

FCC 47 CFR PART 15 SUBPART C

Product Type : SmartBox
Applicant : Gigastone Corp.
Address : 2F, No. 480, Rueiguang Rd., Neihu Dist., Taipei 114, Taiwan
Trade Name : Gigastone
Model Number : A4-52ER
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
ANSI C63.4-2009
Receive Date : Aug. 30, 2013
Test Period : Sep. 11 ~ Sep. 12, 2013
Issue Date : Sep. 30, 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	Sep. 30, 2013	Initial Issue	

Verification of Compliance

Issued Date: 09/30/2013

Product Type : SmartBox
Applicant : Gigastone Corp.
Address : 2F, No. 480, Rueiguang Rd., Neihu Dist., Taipei 114, Taiwan
Trade Name : Gigastone
Model Number : A4-52ER
FCC ID : PLE-ER5201
EUT Rated Voltage : DC 5V (USB Interface)
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
ANSI C63.4-2009

Test Result : Complied

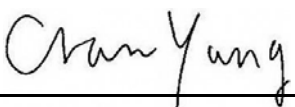
Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>



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)

: 
(Cran Yang)

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	N/A	Not applicable, This device use DC power source.
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

Item	Frequency Range		Uncertainty (dB)
AC Power Conducted Emission	9kHz ~ 30MHz		± 2.020
Radiated Emissions	30MHz ~ 230MHz	Horizontal	± 3.960
		Vertical	± 3.570
	230MHz ~ 1000MHz	Horizontal	± 3.960
		Vertical	± 3.570
	1000MHz ~ 18000MHz	Horizontal	± 3.072
		Vertical	± 3.028
	18000MHz ~ 40000MHz	Horizontal	± 3.622
		Vertical	± 3.506

2 EUT Description

Product Type	SmartBox
Trade Name	Gigastone
Model No.	A4-52ER
Applicant	Gigastone Corp. 2F, No. 480, Rueiguang Rd., Neihu Dist., Taipei 114, Taiwan
Manufacturer	Gigastone Corp. 2F, No. 480, Rueiguang Rd., Neihu Dist., Taipei 114, Taiwan
FCC ID	PLE-ER5201
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 Type	Monopole Antenna
Antenna Gain	2.6 dBi
RF Output Power	IEEE 802.11b: 0.032 W / 14.99 dBm IEEE 802.11g: 0.125 W / 20.97 dBm IEEE 802.11n 2.4GHz 20MHz: 0.107 W / 20.29 dBm IEEE 802.11n 2.4GHz 40MHz: 0.106 W / 20.25 dBm
99 % Occupied Bandwidth	IEEE 802.11b: 14.03 MHz IEEE 802.11g: 16.61 MHz IEEE 802.11n 2.4GHz 20MHz: 17.75 MHz IEEE 802.11n 2.4GHz 40MHz: 36.19 MHz
Emission Designator	IEEE 802.11b: 14M0G1D IEEE 802.11g: 16M6G1D IEEE 802.11n 2.4GHz 20MHz: 17M8G1D IEEE 802.11n 2.4GHz 40MHz: 36M2G1D

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

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 were chosen for full testing.

IEEE 802.11g mode:

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

IEEE 802.11n 2.4GHz 20MHz mode:

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

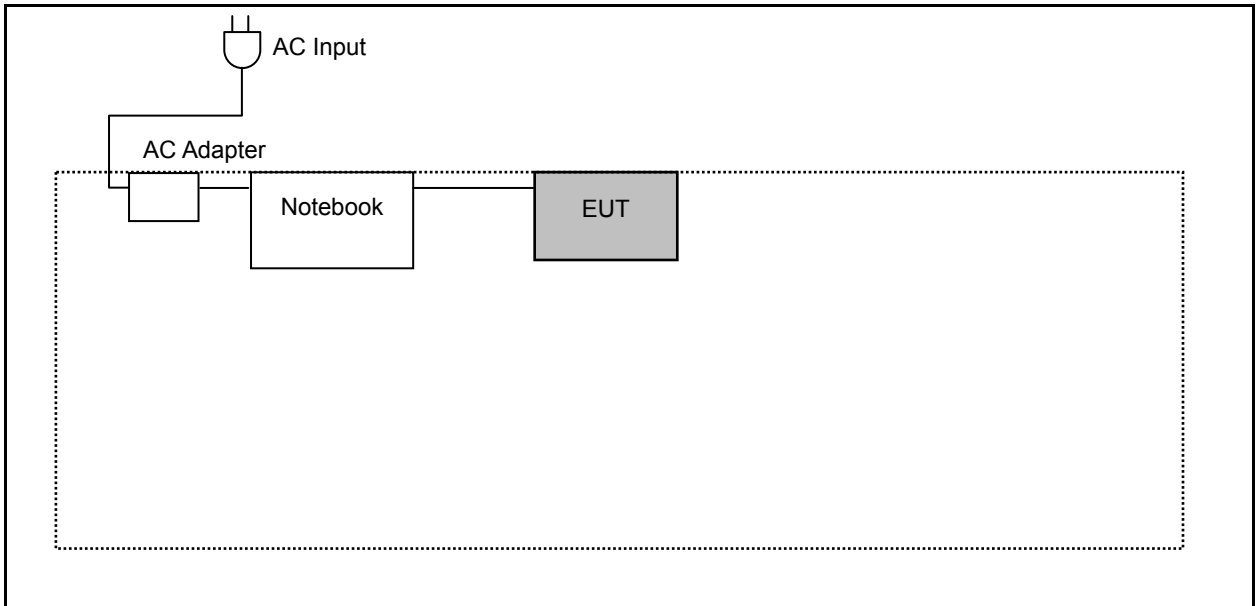
IEEE 802.11n 2.4GHz 40MHz mode:

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

3.2. EUT Exercise Software

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

3.3. Configuration of Test System Details



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 Radiated Emission Measurement

4.1. 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.

4.2. Test Instruments

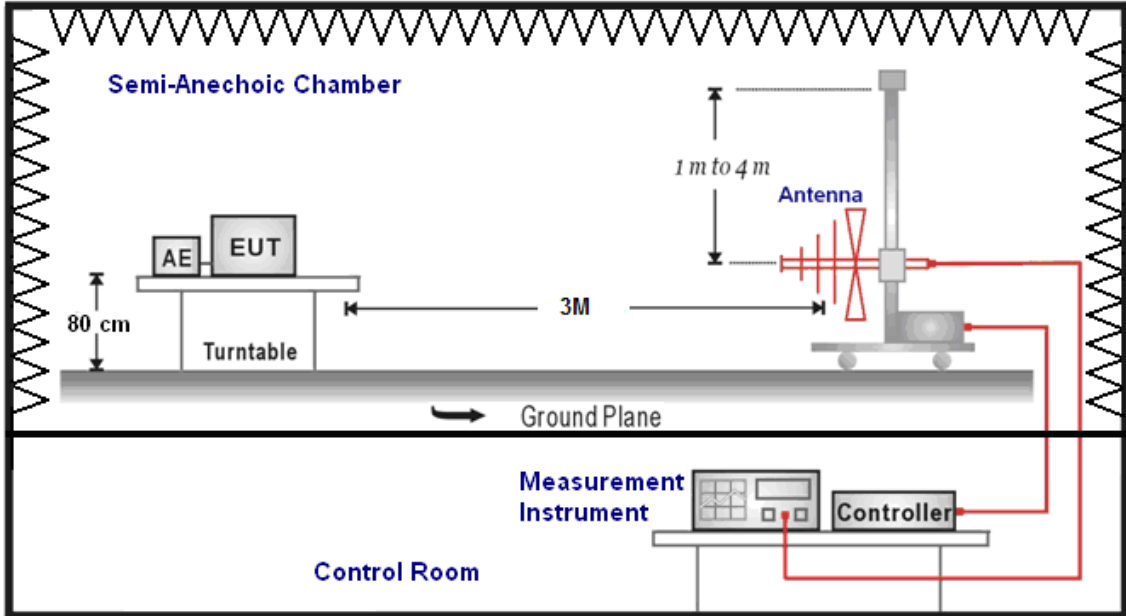
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/21/2013	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/21/2013	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2013	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2013	(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	08/27/2013	(1)

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

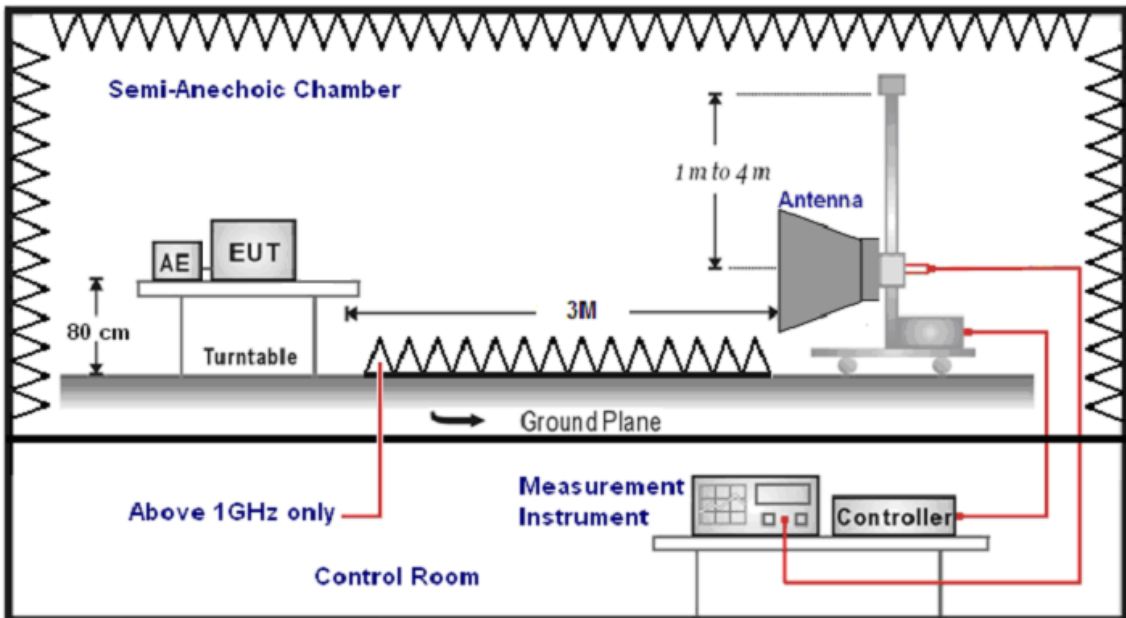
Note: N.C.R. = No Calibration Request.

4.3. Setup

Below 1GHz



Above 1GHz



4.4. 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.

