



RF TEST REPORT

Report No.: FCC2012-8706R

Product Name: MID

FCC ID: Q7Q-M1703

Model No. : M1703

Brand Name: *i-mobile*

Applicant: Shenzhen Skyworth Wireless Technology Co., Ltd.

Address: Unit A, Rm 3A01, Skyworth Building, Gaoxin Ave 1S, Nanshan District, Shenzhen, China

Issued by: CCIC-SET

Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055, P. R. China

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Test Report

Product Name.....: MID

Model No.: M1703

Applicant.....: Shenzhen Skyworth Wireless Technology Co., Ltd.

Applicant Address: Unit A, Rm 3A01, Skyworth Building, Gaoxin Ave 1S,
Nanshan District, Shenzhen, China

Manufacturer: Shenzhen Skyworth Wireless Technology Co., Ltd.

Manufacturer Address: Skyworth Industrial Park, Tangtou Village, Shiyan Town,
Baoan District, Shenzhen, Guangdong, China

Test Standards: 47 CFR Part 15 Subpart C: Radio Frequency Devices
ANSI C63.10:2009 : American National Standard for
Testing Unlicensed Wireless Devices
KDB558074 D01 DTS Meas Guidance v02

Test Result.....: PASS

Tested by: Luci Jan 9, 2013
Signature, Date

Reviewed by: Shuangwen Zhang Jan 9, 2013
Signature, Date

Approved by: [Signature] Jan 9, 2013
Signature, Date

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Change History		
Issue	Date	Reason for change
1.0	Jan 09, 2013	First edition



1. GENERAL INFORMATION

1.1 EUT Description

EUT Type : M1703
Serial No..... : (n.a, marked #1 by test site)
FCC ID : Q7Q- M1703
Hardware Version..... : V1.0
Software Version : V1.0
Frequency Range..... : 802.11b/g/n-20MHz: 2.412GHz - 2.462GHz
802.11n-40MHz: 2.422GHz - 2.452GHz
Channel Number : 802.11b/g/n-20MHz: 11
802.11n-40MHz: 7
Modulation Type : DSSS (802.11b), OFDM (802.11g/n)
Antenna Type : PIFA Antenna
Antenna Gain : 2.5dBi

Note 1: The EUT is MID, it contains WIFI Module operating at 2.4GHz ISM band; it supports 802.11b, 802.11g, 802.11n and they are all tested in this report.

Note 2: The frequencies allocated is $F \text{ (MHz)} = 2412 + 5 * (n - 1)$ ($1 \leq n \leq 11$). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 6 (2437MHz) and 11 (2462MHz).

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 4: The antenna connector of EUT is designed with permanent attachment and no consideration of replacement.



1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C (Wi-Fi, 2.4GHz ISM band radiators) for the EUT FCC ID Certification::

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-09 Edition)	Radio Frequency Devices
2	ANSI C63.102009	American National Standard for Testing Unlicensed Wireless Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	15.247(b)	Peak Output Power	PASS
2	15.247(a)	Bandwidth	PASS
3	15.247(d)	Conducted Spurious Emission	PASS
4	15.247(d)	Band Edge	PASS
5	15.207	Conducted Emission	PASS
6	15.209 ,15.247(c)	Radiated Emission	PASS
7	15.247(e)	Power spectral density (PSD)	PASS
8	15.247(i), 1.1307&2.1093	RF exposure evaluation	PASS

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.4 2009.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item.

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Peak Conducted Output Power	11b/DSSS	11 Mbps	1/6/11
Power Spectral Density	11g/OFDM	54 Mbps	1/6/11
6dB Bandwidth	11n(20MHz)/OFDM	65Mbps	1/6/11
Spurious RF conducted emission	11n(40MHz)/OFDM	135 Mbps	3/6/9
Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	11 Mbps	1/11
Band Edge	11g/OFDM	54 Mbps	1/11
	11n(20MHz)/OFDM	65Mbps	1/11



11n(40MHz)/OFDM

135 Mbps

3/9

1.3 Facilities and Accreditations

1.3.1 Facilities

CNAS-Lab Code: L1659

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

FCC-Registration No.: 406086

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 406086, Renewal date Nov. 19, 2011, valid time is until Nov. 18, 2014.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	30% - 60%
Atmospheric Pressure (kPa):	86KPa - 106KPa

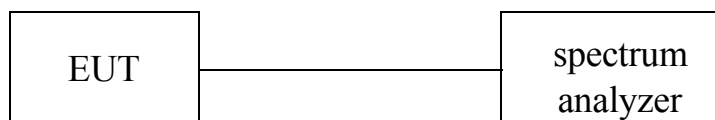
2. 47 CFR PART 15C REQUIREMENTS

2.1 Peak Output Power

2.1.1 Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

2.1.2 Test Description



The measured output power was calculated by the reading of the spectrum analyzer and calibration.

A. Test Setup:

The EUT was directly connected to the spectrum analyzer by 20dB Atten and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2012.06.10

The Cal. Interval was one year.



2.1.3 Test Result

The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

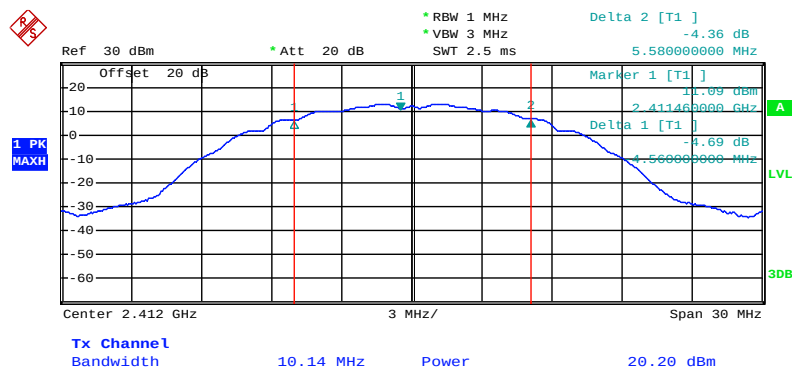
2.1.3.1 802.11b Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Refer to Plot	Limits (dBm)	Result
1	2412	20.20	Plot 2.1 A	30	PASS
6	2437	19.12	Plot 2.1 B	30	PASS
11	2462	18.43	Plot 2.1 C	30	PASS

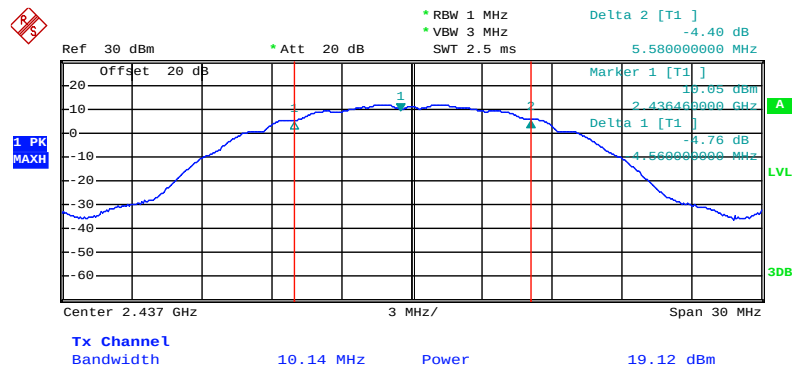
Note: 1. For 802.11b mode at final test to get the worst-case emission at 11Mbps.
2. The test results including the cable lose.

B. Test Plots:



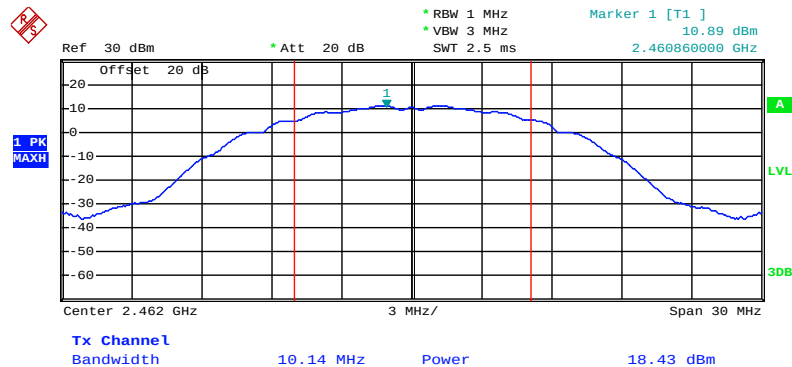
Date: 9.JAN.2013 09:32:29

(Plot 2.1 A: Channel 1: 2412MHz @ 802.11b)



Date: 9.JAN.2013 09:45:09

(Plot 2.1 B: Channel 6: 2437 MHz @ 802.11b)



Date: 9.JAN.2013 09:50:51

(Plot 2.1 C: Channel 11: 2462MHz @ 802.11b)



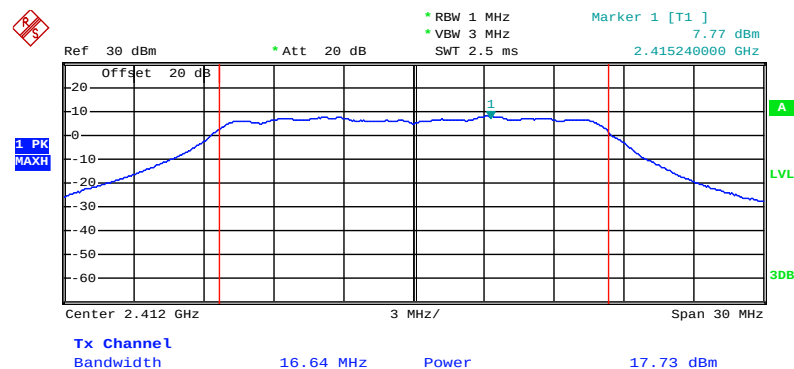
2.1.3.2 802.11g Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Refer to Plot	Limits (dBm)	Result
1	2412	17.73	Plot 2.1 D	30	PASS
6	2437	17.30	Plot 2.1 E	30	PASS
11	2462	16.61	Plot 2.1 F	30	PASS

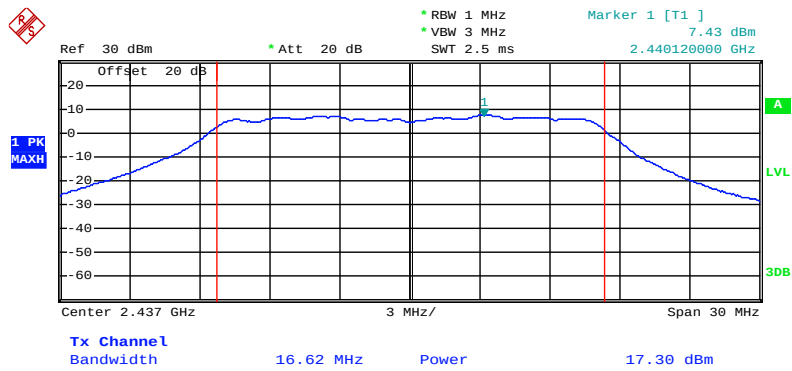
Note: 1. For 802.11g mode at final test to get the worst-case emission at 54Mbps.
2. The test results including the cable lose.

B. Test Plots:



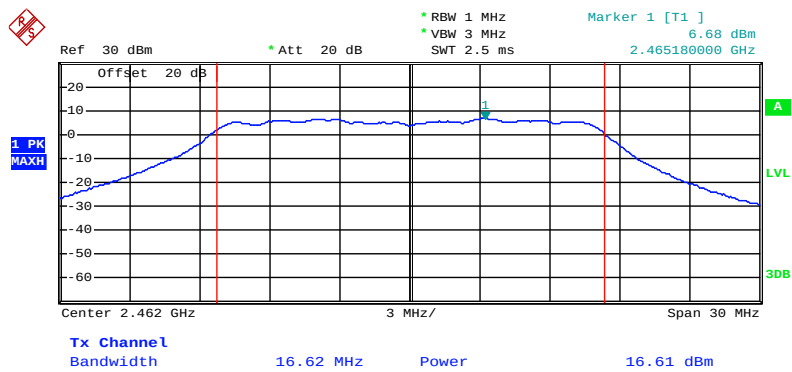
Date: 9.JAN.2013 10:13:49

(Plot 2.1 D: Channel 1: 2412MHz @ 802.11g)



Date: 9.JAN.2013 10:10:36

(Plot 2.1 E: Channel 6: 2437MHz @ 802.11g)



Date: 9.JAN.2013 10:15:35

(Plot 2.1 F: Channel 11: 2462MHz @ 802.11g)



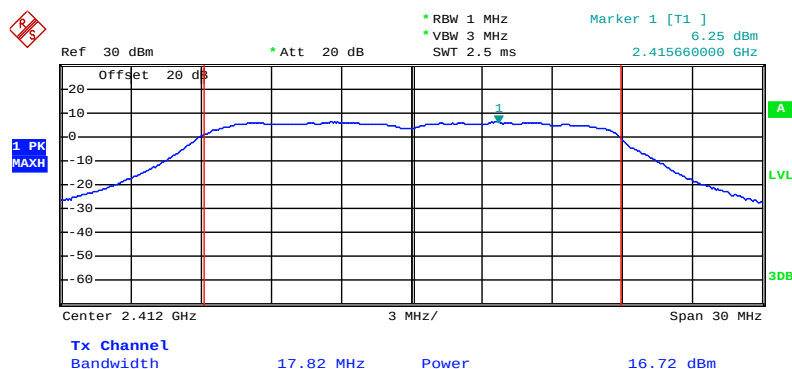
2.1.3.3 802.11n-20MHz Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Refer to Plot	Limits (dBm)	Result
1	2412	16.72	Plot 2.1 G	30	PASS
6	2437	16.22	Plot 2.1 H	30	PASS
11	2462	15.58	Plot 2.1 I	30	PASS

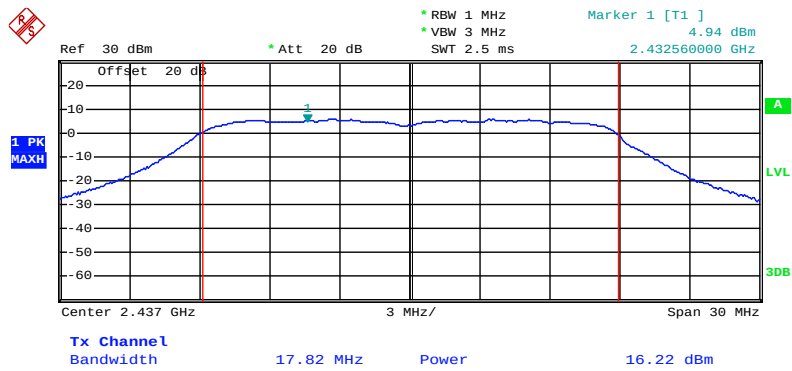
Note: 1. For 802.11n-20 mode at final test to get the worst-case emission at 65Mbps.
2. The test results including the cable lose.

B. Test Plots:



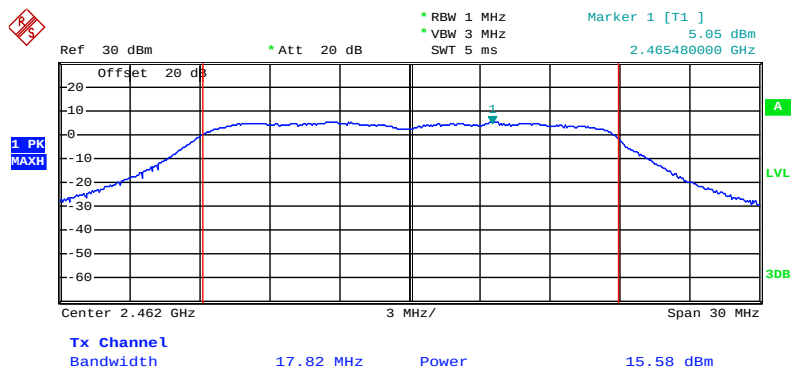
Date: 9.JAN.2013 10:23:58

(Plot 2.1 G: Channel 1: 2412MHz @ 802.11n-20)



Date: 9.JAN.2013 10:29:47

(Plot 2.1 H: Channel 6: 2437MHz @ 802.11n-20)



Date: 9.JAN.2013 10:33:27

(Plot 2.1 I: Channel 11: 2462MHz @ 802.11n-20)



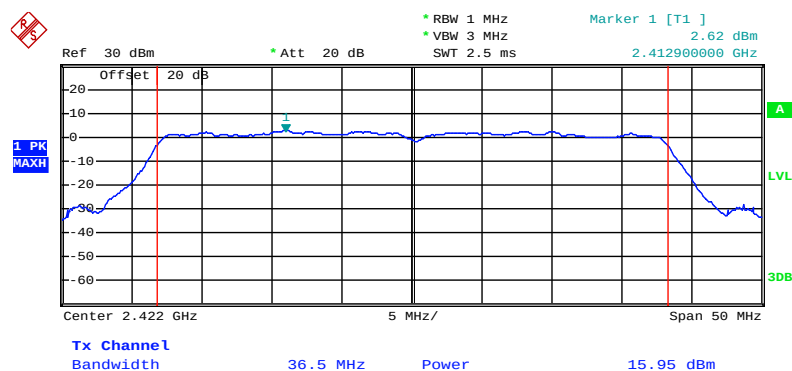
2.1.3.4 802.11n-40MHz Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Refer to Plot	Limits (dBm)	Result
3	2422	15.95	Plot 2.1 J	30	PASS
6	2437	15.70	Plot 2.1 K	30	PASS
9	2452	16.38	Plot 2.1 L	30	PASS

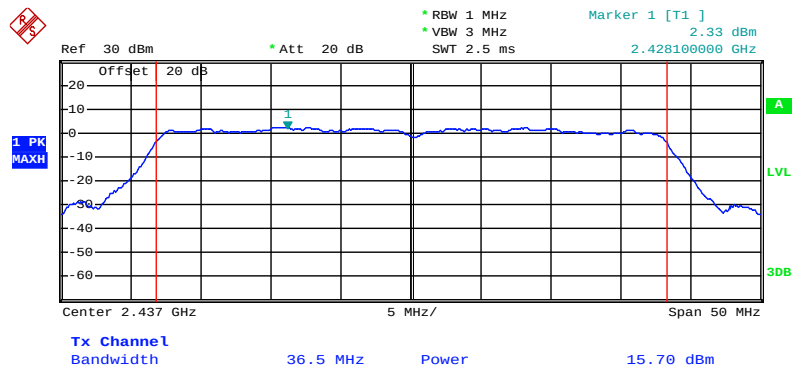
Note: 1. For 802.11n-40 mode at final test to get the worst-case emission at 135Mbps.
2. The test results including the cable lose.

