

## FCC 47 CFR PART 15 SUBPART C AND ANSI C63.4 : 2003

## **TEST REPORT**

For

WLAN USB Stick a/b/g/n Adapter

Model: 65-VF438-P2

**Trade Name : Qualcomm** 

**Issued** for

## QUALCOMM INCORPORATED

5775 Morehouse Drive San Diego California United States 92121

Issued by



Compliance Certification Services Inc. Hsinchu Lab. Rm. 258, Bldg. 17, NO.195, Sec.4 Chung Hsing Rd., ChuTung Chen, Hsinchu, Taiwan 310, R.O.C TEL: (03) 591-0068 FAX: (03) 582-5720



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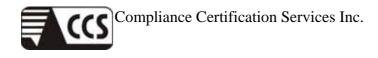
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 : J9C-65VF438P2

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 : 71108001-RP1

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# **1. TEST REPORT CERTIFICATION**

Applicant	: QUALCOMM INCORPORATED
Address	: 5775 Morehouse Drive San Diego California United States 92121
Equipment Under Tes	t: WLAN USB Stick a/b/g/n Adapter
Model	: 65-VF438-P2
Trade Name	: Qualcomm
Tested Date	: November 08 ~ December 03, 2007

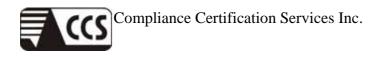
APPLICABLE STANDARD		
STANDARD	TEST RESULT	
FCC Part 15 Subpart C:2006 AND ANSI C63.4:2003	No non-compliance noted	

Approved by:

Reviewed by:

股 份 5.B.L lan 檢測報 Fasion S. B. Lu Chang Assistant Manager of Hsinchu Laboratory 專用章 Test gineer of Hsinehu Laboratory pliance Certification Services Inc. Compliance Certification Services Inc. С

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.



# **2. EUT DESCRIPTION**

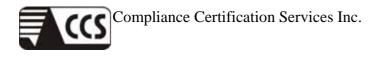
### 2.1 DESCRIPTION OF EUT & POWER

Product Name	WLAN USB Stick a/b/g/n Adapter		
Model Number	65-VF438-P2		
	IEEE 802.11a, IEEE 802.11n HT20/HT40 : 5725MHz ~ 5850MHz		
Frequency Range	IEEE 802.11b/g, IEEE 802.11n HT20 : 2412MHz~2462MHz		
	IEEE 802.11n HT40 : 2422MHz~2452MHz		
	IEEE 802.11a : 20.14dBm		
	IEEE 802.11n HT20 : 19.84dBm		
	IEEE 802.11n HT40 : 20.83dBm		
<b>Transmit Power</b>	IEEE 802.11b : 17.75dBm		
	IEEE 802.11g : 21.39dBm		
	IEEE 802.11n HT20 : 21.54dBm		
	IEEE 802.11n HT40 : 21.11dBm		
Channel Spacing	IEEE 802.11a, IEEE 802.11n HT20/HT40 : 20MHz		
Channel Spacing	IEEE 802.11b/g, IEEE 802.11n HT20/HT40 : 5MHz		
	IEEE 802.11a, IEEE 802.11n HT20 : 5 Channels		
Channel Number	IEEE 802.11n HT40 : 2 Channels		
Channel Number	IEEE 802.11b/g, IEEE 802.11n HT20 : 11 Channels		
	IEEE 802.11n HT40 : 7 Channels		
	IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6 Mbps		
	IEEE 802.11b : 11, 5.5, 2, 1 Mbps		
	IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps		
Transmit Data Rate	IEEE 802.11n HT20 : 144.444, 130.0, 117.0, 115,556, 104.0, 86.667,		
Transmit Data Nate	78.0, 65.0, 58.5, 57.778, 52.0, 43.333, 39.0,		
	28.889, 26.0, 19.5, 14.444, 13.0, 6.5Mbps		
	IEEE 802.11n HT40 : 300, 270, 243, 240, 216, 180, 162, 135, 121.5,		
	120, 108, 81, 54, 40.5, 27, 13.5Mbps		
	IEEE 802.11a : OFDM (64QAM, 16QAM, QPSK, BPSK)		
Type of Modulation	IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK)		
	IEEE 802.11g : OFDM (64QAM, 16AQM, QPSK, BPSK)		
	IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK)		
<b>Frequency Selection</b>	by software / firmware		
Antenna Type	Chip Antenna, Antenna Peak Gain : (2.34dBi (×2) for 5GHz,		
1.51dB1 (× 2) for 2.4GHZ)			
<b>Power Source</b>	5.0VDC (From Notebook PC, Powered From Host Device)		

#### Remark:

- 2. This submittal(s) (test report) is intended for FCC ID: J9C-65VF438P2 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
- 3. For more details, please refer to the User's manual of the EUT.

<sup>1.</sup> The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.



# **3. DESCRIPTION OF TEST MODES**

The EUT is an 802.11n MIMO transceiver in USB form factor. It has two transmitter chains and two receive chains ( $2 \times 2$  configurations). The  $2 \times 2$  configuration is implemented with two outside chains (Chain 0, 1).

The RF chipset is manufactured by QUALCOMM International, Inc. The antenna peak gain 1.51 dBi (2.4G) and 2.34 dBi (5G) were chosen for full testing.

### IEEE 802.11a mode, IEEE 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5745
Middle	5785
High	5825

IEEE 802.11a mode : 6 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 6.5Mbps data rate (worst case) were chosen for full testing.

### IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are two channels have been tested as following :

Channel	Frequency (MHz)
Low	5755
High	5795

IEEE 802.11n HT40 mode : 13.5 Mbps data rate (worst case) were chosen for full testing.

### IEEE 802.11b mode, IEEE 802.11g mode, IEEE 802.11n HT20 mode

The EUT had been tested under operating condition.

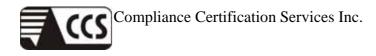
There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode : 1 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11g mode : 6 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 6.5 Mbps data rate (worst case) were chosen for full testing.



### IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

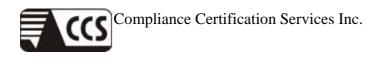
IEEE 802.11n HT40 mode : 13.5Mbps data rate (worst case) were chosen for full testing.

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD and average power across all the data rates, bandwidths, modulations and spatial stream modes.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz. Thus all emissions tests were made in the IEEE 802.11b mode, 2437 MHz, 1Mb/s.

## 4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CRF 47 2.1046, 2046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.



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# **5. FACILITIES AND ACCREDITATIONS**

## **5.1 FACILITIES**

All measurement facilities used to collect the measurement data are located at Rm.258, Bldg.17, NO.195, Sec. 4, Chung Hsing Rd., Chu-Tung Chen. Hsin-Chu, Taiwan 310 R.O.C.

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

## **5.2 EQUIPMENT**

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

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

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

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

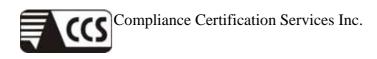
## **5.3 LABORATORY ACCREDITATIONS LISTINGS**

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200118-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: 90585 and 90584).

## 5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP	EN 55014-1, AS/NZS 1044, CNS 13783-1, IEC/CISPR 14-1, IEC/CISPR 22, EN 55022, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, AS/NZS CISPR 22, AS/NZS 3548, IEC 61000-4-2/3/4/5/6/8/11	200118-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	<b>FC</b> 90585, 90584
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	<b>VCCI</b> R-1229/1189 C-1250/1294
Taiwan	TAF	FCC Method-47 CFR Part 15 Subpart C,D,E CISPR 11, FCC METHOD-47 CFR Part 18, EN 55011, CNS 13803, CISPR 13, CNS 13439, FCC Method-47 CFR Part 15 Subpart B, CISPR 14-1, EN 55014-1, CNS 13783-1, EN 55015, CNS 14115, CISPR 22, EN 55022, VCCI CNS 13438, EN 61000-4-2/3/4/5/6/8/11	Testing Laboratory 0240
Taiwan	BSMI	CNS 13803, CNS 13438, CNS 13439, CNS 13783-1, CNS 14115	SL2-IS-E-0002 SL2-IN-E-0002 SL2-A1-E-0002 SL2-R1-E-0002 SL2-R2-E-0002 SL2-L1-E-0002
Canada	Industry Canada	RSS212, Issue 1	Canada IC 4417-1

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



## 6. CALIBRATION AND UNCERTAINTY

### 6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### **6.2 MEASUREMENT UNCERTAINTY**

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 1000 MHz	+/- 3.2 dB
Radiated Emission, 1 to 26.5 GHz	+/- 3.2 dB
Power Line Conducted Emission	+/- 2.1 dB

Uncertainty figures are valid to a confidence level of 95%



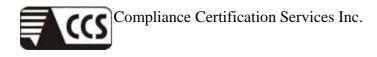
# 7. SETUP OF EQUIPMENT UNDER TEST

### **SUPPORT EQUIPMENT**

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	IBM	X60	LV-R1400	DoC

### **SETUP DIAGRAM FOR TESTS**

EUT & peripherals setup diagram is shown in appendix setup photos.



# 8. APPLICABLE LIMITS AND TEST RESULTS

## 8.1 6dB BANDWIDTH

### LIMIT

§ 15.207(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

### **TEST EQUIPMENT**

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	March 22, 2007

### TEST SETUP



#### **TEST PROCEDURE**

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

### TEST RESULTS

No non-compliance noted

#### IEEE 802.11a mode

Channel	Channel Frequency	6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	5745	16420	16420	500	PASS
Middle	5785	16500	16250	500	PASS
High	5825	16420	16420	500	PASS

### IEEE 802.11n HT20 mode

Channel	Channel Frequency	6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	5745	17500	17330	500	PASS
Middle	5785	17500	17580	500	PASS
High	5825	17250	17580	500	PASS

#### IEEE 802.11n HT40 mode

Channel Channel Frequency		6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	5755	34080	34920	500	PASS
High	5795	33750	35750	500	PASS

### IEEE 802.11b mode

Channel Channel Frequency (MHz) 6dH		6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	7920	500	PASS
Middle	2437	8580	500	PASS
High	2462	6920	500	PASS

### IEEE 802.11g mode

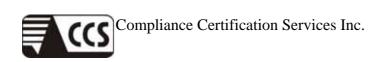
Channel	Channel Frequency	6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	2412	16420	16420	500	PASS
Middle	2437	16330	16420	500	PASS
High	2462	1650	16330	500	PASS

### IEEE 802.11n HT20 mode

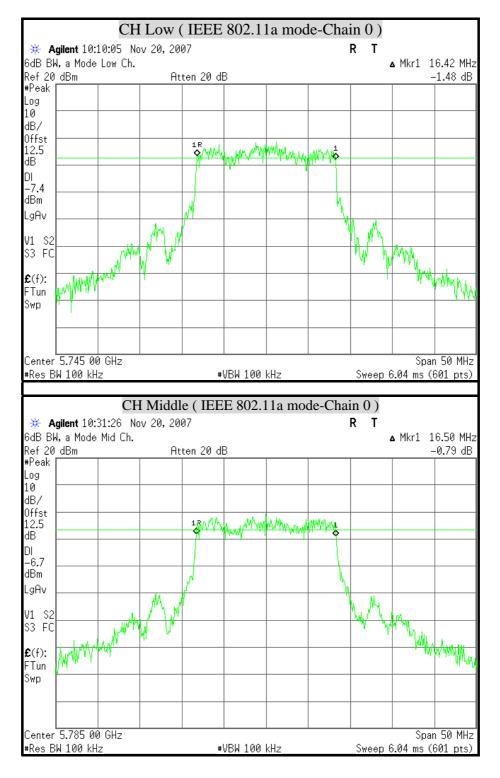
Channel	Channel Frequency	6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	2412	16920	17250	500	PASS
Middle	2437	17250	17580	500	PASS
High	2462	17670	17330	500	PASS

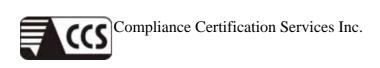
### IEEE 802.11n HT40 mode

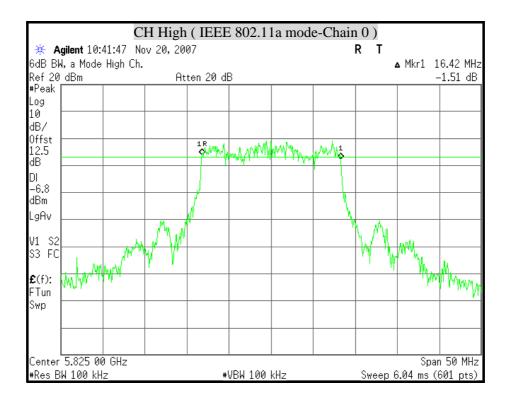
Channel	Channel Frequency	6dB Bandwidth (kHz)		Minimum Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(kHz)	
Low	2422	32670	34080	500	PASS
Middle	2437	35080	32580	500	PASS
High	2452	34830	34420	500	PASS

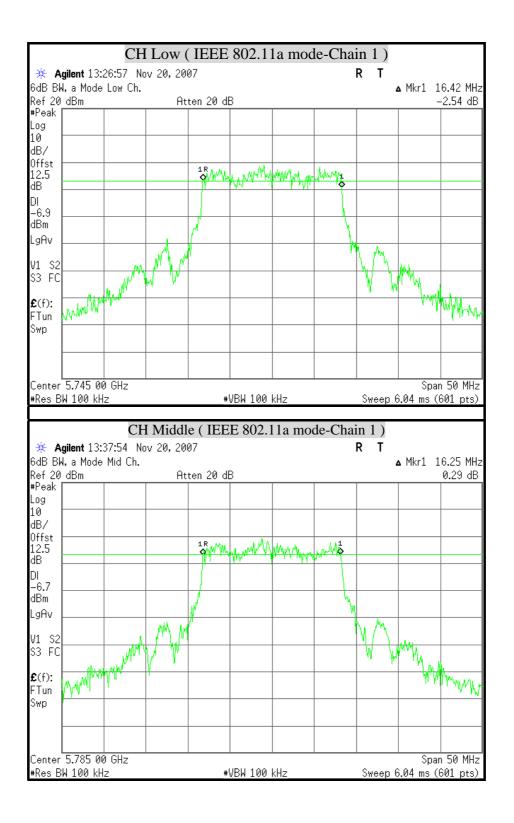


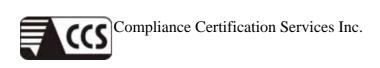
### 6dB BANDWIDTH ( IEEE 802.11a mode )

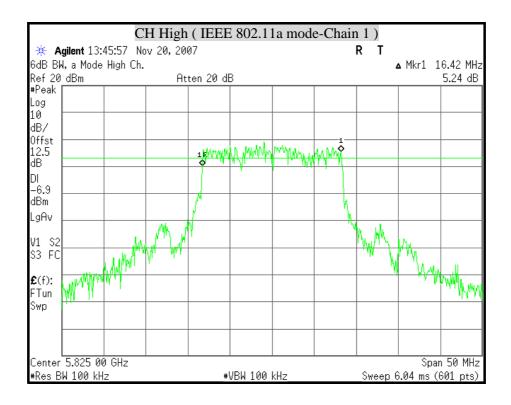


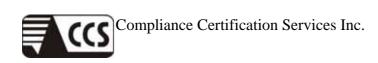




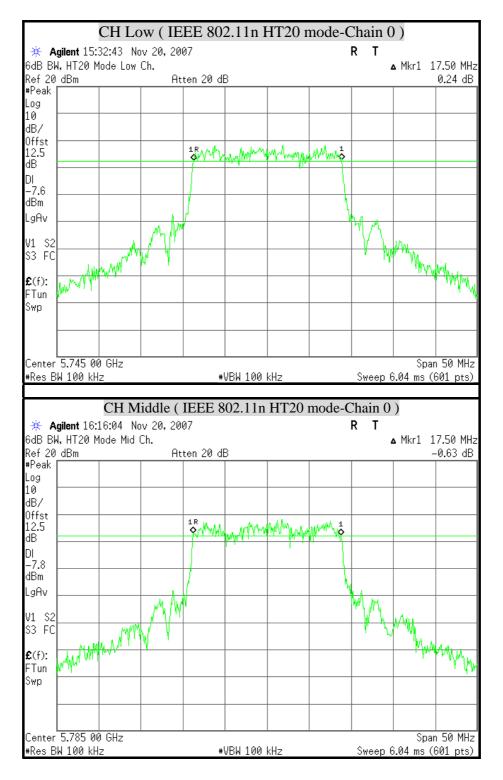


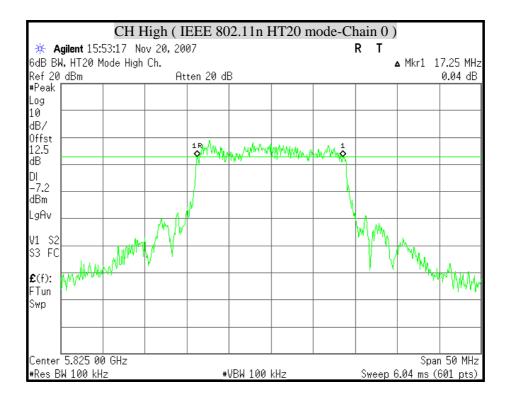


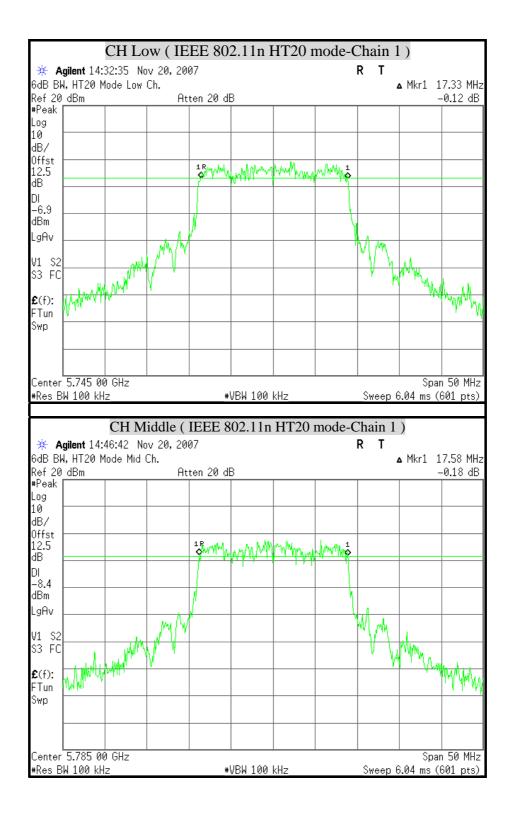




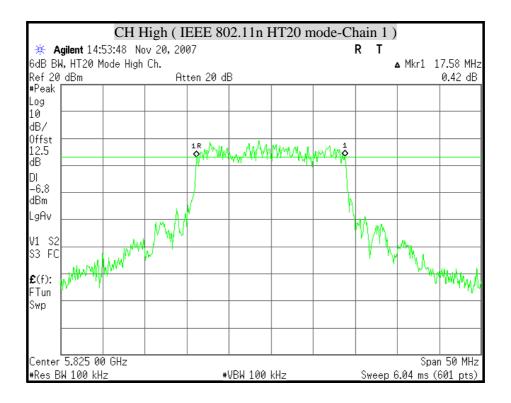
### 6dB BANDWIDTH ( IEEE 802.11n HT20 mode )

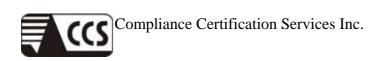




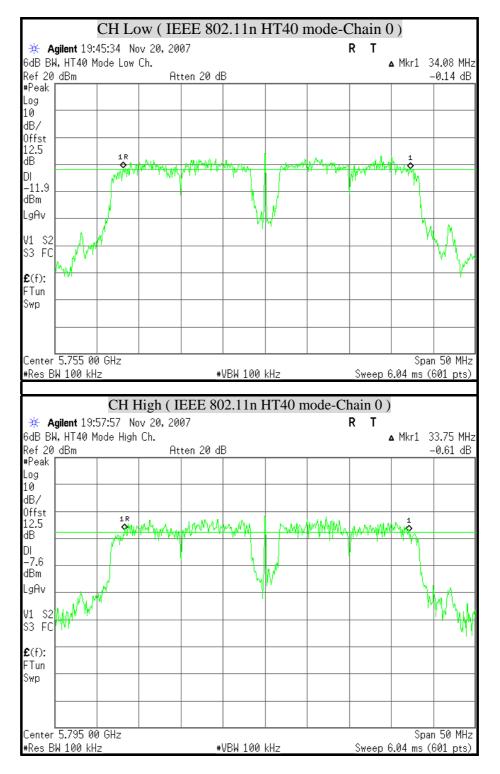


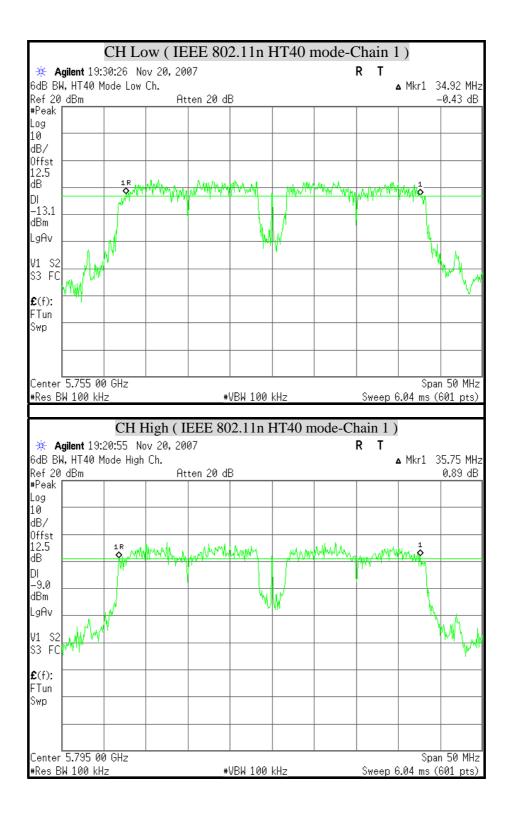






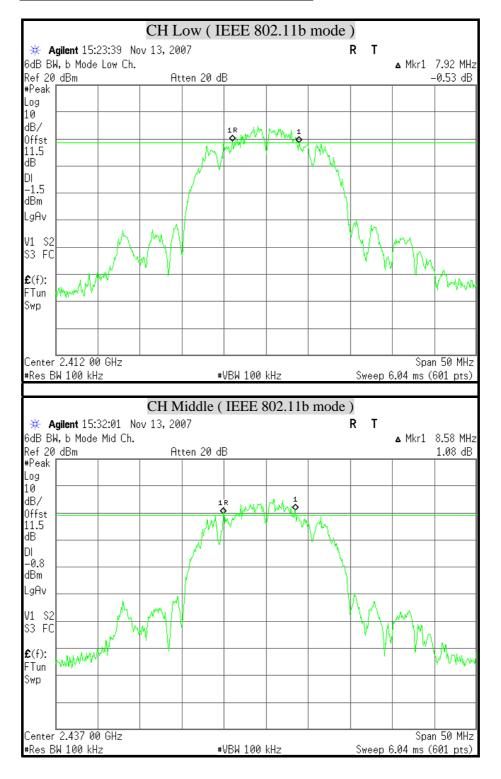
### 6dB BANDWIDTH ( IEEE 802.11n HT40 mode )



