

**TEST REPORT**

**Report Number: 30276572**  
**Project Number: 3027657**

**Report Date: August 21, 2002**  
**Date of Test: May 18 to August 20, 2002**

Testing performed on the

**Unlicensed NII Transceiver**  
**FCC ID: HZB-US5358-GX1**  
**IC: 1856-U5358GX1**  
to

**FCC Part 15 Subpart E**  
for

**Proxim Corporation**

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**1.0 Summary of Tests**

**FCC ID: HZB-US5358-GX1**  
**IC: 1856-U5358GX1**

Test	Reference	Results
Output power	15.407(a)	Complies, see sec. 4.1 of this report
26 dB Bandwidth	15.407(a)	For calculation only, see sec. 4.2 of this report
Power Density	15.407(a)(5)	Complies, see sec. 4.3 of this report
The ratio of the peak excursion of the modulation envelope to the peak transmit power	15.407(a)(6)	Complies, see sec. 4.4 of this report
Out-of-band Antenna Conducted Emission	15.407(b)	Complies, see sec. 4.5 of this report
Spurious Radiated Emission from transmitter	15.407(b)	Complies, see sec. 4.6 of this report
Radiated Emission in Restricted Bands	15.209, 15.205	Complies, see sec. 4.6 of this report
Radiated Emission from digital part and receiver	15.109	Complies with Class A requirements *, see sec. 4.7 of this report
AC Conducted Emission	15.207	Complies with Class B requirements, see sec. 4.8 of this report
Requirement	15.407(c)	Complies, see Appendix D
Requirement	15.407(d)	Complies, see Appendix D
Radiation Exposure Requirement	1.1310	Complies, see exhibit "RF Exposure"
Antenna Requirement	15.203	Not applicable, The EUT requires professional installation

Note: According to the test results, the maximum allowed antenna gain is 4.6 dBi in the 5.25-5.35 GHz band and 26.5 dBi in the 5.725-5.825 GHz band. When a higher gain antenna is used, the output power will have to be reduced.

\* According to the Applicant, the EUT is not used in residential area.



## **2.0 General Description**

### 2.1 Product Description

The HZB-US5358-GX1 is a product family designed to offer outdoor point-to-point wireless link using 5.25-5.35GHz and 5.725-5.725/5.850GHz frequency bands.

The product hardware include two major subassemblies consisting of an IDU (indoor unit) and an RF Unit. The IDU Unit contains the power supply, modem, multiplexing functions, system control, user and data interfaces, and orderwire. The RF Unit contains all RF related functions. There are four separate Line Interface Cards (LIUs) offering different data interfaces of different capacities. One LIU is used for each product model. The four LIUs are:

- LIU-1: Provides 1, or 2, or 4, or 8 T1 or E1 interface(s), or a 100BaseT interface using RJ45 connectors.
- LIU-2: Provides a DS3 interface using BNC connectors
- LIU-3: Provides 16T1 or 12 E1 interfaces using RJ45 connectors
- LIU-4: Provides 28 T1 or 21 E1 interfaces using 64-pin (telco) DSX connectors

Depending on the configuration of the product, which is a combination of software setup and hardware configuration (use of a certain LIU card and diplexer), the product is capable of offering outdoor point to point wireless links with certain data capacities and interfaces under the provision of UNII rules (15.407) or spread spectrum rules (15.247). Different RF transmit channel plans are available corresponding to different data bandwidth. For marketing purpose, different model names and numbers are given to distinguish different combination of data capacity and interfaces. Please refer to the following table for a list of all product models in the product family and relevant information of test/certification concern on each model.

Model Name	Model Number	IDU with:				ODU with:			Channel Center Frequencies (MHz)
		LIU-1	LIU-2	LIU-3	LIU-4	Filter 1 5.25-5.35G UNII	Filter 2 5.725-5.825G UNII	Filter 3 5.8G ISM	
Lynx.GX 28T1 5.8 GHz U-NII System	57710-81xx				x		x		5749/5801
Lynx.GX 21E1 5.8 GHz U-NII System	57710-71xx				x		x		5749/5801
Lynx.GX DS-3 + T1 5.8 GHz U-NII System	57710-91xx		x				x		5749/5801
Tsunami 90+2T1 5.8 GHz U-NII System	57710-51xx	x					x		5749/5801
Tsunami 90+2E1 5.8 GHz U-NII System	57710-52xx	x					x		5749/5801
Lynx.GX 8E1 5.8 GHz U-NII System	51155-20xx	x					x		5741.5/5756.5/ 5793.5/5808.5
Lynx.GX DS3 +T1 5.3 GHz U-NII System	57750-91xx		x			x			5274/5326
Tsunami 90 +2T1 5.3 GHz U-NII System	57750-51xx	x				x			5274/5326



**Overview of the EUT**

<b>Applicant</b>	Proxim Corporation
<b>Manufacturer</b>	Proxim Corporation
<b>Trade Name</b>	Tsunami/Lynx
<b>Model No</b>	See table in section 2.1
<b>FCC/IC Identifier</b>	FCC ID: HZB-US5358-GX1 IC: 1856-U5358GX1
<b>Use of Product</b>	Point-to-point fixed wireless communication network
<b>Type of Transmission</b>	FDD
<b>Type of Modulation</b>	QPSK
<b>Symbol rate</b>	2.7 Msps, 4.5 Msps, 9 Msps, 13.5 Msps, 27 Msps
<b>Rated RF Output</b>	The output power depends on the gain of the antenna used. Maximum Peak Power is 24.9 dBm
<b>Frequency Range</b>	5274 – 5326 MHz and 5741.05 – 5808.5 MHz
<b>Number of Channel(s)</b>	See table in section 2.1
<b>Antenna(s) &amp; Gain, dBi</b>	2' Parabolic Antenna, 28.5 dBi 8' Parabolic Antenna, 39.7 dBi 1' Flat Panel Antenna, 23.5 dBi 2' Flat Panel Antenna, 28.0 dBi
<b>Antenna Requirement</b>	The EUT requires professional installation (supporting documentation is attached)
<b>Manufacturer name &amp; address</b>	Proxim Corporation 935 Stewart Drive Sunnyvale, CA 94085 USA

A prototype version of the device was received on May 17, 2002 in good operating condition.

## 2.2 Related Submittal(s) Grants

FCC Part 15.247 Direct Sequence Spread Spectrum.

## 2.3 Test Methodology

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4 (1992). Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Data Sheet**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

## 2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC and A2LA accredited.

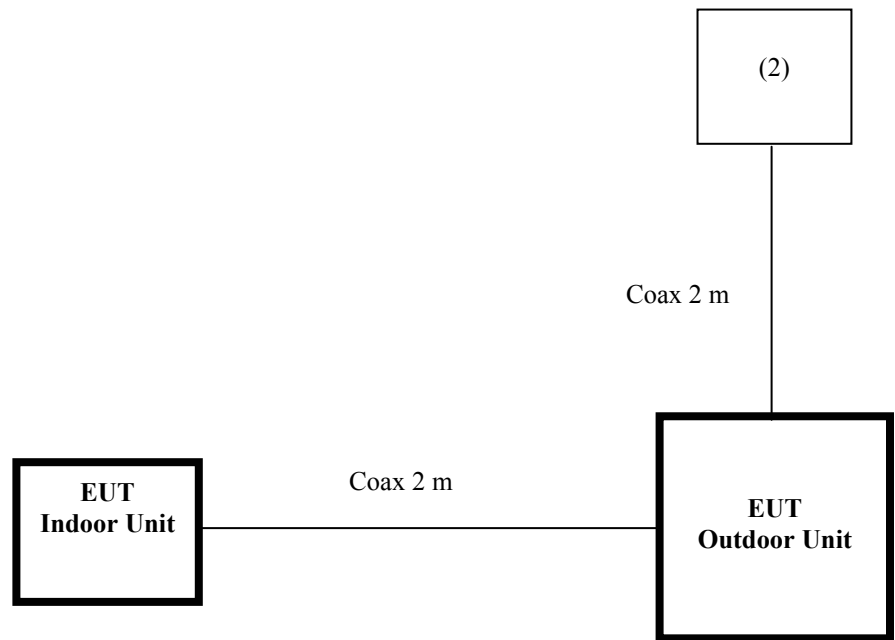
**3.0 System Test Configuration**

3.1 Support Equipment and description

Item #	Description	Model No.	Serial No.
1	HP DC Power Supply	6296A	2234A-04250
2	Gabriel Electronics 1' Directional Flat Panel Antenna	DFPD1-52	N/A
2	Gabriel Electronics 2' Directional Flat Panel Antenna	DFPD2-52	N/A
2	Gabriel Electronics 2' Parabolic Antenna	SSP2-52B	N/A
2	Gabriel Electronics 8' Parabolic Antenna	SSD8-52	N/A

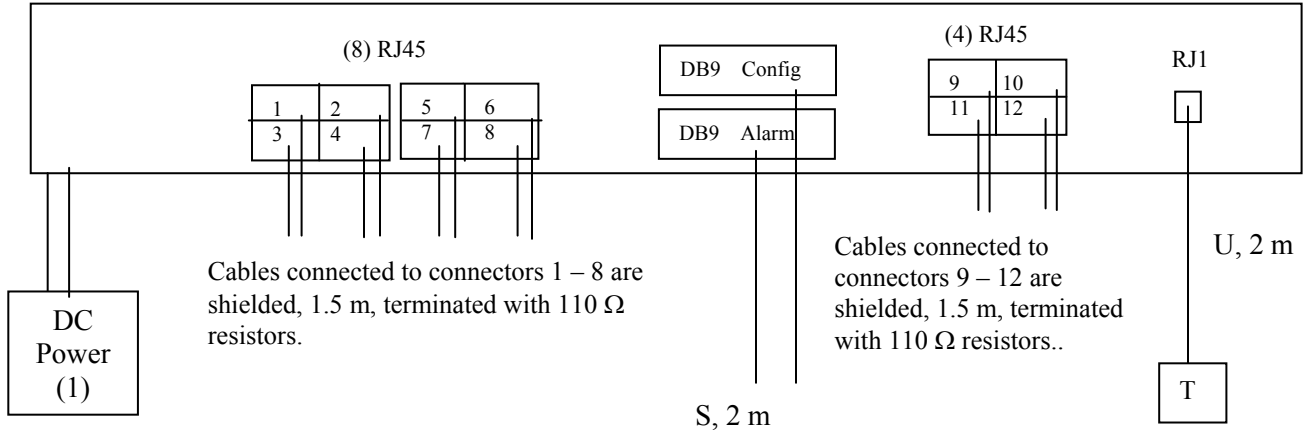


3.2 Block Diagram of Test Setup

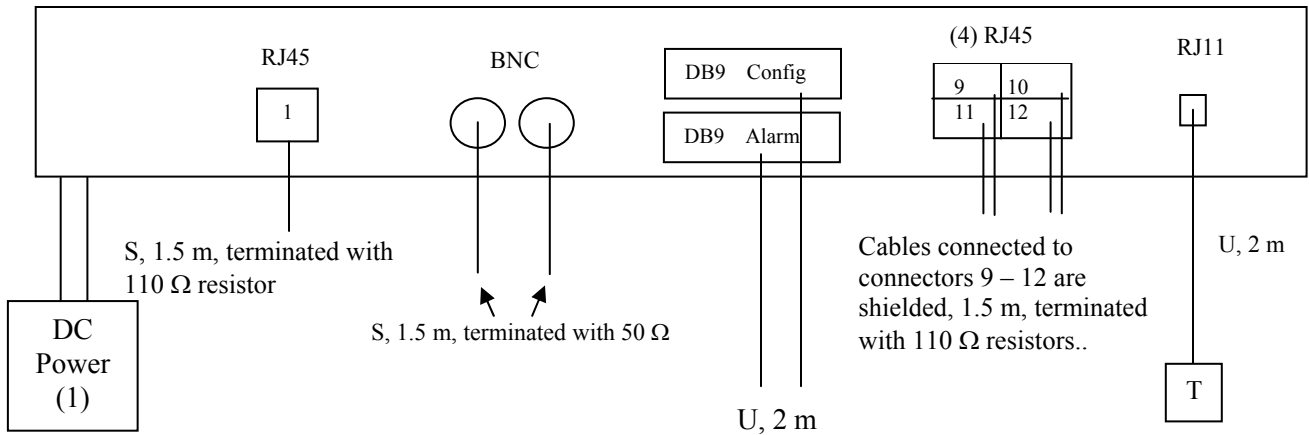


EUT Indoor Unit consists of (4) separate configurations, LIU-1, 2, 3, 4, which are diagramed on the following pages of this report.

