

FCC 47 CFR PART 15 SUBPART C

Product Type : Wireless Mobile HotSpot
Applicant : Netgear Incorporated
Address : 350 East Plumeria Drive San Jose, CA 95134 United States
Model Number : AirCard 771S
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
ANSI C63.4-2009

Receive Date : Feb. 19, 2013
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Issue Date : May 24, 2013

Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Apr. 10, 2013	Initial Issue	
01	Apr. 11, 2013	Revised report information.	Joyce Liao
02	May 24, 2013	Revised section 5.4 description.	Joyce Liao

Verification of Compliance

Issued Date: 05/24/2013

Product Type : Wireless Mobile HotSpot

Applicant : Netgear Incorporated

Address : 350 East Plumeria Drive San Jose, CA 95134 United States

Model Number : AirCard 771S

FCC ID : PY3AC771S

Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
ANSI C63.4-2009

Test Result : Complied

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<http://www.atl-lab.com.tw/e-index.htm>



The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247 .

The test results of this report relate only to the tested sample identified in this report.


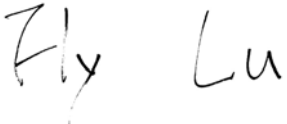
Approved By :  (Manager) Reviewed By :  (Testing Engineer) (Fly Lu)

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1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	----
----	6	Receiver Radiated Emissions	PASS	----
Standard		Item	Result	Remark
15.247	RSS-210			
15.247(d)	A8.5	Transmitter Radiated Emissions	PASS	----
15.247(b)(3)	A8.4	Max. Output Power	PASS	----
15.247(a)(2)	A8.2 (a)	6dB RF Bandwidth	PASS	----
15.247(e)	A8.2 (b)	Power Spectral Density	PASS	----
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	PASS	----
15.247(d)	A8.5	Band Edge Measurement	PASS	----
15.247(c)	A8.5	Occupied Bandwidth Measurement	PASS	----
15.203	-	Antenna Requirement	PASS	----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.072 dB.

2 EUT Description

Product	Wireless Mobile HotSpot
Model No.	AirCard 771S
Applicant	Netgear Incorporated 350 East Plumeria Drive San Jose, CA 95134 United States
Manufacturer	Netgear Incorporated 350 East Plumeria Drive San Jose, CA 95134 United States
FCC ID	PY3AC771S
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz 20MHz: 2412 ~ 2462 MHz
Modulation Type	IEEE 802.11b:DSSS IEEE 802.11g:DSSS + OFDM IEEE 802.11n 2.4GHz 20MHz: OFDM
RF Output Power	IEEE 802.11b: 0.033 W / 15.12 dBm IEEE 802.11g: 0.091 W / 19.61 dBm IEEE 802.11n 2.4GHz 20MHz: 0.069 W / 18.37 dBm
Component	
Battery	SIERRA, W-5 3.7V, 2500mAh
Power Adapter	SIERRA, SSW-2458 Input:110-240Vac, 50/60Hz , 0.2A Output: 5Vdc, 1A Shielded, 1.2 m

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode
Mode 2: IEEE 802.11b Link Mode
Mode 3: IEEE 802.11g Link Mode
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode
Mode 5: Receiver Mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11b mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11n 2.4GHz 20MHzmode:

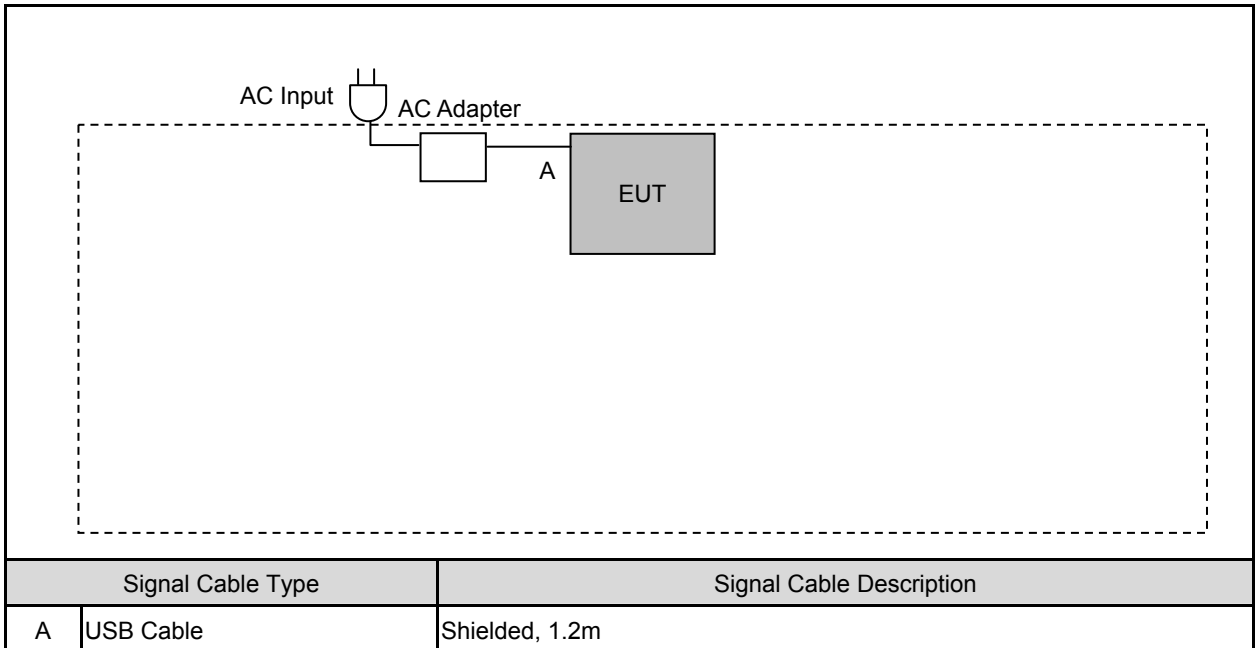
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

3.2. EUT Exercise Software

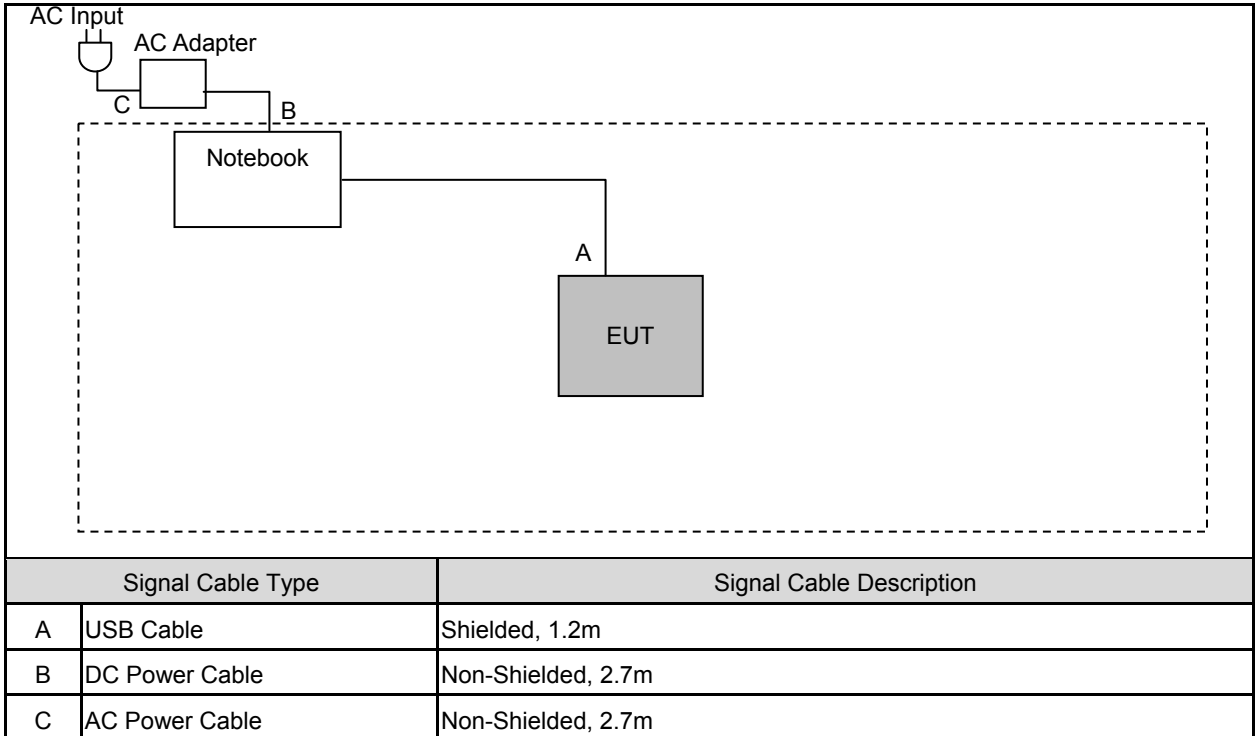
1. Setup the EUT shown on 3.3.
2. Turn on the power of all equipment.
3. Turn on Wi-Fi function link to AP
4. EUT run test program.

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emission



3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

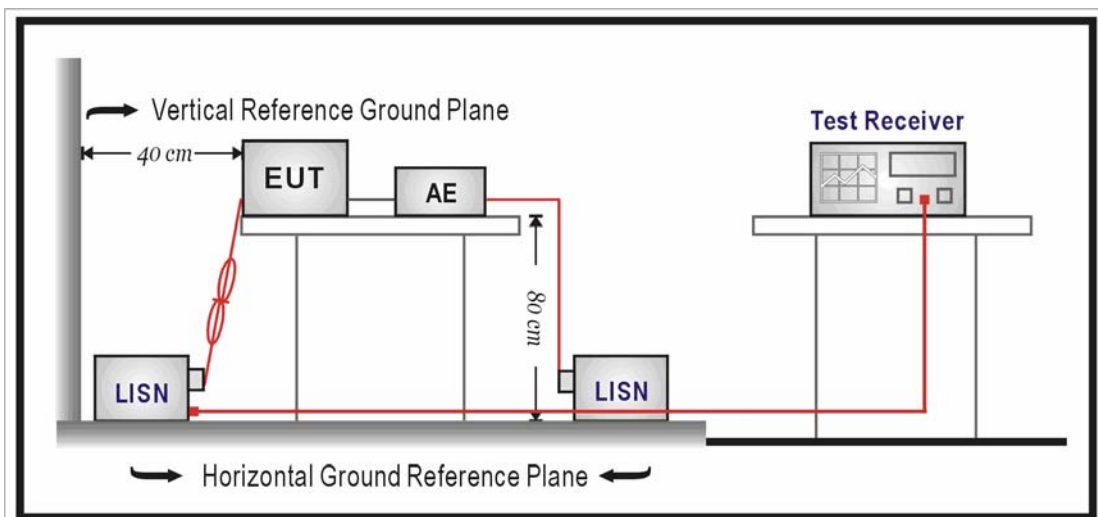
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/18/2012	(1)
LISN	R&S	ENV216	101040	03/07/2012	(1)
LISN	R&S	ENV216	101041	03/07/2012	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

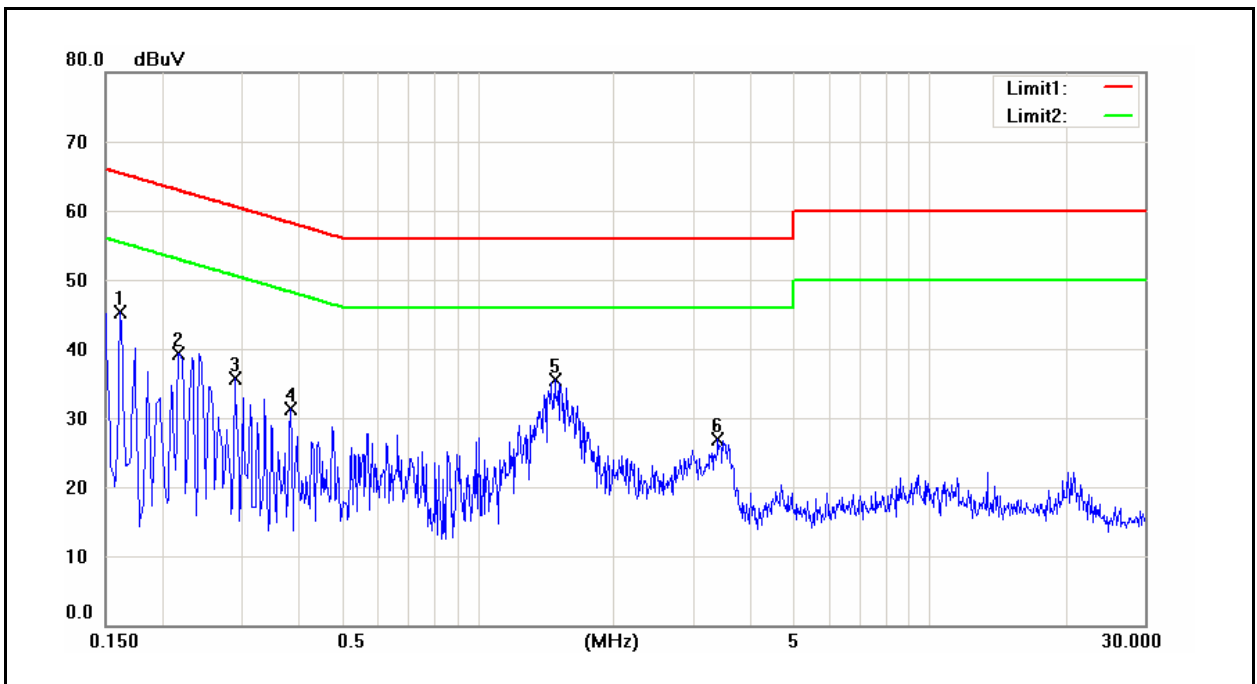
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