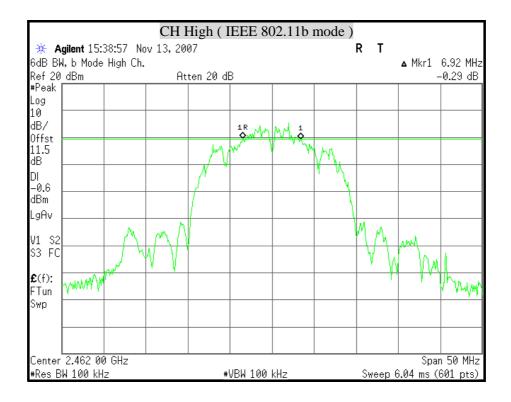


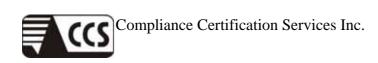


### 6dB BANDWIDTH ( IEEE 802.11b mode )

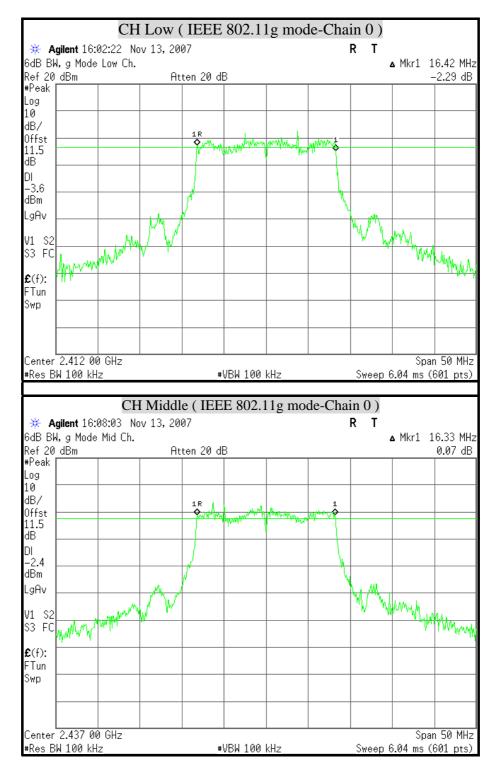




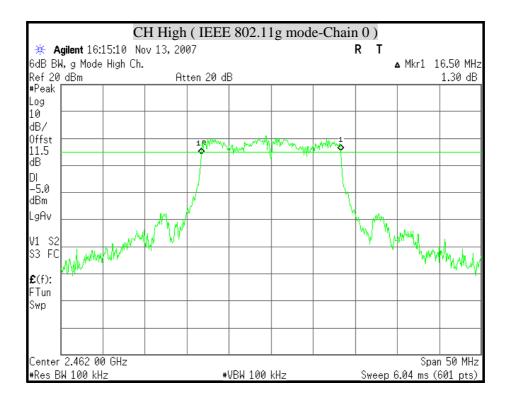


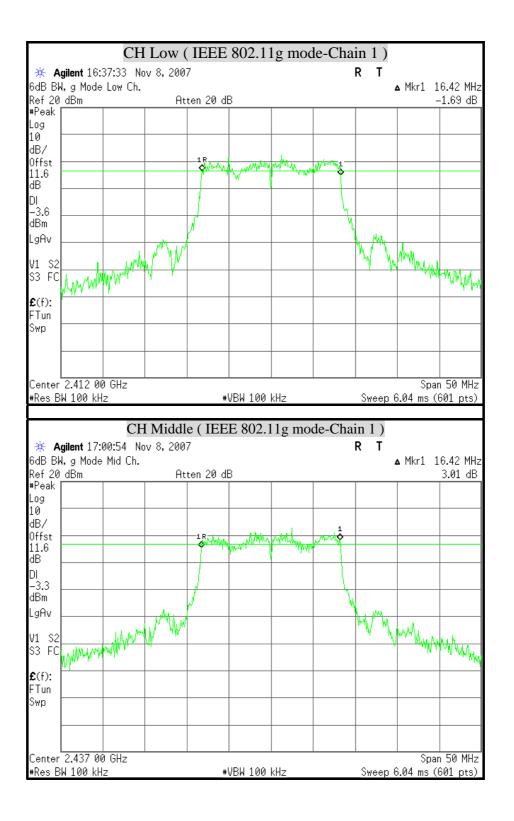


### 6dB BANDWIDTH ( IEEE 802.11g mode )

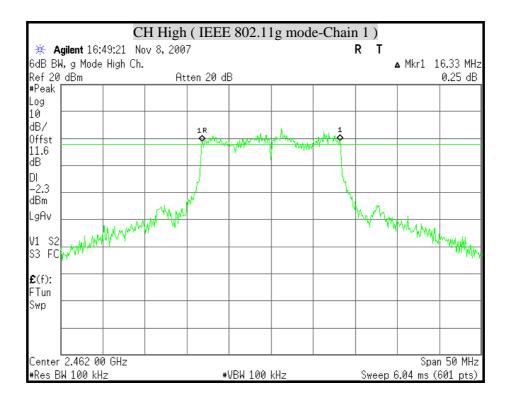


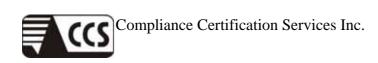




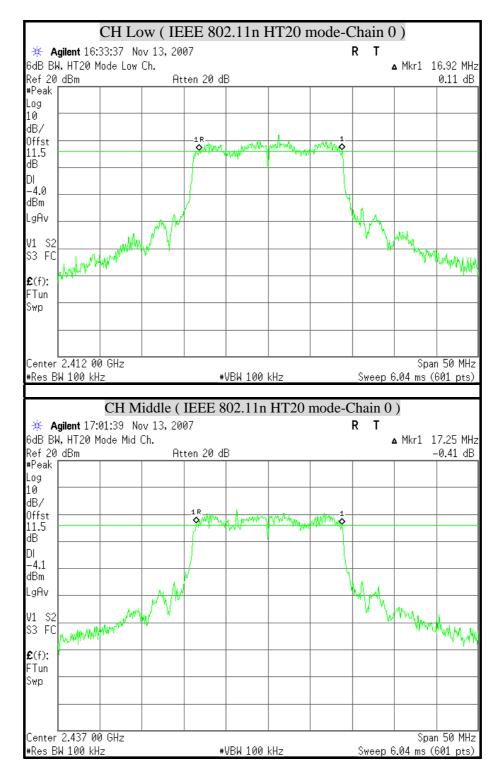




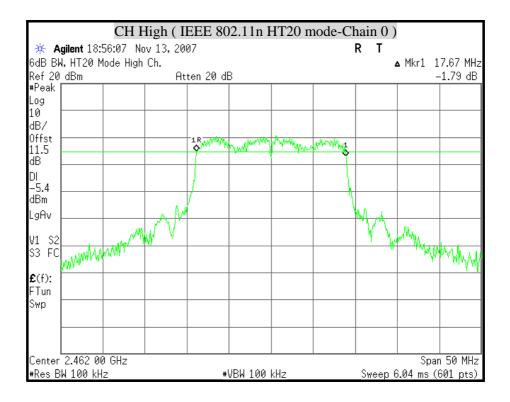


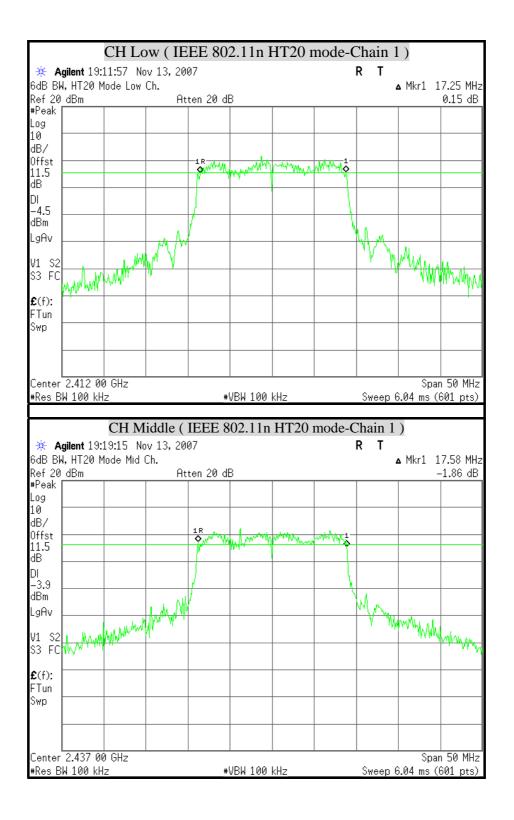


### 6dB BANDWIDTH ( IEEE 802.11n HT20 mode )

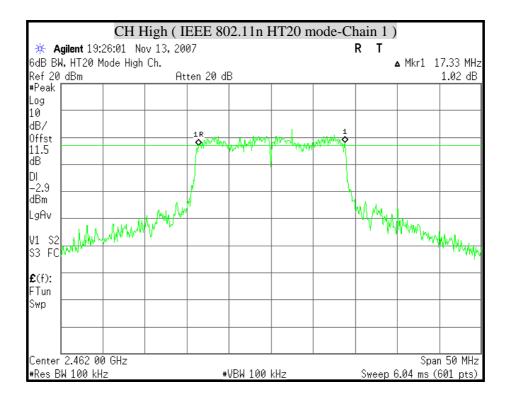


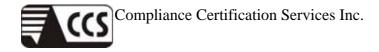




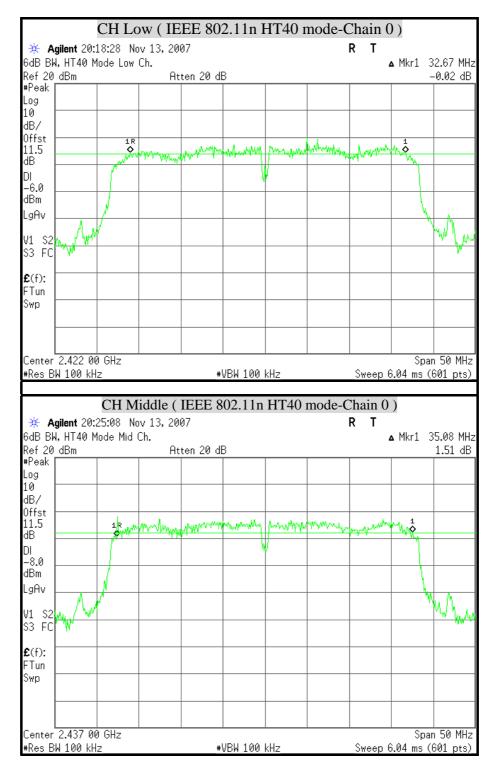




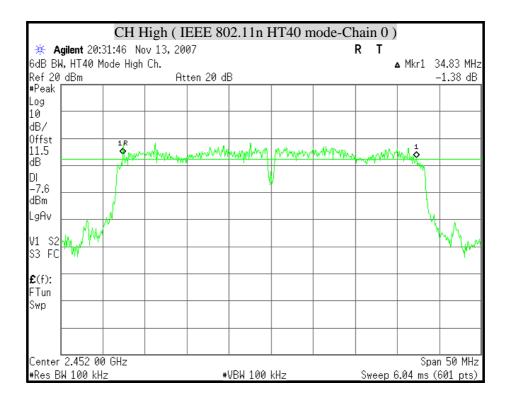


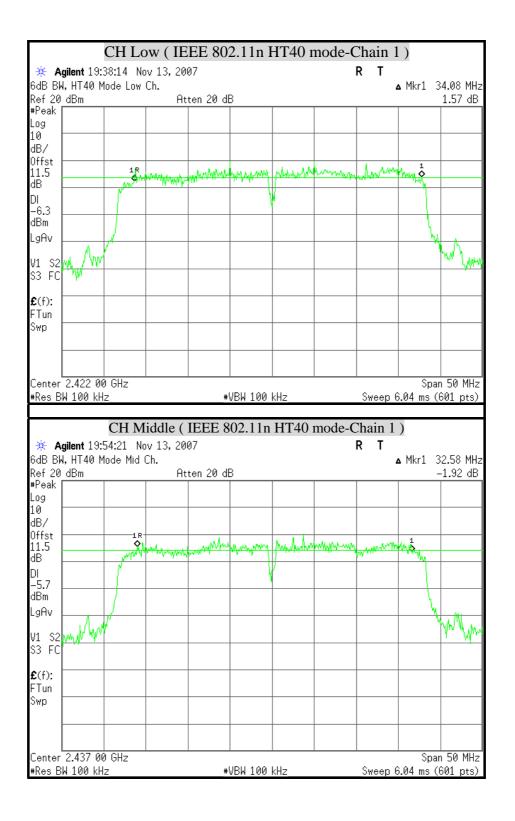


### 6dB BANDWIDTH ( IEEE 802.11n HT40 mode )

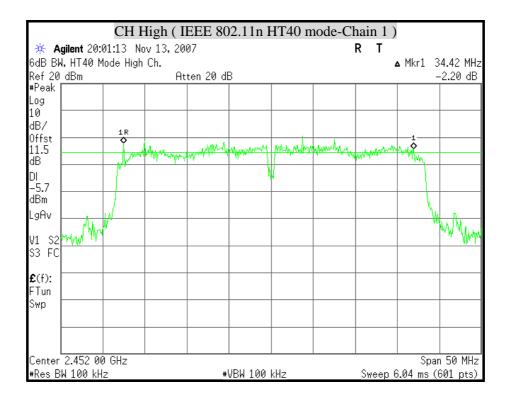


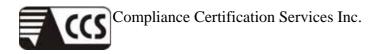












# 8.2 99% **BANDWIDTH**

# **LIMIT**

None; for reporting purposes only.

### TEST EQUIPMENT

<b>Description &amp; Manufacturer</b>	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

# TEST SETUP

# TEST PROCEDURE

- 1. The spectrum shall be set as follows :
  - Span : The minimum span to fully display the emission and approximately 20dB below peak level.

RBW : The set to 1% to 3% of the approximate emission width.

- 2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
- 3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
- 4. The 99% BW is the bandwidth between the right and left markers.



# TEST RESULTS

No non-compliance noted

#### IEEE 802.11a mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
	(14112)	Chain 0	Chain 1	
Low	5745	16.49	16.51	
Middle	5785	16.48	16.48	
High	5825	16.51	16.51	

### **IEEE 802.11n HT20 mode**

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
	(1 <b>VIHZ</b> )	Chain 0	Chain 1	
Low	5745	17.56	17.57	
Middle	5785	17.56	17.58	
High	5825	17.56	17.57	

#### IEEE 802.11n HT40 mode

Channel	Channel Frequency	99% Occupied power bandwidth (MHz)		
(MHz)		Chain 0	Chain 1	
Low	5755	35.77	35.83	
High	5795	35.86	35.81	



### IEEE 802.11b mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)
Low	2412	15.60
Middle 2437		15.66
High	2462	15.69

#### IEEE 802.11g mode

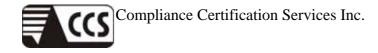
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
	(11112)	Chain 0	Chain 1	
Low	2412	16.55	16.54	
Middle	2437	16.56	16.57	
High	2462	16.54	16.59	

#### IEEE 802.11n HT20 mode

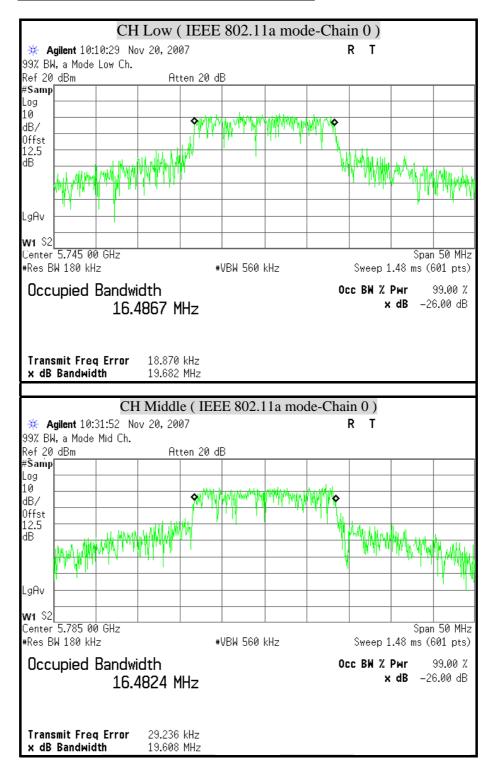
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
	(11112)	Chain 0	Chain 1	
Low	2412	17.57	17.60	
Middle	2437	17.59	17.64	
High	High 2462		17.69	

#### IEEE 802.11n HT40 mode

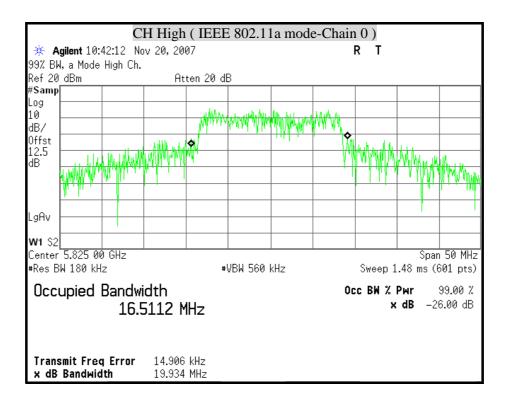
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
	(11112)	Chain 0	Chain 1	
Low	2422	35.61	35.55	
Middle	2437	35.59	35.54	
High	2452	35.59	35.59	

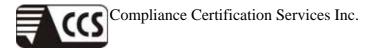


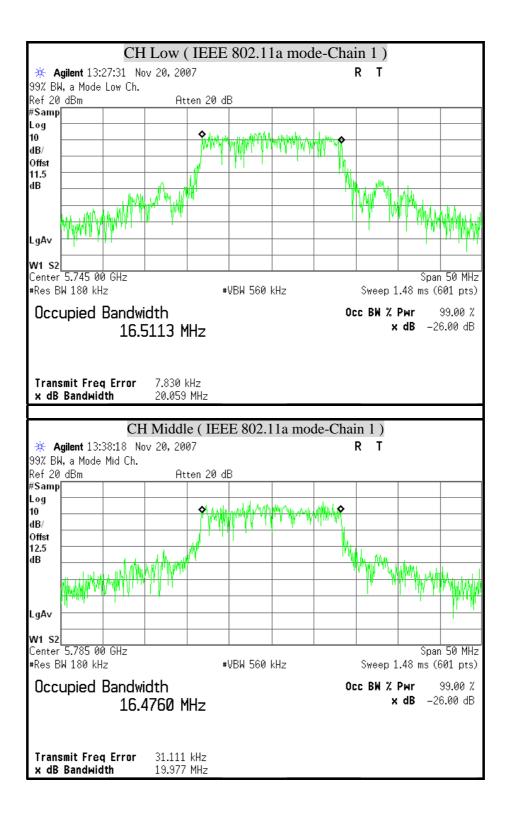
### 99% BANDWIDTH ( IEEE 802.11a mode )



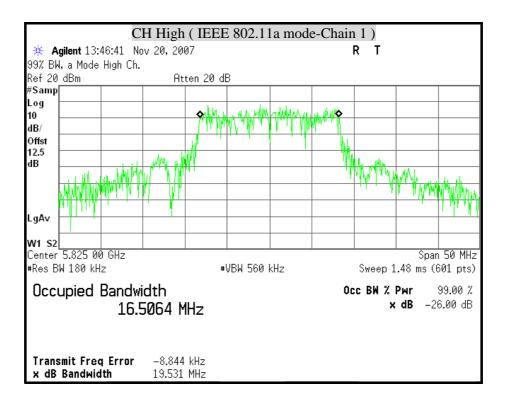


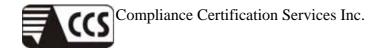




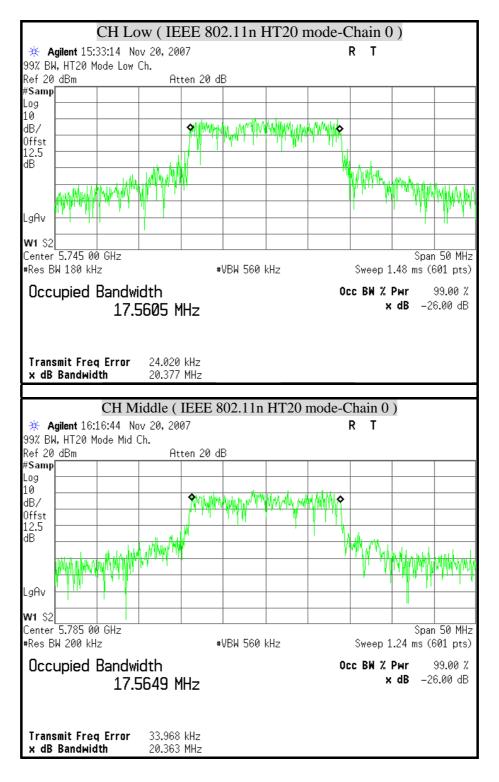




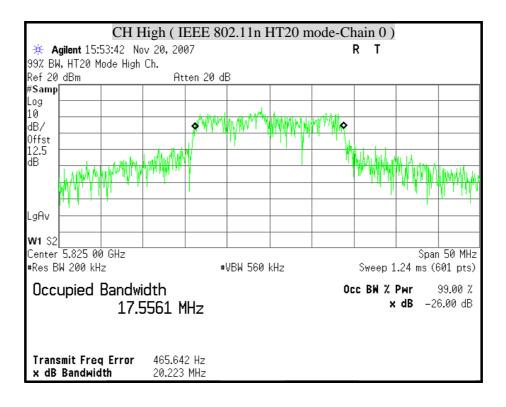


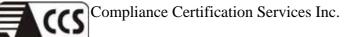


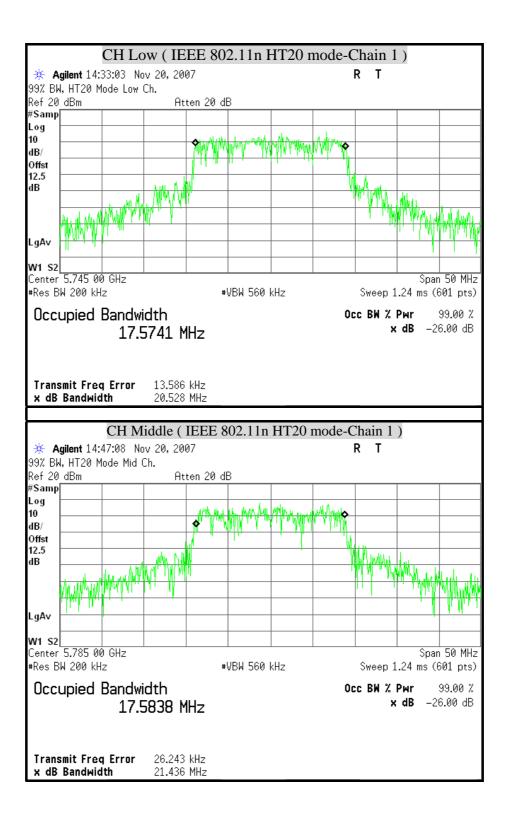
### 99% BANDWIDTH ( IEEE 802.11n HT20 mode )

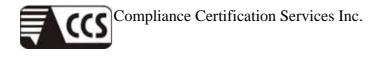


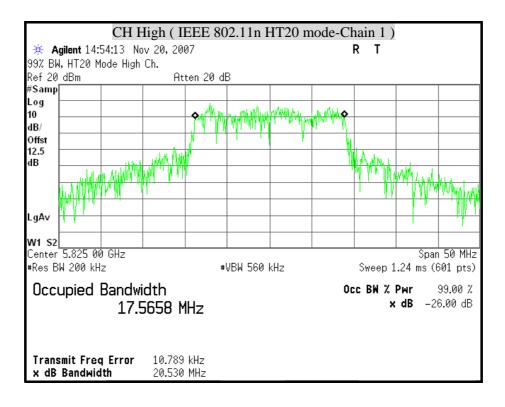


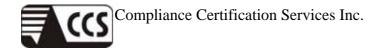




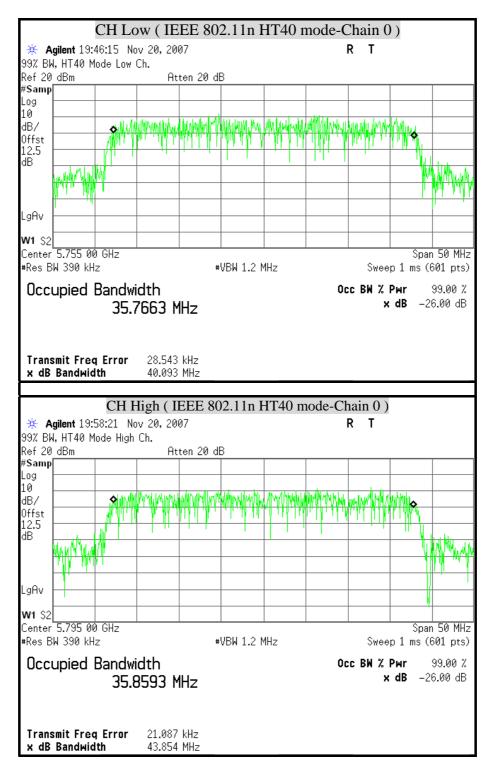


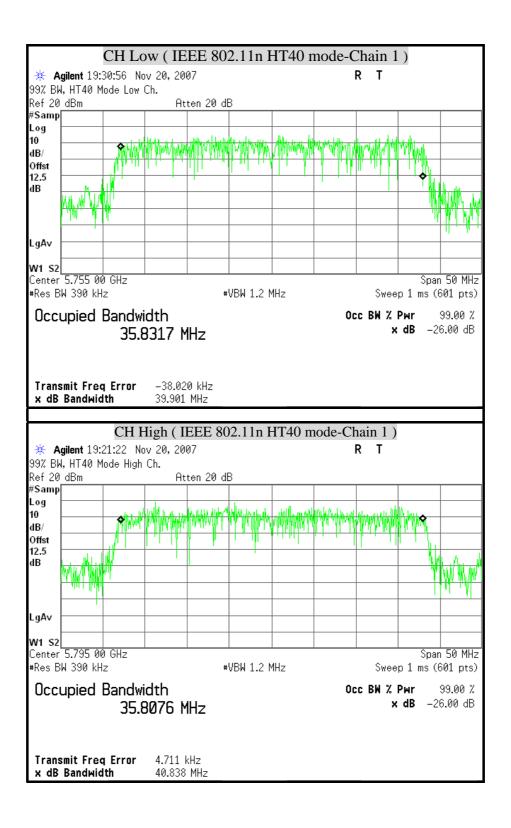


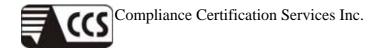




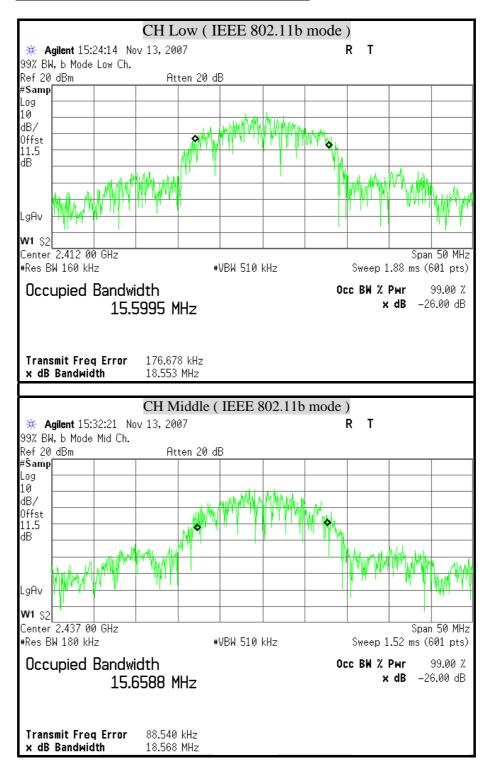
### 99% BANDWIDTH ( IEEE 802.11n HT40 mode )

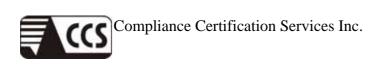


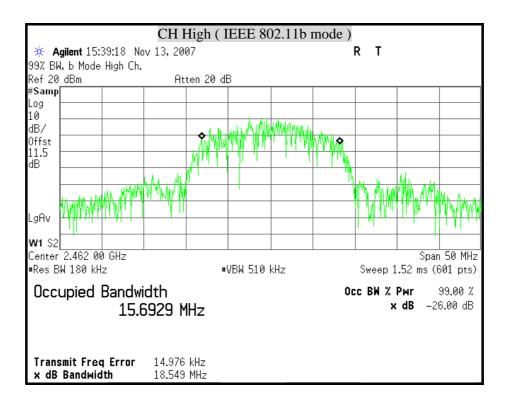


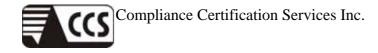


### 99% BANDWIDTH ( IEEE 802.11b mode)

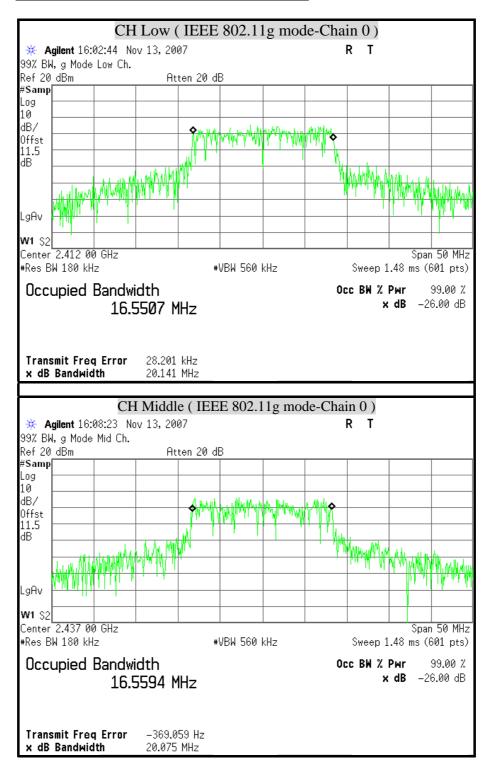




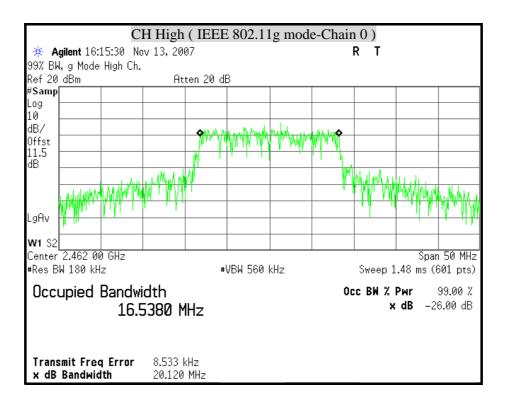


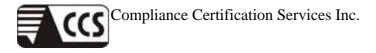


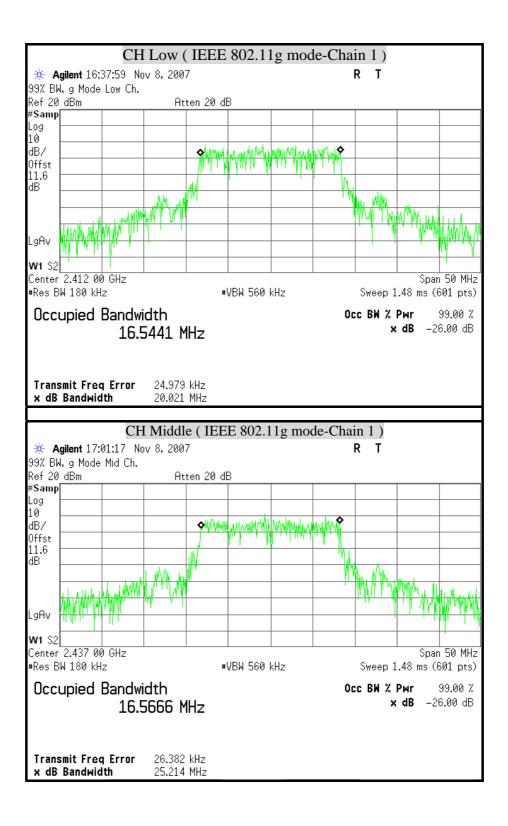
#### 99% BANDWIDTH ( IEEE 802.11g mode)

