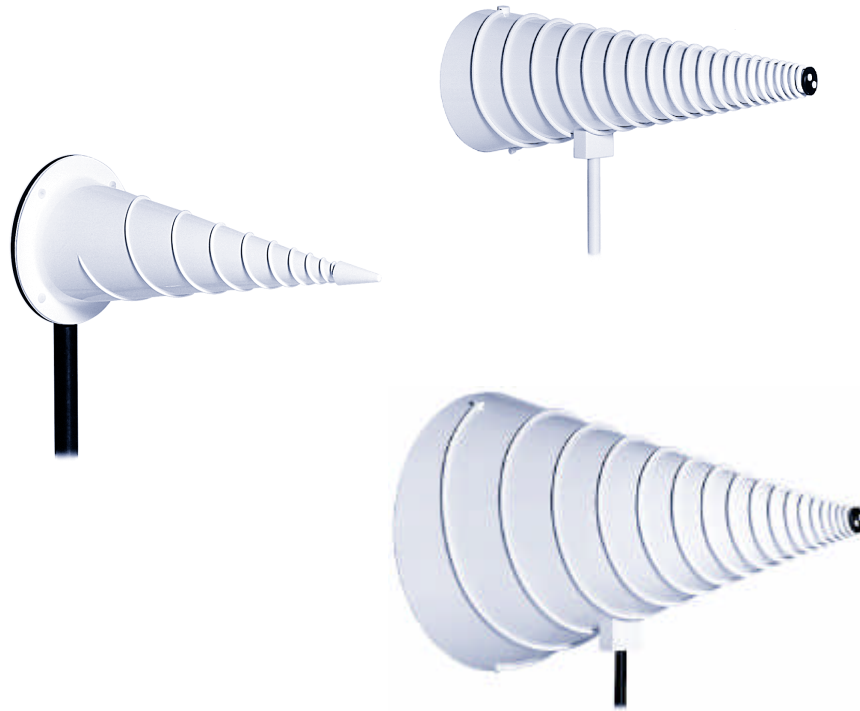


Model 3101, 3102 and 3103

Conical Log-Spiral Antennas

MANUAL



 **ETS·LINDGREN**™
An ESCO Technologies Company

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INTRODUCTION

The ETS-Lindgren Model 3100 series of Conical Log-Spiral Antennas are circularly polarized broadband antennas covering the frequency range of 100 MHz to 10 GHz. This family of antennas includes the 3101, 3102 , 3103 and L (right-hand polarized) models. The Conical Log-Spiral Antennas are designed specifically for EMI measurements and compliance testing as called for in various Military Standards.

Each antenna is constructed of a fiberglass cone upon which two logarithmic spirals of 50 ohm coaxial cable are securely fastened. Outside windings improve heat dissipation. The coaxial connectors are located in the phenolic base plate of the cone. An adapter for a tripod or other mounting configurations is attached to the antenna near its horizontal center of gravity or at the antenna base plate.

The conical log spiral antennas will receive both circular polarized and linear polarized fields (with a 3 dB variance for linear fields) under normal operating conditions.

Each antenna is individually calibrated at 1 m per SAE ARP 958, during the manufacturing process. Typical antenna data is included in this manual. Actual factors and a signed Certificate of Calibration Conformance are shipped with each antenna.

STANDARD CONFIGURATION

- Left-hand circular polarization
- Support rod
- Configured to accept EMCO brand or other tripod mount with standard ¼ in x 20 threads
- Individually calibrated at 1m per SAE ARP 958. Actual factors and signed Certificate of Calibration Conformance included with antenna.

OPTIONS

Right-hand circular polarization: This option reverses the antenna windings for right-hand polarization. See explanation pages 6 and 7.

Tripods: ETS-Lindgren produces two high quality tripods for use at both indoor and outdoor EMC test sites.

The Model 4-TR, constructed of linen phenolic and delrin, is compatible with all the Conical Log-Spiral Antennas. The 4-TR is designed with an adjustable center piece for precise height adjustments. Maximum height for the 4-TR is 2.0 m (80.0 in), while minimum height is 94 cm (37.0 in). This tripod can bear up to a 11.8 kg (26.0 lb) load.

The 7-TR tripod series provides increased stability for physically large antennas. Its unique design allows for quick assembly/disassembly and convenient storage. Quick height adjustment and locking wheels provide ease of use during testing. This tripod can bear up to a 13.5 kg (30.0 lb) load. For the 7-TR series, maximum height is 2.17 m (85.8 in), with a minimum height of .8 m (31.8 in). The 7-TR is constructed of PVC and fiberglass components.