B. Test Plots:



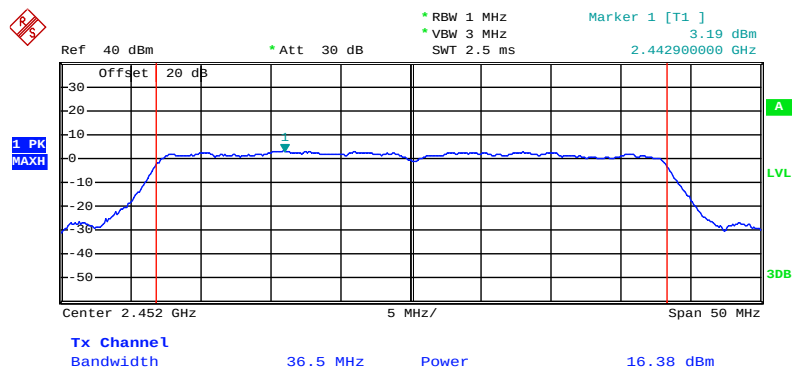
Date: 9.JAN.2013 10:38:21

(Plot 2.1 J: Channel 3: 2422MHz @ 802.11n-40)



Date: 9.JAN.2013 10:46:19

(Plot 2.1 K: Channel 6: 2437MHz @ 802.11n-40)



Date: 9.JAN.2013 13:21:55

(Plot 2.1 L: Channel 9: 2462MHz @ 802.11n-40)

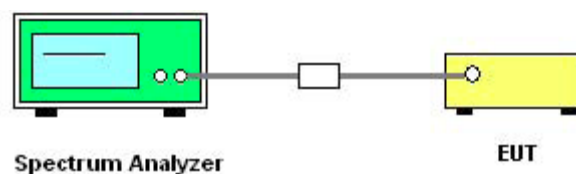
2.2 Bandwidth

2.2.1 Requirement

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

2.2.2 Test Description

A. Test Set:



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss and Atten as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2012.06.10

The Cal. Interval was one year.

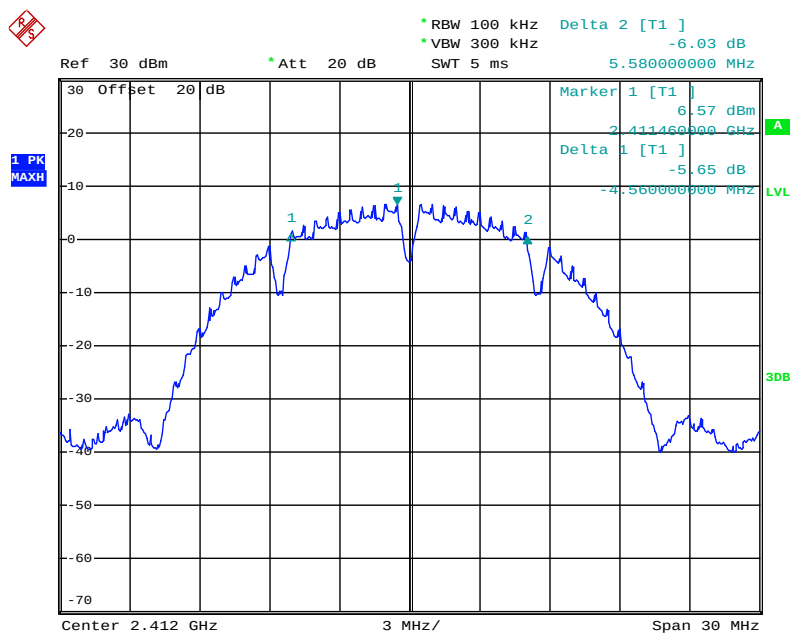
2.2.3 Test Result

The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

2.2.3.1 802.11b Test mode

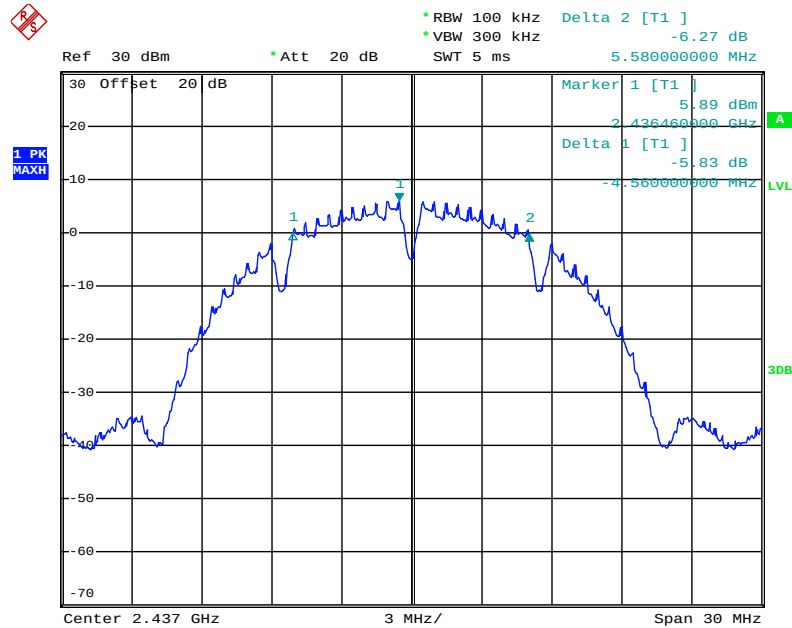
**A. Test Verdict:**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits(kHz)	Result
1	2412	10.14	Plot 2.2 A	≥ 500	PASS
6	2437	10.14	Plot 2.2 B	≥ 500	PASS
11	2462	10.14	Plot 2.2 C	≥ 500	PASS

B. Test Plots:

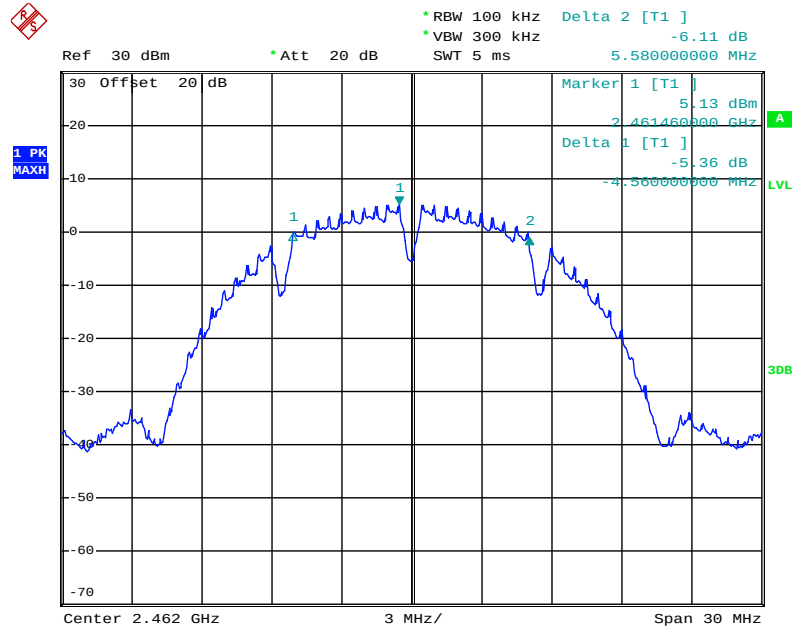
Date: 9.JAN.2013 09:29:51

(Plot 2.2 A: Channel 1: 2412MHz @ 802.11b)



Date: 9.JAN.2013 09:44:32

(Plot 2.2 B: Channel 6: 2437 MHz @ 802.11b)



Date: 9.JAN.2013 09:50:20

(Plot 2.2 C: Channel 11: 2462MHz @ 802.11b)

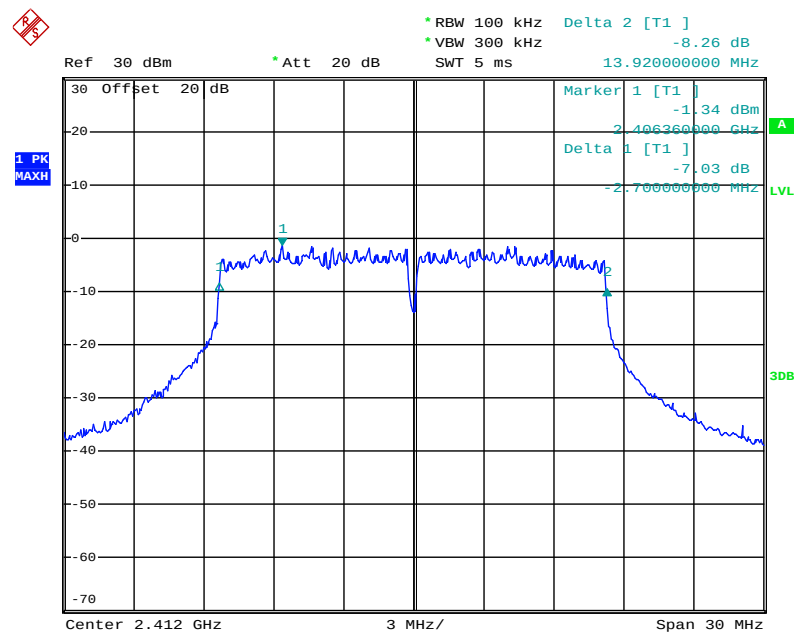


2.2.3.2 802.11g Test mode

A. Test Verdict:

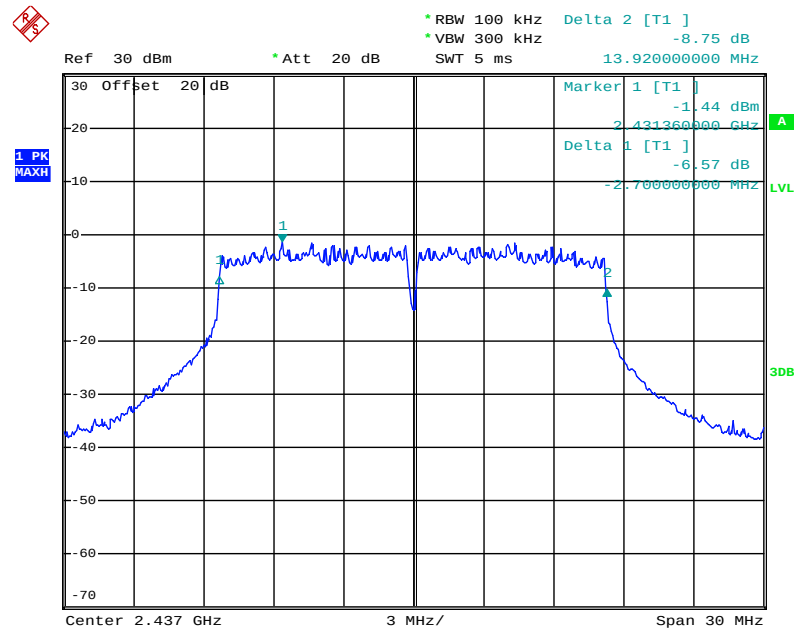
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
1	2412	16.64	Plot 2.2 D	≥ 500	PASS
6	2437	16.62	Plot 2.2 E	≥ 500	PASS
11	2462	16.62	Plot 2.2 F	≥ 500	PASS

B. Test Plots:



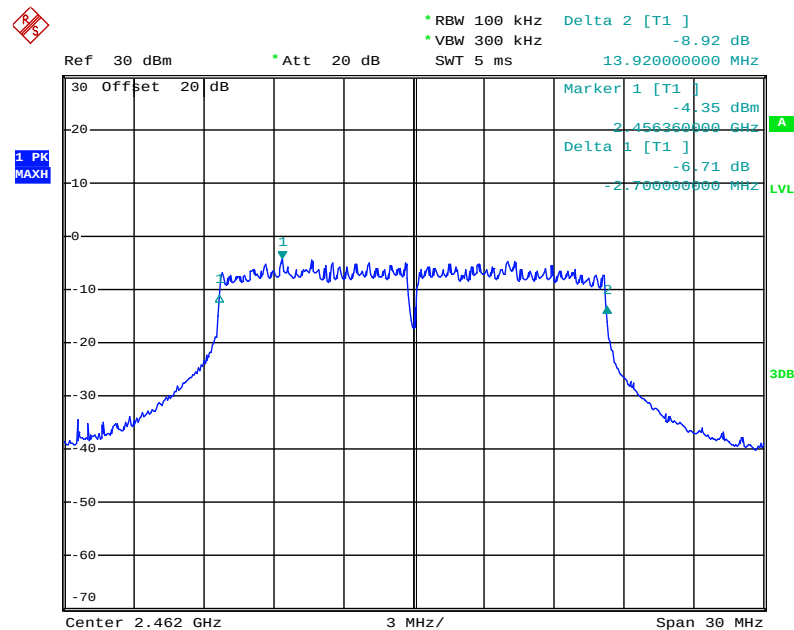
Date: 9.JAN.2013 09:57:21

(Plot 2.2 D: Channel 1: 2412MHz @ 802.11g)



Date: 9.JAN.2013 10:08:38

(Plot 2.2 E: Channel 6: 2437MHz @ 802.11g)



Date: 9.JAN.2013 10:15:00

(Plot 2.2 F: Channel 11: 2462MHz @ 802.11g)

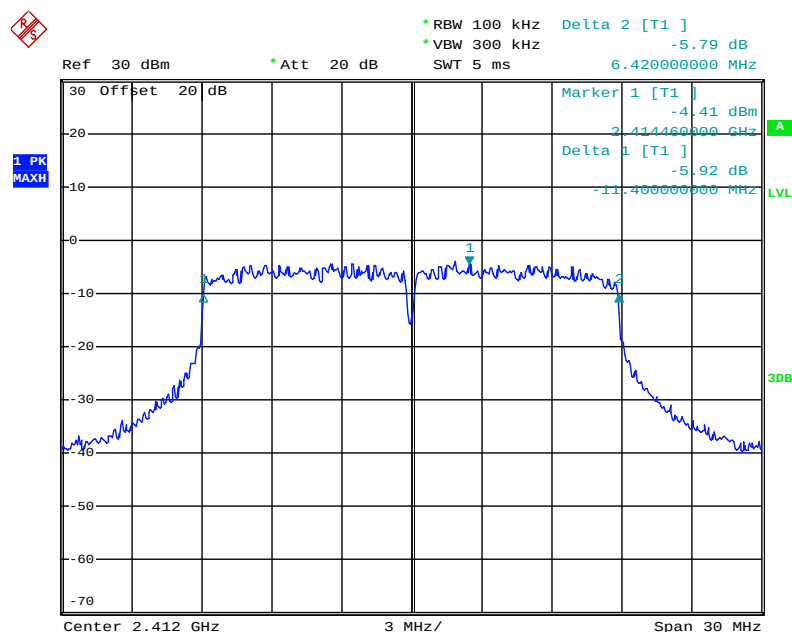


2.2.3.3 802.11n-20 Test mode

A. Test Verdict:

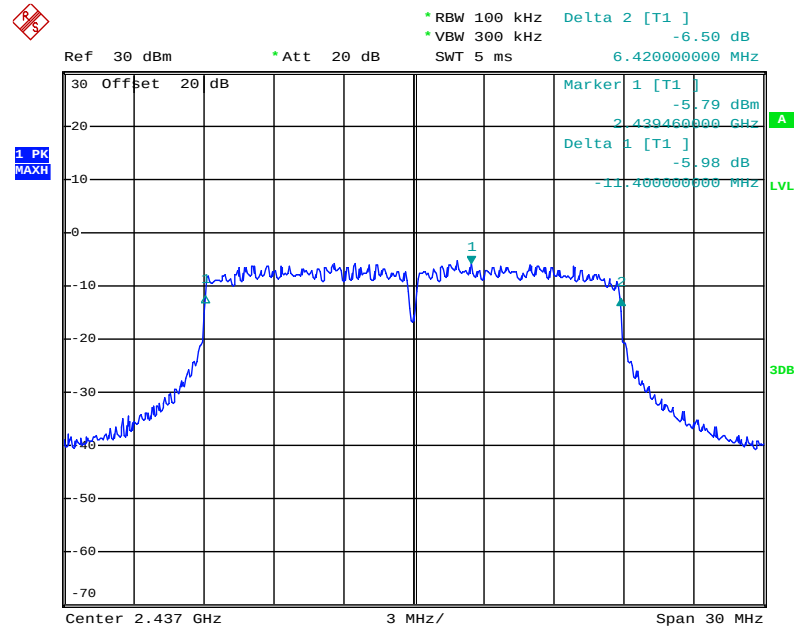
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
1	2412	17.82	Plot 2.2 G	≥ 500	PASS
6	2437	17.82	Plot 2.2 H	≥ 500	PASS
11	2462	17.82	Plot 2.2 I	≥ 500	PASS

