



## FCC 47 CFR PART 15 SUBPART C

for

**Stealth Intelligent WiFi Router**

**Model: IR300/VF35A**

**Brand: VOLANS**

**Test Report Number:**

**C140611Z01-RP1**

**Issued Date: July 11, 2014**

Issued for

**Chengdu Volans Technology, Inc.**

**7-8F, Building G4, No.1800, Mid Yizhou Ave, Hi-tech Zone,  
Chengdu, P.R.China 610041**

Issued by:

**Compliance Certification Services (Shenzhen) Inc.**

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## Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	July 11, 2014	Initial Issue	ALL	Sabrina Wang



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## 1 TEST CERTIFICATION

<b>Product</b>	Stealth Intelligent WiFi Router
<b>Model</b>	IR300/VF35A
<b>Brand</b>	VOLANS
<b>Tested</b>	June 11~July 11, 2014
<b>Applicant</b>	<b>Chengdu Volans Technology, Inc.</b> 7-8F, Building G4, No.1800, Mid Yizhou Ave, Hi-tech Zone, Chengdu, P.R.China 610041
<b>Manufacturer</b>	<b>Chengdu Volans Technology, Inc.</b> 7-8F, Building G4, No.1800, Mid Yizhou Ave, Hi-tech Zone, Chengdu, P.R.China 610041

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 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.

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 Service Inc.

**Reviewed by:**

**Ruby Zhang**  
Supervisor of Report Dept.  
Compliance Certification Service Inc.



## 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.



### 3 EUT DESCRIPTION

<b>Product</b>	Stealth Intelligent WiFi Router
<b>Model Number</b>	IR300/VF35A
<b>Brand</b>	VOLANS
<b>Model Discrepancy</b>	N/A
<b>Identify Number</b>	C140611Z01-RP1
<b>Power Supply</b>	DC12V supply by the adapter
<b>Adapter Manufacturer / Model No.</b>	Shenzhen Gongjin Electronics Co., Ltd. / S12B22-120A100-04 I/P: AC100-240V ~ 50/60Hz, 0.5A max O/P: DC12V, 1A DC Output Cable: Unshielded, 1.90m
<b>Transmit Power</b>	IEEE 802.11b mode: 26.59dBm (Antenna 0) IEEE 802.11b mode: 25.67dBm (Antenna 1) IEEE 802.11g mode: 23.17dBm (Antenna 0) IEEE 802.11g mode: 22.71dBm (Antenna 1) IEEE 802.11n HT20 MHz mode: 22.90dBm(Combine with Antenna 0 and Antenna 1) IEEE 802.11n HT40 MHz mode: 22.81dBm(Combine with Antenna 0 and Antenna 1)
<b>Modulation Technique</b>	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)
<b>Transmit Data Rate</b>	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
<b>Number of Channels</b>	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
<b>Antenna Specification</b>	Dipole Antenna 0 with 5.0dBi gain (Max) Dipole Antenna 1 with 5.0dBi gain (Max)
<b>Channels Spacing</b>	IEEE 802.11b/g ,802.11n HT20/HT40 : 5MHz
<b>Temperature Range</b>	0°C ~ +40°C

**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: 2ACBQIR300 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



## 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	<b>Mode 1:</b> LAN 10Mbps 100% with adapter <b>Mode 2:</b> LAN 100Mbps 100% with adapter	<b>Mode 2</b>
Radiated Emission	<b>Mode 1:</b> TX	<b>Mode 1</b>

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.



## 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 1#	E335	R9-WN1EF	DoC	Think pad	Unshielded 1.70m	Unshielded 1.80m
2	Notebook 2#	E335	R9-WN0KH	DoC	Think pad	Unshielded 1.70m	Unshielded 1.80m
3	RJ45 Cable*3	N/A	N/A	N/A	N/A	Unshielded 1.20m	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.



## 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 C63.4, 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.

<b>USA</b>	<b>A2LA</b>
<b>China</b>	<b>CNAS</b>

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

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

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



## 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  $\mu$ H/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 (dB $\mu$ V)	
	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	03/09/2014	03/08/2015
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	04/20/2014	04/19/2015
LISN	EMCO	3825/2	8901-1459	03/09/2014	03/08/2015
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	03/17/2014	03/17/2015
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.

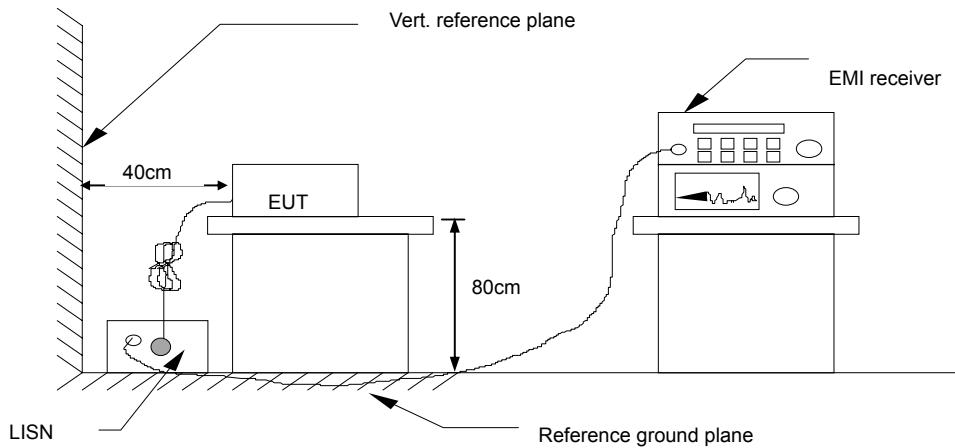


## 7.1.3. TEST PROCEDURES (please refer to measurement standard)

- 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.



## 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

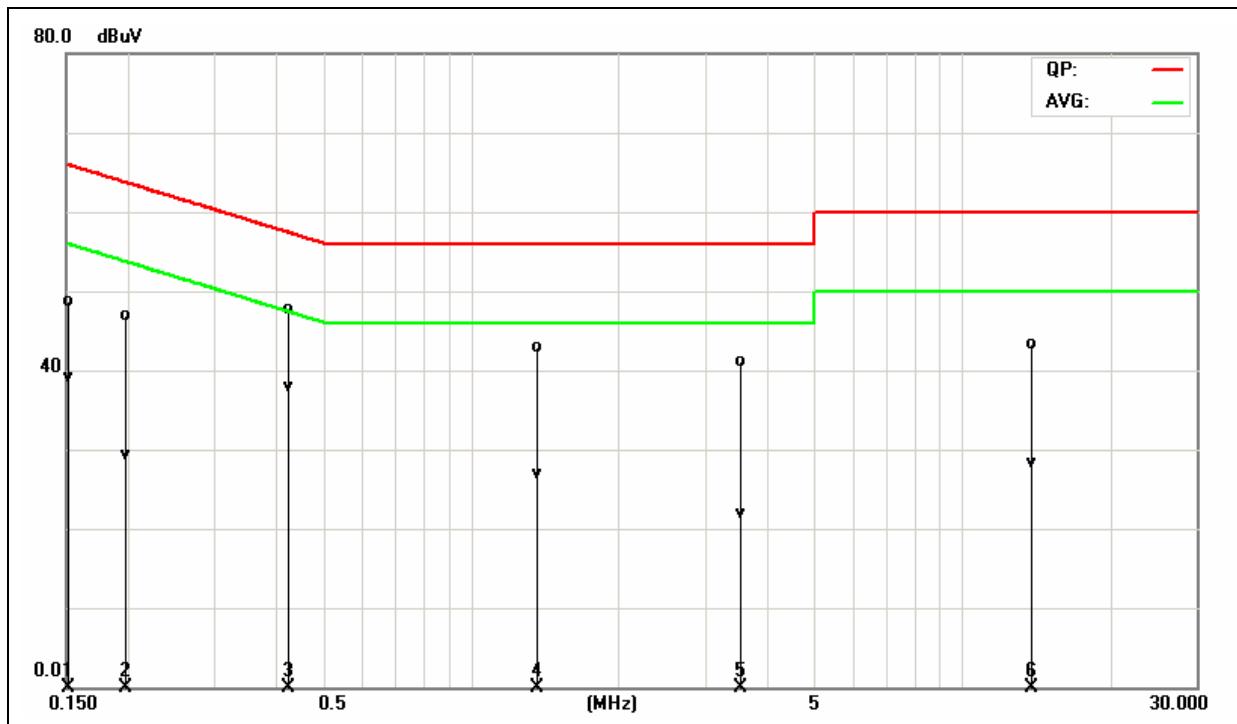
Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62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



## 7.1.6. TEST RESULTS

Model No.	IR300	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 2
Tested by	Mack Li	Line	L1

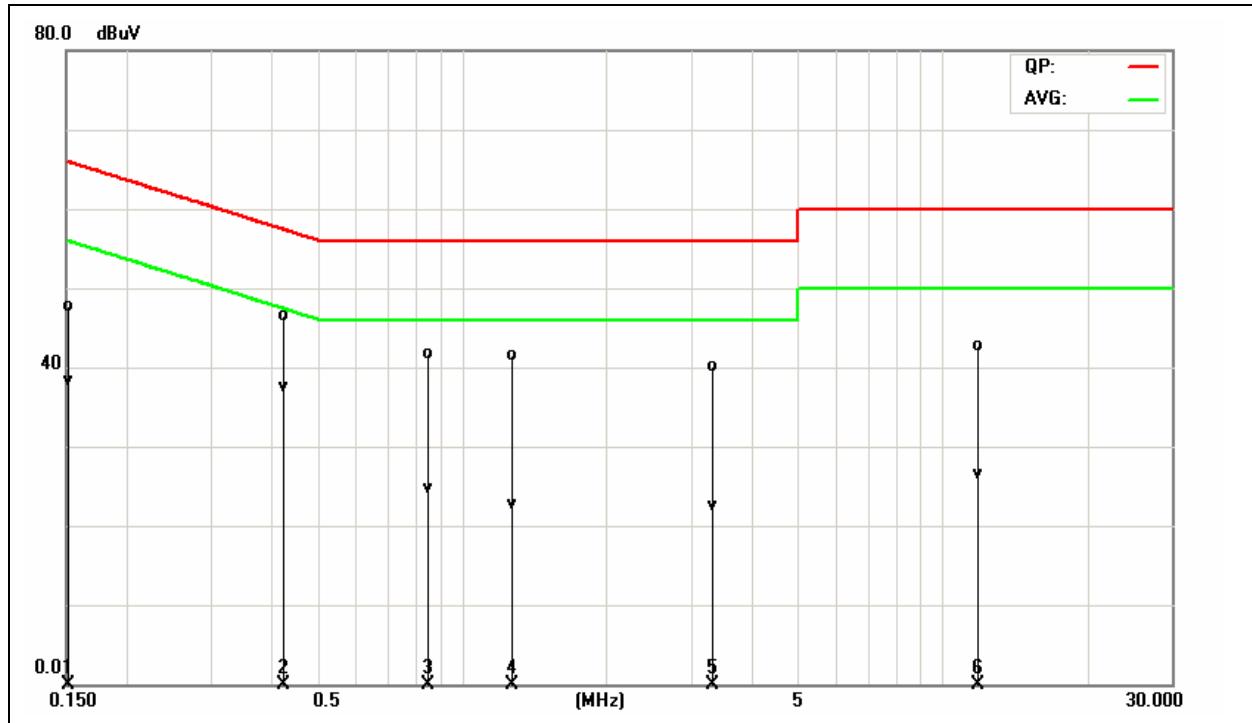


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1500	39.09	29.56	9.58	48.67	39.14	65.99	56.00	-17.32	-16.86	Pass	L1
0.1980	37.16	19.62	9.69	46.85	29.31	63.69	53.69	-16.84	-24.38	Pass	L1
0.4220	38.04	28.30	9.68	47.72	37.98	57.41	47.41	-9.69	-9.43	Pass	L1
1.3660	33.22	17.23	9.72	42.94	26.95	56.00	46.00	-13.06	-19.05	Pass	L1
3.5300	31.45	12.29	9.71	41.16	22.00	56.00	46.00	-14.84	-24.00	Pass	L1
13.7700	33.38	18.44	9.90	43.28	28.34	60.00	50.00	-16.72	-21.66	Pass	L1

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



<b>Model No.</b>	IR300	<b>RBW,VBW</b>	9 kHz
<b>Environmental Conditions</b>	22°C, 45% RH	<b>Test Mode</b>	Mode 2
<b>Tested by</b>	Mack Li	<b>Line</b>	L1



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)
0.1500	37.88	28.56	9.78	47.66	38.34	65.99	56.00	-18.33	-17.66	Pass	L2
0.4220	36.80	27.86	9.71	46.51	37.57	57.41	47.41	-10.90	-9.84	Pass	L2
0.8460	31.99	14.97	9.75	41.74	24.72	56.00	46.00	-14.26	-21.28	Pass	L2
1.2660	31.66	12.92	9.79	41.45	22.71	56.00	46.00	-14.55	-23.29	Pass	L2
3.3220	30.45	12.77	9.75	40.20	22.52	56.00	46.00	-15.80	-23.48	Pass	L2
11.8260	32.86	16.60	9.81	42.67	26.41	60.00	50.00	-17.33	-23.59	Pass	L2

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



## 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 peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to 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 measured in-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	R&S	FSU	200409	09/23/2013	09/22/2014
Spectrum Analyzer	Agilent	E4446A	US44300399	03/01/2014	03/01/2015

#### 7.2.1.3. TEST PROCEDURE (please refer to measurement standard)

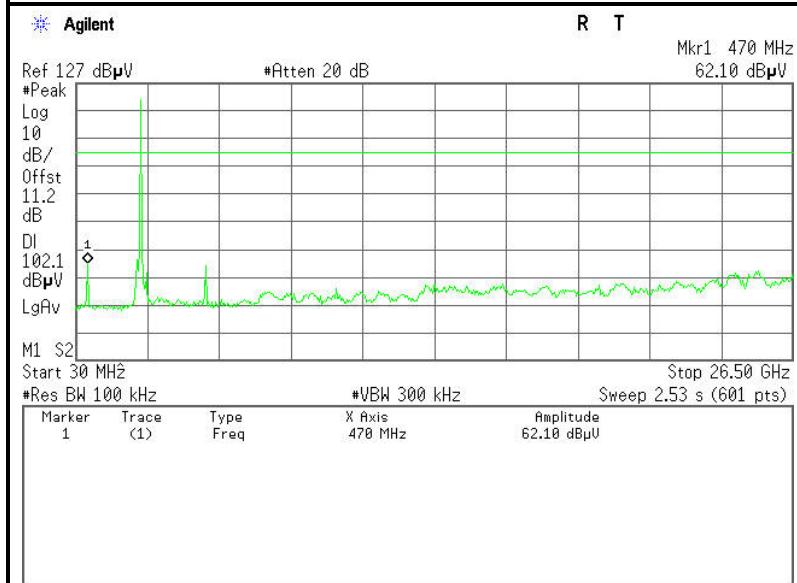
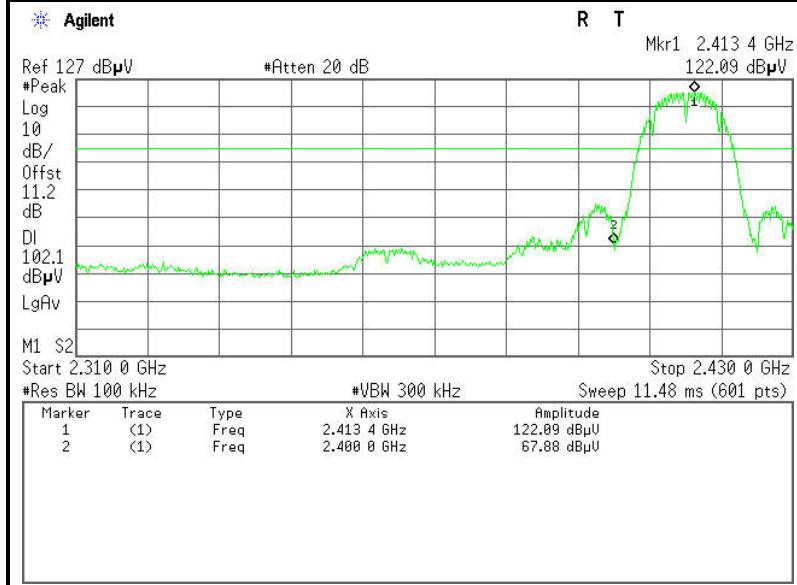
Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

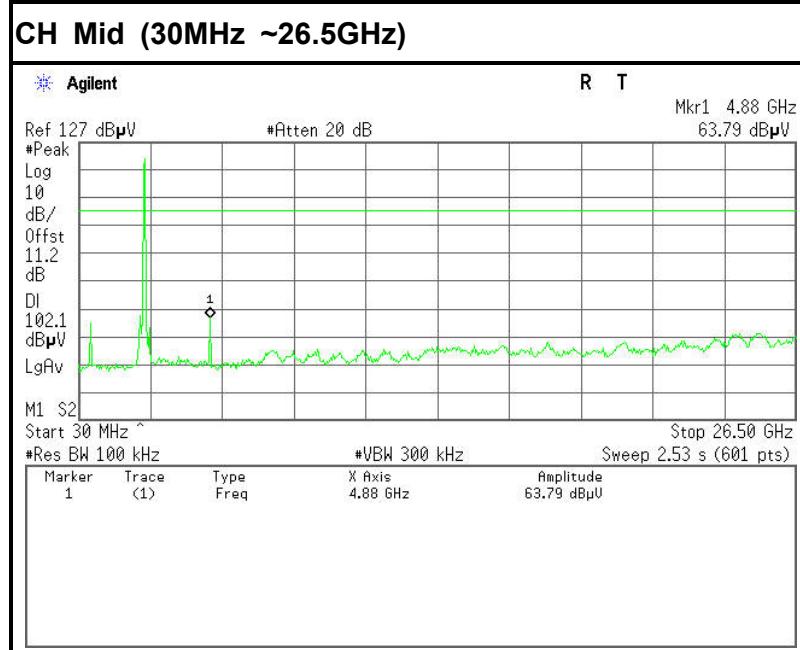
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.



