FCC Part 15C

Measurement and Test Report

For

AsiaRF Co., Ltd.

1F., No.2, Lane45, Shuiyuan Street., Yonghe Dist, New Taipei City 234, Taiwan

FCC ID: TKZAWUHN2408

Report Concerns: Equipment Type: Original Report Top Catcher CC Tactical Model: AWUHN2408 Report No.: STR12078215I-1 Test Date: 2012-07-20 to 2012-07-26 Issue Date: 2012-07-27 Tested By: Seven Song / Engineer Lahm Peng / EMC Manager Reviewed By: Approved & Authorized By: Jandy so / PSQ Manager Prepared By: SEM.Test Compliance Service Co., Ltd 3/F, Jinbao Commerce Building, Xin'an Fanshen Road,

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: <u>www.semtest.com.cn</u>

Bao'an District, Shenzhen, P.R.C. (518101)

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: AsiaRF Co., Ltd.

Address of applicant: 1F., No.2, Lane45, Shuiyuan Street., Yonghe Dist, New

Taipei City 234, Taiwan

Manufacturer: AsiaRF Co., Ltd.

Address of manufacturer: 1F., No.2, Lane45, Shuiyuan Street., Yonghe Dist, New

Taipei City 234, Taiwan

General Description of E.U.T

Items	Description
EUT Description:	Top Catcher CC Tactical
Trade Name:	AsiaRF
Model No.:	AWUHN2408
Add Model:	CC Tactical
Rated Voltage:	USB DC 5V
RF Output Power	Max. 20.66dBm (Conducted)
Frequency range:	802.11b/g/n-HT20: 2412MHz~2462MHz
	802.11n-HT40: 2422MHz~2452MHz
Number of channels:	802.11b/g/n-HT20: 11
	802.11n-HT40: 7
Channel Separation:	5MHz
Antenna Gain:	Antenna 1: 15 dBi
Type of Antenna:	Detachable Antenna

Note: The test data is gathered from a production sample, provided by the manufacture. The others models listed in the report have different appearance only of AWUHN2408 without circuit and electronic construction changed, declared by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the AsiaRF Co., Ltd. in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel, accordingly in reference to the Operating Instructions.

1.4 Test Facility

• FCC – Registration No.: 994117

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

• Industry Canada (IC) Registration No.: 7673A

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

• CNAS Registration No.: L4062

Shenzhen SEM. Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work, under the Windows XP terminal.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number	
Notebook	SAMSUNG	NP-R20	124V93FP30082V	

1.7 EUT Cable List and Details

Cable Description	Length (m)	Shielded/Unshielded	With Core/Without Core	
USB Cable	4.0	Shielded	With Core	

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.203; § 15.247(c)(1)(i)	Antenna Requirement	Compliant
§ 15.207	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	Power Output	Compliant
§ 15.209(a)(d)	Radiated Emission	Compliant
§ 15.247(d)	Band edge	Compliant

3. ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a detachable and unique antenna, fulfill the requirement of this section.

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4. POWER SPECTRAL DENSITY

4.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2012-03-28	2013-03-27
Attenuator	ATTEN	ATS100-4-20	/	2012-03-28	2013-03-27

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

4.3 Test Procedure

- 1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 3. Set the spectrum analyzer as RBW, VBW=3KHz, Span = 20MHz.
- 4. Repeat above procedures until all frequency measured was complete.

4.4 Environmental Conditions

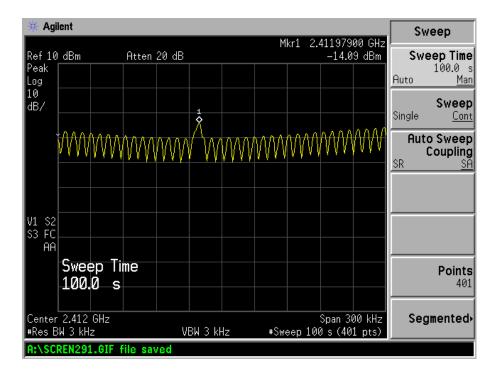
Temperature:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

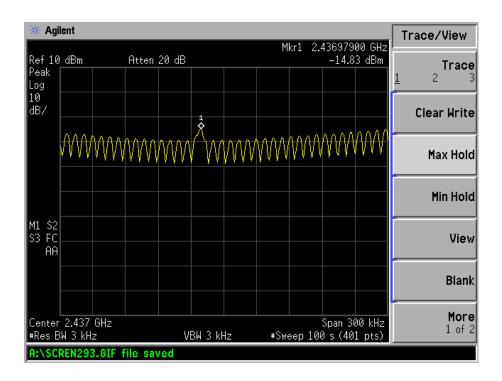
Test mode	Test channel	Reading dBm/3kHz	Limit dBm/3kHz
	Low channel (2412MHz)	-14.09	8
802.11b	Middle channel (2437MHz)	-14.83	8
	High channel (2462MHz)	-13.91	8
802.11g	Low channel (2412MHz)	-11.39	8
	Middle channel (2437MHz)	-12.49	8
	High channel (2462MHz)	-13.55	8
	Low channel (2412MHz)	-13.26	8
802.11n-HT20	Middle channel (2437MHz)	-13.87	8
	High channel (2462MHz)	-12.59	8
	Low channel (2422MHz)	-13.82	8
802.11n-HT40	Middle channel (2437MHz)	-14.90	8
	High channel (2452MHz)	-13.45	8

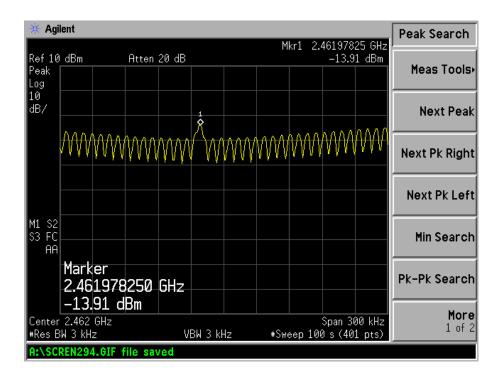
For 802.11b

Low Channel:

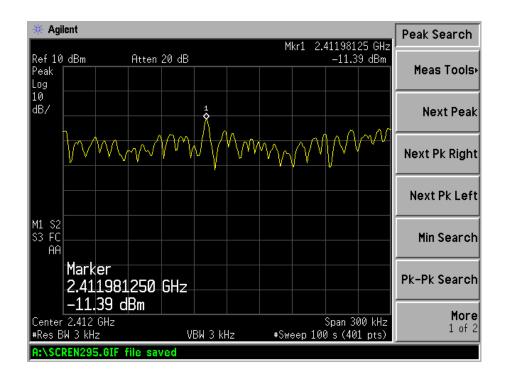


Middle Channel:

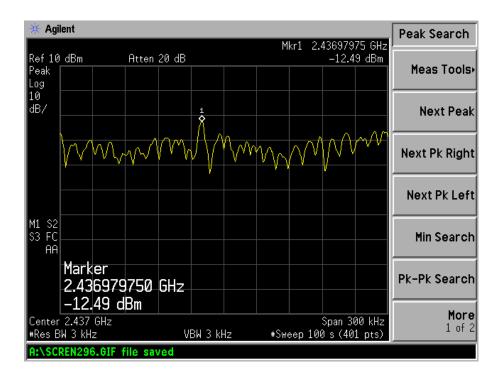


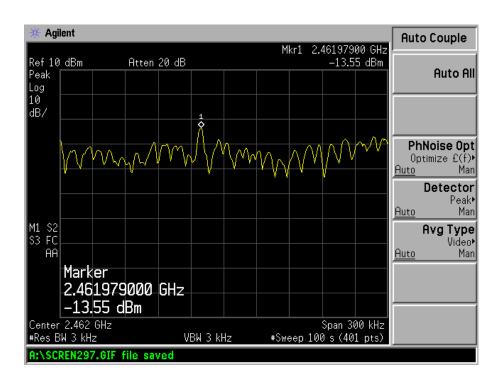


For 802.11g Low Channel:



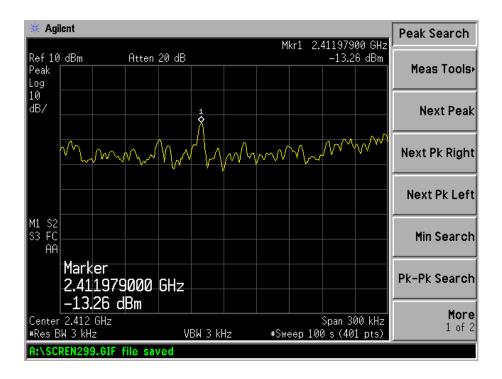
Middle Channel:



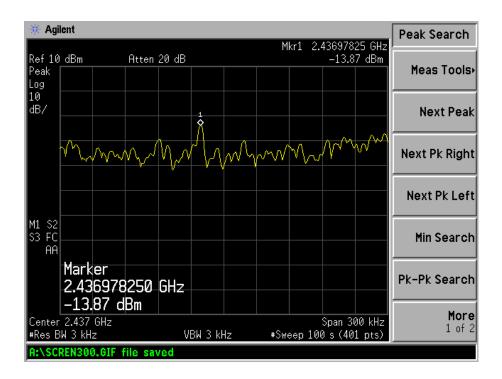


For 802.11n-HT20

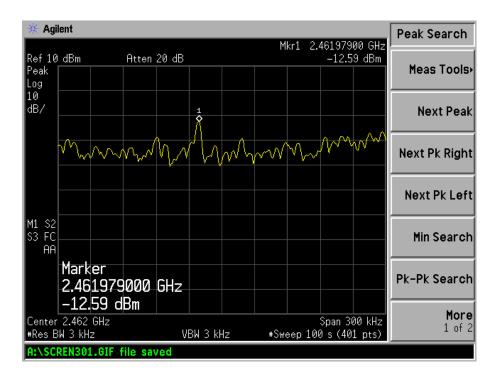
Low Channel:



Middle Channel:

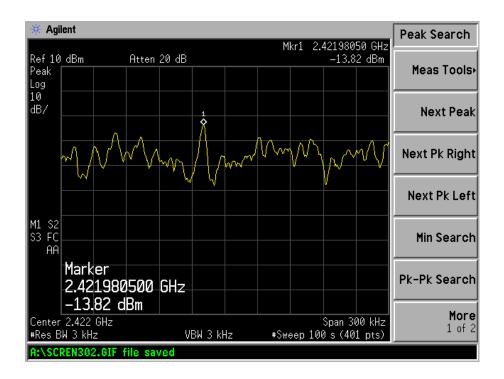


High Channel:

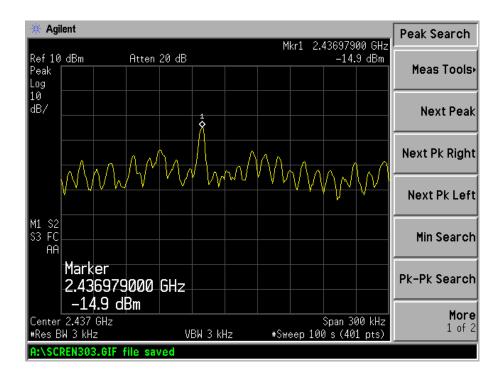


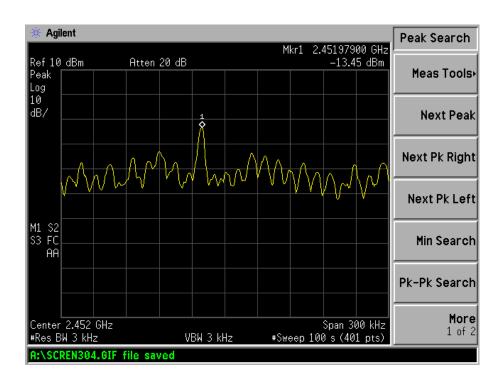
For 802.11n-HT40

Low Channel:



Middle Channel:





5. 6-dB BANDWIDTH

5.1 Standard Applicable

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2012-03-28	2013-03-27
Attenuator	ATTEN	ATS100-4-20	/	2012-03-28	2013-03-27

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

5.3 Test Procedure

- 1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 3. The spectrum analyzer as RBW=100KHz (1 % of Bandwidth.), Sweep=auto
- 4. Mark the peak frequency and -6dB (upper and lower) frequency.

