FCC 47 CFR PART 15 SUBPART C

for

Sparx200W WIRELESS POWERLINE NETWORK MINIADAPTER

Model: AELEL204U1

Brand: NEXXT

Test Report Number:
C150803Z04-RP1
Issued Date: September 8, 2015

Issued for

NEXXT SOLUTIONS

3505 N.W 107TH AVE.MIAMI Florida United States 33178

Issued by:

Compliance Certification Services (Shenzhen) Inc.
No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd.,
Guan Lan Town, Baoan District, Shenzhen, China
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CNAS L4818

TESTING CERT #2861.01

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	September 8, 2015	Initial Issue	ALL	Amzula Chen

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1 TEST CERTIFICATION

Product	Sparx200W WIRELESS POWERLINE NETWORK MINIADAPTER
Model	AELEL204U1
Brand	NEXXT
Tested	August 3~ September 7, 2015
Applicant	**NEXXT SOLUTIONS** 3505 N.W 107TH AVE.MIAMI Florida United States 33178
Manufacturer	**NEXXT SOLUTIONS** 3505 N.W 107TH AVE.MIAMI Florida United States 33178

APPLICABLE STANDARDS			
Standard	**Test Type**	**Standard**	**Test Type**
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	● Spurious Emissions ● Conducted Measurement ● Radiated Emissions
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density

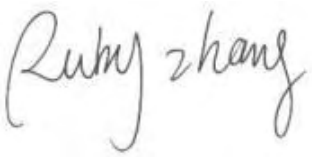
We hereby certify that:

The above equipment was tested by Compliance Certification Services (Shenzhen) 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 C63.10: 2013** 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:

Sunday Hu
Supervisor of EMC Dept.
Compliance Certification Services (Shenzhen) Inc.

Reviewed by:



Ruby Zhang
Supervisor of Report Dept.
Compliance Certification Services (Shenzhen) Inc.

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2 TEST RESULT SUMMARY

APPLICABLE STANDARDS			
Standard	**Test Type**	**Result**	**Remark**
15.247(a)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of limit.
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.247(d) 15.209(a)	● Spurious Emissions ● Conducted Measurement ● Radiated Emissions	Pass	Meet the requirement of limit.
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

2. The information of measurement uncertainty is available upon the customer's request.

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3 EUT DESCRIPTION

Product	Sparx200W WIRELESS POWERLINE NETWORK MINIADAPTER
Model Number	AELEL204U1
Brand	NEXXT
Model Discrepancy	N/A
Identify Number	C150803Z04-RP1
Power Supply	AC100-240V, 50/60Hz, 0.2A
Transmit Power	IEEE 802.11b mode: 15.34dBm (Antenna 1) IEEE 802.11b mode: 16.01dBm (Antenna 2) IEEE 802.11g mode: 19.75dBm (Antenna 1) IEEE 802.11g mode: 20.16dBm (Antenna 2) IEEE 802.11n HT20 MHz mode: 21.77dBm(Combine with Antenna 1 and Antenna 2) IEEE 802.11n HT40 MHz mode: 20.05dBm(Combine with Antenna 1 and Antenna 2)
Modulation Technique	IEEE 802.11b mode: DSSS(CCK,QPSK, BPSK) IEEE 802.11g mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT20 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT40 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM)
Transmit Data Rate	IEEE 802.11b: 11Mbps(CCK) with fall back rates of 5.5/2/1Mbps IEEE 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9 /6Mbps IEEE 802.11n HT20: 130Mbps with fall back rates of 130/117/104/ 78/52/39/26/13Mbps IEEE 802.11n HT40: 270Mbps with fall back rates of 270/243/216/ 162/108/81/54/27Mbps
Number of Channels	IEEE 802.11b mode: 11 Channels IEEE 802.11g mode: 11 Channels IEEE 802.11n HT20 MHz mode: 11 Channels IEEE 802.11n HT40 MHz mode: 7 Channels
Antenna Specification	PCB Antenna with 2.0dBi gain (Max)
Channels Spacing	IEEE 802.11b/g ,802.11n HT20/HT40 : 5MHz
Temperature Range	0°C ~ +40°C
Hardware Version	AELEL204U1 V2.0
Software Version	AELEL204U1 V2.0

Note: *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: **X4YSPARX2W** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*

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4 TEST METHODOLOGY

4.1. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

Test Item	Test mode	Worse mode
Conducted Emission	**Mode 1:** Normal Link(AC120V/60Hz) **Mode 2:** Normal Link(AC240V/50Hz)	**Mode 1**
Radiated Emission	**Mode 1:** TX	**Mode 1**

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, and power line conducted emission below 30MHz, which worst case was in normal link mode.

IEEE802.11b mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 MHz mode: Channel Low (2412MHz), Channel Mid(2437MHz) and Channel High (2462MHz) with 13Mbps data rate were chosen for full testing.

IEEE 802.11n HT40 MHz mode: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 27Mbps data rate were chosen for full testing.

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5 SETUP OF EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Brand	Data Cable	Power Cord
1	Notebook	E335	R9-WN1EF	DoC	Thinkpad	N/A	N/A

Note:

Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST

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

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6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at **No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.10, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	**A2LA**
China	**CNAS**

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	**FCC**
Japan	**VCCI(C-3478, R-3135, T-652, G-624)**
Canada	**INDUSTRY CANADA**
Taiwan	**BSMI**

Copies of granted accreditation certificates are available for downloading from our web site, http://www.ccssz.com

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Uncertainty
Radiated Emission, 30 to 200 MHz Test Site : 966(2)	+/-3.6880dB
Radiated Emission, 200 to 1000 MHz Test Site : 966(2)	+/-3.6695dB
Radiated Emission, 1 to 8 GHz	+/-5.1782dB
Radiated Emission, 8 to 18 GHz	+/-5.2173dB
Conducted Emissions	+/-3.6836dB
Band Width	178kHz
Peak Output Power MU	+/-1.906dB
Band Edge MU	+/-0.182dB
Channel Separation MU	416.178Hz
Duty Cycle MU	0.054ms
Frequency Stability MU	226Hz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.

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7 FCC PART 15.247 REQUIREMENTS

7.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

7.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

NOTE:
(1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/28/2015	02/27/2016
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	02/28/2015	02/27/2016
LISN	EMCO	3825/2	8901-1459	02/28/2015	02/27/2016
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	02/28/2015	02/27/2016
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.

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7.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.

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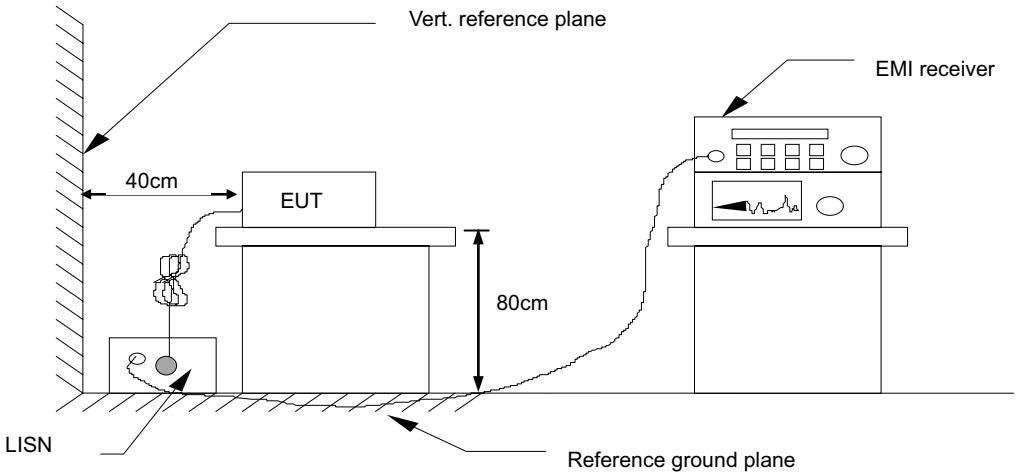
7.1.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.5. DATA SAMPLE

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Reading/ Average Reading + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)

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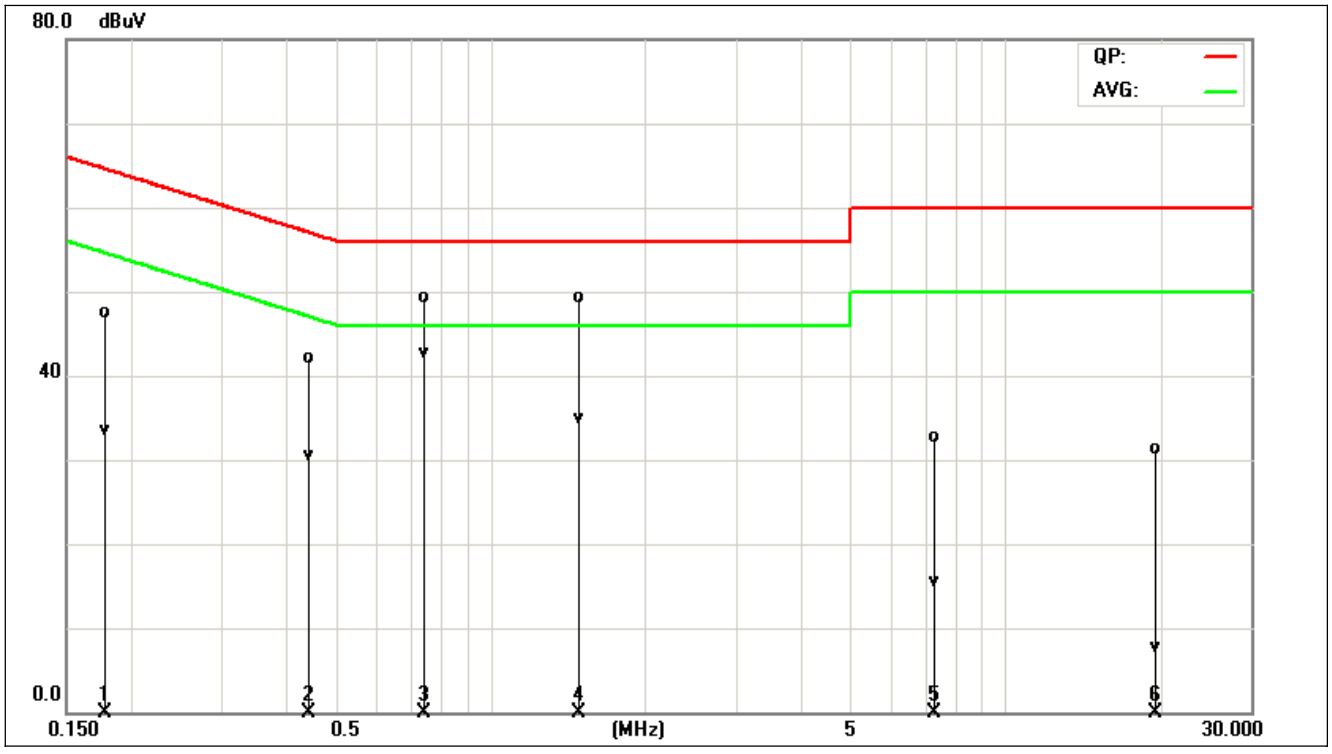
7.1.6. TEST RESULTS

Model No.	AELEL204U1	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Eve Wang	Line	L1
Test Date	September 1, 2015		



Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1780	37.72	23.77	9.79	47.51	33.56	64.57	54.58	-17.06	-21.02	Pass	L1
0.4420	32.40	20.77	9.70	42.10	30.47	57.02	47.02	-14.92	-16.55	Pass	L1
0.7420	39.60	33.00	9.70	49.30	42.70	56.00	46.00	-6.70	-3.30	Pass	L1
1.4827	39.62	25.05	9.77	49.39	34.82	56.00	46.00	-6.61	-11.18	Pass	L1
7.2300	23.01	5.64	9.79	32.80	15.43	60.00	50.00	-27.20	-34.57	Pass	L1
19.5300	21.56	-2.11	9.73	31.29	7.62	60.00	50.00	-28.71	-42.38	Pass	L1

REMARKS: *L1 = Line One (Live Line)*

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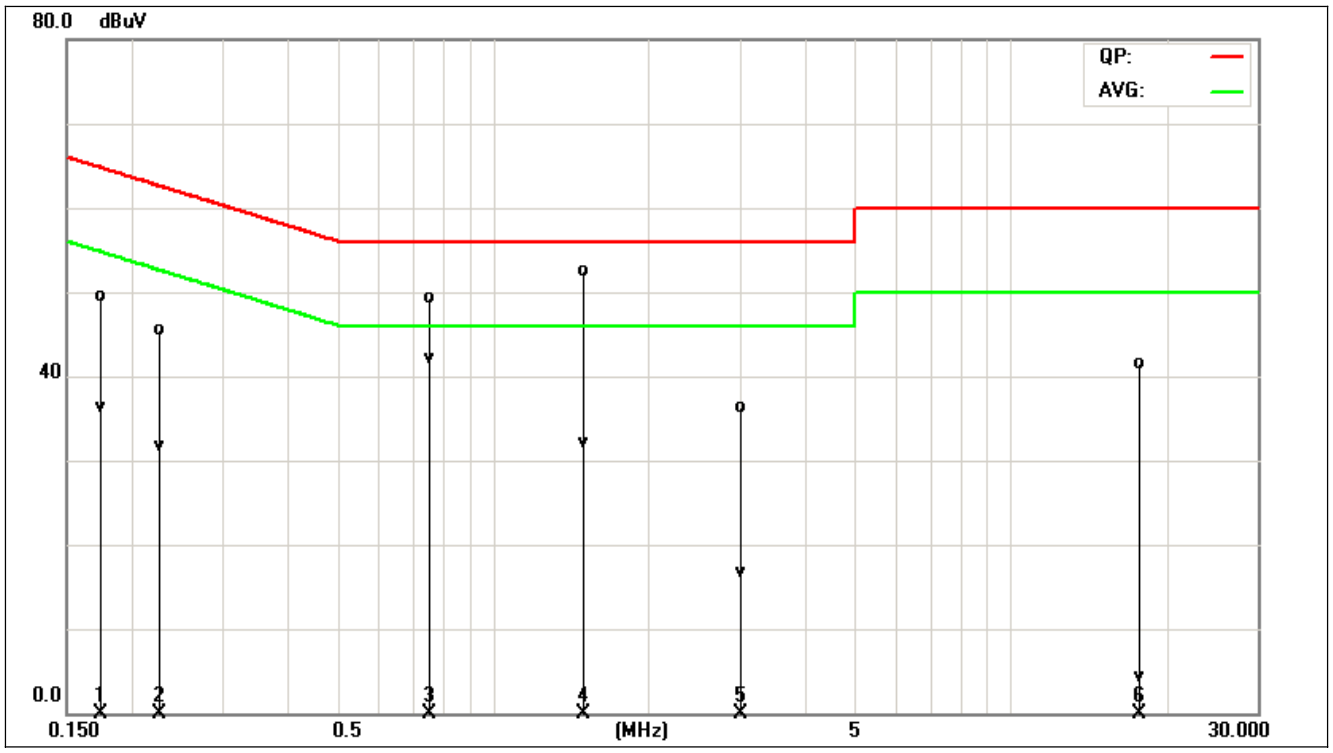
Model No.	AELEL204U1	**RBW,VBW**	9 kHz
Environmental Conditions	22°C, 45% RH	**Test Mode**	Mode 1
Tested by	Eve Wang	**Line**	L1
Test Date	September 1, 2015		



Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	**Line (L1/L2)**
0.1740	39.79	26.65	9.63	49.42	36.28	64.76	54.77	-15.34	-18.49	Pass	L2
0.2260	35.76	22.00	9.69	45.45	31.69	62.59	52.60	-17.14	-20.91	Pass	L2
0.7500	39.53	32.33	9.77	49.30	42.10	56.00	46.00	-6.70	-3.90	Pass	L2
1.4940	42.69	22.38	9.72	52.41	32.10	56.00	46.00	-3.59	-13.90	Pass	L2
2.9940	26.51	7.01	9.72	36.23	16.73	56.00	46.00	-19.77	-29.27	Pass	L2
17.6460	31.63	-5.55	9.87	41.50	4.32	60.00	50.00	-18.50	-45.68	Pass	L2

REMARKS: *L2 = Line Two (Neutral Line)*

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7.2. SPURIOUS EMISSIONS MEASUREMENT

7.2.1. CONDUCTED EMISSIONS MEASUREMENT

7.2.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

§15.247(d)specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:
If the peakoutput power procedure is used to measure the fundamental emission powerto demonstrate compliance to 15.247(b)(3)requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency bandshall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
If the averageoutput power procedure is used to measure the fundamental emission powerto demonstrate compliance to 15.247(b)(3)requirements,then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measuredin-band average PSD level.
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)).

