



**FCC 47 CFR PART 15 SUBPART C  
(Class II Permissive Change)**

**TEST REPORT**

**For**

**Compact HD (11N) Wireless Network Camera**

**Model: RC8221xxxxx(x= 0~9, A~Z, Blank or any Character), ISEE-HDWLN**

**Trade Name: SerComm**

*Issued to*

**SerComm Corporation  
8F, No. 3-1, YuanQu St., NanKang,  
Taipei 115, Taiwan, R.O.C.**

*Issued by*

**Compliance Certification Services Inc.  
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Issued Date: September 29, 2011**



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**Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	January 25, 2011	Initial Issue	ALL	Jessica Ho
01	September 19, 2011	Added one set of antenna	5	Jessica Ho
01	September 19, 2011	Modified the model name	1, 4, 5	Jessica Ho
02	September 28, 2011	Added peak power section and radio frequency exposure section.	9, 14-15, 50-52	Jessica Ho
03	September 29, 2011	Re-tested peak power and modified radio frequency exposure section.	4, 14-15, 50-52	Jessica Ho

*Note: Rev. (01):*

- 1. Applicant add one set of antenna (Please refer to have \*\* mark items.)*
- 2. Tested the radiation & band edges.*
- 3. Modified the model name.*
- 4. Added one power adapter (Please refer to have \*\* mark items.)*
- 5. Other information, please refer to the T101027204 and this test report.*



## TABLE OF CONTENTS

<b>1. TEST RESULT CERTIFICATION.....</b>	<b>4</b>
<b>2. EUT DESCRIPTION .....</b>	<b>5</b>
<b>3. TEST METHODOLOGY .....</b>	<b>6</b>
3.1 EUT CONFIGURATION .....	6
3.2 EUT EXERCISE.....	6
3.3 GENERAL TEST PROCEDURES.....	6
3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS.....	7
3.5 DESCRIPTION OF TEST MODES .....	8
<b>4. INSTRUMENT CALIBRATION.....</b>	<b>9</b>
4.1 MEASURING INSTRUMENT CALIBRATION .....	9
4.2 MEASUREMENT EQUIPMENT USED .....	9
4.3 MEASUREMENT UNCERTAINTY .....	10
<b>5. FACILITIES AND ACCREDITATIONS .....</b>	<b>11</b>
5.1 FACILITIES .....	11
5.2 EQUIPMENT.....	11
5.3 TABLE OF ACCREDITATIONS AND LISTINGS.....	12
<b>6. SETUP OF EQUIPMENT UNDER TEST .....</b>	<b>13</b>
6.1 SETUP CONFIGURATION OF EUT.....	13
6.2 SUPPORT EQUIPMENT .....	13
<b>7. FCC PART 15.247 REQUIREMENTS.....</b>	<b>14</b>
7.1 PEAK POWER.....	14
7.2 BAND EDGES MEASUREMENT .....	16
7.3 RADIATED EMISSIONS .....	33
<b>APPENDIX I RADIO FREQUENCY EXPOSURE.....</b>	<b>50</b>
<b>APPENDIX II PHOTOGRAPHS OF TEST SETUP.....</b>	<b>53</b>
<b>APPENDIX 1 - PHOTOGRAPHS OF EUT</b>	



## 1. TEST RESULT CERTIFICATION

**Applicant:** SerComm Corporation  
8F, No. 3-1, YuanQu St., NanKang,  
Taipei 115, Taiwan, R.O.C.

**Equipment Under Test:** Compact HD (11N) Wireless Network Camera

**Trade Name:** SerComm

**Model Number:** RC8221xxxxx(x= 0~9, A~Z, Blank or any Character),  
ISEE-HDWLN

**Date of Test:** September 8 ~ 29, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Rex Lai  
Section Manager  
Compliance Certification Services Inc.

Reviewed by:

Gina Lo  
Section Manager  
Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	Compact HD (11N) Wireless Network Camera
<b>Trade Name</b>	SerComm
<b>Model Number</b>	RC8221xxxxx(x= 0~9, A~Z, Blank or any Character), ISEE-HDWLN
<b>Model Discrepancy</b>	All the specification and layout are identical except they come with different model numbers for marketing purposes.
<b>Power Adapter</b>	1. Sunny / Model: SYS1381-1212-W2 I/P: 100-240V, 50-60Hz, 0.5A O/P: 12V, 1.0A *2. Leader / Model: MU12-G120100-A1 I/P: 100-240V, 50-60Hz, 0.5A O/P: 12V, 1.0A
<b>Frequency Range</b>	2412 ~ 2462 MHz
<b>Original Transmit Power</b>	IEEE 802.11b mode: 17.01 dBm IEEE 802.11g mode: 23.75 dBm IEEE 802.11n HT 20 MHz mode: 27.53dBm IEEE 802.11n HT 40 MHz mode: 25.79 dBm
<b>Modulation Technique</b>	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) IEEE 802.11n HT 20 MHz mode: OFDM (6.5, 13, 19.5, 26, 39, 52, 58.5, 65.0, 78, 104, 117, 130 Mbps) IEEE 802.11n HT 40 MHz mode: OFDM (13.5, 27, 40.5, 54, 81, 108, 121.5, 135, 162, 216, 243, 270 Mbps)
<b>Number of Channels</b>	IEEE 802.11b/g mode: 11 Channels IEEE 802.11n HT 20 MHz mode: 11 Channels IEEE 802.11n HT 40 MHz mode: 7 Channels
<b>Antenna Specification</b>	Approved Antenna: Print Antenna: Antenna 1: 3.81 dBi Antenna 2: 1.74 dBi $Total\ ANT = 10 * \log(((10^{(3.81/20)} + 10^{(1.74/20)})^2) / 2) = 5.85$ *New antenna: PCB Antenna / Gain: 2.15 dBi
<b>Class II Permissive Change</b>	1. Added one set of antenna, please see "" in this report, for detail descriptions, please refers to the antenna specification. 2. Added one power adapter, please see "" in this report, please refer to the external photos for reference.

**Remark:**

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **P27-RC8221** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



### **3. TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



### 3.4 FCC PART 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
<sup>1</sup> 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 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> 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.



### 3.5 DESCRIPTION OF TEST MODES

The EUT (model: RC8221) comes with two types of power adapter for sale. After the preliminary test, the EUT with adapter (Model: SYS1381-1212-W2) was found to emit the worst emissions and therefore had been tested under operating condition.

The EUT is a 2x2 configuration spatial MIMO (2Tx & 2Rx) without beam forming function that operate in double TX chains and double RX chains. The 2x2 configuration is implemented with two outside TX & RX chains (Chain 0 and 1).

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz which worst case was in normal link mode only.

#### **IEEE 802.11b mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

#### **IEEE 802.11g mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

#### **IEEE 802.11n HT 20 MHz mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

#### **IEEE 802.11n HT 40 MHz mode:**

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.





## 4. INSTRUMENT CALIBRATION

### 4.1 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.

### 4.2 MEASUREMENT EQUIPMENT USED

#### Equipment Used for Emissions Measurement

**Remark:** Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1012009	04/27/2012
Power Sensor	Anritsu	MA2411B	0917072	04/27/2012

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	11/03/2011
EMI Test Receiver	R&S	ESCI	100064	02/03/2012
Pre-Amplifier	Mini-Circuits	ZFL-1000LN	SF350700823	01/12/2012
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/19/2011
Bilog Antenna	Sunol Sciences	JB3	A030105	10/06/2011
Horn Antenna	EMCO	3117	00055165	01/12/2012
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/26/2011
Test S/W	EZ-EMC (CCS-3A1RE)			



### 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0606
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9979
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5790
3M Semi Anechoic Chamber / 8G~18G	+/- 2.5928
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7212
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9520

**Remark:** This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .



## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wu-Gong 6th Rd., Wugu Industrial Park, New Taipei City 248, Taiwan (R.O.C.)

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.139, Wugong Rd., Wugu Industrial Park, New Taipei City 248, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.



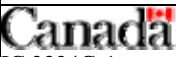
Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



### 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	 Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

### 6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Notebook PC (Remote)	HP	dv6-1332TX	CNF9491GLJ	PD9112BNHU	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

**Remark:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



## 7. FCC PART 15.247 REQUIREMENTS

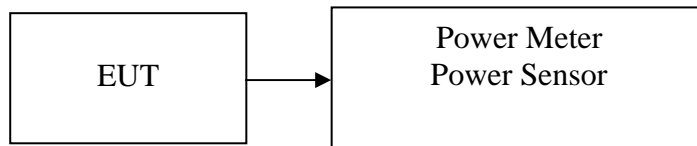
### 7.1 PEAK POWER

#### LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Test Configuration



#### TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the peak power detection.

**Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	17.1	0.0513	1.00	PASS
Mid	2437	13.36	0.0217		PASS
High	2462	15.62	0.0365		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	23.68	0.2333	1.00	PASS
Mid	2437	20.62	0.1153		PASS
High	2462	19.26	0.0843		PASS

**Test mode: IEEE 802.11n HT 20 MHz mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	23.65	25.02	27.40	0.5495	1.00	PASS
Mid	2437	19.82	24.63	25.87	0.3864		PASS
High	2462	17.83	23.61	24.63	0.2904		PASS

**Test mode: IEEE 802.11n HT 40 MHz mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	17.93	22.42	23.74	0.2366	1.00	PASS
Mid	2437	20.42	24.09	25.64	0.3664		PASS
High	2452	17.34	21.7	23.06	0.2023		PASS

**Remark:** Total Output Power (w) = Chain 0 ( $10^{(\text{Output Power}/10)/1000}$ ) + Chain 1 ( $10^{(\text{Output Power}/10)/1000}$ )