B. Test Plots:



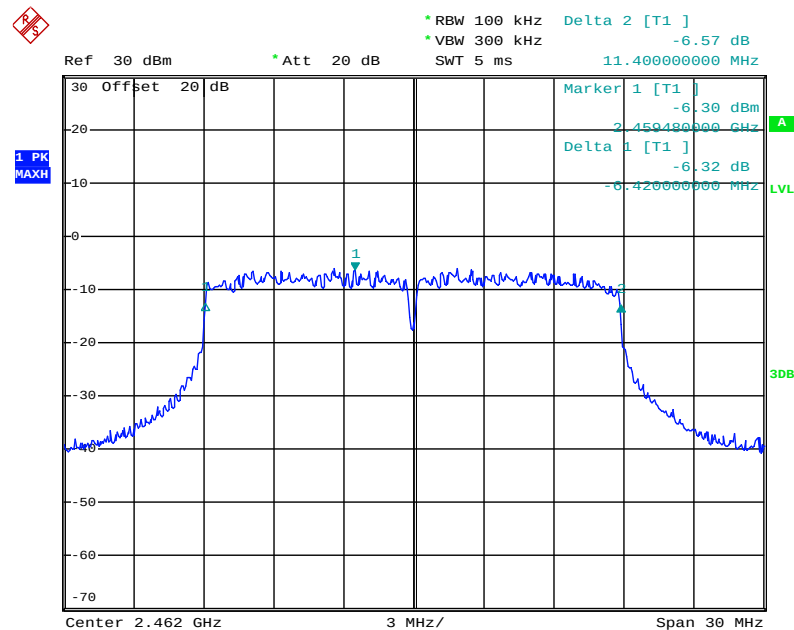
Date: 9.JAN.2013 10:22:47

(Plot 2.2 G: Channel 1: 2412MHz @ 802.11n-20)



Date: 9.JAN.2013 10:29:17

(Plot 2.2 H: Channel 6: 2437MHz @ 802.11n-20)

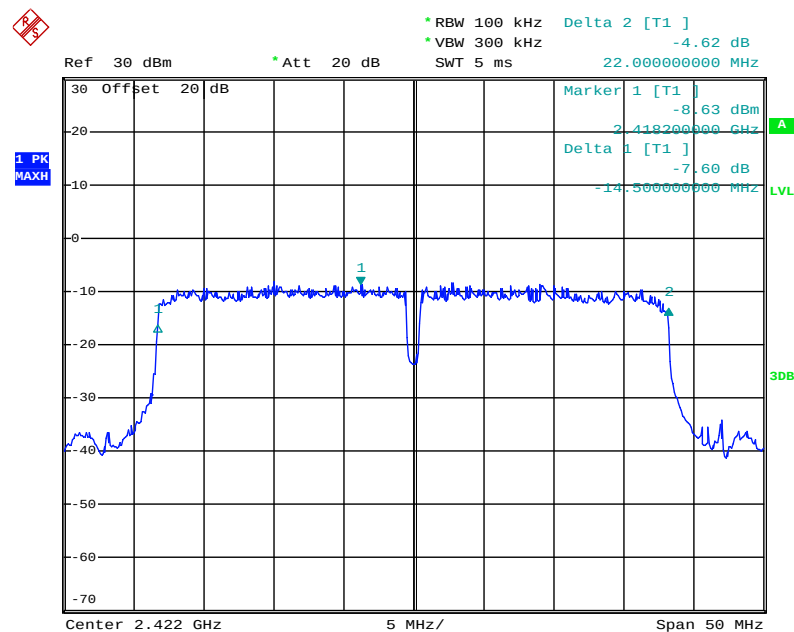


Date: 9.JAN.2013 10:33:01

(Plot 2.2 I: Channel 11: 2462MHz @ 802.11n-20)

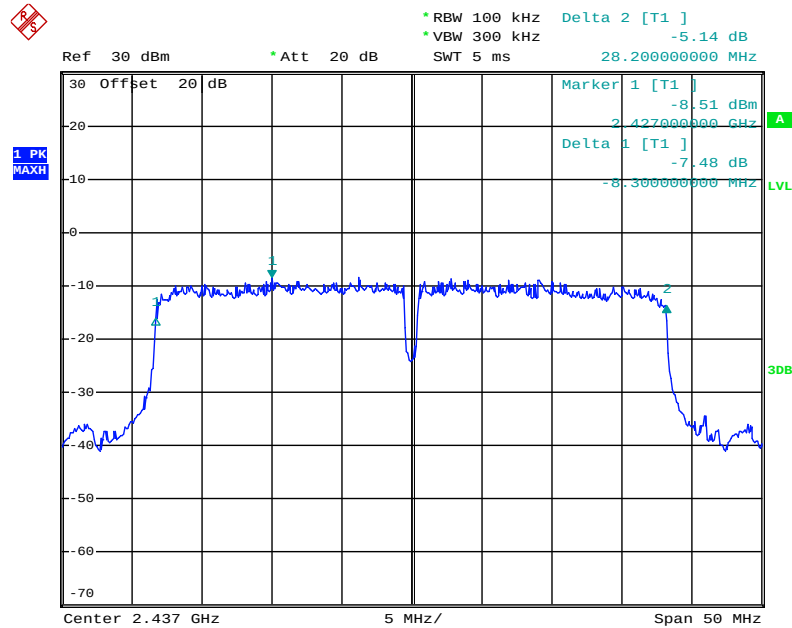
**2.2.3.4 802.11n-40MHz Test mode****A. Test Verdict:**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
3	2422	36.50	Plot J	≥ 500	PASS
6	2437	36.50	Plot K	≥ 500	PASS
9	2452	36.50	Plot L	≥ 500	PASS

B. Test Plots:

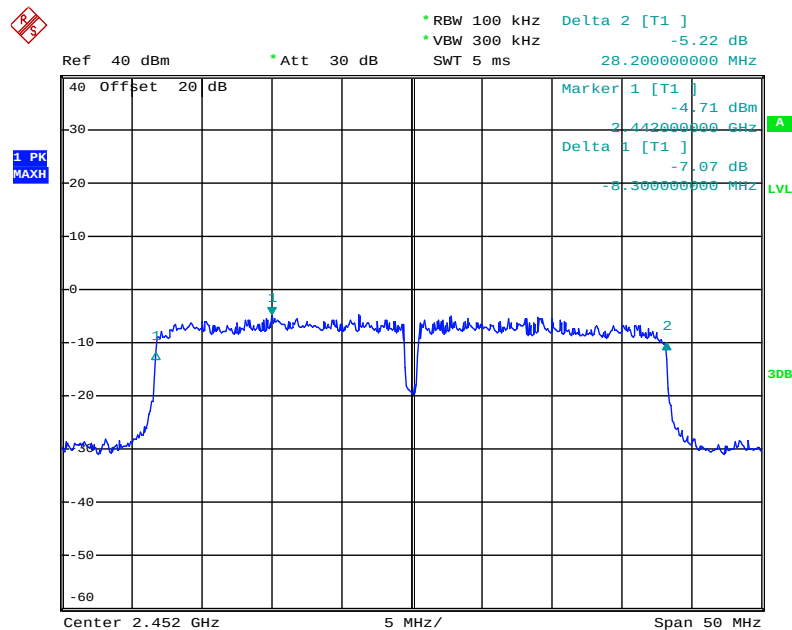
Date: 9.JAN.2013 10:37:43

(Plot 2.2 J: Channel 3: 2422MHz @ 802.11n-40)



Date: 9.JAN.2013 10:45:54

(Plot 2.2 K: Channel 6: 2437MHz @ 802.11n-40)



Date: 9.JAN.2013 13:20:52

(Plot 2.2 L: Channel 9: 2452MHz @ 802.11n-40)

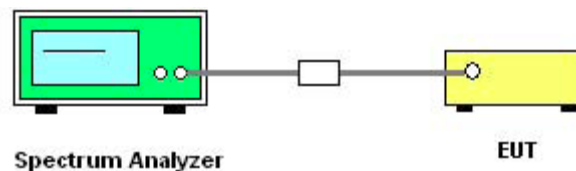
2.3 Conducted Spurious Emissions

2.3.1 Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

2.3.2 Test Description

A. Test Set:



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss and Atten as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2012.06.10

The Cal. Interval was one year.

2.3.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

2.3.3.1 802.11b Test mode

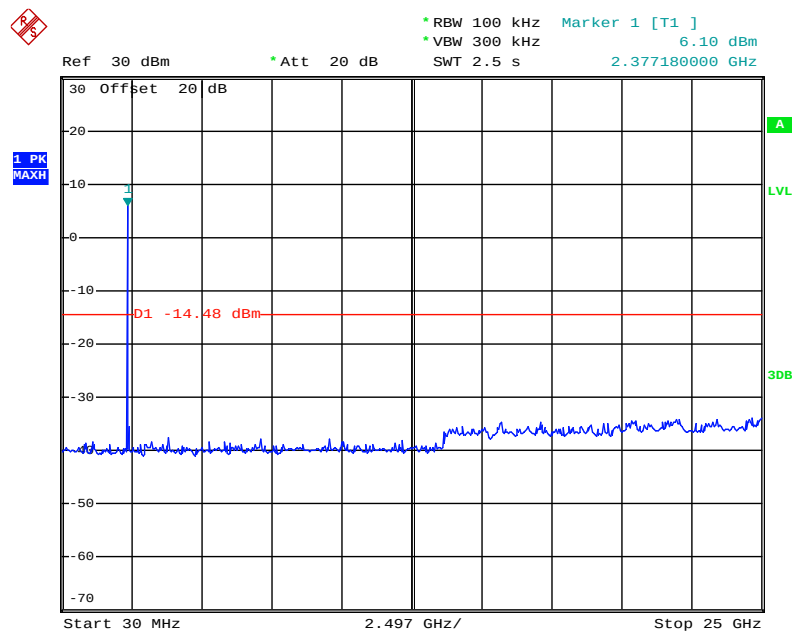
A. Test Verdict:



Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
1	2412	Plot 2.3 A	-20	PASS
6	2437	Plot 2.3 B	-20	PASS
11	2462	Plot 2.3 C	-20	PASS

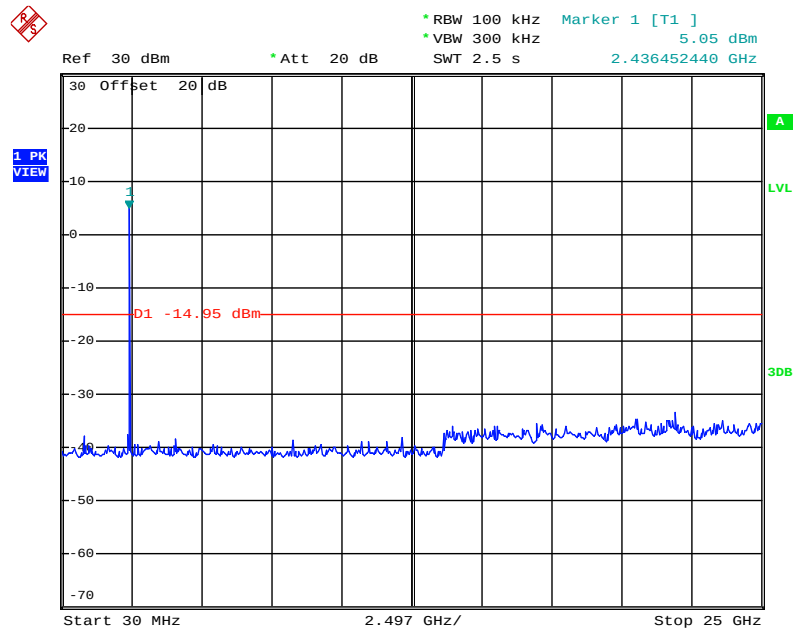
B. Test Plots:

Note: the power of the Module transmitting frequency should be ignored.



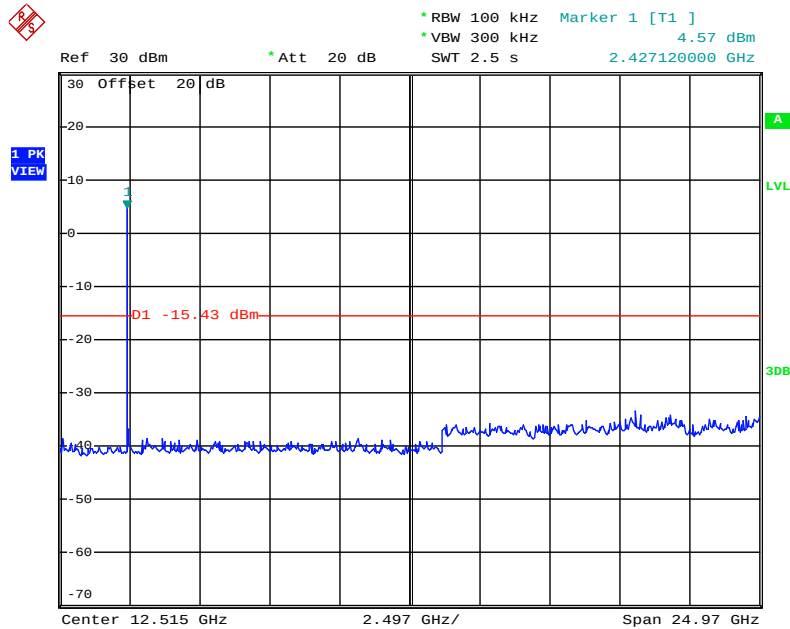
Date: 9.JAN.2013 09:38:14

(Plot 2.3 A: Channel = 1, 30MHz to 25GHz@ 802.11b)



Date: 9.JAN.2013 09:48:12

(Plot 2.3 B: Channel = 6, 30MHz to 25GHz@ 802.11b)



Date: 9.JAN.2013 09:49:18

(Plot 2.3 C: Channel = 11, 30MHz to 25GHz@ 802.11b)



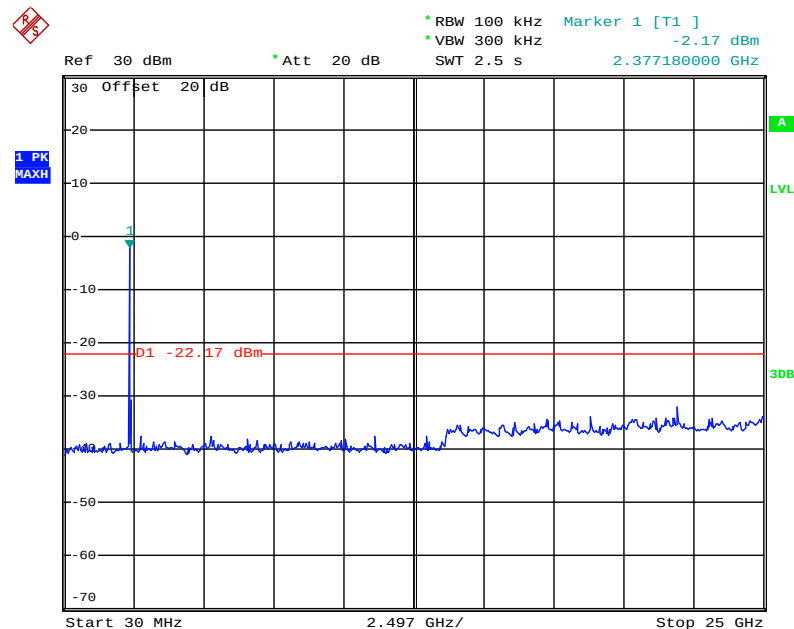
2.3.3.2 802.11g Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
1	2412	Plot 2.3 D	-20	PASS
6	2437	Plot 2.3 E	-20	PASS
11	2462	Plot 2.3 F	-20	PASS

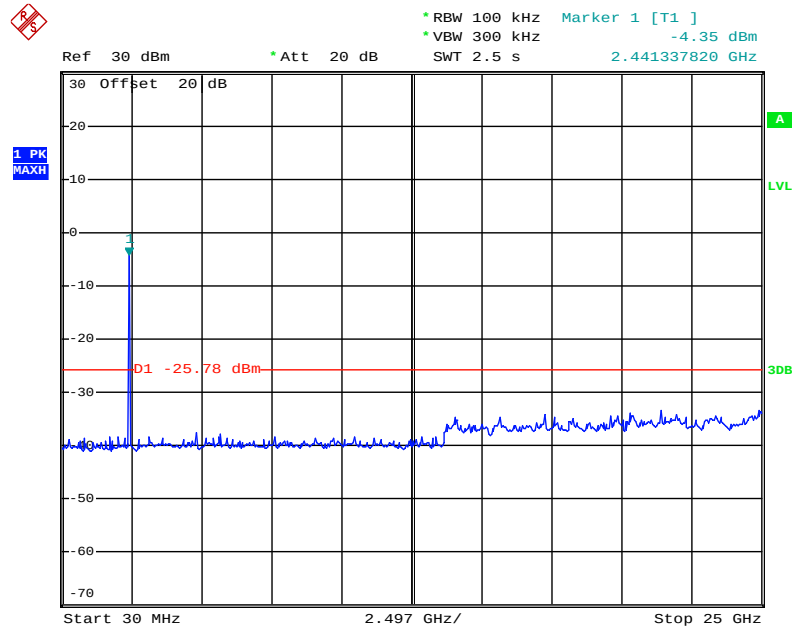
B. Test Plots:

Note: the power of the Module transmitting frequency should be ignored.