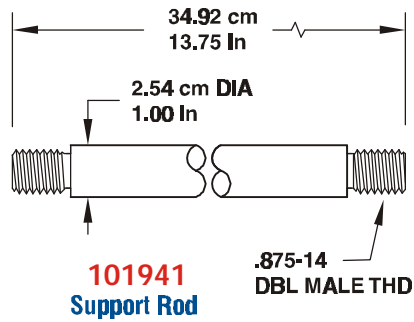
ASSEMBLY & MOUNTING INSTRUCTIONS

Conical Log-Spiral Antennas consist of the following:

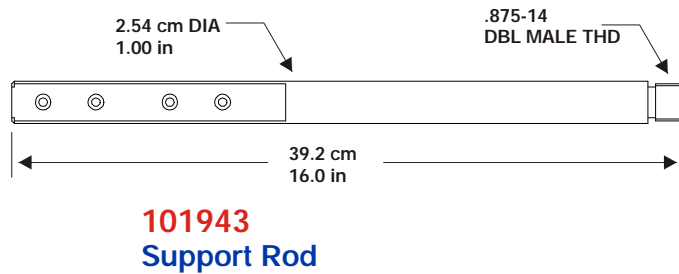
- 1 ea. Conical Log-Spiral Antenna
- 1 ea. Support Rod
- 1 ea. Tripod Mounting Base

SUPPORT RODS

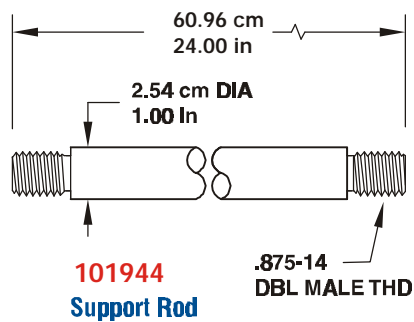
Model 3101



Model 3102

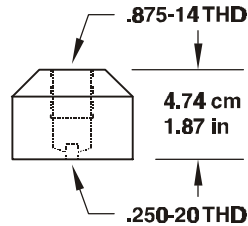


Model 3103



SUPPORT BASE

All Models



101942B
Support Base

ALL MODELS

Thread the support rod into the tripod mounting base. Take care not to cross-thread the connection as permanent damage to the joint could result.

MODELS 3101 & 3103

The Model 3101 and 3103 antennas have a mounting block attached to the antenna near the horizontal center of gravity. Thread the available end of the support rod into the mounting block. Take care not to cross thread the connection.

