# FCC 47 CFR PART 15 SUBPART C & INDUSTRY CANADA RSS-210 (Class II Permissive Change)

Report No.: T140522W08-RP4

#### **TEST REPORT**

#### For

#### Broadcom 802.11bgn WLAN + Bluetooth NGFF1630 Mini Card

Model: BCM943142Y

**Trade Name: Broadcom** 

Issued to

Broadcom Corporation 190 Mathilda Avenue, Sunnyvale, CA 94086

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
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Issued Date: September 10. 2014





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# **Revision History**

Report No.: T140522W08-RP4

	Issue		Effect	
Rev.	Date	Revisions	Page	Revised By
00	September 10, 2014	Initial Issue	ALL	Doris Chu

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# 1. TEST RESULT CERTIFICATION

**Applicant:** Broadcom Corporation

190 Mathilda Avenue, Sunnyvale, CA 94086

Report No.: T140522W08-RP4

**Manufacturer:** Broadcom Corporation

190 Mathilda Avenue, Sunnyvale, CA 94086

**Equipment Under Test:** Broadcom 802.11bgn WLAN + Bluetooth NGFF1630 Mini Card

**Trade Name:** Broadcom

Model: BCM943142Y

**Date of Test:** August 8, 2014 ~ September 6, 2014

APPLICABLE STANDARDS					
STANDARD	TEST RESULT				
FCC 47 CFR Part 15 Subpart C					
&	No non-compliance noted				
Industry Canada RSS-210 Issue 8 December, 2010					

# 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: 2009 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 and Industry Canada RSS-210.

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

Approved by: Reviewed by:

Miller Lee

Section Manager

Compliance Certification Services Inc.

Killer Lee

Angel Cheng

Section Manager

Compliance Certification Services Inc.

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# 2. EUT DESCRIPTION

Product	Broadcom 802.11bgn WLAN + Bluetooth NGFF1630 Mini Card				
Trade Name	Broadcom				
Model Number	BCM943142Y				
Received Date	May 22, 2014				
Frequency Range	2412 ~ 2462 MHz				
	Mode	Frequency Range	Average output power (dBm)	Average output power (W)	
m	802.11b	2412 - 2472	13.40	0.02188	
Transmit Power	802.11g	2412 – 2472	13.30	0.02138	
	802.11n Standard-20 MHz	2412 - 2472	13.30	0.02138	
	802.11n Standard-40 MHz	2422 - 2462	13.00	0.01995	
	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mpbs) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mpbs) IEEE 802.11n HT 20 MHz mode: OFDM (6.5, 7.2, 13, 14.4, 14.44,				
Modulation Technique	19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117,				
•	130, 144.44 Mbps)				
	IEEE 802.11n HT 40 MHz mode: OFDM (13.5, 15, 27, 30, 40.5, 45,				
	54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180,				
	216, 240, 243, 270, 300 Mbps)				
	IEEE 802.11b/g mo	de: 13 Channel	S		
Number of Channels	IEEE 802.11n HT 20 MHz mode: 13 Channels				
	IEEE 802.11n HT 40 MHz mode: 9 Channels				
	1. High-Tek Electronics Co.,Ltd				
	P/N: 025.9002Q.0011 (Main) / -0.41 dBi				
Antenna Specification	025.9002P.0011 (Aux) / -2.88 dBi				
Antenna Specification	2. Wistron NeWeb Corporation				
	P/N: 025.9002Q.0	001 (Main) / -0.4	47 dBi		
	025.9002P.0001 (Aux) / -0.35 dBi				
Class II Permissive	To alternated a table	et PC (Trade Na	ame:Lenovo/ Mo	del Number:	
	Lenovo Edge 15) and antennas. Output power was reduced to comply				
Change	with SAR requirements.				

#### 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: <u>QDS-BRCM1079</u> filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

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#### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209, 15.247 and DA00-705.

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The tests documented in this report were performed in accordance with IC RSS-210, IC RSS-Gen, IC RSS-102, IC RSS-212, and ANSI C63.4.

This submittal(s) (test report) is intended for IC Certification with Industry Canada RSS-210.

#### 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.

The tests documented in this report were performed in accordance with IC RSS-210, IC RSS-Gen, IC RSS-102, and ANSI C63.4.

#### 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.

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#### 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:

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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	$\binom{2}{}$
13.36 - 13.41	322 - 335.4		

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

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<sup>&</sup>lt;sup>2</sup> Above 38.6

<sup>(</sup>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: BCM943142Y) had been tested under operating condition.

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

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After verification, all tests carried out are with the worst-case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode.

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

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2472MHz) with 1Mbps data rate were chosen for full testing.

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

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2472MHz) 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 (2472MHz) 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 (2462MHz) with 13.5Mbps data rate were chosen for full testing.

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# 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.

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# 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 Calib				Calibration Due	
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/14/2015	
Power Meter	Anritsu	ML2495A	1012009	04/24/2015	
Power Sensor	Anritsu	MA2411B	0917072	04/24/2015	

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Manufacturer Model		Calibration Due	
Spectrum Analyzer	Agilent	E4446A	US42510268	11/13/2014	
EMI Test Receiver	R&S	ESCI	100064	02/14/2015	
Pre-Amplifier	Mini-Circults	ZFL-1000LN	SF350700823	01/10/2015	
Pre-Amplifier	MITEQ	AFS44-00102650- 42-10P-44	1415367	11/18/2014	
Bilog Antenna	Sunol Sciences	JB3	A030105	10/01/2014	
Horn Antenna	EMCO	3117	00055165	01/09/2015	
Horn Antenna	EMCO	3116	00026370	10/10/2014	
Loop Antenna	EMCO	6502	8905/2356	06/08/2015	
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	12/23/2014	
Test S/W		EZ-EMC (	(CCS-3A1RE)		

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# 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

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

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# 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
$\boxtimes$	No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
	Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045
	No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN,
	R.O.C.
	Tel: 886-3-324-0332 / Fax: 886-3-324-5235

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."

#### 5.3LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

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# 5.4 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	Canadä IC 2324G-1 IC 2324G-2

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<sup>\*</sup> 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
	N/A						

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#### 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.

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# 7. FCC PART 15.247 REQUIREMENTS & RSS-210 REQUIREMENTS

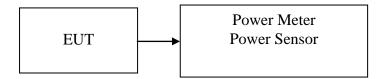
#### 7.1 OUTPUT POWER

#### 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.
- 3. According to RSS-210 §A8.4(4), for systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W.

#### **Test Configuration**



#### TEST PROCEDURE

KDB558074

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

#### **TEST RESULTS**

No non-compliance noted

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# **Test Data**

#### Test mode: IEEE 802.11b mode

Frequency (MHz)	Output Power (dBm)	Output Power (W)
2412	13.40	0.02188
2442	13.40	0.02188
2462	13.40	0.02188
2467	13.40	0.02188
2472	8.4	0.00692

#### Test mode: IEEE 802.11g mode

Frequency (MHz)	Output Power (dBm)	Output Power (W)	
2412	12.80	0.01905	
2442	13.30	0.02138	
2462	13.30	0.02138	
2467	9.9	0.00977	
2472	8.4	0.00692	

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

Frequency (MHz)	Output Power (dBm)	Output Power (W)
2412	11.70	0.01479
2442	13.30	0.02138
2462	12.70	0.01862
2467	9.4	0.00871
2472	7.8	0.00603

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

Frequency (MHz)	Output Power (dBm)	Output Power (W)
2422	8.30	0.00676
2442	13.00	0.01995
2452	11.80	0.0151
2457	10.90	0.0123
2462	10.00	0.0100

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

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#### 7.2 BAND EDGES MEASUREMENT

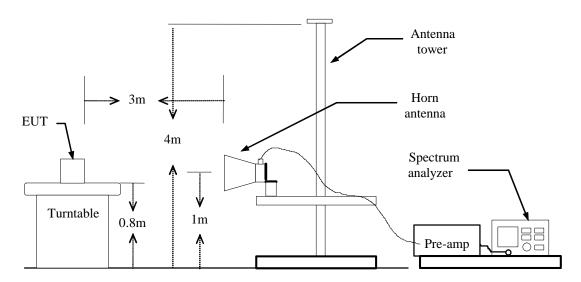
#### **LIMIT**

According to §15.247(d) & RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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)).

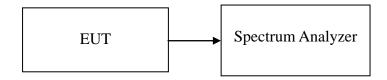
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#### **Test Configuration**

#### For Radiated



#### **For Conducted**



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# **TEST PROCEDURE**

#### For Radiated

- 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.

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- 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=3MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz,

if duty cycle ≥ 98%, VBW=300Hz.

if duty cycle<98% VBW=1/T.

**IEEE 802.11b mode:**  $\ge 98\%$ , VBW=300Hz **IEEE 802.11g mode:**  $\ge 98\%$ , VBW=300Hz

IEEE 802.11n HT 20 MHz mode:  $\geq$  98%, VBW=300Hz

**IEEE 802.11n HT 40 MHz mode:** 96%=VBW 2kHz

5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

#### For Conducted

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

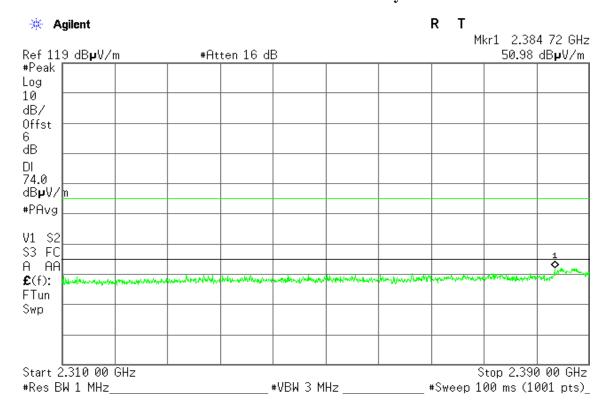
#### TEST RESULTS

Refer to attach spectrum analyzer data chart.