5.4 Environmental Conditions

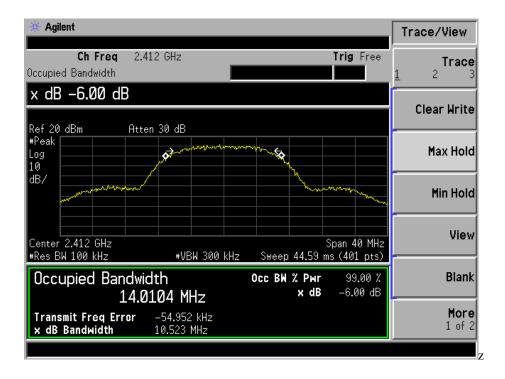
Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

5.5 Summary of Test Results/Plots

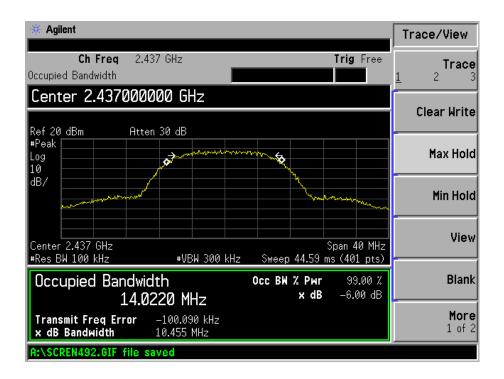
Test mode	Frequency	6 dB Bandwidth	Limit
rest mode	MHz	kHz	kHz
	2412	10523	500
802.11b	2437	10455	500
	2462	10565	500
	2412	16573	500
802.11g	2437	16554	500
	2462	16559	500
	2412	17705	500
802.11n-HT20	2437	17714	500
	2462	17710	500
	2422	36353	500
802.11n-HT40	2437	36127	500
	2452	36083	500

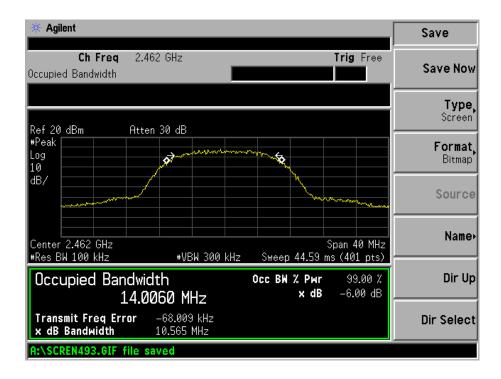
For 802.11b

Low Channel:

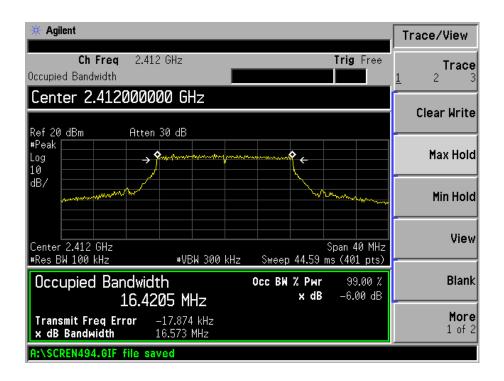


Mid Channel:

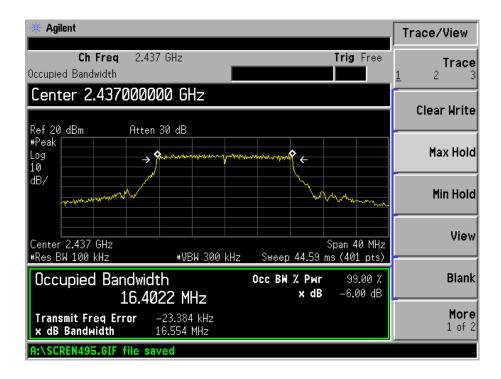


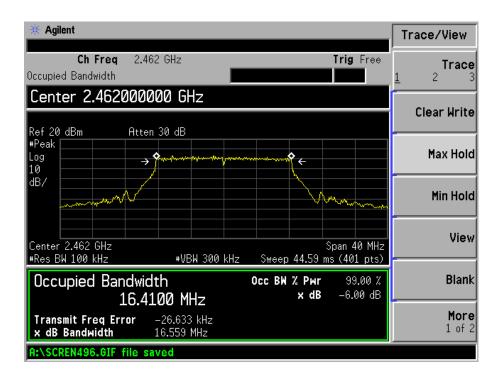


For 802.11g Low Channel:



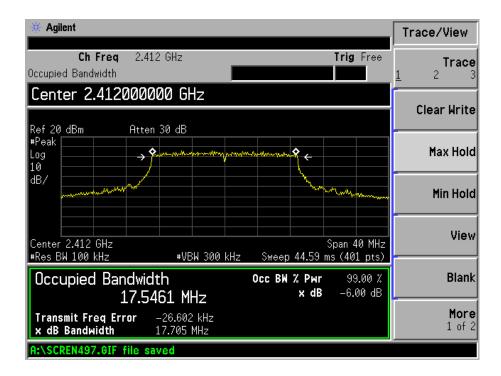
Mid Channel:



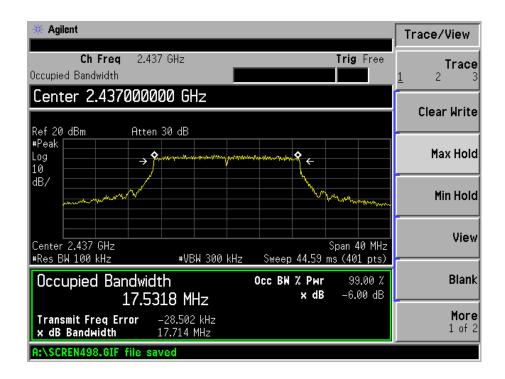


For 802.11n-HT20

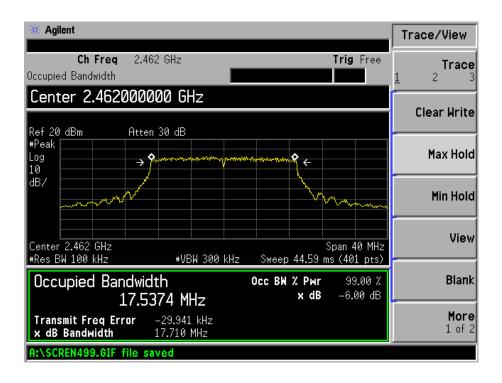
Low Channel:



Mid Channel:

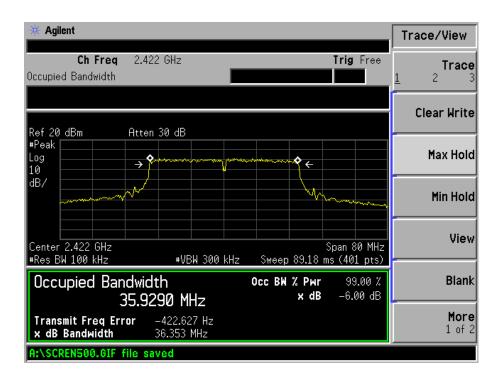


High Channel:

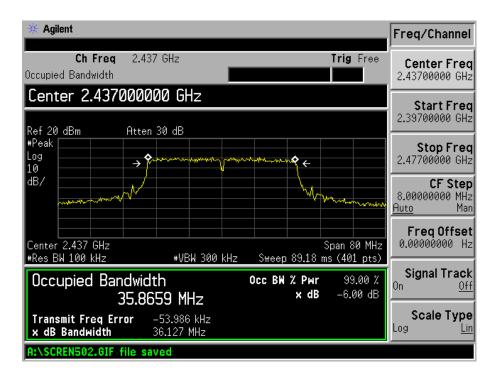


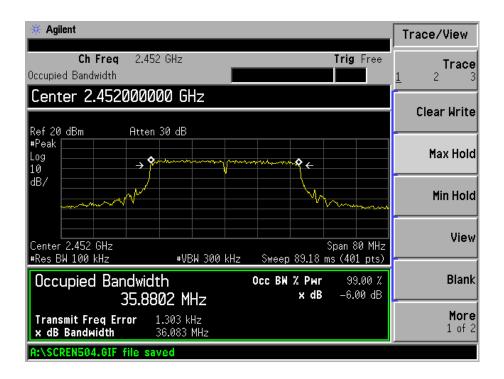
For 802.11n-HT40

Low Channel:



Mid Channel:





6. POWER OUTPUT

6.1 Standard Applicable

According to 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.

6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2012-03-28	2013-03-27
Attenuator	ATTEN	ATS100-4-20	/	2012-03-28	2013-03-27

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

6.3 Test Procedure

According to section 15.247(b)-power output of the KDB-558074 (2005), the method #1 of the power output option2 was used, the following is the measurement procedure.

- 1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2. Set RBW = 1 MHz, Set VBW \geq 3 MHz.
- 4. Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode.
- 5. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".
- 6. Trace average 100 traces in power averaging mode.
- 7. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges.

6.4 Environmental Conditions

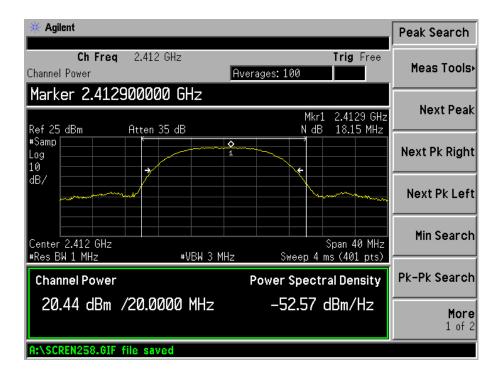
Temperature:	21° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

6.5 Summary of Test Results/Plots

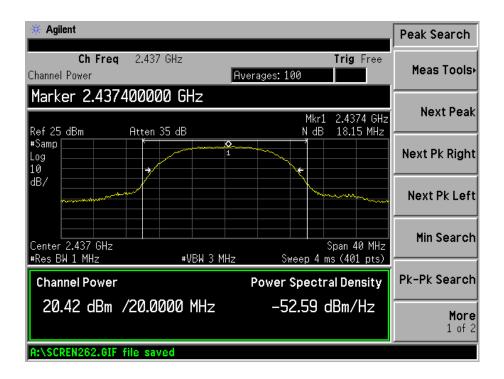
Test mode	Frequency	Reading	Output power	Limit
	MHz	dBm	W	W
802.11b (1M Short)	2412	20.44	0.1107	0.1259
	2437	20.42	0.1102	0.1259
	2462	20.66	0.1164	0.1259
802.11b (11M Short)	2412	20.41	0.1099	0.1259
	2437	20.52	0.1127	0.1259
	2462	20.53	0.1130	0.1259
802.11b (1M Short)	2412	20.52	0.1127	0.1259
	2437	20.53	0.1130	0.1259
	2462	20.50	0.1122	0.1259
802.11b (11M Short)	2412	20.54	0.1132	0.1259
	2437	20.52	0.1127	0.1259
	2462	20.58	0.1143	0.1259
802.11g (6M)	2412	18.14	0.0652	0.1259
	2437	18.35	0.0684	0.1259
	2462	18.10	0.0646	0.1259
802.11g (54M)	2412	18.23	0.0665	0.1259
	2437	18.25	0.0668	0.1259
	2462	17.90	0.0617	0.1259
802.11n-HT20	2422	18.14	0.0652	0.1259
	2437	18.35	0.0684	0.1259
	2452	18.10	0.0646	0.1259
802.11n-HT40	2422	17.45	0.0556	0.1259
	2437	17.25	0.0531	0.1259
	2452	17.61	0.0577	0.1259

