

FCC Part 15C

Measurement and Test Report

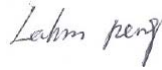
For

Hena Digital Technology (Shenzhen) Co., Ltd.

3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech

Industrial Park, Nanshan District, Shenzhen, China

FCC ID: M7CMID008

Report Concerns: Original Report	Equipment Type: MID
Model:	<u>MID1107CM</u>
Report No.:	<u>STR12048080I-1</u>
Test Date:	<u>2012-04-11 to 2012-04-24</u>
Issue Date:	<u>2012-04-26</u>
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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: Hena Digital Technology (Shenzhen) Co., Ltd.
Address of applicant: 3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech Industrial Park

Manufacturer: Hena Digital Technology (Shenzhen) Co., Ltd.
Address of manufacturer: 3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech Industrial Park

General Description of E.U.T

Items	Description
EUT Description:	MID
Trade Name:	HENA
Model No.:	MID1107CM
Add Models:	MID1107; MID11**CM; MID1107**(**Can be 01-99)
Rated Voltage:	DC 3.7V Battery
Supply Voltage:	100-240VAC/50-60Hz
Adaptor Model:	PS14K0502000U5
RF Output Power	Max. 10.29dBm(Conducted)
Antenna Gain:	2dBi
Frequency range:	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
Number of channels:	11 for 11b/g/n(HT20), 7 for 11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral 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 MID1107CM without circuit and electronic construction changed, declared by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Hena Digital Technology (Shenzhen) 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 the testing was designed to exercise the system components.

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	1.5	Unshielded	Without Core
Earphone	1.0	Unshielded	Without Core

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.203; § 15.247(c)(1)(i)	Antenna Requirement	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 Emissions	Compliant
§ 15.247(d)	Band edge	Compliant
§ 15.207(a)	Conducted Emissions	Compliant

3. §15.203 - 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 integral antenna, fulfill the requirement of this section.

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

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

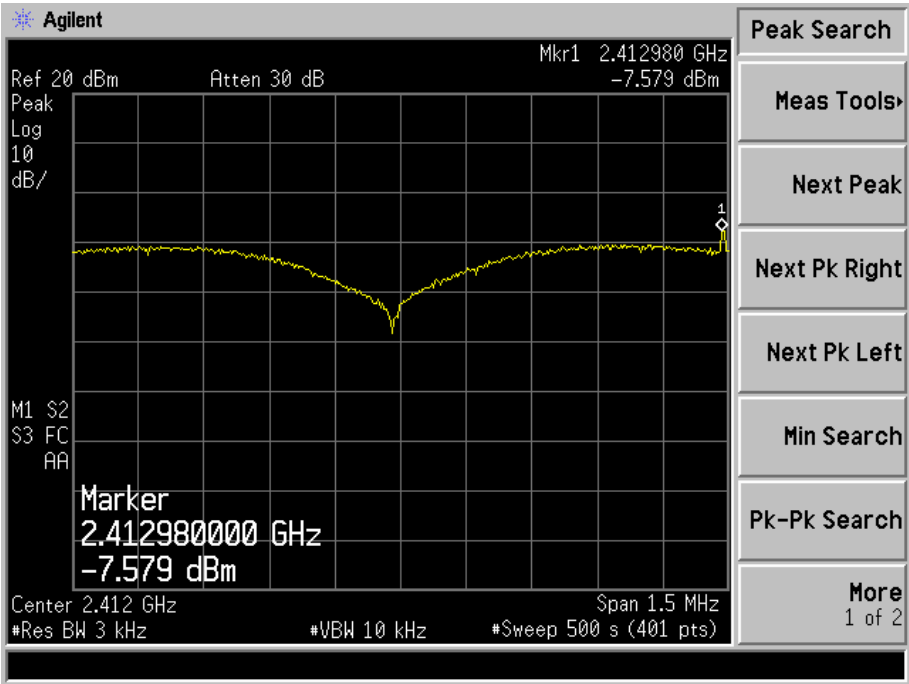
4.5 Summary of Test Results/Plots

Test mode	Test channel	Reading dBm/3kHz	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-7.579	8
	Middle channel (2437MHz)	-9.625	8
	High channel (2462MHz)	-8.768	8
802.11g	Low channel (2412MHz)	-15.35	8
	Middle channel (2437MHz)	-15.23	8
	High channel (2462MHz)	-14.17	8
802.11n (HT20)	Low channel (2412MHz)	-14.91	8
	Middle channel (2437MHz)	-14.77	8
	High channel (2462MHz)	-14.51	8
802.11n (HT40)	Low channel (2422MHz)	-18.88	8
	Middle channel (2437MHz)	-18.82	8
	High channel (2452MHz)	-18.67	8

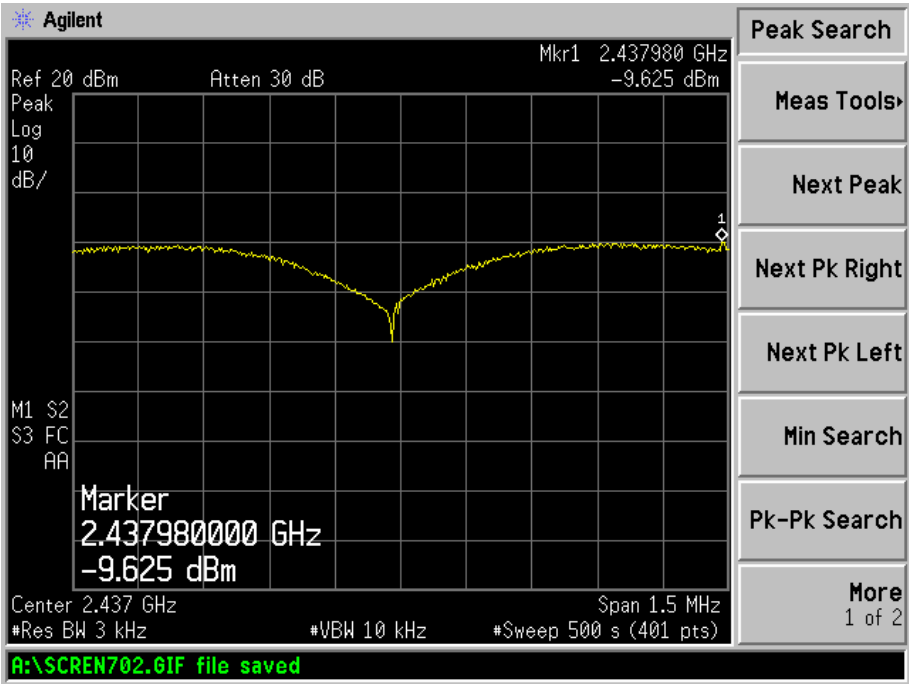
Please refer to the following test plots:

For 802.11b

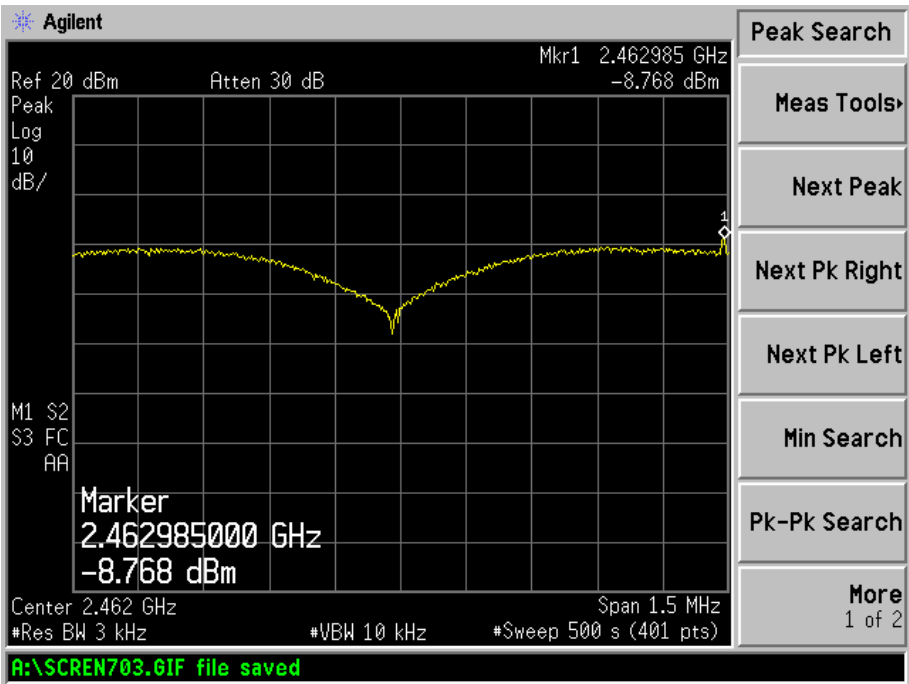
Low Channel:



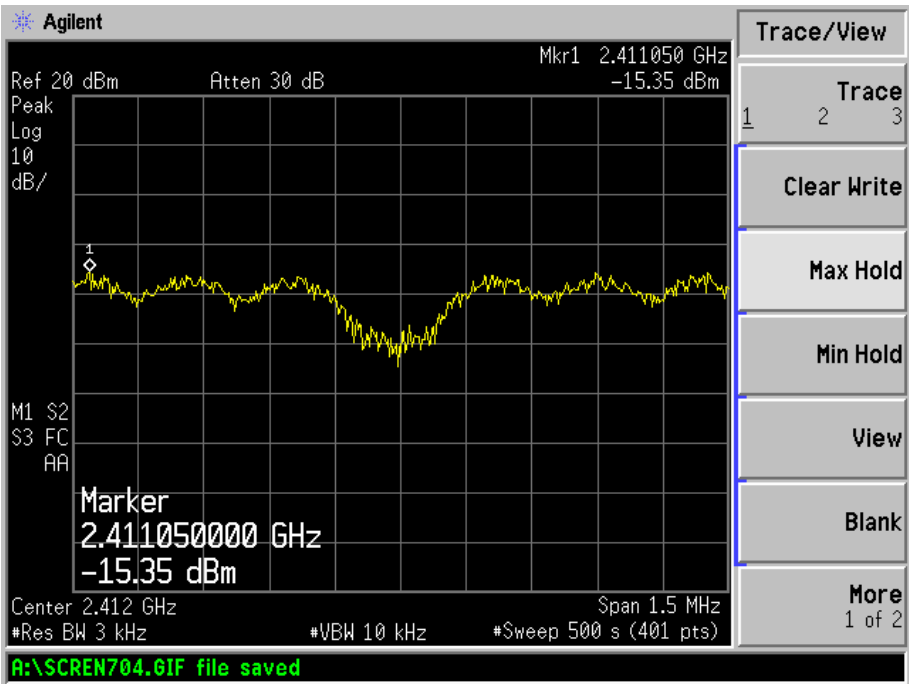
Middle Channel:



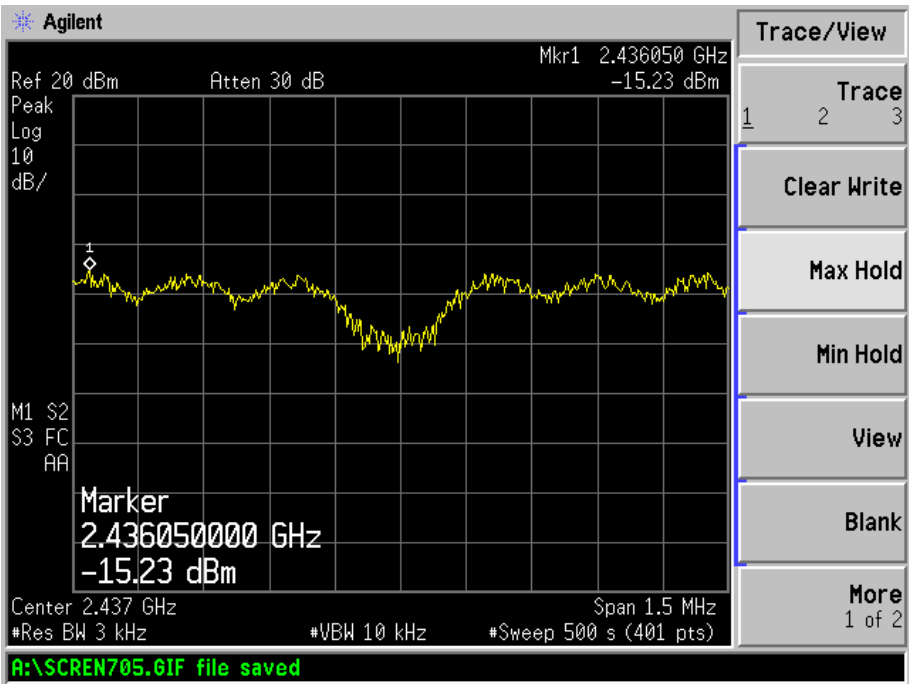
High Channel:



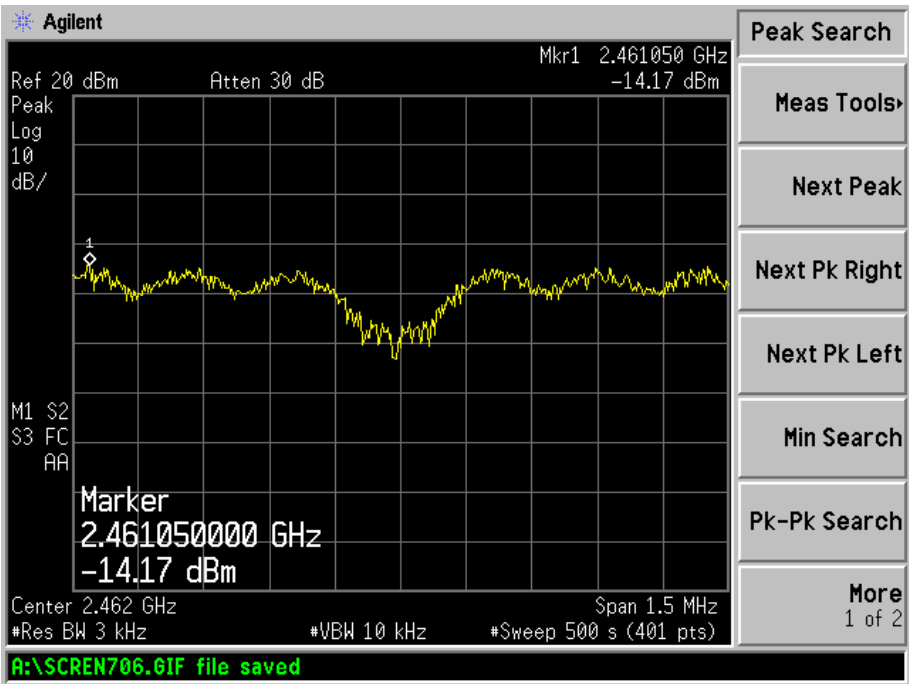
For 802.11g
Low Channel:



Middle Channel:

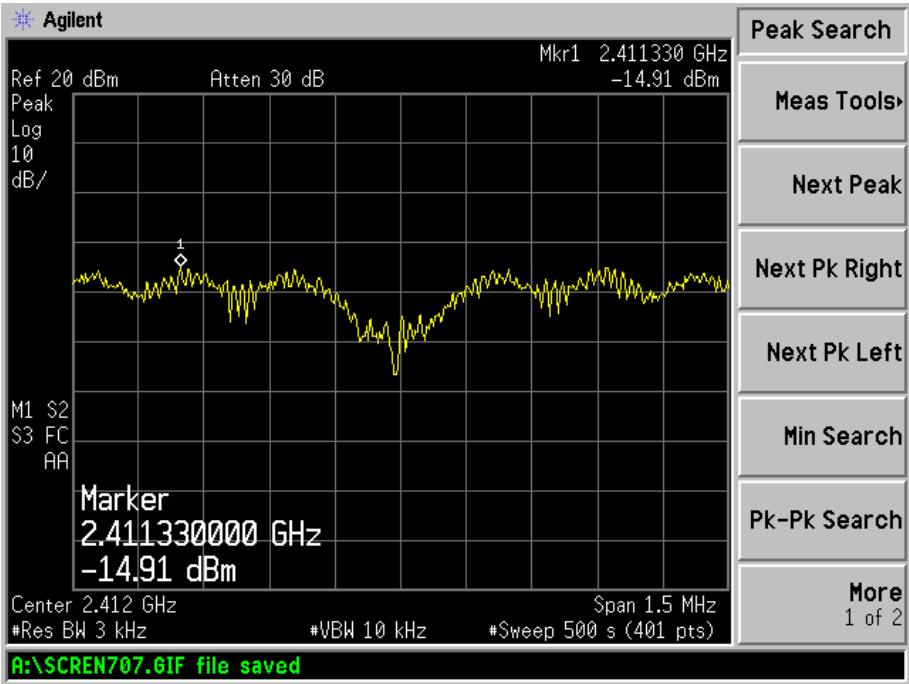


High Channel:

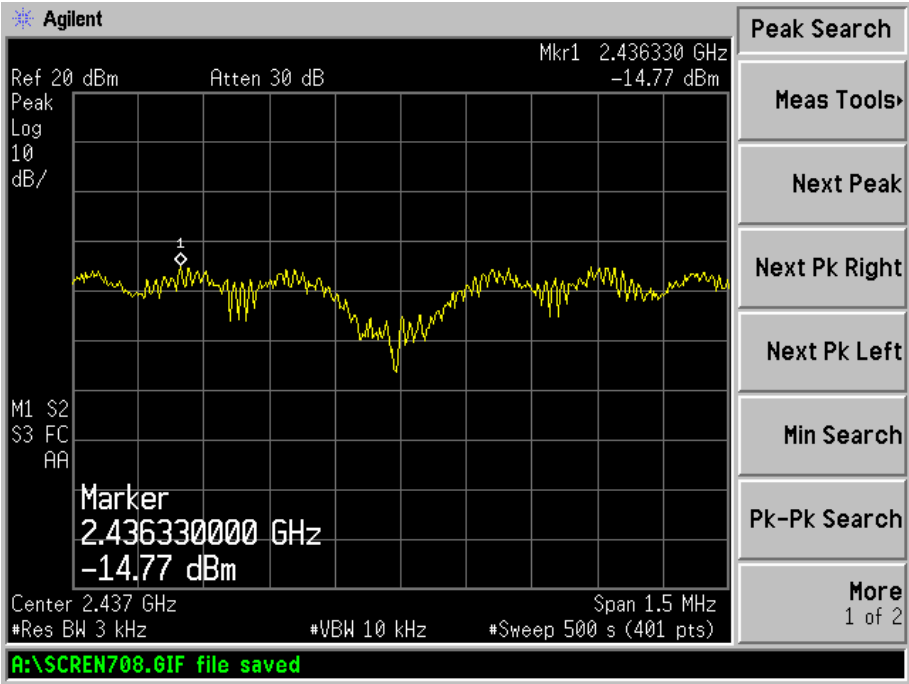


For 802.11n HT 20M

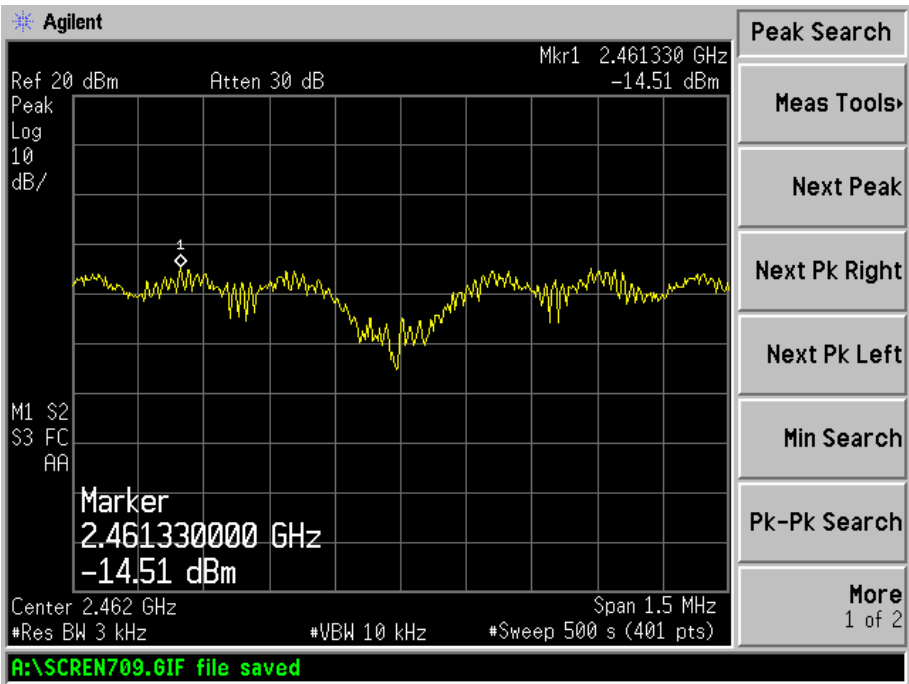
Low Channel:



Middle Channel:

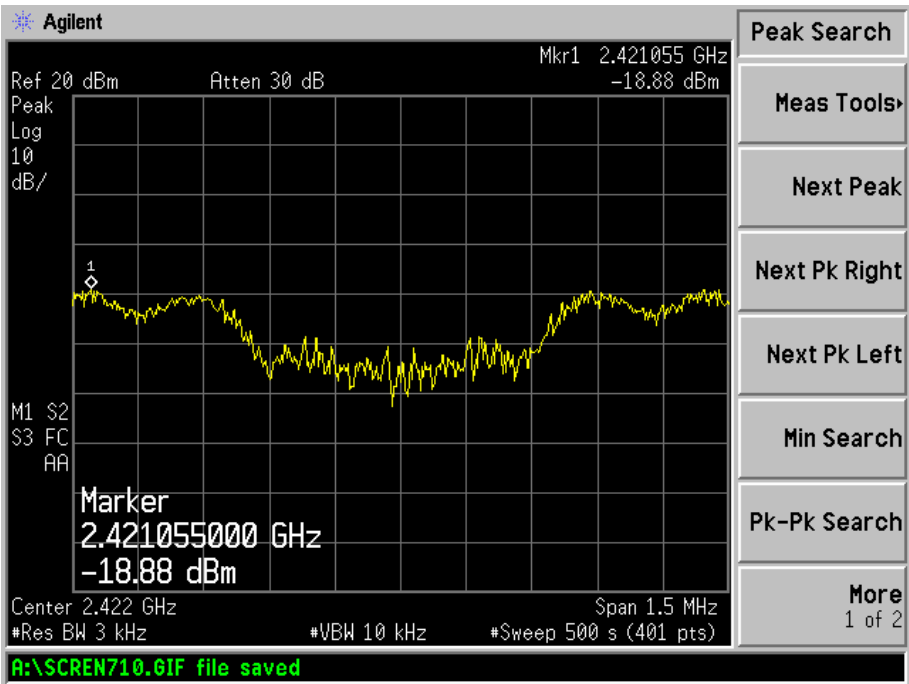


High Channel:

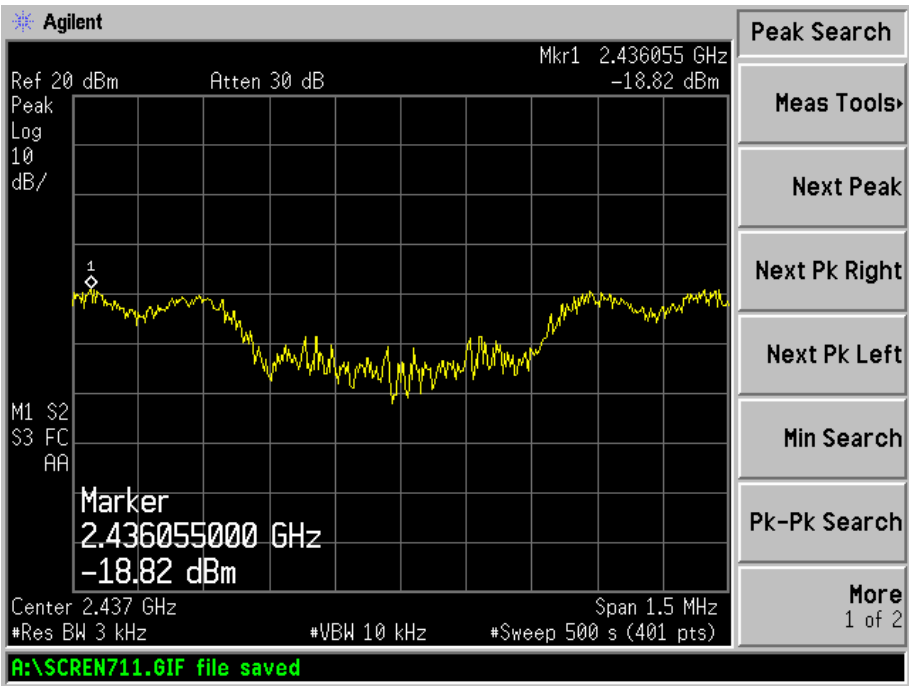


For 802.11n HT 40M

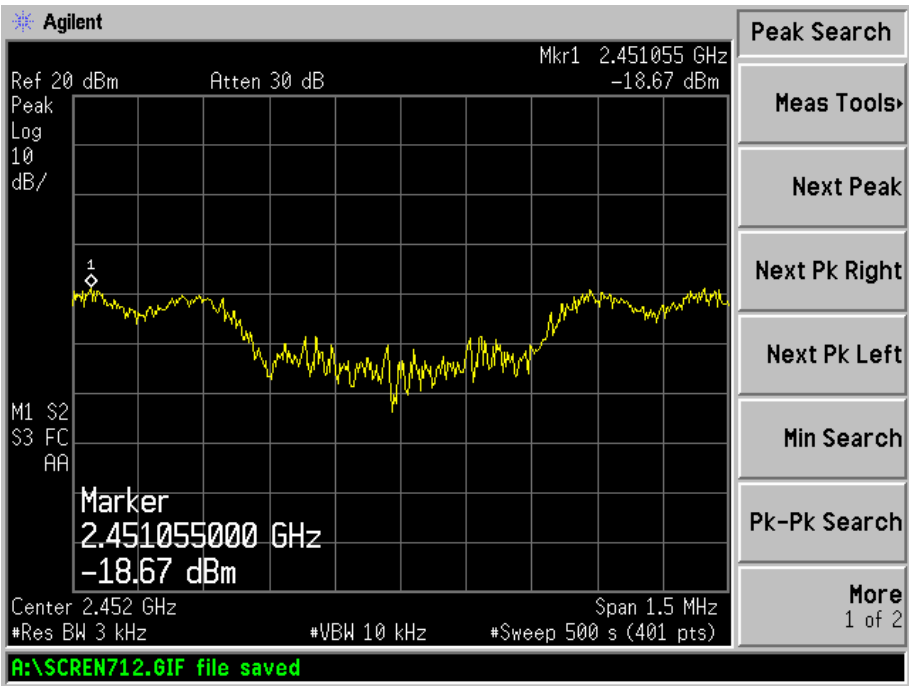
Low Channel:



Middle Channel:



High 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

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

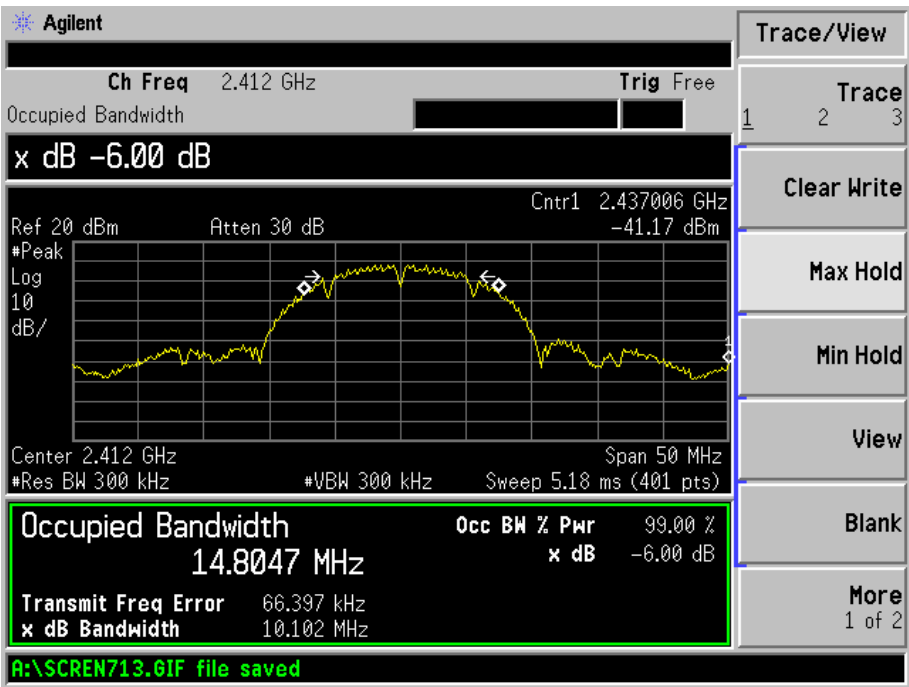
Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

5.5 Summary of Test Results/Plots

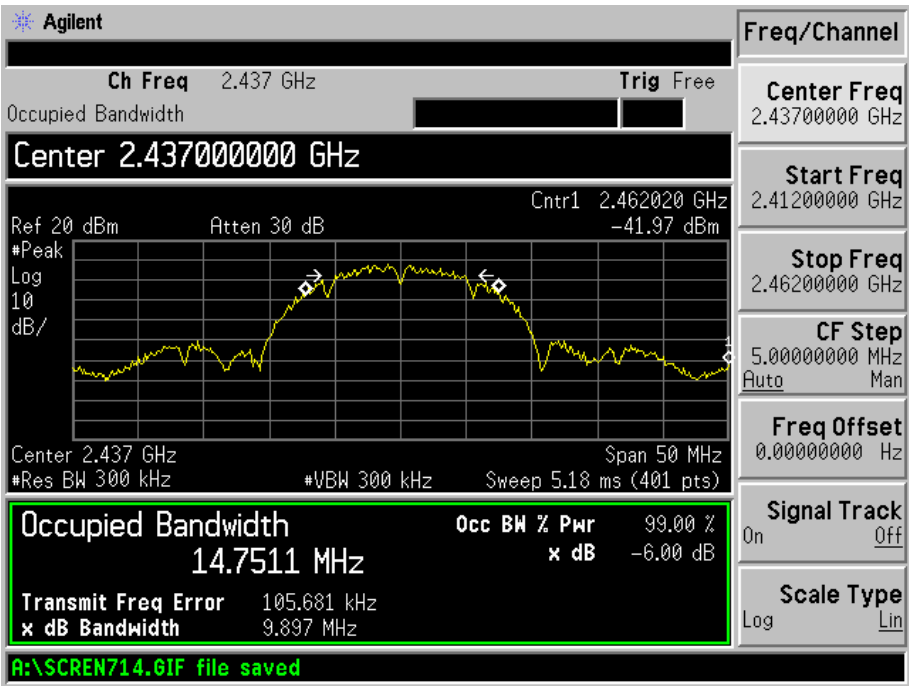
Test mode	Frequency MHz	6 dB Bandwidth kHz	Limit kHz
802.11b	2412	10102	500
	2437	9897	500
	2462	10069	500
802.11g	2412	16536	500
	2437	16568	500
	2462	16525	500
802.11n (HT20)	2412	17785	500
	2437	17840	500
	2462	17809	500
802.11n (HT40)	2422	36233	500
	2437	36278	500
	2452	36375	500

For 802.11b

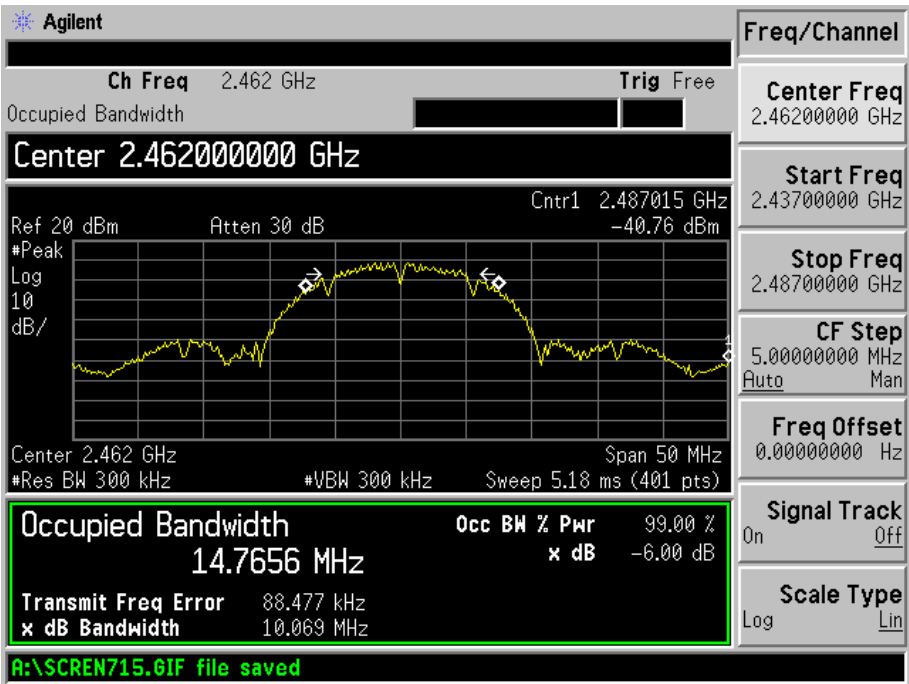
Low Channel:



Mid Channel:

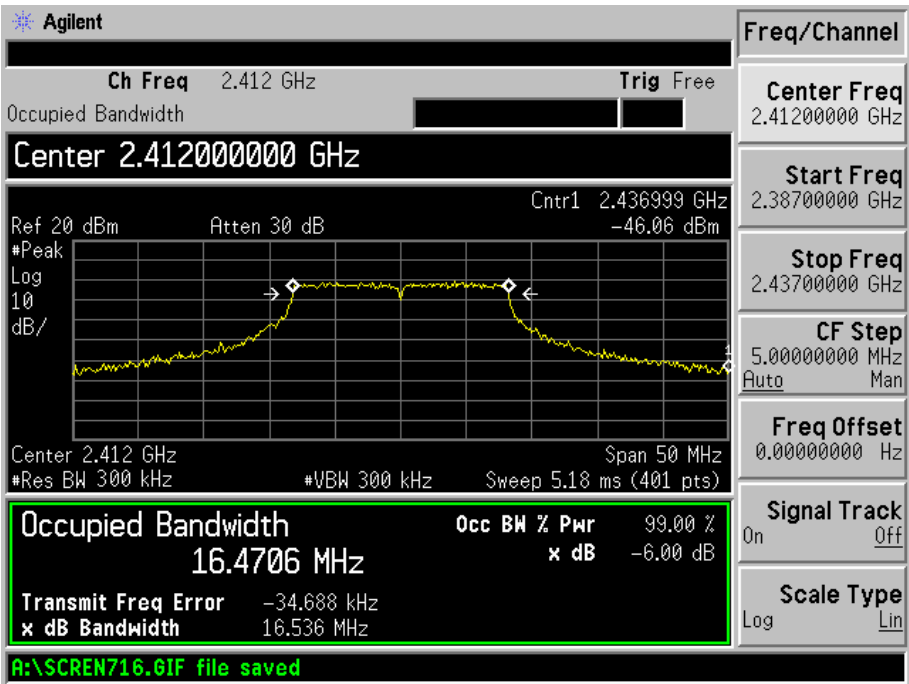


High Channel:

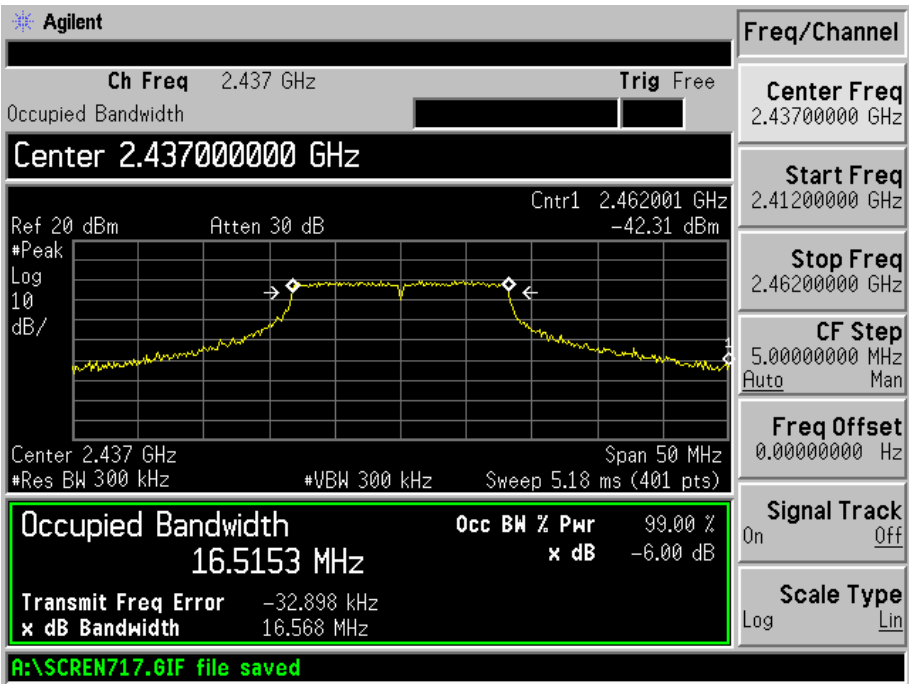


For 802.11g

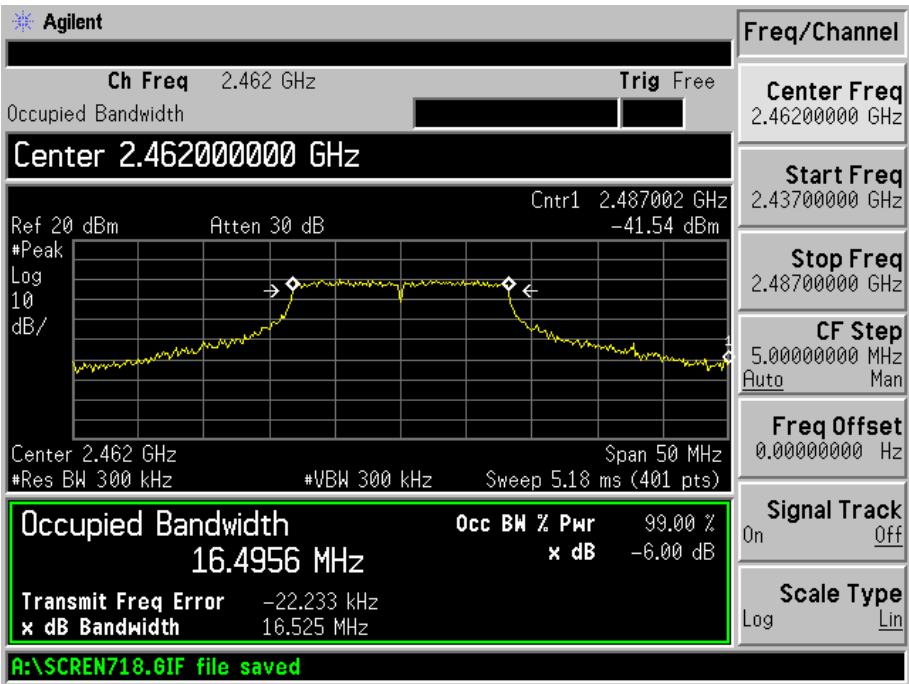
Low Channel:



Mid Channel:

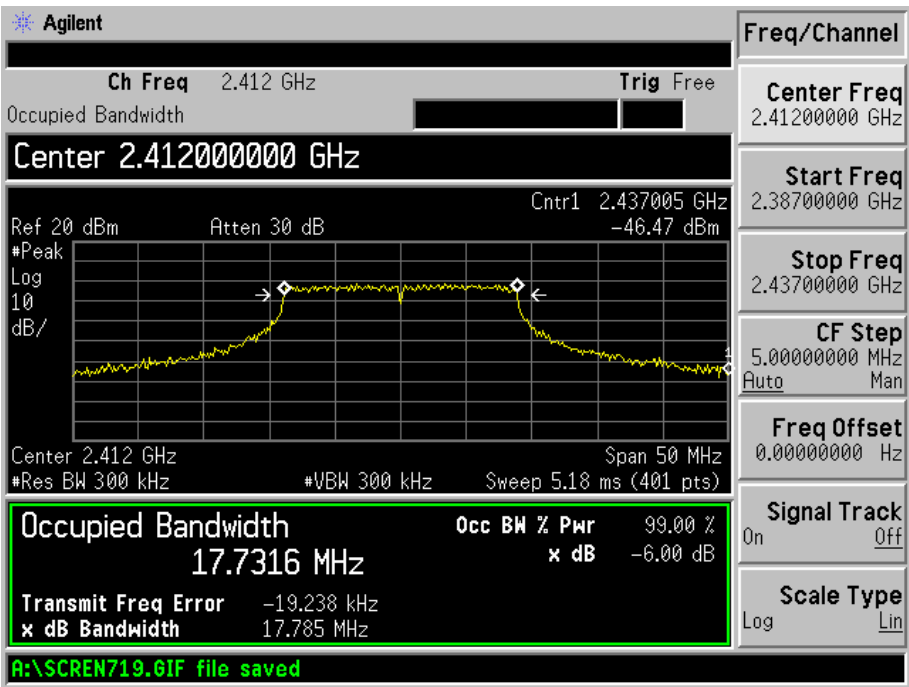


High Channel:

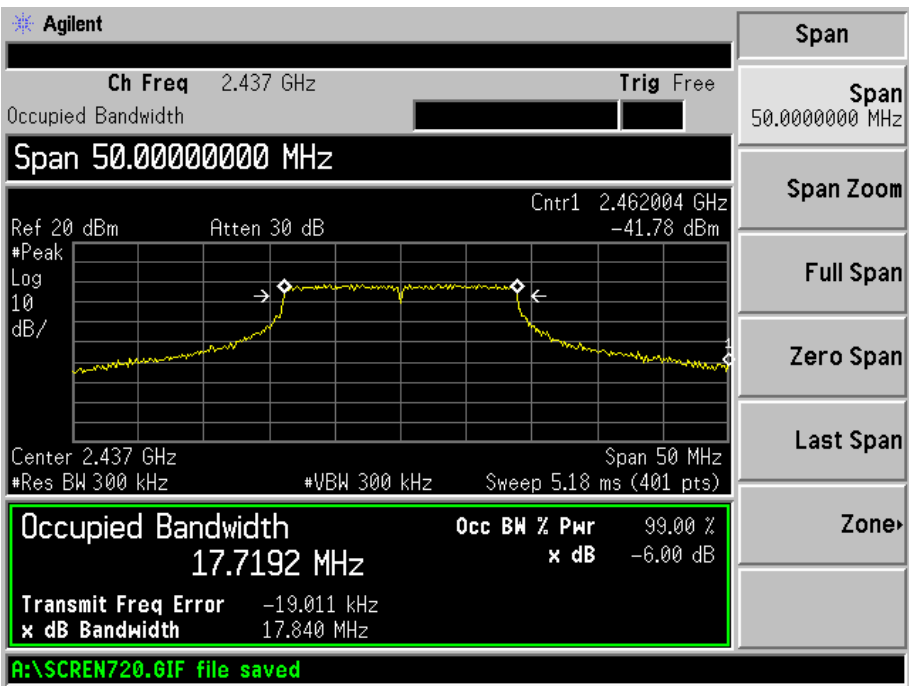


For 802.11n HT 20M

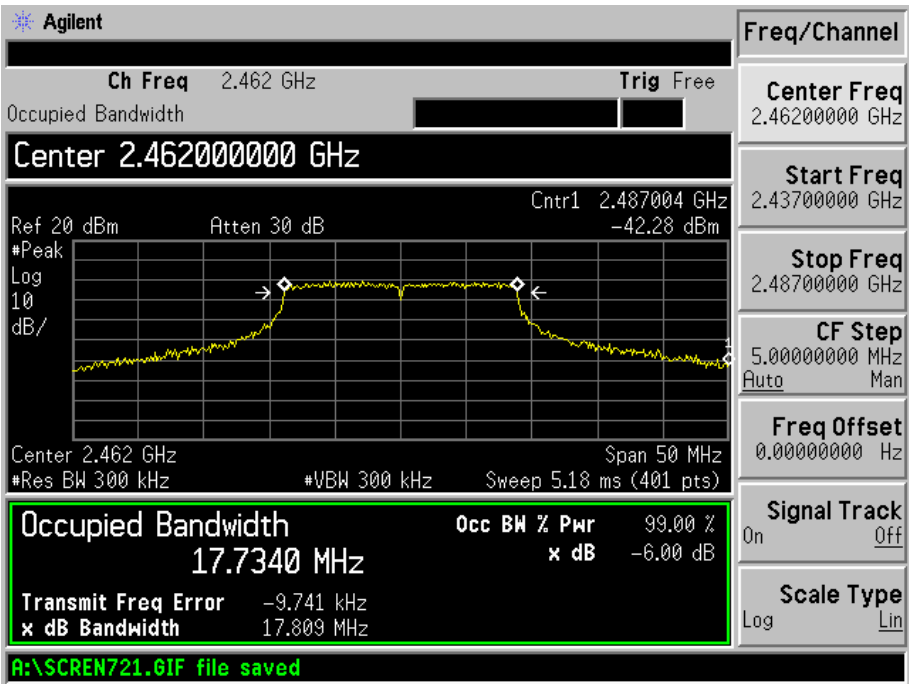
Low Channel:



Mid Channel:

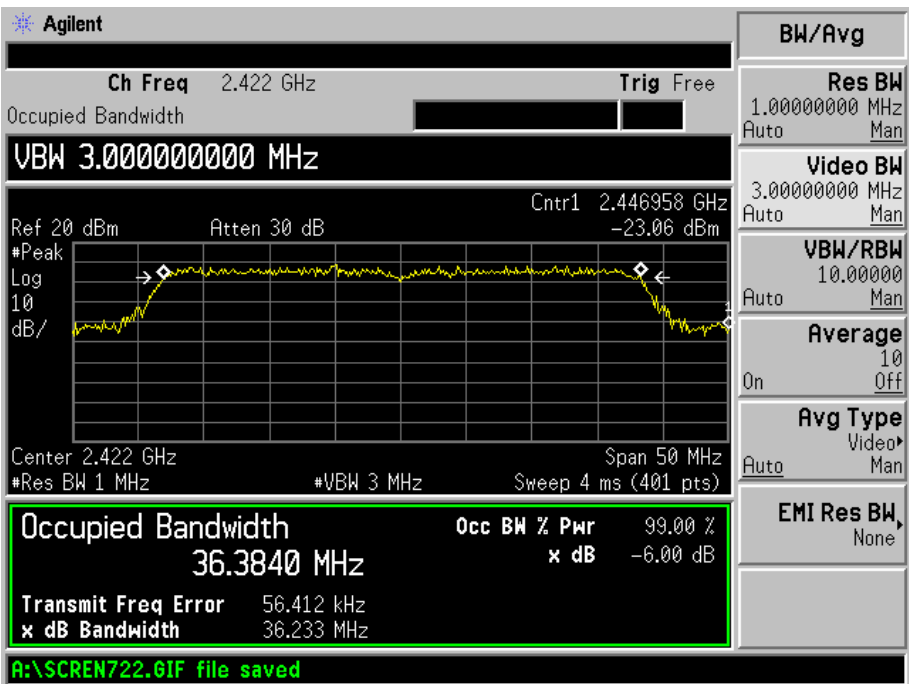


High Channel:

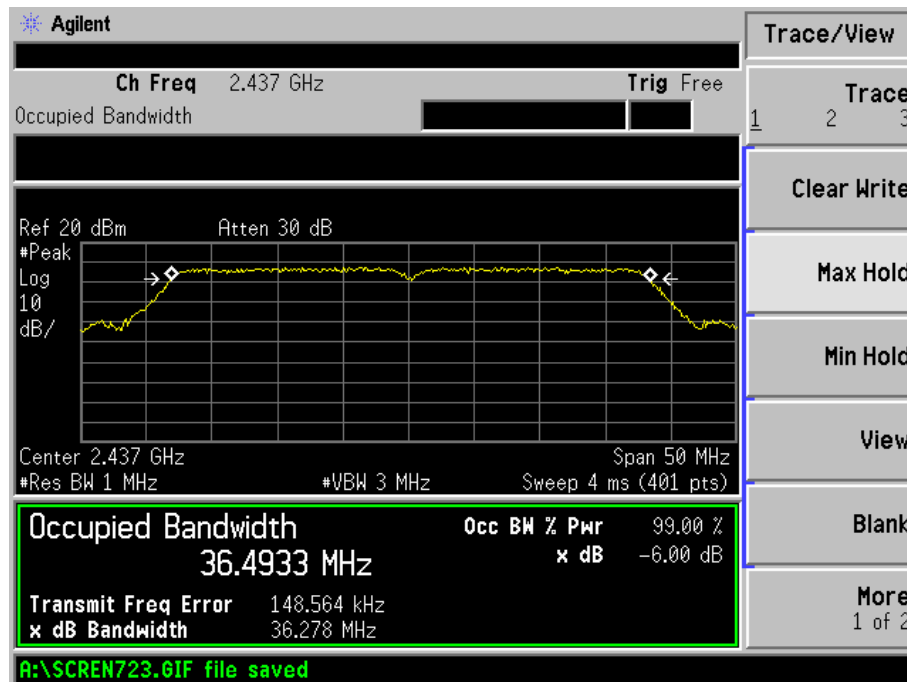


For 802.11n HT 40M

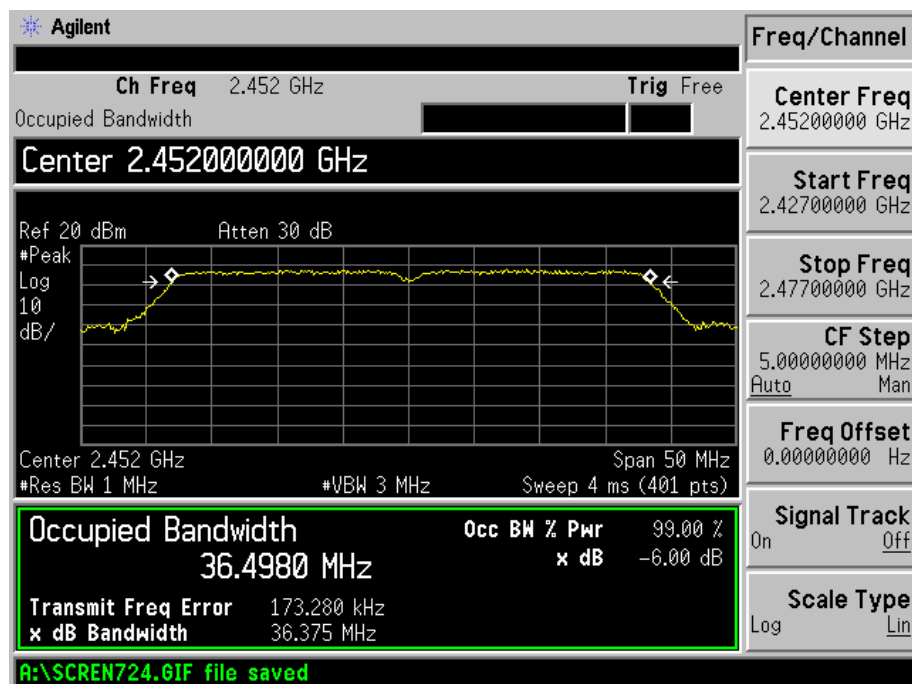
Low Channel:



Mid Channel:



High 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

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

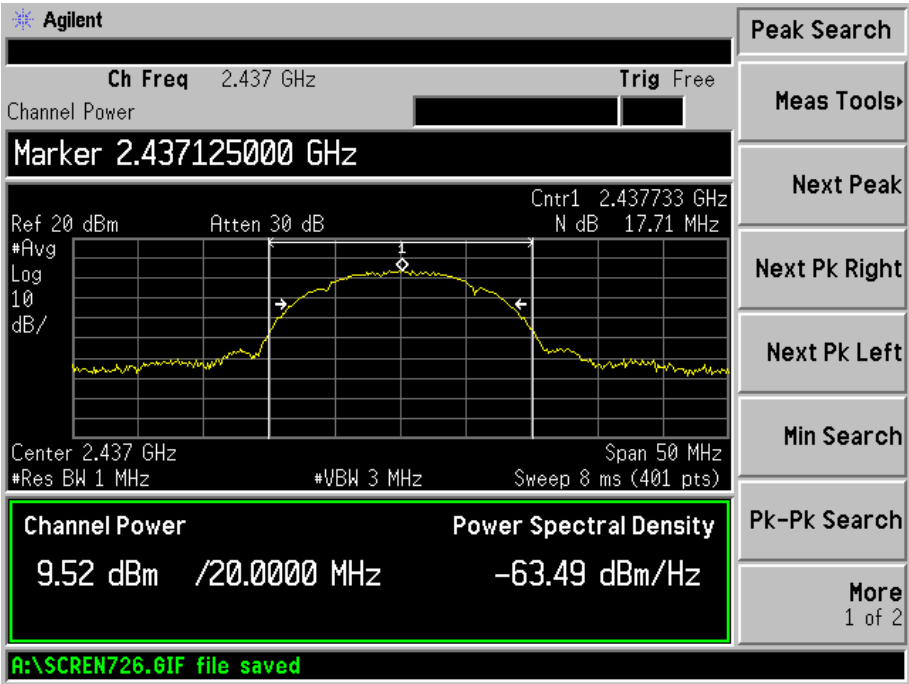
Temperature:	21° C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

6.5 Summary of Test Results/Plots

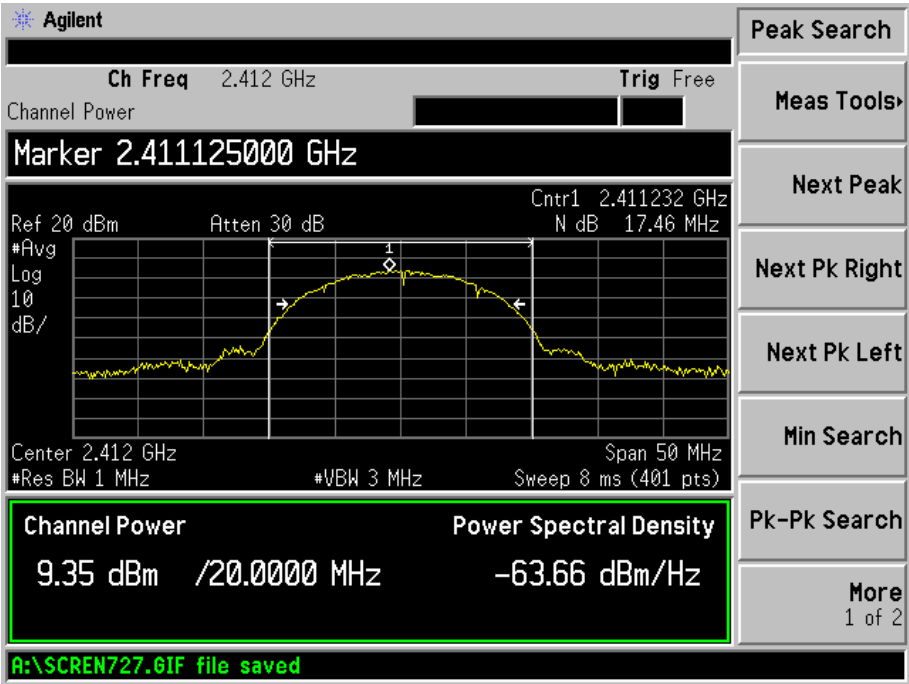
Test mode	Frequency MHz	Reading dBm	Output power W	Limit W
802.11b (1M)	2412	9.52	0.00895	1
	2437	9.35	0.00861	1
	2462	9.77	0.00948	1
802.11b (11M)	2412	9.80	0.00955	1
	2437	10.29	0.01069	1
	2462	10.15	0.01035	1
802.11g (6M)	2412	8.31	0.00678	1
	2437	8.17	0.00656	1
	2462	7.78	0.00600	1
802.11g (54M)	2412	8.16	0.00655	1
	2437	7.85	0.00610	1
	2462	7.66	0.00583	1
802.11n HT 20M	2412	8.86	0.00769	1
	2437	7.67	0.00585	1
	2462	8.05	0.00638	1
802.11n HT 40M	2422	8.42	0.00695	1
	2437	8.63	0.00729	1
	2452	7.04	0.00506	1