4.5. Test Result

Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	09/12/2013
		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
200.0000	48.61	-13.89	34.72	43.50	-8.78	QP	H
272.0000	45.71	-11.48	34.23	46.00	-11.77	QP	H
399.0000	45.65	-8.60	37.05	46.00	-8.95	QP	H
558.5000	37.00	-6.33	30.67	46.00	-15.33	QP	H
644.5000	32.16	-4.16	28.00	46.00	-18.00	QP	H
798.5000	36.45	-1.57	34.88	46.00	-11.12	QP	H
199.0000	48.40	-13.89	34.51	43.50	-8.99	QP	V
398.5000	47.72	-8.60	39.12	46.00	-6.88	QP	V
501.0000	44.52	-6.79	37.73	46.00	-8.27	QP	V
530.0000	44.59	-6.64	37.95	46.00	-8.05	QP	V
637.5000	38.01	-4.28	33.73	46.00	-12.27	QP	V
796.5000	39.32	-1.62	37.70	46.00	-8.30	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:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/12/2013
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
2974.000	37.00	5.84	42.84	74.00	-31.16	peak	H
4577.000	34.67	11.07	45.74	74.00	-28.26	peak	H
6397.000	33.49	17.10	50.59	74.00	-23.41	peak	H
2953.000	37.46	5.79	43.25	74.00	-30.75	peak	V
4598.000	36.16	11.14	47.30	74.00	-26.70	peak	V
6313.000	32.85	16.84	49.69	74.00	-24.31	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/12/2013
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
3030.000	36.70	5.97	42.67	74.00	-31.33	peak	H
4619.000	34.68	11.19	45.87	74.00	-28.13	peak	H
6362.000	32.23	16.99	49.22	74.00	-24.78	peak	H
3051.000	38.67	6.02	44.69	74.00	-29.31	peak	V
4577.000	35.70	11.07	46.77	74.00	-27.23	peak	V
6369.000	33.67	17.00	50.67	74.00	-23.33	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	2			Date:	09/12/2013		
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	37.20	5.64	42.84	74.00	-31.16	peak	H
4577.000	36.17	11.07	47.24	74.00	-26.76	peak	H
6271.000	33.17	16.71	49.88	74.00	-24.12	peak	H
2925.000	38.36	5.72	44.08	74.00	-29.92	peak	V
4598.000	34.91	11.14	46.05	74.00	-27.95	peak	V
6271.000	32.74	16.71	49.45	74.00	-24.55	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	09/12/2013		
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
2974.000	37.93	5.84	43.77	74.00	-30.23	peak	H
4570.000	35.48	11.06	46.54	74.00	-27.46	peak	H
6411.000	33.18	17.14	50.32	74.00	-23.68	peak	H
2981.000	37.05	5.86	42.91	74.00	-31.09	peak	V
4577.000	34.99	11.07	46.06	74.00	-27.94	peak	V
6369.000	32.83	17.00	49.83	74.00	-24.17	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	09/12/2013		
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
3009.000	38.46	5.93	44.39	74.00	-29.61	peak	H
4577.000	35.33	11.07	46.40	74.00	-27.60	peak	H
6362.000	32.71	16.99	49.70	74.00	-24.30	peak	H
3002.000	37.62	5.91	43.53	74.00	-30.47	peak	V
4563.000	35.50	11.05	46.55	74.00	-27.45	peak	V
6229.000	32.76	16.58	49.34	74.00	-24.66	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	09/12/2013		
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
2946.000	37.35	5.76	43.11	74.00	-30.89	peak	H
4577.000	35.30	11.07	46.37	74.00	-27.63	peak	H
6243.000	34.06	16.63	50.69	74.00	-23.31	peak	H
3219.000	37.38	6.39	43.77	74.00	-30.23	peak	V
4570.000	35.51	11.06	46.57	74.00	-27.43	peak	V
6411.000	33.46	17.14	50.60	74.00	-23.40	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	A4-52ER		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	4		Date:	09/12/2013			
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
3114.000	38.92	6.16	45.08	74.00	-28.92	peak	H
4570.000	35.78	11.06	46.84	74.00	-27.16	peak	H
6362.000	33.25	16.99	50.24	74.00	-23.76	peak	H
2911.000	38.19	5.68	43.87	74.00	-30.13	peak	V
4577.000	34.69	11.07	45.76	74.00	-28.24	peak	V
6369.000	33.25	17.00	50.25	74.00	-23.75	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	A4-52ER		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	4		Date:	09/12/2013			
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
2967.000	36.99	5.82	42.81	74.00	-31.19	peak	H
4563.000	35.04	11.05	46.09	74.00	-27.91	peak	H
6341.000	32.51	16.92	49.43	74.00	-24.57	peak	H
3037.000	37.48	5.99	43.47	74.00	-30.53	peak	V
4598.000	34.97	11.14	46.11	74.00	-27.89	peak	V
6341.000	33.99	16.92	50.91	74.00	-23.09	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	09/12/2013		
Frequency:	2462MHz			Test By:	Fly Lu		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2967.000	38.62	5.82	44.44	74.00	-29.56	peak	H
4577.000	34.57	11.07	45.64	74.00	-28.36	peak	H
6362.000	32.81	16.99	49.80	74.00	-24.20	peak	H
2967.000	37.19	5.82	43.01	74.00	-30.99	peak	V
4577.000	35.66	11.07	46.73	74.00	-27.27	peak	V
6362.000	33.30	16.99	50.29	74.00	-23.71	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	A4-52ER			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	5			Date:	09/12/2013		
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
3037.000	37.22	5.99	43.21	74.00	-30.79	peak	H
4542.000	34.59	10.99	45.58	74.00	-28.42	peak	H
6362.000	33.89	16.99	50.88	74.00	-23.12	peak	H
2925.000	37.89	5.72	43.61	74.00	-30.39	peak	V
4563.000	36.19	11.05	47.24	74.00	-26.76	peak	V
6362.000	33.58	16.99	50.57	74.00	-23.43	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	A4-52ER		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	09/12/2013			
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
3037.000	38.64	5.99	44.63	74.00	-29.37	peak	H
4542.000	36.60	10.99	47.59	74.00	-26.41	peak	H
6243.000	33.60	16.63	50.23	74.00	-23.77	peak	H
3002.000	36.64	5.91	42.55	74.00	-31.45	peak	V
4577.000	35.00	11.07	46.07	74.00	-27.93	peak	V
6362.000	32.17	16.99	49.16	74.00	-24.84	peak	V

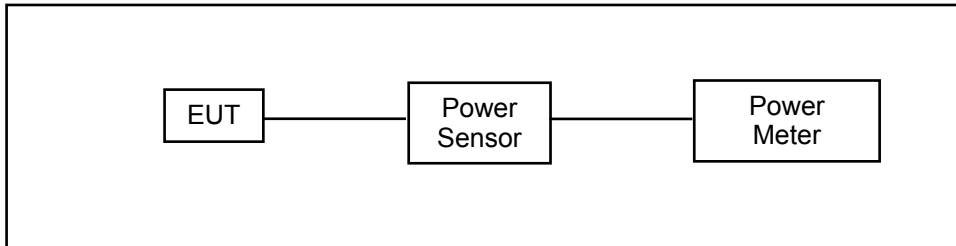
Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	A4-52ER		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	09/12/2013			
Frequency:	2452MHz		Test By:	Fly Lu			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3107.000	38.40	6.14	44.54	74.00	-29.46	peak	H
4577.000	35.41	11.07	46.48	74.00	-27.52	peak	H
6243.000	33.25	16.63	49.88	74.00	-24.12	peak	H
3030.000	36.50	5.97	42.47	74.00	-31.53	peak	V
4598.000	35.60	11.14	46.74	74.00	-27.26	peak	V
6362.000	33.56	16.99	50.55	74.00	-23.45	peak	V

5 Maximum Conducted Output Power Measurement

5.1. Limit

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

5.2. Test Setup



5.3. 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.

5.4. 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.

5.5. Test Result

Model Number	A4-52ER					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 2: IEEE 802.11b Link Mode					
Date of Test	09/11/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	1M	12.45	0.018	14.75	0.030	< 30
2437		12.69	0.019	14.99	0.032	< 30
2462		12.54	0.018	14.89	0.031	< 30
2437	2M	12.65	0.018	14.95	0.031	< 30
2437	5.5M	12.64	0.018	14.93	0.031	< 30
2437	11M	12.62	0.018	14.87	0.031	< 30

Model Number	A4-52ER					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 3: IEEE 802.11g Link Mode					
Date of Test	09/11/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6M	12.32	0.017	20.32	0.108	< 30
2437		12.72	0.019	20.97	0.125	< 30
2462		12.69	0.019	20.41	0.110	< 30
2437	9M	12.28	0.017	20.56	0.114	< 30
2437	12M	12.54	0.018	20.57	0.114	< 30
2437	18M	12.59	0.018	20.79	0.120	< 30
2437	24M	12.58	0.018	20.77	0.119	< 30
2437	36M	12.56	0.018	20.71	0.118	< 30
2437	48M	12.54	0.018	20.67	0.117	< 30
2437	54M	12.51	0.018	20.59	0.115	< 30

Model Number	A4-52ER					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode					
Date of Test	09/11/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6.5M	11.76	0.015	20.19	0.104	< 30
2437		11.58	0.014	19.97	0.099	< 30
2462		11.78	0.015	20.29	0.107	< 30
2412	13M	11.55	0.014	19.89	0.097	< 30
2437	19.5M	11.52	0.014	19.85	0.097	< 30
2437	26M	11.50	0.014	19.81	0.096	< 30
2437	39M	11.49	0.014	19.78	0.095	< 30
2437	52M	11.46	0.014	19.72	0.094	< 30
2437	58.5M	11.45	0.014	19.65	0.092	< 30
2462	65M	11.47	0.014	19.68	0.093	< 30

Model Number	A4-52ER					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode					
Date of Test	09/11/2013			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2422	13.5M	11.26	0.013	20.05	0.101	< 30
2437		11.39	0.014	20.25	0.106	< 30
2452		11.27	0.013	20.06	0.101	< 30
2422	27M	11.37	0.014	20.20	0.105	< 30
2437	40.5M	11.35	0.014	20.15	0.104	< 30
2437	54M	11.33	0.014	20.11	0.103	< 30
2437	81M	11.29	0.013	20.08	0.102	< 30
2437	108M	11.26	0.013	20.03	0.101	< 30
2437	121.5M	11.25	0.013	19.93	0.098	< 30
2452	135M	11.24	0.013	19.87	0.097	< 30

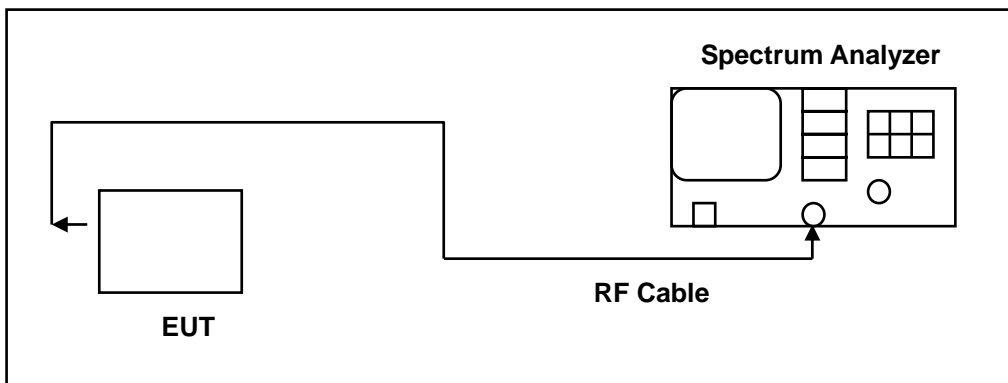
6 6dB RF Bandwidth and 99 % Occupied Bandwidth Measurement

6.1. 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

6.2. Test Setup



6.3. 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.

6.4. 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.

6.5. Test Result

Model Number	A4-52ER		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	10.103	13.9622	> 0.500
2437	10.121	14.0269	> 0.500
2462	10.123	13.9888	> 0.500

Model Number	A4-52ER		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	16.555	16.6018	> 0.500
2437	16.544	16.6084	> 0.500
2462	16.568	16.5996	> 0.500

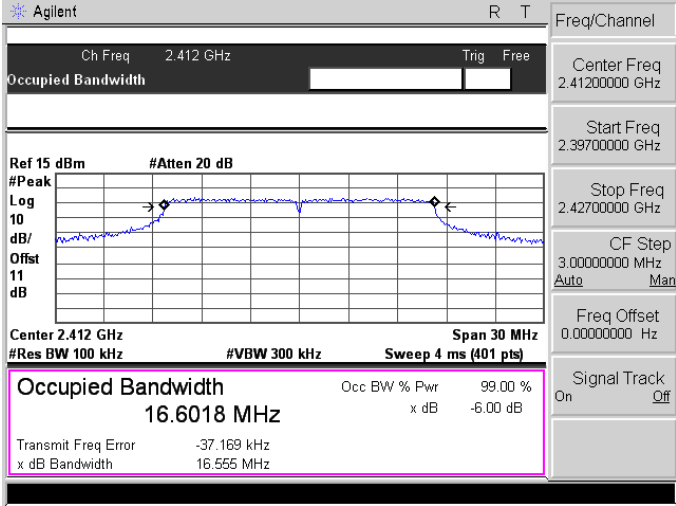
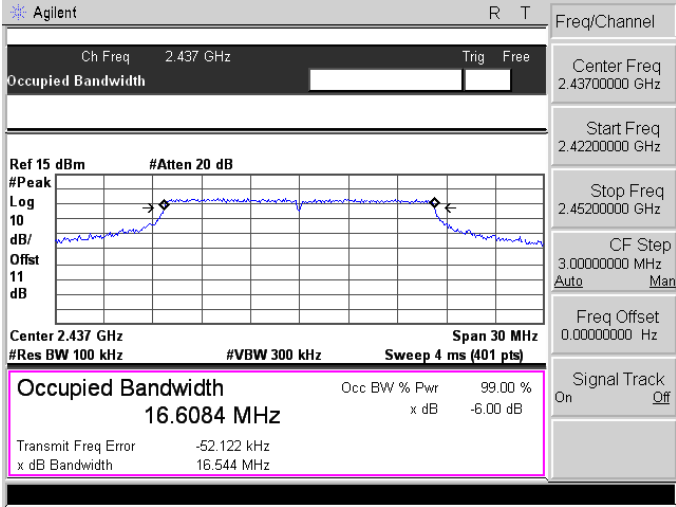
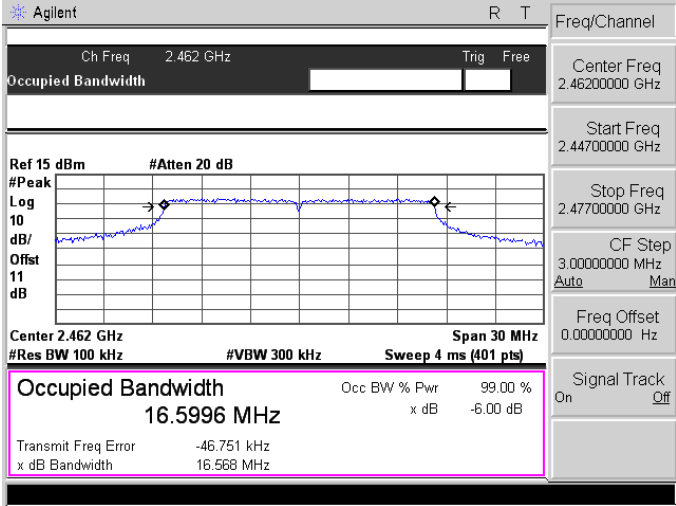
Model Number	A4-52ER		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	17.818	17.6990	> 0.500
2437	17.762	17.7142	> 0.500
2462	17.800	17.7502	> 0.500

Model Number	A4-52ER		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2422	36.586	36.1853	> 0.500
2437	36.503	36.1783	> 0.500
2452	36.587	36.2083	> 0.500

6.6. 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>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 13.9622 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -35.396 kHz</p> <p>x dB Bandwidth 10.103 MHz</p> <p>Freq/Channel</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>
2437	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 14.0269 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -51.057 kHz</p> <p>x dB Bandwidth 10.121 MHz</p> <p>Freq/Channel</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>
2462	<p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 13.9888 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -45.505 kHz</p> <p>x dB Bandwidth 10.123 MHz</p> <p>Freq/Channel</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>

Mode 3: IEEE 802.11g Link Mode

<p>2412</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 11 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 16.6018 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -37.169 kHz</p> <p>x dB Bandwidth 16.555 MHz</p> <p>Freq/Channel</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>2437</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 11 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 16.6084 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -52.122 kHz</p> <p>x dB Bandwidth 16.544 MHz</p> <p>Freq/Channel</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>2462</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 11 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>Occupied Bandwidth 16.5996 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -46.751 kHz</p> <p>x dB Bandwidth 16.568 MHz</p> <p>Freq/Channel</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>

