

**LICENSE TO COVER**  
**Construction Permit 0000147991**  
**KVED (FM) Veronon TX**  
**FACID 175039**

**TECHNICAL STATEMENTS**

**TRANSMITTER POWER OUTPUT**

**TRANSMITTER POWER OUTPUT = 9,210 WATTS**  
**4m LMR600 Jumper = -0.10 db**  
**Bandpass Filter - -0.200 db**  
**135 METERS OF 3-1/8" COAX = -0.48 dB**  
**TEN-BAY Jampro Antenna = + 6.77 dB**  
**EFFECTIVE RADIATED POWER = 36,000 WATTS.**

**SPECIAL OPERATING CONDITIONS:**

This is a combined antenna with 3 stations: KVED (FM) 88.1; KQTX (FM) 98.1 and KPRO (FM) 93.5. The existing KPRO antenna was replaced with a broadband antenna; license applications are being filed for both KVED (FM) and KQTX (FM) Construction permit, and the KPRO (FM) replacement license to reflect the addition of the combiner unit.

The Jampro Combiner and Antenna manufacturer proof of performance data is attached which demonstrates full compliance with all spurious emissions tests which are required by FCC rules. The data for all 3 stations is included on all 3 applications for full compliance.

Upon completion of construction, radiofrequency electromagnetic field strength measurements were made at all points on the property of the tower compound Utilizing an Anaheim Scientific 3-axis RF field strength meter, model e200, held at a height of 2 meters above the surface of the ground, at no point did the meter indicate a level higher than 33.66, which is 17.8 per cent of the allowed 200 microvolts per centimeter squared for a controlled environment. The tower compound is a tightly controlled, high security access location where no member of the general public is ever allowed to be present within 100 meters of the tower.

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**JAMPRO ANTENNAS, INC.**

**PARADISE BROADCASTING  
(KVED-88.1, KPRO-93.5, KQTX-98.1)**

**JCPB-10HR**

**88.1, 93.5, 98.1 MHZ**

**APRIL 19, 2022**

**SERIAL NUMBER 20149-A**



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**JAMPRO ANTENNAS, INC.**

**RCCS-313-2.5H**

**PARADISE  
BROADCASTING**

**88.1, 93.5 & 98.1 MHZ**

**APRIL 12, 2022**

**SERIAL NUMBER 20149-D**





6340 Sky Creek Drive, Sacramento, California 95828  
P.O. Box 292880, Sacramento, California 95829-2880

(916) 383-1177 FAX (916) 383-1182

## INTRODUCTION

Jampro Antennas, Inc. is proud to present the RCCS-313-2.5H Starpoint Combiner System. State-of-the-art design and manufacturing techniques have been used in the production and testing of the RCCS-313-2.5H combining system. System performance has been verified and documented prior to shipment; copies of the factory data are provided as evidence of testing.

This manual will assist in the setup of the combining system. Completely read this manual prior to installation. The first section contains installation and set up instructions. This is then followed by factory performance data. The third section of this document contains Jampro's Limited Warranty and Terms of Sale. If there are any questions regarding the combiner or this document, please contact Jampro's local representative or contact us directly at our factory in the USA.



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## **SYSTEM SPECIFICATIONS**

**MODEL:** RCCS-313-2.5H      **SERIAL NO:** 20149-D

## **ELECTRICAL SPECIFICATIONS**

**COMBINER TYPE:** STARPOINT

**CENTER FREQUENCY (Fc):** 88.1, 93.5 & 98.1 MHz

**BANDWIDTH (BW):**  $F_c \pm 150$  kHz

**INPUT POWER (88.1 MHz):** 8 kW  
**(93.5 MHz):** 10 kW  
**(98.1 MHz):** 8 kW

**INSERTION LOSS:** 0.30 dB

**VSWR:** 1.08:1

**ISOLATION:** 34 dB @ 2.5 MHz separation  
50 dB @ 5.0 MHz separation

**INPUT CONNECTORS:** 1-5/8" Unflanged

**OUTPUT CONNECTOR:** 3-1/8" EIA Flanged

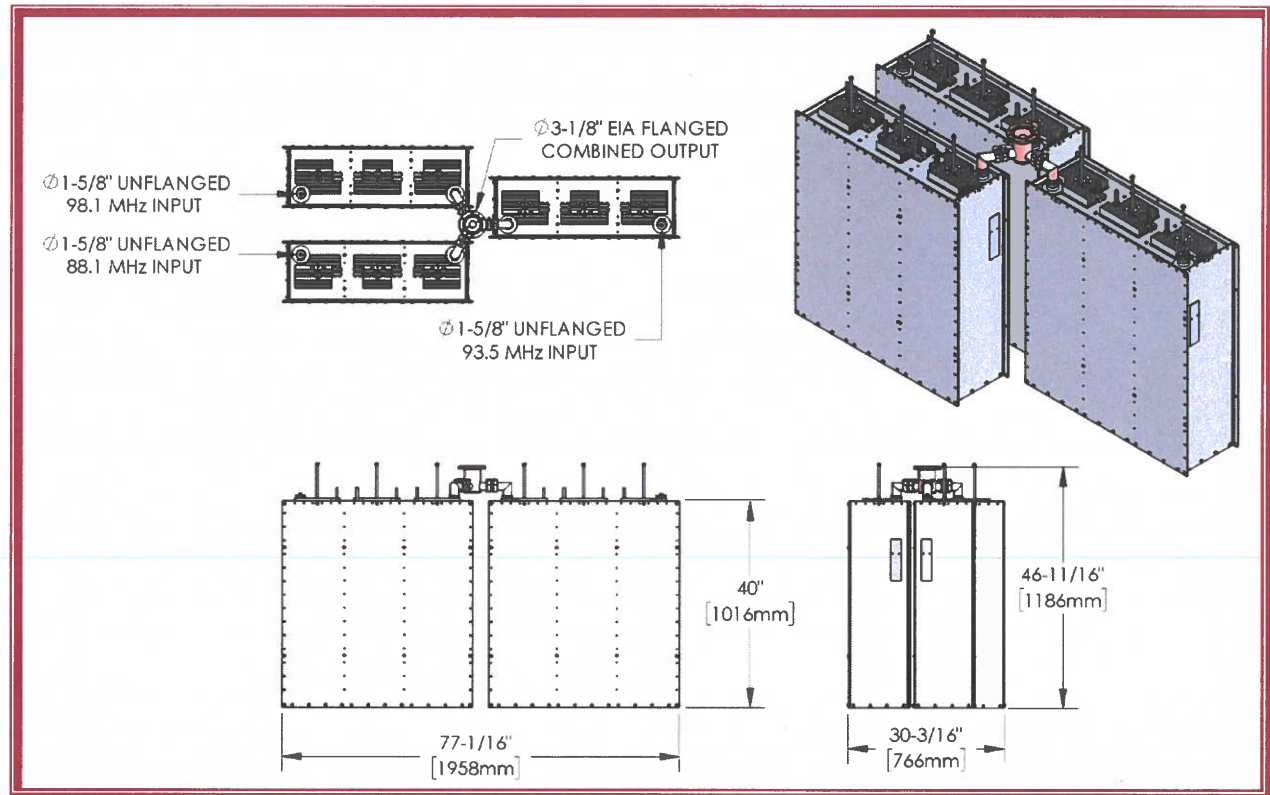
**HEAT SINKS:** Yes



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## RCCS-313-2.5H





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## PACKING LIST



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Date: 12-Apr-22

**PACKING LIST**  
**JOB # 20149-D**  
**FILTER**  
**PARADISE BROADCASTING**

ITEM #	QTY <small>(req spare)</small>	MODEL #	DESCRIPTION	BOX #	Q/A
1	1	NPN	INSTRUCTION MANUAL	1	ZL CR
2	1	20149-D-010	3 WAY TEE WITH ELBOWS	1	ZL CR
3	3	001-90055-06	RCBC-213-FMH ASSEMBLY	1	ZL CR



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## **UNPACKING AND INSTALLATION**

1. Clear the area needed to install the combiner of all debris and ensure there is ample headroom to allow for the height of the system.
2. Prior to moving the combiner system to its final location, the system should be inspected for damage. If damage is found, report it to the shipping company immediately. Jampro will not bear the responsibility or liability for any damage to the combiner incurred during the shipping and installation processes.
3. Attach Tee junction as shown in the drawing. Line lengths are critical to the performance of the combiner and should not be modified.
4. At this point the combiner is ready for operation. Attach each input line to its corresponding combiner-input connector and the output line to its corresponding combiner output connector.





## **PLANT PERFORMANCE DATA**

All plots were recorded at Jampro RF Systems' manufacturing facility using an Agilent Vector Network Analyzer, calibrated to a 50  $\Omega$  Standard using eighteen point error correction. All test equipment is returned annually to a certified Agilent service center for recalibration.

The plots are individually labeled above each plot; a table is given below for your convenience.