For 802.11b_1M rate

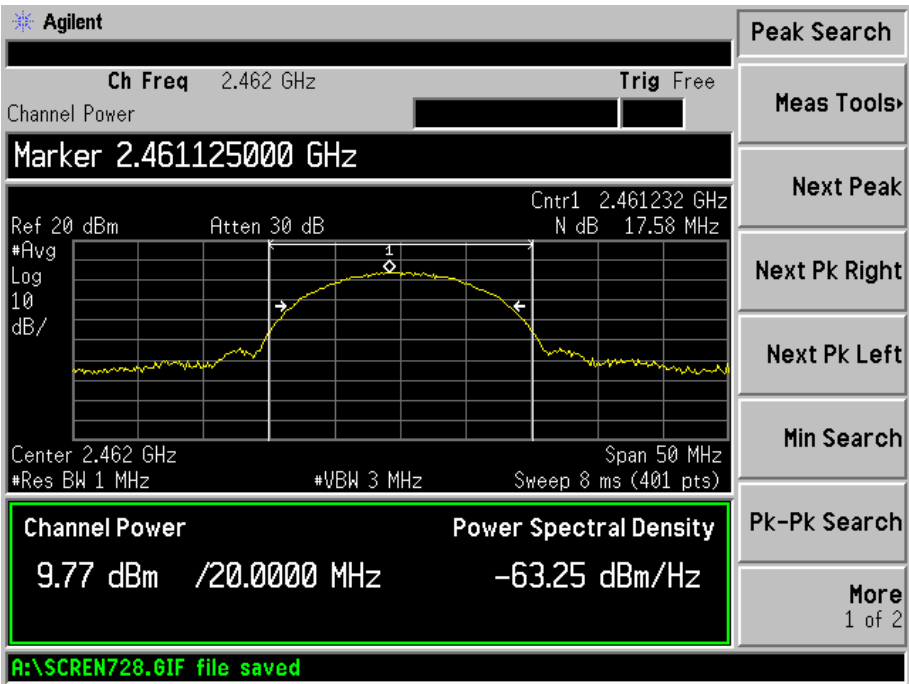
Low Channel:



Middle Channel:

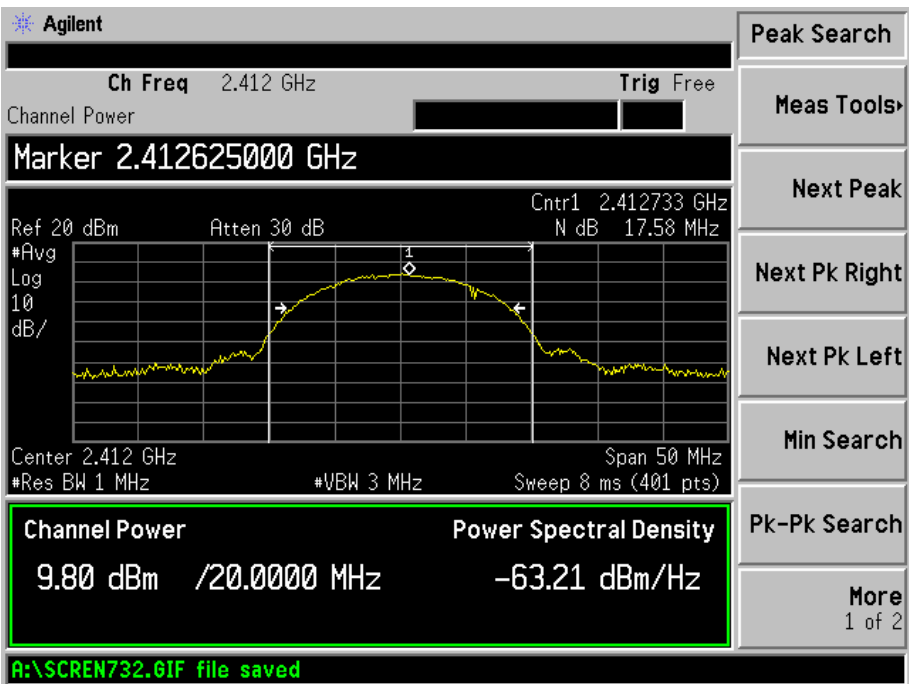


High Channel:

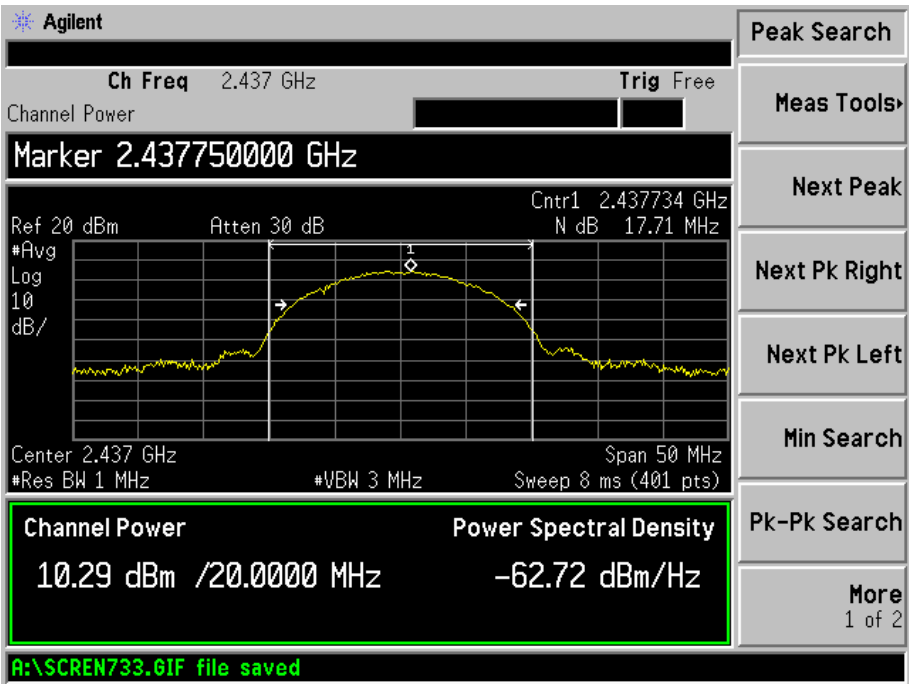


For 802.11b_11M rate

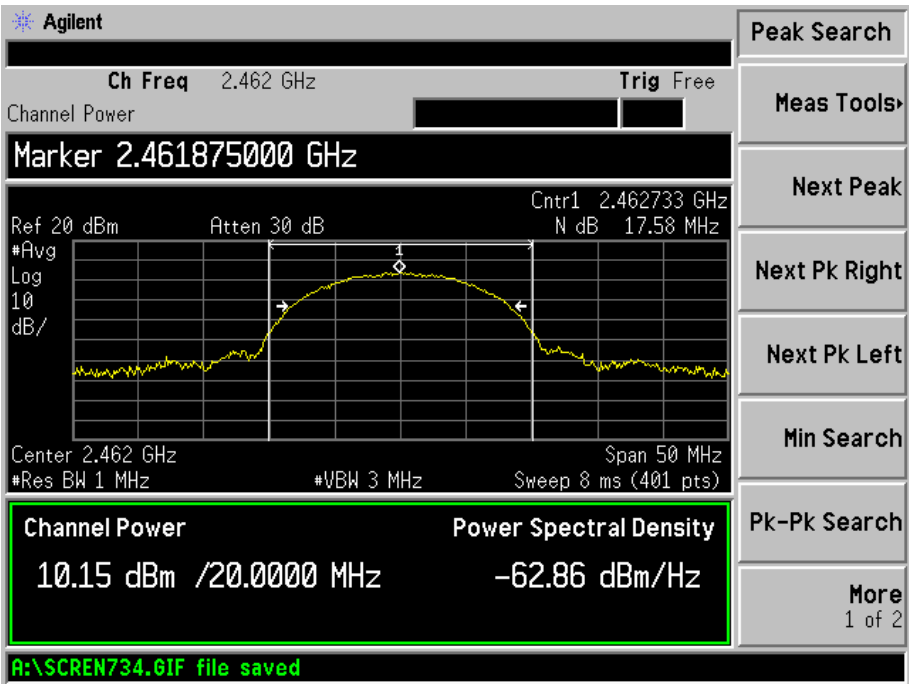
Low Channel:



Middle Channel:

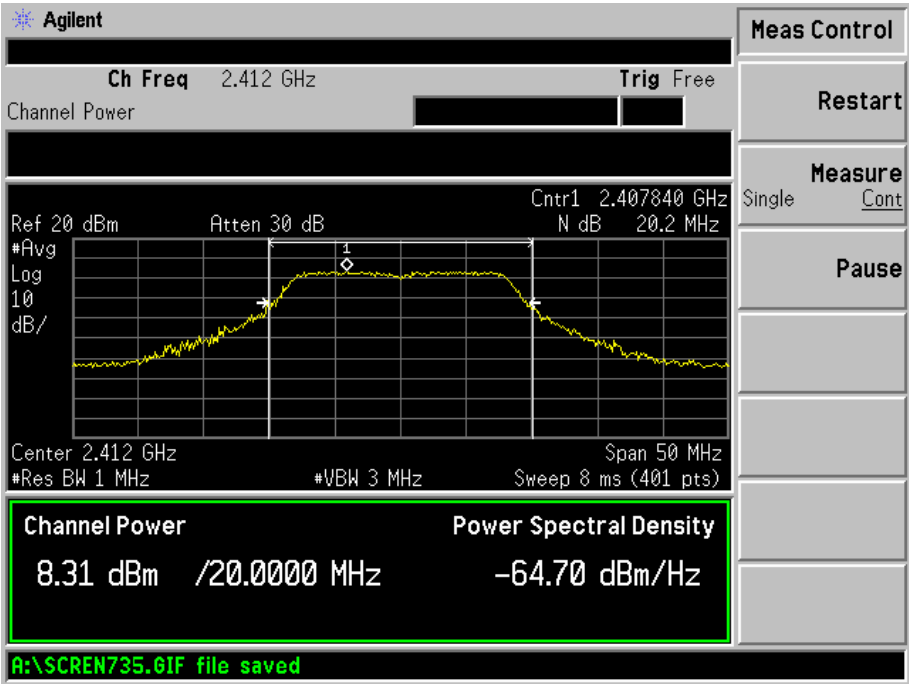


High Channel:

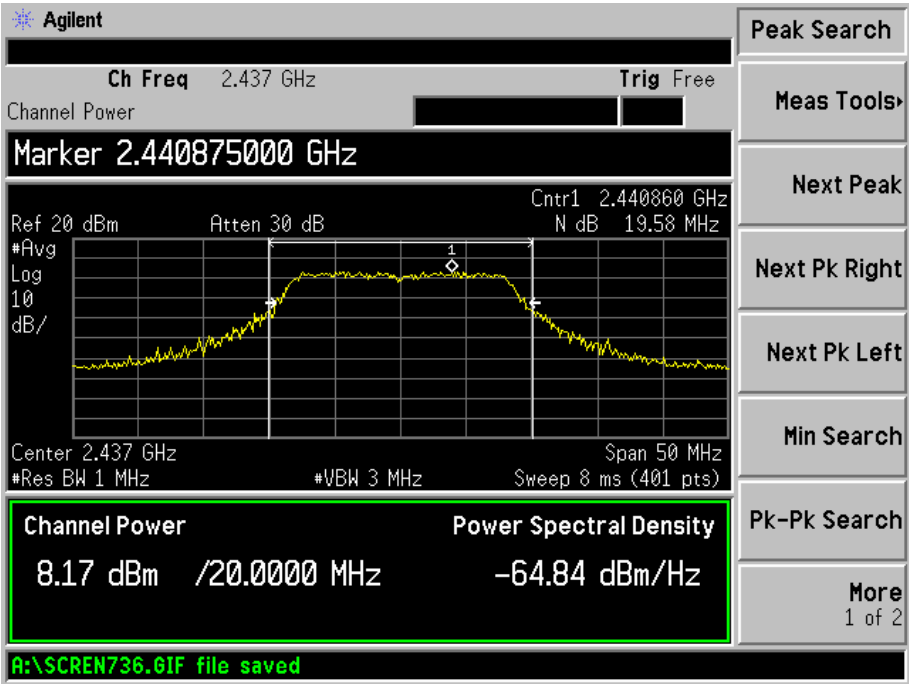


For 802.11g_6M rate

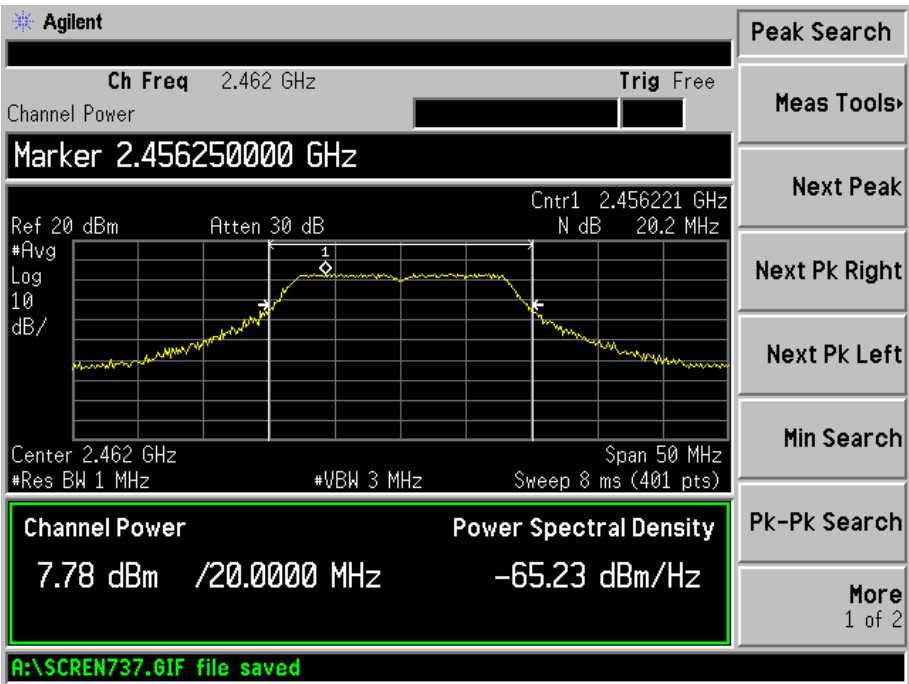
Low Channel:



Middle Channel:

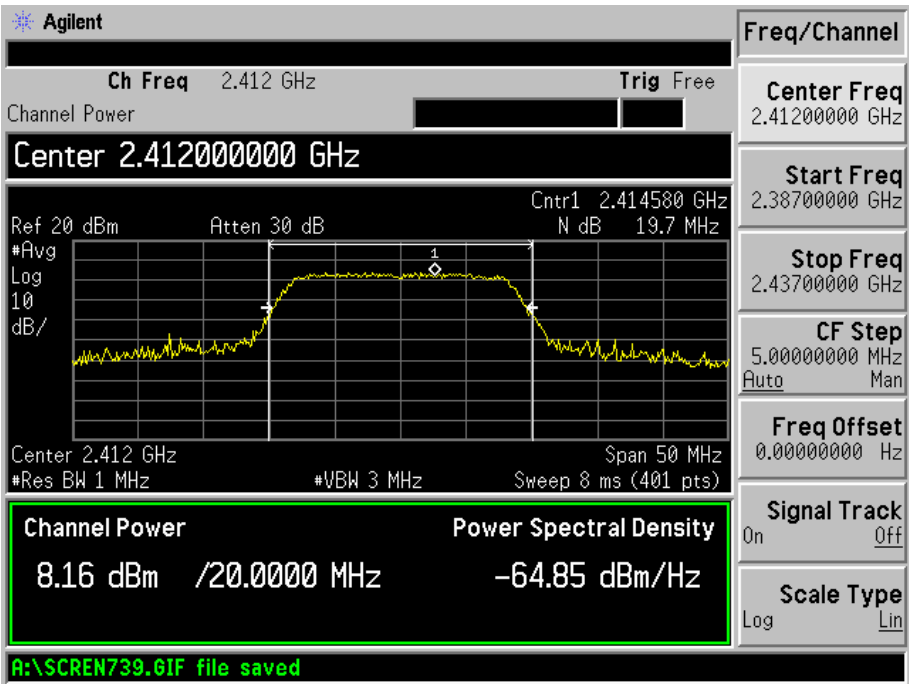


High Channel:

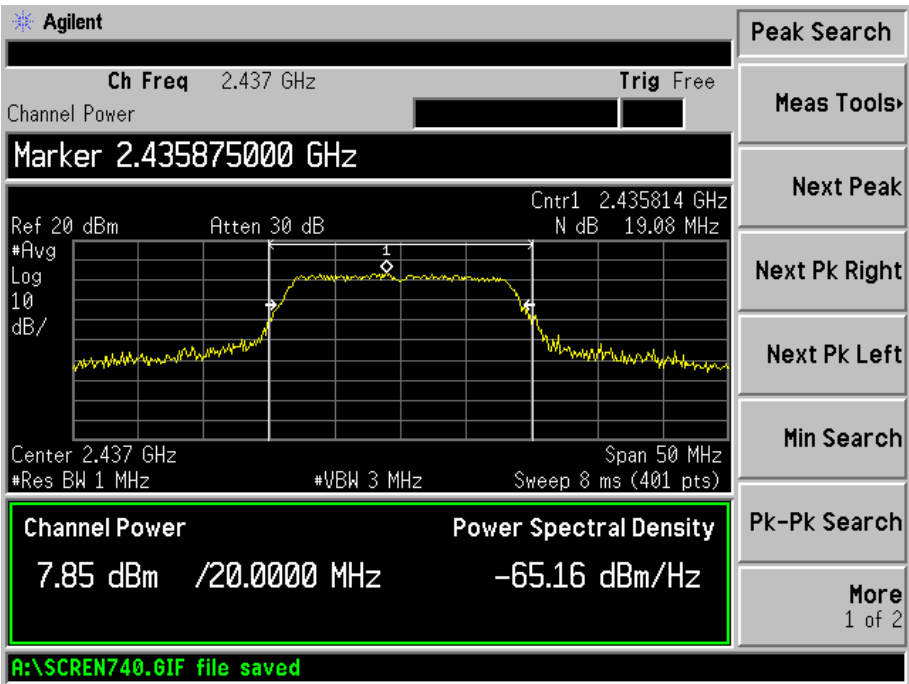


For 802.11g_54M rate

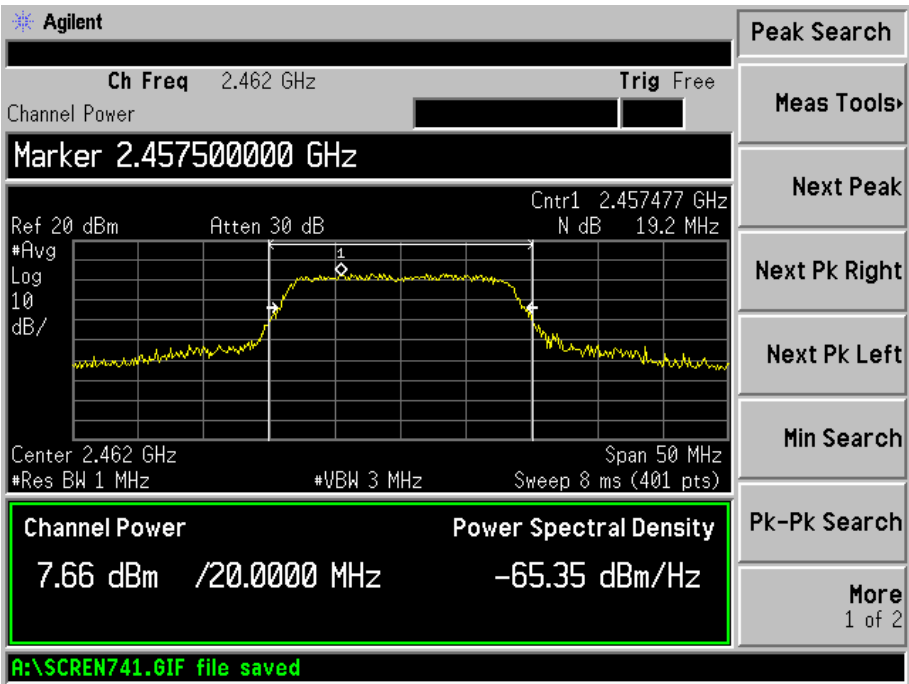
Low Channel:



Middle Channel:

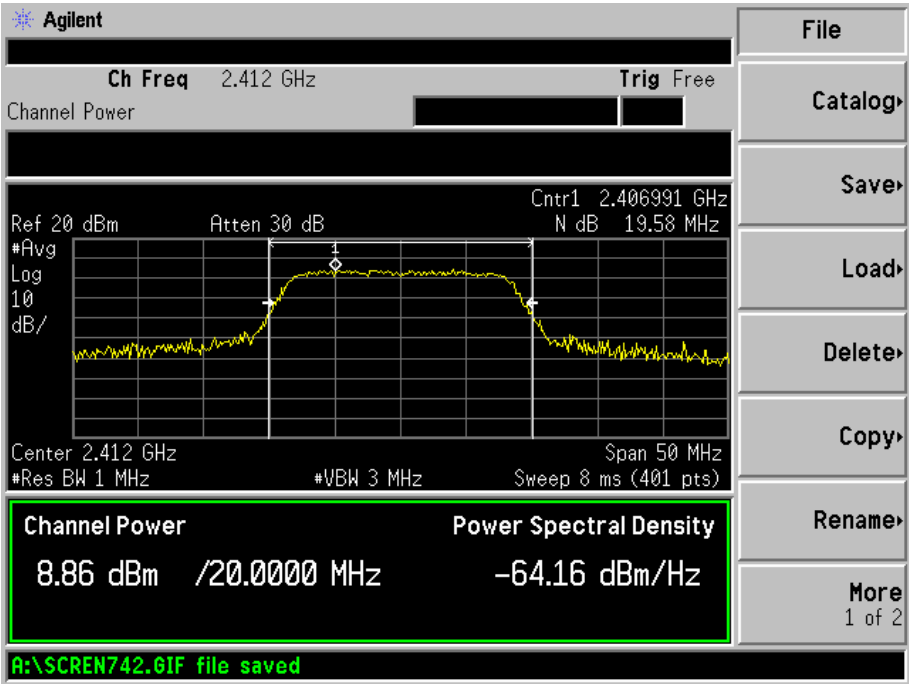


High Channel:

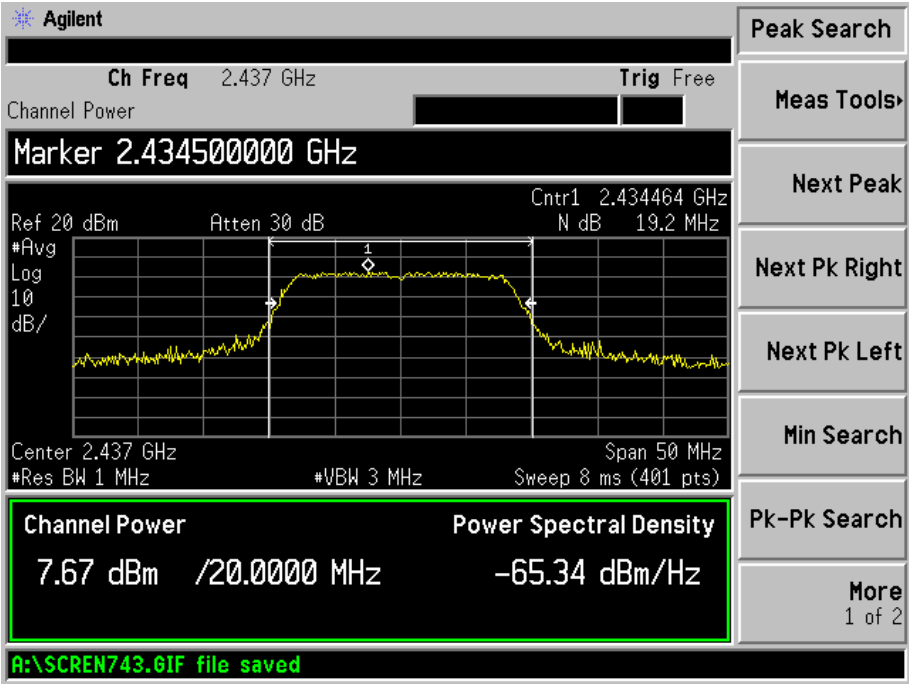


For 802.11n_HT 20M rate

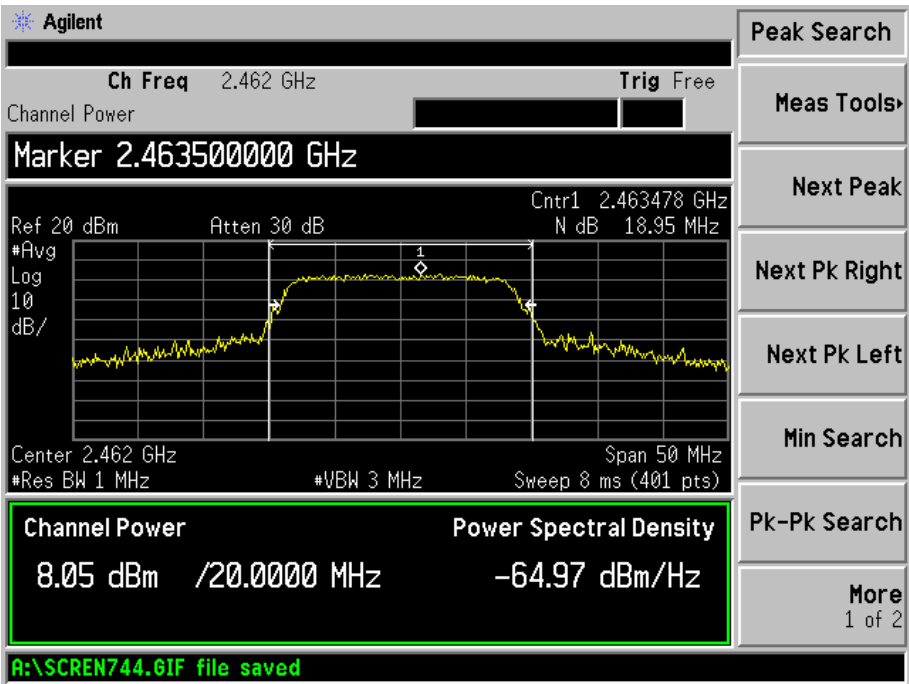
Low Channel:



Middle Channel:

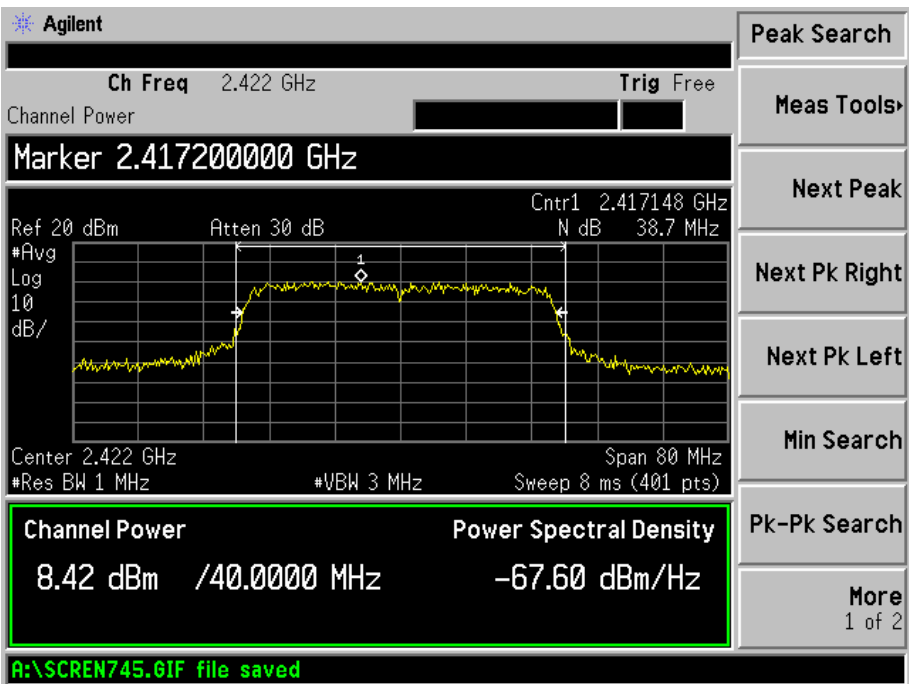


High Channel:

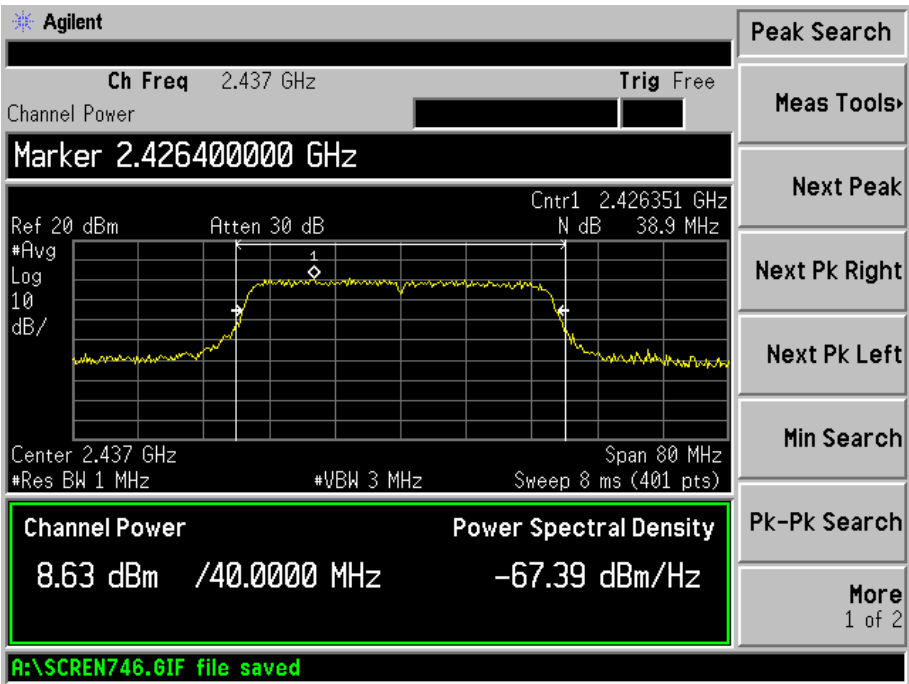


For 802.11n_HT 40M rate

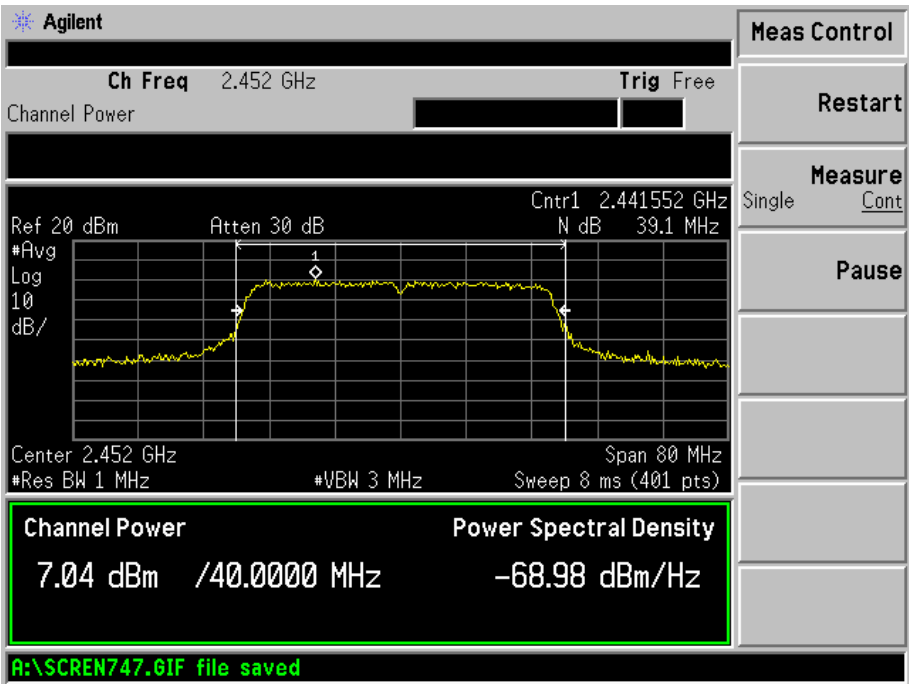
Low Channel:



Middle Channel:



High 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

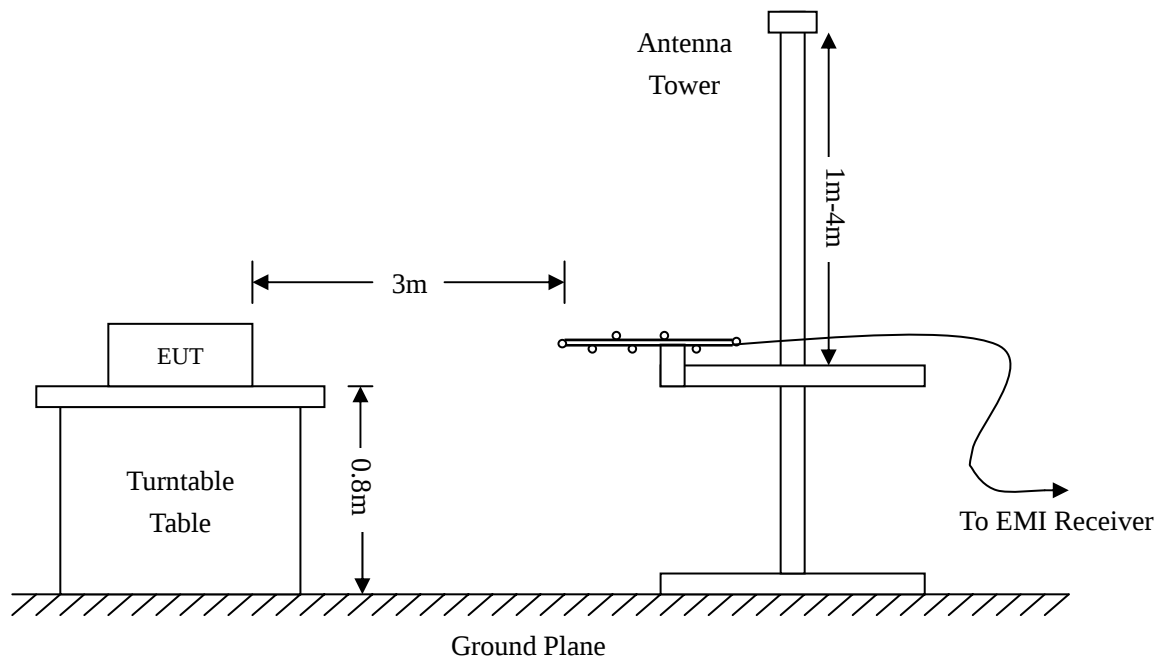
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	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

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

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:

-4.52dBμV at 900.1474MHz in the Horizontal polarization, Transmitting 802.11n HT20M Middle Channel test mode with, 9 kHz to 25 GHz, 3Meters

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

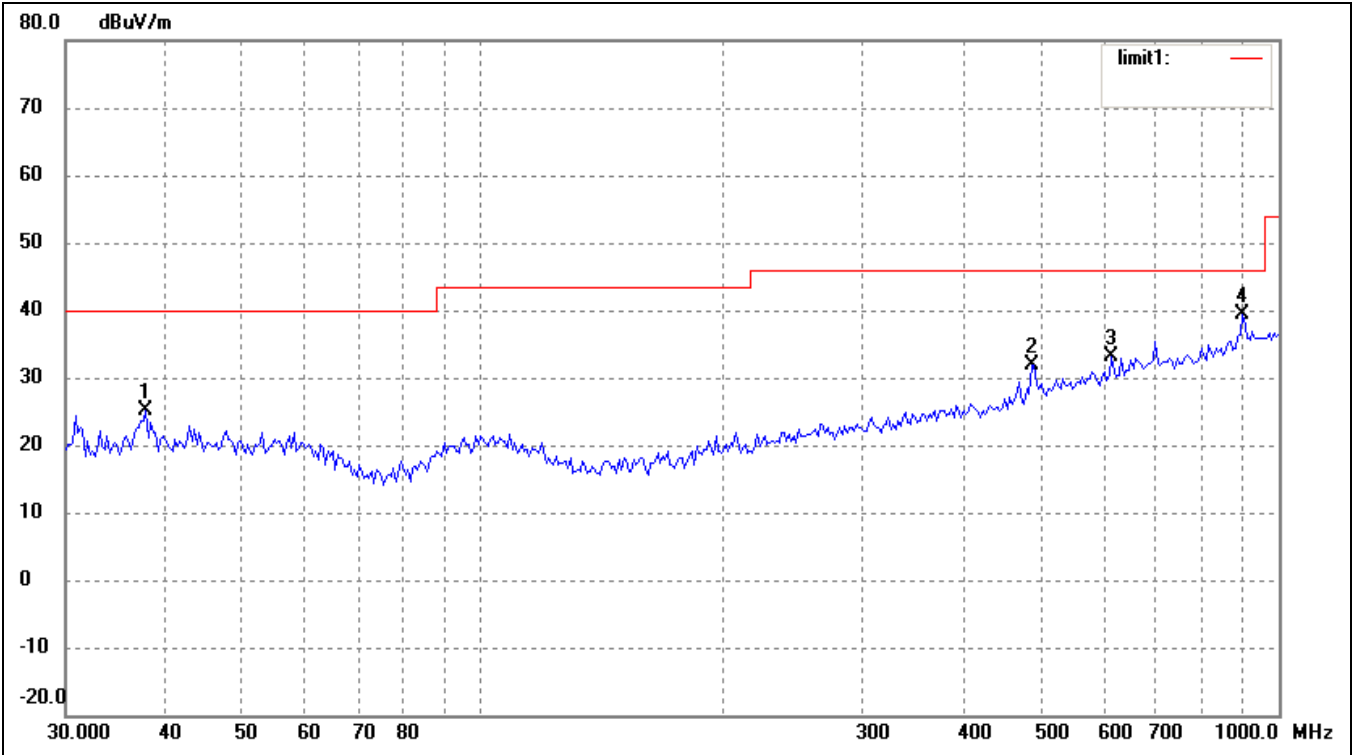
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Low Channel

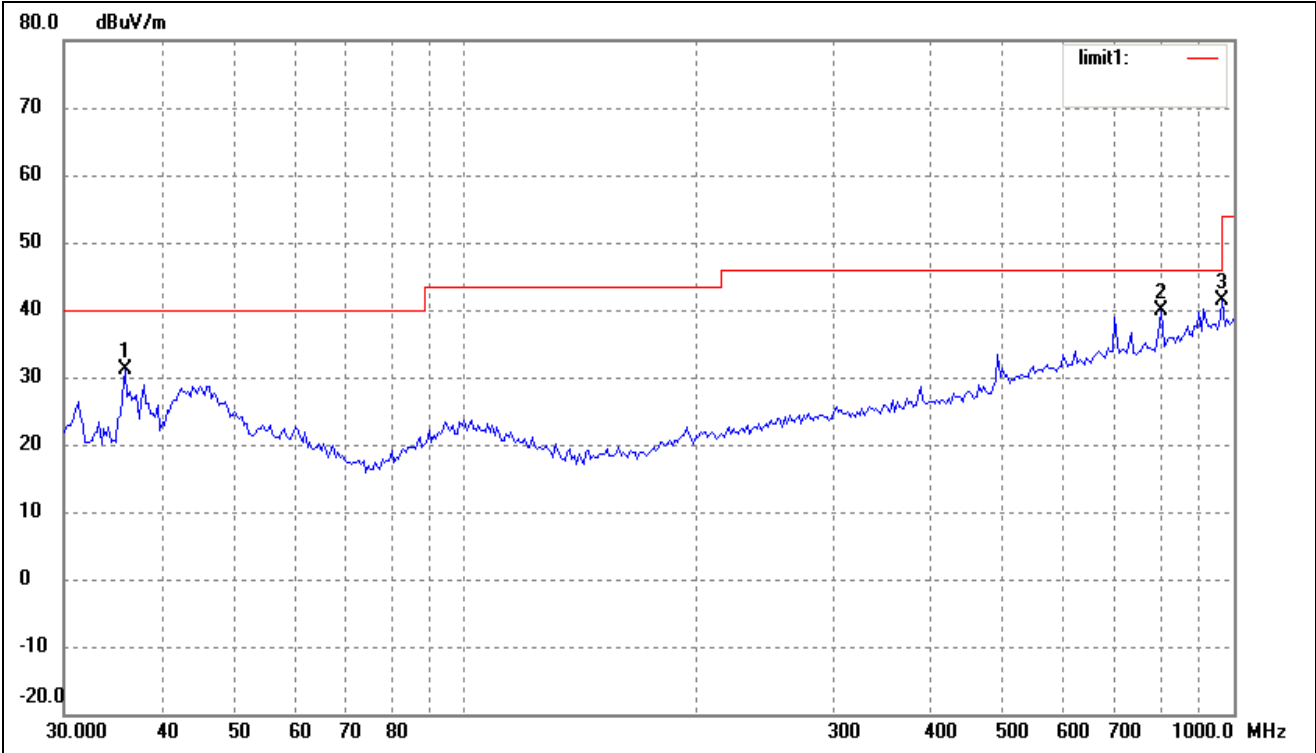
Comment:

Horizontal



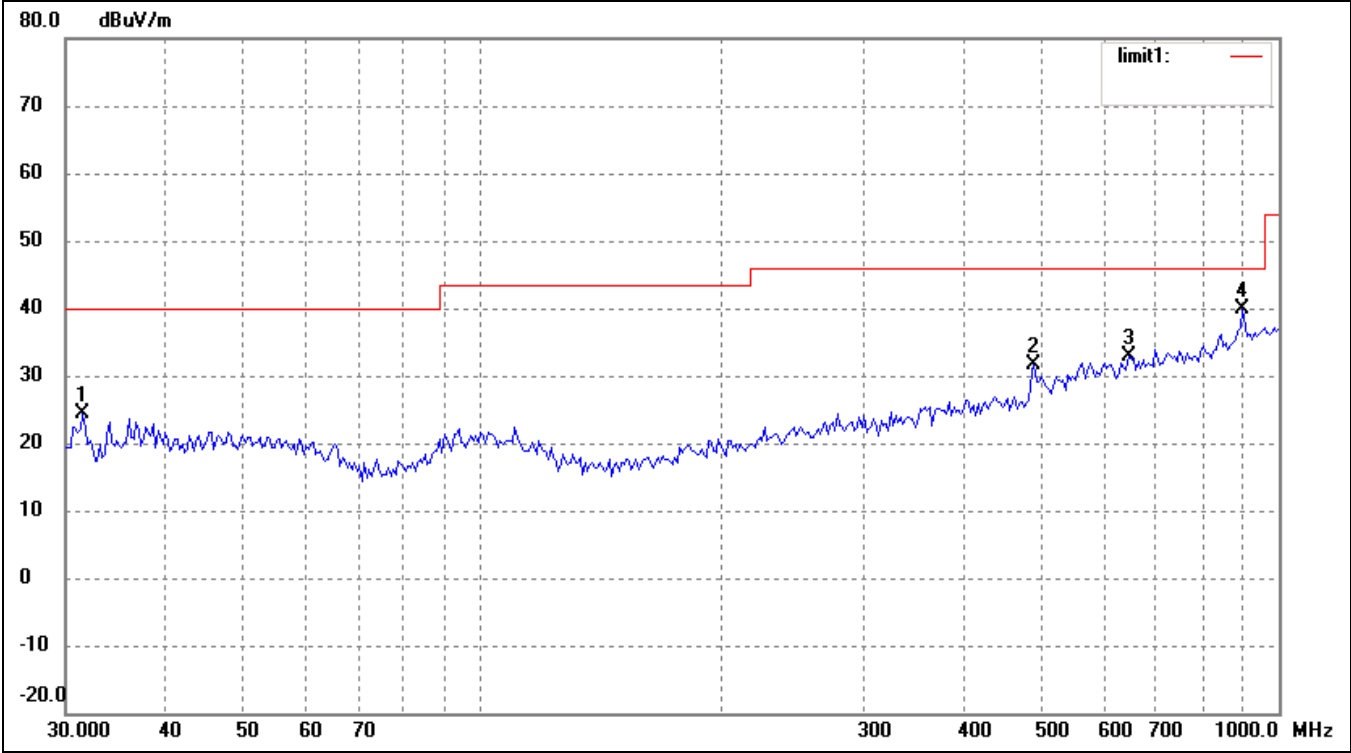
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	37.8121	17.54	7.54	25.08	40.00	-14.92	360	100	peak
2	489.0269	18.64	13.34	31.98	46.00	-14.02	360	100	peak
3	616.3718	16.29	16.80	33.09	46.00	-12.91	360	100	peak
4	900.1474	18.37	20.90	39.27	46.00	-6.73	360	100	peak

Vertical



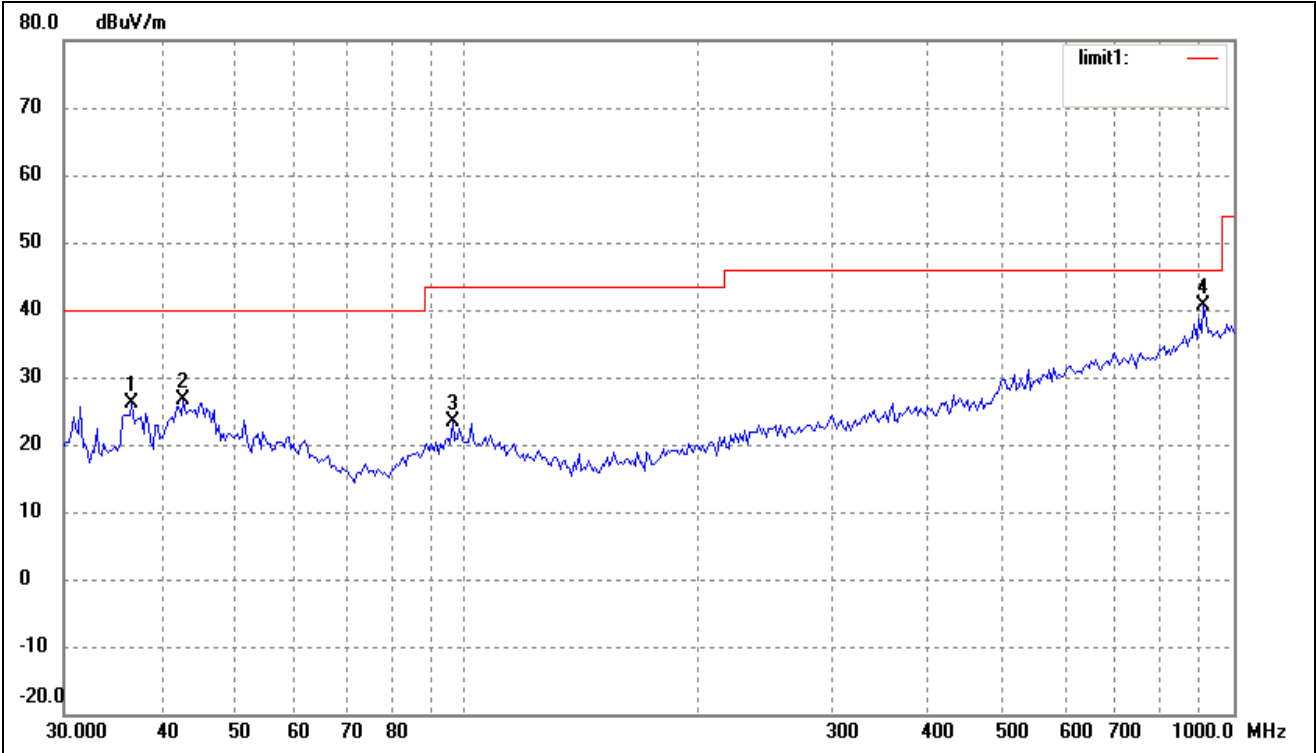
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	24.17	7.05	31.22	40.00	-8.78	360	100	peak
2	804.6028	20.72	19.10	39.82	46.00	-6.18	360	100	peak
3	965.5421	19.31	22.10	41.41	54.00	-12.59	360	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11b) Middle Channel
Comment:
Horizontal



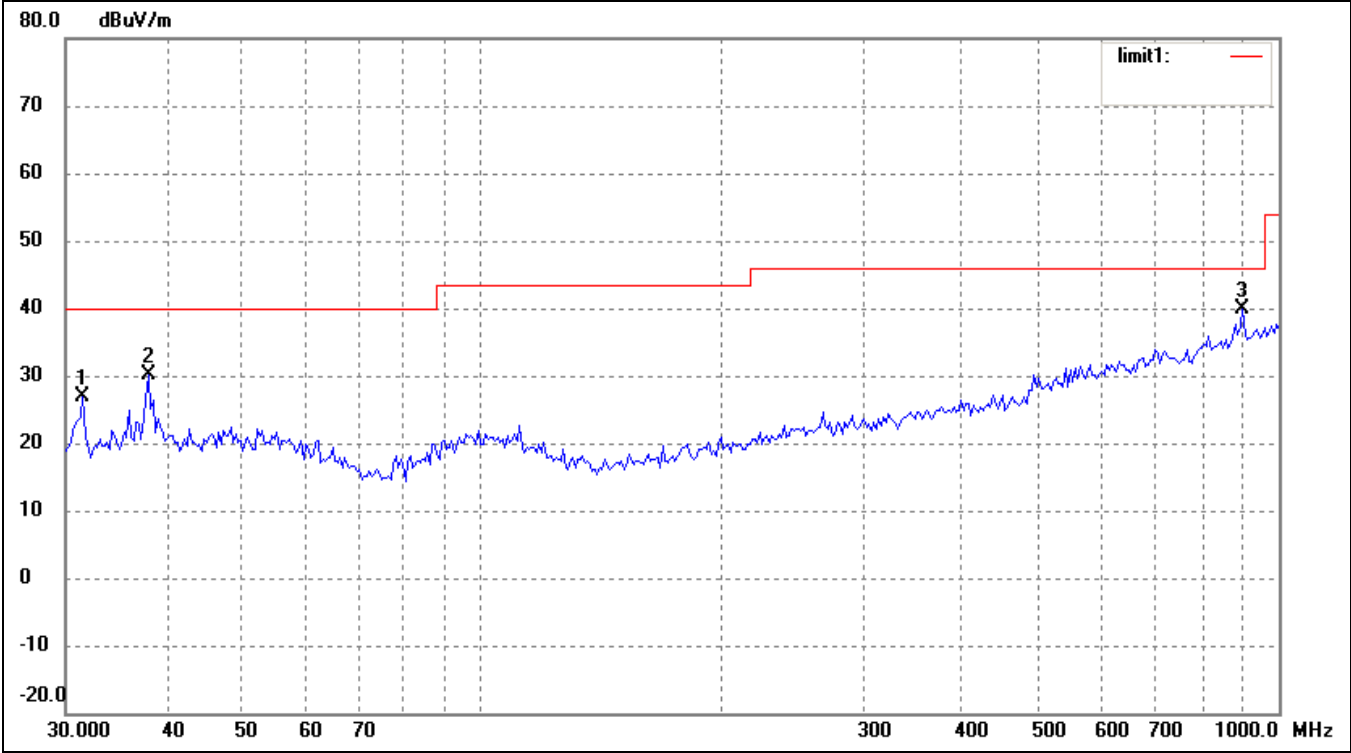
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.5095	17.67	6.77	24.44	40.00	-15.56	360	100	peak
2	492.4685	17.93	13.67	31.60	46.00	-14.40	360	100	peak
3	647.3856	15.71	17.07	32.78	46.00	-13.22	360	100	peak
4	900.1474	19.01	20.90	39.91	46.00	-6.09	360	100	peak

Vertical



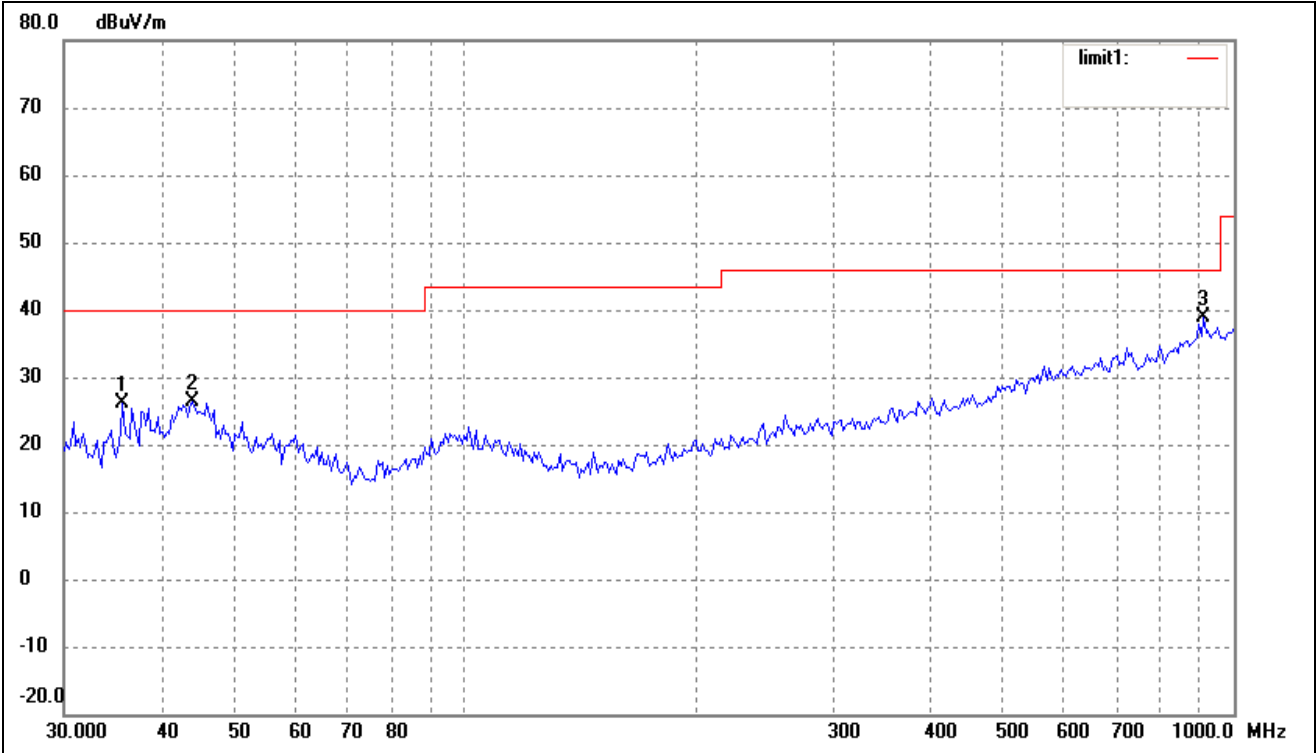
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.7662	18.87	7.25	26.12	40.00	-13.88	360	100	peak
2	42.8998	18.32	8.20	26.52	40.00	-13.48	360	100	peak
3	96.0986	15.30	8.14	23.44	43.50	-20.06	360	100	peak
4	912.8620	19.45	21.14	40.59	46.00	-5.41	360	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11b) High Channel
Comment:
Horizontal



