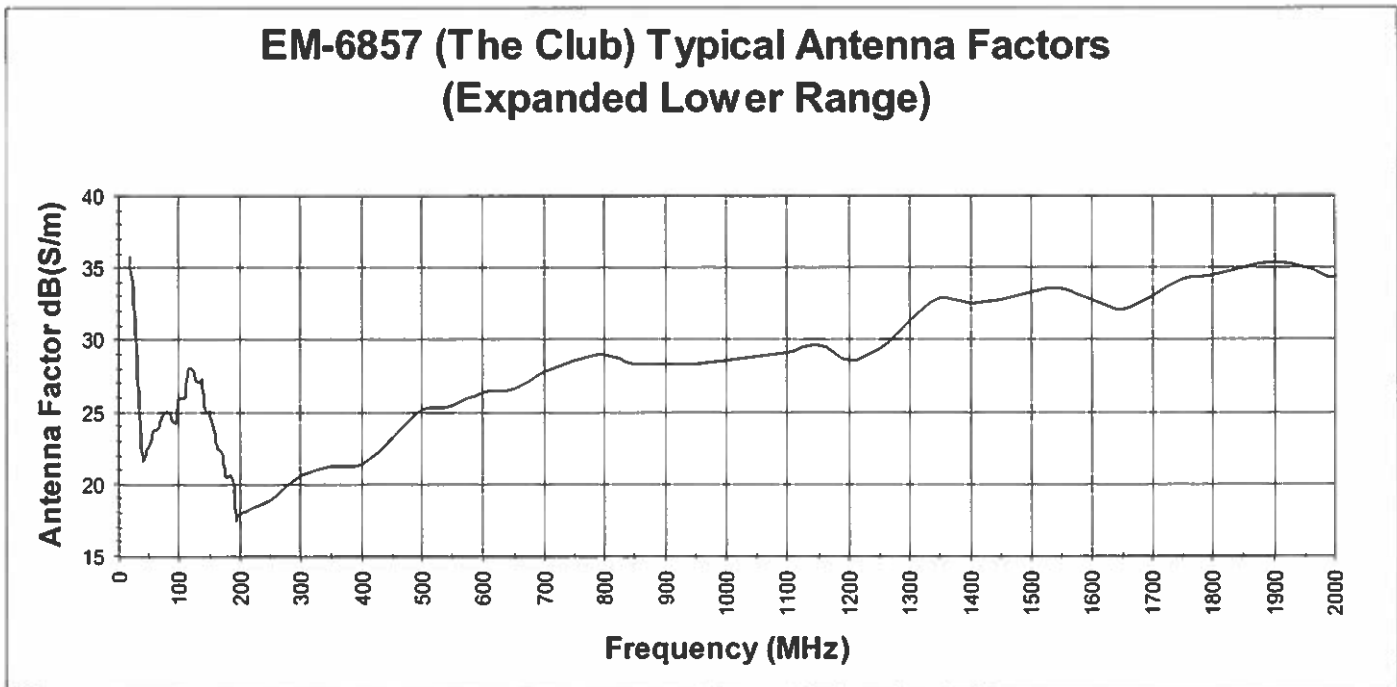
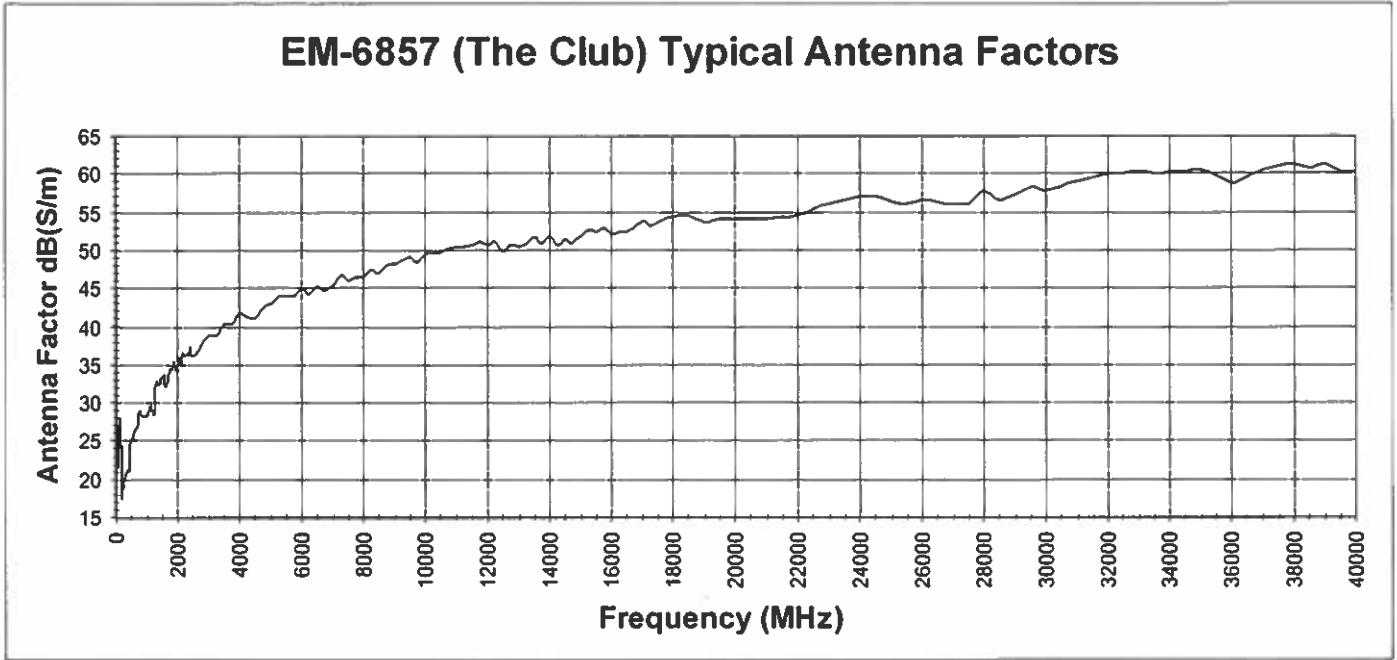


