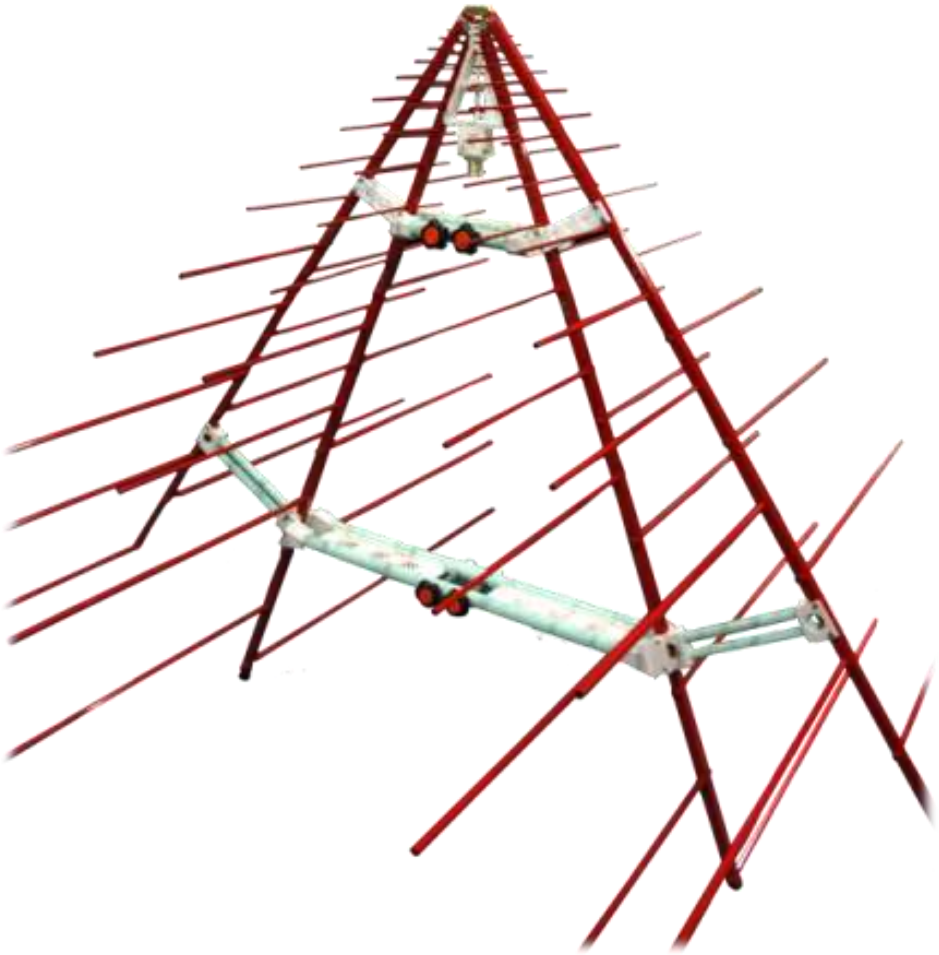
Model 3150B

Dual-Stacked Log Periodic Dipole Array Antenna

Assembly Manual



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Revision Record | MANUAL,3150B | Part #399335, Rev. A

Revision	Description	Date
A	Initial Release	October, 2012

Table of Contents

Notes, Cautions, and Warnings

	**Note:** Denotes helpful information intended to provide tips for better use of the product.
CAUTION	**Caution: Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.**
WARNING	**Warning: Denotes a hazard. Failure to follow instructions could result in SEVERE personal injury and/or property damage. Included text gives proper procedures.**

See the ETS-Lindgren *Product Information Bulletin* for safety, regulatory, and other product marking information.

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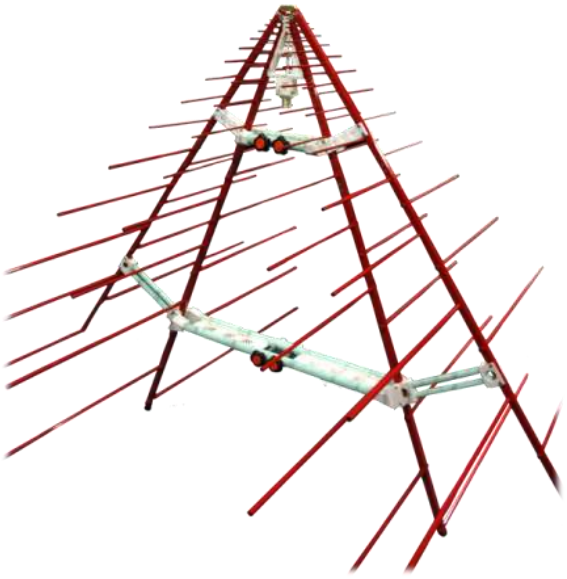
1.0 Introduction

The **ETS-Lindgren Model 3150B Dual-Stacked Log Periodic Dipole Array (LPDA) Antenna** is comprised of two separate 100 ohm LPDAs. The result is a 50 ohm input impedance array when assembled in parallel, providing increased gain when compared to a single LPDA. Also, the VSWR is low so that it provides excellent match with the amplifier, resulting in the generation of a high field per input power.



The Model 3150B is ideal in situations where high fields need to be generated. Although the Model 3150B can be used as a receive antenna, the primary application is for generating the high fields that are required in automotive EMC applications per standards like ISO 11541-2, or for MIL-STD susceptibility testing.

The frequency range covers 80 MHz to 1 GHz. The Model 3150B can generate 200 V/m with less than 1 kW of input power at a 1-m distance for the 100 MHz to 1 GHz range. When combined with ETS-Lindgren Model 3159 or Model 3158 High-Power Biconical Antennas, the 3150B becomes an integral part of the ETS-Lindgren high severity level immunity solution.

The Model 3150B is fitted with a 7/16 coaxial connector. With this connector the antenna can handle up to 5 kW of input power at 80 MHz and up to 3 kW at 1 GHz.

For easy horizontal and vertical polarization changes, the ETS-Lindgren 7-TR Tripod is recommended; a special cross boom is required to use the Model 3150B with the 7-TR. For information on the 7-TR and special cross boom, see page 9. For mounting instructions, see *Mounting onto a 7-TR Tripod* on page 25.

Standard Configuration

The Model 3150B ships unassembled, and includes the following components to be assembled, plus the necessary fasteners. For assembly steps, see page 15.

- Feed Boom Assembly

- Boom Assemblies (4)

  The five longest elements (the last five elements from the bottom of each boom assembly) are removed for shipping. To attach the removable elements to the boom assembly, see page 16.

(one boom assembly shown with the five removable elements attached)

- Center Support Bar

- Side Support Bars (2)

Optional 7-TR Tripod

The Model 3150B mounts to an ETS-Lindgren 7-TR Tripod using a special cross boom (part# 118556). To order a 7-TR and cross boom, contact ETS-Lindgren Sales.

The **ETS-Lindgren 7-TR Tripod** is constructed of PVC and fiberglass components, providing increased stability for physically large antennas. The unique design allows for quick assembly, disassembly, and convenient storage. Allows several different configurations, including options for manual or pneumatic polarization. Quick height adjustment and locking wheels provide ease of use during testing. Maximum height is 2.17 m (85.8 in), with a minimum height of 0.8 m (31.8 in). This tripod can support a 13.5 kg (30 lb) load.

7-TR shown with standard boom

ETS-Lindgren Product Information Bulletin

See the ETS-Lindgren *Product Information Bulletin* included with your shipment for the following:

- Warranty information
- Safety, regulatory, and other product marking information
- Steps to receive your shipment
- Steps to return a component for service
- ETS Lindgren calibration service
- ETS Lindgren contact information

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2.0 Maintenance

CAUTION

Before performing any maintenance, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

Maintenance of the Model 3150B is limited to external components such as cables or connectors. If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

If you have any questions concerning maintenance, contact ETS Lindgren Customer Service.

Replacement and Optional Parts

ETS-Lindgren may substitute a similar part or new part number with the same functionality for another part/part number. Contact ETS-Lindgren for questions about part numbers and ordering parts.

Following are the part numbers for ordering replacement or optional parts for the Model 3150B Dual Stacked Log Periodic Dipole Array (LPDA) Antenna.

Part Description	Part Number
7-TR Cross Boom for 3150B	118556

Service Procedures

For the steps to return a system or system component to ETS-Lindgren for service, see the *Product Information Bulletin* included with your shipment.

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3.0 Specifications

Electrical Specifications

Frequency Range:	80 MHz to 1 GHz
VSWR (Average):	2:1
Maximum Continuous Power:	5 kW at 80 MHz, 2.5 kW at 1 GHz
Peak Power:	7 kW at 80 MHz, 4 kW at 1 GHz
Impedance (Nominal):	50 Ω
Connector:	7/16 female

Physical Specifications

Height:	203.07 cm (79.95 in)
Width:	209.07 cm (82.31 in)
Depth:	150.44 cm (59.23 in)
Weight:	10.56 kg (23.28 lb)

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4.0 Assembly Instructions

CAUTION **Before assembling or connecting any components, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.**

CAUTION **Take care when assembling the Model 3150B. Make sure the antenna is on a stable surface at all times.**

CAUTION **Assembly steps require assistance from one or more crewmembers.**

Components to Assemble

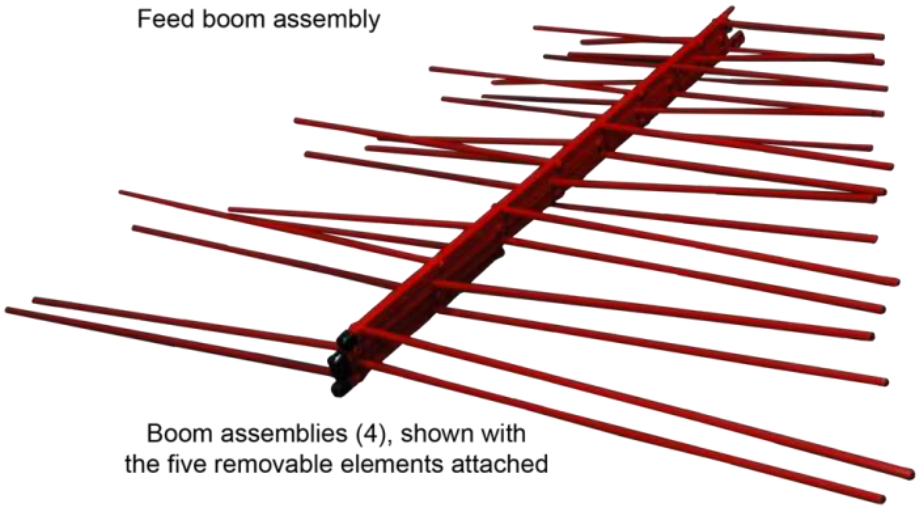
The four boom assemblies are identical and interchangeable.

You will require a Phillips screwdriver (not included) to assemble the Model 3150B.

Feed boom assembly

Center support bar

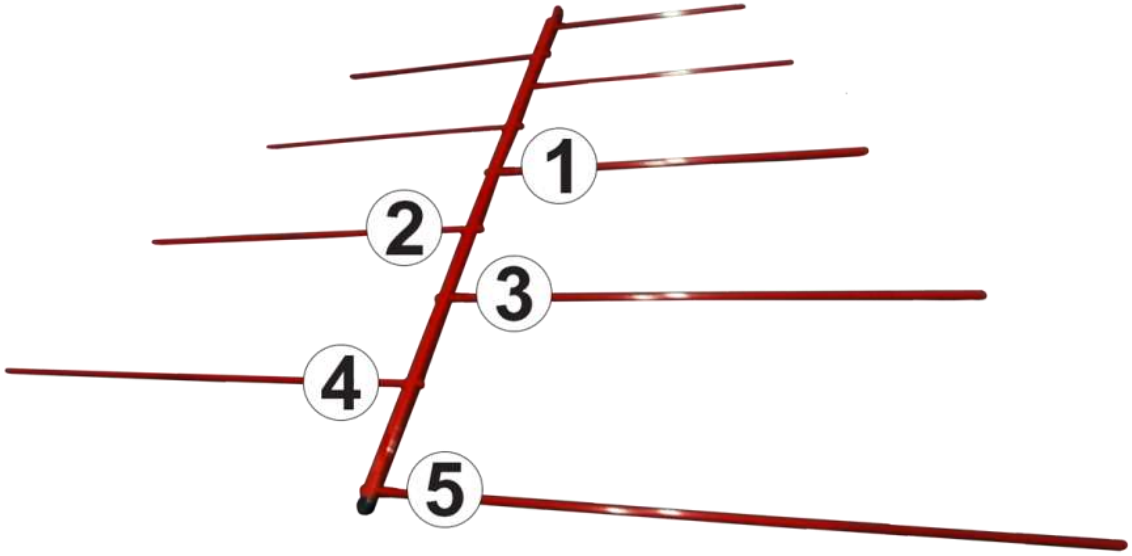
Side support bars (2)



Boom assemblies (4), shown with the five removable elements attached

Attach the Removable Elements

The five longest elements on each boom assembly (the last five from the bottom) are removed for shipping, and should be re-attached during assembly inside the chamber.