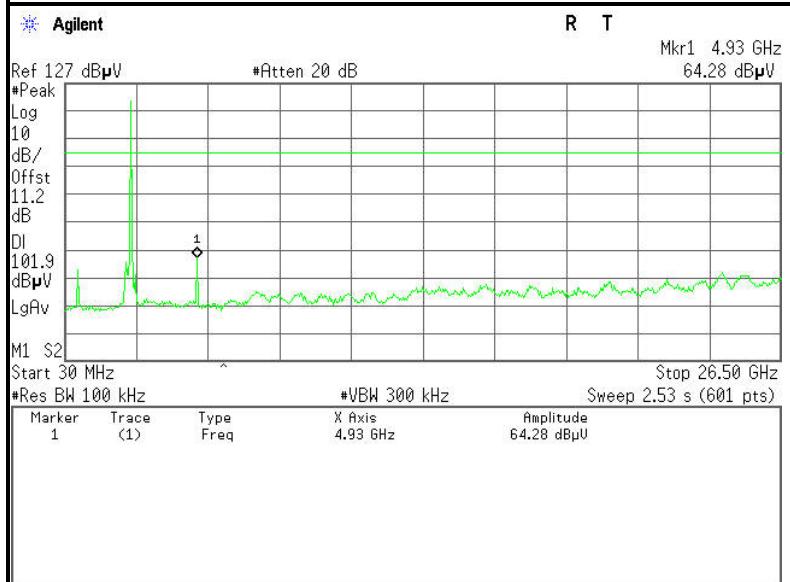
## 7.2.1.4. TEST RESULTS

Test PlotIEEE 802.11b mode (Antenna 0)**CH Low (30MHz ~26.5GHz)****CH Low (2.31GHz ~2.43GHz)**

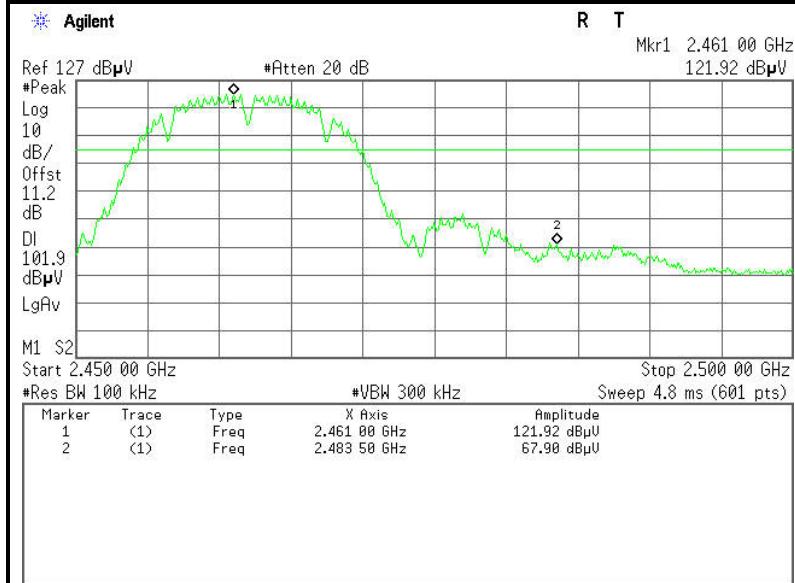




## CH High (30MHz ~26.5GHz)



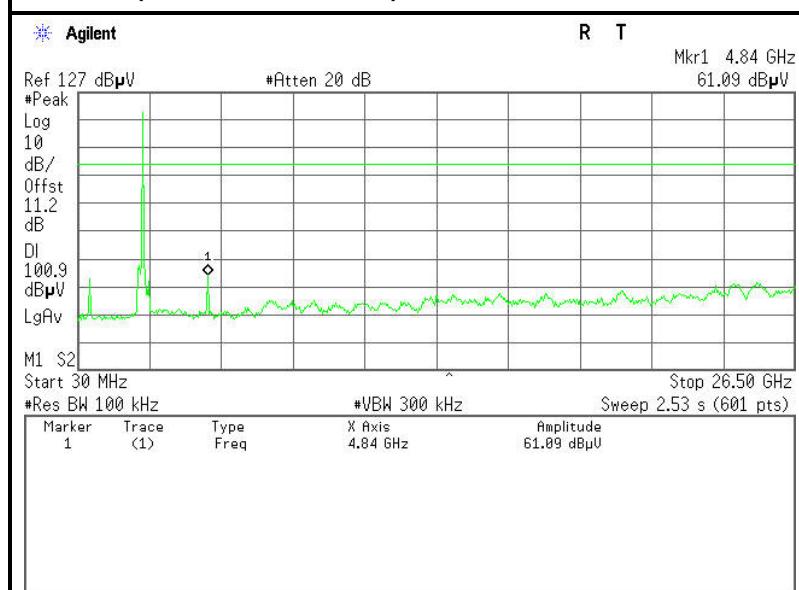
## CH High (2.45GHz ~2.5GHz)



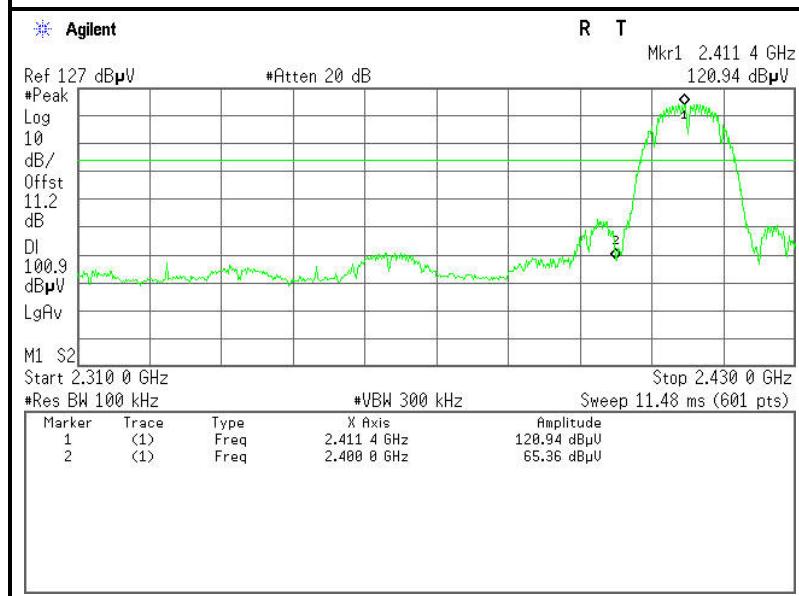


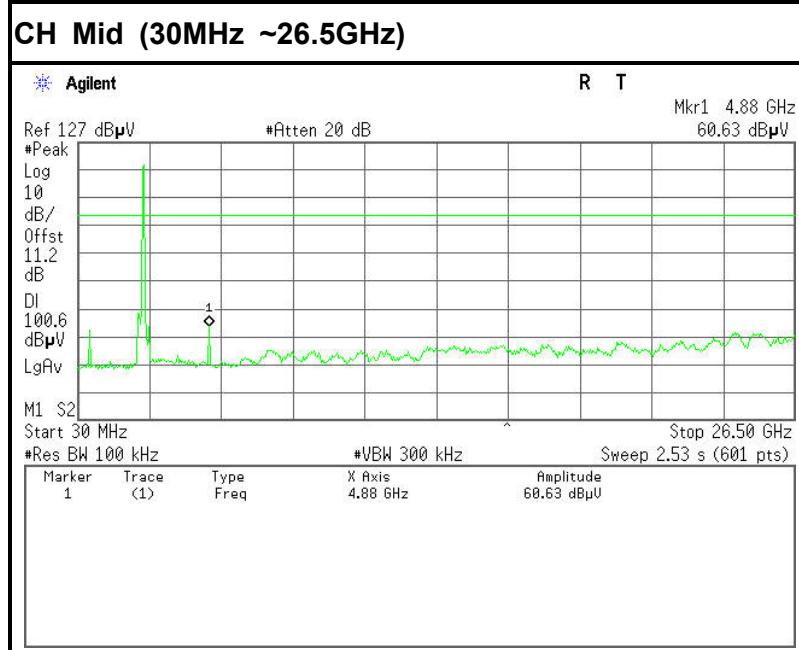
## IEEE 802.11b mode (Antenna 1)

### CH Low (30MHz ~26.5GHz)



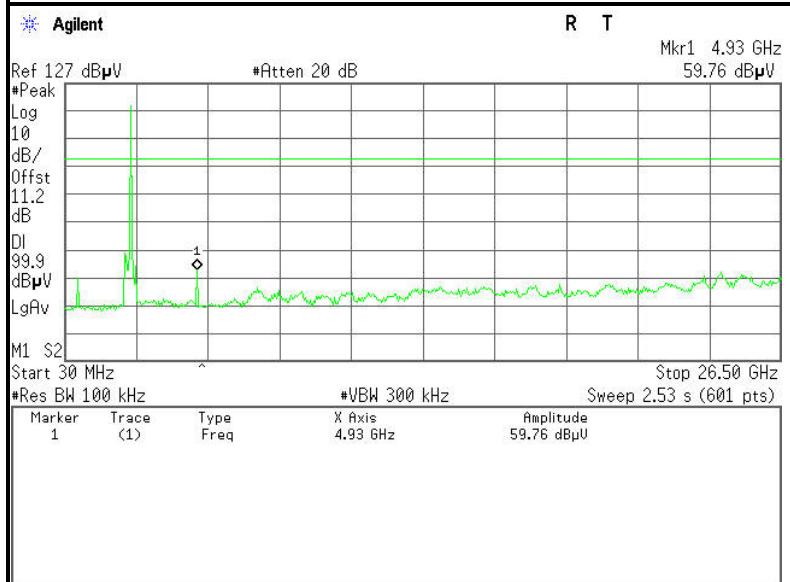
### CH Low (2.31GHz ~2.43GHz)



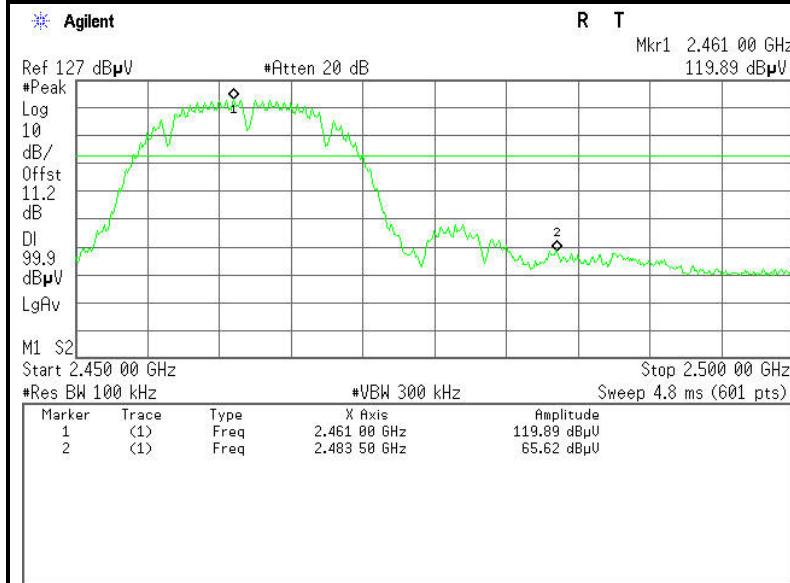




## CH High (30MHz ~26.5GHz)



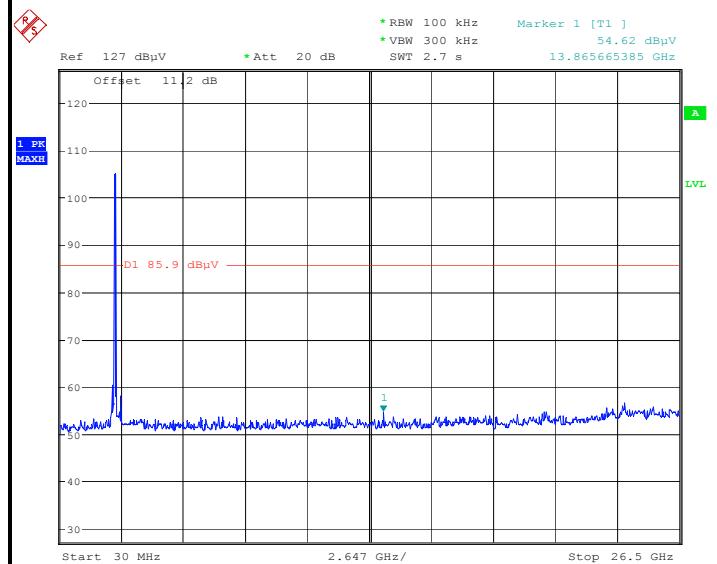
## CH High (2.45GHz ~2.5GHz)





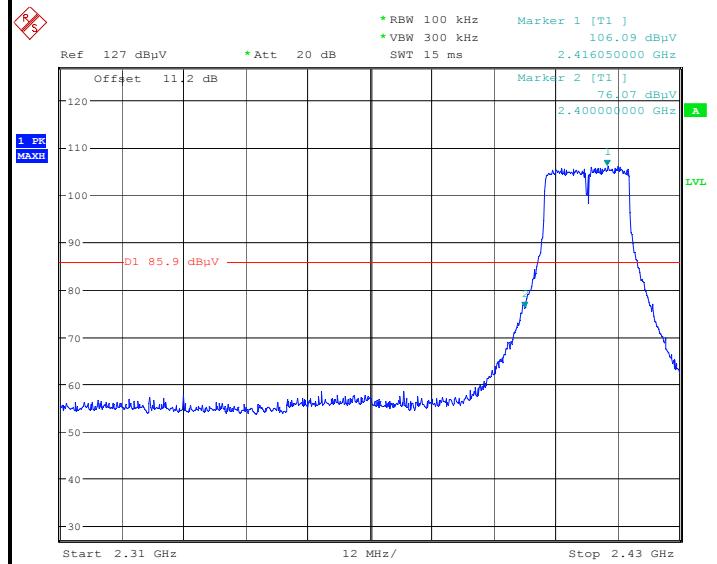
## IEEE 802.11q mode (Antenna 0)

### CH Low (30MHz ~26.5GHz)



Date: 8.JUL.2014 13:58:08

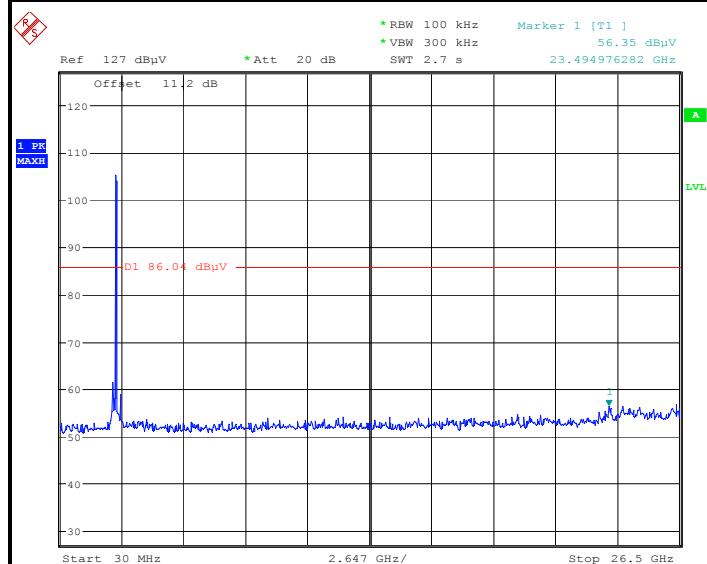
### CH Low (2.31GHz ~2.43GHz)



Date: 8.JUL.2014 13:57:25



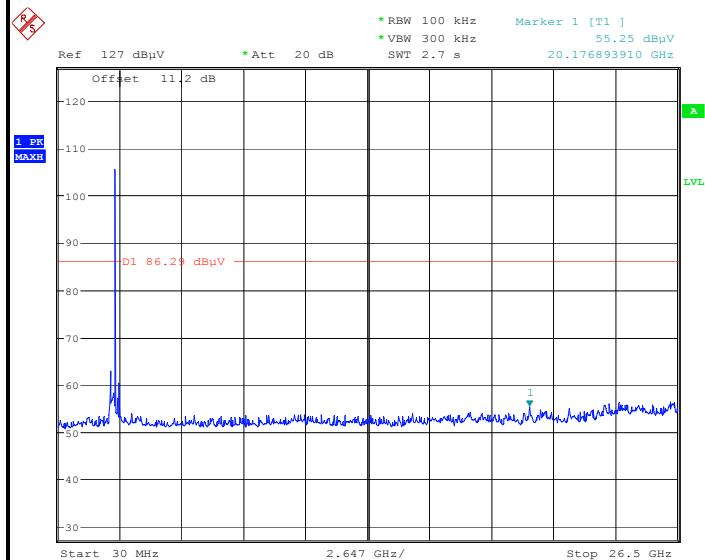
## CH Mid (30MHz ~26.5GHz)



