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Test Report: 97908-2TRFWL

Applicant: Redline Communications
302 Town Centre Blvd.
Markham, Ontario
L3R 0E8

Apparatus: AN-80i (4.9-5.3GHz)

FCC ID: QC8-AN80IB

In Accordance With: FCC Part 15 Subpart E, 15.407
Unlicensed National Information Infrastructure
Devices

Tested By: Nemko Canada Inc.
303 River Road
Ottawa, Ontario
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Authorized By: 
Sim Jagpal, Resource Manager

Date: February 14, 2008

Total Number of Pages: 54

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart E, 15.407. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed:	AN-80i (4.9-5.3GHz)
Specification:	FCC Part 15 Subpart E, 15.407
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release

Author: Jason Nixon, Wireless/Telecom Specialist

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

AN-80i (4.9-5.3GHz)

1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
1	AN-80i (4.9-5.3GHz)	2308-0509-01199
2	AC adapter (M/N: TR60A-POE-L)	002182
3	9dBi Omni Antenna	None
4	22dBi Panel Antenna	0C380

The first samples were received on: January 3, 2008

1.3 Theory of Operation

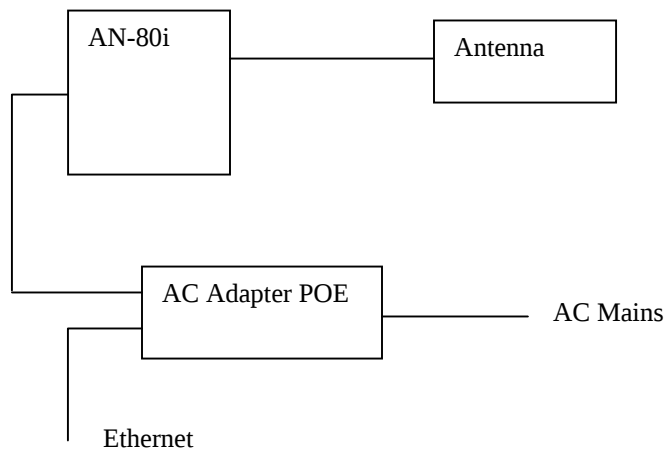
The AN-80i (4.9-5.3GHz) radio is an OFDM broadband wireless communication device operating in the 5250-5350MHz band, designed to provide wireless high-speed Ethernet connection.

1.4 Technical Specifications of the EUT

Operating Frequency:	10MHz channel: 5260-5340MHz 20MHz channel: 5265-5335MHz 40MHz channel: 5280-5320MHz
Peak Output Power:	10MHz channel: 11.8mW(10.71dBm) 20MHz channel: 18.8mW(12.75dBm) 40MHz channel: 19.9mW(12.98dBm)
Emission Designator	10MHz channel: 8M31W7D 20MHz channel: 16M8W7D 40MHz channel: 33M1W7D
Modulation:	OFDM
Antenna Data:	9dBi Omni Directional Antenna 22dBi Panel Antenna 17dBi Panel Antenna 16dBi Panel Antenna 15dBi Panel Antenna

Note: Testing was only conducted on the 9dBi antenna and the 22dBi antenna, as the remaining are of the same type as the 22dBi antenna, but have a lower gain.

1.5 Block Diagram of the EUT



Section 2 : Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart E, 15.407

Unlicensed National Information Infrastructure Devices

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 °C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

2.4 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
3m EMI Test Chamber	TDK	SAC-3	FA002047	May 19/08
Bilog	Sunol	JB3	FA002108	Jan. 21/09
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR
Controller	Sunol	SC104V	FA002060	NCR
Mast	Sunol	TLT2	FA002061	NCR
LISN	Rohde & Schwarz	ENV216	FA002023	Sept. 04/08
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 07/08
Spectrum Analyzer	Rohde & Schwarz	FSP40	FA001920	Mar 19/08
Attenuator	Narda	768-10	9707	COU
Horn Antenna #1	EMCO	3115	FA000649	Feb 26/08
18.0 – 40.0GHz Horn Antenna	EMCO	3116	FA001847	May 9/08
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	Aug. 21/08
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	Aug. 21/08
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	Aug. 21/08
5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU
18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU
26 – 40.0 GHz Amplifier	NARDA	DBL-2640N610	FA001556	COU

COU – Calibrate on Use

NCR – No Calibration Required

2.5 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95% and can be found in Nemko Canada document MU-003.

Section 3 : Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

3.5 Additional Observations

There were no additional observations made during this assessment.

Section 4 : Results Summary

This section contains the following:

FCC Part 15 Subpart E : Test Results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

- N No : not applicable / not relevant.
- Y Yes : Mandatory i.e. the apparatus shall conform to these tests.
- N/T Not Tested, mandatory but not assessed. (See section 3.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

4.1 FCC Part 15 Subpart E : Test Results

Part 15	Test Description	Required	Result
15.207(a)	Powerline Conducted Emissions	Y	PASS
15.209(a)	Radiated Emissions within Restricted Bands	Y	PASS
15.403(i)	Emission Bandwidth	Y	PASS
15.407(a)(2)	Peak Conducted Transmit Output Power	Y	PASS
15.407(b)	Spurious Emissions	Y	PASS
15.407(a)(2)	Peak Power Spectral Density	Y	PASS
15.407(a)(6)	Peak Excursion Measurement	Y	PASS
15.407(h)	Transmit power Control (TPC) and Dynamic Frequency Selection (DFS)	N/T *	

Notes:

* The TPC and DFS were not assessed in this test report. Compliance is to be proven in a separate report supplied by the applicant.

Appendix A : Test Results

Clause 15.207(a) Powerline Conducted Emissions

Frequency of Conducted limit (dB μ V)		
Emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

Test Conditions:

Sample Number:	1	Temperature (°C):	24
Date:	January 31, 2008	Humidity (%):	25
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	3m EMI Chamber

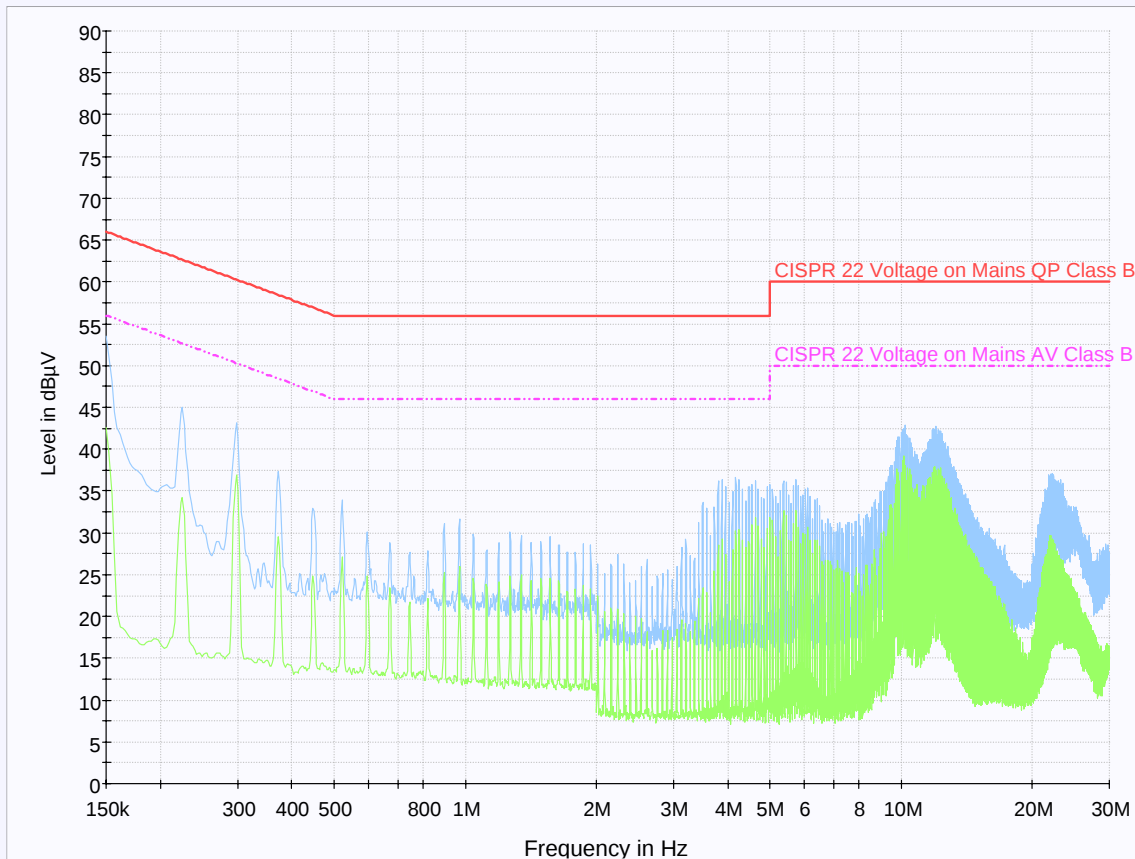
Test Results: See Attached Plots.

Additional Observations:

All plots were taken using a Peak and Average detector with a Receiver in sweep mode and an IF bandwidth of 10kHz.

All plots have been corrected with cable and LISN losses to show compliance.

Line Conductor

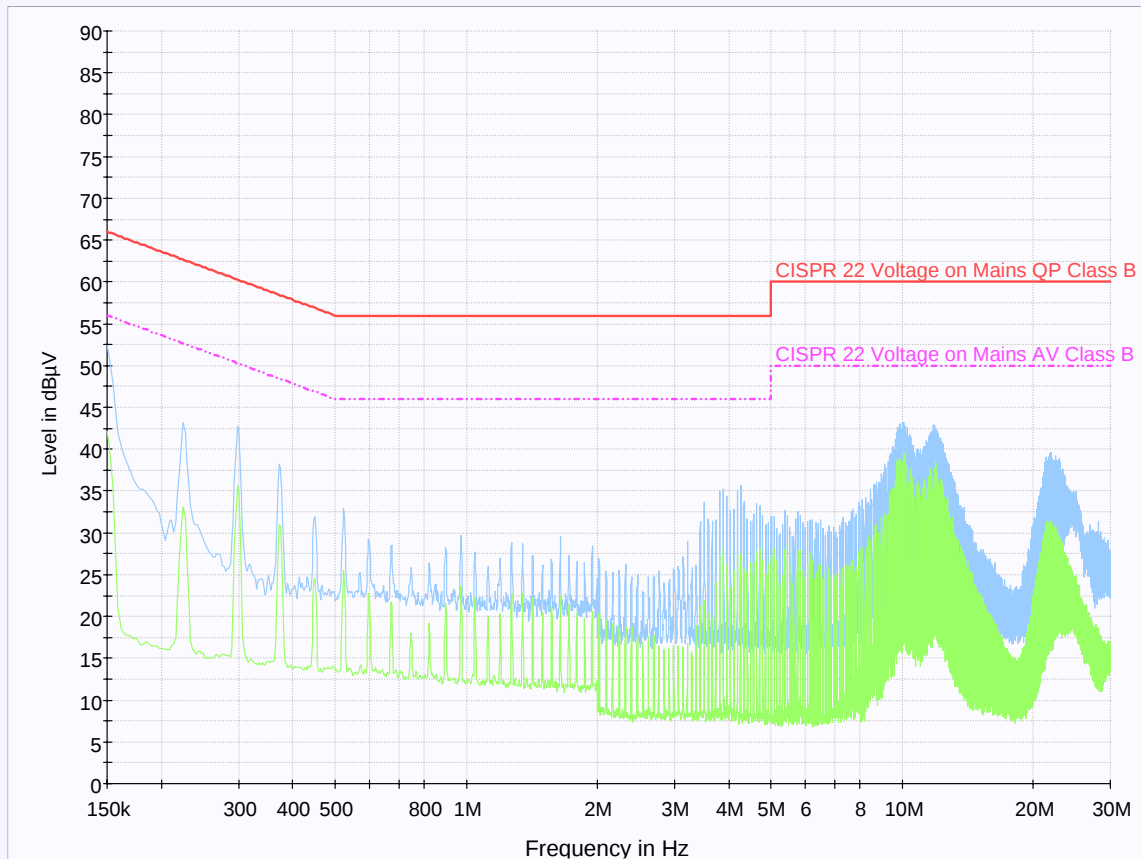


AC Powerline Conducted - Line Conductor

— CISPR 22 Voltage on Mains QP Class B.LimitLine - - - CISPR 22 Voltage on Mains AV Class B.LimitLine

— Peak Detector — Average Detector

Neutral Conductor



AC Powerline Conducted - Neutral Conductor

— CISPR 22 Voltage on Mains QP Class B.LimitLine - - - CISPR 22 Voltage on Mains AV Class B.LimitLine

— Peak Detector — Average Detector

Clause 15.209(a) Radiated Emissions within Restricted Bands

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)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Conditions:

Sample Number:	1	Temperature (°C):	24
Date:	January 30, 2008	Humidity (%):	16
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	3m EMI Chamber

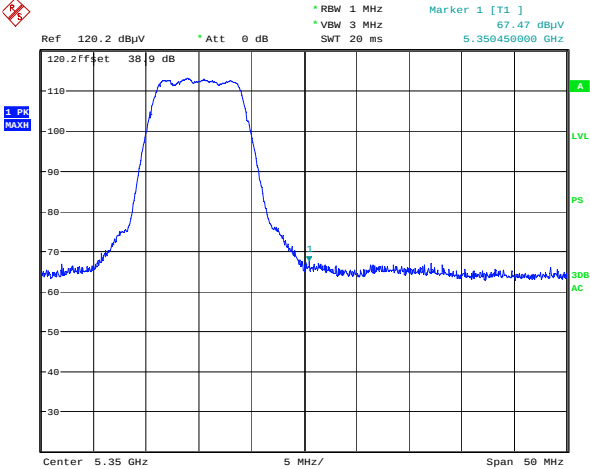
Test Results: No Emissions were detected within 20dB below of the limit.

Additional Observations:

The Spectrum was searched from 30MHz to the 10th Harmonic.

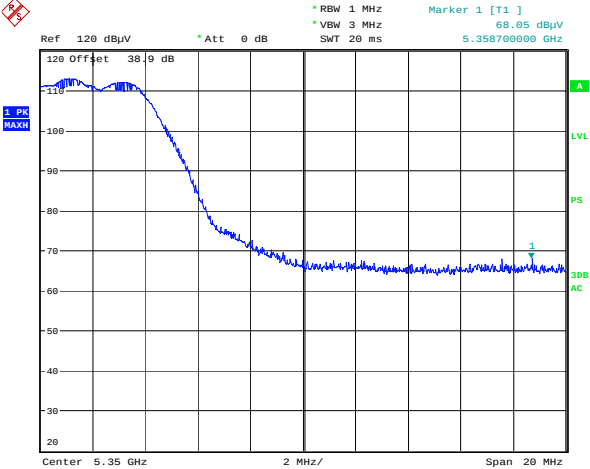
Bandedge measurements were performed with the transmitter set for continuous transmit. The Measurement was performed using a Peak detector of 1MHz RBW and 3MHz VBW and compared to the limit of 68.2dBuV/m, which is the Peak requirement from Clause 6.2.2(q1)(ii). The Average limit of 54dBuV/m was performed using a Peak Detector with 1MHz RBW and a 10Hz VBW.