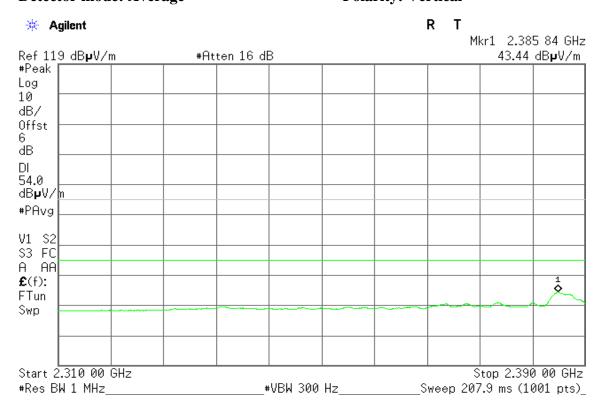
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#### Band Edges (IEEE 802.11b mode / CH 2412)

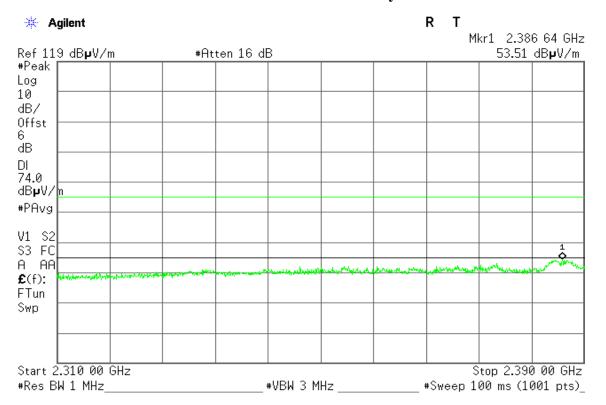
Detector mode: Peak Polarity: Vertical



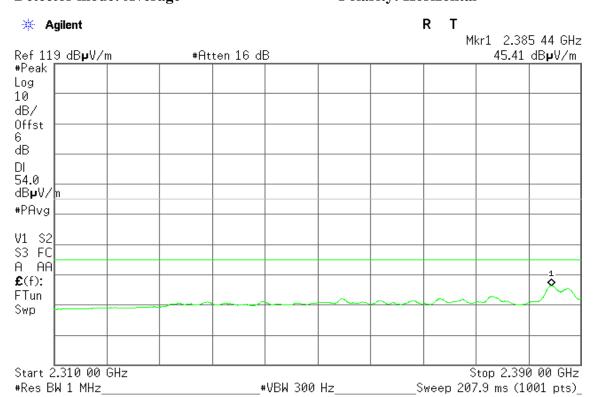
Detector mode: Average Polarity: Vertical



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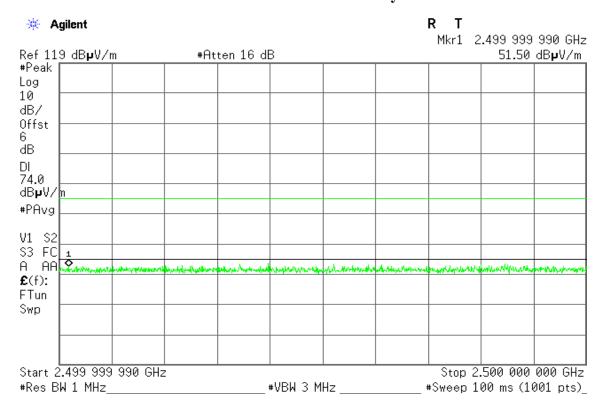
Detector mode: Average Polarity: Horizontal



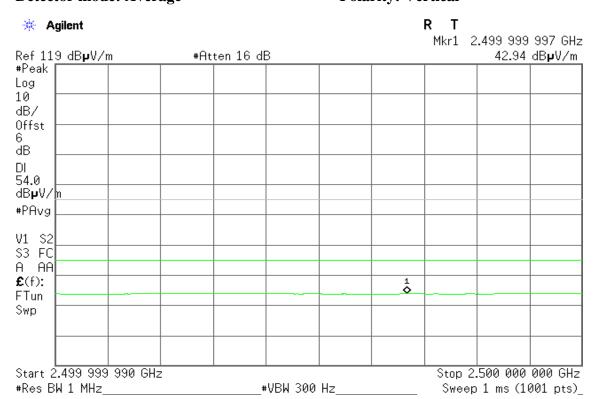
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#### Band Edges (IEEE 802.11b mode / CH 2462)

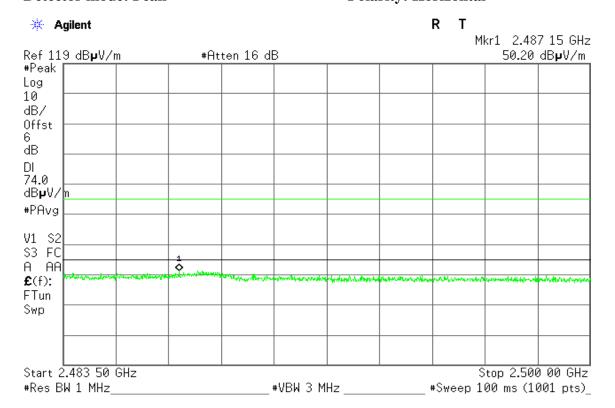
Detector mode: Peak Polarity: Vertical



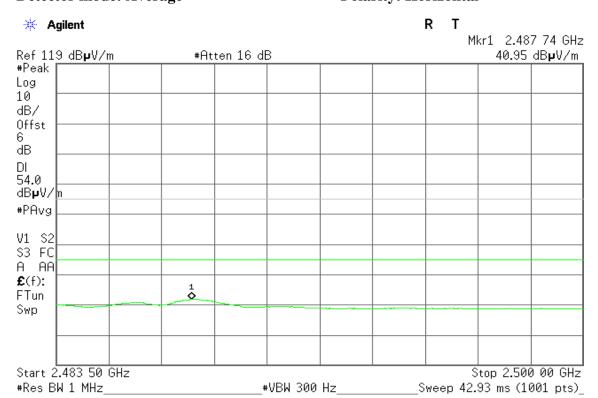
Detector mode: Average Polarity: Vertical



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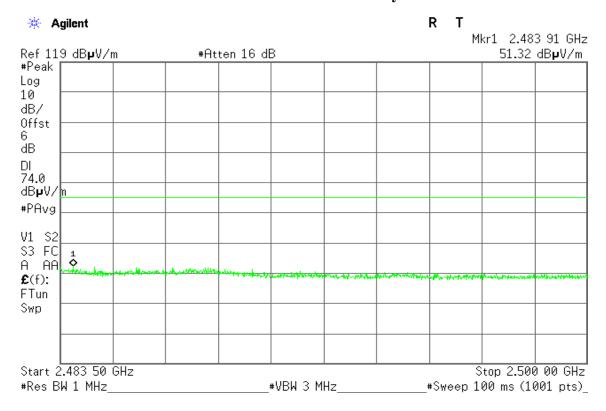
Detector mode: Average Polarity: Horizontal



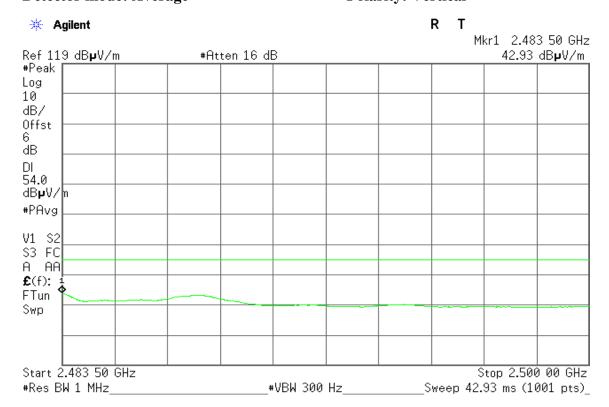
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#### Band Edges (IEEE 802.11b mode / CH 2467)

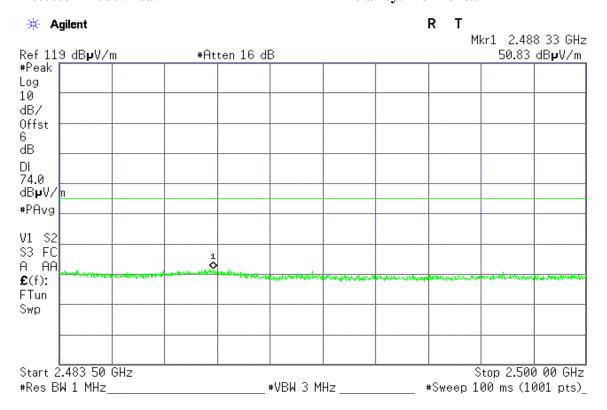
# Detector mode: Peak Polarity: Vertical



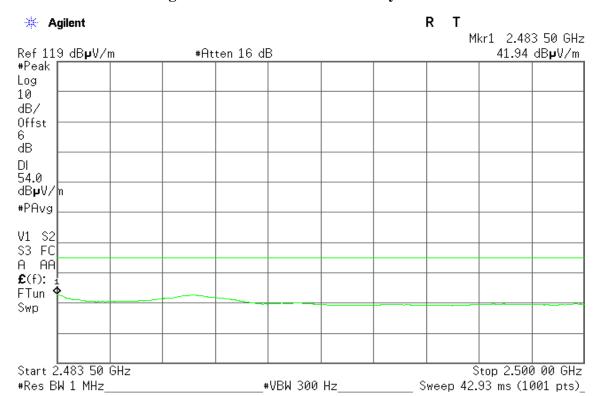
# Detector mode: Average Polarity: Vertical