The elements and the location on the boom assembly where they attach are marked with the numbers **1**, **2**, **3**, **4**, and **5**.

CAUTION

Do not cross thread the connection or permanent damage to the element or boom could occur.

1. Match the number **1** on the element with the number **1** on the boom.

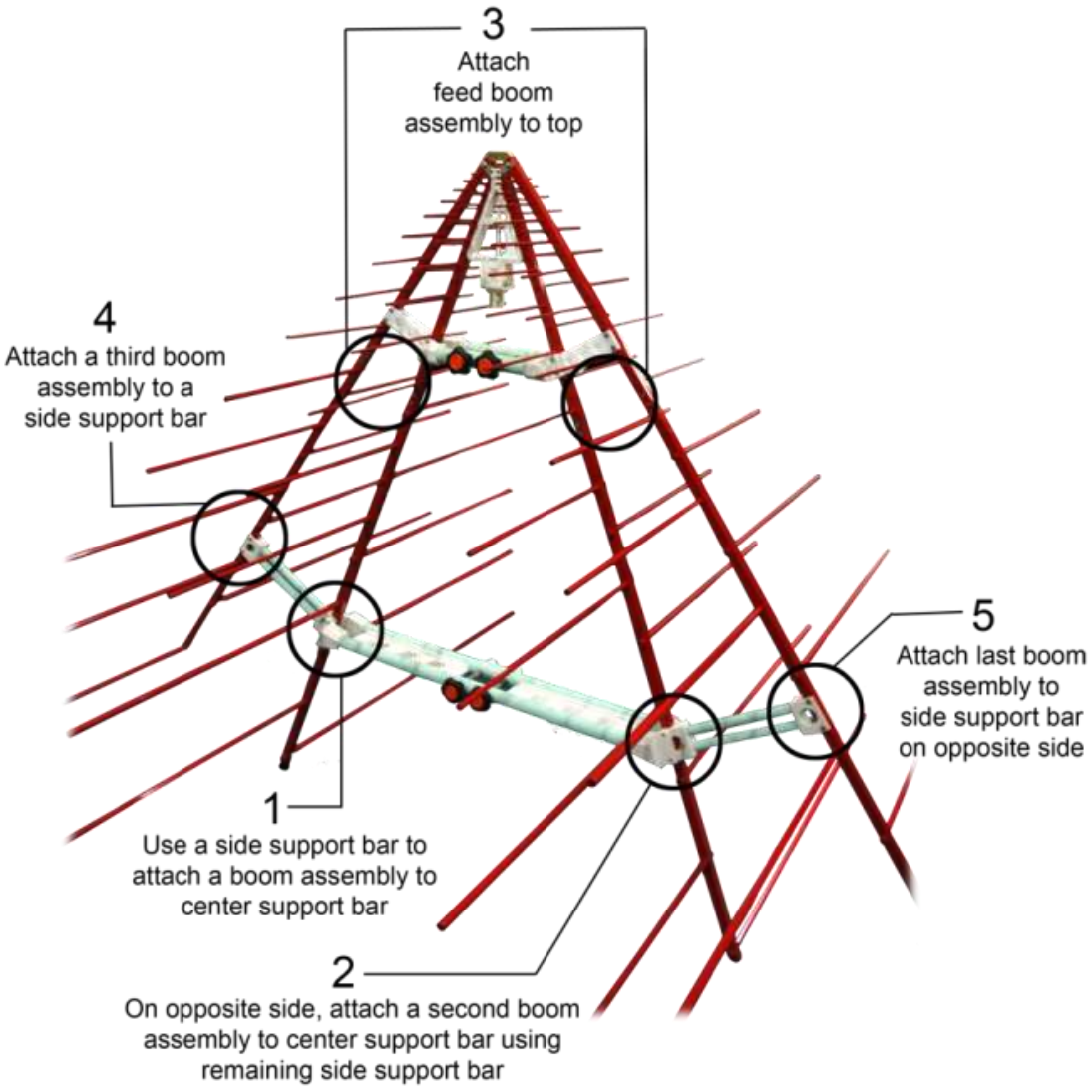
   The end of the element and the connector on the boom are threaded; rotate the element into the connector, and then hand tighten.

2. Repeat step 1 for elements marked **2**, **3**, **4**, and **5**, attaching them to the corresponding locations on the boom marked **2**, **3**, **4**, and **5**.

3. Repeat step 1 and step 2 for each boom assembly.

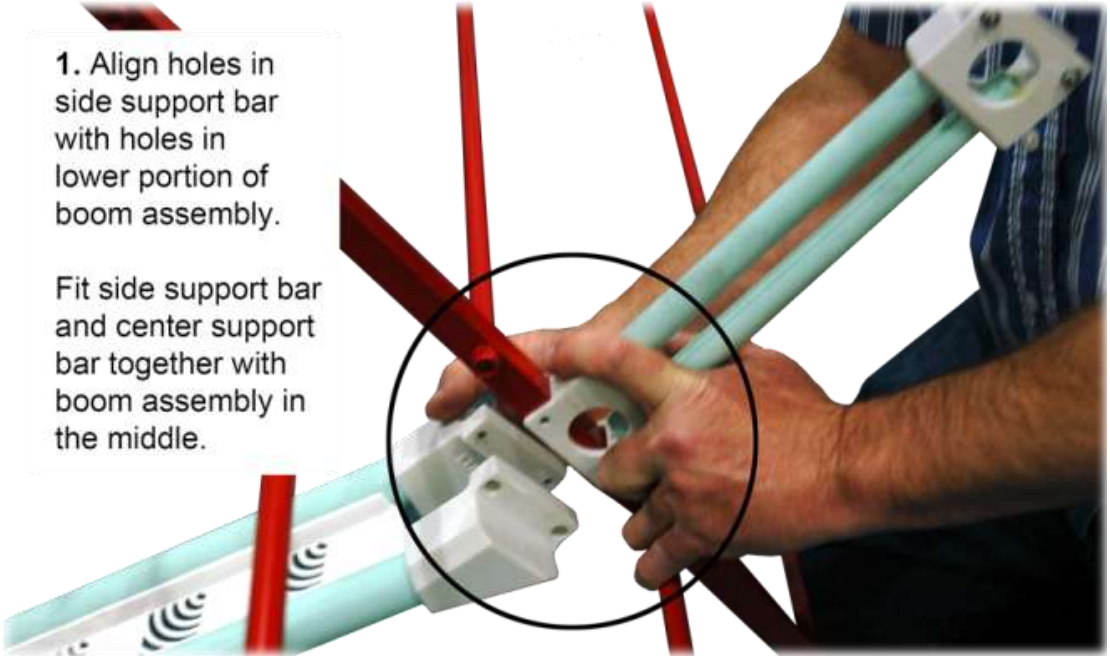
Overview of Steps

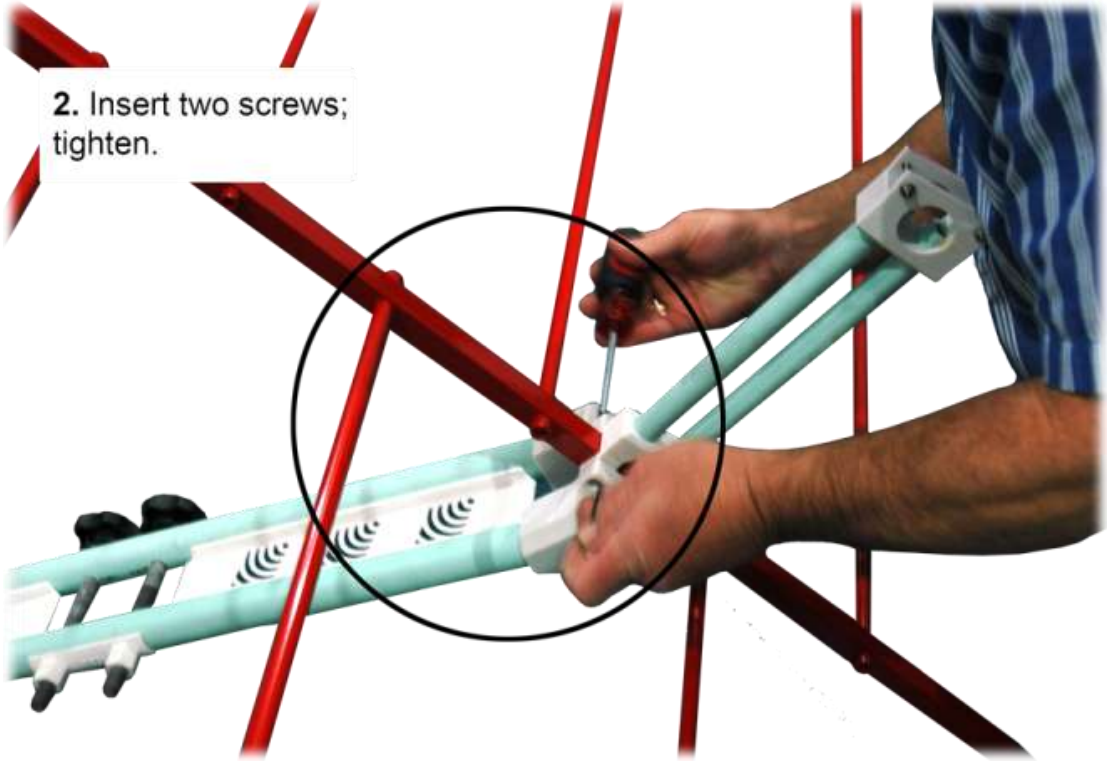
Before you begin, see page 16 to attach the removable elements to each boom assembly.



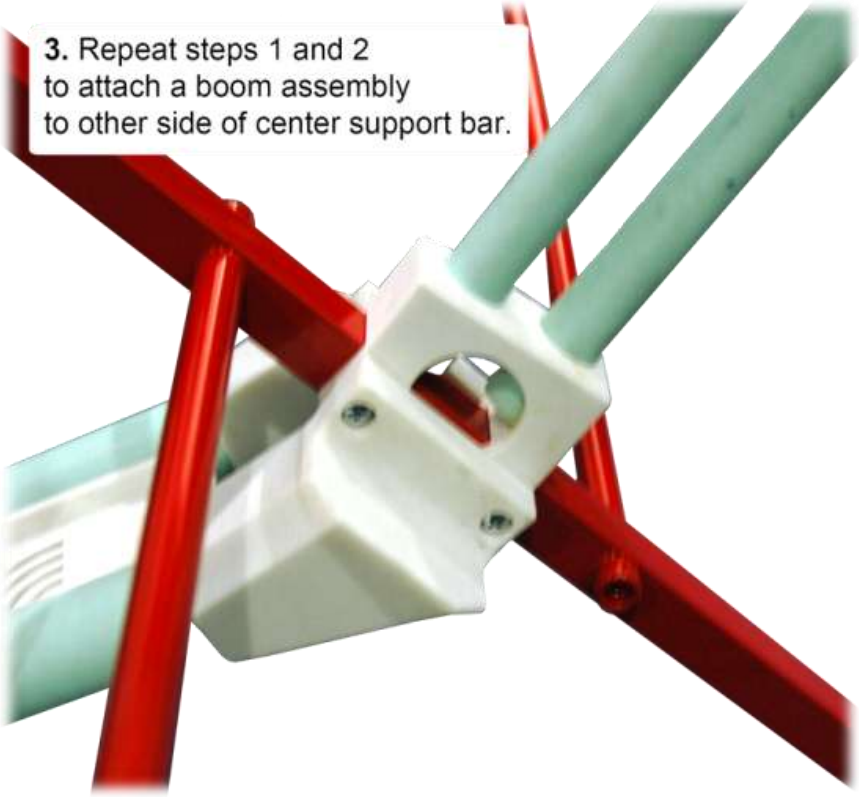
Attach Two Boom Assemblies to Center Support Bar

Before you begin, see page 16 to attach the removable elements to each boom assembly.