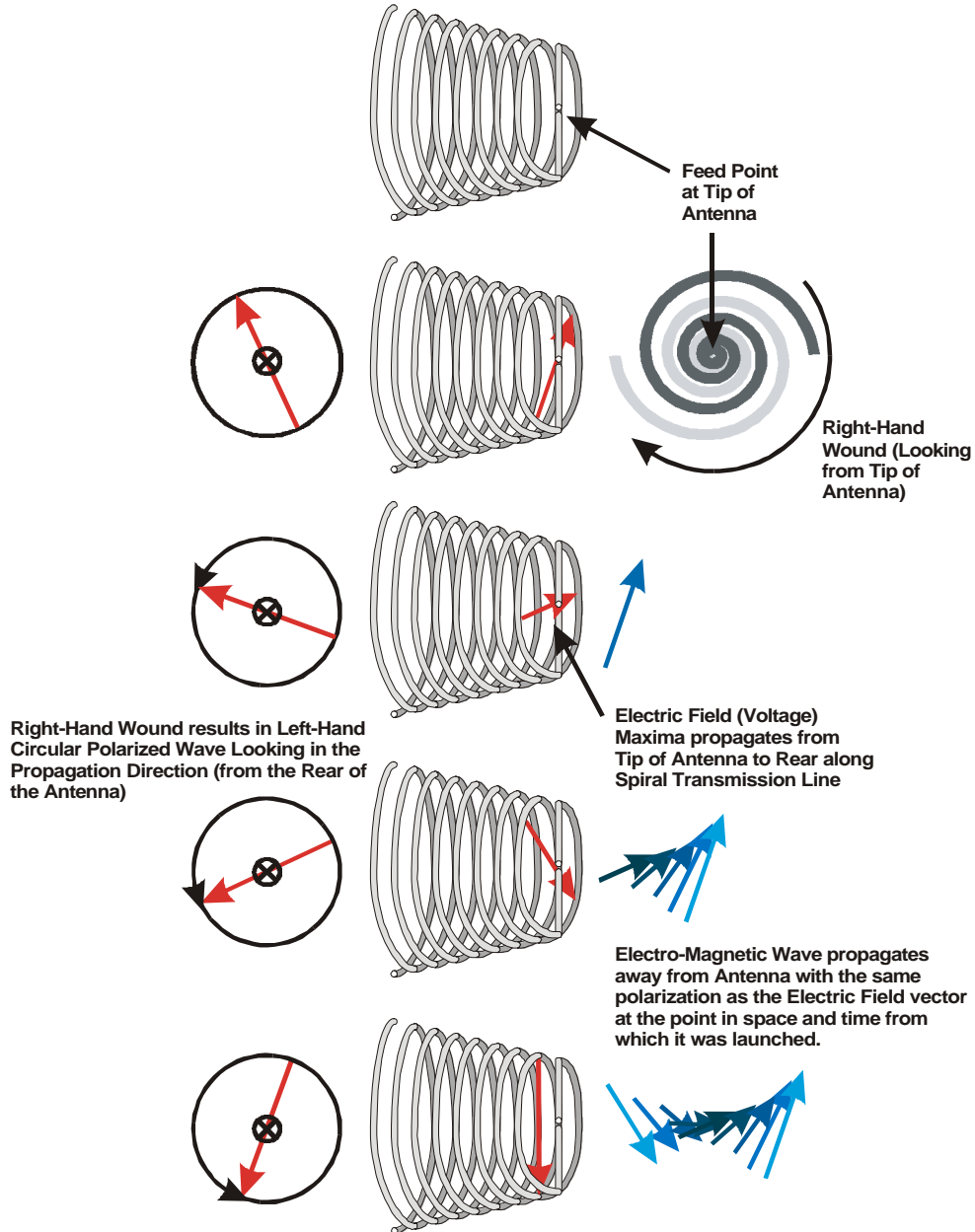
MODEL 3102

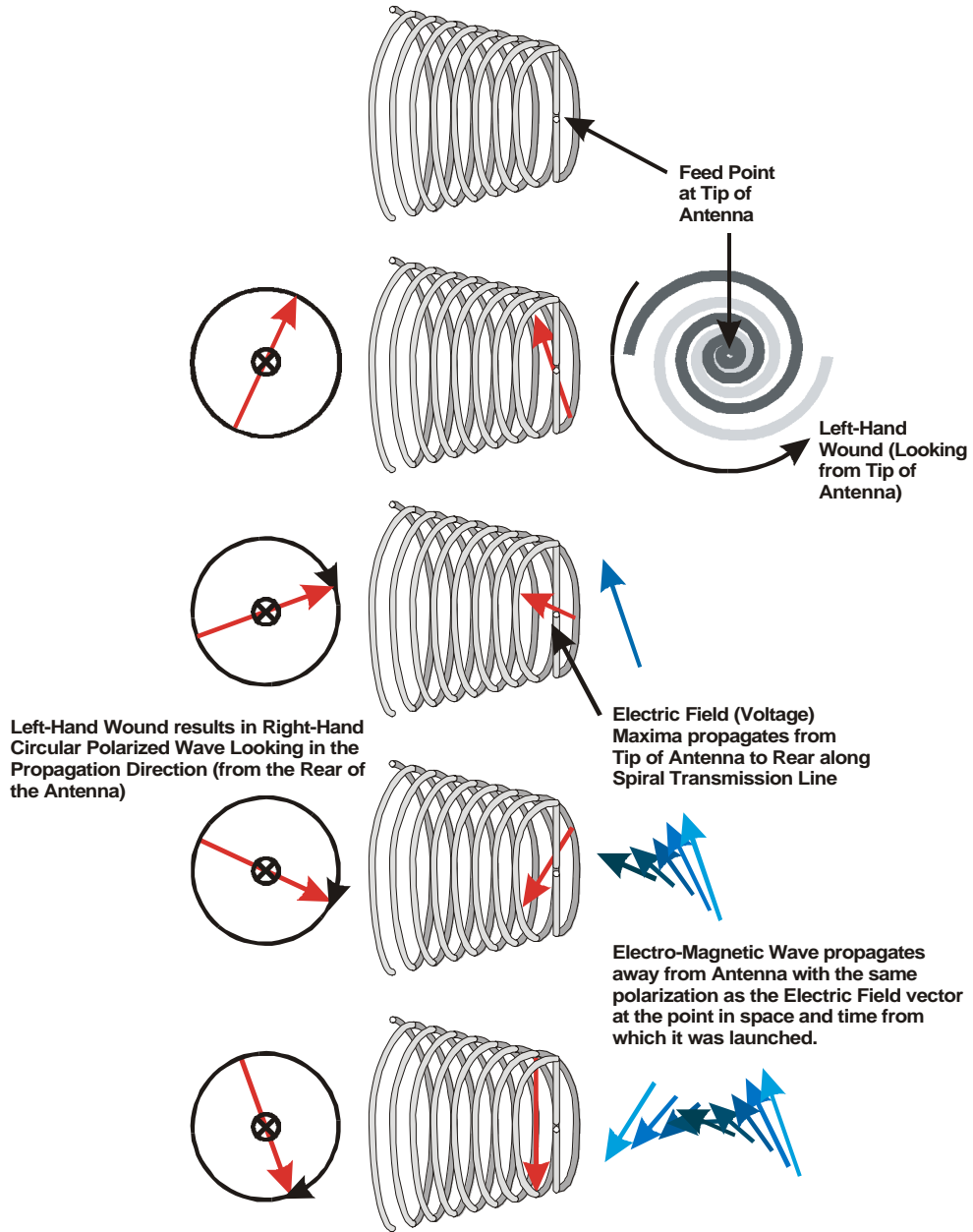
The Model 3102 support assembly is different from the other models. The support rod is threaded at one end and has four through holes at the other end for mounting the antenna. With the flat side of the support rod against the back plate of the antenna, align the holes on the support rod with those on the antenna. Insert the nylon screws provided into the support rod and antenna receptacle holes to secure the rod in place. Do not over tighten as damage to the screws will occur.

MOUNTING

The underside of the mounting base is designed to accept ETS-Lindgren or other tripod mounts with standard 1/4" x 20 thread mounts. Place the mounting base over the tripod mount interface and secure the antenna in place by inserting a 1/4" x 20 thread screw knob. Mounting instructions may vary depending on the tripod used. Please consult your tripod manual for instructions.

