



**FCC CFR47 PART 15 SUBPART E
CERTIFICATION**

TEST REPORT

FOR

PROXIM HARMONY 802.11a ACCESS POINT

MODEL: 8571

FCC ID: IMK-AP5C

REPORT NUMBER: 02U1141-1

ISSUE DATE: FEBRUARY 27, 2002

Prepared for

PROXIM

**510 DE GUIGNE DRIVE
SUNNYVALE, CA 94085
USA**

Prepared by

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1. TEST RESULT CERTIFICATION

COMPANY NAME: PROXIM
510 DE GUIGNE DRIVE
SUNNYVALE, CA 94085 USA

CONTACT PERSON: MIKE REILLY / RF DESIGN ENGINEER

TELEPHONE NO: 408-731-2613

EUT DESCRIPTION: PROXIM HARMONY 802.11A ACCESS POINT

MODEM NAME: 8571

DATE TESTED: JANUARY 21 – FEBRUARY 26, 2002

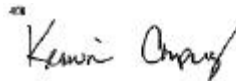
TYPE OF EQUIPMENT	INTENTIONAL RADIATOR
EQUIPMENT TYPE	5.25 – 5.35 GHz TRANSCEIVER
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992, TIA/EIA 603
PROCEDURE	CERTIFICATION
FCC RULE	CFR 47 PART 15.E

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirements set forth in CFR 47, PART 15, Subpart E. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

Tested By:



MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

KERWIN CORPUZ
ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The product is a WLAN adapter operating in the 5.25-5.35GHz band with a maximum TX output power of 20mW. It is a small desktop box with associated wall plug mount 12 VDC power supply, dual external antenna connectors and a 10/100 baseT port for connection to standard wired LAN. There are four antennas available, two Omni antennas each with a 5dBi gain and two Patch antennas, one with 7dBi gain and one with 12dBi gain. The two tested antennas are Omni antenna with 5dBi gain, and Patch antenna with 12dBi gain.

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.407.

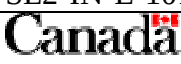
4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

5.1. Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	 R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

6. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

6.1. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

7. SUPPORT EQUIPMENT / TEST DIAGRAM

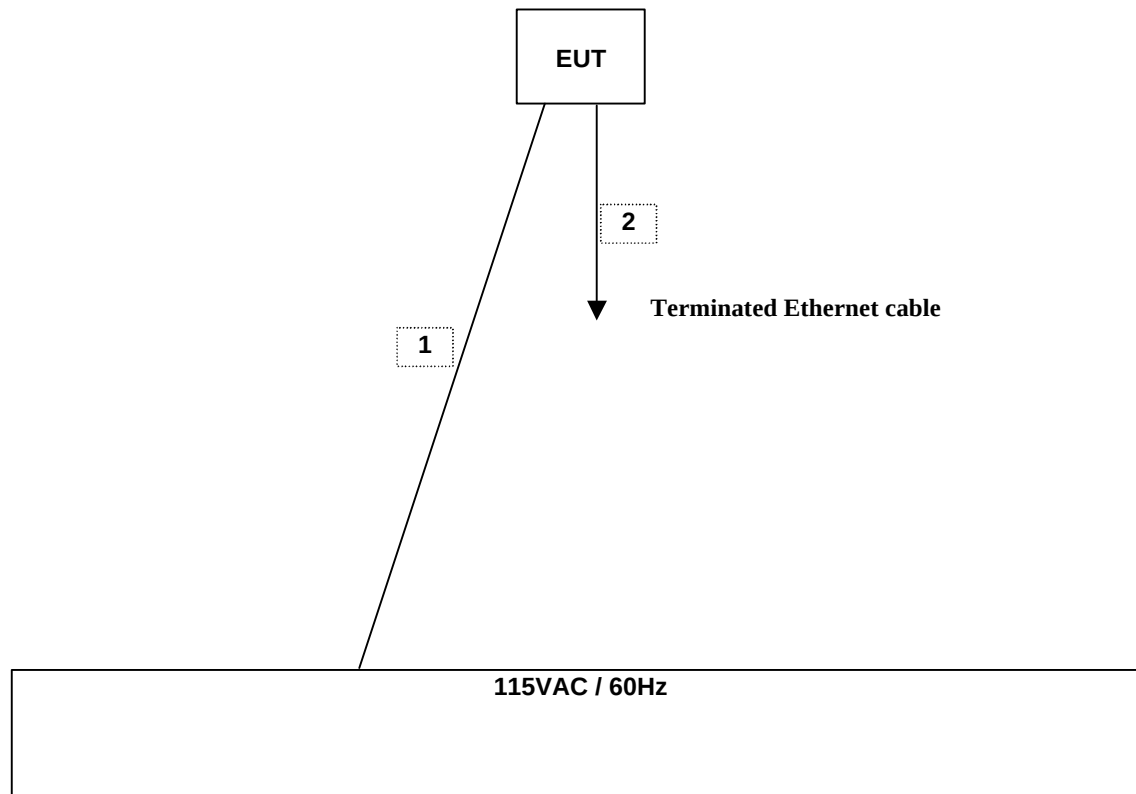
Support Equipment

No support equipment was used during the test.

Test Equipment

TEST EQUIPMENTS LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Spectrum Analyzer	HP100Hz - 22GHz	8566B	2140A01296	5/4/02
Spectrum Display	HP	85662A	2152A03066	5/10/02
Quasi-Peak Detector	HP9K - 1GHz	85650A	2811A01155	5/4/02
Pre-Amplifier, 25 dB	HP 0.1 - 1300MHz	8447D (P_1M)	2944A06833	8/21/02
Antenna, BiLog	Chase 30 - 2000MHz	CBL6112	2049	8/2/02
Line Filter	Lindgren 10k - 10GHz	LMF-3489	497	N.C.R.
LISN	Fisher Cus. Comm.	LISN-50/250-25-2	2023	8/2/02
EMI Test Receiver	Rohde & Schwarz	ESHS 20	827129/006	4/2/02
Pre-amplifier, 35.5 dB (1 - 26.5GHz)	HP	8449B	3008A00369	5/30/02
Horn Antenna(1 - 18GHz)	EMCO	3115	9001-3245	6/20/02
Horn Antenna,(18 - 26GHz)	Antenna Research Associate	MWH 1826/B	1013	7/26/02
Harmonic Mixer (26.5-40GHz)	HP	11970A	3003A04190	9/23/02
Horn Antenna(26.5 - 40GHz)	Dico	1149	2	9/22/02
High Pass Filter(7.6GHz)	FSY Microwave	7600-9SS	1	N.C.R.
10 dB Attenuator	Mini-Circuits	MCL BW-S10W2	0026	In House Cal
Environmental Chamber	Thermotron	SE 600-10-10	29800	3/23/02
Spectrum Analyzer	HP	8593E	3710A00205	6/2/02

Test Diagram



I/O Cables

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	AC	1	US 115V	Un-shielded	2m	No	No	bundled @ Line Conducted test
2	Ethernet	1	RJ45	Un-shielded	2m	No	Yes	N/A

8. APPLICABLE RULES AND BRIEF TEST RESULT

§15.403- EMISSION BANDWIDTH

(c) Emission bandwidth. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test result:

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Bandwidth(MHz)</i>
<i>56</i>	<i>5280</i>	<i>26.25</i>
<i>60</i>	<i>5300</i>	<i>26.60</i>
<i>64</i>	<i>5320</i>	<i>26.08</i>

§15.407(a)- POWER LIMIT

(2) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10\log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Spec limit: As specified above

For Channel 56, B is 26.25 MHz and the antenna gain is 12 dBi

therefore the limit is $11 \text{ dBm} + 10\log(26.25) \text{ dB} - 6 \text{ dB} = 19.19 \text{ dBm}$

For Channel 60, B is 26.60 MHz and the antenna gain is 12 dBi

therefore the limit is $11 \text{ dBm} + 10\log(26.60) \text{ dB} - 6 \text{ dB} = 19.25 \text{ dBm}$

For Channel 64, B is 26.08 MHz and the antenna gain is 12 dBi

therefore the limit is $11 \text{ dBm} + 10\log(26.08) \text{ dB} - 6 \text{ dB} = 19.16 \text{ dBm}$

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Power Limit</i>
<i>56</i>	<i>5280</i>	<i>82.99 mW (19.19 dBm)</i>
<i>60</i>	<i>5300</i>	<i>84.14 mW (19.25 dBm)</i>
<i>64</i>	<i>5320</i>	<i>82.41 mW (19.16 dBm)</i>

Test result: No non-compliance noted.

$10\log B + \text{measured} = \text{Measured Power}$

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Measured Power</i>
<i>56</i>	<i>5280</i>	<i>13.84 mW (11.41 dBm)</i>
<i>60</i>	<i>5300</i>	<i>18.28 mW (12.62 dBm)</i>
<i>64</i>	<i>5320</i>	<i>14.87 mW (11.72 dBm)</i>

§15.407(a)- PEAK POWER SPECTRAL DENSITY

(2) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Spec limit: the antenna gain is 12 dBi, therefore the limit is 5 dBm.

Test result: No non-compliance noted.

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Results (dBm)</i>
<i>56</i>	<i>5280</i>	<i>-7.61</i>
<i>60</i>	<i>5300</i>	<i>-6.29</i>
<i>64</i>	<i>5320</i>	<i>-6.62</i>

§15.407(a)- PEAK EXCURSION

(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Spec limit: <13 dB

Test result: No non-compliance noted.

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Results (dBm)</i>
<i>56</i>	<i>5280</i>	<i>5.48</i>
<i>60</i>	<i>5300</i>	<i>5.63</i>
<i>64</i>	<i>5320</i>	<i>5.04</i>

§15.407(b)- UNDESIRABLE EMISSION – BAND EDGE

(2) 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.

***Spec limit: < -27 dBm/MHz EIRP outside the 5.15 to 5.35 GHz band.
<-27 dBm/MHz EIRP within 5.15 to 5.25 GHz band***

Test result: No non-compliance noted.

Band Edge	Reading	Antenna Gain	EIRP	Limit	Margin
	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
below 5.15 GHz	-48.70	12	-36.70	-27	-9.7
5.15 to 5.25 GHz	-40.84	12	-28.82	-27	-1.82
above 5.35 GHz	-42.00	12	-30.00	-27	-3.00

§15.407(g)- FREQUENCY STABILITY

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Spec limit: Emission remains within the range of 5.25 to 5.35 GHz over the temperature range of -30°C to +50°C.

Test result: No non-compliance noted.

§15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Spec limit: As specified above,.

Test result: No non-compliance noted.

§15.207- CONDUCTED LIMITS

(a) For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 450 kHz to 30 MHz shall not exceed 250 microvolts. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

FCC PART 15.207

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)/QP
450kHz-30MHz	250	48

Spec limit: As specified above.

Test result: No non-compliance noted.

§15.209- RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

FCC PART 15.209

MEASURING DISTANCE OF 3 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Spec limit: As specified above.

Test result: No non-compliance noted.

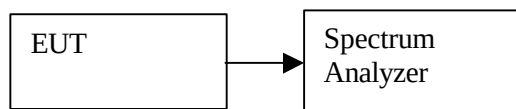
9. TEST SETUP, PROCEDURE AND RESULT

9.1. EMISSION BANDWIDTH

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 300 kHz ☐ 1 MHz	☒ 300 kHz ☐ 1 MHz

TEST SETUP



TEST PROCEDURE

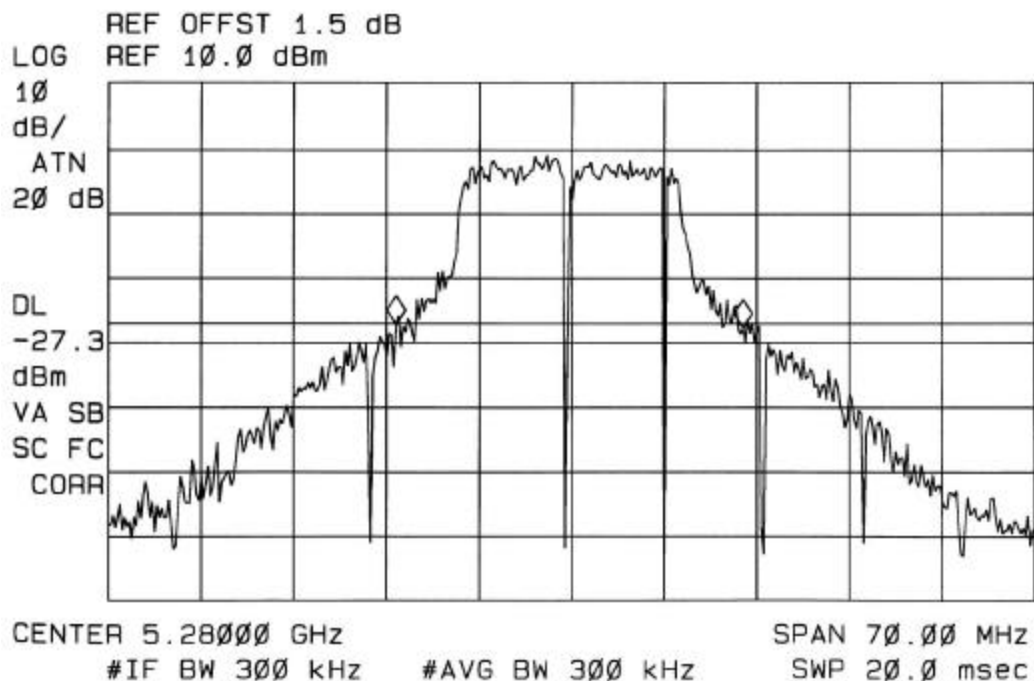
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to approximately 1% of the emission bandwidth. The 26 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 26 dB.

RESULT

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Bandwidth(MHz)</i>
56	5280	26.25
60	5300	26.60
64	5320	26.08

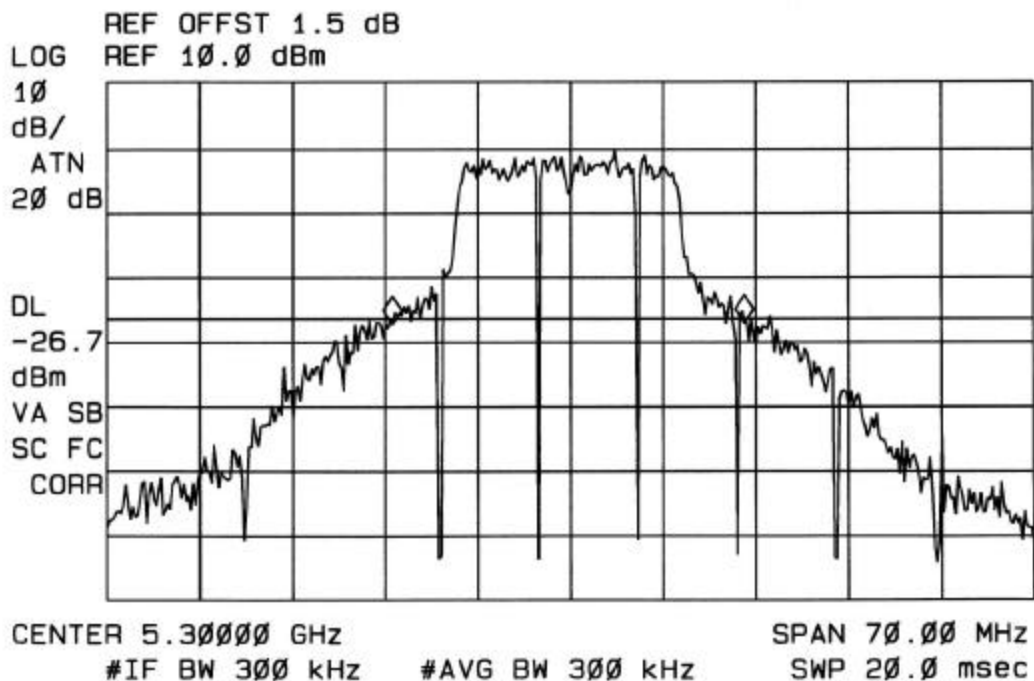
10:59:11 FEB 26, 2002 L&W
PROXIM 8571, occupied BW, MID CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 26.25 MHz
-.52 dB