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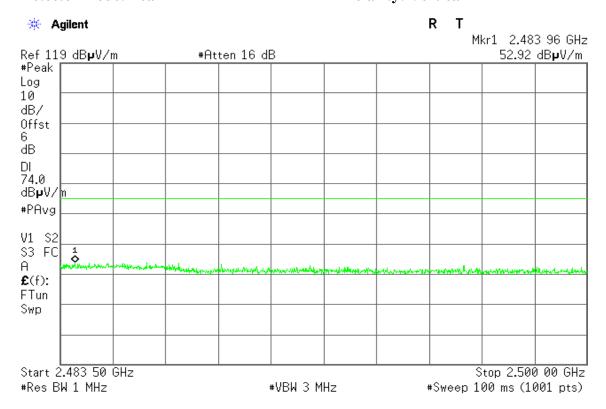
## Detector mode: Average Polarity: Horizontal



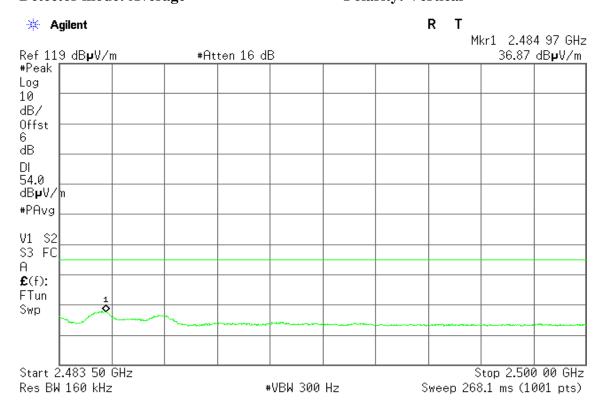
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#### Band Edges (IEEE 802.11b mode / CH 2472)

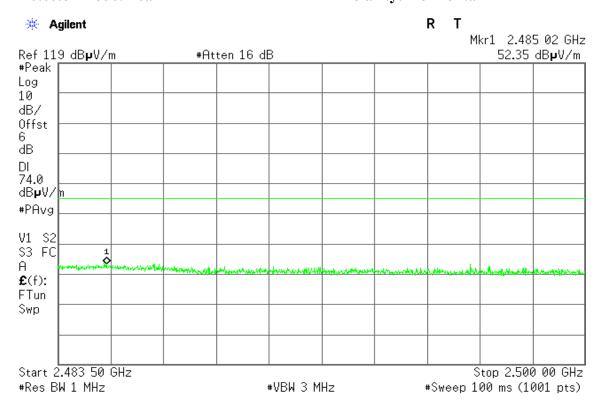
# Detector mode: Peak Polarity: Vertical



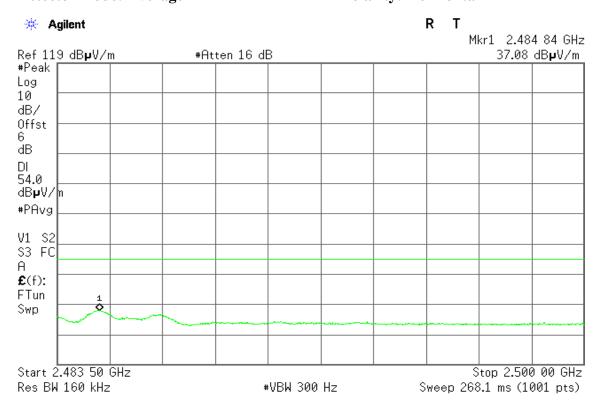
# Detector mode: Average Polarity: Vertical



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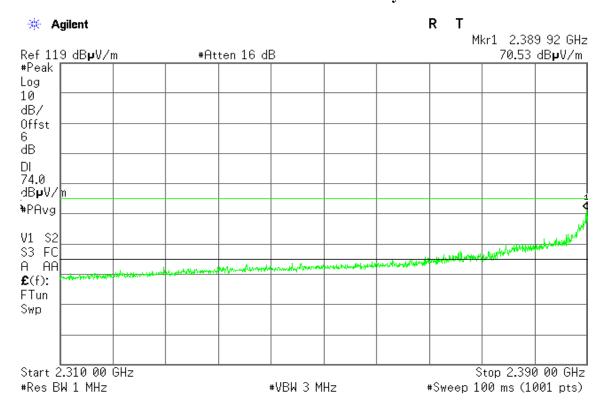
## Detector mode: Average Polarity: Horizontal



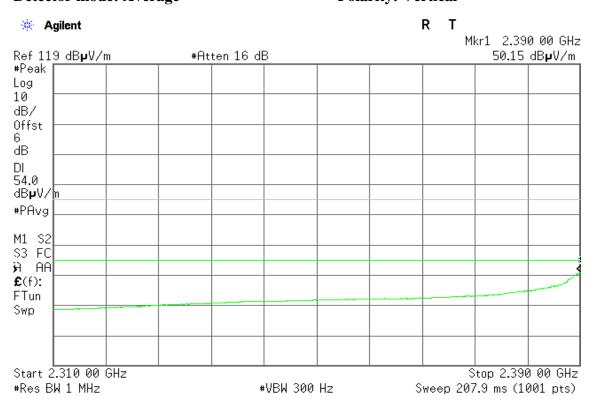
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#### Band Edges (IEEE 802.11g mode / CH 2412)

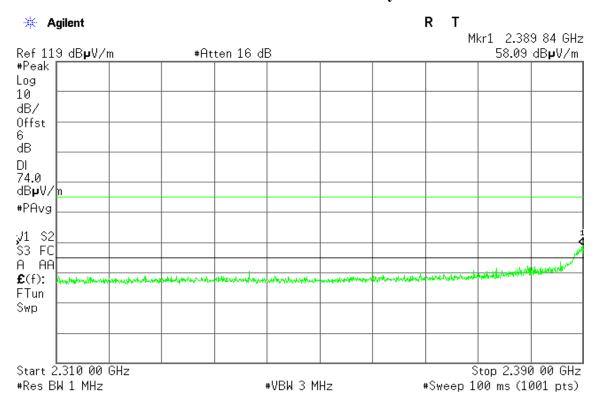
Detector mode: Peak Polarity: Vertical



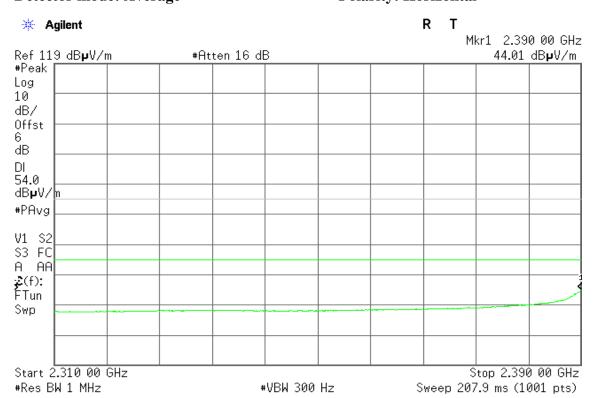
Detector mode: Average Polarity: Vertical



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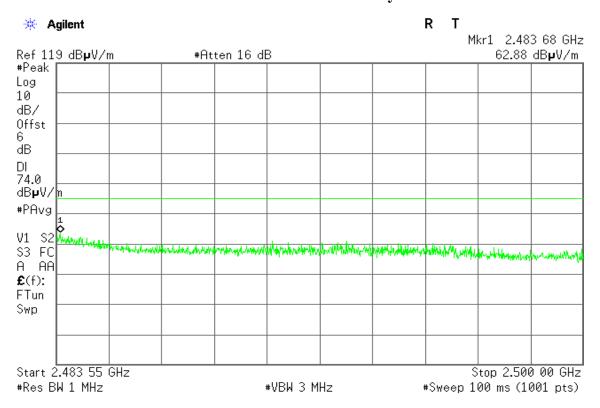
Detector mode: Average Polarity: Horizontal



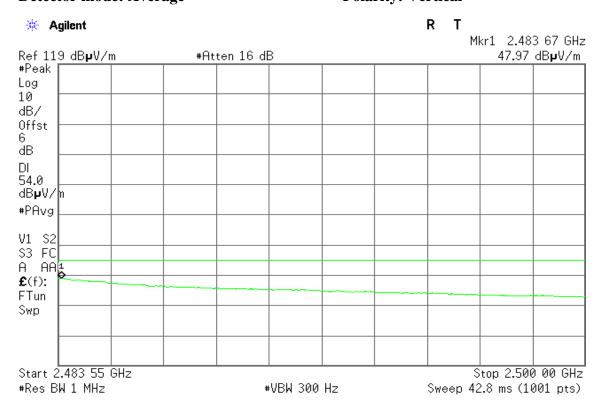
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#### Band Edges (IEEE 802.11g mode / CH 2462)

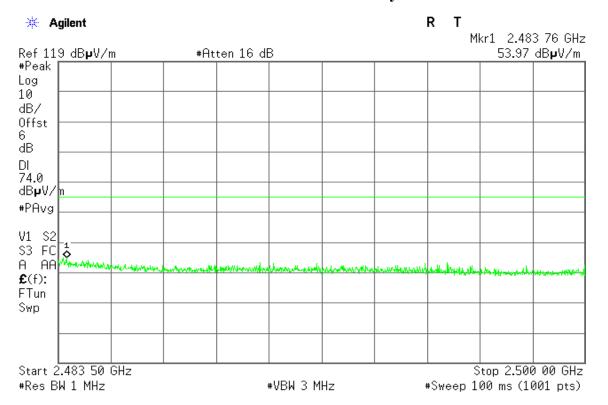
Detector mode: Peak Polarity: Vertical



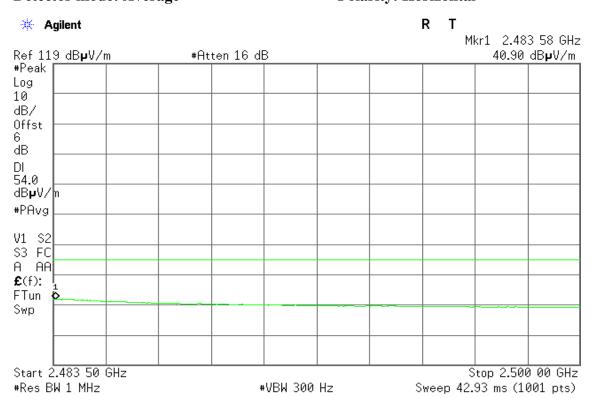
Detector mode: Average Polarity: Vertical