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

<p>2412</p>	<p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.412 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>17.6990 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-12.623 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.818 MHz</td> <td></td> </tr> </table> <p>Freq/Channel</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>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	17.6990 MHz	x dB	-6.00 dB	Transmit Freq Error	-12.623 kHz		x dB Bandwidth	17.818 MHz	
Occupied Bandwidth	Occ BW % Pwr	99.00 %											
17.6990 MHz	x dB	-6.00 dB											
Transmit Freq Error	-12.623 kHz												
x dB Bandwidth	17.818 MHz												
<p>2437</p>	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.437 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>17.7142 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-40.518 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.762 MHz</td> <td></td> </tr> </table> <p>Freq/Channel</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>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	17.7142 MHz	x dB	-6.00 dB	Transmit Freq Error	-40.518 kHz		x dB Bandwidth	17.762 MHz	
Occupied Bandwidth	Occ BW % Pwr	99.00 %											
17.7142 MHz	x dB	-6.00 dB											
Transmit Freq Error	-40.518 kHz												
x dB Bandwidth	17.762 MHz												
<p>2462</p>	<p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offset 11 dB</p> <p>Center 2.462 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>17.7502 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-25.095 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.800 MHz</td> <td></td> </tr> </table> <p>Freq/Channel</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>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	17.7502 MHz	x dB	-6.00 dB	Transmit Freq Error	-25.095 kHz		x dB Bandwidth	17.800 MHz	
Occupied Bandwidth	Occ BW % Pwr	99.00 %											
17.7502 MHz	x dB	-6.00 dB											
Transmit Freq Error	-25.095 kHz												
x dB Bandwidth	17.800 MHz												

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

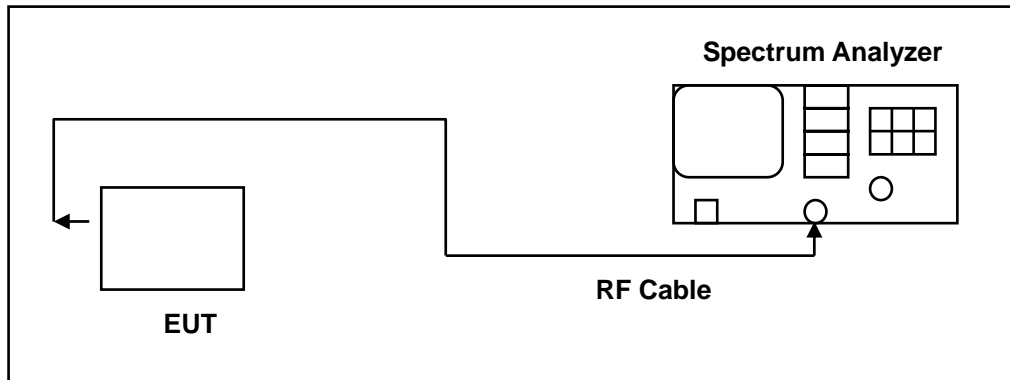
<p>2422</p>	<p>Agilent R T</p> <p>Ch Freq 2.422 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offist 11 dB</p> <p>Center 2.422 GHz Span 50 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.18 ms (401 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 36.1853 MHz x dB -6.00 dB</p> <p>Transmit Freq Error -48.130 kHz x dB Bandwidth 36.586 MHz</p> <p>Freq/Channel Center Freq 2.42200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.44700000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
<p>2437</p>	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offist 11 dB</p> <p>Center 2.437 GHz Span 50 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.18 ms (401 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 36.1783 MHz x dB -6.00 dB</p> <p>Transmit Freq Error -47.417 kHz x dB Bandwidth 36.503 MHz</p> <p>Freq/Channel Center Freq 2.43700000 GHz Start Freq 2.41200000 GHz Stop Freq 2.46200000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
<p>2452</p>	<p>Agilent R T</p> <p>Ch Freq 2.452 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 15 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offist 11 dB</p> <p>Center 2.452 GHz Span 50 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.18 ms (401 pts)</p> <p>Occupied Bandwidth Occ BW % Pwr 99.00 % 36.2083 MHz x dB -6.00 dB</p> <p>Transmit Freq Error -51.973 kHz x dB Bandwidth 36.587 MHz</p> <p>Freq/Channel Center Freq 2.45200000 GHz Start Freq 2.42700000 GHz Stop Freq 2.47700000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>

7 Maximum Power Density Measurement

7.1. 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.

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.	-----

Remark: (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 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.

7.5. Test Result

Model Number	A4-52ER		
Test Item	Maximum Power Density		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-11.49		< 8
2437	-10.74		< 8
2462	-10.23		< 8

Model Number	A4-52ER		
Test Item	Maximum Power Density		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-13.21		< 8
2437	-13.07		< 8
2462	-10.31		< 8

Model Number	A4-52ER		
Test Item	Maximum Power Density		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-13.37		< 8
2437	-12.17		< 8
2462	-12.32		< 8

Model Number	A4-52ER		
Test Item	Maximum Power Density		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	09/11/2013	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2422	-16.93		< 8
2437	-17.01		< 8
2452	-16.37		< 8

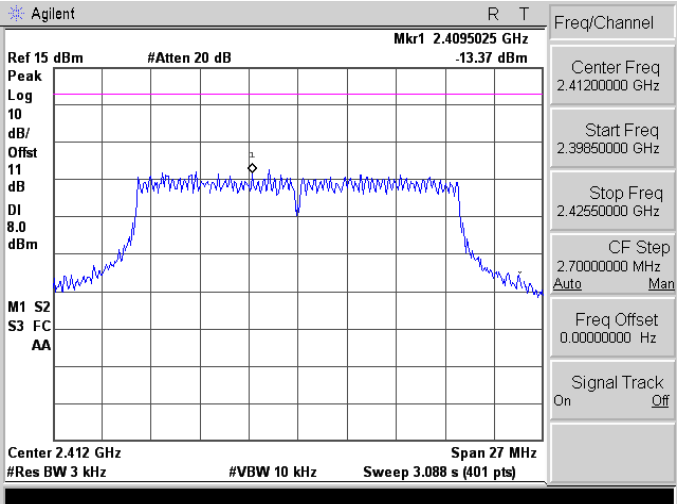
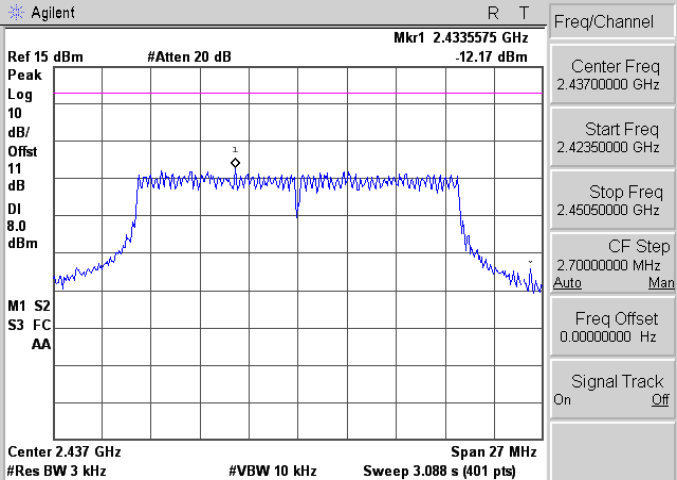
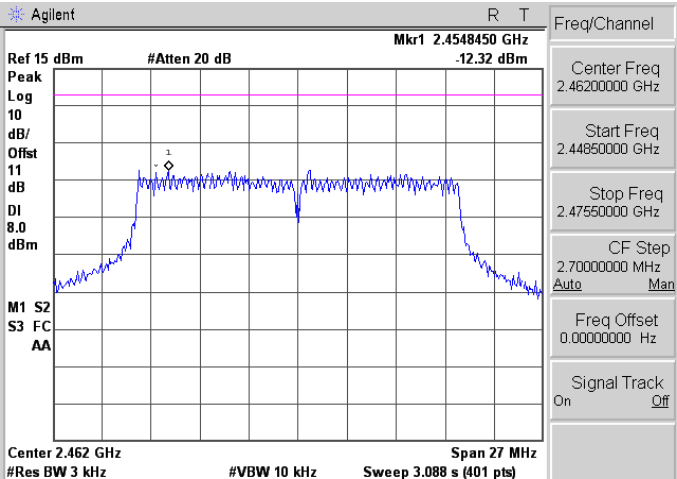
7.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.41284 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.412 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.83 s (401 pts)</p> <p>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</p>
2437	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.43620 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.437 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.83 s (401 pts)</p> <p>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</p>
2462	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.46020 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.462 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.83 s (401 pts)</p> <p>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</p>

Mode 3: IEEE 802.11g Link Mode

<p>2412</p>	
<p>2437</p>	
<p>2462</p>	

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

2412	 <p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.4095025 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.412 GHz Span 27 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 3.088 s (401 pts)</p> <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</p>
2437	 <p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.4335575 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.437 GHz Span 27 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 3.088 s (401 pts)</p> <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</p>
2462	 <p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.4548450 GHz Peak Log 10 dB/Offset 11 dB DI 8.0 dBm M1 S2 S3 FC AA Center 2.462 GHz Span 27 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 3.088 s (401 pts)</p> <p>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</p>

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

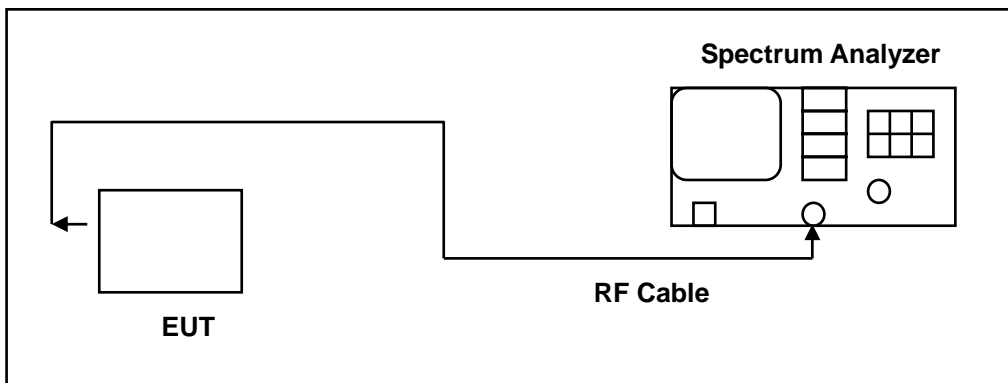
<p>2422</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.41290 GHz -16.93 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI 8.0 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.422 GHz Span 56 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 6.404 s (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.42200000 GHz</p> <p>Start Freq 2.39400000 GHz</p> <p>Stop Freq 2.45000000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44638 GHz -17.01 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI 8.0 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.437 GHz Span 56 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 6.404 s (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.40900000 GHz</p> <p>Stop Freq 2.46500000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
<p>2452</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44822 GHz -16.37 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI 8.0 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.452 GHz Span 56 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 6.404 s (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.45200000 GHz</p> <p>Start Freq 2.42400000 GHz</p> <p>Stop Freq 2.48000000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>

8 Out of Band Conducted Emissions Measurement

8.1. 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

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)
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.

8.4. 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)

8.5. Test Graphs

Reference level

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.41148 GHz 2.734 dBm Peak Log 10 dB/Offst 11 dB M1 S2 S3 FC AA Center 2.412 GHz Span 16 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>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</p>
2437	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.4355150 GHz 2.552 dBm Peak Log 10 dB/Offst 11 dB M1 S2 S3 FC AA Center 2.437 GHz Span 27 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <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</p>
2462	<p>Agilent R T Ref 15 dBm #Atten 20 dB Mkr1 2.46152 GHz 3.059 dBm Peak Log 10 dB/Offst 11 dB M1 S2 S3 FC AA Center 2.462 GHz Span 16 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>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</p>

Mode 3: IEEE 802.11g Link Mode

<p>2412</p>	
<p>2437</p>	
<p>2462</p>	

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

<p>2412</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.4155100 GHz Peak -3.559 dBm</p> <p>Log 10 dB/ dB/ Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.412 GHz Span 27 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <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</p>
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.4399025 GHz Peak -2.921 dBm</p> <p>Log 10 dB/ dB/ Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.437 GHz Span 27 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <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</p>
<p>2462</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.4580175 GHz Peak -2.725 dBm</p> <p>Log 10 dB/ dB/ Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.462 GHz Span 27 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts)</p> <p>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</p>

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

<p>2422</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.40800 GHz 5.94 dBm</p> <p>Peak Log dB/Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.422 GHz Span 56 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.802 ms (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.42200000 GHz</p> <p>Start Freq 2.39400000 GHz</p> <p>Stop Freq 2.45000000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.42930 GHz 5.659 dBm</p> <p>Peak Log dB/Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.437 GHz Span 56 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.802 ms (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.40900000 GHz</p> <p>Stop Freq 2.46500000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
<p>2452</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.43548 GHz 6.163 dBm</p> <p>Peak Log dB/Offst 11 dB</p> <p>M1 S2 S3 FC AA</p> <p>Center 2.452 GHz Span 56 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.802 ms (401 pts)</p> <p>Freq/Channel</p> <p>Center Freq 2.45200000 GHz</p> <p>Start Freq 2.42400000 GHz</p> <p>Stop Freq 2.48000000 GHz</p> <p>CF Step 5.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>