7.2.1.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	10/25/2014	10/24/2015

7.2.1.3. TEST PROCEDURE (please refer to measurement standard)

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 300 kHz.
Measurements are made over the 10MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

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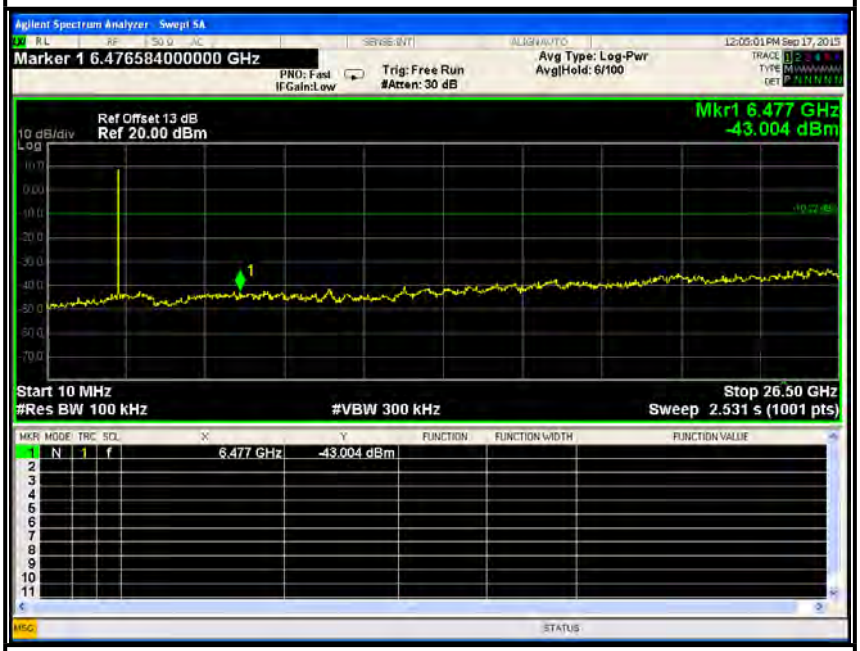
7.2.1.4. TEST RESULTS

Test Plot

IEEE 802.11b mode (Antenna 1)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)

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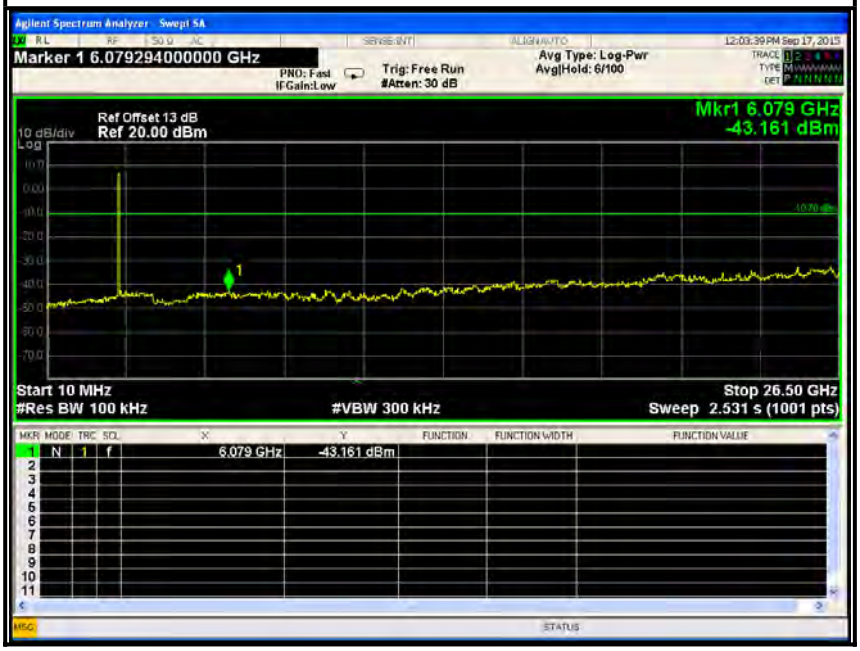
CH Mid (10MHz ~26.5GHz)



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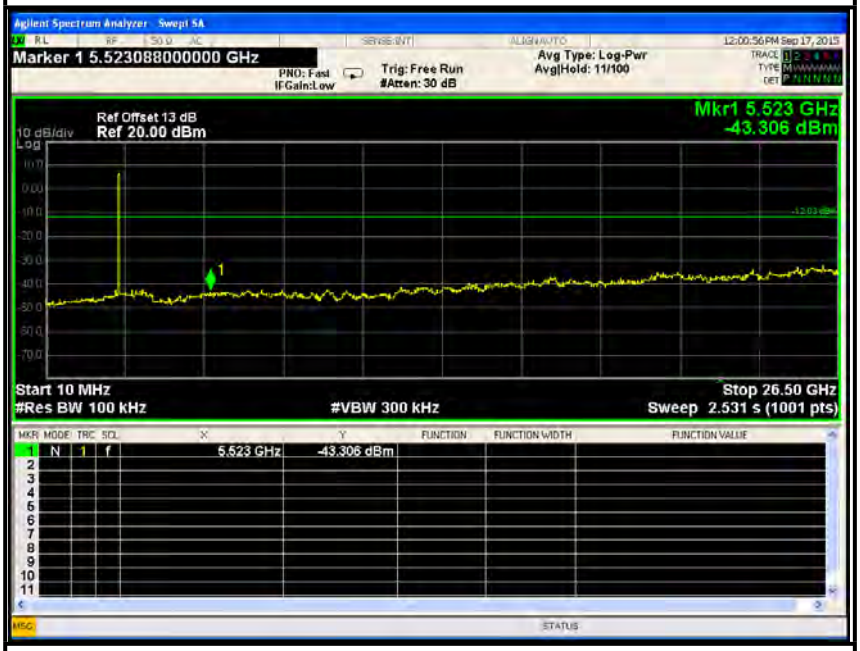
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)

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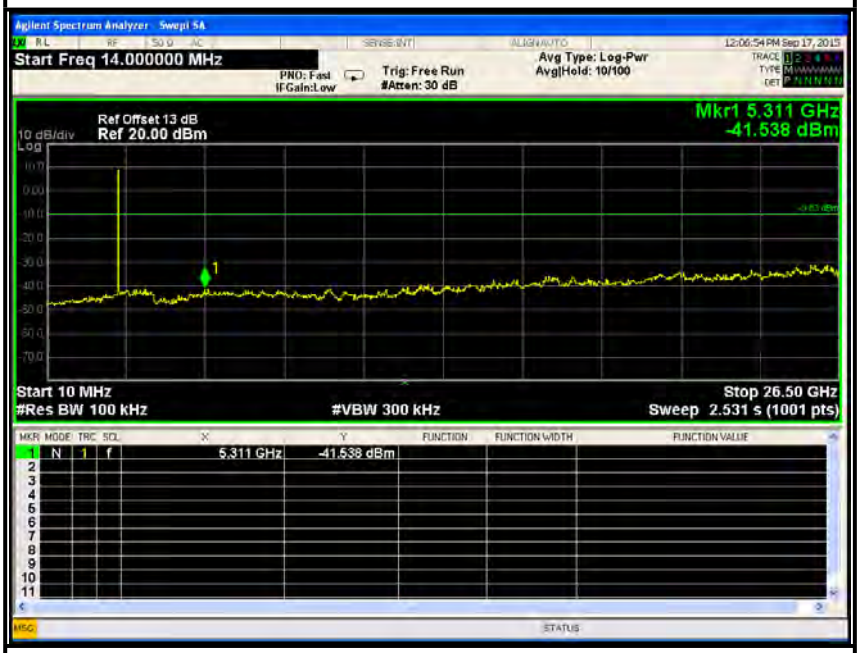
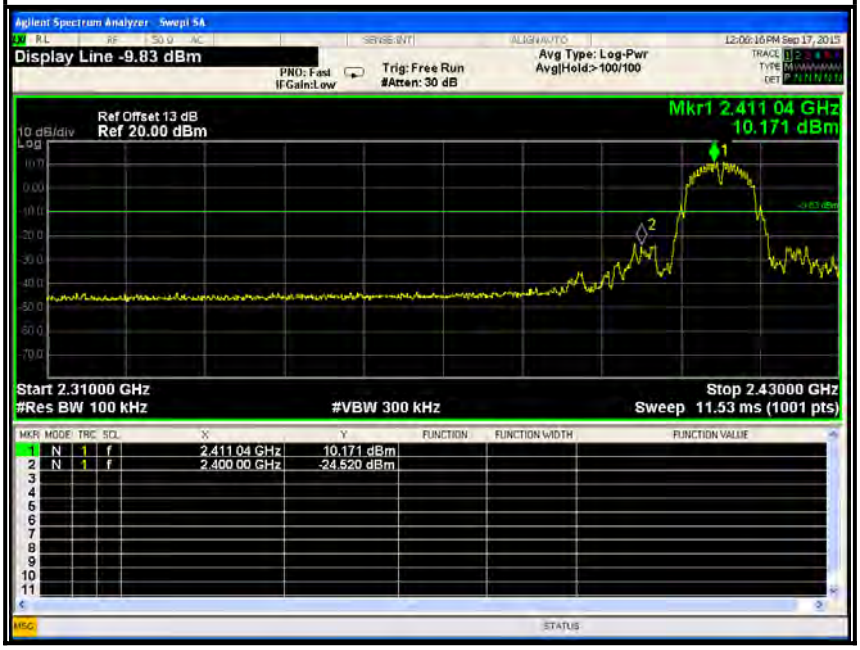
IEEE 802.11b mode (Antenna 2)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)



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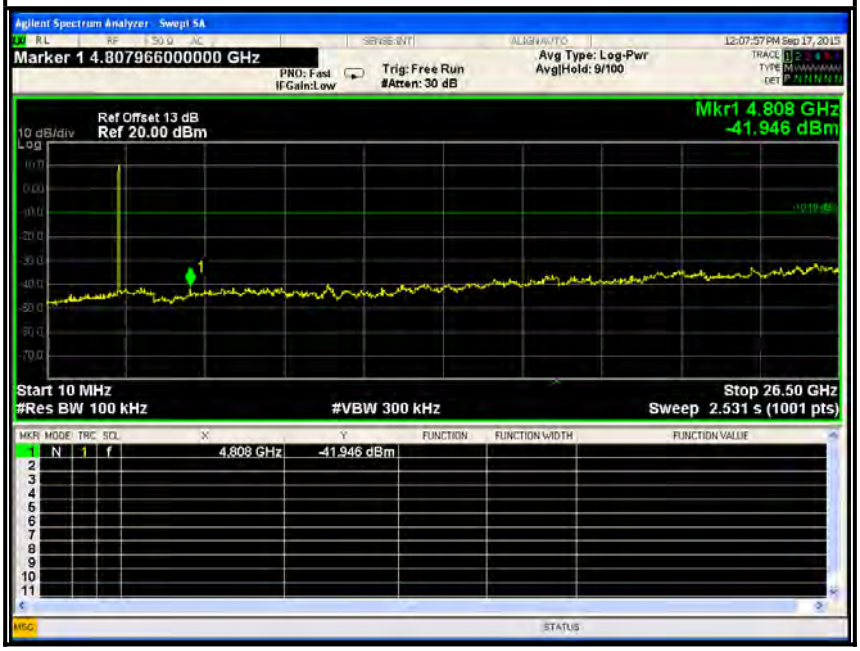
CH Mid (10MHz ~26.5GHz)



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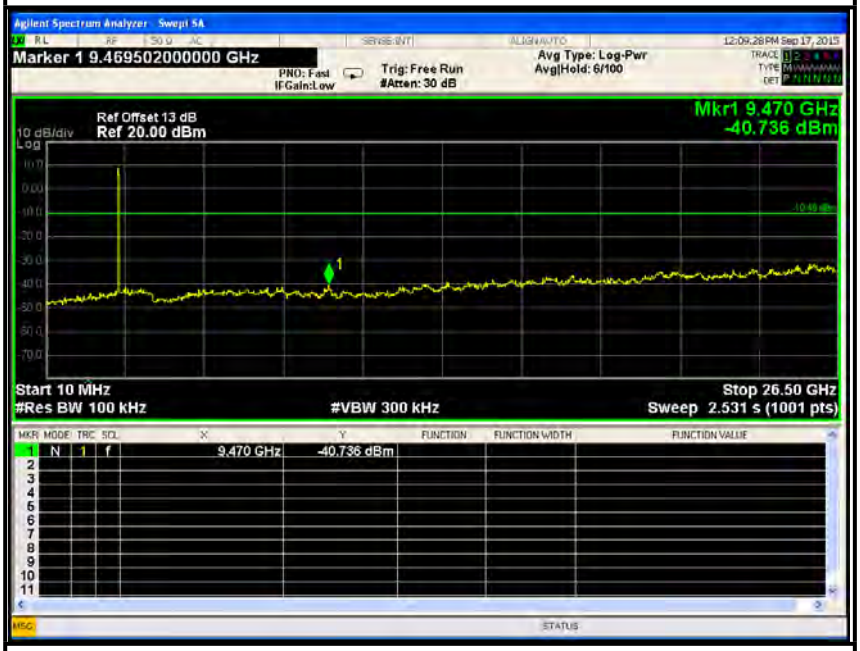
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)

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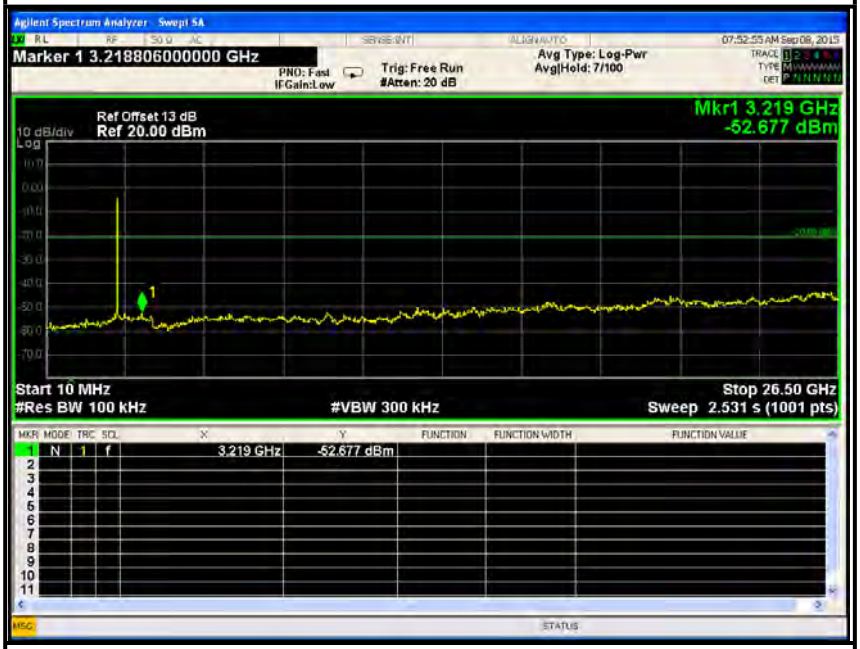
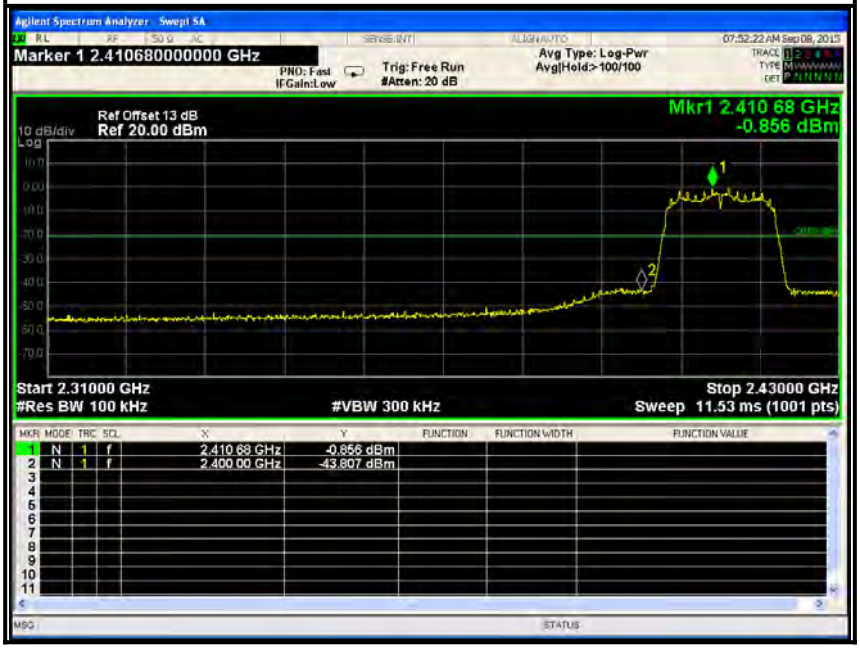
IEEE 802.11g mode (Antenna 1)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)



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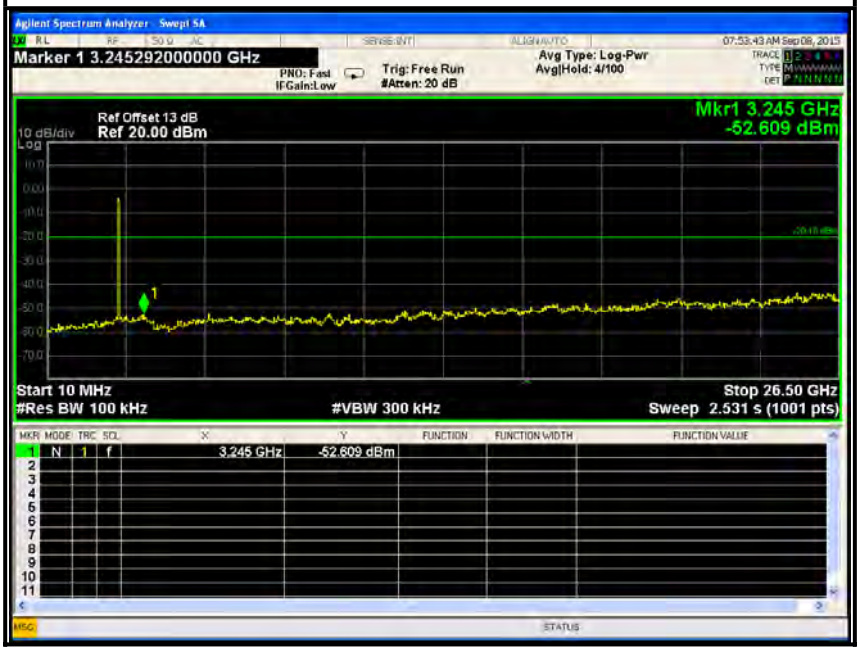
CH Mid (10MHz ~26.5GHz)



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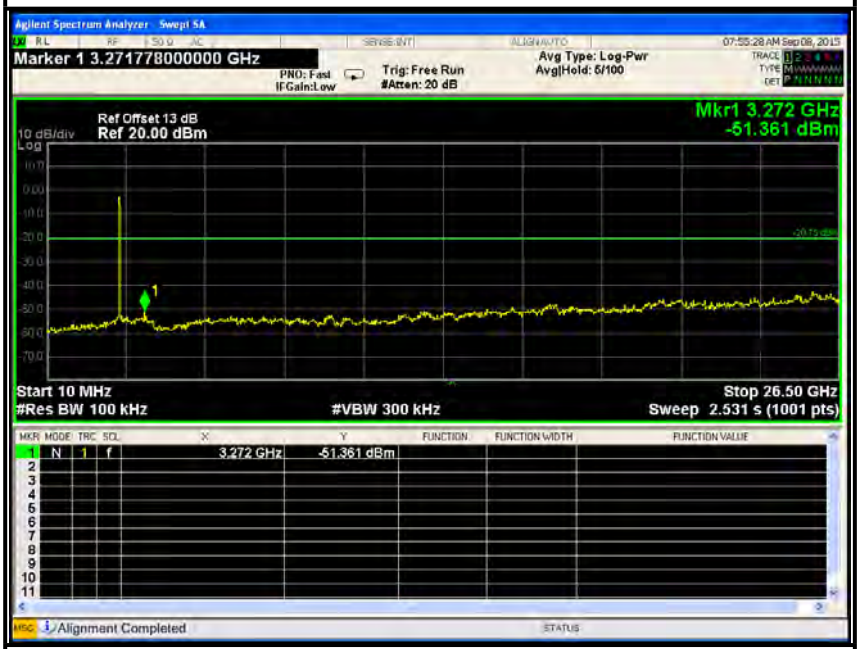
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)