For 802.11b 1M Short rate

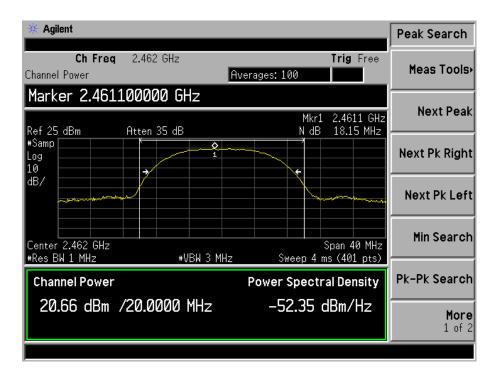
Low Channel:



Middle Channel:

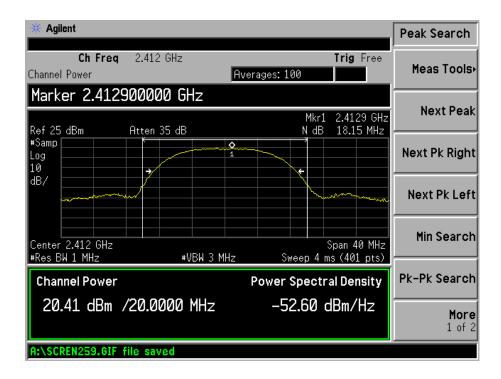


High Channel:

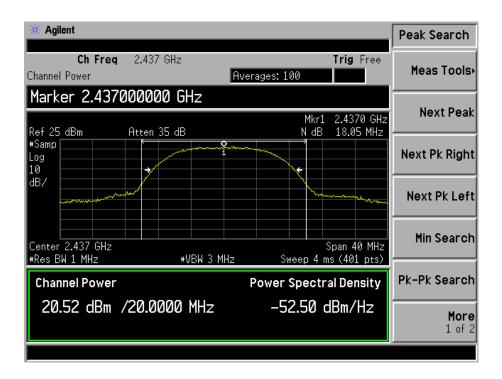


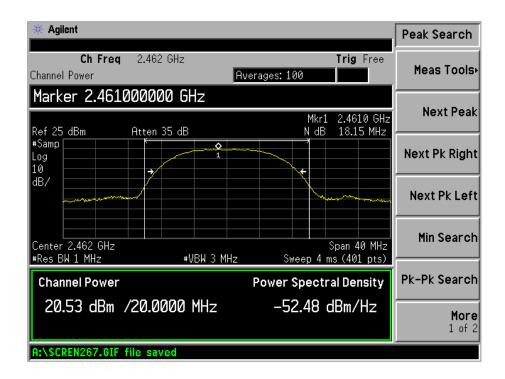
For 802.11b_11M Short rate

Low Channel:



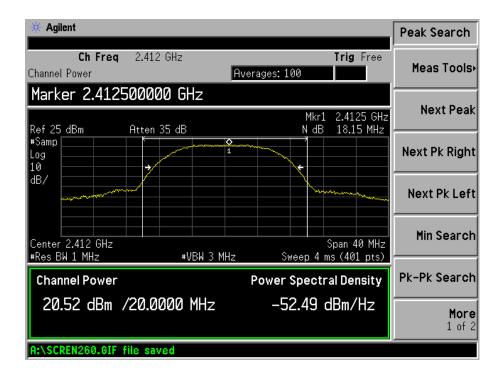
Middle Channel:



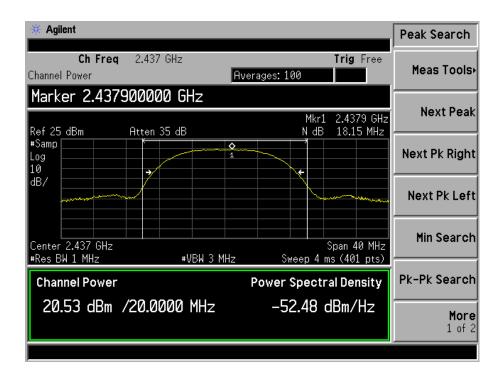


For 802.11b_1M Long rate

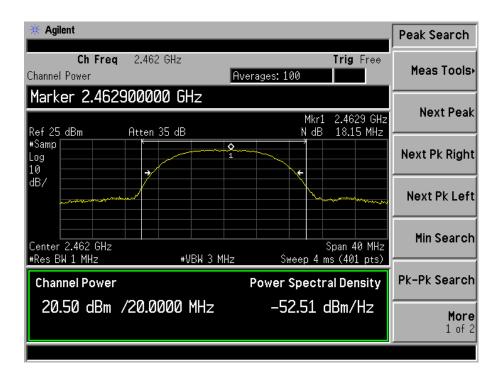
Low Channel:



Middle Channel:

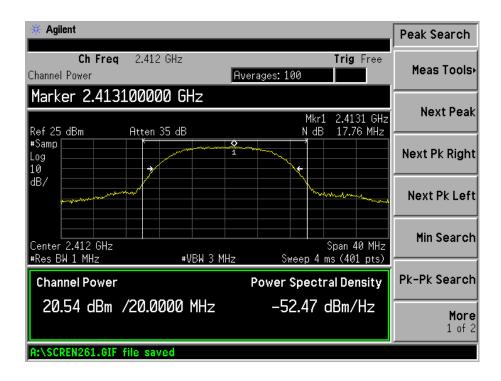


High Channel:

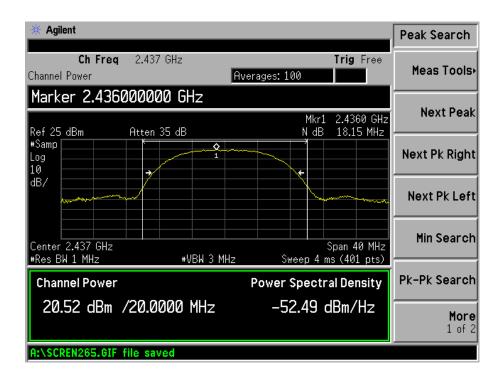


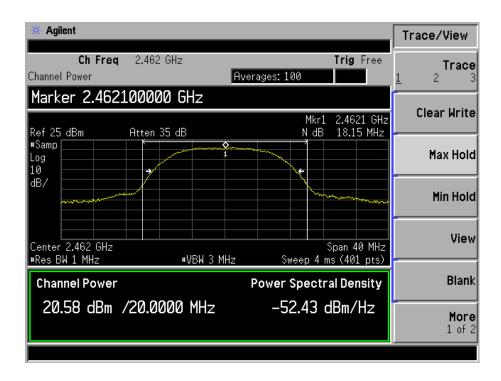
For 802.11b_11M Long rate

Low Channel:



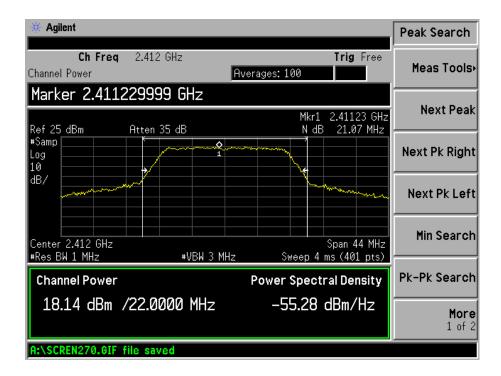
Middle Channel:



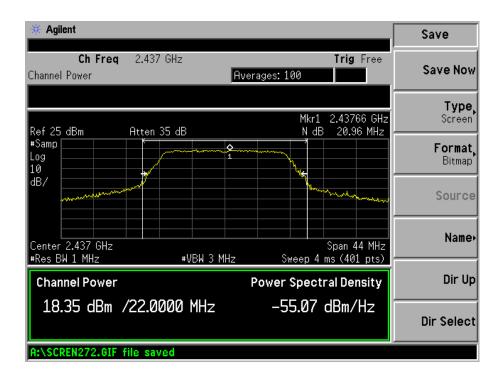


For 802.11g_6M rate

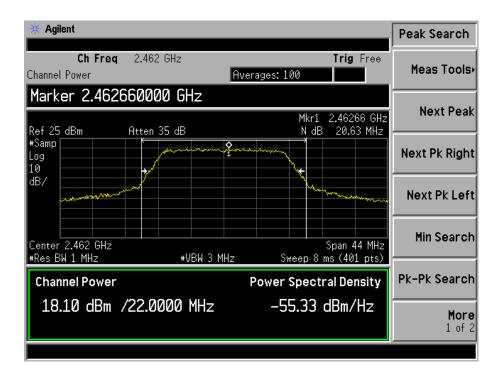
Low Channel:



Middle Channel:

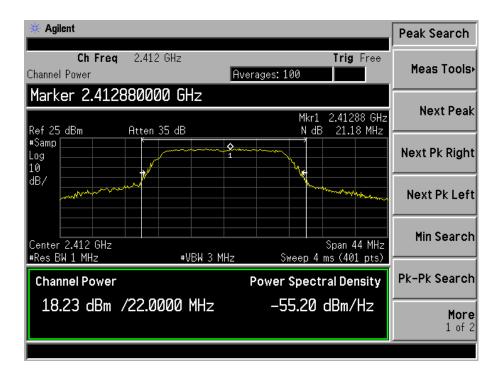


High Channel:

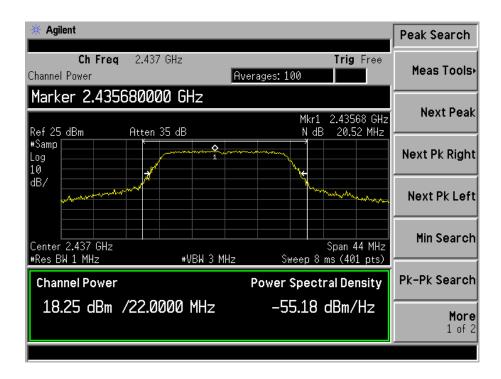


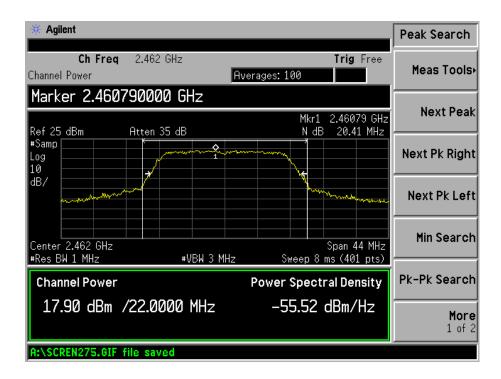
For 802.11g_54M rate

Low Channel:



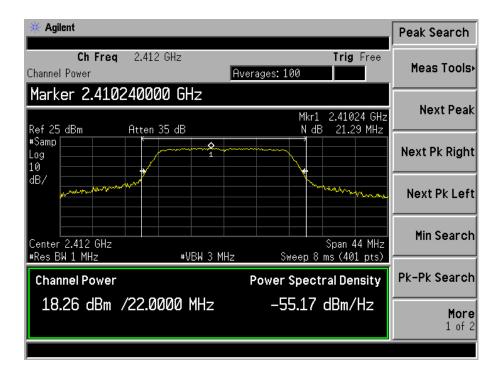
Middle Channel:



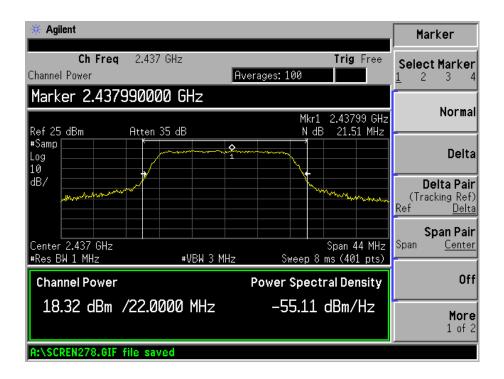


For 802.11n-HT20 rate

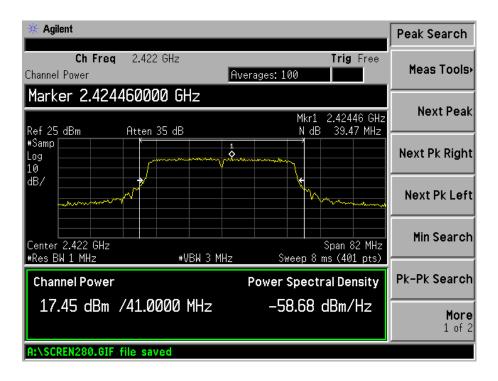
Low Channel:



Middle Channel:

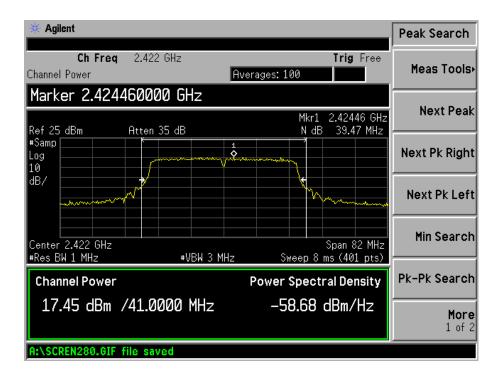


High Channel:

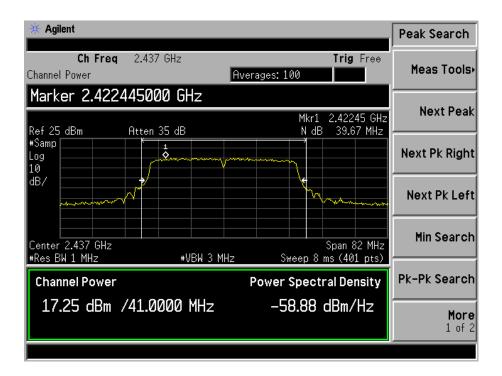


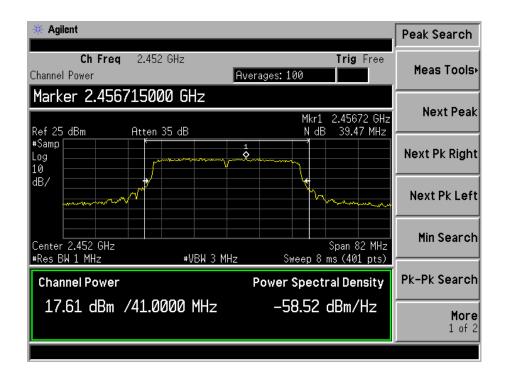
For 802.11n-HT40 rate

Low Channel:



Middle Channel:





7. FIELD STRENGTH OF SPURIOUS EMISSIONS

7.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 5.10 dB.

7.2 Standard Applicable

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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).

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

7.3 Test Equipment List and Details

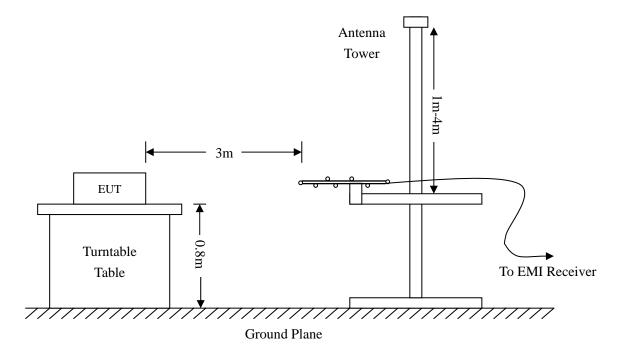
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Positioning Controller	C&C	CC-C-1F	N/A	2012-03-28	2013-03-27
RF Switch	EM	EMSW18	SW060023	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24
Horn Antenna	ETS	3116B	00088203	2012-02-25	2013-02-24
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2012-02-25	2013-02-24

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7.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-6dB\mu V$ means the emission is $6dB\mu V$ below the maximum limit for Class B. The equation for margin calculation is as follows:

7.6 Environmental Conditions

Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

7.7 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

 $-2.52dB\mu V$ at 361.7139MHz in the Horizontal polarization, Transmitting 802.11g High Channel test mode with, 30 MHz to 25 GHz, 3Meters

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

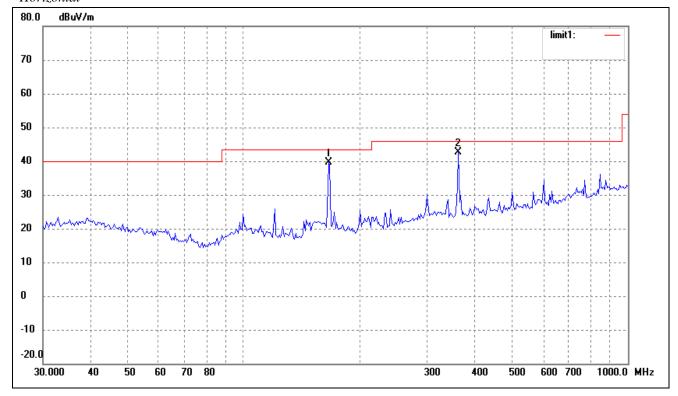
For Antenna 1: 15dBi

Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

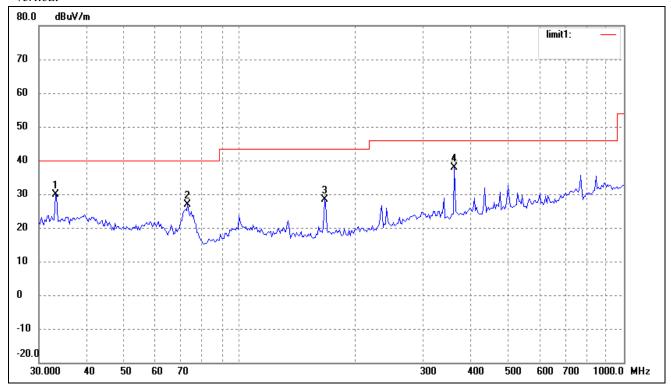
Test mode: Transmitting (802.11b) Low Channel

Comment: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	36.90	2.71	39.61	43.50	-3.89	235	100	QP
2	361.7139	33.49	9.26	42.75	46.00	-3.25	116	100	QP

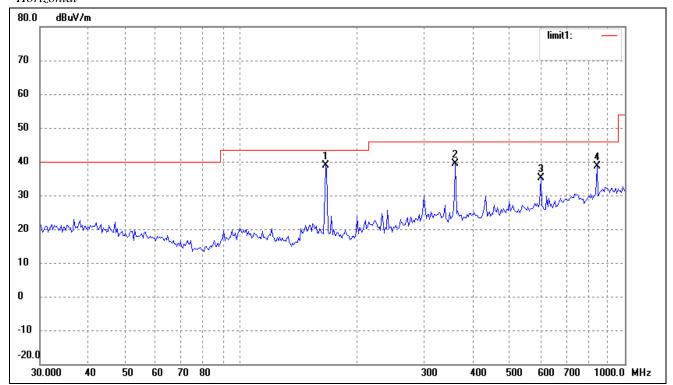
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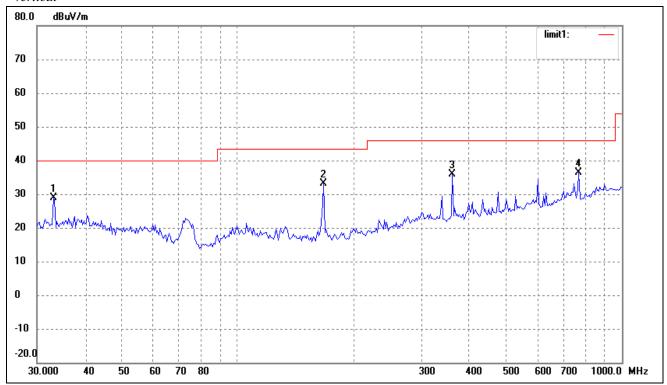
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	22.12	7.76	29.88	40.00	-10.12	360	100	peak
2	73.1025	25.17	1.65	26.82	40.00	-13.18	224	100	peak
3	166.0680	25.59	2.71	28.30	43.50	-15.20	119	100	peak
4	361.7139	28.70	9.26	37.96	46.00	-8.04	200	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Middle Channel



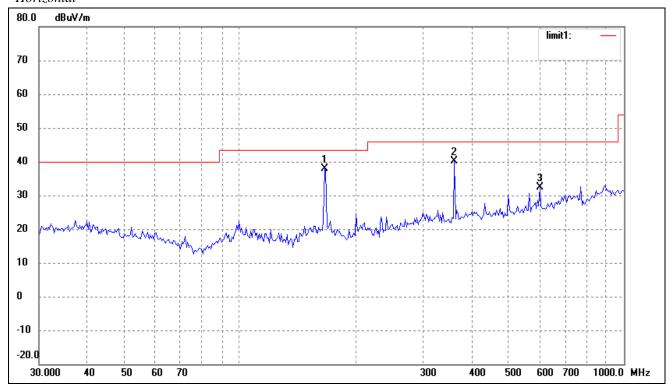
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	36.25	2.71	38.96	43.50	-4.54	360	100	QP
2	361.7139	30.17	9.26	39.43	46.00	-6.57	260	200	peak
3	603.5392	22.28	12.97	35.25	46.00	-10.75	360	100	peak
4	845.0878	22.90	15.68	38.58	46.00	-7.42	116	200	peak



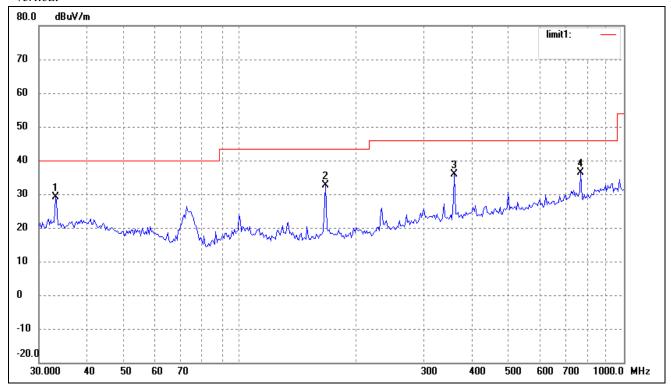
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.09	7.76	28.85	40.00	-11.15	264	100	peak
2	167.2368	30.35	2.71	33.06	43.50	-10.44	187	100	peak
3	361.7139	26.63	9.26	35.89	46.00	-10.11	110	100	peak
4	771.4486	22.49	13.94	36.43	46.00	-9.57	90	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) High Channel