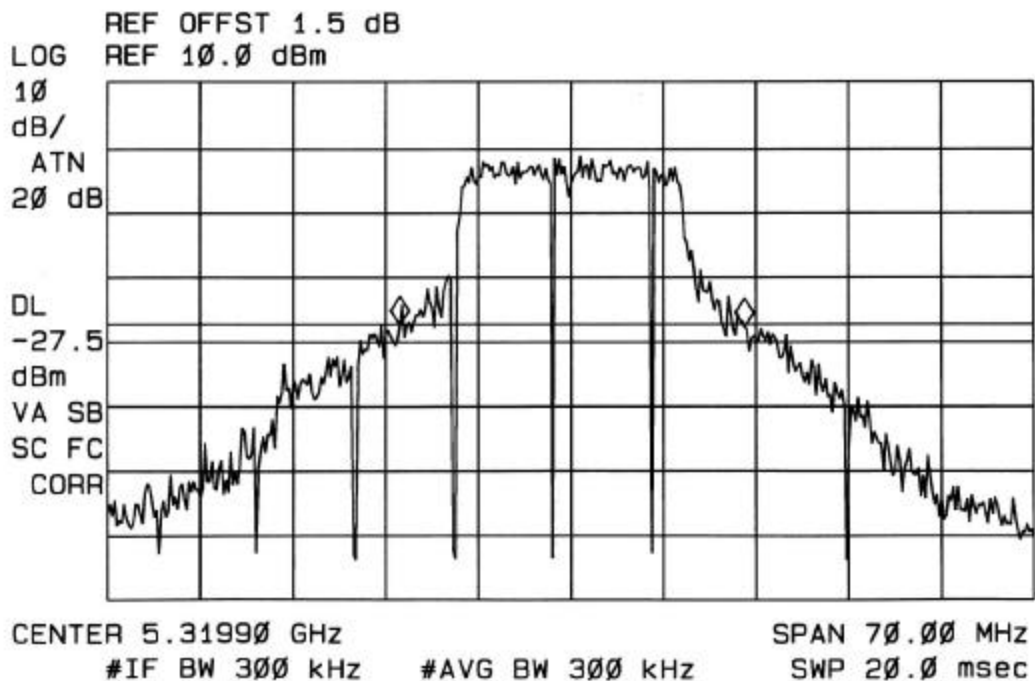
11: 13: 32 FEB 26, 2002
PROXIM 8571, occupied BW, MID CH

ACTV DET: PEAK
MEAS DET: PEAK GP AVG
MKR 26.60 MHz
.18 dB



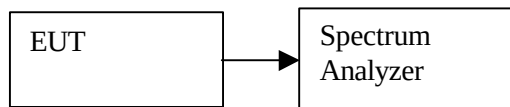
10:46:11 FEB 26, 2002
PROXIM 8571, occupied BW, HIGH CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 26.08 MHz
-.35 dB



9.2. PEAK POWER

TEST SETUP



Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 1 MHz	☒ 30 kHz

TEST PROCEDURE

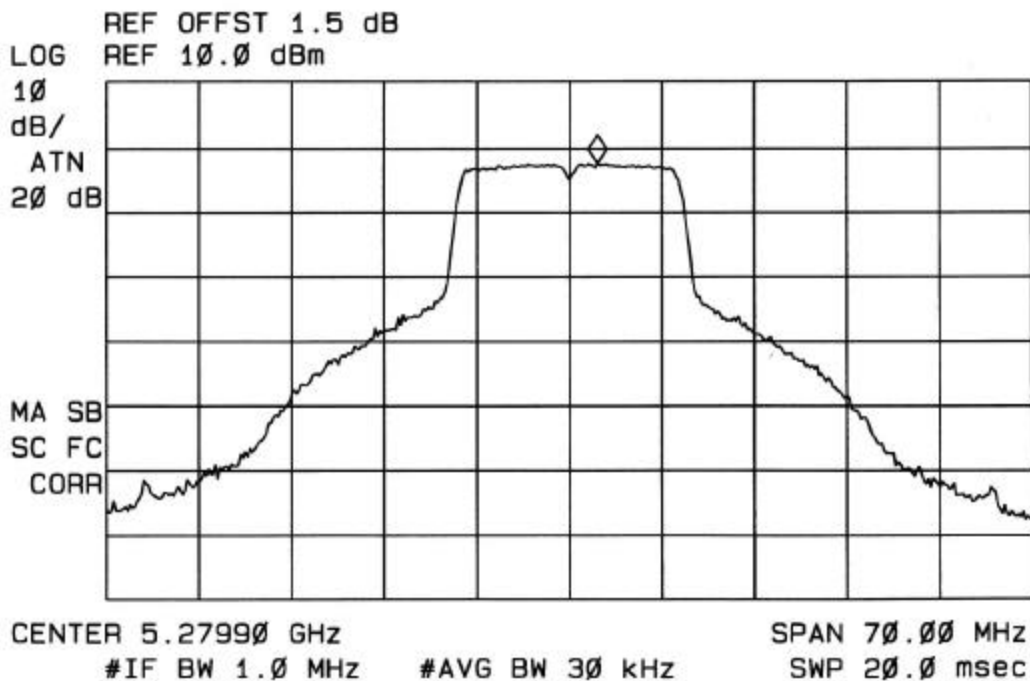
The EUT is configured on a test bench as shown above in a continuously transmitting / receiving mode. For each channel measured, the highest reading is corrected for the emissions bandwidth of that channel to yield the peak power.

Peak Power = measured reading + 10 log (B), B as measured in Section 9.1.

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Measured Power (dBm)</i>	<i>B (MHz)</i>	<i>Peak Power</i>
56	5280	-2.78	26.25	13.84 mW (11.41 dBm)
60	5300	-1.63	26.60	18.28 mW (12.62 dBm)
64	5320	-2.44	26.08	14.87 mW (11.72 dBm)

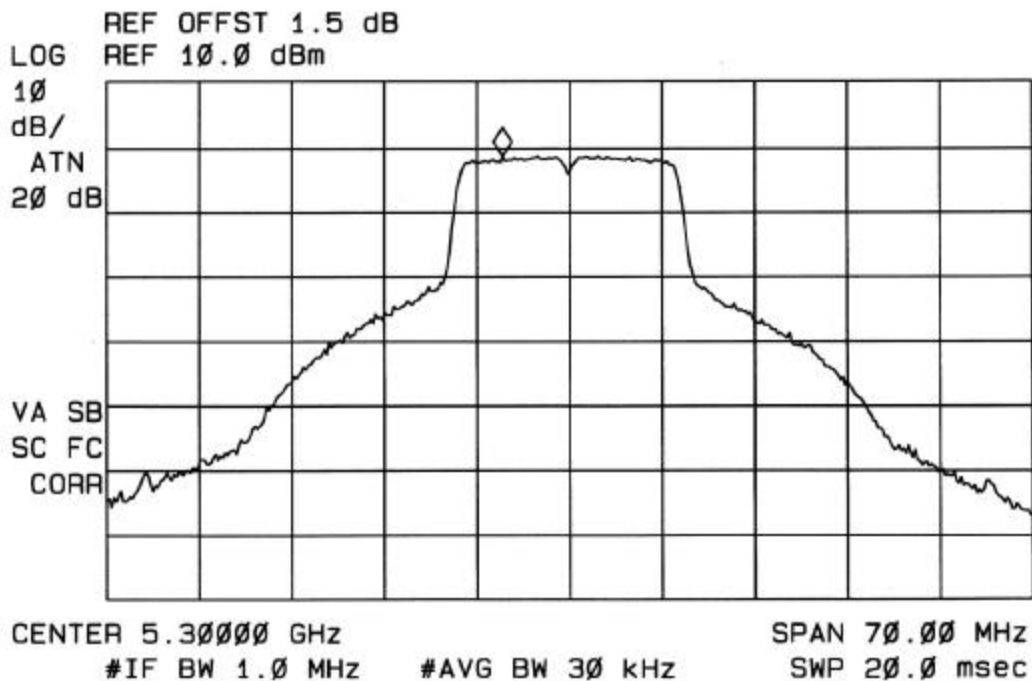
10:36:38 FEB 26, 2002
PROXIM 8571, Power Output, LOW CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.28200 GHz
-2.78 dBm



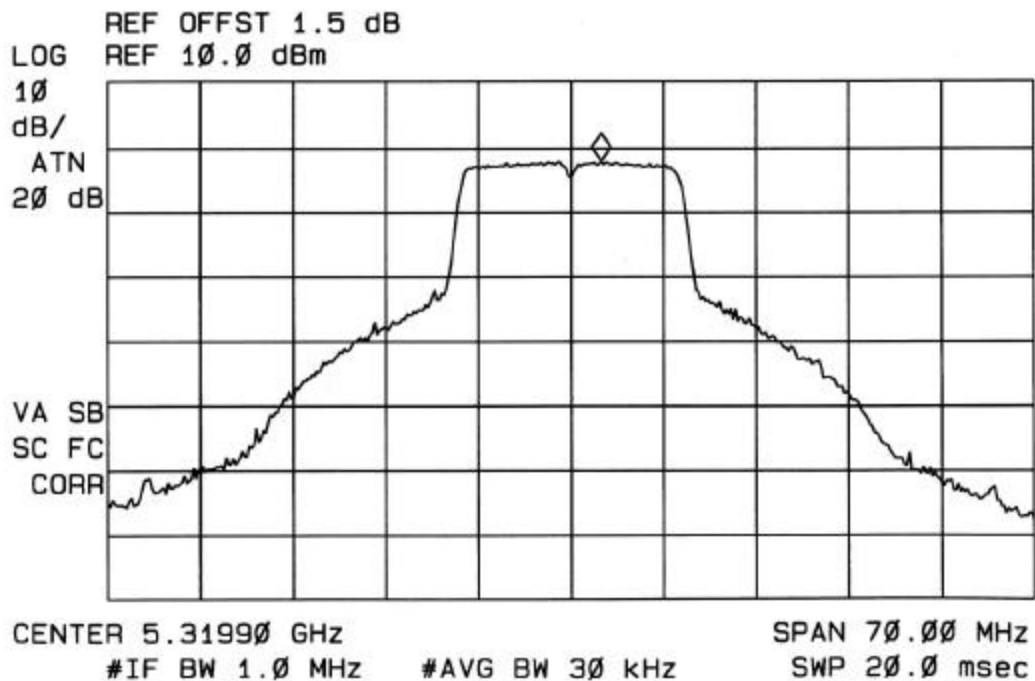
10:32:28 FEB 26, 2002
PROXIM 8571, Power Output, MID CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.29493 GHz
-1.63 dBm



10:40:53 FEB 26, 2002
PROXIM 8571, Power Output, HIGH CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.32218 GHz
-2.44 dBm

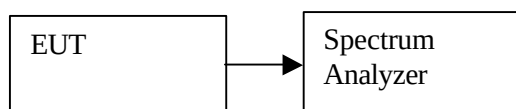


9.3. PEAK POWER SPECTRAL DENSITY

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer, the maximum level in a 1 MHz bandwidth was measured with the spectrum analyzer using 1 MHz RESOLUTION BW and 1 MHz VIDEO BW.

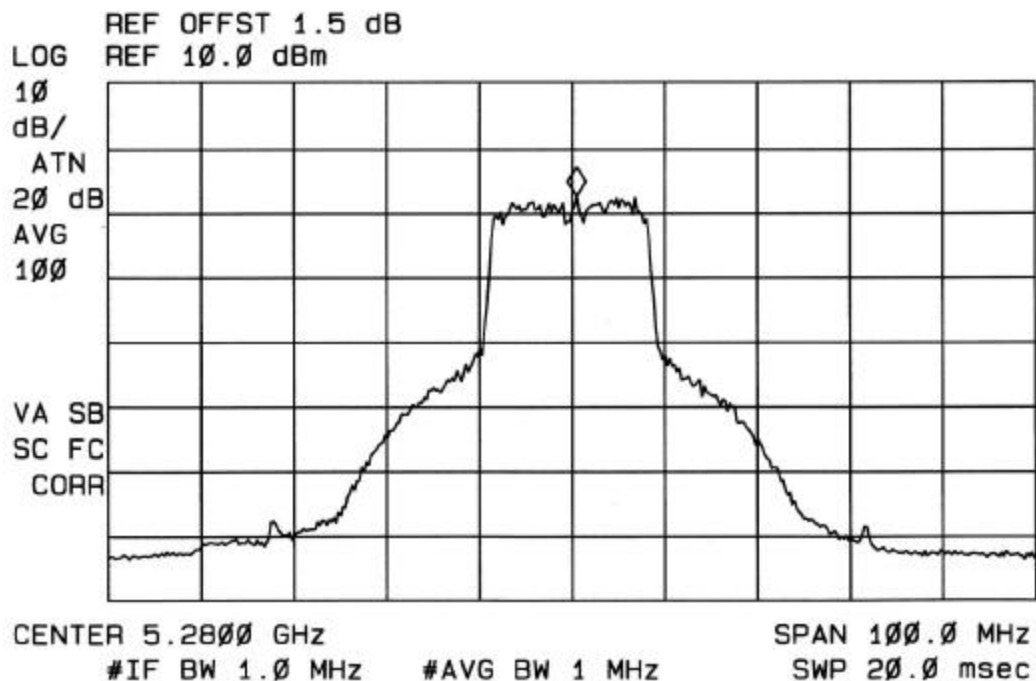
Result:

No non-compliance noted. See plots:

Channel	Frequency (MHz)	Results (dBm)
56	5280	-7.61
60	5300	-6.29
64	5320	-6.62

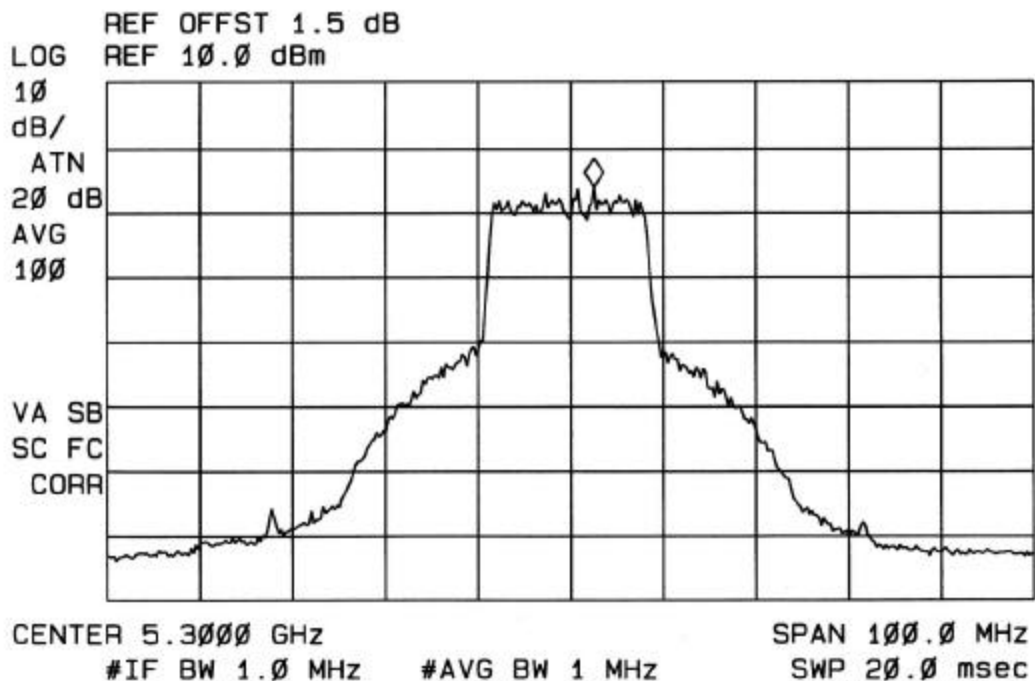
11:37:34 FEB 26, 2002
PROXIM 8571, Power Density, LOW CH