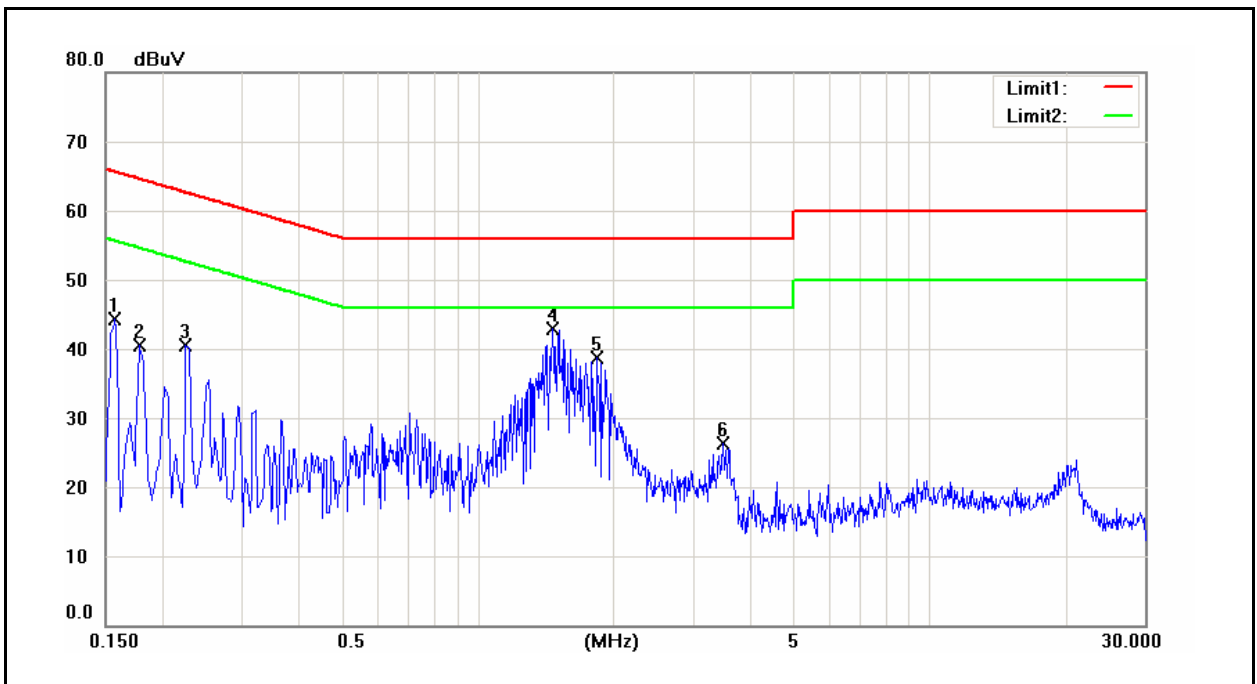
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	02/25/2013
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	29.83	12.95	9.72	39.55	22.67	65.36	55.36	-25.81	-32.69	Pass
2	0.2180	23.78	10.24	9.72	33.50	19.96	62.89	52.89	-29.39	-32.93	Pass
3	0.2900	17.76	6.88	9.72	27.48	16.60	60.52	50.52	-33.04	-33.92	Pass
4	0.3860	13.95	5.28	9.72	23.67	15.00	58.15	48.15	-34.48	-33.15	Pass
5	1.4820	17.34	12.16	9.76	27.10	21.92	56.00	46.00	-28.90	-24.08	Pass
6	3.4020	13.39	6.76	9.82	23.21	16.58	56.00	46.00	-32.79	-29.42	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	02/25/2013
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	29.42	14.36	9.65	39.07	24.01	65.57	55.57	-26.50	-31.56	Pass
2	0.1780	25.08	8.75	9.64	34.72	18.39	64.58	54.58	-29.86	-36.19	Pass
3	0.2260	23.77	10.74	9.64	33.41	20.38	62.60	52.60	-29.19	-32.22	Pass
4	1.4660	22.03	17.19	9.69	31.72	26.88	56.00	46.00	-24.28	-19.12	Pass
5	1.8340	25.20	14.63	9.71	34.91	24.34	56.00	46.00	-21.09	-21.66	Pass
6	3.5020	11.44	2.96	9.75	21.19	12.71	56.00	46.00	-34.81	-33.29	Pass

5 Radiated Emission Measurement

5.1. Limit

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at meter)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

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

5.2. Test Instruments

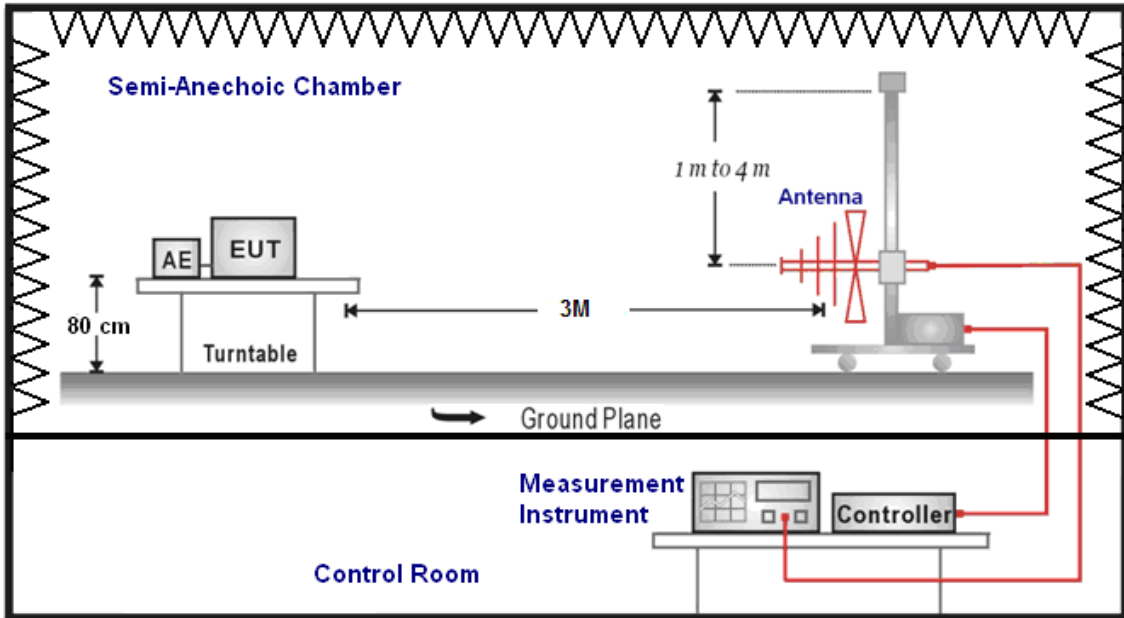
3 Meter Chamber (966-A)					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/16/2012	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/21/2013	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2013	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2013	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	06/29/2012	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/15/2012	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/21/2012	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2012	(3)
Test Site	ATL	TE01	888001	08/18/2012	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

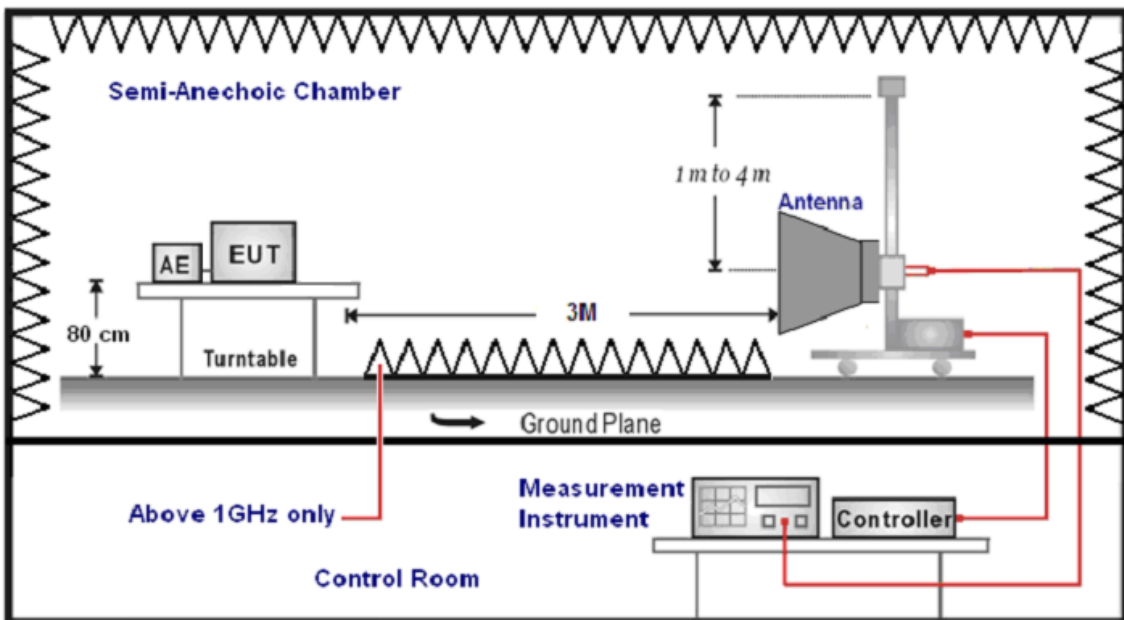
Note: N.C.R. = No Calibration Request.

5.3. Setup

Below 1GHz



Above 1GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

Pre Scan has been conducted and radiation three axis to determine the worst case mode all possible combinations between available modulations.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5.5. Test Result

Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	02/27/2013
		Test By:	Fly Lu

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
159.5000	48.86	-16.97	31.89	43.50	-11.61	QP	H
260.0000	45.20	-11.97	33.23	46.00	-12.77	QP	H
455.0000	47.10	-7.81	39.29	46.00	-6.71	QP	H
615.5000	34.49	-4.72	29.77	46.00	-16.23	QP	H
810.0000	30.58	-1.39	29.19	46.00	-16.81	QP	H
909.5000	36.47	0.56	37.03	46.00	-8.97	QP	H
159.5000	48.88	-16.97	31.91	43.50	-11.59	QP	V
390.0000	48.12	-8.62	39.50	46.00	-6.50	QP	V
455.0000	46.08	-7.81	38.27	46.00	-7.73	QP	V
520.0000	45.12	-6.69	38.43	46.00	-7.57	QP	V
649.5000	35.25	-4.08	31.17	46.00	-14.83	QP	V
909.5000	37.50	0.56	38.06	46.00	-7.94	QP	V

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Above 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2412MHz	Test By:	Fly Lu

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2911.000	36.22	5.68	41.90	74.00	-32.10	peak	H
4549.000	34.49	11.01	45.50	74.00	-28.50	peak	H
6243.000	32.54	16.63	49.17	74.00	-24.83	peak	H
3009.000	38.02	5.93	43.95	74.00	-30.05	peak	V
4824.000	37.32	11.71	49.03	74.00	-24.97	peak	V
6418.000	33.47	17.16	50.63	74.00	-23.37	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2437MHz	Test By:	Fly Lu

