Model 3116

Double-Ridged Waveguide Horn

MANUAL

ETS·LINDGREN™
An ESCO Technologies Company

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REV E – PN 399040

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INTRODUCTION

The ETS-Lindgren EMCO brand Model 3116 Double-Ridged Waveguide Horn Antenna is a linearly polarized broadband antenna covering the frequency range of 18 GHz up to 40 GHz. The Model 3116 was designed and built specifically for emissions and susceptibility testing.

The antenna is precision machined from aluminum. A 50 Ω type K female connector is mounted on the base block of the antenna for increased performance at high frequencies.

Although the type K connector mates with type SMA connectors when used with SMA connectors the high frequency performance will be limited to the rating of the SMA connector. It is recommended that cables with type K connectors be used to ensure optimal performance.

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MOUNTING INSTRUCTIONS

The Model 3116 can easily be mounted on a variety of tripods including the ETS-Lindgren Model 4-TR.

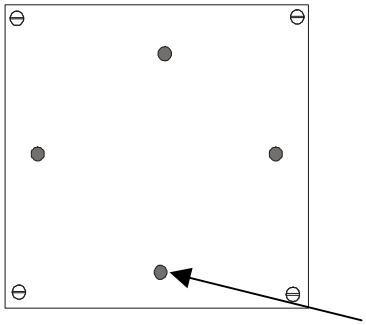
The Model 3116 consists of the following:

1 ea Double Ridged Waveguide Horn
1 ea Mounting Bracket drilled to accept ETS-Lindgren or other tripod mount with ¼-20 threads
2 ea Thumb screws for attaching the horn to the mounting bracket

NOTE When removing the Model 3116 from its mounting bracket, take care to ensure that the antenna is supported while removing the thumbscrews. Failure to support the antenna when removing the thumbscrews could result in damage to the antenna.

Step 1. Before the antenna is mounted on a tripod the user will need to unscrew the thumbscrews and separate the antenna from the mounting bracket and set it to the side.

Step 2. To mount the antenna on the tripod, attach the mounting bracket to the tripod with the ¼-20 bolt. To attach the antenna to the mounting bracket, with the connector facing downward and while holding the antenna with one hand, line up the holes on the back of the horn with the holes on the bracket and insert and tighten both thumbscrews.



Back Plate of Model 3116 Thumbscrew Holes

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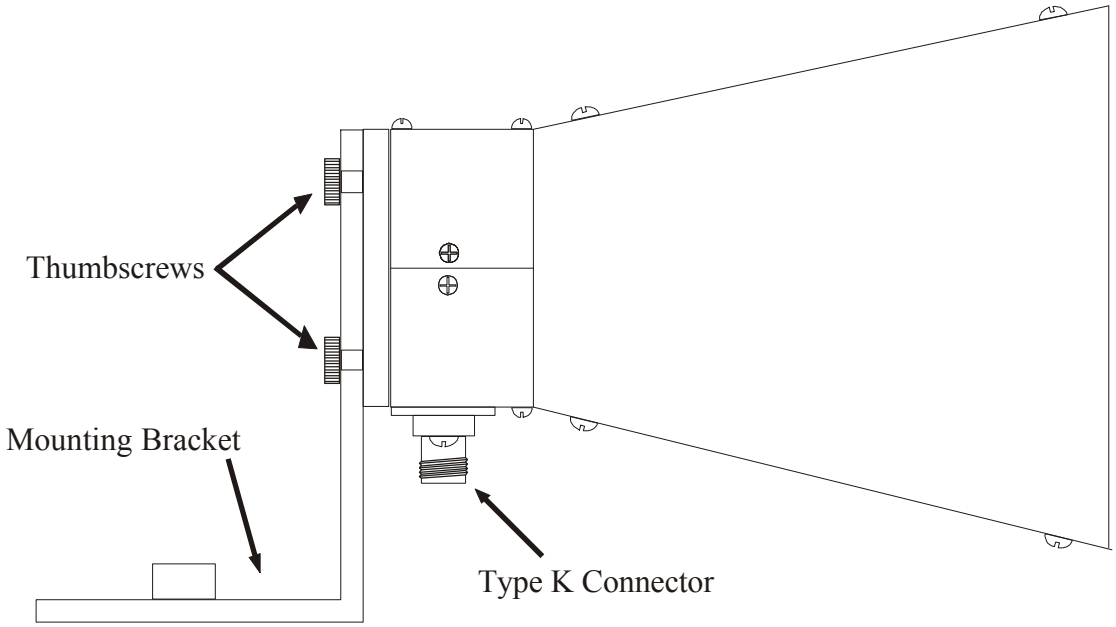
Step 3. To rotate the antenna, while holding the antenna with one hand remove both thumbscrews from the mounting bracket. Rotate the antenna so the bracket holes line up with the two horizontal mounting holes on the back of the antenna. Re-insert and tighten the thumbscrews.