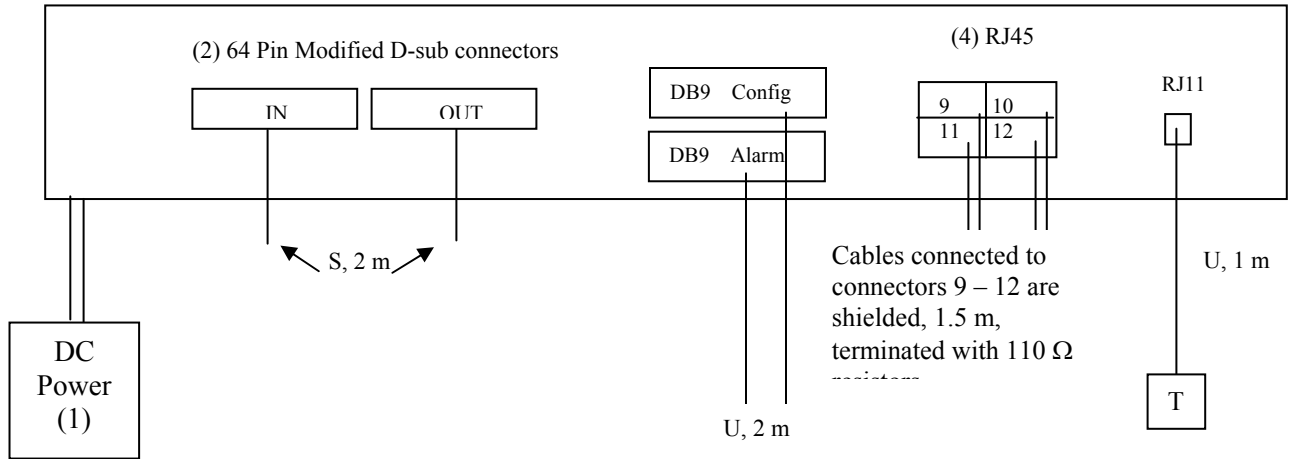
**LIU-1**



**LIU-2**



**LIU-4**



<b>S</b> = Shielded	<b>F</b> = With Ferrite
<b>U</b> = Unshielded	<b>m</b> = Length in Meters



### 3.3 Justification

For emission testing, the Equipment Under Test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was wired to transmit full power.

The tests were performed on the lowest, middle and highest available channels. The channels were chosen from the table in section 2.1:

For operation in the band 5.725-5.825 GHz (8E configuration)  
5741.5 MHz – the lowest channel,  
5756.5 MHz – the middle channel,  
5808.5 MHz – the highest channel.

In addition, the emission tests were performed on the widest channels in DS3 configuration:  
5749 MHz and 5801 MHz.

For operation in the band 5.25-5.35 GHz (only 2 channels are available in DS3+T1 configuration):  
5274 MHz and 5326 MHz,

Radiated emission test was performed with all antennas listed in section 3.1.  
Care was taken to ensure proper power supply voltages during testing.

### 3.4 Software Exercise Program

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology.

### 3.5 Mode of operation during test

100% time transmitting signal on low and high channels.

### 3.6 Modifications required for Compliance

The following modifications were installed during compliance testing in order to bring the product into compliance (Please note that this list does not include changes made specifically by Proxim Corporation prior to compliance testing):

Intertek Testing Services made no modifications to the EUT.

### 3.7 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.



**4.0 Measurement Results**

4.1 Conducted Output Power at Antenna Terminal  
FCC Rule 15.407(a)

**Requirement:**

For fixed point-to-point U-NII devices operating in 5.725-5.825 GHz band, the peak transmit power shall not exceed the lesser of 1 Watt (30 dBm) or 17 dBm+10Log(B), where B is the 26dB emission bandwidth in MHz (for antenna gain up to 23 dBi). For devices operating in 5.25-5.35 GHz band, the peak transmit power shall not exceed the lesser of 250 mW (24 dBm) or 11 dBm + 10Log(B), where B is the 26 dB emission bandwidth in MHz (for antenna gain up to 6 dBi).

**Procedure:**

The antenna port of the EUT was connected to the input of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal.

**Result:**

Frequency, MHz	Configuration	Output Power, mW	Output Power, dBm	EIRP Limit, dBm	Maximum allowed antenna gain, dBi
5274	DS3	325.0	25.1	30.0	4.9 *
5326	DS3	343.0	25.3	30.0	4.7 *
5741.5	8E	385.0	25.9	53.0	27.1 *
5749	DS3	327.0	25.1	53.0	27.9 *
5756.5	8E	445.0	26.5	53.0	26.5 *
5801	DS3	308.0	24.9	53.0	28.1 *
5808.5	8E	330.0	25.2	53.0	27.8 *

\* When a higher gain antenna is used, the Output Power will have to be reduced.

4.2 26 dB Bandwidth  
FCC Rule 15.407(a) (for calculation only)

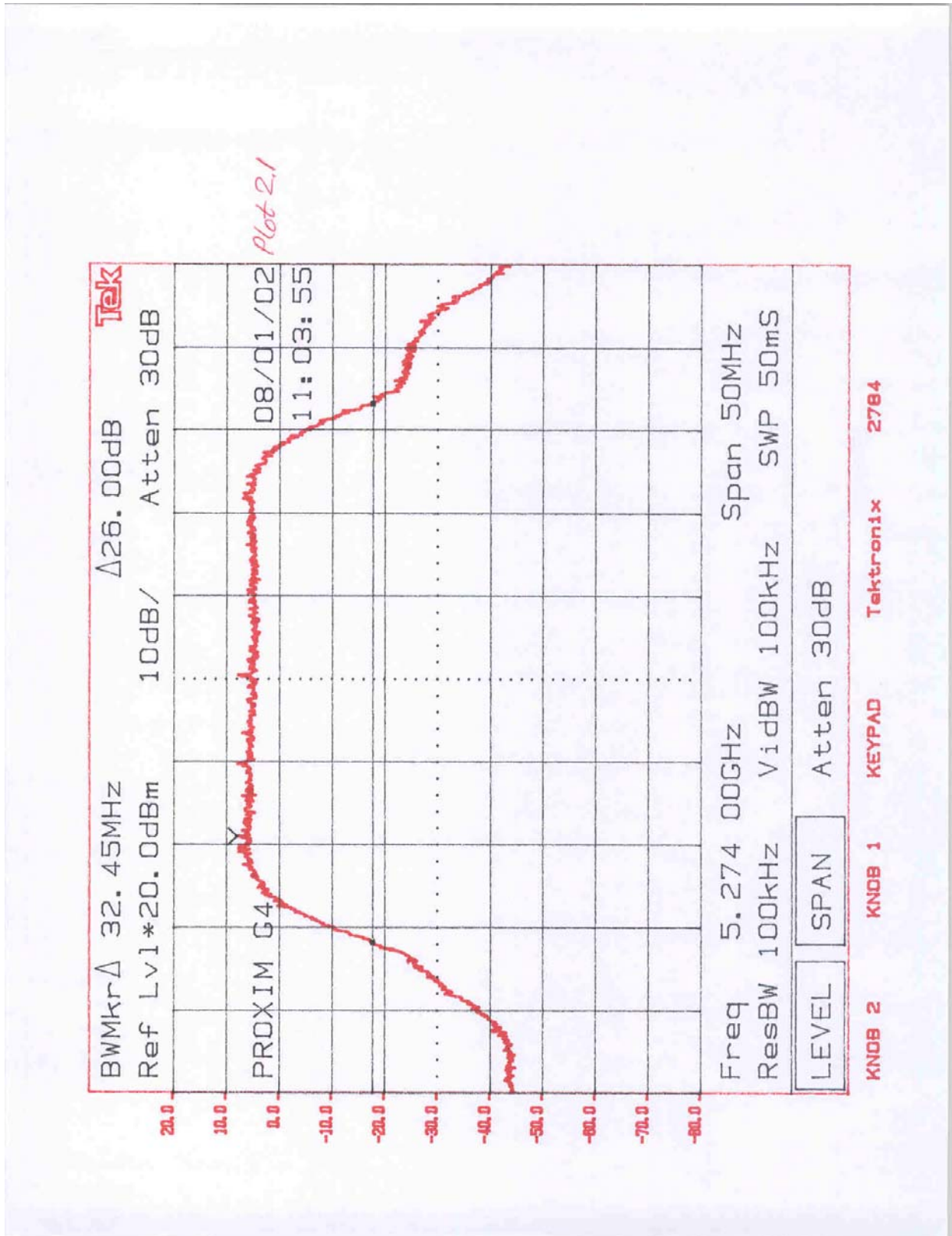
**Procedure:**

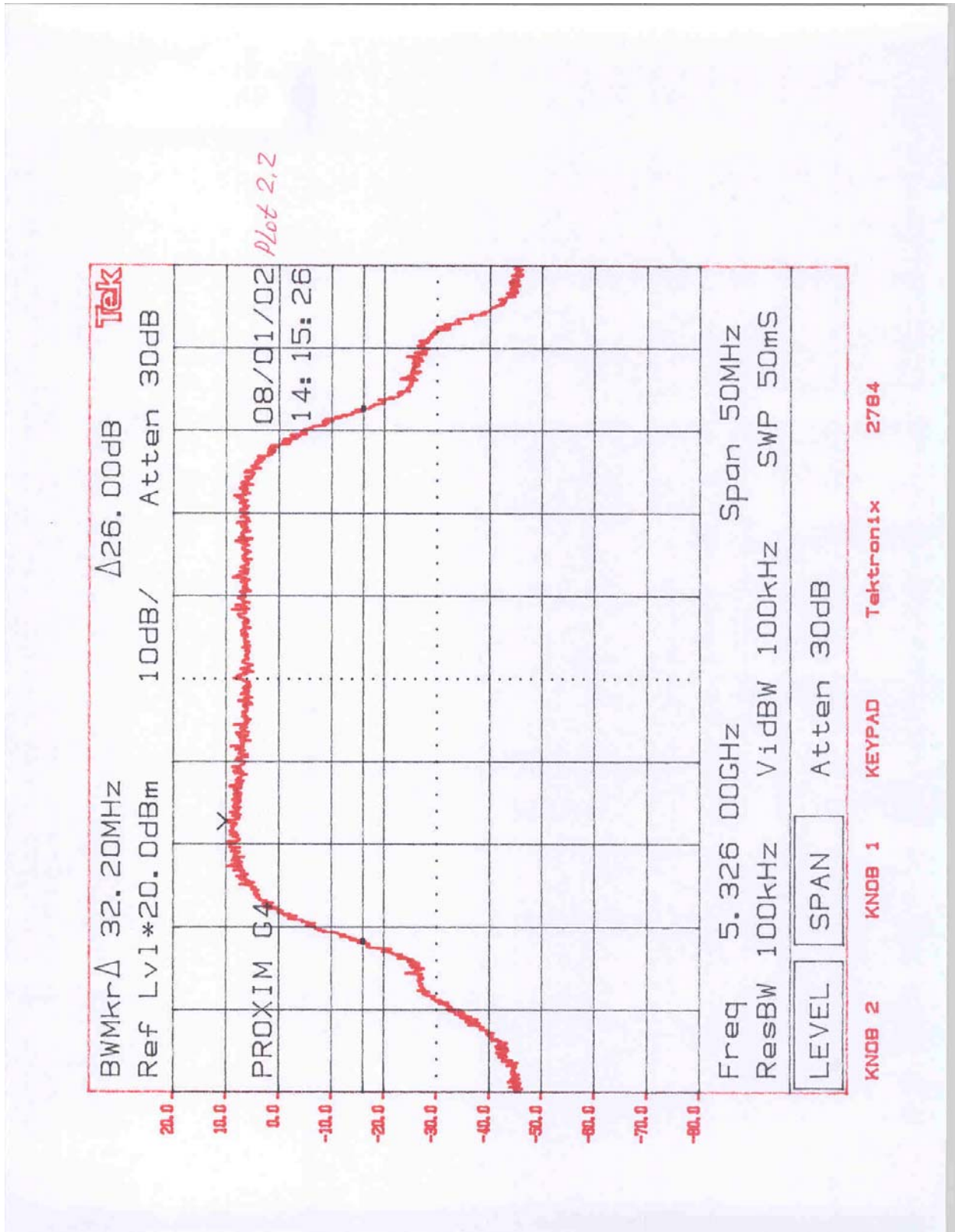
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer Res BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 26 dB lower than PEAK level. The 26-dB bandwidth was determined from where the channel output spectrum intersected the display line.

