

FCC 47 CFR PART 15 SUBPART C

Product Type : NBE-M2
Applicant : Ubiquiti Networks, Inc.
Address : 12F, No105, Song Ren Rd., SinYi District, Taipei, Taiwan
Trade Name : UBIQUiTi
Model Number : NBE-M2
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009
Receive Date : Apr. 11, 2013
Test Period : Jun. 10 ~ Aug. 01, 2013
Issue Date : Aug. 19, 2013

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Aug. 19, 2013	Initial Issue	

Verification of Compliance

Issued Date: 08/19/2013

Product Type : NBE-M2
Applicant : Ubiquiti Networks, Inc.
Address : 12F, No105, Song Ren Rd., SinYi District, Taipei, Taiwan
Trade Name : UBiQUiTi
Model Number : NBE-M2
FCC ID : SWX-NBM2HP
EUT Rated Voltage : DC 24V, 0.5A
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009

Test Result : Complied

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Taiwan Accreditation Foundation accreditation number: 1330
<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	NBE-M2
Trade Name	UBiQUiTi
Model No.	NBE-M2
Applicant	Ubiquiti Networks, Inc. 12F, No105, Song Ren Rd., SinYi District, Taipei, Taiwan
Manufacturer	Ubiquiti Networks, Inc. 12F, No105, Song Ren Rd., SinYi District, Taipei, Taiwan
FCC ID	SWX-NBM2HP
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz 20MHz: 2412 ~ 2462 MHz IEEE 802.11n 2.4GHz 40MHz: 2422 ~ 2452 MHz
Modulation Type	IEEE 802.11b:DSSS IEEE 802.11g:DSSS + OFDM IEEE 802.11n 2.4GHz 20MHz: OFDM IEEE 802.11n 2.4GHz 40MHz: OFDM
Antenna Delivery	1TX+1RX
Antenna Type	Dish Antenna
Antenna Gain	18 dBi
RF Output Power	IEEE 802.11b: 0.037 W / 15.69 dBm IEEE 802.11g: 0.155 W / 21.91 dBm IEEE 802.11n 2.4GHz 20MHz: 0.161 W / 22.07 dBm IEEE 802.11n 2.4GHz 40MHz: 0.072 W / 18.57 dBm

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: IEEE 802.11n 2.4GHz 40MHz Link Mode
Mode 6: 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 20MHz mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 13Mbps data rate were chosen for full testing.

IEEE 802.11n 2.4GHz 40MHz mode:

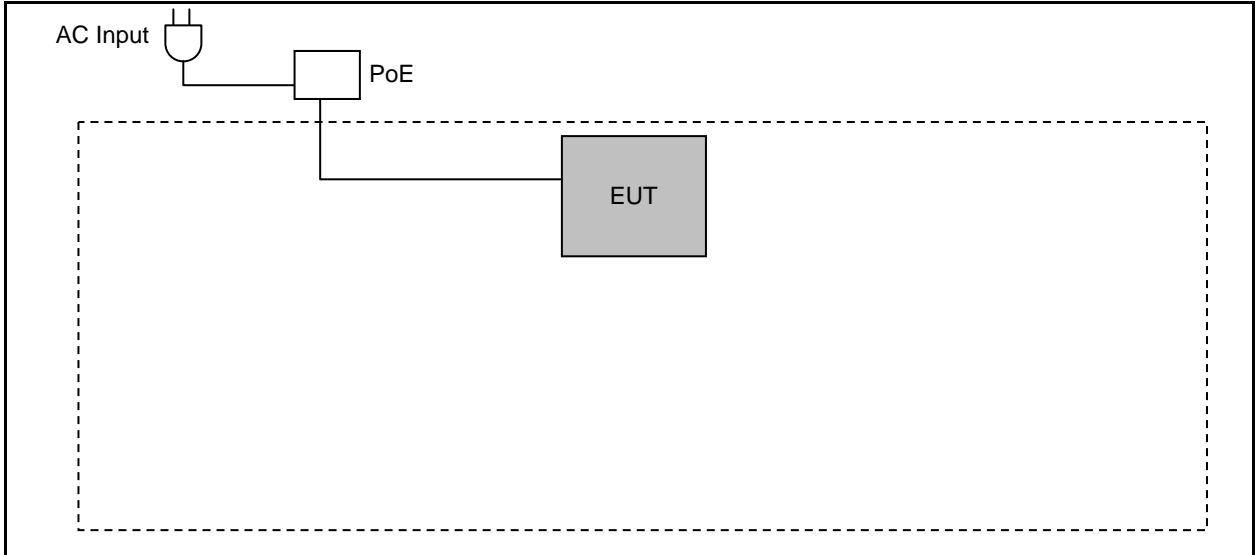
Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 27Mbps data rate were chosen for full testing.

3.2. EUT Exercise Software

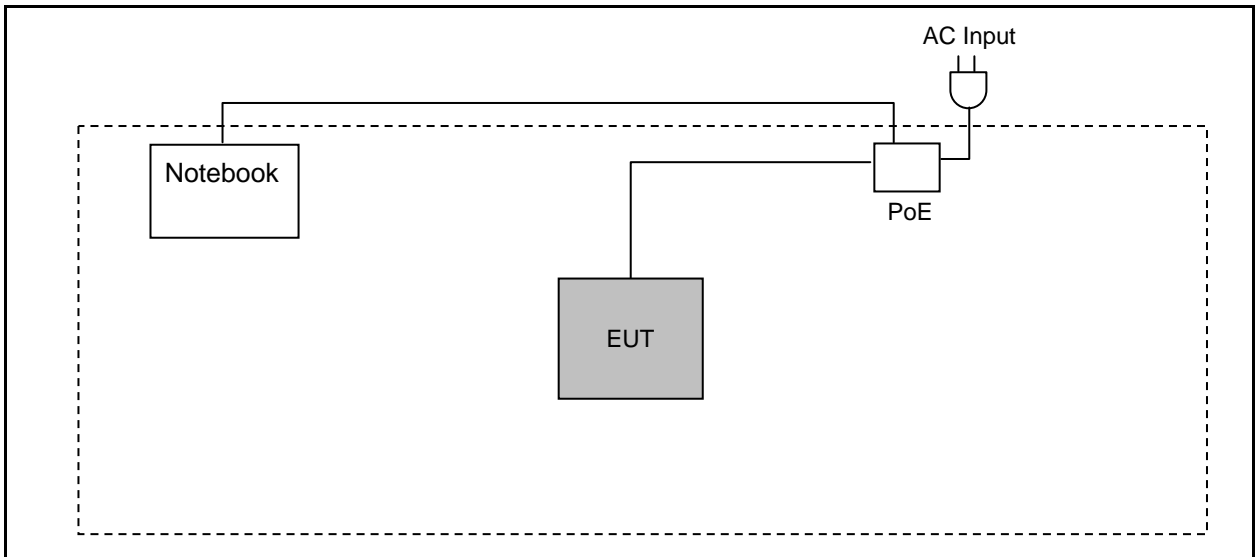
1. Setup the EUT shown on 3.3.
2. Turn on the power of all equipment.
3. Turn on Wi-Fi function link to Notebook.
4. EUT run test program.

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	26
Humidity (%RH)	25-75	60
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

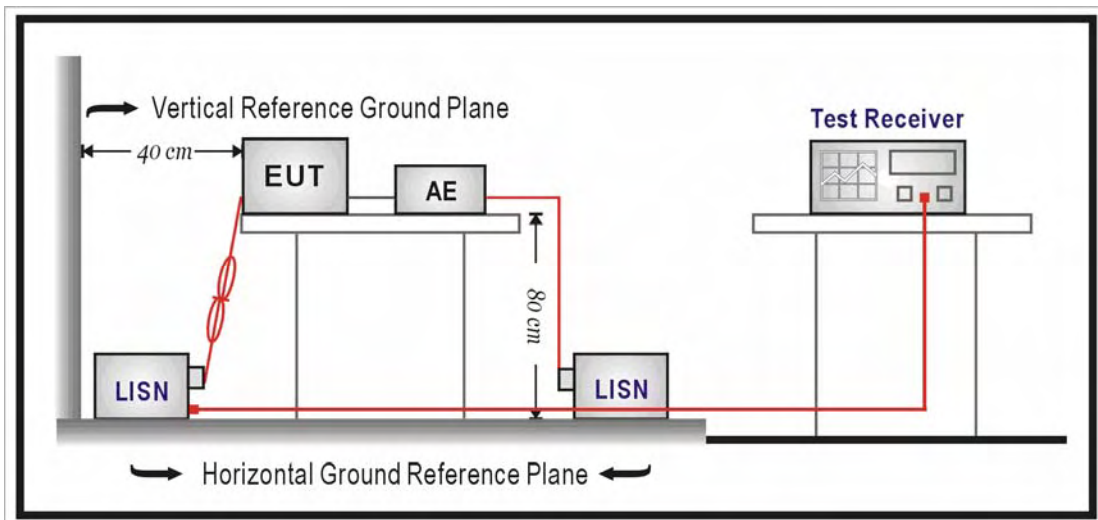
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/18/2012	(1)
LISN	R&S	ENV216	101040	03/04/2013	(1)
LISN	R&S	ENV216	101041	03/04/2013	(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

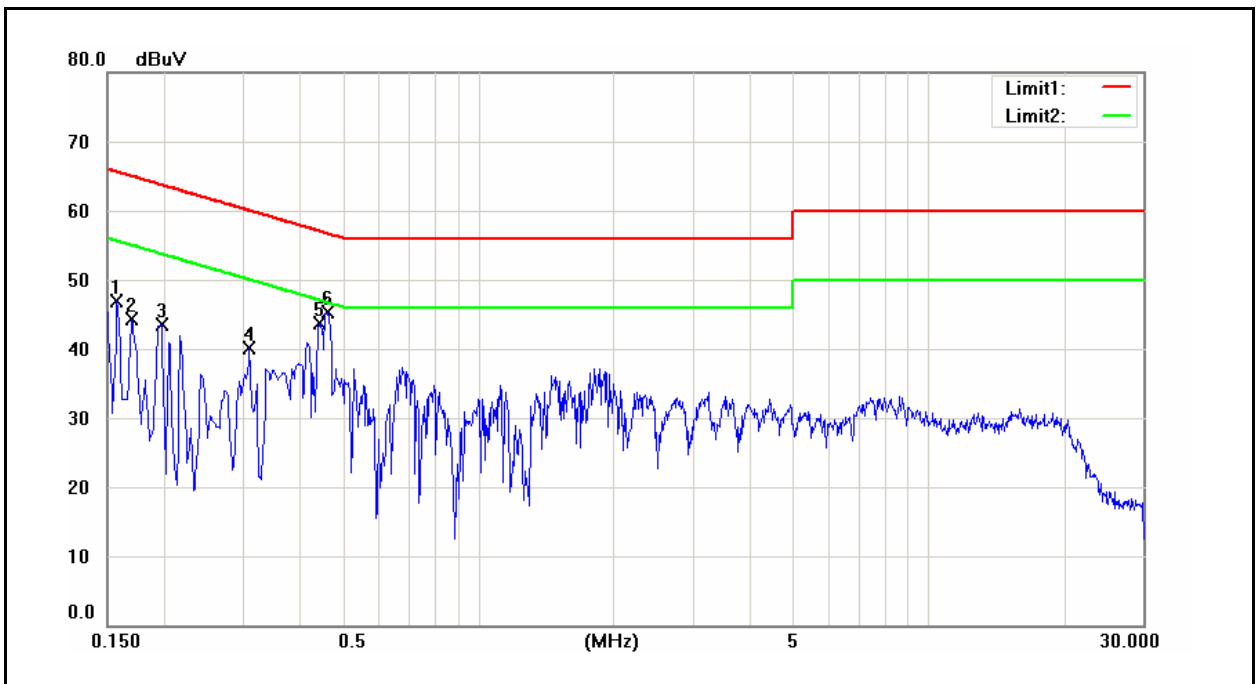
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

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.

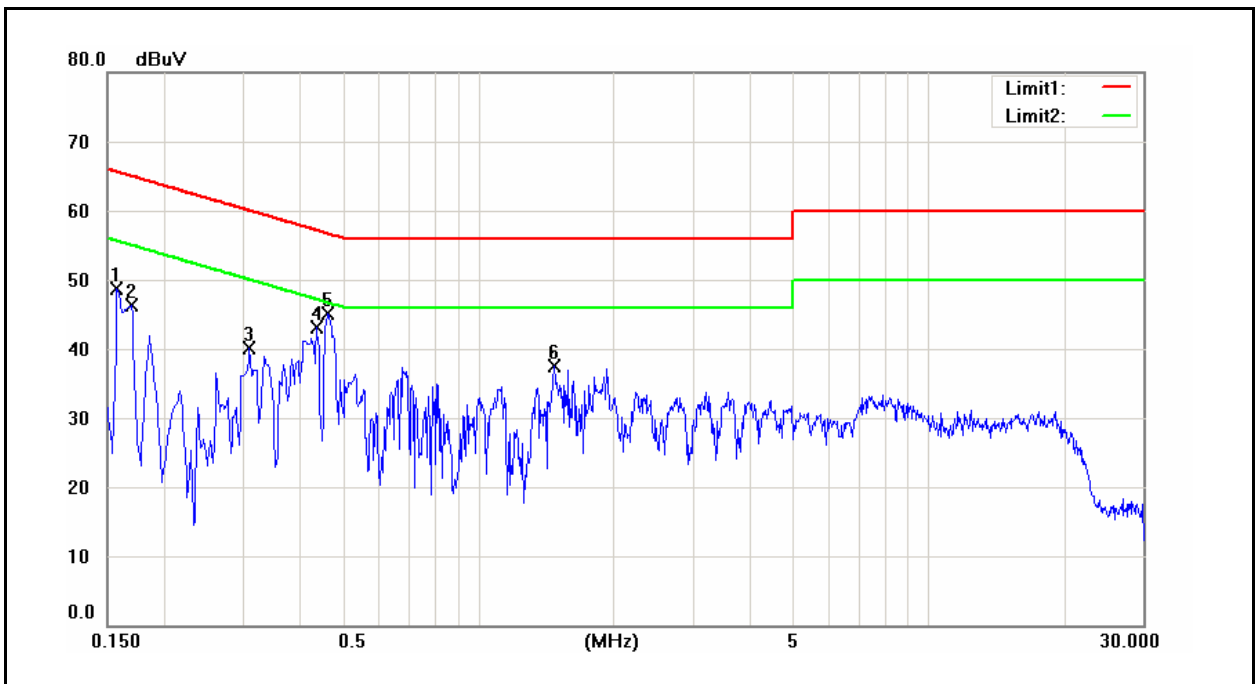
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	06/10/2013
		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	36.79	20.84	9.62	46.41	30.46	65.57	55.57	-19.16	-25.11	Pass
2	0.1700	33.26	15.22	9.62	42.88	24.84	64.96	54.96	-22.08	-30.12	Pass
3	0.1980	29.05	11.49	9.62	38.67	21.11	63.69	53.69	-25.02	-32.58	Pass
4	0.3100	26.68	17.31	9.62	36.30	26.93	59.97	49.97	-23.67	-23.04	Pass
5	0.4460	33.55	26.13	9.62	43.17	35.75	56.95	46.95	-13.78	-11.20	Pass
6	0.4620	34.52	26.40	9.62	44.14	36.02	56.66	46.66	-12.52	-10.64	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	06/10/2013
		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	36.74	22.27	9.63	46.37	31.90	65.57	55.57	-19.20	-23.67	Pass
2	0.1700	33.19	15.84	9.63	42.82	25.47	64.96	54.96	-22.14	-29.49	Pass
3	0.3100	27.00	18.05	9.63	36.63	27.68	59.97	49.97	-23.34	-22.29	Pass
4	0.4380	32.30	25.19	9.63	41.93	34.82	57.10	47.10	-15.17	-12.28	Pass
5	0.4620	34.92	26.83	9.63	44.55	36.46	56.66	46.66	-12.11	-10.20	Pass
6	1.4780	25.01	17.91	9.67	34.68	27.58	56.00	46.00	-21.32	-18.42	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