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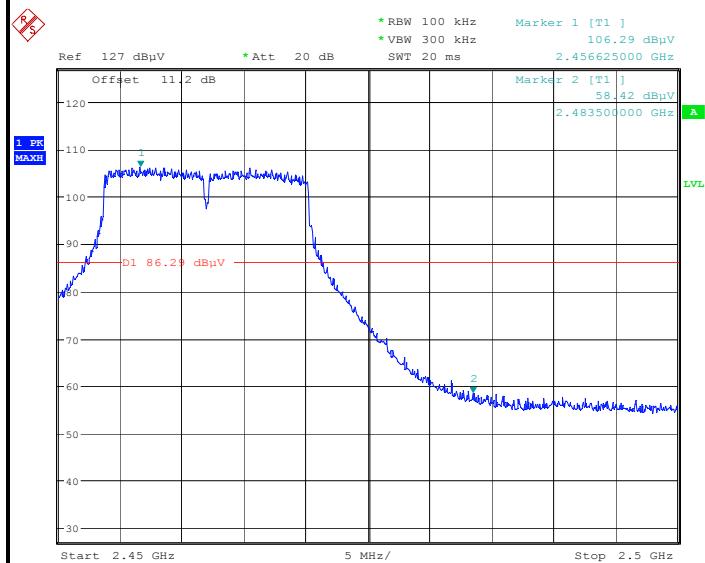


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 13:54:28

## CH High (2.45GHz ~2.5GHz)

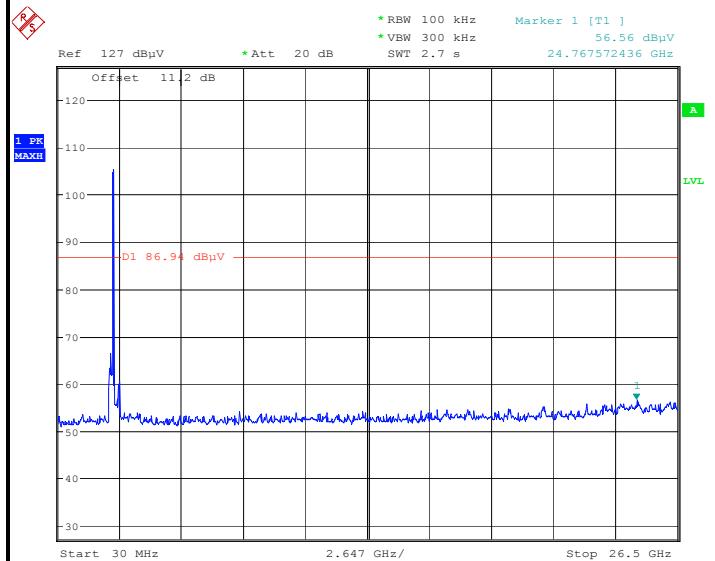


Date: 8.JUL.2014 13:53:28

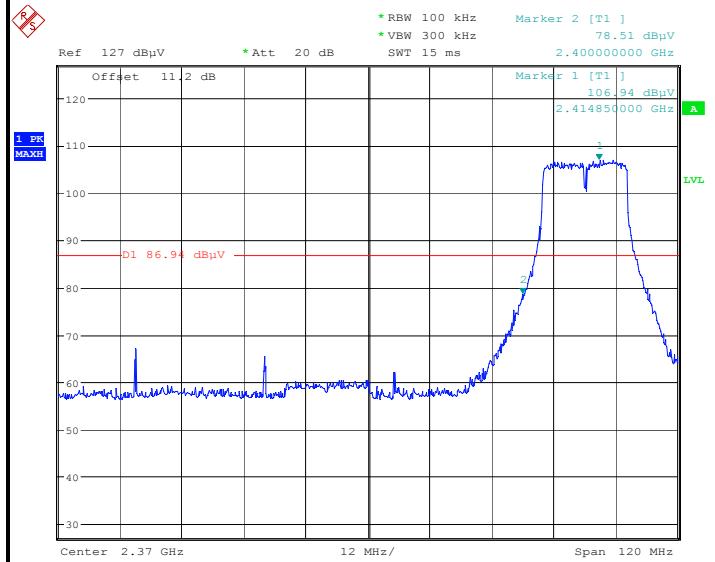


## IEEE 802.11q mode (Antenna 1)

### **CH Low (30MHz ~26.5GHz)**

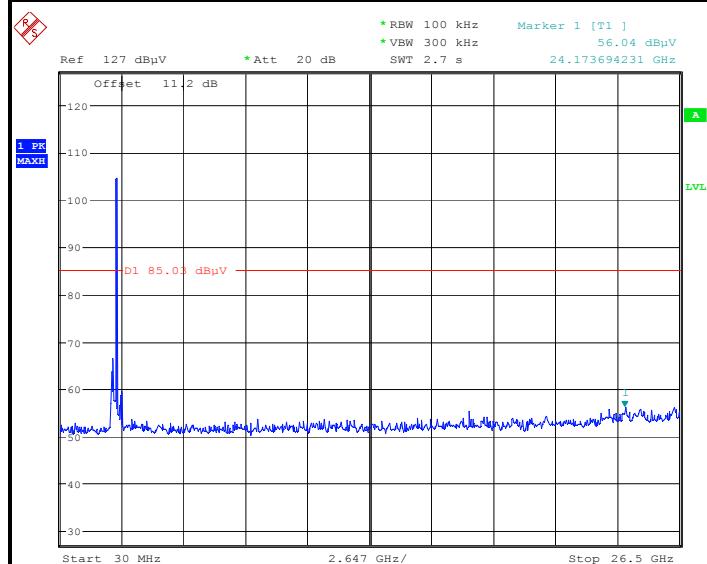


### **CH Low (2.31GHz ~2.43GHz)**





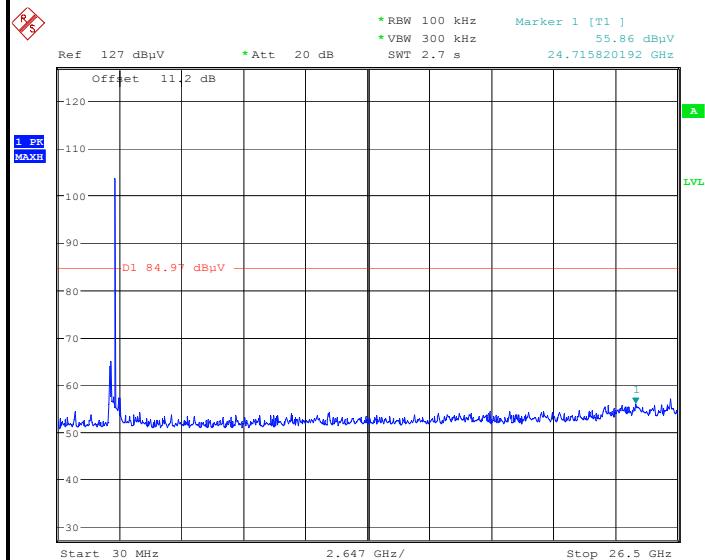
## CH Mid (30MHz ~26.5GHz)



Date: 8.JUL.2014 11:23:28

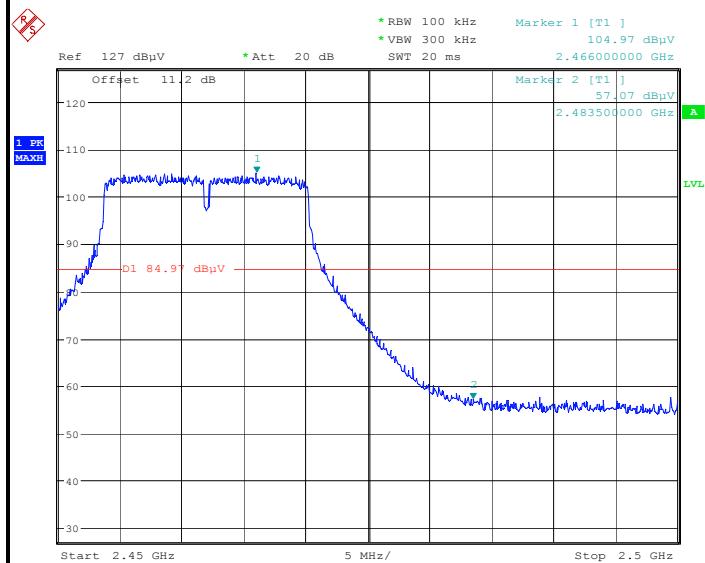


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 11:26:07

## CH High (2.45GHz ~2.5GHz)

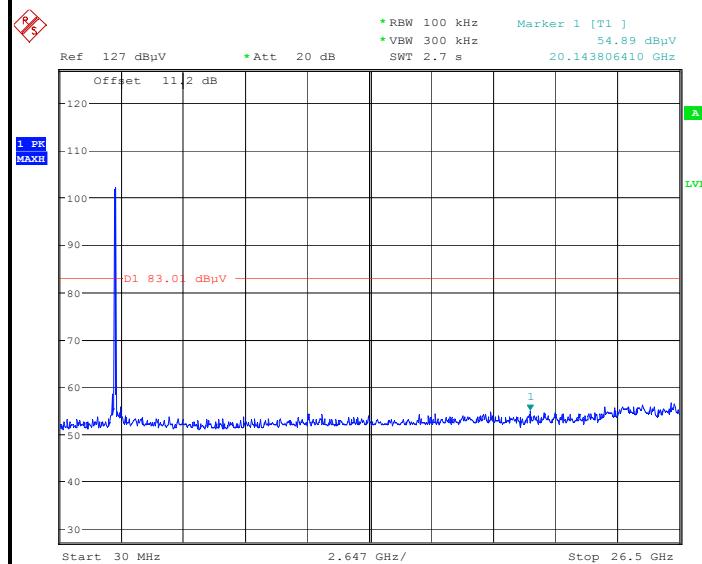


Date: 8.JUL.2014 11:25:07



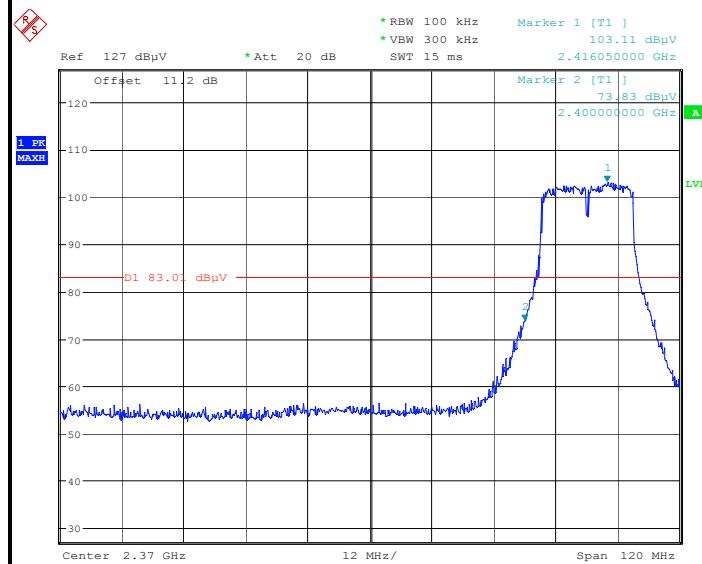
## IEEE 802.11n HT20 MHz mode (Antenna 0)

### **CH Low (30MHz ~26.5GHz)**



Date: 8.JUL.2014 14:00:37

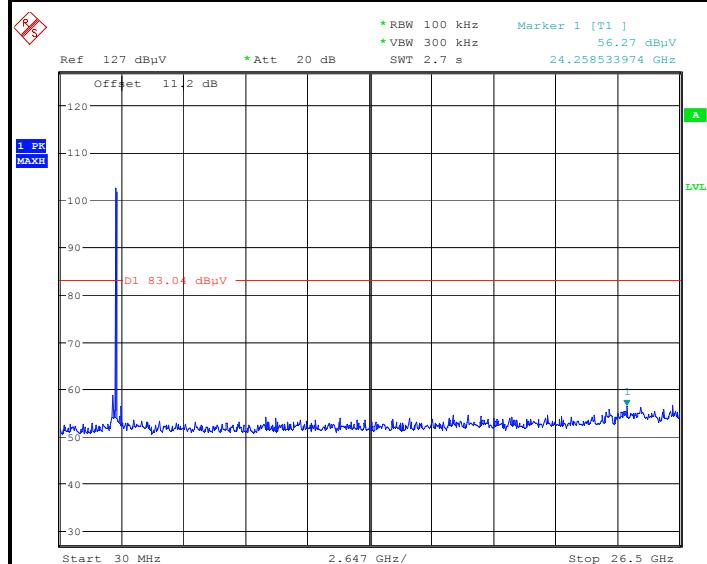
### **CH Low (2.31GHz ~2.43GHz)**



Date: 8.JUL.2014 13:59:24



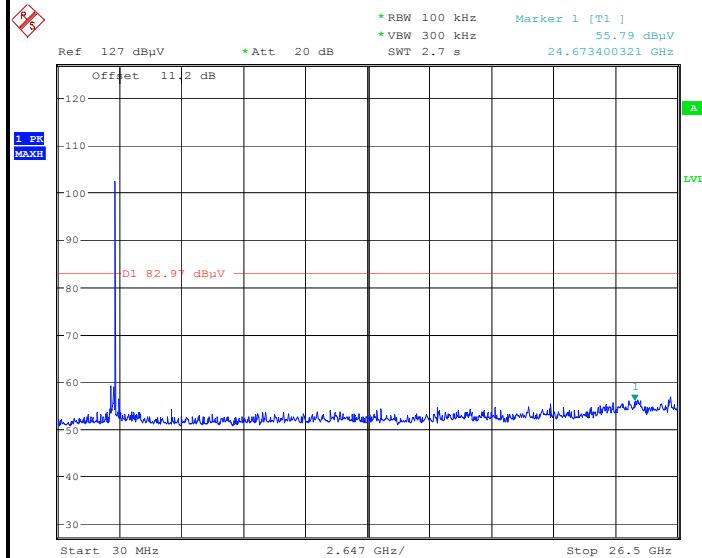
## CH Mid (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:01:51

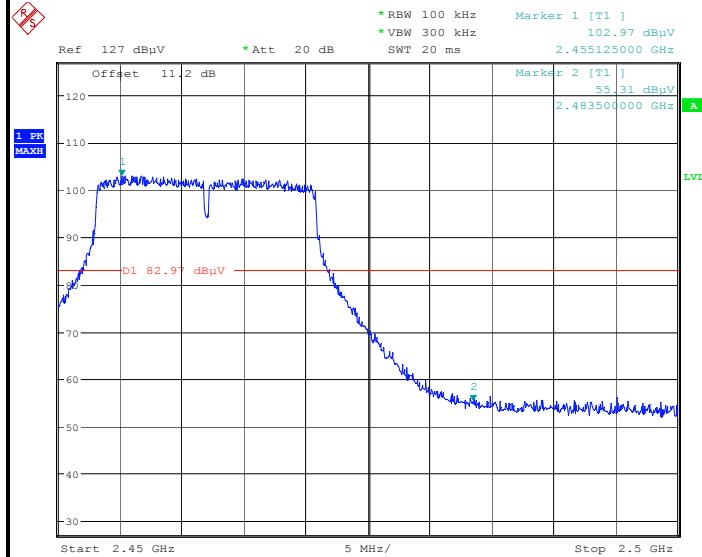


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:03:26

## CH High (2.45GHz ~2.5GHz)

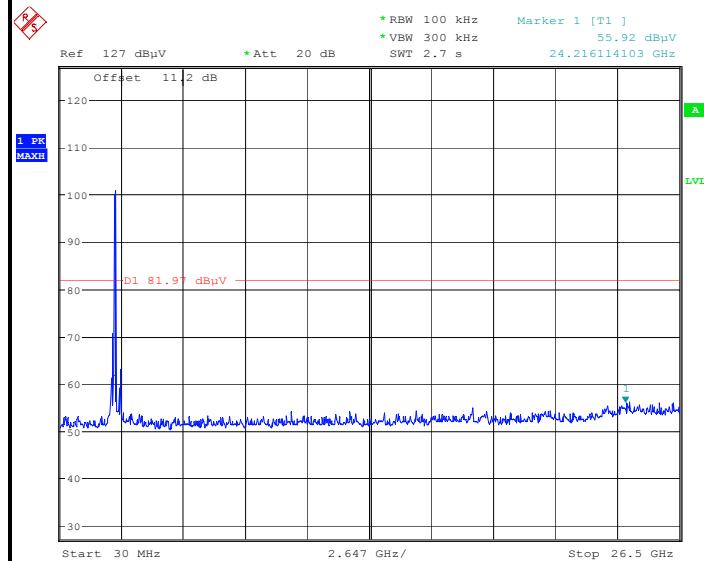


Date: 8.JUL.2014 14:02:37



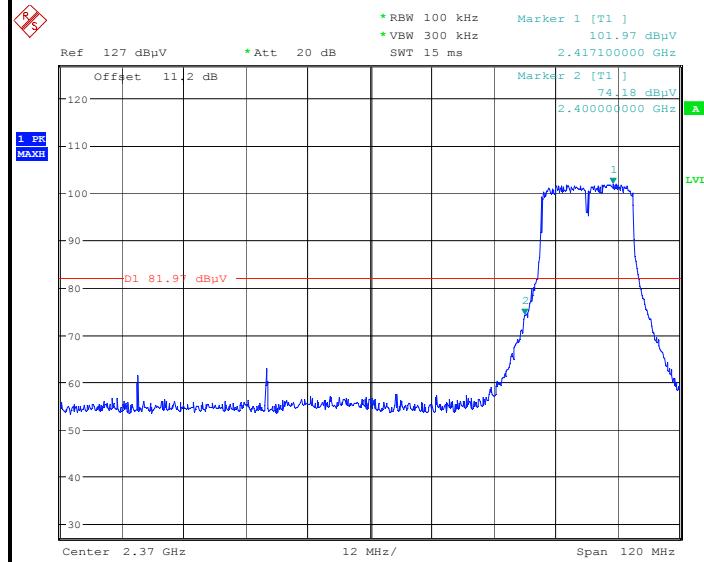
## IEEE 802.11n HT20 MHz mode (Antenna 1)