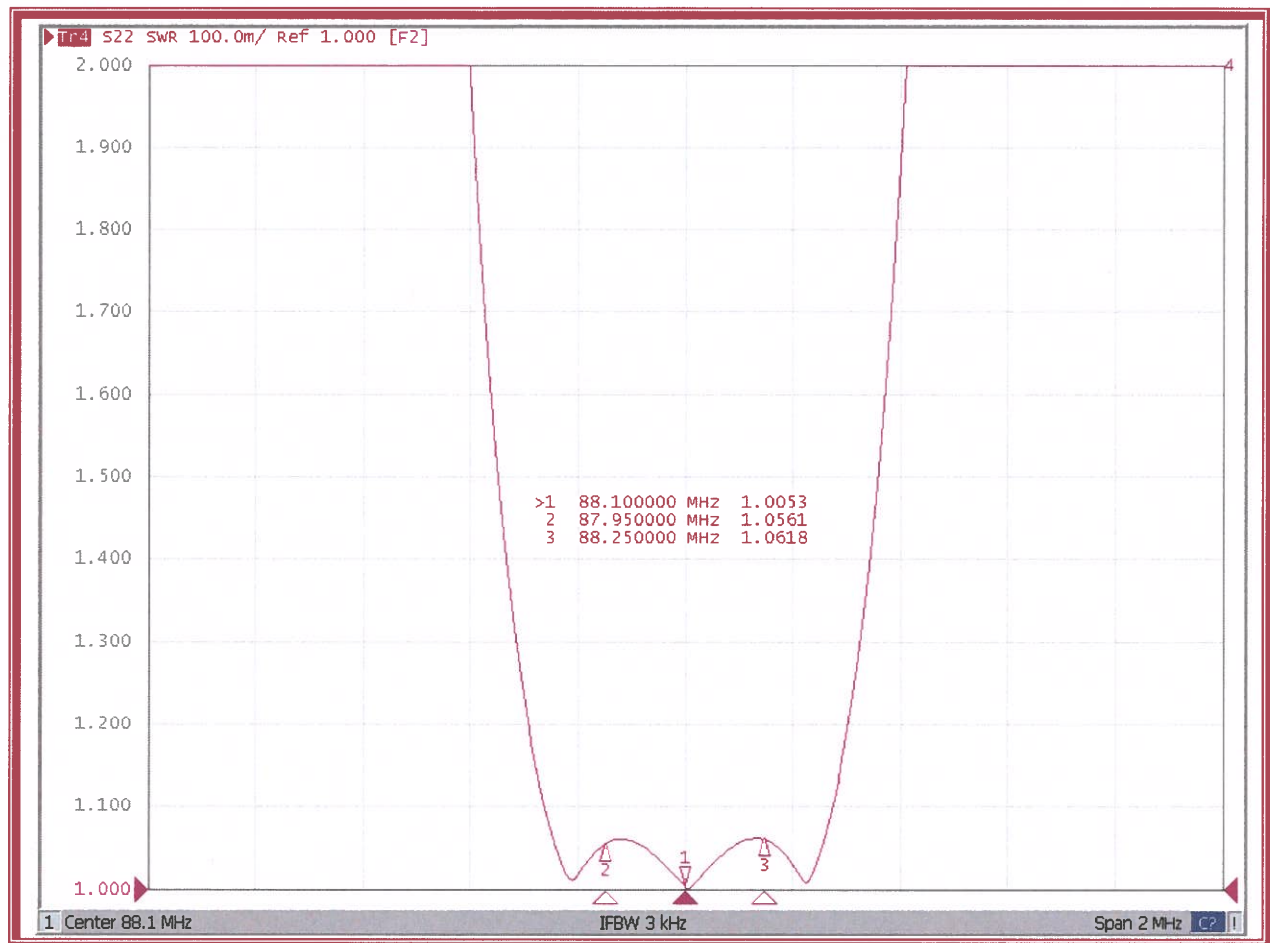
- 88.1 MHz VSWR
- 88.1 MHz Impedance
- 88.1 MHz Insertion Loss
- 88.1 MHz Rejection
- 93.5 MHz VSWR
- 93.5 MHz Impedance
- 93.5 MHz Insertion Loss
- 93.5 MHz Rejection
- 98.1 MHz VSWR
- 98.1 MHz Impedance
- 98.1 MHz Insertion Loss
- 98.1 MHz Rejection
- 88.1 MHz and 93.5 MHz Isolation
- 88.1 MHz and 98.1 MHz Isolation
- 93.5 MHz and 98.1 MHz Isolation