**Result:**

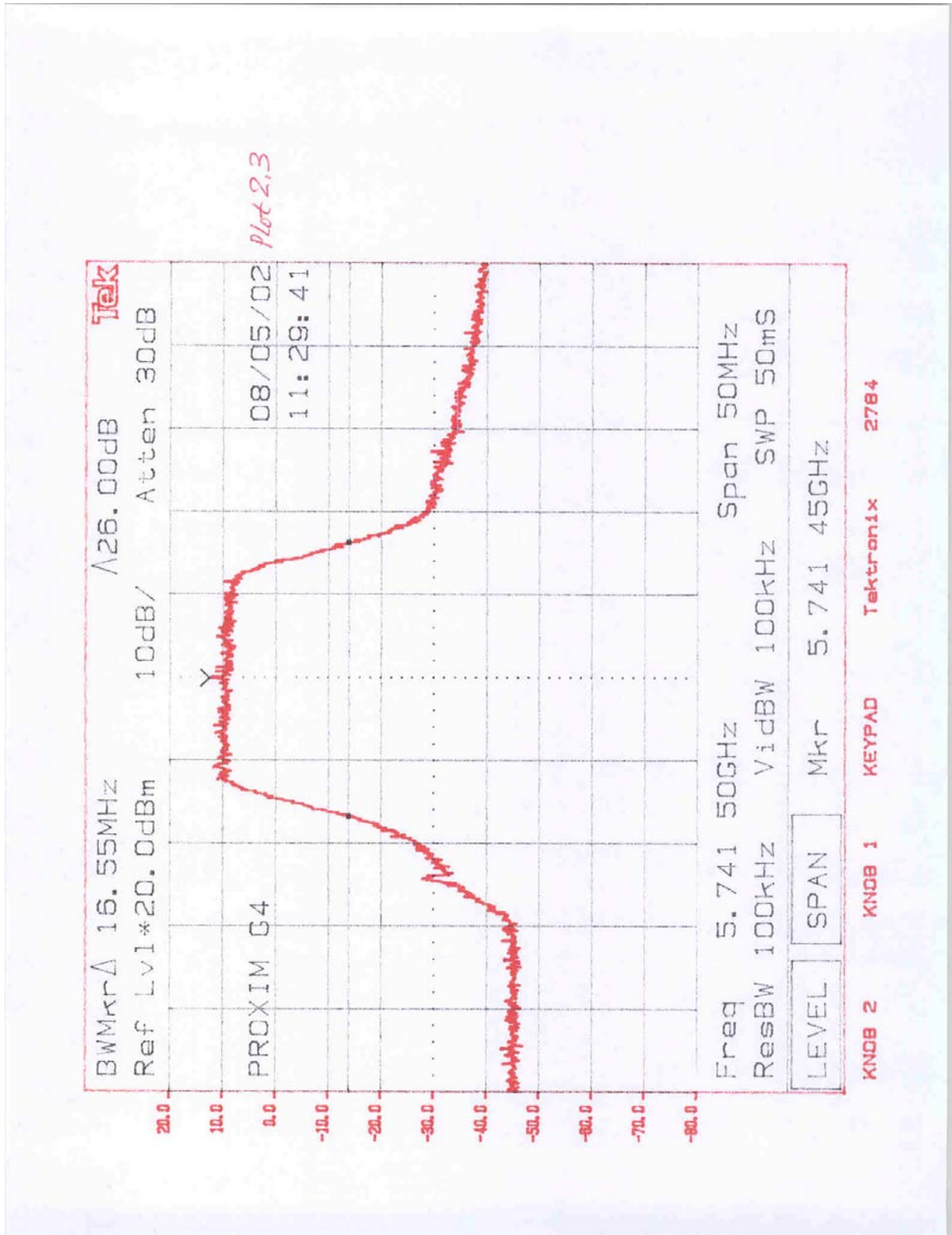
Frequency, MHz	26 dB Bandwidth, MHz	Plot
5274	32.5	2.1
5326	32.2	2.2
5741.5	16.6	2.3
5749	31.3	2.4
5756.5	16.6	2.5
5801	31.4	2.7
5808.5	16.5	2.6

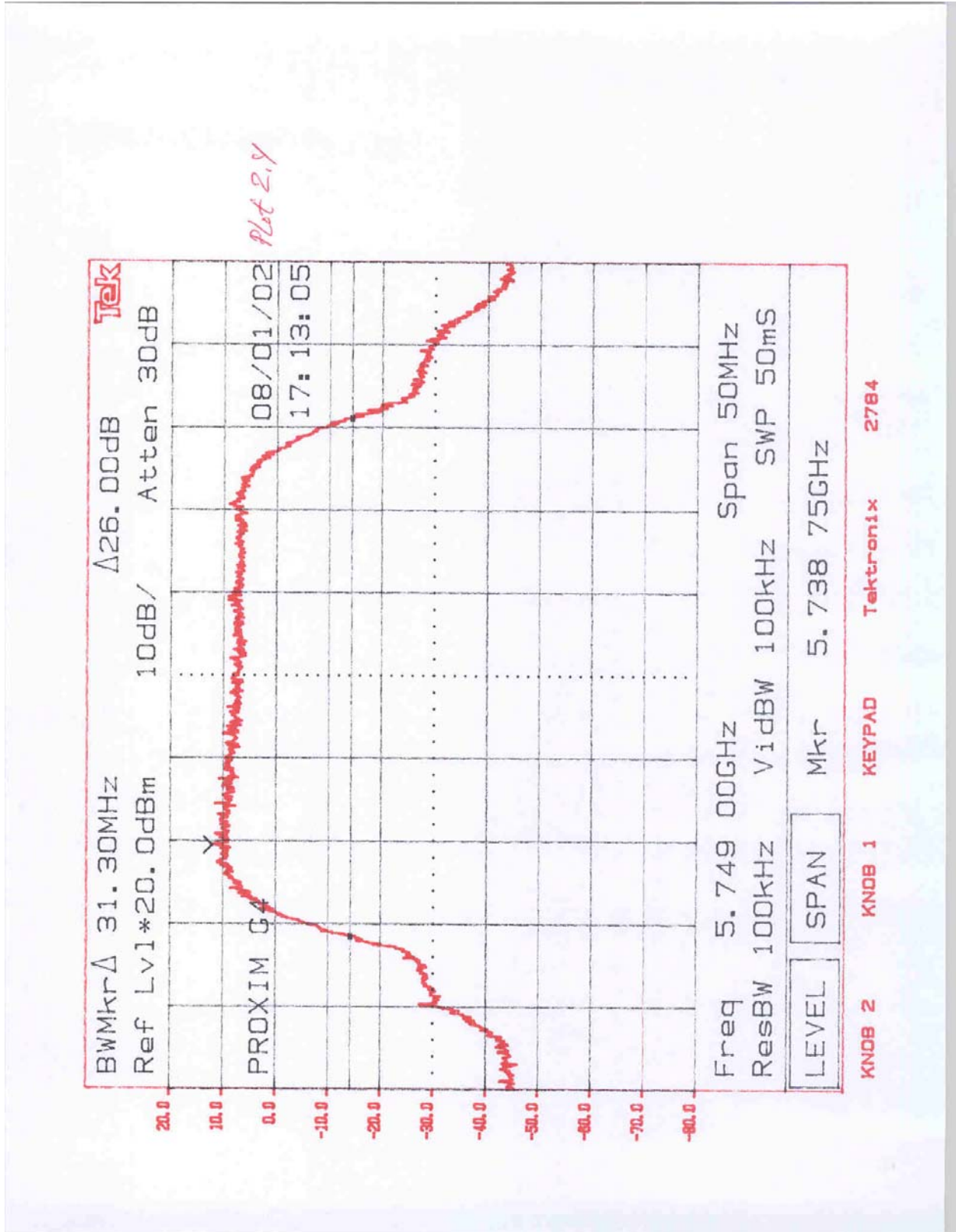
Refer to the following plots for 26-dB bandwidth.