Bandedge at 5350MHz
10MHz Channel - Vertical
5250MHz, 9dBi Antenna (Peak detector)



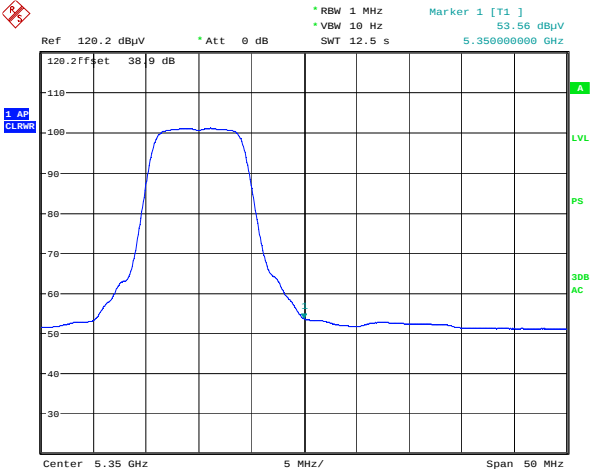
Date: 29.JAN.2008 16:01:26

22dBi Antenna (Peak Detector)



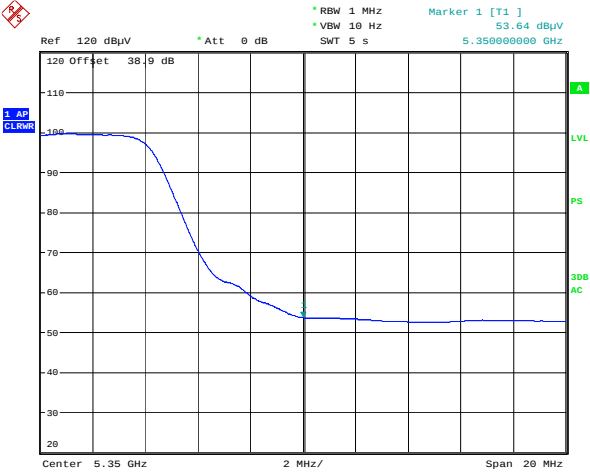
Date: 29.JAN.2008 18:30:08

5250MHz, 9dBi Antenna (Average detector)



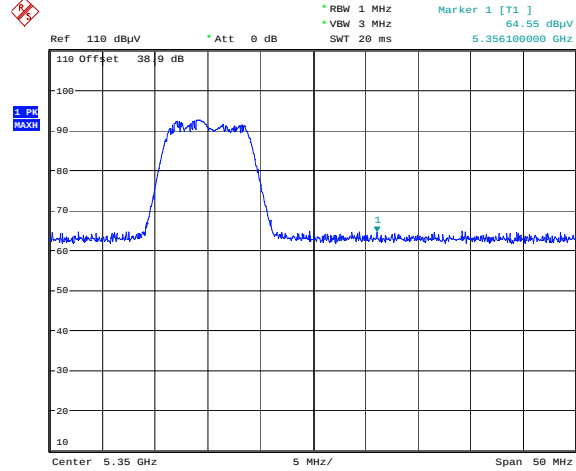
Date: 29.JAN.2008 16:01:00

22dBi Antenna (Average Detector)

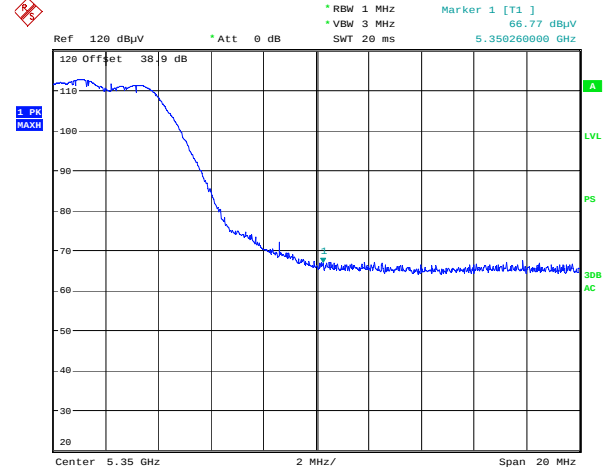


Date: 29.JAN.2008 18:29:34

10MHz Channel – Horizontal 5250MHz, 9dBi Antenna (Peak detector)

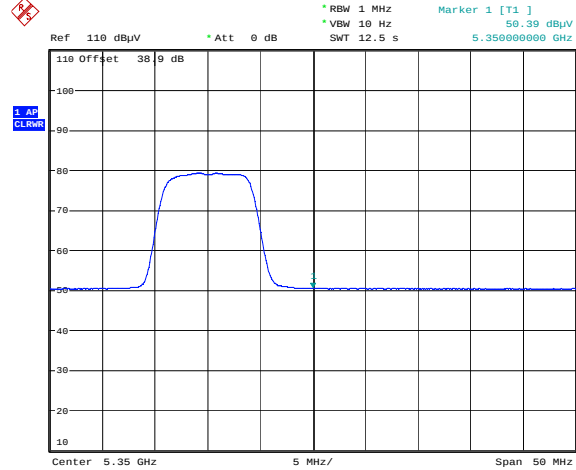


22dBi Antenna (Peak Detector)



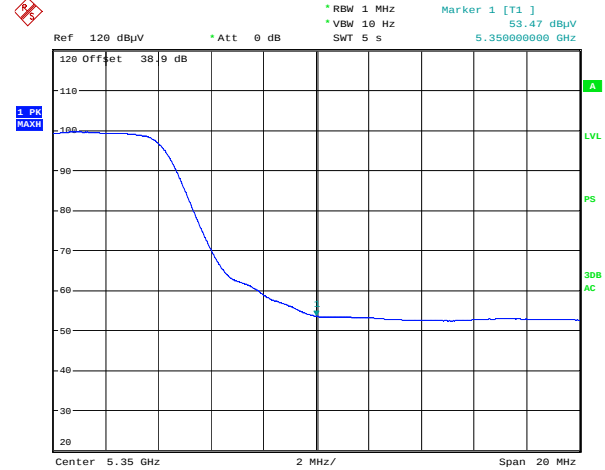
Date: 29.JAN.2008 16:07:04

5250MHz, 9dBi Antenna (Average detector)



Date: 30.JAN.2008 01:36:00

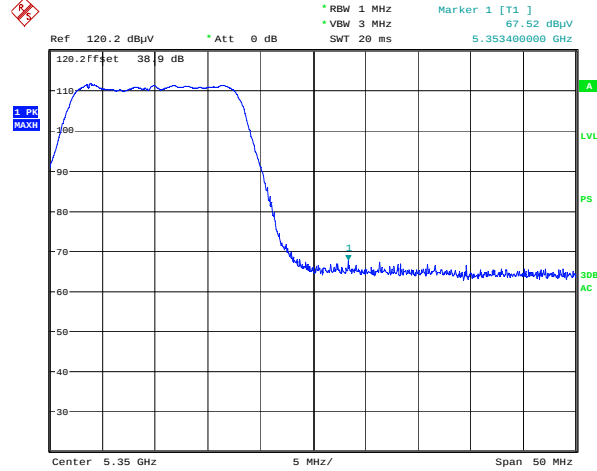
22dBi Antenna (Average Detector)



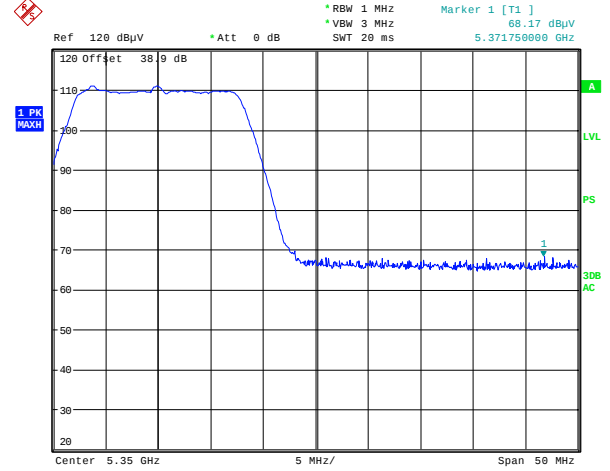
Date: 29.JAN.2008 16:06:37

Date: 30.JAN.2008 01:35:34

20MHz Channel – Vertical 5250MHz, 9dBi Antenna (Peak detector)

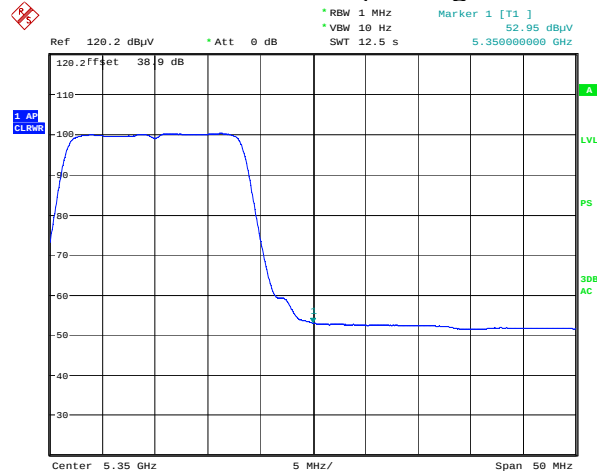


22dBi Antenna (Peak Detector)

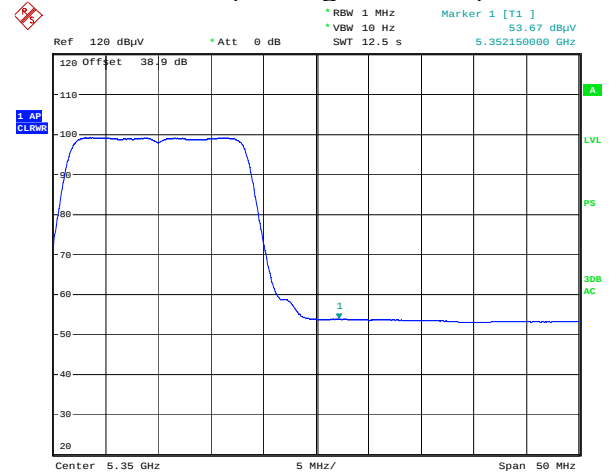


Date: 29.JAN.2008 15:52:43

5250MHz, 9dBi Antenna (Average detector)



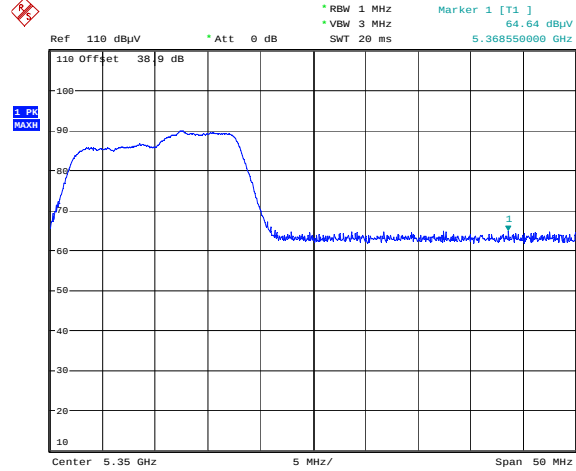
22dBi Antenna (Average Detector)



Date: 29.JAN.2008 15:52:21

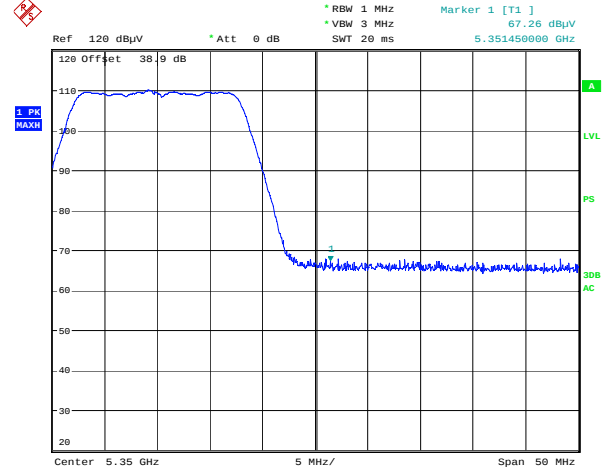
Date: 29.JAN.2008 18:23:32

20MHz Channel – Horizontal 5250MHz, 9dBi Antenna (Peak detector)



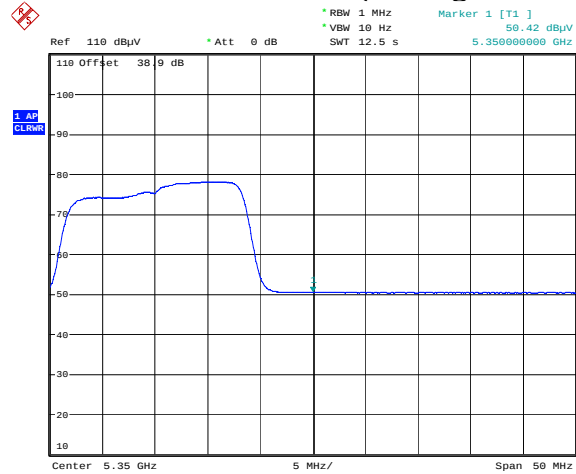
Date: 29.JAN.2008 16:11:38

22dBi Antenna (Peak Detector)



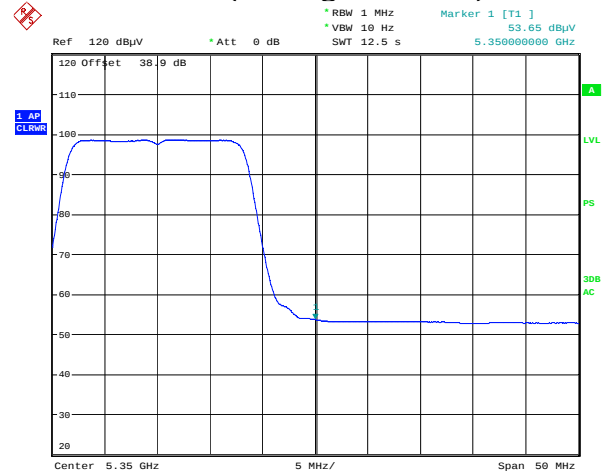
Date: 30.JAN.2008 01:36:54

5250MHz, 9dBi Antenna (Average detector)



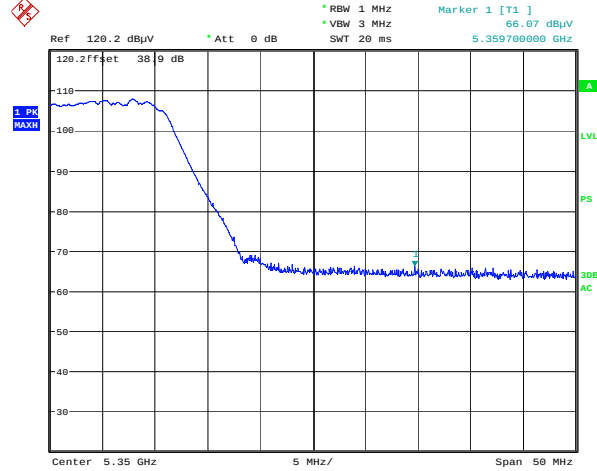
Date: 29.JAN.2008 16:12:30

22dBi Antenna (Average Detector)

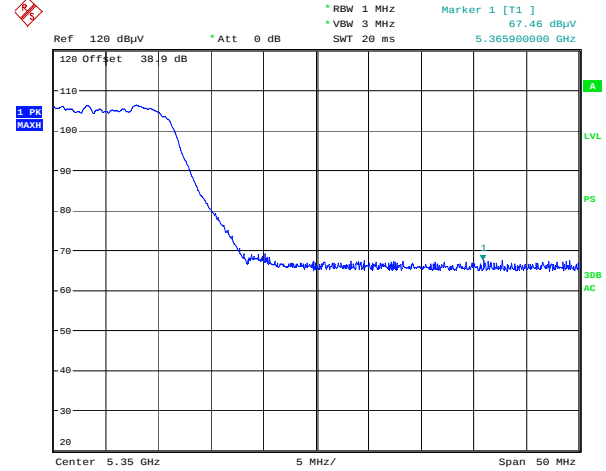


Date: 30.JAN.2008 01:37:35

40MHz Channel – Vertical 5250MHz, 9dBi Antenna (Peak detector)

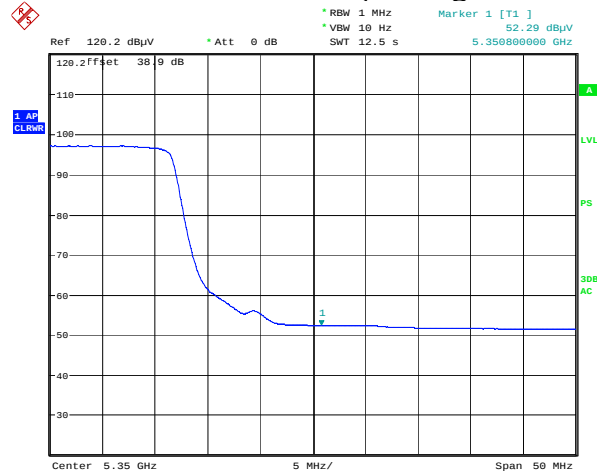


22dBi Antenna (Peak Detector)



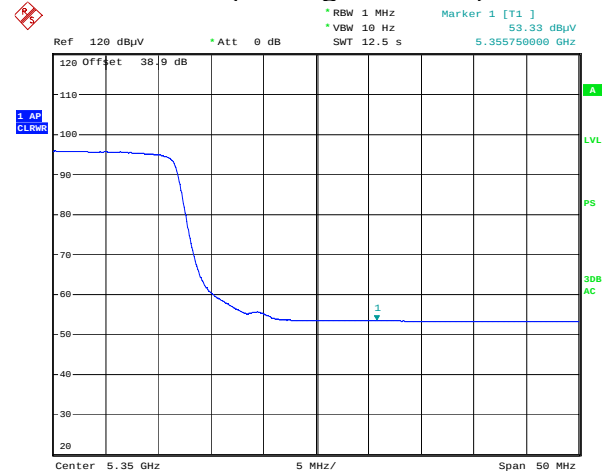
Date: 29.JAN.2008 15:39:19

5250MHz, 9dBi Antenna (Average detector)