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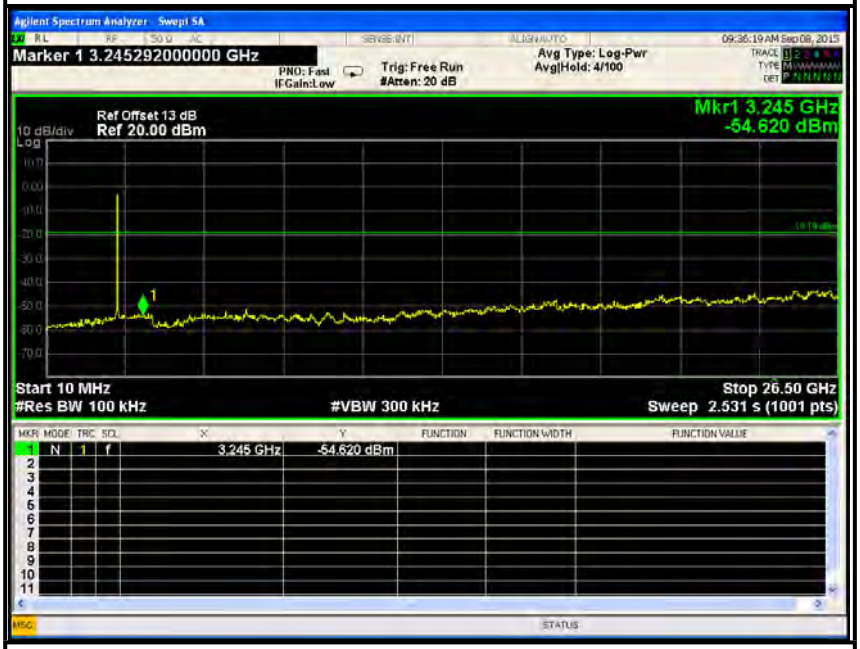
IEEE 802.11g mode (Antenna 2)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)

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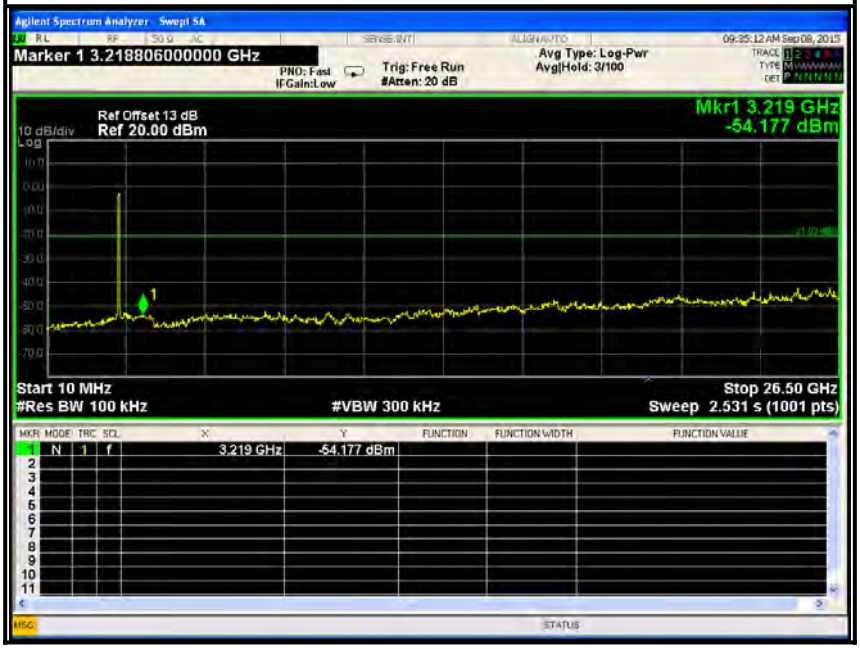
CH Mid (10MHz ~26.5GHz)



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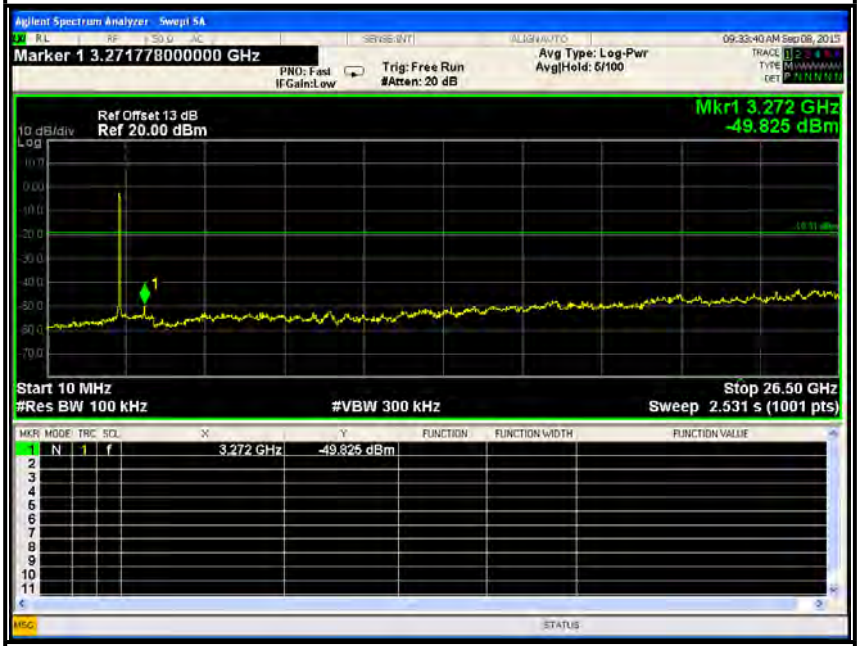
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)

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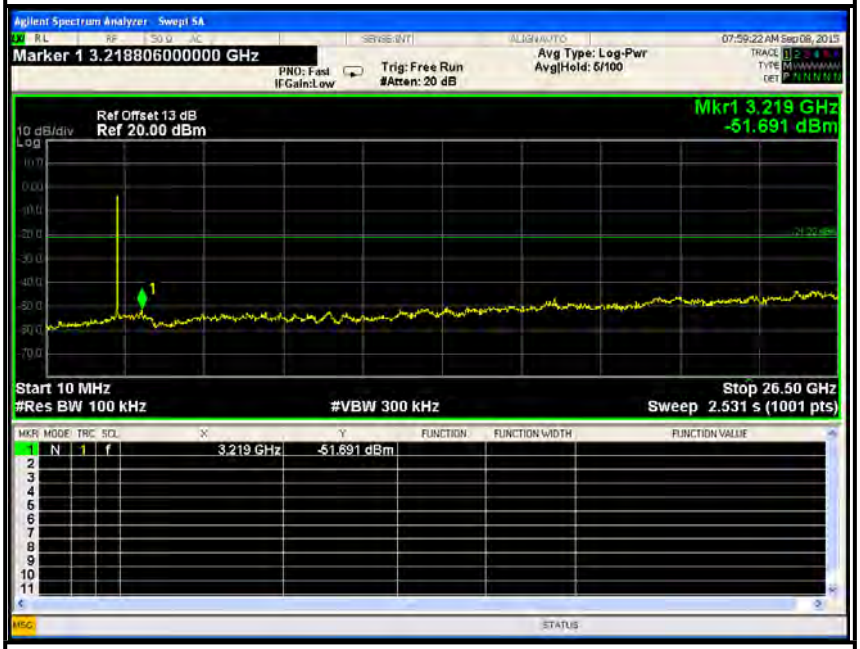
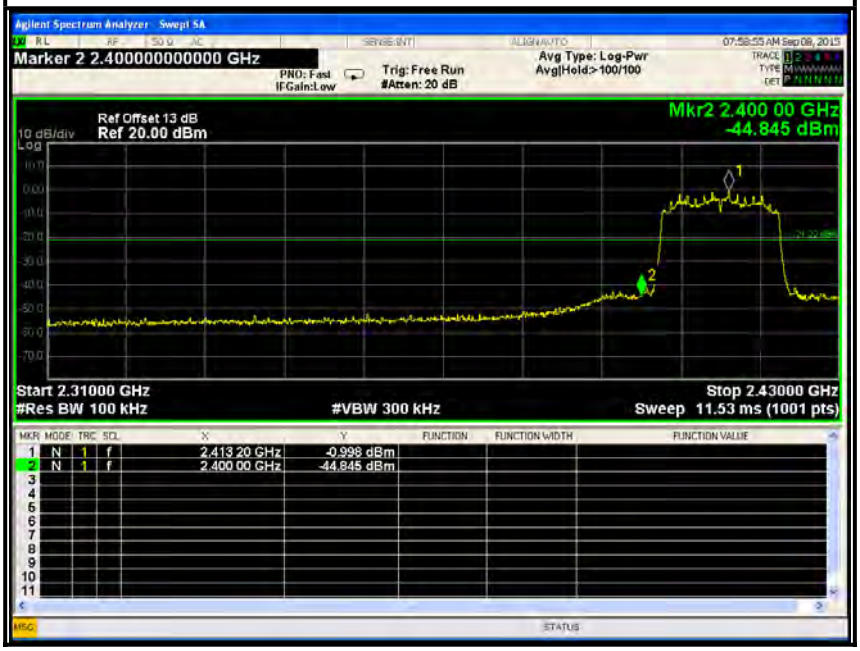
IEEE 802.11n HT20 MHz mode (Antenna 1)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)



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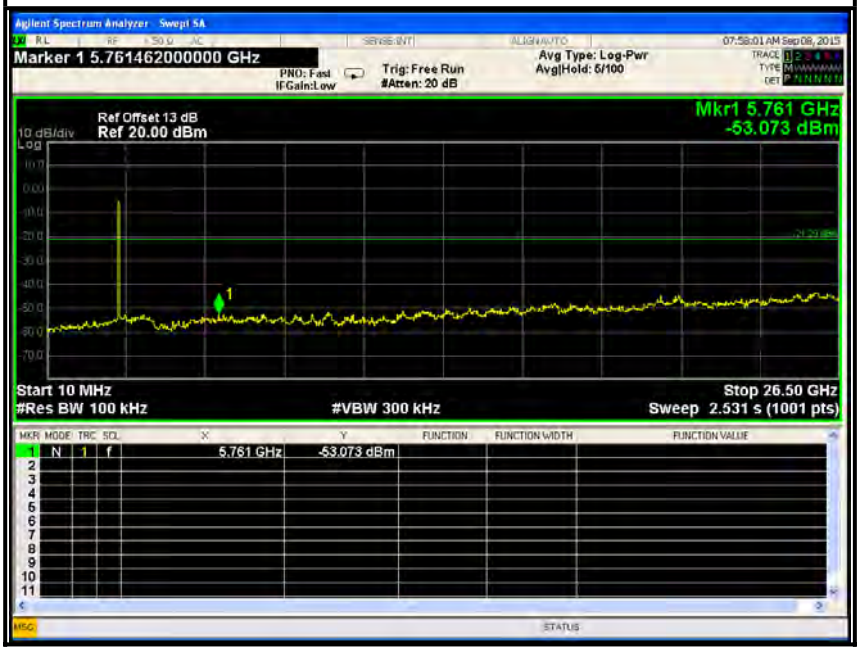
CH Mid (10MHz ~26.5GHz)



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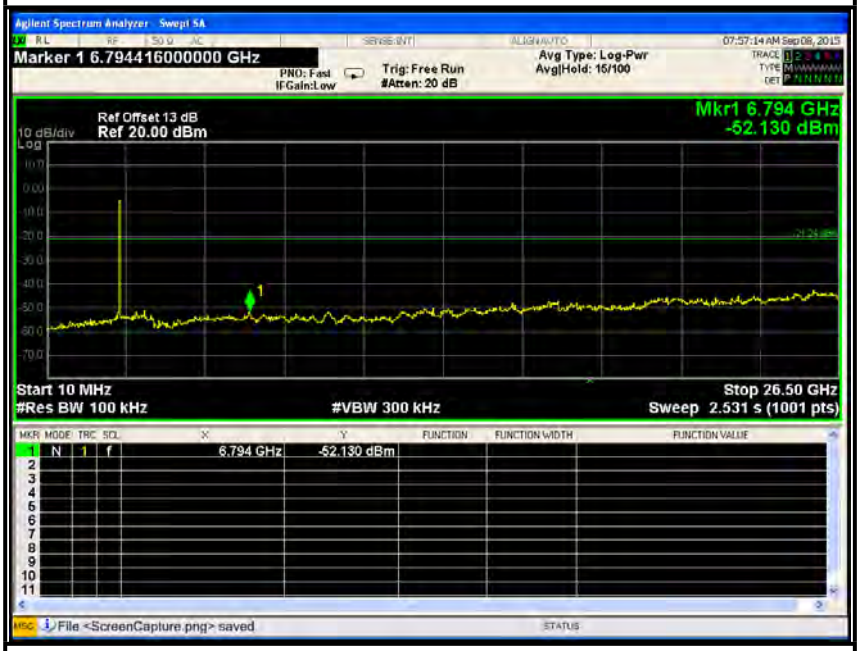
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)

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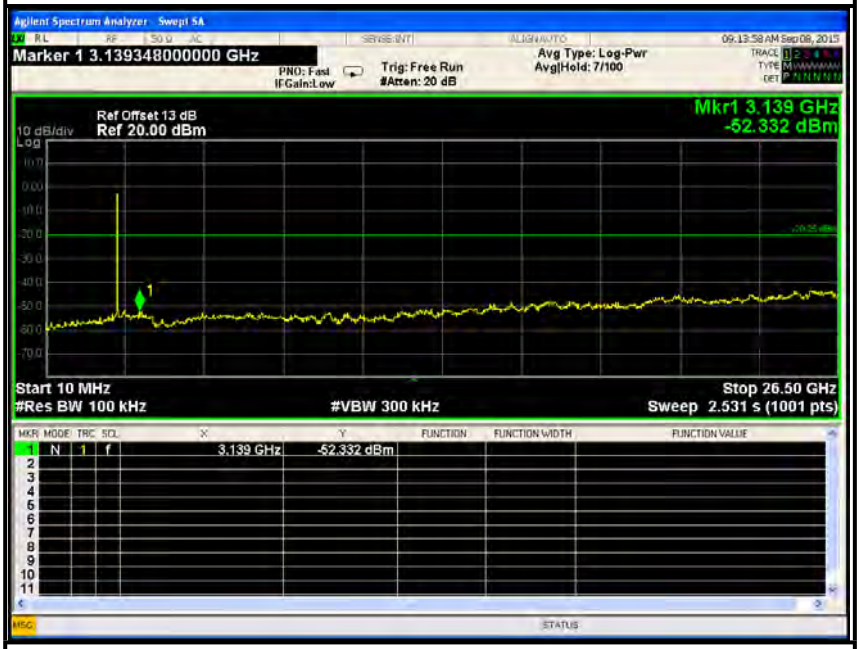
IEEE 802.11n HT20 MHz mode (Antenna 2)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.43GHz)

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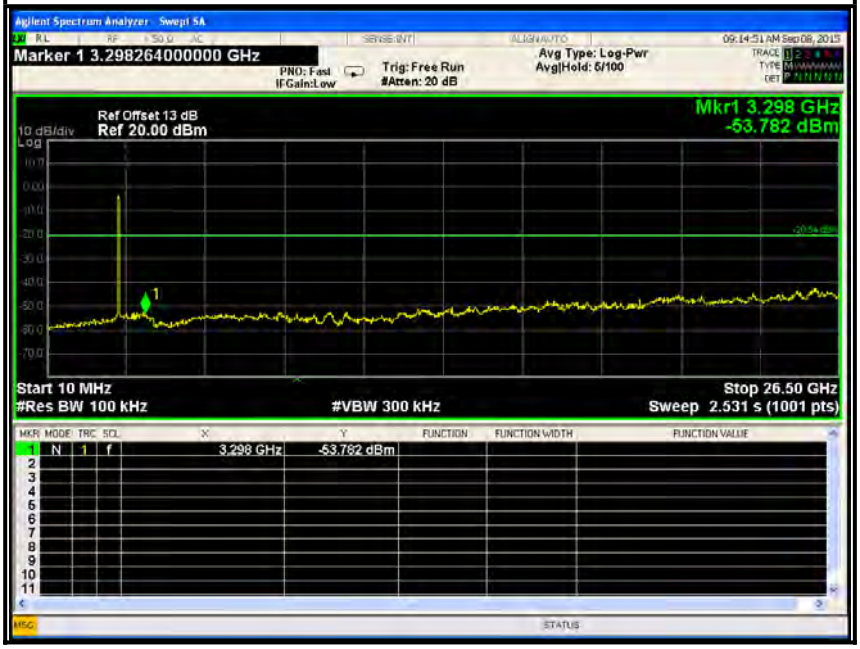
CH Mid (10MHz ~26.5GHz)