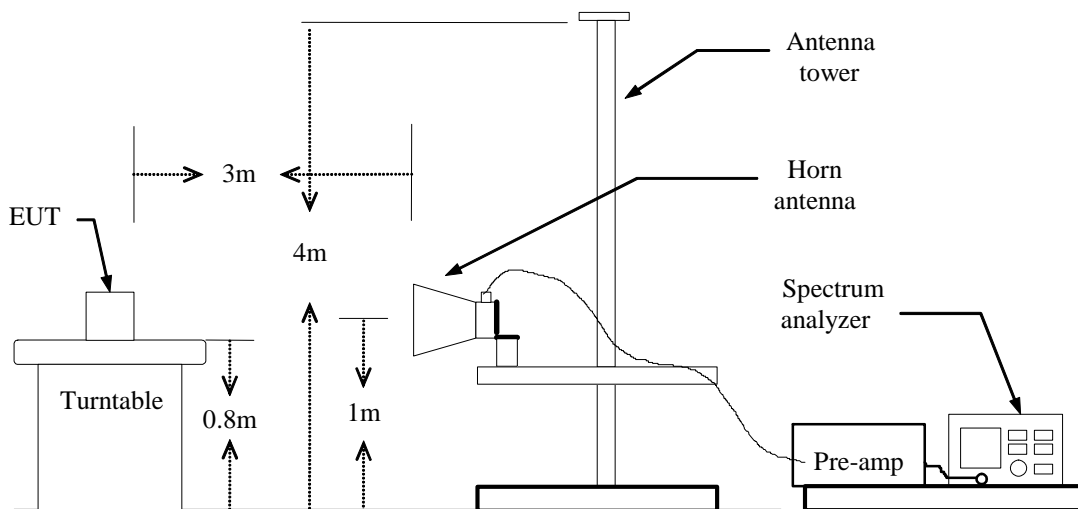


## 7.2 BAND EDGES MEASUREMENT

### LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

### Test Configuration



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

### TEST RESULTS

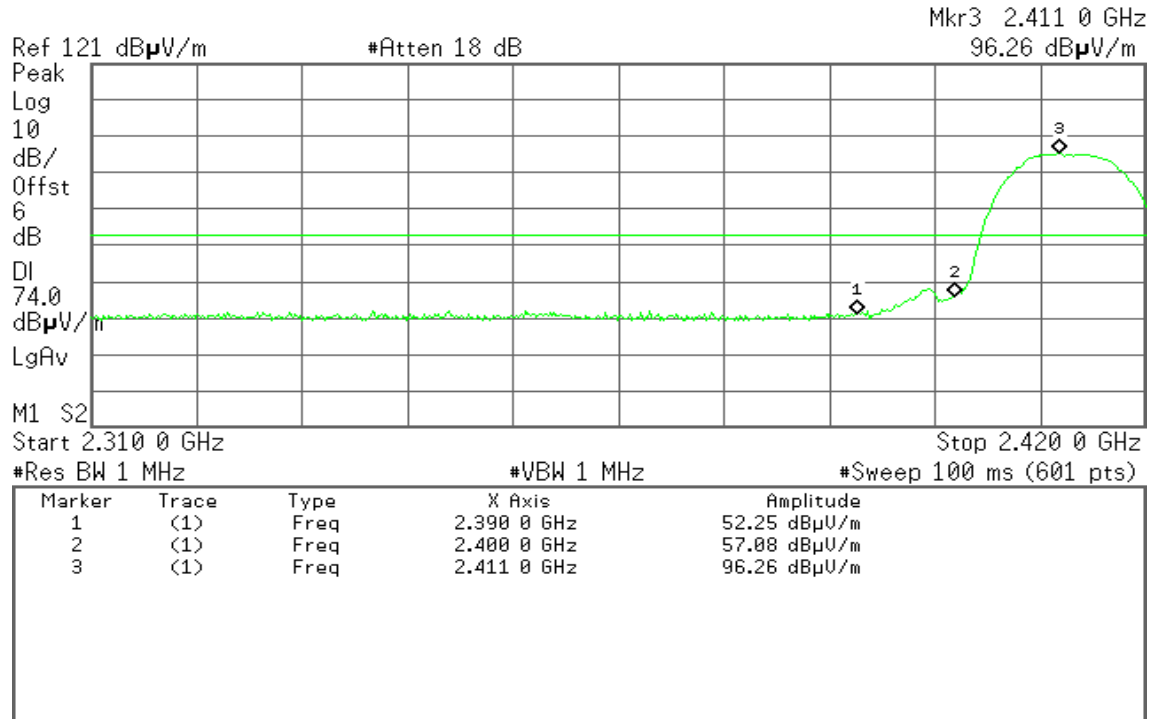
Refer to attach spectrum analyzer data chart.



