DNB ENGINEERING, INC.
"One World, One EMC Solution"

Transmitter Certification Report
Per CFR 47 Part 15 Section 15.239

NVLAP Lab Code 200634-0

EUT: Mini iTrip

PREPARED FOR APPLICANT:

Griffin Technology
1619C Elm Hill Pike Suite C
Nashville, TN 37210

REPORT # 46073F
Test Completion Date: June 8, 2004

Prepared By:
DNB ENGINEERING, INC.
1100 East Chalk Creek Rd.
Coalville, Utah 84017
Tel: 1(435) 336-4433

EXECUTIVE SUMMARY

The purpose of this series of tests was to demonstrate the Electromagnetic Compatibility (EMC) characteristics of the MINI ITRIP, the following tests were performed:

REQUIREMENTS	STATUS	COMPLIANT Yes/No/NA
47 CFR Part 15 Subpart C,	ITE Emissions	Yes
Radiated Emissions	Section 15.239	Yes

Signed By:

Clay Allred
Lab Manager
DNB Engineering Inc.

DOCUMENT HISTORY

Revision Letter	Number of Pages	Page No. of Rev.	Description	Date
	52		Document Release	06/17/2004

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TRANSMITTAL SUMMARY

Unit tested:	MINI ITRIP
Specifications:	CFR 47 Part 15 Subpart C Section 15.239 ANSI C63.4
Purpose of Report:	This report was prepared to document the status of the MINI ITRIP, with requirements of CFR 47 Part 15 Subpart C.
Test Summary:	The EUT's compliance status according to the tests performed as follows: Refer to Page 2 Executive Summary.

CERTIFICATION OF TEST DATA

This report, containing emissions test data and evaluations, has been prepared by an independent electromagnetic compatibility laboratory, DNB ENGINEERING, in accordance with the applicable specifications and instructions required per the Introduction. NEMKO and the National Institute of Standards and Technology have evaluated DNB Engineering to do these tests for NVLAP.

NEMKO EMC Laboratory Authorization No.: ELA 116

NVLAP Lab Code: 200634-0

The data evaluation and equipment configuration presented herein are a true and accurate representation of the measurements of the test emissions characteristics as of the months and at the times of the test under the conditions herein specified.

Equipment Tested:	MINI ITRIP
Test Completion Date:	June 8, 2004

Report Written By:

Thursday, June 17, 2004

Carrie Yates
Quality Assurance Manager

Date

Report Reviewed By:

Thursday, June 17, 2004

Clay Allred
Lab Manager

Date

1 INTRODUCTION

1.1 Administrative Data and Test Description

Manufacture: **Griffin Technology**
Contact: Beat Zenerino
Address: 1619C Elm Hill Pike Nashville, TN 37210
Telephone: 615-399-7000
Fax: 615-399-8041

Contact: **Paul Stover**
Company: BorderWatch Compliance Services L.L.C.
Address: P.O. Box 796, Madison, Alabama 35758-0796
Telephone: 256-358-4228
Email: pstover@borderwatchllc.com
EUT: Mini iTrip

1.2 Test Configuration

Config - uration	Unit Name - Processor, Monitor, Printer, Cable, etc. (indent for features of a unit)	Style/Model/ Part No.	Serial Number	Obj. of test	VAC 120	Comments/ FCC ID#
	MINI ITRIP	MINI ITRIP		X	X	PAV4015TRIP
	SUPPORT EQUIPMENT					
	Apple iPod	A1051	JQ4193GFPFW			

X - Specific device(s) for which this test is being conducted

1.3 Equipment Description

See Attachments

1.4 Mode of Operation

The EUT was operating, in transmit mode, while playing audio in continuous mode for spurious emissions, as well as fundamental frequency measurements. The batteries of the iPod were fully charged and the volume was full on. While performing occupied bandwidth measurements, the audio was paused in order to turn the modulation off per ANSI C63.4 section 13.1.1.1, which the fundamental frequency was measured in this mode as well.

1.5 Documented EMC Control Measures

There were no documented control measures.

1.6 Clock Frequencies

Internal Clock -7.6MHz

Transmit Frequencies:

88.3	88.5	88.7	88.9	89.1	89.3	89.5	89.7	89.9	90.1		
90.3	90.5	90.7	90.9	91.1	91.3	91.5	91.7	91.9	92.1	92.3	92.5
92.7	92.9	93.1	93.3	93.5	93.7	93.9	94.1	94.3	94.5	94.7	94.9
95.1	95.3	95.5	95.7	95.9	96.1	96.3	96.5	96.7	96.9	97.1	97.3
97.5	97.7	97.9	98.1	98.3	98.5	98.7	98.9	99.1	99.3	99.5	99.7
99.9	100.1	100.3	100.5	100.7	100.9	101.1	101.3	101.5	101.7	101.9	102.1
102.3	102.5	102.7	102.9	103.1	103.3	103.5	103.7	103.9	104.1	104.3	104.5
104.7	104.9	105.1	105.3	105.5	105.7	105.9	106.1	106.3	106.5	106.7	106.9
107.1	107.3	107.5	107.7								

1.7 Test Voltage

The device receives it's power from the battery operated iPod.

1.8 Deviations

Both the 20 dB and 26 dB Occupied bandwidth was recorded, because CFR 47 Part 15 section 15.239 did not specify as to which one to use.

1.9 Justifications

None

1.10 Block Diagram

See attachments

1.11 Label

See attachments

1.12 Photograph of EUT

EUT: MINI ITRIP
View: External Top, (Antenna) External Front

See Attachments

1.13 Photograph of EUT

EUT: MINI ITRIP
View: Internal Side 1 Internal Side 2 internal chassis and antenna routing

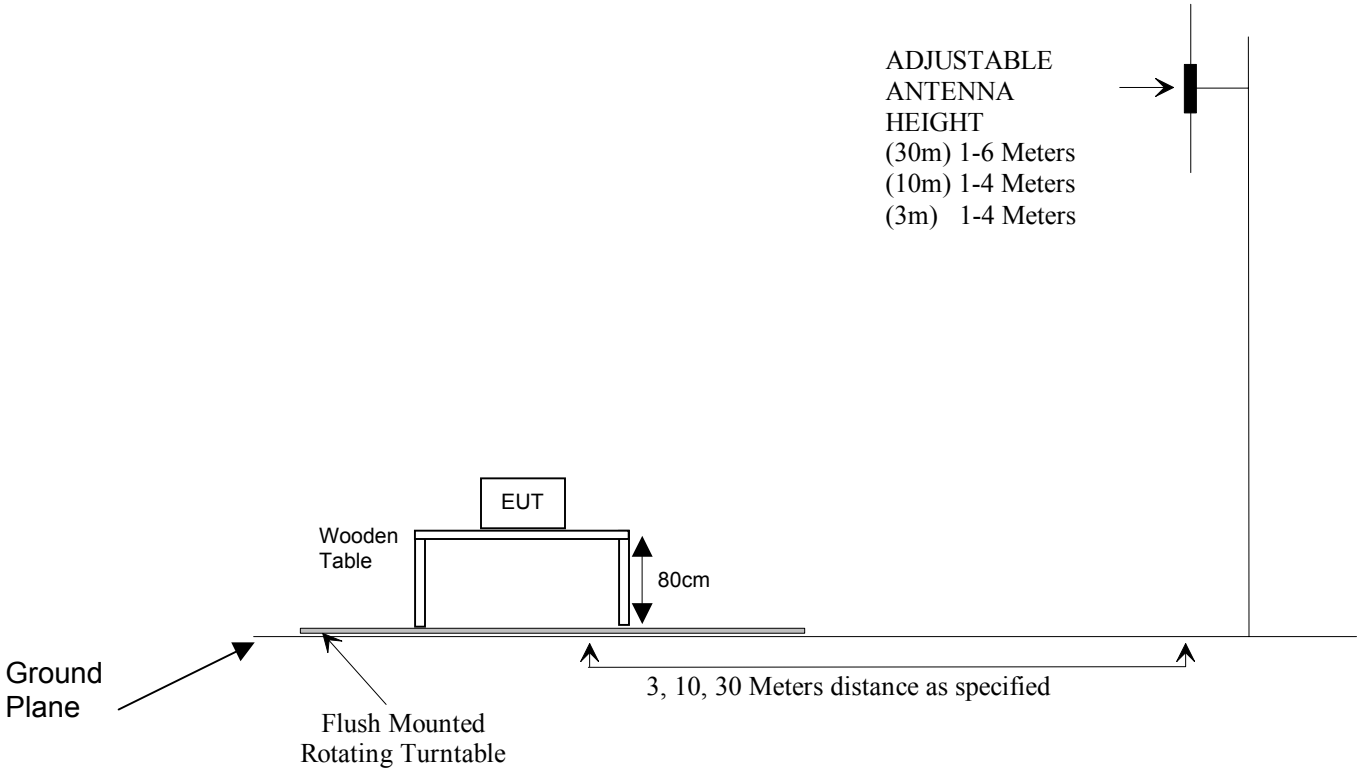
See Attachments

2 SPURIOUS EMISSIONS FCC PART 15, CLASS B

2.1 Radiated Emissions Test Setup and Procedure

The EUT was placed on a wooden table 1 meter wide and 1.5 meters long which rests on a flush mounted, steel-top turntable on the open area test site as shown below. The top of the table is 80 cm above the ground plane. The turntable can be rotated 360 degrees. The measuring antenna is set at the prescribed distance. Measurements are made with broadband antennas that have been correlated with tuned dipole antennas. The mast is 4.5 meters high and is self-supporting. The height of the antenna can be varied from 1 to 4 meters. Positioning of the antenna is controlled remotely.