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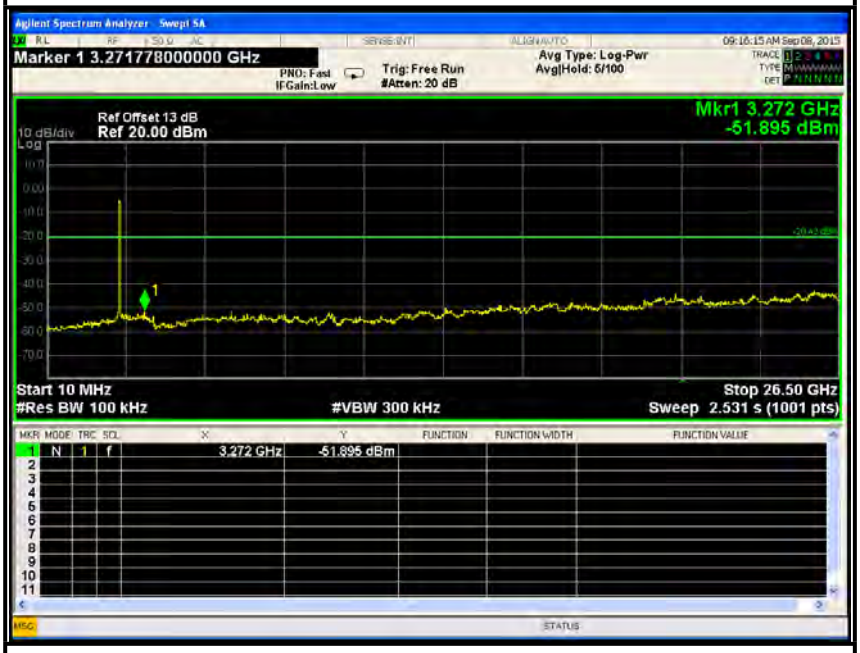
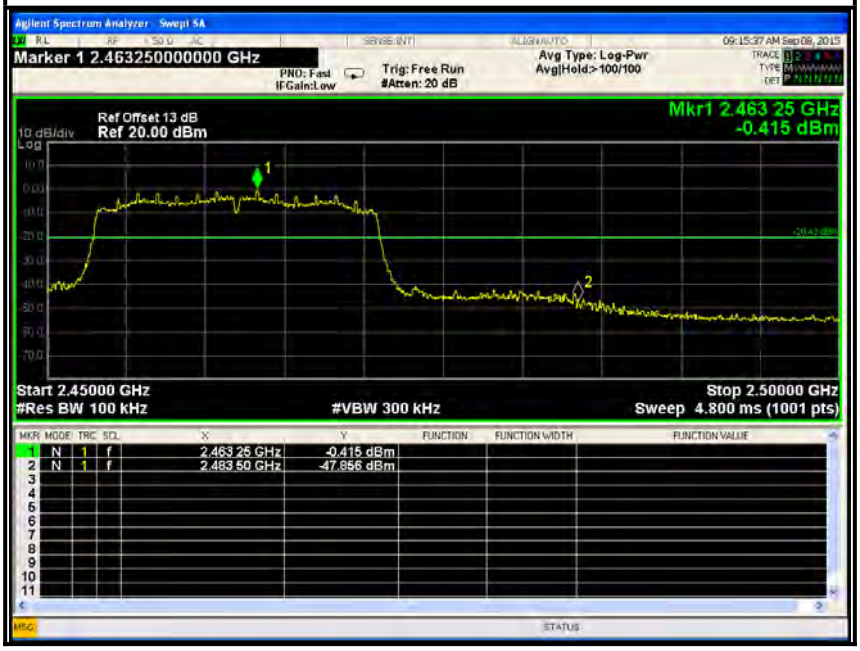
CH High (10MHz ~26.5GHz)



CH High (2.45GHz ~2.5GHz)



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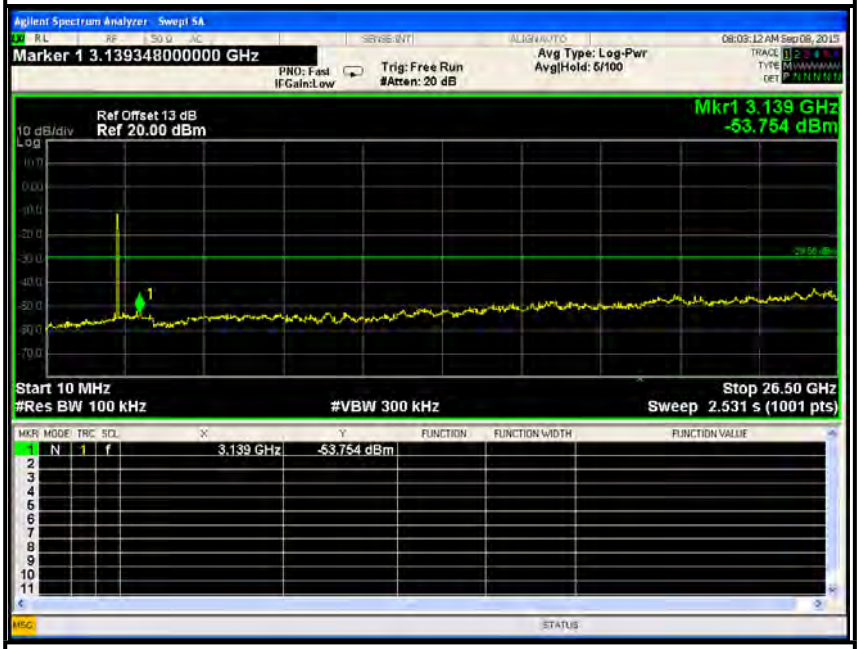
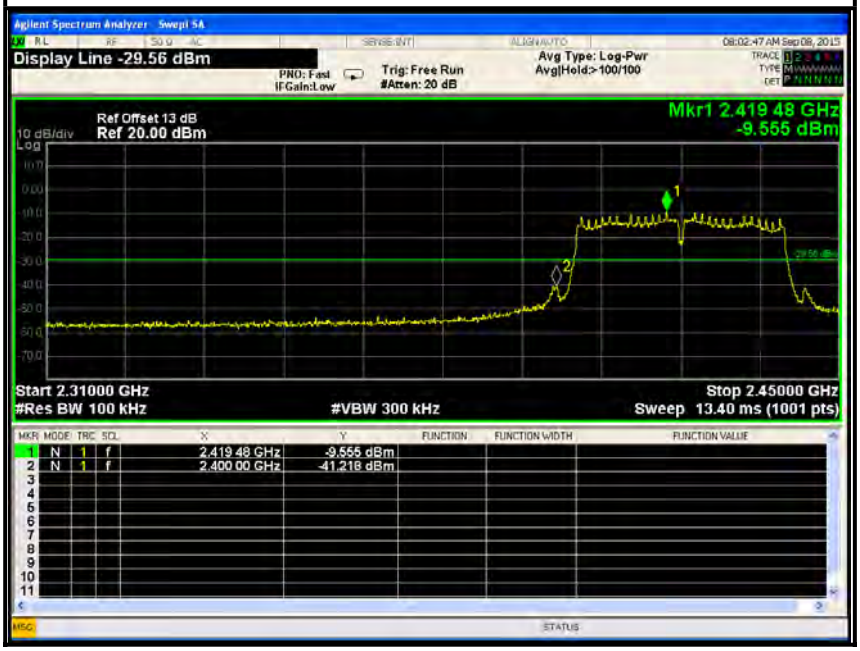
IEEE 802.11n HT40 MHz mode (Antenna 1)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.45GHz)



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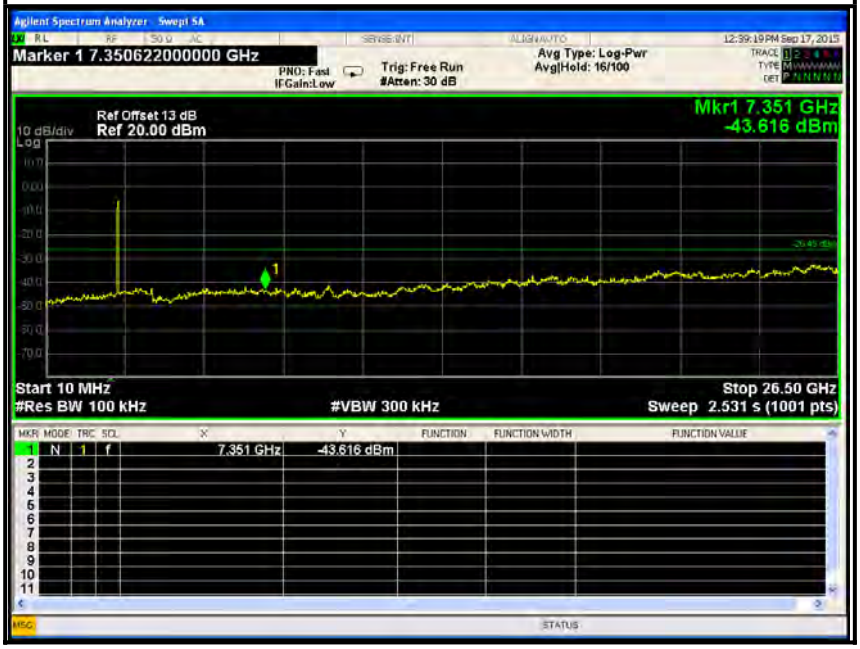
CH Mid (10MHz ~26.5GHz)



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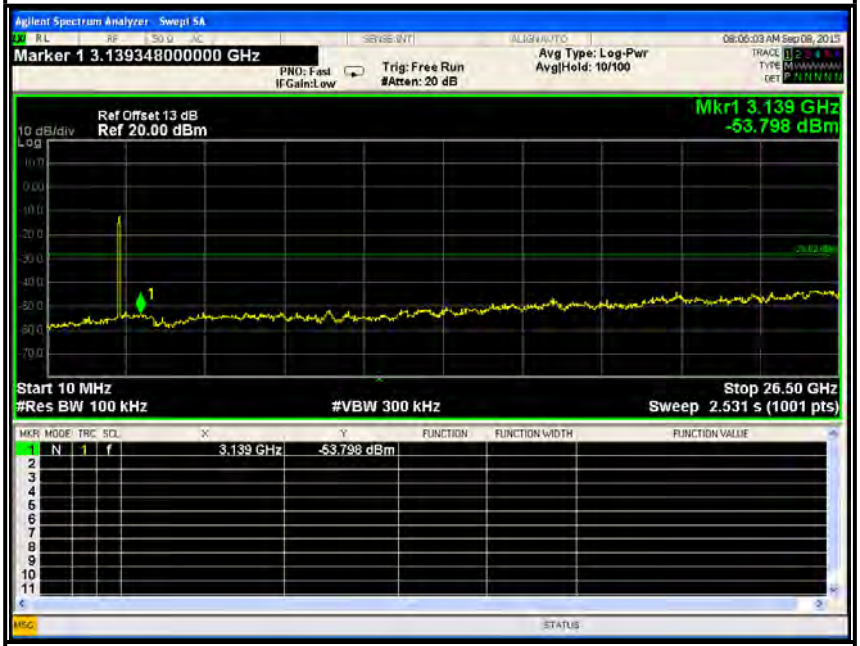
CH High (10MHz ~26.5GHz)



CH High (2.43GHz ~2.5GHz)

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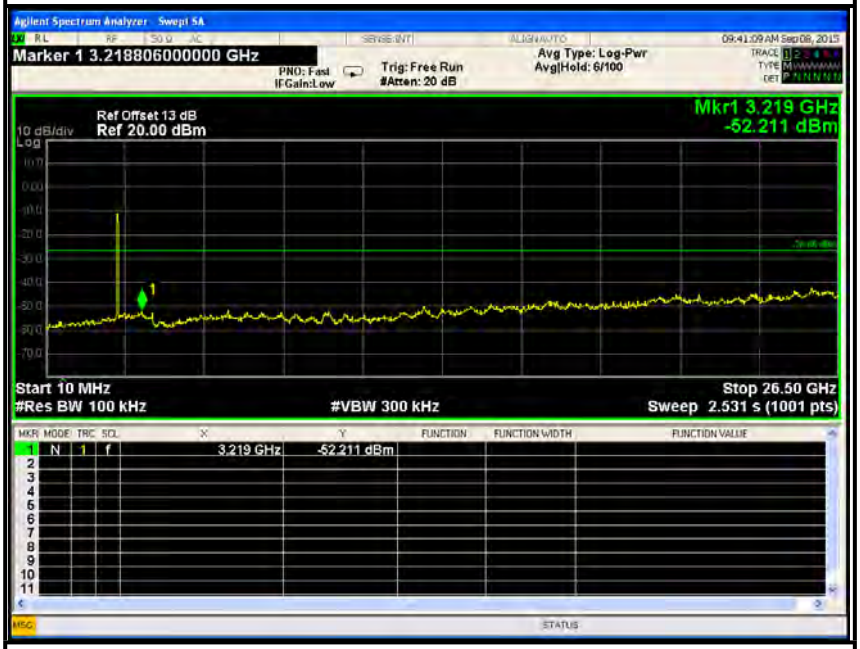
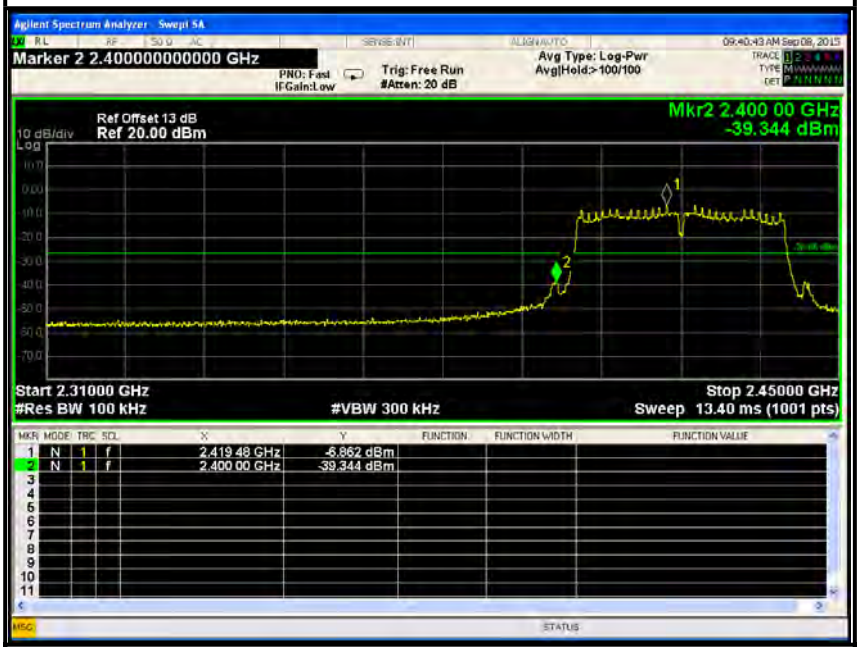
IEEE 802.11n HT40 MHz mode (Antenna 2)

CH Low (10MHz ~26.5GHz)



CH Low (2.31GHz ~2.45GHz)



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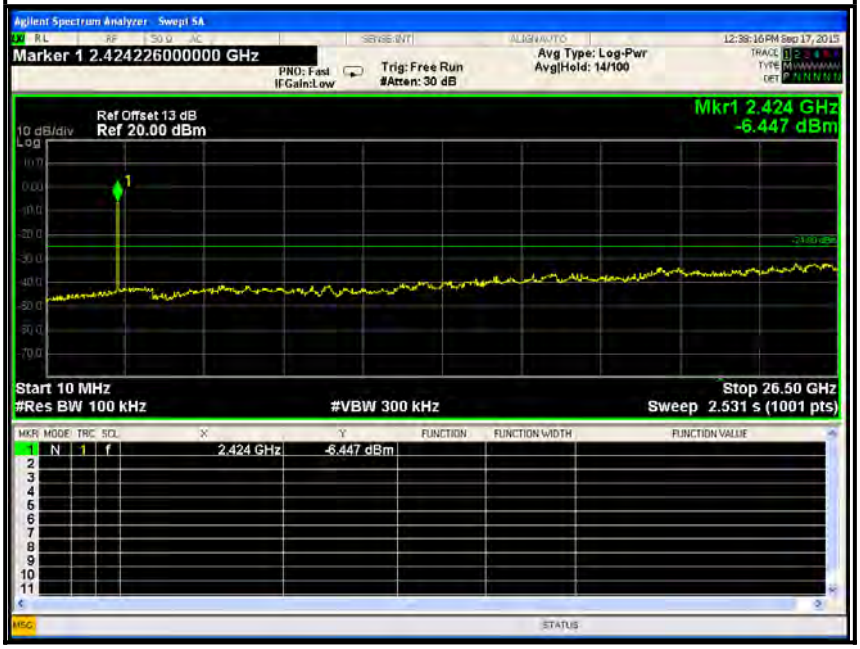
CH Mid (10MHz ~26.5GHz)



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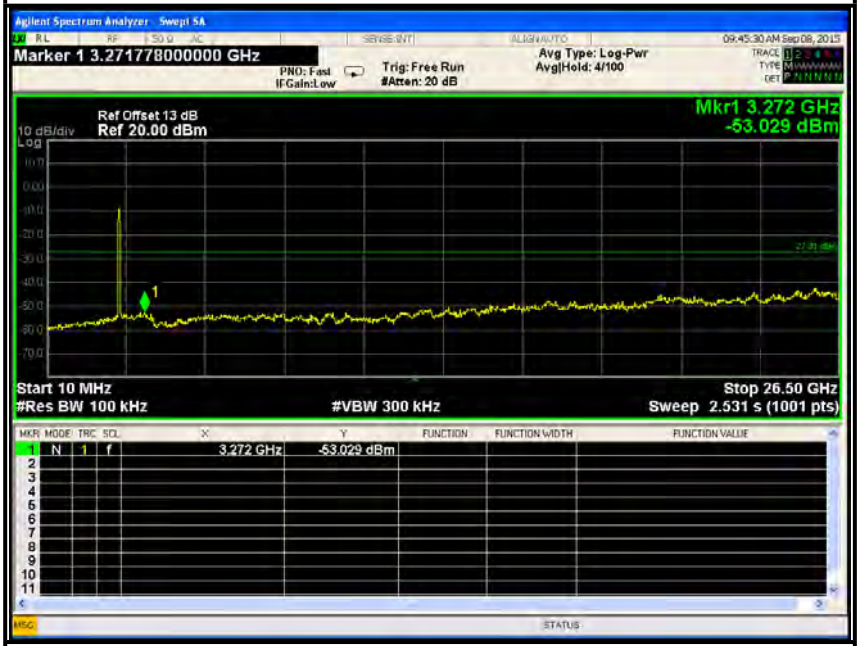
CH High (10MHz ~26.5GHz)



CH High (2.43GHz ~2.5GHz)

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7.2.2. RADIATED EMISSIONS MEASUREMENT

7.2.2.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

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

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.

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

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

NOTE:(1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

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7.2.2.2. TEST INSTRUMENTS

Radiated Emission Test Site 966（2）					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	02/28/2015	02/27/2016
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/28/2015	02/27/2016
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2015	03/18/2016
High Noise Amplifier	Agilent	8449B	3008A01838	02/28/2015	02/27/2016
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/28/2015	02/27/2016
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/28/2015	02/27/2016
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/28/2015	02/27/2016
Loop Antenna	COM-POWER	AL-130	121044	09/25/2014	09/24/2015
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/28/2015	02/27/2016
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 101879.

3. N.C.R = No Calibration Required.

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7.2.2.3. TEST PROCEDURE (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 0.8m or 1.5m 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=1MHz,VBW=3MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO / Detector=RMS
7. Repeat above procedures until the measurements for all frequencies
8. are complete.