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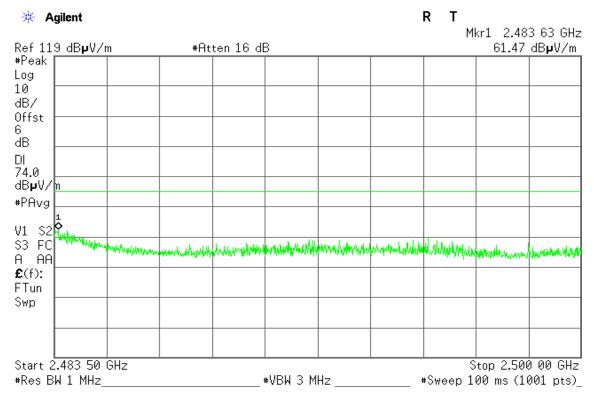
Detector mode: Average Polarity: Horizontal



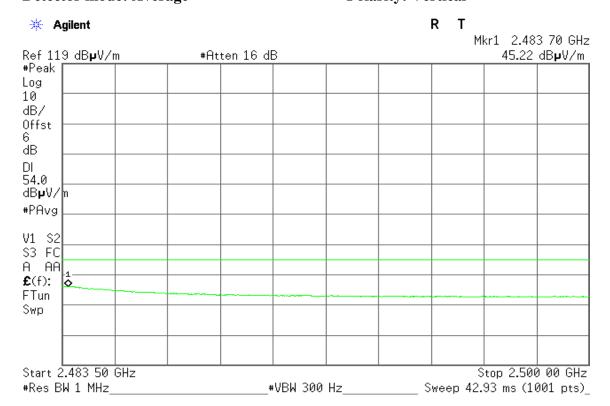
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#### Band Edges (IEEE 802.11g mode / CH 2467)

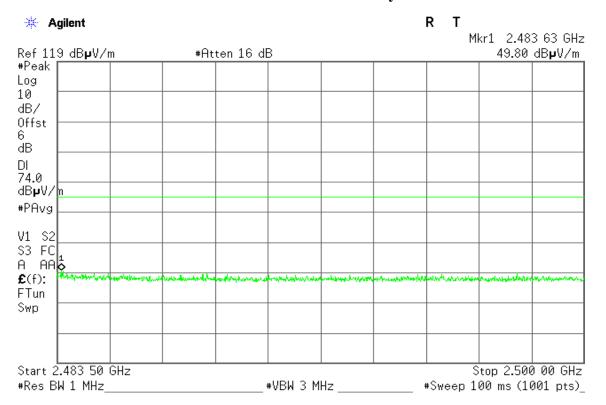
Detector mode: Peak Polarity: Vertical



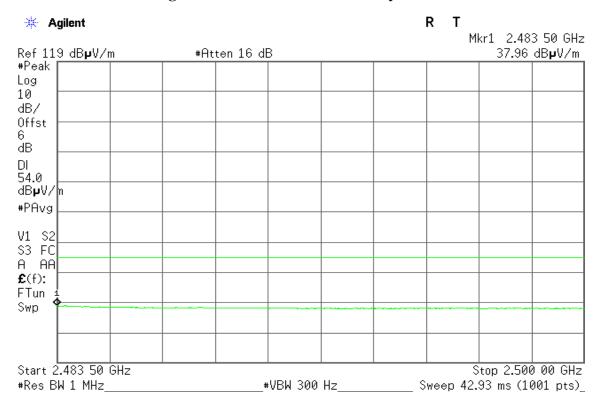
# Detector mode: Average Polarity: Vertical



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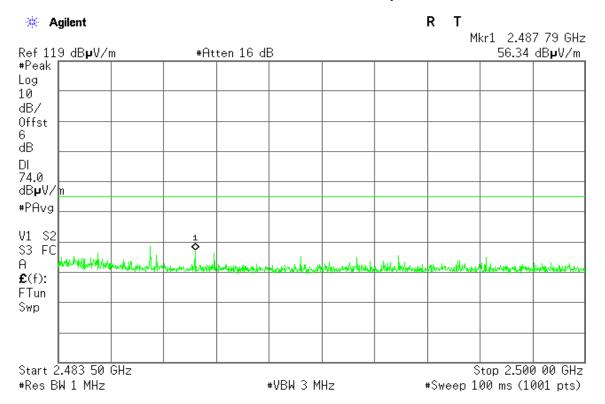
#### Detector mode: Average Polarity: Horizontal



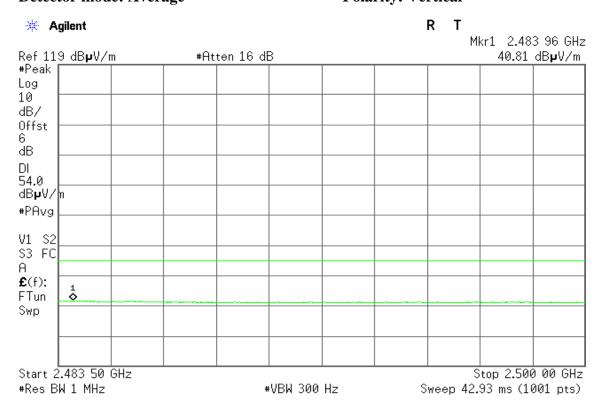
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#### Band Edges (IEEE 802.11g mode / CH 2472)

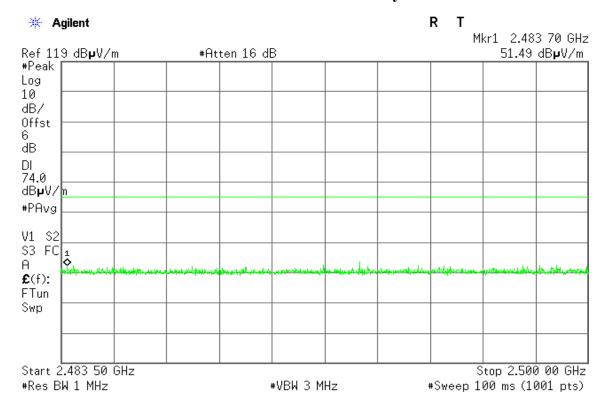
Detector mode: Peak Polarity: Vertical



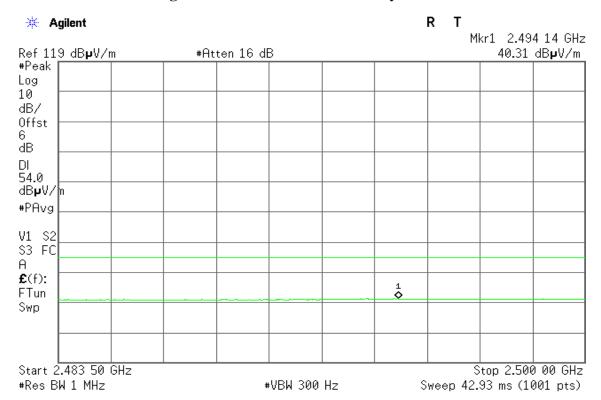
#### Detector mode: Average Polarity: Vertical



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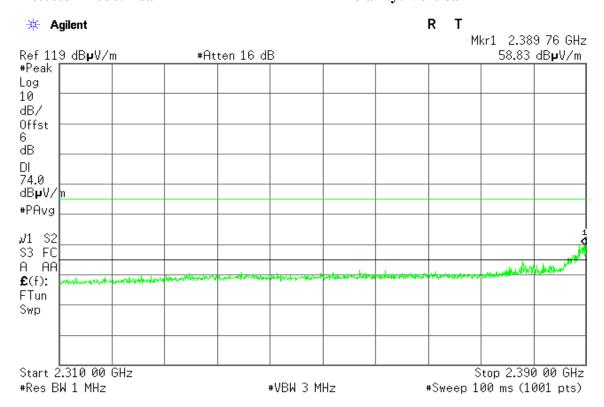
#### Detector mode: Average Polarity: Horizontal



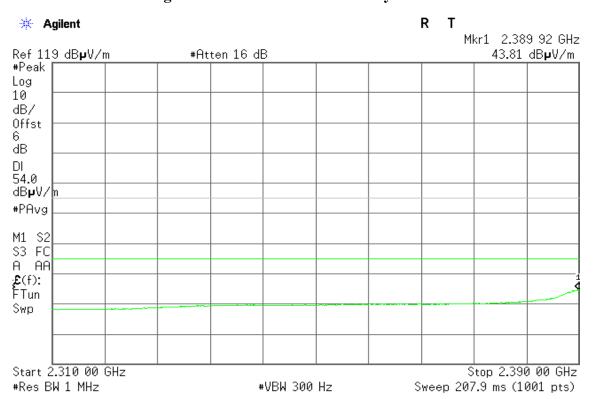
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#### Band Edges (IEEE 802.11n HT 20 MHz mode / CH 2412)