Open Area Test Site



Radiated Test Setup and Procedure - contd.

The EUT is put into the operational test mode as stated in Section 1.4 and then started.

The spectrum analyzer is setup to store the peak emission over the frequency range of the antenna. Peak EUT and ambient emissions are stored while the turntable is rotated 360^0. The Peak spectrum analyzer trace is then plotted with the addition of antenna and cable correction factors. The limit is plotted on the same graph. A receiver with CISPR Quasi Peak detector is then used on the frequencies identified as the highest with respect to the plotted limit. Ambients are noted on the graph along with EUT emissions. The highest emissions are maximized.

To maximize emissions levels, the turntable is rotated and the antenna is raised and lowered to determine the point of maximum emanations. The cables are then manipulated at that point to maximize emissions. Measurements are made with the antennas in each horizontal and vertical polarization. The data obtained from these tests is corrected with the proper cable, preamplifier and antenna factors. The results are then transcribed onto tables that show the maximum emission levels. The highest emissions are listed in a Radiated Emissions Summary table.

If no emissions can be found, the lowest harmonics of the EUT clocks within the bands of the standard are tuned to with the receiver. If no emissions are found, the noise floor will be entered into the table and noted. A minimum of six frequencies will be logged. Summary results will reflect only actual emissions from the EUT.

The field intensity measurements are made using standard techniques with a spectrum analyzer or EMI receiver as the calibrated Field Intensity Meter (FIM). Preamplifiers and filters are used when required.

When using the Hewlett Packard Model 8568B Spectrum Analyzer as the FIM, the Analyzer is calibrated to read signal level in dBm. Where:

0 dBm (50 ohms) = 107 dBµV (50 ohms)

The signal level (dBµV) = indicated signal level (dBm) + 107 dB. To obtain the signal level in dBµV/m it is necessary to add the antenna factor in dB.

Example of Typical Calculation

Measurement Distance = 3 Meter

Rohde and Schwarz reading @ 60 MHz	49.0	dBµV
Antenna Factor	+7.5	dB/m
Cable Loss	+2.0	dB
Preamplifier	-25.5	dB
	-16.0	dB/m
Field Strength dBµV/m at 3 Meter =	33.0	dBµV/m

2.1 Radiated Spurious Emissions Compliance Data

The EUT was compliant with FCC part 15 section 15.209 radiated emissions requirements.

Radiated Spurious Emissions Summary Test Data
Per CFR 47 Part 15 section 15.209 at 3 meters

Transmitting at 88.3 MHz (lower Transmit Frequency)

Griffin Technology	Mini iTrip

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	Corrected signal (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Antenna Hort/Vert
618.100	28.0	27.6	6.2	21.5	0.1	**28.10**	46.0	**-17.90**	**Hor/**
706.400	23.8	27.7	6.3	22.8	1.4	**25.20**	46.0	**-20.80**	**Hor/**
883.000	20.1	27.4	6.7	25.4	4.7	**24.80**	46.0	**-21.20**	**Vert**
883.000	19.3	27.4	6.7	24.4	3.7	**23.00**	46.0	**-23.00**	**Hor/**
706.400	20.8	27.7	6.3	23.2	1.8	**22.60**	46.0	**-23.40**	**Vert**
794.700	19.0	27.5	6.5	24.1	3.1	**22.10**	46.0	**-23.90**	**Vert**

Transmitting at 98.3 MHz (Middle Transmit Frequency)

Griffin Technology	Mini iTrip

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	Corrected signal (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Antenna Hort/Vert
884.700	19.3	27.4	6.7	25.4	4.7	**24.00**	46.0	**-22.00**	**Vert**
491.500	26.2	27.3	5.1	19.2	-3.0	**23.20**	46.0	**-22.80**	**Hor/**
884.700	19.1	27.4	6.7	24.4	3.7	**22.80**	46.0	**-23.20**	**Hor/**
786.400	18.9	27.5	6.5	24.1	3.1	**22.00**	46.0	**-24.00**	**Vert**
786.400	18.8	27.5	6.5	23.3	2.3	**21.10**	46.0	**-24.90**	**Hor/**
688.100	19.1	27.7	6.3	22.9	1.5	**20.60**	46.0	**-25.40**	**Vert**

Transmitting at 107.7 MHz (Upper Transmit Frequency)

Griffin Technology	Mini iTrip

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	Corrected signal (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Antenna Hort/Vert
861.600	22.6	27.4	6.7	25.1	4.4	**27.00**	46.0	**-19.00**	**Vert**
646.200	25.7	27.7	6.2	21.9	0.4	**26.10**	46.0	**-19.90**	**Hor/**
861.600	22.3	27.4	6.7	24.1	3.4	**25.70**	46.0	**-20.30**	**Hor/**
753.900	21.7	27.6	6.4	23.7	2.5	**24.20**	46.0	**-21.80**	**Vert**
646.200	23.4	27.7	6.2	22.1	0.6	**24.00**	46.0	**-22.00**	**Vert**
753.900	19.8	27.6	6.4	23.1	1.9	**21.70**	46.0	**-24.30**	**Hor/**

- Highest frequencies relative to the Limit.

2.2 Fundamental Frequency Emissions Data

The EUT was compliant with FCC part 15 section 15.239 radiated emissions requirements.

Transmitting at 88.3 MHz (lower Transmit Frequency)

Griffin Technology						Mini iTrip					
Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	**Corrected signal (dBuV/m)**	Limit (dBuV/m)	**Delta (dB)**	**Antenna Hort / Vert**	**Meas. Type**	**Comments**
88.300	60.5	26.1	2.7	8.8	-14.6	**45.90**	47.9	**-2.00**	**Hor/**	**Ave**	**Playing**
88.300	60.4	26.1	2.7	8.8	-14.6	**45.80**	47.9	**-2.10**	**Hor/**	**Ave**	**paused**
88.300	60.4	26.1	2.7	8.8	-14.6	**45.80**	47.9	**-2.10**	**Hor/**	**QP**	**Playing**
88.300	61.3	26.1	2.7	7.7	-15.7	**45.60**	47.9	**-2.30**	**Vert**	**Peak**	**Playing**
88.300	59.8	26.1	2.7	8.8	-14.6	**45.20**	47.9	**-2.70**	**Hor/**	**QP**	**paused**
88.300	55.0	26.1	2.7	7.7	-15.7	**39.30**	47.9	**-8.60**	**Vert**	**QP**	**Playing**
88.300	54.9	26.1	2.7	7.7	-15.7	**39.20**	47.9	**-8.70**	**Vert**	**Ave**	**Paused**
88.300	54.7	26.1	2.7	7.7	-15.7	**39.00**	47.9	**-8.90**	**Vert**	**Ave**	**Playing**
88.300	53.5	26.1	2.7	7.7	-15.7	**37.80**	47.9	**-10.10**	**Vert**	**QP**	**paused**

Transmitting at 98.3 MHz (Middle Transmit Frequency)

Griffin Technology						Mini iTrip					
Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	**Corrected signal (dBuV/m)**	Limit (dBuV/m)	**Delta (dB)**	**Antenna Hort / Vert**	**Meas. Type**	**Comments**
98.300	49.8	26.1	2.8	10.6	-12.7	**37.10**	47.9	**-10.80**	**Hor/**	**QP**	**Playing**
98.300	48.7	26.1	2.8	10.6	-12.7	**36.00**	47.9	**-11.90**	**Hor/**	**Ave**	**Paused**
98.300	48.4	26.1	2.8	10.6	-12.7	**35.70**	47.9	**-12.20**	**Hor/**	**QP**	**Paused**
98.300	45.9	26.1	2.8	10.6	-12.7	**33.20**	47.9	**-14.70**	**Hor/**	**Ave**	**Playing**
98.300	43.9	26.1	2.8	9.4	-13.9	**30.00**	47.9	**-17.90**	**Vert**	**Ave**	**Playing**
98.300	41.0	26.1	2.8	9.4	-13.9	**27.10**	47.9	**-20.80**	**Vert**	**QP**	**Playing**
98.300	41.0	26.1	2.8	9.4	-13.9	**27.10**	47.9	**-20.80**	**Vert**	**Ave**	**Paused**
98.300	39.9	26.1	2.8	9.4	-13.9	**26.00**	47.9	**-21.90**	**Vert**	**QP**	**Paused**

Transmitting at 107.7 MHz (Upper Transmit Frequency)