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## 88.1 MHZ VSWR

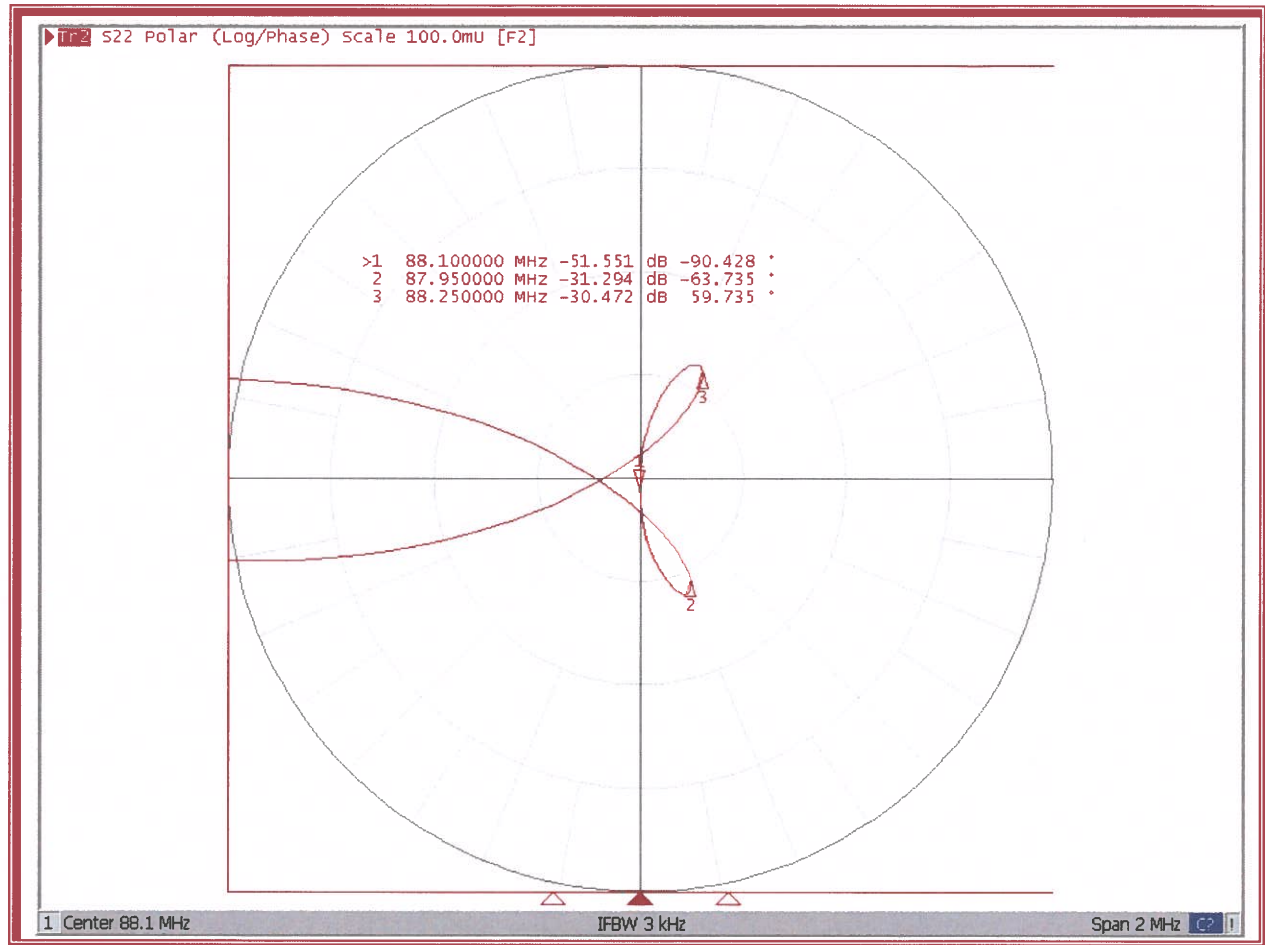




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## 88.1 MHZ IMPEDANCE

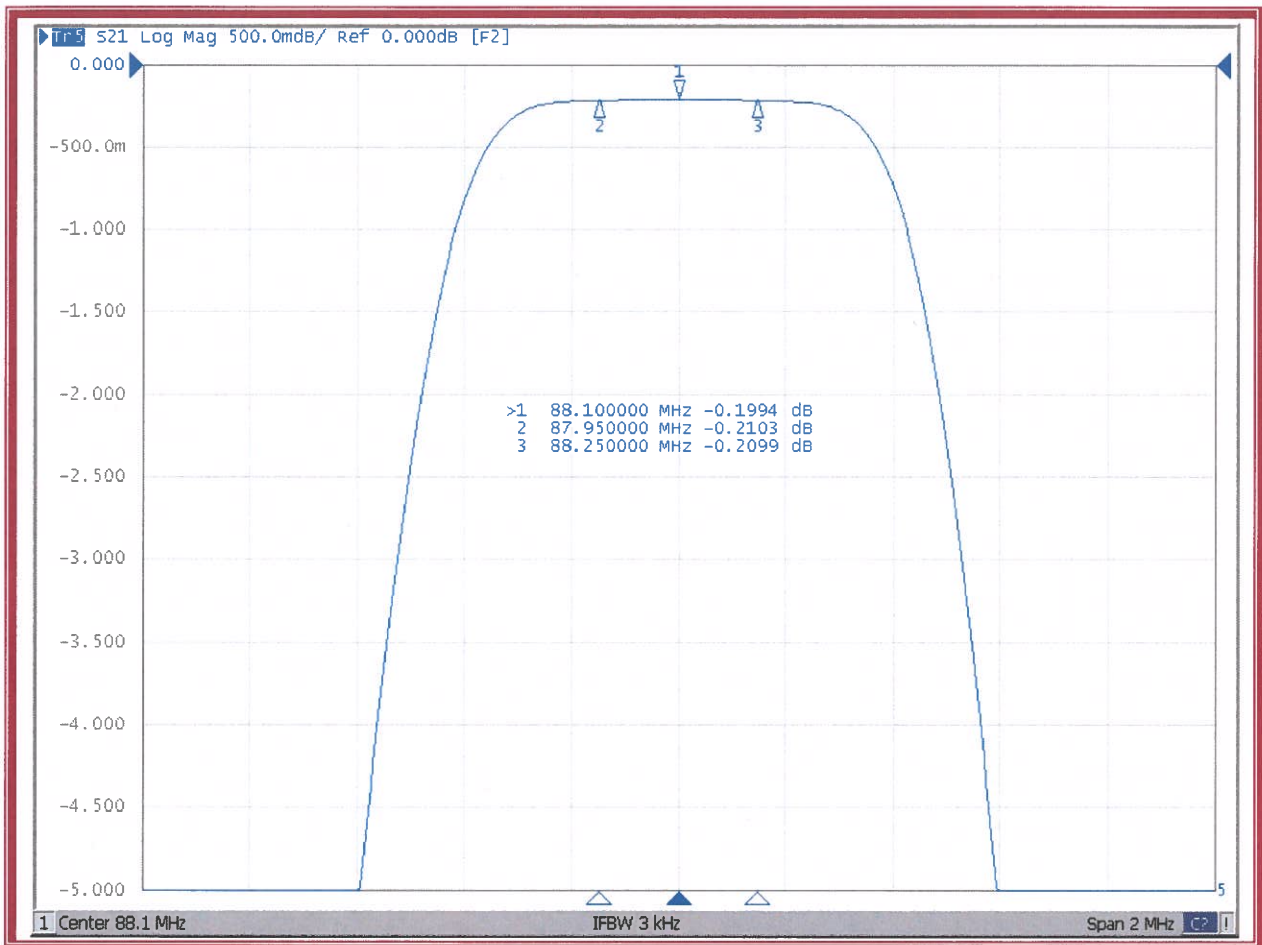




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## 88.1 MHZ INSERTION LOSS

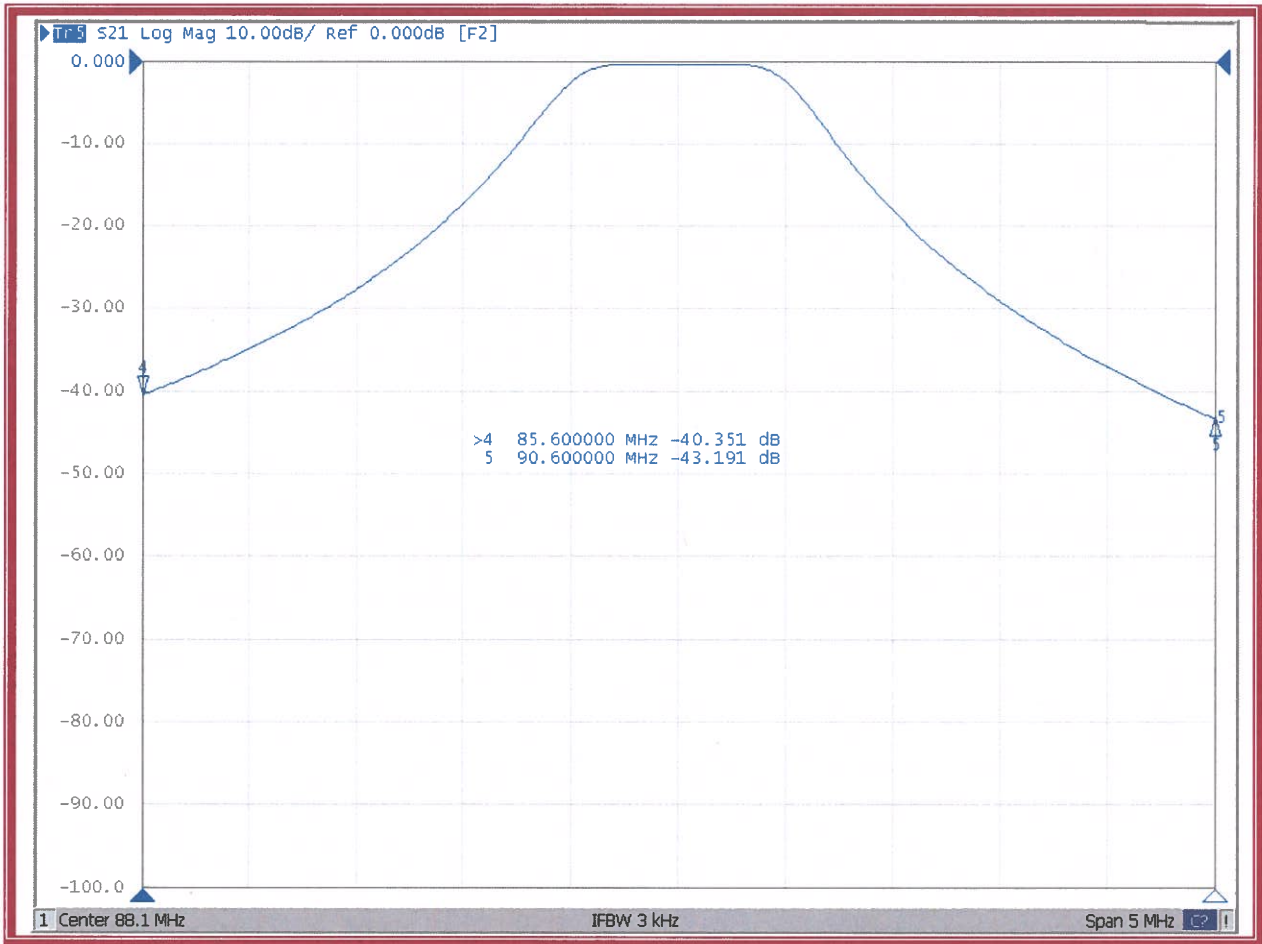