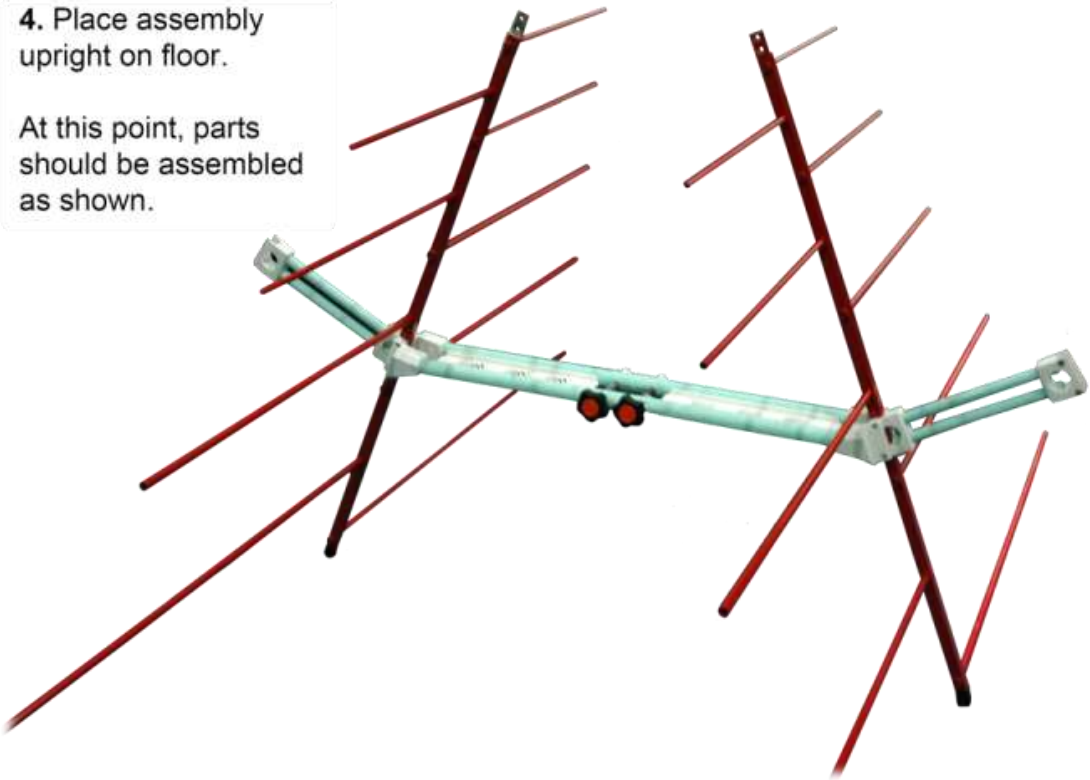


3. Repeat steps 1 and 2 to attach a boom assembly to other side of center support bar.

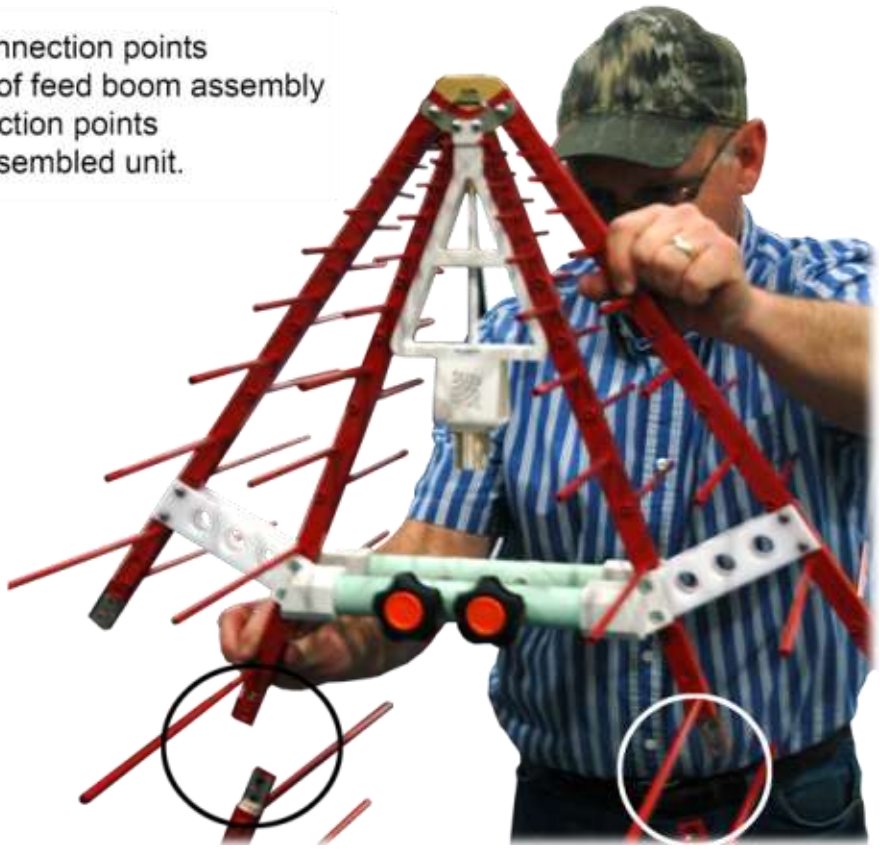


4. Place assembly upright on floor.

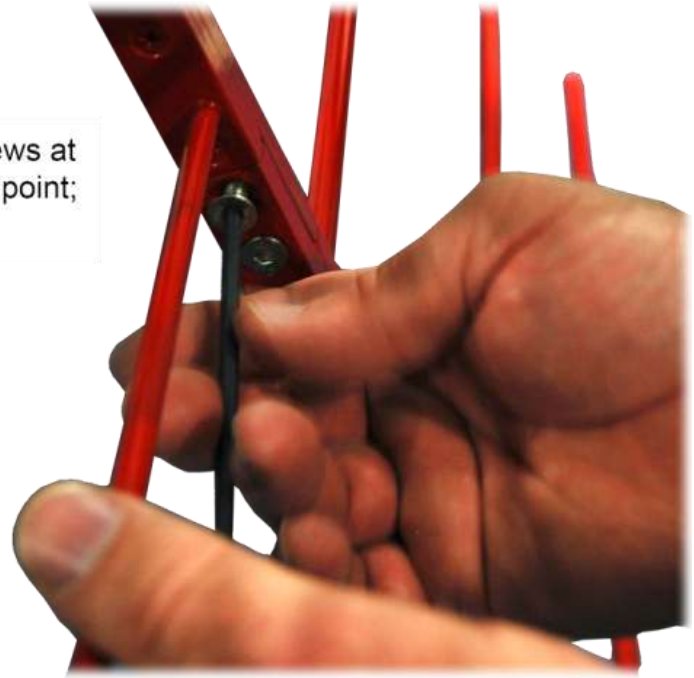
At this point, parts should be assembled as shown.



5. Mate connection points on bottom of feed boom assembly with connection points on top of asembled unit.



6. Insert two screws at each connection point; tighten.

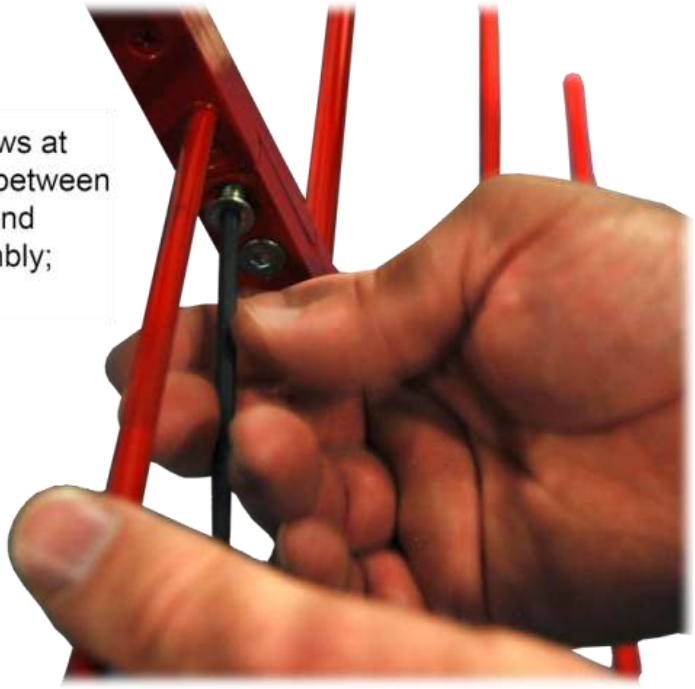


Attach Remaining Two Boom Assemblies to Side Support Bars

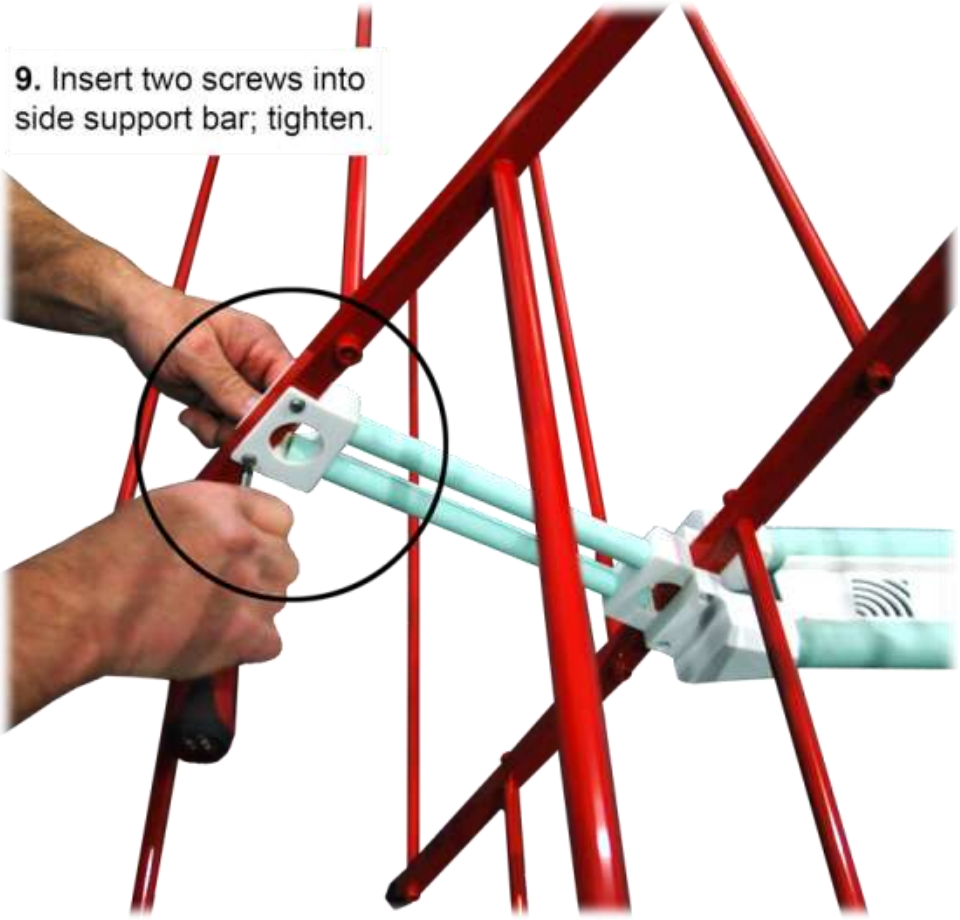
7. Align holes in side support bar with holes in lower portion of boom assembly.

Mate connection point on top of boom assembly with connection point on bottom of feed boom assembly.