Date: 29.JAN.2008 17:28:06

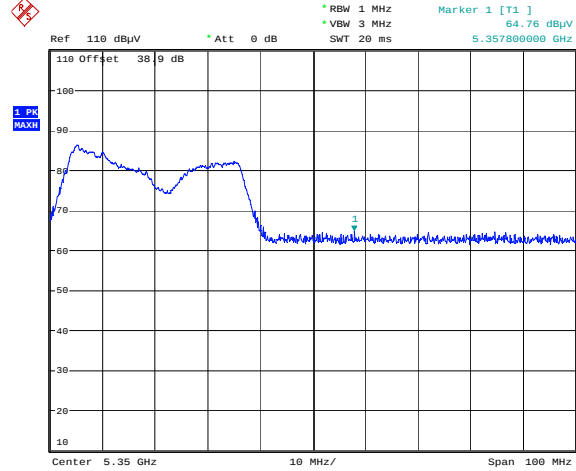
22dBi Antenna (Average Detector)



Date: 29.JAN.2008 15:38:57

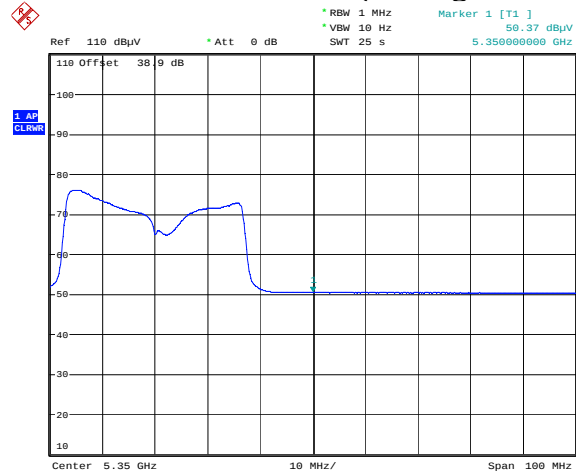
Date: 29.JAN.2008 17:27:45

40MHz Channel – Horizontal 5250MHz, 9dBi Antenna (Peak detector)



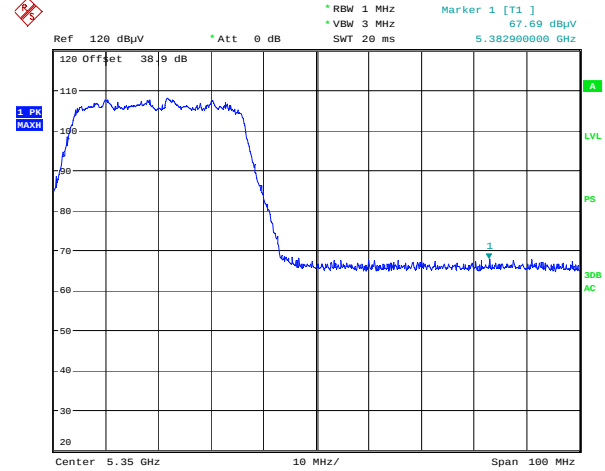
Date: 29.JAN.2008 16:14:50

5250MHz, 9dBi Antenna (Average detector)



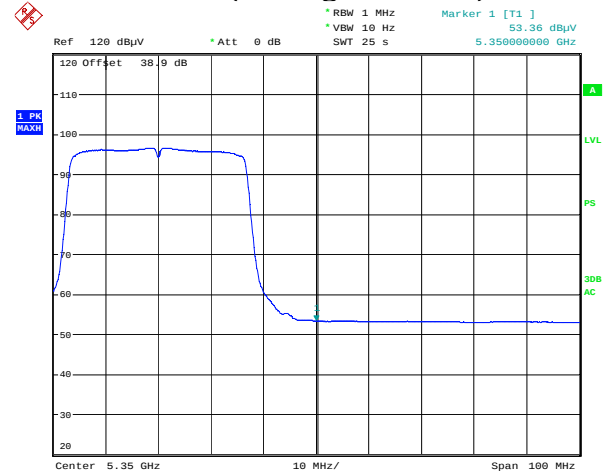
Date: 29.JAN.2008 16:14:32

22dBi Antenna (Peak Detector)



Date: 30.JAN.2008 01:43:53

22dBi Antenna (Average Detector)



Date: 30.JAN.2008 01:44:36

Clause 15.403(i) Emission Bandwidth

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 resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement

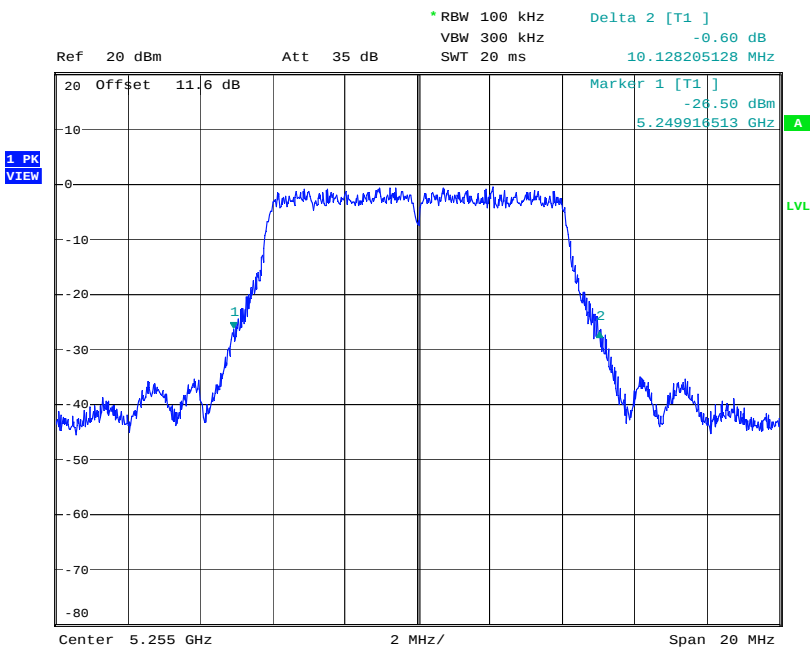
Test Conditions:

Sample Number:	1	Temperature (°C):	25
Date:	January 9, 2008	Humidity (%):	20
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

Occupied Bandwidth:

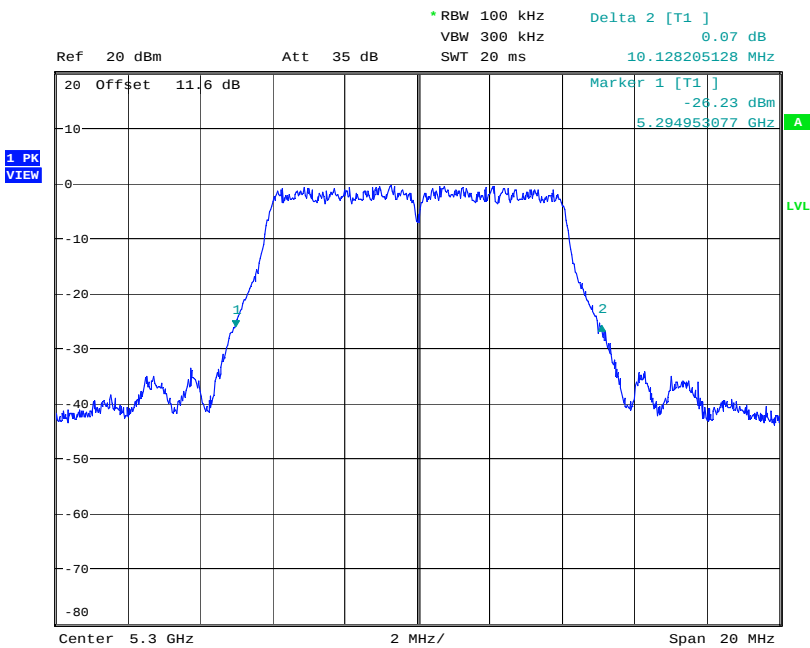
Channel	Measured 26dB Bandwidth		
	10MHz	20MHz	40MHz
Low	10.128MHz	20.433MHz	39.904MHz
Mid	10.128MHz	20.272MHz	39.263MHz
High	10.069MHz	20.350MHz	39.744MHz