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3093.000	38.72	6.11	44.83	74.00	-29.17	peak	H
4563.000	35.08	11.05	46.13	74.00	-27.87	peak	H
6215.000	34.01	16.54	50.55	74.00	-23.45	peak	H
3198.000	36.03	6.34	42.37	74.00	-31.63	peak	V
4549.000	34.41	11.01	45.42	74.00	-28.58	peak	V
6229.000	32.48	16.58	49.06	74.00	-24.94	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	2			Date:	02/27/2013		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3058.000	37.96	6.04	44.00	74.00	-30.00	peak	H
4570.000	35.09	11.06	46.15	74.00	-27.85	peak	H
6215.000	33.55	16.54	50.09	74.00	-23.91	peak	H
2946.000	37.16	5.76	42.92	74.00	-31.08	peak	V
4549.000	36.30	11.01	47.31	74.00	-26.69	peak	V
6222.000	33.87	16.56	50.43	74.00	-23.57	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	02/27/2013		
Frequency:	2412MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2897.000	37.08	5.64	42.72	74.00	-31.28	peak	H
4549.000	35.52	11.01	46.53	74.00	-27.47	peak	H
6271.000	33.52	16.71	50.23	74.00	-23.77	peak	H
2939.000	36.77	5.75	42.52	74.00	-31.48	peak	V
4563.000	35.58	11.05	46.63	74.00	-27.37	peak	V
6397.000	33.91	17.10	51.01	74.00	-22.99	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	02/27/2013		
Frequency:	2437MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2883.000	36.73	5.61	42.34	74.00	-31.66	peak	H
4577.000	36.48	11.07	47.55	74.00	-26.45	peak	H
6355.000	32.91	16.97	49.88	74.00	-24.12	peak	H
2911.000	36.83	5.68	42.51	74.00	-31.49	peak	V
4542.000	35.18	10.99	46.17	74.00	-27.83	peak	V
6194.000	33.26	16.47	49.73	74.00	-24.27	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	02/27/2013		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2890.000	37.05	5.63	42.68	74.00	-31.32	peak	H
4563.000	35.05	11.05	46.10	74.00	-27.90	peak	H
6257.000	32.55	16.66	49.21	74.00	-24.79	peak	H
2946.000	36.47	5.76	42.23	74.00	-31.77	peak	V
4549.000	35.84	11.01	46.85	74.00	-27.15	peak	V
6299.000	34.03	16.80	50.83	74.00	-23.17	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	02/27/2013		
Frequency:	2412MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2918.000	36.90	5.70	42.60	74.00	-31.40	peak	H
4549.000	35.73	11.01	46.74	74.00	-27.26	peak	H
6355.000	32.90	16.97	49.87	74.00	-24.13	peak	H
2939.000	37.23	5.75	42.98	74.00	-31.02	peak	V
4570.000	34.52	11.06	45.58	74.00	-28.42	peak	V
6418.000	32.92	17.16	50.08	74.00	-23.92	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	AirCard 771S			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	02/27/2013		
Frequency:	2437MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3002.000	36.80	5.91	42.71	74.00	-31.29	peak	H
4549.000	35.23	11.01	46.24	74.00	-27.76	peak	H
6390.000	33.25	17.08	50.33	74.00	-23.67	peak	H
2974.000	37.83	5.84	43.67	74.00	-30.33	peak	V
4570.000	35.74	11.06	46.80	74.00	-27.20	peak	V
6369.000	33.70	17.00	50.70	74.00	-23.30	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	02/27/2013
Frequency:	2462MHz	Test By:	Fly Lu

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2967.000	36.23	5.82	42.05	74.00	-31.95	peak	H
4542.000	35.20	10.99	46.19	74.00	-27.81	peak	H
6327.000	32.87	16.88	49.75	74.00	-24.25	peak	H
2918.000	36.71	5.70	42.41	74.00	-31.59	peak	V
4563.000	35.81	11.05	46.86	74.00	-27.14	peak	V
6271.000	33.03	16.71	49.74	74.00	-24.26	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	02/27/2013
Modulation:	IEEE 802.11b	Test By:	Fly Lu
Frequency:	2437MHz		

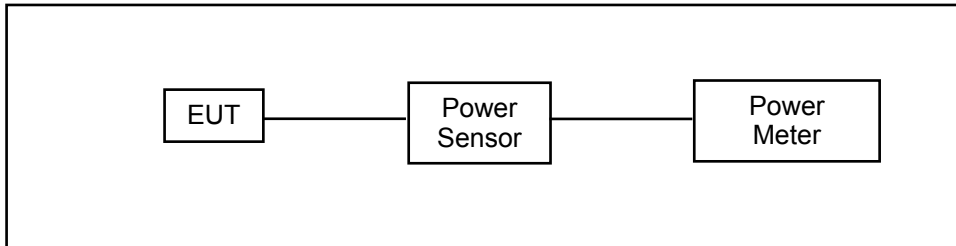
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/)	Peak (dBuV/m)	AVG. (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2911.000	38.32	5.68	44.00	74.00	54.00	-30.00	peak	H
4619.000	35.87	11.19	47.06	74.00	54.00	-26.94	peak	H
6369.000	33.76	17.00	50.76	74.00	54.00	-23.24	peak	H
2911.000	36.83	5.68	42.51	74.00	54.00	-31.49	peak	V
4577.000	35.96	11.07	47.03	74.00	54.00	-26.97	peak	V
6194.000	34.34	16.47	50.81	74.00	54.00	-23.19	peak	V

6 Maximum Conducted Output Power Measurement

6.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Single Channel PK Power Sensor	Agilent	N1911A	MY45101619	12/19/2012	(1)
Wideband Power Meter	Agilent	N1921A	MY45241957	12/19/2012	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to $(\text{GAIN} - 6)/3$ dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

Model Number	AirCard 771S					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 2: IEEE 802.11b Link Mode					
Date of Test	02/25/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	1	12.23	0.017	15.12	0.033	< 30
2437		10.12	0.010	13.05	0.020	< 30
2462		7.79	0.006	10.93	0.012	< 30
2412	11	11.91	0.016	14.88	0.031	< 30
2437		9.94	0.010	12.89	0.019	< 30
2462		7.63	0.006	10.73	0.012	< 30

Model Number	AirCard 771S					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 3: IEEE 802.11g Link Mode					
Date of Test	02/25/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6	10.77	0.012	19.61	0.091	< 30
2437		10.13	0.010	19.17	0.083	< 30
2462		9.16	0.008	17.71	0.059	< 30
2412	54	10.62	0.012	18.26	0.067	< 30
2437		9.43	0.009	18.28	0.067	< 30
2462		8.03	0.006	17.28	0.053	< 30

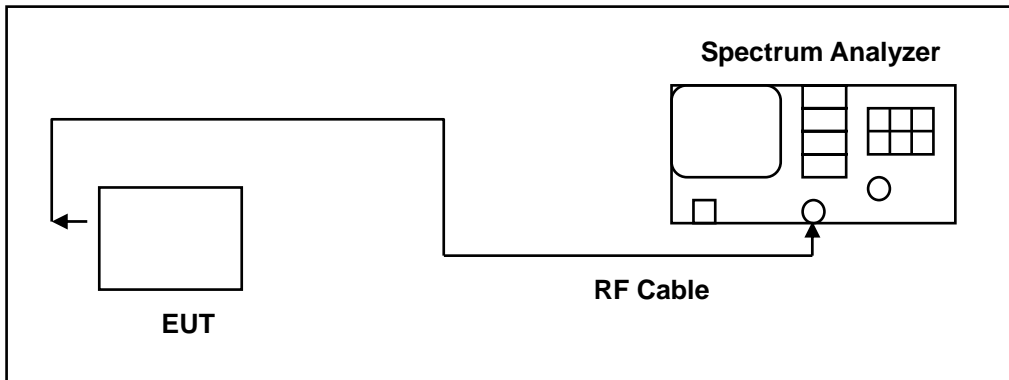
Model Number	AirCard 771S					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode					
Date of Test	02/25/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	MCS0	10.95	0.012	18.37	0.069	< 30
2437		10.07	0.010	17.55	0.057	< 30
2462		9.15	0.008	16.38	0.043	< 30
2412	MCS7	10.65	0.012	18.07	0.064	< 30
2437		9.81	0.010	17.25	0.053	< 30
2462		8.72	0.007	15.98	0.040	< 30

7 6dB RF Bandwidth Measurement

7.1. Limit

Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Test Site	ATL	TE05	TE05	N.C.R.	-----

dRemark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel 1, 6, 11)

7.5. Test Result

Model Number	AirCard 771S		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	03/01/2013	Test Site	TE05
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	9579	> 500
	2437	9673	> 500
	2462	10077	> 500

Model Number	AirCard 771S		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	03/01/2013	Test Site	TE06
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	15324	> 500
	2437	13249	> 500
	2462	15119	> 500

Model Number	AirCard 771S		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	03/01/2013	Test Site	TE05
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	15636	> 500
	2437	16113	> 500
	2462	15113	> 500

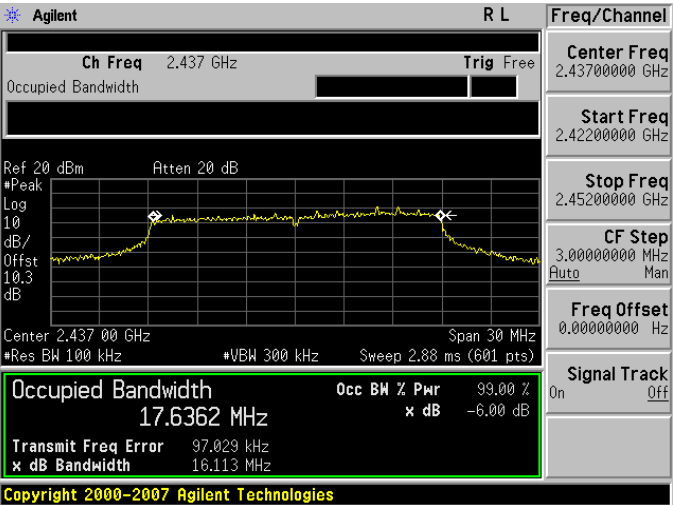
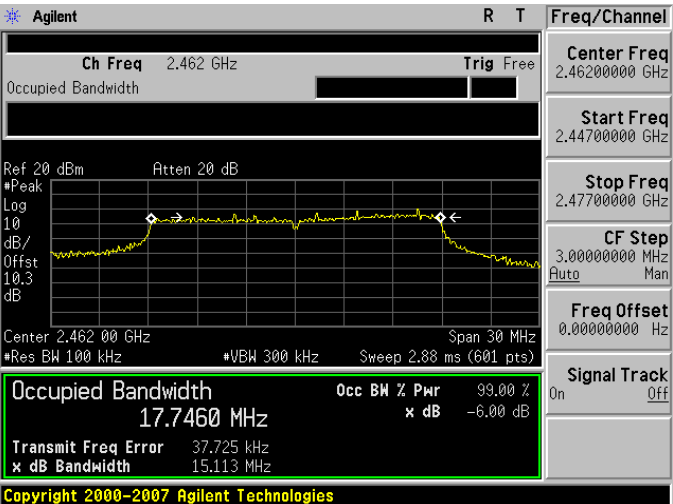
7.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.412 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.0348 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 232.040 kHz</p> <p>x dB Bandwidth 9.579 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.437 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.1055 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 337.908 kHz</p> <p>x dB Bandwidth 9.673 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.462 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.5346 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 196.575 kHz</p> <p>x dB Bandwidth 10.077 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

Mode 3: IEEE 802.11g Link Mode

2412	<p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.4879 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 80.139 kHz</p> <p>x dB Bandwidth 15.324 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.5734 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 137.059 kHz</p> <p>x dB Bandwidth 13.249 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	<p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.7435 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 22.951 kHz</p> <p>x dB Bandwidth 15.119 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

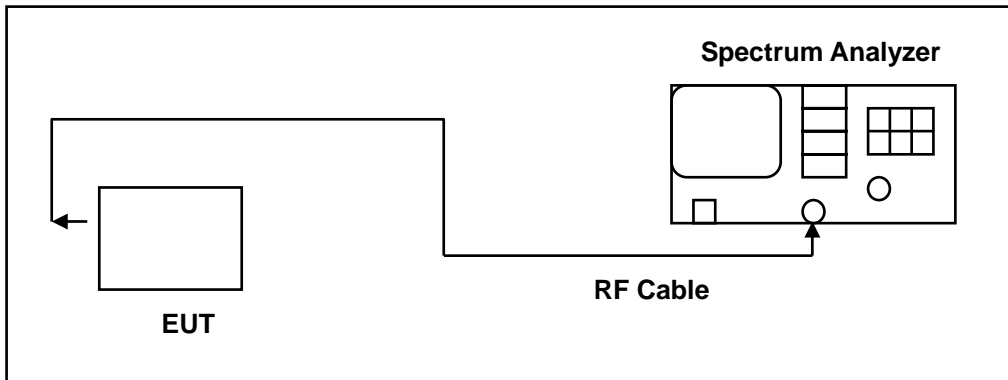
2412	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.5314 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 35.664 kHz</p> <p>x dB Bandwidth 15.636 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	 <p>Agilent R L</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.6362 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 97.029 kHz</p> <p>x dB Bandwidth 16.113 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.7460 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 37.725 kHz</p> <p>x dB Bandwidth 15.113 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

8 Maximum Power Density Measurement

8.1. Limit

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.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

- 1) The EUT was directly connectd to the spectrum analyzer and antenna output port as show in the block diagram below,
- 2) Spectrum Setting: RBW=100KHz, VBW=300KHz, Sweep time=Auto. Span to 5-30% greater than EBW
- 3) Scale the observed power level to an equivalent value in 3kHz by adjusting(reducing) the measured power by a bandwidth correction factor(BWCF) where $BWCF=10\log(3\text{kHz}/100\text{kHz}=-15.3\text{dB})$.
- 4) Use peak detector+BWCF.
- 5) The resulting peak PSD level must be $\leq 8\text{dBm}$.