8. Insert two screws at connection point between boom assembly and feed boom assembly; tighten.

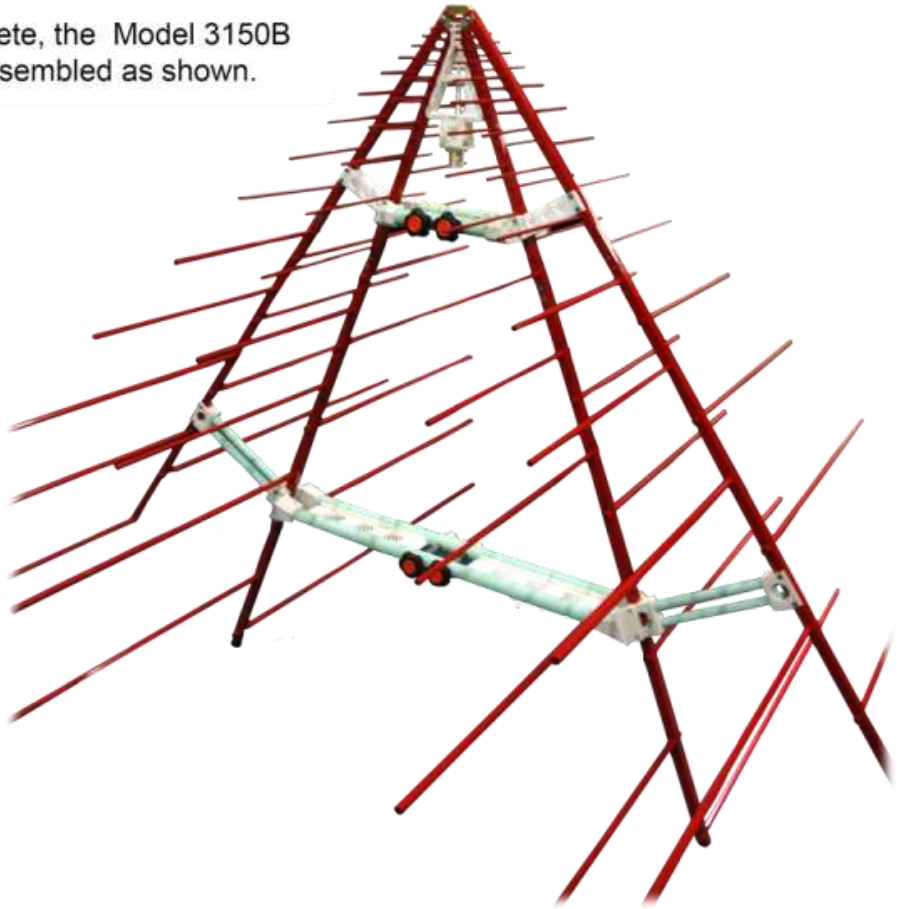


9. Insert two screws into side support bar; tighten.



10. Repeat steps 7, 8, and 9 to attach remaining boom assembly.

When complete, the Model 3150B should be assembled as shown.



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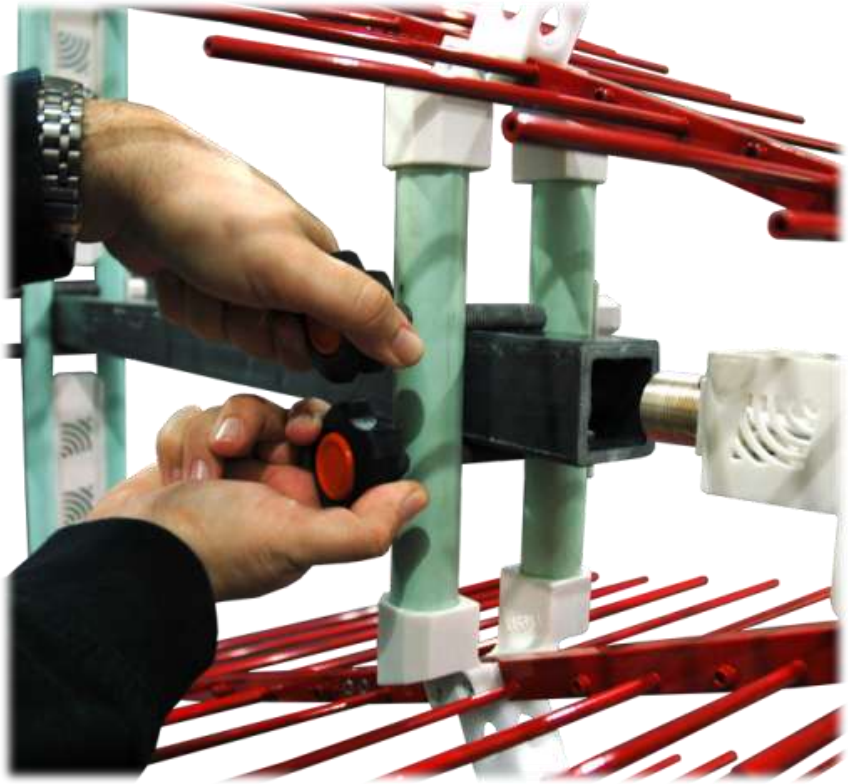
5.0 Mounting onto a 7-TR Tripod

The Model 3150B mounts to an ETS-Lindgren 7-TR Tripod using a special cross boom (part# 118556). Install the 118556 cross boom prior to mounting the Model 3150B onto the 7-TR.

1. Loosen knobs on upper and lower center support bars.

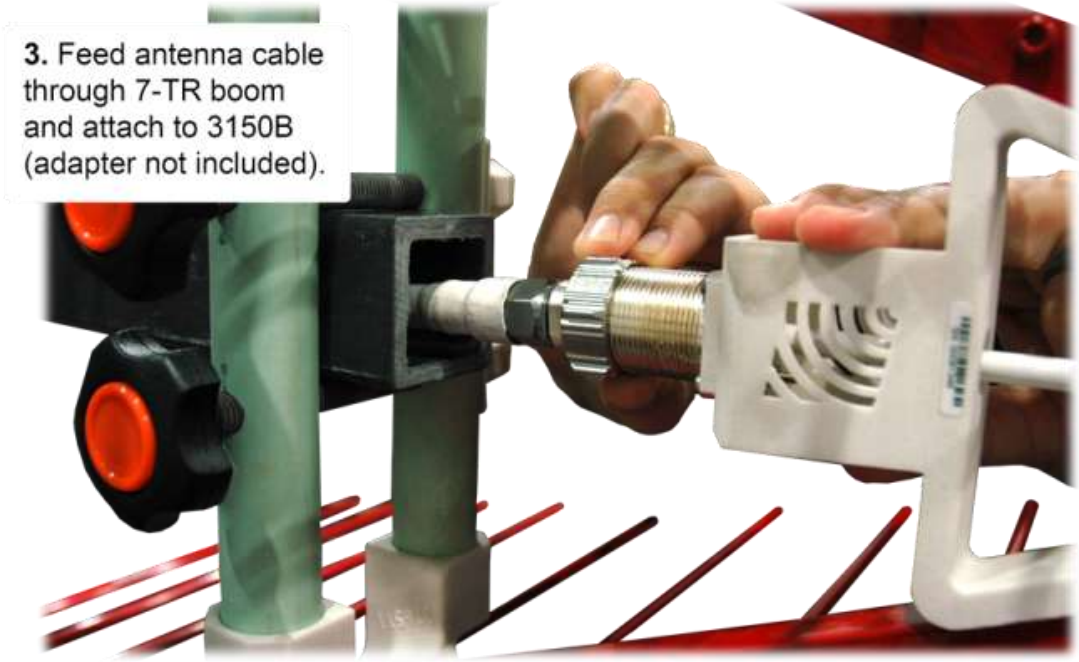
Slide 7-TR boom through holes created by knob screws.

Insert boom first through lower center support bar, and then through upper support bar.



2. When 3150B is in position, tighten knobs on upper and lower center support bars to fix it into place.

Provide support when tightening knobs.


3. Feed antenna cable through 7-TR boom and attach to 3150B (adapter not included).

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6.0 Disassembly Instructions

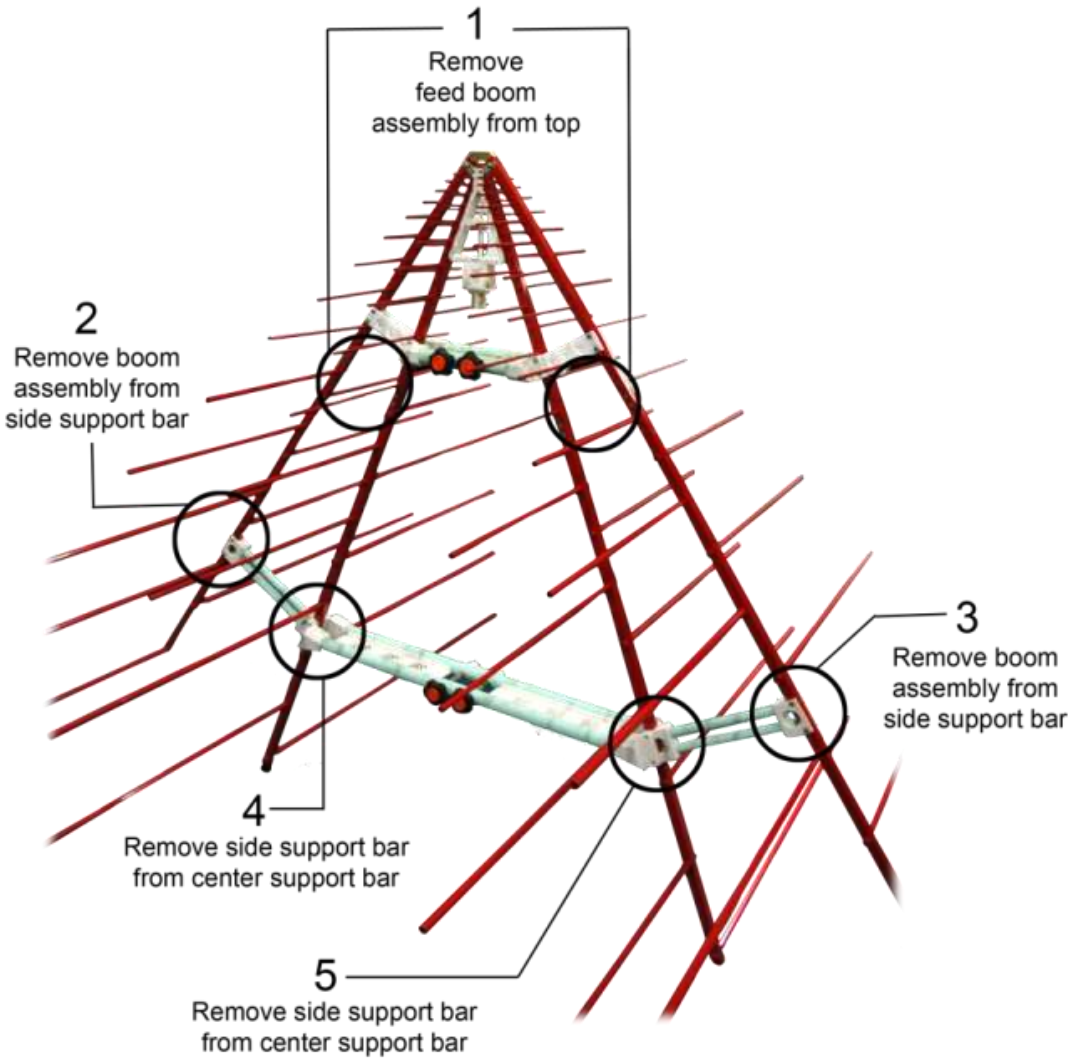
CAUTION

Before disconnecting any components, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

CAUTION

Place the Model 3150B on a stable surface before disassembling. As you remove parts, place them in a safe location. Store disassembled components in secure, protective location. Retain all fasteners.

See the corresponding step in *Assembly Instructions* on page 15 for detailed information about how each component is attached.