**Band Edges (IEEE 802.11b mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

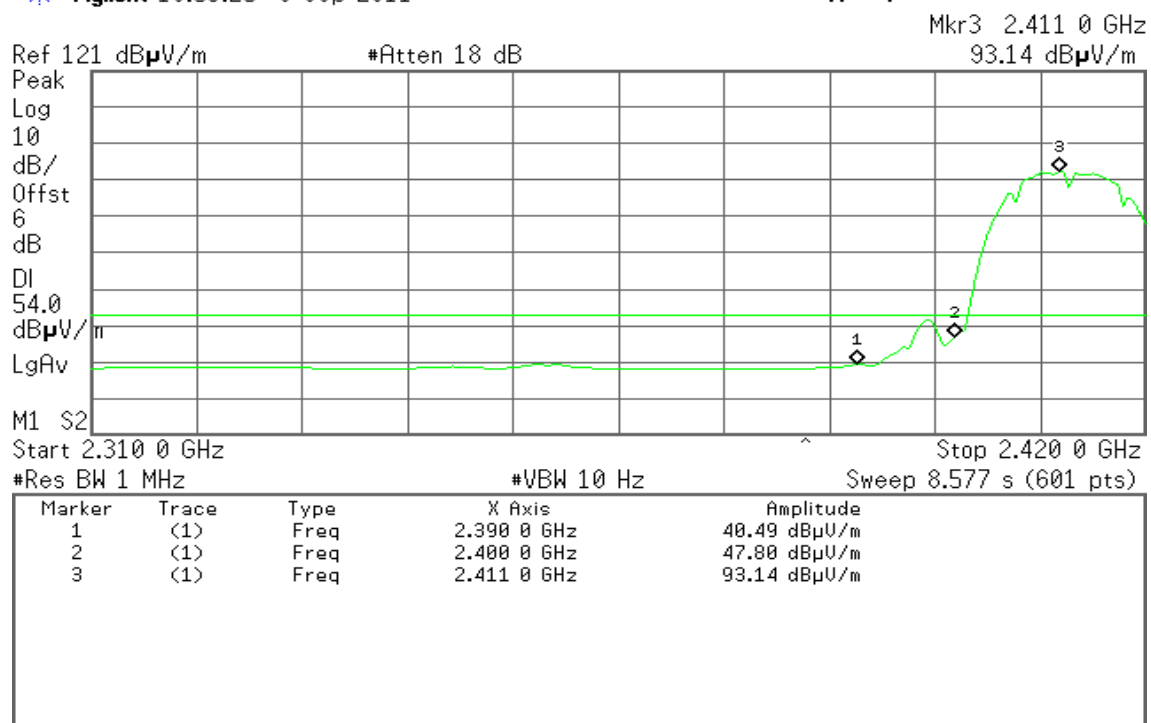
\* Agilent 10:52:59 8 Sep 2011

R T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 10:53:25 8 Sep 2011

R T



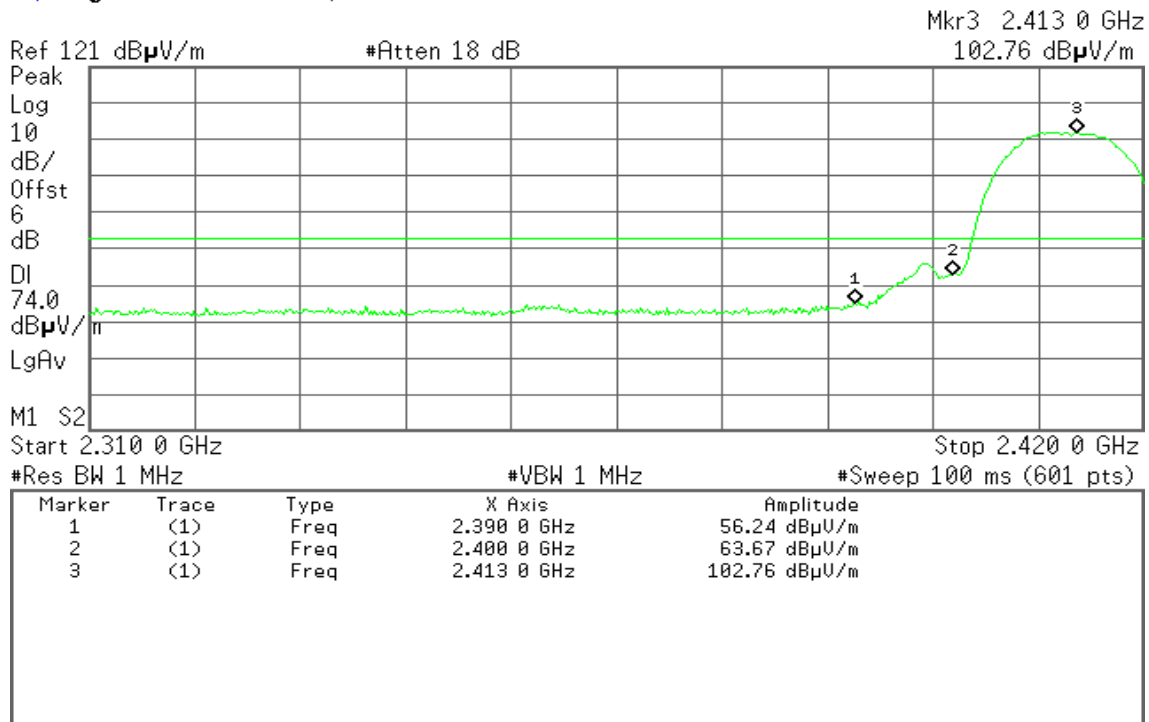


## Detector mode: Peak

## Polarity: Horizontal

\* Agilent 10:48:45 8 Sep 2011

R T

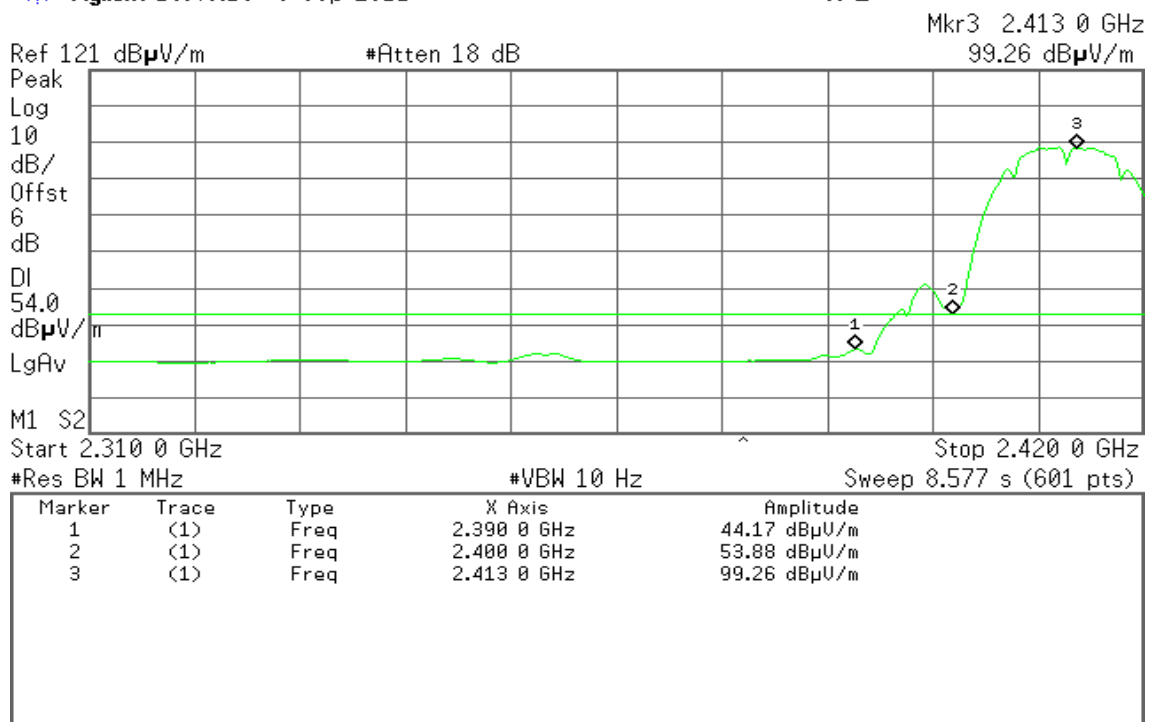


## Detector mode: Average

## Polarity: Horizontal

\* Agilent 10:49:10 8 Sep 2011

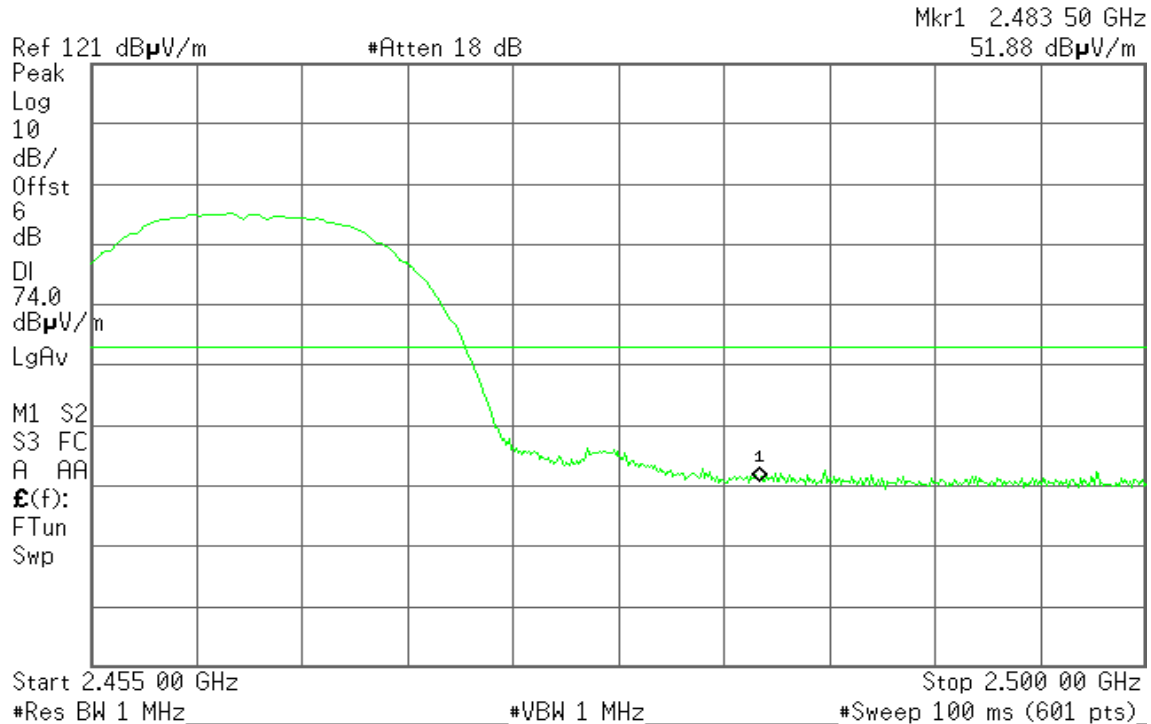
R L



**Band Edges (IEEE 802.11b mode / CH High)****Detector mode: Peak****Polarity: Vertical**

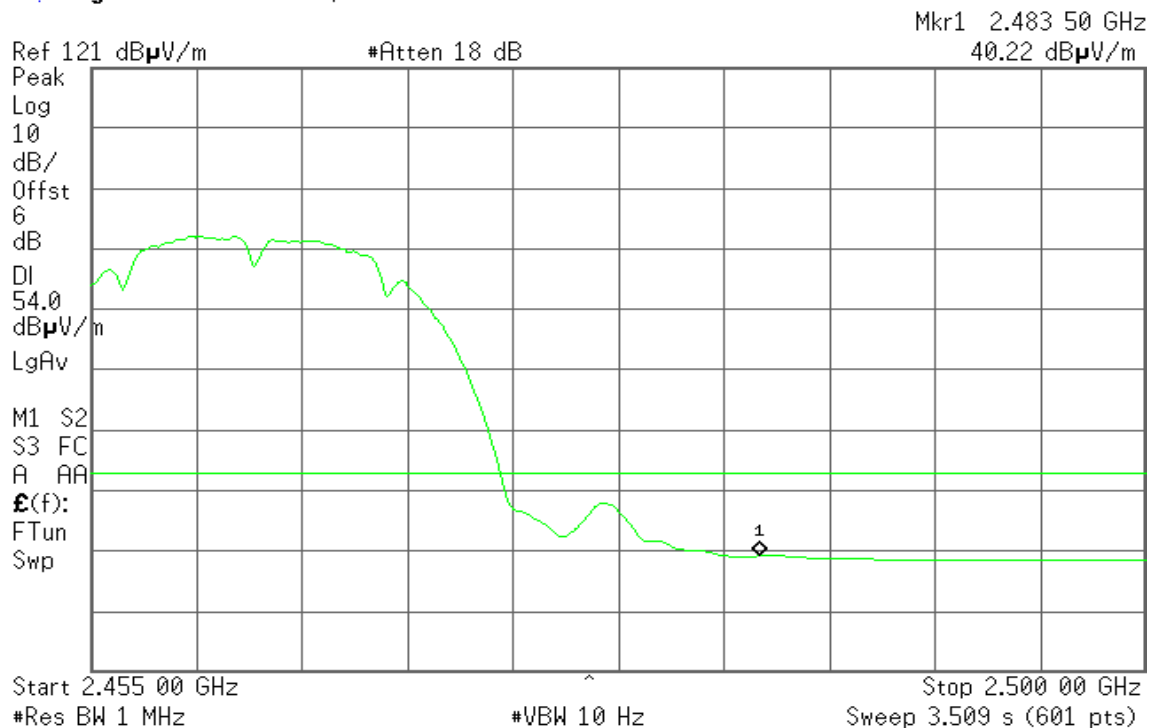
\* Agilent 11:21:20 8 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 11:21:38 8 Sep 2011

T



**Detector mode: Peak****Polarity: Horizontal**

\* Agilent 11:15:23 8 Sep 2011

R T

Mkr1 2.483 50 GHz

55.04 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

74.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

**Detector mode: Average****Polarity: Horizontal**

\* Agilent 11:15:44 8 Sep 2011

R T

Mkr1 2.483 50 GHz

43.19 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

54.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

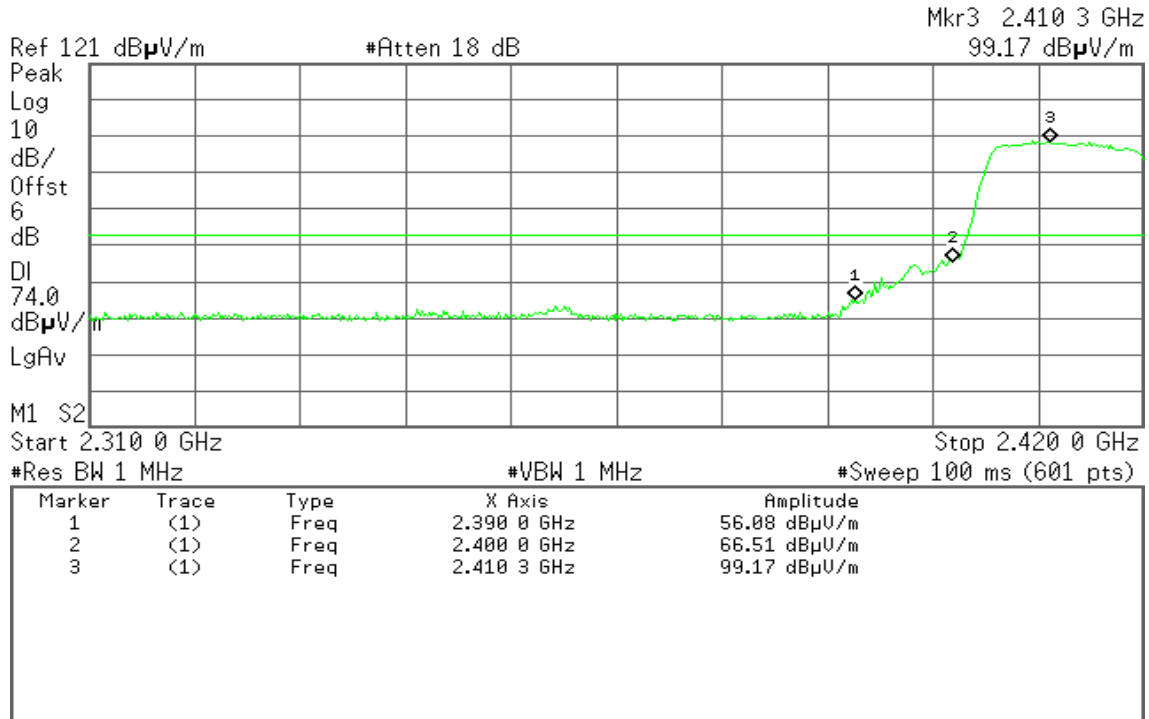
Stop 2.500 00 GHz

Sweep 3.509 s (601 pts)

**Band Edges (IEEE 802.11g mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

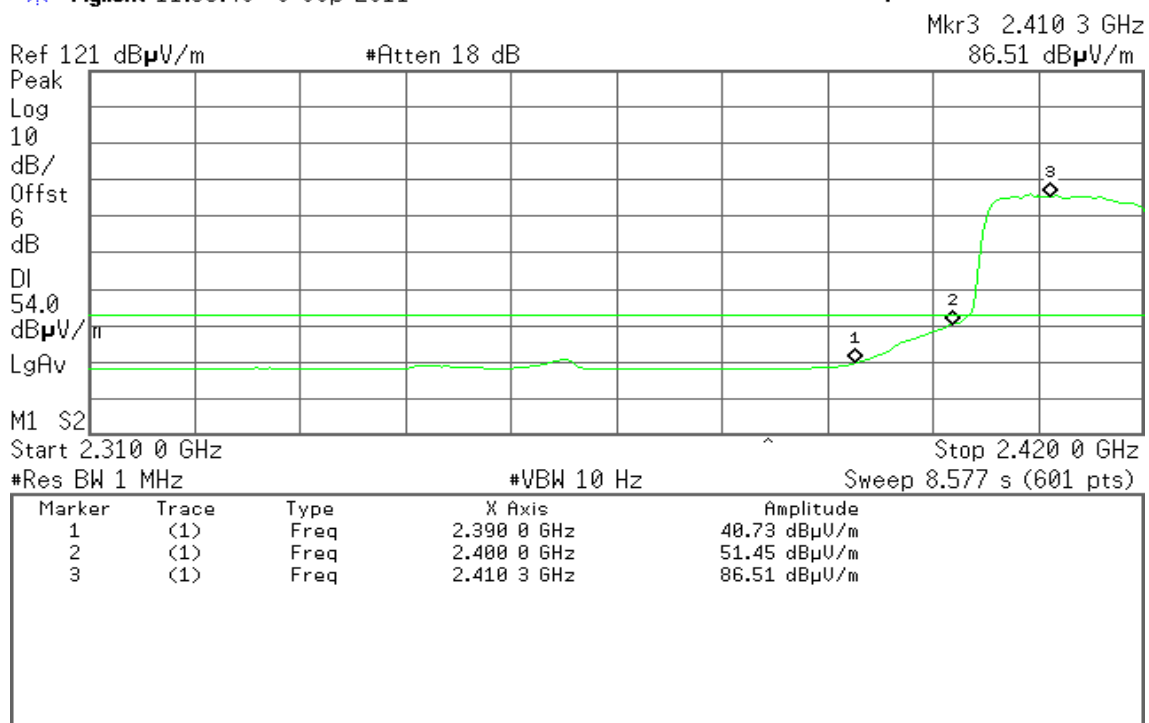
\* Agilent 11:33:25 8 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 11:33:49 8 Sep 2011