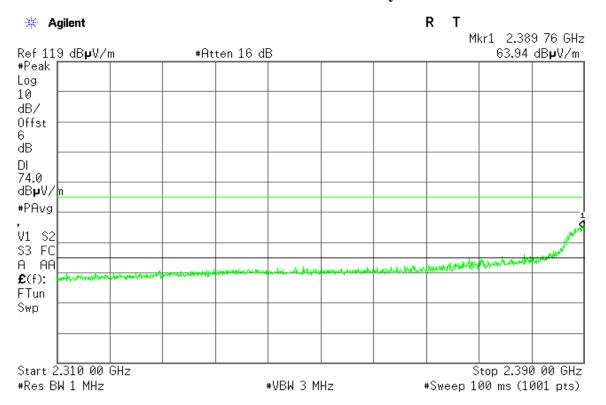
Detector mode: Peak Polarity: Vertical



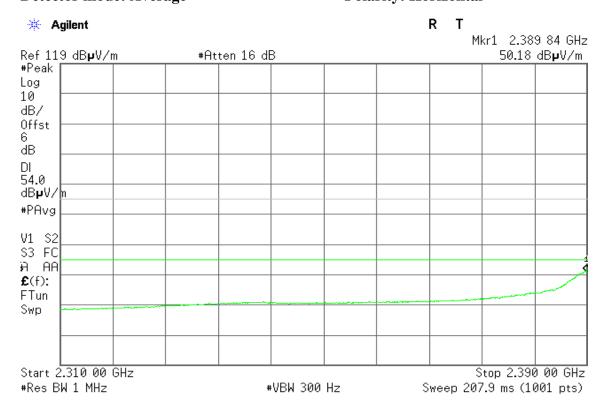
Detector mode: Average Polarity: Vertical



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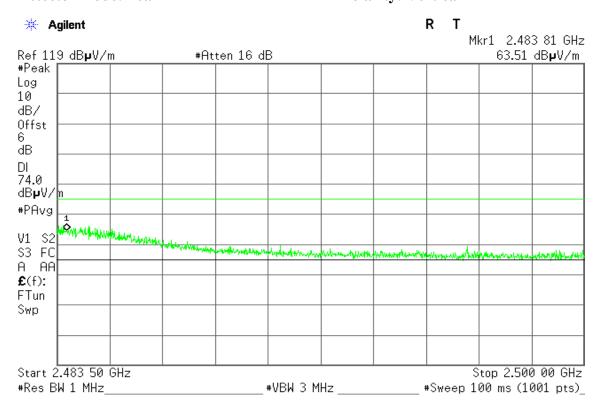
Detector mode: Average Polarity: Horizontal



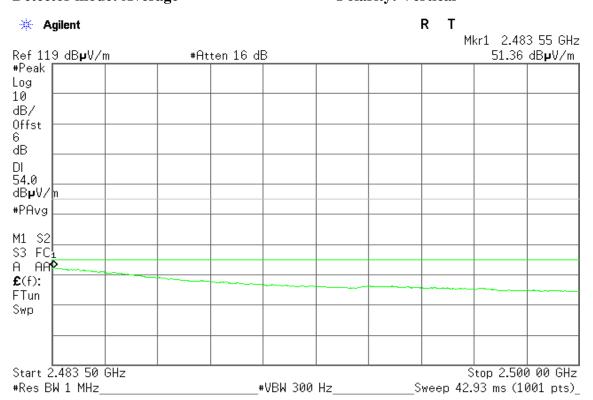
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#### Band Edges (IEEE 802.11n HT 20 MHz mode / CH 2462)

Detector mode: Peak Polarity: Vertical

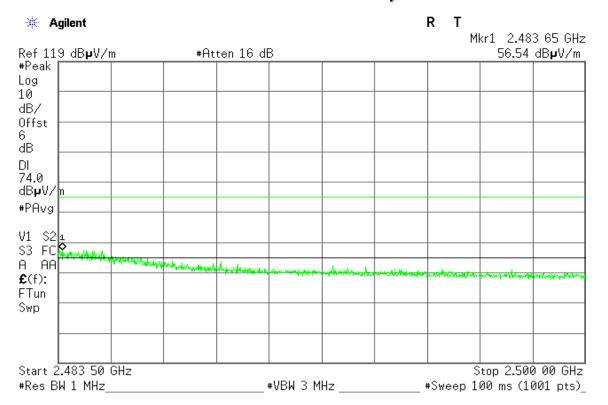


Detector mode: Average Polarity: Vertical

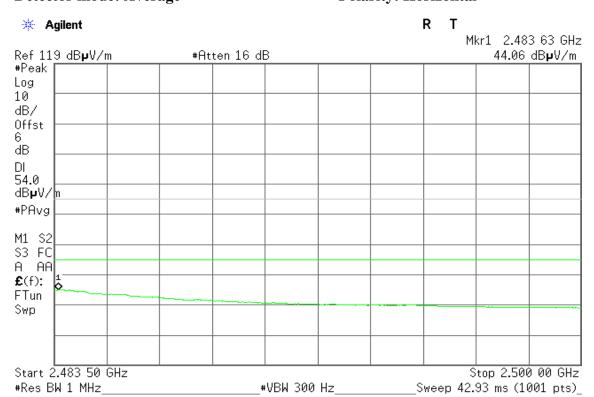


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Detector mode: Peak Polarity: Horizontal



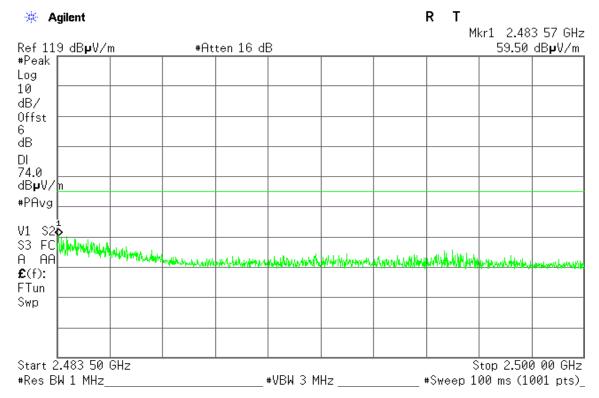
Detector mode: Average Polarity: Horizontal



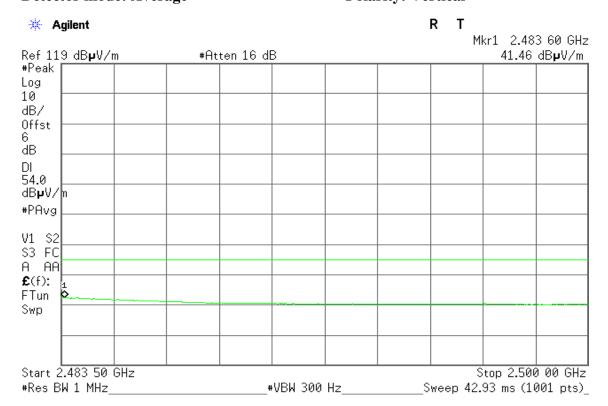
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### Band Edges (IEEE 802.11n HT 20 MHz mode / CH 2467)

Detector mode: Peak Polarity: Vertical

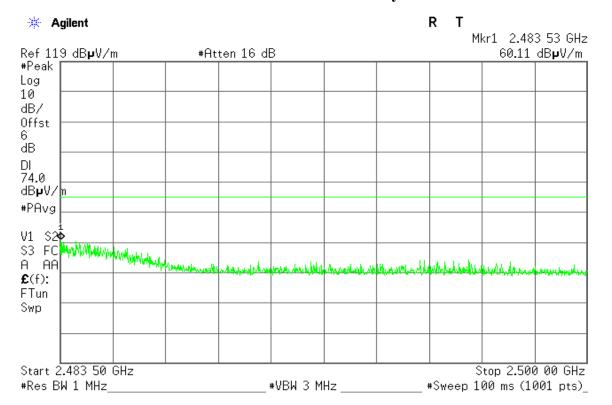


# Detector mode: Average Polarity: Vertical

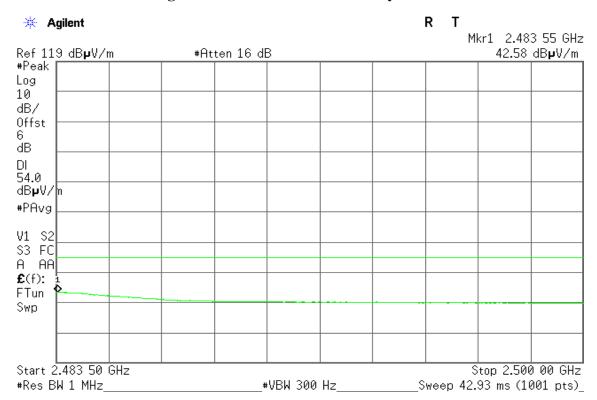


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Detector mode: Peak Polarity: Horizontal



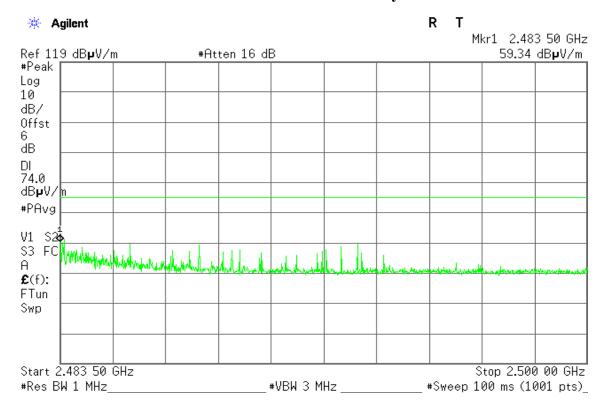
# Detector mode: Average Polarity: Horizontal



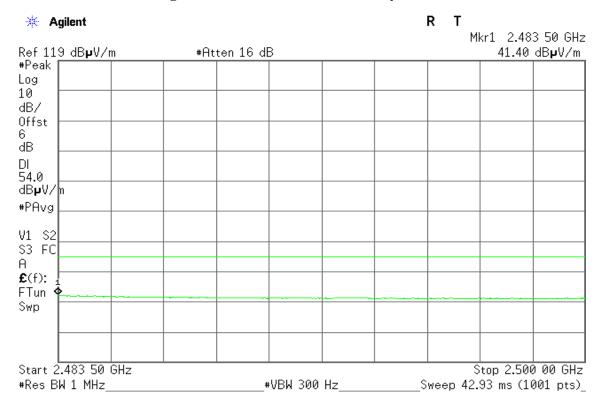
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#### Band Edges (IEEE 802.11n HT 20 MHz mode / CH 2472)