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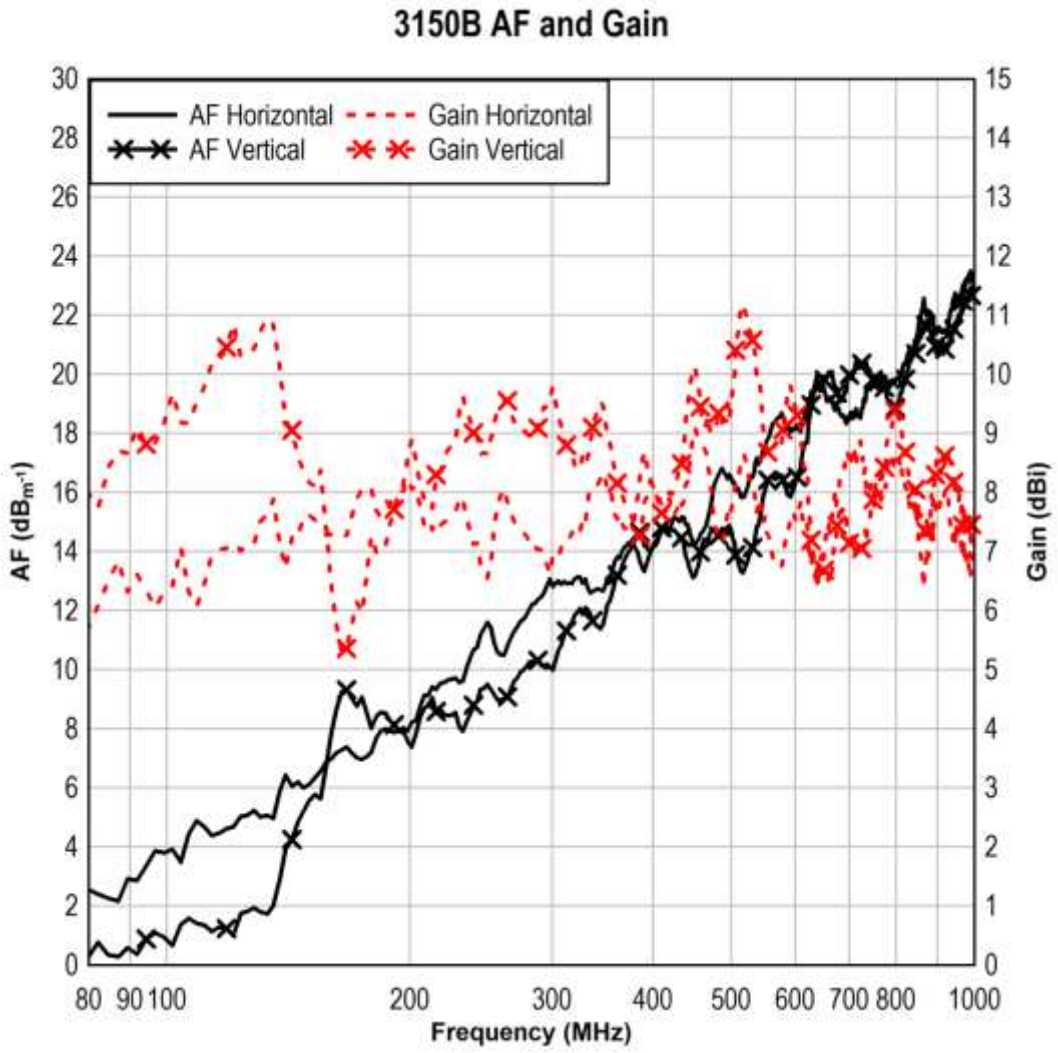
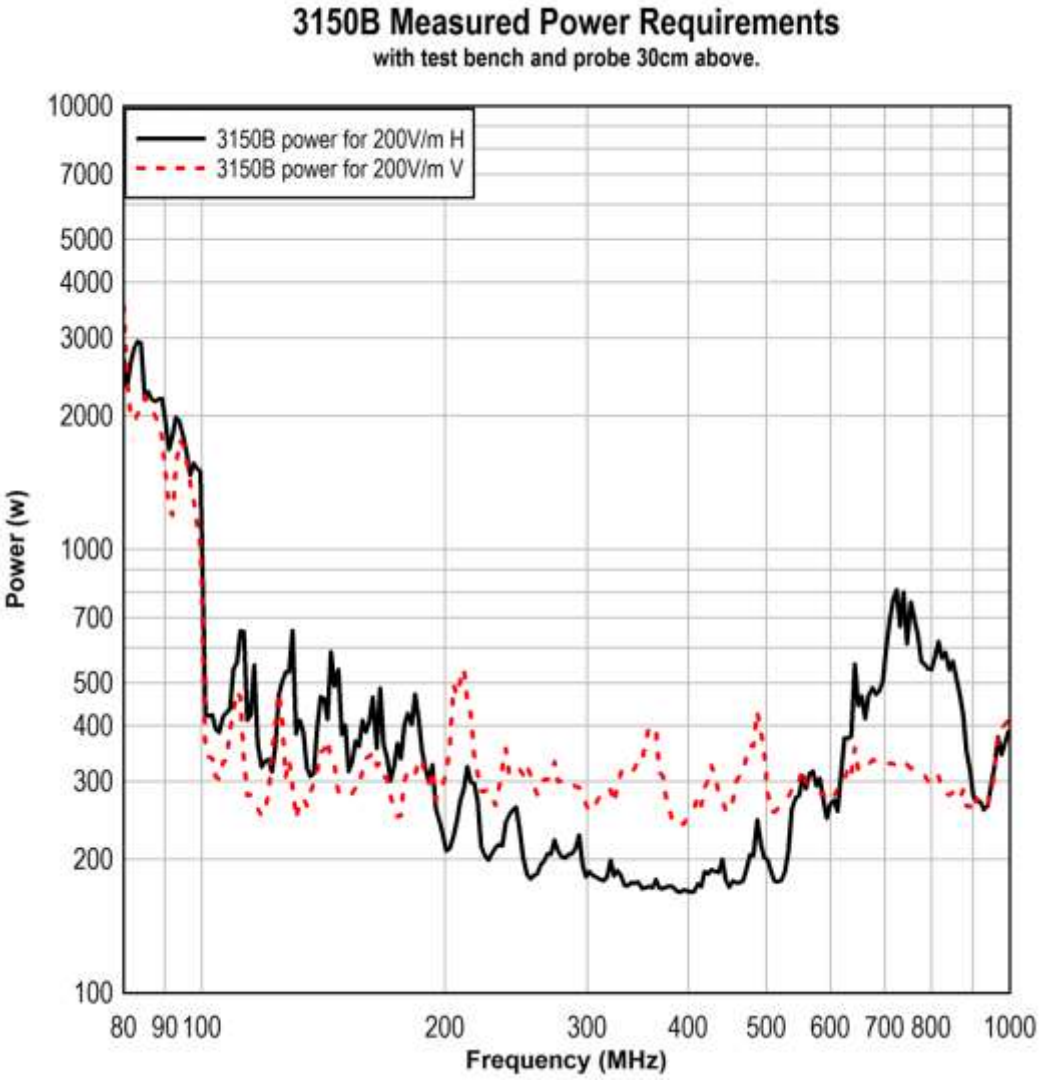
7.0 Typical Data