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 5.2805 GHz
-7.61 dBm



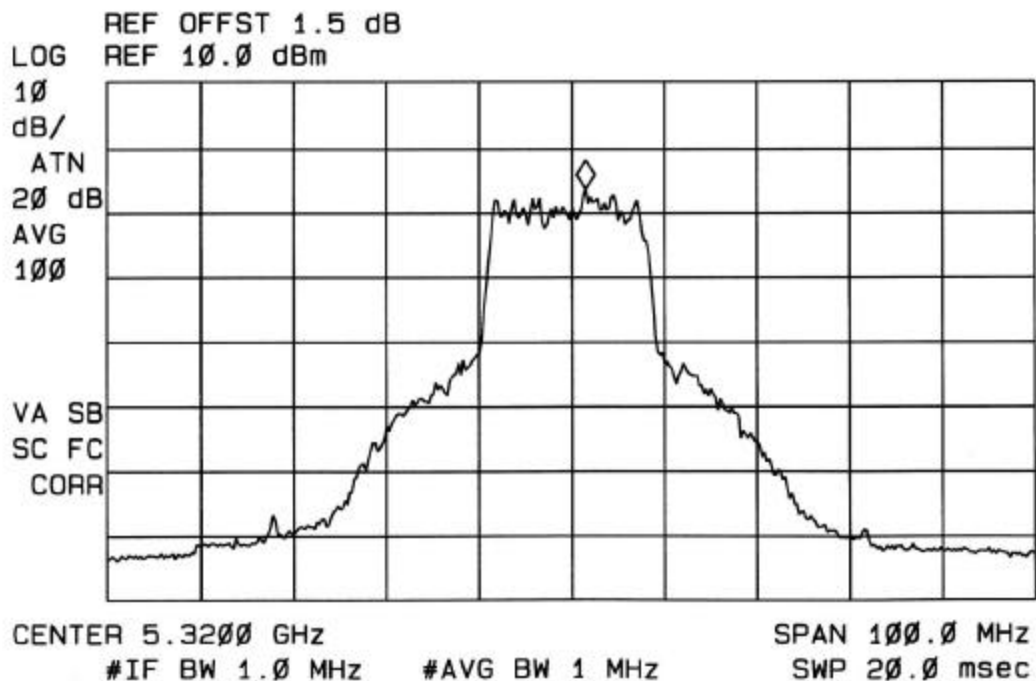
11:36:23 FEB 26, 2002
PROXIM 8571, Power Density, MID CH

ACTV DET: SMPL
MEAS DET: PEAK GP AVG
MKR 5.3025 GHz
-6.29 dBm



11:39:31 FEB 26, 2002
PROXIM 8571, Power Density, HIGH CH

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 5.3215 GHz
-6.62 dBm

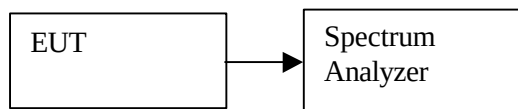


9.4. PEAK EXCURSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 1 MHz	☒ 1 MHz
	☒ Average	☒ 1 MHz	☒ 30 Hz

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer through an attenuator. The spectrum analyzer is set to 1 MHz RESOLUTION BW and 1MHz VIDEO BW. Trace A is set to Max Hold, then to View. The VIDEO BW is readjusted to 30 kHz, and the signal under this measurement condition is captured in Trace B.

The difference between the traces is investigated. The marker is placed at the frequency which shows the largest difference. The amplitude delta between the traces at this frequency is the peak excursion.

Result:

No non-compliance noted. See plots:

Channel	Frequency (MHz)	Results (dBm)
56	5280	5.48
60	5300	5.63
64	5320	5.04

11:58:26 FEB 26, 2002

PROXIM 8571, Peak/Average Ratio, LOW CH

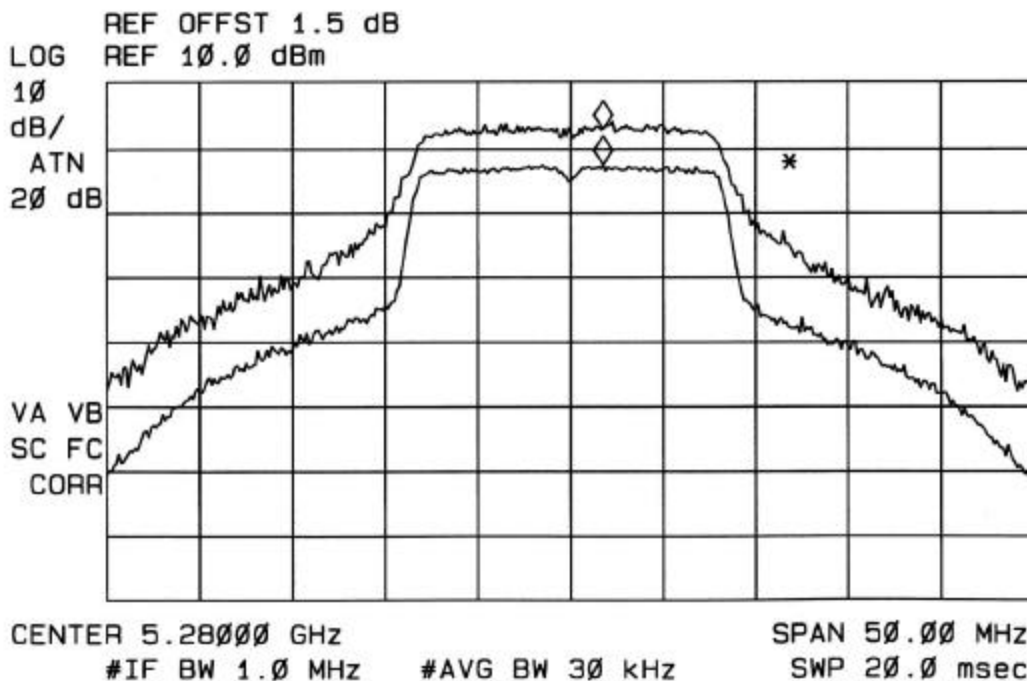
Peak Excursion

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 0 Hz

5.48 dB



11:56:48 FEB 26, 2002

PROXIM 8571, Peak/Average Ratio, MID CH

Peak Excursion

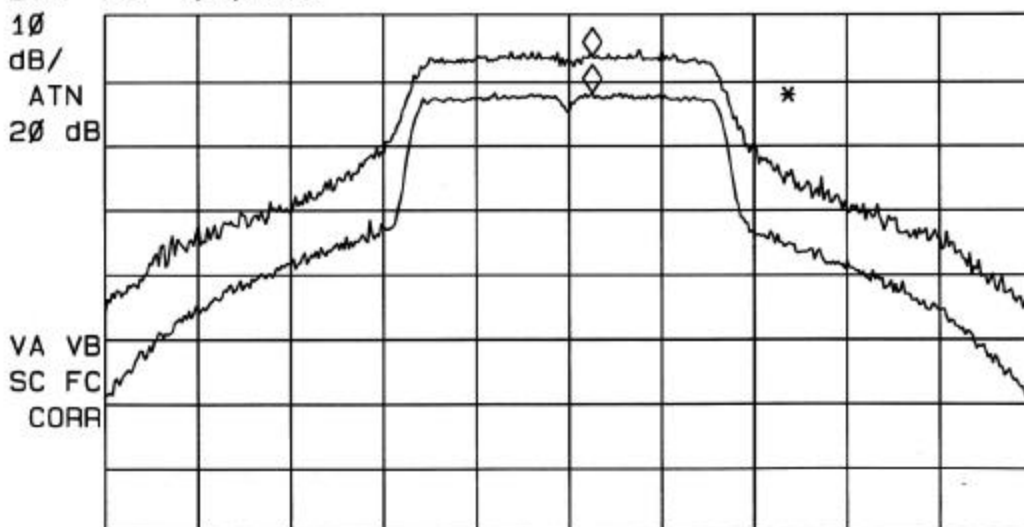
ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 0 Hz

5.63 dB

REF OFFST 1.5 dB
LOG REF 10.0 dBm



CENTER 5.30000 GHz

#IF BW 1.0 MHz

#AVG BW 30 kHz

SPAN 50.00 MHz

SWP 20.0 msec

11: 53: 26 FEB 26, 2002
PROXIM 8571, Peak/Average Ratio, HIGH CH

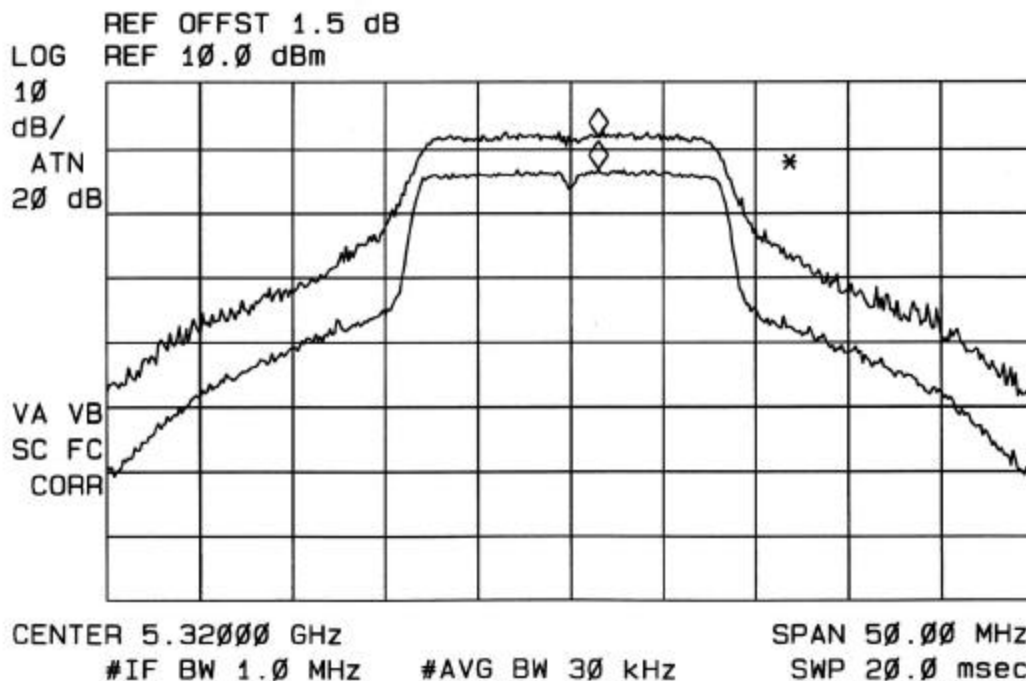
Peak Excursion

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 0 Hz

5.04 dB

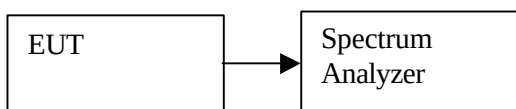


9.5. UNDESIRABLE EMISSION - BAND EDGE

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer. The resolution and video bandwidth were set to 1MHz. The lower and upper band edge is investigated.

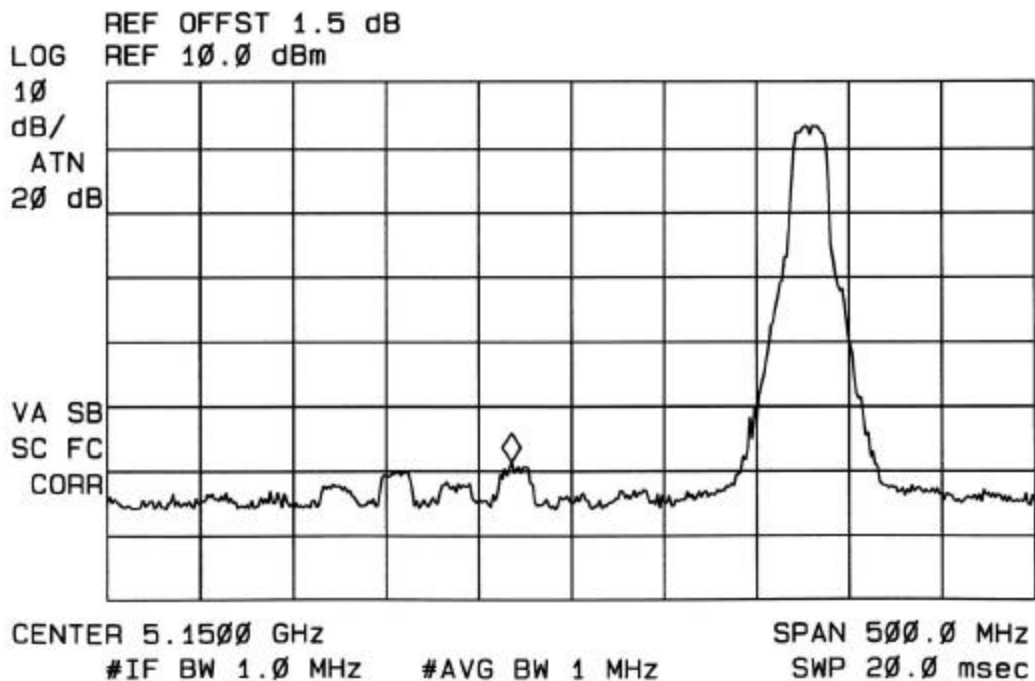
RESULT

No non-compliance noted. See plots:

Band Edge	Reading (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
below 5.15 GHz	-48.70	12	-36.70	-27	-9.7
5.15 to 5.25 GHz	-40.84	12	-28.82	-27	-1.82
above 5.35 GHz	-42.00	12	-30.00	-27	-3.00

12:04:55 FEB 26, 2002
PROXIM 8571, Bandedge <5.15 GHz, LOW CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.1175 GHz
-48.70 dBm



13: 40: 26 FEB 26, 2002

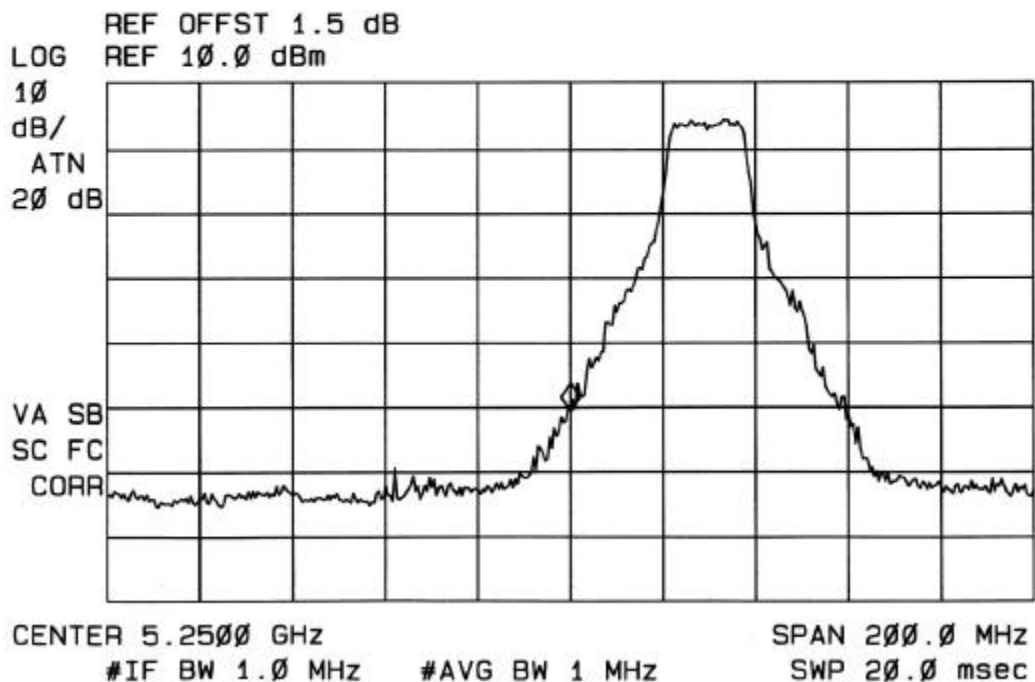
PROXIM 8571, Bandedge 5.15-5.25 GHz, LOW CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

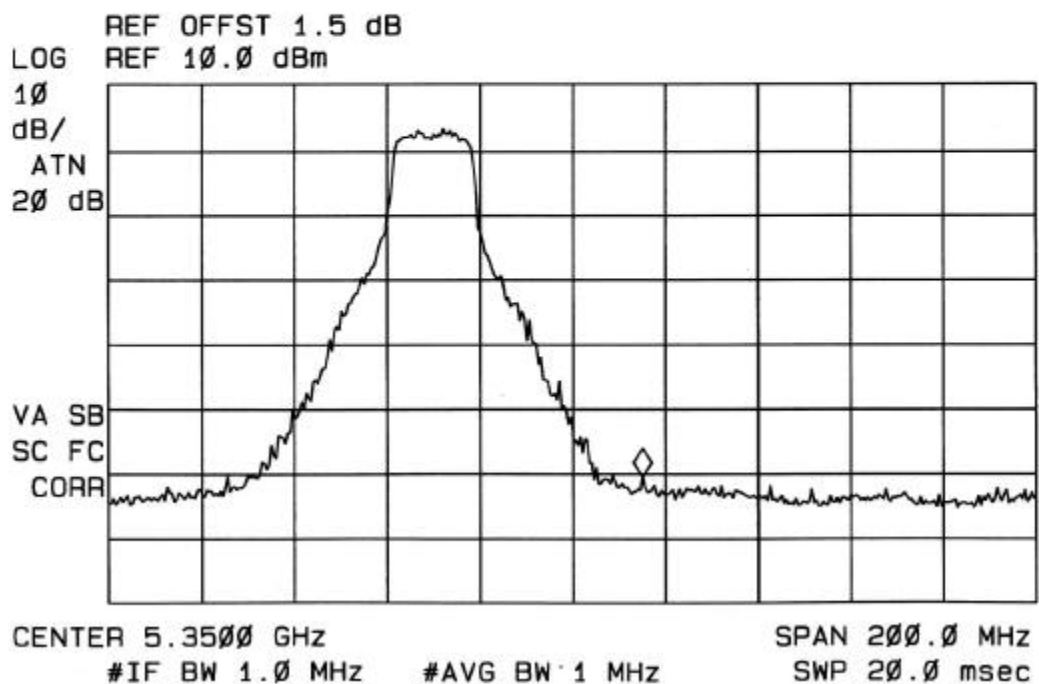
MKR 5.2500 GHz

-40.84 dBm



12:09:01 FEB 26, 2002
PROXIM 8571, Bandedge >5.35 GHz, HIGH CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.3650 GHz
-50.57 dBm



* THE AMPLITUDE VALUE AT 5.35 GHz IS -42 dBm

9.6. FREQUENCY STABILITY

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Refer to Theory of Operations for compliance.