### CH Low (30MHz ~26.5GHz)



Date: 8.JUL.2014 11:40:01

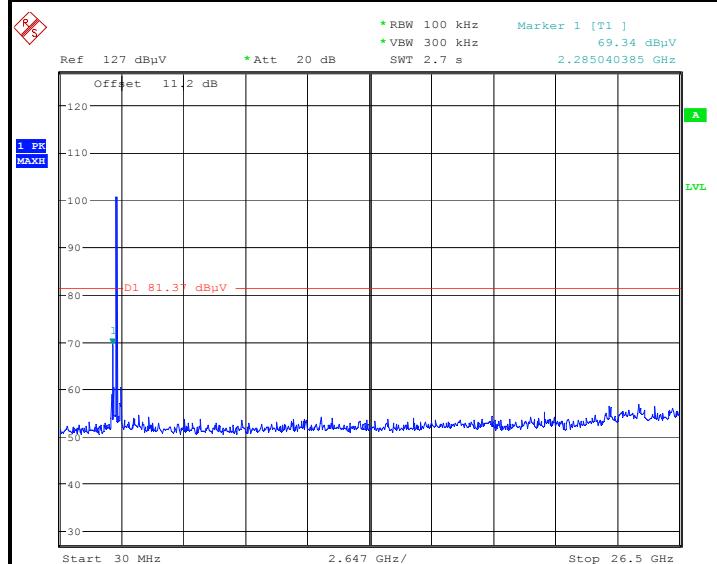
### CH Low (2.31GHz ~2.43GHz)



Date: 8.JUL.2014 11:37:32



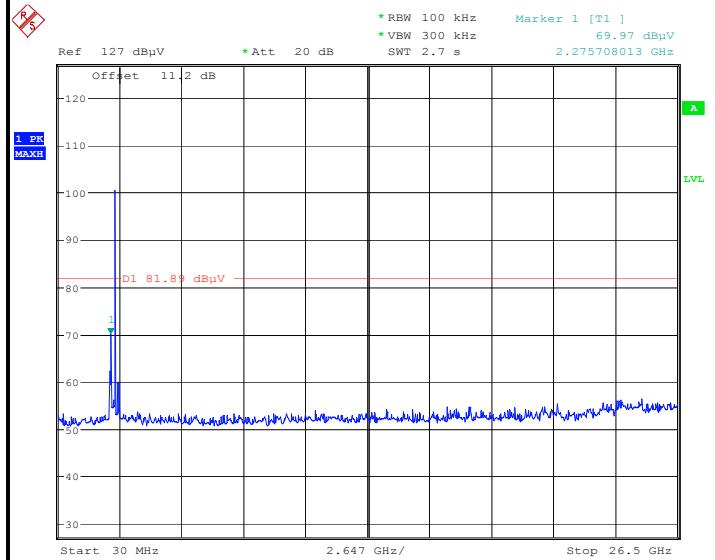
## CH Mid (30MHz ~26.5GHz)



Date: 8.JUL.2014 11:38:40

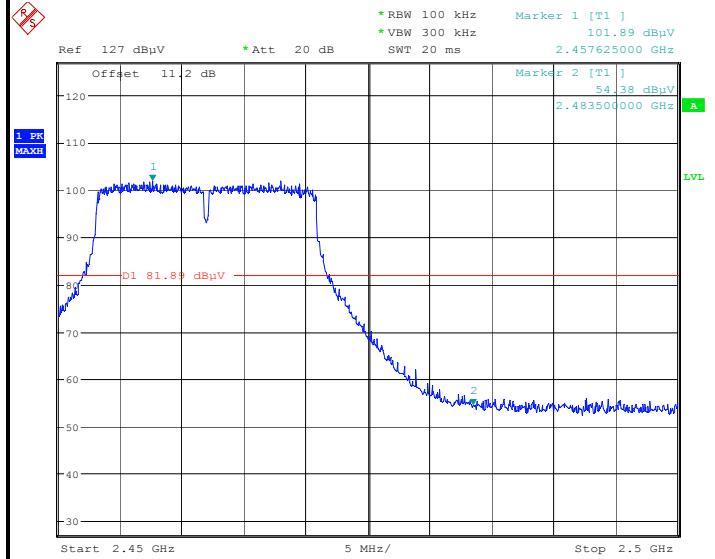


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 11:35:46

## CH High (2.45GHz ~2.5GHz)

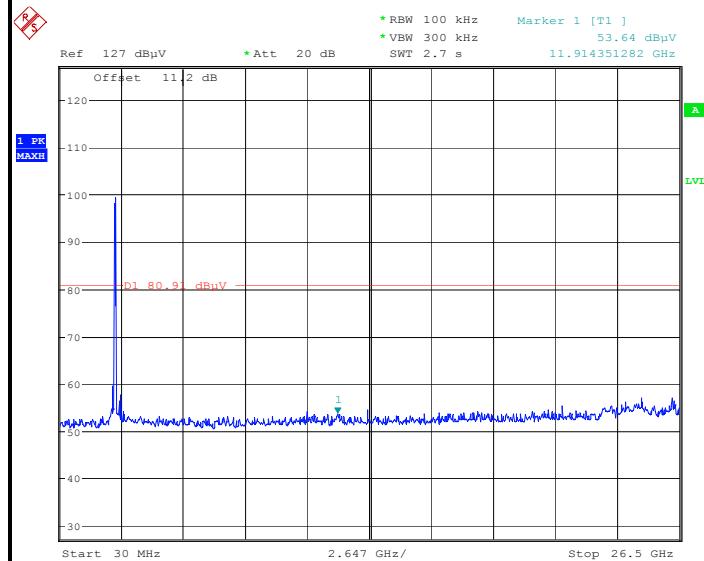


Date: 8.JUL.2014 11:34:54

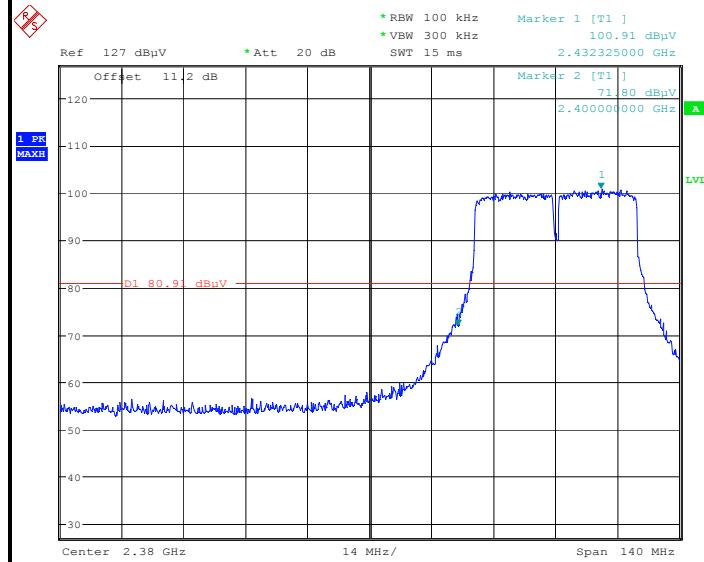


## IEEE 802.11n HT40 MHz mode (Antenna 0)

### **CH Low (30MHz ~26.5GHz)**

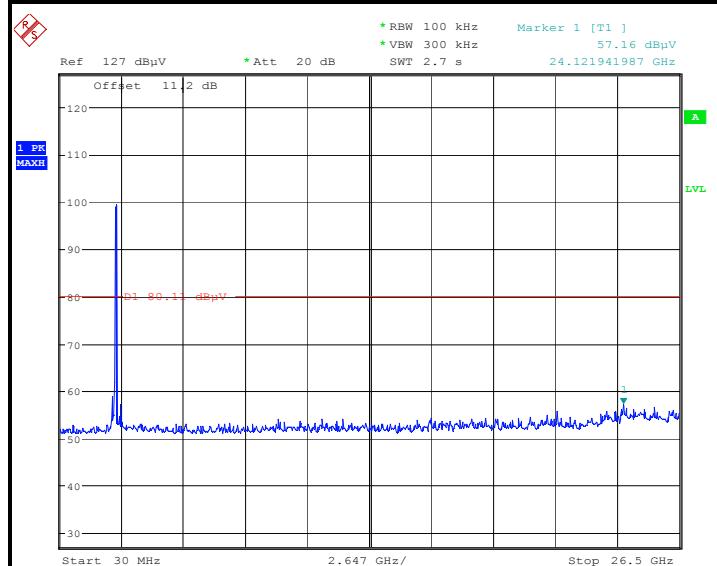


### **CH Low (2.31GHz ~2.45GHz)**





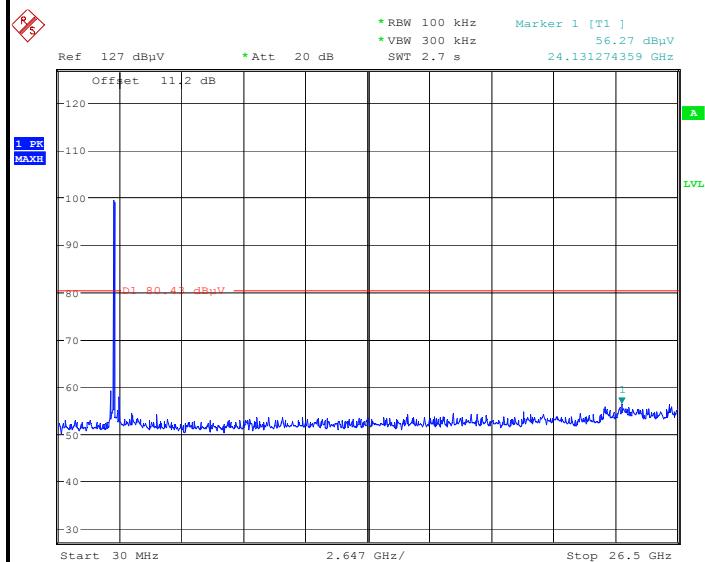
## CH Mid (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:06:57

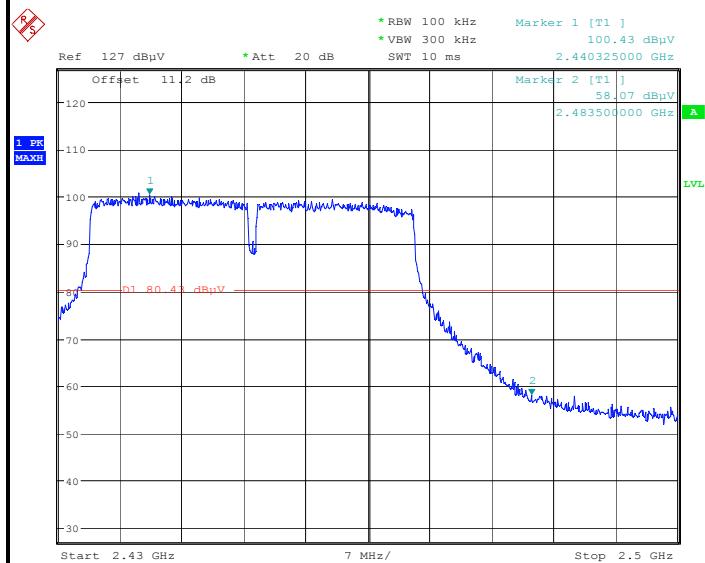


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:08:22

## CH High (2.43GHz ~2.5GHz)

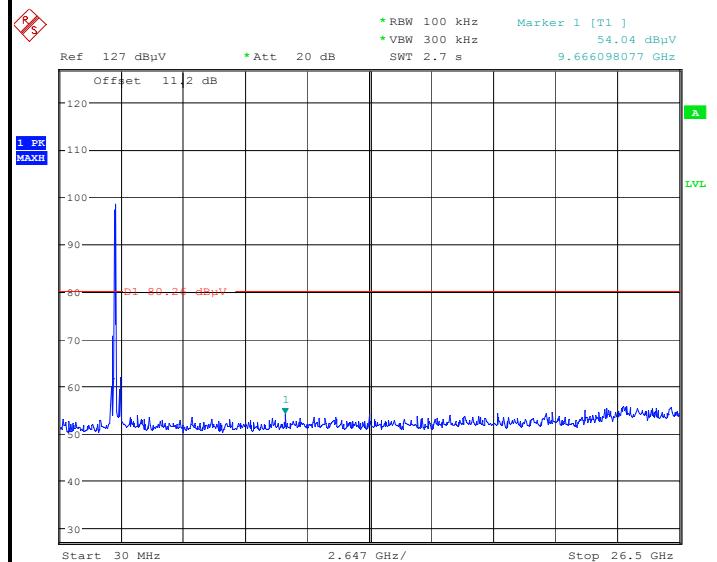


Date: 8.JUL.2014 14:07:43



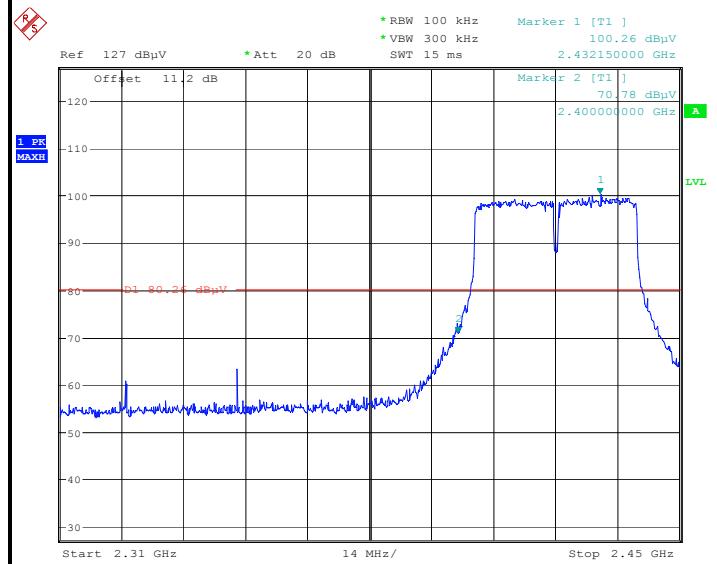
## IEEE 802.11n HT40 MHz mode (Antenna 1)

### CH Low (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:17:13

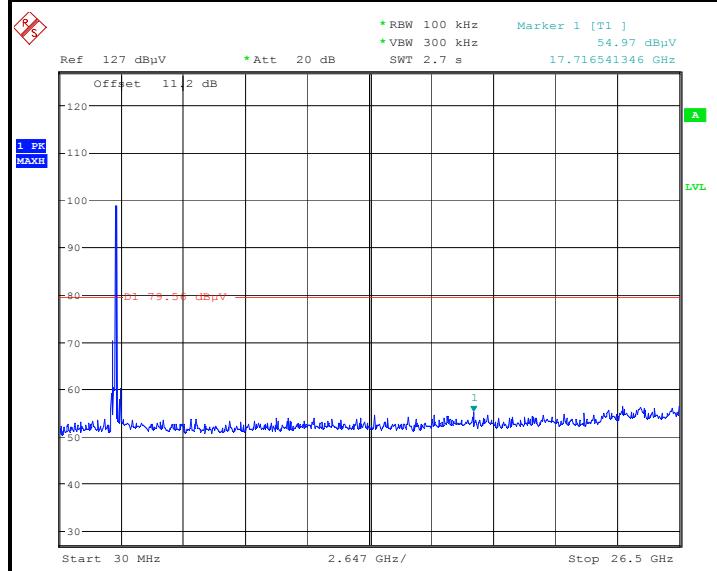
### CH Low (2.31GHz ~2.45GHz)



Date: 8.JUL.2014 14:16:34



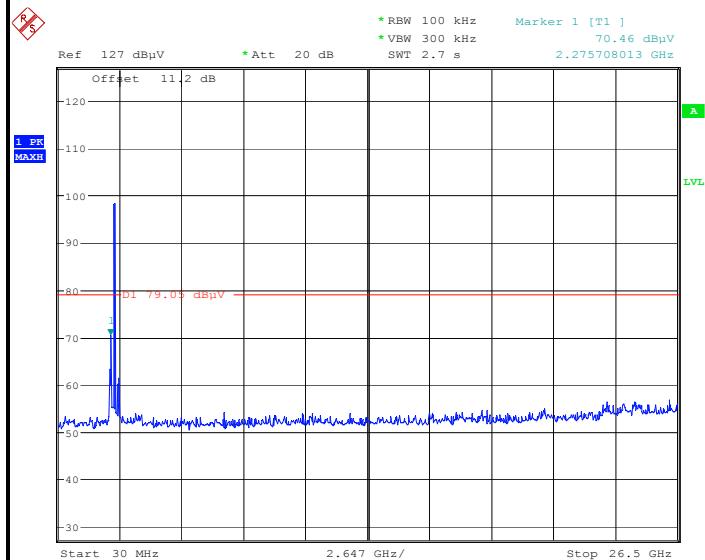
## CH Mid (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:13:12

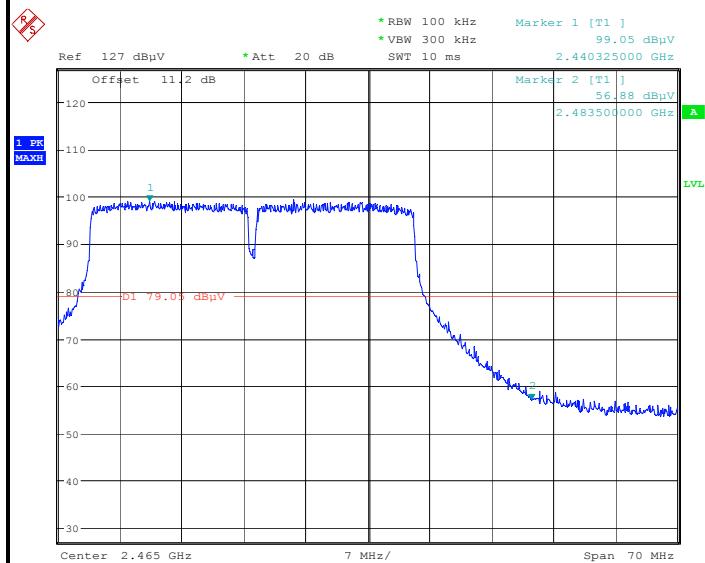


## CH High (30MHz ~26.5GHz)



Date: 8.JUL.2014 14:15:18

## CH High (2.43GHz ~2.5GHz)



Date: 8.JUL.2014 14:11:49



## 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 (dB $\mu$ V/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 (dB $\mu$ V/m) = 20 log Emission level (uV/m).