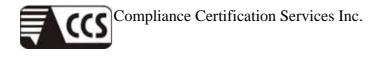


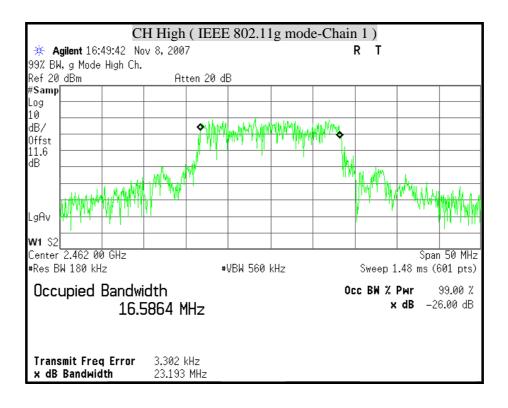


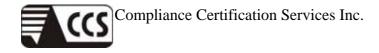




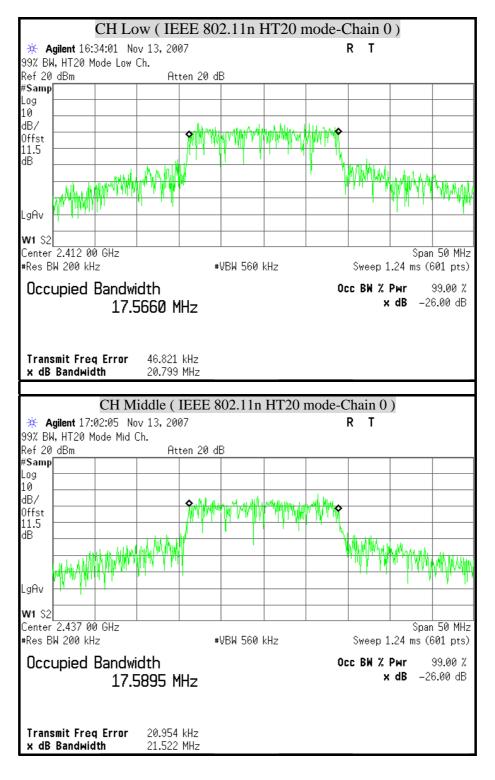




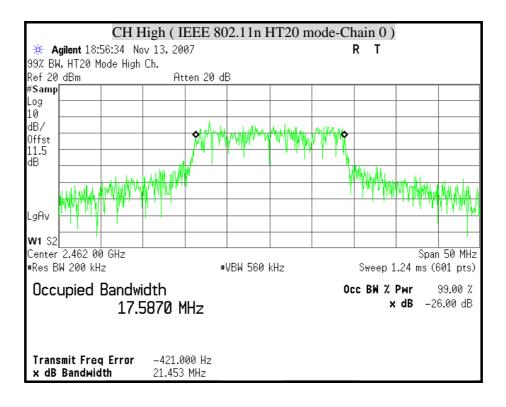




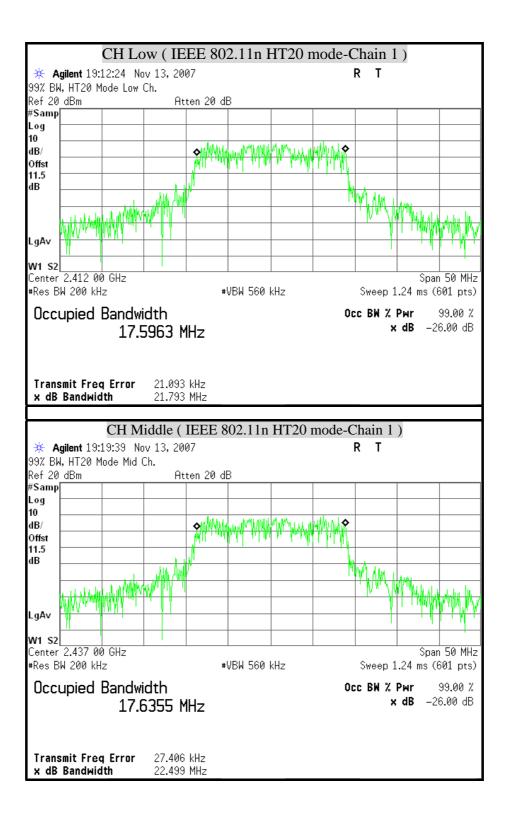
### 99% BANDWIDTH ( IEEE 802.11n HT20 mode )



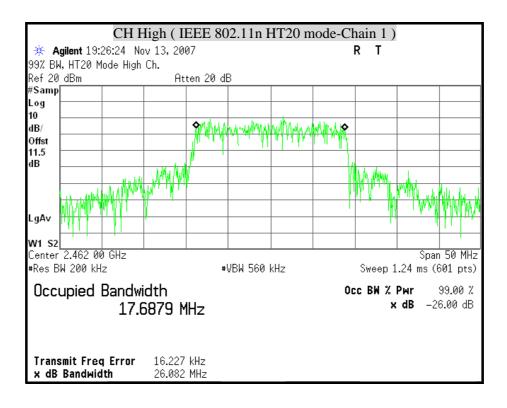


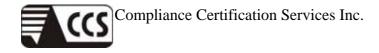




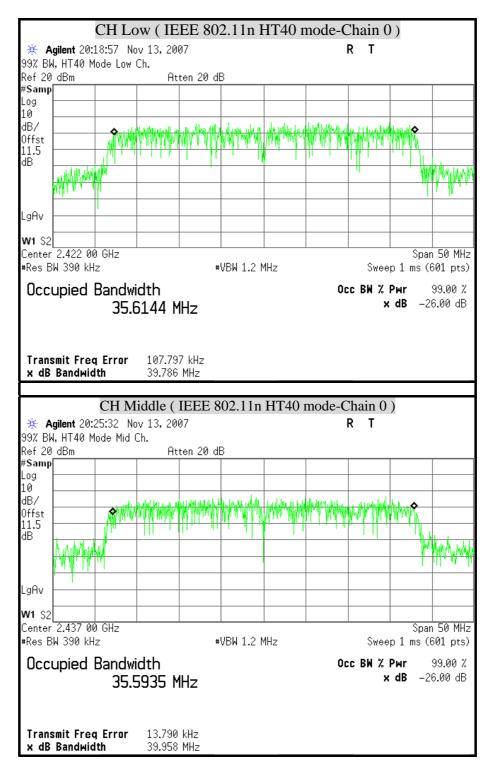


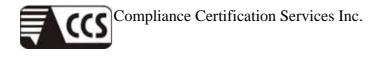


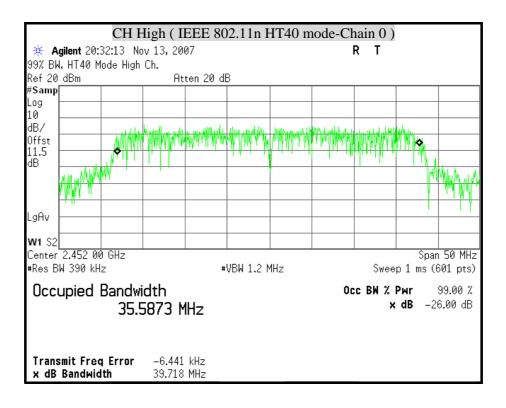


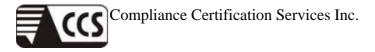


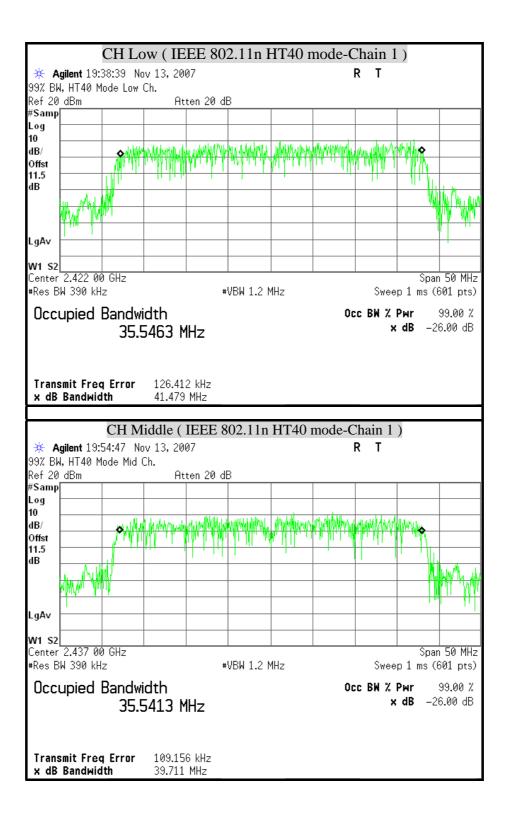
### 99% BANDWIDTH (IEEE 802.11n HT40 mode)



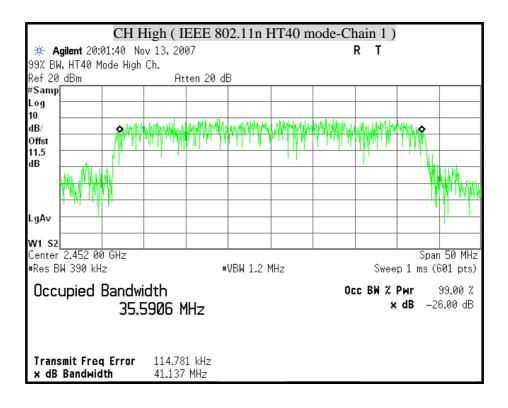


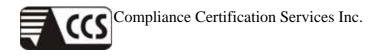












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# **8.3 MAXIMUM PEAK OUTPUT POWER**

# **LIMIT**

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

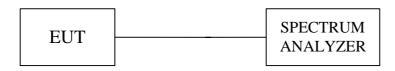
15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section , as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# TEST EQUIPMENT

<b>Description &amp; Manufacturer</b>	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

# TEST SETUP



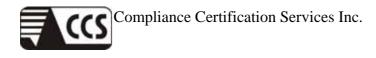
### **TEST PROCEDURE**

 The spectrum shall be set as follows : Span : 1.5 times channel integration bandwidth. RBW : 1MHz VBW : 3MHz

Detector : Peak

Sweep : Single trace

- 2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
- 3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
- 4. The peak output power is the channel power integrated over 99% bandwidth.



# TEST RESULTS

No non-compliance noted

Total peak power calculation formula: 10 log (10<sup>^</sup> (Chain 0 Power / 10) + 10<sup>^</sup> (Chain 1 Power / 10)).

The maximum antenna gain is 2.34 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is  $2.34 + 10 \times \text{Log}(2) = 5.35 \text{ dBi}$ . Please refer to IEEE 802.11a/11n mode.

The maximum antenna gain is 1.51 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is  $2.34 + 10 \times \text{Log}(2) = 4.52 \text{ dBi}$  Please refer to IEEE 802.11b/11g /11n mode.

#### IEEE 802.11a mode

Channel	Channel Frequency	Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	5745	16.30	17.83	20.14	30	PASS
Middle	5785	16.57	16.06	19.33	30	PASS
High	5825	16.80	17.05	19.94	30	PASS

Remark:

1. At finial test to get the worst-case emission at 6 Mbps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency	Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	5745	16.75	16.82	19.80	30	PASS
Middle	5785	16.40	16.64	19.53	30	PASS
High	5825	16.88	16.77	19.84	30	PASS

#### IEEE 802.11n HT20 mode in The 5.8 GHz Band

Remark:

1. At finial test to get the worst-case emission at 6.5 Mbps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency	Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	5755	13.34	14.38	16.90	30	PASS
High	5795	18.51	17.01	20.83	30	PASS

#### IEEE 802.11n HT40 mode in The 5.8 GHz Band

Remark:

1. At finial test to get the worst-case emission at 13.5 Mbps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

#### IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Peak Power (dBm) Chain 0	Peak Power Limit (dBm)	Pass / Fail
Low	2412	17.56	30	PASS
Middle	2437	17.75	30	PASS
High	2462	17.26	30	PASS

Remark:

1. At finial test to get the worst-case emission at 1 Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

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Channel	Channel Frequency	Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	2412	17.71	17.65	20.69	30	PASS
Middle	2437	18.43	17.92	21.19	30	PASS
High	2462	17.80	18.89	21.39	30	PASS

Remark:

1. At finial test to get the worst-case emission at 6 Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel Channel Frequency		Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	2412	17.51	17.74	20.64	30	PASS
Middle	2437	17.96	18.86	21.54	30	PASS
High	2462	17.74	18.63	21.22	30	PASS

#### IEEE 802.11n HT20 mode in The 2.4 GHz Band

Remark:

1. At finial test to get the worst-case emission at 6. 5Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

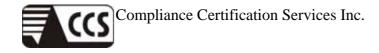
IEEE 802.11n HT40 mode in The 2.4 GHz B	and

Channel Channel Frequency		Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
	(MHz)	Chain 0	Chain 1	(dBm)	(dBm)	
Low	2422	17.78	18.10	20.95	30	PASS
Middle	2437	17.96	18.14	21.06	30	PASS
High	2452	17.74	18.44	21.11	30	PASS

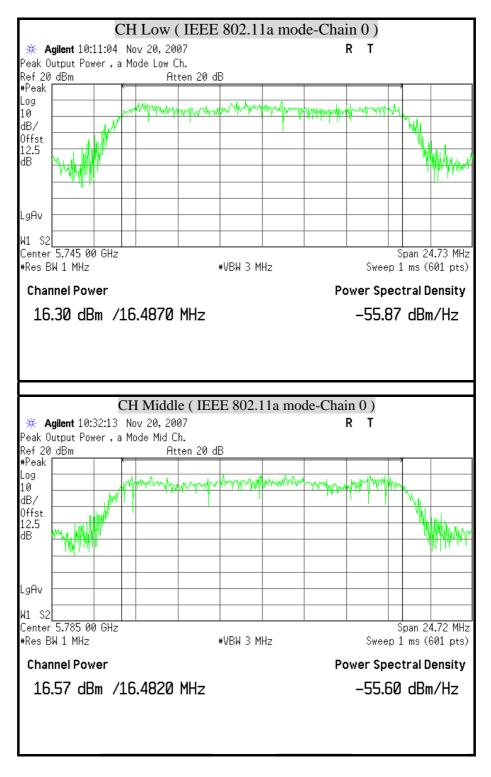
Remark:

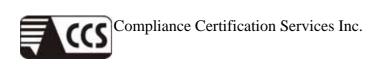
1. At finial test to get the worst-case emission at 13.5 Mbps.

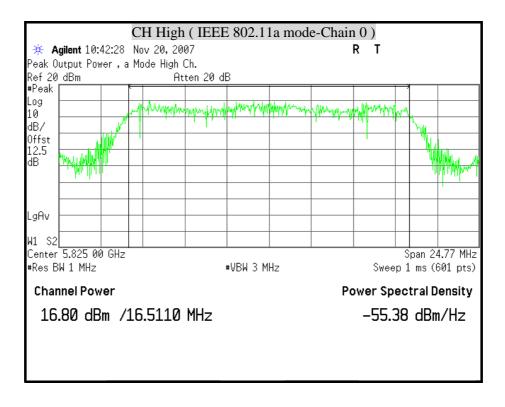
2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



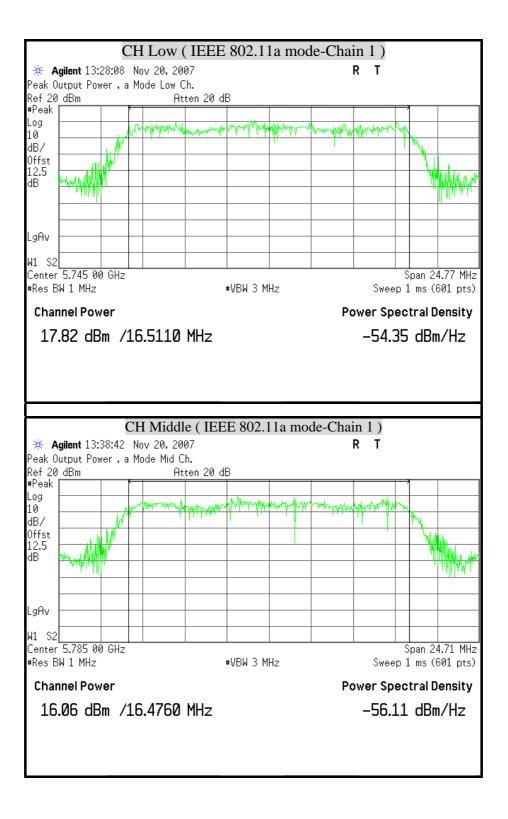
### MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11a mode )

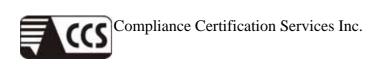


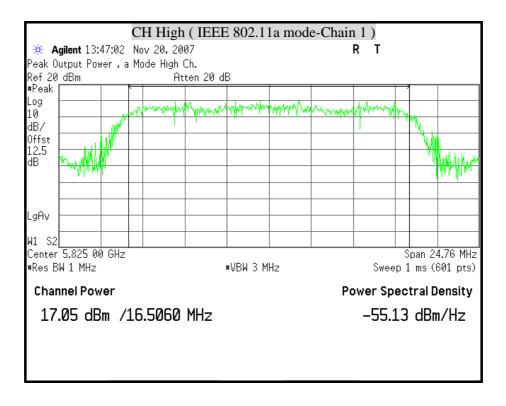


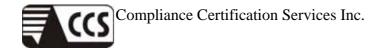






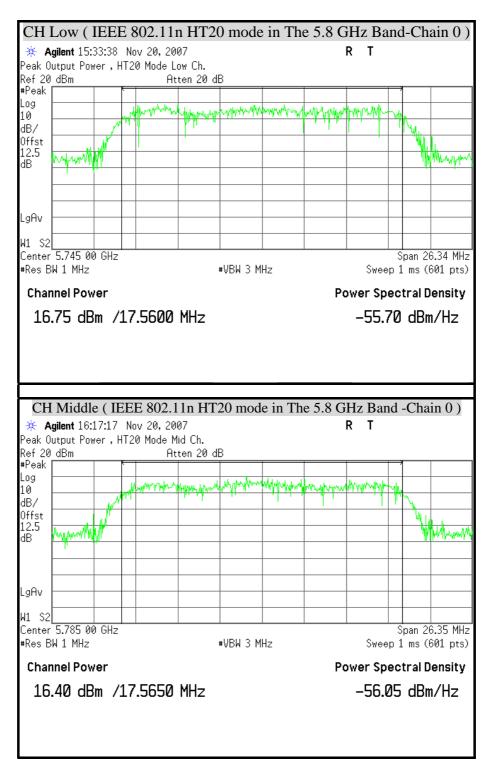


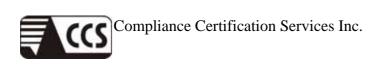


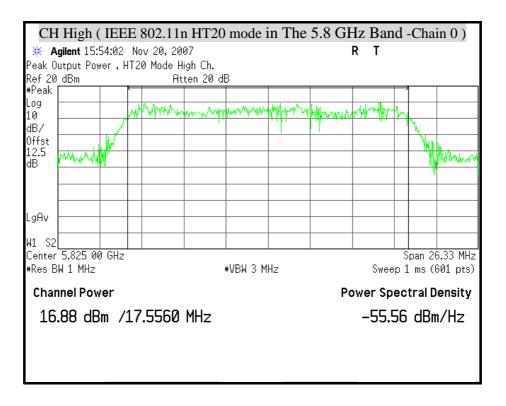


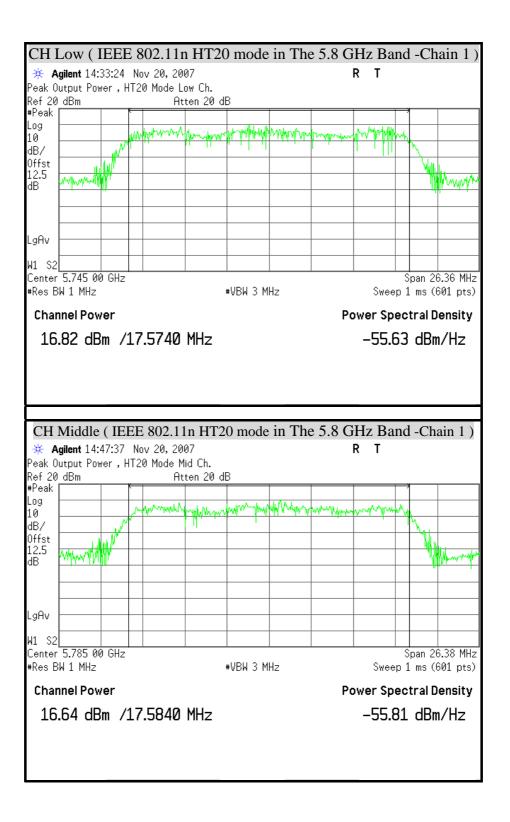
### MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11n HT20 mode in The 5.8

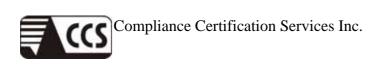
#### **GHz Band** )

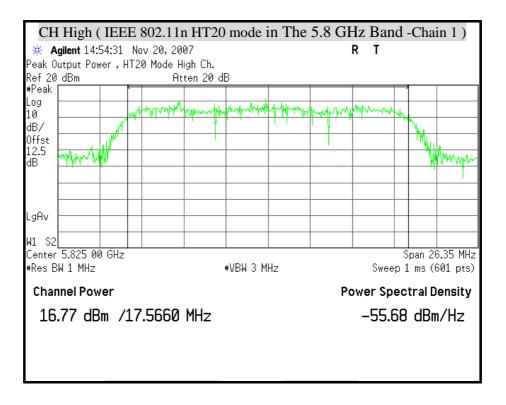




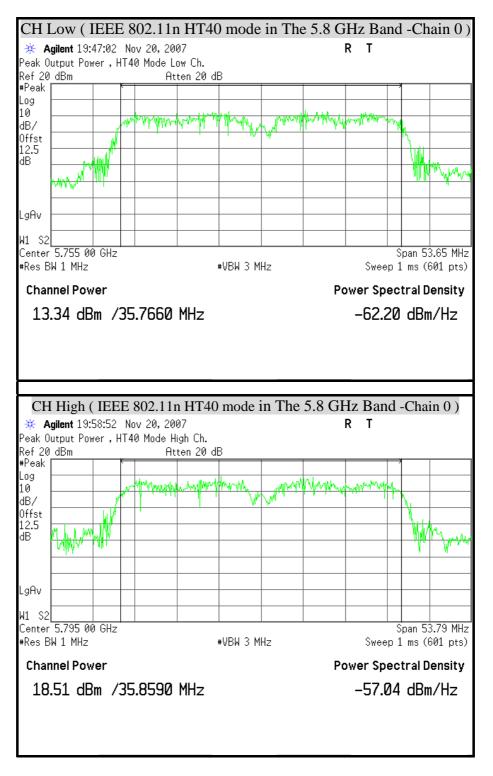


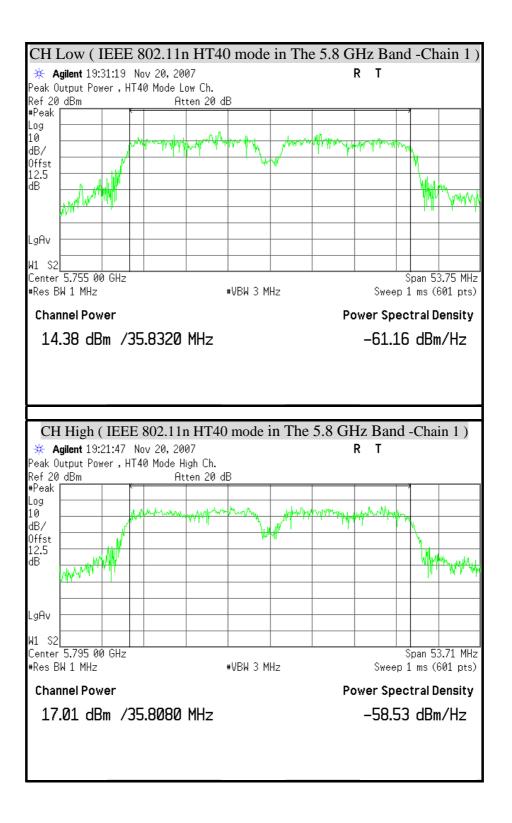


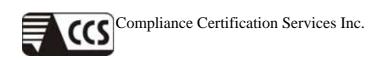




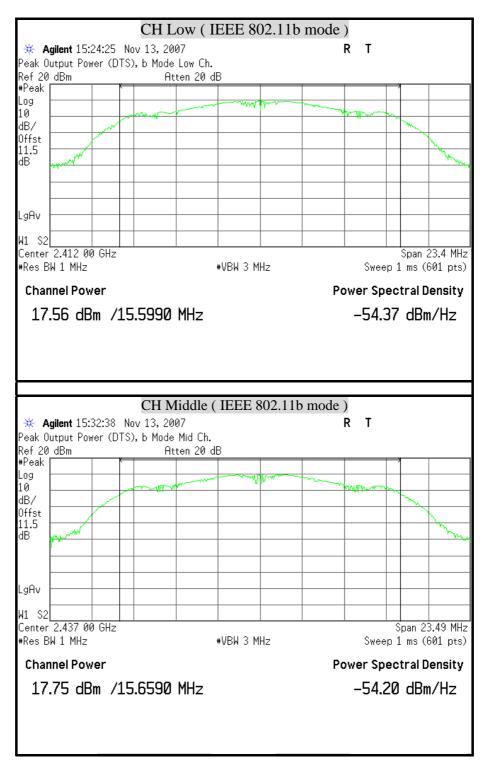
## MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11n HT40 mode )

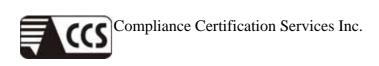


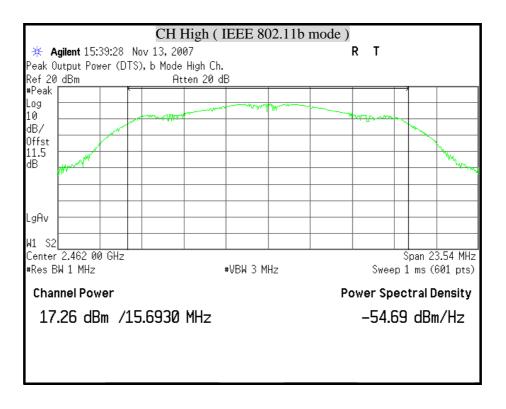


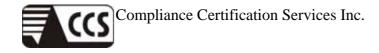


## MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11b mode)

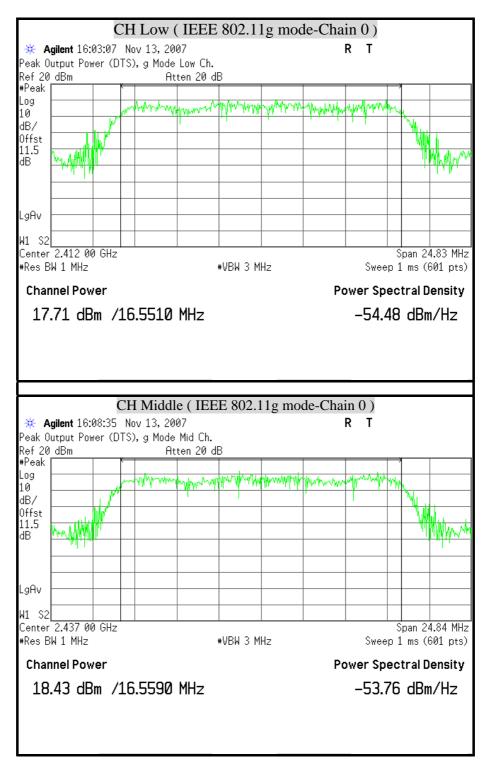




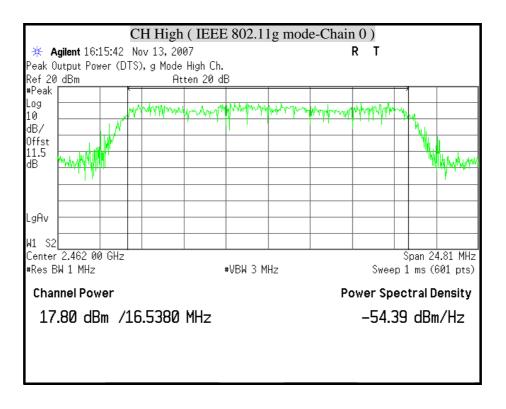




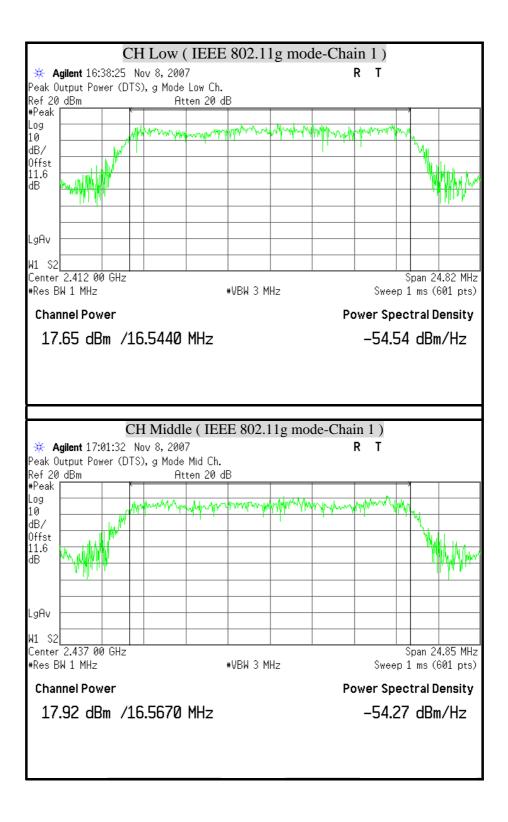
## MAXIMUM PEAK OUTPUT POWER (IEEE 802.11g mode)