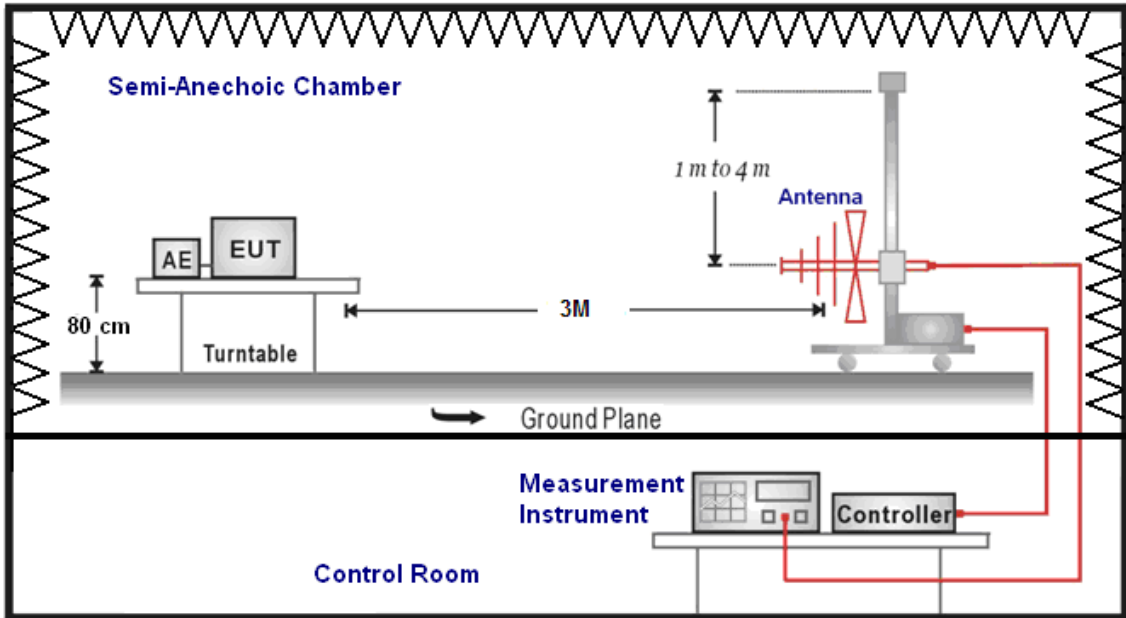
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/21/2013	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/21/2013	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2013	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2013	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	07/16/2013	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2013	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/13/2013	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2012	(3)
Test Site	ATL	TE01	888001	08/28/2012	(1)

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

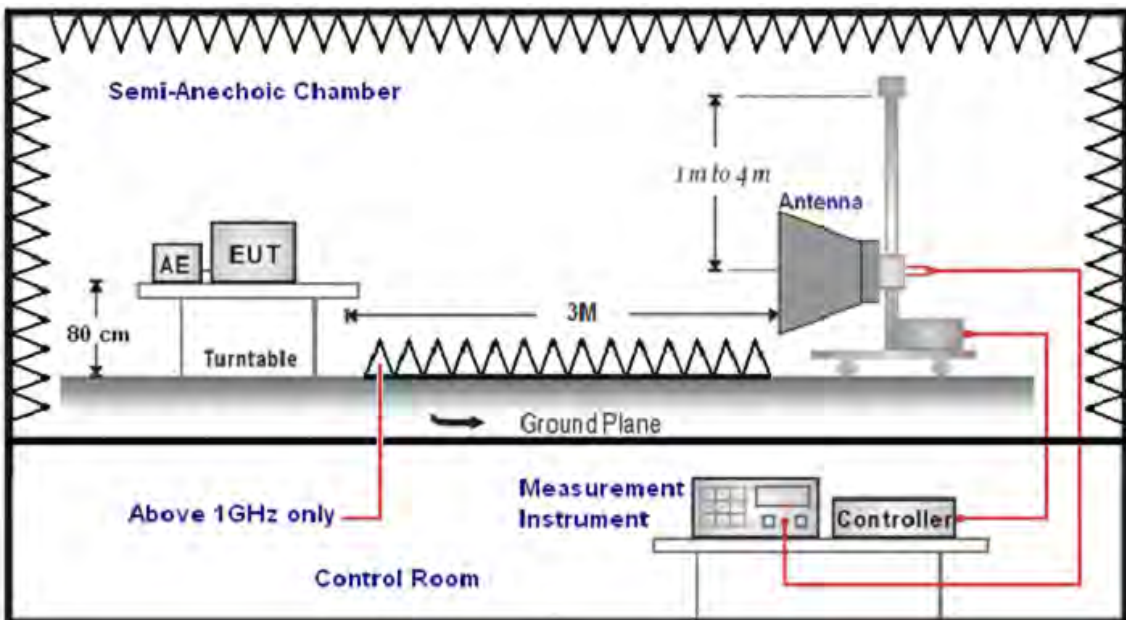
Note: N.C.R. = No Calibration Request.

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.

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:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	08/01/2013
		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
160.0000	45.32	-16.96	28.36	43.50	-15.14	QP	H
286.5000	48.05	-10.96	37.09	46.00	-8.91	QP	H
480.0000	46.59	-7.28	39.31	46.00	-6.69	QP	H
600.0000	40.40	-5.04	35.36	46.00	-10.64	QP	H
800.0000	40.34	-1.55	38.79	46.00	-7.21	QP	H
900.0000	37.79	0.41	38.20	46.00	-7.80	QP	H
100.0000	44.12	-13.85	30.27	43.50	-13.23	QP	V
286.5000	43.23	-10.96	32.27	46.00	-13.73	QP	V
501.0000	43.48	-6.79	36.69	46.00	-9.31	QP	V
672.0000	35.34	-3.92	31.42	46.00	-14.58	QP	V
749.5000	41.47	-2.47	39.00	46.00	-7.00	QP	V
800.0000	41.18	-1.55	39.63	46.00	-6.37	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:	NBE-M2		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	2		Date:	08/01/2013			
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	35.86	5.68	41.54	74.00	-32.46	peak	H
4570.000	34.56	11.06	45.62	74.00	-28.38	peak	H
6243.000	32.39	16.63	49.02	74.00	-24.98	peak	H
2890.000	35.85	5.63	41.48	74.00	-32.52	peak	V
4570.000	34.36	11.06	45.42	74.00	-28.58	peak	V
6390.000	32.82	17.08	49.90	74.00	-24.10	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	NBE-M2		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	2		Date:	08/01/2013			
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
2974.000	37.11	5.84	42.95	74.00	-31.05	peak	H
4549.000	35.15	11.01	46.16	74.00	-27.84	peak	H
6271.000	32.65	16.71	49.36	74.00	-24.64	peak	H
2869.000	36.59	5.57	42.16	74.00	-31.84	peak	V
4577.000	34.34	11.07	45.41	74.00	-28.59	peak	V
6383.000	32.67	17.06	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:	NBE-M2		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	2		Date:	08/01/2013			
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
2911.000	35.76	5.68	41.44	74.00	-32.56	peak	H
4577.000	34.54	11.07	45.61	74.00	-28.39	peak	H
6355.000	33.25	16.97	50.22	74.00	-23.78	peak	H
2897.000	36.35	5.64	41.99	74.00	-32.01	peak	V
4563.000	34.76	11.05	45.81	74.00	-28.19	peak	V
6418.000	32.96	17.16	50.12	74.00	-23.88	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	NBE-M2		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	3		Date:	08/01/2013			
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
2701.000	36.11	5.13	41.24	74.00	-32.76	peak	H
4563.000	34.43	11.05	45.48	74.00	-28.52	peak	H
6397.000	32.34	17.10	49.44	74.00	-24.56	peak	H
2883.000	36.94	5.61	42.55	74.00	-31.45	peak	V
4542.000	34.30	10.99	45.29	74.00	-28.71	peak	V
6355.000	33.08	16.97	50.05	74.00	-23.95	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	08/01/2013		
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
2918.000	35.38	5.70	41.08	74.00	-32.92	peak	H
4549.000	34.16	11.01	45.17	74.00	-28.83	peak	H
6390.000	33.64	17.08	50.72	74.00	-23.28	peak	H
2883.000	35.78	5.61	41.39	74.00	-32.61	peak	V
4605.000	34.29	11.15	45.44	74.00	-28.56	peak	V
6250.000	32.59	16.64	49.23	74.00	-24.77	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	08/01/2013		
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
2911.000	35.48	5.68	41.16	74.00	-32.84	peak	H
4577.000	36.44	11.07	47.51	74.00	-26.49	peak	H
6369.000	32.67	17.00	49.67	74.00	-24.33	peak	H
2869.000	36.00	5.57	41.57	74.00	-32.43	peak	V
4570.000	35.77	11.06	46.83	74.00	-27.17	peak	V
6418.000	33.23	17.16	50.39	74.00	-23.61	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	08/01/2013		
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	37.83	5.70	43.53	74.00	-30.47	peak	H
4563.000	34.67	11.05	45.72	74.00	-28.28	peak	H
6383.000	31.95	17.06	49.01	74.00	-24.99	peak	H
2897.000	36.07	5.64	41.71	74.00	-32.29	peak	V
4563.000	34.93	11.05	45.98	74.00	-28.02	peak	V
6341.000	32.92	16.92	49.84	74.00	-24.16	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	08/01/2013		
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
2939.000	36.95	5.75	42.70	74.00	-31.30	peak	H
4542.000	34.54	10.99	45.53	74.00	-28.47	peak	H
6383.000	32.85	17.06	49.91	74.00	-24.09	peak	H
2890.000	36.13	5.63	41.76	74.00	-32.24	peak	V
4563.000	34.47	11.05	45.52	74.00	-28.48	peak	V
6355.000	33.08	16.97	50.05	74.00	-23.95	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	08/01/2013		
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
2897.000	35.66	5.64	41.30	74.00	-32.70	peak	H
4570.000	35.02	11.06	46.08	74.00	-27.92	peak	H
6362.000	32.34	16.99	49.33	74.00	-24.67	peak	H
2862.000	35.64	5.55	41.19	74.00	-32.81	peak	V
4570.000	34.79	11.06	45.85	74.00	-28.15	peak	V
6369.000	32.07	17.00	49.07	74.00	-24.93	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	5			Date:	08/01/2013		
Frequency:	2422MHz			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
2694.000	34.54	5.12	39.66	74.00	-34.34	peak	H
4563.000	33.97	11.05	45.02	74.00	-28.98	peak	H
6334.000	33.31	16.90	50.21	74.00	-23.79	peak	H
2946.000	37.93	5.76	43.69	74.00	-30.31	peak	V
4591.000	34.70	11.11	45.81	74.00	-28.19	peak	V
6390.000	32.87	17.08	49.95	74.00	-24.05	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	5			Date:	08/01/2013		
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
2897.000	36.28	5.64	41.92	74.00	-32.08	peak	H
4570.000	35.66	11.06	46.72	74.00	-27.28	peak	H
6425.000	32.53	17.18	49.71	74.00	-24.29	peak	H
2946.000	36.44	5.76	42.20	74.00	-31.80	peak	V
4591.000	34.93	11.11	46.04	74.00	-27.96	peak	V
6222.000	32.23	16.56	48.79	74.00	-25.21	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	NBE-M2			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	5			Date:	08/01/2013		
Frequency:	2452MHz			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	36.75	5.82	42.57	74.00	-31.43	peak	H
4542.000	34.13	10.99	45.12	74.00	-28.88	peak	H
6397.000	32.62	17.10	49.72	74.00	-24.28	peak	H
2897.000	35.85	5.64	41.49	74.00	-32.51	peak	V
4577.000	34.75	11.07	45.82	74.00	-28.18	peak	V
6383.000	33.75	17.06	50.81	74.00	-23.19	peak	V

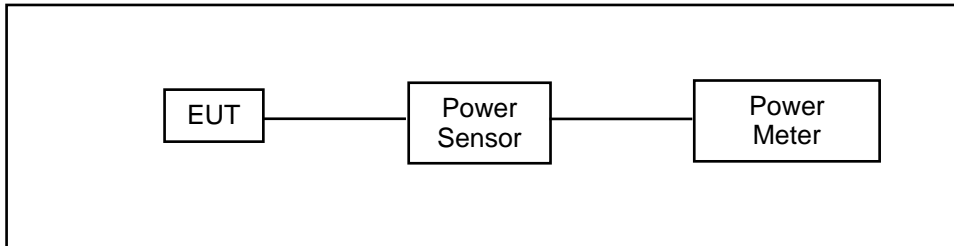
Standard:	RSS-Gen	Test Distance:	3m					
Test item:	Radiated Emission	Power:	AC 120V/60Hz					
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH					
Mode:	6	Date:	08/01/2013					
Modulation:	IEEE 802.11b	Test By:	Fly Lu					
Frequency:	2437MHz							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/)	Peak (dBuV/m)	AVG. (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3198.000	34.49	6.34	40.83	74.00	54.00	-33.17	peak	H
4563.000	33.65	11.05	44.70	74.00	54.00	-29.30	peak	H
6677.000	31.80	18.28	50.08	74.00	54.00	-23.92	peak	H
2946.000	35.00	5.76	40.76	74.00	54.00	-33.24	peak	V
4542.000	34.06	10.99	45.05	74.00	54.00	-28.95	peak	V
6593.000	32.22	17.87	50.09	74.00	54.00	-23.91	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	NBE-M2										
Test Item	Maximum Conducted Output Power										
Test Mode	Mode 2: IEEE 802.11b Link Mode										
Date of Test	08/01/2013							Test Site		TE05	
Frequency (MHz)	Data Rate	Average Power				Peak Power				Limit (dBm)	
		ANT1		ANT2		ANT1		ANT2			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
2412	1 M	13.07	0.020	11.09	0.013	15.69	0.037	13.73	0.024	< 26	
2437		12.92	0.020	11.16	0.013	15.60	0.036	13.77	0.024	< 26	
2462		12.43	0.017	10.83	0.012	15.05	0.032	13.53	0.023	< 26	
2437	2 M	12.86	0.019	11.12	0.013	15.45	0.035	13.72	0.024	< 26	
2437	5.5 M	12.84	0.019	11.10	0.013	15.40	0.035	13.70	0.023	< 26	
2437	11 M	12.80	0.019	11.08	0.013	15.39	0.035	13.73	0.024	< 26	

Model Number	NBE-M2										
Test Item	Maximum Conducted Output Power										
Test Mode	Mode 3: IEEE 802.11g Link Mode										
Date of Test	08/01/2013							Test Site		TE05	
Frequency (MHz)	Data Rate	Average Power				Peak Power				Limit (dBm)	
		ANT1		ANT2		ANT1		ANT2			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
2412	6 M	10.86	0.012	9.29	0.008	21.91	0.155	20.42	0.110	< 26	
2437		10.56	0.011	9.31	0.009	21.88	0.154	20.53	0.113	< 26	
2462		10.10	0.010	9.08	0.008	21.20	0.132	20.21	0.105	< 26	
2437	9 M	10.50	0.011	9.21	0.008	21.76	0.150	20.51	0.112	< 26	
2437	12 M	10.52	0.011	9.24	0.008	21.82	0.152	20.48	0.112	< 26	
2437	18 M	10.49	0.011	9.17	0.008	21.80	0.151	20.45	0.111	< 26	
2437	24 M	10.53	0.011	9.23	0.008	21.84	0.153	20.44	0.111	< 26	
2437	36 M	10.51	0.011	9.20	0.008	21.79	0.151	20.42	0.110	< 26	
2437	48 M	10.47	0.011	9.25	0.008	21.75	0.150	20.50	0.112	< 26	
2437	54 M	10.45	0.011	9.21	0.008	21.74	0.149	20.46	0.111	< 26	

Note: The antenna gain is 18 dBi > 6 dBi of the limit, so calculate the power limit according to the standard.

$$\begin{aligned}
 \text{Limit} &= 30 - \{ (\text{Peak Gain} - 6) / 3 \} \\
 &= 30 - \{ (18 - 6) / 3 \} \\
 &= 30 - 4 \\
 &= 26
 \end{aligned}$$