Out of Band Conducted Emissions

Mode 2: IEEE 802.11b Link Mode

<p>2412</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.41 GHz 2.208 dBm</p> <p>Peak Log dB/Offst dB DI -17.3 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.5 GHz 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>2.208 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.79 GHz</td> <td>-38.05 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	2.208 dBm	2	(1)	Freq	4.79 GHz	-38.05 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.41 GHz	2.208 dBm												
2	(1)	Freq	4.79 GHz	-38.05 dBm												
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44 GHz 2.046 dBm</p> <p>Peak Log dB/Offst dB DI -17.5 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.5 GHz 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>2.046 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.86 GHz</td> <td>-38.61 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	2.046 dBm	2	(1)	Freq	4.86 GHz	-38.61 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.44 GHz	2.046 dBm												
2	(1)	Freq	4.86 GHz	-38.61 dBm												
<p>2462</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.46 GHz 3.075 dBm</p> <p>Peak Log dB/Offst dB DI -17.0 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.5 GHz 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>3.075 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>4.93 GHz</td> <td>-41.31 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	3.075 dBm	2	(1)	Freq	4.93 GHz	-41.31 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.46 GHz	3.075 dBm												
2	(1)	Freq	4.93 GHz	-41.31 dBm												

Mode 3: IEEE 802.11g Link Mode

2412	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.41 GHz 2.003 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -21.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>-2.003 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	-2.003 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.41 GHz	-2.003 dBm							
2437	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44 GHz 2.276 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -20.3 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>-2.276 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	-2.276 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.44 GHz	-2.276 dBm							
2462	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.46 GHz -1.005 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -20.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>-1.005 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	-1.005 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.46 GHz	-1.005 dBm							

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

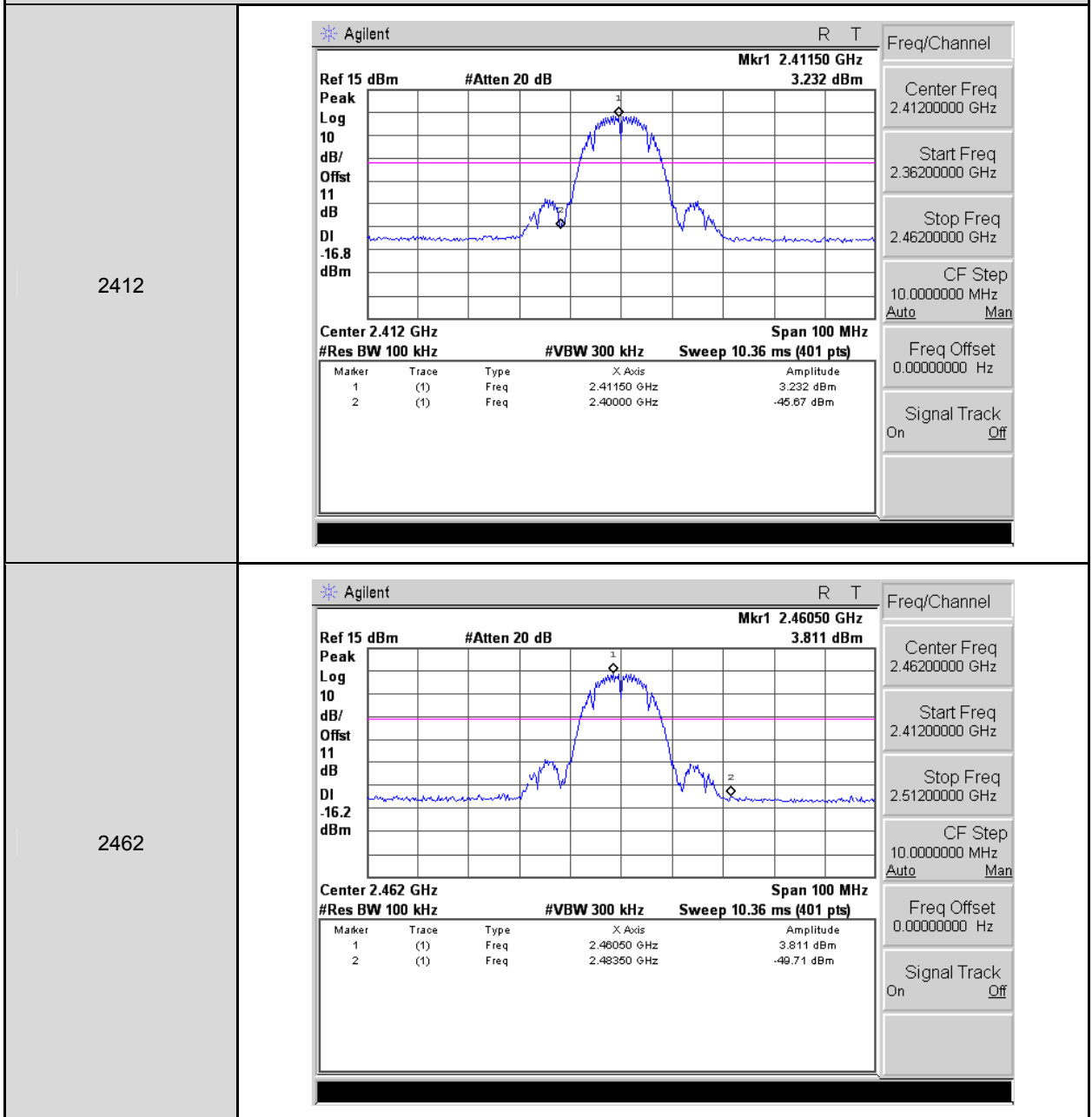
<p>2412</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.41 GHz -4.19 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -23.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.742 s (401 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.41 GHz</td> <td>-4.19 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.41 GHz	-4.19 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.41 GHz	-4.19 dBm							
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44 GHz -4.033 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -22.9 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>-4.033 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	-4.033 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.44 GHz	-4.033 dBm							
<p>2462</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.46 GHz -3.899 dBm</p> <p>Peak Log 10 dB/Offset 11 dB DI -22.7 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>-3.899 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.46 GHz	-3.899 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.46 GHz	-3.899 dBm							

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

<p>2422</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.42 GHz -7.013 dBm</p> <p>Peak Log 10 dB/Offst 11 dB DI -25.9 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>2.42 GHz</td> <td>-7.013 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.42 GHz	-7.013 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.42 GHz	-7.013 dBm							
<p>2437</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.44 GHz -7.023 dBm</p> <p>Peak Log 10 dB/Offst 11 dB DI -25.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>-7.023 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.44 GHz	-7.023 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.44 GHz	-7.023 dBm							
<p>2452</p>	<p>Agilent R T</p> <p>Ref 15 dBm #Atten 20 dB Mkr1 2.45 GHz -6.899 dBm</p> <p>Peak Log 10 dB/Offst 11 dB DI -25.6 dBm</p> <p>Start 30 MHz Stop 26.5 GHz</p> <p>#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>2.45 GHz</td> <td>-6.899 dBm</td> </tr> </tbody> </table> <p>Freq/Channel</p> <p>Center Freq 13.2650000 GHz</p> <p>Start Freq 30.0000000 MHz</p> <p>Stop Freq 26.5000000 GHz</p> <p>CF Step 2.64700000 GHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.45 GHz	-6.899 dBm
Marker	Trace	Type	X Axis	Amplitude							
1	(1)	Freq	2.45 GHz	-6.899 dBm							