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## 88.1 MHZ REJECTION

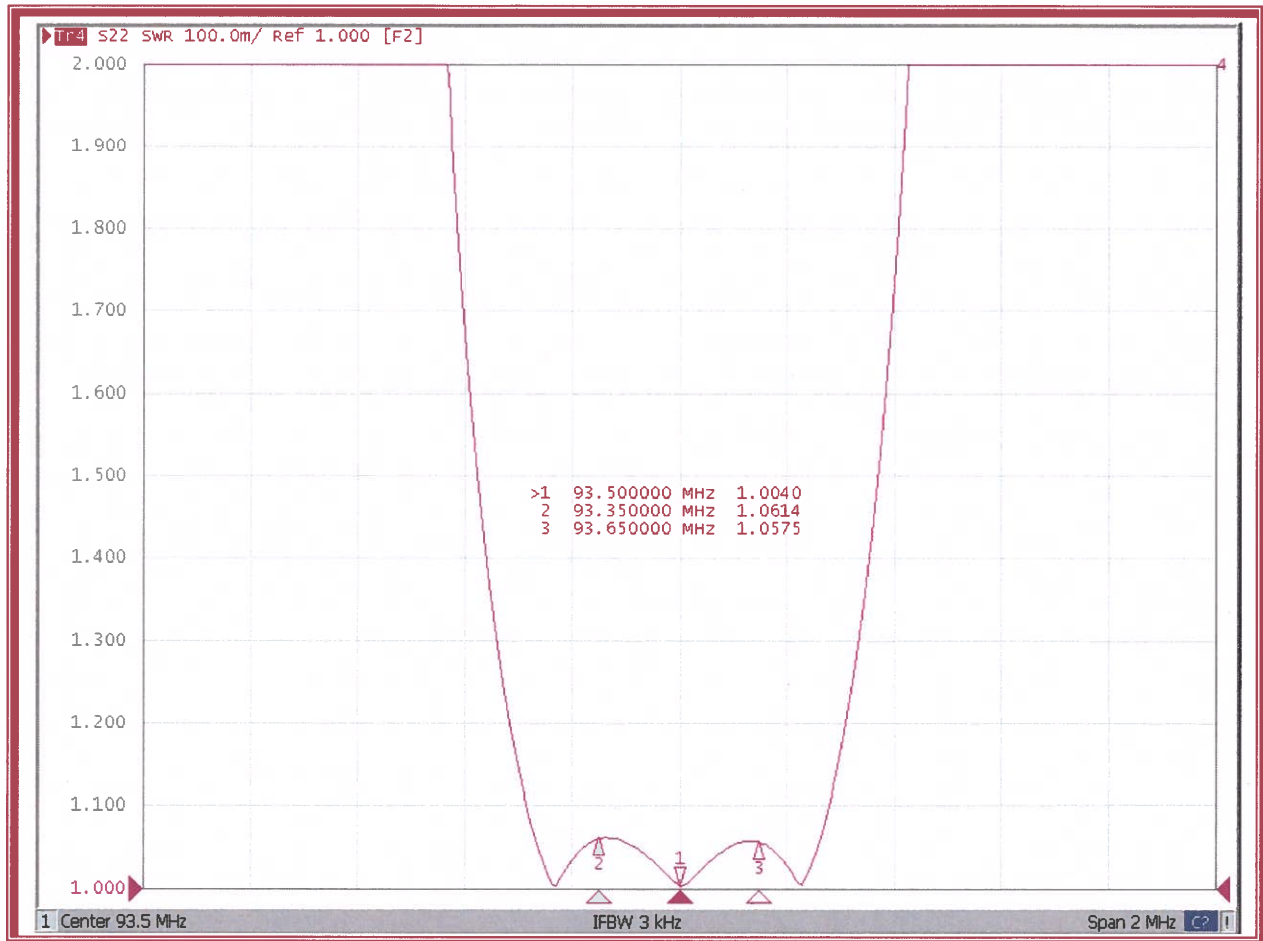




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## 93.5 MHZ VSWR

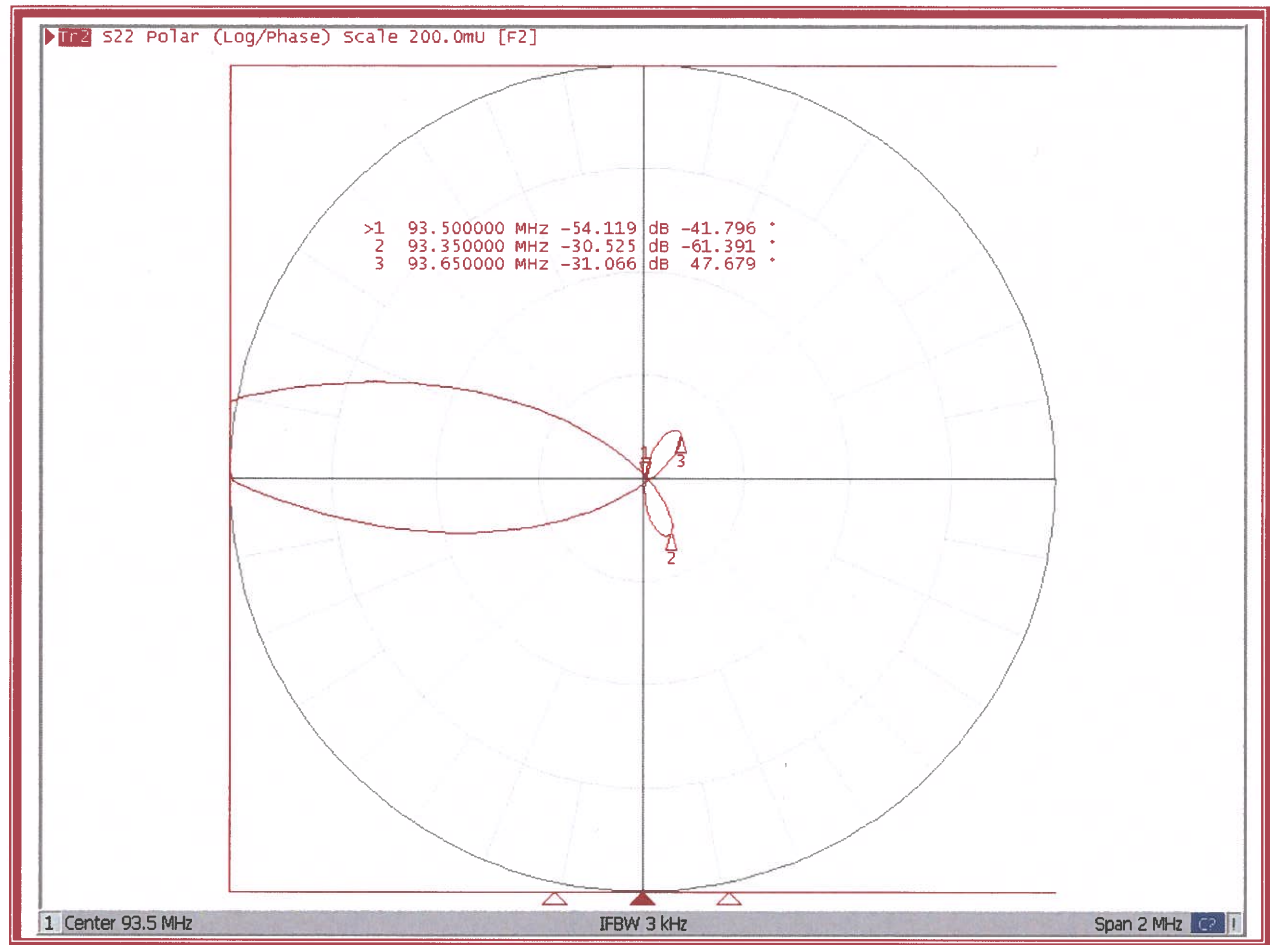




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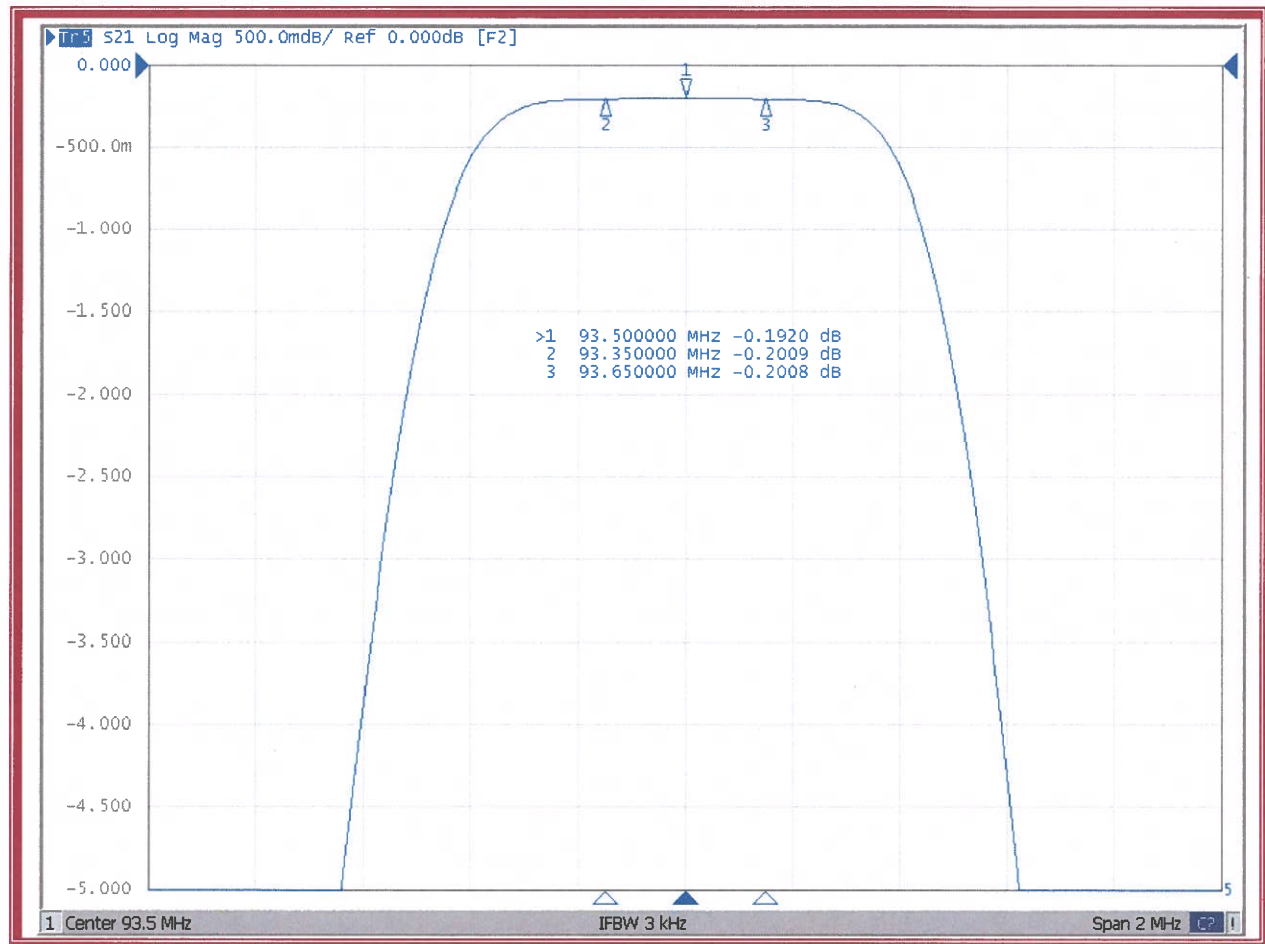
## 93.5 MHZ IMPEDANCE