Model Number	NBE-M2										
Test Item	Maximum Conducted Output Power										
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode										
Date of Test	08/01/2013							Test Site	TE05		
Frequency (MHz)	Data Rate	Average Power				Peak Power				Limit (dBm)	
		ANT1		ANT2		ANT1		ANT2			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
2437.0	6.5M	10.47	0.011	9.12	0.008	21.90	0.155	20.49	0.112	< 26	
2437.0	13M	10.54	0.011	9.20	0.008	21.96	0.157	20.64	0.116	< 26	
2437.0	19.5M	10.52	0.011	9.21	0.008	21.92	0.156	20.61	0.115	< 26	
2437.0	26M	10.50	0.011	9.18	0.008	21.95	0.157	20.54	0.113	< 26	
2437.0	39M	10.55	0.011	9.15	0.008	21.97	0.157	20.46	0.111	< 26	
2437.0	52M	10.50	0.011	9.20	0.008	21.92	0.156	20.59	0.115	< 26	
2437.0	58.5M	10.48	0.011	9.23	0.008	21.95	0.157	20.61	0.115	< 26	
2437.0	65M	10.51	0.011	9.18	0.008	21.91	0.155	20.52	0.113	< 26	
2412.0	13M	10.81	0.012	9.50	0.009	22.07	0.161	20.88	0.122	< 26	
2437.0		10.57	0.011	9.25	0.008	22.03	0.160	20.66	0.116	< 26	
2462.0		10.25	0.011	9.00	0.008	21.80	0.151	20.22	0.105	< 26	
2437.0	26M	10.53	0.011	9.10	0.008	21.95	0.157	20.40	0.110	< 26	
2437.0	39M	10.52	0.011	9.16	0.008	21.97	0.157	20.54	0.113	< 26	
2437.0	52M	10.48	0.011	9.13	0.008	21.91	0.155	20.49	0.112	< 26	
2437.0	78M	10.52	0.011	9.11	0.008	21.93	0.156	20.40	0.110	< 26	
2437.0	104M	10.49	0.011	9.15	0.008	21.90	0.155	20.38	0.109	< 26	
2437.0	117M	10.47	0.011	9.21	0.008	21.96	0.157	20.53	0.113	< 26	
2437.0	130M	10.53	0.011	9.14	0.008	21.94	0.156	20.49	0.112	< 26	

Note: The antenna gain is 18 dBi > 6 dBi of the limit, so calculate the power limit according to the standard.

$$\begin{aligned}
 \text{Limit} &= 30 - \{ (\text{Peak Gain} - 6) / 3 \} \\
 &= 30 - \{ (18 - 6) / 3 \} \\
 &= 30 - 4 \\
 &= 26
 \end{aligned}$$

Model Number	NBE-M2										
Test Item	Maximum Conducted Output Power										
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode										
Date of Test	08/01/2013							Test Site	TE05		
Frequency (MHz)	Data Rate	Average Power				Peak Power				Limit (dBm)	
		ANT1		ANT2		ANT1		ANT2			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
2437.0	13.5M	6.61	0.005	5.16	0.003	18.39	0.069	17.24	0.053	< 26	
2437.0	27M	6.62	0.005	5.25	0.003	18.46	0.070	17.24	0.053	< 26	
2437.0	40.5M	6.60	0.005	5.21	0.003	18.32	0.068	17.20	0.052	< 26	
2437.0	54M	6.59	0.005	5.17	0.003	18.29	0.067	17.19	0.052	< 26	
2437.0	81M	6.55	0.005	5.15	0.003	18.26	0.067	17.15	0.052	< 26	
2437.0	108M	6.63	0.005	5.11	0.003	18.36	0.069	17.20	0.052	< 26	
2437.0	121.5M	6.60	0.005	5.14	0.003	18.30	0.068	17.16	0.052	< 26	
2437.0	135M	6.57	0.005	5.10	0.003	18.24	0.067	17.10	0.051	< 26	
2422.0	27M	6.60	0.005	5.15	0.003	18.52	0.071	17.26	0.053	< 26	
2437.0		6.75	0.005	5.27	0.003	18.57	0.072	17.38	0.055	< 26	
2452.0		6.10	0.004	4.60	0.003	17.95	0.062	16.29	0.043	< 26	
2437.0	54M	6.53	0.004	5.11	0.003	18.32	0.068	17.15	0.052	< 26	
2437.0	81M	6.49	0.004	5.16	0.003	18.23	0.067	17.20	0.052	< 26	
2437.0	108M	6.46	0.004	5.12	0.003	18.20	0.066	17.24	0.053	< 26	
2437.0	162M	6.54	0.005	5.16	0.003	18.38	0.069	17.27	0.053	< 26	
2437.0	216M	6.52	0.004	5.13	0.003	18.40	0.069	17.20	0.052	< 26	
2437.0	243M	6.57	0.005	5.10	0.003	18.39	0.069	17.14	0.052	< 26	
2437.0	270M	6.51	0.004	5.12	0.003	18.43	0.070	17.18	0.052	< 26	

Note: The antenna gain is 18 dBi > 6 dBi of the limit, so calculate the power limit according to the standard.

$$\begin{aligned}
 \text{Limit} &= 30 - \{ (\text{Peak Gain} - 6) / 3 \} \\
 &= 30 - \{ (18 - 6) / 3 \} \\
 &= 30 - 4 \\
 &= 26
 \end{aligned}$$

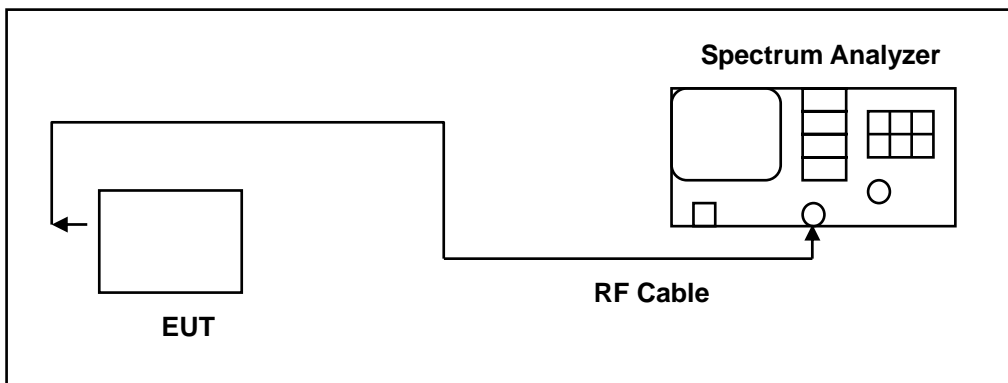
7 6dB RF Bandwidth and 99 % Occupied Bandwidth Measurement

7.1. Limit

6dB RF Bandwidth: 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.

99 % Occupied Bandwidth: N/A

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.

6dB RF Bandwidth: 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 low, middle, high)

99 % Occupied Bandwidth: 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.

7.5. Test Result

Model Number	NBE-M2		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	10.115	13.7723	> 0.500
2437	10.139	13.6952	> 0.500
2462	10.064	13.7233	> 0.500

Model Number	NBE-M2		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	16.600	16.5146	> 0.500
2437	16.609	16.5350	> 0.500
2462	16.583	16.5095	> 0.500

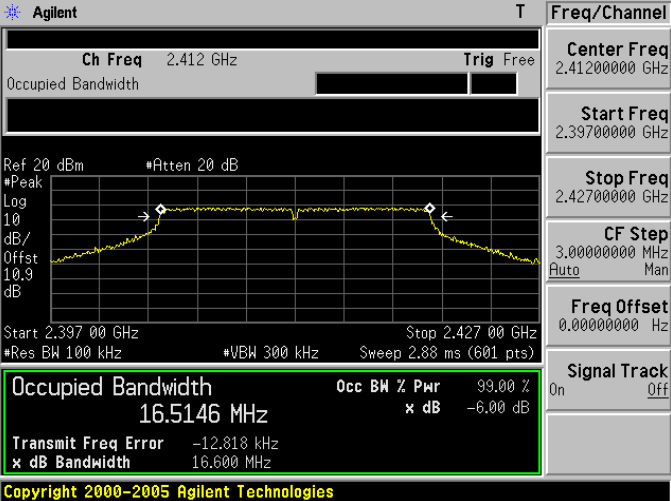
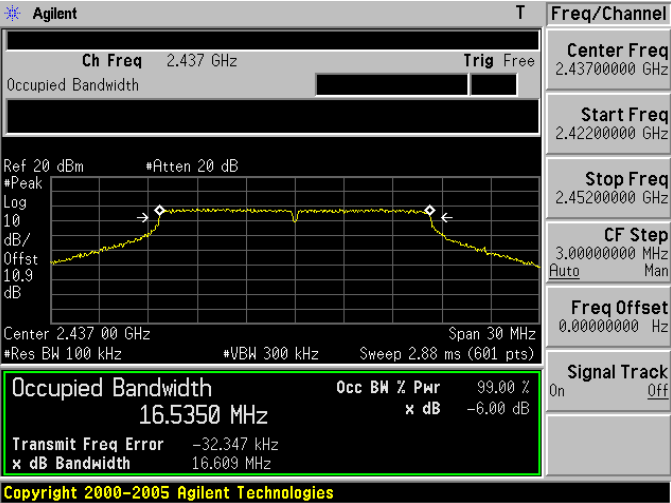
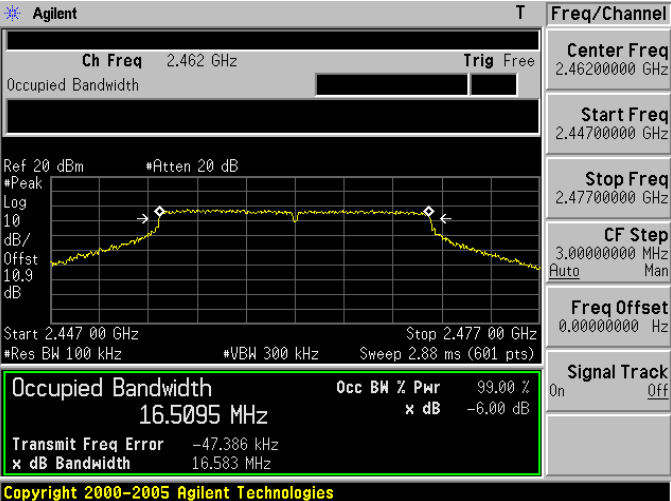
Model Number	NBE-M2		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	17.815	17.6965	> 0.500
2437	17.788	17.7151	> 0.500
2462	17.828	17.7049	> 0.500

Model Number	NBE-M2		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2422	36.642	36.3046	> 0.500
2437	36.637	36.3033	> 0.500
2452	36.617	36.3036	> 0.500

7.6. Test Graphs

Mode 2: IEEE 802.11b 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>Ref 20 dBm *Atten 20 dB</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 Occ BW % PWR 99.00 %</p> <p>13.7723 MHz x dB -6.00 dB</p> <p>Transmit Freq Error 14.560 kHz</p> <p>x dB Bandwidth 10.115 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent 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>Ref 20 dBm *Atten 20 dB</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 Occ BW % PWR 99.00 %</p> <p>13.6952 MHz x dB -6.00 dB</p> <p>Transmit Freq Error -74.417 kHz</p> <p>x dB Bandwidth 10.139 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	<p>Agilent 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>Ref 20 dBm *Atten 20 dB</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 Occ BW % PWR 99.00 %</p> <p>13.7233 MHz x dB -6.00 dB</p> <p>Transmit Freq Error -106.661 kHz</p> <p>x dB Bandwidth 10.064 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 3: IEEE 802.11g Link Mode

2412	 <p>Agilent 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 16.5146 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -12.818 kHz</p> <p>x dB Bandwidth 16.600 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	 <p>Agilent 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 16.5350 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -32.347 kHz</p> <p>x dB Bandwidth 16.609 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	 <p>Agilent 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 16.5095 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -47.386 kHz</p> <p>x dB Bandwidth 16.583 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

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

2412	<p>Agilent 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 17.6965 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -16.928 kHz</p> <p>x dB Bandwidth 17.815 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent 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 17.7151 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -34.862 kHz</p> <p>x dB Bandwidth 17.788 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	<p>Agilent 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 17.7049 MHz Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -47.766 kHz</p> <p>x dB Bandwidth 17.828 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

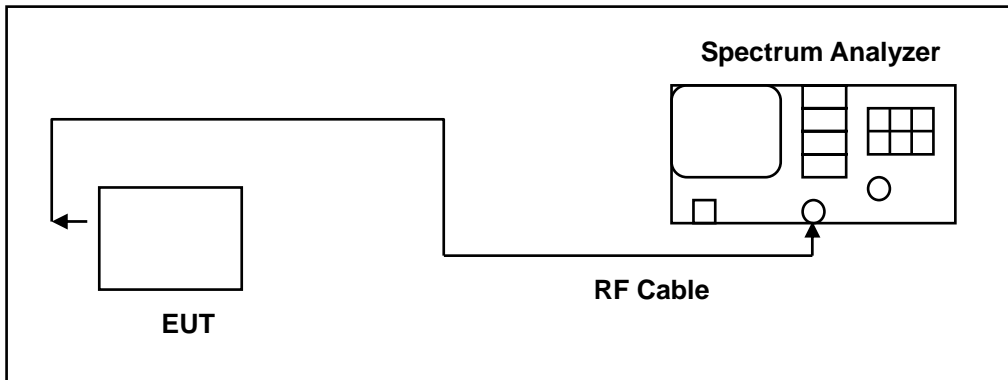
2422	<p>Agilent T</p> <p>Ch Freq 2.422 GHz Trig Free</p> <p>Center Freq 2.42200000 GHz</p> <p>Start Freq 2.39200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 6.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm *Atten 20 dB</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst 10.9</p> <p>dB</p> <p>Center 2.422 00 GHz Span 60 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.76 ms (601 pts)</p> <p>Occupied Bandwidth 36.3046 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -21.979 kHz</p> <p>x dB Bandwidth 36.642 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.40700000 GHz</p> <p>Stop Freq 2.46700000 GHz</p> <p>CF Step 6.00000000 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</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst 10.9</p> <p>dB</p> <p>Center 2.437 00 GHz Span 60 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.76 ms (601 pts)</p> <p>Occupied Bandwidth 36.3033 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -49.959 kHz</p> <p>x dB Bandwidth 36.637 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2452	<p>Agilent T</p> <p>Ch Freq 2.452 GHz Trig Free</p> <p>Center Freq 2.45200000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.48200000 GHz</p> <p>CF Step 6.00000000 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</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst 10.9</p> <p>dB</p> <p>Center 2.452 00 GHz Span 60 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.76 ms (601 pts)</p> <p>Occupied Bandwidth 36.3036 MHz</p> <p>Occ BW % PWR 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -60.390 kHz</p> <p>x dB Bandwidth 36.617 MHz</p> <p>Copyright 2000-2005 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 KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW ≥ 3 RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.5. Test Result

Model Number	NBE-M2		
Test Item	Maximum Power Density		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-10.07		< 8
2437	-8.91		< 8
2462	-9.95		< 8

Model Number	NBE-M2		
Test Item	Maximum Power Density		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-11.75		< 8
2437	-13.34		< 8
2462	-13.82		< 8