8.5. Test Result

Model Number	AirCard 771S			
Test Item	Maximum Power Density			
Test Mode	Mode 2: IEEE 802.11b Link Mode			
Date of Test	03/05/2013		Test Site	TE05
Frequency (MHz)	Reading (dBm/100KHz)	BWCF (dB)	Results (dBm/3KHz)	Limit (dBm)
2412	2.44	-15.30	-12.86	< 8
2437	-1.23	-15.30	-16.53	< 8
2462	-3.06	-15.30	-18.36	< 8

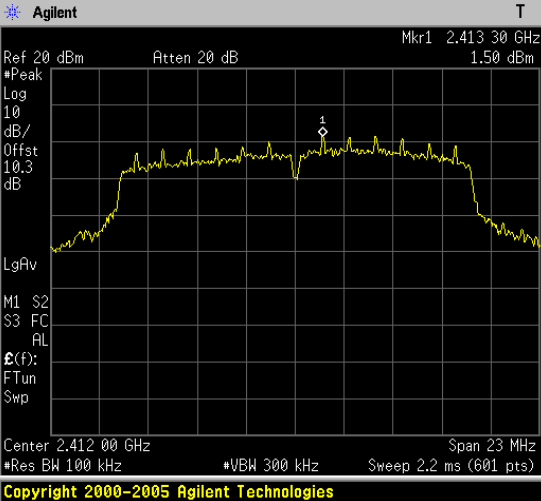
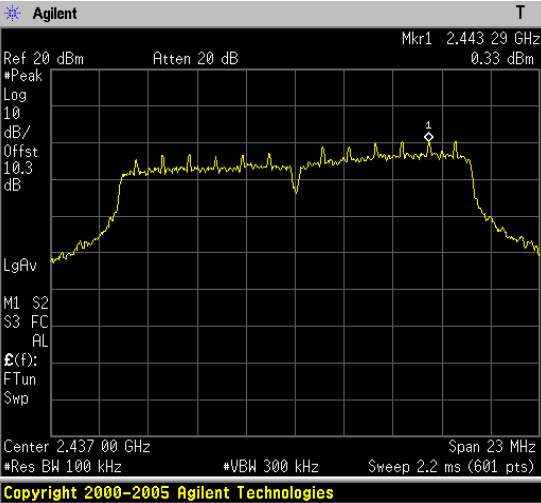
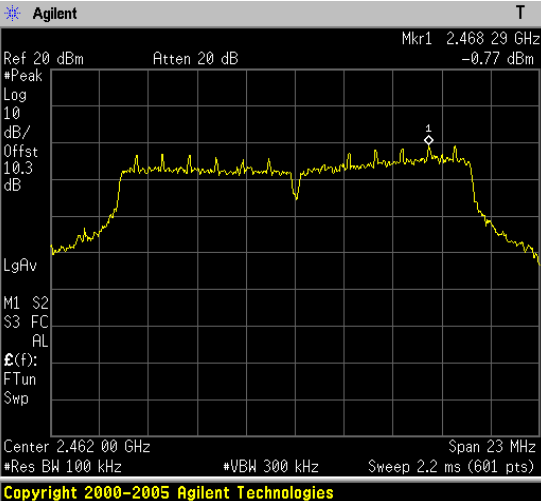
Model Number	AirCard 771S			
Test Item	Maximum Power Density			
Test Mode	Mode 3: IEEE 802.11g Link Mode			
Date of Test	03/05/2013		Test Site	TE05
Frequency (MHz)	Reading (dBm/100KHz)	BWCF (dB)	Results (dBm/3KHz)	Limit (dBm)
2412	1.50	-15.30	-13.80	< 8
2437	0.33	-15.30	-14.97	< 8
2462	-0.77	-15.30	-16.07	< 8

Model Number	AirCard 771S			
Test Item	Maximum Power Density			
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode			
Date of Test	03/01/2013		Test Site	TE05
Frequency (MHz)	Reading (dBm/100KHz)	BWCF (dB)	Results (dBm/3KHz)	Limit (dBm)
2412	1.71	-15.30	-13.59	< 8
2437	0.60	-15.30	-14.70	< 8
2462	-0.12	-15.30	-15.42	< 8

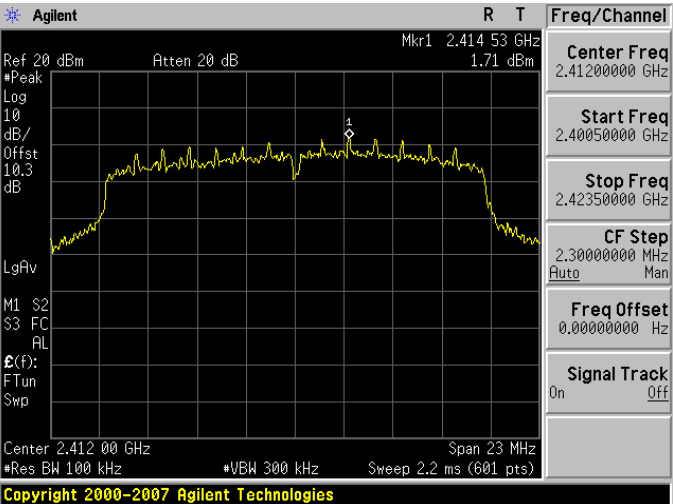
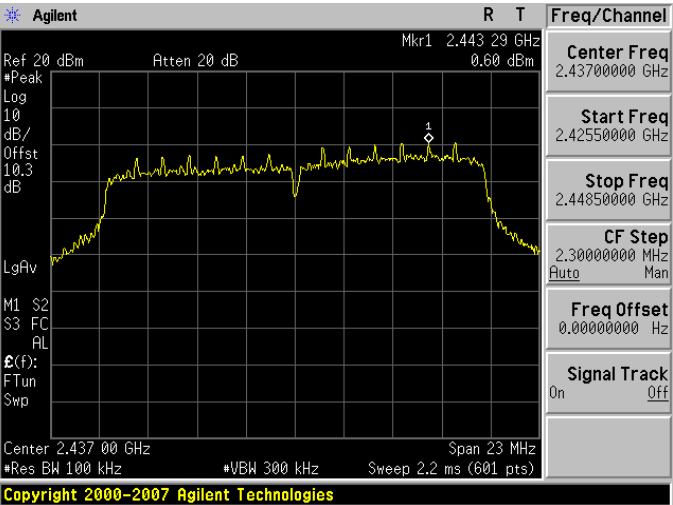
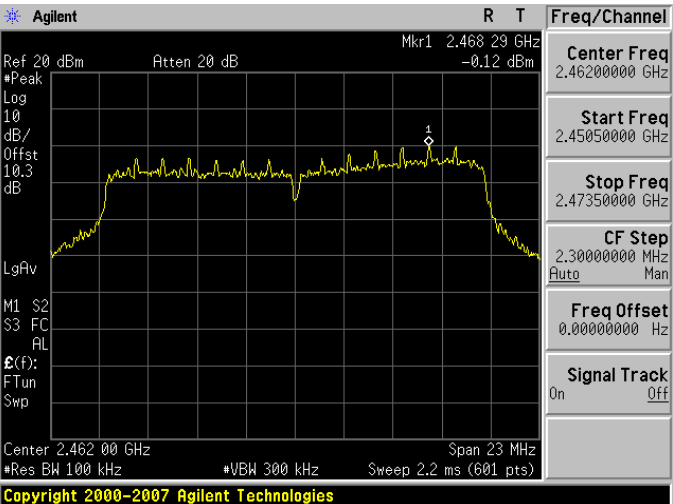
8.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode															
2412	<p>Agilent R T Ref 20 dBm Atten 20 dB Mkr1 2.413 52 GHz 2.44 dBm #Peak Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.412 00 GHz Span 15 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.44 ms (601 pts) Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.40450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.41950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.50000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.41200000 GHz	Start Freq	2.40450000 GHz	Stop Freq	2.41950000 GHz	CF Step	1.50000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.41200000 GHz														
Start Freq	2.40450000 GHz														
Stop Freq	2.41950000 GHz														
CF Step	1.50000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
2437	<p>Agilent T Ref 20 dBm Atten 20 dB Mkr1 2.439 52 GHz -1.23 dBm #Peak Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.437 00 GHz Span 15 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.44 ms (601 pts) Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.50000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.42950000 GHz	Stop Freq	2.44450000 GHz	CF Step	1.50000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.43700000 GHz														
Start Freq	2.42950000 GHz														
Stop Freq	2.44450000 GHz														
CF Step	1.50000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
2462	<p>Agilent T Ref 20 dBm Atten 20 dB Mkr1 2.464 52 GHz -3.06 dBm #Peak Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.462 00 GHz Span 15 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.44 ms (601 pts) Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.45450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.50000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.46200000 GHz	Start Freq	2.45450000 GHz	Stop Freq	2.46950000 GHz	CF Step	1.50000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.46200000 GHz														
Start Freq	2.45450000 GHz														
Stop Freq	2.46950000 GHz														
CF Step	1.50000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

Mode 3: IEEE 802.11g Link Mode

<p>2412</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.413 30 GHz 1.50 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>E(f):</p> <p>FTun</p> <p>Swp</p> <p>Center 2.412 00 GHz Span 23 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.40050000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42350000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.30000000 MHz</td> </tr> <tr> <td></td> <td>Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.41200000 GHz	Start Freq	2.40050000 GHz	Stop Freq	2.42350000 GHz	CF Step	2.30000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel																	
Center Freq	2.41200000 GHz																
Start Freq	2.40050000 GHz																
Stop Freq	2.42350000 GHz																
CF Step	2.30000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2437</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.443 29 GHz 0.33 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>E(f):</p> <p>FTun</p> <p>Swp</p> <p>Center 2.437 00 GHz Span 23 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42550000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44850000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.30000000 MHz</td> </tr> <tr> <td></td> <td>Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.42550000 GHz	Stop Freq	2.44850000 GHz	CF Step	2.30000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel																	
Center Freq	2.43700000 GHz																
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CF Step	2.30000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2462</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.468 29 GHz -0.77 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>E(f):</p> <p>FTun</p> <p>Swp</p> <p>Center 2.462 00 GHz Span 23 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.45050000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47350000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.30000000 MHz</td> </tr> <tr> <td></td> <td>Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.46200000 GHz	Start Freq	2.45050000 GHz	Stop Freq	2.47350000 GHz	CF Step	2.30000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel																	
Center Freq	2.46200000 GHz																
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CF Step	2.30000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

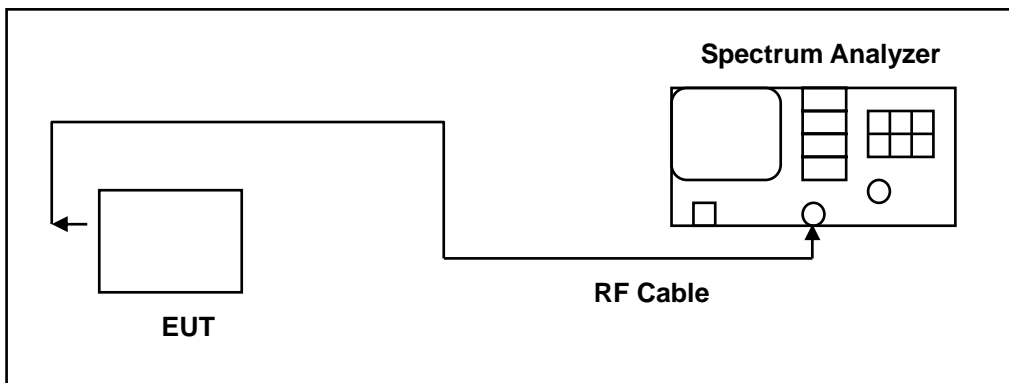
<p>2412</p>	 <p>Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.414 53 GHz #Peak 1.71 dBm Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.412 00 GHz Span 23 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts) Copyright 2000-2007 Agilent Technologies</p> <p>Center Freq 2.41200000 GHz Start Freq 2.40050000 GHz Stop Freq 2.42350000 GHz CF Step 2.30000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
<p>2437</p>	 <p>Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.443 29 GHz #Peak 0.60 dBm Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.437 00 GHz Span 23 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts) Copyright 2000-2007 Agilent Technologies</p> <p>Center Freq 2.43700000 GHz Start Freq 2.42550000 GHz Stop Freq 2.44850000 GHz CF Step 2.30000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
<p>2462</p>	 <p>Agilent R T Freq/Channel Ref 20 dBm Atten 20 dB Mkr1 2.468 29 GHz #Peak -0.12 dBm Log 10 dB/ Offst 10.3 dB LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.462 00 GHz Span 23 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.2 ms (601 pts) Copyright 2000-2007 Agilent Technologies</p> <p>Center Freq 2.46200000 GHz Start Freq 2.45050000 GHz Stop Freq 2.47350000 GHz CF Step 2.30000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>

9 Out of Band Conducted Emissions Measurement

9.1. Limit

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

9.2. Test Setup



9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/09/2012	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

9.4. Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.