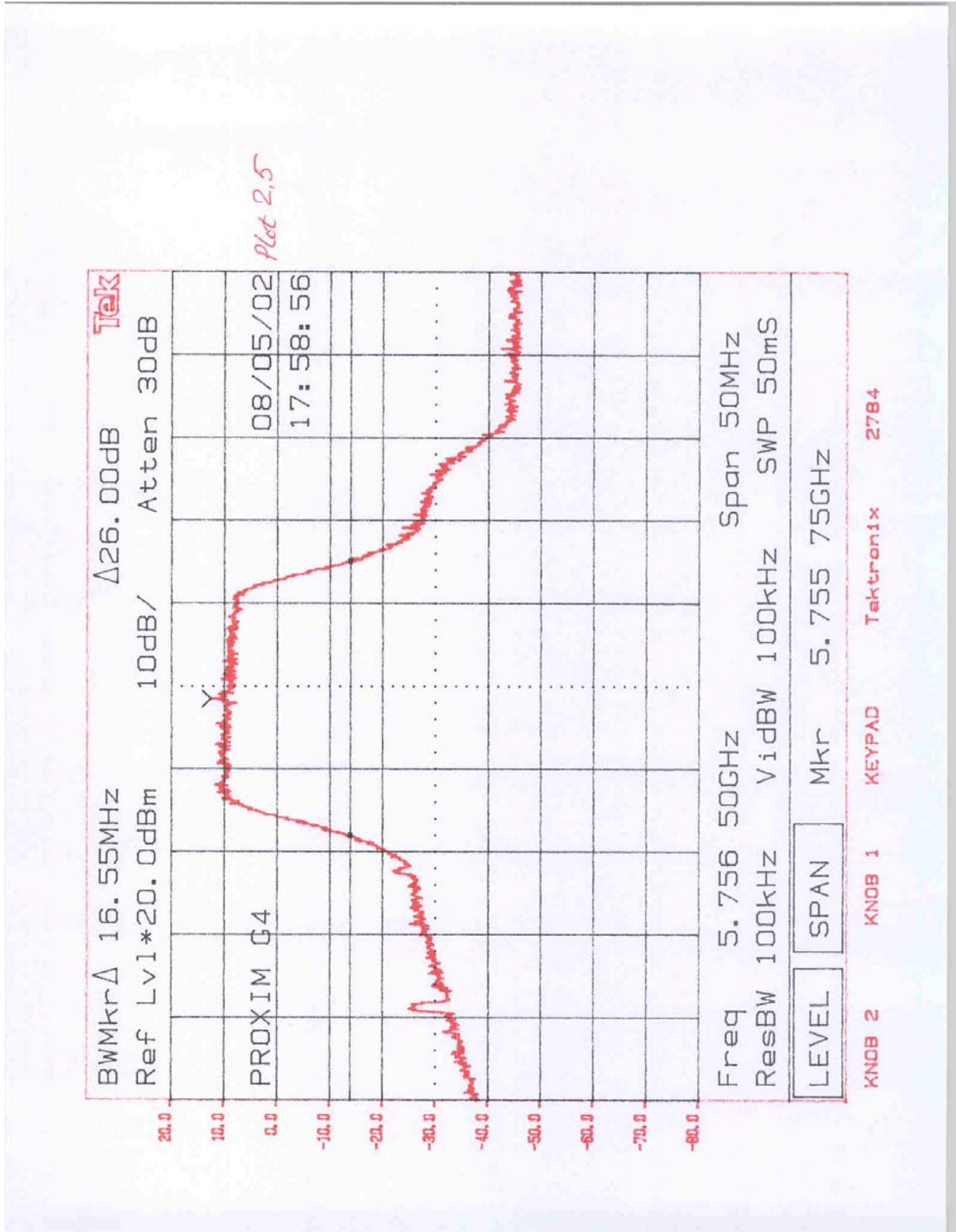


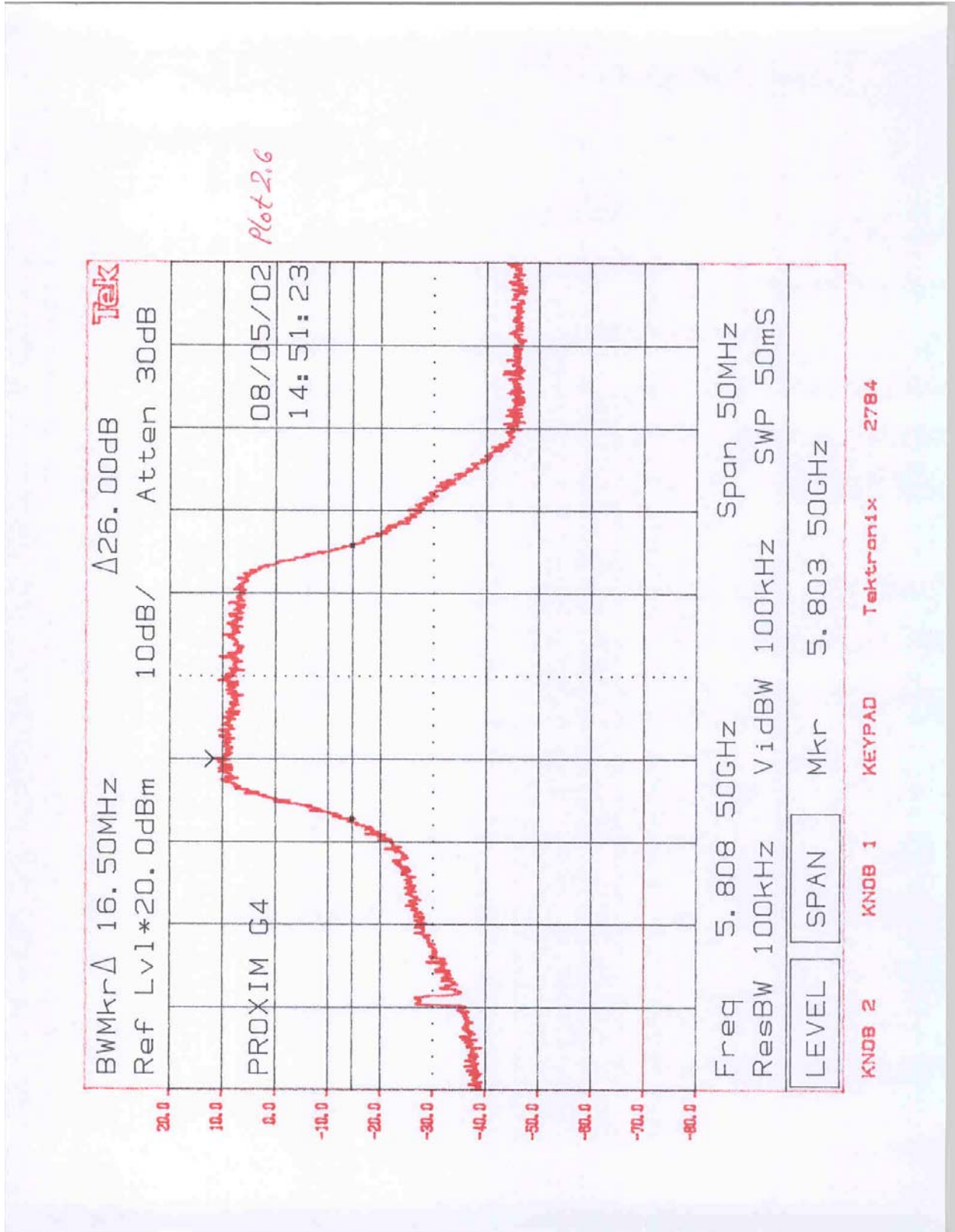


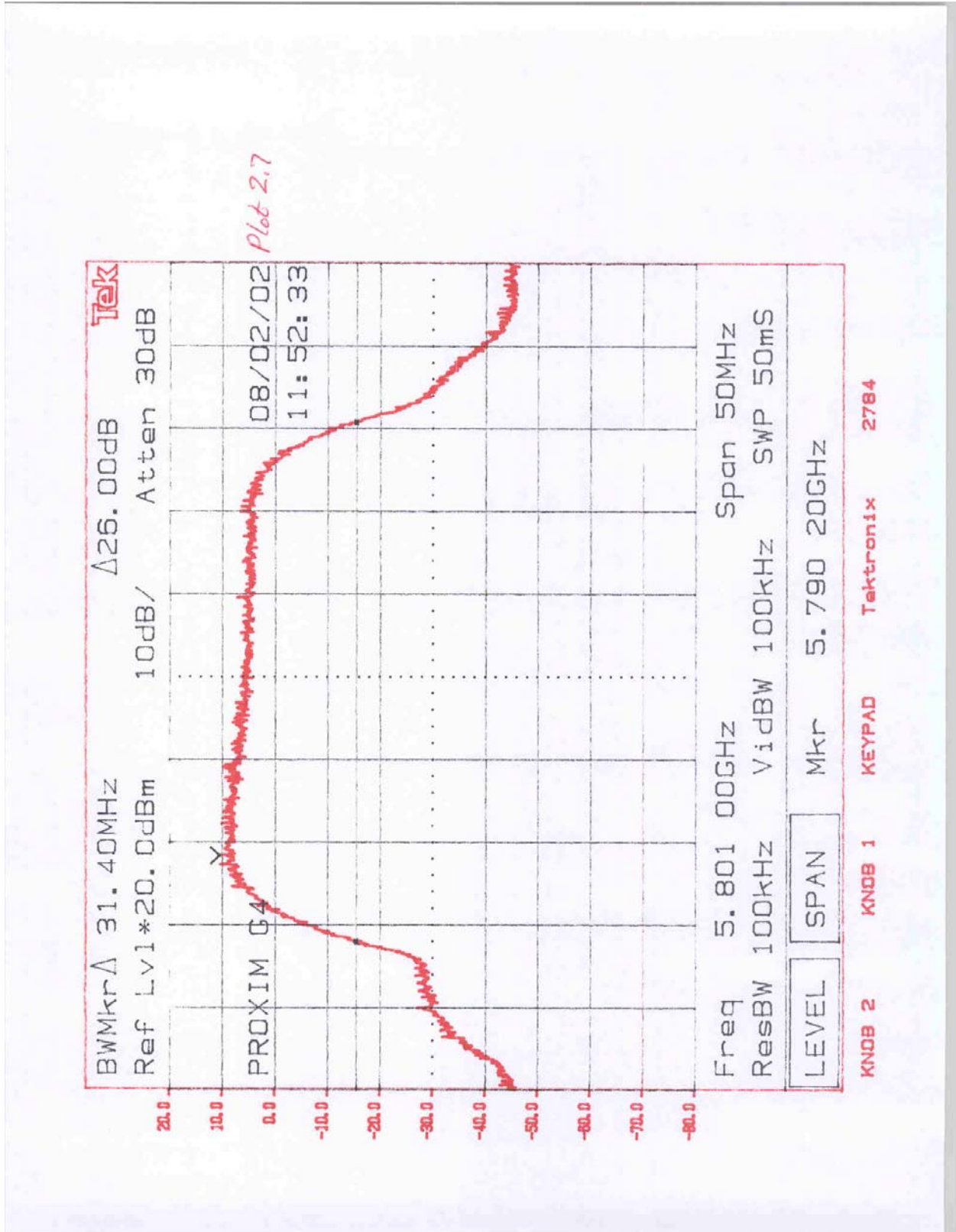














4.3 Power Density  
FCC Rule 15.407(a)(3)

**Requirement:**

For fixed point-to-point U-NII devices operating in 5.725-5.825 GHz band the peak power spectral density shall not exceed 17 dBm in any 1 MHz band (for antenna gain up to 23 dBi).  
For devices operating in 5.25-5.35 GHz band peak power spectral density shall not exceed 11 dBm in any 1 MHz band (for antenna gain up to 6 dBi).

**Procedure:**

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

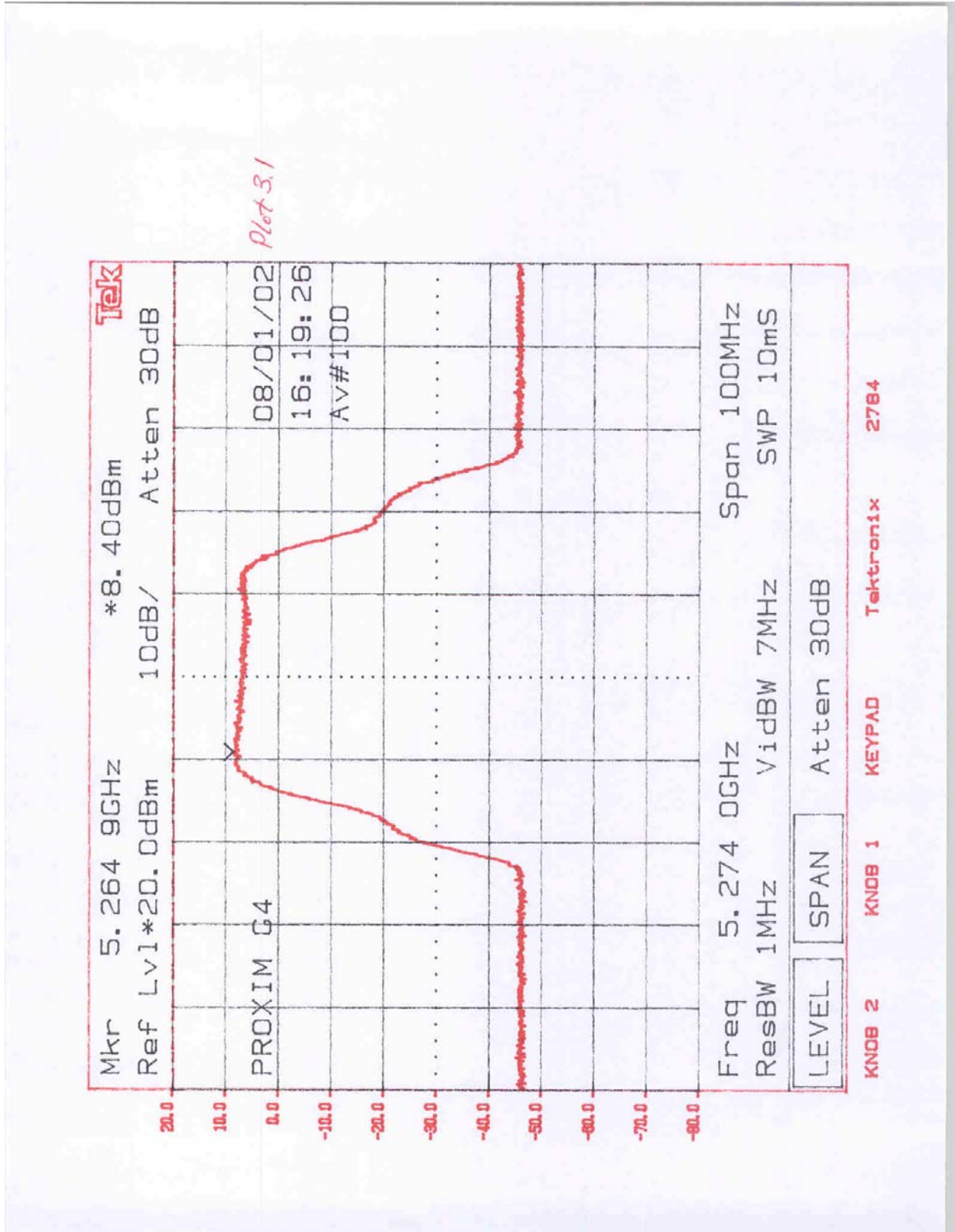
The spectrum analyzer Resolution Bandwidth was set to 1 MHz and Video Bandwidth was set to 7 MHz. The START and STOP frequencies were set to the band edges of the maximum output passband. The spectrum analyzer was set to average mode by sampling, 100 sweeps were used. Maximum power spectral density reading was recorded.