Theory of Operations

The Proxim Harmony 8570 Access Point device uses 8 channels between 5.28 GHz and 5.32 GHz. The bandwidth is at most 26.6 MHz wide centered at these frequencies, or a peak deviation of ± 13.3 MHz.

The Proxim Harmony 8570 Access Point device also requires a ± 20 ppm XTAL over temperature and with aging. This required per the 802.11a specification. This yields a stability of ± 106.4 kHz at the highest channel (5.32 GHz). The peak deviation including modulation and stability is ± 13.4064 MHz. The lowest channel (5.28 MHz) is centered 30 MHz above the lower band limit. The highest channel (5.32 MHz) is centered 30 MHz below the upper band limit. Therefore the device will maintain emissions within the band of operation under normal operating conditions specified in the user manual.

DISCONTINUE TRANSMITTING WITH ABSENCE OF DATA OR OPERATIONAL FAILURE 15.407 (C)

(c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

Refer to Theory of Operations for compliance.

Theory of Operations

Data transmission is always initiated by software, which is then passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets (ACKs, CTS, PS-Poll, etc...) are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.

9.7. UNDESIRABLE EMISSION

Conducted RF measurements of the transmitter output were made over the 0 to 2.9 GHz band and the 2.75 to 26 GHz band in order to identify any spurious signals that require further investigation or measurements on the radiated emissions site. Signals that are outside the 15.205 restricted bands are measured for compliance with the out-of-band EIRP limit using the substitution method. Signals that are within the 15.205 restricted bands are measured for compliance with 15.209 limits.

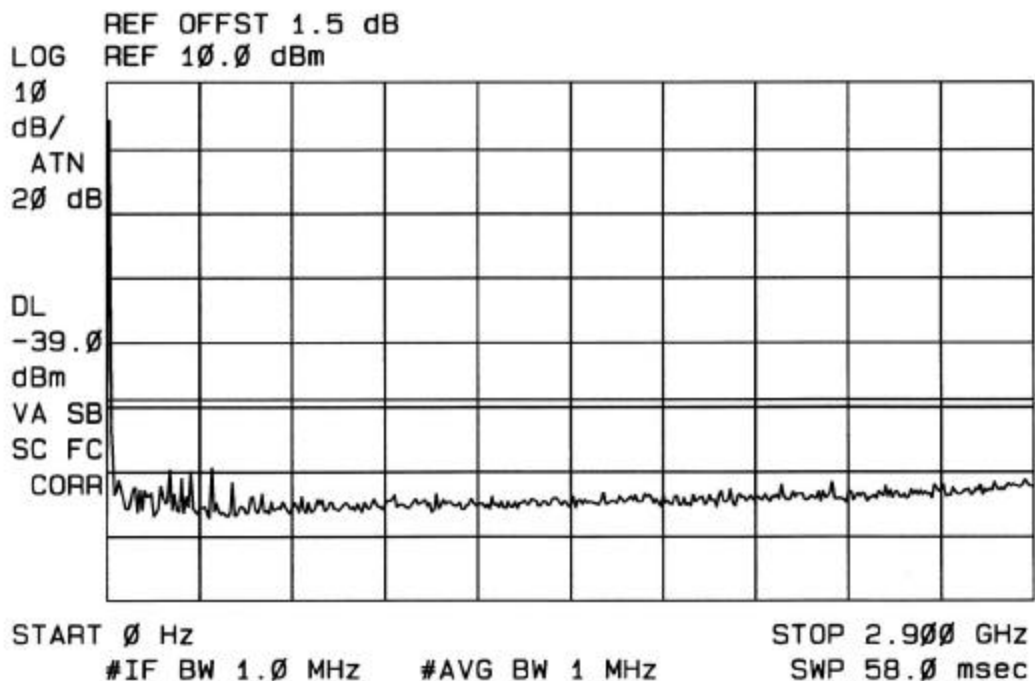
MEASUREMENT PROCEDURE (Substitution Method)

- 1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
- 2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the frequency of the transmitter.
- 3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- 4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- 5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 6). The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- 7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 8). The maximum signal level detected by the measuring receiver shall be noted.
- 9). The transmitter shall be replaced by a tuned dipole (substitution antenna). For frequencies above 1 GHz, at which a tuned dipole is impracticable, a horn antenna shall be used.
- 10). The substitution antenna shall be oriented for vertical polarization and the length of the dipole substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- 11). The substitution antenna shall be connected to a calibrated signal generator.

- 12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- 13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- 14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- 15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- 16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
- 17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

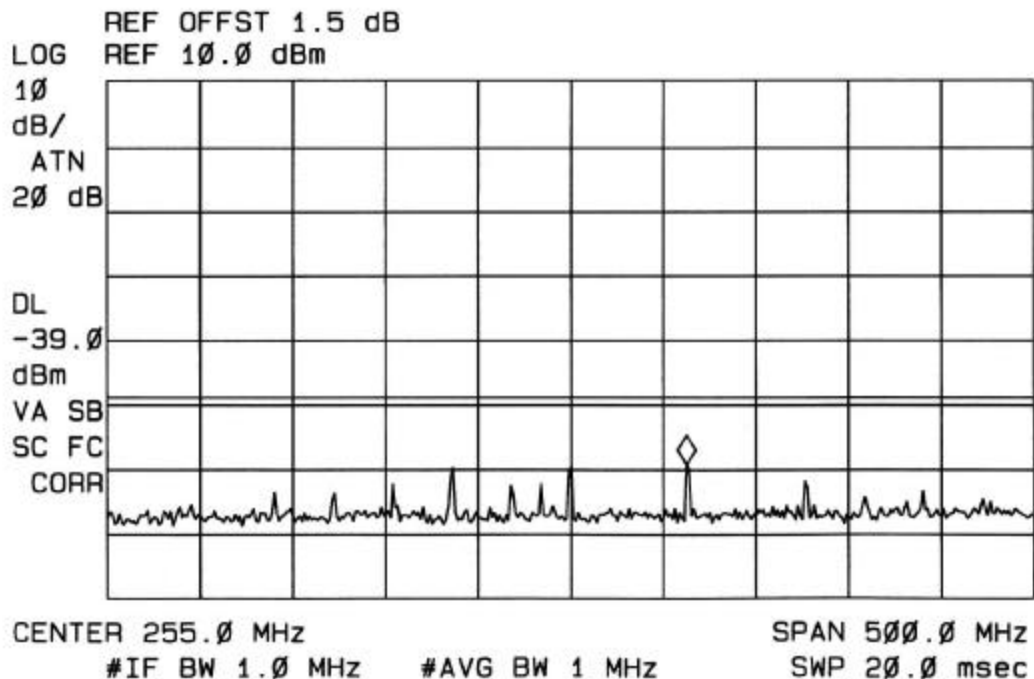
16: 14: 22 FEB 26, 2002
PROXIM 8571, Conducted Spurious, LOW CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



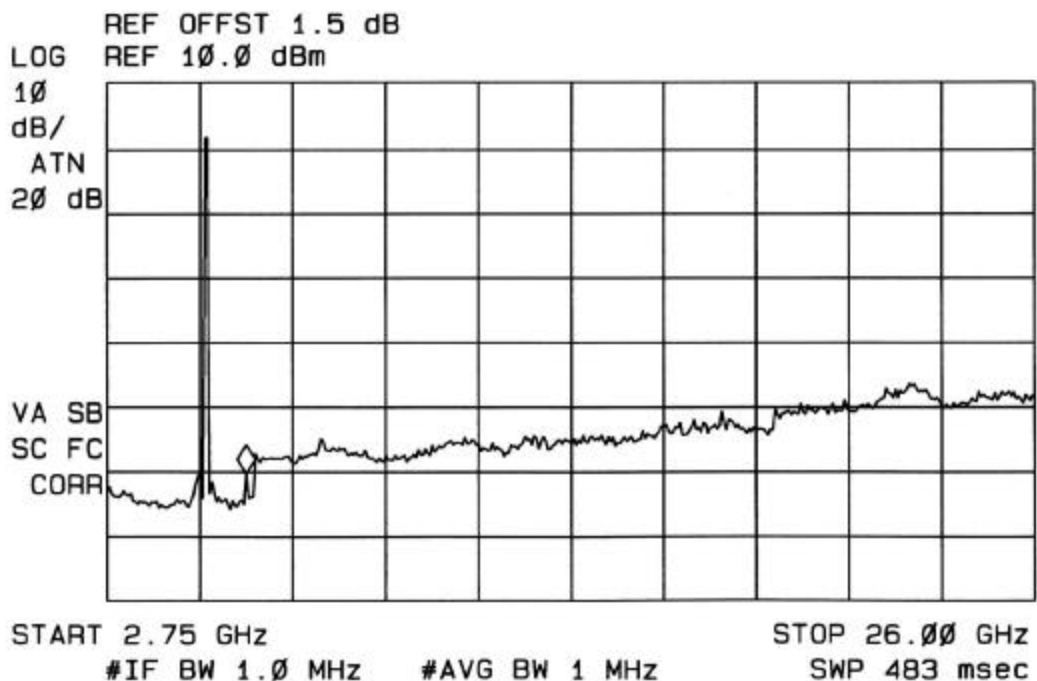
14:40:57 FEB 26, 2002
PROXIM 8571, Conducted Spurious, LOW CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 317.5 MHz
-49.28 dBm



14:02:55 FEB 26, 2002
PROXIM 8571, Conducted Spurious, LOW CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 6.24 GHz
-50.38 dBm



14: 14: 59 FEB 26, 2002

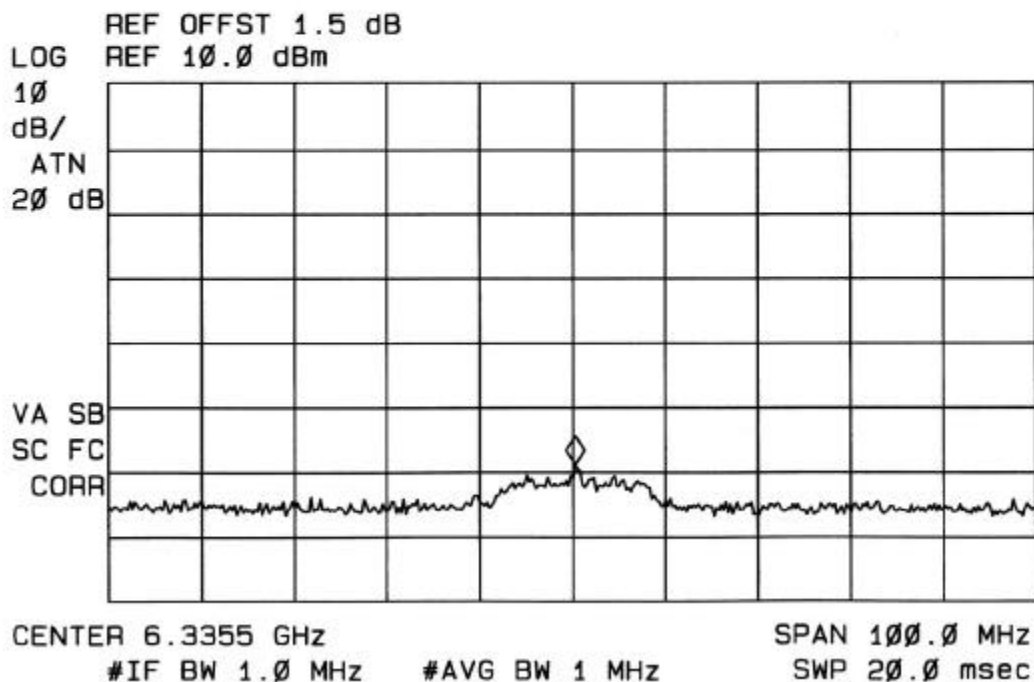
PROXIM 8571, Conducted Spurious, LOW CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

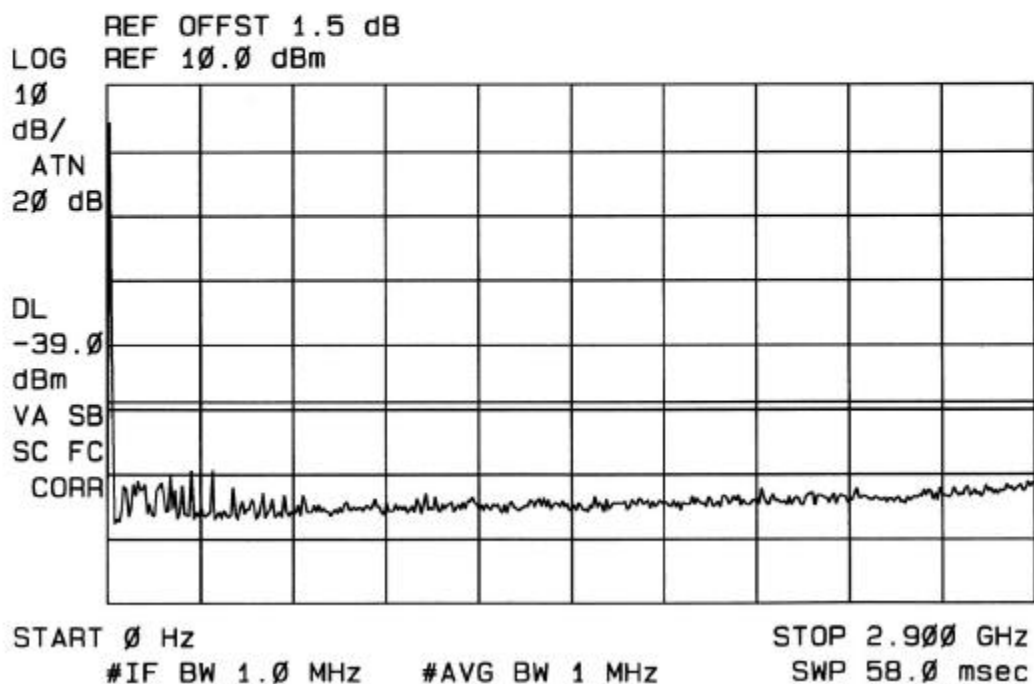
MKR 6.3358 GHz

-48.94 dBm



16: 15: 37 FEB 26, 2002
PROXIM 8571, Conducted Spurious, MID CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