Griffin Technology						Mini iTrip					
Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	**Corrected signal (dBuV/m)**	Limit (dBuV/m)	**Delta (dB)**	**Antenna Hort / Vert**	**Meas. Type**	**Comments**
107.700	46.0	26.0	2.9	11.7	-11.4	**34.60**	47.9	**-13.30**	**Hor/**	**QP**	**Playing**
107.700	45.6	26.0	2.9	11.7	-11.4	**34.20**	47.9	**-13.70**	**Hor/**	**Ave**	**Playing**
107.700	45.5	26.0	2.9	11.7	-11.4	**34.10**	47.9	**-13.80**	**Hor/**	**ave**	**Paused**
107.700	44.4	26.0	2.9	11.7	-11.4	**33.00**	47.9	**-14.90**	**Hor/**	**QP**	**Paused**
107.700	37.7	26.0	2.9	10.7	-12.4	**25.30**	47.9	**-22.60**	**Vert**	**QP**	**Playing**
107.700	37.0	26.0	2.9	10.7	-12.4	**24.60**	47.9	**-23.30**	**Vert**	**Ave**	**Playing**
107.700	37.0	26	2.9	10.7	-12.4	**24.60**	47.9	**-23.30**	**Vert**	**Ave**	**Paused**
107.700	36.4	26	2.9	10.7	-12.4	**24.00**	47.9	**-23.90**	**Vert**	**QP**	**Paused**

2.3 Climatic Conditions

The climatic conditions during the Radiated Emissions tests were recorded as follows:

Ambient Temperature	Measured Value
Temperature	15C
Relative Humidity	30%

2.4 Compliant Statement

The EUT was compliant with CFR 47 part 15 section 15.209

YES	NO
CA	

CA Test Engineer's Initials

2.5 Test Data Transmitting at 88.3 MHz (lower Transmit Frequency)

2.5.1 88.3 MHz Fundamental Frequency Emissions Test Data

See Attachments

2.5.2 Spurious Emissions Test Data

See Attachments

2.5.3 30-300 MHz Horizontal

See Attachments

2.5.4 300-1000 MHz Horizontal

See Attachments

2.5.5 30-300 MHz Vertical

See Attachments

2.5.6 300-1000 MHz Vertical

See Attachments

2.6 Transmitting at 98.3 MHz (Middle Transmit Frequency)

2.6.1 98.3 MHz Fundamental Frequency Emissions Test Data

See Attachments

2.6.2 Spurious Emissions Test Data

See Attachments

2.6.3 30-300 MHz Horizontal

See Attachments

2.6.4 300-1000 MHz Horizontal

See Attachments

2.6.5 30-300 MHz Vertical

See Attachments

2.6.6 300-1000 MHz Vertical

See Attachments

2.7 Transmitting at 107.7 MHz (Upper Transmit Frequency)

2.7.1 107.7 MHz Fundamental Frequency Emissions Test Data

See Attachments

2.7.2 Spurious Emissions Test Data

See Attachments

2.7.3 30-300 MHz Horizontal

See Attachments

2.7.4 300-1000 MHz Horizontal

See Attachments

2.7.5 30-300 MHz Vertical

See Attachments

2.7.6 300-1000 MHz Vertical

See Attachments

2.8 Photograph of Radiated Emissions Test Setup

EUT: MINI ITRIP
View: Test Setup

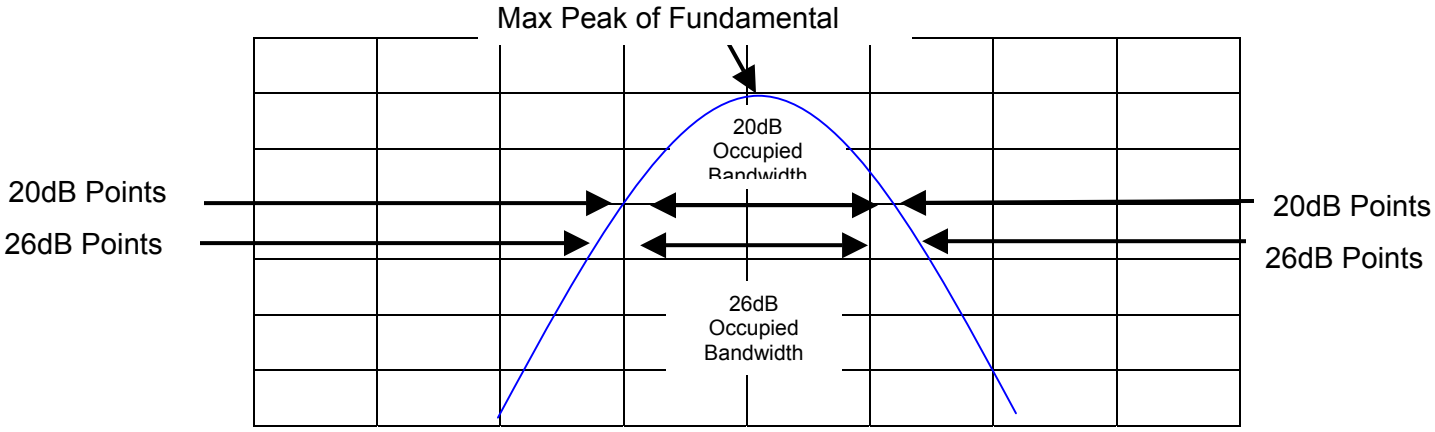
See Attachemnts

3 OCCUPIED BANDWIDTH – PER ANSI C63.4 ANNEX I.6

3.1 Test Setup and Procedure

The Test Site and EUT were set up as described in section 2.1 of this document. The EUT is put into the operational test mode as stated in Section 1.4 and then started. The spectrum analyzer had its self-calibration performed, and then set to the frequency to be tested, with a bandwidth of 10kHz as per ANSI C63.4 Annex I.6 paragraph b. The Max Peak of the Fundamental Frequency was noted, and the points 20 dB as well as 26 dB below the Fundamental Max Peak, for both sides of the signal was noted, and the frequency difference was recorded as the occupied bandwidth. See below for example.

Example Of Occupied Bandwidth Measurement



Instrumentation Bandwidth set as described in ANSI C63.4 Annex I.6

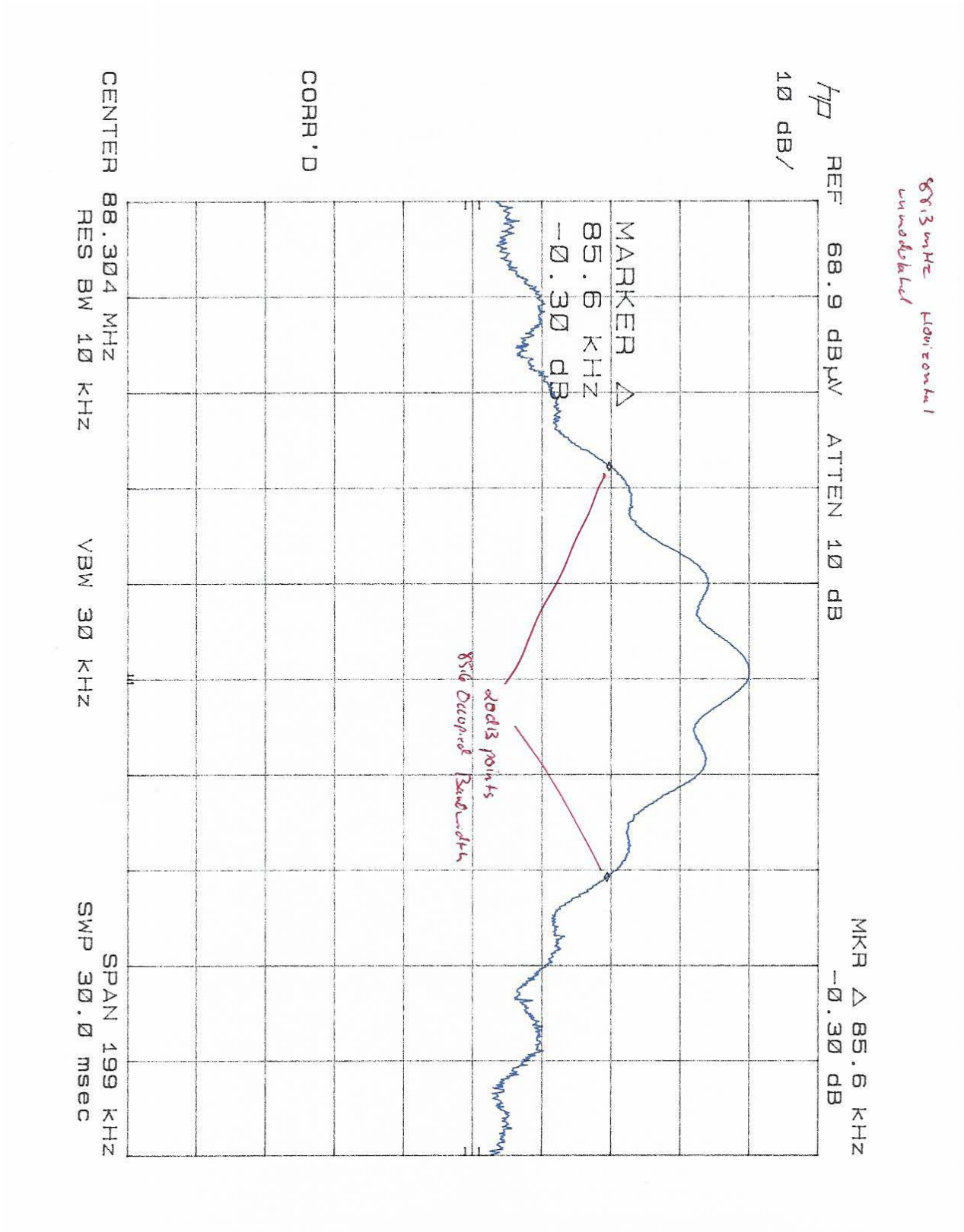
3.2 Occupied Bandwidth Test Data.