Low 10MHz Channel



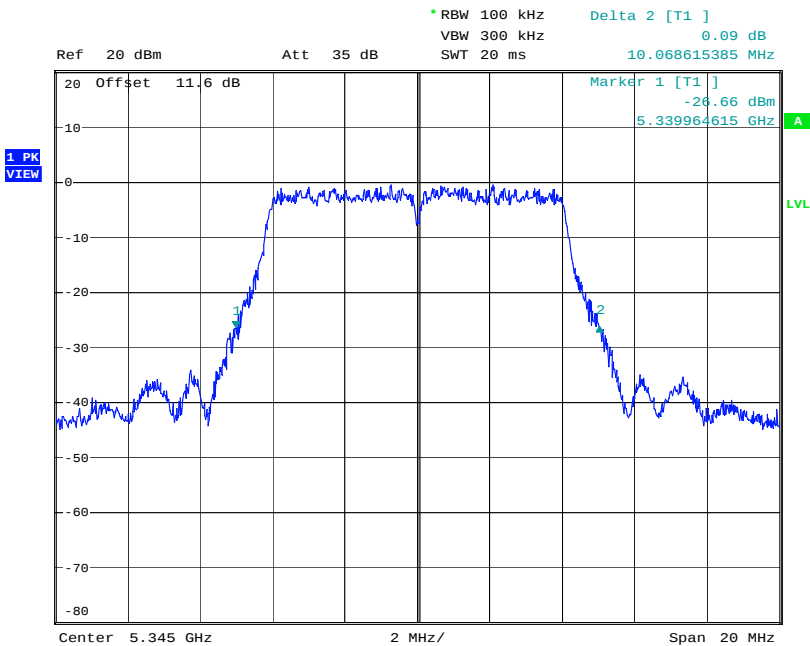
Date: 9.JAN.2008 10:42:13

Mid 10MHz Channel



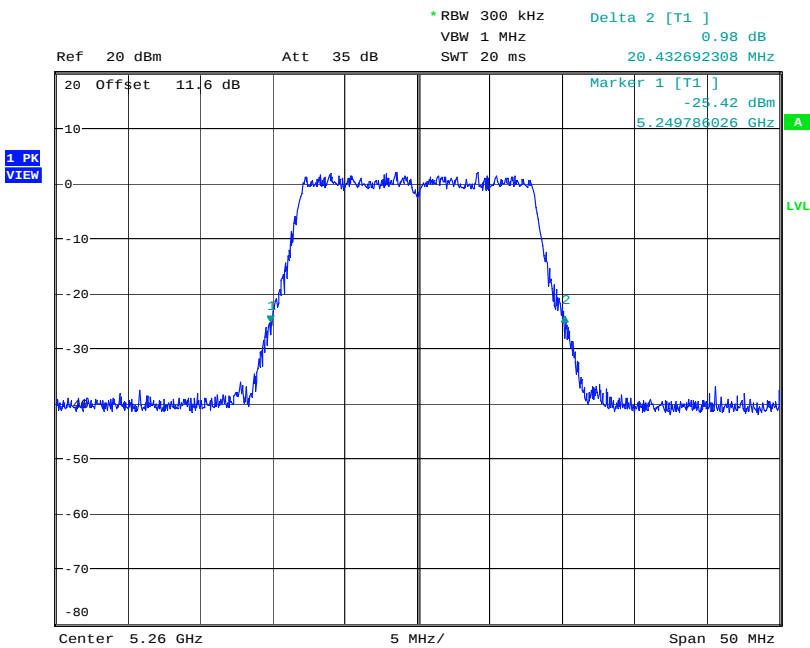
Date: 9.JAN.2008 10:39:40

High 10MHz Channel



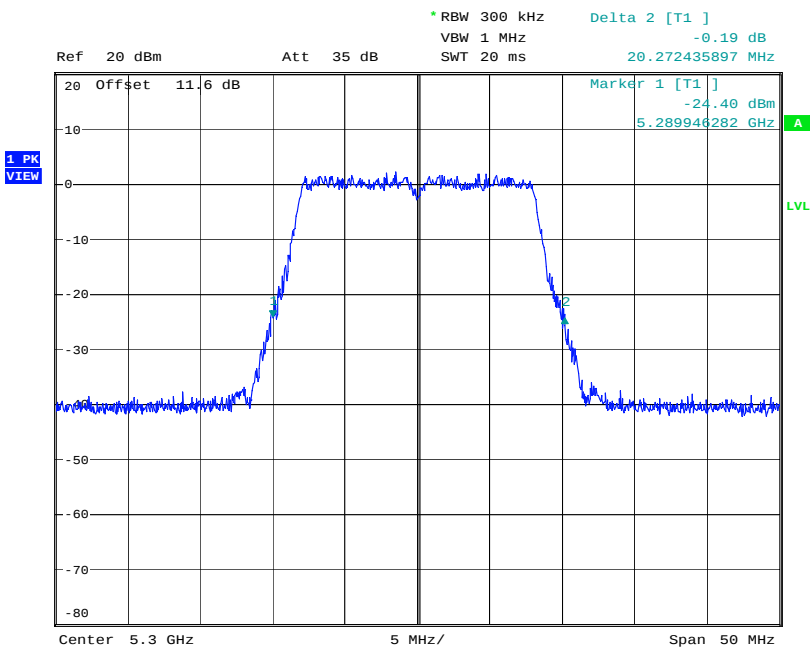
Date: 9.JAN.2008 10:36:59

Low 20MHz Channel



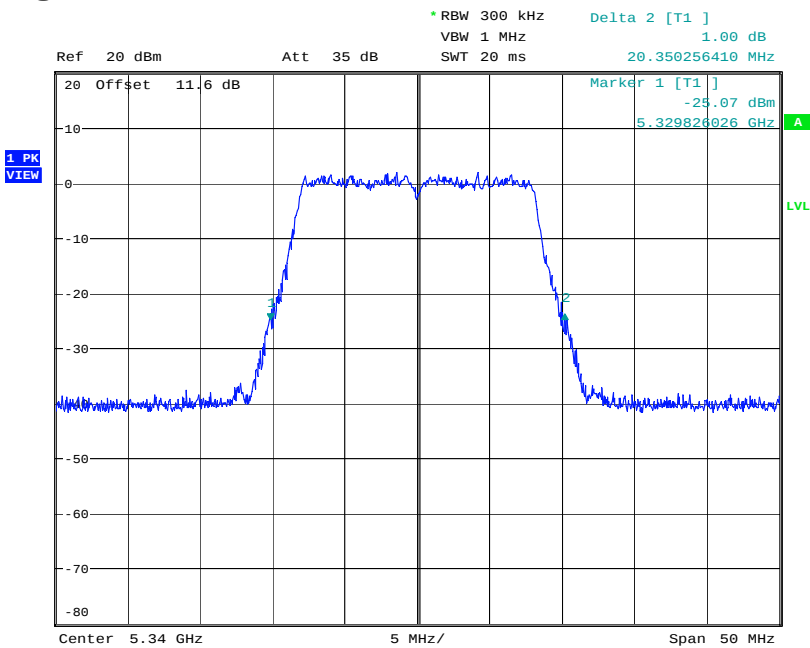
Date: 9.JAN.2008 10:47:19

Mid 20MHz Channel



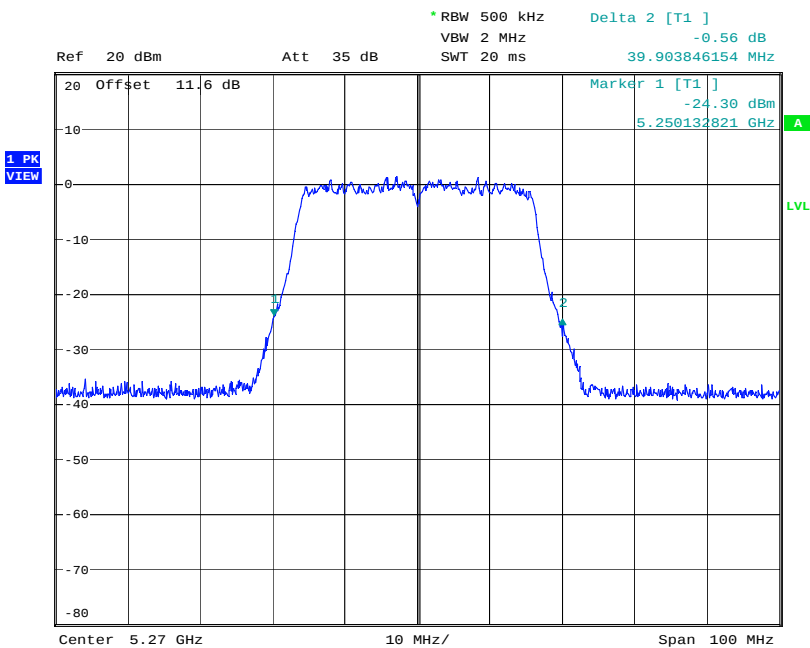
Date: 9.JAN.2008 10:48:44

High 20MHz Channel



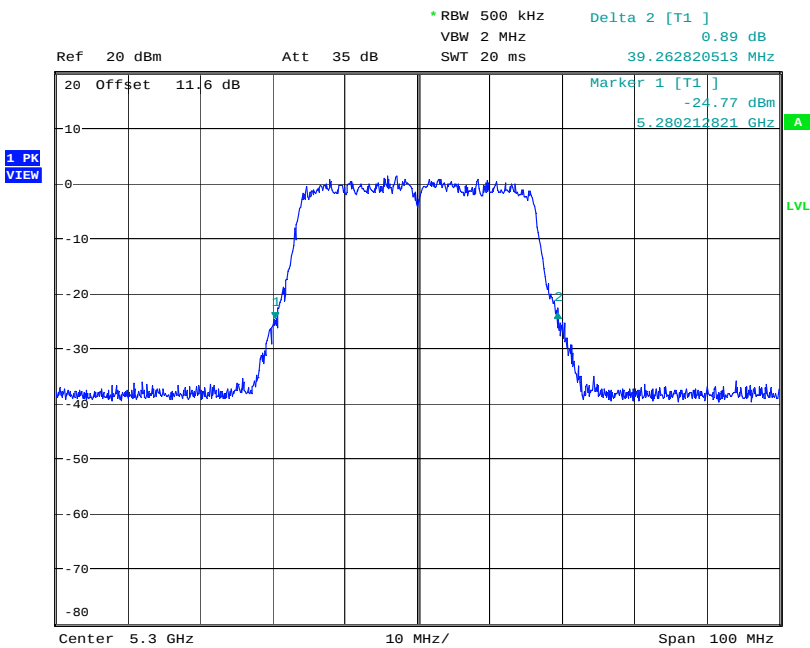
Date: 9.JAN.2008 10:50:11

Low 40MHz Channel



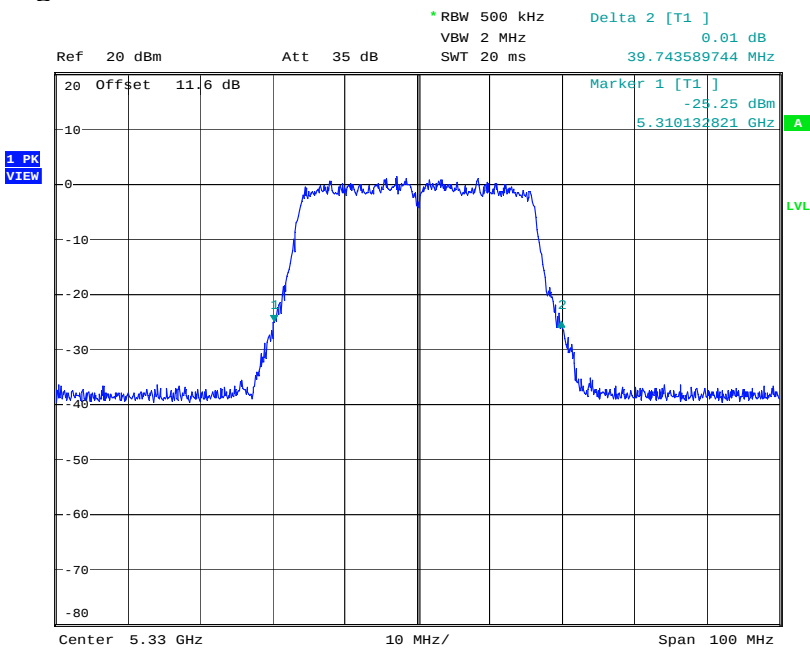
Date: 9.JAN.2008 10:54:13

Mid 40MHz Channel



Date: 9.JAN.2008 10:52:40

High 40MHz Channel



Date: 9.JAN.2008 10:51:30

Clause 15.407(a)(2) Peak Conducted Transmit Output Power and Power Spectral Density

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

Test Conditions:

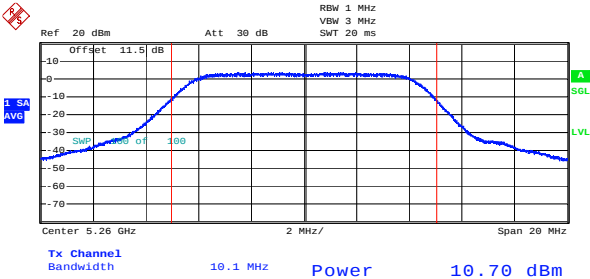
Sample Number:	1	Temperature (°C):	24
Date:	January 30, 2008	Humidity (%):	16
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

Test Method: FCC Public Notice Ref: DA: 02-2138
Measurement Procedure for Peak Transmit Power in UNII Band

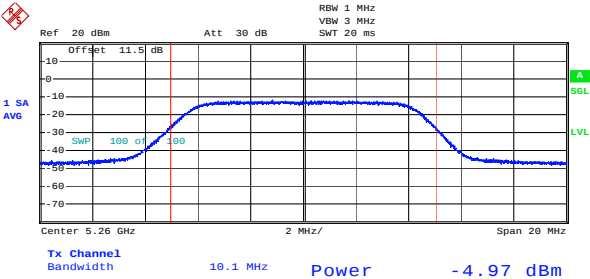
Test Results:**Output Power**

Channel	Channel Bandwidth	Measured power	Limit	Antenna Gain	Max EIRP	Limit
5260MHz	10MHz	10.70dBm	18dBm	9dBi	19.70dBm	27dBm
5300MHz	10MHz	10.53dBm	18dBm	9dBi	19.53dBm	27dBm
5340MHz	10MHz	10.71dBm	18dBm	9dBi	19.71dBm	27dBm
5260MHz	10MHz	-4.97dBm	5dBm	22dBi	17.03dBm	27dBm
5300MHz	10MHz	-4.58dBm	5dBm	22dBi	17.42dBm	27dBm
5340MHz	10MHz	-4.77dBm	5dBm	22dBi	17.23dBm	27dBm
5265MHz	20MHz	12.60dBm	21dBm	9dBi	21.60dBm	30dBm
5300MHz	20MHz	12.43dBm	21dBm	9dBi	21.43dBm	30dBm
5335MHz	20MHz	12.75dBm	21dBm	9dBi	21.75dBm	30dBm
5265MHz	20MHz	-3.19dBm	8dBm	22dBi	18.81dBm	30dBm
5300MHz	20MHz	-2.62dBm	8dBm	22dBi	19.38dBm	30dBm
5335MHz	20MHz	-2.79dBm	8dBm	22dBi	19.21dBm	30dBm
5280MHz	40MHz	12.80dBm	21dBm	9dBi	21.80dBm	30dBm
5300MHz	40MHz	12.76dBm	21dBm	9dBi	21.76dBm	30dBm
5320MHz	40MHz	12.98dBm	21dBm	9dBi	21.98dBm	30dBm
5280MHz	40MHz	-2.65dBm	8dBm	22dBi	19.35dBm	30dBm
5300MHz	40MHz	-2.31dBm	8dBm	22dBi	19.69dBm	30dBm
5320MHz	40MHz	-2.50dBm	8dBm	22dBi	19.50dBm	30dBm

10MHz Channel
5260MHz, 9dBi Antenna

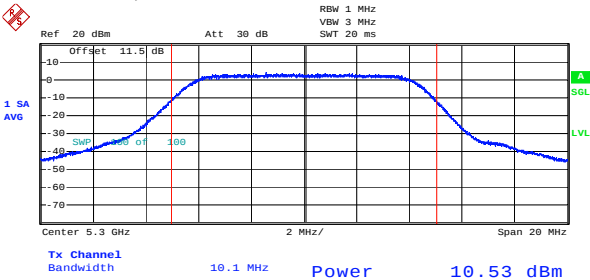


22dBi Antenna



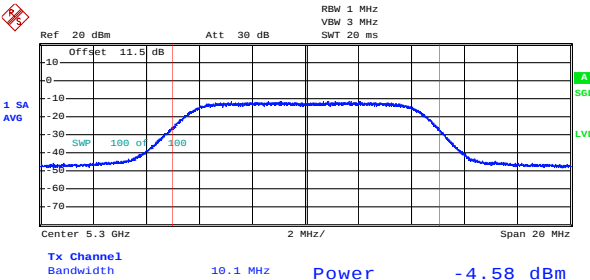
Date: 30.JAN.2008 12:49:06

5300MHz, 9dBi Antenna



Date: 30.JAN.2008 12:55:53

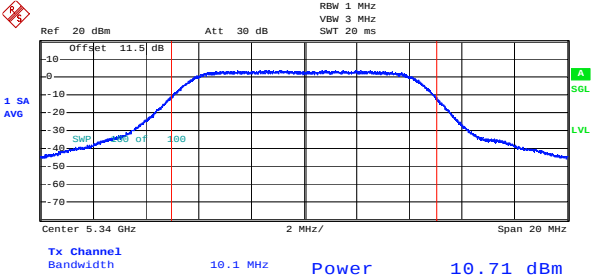
22dBi Antenna



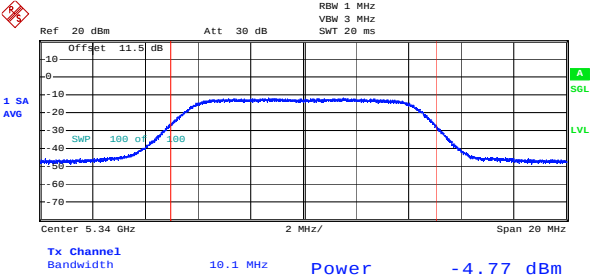
Date: 30.JAN.2008 13:01:27

Date: 30.JAN.2008 12:56:57

5340MHz, 9dBi Antenna



22dBi Antenna

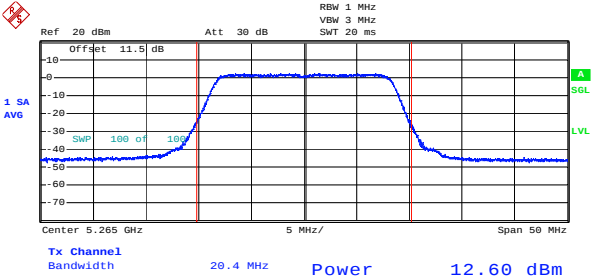


Date: 30.JAN.2008 13:02:16

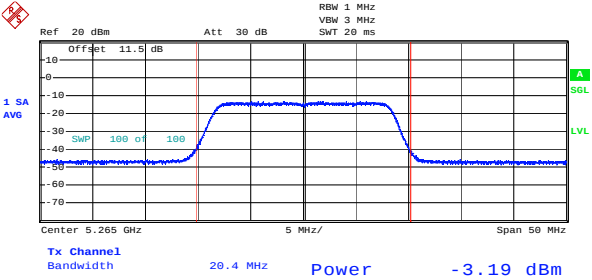
Date: 30.JAN.2008 13:04:43

20MHz Channel

5262MHz, 9dBi Antenna



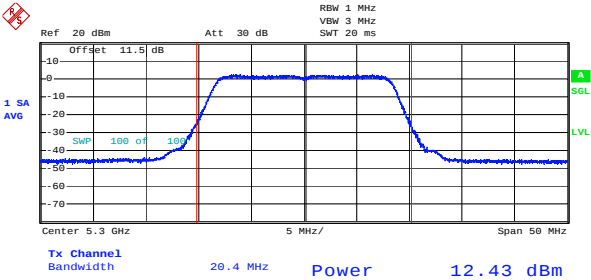
22dBi Antenna



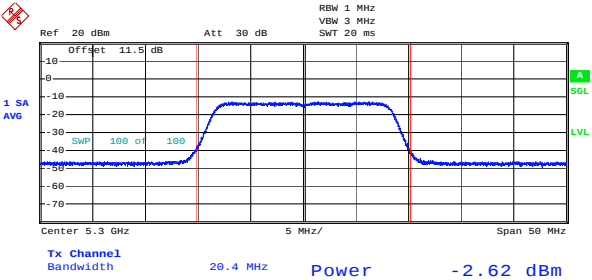
Date: 30.JAN.2008 13:31:31

Date: 30.JAN.2008 13:42:47

5300MHz, 9dBi Antenna

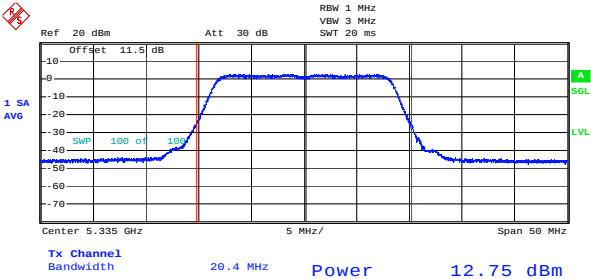


22dBi Antenna



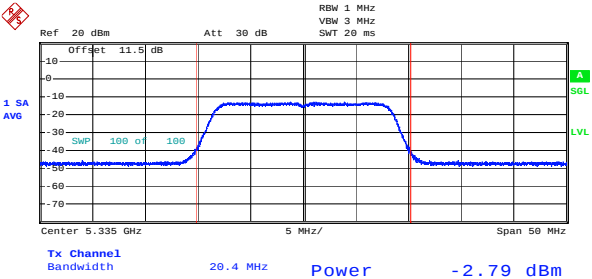
Date: 30.JAN.2008 13:30:44

5335MHz, 9dBi Antenna



Date: 30.JAN.2008 13:28:13

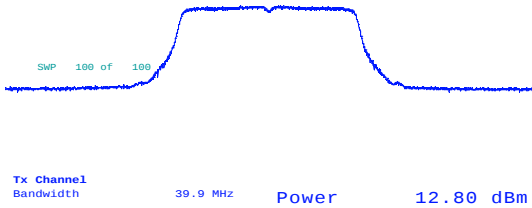
22dBi Antenna



Date: 30.JAN.2008 13:18:42

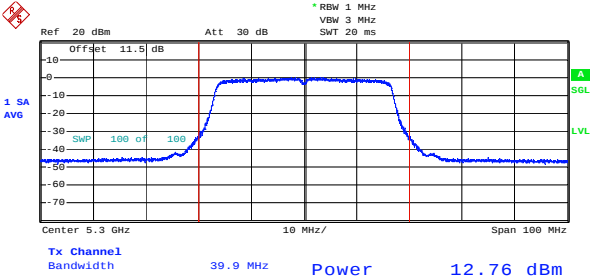
Date: 30.JAN.2008 13:21:59

40MHz Channel
5280MHz, 9dBi Antenna



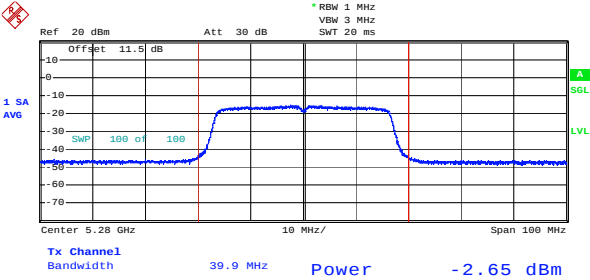
Date: 30.JAN.2008 14:01:28

5300MHz, 9dBi Antenna



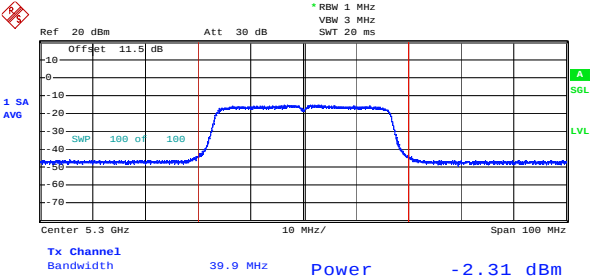
Date: 30.JAN.2008 14:07:41

22dBi Antenna

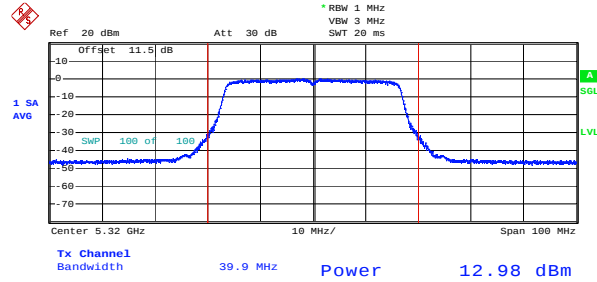
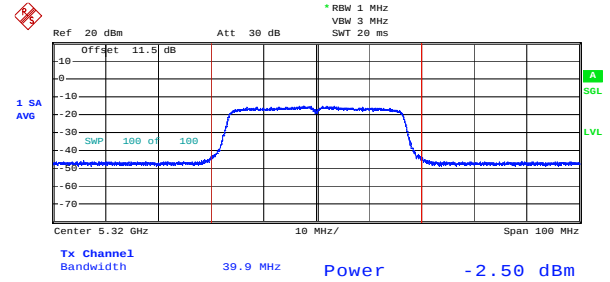


