



Nemko Test Report: 65847RUS1

Applicant: AMX
3000 Research Drive
Richardson, TX 75082
USA

Equipment Under Test: MVP-9000i
(E.U.T.)

In Accordance With: FCC Part 15, Subpart C, 15.247 and
Industry Canada, RSS-210, Issue 8
Digital Transmission System Transmitter

Tested By: Nemko USA, Inc.
802 N. Kealy
Lewisville, Texas 75057-3136

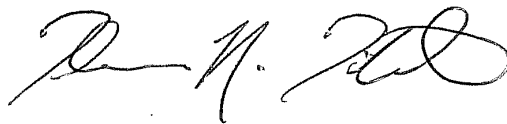
TESTED BY:



David Light, Senior Wireless Engineer

DATE: 17 December 2010

APPROVED BY:



Tom Tidwell, Telecom Direct

DATE: 19 May 2011

Number of Pages: 64

Table of Contents

SECTION 1.	SUMMARY OF TEST RESULTS	3
SECTION 2.	EQUIPMENT UNDER TEST (E.U.T.)	5
SECTION 3.	OCCUPIED BANDWIDTH	6
SECTION 4.	MAXIMUM PEAK OUTPUT POWER	19
SECTION 5	SPURIOUS EMISSIONS (CONDUCTED)	21
SECTION 6.	RADIATED EMISSIONS	35
SECTION 7.	PEAK POWER SPECTRAL DENSITY	37
SECTION 8.	POWERLINE CONDUCTED EMISSIONS	47
SECTION 9.	RECEIVER EMISSIONS	49
SECTION 10.	TEST EQUIPMENT LIST	51
ANNEX A - TEST DETAILS		52
ANNEX B - TEST DIAGRAMS		62

EQUIPMENT: MVP-9000i

Section 1. Summary of Test Results

Manufacturer: AMX

Model No.: MVP-9000i

Variants: MVP-9000i-GW (White Plastics) MVP-9000i-GB (Black Plastics)

Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.247 and Industry Canada RSS-210, Issue 8 for Digital Transmission Systems. 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.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST
SPECIFICATIONS HAVE BEEN MADE.

See " Summary of Test Data".



NVLAP Lab Code 100426-0

Nemko USA, Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety, for use by the company's employees only.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Nemko USA, Inc. is a NVLAP accredited laboratory.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko USA, Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report applies only to the items tested.

EQUIPMENT: MVP-9000i**Summary Of Test Data**

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207(a)/RSS-Gen 7.2.4	Complies
Minimum 6 dB Bandwidth	15.247(a)(2)/A8.2(a)	Complies
Maximum Peak Power Output	15.247(b)(3)/A8.4(4)	Complies
Spurious Emissions (Antenna Conducted)	15.247(d)/A8.5	Complies
Spurious Emissions (Restricted Bands)	15.209(a)/RSS-Gen 7.2.2	Complies
Peak Power Spectral Density	15.247(e)/A8.2(b)	Complies
Receiver Spurious Emissions	RSS-Gen 6.1	Complies

Footnotes:

Section 2. Equipment Under Test (E.U.T.)

General Equipment Information

Frequency Band (MHz):	902-928	2400-2483.5	5725-5850
	☐	☒	☒

Operating Frequency of Test Sample: 2412 to 2462 MHz and 5745 to 5825 MHz

User Frequency Adjustment: Software controlled

Description of EUT

The AMX MVP-9000i-XX Modero Wireless Touch Panel is a mobile device that communicates with a NetLinx Master via a standard 802.11a/b/g Wireless Access Point.

EQUIPMENT: MVP-9000i

Section 3. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: FCC 15.247(a)(2) RSS-210, A8.2(a)
TESTED BY: David Light	DATE: 13 December 2010

Test Results: Complies.

Measurement Data: See 6 dB BW plot
Measured 6 dB bandwidth: 12.7 MHz (802.11b)
16.7 MHz (802.11g)
16.6 MHz (802.11a)

Test Conditions: 50 %RH
23 °C

Measurement Uncertainty: $\pm 1 \times 10^{-7}$ ppm

Test Equipment Used: 1036-1082-1472

EQUIPMENT: MVP-9000i

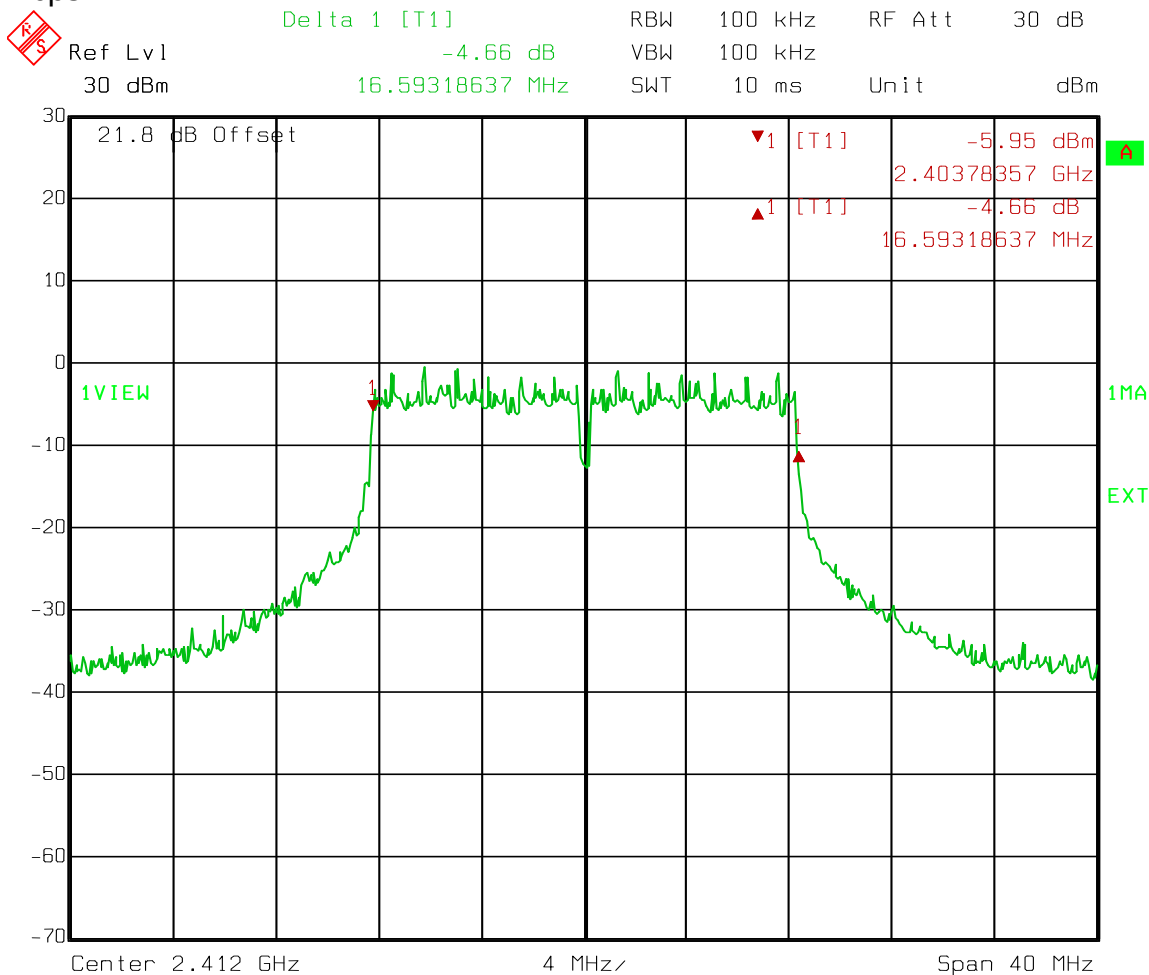
Test Data – Occupied Bandwidth

6 dB Bandwidth

802.11g

Channel 1

54 Mbps



Date: 13.DEC.2010 11:23:50

EQUIPMENT: MVP-9000i

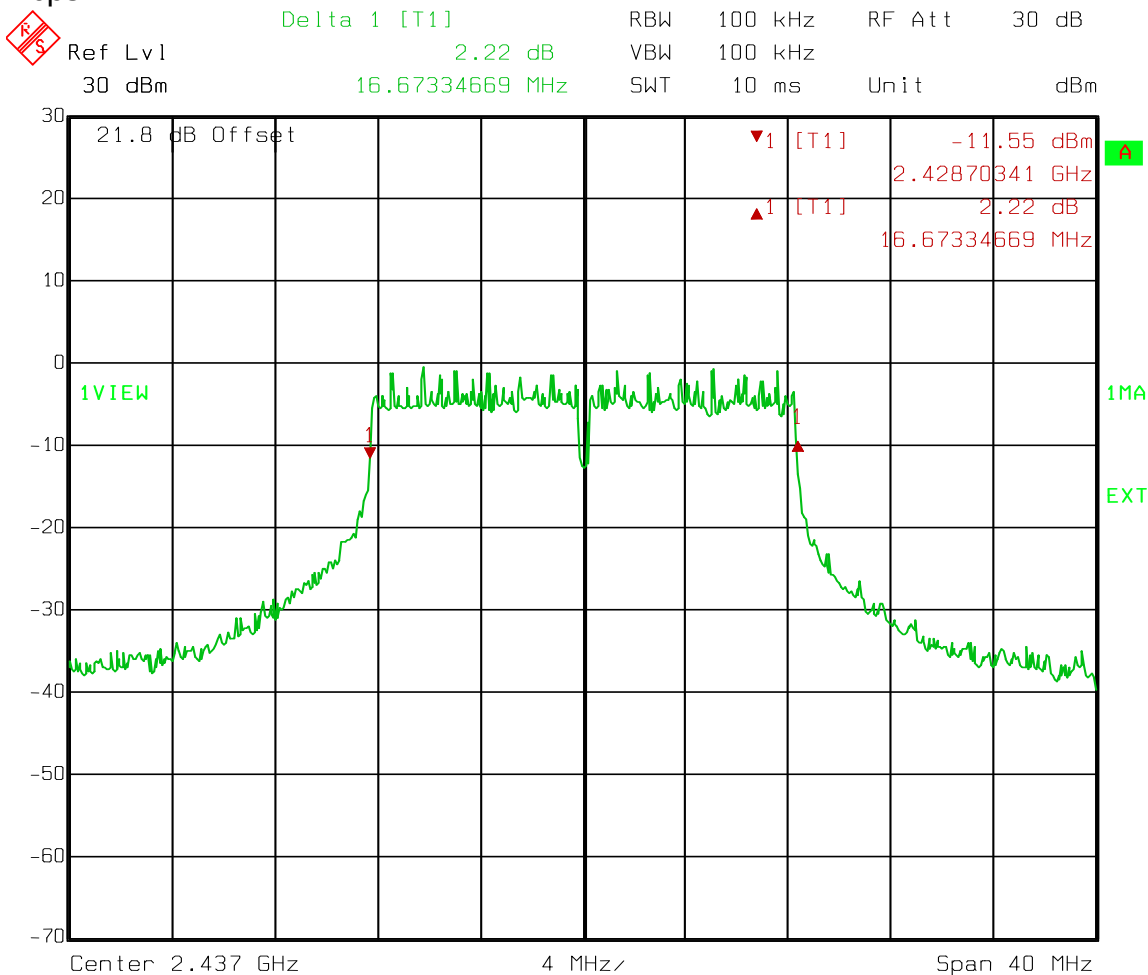
Test Data – Occupied Bandwidth

802.11g

6 dB Bandwidth

Channel 6

54 Mbps



Date: 13.DEC.2010 13:08:33

EQUIPMENT: MVP-9000i

Test Data – Occupied Bandwidth

6 dB Bandwidth

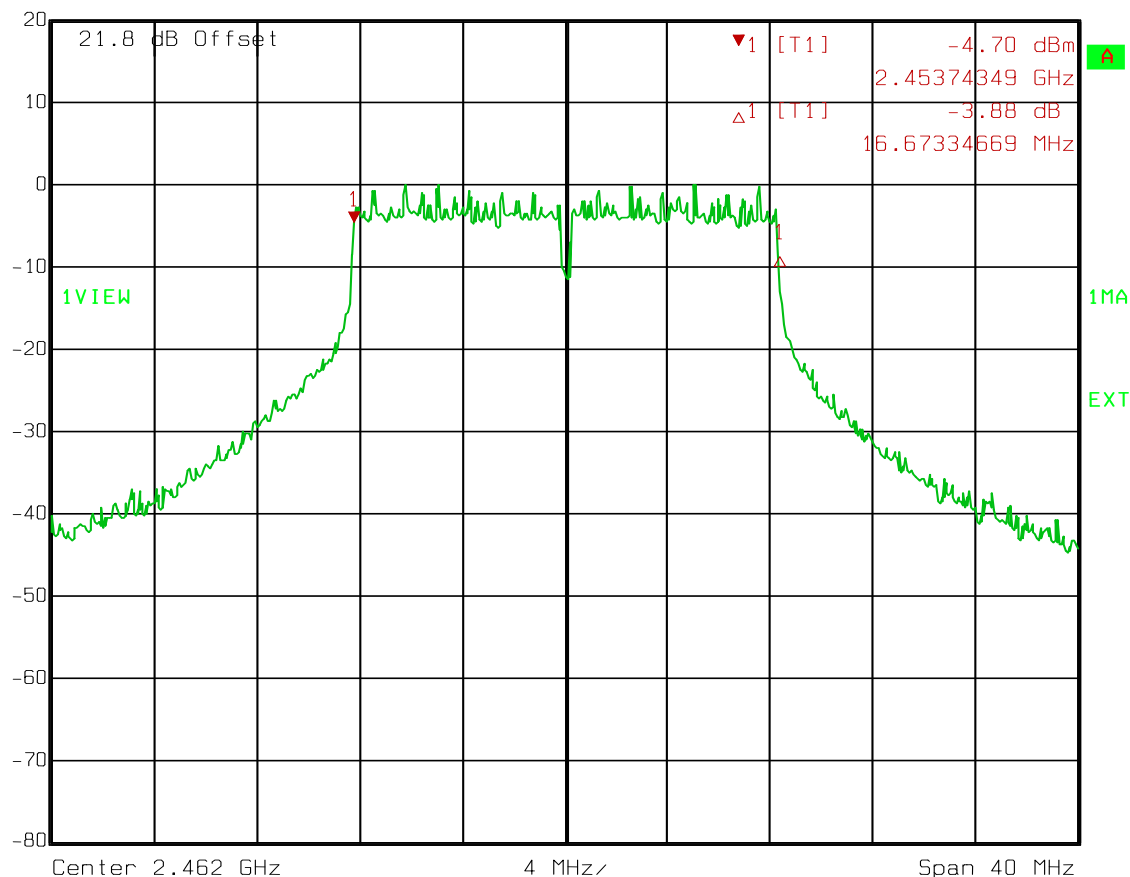
802.11g

Channel 11

54 Mbps



Marker 1 [T1] RBW 100 kHz RF Att 20 dB
Ref Lvl -4.70 dBm VBW 100 kHz
20 dBm 2.45374349 GHz SWT 10 ms Unit dBm