LEFT VS. RIGHT HAND CIRCULAR POLARIZATION

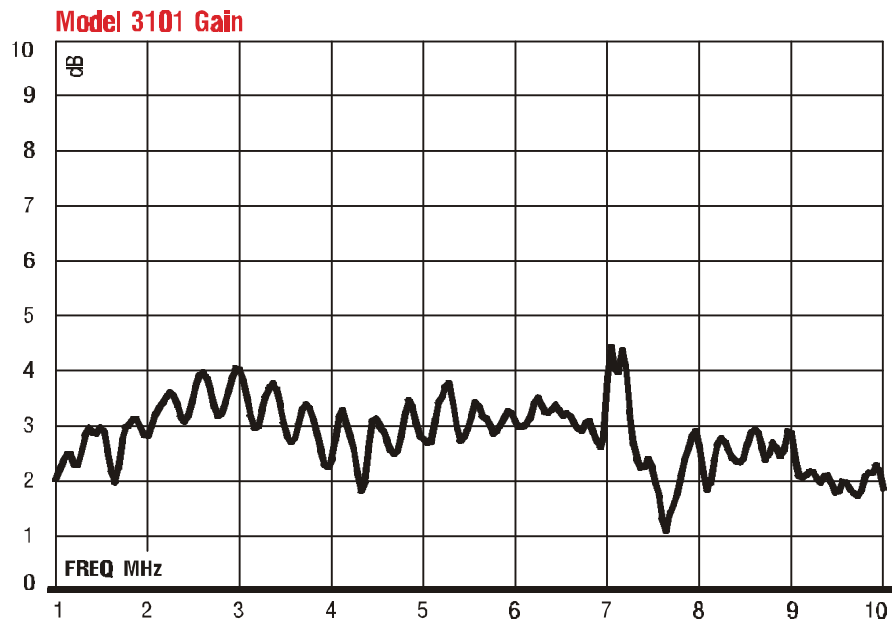
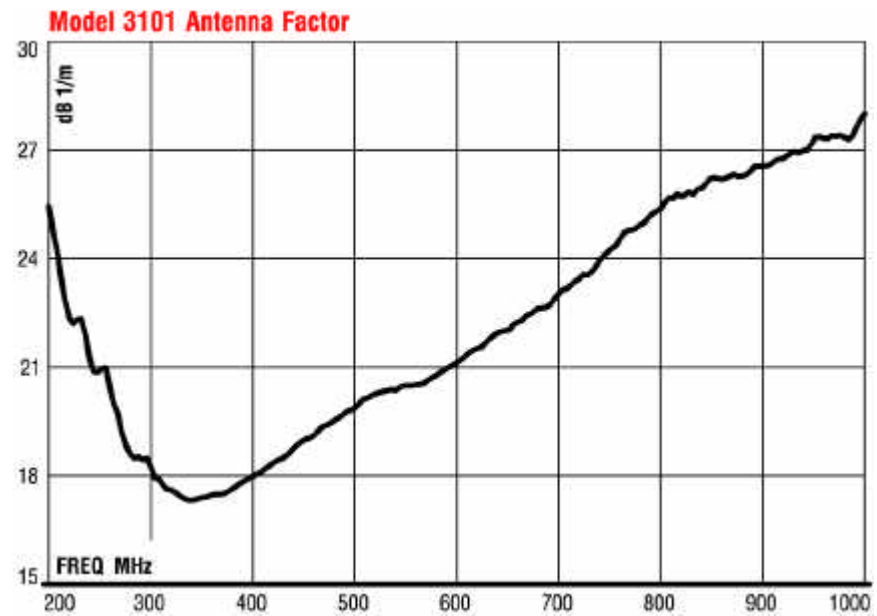


