

Approved by OMB
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
STA Request for Modified Facilities at Yona, Guam (March 2019)

1. Applicant

Name:	TeleCommunication Systems, Inc.	Phone Number:	302-932-9697
DBA Name:		Fax Number:	410-280-4903
Street:	275 West Street - Suite 400	E-Mail:	keith.cha@comtechtel.com
City:	Annapolis	State:	MD
Country:	USA	Zipcode:	21401 -2140
Attention:	Keith Cha		



File # SES-STA-20190329-00408
Call Sign E090026 Grant Date 4-5-19
(or other identifier)
Term Dates From: 4-6-19 To: 6-5-19
Approved: Paul E. Black

2. Contact			
Name:	David S. Keir	Phone Number:	202-416-6742
Company:	Lerman Senter PLLC	Fax Number:	202-293-7783
Street:	2001 L Street, N.W. Suite 400	E-Mail:	dkeir@lermansenter.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	22302 -
Attention:		Relationship:	Legal Counsel
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)			
3. Reference File Number SESMOD2019020800087 or Submission ID			
4a. Is a fee submitted with this application?			
☒ If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114). ☐ Governmental Entity ☐ Noncommercial educational licensee ☐ Other (please explain):			
4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station			
5. Type Request			
☒ Use Prior to Grant ☐ Change Station Location ☐ Other			
6. Requested Use Prior Date			
04/08/2019			
7. City Yona		8. Latitude	
		(dd mm ss.s h) 13 25 58.0 N	

9. State GU	10. Longitude (dd mm ss.s h) 144 42 47.0 E
11. Please supply any need attachments. Attachment 1: STA Request Attachment 2: Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) Application for Special Temporary Authority to operate its C-band satellite Earth station at Yona, Guam (Call Sign E090026) with modified parameters (additional antenna, increased power and maximum EIRP and modified emissions) as requested in its pending license modification application (IBFS File No. SES-MOD-20190208-00087).	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. ☒ Yes ☐ No	
14. Name of Person Signing Keith Cha	15. Title of Person Signing Director, Ground Systems
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

Applicant: TeleCommunication Systems, Inc.
Call Sign: E090026
File Number: SES-STA-20190329-00408



File # SES-STA-20190329-00408
Call Sign E090026 Grant Date 4-5-19
(or other identifier)
Term Dates
From: 4-6-19 To: 6-5-19
Approved: Paul E. Hach

TeleCommunication Systems, Inc. is granted special temporary authority for 60 days, beginning April 6, 2019 to operate a new antenna at its fixed earth station located in Yona, Guam with the Permitted List Satellites in order to allow testing of the new antenna at the revised operating parameters to validate expected performance in connection with anticipated upcoming use for launch monitoring activities under contract to the Japan Aerospace Exploration Agency ("JAXA"). Operations are limited to the 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth) frequency band under the following conditions:

1. Operations must comply with operational parameters identified in IBFS File No. SES-MOD-20180208-00087.
2. Operations shall not cause harmful interference to and shall not claim protection from interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference and notify the FCC in writing.
3. Operations with Permitted List satellites must comply with the applicable "routine" uplink and downlink power limits specified in 47 CFR §25.212
4. Any action taken, or expense incurred as a result of operations pursuant to this STA is solely at TeleCommunication Systems, Inc.'s risk.
5. Transmitter(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector. Appropriate measures must also be taken to restrict access to other regions in which the earth station's power flux density levels exceed the specified guidelines.
6. The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers.
7. Grant of this authorization is without prejudice to any determination that the Commission may make regarding TeleCommunication Systems, Inc.'s pending application FCC IBFS File number SES-MOD-20190208-00087 or future applications.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately.

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

TeleCommunications Systems, Inc. ("Comtech TCS")¹ hereby requests special temporary authority ("STA") in connection with its application filed February 8, 2019 to modify the license for its C-band satellite Earth station license at Yona, Guam (Call Sign E090026) to add an antenna, increase power and maximum EIRP and modify emissions (IBFS File No. SES-MOD-20190208-00087)("Modification Application"). Comtech TCS requires authority to operate the modified facilities beginning Monday, April 8, 2019, the first date that the pending Modification Application may be eligible for grant.² However, because Guam is fourteen hours ahead of the North American Eastern Time Zone, even a grant at 8 a.m. on Monday, April 8, 2019 would come after the end of the business day on Guam. Accordingly, an STA grant prior to April 8th and effective as of that date is required to commence testing in timely fashion as described below.

Authority to commence transmissions on April 8th is necessary in order to allow testing of the new antenna at the revised operating parameters to validate expected performance in connection with anticipated upcoming use for launch monitoring activities under contract to the Japan Aerospace Exploration Agency ("JAXA"). Testing must be coordinated with other facilities on the island and has been planned for several months. Comtech TCS is a long-term FCC licensee, and the Commission has previously reviewed and approved its qualifications to operate this satellite Earth station facility. Accordingly, there is no need for delay in granting Comtech TCS permission to operate an additional antenna at this site, on a temporary basis, without prejudice to final action on the pending Modification Application.

Comtech TCS has filed this application in compliance with Section 25.120(a) of the FCC's Rules in advance of the requested transmission date. Comtech TCS seeks grant of an STA to permit it to operate the subject facilities, and, as detailed above, respectfully requests that action on this matter be completed before Monday, April 8, 2019, providing Comtech TCS with the assurance that it can proceed with its testing program on that date. Consistent with the FCC's Rules concerning authority for use prior to grant, Comtech TCS requests an STA for a period of up to 60 days. *See* 47 C.F.R. §25.120(b)(3).

¹ TeleCommunications Systems, Inc. is a wholly-owned subsidiary of Comtech Telecommunications Corp.

² The Modification Application was placed on the Satellite Division's Accepted for Filing Public Notice on March 9, 2019, and therefore does not become eligible for grant until thirty (30) days later. *See* FCC Public Notice, Satellite Communications Services re: Satellite Radio Applications Accepted for Filing, Report No. SES-02142, at 13-14 (released March 6, 2019); 47 U.S.C. § 309(b). The first business day after the expiration of the 30-day public notice period is Monday, April 8, 2019.

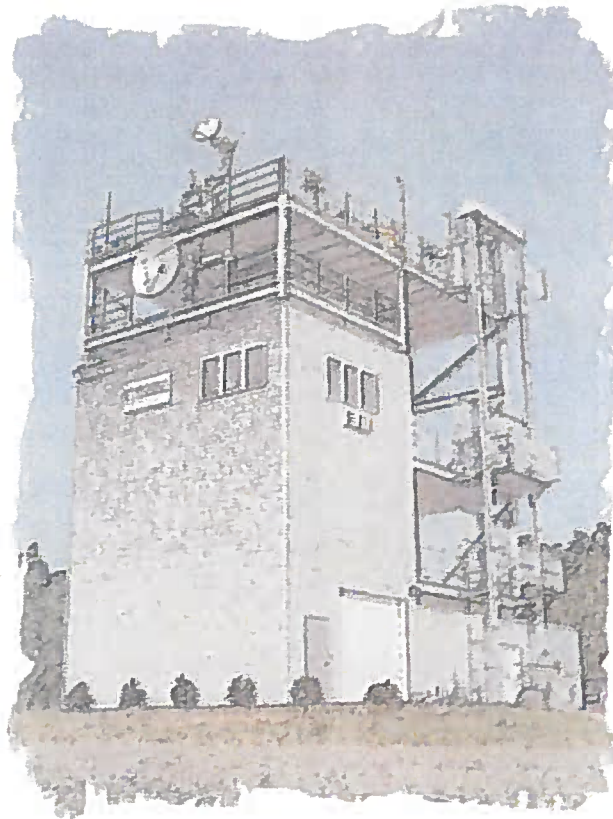
GENERAL DYNAMICS

C4 Systems

Antenna Test Report

Test No. 1519

**Project: Prodelin 2.4M Quick Deploy C-X-Ku-Band
Series 1259-800 Antenna System**



East Maiden Antenna Test Facility
4488 Lawing Chapel Church Road
Maiden, North Carolina 28650
828-428-1485 / 828-428-1488 fax

GENERAL DYNAMICS
C4 Systems



1500 Prodelin Drive
Newton, NC 28658
828-464-4141

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1.0 General information

1.1 Notes

The test results of this test report relate exclusively to the specified antenna system in section 2.1 of this report. The purpose of test was to show the level of conformity to "factory" technical specifications following a mechanical refurbishment of such antenna system. This antenna was returned for mechanical and electrical repairs following years of service in the field.

1.2 Test range information

General Dynamics C4/ Prodelin Antenna Test Facility is located 5km (3 miles) East of Maiden, NC and approximately 16km (10 Miles) South-southeast of Prodelin main office in Newton, NC. We are located 61km (38 Miles) from Charlotte International Airport and 149km (90 miles) from Piedmont Triad International Airport in Greensboro, NC.

The antenna range can test a multitude of frequencies between 800 MHz and 30.00GHz, and antennas up to 4.5 meters in diameter.

Testing is accomplished over a test path between a fixed transmit tower location and a fixed receive tower location, separated by a distance of 1193.06 Meters (3914.44 feet). Transmit and receive tower heights are 17.41 meters (57.11 feet) above ground level. Using directional antennas, an unmodulated carrier wave (CW) test signal(s) are transmitted from the source tower location toward the receive tower location.

The signal is then received and interpreted by the sophisticated Orbit F/R959 Antenna Measurement System. Data is digitally recorded and many options of data analysis and presentation are possible using the Orbit F/R DataPro and GD specific software.

1.3 Test range specifics:

Range Length	1193.06 Meters (3914.44 Feet)
C/L Tx Source Antenna AGL	17.41 Meters (57.11 Feet)
C/L AUT Mounting Positioner AGL	17.49 Meters (57.88 Feet)

Test zone:

Frequency range	0.8 - 30.00 GHz
Dynamic range	80 dB (in most frequency bands)
Gain	+/- 0.5 dB*
Amplitude ripple	< +/- 0.3 dB* @ +/-20°-boresight
Amplitude ripple	< +/-0.5 dB* @ greater than 20° boresight
Phase ripple	< +/-5°*
Cross-polar purity:	-40 dB*

* For the majority of practical applications.

Positioner:

Axis 1 Azimuth	
Accuracy	< 0.12°
Axis 2 Elevation	
Accuracy	< 0.1°
Max load:	800 Lbs.

1.4 Test Equipment:

Manufacturer:	Model	Options	S/N
HP Microwave Receiver (Top Section)	8530A	010-011-8Ze	3031A08077
HP Microwave Receiver (Btm Section)	8530A	011-8ZE	3409A00301
HP Synthesized Sweeper Source #1 (Tx Source) 10Mhz – 50GHz	83651B		3844A00444
HP Amplifier 2-50GHz	83050A	8ZE	3331A00520
HP Power Supply (For 83050A Amplifier)	87421A		3611A00932
HP Synthesized Sweeper Source #2 (Reference Source) 10Mhz – 20GHz	83621B		3614A00156
HP LO/IF Distribution Unit	85309A		3224A00188
HP Extender (Up-Range)	37204A	03	3212U24550
HP Extender (Down-Range)	37204A	03	3212U23735
HP Mixer Module (Reference) #1 2-50GHz -140Mv	85320B	H50	2944A00617
HP Mixer Module (Reference) #2 2-26.5GHz -71Mv	85320B		860A00143
HP Mixer Module (Reference) # 3 2-50GHz -148Mv	85320B	H50	2944A00508
HP Mixer Module (Reference) # 4 0.1-3.0GHz -18Mv	85320B	H20	2944A00598
HP Mixer Module (Reference) # 5 0.1-3.0GHz -18Mv	85320B	H20	2944A00272
HP Mixer Module (Test) #6 2-50GHz	85320A	H50	2944A00676
HP Mixer Module (Test) #7 2-50GHz	85320A	H50	2914A00501
HP Mixer Module (Test) #8 0.1-3.0GHz	85320A	H20	2944A00685
HP Mixer Module (Test) #9 2-26.5GHz	85320A		3031A08077

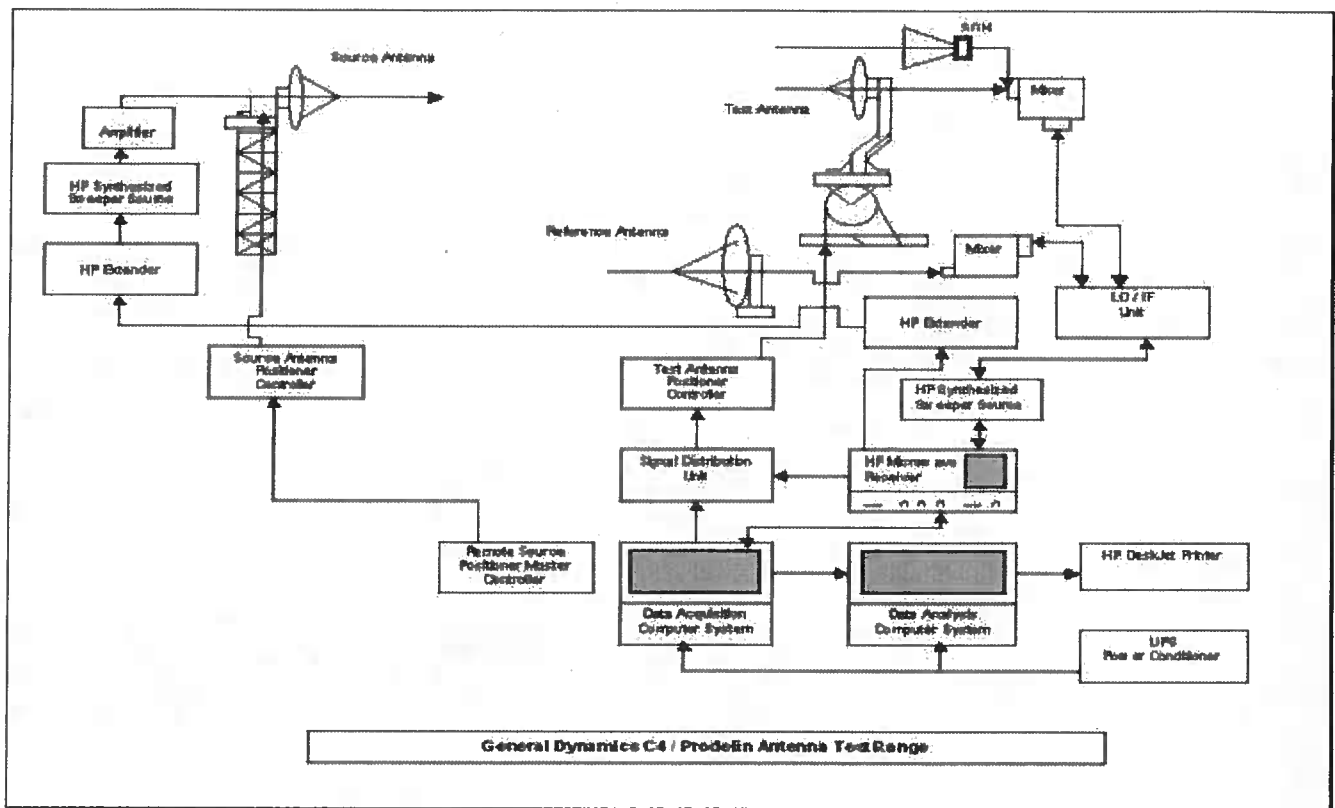
1.5 Positioner Equipment:

Orbit Positioner Programmer (To control Tx positioner)	AL-4706-3B		208
Orbit Positioner Controller & PCU (Up Range – Power Control Unit)	AL-4806-3A		182
Orbit Positioner Controller & PCU (Down Range – Power Control Unit)	AL-4806-3A	1 & 5	266

1.6 Test Software:

F/R Signal Distribution Unit	959		K1036
Orbit F/R 959 Data Acquisition Software	Spectrum	Rev-A	
Automated Antenna Measurement Workstation	Version 2.6.1		
Orbit F/R DataPro Plus Software	Spectrum	Rev-A	
Antenna Data Presentation and Analysis	Version 2.6.1		

1.7 Block Diagram / Test Set-up



1.8 Staff / Contact Information:

Two full time operators with a combined total of 30+ Years experience in antenna testing.

Dwight B. Lutz

Email:

phone: 828-428-1486

dwight.lutz@gdsatcom.com

Ken Poovey

Email:

phone: 828-428-1486

kenneth.poovey@gdsatcom.com

Fax: 828-428-1488

Internet: <http://www.gdsatcom.com>

2.0 Technical Test:

2.1 Summary of Test Results

Summary of test results:

Test Number		1519					
Antenna Series		1259-800					
Antenna Size (Meter)		2.4					
Operating Frequency	Receive	3.625	3.950	4.200	3.625	3.950	4.200
	Transmit	5.850	6.138	6.425	5.850	6.138	6.425
Polarization		LHCP	LHCP	LHCP	RHCP	RHCP	RHCP
Gain +/-0.2dB	Receive	37.14	37.86	38.49	37.10	38.00	38.52
	Transmit	41.02	41.77	42.19	41.03	41.72	42.27
Cross Polarization Isolation	Receive	17.53	23.89	18.20	15.66	22.03	18.51
	Transmit	18.48	20.90	35.47	21.36	24.81	38.18
-3 dB Beamwidth (deg)	Receive	2.14	2.01	1.93	2.27	2.03	1.85
	Transmit	1.40	1.32	1.27	1.39	1.30	1.25
Sidelobe Compliant with		IESS 207 STD H					
Antenna		3.625	3.950	4.200			
Noise Temp 30 degree Elevation		55.35	52.65	53.19			
G/T		17.94	18.80	19.32			

Operating Frequency	Receive				7.250	7.500	7.750
	Transmit	7.900	8.200	8.400			
Polarization		LHCP	LHCP	LHCP	RHCP	RHCP	RHCP
Gain +/-0.2dB	Receive				43.53	43.92	44.14
	Transmit	43.98	44.2	44.39			
Cross Polarization Isolation		23.16	23.22	17.73	15.56	17.39	19.63
-3 dB Beamwidth (deg)		1.03	0.97	0.96	1.09	1.05	1.02
Sidelobe Compliant with		IESS 207 STD H					
Antenna Noise Temp		N/A	N/A	N/A			
30 degree Elevation		N/A	N/A	N/A			
G/T		N/A	N/A	N/A			

Operating Frequency	Receive	10.950	11.950	12.750	10.950	11.950	12.750
	Transmit	13.750	14.125	14.500	13.750	14.125	14.500
Polarization		Vertical	Vertical	Vertical	Horizontal	Horizontal	Horizontal
Gain +/-0.2dB	Receive	46.88	47.63	48.07	46.90	47.66	48.20
	Transmit	48.81	48.91	49.04	48.75	48.91	49.18
Cross Polarization Isolation	Receive	55.84	40.61	38.00	39.09	37.81	38.53
	Transmit	36.57	45.97	42.49	33.53	36.88	42.37
-3 dB Beamwidth (deg)	Receive	0.76	0.71	0.65	0.78	0.70	0.67
	Transmit	0.62	0.60	0.57	0.62	0.61	0.58
Sidelobe Compliant with		IESS 208 STD E1					
Antenna		10.950	11.950	12.750			
Noise Temp 30 degree Elevation		67.29	66.9	63.06			
G/T		25.33	26.18	26.66			

2.2 Radiation Patterns

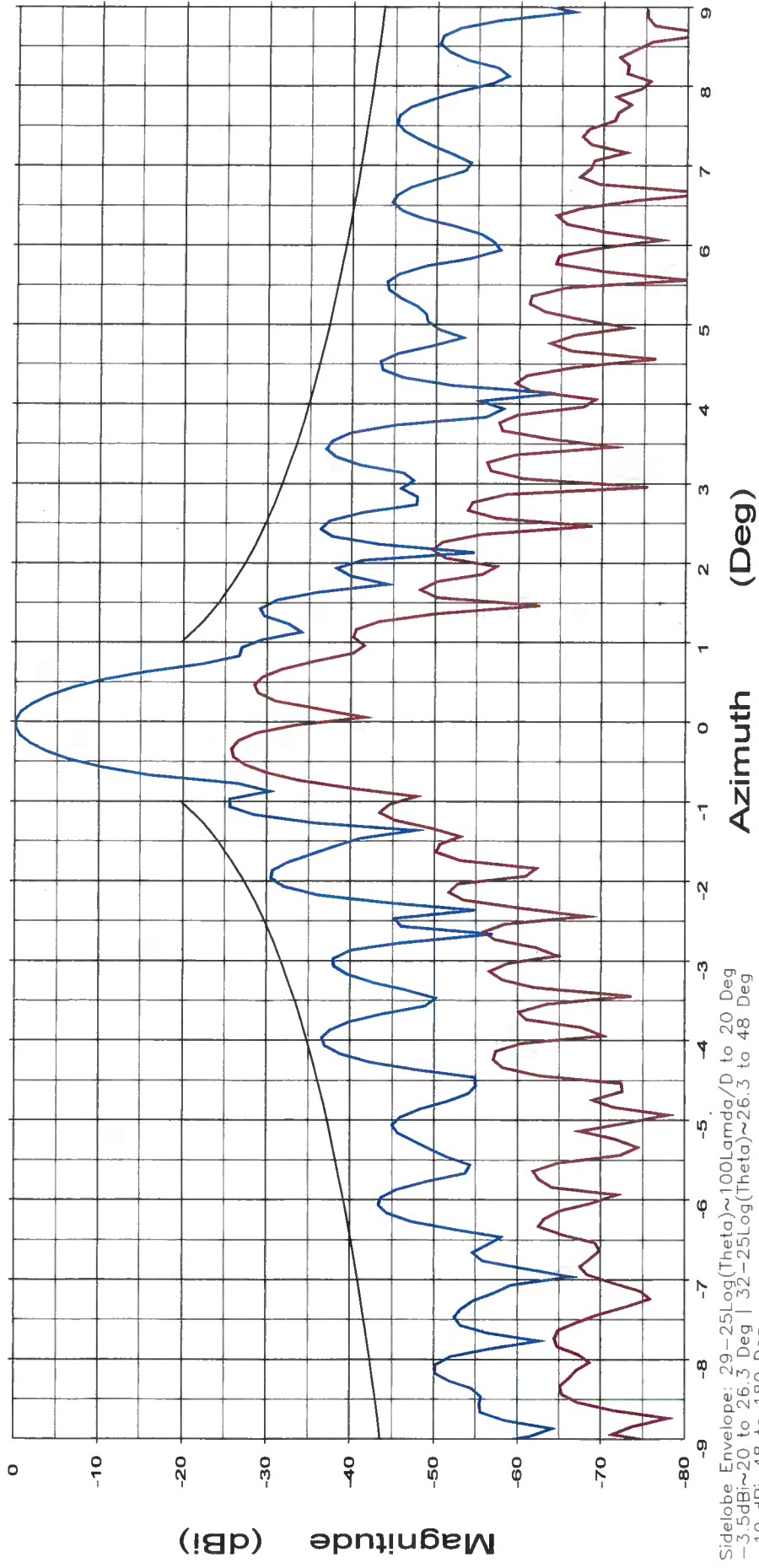
2.3 Ku-Band Patterns

Frequency : 13.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

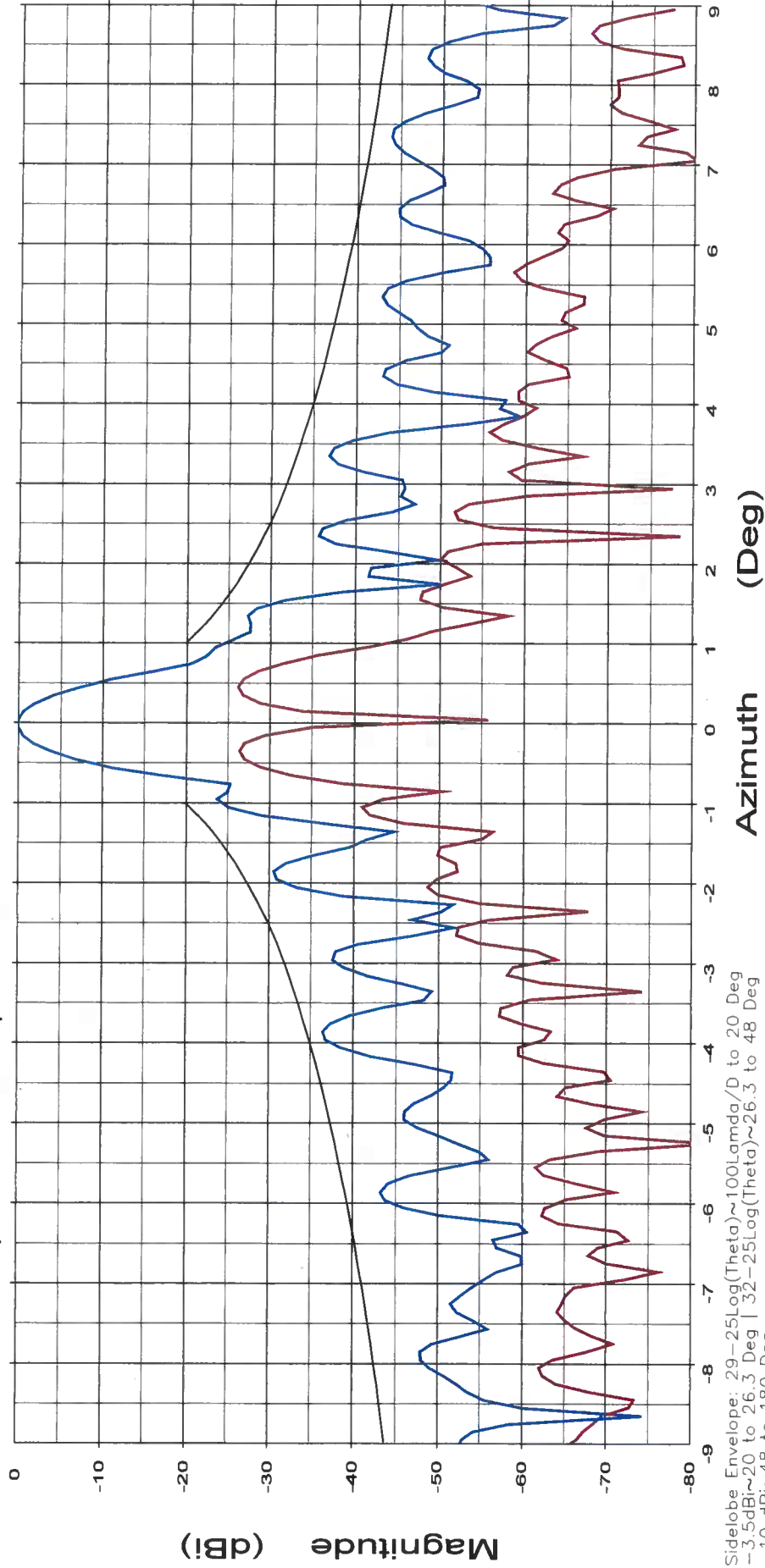
Overlays
1519-12.dat-ant_under_test ——— dBi
1519-14.dat-ant_under_test ——— dBi

Frequency : 14.125 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



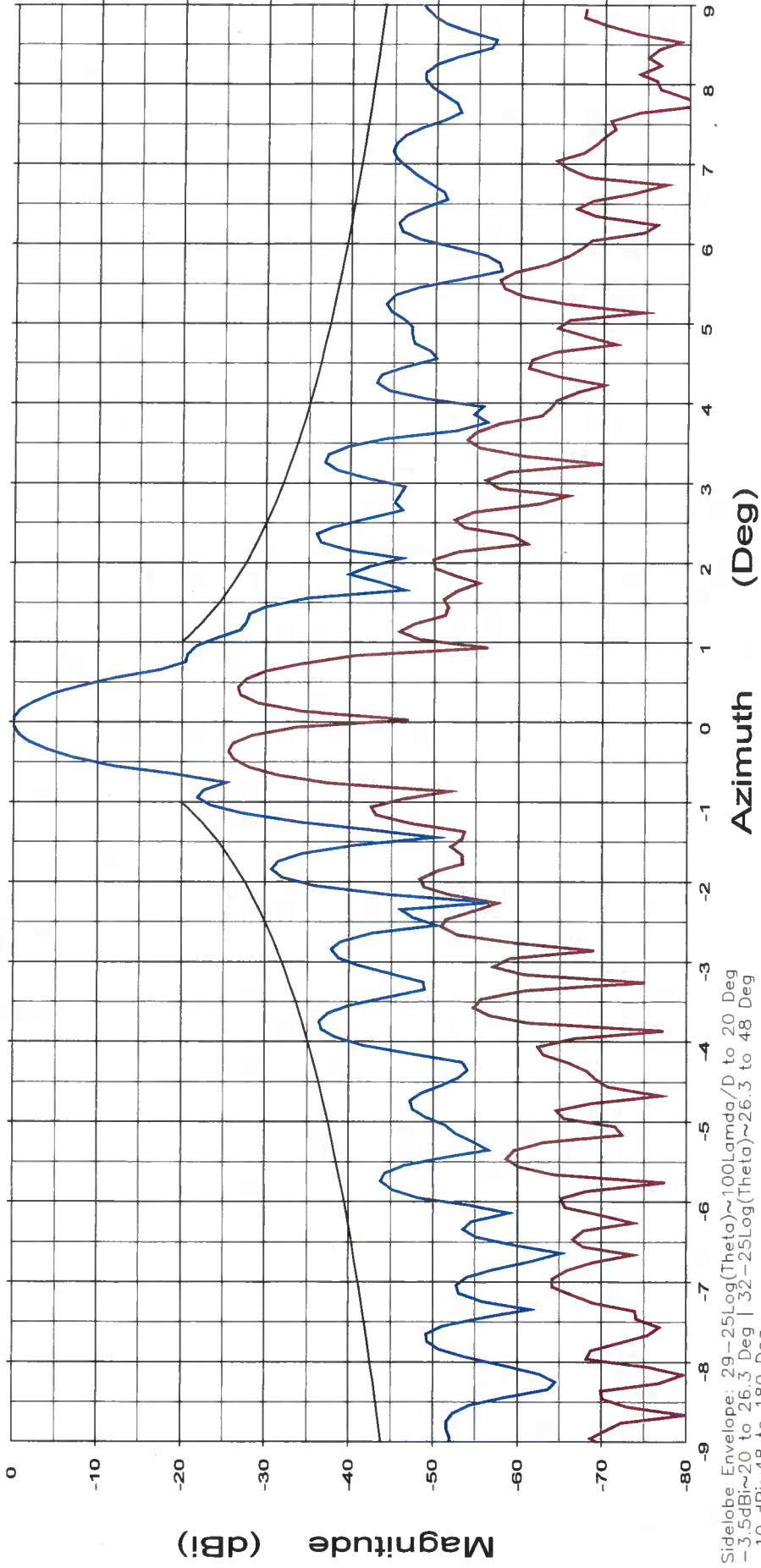
Overlays
1519-12.dat-ant_under_test — units
1519-14.dat-ant_under_test — dBi

Frequency : 14.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



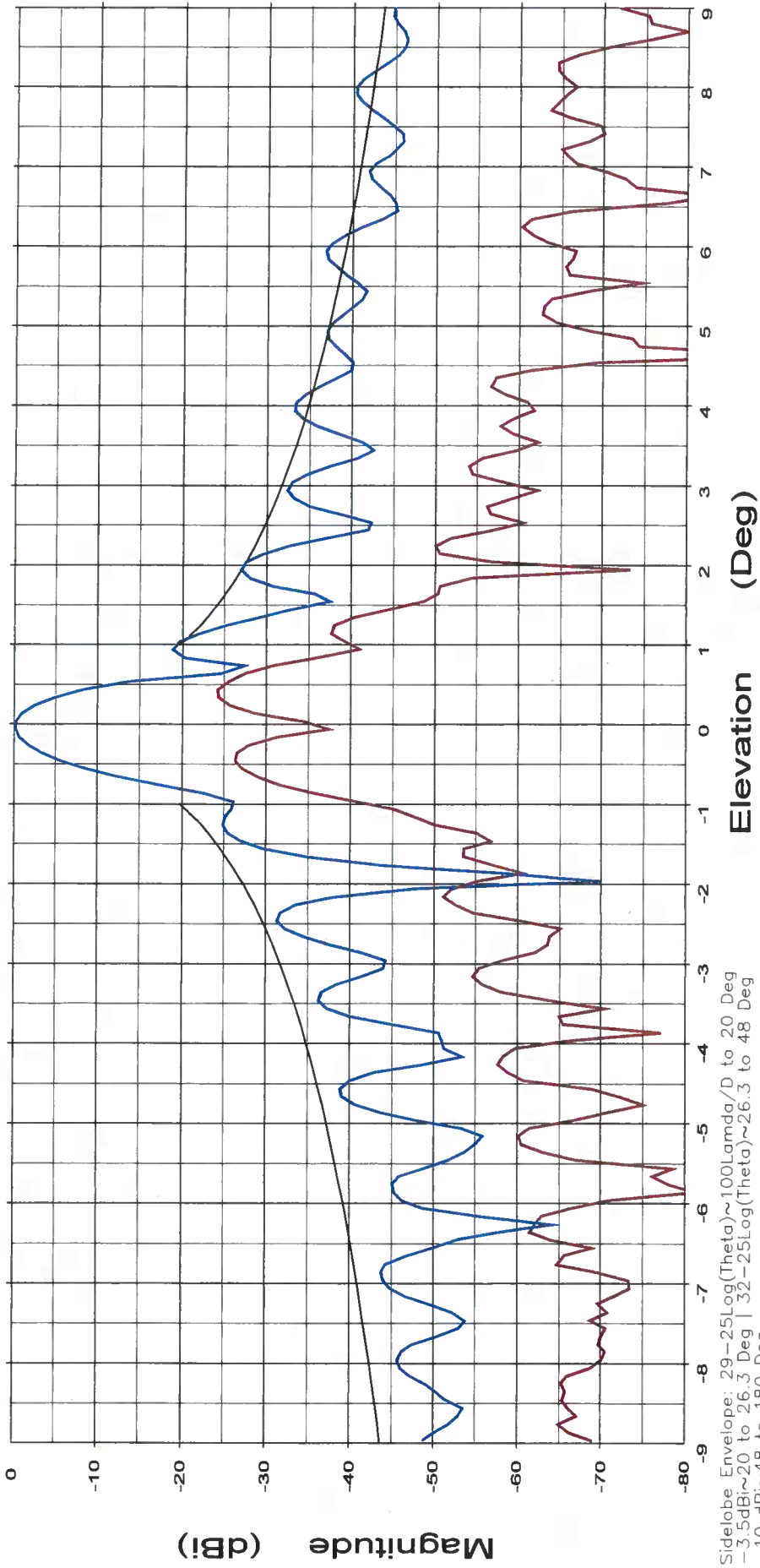
Overlays
1519-12.dat-ant_under_test — 1519-12.dat dBi
1519-14.dat-ant_under_test — 1519-14.dat dBi

Frequency : 13.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Overlays

	Cal. file	units
1519-13.dat-ant_under_test	1519-13.dat	dBi
1519-15.dat-ant_under_test	1519-15.dat	dBi

Prodelin Corporation - Series 1259-800
 2.4M Quick Deploy Tri-Band Antenna System
 Electrical Verification Testing Following Mechanical Restoration

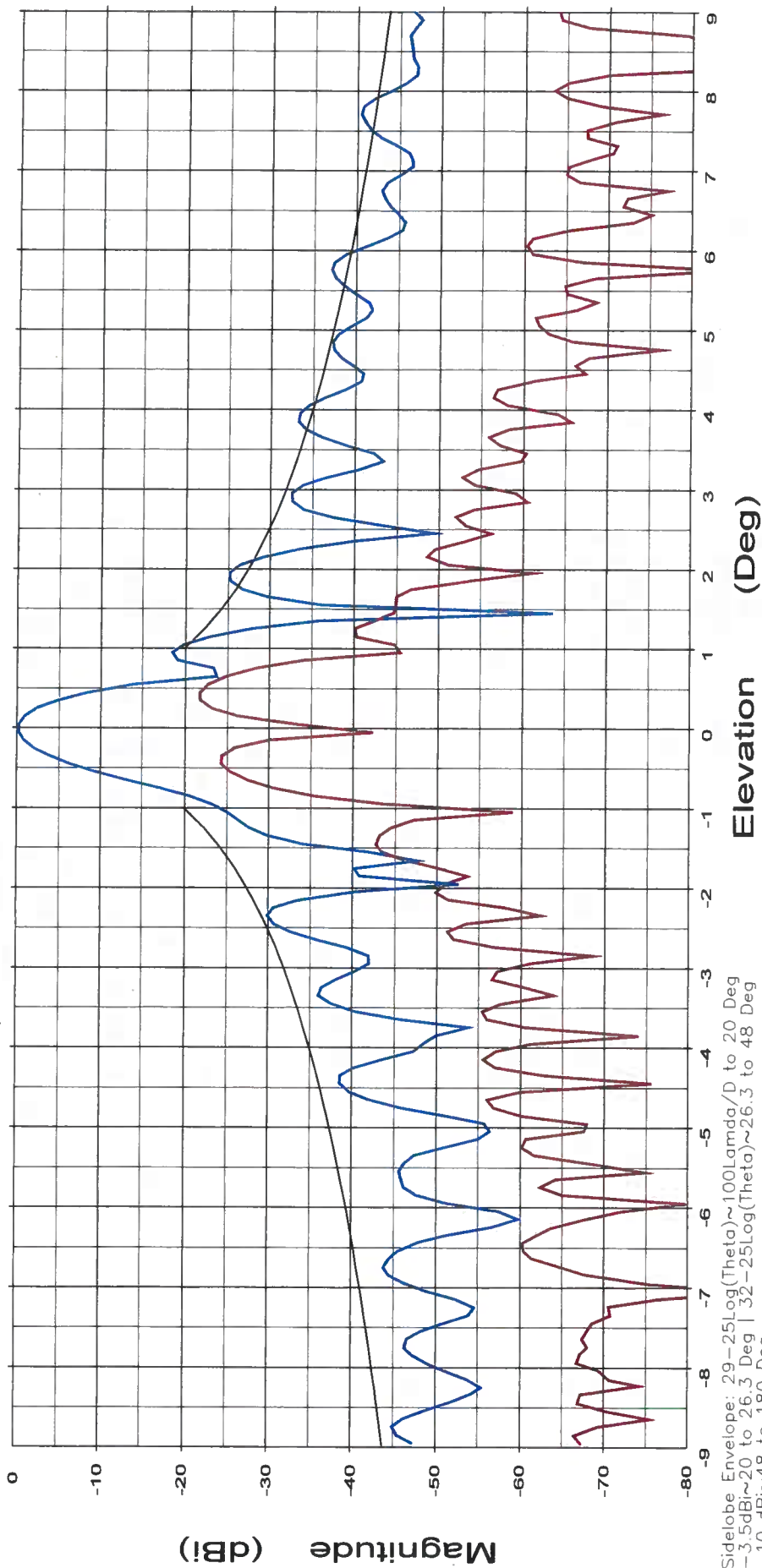
Frequency : 14.125 GHz

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: Vert. Rx pol: Vert.