T



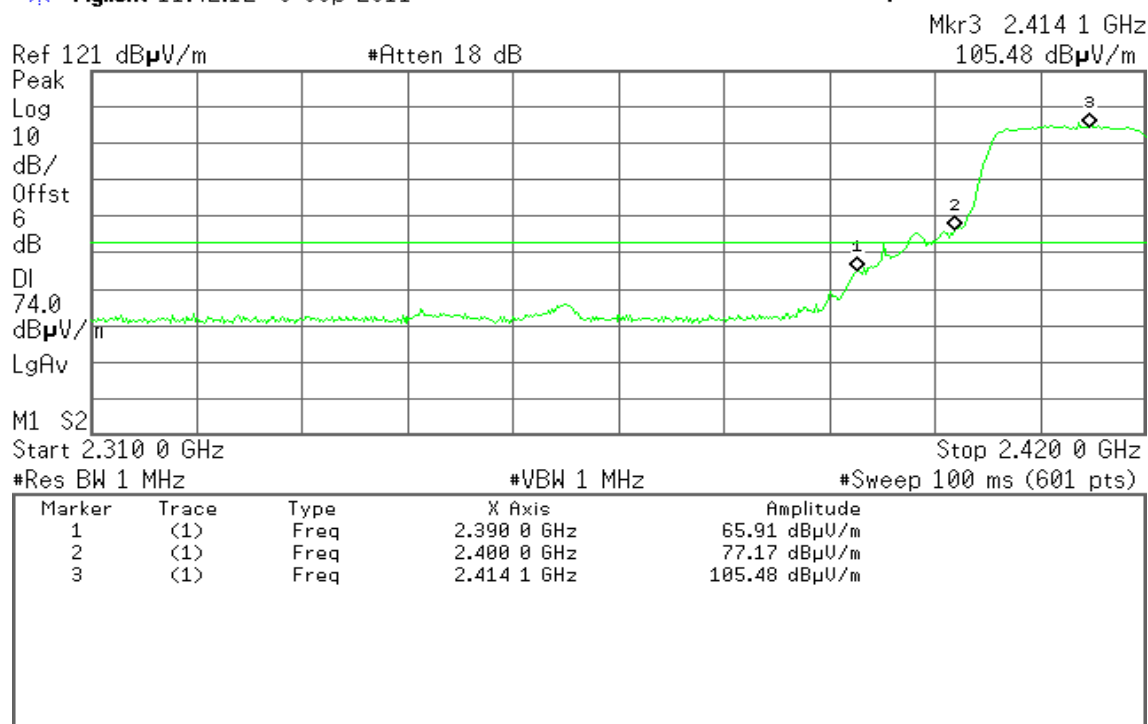


## Detector mode: Peak

## Polarity: Horizontal

\* Agilent 11:42:12 8 Sep 2011

T

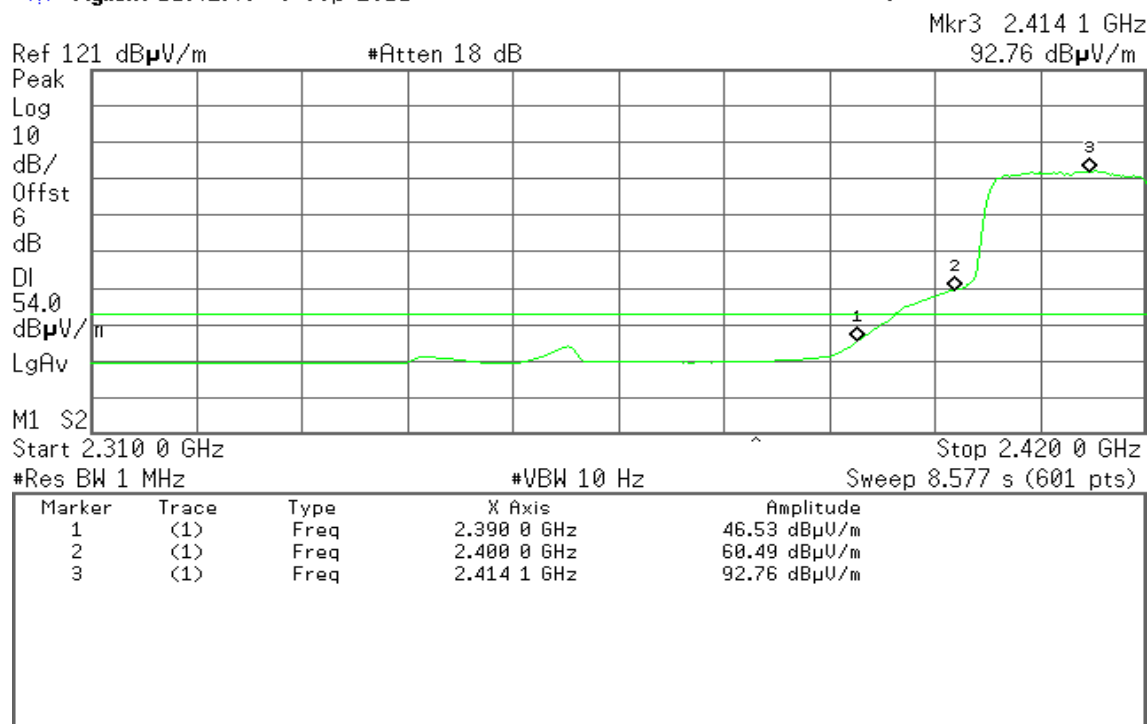


## Detector mode: Average

## Polarity: Horizontal

\* Agilent 11:42:46 8 Sep 2011

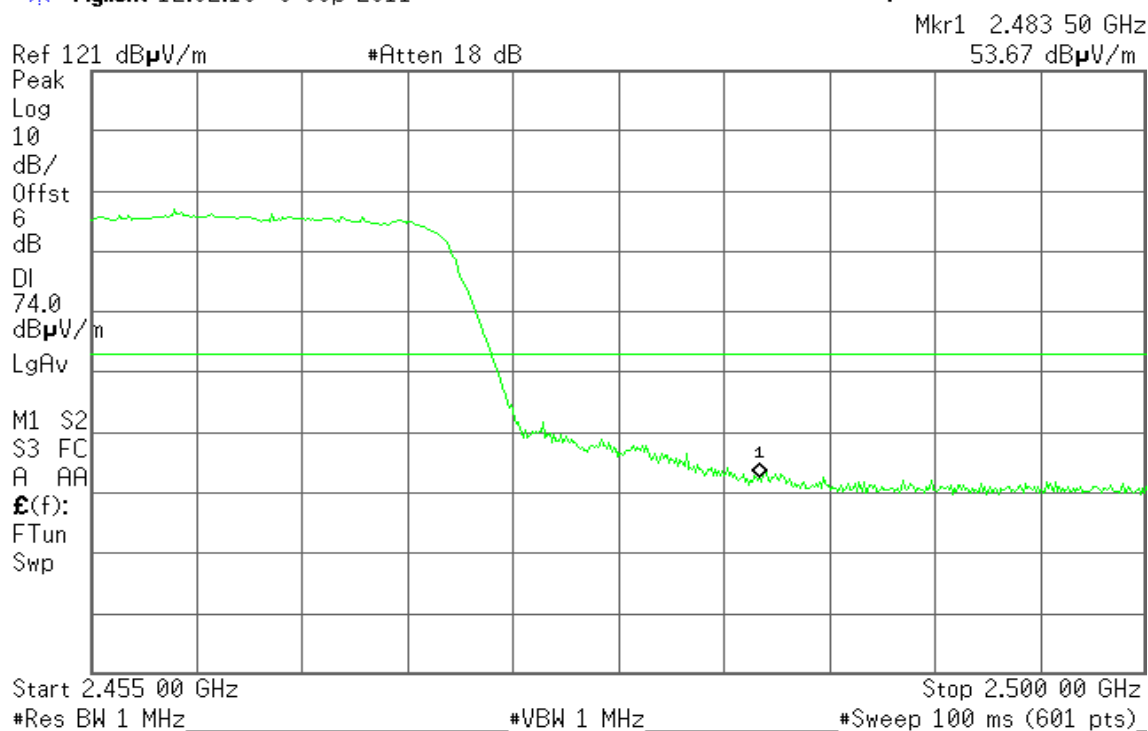
T



**Band Edges (IEEE 802.11g mode / CH High)****Detector mode: Peak****Polarity: Vertical**

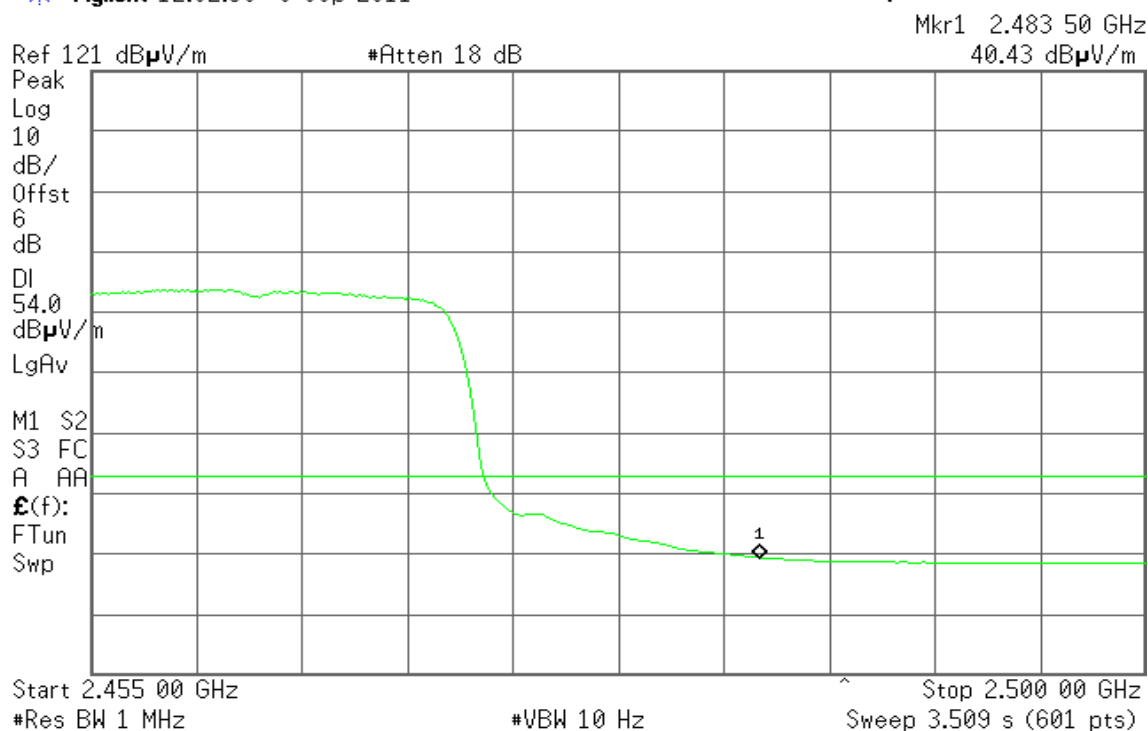
Agilent 12:02:18 8 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

Agilent 12:02:36 8 Sep 2011

T





## Detector mode: Peak

## Polarity: Horizontal

\* Agilent 13:09:35 8 Sep 2011

T

Mkr1 2.483 50 GHz

61.12 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

74.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

## Detector mode: Average

## Polarity: Horizontal

\* Agilent 13:09:55 8 Sep 2011

T

Mkr1 2.483 50 GHz

44.57 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

54.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

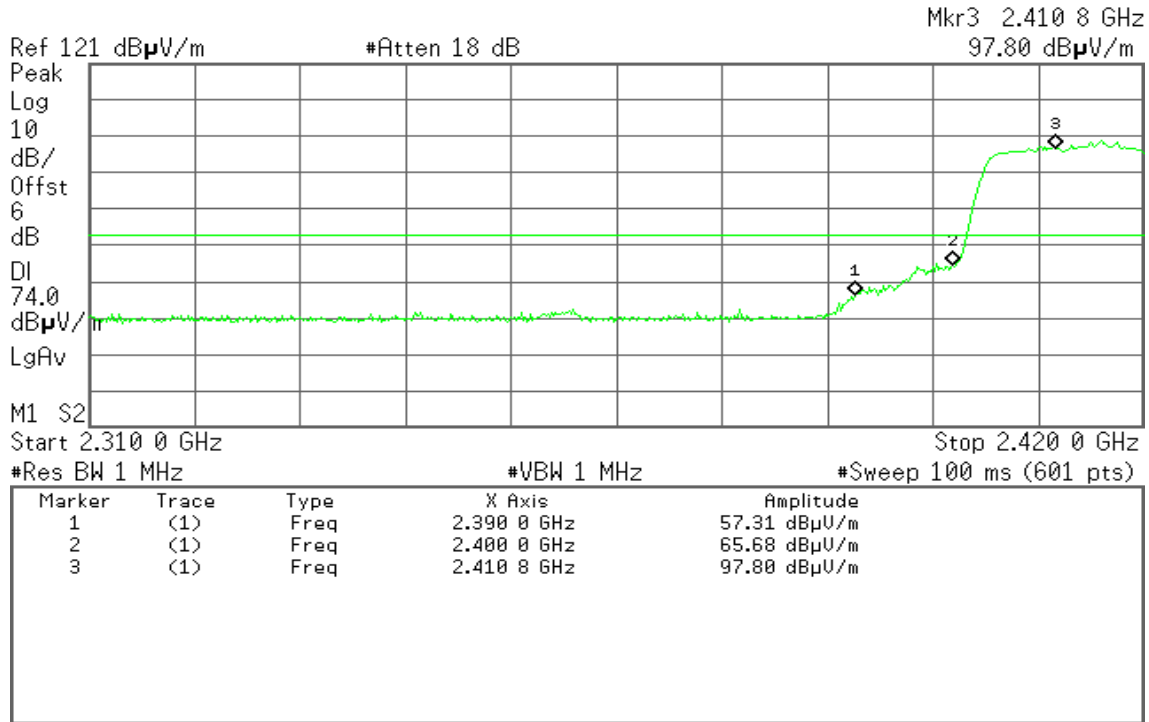
Sweep 3.509 s (601 pts)



