



**INSTRUCTION MANUAL**

**LOOP ANTENNA**

**MODEL EM-6879**

**10 kHz - 30 MHz**

# INSTRUCTION MANUAL

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**LOOP ANTENNA**

**10 kHz - 30 MHz**

**ELECTRO-METRICS**

**MODEL EM-6879**

**SERIAL NO:**

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## **WARRANTY**

**This Model EM-6879 Loop 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 ELECTO-METRICS MODEL EM-6879 LOOP ANTENNA

## 1.0 Introduction

The EM-6879 Loop Antenna is designed to obtain magnetic field measurements from 10 kHz to 30 MHz. The antenna is suited for use in compliance testing to MIL-STD-461A/B/C, CISPR standards, plus other government and federal standards.

The antenna can be used with any  $50\Omega$  instrument being designed and calibrated for use in a  $50\Omega$  system. The antenna incorporates a balanced faraday shield that reduces its response to electric fields to a vanishingly small amount allowing it to obtain practically pure magnetic field measurements.

The antenna is designed to work into a  $50\Omega$  system and the calibration chart is based on this use. The calibration chart gives values of antenna factor for finding magnetic field strength H.

To find the field strength H in  $\text{dB}(\mu\text{A}/\text{m})$ , add the factor in  $\text{dB}(\text{S}/\text{m})$  to the measured two-terminal input voltage on the  $50\Omega$  analyzer/receiver in  $\text{dB}(\mu\text{V})$ .

To find the flux density B in  $\text{dB}(\text{pT})$ , add 2 dB to the field strength H reading.

The EM-6879 Loop Antenna is, electrically, a magnetic dipole and thus having a dipole pattern must be oriented for best sensitivity.

The base plate has a 5/8-11 threaded receptacle for mounting to the Model TRI-136 Tripod. This allows the loop antenna to be mounted either vertically or horizontally with respect to a horizontal plane.

## 2.0 Specifications

### 2.1 Electrical

Frequency Range (calibrated): 10 kHz-30 MHz.

Refer to Figure 1 for the Antenna Factor Chart)

Impedance: Calibrated for use into  $50\Omega$ .

Signal Output Connector: BNC, female.

Signal Injection Connector: BNC, female.

## 2.2 Mechanical

Outside Diameter:	635 mm (25").
Height:	686 mm (27").
Weight:	0.5 kg (1.1 lbs).

## 3.0 Calibration Data

The Electro-Metrics Model EM-6879 Loop Antenna is calibrated at 1 Meter. The data is presented in graphic form as Antenna Factors (dB(S/m)) versus Frequency, Figure 1.

**Figure 1:**

**1 Meter: Page 3**

**Figure 1**  
**Electro-Metrics EM-6879 Loop Antenna**  
**Antenna Factors**  
**At**  
**1 Meter Calibration**  
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