Figure 3A

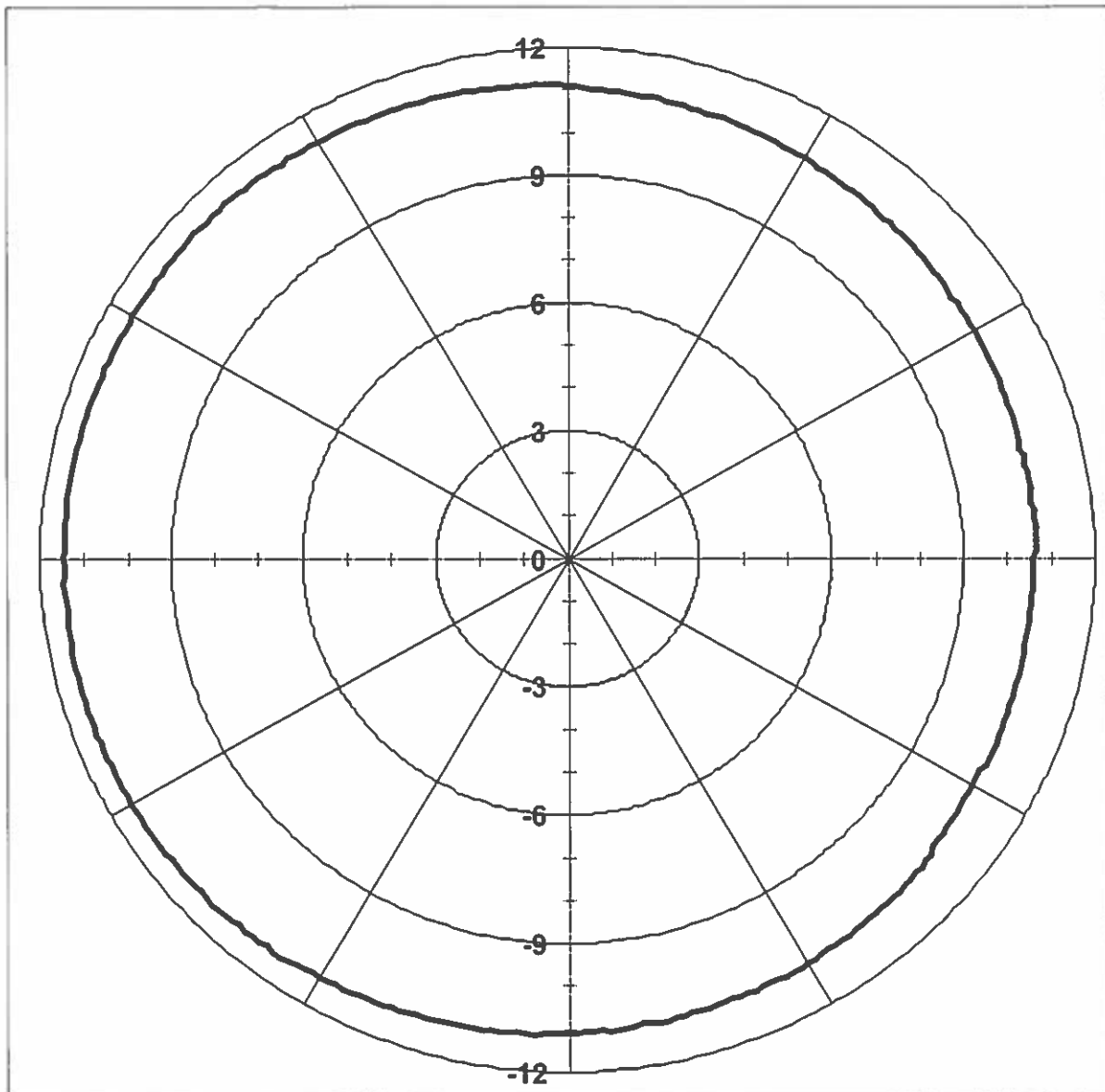
(EM6857-4)