Detector mode: Peak Polarity: Vertical

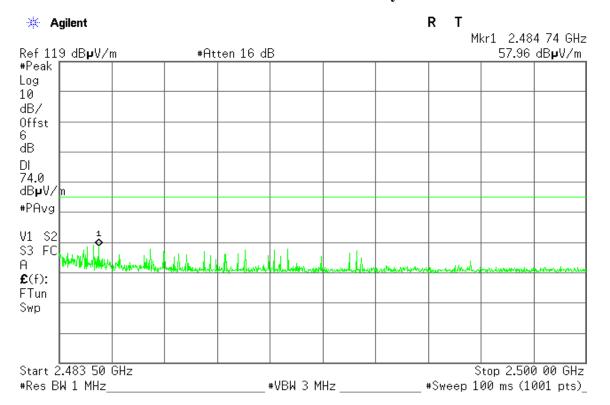


Detector mode: Average Polarity: Vertical

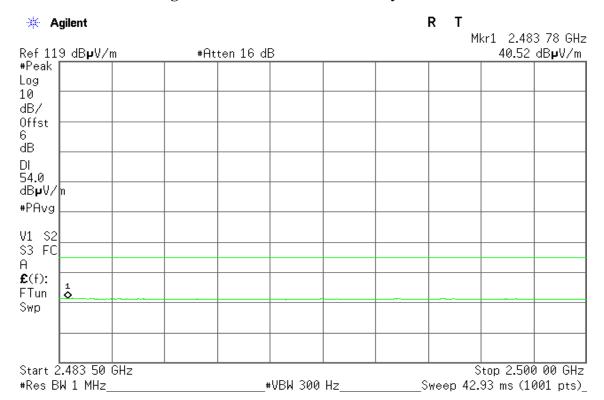


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Detector mode: Peak Polarity: Horizontal



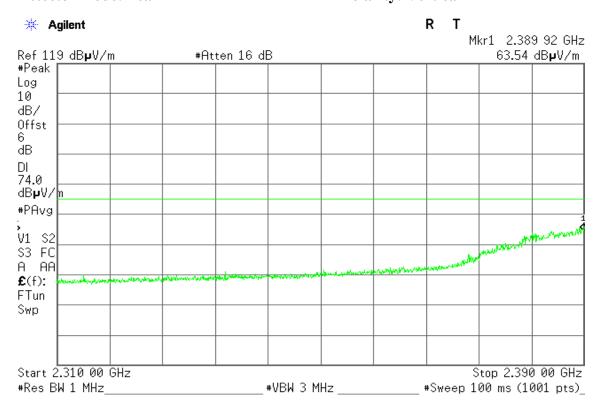
# Detector mode: Average Polarity: Horizontal



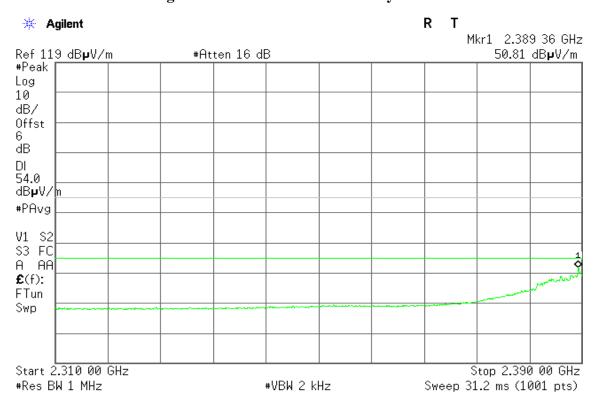
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Band Edges (IEEE 802.11n HT 40 MHz mode / CH 2422)

# Detector mode: Peak Polarity: Vertical

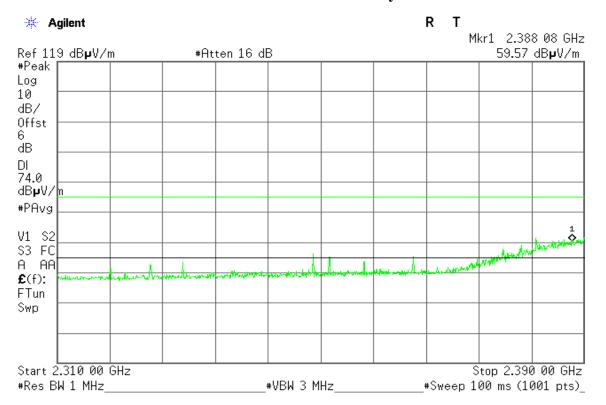


Detector mode: Average Polarity: Vertical

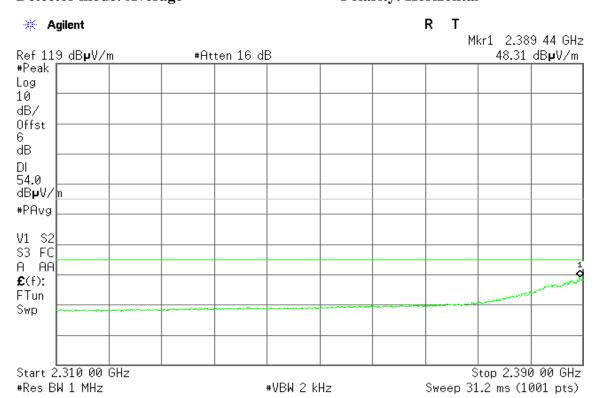


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Detector mode: Peak Polarity: Horizontal



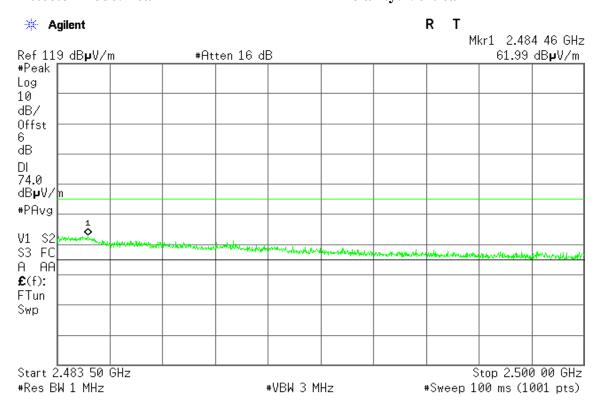
Detector mode: Average Polarity: Horizontal



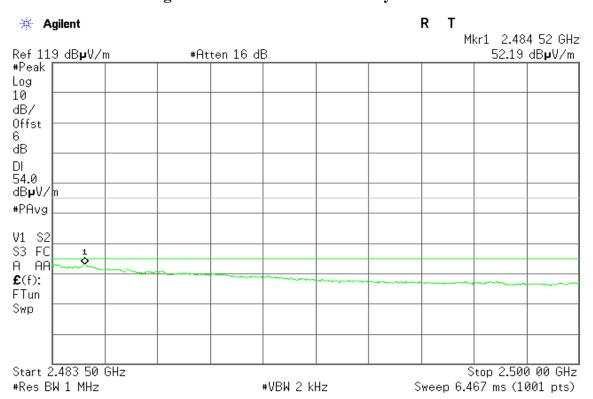
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#### Band Edges (IEEE 802.11n HT 40 MHz mode / CH 2452)

Detector mode: Peak Polarity: Vertical

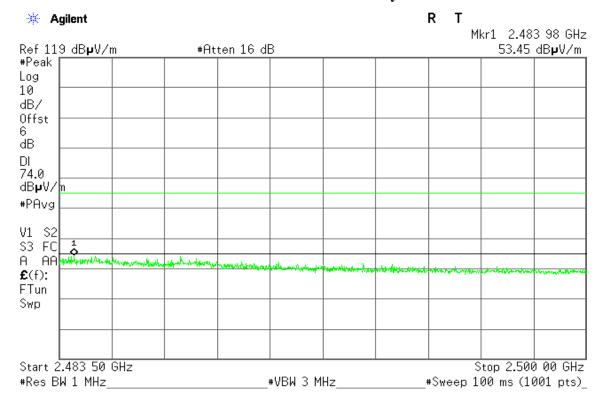


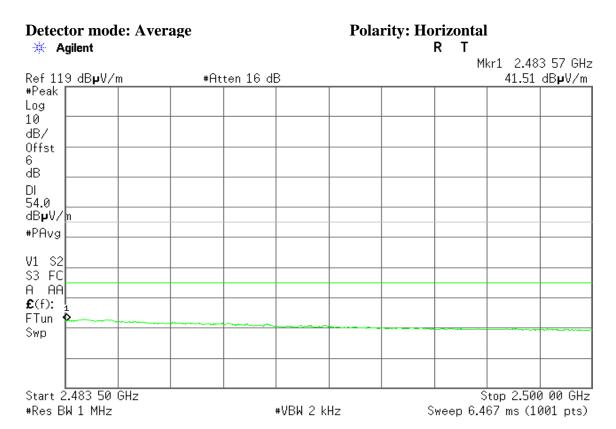
Detector mode: Average Polarity: Vertical



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Detector mode: Peak Polarity: Horizontal

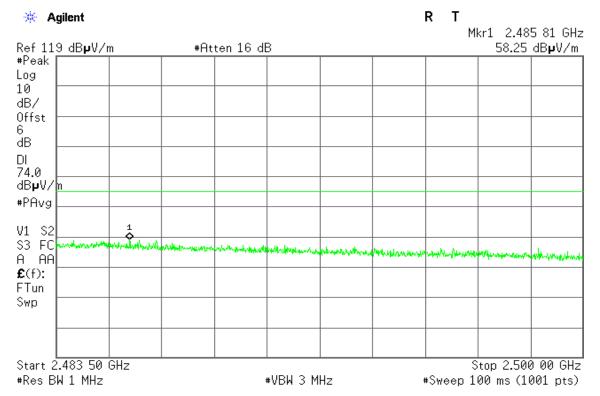




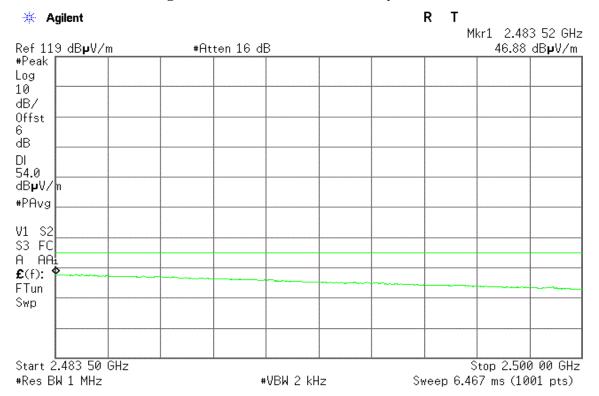
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# Band Edges (IEEE 802.11n HT 40 MHz mode / CH 2457)