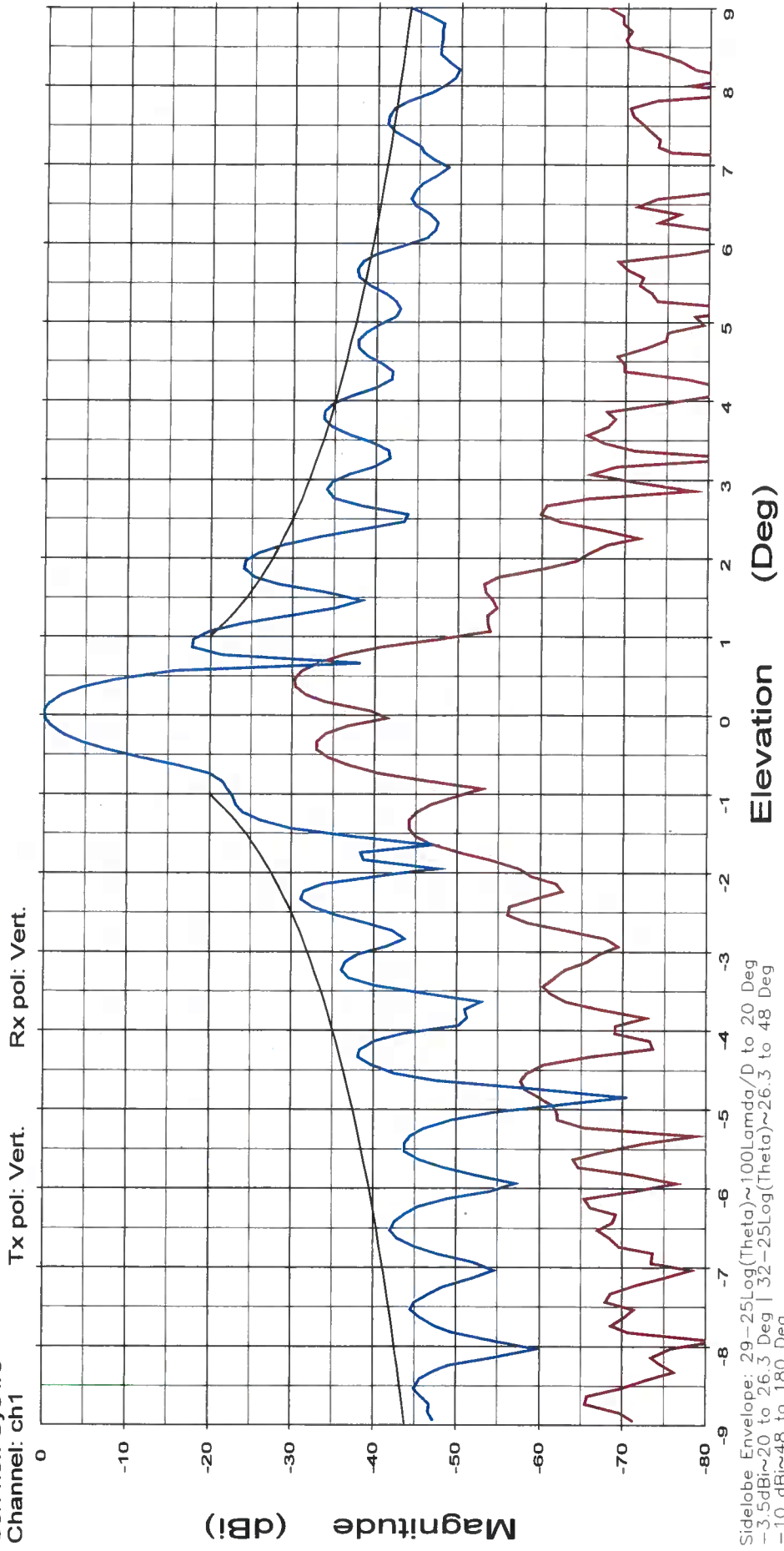
Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
 -3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
 -10 dBi~48 to 180 Deg

Overlays
 1519-13.dat-ant_under_test — 1519-13.dat
 1519-15.dat-ant_under_test — 1519-15.dat

Frequency : 14.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Sidelobe Envelope: $29 - 25 \log(\theta)$ for θ between 20 and 48 Deg
 -3.5 dBi for θ between 20 and 26.3 Deg
 -10 dBi for θ between 48 and 180 Deg

Overlays
1519-13.dat-ant_under_test — dBi
1519-15.dat-ant_under_test — dBi

File: 1519-12.dat

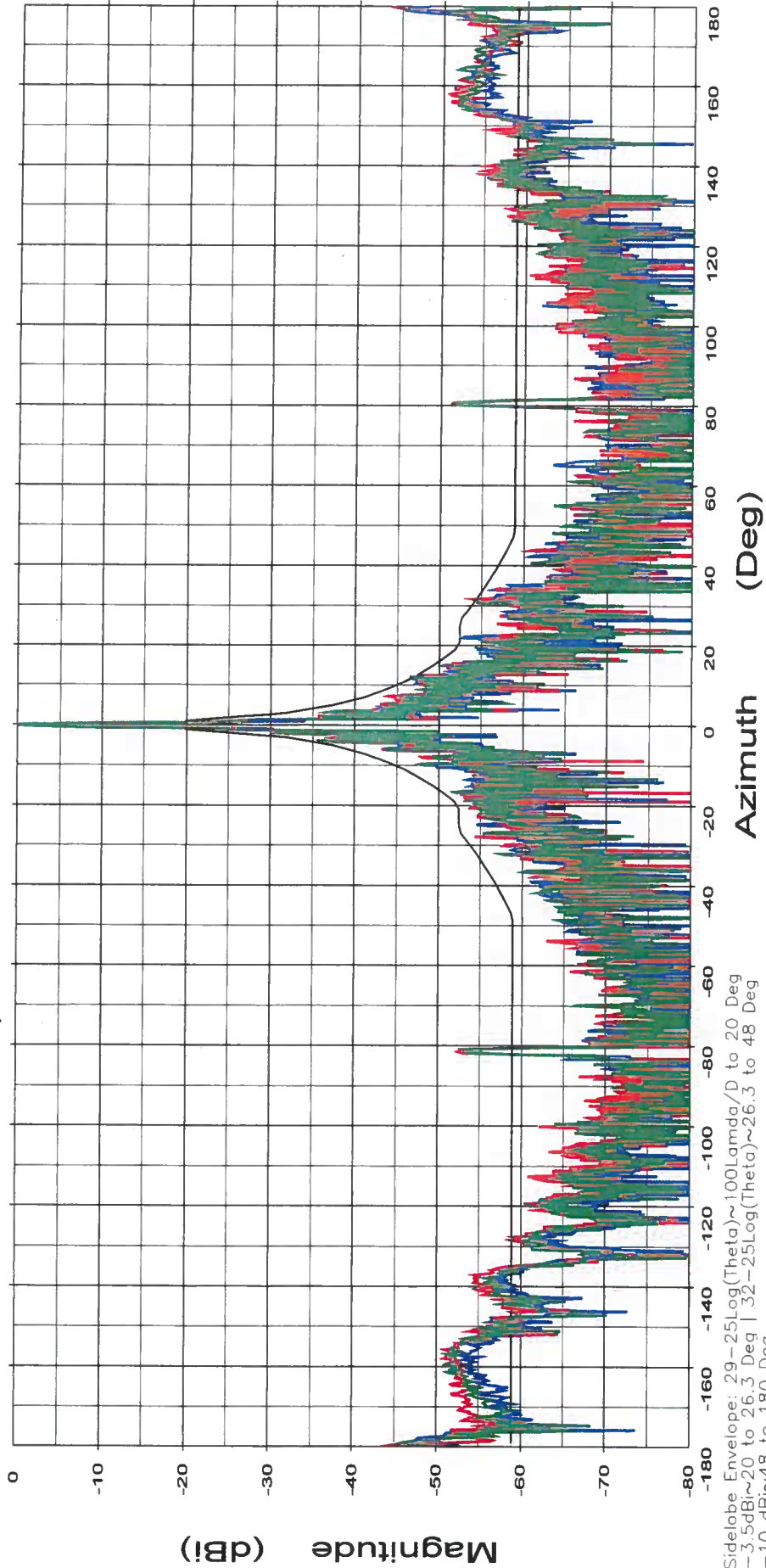
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re:Chan...

Frequency : See Legend

Calibration status:
File: 1519-12.dat
Table: SGH-110
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



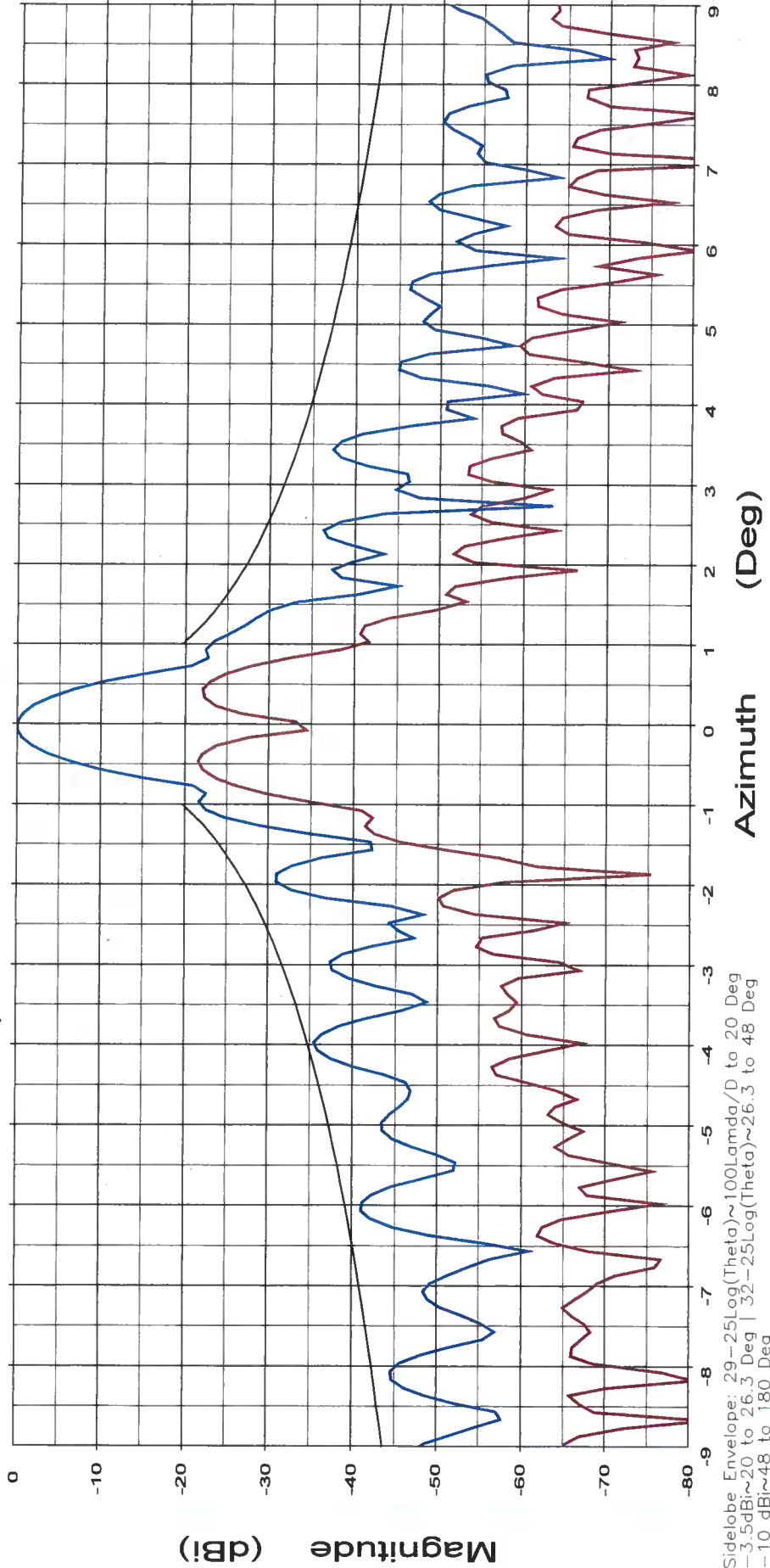
Overlays
Frequency : 13.750 GHz
Frequency : 14.125 GHz
Frequency : 14.500 GHz

Frequency : 13.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29~-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32~-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

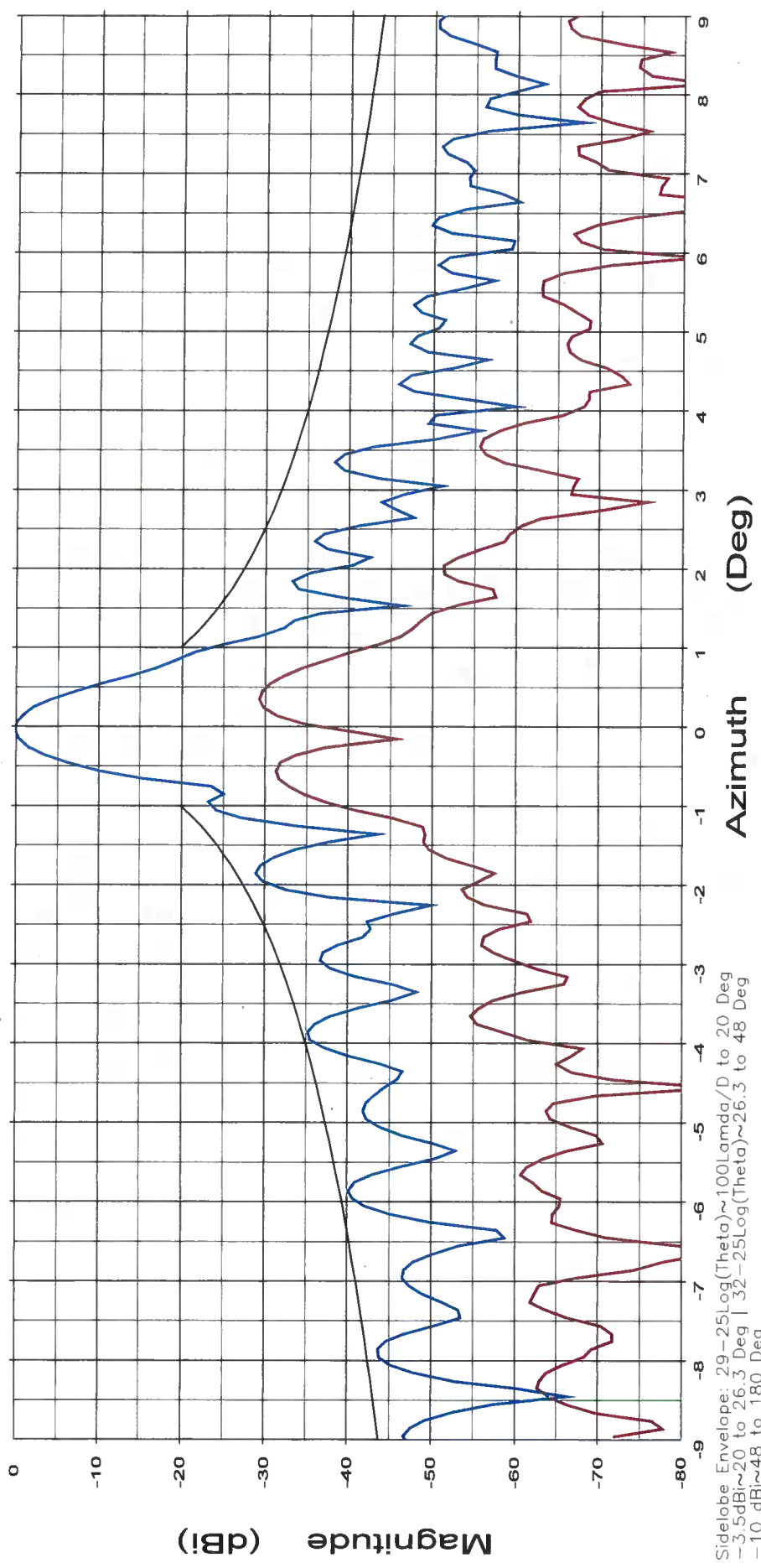
Overlays
1519-17.dat-ant_under_test — units dBi
1519-19.dat-ant_under_test — units dBi

Frequency : 14.125 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

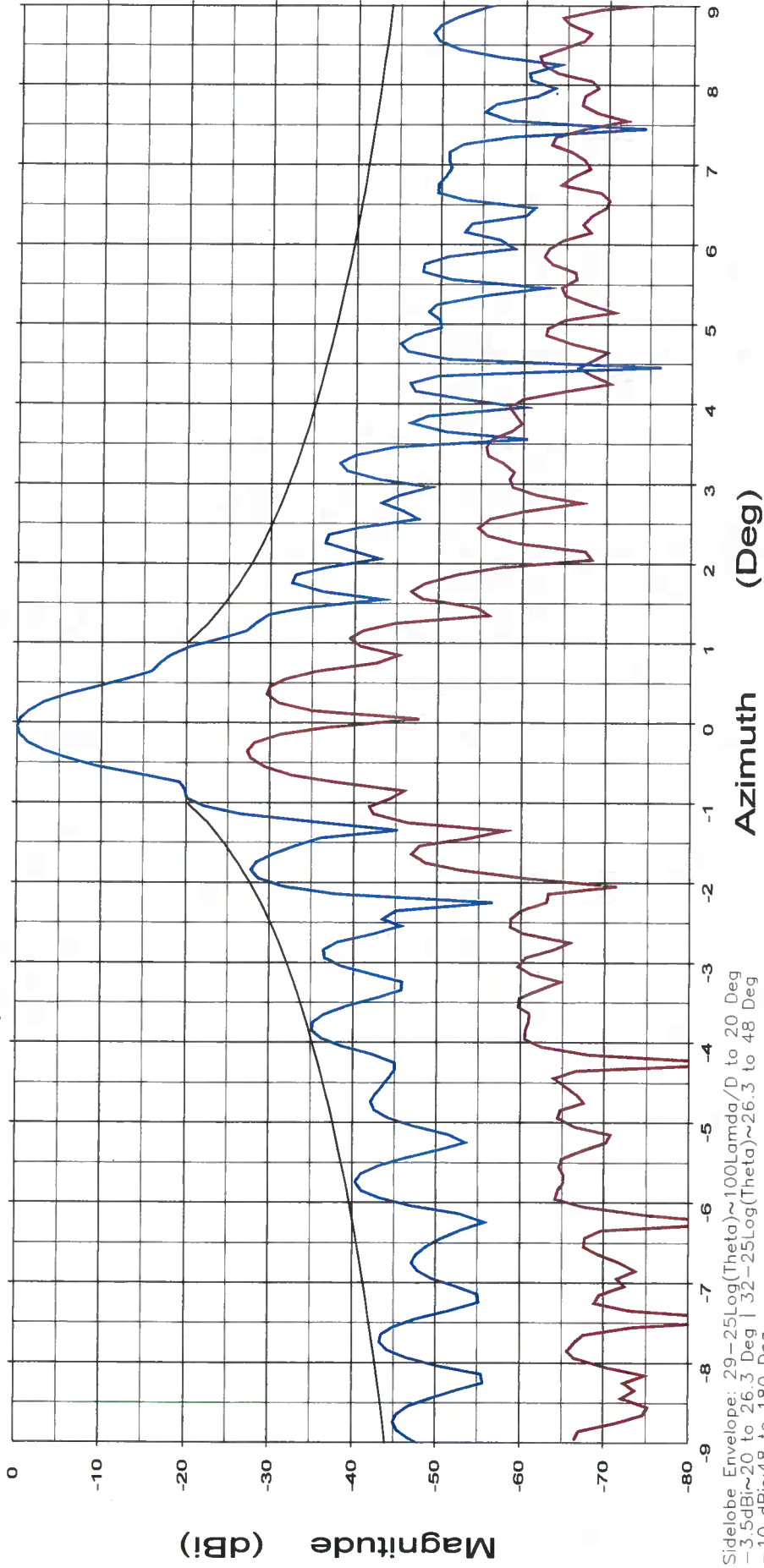
Overlays
1519-17.dat-ant_under_test — units
1519-19.dat-ant_under_test — units
Cal. file 1519-17.dat dBi
1519-19.dat dBi

Frequency : 14.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Overlays

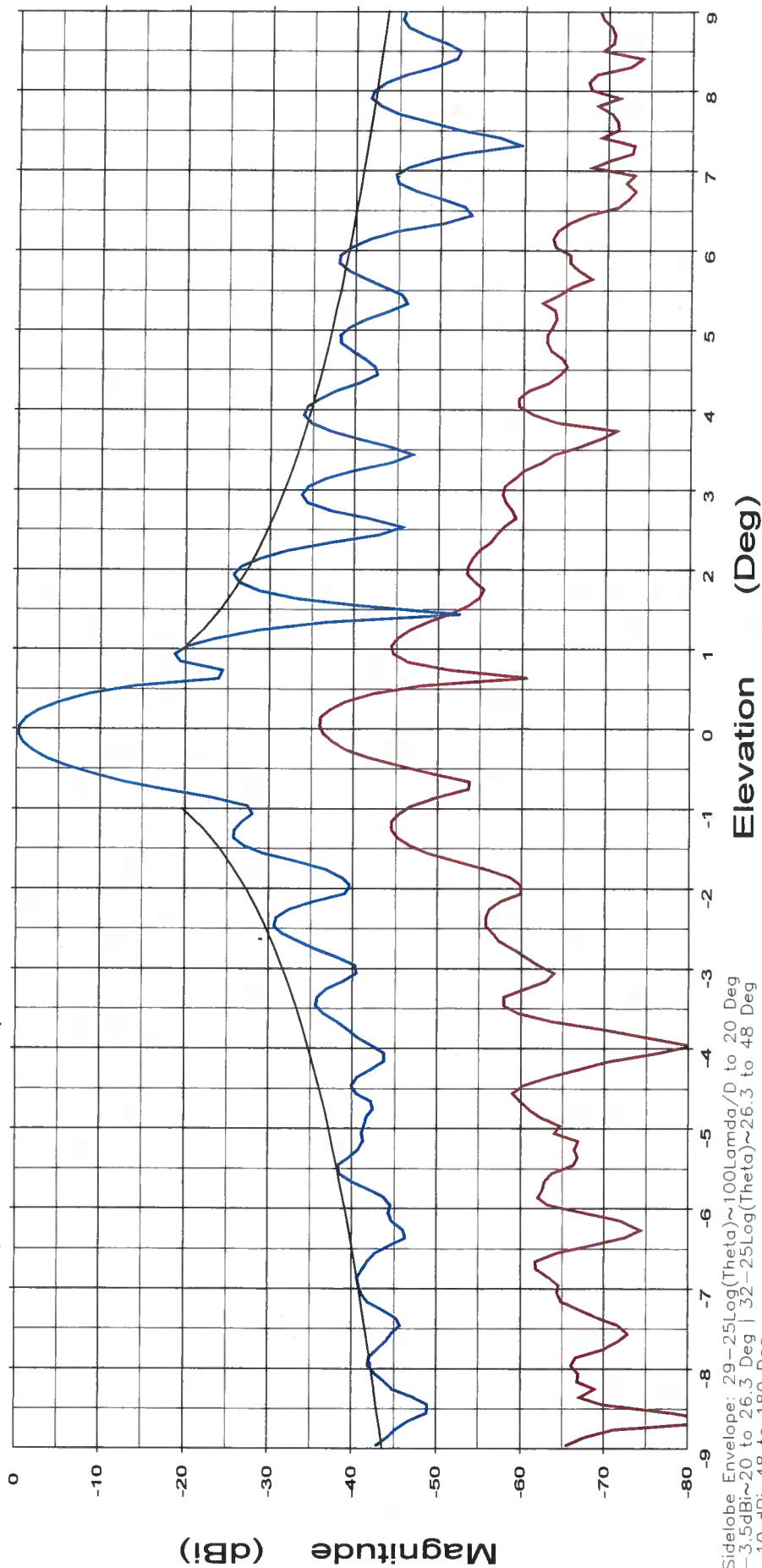
	Cal. file	units
1519-17.dat-ant_under_test	1519-17.dat	dBi
1519-19.dat-ant_under_test	1519-19.dat	dBi

Frequency : 13.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



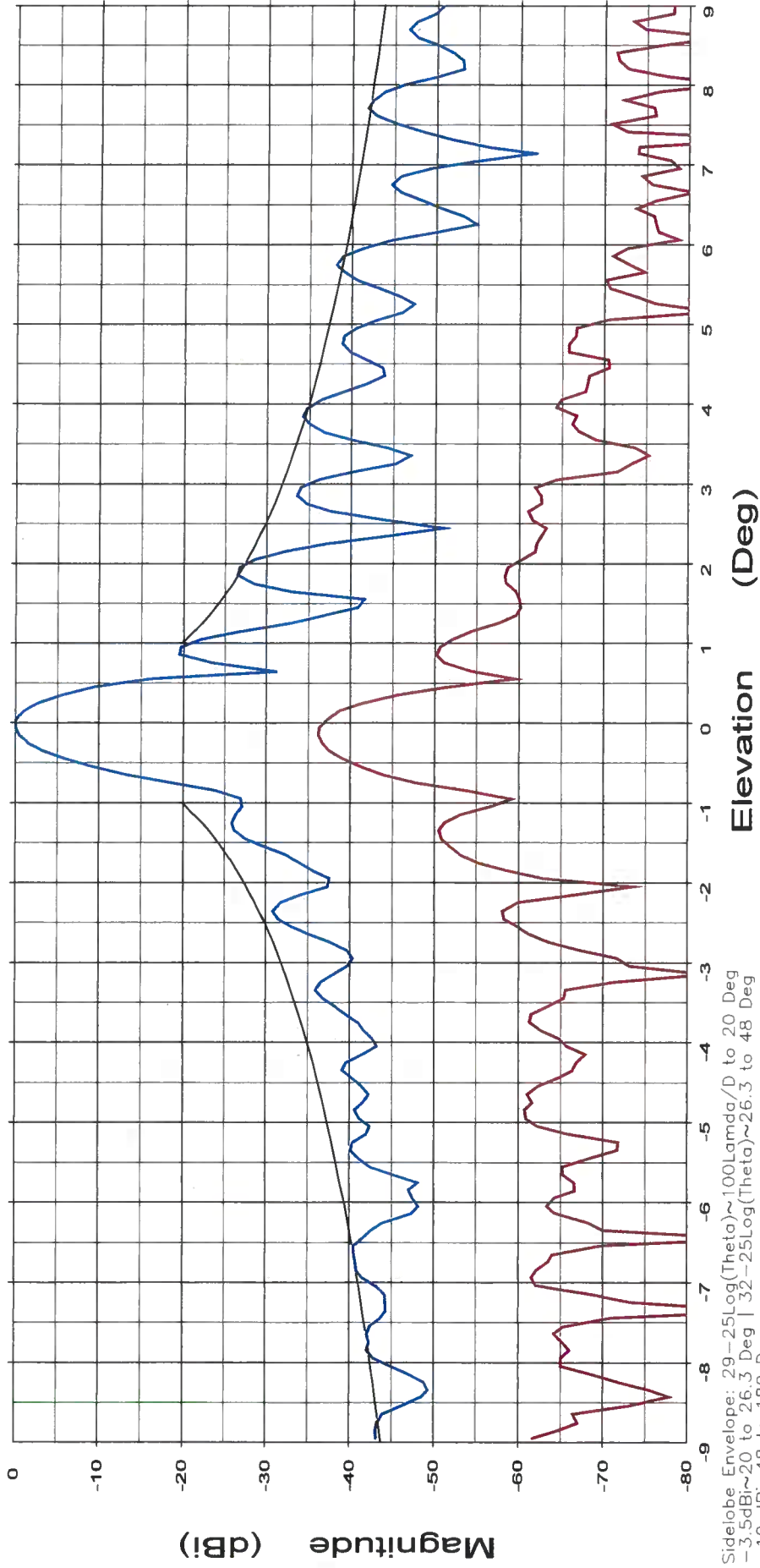
Overlays
1519-18.dat-ant_under_test — dBi
1519-20.dat-ant_under_test — dBi

Frequency : 14.125 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: $29-25\text{Log}(\text{Theta}) \sim 100\text{Lambda}/D$ to 20 Deg
-3.5dBi ~ 20 to 26.3 Deg | $32-25\text{Log}(\text{Theta}) \sim 26.3$ to 48 Deg
-10 dBi ~ 48 to 180 Deg

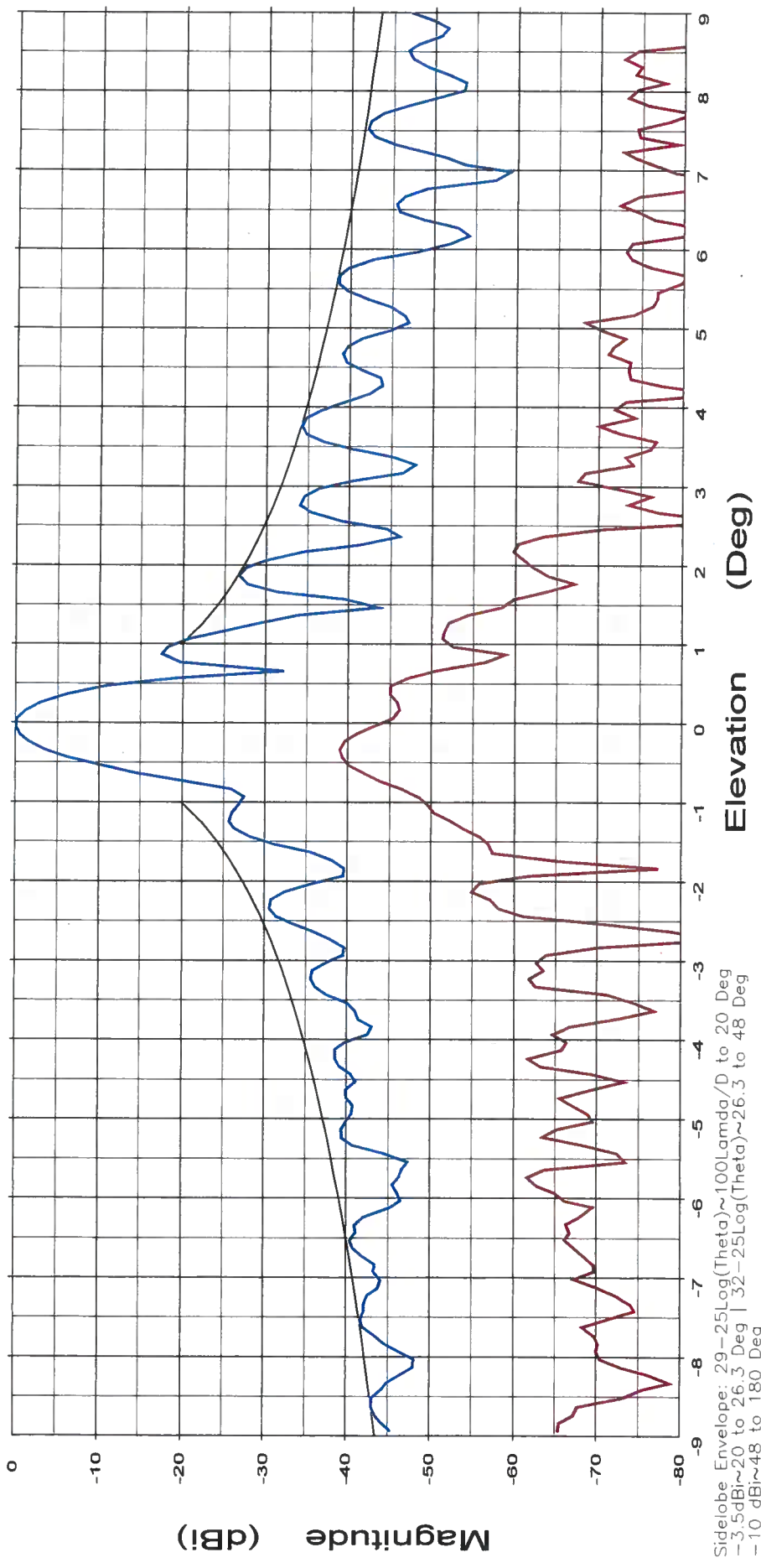
Overlays
1519-18.dat-ant_under_test — units
1519-20.dat-ant_under_test — dBi

Frequency : 14.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-18.dat-ant_under_test — units
1519-20.dat-ant_under_test — dBi

File: 1519-17.dat

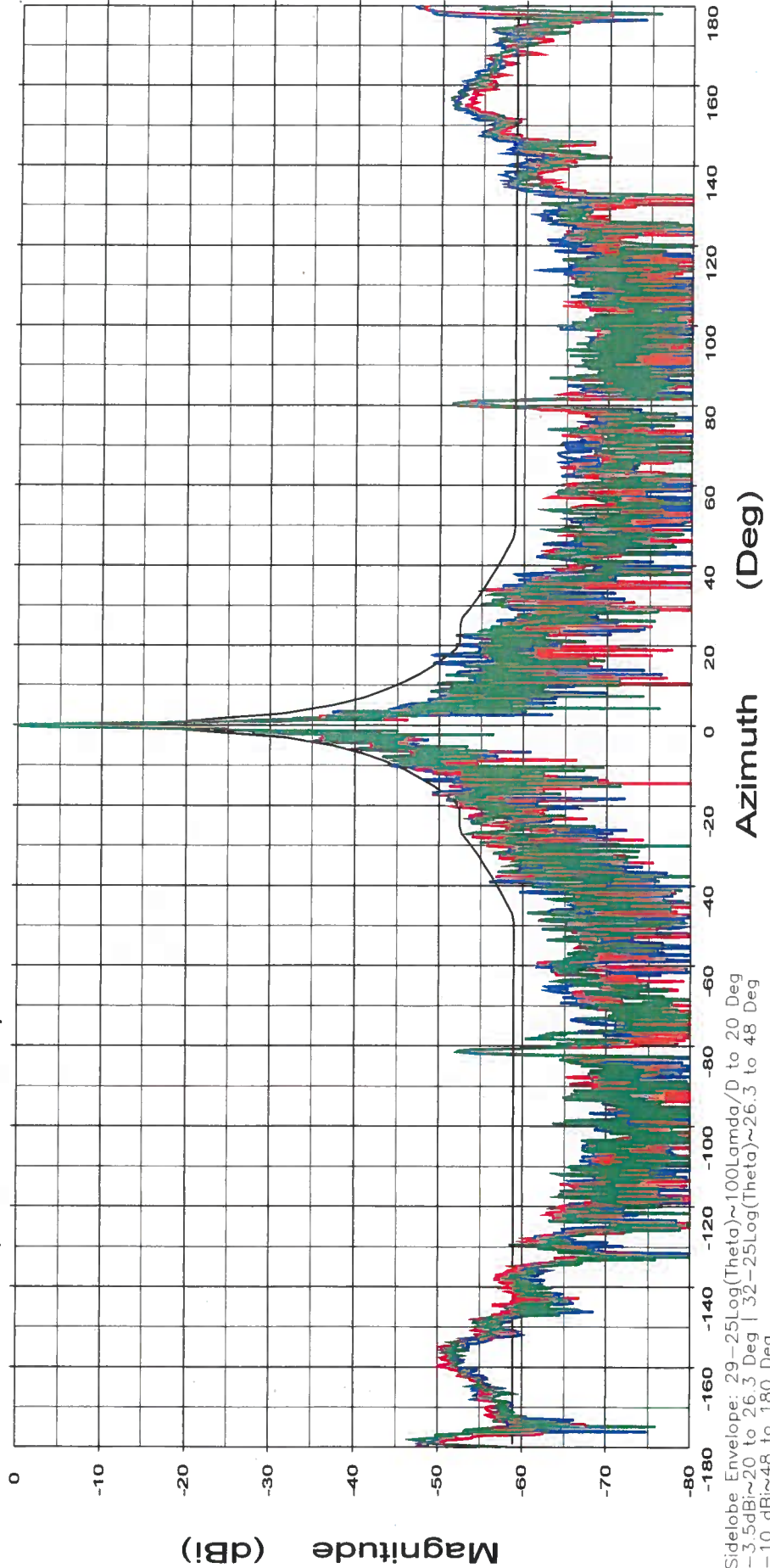
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Frequency : See Legend

Calibration status:
File: 1519-17.dat
Table: SGH-110
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



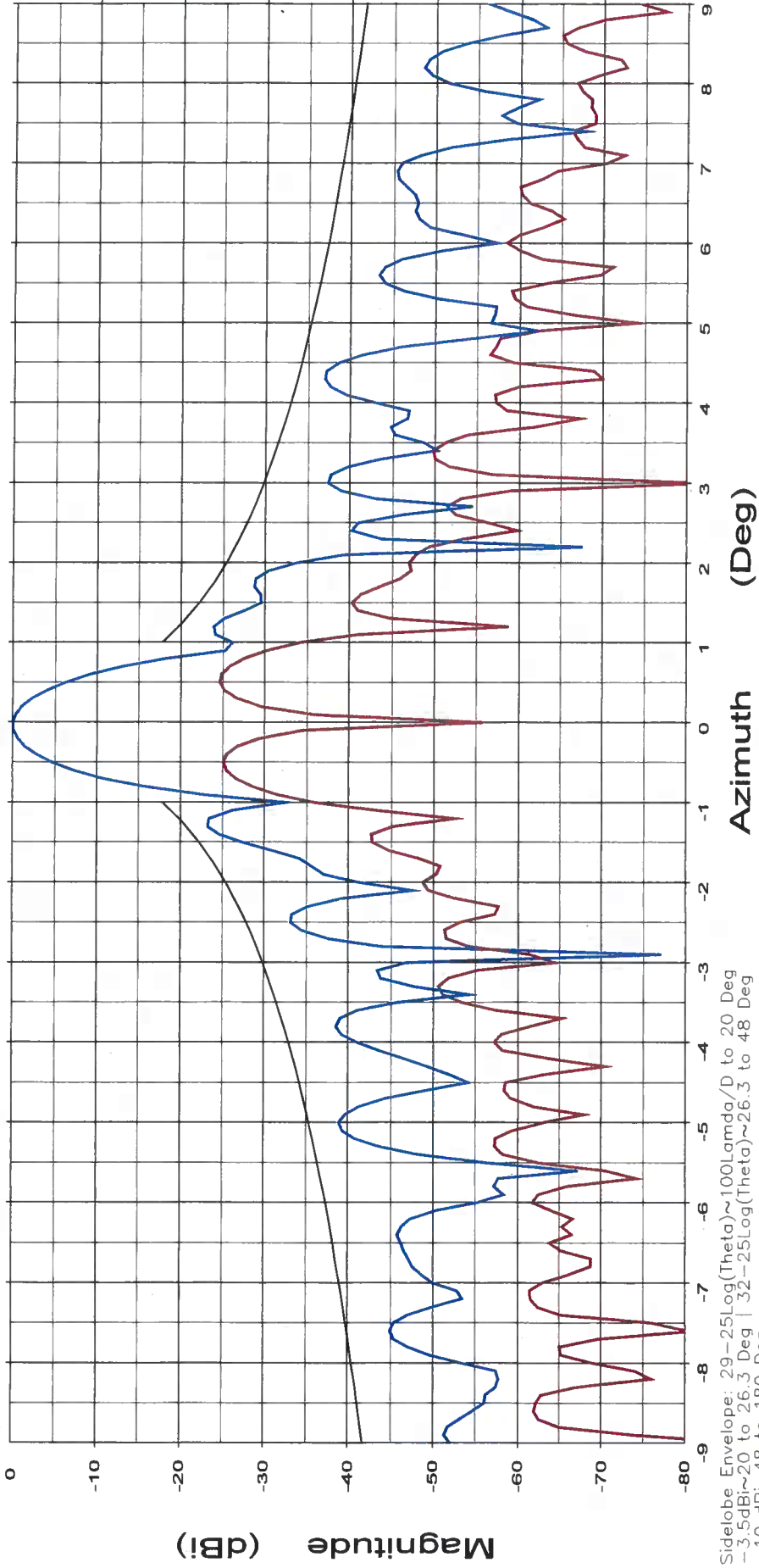
Overlays
Frequency : 13.750 GHz
Frequency : 14.125 GHz
Frequency : 14.500 GHz