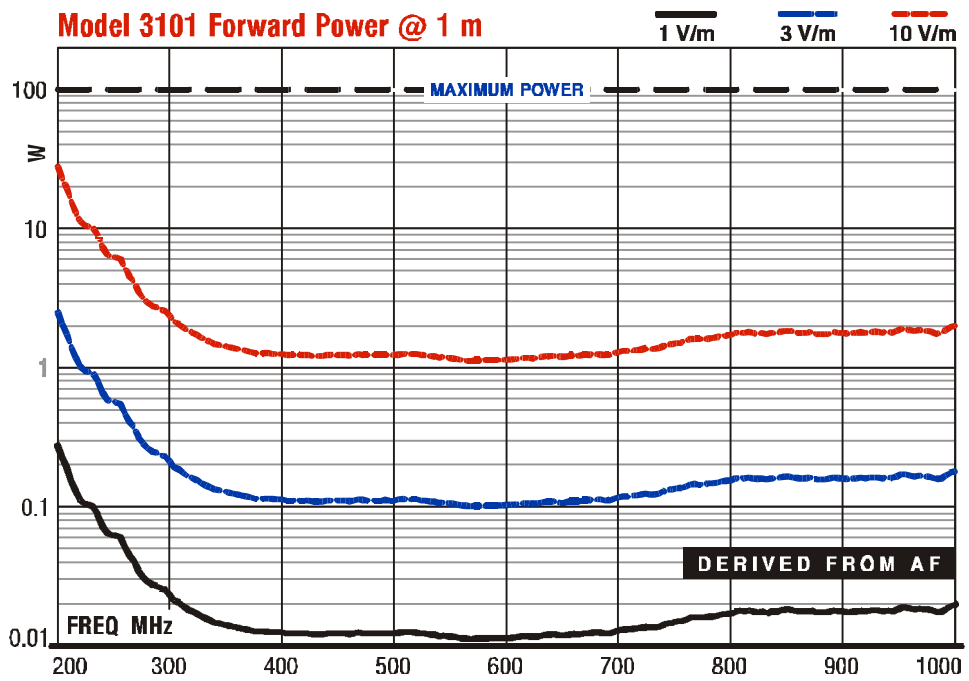
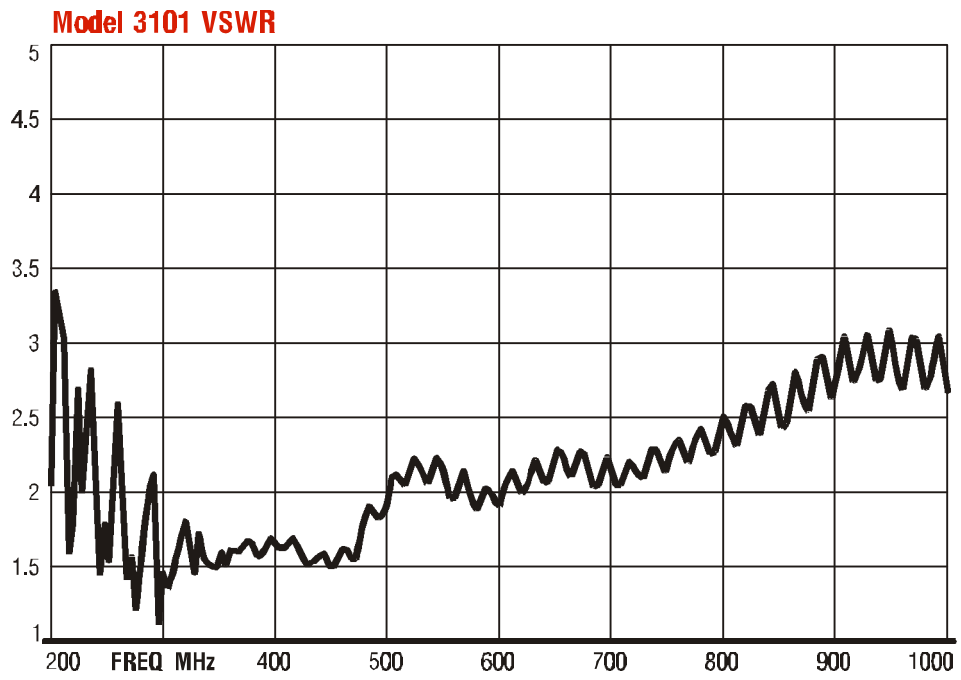


TYPICAL DATA

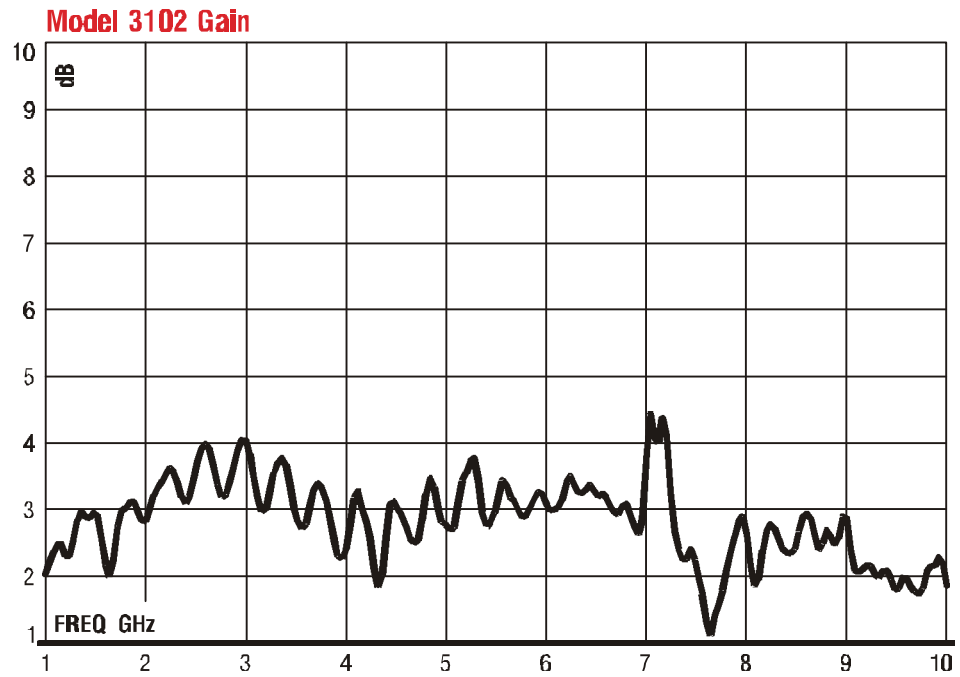
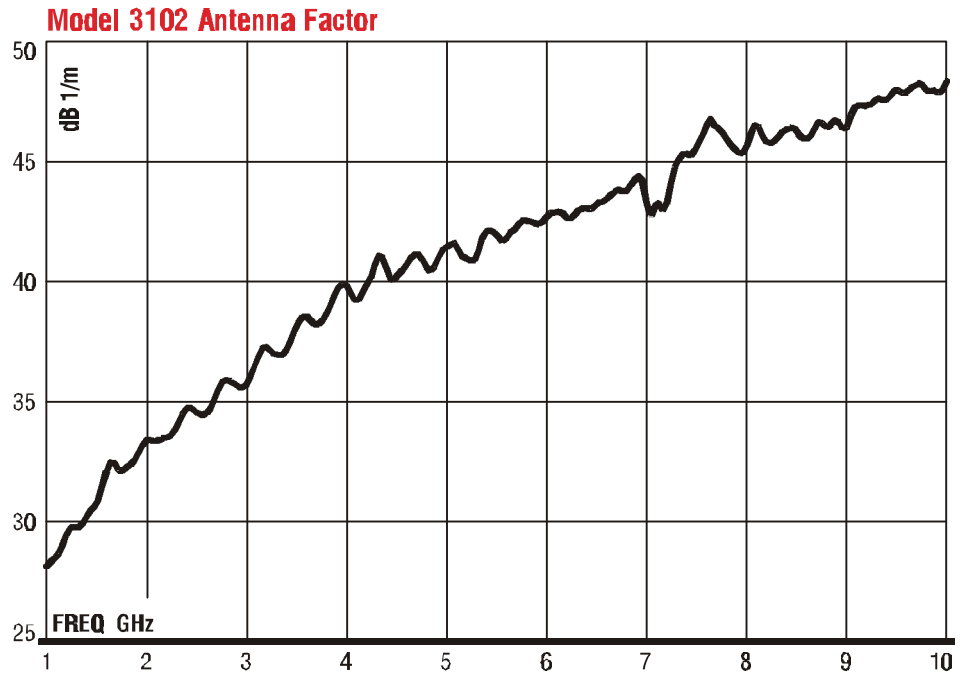
Typical Data measurements taken at a 1 meter spacing.