Date: 13.DEC.2010 10:13:53

EQUIPMENT: MVP-9000i

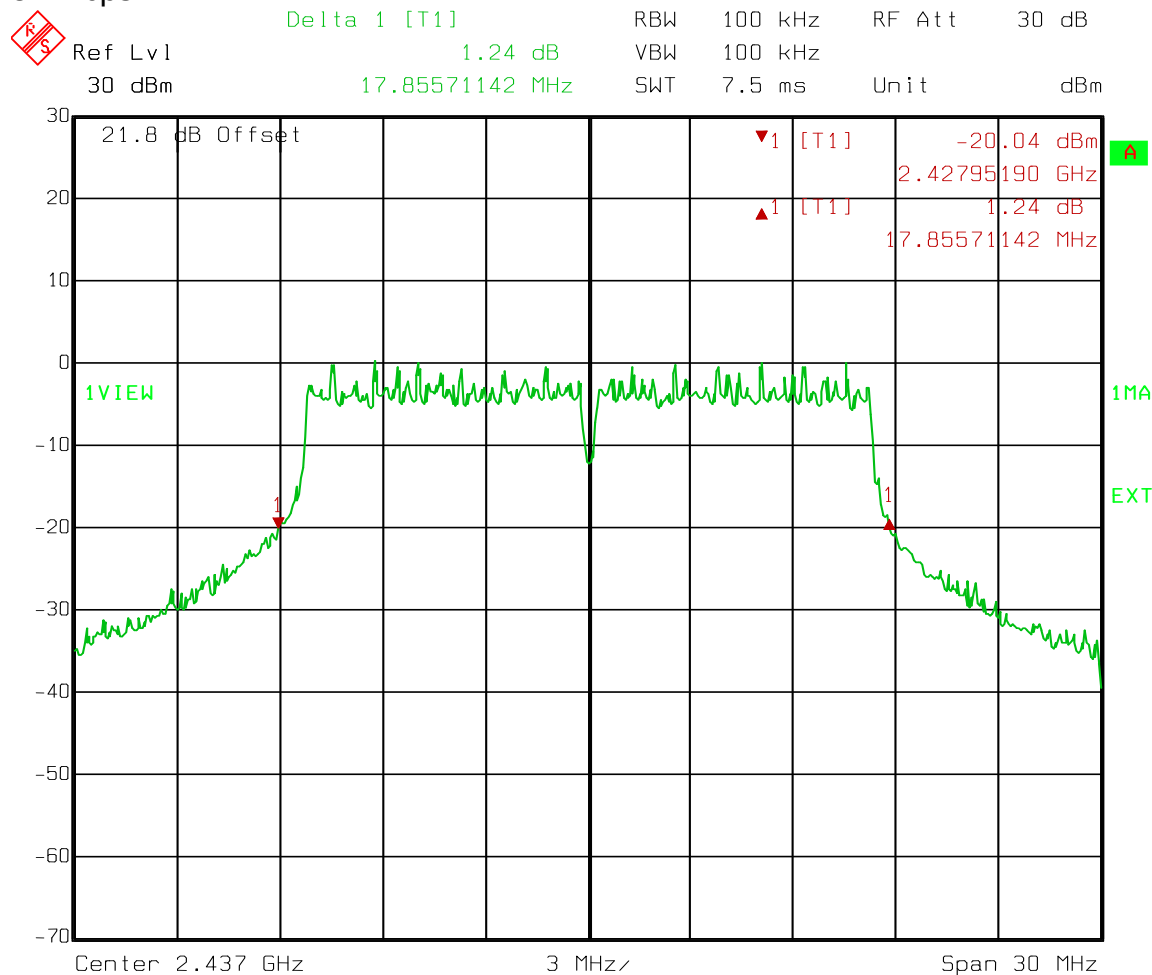
Test Data – Occupied Bandwidth

802.11g

20 dB Bandwidth

Channel 6

54 Mbps



Date: 14.DEC.2010 10:37:08

EQUIPMENT: MVP-9000i

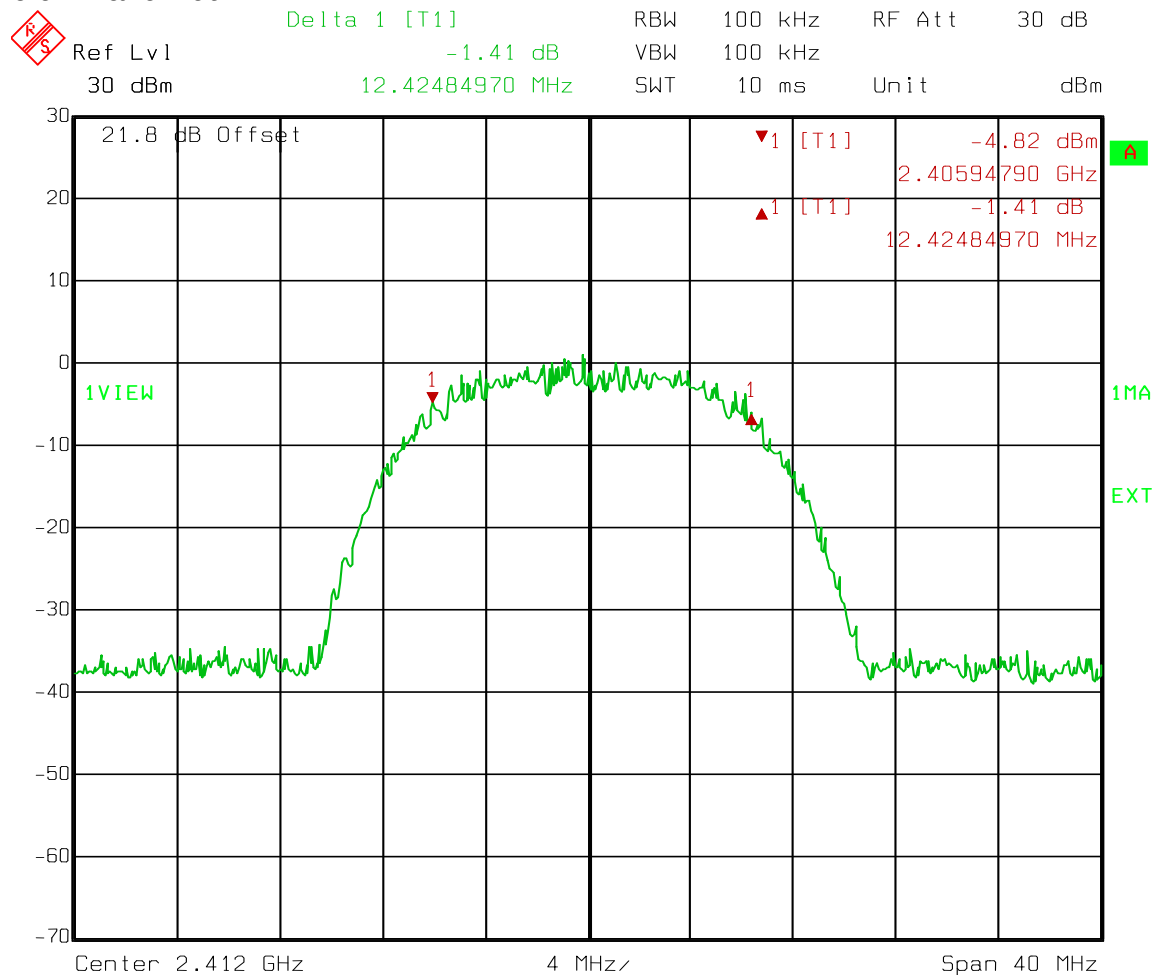
Test Data – Occupied Bandwidth

802.11b

11 Mbps

Channel 1

6 dB Bandwidth



Date: 13.DEC.2010 13:57:43

EQUIPMENT: MVP-9000i

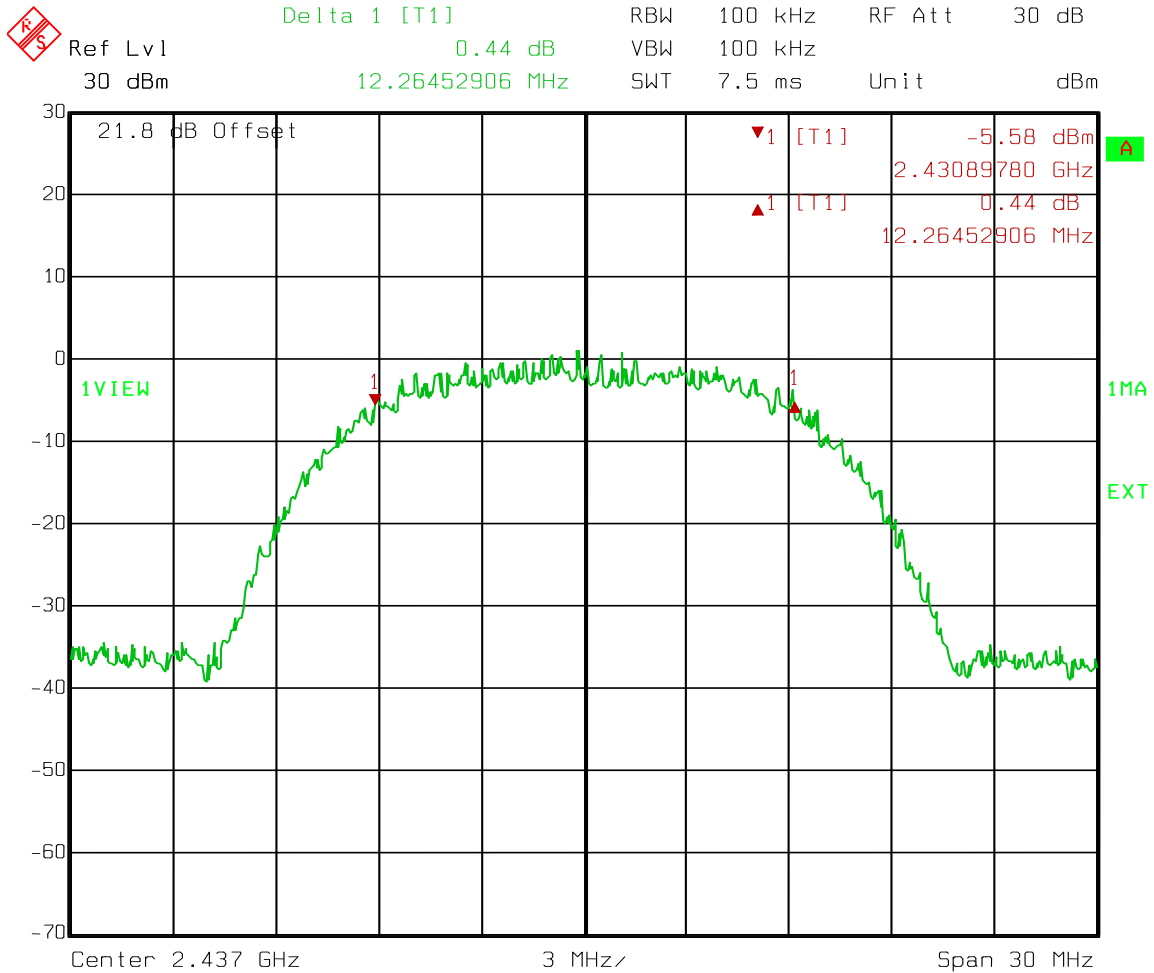
Test Data – Occupied Bandwidth

802.11b

11 Mbps

6 dB BW

Channel 6



Date: 13.DEC.2010 15:07:10

EQUIPMENT: MVP-9000i

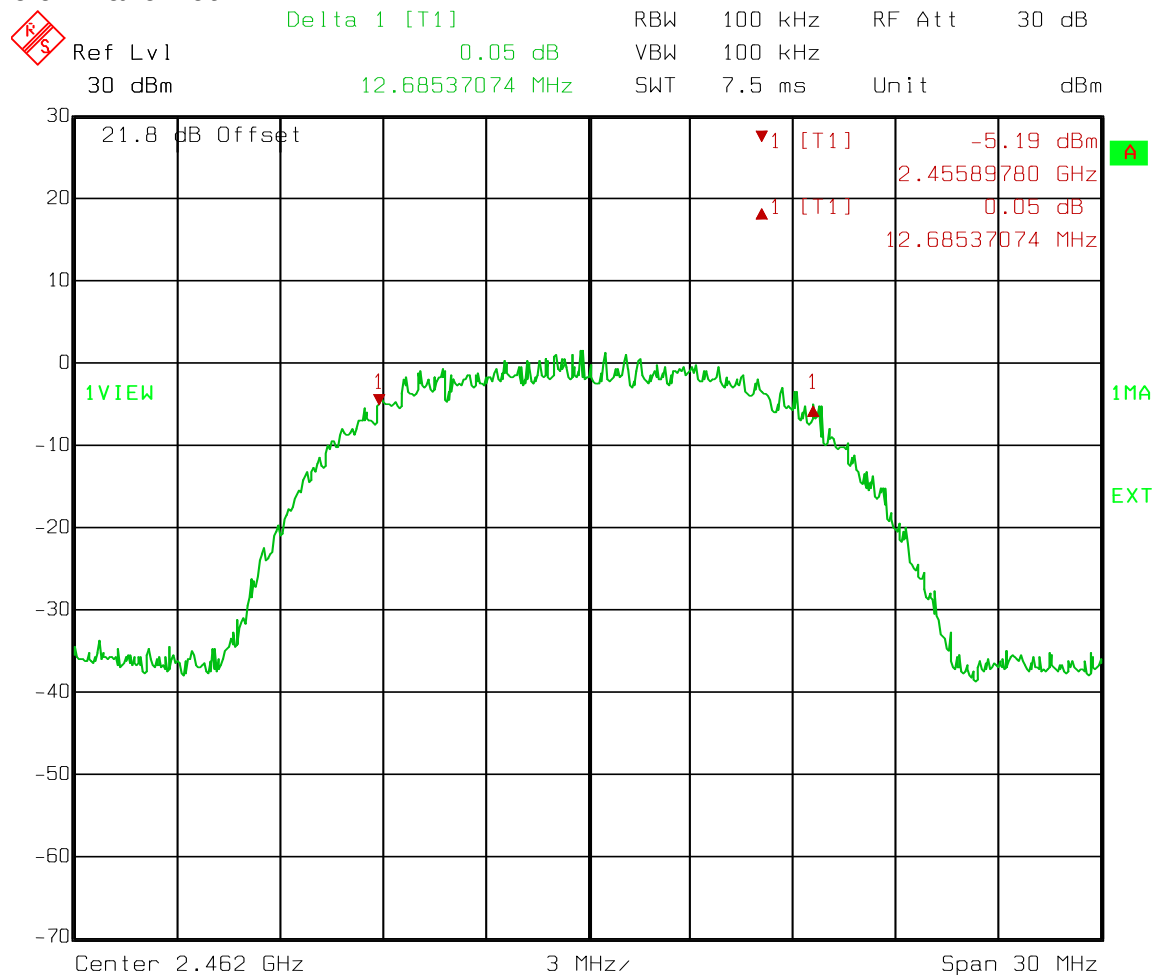
Test Data – Occupied Bandwidth

802.11b

11 Mbps

Channel 11

6 dB Bandwidth



Date: 14.DEC.2010 10:32:00

EQUIPMENT: MVP-9000i

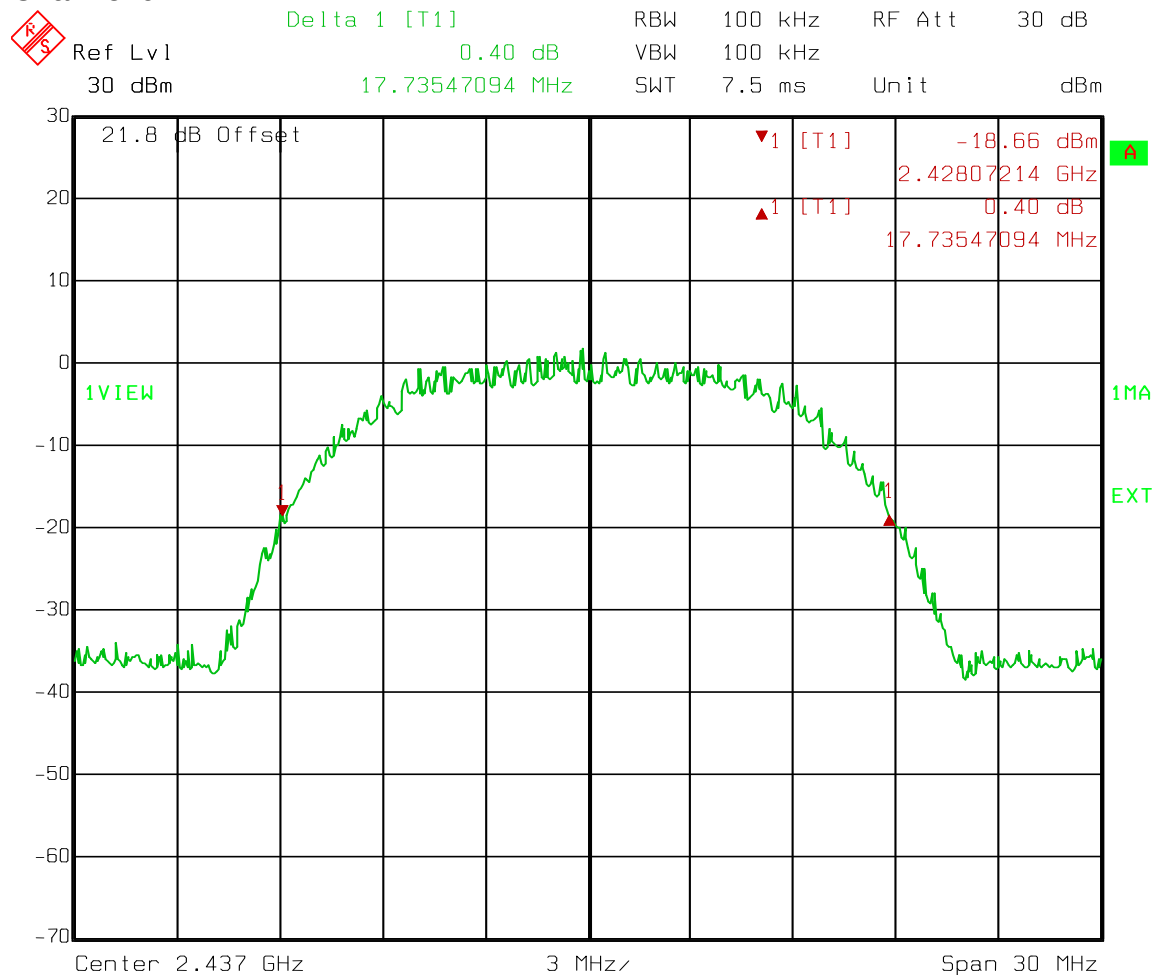
Test Data – Occupied Bandwidth

802.11b

11 Mbps

20 dB Bandwidth

Channel 6



Date: 14.DEC.2010 10:34:57

EQUIPMENT: MVP-9000i

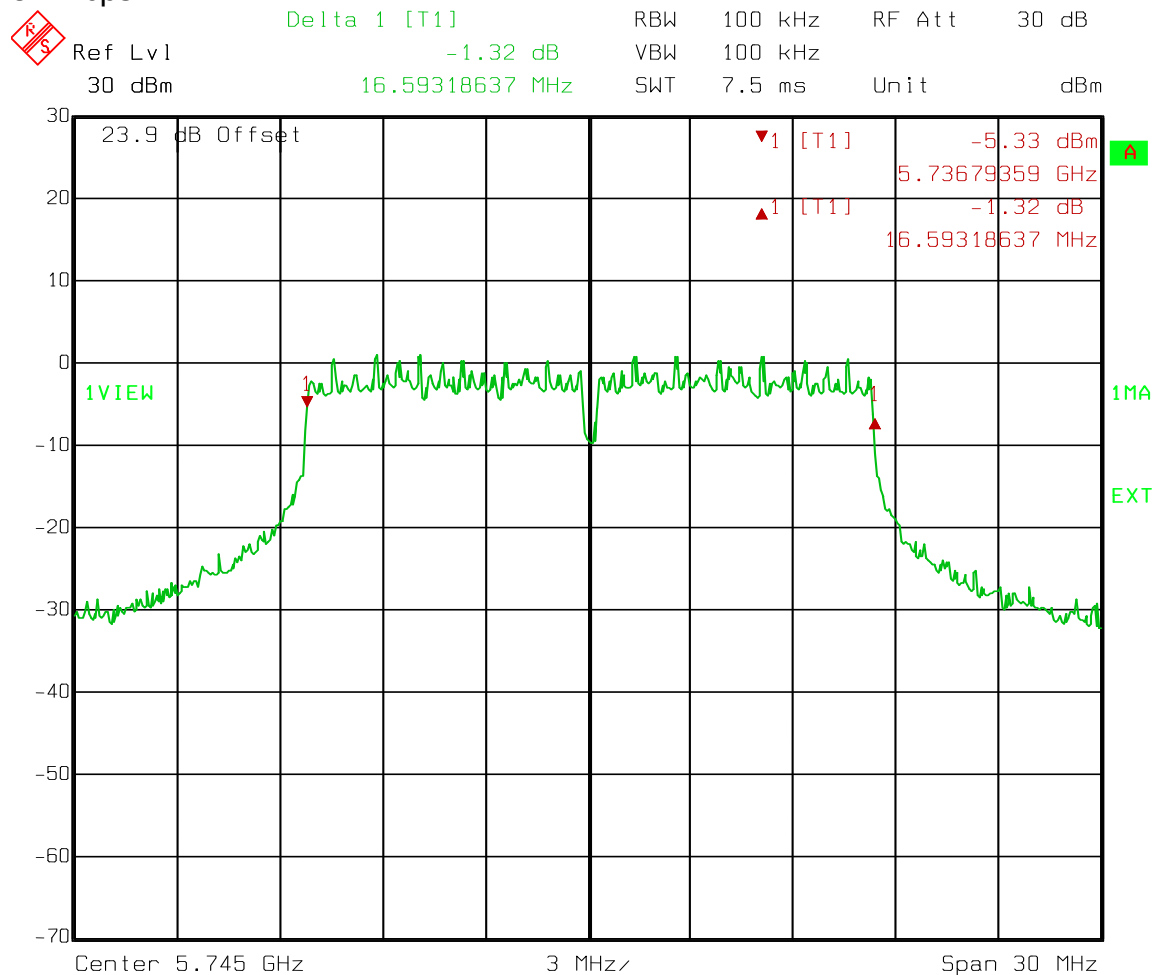
Test Data – Occupied Bandwidth

6 dB Bandwidth

802.11a

Low channel

54 Mbps



Date: 15.DEC.2010 13:29:46

EQUIPMENT: MVP-9000i

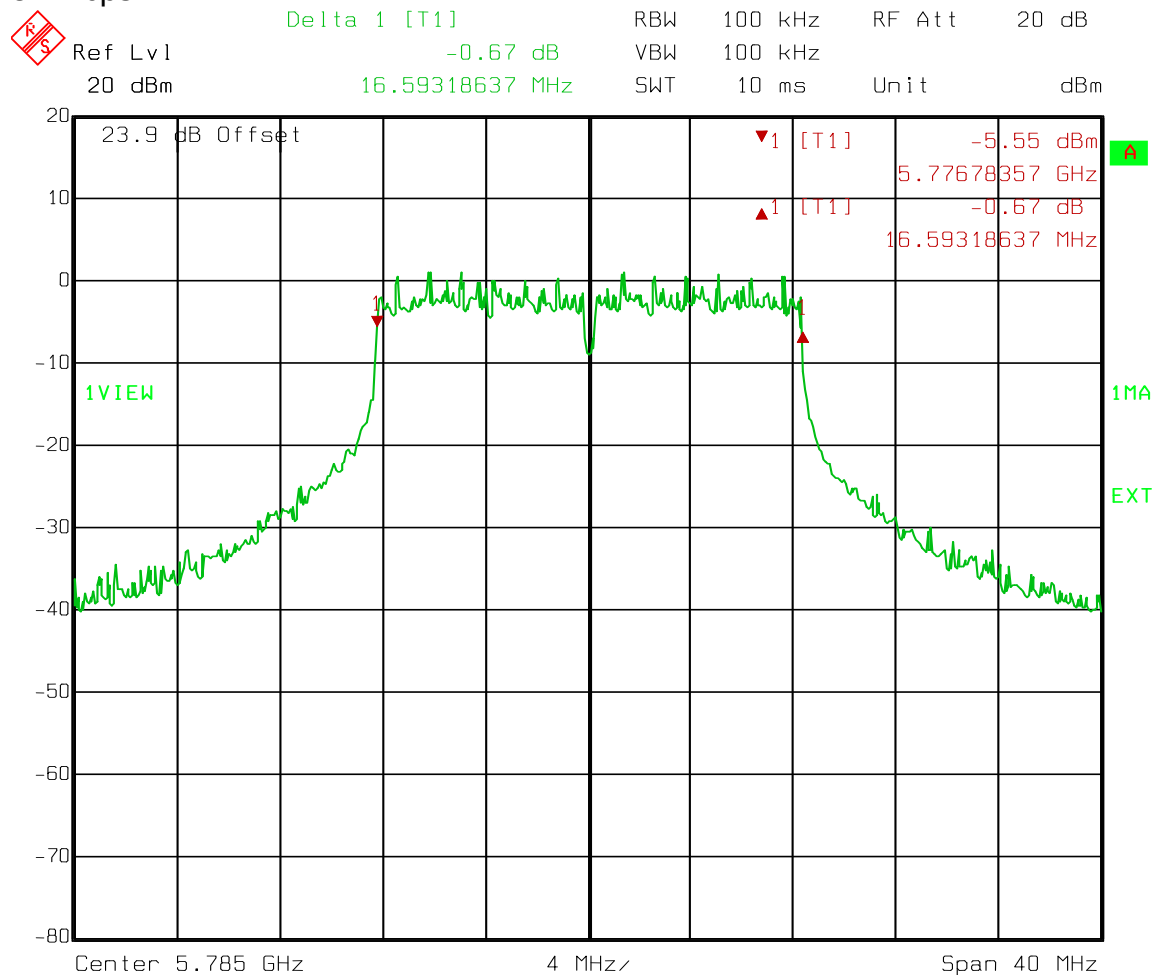
Test Data – Occupied Bandwidth

6 dB Bandwidth

802.11a

Mid channel

54 Mbps



Date: 15.DEC.2010 14:38:29

EQUIPMENT: MVP-9000i

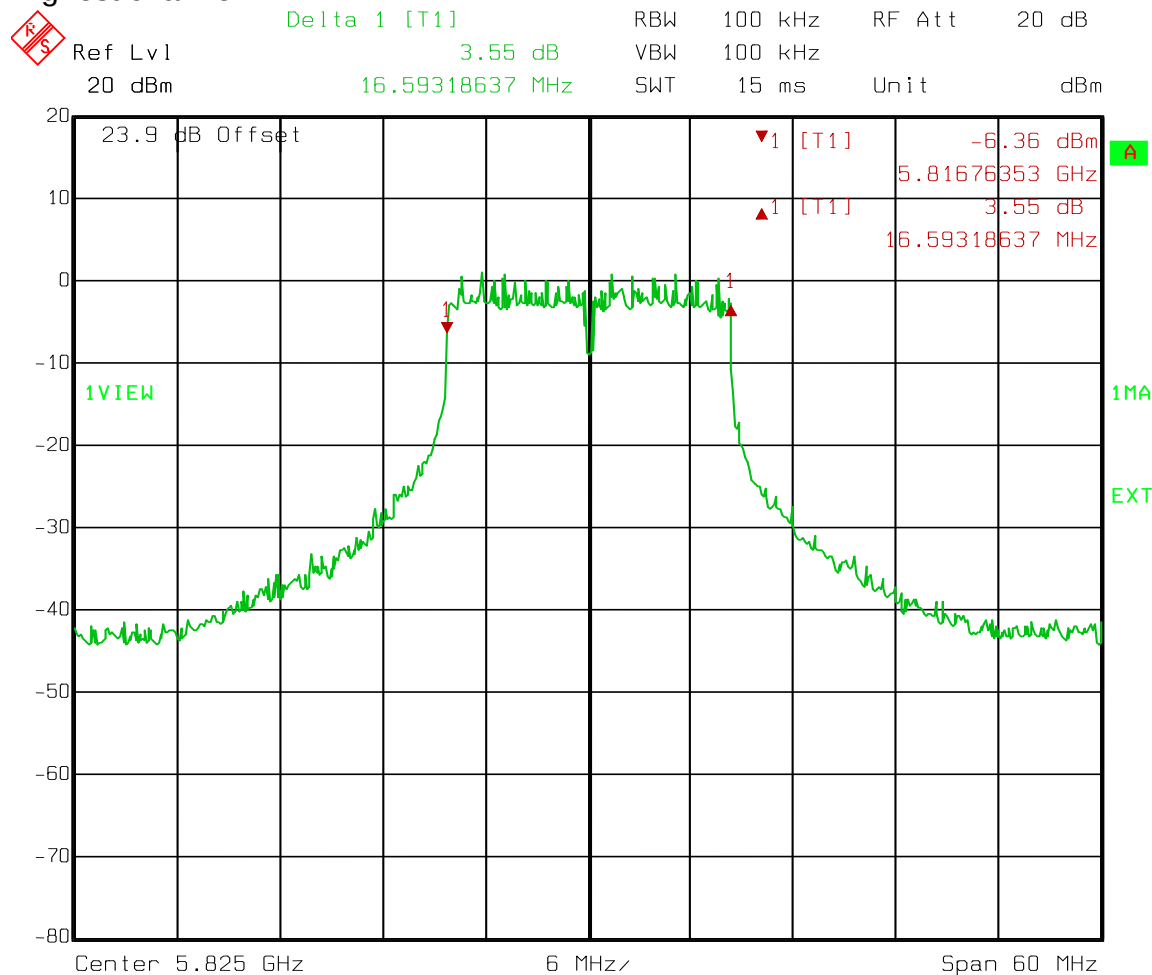
Test Data – Occupied Bandwidth

6 dB Bandwidth

802.11a

54 Mbps

Highest channel



Date: 15.DEC.2010 15:33:10

EQUIPMENT: MVP-9000i

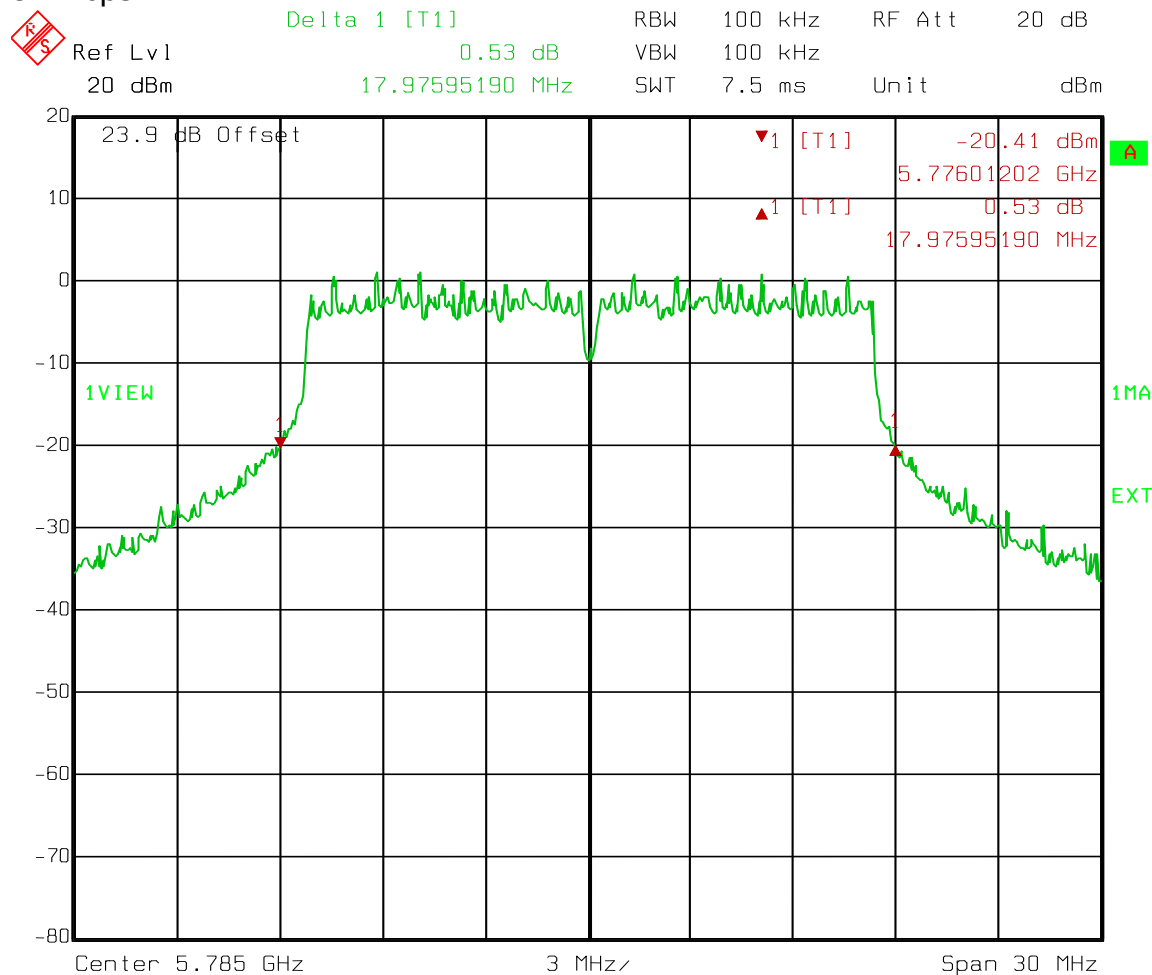
Test Data – Occupied Bandwidth

20 dB Bandwidth

802.11a

Mid channel

54 Mbps



Date: 15.DEC.2010 15:26:11

EQUIPMENT: MVP-9000i

Section 4. Maximum Peak Output Power

NAME OF TEST: Maximum Peak Output power	FCC PARA. NO.: 15.247(b)(3) RSS-210, A8.4(4)
TESTED BY: David Light	DATE: 13 December 2010

Test Results: Complies.**Measurement Data:**

Frequency (MHz)	Mode	Power Output (dBm)	Power Output (mW)