Frequency : 10.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Overlays
1519-12.dat-ant_under_test — dBi
1519-14.dat-ant_under_test — dBi

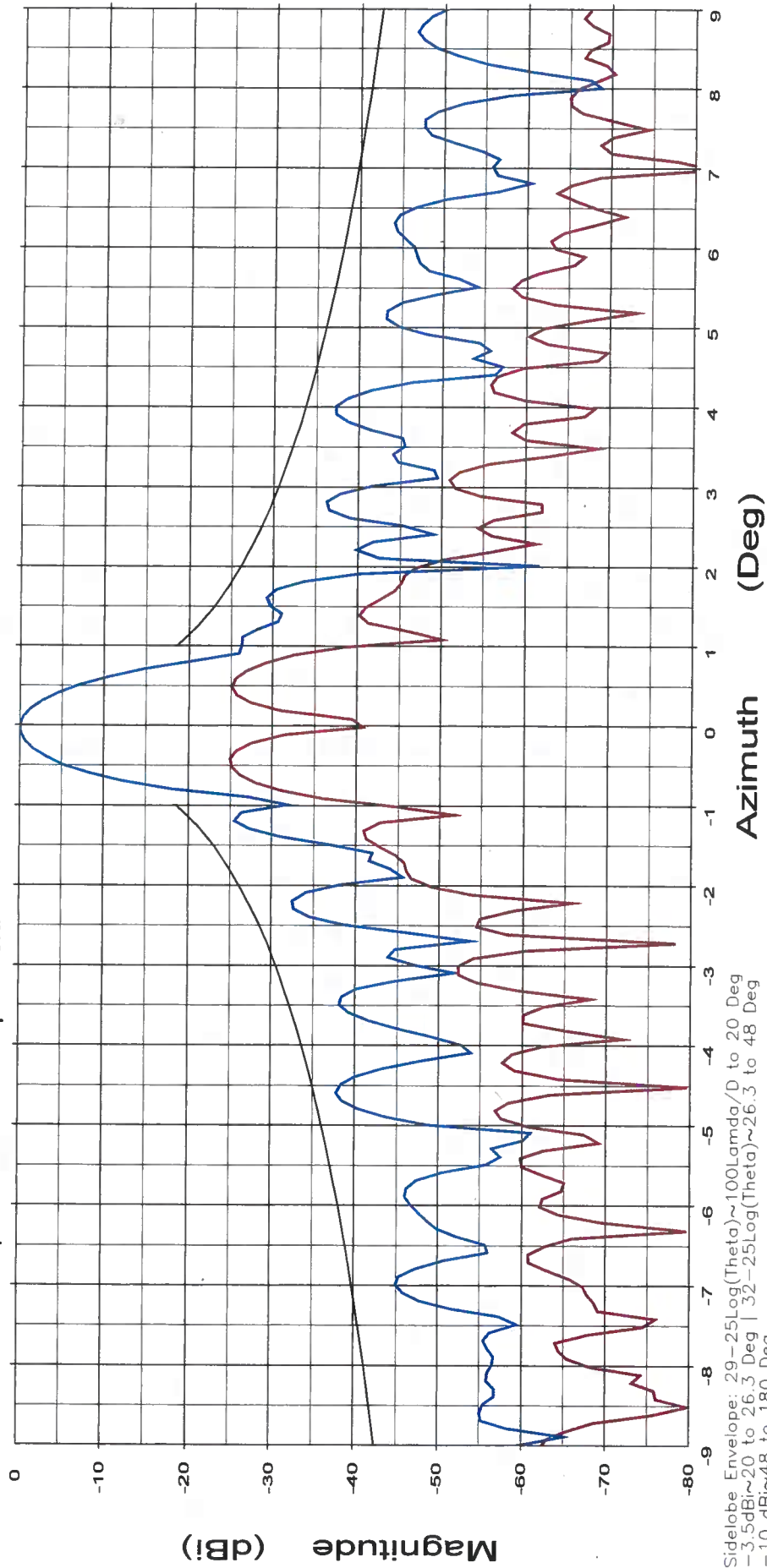
Cal. file units
1519-12.dat dBi
1519-14.dat dBi

Frequency : 11.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



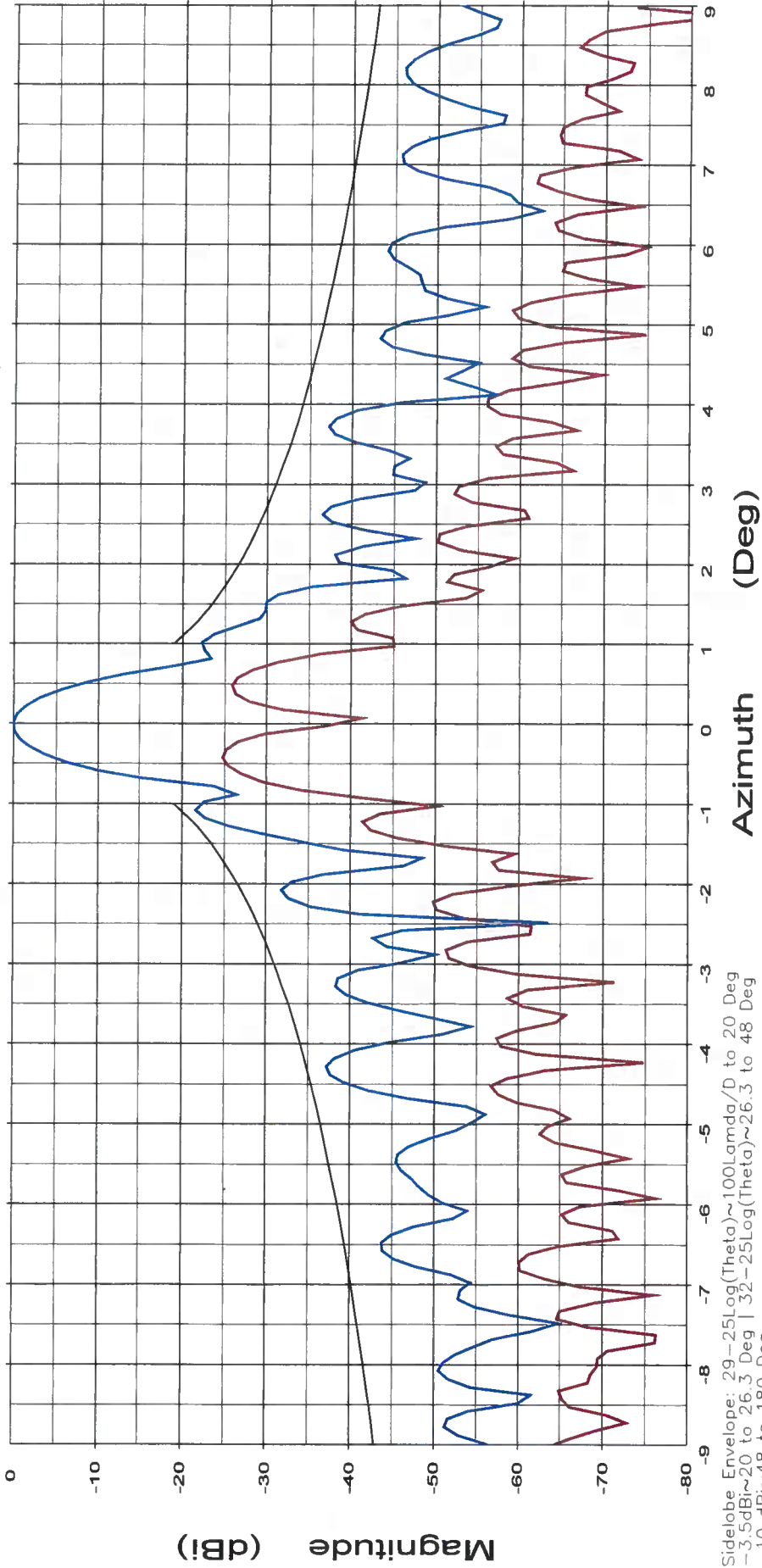
Overlays
1519-12.dat-ant_under_test — 1519-12.dat dBi
1519-14.dat-ant_under_test — 1519-14.dat dBi

Frequency : 12.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Overlays

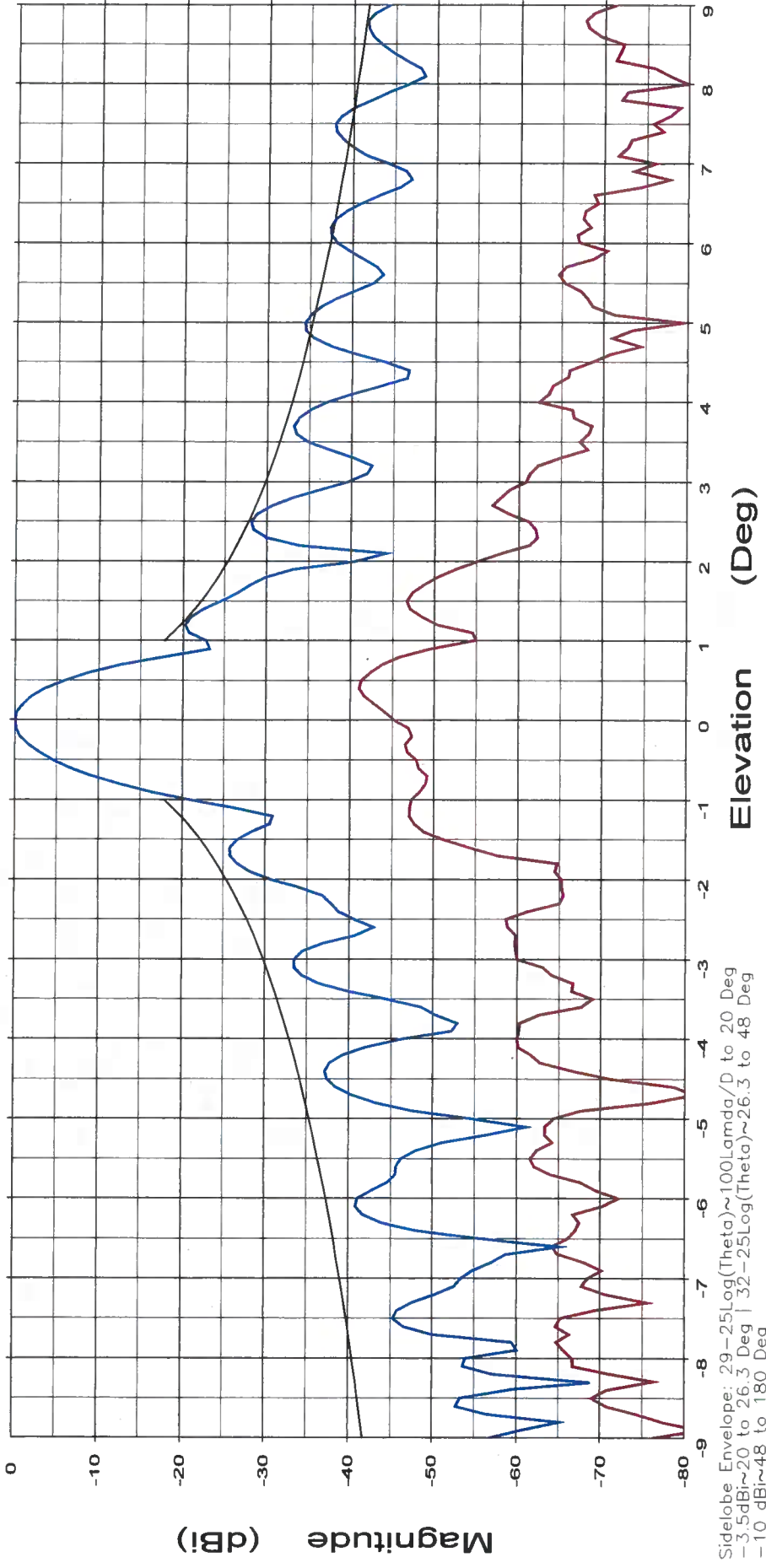
Cal. file	units
1519-12.dat-ant_under_test	dBi
1519-14.dat-ant_under_test	dBi

Frequency : 10.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Overlays
1519-13.dat-ant_under_test — 1519-13.dat
1519-15.dat-ant_under_test — 1519-15.dat

Cal. file units
1519-13.dat dBi
1519-15.dat dBi

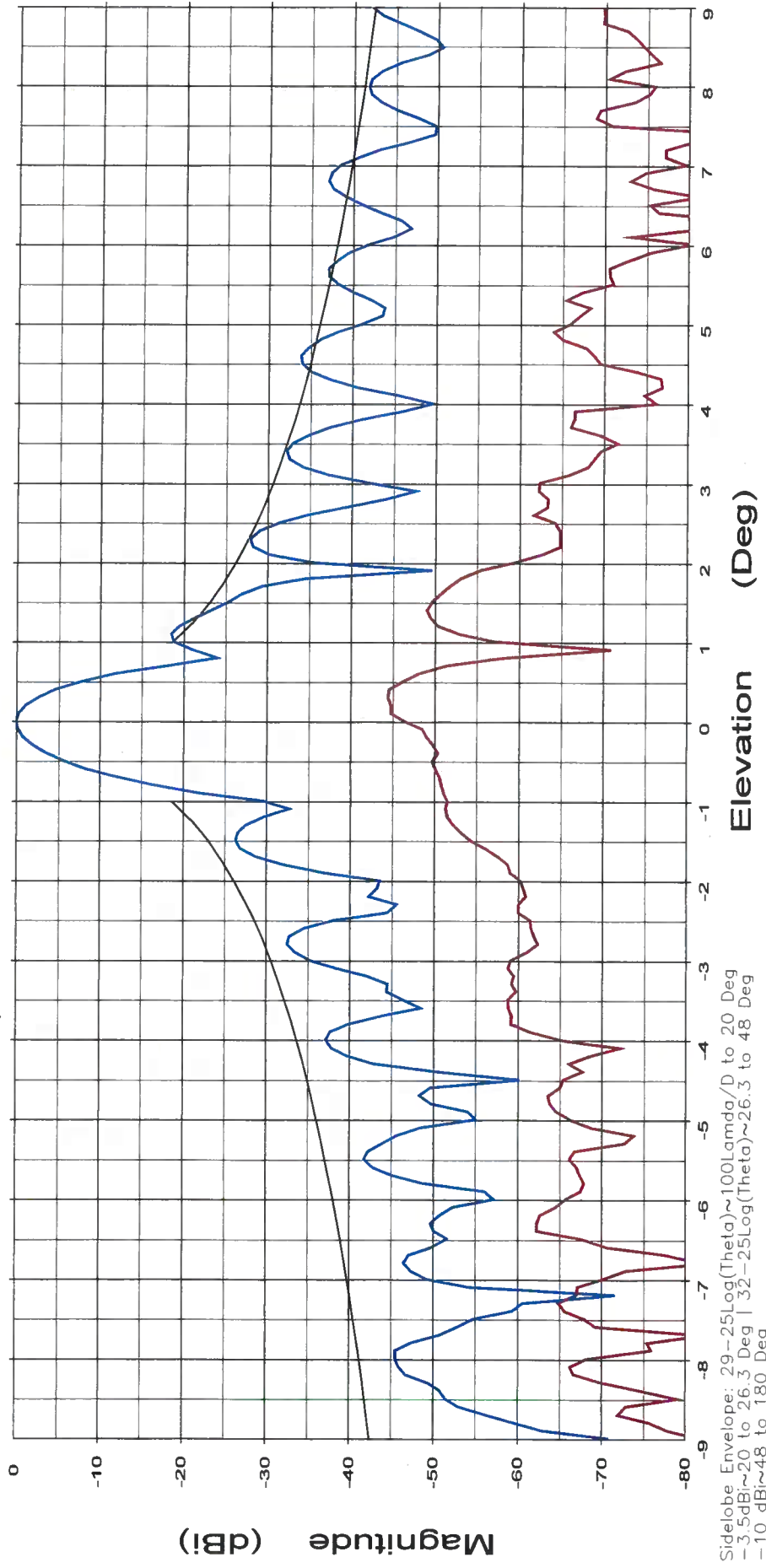
Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Frequency : 11.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Vert. Rx pol: Vert.



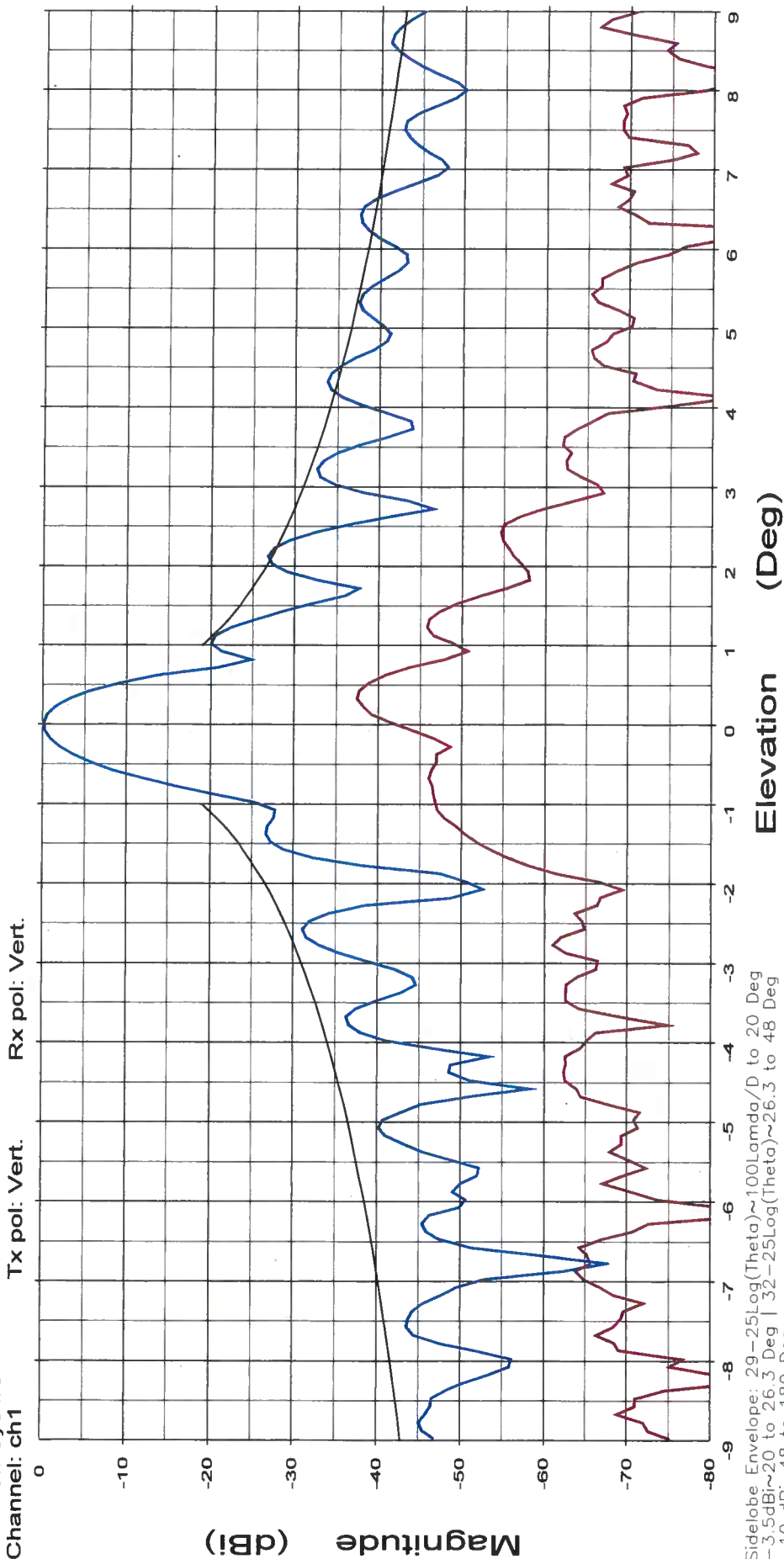
Sidelobe Envelope: 29~25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32~25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-13.dat-ant_under_test — 1519-13.dat dBi
1519-15.dat-ant_under_test — 1519-15.dat dBi

Frequency : 12.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Overlays

	Cal. file	units
1519-13.dat-ant_under_test	1519-13.dat	dBi
1519-15.dat-ant_under_test	1519-15.dat	dBi

File: 1519-12.dat

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Calibration status:
File: 1519-12.dat
Table: SGH-110
Units: dBi

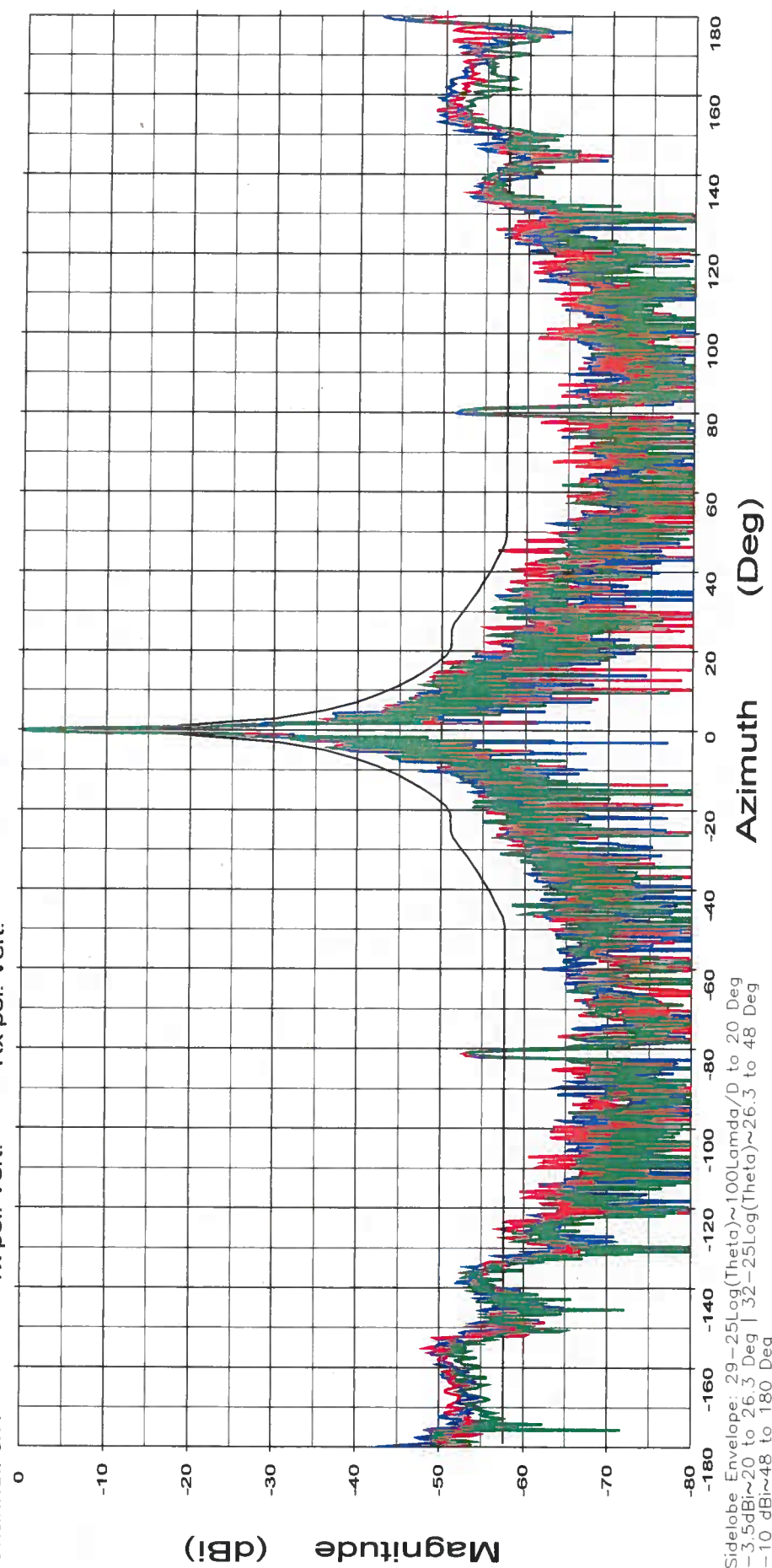
Frequency : See Legend

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: Vert. Rx pol: Vert.



Overlays

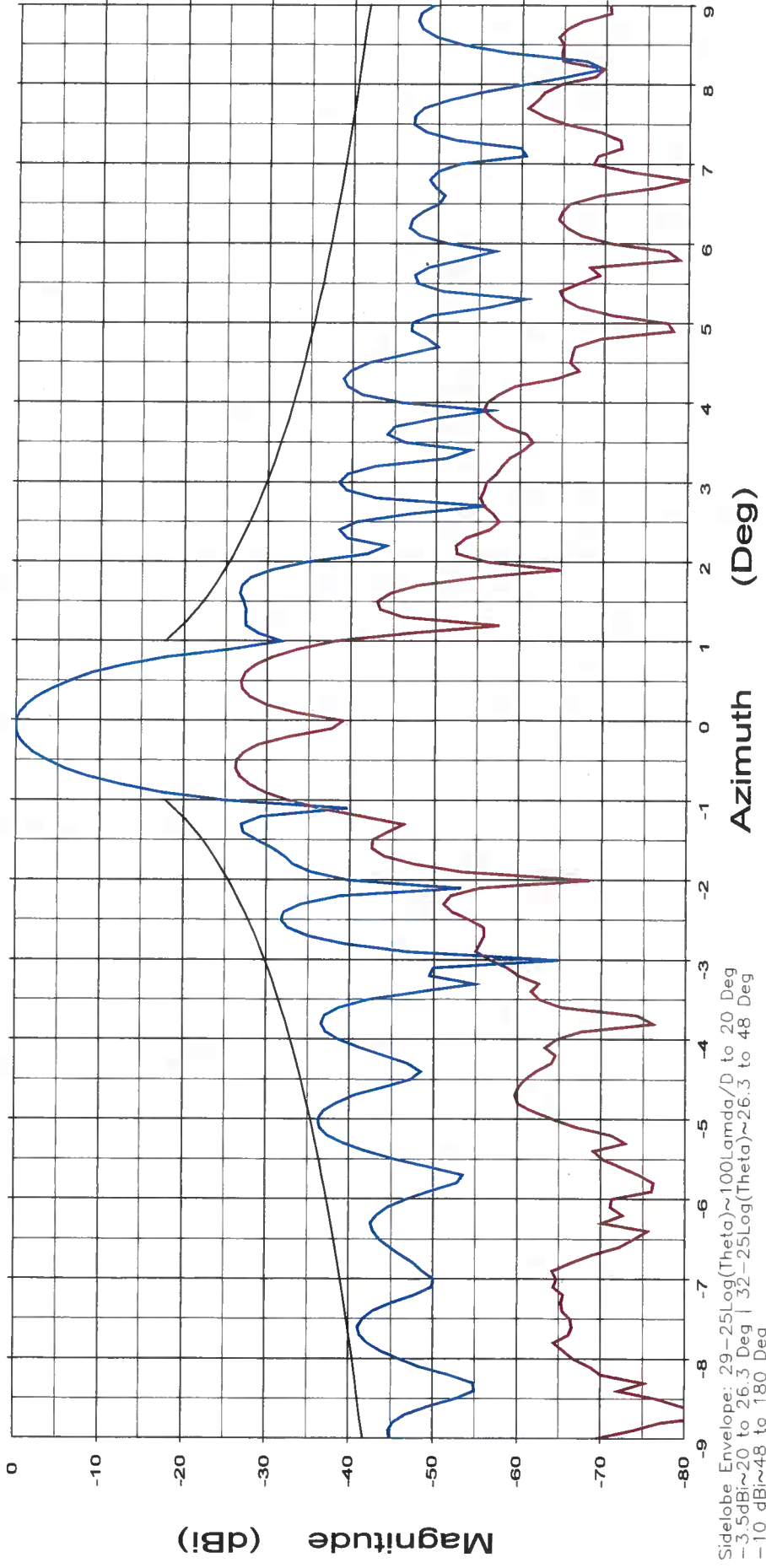
- Frequency : 10.950 GHz
- Frequency : 11.950 GHz
- Frequency : 12.750 GHz

Frequency : 10.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

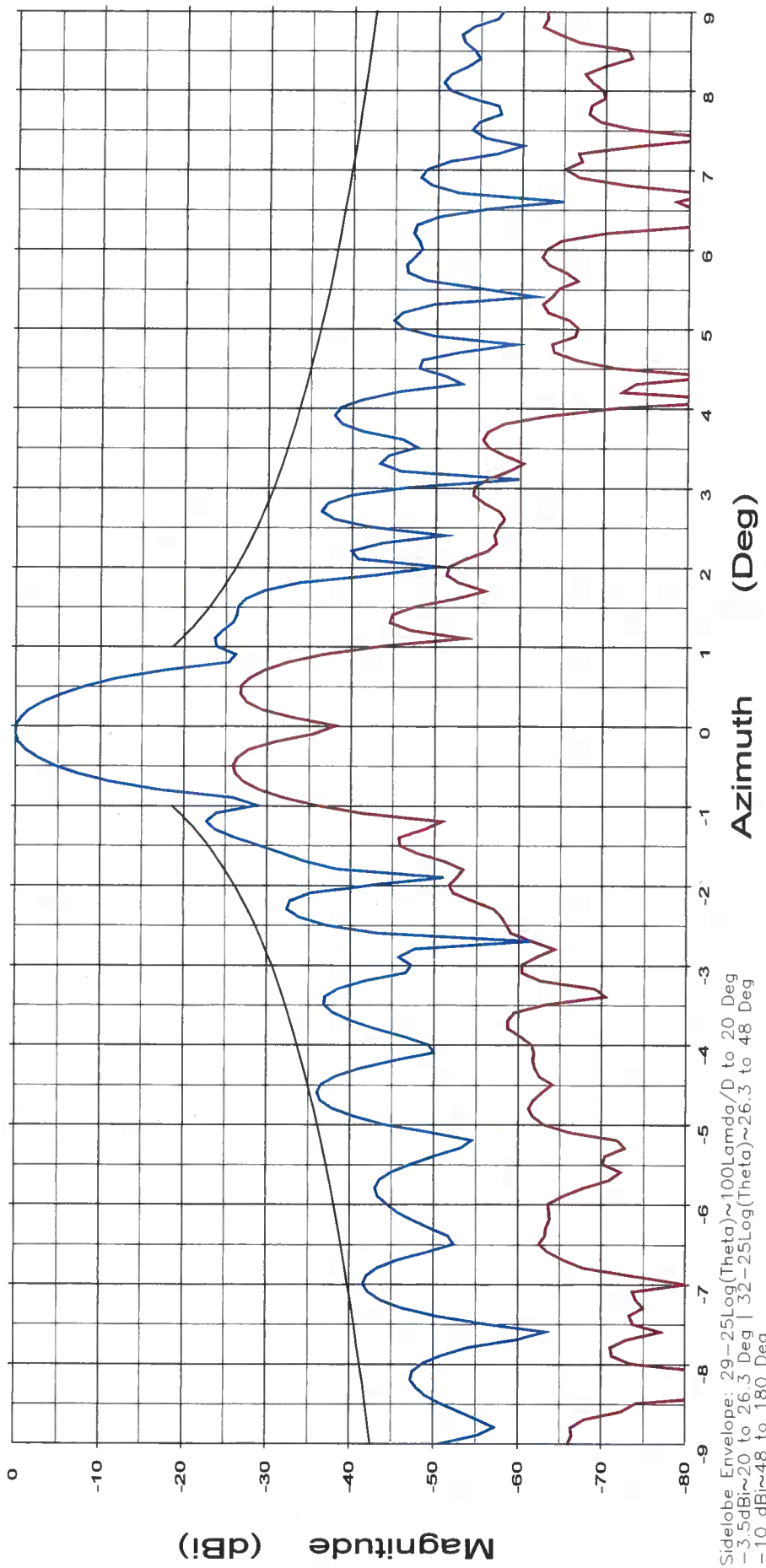
Overlays
1519-17.dat-ant_under_test — 1519-17.dat dBi
1519-19.dat-ant_under_test — 1519-19.dat dBi

Frequency : 11.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29~-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32~-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

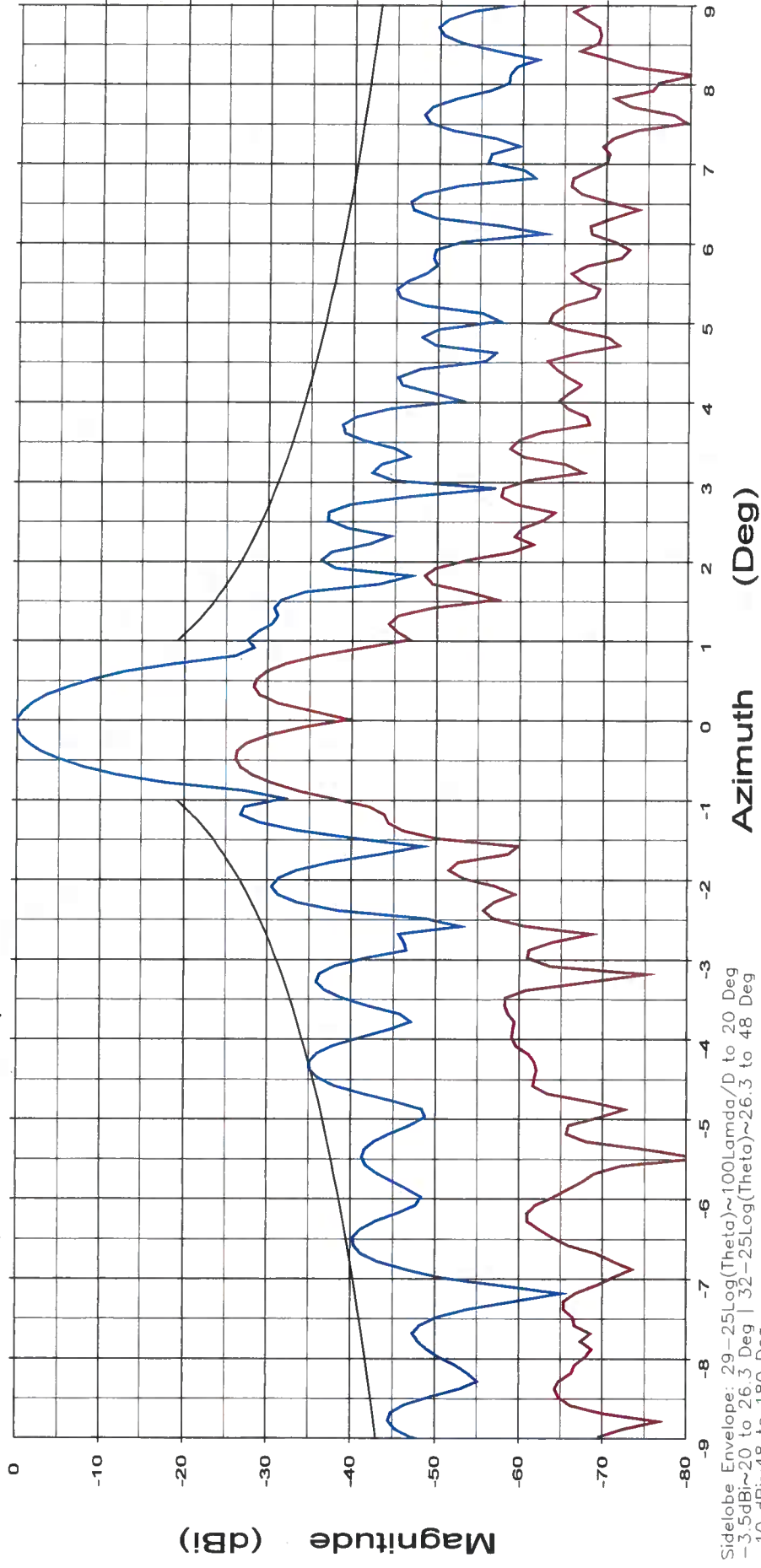
Overlays
1519-17.dat-ant_under_test — dBi
1519-19.dat-ant_under_test — dBi