### 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	03/01/2014	03/01/2015
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	03/09/2014	03/08/2015
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2014	03/18/2015
High Noise Amplifier	Agilent	8449B	3008A01838	03/18/2014	03/18/2015
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	07/10/2014	07/09/2015
Bilog Antenna	SCHAFFNER	CBL6143	5082	03/01/2014	03/01/2015
Horn Antenna	SCHWARZBECK	BBHA9120	D286	03/01/2014	03/01/2015
Loop Antenna	COM-POWER	AL-130	121044	09/27/2013	09/26/2014
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	02/28/2014	02/28/2015
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.



### 7.2.2.3. TEST PROCEDURE (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

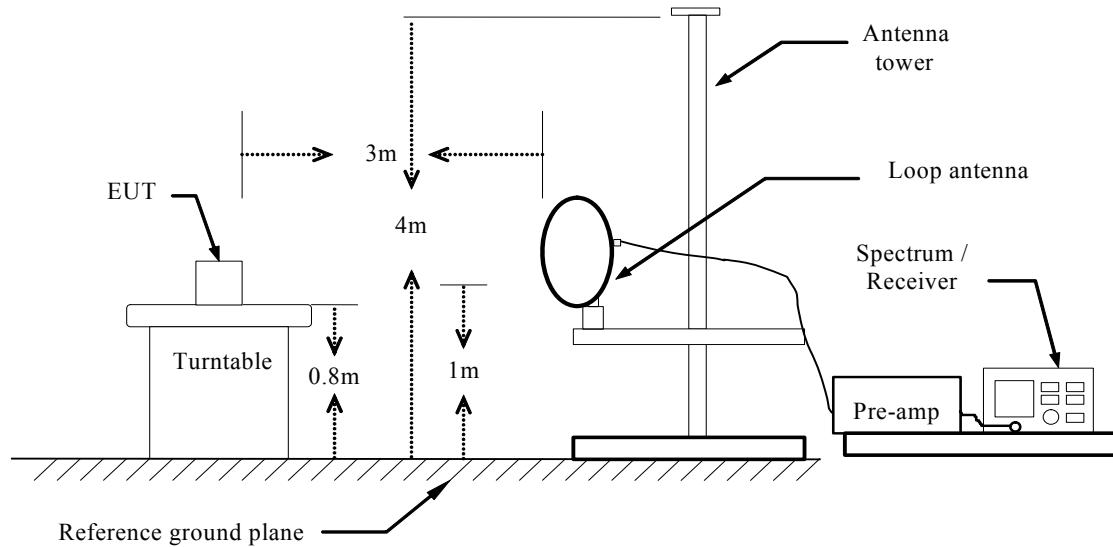
(a) PEAK: RBW=1MHz,VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

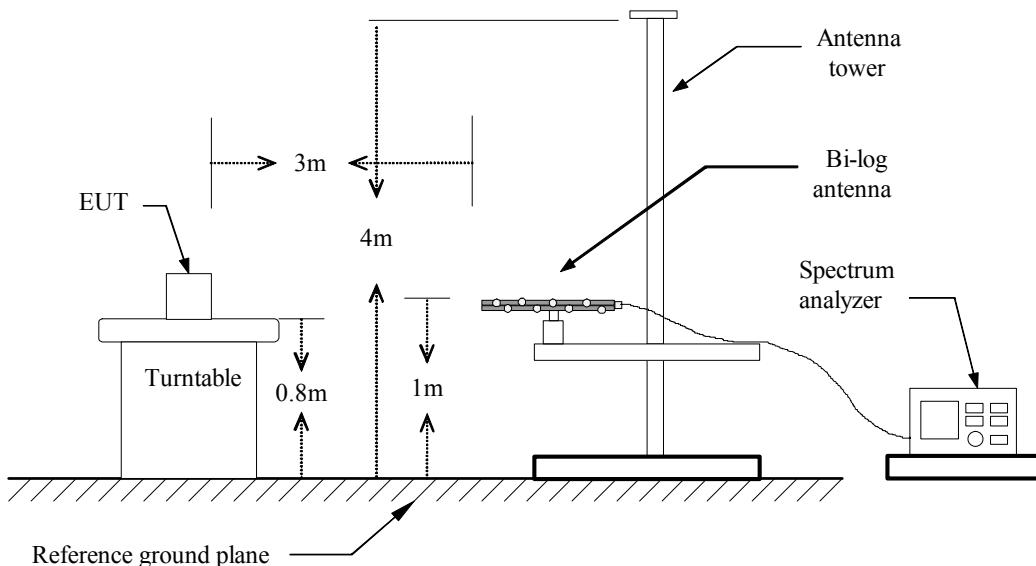
7. Repeat above procedures until the measurements for all frequencies are complete.

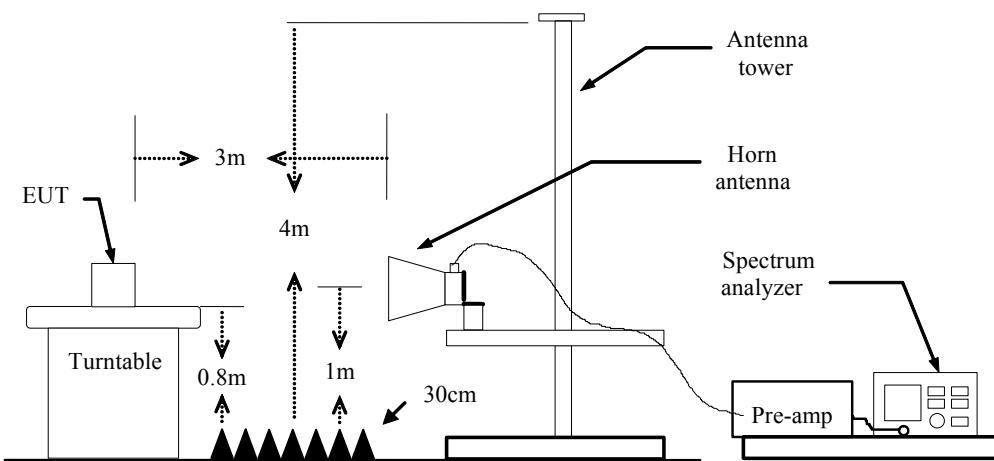
#### 7.2.2.4. TEST SETUP

##### Below 30MHz



##### Below 1 GHz



**Above 1 GHz**

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

**7.2.2.5. DATA SAMPLE****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**

$$\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limits (dBuV/m)}$$

$$\text{Result (dBuV/m)} = \text{Reading (dBuV)} + \text{Correction Factor}$$



### 7.2.2.6. TEST RESULTS

#### Below 1 GHz

**Test Mode: TX**

**Tested by: Mack Li**

**Ambient temperature: 24°C**

**Relative humidity: 52% RH**

**Date: July 3, 2013**

Frequency (MHz)	Reading (dB $\mu$ V)	Correction Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pole (V/H)	Remark
106.6300	48.77	-8.30	40.47	43.50	-3.03	V	QP
142.5200	42.05	-3.45	38.60	43.50	-4.90	V	QP
174.5300	44.89	-5.84	39.05	43.50	-4.45	V	QP
237.5800	37.49	-2.24	35.25	46.00	-10.75	V	QP
600.3600	42.31	-1.26	41.05	46.00	-4.95	V	QP
799.2100	36.25	-0.77	35.48	46.00	-10.52	V	QP
109.5400	47.94	-12.16	35.78	43.50	-7.72	H	QP
199.7500	49.28	-9.27	40.01	43.50	-3.49	H	QP
243.4000	42.92	-2.07	40.85	46.00	-5.15	H	QP
386.9600	45.50	-5.72	39.78	46.00	-6.22	H	QP
600.3600	41.31	-0.33	40.98	46.00	-5.02	H	QP
750.7100	41.73	-4.70	37.03	46.00	-8.97	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 (dB $\mu$ V/m) = Receiver reading  
Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain  
Limit (dB $\mu$ V/m) = Limit stated in standard  
Margin (dB) = Measured (dB $\mu$ V/m) – Limits (dB $\mu$ V/m)  
Antenna Pole (H/V) = Current carrying line of reading

**Above 1 GHz****Antenna 0****Test Mode: TX / IEEE 802.11b(CH Low)****Tested by: Mack Li****Ambient temperature: 24°C      Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3043.000	44.79	-3.72	41.07	74.00	-32.93	V	peak
3628.000	43.42	-2.42	41.00	74.00	-33.00	V	peak
4825.000	50.71	1.78	52.49	74.00	-21.51	V	peak
4825.000	48.37	1.78	50.15	54.00	-3.85	V	AVG
5347.000	40.82	2.54	43.36	74.00	-30.64	V	peak
6085.000	40.07	3.76	43.83	74.00	-30.17	V	peak
6949.000	41.94	7.48	49.42	74.00	-24.58	V	peak
3376.000	44.31	-3.12	41.19	74.00	-32.81	H	Peak
4204.000	42.47	-0.44	42.03	74.00	-31.97	H	Peak
4825.000	46.04	1.78	47.82	74.00	-26.18	H	Peak
5752.000	41.31	2.97	44.28	74.00	-29.72	H	peak
6580.000	40.16	5.89	46.05	74.00	-27.95	H	peak
6958.000	41.21	7.52	48.73	74.00	-25.27	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).

**Test Mode:** TX / IEEE 802.11b (CH Mid)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3223.000	43.45	-3.39	40.06	74.00	-33.94	V	Peak
3871.000	42.84	-1.52	41.32	74.00	-32.68	V	Peak
4870.000	48.48	1.97	50.45	74.00	-23.55	V	Peak
5842.000	40.61	3.12	43.73	74.00	-30.27	V	Peak
6724.000	40.17	6.51	46.68	74.00	-27.32	V	Peak
7669.000	40.16	9.00	49.16	74.00	-24.84	V	Peak
<hr/>							
4033.000	42.69	-0.94	41.75	74.00	-32.25	H	Peak
4870.000	44.89	1.97	46.86	74.00	-27.14	H	Peak
5644.000	40.91	2.79	43.70	74.00	-30.30	H	Peak
6166.000	41.34	4.11	45.45	74.00	-28.55	H	Peak
6904.000	40.74	7.29	48.03	74.00	-25.97	H	Peak
7543.000	40.81	8.76	49.57	74.00	-24.43	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).

**Test Mode:** TX / IEEE 802.11b (CH High)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3727.000	42.44	-2.05	40.39	74.00	-33.61	V	Peak
4303.000	42.64	-0.15	42.49	74.00	-31.51	V	Peak
4924.000	46.63	2.19	48.82	74.00	-25.18	V	Peak
5905.000	40.36	3.23	43.59	74.00	-30.41	V	Peak
6562.000	39.93	5.81	45.74	74.00	-28.26	V	Peak
7669.000	40.93	9.00	49.93	74.00	-24.07	V	Peak
3979.000	41.73	-1.12	40.61	74.00	-33.39	H	Peak
4924.000	42.77	2.19	44.96	74.00	-29.04	H	Peak
5905.000	41.28	3.23	44.51	74.00	-29.49	H	Peak
7030.000	41.42	7.76	49.18	74.00	-24.82	H	Peak
7597.000	40.75	8.86	49.61	74.00	-24.39	H	Peak
8362.000	40.50	9.45	49.95	74.00	-24.05	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).*

**Antenna 1****Test Mode: TX / IEEE 802.11b(CH Low)****Tested by: Mack Li****Ambient temperature: 24°C      Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3574.000	42.91	-2.62	40.29	74.00	-33.71	V	peak
4267.000	41.42	-0.26	41.16	74.00	-32.84	V	peak
4825.000	48.88	1.78	50.66	74.00	-23.34	V	peak
5752.000	41.51	2.97	44.48	74.00	-29.52	V	peak
6769.000	40.73	6.70	47.43	74.00	-26.57	V	peak
7741.000	40.81	9.14	49.95	74.00	-24.05	V	peak
3304.000	43.23	-3.25	39.98	74.00	-34.02	H	Peak
3907.000	42.23	-1.38	40.85	74.00	-33.15	H	Peak
4825.000	43.35	1.78	45.13	74.00	-28.87	H	Peak
5824.000	40.56	3.09	43.65	74.00	-30.35	H	peak
6715.000	39.93	6.47	46.40	74.00	-27.60	H	peak
7516.000	39.45	8.71	48.16	74.00	-25.84	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).

**Test Mode:** TX / IEEE 802.11b (CH Mid)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3268.000	43.87	-3.31	40.56	74.00	-33.44	V	Peak
3961.000	42.30	-1.18	41.12	74.00	-32.88	V	Peak
4870.000	46.85	1.97	48.82	74.00	-25.18	V	Peak
6202.000	39.82	4.26	44.08	74.00	-29.92	V	Peak
6967.000	41.00	7.56	48.56	74.00	-25.44	V	Peak
7732.000	40.25	9.13	49.38	74.00	-24.62	V	Peak
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3214.000	43.52	-3.41	40.11	74.00	-33.89	H	Peak
3970.000	41.90	-1.15	40.75	74.00	-33.25	H	Peak
4870.000	43.26	1.97	45.23	74.00	-28.77	H	Peak
5338.000	40.99	2.54	43.53	74.00	-30.47	H	Peak
6553.000	39.26	5.77	45.03	74.00	-28.97	H	Peak
7471.000	39.87	8.62	48.49	74.00	-25.51	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).

**Test Mode:** TX / IEEE 802.11b (CH High)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3448.000	43.84	-2.98	40.86	74.00	-33.14	V	Peak
4033.000	42.48	-0.94	41.54	74.00	-32.46	V	Peak
4924.000	45.53	2.19	47.72	74.00	-26.28	V	Peak
5419.000	41.28	2.54	43.82	74.00	-30.18	V	Peak
6364.000	39.92	4.96	44.88	74.00	-29.12	V	Peak
6931.000	40.24	7.40	47.64	74.00	-26.36	V	Peak
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4303.000	42.63	-0.15	42.48	74.00	-31.52	H	Peak
4924.000	42.16	2.19	44.35	74.00	-29.65	H	Peak
5464.000	40.92	2.55	43.47	74.00	-30.53	H	Peak
6220.000	40.30	4.34	44.64	74.00	-29.36	H	Peak
7003.000	41.21	7.71	48.92	74.00	-25.08	H	Peak
7768.000	40.17	9.20	49.37	74.00	-24.63	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).*

**Antenna 0****Test Mode: TX / IEEE 802.11g(CH Low)****Tested by: Mack Li****Ambient temperature: 24°C      Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3763.9000	43.23	-1.91	41.32	74.00	-32.68	V	Peak
4646.8000	41.89	1.04	42.93	74.00	-31.07	V	Peak
5173.3000	40.93	2.52	43.45	74.00	-30.55	V	Peak
6218.2000	41.10	4.33	45.43	74.00	-28.57	V	Peak
6892.3000	39.72	7.24	46.96	74.00	-27.04	V	Peak
7707.7000	39.71	9.08	48.79	74.00	-25.21	V	Peak
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2989.9000	44.52	-3.85	40.67	74.00	-33.33	H	Peak
4276.0000	42.70	-0.23	42.47	74.00	-31.53	H	Peak
4932.1000	41.12	2.23	43.35	74.00	-30.65	H	Peak
5921.2000	39.98	3.26	43.24	74.00	-30.76	H	Peak
7119.1000	40.76	7.93	48.69	74.00	-25.31	H	Peak
8019.1000	39.81	9.64	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).*

**Test Mode: TX / IEEE 802.11g (CH Mid)****Tested by: Mack Li****Ambient temperature: 24°C      Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3168.1000	44.52	-3.49	41.03	74.00	-32.97	V	Peak
4188.7000	41.63	-0.49	41.14	74.00	-32.86	V	Peak
4801.6000	41.38	1.68	43.06	74.00	-30.94	V	Peak
5688.1000	41.25	2.87	44.12	74.00	-29.88	V	Peak
6570.1000	39.70	5.85	45.55	74.00	-28.45	V	Peak
7712.2000	40.40	9.09	49.49	74.00	-24.51	V	Peak
3859.3000	43.44	-1.56	41.88	74.00	-32.12	H	Peak
4908.7000	41.10	2.13	43.23	74.00	-30.77	H	Peak
5742.1000	40.72	2.96	43.68	74.00	-30.32	H	Peak
6596.2000	39.79	5.96	45.75	74.00	-28.25	H	Peak
7438.6000	40.18	8.56	48.74	74.00	-25.26	H	Peak
8221.6000	40.58	9.53	50.11	74.00	-23.89	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).*

**Test Mode: TX / IEEE 802.11g (CH High)****Tested by: Mack Li****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3207.7000	44.25	-3.42	40.83	74.00	-33.17	V	Peak
4042.9000	42.68	-0.91	41.77	74.00	-32.23	V	Peak
5039.2000	41.55	2.51	44.06	74.00	-29.94	V	Peak
5714.2000	40.30	2.91	43.21	74.00	-30.79	V	Peak
6769.9000	39.65	6.71	46.36	74.00	-27.64	V	Peak
7288.3000	40.39	8.26	48.65	74.00	-25.35	V	Peak
3865.6000	43.11	-1.54	41.57	74.00	-32.43	H	Peak
4836.7000	41.74	1.83	43.57	74.00	-30.43	H	Peak
5307.4000	41.36	2.53	43.89	74.00	-30.11	H	Peak
6152.5000	40.43	4.05	44.48	74.00	-29.52	H	Peak
7090.3000	39.69	7.88	47.57	74.00	-26.43	H	Peak
8103.7000	39.96	9.59	49.55	74.00	-24.45	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).*

**Antenna 1****Test Mode:** TX / IEEE 802.11g(CH Low)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3205.0000	44.30	-3.43	40.87	74.00	-33.13	V	Peak
3768.4000	43.03	-1.90	41.13	74.00	-32.87	V	Peak
4813.3000	42.99	1.73	44.72	74.00	-29.28	V	Peak
5750.2000	40.97	2.97	43.94	74.00	-30.06	V	Peak
6412.6000	40.62	5.17	45.79	74.00	-28.21	V	Peak
7246.0000	40.91	8.18	49.09	74.00	-24.91	V	Peak
3631.6000	42.88	-2.40	40.48	74.00	-33.52	H	Peak
4734.1000	41.89	1.40	43.29	74.00	-30.71	H	Peak
5140.9000	41.67	2.52	44.19	74.00	-29.81	H	Peak
6376.6000	40.13	5.01	45.14	74.00	-28.86	H	Peak
7311.7000	40.26	8.31	48.57	74.00	-25.43	H	Peak
8224.3000	39.96	9.53	49.49	74.00	-24.51	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).