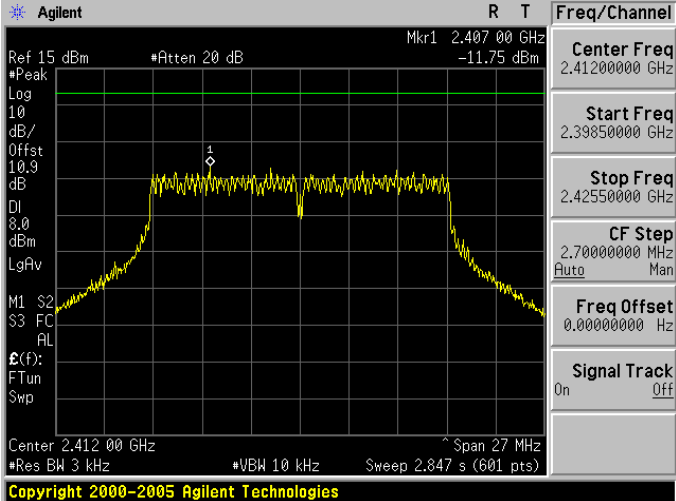
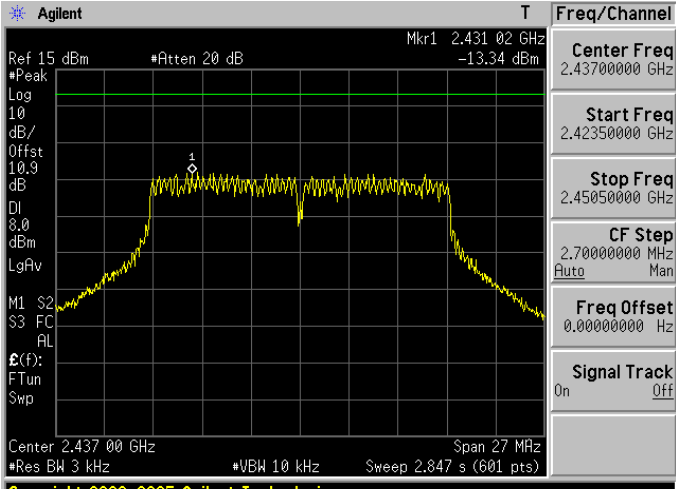
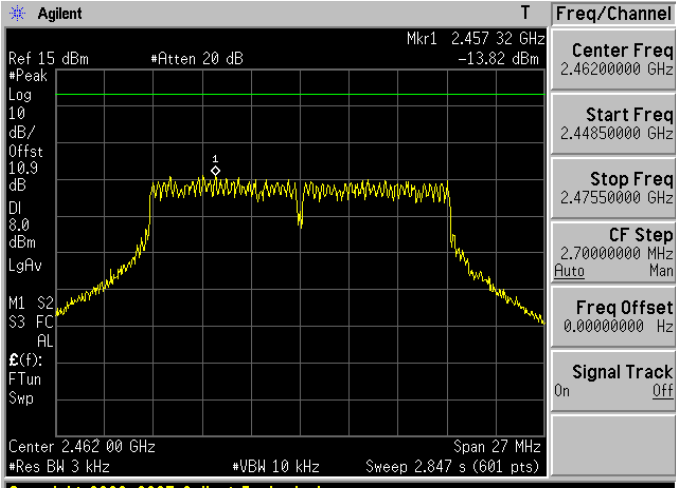
Model Number	NBE-M2		
Test Item	Maximum Power Density		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-12.17		< 8
2437	-10.97		< 8
2462	-12.87		< 8

Model Number	NBE-M2		
Test Item	Maximum Power Density		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	08/01/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2422	-16.46		< 8
2437	-17.08		< 8
2452	-15.18		< 8

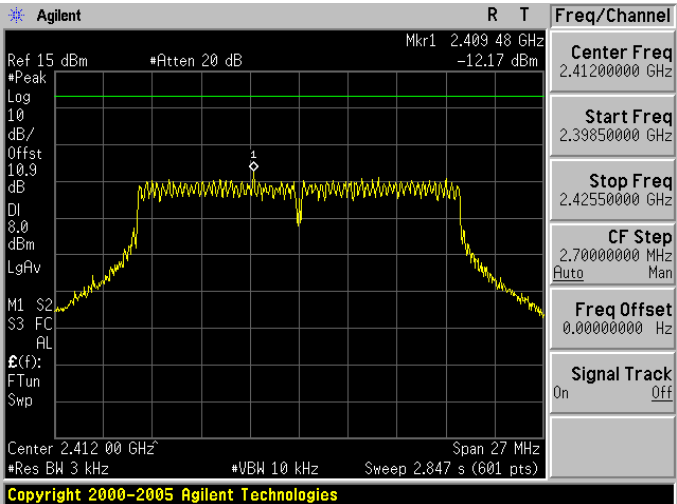
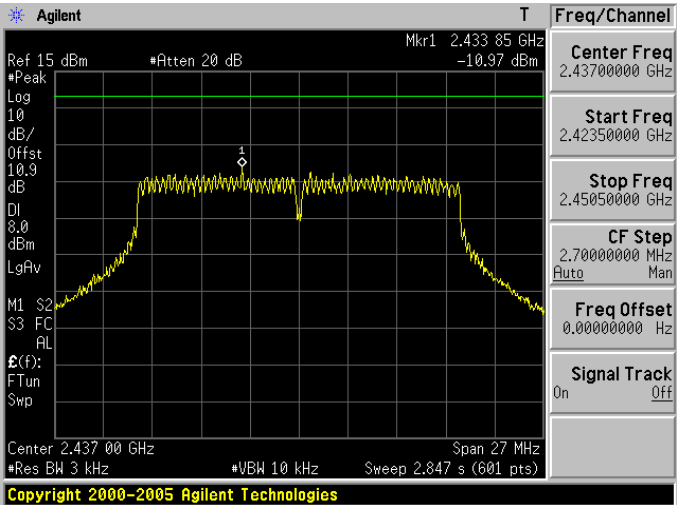
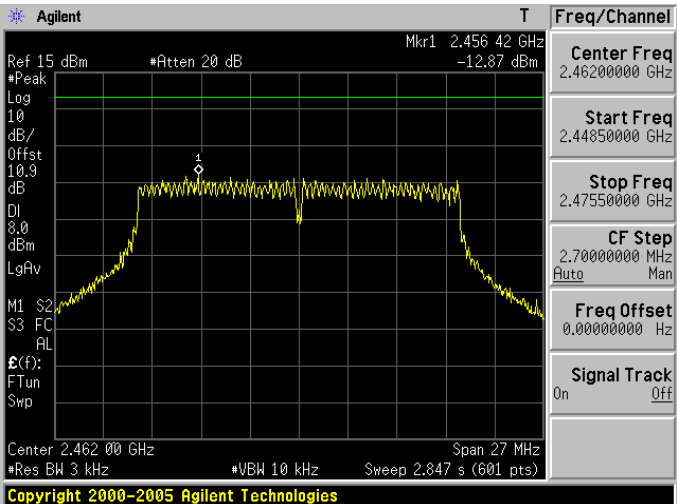
8.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode															
2412	<p>Agilent T Ref 15 dBm *Atten 20 dB Mkr1 2.412 77 GHz #Peak -10.07 dBm Log 10 dB/ Offst 10.9 dB DI 8.0 dBm LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.412 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.637 s (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>2.40400000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.60000000 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	2.40400000 GHz	Stop Freq	2.42000000 GHz	CF Step	1.60000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.41200000 GHz														
Start Freq	2.40400000 GHz														
Stop Freq	2.42000000 GHz														
CF Step	1.60000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
2437	<p>Agilent R T Ref 15 dBm *Atten 20 dB Mkr1 2.438 49 GHz #Peak -8.91 dBm Log 10 dB/ Offst 10.9 dB DI 8.0 dBm LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.437 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.637 s (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>2.42900000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44500000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.60000000 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	2.42900000 GHz	Stop Freq	2.44500000 GHz	CF Step	1.60000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.43700000 GHz														
Start Freq	2.42900000 GHz														
Stop Freq	2.44500000 GHz														
CF Step	1.60000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
2462	<p>Agilent T Ref 15 dBm *Atten 20 dB Mkr1 2.465 49 GHz #Peak -9.95 dBm Log 10 dB/ Offst 10.9 dB DI 8.0 dBm LgAv M1 S2 S3 FC AL E(f): FTun Swp Center 2.462 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.637 s (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>2.45400000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>1.60000000 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	2.45400000 GHz	Stop Freq	2.47000000 GHz	CF Step	1.60000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.46200000 GHz														
Start Freq	2.45400000 GHz														
Stop Freq	2.47000000 GHz														
CF Step	1.60000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

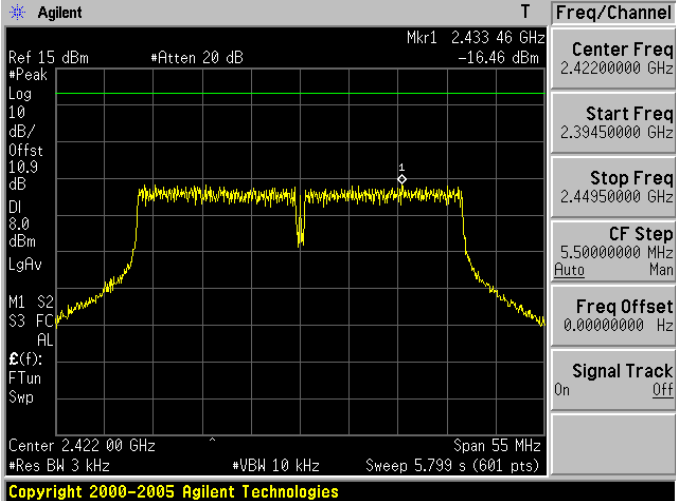
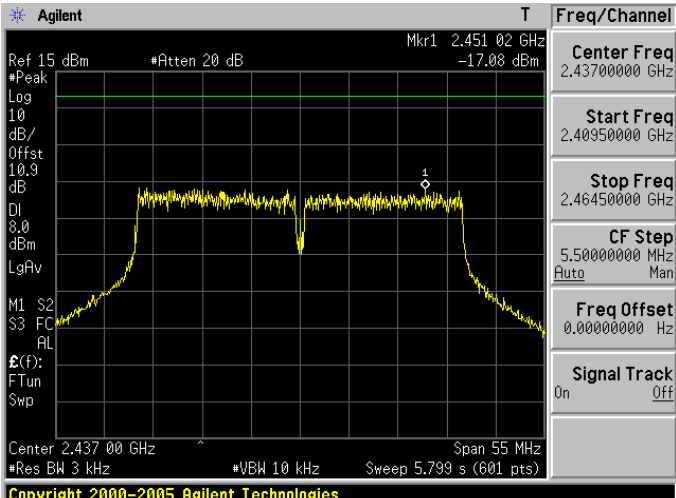
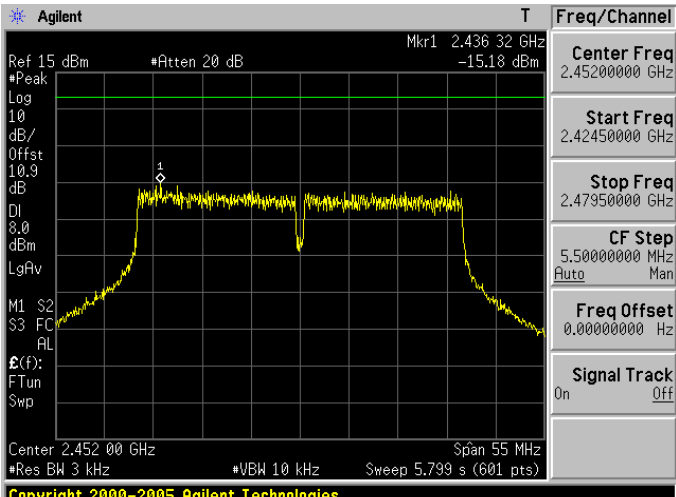
Mode 3: IEEE 802.11g Link Mode

2412	 <p>Agilent R T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.407 00 GHz -11.75 dBm</p> <p>Center 2.412 00 GHz Span 27 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39850000 GHz</p> <p>Stop Freq 2.42550000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.431 02 GHz -13.34 dBm</p> <p>Center 2.437 00 GHz Span 27 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42350000 GHz</p> <p>Stop Freq 2.45050000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.457 32 GHz -13.82 dBm</p> <p>Center 2.462 00 GHz Span 27 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44850000 GHz</p> <p>Stop Freq 2.47550000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Copyright 2000-2005 Agilent Technologies</p>

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

<p>2412</p>	 <p>Agilent R T Freq/Channel</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.409 48 GHz -12.17 dBm</p> <p>*Peak Center Freq 2.41200000 GHz</p> <p>Log Start Freq 2.39850000 GHz</p> <p>10 dB/ Stop Freq 2.42550000 GHz</p> <p>Offst 10.9 dB CF Step 2.70000000 MHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv M1 S2 Signal Track 0n Off</p> <p>S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.412 00 GHz Span 27 MHz *Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2437</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.433 85 GHz -10.97 dBm</p> <p>*Peak Center Freq 2.43700000 GHz</p> <p>Log Start Freq 2.42350000 GHz</p> <p>10 dB/ Stop Freq 2.45050000 GHz</p> <p>Offst 10.9 dB CF Step 2.70000000 MHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv M1 S2 Signal Track 0n Off</p> <p>S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.437 00 GHz Span 27 MHz *Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2462</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.456 42 GHz -12.87 dBm</p> <p>*Peak Center Freq 2.46200000 GHz</p> <p>Log Start Freq 2.44850000 GHz</p> <p>10 dB/ Stop Freq 2.47550000 GHz</p> <p>Offst 10.9 dB CF Step 2.70000000 MHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv M1 S2 Signal Track 0n Off</p> <p>S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.462 00 GHz Span 27 MHz *Res BW 3 kHz *VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

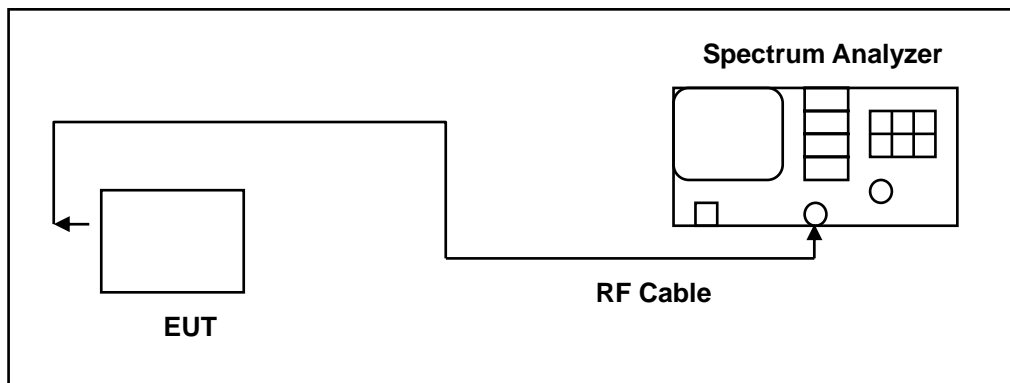
<p>2422</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.433 46 GHz -16.46 dBm</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>DI</p> <p>8.0</p> <p>dBm</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>E(f):</p> <p>FTun</p> <p>Swp</p> <p>Center 2.422 00 GHz Span 55 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 5.799 s (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>2.42200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.39450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.42200000 GHz	Start Freq	2.39450000 GHz	Stop Freq	2.44950000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Stop Freq	2.44950000 GHz																
CF Step	5.50000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2437</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.451 02 GHz -17.08 dBm</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>DI</p> <p>8.0</p> <p>dBm</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 55 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 5.799 s (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>2.40950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.40950000 GHz	Stop Freq	2.46450000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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CF Step	5.50000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2452</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.436 32 GHz -15.18 dBm</p> <p>*Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>DI</p> <p>8.0</p> <p>dBm</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 2.452 00 GHz Span 55 MHz</p> <p>*Res BW 3 kHz *VBW 10 kHz Sweep 5.799 s (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>2.45200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.45200000 GHz	Start Freq	2.42450000 GHz	Stop Freq	2.47950000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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CF Step	5.50000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																

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	07/11/2013	(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.