14: 59: 45 FEB 26, 2002

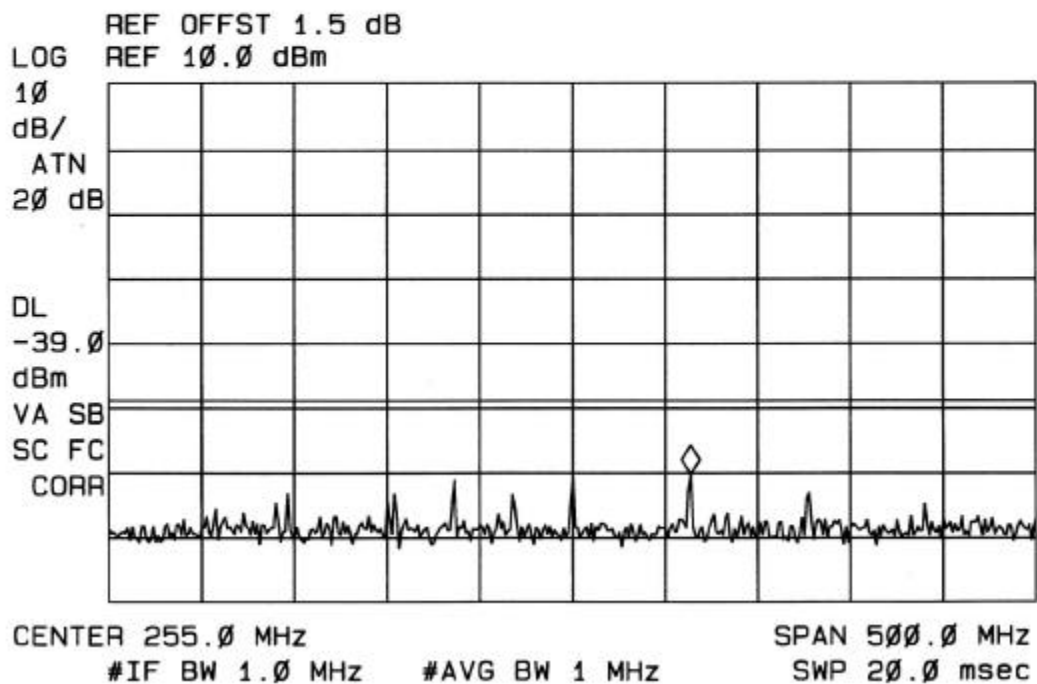
PROXIM 8571, Conducted Spurious, MID CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 318.8 MHz

-50.30 dBm



14:51:41 FEB 26, 2002

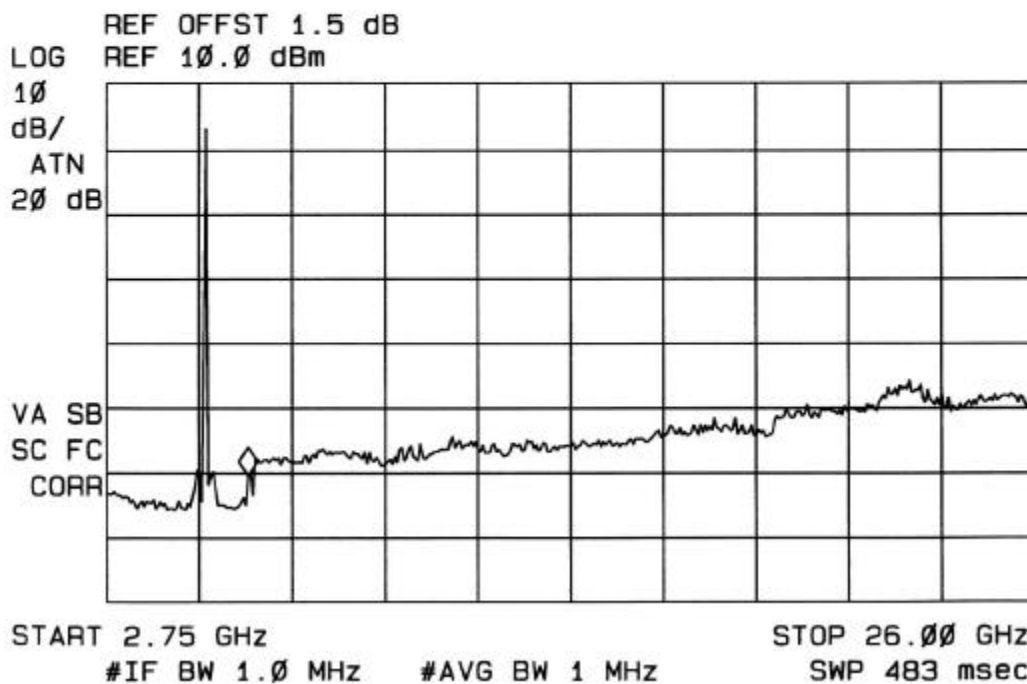
PROXIM 8571, Conducted Spurious, MID CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 6.30 GHz

-50.54 dBm



14: 52: 41 FEB 26, 2002

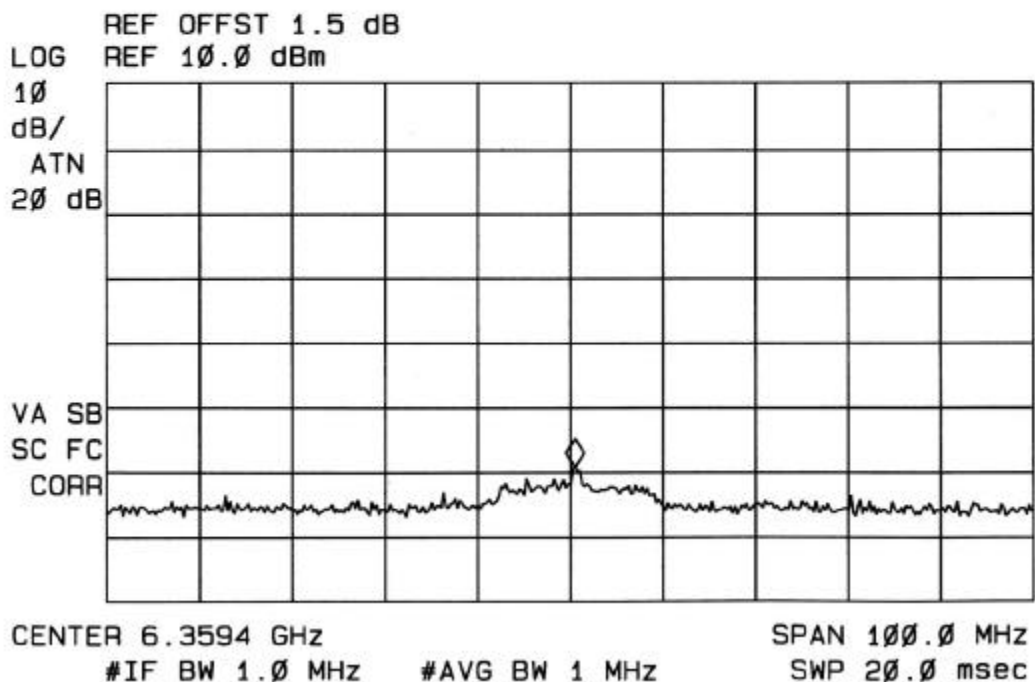
PROXIM 8571, Conducted Spurious, MID CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

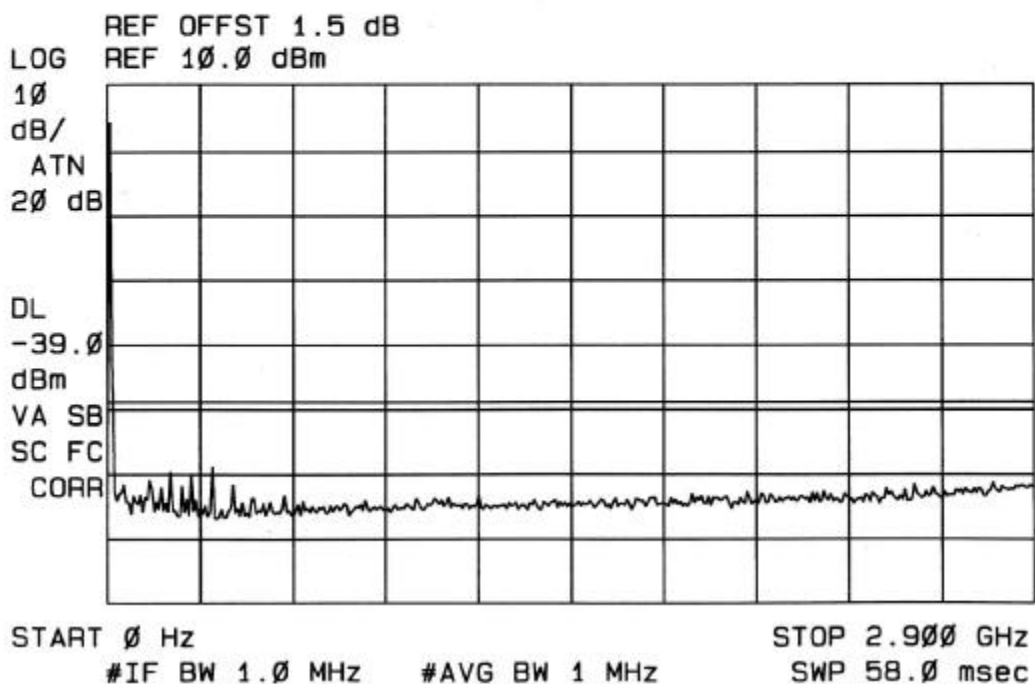
MKR 6.3599 GHz

-49.33 dBm



16: 16: 11 FEB 26, 2002
PROXIM 8571, Conducted Spurious, HIGH CH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



15: 27: 16 FEB 26, 2002

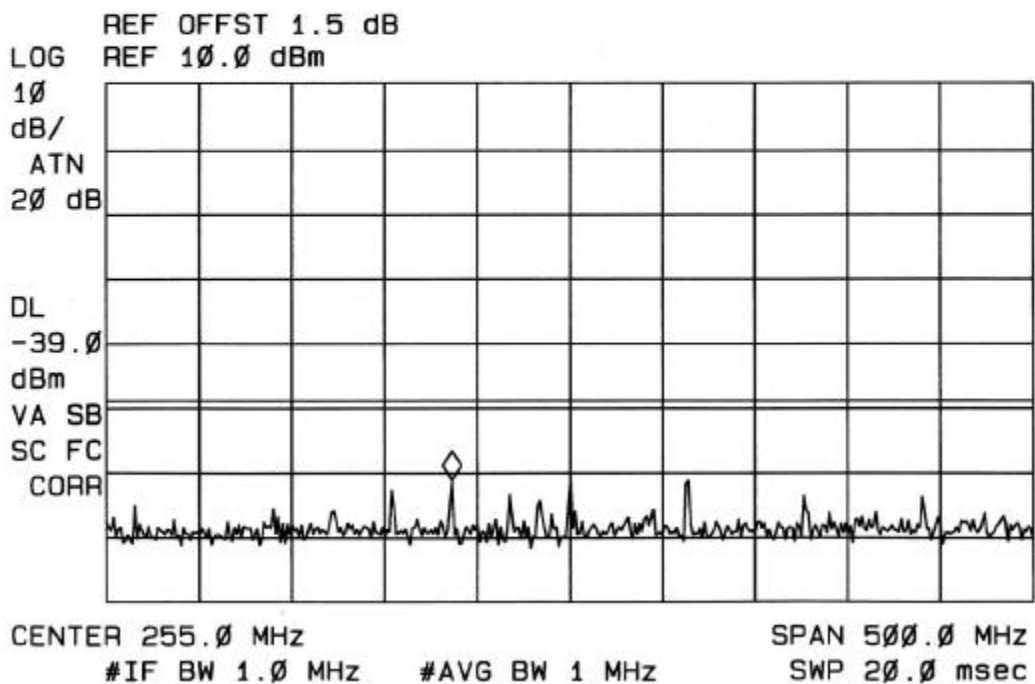
PROXIM 8571, Conducted Spurious, HIGH CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 191.3 MHz

-51.14 dBm



15:07:35 FEB 26, 2002

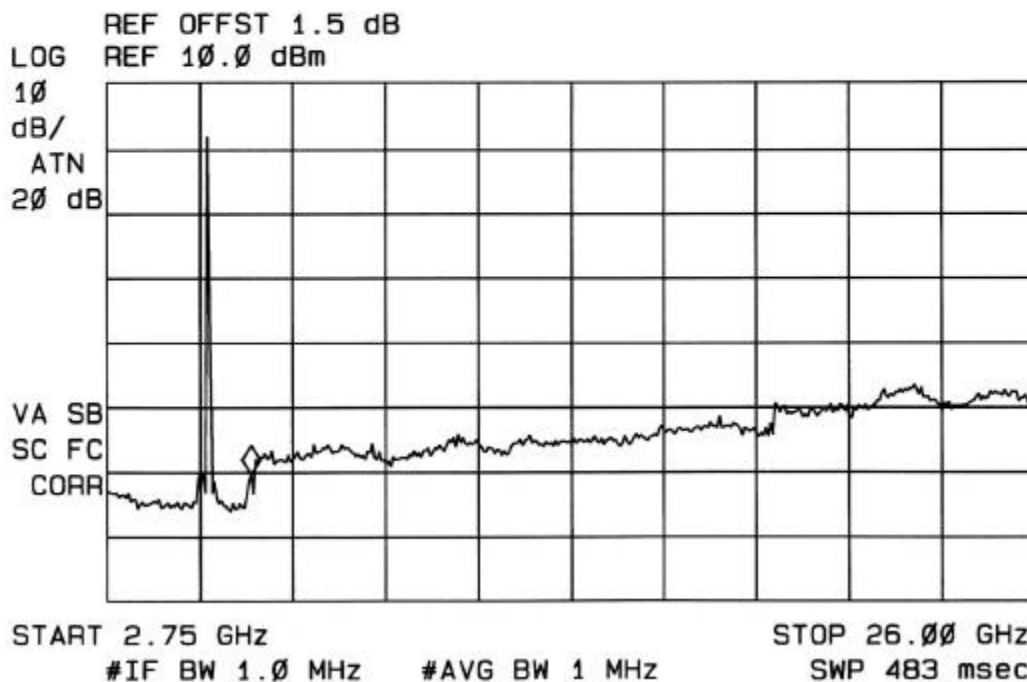
PROXIM 8571, Conducted Spurious, HIGH CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 6.35 GHz

-50.38 dBm



15:08:16 FEB 26, 2002

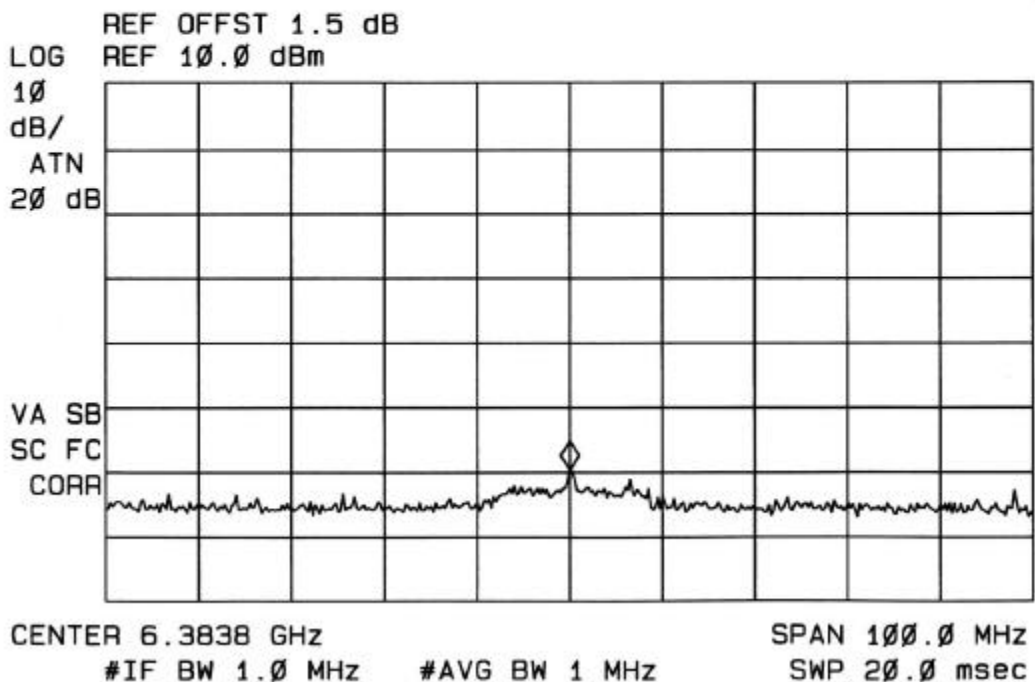
PROXIM 8571, Conducted Spurious, HIGH CH

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 6.3838 GHz

-49.75 dBm



Signals in the 0 to 2.9 GHz conducted spurious plot that were identified as falling in a 15.205 restricted band were measured to 15.209 limits. Other emissions are limited to -27 dBm with EUT's antenna gain of 12 dBi, this corresponds to a measured value of -39dBm. The signal at approximately 6.3 GHz, in the 2.75 to 26 GHz conducted spurious plot was also limited to -39 dBm.