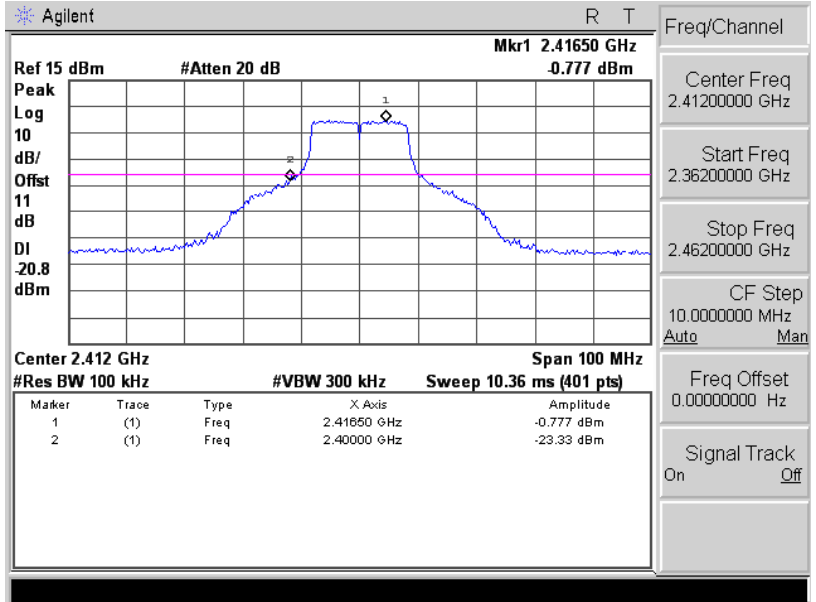
Conducted Band Edge

Mode 2: IEEE 802.11b Link Mode

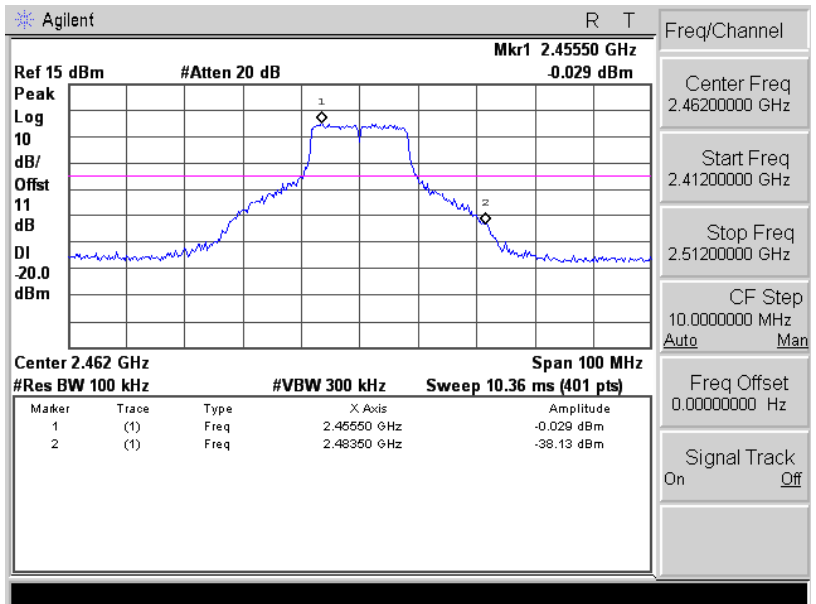


Mode 3: IEEE 802.11g Link Mode

2412

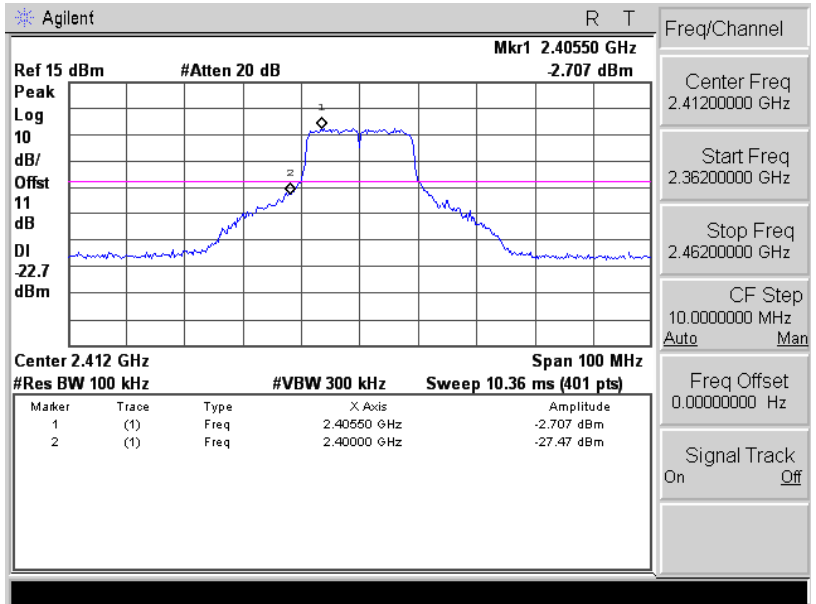


2462

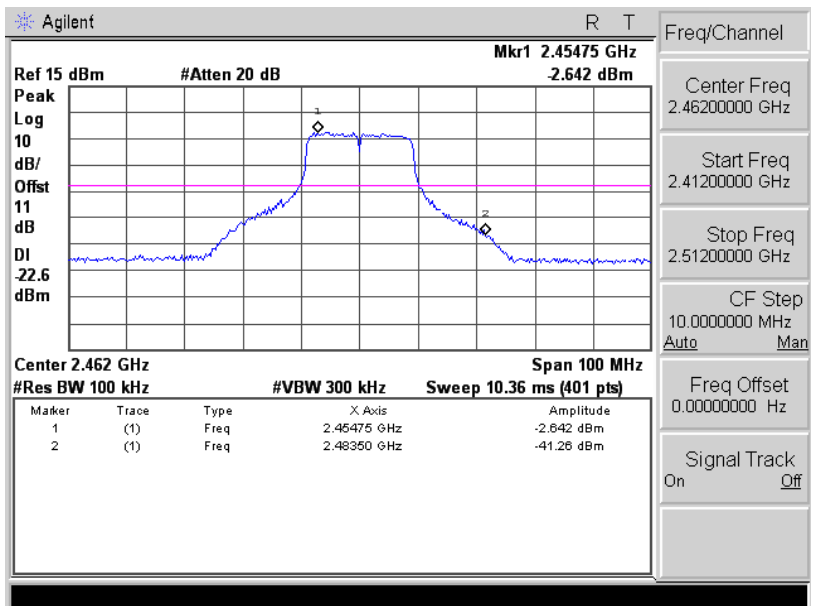


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2412

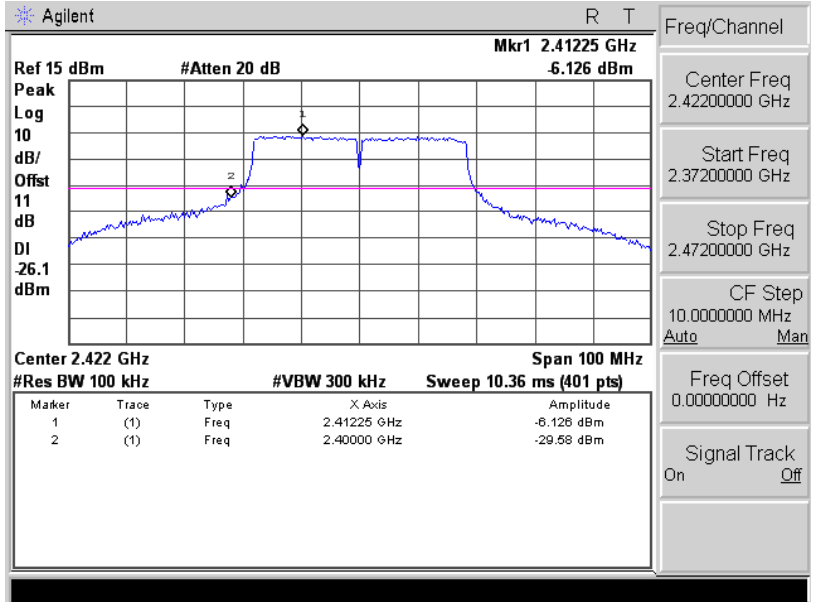


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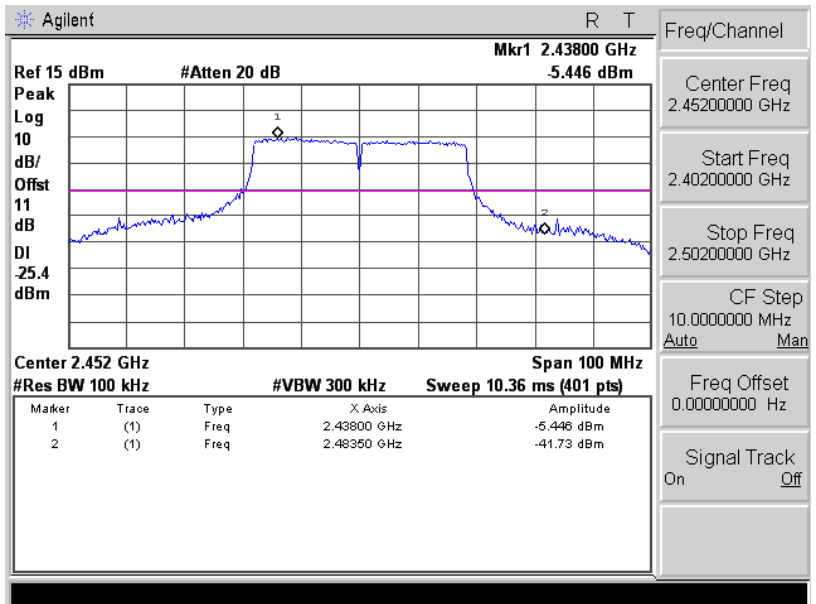


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2422



2452

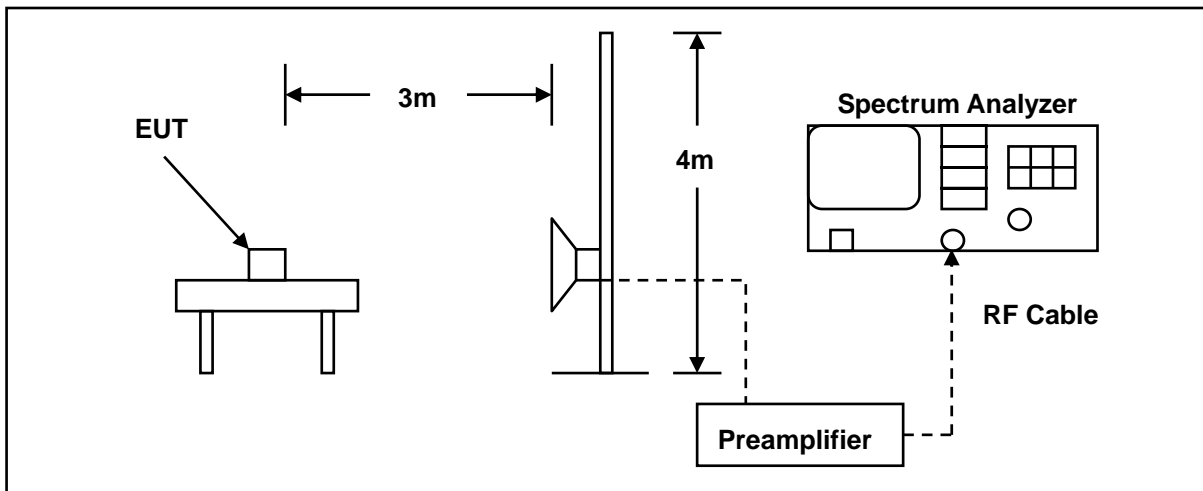


9 Band Edges Measurement

9.1. 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.

9.2. Test Setup



9.3. 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)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2013	(1)
Test Site	ATL	TE01	888001	08/27/2013	(1)

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

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.

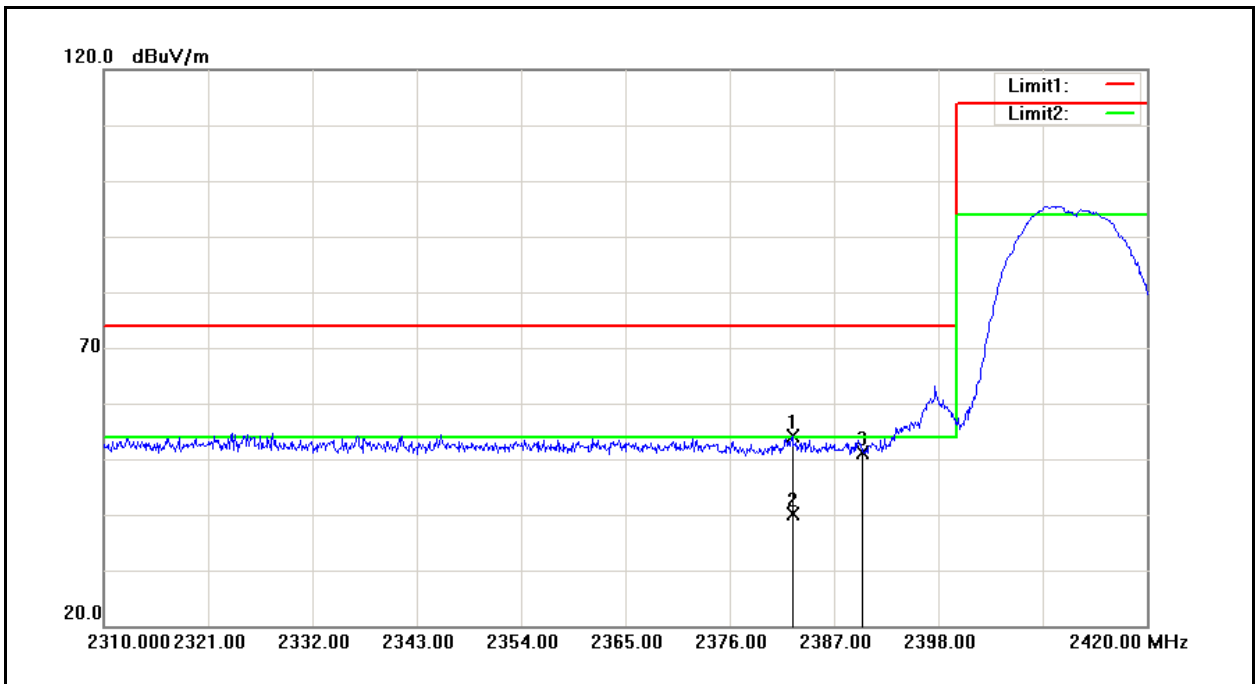
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

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.

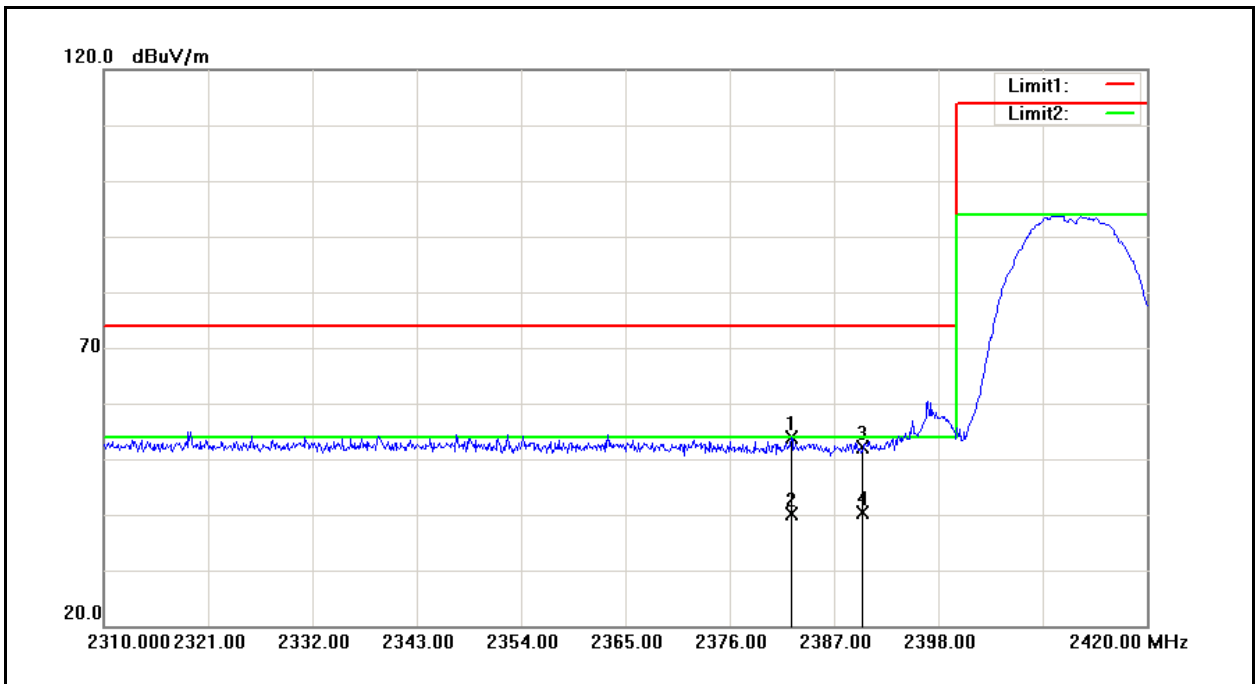
9.5. Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



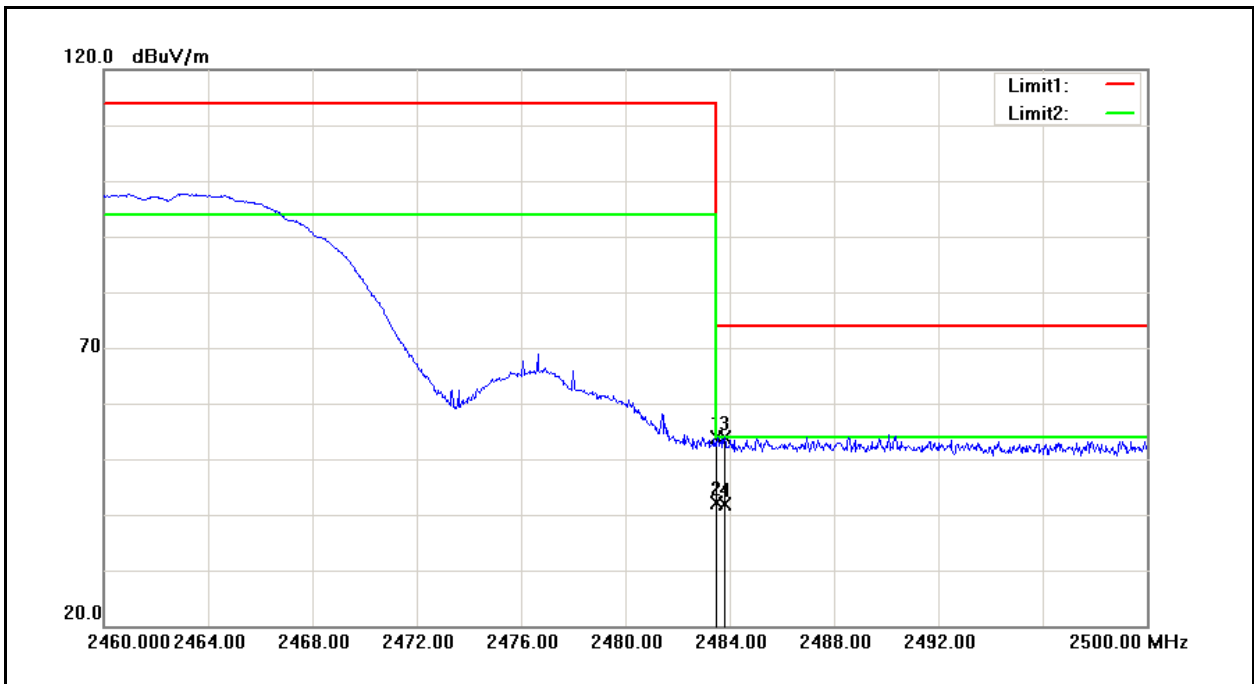
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.600	50.36	3.83	54.19	74.00	-19.81	peak
2	2382.600	36.38	3.83	40.21	54.00	-13.79	AVG
3	2390.000	47.27	3.88	51.15	74.00	-22.85	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