**Test Mode: TX / IEEE 802.11g (CH Mid)**

**Tested by: Mack Li**

**Ambient temperature: 24°C      Relative humidity: 52% RH**

**Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3730.6000	44.62	-2.04	42.58	74.00	-31.42	V	Peak
5059.9000	41.86	2.51	44.37	74.00	-29.63	V	Peak
5808.7000	41.32	3.07	44.39	74.00	-29.61	V	Peak
6589.9000	41.16	5.93	47.09	74.00	-26.91	V	Peak
7022.8000	40.32	7.74	48.06	74.00	-25.94	V	Peak
7967.8000	40.91	9.59	50.50	74.00	-23.50	V	Peak
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4034.8000	43.63	-0.94	42.69	74.00	-31.31	H	Peak
5132.8000	40.92	2.52	43.44	74.00	-30.56	H	Peak
5778.1000	40.95	3.02	43.97	74.00	-30.03	H	Peak
6309.1000	40.69	4.72	45.41	74.00	-28.59	H	Peak
7369.3000	39.77	8.42	48.19	74.00	-25.81	H	Peak
7920.1000	40.43	9.49	49.92	74.00	-24.08	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).*

**Test Mode: TX / IEEE 802.11g (CH High)****Tested by: Mack Li****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3438.1000	43.18	-3.00	40.18	74.00	-33.82	V	Peak
3865.6000	43.12	-1.54	41.58	74.00	-32.42	V	Peak
5025.7000	40.90	2.51	43.41	74.00	-30.59	V	Peak
6173.2000	40.52	4.14	44.66	74.00	-29.34	V	Peak
7207.3000	39.35	8.10	47.45	74.00	-26.55	V	Peak
7999.3000	40.41	9.65	50.06	74.00	-23.94	V	Peak
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3700.0000	42.73	-2.15	40.58	74.00	-33.42	H	Peak
4965.4000	41.55	2.37	43.92	74.00	-30.08	H	Peak
5428.9000	41.03	2.54	43.57	74.00	-30.43	H	Peak
6619.6000	40.73	6.06	46.79	74.00	-27.21	H	Peak
7390.0000	40.20	8.46	48.66	74.00	-25.34	H	Peak
7964.2000	39.69	9.58	49.27	74.00	-24.73	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).*

**Combine with Antenna 0 and Antenna 1****Test Mode: TX / IEEE 802.11n HT20 MHz (CH Low)****Tested by: Mack Li****Ambient temperature: 24°C      Relative humidity: 52% RH****Date: June 29, 2014**

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3440.8000	43.47	-3.00	40.47	74.00	-33.53	V	Peak
3833.2000	43.26	-1.66	41.60	74.00	-32.40	V	Peak
5133.7000	41.82	2.52	44.34	74.00	-29.66	V	Peak
5876.2000	40.20	3.18	43.38	74.00	-30.62	V	Peak
7069.6000	40.69	7.84	48.53	74.00	-25.47	V	Peak
7993.0000	40.39	9.64	50.03	74.00	-23.97	V	Peak
3862.0000	42.86	-1.55	41.31	74.00	-32.69	H	Peak
4792.6000	41.49	1.65	43.14	74.00	-30.86	H	Peak
5834.8000	40.65	3.11	43.76	74.00	-30.24	H	Peak
6911.2000	39.31	7.32	46.63	74.00	-27.37	H	Peak
7606.0000	40.01	8.88	48.89	74.00	-25.11	H	Peak
8239.6000	39.79	9.52	49.31	74.00	-24.69	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).*



**Test Mode:** TX / IEEE 802.11n HT20 MHz (CH Mid)

**Tested by:** Mack Li

**Ambient temperature:** 24°C    **Relative humidity:** 52% RH

**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3860.2000	43.58	-1.56	42.02	74.00	-31.98	V	Peak
4961.8000	41.19	2.35	43.54	74.00	-30.46	V	Peak
6033.7000	40.00	3.54	43.54	74.00	-30.46	V	Peak
6811.3000	39.61	6.89	46.50	74.00	-27.50	V	Peak
7593.4000	39.64	8.86	48.50	74.00	-25.50	V	Peak
8019.1000	40.36	9.64	50.00	74.00	-24.00	V	Peak
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3214.0000	44.54	-3.41	41.13	74.00	-32.87	H	Peak
4201.3000	41.71	-0.45	41.26	74.00	-32.74	H	Peak
4843.0000	41.75	1.86	43.61	74.00	-30.39	H	Peak
5544.1000	40.93	2.62	43.55	74.00	-30.45	H	Peak
6490.9000	40.21	5.51	45.72	74.00	-28.28	H	Peak
7431.4000	39.65	8.54	48.19	74.00	-25.81	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).*

**Test Mode:** TX / EEE 802.11n HT20 MHz (CH High)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3765.7000	43.38	-1.91	41.47	74.00	-32.53	V	Peak
5005.0000	41.05	2.51	43.56	74.00	-30.44	V	Peak
5553.1000	40.56	2.64	43.20	74.00	-30.80	V	Peak
6198.4000	39.95	4.25	44.20	74.00	-29.80	V	Peak
7067.8000	39.61	7.83	47.44	74.00	-26.56	V	Peak
7631.2000	40.24	8.93	49.17	74.00	-24.83	V	Peak
3741.4000	43.50	-2.00	41.50	74.00	-32.50	H	Peak
4304.8000	42.99	-0.14	42.85	74.00	-31.15	H	Peak
5072.5000	42.54	2.52	45.06	74.00	-28.94	H	Peak
6245.2000	39.89	4.45	44.34	74.00	-29.66	H	Peak
7246.0000	40.34	8.18	48.52	74.00	-25.48	H	Peak
7557.4000	40.24	8.79	49.03	74.00	-24.97	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).

**Combine with Antenna 0 and Antenna 1****Test Mode:** TX/ IEEE 802.11n HT40 MHz (CH Low)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3307.6000	43.67	-3.24	40.43	74.00	-33.57	V	Peak
4593.7000	41.74	0.82	42.56	74.00	-31.44	V	Peak
5712.4000	41.26	2.91	44.17	74.00	-29.83	V	Peak
6423.4000	40.17	5.21	45.38	74.00	-28.62	V	Peak
6990.4000	40.19	7.66	47.85	74.00	-26.15	V	Peak
7998.4000	40.69	9.65	50.34	74.00	-23.66	V	Peak
3449.8000	43.35	-2.98	40.37	74.00	-33.63	H	Peak
4395.7000	41.21	0.12	41.33	74.00	-32.67	H	Peak
5029.3000	41.74	2.51	44.25	74.00	-29.75	H	Peak
5953.6000	40.75	3.31	44.06	74.00	-29.94	H	Peak
6578.2000	39.71	5.88	45.59	74.00	-28.41	H	Peak
7930.9000	40.93	9.52	50.45	74.00	-23.55	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).*

**Test Mode:** TX / IEEE 802.11n HT40 MHz (CH Mid)**Tested by:** Mack Li**Ambient temperature:** 24°C    **Relative humidity:** 52% RH**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3111.4000	44.39	-3.60	40.79	74.00	-33.21	V	Peak
4323.7000	42.00	-0.09	41.91	74.00	-32.09	V	Peak
4876.3000	43.12	2.00	45.12	74.00	-28.88	V	Peak
6179.5000	39.76	4.16	43.92	74.00	-30.08	V	Peak
7140.7000	39.51	7.97	47.48	74.00	-26.52	V	Peak
7690.6000	40.36	9.05	49.41	74.00	-24.59	V	Peak
4243.6000	42.08	-0.32	41.76	74.00	-32.24	H	Peak
5074.3000	41.62	2.52	44.14	74.00	-29.86	H	Peak
5718.7000	40.32	2.92	43.24	74.00	-30.76	H	Peak
6625.0000	40.57	6.08	46.65	74.00	-27.35	H	Peak
7419.7000	39.95	8.52	48.47	74.00	-25.53	H	Peak
7786.9000	40.91	9.23	50.14	74.00	-23.86	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).



**Test Mode:** TX/ IEEE 802.11n HT40 MHz (CH High)

**Tested by:** Mack Li

**Ambient temperature:** 24°C    **Relative humidity:** 52% RH

**Date:** June 29, 2014

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
3552.4000	43.60	-2.70	40.90	74.00	-33.10	V	Peak
4297.6000	42.69	-0.17	42.52	74.00	-31.48	V	Peak
4905.1000	41.72	2.12	43.84	74.00	-30.16	V	Peak
5676.4000	41.23	2.85	44.08	74.00	-29.92	V	Peak
6614.2000	40.13	6.04	46.17	74.00	-27.83	V	Peak
7369.3000	40.05	8.42	48.47	74.00	-25.53	V	Peak
<hr/>							
3763.9000	43.70	-1.91	41.79	74.00	-32.21	H	Peak
5175.1000	41.32	2.52	43.84	74.00	-30.16	H	Peak
6254.2000	40.86	4.49	45.35	74.00	-28.65	H	Peak
7184.8000	40.85	8.06	48.91	74.00	-25.09	H	Peak
7989.4000	39.78	9.63	49.41	74.00	-24.59	H	Peak
8611.3000	40.15	9.31	49.46	74.00	-24.54	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).*



## 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, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 7.3.2. TEST INSTRUMENTS

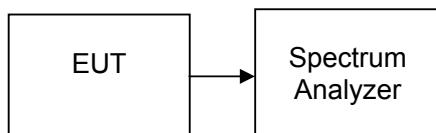
Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52221469	10/25/2013	10/24/2014

### 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)  $\geq 3 \times$  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





### 7.3.5. TEST RESULTS

*No non-compliance noted*

#### Test Data

##### Test Mode: IEEE 802.11b Mode

Channel	Frequency (MHz)	Bandwidth (kHz) Antenna 0	Bandwidth (kHz) Antenna 1	Limit (kHz)	Test Result
Low	2412	10120	10120	>500	PASS
Mid	2437	10110	10110		PASS
High	2462	10120	10120		PASS

##### Test Mode: IEEE 802.11g Mode

Channel	Frequency (MHz)	Bandwidth (kHz) Antenna 0	Bandwidth (kHz) Antenna 1	Limit (kHz)	Test Result
Low	2412	16590	16550	>500	PASS
Mid	2437	16580	16580		PASS
High	2462	16590	16580		PASS

##### Test Mode: IEEE 802.11n HT20 MHz Mode

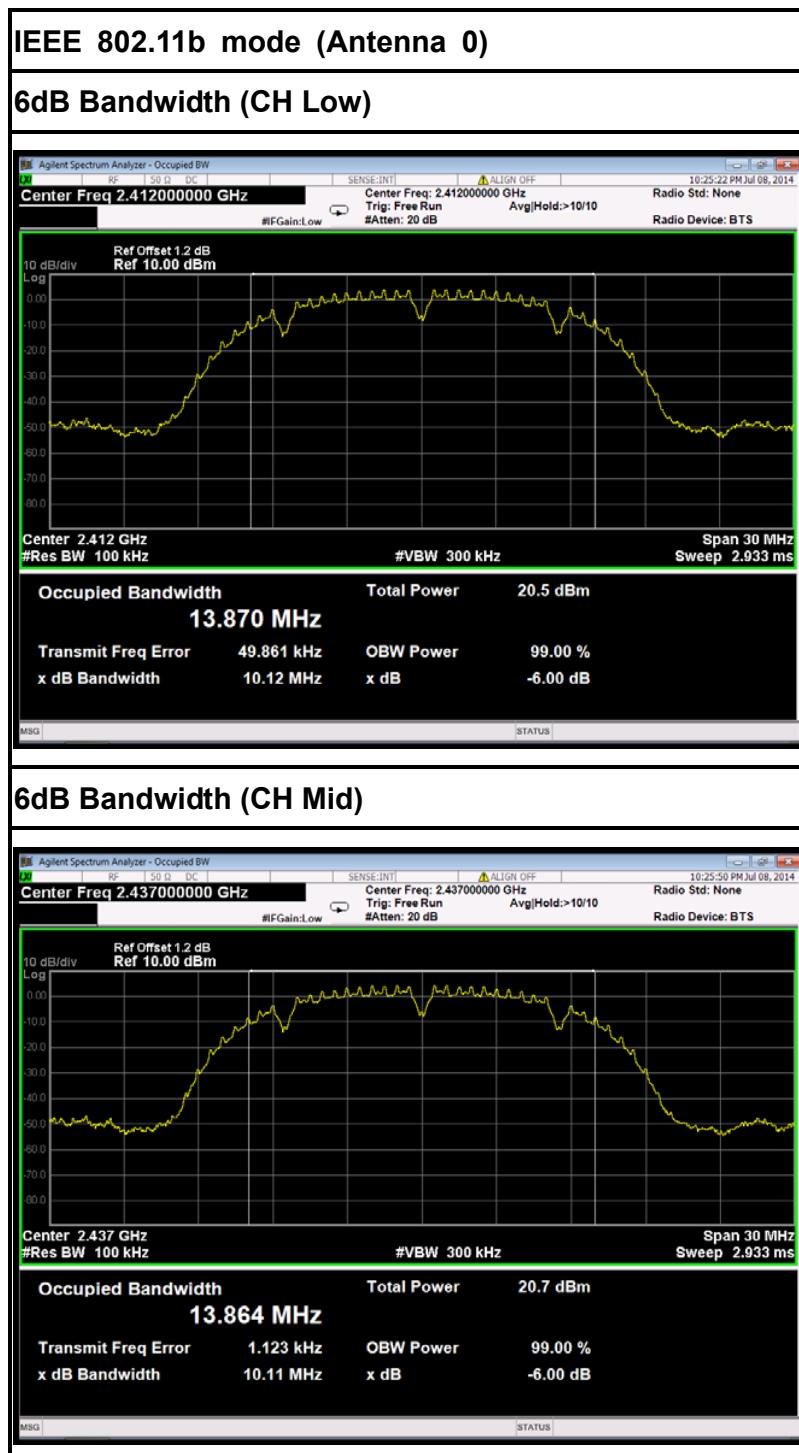
Channel	Frequency (MHz)	Bandwidth (kHz) Antenna 0	Bandwidth (kHz) Antenna 1	Limit (kHz)	Test Result
Low	2412	17810	17820	>500	PASS
Mid	2437	17790	17800		PASS
High	2462	17780	17800		PASS

##### Test Mode: IEEE 802.11n HT40 MHz Mode

Channel	Frequency (MHz)	Bandwidth (kHz) Antenna 0	Bandwidth (kHz) Antenna 1	Limit (kHz)	Test Result
Low	2422	36540	36580	>500	PASS
Mid	2437	36590	36590		PASS
High	2452	36540	36590		PASS