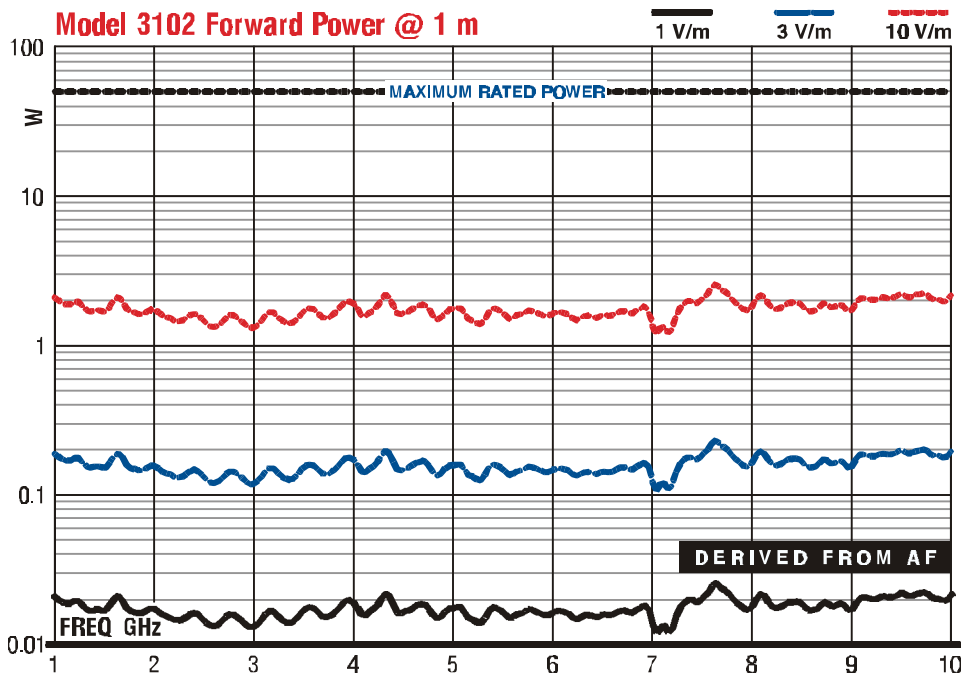
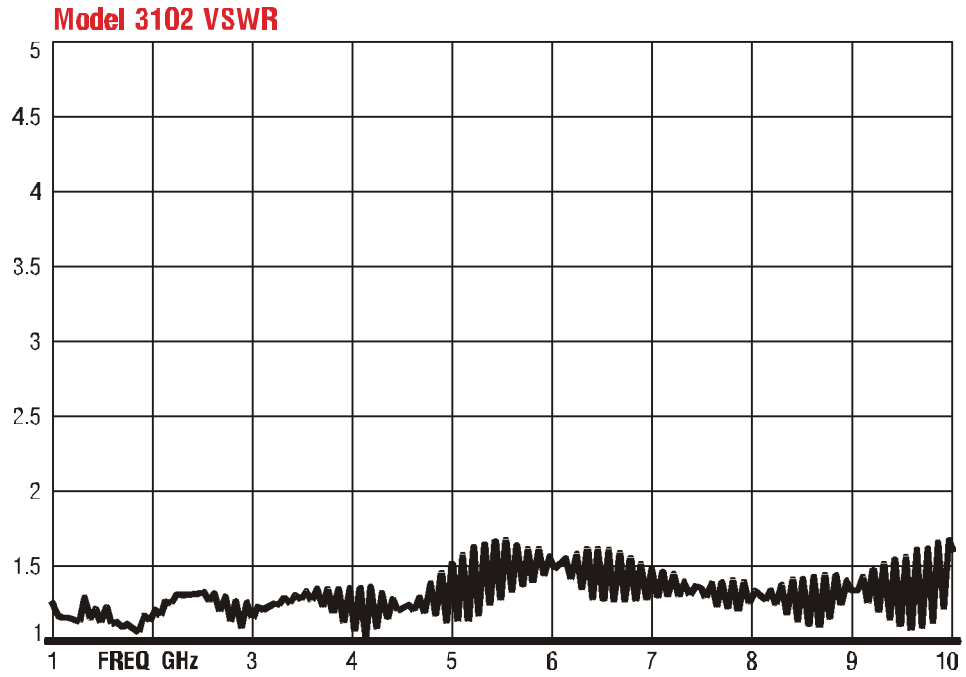
MODEL 3101