2412	802.11g	17.7	58.9
2437	802.11g	17.8	60.3
2462	802.11g	18.0	63.1
2412	802.11b	18.2	66.1
2437	802.11b	18.1	64.6
2462	802.11b	19.2	83.2
5745	802.11a	19.2	83.2
5785	802.11a	19.3	85.1
5825	802.11a	19.3	85.1

Test Conditions: 50 %RH
23 °C**Measurement Uncertainty:** +/-1.7 dB**Test Equipment Used:** 1036-1082-1472

- ☒ This device was tested at +/- 15% input power per 15.31(e), with no variation in output power.
- ☐ For battery powered equipment, the device was tested with a fresh battery per 15.31(e).
- ☒ The device was tested on three channels per 15.31(l).
- ☐ This test was performed radiated.

EQUIPMENT: MVP-9000i

Test Data – Average Power

802.11b				
Freq	Channel	Data Rate	Antenna	Power
2412	1	1	1	15.20
2437	6	1	1	15.45
2462	11	1	1	15.72
2412	1	1	2	15.34
2437	6	1	2	15.49
2462	11	1	2	15.92

802.11g				
Freq	Channel	Data Rate	Antenna	Power
2412	1	6	1	13.48
2437	6	6	1	16.90
2462	11	6	1	13.17
2412	1	6	2	13.26
2437	6	6	2	16.87
2462	11	6	2	12.99

802.11a Upper				
Freq	Channel	Data Rate	Antenna	Power
5745	149	6	1	12.70
5765	153	6	1	12.65
5785	157	6	1	12.67
5805	161	6	1	12.94
5825	165	6	1	13.00
5745	149	6	2	12.74
5765	153	6	2	12.72
5785	157	6	2	12.91
5805	161	6	2	12.84
5825	165	6	2	12.70

These measurements were made with an averaging power meter for comparison with SAR data submitted as separate exhibit.

Test equipment used: 2071-2072

EQUIPMENT: MVP-9000i

Section 5 Spurious Emissions (Conducted)

NAME OF TEST: Spurious Emissions (Conducted)	PARA. NO.: FCC 15.247 (d) RSS-210, A8.5
TESTED BY: David Light	DATE: 13 December 2010

Test Results: Complies.

Measurement Data: See attached plots.

Test Conditions: 50 %RH
 22 °C

Measurement Uncertainty: +/-1.7 dB

Test Equipment Used: 1036-1082-1472

EQUIPMENT: MVP-9000i

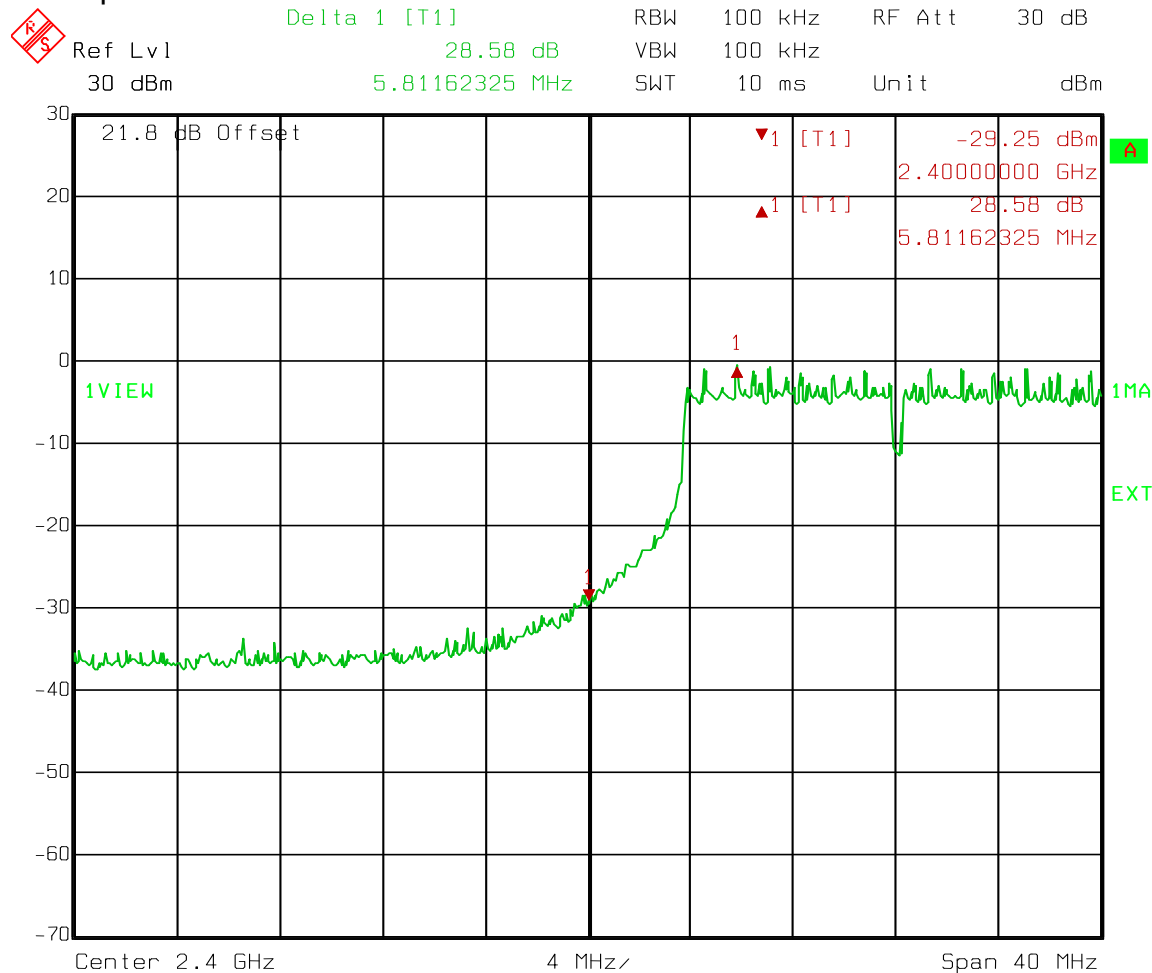
Test Data – Spurious Emissions at Antenna Terminals