**Band Edges (IEEE 802.11n HT 20 MHz mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

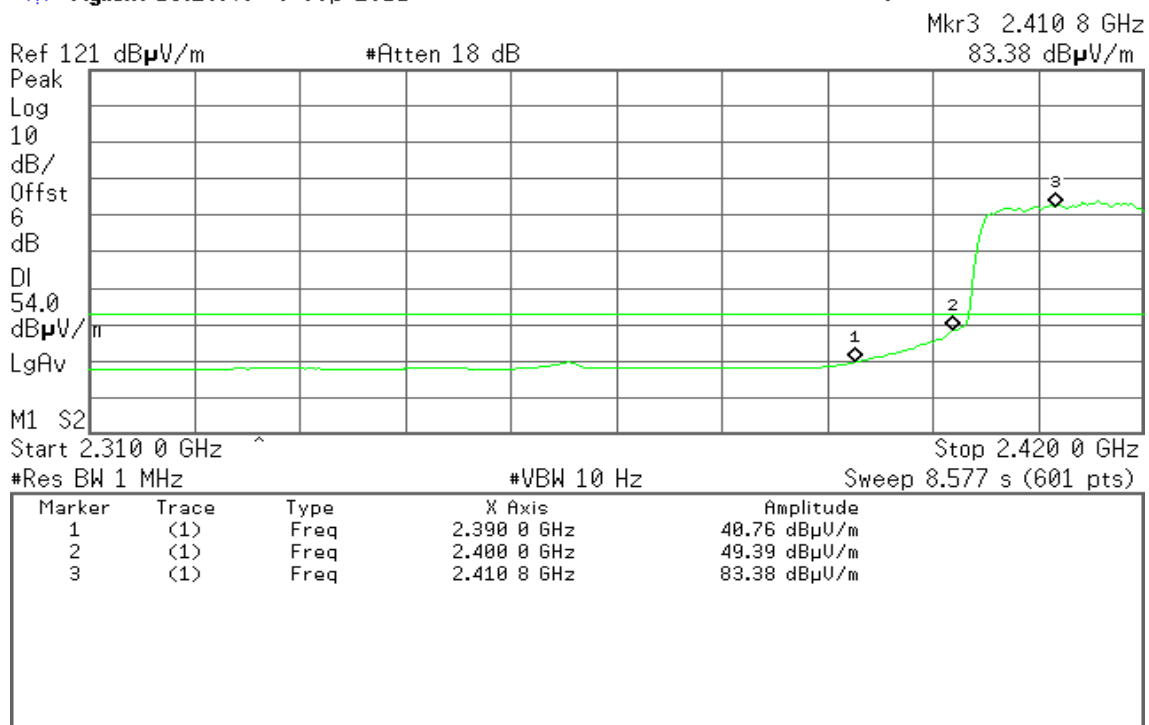
\* Agilent 13:28:18 8 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 13:28:49 8 Sep 2011

T



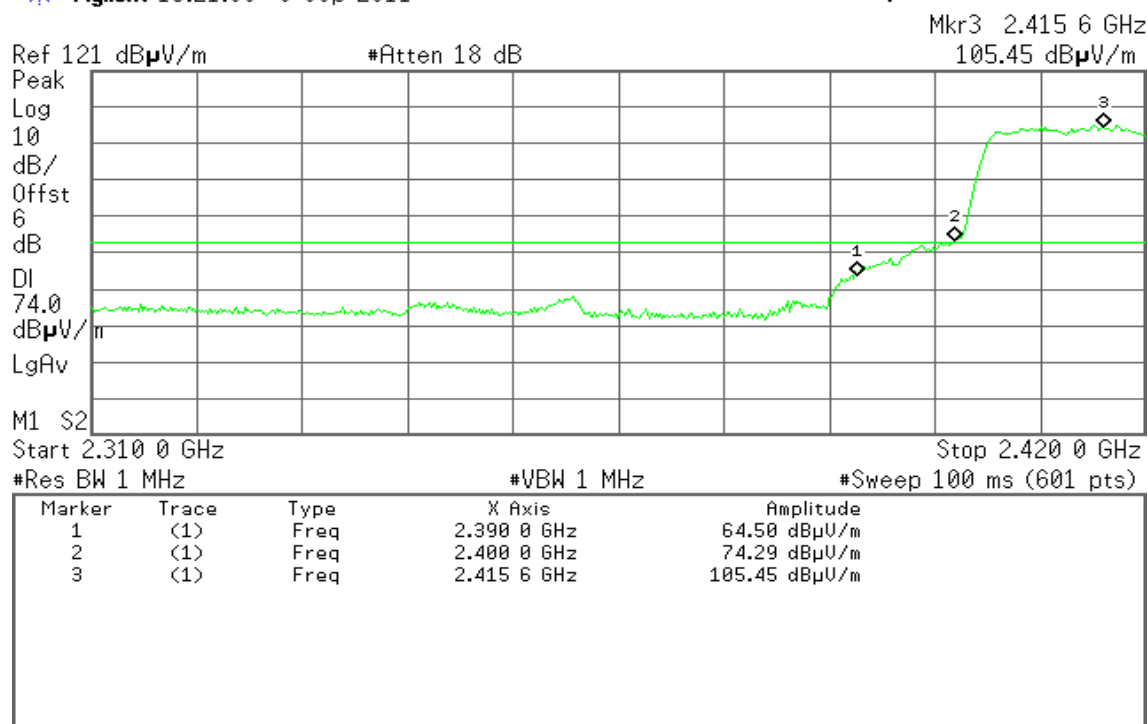


## Detector mode: Peak

## Polarity: Horizontal

\* Agilent 13:21:09 8 Sep 2011

T

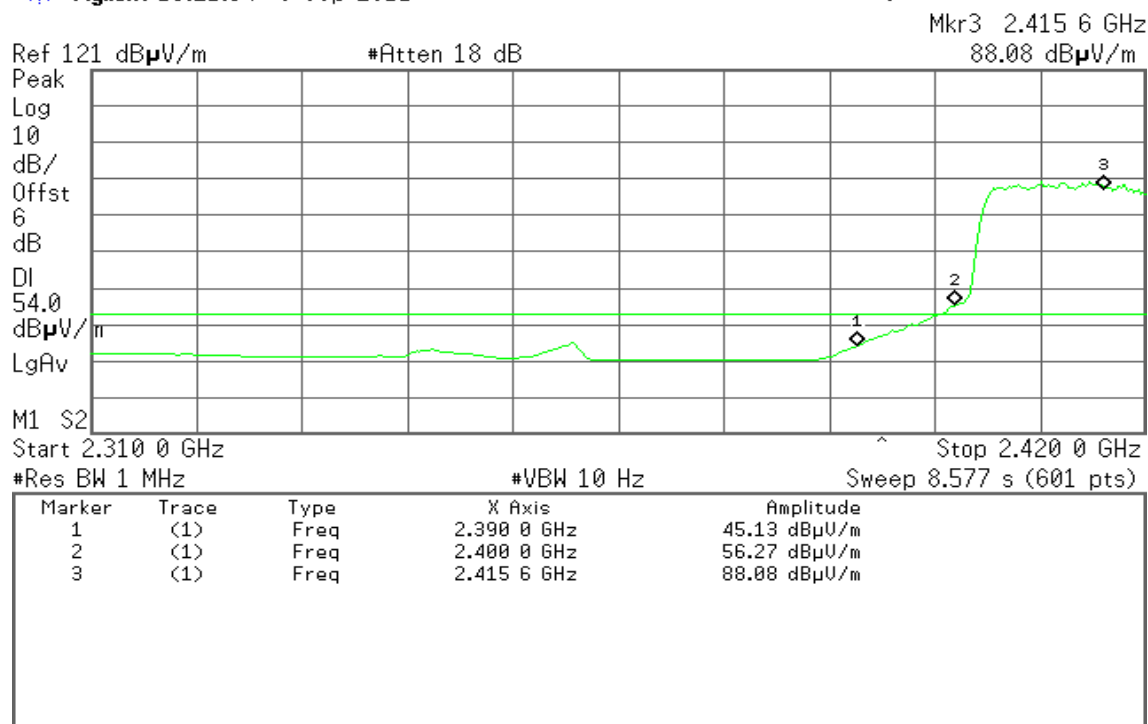


## Detector mode: Average

## Polarity: Horizontal

\* Agilent 13:21:34 8 Sep 2011

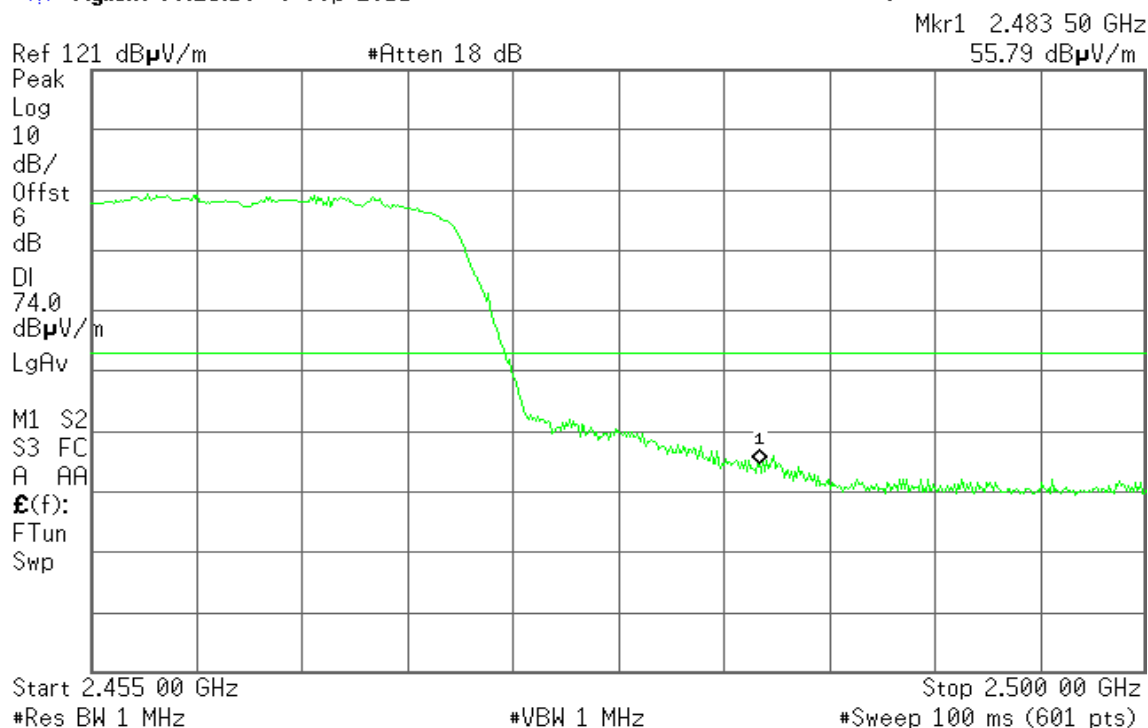
T



**Band Edges (IEEE 802.11n HT 20 MHz mode / CH High)****Detector mode: Peak****Polarity: Vertical**

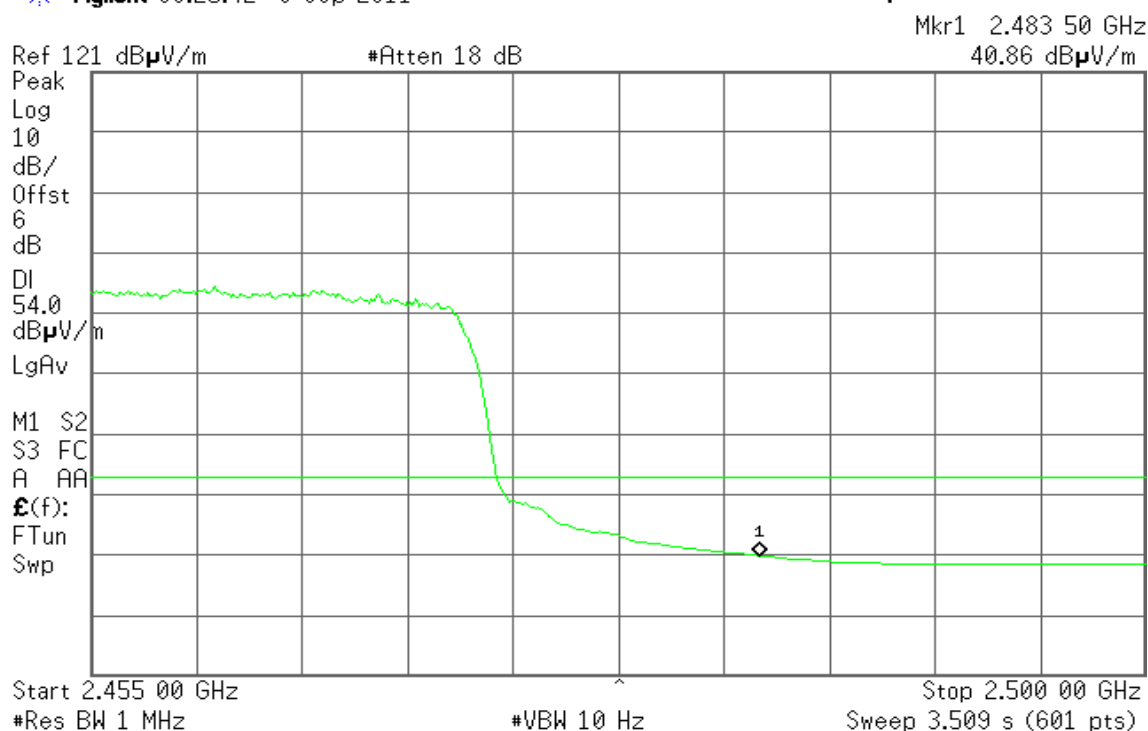
\* Agilent 09:25:10 9 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 09:25:42 9 Sep 2011