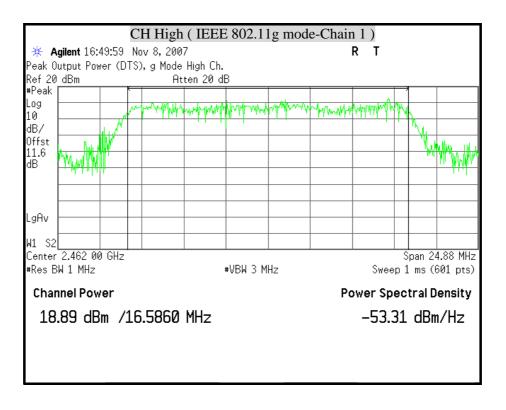




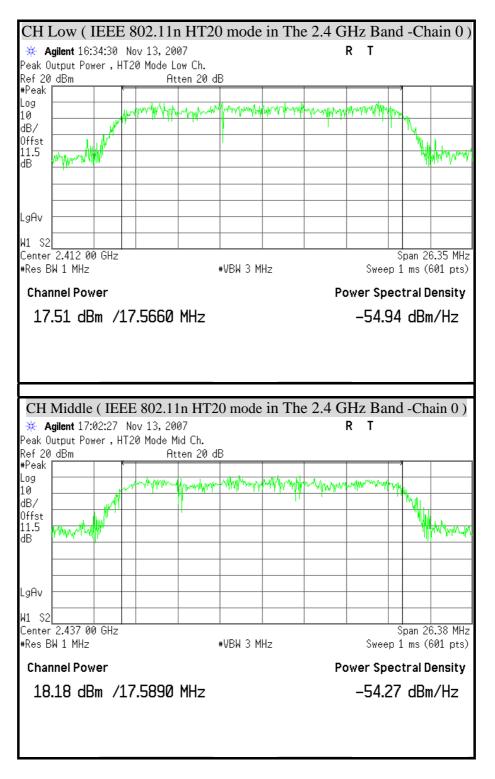




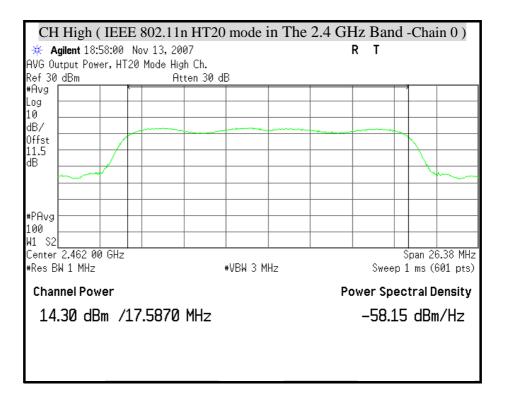




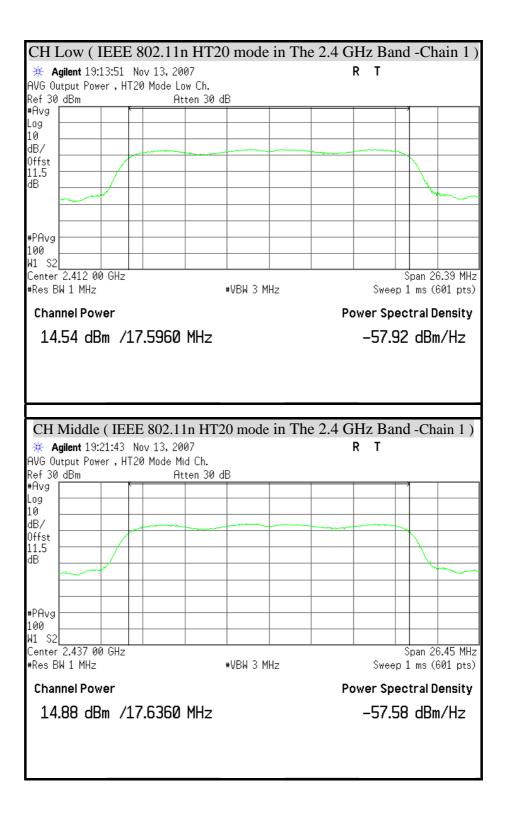
# MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11n HT20 mode )

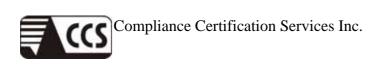


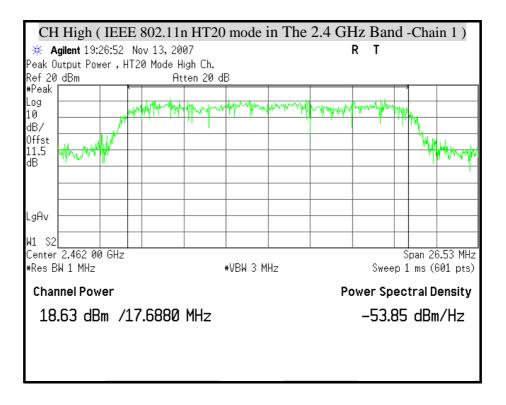




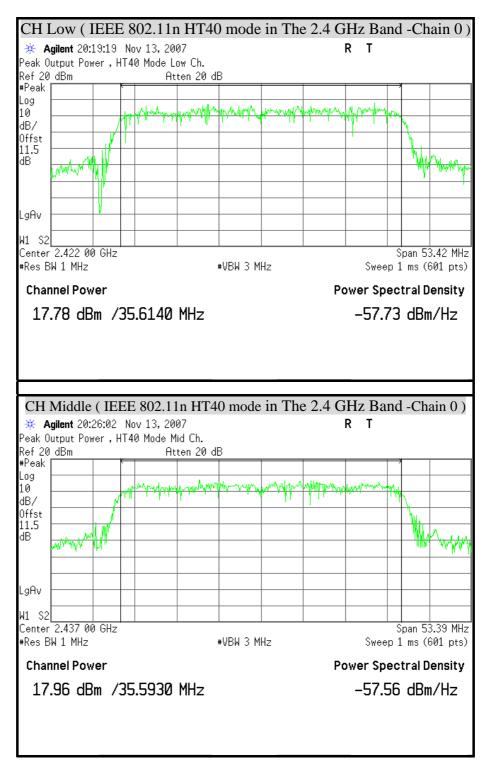




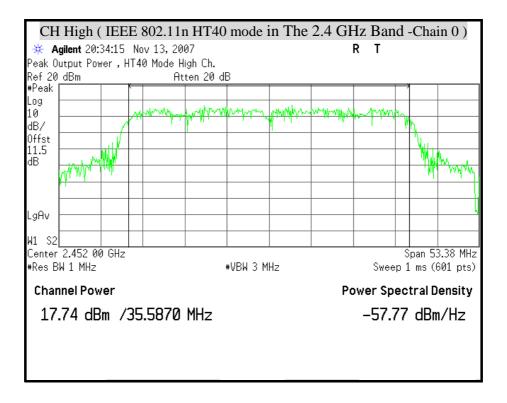


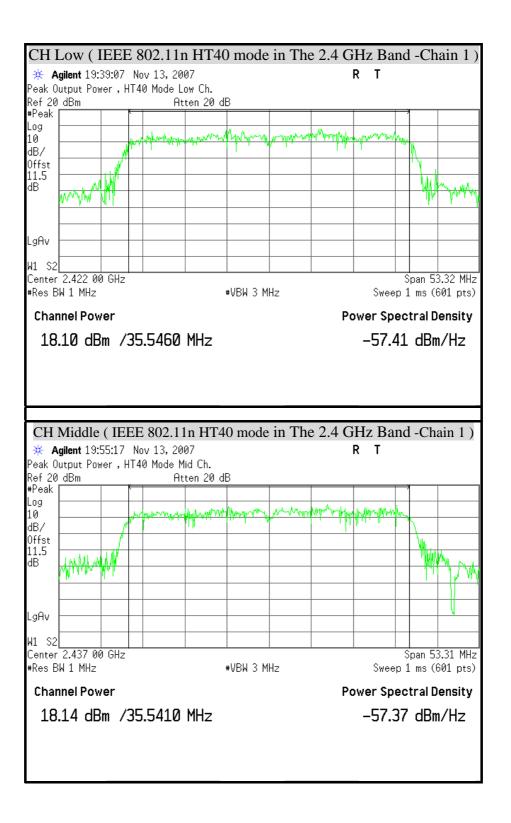


# MAXIMUM PEAK OUTPUT POWER ( IEEE 802.11n HT40 mode )

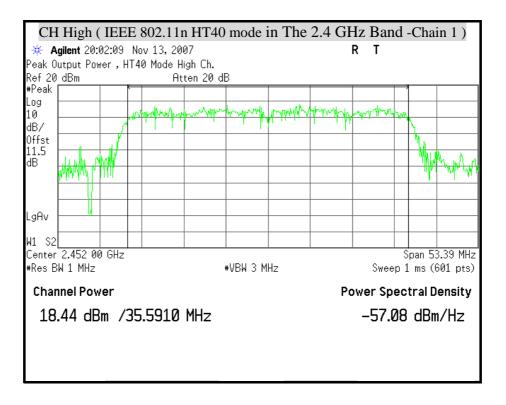


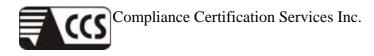












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 : 71108001-RP1

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# **8.4 POWER SPECTRAL DENSITY**

# **LIMIT**

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

# TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

# TEST SETUP



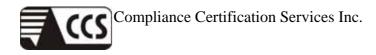


### TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW=3KHz and  $VBW \ge RBW$ , set sweep time=span / 3KHz.

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.



## TEST RESULTS

No non-compliance noted

Total power spectral density calculation formula: 10 log (10<sup>^</sup> (Chain 0 PPSD / 10) + 10<sup>^</sup> (Chain 1 PPSD / 10)).

#### IEEE 802.11a mode

Channel	Channel Frequency (MHz)	Level in 3	F Power BKHz BW Bm)	PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
	(111112)	Chain 0	Chain 1		(uDiii)	
Low	5745	-3.80	-10.36	-2.93	8	PASS
Middle	5785	-1.47	-9.02	-0.77	8	PASS
High	5825	-2.99	-8.55	-1.92	8	PASS

Remark:

1. At finial test to get the worst-case emission at 6 Mbps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

#### IEEE 802.11a Combined mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5745	-3.37	8	PASS
Middle	5785	0.20	8	PASS
High	5825	-0.92	8	PASS

Remark:

1. At finial test to get the worst-case emission at 6 Mbps.

2. The cable assembly insertion loss of 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

<b>IEEE 802</b>	IEEE 802.11n HT20 mode				
		Final D			

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
	(191112)	Chain 0	Chain 1		(ubiii)	
Low	5745	-3.83	-10.36	-2.93	8	PASS
Middle	5785	-3.36	-9.21	-2.36	8	PASS
High	5825	-2.99	-8.72	-1.96	8	PASS

#### Remark:

1. At finial test to get the worst-case emission at 6.5 Mbps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

### IEEE 802.11n HT20 Combined mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5745	-1.99	8	PASS
Middle	5785	-1.37	8	PASS
High	5825	-0.80	8	PASS

Remark:

1. At finial test to get the worst-case emission at 6.5 Mbps.

2. The cable assembly insertion loss 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
	(1/1112)	Chain 0	Chain 1	, , , , ,	(ubiii)	
Low	5755	-4.27	-11.84	-3.57	8	PASS
High	5795	-3.74	-8.57	-2.51	8	PASS

#### Remark:

1. At finial test to get the worst-case emission at 13.5 bps.

2. The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5755	-4.40	8	PASS
High	5795	-2.25	8	PASS

#### IEEE 802.11n HT40 Combined mode

Remark:

1. At finial test to get the worst-case emission at 13.5Mbps.

2. The cable assembly insertion loss of 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	2412	-6.26	8	PASS
Middle	2437	-6.69	8	PASS
High	2462	-6.74	8	PASS

Remark:

1. At finial test to get the worst-case emission at 1 Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency (MHz)	Level in 3 (dF	F Power BKHz BW Bm)	PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	2412	Chain 0 -9.87	Chain 1 -9.03	-6.42	8	PASS
Middle	2437	-9.17	-7.79	-5.42	8	PASS
High	2462	-9.45	-7.83	-5.55	8	PASS

### IEEE 802.11g mode

Remark:

1. At finial test to get the worst-case emission at 6 Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Channel	Channel Frequency (MHz)	Level in 3	F Power SKHz BW Sm)	PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail	
	(11112)	Chain 0	Chain 1	~ /	(uDiii)		
Low	2412	-8.62	-9.70	-6.12	8	PASS	
Middle	2437	-8.60	-9.09	-5.83	8	PASS	
High	2462	-9.04	-8.13	-5.55	8	PASS	

### IEEE 802.11n HT20 mode

#### Remark:

1. At finial test to get the worst-case emission at 6.5Mbps.

2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

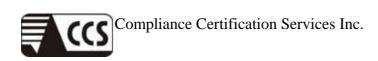
### IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	Level in 3KHz RW		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail	
					(uDiii)		
Low	2422	-12.81	-12.25	-9.51	8	PASS	
Middle	2437	-10.20	-12.09	-8.03	8	PASS	
High	2452	-13.10	-12.19	-9.61	8	PASS	

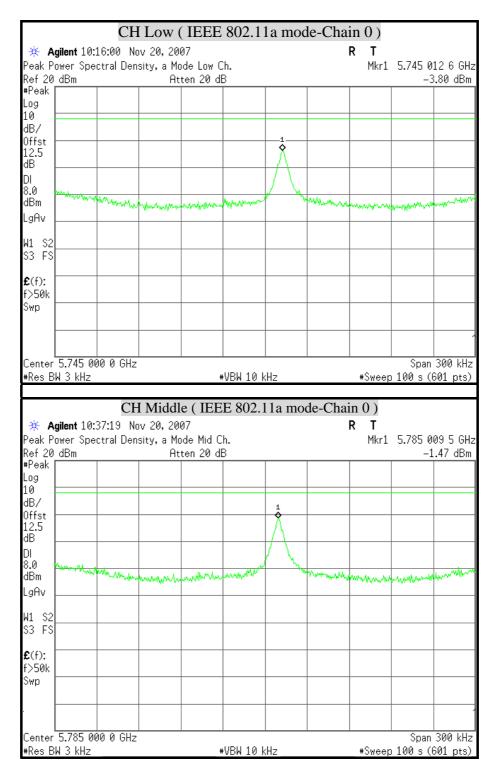
Remark:

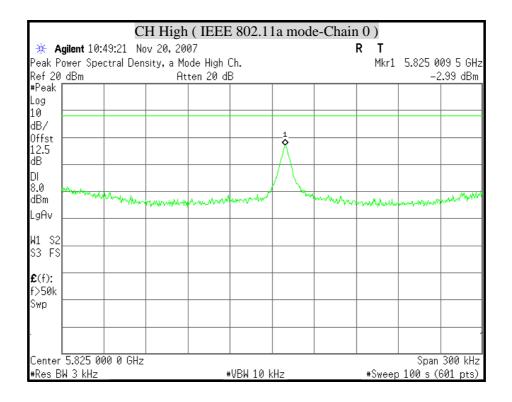
1. At finial test to get the worst-case emission at 13.5Mbps.

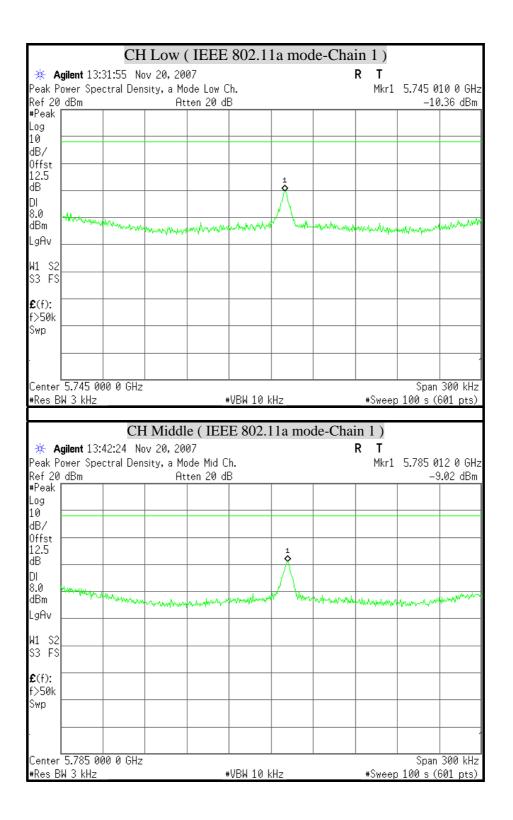
2. The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

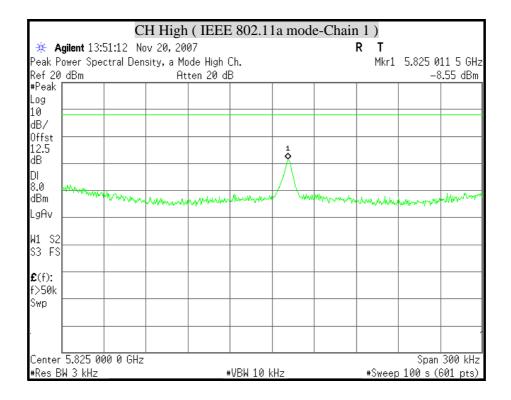


### POWER SPECTRAL DENSITY ( IEEE 802.11a mode)







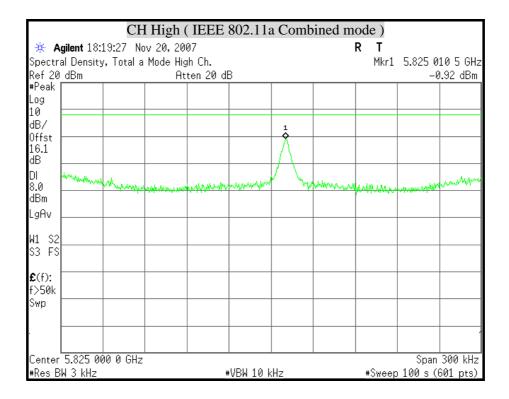




# **<u>POWER SPECTRAL DENSITY ( IEEE 802.11a Combined mode )</u>**

		CH	Low (	IEEE 8	802.11	a Com	bined n	node )		
ж А	gilent 18:	28:48 No	ov 20, 20	07				RТ		
	al Density							Mkr1	5.745 0	10 0 GHz
Ref 20				ten 20 di	В				-3	3.37 dBm
#Peak										
Log										
10 dB/										
ab/ Offst						_1				
16.1						8				
dB						A-				
DI						V = 1				
8.0 JD	WAR BOARD	MANNAM	and many my	Maryton	Amprovent	r Mupo	Martinana	Mar and the second second	Ned and Michael	and the second
dBm		· ·								
LgAv	<u> </u>									
W1 S2	,									
S3 FS										
<b>£</b> (f):										
f>50k										
Swp										
										1
Contor	L 5.745-00								( Spon	300 kHz
	3.745 00 3W 3 kHz_	00 0 GHZ			•VBW 10 k	,U→		#\$\		300 кн2 601 pts)_
TINES L	/M J NHZ -									
					NDM IO K			_#JM66k	1 100 3 (	001 pt3/_
		СН	Middle				bined n		11002(	001 pt3/_
				( IEEF			ibined n	node)	1 100 2 (	001 pt3/_
* A	Agilent 18:	23 <b>:</b> 48 No	ov 20, 20	( IEEE 07				node) RT		
🔆 A Spectr	A <b>gilent</b> 18: ral Density	23 <b>:</b> 48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1			node) RT	5.785 0	11 0 GHz
∰ A Spectr Ref 20	A <b>gilent</b> 18: al Density dBm	23 <b>:</b> 48 No	ov 20, 20 Mode Mid	( IEEE 07	E 802.1			node) RT	5.785 0	
🔆 A Spectr	A <b>gilent</b> 18: al Density dBm	23 <b>:</b> 48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1			node) RT	5.785 0	11 0 GHz
¥ <b>¥ A</b> Spectr Ref 20 #Peak Log 10	A <b>gilent</b> 18: al Density dBm	23 <b>:</b> 48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1	la Com		node) RT	5.785 0	11 0 GHz
¥ <b>¥ A</b> Spectr Ref 20 #Peak Log 10 dB∕	A <b>gilent</b> 18: al Density dBm	23 <b>:</b> 48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1			node) RT	5.785 0	11 0 GHz
Spectr Ref 20 #Peak Log 10 dB/ Offst	A <b>gilent</b> 18: al Density dBm	23:48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1	la Com		node) RT	5.785 0	11 0 GHz
¥ <b>¥ A</b> Spectr Ref 20 #Peak Log 10 dB∕	A <b>gilent</b> 18: al Density dBm	23:48 No	ov 20, 20 Mode Mid	( IEEE 07 Ch.	E 802.1	la Com		node) RT	5.785 0	11 0 GHz
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
¥ A Spectr Ref 20 #Peak Log dB/ Offst 16.1 dB DI 8.0	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩     A       Spectr     Ref 20       #Peak     Log       10     dB/       0ffst     16.1       dB     DI       8.0     dBm	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
¥ A Spectr Ref 20 #Peak Log dB/ Offst 16.1 dB DI 8.0	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
★ A Spectr Ref 20 #Peak Log dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
★ A Spectr Ref 20 #Peak Log dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩     A       Spectr     Ref 20       #Peak     Log       10     dB/       0ffst     16.1       dB     DI       8.0     dBm	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
★     A       Spectr     Ref 20       #Peak     Log       10     dB/       0ffst     16.1       dB     DI       8.0     dBm       LgAv     S3	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩         A           Spectr         Ref 20           #Peak         Log           10         dB/           0ffst         16.1           dB         DI           8.0         dBm           LgAv         S3           K1         S2           S3         FS           £(f):         f>50k	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩         A           Spectr         Ref 20           #Peak         Log           10         dB/           0ffst         16.1           dB         DI           8.0         dBm           LgAv         \$3           \$3         \$5           £(f):         ************************************	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩         A           Spectr         Ref 20           #Peak         Log           10         dB/           0ffst         16.1           dB         DI           8.0         dBm           LgAv         S3           K1         S2           S3         FS           £(f):         f>50k	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩         A           Spectr         Ref 20           #Peak         Log           10         dB/           0ffst         16.1           dB         DI           8.0         dBm           LgAv         S3           K1         S2           S3         FS           £(f):         f>50k	Agilent 18: al Density dBm	23:48 Nc y,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩         A           Spectr         Ref 20           Ref 20         10           dB/         10           0ffst         16.1           dB         DI           8.0         dBm           LgAv         \$3           K1         \$2           S3         FS           £(f):         f>50k           Swp         .	Agilent 18: al Density dBm	23:48 Nc ,,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 d	B 802.1	1 a Com		node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm
₩       A         Spectr       Ref 20         Ref 20       I         J0       I         J0       I         J10       I         J2       I         J10       I         J11       I         J12       I         J13       I         J14       I         J2       S         J3       FS         £(f):       S         F>50k       Swp         Center       Center	Agilent 18: al Density dBm	23:48 Nc ,,Total a	ov 20, 20 Mode Mid At	( IEEE 07 Ch. ten 20 dl	B 802.1			node) R T Mkr1	5.785 0	11 0 GHz 0.20 dBm



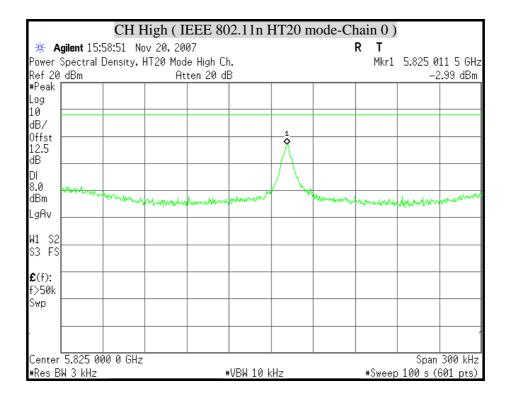


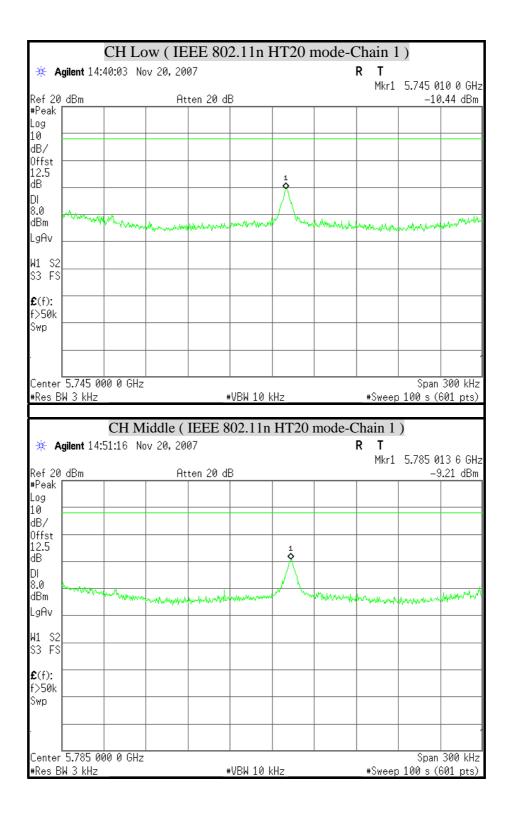


# POWER SPECTRAL DENSITY ( IEEE 802.11n HT20 mode )

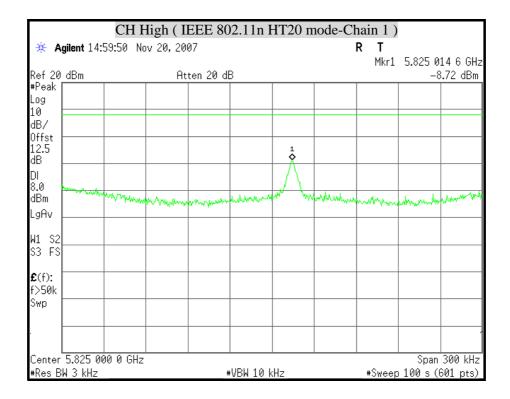
		CH Lo	ow ( IE	EE 80	2.11n l	HT20 r	node-C	Chain (	))	
₩ А	gilent 15:	39:38 No	ov 20, 20	07				RТ		
	Spectral							Mkr1	5.745 0	)13 1 GHz
Ref 20			At	ten 20 di	3					3.83 dBm
#Peak										
Log 10										
dB/										
Offst						1				
12.5						Ι Ň				
dB						$\vdash \land \vdash$				
DI						$ / \rangle$				
8.0 dBm	Martin Con	monteres	- de al and a start a s	بر مادر	a the constant	r 4	WHIMMAN	he can co		within the new
LgAv			ter day where where where	Man and the second second	W. W. Mart		. 1. 16 & . 26 & . 160	and the second	month	
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W1 S2	2									
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f>50k Swp	L									ļ
Swb										
•										1
Center	5.745 0	I AA A GHz							Snan	300 kHz
		00 0 0112								
#Res B	3W 3 kHz			+	•VBW 10 k	Hz		#Sweep	100 s (	601 pts)
#Res B	3W 3 kHz	_			•VBW 10 k	(Hz		_ #Sweep	o 100 s (	601 pts)_
#Res B	3W 3 kHz	СН М	iddle (				mode-C			601 pts)_
				IEEE 8			mode-C	bain 0		601 pts)_
<b>∦ A</b>	Agilent 16:	21:16 No	ov 20, 20	IEEE 8 07	02.11n			Chain O R T	)	
<b>₩ A</b> Power	A <b>gilent</b> 16: Spectral	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n			Chain O R T	) 5.785 @	)12 5 GHz
<b>∦ A</b>	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	IEEE 8 07	02.11n			Chain O R T	) 5.785 @	
₩ A Power Ref 20 #Peak Log	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n			Chain O R T	) 5.785 @	)12 5 GHz
₩ A Power Ref 20 #Peak Log 10	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n			Chain O R T	) 5.785 @	)12 5 GHz
₩ A Power Ref 20 #Peak Log 10 dB/	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n			Chain O R T	) 5.785 @	)12 5 GHz
₩ <b>A</b> Power Ref 20 #Peak Log 10 dB/ Offst	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n	HT20		Chain O R T	) 5.785 @	)12 5 GHz
₩ A Power Ref 20 #Peak Log 10 dB/	A <b>gilent</b> 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	<b>IEEE 8</b> 07 e Mid Ch.	02.11n	HT20		Chain O R T	) 5.785 @	)12 5 GHz
Power Ref 20 #Peak Log dB/ Offst 12.5 dB DI	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Chain O R T	) 5.785 @	)12 5 GHz
Power Ref 20 #Peak Log dB/ Offst 12.5 dB DI 8.0	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
Power Ref 20 #Peak Log 10 dB/ 0ffst 12.5 dB DI 8.0 dBm	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	)12 5 GHz
Power Ref 20 #Peak Log dB/ Offst 12.5 dB DI 8.0	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
Power Ref 20 #Peak Log dB/ 0ffst 12.5 dB DI 8.0 dBm LgAv	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
Power Ref 20 #Peak Log 10 dB/ 0ffst 12.5 dB DI 8.0 dB DI 8.0 dBm LgAv W1 S2	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
Power Ref 20 #Peak Log dB/ 0ffst 12.5 dB DI 8.0 dBm LgAv	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         10           dB/         10           0ffst         12.5           dB         DI           8.0         dBm           LgAv         \$3           \$3         FS           €(f):         \$2	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         I           uog         10           dB/         0           0ffst         12.5           dB         DI           8.0         dBm           LgAv         ¥1           S3         FS           £(f):         f>50k	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         10           dB/         10           0ffst         12.5           dB         DI           8.0         dBm           LgAv         \$3           \$3         FS           €(f):         \$2	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         I           uog         10           dB/         0           0ffst         12.5           dB         DI           8.0         dBm           LgAv         ¥1           S3         FS           £(f):         f>50k	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         I           uog         10           dB/         0           0ffst         12.5           dB         DI           8.0         dBm           LgAv         ¥1           S3         FS           £(f):         f>50k	Agilent 16: Spectral ) dBm	21:16 No	ov 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @ :	012 5 GHz 3.36 dBm
₩         A           Power         Ref 20           Ref 20         10           dB/         10           0ffst         12.5           dB         DI           8.0         dBm           LgAV         ¥1 \$25           K         \$3           FS         \$50k           S3         FS           x         \$50k	Agilent 16: Spectral dBm	21:16 No	by 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20		Shain 0 R T Mkr1	) 5.785 @	12 5 GHz 3.36 dBm
₩     A       Power     Ref 20       Ref 20     I       I0     dB/       0ffst     12.5       dB     DI       8.0     dBm       LgAv     S3       \$S3     FS       f>50k     Swp       Center     Center	Agilent 16: Spectral ) dBm	21:16 No	by 20, 20 HT20 Mod At	IEEE 8 07 e Mid Ch. ten 20 dl	02.11n	HT20 :		Chain O R T Mkr1	) 5.785 ( 	012 5 GHz 3.36 dBm