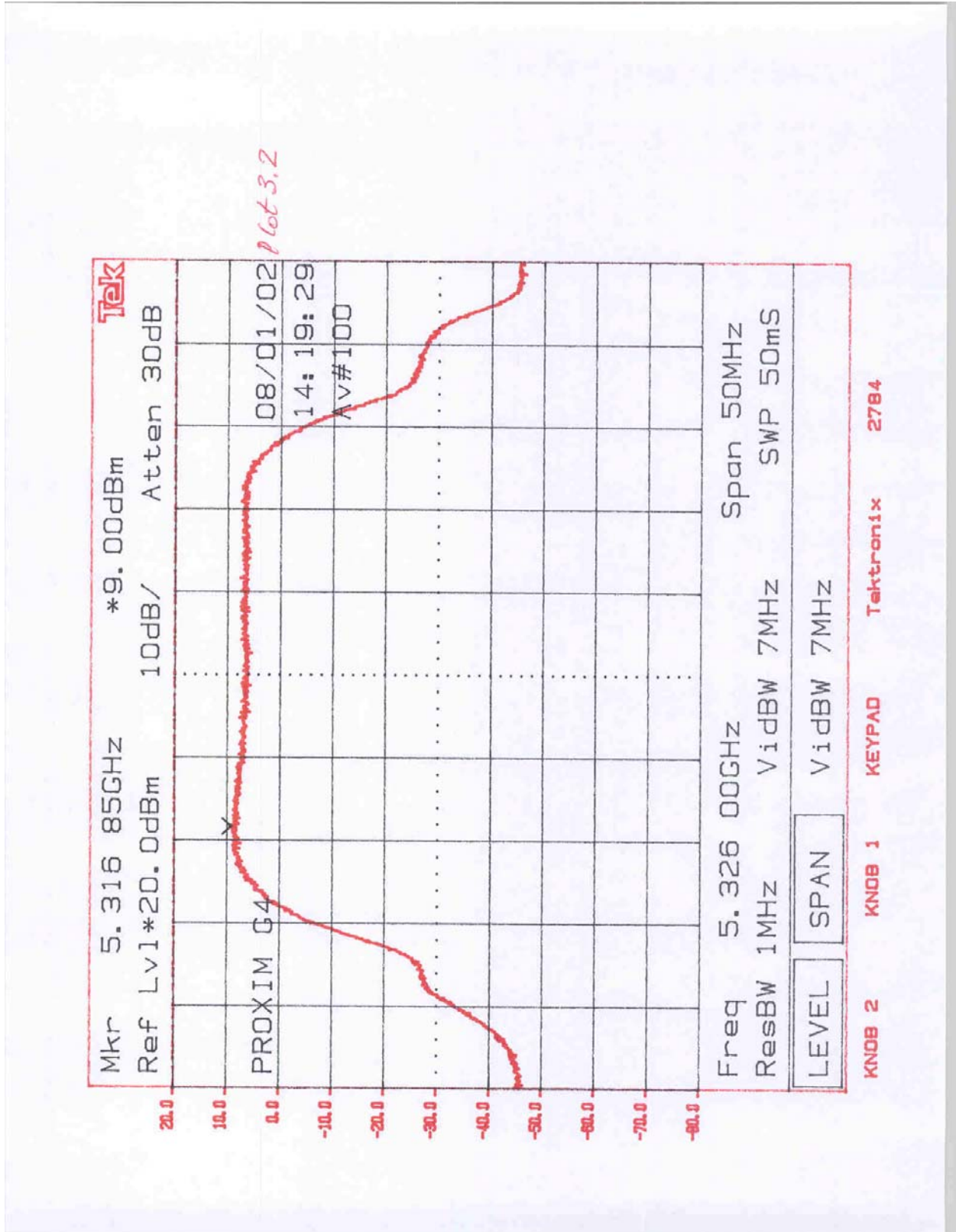
**Result:**

Frequency, MHz	Configuration	Power Density, dBm	EIRP Limit, dBm	Maximum allowed antenna gain, dBi	Plot
5274	DS3	8.4	17.0	8.6 *	3.1
5326	DS3	9.0	17.0	8.0 *	3.2
5741.5	8E	9.1	40.0	30.9 *	3.3
5749	DS3	8.8	40.0	31.2 *	3.4
5756.5	8E	9.7	40.0	30.3 *	3.5
5801	DS3	8.1	40.0	31.9 *	3.7
5808.5	8E	8.6	40.0	31.4 *	3.6

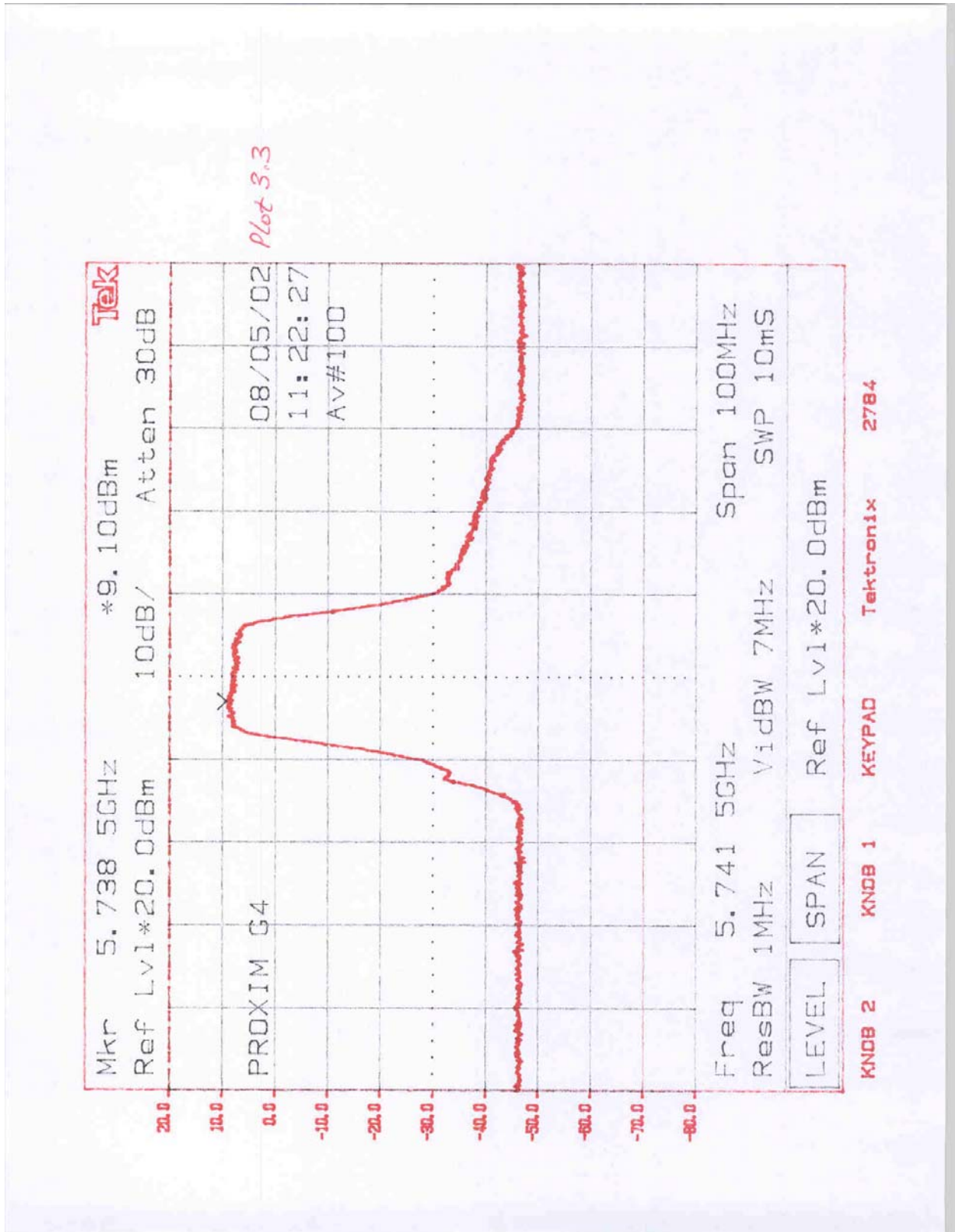
\* When a higher gain antenna is used, the Output Power will have to be reduced.

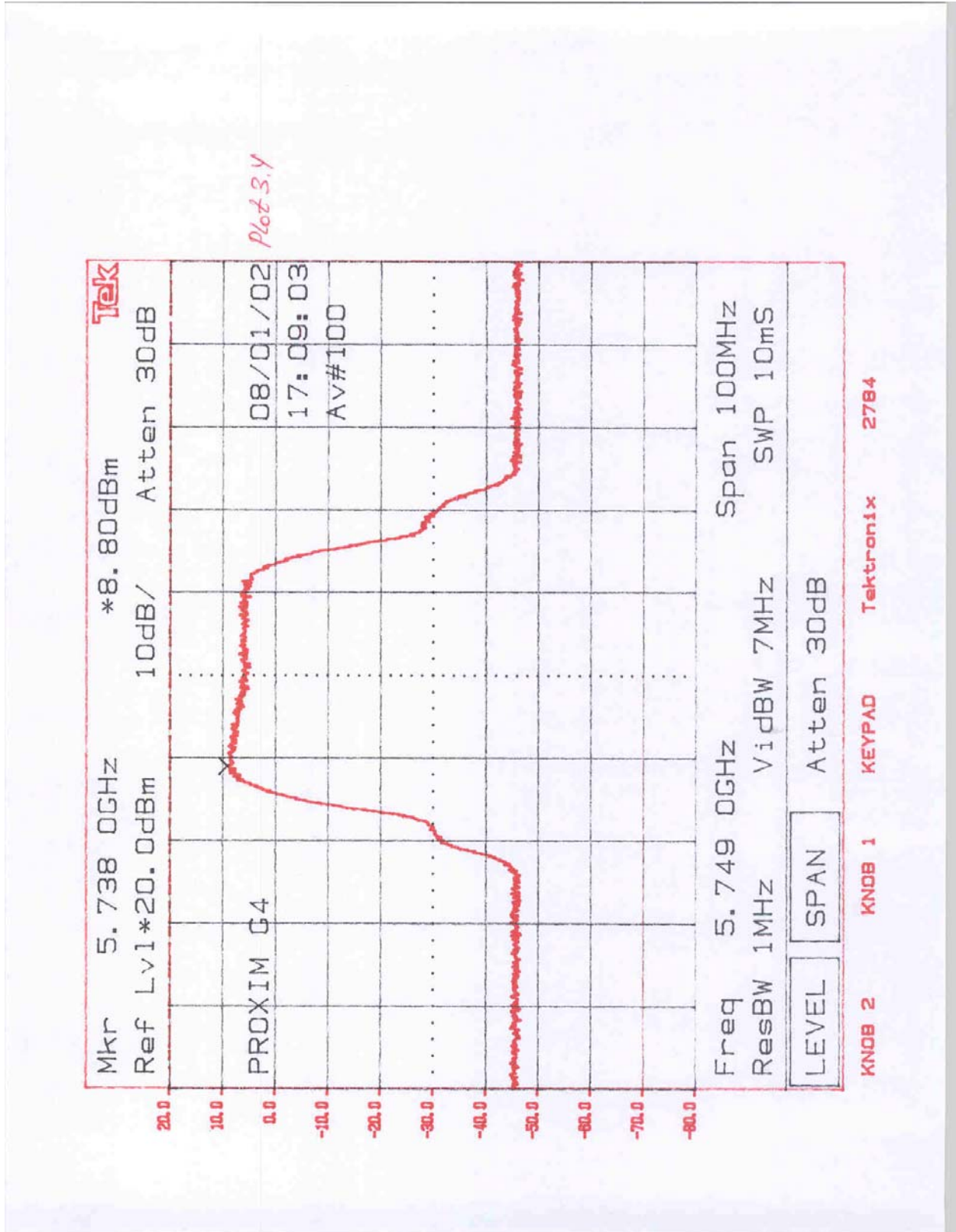
Refer to the following plots for power density data.