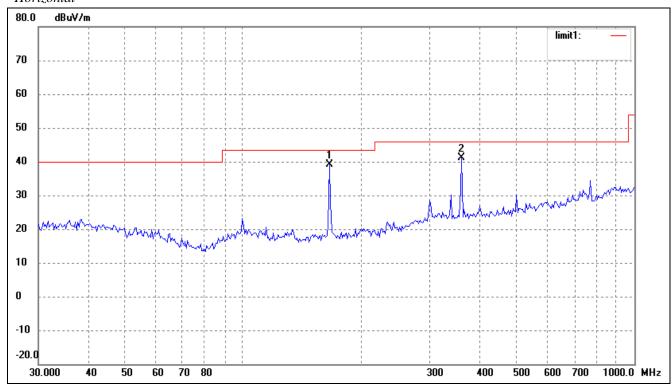
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	35.15	2.71	37.86	43.50	-5.64	250	100	QP
2	361.7139	30.86	9.26	40.12	46.00	-5.88	190	200	QP
3	603.5392	19.29	12.97	32.26	46.00	-13.74	310	100	peak



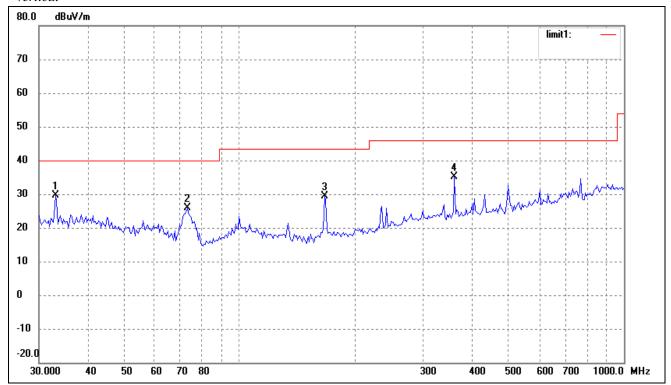
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.40	7.76	29.16	40.00	-10.84	360	100	peak
2	167.2368	29.98	2.71	32.69	43.50	-10.81	245	100	peak
3	361.7139	26.71	9.26	35.97	46.00	-10.03	119	100	peak
4	771.4486	22.44	13.94	36.38	46.00	-9.62	81	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Low Channel



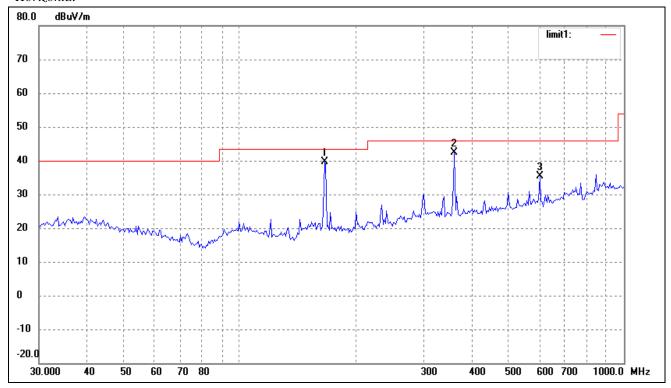
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	36.54	2.71	39.25	43.50	-4.25	237	100	QP
2	361.7139	31.88	9.26	41.14	46.00	-4.86	116	200	QP



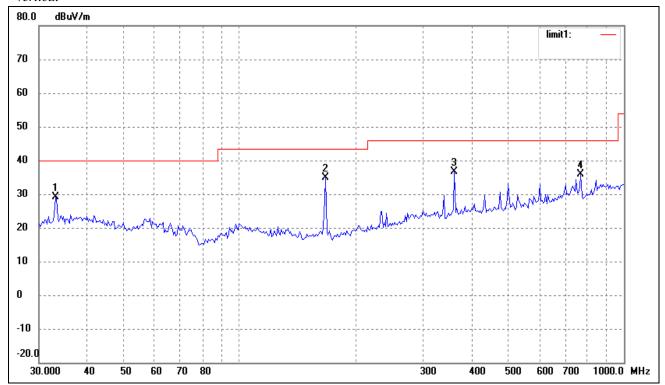
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.86	7.76	29.62	40.00	-10.38	174	100	peak
2	73.1025	24.32	1.65	25.97	40.00	-14.03	210	100	peak
3	166.0680	26.56	2.71	29.27	43.50	-14.23	310	100	peak
4	361.7139	25.77	9.26	35.03	46.00	-10.97	360	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Middle Channel



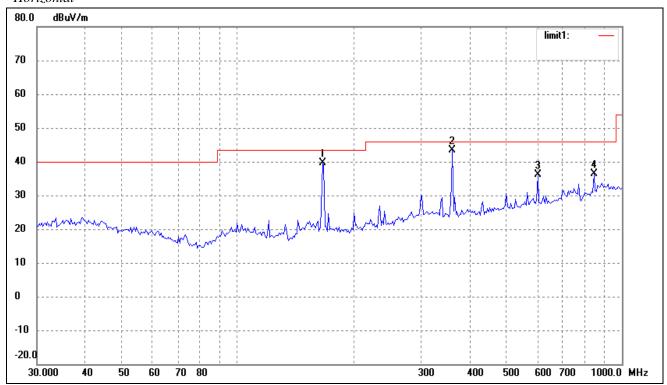
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	36.87	2.71	39.58	43.50	-3.92	357	100	QP
2	361.7139	33.03	9.26	42.29	46.00	-3.71	226	100	QP
3	603.5392	22.41	12.97	35.38	46.00	-10.62	138	100	peak



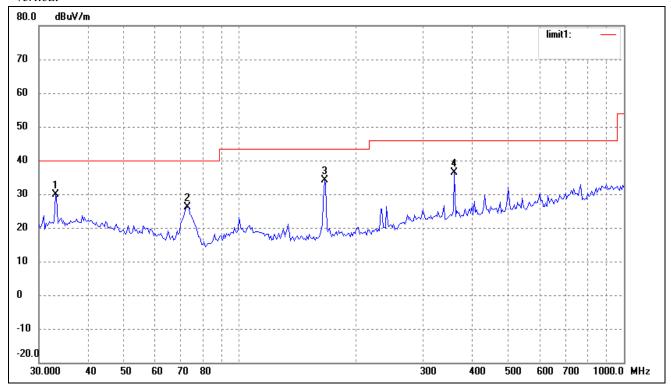
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.39	7.76	29.15	40.00	-10.85	274	100	peak
2	167.2368	32.07	2.71	34.78	43.50	-8.72	137	100	peak
3	361.7139	27.28	9.26	36.54	46.00	-9.46	98	100	peak
4	771.4486	21.86	13.94	35.80	46.00	-10.20	110	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) High Channel



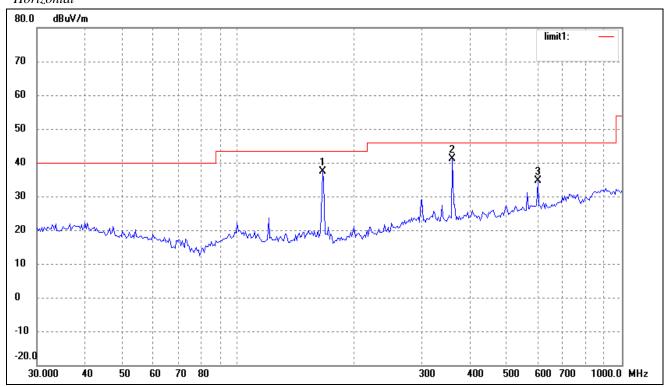
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	36.87	2.71	39.58	43.50	-3.92	241	100	QP
2	361.7139	34.22	9.26	43.48	46.00	-2.52	162	100	QP
3	603.5392	23.27	12.97	36.24	46.00	-9.76	300	100	peak
4	845.0878	20.68	15.68	36.36	46.00	-9.64	254	100	peak



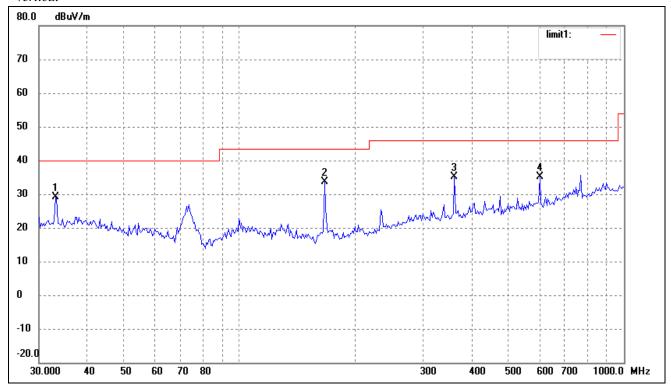
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	22.24	7.76	30.00	40.00	-10.00	137	100	peak
2	73.1025	24.54	1.65	26.19	40.00	-13.81	264	100	peak
3	166.0680	31.40	2.71	34.11	43.50	-9.39	225	100	peak
4	361.7139	27.24	9.26	36.50	46.00	-9.50	163	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) Low Channel



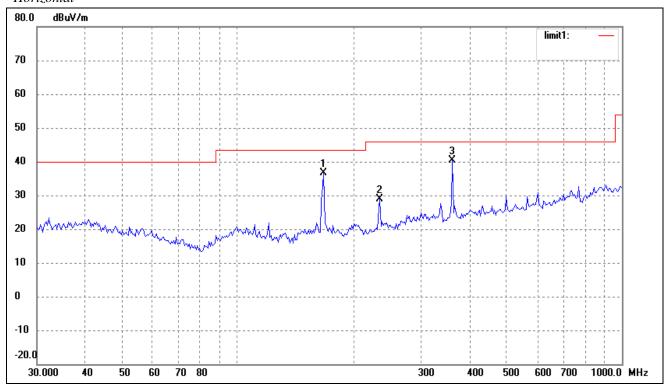
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	34.79	2.71	37.50	43.50	-6.00	264	100	peak
2	361.7139	31.77	9.26	41.03	46.00	-4.97	113	100	QP
3	603.5392	21.57	12.97	34.54	46.00	-11.46	306	100	peak



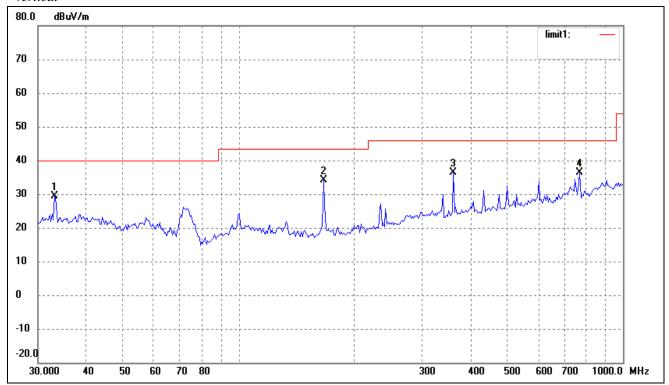
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.28	7.76	29.04	40.00	-10.96	264	100	peak
2	166.0680	31.00	2.71	33.71	43.50	-9.79	113	100	peak
3	361.7139	25.79	9.26	35.05	46.00	-10.95	184	200	peak
4	603.5392	22.18	12.97	35.15	46.00	-10.85	91	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) Middle Channel