Frequency : 12.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

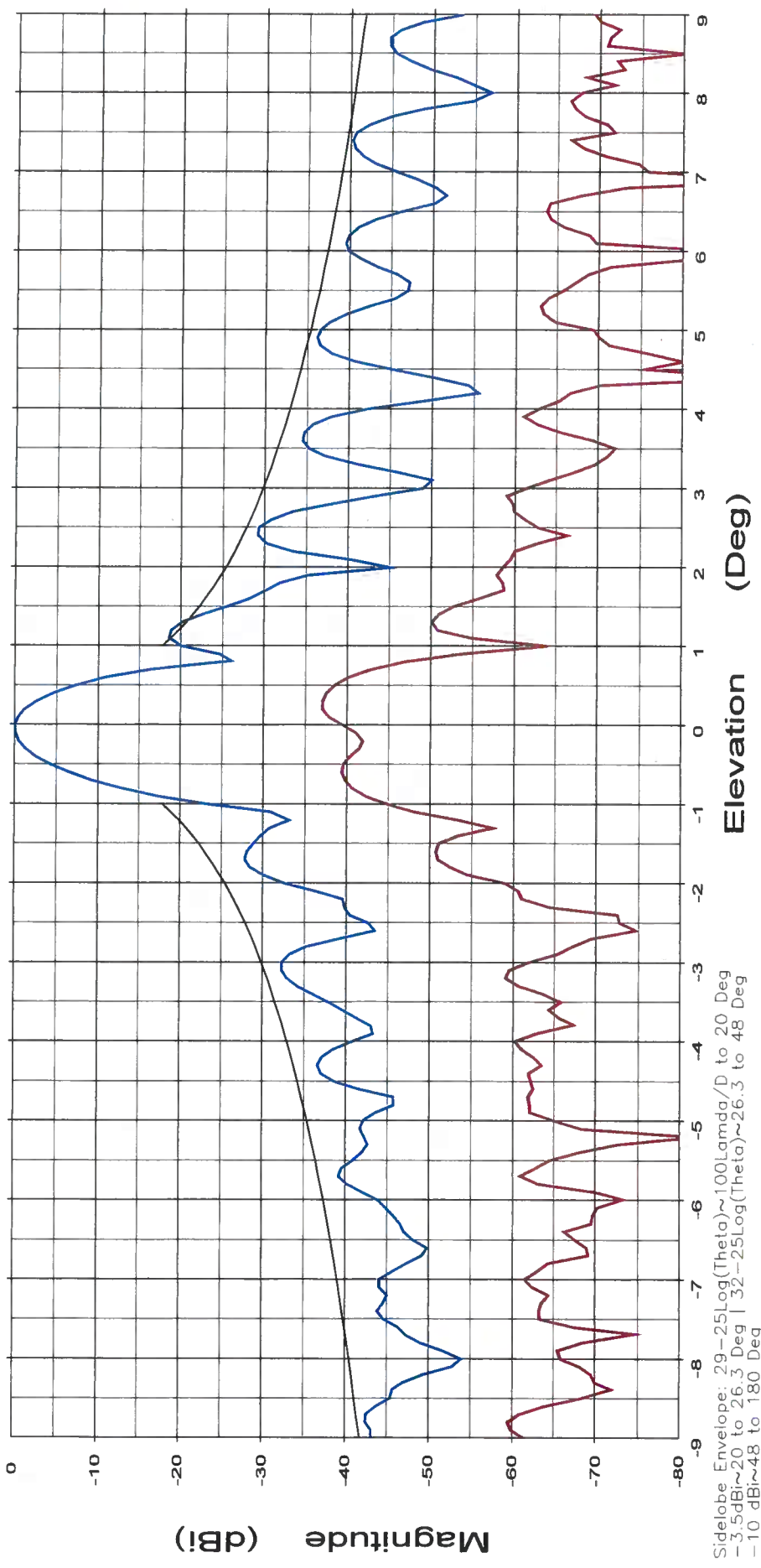
Overlays
1519-17.dat-ant_under_test — dBi
1519-19.dat-ant_under_test — dBi

Frequency : 10.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

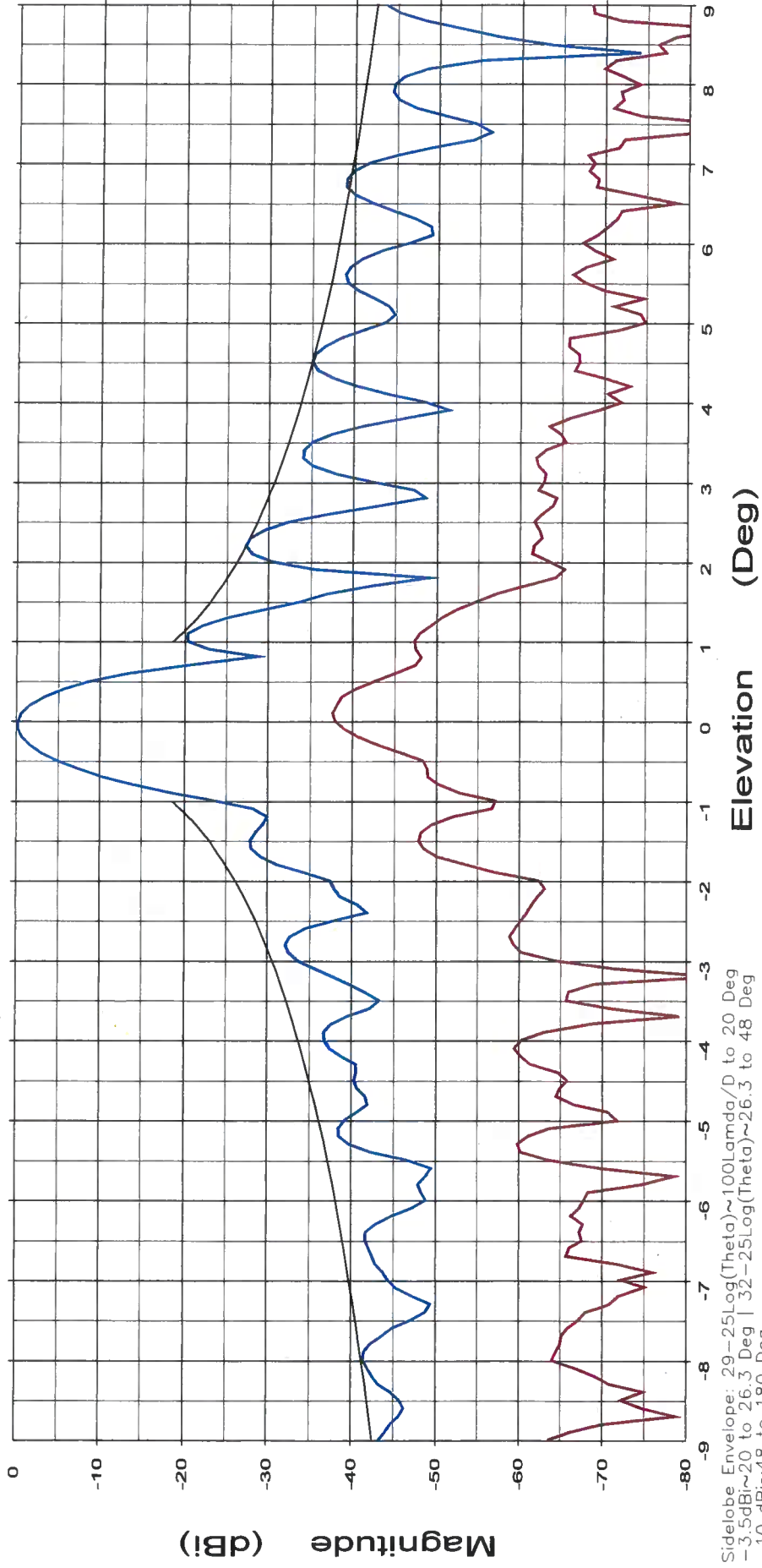
Overlays
1519-18.dat-ant_under_test — units dBi
1519-20.dat-ant_under_test — units dBi

Frequency : 11.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Sidelobe Envelope: 29~25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32~25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-18.dat-ant_under_test — 1519-18.dat dBi
1519-20.dat-ant_under_test — 1519-20.dat dBi

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

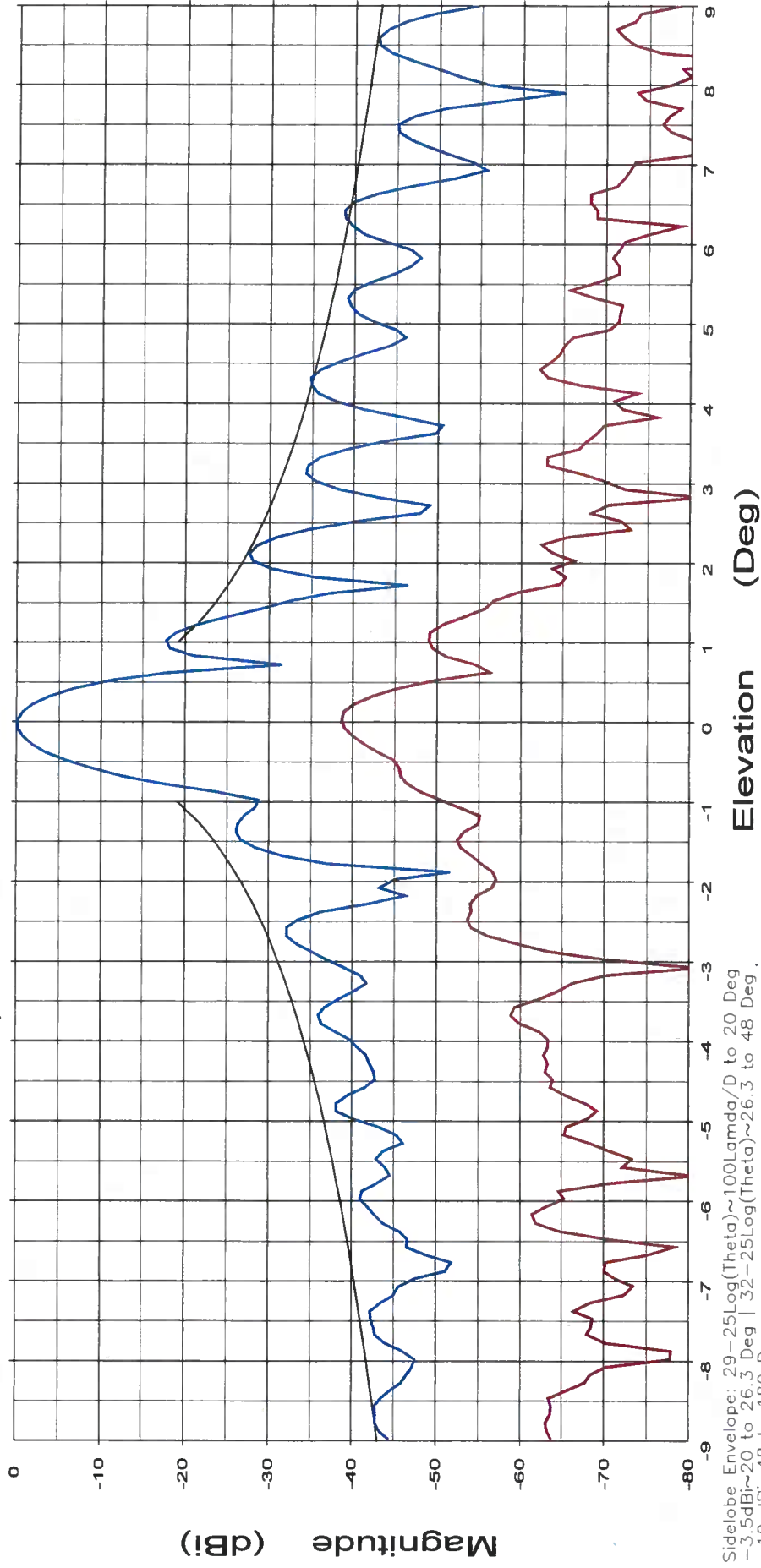
Frequency : 12.750 GHz

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Overlays

	Cal. file	units
1519-18.dat-ant_under_test	1519-18.dat	dBi
1519-20.dat-ant_under_test	1519-20.dat	dBi

File: 1519-17.dat

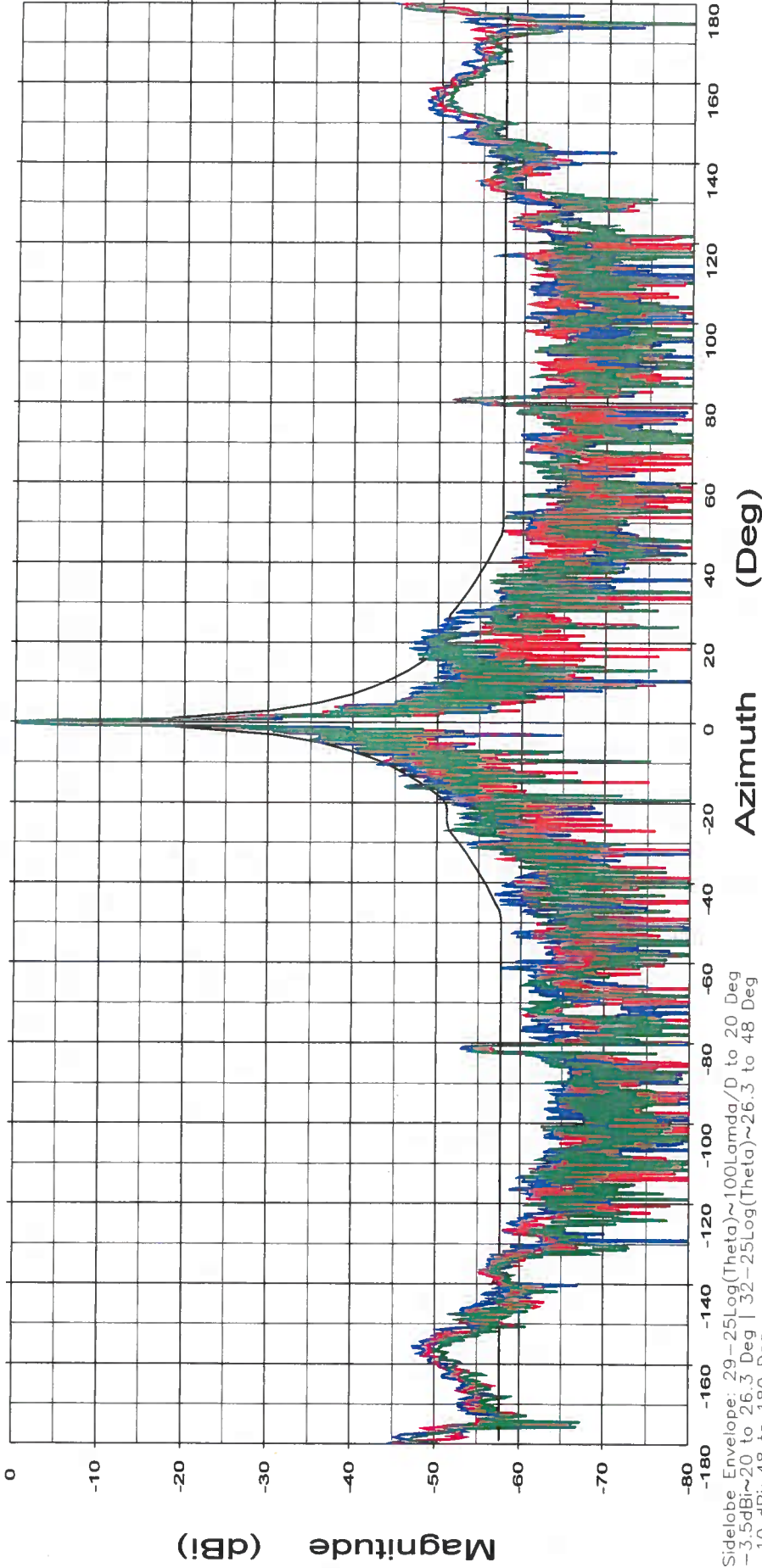
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re:Chan.:rch1

Frequency : See Legend

Calibration status:
File: 1519-17.dat
Table: SGH-110
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: Horiz. Rx pol: Horiz.



Overlays

Frequency : 10.950 GHz
Frequency : 11.950 GHz
Frequency : 12.750 GHz

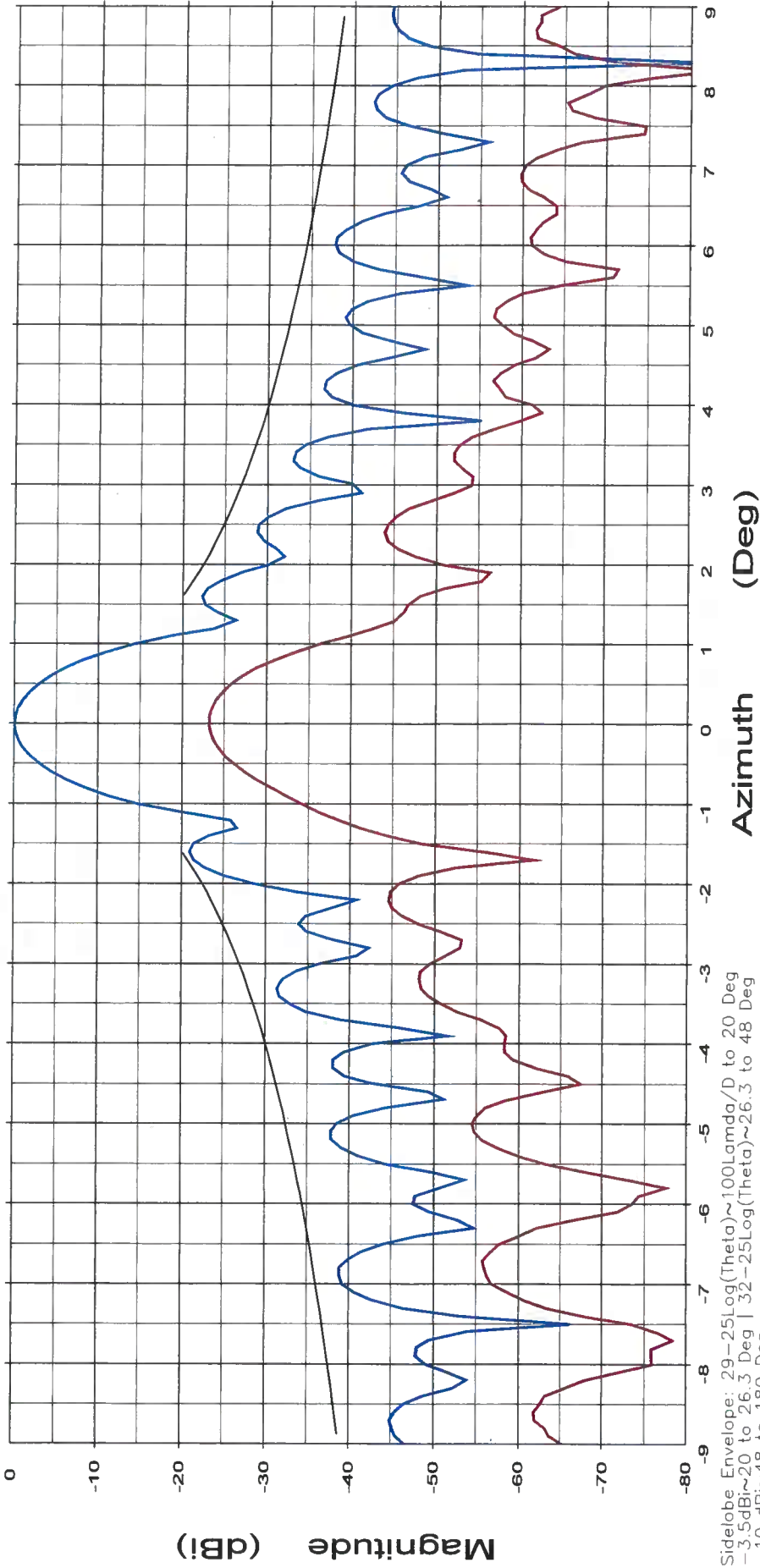
2.4 X-Band Patterns

Frequency : 7.900 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays
1519-25.dat-ant_under_test
1519-27.dat-ant_under_test

Cal. file
1519-25.dat
1519-27.dat

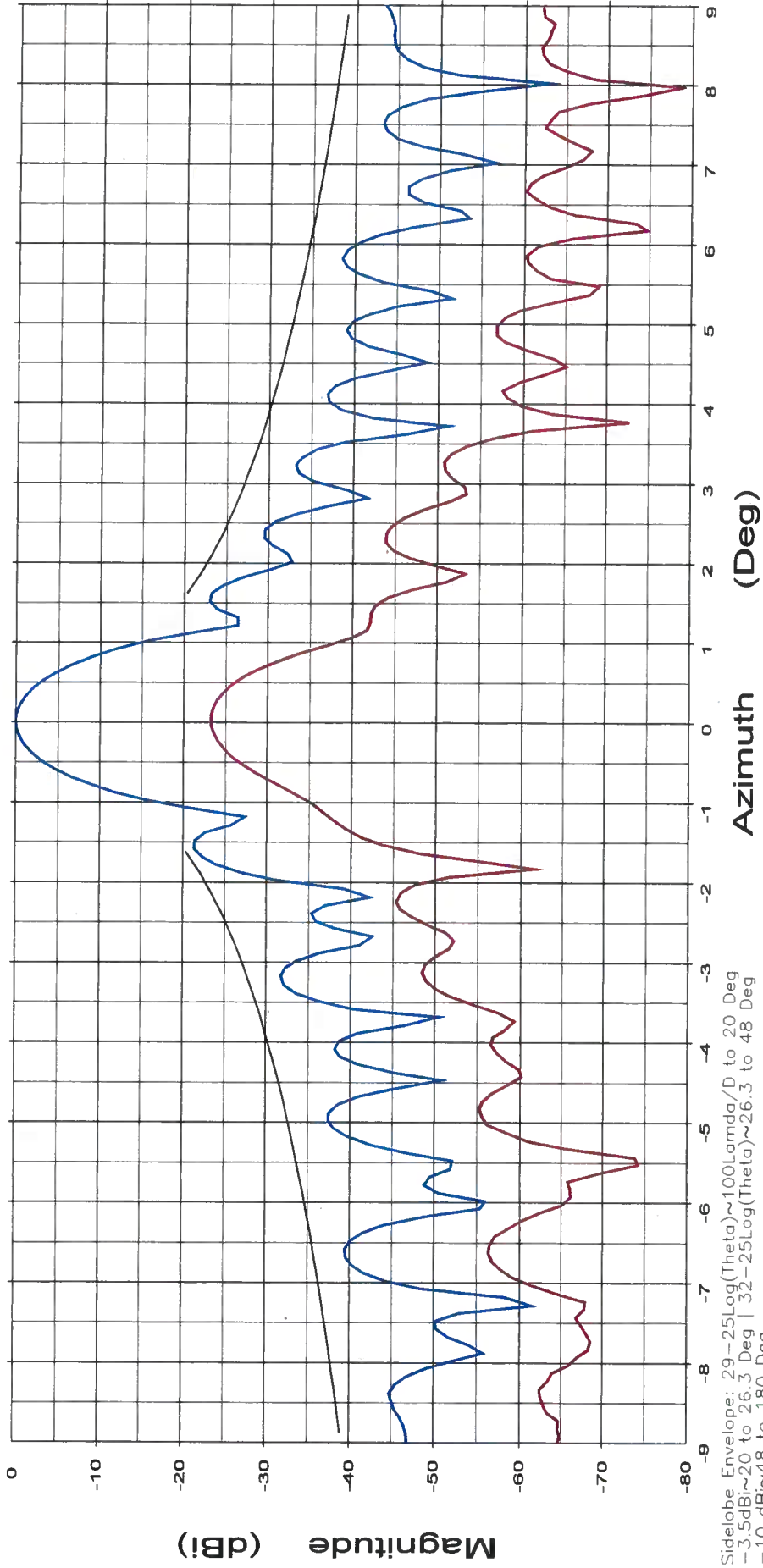
units
dBi
dBi

Frequency : 8.200 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: $29 - 25 \log(\theta) \sim 100 \lambda / D$ from -20 to 20 Deg
 $-3.5 \text{ dBi} \sim 20$ to 26.3 Deg | $-10 \text{ dBi} \sim 48$ to 180 Deg

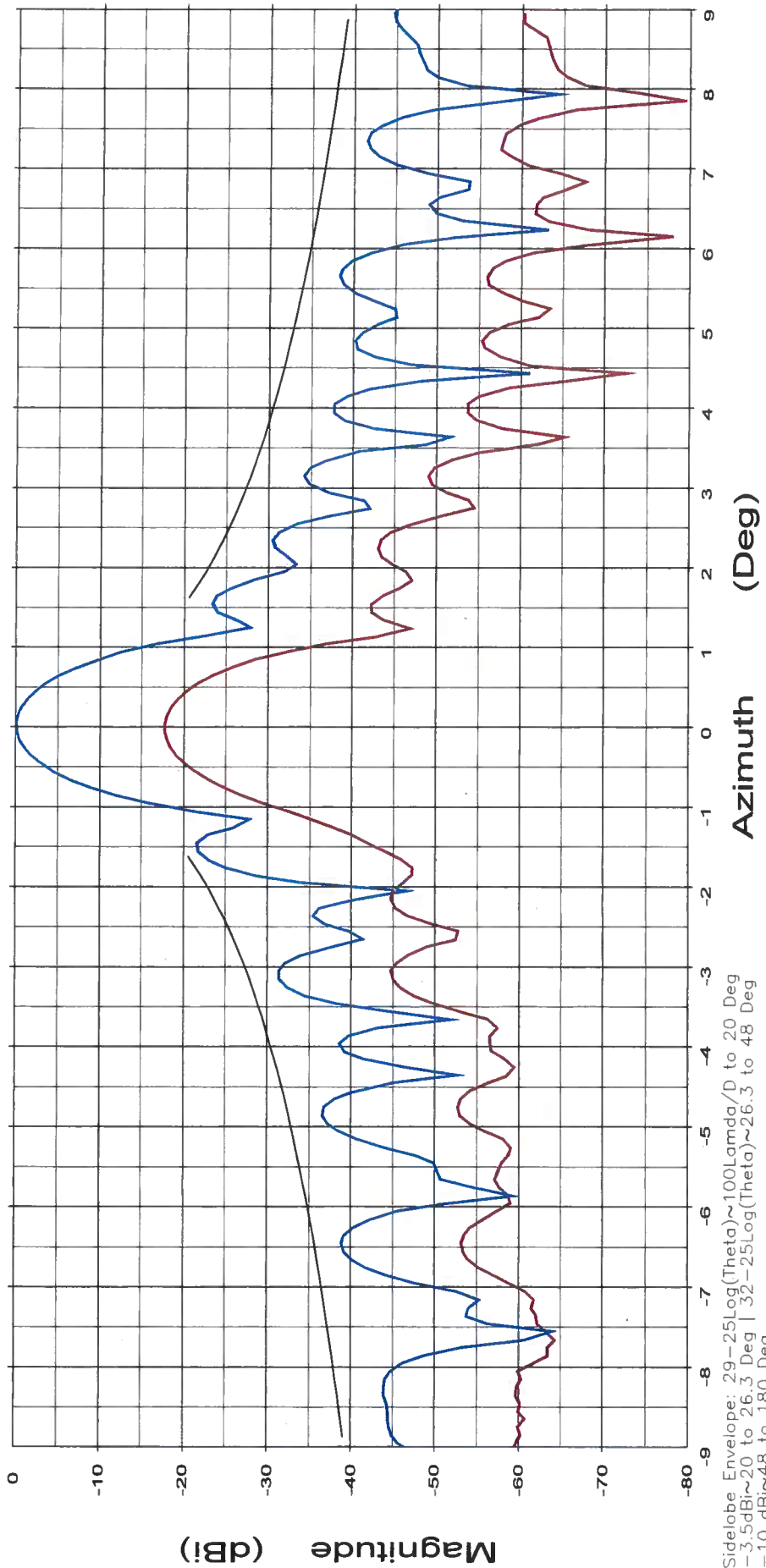
Overlays
1519-25.dat-ant_under_test — dBi
1519-27.dat-ant_under_test — dBi

Frequency : 8.400 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

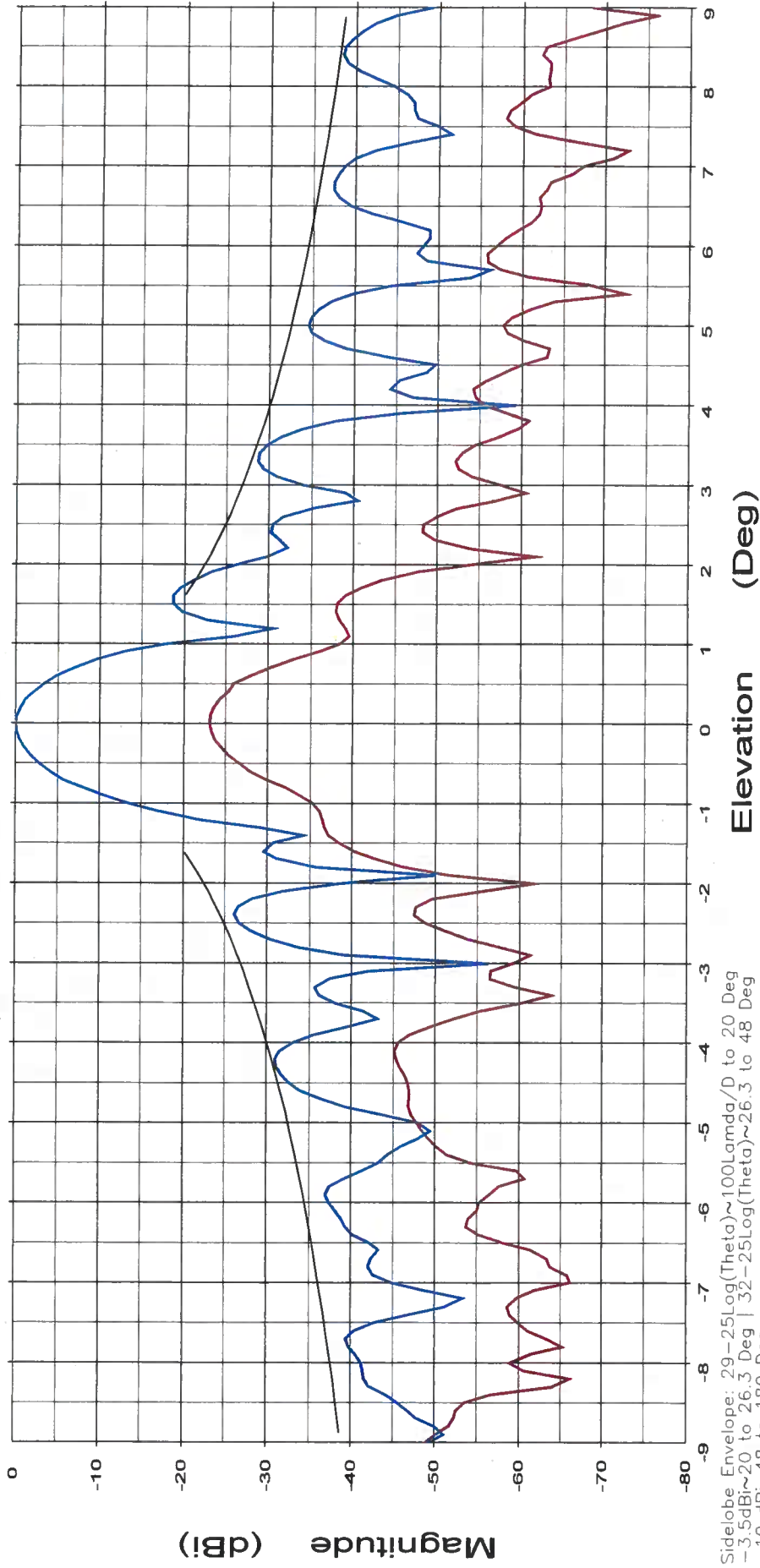
Overlays
1519-25.dat-ant_under_test — dBi
1519-27.dat-ant_under_test — dBi

Frequency : 7.900 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

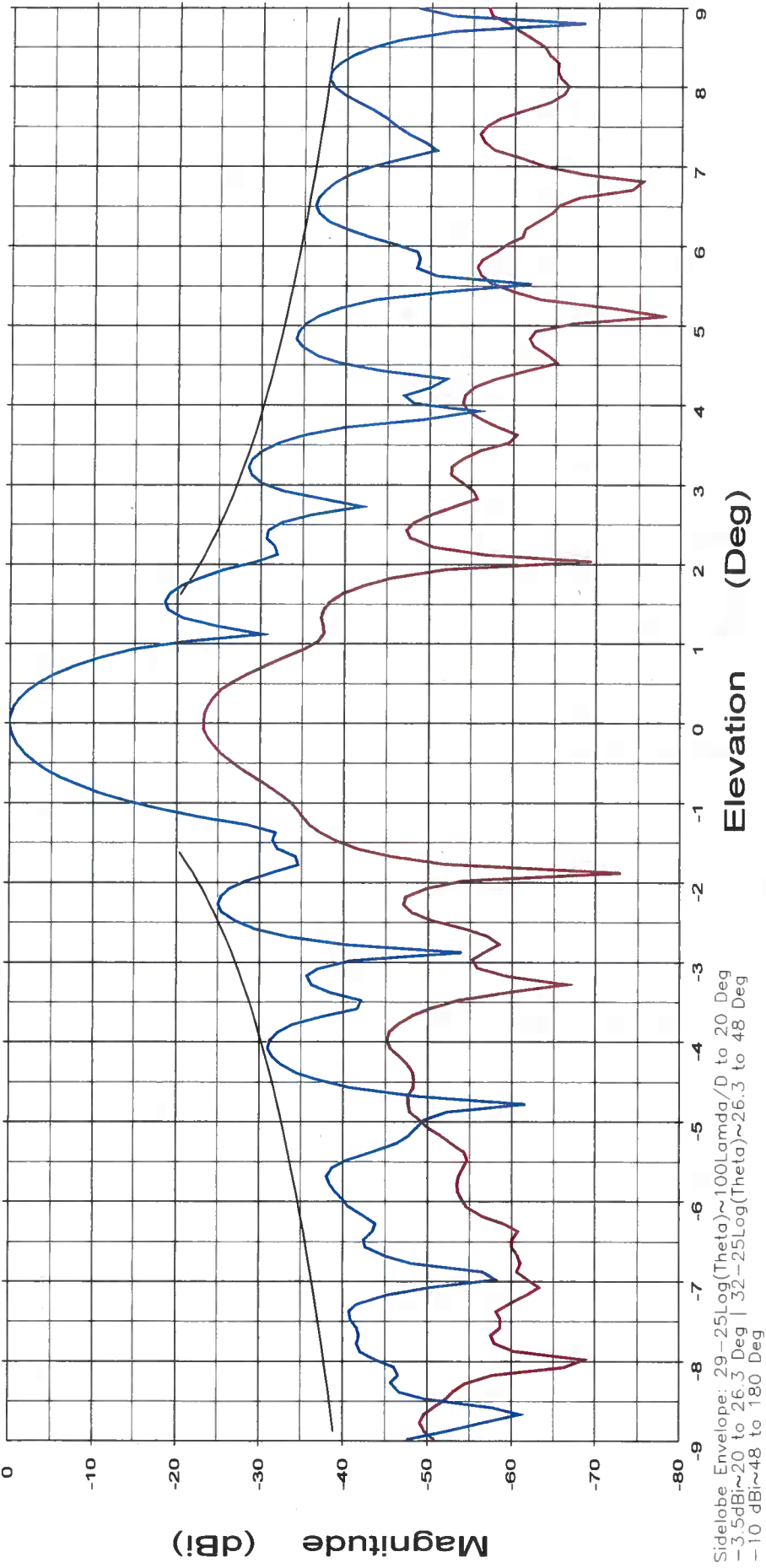
Overlays
1519-26.dat-ant_under_test — dBi
1519-28.dat-ant_under_test — dBi

Frequency : 8.200 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays
1519-26.dat-ant_under_test
1519-28.dat-ant_under_test

Cal. file
1519-26.dat
1519-28.dat

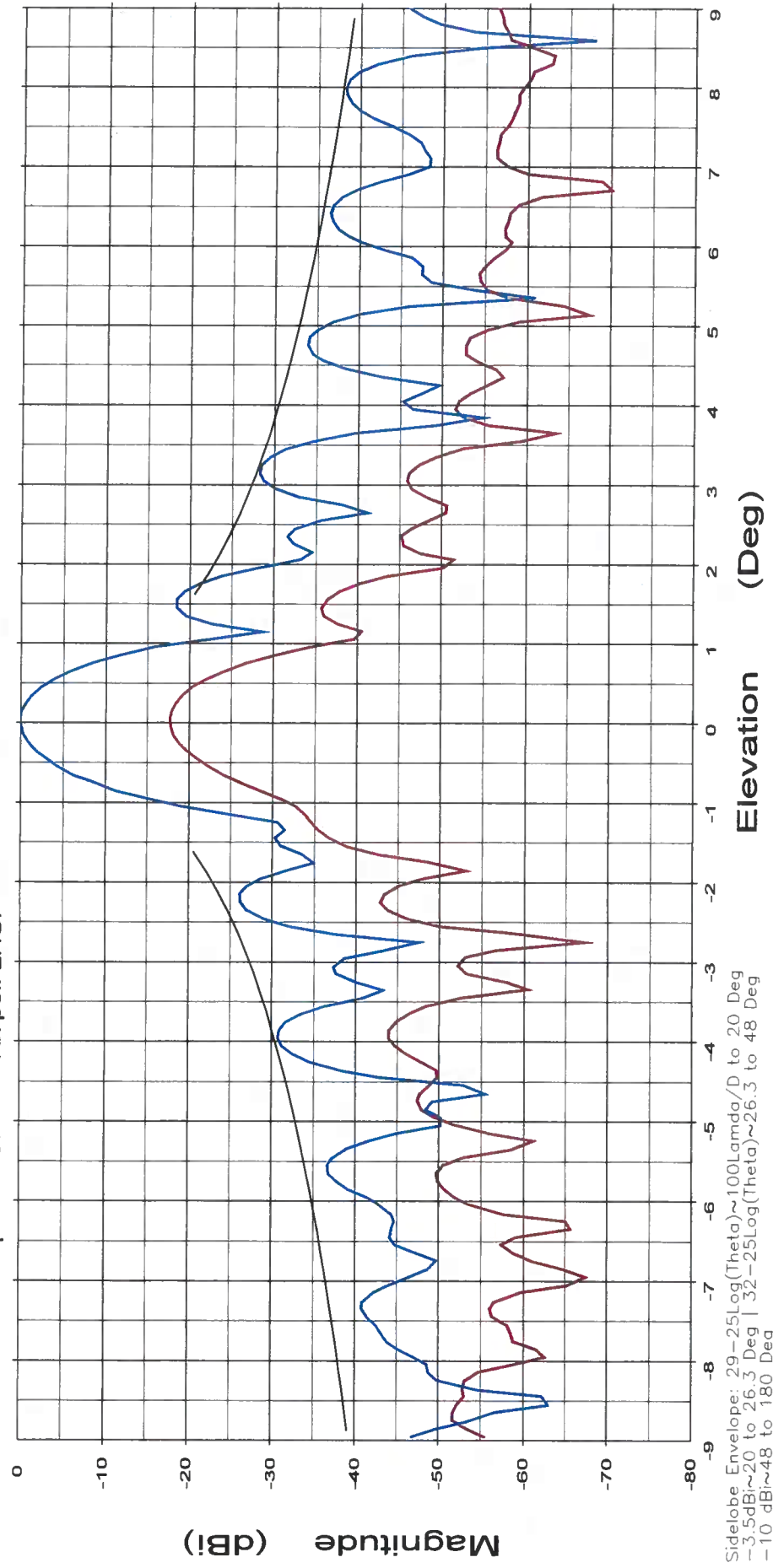
units
dBi
dBi

Frequency : 8.400 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: $29 - 25 \log(\theta)$ to 20 Deg
 -3.5 dBi to 26.3 Deg | $32 - 25 \log(\theta)$ to 48 Deg
 -10 dBi to 180 Deg