T



**Detector mode: Peak****Polarity: Horizontal**

\* Agilent 09:17:03 9 Sep 2011

R T

Mkr1 2.483 50 GHz

55.57 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

74.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

**Detector mode: Average****Polarity: Horizontal**

\* Agilent 09:17:37 9 Sep 2011

R T

Mkr1 2.483 50 GHz

40.37 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

54.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.455 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

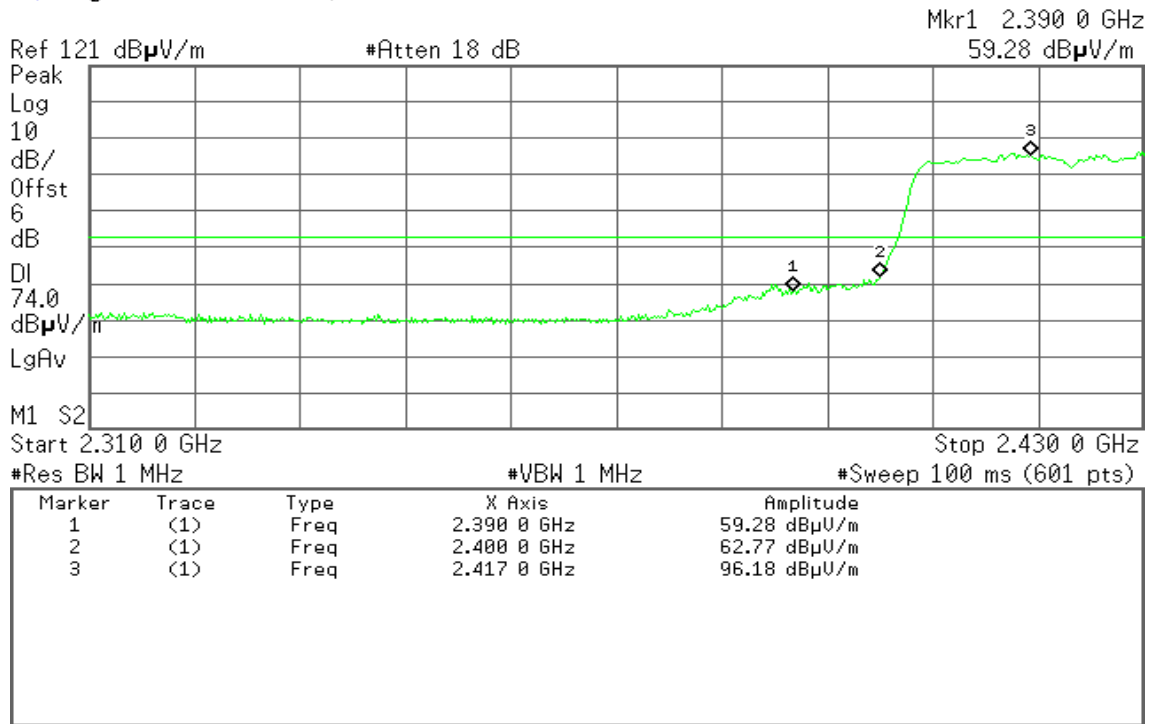
Stop 2.500 00 GHz

Sweep 3.509 s (601 pts)

**Band Edges (IEEE 802.11n HT 40 MHz mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

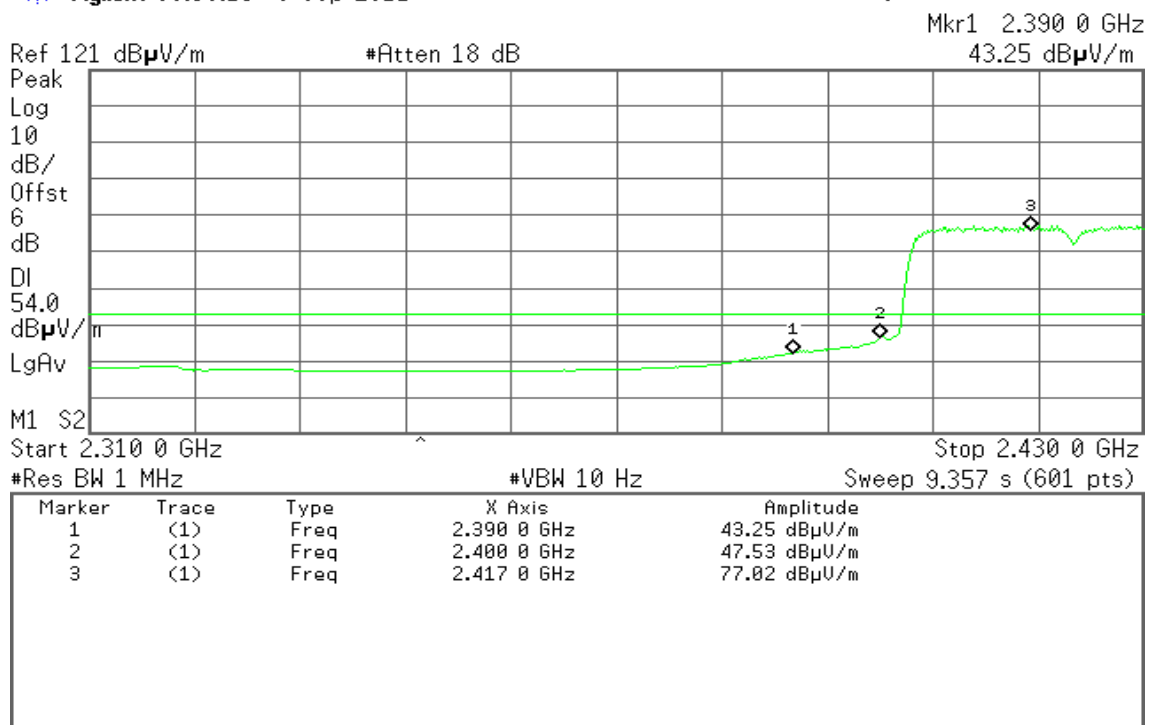
\* Agilent 09:36:53 9 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 09:39:13 9 Sep 2011