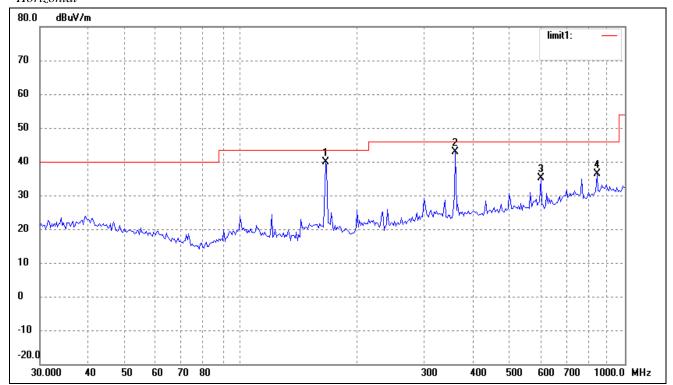
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	167.2368	34.03	2.71	36.74	43.50	-6.76	227	100	peak
2	234.1684	23.02	5.92	28.94	46.00	-17.06	137	10	peak
3	361.7139	31.08	9.26	40.34	46.00	-5.66	160	200	QP



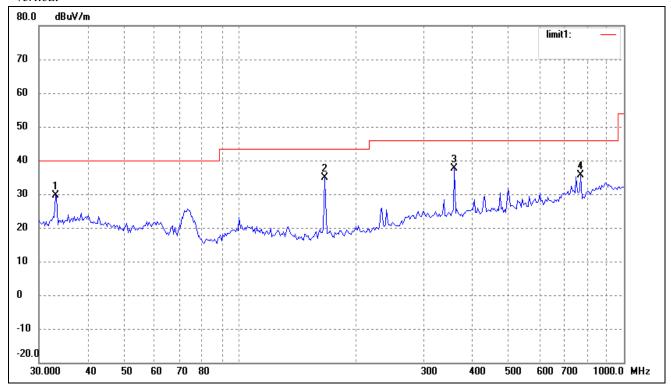
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.72	7.76	29.48	40.00	-10.52	234	100	peak
2	166.0680	31.37	2.71	34.08	43.50	-9.42	119	100	peak
3	361.7139	27.04	9.26	36.30	46.00	-9.70	200	100	peak
4	771.4486	22.35	13.94	36.29	46.00	-9.71	167	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) High Channel



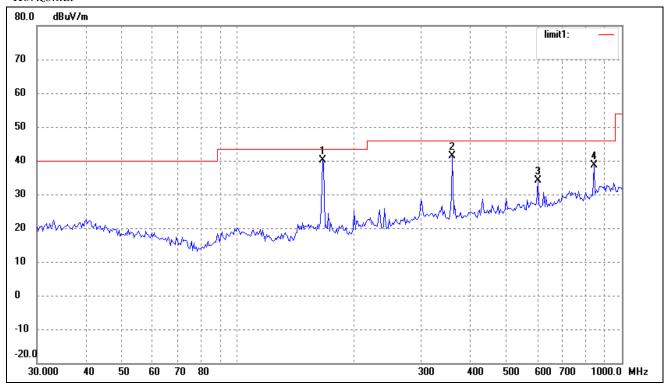
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	37.20	2.71	39.91	43.50	-3.59	137	100	QP
2	361.7139	33.60	9.26	42.86	46.00	-3.14	226	100	QP
3	603.5392	22.25	12.97	35.22	46.00	-10.78	200	100	peak
4	845.0878	20.60	15.68	36.28	46.00	-9.72	167	200	peak



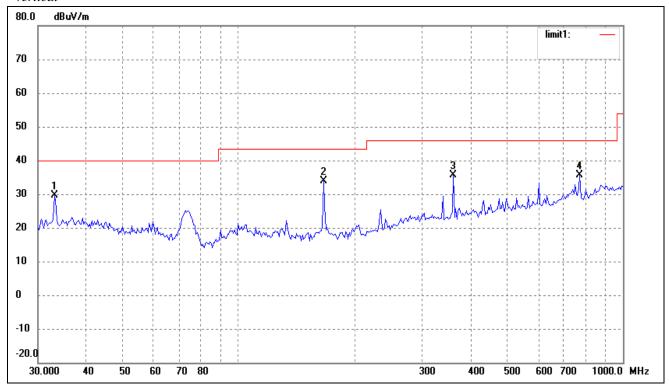
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.99	7.76	29.75	40.00	-10.25	246	100	peak
2	166.0680	32.06	2.71	34.77	43.50	-8.73	360	100	peak
3	361.7139	28.34	9.26	37.60	46.00	-8.40	113	100	peak
4	771.4486	21.70	13.94	35.64	46.00	-10.36	167	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) Low Channel



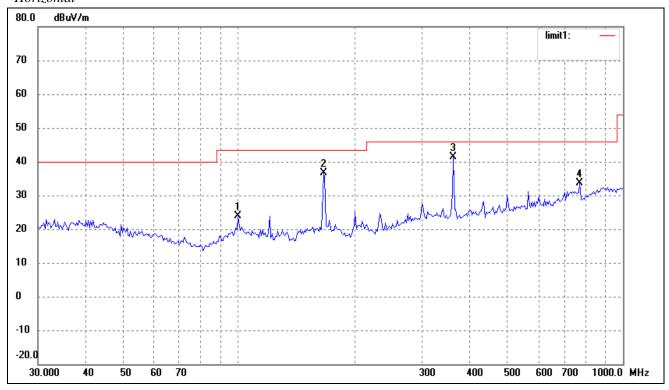
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	37.40	2.71	40.11	43.50	-3.39	224	100	QP
2	361.7139	32.09	9.26	41.35	46.00	-4.65	167	100	QP
3	603.5392	21.25	12.97	34.22	46.00	-11.78	360	100	peak
4	845.0878	22.94	15.68	38.62	46.00	-7.38	360	100	peak



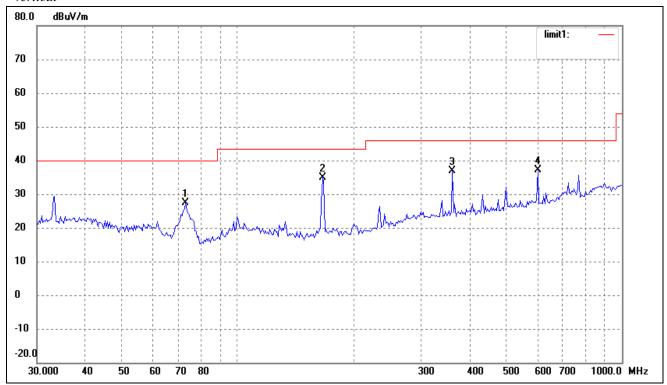
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.77	7.76	29.53	40.00	-10.47	260	100	peak
2	166.0680	31.11	2.71	33.82	43.50	-9.68	330	100	peak
3	361.7139	26.46	9.26	35.72	46.00	-10.28	167	100	peak
4	771.4486	21.71	13.94	35.65	46.00	-10.35	180	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) Middle Channel



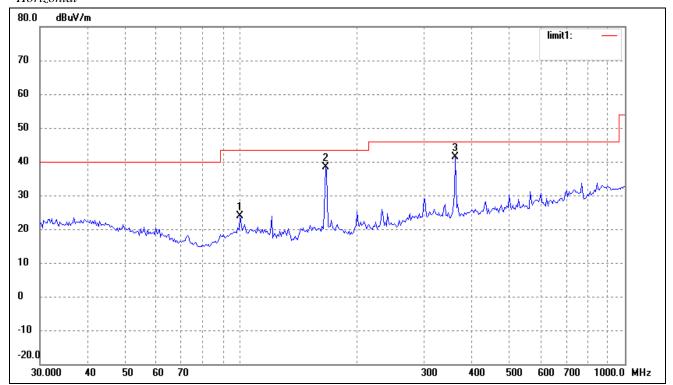
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	99.5281	17.96	6.03	23.99	43.50	-19.51	360	100	peak
2	166.0680	33.99	2.71	36.70	43.50	-6.80	174	100	peak
3	361.7139	32.20	9.26	41.46	46.00	-4.54	250	100	QP
4	771.4486	19.77	13.94	33.71	46.00	-12.29	113	100	peak



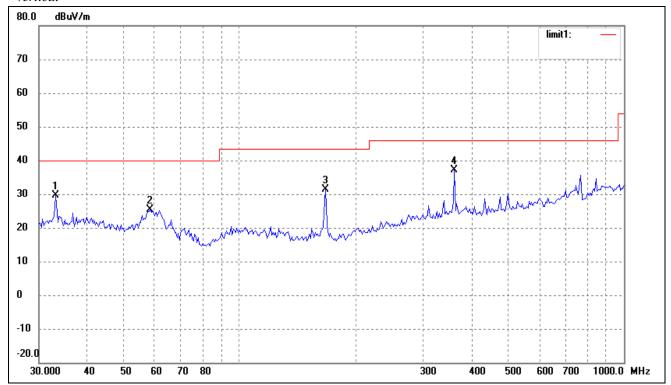
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	73.1025	25.65	1.65	27.30	40.00	-12.70	260	100	peak
2	166.0680	32.13	2.71	34.84	43.50	-8.66	113	100	peak
3	361.7139	27.65	9.26	36.91	46.00	-9.09	280	100	peak
4	603.5392	24.23	12.97	37.20	46.00	-8.80	110	100	peak

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) High Channel



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	99.5281	17.96	6.03	23.99	43.50	-19.51	264	100	peak
2	166.0680	35.79	2.71	38.50	43.50	-5.00	110	100	QP
3	361.7139	32.20	9.26	41.46	46.00	-4.54	360	100	QP



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	21.79	7.76	29.55	40.00	-10.45	270	100	peak
2	58.4074	20.13	5.24	25.37	40.00	-14.63	116	100	peak
3	167.2368	28.60	2.71	31.31	43.50	-12.19	345	100	peak
4	361.7139	27.95	9.26	37.21	46.00	-8.79	116	100	peak

Spurious Emissions Above 1GHz

Test Mode: 802.11b

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
			Low Channe	el-2412MHz			
4828.000	48.83	-3.87	44.96	74.00	-29.04	Н	PK
8920.000	47.45	3.84	51.29	74.00	-22.71	Н	PK
4828.000	52.75	-3.87	48.88	74.00	-25.12	V	PK
8832.000	45.98	3.66	49.64	74.00	-24.36	V	PK
4828.000	36.36	-3.87	32.49	54.00	-21.51	Н	AV
8920.000	35.67	3.84	39.51	54.00	-14.49	Н	AV
4828.000	39.64	-3.87	35.77	54.00	-18.23	V	AV
8832.000	35.62	3.66	39.28	54.00	-14.72	V	AV
			Middle Chan	nel-2437MHz			
4872.000	54.66	-3.74	50.92	74.00	-23.08	Н	PK
8898.000	48.39	3.80	52.19	74.00	-21.81	Н	PK
4872.000	57.02	-3.74	53.28	74.00	-20.72	V	PK
7556.000	46.95	2.21	49.16	74.00	-24.84	V	PK
4872.000	40.86	-3.74	37.12	54.00	-16.88	Н	AV
8920.000	35.82	3.84	39.66	54.00	-14.34	Н	AV
4872.000	43.57	-3.74	39.83	54.00	-14.17	V	AV
7534.000	34.89	2.24	37.13	54.00	-16.87	V	AV
			High Chann	el-2462MHz			
8854.000	47.43	3.71	51.14	74.00	-22.86	Н	PK
11076.000	46.97	4.58	51.55	74.00	-22.45	Н	PK
4916.000	53.17	-3.62	49.55	74.00	-24.45	V	PK
8832.000	47.15	3.66	50.81	74.00	-23.19	V	PK
8832.000	35.78	3.66	39.44	54.00	-14.56	Н	AV
11076.000	35.23	4.58	39.81	54.00	-14.19	Н	AV
4916.000	39.88	-3.62	36.26	54.00	-17.74	V	AV
8832.000	35.92	3.66	39.58	54.00	-14.42	V	AV