Low band edge

802.11g

Channel 1

54 Mbps

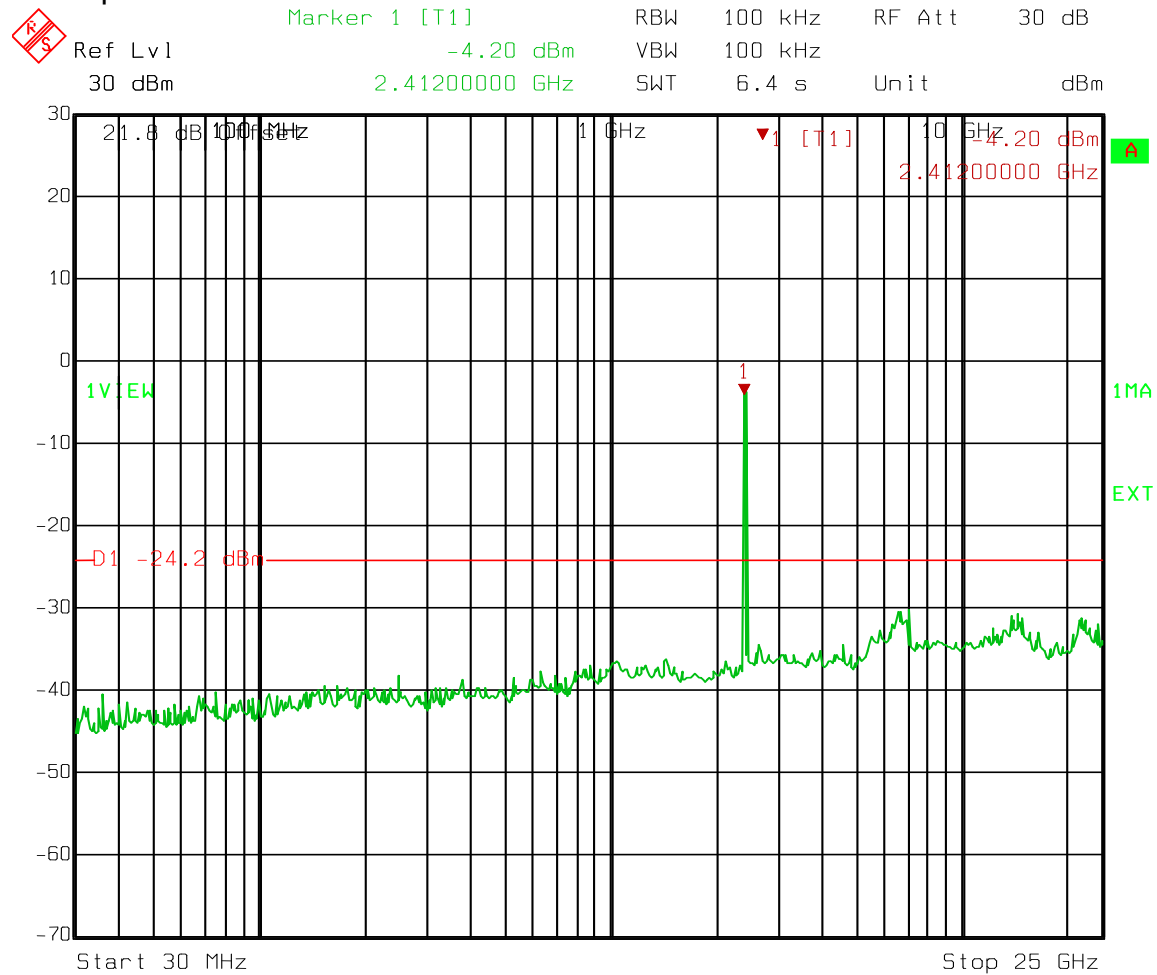


Date: 13.DEC.2010 11:25:00

EQUIPMENT: MVP-9000i

Test Data – Spurious Emissions at Antenna Terminals

Spurs
802.11g
Channel 1
54 Mbps



Date: 13.DEC.2010 11:26:40

EQUIPMENT: MVP-9000i

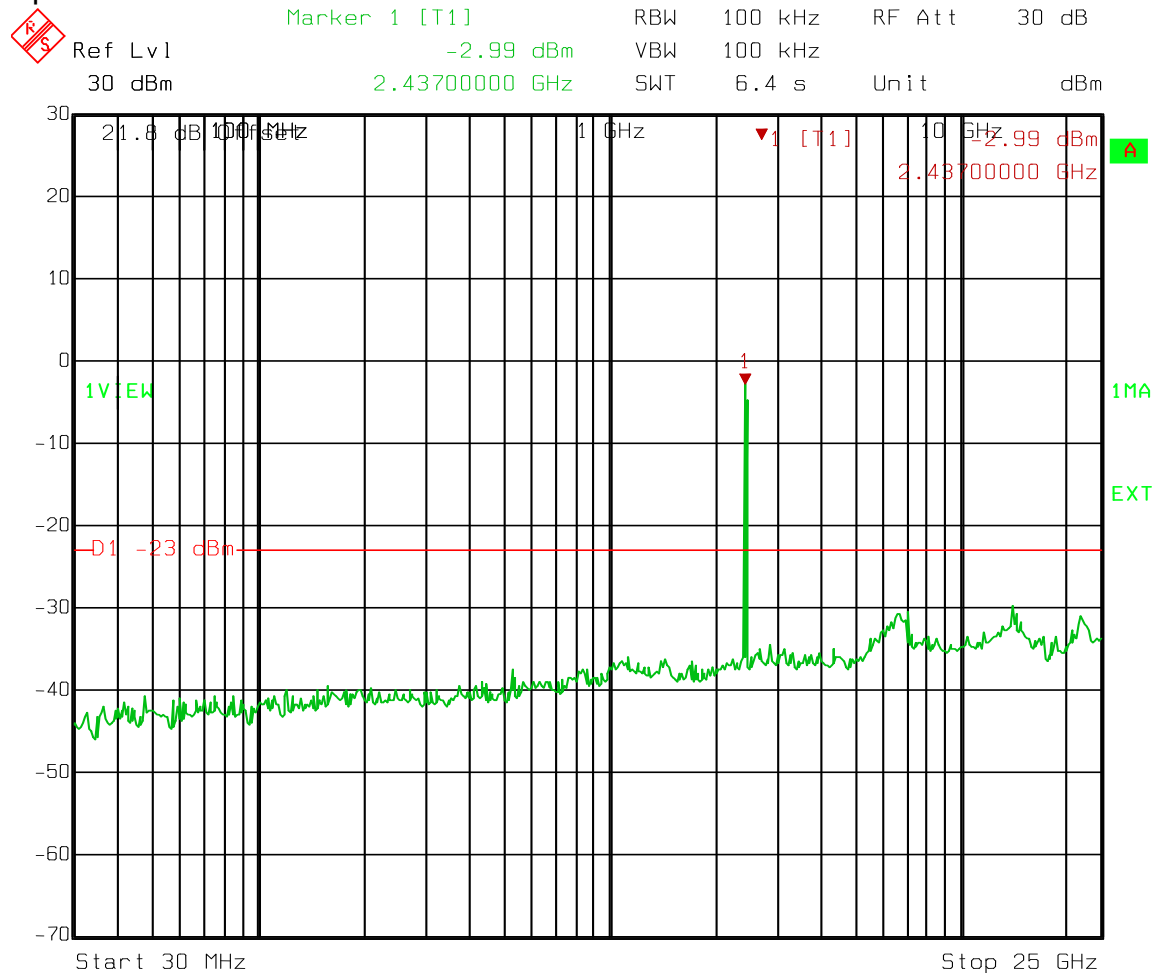
Test Data – Spurious Emissions at Antenna Terminals

802.11g

54 Mbps

Channel 6

Spurs

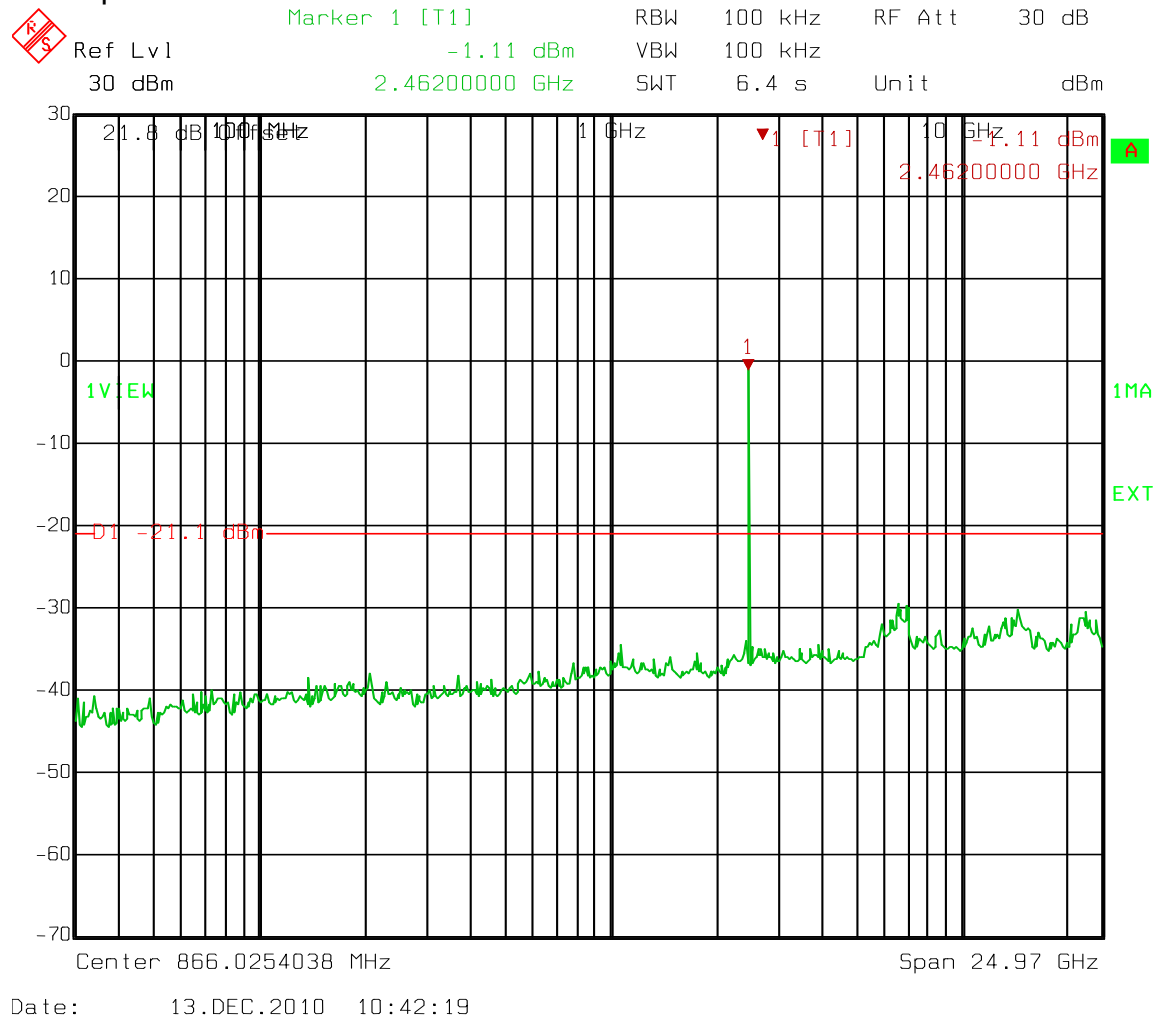


Date: 13.DEC.2010 13:54:54

EQUIPMENT: MVP-9000i

Test Data – Spurious Emissions at Antenna Terminals

Spurs
802.11g
Channel 11
54 Mbps



EQUIPMENT: MVP-9000i

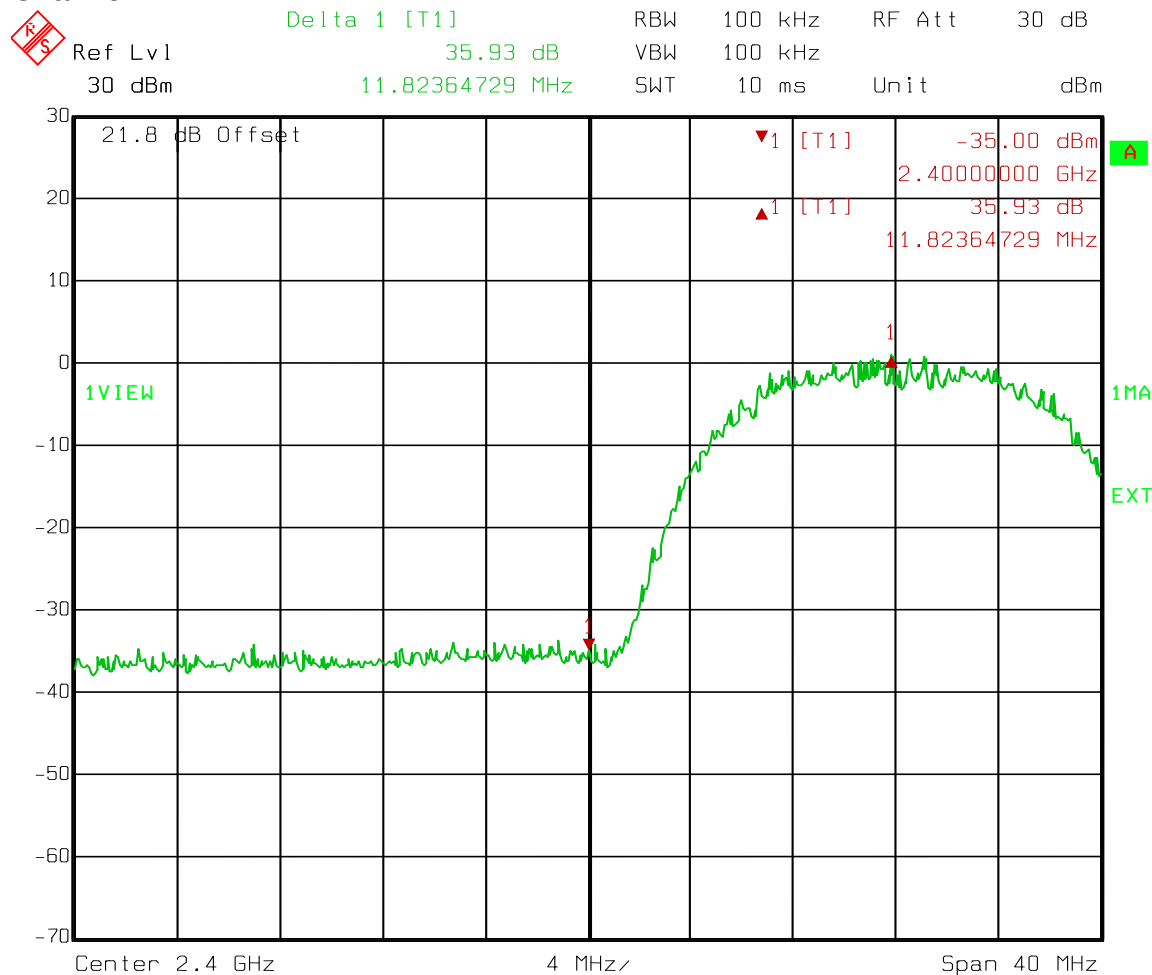
Test Data – Spurious Emissions at Antenna Terminals