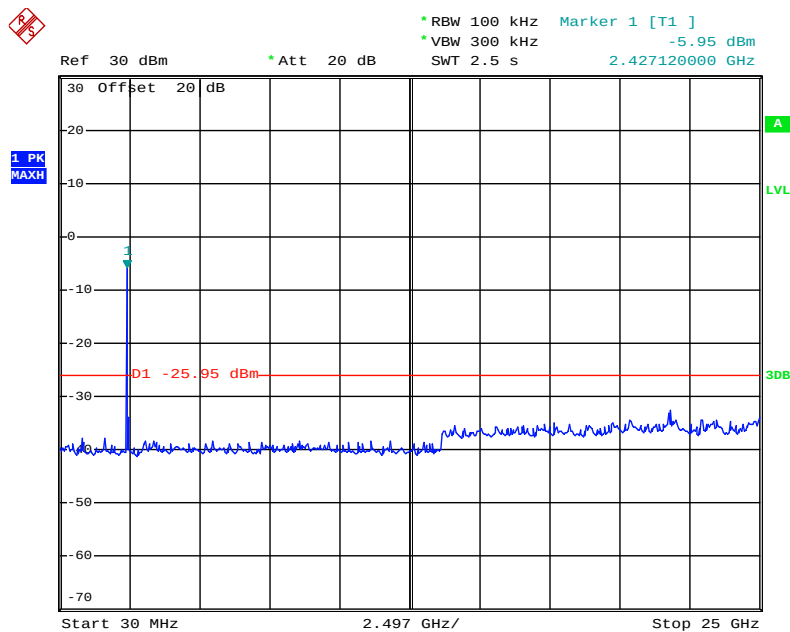
Date: 9.JAN.2013 10:00:30

(Plot 2.3 D: Channel = 1, 30MHz to 25GHz@ 802.11g)



Date: 9.JAN.2013 10:12:07

(Plot 2.3 E: Channel = 6, 30MHz to 25GHz@ 802.11g)



Date: 9.JAN.2013 10:16:53

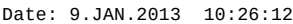
(Plot 2.3 F: Channel = 11, 30MHz to 25GHz@ 802.11g)



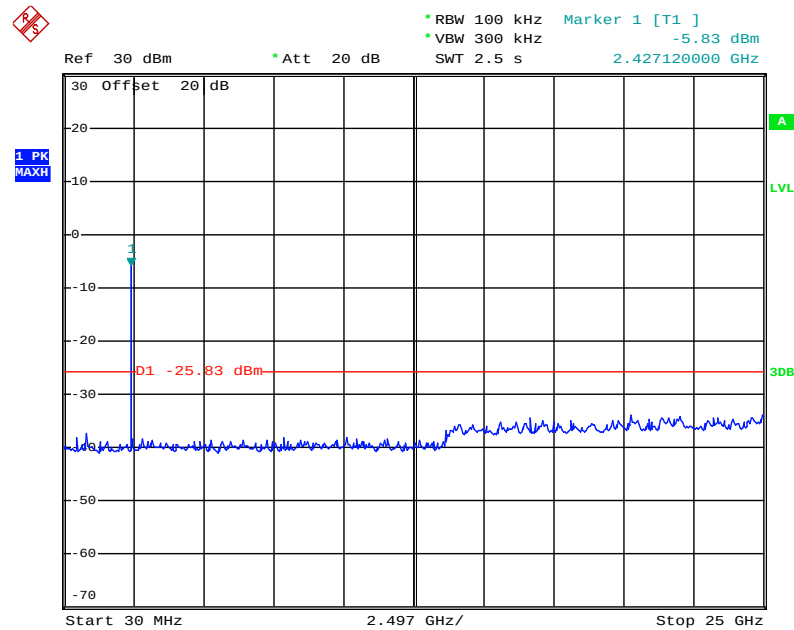
A. Test Verdict:

B. Test Plots:

Note: the power of the Module transmitting frequency should be ignored.

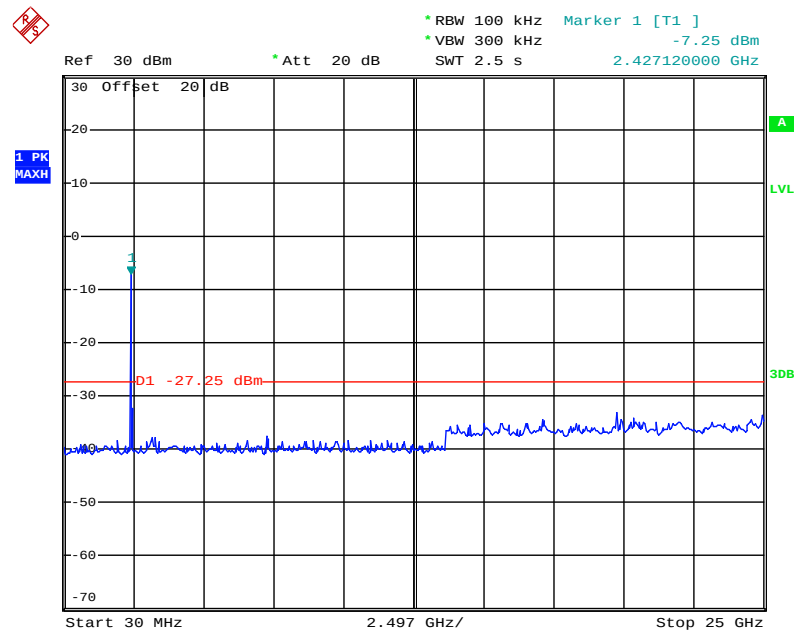


(Plot 2.3 G: Channel = 1, 30MHz to 25GHz@ 802.11n-20)



Date: 9.JAN.2013 10:31:12

(Plot 2.3 H: Channel = 6, 30MHz to 25GHz@ 802.11n-20)



Date: 9.JAN.2013 10:34:42

(Plot 2.3 I: Channel = 11, 30MHz to 25GHz@ 802.11n-20)



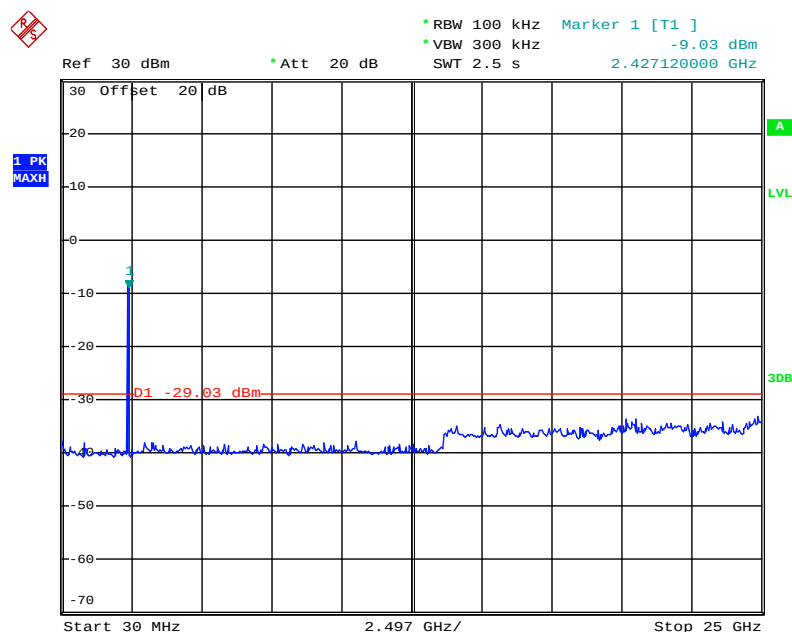
2.3.3.4 802.11n-40MHz Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
3	2422	Plot 2.3 J	-20	PASS
6	2437	Plot 2.3 K	-20	PASS
9	2452	Plot 2.3 L	-20	PASS

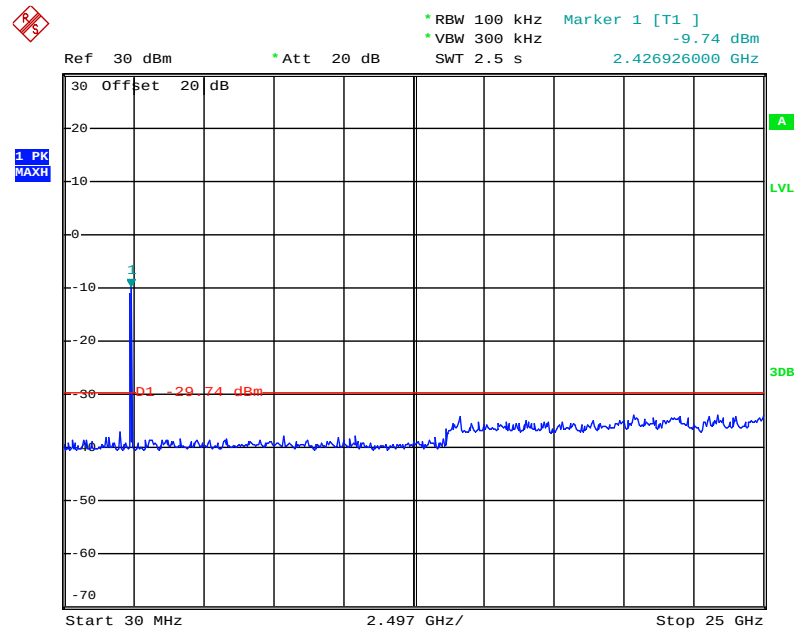
B. Test Plot:

Note: the power of the Module transmitting frequency should be ignored.



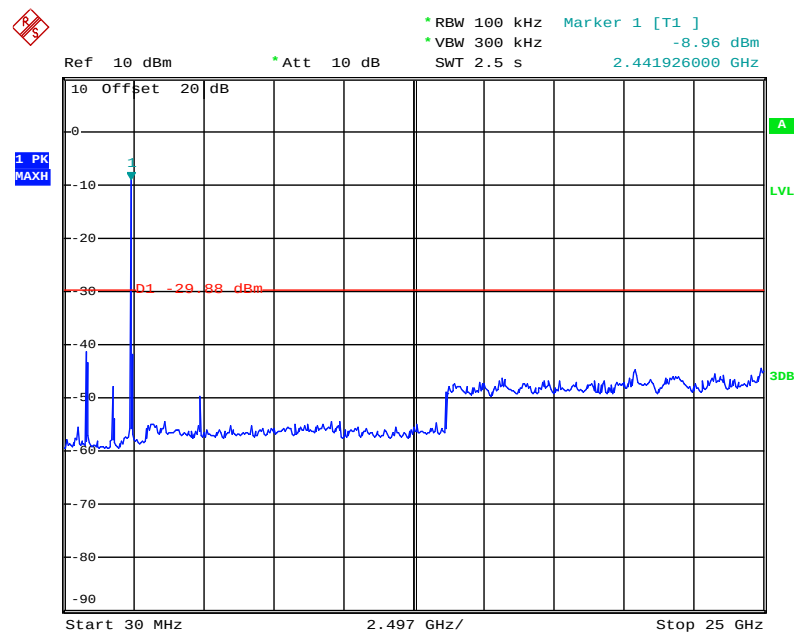
Date: 9.JAN.2013 10:41:57

(Plot 2.3 J: Channel = 3, 30MHz to 25GHz@ 802.11n-40)



Date: 9.JAN.2013 10:48:14

(Plot 2.3 K: Channel = 6, 30MHz to 25GHz@ 802.11n-40)



Date: 9.JAN.2013 13:24:22

(Plot 2.3 L: Channel = 9, 30MHz to 25GHz@ 802.11n-40)

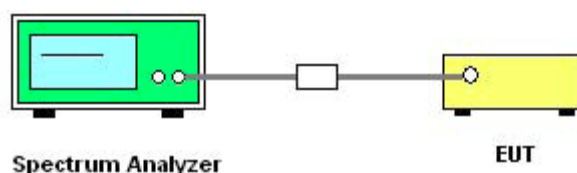
2.4 Power spectral density (PSD)

2.4.1 Requirement

According to FCC section 15.247(d), the same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

2.4.2 Test Description

A. Test Set:



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss and Atten as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

B. Test Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW $\geq$ 3 kHz.
4. Set the VBW $\geq$ 3 x 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.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

C. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2012.06.10

The Cal. Interval was one year.



2.4.3 Test Result

The lowest, middle and highest channels are tested to verify the band edge emissions.

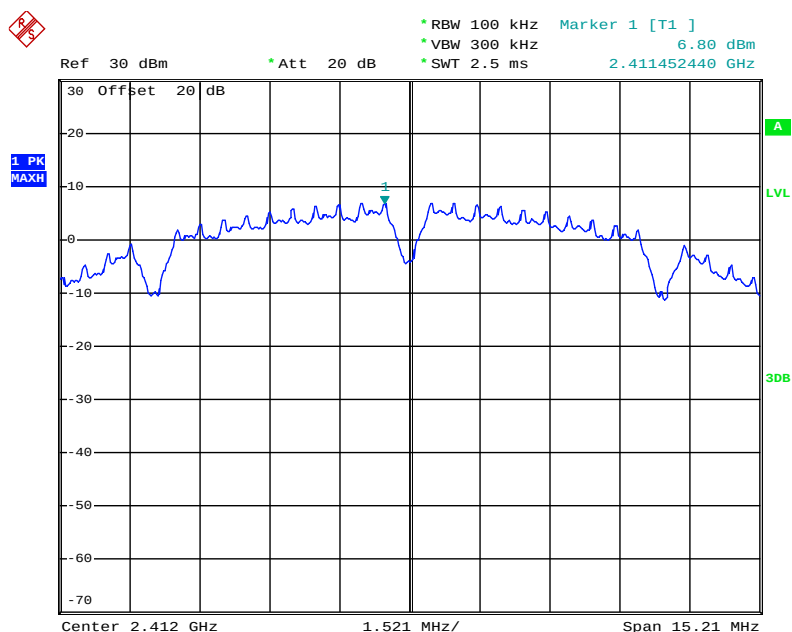
2.4.3.1 802.11b Test mode

A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	6.80	-8.40	Plot 2.4 A	8	PASS
6	2437	5.82	-9.38	Plot 2.4 B	8	PASS
11	2462	5.10	-10.10	Plot 2.4 C	8	PASS
Measurement uncertainty: ± 1.3 dB						

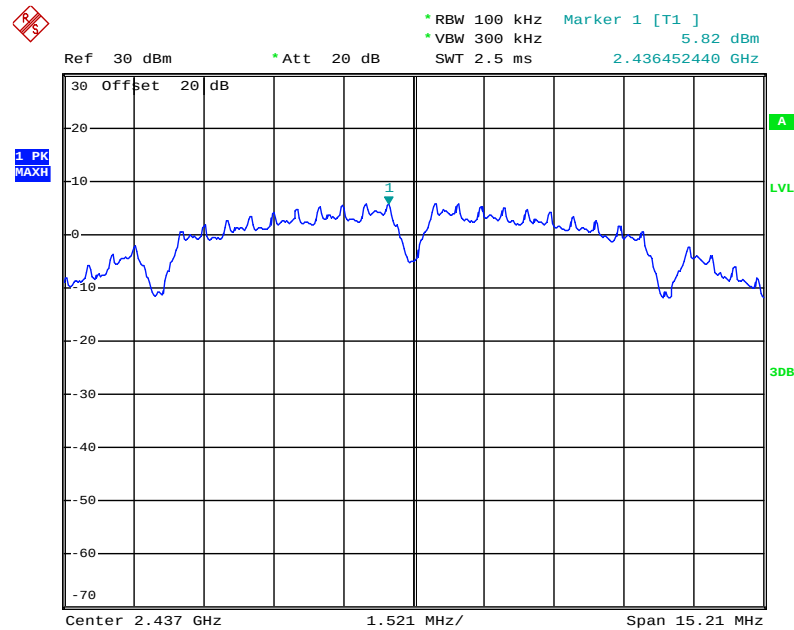
Note: 1. For 802.11b mode at final test to get the worst-case emission at 11Mbps.
2. The test results including the cable lose.

B. Test Plots:



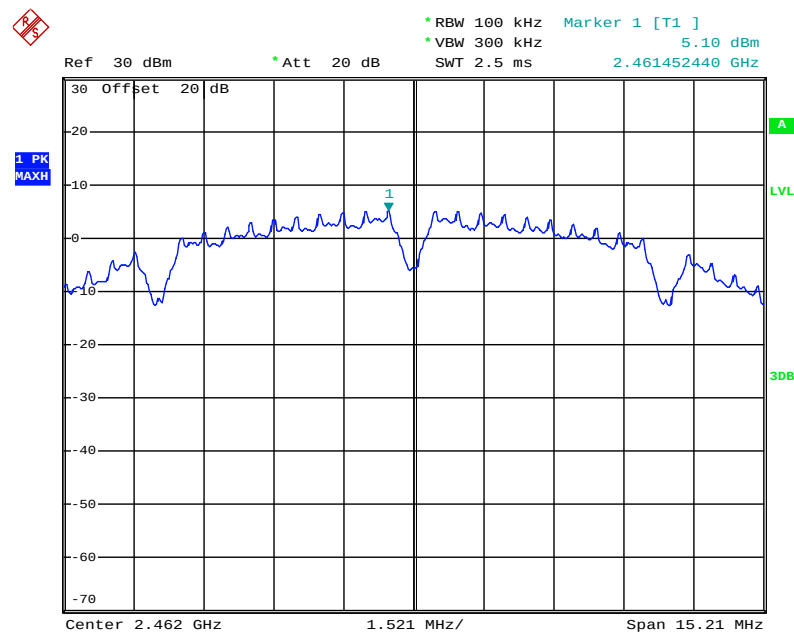
Date: 9.JAN.2013 09:37:08

(Plot 2.4 A: Channel = 1 @ 802.11b)



Date: 9.JAN.2013 09:45:56

(Plot 2.4 B: Channel = 6 @ 802.11b)



Date: 9.JAN.2013 09:51:32

(Plot 2.4 C: Channel = 11 @ 802.11b)



2.4.3.2 802.11g Test mode

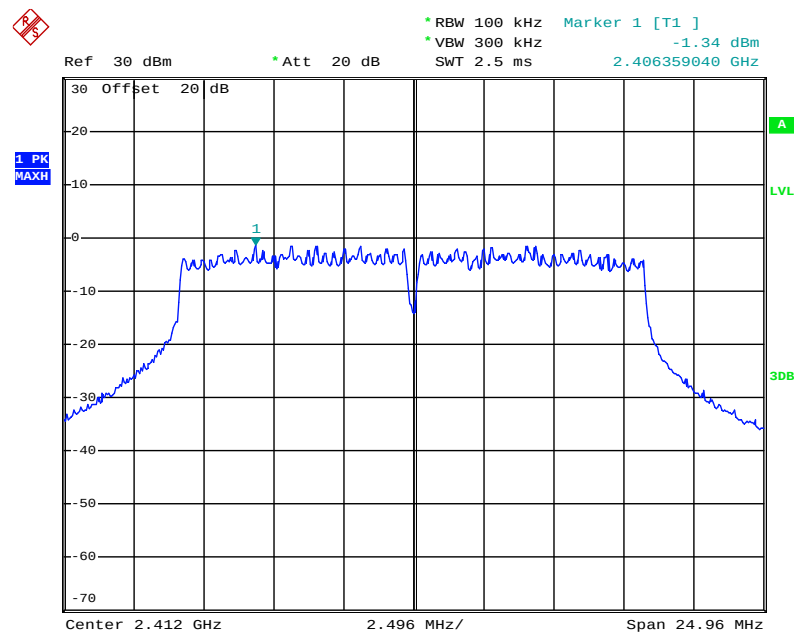
A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	-1.34	-16.54	Plot 2.4 D	8	PASS
6	2437	-3.91	-19.11	Plot 2.4 E	8	PASS
11	2462	-4.29	-19.49	Plot 2.4 F	8	PASS

Measurement uncertainty: ± 1.3 dB

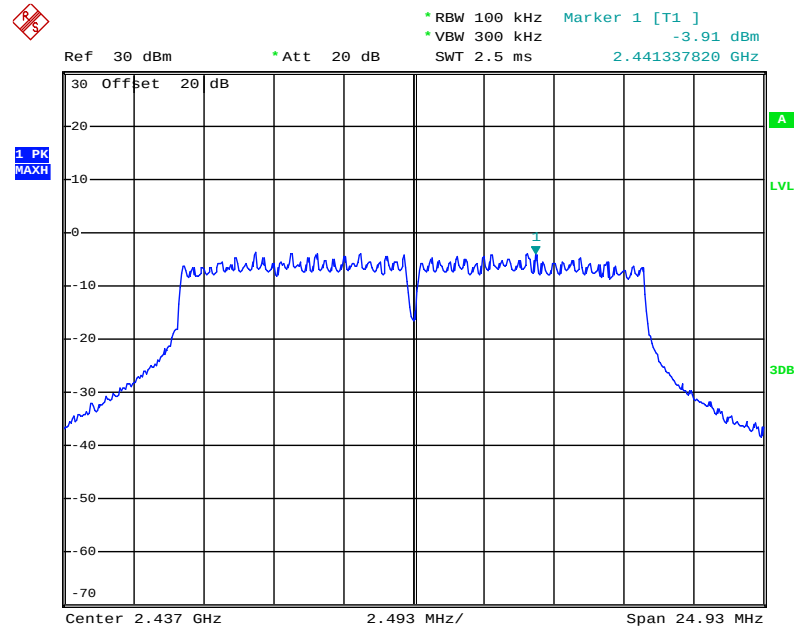
Note: 1. For 802.11g mode at final test to get the worst-case emission at 54 Mbps.
2. The test results including the cable lose.