Date: 30.JAN.2008 14:04:08

22dBi Antenna



Date: 30.JAN.2008 14:05:12

5320MHz, 9dBi Antenna**22dBi Antenna**

Date: 30.JAN.2008 14:08:28

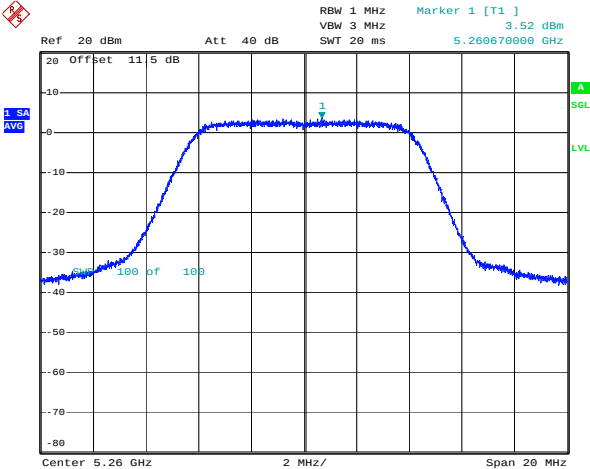
Date: 30.JAN.2008 14:11:58

PSD

Channel	Channel Bandwidth	Antenna Gain	Measured PSD (dBm/MHz)	Limit
5260MHz	10MHz	9dBi	3.52dBm	8dBm
5300MHz	10MHz	9dBi	3.28dBm	8dBm
5340MHz	10MHz	9dBi	3.10dBm	8dBm
5260MHz	10MHz	22dBi	-12.24dBm	-5dBm
5300MHz	10MHz	22dBi	-11.86dBm	-5dBm
5340MHz	10MHz	22dBi	-12.16dBm	-5dBm
5265MHz	20MHz	9dBi	1.90dBm	8dBm
5300MHz	20MHz	9dBi	2.09dBm	8dBm
5335MHz	20MHz	9dBi	2.21dBm	8dBm
5265MHz	20MHz	22dBi	-13.60dBm	-5dBm
5300MHz	20MHz	22dBi	-13.08dBm	-5dBm
5335MHz	20MHz	22dBi	-13.20dBm	-5dBm
5280MHz	40MHz	9dBi	-0.19dBm	8dBm
5300MHz	40MHz	9dBi	-0.24dBm	8dBm
5320MHz	40MHz	9dBi	-0.80dBm	8dBm
5280MHz	40MHz	22dBi	-15.60dBm	-5dBm
5300MHz	40MHz	22dBi	-15.53dBm	-5dBm
5320MHz	40MHz	22dBi	-15.58dBm	-5dBm

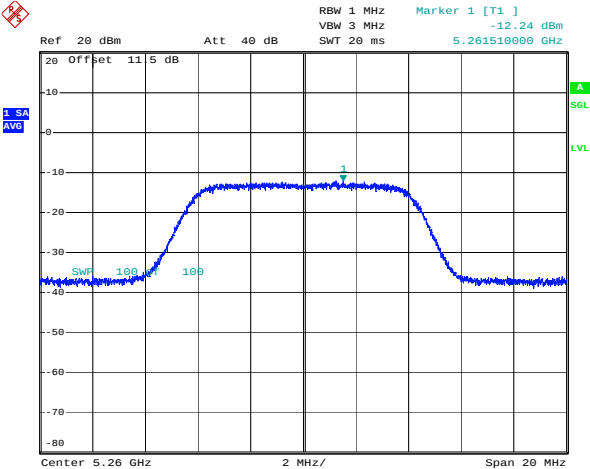
PSD Limit = 11dBm – (antenna gain – 6dBi)