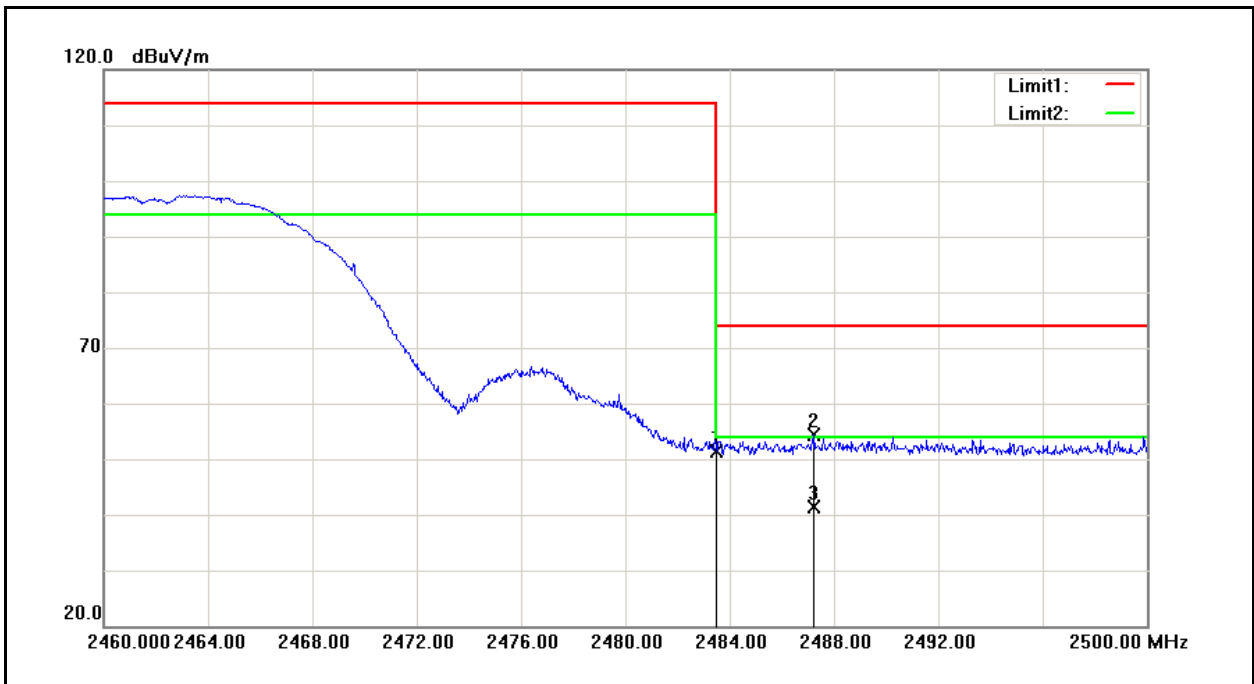
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.490	49.95	3.83	53.78	74.00	-20.22	peak
2	2382.490	36.32	3.83	40.15	54.00	-13.85	AVG
3	2390.000	48.25	3.88	52.13	74.00	-21.87	peak
4	2390.000	36.52	3.88	40.40	54.00	-13.60	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



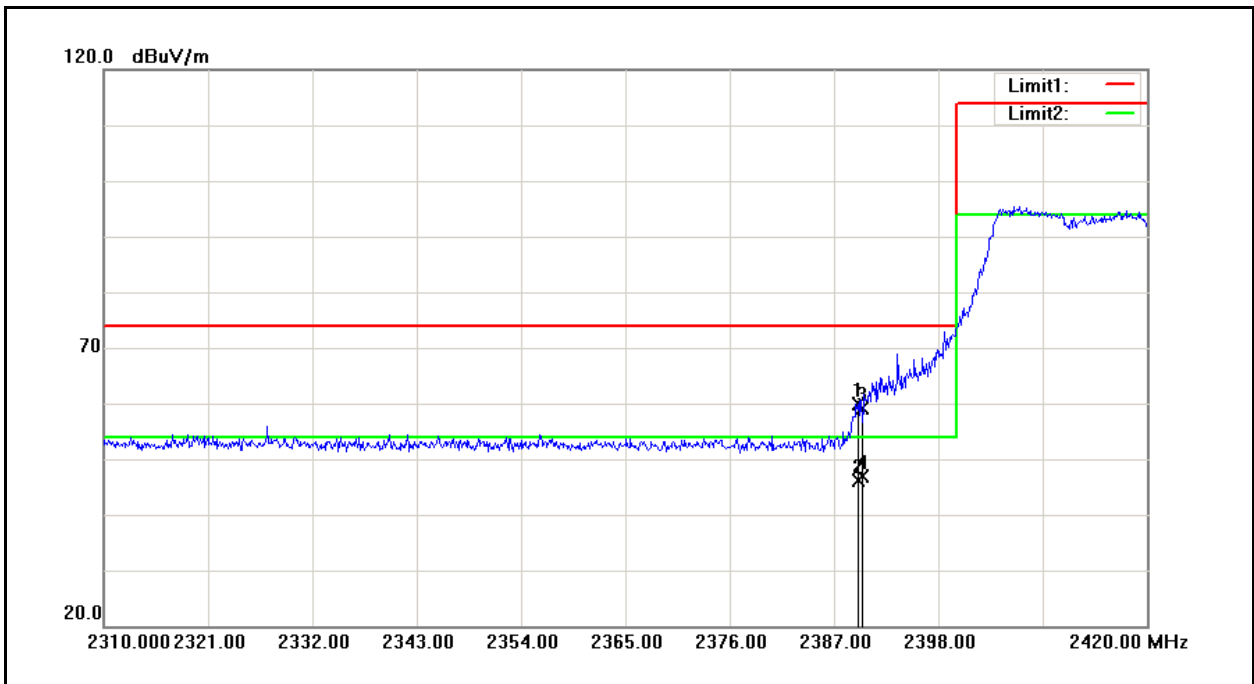
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	49.37	4.50	53.87	74.00	-20.13	peak
2	2483.500	37.63	4.50	42.13	54.00	-11.87	AVG
3	2483.800	49.33	4.51	53.84	74.00	-20.16	peak
4	2483.800	37.46	4.51	41.97	54.00	-12.03	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



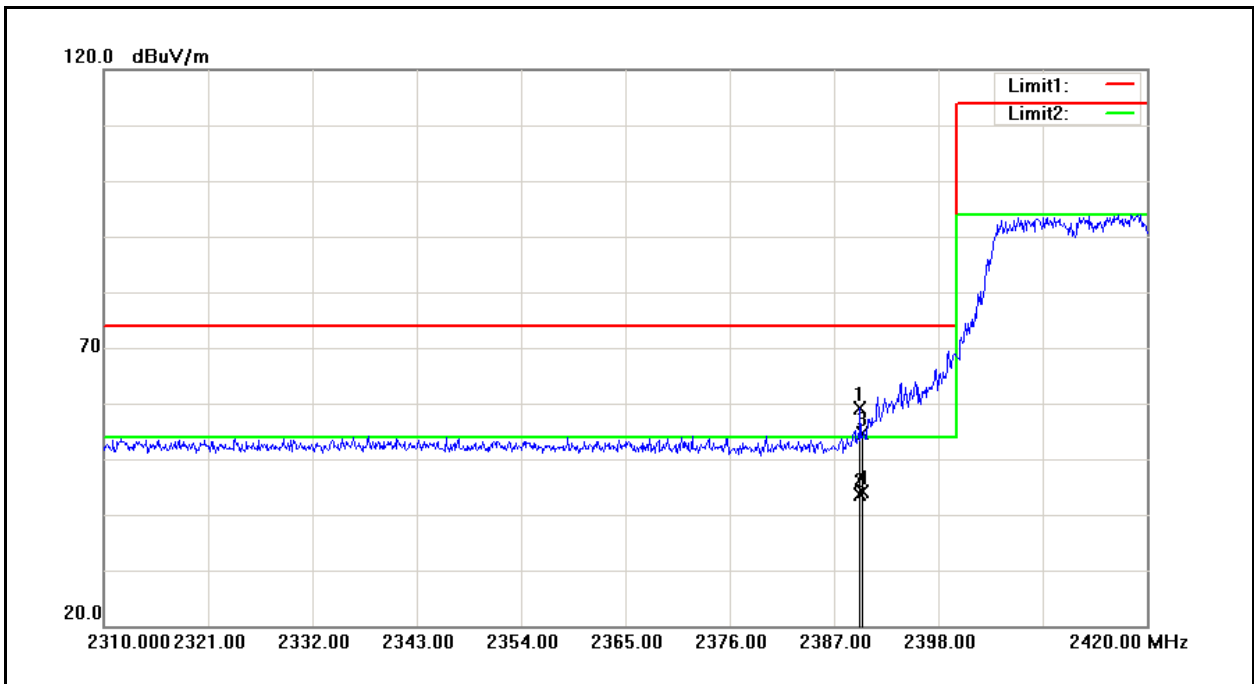
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	46.95	4.50	51.45	74.00	-22.55	peak
2	2487.240	49.76	4.53	54.29	74.00	-19.71	peak
3	2487.240	36.83	4.53	41.36	54.00	-12.64	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



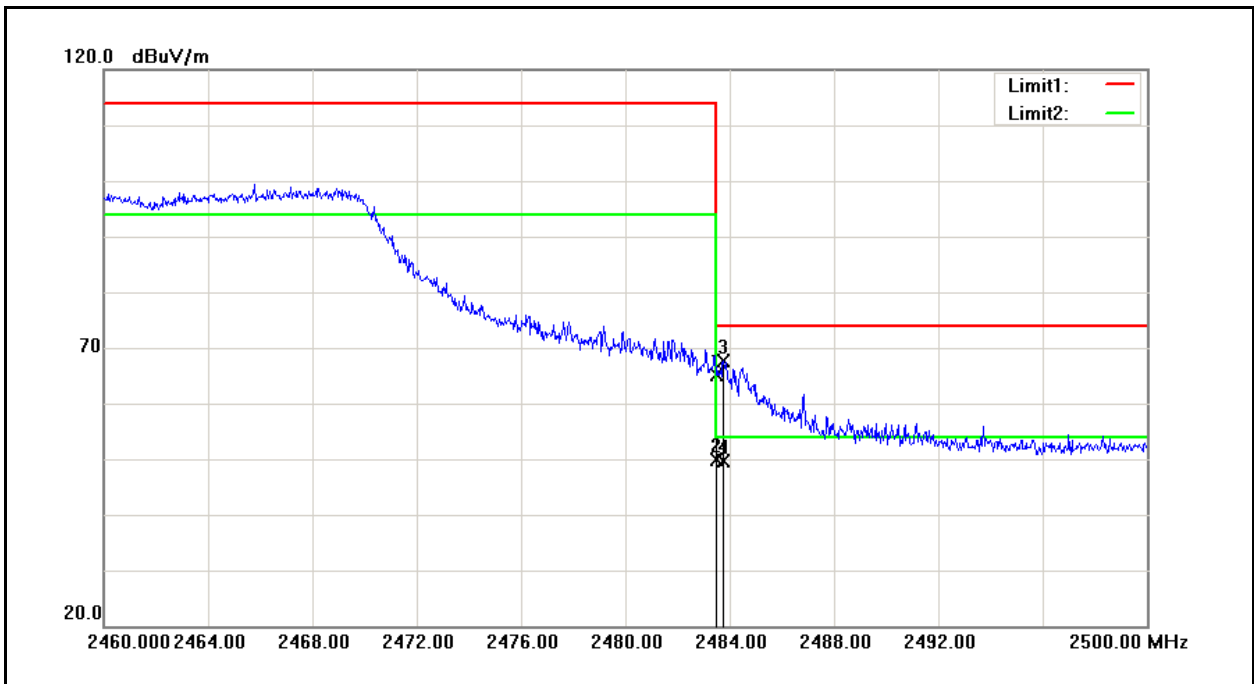
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.530	56.06	3.88	59.94	74.00	-14.06	peak
2	2389.530	42.36	3.88	46.24	54.00	-7.76	AVG
3	2390.000	55.17	3.88	59.05	74.00	-14.95	peak
4	2390.000	43.01	3.88	46.89	54.00	-7.11	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