B. Test Plots:



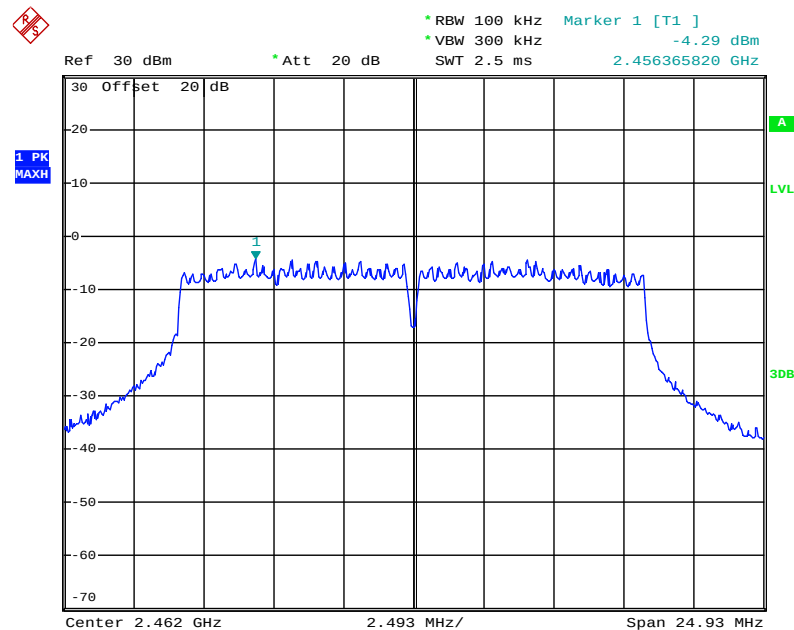
Date: 9.JAN.2013 09:59:40

(Plot 2.4 D: Channel = 1 @ 802.11g)



Date: 9.JAN.2013 10:11:29

(Plot 2.4 E: Channel = 6 @ 802.11g)



Date: 9.JAN.2013 10:16:18

(Plot 2.4 F: Channel = 11 @ 802.11g)



2.4.3.3 802.11n-20 Test mode

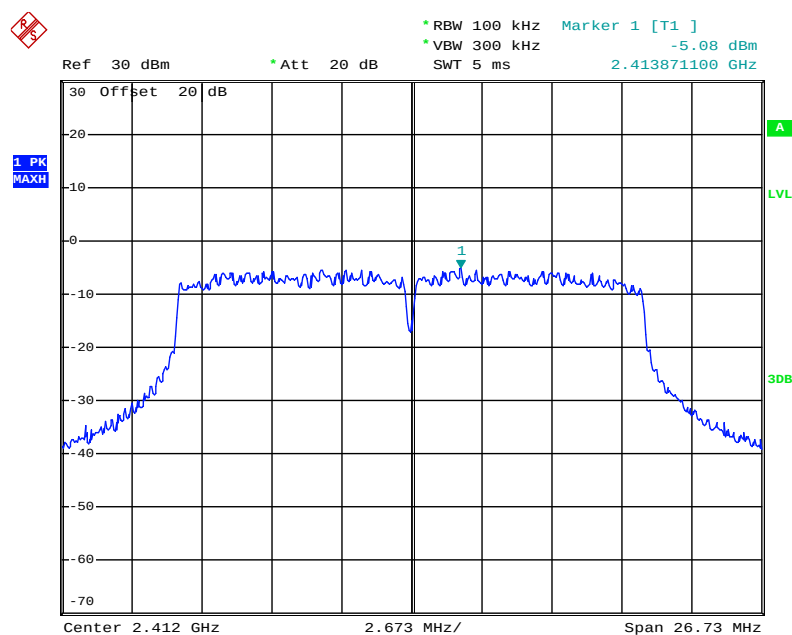
A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	-5.08	-20.28	Plot G	8	PASS
6	2437	-5.46	-20.66	Plot H	8	PASS
11	2462	-6.19	-21.39	Plot I	8	PASS

Measurement uncertainty: ± 1.3 dB

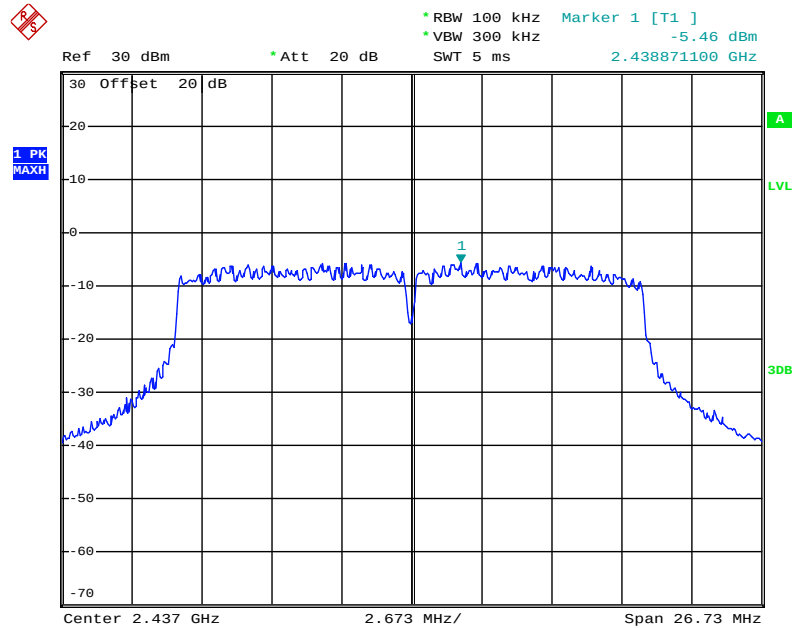
Note: 1. For 802.11n(20MHz) mode at final test to get the worst-case emission at 65 Mbps.
2. The test results including the cable loss.

B. Test Plots:



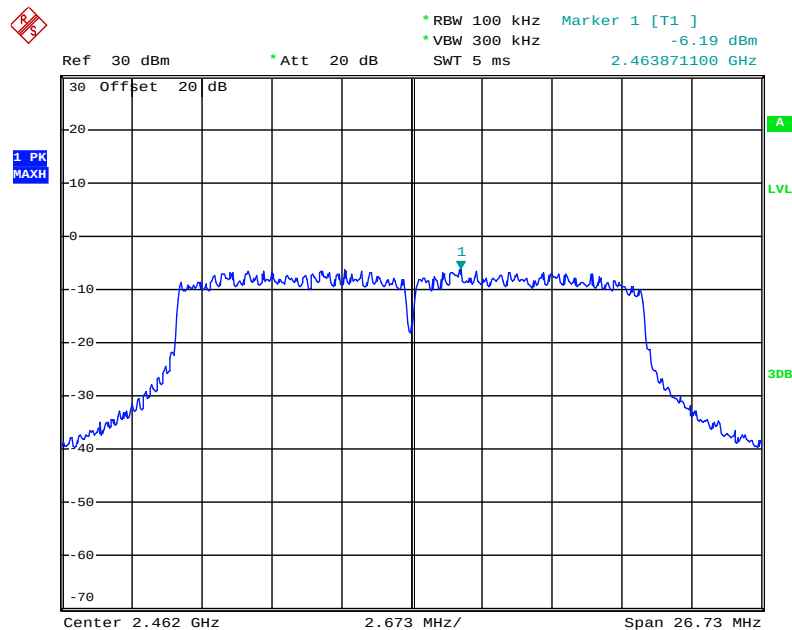
Date: 9.JAN.2013 10:25:00

(Plot 2.4 G: Channel = 1 @ 802.11n)



Date: 9.JAN.2013 10:30:29

(Plot 2.4 H: Channel = 6 @ 802.11n)



Date: 9.JAN.2013 10:34:07

(Plot 2.4 I: Channel = 11 @ 802.11n)



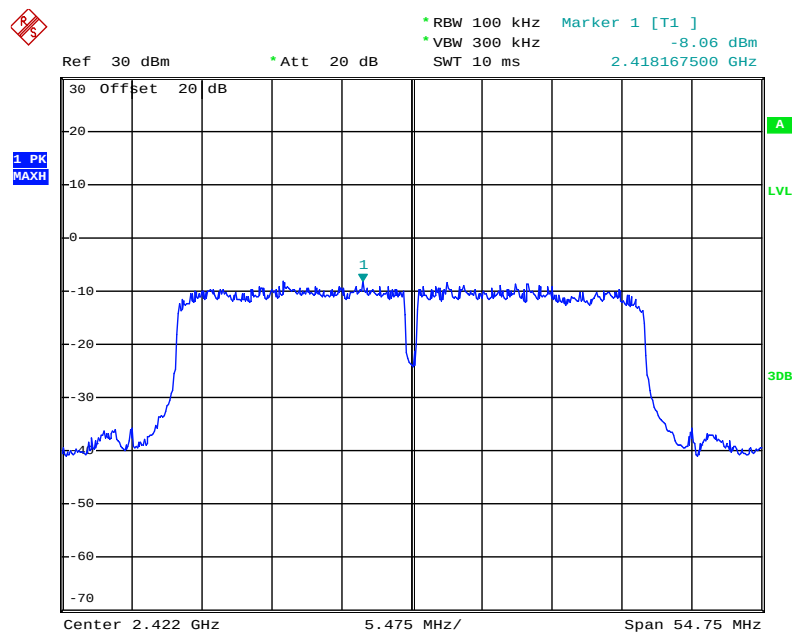
2.4.3.4 802.11n-40 Test mode

A. Test Verdict:

Spectral power density (dBm/3kHz)						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
3	2422	-8.06	-23.26	Plot 2.4 J	8	PASS
6	2437	-8.58	-23.78	Plot 2.4 K	8	PASS
9	2452	-7.61	-22.81	Plot 2.4 L	8	PASS
Measurement uncertainty: ± 1.3 dB						

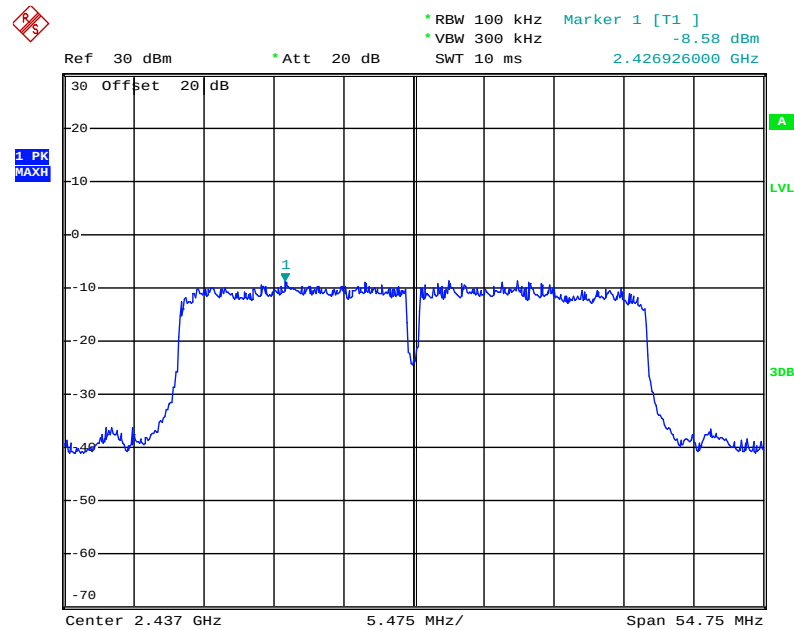
Note: 1. For 802.11n(40MHz) mode at final test to get the worst-case emission at 135Mbps.
2. The test results including the cable loss.

B. Test Plots:



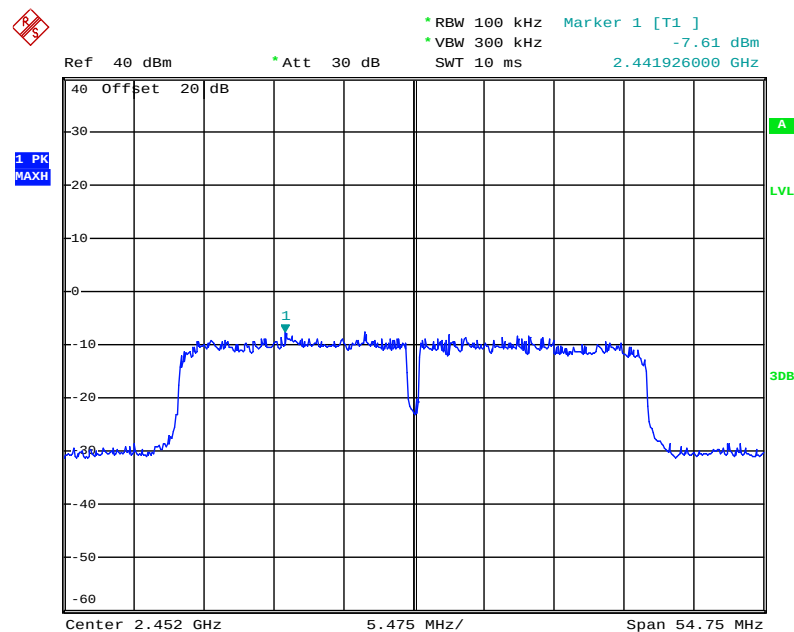
Date: 9.JAN.2013 10:40:58

(Plot 2.4 J: Channel = 3 @ 802.11n)



Date: 9.JAN.2013 10:47:04

(Plot 2.4 K: Channel = 6 @ 802.11n)



Date: 9.JAN.2013 13:22:57

(Plot 2.4 L: Channel = 9 @ 802.11n)

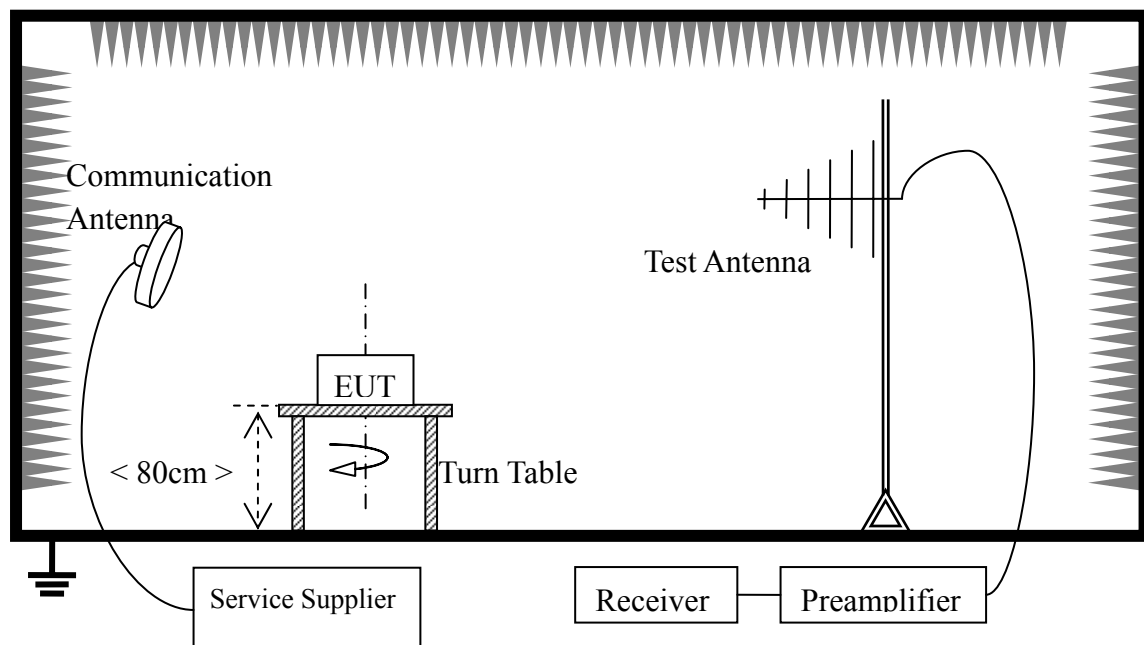
2.5 Band Edge

2.5.1 Requirement

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

2.5.2 Test Description

A. Test Setup



The Module of the EUT is powered by the Battery charged with the AC Adapter. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

B. Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=10Hz for average detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.
6. Antenna-port conducted measurements are acceptable as an alternative to radiated measurements for demonstrating compliance to the limits in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test (with antenna port(s) terminated) for cabinet/case emissions will also be required.
7. § 15.209(a) specifies radiated emissions limits for unwanted emissions in the restricted bands in terms of the maximum permissible electric field strength at a specified measurement distance. A correspondent EIRP level can be determined from the following relationship:

$$E = \text{EIRP} - 20\log(d) + 104.8$$
 where:
 EIRP = the equivalent isotropic radiated power in dBm,
 E = electric field strength in dBμV/m,
 d = measurement distance in meters.

C. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Receiver	R&S	ESIB26	100010	2012.06.10
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	A0412372	2012.06.10
Double ridge horn antenna	R&S	HF906	A0304225	2012.06.10
Ultra-wideband antenna	R&S	HL562	A0304224	2012.06.10
Ampilier 1G~18GHz	R&S	MITEQ AFS42-00101800	25-S-42	2012.06.10

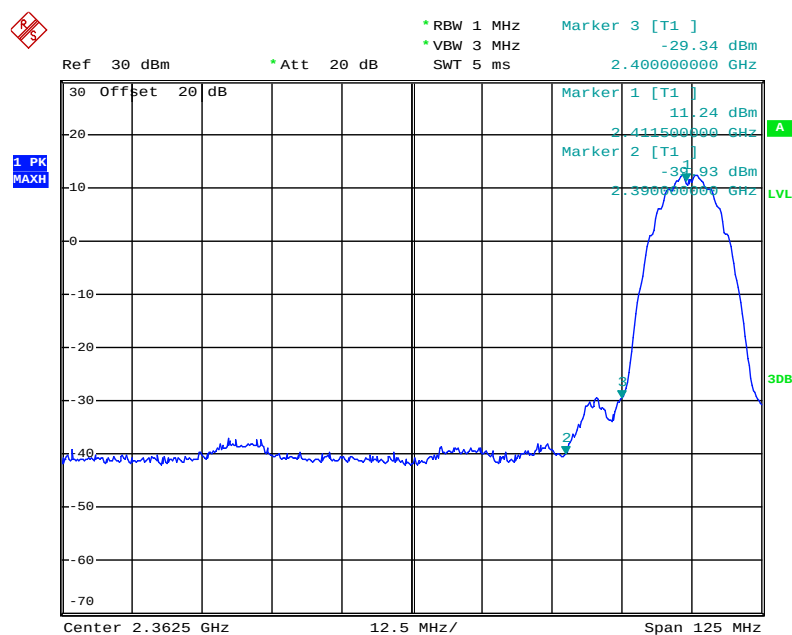
The Cal. Interval was one year.

2.5.3 Test Result

Conducted band edge were measurement for 802.11b,802.11g,802.11n(20MHz) and 802.11n(40MHz) mode at difference date,recording worst case in test report.

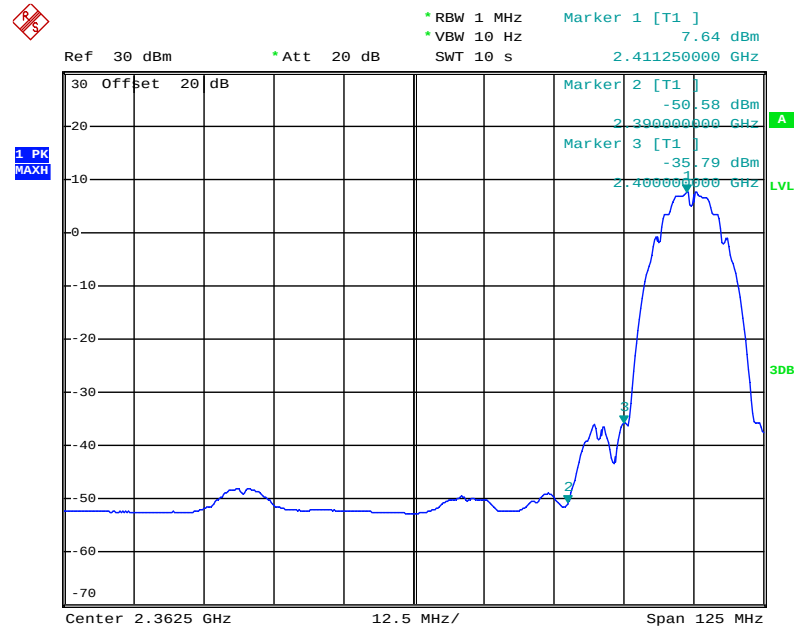
**802.11b****A. Test Verdict:**

Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Refer to Plot
Out of left side band						
2390.00	-39.93	2.50	57.83	PK	74.00	Plot 2.5.1A1
2390.00	-50.58	2.50	47.18	AV	54.00	Plot 2.5.1A2
Out of right side band						
2483.50	-39.43	2.50	58.33	PK	74.00	Plot 2.5.1A3
2483.50	-50.40	2.50	47.36	AV	54.00	Plot 2.5.1A4
2500.00	-39.73	2.50	58.03	PK	74.00	Plot 2.5.1A3
2500.00	-51.50	2.50	46.26	AV	54.00	Plot 2.5.1A4

B. Test Plots:

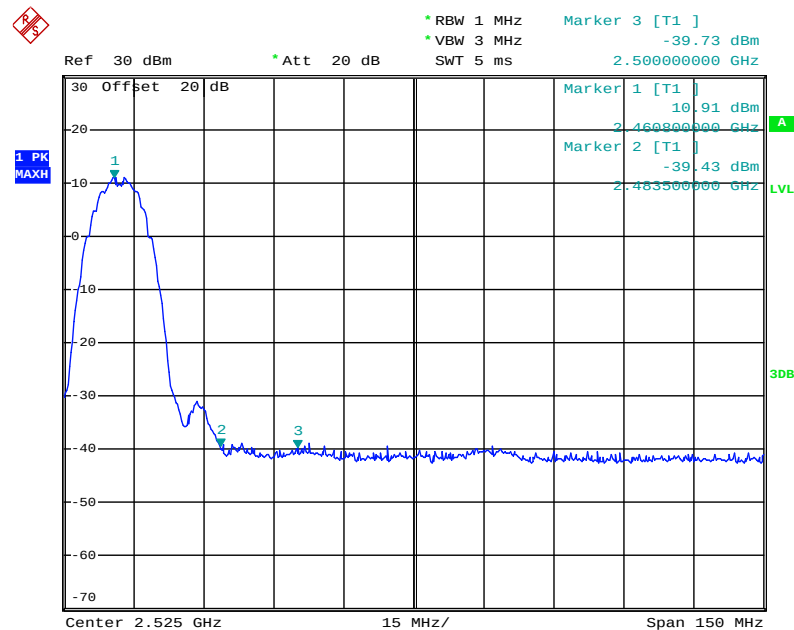
Date: 9.JAN.2013 09:41:06

(Plot 2.5.1 A1: Channel = 1 2412MHz @ 802.11b)



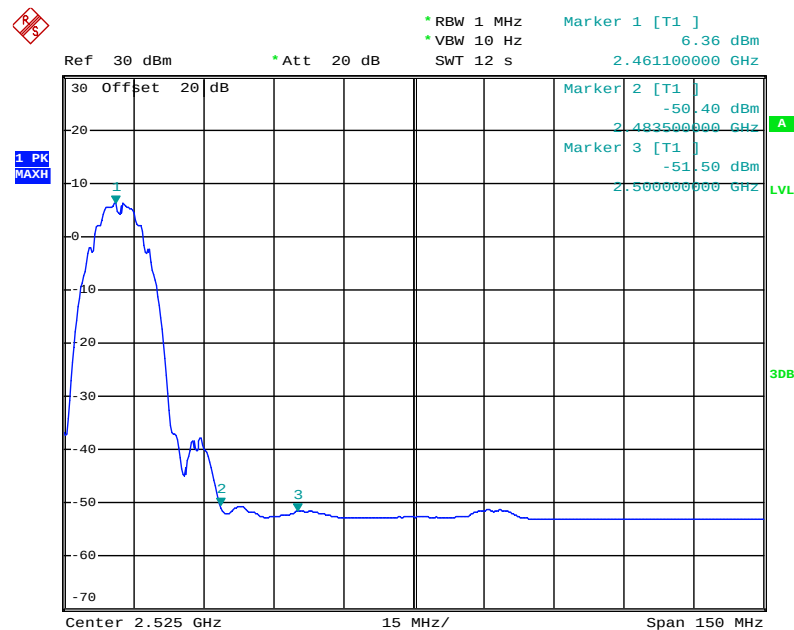
Date: 9.JAN.2013 09:42:02

(Plot 2.5.1 A2: Channel = 1 2412MHz @ 802.11b)



Date: 9.JAN.2013 09:53:30

(Plot 2.5.1 A3: Channel = 11 2462MHz @ 802.11b)



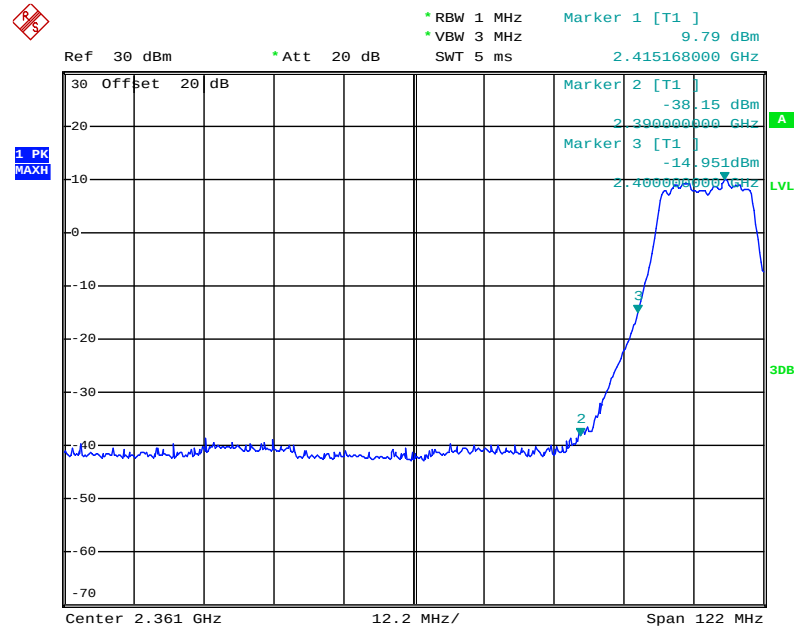
Date: 9.JAN.2013 09:54:47

(Plot 2.5.1 A4: Channel = 11 2462MHz @ 802.11b)

802.11g**A. Test Verdict:**

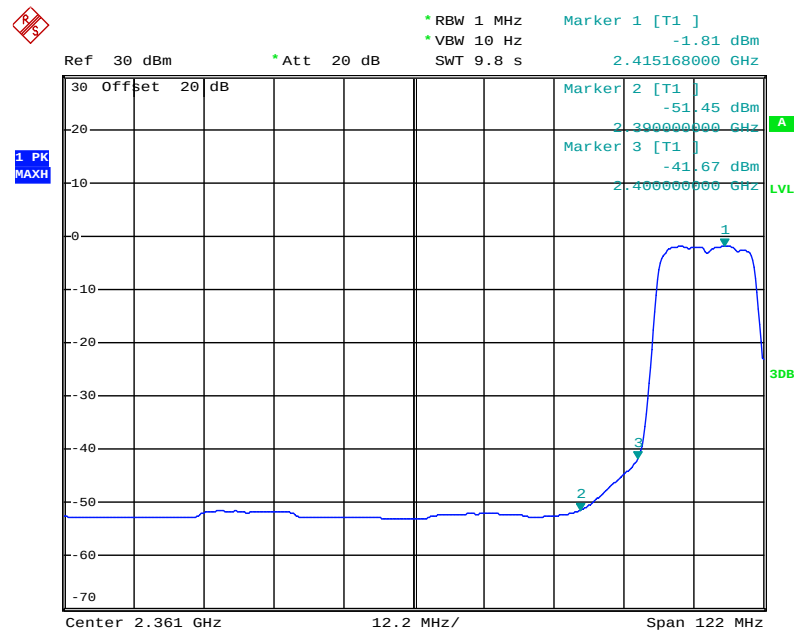
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Refer to Plot
Out of left side band						
2390.00	-38.15	2.50	59.61	PK	74.00	Plot 2.5.1B1
2390.00	-51.45	2.50	46.31	AV	54.00	Plot 2.5.1B2
Out of right side band						
2483.50	-40.65	2.50	57.01	PK	74.00	Plot 2.5.1B3
2483.50	-52.66	2.50	45.10	AV	54.00	Plot 2.5.1B4
2500.00	-41.45	2.50	56.31	PK	74.00	Plot 2.5.1B3
2500.00	-52.98	2.50	44.78	AV	54.00	Plot 2.5.1B4

B. Test Plots:



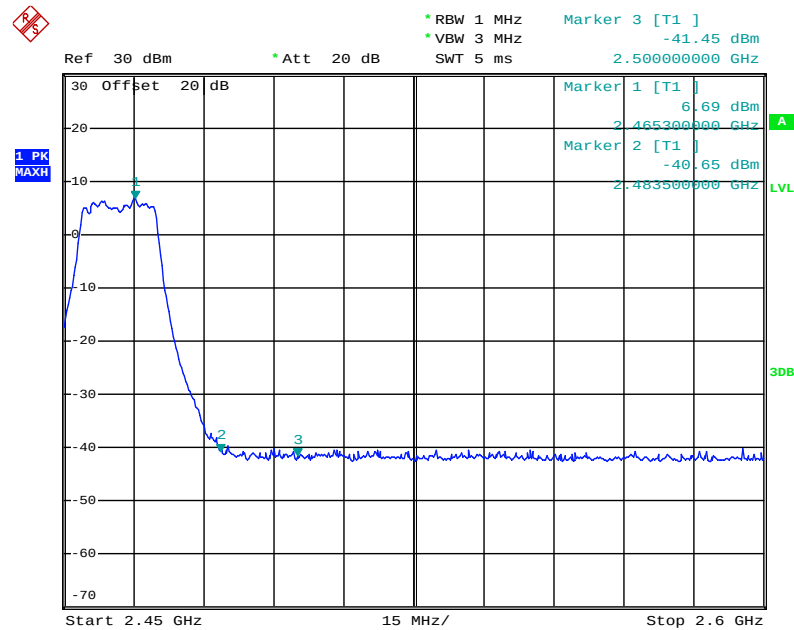
Date: 9.JAN.2013 10:01:59

(Plot 2.5.1 B1: Channel = 1 2412MHz @ 802.11g)



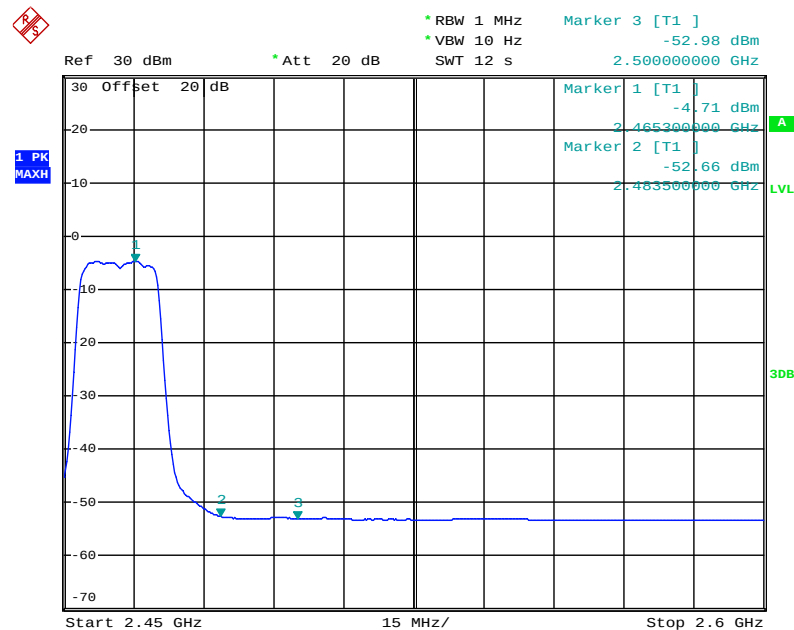
Date: 9.JAN.2013 10:02:32

(Plot 2.5.1 B2: Channel = 1 2412MHz @ 802.11g)



Date: 9.JAN.2013 10:18:51

(Plot 2.5.1 B3: Channel = 11 2462MHz @ 802.11g)

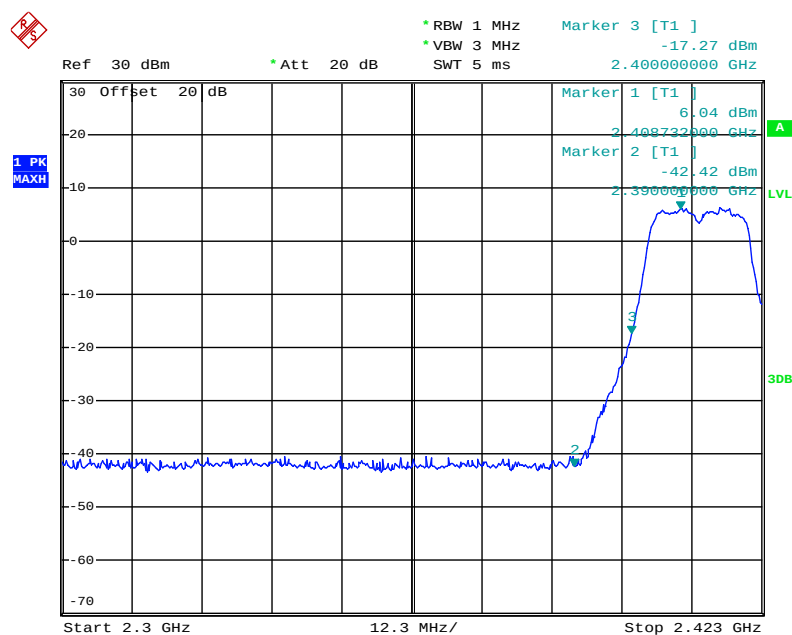


Date: 9.JAN.2013 10:19:56

(Plot 2.5.1 B4: Channel = 11 2462MHz @ 802.11g)