10MHz Channel
5260MHz, 9dBi Antenna



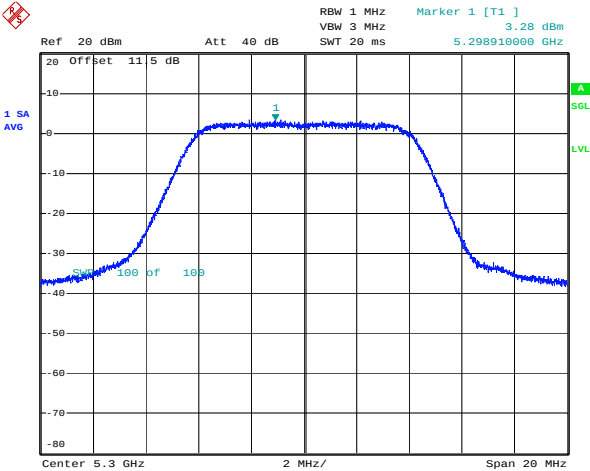
Date: 30.JAN.2008 12:51:17

22dBi Antenna



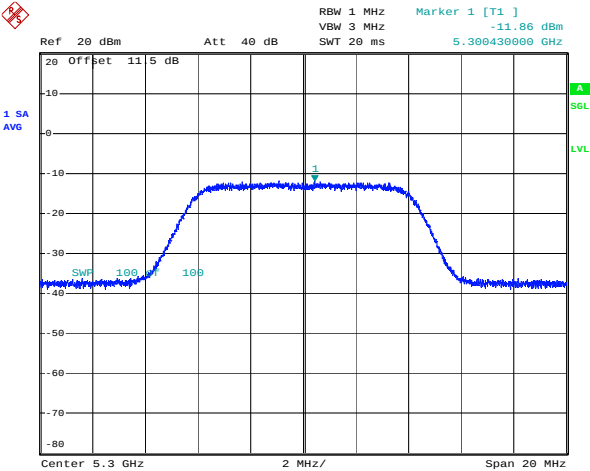
Date: 30.JAN.2008 12:55:32

5300MHz, 9dBi Antenna



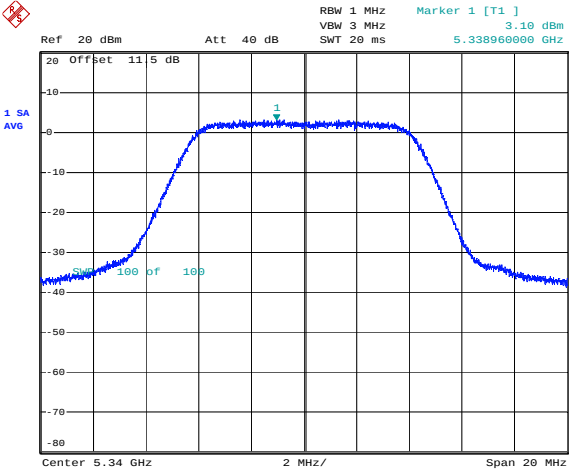
Date: 30.JAN.2008 12:59:17

22dBi Antenna



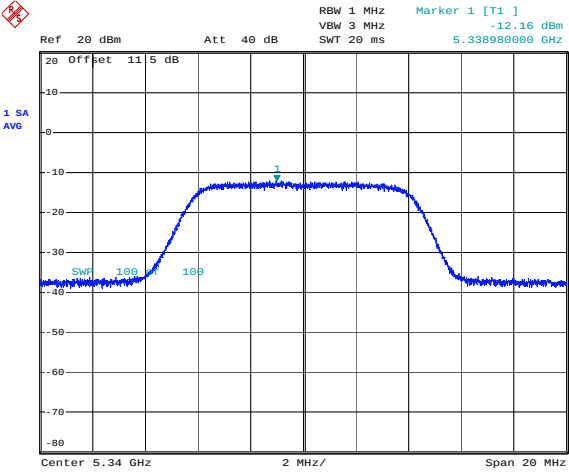
Date: 30.JAN.2008 12:57:23

5340MHz, 9dBi Antenna



Date: 30.JAN.2008 13:02:37

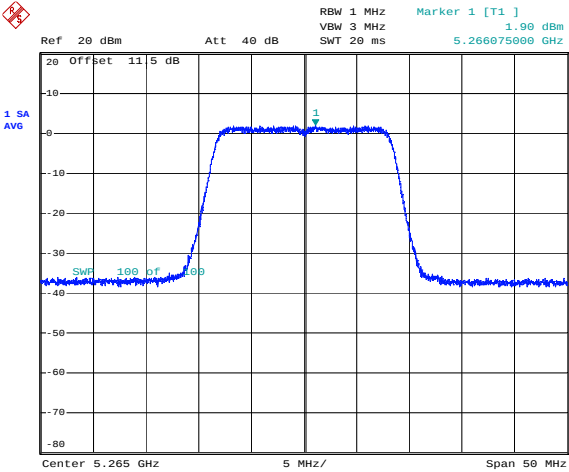
22dBi Antenna



Date: 30.JAN.2008 13:04:17

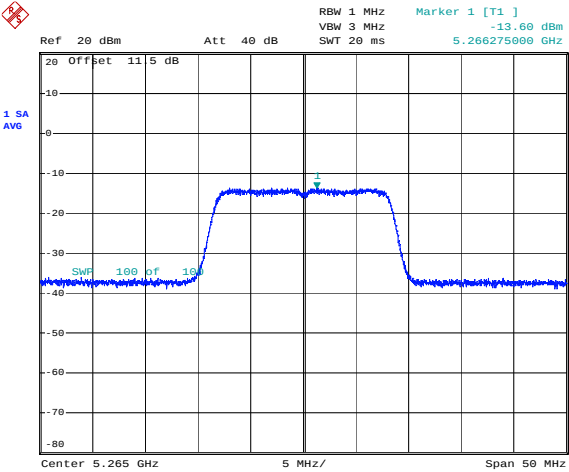
20MHz Channel

5265MHz, 9dBi Antenna



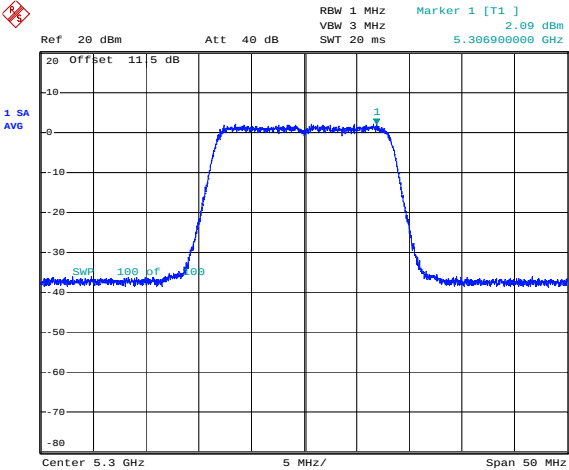
Date: 30.JAN.2008 13:31:55

22dBi Antenna



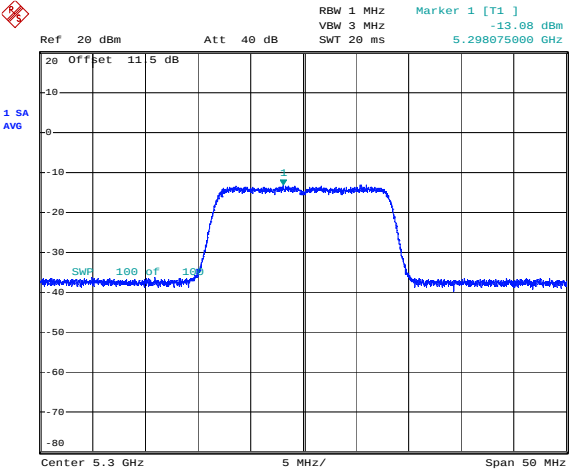
Date: 30.JAN.2008 13:35:39

5300MHz, 9dBi Antenna



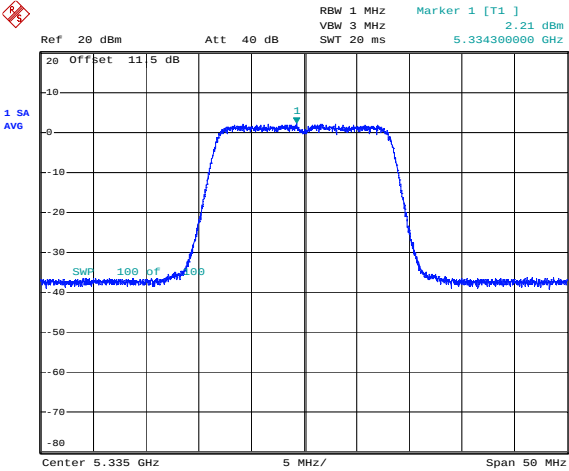
Date: 30.JAN.2008 13:30:21

22dBi Antenna



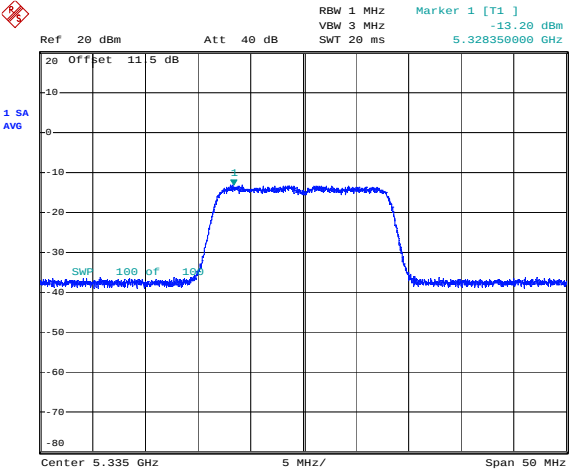
Date: 30.JAN.2008 13:28:34

5335MHz, 9dBi Antenna



Date: 30.JAN.2008 13:30:21

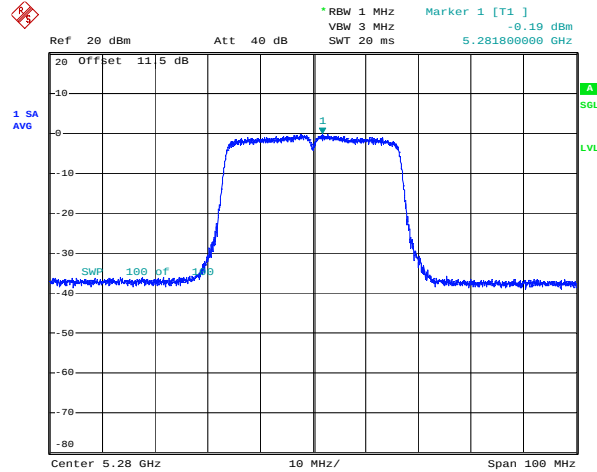
22dBi Antenna



Date: 30.JAN.2008 13:21:41

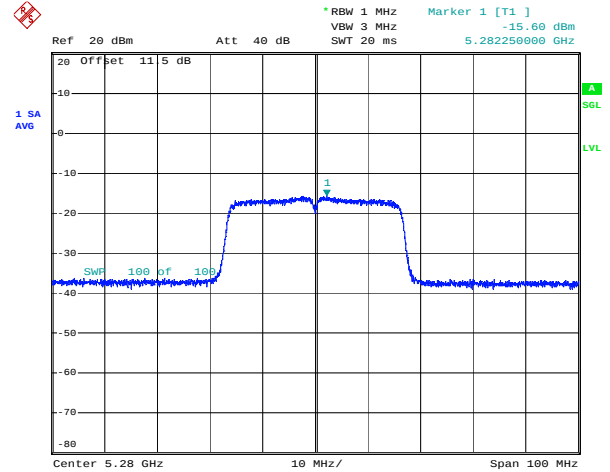
40MHz Channel

5280MHz, 9dBi Antenna



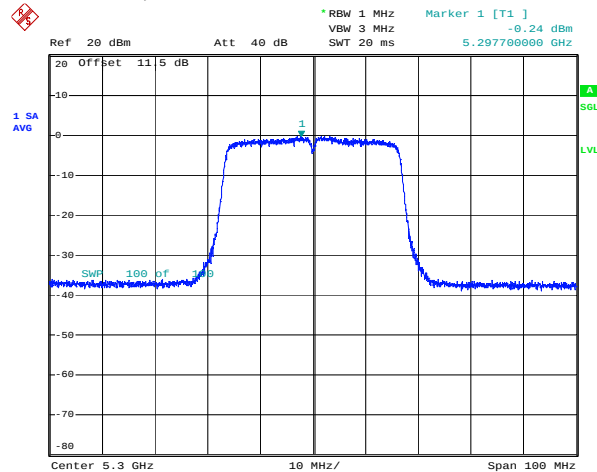
Date: 30.JAN.2008 14:01:47

22dBi Antenna



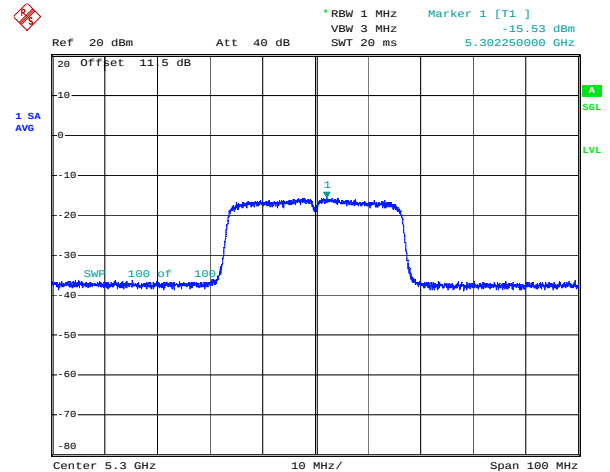
Date: 30.JAN.2008 14:03:37

5300MHz, 9dBi Antenna



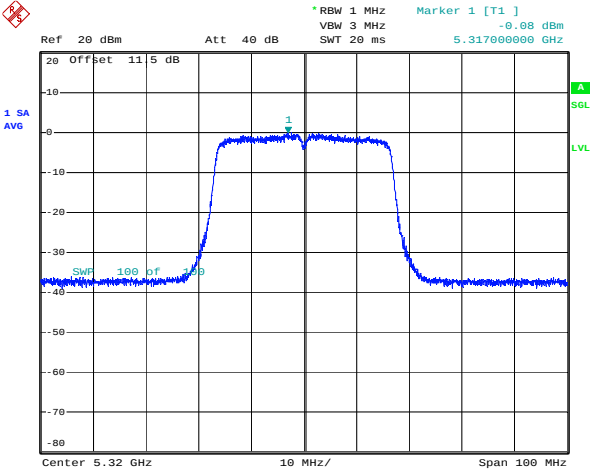
Date: 30.JAN.2008 14:07:17

22dBi Antenna



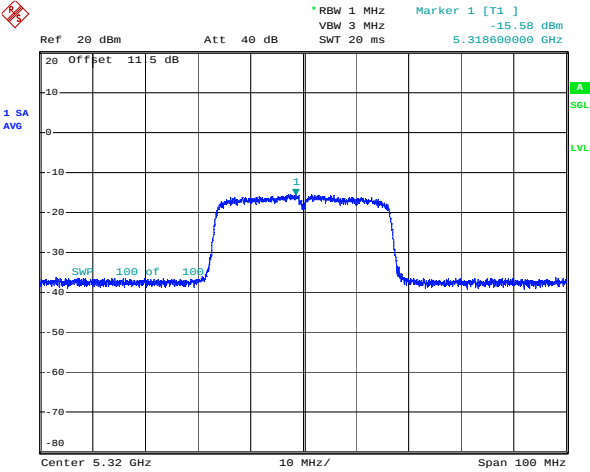
Date: 30.JAN.2008 14:05:33

5320MHz, 9dBi Antenna



Date: 30.JAN.2008 14:08:49

22dBi Antenna



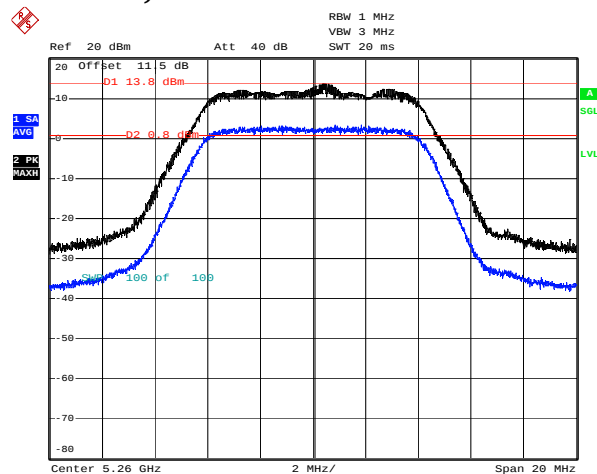
Date: 30.JAN.2008 14:11:33

Clause 15.407(a)(6) Peak Excursion Measurement

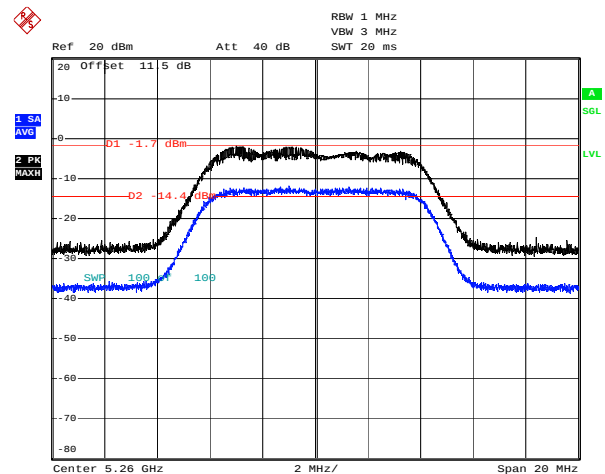
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test Conditions:

Sample Number:	1	Temperature (°C):	24
Date:	January 30, 2008	Humidity (%):	16
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

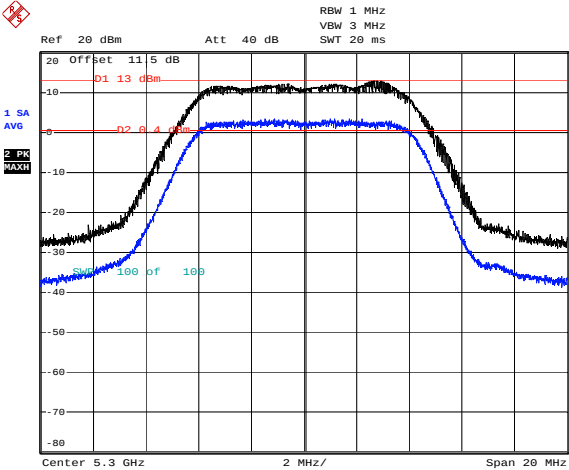
Test Method:**FCC Public Notice Ref: DA: 02-2138****Measurement Procedure for Peak Transmit Power in UNII Band****Test Results:****10MHz Channel****5260MHz, 9dBi Antenna**