NOTE This illustration shows the Model 3116 vertically polarized for the purpose of introducing the primary mounting components. Typically the horn will be mounted in the horizontally polarized position for testing.

APPLICATION

Each Model 3116 Double-Ridged Waveguide Antenna is individually calibrated during the manufacturing process. Apparent gain at 1 meter from the end of the antenna is determined and included in this manual. This factor should be used in specification compliance testing to convert receiver reading (dBuV) to field intensity units (dBuV/M). This conversion is accomplished by adding the antenna factor in dB to the receiver reading in dB above 1 microvolt. To produce specific field strengths at one meter spacings see the Forward Power data on page 6.

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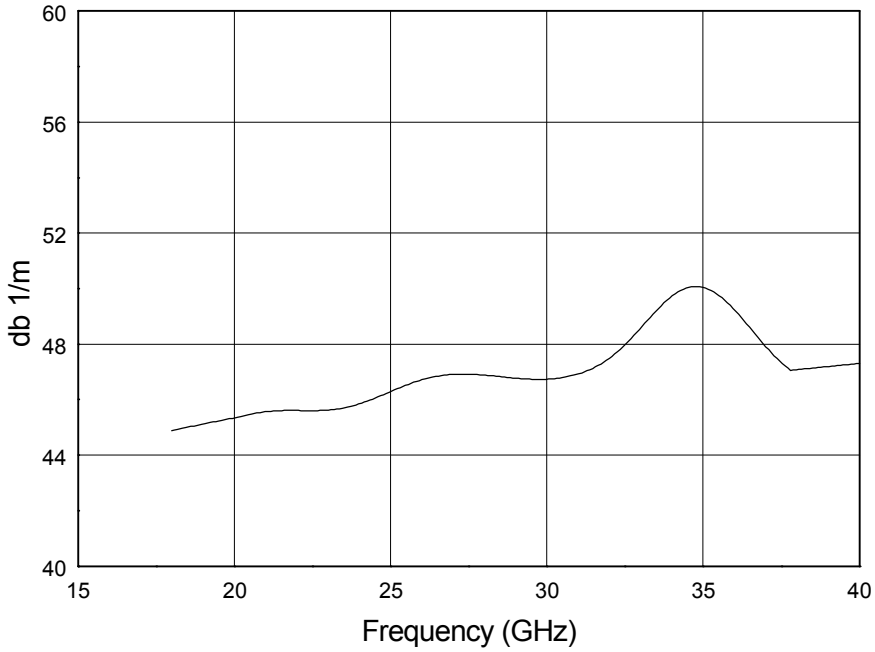
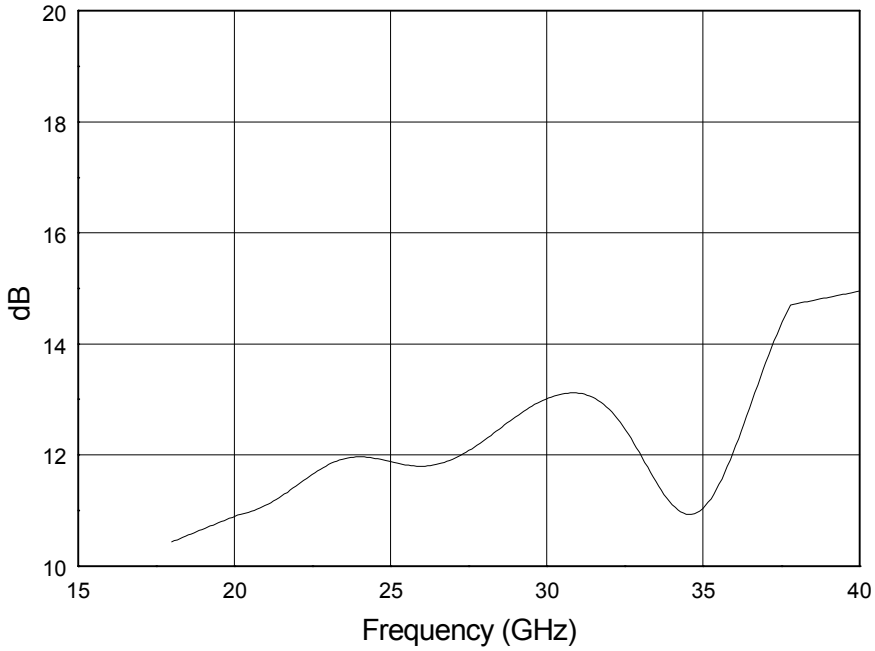
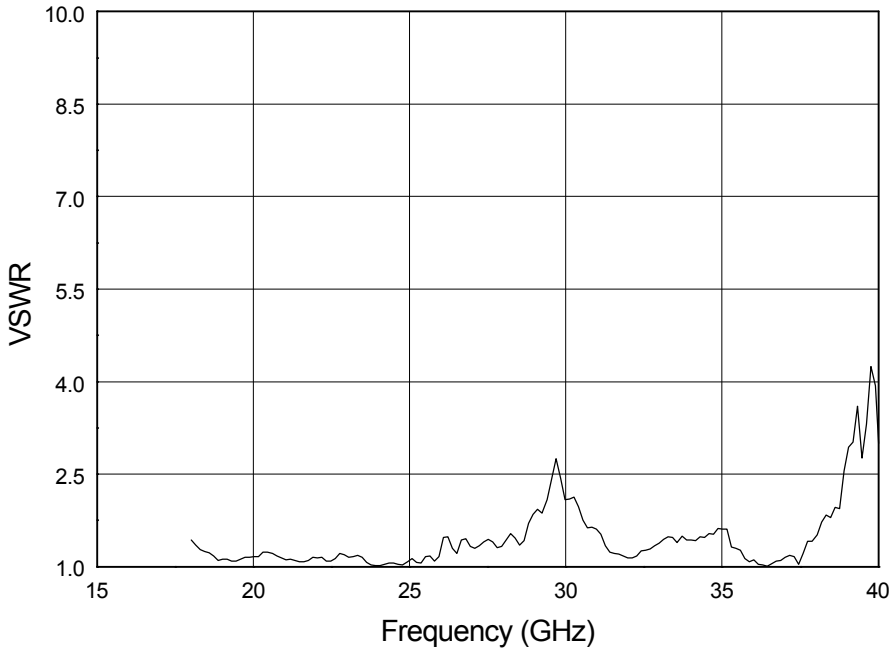
TYPICAL DATA