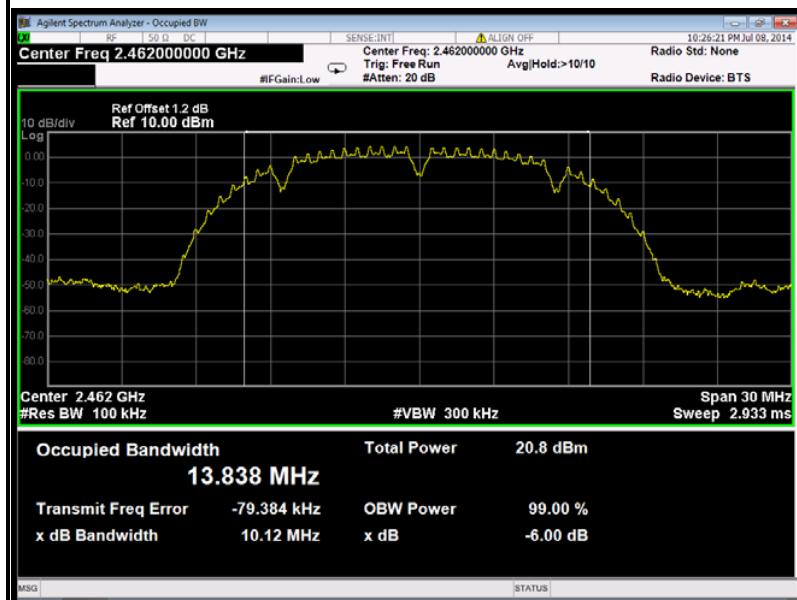


## Test Plot



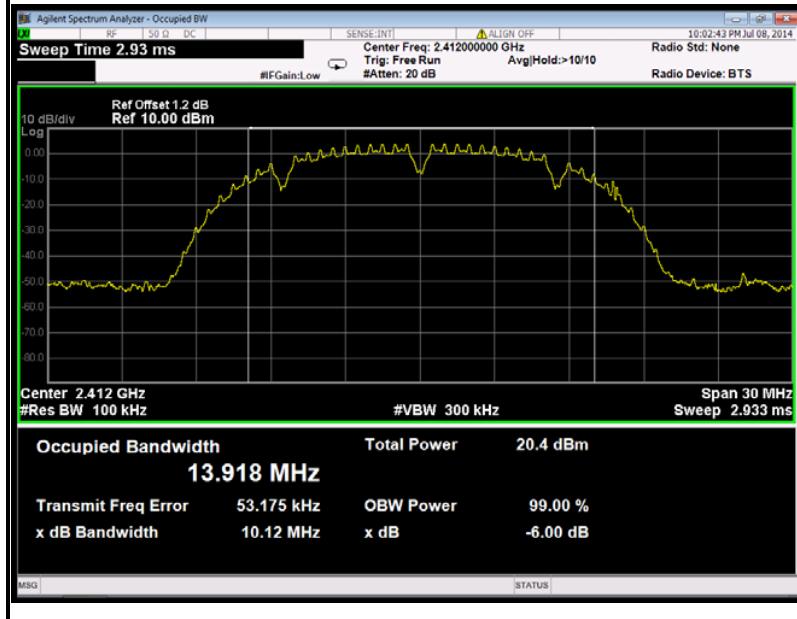


## 6dB Bandwidth (CH High)



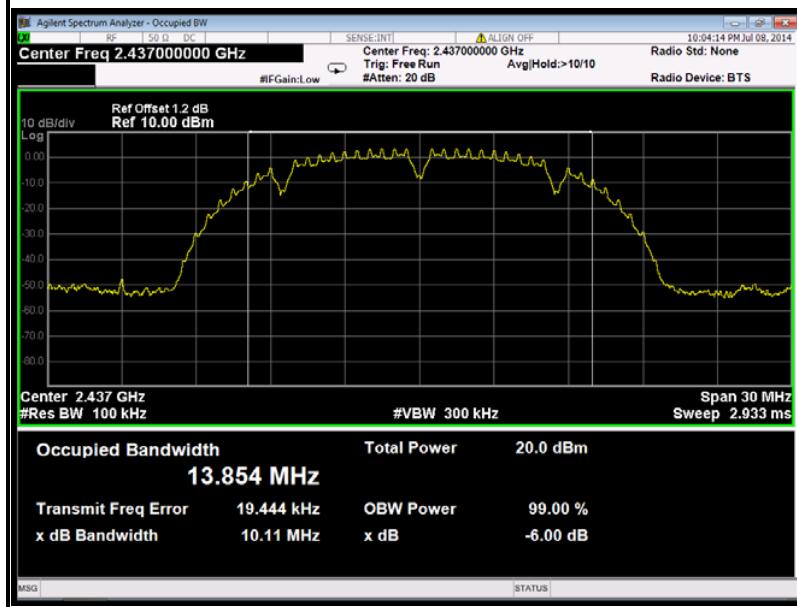
## IEEE 802.11b mode (Antenna 1)

### 6dB Bandwidth (CH Low)

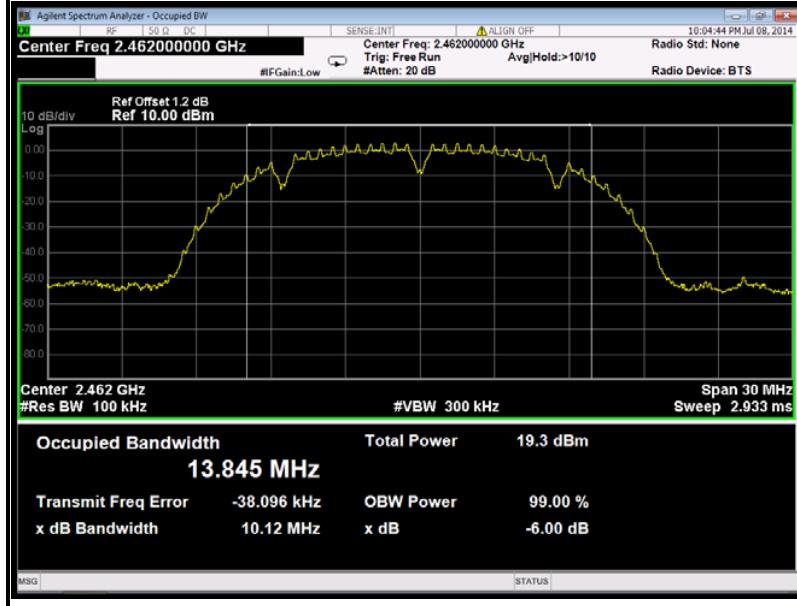




## 6dB Bandwidth (CH Low)



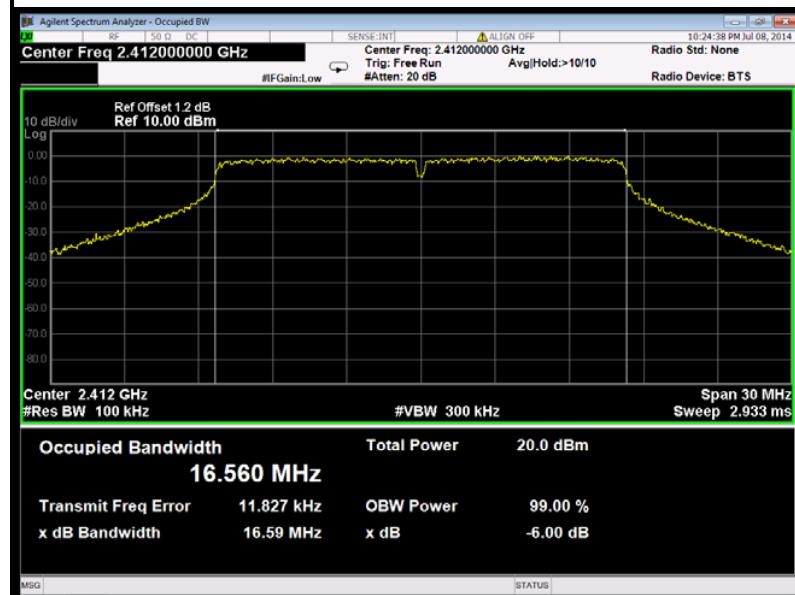
## 6dB Bandwidth (CH Mid)



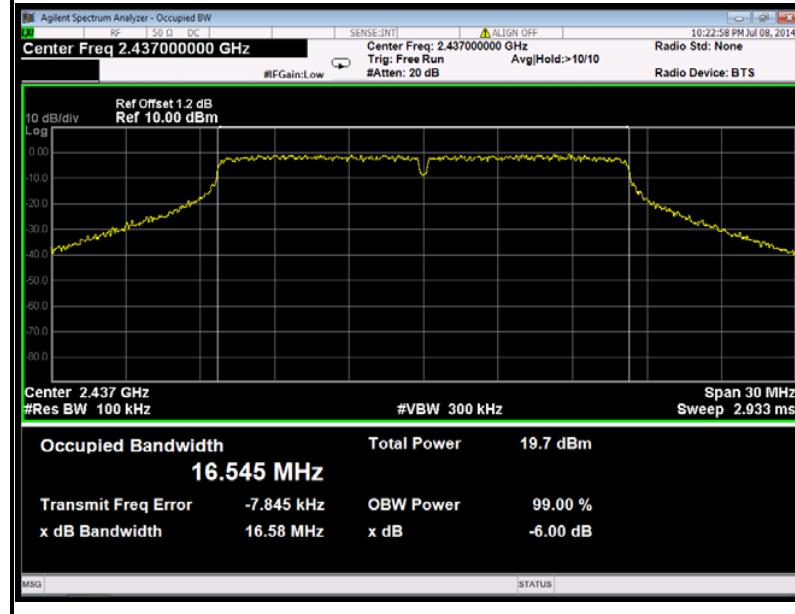


## IEEE 802.11g mode (Antenna 0)

### 6dB Bandwidth (CH Low)

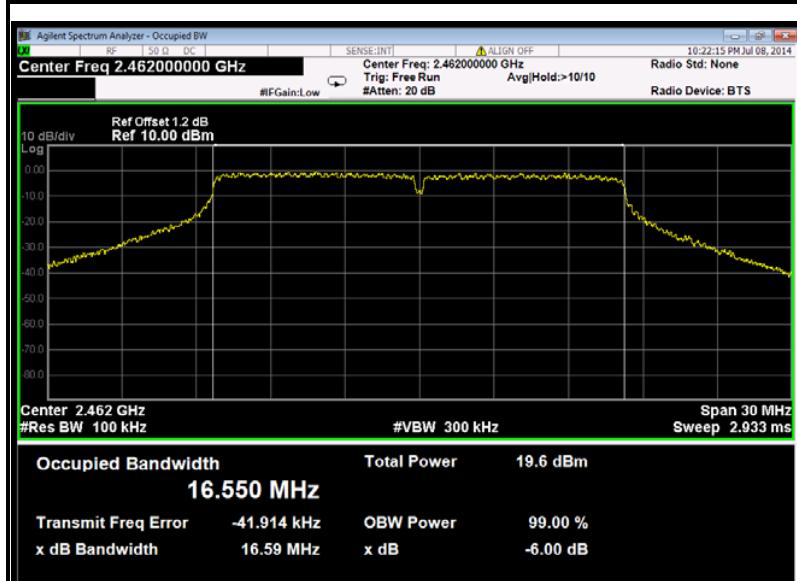


### 6dB Bandwidth (CH Mid)



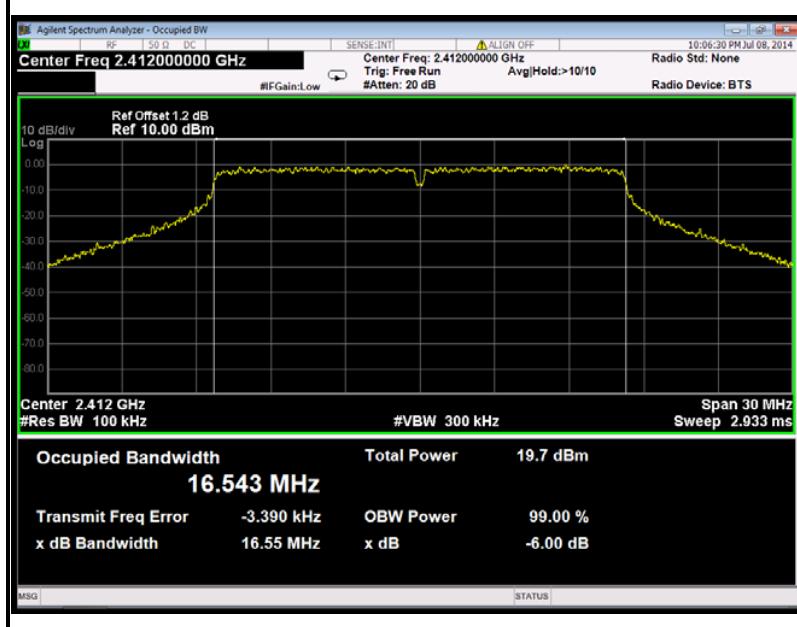


## 6dB Bandwidth (CH High)



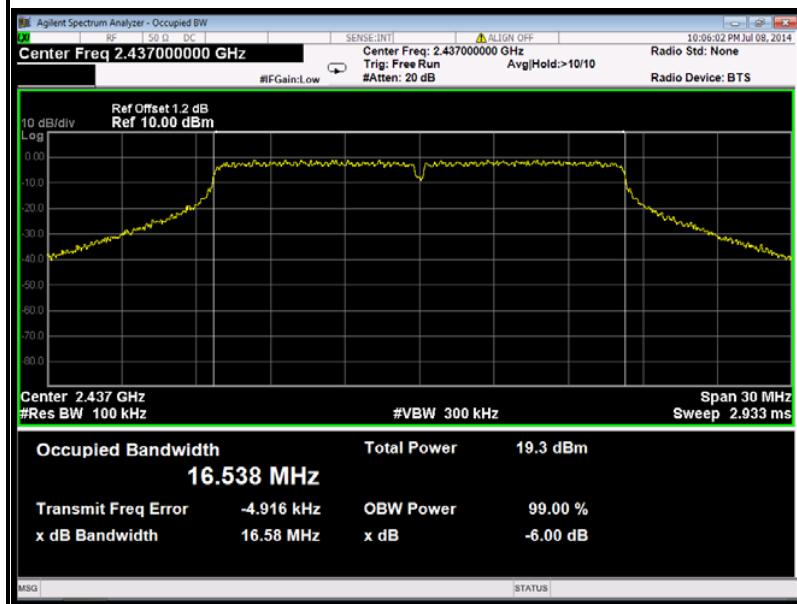
## IEEE 802.11g mode (Antenna 1)

### 6dB Bandwidth (CH Low)

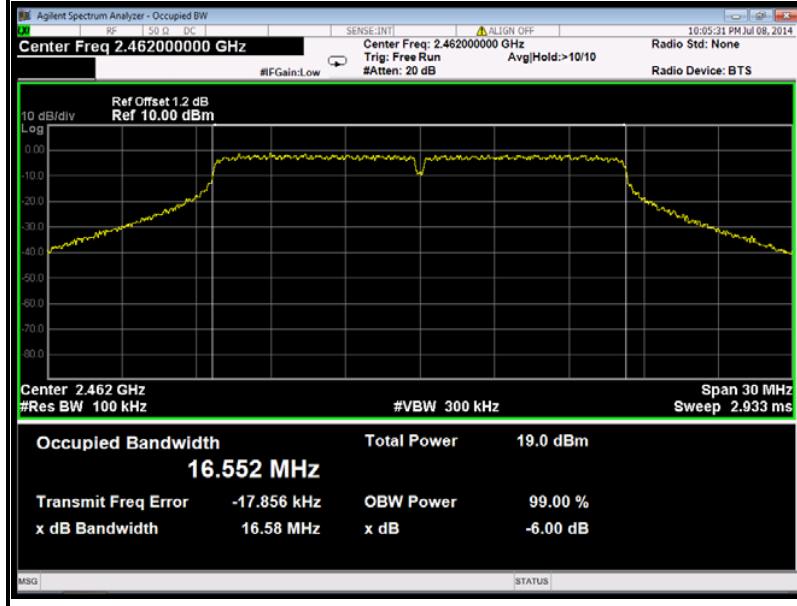




## 6dB Bandwidth (CH Low)



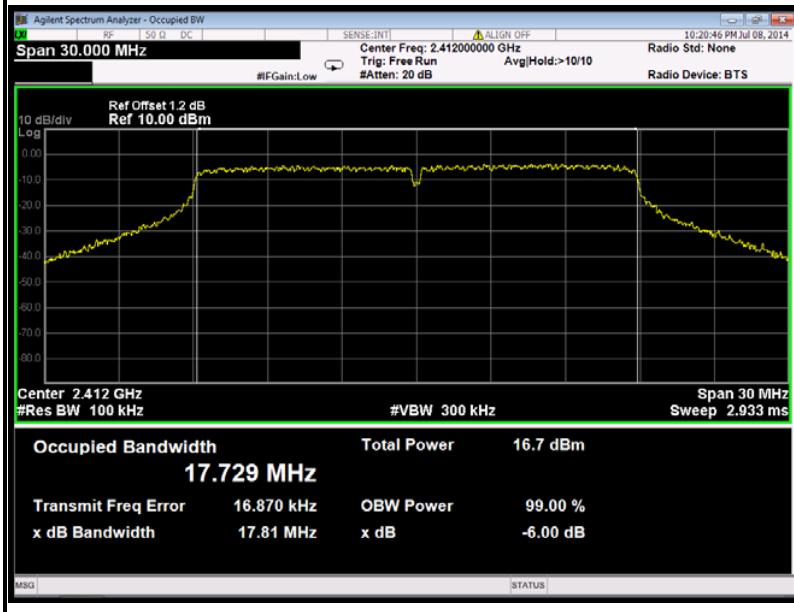
## 6dB Bandwidth (CH Mid)