Date: 30.JAN.2008 12:53:34

22dBi Antenna

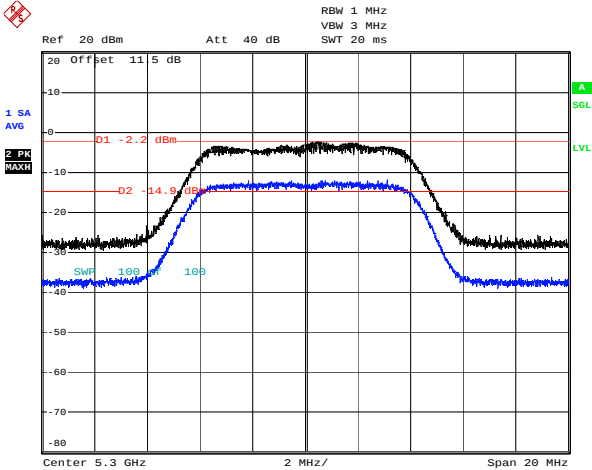
Date: 30.JAN.2008 12:54:59

5300MHz, 9dBi Antenna



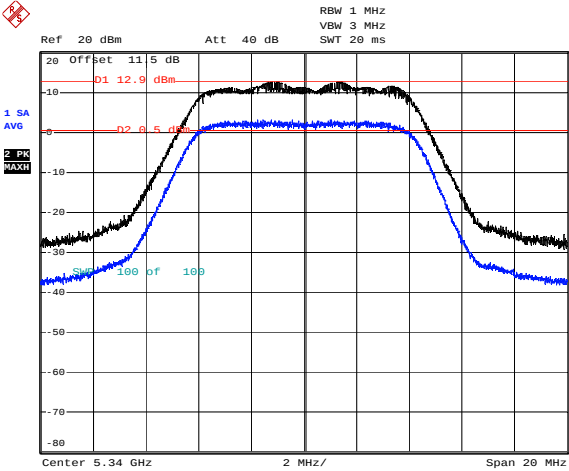
Date: 30.JAN.2008 12:58:51

22dBi Antenna



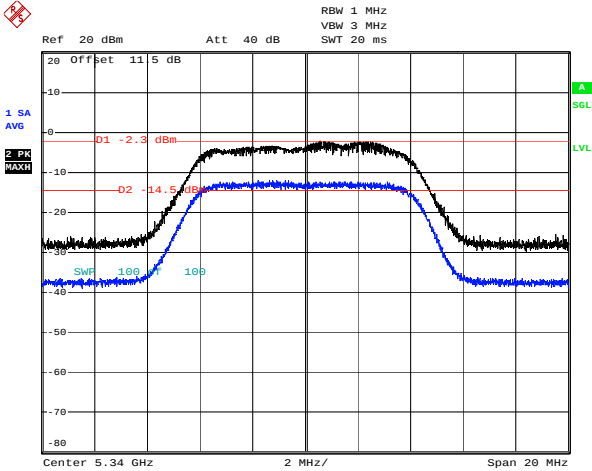
Date: 30.JAN.2008 12:58:03

5340MHz, 9dBi Antenna



Date: 30.JAN.2008 13:03:03

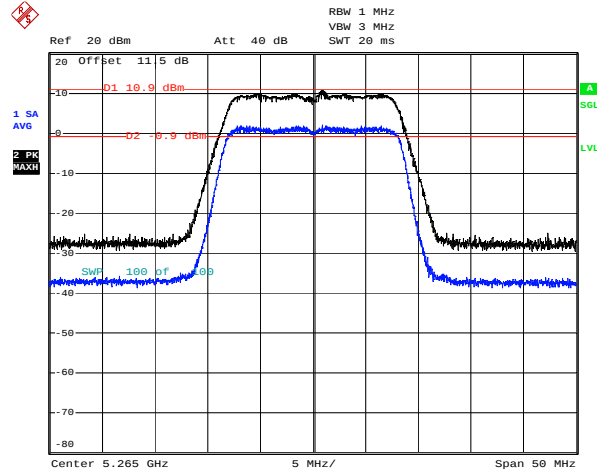
22dBi Antenna



Date: 30.JAN.2008 13:03:51

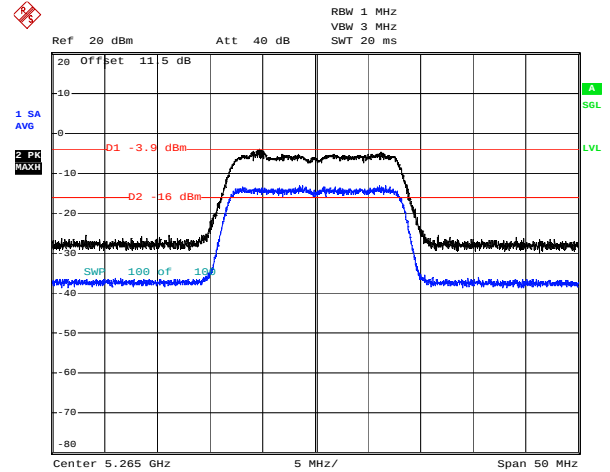
20MHz Channel

5265MHz, 9dBi Antenna



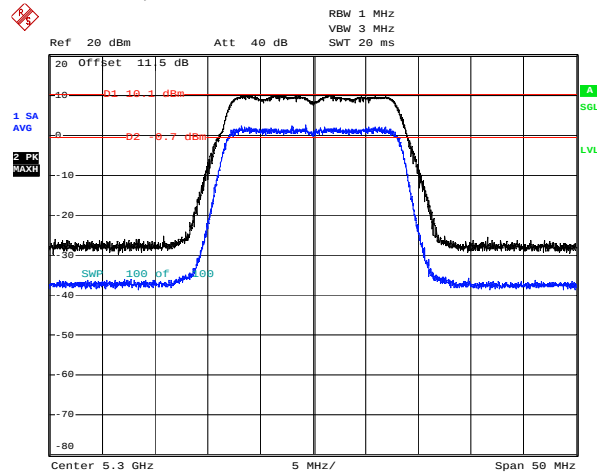
Date: 30.JAN.2008 13:32:32

22dBi Antenna



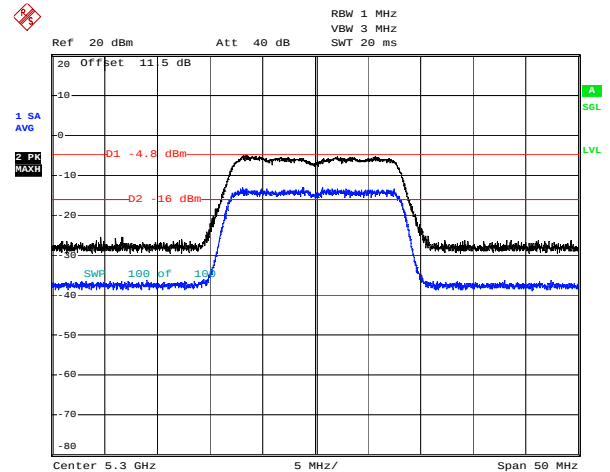
Date: 30.JAN.2008 13:34:03

5300MHz, 9dBi Antenna



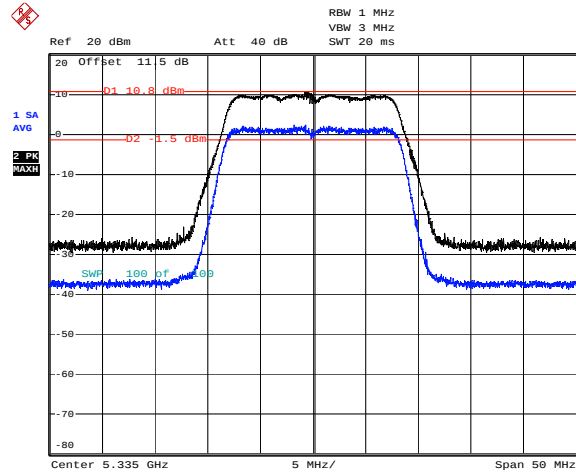
Date: 30.JAN.2008 13:29:49

22dBi Antenna



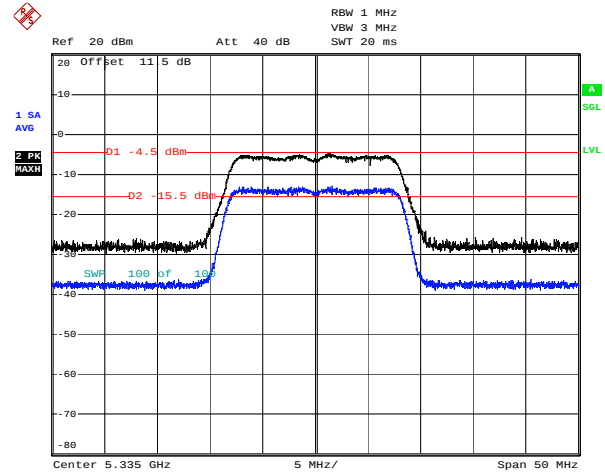
Date: 30.JAN.2008 13:29:02

5335MHz, 9dBi Antenna



Date: 30.JAN.2008 13:20:25

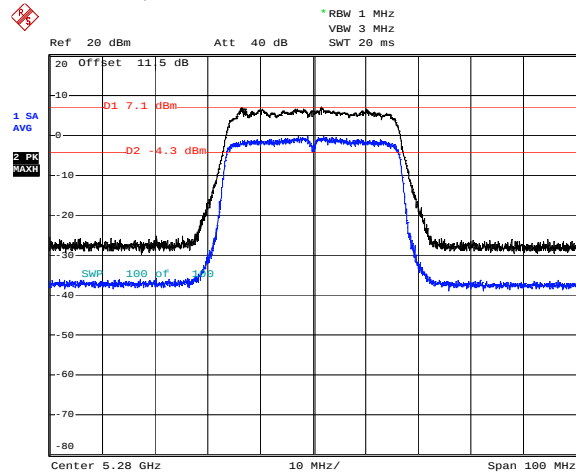
22dBi Antenna



Date: 30.JAN.2008 13:21:17

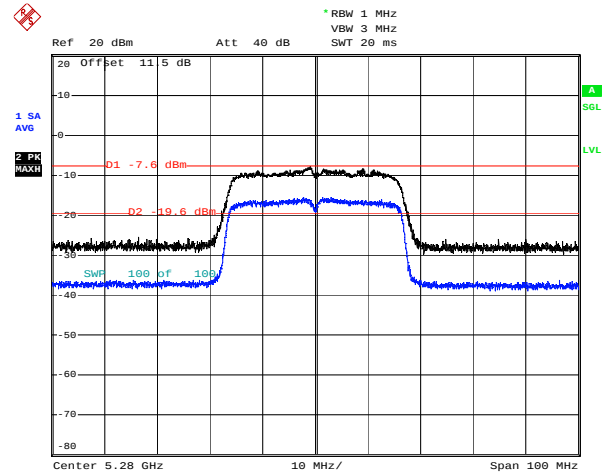
40MHz Channel

5280MHz, 9dBi Antenna



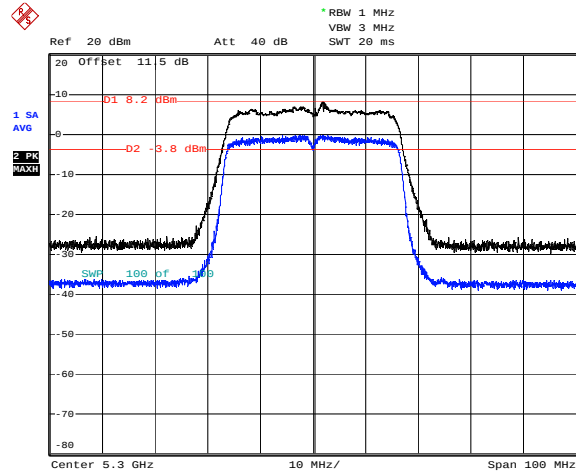
Date: 30.JAN.2008 14:02:23

22dBi Antenna



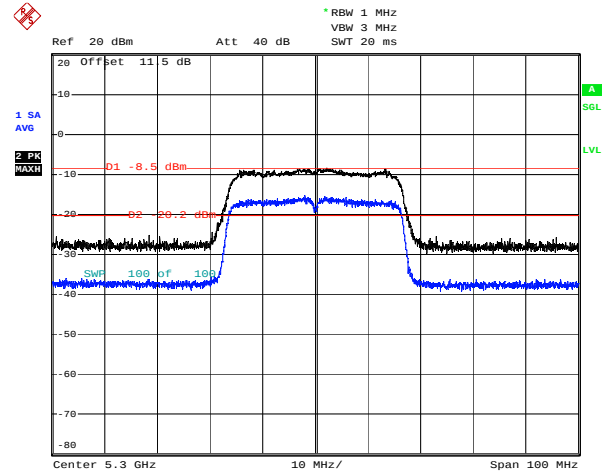
Date: 30.JAN.2008 14:03:12

5300MHz, 9dBi Antenna



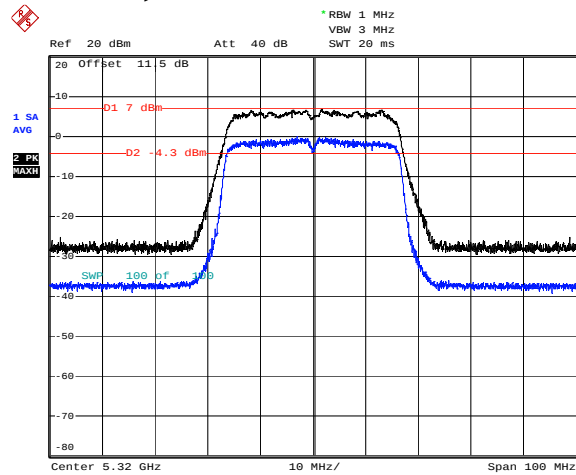
Date: 30.JAN.2008 14:06:46

22dBi Antenna



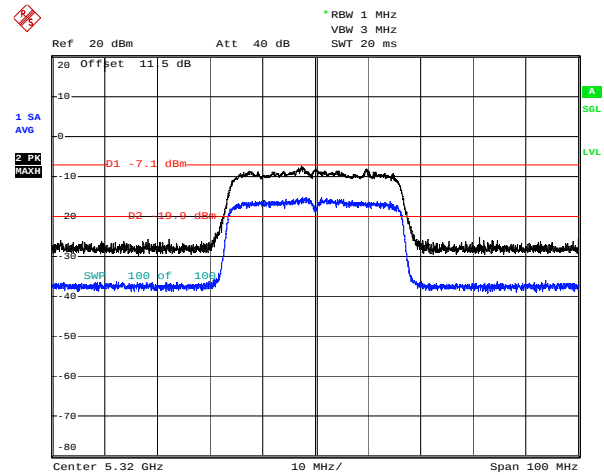
Date: 30.JAN.2008 14:06:00

5320MHz, 9dBi Antenna



Date: 30.JAN.2008 14:09:18

22dBi Antenna



Date: 30.JAN.2008 14:10:52

Clause 15.407(b)(2) Spurious Emissions

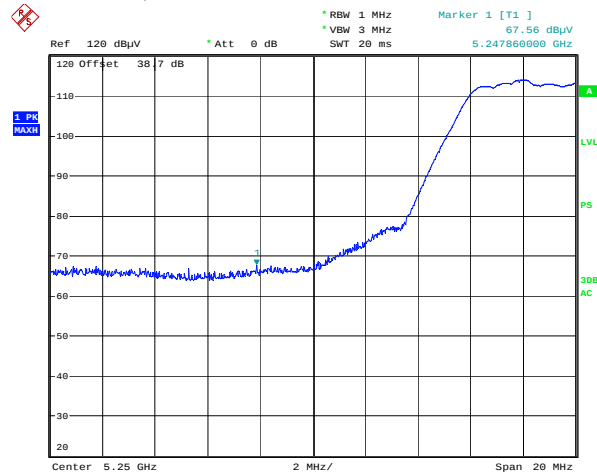
For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in 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.

Test Conditions:

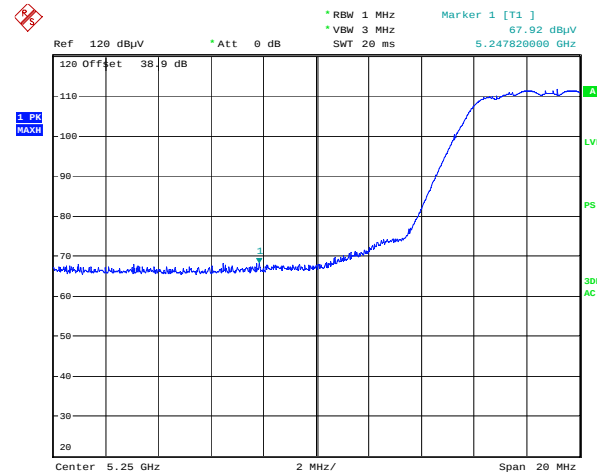
Sample Number:	1	Temperature (°C):	24
Date:	January 30, 2008	Humidity (%):	16
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	3m EMI Chamber

Test Results:

Radiated measurements were performed from 30MHz to 40GHz and no emissions were detected within 20dB below the limit.

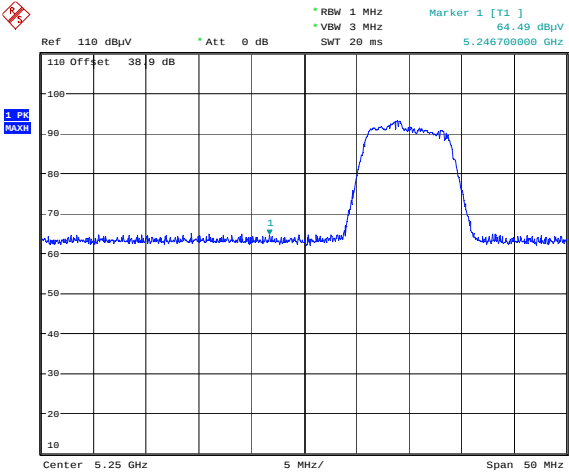
**Bandedge at 5250MHz
10MHz Channel - Vertical
5250MHz, 9dBi Antenna**

Date: 29. JAN. 2008 15:24:37

22dBi Antenna

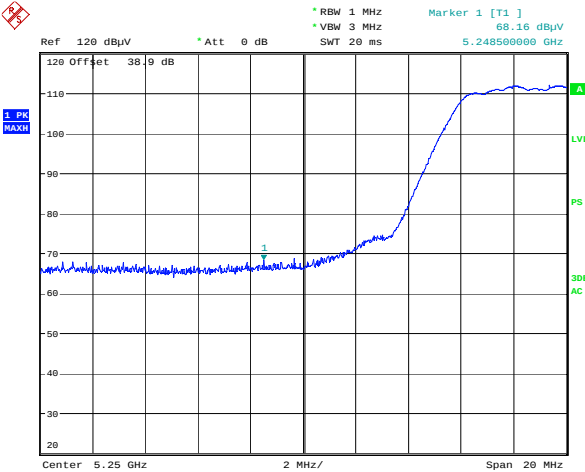
Date: 30. JAN. 2008 01:30:28

10MHz Channel - Horizontal
5250MHz, 9dBi Antenna



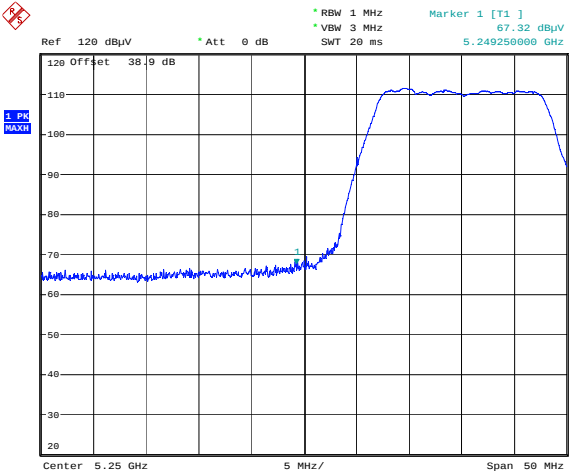
Date: 29.JAN.2008 16:08:09

22dBi Antenna



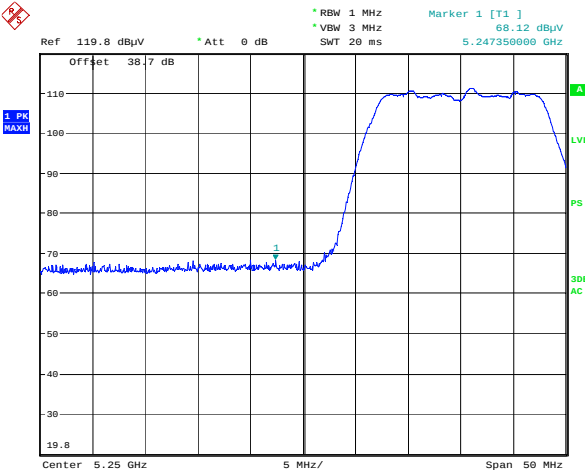
Date: 30.JAN.2008 01:33:30

20MHz Channel - Vertical
5250MHz, 9dBi Antenna



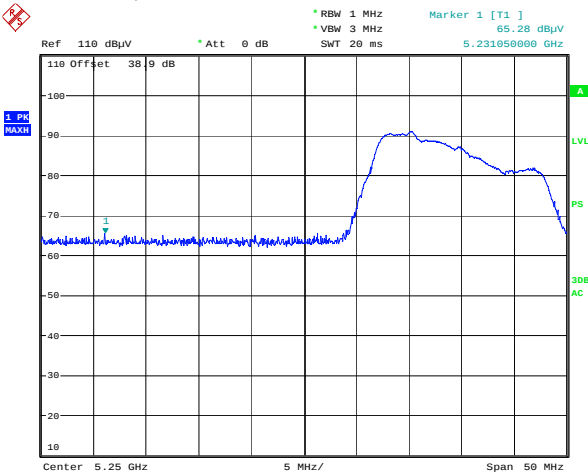
Date: 30.JAN.2008 01:49:11

22dBi Antenna



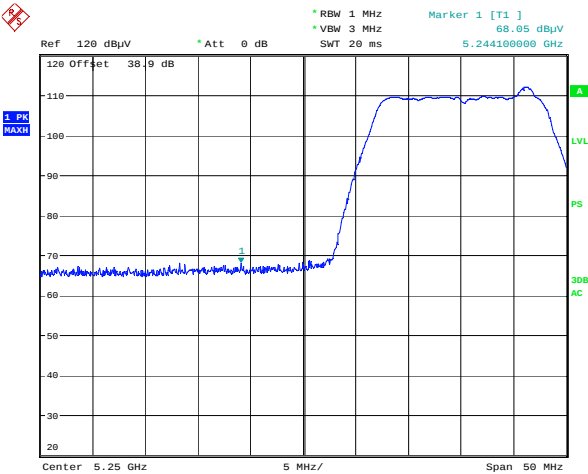
Date: 29.JAN.2008 17:19:06

20MHz Channel - Horizontal
5250MHz, 9dBi Antenna



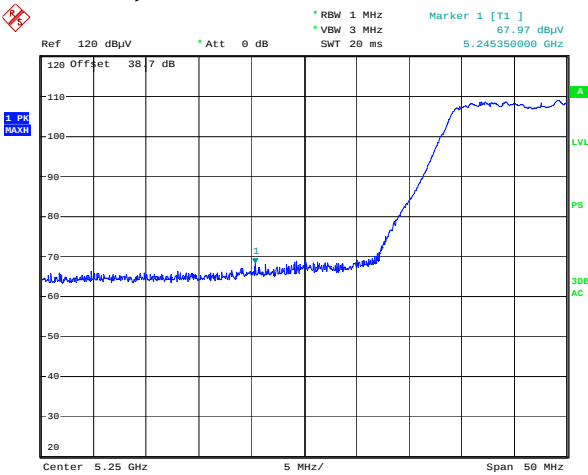
Date: 29.JAN.2008 16:10:36

22dBi Antenna



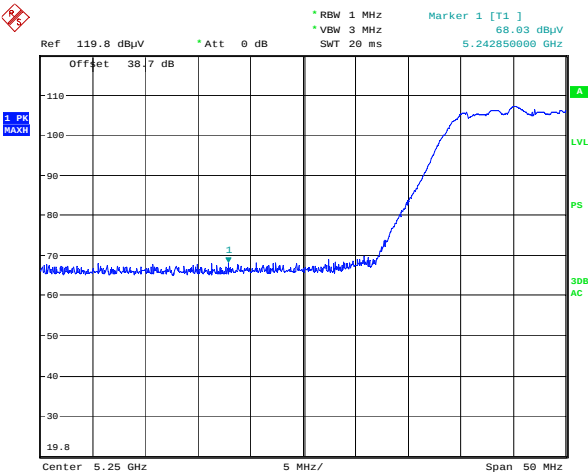
Date: 30.JAN.2008 01:39:52

40MHz Channel - Vertical
5250MHz, 9dBi Antenna

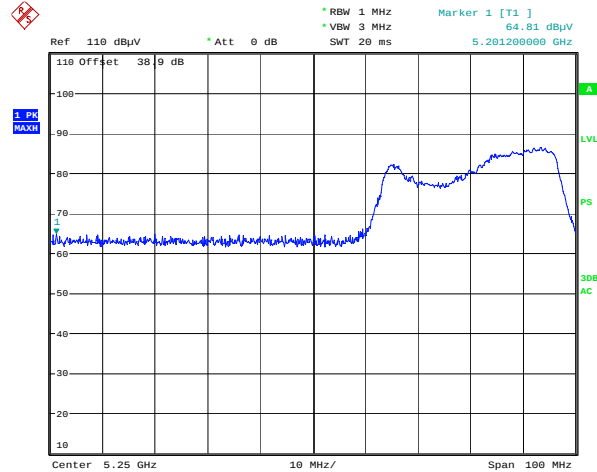


Date: 29.JAN.2008 15:37:14

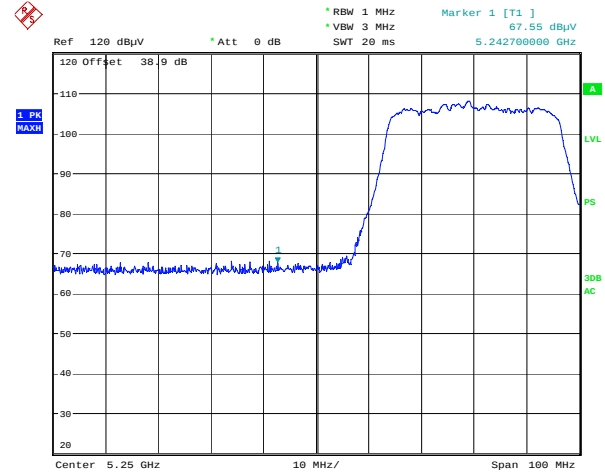
22dBi Antenna



Date: 29.JAN.2008 17:23:45

40MHz Channel – Horizontal**5250MHz, 9dBi Antenna**

Date: 29.JAN.2008 16:15:53

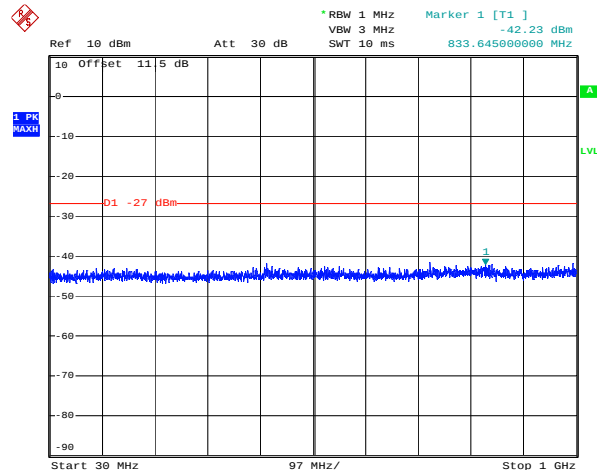
22dBi Antenna

Date: 30.JAN.2008 01:43:08

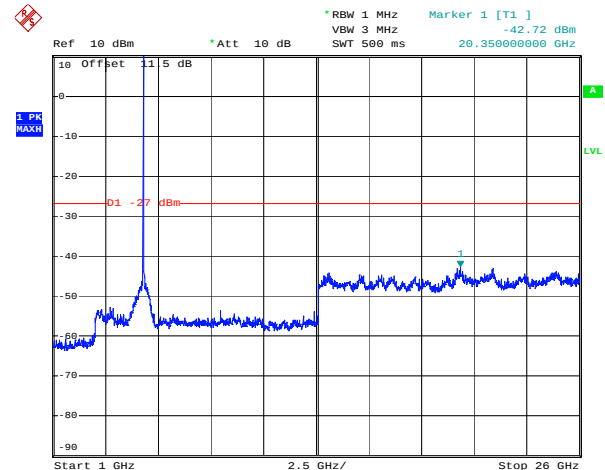
Note: -27dBm/MHz at 3 meters is equal to 68.2dBuV/m, therefore all emissions outside of the 5250-5350MHz band, not in restricted bands, were measured using a Peak detector with RBW/VBW 1MHz and compared to the limit of 68.2dBuV/m @ 3m.

