HORN ANTENNA

18 - 40 GHz

MODEL AH-840

rev: 030402

WARRANTY

All equipment manufactured by **Com-Power Corporation** is warranted against defects in material and workmanship for a period of two (2) years from the date of shipment. Com-Power Corporation will repair or replace any defective item or material if notified within the warranty period.

You will not be charged for warranty service performed at our factory. You must, however, prepay inbound shipping costs and have a return authorization.

This warranty does not apply to:

a) products damaged during shipment from your plant or ours.
b) improperly installed products.
c) products operated outside their specifications.
d) improperly maintained products.
e) products which have been modified.
f) normal wear of material.
g) calibration.

Any warranties or guarantees, whether expressed or implied, that are not specified set forth herein, will not be considered applicable to any equipment sold or otherwise furnished by Com-Power Corporation. Under no circumstances does Com-Power Corporation recognize or assume any liability for any loss, damage or expense arising either directly or indirectly from the use or handling of products manufactured by Com-Power Corporation, or any inability to use them separately or in combination with other equipment or material.

The warranty is void if items are shipped outside the United States, without prior approval of Com-Power Corporation.

Warranty Limitations

The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the buyer, unauthorized modification or misuse, operation exceeding specifications, or improper site preparation.

SAFETY PRECAUTIONS

The model AH-840 Horn Antenna is designed to be used in an EMI laboratory to measure and/or to generate electro-magnetic E (electric) fields.

Generating Electro Magnetic Fields:

The model AH-840 antenna should be operated by trained personnel in the field of EMC for the purpose of generating electro-magnetic fields. Test location should be carefully selected to avoid interference to other equipment and exposure of personnel to high electromagnetic fields.

Maintenance and Service:

There are no user serviceable parts in the antenna. However, the user should periodically check the antenna for any deformed elements or dents on the antenna caused by accident during use. Com-Power recommends calibration of the antenna be checked once a year (If used in accordance to ANSI C63.4-1992 Section 4.4 Calibration of Measuring Equipment). Com-Power provides calibration service for all equipment sold. Call the factory if calibration or other service is desired.

About this Manual

This manual provides instructions for testing and using the Model AH-840 Horn Antenna.

If You Need Assistance

If you encounter problems while using the Model AH-840 Horn Antenna, contact Com-Power Corporation at (949) 587-9800.

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General Information

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This section includes the following:

a) Introduction
b) General Description
c) Specifications
d) Equipment Supplied

1.1 Introduction

This section contains general description of the Horn antenna model AH-840. This section also contains general performance and background information about the antenna.

1.2 General Description

The Model AH-840 Horn antenna was specifically designed for EMI measurement from 18 to 40 GHz. The antenna is capable of receiving and transmitting signals.

The Horn antenna is a transducer which converts electric field strength in dBV/m to Volts that can be displayed on a spectrum analyzer or EMI meter.

Setting up using the antenna is described in section 2. Information on theory of operation is given in section 3.

1.3 Equipment Specifications

The specification for AH-840 Horn antenna are listed in Table 1-1.

1.4 Equipment, Accessories, and Documents Supplied

Equipment, accessories, and documents supplied with the Antenna are as follows:

a) Horn Antenna
b) User's Guide
c) Calibration information

Model: AH-840 Horn Antenna

ELECTRICAL	
Frequency Range:	18 - 40 GHz
VSWR (Typ.)	2.0 : 1.0
Gain, dBi (Typ.)	See Table 1-2
Antenna Factor (Typ.)	See Figure 1-2
Power Handling:	5 Watts CW
Impedance:	50 Ω, nominal
Polarization:	Linear
Connector Type:	K- Female
MECHANICAL	
Dimensions	7.35" long (18.67 cm) 2.65" wide (6.73 cm) 1.98" high (5.03 cm)
Weight:	2 lbs. (.909 kg), max.