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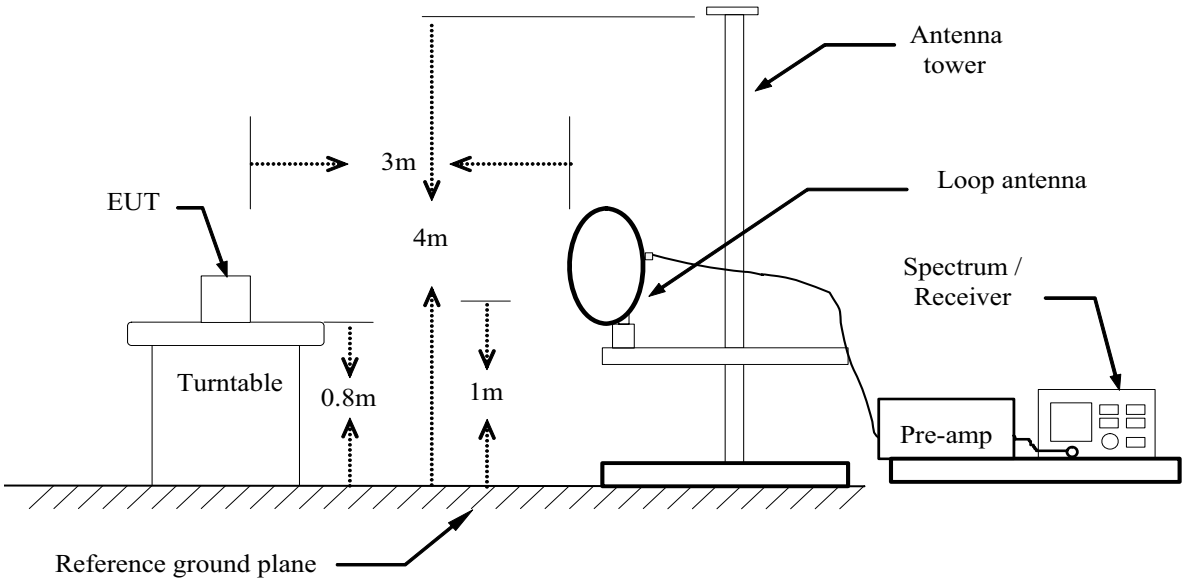
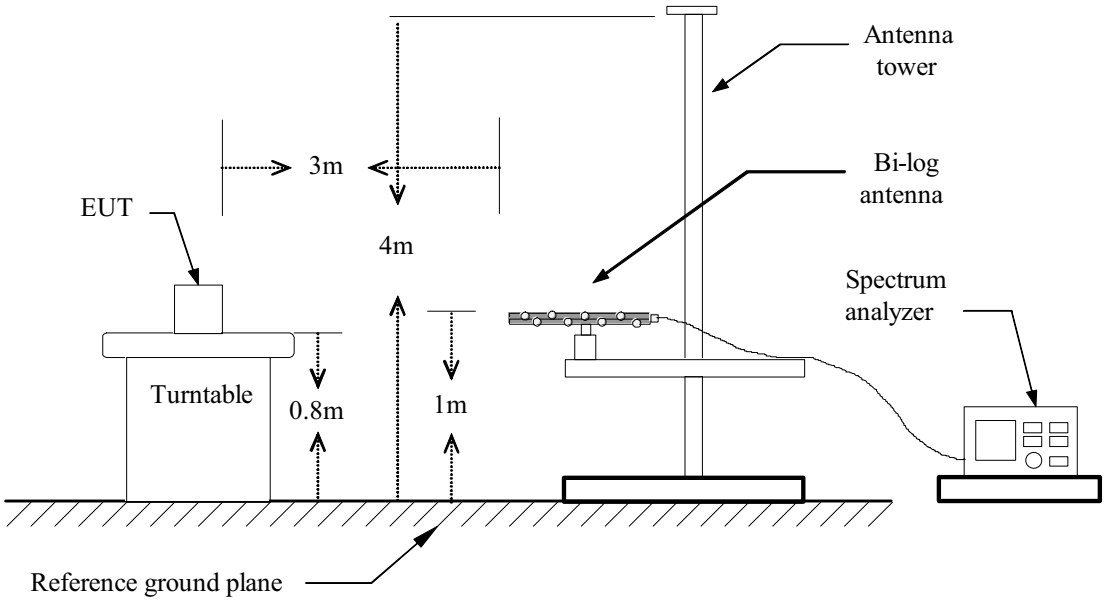
7.2.2.4. TEST SETUP

Below 30MHz



Below 1 GHz



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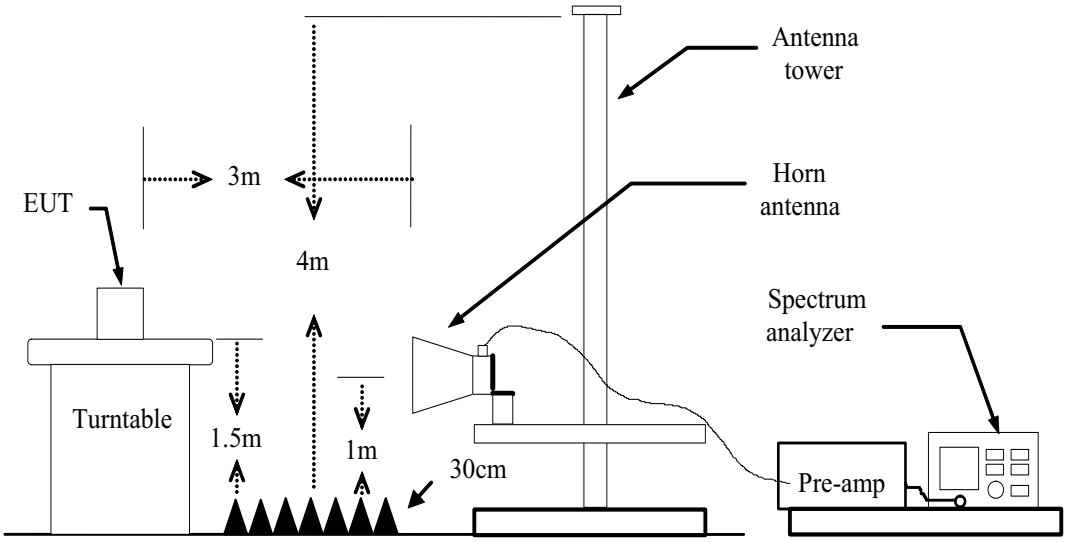
Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

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7.2.2.5. DATA SAPLE

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXX.XXXX	36.37	-12.20	24.17	40.00	-15.83	V	QP

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
Q.P. = Quasi-peak Reading

Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXXX.XXXX	62.09	-11.42	50.67	74.00	-23.33	V	Peak
XXXX.XXXX	49.78	-11.42	38.36	54.00	-15.64	V	AVG

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
Peak = Peak Reading
AVG = Average Reading

Calculation Formula

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m)
Result (dBuV/m) = Reading (dBuV) + Correction Factor

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7.2.2.6. TEST RESULTS

Below 1 GHz

Test Mode: TX **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
154.4833	56.32	-22.11	34.21	43.50	-9.29	V	QP
215.9166	54.69	-20.82	33.87	43.50	-9.63	V	QP
264.4166	54.82	-20.17	34.65	46.00	-11.35	V	QP
288.6666	54.56	-20.46	34.10	46.00	-11.90	V	QP
442.2500	51.56	-15.63	35.93	46.00	-10.07	V	QP
479.4332	50.02	-14.38	35.64	46.00	-10.36	V	QP
81.7332	61.60	-26.34	35.26	40.00	-4.74	H	QP
227.2333	53.75	-21.43	32.32	46.00	-13.68	H	QP
288.6666	56.26	-20.46	35.80	46.00	-10.20	H	QP
442.2500	46.46	-15.63	30.83	46.00	-15.17	H	QP
479.4332	48.13	-14.38	33.75	46.00	-12.25	H	QP
600.6833	41.57	-12.85	28.72	46.00	-17.28	H	QP

***Remark:** No emission found between lowest internal used/generated frequency to 30MHz.*

Notes:

1. *Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.*
2. *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.*
3. *The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.*
4. *Frequency (MHz). = Emission frequency in MHz*
   Reading (dBμV/m) = Receiver reading
   Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain
   Limit (dBμV/m) = Limit stated in standard
   Margin (dB) = Measured (dBμV/m) – Limits (dBμV/m)
   Antenna Pol e(H/V) = Current carrying line of reading

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Above 1 GHz
Antenna 1
Test Mode: TX / IEEE 802.11b(CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2539.000	45.38	-2.19	43.19	74.00	-30.81	V	peak
3214.000	44.03	-1.00	43.03	74.00	-30.97	V	peak
4285.000	40.78	2.59	43.37	74.00	-30.63	V	peak
6004.000	40.56	6.09	46.65	74.00	-27.35	V	peak
7021.000	40.52	7.74	48.26	74.00	-25.74	V	peak
7705.000	40.47	9.07	49.54	74.00	-24.46	V	peak
2539.000	44.32	-2.19	42.13	74.00	-31.87	H	Peak
3223.000	43.20	-0.99	42.21	74.00	-31.79	H	Peak
4942.000	40.63	4.79	45.42	74.00	-28.58	H	Peak
6301.000	40.29	6.57	46.86	74.00	-27.14	H	AVG
7642.000	40.19	8.95	49.14	74.00	-24.86	H	peak
7786.000	40.17	9.23	49.40	74.00	-24.60	H	peak
2539.000	44.32	-2.19	42.13	74.00	-31.87	H	peak

***REMARKS**:*

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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Test Mode: TX / IEEE 802.11b (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3889.000	42.28	1.12	43.40	74.00	-30.60	V	Peak
4384.000	41.24	2.94	44.18	74.00	-29.82	V	Peak
5338.000	39.74	5.58	45.32	74.00	-28.68	V	Peak
5626.000	40.95	5.92	46.87	74.00	-27.13	V	Peak
6913.000	39.64	7.56	47.20	74.00	-26.80	V	Peak
7912.000	39.60	9.48	49.08	74.00	-24.92	V	Peak
2530.000	44.11	-2.21	41.90	74.00	-32.10	H	Peak
3223.000	43.31	-0.99	42.32	74.00	-31.68	H	Peak
5266.000	40.20	5.45	45.65	74.00	-28.35	H	Peak
5491.000	40.78	5.85	46.63	74.00	-27.37	H	Peak
7012.000	40.57	7.72	48.29	74.00	-25.71	H	Peak
8371.000	40.54	9.45	49.99	74.00	-24.01	H	Peak

REMARKS:

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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Test Mode: TX / IEEE 802.11b (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
4789.000	42.42	4.29	46.71	74.00	-27.29	V	Peak
2998.000	47.49	-1.36	46.13	74.00	-27.87	V	Peak
7579.000	40.89	8.83	49.72	74.00	-24.28	V	Peak
8344.000	42.02	9.46	51.48	74.00	-22.52	V	Peak
6796.000	41.49	7.37	48.86	74.00	-25.14	V	Peak
6301.000	41.41	6.57	47.98	74.00	-26.02	V	Peak
4933.000	41.42	4.76	46.18	74.00	-27.82	H	Peak
6220.000	39.82	6.44	46.26	74.00	-27.74	H	Peak
6688.000	41.09	7.19	48.28	74.00	-25.72	H	Peak
6940.000	40.84	7.60	48.44	74.00	-25.56	H	Peak
7786.000	40.64	9.23	49.87	74.00	-24.13	H	Peak
8713.000	40.72	9.26	49.98	74.00	-24.02	H	Peak

REMARKS:

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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Antenna 2

Test Mode: TX / IEEE 802.11b(CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1999.000	48.89	-5.01	43.88	74.00	-30.12	V	peak
2539.000	44.42	-2.19	42.23	74.00	-31.77	V	peak
4492.000	41.83	3.32	45.15	74.00	-28.85	V	peak
6301.000	40.87	6.57	47.44	74.00	-26.56	V	peak
7723.000	40.83	9.11	49.94	74.00	-24.06	V	peak
9514.000	41.30	10.58	51.88	74.00	-22.12	V	peak
2575.000	45.18	-2.12	43.06	74.00	-30.94	H	Peak
4276.000	42.24	2.56	44.80	74.00	-29.20	H	Peak
4942.000	41.76	4.79	46.55	74.00	-27.45	H	Peak
6454.000	40.68	6.82	47.50	74.00	-26.50	H	peak
8569.000	40.87	9.34	50.21	74.00	-23.79	H	peak
9694.000	41.33	11.10	52.43	74.00	-21.57	H	peak

REMARKS:

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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Test Mode: TX / IEEE 802.11b (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2818.000	44.56	-1.69	42.87	74.00	-31.13	V	Peak
4366.000	41.20	2.88	44.08	74.00	-29.92	V	Peak
4870.000	42.67	4.56	47.23	74.00	-26.77	V	Peak
5356.000	40.86	5.61	46.47	74.00	-27.53	V	Peak
6211.000	40.30	6.42	46.72	74.00	-27.28	V	Peak
8083.000	41.86	9.60	51.46	74.00	-22.54	V	Peak
4042.000	41.83	1.74	43.57	74.00	-30.43	H	Peak
4879.000	41.70	4.59	46.29	74.00	-27.71	H	Peak
5599.000	40.85	5.91	46.76	74.00	-27.24	H	Peak
6778.000	40.92	7.34	48.26	74.00	-25.74	H	Peak
7606.000	40.12	8.88	49.00	74.00	-25.00	H	Peak
8443.000	41.71	9.41	51.12	74.00	-22.88	H	Peak

REMARKS:

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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Test Mode: TX / IEEE 802.11b (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
4204.000	41.92	2.31	44.23	74.00	-29.77	V	Peak
4924.000	42.52	4.73	47.25	74.00	-26.75	V	Peak
6157.000	40.83	6.33	47.16	74.00	-26.84	V	Peak
6922.000	40.49	7.57	48.06	74.00	-25.94	V	Peak
7651.000	40.86	8.97	49.83	74.00	-24.17	V	Peak
8380.000	40.83	9.44	50.27	74.00	-23.73	V	Peak
4447.000	42.53	3.16	45.69	74.00	-28.31	H	Peak
4924.000	42.60	4.73	47.33	74.00	-26.67	H	Peak
6499.000	41.11	6.89	48.00	74.00	-26.00	H	Peak
7651.000	40.51	8.97	49.48	74.00	-24.52	H	Peak
8083.000	40.61	9.60	50.21	74.00	-23.79	H	Peak
8497.000	40.79	9.38	50.17	74.00	-23.83	H	Peak

REMARKS:

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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Antenna 1

Test Mode: TX / IEEE 802.11g(CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1999.000	48.57	-5.01	43.56	74.00	-30.44	V	Peak
2791.000	44.31	-1.74	42.57	74.00	-31.43	V	Peak
3880.000	42.01	1.08	43.09	74.00	-30.91	V	Peak
4825.000	42.69	4.41	47.10	74.00	-26.90	V	Peak
7750.000	40.67	9.16	49.83	74.00	-24.17	V	Peak
8335.000	40.60	9.47	50.07	74.00	-23.93	V	Peak
1990.000	48.14	-5.06	43.08	74.00	-30.92	H	Peak
2818.000	44.13	-1.69	42.44	74.00	-31.56	H	Peak
3889.000	41.70	1.12	42.82	74.00	-31.18	H	Peak
4942.000	41.07	4.79	45.86	74.00	-28.14	H	Peak
6076.000	39.85	6.20	46.05	74.00	-27.95	H	Peak
7750.000	40.38	9.16	49.54	74.00	-24.46	H	Peak

REMARKS:

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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Test Mode: TX / IEEE 802.11g (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2584.000	45.86	-2.11	43.75	74.00	-30.25	V	Peak
3241.000	42.92	-0.96	41.96	74.00	-32.04	V	Peak
4537.000	41.51	3.47	44.98	74.00	-29.02	V	Peak
4870.000	42.94	4.56	47.50	74.00	-26.50	V	Peak
5833.000	39.74	6.01	45.75	74.00	-28.25	V	Peak
7039.000	39.77	7.78	47.55	74.00	-26.45	V	Peak
3889.000	41.54	1.12	42.66	74.00	-31.34	H	Peak
4546.000	41.20	3.50	44.70	74.00	-29.30	H	Peak
5491.000	39.97	5.85	45.82	74.00	-28.18	H	Peak
6535.000	40.32	6.95	47.27	74.00	-26.73	H	Peak
7444.000	39.77	8.57	48.34	74.00	-25.66	H	Peak
8362.000	40.00	9.45	49.45	74.00	-24.55	H	Peak

REMARKS:

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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Test Mode: TX / IEEE 802.11g (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2566.000	44.75	-2.14	42.61	74.00	-31.39	V	Peak
4258.000	41.23	2.50	43.73	74.00	-30.27	V	Peak
4924.000	41.66	4.73	46.39	74.00	-27.61	V	Peak
5428.000	40.51	5.74	46.25	74.00	-27.75	V	Peak
6175.000	39.41	6.36	45.77	74.00	-28.23	V	Peak
7921.000	39.77	9.50	49.27	74.00	-24.73	V	Peak
2503.000	44.34	-2.25	42.09	74.00	-31.91	H	Peak
3889.000	42.77	1.12	43.89	74.00	-30.11	H	Peak
4465.000	40.38	3.23	43.61	74.00	-30.39	H	Peak
5248.000	40.56	5.42	45.98	74.00	-28.02	H	Peak
6778.000	41.31	7.34	48.65	74.00	-25.35	H	Peak
7768.000	39.87	9.20	49.07	74.00	-24.93	H	Peak

REMARKS:

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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Antenna 2

Test Mode: TX / IEEE 802.11g(CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2550.250	44.94	-2.17	42.77	74.00	-31.23	V	Peak
4101.625	41.45	1.95	43.40	74.00	-30.60	V	Peak
4831.750	44.79	4.43	49.22	74.00	-24.78	V	Peak
5593.375	40.50	5.91	46.41	74.00	-27.59	V	Peak
7228.000	43.02	8.14	51.16	74.00	-22.84	V	Peak
8440.750	40.64	9.41	50.05	74.00	-23.95	V	Peak
3221.875	42.67	-0.99	41.68	74.00	-32.32	H	Peak
4051.000	42.71	1.77	44.48	74.00	-29.52	H	Peak
5117.500	40.13	5.19	45.32	74.00	-28.68	H	Peak
5974.750	39.65	6.07	45.72	74.00	-28.28	H	Peak
6740.875	39.74	7.28	47.02	74.00	-26.98	H	Peak
7243.750	58.02	8.18	66.20	74.00	-7.80	H	Peak
7243.750	35.82	8.18	44.00	54.00	-10.00	H	AVG