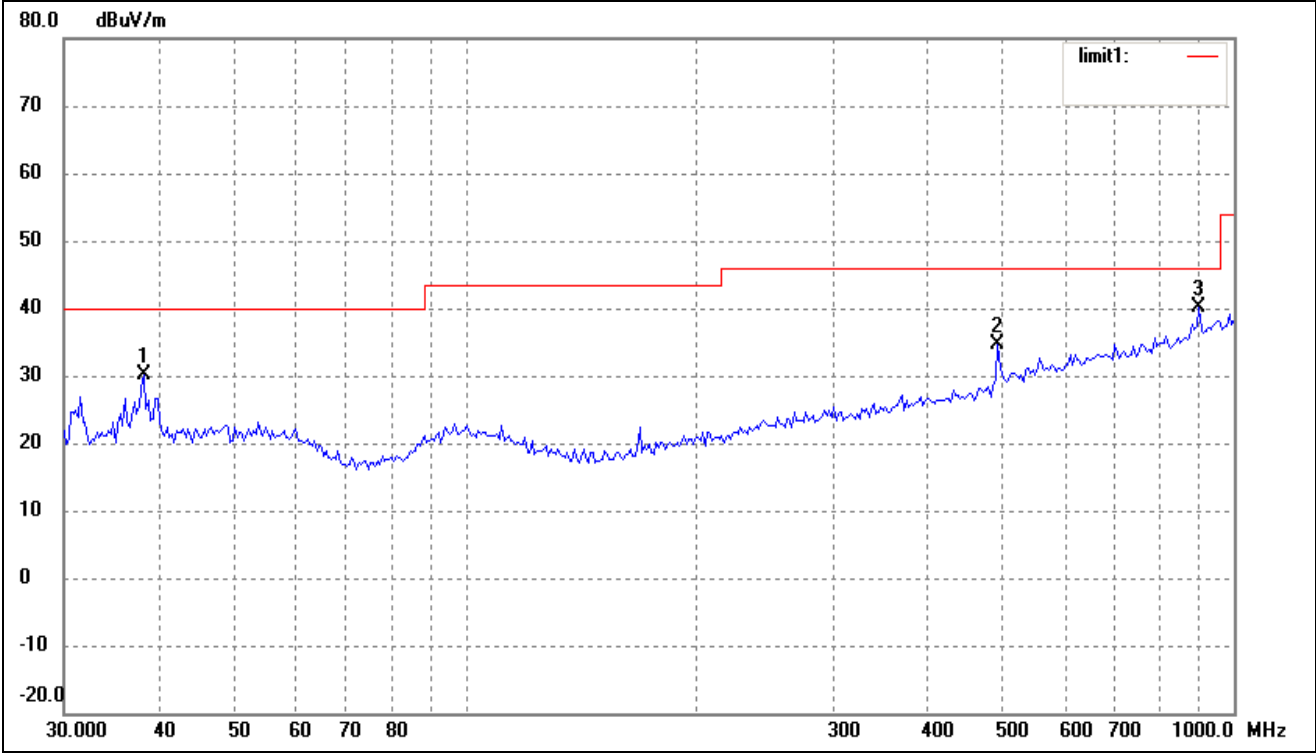
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.5095	20.20	6.77	26.97	40.00	-13.03	360	100	peak
2	38.0783	22.44	7.61	30.05	40.00	-9.95	360	100	peak
3	900.1474	19.01	20.90	39.91	46.00	-6.09	360	100	peak

Vertical



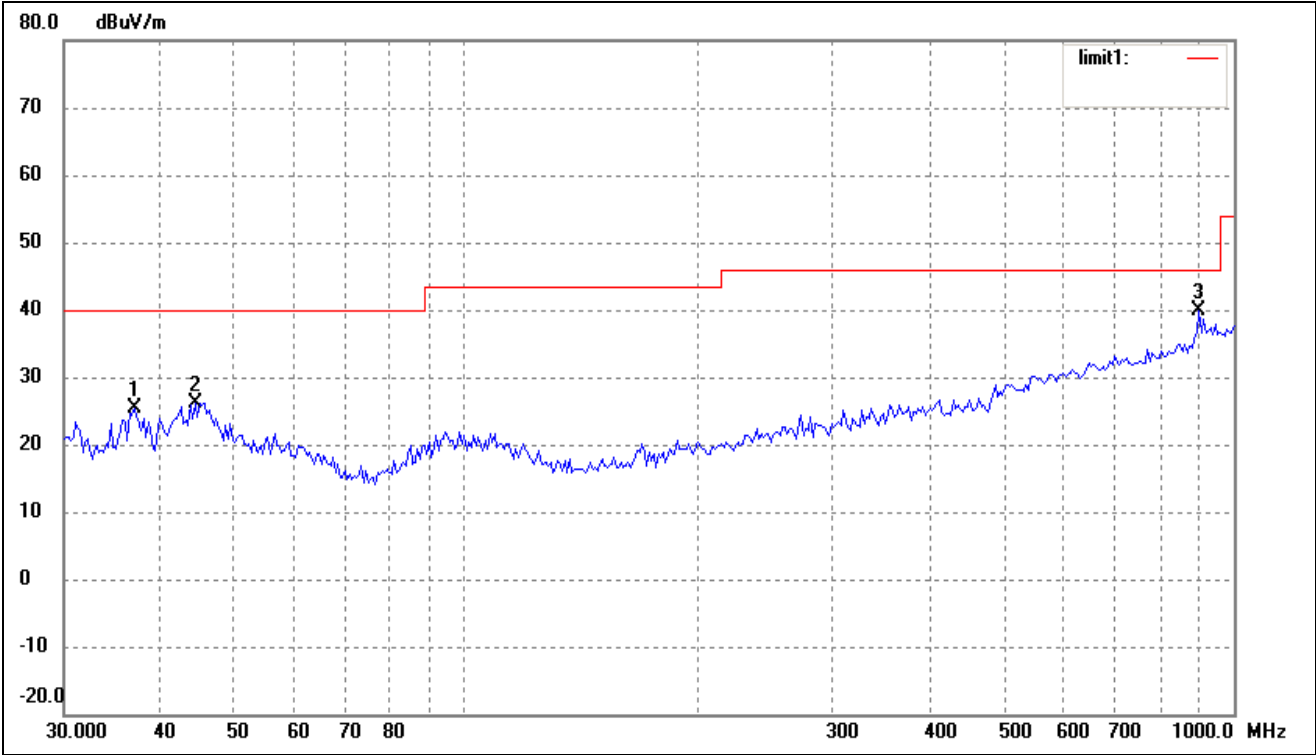
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	35.7491	19.12	6.98	26.10	40.00	-13.90	360	100	peak
2	44.1202	18.23	8.21	26.44	40.00	-13.56	360	100	peak
3	912.8620	17.77	21.14	38.91	46.00	-7.09	360	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11g) Low Channel
Comment:
Horizontal



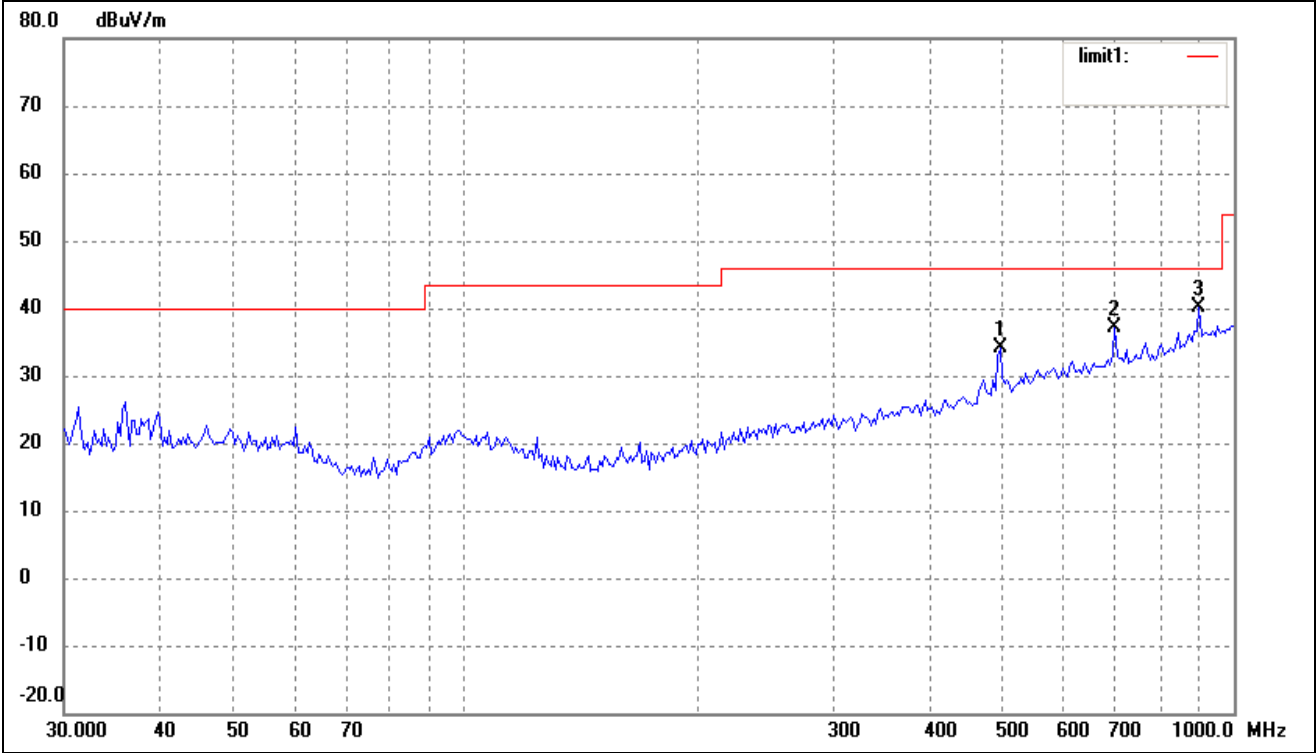
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	38.0783	22.44	7.61	30.05	40.00	-9.95	360	100	peak
2	492.4685	20.94	13.67	34.61	46.00	-11.39	110	124	peak
3	900.1474	19.32	20.90	40.22	46.00	-5.78	208	104	peak

Vertical



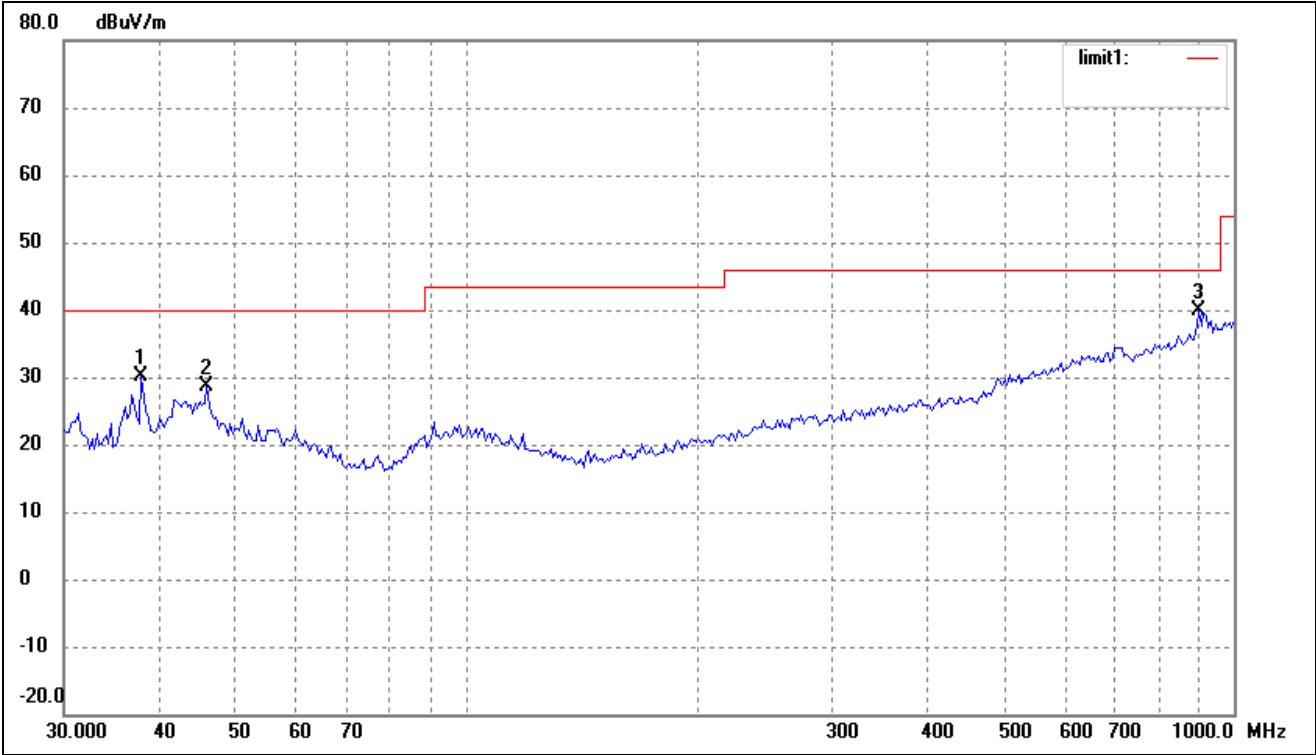
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	37.0249	17.97	7.33	25.30	40.00	-14.70	201	204	peak
2	44.4308	17.94	8.22	26.16	40.00	-13.84	360	100	peak
3	900.1474	19.07	20.90	39.97	46.00	-6.03	118	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11g) Middle Channel
Comment:
Horizontal



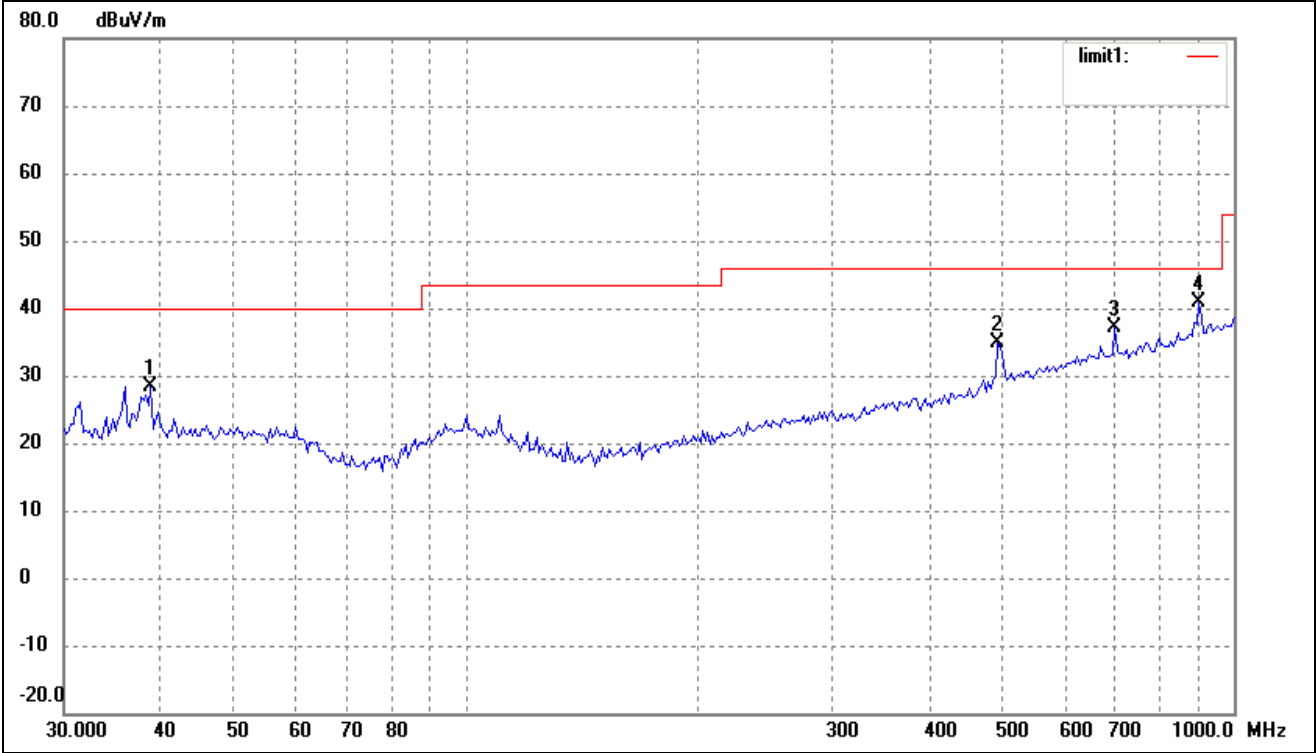
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	495.9344	20.16	14.01	34.17	46.00	-11.83	360	100	peak
2	699.3046	19.65	17.49	37.14	46.00	-8.86	0	100	peak
3	900.1474	19.20	20.90	40.10	46.00	-5.90	203	105	peak

Vertical



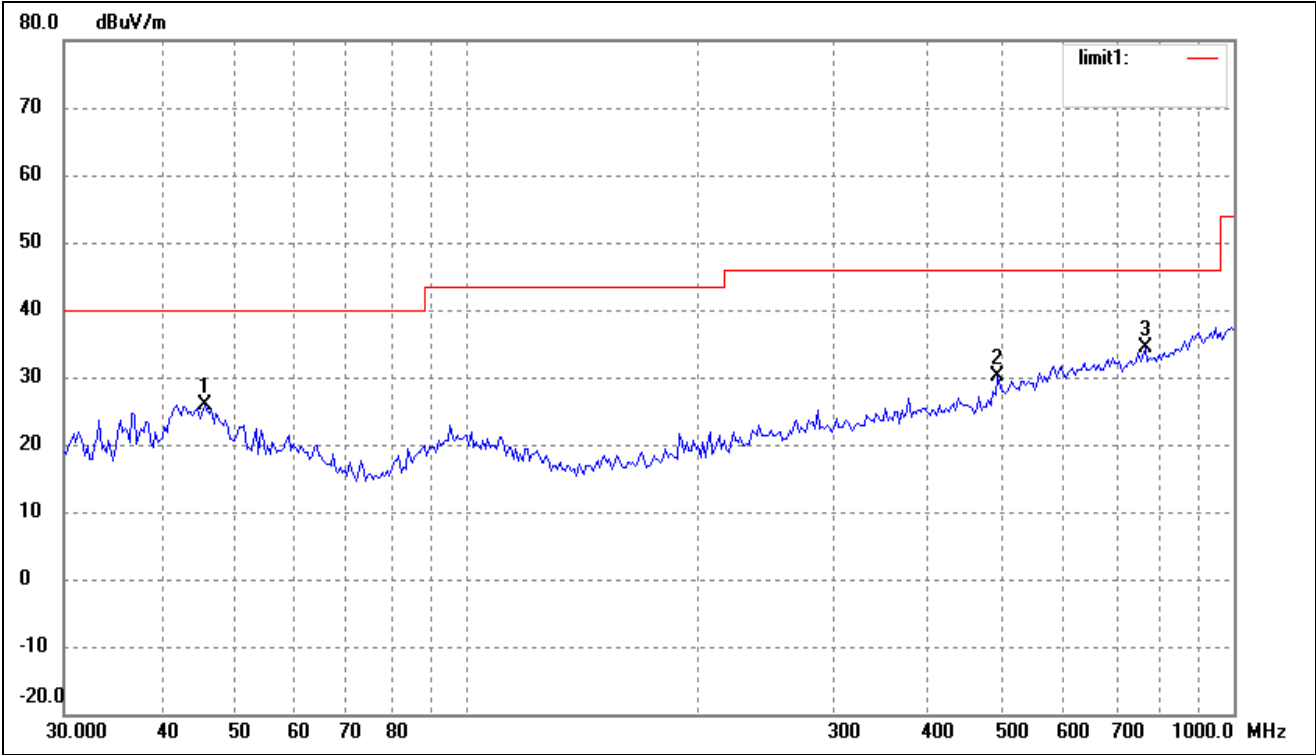
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	37.8121	22.47	7.54	30.01	40.00	-9.99	204	164	peak
2	46.0164	20.38	8.18	28.56	40.00	-11.44	360	200	peak
3	900.1474	19.07	20.90	39.97	46.00	-6.03	221	107	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11g) High Channel
Comment:
Horizontal



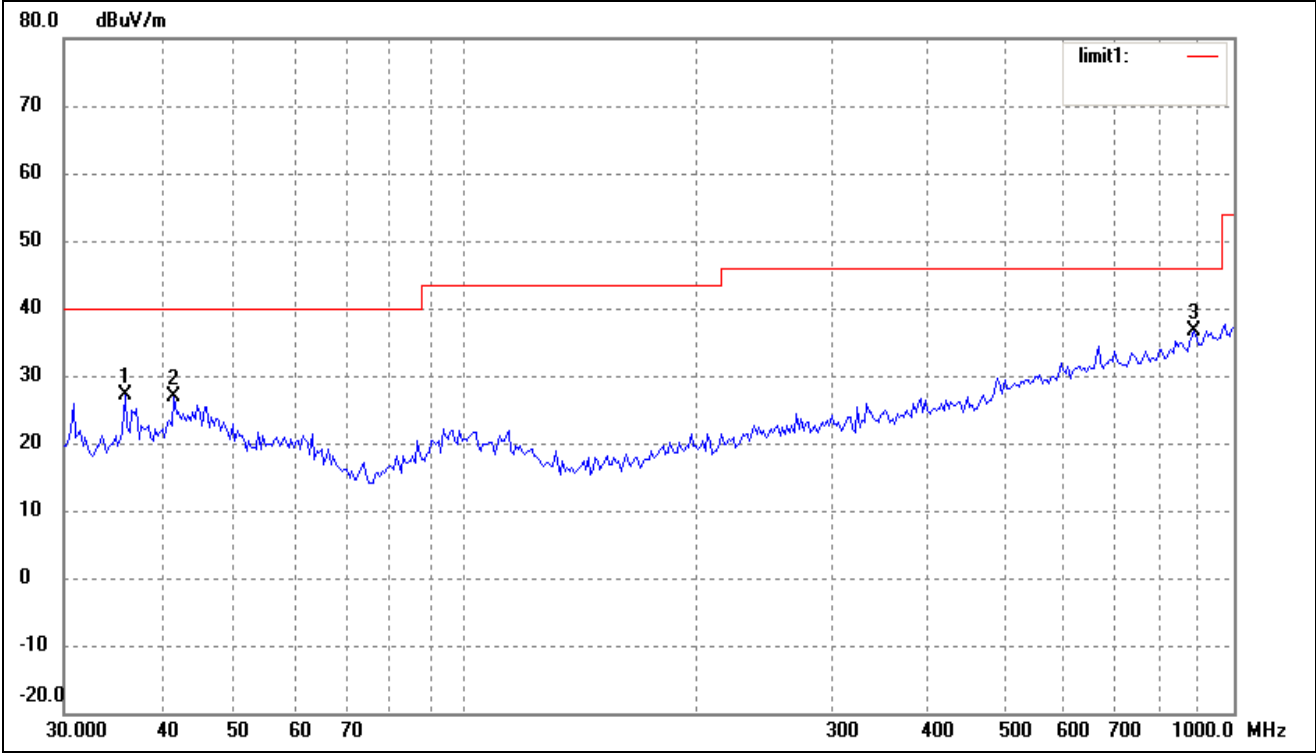
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	38.8879	20.65	7.84	28.49	40.00	-11.51	216	206	peak
2	492.4685	21.22	13.67	34.89	46.00	-11.11	360	100	peak
3	699.3046	19.65	17.49	37.14	46.00	-8.86	208	106	peak
4	900.1474	19.93	20.90	40.83	46.00	-5.17	127	119	peak

Vertical



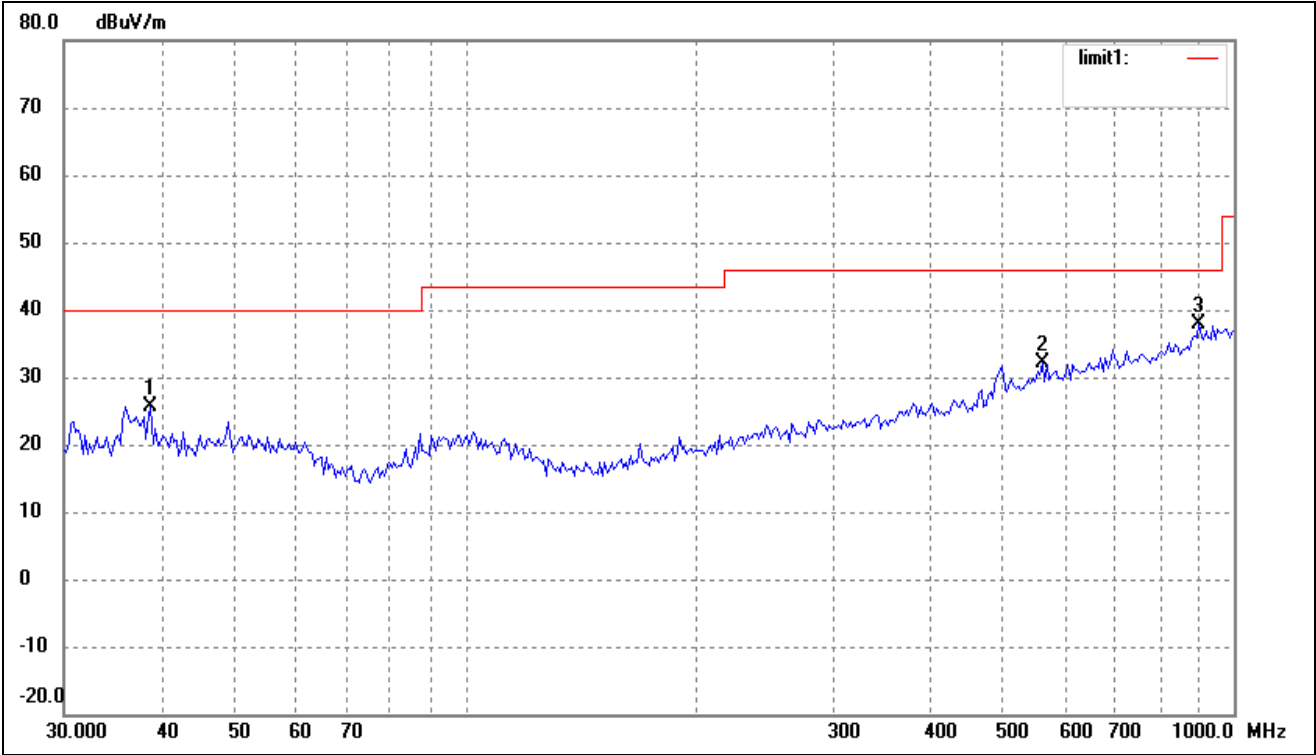
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	45.6948	17.68	8.20	25.88	40.00	-14.12	204	124	peak
2	492.4685	16.34	13.67	30.01	46.00	-15.99	360	100	peak
3	766.0572	15.78	18.51	34.29	46.00	-11.71	225	106	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11n_HT20M) Low Channel
Comment:
Horizontal