Typical Antenna Factor and Gain

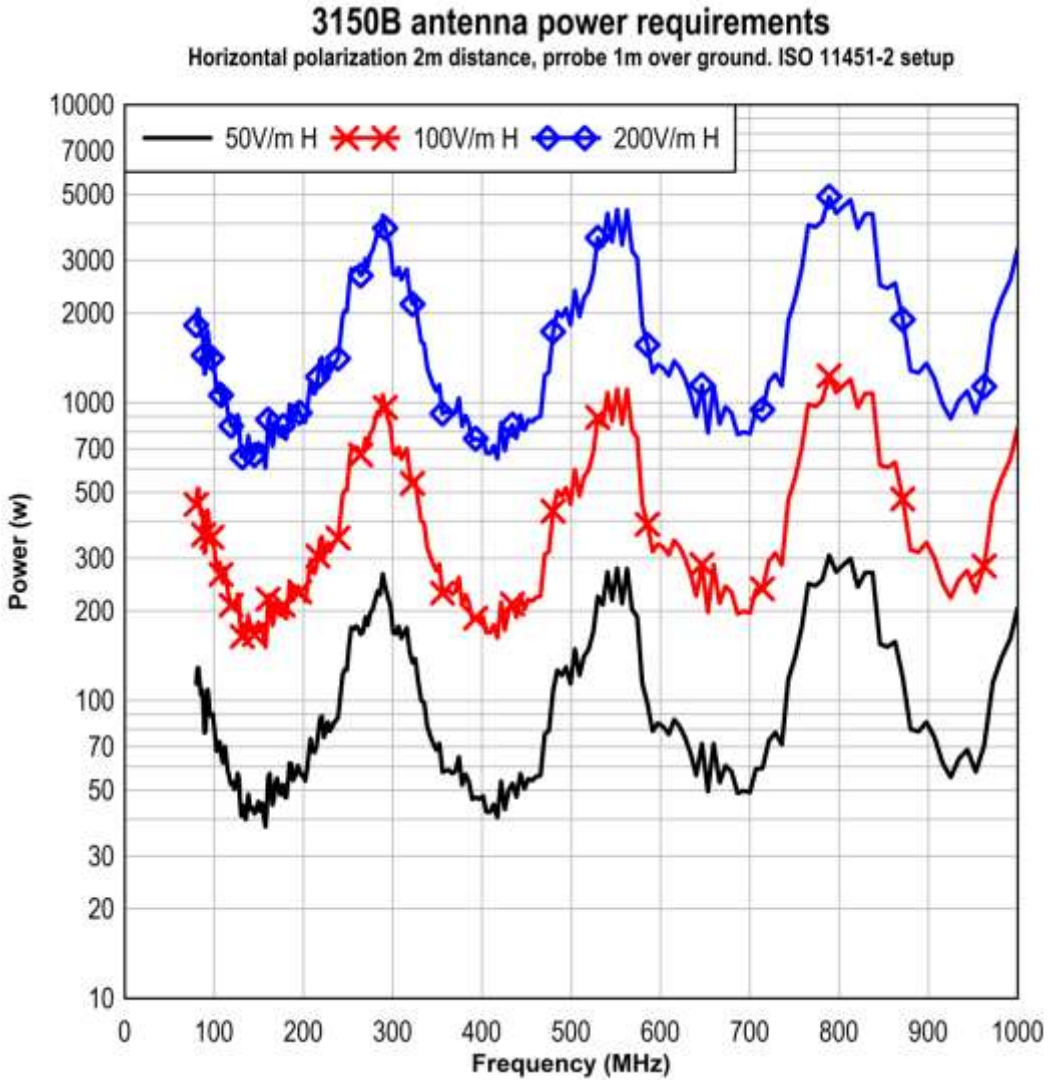


Typical Average Power Requirements

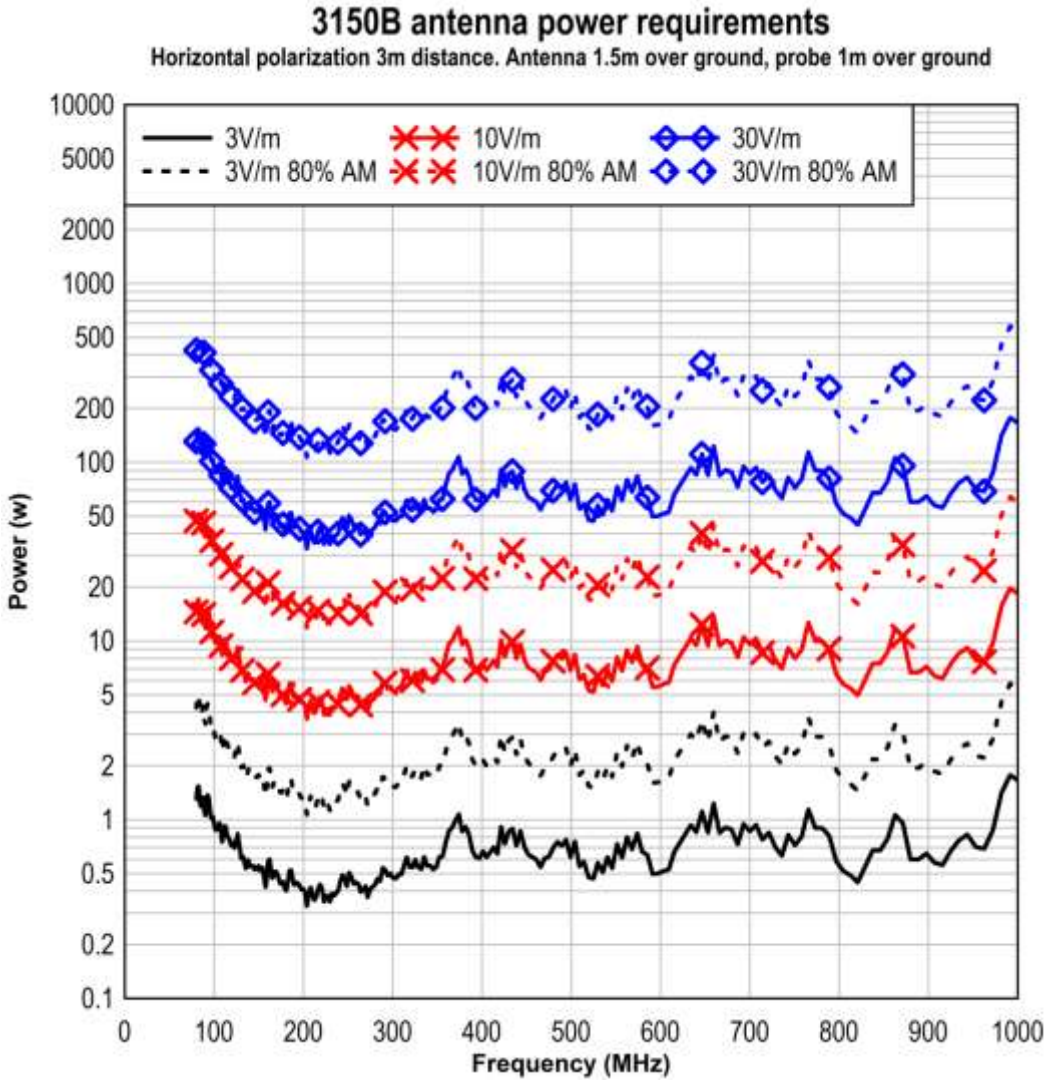
MEASURED POWER REQUIREMENTS



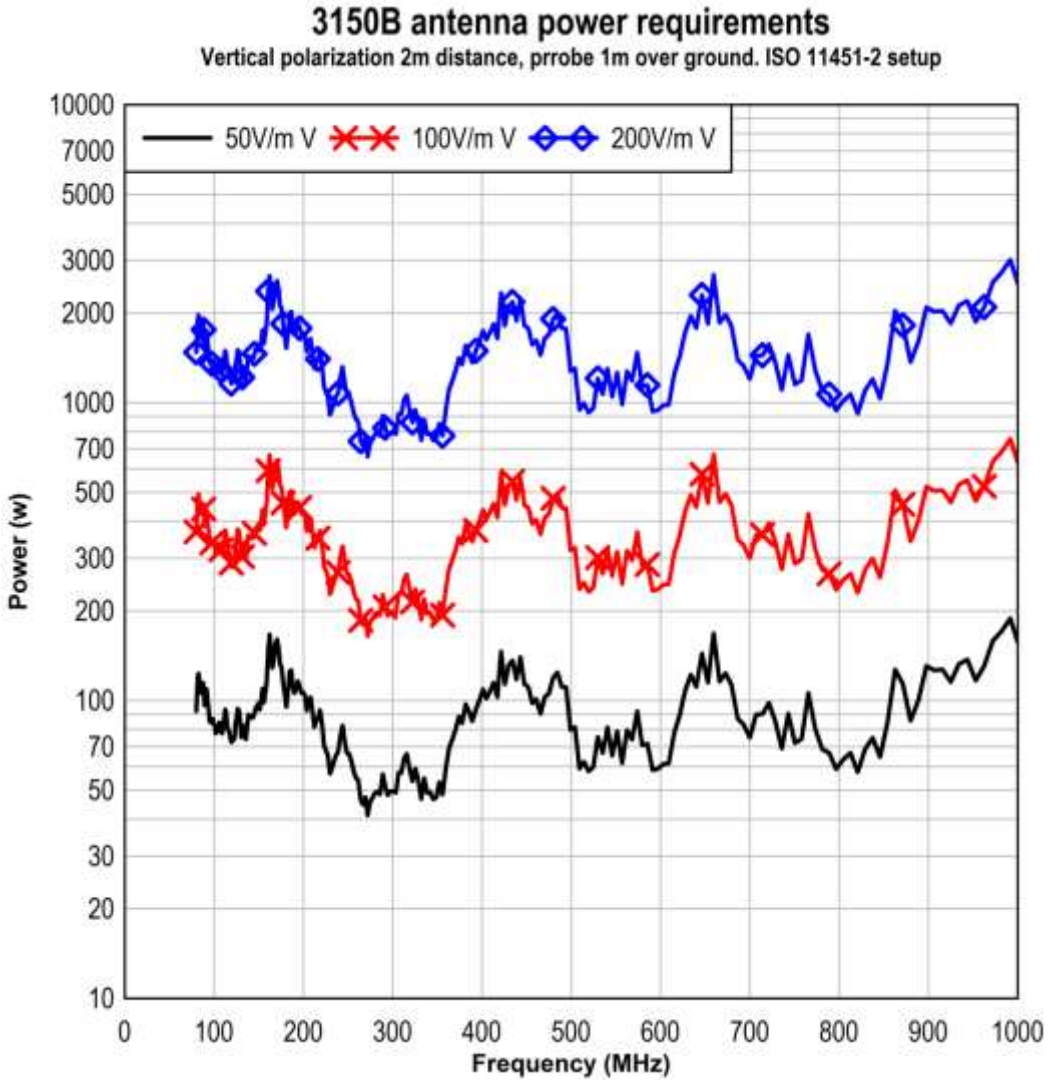
HORIZONTAL POLARIZATION, 2-M DISTANCE



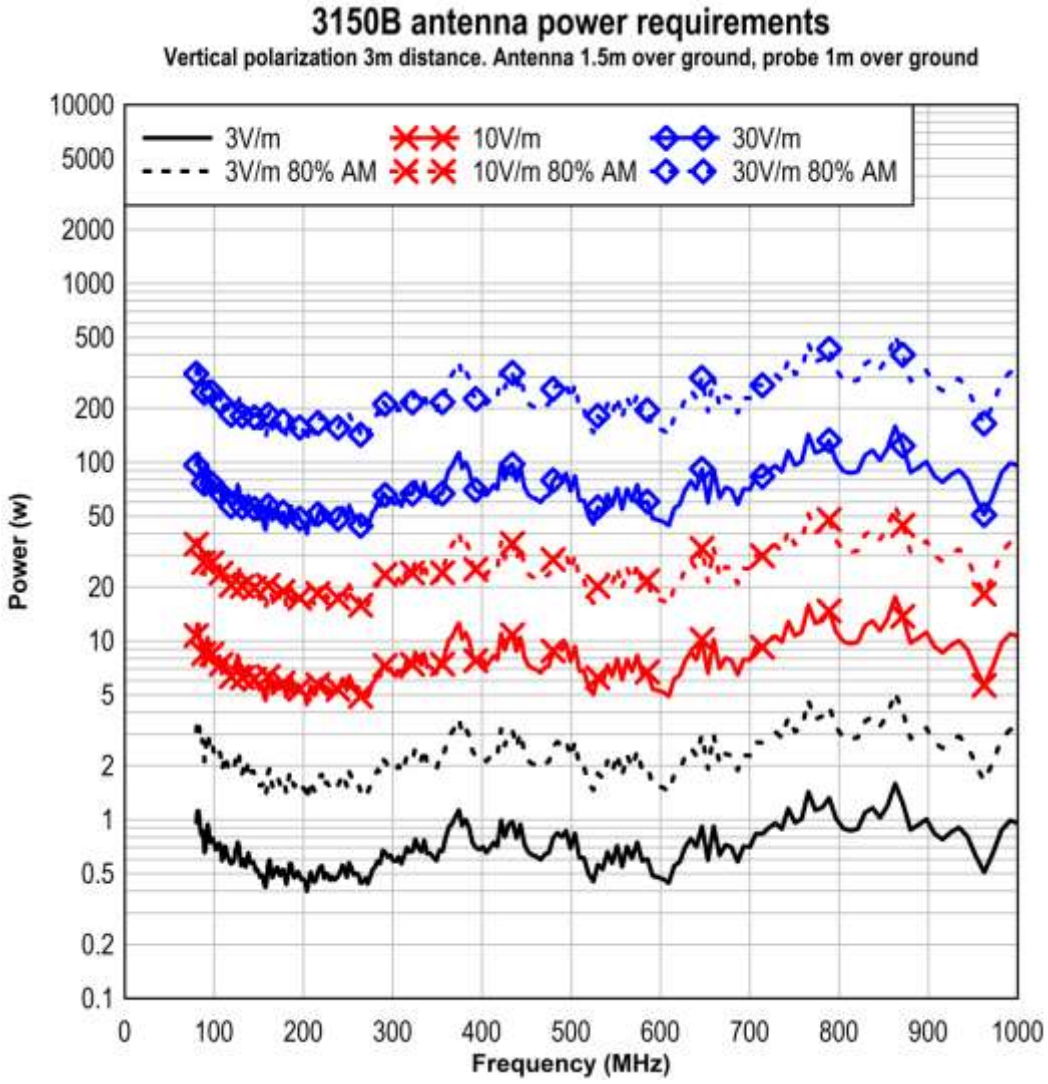