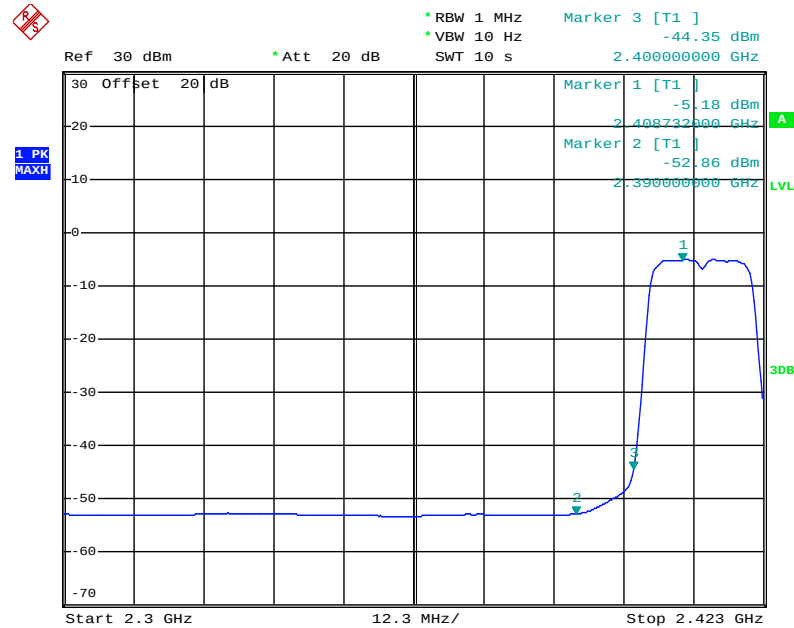
**802.11n-20****A. Test Verdict:**

Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Refer to Plot
Out of left side band						
2390.00	-42.42	2.50	55.34	PK	74.00	Plot 2.5.1C1
2390.00	-52.86	2.50	44.90	AV	54.00	Plot 2.5.1C2
Out of right side band						
2483.50	-42.00	2.50	55.76	PK	74.00	Plot 2.5.1C3
2483.50	-52.88	2.50	44.88	AV	54.00	Plot 2.5.1C4
2500.00	-42.15	2.50	55.61	PK	74.00	Plot 2.5.1C3
2500.00	-53.05	2.50	44.71	AV	54.00	Plot 2.5.1C4

B. Test Plots:

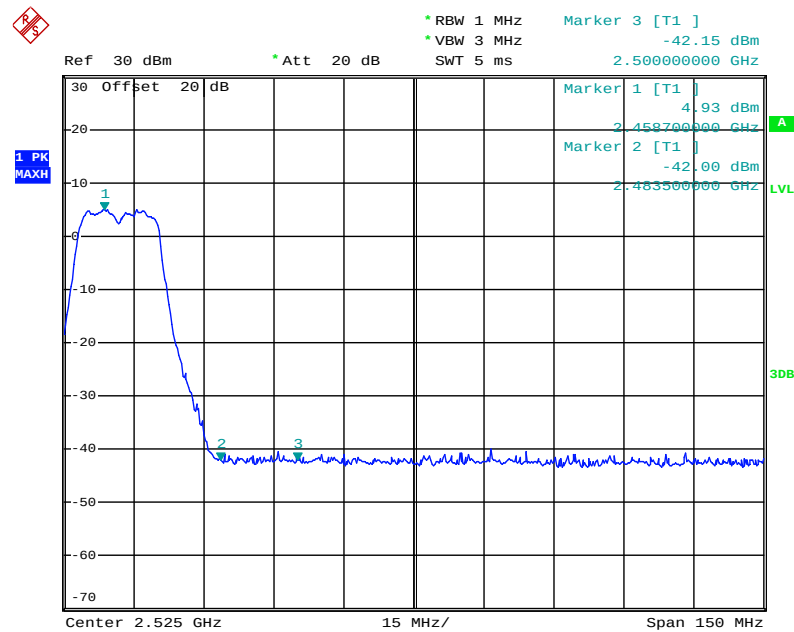
Date: 9.JAN.2013 10:27:44

(Plot 2.5.1 C1: Channel = 1 2412MHz @ 802.11n-20)



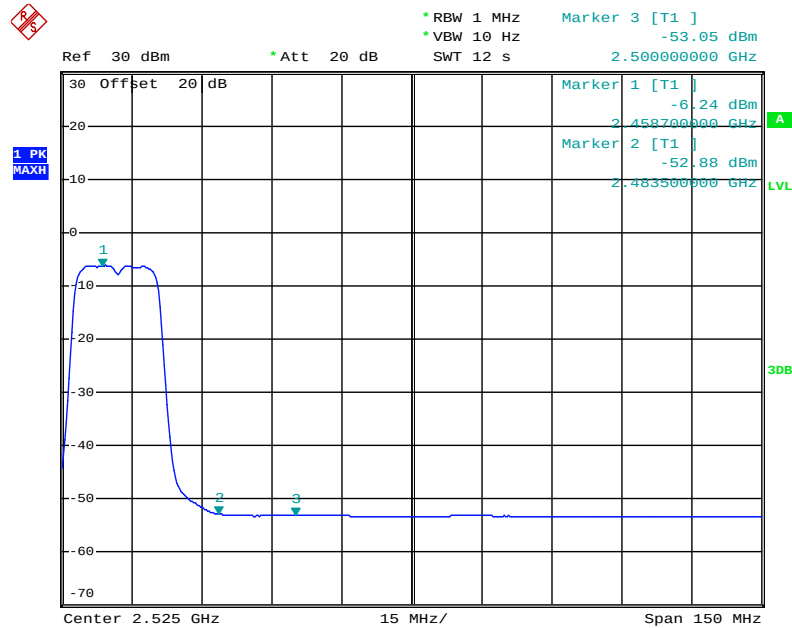
Date: 9.JAN.2013 10:28:16

(Plot 2.5.1 C2: Channel = 1 2412MHz @ 802.11n-20)



Date: 9.JAN.2013 10:36:04

(Plot 2.5.1 C3: Channel = 11 2462MHz @ 802.11n-20)



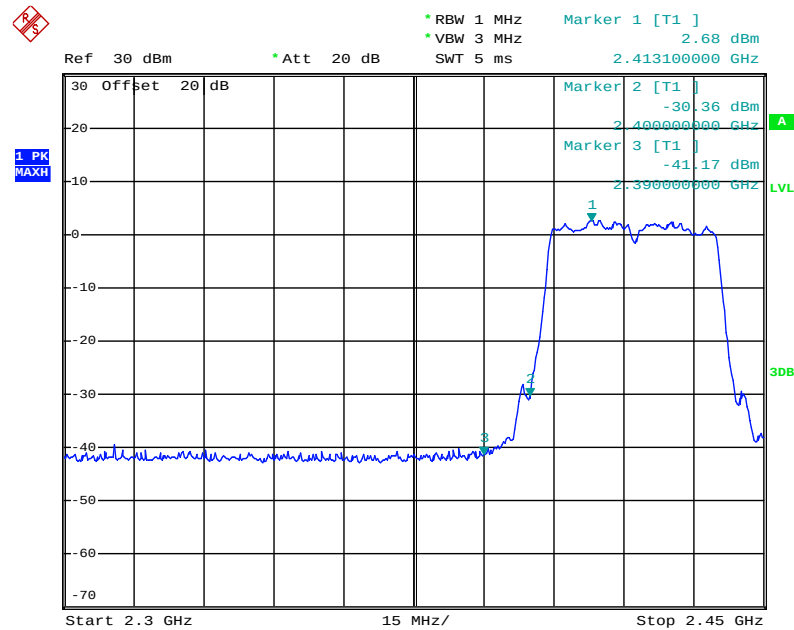
Date: 9.JAN.2013 10:36:35

(Plot 2.5.1 C4: Channel = 11 2462MHz @ 802.11n-20)

802.11n(40MHz)**A. Test Verdict:**

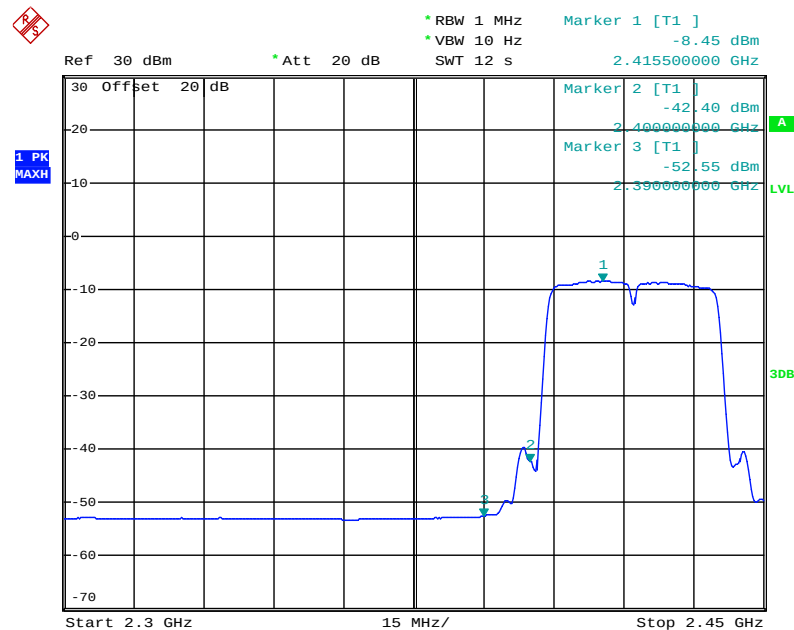
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Refer to Plot
Out of left side band						
2390.00	-41.17	2.50	56.59	PK	74.00	Plot 2.5.1D1
2390.00	-52.55	2.50	45.21	AV	54.00	Plot 2.5.1D2
Out of right side band						
2483.50	-33.25	2.50	64.51	PK	74.00	Plot 2.5.1D3
2483.50	-45.05	2.50	52.71	AV	54.00	Plot 2.5.1D4
2500.00	-32.25	2.50	65.51	PK	74.00	Plot 2.5.1D3
2500.00	-45.15	2.50	52.61	AV	54.00	Plot 2.5.1D4

B. Test Plots:



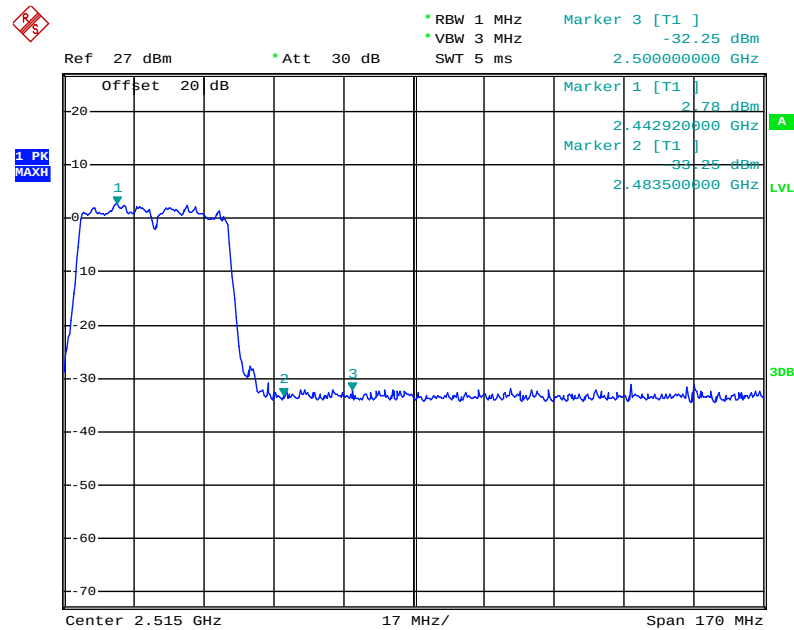
Date: 9.JAN.2013 10:43:33

(Plot 2.5.1 D1: Channel = 2 2422MHz @ 802.11n-40)



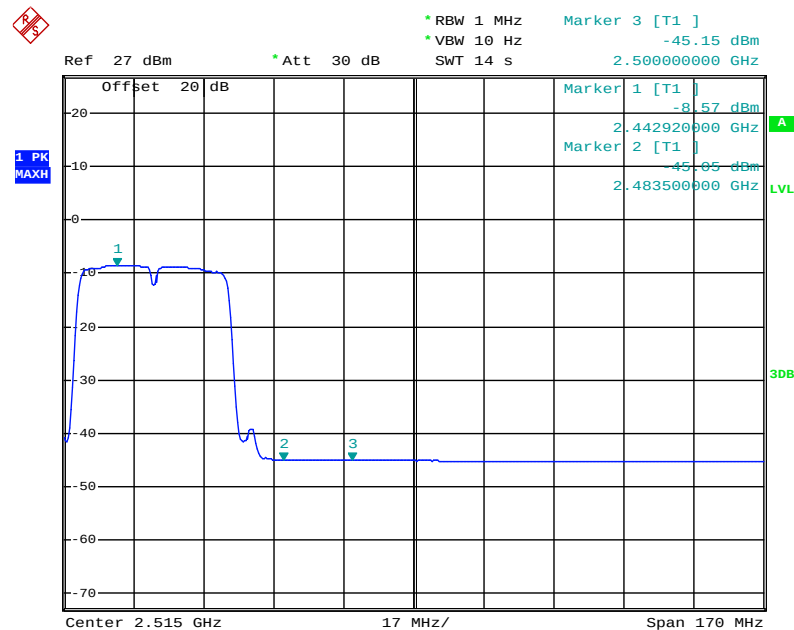
Date: 9.JAN.2013 10:44:32

(Plot 2.5.1 D2: Channel = 3 2422MHz @ 802.11n-40)



Date: 9.JAN.2013 13:27:15

(Plot 2.5.1 D3: Channel = 9 2452MHz @ 802.11n-40)

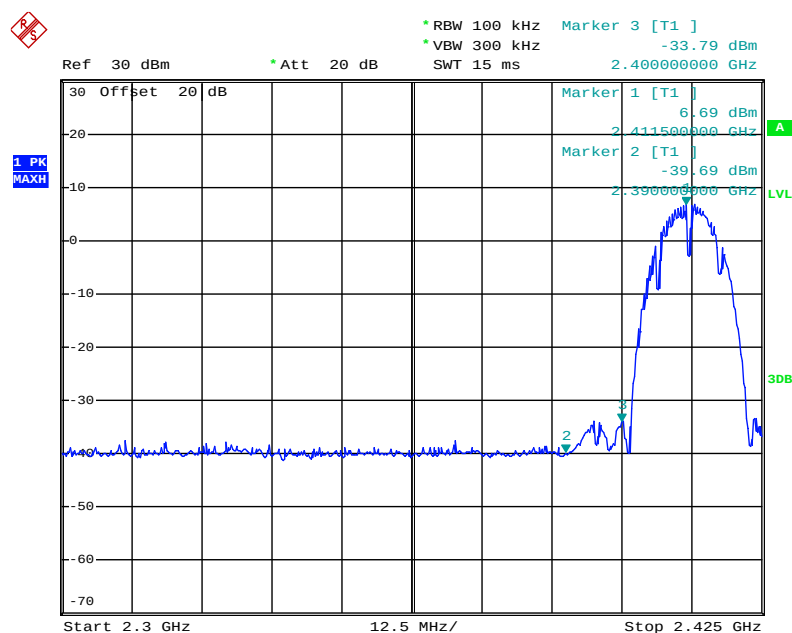


Date: 9.JAN.2013 13:28:59

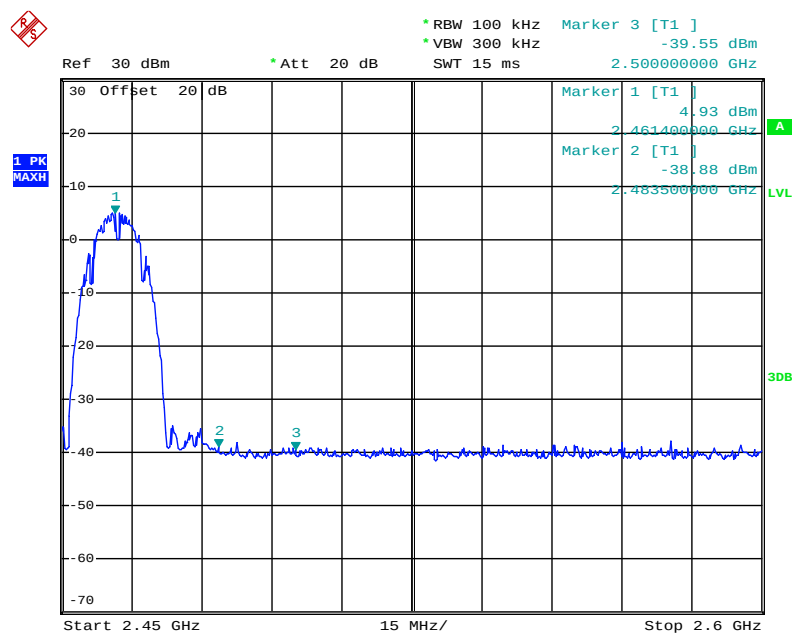
(Plot 2.5.1 D4: Channel = 9 2452MHz @ 802.11n-40)

**Photos of Conducted Band Edge Measurement****802.11b Test mode****A. Test Verdict:**

Frequency (MHz)	Delta Peak to Band emission (dBc)	Detector	Limit (dBc)	Refer to Plot	Verdict
Out of left side band					
2390.00	-46.38	PK	-20.00	Plot 2.5.2A1	Pass
2400.00	-40.48	PK	-20.00	Plot 2.5.2A1	Pass
Out of right side band					
2483.50	-43.81	PK	-20.00	Plot 2.5.2A2	Pass
2500.00	-44.48	PK	-20.00	Plot 2.5.2A2	Pass

B. Test Plots:

(Plot 2.5.2 A1: Channel =1 2412MHz @ 802.11b)



Date: 9.JAN.2013 09:52:47

(Plot 2.5.2 A2: Channel =11 2462MHz @ 802.11b)

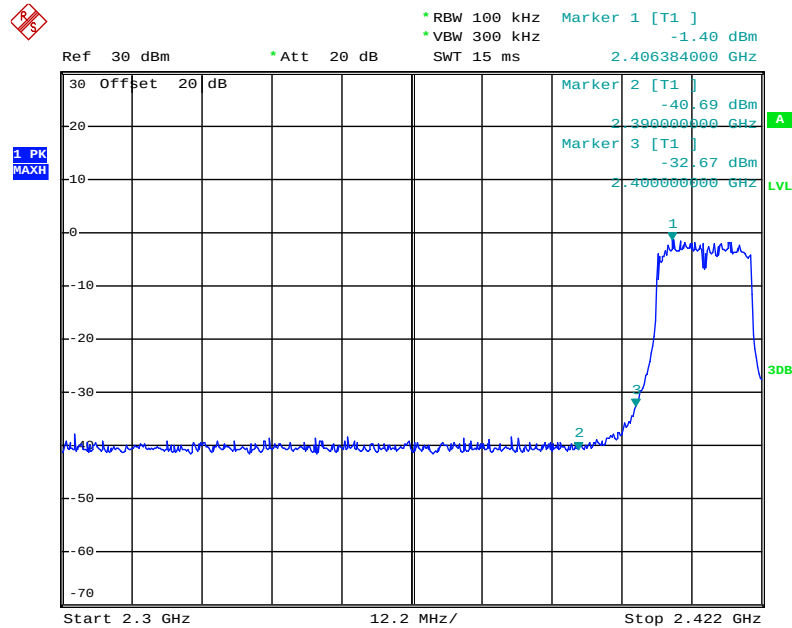
802.11g Test mode

The lowest and highest channels are tested to verify the band edge emissions.