Table 1-1 Equipment Specifications

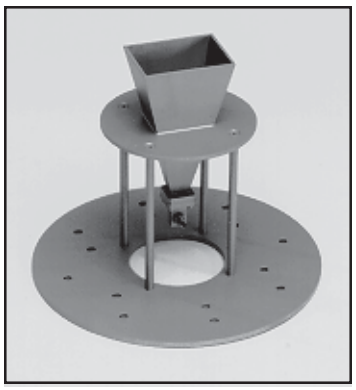

Figure 1-1 AH-840 Horn Antenna

Figure 1-2 Typical Antenna Factors

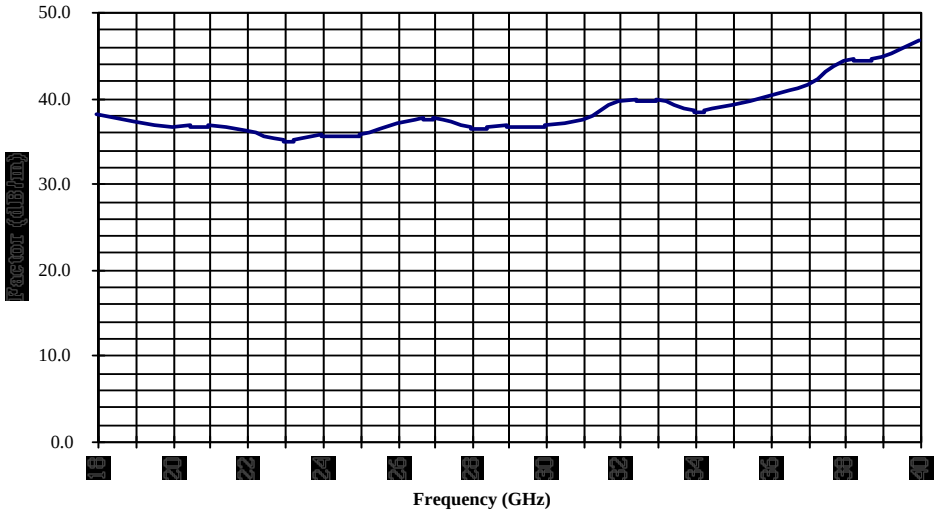

Table 1-2 Power Requirements and Antenna Gain (typical)

Power Requirement (Watts) at 1 meter spacing to obtain field strength:

Frequency	**Field strength**			**Gain**
GHz	E	E	E	(dBi)
	10 V/m	50 V/m	100 V/m	
18	0.05	1.15	4.61	18.6
20	0.03	0.80	3.18	20.2
22	0.03	0.76	3.04	20.4
24	0.02	0.62	2.47	21.3
26	0.02	0.50	2.01	22.2
28	0.01	0.32	1.27	24.2
30	0.01	0.32	1.30	24.1
32	0.02	0.51	2.05	22.1
34	0.02	0.38	1.52	23.4
36	0.02	0.51	2.06	22.1
38	0.03	0.82	3.26	20,1
40	0.04	1.00	4.01	19.1

Setup Procedure

2

This section explains the following:

a) Introduction
b) Setup

2.0 Introduction

This section describes antenna setup and mounting for EMI measurement.

2.1 Antenna Setup

2.1.1 Connecting

The model AH-840 horn antenna has a Type K- Female connector. This connector is used for antenna output and input.

2.1.2 Antenna setup for receiving signals

The model AH-840 must be connected to the spectrum analyzer with microwave frequency rated, low loss coaxial cabling. The losses must be measured and accounted for when in calculating / measuring the field strength.

2.1.3 Antenna setup for transmitting signals

When the AH-840 antenna is used for transmitting signals, the antenna is connected to a microwave signal generator and power amplifier. The model AH-840 antenna can transmit up to 5 Watts of continuous power. The field generated by the antenna can be measured by using a field strength meter or another horn antenna withen their respective limits.

2.1.4 Test location

The Horn Antenna must be mounted and placed in area away from other conductive objects or materials when in use. Large conductive building, structures and electrical cables, can reflect and reradiate the emissions of EUT, causing errors in the test data. In addition, care should be taken to keep measuring instruments and test personnel away from the test area to avoid interference to the test, as well exposure of test personnel to high electromagnetic fields.

Theory of Operation

3

This chapter explains the following:

a) Overview
b) Theory of Operation

3.0 Overview

This section describes the theory of operation of the Horn Antenna.

3.1 Theory of Operation

Broadband antennas allow measurement of signals over a wide frequency range. These antennas do not require any tuning or balun switching during measurement. Models AH-840 Horn Antennas are broadband antennas that operate in the frequency range of 18 GHz - 40 GHz.

The model AH-840 can both Receive and Transmit over the frequency range of operation and is used for susceptibility and emissions testing in EMC Laboratories.

Before the Horn antennas are used for measurement they have to be calibrated. Typically antenna calibration is performed in an open field test site(OATS). During calibration a known field strength (dBV/m) is generated around the antenna at each frequency at predetermined intervals between 18 GHz - 40 GHz. The difference between field strength (dBV/m) received by the antenna and known field strength generated (dBV/m) is the antenna factor (dB/m) for that frequency. During EMC testing the antenna factor for the frequency of interest is added back to reading on the EMI meter or spectrum analyzer to calculate the field strength measured by the antenna.

Field strength (dBv/m) = Output measured (dBV) + Antenna Factor (dB/m)

When using the AH-840 antenna for transmitting application, please refer to Table 1-2 to determine the power requirements to generate the desired electro magnetic field.