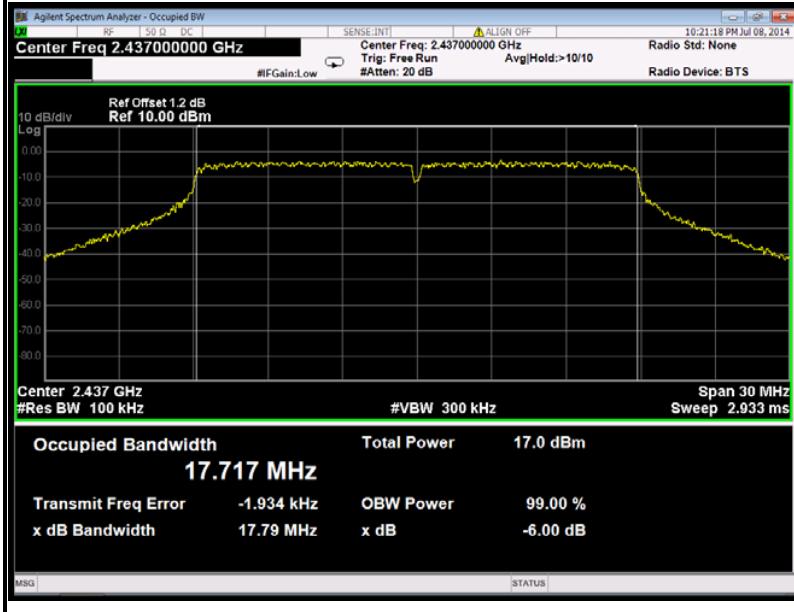


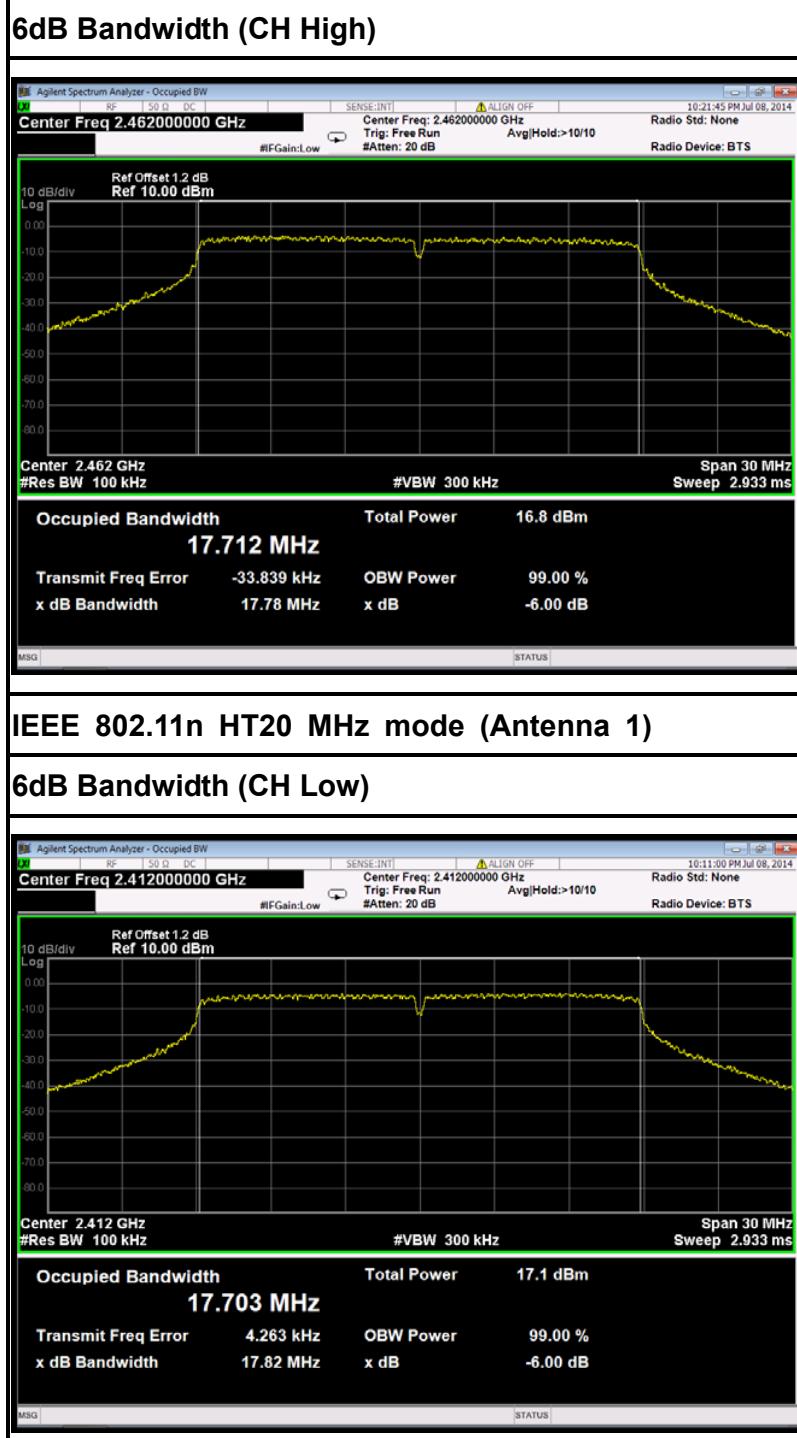
## IEEE 802.11n HT20 MHz mode (Antenna 0)

### 6dB Bandwidth (CH Low)



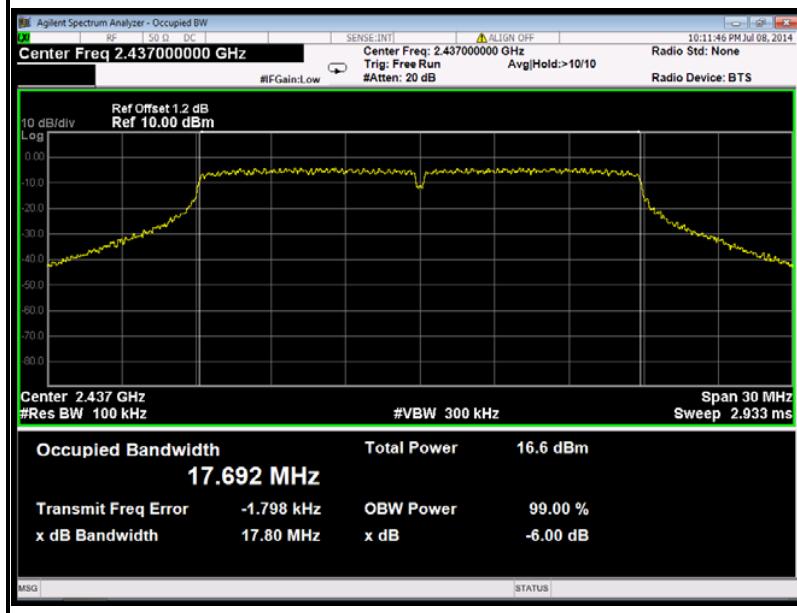
### 6dB Bandwidth (CH Mid)



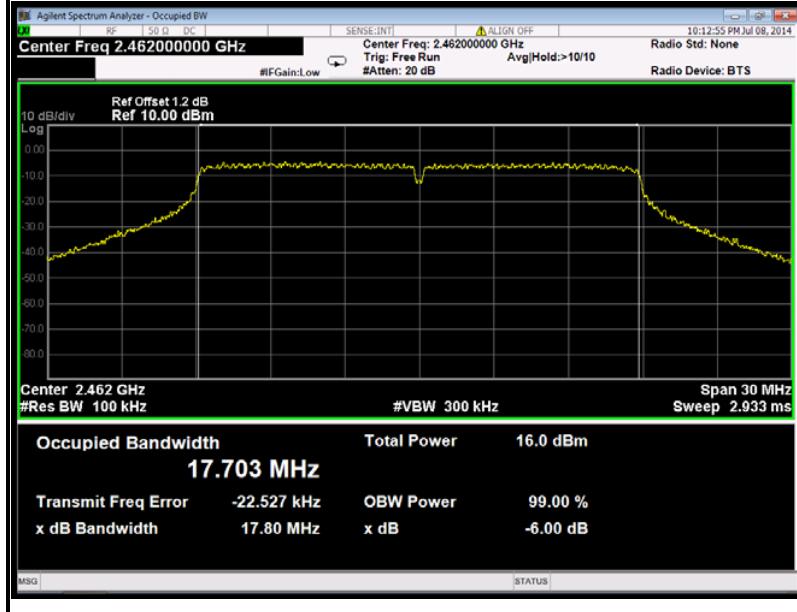




## 6dB Bandwidth (CH Mid)



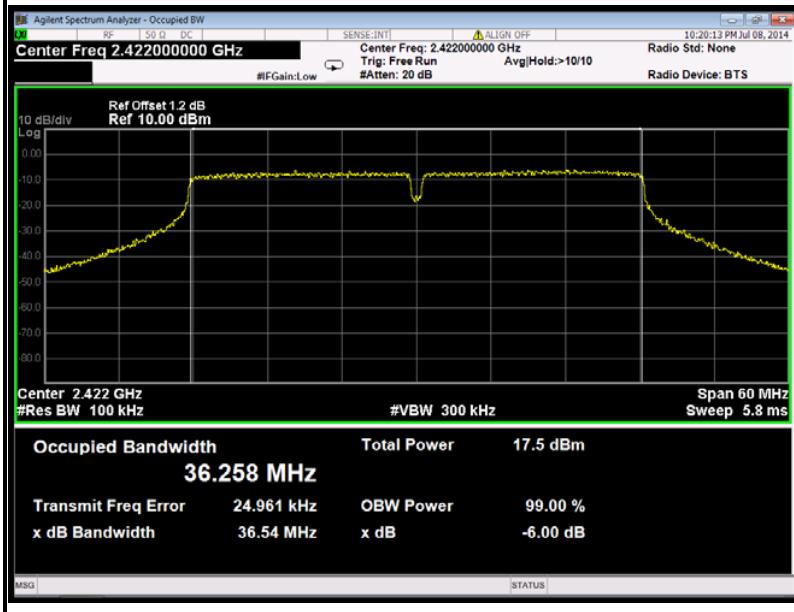
## 6dB Bandwidth (CH High)



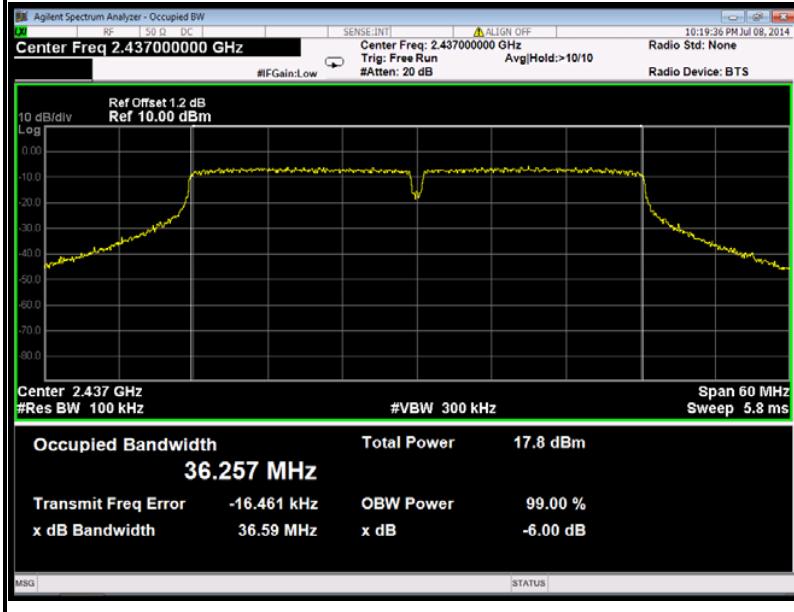


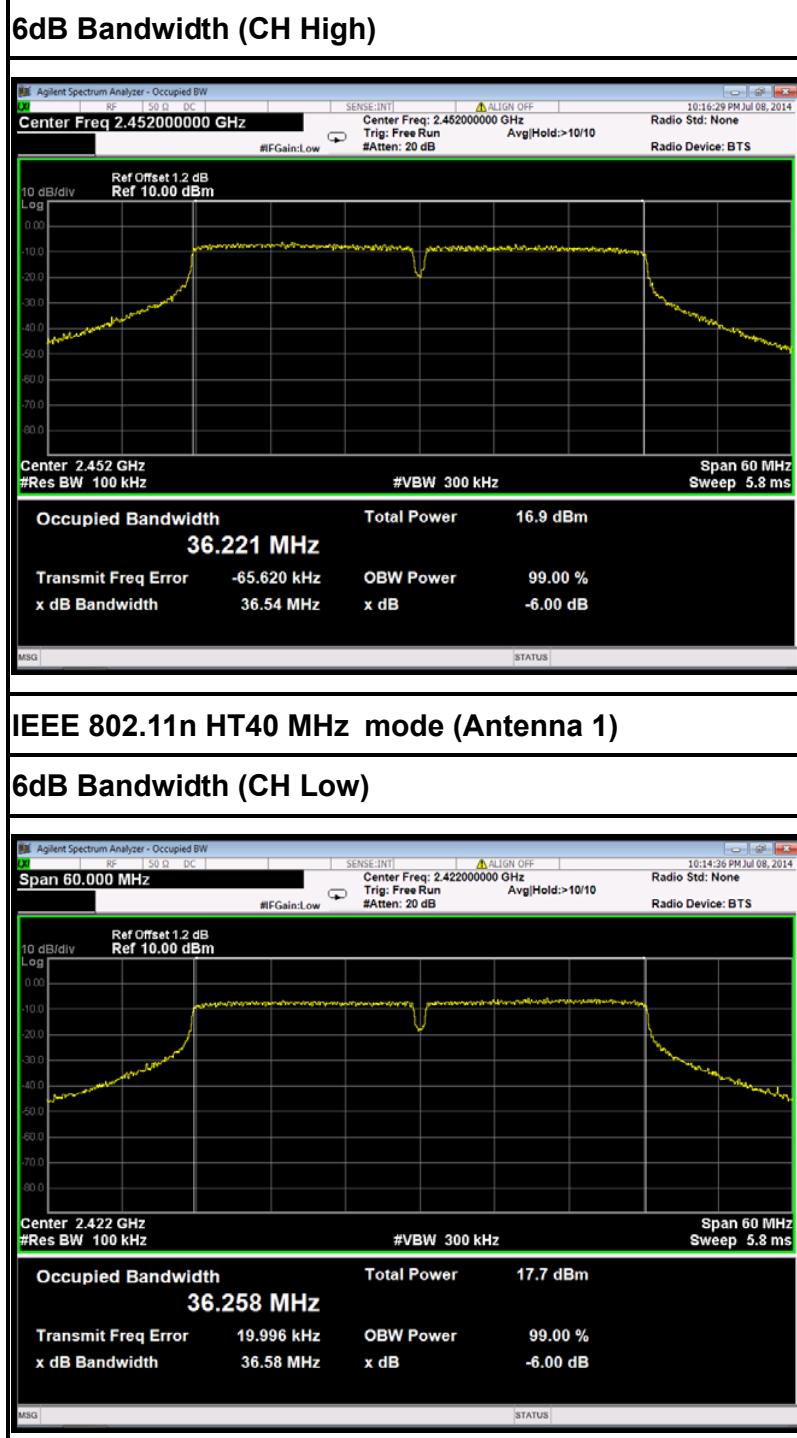
## IEEE 802.11n HT40 MHz mode (Antenna 0)

### 6dB Bandwidth (CH Low)



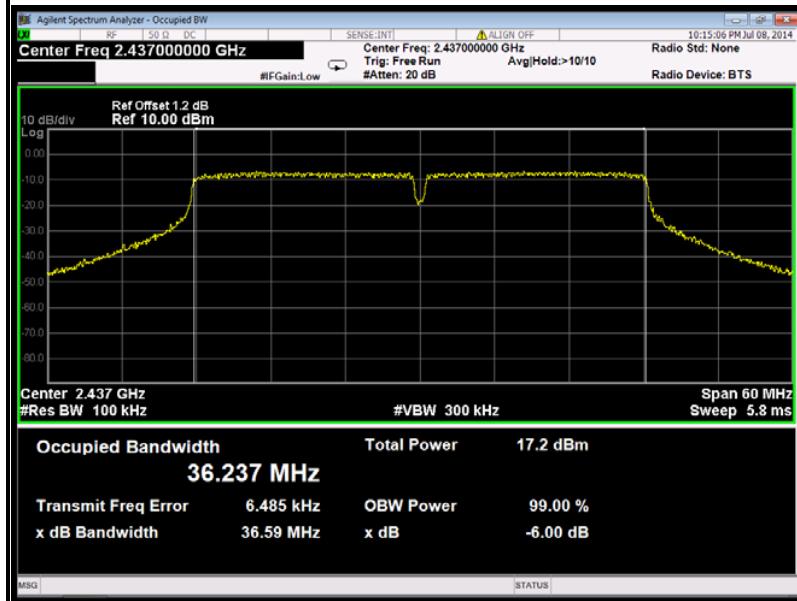
### 6dB Bandwidth (CH Mid)



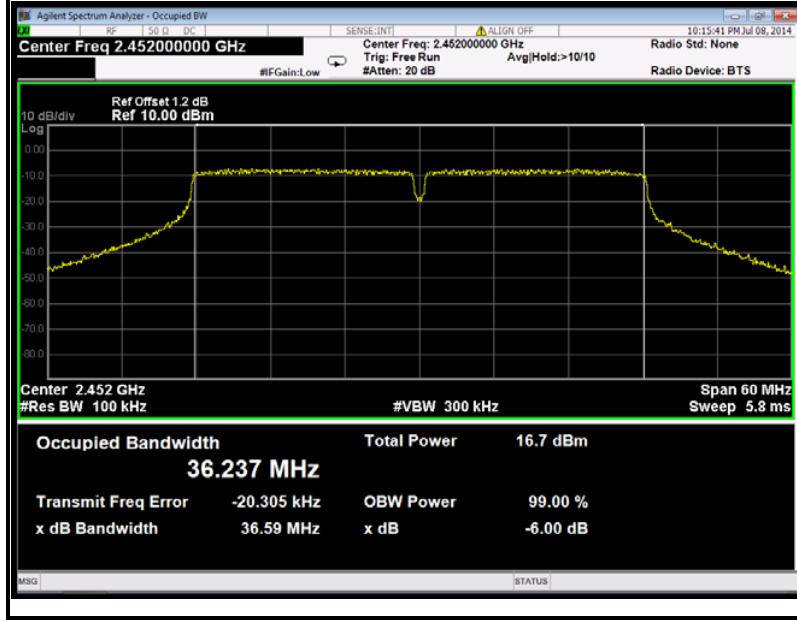




## 6dB Bandwidth (CH Mid)



## 6dB Bandwidth (CH High)





## 7.4. PEAK OUTPUT POWER

### 7.4.1. 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.

### 7.4.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/01/2014	03/01/2015
Power Meter	Anritsu	ML2495A	1204003	03/01/2014	03/01/2015
Power Sensor	Anritsu	MA2411B	1126150	03/01/2014	03/01/2015

### 7.4.3. TEST PROCEDURES (please refer to measurement standard)

#### 9.1.1 RBW $\geq$ 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  $\geq$  DTS bandwidth.
- b) Set VBW  $\geq$  3 RBW.
- c) Set span  $\geq$  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.



### 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  $\geq$  3 RBW
- c) Set the span  $\geq$  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.

### 7.4.4. TEST SETUP