Test Mode: 802.11g

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
			Low Chann	el-2412MHz			
8810.000	47.16	3.62	50.78	74.00	-23.22	Н	PK
10988.000	47.10	4.46	51.56	74.00	-22.44	Н	PK
4828.000	51.56	-3.87	47.69	74.00	-26.31	V	PK
8942.000	48.26	3.89	52.15	74.00	-21.85	V	PK
8920.000	35.73	3.84	39.57	54.00	-14.43	Н	AV
11010.000	35.57	4.49	40.06	54.00	-13.94	Н	AV
4828.000	37.44	-3.87	33.57	54.00	-20.43	V	AV
8942.000	35.79	3.89	39.68	54.00	-14.32	V	AV
			Middle Chan	nel-2437MHz			
4872.000	48.25	-3.74	44.51	74.00	-29.49	Н	PK
7534.000	46.61	2.24	48.85	74.00	-25.15	Н	PK
4872.000	64.63	-3.74	60.89	74.00	-13.11	V	PK
7468.000	47.52	2.16	49.68	74.00	-24.32	V	PK
4872.000	37.20	-3.74	33.46	54.00	-20.54	Н	AV
7490.000	34.95	2.25	37.20	54.00	-16.80	Н	AV
4872.000	48.88	-3.74	45.14	54.00	-8.86	V	AV
7512.000	34.89	2.29	37.18	54.00	-16.82	V	AV
			High Chann	el-2462MHz			
5554.000	47.10	-1.56	45.54	74.00	-28.46	Н	PK
8942.000	47.39	3.89	51.28	74.00	-22.72	Н	PK
4916.000	54.41	-3.62	50.79	74.00	-23.21	V	PK
8876.000	47.60	3.75	51.35	74.00	-22.65	V	PK
5334.000	35.39	-2.13	33.26	54.00	-20.74	Н	AV
8942.000	35.56	3.89	39.45	54.00	-14.55	Н	AV
4916.000	39.93	-3.62	36.31	54.00	-17.69	V	AV
8920.000	35.72	3.84	39.56	54.00	-14.44	V	AV

Test Mode: 802.11n-HT20

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
			Low Channe	el-2412MHz			
7644.000	46.61	2.07	48.68	74.00	-25.32	Н	PK
8722.000	46.93	3.45	50.38	74.00	-23.62	Н	PK
4828.000	56.67	-3.87	52.80	74.00	-21.20	V	PK
8744.000	47.65	3.49	51.14	74.00	-22.86	V	PK
7578.000	35.14	2.17	37.31	54.00	-16.69	Н	AV
8920.000	35.85	3.84	39.69	54.00	-14.31	Н	AV
4828.000	41.73	-3.87	37.86	54.00	-16.14	V	AV
8920.000	35.91	3.84	39.75	54.00	-14.25	V	AV
			Middle Chan	nel-2437MHz			
4872.000	51.27	-3.74	47.53	74.00	-26.47	Н	PK
8986.000	47.07	3.97	51.04	74.00	-22.96	Н	PK
4872.000	58.77	-3.74	55.03	74.00	-18.97	V	PK
8832.000	47.89	3.66	51.55	74.00	-22.45	V	PK
4872.000	38.09	-3.74	34.35	54.00	-19.65	Н	AV
8920.000	35.76	3.84	39.60	54.00	-14.40	Н	AV
4872.000	44.57	-3.74	40.83	54.00	-13.17	V	AV
8942.000	35.65	3.89	39.54	54.00	-14.46	V	AV
			High Chann	el-2462MHz			
7490.000	46.77	2.25	49.02	74.00	-24.98	Н	PK
8986.000	47.40	3.97	51.37	74.00	-22.63	Н	PK
4916.000	54.40	-3.62	50.78	74.00	-23.22	V	PK
8920.000	47.07	3.84	50.91	74.00	-23.09	V	PK
7490.000	34.71	2.25	36.96	54.00	-17.04	Н	AV
7578.000	34.84	2.17	37.01	54.00	-16.99	Н	AV
4916.000	39.94	-3.62	36.32	54.00	-17.68	V	AV
8942.000	35.84	3.89	39.73	54.00	-14.27	V	AV

Test Mode: 802.11n-HT40

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
			Low Channe	el-2422MHz			
5334.000	35.74	-2.13	33.61	54.00	-20.39	Н	PK
5774.000	47.54	-1.72	45.82	74.00	-28.18	Н	AV
7468.000	46.55	2.16	48.71	74.00	-25.29	Н	PK
7578.000	35.21	2.17	37.38	54.00	-16.62	Н	AV
4894.000	49.54	-3.68	45.86	74.00	-28.14	V	PK
4894.000	38.22	-3.68	34.54	54.00	-19.46	V	AV
7490.000	35.13	2.25	37.38	54.00	-16.62	V	PK
7534.000	47.12	2.24	49.36	74.00	-24.64	V	AV
			Middle Chan	nel-2437MHz			
4872.000	51.21	-3.74	47.47	74.00	-26.53	Н	PK
4872.000	40.35	-3.74	36.61	54.00	-17.39	Н	AV
8920.000	47.92	3.84	51.76	74.00	-22.24	Н	PK
8920.000	36.01	3.84	39.85	54.00	-14.15	Н	AV
4872.000	54.51	-3.74	50.77	74.00	-23.23	V	PK
4872.000	42.51	-3.74	38.77	54.00	-15.23	V	AV
8832.000	48.34	3.66	52.00	74.00	-22.00	V	PK
8920.000	36.03	3.84	39.87	54.00	-14.13	V	AV
			High Chann	el-2452MHz			
5796.000	35.41	-1.75	33.66	54.00	-20.34	Н	PK
5840.000	48.54	-1.78	46.76	74.00	-27.24	Н	AV
7556.000	46.28	2.21	48.49	74.00	-25.51	Н	PK
7578.000	35.31	2.17	37.48	54.00	-16.52	Н	AV
4850.000	47.86	-3.80	44.06	74.00	-29.94	V	PK
4850.000	36.49	-3.80	32.69	54.00	-21.31	V	AV
7512.000	35.02	2.29	37.31	54.00	-16.69	V	PK
7600.000	47.54	2.14	49.68	74.00	-24.32	V	AV

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. OUT OF BAND EMISSIONS

8.1 Standard Applicable

According to §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP 836079/035		2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Positioning Controller	C&C	CC-C-1F	N/A	2012-03-28	2013-03-27
RF Switch	EM	EMSW18	SW060023	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK		9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24

8.3 Test Procedure

According to the KDB 558074, the band-edge radiated test method as follows:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation porduct outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205.

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8.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

8.5 Summary of Test Results/Plots

Test mode	Frequency	Limit	Result
Test mode	MHz	dBuV /dB	Result
	2310.00	<54dBuv	Pass
	2390.00	<54dBuv	Pass
802.11b	2398.32	>20dB	Pass
002.110	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass
	2500.00	<54dBuv	Pass
	2310.00	<54dBuv	Pass
	2390.00	<54dBuv	Pass
802.11g	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass
	2500.00	<54dBuv	Pass
	2310.00	<54dBuv	Pass
	2390.00	<54dBuv	Pass
802.11n-HT20	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass
	2500.00	<54dBuv	Pass
	2310.00	<54dBuv	Pass
	2390.00	<54dBuv	Pass
802.11n-HT40	2400.00	>20dB	Pass
	2483.50	<54dBuv	Pass
	2500.00	<54dBuv	Pass

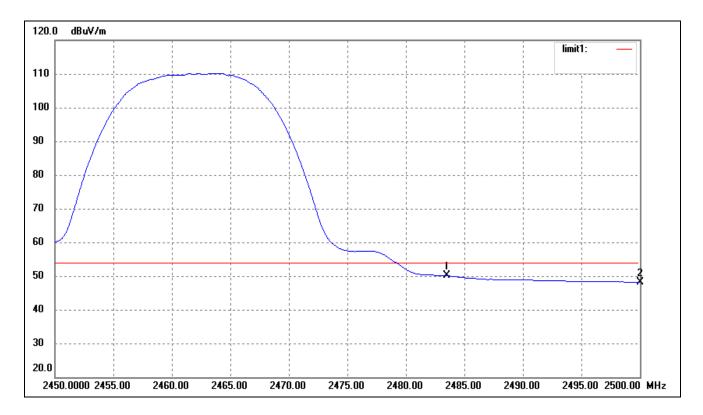
Antenna 1: 15dBi For 802.11b

Lowest Bandedge



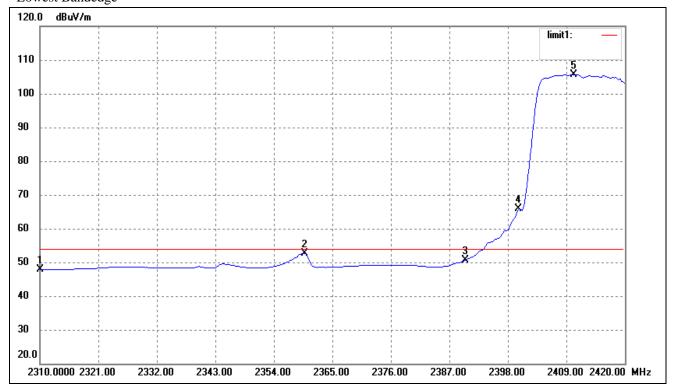
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	18.64	31.70	50.34	54.00	-3.66	Average Detector
	2310.000	28.96	31.70	60.66	74.00	-13.34	Peak Detector
2	2390.000	21.17	31.71	52.88	54.00	-1.12	Average Detector
	2390.000	32.32	31.71	64.03	74.00	-9.97	Peak Detector
3	2400.000	34.27	31.71	65.98	/	/	Average Detector
4	2411.640	81.44	31.71	113.15	/	/	Average Detector
5	2398.880	35.10	31.71	66.81	/	/	Average Detector

For 802.11b Highest Bandedge



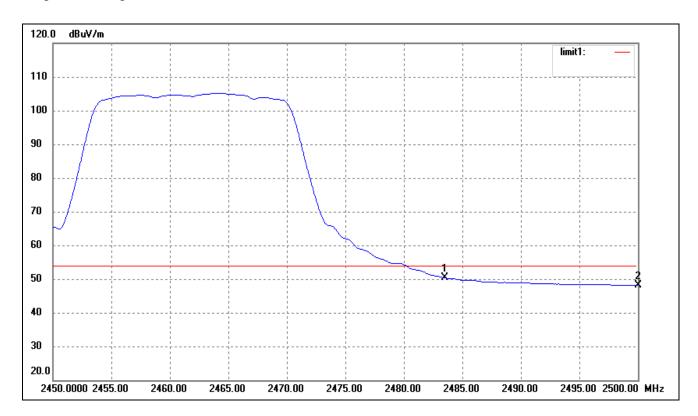
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	18.35	31.71	50.06	54.00	-3.94	Average Detector
	2483.500	28.42	31.71	60.13	74.00	-13.87	Peak Detector
2	2500.000	16.38	31.72	48.10	54.00	-5.90	Average Detector
	2500.000	27.82	31.72	59.54	74.00	-14.46	Peak Detector