Low Bandd edge

802.11b

11 Mbps

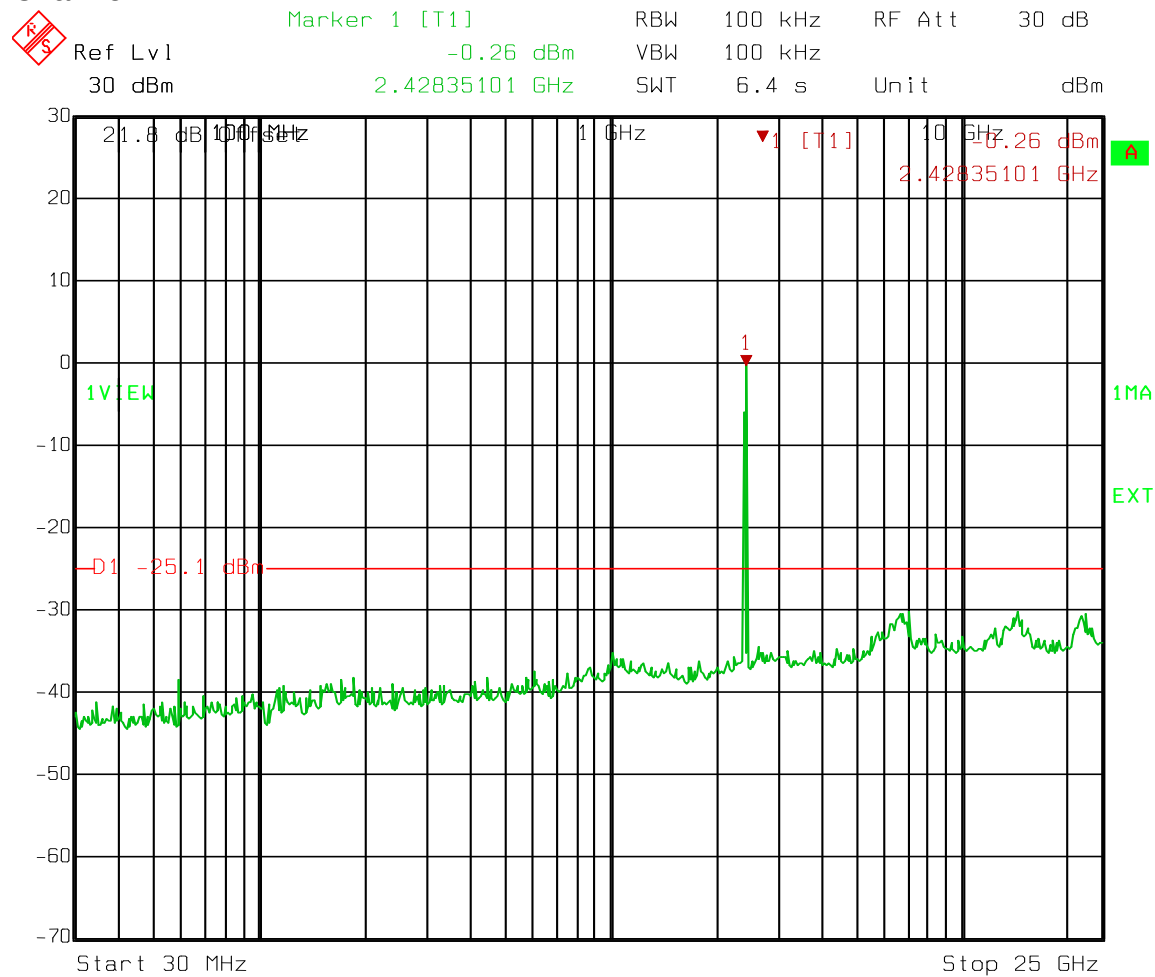
Channel 1



Date: 13.DEC.2010 13:58:40

Test Data – Spurious Emissions at Antenna Terminals

Spurs
802.11b
11 Mbps
Channel 1

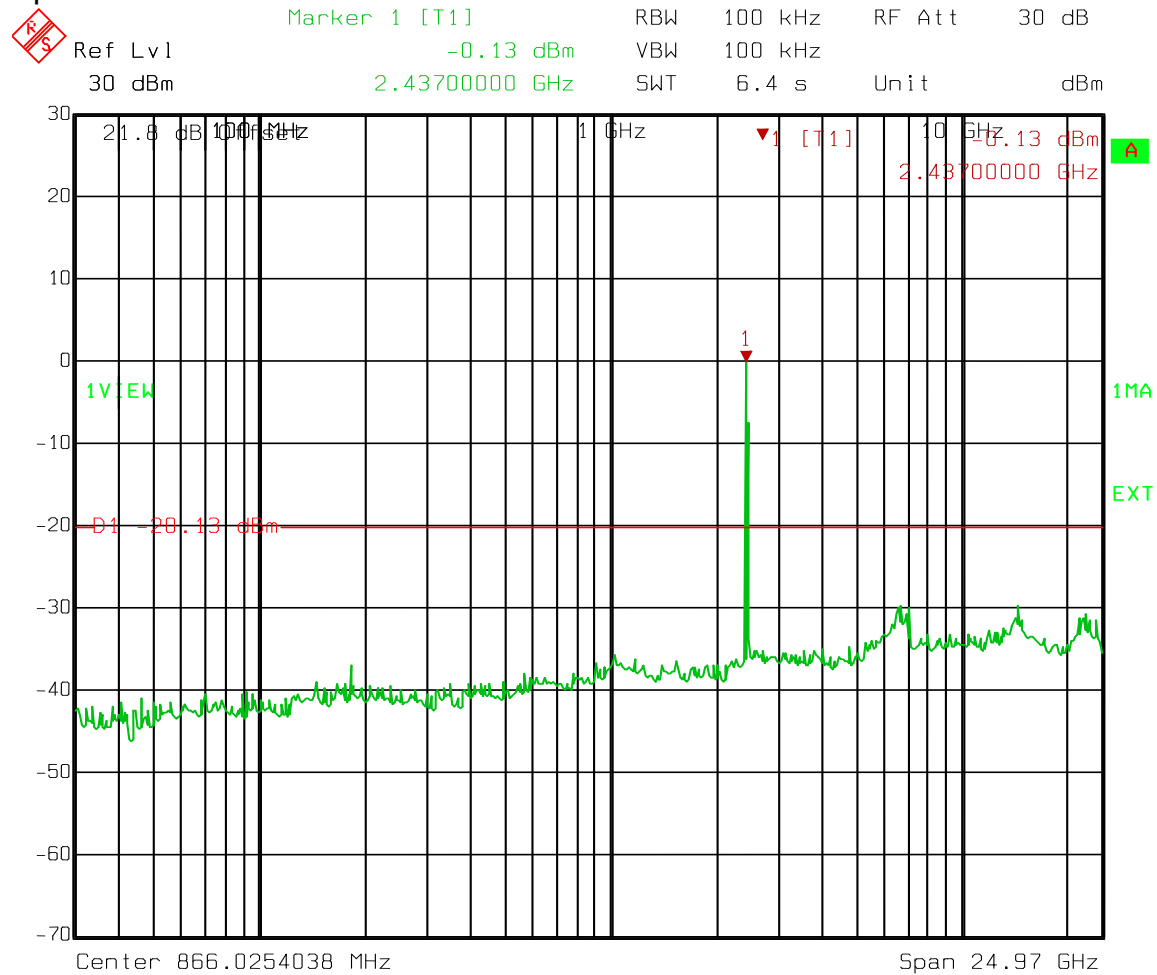


Date: 13.DEC.2010 14:02:46

EQUIPMENT: MVP-9000i

Test Data – Spurious Emissions at Antenna Terminals

802.11b
Channel 6
11 Mbps
Spurs



Date: 13.DEC.2010 15:10:49

EQUIPMENT: MVP-9000i

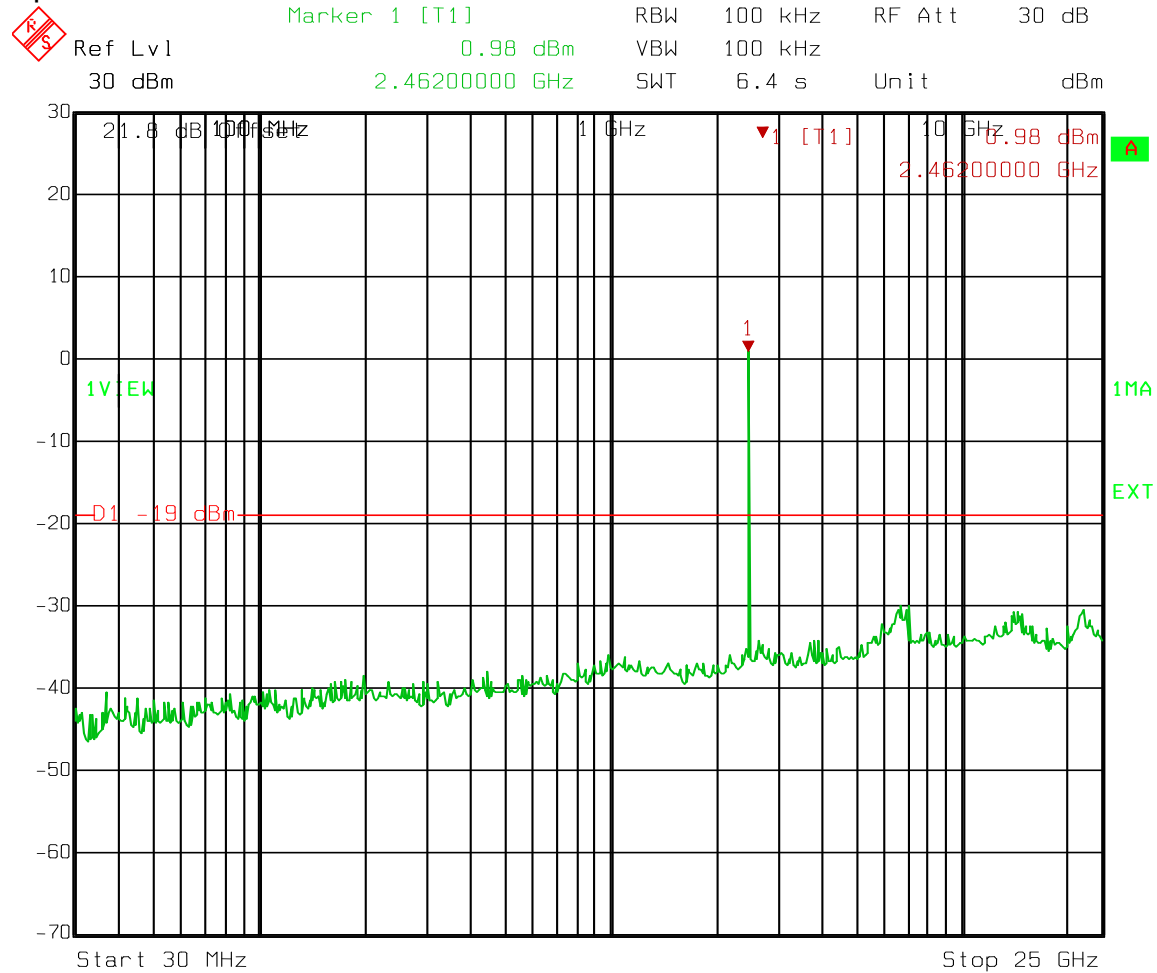
Test Data – Spurious Emissions at Antenna Terminals

802.11b

11 Mbps

Channel 11

Spurs



Date: 14.DEC.2010 10:41:01

EQUIPMENT: MVP-9000i

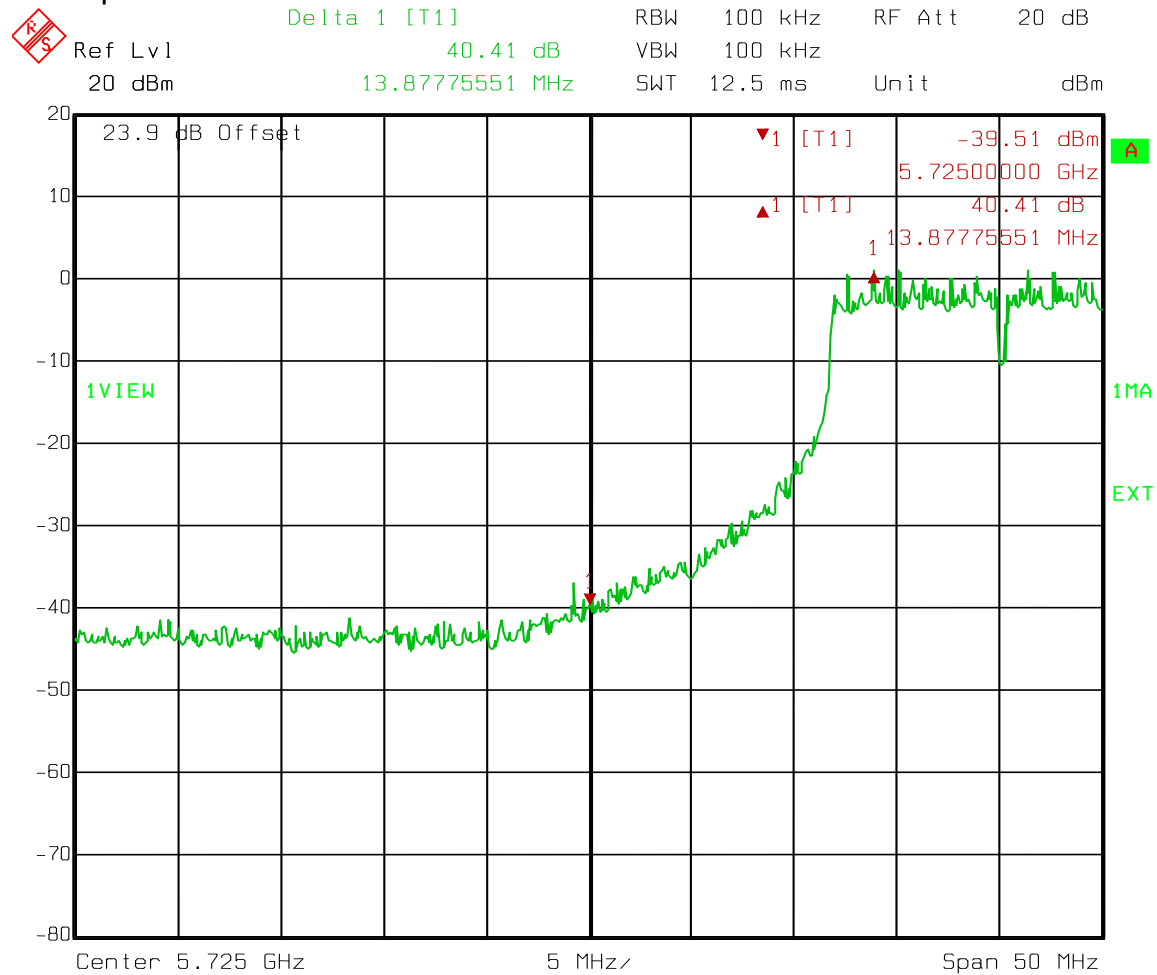
Test Data – Spurious Emissions at Antenna Terminals

Lower Band edge

Low Channel

802.11a

54 Mbps



Date: 15.DEC.2010 13:41:25

EQUIPMENT: MVP-9000i

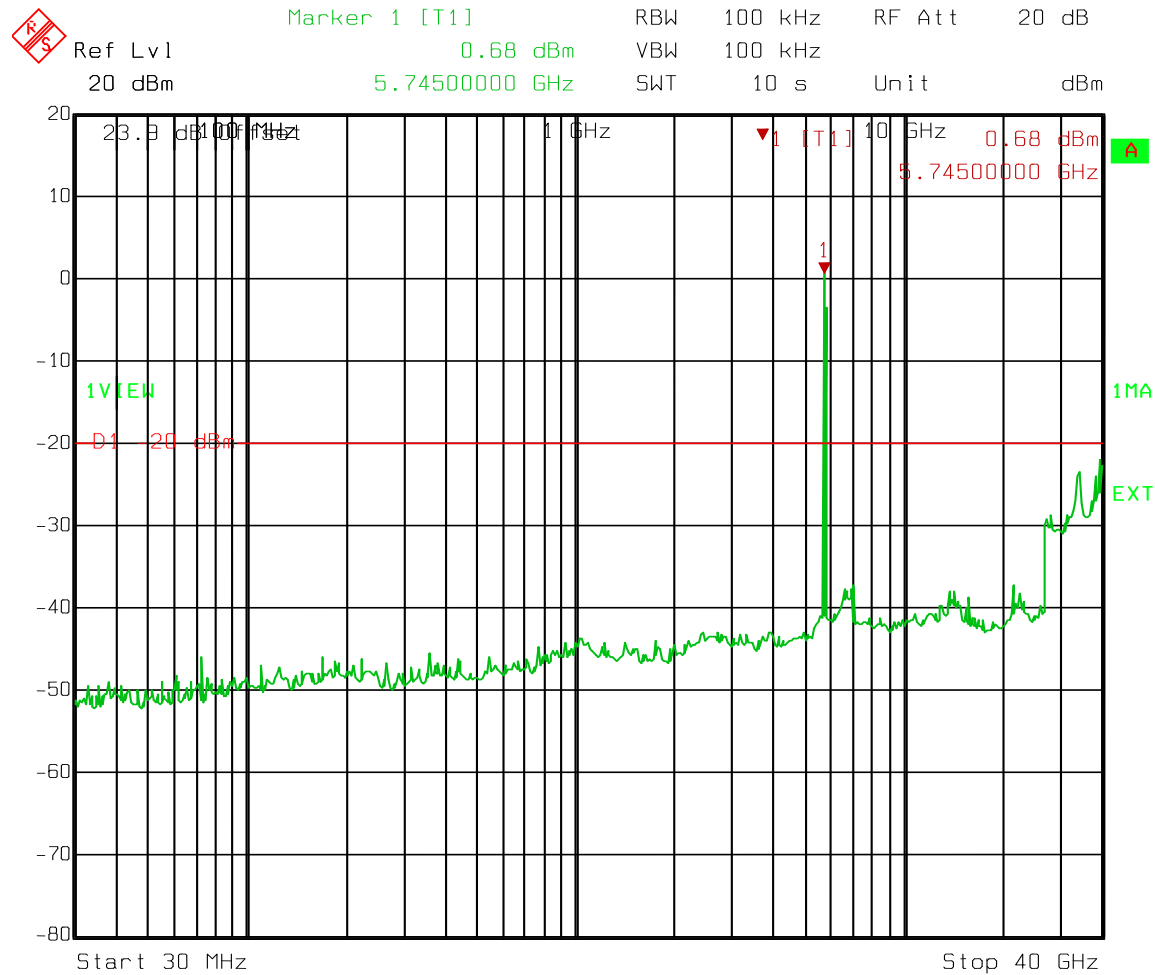
Test Data – Spurious Emissions at Antenna Terminals

Spurs

802.11a

54 Mbps

Lowest channel

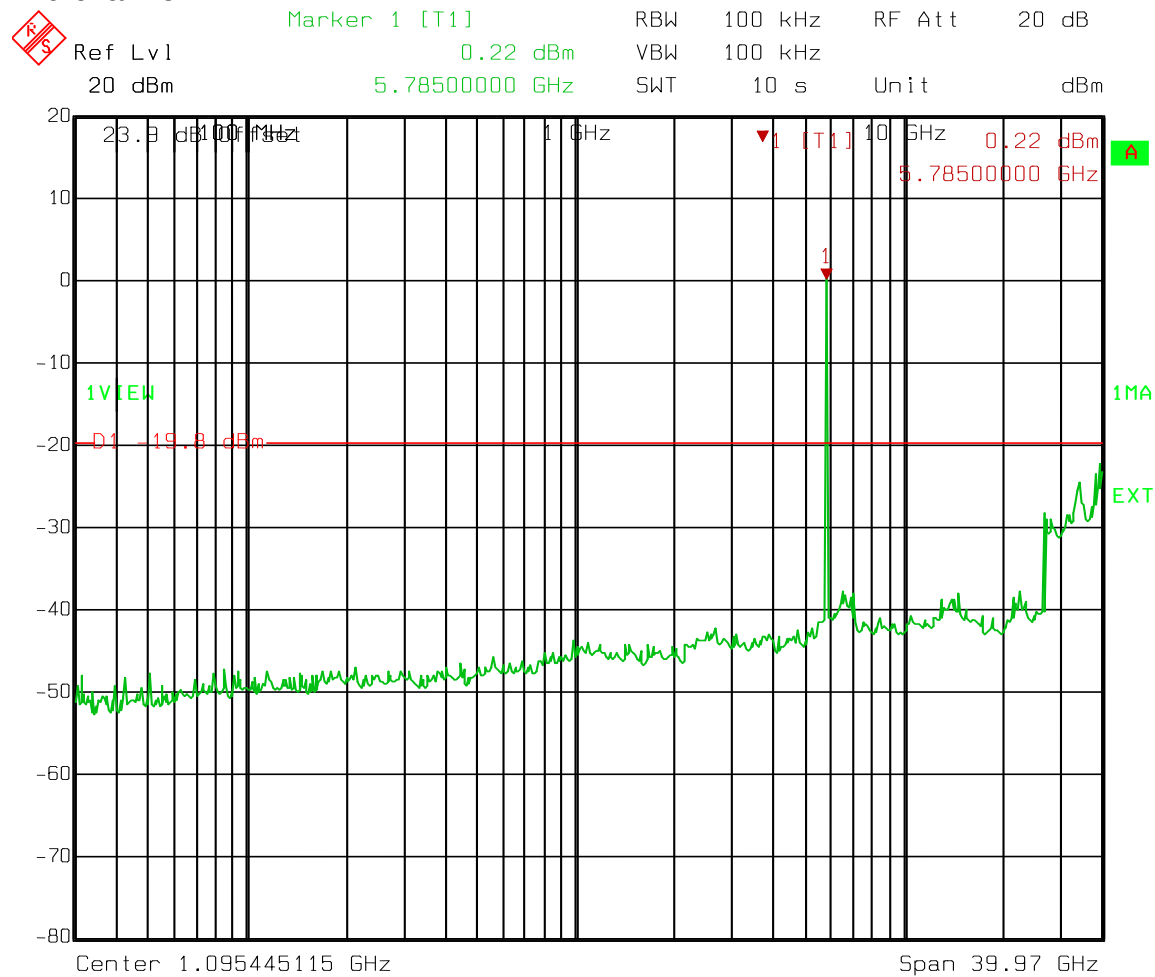


Date: 15.DEC.2010 13:36:39

EQUIPMENT: MVP-9000i

Test Data – Spurious Emissions at Antenna Terminals

Spurs
802.11a
54 Mbps
Mid channel



Date: 15.DEC.2010 14:42:18

EQUIPMENT: MVP-9000i

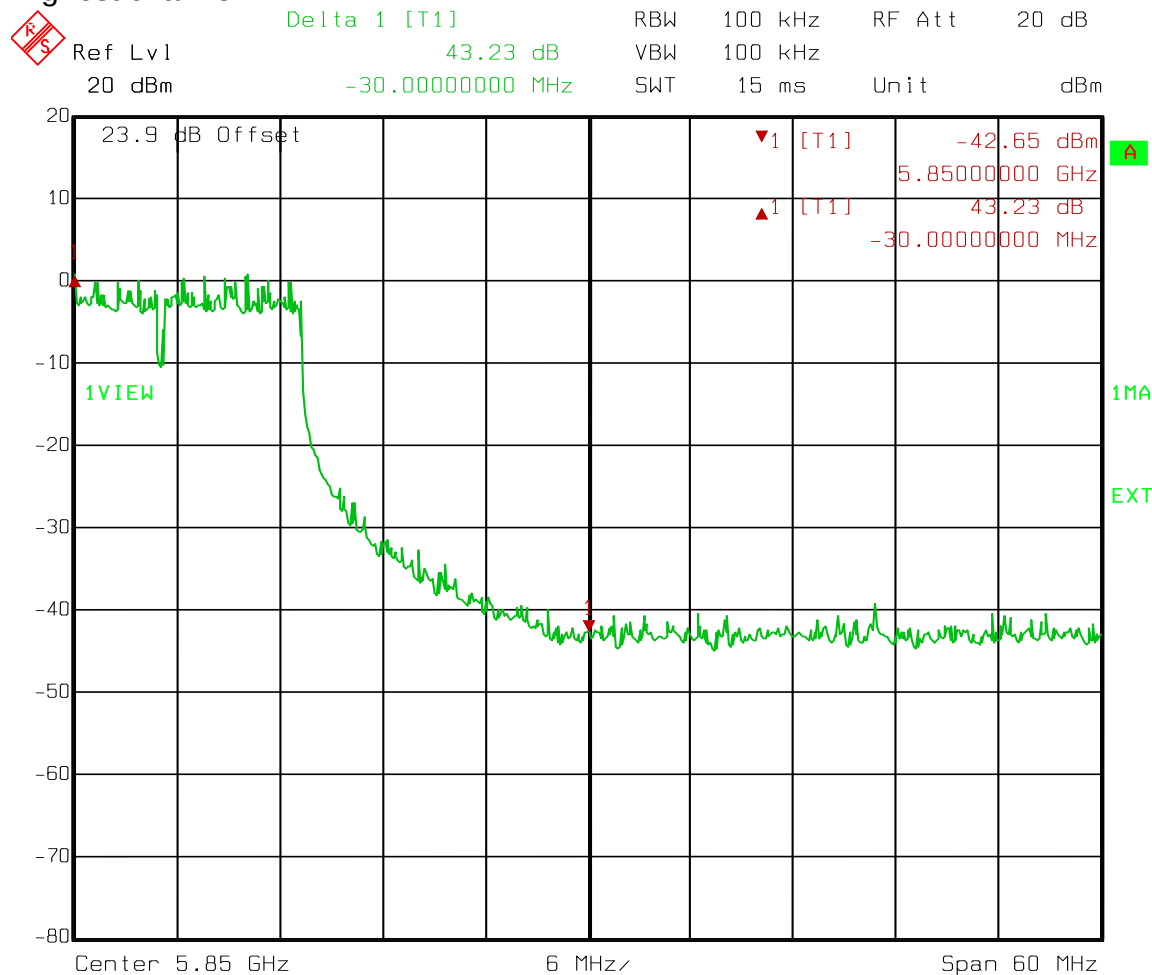
Test Data – Spurious Emissions at Antenna Terminals