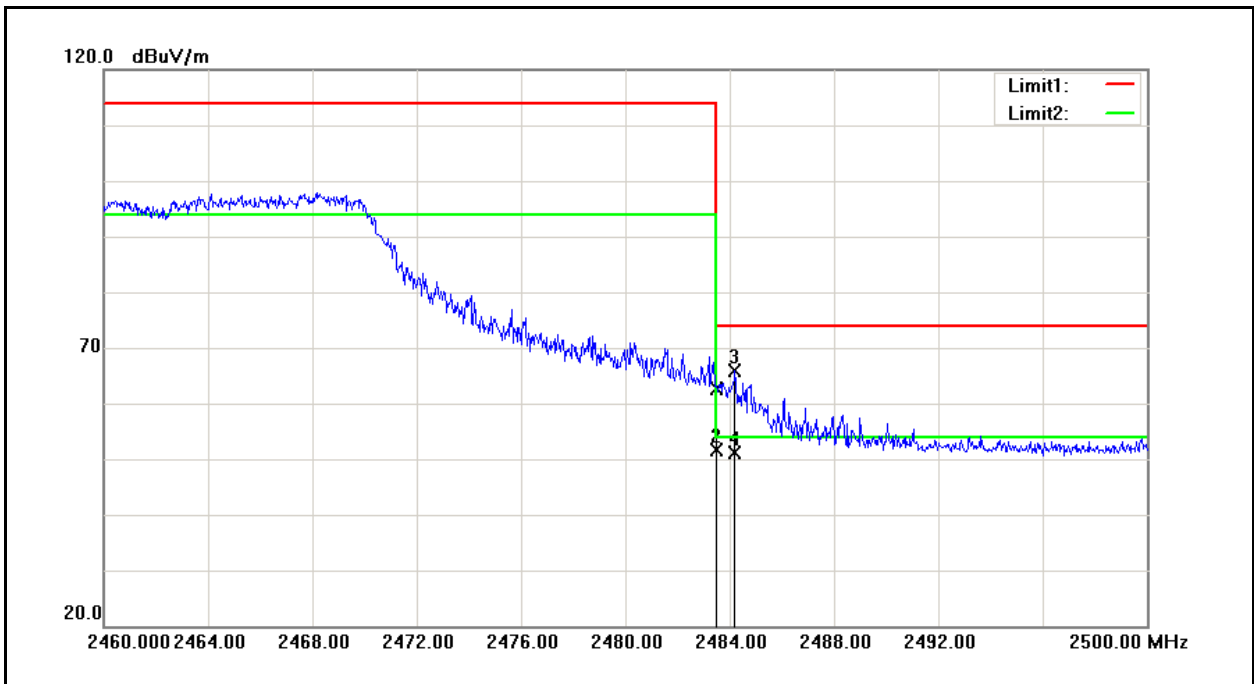
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.750	55.36	3.88	59.24	74.00	-14.76	peak
2	2389.750	39.68	3.88	43.56	54.00	-10.44	AVG
3	2390.000	50.79	3.88	54.67	74.00	-19.33	peak
4	2390.000	40.27	3.88	44.15	54.00	-9.85	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



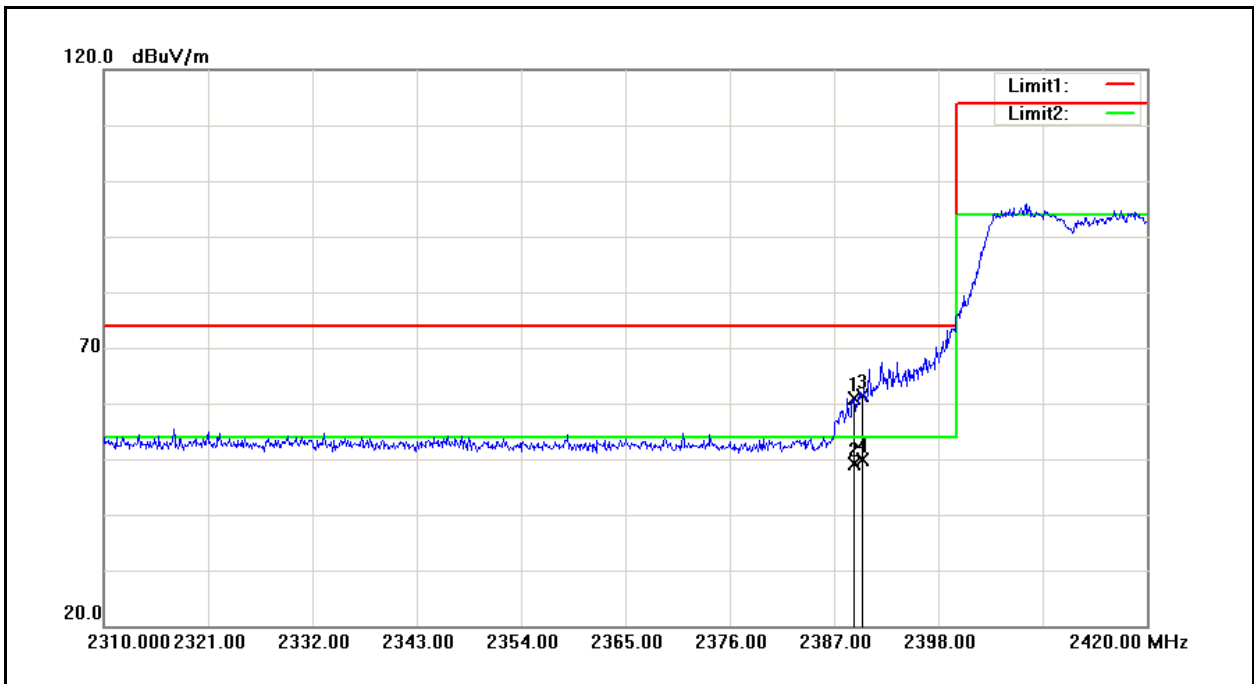
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	60.67	4.50	65.17	74.00	-8.83	peak
2	2483.500	45.29	4.50	49.79	54.00	-4.21	AVG
3	2483.760	63.05	4.51	67.56	74.00	-6.44	peak
4	2483.760	45.12	4.51	49.63	54.00	-4.37	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	3	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



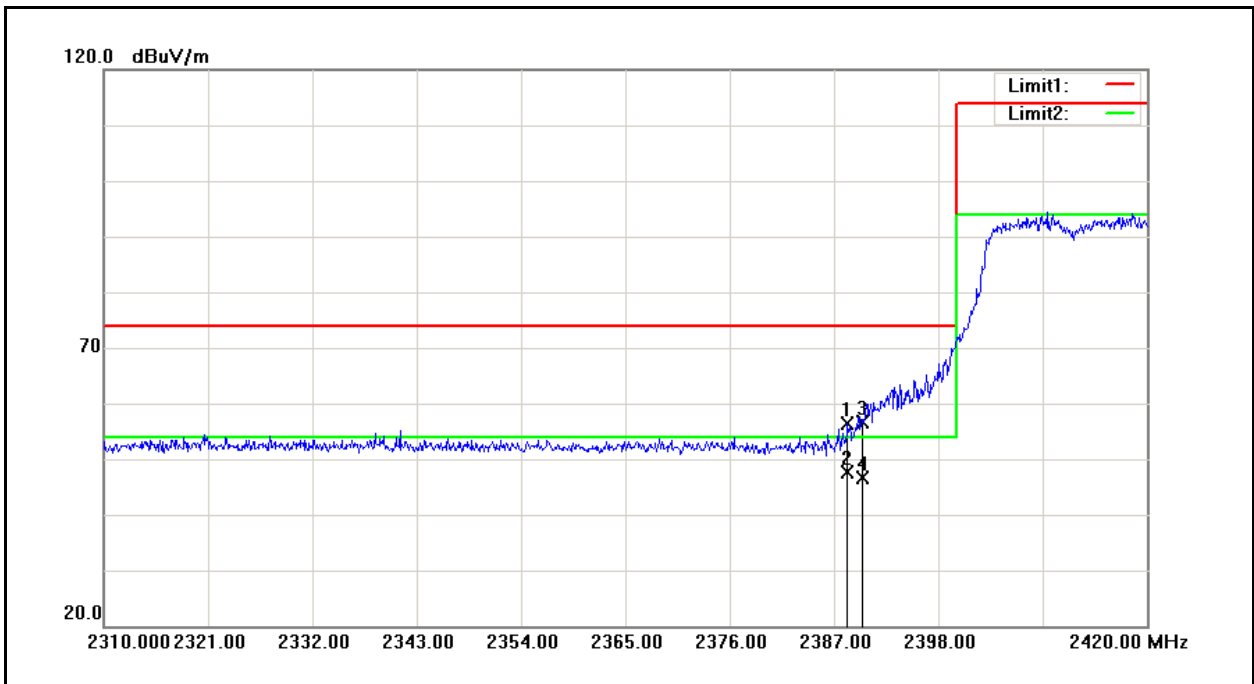
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	58.14	4.50	62.64	74.00	-11.36	peak
2	2483.500	47.17	4.50	51.67	54.00	-2.33	AVG
3	2484.200	61.47	4.51	65.98	74.00	-8.02	peak
4	2484.200	46.61	4.51	51.12	54.00	-2.88	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



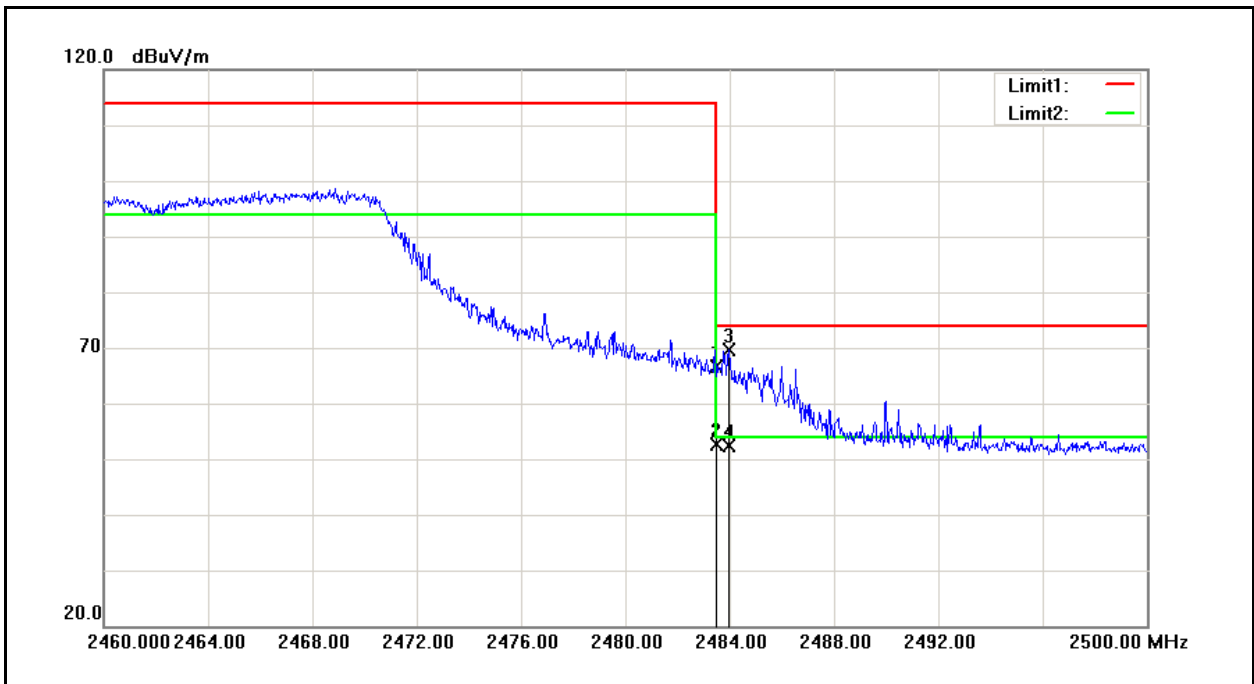
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.090	56.90	3.88	60.78	74.00	-13.22	peak
2	2389.090	45.23	3.88	49.11	54.00	-4.89	AVG
3	2390.000	57.51	3.88	61.39	74.00	-12.61	peak
4	2390.000	45.93	3.88	49.81	54.00	-4.19	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	09/11/2013
Frequency:	2412 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



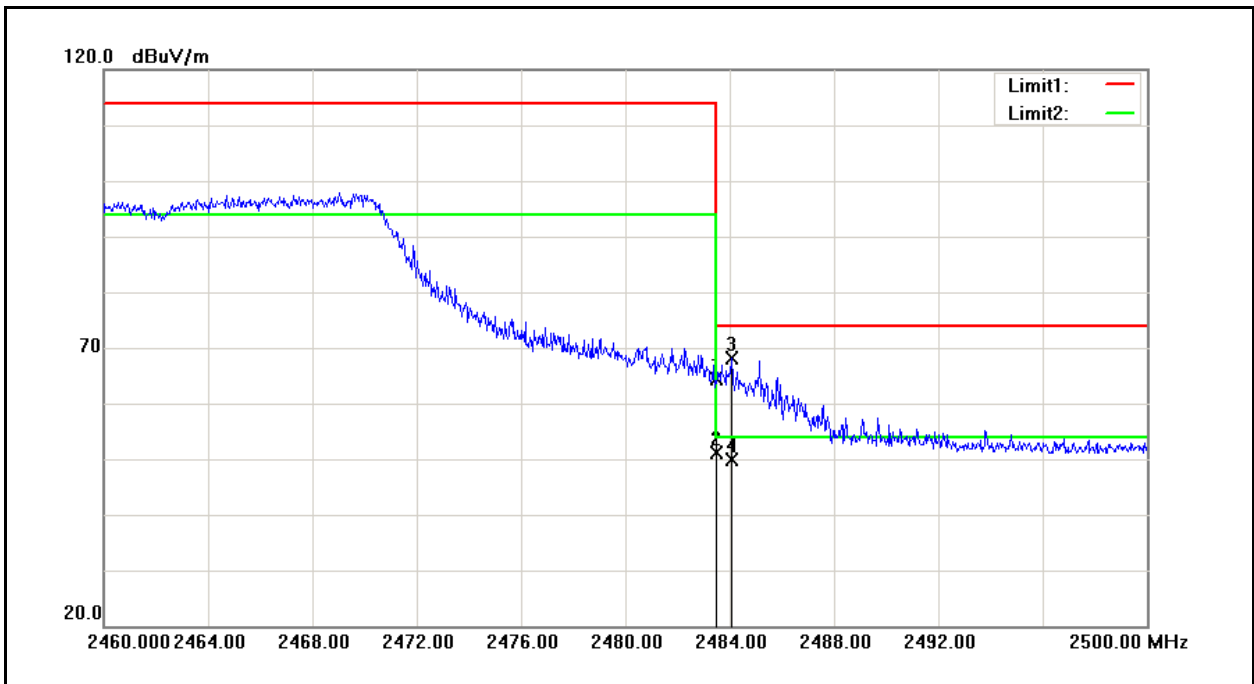
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.430	52.55	3.87	56.42	74.00	-17.58	peak
2	2388.430	43.64	3.87	47.51	54.00	-6.49	AVG
3	2390.000	52.84	3.88	56.72	74.00	-17.28	peak
4	2390.000	42.68	3.88	46.56	54.00	-7.44	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