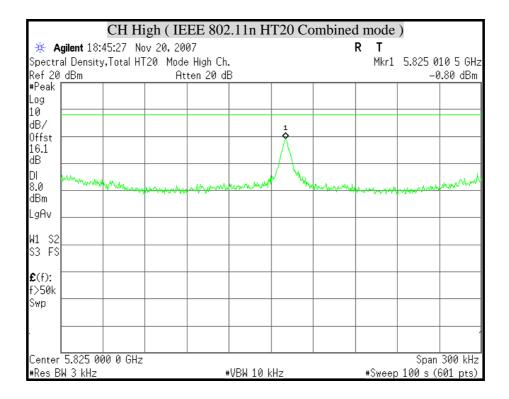


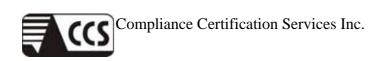


# POWER SPECTRAL DENSITY ( IEEE 802.11n HT20 Combined mode )

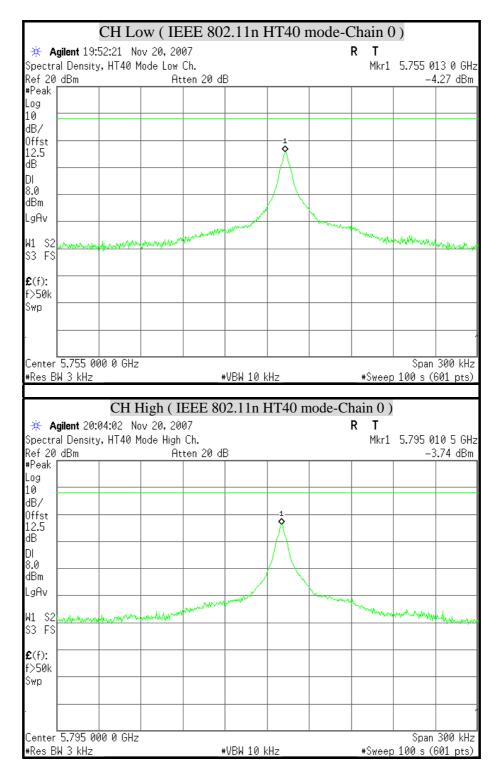
	(	CH Lov	w ( IEE	EE 802	.11n H	T20 C	ombine	ed mod	le)	
ж А	<b>gilent</b> 18:	36:37 No	ov 20, 20	07			I	₹т		
	al Density	y,Total H1						Mkr1	5.745 0	10 5 GHz
Ref 20			At	ten 20 d	B				-1	.99 dBm
#Peak Log										
10 10										
dB/										
Offst										
16.1 dB						LA –				
DI						1/1				
8.0	mon	Markens u	and the start	. Jun under	aparter	" "m	and when the second second	and to per-	. In all	worknow
dBm		1.150.05	ACTING ON MALIN	and the second secon				a man Abdren	Contraction of	
LgAv										
W1 S2										
S3 FS	S .									
<b>£</b> (f): f>50k										
т>5⊍к Ѕwp										
	L									
Center	5.745 0	00 0 GHz								300 kHz
#Res B					•VBW 10 k				) 100 s ((	601 pts)_
∰ A Spectr Ref 20	A <b>gilent</b> 18: al Density dBm	41:09 No	ov 20, 20 IT20 Mode	EEE 80 07	2.11n I		Combine	d mod	e) 5.7850	501 pts) 10 5 GHz 37 dBm
∰ A Spectr Ref 20 #Peak Log	A <b>gilent</b> 18: al Density dBm	41:09 No	ov 20, 20 IT20 Mode	<b>EEE 80</b> 07 > Mid Ch.	2.11n I			d mod	e) 5.7850	10 5 GHz
∰ <b>A</b> Spectr Ref 20 #Peak	A <b>gilent</b> 18: al Density dBm	41:09 No	ov 20, 20 IT20 Mode	<b>EEE 80</b> 07 > Mid Ch.	2.11n I	HT20 C		d mod	e) 5.7850	10 5 GHz
* A Spectr Ref 20 *Peak Log 10 dB/ Offst 16.1	A <b>gilent</b> 18: al Density dBm	41:09 No	ov 20, 20 IT20 Mode	<b>EEE 80</b> 07 > Mid Ch.	2.11n I			d mod	e) 5.7850	10 5 GHz
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst	Agilent 18: al Density dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1 dB DI 8.0	Agilent 18: al Density dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1 dB DI	Agilent 18: al Density dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz
* A Spectr Ref 20 *Peak Log dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log dB/ 0ffst 16.1 dB DI 8.0 dBm dBm	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f):	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
₩     A       Spectr       Ref 20       #Peak       Log       10       dB/       0ffst       16.1       dB       DI       dB       LgAv       MB       S3       FS	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
★ A Spectr Ref 20 #Peak Log 10 dB/ 0ffst 16.1 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k	Agilent 18: al Density ) dBm	41:09 No y, Total H	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod <b>T</b> Mkr1	e) 5.785 0 -1	10 5 GHz 37 dBm
<pre></pre>	Agilent 18: al Density ) dBm	41:09 No	ov 20, 20 T20 Mode At	EEE 80 07 → Mid Ch. ten 20 dl	<b>2.11n I</b>			d mod T Mkr1	e) 5.785 0 	10 5 GHz 37 dBm

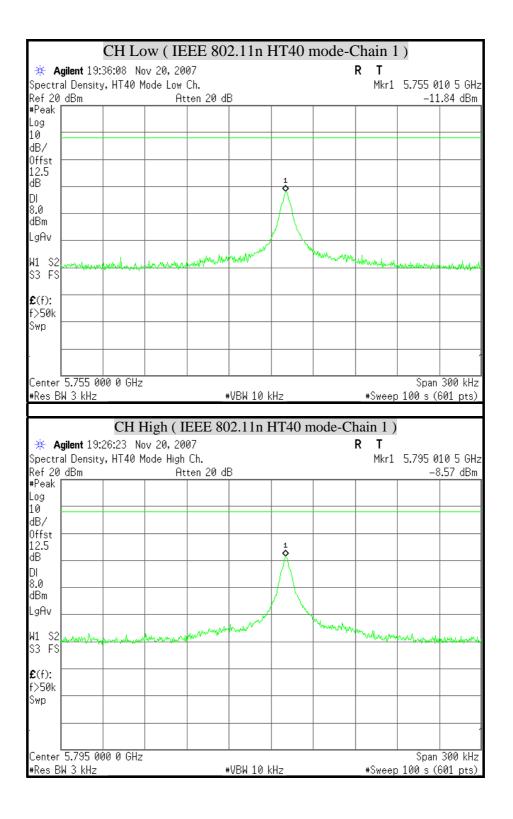


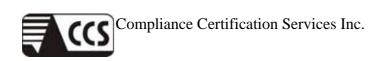




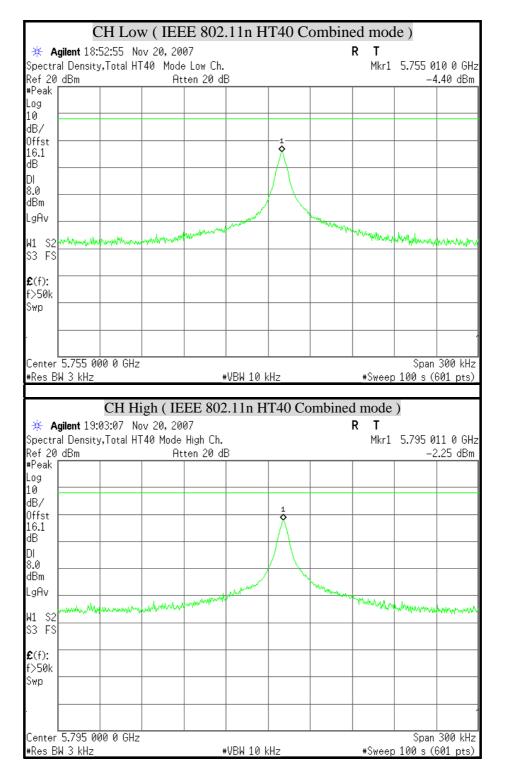
#### POWER SPECTRAL DENSITY ( IEEE 802.11n HT40 mode )







#### POWER SPECTRAL DENSITY ( IEEE 802.11n HT40 Combined mode )





# POWER SPECTRAL DENSITY ( IEEE 802.11b mode)

2.412 991 6 GHz
-6.26 dBm
huder bud and and the second
Span 300 kHz
100 s (601 pts)
2.435 990 2 GHz
-6.69 dBm
www.
Varia Markala and Andrew Markan
Ward and the second
Verwork Allen and Anna and Ann
Span 300 kHz



				<b>.</b>	EEE 80	02.11b	-	_			
Peak P	ower Spe		ov 13, 200 sity, b Mc	de High I				R	T Mkr1		39 7 GHz
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10 dB/											
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dBm											
LgAv											
W1 S2 S3 FS											
<b>£</b> (f): f>50k											
Swp											
	2.461 40 W 3 kHz	00 0 GHz			 •VBW 10 k	 /H-7			Swaar		 300 kHz 601 pts)_



# **POWER SPECTRAL DENSITY ( IEEE 802.11g mode)**

		CH	Low (	( IEEE	802.1	lg mod	le-Cha	in 0)		
ж А	gilent 16:	06:15 No	v 13, 20	07				RT		
		ctral Den	sity, g Mo	ode Low (	Ch.			Mkr1	2.411 6	671 6 GHz
Ref 20	dBm		At	ten 20 d	B					9.86 dBm
#Peak Lo≃										
Log 10										
dB/										
Offst										
11.5						1				
dB		mound	. I ashing	mount	Mar Margaran	m	-	MANA	within	
DI 8.0	montered	mount	horalise Wilson also							And a second with
dBm										
LgAv										
W1 S2										
S3 FS										
<b>£</b> (f):	<u> </u>									
f>50k										
Swp										
										1
Center	2.411 6	<u> </u> 50 0 GHz							Snar	1 300 kHz
	SW 3 kHz									
- nvo D				+	⊧VBW 10 k	(Hz		#Sweep	i 100 s (	,601 pts)
-1100 D				+	•VBW 10 k	(Hz		_ #Sweep	100 s (	,601 pts)_
		CH	[ Middl				de-Chai		) 100 s (	,601 pts)
* A	<b>gilent</b> 16:	13:11 No	v 13, 20	e ( IEE 07	E 802.1				100 s (	,601 pts)_
🔆 🗚 Peak P	<b>gilent</b> 16: 'ower Spe		∣v 13, 20∣ sity, g Mα	e ( IEE 07 ode Mid C	E 802.1			in0) RT	2.430 \$	989 7 GHz
₩ <b>A</b> Peak P Ref 20	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 20∣ sity, g Mα	e ( IEE 07	E 802.1			in0) RT	2.430 \$	
<b>∦ A</b> Peak P Ref 20 #Peak	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 20∣ sity, g Mα	e ( IEE 07 ode Mid C	E 802.1			in0) RT	2.430 \$	989 7 GHz
₩ <b>A</b> Peak P Ref 20 #Peak Log	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 20∣ sity, g Mα	e ( IEE 07 ode Mid C	E 802.1			in0) RT	2.430 \$	989 7 GHz
<b>∦ A</b> Peak P Ref 20 #Peak	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 200 sity, g Mα	e ( IEE 07 ode Mid C	E 802.1			in0) RT	2.430 \$	989 7 GHz
₩ <b>A</b> Peak P Ref 20 #Peak Log 10 dB/ Offst	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 200 sity, g Mα	e ( IEE 07 ode Mid C	E 802.1			in0) RT	2.430 \$	989 7 GHz
₩     A       Peak     P       Ref     20       #Peak     Log       10     dB/       0ffst     11.5	<b>gilent</b> 16: 'ower Spe	13:11 No	∣v 13, 200 sity, g Mα	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩     A       Peak     P       Ref 20     #Peak       Log     10       dB/     0ffst       11.5     dB	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩     A       Peak     P       Ref     20       #Peak     Log       10     dB/       0ffst     11.5	gilent 16: ower Spe dBm	13:11 No	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	989 7 GHz
₩     A       Peak     P       Ref     20       #Peak     Log       10     dB/       0ffst     11.5       dB     DI	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩     A       Peak     Peak       Log     10       dB/     0ffst       11.5     dB       DI     8.0	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
Peak P Ref 20 #Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩     A       Peak     Peak       Log     10       dB/     0ffst       11.5     dB       DI     8.0       dBm     LgAv	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩         A           Peak P         Peak P           Log         10           dB/         0ffst           11.5         dB           DI         8.0           dBm         LgAv           Kanger         S3           FS         €(f):	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩         A           Peak P         Peak P           Log         10           dB/         0ffst           11.5         dB           DI         8.0           dBm         LgAv           W1         \$2           \$3         FS           £(f):         f>50k	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩         A           Peak P         Peak P           Log         10           dB/         0ffst           DI         8.0           dBm         LgAv           Kaf S3         FS           £(f):         **	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩         A           Peak P         Peak P           Log         10           dB/         0ffst           11.5         dB           DI         8.0           dBm         LgAv           W1         \$2           \$3         FS           £(f):         f>50k	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm
₩         A           Peak P         Peak           Log         10           dB/         0ffst           11.5         dB           DI         8.0           dBm         LgAv           W1         \$2           \$3         FS           £(f):         f>50k           Swp	gilent 16: ower Spe dBm	13:11 No ctral Den	v 13, 20 sity, g Ma At	e (IEE 07 ode Mid C ten 20 d	E 802.1	l 1g mo		in 0) R T Mkr1	2.430 \$	089 7 GHz 9.17 dBm

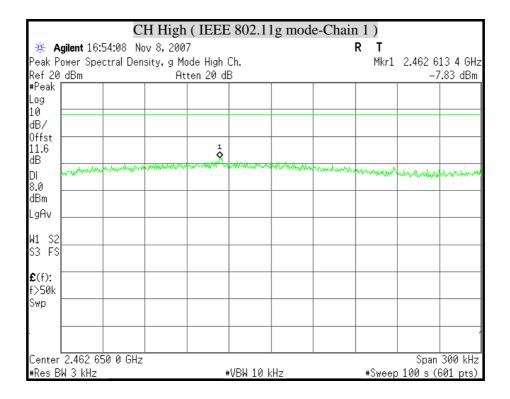


		CI	H High	( IEEE	E 802.11	lg mod	e-Chair	n O )		
🔆 🔆 🕹	gilent 16:22:	26 No	v 13, 200	07				RΤ		
Peak Po	ower Spectr	al Dens	ity, g Mo	de High I	Ch.			Mk	r1 2.46	3 864 6 GHz
Ref 20				ten 20 di						-9.44 dBm
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Log										
10										
dB/										
Offst										
11.5						1				
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8.0										
dBm										
LgAv										
W1 S2										
S3 FS										
<b>£</b> (f):										
f>50k										
Swp										
Contor	2.463 850	0 CU-								
		0 GHZ				11-		щ¢		oan 300 kHz
#KeS D	W 3 kHz			#	•VBW 10 k	HZ		#3W6	eep 100	<u>s (601 pts)</u>

E

		CH	Low (	( IEEE	802.1	1g moo	le-Chai	in 1)		
₩ 4	Agilent 16:	41:54 No	ov 8, 200	7				RТ		
	Power Spe				Ch.			Mkr1	2.419 1	13 4 GHz
	0_dBm		At	ten 20 di	В				-9	9.03 dBm
#Peak										
Log 10										
dB/										
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W1 S2 S3 F3										
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<b>£</b> (f):	<u> </u>									
f>50k										
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	r 2.419 1 BW 3 kHz	50 0 GHZ								
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"NOJ L		CH	I Middl				de-Chai		)100 s (	601 pts)
				e ( IEE			de-Chai	n 1 )	o 100 s (	601 pts)
* /	Agilent 17:	04:44 No	ov 8, 200	e ( IEE 7	E 802.			n1) RT		
<b>₩ /</b> Peak F		04:44 No	ov 8, 200 sity, g Ma	e ( IEE 7	E 802.:			n1) RT	2.443 2	239 0 GHz 7.79 dBm
<b>₩ /</b> Peak F	<b>Agilent</b> 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma	<b>e ( IEE</b> 7 ode Mid C	E 802.:			n1) RT	2.443 2	239 0 GHz
<mark>∦¥</mark> <b>/</b> Peak F Ref 20 #Peak Log	<b>Agilent</b> 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma	<b>e ( IEE</b> 7 ode Mid C	E 802.:			n1) RT	2.443 2	239 0 GHz
¥¥ ↓ Peak F Ref 20 #Peak Log 10	<b>Agilent</b> 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma	<b>e ( IEE</b> 7 ode Mid C	E 802.:			n1) RT	2.443 2	239 0 GHz
¥¥ ↓ Peak F Ref 20 #Peak Log 10 dB/	<b>Agilent</b> 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma	<b>e ( IEE</b> 7 ode Mid C	E 802.:			n1) RT	2.443 2	239 0 GHz
₩ / Peak F Ref 20 #Peak Log 10 dB/ Offst 11.6	<b>Agilent</b> 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma	<b>e ( IEE</b> 7 ode Mid C	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ / Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ / Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB DI	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB DI 8.0	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ <b>4</b> Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB DI 8.0 dBm	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB DI 8.0	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB dB dB dB dB dB dB dB dB dB dB dB dB	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ / Peak F Ref 20 #Peak Log 10 dB/ 0ffst 11.6 dB DI 8.0 dBm LgAv	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩ / Peak F #Peak Log 10 dB/ 0ffst 11.6 dB dB dB LgAv LgAv K1 \$2 \$3 F\$	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩         ¥           Peak F         Ref 20           #Peak Log         10           dB/         0ffst           11.6         dB           dB         LgAv           LgAv         LgAv           kl S3         FS           €(f):         S50k	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩         ¥           Peak F         Ref 20           #Peak Log         10           dB/         0ffst           11.6         dB           dB         LgAv           LgAv         LgAv           kl S3         FS           €(f):         S50k	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	39 0 GHz 7.79 dBm
₩         J           Peak F         Ref 20           #Peak F         20           #Oad         10           dB/         01           0ffst         11.6           dB         20           dB         20           dB         20           dB         20           dB         20           dB         53           £C(f):         500k           Swp         50k	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e (IEE 7 ode Mid C ten 20 dl	E 802.	l 1g mo		n1) RT Mkr1	2.443 2	239 0 GHz 7.79 dBm
₩         I           Peak F         Ref 20           #Peak F         20           #Oad         10           dB/         0ffst           010         8.0           dBm         LgAv           LgAv         \$1.50           €(f):         f>50k           Swp         Centel	Agilent 17: Power Spe 0 dBm	04:44 No	ov 8, 200 sity, g Ma At	e ( IEE 7 ode Mid C ten 20 dl	E 802.	11g mo		n 1 ) R T Mkr1	2.443 2 	39 0 GHz 7.79 dBm







# POWER SPECTRAL DENSITY ( IEEE 802.11n HT20 mode )

		CH Lo	ow ( IE	EE 80	2.11n l	HT20 r	node-C	Chain (	))	
ж А	<b>gilent</b> 16:	38:39 No	ov 13, 20	07				RТ		
	-	Density, I						Mkr1	2.410 7	739 5 GHz
Ref 20	) dBm		At	ten 20 di	В				_	8.61 dBm
#Peak										
Log										
10 JD7										
dB/ Offst										
11.5					1					
dB					<b>Ý</b>					
DI	www.hum	mond	mound	man	man you	Mir hay wang half he	Myrtmatha	Astronom And And	hannagen	hornenberg
8.0										
dBm										
LgAv										
W1 S2	2									
S3 FS	5									
<b>£</b> (f):										
f>50k										
Swp										
Contor	2 41 0 7	<u> </u> 50 0 GHz							( Spor	1 300 kHz
Center		30 0 GHZ								
#Dag B	2012701-			+	URLIA L	/U->		#Swaar	100 - (	601 n+e)
#Res B	3W 3 kHz			+	⊧VBW 10 k	(Hz		_ #Sweep	)100 s (	601 pts)_
<b>∦</b> A	Agilent 17:	CH M 06:03 No Density, I	ov 13, 20	IEEE 8 07	02.11n		mode-C	Chain O R T	)	.601 pts) .78 4 GHz
<b>₩ A</b> Power Ref 20	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07	02.11n			Chain O R T	) 2.444 1	
<b>₩ A</b> Power Ref 20 #Peak	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Ch.	02.11n			Chain O R T	) 2.444 1	.78 4 GHz
₩ <b>A</b> Power Ref 20 #Peak Log	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Ch.	02.11n			Chain O R T	) 2.444 1	.78 4 GHz
₩ <b>A</b> Power Ref 20 #Peak Log 10	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Ch.	02.11n			Chain O R T	) 2.444 1	.78 4 GHz
₩ <b>A</b> Power Ref 20 #Peak Log	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Ch.	02.11n			Chain O R T	) 2.444 1	.78 4 GHz
₩     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5	<b>Agilent</b> 17: Spectral ) dBm	06:03 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Ch.	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5       dB     dB	Agilent 17: Spectral dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩ A Power Ref 20 #Peak Log dB/ 0ffst 11.5 dB DI	Agilent 17: Spectral dBm	06:03 No	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       Ref 20     #Peak       Log     10       dB/     0ffst       11.5     dB       DI     8.0	Agilent 17: Spectral dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       Ref 20     10       HPeak     10       J0     dB/       0ffst     11.5       dB     0       DI     8.0       dBm	Agilent 17: Spectral dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       Ref 20     #Peak       Log     10       dB/     0ffst       11.5     dB       DI     8.0	Agilent 17: Spectral dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
#     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5       dB     B       DI     8.0       dBm     LgAv	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       Ref 20     10       HPeak     10       J0     dB/       0ffst     11.5       dB     0       DI     8.0       dBm	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
#     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5       dB     DI       8.0     dBm       LgAv     S3       W1     S2       S3     FS	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           Log         10           dB/         Offst           11.5         dB           DI         8.0           dBm         LgAv           K1         \$2           S3         FS           £(f):         ************************************	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         \$3           K1         \$2           S3         FS           £(f):         f>50k	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           Log         10           dB/         Offst           11.5         dB           DI         8.0           dBm         LgAv           K1         \$2           S3         FS           £(f):         ************************************	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         \$3           K1         \$2           S3         FS           £(f):         f>50k	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         \$3           K1         \$2           S3         FS           £(f):         f>50k	Agilent 17: Spectral ) dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         ¥1 \$2           S3         FS           £(f):         f>50k           Swp	Agilent 17: Spectral dBm	06:03 No	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Chain O R T Mkr1	) 2.444 1	.78 4 GHz 8.60 dBm
₩     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5       dB     DI       8.0     dBm       LgAv     X1       S3     FS       £(f):     f>50k       Swp     Center	Agilent 17: Spectral dBm	06:03 No Density, I	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch. ten 20 dl	02.11n B	HT20		Shain O R T Mkr1	) 2.444 1 	.78 4 GHz 8.60 dBm



		CH H	ligh ( Il	EEE 80	2.11n H	HT20 n	node-C	hai	in 0 )		
🔆 👫 🗛	<b>gilent</b> 19:00	:43 No	v 13, 200	07				R	Т		
	Spectral De	nsity, H	T20 Mod	e High Cł	ı <b>.</b>				Mkr1	2.468 8	64 5 GHz
Ref 20	dBm		At	ten 20 di	3					-5	0.04 dBm
#Peak								Τ			
Log											
10								-			
dB/											
Offst								$\vdash$			
11.5 dB											
	Muyuuwaa	al. 1	المراجع والمراجع	mandante	mound	not theme	mound	m	Nederland	atta sa ita	
DI 8.0	Mangar provident and	mann	and the second				· ·			Contract (Non-Mark)	paper the street
dBm								+			
LgAv											
LYHV								+			
W1 S2											
S3 FS								+			
00 10											
<b>£</b> (f):								+			
f>50k											
Swp								+			
								$\vdash$			
ľ l											
Contor	2.468 850	0 0 0-								l Span	300 kHz
#Res B		e onz			VBW 10 k	11-					300 кнz 601 pts)_
#res p	שטאדוZ _				VDM IU K	.ΠΖ		Ŧ	∙sweep	D TOO 2 (	oor pts)_