HORIZONTAL POLARIZATION, 3-M DISTANCE



VERTICAL POLARIZATION, 2-M DISTANCE

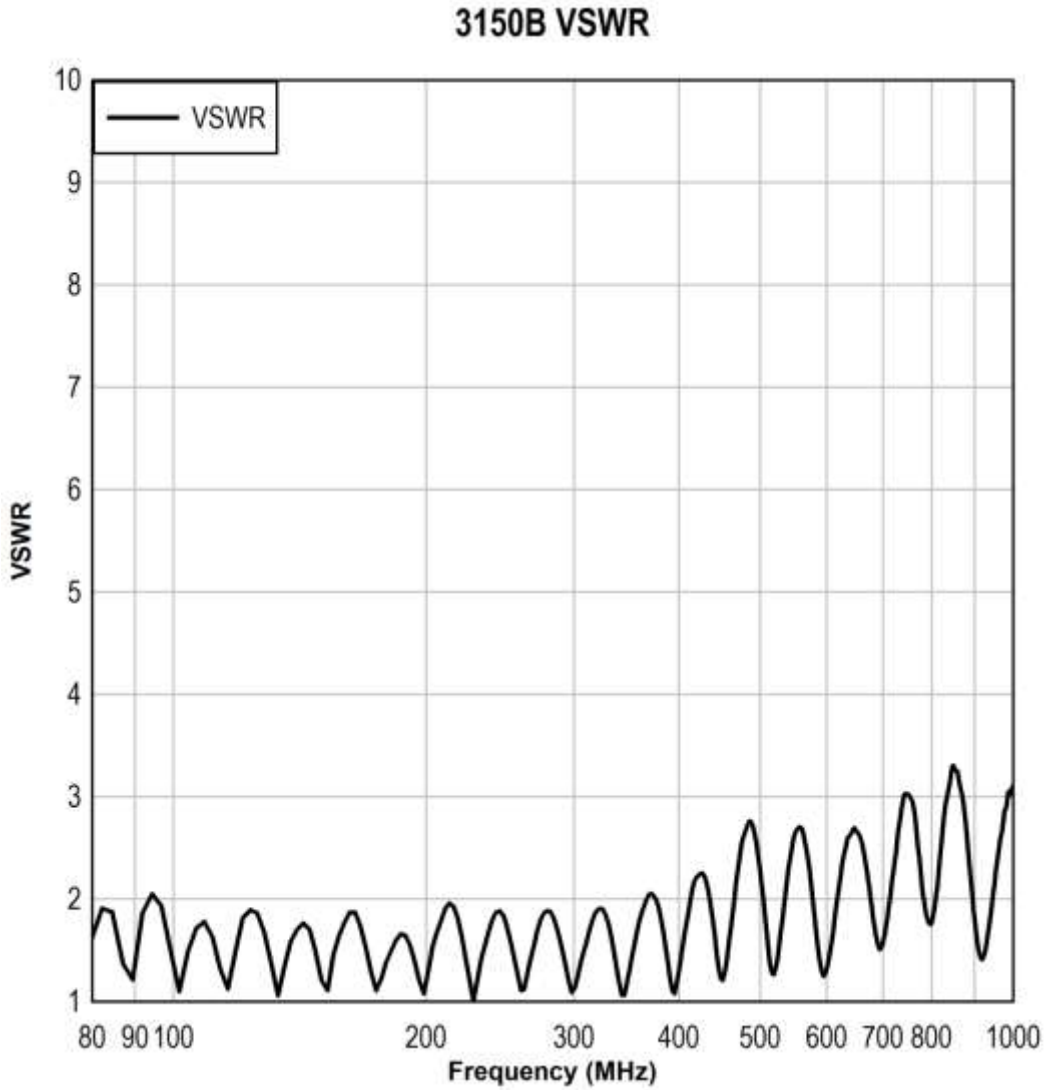


VERTICAL POLARIZATION, 3-M DISTANCE

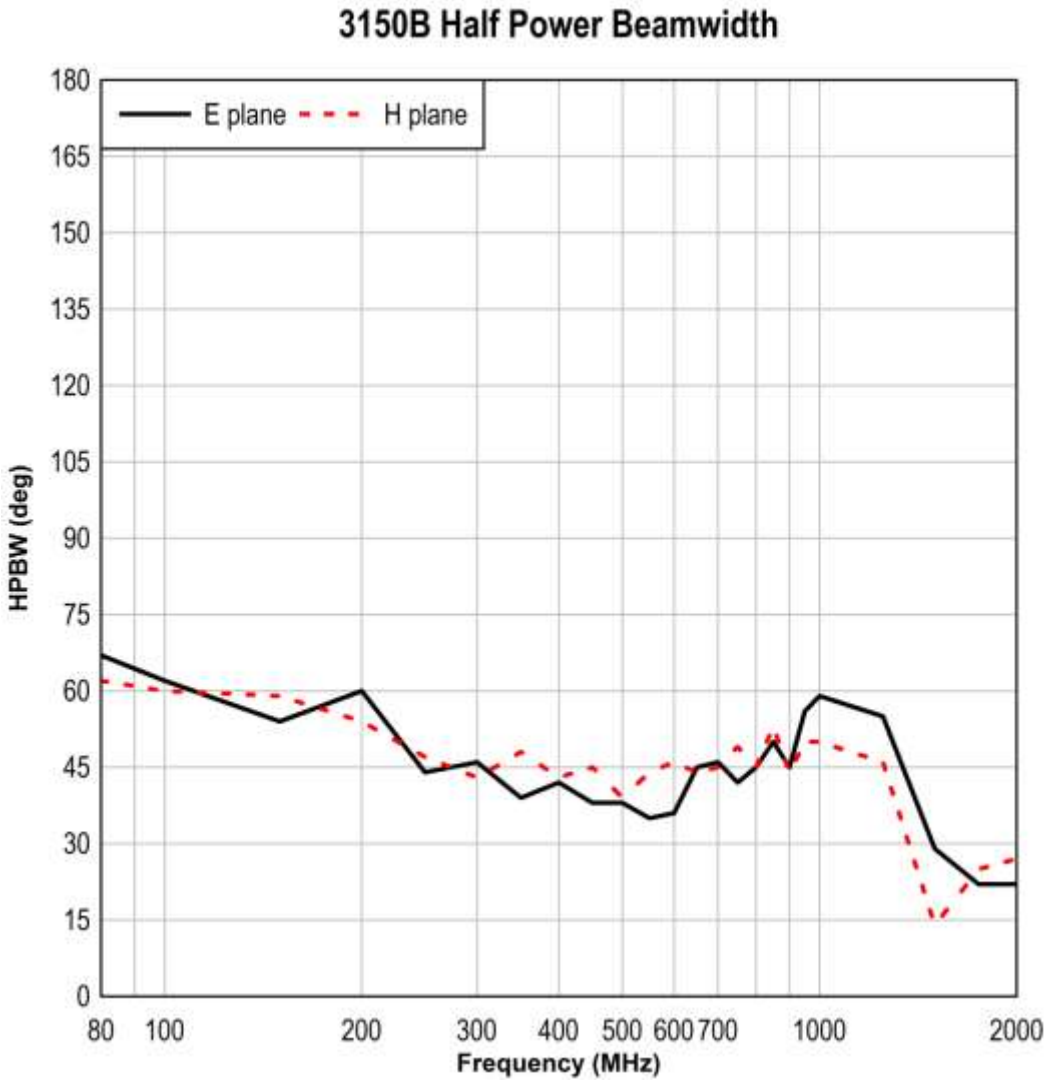


Typical VSWR

The typical VSWR for the Model 3150B is less than 2:1 from 80 MHz to 400 MHz. Above that frequency the average VSWR is 2:1.