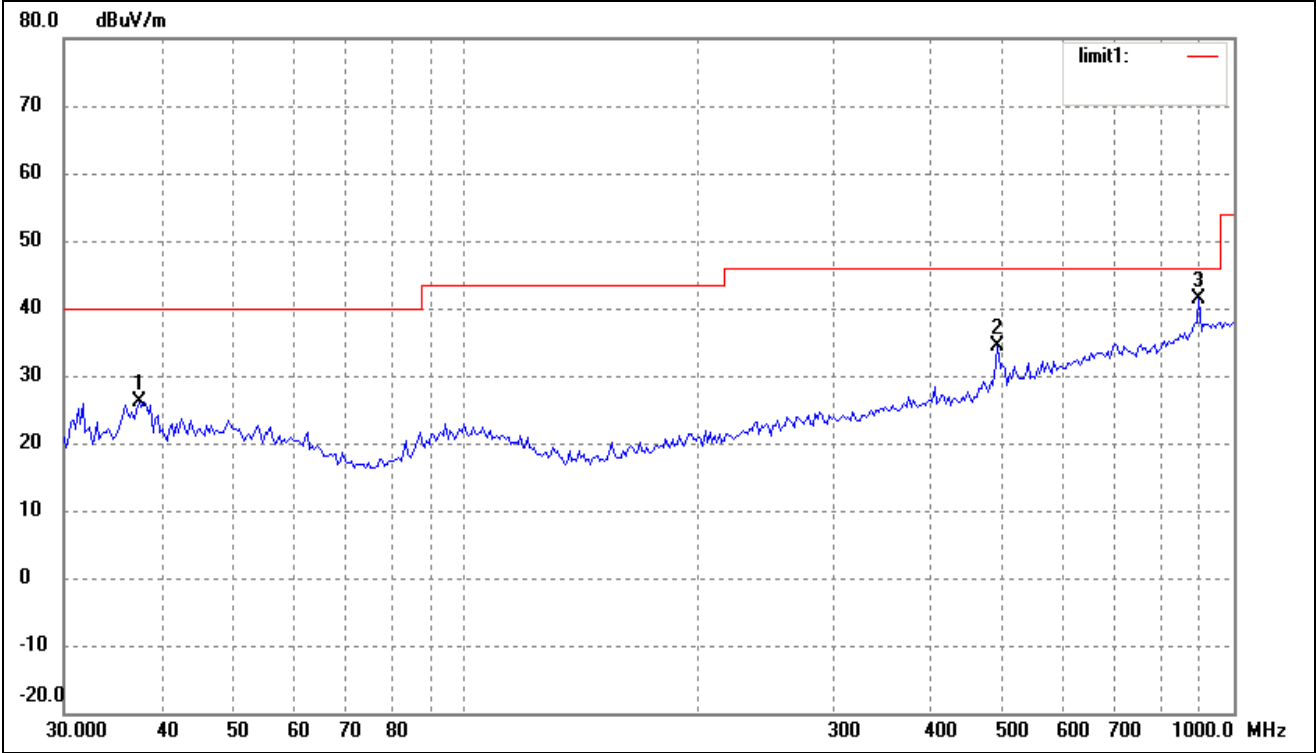
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	20.04	7.05	27.09	40.00	-12.91	360	100	peak
2	41.7130	18.62	8.17	26.79	40.00	-13.21	110	124	peak
3	887.6099	15.89	20.67	36.56	46.00	-9.44	208	104	peak

Vertical



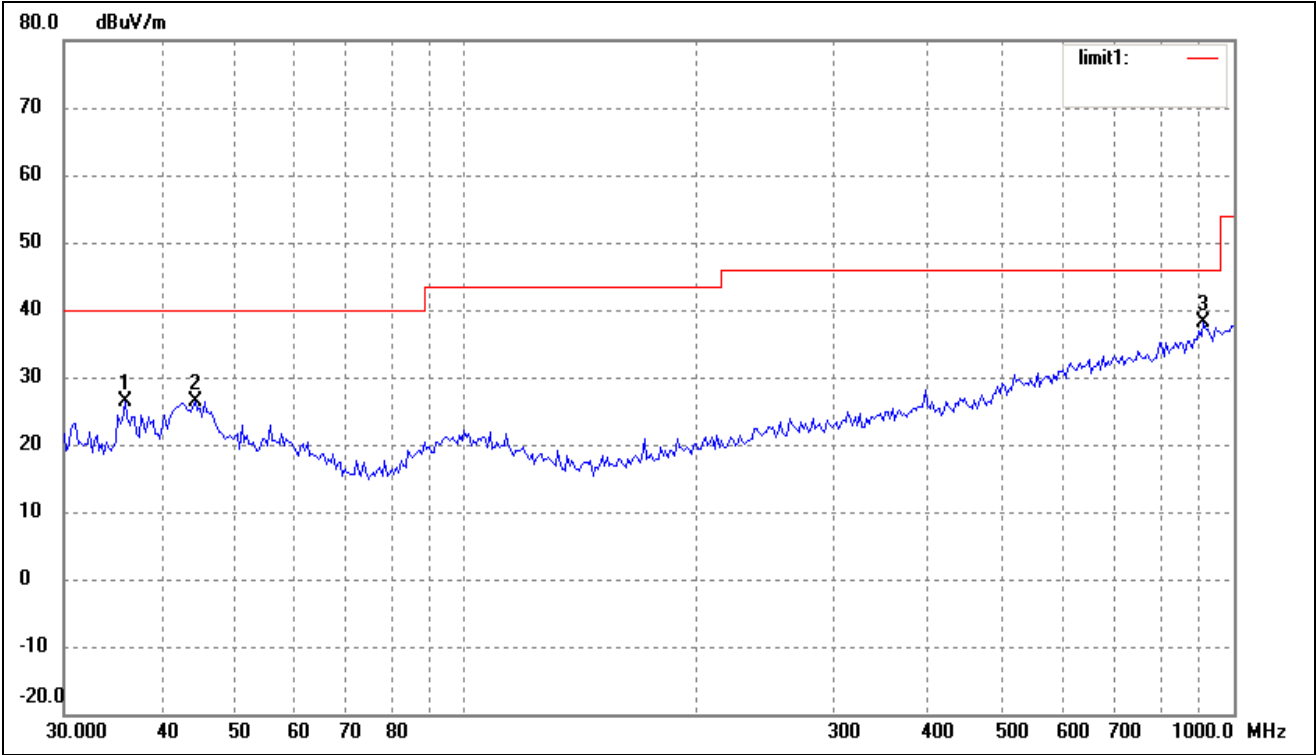
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	38.8879	17.80	7.84	25.64	40.00	-14.36	201	204	peak
2	562.6624	16.41	15.83	32.24	46.00	-13.76	360	100	peak
3	900.1474	17.07	20.90	37.97	46.00	-8.03	118	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11n_HT20M) Middle Channel
Comment:
Horizontal



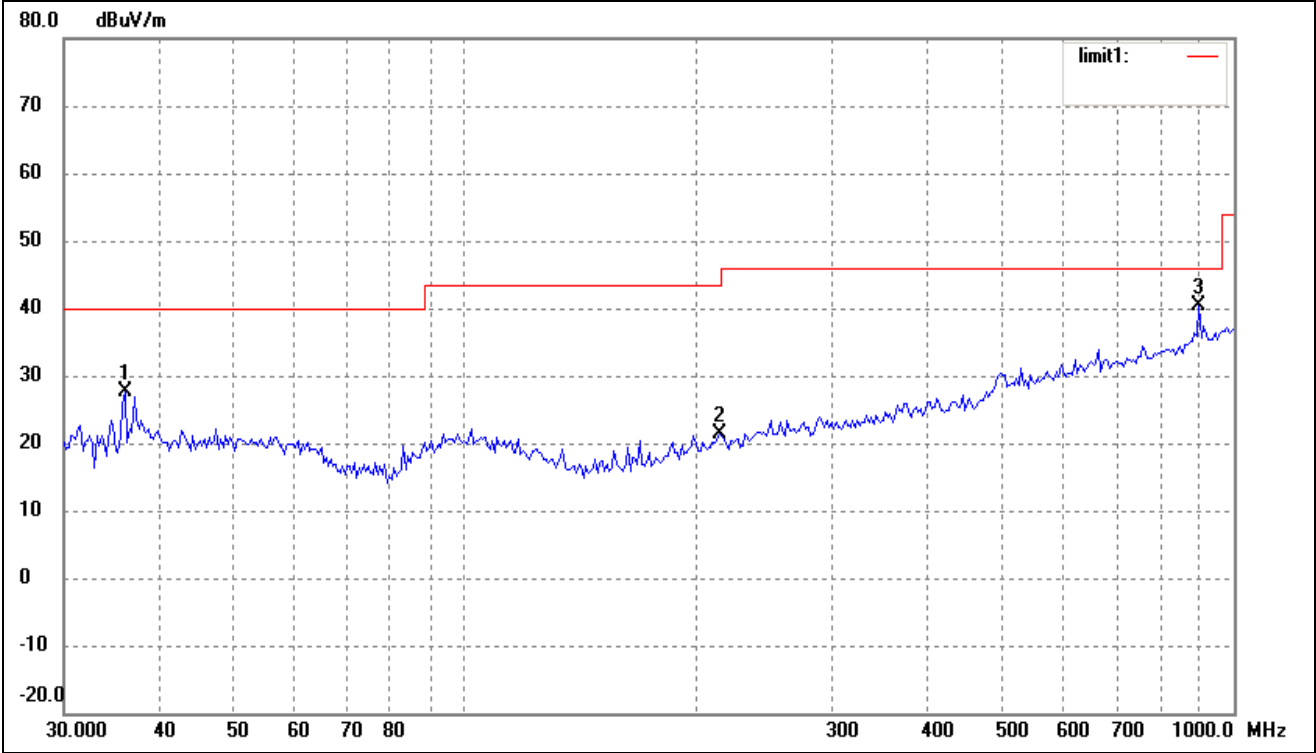
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	37.5479	18.71	7.47	26.18	40.00	-13.82	360	100	peak
2	492.4685	20.63	13.67	34.30	46.00	-11.70	0	100	peak
3	900.1474	20.58	20.90	41.48	46.00	-4.52	203	105	peak

Vertical



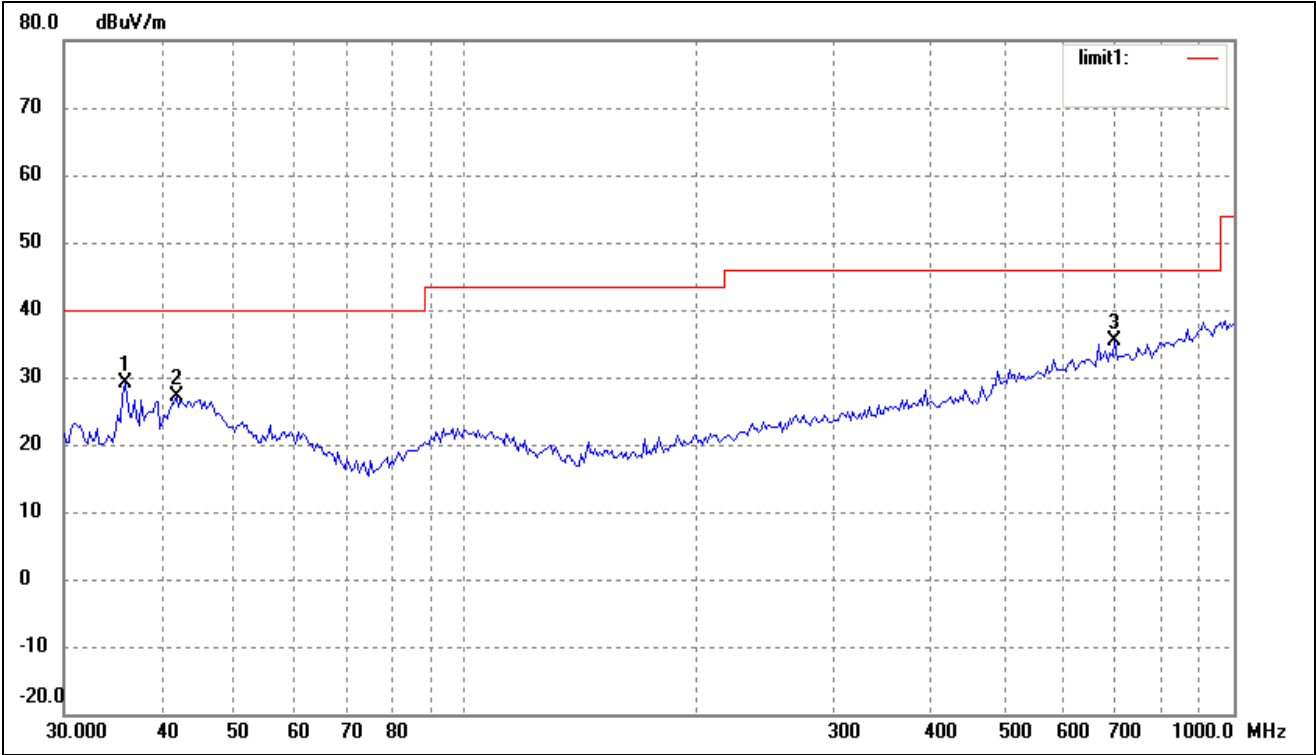
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	19.37	7.05	26.42	40.00	-13.58	204	164	peak
2	44.4308	18.24	8.22	26.46	40.00	-13.54	360	200	peak
3	912.8620	17.11	21.14	38.25	46.00	-7.75	221	107	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11n_HT20M)High Channel
Comment:
Horizontal



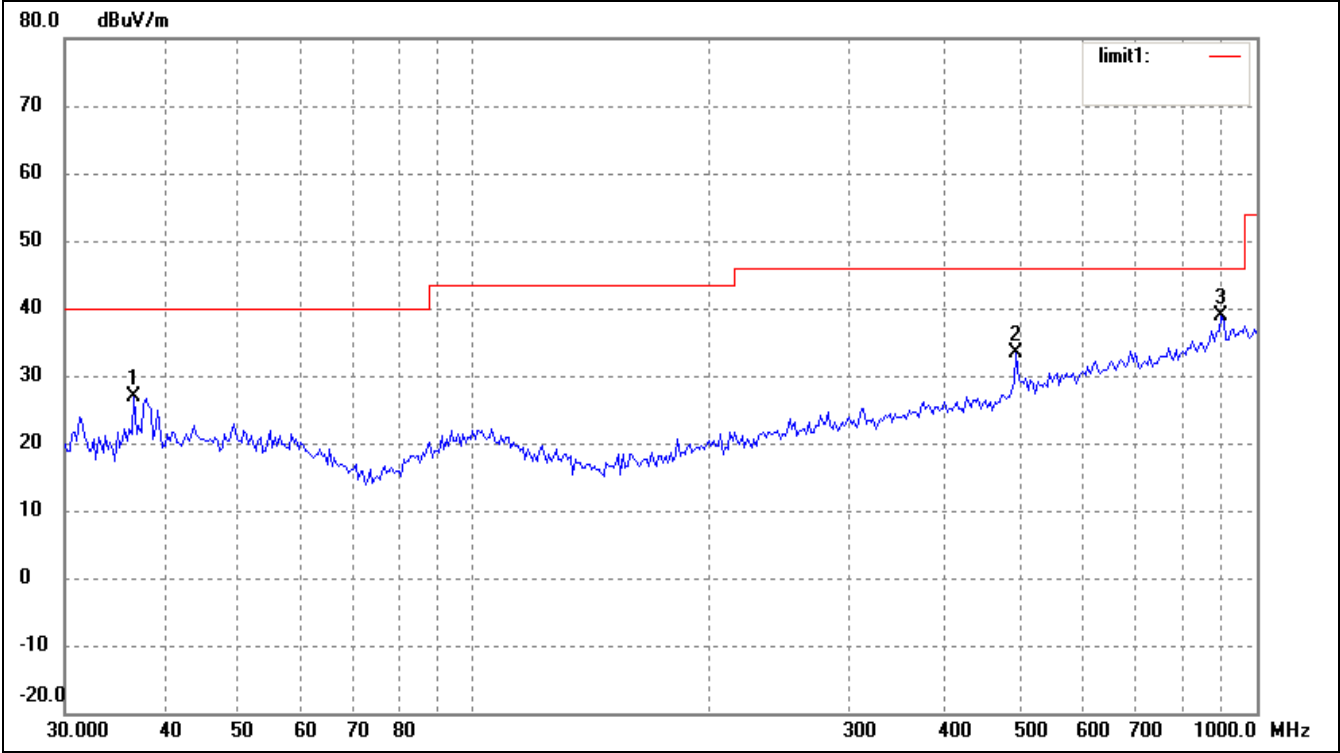
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	20.69	7.05	27.74	40.00	-12.26	216	206	peak
2	213.7634	14.40	7.06	21.46	43.50	-22.04	360	100	peak
3	900.1474	19.52	20.90	40.42	46.00	-5.58	208	106	peak

Vertical



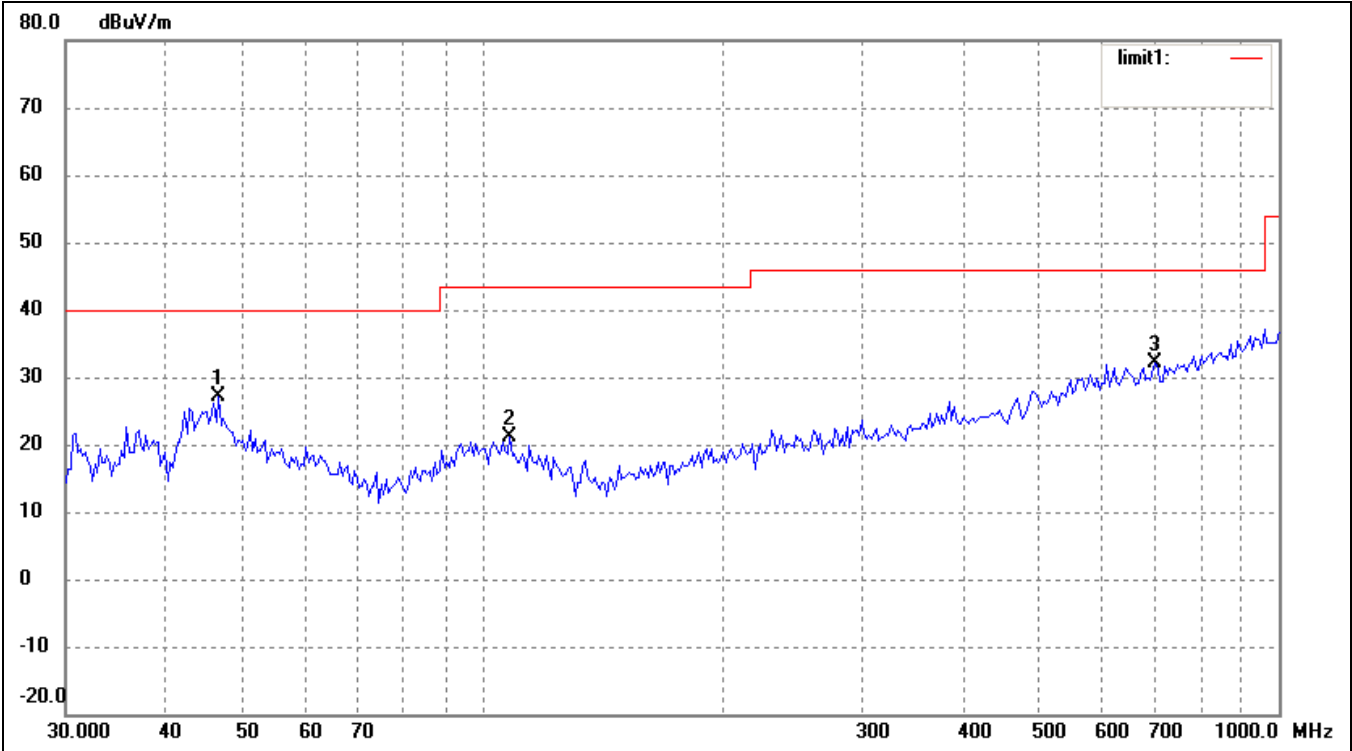
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	22.08	7.05	29.13	40.00	-10.87	204	124	peak
2	42.0066	19.02	8.17	27.19	40.00	-12.81	360	100	peak
3	699.3046	17.95	17.49	35.44	46.00	-10.56	225	106	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting(802.11n_HT40M)Low Channel
Comment:
Horizontal



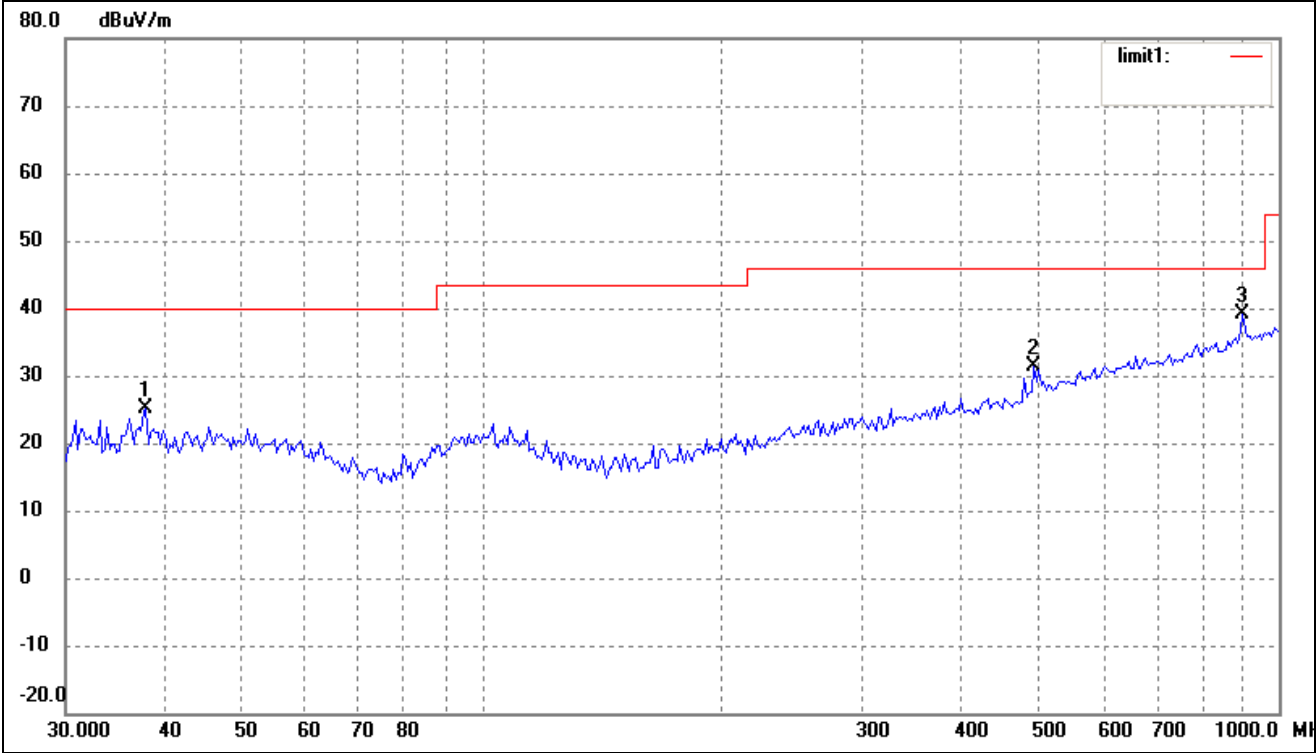
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	36.7662	19.57	7.25	26.82	40.00	-13.18	360	100	peak
2	492.4685	19.64	13.67	33.31	46.00	-12.69	110	124	peak
3	900.1474	17.90	20.90	38.80	46.00	-7.20	208	104	peak

Vertical



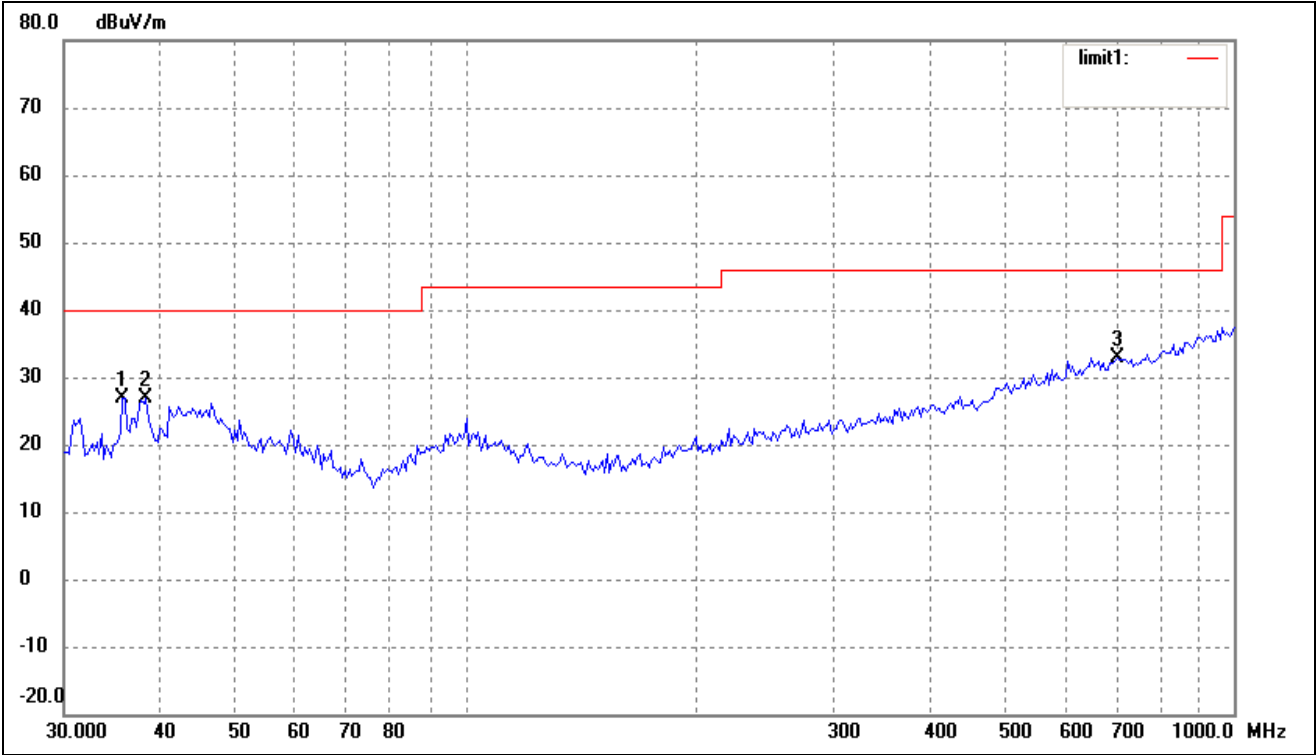
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	46.6664	19.01	8.14	27.15	40.00	-12.85	201	204	peak
2	108.2667	13.28	7.73	21.01	43.50	-22.49	360	100	peak
3	699.3046	14.63	17.49	32.12	46.00	-13.88	118	100	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting(802.11n_HT40M)Middle Channel
Comment:
Horizontal