Detector mode: Peak Polarity: Vertical

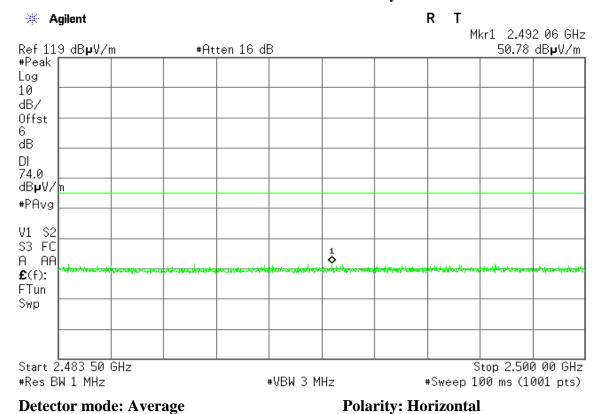


Detector mode: Average Polarity: Vertical



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



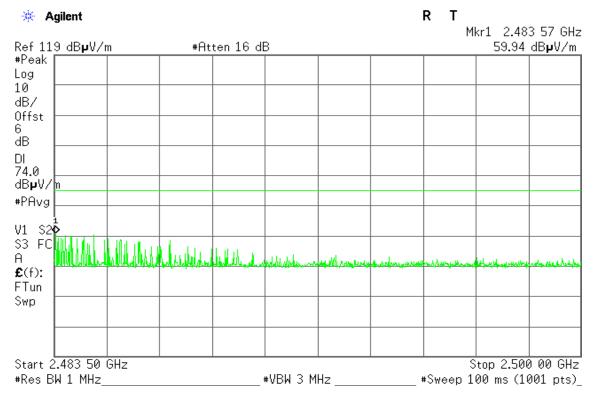
### **Detector mode: Average**

#### R \* Agilent Mkr1 2.497 61 GHz Ref 119 dB**µ**V/m #Atten 16 dB 39.84 dB**µ**V/m #Peak Log 10 dB/ Offst 6 ďΒ DΙ 54.0 dB**µ**V/þ #PAvg V1 S2 S3 FC A AA £(f): FTun Swp Start 2.483 50 GHz Stop 2.500 00 GHz #Res BW 1 MHz #VBW 2 kHz Sweep 6.467 ms (1001 pts)

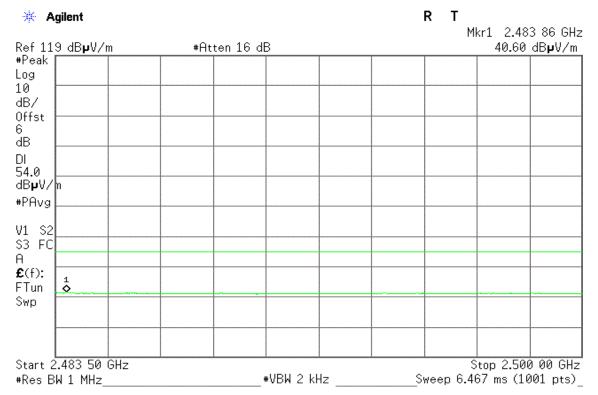
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## Band Edges (IEEE 802.11n HT 40 MHz mode / CH 2462)

Detector mode: Peak Polarity: Vertical

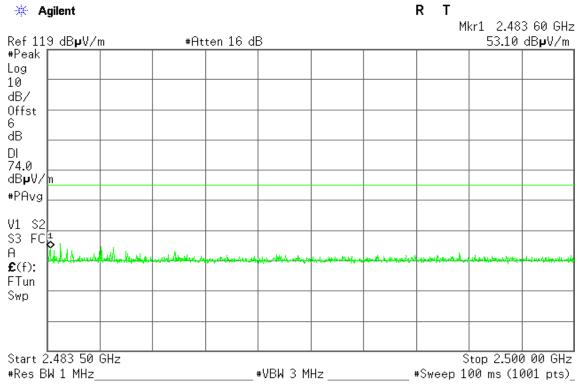


Detector mode: Average Polarity: Vertical

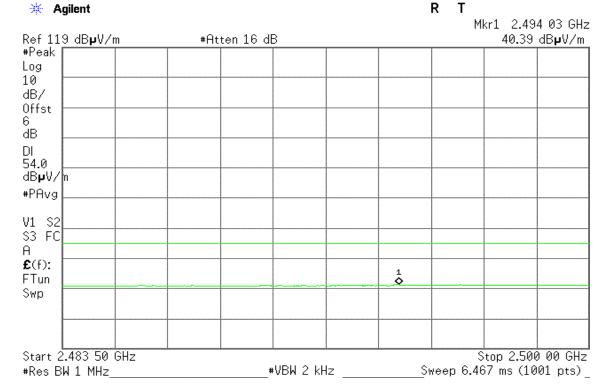


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Detector mode: Peak Polarity: Horizontal







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### 7.3 RADIATED EMISSIONS

### LIMIT

All spurious emissions shall comply with the limits of §15.209(a) and RSS-Gen Table 2 & Table 5

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RSS-Gen Table 2 & Table 5: General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz (Note)

Frequency	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)					
(MHz)	Transmitters	Receivers				
30-88	100 (3 nW)	100 (3 nW)				
88-216	150 (6.8 nW)	150 (6.8 nW)				
216-960	200 (12 nW)	200 (12 nW)				
Above 960	500 (75 nW)	500 (75 nW)				

*Note:* \*Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7.

Transmitting devices are not permitted in Table 1 bands or, unless stated otherwise, in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz).

RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

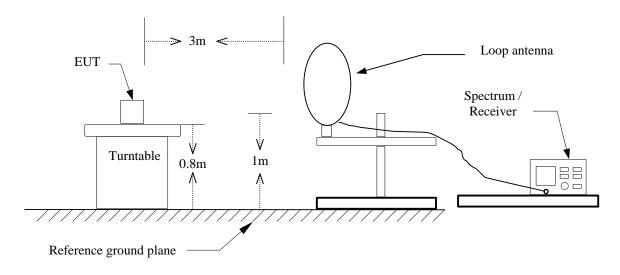
Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)	
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	3000	
490-1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30	
1.705-30 MHz	30	N/A	30	

*Note:* The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.

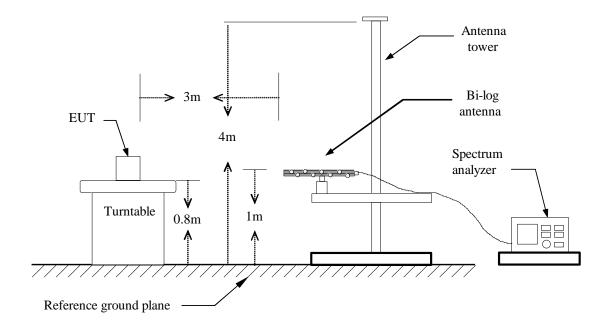
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# **Test Configuration**

### 9kHz ~ 30MHz

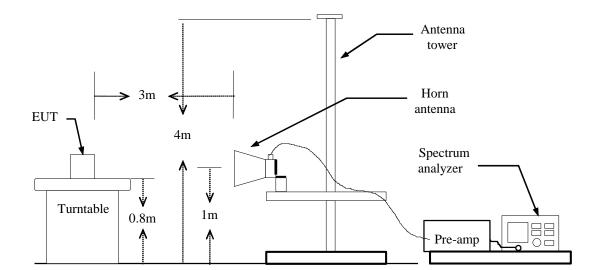


# **30MHz ~ 1GHz**



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**Above 1 GHz** 



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# **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.

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- 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=1MHz, VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=300Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

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# **Below 1GHz**

**Operation Mode:** Normal Link **Test Date:** August 8, 2014

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**Temperature:** 27°C **Tested by:** Ali Shu

**Humidity:** 53% 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)
38.7300	48.32	-16.27	32.05	40.00	-7.95	peak	V
159.0100	48.96	-18.24	30.72	43.50	-12.78	peak	V
231.7600	53.02	-18.77	34.25	46.00	-11.75	peak	V
268.6200	52.18	-17.04	35.14	46.00	-10.86	peak	V
450.0100	41.60	-12.66	28.94	46.00	-17.06	peak	V
694.4500	38.40	-8.85	29.55	46.00	-16.45	peak	V
30.9700	45.12	-10.58	34.54	40.00	-5.46	peak	Н
158.0400	53.79	-18.21	35.58	43.50	-7.92	peak	Н
236.6100	57.98	-18.67	39.31	46.00	-6.69	peak	Н
367.5600	48.96	-14.78	34.18	46.00	-11.82	peak	Н
450.0100	46.36	-12.66	33.70	46.00	-12.30	peak	Н
696.3900	40.15	-8.83	31.32	46.00	-14.68	peak	Н

### Remark:

- 1. Measuring frequencies from 30 MHz to the 1GHz.
- 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. Margin(dB) = Result(dBuV/m) Limit(dBuV/m).