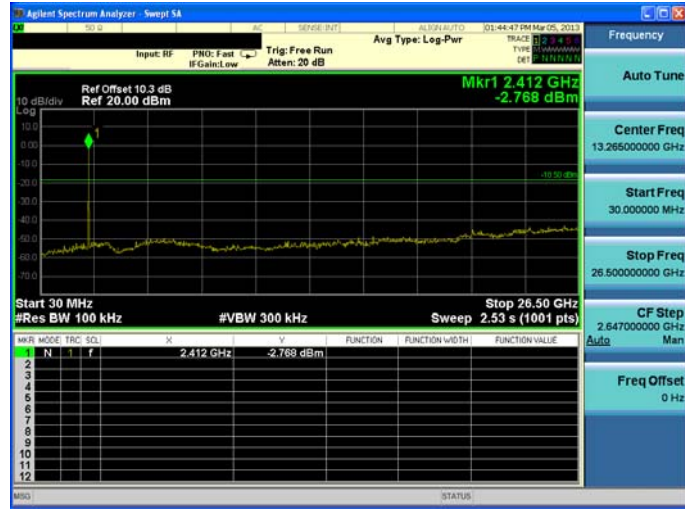
The test was performed at 3 channels (Channel 1, 6, 11)

9.5. Test Graphs

Mode 2: IEEE 802.11b Link Mode																	
2412	<p>Agilent Spectrum Analyzer Screenshot for 2412 GHz. The plot shows a signal at 2412 GHz with a power level of -0.504 dBm. The y-axis is 10 dB/div and the x-axis is 30 MHz. Parameters include Res BW 100 kHz, #VBW 300 kHz, and Sweep 2.53 s (1001 pts).</p> <table border="1"> <thead> <tr> <th>MWR MODE</th> <th>TRC</th> <th>SCN</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.412 GHz</td> <td></td> <td></td> <td>-0.504 dBm</td> </tr> </tbody> </table>	MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.412 GHz			-0.504 dBm
MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE										
1	N	1	f	2.412 GHz			-0.504 dBm										
2437	<p>Agilent Spectrum Analyzer Screenshot for 2437 GHz. The plot shows a signal at 2437 GHz with a power level of -2.726 dBm. The y-axis is 10 dB/div and the x-axis is 30 MHz. Parameters include Res BW 100 kHz, #VBW 300 kHz, and Sweep 2.53 s (1001 pts).</p> <table border="1"> <thead> <tr> <th>MWR MODE</th> <th>TRC</th> <th>SCN</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.437 GHz</td> <td></td> <td></td> <td>-2.726 dBm</td> </tr> </tbody> </table>	MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.437 GHz			-2.726 dBm
MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE										
1	N	1	f	2.437 GHz			-2.726 dBm										
2462	<p>Agilent Spectrum Analyzer Screenshot for 2462 GHz. The plot shows a signal at 2462 GHz with a power level of -3.258 dBm. The y-axis is 10 dB/div and the x-axis is 30 MHz. Parameters include Res BW 100 kHz, #VBW 300 kHz, and Sweep 2.53 s (1001 pts).</p> <table border="1"> <thead> <tr> <th>MWR MODE</th> <th>TRC</th> <th>SCN</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.462 GHz</td> <td></td> <td></td> <td>-3.258 dBm</td> </tr> </tbody> </table>	MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.462 GHz			-3.258 dBm
MWR MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE										
1	N	1	f	2.462 GHz			-3.258 dBm										

Mode 3: IEEE 802.11g Link Mode

2412



2437



2462



Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

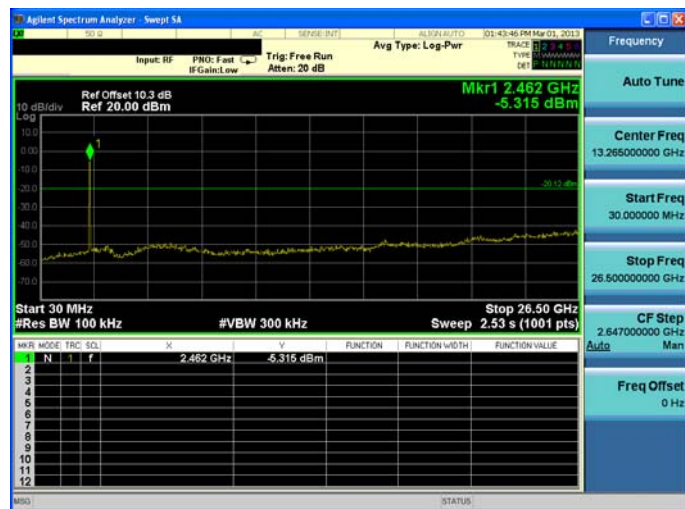
2412



2437



2462

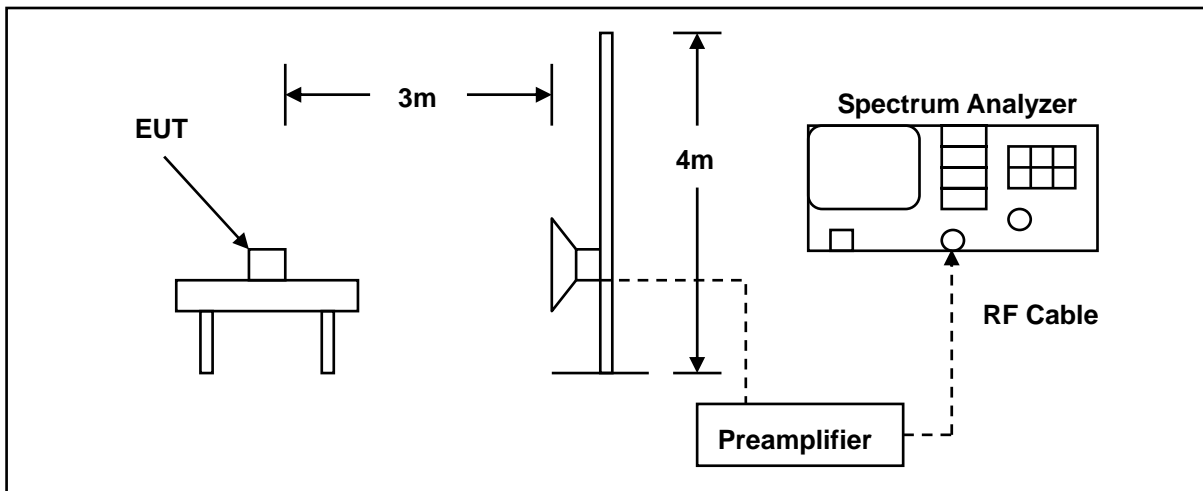


10 Band Edges Measurement

10.1.Limit

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

10.2.Test Setup



10.3.Test Instruments

3 Meter Chamber (966-A)					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/16/2012	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/21/2013	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2013	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2013	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/15/2012	(1)
Test Site	ATL	TE01	888001	08/18/2012	(1)
Horn Antenna (1~18GHz)	ETS-Lindgren	3117	00128055	08/09/2012	(1)
Test Site	ATL	TE09	TE09	05/11/2012	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of Oct 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

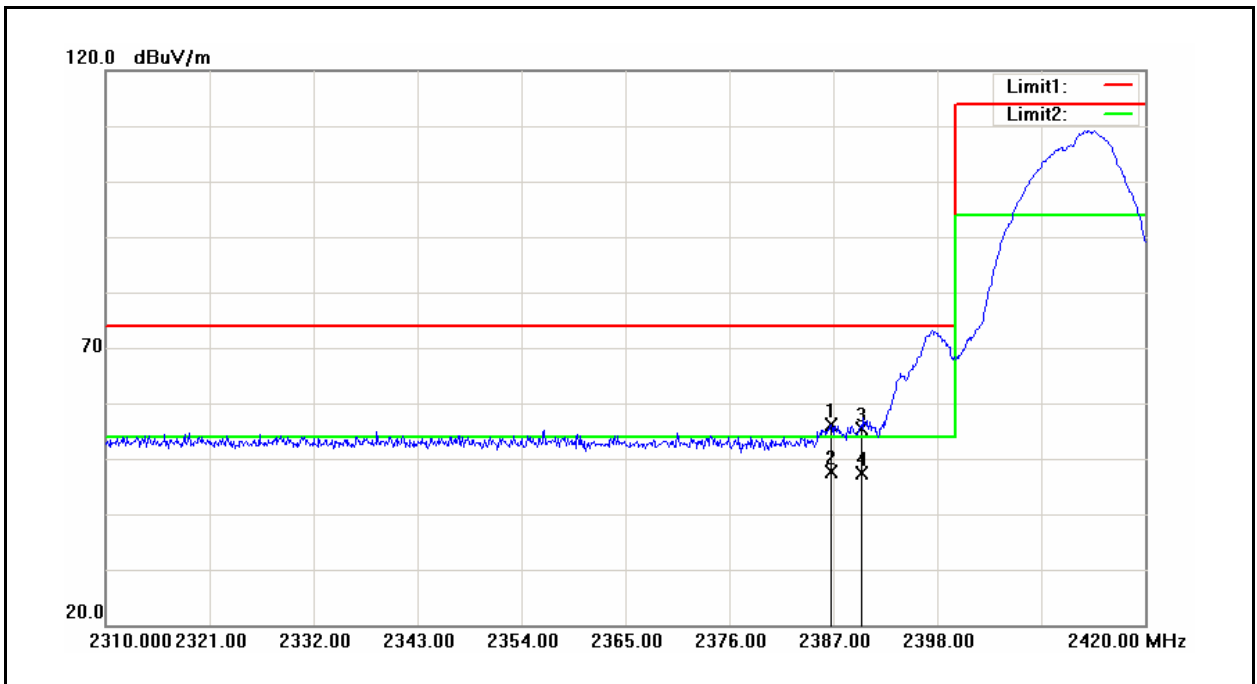
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

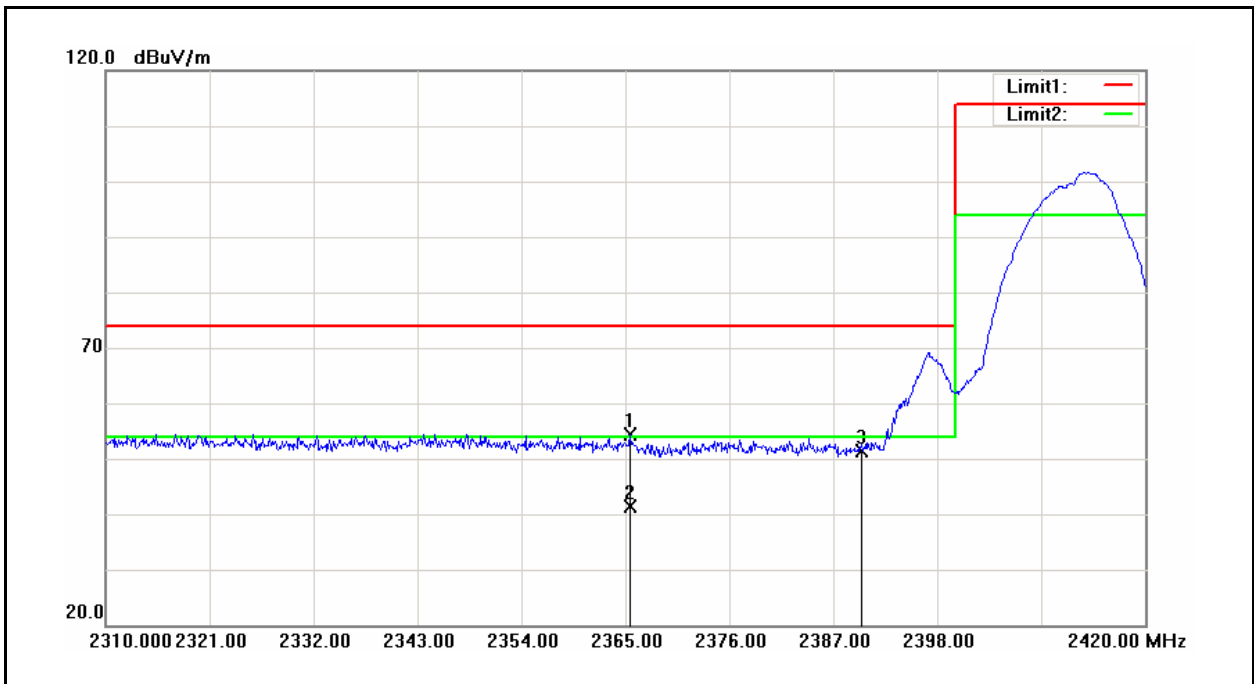
10.5. Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