Overlays
1519-26 dat-ant_under_test — dBi
1519-28 dat-ant_under_test — dBi

File: 1519-25.dat

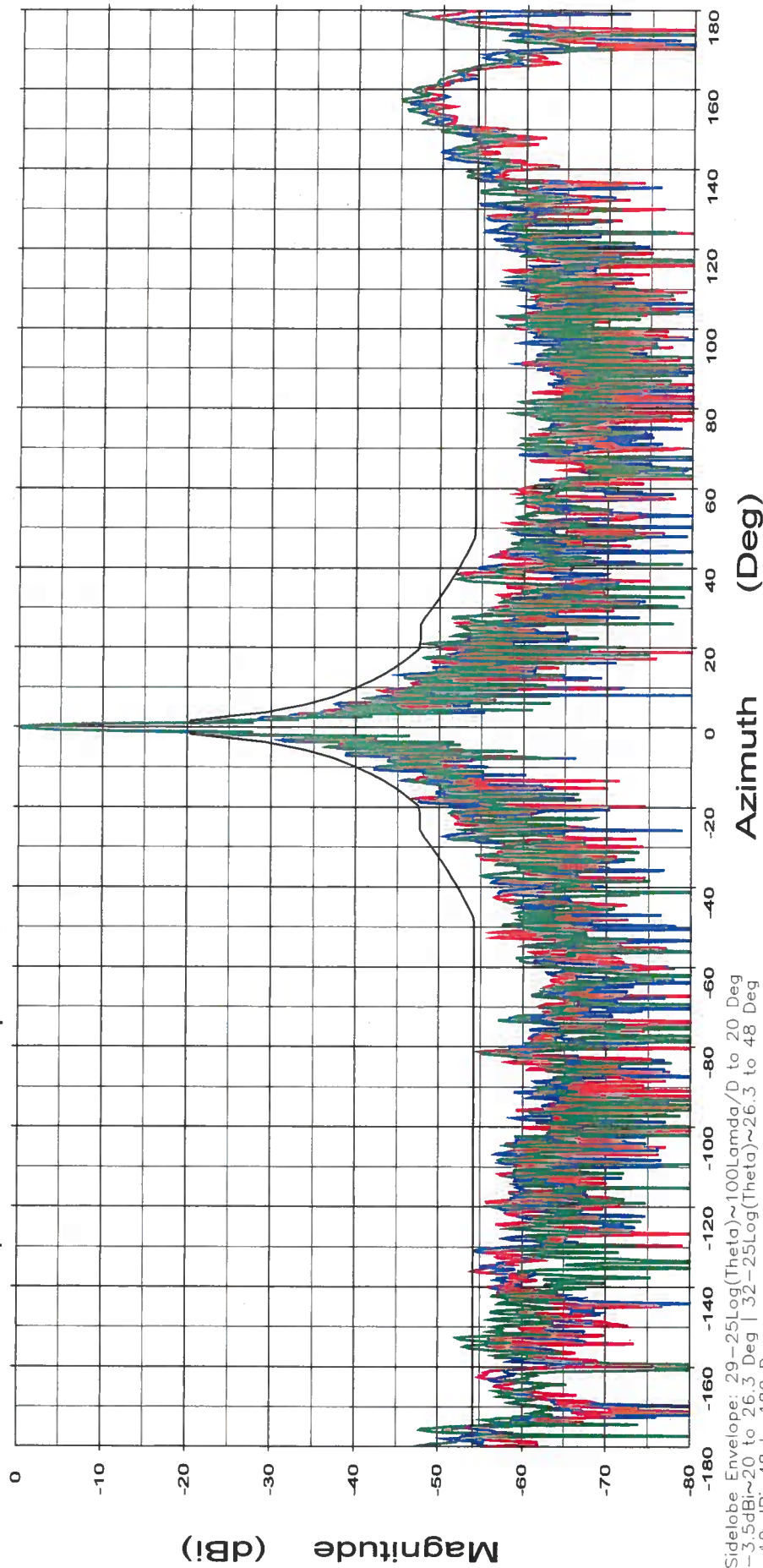
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Calibration status:
File: 1519-25.dat
Table: 2.4mx-band
Units: dBi

Frequency : See Legend

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays

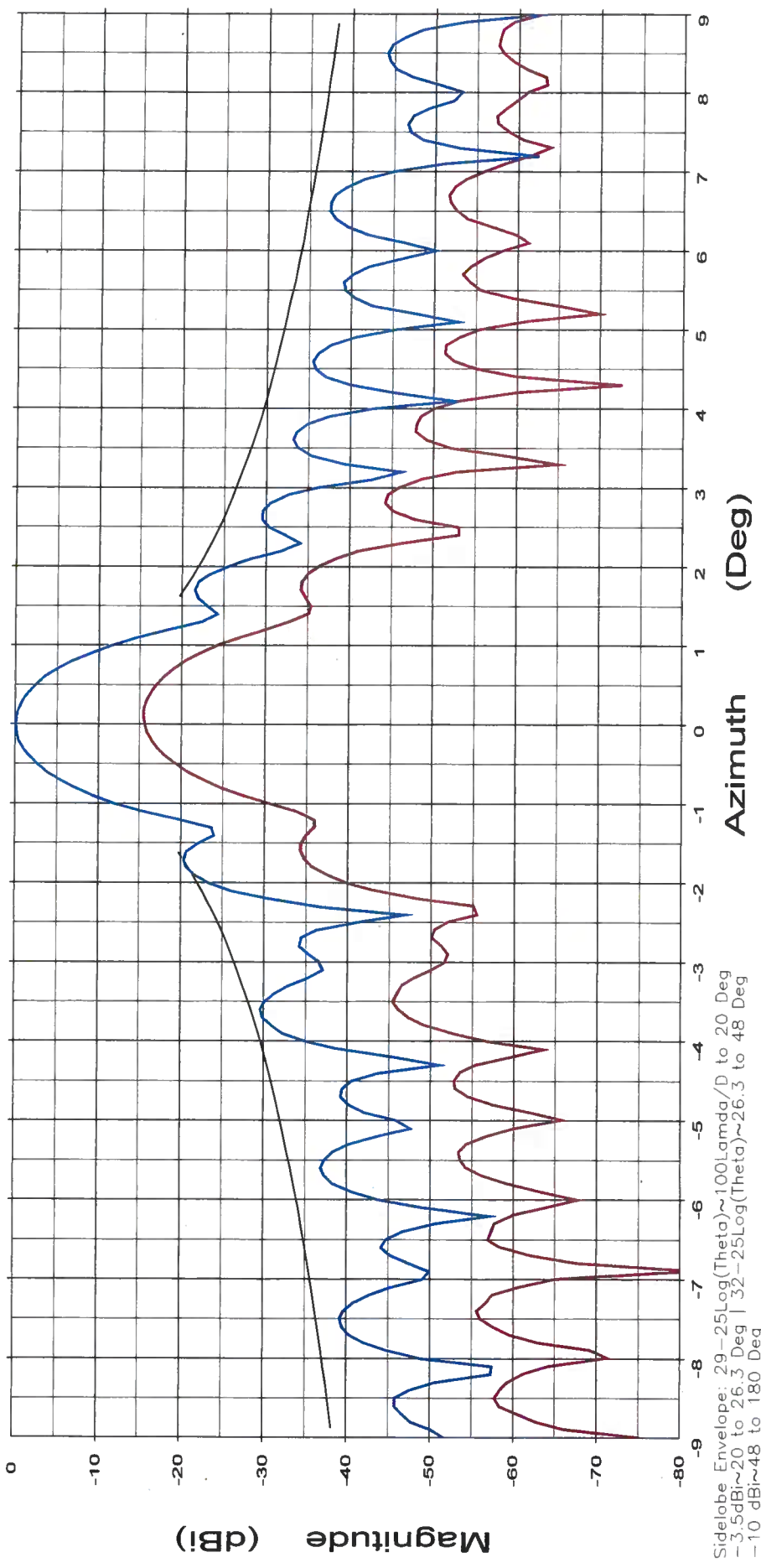
Frequency : 7.900 GHz
Frequency : 8.200 GHz
Frequency : 8.400 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Frequency : 7.250 GHz

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-21.dat-ant_under_test — 1519-21.dat
1519-23.dat-ant_under_test — 1519-23.dat

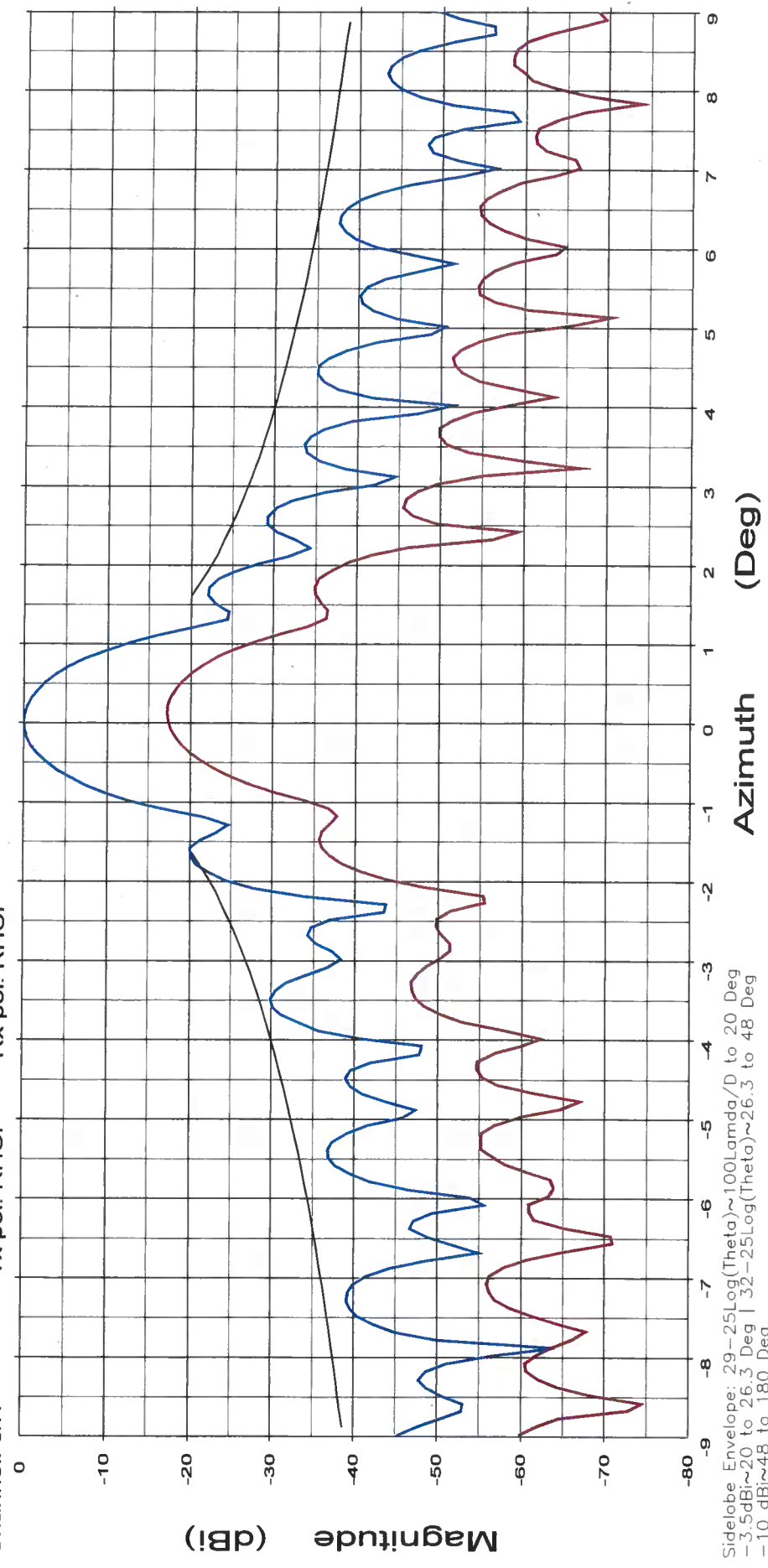
Cal. file units
1519-21.dat dBi
1519-23.dat dBi

Frequency : 7.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-21.dat-ant_under_test — 1519-21.dat dBi
1519-23.dat-ant_under_test — 1519-23.dat dBi

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

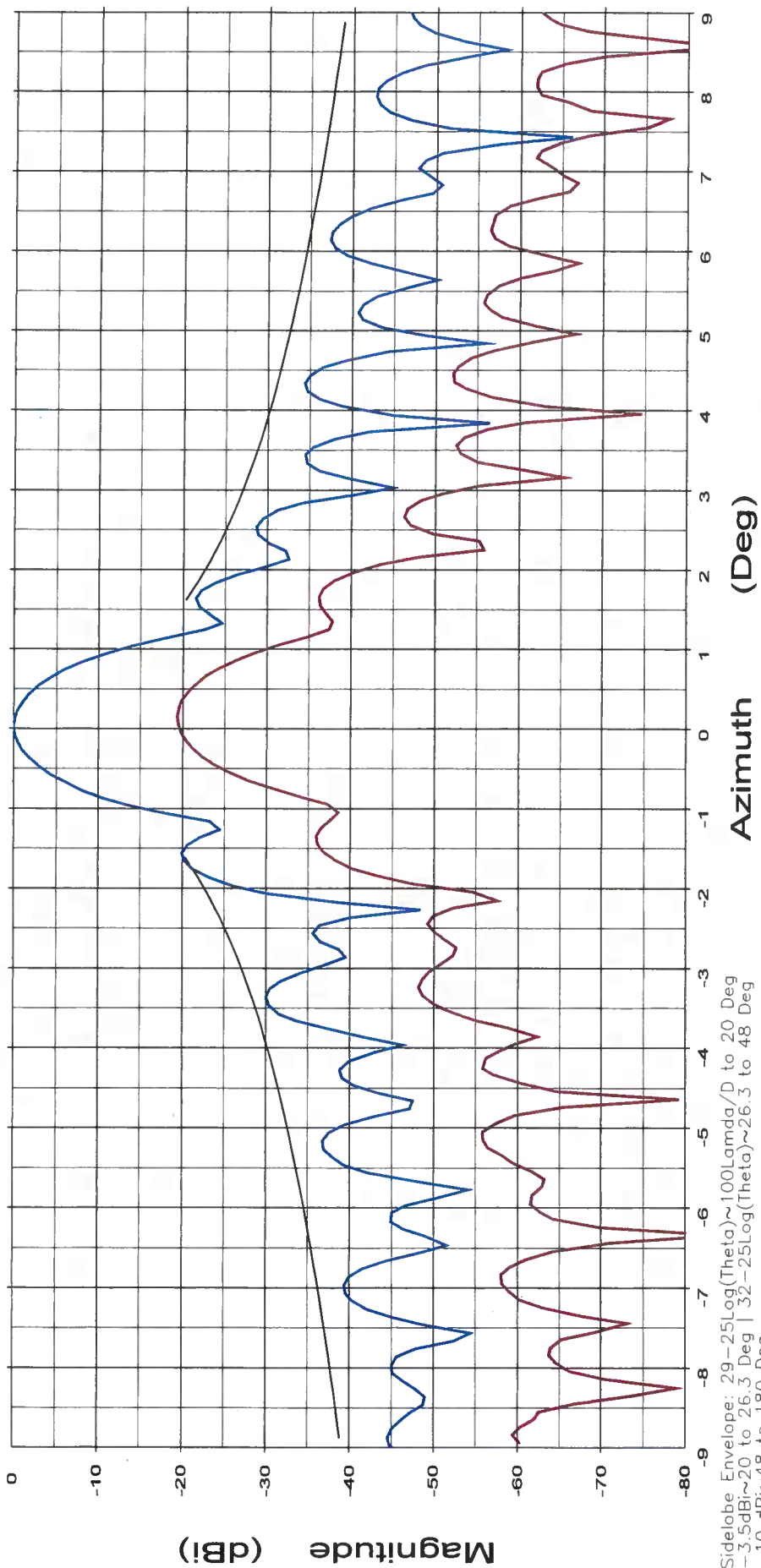
Frequency : 7.750 GHz

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

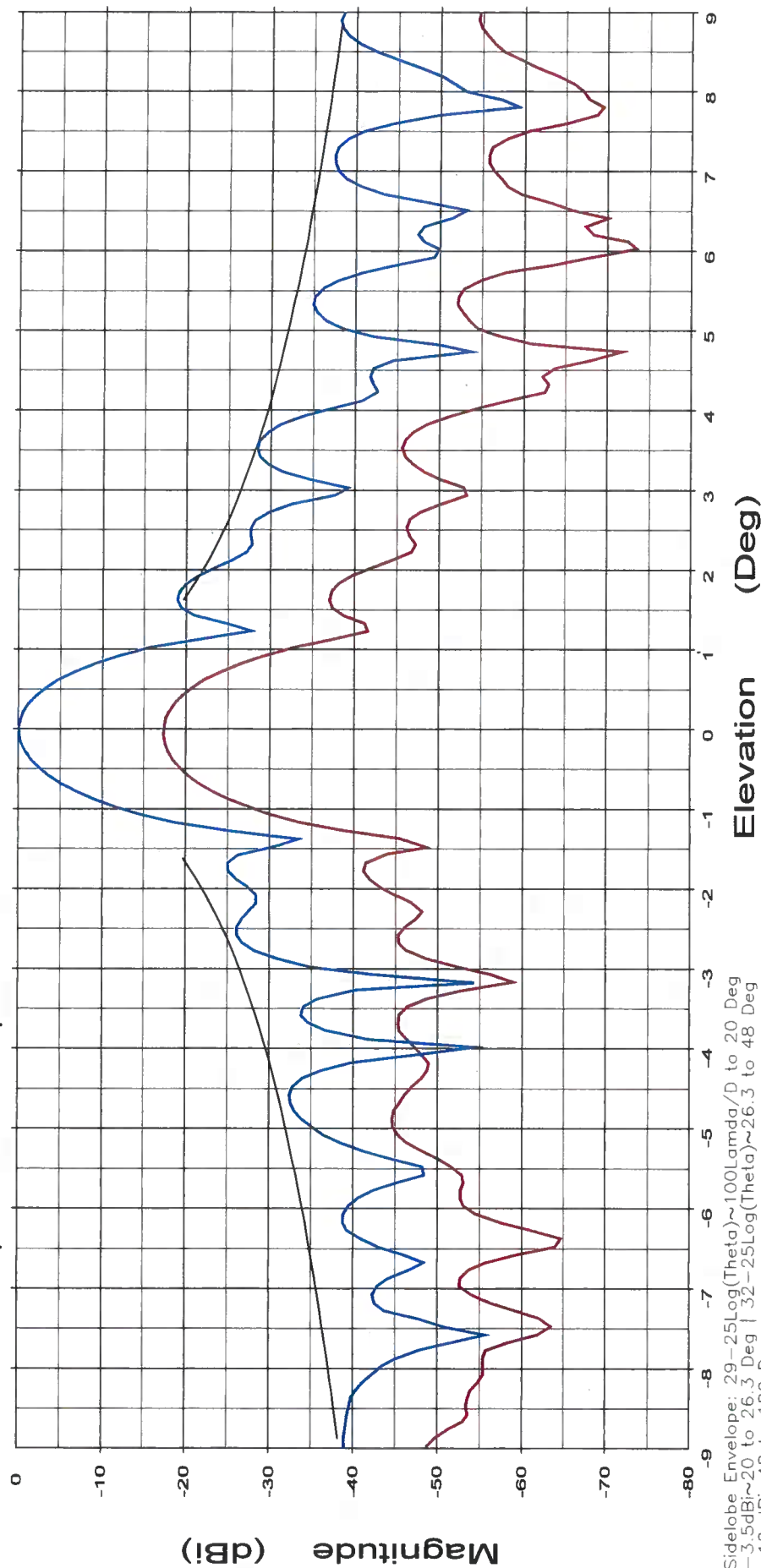
Overlays
1519-21.dat-ant_under_test — dBi
1519-23.dat-ant_under_test — dBi

Frequency : 7.500 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

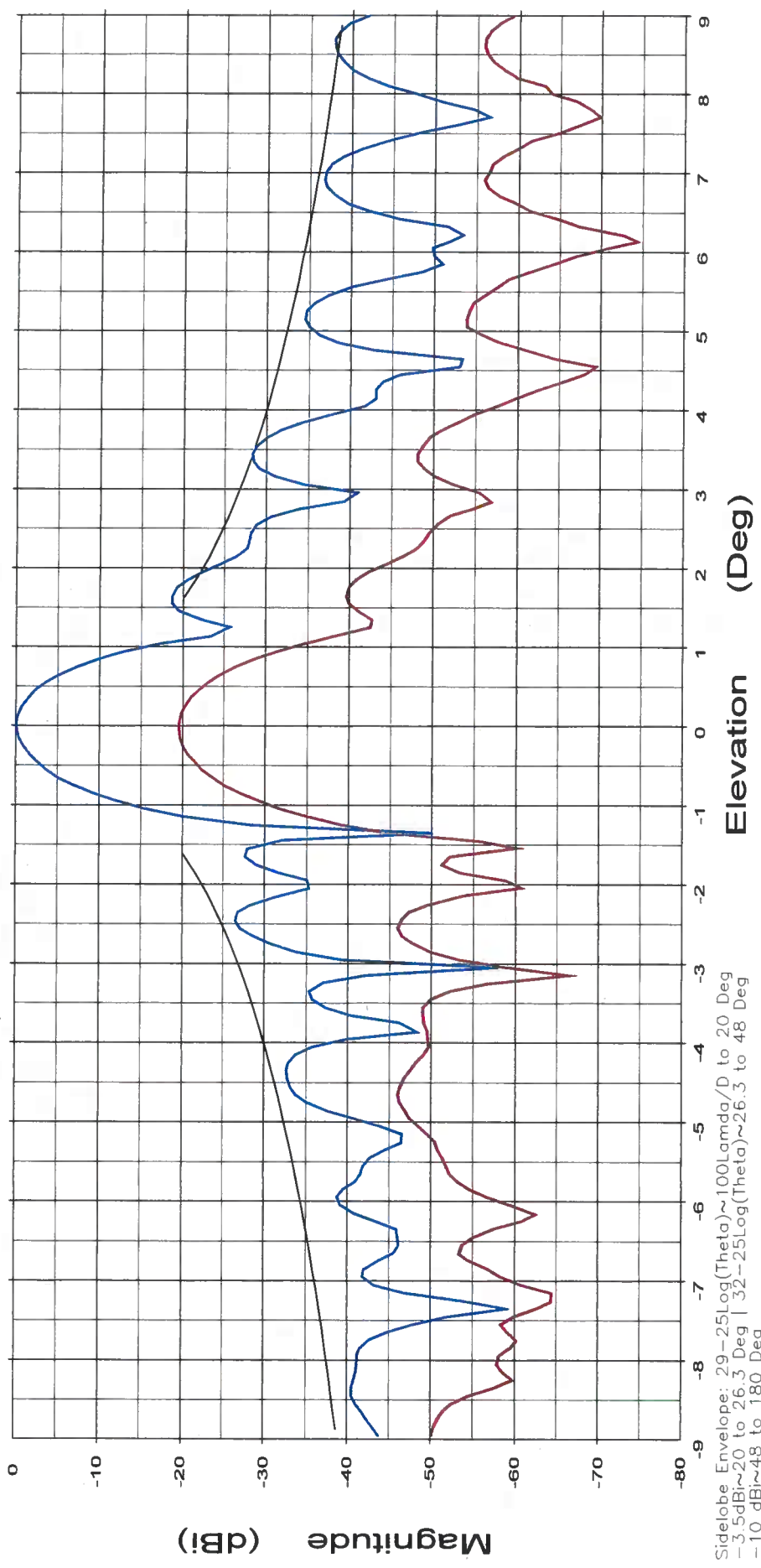
Overlays
1519-22.dat-ant_under_test — dBi
1519-24.dat-ant_under_test — dBi

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Frequency : 7.750 GHz

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Overlays

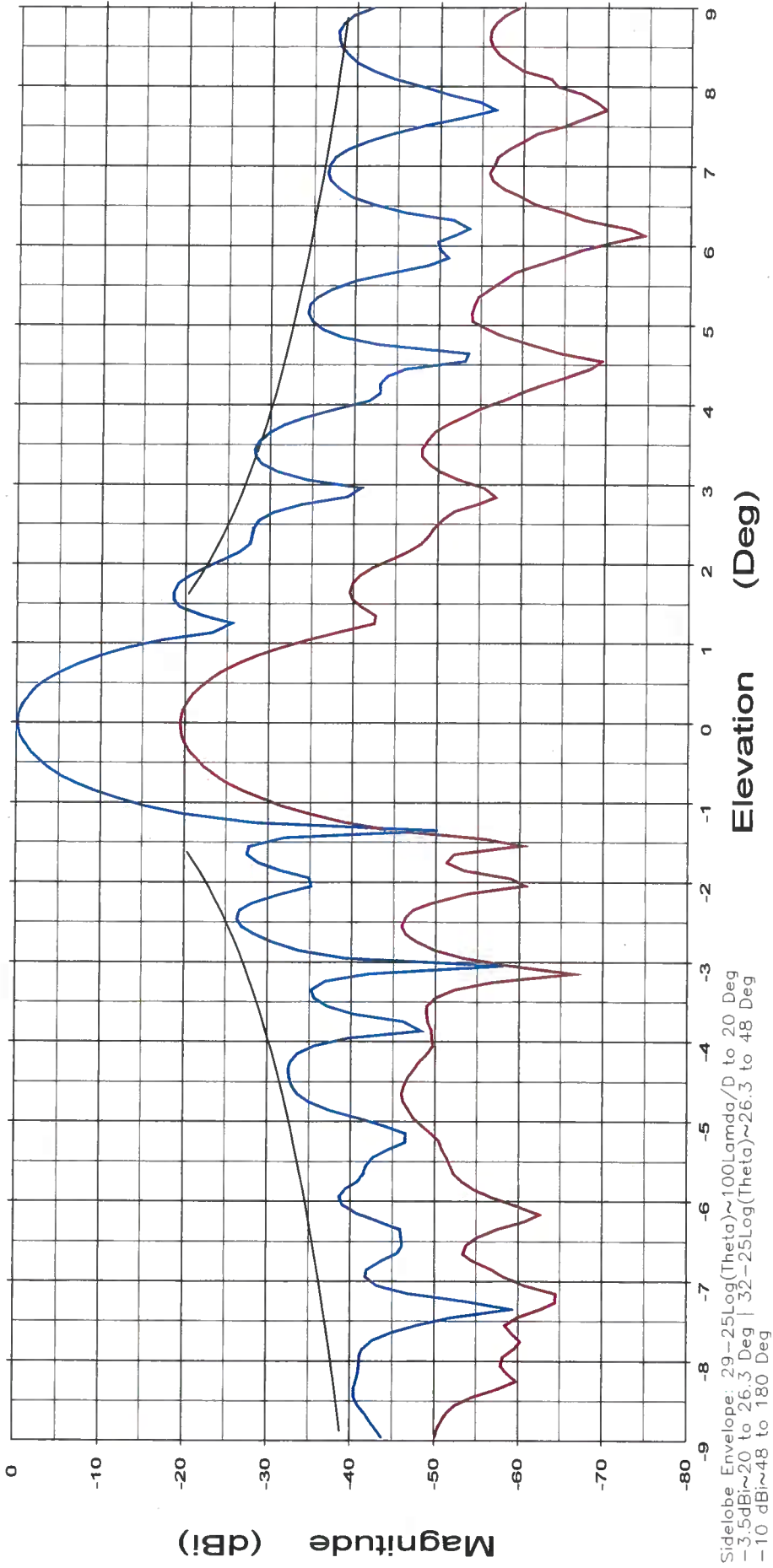
Cal. file	units
1519-22.dat-ant_under_test	dBi
1519-24.dat-ant_under_test	dBi

Frequency : 7.750 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP

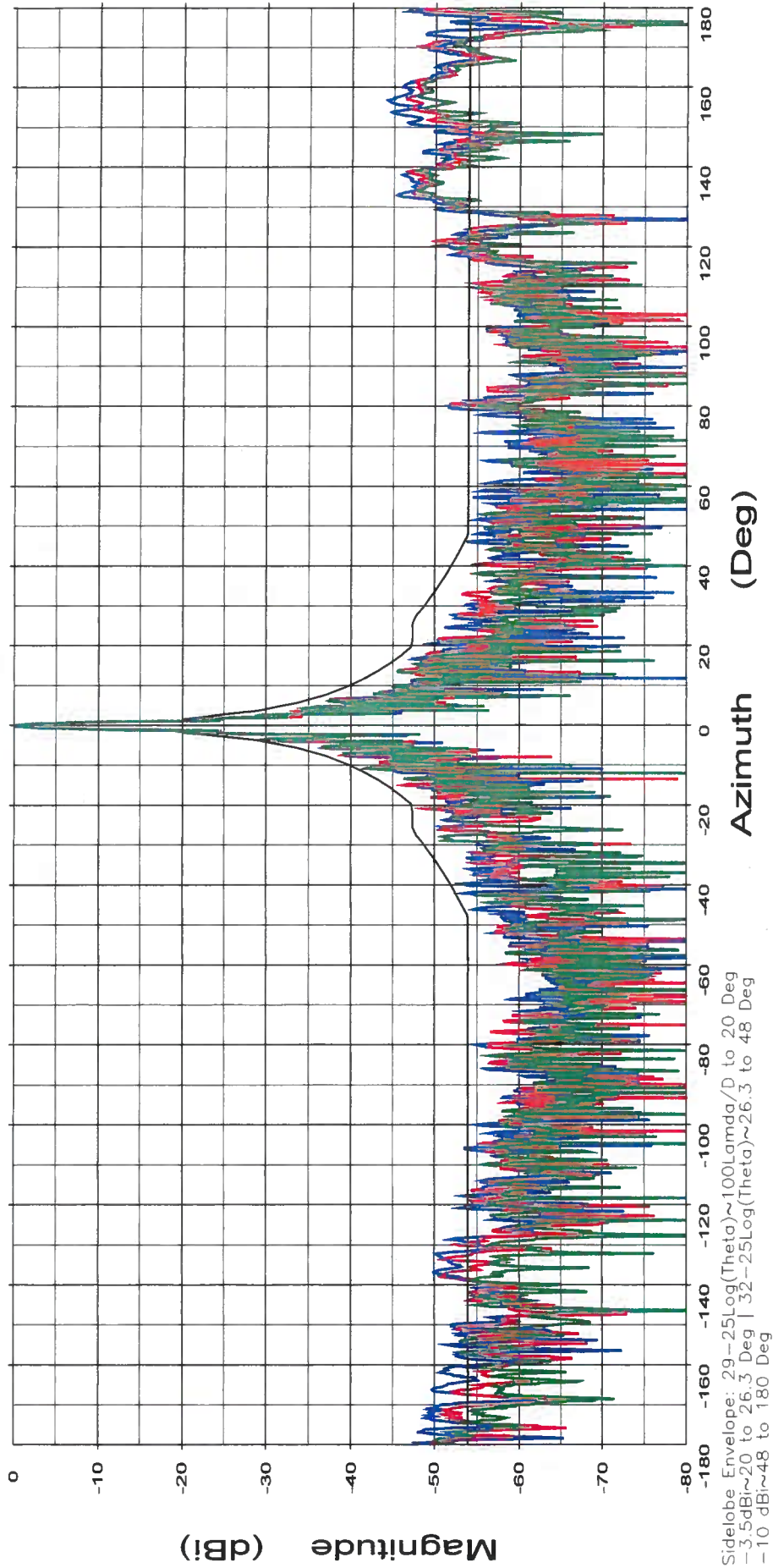


Overlays
1519-22.dat-ant_under_test
1519-24.dat-ant_under_test

Cal. file
1519-22.dat
1519-24.dat

units
dBi
dBi

File: 1519-21.dat
Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1
Tx pol: RHCP
Rx pol: RHCP
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Resonance
Calibration status:
File: 1519-21.dat
Table: 2.4mx-band
Units: dBi
Frequency : See Legend



Overlays
Frequency : 7.250 GHz
Frequency : 7.500 GHz
Frequency : 7.750 GHz

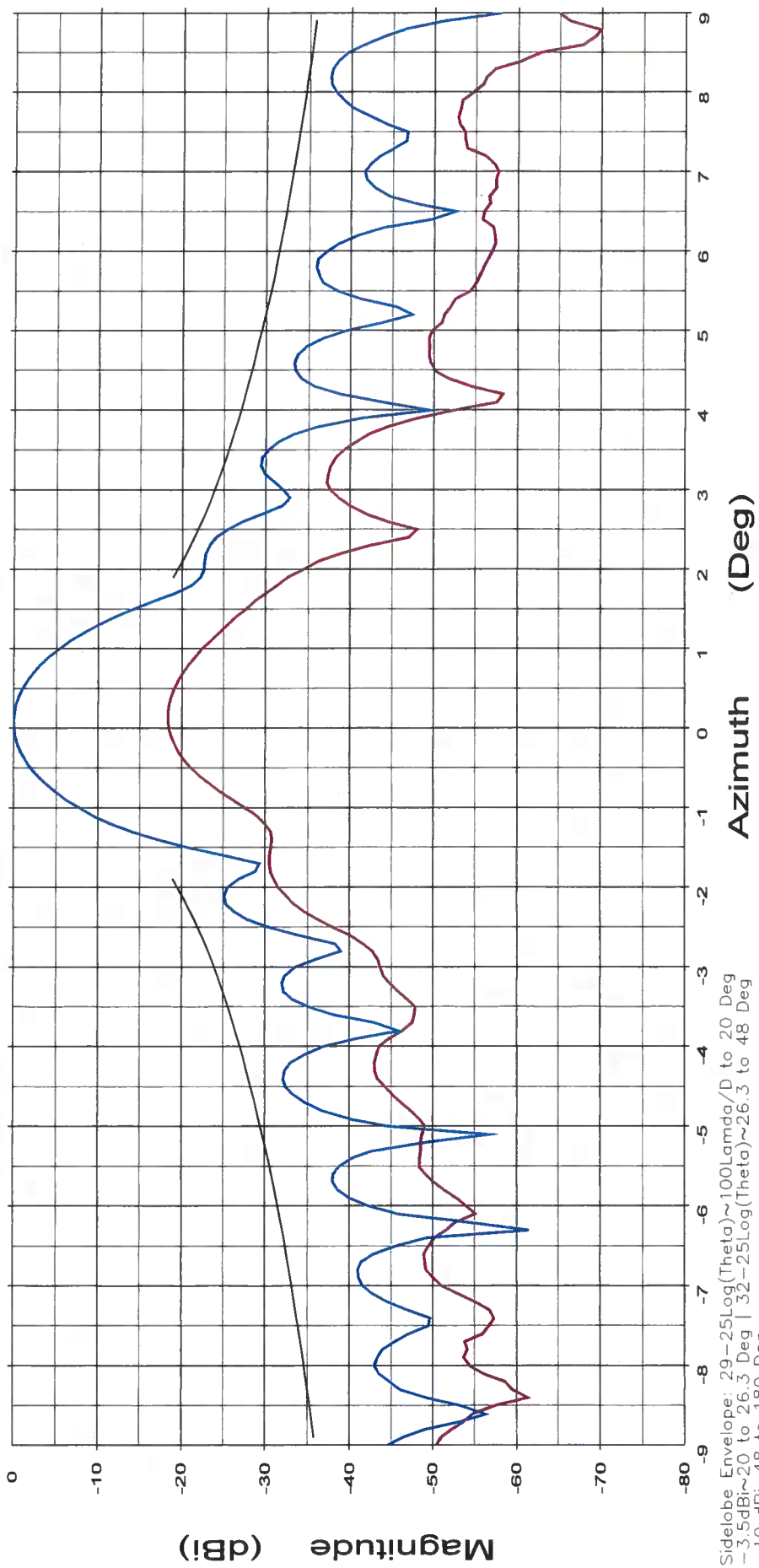
2.5 C-Band Patterns

Frequency : 5.850 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

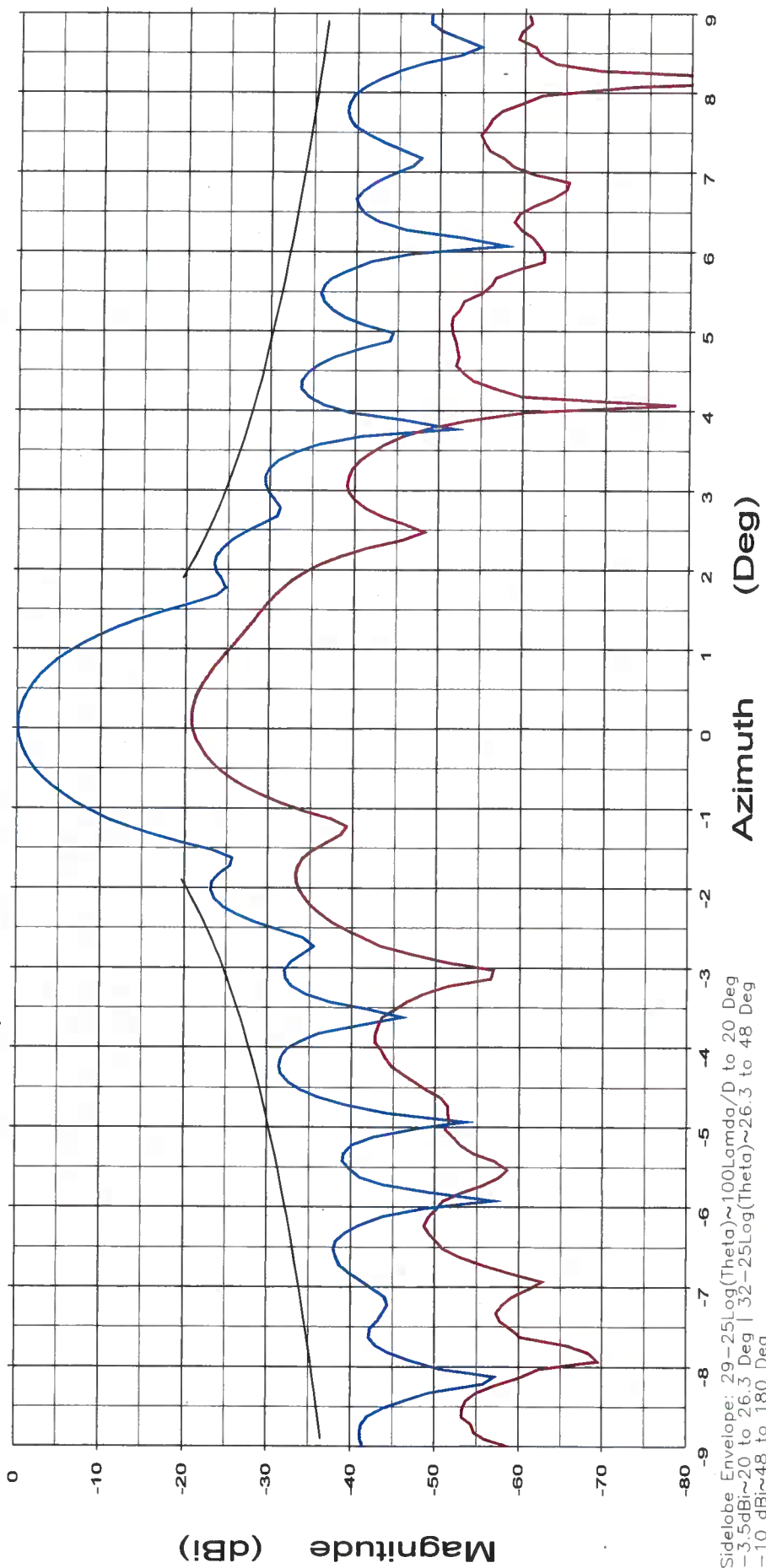
Overlays
1519-43 dat-ant_under_test — dBi
1519-45 dat-ant_under_test — dBi