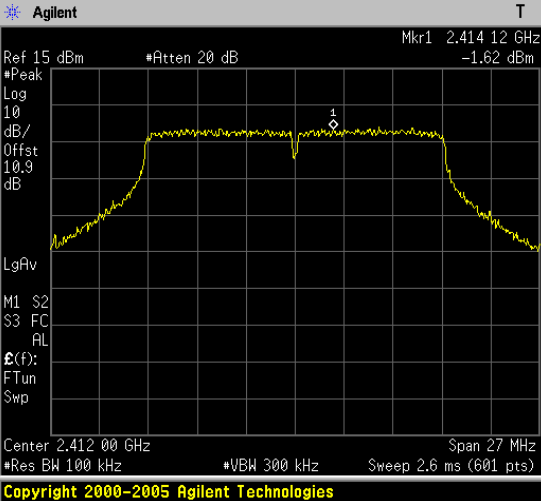
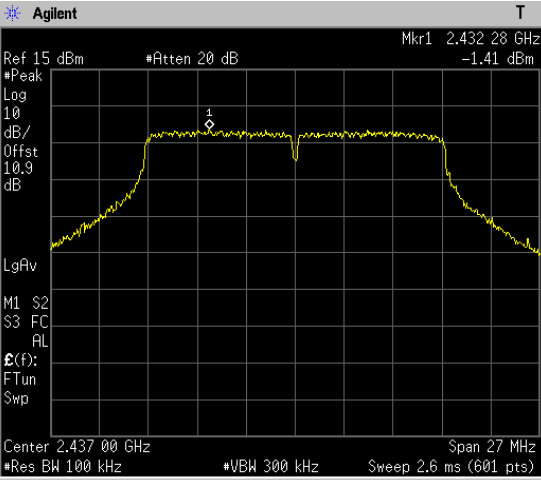
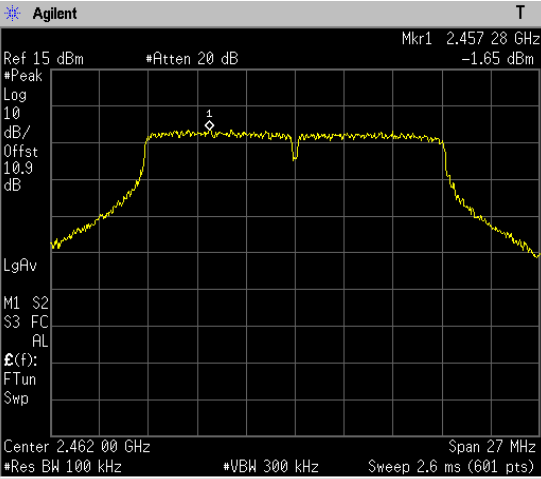
The test was performed at 3 channels (Channel 1, 6, 11)

9.5. Test Graphs

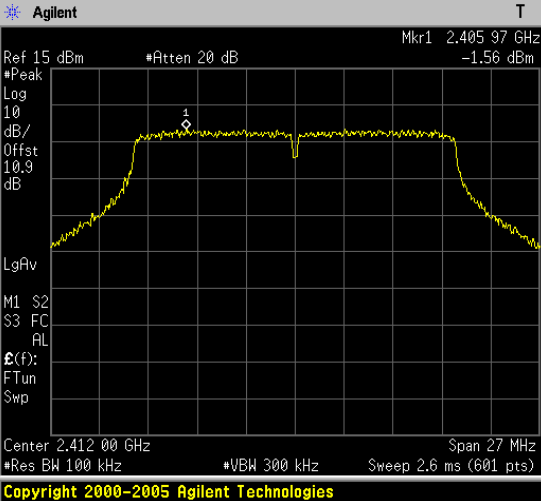
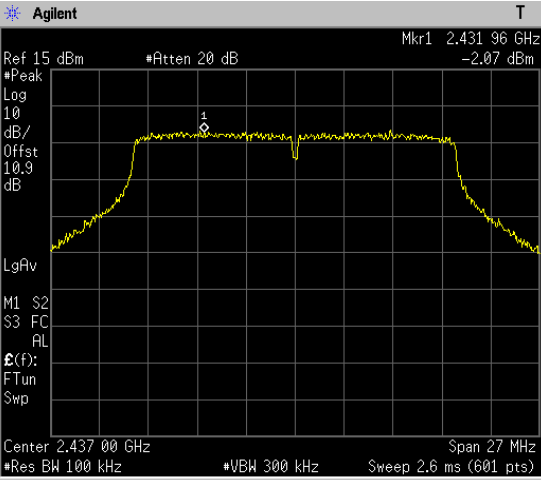
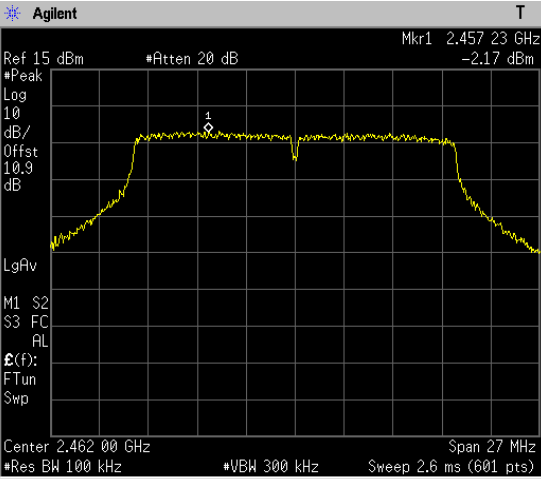
Reference level

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent T Freq/Channel</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.413 97 GHz 5.14 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>Ⓢ(f):</p> <p>F Tun</p> <p>Swp</p> <p>Center 2.412 00 GHz Span 16 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.40400000 GHz</p> <p>Stop Freq 2.42000000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
2437	<p>Agilent T Freq/Channel</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.435 99 GHz 4.48 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>Ⓢ(f):</p> <p>F Tun</p> <p>Swp</p> <p>Center 2.437 00 GHz Span 16 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42900000 GHz</p> <p>Stop Freq 2.44500000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
2462	<p>Agilent R T Freq/Channel</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.461 49 GHz 4.37 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</p> <p>dB</p> <p>LgAv</p> <p>M1 S2</p> <p>S3 FC</p> <p>AL</p> <p>Ⓢ(f):</p> <p>F Tun</p> <p>Swp</p> <p>Center 2.462 00 GHz Span 16 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.45400000 GHz</p> <p>Stop Freq 2.47000000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>

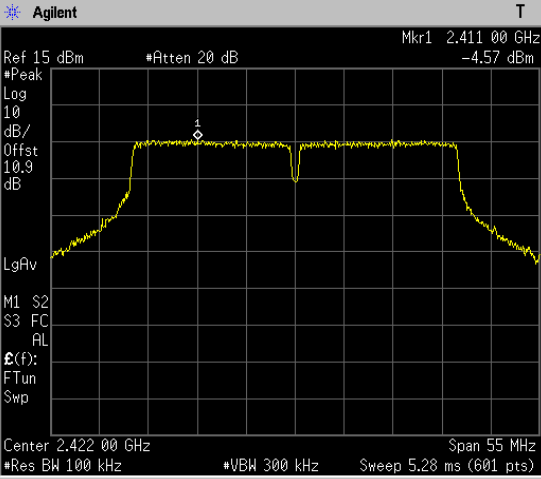
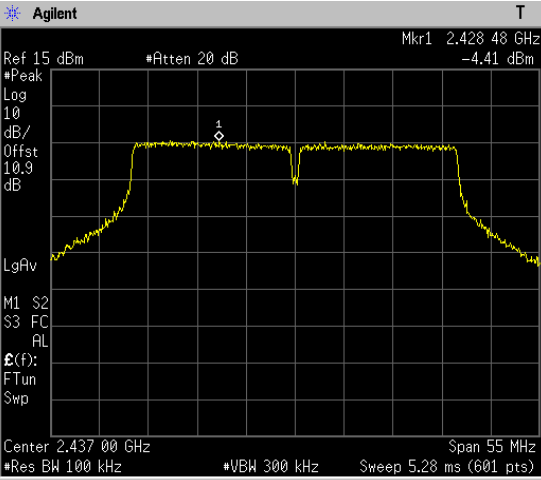
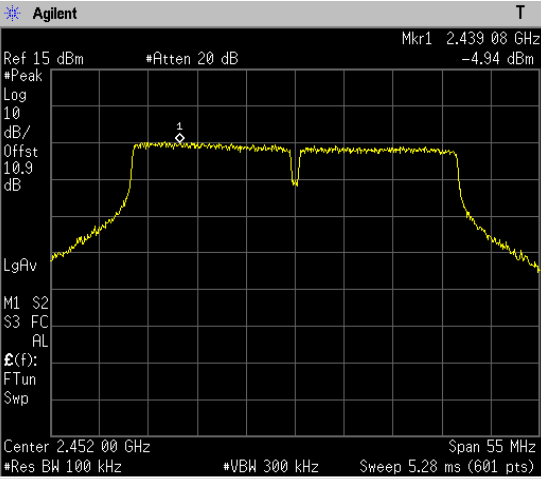
Mode 3: IEEE 802.11g Link Mode

<p>2412</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.414 12 GHz -1.62 dBm</p> <p>*Peak Log 10 dB/ Offst 10.9 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.412 00 GHz Span 27 MHz *Res BW 100 kHz #VBW 300 kHz Sweep 2.6 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>2.39850000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42550000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 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	2.39850000 GHz	Stop Freq	2.42550000 GHz	CF Step	2.70000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
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Start Freq	2.39850000 GHz														
Stop Freq	2.42550000 GHz														
CF Step	2.70000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2437</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.432 28 GHz -1.41 dBm</p> <p>*Peak Log 10 dB/ Offst 10.9 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.437 00 GHz Span 27 MHz *Res BW 100 kHz #VBW 300 kHz Sweep 2.6 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>2.42350000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.45050000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 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	2.42350000 GHz	Stop Freq	2.45050000 GHz	CF Step	2.70000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Start Freq	2.42350000 GHz														
Stop Freq	2.45050000 GHz														
CF Step	2.70000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2462</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.457 28 GHz -1.65 dBm</p> <p>*Peak Log 10 dB/ Offst 10.9 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.462 00 GHz Span 27 MHz *Res BW 100 kHz #VBW 300 kHz Sweep 2.6 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>2.44850000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47550000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 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	2.44850000 GHz	Stop Freq	2.47550000 GHz	CF Step	2.70000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Stop Freq	2.47550000 GHz														
CF Step	2.70000000 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>	 <table border="1" data-bbox="1197 392 1324 891"> <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>2.39850000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42550000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 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> <p>Copyright 2000-2005 Agilent Technologies</p>	Freq/Channel		Center Freq	2.41200000 GHz	Start Freq	2.39850000 GHz	Stop Freq	2.42550000 GHz	CF Step	2.70000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
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Start Freq	2.39850000 GHz														
Stop Freq	2.42550000 GHz														
CF Step	2.70000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2437</p>	 <table border="1" data-bbox="1197 920 1324 1397"> <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>2.42350000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.45050000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 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> <p>Copyright 2000-2005 Agilent Technologies</p>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.42350000 GHz	Stop Freq	2.45050000 GHz	CF Step	2.70000000 MHz Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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CF Step	2.70000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
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Start Freq	2.44850000 GHz														
Stop Freq	2.47550000 GHz														
CF Step	2.70000000 MHz Auto Man														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

<p>2422</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.411 00 GHz -4.57 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 2.422 00 GHz Span 55 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 392 1324 869"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.42200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.39450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.42200000 GHz	Start Freq	2.39450000 GHz	Stop Freq	2.44950000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Stop Freq	2.44950000 GHz																
CF Step	5.50000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2437</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.428 48 GHz -4.41 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 55 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 920 1324 1397"> <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>2.40950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.40950000 GHz	Stop Freq	2.46450000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
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	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																
<p>2452</p>	 <p>Agilent T</p> <p>Ref 15 dBm *Atten 20 dB Mkr1 2.439 08 GHz -4.94 dBm</p> <p>#Peak</p> <p>Log</p> <p>10</p> <p>dB/</p> <p>Offst</p> <p>10.9</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 2.452 00 GHz Span 55 MHz</p> <p>*Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 1447 1324 1924"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.45200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 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	2.45200000 GHz	Start Freq	2.42450000 GHz	Stop Freq	2.47950000 GHz	CF Step	5.50000000 MHz		Auto Man	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel																	
Center Freq	2.45200000 GHz																
Start Freq	2.42450000 GHz																
Stop Freq	2.47950000 GHz																
CF Step	5.50000000 MHz																
	Auto Man																
Freq Offset	0.00000000 Hz																
Signal Track	On Off																

Out of Band Conducted Emissions

Mode 2: IEEE 802.11b Link Mode

<p>2412</p>	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.79 GHz -37.58 dBm</p> <p>Peak Log 10 dB/Offst 10.9 dB DI -14.9 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts) Stop 26.5 GHz</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.41 GHz</td> <td>4.42 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.79 GHz</td> <td>-37.58 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	4.42 dBm	2	(1)	Freq	4.79 GHz	-37.58 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.41 GHz	4.42 dBm												
2	(1)	Freq	4.79 GHz	-37.58 dBm												
<p>2437</p>	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.86 GHz -38.27 dBm</p> <p>Peak Log 10 dB/Offst 10.9 dB DI -15.5 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts) Stop 26.5 GHz</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.44 GHz</td> <td>4.955 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.86 GHz</td> <td>-38.27 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	4.955 dBm	2	(1)	Freq	4.86 GHz	-38.27 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.44 GHz	4.955 dBm												
2	(1)	Freq	4.86 GHz	-38.27 dBm												
<p>2462</p>	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.93 GHz -39.16 dBm</p> <p>Peak Log 10 dB/Offst 10.9 dB DI -15.6 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts) Stop 26.5 GHz</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.46 GHz</td> <td>4.207 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.93 GHz</td> <td>-39.16 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	4.207 dBm	2	(1)	Freq	4.93 GHz	-39.16 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.46 GHz	4.207 dBm												
2	(1)	Freq	4.93 GHz	-39.16 dBm												

Mode 3: IEEE 802.11g Link Mode

2412	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.79 GHz -48.87 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -21.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.41 GHz</td> <td>-1.876 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.79 GHz</td> <td>-48.87 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	-1.876 dBm	2	(1)	Freq	4.79 GHz	-48.87 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.41 GHz	-1.876 dBm												
2	(1)	Freq	4.79 GHz	-48.87 dBm												
2437	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.86 GHz -46.77 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -21.4 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.44 GHz</td> <td>-0.577 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.86 GHz</td> <td>-46.77 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	-0.577 dBm	2	(1)	Freq	4.86 GHz	-46.77 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.44 GHz	-0.577 dBm												
2	(1)	Freq	4.86 GHz	-46.77 dBm												
2462	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr1 2.46 GHz -2.551 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -21.7 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.46 GHz</td> <td>-2.551 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	-2.551 dBm					
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.46 GHz	-2.551 dBm												

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

2412	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr1 2.41 GHz -2.771 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -21.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.41 GHz</td> <td>-2.771 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	-2.771 dBm					
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.41 GHz	-2.771 dBm												
2437	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr2 4.86 GHz -48.33 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -22.1 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.44 GHz</td> <td>-2.327 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.86 GHz</td> <td>-48.33 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	-2.327 dBm	2	(1)	Freq	4.86 GHz	-48.33 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.44 GHz	-2.327 dBm												
2	(1)	Freq	4.86 GHz	-48.33 dBm												
2462	<p>Agilent R T</p> <p>Ref 10 dBm #Atten 20 dB Mkr1 2.46 GHz -2.585 dBm</p> <p>Peak Log 10 dB/Offset 10.9 dB DI -22.2 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.46 GHz</td> <td>-2.585 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.0000000 Hz, Signal Track On</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	-2.585 dBm					
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.46 GHz	-2.585 dBm												

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

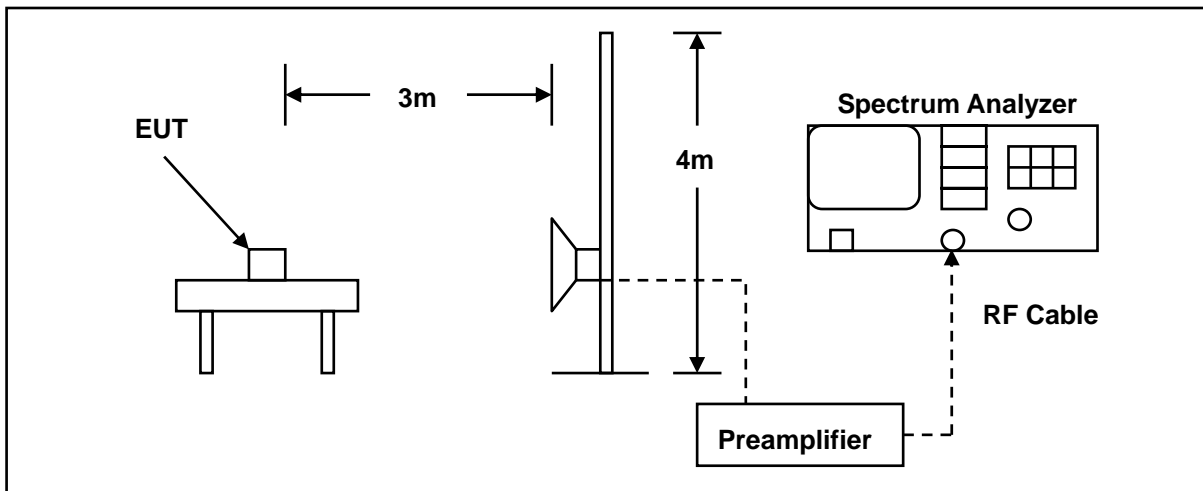
<p>2422</p>	
<p>2437</p>	
<p>2452</p>	

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					
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	06/10/2013	(1)
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.

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.