REMARKS:

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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Test Mode: TX / IEEE 802.11g (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1722.250	55.13	-6.44	48.69	74.00	-25.31	V	Peak
4206.250	41.16	2.32	43.48	74.00	-30.52	V	Peak
4952.125	41.12	4.82	45.94	74.00	-28.06	V	Peak
6229.000	39.83	6.45	46.28	74.00	-27.72	V	Peak
7312.375	57.99	8.31	66.30	74.00	-7.70	V	Peak
7312.375	40.39	8.31	48.70	54.00	-5.30	V	AVG
8161.750	43.48	9.56	53.04	74.00	-20.96	V	Peak
2599.750	44.90	-2.08	42.82	74.00	-31.18	H	Peak
3283.750	42.63	-0.88	41.75	74.00	-32.25	H	Peak
5137.750	40.58	5.23	45.81	74.00	-28.19	H	Peak
6001.750	40.15	6.08	46.23	74.00	-27.77	H	Peak
6877.000	40.87	7.50	48.37	74.00	-25.63	H	Peak
7315.750	55.52	8.32	63.84	74.00	-10.16	H	Peak
7315.750	39.68	8.32	48.00	54.00	-6.00	H	AVG

REMARKS:

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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Test Mode: TX / IEEE 802.11g (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1994.500	49.69	-5.03	44.66	74.00	-29.34	V	Peak
2590.750	44.56	-2.10	42.46	74.00	-31.54	V	Peak
4151.125	41.83	2.12	43.95	74.00	-30.05	V	Peak
4541.500	41.49	3.49	44.98	74.00	-29.02	V	Peak
6252.625	39.82	6.49	46.31	74.00	-27.69	V	Peak
7390.000	51.24	8.46	59.70	74.00	-14.30	V	Peak
7390.000	37.84	8.46	46.30	54.00	-7.70	V	AVG
1432.000	50.38	-7.00	43.38	74.00	-30.62	H	Peak
2557.000	44.83	-2.16	42.67	74.00	-31.33	H	Peak
4312.000	41.67	2.69	44.36	74.00	-29.64	H	Peak
4816.000	41.27	4.38	45.65	74.00	-28.35	H	Peak
5455.000	40.27	5.79	46.06	74.00	-27.94	H	Peak
7381.000	52.58	8.44	61.02	74.00	-12.98	H	Peak
7381.000	42.79	8.44	51.23	54.00	-2.77	H	AVG

REMARKS:

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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Combine with Antenna 1 and Antenna 2

Test Mode: TX / IEEE 802.11n HT20 MHz (CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2536.750	45.54	-2.19	43.35	74.00	-30.65	V	Peak
3216.250	44.13	-1.00	43.13	74.00	-30.87	V	Peak
4109.500	41.75	1.98	43.73	74.00	-30.27	V	Peak
5422.375	42.00	5.73	47.73	74.00	-26.27	V	Peak
7238.125	44.82	8.16	52.98	74.00	-21.02	V	Peak
7238.125	37.66	8.16	45.82	54.00	-8.18	V	AVG
7747.750	41.57	9.16	50.73	74.00	-23.27	V	Peak
2541.250	44.40	-2.19	42.21	74.00	-31.79	H	Peak
4701.250	42.03	4.01	46.04	74.00	-27.96	H	Peak
6740.875	40.19	7.28	47.47	74.00	-26.53	H	Peak
7233.625	50.34	8.16	58.50	74.00	-15.50	H	Peak
7233.625	36.84	8.16	45.00	54.00	-9.00	H	Peak
7736.500	41.67	9.14	50.81	74.00	-23.19	H	AVG
8465.500	41.04	9.39	50.43	74.00	-23.57	H	Peak

REMARKS:

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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Test Mode: TX / IEEE 802.11n HT20 MHz (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1726.750	52.62	-6.43	46.19	74.00	-27.81	V	Peak
2828.125	43.92	-1.67	42.25	74.00	-31.75	V	Peak
4974.625	40.91	4.90	45.81	74.00	-28.19	V	Peak
6230.125	40.45	6.45	46.90	74.00	-27.10	V	Peak
7392.250	40.12	8.46	48.58	74.00	-25.42	V	Peak
7737.625	40.86	9.14	50.00	74.00	-24.00	V	Peak
3765.250	41.65	0.60	42.25	74.00	-31.75	H	Peak
4796.875	40.60	4.32	44.92	74.00	-29.08	H	Peak
6500.125	39.40	6.89	46.29	74.00	-27.71	H	Peak
7193.125	40.49	8.08	48.57	74.00	-25.43	H	Peak
7787.125	40.72	9.23	49.95	74.00	-24.05	H	Peak
8411.500	41.18	9.42	50.60	74.00	-23.40	H	Peak

REMARKS:

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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Test Mode: TX / EEE 802.11n HT20 MHz (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3759.625	43.05	0.58	43.63	74.00	-30.37	V	Peak
4794.625	41.44	4.31	45.75	74.00	-28.25	V	Peak
5749.750	40.52	5.97	46.49	74.00	-27.51	V	Peak
6699.250	40.02	7.21	47.23	74.00	-26.77	V	Peak
7391.125	42.46	8.46	50.92	74.00	-23.08	V	Peak
7757.875	40.54	9.18	49.72	74.00	-24.28	V	Peak
2528.875	46.11	-2.21	43.90	74.00	-30.10	H	Peak
3867.625	41.23	1.03	42.26	74.00	-31.74	H	Peak
4791.250	41.31	4.30	45.61	74.00	-28.39	H	Peak
5480.875	40.45	5.84	46.29	74.00	-27.71	H	Peak
6465.250	39.65	6.83	46.48	74.00	-27.52	H	Peak
7387.750	47.26	8.46	55.72	74.00	-18.28	H	Peak
7387.750	36.84	8.46	45.30	54.00	-8.70	H	AVG

REMARKS:

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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Combine with Antenna 1 and Antenna 2

Test Mode: TX/ IEEE 802.11n HT40 MHz (CH Low) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2932.750	44.07	-1.48	42.59	74.00	-31.41	V	Peak
4277.125	41.76	2.57	44.33	74.00	-29.67	V	Peak
5639.500	40.66	5.93	46.59	74.00	-27.41	V	Peak
6945.625	41.01	7.61	48.62	74.00	-25.38	V	Peak
7787.125	40.29	9.23	49.52	74.00	-24.48	V	Peak
8407.000	40.47	9.43	49.90	74.00	-24.10	V	Peak
1766.125	49.61	-6.34	43.27	74.00	-30.73	H	Peak
2820.250	44.59	-1.68	42.91	74.00	-31.09	H	Peak
3329.875	43.48	-0.81	42.67	74.00	-31.33	H	Peak
4849.750	40.37	4.49	44.86	74.00	-29.14	H	Peak
5126.500	40.80	5.21	46.01	74.00	-27.99	H	Peak
7260.625	54.99	8.21	63.20	74.00	-10.80	H	Peak
7260.625	39.09	8.21	47.30	54.00	-6.70	H	AVG

REMARKS:

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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Test Mode: TX / IEEE 802.11n HT40 MHz (CH Mid) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3878.875	41.58	1.08	42.66	74.00	-31.34	V	Peak
4939.750	40.91	4.78	45.69	74.00	-28.31	V	Peak
5563.000	40.34	5.90	46.24	74.00	-27.76	V	Peak
6361.750	40.44	6.67	47.11	74.00	-26.89	V	Peak
7739.875	40.87	9.14	50.01	74.00	-23.99	V	Peak
8886.250	40.64	9.16	49.80	74.00	-24.20	V	Peak
4650.625	40.79	3.84	44.63	74.00	-29.37	H	Peak
5357.125	40.75	5.62	46.37	74.00	-27.63	H	Peak
7293.250	42.96	8.27	51.23	74.00	-22.77	H	Peak
7764.625	41.17	9.19	50.36	74.00	-23.64	H	Peak
8331.625	40.84	9.47	50.31	74.00	-23.69	H	Peak
9478.000	41.03	10.48	51.51	74.00	-22.49	H	Peak

REMARKS:

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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Test Mode: TX/ IEEE 802.11n HT40 MHz (CH High) **Tested by:** Eve Wang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** August 27, 2015

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3322.000	44.25	-0.82	43.43	74.00	-30.57	V	Peak
4384.000	41.43	2.94	44.37	74.00	-29.63	V	Peak
5406.625	39.98	5.70	45.68	74.00	-28.32	V	Peak
5759.875	41.03	5.98	47.01	74.00	-26.99	V	Peak
6915.250	40.74	7.56	48.30	74.00	-25.70	V	Peak
7741.000	39.93	9.14	49.07	74.00	-24.93	V	Peak
2821.375	44.34	-1.68	42.66	74.00	-31.34	H	Peak
4443.625	41.76	3.15	44.91	74.00	-29.09	H	Peak
5035.375	40.98	5.04	46.02	74.00	-27.98	H	Peak
6492.250	40.78	6.88	47.66	74.00	-26.34	H	Peak
7352.875	43.30	8.39	51.69	74.00	-22.31	H	Peak
7727.500	41.63	9.12	50.75	74.00	-23.25	H	Peak

REMARKS:

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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7.3. 6dB BANDWIDTH MEASUREMENT

7.3.1. LIMITS

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz. The minimum 6 dB bandwidth shall be at least 500 kHz.

7.3.2. TEST INSTRUMENTS

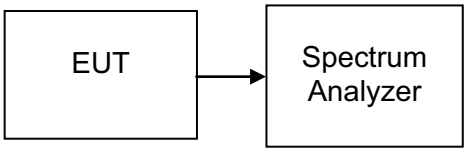
Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52221469	10/25/2014	10/24/2015

7.3.3. TEST PROCEDURES (please refer to measurement standard)

8.1 Option 1:

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 x RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3.4. TEST SETUP



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7.3.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b (Antenna 1)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	8112	>500	PASS
Mid	2437	8127		PASS
High	2462	8106		PASS

Test mode: IEEE 802.11b (Antenna 2)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	8108	>500	PASS
Mid	2437	8110		PASS
High	2462	8117		PASS

Test mode: IEEE 802.11g (Antenna 1)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	15110	>500	PASS
Mid	2437	14140		PASS
High	2462	15100		PASS

Test mode: IEEE 802.11g (Antenna 2)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	15100	>500	PASS
Mid	2437	15090		PASS
High	2462	15070		PASS

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Test mode: IEEE 802.11n HT20 MHz (Antenna 1)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	15060	>500	PASS
Mid	2437	15100		PASS
High	2462	15080		PASS

Test mode: IEEE 802.11n HT20 MHz (Antenna 2)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	15110	>500	PASS
Mid	2437	15020		PASS
High	2462	15110		PASS

Test mode: IEEE 802.11n HT40 MHz (Antenna 1)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2422	36310	>500	PASS
Mid	2437	35800		PASS
High	2452	35770		PASS

Test mode: IEEE 802.11n HT40 MHz (Antenna 2)

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2422	35780	>500	PASS
Mid	2437	35780		PASS
High	2452	35770		PASS

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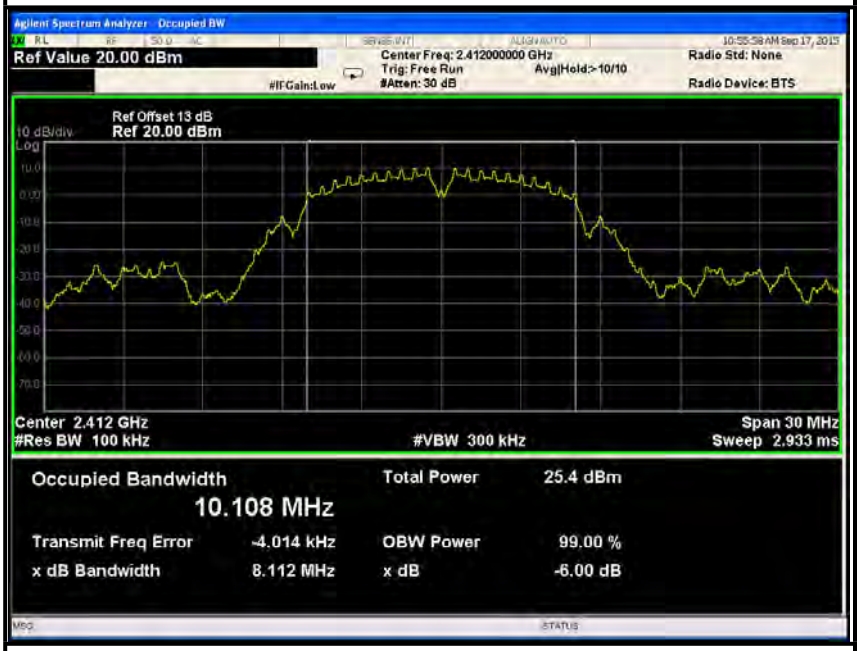
Test Plot

IEEE 802.11b mode (Antenna 1)
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

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6dB Bandwidth (CH High)

IEEE 802.11b mode (Antenna 2)

6dB Bandwidth (CH Low)

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6dB Bandwidth (CH Mid)

6dB Bandwidth (CH High)

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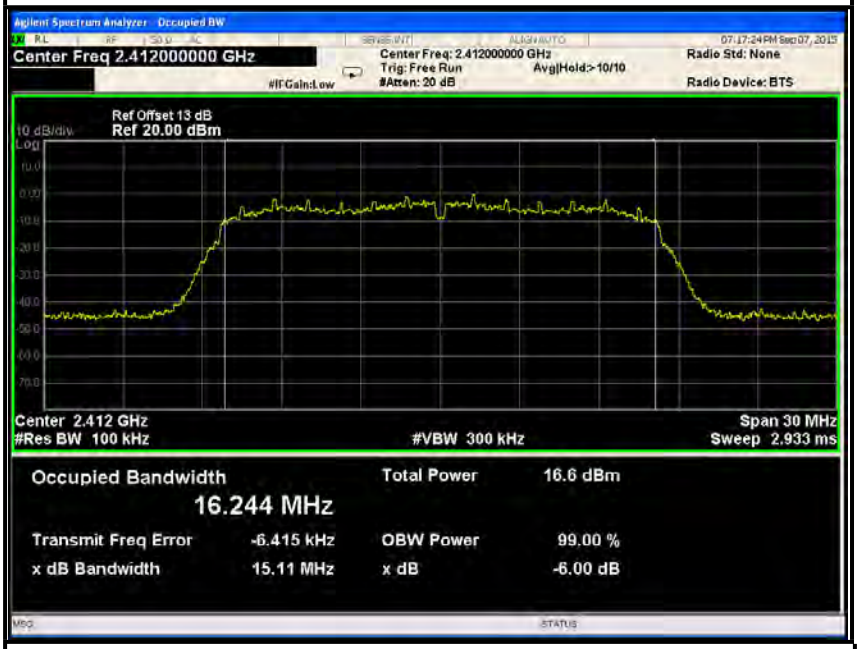
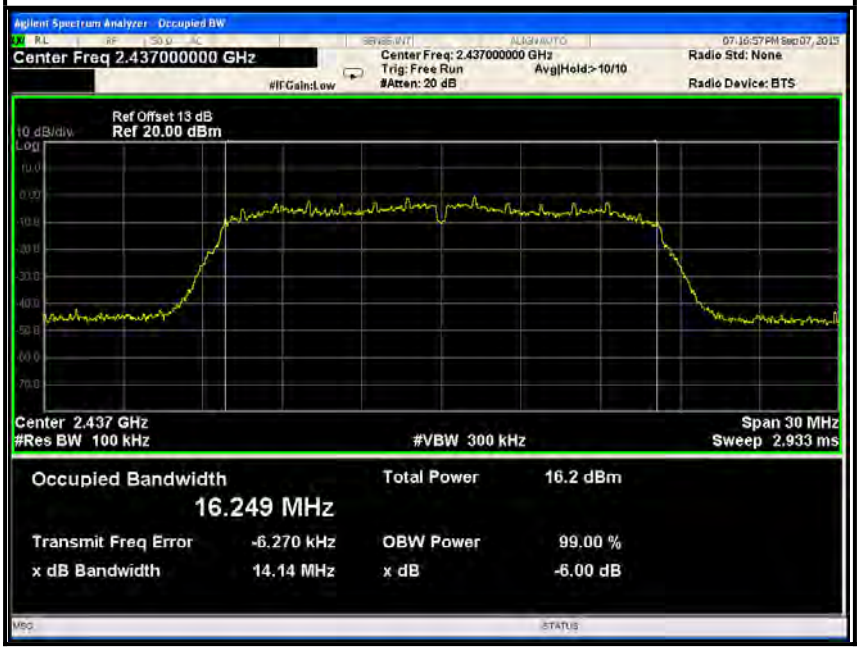
IEEE 802.11g mode (Antenna 1)