**Model EM-6857 Omni-Directional Ultra-Wideband Antenna**

**Typical Antenna Patterns**

**200 MHz**



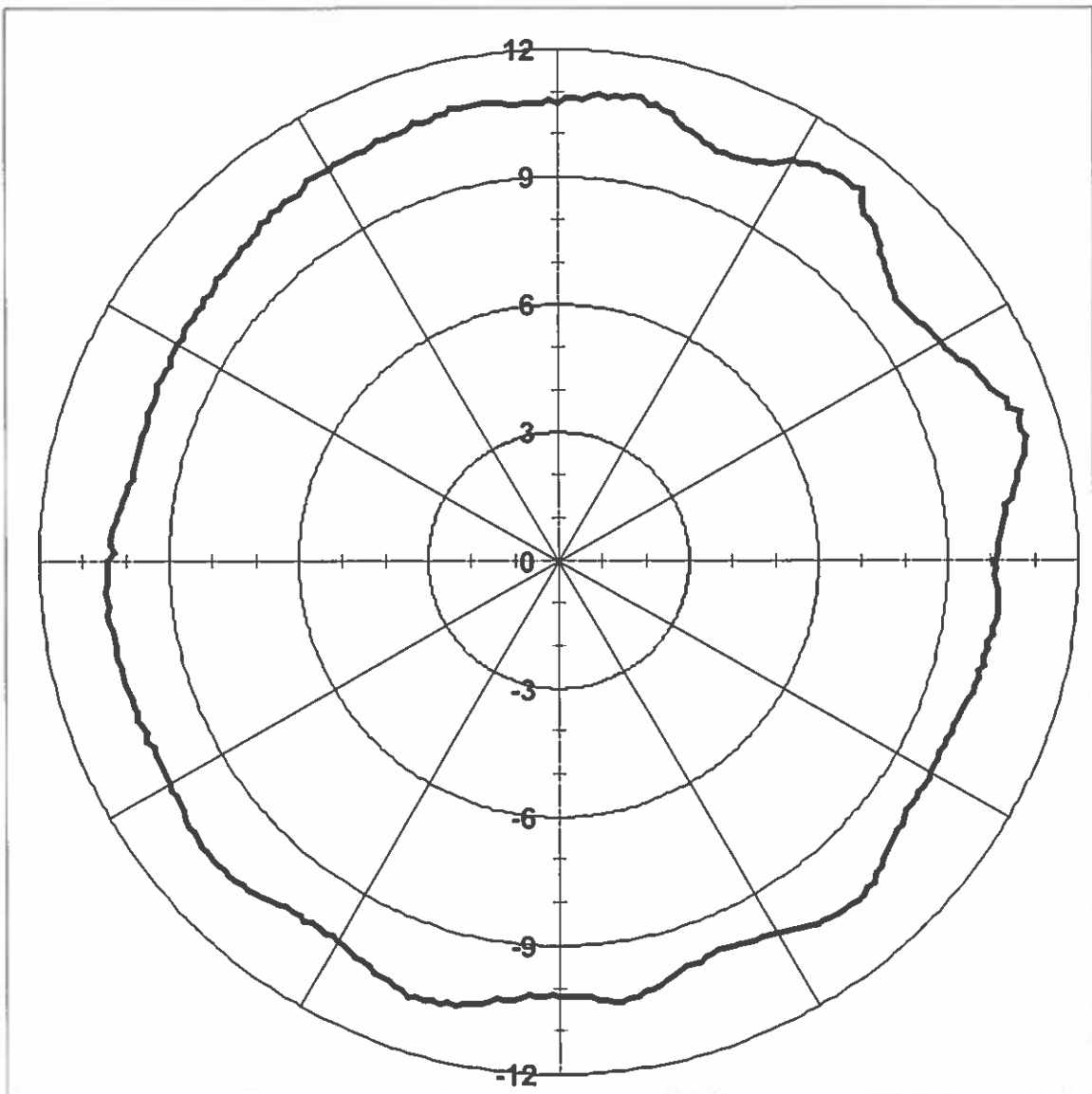
**Figure 3B**

(EM6857-5)

**Model EM-6857 Omni-Directional Ultra-Wideband Antenna**

**Typical Antenna Patterns**

**5 GHz**



(EM6857-6)

Figure 3C

Model EM-6857 Omni-Directional Ultra-Wideband Antenna

Typical Antenna Patterns

40 GHz