Frequency (MHz)	Measured Bandwidth	Bellow Fundamental	Instrument Bandwidth	Antenna Polarity	Required Occupied Bandwidth	Result	Comments
88.3	85.6kHz	20dB	10kHz	Horizontal	200kHz	Pass	
88.3	96.9kHz	26dB	10kHz	Horizontal	200kHz	Pass	
88.3	85.6kHz	20dB	10kHz	Vertical	200kHz	Pass	
88.3	99.5kHz	26dB	10kHz	Vertical	200kHz	Pass	
98.3	122.4kHz	20dB	10kHz	Horizontal	200kHz	Pass	
98.3	187.5kHz	26dB	10kHz	Horizontal	200kHz	Pass	
98.3	171.2kHz	20dB	10kHz	Vertical	200kHz	Pass	Level too low for 26dB points
107.7	55.0kHz	20dB	10kHz	Horizontal	200kHz	Pass	
107.7	75.0kHz	26dB	10kHz	Horizontal	200kHz	Pass	
107.7	69.4kHz	20dB	10kHz	Vertical	200kHz	Pass	Level too low for 26dB points

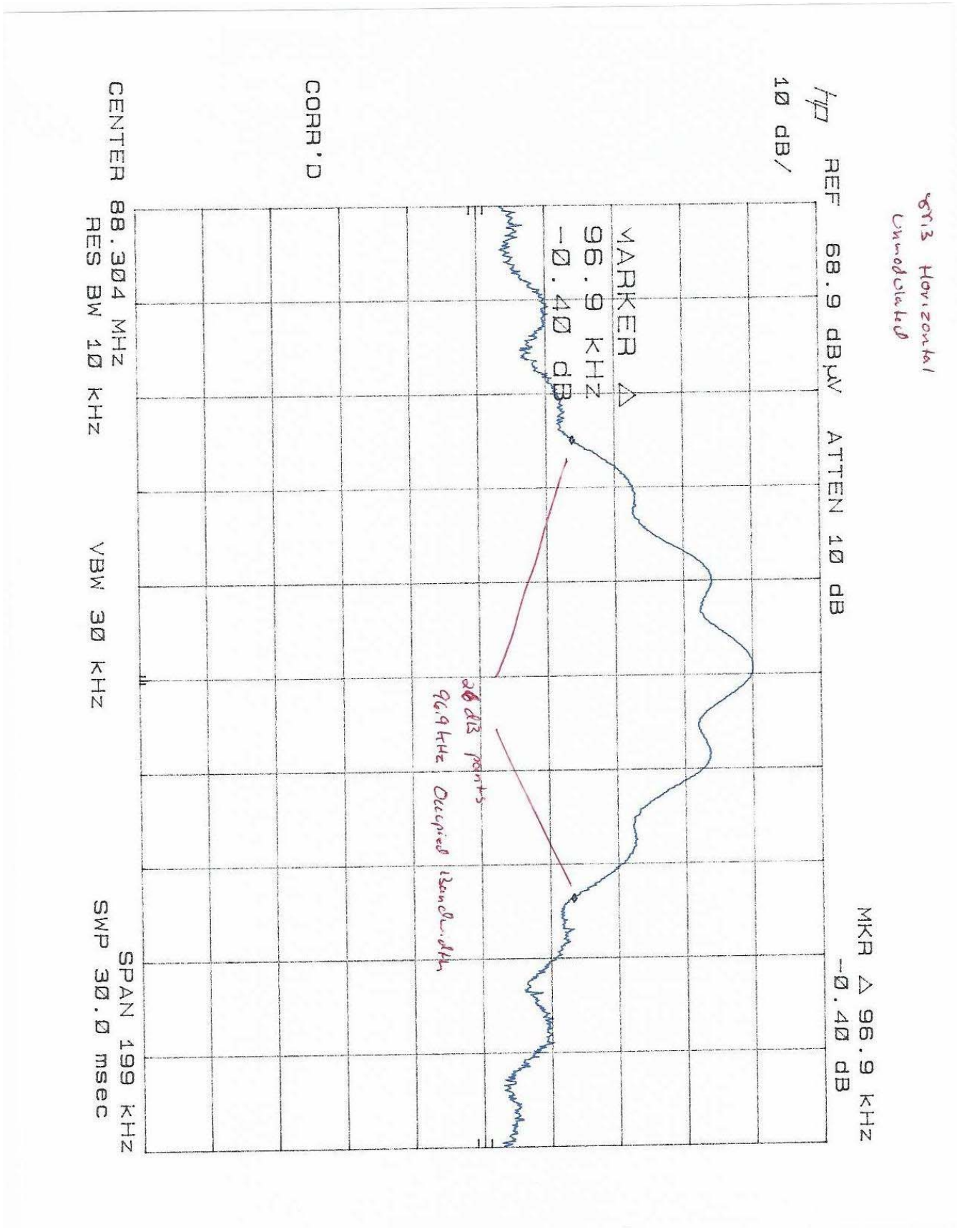
Refer to section 3.3 for Test Data

3.3 Occupied Bandwidth Test Data Transmitting at 88.3 MHz

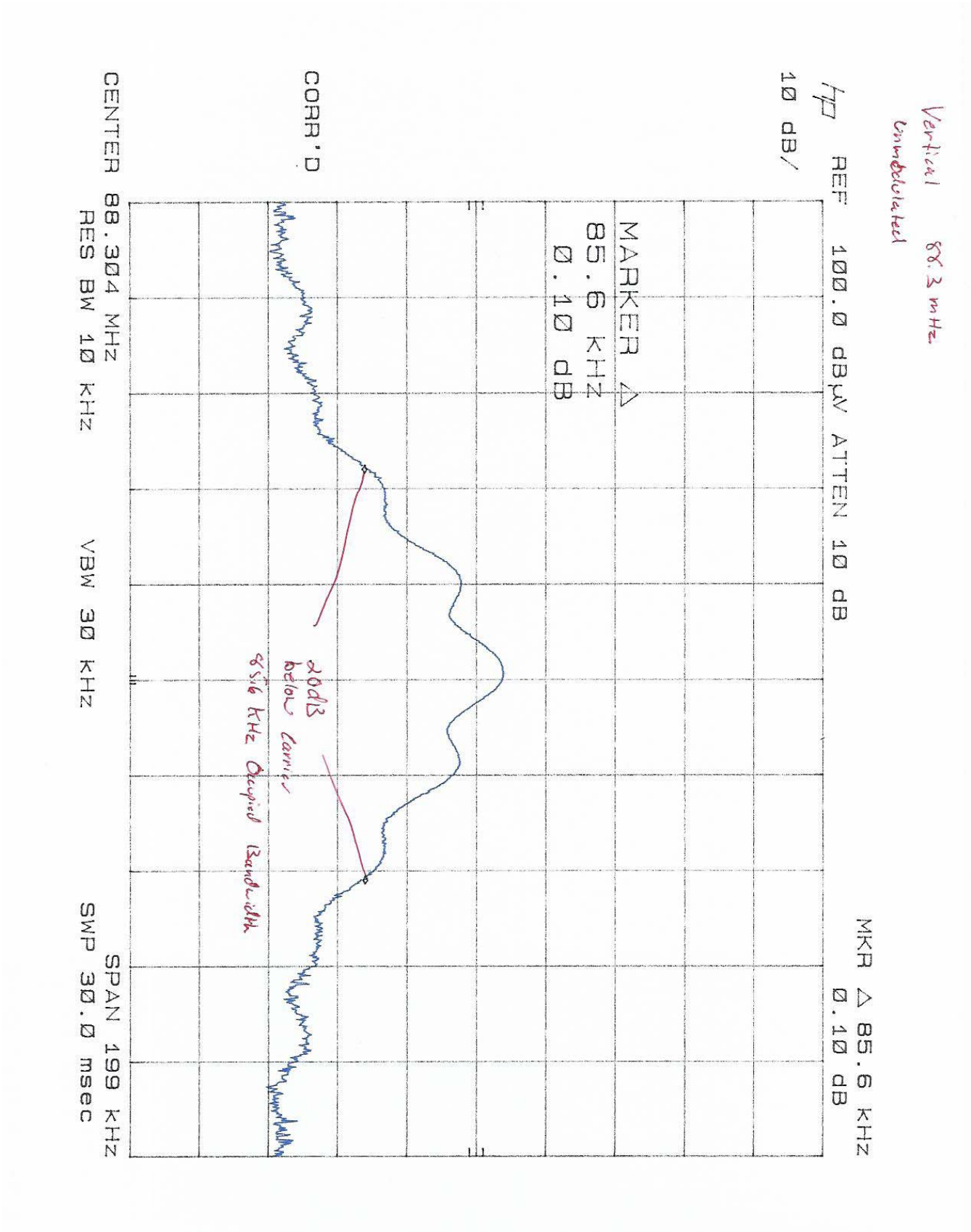
3.3.1 88.3 MHz Horizontal 20dB



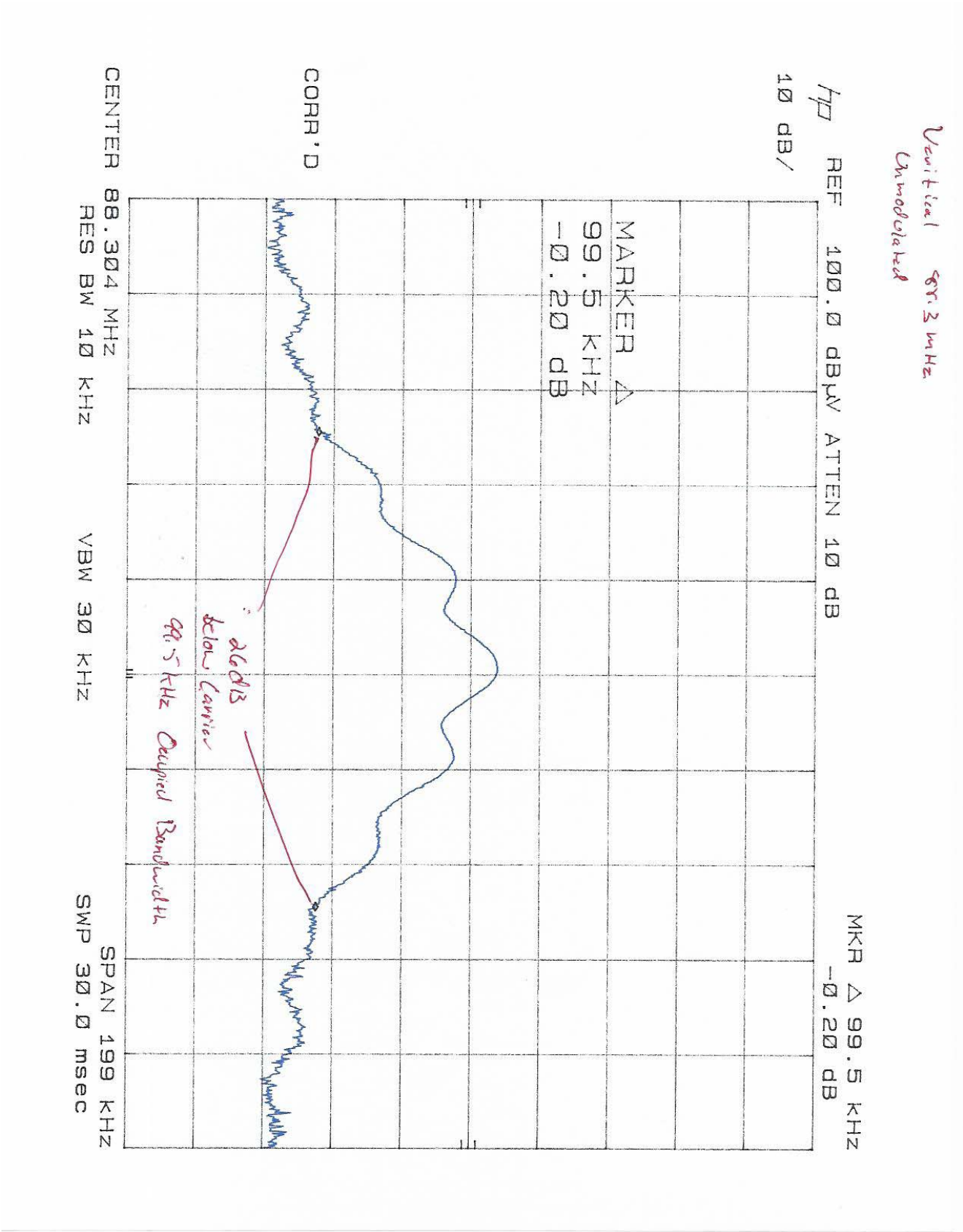
3.3.2 88.3 MHz Horizontal 26dB



3.3.3 88.3 MHz Vertical 20 dB

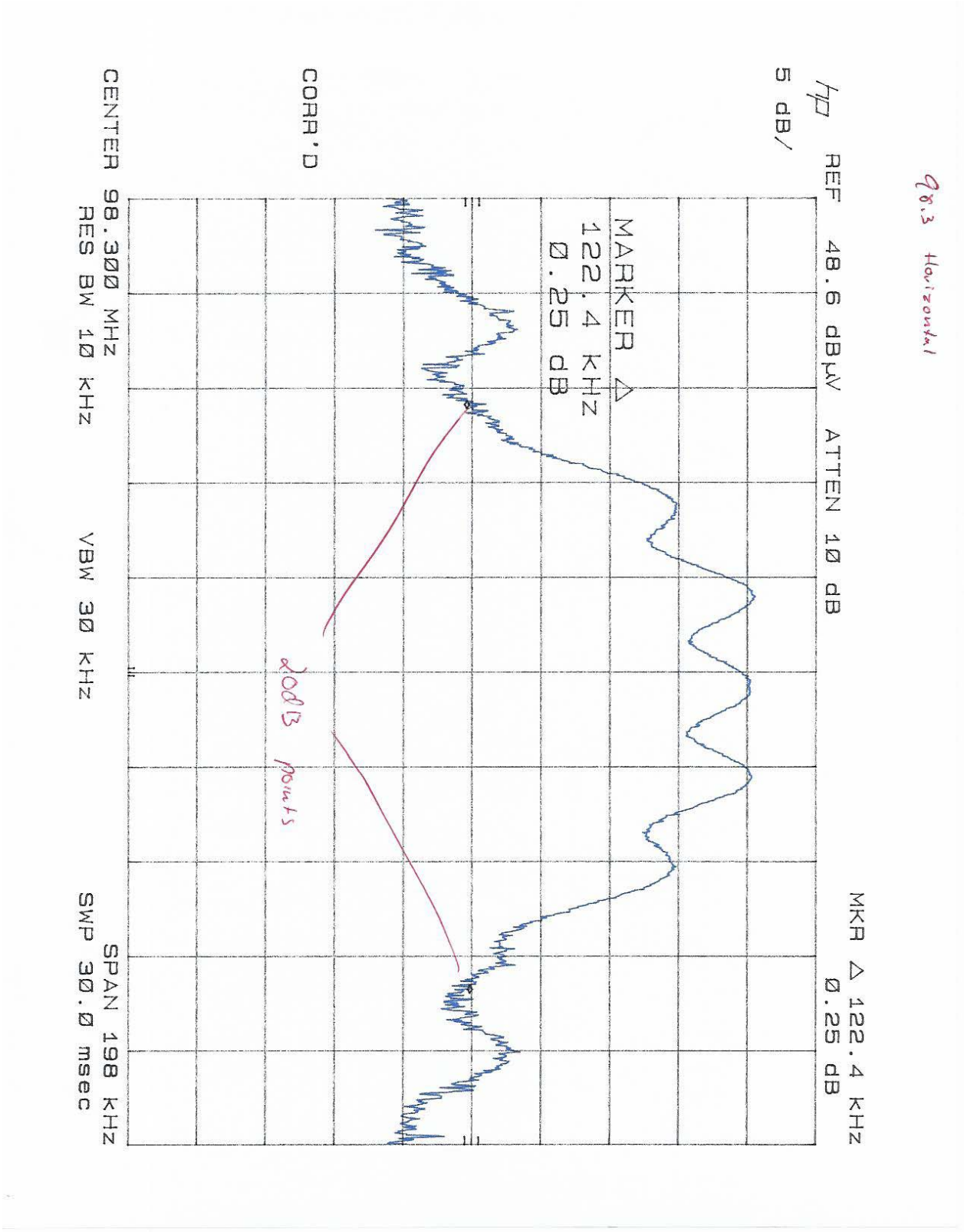


3.3.4 88.3 MHz Vertical 26 dB

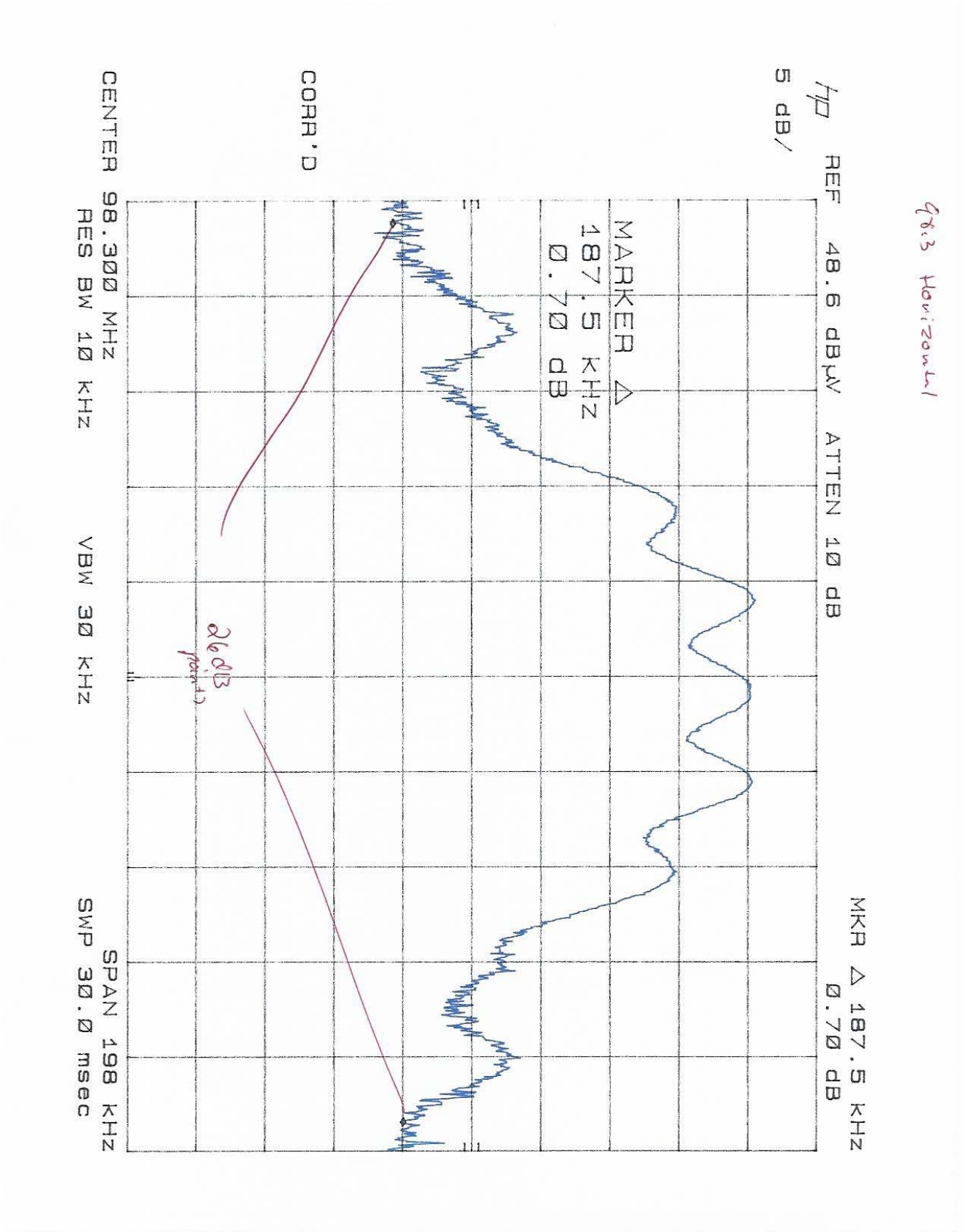


3.4 Occupied Bandwidth Test Data Transmitting at 98.3 MHz

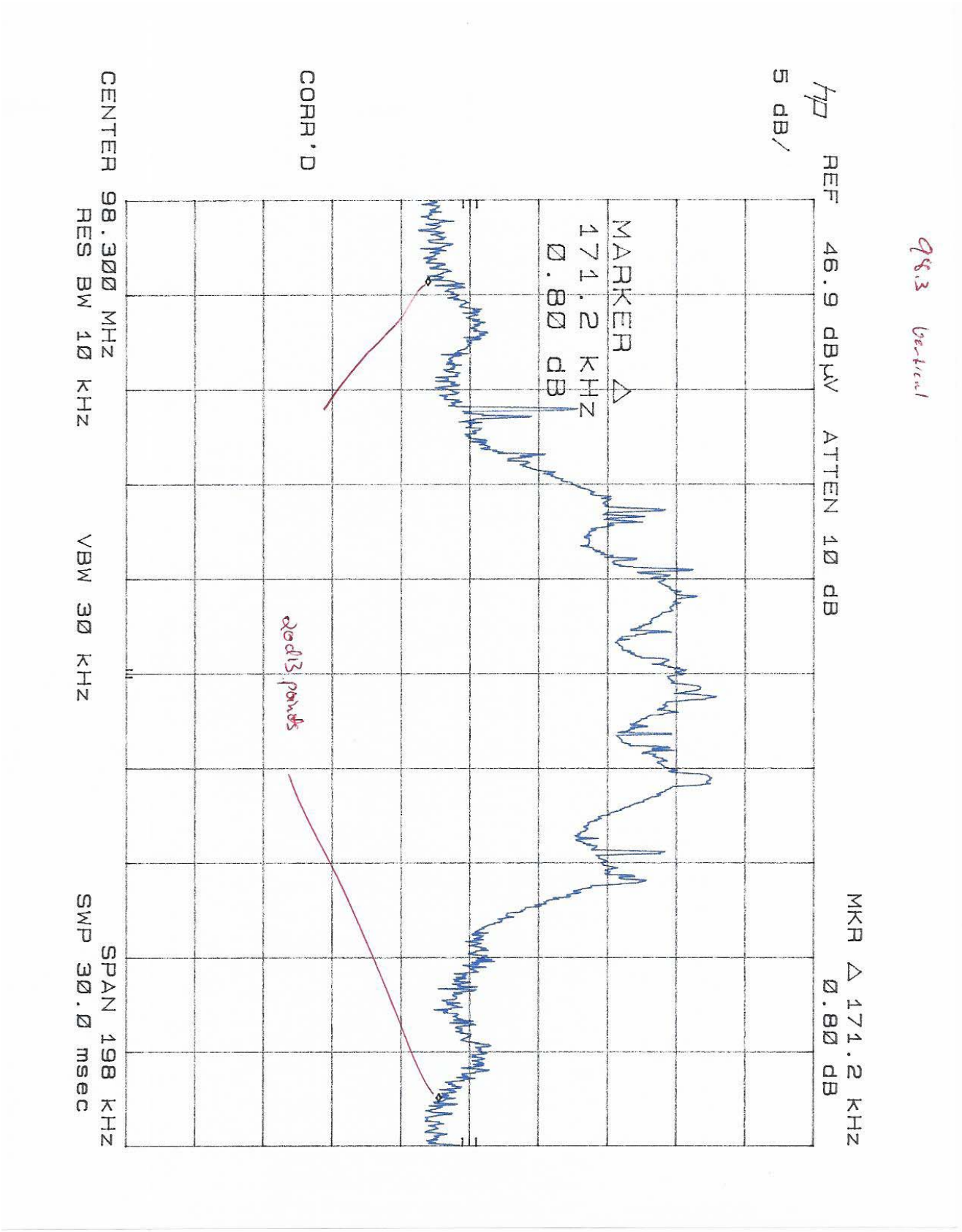
3.4.1 98.3 MHz Horizontal 20dB



3.4.2 98.3 MHz Horizontal 26dB

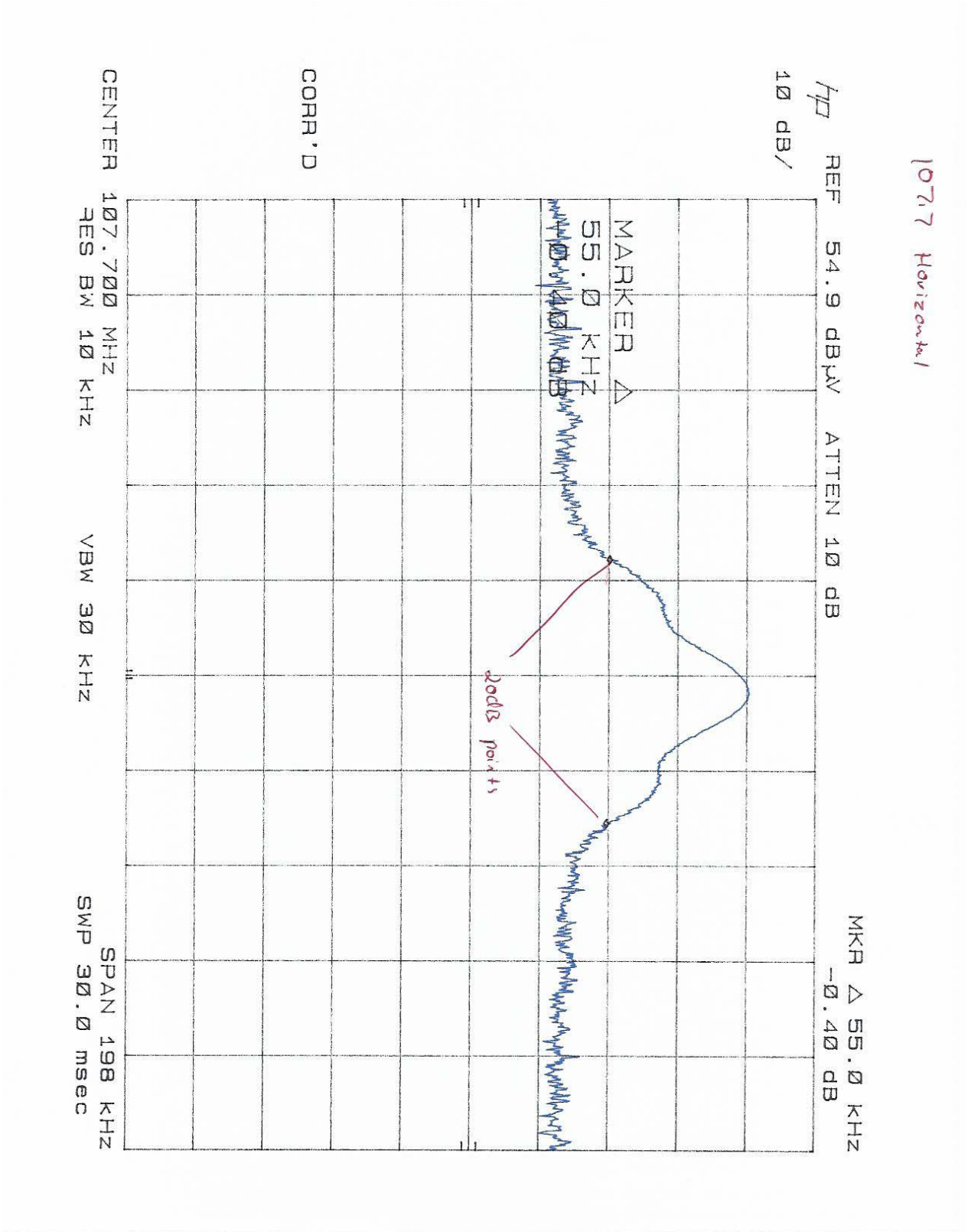


3.4.3 98.3 MHz Vertical 20dB

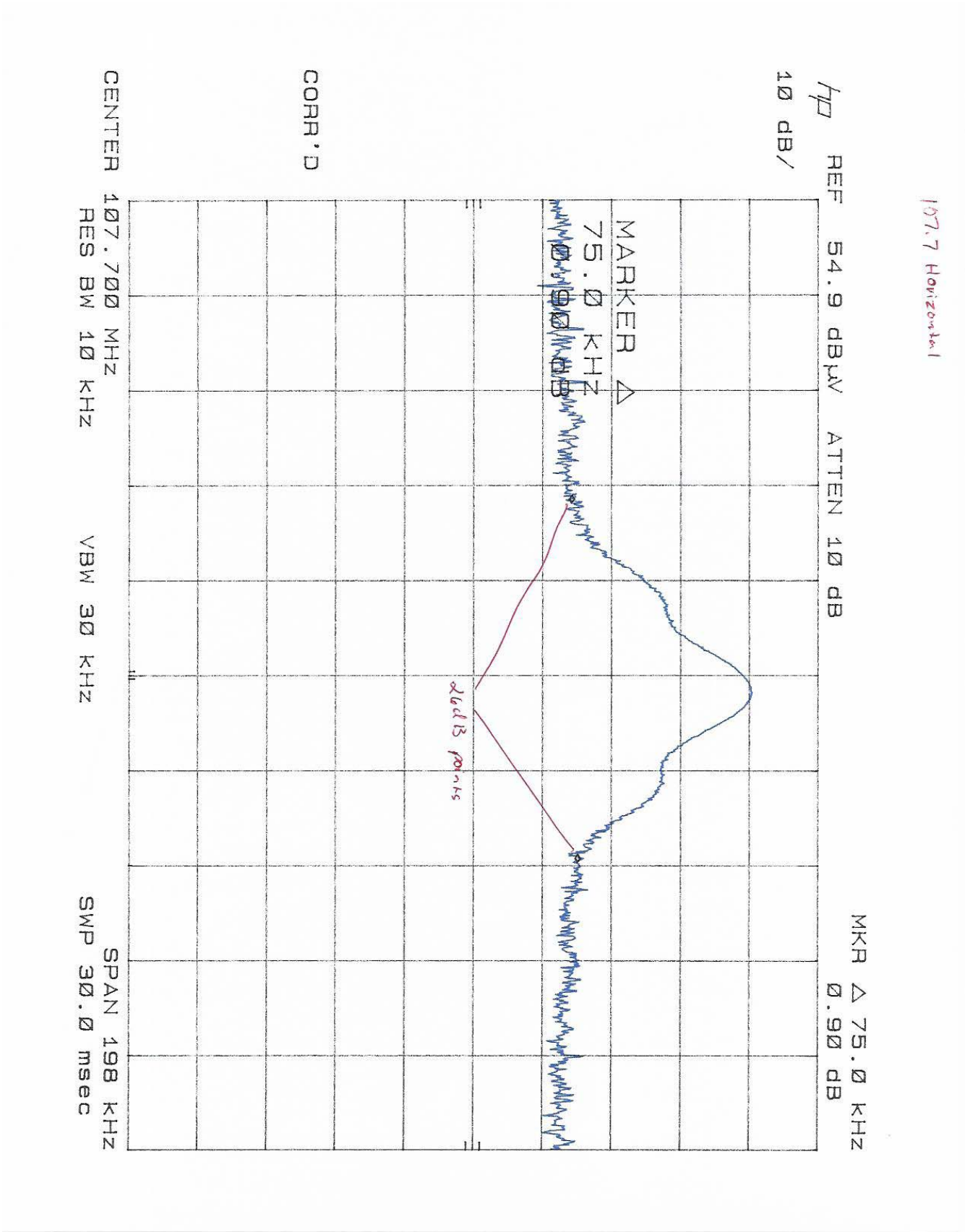


3.5 Occupied Bandwidth Test Data Transmitting at 107.7 MHz

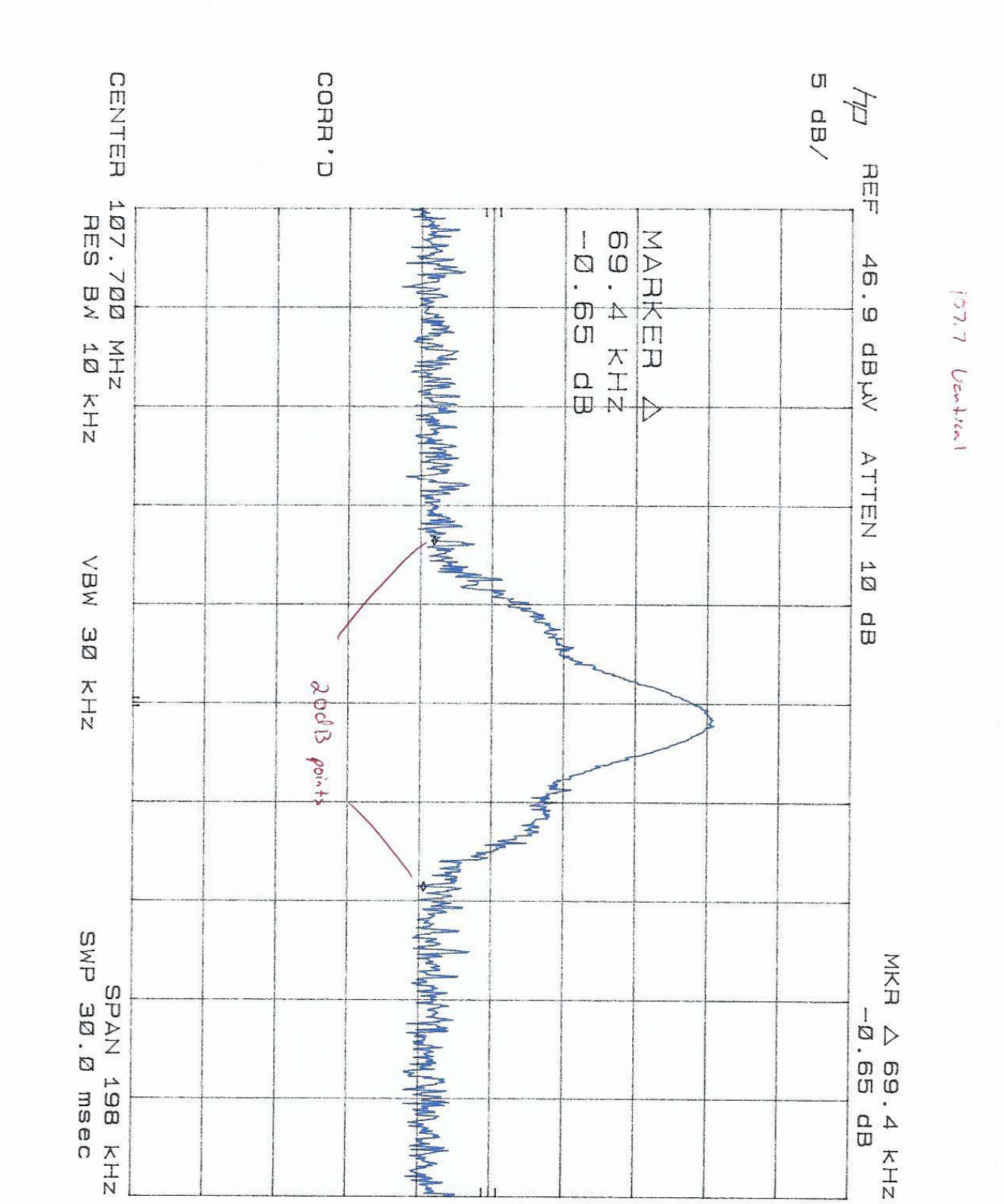
3.5.1 107.7MHz Horizontal 20dB



3.5.2 107.7MHz Horizontal 26dB



3.5.3 107.7MHz Vertical 20 dB