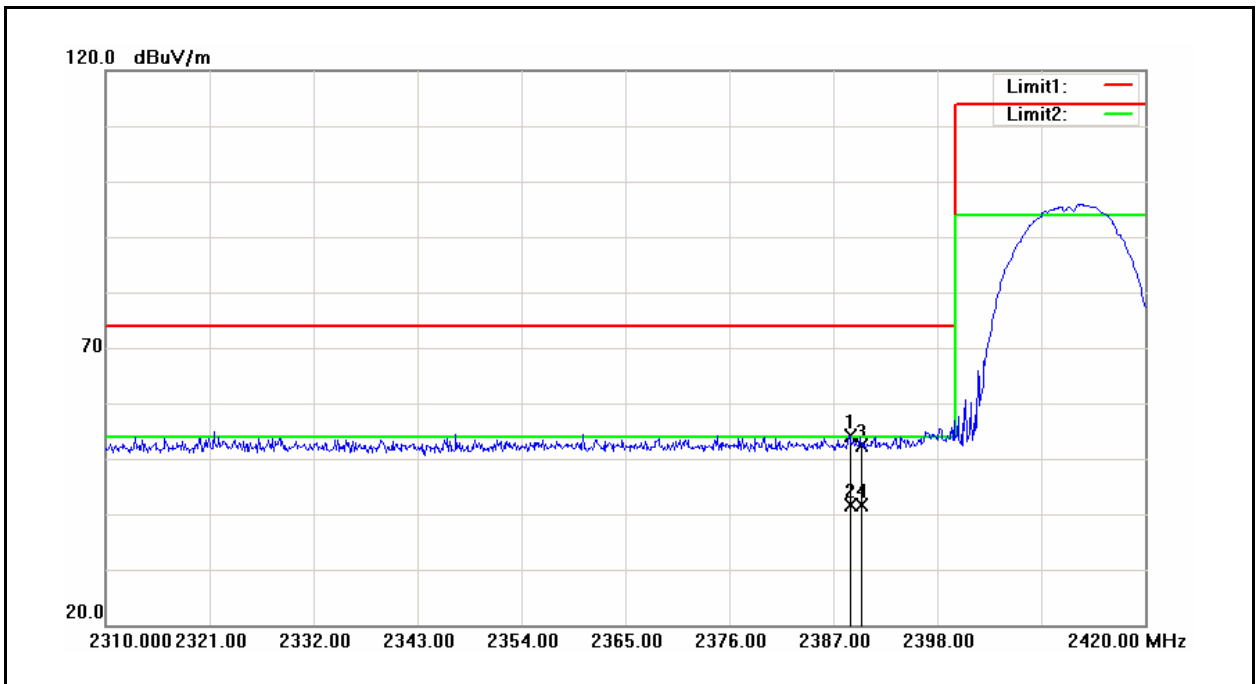
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

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.

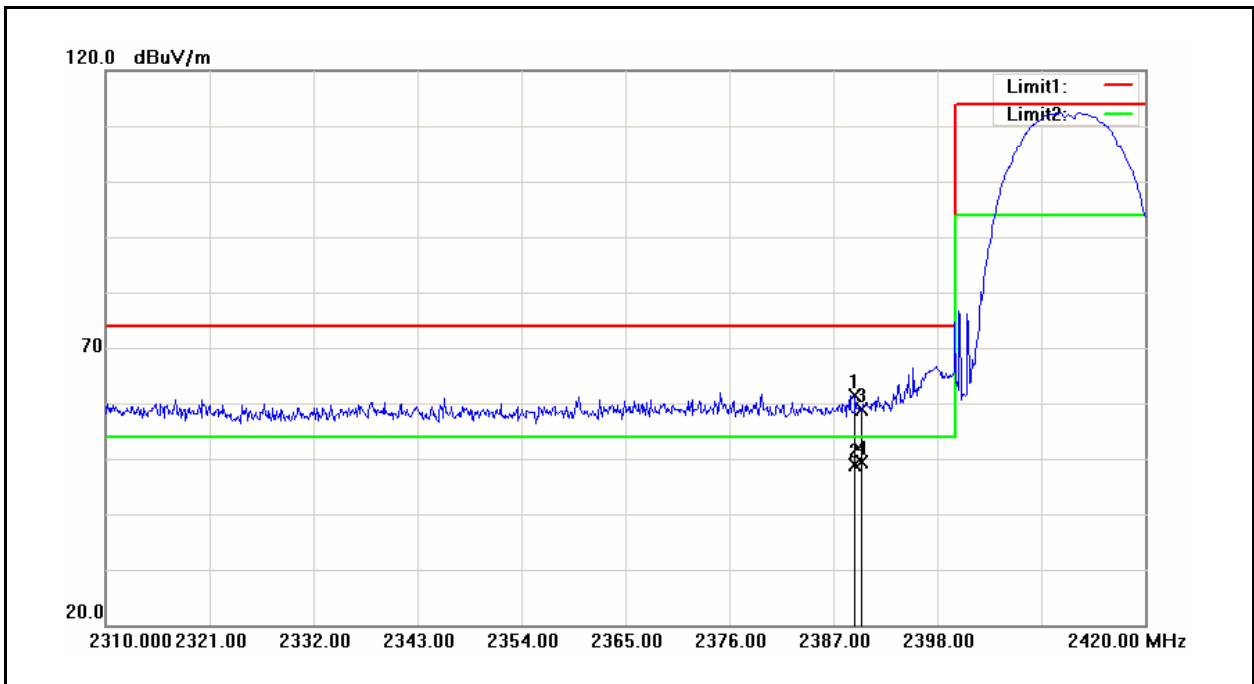
10.5. Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



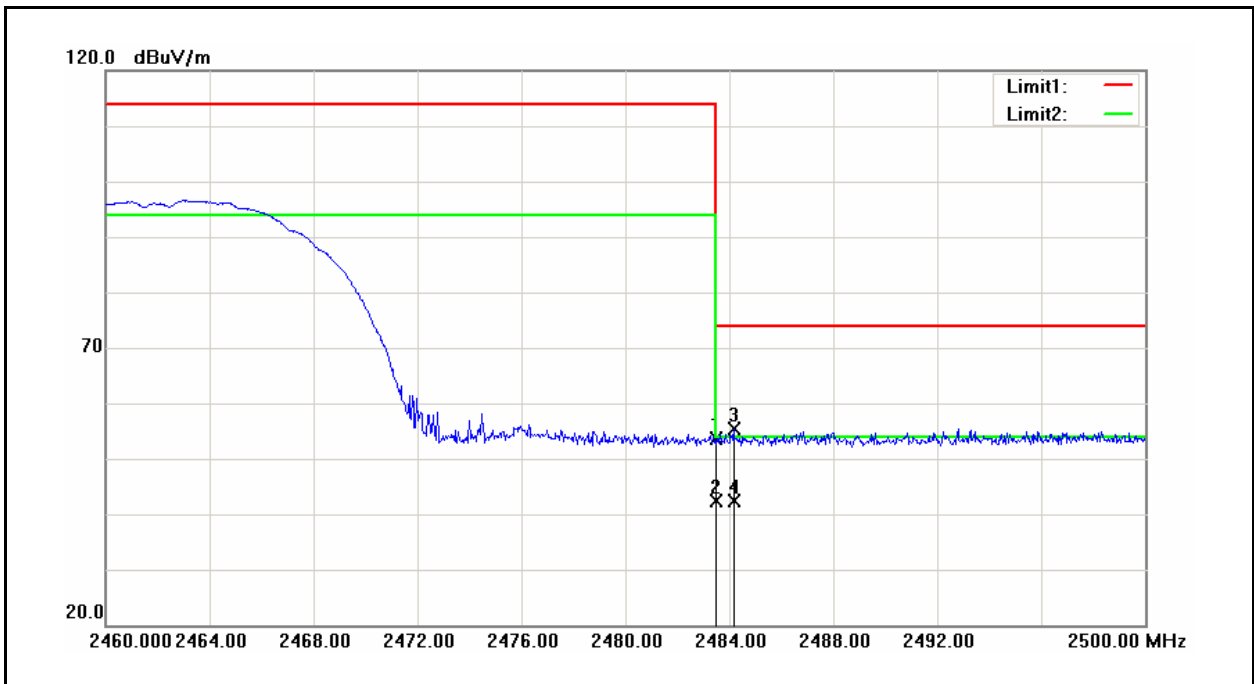
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.760	50.29	3.88	54.17	74.00	-19.83	peak
2	2388.760	37.67	3.88	41.55	54.00	-12.45	AVG
3	2390.000	48.52	3.88	52.40	74.00	-21.60	peak
4	2390.000	37.75	3.88	41.63	54.00	-12.37	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



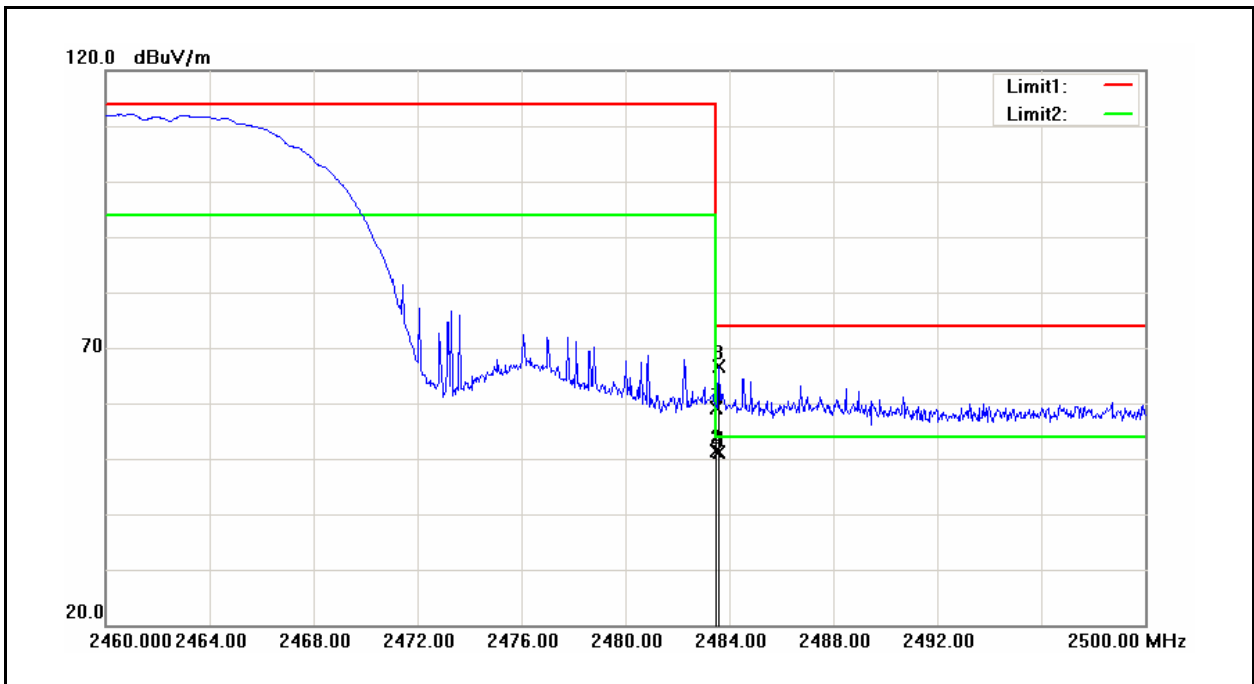
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.310	57.60	3.88	61.48	74.00	-12.52	peak
2	2389.310	44.99	3.88	48.87	54.00	-5.13	AVG
3	2390.000	54.88	3.88	58.76	74.00	-15.24	peak
4	2390.000	45.49	3.88	49.37	54.00	-4.63	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



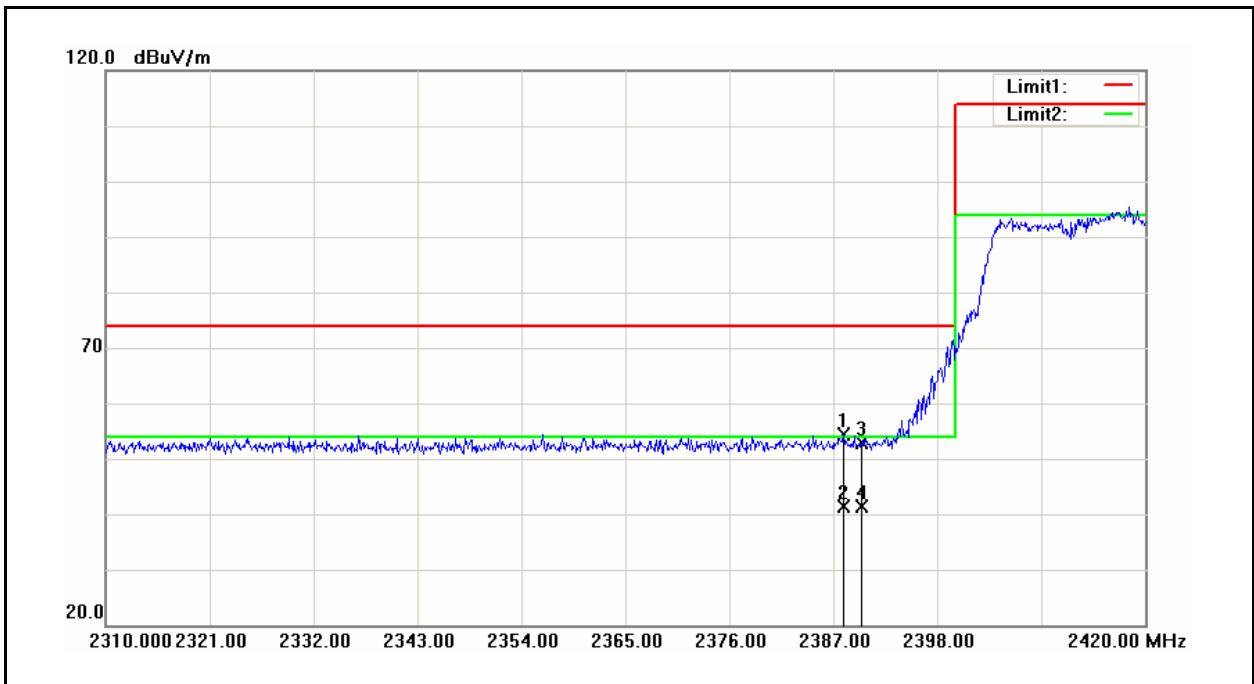
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	49.24	4.50	53.74	74.00	-20.26	peak
2	2483.500	37.95	4.50	42.45	54.00	-11.55	AVG
3	2484.160	50.75	4.51	55.26	74.00	-18.74	peak
4	2484.160	37.78	4.51	42.29	54.00	-11.71	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



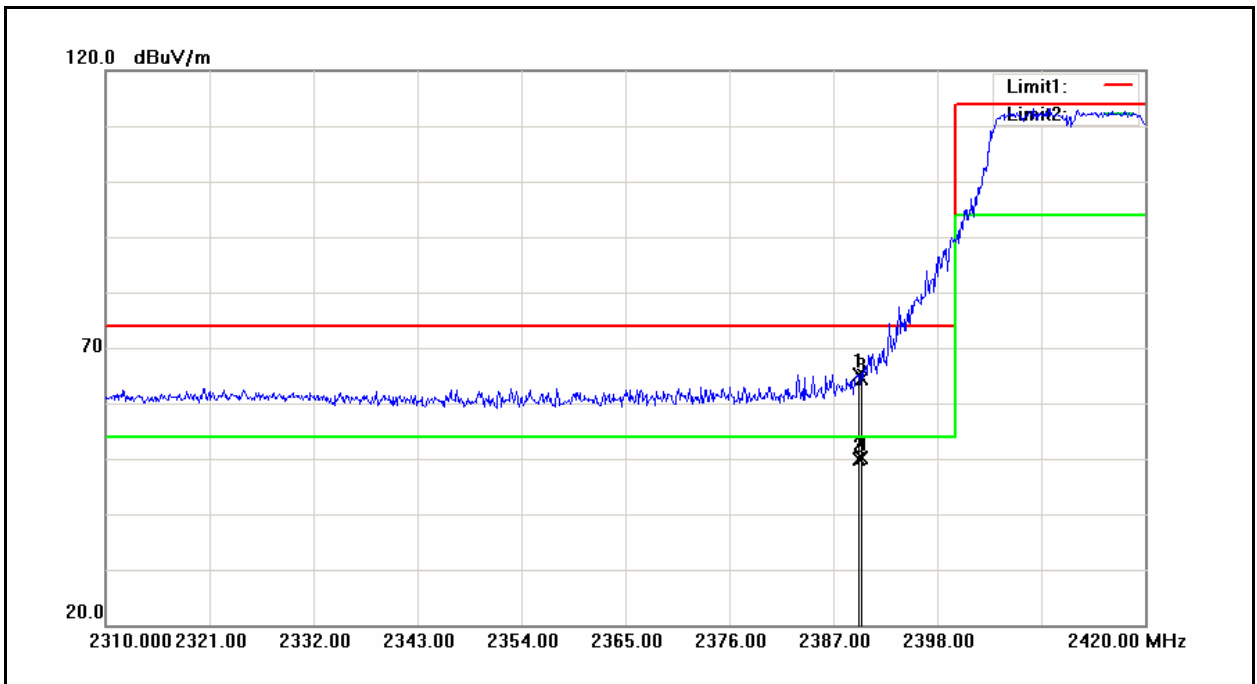
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.66	4.50	59.16	74.00	-14.84	peak
2	2483.500	46.81	4.50	51.31	54.00	-2.69	AVG
3	2483.600	62.01	4.50	66.51	74.00	-7.49	peak
4	2483.600	46.63	4.50	51.13	54.00	-2.87	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