## 93.5 MHZ INSERTION LOSS



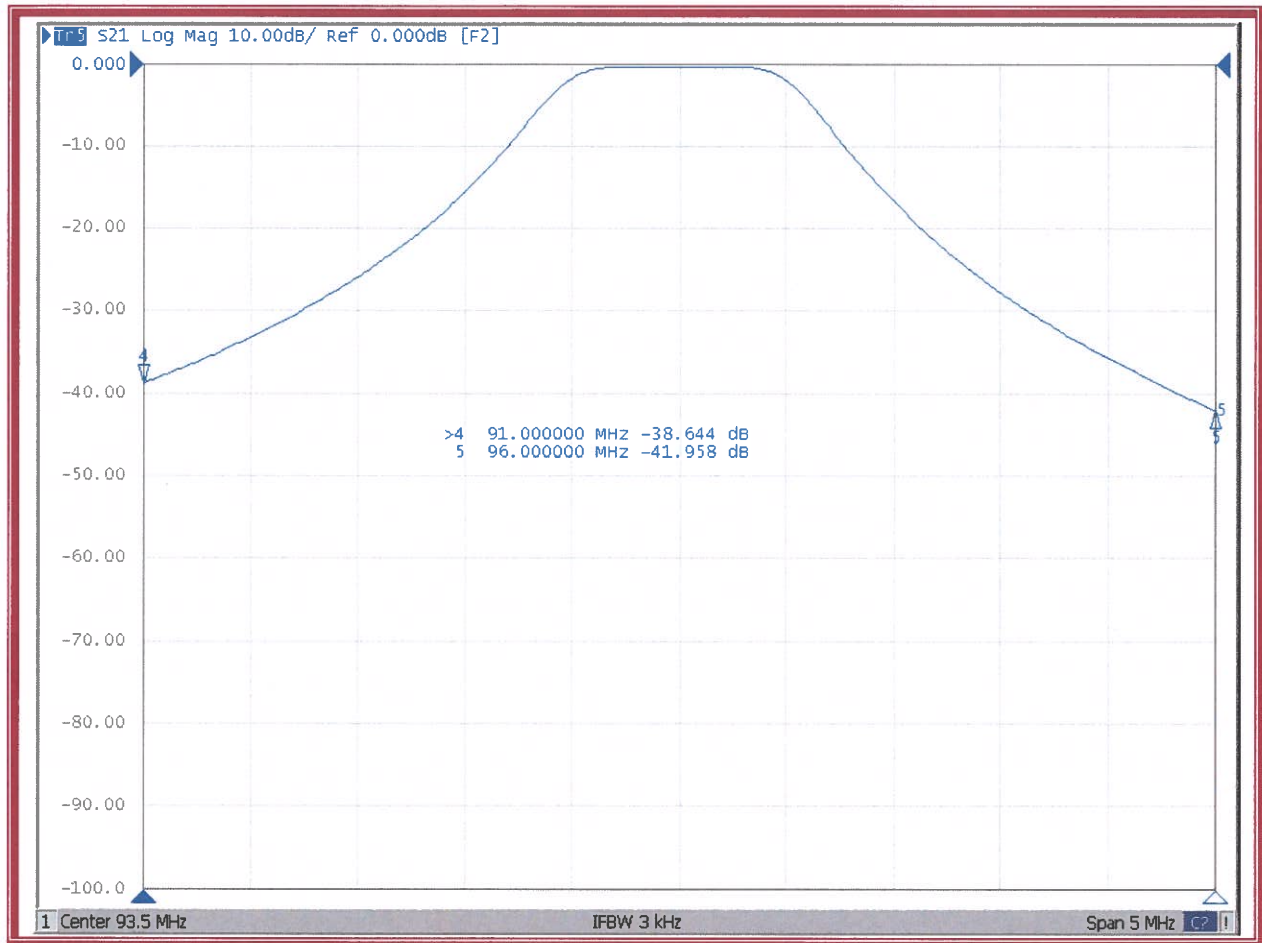




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## 93.5 MHZ REJECTION

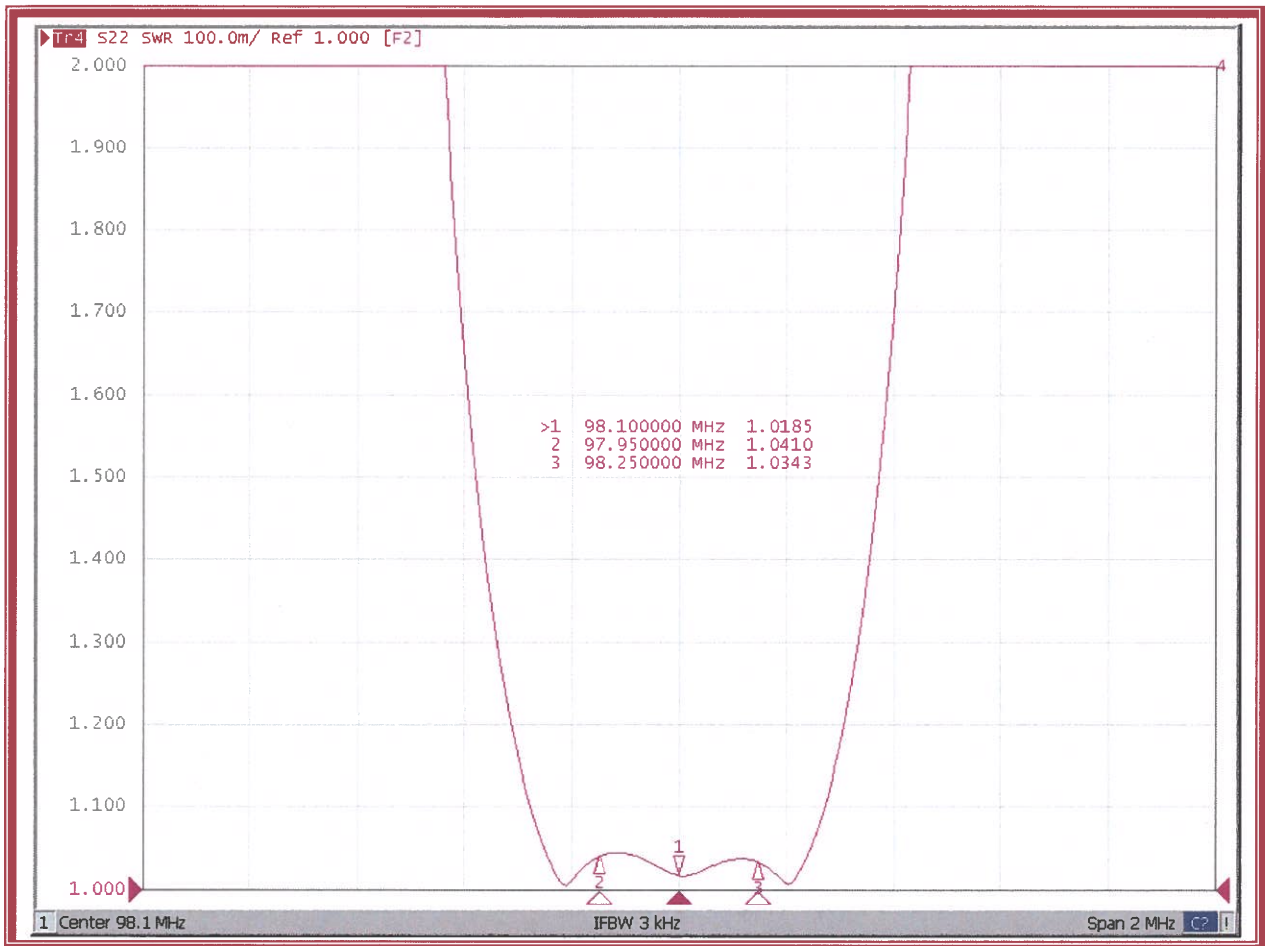




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## 98.1 MHZ VSWR

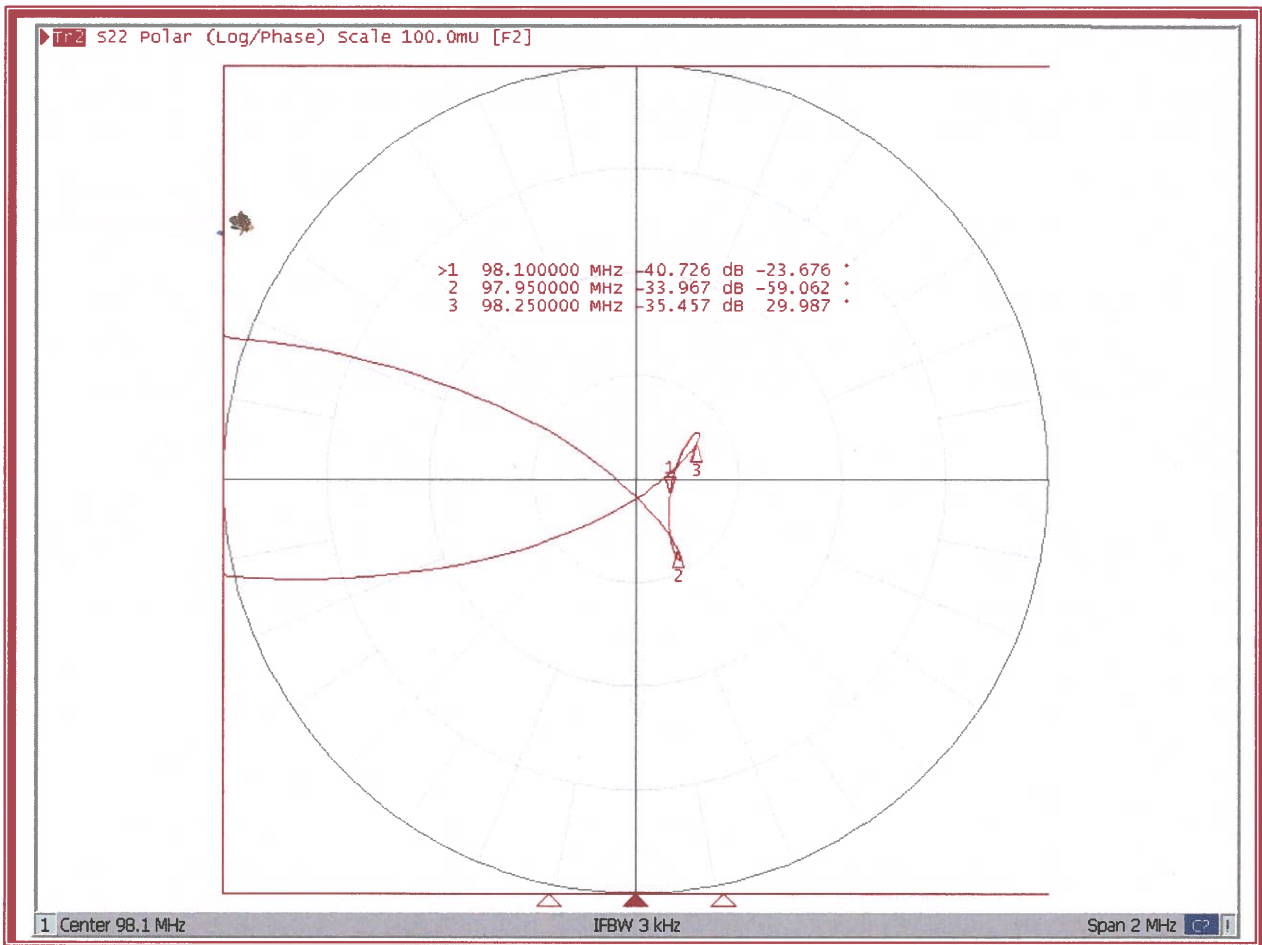




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## 98.1 MHZ IMPEDANCE