3.6 Photograph of Radiated Emissions Test Setup

EUT: MINI ITRIP
View: Test Setup

See Attachments

4 APPENDIX SECTION

4.1 APPENDIX A: UNCERTAINTY TOLERANCE

DNB Engineering's Utah Facility is within acceptable uncertainty tolerances per ANSI C63.4 sections 5.4.6.1 and 5.4.6.2 as well as CISPR 16-1 Annex M, section M.2.

ANSI C63.4

5.4.6.1 Site Attenuation. A measurement site shall be considered acceptable for radiated electromagnetic field measurements if the horizontal and vertical NSA derived from measurements, i.e., the "measured NSA," are within ±4 dB of the theoretical NSA (5.4.6.3) for an ideal site.

5.4.6.1 NSA Tolerance. The ±4 dB tolerance in 5.4.6.1 includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies. These errors are analyzed in ANSI C63.6- [3], wherein it is shown that the performance of a well-built site contributes only 1 dB of the total allowable tolerance.

CISPR 16-1

M.2 Error analysis

. . . The total estimated errors are the basis for the ±4 dB site acceptability criterion consisting of approximately 3 dB measurement uncertainty and an additional allowable 1 dB for site imperfections.

4.2 APPENDIX B: SITE CHARACTERISTICS,

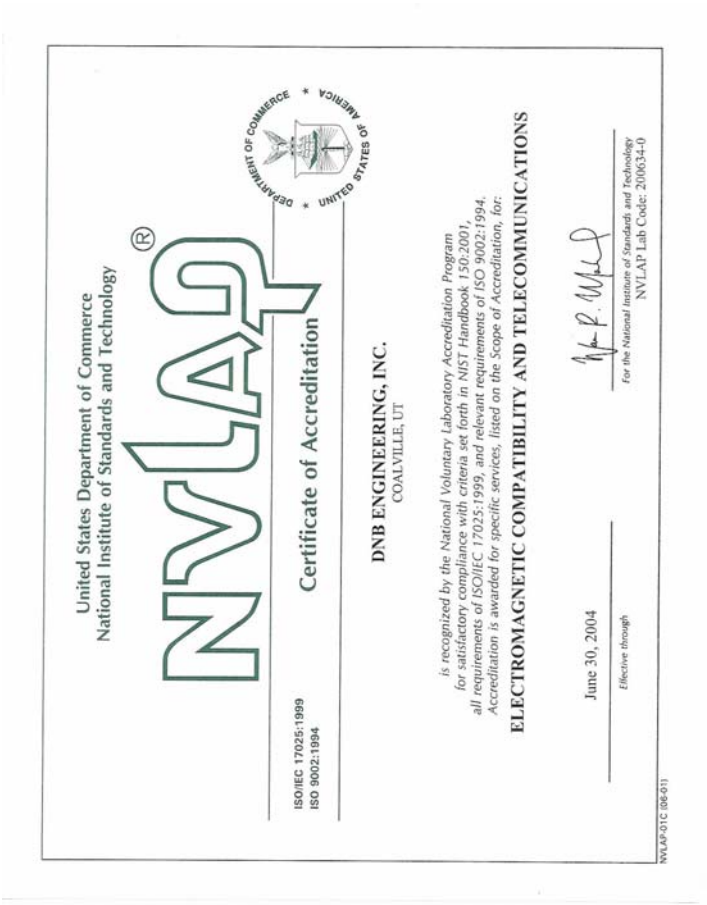
CHALK CREEK EMI TEST SITE

The DNB Engineering test facility is located in Chalk Creek Canyon near Coalville, Utah. Site characteristics were measured according to the procedures outlined in ANSI C63.4 (2000) "Characteristics of Open Field Test Site". The results of these characterizations indicate that the Chalk Creek site is an outstanding facility to perform accurate and repeatable EMI tests.