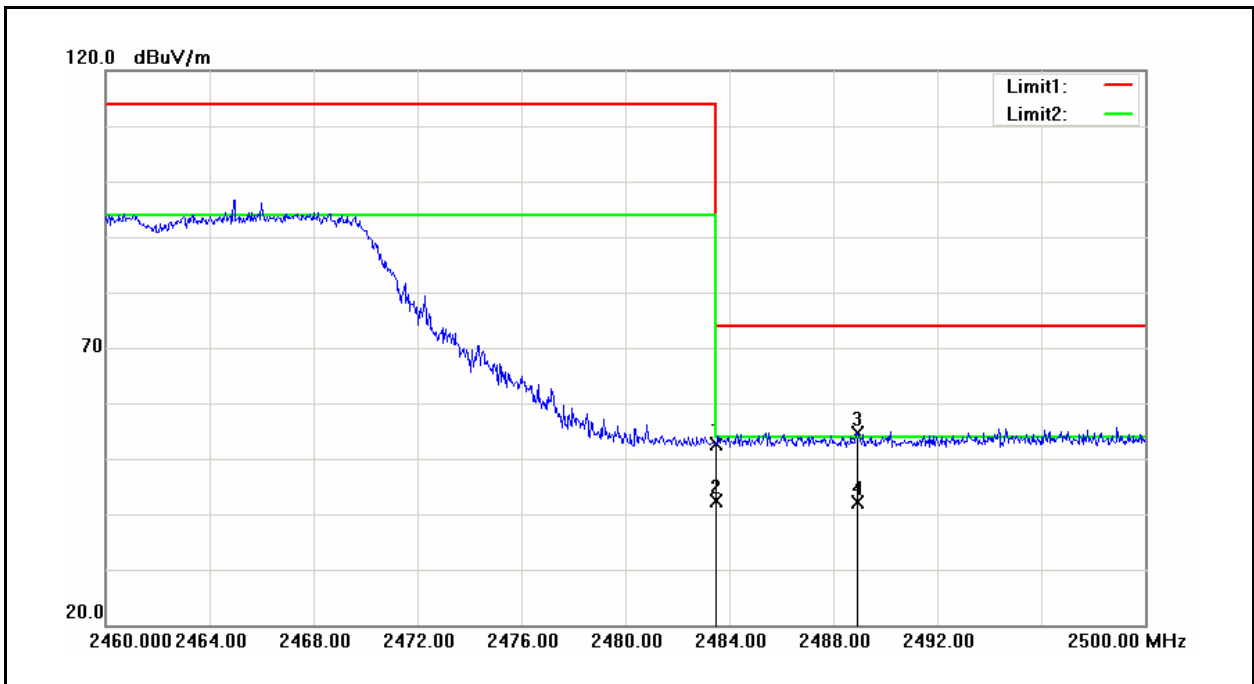
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.100	50.42	3.86	54.28	74.00	-19.72	peak
2	2388.100	37.48	3.86	41.34	54.00	-12.66	AVG
3	2390.000	48.92	3.88	52.80	74.00	-21.20	peak
4	2390.000	37.58	3.88	41.46	54.00	-12.54	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



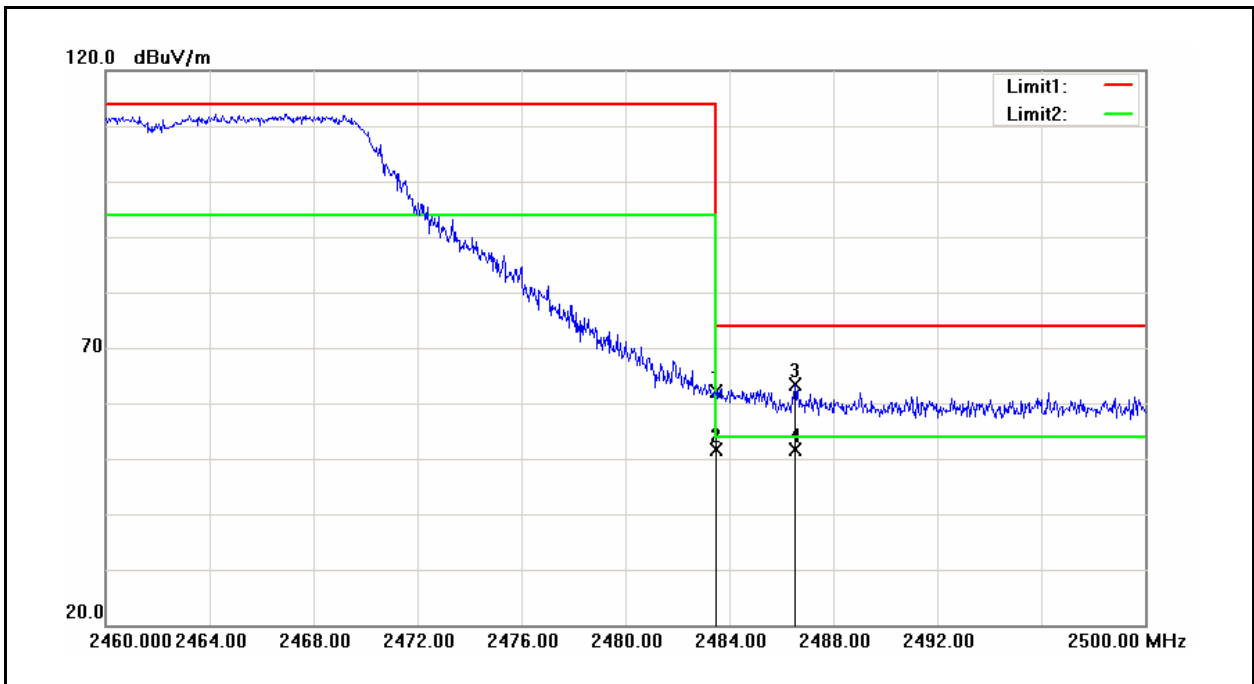
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.750	61.35	3.88	65.23	74.00	-8.77	peak
2	2389.750	46.08	3.88	49.96	54.00	-4.04	AVG
3	2390.000	60.47	3.88	64.35	74.00	-9.65	peak
4	2390.000	46.20	3.88	50.08	54.00	-3.92	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



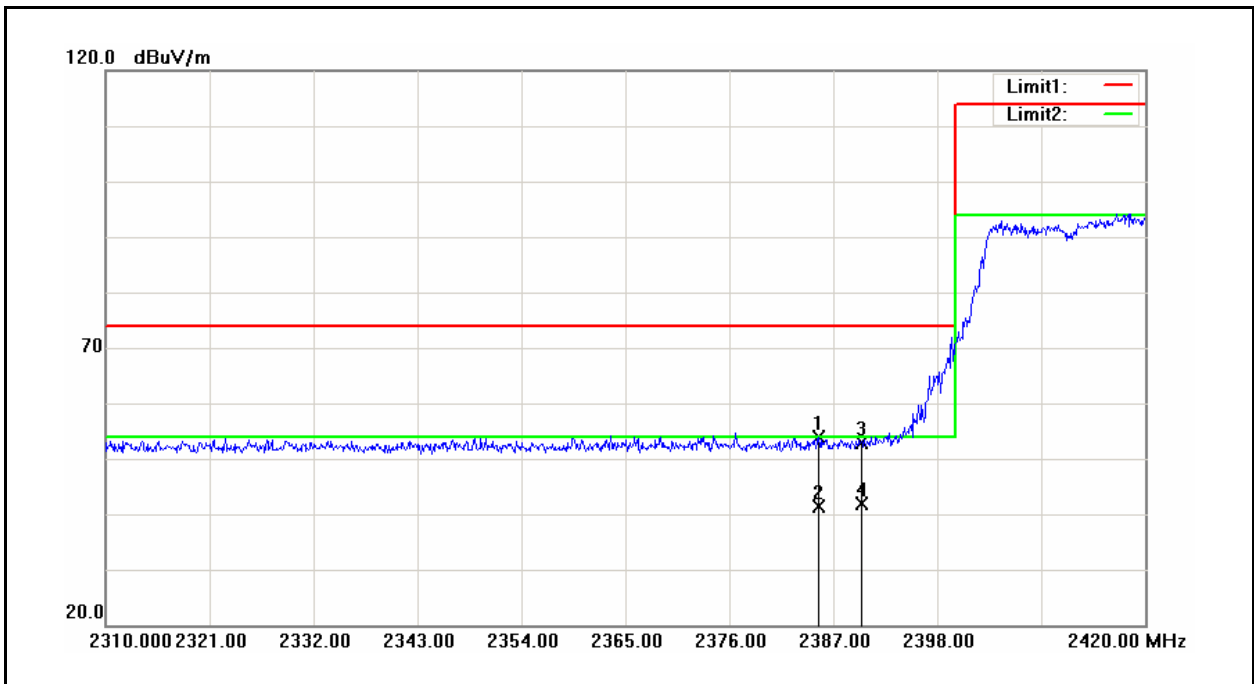
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	48.19	4.50	52.69	74.00	-21.31	peak
2	2483.500	37.84	4.50	42.34	54.00	-11.66	AVG
3	2488.920	50.10	4.55	54.65	74.00	-19.35	peak
4	2488.920	37.56	4.55	42.11	54.00	-11.89	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



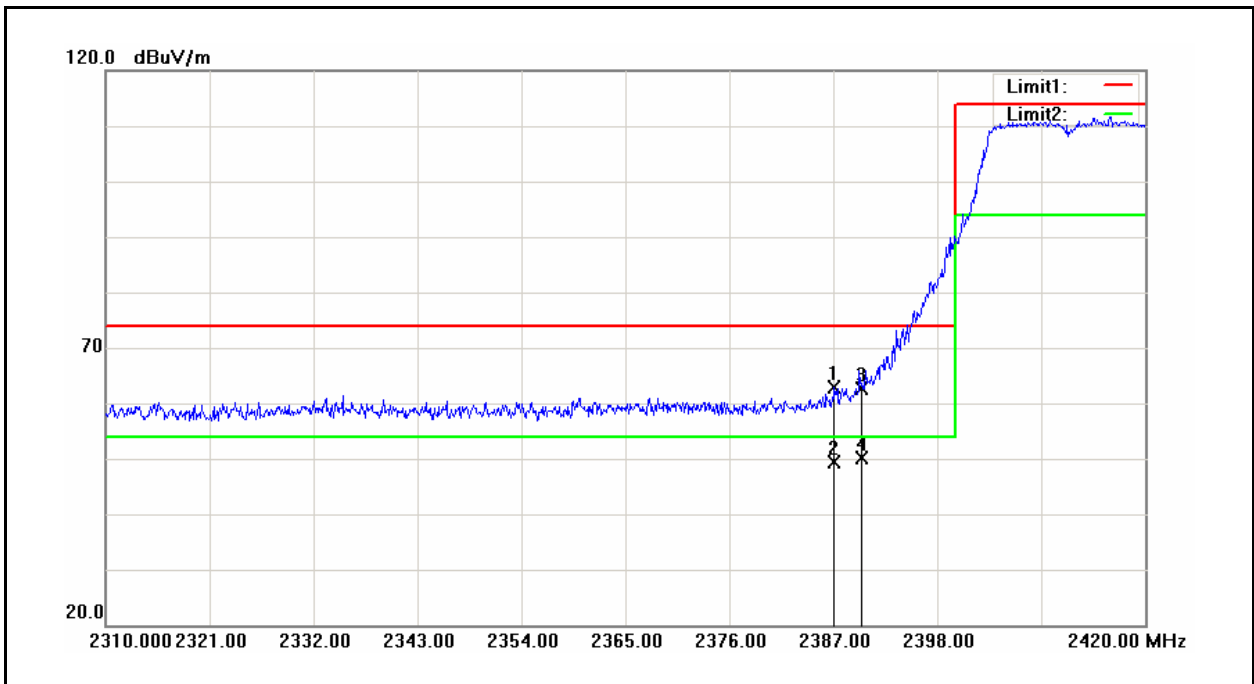
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	57.53	4.50	62.03	74.00	-11.97	peak
2	2483.500	47.17	4.50	51.67	54.00	-2.33	AVG
3	2486.520	58.90	4.53	63.43	74.00	-10.57	peak
4	2486.520	46.98	4.53	51.51	54.00	-2.49	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



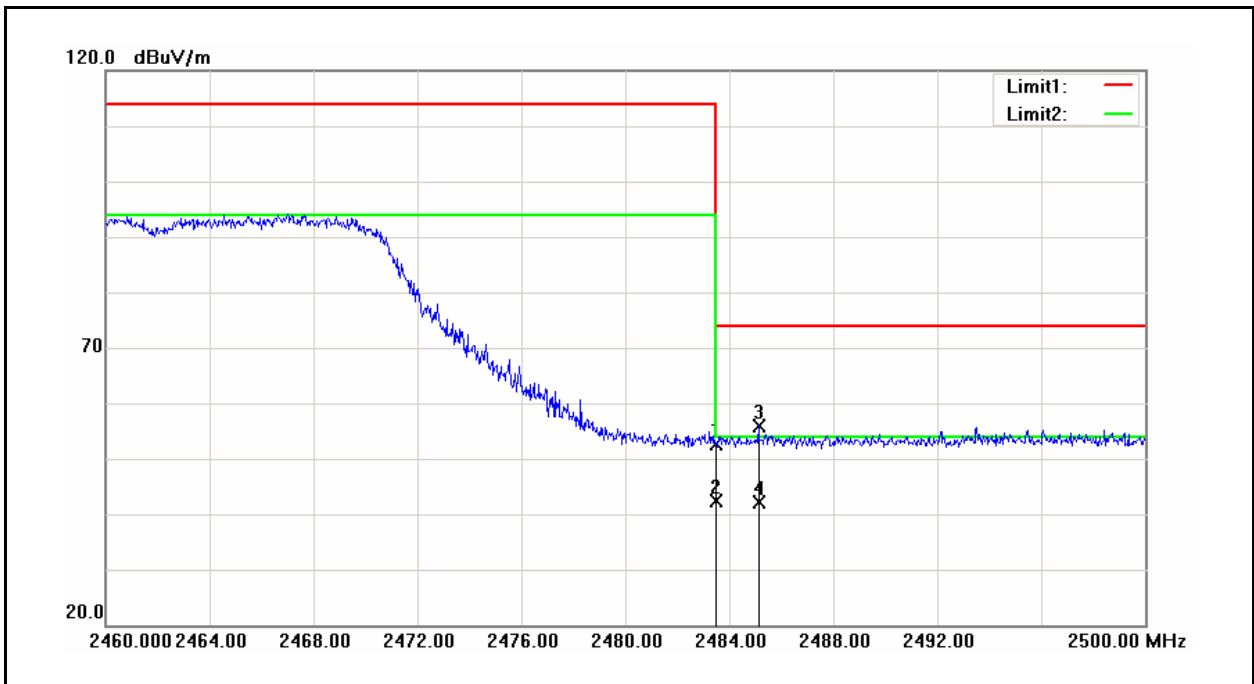
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2385.460	50.02	3.85	53.87	74.00	-20.13	peak
2	2385.460	37.43	3.85	41.28	54.00	-12.72	AVG
3	2390.000	49.11	3.88	52.99	74.00	-21.01	peak
4	2390.000	37.98	3.88	41.86	54.00	-12.14	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	08/01/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