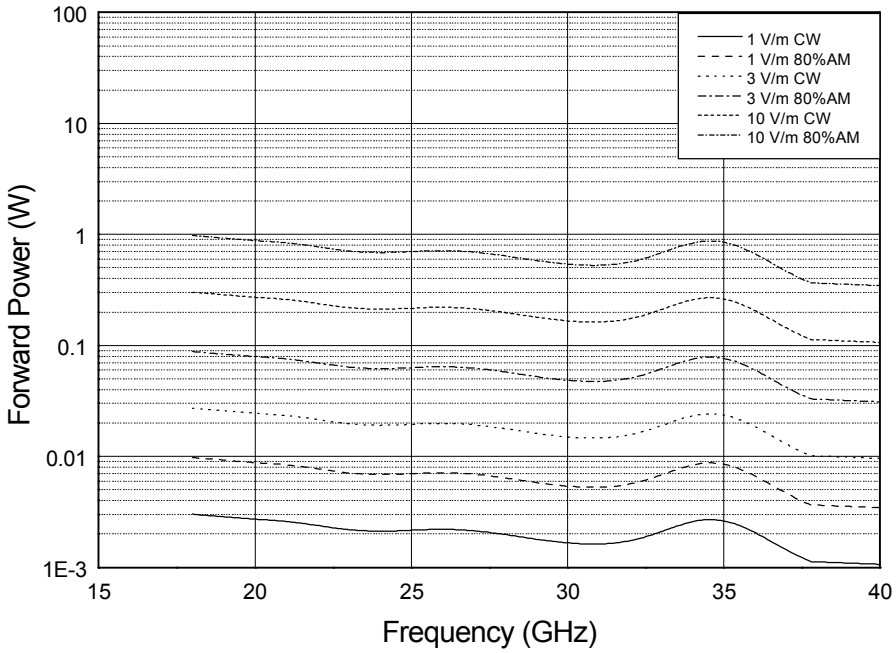
Model 3116 Antenna Factor



Model 3116 Gain



Model 3116 VSWR



Model 3116 Forward Power at 1 meter 1V/m to 10 V/m
Maximum Continuous Power for the Model 3116 is 50 Watts
The Maximum Peak Power Rating for this model is 70 Watts

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SPECIFICATIONS

Electrical

Frequency Range	18-40 GHz
VSWR Ratio (AVG)	<1.6:1
Maximum Continuous Power	50 Watts
Peak Power	70 Watts
Impedance	50 Ω
Connector	Type K female
Front to Back Ratio	20 dB
Cross Polarization	20 dB minimum

Physical

Width	13 cm 5.2 in
Depth	10 cm 4.0 in
Height	6 cm 2.4 in
Weight	135.0 g 4.7 oz

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MAINTENANCE

To ensure reliable and repeatable long-term performance, annual recalibration of your antenna by ETS-Lindgren's experienced technicians is recommended. Our staff can recalibrate almost any type or brand of antenna. Please call to receive a Service Order Number prior to sending an antenna to us for calibration.

For more information about our calibration services or to place an order for antenna calibration visit our calibration website at http://www.antennacalibration.com.

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WARRANTY STATEMENT

EMC Test Systems, L.P., hereinafter referred to as the Seller, warrants that standard EMCO products are free from defect in materials and workmanship for a period of two (2) years from date of shipment. Standard EMCO Products include the following:

- Antennas, Loops, Horns
- GTEM cells, TEM cells, Helmholtz Coils
- LISNs, PLISNs, Rejection cavities & Networks
- Towers, Turntables, Tripods & Controllers
- Field Probes, Current Probes, Injection Probes

If the Buyer notifies the Seller of a defect within the warranty period, the Seller will, at the Seller's option, either repair and/or replace those products that prove to be defective.

There will be no charge for warranty services performed at the location the Seller designates. The Buyer must, however, prepay inbound shipping costs and any duties or taxes. The Seller will pay outbound shipping cost for a carrier of the Seller's choice, exclusive of any duties or taxes. If the Seller determines that warranty service can only be performed at the Buyer's location, the Buyer will not be charged for the Seller's travel related costs.

This warranty does not apply to:

- Normal wear and tear of materials
- Consumable items such as fuses, batteries, etc.
- Products that have been improperly installed, maintained or used
- Products which have been operated outside the specifications
- Products which have been modified without authorization
- Calibration of products, unless necessitated by defects

THIS WARRANTY IS EXCLUSIVE. NO OTHER WARRANTY, WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED, INCLUDING BUT NOT LMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES PROVIDED BY THIS WARRANTY ARE THE BUYER'S SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT IS THE SELLER LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO, DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

Note: Please contact the Seller's sales department for a Return Materials Authorization (RMA) number before shipping equipment to us.

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