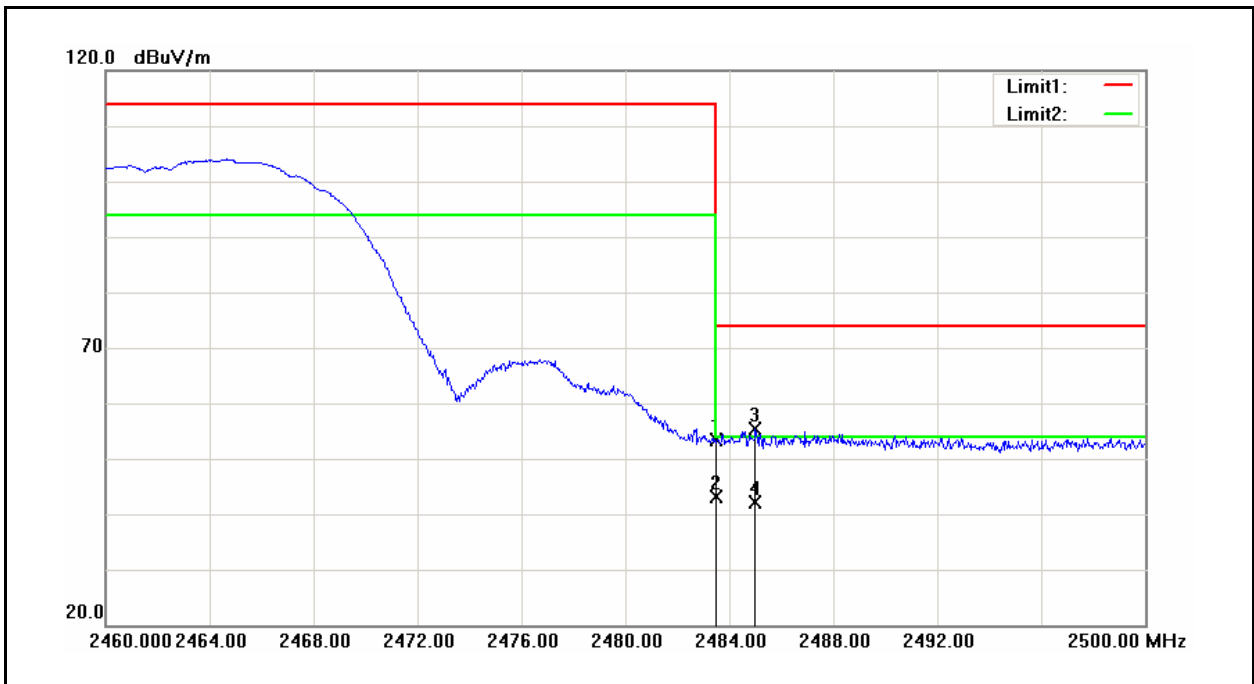
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.780	52.27	3.86	56.13	74.00	-17.87	peak
2	2386.780	43.79	3.86	47.65	54.00	-6.35	AVG
3	2390.000	51.41	3.88	55.29	74.00	-18.71	peak
4	2390.000	43.43	3.88	47.31	54.00	-6.69	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



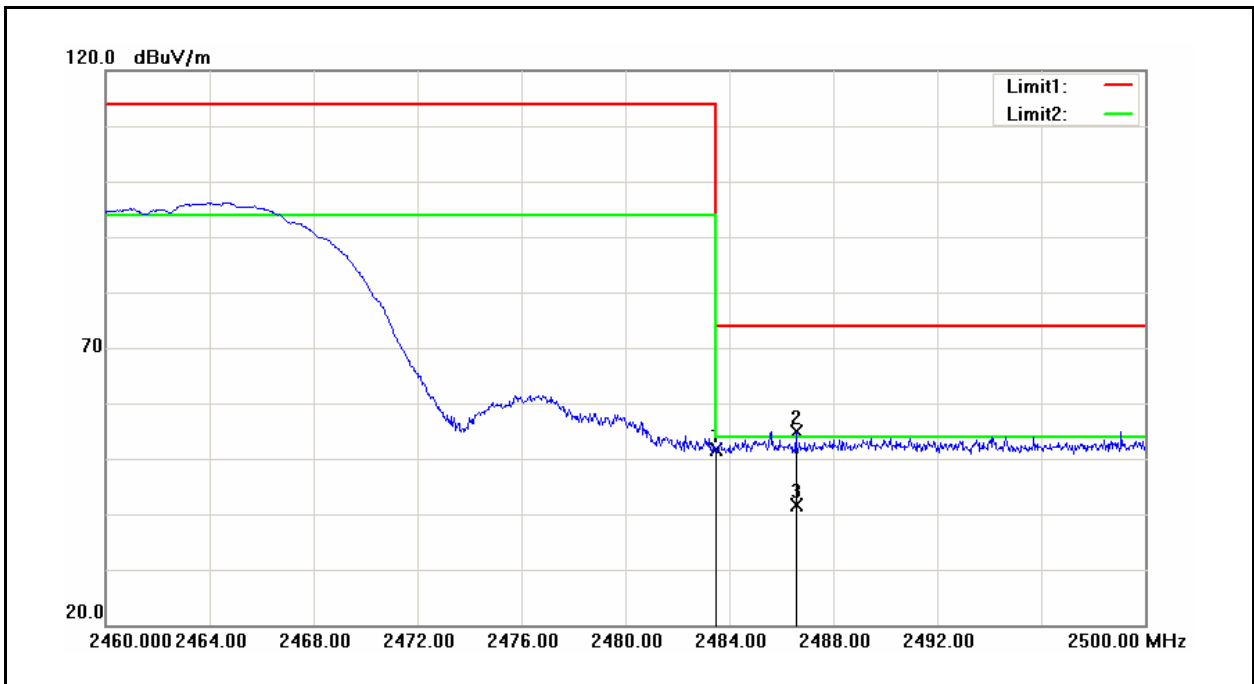
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2365.440	50.57	3.72	54.29	74.00	-19.71	peak
2	2365.440	37.75	3.72	41.47	54.00	-12.53	AVG
3	2390.000	47.38	3.88	51.26	74.00	-22.74	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



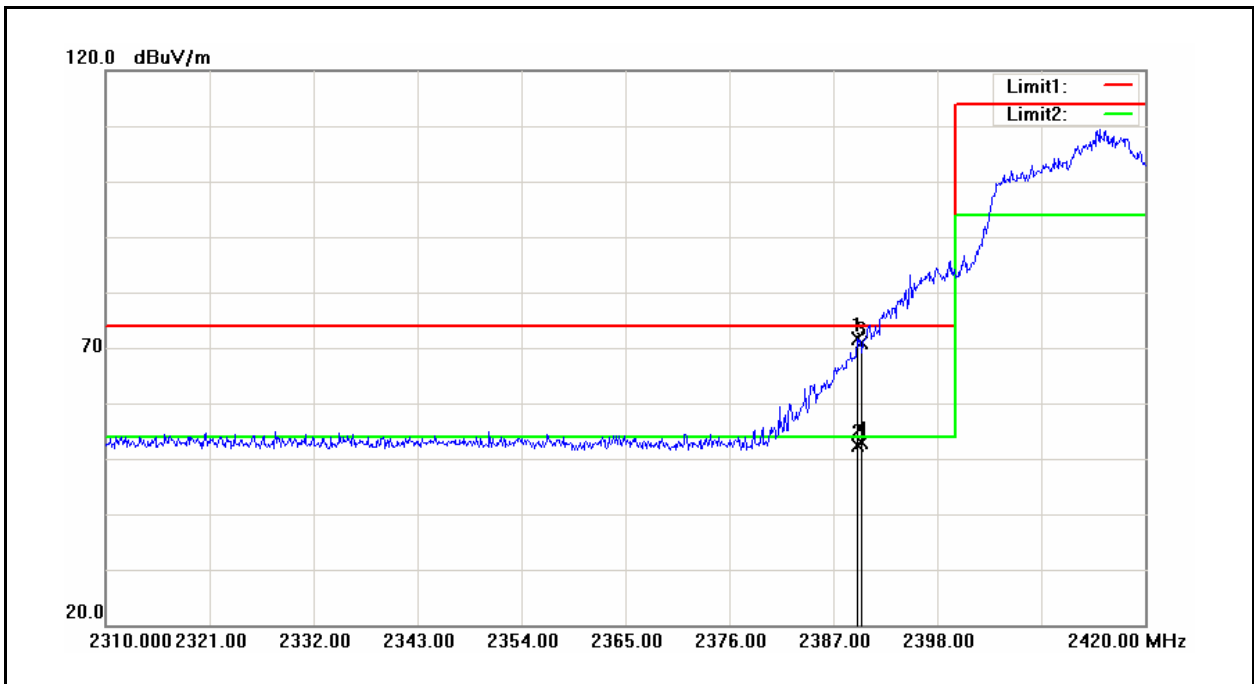
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	48.78	4.50	53.28	74.00	-20.72	peak
2	2483.500	38.60	4.50	43.10	54.00	-10.90	AVG
3	2485.000	50.77	4.51	55.28	74.00	-18.72	peak
4	2485.000	37.72	4.51	42.23	54.00	-11.77	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



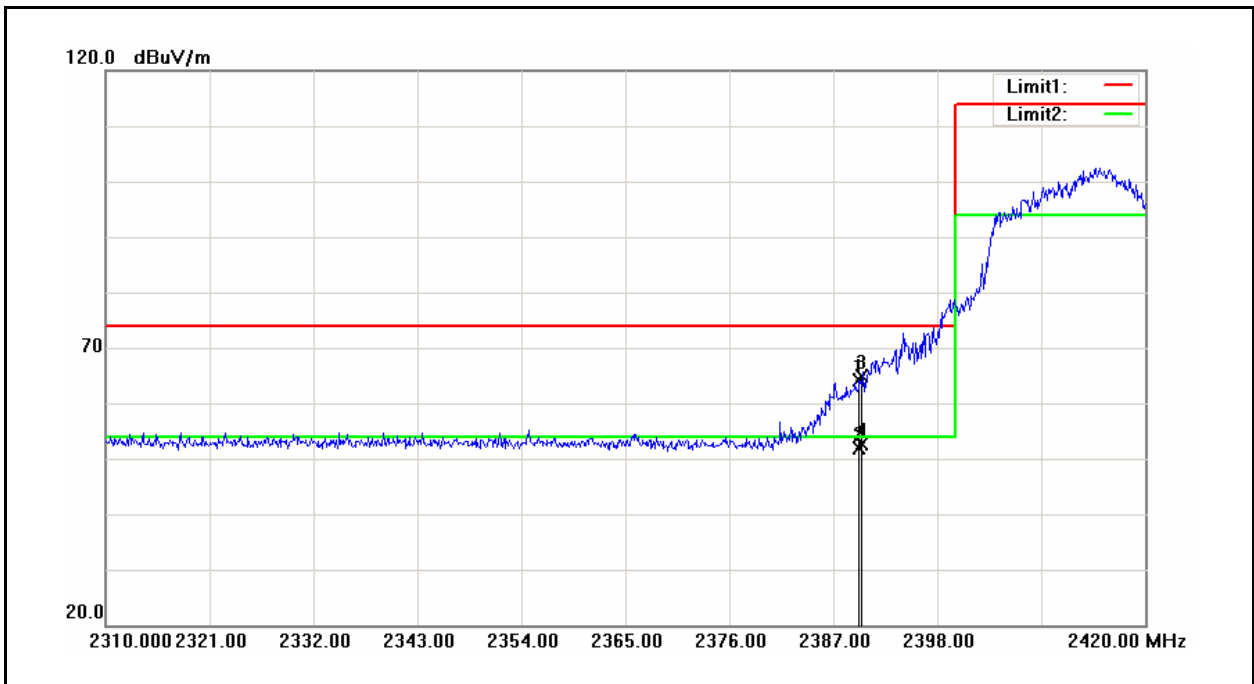
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	47.15	4.50	51.65	74.00	-22.35	peak
2	2486.560	50.28	4.53	54.81	74.00	-19.19	peak
3	2486.560	36.98	4.53	41.51	54.00	-12.49	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