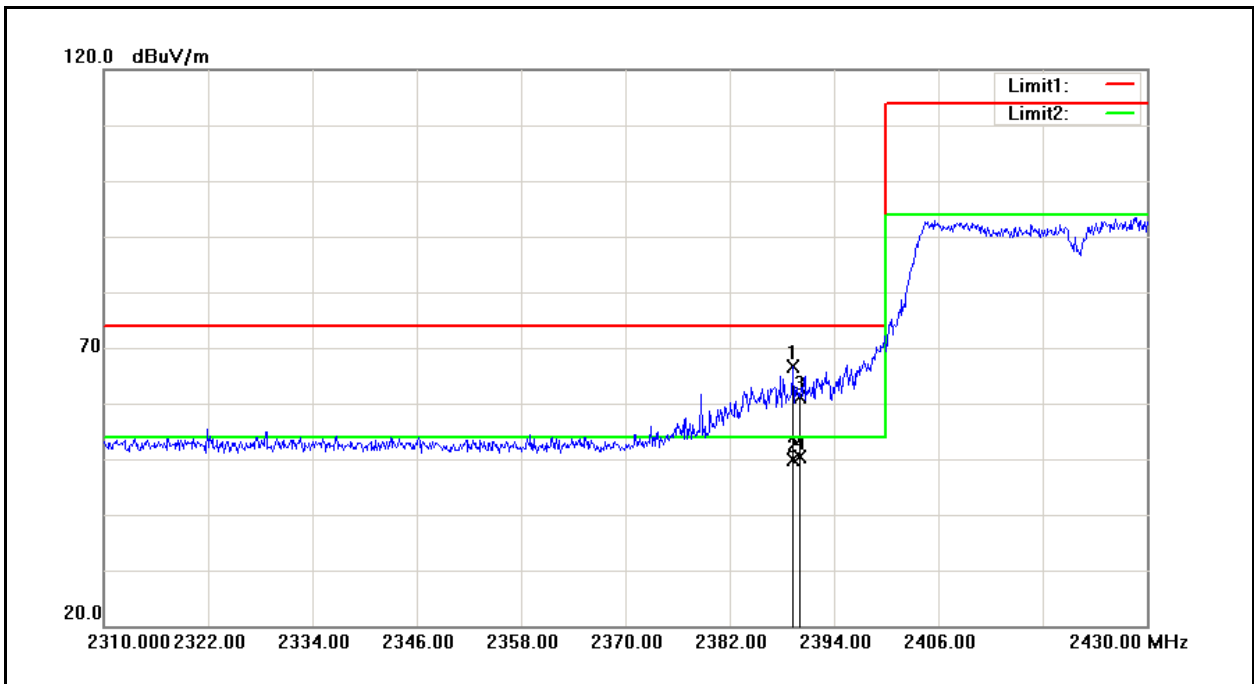
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	62.19	4.50	66.69	74.00	-7.31	peak
2	2483.500	48.18	4.50	52.68	54.00	-1.32	AVG
3	2483.960	65.20	4.51	69.71	74.00	-4.29	peak
4	2483.960	47.98	4.51	52.49	54.00	-1.51	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	4	Date:	09/11/2013
Frequency:	2462 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



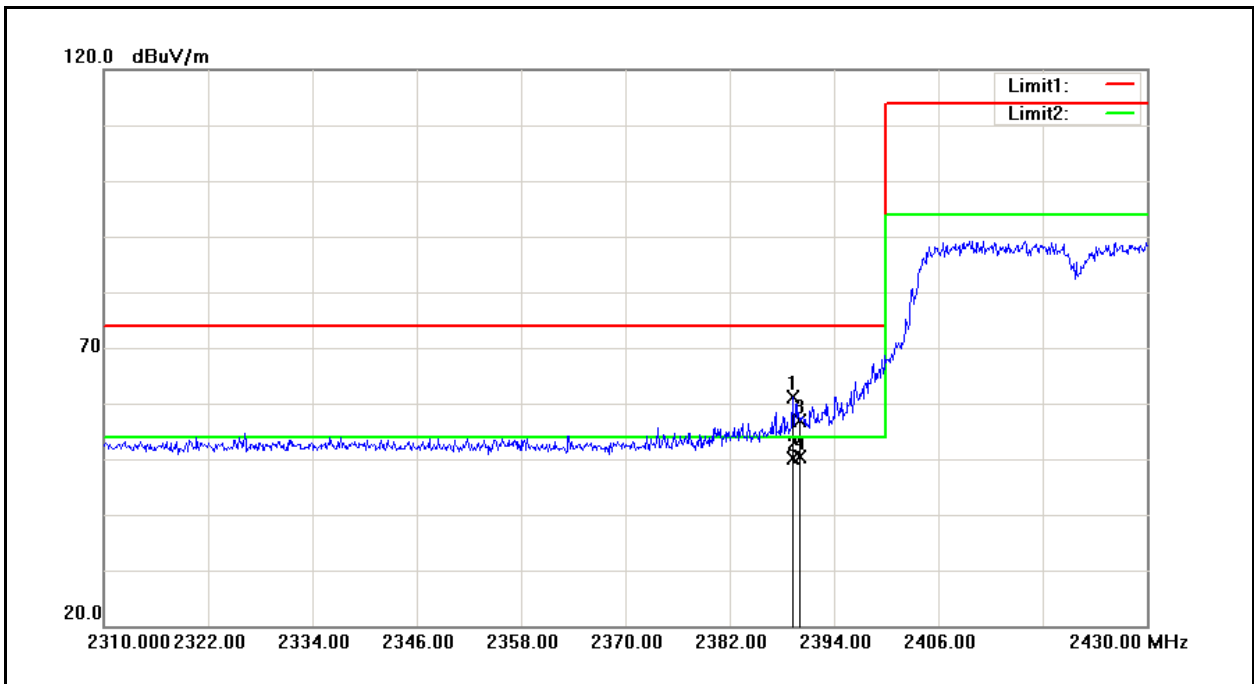
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	59.91	4.50	64.41	74.00	-9.59	peak
2	2483.500	46.52	4.50	51.02	54.00	-2.98	AVG
3	2484.080	63.59	4.51	68.10	74.00	-5.90	peak
4	2484.080	45.43	4.51	49.94	54.00	-4.06	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	09/11/2013
Frequency:	2422 MHz	Test By:	Fly Lu
Ant.Polar.:	Horizontal		



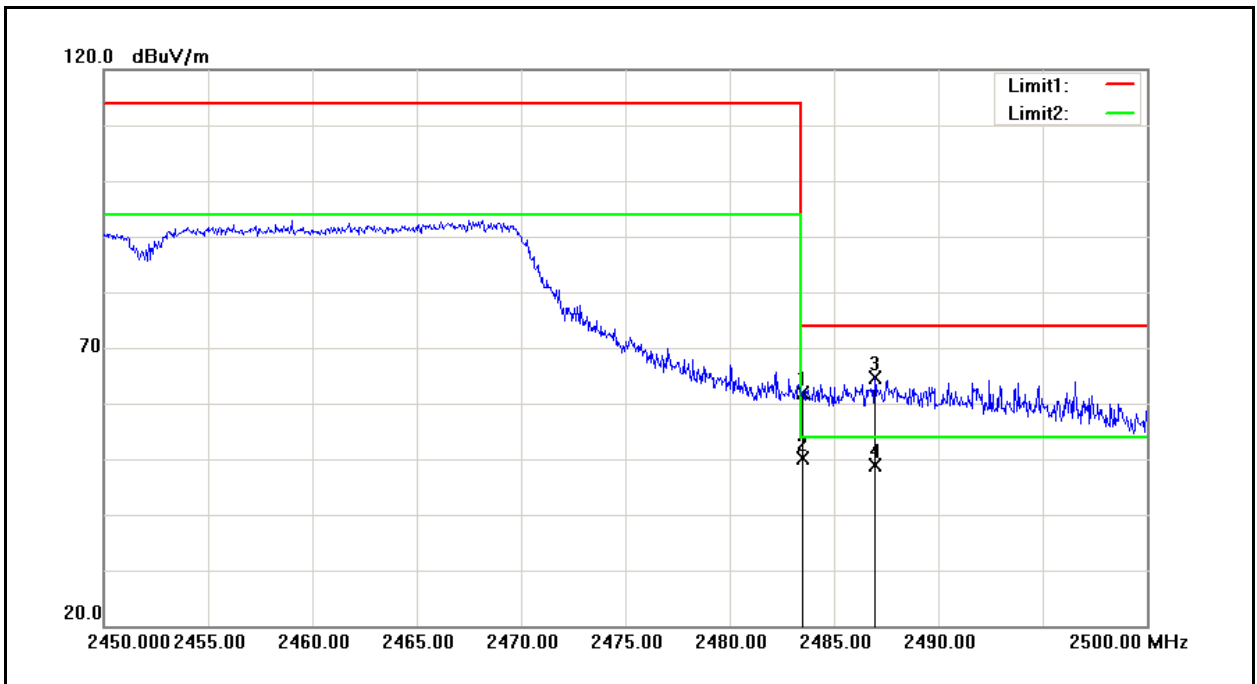
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.320	62.68	3.88	66.56	74.00	-7.44	peak
2	2389.320	46.01	3.88	49.89	54.00	-4.11	AVG
3	2390.000	57.37	3.88	61.25	74.00	-12.75	peak
4	2390.000	46.61	3.88	50.49	54.00	-3.51	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	09/11/2013
Frequency:	2422 MHz	Test By:	Fly Lu
Ant.Polar.:	Vertical		



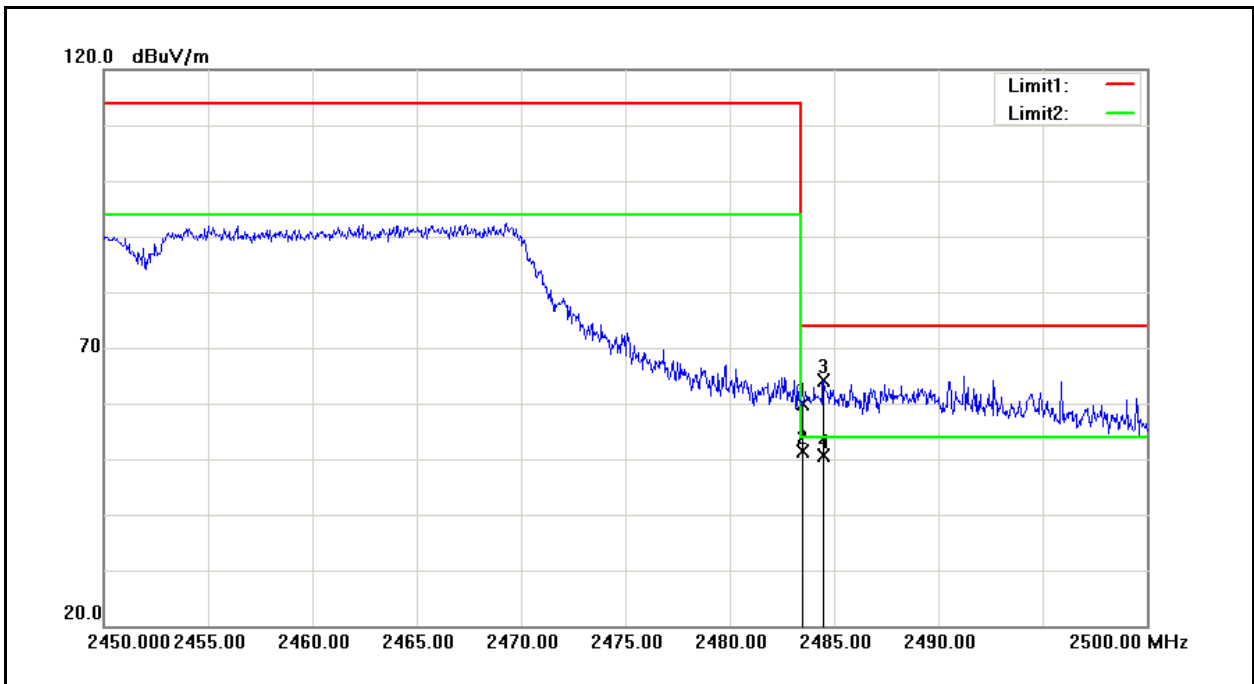
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.200	57.20	3.88	61.08	74.00	-12.92	peak
2	2389.200	46.27	3.88	50.15	54.00	-3.85	AVG
3	2390.000	52.88	3.88	56.76	74.00	-17.24	peak
4	2390.000	46.56	3.88	50.44	54.00	-3.56	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	09/11/2013
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	57.29	4.50	61.79	74.00	-12.21	peak
2	2483.500	45.59	4.50	50.09	54.00	-3.91	AVG
3	2486.950	59.99	4.53	64.52	74.00	-9.48	peak
4	2486.950	44.40	4.53	48.93	54.00	-5.07	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	A4-52ER	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	5	Date:	09/11/2013
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	55.30	4.50	59.80	74.00	-14.20	peak
2	2483.500	46.88	4.50	51.38	54.00	-2.62	AVG
3	2484.500	59.50	4.51	64.01	74.00	-9.99	peak
4	2484.500	46.20	4.51	50.71	54.00	-3.29	AVG

10 Antenna Measurement

10.1.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.

10.2.Antenna Connector Construction

The antenna used in this product is Monopole Antenna. And the maximum Gain of this antenna is 2.6 dBi.