Frequency : 6.138 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

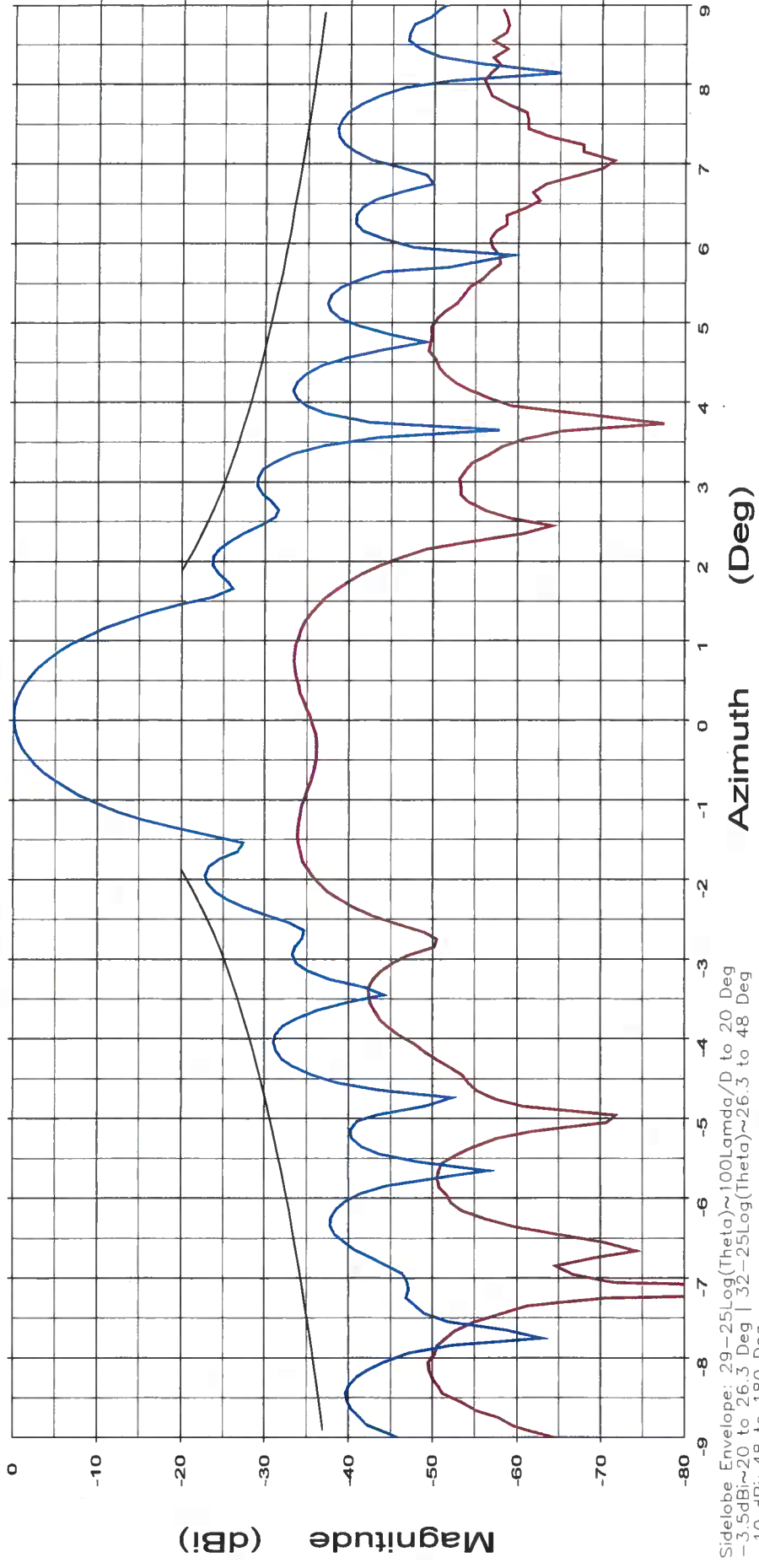
Overlays
1519-43.dat-ant_under_test — units dBi
1519-45.dat-ant_under_test — units dBi

Prodelin Corporation - Series 1259-800
 2.4M Quick Deploy Tri-Band Antenna System
 Electrical Verification Testing Following Mechanical Restoration

Frequency : 6.425 GHz

Operator: Dwight B. Lutz
 Ser. no.: Sys #3
 Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
 -3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
 -10 dBi~48 to 180 Deg

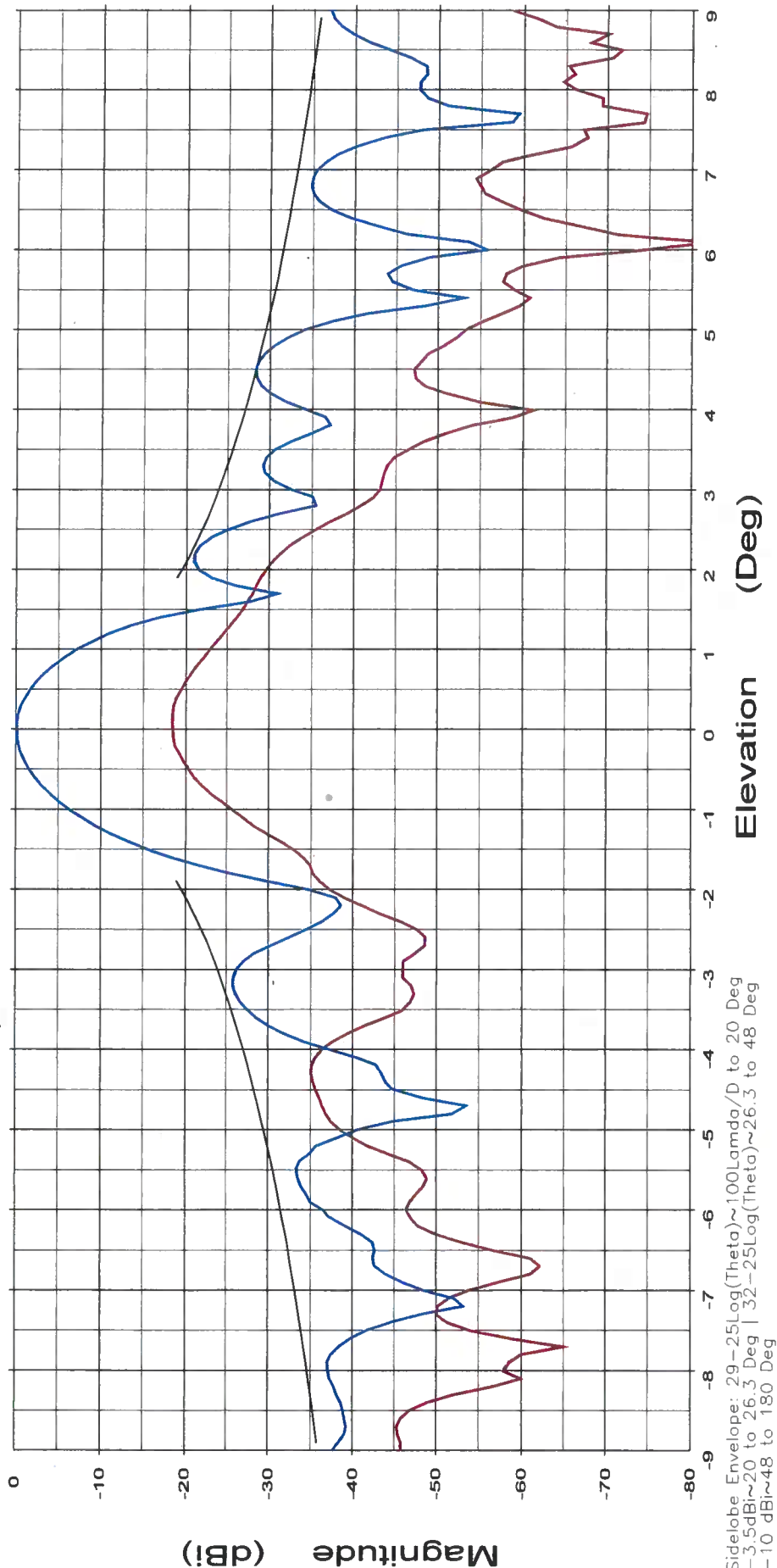
Overlays
 1519-43.dat-ant_under_test — 1519-43.dat dBi
 1519-45.dat-ant_under_test — 1519-45.dat dBi

Frequency : 5.850 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays

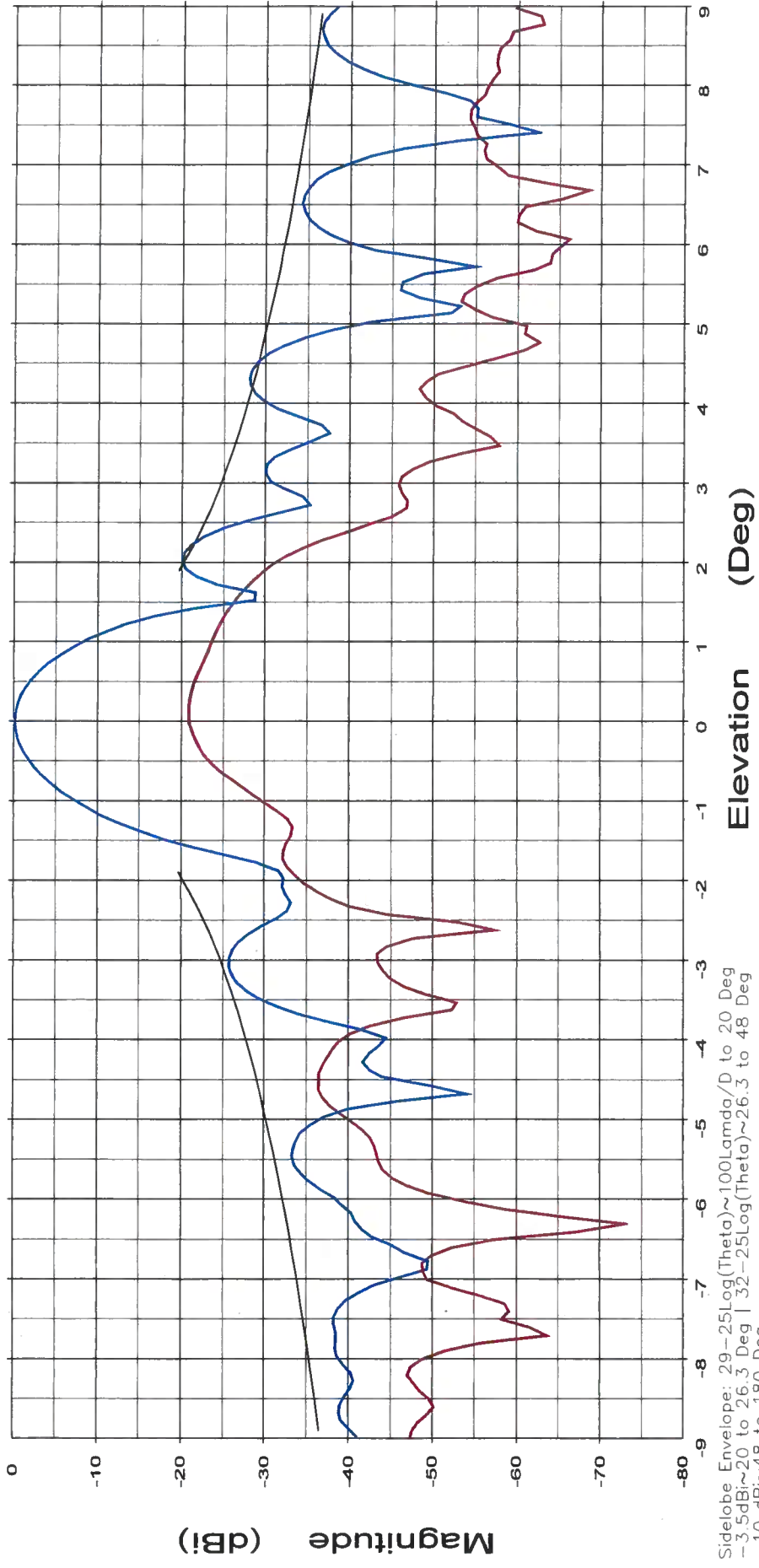
Cal. file	units
1519-44.dat-ant_under_test	dBi
1519-46.dat-ant_under_test	dBi

Frequency : 6.138 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-44.dat-ant_under_test
1519-46.dat-ant_under_test

Cal. file
1519-44.dat
1519-46.dat

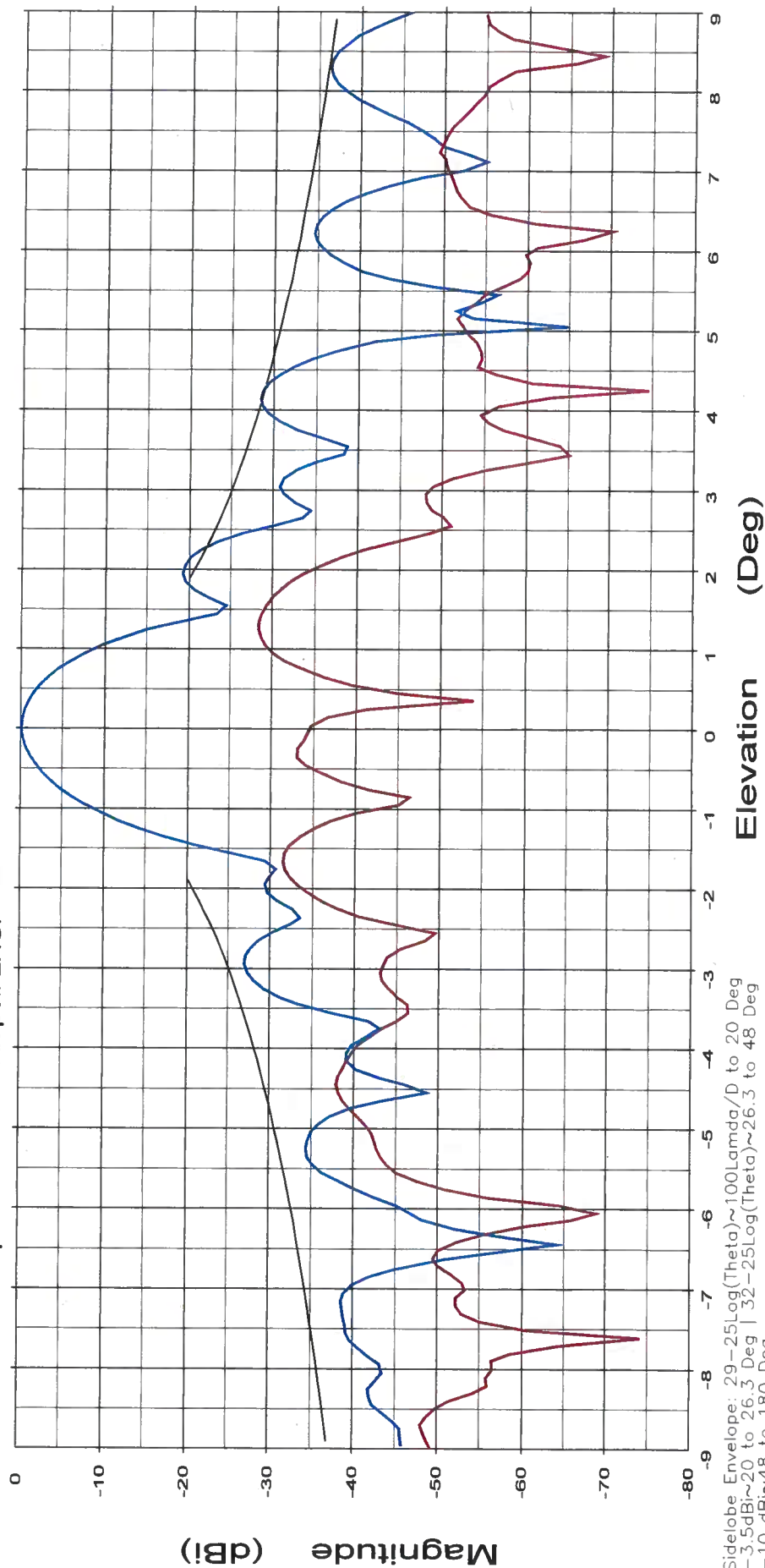
units
dBi
dBi

Frequency : 6.425 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays
1519-44.dat-ant_under_test
1519-46.dat-ant_under_test

Cal. file
1519-44.dat
1519-46.dat

units
dBi
dBi

Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

File: 1519-43.dat

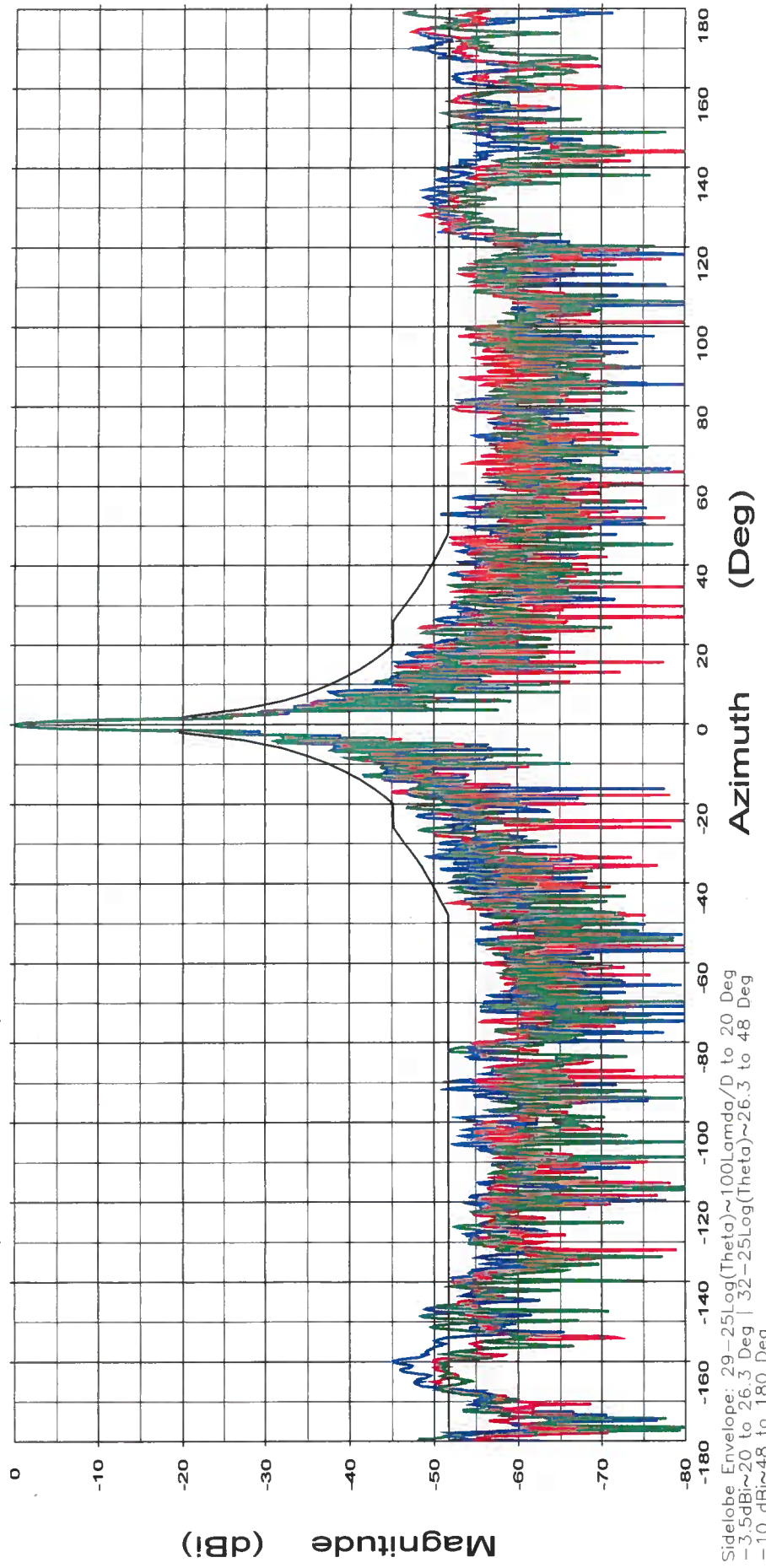
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Frequency : See Legend

Calibration status:
File: 1519-43.dat
Table: Reference
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

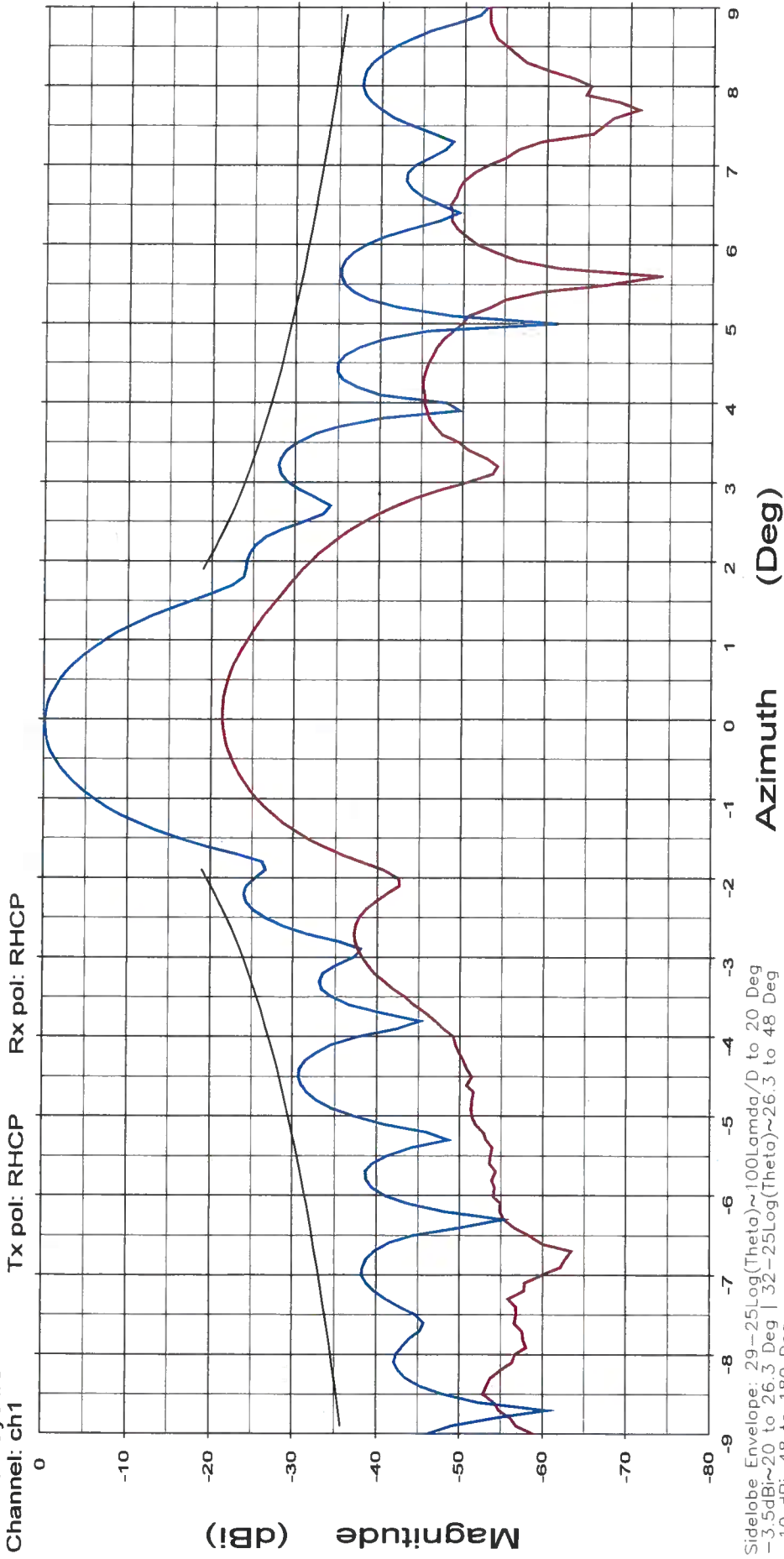
Overlays

- Frequency : 5.850 GHz
- Frequency : 6.138 GHz
- Frequency : 6.425 GHz

Frequency : 5.850 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Overlays

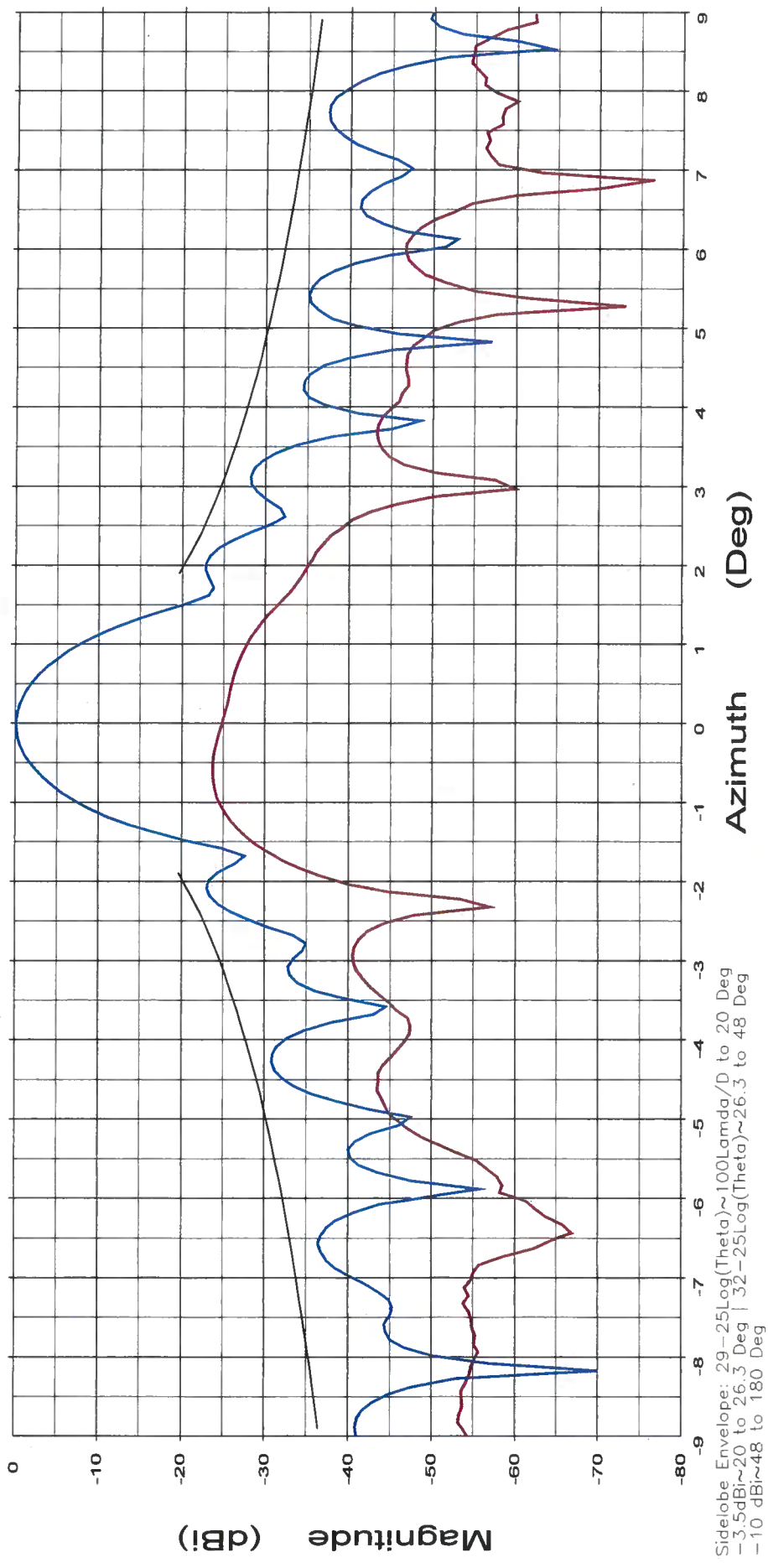
	Cal. file	units
1519-29.dat-ant_under_test	1519-29.dat	dBi
1519-31.dat-ant_under_test	1519-31.dat	dBi

Frequency : 6.138 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays

	Cal. file	units
1519-29.dat-ant_under_test	1519-29.dat	dBi
1519-31.dat-ant_under_test	1519-31.dat	dBi

Frequency : 6.425 GHz

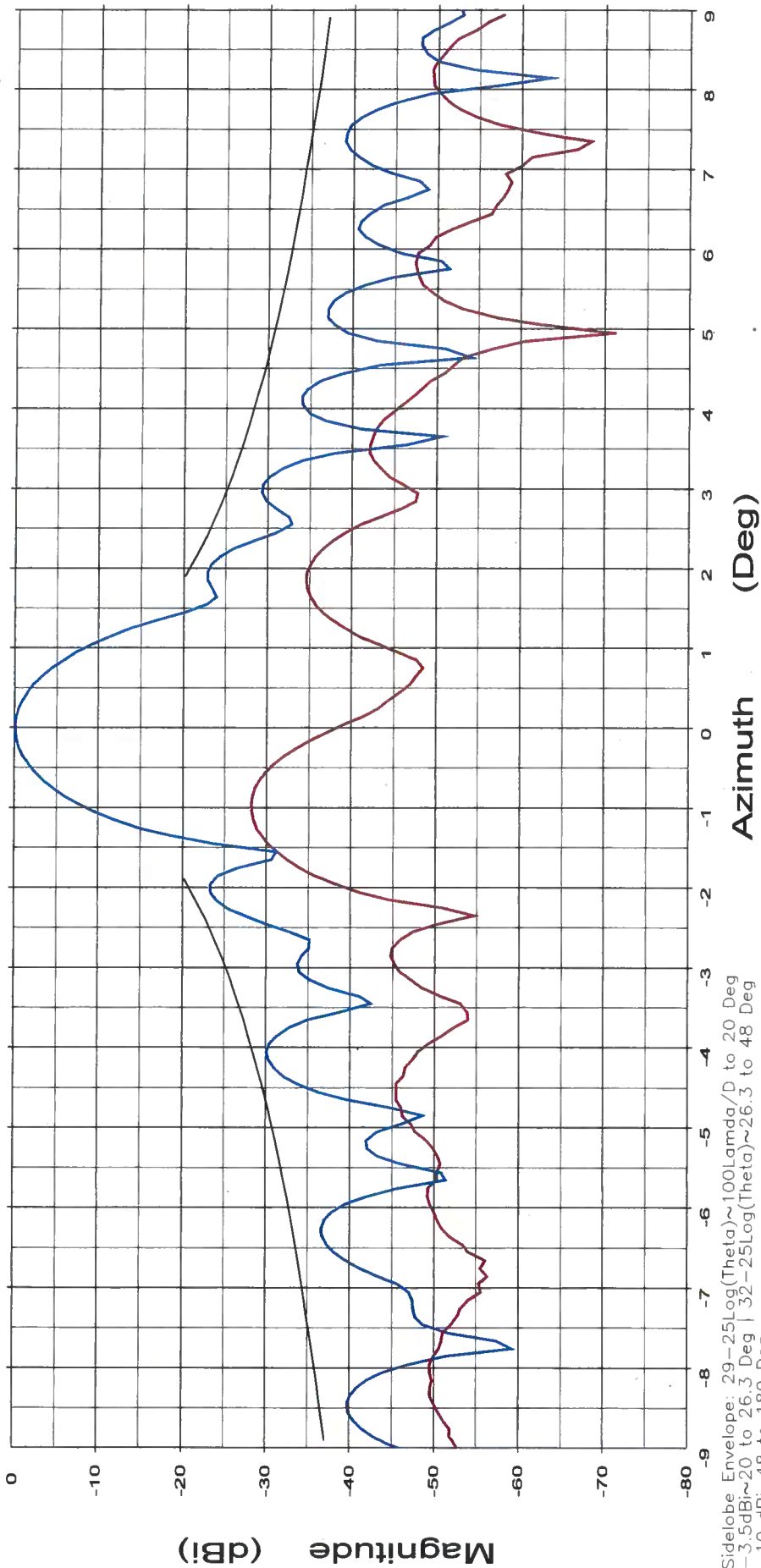
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: RHCP Rx pol: RHCP



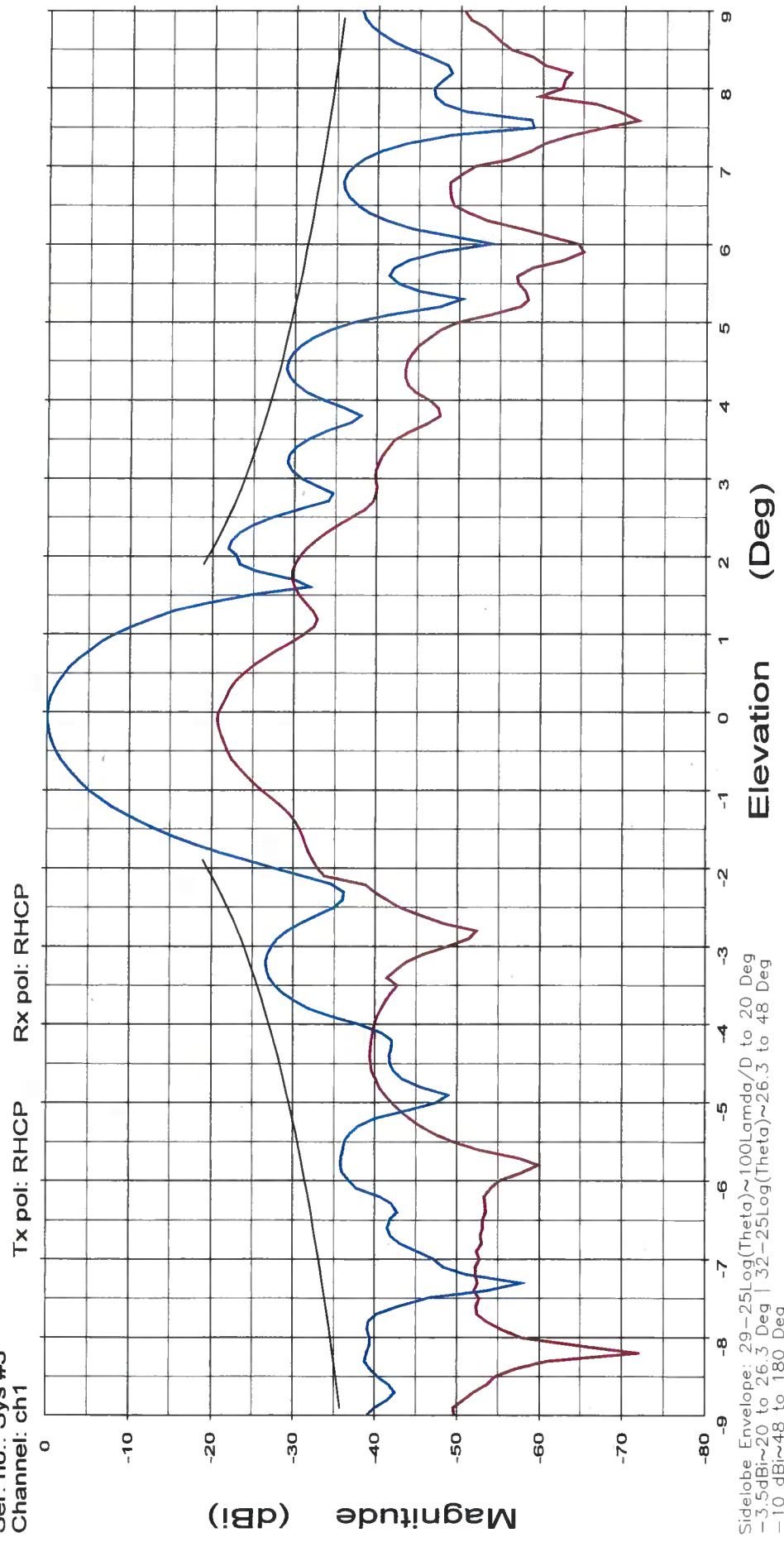
Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-29.dat-ant_under_test — dBi
1519-31.dat-ant_under_test — dBi

Frequency : 5.850 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

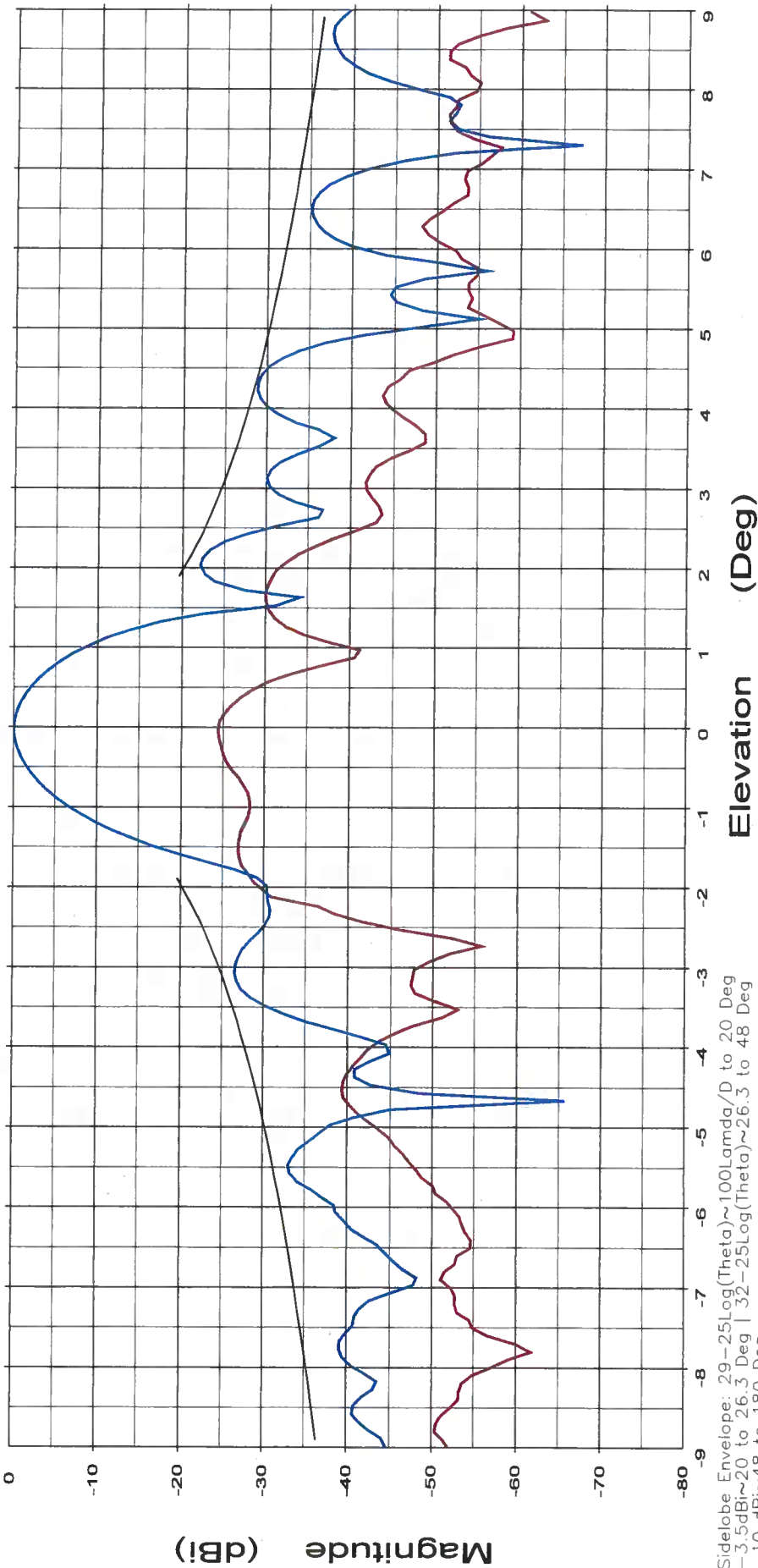
Overlays
1519-30.dat-ant_under_test — units dBi
1519-32.dat-ant_under_test — units dBi