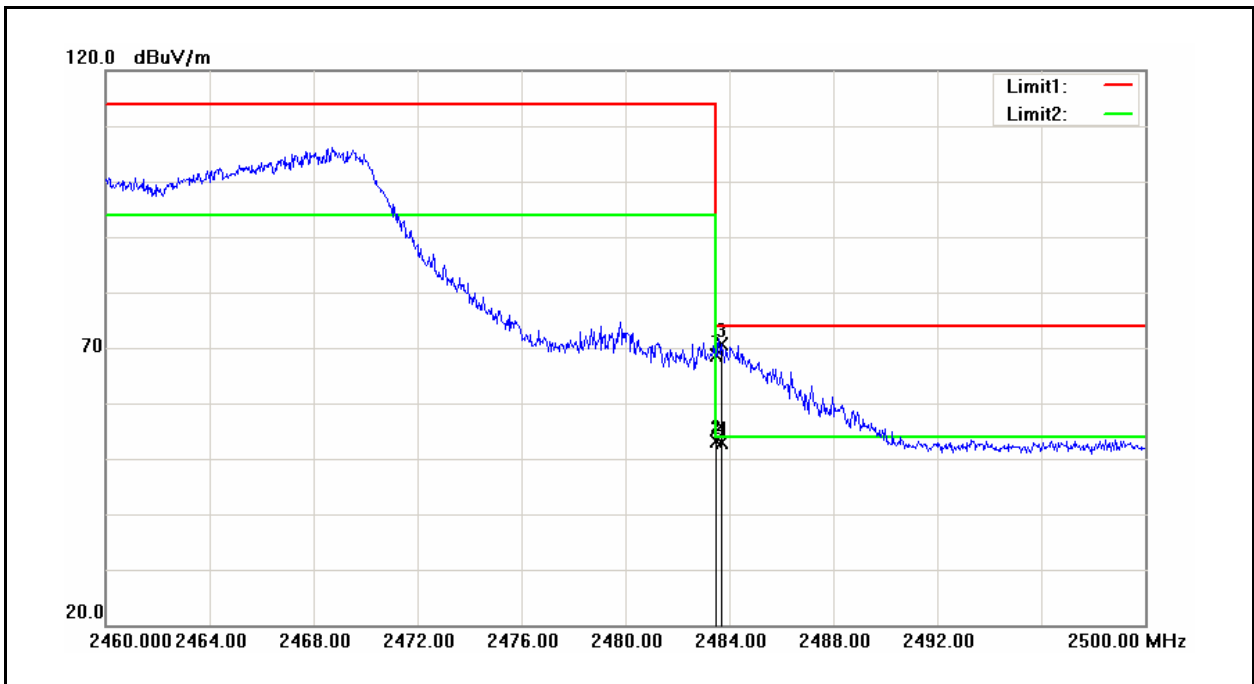
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.530	67.68	3.88	71.56	74.00	-2.44	peak
2	2389.530	48.38	3.88	52.26	54.00	-1.74	AVG
3	2390.000	66.90	3.88	70.78	74.00	-3.22	peak
4	2390.000	49.01	3.88	52.89	54.00	-1.11	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



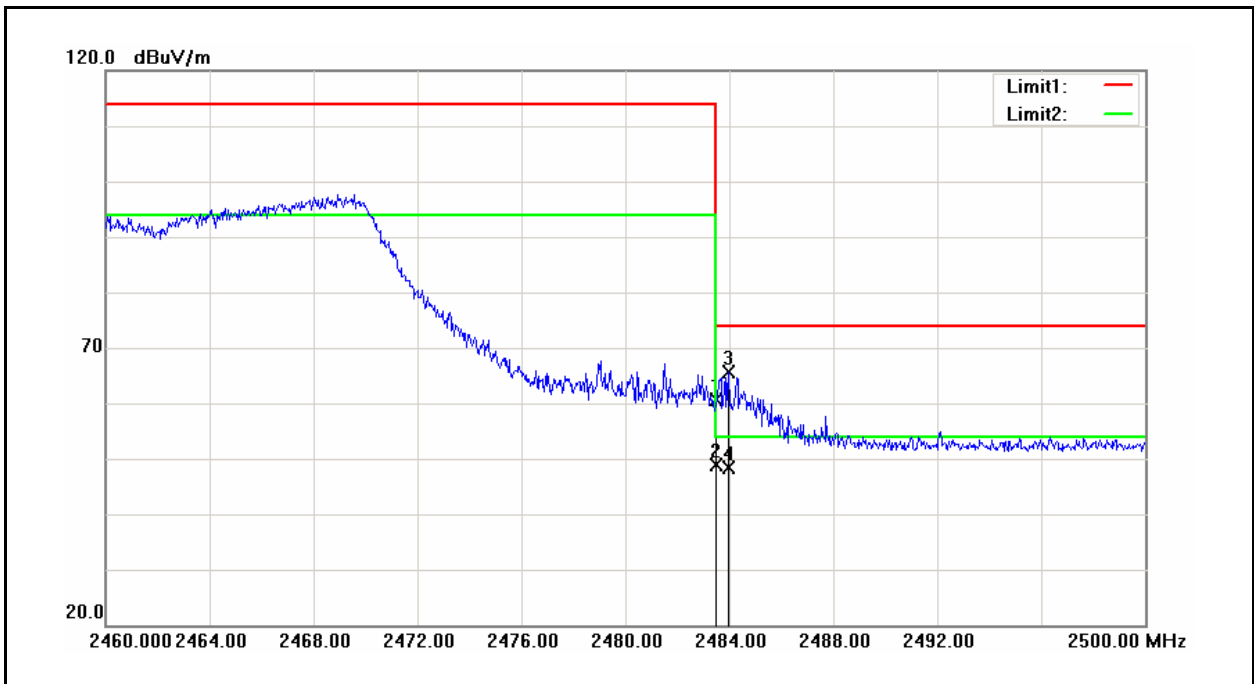
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.750	60.20	3.88	64.08	74.00	-9.92	peak
2	2389.750	48.08	3.88	51.96	54.00	-2.04	AVG
3	2390.000	60.91	3.88	64.79	74.00	-9.21	peak
4	2390.000	48.70	3.88	52.58	54.00	-1.42	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



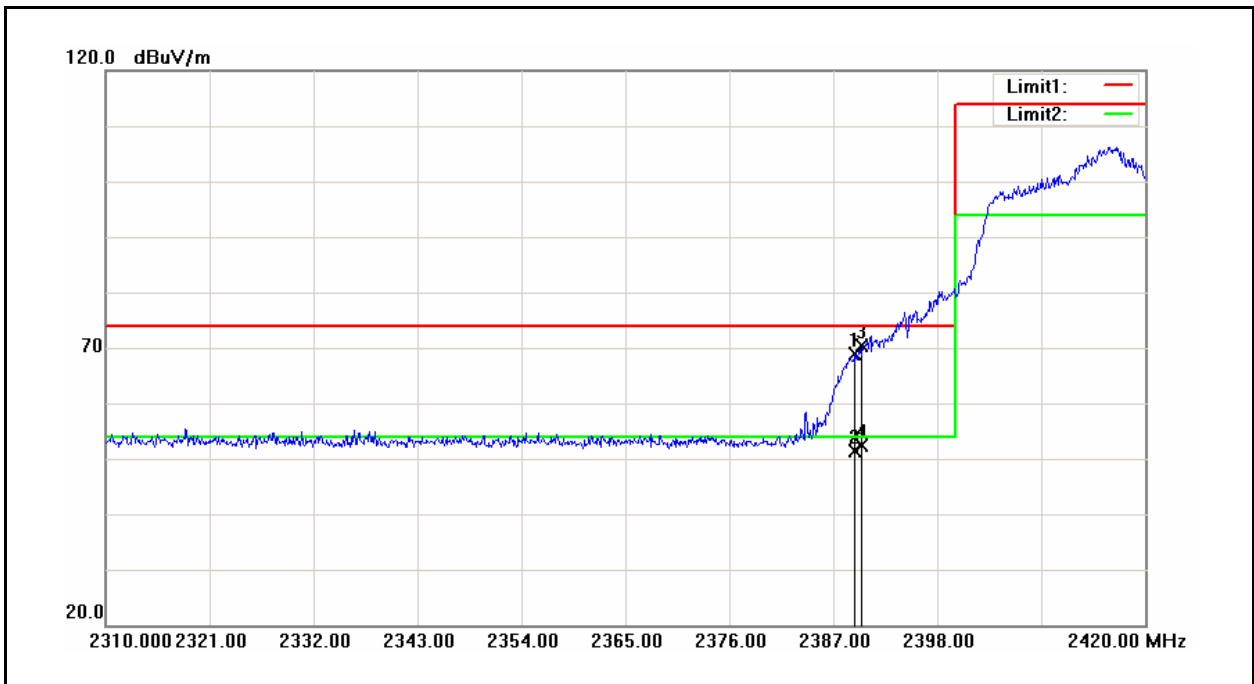
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.05	4.50	68.55	74.00	-5.45	peak
2	2483.500	48.53	4.50	53.03	54.00	-0.97	AVG
3	2483.680	66.05	4.50	70.55	74.00	-3.45	peak
4	2483.680	48.41	4.50	52.91	54.00	-1.09	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



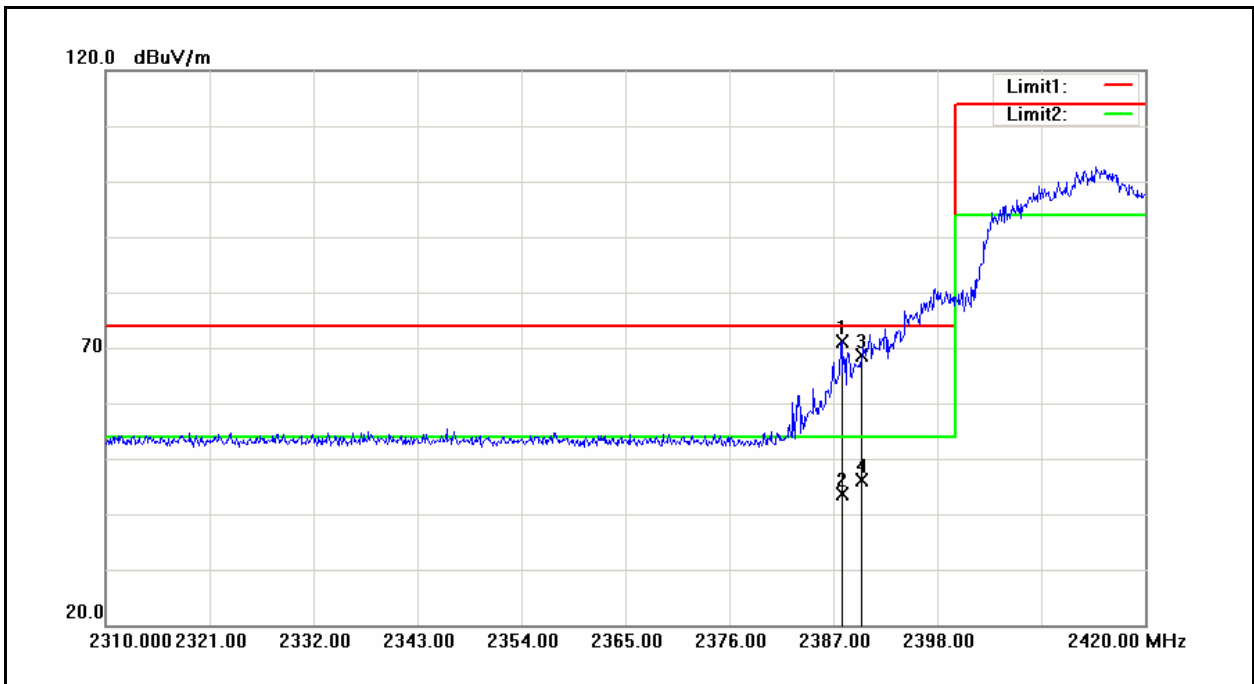
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	56.17	4.50	60.67	74.00	-13.33	peak
2	2483.500	44.38	4.50	48.88	54.00	-5.12	AVG
3	2483.960	61.18	4.51	65.69	74.00	-8.31	peak
4	2483.960	43.86	4.51	48.37	54.00	-5.63	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