E

		CH Lo	ow ( IE	EE 80	2.11n ]	HT20 1	node-(	Ch	ain 1	l )	
∦к А	gilent 19:	16:50 No	ov 13, 20	07				R	т		
	•	Density, H							Mkr1		739 9 GHz
Ref 20	dBm	1	At	ten 20 d	B					_	9.70 dBm
#Peak Log											
10											
dB/											
0ffst 11.5											
dB											
DI	m www.	Mar Waltow	www.www.	and a start of the	www.	moun	M. When you	and the second	www.ha	mound	monthand
8.0 dBm											
LgAv											
Lain											
W1 S2											
S3 FS											
<b>£</b> (f):	<u> </u>										+
f>50k											
Swp											
											1
Center	2 41 9 8	1 50 0 GHz								Snar	1 300 kHz
	3W 3 kHz	00 0 0112			∗VBW 10 K	<hz< td=""><td></td><td>#</td><td>Sweep</td><td></td><td>(601 pts)_</td></hz<>		#	Sweep		(601 pts)_
-nvo D											
-nos b											
		CH M	iddle (				mode-(				
* A		24:17 No	ov 13, 20	IEEE 8 07	302.11n						
* A Power	Spectral		ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Chi	802.11n			Cha	uin 1 T	) 2.444 -	488 5 GHz
₩ A Power Ref 20	Spectral dBm	24:17 No	ov 13, 20 HT20 Mod	IEEE 8 07	802.11n			Cha	uin 1 T	) 2.444 -	
* A Power	Spectral dBm	24:17 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Chi	802.11n			Cha	uin 1 T	) 2.444 -	488 5 GHz
→ A Power Ref 20 #Peak Log 10	Spectral dBm	24:17 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Chi	802.11n			Cha	uin 1 T	) 2.444 -	488 5 GHz
Power Ref 20 #Peak Log 10 dB/	Spectral dBm	24:17 No	ov 13, 20 HT20 Mod	IEEE 8 07 le Mid Chi	802.11n			Cha	uin 1 T	) 2.444 -	488 5 GHz
→ A Power Ref 20 #Peak Log 10	Spectral dBm	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩     A       Power     Ref 20       #Peak     Log       10     dB/       0ffst     11.5       dB     dB	Spectral dBm	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩ A Power Ref 20 #Peak Log dB/ 0ffst 11.5 dB DI	Spectral dBm	24:17 No	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩     A       Power     Ref 20       Ref 20     #Peak       Log     10       dB/     0ffst       11.5     dB       DI     8.0	Spectral dBm	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩ A Power Ref 20 #Peak Log dB/ 0ffst 11.5 dB DI	Spectral dBm	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
Power Ref 20 #Peak Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv	Spectral dBm	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
Power Ref 20 #Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 S2	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
Power Ref 20 #Peak Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           #Peak         Log           Log         10           dB/         Offst           11.5         dB           DI         8.0           dBm         LgAv           K1         S2           S3         FS           £(f):         **	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         ¥I           %3         FS           £(f):         f>50k	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           #Peak         Log           Log         10           dB/         Offst           11.5         dB           DI         8.0           dBm         LgAv           K1         S2           S3         FS           £(f):         **	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         ¥I           %3         FS           £(f):         f>50k	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           #Peak         Log           10         dB/           0ffst         11.5           dB         DI           8.0         dBm           LgAv         ¥I           %3         FS           £(f):         f>50k	Spectral	24:17 No Density, H	ov 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444 - 	488 5 GHz 9.09 dBm
₩         A           Power         Ref 20           Ref 20         10           dB/         0ffst           11.5         dB           DI         8.0           dBm         LgAv           W1         S2           S3         FS           £(f):         f>50k           Swp	Spectral dBm	24:17 No Density, H	by 13, 20 HT20 Mod At	IEEE 8 07 le Mid Ch ten 20 d	802.11n B	HT20		Cha R	<b>tin 1</b> T Mkr1	) 2.444	488 5 GHz 9.09 dBm



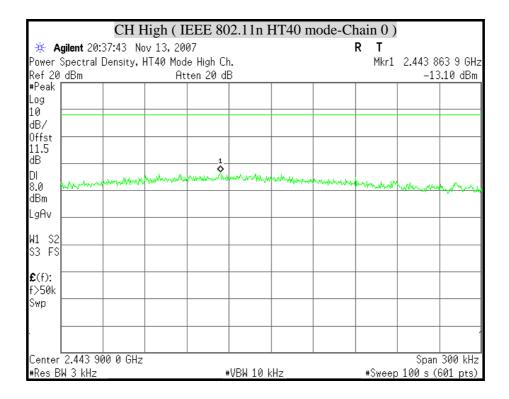
	(	CH H	igh ( I	EEE 80	2.11n H	HT20 n	node-Cł	nair	n1)		
* A	gilent 19:30:	59 Nov	/ 13, 20	07				R	Т		
Power S	- Spectral Den	sity, H	T20 Mod	e High Cł	ı.				Mkr1	2.460 7	38 7 GHz
Ref 20				ten 20 di						-8	3.13 dBm
#Peak											
Log											
10											
dB/											
0ffst 11.5							1				
dB							Š.				
DI	Muhahanahpanah	Marina	Marmonth	www.www.	and age way and a grant of the state of the	alm attended attended	and and address	WW	and the	mander	worthworth
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dBm											
LgAv											
-											
W1 S2											
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т∠з⊍к Swp											
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C	0.400.700.0	2 CU-									200 LU-
	2.460 700 (	0 GHZ			•VBW 10 k	11-		ш (			300 kHz
#rtes D	W 3 kHz 🔄			+	VDM IU K	.Π∠		_ #.	pweeb	TOOR	601 pts)_



# POWER SPECTRAL DENSITY ( IEEE 802.11n HT40 mode )

Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	Spectral 0 dBm			le Low Ch :ten 20 dl	B		F		2.436 0 -12	48 5 GHz 2.81 dBm
Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	Spectral 0 dBm	Density,	HT40 Moc At	le Low Ch :ten 20 dl	B			Mkr1		
Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	) dBm		At	ten 20 dl	B				-12	2.81 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				1					
10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2					1					
dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2		www.ww			1					
Offst 11.5 dB DI 8.0 dBm LgAv W1 S2		www.ww			1					
11.5 dB DI 8.0 dBm LgAv W1 S2	, date with the				1					
DI 8.0 dBm LgAv W1 S2	Alahanna	and an all			1 1		I			
8.0 dBm LgAv W1 S2	alah menangkan sebelah seb	motor war	La series de la							
dBm LgAv W1 S2	Acord and an a	and the second	the Arthon make	And wet WW	mound	mangen	mon the set	mynn	Martine	
LgAv W1 S2										A NUMBER OF STREET
W1 S2										
	2									
S3 FS										
£(f): €\EQL										
f>50k Swp										
μν										
Center	2.436 0	50 0 GHz	:		1		I		Span	300 kHz
	3W 3 kHz			+	∗VBW 10 k	Hz		#Sweep	100 s (	
		CH M	liddle (	IEEE 8	302.11n	HT40 r				
* A	gilent 20:					111 10 1	node-C	hain 0	)	
			ov 13.20	07		111 101	node-C F		)	
Ref 20		Density,						τ (	) 2.431 3	63 5 GHz
		Density,	HT40 Moc					τ (	2.431 3	63 5 GHz ).20 dBm
#Peak		Density,	HT40 Moc	le Mid Ch.				τ (	2.431 3	
Log		Density,	HT40 Moc	le Mid Ch.				τ (	2.431 3	
Log 10		Density,	HT40 Moc	le Mid Ch.				τ (	2.431 3	
Log		Density,	HT40 Moc	le Mid Ch.				τ (	2.431 3	
Log 10 dB/ Offst 11.5		Density,	HT40 Moc	le Mid Ch.		1		τ (	2.431 3	
Log 10 dB/ Offst 11.5 dB		Density,	HT40 Moc	le Mid Ch.			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI	) dBm		HT40 Moc At	le Mid Ch.				₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0			HT40 Moc	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv %3 FS	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f):	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 \$2 \$3 F\$ £(f): f>50k	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f):	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 \$2 \$3 F\$ £(f): f>50k	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 \$2 \$3 F\$ £(f): f>50k	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 \$2 \$3 F\$ \$3 F\$ \$3 F\$	) dBm		HT40 Moc At	le Mid Ch. :ten 20 dl			F	₹ T Mkr1	2.431 3 -10	).20 dBm
Log 10		Density,	HT40 Moc	le Mid Ch.				? Т	2.431 3	



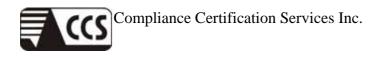


E

		CH Lo	ow ( IE	EE 80	2.11n ]	HT40 1	node-(	Ch	ain 1	)	
ж А	gilent 19:	42:32 No	ov 13, 20	07				R	т		
Power	Spectral	Density, I	HT40 Mod	e Low Ch					Mkr1		03 0 GHz
Ref 20			At	ten 20 d	B					-13	2.25 dBm
#Peak Log											
10 10											
dB/											
Offst								-			
11.5 dB						1					
DI				A	here and	Anna Annata	MUMUMUNU NA	a.d.		•	
8.0	handerland	h-web.when.wh	www.	anna a	Maximum a	THE REAL PROPERTY.	www	ļ,	TV SPYTHIN	where where	and a special state of the spe
dBm											
LgAv								-			
W1 S2											
MI 52 S3 FS								-			<u> </u>
<b>£</b> (f):											
f>50k											
Swp											
								-			
•											1
Center	2.427 9	00 0 GHz								Span	300 kHz
	3W 3 kHz			+	•VBW 10 W	KHz		#	Sweep		601 pts)_
		CH M	iddle (	IEEE 8	302.11n	HT40	mode-C	Cha	ain 1		
* A	gilent 19:		i <b>ddle (</b> ov 13, 20		302.11n	HT40		Cha R	uin 1 T		
		58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		HT40			Т	)	364 0 GHz
Power Ref 20	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07		HT40			Т	) 2.431 3	364 0 GHz 2.09 dBm
Power Ref 20 #Peak	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		HT40			Т	) 2.431 3	
Power Ref 20 #Peak Log	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		HT40			Т	) 2.431 3	
Power Ref 20 #Peak	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		HT40			Т	) 2.431 3	
Power Ref 20 #Peak Log 10 dB/ Offst	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		HT40			Т	) 2.431 3	
Power Ref 20 #Peak Log 10 dB/ Offst 11.5	Spectral dBm	58:45 No	ov 13, 20 HT40 Mod	07 e Mid Ch.		1			Т	) 2.431 3	
Power Ref 20 #Peak Log 10 dB/ dB/ 0ffst 11.5 dB	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ 0ffst 11.5 dB DI 8.0	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ 0ffst 11.5 dB DI 8.0	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 *Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f):	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 *Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 *Peak Log dB/ Offst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f):	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 *Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 *Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k	Spectral	58:45 No Density, I	ov 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 	2.09 dBm
Power Ref 20 #Peak Log 10 dB/ 0ffst 11.5 dB DI 8.0 dBm LgAv W1 S2 S3 FS £(f): f>50k Swp	Spectral	58:45 No Density, I	0v 13, 20 HT40 Mod At	07 e Mid Ch. ten 20 dl	B	1		R	T Mkr1	) 2.431 3 -17	2.09 dBm



		CH H	ligh ( Il	EEE 80	2.11n H	HT40 n	node-Cl	hai	n 1 )		
₩ A	gilent 20:0	)5:56 No	v 13,200	07				R	Т		
Power S	Spectral E	Density, H	IT40 Mod	e High Cł	ı.				Mkr1	2.447 6	13 5 GHz
Ref 20	dBm		At	ten 20 dE	3					-12	2.19 dBm
#Peak											
Log											
10											
dB/											
0ffst 11.5											
JD DL						1					
DI					144.55	u Å.					
8.0	muhan	4 Marsh	Marriansant	ypervision/n	C.W. Warden	adrim Andria	an sugar	free all	White	markenarch	mon
dBm											
LgAv											
W1 S2											
S3 FS											
<b>£</b> (f):											
f>50k											
Swp											
Center	2.447 60	10 0 GHz								Span	300 kHz
#Res Bl	W 3 kHz			#	•VBW 10 k	:Hz		#	Sweep	o 100 s (M	601 pts)_



# **8.5 CONDUCTED SPURIOUS EMISSION**

## **LIMITS**

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. 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 § 15.205(c)).

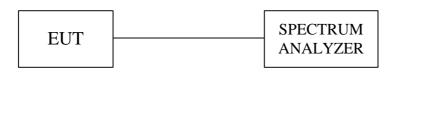
### TEST PROCEDURE

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

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 5.8 GHz band.

#### TEST SETUP

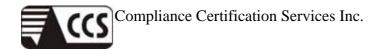


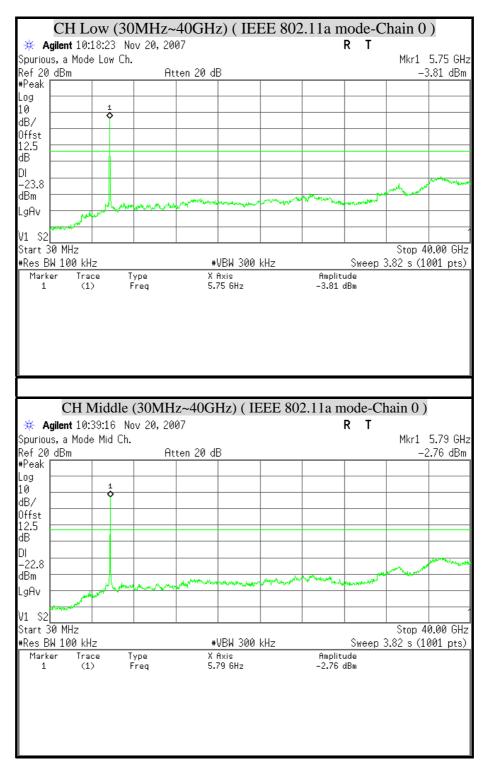
Combine	u mode	 -	
EUT	Chaino 0 – Chaino 1 –		SPECTRUM ANALYZER

## TEST RESULTS

No non-compliance noted

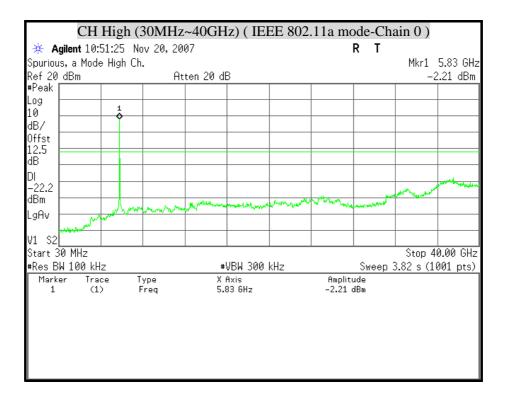
Combined mode

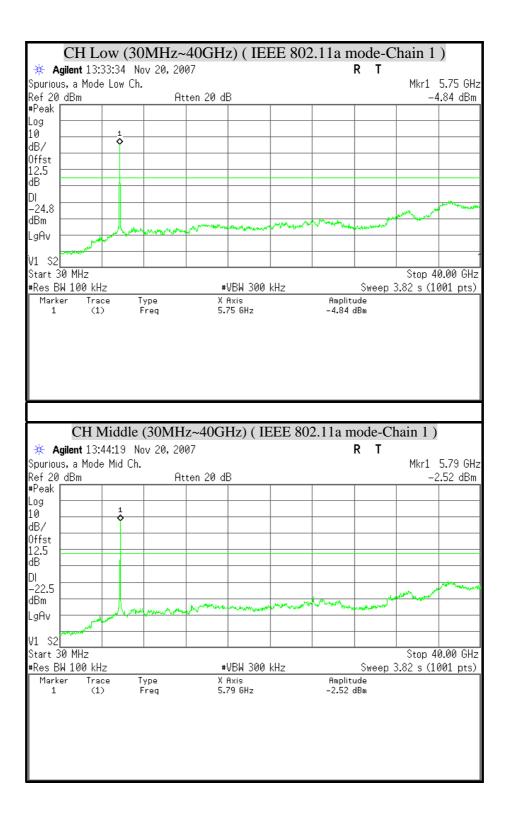




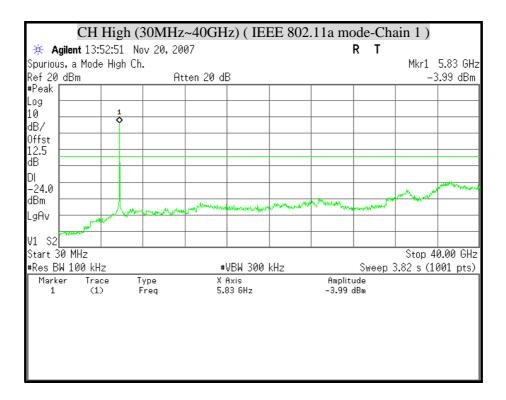
#### ( IEEE 802.11a mode)

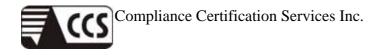




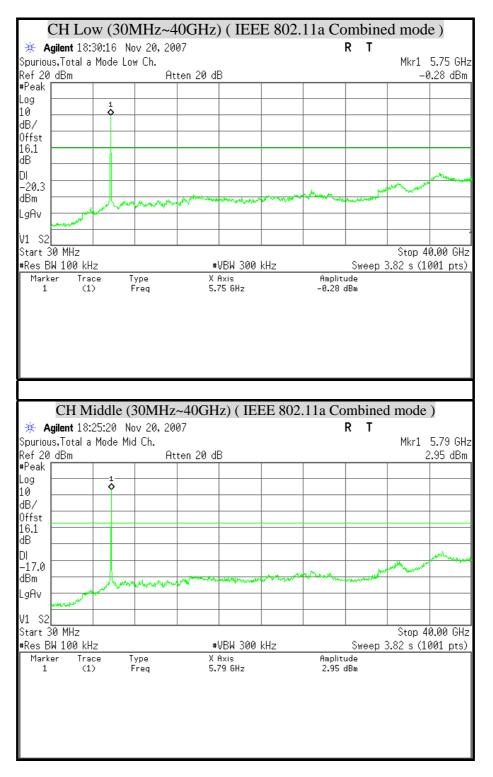


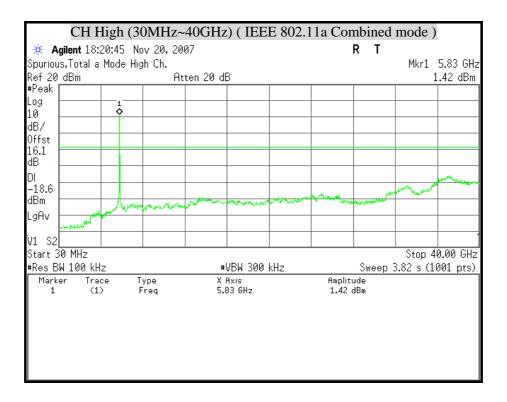


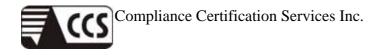


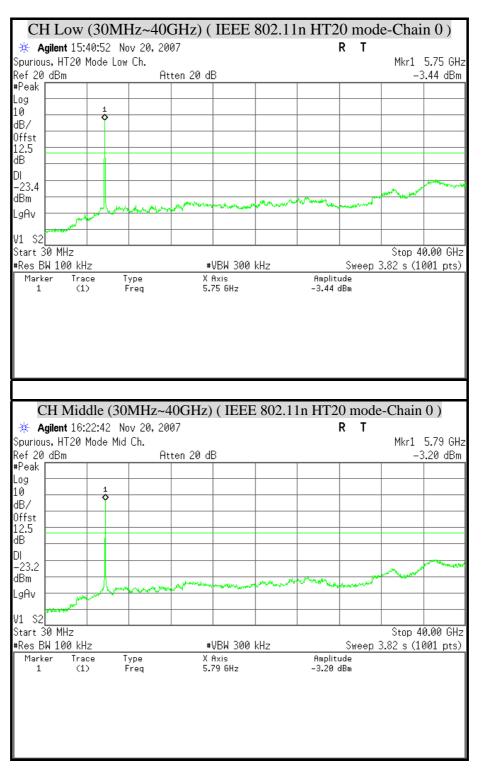


#### (IEEE 802.11a Combined mode)



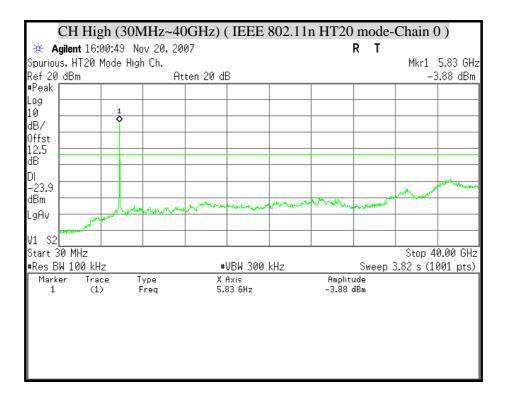


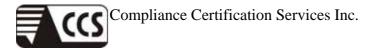


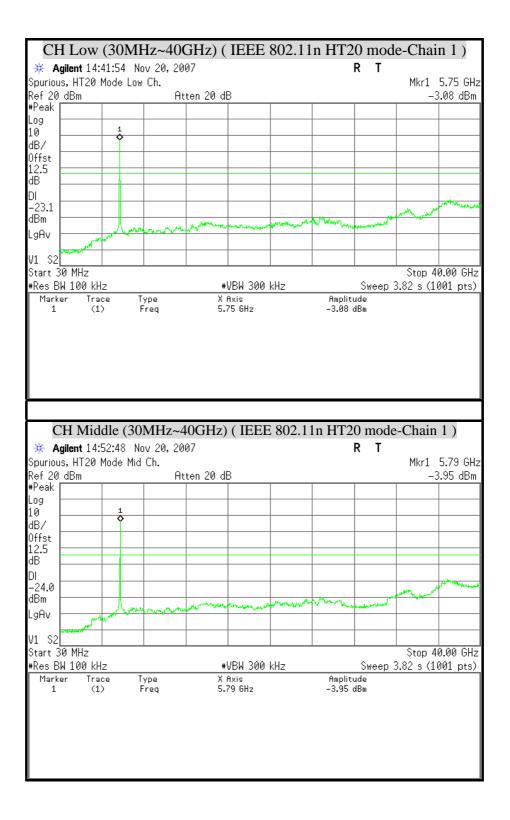


#### ( IEEE 802.11n HT20 mode )

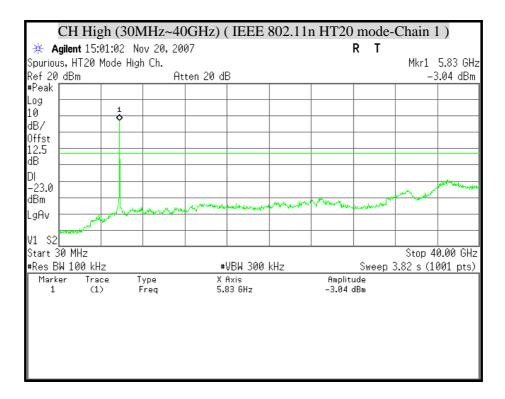


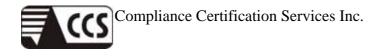




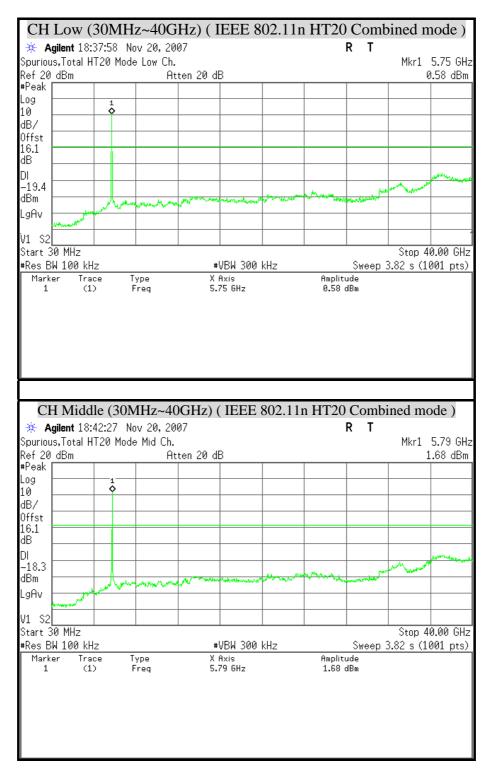


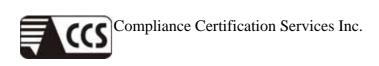


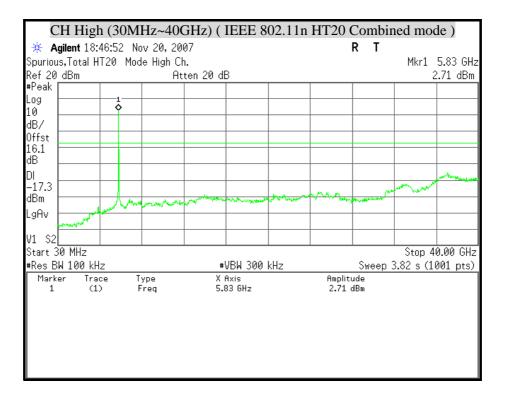


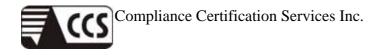


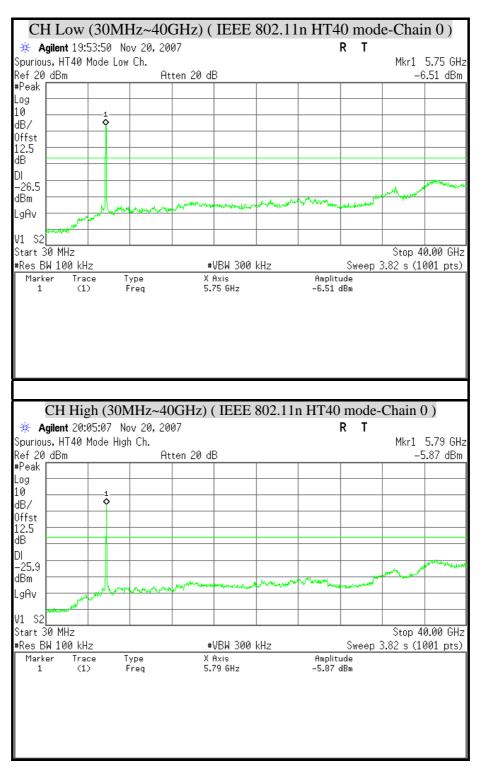
#### (IEEE 802.11n HT20 Combined mode)



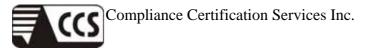


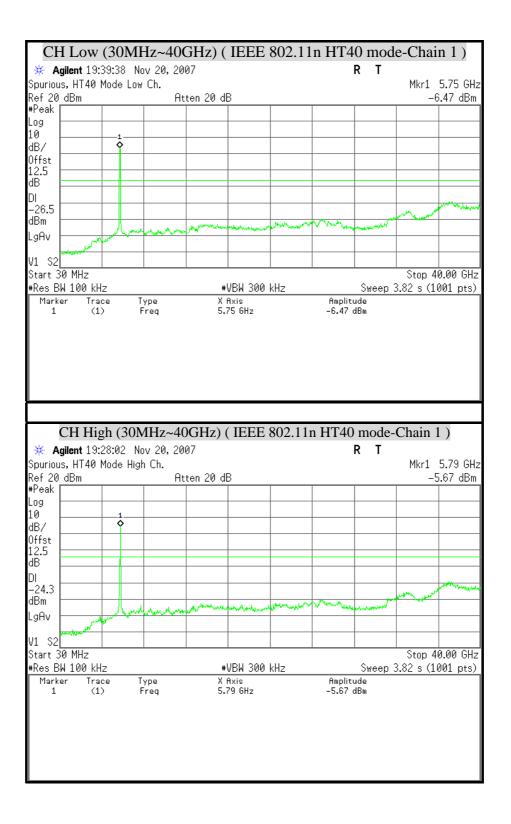


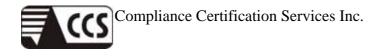




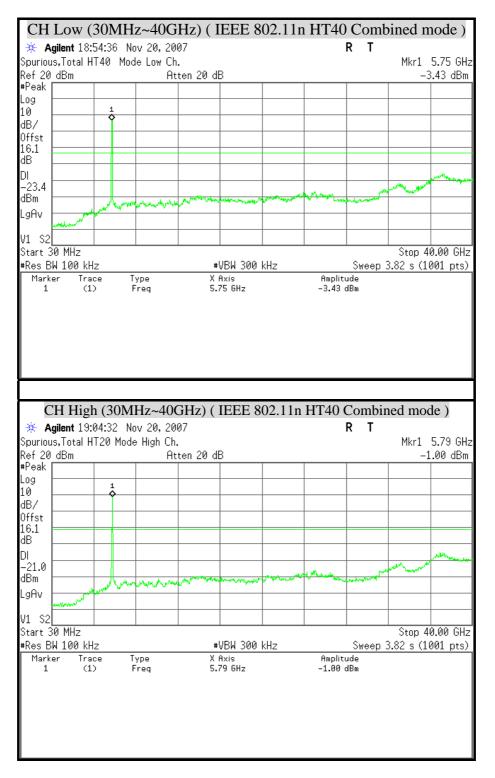
#### (IEEE 802.11n HT40 mode)