Upper Band Edge

802.11a

54 Mbps

Highest channel



Date: 15.DEC.2010 15:36:38

EQUIPMENT: MVP-9000i

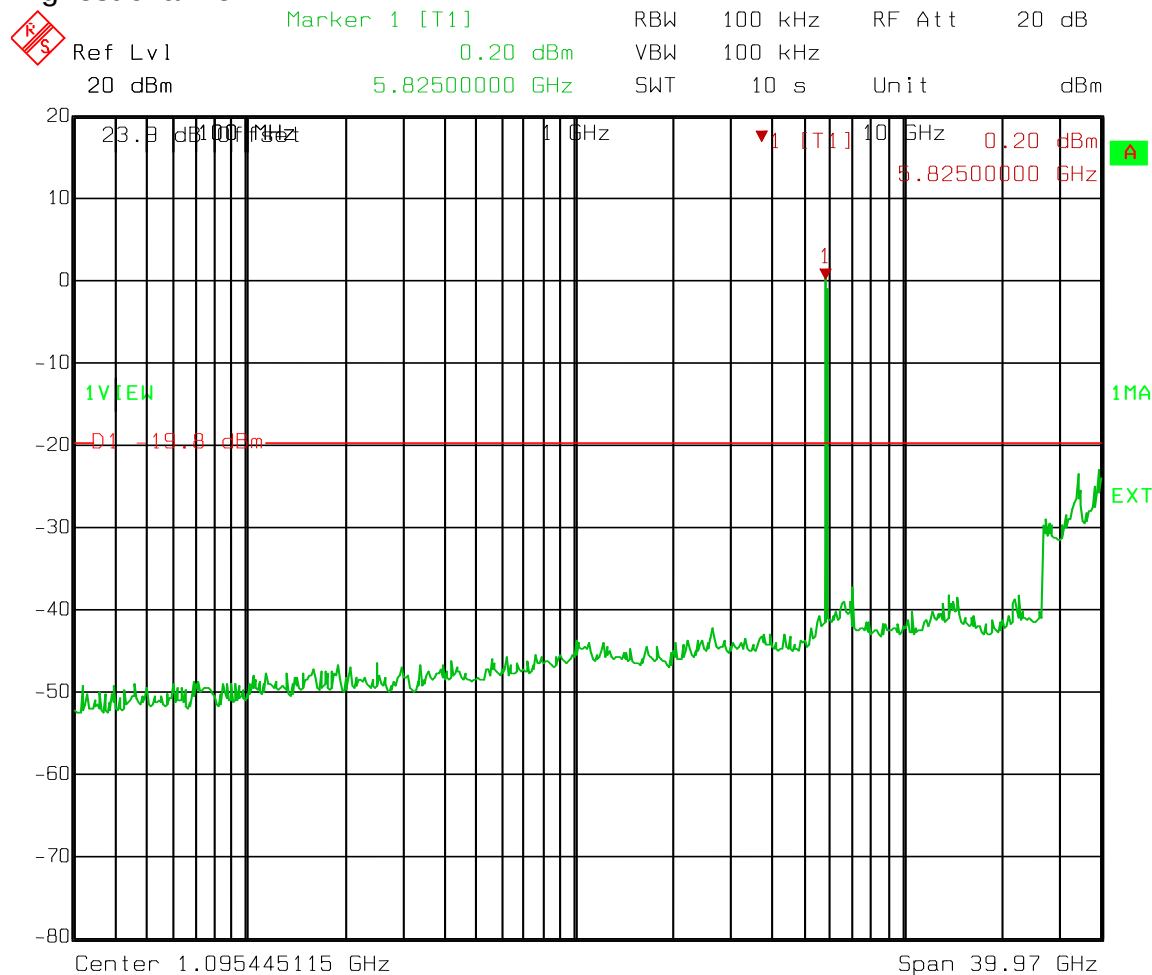
Test Data – Spurious Emissions at Antenna Terminals

Spurs

802.11a

54 Mbps

Highest channel



Date: 15.DEC.2010 15:38:04

EQUIPMENT: MVP-9000i**Section 6. Radiated Emissions**

NAME OF TEST: Radiated Emissions	PARA. NO.: FCC 15.247 (d) RSS-Gen, 7.2.2
TESTED BY: David Light	DATE: 15 December 2010

Test Results: Complies.**Measurement Data:** See attached table.**Test Conditions:** %RH
°C**Measurement Uncertainty:** +/-1.7 dB**Test Equipment Used:**

Notes:

- ☒ For handheld devices, the EUT was tested on three orthogonal axis'
- ☒ The device was tested from 30 MHz to the tenth harmonic of the highest fundamental frequency per 15.33
- ☒ The device was tested on three channels per 15.31(l).
- ☐ No emissions were detected within 20 dB of the specification limit therefore none are reported per 15.31(o). Band edge data is presented below.

RBW=VBW=100 kHz below 1000 MHz
RBW=VBW=1 MHz above 1000 MHz (Peak)
RBW= 1 MHz VBW=10Hz (Average)

EQUIPMENT: MVP-9000i

Radiated Emissions**Measurement Data:** Reading listed by order taken.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Horn dB	Pre-A dB	Cable dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	2483.5	48.8	+29.0	+33.0	+0.8	+2.3	+0.0	47.9	74.0	-26.1	Vert
	Peak								Ant. 1 802.11b		
2	2483.5	34.9	+29.0	+33.0	+0.8	+2.3	+0.0	34.0	54.0	-20.0	Vert
	Ave								Ant. 1 802.11b		
3	2483.5	48.0	+29.0	+33.0	+0.8	+2.3	+0.0	47.1	74.0	-26.9	Horiz
	Peak								Ant. 1 802.11b		
4	2483.5	34.0	+29.0	+33.0	+0.8	+2.3	+0.0	33.1	54.0	-20.9	Horiz
	Ave								Ant. 1 802.11b		
1	2483.5	50.6	+29.0	+33.0	+0.8	+2.3	+0.0	49.7	74.0	-24.3	Vert
	Peak								Ant. 2 802.11b		
2	2483.5	37.0	+29.0	+33.0	+0.8	+2.3	+0.0	36.1	54.0	-17.9	Vert
	Ave								Ant. 2 802.11b		
3	2483.5	50.7	+29.0	+33.0	+0.8	+2.3	+0.0	49.8	74.0	-24.2	Horiz
	Peak								Ant. 2 802.11b		
4	2483.5	42.7	+29.0	+33.0	+0.8	+2.3	+0.0	41.8	54.0	-12.2	Horiz
	Ave								Ant. 2 802.11b		
1	2483.5	51.8	+29.0	+33.0	+0.8	+2.3	+0.0	50.9	74.0	-23.1	Vert
	Peak								Ant. 1 802.11g		
2	2483.5	39.3	+29.0	+33.0	+0.8	+2.3	+0.0	38.4	54.0	-15.6	Vert
	Ave								Ant. 1 802.11g		
3	2483.5	56.3	+29.0	+33.0	+0.8	+2.3	+0.0	55.4	74.0	-18.6	Horiz
	Peak								Ant. 1 802.11g		
4	2483.5	43.2	+29.0	+33.0	+0.8	+2.3	+0.0	42.3	54.0	-11.7	Horiz
	Ave								Ant. 1 802.11g		
1	2483.5	52.0	+29.0	+33.0	+0.8	+2.3	+0.0	51.1	74.0	-22.9	Vert
	Peak								Ant. 2 802.11g		
2	2483.5	38.0	+29.0	+33.0	+0.8	+2.3	+0.0	37.1	54.0	-16.9	Vert
	Ave								Ant. 2 802.11g		
3	2483.5	69.5	+29.0	+33.0	+0.8	+2.3	+0.0	68.6	74.0	-5.4	Horiz
	Peak								Ant. 2 802.11g		
4	2483.5	54.5	+29.0	+33.0	+0.8	+2.3	+0.0	53.6	54.0	-0.4	Horiz
	Ave								Ant. 2 802.11g		

EQUIPMENT: MVP-9000i

Section 7. Peak Power Spectral Density

NAME OF TEST: Peak Power Spectral Density	PARA. NO.: FCC 15.247(e) RSS-210, A8.2(b)
TESTED BY: David Light	DATE: 13 December 2010

Test Results: Complies.

Measurement Data: See attached data..

Test Conditions: 53 %RH
21 °C

Measurement Uncertainty: +/-1.7 dB

Test Equipment Used: 1036-1082-1472

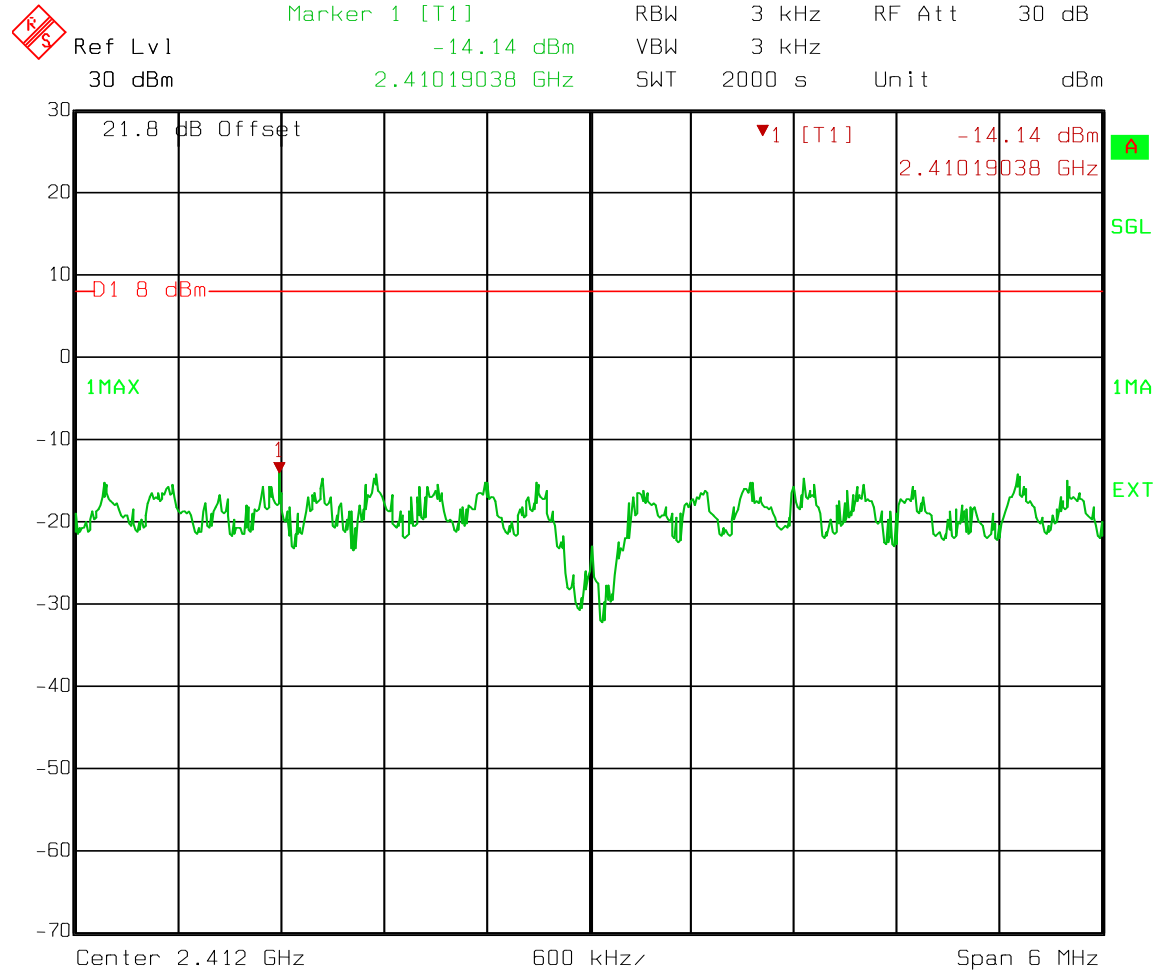
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11g

54 Mbps

Channel 1



Date: 13.DEC.2010 13:05:38

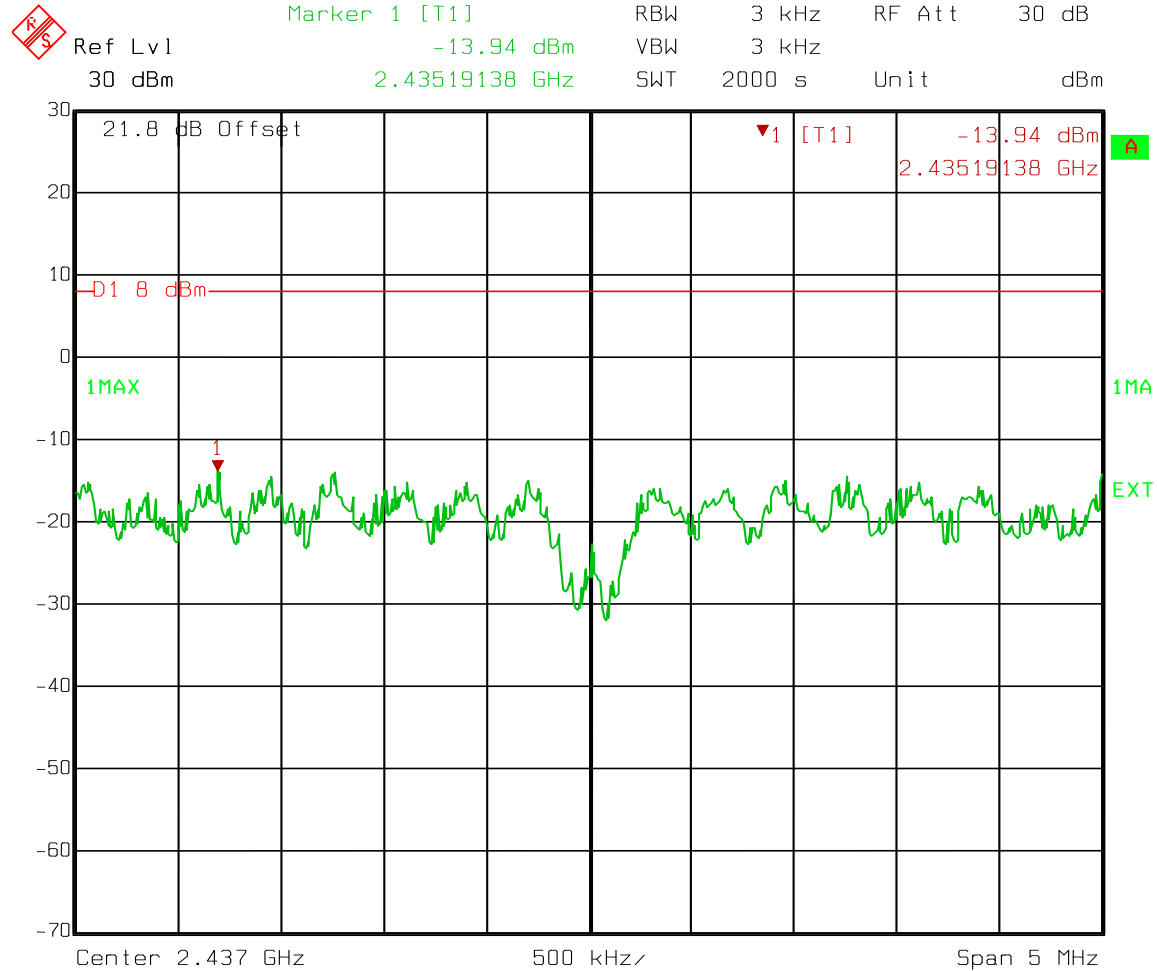
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11g

54 Mbps

Channel 6



Date: 13.DEC.2010 13:53:39

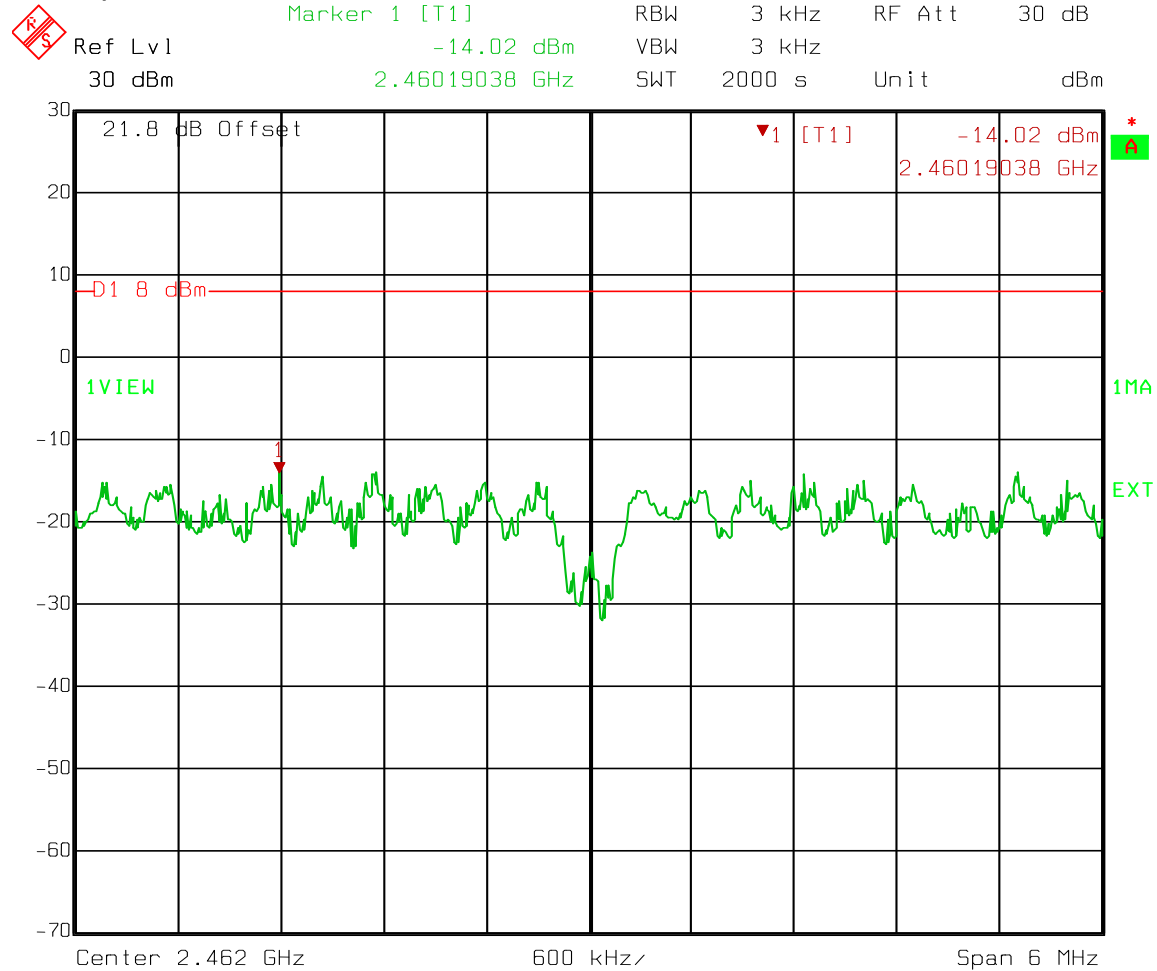
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11g

Channel 11

54 Mbps



Date: 13.DEC.2010 11:21:25

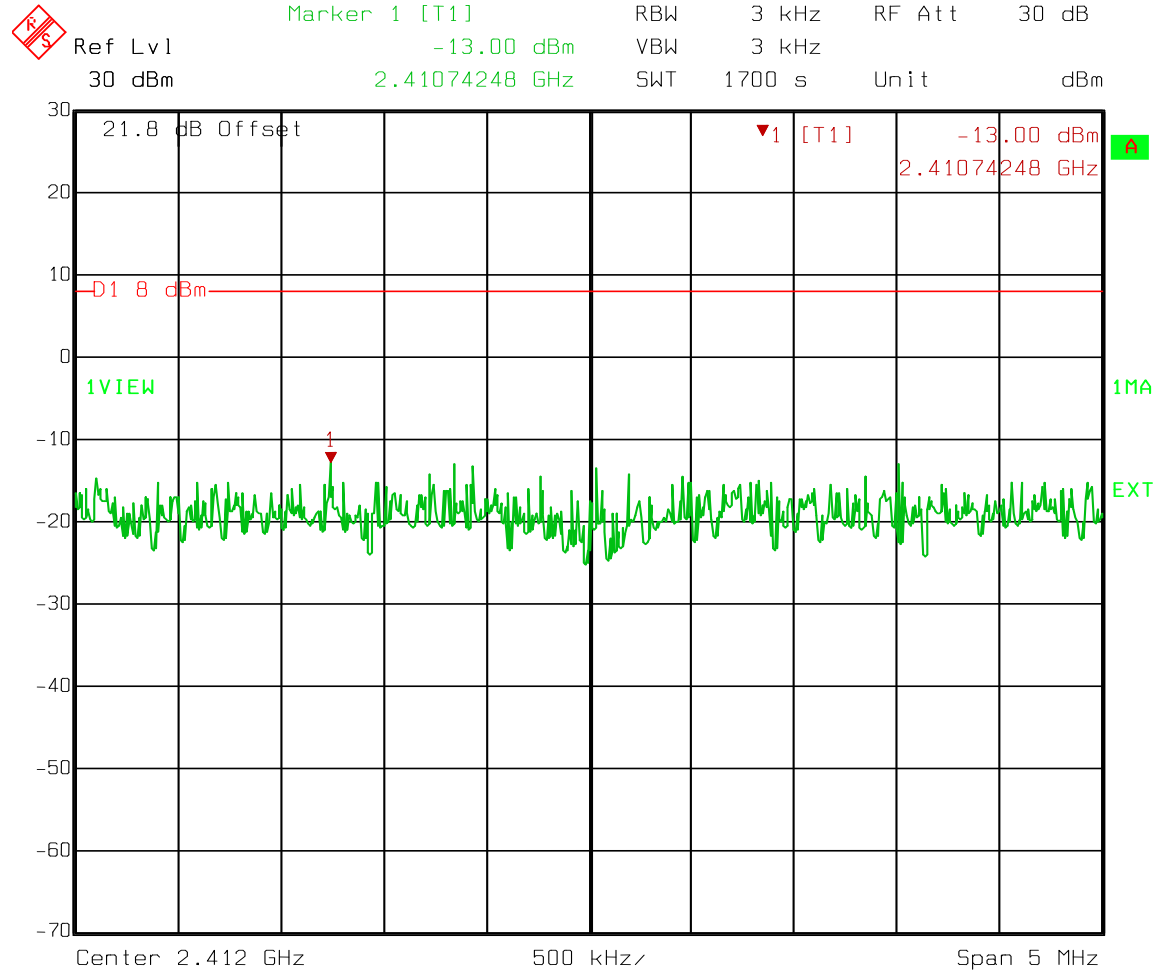
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11b