4.2.1 Ambient Emissions

Ambient Emission measurements were made to determine the level of the ambient emanations at the DNB test facility. The results indicate that all ambient signals are below the FCC Radiated Emission limits or that each can easily be identified as an ambient signal.

4.3 NVLAP Accreditation



United States Department of Commerce
National Institute of Standards and Technology

NVLAP

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Certificate of Accreditation

ISO/IEC 17025:1999
ISO 9002:1994

DNB ENGINEERING, INC.
COALVILLE, UT

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

June 30, 2004
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200634-0

NVLAP-01C (08-01)

4.3.1 NVLAP Accreditation

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 1 of 4

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.
1100 E. Chalk Creek Road
Coalville, UT 84017
Mr. Michael Neis
Phone: 714-870-7781 Fax: 714-870-5081
E-Mail: miken@dnbenginc.com
URL: http://www.dnbenginc.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and Methods of Measurement of Radio interference Characteristics of Household Electrical Appliances, Portable Tools and Similiar Electrical Apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS14c	CNS 13783-1
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)

June 30, 2004 — *Effective through*

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 2 of 4

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10) and EN 61000-3-2 (2000) : Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A)
12/EM03b	IEC 61000-3-3 (2002-03), edition 1.1: Electomagnetic compatibility (EMC) - Part 3-3: Limits - Limitations of voltage changes, voltage flucuations and flicker, in public low-voltage supply-systems, for equipment with rated current <=16 A per phase and not subject to conditional
12/FCC15b	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart B: Unintentional Radiators
12/T51	AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment
Immunity Test Methods:	
12/I01	IEC 61000-4-2, Edition 2.1 (2001) including Amds. 1 & 2 and EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (2002) and EN 61000-4-3: Radiated Radio-Frequency Electromagnetic Field Immunity Test

June 30, 2004 — *Effective through*

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National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/I03	IEC 61000-4-4 (1995) + Amd. 1 (2000) & Amd. 2 (2001) and EN 61000-4-4: Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995) + Amd. 1 (2000) and EN 61000-4-5: Surge Immunity Test
12/I05	IEC 61000-4-6, Edition 2.0 (2003) and EN 61000-4-6: Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
12/I06	IEC 61000-4-8, Edition 1.1 (2001) and EN 61000-4-8: Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994) + Amd. 1 (2000) and EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
Safety Test Methods:	
12/60065	IEC 60065 (2001-12), 7th edition: Audio, video and similar electronic apparatus - Safety requirements
12/601a	IEC 601-1 (1988), 2nd edition: Medical electrical equipment - Part 1: General requirements for safety