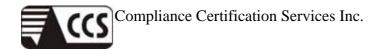


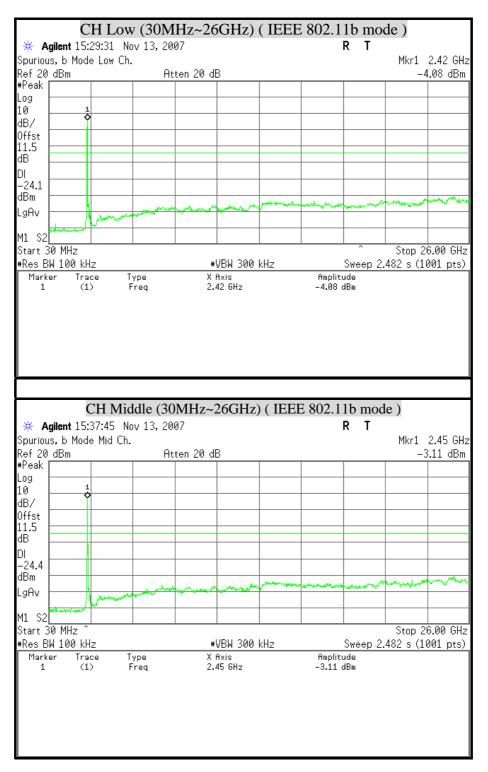




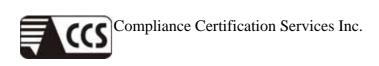
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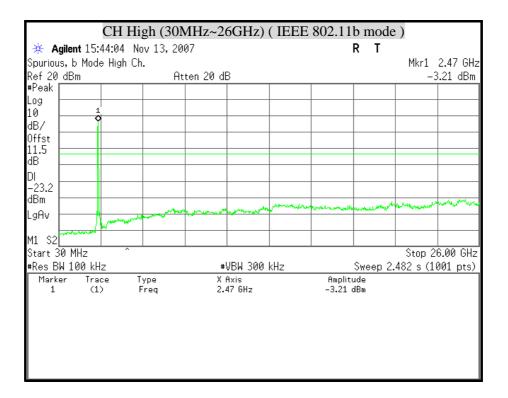


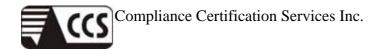




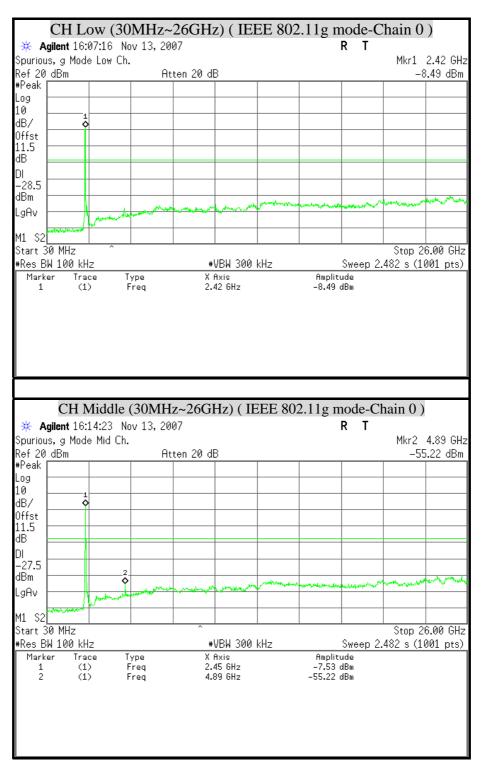
#### ( IEEE 802.11b mode)





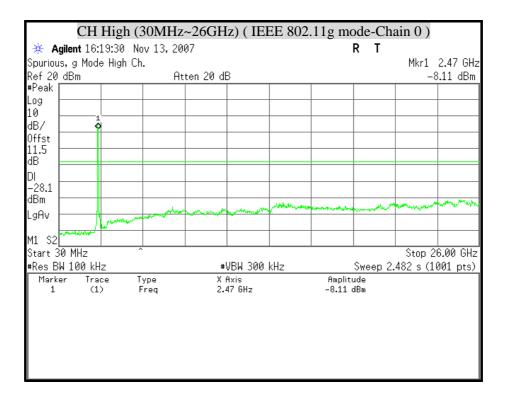


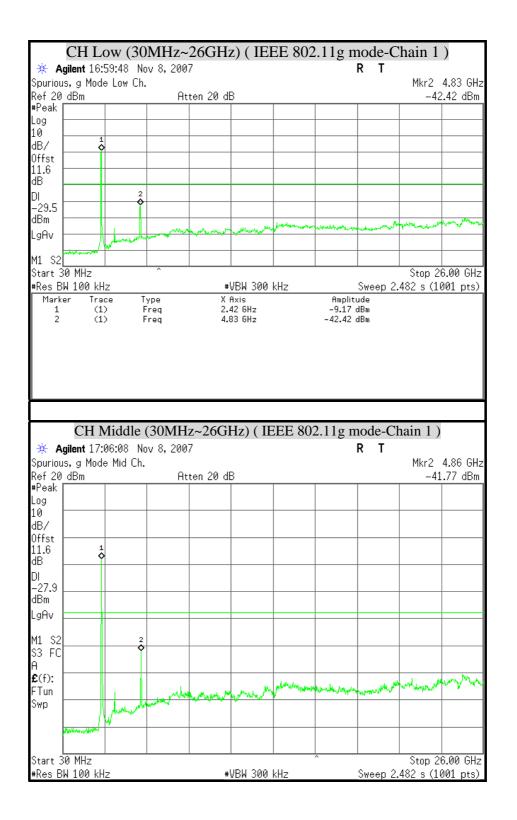
### **OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT**



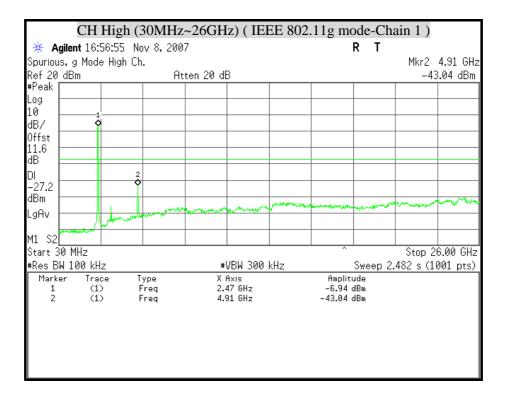
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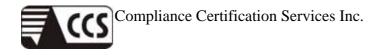






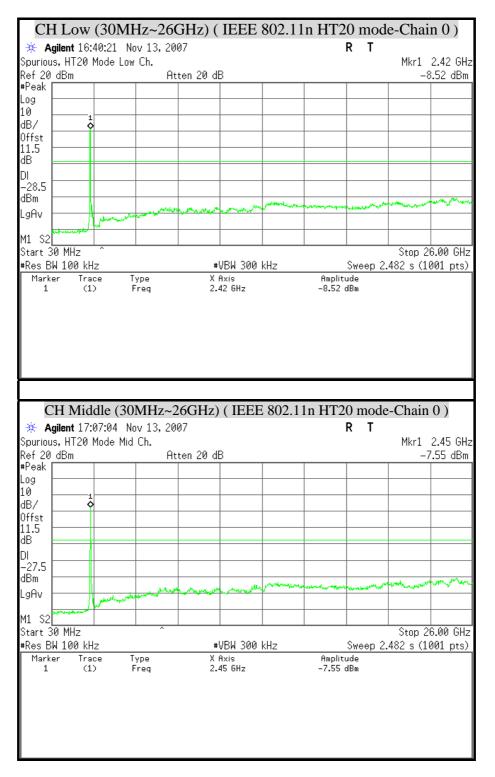




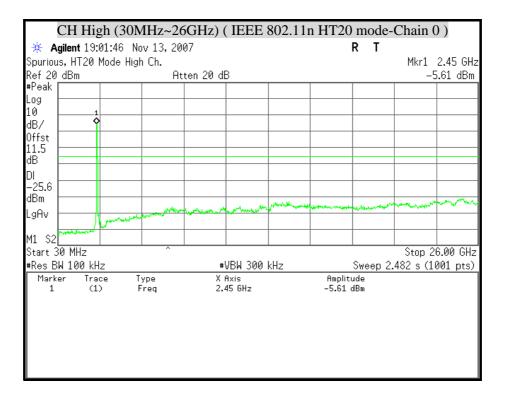


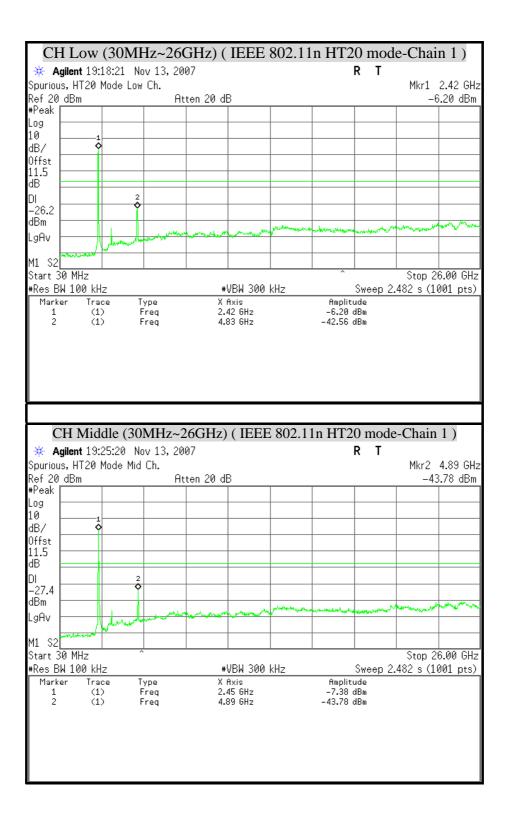
### **OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT**

#### ( IEEE 802.11n HT20 mode )

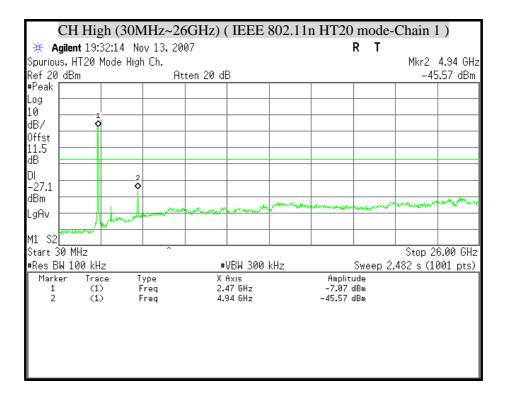


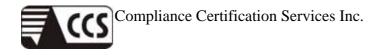






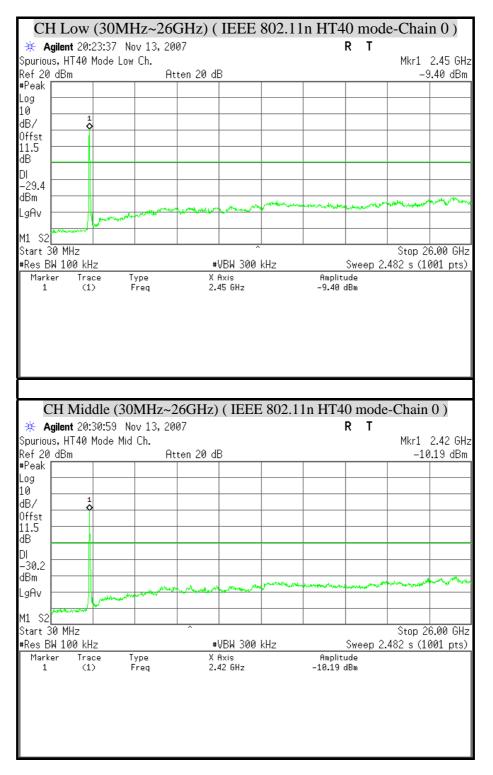




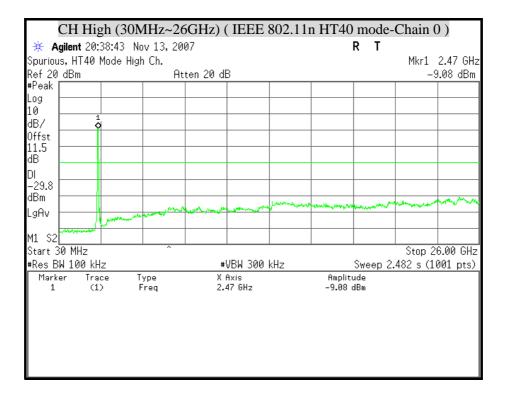


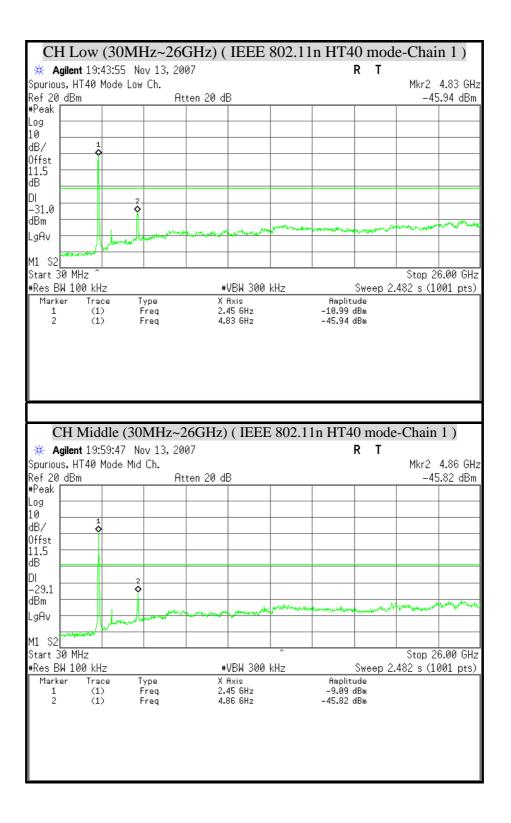
### **OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT**

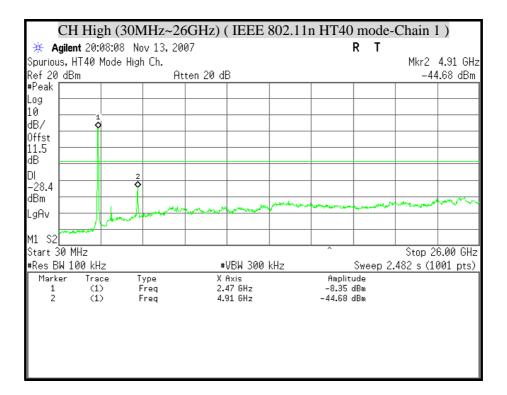
### ( IEEE 802.11n HT40 mode )

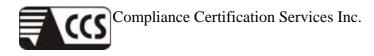












## **8.6 RADIATED EMISSIONS**

## **8.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS**

### **LIMITS**

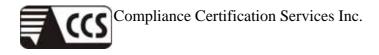
§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 -1710	10.6 -12.7
6.26775 - 6.26825	108 -121.94	1718.8 - 1722.2	13.25 -13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 – 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 -16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

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

<sup>2</sup> Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown is Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



§ 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 (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

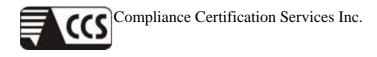
\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz, However, operation within these frequency bands is permitted under other sections of this Part, e-g, Sections 15.231 and 15.241.

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

### TEST EQUIPMENT

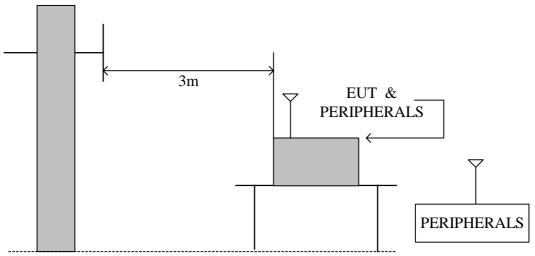
The following test equipment is utilized in making the measurements contained in this report.

Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
CHASE BILOG ANTENNA	CBL6112B	2817	October 18, 2007	1 Year	FINAL
R/S SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007	1 Year	FINAL
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007	1 Year	FINAL
R/S EMI TEST RECEIVER	ESCS30	835418/008	October 16, 2007	1 Year	FINAL
OPEN SITE		No.2	May 07, 2007	1 Year	FINAL
MIYAZAKI N TYPE COAXIAL CABLE	8D-FB	02	May 16, 2007	1 Year	FINAL
Horn Antenna	AH-118	10089	October 18, 2007	1 Year	FINAL
Horn Antenna	AH-840	03077	February 25, 2007	1 Year	FINAL
Agilent Pre-amplifier	8449B	3008A01471	December 25, 2006	1 Year	FINAL
HP Amplifier	8447D	1937A02748	December 25, 2006	1 Year	FINAL
HP High pass filter	84300/80038	002	CAL. ON USE	1 Year	FINAL
HP High pass filter	84300/80039	003	CAL. ON USE	1 Year	FINAL
Loop Antenna ETS-LINDGREN	6502	2356	June 15, 2007	1 Year	FINAL



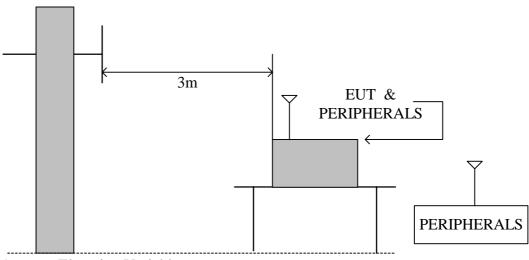
## TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.

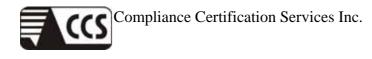


Antenna Elevation Variable

The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



Antenna Elevation Variable



### TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. White measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 1 meters away from the interference-receiving antenna
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note :

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

### TEST RESULTS

No non-compliance noted

# 8.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/21
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	Normal operating	<b>TEMP &amp; Humidity</b>	23°C, 50%

	Hor	izontal polarit	У		
Reading (dBµV)	Correction Factor (dB/m)	Result (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Mark (P/Q/A)
51.29	-14.13	37.16	43.50	-6.34	Р
52.66	-14.04	38.62	46.00	-7.38	Р
52.98	-13.04	39.94	46.00	-6.06	Р
50.84	-11.86	38.98	46.00	-7.02	Р
46.81	-10.77	36.04	46.00	-9.96	Р
40.35	-5.15	35.20	46.00	-10.80	Р
41.03	-2.06	38.97	54.00	-15.03	Р
	Ve	ertical polarity			
Reading (dBµV)	Correction Factor (dB/m)	Result (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Mark (P/Q/A)
47.03	-15.04	31.99	46.00	-14.01	Р
42.94	-13.06	29.87	46.00	-16.13	Р
42.49	-11.88	30.61	46.00	-15.39	Р
l					
	(dBμV)         51.29         52.66         52.98         50.84         46.81         40.35         41.03         Reading (dBμV)         47.03         42.94	$\begin{array}{c} \mbox{Reading} \\ (dB\mu V) \end{array} & \begin{array}{c} \mbox{Correction} \\ \mbox{Factor} \\ (dB/m) \end{array} \\ \hline 51.29 & -14.13 \\ \hline 52.98 & -13.04 \\ \hline 52.98 & -13.04 \\ \hline 50.84 & -11.86 \\ \hline 46.81 & -10.77 \\ \hline 40.35 & -5.15 \\ \hline 41.03 & -2.06 \end{array} \\ \hline \\$	Reading (dB $\mu$ V)Correction Factor (dB/m)Result (dB $\mu$ V/m)51.29-14.1337.1652.66-14.0438.6252.98-13.0439.9450.84-11.8638.9846.81-10.7736.0440.35-5.1535.2041.03-2.0638.97Vertical polarityReading (dB $\mu$ V)Correction Factor (dB/m)47.03-15.0431.9942.94-13.0629.87	Reading (dB $\mu$ V)Factor (dB/m)Result (dB $\mu$ V/m)Limits (dB $\mu$ V/m)51.29-14.1337.1643.5052.66-14.0438.6246.0052.98-13.0439.9446.0050.84-11.8638.9846.0040.35-5.1535.2046.0041.03-2.0638.9754.00Vertical polarityReading (dB $\mu$ V)Correction Factor (dB/m)Result (dB $\mu$ V/m)Limits (dB $\mu$ V/m)47.03-15.0431.9946.0042.94-13.0629.8746.00	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

(MHz)	(dBµV)	Factor (dB/m)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A
233.70	47.03	-15.04	31.99	46.00	-14.01	Р
298.69	42.94	-13.06	29.87	46.00	-16.13	Р
364.65	42.49	-11.88	30.61	46.00	-15.39	Р
433.52	49.96	-10.77	39.19	46.00	-6.81	Р
497.54	45.73	-9.94	35.79	46.00	-10.21	Р
533.43	43.85	-9.31	34.55	46.00	-11.45	Р
566.41	41.46	-8.63	32.83	46.00	-13.17	Р
796.30	38.79	-4.28	34.52	46.00	-11.48	Р

#### Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.

2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.

3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.

4. 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) – Quasi-peak limit (dBuV/m).

# 8.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

<b>Product Name</b>	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH Low)	TEMP & Humidity	23°C, 51%

	Horizontal polarity										
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)		
1500.00	53.14		-13.81	39.33		74.00	54.00	-14.67	Р		
1735.00	51.44		-13.05	38.39		74.00	54.00	-15.61	Р		
3830.00	47.77		-6.17	41.60		74.00	54.00	-12.40	Р		
11496.00	52.11	41.23	7.55	59.66	48.78	74.00	54.00	-5.22	А		
			Ι	ertical po	larity	-	-				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)		
1500.00	57.08		-13.81	43.27		74.00	54.00	-10.73	Р		
2500.00	52.09		-8.30	43.78		74.00	54.00	-10.22	Р		
11496.00	53.21	42.88	7.55	60.76	50.43	74.00	54.00	-3.57	А		

#### Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.

3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.

4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH Middle)	<b>TEMP &amp; Humidity</b>	23°C, 51%

	Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)	
3180.00	57.05		-7.44	49.61		74.00	54.00	-4.39	Р	
11568.00	51.28	40.28	7.54	58.82	47.82	74.00	54.00	-6.18	А	
			V	/ertical po	larity					
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)	
3885.00	55.64		-6.07	49.57		74.00	54.00	-4.43	Р	
11568.00	54.48	43.37	7.54	62.02	50.91	74.00	54.00	-3.09	А	

- 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) = Mark result (dBuV/m) –Average limit (dBuV/m).

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

	Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)	
3260.00	56.88		-7.27	49.62		74.00	54.00	-4.38	Р	
11652.00	51.25	40.28	7.50	58.75	47.78	74.00	54.00	-6.22	А	
			V	/ertical po	larity					
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)	
1815.00	58.81		-12.79	46.03		74.00	54.00	-7.97	Р	
11652.00	56.65	45.32	7.50	64.15	52.82	74.00	54.00	-1.18	А	

- 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) = Result(dBuV/m) -Average limit(dBuV/m)..

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			He	orizontal p	olarity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3170.00	56.72		-7.46	49.26		74.00	54.00	-4.74	Р
11496.00	48.54	39.55	7.55	56.09	47.10	74.00	54.00	-6.90	А
			١	Vertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3125.00	56.86		-7.55	49.30		74.00	54.00	-4.70	Р
11496.00	50.33	43.28	7.55	57.88	50.83	74.00	54.00	-3.17	А
17232.00	44.24	34.28	15.71	59.95	49.99	74.00	54.00	-4.01	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Ho	orizontal p	olarity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3315.00	56.76		-7.15	49.62		74.00	54.00	-4.38	Р
11568.00	49.21	40.25	7.54	56.75	47.79	74.00	54.00	-6.21	А
			V	/ertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4085.00	55.18		-5.58	49.60		74.00	54.00	-4.40	Р
11568.00	50.35	41.58	7.54	57.89	49.12	74.00	54.00	-4.88	А

- 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) = Result(dBuV/m) -Average limit(dBuV/m)..

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Но	orizontal p	olarity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
2725.00	57.27		-8.09	49.19		74.00	54.00	-4.81	Р
11652.00	48.11	37.15	7.50	55.61	44.65	74.00	54.00	-9.35	А
17340.00	45.21	34.11	15.75	60.96	49.86	74.00	54.00	-4.14	А
			١	/ertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4695.00	54.64		-3.63	51.01		74.00	54.00	-2.99	Р
11652.00	51.05	42.11	7.50	58.55	49.61	74.00	54.00	-4.39	А
17472.00	47.22	35.11	15.80	63.02	50.91	74.00	54.00	-3.09	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Но	prizontal p	olarity				Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)									
3375.00	57.23		-7.02	50.21		74.00	54.00	-3.79	Р									
11508.00	53.15	40.25	7.56	60.71	47.81	74.00	54.00	-6.19	А									
			V	/ertical po	larity													
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)									
11508.00	54.92	41.25	7.56	62.48	48.81	74.00	54.00	-5.19	А									

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Но	orizontal p	olarity	-			
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
2585.00	57.16		-8.22	48.94		74.00	54.00	-5.06	Р
11628.00	42.12		7.51	49.63		74.00	54.00	-4.37	Р
			V	/ertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
11628.00	55.35	42.88	7.51	62.86	50.39	74.00	54.00	-3.61	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP & Humidity	23°C, 51%

	Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)	
1629.00	53.47		-13.39	40.08		74.00	54.00	-13.92	Р	
1629.00	53.47		-13.39	40.08		74.00	54.00	-13.92		

	Vertical polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)		Margin (dB)	Mark (P/Q/A)			
1595.00	59.98		-13.50	46.48		74.00	54.00	-7.52	Р			

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH Middle)	<b>TEMP &amp; Humidity</b>	23°C, 51%

Horizontal polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)		
1595.00	56.58		-13.50	43.08		74.00	54.00	-10.92	Р		
	1	1		Į							

	Vertical polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)			
1595.00	59.28		-13.50	45.77		74.00	54.00	-8.23	Р			

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

	Horizontal polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)		Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)			
4842.00	49.79		-3.23	46.56		74.00	54.00	-7.44	Р			

	Vertical polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)			
1595.00	58.52		-13.50	45.02		74.00	54.00	-8.98	Р			

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH Low)	<b>TEMP &amp; Humidity</b>	23°C, 51%

	Horizontal polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)			
4825.00	70.57	54.91	-3.27	67.30	51.64	74.00	54.00	-2.36	А			
		1						1				

	Vertical polarity											
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)			
1731.00	56.43		-13.06	43.37		74.00	54.00	-10.63	Р			
4808.00	69.10	54.94	-3.32	65.78	51.62	74.00	54.00	-2.38	А			

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH Middle)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Но	orizontal p	olarity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	59.06		-13.50	45.56		74.00	54.00	-8.44	Р
4876.00	71.51	56.18	-3.13	68.38	53.05	74.00	54.00	-0.95	А
			V	/ertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1612.00	54.79		-13.45	41.35		74.00	54.00	-12.65	Р
4876.00	65.36	49.39	-3.13	62.23	46.26	74.00	54.00	-7.74	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

			Но	prizontal p	olarity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4910.00	69.63	49.67	-3.04	66.59	46.63	74.00	54.00	-7.37	А
			V	vertical po	larity				
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	60.82	0.00	-13.50	47.32	-13.50	74.00	54.00	-6.68	Р
4944.00	63.58	51.99	-2.95	60.63	49.04	74.00	54.00	-4.96	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	<b>TEMP &amp; Humidity</b>	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)
4825.00	70.70	55.87	-3.27	67.43	52.60	74.00	54.00	-1.40	А

	Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)	
1612.00	60.35		-13.45	46.90		74.00	54.00	-7.10	Р	
4825.00	68.91	53.18	-3.27	65.64	49.91	74.00	54.00	-4.09	А	

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.

<b>Product Name</b>	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	<b>TEMP &amp; Humidity</b>	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)		Margin (dB)	Mark (P/Q/A)
4876.00	70.96	55.71	-3.13	67.83	52.58	74.00	54.00	-1.42	Р

	Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)	
1629.00	59.23		-13.39	45.84		74.00	54.00	-8.16	Р	
4876.00	66.83	52.73	-3.13	63.70	49.60	74.00	54.00	-4.40	А	

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)
4927.00	65.13	48.22	-2.99	62.14	45.23	74.00	54.00	-8.77	А

	Vertical polarity								
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)
4927.00	62.12	44.46	-2.99	59.13	41.47	74.00	54.00	-12.53	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	<b>TEMP &amp; Humidity</b>	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)
4859.00	66.61	51.35	-3.18	63.43	48.17	74.00	54.00	-5.83	А

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)		Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	58.43		-13.39	45.04		74.00	54.00	-8.96	Р
4859.00	65.85	48.55	-3.18	62.67	45.37	74.00	54.00	-8.63	А

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.