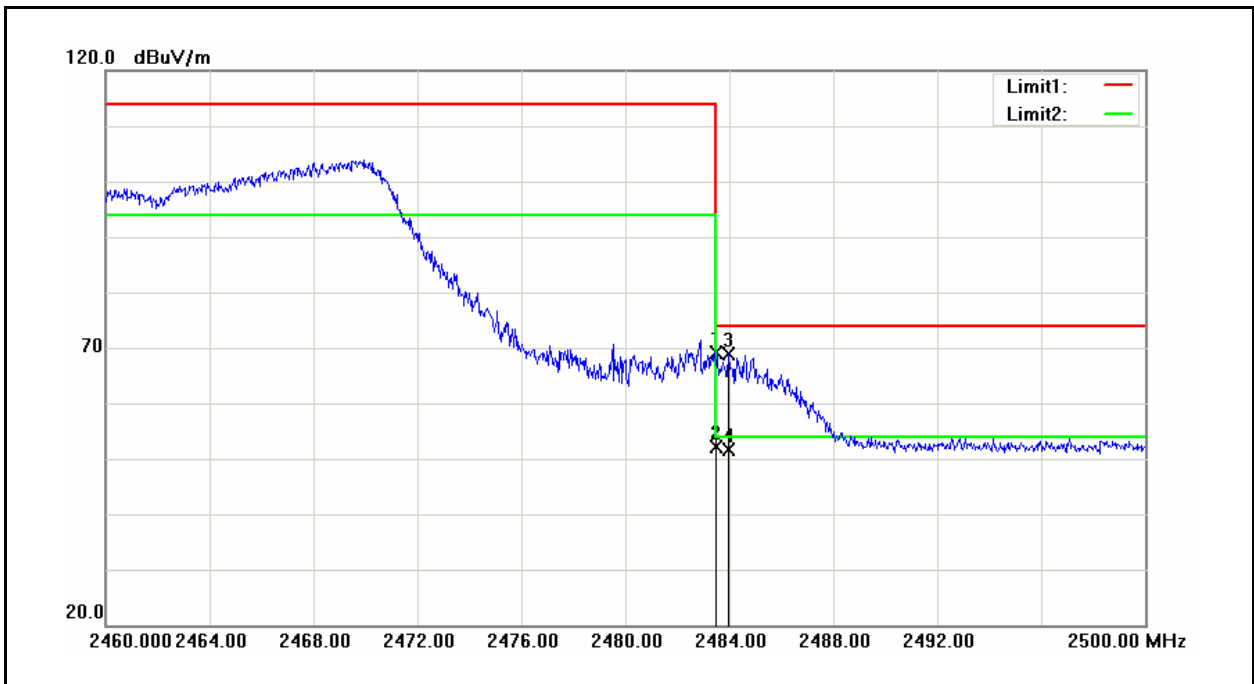
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.310	64.97	3.88	68.85	74.00	-5.15	peak
2	2389.310	47.58	3.88	51.46	54.00	-2.54	AVG
3	2390.000	66.44	3.88	70.32	74.00	-3.68	peak
4	2390.000	48.59	3.88	52.47	54.00	-1.53	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	02/27/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



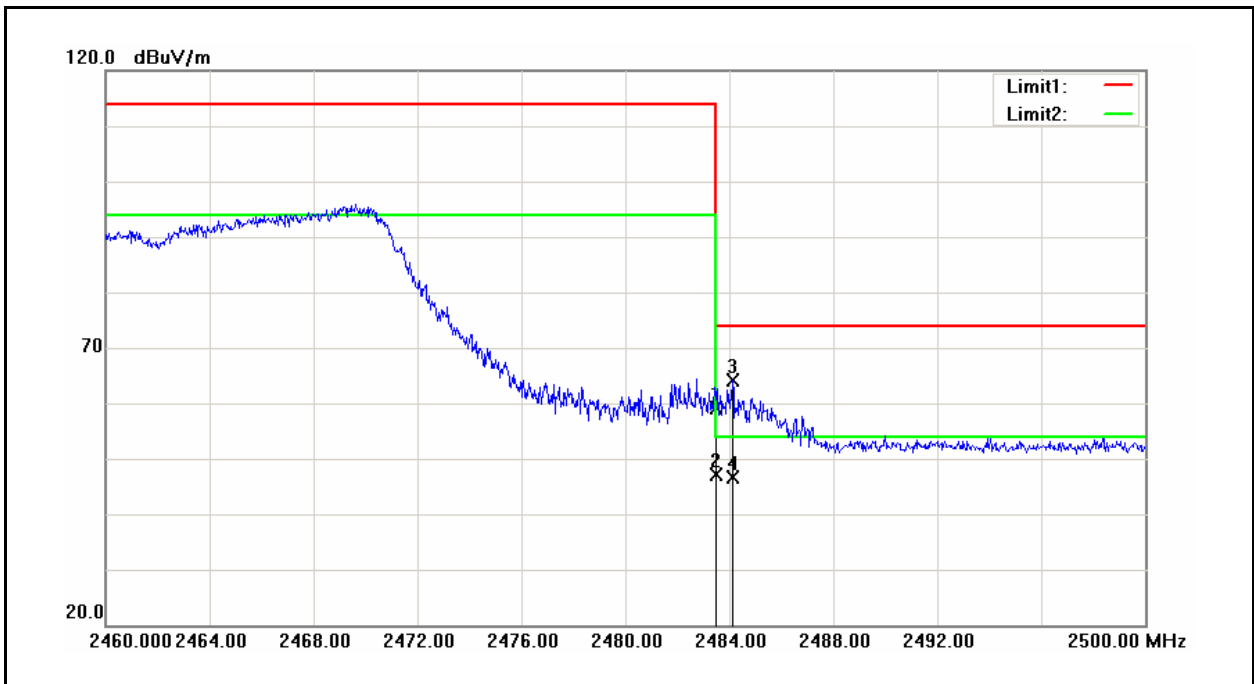
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.880	67.24	3.86	71.10	74.00	-2.90	peak
2	2387.880	39.70	3.86	43.56	54.00	-10.44	AVG
3	2390.000	64.76	3.88	68.64	74.00	-5.36	peak
4	2390.000	42.35	3.88	46.23	54.00	-7.77	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.68	4.50	69.18	74.00	-4.82	peak
2	2483.500	47.51	4.50	52.01	54.00	-1.99	AVG
3	2483.960	64.35	4.51	68.86	74.00	-5.14	peak
4	2483.960	47.17	4.51	51.68	54.00	-2.32	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	AirCard 771S	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	02/27/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



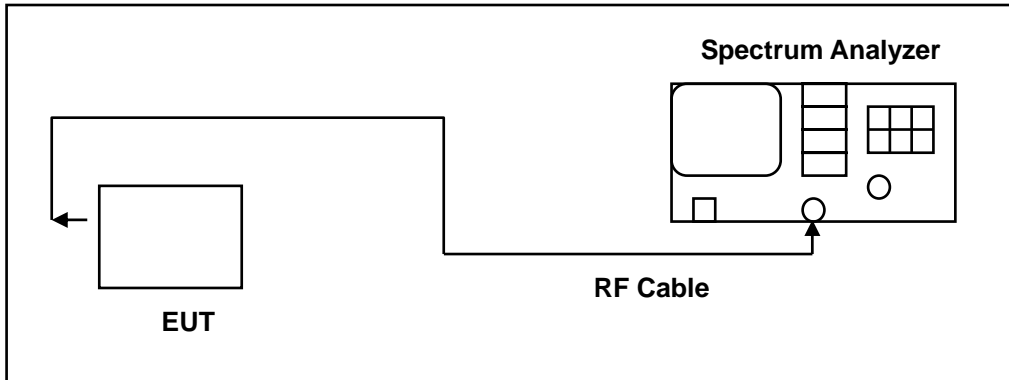
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.70	4.50	59.20	74.00	-14.80	peak
2	2483.500	42.62	4.50	47.12	54.00	-6.88	AVG
3	2484.120	59.73	4.51	64.24	74.00	-9.76	peak
4	2484.120	42.22	4.51	46.73	54.00	-7.27	AVG

11 99 % Occupied Bandwidth Measurement

11.1.Limit

N/A

11.2.Test Setup



11.3.Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/21/2011	(2)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

11.4.Test Procedure

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%.

The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

11.5. Test Result

Model Number	AirCard 771S		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	03/01/2013	Test Site	TE05
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	14034.8	----
	2437	14105.5	----
	2462	14534.6	----

Model Number	AirCard 771S		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	03/01/2013	Test Site	TE05
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	16487.9	----
	2437	16573.4	----
	2462	16743.5	----

Model Number	AirCard 771S		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	03/01/2013	Test Site	TE05
	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	17531.4	----
	2437	17636.2	----
	2462	17746.0	----

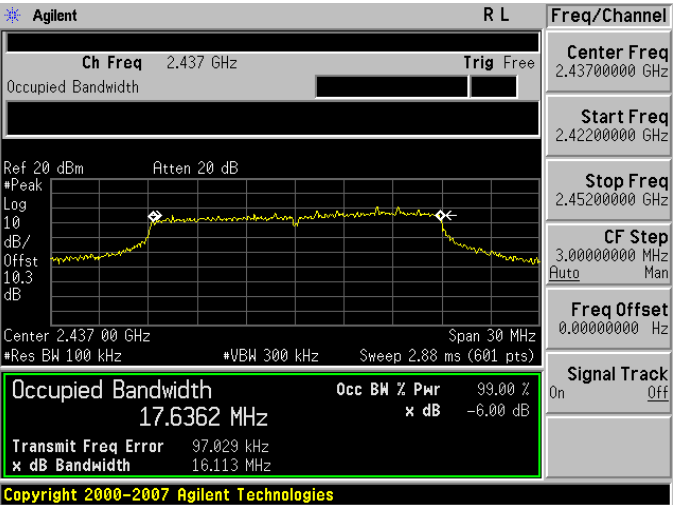
11.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.412 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.0348 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 232.040 kHz</p> <p>x dB Bandwidth 9.579 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.437 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.1055 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 337.908 kHz</p> <p>x dB Bandwidth 9.673 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak Log 10 dB/Offst 10.3 dB</p> <p>Center 2.462 00 GHz Span 30 MHz</p> <p>Res BW 100 kHz VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.5346 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 196.575 kHz</p> <p>x dB Bandwidth 10.077 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

Mode 3: IEEE 802.11g Link Mode

2412	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.4120000 GHz</p> <p>Start Freq 2.3970000 GHz</p> <p>Stop Freq 2.4270000 GHz</p> <p>CF Step 3.0000000 MHz</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>Center 2.412 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 16.4879 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error 80.139 kHz</p> <p>x dB Bandwidth 15.324 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.4370000 GHz</p> <p>Start Freq 2.4220000 GHz</p> <p>Stop Freq 2.4520000 GHz</p> <p>CF Step 3.0000000 MHz</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>Center 2.437 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 16.5734 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error 137.059 kHz</p> <p>x dB Bandwidth 13.249 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	<p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.4620000 GHz</p> <p>Start Freq 2.4470000 GHz</p> <p>Stop Freq 2.4770000 GHz</p> <p>CF Step 3.0000000 MHz</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.3</p> <p>dB</p> <p>Center 2.462 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 16.7435 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error 22.951 kHz</p> <p>x dB Bandwidth 15.119 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2412	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.4120000 GHz</p> <p>Start Freq 2.3970000 GHz</p> <p>Stop Freq 2.4270000 GHz</p> <p>CF Step 3.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.5314 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 35.664 kHz</p> <p>x dB Bandwidth 15.636 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2437	 <p>Agilent R L</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.4370000 GHz</p> <p>Start Freq 2.4220000 GHz</p> <p>Stop Freq 2.4520000 GHz</p> <p>CF Step 3.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.6362 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 97.029 kHz</p> <p>x dB Bandwidth 16.113 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>
2462	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.4620000 GHz</p> <p>Start Freq 2.4470000 GHz</p> <p>Stop Freq 2.4770000 GHz</p> <p>CF Step 3.0000000 MHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 17.7460 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 37.725 kHz</p> <p>x dB Bandwidth 15.113 MHz</p> <p>Copyright 2000-2007 Agilent Technologies</p>

12 Antenna Measurement

12.1.Limit

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

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

12.2.Antenna Connector Construction

The antenna used in this product is internal antenna. And maximum Gain of this antenna is 2.3dBi.