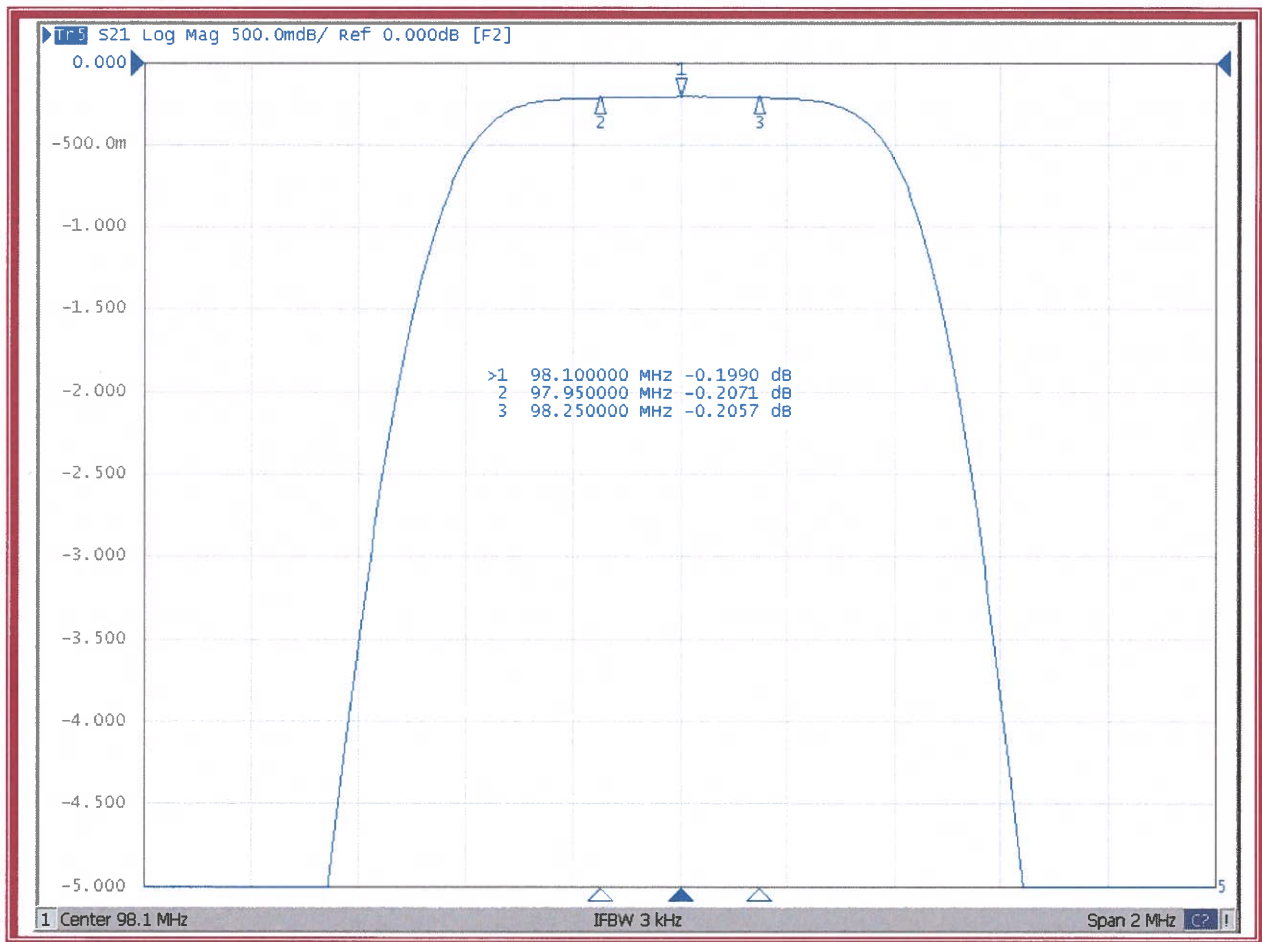




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## 98.1 MHZ INSERTION LOSS

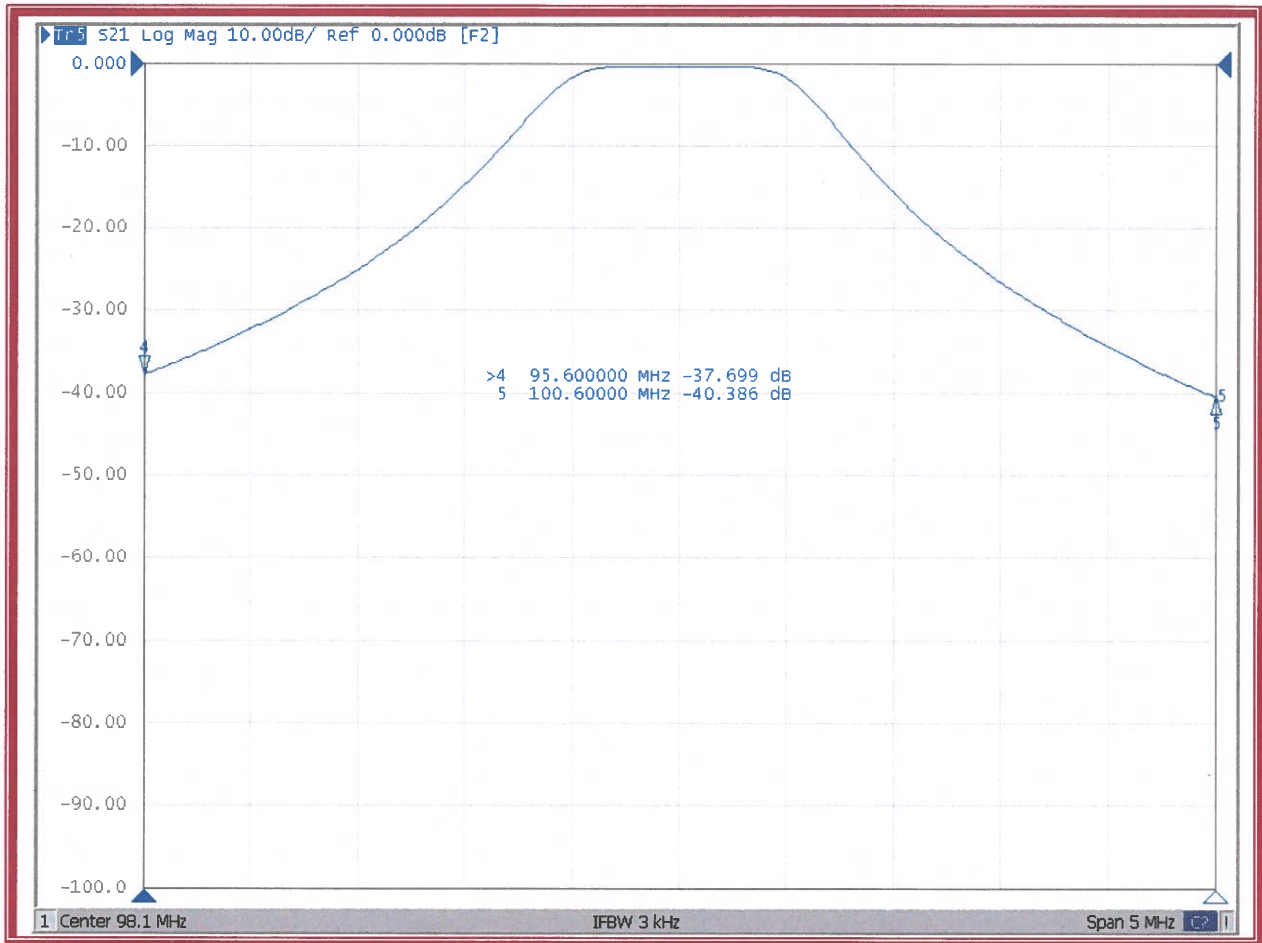




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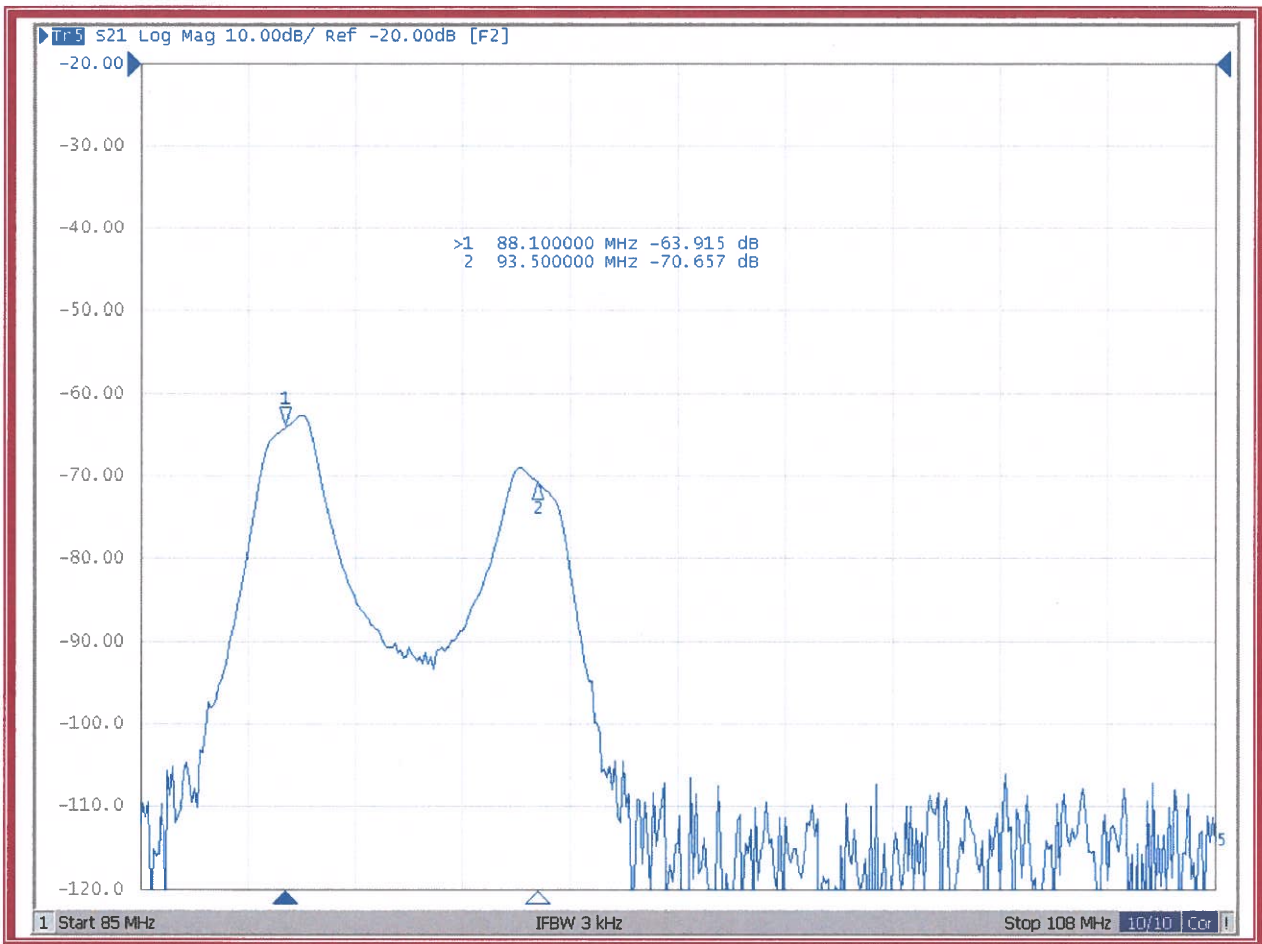
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## 98.1 MHZ REJECTION