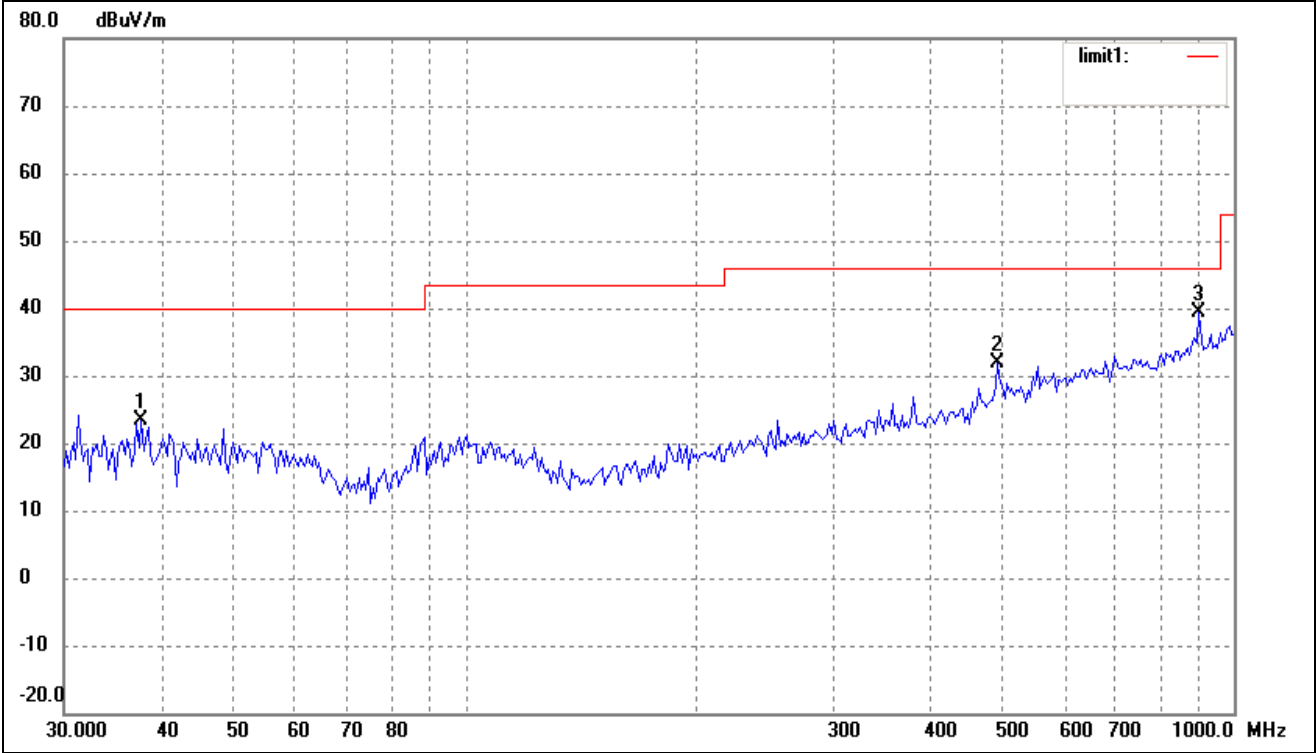
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.8121	17.50	7.54	25.04	40.00	-14.96	360	100	peak
2	492.4685	17.59	13.67	31.26	46.00	-14.74	0	100	peak
3	900.1474	18.30	20.90	39.20	46.00	-6.80	203	105	peak

Vertical



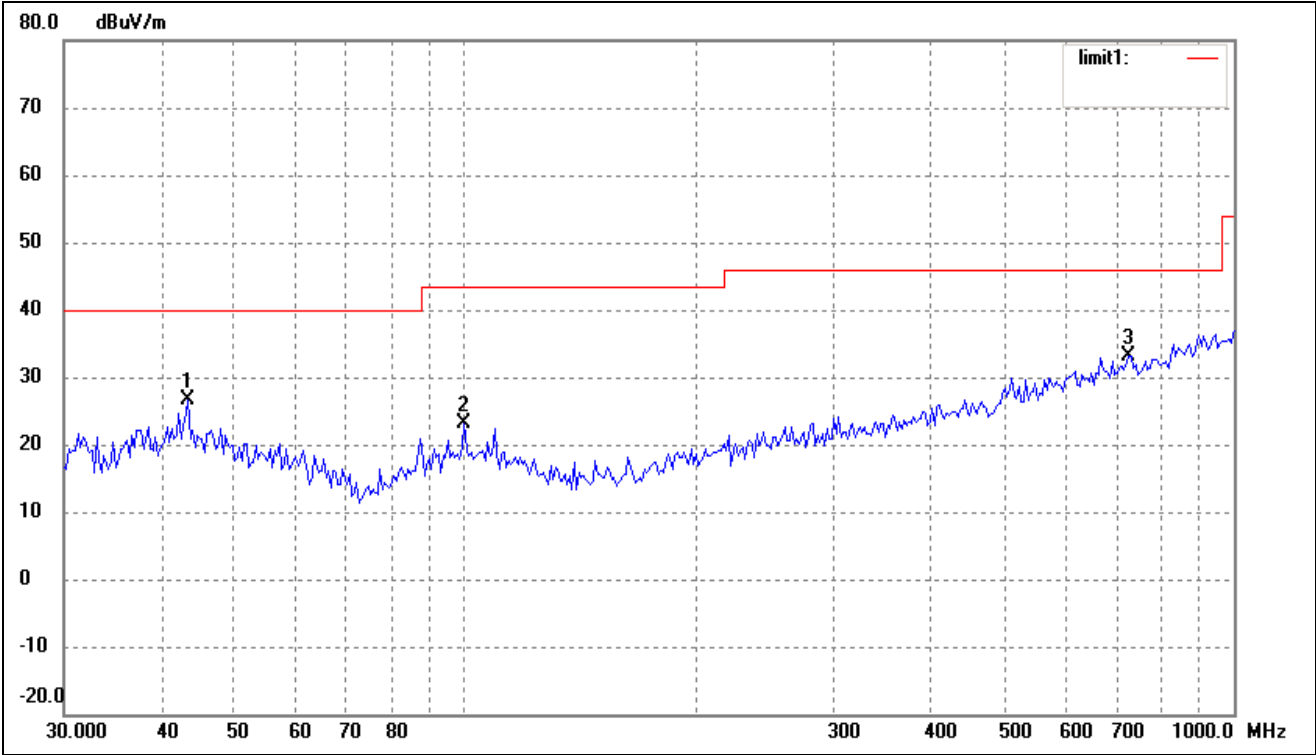
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	35.7491	20.01	6.98	26.99	40.00	-13.01	204	164	peak
2	38.3462	19.19	7.69	26.88	40.00	-13.12	360	200	peak
3	704.2261	15.33	17.56	32.89	46.00	-13.11	221	107	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting(802.11n_HT40M)High Channel
Comment:
Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	37.8121	15.94	7.54	23.48	40.00	-16.52	216	206	peak
2	492.4685	18.09	13.67	31.76	46.00	-14.24	360	100	peak
3	900.1474	18.44	20.90	39.34	46.00	-6.66	208	106	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	43.5057	18.37	8.20	26.57	40.00	-13.43	204	124	peak
2	99.5281	14.68	8.40	23.08	43.50	-20.42	360	100	peak
3	729.3583	15.31	17.94	33.25	46.00	-12.75	225	106	peak

*Spurious Emission above 1GHz**Test Mode: Transmitting (802.11b)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)										
4824.0	PK	38.72	90	V	34.1	5.2	33.0	45.02	74	-28.98
4824.0	PK	48.94	270	H	34.1	5.2	33.0	55.24	74	-18.76
7236.0	PK	33.44	180	V	37.4	6.1	33.5	43.44	74	-30.56
7236.0	PK	34.55	45	H	37.4	6.1	33.5	44.55	74	-29.45
4824.0	AV	25.07	270	V	34.1	5.2	33.0	31.37	54	-22.63
4824.0	AV	31.88	90	H	34.1	5.2	33.0	38.18	54	-15.82
7236.0	AV	22.10	45	V	37.4	6.1	33.5	32.10	54	-21.90
7236.0	AV	22.39	60	H	37.4	6.1	33.5	32.39	54	-21.61
Middle Channel (2437MHz)										
4874.0	PK	39.27	45	V	34.1	5.2	33.0	45.57	74	-28.43
4874.0	PK	47.27	270	H	34.1	5.2	33.0	53.57	74	-20.43
7311.0	PK	33.00	45	V	37.4	6.1	33.5	43.00	74	-31.00
7311.0	PK	33.79	180	H	37.4	6.1	33.5	43.79	74	-30.21
4874.0	AV	24.93	270	V	34.1	5.2	33.0	31.23	54	-22.77
4874.0	AV	30.71	90	H	34.1	5.2	33.0	37.01	54	-16.99
7311.0	AV	22.58	60	V	37.4	6.1	33.5	32.58	54	-21.42
7311.0	AV	22.17	45	H	37.4	6.1	33.5	32.17	54	-21.83
High Channel (2462MHz)										
4924.0	PK	39.09	270	V	34.1	5.2	33.0	45.39	74	-28.61
4924.0	PK	47.72	45	H	34.1	5.2	33.0	54.02	74	-19.98
7386.0	PK	33.73	180	V	37.4	6.1	33.5	43.73	74	-30.27
7386.0	PK	34.72	45	H	37.4	6.1	33.5	44.72	74	-29.28
4924.0	AV	25.02	90	V	34.1	5.2	33.0	31.32	54	-22.68
4924.0	AV	30.71	270	H	34.1	5.2	33.0	37.01	54	-16.99
7386.0	AV	22.99	60	V	37.4	6.1	33.5	32.99	54	-21.01
7386.0	AV	23.12	60	H	37.4	6.1	33.5	33.12	54	-20.88

*Spurious Emission Above 1GHz**Test Mode: Transmitting (802.11g)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)										
4824.0	PK	40.05	90	V	34.1	5.2	33.0	46.35	74	-27.65
4824.0	PK	46.38	270	H	34.1	5.2	33.0	52.68	74	-21.32
7236.0	PK	32.35	180	V	37.4	6.1	33.5	42.35	74	-31.65
7236.0	PK	35.23	45	H	37.4	6.1	33.5	45.23	74	-28.77
4824.0	AV	23.93	270	V	34.1	5.2	33.0	30.23	54	-23.77
4824.0	AV	29.38	90	H	34.1	5.2	33.0	35.68	54	-18.32
7236.0	AV	23.56	45	V	37.4	6.1	33.5	33.56	54	-20.44
7236.0	AV	24.25	60	H	37.4	6.1	33.5	34.25	54	-19.75
Middle Channel (2437MHz)										
4874.0	PK	42.77	45	V	34.1	5.2	33.0	49.07	74	-24.93
4874.0	PK	39.58	270	H	34.1	5.2	33.0	45.88	74	-28.12
7311.0	PK	35.36	45	V	37.4	6.1	33.5	45.36	74	-28.64
7311.0	PK	34.52	180	H	37.4	6.1	33.5	44.52	74	-29.48
4874.0	AV	31.38	270	V	34.1	5.2	33.0	37.68	54	-16.32
4874.0	AV	26.79	90	H	34.1	5.2	33.0	33.09	54	-20.91
7311.0	AV	25.15	60	V	37.4	6.1	33.5	35.15	54	-18.85
7311.0	AV	25.54	45	H	37.4	6.1	33.5	35.54	54	-18.46
High Channel (2462MHz)										
4924.0	PK	43.82	270	V	34.1	5.2	33.0	50.12	74	-23.88
4924.0	PK	42.35	45	H	34.1	5.2	33.0	48.65	74	-25.35
7386.0	PK	32.65	180	V	37.4	6.1	33.5	42.65	74	-31.35
7386.0	PK	30.32	45	H	37.4	6.1	33.5	40.32	74	-33.68
4924.0	AV	27.38	90	V	34.1	5.2	33.0	33.68	54	-20.32
4924.0	AV	27.93	270	H	34.1	5.2	33.0	34.23	54	-19.77
7386.0	AV	25.12	60	V	37.4	6.1	33.5	35.12	54	-18.88
7386.0	AV	25.88	60	H	37.4	6.1	33.5	35.88	54	-18.12

*Spurious Emission Above 1GHz**Test Mode: Transmitting (802.11n_HT20M)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)										
4824.0	PK	41.78	90	V	34.1	5.2	33.0	48.08	74	-25.92
4824.0	PK	38.76	270	H	34.1	5.2	33.0	45.06	74	-28.94
7236.0	PK	35.12	180	V	37.4	6.1	33.5	45.12	74	-28.88
7236.0	PK	34.21	45	H	37.4	6.1	33.5	44.21	74	-29.79
4824.0	AV	29.91	270	V	34.1	5.2	33.0	36.21	54	-17.79
4824.0	AV	27.79	90	H	34.1	5.2	33.0	34.09	54	-19.91
7236.0	AV	25.71	45	V	37.4	6.1	33.5	35.71	54	-18.29
7236.0	AV	25.50	60	H	37.4	6.1	33.5	35.50	54	-18.50
Middle Channel (2437MHz)										
4874.0	PK	41.35	45	V	34.1	5.2	33.0	47.65	74	-26.35
4874.0	PK	39.95	270	H	34.1	5.2	33.0	46.25	74	-27.75
7311.0	PK	33.21	45	V	37.4	6.1	33.5	43.21	74	-30.79
7311.0	PK	34.12	180	H	37.4	6.1	33.5	44.12	74	-29.88
4874.0	AV	28.26	270	V	34.1	5.2	33.0	34.56	54	-19.44
4874.0	AV	28.30	90	H	34.1	5.2	33.0	34.6	54	-19.40
7311.0	AV	23.12	60	V	37.4	6.1	33.5	33.12	54	-20.88
7311.0	AV	23.33	45	H	37.4	6.1	33.5	33.33	54	-20.67
High Channel (2462MHz)										
4924.0	PK	41.59	270	V	34.1	5.2	33.0	47.89	74	-26.11
4924.0	PK	37.26	45	H	34.1	5.2	33.0	43.56	74	-30.44
7386.0	PK	33.12	180	V	37.4	6.1	33.5	43.12	74	-30.88
7386.0	PK	29.56	45	H	37.4	6.1	33.5	39.56	74	-34.44
4924.0	AV	28.93	90	V	34.1	5.2	33.0	35.23	54	-18.77
4924.0	AV	27.91	270	H	34.1	5.2	33.0	34.21	54	-19.79
7386.0	AV	21.00	60	V	37.4	6.1	33.5	31	54	-23.00
7386.0	AV	21.23	60	H	37.4	6.1	33.5	31.23	54	-22.77

*Spurious Emission Above 1GHz**Test Mode: Transmitting (802.11n_HT40M)*

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2422MHz)										
4824.0	PK	41.79	90	V	34.1	5.2	33.0	48.09	74	-25.91
4824.0	PK	41.97	270	H	34.1	5.2	33.0	48.27	74	-25.73
7236.0	PK	36.52	180	V	37.4	6.1	33.5	46.52	74	-27.48
7236.0	PK	35.88	45	H	37.4	6.1	33.5	45.88	74	-28.12
4824.0	AV	29.22	270	V	34.1	5.2	33.0	35.52	54	-18.48
4824.0	AV	29.35	90	H	34.1	5.2	33.0	35.65	54	-18.35
7236.0	AV	23.59	45	V	37.4	6.1	33.5	33.59	54	-20.41
7236.0	AV	23.50	60	H	37.4	6.1	33.5	33.5	54	-20.50
Middle Channel (2437MHz)										
4874.0	PK	40.35	45	V	34.1	5.2	33.0	46.65	74	-27.35
4874.0	PK	36.05	270	H	34.1	5.2	33.0	42.35	74	-31.65
7311.0	PK	37.83	45	V	37.4	6.1	33.5	47.83	74	-26.17
7311.0	PK	32.65	180	H	37.4	6.1	33.5	42.65	74	-31.35
4874.0	AV	26.91	270	V	34.1	5.2	33.0	33.21	54	-20.79
4874.0	AV	26.79	90	H	34.1	5.2	33.0	33.09	54	-20.91
7311.0	AV	25.89	60	V	37.4	6.1	33.5	35.89	54	-18.11
7311.0	AV	25.29	45	H	37.4	6.1	33.5	35.29	54	-18.71
High Channel (2452MHz)										
4924.0	PK	41.35	270	V	34.1	5.2	33.0	47.65	74	-26.35
4924.0	PK	40.11	45	H	34.1	5.2	33.0	46.41	74	-27.59
7386.0	PK	35.21	180	V	37.4	6.1	33.5	45.21	74	-28.79
7386.0	PK	33.65	45	H	37.4	6.1	33.5	43.65	74	-30.35
4924.0	AV	31.58	90	V	34.1	5.2	33.0	37.88	54	-16.12
4924.0	AV	28.96	270	H	34.1	5.2	33.0	35.26	54	-18.74
7386.0	AV	25.84	60	V	37.4	6.1	33.5	35.84	54	-18.16
7386.0	AV	25.40	60	H	37.4	6.1	33.5	35.4	54	-18.60

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz..

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
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

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 product 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.

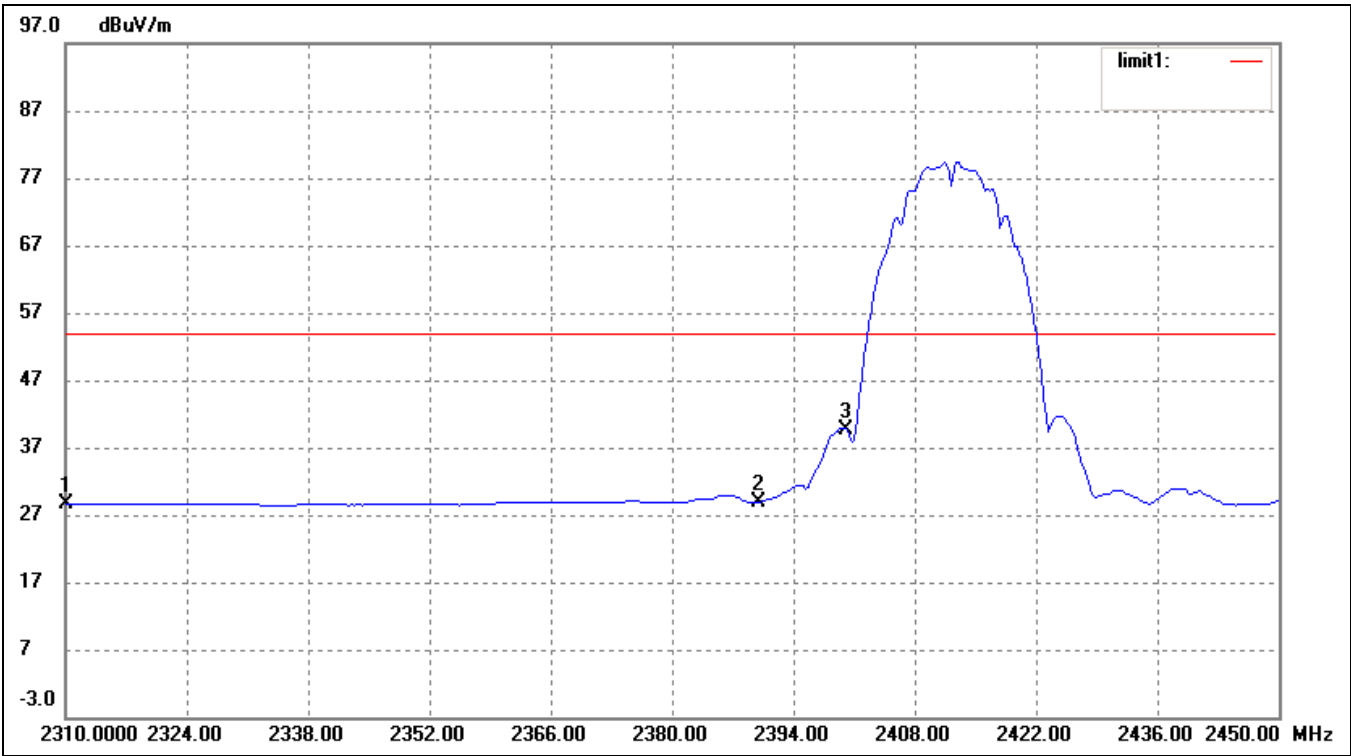
8.4 Environmental Conditions

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

8.5 Summary of Test Results/Plots

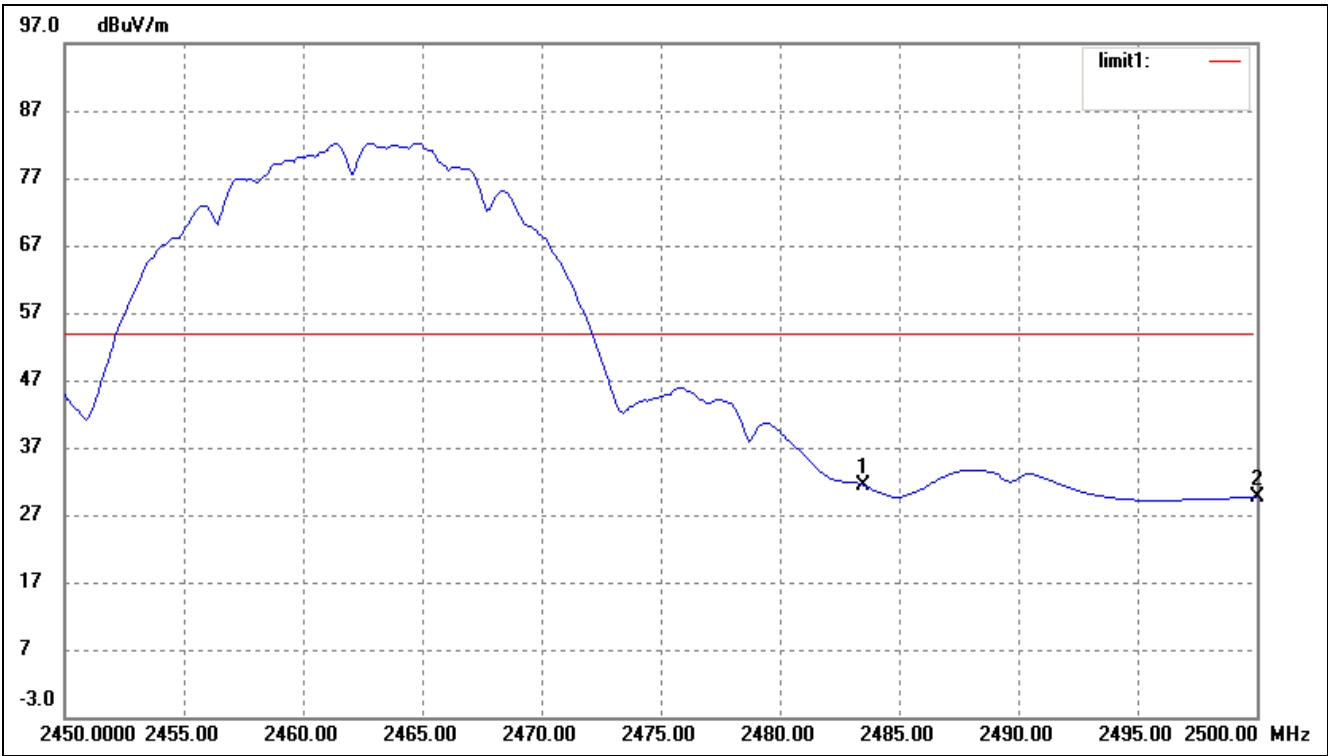
Test mode	Frequency MHz	Limit dBuV /dB	Result
802.11b	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
802.11g	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
802.11n_HT 20M	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass
802.11n_HT 40M	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
	2483.50	<54dBuV	Pass

For 802.11b
Lowest Bandedge



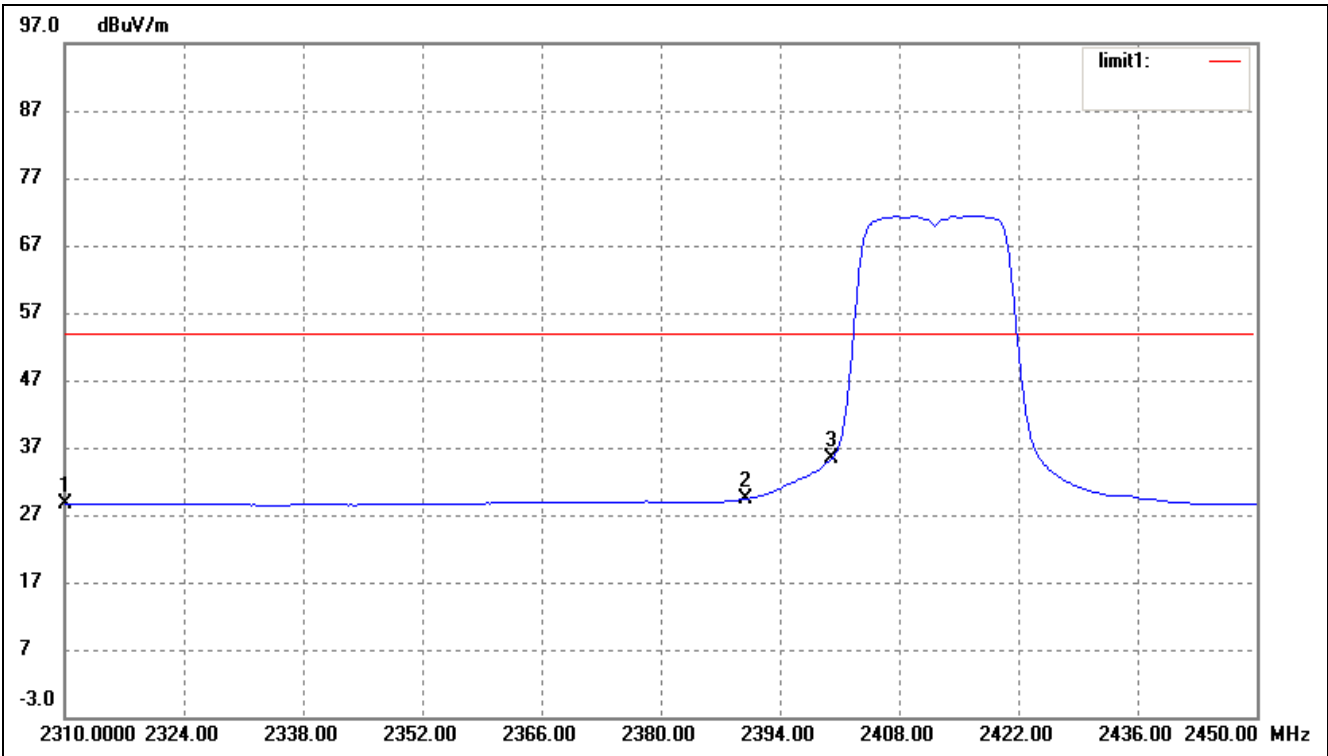
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	2310.000	36.08	-7.51	28.57	54.00	-25.43	226	100	Ave
	2310.000	46.80	-7.51	39.29	74.00	-34.71	226	100	peak
2	2390.000	36.32	-7.34	28.98	54.00	-25.02	154	100	Ave
	2390.000	48.67	-7.34	41.33	74.00	-32.67	235	100	peak
3	2400.000	46.86	-7.31	39.55	54.00	-14.45	126	100	Ave
	2400.000	54.58	-7.31	47.27	74.00	-26.73	115	100	peak