T



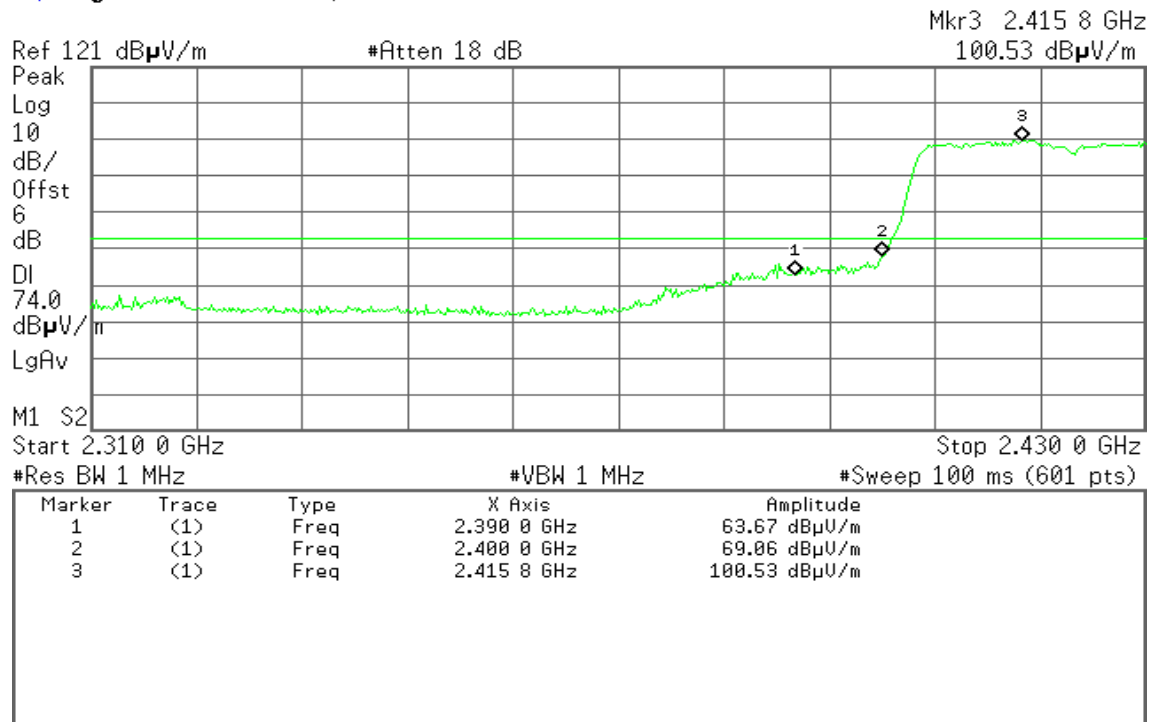


## Detector mode: Peak

## Polarity: Horizontal

\* Agilent 09:48:41 9 Sep 2011

T

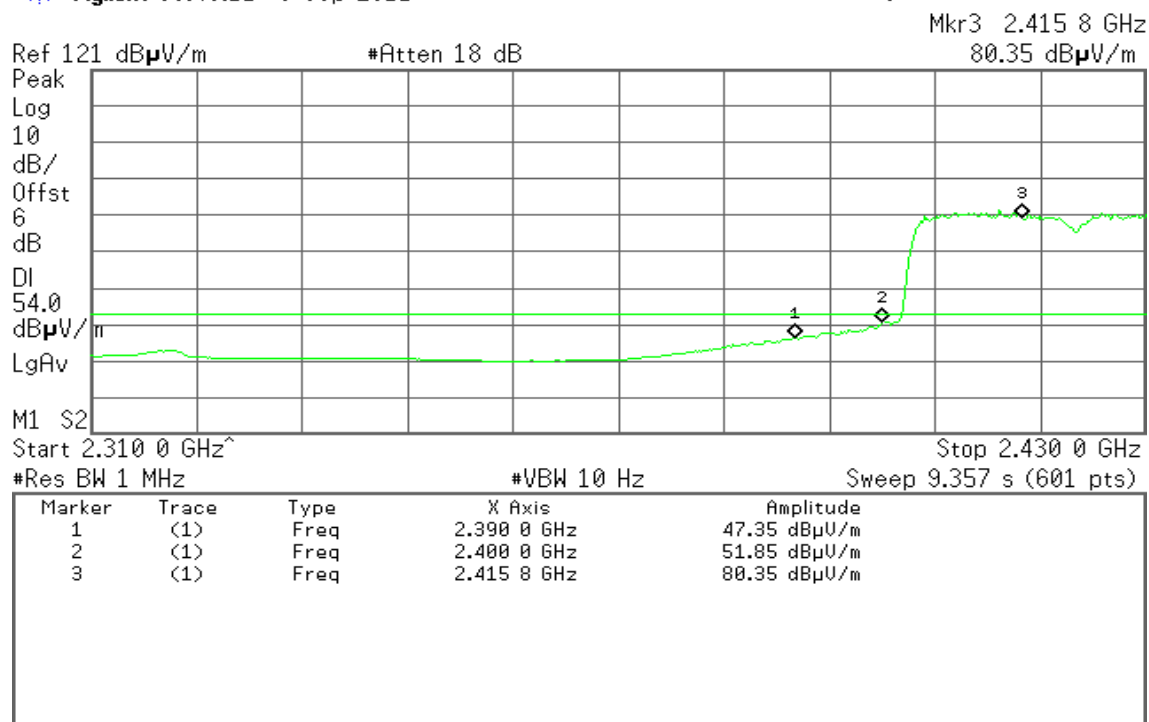


## Detector mode: Average

## Polarity: Horizontal

\* Agilent 09:49:11 9 Sep 2011

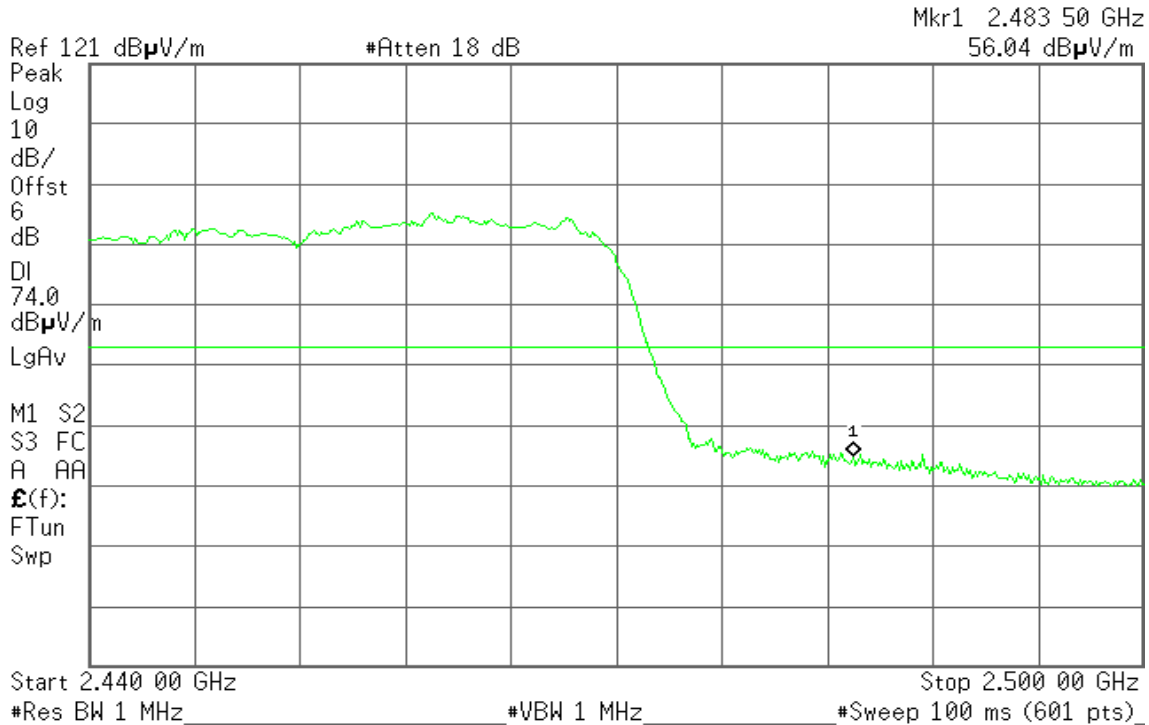
T



**Band Edges (IEEE 802.11n HT 40 MHz mode / CH High)****Detector mode: Peak****Polarity: Vertical**

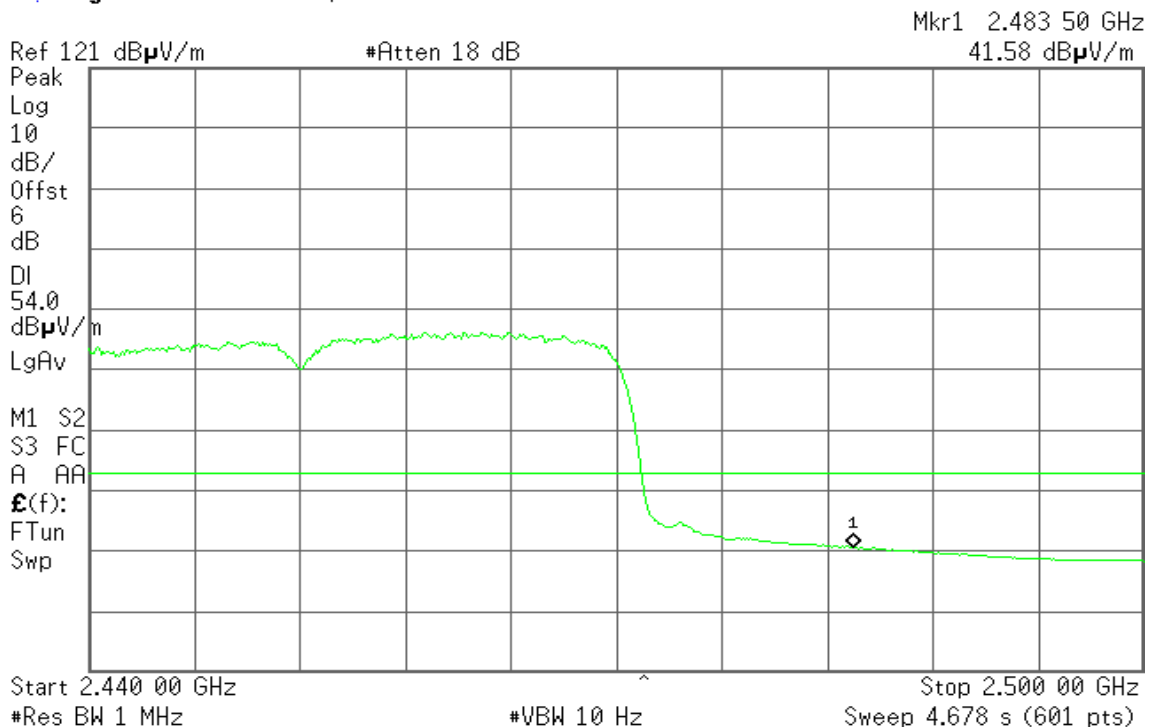
\* Agilent 10:14:13 9 Sep 2011

T

**Detector mode: Average****Polarity: Vertical**

\* Agilent 10:14:35 9 Sep 2011

T



**Detector mode: Peak****Polarity: Horizontal**

\* Agilent 10:23:42 9 Sep 2011

T

Mkr1 2.483 50 GHz

60.73 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

74.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.440 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

**Detector mode: Average****Polarity: Horizontal**

\* Agilent 10:24:07 9 Sep 2011

T

Mkr1 2.483 50 GHz

45.63 dB $\mu$ V/mRef 121 dB $\mu$ V/m

#Atten 18 dB

Peak

Log

10

dB/

Offst

6

dB

DI

54.0

dB $\mu$ V/m

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.440 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 4.678 s (601 pts)





## 7.3 RADIATED EMISSIONS

### LIMIT

1. According to §15.209(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 ( $\mu\text{V/m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**Remark:** 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.

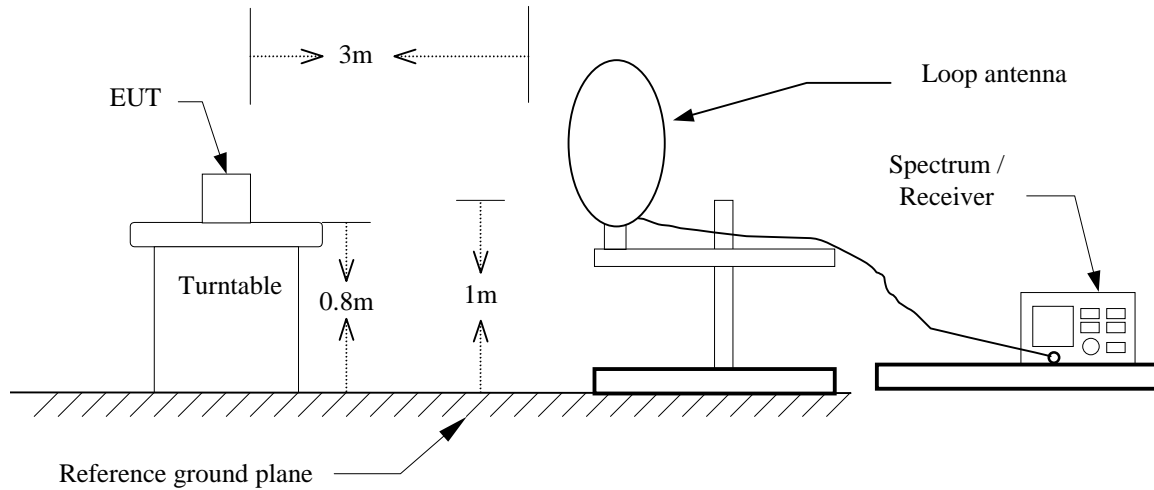
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

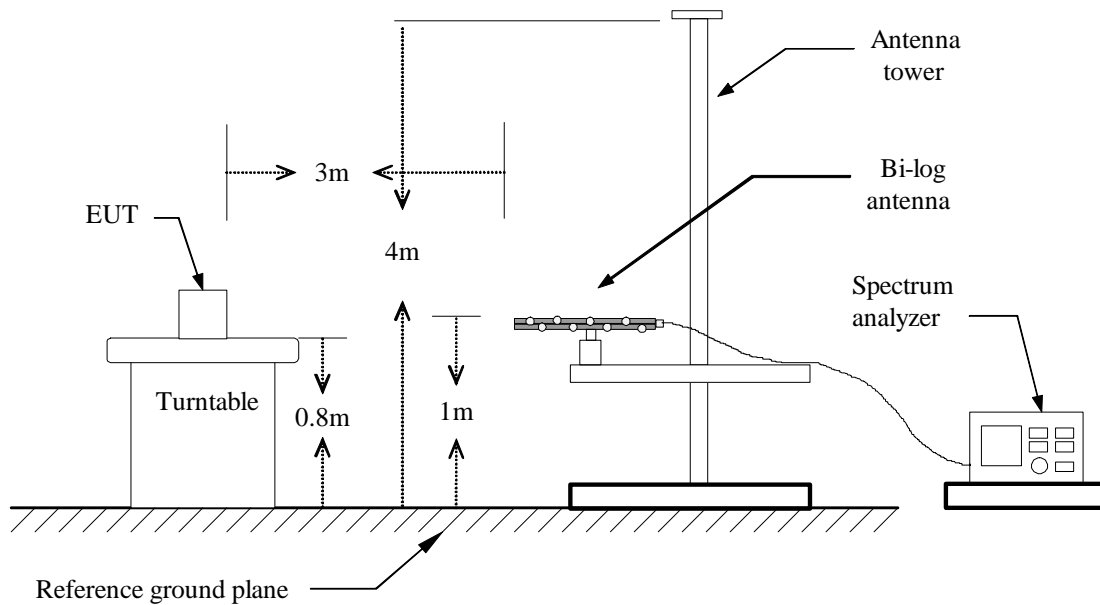


## Test Configuration

**9kHz ~ 30MHz**

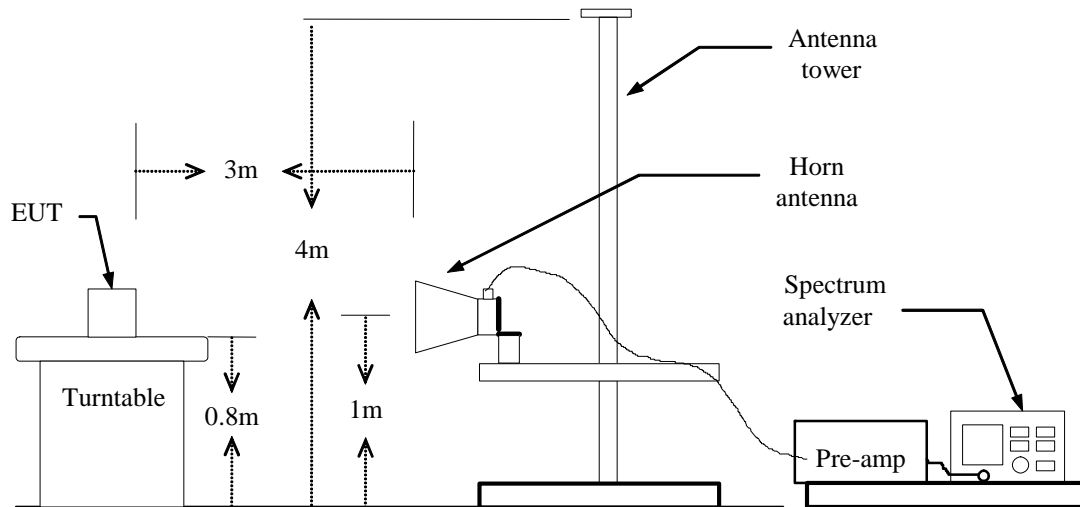


**30MHz ~ 1GHz**





## Above 1 GHz





## **TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:  
Below 1GHz:  
RBW=100kHz / VBW=300kHz / Sweep=AUTO  
Above 1GHz:  
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.