## 88.1 MHZ AND 93.5 MHZ ISOLATION



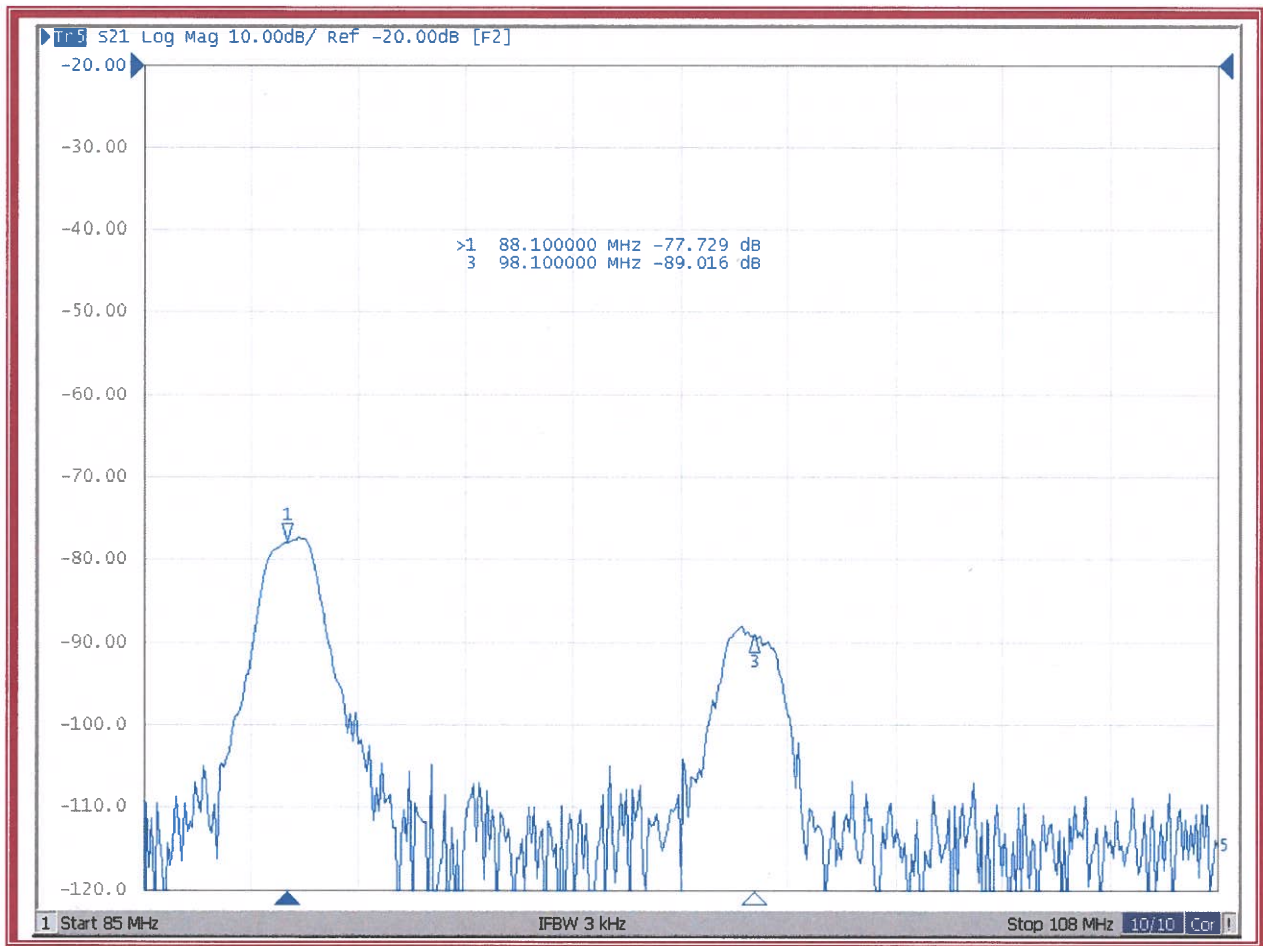




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## 88.1 MHZ AND 98.1 MHZ ISOLATION

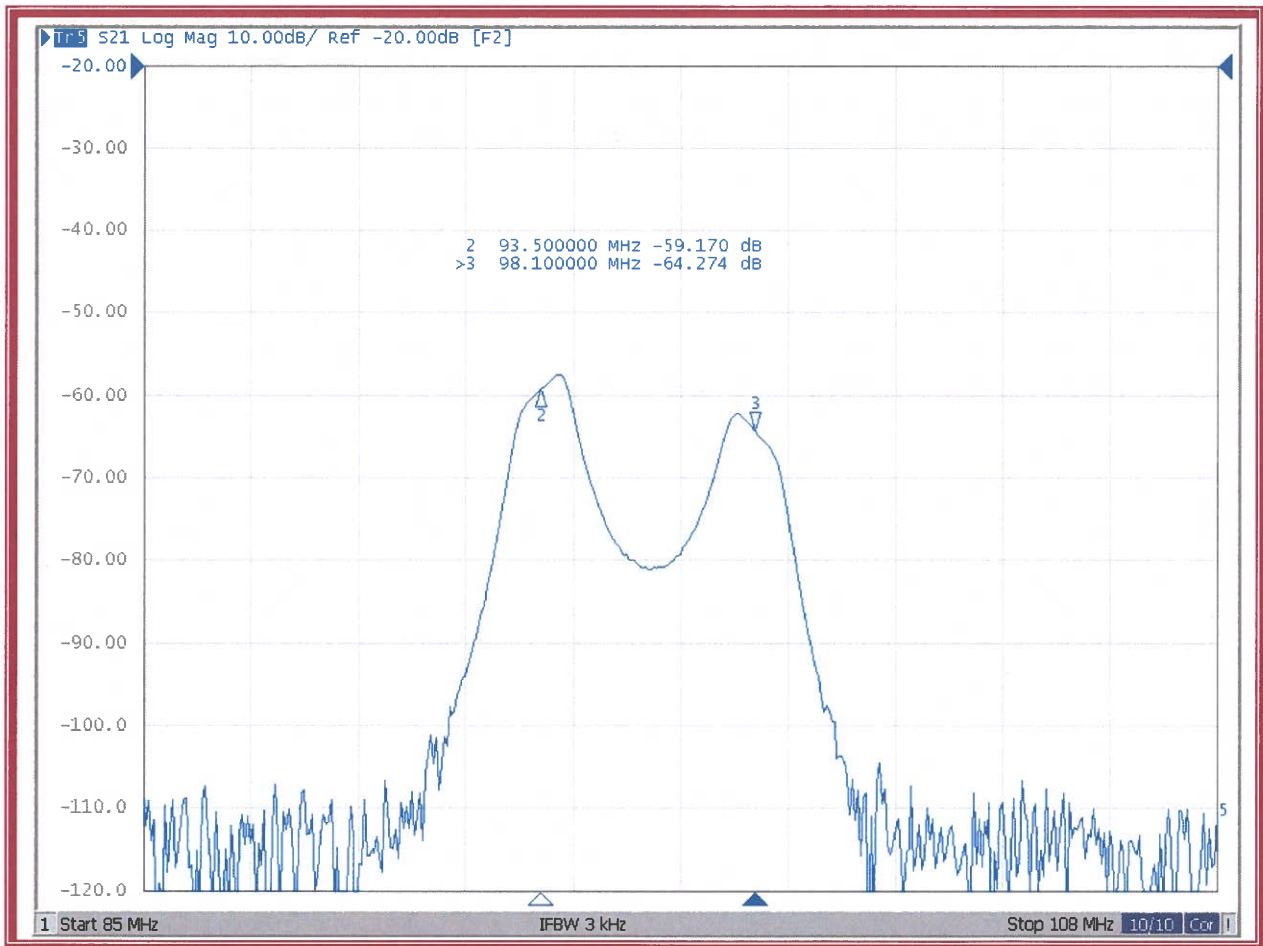




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## 93.5 MHZ AND 98.1 MHZ ISOLATION







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## **INTRODUCTION**

The JAMPRO JCPB-series FM antenna is one of the finest available to the broadcasting industry. This antenna type is available for all frequencies between 88 and 108 megahertz, and on other frequencies by special order.

JAMPRO has developed the JCPB-series of circularity-polarized FM antennas providing signals for portable, home and car receivers. This antenna incorporates transmission of horizontally and vertically polarized signals. The JCPB antenna provides a rugged and economical FM radiating element and still provides equal power levels for omni-directional service.

The radiation patterns of a side-mounted antenna are subject to wide variation. The non-circularity is greatly minimized by the design of the JAMPRO JCPB antenna. The basic radiation pattern is circular. Typically, free space variations are limited to less than  $\pm 2$  dB.

This antenna type features field tuning of the elements. After installation on the tower, the antenna reflectometer, or suitable test equipment may be used to simply tune the installed antenna system for minimum Voltage Standing Wave Ratios (VSWR) on the order of 1.2:1 or less.

This instruction book contains illustrations which illustrate a typical mounting scheme. The radiating elements are fed power through coax cable from one or more power dividers. The power divider(s) located near the middle of the antenna array is fed power from the transmission line.

The antenna input is 50 ohms EIA. The input size is as specified on the purchase order.

The type of feed shown in this instruction book provides uniform phase amplitude across the antenna aperture.



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## **ANTENNA SPECIFICATIONS**

**MODEL:** JCPB-10HR

**SERIAL NO:** 20149-A

## **ELECTRICAL SPECIFICATIONS**

**FREQUENCY:** 88.1, 93.5, 98.1 MHz

**POLARIZATION:** Circular

**AZIMUTH PATTERN:** Side mount

**ESTIMATED GAIN:** @ 88.1 MHz – 4.75x/6.77 dBd  
@ 93.5 MHz – 4.92x/6.92 dBd  
@ 98.1 MHz - 5.01x/7.0 dBd

**BEAM TILT:** 2.2°

**NULL FILL:** 10%

**MAX.INPUT POWER:** 30 kW max

**INPUT IMPEDANCE:** 50 ohms, nominal

**MAXIMUM VSWR:** 1.15:1 or better over Fc

**ELECTRICAL DE-ICER:** none

**INPUT CONNECTION:** 3-1/8" EIA (f), Flanged

## **MECHANICAL/ENVIRONMENTAL SPECIFICATIONS**

**WEIGHT:** 1273 lbs. (577 kg), no ice

**EFFECTIVE PROJECTED AREA (EPA):** 95 ft<sup>2</sup> (8.8m<sup>2</sup>) no ice, per TIA-222-G

**PRESSURIZATION:** 10 psi max, 3–5 psi operating

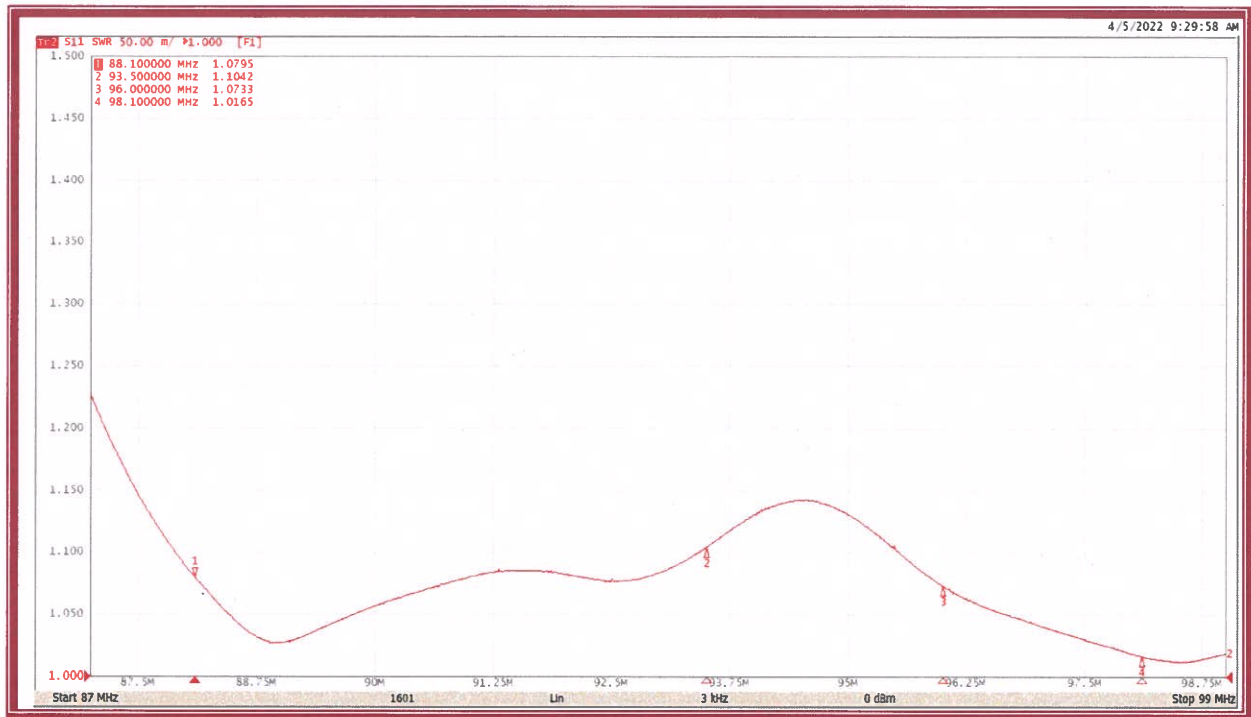
**ANTI-ICING PROTECTION:** Feed Point Radome