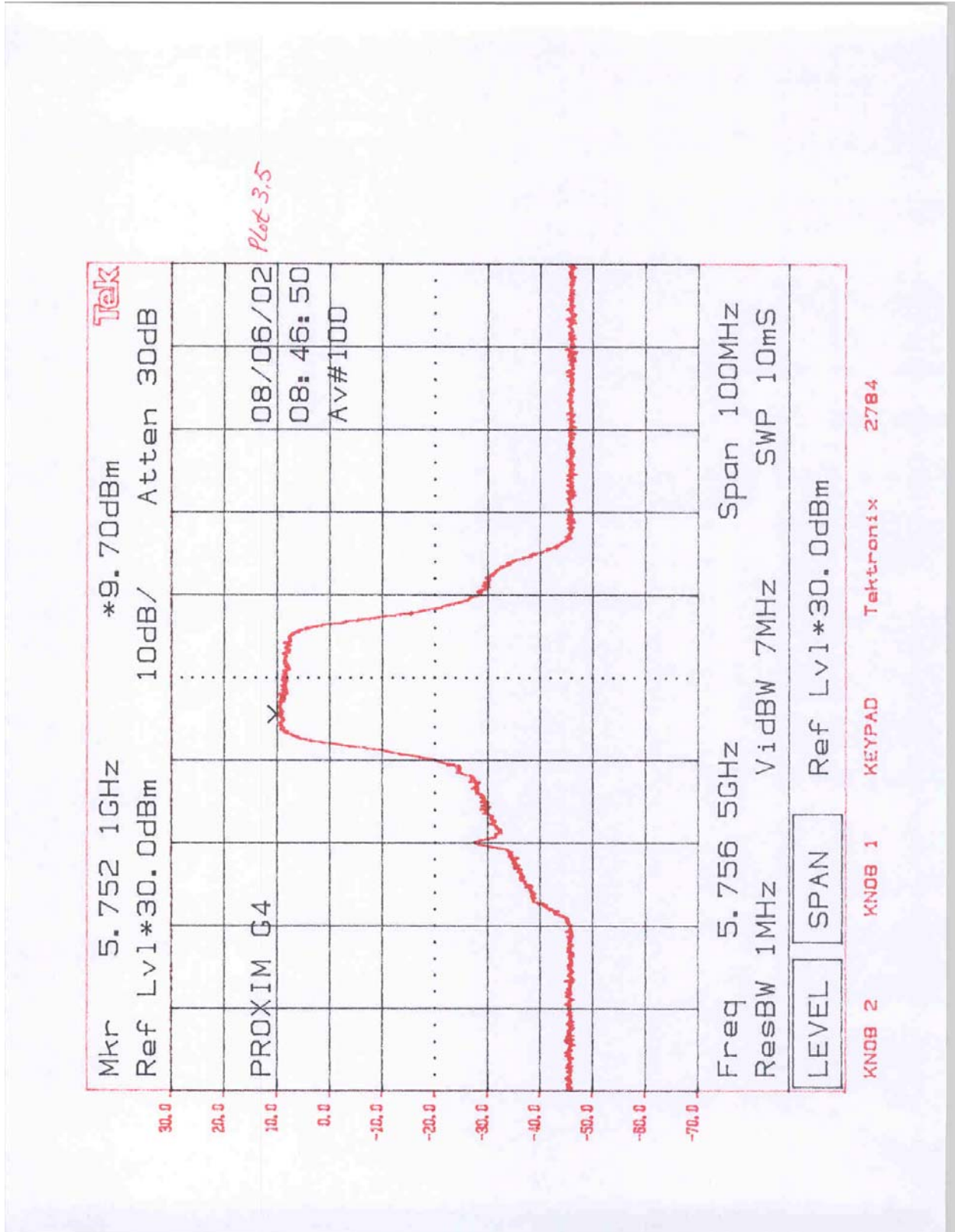


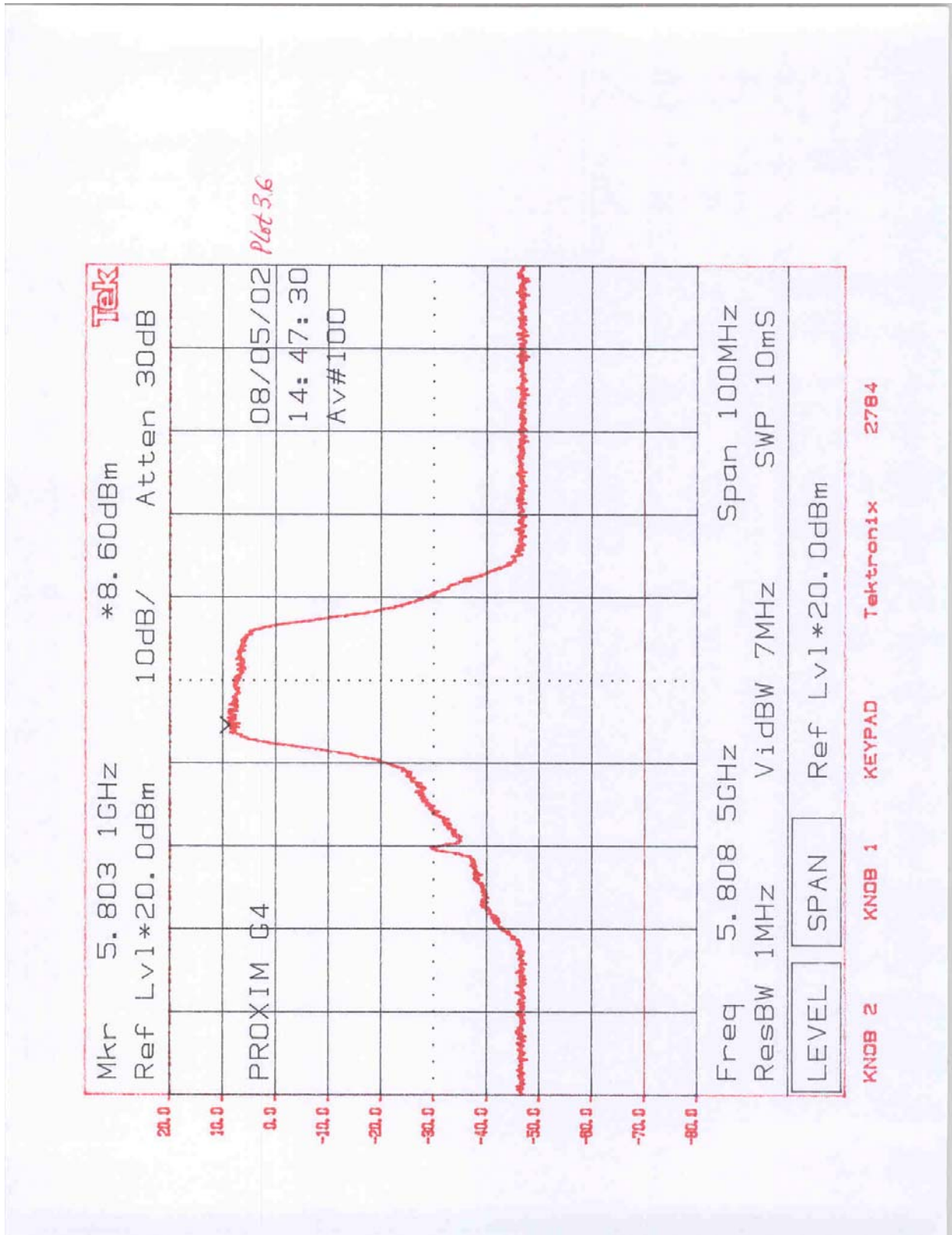


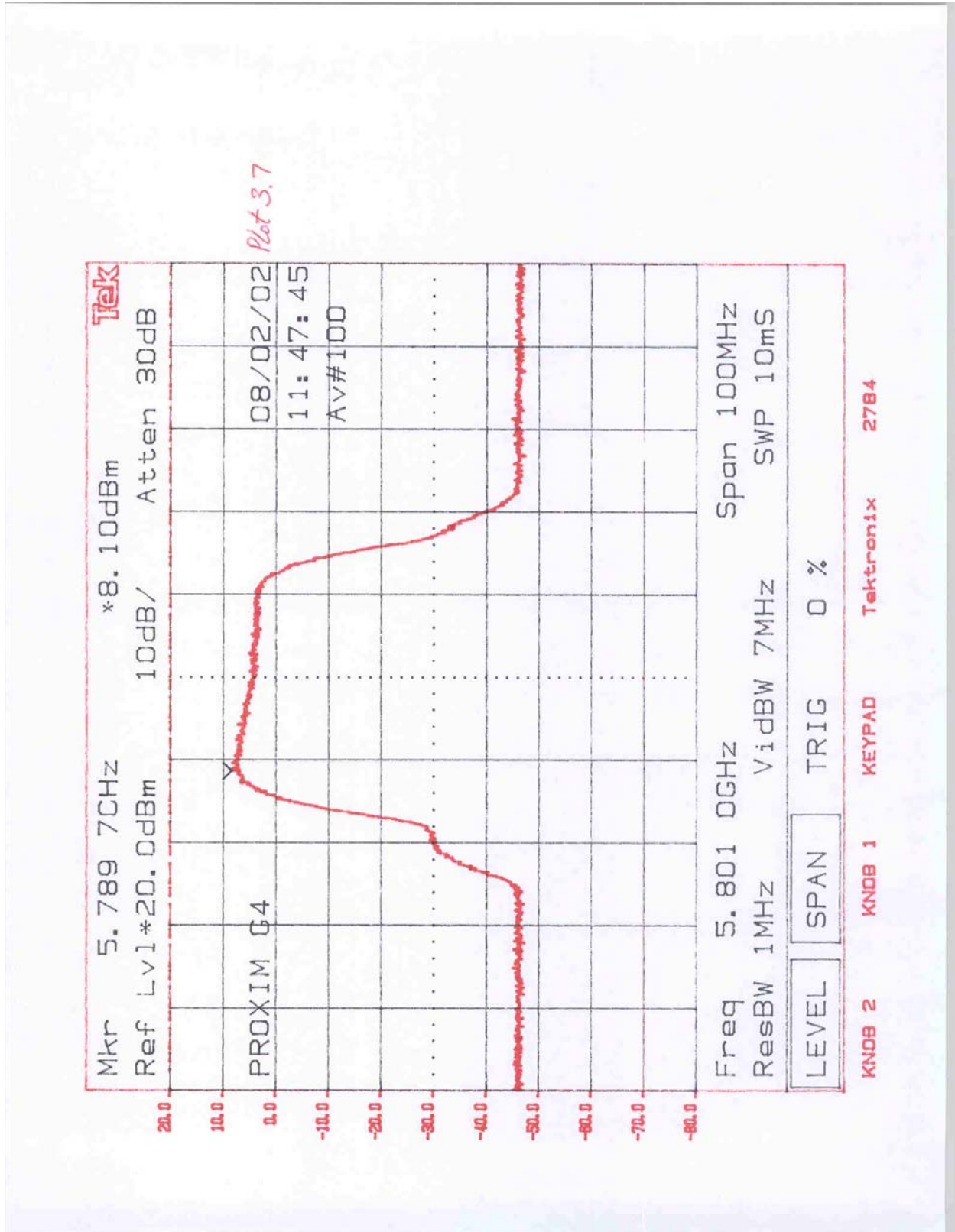














Proxim Corporation

Date of Test: May 18 to August 20 2002

FCC ID: HZB-US5358-GX1

IC: 1856-U5358GX1

- 4.4 The ratio of the peak excursion of the modulation envelope to the peak power  
FCC Rule 15.407(a)(6)

**Requirement:**

The ratio of the peak excursion of the modulation envelope to the peak transmit power shall not exceed 13 dB.

**Procedure:**

Spectrum Analyzer was connected to the output of the EUT. The Resolution Bandwidth was set to 1 MHz. Two plots were made in each band: with the Video Bandwidth set to 7 MHz and with the Video Bandwidth set to 30 kHz. The difference between spectrum analyzer readings indicates the ratio of the peak excursion of the modulation envelope to the peak transmit power.

**Test Result:**

See plots 4.1a/b – 4.7a/b. in Appendix A for the ratio of the peak excursion of the modulation envelope to the peak power. The maximum Ratio is 6.8 dB.



4.5 Out-of-Band Conducted Emissions  
FCC Rule 15.407(b)

**Requirement:**

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of  $-27$  dBm/MHz in the 5.15-5.25 GHz band.

For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of  $-17$  dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed and EIRP of  $-27$  dBm/MHz.

The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

**Procedure:**

Spectrum Analyzer was connected to the output of the EUT. For measurements above 1 GHz, the Resolution Bandwidth was set to 1 MHz; for measurements below 1 GHz, the Resolution Bandwidth was set 100 kHz, and the Video Bandwidth was set to 100 kHz. Several plots were made in the frequency range from 5715 to 5835 MHz.

In addition, plots were made in the frequency range from 30 MHz to 40 GHz.

**Result:**

Refer to the following data tables (on the next page) and the plots located in Appendix B for out-of-band conducted emissions data:



Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* dBi
5274	<5150	-56.7 from plot 5.1c	-27.0	29.7
	>5350	-61.3 from plot 5.1f	-27.0	34.3
5326	<5150	-58.2 from plot 5.2c	-27.0	31.2
	>5350	-60.1 from plot 5.2f	-27.0	33.1

Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* DBi
5741.5	≤ 5715	-65.9 from plot 5.3c	-27.0	38.9
	5725	-55.6 from plot 5.3d	-17.0	28.6
	5825	-66.8 from plot 5.3f	-17.0	39.8
	5835	-66.2 from plot 5.3g	-27.0	39.2

\* Maximum antenna gain without reducing the Output Power.

Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* dBi
5749	≤ 5715	-56.3 from plot 5.4c	-27.0	29.3
	5725	-55.5 from plot 5.4d	-17.0	38.5
	5825	-60.6 from plot 5.4f	-17.0	43.6
	5835	-60.4 from plot 5.4g	-27.0	33.4

\* Maximum antenna gain without reducing the Output Power.





Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* dBi
5756.5	≤ 5715	-65.6 from plot 5.5c	-27.0	38.6
	5725	-64.2 from plot 5.5d	-17.0	47.2
	5825	-65.6 from plot 5.5f	-17.0	48.6
	5835	-66.1 from plot 5.5g	-27.0	39.1

\* Maximum antenna gain without reducing the Output Power.

Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* dBi
5808.5	≤ 5715	-66.6 from plot 5.6d	-27.0	39.6
	5725	-66.6 from plot 5.6d	-17.0	49.6
	5825	-61.3 from plot 5.6f	-17.0	44.3
	5835	-66.5 from plot 5.6g	-27.0	39.5

\* Maximum antenna gain without reducing the Output Power.

Operating Frequency, MHz	Frequency MHz	Level, dBm	Limit, dBm/MHz	Maximum allowed antenna gain,* dBi
5801	≤ 5715	-63.7 from plot 5.7b	-27.0	36.7
	5725	-66.9 from plot 5.7d	-17.0	49.9
	5825	-59.4 from plot 5.7f	-17.0	42.4
	5835	-62.7 from plot 5.7g	-27.0	35.7

\* Maximum antenna gain without reducing the Output Power.



4.6 Transmitter Radiated Emissions  
FCC Rule 15.407(b), 15.209, 15.205

Radiated emission measurements were performed from 30 MHz to 40,000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz - for frequencies above 1000 MHz.

The EUT is placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG + Att$$

Where FS = Field Strength in dB( $\mu$ V/m)

RA = Receiver Amplitude (including preamplifier) in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB(1/m)

AG = Amplifier Gain in dB

Att = External attenuator (if used)

Assume a receiver reading of 52.0 dB( $\mu$ V) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29.0 dB is subtracted, giving field strength of 32.0 dB( $\mu$ V/m). This value in dB( $\mu$ V/m) was converted to its corresponding level in  $\mu$ V/m.

$$RA = 52.0 \text{ dB}(\mu\text{V})$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$Att = 0 \text{ dB}$$

$$FS = 52+7.4+1.6-29.0+0 = 32.0 \text{ dB}(\mu\text{V}/\text{m})$$

$$\text{Level in } \mu\text{V}/\text{m} = \text{Common Antilogarithm } [(32.0 \text{ dB}\mu\text{V}/\text{m})/20] = 39.8 \mu\text{V}/\text{m}$$



**Test Result**

The data in Appendix C list the significant emission frequencies and the Field Strength of the emissions. The average value of the Field Strength outside the restricted bands does not exceed 40 dB( $\mu$ V/m) at 3m which corresponds to the EIRP of -55 dBm. Therefore the EUT passed by 28 dB. In the restricted bands the EUT passed by 13.6 dB.



4.7 Radiated Emissions from Digital Section and Receiver  
FCC Rule 15.209

Procedure

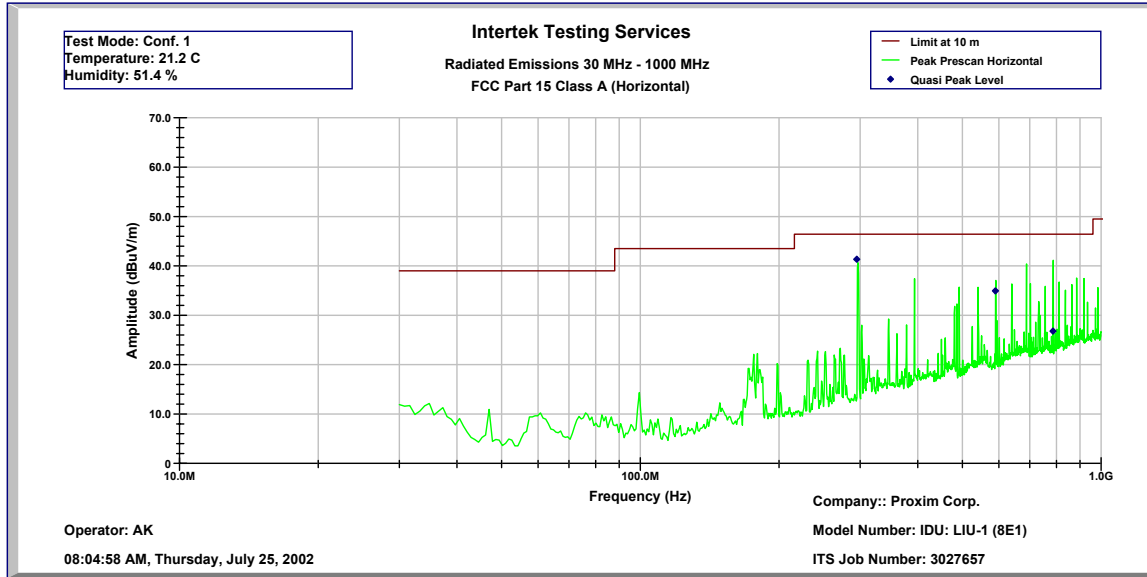
Radiated emission measurements were performed from 30 MHz to 1000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater. See also section 4.6.

All tree Line Interface Card (LIU-1, LIU-2 and LIU-4) in worse case configuration, described in sec. 2.1 and 3.2, were tested.

Result

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

The EUT passed Class A Limit by 2.2 dB. According to the applicant, the EUT is not used in residential area.



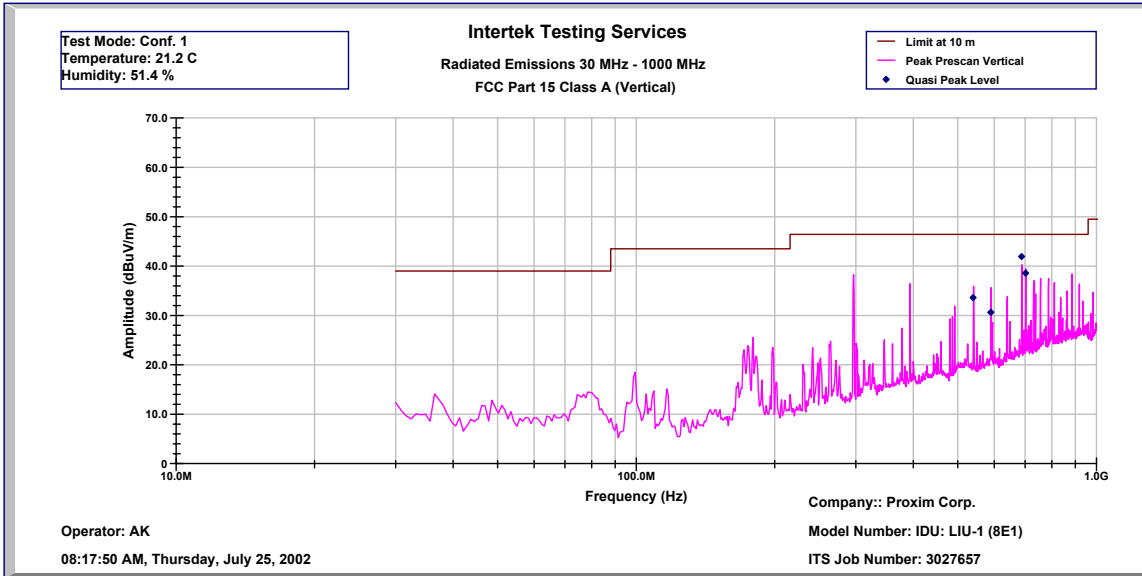
Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Horizontal)

Operator: AK  
ITS Job Number: 3027657  
Wed Dec 11 16:49:21 2002

Company: Proxim Corp.

Frequency	QP Level	Limit@10m	QP Margin
MHz	(dBuV/m)	(dBuV/m)	(dB)
294.90	41.3	46.4	-5.1
589.80	34.9	46.4	-11.5
786.40	26.8	46.4	-19.6

Test Mode: Conf. 1      IDU: LIU-1 (8E1)  
Temperature: 21.2 C  
Humidity: 51.4 %



Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Vertical)

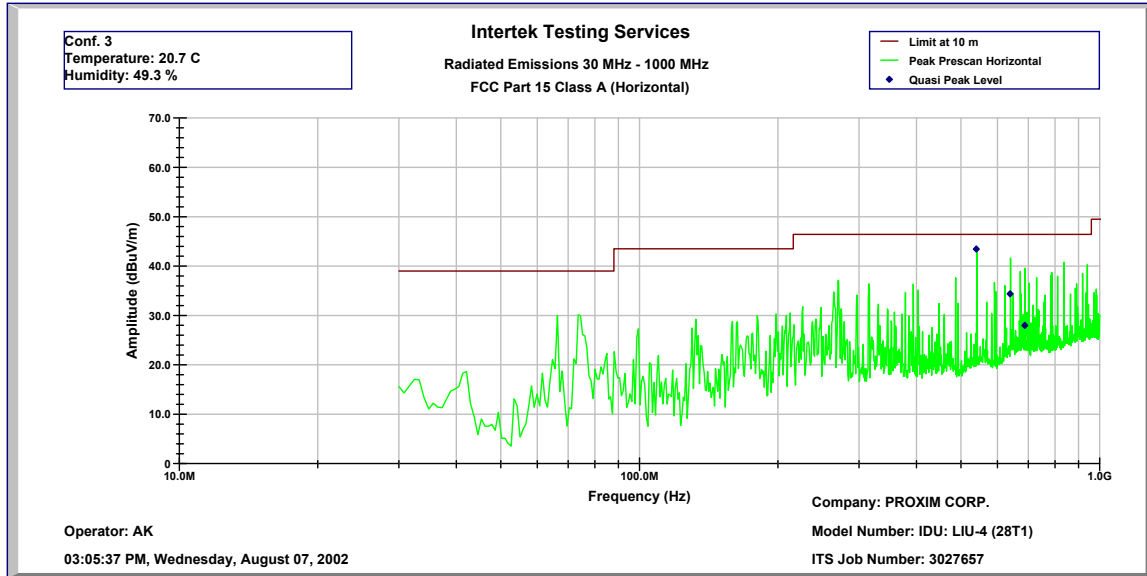
Operator: AK  
ITS Job Number: 3027657  
Wed Dec 11 16:49:59 2002

Company: Proxim Corp.

Frequency Quasi Pk FS Limit@10m Margin

MHz	(dBuV/m)	(dBuV/m)	(dB)
539.81	33.6	46.4	-12.8
589.80	30.6	46.4	-15.8
688.10	41.9	46.4	-4.5
701.75	38.6	46.4	-7.8

Test Mode: Conf. 1      IDU: LIU-1 (8E1)  
Temperature: 21.2 C  
Humidity: 51.4 %



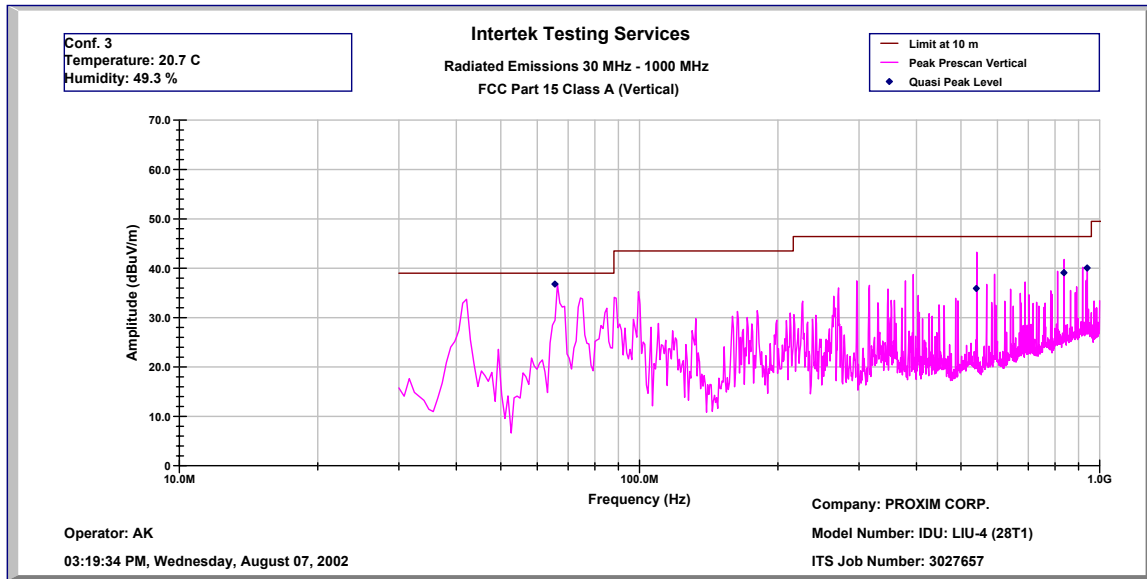
Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Horizontal)

Operator: AK  
ITS Job Number: 3027657  
Wed Dec 11 17:22:35 2002

Company: PROXIM CORP.

