Double Ridged

HORN ANTENNA

1 - 18 GHz

MODEL AH-118

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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.

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SAFETY PRECAUTIONS

The Model AH-118 Horn antenna is designed for use in an EMI laboratory to measure or generate electric fields.

Test Operator and Test Location:

The Model AH-118 antenna should be operated by trained personnel in the field of EMC for the purpose of generating electromagnetic fields. Test location should be 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 antenna at least once a year. **Com-Power** provides calibration service for all equipment sold. Call the factory if calibration or other service is required.

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About this Manual

This manual provides instructions for testing and using the Model AH-118 Horn Antenna.

Information contained in this manual is the property of Com-Power Corporation. It is issued with the understanding that none of this material may be reproduced or copied without written permission from Com-Power.

If You Need Assistance

If you encounter problems while using the Model AH-118 Horn Antenna, contact Com-Power Corporation at (949) 587-9800.

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General Information

1

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-118. This section also contains general performance and background information and technical information about the antenna.

1.2 General Description

The Model AH-118 Horn antennna was specifically designed for radiated EMI measurement over a wide frequency range. The Model AH-118 was also designed to receive radiated EMI signals or transmit during susceptiblity testing for various agency specifications.

The Horn antenna is a broadband transducer which converts Electric field strength in dBuV/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. Typical physical and operational characteristic of the Horn antenna are given in appendix I and II.

1.3 Equipment Specifications

The specifications for model AH-118 horn antenna are listed in Table 1-1 on page 1-2.

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1.4 Equipment and Documents Supplied

Equipment and documents supplied with the Model AH-118 horn antenna are as follows:

a) Horn antenna
b) User's guide
c) Calibration information

Table 1-1 Equipment Specifications

Frequency Range:	1 - 18 GHz
VSWR (typ.)	2.0 : 1.0
Gain, dBi (typ.)	See Table 1-3
Power Handling:	400 Watts CW
Impedance:	50 Ω (nominal)
Polarization:	Linear
Connector Type:	N (female)
Weight:	4 lbs. max.
Dimensions:	8" x 9.5" x 6" (L x W x H)
Mounting:	1/4 - 20 bolt hole

Table 1-2 Typical Power Requirments (Watts)

Frequency	E-Field strength		
GHz	**10 V/m**	**20 V/m**	**100 V/m**
1	0.62	2.48	62.0
2	0.82	3.27	81.8
3	0.41	1.64	40.9
4	0.20	0.78	19.6
5	0.24	0.97	24.1
6	0.17	0.70	17.4
7	0.22	0.88	22.0
8	0.24	0.94	23.5
9	0.16	0.65	16.3
10	0.20	0.80	20.0
12	0.13	0.53	13.2
14	0.28	1.11	27.7
16	0.09	0.35	8.7
18	0.18	0.70	17.5

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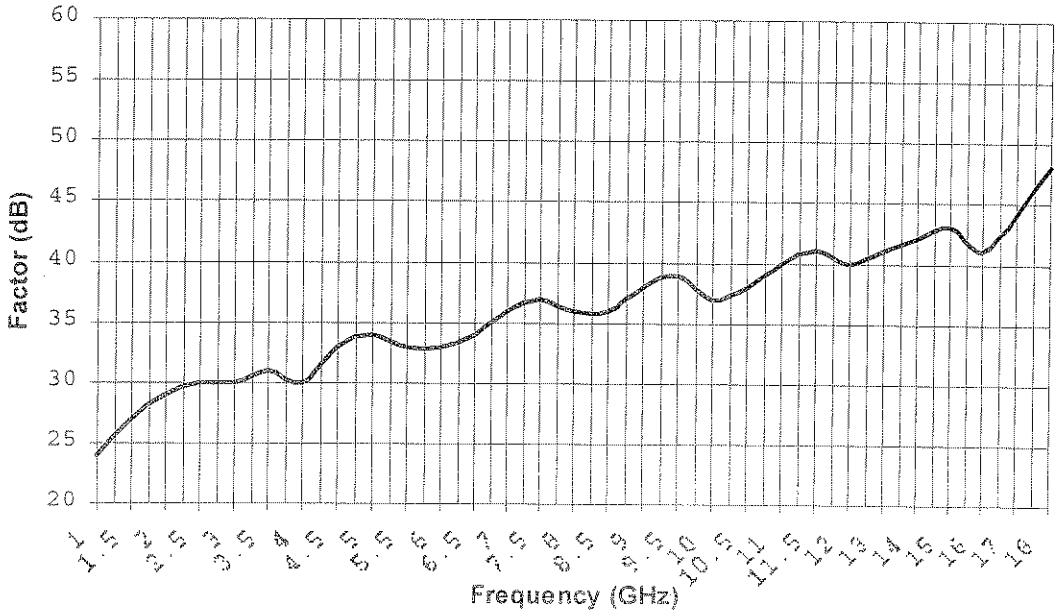
Figure 1-1 Typical Antenna Factors



Frequency (GHz)	Gain (dBi)
1.0	6
2.0	6
3.0	9
4.0	12
5.0	10
6.0	13
7.0	9
8.0	12
9.0	12
10.0	13
12.0	12
14.0	11
16.0	13
18.0	6

Table 1-3 Typical Antenna Gain

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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-118 horn antenna has an 'N' type female connector. This connector is used for signal input or output.

2.1.2 Antenna setup for receiving signals

The Model AH-118 antenna can be used to measure EMI from an equipment under test (EUT). The antenna is mounted on either an antenna mast (model AM-400) or an antenna tripod. The antenna rear has a 1/4 inch x 20 threaded hole for mounting on AT-100 series tripod or other similar tripod. A coax cable is used to connect the antenna to the a measureing instrument. If a long cable is used, cable loss should be measured and used in calculating the field strength.

2.1.3 Antenna setup for transmitting signals

When AH-118 antenna is used for transmiting signals, the antenna is mounted on either on an antenna mast (model AM-400) or antenna tripod. To transmit signals, the antenna is connected to a microwave signal generator and / or power amplifier. The Model AH-118 antenna can handle up to 400 watts continuous power. The field generated by the antenna can be measured by an field strength probe or another horn antenna.

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2.1.3 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 intruments and test personnel away from the test area to avoid interference to the test, as well exposure of test personnel to possible high electromagnetic fields.

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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. It is very useful for sweep measurement over the frequency range of operation. The model AH-118 horn antenna is a broadband antenna that operates in the frequency range of 1 to 18 Giga Hertz.

Model AH-118 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 antenna is used for measurement, they should be calibrated. Typically antenna calibration is performed in an open field test site (OATS). During calibration a known field strength (dBuV/m) is generated around the antenna at each frequency (1 GHz - 18 GHz). The difference between field strength (dBuV) received by the antenna and known field strength generated (dBuV) is the antenna factor (dB) 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 measure field strength.

dBuV/m (field strength) = dBuV (output measured) + Antenna Factor

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