6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



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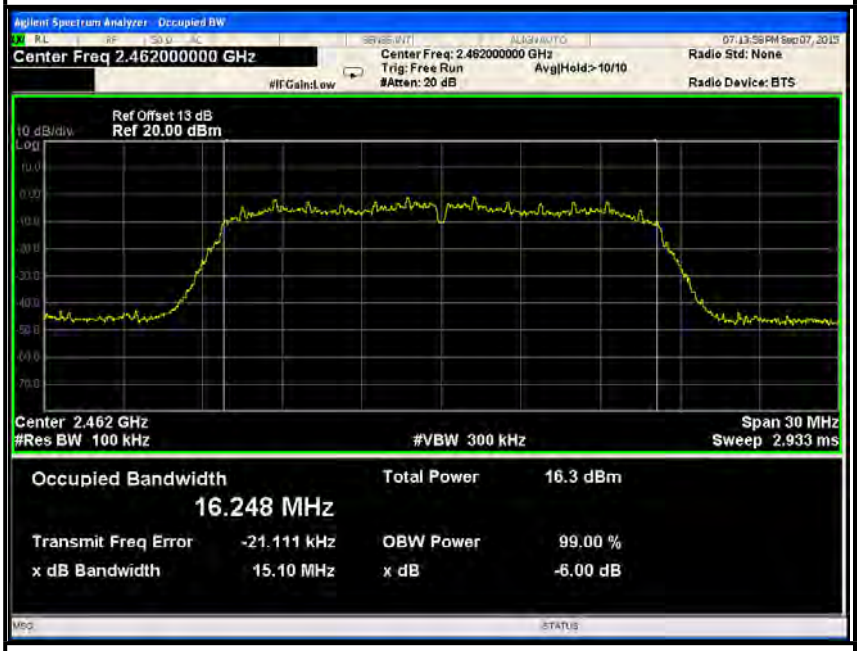
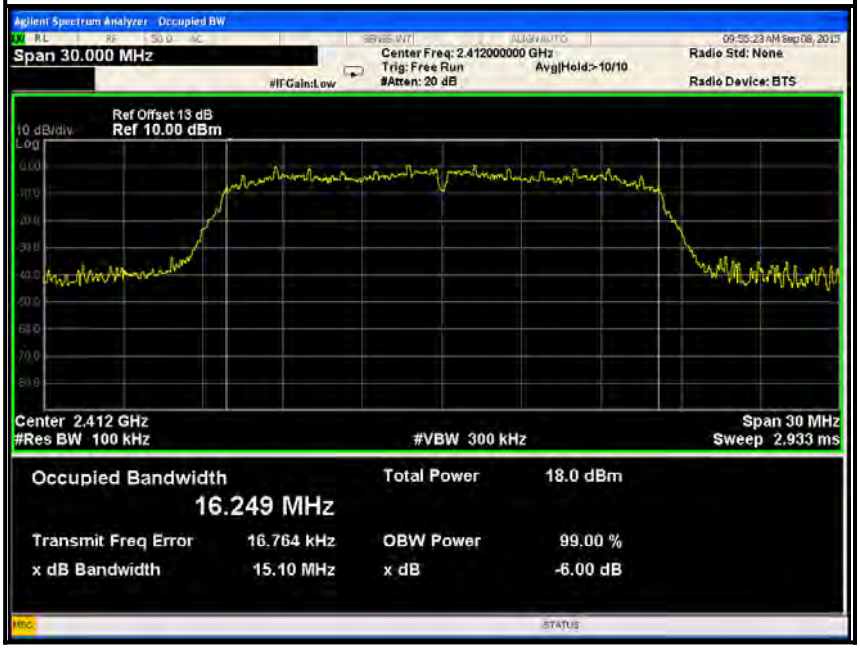
6dB Bandwidth (CH High)



IEEE 802.11g mode (Antenna 2)

6dB Bandwidth (CH Low)



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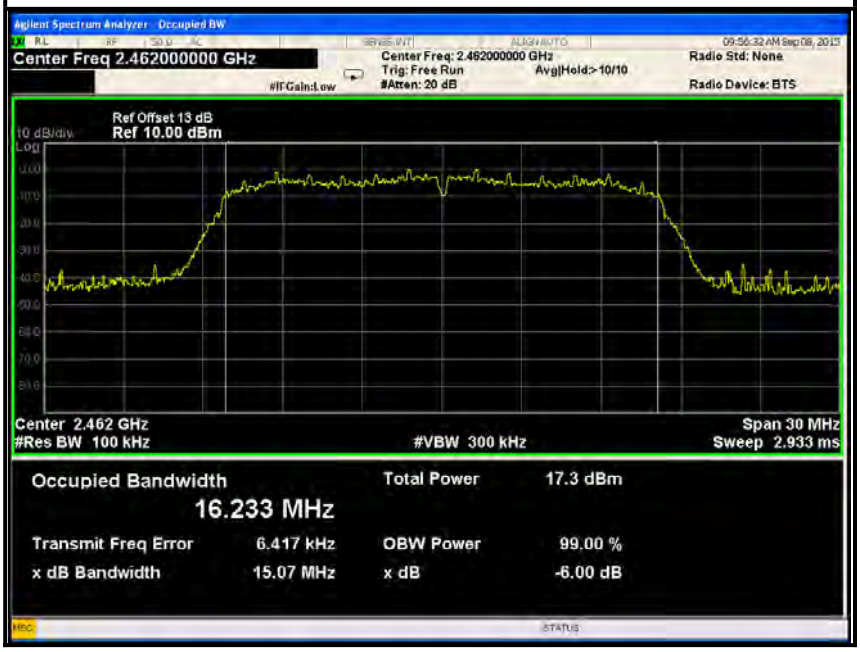
6dB Bandwidth (CH Mid)

6dB Bandwidth (CH High



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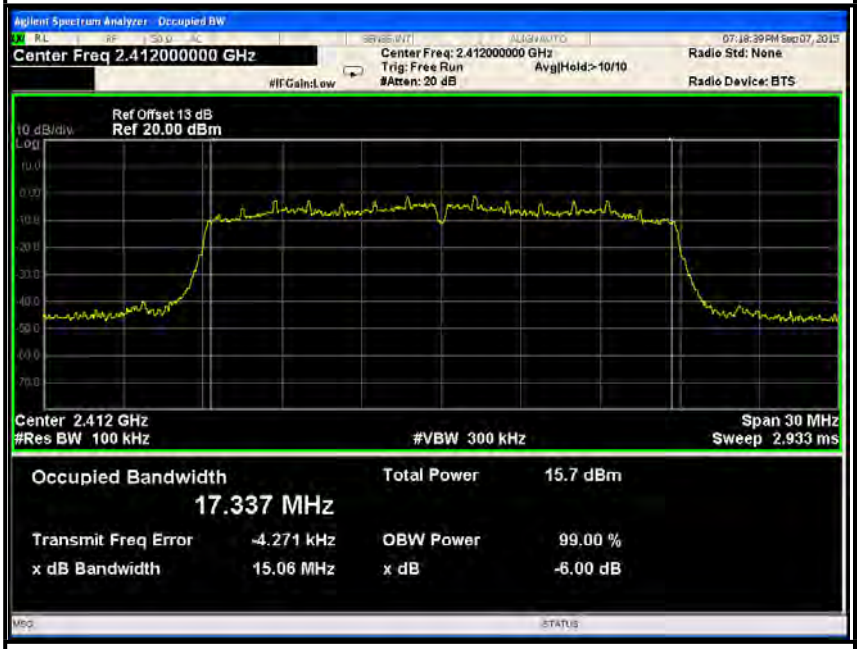
IEEE 802.11n HT20 MHz mode (Antenna 1)
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

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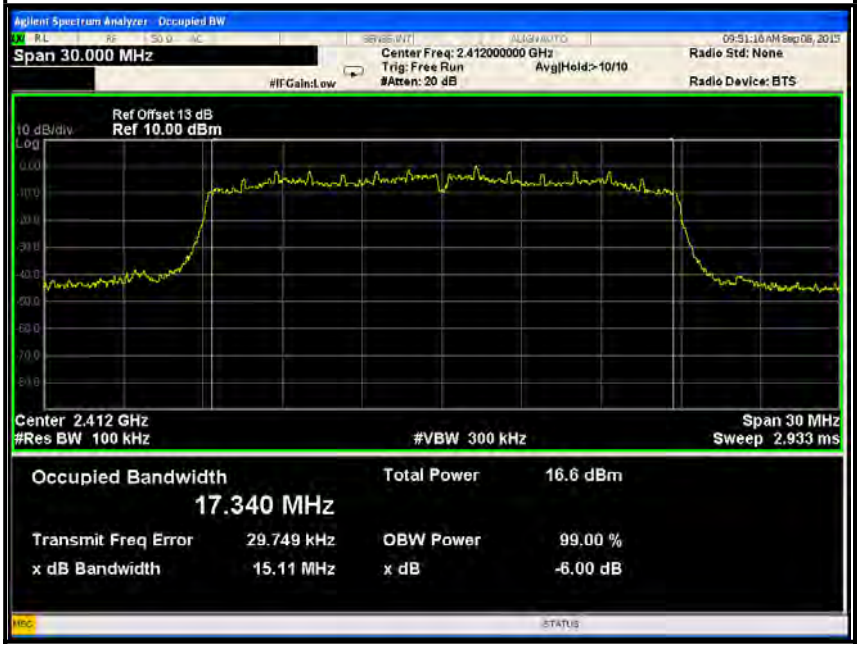
6dB Bandwidth (CH High)

IEEE 802.11n HT20 MHz mode (Antenna 2)

6dB Bandwidth (CH Low)



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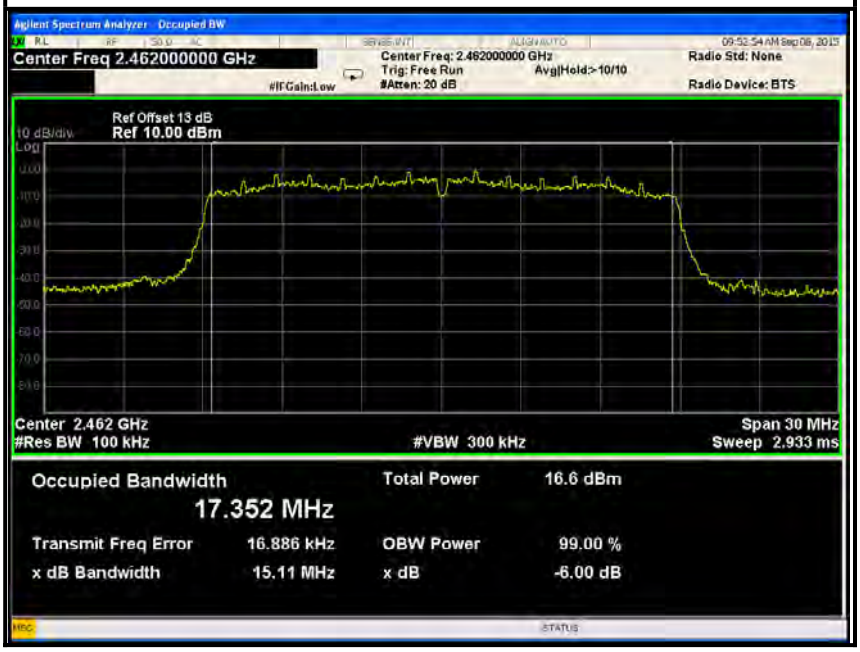
6dB Bandwidth (CH Mid)

6dB Bandwidth (CH High)



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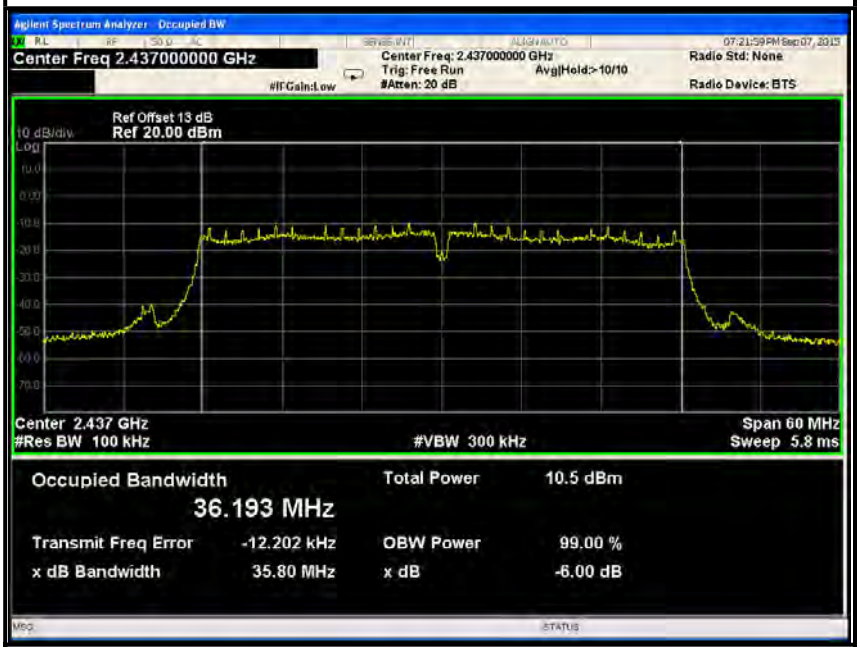
IEEE 802.11n HT40 MHz mode (Antenna 1)

6dB Bandwidth (CH Low)

6dB Bandwidth (CH Mid)



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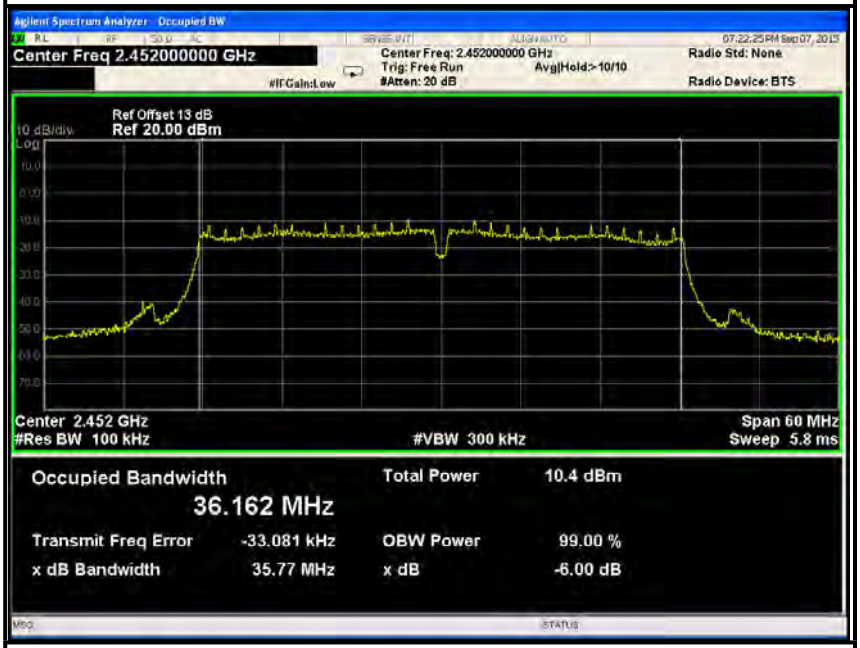
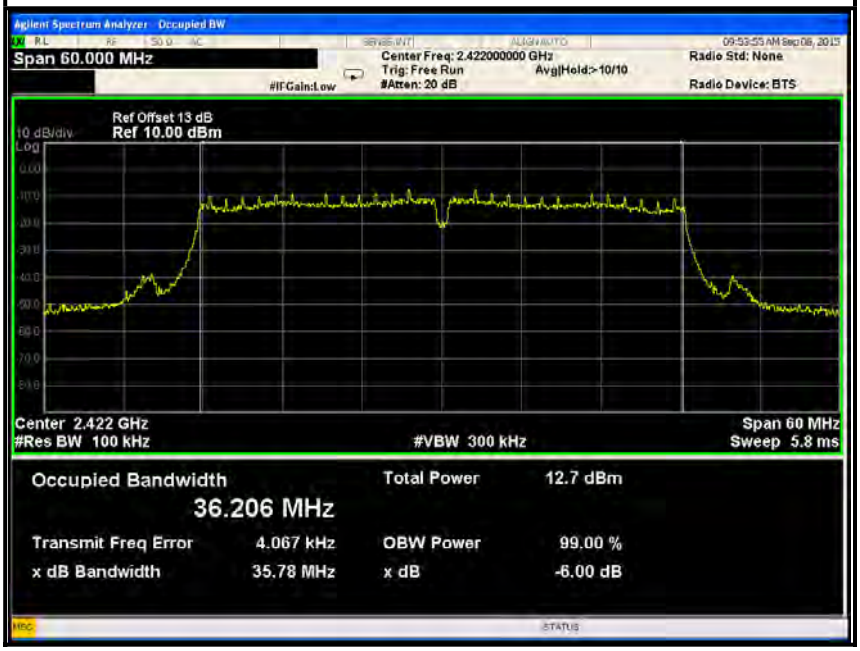
6dB Bandwidth (CH High)



IEEE 802.11n HT40 MHz mode (Antenna 2)

6dB Bandwidth (CH Low)



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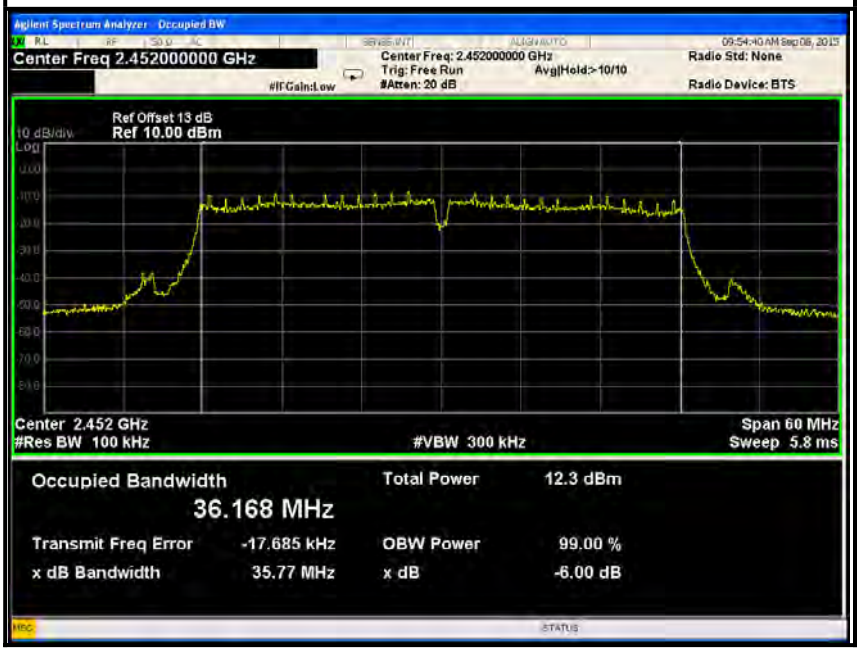
6dB Bandwidth (CH Mid)

6dB Bandwidth (CH High)



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7.4. ANTENNA GAIN

MEASUREMENT

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the DSSS mode is used.

MEASUREMENT PARAMETERS

Measurement parameter	
Detector	Peak
Sweep time	Auto
Resolution bandwidth	3 MHz
Video bandwidth	3 MHz
Trace-Mode	Max hold

LIMITS

FCC	IC
Antenna Gain	
6 dBi	

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TEST RESULTS

IEEE 802.11g mode (Antenna 1)

T_{nom}	V_{nom}	Lowest channel 2412MHz	Middle channel 2437MHz	Highest channel 2462MHz
Conducted power [dBm/MHz] Measured with DSSS modulation		7.71	8.19	8.41
Radiated power [dBm/MHz] Measured with DSSS modulation		9.19	9.40	9.60
Gain [dBi] Calculated		1.48	1.21	1.19
Measurement uncertainty		± 1.5 dB (cond.) / ± 3 dB (rad.)		