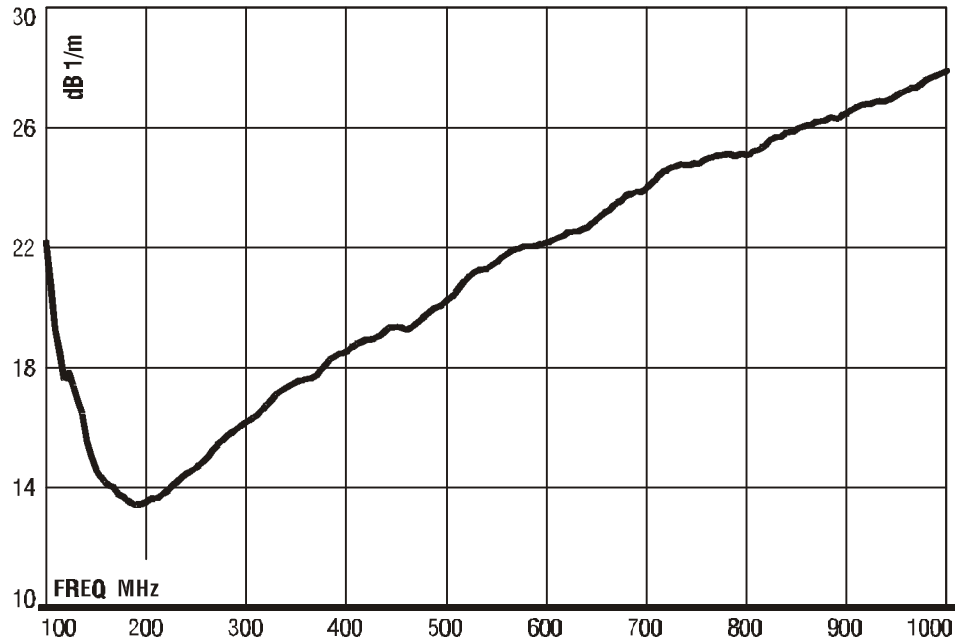
MODEL 3102



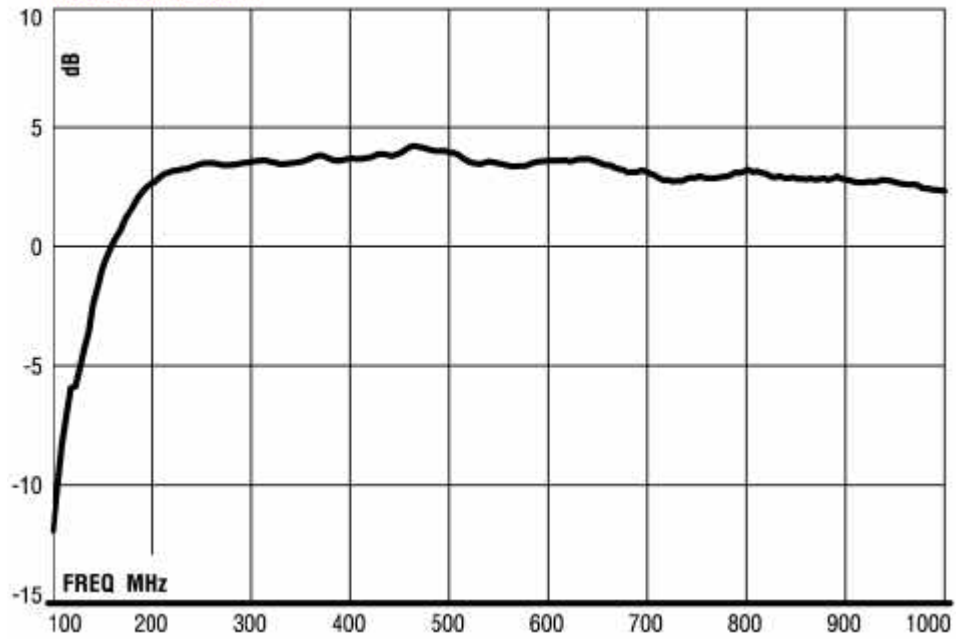


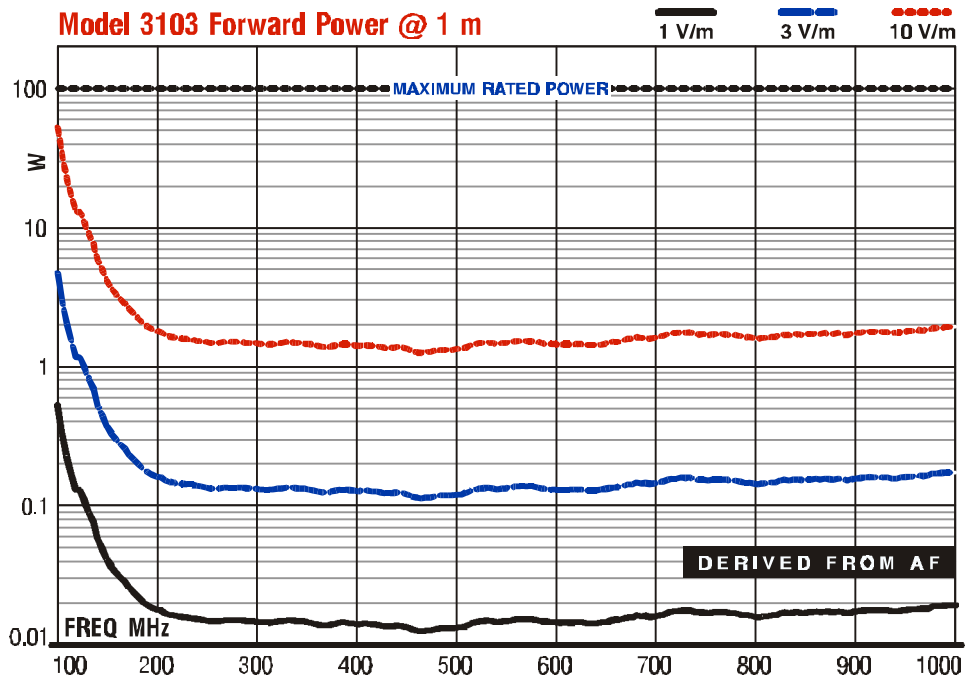
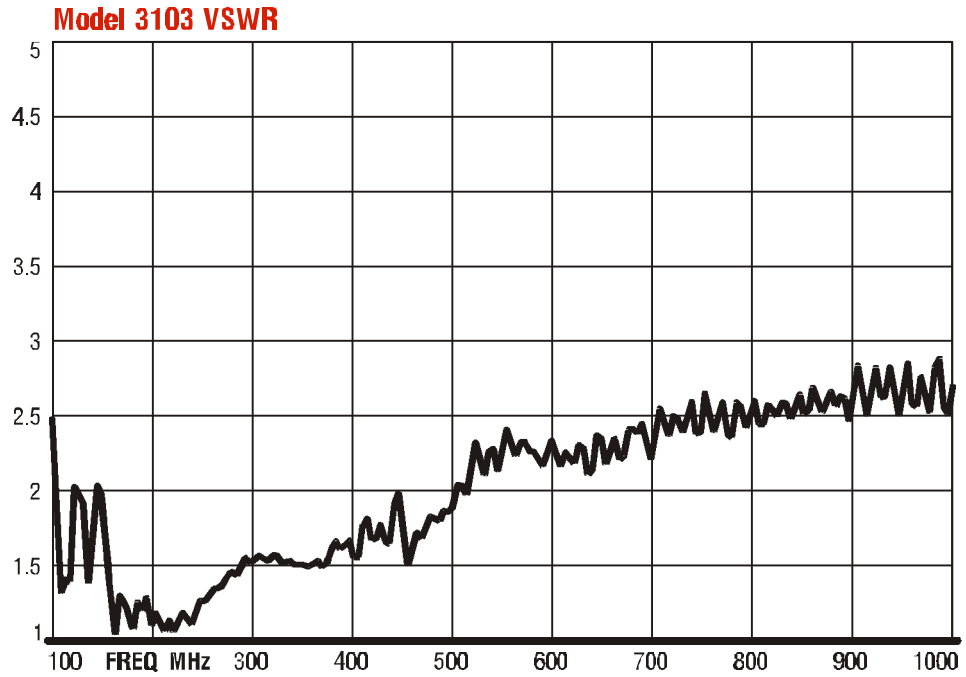
MODEL 3103

Model 3103 Antenna Factor



Model 3103 Gain





SPECIFICATIONS

ELECTRICAL

Model	3101	3102	3103
Impedance	50 ohms		
VSWR (AVG.)	2.4:1	1.6:1	1.9:1
Maximum Continuous Power	100 Watts	50 Watts	100 Watts
Short Term Peak Power	150 Watts	100 Watts	150 Watts
Polarization	Circular		
Connector	Type N female		

PHYSICAL

Model	3101	3102	3103
Length	81 cm 32 in	38.1 cm 15 in	102 cm 40 in
Diameter	33 cm 13 in	12.7 cm 5 in	66 cm 26 in
Weight	4.5 kg 10 lbs	1.36 kg 3 lbs	10 kg 22 lbs

MAINTENANCE

If the antennas are used outdoors, they should be checked for water accumulation. Water has a high dielectric constant and can alter the performance of the antenna.

To ensure reliable and repeatable long-term performance, annual recalibration of your antennas 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/>.

WARRANTY

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 LIMITED 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.