Below data emissions are identified as restricted band and tested to 15.209 limits.

		Project #: 02U1141 Report #: 020226A1 Date & Time: 02/26/02 4:25 PM Test Engr: KERWIN CORPUZ									
FCC, VCCI, CISPR, CE, AUSTEL, NZ UL, CSA, TUV, BSMI, DHHS, NVLAP 561F MONTEREY ROAD, SAN JOSE, CA 95037-9001 PHONE: (408) 463-0885 FAX: (408) 463-0888											
Company: PROXIM EUT Description: Harmony 802.11a Access Point (M/N: 8571) Test Configuration : EUT only Type of Test: FCC CLASS B Mode of Operation: RX											
☒ A-Site		☐ B-Site									
☐ C-Site		☐ F-Site									
6 Worst Data		Descending									
Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_A	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
256.00	41.40	14.55	2.14	27.04	31.04	46.40	-15.36	3mV	270.00	1.00	P
125.00	45.50	14.20	1.53	27.51	33.72	43.50	-9.78	3mV	270.00	1.00	P
125.00	45.70	13.80	1.53	27.51	33.52	43.50	-9.98	3mH	90.00	1.50	P
256.00	46.90	14.03	2.14	27.04	36.02	46.40	-10.38	3mH	45.00	1.50	P

Verified Mode of Operation using TX and RX that the frequency data above does not change including the amplitude.

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Below 1000	☒ Peak	☒ 100 kHz	☒ 100 kHz
	☐ Q.P.	☐ 1 MHz	☐ 10 Hz
Above 1000	☒ Peak	☒ 1 MHz	☒ 1 MHz
	☐ Average	☐ 1 MHz	☐ 10 Hz

TEST SETUP

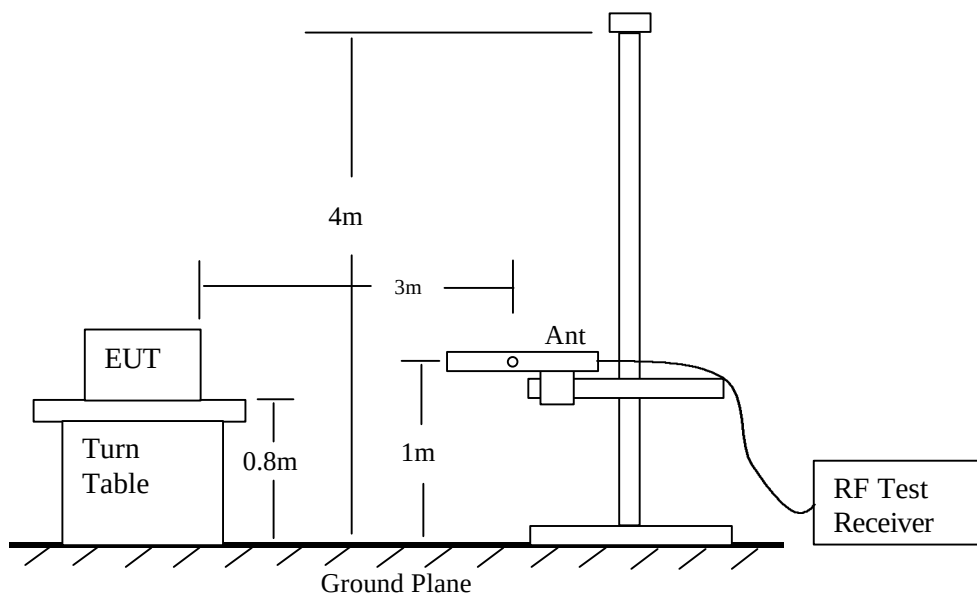


Fig 1: Radiated Emission Measurement 30 to 1000MHz.

TEST SETUP

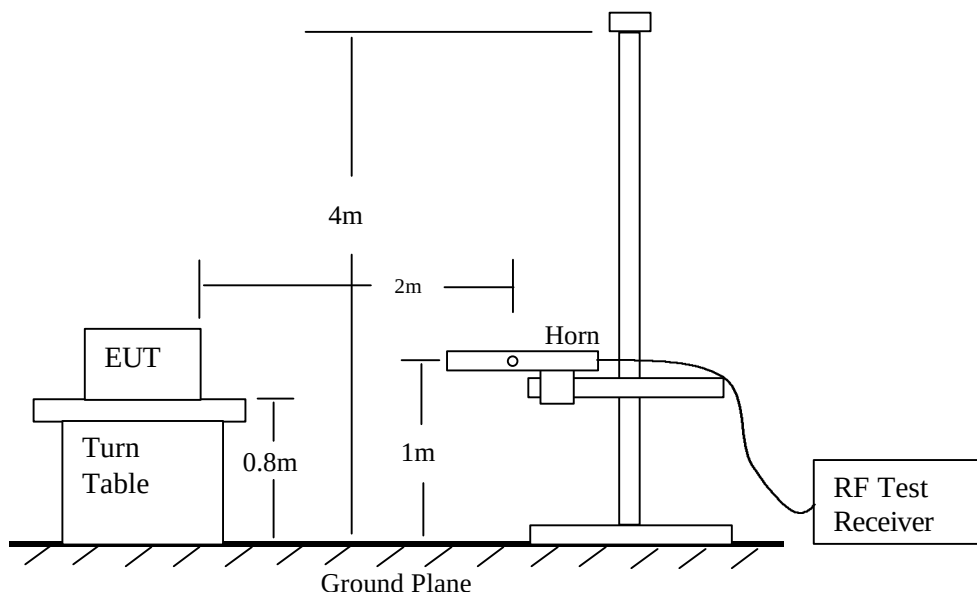


Fig 2: Radiated Emission Above 1000MHz

TEST PROCEDURE

The EUT and all other support equipment were placed on a wooden table 80 cm above the ground screen. The antenna to EUT distance was 10 meters. During the test, the table was rotated 360 degrees to maximize emissions and the antenna was positioned from 1 to 4 meters above the ground screen to further maximize emissions. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

The EUT test configuration was according to Section 8 of ANSI C63.4/1992.

The following procedure was used to make the measurements: The frequency range of interest was monitored at a fixed antenna height and EUT azimuth. The Frequency span was set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT was rotated through 360 degrees to maximize emissions received. During the rotation if emission increased by more than 1 dB, or if another emission appeared that was greater by 1 dB, the EUT was returned to the azimuth where the maximum occurred, and additional cable manipulation was performed to further maximize received emissions.

The antenna was moved up and down to further maximize the suspected highest amplitude signal. If the emission increased by 1 dB or more, or if another emission appeared that was greater by 1dB or more, the antenna was returned to the height where maximum signal was observed, and, cables were manipulated to produce highest emissions, noting frequency and amplitude.

RESULT

No non-compliance noted.

FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

PROXIM

01/21/02

Cable length

16.0 feet

Distance to Antenna

3.3 feet

Average Measurements:

1 MHz Resolution Bandwidth

10Hz Video Bandwidth

Peak Measurements:

1MHz Resolution Bandwidth

1MHz Video Bandwidth

Antenna: Patch

Low channel:56

Antenna Gain: 12dBi

Fo: 5280 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
5.15	42.0	33.4	33.3	6.4	-41.7	-9.5	1.0	31.4	22.8	74.0	54.0	-42.6	-31.2	V, bandedge
5.15	50.0	42.3	33.3	6.4	-41.7	-9.5	1.0	39.4	31.7	74.0	54.0	-34.6	-22.3	H, bandedge
10.56	43.3	32.8	38.3	9.5	-39.3	-9.5	1.0	43.3	32.8	74.0	54.0	-30.7	-21.2	H
10.56	41.1	30.1	38.3	9.5	-39.3	-9.5	1.0	41.1	30.1	74.0	54.0	-32.9	-23.9	V
15.84	47.9	37.9	38.7	12.4	-44.4	-9.5	1.0	46.1	36.1	74.0	54.0	-27.9	-17.9	H
15.84	48.0	37.7	38.7	12.4	-44.4	-9.5	1.0	46.2	35.9	74.0	54.0	-27.8	-18.1	V
21.12	46.2	36.3	46.6	15.4	-44.3	-9.5	1.0	55.4	45.5	74.0	54.0	-18.6	-8.5	H
21.12	46.5	36.3	46.6	15.4	-44.3	-9.5	1.0	55.7	45.5	74.0	54.0	-18.3	-8.5	V
26.40	35.6	26.6	44.1	0.0	0.0	-19.9	0.0	59.8	50.8	74.0	54.0	-14.2	-3.2	V
26.40	35.6	26.5	44.1	0.0	0.0	-19.9	0.0	59.8	50.7	74.0	54.0	-14.2	-3.3	H
31.68	35.6	26.5	44.6	0.0	0.0	-19.9	0.0	60.3	51.2	74.0	54.0	-13.7	-2.8	V
31.68	35.9	26.4	44.6	0.0	0.0	-19.9	0.0	60.6	51.1	74.0	54.0	-13.4	-2.9	H
36.96	35.6	26.1	44.8	0.0	0.0	-19.9	0.0	60.5	51.0	74.0	54.0	-13.5	-3.0	V
36.96	35.1	26.0	44.8	0.0	0.0	-19.9	0.0	60.0	50.9	74.0	54.0	-14.0	-3.1	H

f Measurement Frequency

Peak R. Analyzer Peak Reading

Avg. R. Analyzer Avg. Reading

AF Antenna Factor

CL Cable Loss

Amp Pre amp gain

D Corr Discorrections to 3 meter

HPF

Peak

Avg

Pk Lim

Avg Lim

Pk Mar

Avg Mar

High Pass filter

Calculated peak field Strength

Calculated average field Strength

Peak Field Strength Limit

Average Field Strength Limit

Margin vs. Peak Limit

Margin vs. Average Limit

FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

PROXIM

01/21/02

Cable length

16.0 feet

Distance to Antenna

3.3 feet

Average Measurements:

1 MHz Resolution Bandwidth

10Hz Video Bandwidth

Peak Measurements:

1MHz Resolution Bandwidth

1MHz Video Bandwidth

Antenna: Patch

Mid Channel: 60

Antenna Gain: 12 dBi

Fo= 5300 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
10.60	43.9	32.3	38.2	9.5	-39.2	-9.5	1.0	43.9	32.3	74.0	54.0	-30.1	-21.7	H
10.60	40.3	31.3	38.2	9.5	-39.2	-9.5	1.0	40.3	31.3	74.0	54.0	-33.7	-22.7	V
15.90	47.8	37.5	38.7	12.4	-44.4	-9.5	1.0	46.0	35.7	74.0	54.0	-28.0	-18.3	H
15.90	47.9	37.5	38.7	12.4	-44.4	-9.5	1.0	46.1	35.7	74.0	54.0	-27.9	-18.3	V
21.20	46.3	35.6	46.6	15.4	-44.3	-9.5	1.0	55.5	44.8	74.0	54.0	-18.5	-9.2	H
21.20	46.2	35.6	46.6	15.4	-44.3	-9.5	1.0	55.4	44.8	74.0	54.0	-18.6	-9.2	V
26.50	37.2	26.6	44.1	0.0	0.0	-19.9	0.0	61.4	50.8	74.0	54.0	-12.6	-3.2	V
26.50	37.4	26.5	44.1	0.0	0.0	-19.9	0.0	61.6	50.7	74.0	54.0	-12.4	-3.3	H
31.80	36.5	26.1	44.7	0.0	0.0	-19.9	0.0	61.3	50.9	74.0	54.0	-12.7	-3.1	V
31.80	35.5	26.2	44.7	0.0	0.0	-19.9	0.0	60.3	51.0	74.0	54.0	-13.7	-3.0	H
37.10	35.9	26.1	44.8	0.0	0.0	-19.9	0.0	60.8	51.0	74.0	54.0	-13.2	-3.0	V
37.10	36.1	26.0	44.8	0.0	0.0	-19.9	0.0	61.0	50.9	74.0	54.0	-13.0	-3.1	H

f Measurement Frequency

Peak R. Analyzer Peak Reading

Avg. R. Analyzer Avg. Reading

AF Antenna Factor

CL Cable Loss

Amp Pre amp gain

D Corr Discorrections to 3 meter

HPF

Peak

Avg

Pk Lim

Avg Lim

Pk Mar

Avg Mar

High Pass filter

Calculated peak field Strength

Calculated average field Strength

Peak Field Strength Limit

Average Field Strength Limit

Margin vs. Peak Limit

Margin vs. Average Limit

FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

PROXIM

01/21/02

Cable length

16.0 feet

Distance to Antenna

3.3 feet

Average Measurements:

1 MHz Resolution Bandwidth

10Hz Video Bandwidth

Peak Measurements:

1MHz Resolution Bandwidth

1MHz Video Bandwidth

Antenna: Patch

High Channel: 64

Antenna Gain: 12 dBi

Fo= 5320 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
5.35	28.0	18.7	33.8	6.5	0.0	-9.5	0.0	58.8	49.5	74.0	54.0	-15.2	-4.5	V,bandedge
5.35	28.5	17.7	33.8	6.5	0.0	-9.5	0.0	59.3	48.5	74.0	54.0	-14.7	-5.5	H,bandedge
10.56	43.3	32.8	38.3	9.5	-39.3	-9.5	1.0	43.3	32.8	74.0	54.0	-30.7	-21.2	H
10.56	41.1	30.1	38.3	9.5	-39.3	-9.5	1.0	41.1	30.1	74.0	54.0	-32.9	-23.9	V
15.84	47.9	37.9	38.7	12.4	-44.4	-9.5	1.0	46.1	36.1	74.0	54.0	-27.9	-17.9	H
15.84	48.0	37.7	38.7	12.4	-44.4	-9.5	1.0	46.2	35.9	74.0	54.0	-27.8	-18.1	V
21.12	46.2	36.3	46.6	15.4	-44.3	-9.5	1.0	55.4	45.5	74.0	54.0	-18.6	-8.5	H
21.12	46.5	36.3	46.6	15.4	-44.3	-9.5	1.0	55.7	45.5	74.0	54.0	-18.3	-8.5	V
26.40	36.7	26.7	44.1	0.0	0.0	-19.9	0.0	60.9	50.9	74.0	54.0	-13.1	-3.1	V
26.40	38.3	26.8	44.1	0.0	0.0	-19.9	0.0	62.5	51.0	74.0	54.0	-11.5	-3.0	H
31.68	37.5	26.2	44.4	0.0	0.0	-19.9	0.0	62.0	50.7	74.0	54.0	-12.0	-3.3	V
31.68	26.8	26.3	44.4	0.0	0.0	-19.9	0.0	51.3	50.8	74.0	54.0	-22.7	-3.2	H
36.96	36.9	26.1	41.7	0.0	0.0	-19.9	0.0	58.7	47.9	74.0	54.0	-15.3	-6.1	V
36.96	37.2	26.1	41.7	0.0	0.0	-19.9	0.0	59.0	47.9	74.0	54.0	-15.0	-6.1	H

f Measurement Frequency
Peak R. Analyzer Peak Reading
Avg. R. Analyzer Avg. Reading
AF Antenna Factor
CL Cable Loss
Amp Pre amp gain
D Corr Discorrections to 3 meter

HPF High Pass filter
Peak Calculated peak field Strength
Avg Calculated average field Strength
Pk Lim Peak Field Strength Limit
Avg Lim Average Field Strength Limit
Pk Mar Margin vs. Peak Limit
Avg Mar Margin vs. Average Limit

FCC Measurement
Compliance Certification Services, Morgan Hill Open Field Site

PROXIM 01/21/02

Cable length
16.0 feet
Distance to Antenna

3.3 feet

Average Measurements: Peak Measurements:
1 MHz Resolution Bandwidth 1MHz Resolution Bandwidth
10Hz Video Bandwidth 1MHz Video Bandwidth