For 802.11b
Highest Bandedge



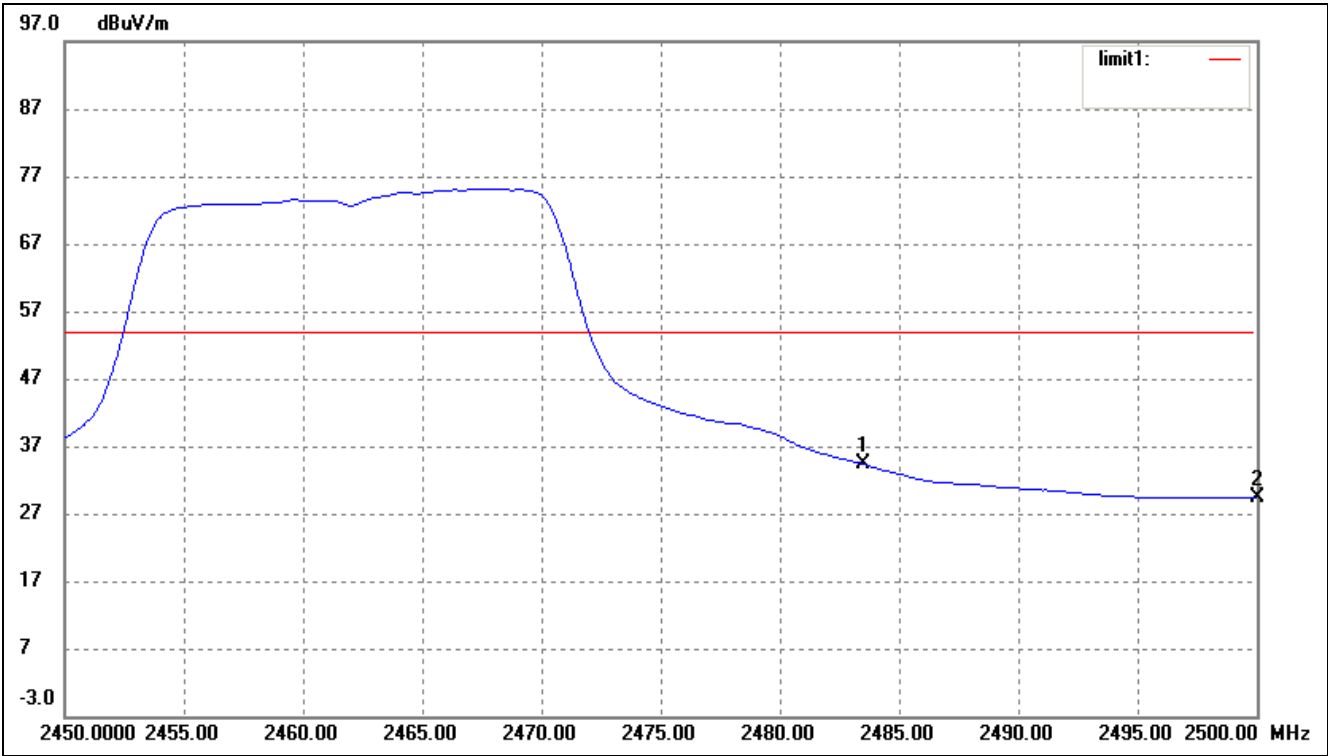
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2483.500	38.53	-7.13	31.40	54.00	-22.60	360	100	Ave
	2483.500	49.95	-7.13	42.82	74.00	-31.18	0	100	peak
2	2500.000	36.66	-7.08	29.58	54.00	-24.42	246	100	Ave
	2500.000	47.94	-7.08	40.86	74.00	-33.14	351	100	peak

For 802.11g
Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2310.000	36.11	-7.51	28.60	54.00	-25.40	360	100	Ave
	2310.000	49.33	-7.51	41.82	74.00	-32.18	0	100	peak
2	2390.000	36.77	-7.34	29.43	54.00	-24.57	235	100	Ave
	2390.000	47.73	-7.34	40.39	74.00	-33.61	221	100	peak
3	2400.000	42.79	-7.31	35.48	54.00	-18.52	162	100	Ave
	2400.000	66.70	-7.31	59.39	74.00	-14.61	116	200	peak

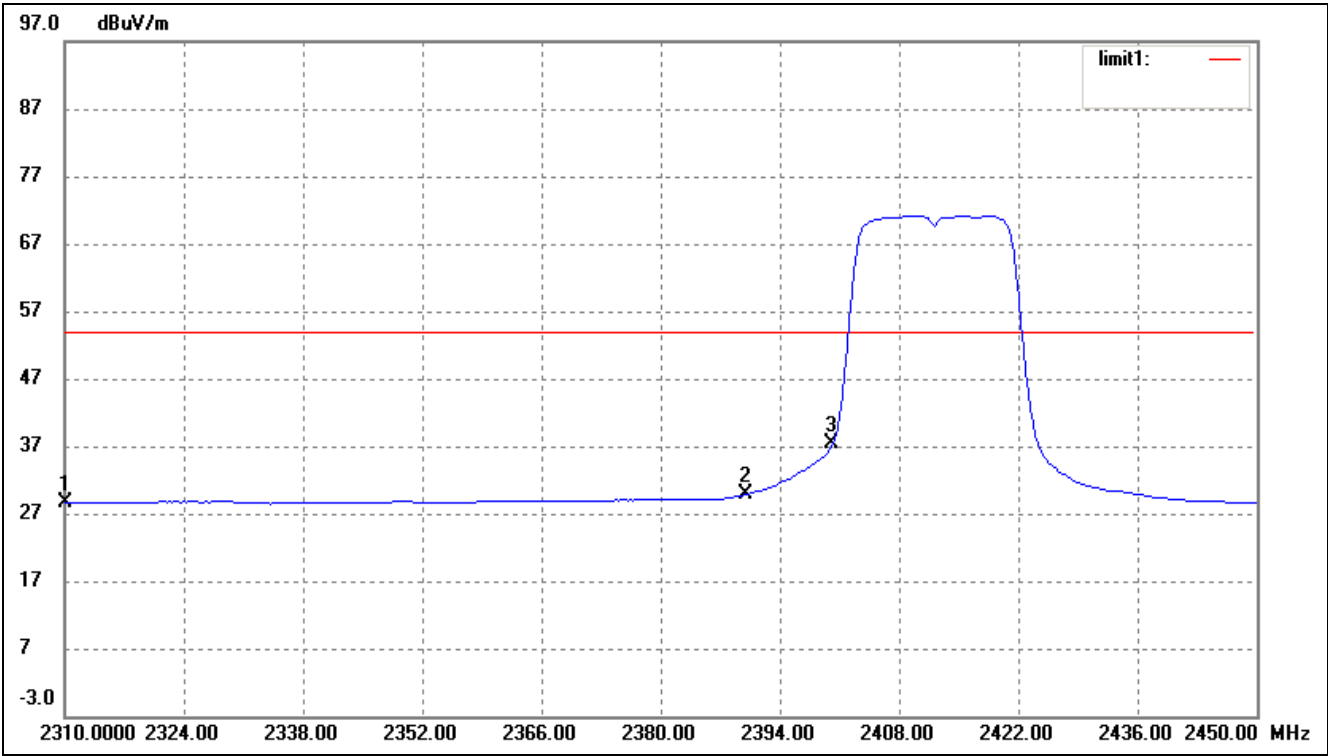
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2483.500	41.48	-7.13	34.35	54.00	-19.65	228	100	Ave
	2483.500	58.54	-7.13	51.41	74.00	-22.59	121	200	peak
2	2500.000	36.36	-7.08	29.28	54.00	-24.72	360	100	Ave
	2500.000	50.04	-7.08	42.96	74.00	-31.04	231	100	peak

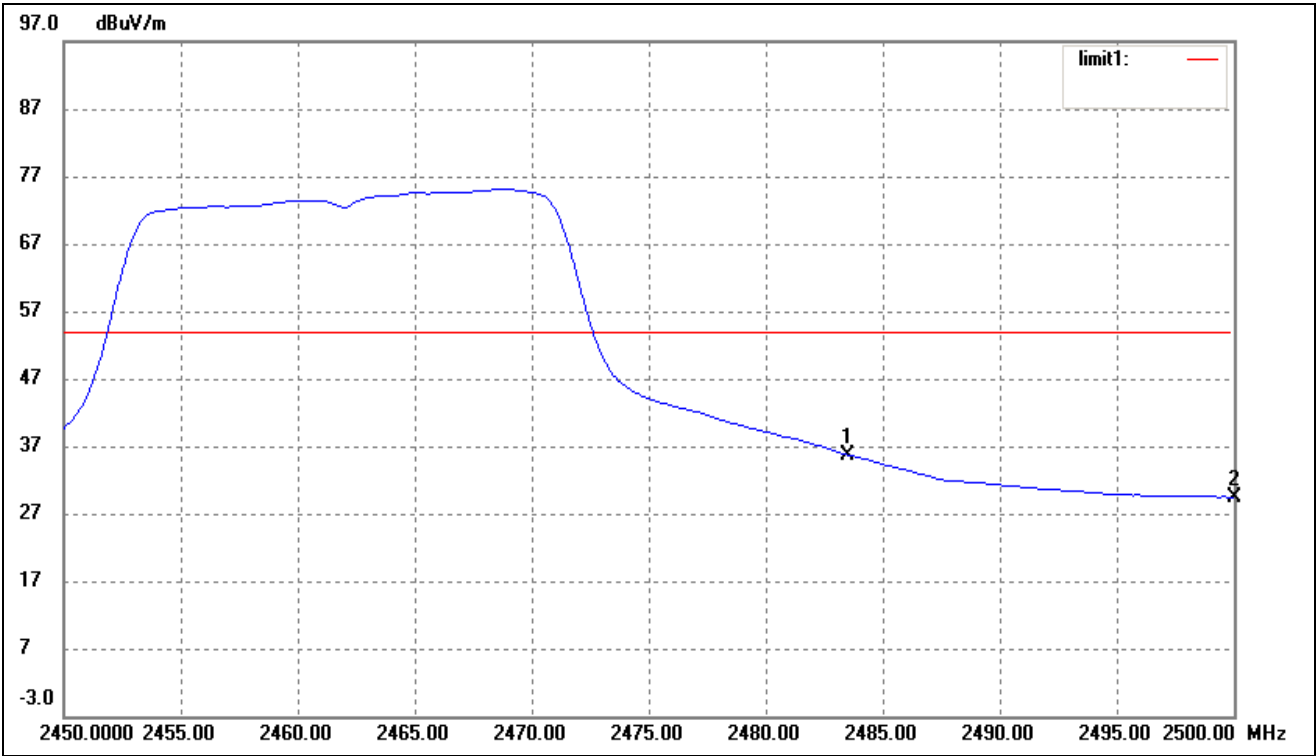
For 802.11n_HT 20M

Lowest Bandedge



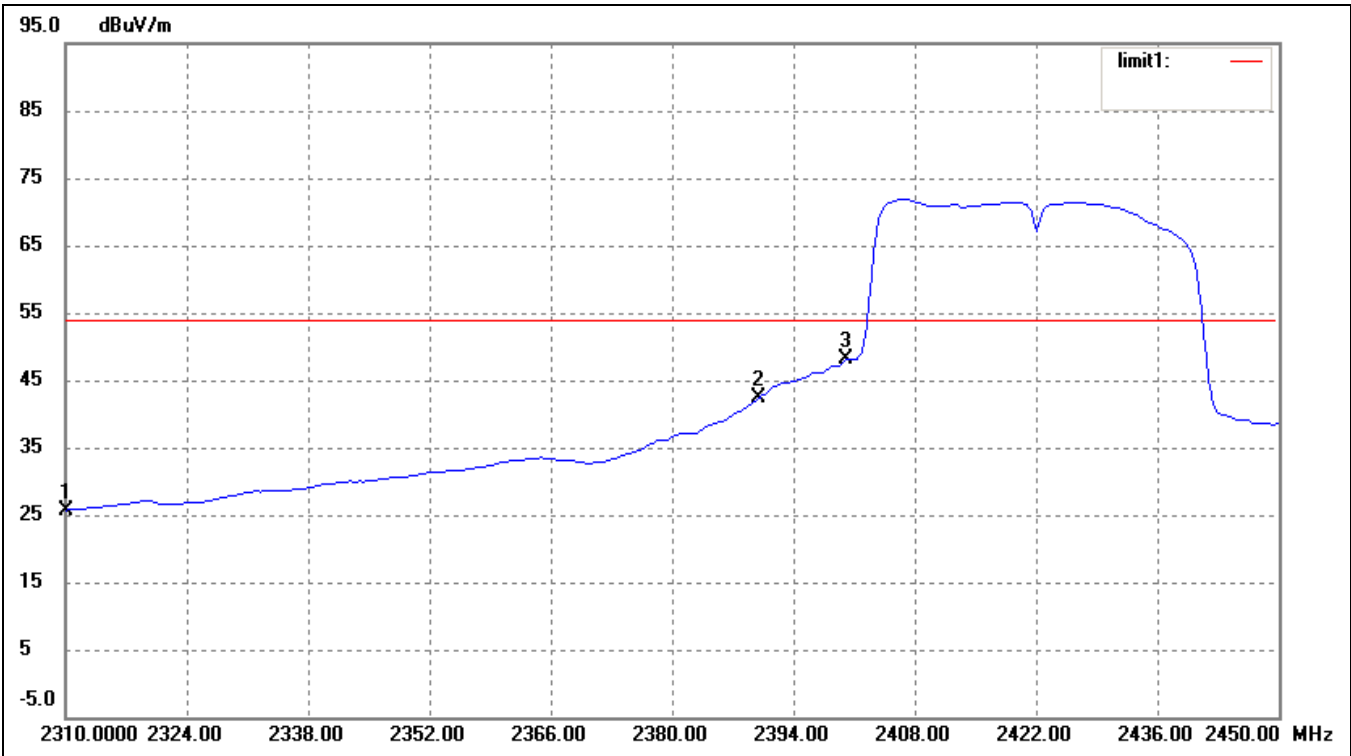
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2310.000	36.17	-7.51	28.66	54.00	-25.34	360	100	Ave
	2310.000	49.33	-7.51	41.82	74.00	-32.18	0	100	peak
2	2390.000	37.16	-7.34	29.82	54.00	-24.18	235	100	Ave
	2390.000	47.73	-7.34	40.39	54.00	-33.61	221	100	peak
3	2400.000	44.58	-7.31	37.27	54.00	-16.73	162	100	Ave
	2400.000	66.70	-7.31	59.39	74.00	-14.61	116	200	peak

Highest Bandedge



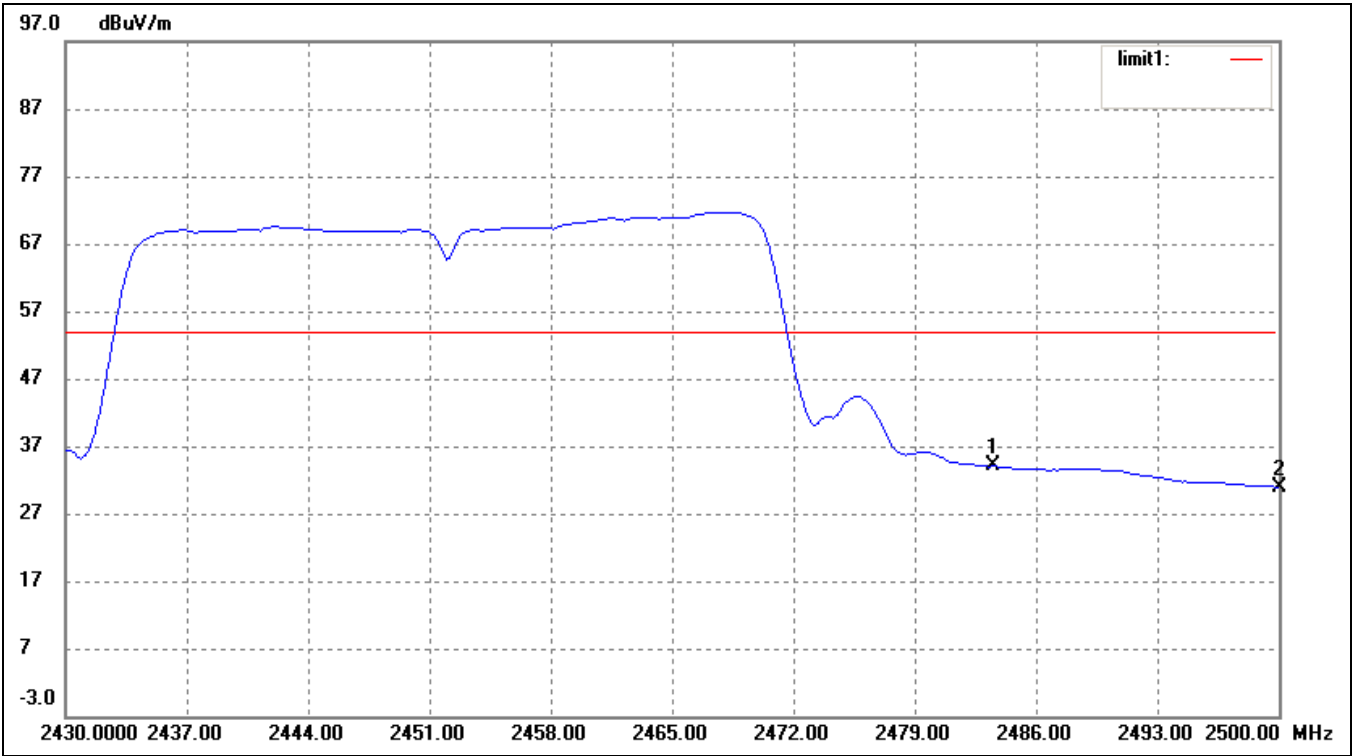
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2483.500	42.83	-7.13	35.70	54.00	-18.30	360	100	Ave
	2483.500	63.75	-7.13	56.62	74.00	-17.38	231	100	peak
2	2500.000	36.52	-7.08	29.44	54.00	-24.56	228	100	Ave
	2500.000	50.52	-7.08	43.44	74.00	-30.56	121	200	peak

For 802.11n_HT 40M
Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2310.000	33.22	-7.51	25.71	54.00	-28.29	360	100	Ave
	2310.000	49.23	-7.51	41.72	74.00	-32.28	0	100	peak
2	2390.000	49.82	-7.34	42.48	54.00	-11.52	235	100	Ave
	2390.000	51.14	-7.34	43.80	74.00	-30.20	221	100	peak
3	2400.000	55.45	-7.31	48.14	54.00	-5.86	162	100	Ave
	2400.000	57.92	-7.31	50.61	74.00	-23.39	116	200	peak

Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	2483.500	41.14	-7.13	34.01	54.00	-19.99	360	100	Ave
	2483.500	55.30	-7.13	48.17	74.00	-25.83	231	100	peak
2	2500.000	37.98	-7.08	30.90	54.00	-23.10	228	100	Ave
	2500.000	51.12	-7.08	44.04	74.00	-29.96	121	200	peak

9. Conducted Emissions

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

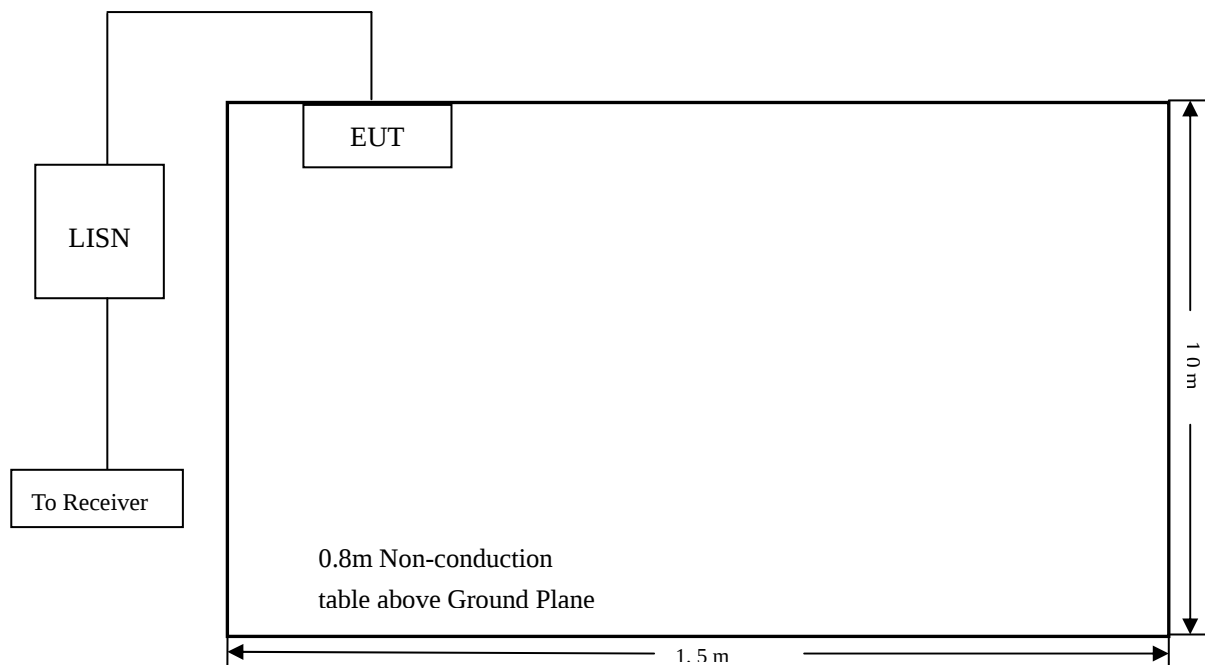
9.3 Test Procedure

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:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

9.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

9.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC Part 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

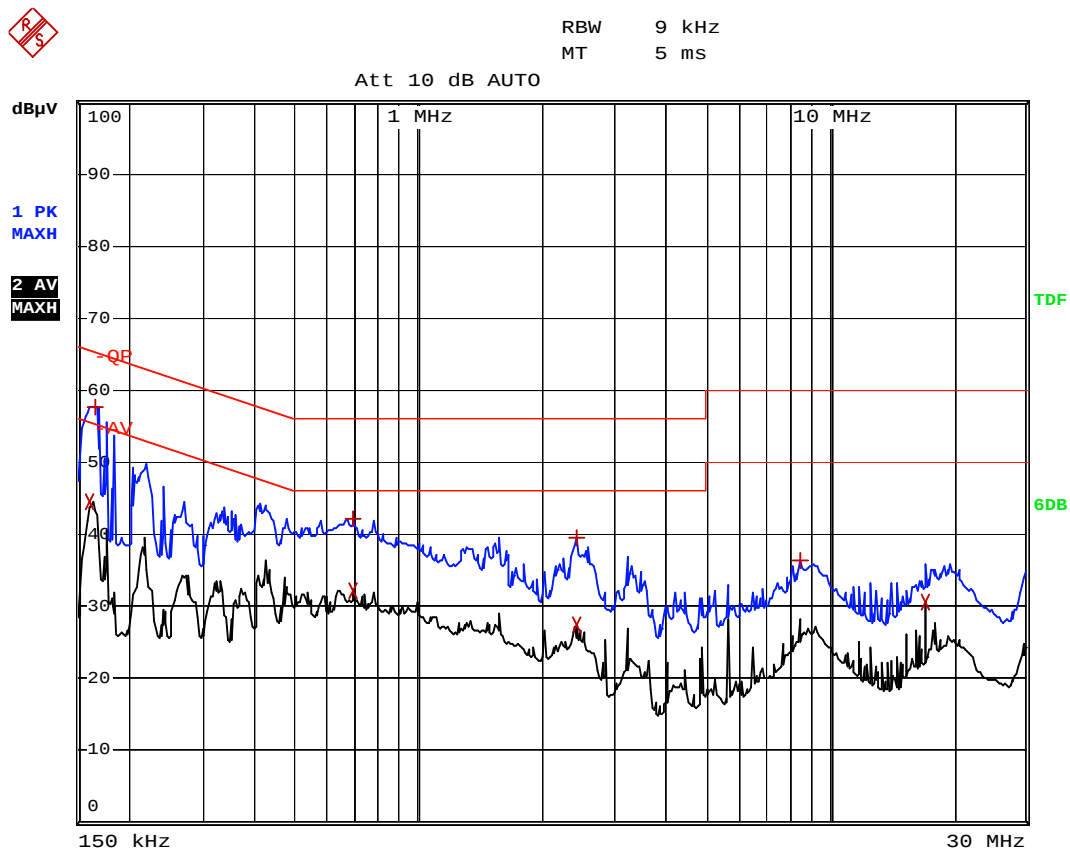
-7.49 dBµV at 0.166 MHz in the **Neutral, Peak** Detector, 0.15-30MHz

9.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

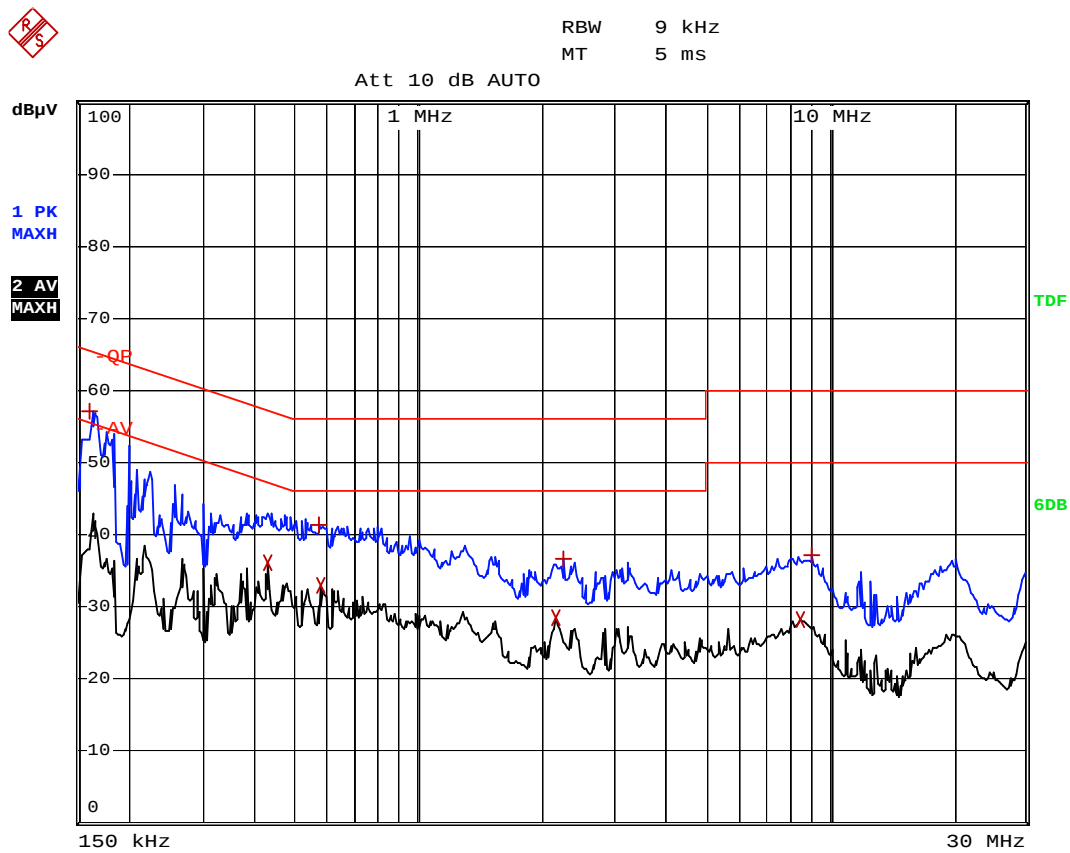
EUT: MID
Tested Model: MID1107CM
Operating Condiation: Charging
Comment:

Test Specification: Neutral



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	162 kHz	44.39	-10.96
1 Max Peak	166 kHz	57.66	-7.49
1 Max Peak	690 kHz	42.23	-13.76
2 Average	690 kHz	32.25	-13.74
1 Max Peak	2.434 MHz	39.39	-16.60
2 Average	2.434 MHz	27.44	-18.55
1 Max Peak	8.514 MHz	36.46	-23.53
2 Average	17.07 MHz	30.47	-19.52

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	162 kHz	57.02	-8.33
2 Average	430 kHz	36.05	-11.20
1 Max Peak	570 kHz	41.25	-14.74
2 Average	578 kHz	33.05	-12.94
2 Average	2.17 MHz	28.54	-17.46
1 Max Peak	2.266 MHz	36.48	-19.51
2 Average	8.506 MHz	28.09	-21.91
1 Max Peak	9.078 MHz	37.06	-22.93

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