<b>Product Name</b>	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	57.31		-13.39	43.92		74.00	54.00	-10.08	Р
4859.00	63.74	50.40	-3.18	60.56	47.22	74.00	54.00	-6.78	А
	Vertical polarity								
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	61.67		-13.50	48.16		74.00	54.00	-5.84	Р
4842.00	64.58	48.22	-3.23	61.35	44.99	74.00	54.00	-9.01	А

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.

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH High)	<b>TEMP &amp; Humidity</b>	23°C, 51%

	Horizontal polarity								
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)		Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4876.00	63.69	49.20	-3.13	60.56	46.07	74.00	54.00	-7.93	А

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)			Margin (dB)	Mark (P/Q/A)
4893.00	62.19	48.22	-3.09	59.10	45.13	74.00	54.00	-8.87	А

#### Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.

3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.

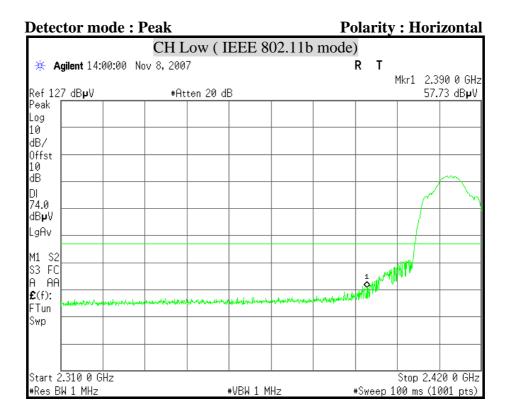
4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

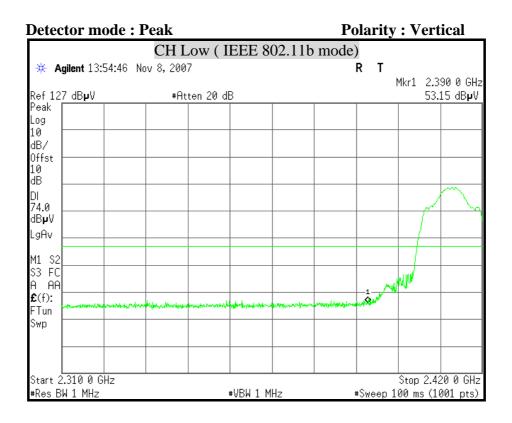
6. Margin(dB) = Result(dBuV/m) - Average limit(dBuV/m).

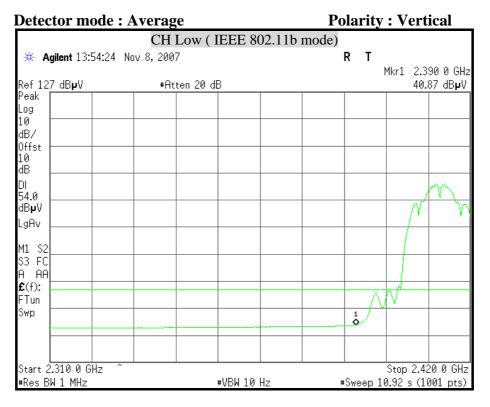


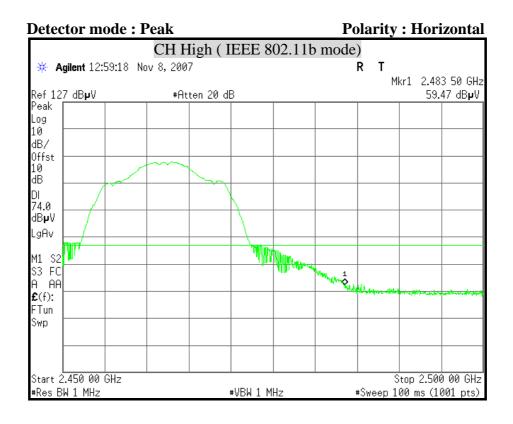
## 8.6.4 RESTRICTED BAND EDGES

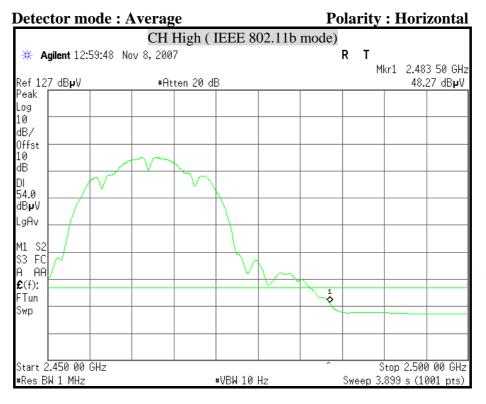


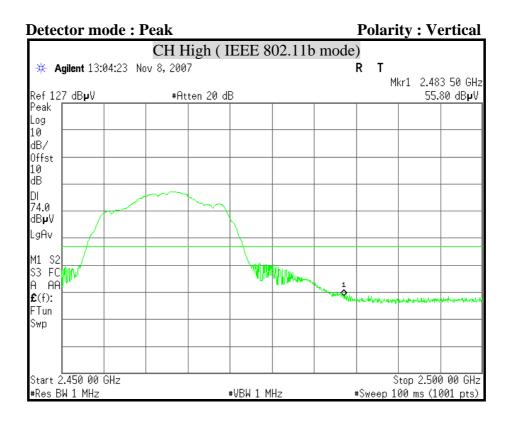
etector mode	e : Average	<b>Polarity : Horizontal</b>
	CH Low (IEEE 80	2.11b mode)
🔆 Agilent 14:00:2	4 Nov 8, 2007	RT
lef 127 dB <b>µ</b> V	#Atten 20 dB	Mkr1 2.390 0 GHz 42.42 dB <b>µ</b> V
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art 2.310 0 GHz	· · · · · · · · · · · · · · · · · · ·	Stop 2.420 0 GHz
es BW 1 MHz	#VBW 10 H	lz Sweep 8.577 s (1001 pts)

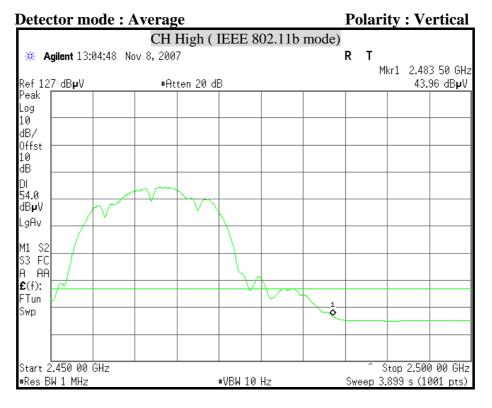


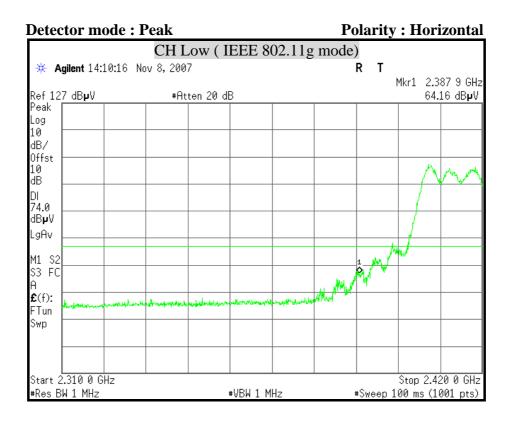


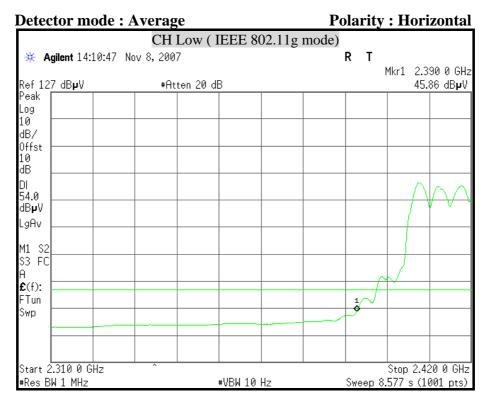


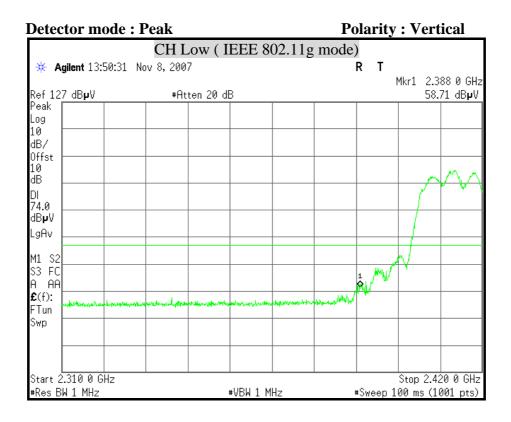


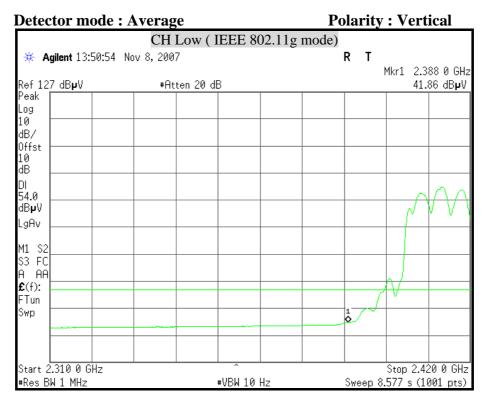


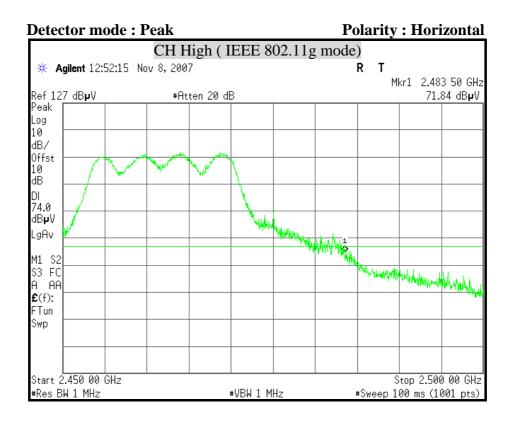


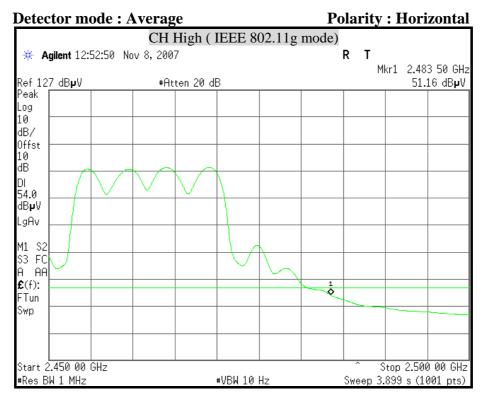


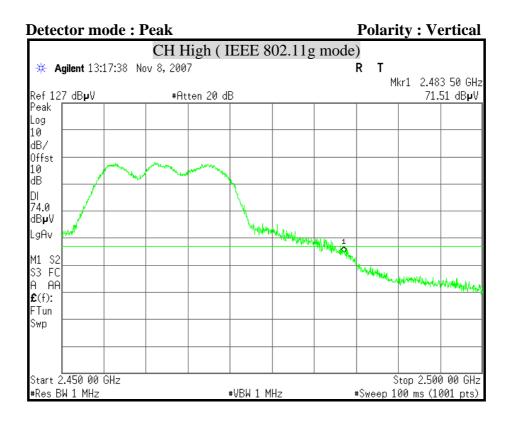


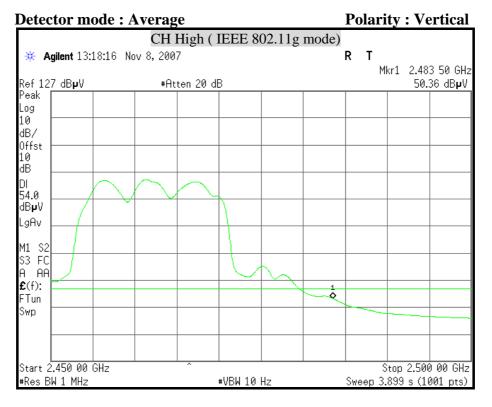


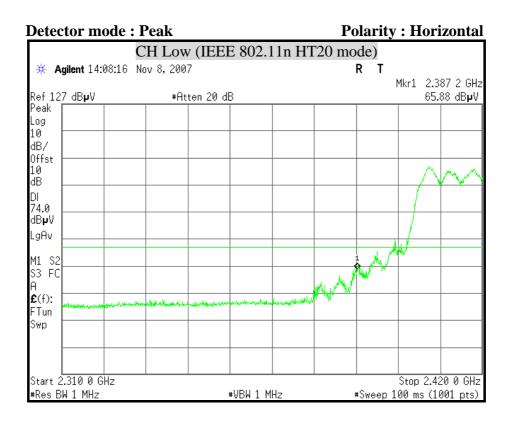


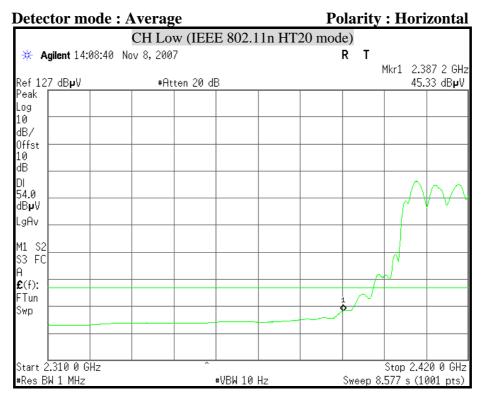


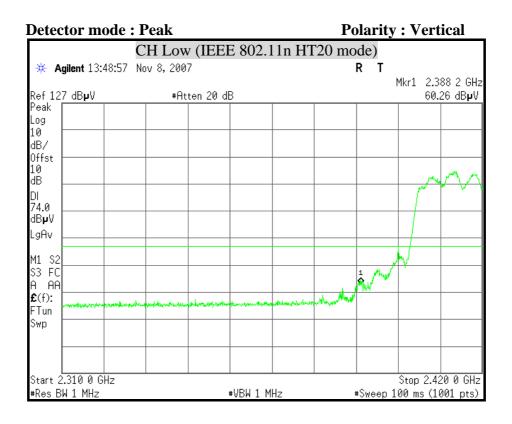


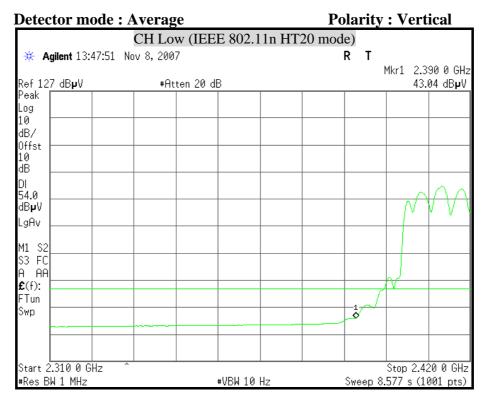


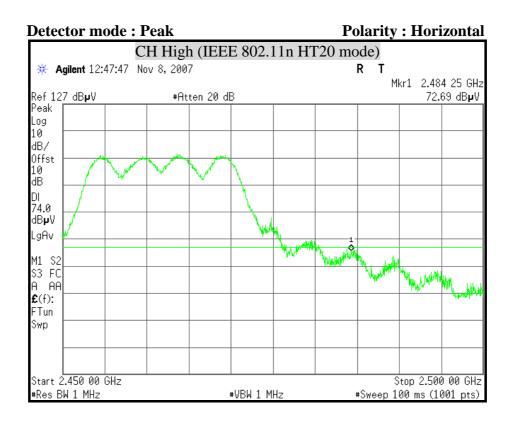


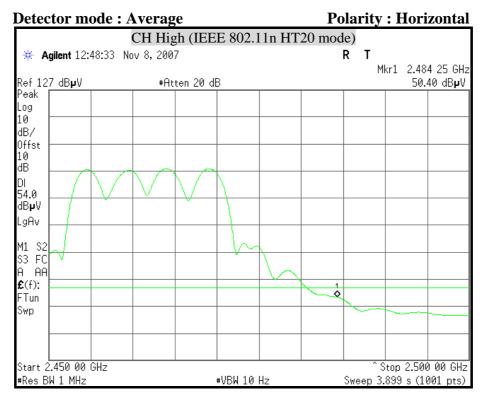


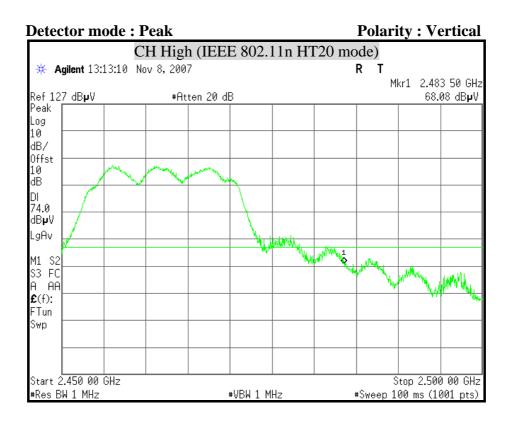


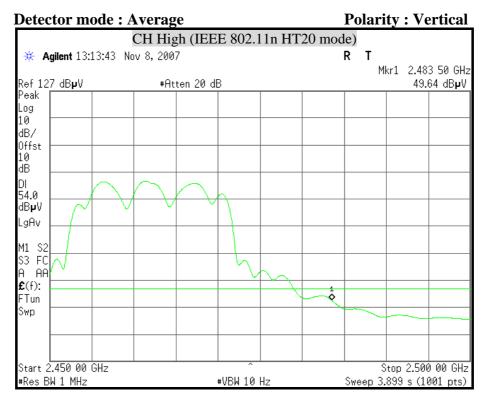


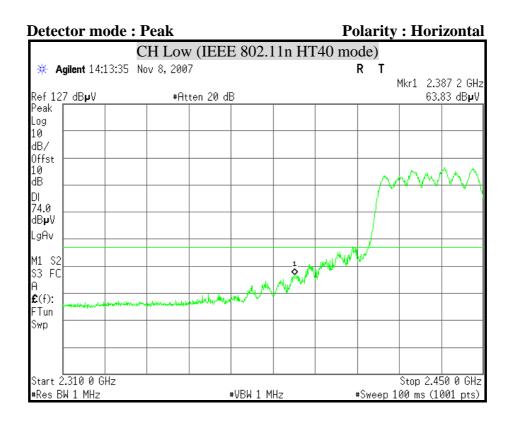


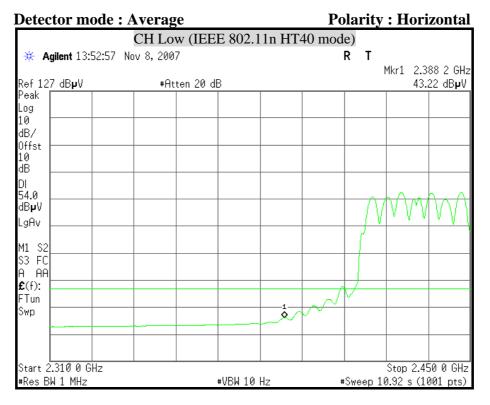


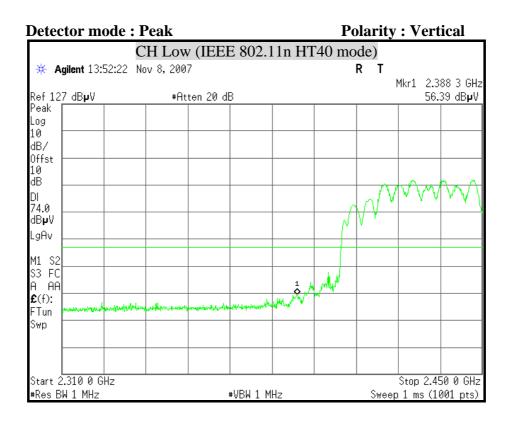


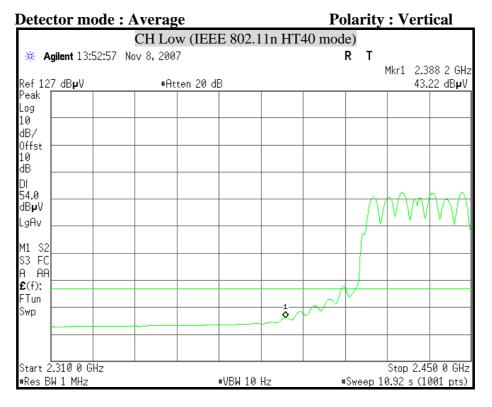


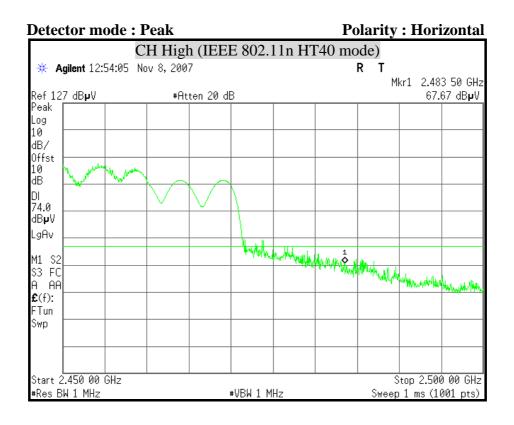


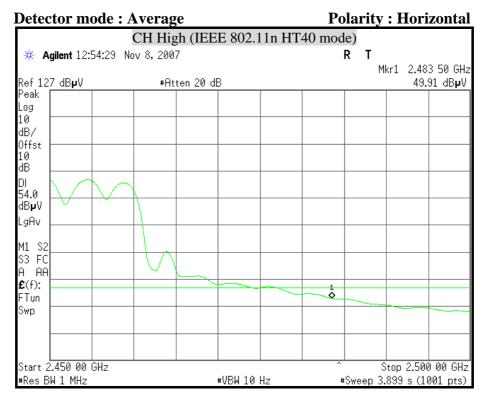


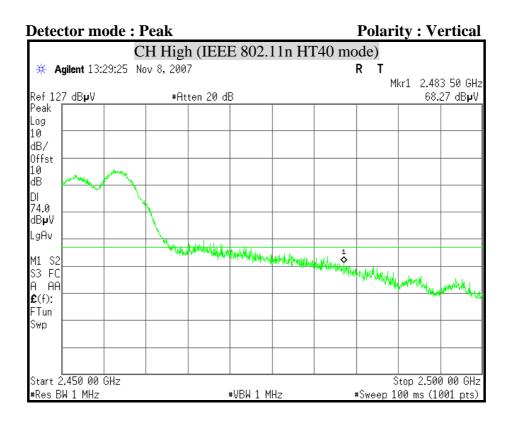


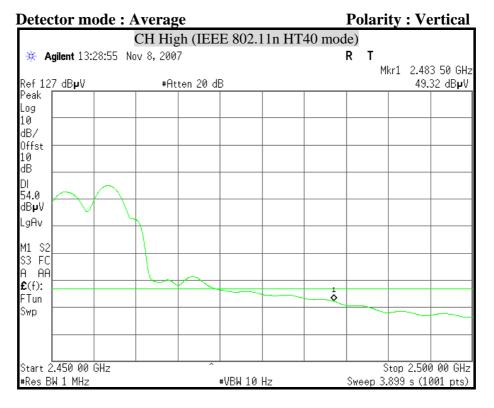












## 8.7 POWERLINE CONDUCTED EMISSIONS

### **LIMITS**

§ 15.207 (a) Except as shown in paragraph (b) and (c) 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.

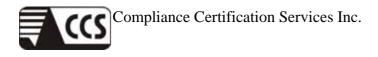
The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dBµv)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.5 - 5	56	46
5 - 30	60	50

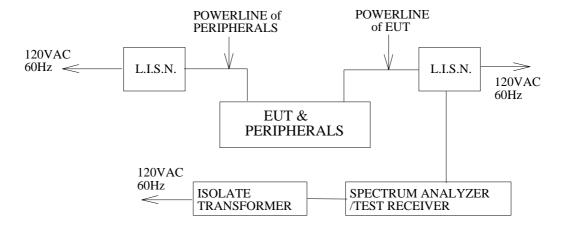
### TEST EQUIPMENT

The following test equipment is used during the conducted powerline tests :

Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
SCHWARZBECK L.I.S.N	NSLK 8127	8127-465	July 09, 2007	1 Year	FINAL
CHASE L.I.S.N	NNLK 8129	8129118	January 26, 2007	1 Year	FINAL
R & S TEST RECEIVER	ESHS30	838550/003	January 31, 2007	1 Year	FINAL
KEENE SHIELDED ROOM	5983	No.1	N/A	N/A	FINAL
R & S PULSE LIMIT	ESH3-Z2	10117	September 17, 2007	1 Year	FINAL
BELDEN N TYPE COAXIAL CABLE	8268 M17/164	003	September 14, 2007	1 Year	FINAL



### TEST SETUP



### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

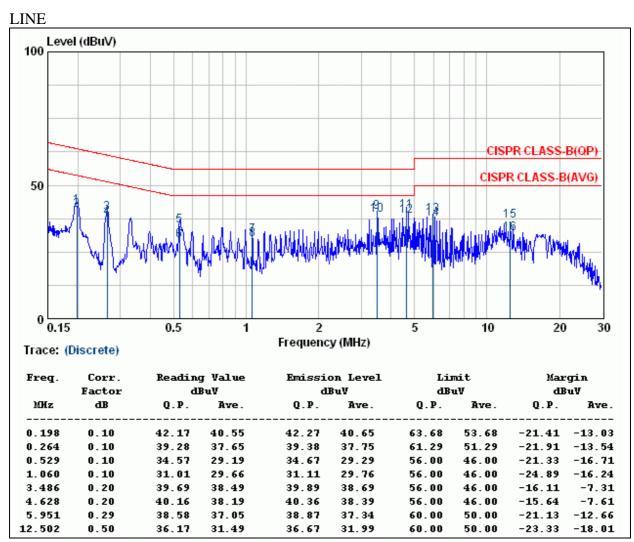
Line conducted data is recorded for both NEUTRAL and LINE.

#### TEST RESULTS

No non-compliance noted

#### CONDUCTED RF VOLTAGE MEASUREMENT

<b>Product Name</b>	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/12/03
Model	65-VE438-P2	Test By	Jason Chang
Test Mode	TX Mode	<b>TEMP &amp; Humidity</b>	24.5°C, 54%



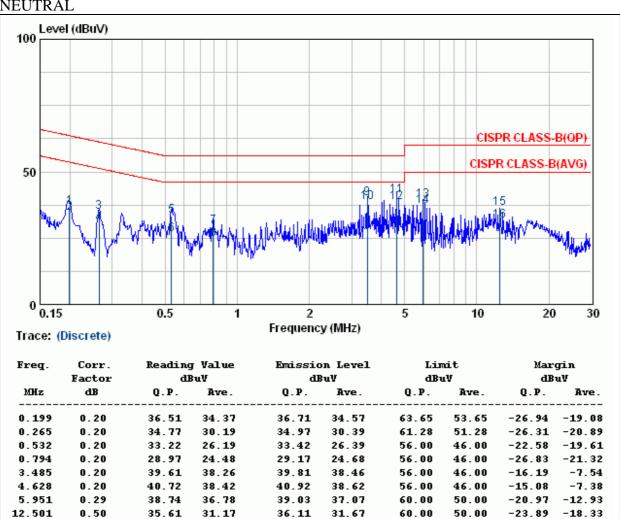
Remark:

1. Correction Factor = Insertion loss + cable loss

2. Margin value = Emission level – Limit value



Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/12/03
Model	65-VE438-P2	Test By	Jason Chang
Test Mode	TX Mode	<b>TEMP &amp; Humidity</b>	24.5°C, 54%

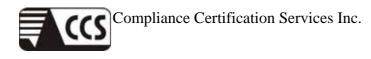


#### NEUTRAL

Remark:

1. Correction Factor = Insertion loss + cable loss

2. Margin value = Emission level – Limit value



# 9. ANTENNA REQUIREMENT

## 9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

## 9.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used for this product is Printed antenna. The peak Gain of this antenna is 1.51dBi at 2.4GHz.

The antenna used for this product is Printed antenna. The peak Gain of this antenna is 2.34dBi at 5 GHz