12/60601e	IEC 60601-1-1 (2000-12), 2nd edition: Medical electrical equipment - Part 1-1: General requirements for safety - Collateral standard: Safety requirements for medical electrical systems

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For the National Institute of Standards and Technology

NVLAP-01S (06-01)

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/61010a	IEC 61010-1 (2001-02), 2nd edition: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
12/T41b	IEC 60950 (1994-04), 3rd edition: Safety of information technology equipment

June 30, 2004 — *Effective through*

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

4.4 APPENDIX C EMC INSTRUMENTATION AND MEASUREMENT EQUIPMENT

Calibration of test and measurement equipment is performed by an approved commercial facility, whose standards are traceable to the National Institute of Science and Technology.

Radiated Emissions

Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Amplifier	HP/8447D	U-067	2727A06182	23 MAR 05
Amplifier	HP/8447D	U-065	2727A06180	23 MAR 05
Amplifier	HP/8447D	U-066	2727A06181	23 MAR 05
Amplifier	HP/8447D	U-068	2727A06184	23 MAR 05
Bicon Antenna	SCH/BBA9106	U-187	6	20 AUG 04
Bicon Antenna	SCH/BBA9106	U-186	7	26 JUN 04
Log P Antenna	SCH/UJALP9107	U-011	11	26 JUN 04
Log P Antenna	SCH/UHAL09107	U-010	10	20 AUG04
Loop Antenna	R&S/HFH 2-Z2	U-016	880665/-40	22 JUL 04
QP Adapter	HP/85650 A	U-001	2043A00277	05 NOV 04
Receiver	R&S/ESVP	U-078	879807/048	15 APR 05
Receiver	R&S/ESVP	U-083	882402/005	30 JAN 05
Spectrum Analyzer	HP/8566B	U-138	2421A00516	06 MAR 05

End of Report 46067F