IEEE 802.11g mode (Antenna 2)

T_{nom}	V_{nom}	Lowest channel 2412MHz	Middle channel 2437MHz	Highest channel 2462MHz
Conducted power [dBm/MHz] Measured with DSSS modulation		12.12	11.82	12.26
Radiated power [dBm/MHz] Measured with DSSS modulation		13.16	13.20	13.24
Gain [dBi] Calculated		1.04	1.38	0.98
Measurement uncertainty		± 1.5 dB (cond.) / ± 3 dB (rad.)		

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7.5. PEAK OUTPUT POWER

7.5.1. LIMITS

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.

7.5.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Power Meter	Anritsu	ML2495A	1204003	02/28/2015	02/27/2016
Power Sensor	Anritsu	MA2411B	1126150	02/28/2015	02/27/2016

7.5.3. TEST PROCEDURES (please refer to measurement standard)

9.1.1 RBW ≥ *DTS bandwidth*

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the *DTS bandwidth*.
a) Set the RBW ≥ *DTS bandwidth*.
b) Set VBW ≥ 3 RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

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9.1.2 Integrated band power method

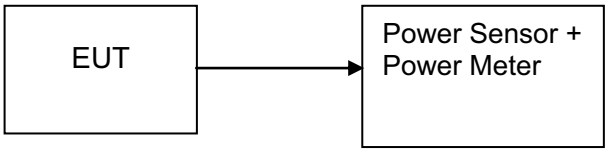
This procedure may be used when the maximum available RBW of the measurement instrument is less than the *DTS bandwidth*.

a) Set the RBW = 1 MHz.
b) Set the VBW ≥ 3 RBW
c) Set the span ≥ 1.5 x DTS bandwidth.
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

9.1.3 PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

7.5.4. TEST SETUP



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7.5.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b (Antenna 1)

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Detector Function	Result
Low	2412	21.05	0.12735	1	Peak	PASS
		17.32	0.05395		AVG	PASS
Mid	2437	20.65	0.11614		Peak	PASS
		16.92	0.04920		AVG	PASS
High	2462	19.17	0.08260		Peak	PASS
		15.32	0.03404		AVG	PASS

Test mode: IEEE 802.11b (Antenna 2)

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Detector Function	Result
Low	2412	21.67	0.14689	1	Peak	PASS
		17.89	0.06152		AVG	PASS
Mid	2437	21.09	0.12853		Peak	PASS
		17.32	0.05395		AVG	PASS
High	2462	20.87	0.12218		Peak	PASS
		16.85	0.04842		AVG	PASS

Test mode: IEEE 802.11g (Antenna 1)

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Detector Function	Result
Low	2412	19.75	0.09441	1	Peak	PASS
		8.13	0.00650		AVG	PASS
Mid	2437	19.23	0.08375		Peak	PASS
		7.87	0.00612		AVG	PASS
High	2462	18.45	0.06998		Peak	PASS
		7.63	0.00579		AVG	PASS

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Test mode: IEEE 802.11g (Antenna 2)

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Detector Function	Result
Low	2412	20.16	0.10375	1	Peak	PASS
		8.69	0.00740		AVG	PASS
Mid	2437	19.87	0.09705		Peak	PASS
		8.32	0.00679		AVG	PASS
High	2462	19.30	0.08511		Peak	PASS
		8.08	0.00643		AVG	PASS

Test mode: IEEE 802.11n HT20 MHz(Combine with Antenna 1 and Antenna 2)

Channel	Frequency (MHz)	Output Power (dBm)			Output Power	Limit (W)	Detector Function	Result
		Antenna 1	Antenna 2	Total				
Low	2412	18.36	19.12	21.77	0.15021	1	Peak	PASS
		7.86	8.30	11.10	0.01287		AVG	PASS
Mid	2437	17.28	18.03	20.68	0.11699		Peak	PASS
		6.73	7.43	10.10	0.01024		AVG	PASS
High	2462	17.26	18.11	20.72	0.11793		Peak	PASS
		6.76	7.36	10.08	0.01019		AVG	PASS

Test mode: IEEE 802.11n HT40 MHz(Combine with Antenna 1 and Antenna 2)

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)	Limit (W)	Detector Function	Result
		Antenna 1	Antenna 2	Total				
Low	2422	14.69	15.21	17.97	0.06263	1	Peak	PASS
		3.88	4.31	7.11	0.00514		AVG	PASS
Mid	2437	16.38	17.62	20.05	0.10126		Peak	PASS
		6.72	7.21	9.98	0.00996		AVG	PASS
High	2452	16.21	17.30	19.80	0.09549		Peak	PASS
		6.51	7.11	9.83	0.00962		AVG	PASS

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7.6. BAND EDGES MEASUREMENT

7.6.1. LIMITS

According to §15.247(d), 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)).

7.6.2. TEST INSTRUMENTS

Radiated Emission Test Site 966（2）					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
EMI TEST RECEIVER	Agilent	N9038A	US44300399	02/28/2015	02/27/2016
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/28/2015	02/27/2016
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2015	03/18/2016
High Noise Amplifier	Agilent	8449B	3008A01838	02/28/2015	02/27/2016
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/28/2015	02/27/2016
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/28/2015	02/27/2016
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/28/2015	02/27/2016
Loop Antenna	COM-POWER	AL-130	121044	09/25/2014	09/24/2015
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/28/2015	02/27/2016
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 101879.

3. N.C.R = No Calibration Required.

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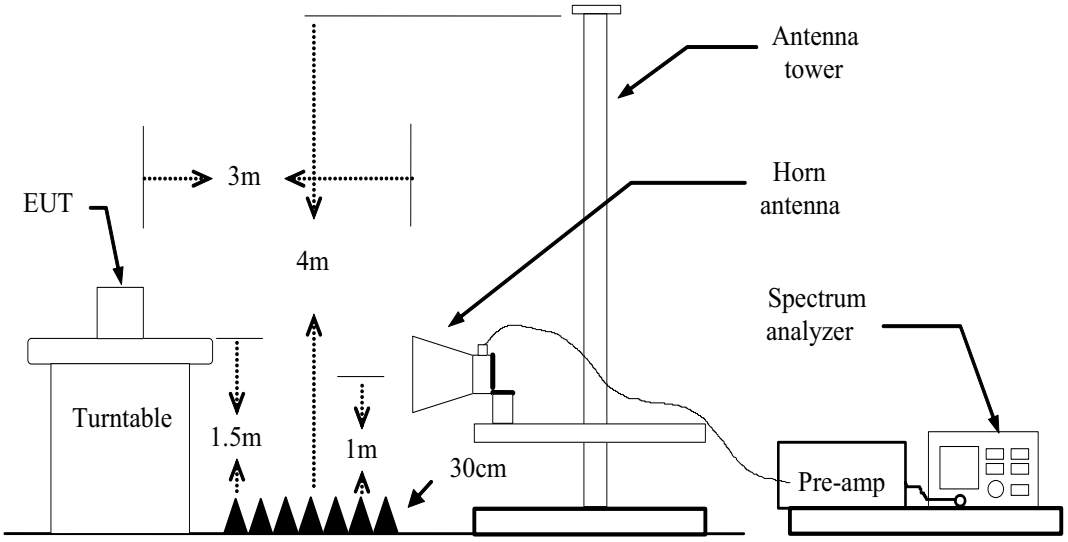
7.6.3. TEST PROCEDURES (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 1.5m 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=1MHz / VBW=3MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO / Detector=RMS
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are

7.6.4. TEST SETUP



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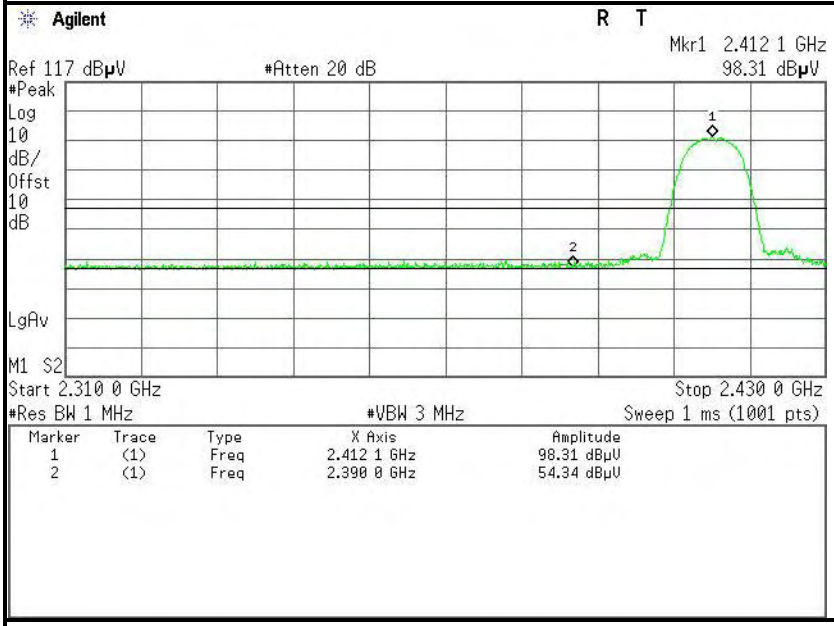
7.6.5. TEST RESULTS

Test Plot

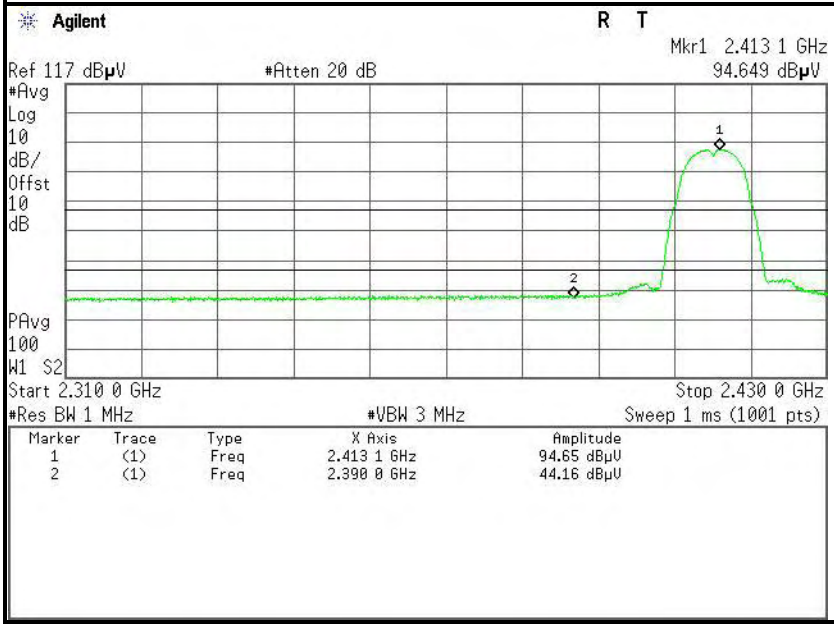
IEEE 802.11b mode (Antenna 1)

Band Edges (CH Low)

Detector mode: Peak **Polarity: Vertical**



Detector mode: Average **Polarity: Vertical**



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	47.74	-6.60	54.34	74.00	-19.66	Peak	Vertical
2	2390.0000	37.56	-6.60	44.16	54.00	-9.84	Average	Vertical

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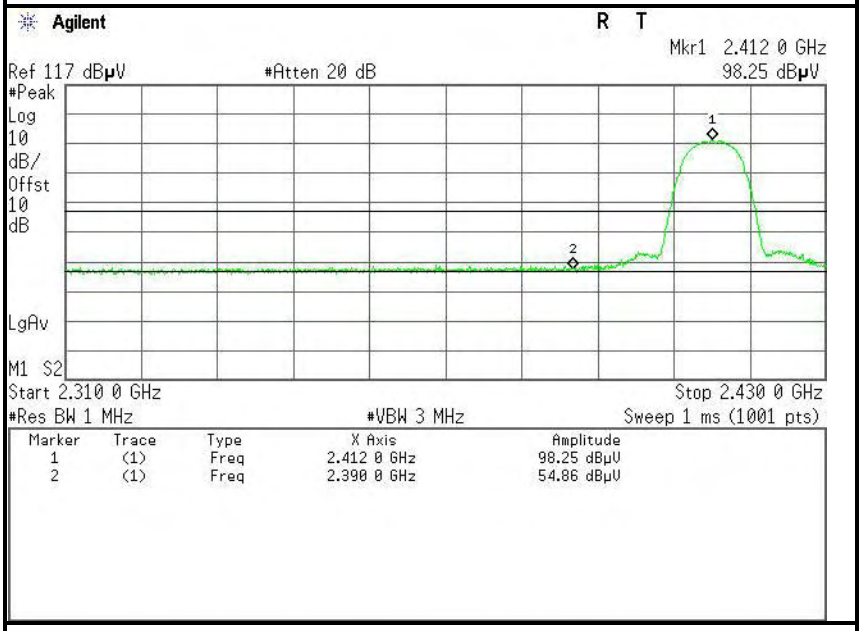
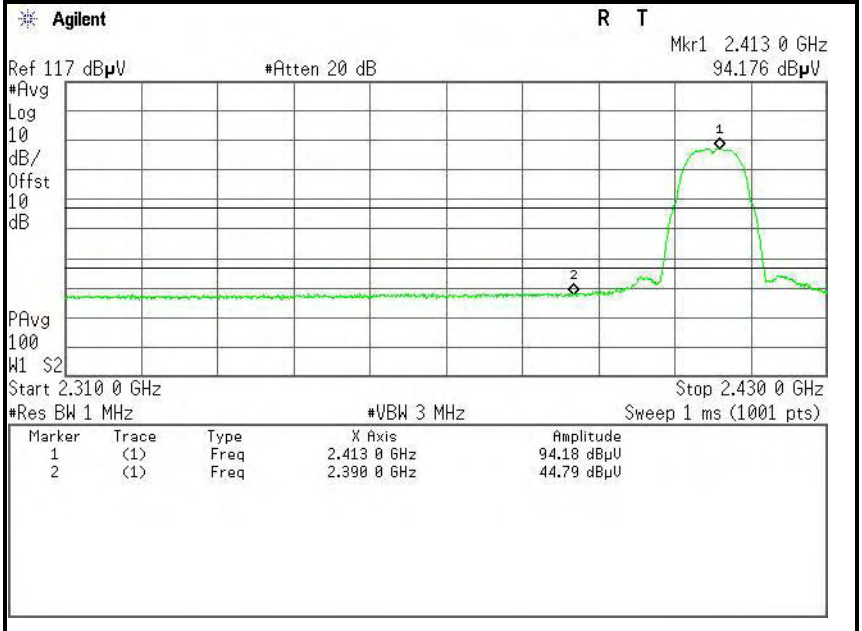
Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	48.26	-6.60	54.86	74.00	-19.14	Peak	Horizontal
2	2390.0000	38.19	-6.60	44.79	54.00	-9.21	Average	Horizontal

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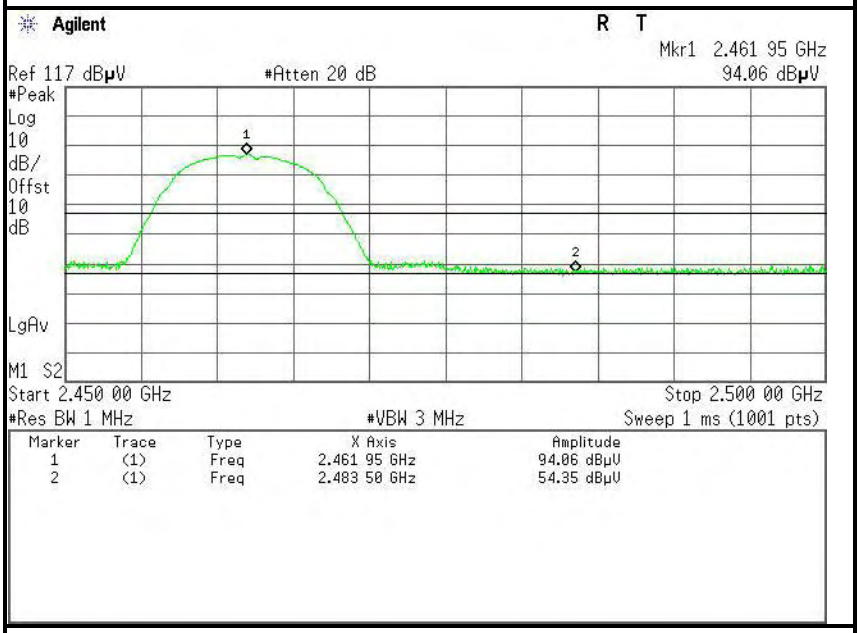
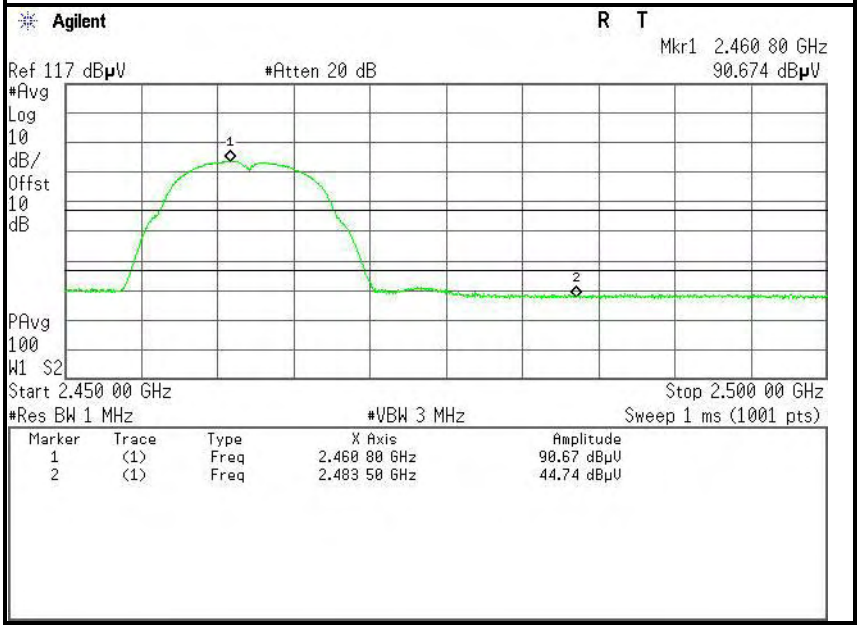
Band Edges (CH High)

Detector mode: Peak **Polarity: Vertical**



Detector mode: Average **Polarity: Vertical**



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	2483.5000	48.11	-6.24	54.35	74.00	-19.65	Peak	Vertical
2	2483.5000	38.50	-6.24	44.74	54.00	-9.26	Average	Vertical

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