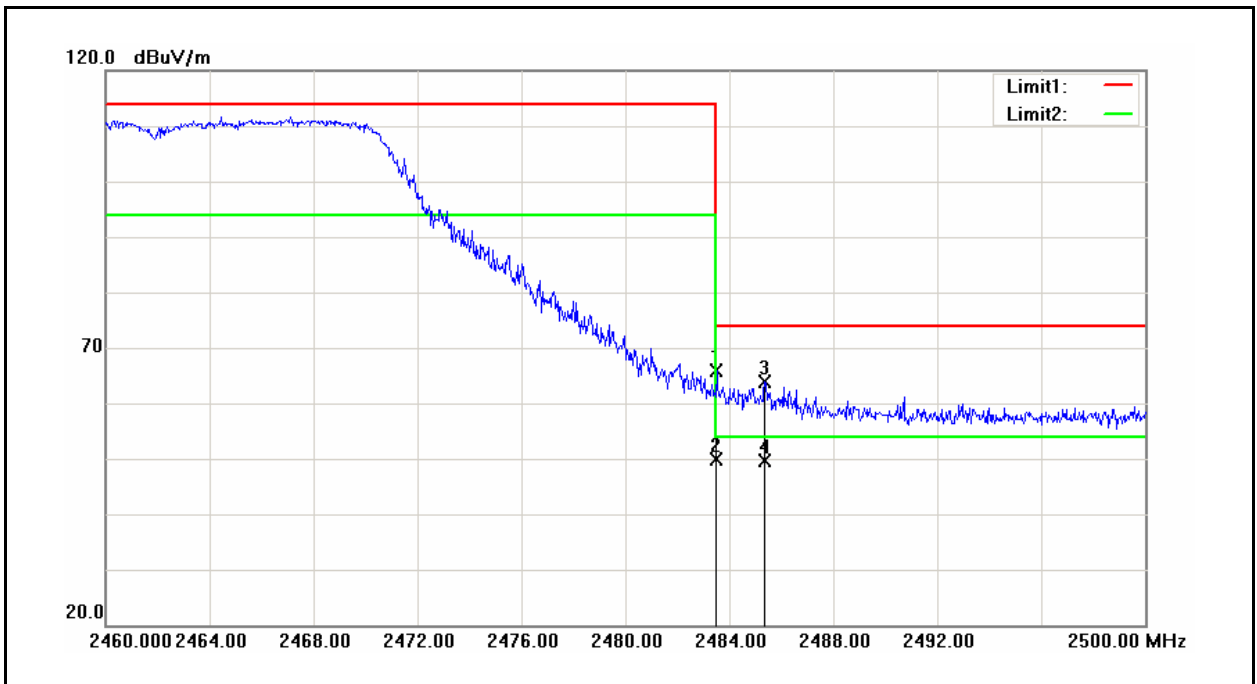
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.110	59.13	3.86	62.99	74.00	-11.01	peak
2	2387.110	45.54	3.86	49.40	54.00	-4.60	AVG
3	2390.000	58.67	3.88	62.55	74.00	-11.45	peak
4	2390.000	46.16	3.88	50.04	54.00	-3.96	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



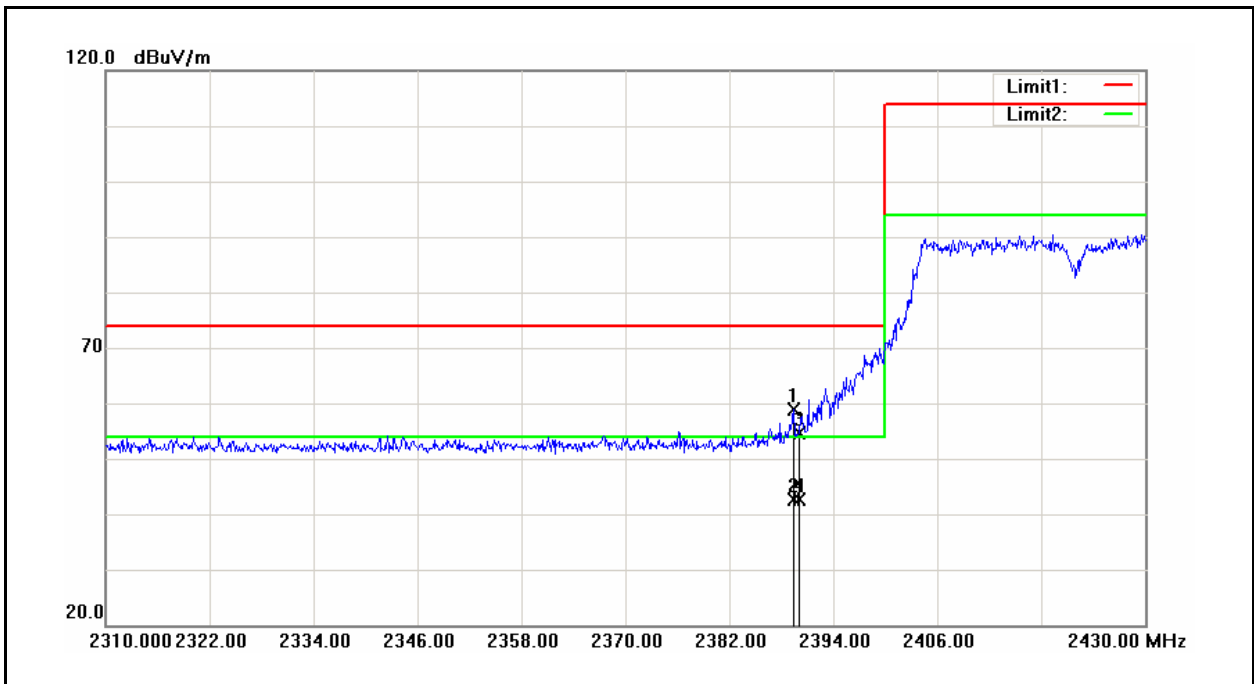
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	48.09	4.50	52.59	74.00	-21.41	peak
2	2483.500	37.86	4.50	42.36	54.00	-11.64	AVG
3	2485.120	51.24	4.52	55.76	74.00	-18.24	peak
4	2485.120	37.62	4.52	42.14	54.00	-11.86	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	08/01/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



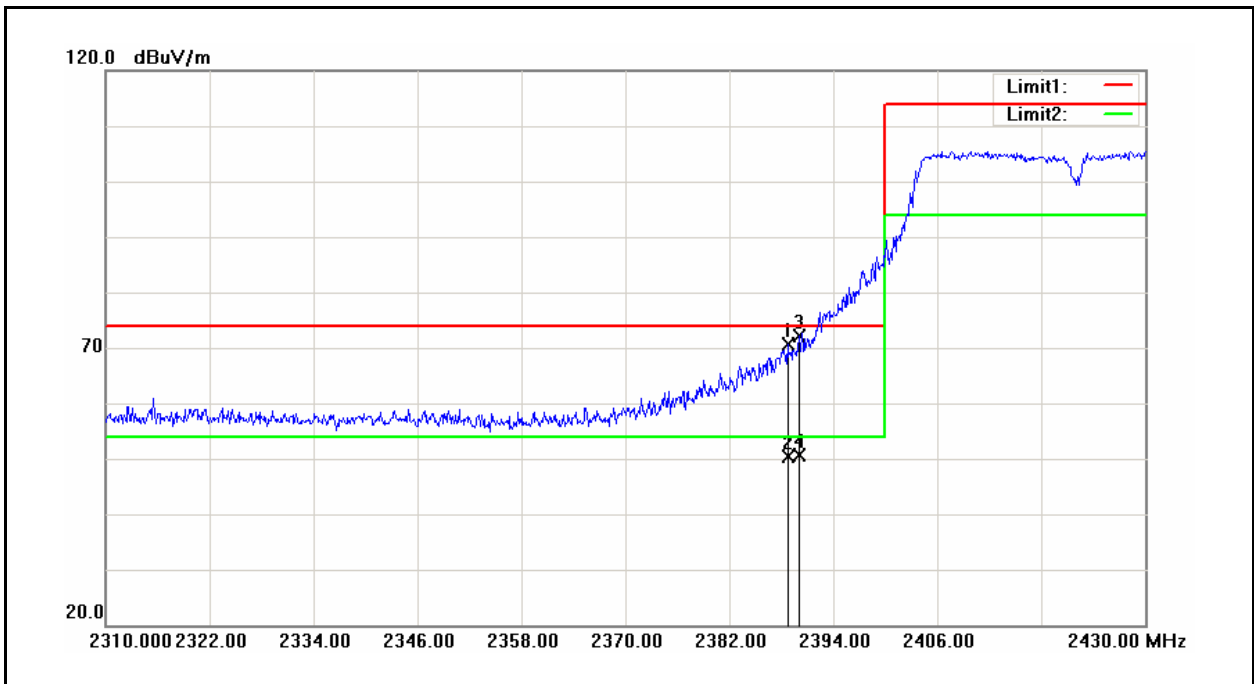
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	61.46	4.50	65.96	74.00	-8.04	peak
2	2483.500	45.31	4.50	49.81	54.00	-4.19	AVG
3	2485.360	59.27	4.52	63.79	74.00	-10.21	peak
4	2485.360	45.18	4.52	49.70	54.00	-4.30	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	08/01/2013
Frequency:	2422 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



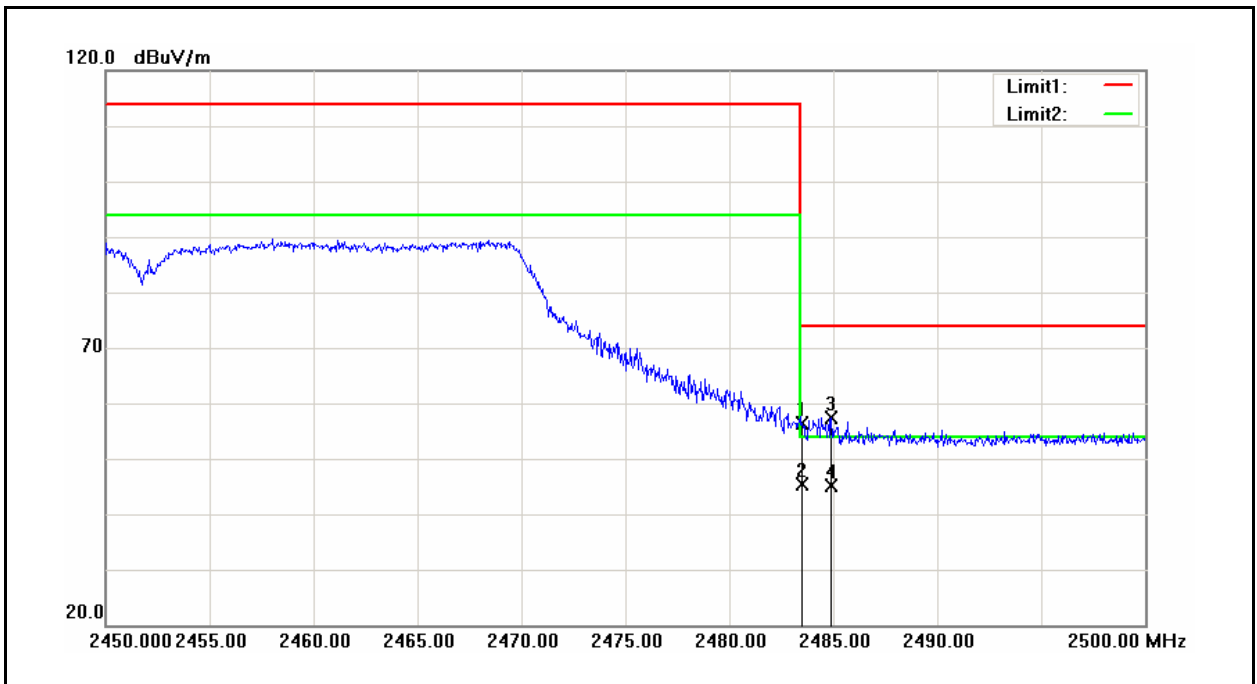
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.440	54.96	3.88	58.84	74.00	-15.16	peak
2	2389.440	38.64	3.88	42.52	54.00	-11.48	AVG
3	2390.000	50.81	3.88	54.69	74.00	-19.31	peak
4	2390.000	38.66	3.88	42.54	54.00	-11.46	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	08/01/2013
Frequency:	2422 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



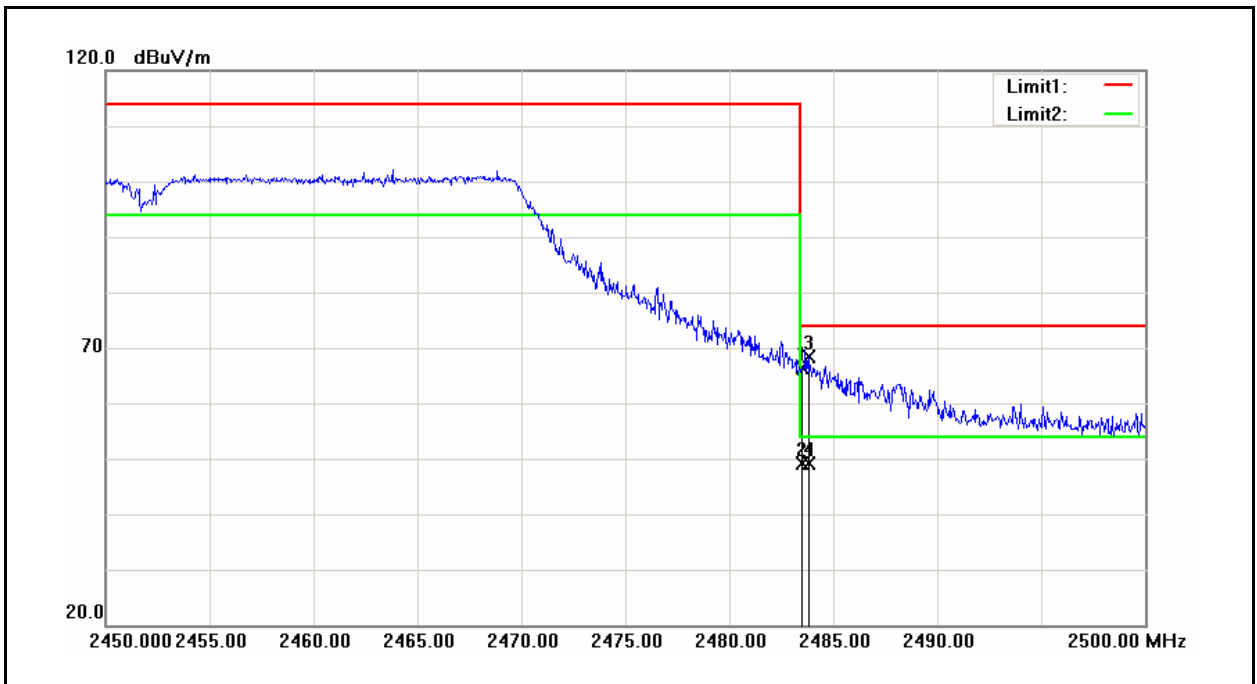
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.720	66.86	3.87	70.73	74.00	-3.27	peak
2	2388.720	46.44	3.87	50.31	54.00	-3.69	AVG
3	2390.000	68.25	3.88	72.13	74.00	-1.87	peak
4	2390.000	46.82	3.88	50.70	54.00	-3.30	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	08/01/2013
Frequency:	2452 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	51.85	4.50	56.35	74.00	-17.65	peak
2	2483.500	40.90	4.50	45.40	54.00	-8.60	AVG
3	2484.900	52.93	4.51	57.44	74.00	-16.56	peak
4	2484.900	40.55	4.51	45.06	54.00	-8.94	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	NBE-M2	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	08/01/2013
Frequency:	2452 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	61.99	4.50	66.49	74.00	-7.51	peak
2	2483.500	44.74	4.50	49.24	54.00	-4.76	AVG
3	2483.800	63.86	4.51	68.37	74.00	-5.63	peak
4	2483.800	44.65	4.51	49.16	54.00	-4.84	AVG

11 Antenna Measurement

11.1.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.

11.2.Antenna Connector Construction

The antenna used in this product is dish antenna. And the maximum Gain of this antenna is 18 dBi.