Antenna: Omni Antenna Gain: 5dBi
Low channel:56 Fo: 5280 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
5.15	28.6	18.6	33.3	6.4	0.0	-9.5	0.0	58.8	48.8	74.0	54.0	-15.2	-5.2	V, bandedge
5.15	29.5	18.7	33.3	6.4	0.0	-9.5	0.0	59.7	48.9	74.0	54.0	-14.3	-5.1	H.bandedge
10.56	41.6	29.6	38.3	9.5	-39.3	-9.5	1.0	41.6	29.6	74.0	54.0	-32.4	-24.4	H
10.56	40.1	28.9	38.3	9.5	-39.3	-9.5	1.0	40.1	28.9	74.0	54.0	-33.9	-25.1	V
15.84	47.6	37.1	38.7	12.4	-44.4	-9.5	1.0	45.8	35.3	74.0	54.0	-28.2	-18.7	H
15.84	46.9	37.1	38.7	12.4	-44.4	-9.5	1.0	45.1	35.3	74.0	54.0	-28.9	-18.7	V
21.12	45.9	35.3	46.6	15.4	-44.3	-9.5	1.0	55.1	44.5	74.0	54.0	-18.9	-9.5	H
21.12	46.0	35.4	46.6	15.4	-44.3	-9.5	1.0	55.2	44.6	74.0	54.0	-18.8	-9.4	V
26.40	35.6	26.7	44.1	0.0	0.0	-19.9	0.0	59.8	50.9	74.0	54.0	-14.2	-3.1	V
26.40	35.6	26.6	44.1	0.0	0.0	-19.9	0.0	59.8	50.8	74.0	54.0	-14.2	-3.2	H
31.68	35.9	26.6	44.6	0.0	0.0	-19.9	0.0	60.6	51.3	74.0	54.0	-13.4	-2.7	V
31.68	36.5	26.5	44.6	0.0	0.0	-19.9	0.0	61.2	51.2	74.0	54.0	-12.8	-2.8	H
36.96	35.6	26.1	44.8	0.0	0.0	-19.9	0.0	60.5	51.0	74.0	54.0	-13.5	-3.0	V
36.96	35.1	26.0	44.8	0.0	0.0	-19.9	0.0	60.0	50.9	74.0	54.0	-14.0	-3.1	H

f	Measurement Frequency	HPF	High Pass filter
Peak R.	Analyzer Peak Reading	Peak	Calculated peak field Strength
Avg. R.	Analyzer Avg. Reading	Avg	Calculated average field Strength
AF	Antenna Factor	Pk Lim	Peak Field Strength Limit
CL	Cable Loss	Avg Lim	Average Field Strength Limit
Amp	Pre amp gain	Pk Mar	Margin vs. Peak Limit
D Corr	Discorrections to 3 meter	Avg Mar	Margin vs. Average Limit

FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

PROXIM

01/21/02

Cable length

16.0 feet

Distance to Antenna

3.3 feet

Average Measurements:

1 MHz Resolution Bandwidth

10Hz Video Bandwidth

Peak Measurements:

1MHz Resolution Bandwidth

1MHz Video Bandwidth

Antenna: Omni

Mid Channel: 60

Antenna Gain: 5 dBi

Fo= 5300 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
10.60	41.5	29.8	38.2	9.5	-39.2	-9.5	1.0	41.5	29.8	74.0	54.0	-32.5	-24.2	H
10.60	44.3	33.4	38.2	9.5	-39.2	-9.5	1.0	44.3	33.4	74.0	54.0	-29.7	-20.6	V
15.90	47.9	37.3	38.7	12.4	-44.4	-9.5	1.0	46.1	35.5	74.0	54.0	-27.9	-18.5	H
15.90	48.7	37.4	38.7	12.4	-44.4	-9.5	1.0	46.9	35.6	74.0	54.0	-27.1	-18.4	V
21.20	45.9	35.3	46.6	15.4	-44.3	-9.5	1.0	55.1	44.5	74.0	54.0	-18.9	-9.5	H
21.20	45.3	35.3	46.6	15.4	-44.3	-9.5	1.0	54.5	44.5	74.0	54.0	-19.5	-9.5	V
26.50	37.2	26.6	44.1	0.0	0.0	-19.5	0.0	61.8	51.2	74.0	54.0	-12.2	-2.8	V
26.50	37.4	26.7	44.1	0.0	0.0	-19.5	0.0	62.0	51.3	74.0	54.0	-12.0	-2.7	H
31.80	36.5	26.1	44.6	0.0	0.0	-19.5	0.0	61.6	51.2	74.0	54.0	-12.4	-2.8	V
31.80	35.5	26.1	44.6	0.0	0.0	-19.5	0.0	60.6	51.2	74.0	54.0	-13.4	-2.8	H
37.10	35.9	26.0	44.8	0.0	0.0	-19.5	0.0	61.2	51.3	74.0	54.0	-12.8	-2.7	V
37.10	36.1	26.0	44.8	0.0	0.0	-19.5	0.0	61.4	51.3	74.0	54.0	-12.6	-2.7	H

f Measurement Frequency

Peak R. Analyzer Peak Reading

Avg. R. Analyzer Avg. Reading

AF Antenna Factor

CL Cable Loss

Amp Pre amp gain

D Corr Discrepancies to 3 meter

HPF

Peak

Avg

Pk Lim

Avg Lim

Pk Mar

Avg Mar

High Pass filter

Calculated peak field Strength

Calculated average field Strength

Peak Field Strength Limit

Average Field Strength Limit

Margin vs. Peak Limit

Margin vs. Average Limit

FCC Measurement
Compliance Certification Services, Morgan Hill Open Field Site

PROXIM 01/21/02

Cable length
16.0 feet
Distance to Antenna

3.3 feet

Average Measurements: 1 MHz Resolution Bandwidth
10Hz Video Bandwidth
Peak Measurements: 1MHz Resolution Bandwidth
1MHz Video Bandwidth

Antenna: Omni Antenna Gain: 5 dBi
High Channel: 64 Fo= 5320 MHz

f GHz	Peak R. dBuV	Avg. R. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Peak Mar dB	Avg Mar dB	Notes
5.35	30.8	19.3	33.8	6.5	0.0	-9.5	0.0	61.6	50.1	74.0	54.0	-12.4	-3.9	V,bandedge
5.35	28.9	19.0	33.8	6.5	0.0	-9.5	0.0	59.7	49.8	74.0	54.0	-14.3	-4.2	H,bandedge
10.64	41.6	31.4	38.2	9.5	-39.2	-9.5	1.0	41.6	31.4	74.0	54.0	-32.4	-22.6	H
10.64	44.9	32.1	38.2	9.5	-39.2	-9.5	1.0	44.9	32.1	74.0	54.0	-29.1	-21.9	V
15.96	48.9	38.9	38.6	12.5	-44.3	-9.5	1.0	47.1	37.1	74.0	54.0	-26.9	-16.9	H
15.96	48.8	37.8	38.6	12.5	-44.3	-9.5	1.0	47.0	36.0	74.0	54.0	-27.0	-18.0	V
21.28	46.1	35.9	46.6	15.5	-44.3	-9.5	1.0	55.4	45.2	74.0	54.0	-18.6	-8.8	H
21.28	46.3	35.9	46.6	15.5	-44.3	-9.5	1.0	55.6	45.2	74.0	54.0	-18.4	-8.8	V
26.60	35.6	26.7	44.1	0.0	0.0	-19.9	0.0	59.8	50.9	74.0	54.0	-14.2	-3.1	V
26.60	35.6	26.6	44.1	0.0	0.0	-19.9	0.0	59.8	50.8	74.0	54.0	-14.2	-3.2	H
31.92	35.9	26.5	44.6	0.0	0.0	-19.9	0.0	60.6	51.2	74.0	54.0	-13.4	-2.8	V
31.92	36.5	26.4	44.6	0.0	0.0	-19.9	0.0	61.2	51.1	74.0	54.0	-12.8	-2.9	H
37.24	35.6	26.2	44.8	0.0	0.0	-19.9	0.0	60.5	51.1	74.0	54.0	-13.5	-2.9	V
37.24	35.1	26.1	44.8	0.0	0.0	-19.5	0.0	60.4	51.4	74.0	54.0	-13.6	-2.6	H

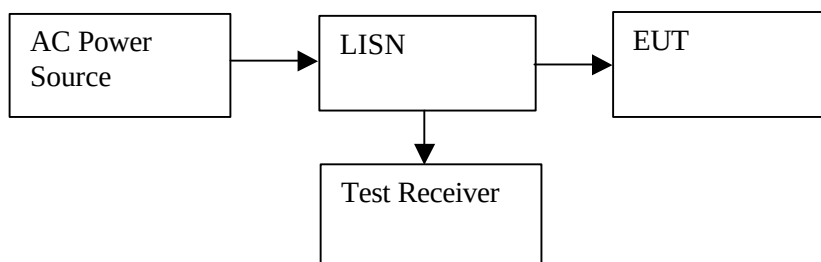
f	Measurement Frequency	HPF	High Pass filter
Peak R.	Analyzer Peak Reading	Peak	Calculated peak field Strength
Avg. R.	Analyzer Avg. Reading	Avg	Calculated average field Strength
AF	Antenna Factor	Pk Lim	Peak Field Strength Limit
CL	Cable Loss	Avg Lim	Average Field Strength Limit
Amp	Pre amp gain	Pk Mar	Margin vs. Peak Limit
D Corr	Discorrections to 3 meter	Avg Mar	Margin vs. Average Limit

9.8. POWER LINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
450 KHz to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

TEST SETUP



TEST PROCEDURE

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

RESULT

No non-compliance noted. See plot Line Conduction.

Data from AC/DC adaptor model # P48121000A140G:

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.45	42.31	--	--	0.00	48.00	--	-5.69	--	L1
0.98	35.61	--	--	0.00	48.00	--	-12.39	--	L1
13.85	28.16	--	--	0.00	48.00	--	-19.84	--	L1
0.45	38.88	--	--	0.00	48.00	--	-9.12	--	L2
0.78	34.61	--	--	0.00	48.00	--	-13.39	--	L2
13.85	29.37	--	--	0.00	48.00	--	-18.63	--	L2
6 Worst Data									

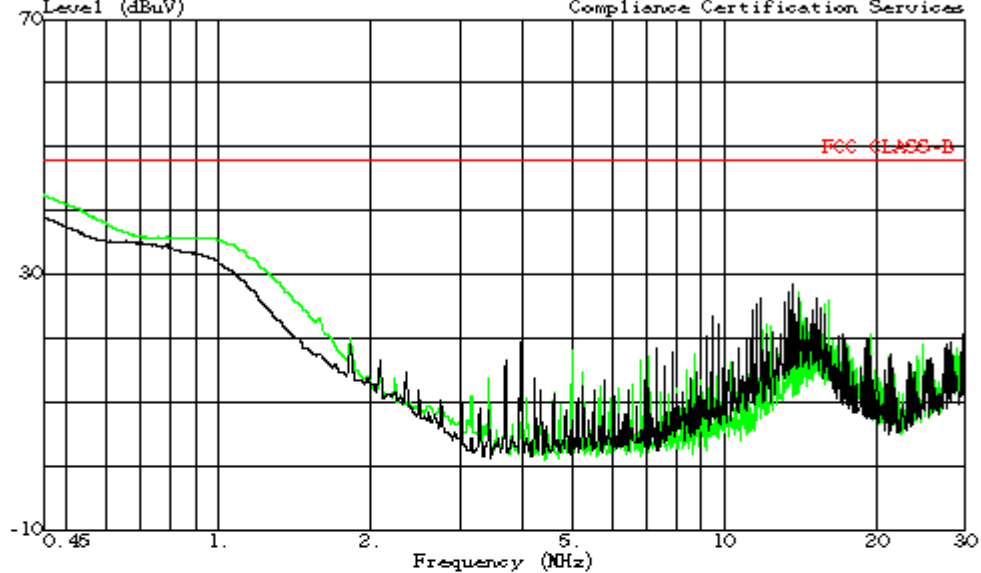
Data from AC/DC Adaptor model # SC102TA1203F01

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.88	45.60	45.27	--	0.00	48.00	--	-2.73	--	L1
1.37	51.20	46.75	--	0.00	48.00	--	-1.25	--	L1
15.52	46.82	46.75	--	0.00	48.00	--	-1.25	--	L1
0.88	44.33	43.71	--	0.00	48.00	--	-4.29	--	L2
1.34	46.58	44.21	--	0.00	48.00	--	-3.79	--	L2
15.54	46.66	43.02	--	0.00	48.00	--	-4.98	--	L2
6 Worst Data									



561 F Monterey Road, Route 2
Morgan Hill, CA 95037-9001 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 16 File#: 01U0973.ENI Date: 09-24-2001 Time: 16:26:16
Level (dBuV) Compliance Certification Services



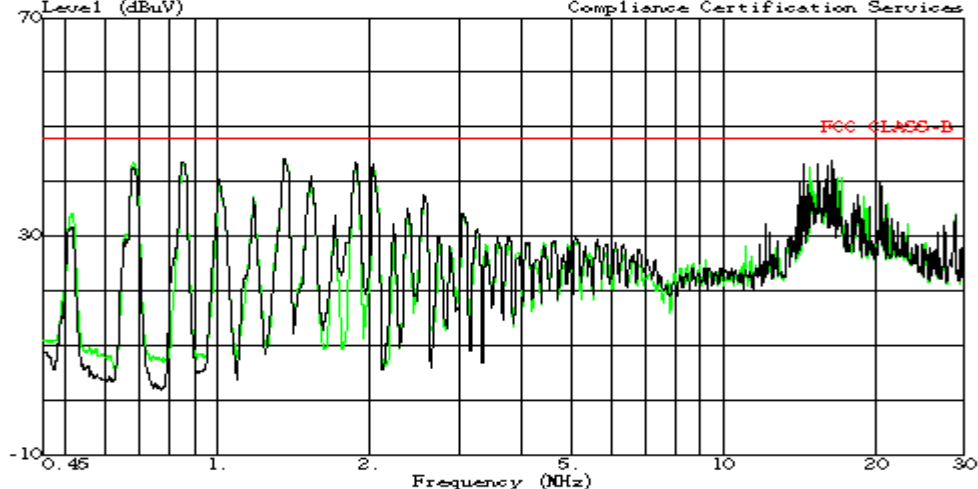
Trace: ②
Project No. : 01U0973-1
Report No. : 0106241c
Test Engr : Hue Ly Vang
Company : Proxim TC
EUT Description : Access Point
Model : 8570 , AC/DC supply: AULT(M/N:P428000A140G)
EUT Config. : EUT only
Type of Test : FCC CLASS B
Mode of Operation: Continuous Transmitting
: PEAK: L1 (Green), L2 (Black)
: 115Vac, 60Hz

Ref Trace:



561 F Monterey Road, Route 2
Morgan Hill, CA 95037-9001 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 29 File#: 01U0973.ENI Date: 09-28-2001 Time: 18:11:38
Level (dBuV) Compliance Certification Services



Trace: 22
Project No. : 01U0973-1
Report No. : 0109241e_11+12
Test Engr : Hue Ly Vang
Company : Proxim TC
EUT Description : Access Point
Model : 8570
EUT Config. : EUT only
AC/DC supply: AULT(M/N: SC102TA1203F01)
Type of Test : FCC CLASS B
Mode of Operation: Continuous Transmitting
Q-PEAK: L1(Green), L2(Black)
: 115Vac, 60Hz

Ref Trace:

9.9. RADIATED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak	☒ 100 KHz	☒ 100 KHz
	☐ Quasi Peak	☐ 120 KHz	☐ 120 KHz
Above 1000	☒ Peak	☒ 1 MHz	☒ 1 MHz
	☐ Average	☐ 1 MHz	☐ 10 Hz