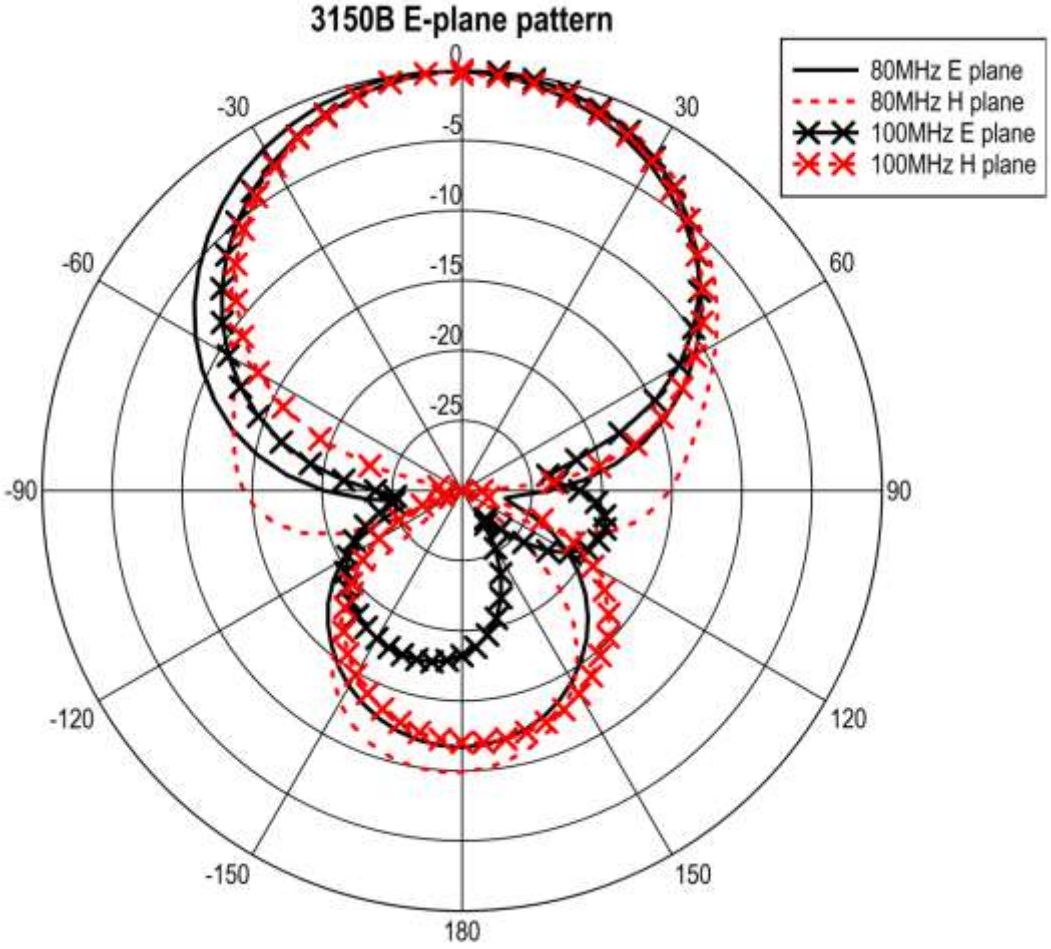


Typical Half Power Beamwidth

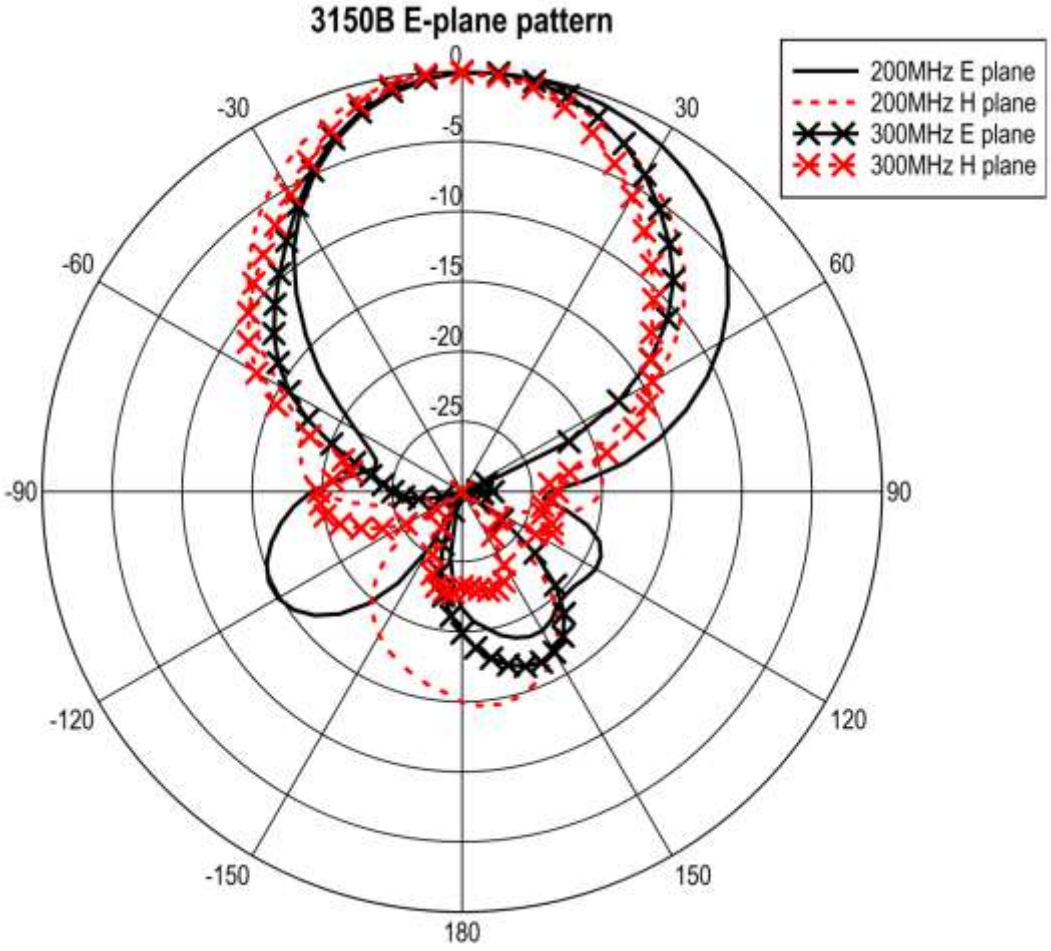


Typical Radiation Patterns

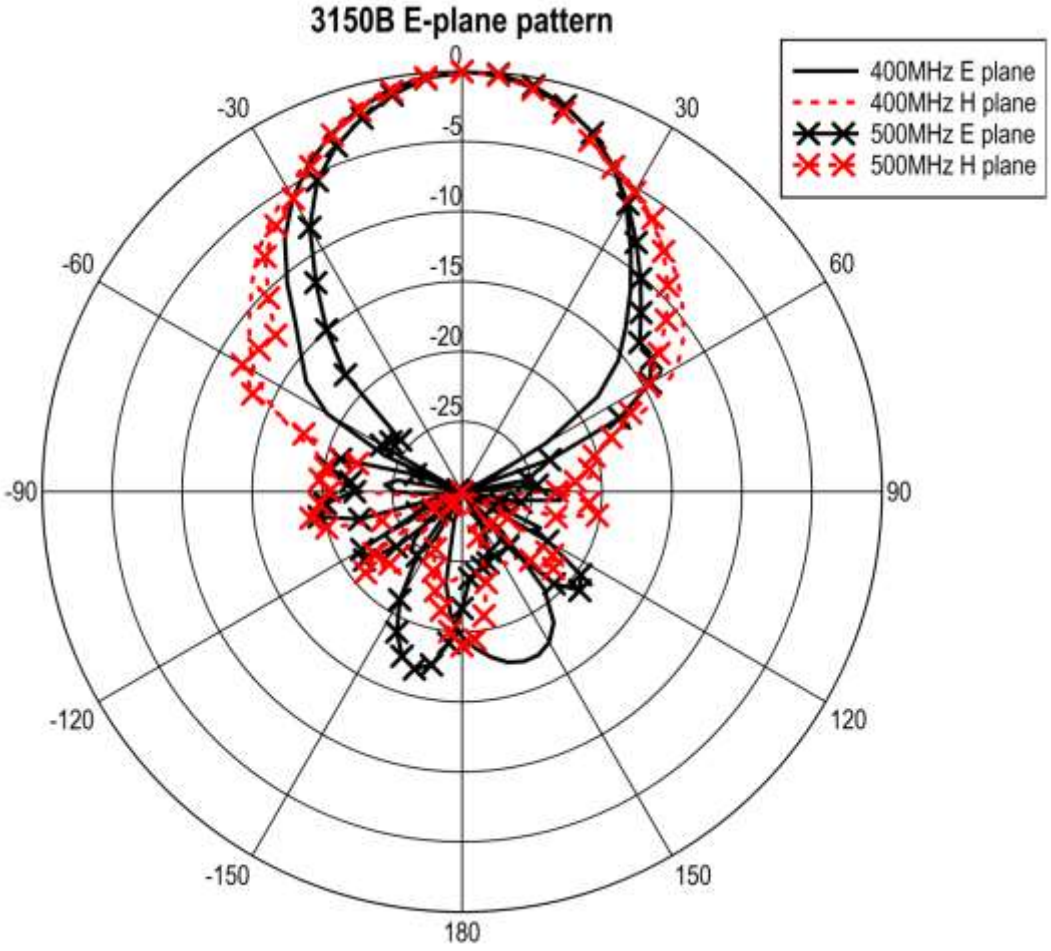
80 MHz—100 MHz



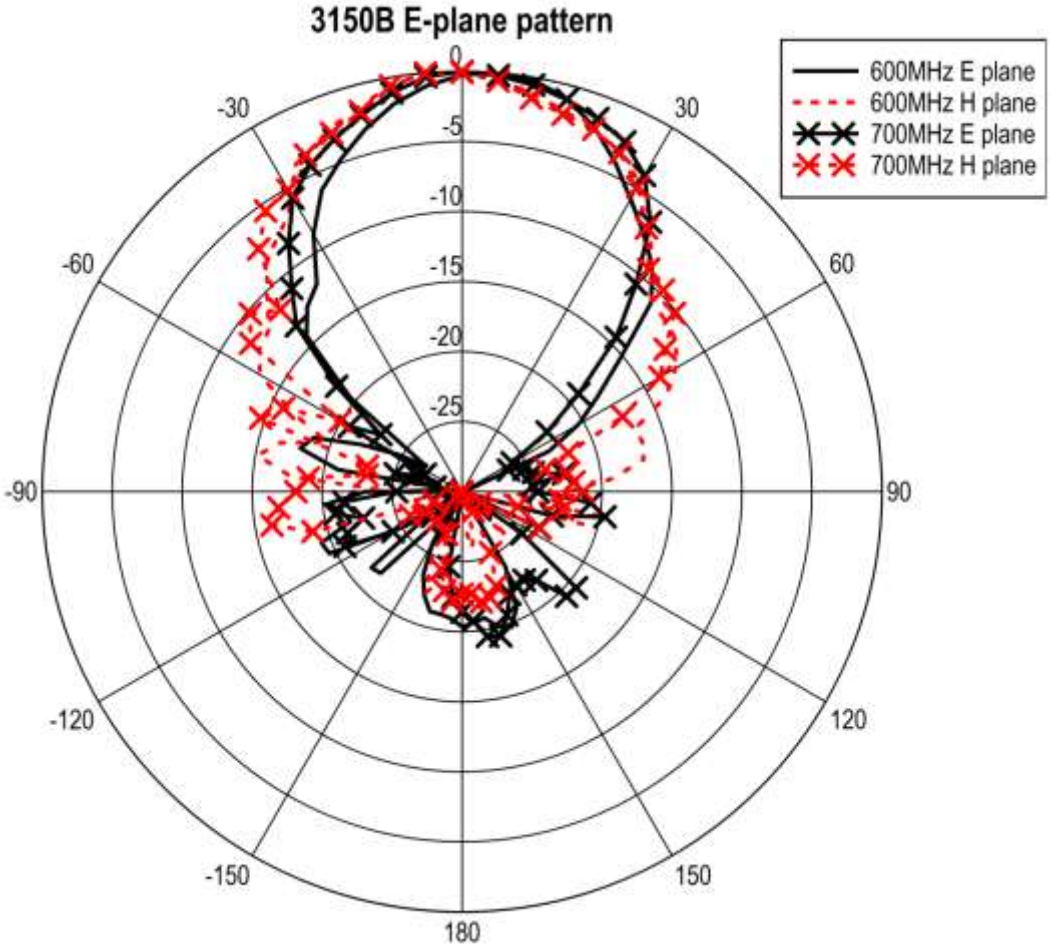
200 MHz—300 MHz



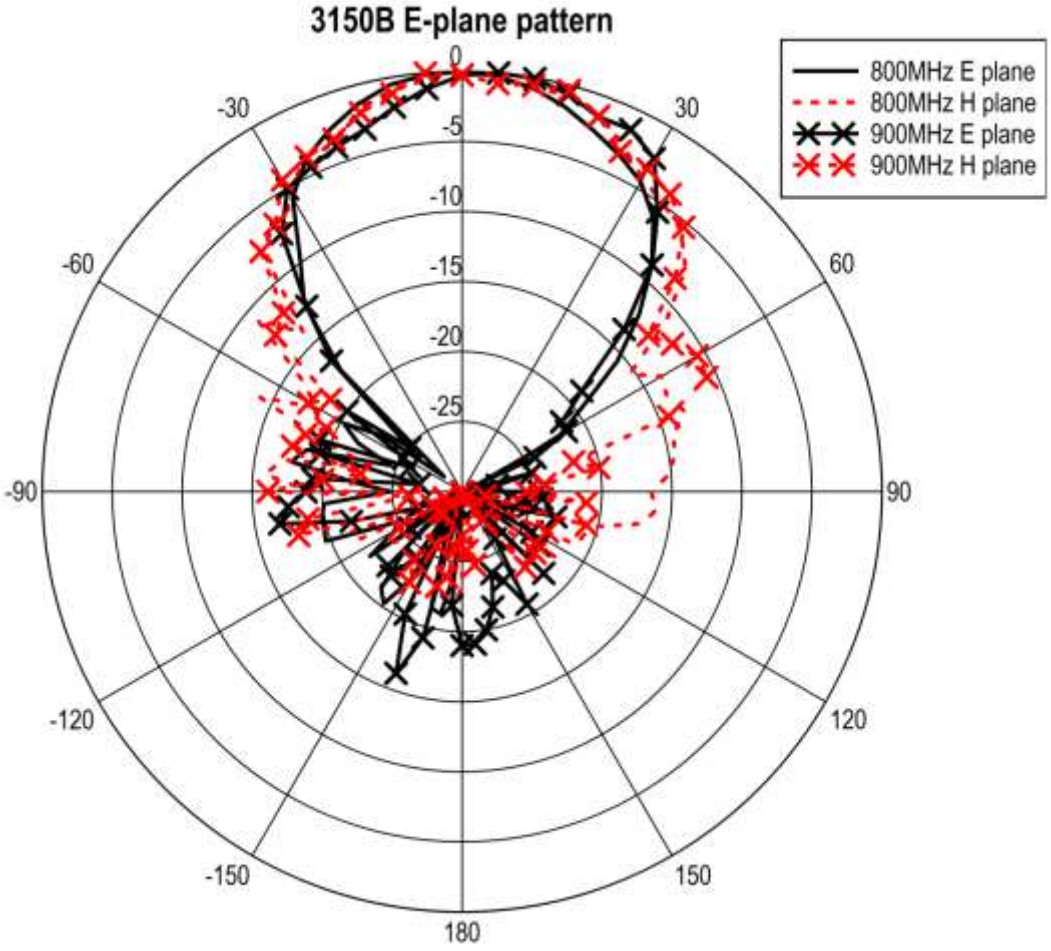
400 MHz—500 MHz



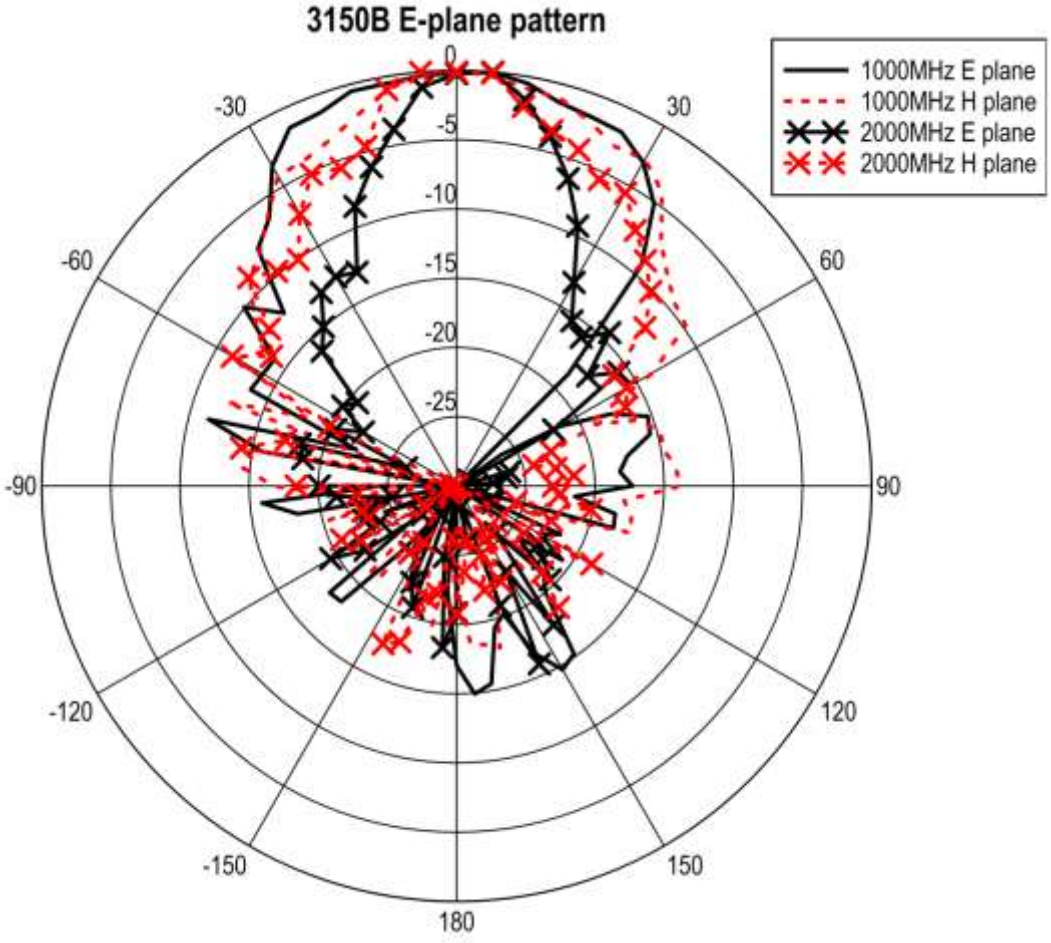
600 MHz—700 MHz



800 MHz—900 MHz



1000 MHz—2000 MHz



Appendix A: Warranty

See the *Product Information Bulletin* included with your shipment for the complete ETS-Lindgren warranty for your Model 3150B.

DURATION OF WARRANTIES FOR MODEL 3150B

All product warranties, except the warranty of title, and all remedies for warranty failures are limited to two years.

Product Warranted	Duration of Warranty Period
Model 3150B Log Periodic Array Antenna	2 Years