11 Mbps

Channel 1



Date: 13.DEC.2010 15:04:24

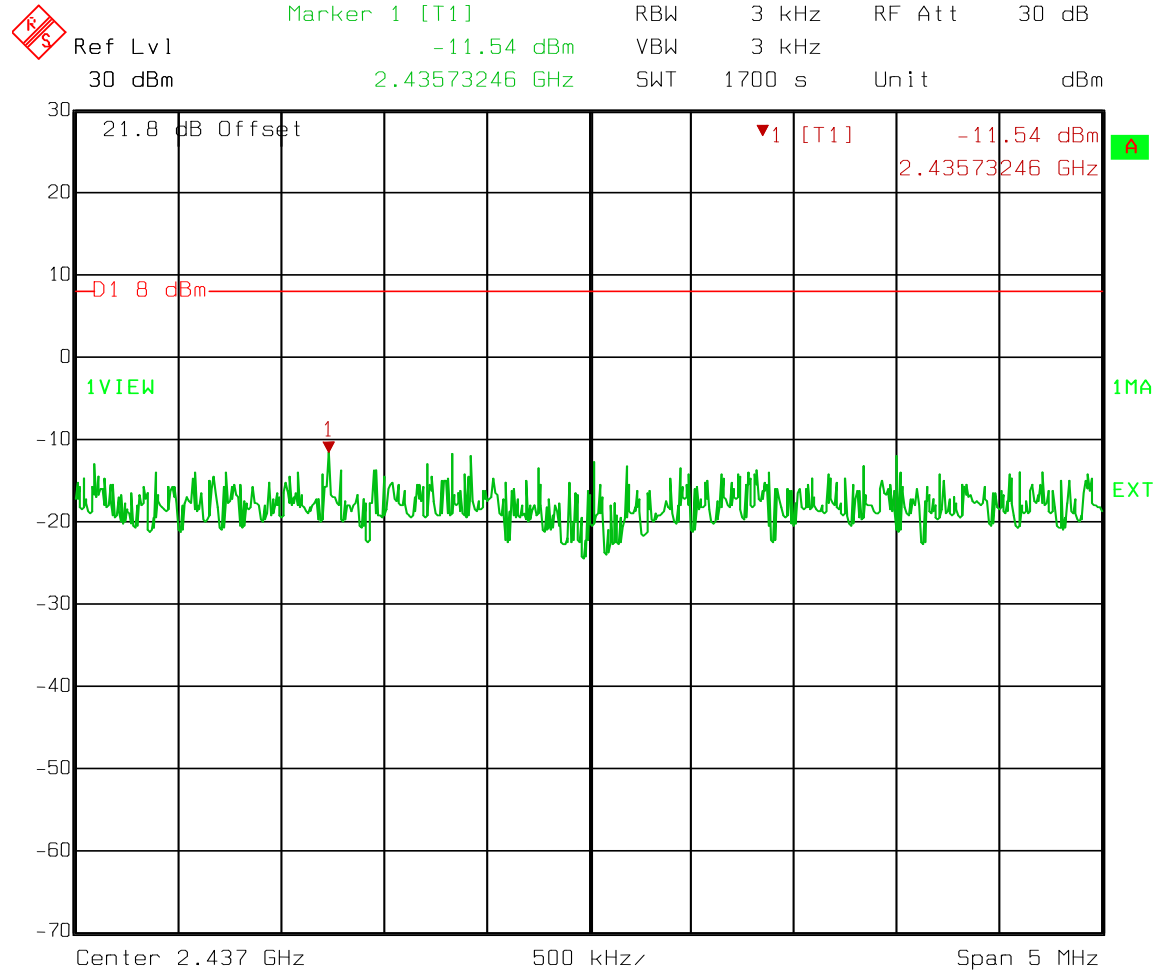
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11b

11 Mbps

Channel 6



Date: 14.DEC.2010 10:30:01

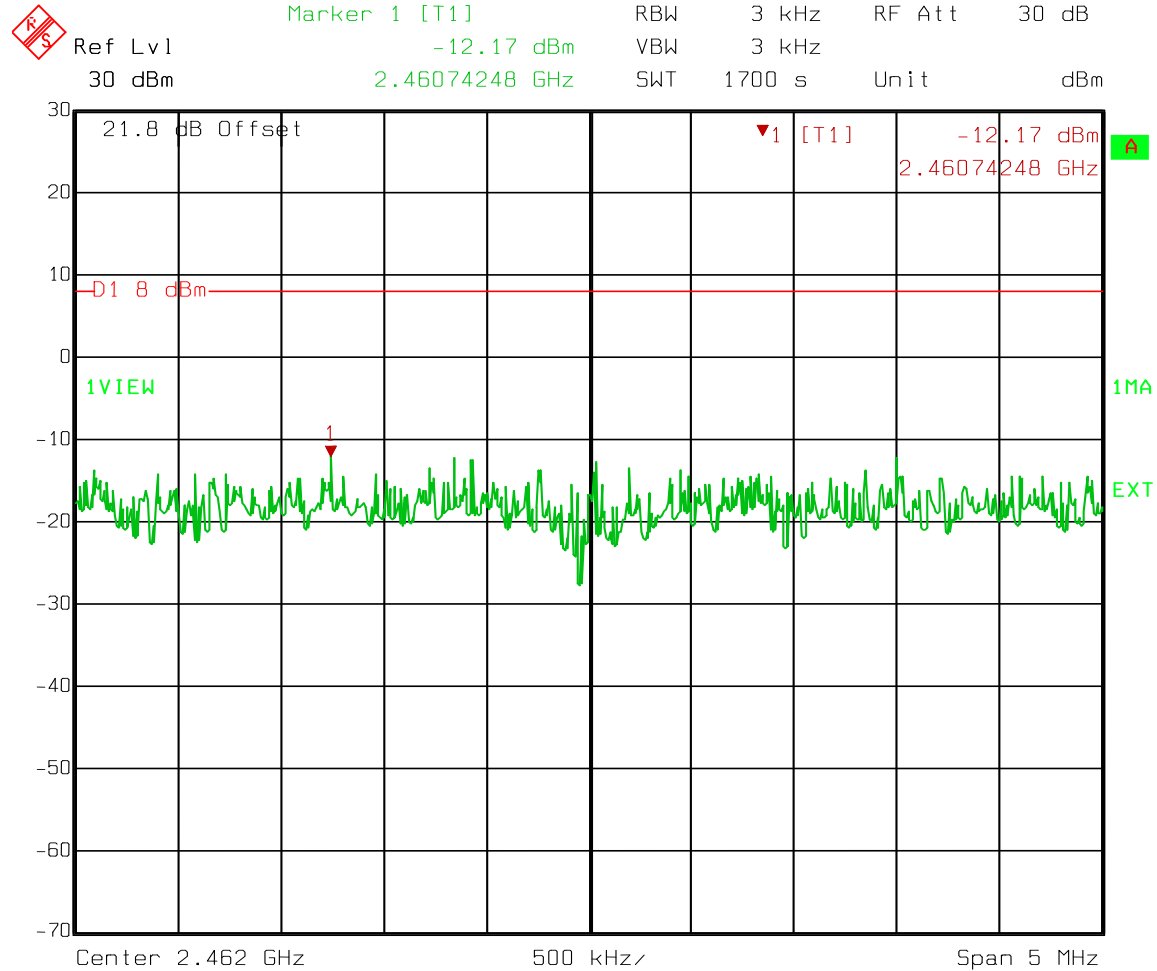
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11b

11 Mbps

Channel 11



Date: 14.DEC.2010 11:10:48

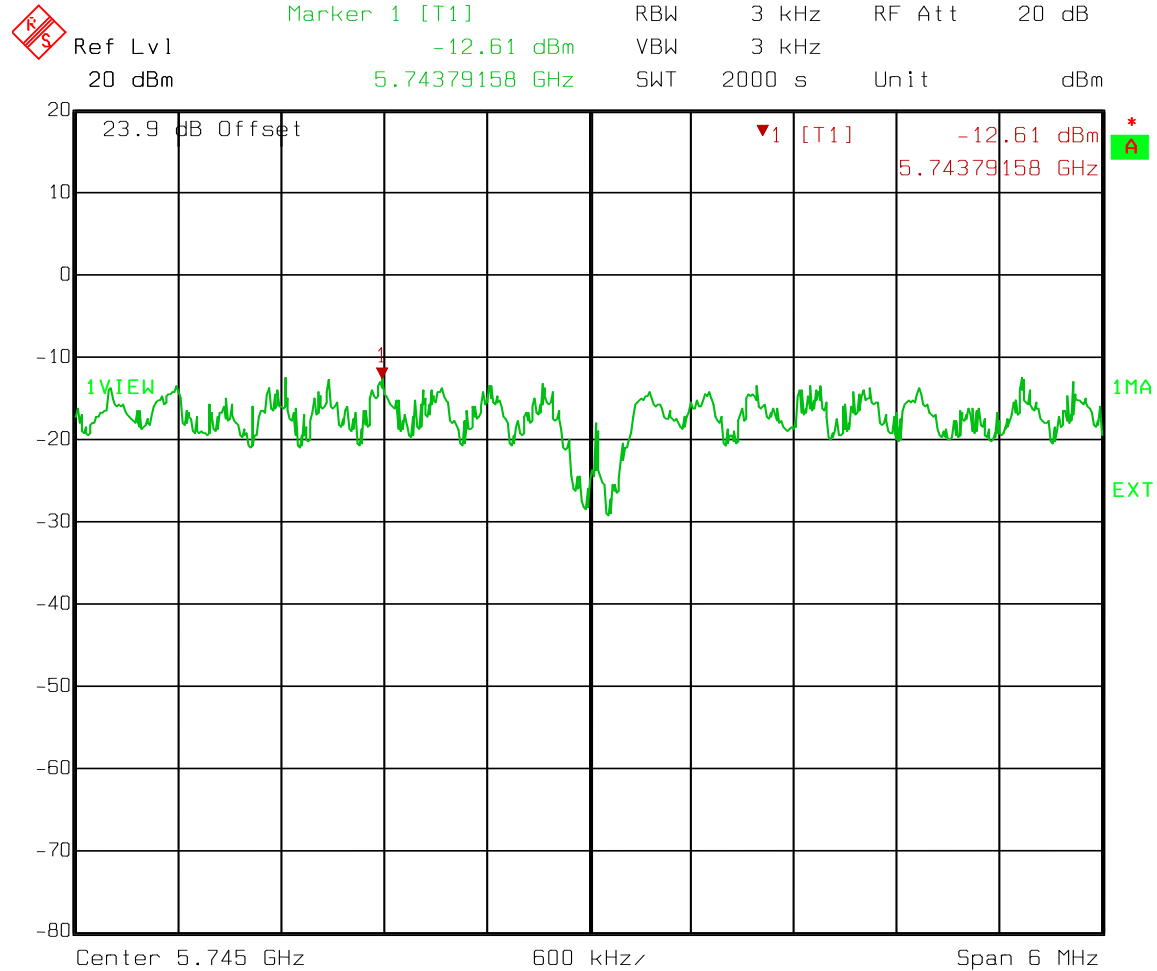
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11a

54 Mbps

Lowest Channel



Date: 15.DEC.2010 14:35:20

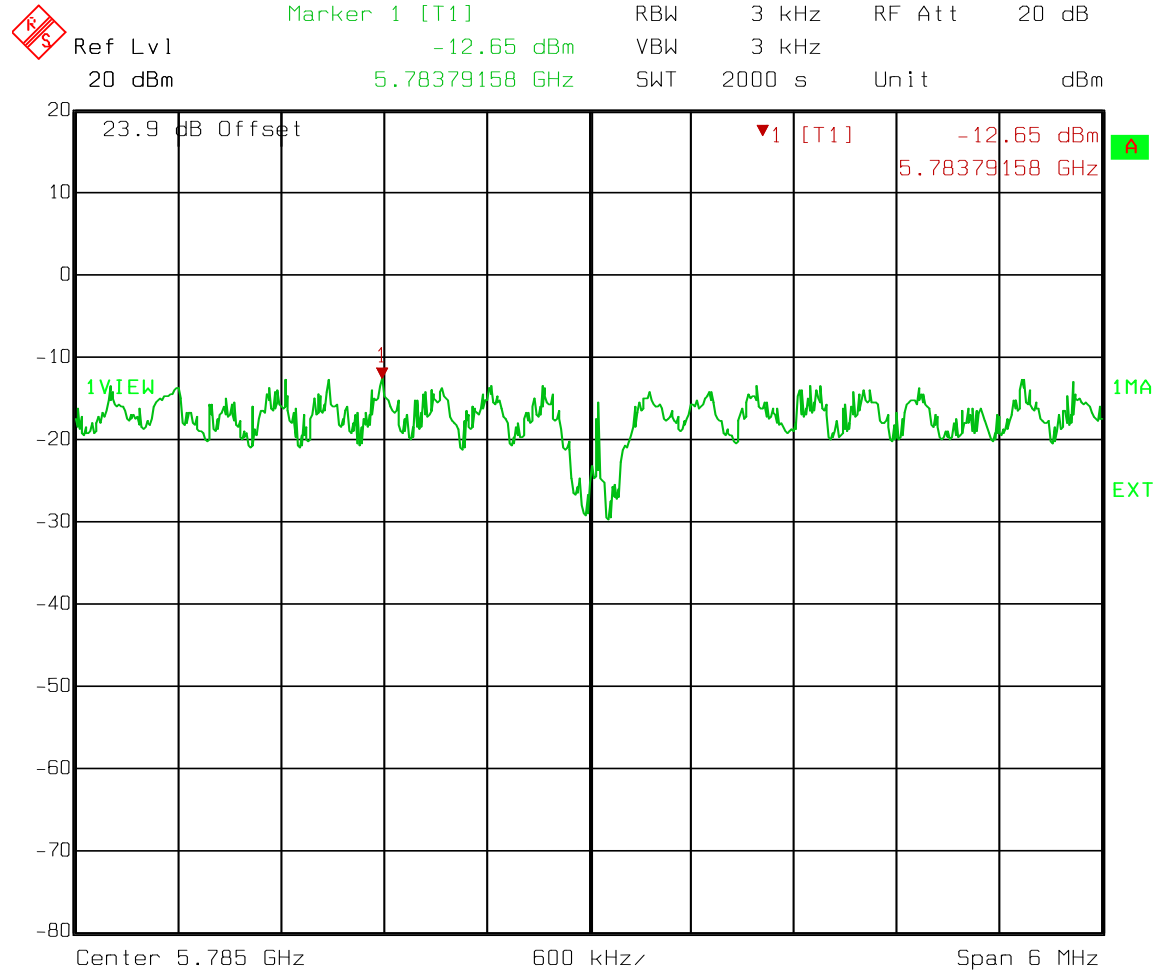
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11a

54 Mbps

Mid channel



Date: 15.DEC.2010 15:24:32

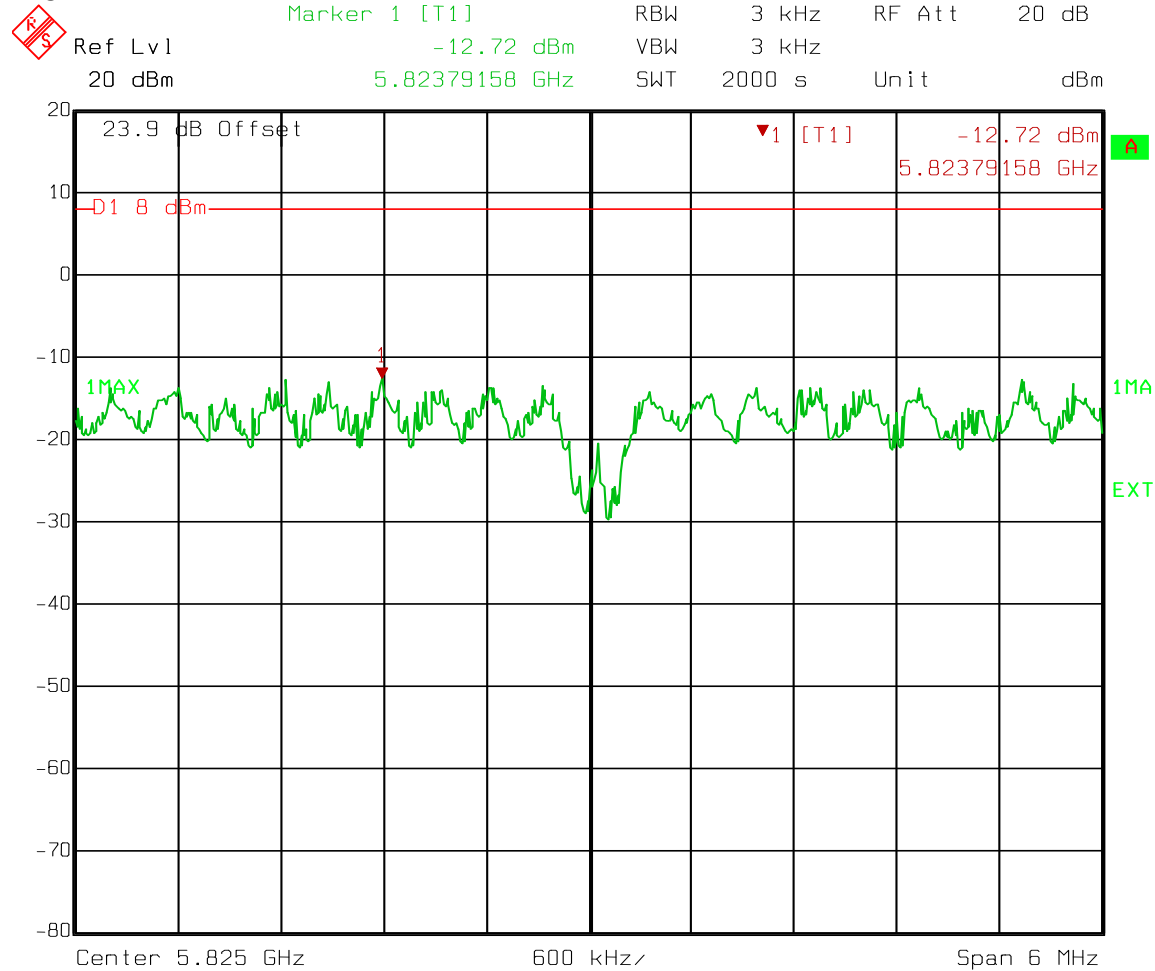
EQUIPMENT: MVP-9000i

Peak Power Spectral Density

802.11a

54 Mbps

Highest channel



Date: 15.DEC.2010 16:12:27

EQUIPMENT: MVP-9000i

Section 8. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a) RSS-Gen, 7.2.4
TESTED BY: David Light	DATE: 16 December 2010

Test Results: Complies.