Frequency : 6.138 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

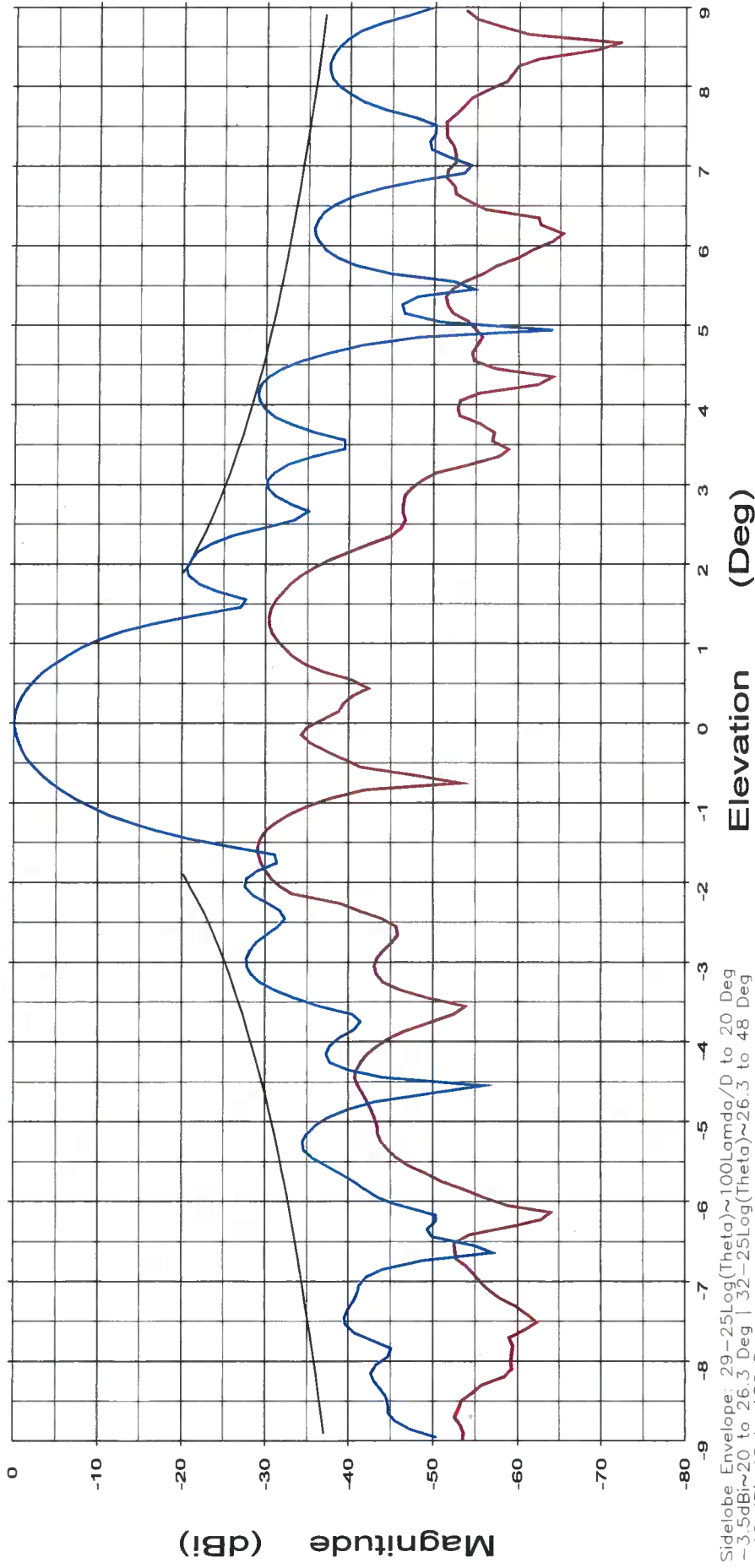
Overlays
1519-30.dat-ant_under_test — 1519-30.dat dBi
1519-32.dat-ant_under_test — 1519-32.dat dBi

Frequency : 6.425 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Overlays

	Cal. file	units
1519-30.dat-ant_under_test	1519-30.dat	dBi
1519-32.dat-ant_under_test	1519-32.dat	dBi

File: 1519-29.dat

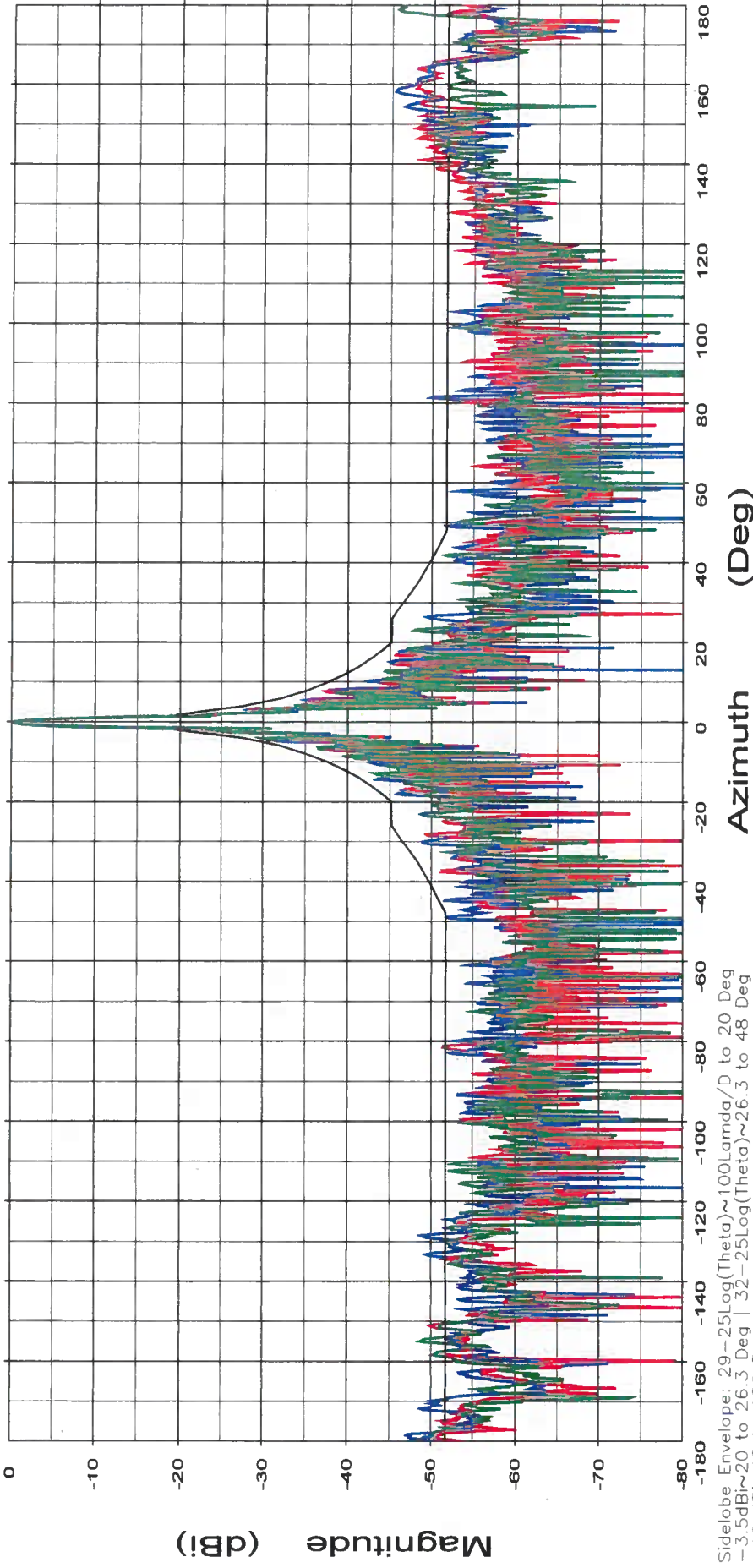
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Frequency : See Legend

Calibration status:
File: 1519-29.dat
Table: Reference
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Overlays

Frequency : 5.850 GHz
Frequency : 6.138 GHz
Frequency : 6.425 GHz

Frequency : 3.625 GHz

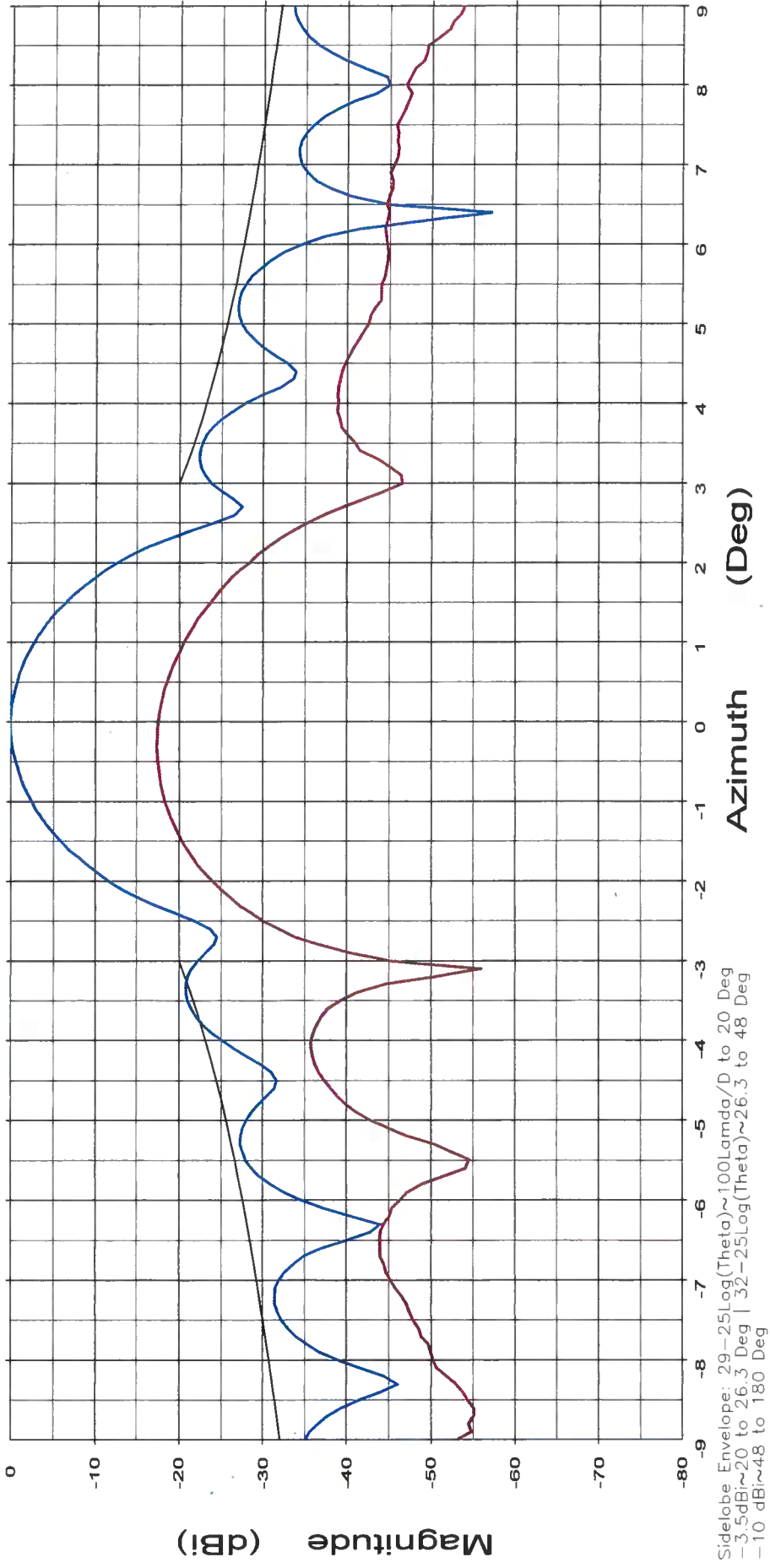
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays

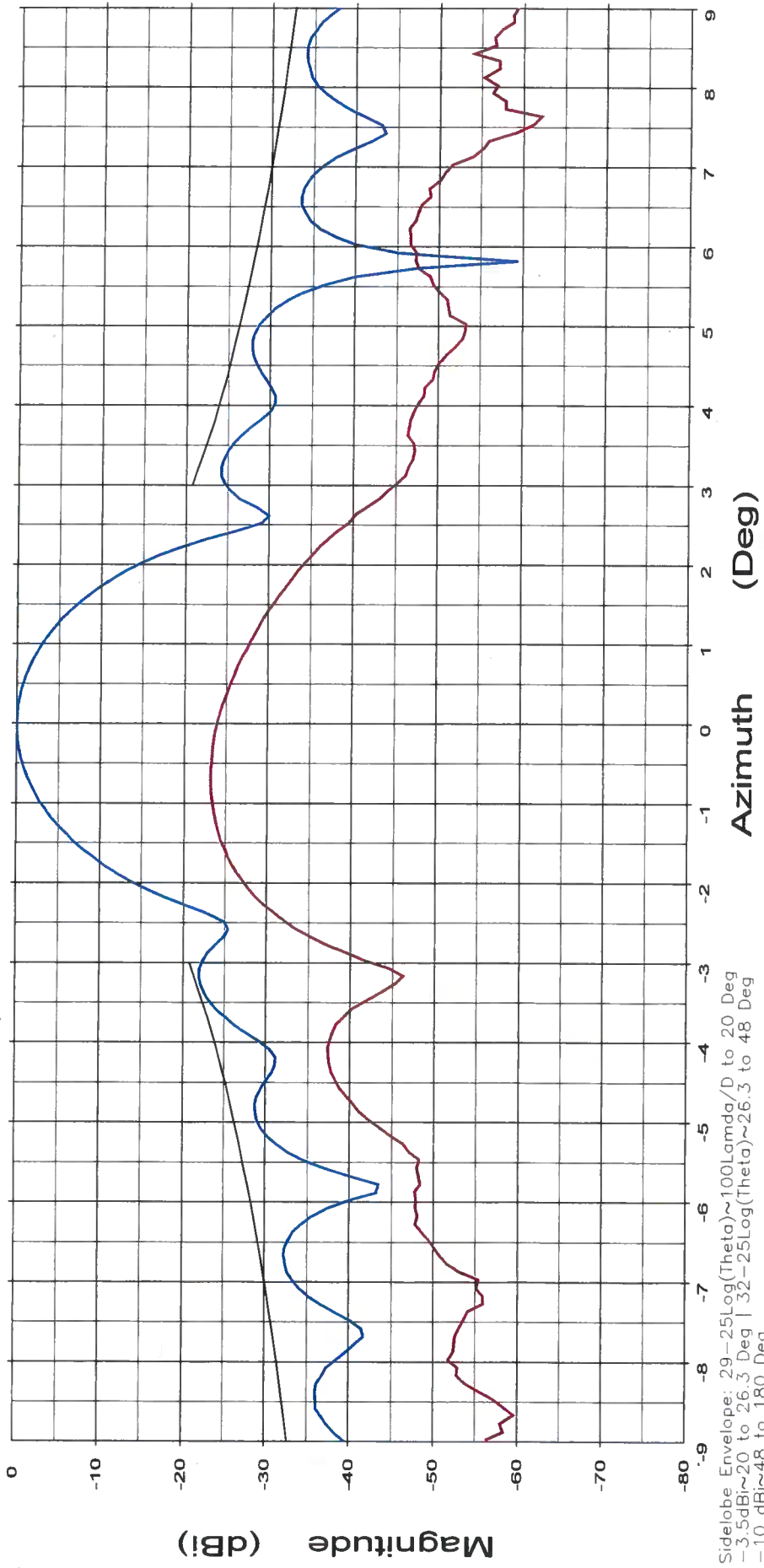
	Cal. file	units
1519-34.dat-ant_under_test	1519-34.dat	dBi
1519-36.dat-ant_under_test	1519-36.dat	dBi

Frequency : 3.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

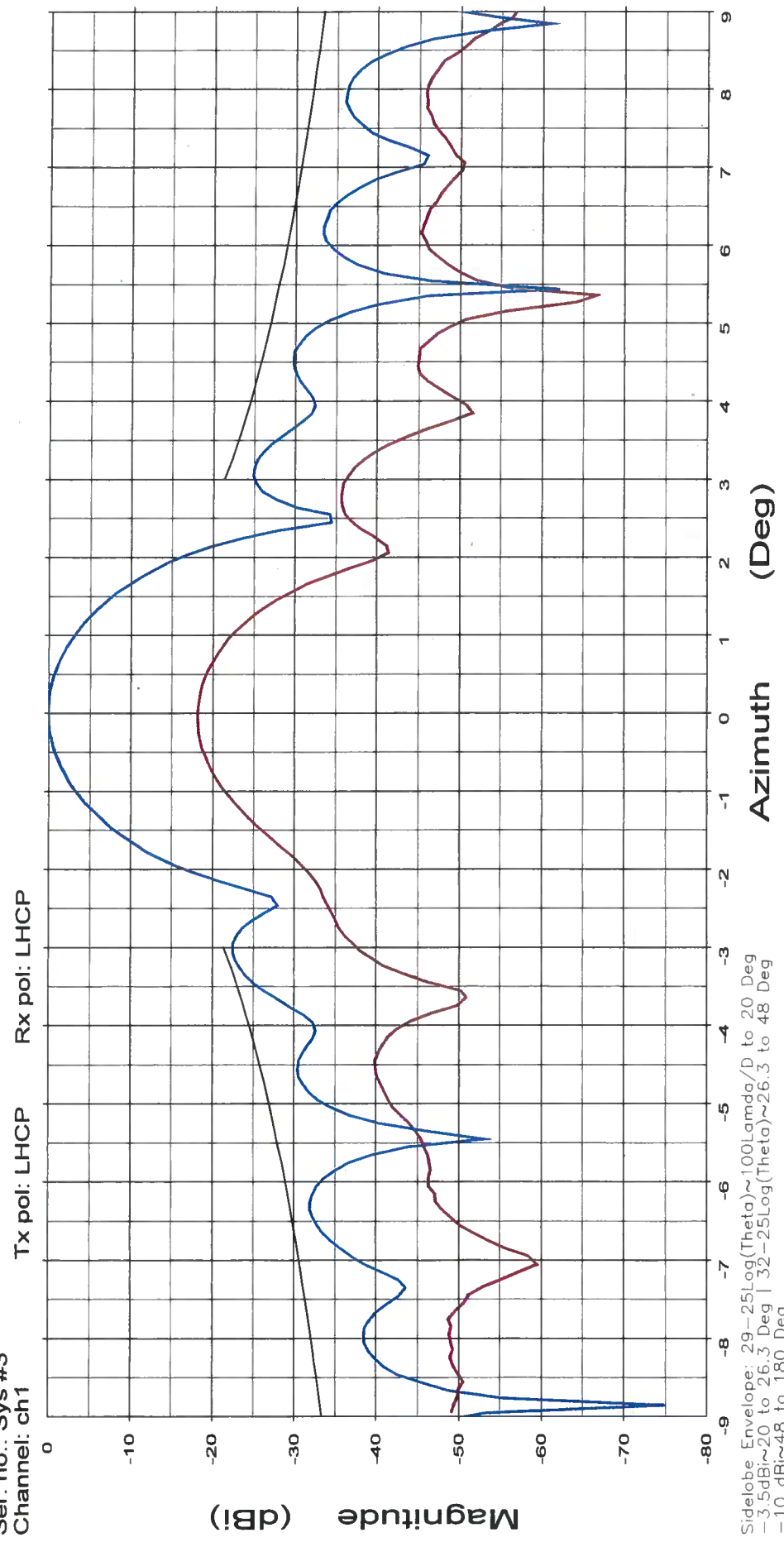
Overlays
1519-34.dat-ant_under_test — 1519-34.dat
1519-36.dat-ant_under_test — 1519-36.dat

Cal. file units
1519-34.dat dBi
1519-36.dat dBi

Frequency : 4.200 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

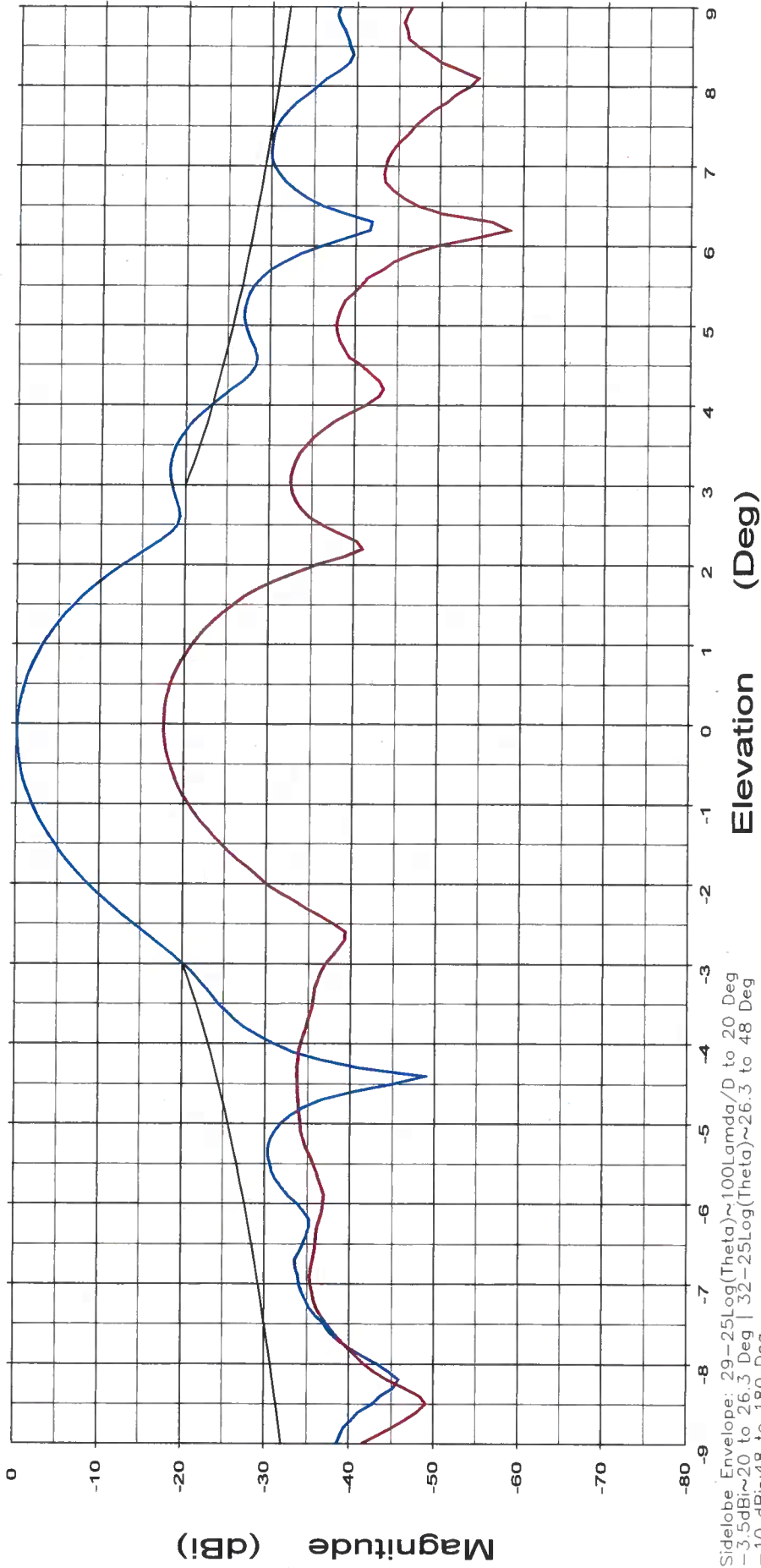
Overlays	Cal. file	units
1519-34.dat-ant_under_test	1519-34.dat	dBi
1519-36.dat-ant_under_test	1519-36.dat	dBi

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Frequency : 3.625 GHz

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

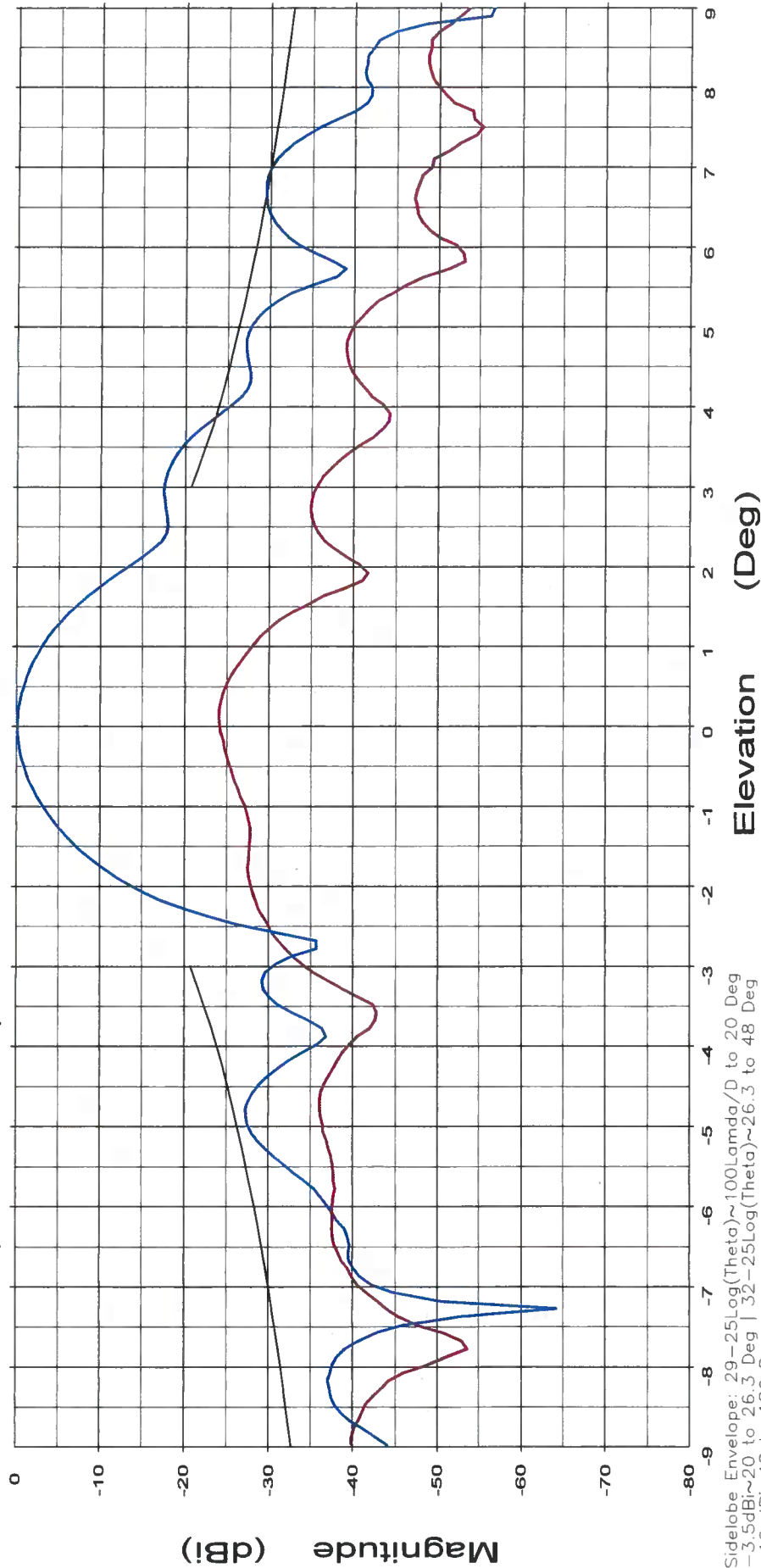
Overlays
1519-35.dat-ant_under_test — 1519-35.dat
1519-37.dat-ant_under_test — 1519-37.dat

Frequency : 3.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29~25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32~25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

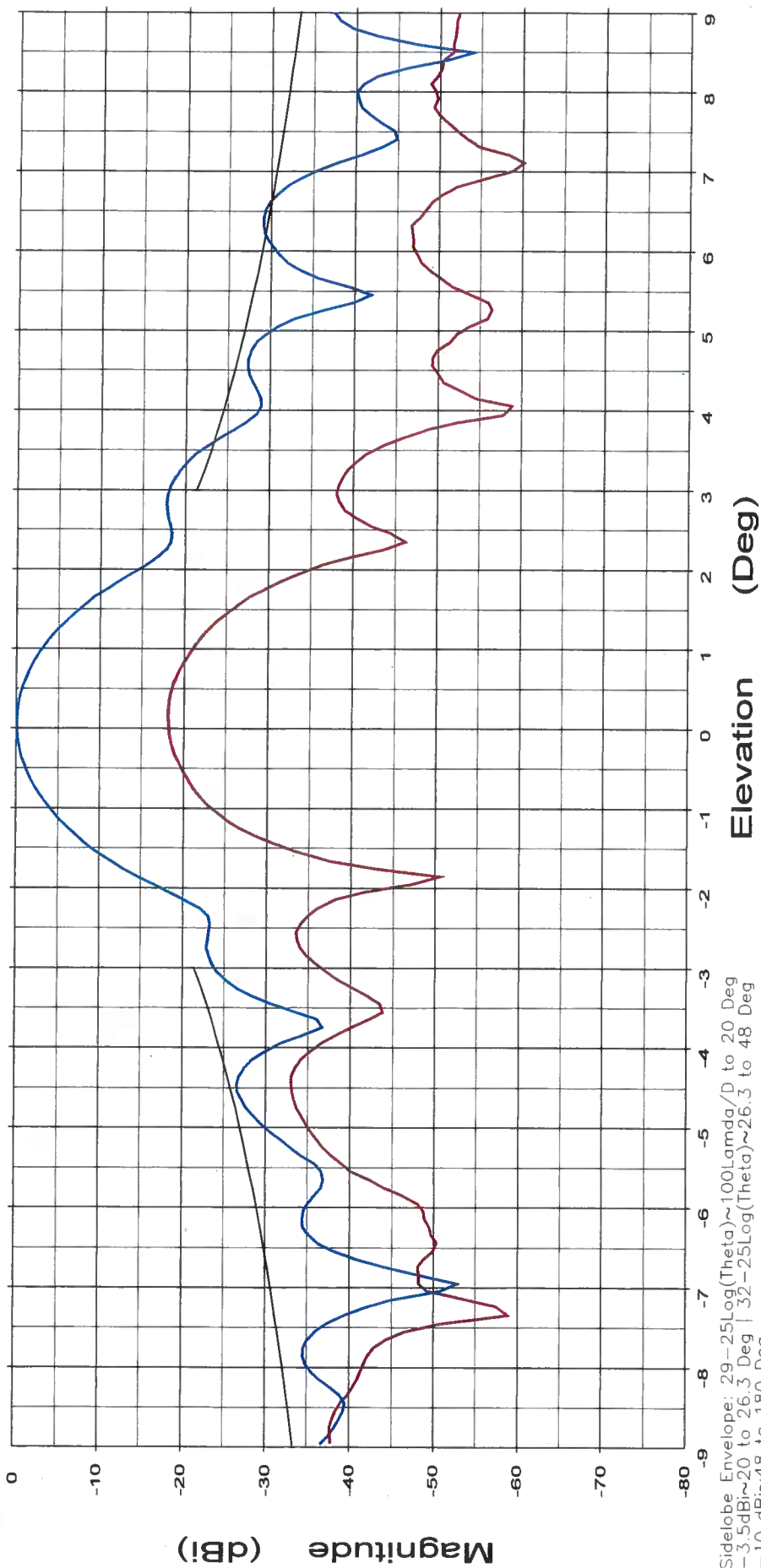
Overlays
1519-35.dat-ant_under_test — 1519-35.dat
1519-37.dat-ant_under_test — 1519-37.dat

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Frequency : 4.200 GHz

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-35.dat-ant_under_test — 1519-35.dat
1519-37.dat-ant_under_test — 1519-37.dat

File: 1519-34.dat

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Calibration status:
File: 1519-34.dat
Table: Reference
Units: dBi