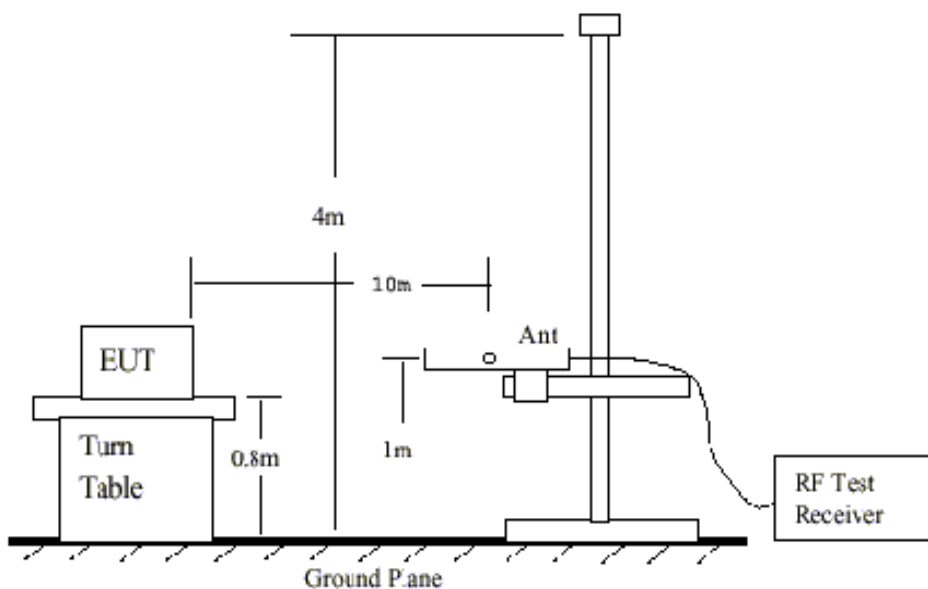


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

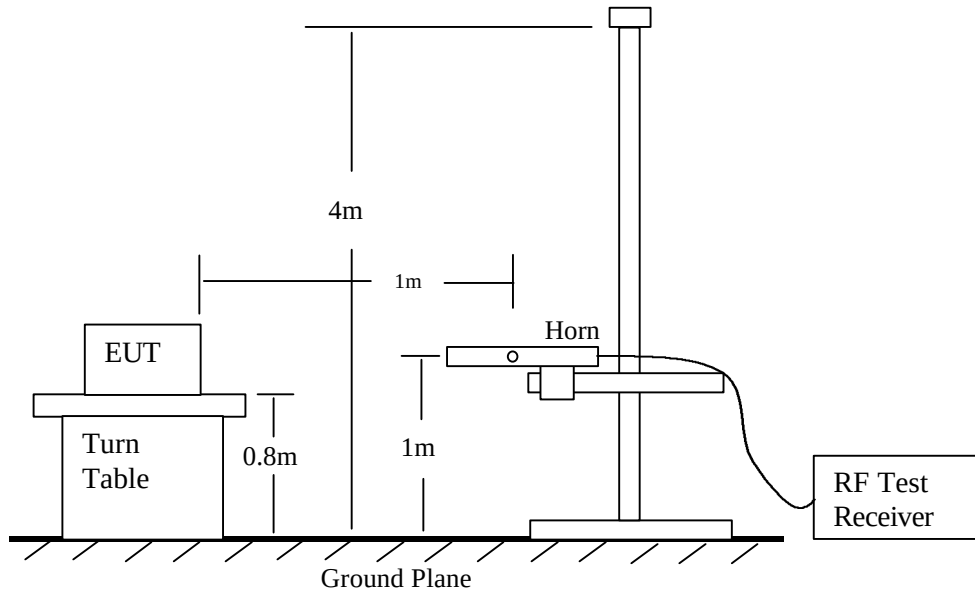


Fig 2: Radiated Emission Above 1000MHz

TEST SETUP & PROCEDURE

1. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures C ~ F. If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures C ~ F for frequency band from 1 GHz to 10 times carrier frequency.

9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 300Hz. Repeat procedures C ~ F. If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

RESULT

No non-compliance noted, as shown below.





FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 02U1141-1
Report #: 020122a
Date & Time: 01/22/02 9:28 AM
Test Engr: HLV

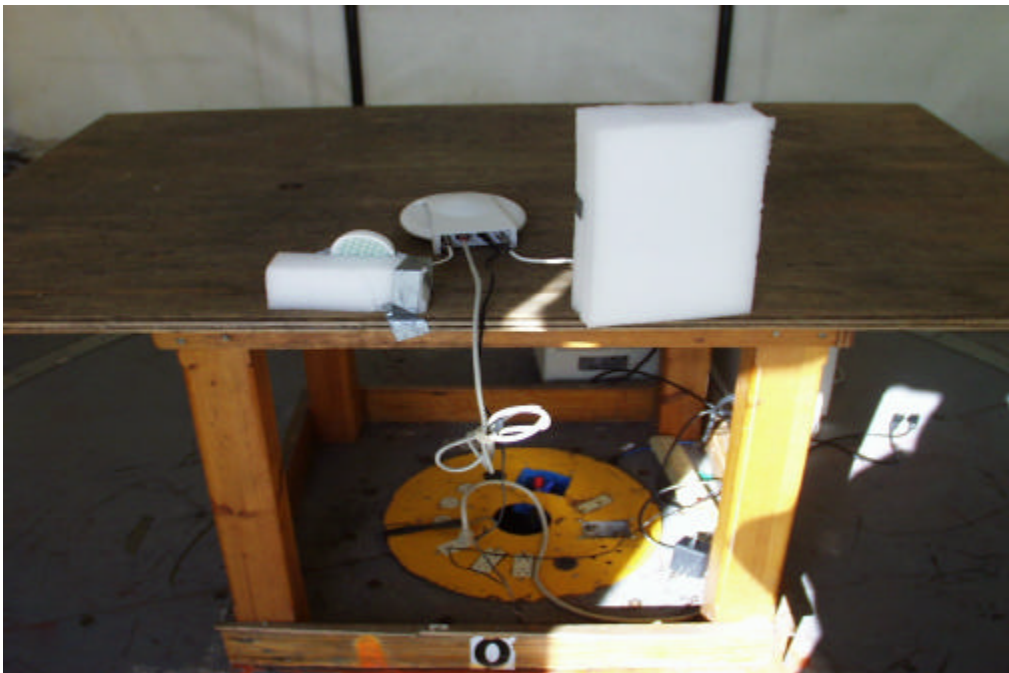
Company: Proxim
EUT Description: Proxim Harmony Model 8571, FCC ID IMK-AP5
Test Configuration : EUT/PC/Monitor/KB/mouse
Type of Test: FCC Class B
Mode of Operation: TX/RX/PATCH ANTENNA

[<< Main Sheet](#)

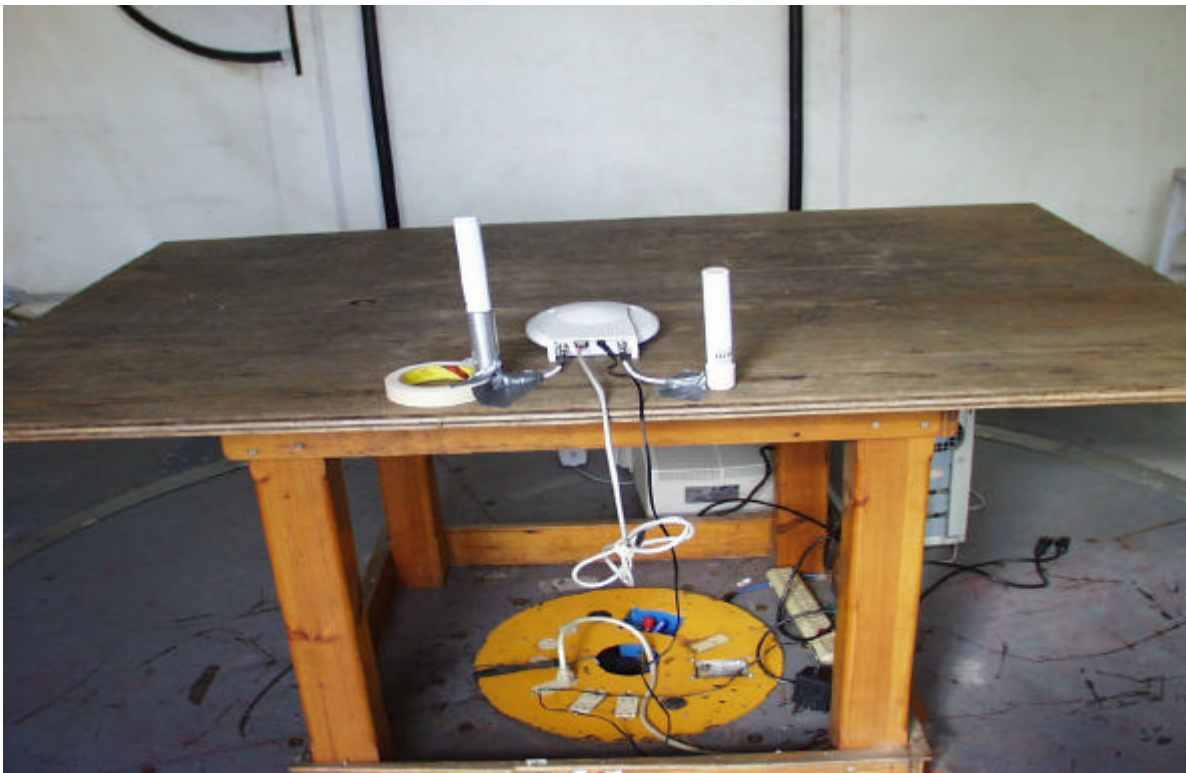
Freq.	Reading	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
500.00	49.90	18.62	3.27	28.40	43.39	46.00	-2.61	3mV	90.00	1.00	P
450.00	49.90	17.87	3.05	28.11	42.71	46.00	-3.29	3mH	90.00	1.00	P
240.00	54.00	13.49	2.06	27.08	42.47	46.00	-3.53	3mH	90.00	1.00	P
499.90	48.40	18.63	3.27	28.40	41.90	46.00	-4.10	3mH	90.00	1.00	P
240.00	51.20	13.71	2.06	27.08	39.89	46.00	-6.11	3mV	90.00	1.00	P
375.00	48.00	16.64	2.72	27.62	39.74	46.00	-6.26	3mV	90.00	1.00	P
6 Worst Data											
									</		

9.10. SETUP PHOTOS

Radiated Emission 30 – 1000 MHz with PATCH antenna



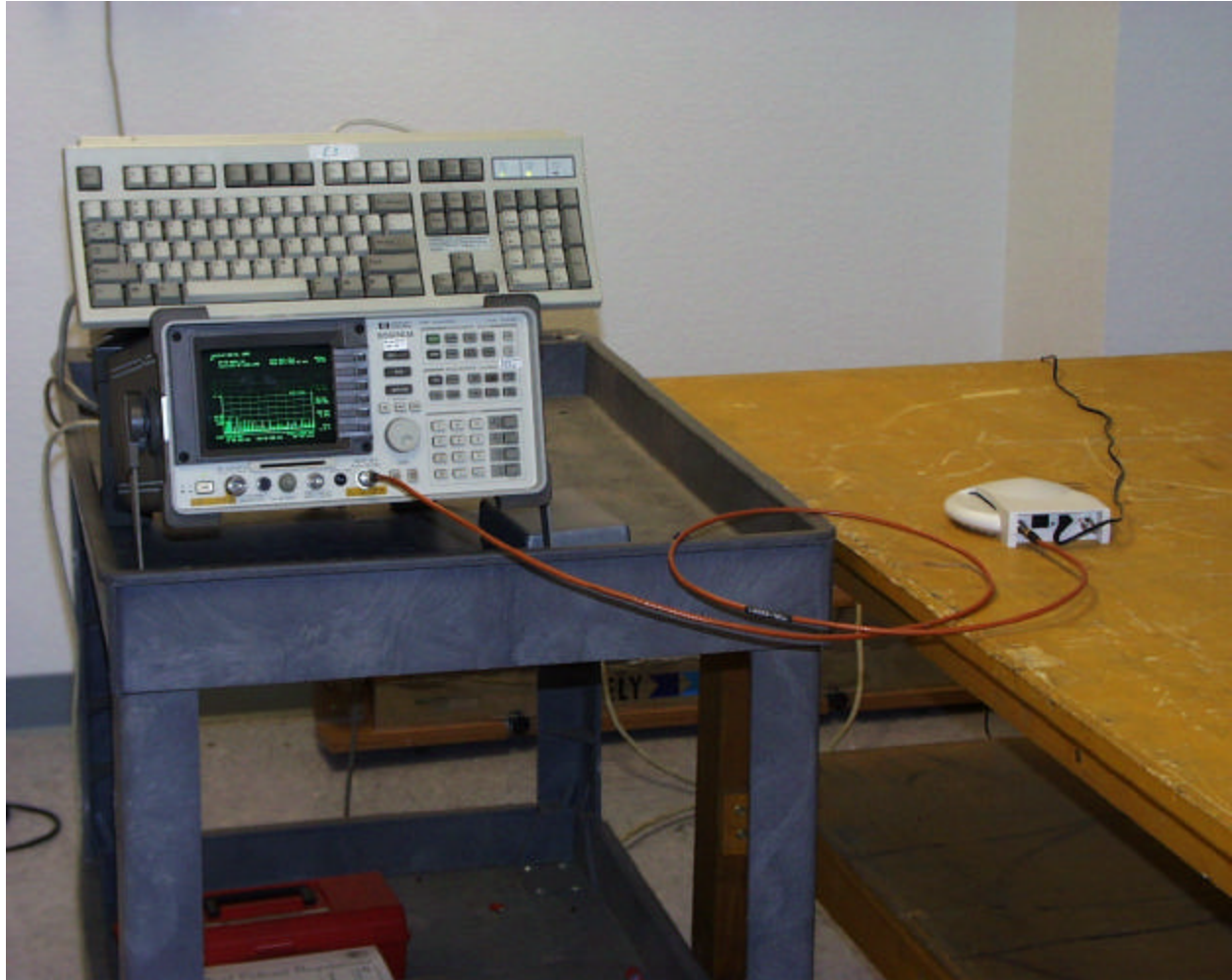
With OMNI antenna



Radiated Emission above 1 GHz

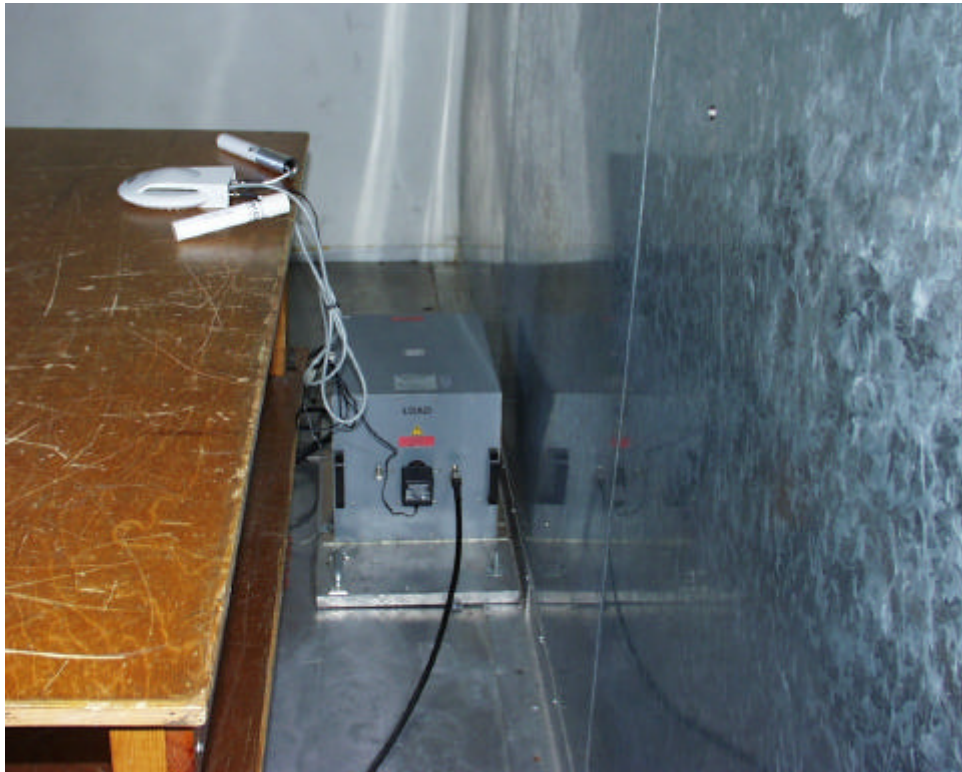


Antenna Terminal Port Measurement



Line Conduction Emission





END OF REPORT