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# **Above 1 GHz**

Operation Mode: TX / IEEE 802.11b / CH 2412 Test Date: August 8, 2014

Report No.: T140522W08-RP4

**Temperature:** 27 °C **Tested by:** Andy Shi **Humidity:** 53% 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)
1974.000	52.38	-5.15	47.23	74.00	-26.77	peak	V
6000.000	42.99	5.24	48.23	74.00	-25.77	peak	V
N/A							
4825.000	43.45	2.99	46.44	74.00	-27.56	peak	Н
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).

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Operation Mode: TX / IEEE 802.11b / CH 2437 Test Date: August 8, 2014

Report No.: T140522W08-RP4

**Temperature:** 27 °C **Tested by:** Andy Shi **Humidity:** 53 % 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)
1944.000	52.41	-5.33	47.08	74.00	-26.92	peak	V
7310.000	46.19	9.39	55.58	74.00	-18.42	peak	V
7310.000	41.36	9.39	50.75	54.00	-3.25	AVG	V
N/A							
2234.000	52.12	-4.53	47.59	74.00	-26.41	peak	Н
4875.000	43.58	2.88	46.46	74.00	-27.54	peak	Н
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).

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Operation Mode: TX / IEEE 802.11b / CH 2462 Test Date: August 8, 2014

Report No.: T140522W08-RP4

**Temperature:** 27 °C **Tested by:** Andy Shi **Humidity:** 53 % 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)
2026.000	52.15	-4.94	47.21	74.00	-26.79	peak	V
7385.000	43.63	9.27	52.90	74.00	-21.10	peak	V
7385.000	39.70	9.27	48.97	54.00	-5.03	AVG	V
N/A							
2164.000	51.33	-4.65	46.68	74.00	-27.32	peak	Н
4925.000	43.39	2.87	46.26	74.00	-27.74	peak	Н
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).

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Operation Mode: TX / IEEE 802.11b / CH 2467 Test Date: September 6, 2014

Report No.: T140522W08-RP4

**Temperature:** 26°C **Tested by:** Ashby Cheng

**Humidity:** 60 % 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)
1918.000	50.42	-2.97	47.45	74.00	-26.55	peak	V
N/A							
1626.000	50.36	-4.74	45.62	74.00	-28.38	peak	Н
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).

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Operation Mode: TX / IEEE 802.11b / CH 2472 Test Date: September 6, 2014

Report No.: T140522W08-RP4

**Temperature:** 26°C **Tested by:** Ashby Cheng

**Humidity:** 60 % 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)
1886.000	50.84	-3.16	47.68	74.00	-26.32	peak	V
N/A							
1834.000	51.46	-3.48	47.98	74.00	-26.02	peak	Н
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).

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Operation Mode: TX / IEEE 802.11g / CH 2412 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature: 27°C Tested by: Andy Shi

**Humidity:** 53 % 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)
2240.000	53.44	-4.78	48.66	74.00	-25.34	peak	V
7235.000	46.66	9.52	56.18	74.00	-17.82	peak	V
7235.000	39.18	9.52	48.70	54.00	-5.30	AVG	V
N/A							
1928.000	53.10	-5.72	47.38	74.00	-26.62	peak	Н
6000.000	41.82	5.24	47.06	74.00	-26.94	peak	Н
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).

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Operation Mode: TX / IEEE 802.11g / CH 2437 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature: 27°C Tested by: Andy Shi

Humidity: 53 % 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)
2200.000	53.27	-4.86	48.41	74.00	-25.59	peak	V
7305.000	48.12	9.40	57.52	74.00	-16.48	peak	V
7305.000	38.72	9.40	48.12	54.00	-5.88	AVG	V
N/A							
2162.000	54.56	-4.94	49.62	74.00	-24.38	peak	Н
7305.000	41.33	9.40	50.73	74.00	-23.27	peak	Н
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).

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Operation Mode: TX / IEEE 802.11g / CH 2462 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature: 27°C Tested by: Andy Shi

**Humidity:** 53 % 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)
1678.000	55.32	-7.23	48.09	74.00	-25.91	peak	V
7380.000	48.47	9.27	57.74	74.00	-16.26	peak	V
7380.000	37.22	9.27	46.49	54.00	-7.51	AVG	V
N/A							
2286.000	53.04	-4.68	48.36	74.00	-25.64	peak	Н
7385.000	41.96	9.27	51.23	74.00	-22.77	peak	Н
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).

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Operation Mode: TX / IEEE 802.11g / CH 2467 Test Date: September 6, 2014

Report No.: T140522W08-RP4

**Temperature:** 26°C **Tested by:** Ashby Cheng

**Humidity:** 60 % 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)
1912.000	50.56	-3.01	47.55	74.00	-26.45	peak	V
N/A							
1796.000	51.38	-3.71	47.67	74.00	-26.33	peak	Н
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).

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Operation Mode: TX / IEEE 802.11g / CH 2472 Test Date: September 6, 2014

Report No.: T140522W08-RP4

**Temperature:** 26°C **Tested by:** Ashby Cheng

**Humidity:** 60 % 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)
1910.000	50.09	-3.02	47.07	74.00	-26.93	peak	V
N/A							
1826.000	50.30	-3.53	46.77	74.00	-27.23	peak	Н
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).

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Operation Mode: TX / IEEE 802.11n HT 20 MHz mode / CH 2412 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature:27 °CTested by: Andy ShiHumidity:53 % RHPolarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1992.000	51.22	-5.04	46.18	74.00	-27.82	peak	V
4790.000	48.76	3.07	51.83	74.00	-22.17	peak	V
N/A							
2002.000	51.94	-4.99	46.95	74.00	-27.05	peak	Н
6000.000	43.58	5.24	48.82	74.00	-25.18	peak	Н
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).

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Operation Mode: TX / IEEE 802.11n HT 20 MHz mode / CH 2437 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature:27 °CTested by: Andy ShiHumidity:53 % RHPolarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1968.000	50.72	-5.19	45.53	74.00	-28.47	peak	V
4795.000	41.32	3.06	44.38	74.00	-29.62	peak	V
N/A							
2146.000	51.47	-4.69	46.78	74.00	-27.22	peak	Н
6000.000	42.53	5.24	47.77	74.00	-26.23	peak	Н
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).

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Operation Mode: TX / IEEE 802.11n HT 20 MHz mode / CH 2462 Test Date: August 8, 2014

Report No.: T140522W08-RP4

Temperature:27 °CTested by: Andy ShiHumidity:53 % RHPolarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1996.000	53.09	-5.01	48.08	74.00	-25.92	peak	V
6000.000	41.78	5.24	47.02	74.00	-26.98	peak	V
N/A							
2032.000	51.95	-4.92	47.03	74.00	-26.97	peak	Н
6000.000	40.50	5.24	45.74	74.00	-28.26	peak	Н
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).

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/ CH 2467

**Temperature:** 26°C **Tested by:** Ashby Cheng

Report No.: T140522W08-RP4

**Test Date:** September 6, 2014

**Humidity:** 60 % 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)
1682.000	50.65	-4.40	46.25	74.00	-27.75	peak	V
N/A							
1828.000	51.10	-3.52	47.58	74.00	-26.42	peak	Н
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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/ CH 2472

**Temperature:** 26°C **Tested by:** Ashby Cheng

Report No.: T140522W08-RP4

**Test Date:** September 6, 2014

**Humidity:** 60 % 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)
1670.000	50.72	-4.48	46.24	74.00	-27.76	peak	V
N/A							
1702.000	51.18	-4.28	46.90	74.00	-27.10	manle	Н
1702.000	31.16	-4.28	40.90	74.00	-27.10	peak	П
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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Operation Mode: TX / IEEE 802.11n HT 40 MHz mode Test Date: August 8, 2014

/ CH 2422

**Temperature:** 27°C **Tested by:** Andy Shi

**Humidity:** 53 % 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)
1814.000	52.03	-6.13	45.90	74.00	-28.10	peak	V
6000.000	44.66	5.24	49.90	74.00	-24.10	peak	V
N/A							
1962.000	51.26	-5.22	46.04	74.00	-27.96	peak	Н
6000.000	42.84	5.24	48.08	74.00	-25.92	peak	Н
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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/ CH 2437

**Temperature:** 27°C **Tested by:** Andy Shi

Humidity: 53 % 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)
2002.000	51.39	-4.99	46.40	74.00	-27.60	peak	V
6000.000	40.54	5.24	45.78	74.00	-28.22	peak	V
N/A							
1988.000	51.15	-5.06	46.09	74.00	-27.91	peak	Н
6000.000	41.41	5.24	46.65	74.00	-27.35	peak	Н
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).

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Report No.: T140522W08-RP4

Test Date: August 8, 2014

/ CH 2452

**Temperature:** 26°C **Tested by:** Ashby Cheng

Report No.: T140522W08-RP4

**Test Date:** September 6, 2014

**Humidity:** 60 % 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)
2014.000	51.35	-4.96	46.39	74.00	-27.61	peak	V
4780.000	43.53	3.09	46.62	74.00	-27.38	peak	V
N/A							
2142.000	51.19	-4.70	46.49	74.00	-27.51	peak	Н
6000.000	42.45	5.24	47.69	74.00	-26.31	peak	Н
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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/ CH 2457

**Temperature:** 26°C **Tested by:** Ashby Cheng

Report No.: T140522W08-RP4

**Test Date:** September 6, 2014

**Humidity:** 60 % 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)
1758.000	50.82	-3.94	46.88	74.00	-27.12	peak	V
N/A							
1702.000	51.21	-3.73	47.48	74.00	-26.52	maalr	Н
1792.000	51.21	-3.73	47.46	74.00	-20.32	peak	П
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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/ CH 2462

**Temperature:** 26°C **Tested by:** Ashby Cheng

Report No.: T140522W08-RP4

**Test Date:** September 6, 2014

**Humidity:** 60 % 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)
1666.000	50.71	-4.50	46.21	74.00	-27.79	peak	V
N/A							
1796.000	52.28	-3.71	48.57	74.00	-25.43	peak	Н
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.  $Margin(dB) = Remark\ result(dBuV/m) Average\ limit(dBuV/m)$ .

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