## TEST RESULTS

### Below 1GHz

**Operation Mode:** Normal Link**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
76.88	46.66	-14.97	31.69	40.00	-8.31	Peak	V
209.45	44.38	-10.65	33.73	43.50	-9.77	Peak	V
424.47	43.15	-6.49	36.67	46.00	-9.33	Peak	V
500.45	43.13	-5.14	37.98	46.00	-8.02	Peak	V
524.70	43.20	-4.81	38.38	46.00	-7.62	Peak	V
574.82	42.22	-4.27	37.95	46.00	-8.05	Peak	V
209.45	44.34	-10.65	33.69	43.50	-9.81	Peak	H
249.87	45.36	-10.90	34.45	46.00	-11.55	Peak	H
335.55	43.46	-8.39	35.07	46.00	-10.93	Peak	H
424.47	39.92	-6.49	33.43	46.00	-12.57	Peak	H
500.45	38.83	-5.14	33.69	46.00	-12.31	Peak	H
574.82	35.53	-4.27	31.26	46.00	-14.74	Peak	H

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5.  $\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limit (dBuV/m)}$ .

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1843.33	56.20	---	-7.06	49.14	---	74.00	54.00	-4.86	Peak	V
4825.00	49.42	45.35	2.61	52.03	47.96	74.00	54.00	-6.04	AVG	V
N/A										
1980.00	67.22	42.47	-5.67	61.55	36.80	74.00	54.00	-17.20	AVG	H
4825.00	49.81	46.28	2.61	52.42	48.89	74.00	54.00	-5.11	AVG	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11b / CH Mid**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2293.33	61.90	47.95	-4.71	57.20	43.24	74.00	54.00	-10.76	AVG	V
4883.33	48.43	---	2.73	51.15	---	74.00	54.00	-2.85	Peak	V
N/A										
1890.00	58.89	43.22	-6.59	52.31	36.63	74.00	54.00	-17.37	AVG	H
1960.00	65.08	43.17	-5.88	59.20	37.29	74.00	54.00	-16.71	AVG	H
1993.33	67.69	43.38	-5.54	62.16	37.84	74.00	54.00	-16.16	AVG	H
2306.67	61.02	53.31	-4.66	56.36	48.65	74.00	54.00	-5.35	AVG	H
4883.33	48.71	---	2.73	51.44	---	74.00	54.00	-2.56	Peak	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11b / CH High**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1993.33	58.85	43.20	-5.54	53.31	37.66	74.00	54.00	-16.34	AVG	V
2290.00	59.92	48.79	-4.72	55.20	44.07	74.00	54.00	-9.93	AVG	V
N/A										
1960.00	63.58	43.24	-5.88	57.70	37.36	74.00	54.00	-16.64	AVG	H
1973.33	67.42	43.11	-5.74	61.67	37.37	74.00	54.00	-16.63	AVG	H
1993.33	63.27	43.25	-5.54	57.73	37.71	74.00	54.00	-16.29	AVG	H
2306.67	61.92	52.37	-4.66	57.26	47.71	74.00	54.00	-6.29	AVG	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** TX / IEEE 802.11g / CH Low**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1993.33	60.70	43.14	-5.54	55.16	37.60	74.00	54.00	-16.40	AVG	V
N/A										
1980.00	68.84	43.20	-5.67	63.17	37.53	74.00	54.00	-16.47	AVG	H
1993.33	69.84	43.16	-5.54	64.30	37.62	74.00	54.00	-16.38	AVG	H
2360.00	59.72	50.56	-4.44	55.27	46.12	74.00	54.00	-7.88	AVG	H
4825.00	48.85	---	2.61	51.46	---	74.00	54.00	-2.54	Peak	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH Mid**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1973.33	60.17	43.42	-5.74	54.43	37.68	74.00	54.00	-16.32	AVG	V
1996.67	60.47	43.55	-5.50	54.97	38.05	74.00	54.00	-15.95	AVG	V
2273.33	59.15	48.24	-4.76	54.39	43.48	74.00	54.00	-10.52	AVG	V
N/A										
1980.00	69.45	42.98	-5.67	63.77	37.31	74.00	54.00	-16.69	AVG	H
1996.67	68.96	43.15	-5.50	63.45	37.65	74.00	54.00	-16.35	AVG	H
2303.33	62.10	52.62	-4.68	57.43	47.94	74.00	54.00	-6.06	AVG	H
4883.33	48.39	---	2.73	51.12	---	74.00	54.00	-2.88	Peak	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH High**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1993.33	60.38	43.19	-5.54	54.84	37.65	74.00	54.00	-16.35	AVG	V
2296.67	60.37	48.70	-4.70	55.67	44.00	74.00	54.00	-10.00	AVG	V
4933.33	47.28	---	2.83	50.10	---	74.00	54.00	-3.90	Peak	V
N/A										
1983.33	68.92	43.20	-5.64	63.28	37.56	74.00	54.00	-16.44	AVG	H
2303.33	62.07	52.20	-4.68	57.40	47.52	74.00	54.00	-6.48	AVG	H
4925.00	47.09	---	2.81	49.90	---	74.00	54.00	-4.10	Peak	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11n HT 20 MHz mode / CH Low **Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1996.67	59.68	43.20	-5.50	54.18	37.70	74.00	54.00	-16.30	AVG	V
2293.33	57.87	45.20	-4.71	53.16	40.49	74.00	54.00	-13.51	AVG	V
4825.00	53.44	40.00	2.61	56.05	42.61	74.00	54.00	-11.39	AVG	V
7241.67	53.41	38.30	7.26	60.67	45.56	74.00	54.00	-8.44	AVG	V
N/A										
1970.00	67.84	43.30	-5.77	62.06	37.53	74.00	54.00	-16.47	AVG	H
2303.33	59.91	49.56	-4.68	55.23	44.88	74.00	54.00	-9.12	AVG	H
2360.00	62.62	51.48	-4.44	58.18	47.04	74.00	54.00	-6.96	AVG	H
4825.00	54.47	41.43	2.61	57.08	44.04	74.00	54.00	-9.96	AVG	H
7233.33	51.62	39.17	7.26	58.88	46.43	74.00	54.00	-7.57	AVG	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11n HT 20 MHz mode / CH Mid **Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1976.67	60.96	43.20	-5.71	55.26	37.49	74.00	54.00	-16.51	AVG	V
2290.00	58.60	48.11	-4.72	53.88	43.39	74.00	54.00	-10.61	AVG	V
4875.00	51.46	41.27	2.71	54.17	43.98	74.00	54.00	-10.02	AVG	V
7333.33	52.56	40.33	7.22	59.78	47.55	74.00	54.00	-6.45	AVG	V
N/A										
1993.33	66.71	43.15	-5.54	61.17	37.61	74.00	54.00	-16.39	AVG	H
2323.33	62.02	43.20	-4.59	57.43	38.61	74.00	54.00	-15.39	AVG	H
4875.00	52.47	40.36	2.71	55.18	43.07	74.00	54.00	-10.93	AVG	H
7325.00	51.87	37.70	7.23	59.09	44.93	74.00	54.00	-9.07	AVG	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11n HT 20 MHz mode / CH High **Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2300.00	61.03	49.30	-4.69	56.34	44.61	74.00	54.00	-9.39	AVG	V
4908.33	51.35	37.20	2.78	54.13	39.98	74.00	54.00	-14.02	AVG	V
7391.67	52.08	39.25	7.20	59.28	46.45	74.00	54.00	-7.55	AVG	V
N/A										
1986.67	65.22	43.55	-5.61	59.62	37.94	74.00	54.00	-16.06	AVG	H
2496.67	63.63	45.13	-3.88	59.75	41.25	74.00	54.00	-12.75	AVG	H
4933.33	50.95	39.49	2.83	53.77	42.32	74.00	54.00	-11.68	AVG	H
7391.67	51.21	35.95	7.20	58.41	43.15	74.00	54.00	-10.85	AVG	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** TX / IEEE 802.11n HT 40 MHz mode  
/ CH Low

**Test Date:** September 9, 2011

**Temperature:** 25°C

**Tested by:** Sehni Hu

**Humidity:** 50 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1976.67	59.78	42.22	-5.71	54.07	36.51	74.00	54.00	-17.49	AVG	V
2023.33	58.87	43.41	-5.41	53.46	38.00	74.00	54.00	-16.00	AVG	V
2290.00	59.27	46.18	-4.72	54.55	41.46	74.00	54.00	-12.54	AVG	V
2316.67	59.41	48.01	-4.62	54.79	43.39	74.00	54.00	-10.61	AVG	V
4841.67	38.54	33.48	2.64	41.18	36.12	74.00	54.00	-17.88	AVG	V
7266.67	46.70	38.48	7.25	53.95	45.73	74.00	54.00	-8.27	AVG	V
1976.67	66.32	43.44	-5.71	60.61	37.73	74.00	54.00	-16.27	AVG	H
1996.67	67.23	43.01	-5.50	61.73	37.51	74.00	54.00	-16.49	AVG	H
2020.00	62.41	43.10	-5.42	56.99	37.68	74.00	54.00	-16.32	AVG	H
2320.00	60.69	48.55	-4.61	56.08	43.94	74.00	54.00	-10.06	AVG	H
4850.00	51.21	38.80	2.66	53.87	41.46	74.00	54.00	-12.54	AVG	H
7266.67	47.84	35.36	7.25	55.09	42.61	74.00	54.00	-11.39	AVG	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



**Operation Mode:** TX / IEEE 802.11n HT 40 MHz mode  
/ CH Mid

**Test Date:** September 9, 2011

**Temperature:** 25°C

**Tested by:** Sehni Hu

**Humidity:** 50 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1966.67	59.06	43.07	-5.81	53.25	37.26	74.00	54.00	-16.74	AVG	V
2000.00	58.79	43.12	-5.47	53.32	37.65	74.00	54.00	-16.35	AVG	V
2303.33	60.78	49.50	-4.68	56.10	44.82	74.00	54.00	-9.18	AVG	V
4883.33	50.78	37.90	2.73	53.51	40.63	74.00	54.00	-13.37	AVG	V
7333.33	46.55	35.72	7.22	53.78	42.94	74.00	54.00	-11.06	AVG	V
N/A										
1976.67	67.49	43.25	-5.71	61.78	37.54	74.00	54.00	-16.46	AVG	H
1996.67	67.62	43.40	-5.50	62.12	37.90	74.00	54.00	-16.10	AVG	H
2306.67	61.95	50.31	-4.66	57.29	45.65	74.00	54.00	-8.35	AVG	H
2340.00	61.61	50.53	-4.53	57.09	46.00	74.00	54.00	-8.00	AVG	H
4883.33	49.86	37.80	2.73	52.59	40.53	74.00	54.00	-13.47	AVG	H
7308.33	48.41	33.20	7.23	55.65	40.43	74.00	54.00	-13.57	AVG	H

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





**Operation Mode:** TX / IEEE 802.11n HT 40 MHz mode  
/ CH High

**Test Date:** September 9, 2011

**Temperature:** 25°C

**Tested by:** Sehni Hu

**Humidity:** 50 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1976.67	58.70	43.11	-5.71	52.99	37.40	74.00	54.00	-16.60	AVG	V
2000.00	58.38	43.27	-5.47	52.91	37.80	74.00	54.00	-16.20	AVG	V
2290.00	62.48	48.82	-4.72	57.76	44.10	74.00	54.00	-9.90	AVG	V
4908.33	49.20	---	2.78	51.98	---	74.00	54.00	-2.02	Peak	V
7350.00	48.94	36.39	7.22	56.16	43.61	74.00	54.00	-10.39	AVG	V
N/A										
1976.67	67.34	43.21	-5.71	61.63	37.50	74.00	54.00	-16.50	AVG	H
2000.00	65.65	43.12	-5.47	60.18	37.65	74.00	54.00	-16.35	AVG	H
2023.33	63.47	43.01	-5.41	58.06	37.60	74.00	54.00	-16.40	AVG	H
2293.33	60.23	50.43	-4.71	55.53	45.72	74.00	54.00	-8.28	AVG	H
4925.00	49.17	---	2.81	51.98	---	74.00	54.00	-2.02	Peak	H
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).