For 802.11g Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	16.16	31.70	47.86	54.00	-6.14	Average Detector
	2310.000	26.65	31.70	58.35	74.00	-15.65	Peak Detector
2	2359.720	21.03	31.70	52.73	54.00	-1.27	Average Detector
	2359.720	29.94	31.70	61.64	74.00	-12.36	Peak Detector
3	2390.000	19.02	31.71	50.73	54.00	-3.27	Average Detector
	2390.000	29.42	31.71	61.13	74.00	-12.87	Peak Detector
4	2400.000	34.07	31.71	65.78	/	/	Average Detector
5	2410.320	73.98	31.71	105.69	/	/	Average Detector

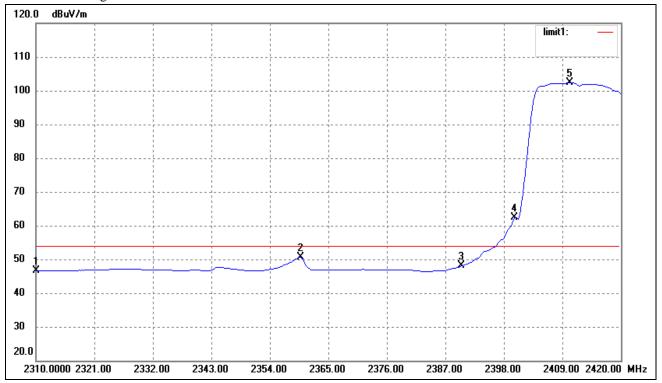
For 802.11g Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	18.62	31.71	50.33	54.00	-3.67	Average Detector
	2483.500	28.44	31.71	60.15	74.00	-13.85	Peak Detector
2	2500.000	16.34	31.72	48.06	54.00	-5.94	Average Detector
	2500.000	28.03	31.72	59.75	74.00	-14.25	Peak Detector

For 802.11n-HT20

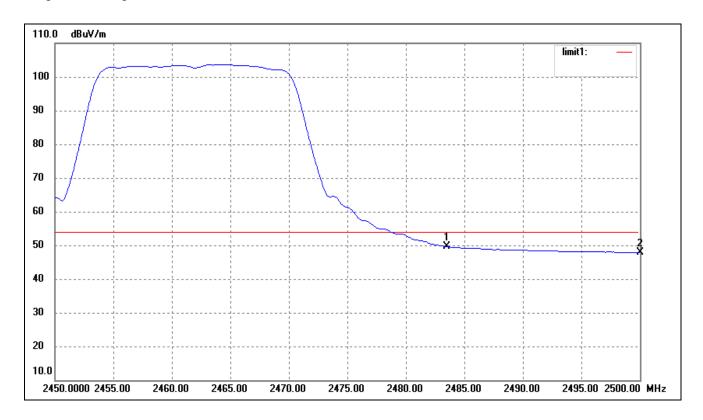
Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	14.91	31.70	46.61	54.00	-7.39	Average Detector
	2310.000	25.45	31.70	57.15	74.00	-16.85	Peak Detector
2	2359.720	18.83	31.70	50.53	54.00	-3.47	Average Detector
	2359.720	30.61	31.70	62.31	74.00	-11.69	Peak Detector
3	2390.000	16.30	31.71	48.01	54.00	-5.99	Average Detector
	2390.000	27.03	31.71	58.74	74.00	-15.26	Peak Detector
4	2400.000	30.74	31.71	62.45	/	/	Average Detector
5	2410.320	70.64	31.71	102.35	/	/	Average Detector

For 802.11n-HT20

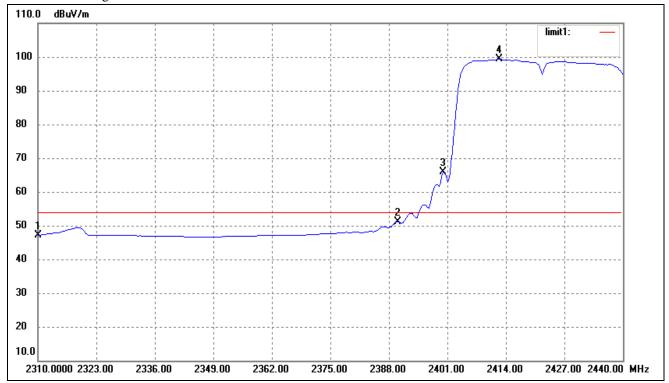
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	17.90	31.71	49.61	54.00	-4.39	Average Detector
	2483.500	27.96	31.71	59.67	74.00	-14.33	Peak Detector
2	2500.000	16.07	31.72	47.79	54.00	-6.21	Average Detector
	2500.000	26.41	31.72	58.13	74.00	-15.87	Peak Detector

For 802.11n-HT40

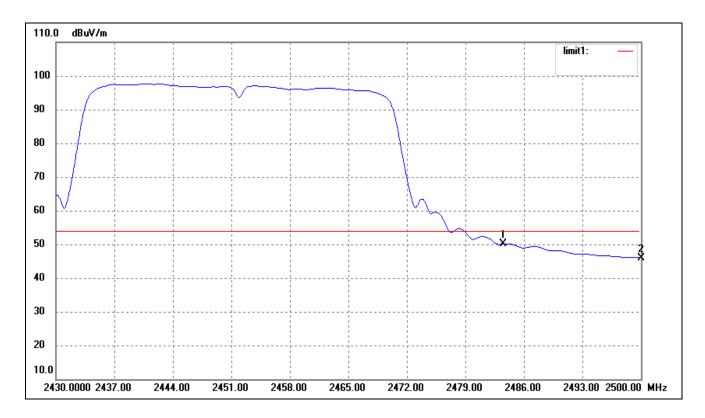
Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	15.45	31.70	47.15	54.00	-6.85	Average Detector
	2310.000	27.96	31.70	59.66	74.00	-14.34	Peak Detector
2	2390.000	19.37	31.71	51.08	54.00	-2.92	Average Detector
	2390.000	30.76	31.71	62.47	74.00	-11.53	Peak Detector
3	2400.000	34.24	31.71	65.95	/	/	Average Detector
4	2412.440	67.71	31.71	99.42	/	/	Peak Detector

For 802.11n-HT40

Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	18.34	31.71	50.05	54.00	-3.95	Average Detector
	2483.500	29.41	31.71	61.12	74.00	-12.88	Peak Detector
2	2500.000	14.27	31.72	45.99	54.00	-8.01	Average Detector
	2500.000	24.69	31.72	56.41	74.00	-17.59	Peak Detector

9. CONDUCTED EMISSION

9.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

9.2 Test Equipment List and Details

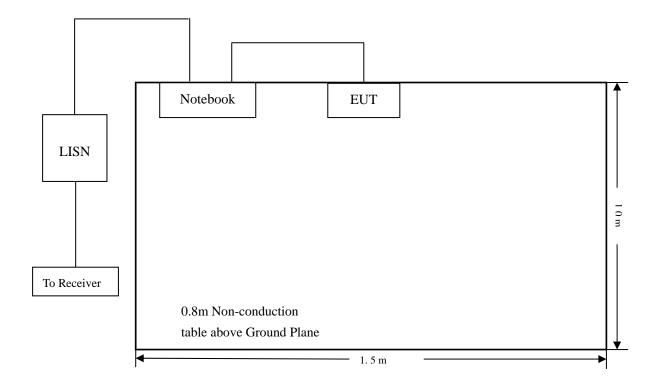
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2012-03-28	2013-03-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2012-03-28	2013-03-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2012-03-28	2013-03-27

9.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

9.4 Basic Test Setup Block Diagram



9.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

9.6 Summary of Test Results/Plots

According to the data in section 9.7, the EUT <u>complied with the FCC 15.207</u> Conducted margin for a Class B device, with the *worst* margin reading of:

-1.75 dB μV at 15.442 MHz in the Neutral mode, Peak detector, 0.15-30MHz

9.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

Conducted Disturbance

EUT: Top Catcher CC Tactical

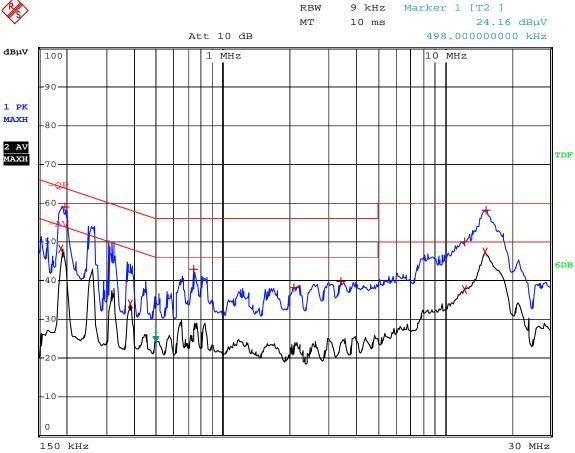
M/N: AWUHN2408

Operating Condition: Transmitting

Test Specification: N

Comment: AC 120V/60Hz/USB 5V





	EDIT PEAK LIST	(Prescan Results)						
Trace1:	-QP							
Trace2:	-AV							
Trace3:								
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB					
2 Average	190 kHz	48.18	-5.85					
1 Max Peak	198 kHz	58.93	-4.75					
2 Average	382 kHz	33.88	-14.35					
1 Max Peak	738 kHz	43.03	-12.96					
1 Max Peak	2.102 MHz	38.10	-17.89					
1 Max Peak	3.422 MHz	39.70	-16.29					
2 Average	12.346 MHz	37.65	-12.34					
1 Max Peak	12.358 MHz	50.08	-9.91					
2 Average	15.238 MHz	47.30	-2.69					
1 Max Peak	15.442 MHz	58.24	-1.75					

Plot of Conducted Emissions Test Data

Conducted Disturbance

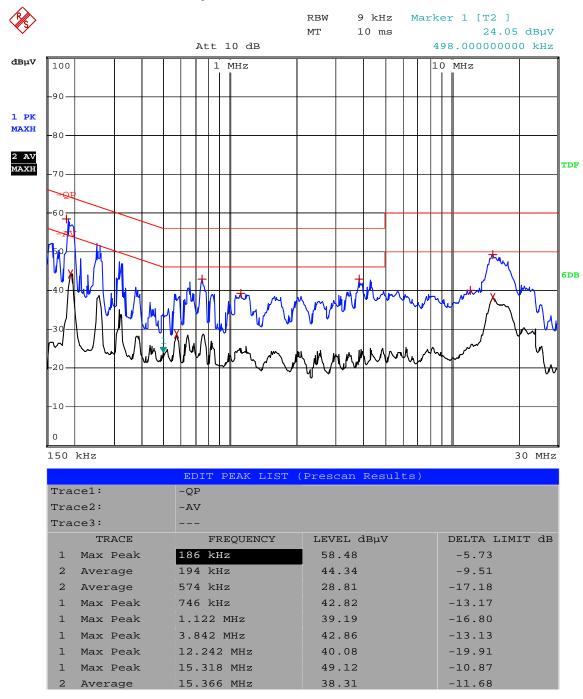
EUT: Top Catcher CC Tactical

M/N: AWUHN2408

Operating Condition: Transmitting

Test Specification: L

Comment: AC 120V/60Hz/USB 5V



***** END OF REPORT *****