$$-27\text{dBm} = 10^{(-27/10)} = 0.001995262\text{mW EIRP} = 1.99526\text{E-06 W EIRP}$$

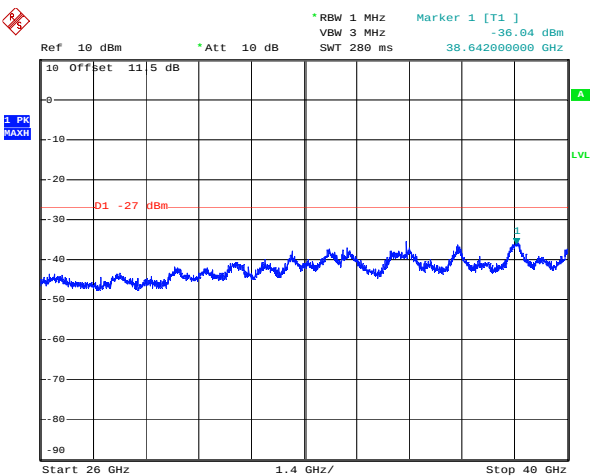
$$1.99526\text{E-06 W} = \frac{\sqrt{30 * 1.99526\text{E-06}}}{3} = 0.002578929\text{V/m @ 3m} = 68.2\text{dBuV/m @ 3m}$$

Spurious Emissions**10MHz Channel**

Date: 30.JAN.2008 14:20:48

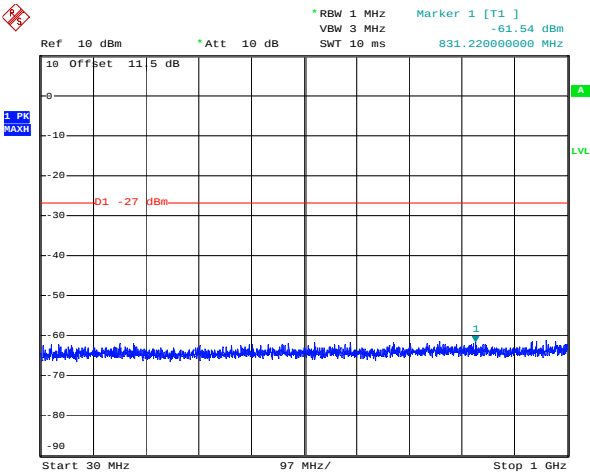


Date: 30.JAN.2008 14:21:39

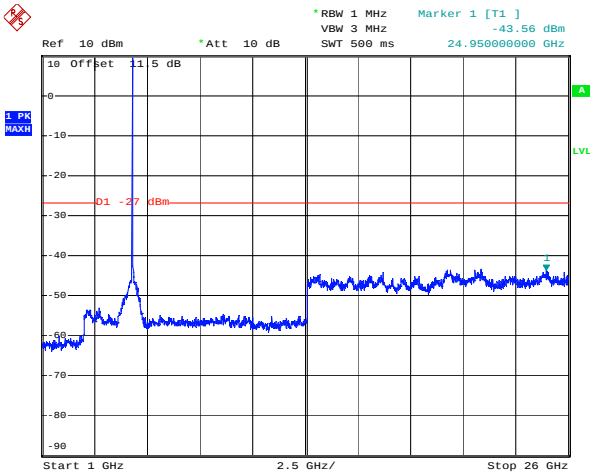


Date: 30.JAN.2008 14:22:04

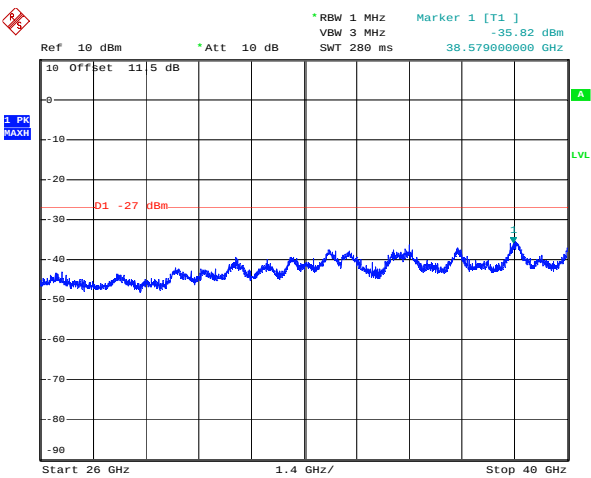
20MHz Channel



Date: 30.JAN.2008 14:23:50

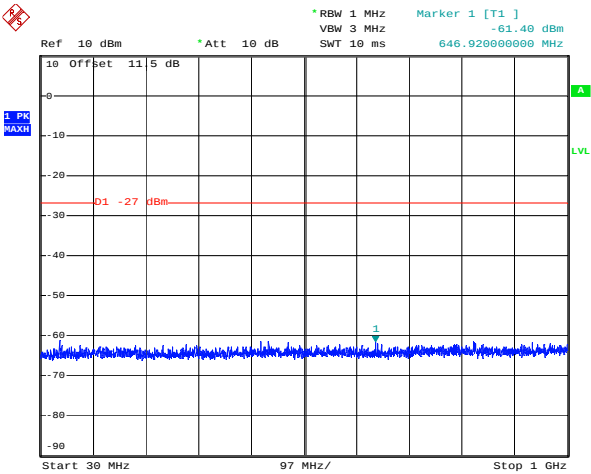


Date: 30.JAN.2008 14:23:18

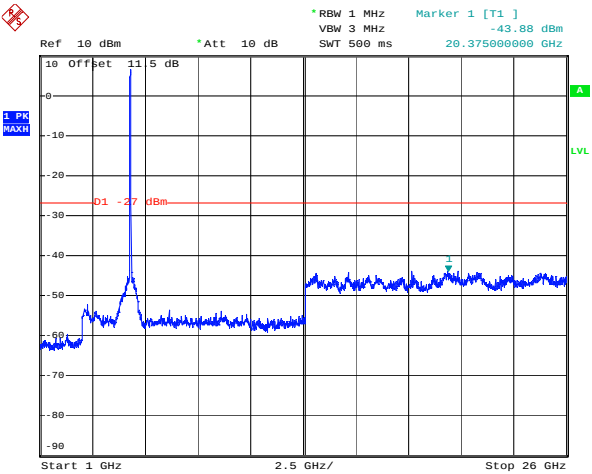


Date: 30.JAN.2008 14:23:00

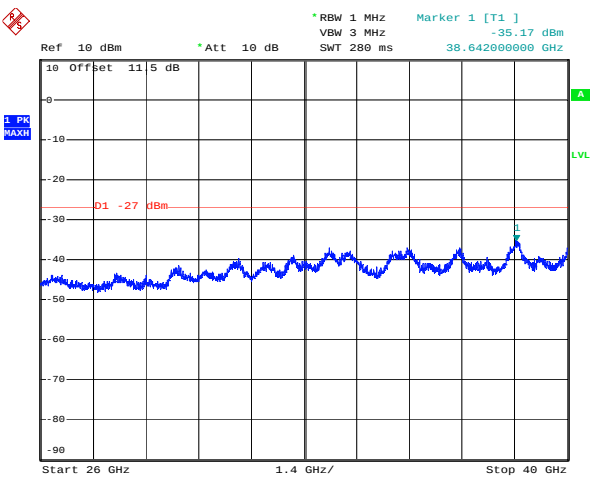
40MHz Channel



Date: 30.JAN.2008 14:24:30



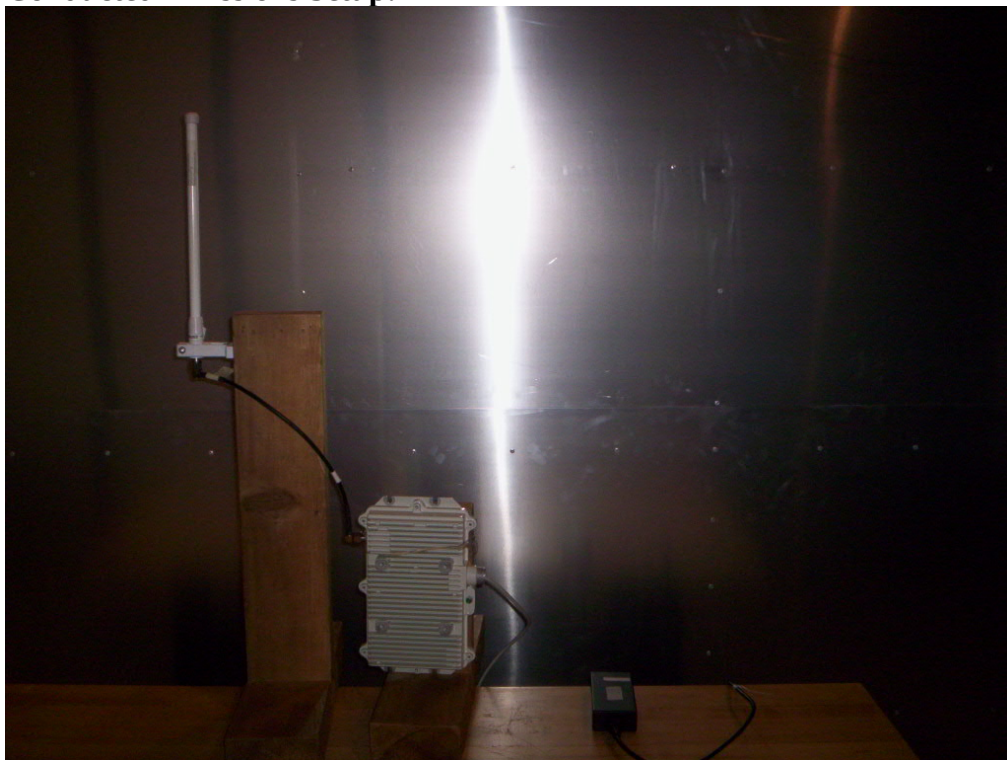
Date: 30.JAN.2008 14:24:51



Date: 30 JAN 2008 14:25:06

Appendix B : Setup Photographs

Conducted Emissions Setup:



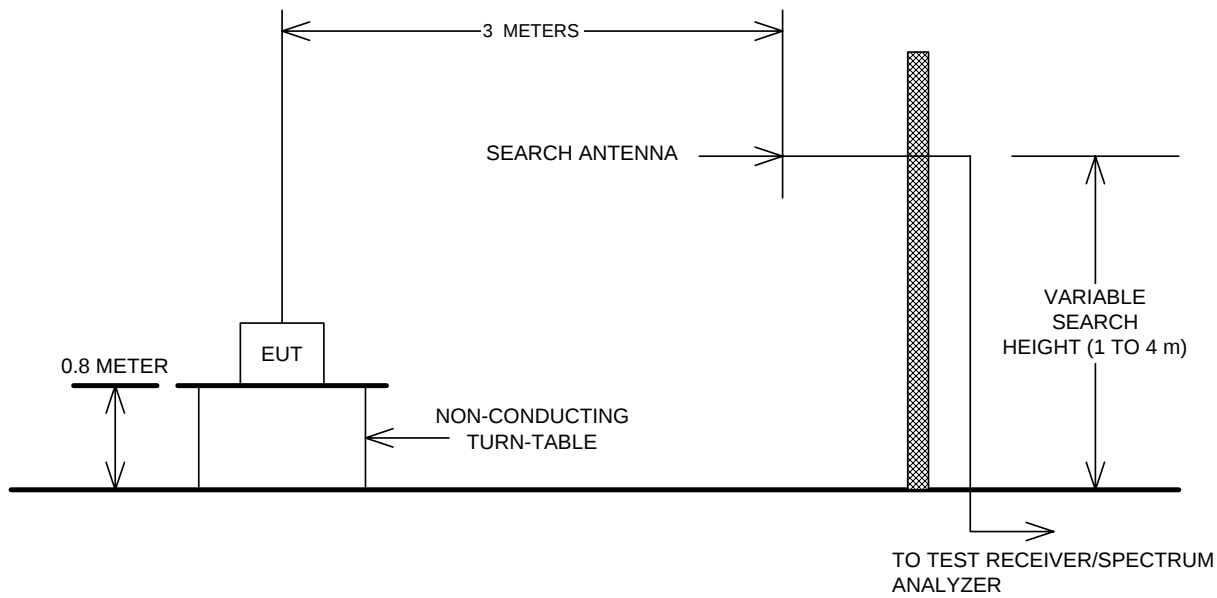
Spurious Emissions Setup:



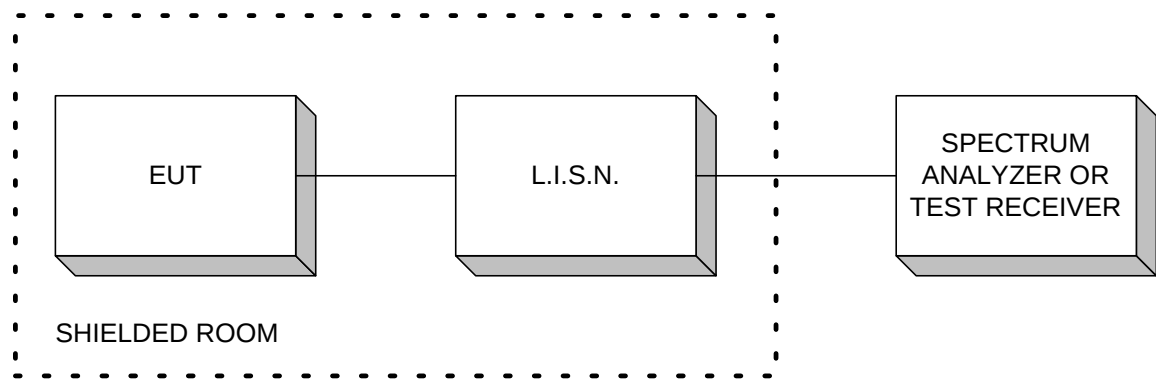


Appendix C : Block Diagram of Test Setups

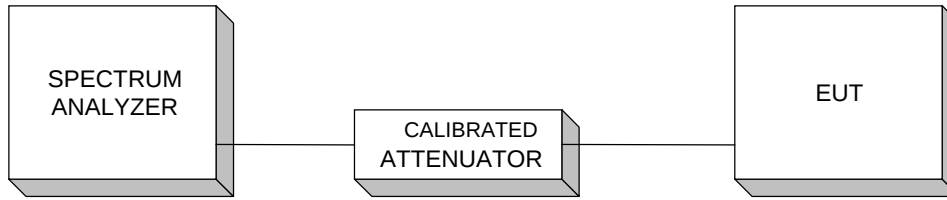
Test Site For Radiated Emissions



Conducted Emissions



Conducted Measurements



TIA/EIA 603, Signal Substitution Method