Measurement Data: See attached plots.

Measurement Uncertainty: +/- 1.7 dB

Test Equipment Used: 1659-1188-758-1485-674

EQUIPMENT: MVP-9000i

Test Data – Powerline Conducted Emissions

Line 1

Frequency	FCCB	FCCB	AVG	AVG	QP	QP
kHz	QP LIMIT	AVG LIMIT	Meas	Margin	Meas	Margin
150.83	65.976	55.976	29.163	-26.814	44.139	-21.837
162.49	65.643	55.643	43.497	-12.146	56.830	-8.813
166.67	65.524	55.524	44.972	-10.552	58.733	-6.791
162.49	65.643	55.643	43.497	-12.146	56.830	-8.813
150.83	65.976	55.976	29.163	-26.814	44.139	-21.837

Line 2

Frequency	FCCB	FCCB	AVG	AVG	QP	QP
kHz	QP Limit	AVG Limit	Meas	Margin	Meas	Margin
166.67	65.524	55.524	45.597	-9.927	59.250	-6.273
169.16	65.453	55.453	45.250	-10.202	58.878	-6.575
166.67	65.524	55.524	45.597	-9.927	59.250	-6.273

EQUIPMENT: MVP-9000i

Section 9. Receiver Emissions

NAME OF TEST: Receiver Emissions	PARA. NO.: RSS-Gen, 6.1
TESTED BY: David Light	DATE: 17 December 2010

Test Results: Complies.

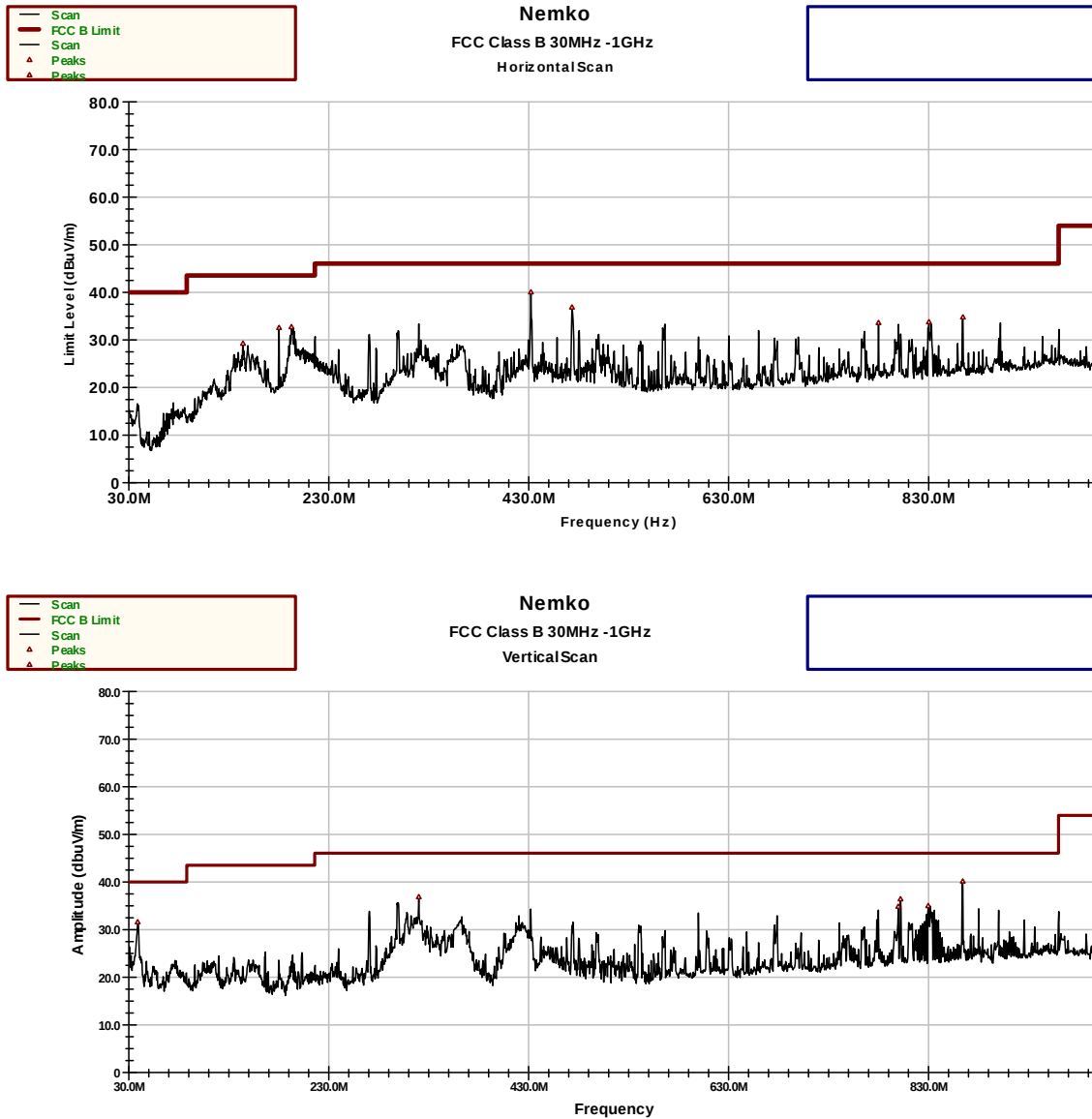
Test Data: Refer to attached data. The worst case emission was 40.2 dB μ V/m at 864.2 MHz in the vertical polarity. This is 5.8 dB below the specification limit.

Measurement Uncertainty: +/- 1.7 dB

Test Equipment Used: 1036-1484-1485-1016-993-1480-791

EQUIPMENT: MVP-9000i

Test Data – Receiver Spurious Emissions



The spectrum was searched from 30 MHz to the 5th harmonic of the carrier. All emissions above 1000 MHz were 20 dB or more below the specification limit.

<1000 MHz: RBW/VBW = 100 kHz Peak detector
>1000 MHz: RBW/VBW = 1 MHz Peak detector

EQUIPMENT: MVP-9000i**Section 10. Test Equipment List**

Asset Tag	Description	Manufacturer	Model	Serial #	Last Cal	Next Cal
674	Limiter	Hewlett Packard	11947A	3107A02200	26-Oct-2010	26-Oct-2011
993	Antenna, Horn	A.H. Systems	SAS-200/571	162	09-Sep-2009	09-Sep-2011
1016	Preamplifier	Hewlett Packard	8449A	2749A00159	19-Jun-2010	19-Jun-2011
1036	Spectrum Analyzer	Rohde & Schwartz	FSEK30	830844/006	19-Jan-2009	19-Jan-2011
1082	Cable	Astrolab	32027-2- 29094-72TC		N/R	
1188	LISN	EMCO	3825/2	1214	25-Oct-2010	25-Oct-2011
1472	Attenuator,	Omni Spectra	20600-20db		N/R	
1480	Antenna, Bilog	Schaffner- Chase	CBL6111C	2572	18-Jan-2010	18-Jan-2011
1484	Cable	Storm	PR90-010-072		19-Jun-2010	19-Jun-2011
1485	Cable	Storm	PR90-010-216		19-Jun-2010	19-Jun-2011
1659	Spectrum Analyzer	Rohde & Schwartz	FSP	973353	27-Sep-2010	27-Sep-2012
791	PreAmp	Nemko, USA			08-Mar-2010	08-Mar-2011
2071	Power Sensor	Agilent	E9304A	MY41495174	12-Oct-2010	12-Oct-2011
2072	Power Meter	Hewlett Packard	E4418B	GB39401848	23-Sep-2010	23-Sep-2011

ANNEX A - TEST DETAILS

EQUIPMENT: MVP-9000i

NAME OF TEST: Powerline Conducted Emissions

PARA. NO.: 15.207(a)

Minimum Standard: §15.207 Conducted limits.

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that 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 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 mH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Conducted Emission (MHz)	Limit (dBmV)	
	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.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 mV within the frequency band 535-1705 kHz, as measured using a 50 mH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits as provided in §15.205 and §§15.209, 15.221, 15.223, 15.225 or 15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another

EQUIPMENT: MVP-9000i

device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

Nemko USA, Inc.

FCC PART 15, SUBPART C and
Industry Canada, RSS-210, Issue 8
Digital Transmission Systems
Test Report No.: 65847RUS1

EQUIPMENT: MVP-9000i

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 15.247(a)(2)

Minimum Standard: The minimum 6 dB bandwidth shall be at least 500 kHz

EQUIPMENT: MVP-9000i

NAME OF TEST: Maximum Peak Output Power

PARA. NO.: 15.247(b)(3)

Minimum Standard: The maximum peak output power shall not exceed 1 watt.

If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point to point operation may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceed 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operation may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Direct Measurement Method For Detachable Antennas:

If the antenna is detachable, a peak power meter is used to measure the power output with the transmitter operating into a 50 ohm load. The dBi gain of the antenna(s) employed shall be reported.

Substitution Antenna Method for Integral Antennas:

The peak field strength of the carrier is measured in a worst-case configuration with a RBW > 5 times the occupied bandwidth of the transmitted waveform. For cases where the RBW of the test instrument is not sufficient, the power is measured using a peak power meter instead of the spectrum analyzer.

The RBW of the spectrum analyzer shall be set to a value greater than the measured 6 dB occupied bandwidth of the E.U.T.

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

Nemko USA, Inc.

FCC PART 15, SUBPART C and
Industry Canada, RSS-210, Issue 8
Digital Transmission Systems
Test Report No.: 65847RUS1

EQUIPMENT: MVP-9000i

EQUIPMENT: MVP-9000i

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 15.247(a)(2)

Minimum Standard:

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Method Of Measurement:

The spectrum analyzer is set as follows:

RBW = VBW = 100 kHz.

Span: Sufficient to display 6 dB bandwidth

LOG dB/div.: 10 dB

Sweep: Auto

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

EQUIPMENT: MVP-9000i

NAME OF TEST: Spurious Emissions(conducted)

PARA. NO.: 15.247(d)

Minimum Standard:

In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

THE SPECTRUM IS SEARCHED TO THE 10th HARMONIC OF THE HIGHEST FREQUENCY GENERATED IN THE EUT.

Method Of Measurement:

30 MHz - 10th harmonic plot

RBW: 100 kHz

VBW: 300 kHz

Sweep: Auto

Display line: -20 dBc

Lower Band Edge

RBW: At least 1% of span/div.

VBW: >RBW

Span: As necessary to display any spurious at band edge.

Sweep: Auto

Center Frequency: 902 MHz, 2400 MHz, or 5725 MHz

Marker: Peak of fundamental emission

Marker Δ : Peak of highest spurious level below center frequency.Upper Band Edge

RBW: At least 1% of span/div.

VBW: >RBW

Span: As necessary to display any spurious at band edge.

Sweep: Auto

Center Frequency: 928 MHz, 2483.5 MHz, or 5850 MHz

Marker: Peak of fundamental emission

Marker Δ : Peak of highest spurious level above center frequency.

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

EQUIPMENT: MVP-9000i

NAME OF TEST: Radiated Spurious Emissions

PARA. NO.: 15.247(c)

Minimum Standard: In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits:

Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

THE SPECTRUM WAS SEARCHED TO THE 10th HARMONIC

15.205 Restricted Bands

MHz	MHz	MHz	GHz
0.09-0.11	16.42-16.423	399.9-410	4.5-5.25
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
6.125-6.218	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	Above 38.6
13.36-13.41	1718		

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

EQUIPMENT: MVP-9000i

NAME OF TEST: Transmitter Power Density

PARA. NO.: 15.247(d)

Minimum Standard: The transmitted power density averaged over any 1 second interval shall not be greater than +8 dBm in any 3 kHz bandwidth.

Method Of Measurement: The spectrum analyzer is set as follows:

RBW: 3 kHz

VBW: >3 kHz

Span: => measured 6 dB bandwidth

Sweep: Span(kHz)/3 (i.e. for a span of 1.5 MHz the sweep rate is $1500/3 = 500$ sec.

LOG dB/div.: 2 dB

Note: For devices with spectrum line spacing ≤ 3 kHz, the RBW of the analyzer is reduced until the spectral lines are resolved. The measurement data is normalized to 3 kHz by summing the power of all the individual spectral lines within a 3 kHz band in linear power units.

For Devices With Integral Antenna:

For devices with non-detachable antennas, the received field strength is peaked and the spectrum analyzer is set as above. The peak emission level is then measured and converted to a field strength by adding the appropriate antenna factor and cable loss. This field strength is then converted to an equivalent isotropic radiated power using the same method as described for Peak Power output.

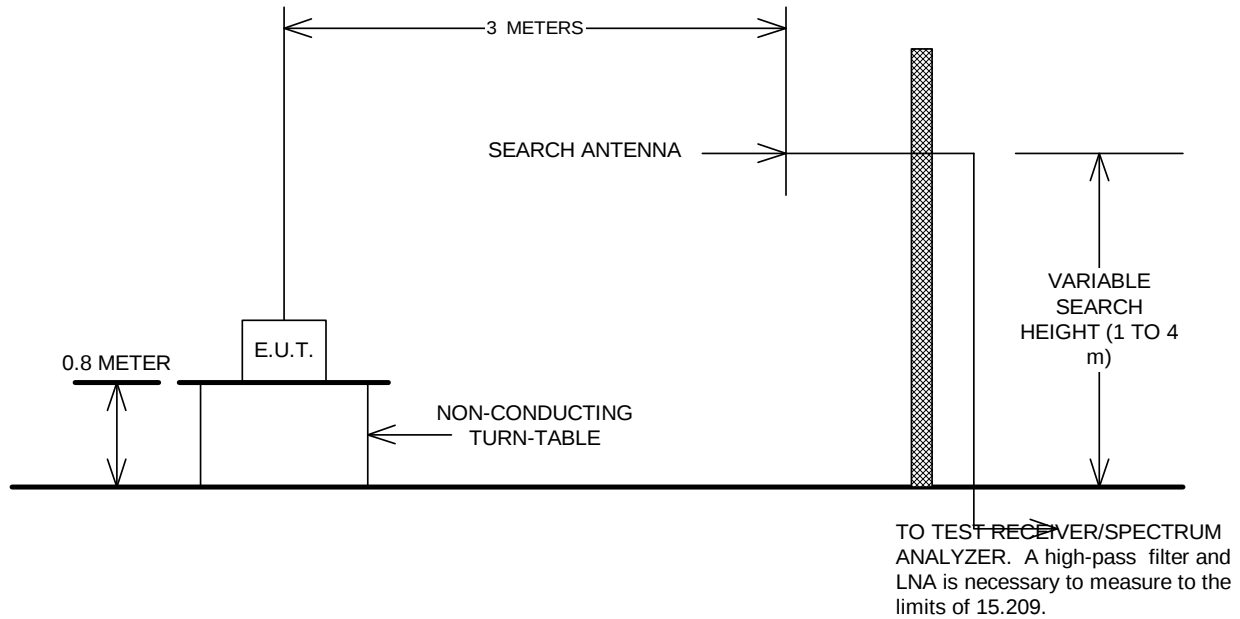
Number of channels tested:

Tuning Range	Number Of Channels Tested	Channel Location In Band
1 MHz or Less	1	Middle
1 to 10 MHz	2	Top And Bottom
More Than 10 MHz	3	Top, Middle, Bottom

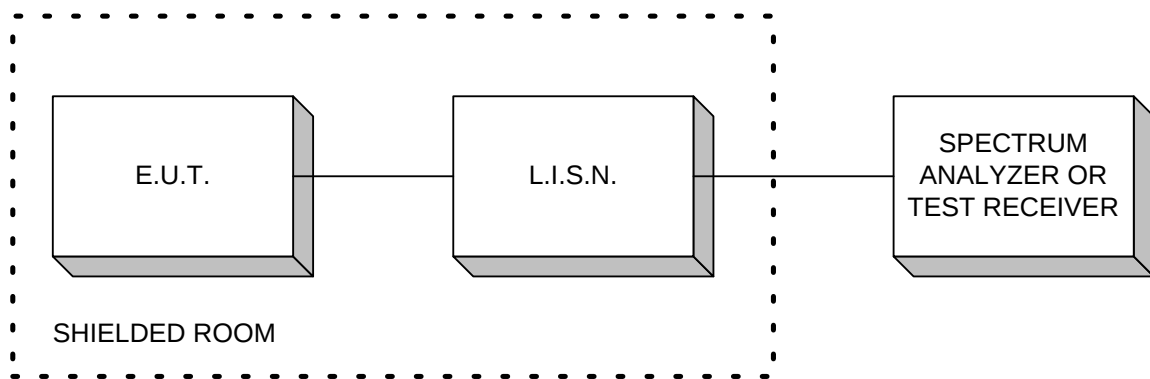
ANNEX B - TEST DIAGRAMS

EQUIPMENT: MVP-9000i

Test Site For Radiated Emissions

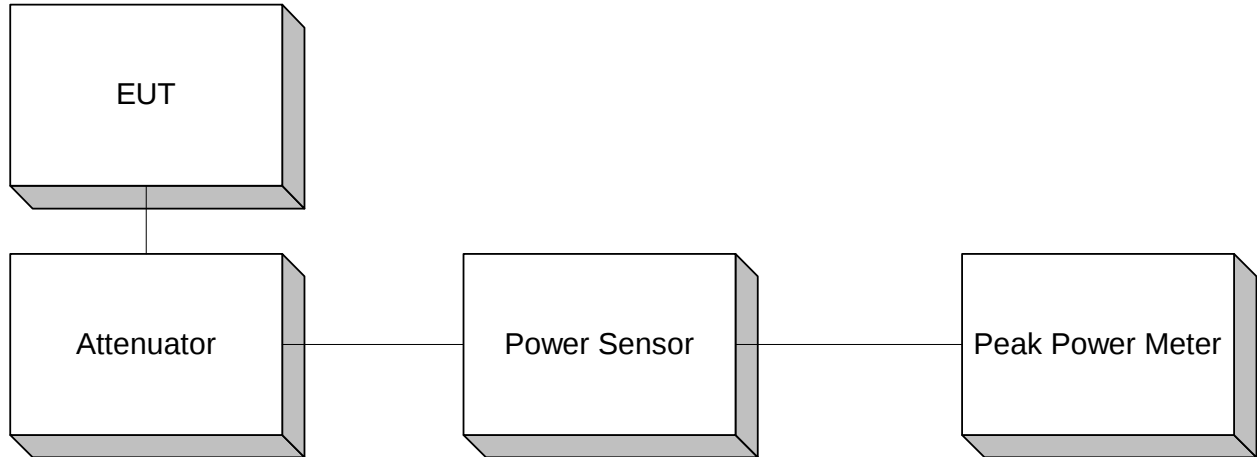


Conducted Emissions



EQUIPMENT: MVP-9000i

Peak Power At Antenna Terminals



Note: A spectrum analyzer may be substituted for Peak Power Meter given that the measurement bandwidth is sufficient to capture the 60 dB bandwidth of the transmitter.

**Minimum 6 dB Bandwidth
Peak Power Spectral Density
Spurious Emissions (conducted)**