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	CF	AF	AG
MHz	(dBuV/m)	(dBuV/m)	(dB)	(dbuV)	(dB)	(dB)	(dB)
539.81	43.4	46.4	-3.0	42.9	6.2	18.2	24.6
638.95	34.4	46.4	-12.0	31.7	6.4	20.3	24.6
688.10	28.0	46.4	-18.4	24.8	6.4	20.2	24.5

Test Mode: Conf. 3      IDU: LIU-4 (28T1)  
Temperature: 20.7 C  
Humidity: 49.3 %



Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Vertical)

Operator: AK

Company: PROXIM CORP.

ITS Job Number: 3027657

Wed Dec 11 17:23:04 2002

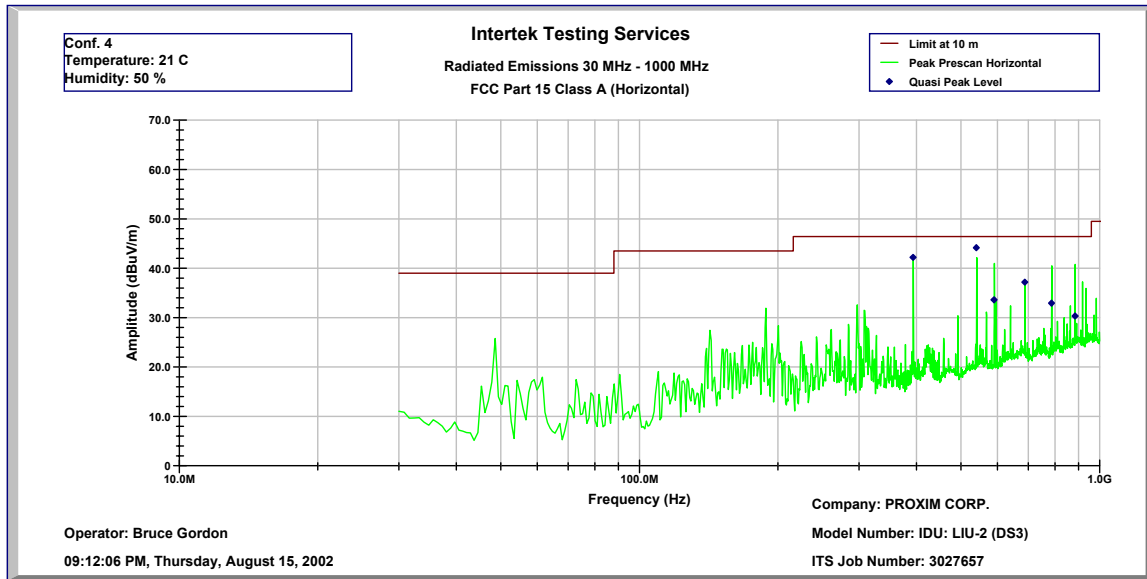
Frequency	Quasi Pk	FS	Limit@10m	Margin	RA	CF	AF	AG
MHz	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
65.53	36.8	39.0	-2.2	52.1	3.9	5.6	25.3	
539.81	35.9	46.4	-10.5	36.1	6.2	18.3	24.6	
836.70	39.1	46.4	-7.3	33.7	7.1	22.9	24.3	
939.55	40.0	46.4	-6.4	32.5	7.2	23.3	24	

Test Mode: Conf. 3 IDU: LIU-4 (28T1)

Temperature: 20.7 C

Humidity: 49.3 %





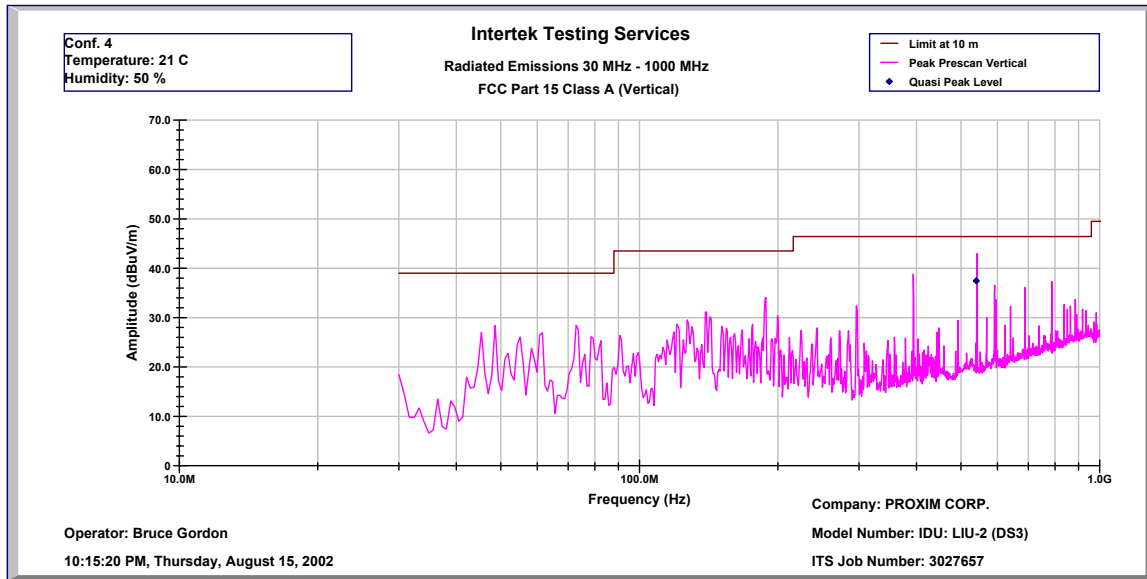
Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Horizontal)

Operator: Bruce Gordon  
ITS Job Number: 3027657  
Wed Dec 11 17:33:51 2002

Company: PROXIM CORP.

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	CF	AG	AF
MHz	(dBuV/m)	(dBuV/m)	(dB)	(dbuV)	(dB)	(dB)	(dB/m)
393.21	42.2	46.4	-4.2	45.2	5.6	24.6	16.0
539.80	44.2	46.4	-2.2	43.7	6.2	24.6	18.9
589.81	33.6	46.4	-12.8	33.0	6.4	24.6	18.8
688.11	37.2	46.4	-9.2	34.0	6.4	24.5	21.3
786.41	32.9	46.4	-13.5	29.7	6.9	24.5	20.9
884.71	30.3	46.4	-16.1	24.8	7.2	24.1	22.5

Test Mode: Conf. 4  
Temperature: 21 C  
Humidity: 50 %  
IDU: LIU-2 (DS3)



Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
FCC Part 15 Class A (QP-Vertical)

Operator: Bruce Gordon  
ITS Job Number: 3027657  
Wed Dec 11 17:33:13 2002

Company: PROXIM CORP.

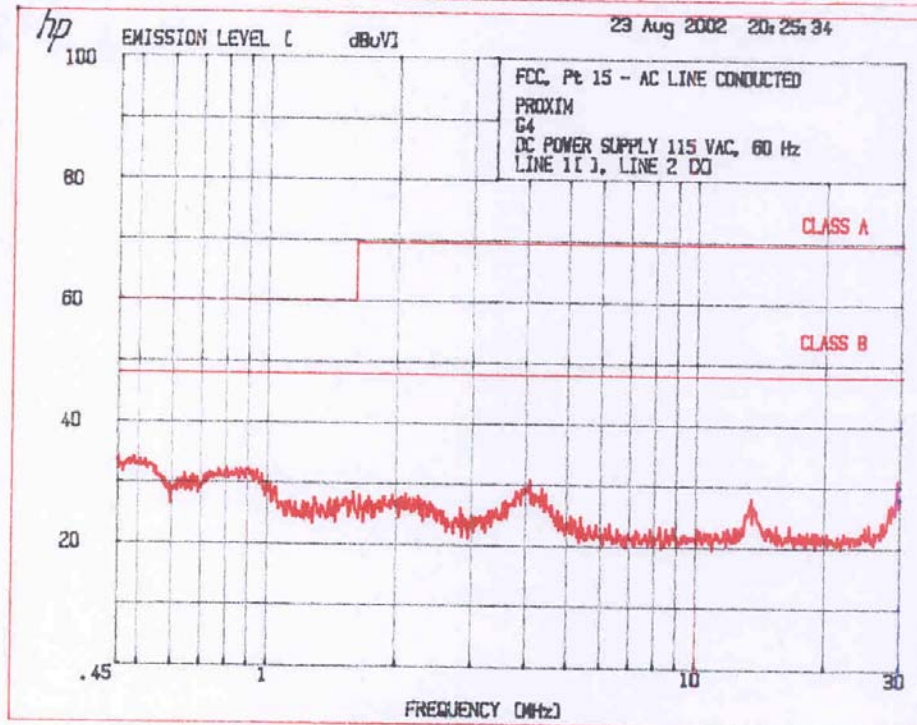
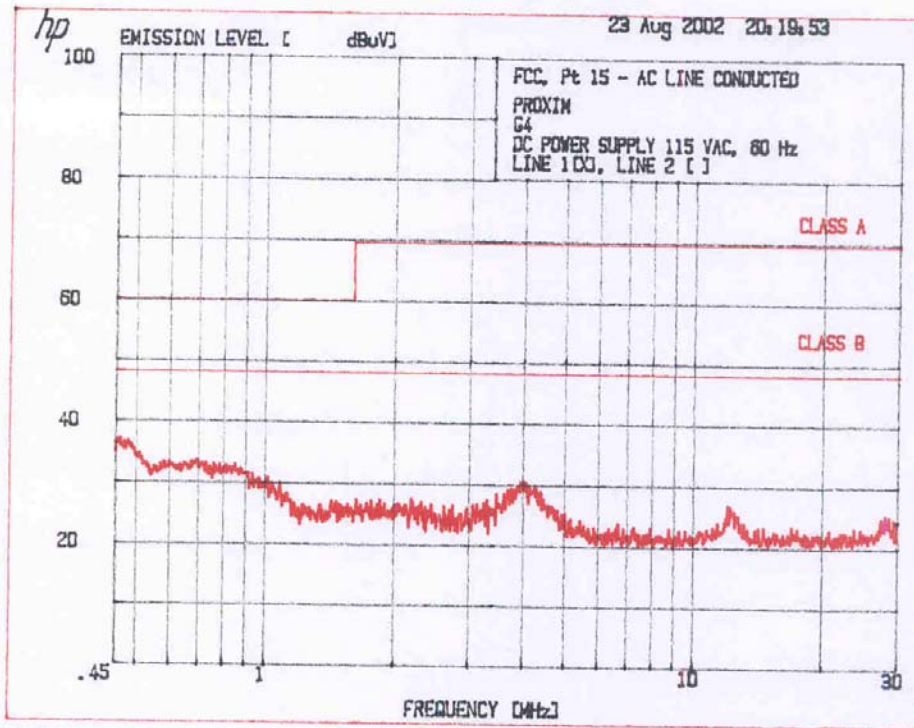
Frequency	Quasi Pk FS	Limit@10m	Margin	RA	CF	AG	AF
MHz	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(dB)	(dB/m)
539.81	37.4	46.4	-9.0	37.6	6.2	24.6	18.2

Test Mode: Conf. 4 IDU: LIU-2 (DS3)  
Temperature: 21 C  
Humidity: 50 %

4.8 AC Line Conducted Emission  
FCC Rule 15.207

AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to a DC Power Supply which was connected to AC Line through the LISNs.

For the test result, refer to the attached plot.  
The EUT passed by 11 dB.



4.9 Transmitter Duty Cycle Calculation / Measurements  
FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Duty cycle = Maximum ON time in 100 msec/100

Duty cycle correction, dB = 20 \* log (DC)

	See attached spectrum analyzer chart(s) for transmitter timing
	See transmitter timing diagram provided by manufacturer
X	Not applicable.



**5.0 List of Test Equipment**

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
BI-Log Antenna	EMCO	3143	9509-1164	12	3/04/03
Pre-Amplifier	Sonoma Inst.	310	185634	12	01/10/03
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	7/16/03
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	7/16/03
Spectrum Analyzer	Tektronix	2784	B3020108	12	8/08/03
Spectrum Analyzer w/8650 QP Adapter	Hewlett Packard	8568B	1912A0053 2521A01021	12	3/15/03
Double-ridged Horn Antenna	EMCO	3115	8812-3049	12	4/03/03
Horn Antenna	EMCO	3160-09	-	#	#
Horn Antenna	EMCO	3160-10	-	#	#
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	04/05/03
Pre-amplifier	CTT	ACO/400	47526	12	10/5/02
Pre-Amplifier	Avantek	AFT-18855	8723H705	12	10/5/02
Power Meter	Hewlett Packard	8900D	3607U00673	12	7/8/03
LISN	FCC	FCC-LISN-50-50-M-H	2011	12	1/02/03

# No calibration required