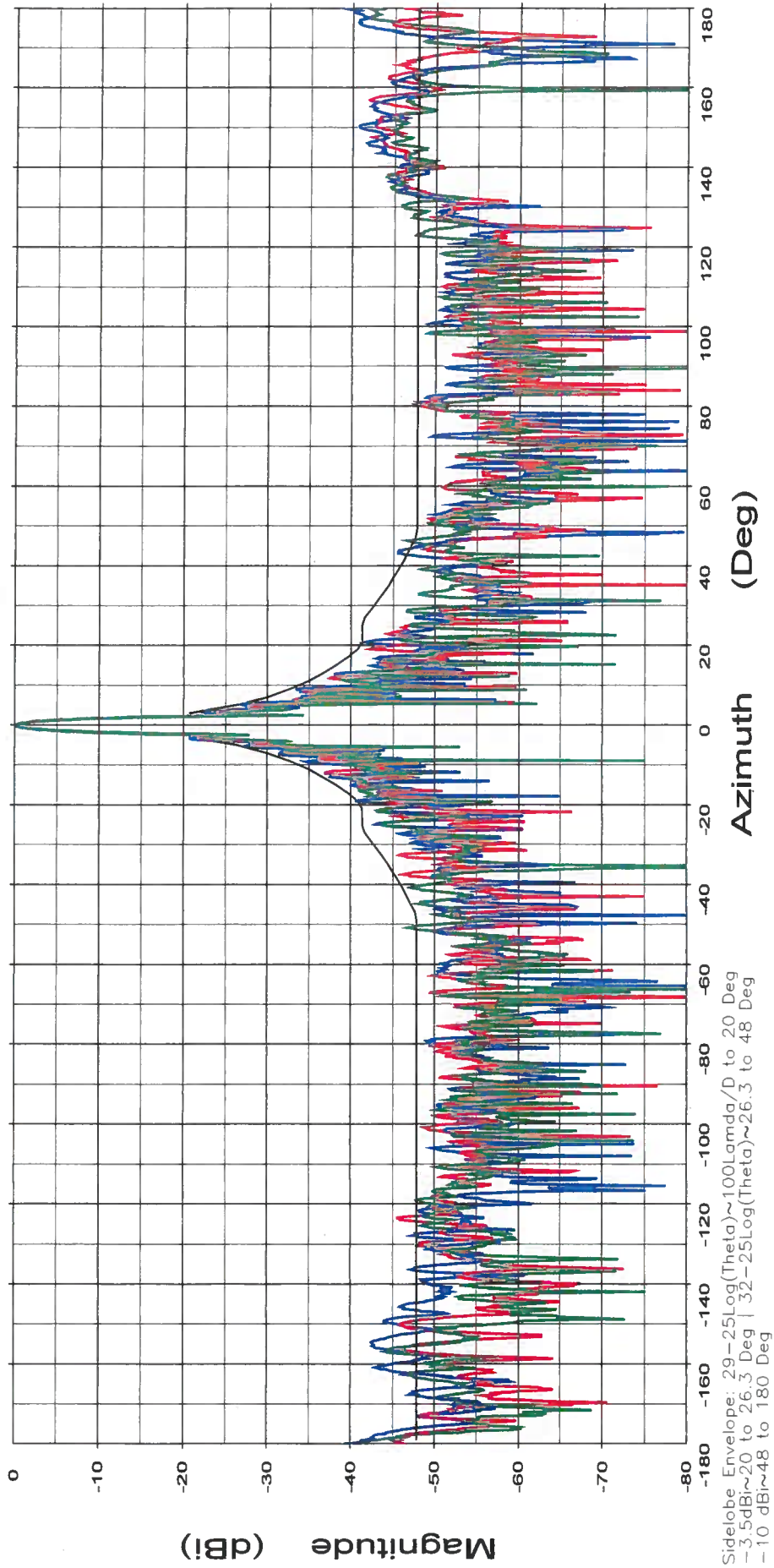
Frequency : See Legend

Operator: Dwight B. Lutz

Ser. no.: Sys #3

Channel: ch1

Tx pol: LHCP Rx pol: LHCP



Overlays

Frequency : 3.625 GHz

Frequency : 3.950 GHz

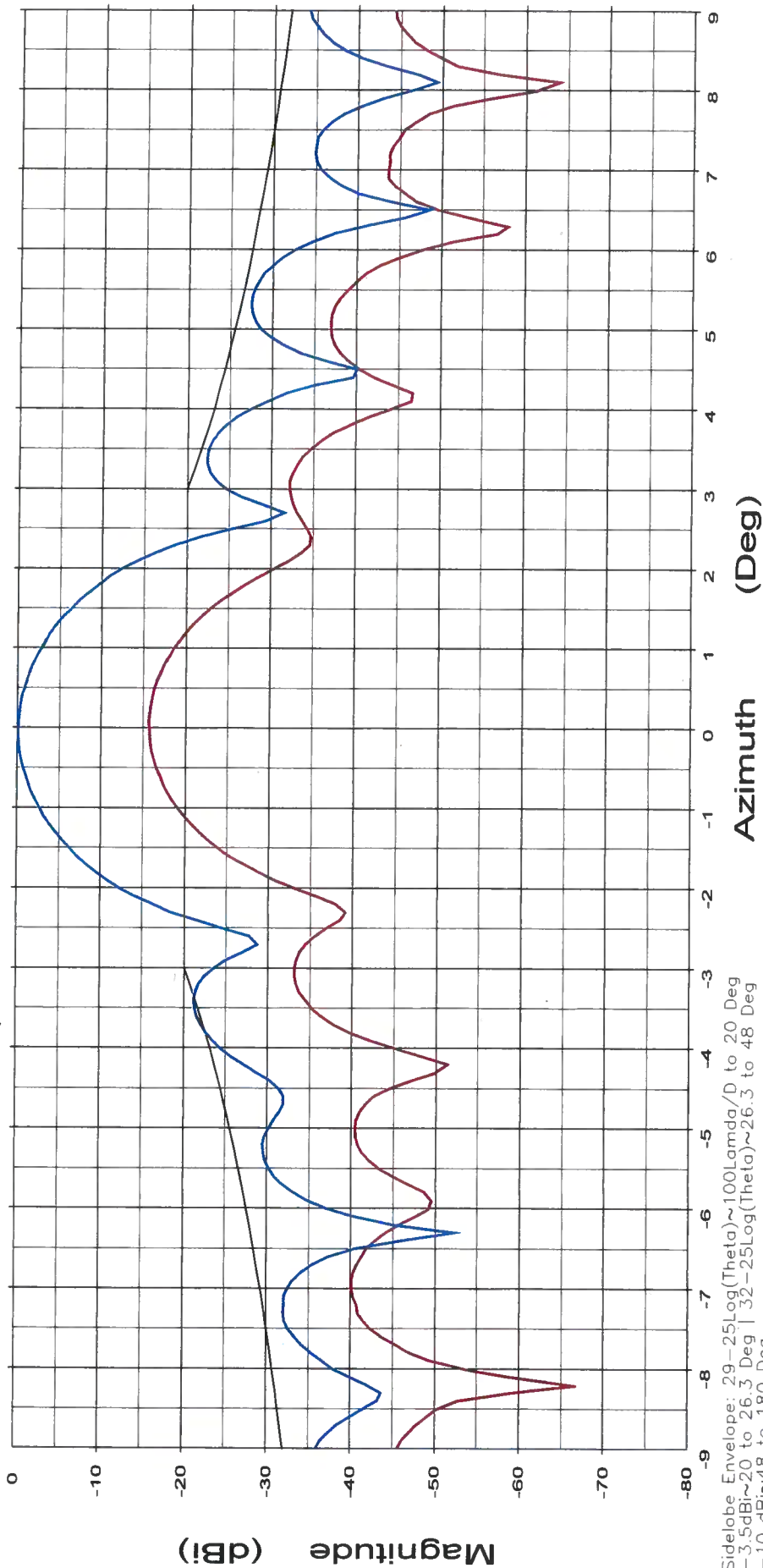
Frequency : 4.200 GHz

Frequency : 3.625 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

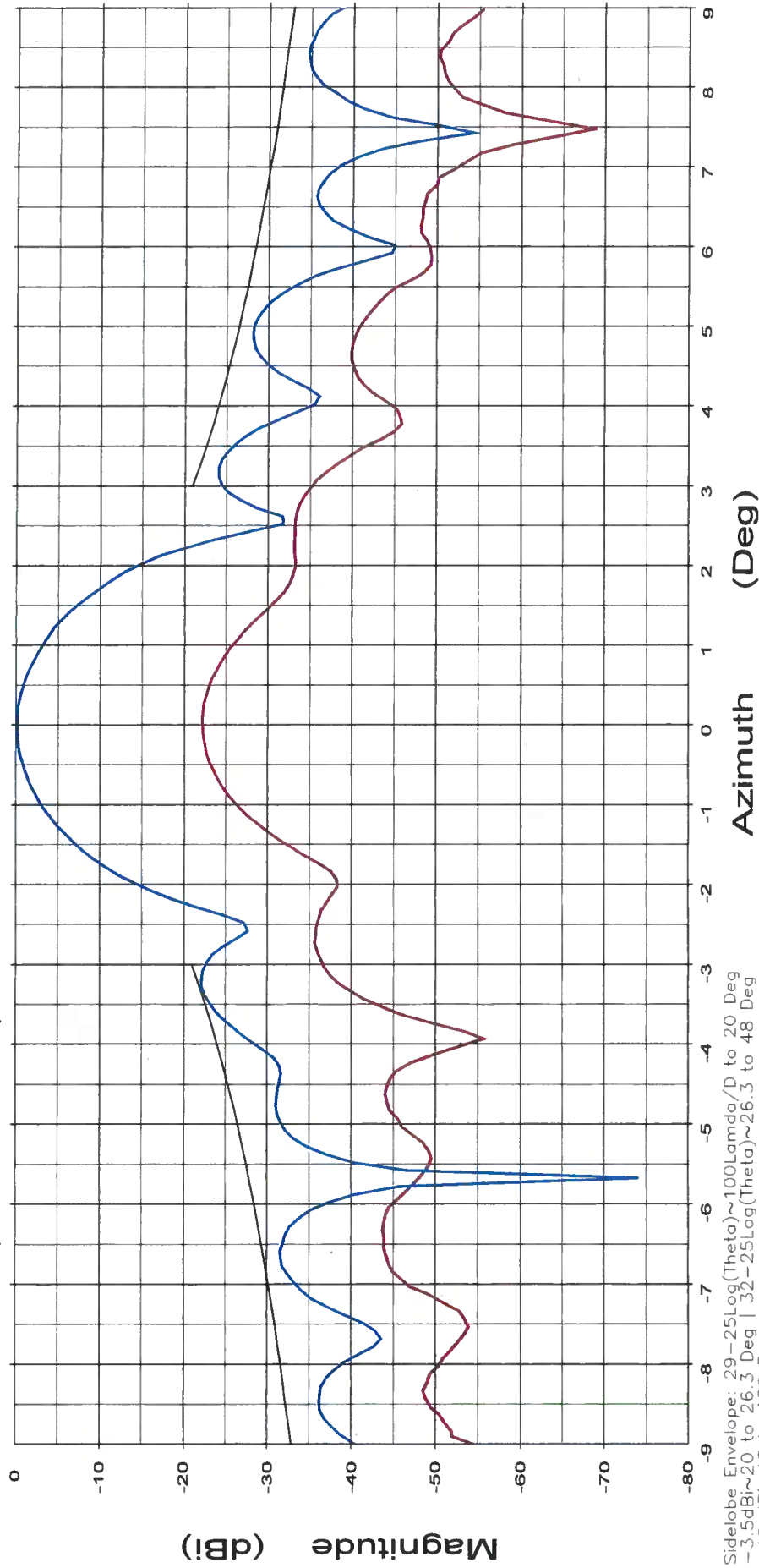
Overlays
1519-38.dat-ant_under_test — 1519-38.dat
1519-40.dat-ant_under_test — 1519-40.dat

Frequency : 3.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

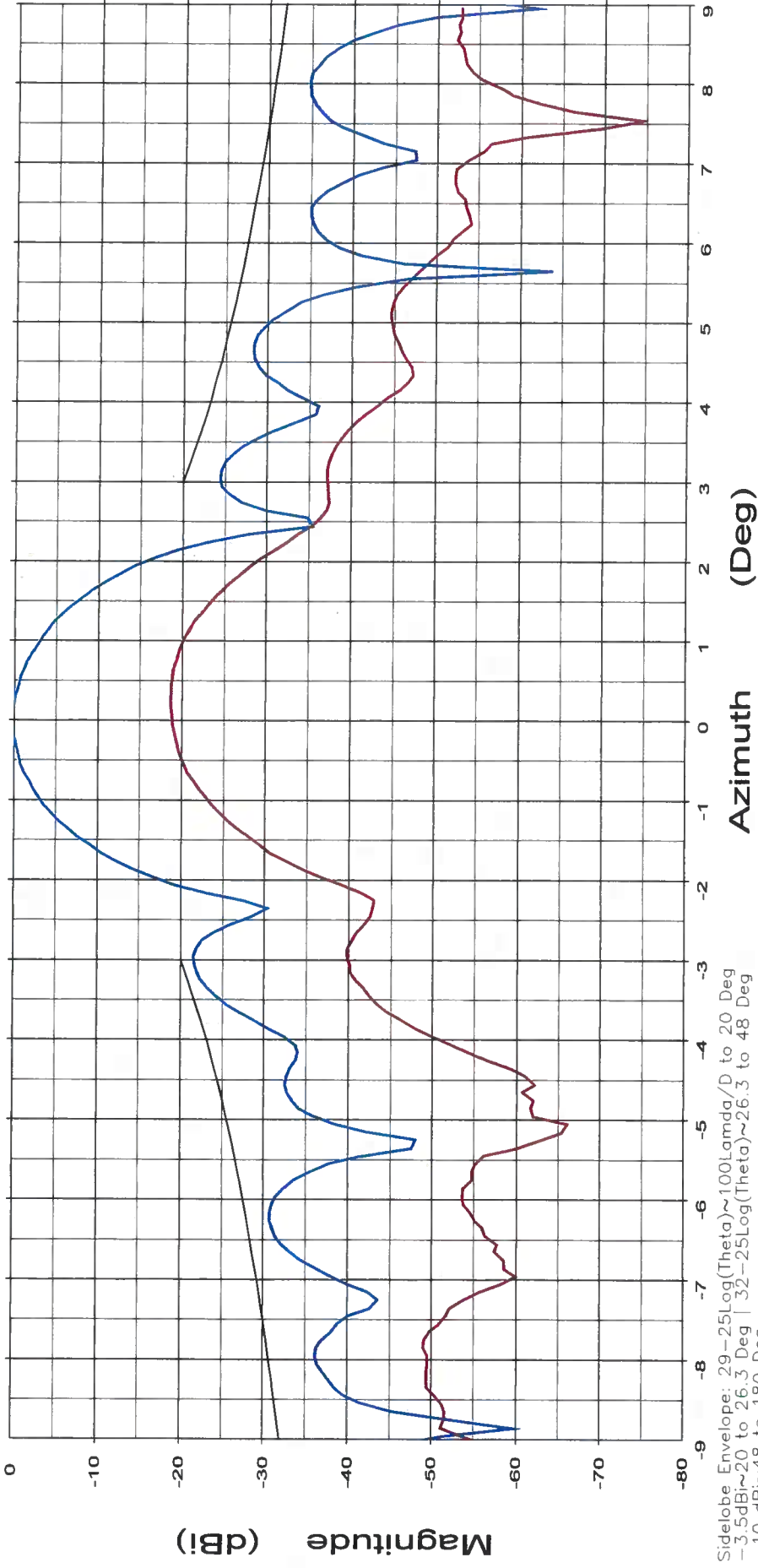
Overlays
1519-38.dat-ant_under_test — units
1519-40.dat-ant_under_test — dBi

Frequency : 4.200 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP

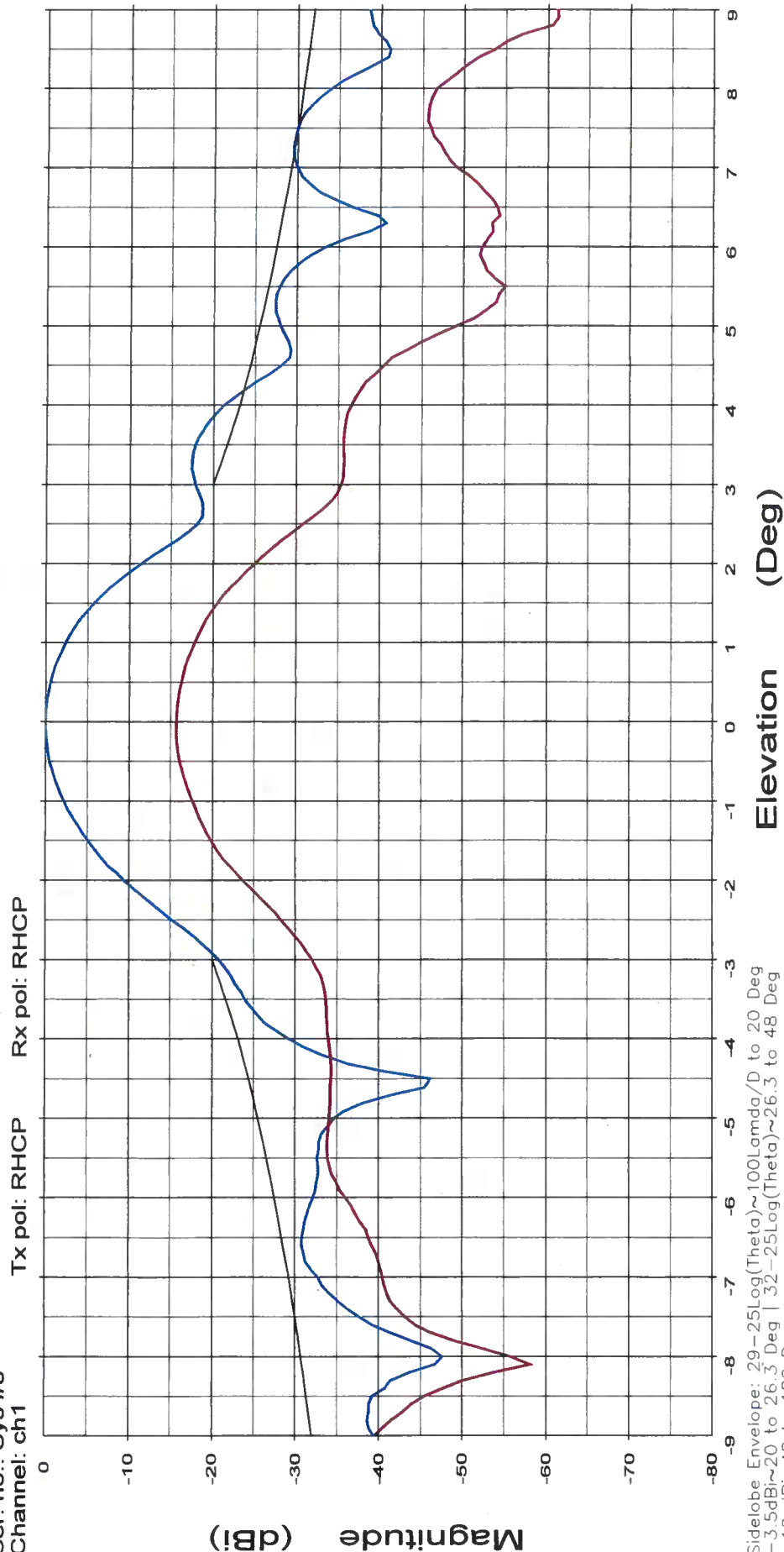


Sidelobe Envelope: 29-25Log(Theta)~100Lambda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-38.dat-ant_under_test — 1519-38.dat
1519-40.dat-ant_under_test — 1519-40.dat

**Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration**

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1



Sidelobe Envelope: $29-25\log(\theta) \sim 100\text{ dBm}/D$ to 20 dB
 -3.5 dB to 26.3 dB | $32-25\log(\theta) \sim 26.3$ to 48 dB
 -10 dB to 48 to 180 dB

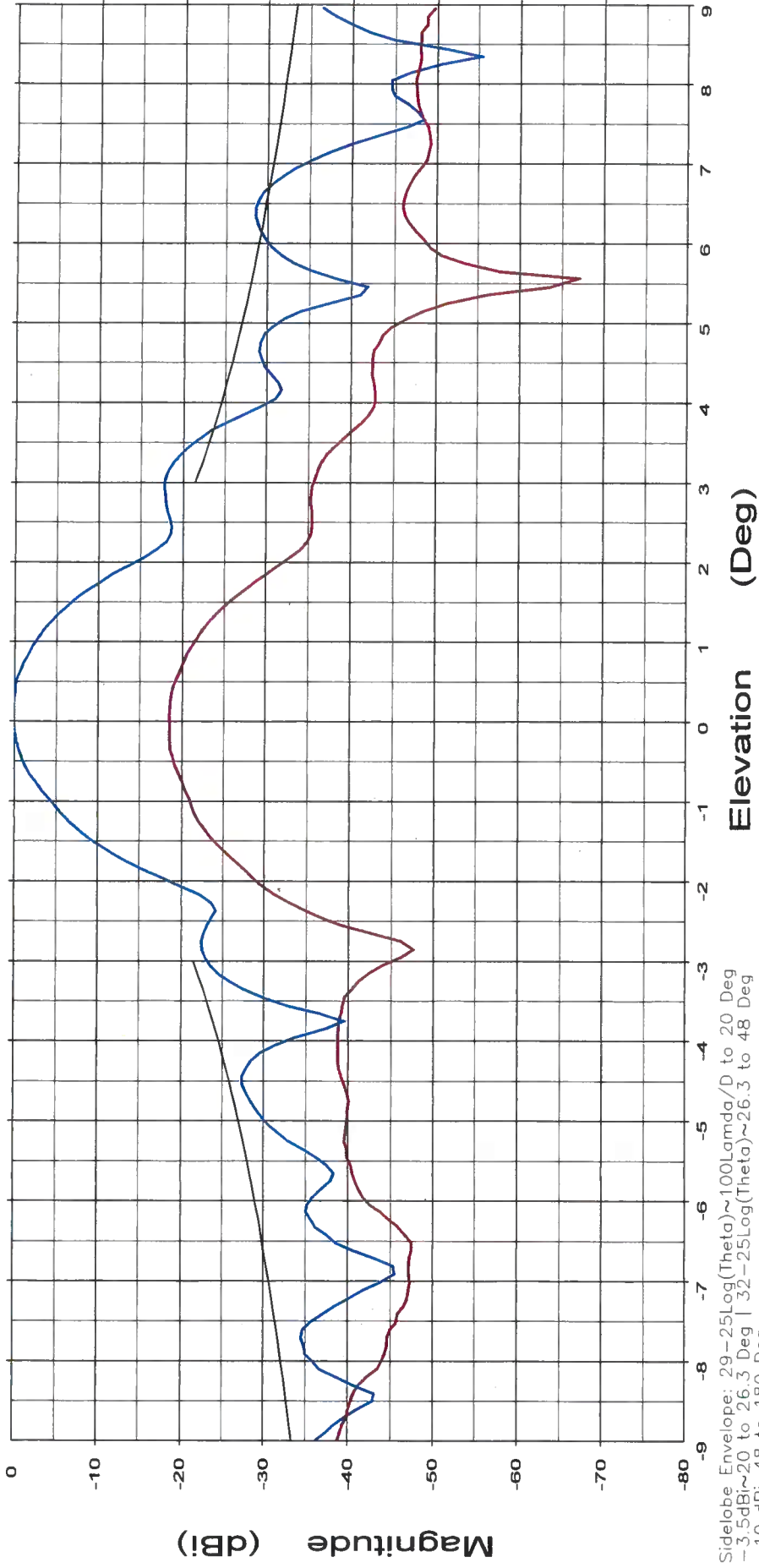
Overlays	Cal. file	units
1519-39.dat_under_test	1519-39.dat	dBi
1519-41.dat_under_test	1519-41.dat	dBi

Frequency : 4.200 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

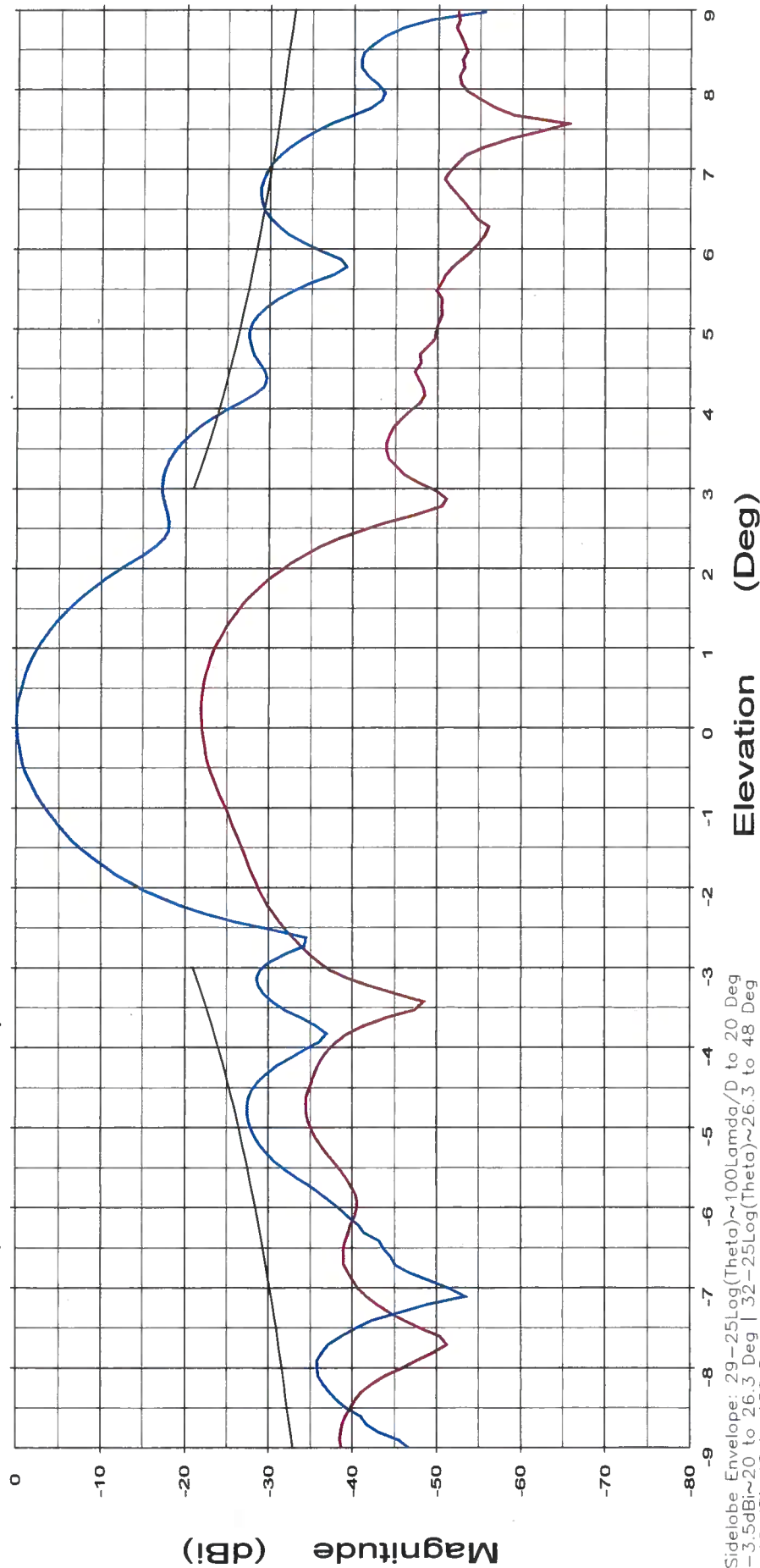
Overlays
1519-39.dat-ant_under_test — units
1519-41.dat-ant_under_test — dBi

Frequency : 3.950 GHz

Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Restoration

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Sidelobe Envelope: 29-25Log(Theta)~100Lamda/D to 20 Deg
-3.5dBi~20 to 26.3 Deg | 32-25Log(Theta)~26.3 to 48 Deg
-10 dBi~48 to 180 Deg

Overlays
1519-39.dat-ant_under_test
1519-41.dat-ant_under_test

Cal. file
1519-39.dat
1519-41.dat

units
dBi
dBi

File: 1519-38.dat

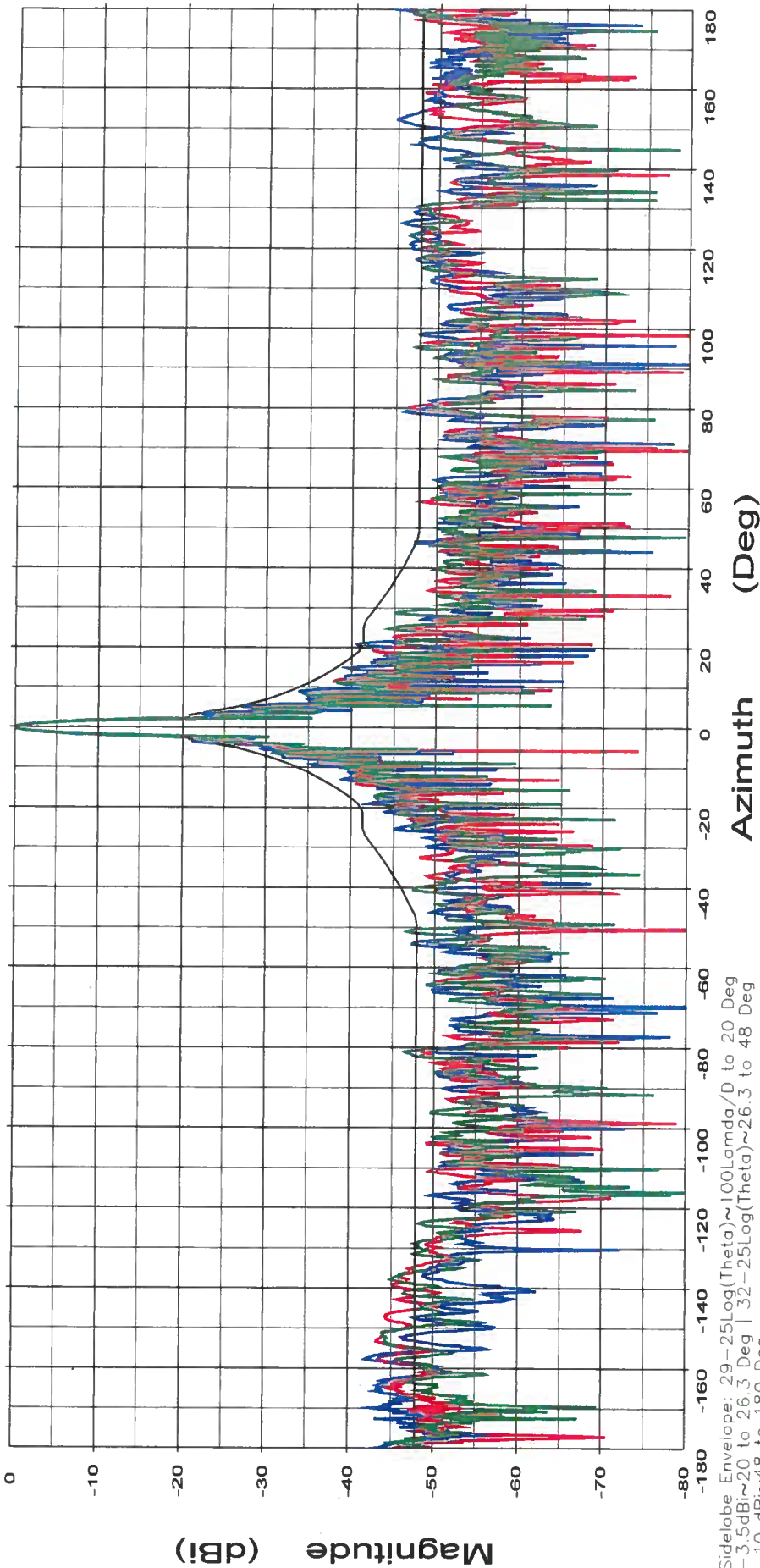
Prodelin Corporation - Series 1259-800
2.4M Quick Deploy Tri-Band Antenna System
Electrical Verification Testing Following Mechanical Re

Frequency : See Legend

Calibration status:
File: 1519-38.dat
Table: Reference
Units: dBi

Operator: Dwight B. Lutz
Ser. no.: Sys #3
Channel: ch1

Tx pol: RHCP Rx pol: RHCP



Overlays

Frequency : 3.625 GHz
Frequency : 3.950 GHz
Frequency : 4.200 GHz

3.0 G/T Noise Temperature Measurement and test setup

Antenna noise temperature was measured based on System Power Test Method recommended by Intelsat document SSOG 210 Section 5.

The noise temperature formula is defined as:

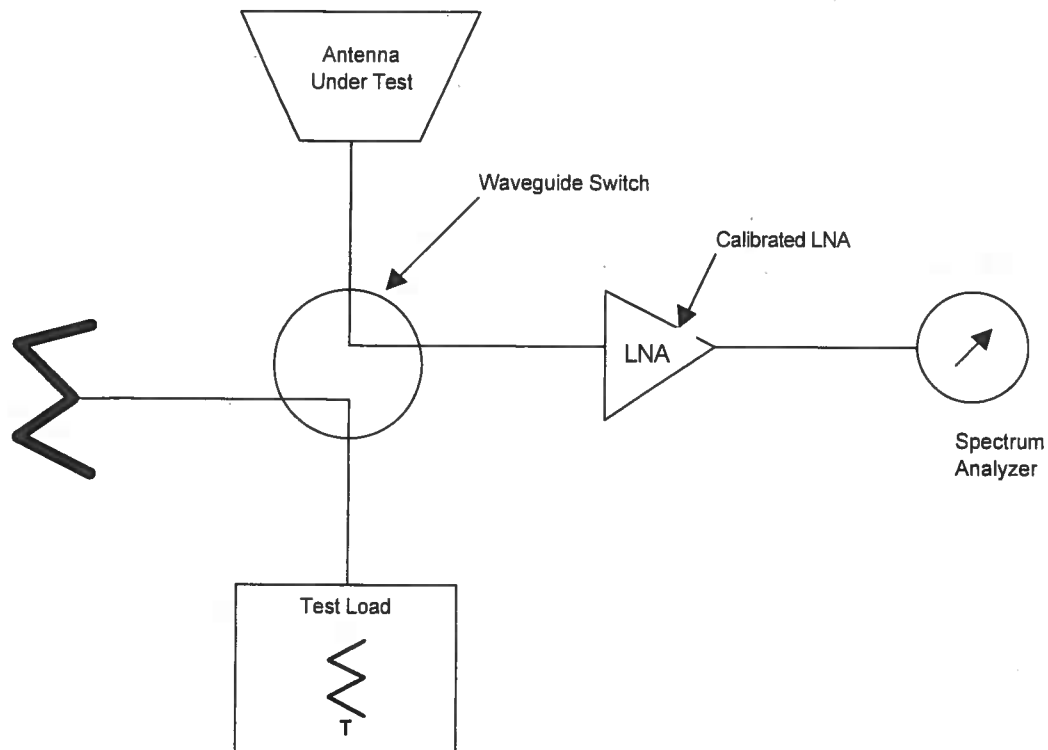
$$T(\text{system}) \text{ dB} = 10\log [T(\text{test load}) (K) + T(\text{LNA}) (K)] - Y(\text{dB})$$

Where,

$T(\text{system})$ is the system noise temperature indB

$T(\text{Test Load})$ is given noise temperature of the matched load used in the measurement

$T(\text{LNA})$ = is the calibrated LNA noise temperature



- Test Equipment Arrangement for Receive System Noise Power Measurement

3.1 Summary of Test Results

3.2 Ku-Band

ANTENNA G/T TEST RESULTS

Test No 1519		Elevation Angle (Degrees)	30	GENERAL DYNAMICS C4 Systems
Date of Test 25 Apr 06		Weather Conditions (Downlink)	Clear Sky 42% Relative Humidity*	
Earth Station under test	Series 1249-800 2.4m QD Tri-Band	Polarization (Downlink)	Vertical	Ambient Temperature (degrees Celsius)
Frequency (GHz)	Antenna Gain (dB)	T load (K)	T LNA (K)	T system (K)
10.95	46.88	302.00	75.62	142.91
11.95	47.63	302.00	72.60	139.50
12.75	48.07	302.00	75.14	138.20
				Y (dB)
				-4.22
				-4.29
				-4.36

ANTENNA NOISE TEMPERATURE SUMMARY

Frequency (GHz)	Antenna Gain (dB)	System Noise Temperature (K)	Antenna Noise Temperature (K)	G/T (dB/K)
10.95	46.88	142.91	67.29	25.33
11.95	47.63	139.50	66.90	26.18
12.75	48.07	138.20	63.06	26.66

Calibrated Test LNA: Maxtech LKE -12080 S/N C714602

*Reported at IJP regional airport

3.3 C-Band

ANTENNA G/T TEST RESULTS

Test No 1519		Elevation Angle (Degrees)	30	GENERAL DYNAMICS C4 Systems
Date of Test 25 Apr 06		Weather Conditions (Downlink)	Clear Sky 42% Relative Humidity*	
Earth Station under test	Series 1249-800 2.4m QD Tri-Band	Polarization (Downlink)	LHCP	Ambient Temperature (degrees Celsius)
Frequency (GHz)	Antenna Gain (dB)	T load (K)	T LNA (K)	T system (K)
3.625	37.14	302.00	27.90	83.25
3.950	37.86	302.00	27.98	80.63
4.200	38.49	302.00	29.51	82.70
				Y (dB)
				-5.98
				-6.12
				-6.03

ANTENNA NOISE TEMPERATURE SUMMARY

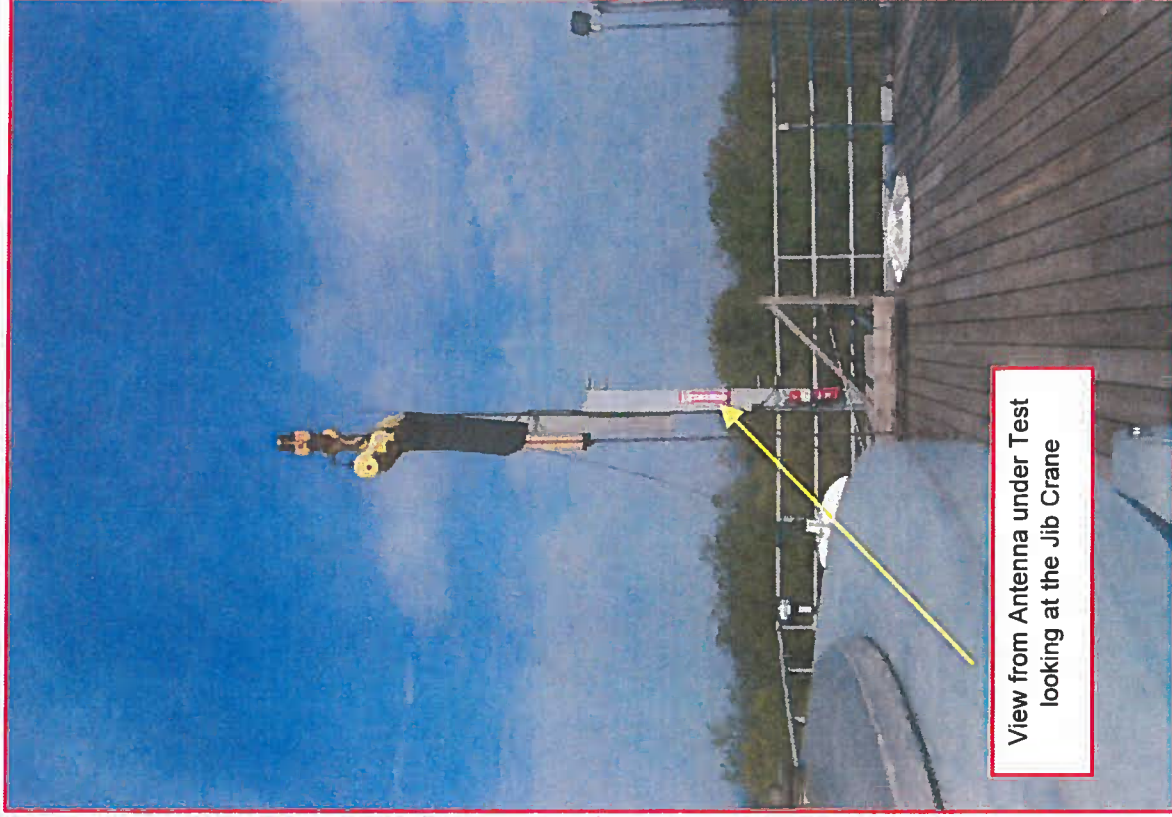
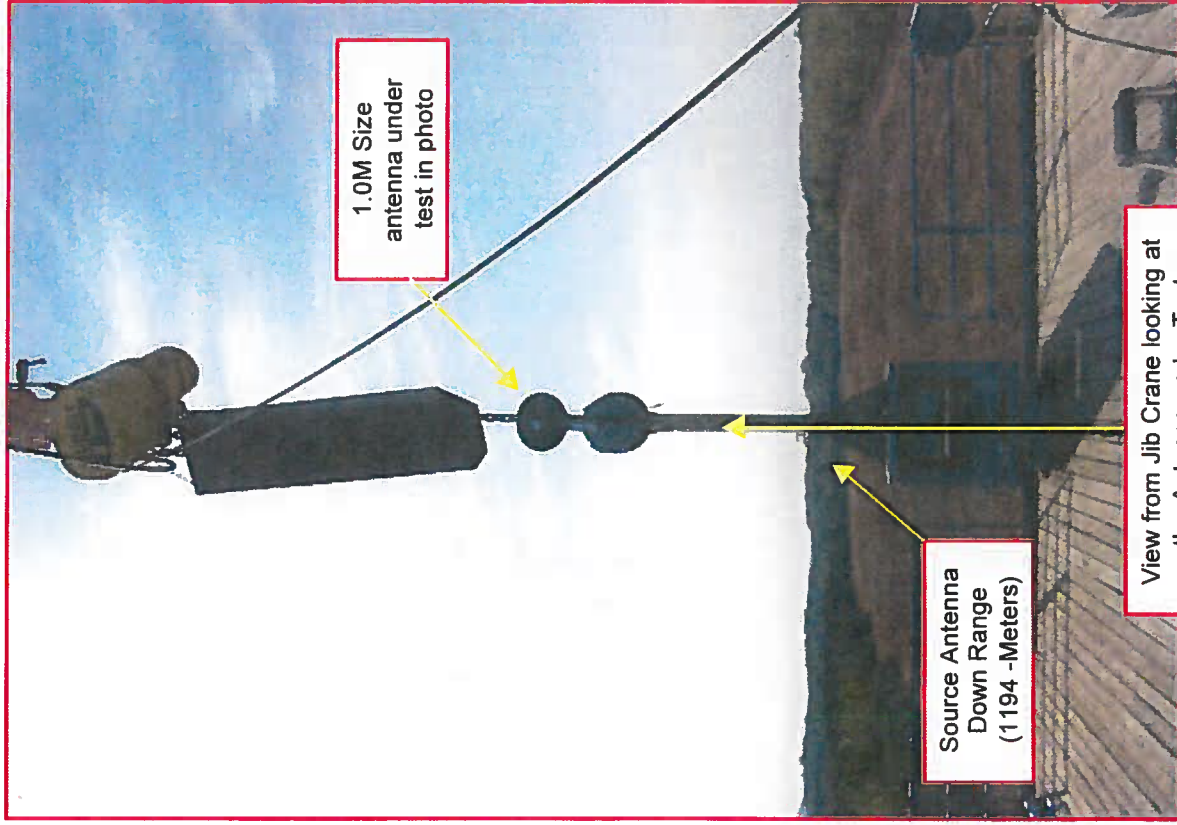
Frequency (GHz)	Antenna Gain (dB)	System Noise Temperature (K)	Antenna Noise Temperature (K)	G/T (dB/K)
3.63	37.14	83.25	55.35	17.94
3.95	37.86	80.63	52.65	18.80
4.20	38.49	82.70	53.19	19.32

Calibrated Test LNA: Maxtech LCD 4040.0002 S/N: C685101

*Reported at IJP regional airport

4.0 Statement on reflections in +/- 180-deg patterns

Photo diagram to show position of the jib-crane in relationship to antenna under test. This metal structure causes reflections visible in our test data when AUT is pointed +/- 165 to 180-degrees from the source antenna. The jib-crane is a permanent structure necessary to lift large antenna systems to the top of platform for testing.





5.0 Photo Documentation