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## VSWR DATA PLOT

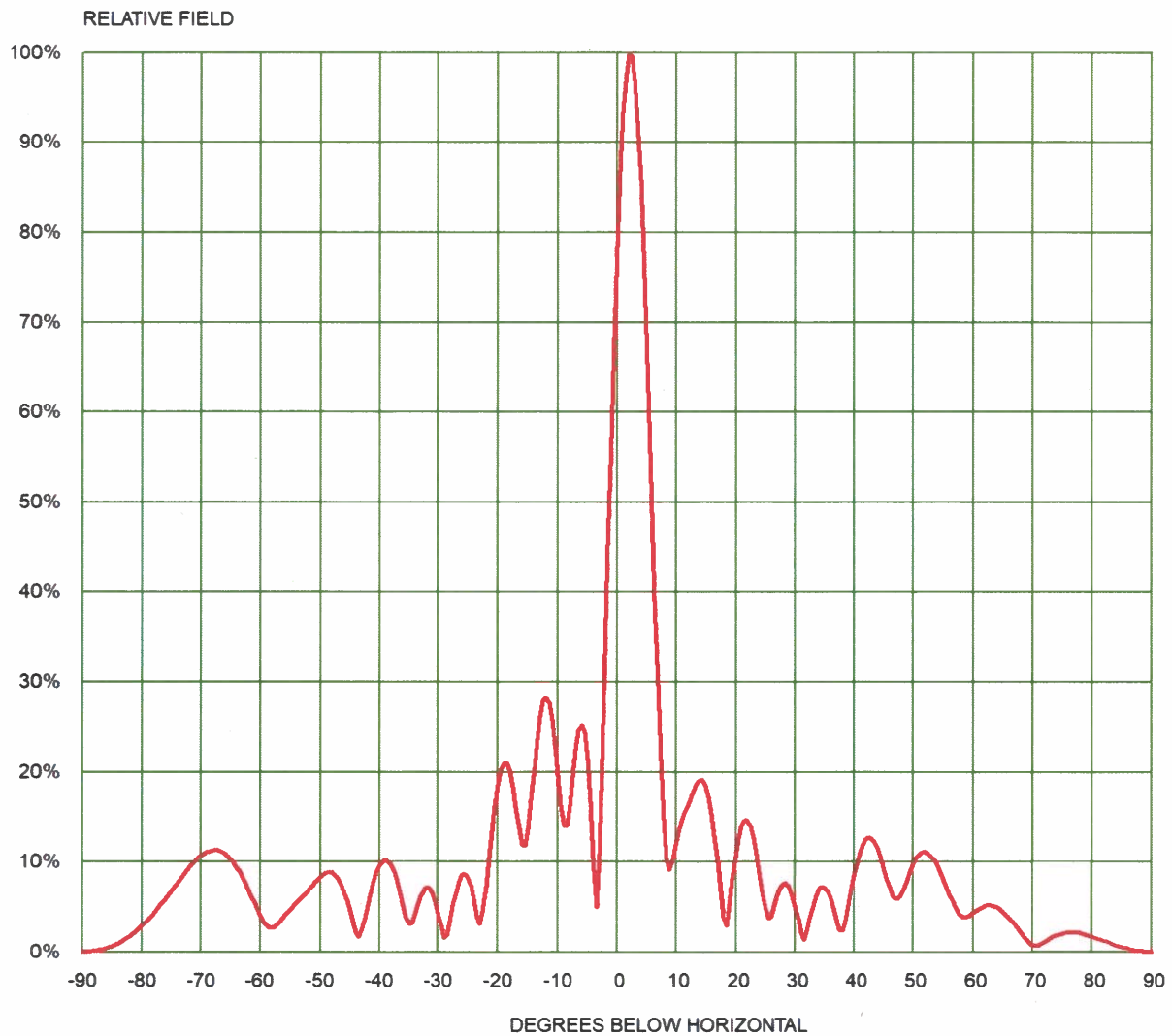




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## ELEVATION PATTERN



Beam Tilt

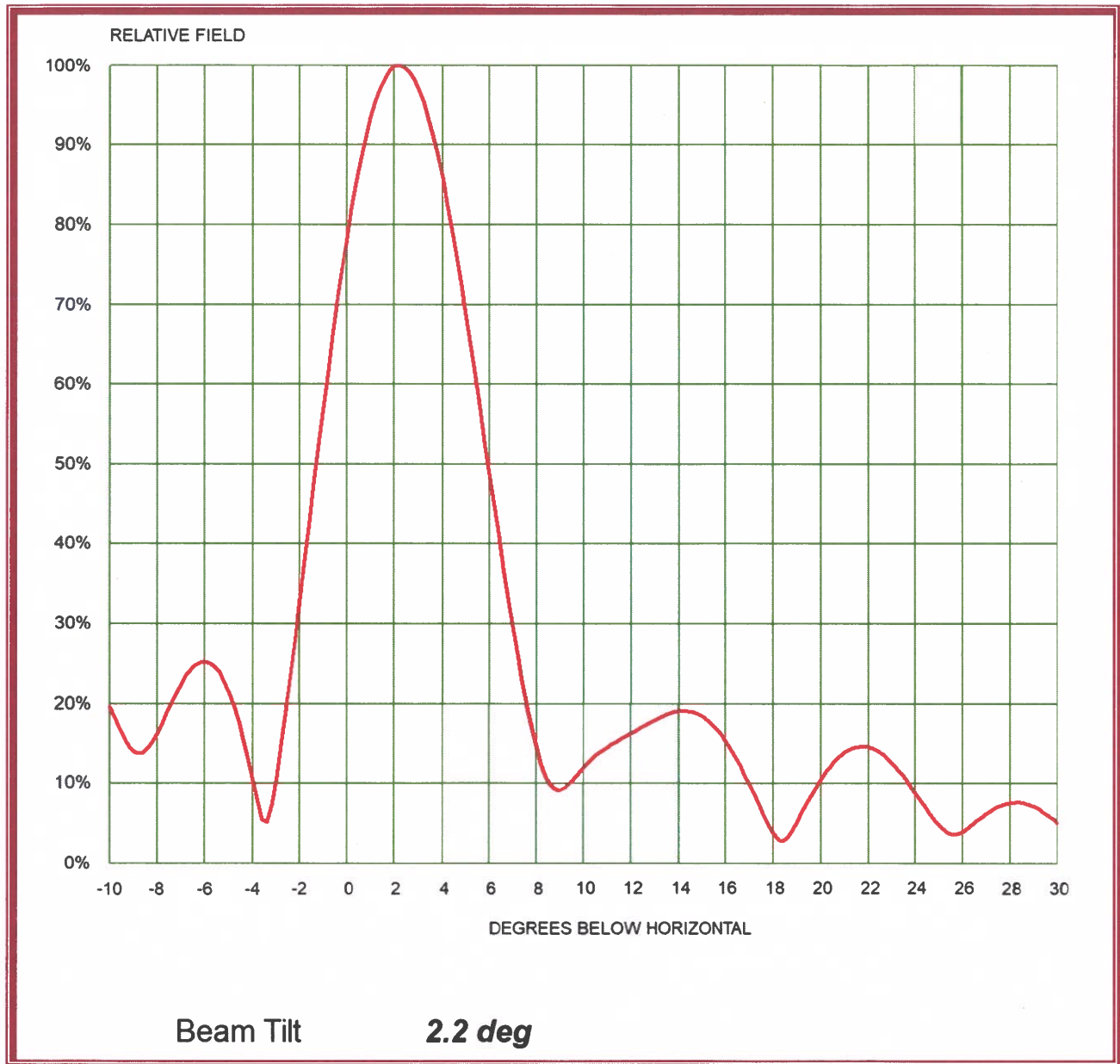
**2.2 deg**



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## EXPANDED ELEVATION PATTERN





## ELEVATION PATTERN TABULATION

### Relative Field VS Elevation Angle

Elevation Angle	Relative Field	Elevation Angle	Relative Field	Elevation Angle	Relative Field
-10	19.55	26	3.95	61	4.78
-9	13.99	27	6.23	62	5.1
-8	16.25	28	7.57	63	5.15
-7	22.45	29	7.11	64	4.91
-6	25.26	30	5.02	65	4.43
-5	21.39	31	2.07	66	3.76
-4	10.32	32	2.3	67	2.99
-3	10.8	33	5.07	68	2.16
-2	33.14	34	6.86	69	1.36
-1	57.13	35	7.15	70	0.71
0	78.36	36	5.91	71	0.6
1	93.36	37	3.57	72	1.01
2	99.82	38	2.39	73	1.43
3	97.01	39	5.17	74	1.75
4	85.84	40	8.47	75	1.96
5	68.7	41	11.05	76	2.07
6	48.78	42	12.46	77	2.07
7	29.59	43	12.56	78	2
8	14.67	44	11.43	79	1.86
9	9.13	45	9.44	80	1.66
10	11.87	46	7.2	81	1.44
11	14.47	47	5.83	82	1.21
12	16.24	48	6.33	83	0.96
13	17.93	49	7.99	84	0.73
14	19.03	50	9.66	85	0.52
15	18.37	51	10.75	86	0.34
16	15.25	52	11.08	87	0.19
17	9.89	53	10.65	88	0.08
18	3.75	54	9.59	89	0.01
19	5.22	55	8.09	90	0
20	10.56	56	6.43		
21	13.91	57	4.93		
22	14.53	58	3.99		
23	12.57	59	3.86		
24	8.8	60	4.28		
25	4.75				