A. Test Verdict:

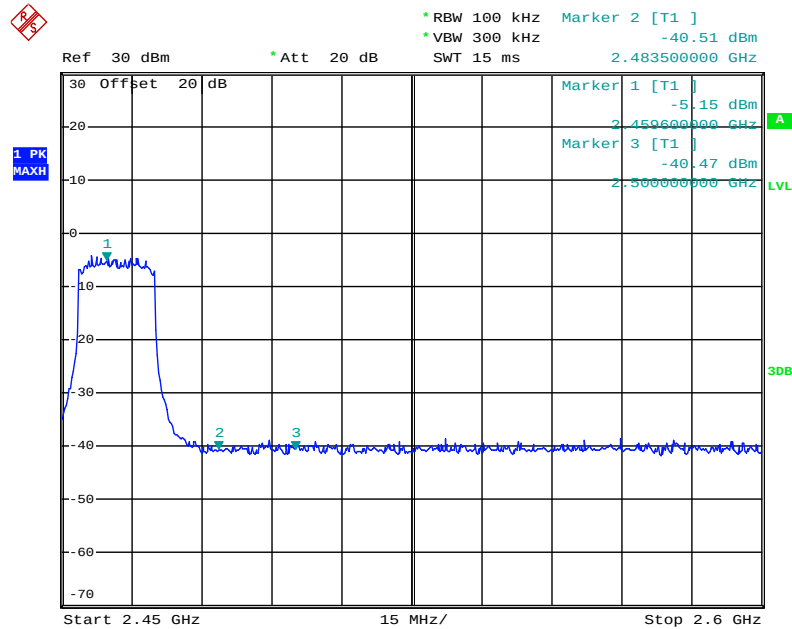
Frequency (MHz)	Delta Peak to Band emission (dBc)	Detector	Limit (dBc)	Refer to Plot	Verdict
Out of left side band					
2390.00	-39.29	PK	-20.00	Plot 2.5.2B1	Pass
2400.00	-31.27	PK	-20.00	Plot 2.5.2B1	Pass
Out of right side band					
2483.50	-35.36	PK	-20.00	Plot 2.5.2B2	Pass
2500.00	-35.32	PK	-20.00	Plot 2.5.2B2	Pass

B. Test Plots:



Date: 9.JAN.2013 10:01:26

(Plot 2.5.2 B1: Channel =1 2412MHz @ 802.11g)



Date: 9.JAN.2013 10:17:39

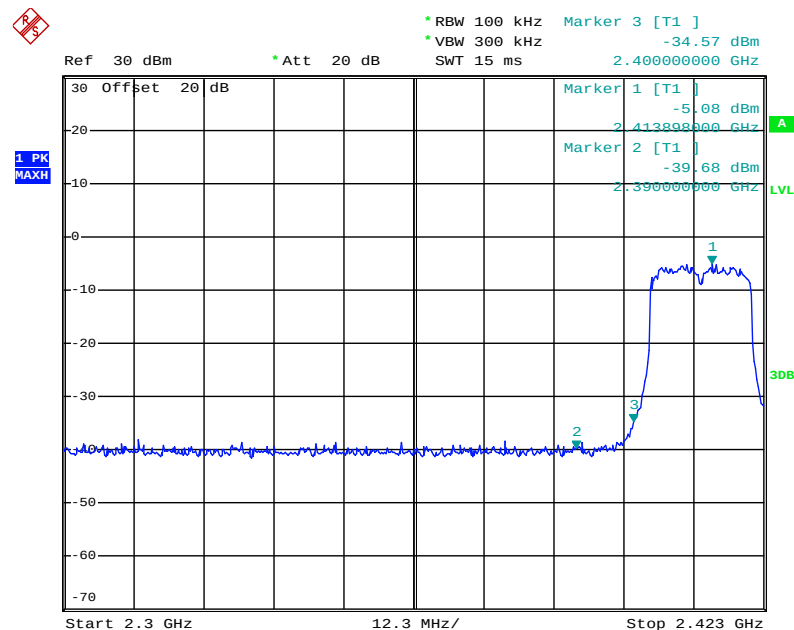
(Plot 2.5.2 B2: Channel =11 2462MHz @ 802.11g)

**802.11n-20 Test mode**

The lowest and highest channels are tested to verify the band edge emissions.

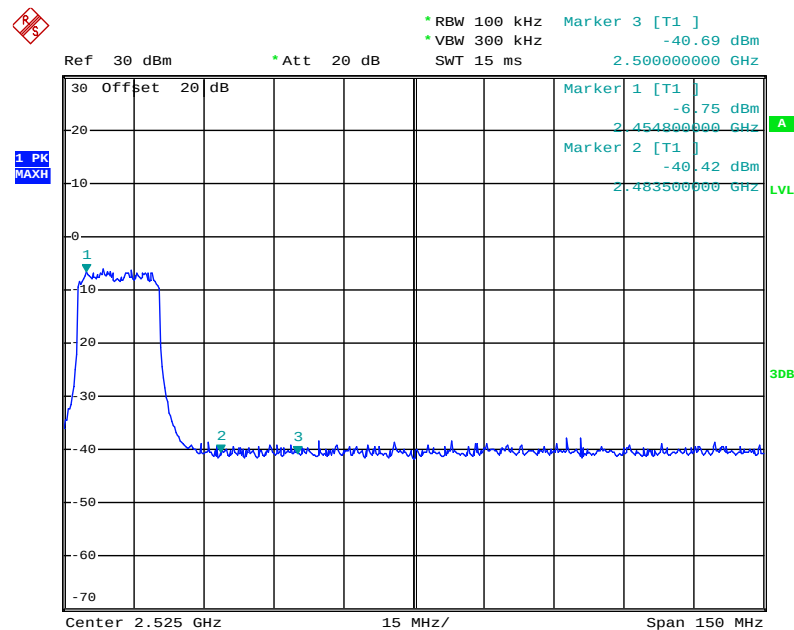
A. Test Verdict:

Frequency (MHz)	Delta Peak to Band emission (dBc)	Detector	Limit (dBc)	Refer to Plot	Verdict
Out of left side band					
2390.00	-34.60	PK	-20.00	Plot 2.5.2C1	Pass
2400.00	-29.49	PK	-20.00	Plot 2.5.2C1	Pass
Out of right side band					
2483.50	-33.67	PK	-20.00	Plot 2.5.2C2	Pass
2500.00	-33.94	PK	-20.00	Plot 2.5.2C2	Pass

B. Test Plots:

Date: 9.JAN.2013 10:27:20

(Plot 2.5.2 C1: Channel=1 2412MHz @ 802.11n-20)



Date: 9.JAN.2013 10:35:35

(Plot 2.5.2 C2: Channel =11 2462MHz @ 802.11n-20)

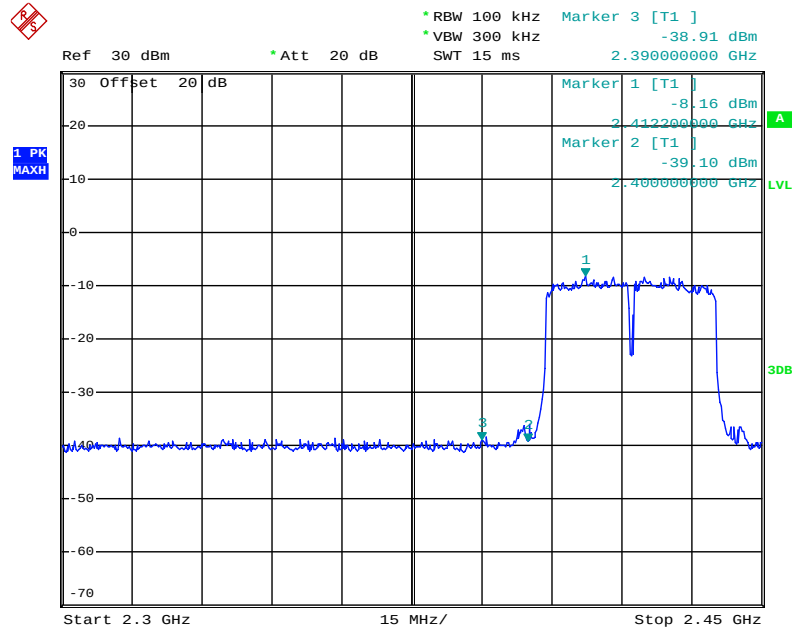
802.11n-40 Test mode

The lowest and highest channels are tested to verify the band edge emissions.

A. Test Verdict:

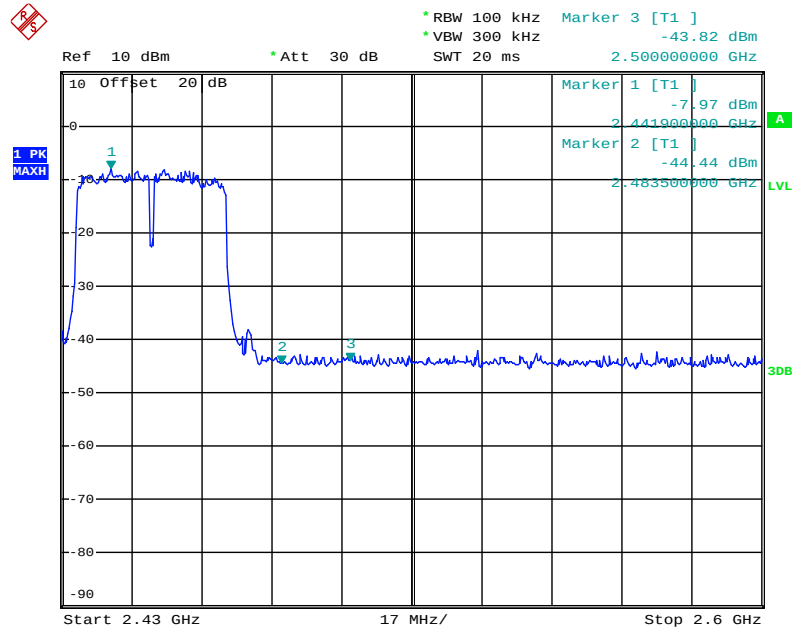
Frequency (MHz)	Delta Peak to Band emission (dBc)	Detector	Limit (dBc)	Refer to Plot	Verdict
Out of left side band					
2390.00	-30.75	PK	-20.00	Plot 2.5.2D1	Pass
2400.00	-30.94	PK	-20.00	Plot 2.5.2D1	Pass
Out of right side band					
2483.50	-36.47	PK	-20.00	Plot 2.5.2D2	Pass
2500.00	-35.85	PK	-20.00	Plot 2.5.2D2	Pass

B. Test Plots:



Date: 9.JAN.2013 10:43:05

(Plot 2.5.2 D1: Channel =3 2422MHz @ 802.11n-40)



Date: 9.JAN.2013 13:25:36

(Plot 2.5.2 D2: Channel =9 2452MHz @ 802.11n-40)

2.6 Conducted Emission

2.6.1 Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

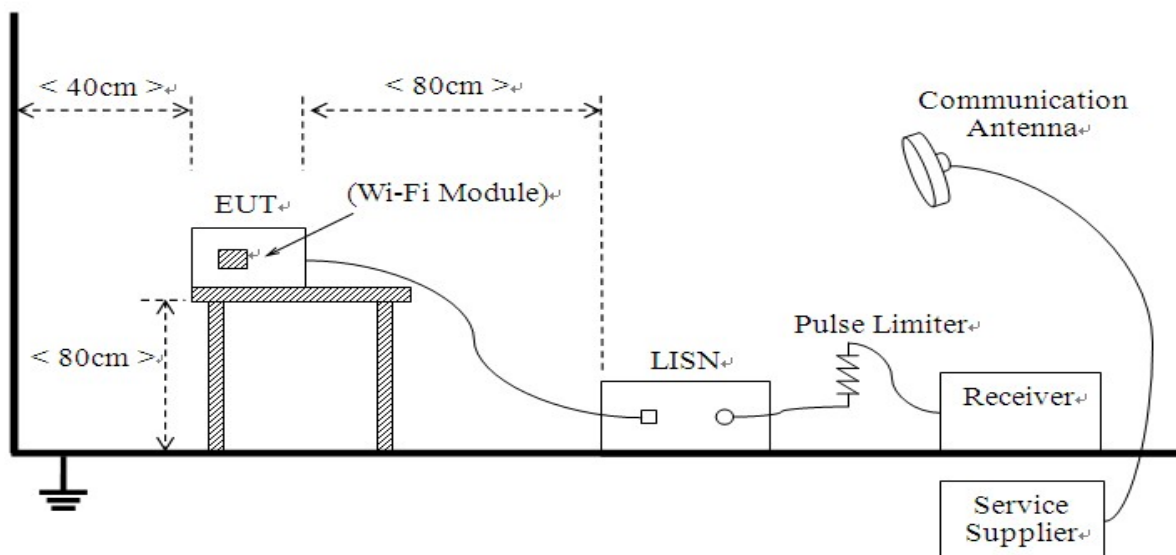
Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.6.2 Test Description

A. Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4:2009

The EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz

AC mains supply. The factors of the site are calibrated to correct the reading. During the measurement, the EUT is activated and controlled by the Wi-Fi Service Supplier (SS) via a Common Antenna.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Test Receiver	ROHDE&SCHWARZ	ESCS30	A0304260	2012.06.10
LISN	ROHDE&SCHWARZ	ESH2-Z5	A0304221	2012.06.10
System Simulator	ROHDE&SCHWARZ	CMU200	A0304212	2012.06.10

The Cal. Interval was one year.

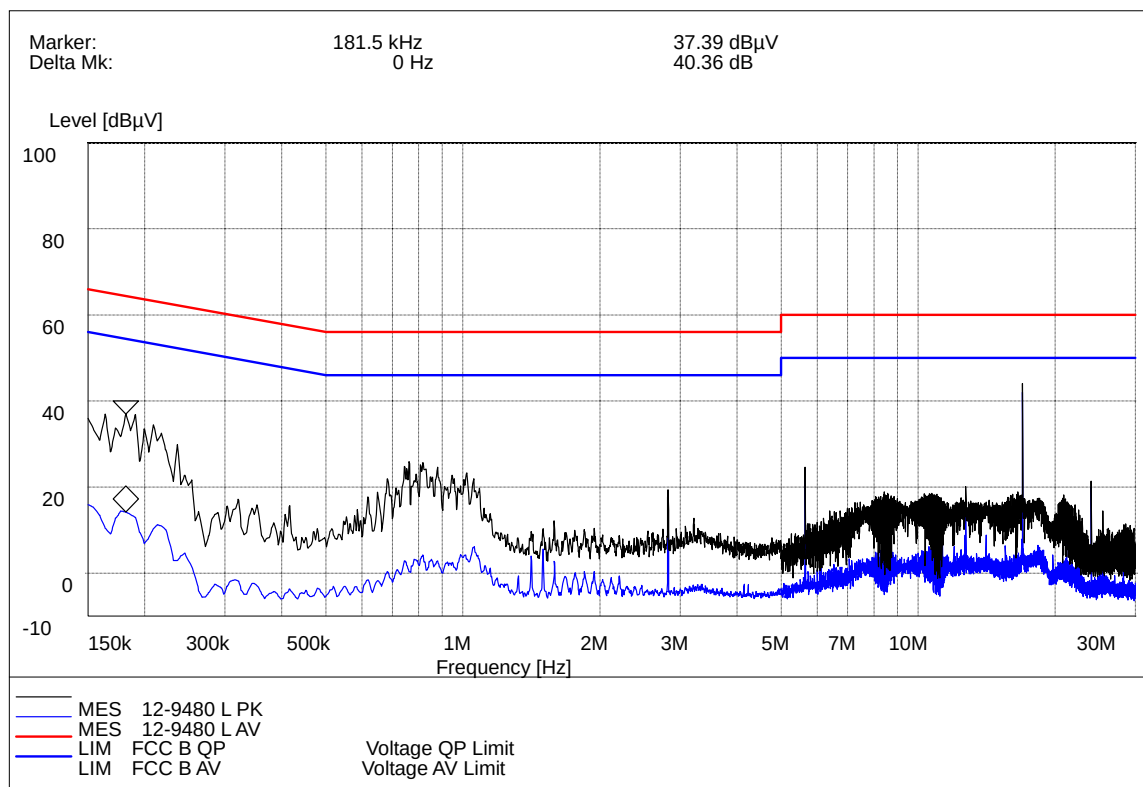
2.6.3 Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

A. Test setup:

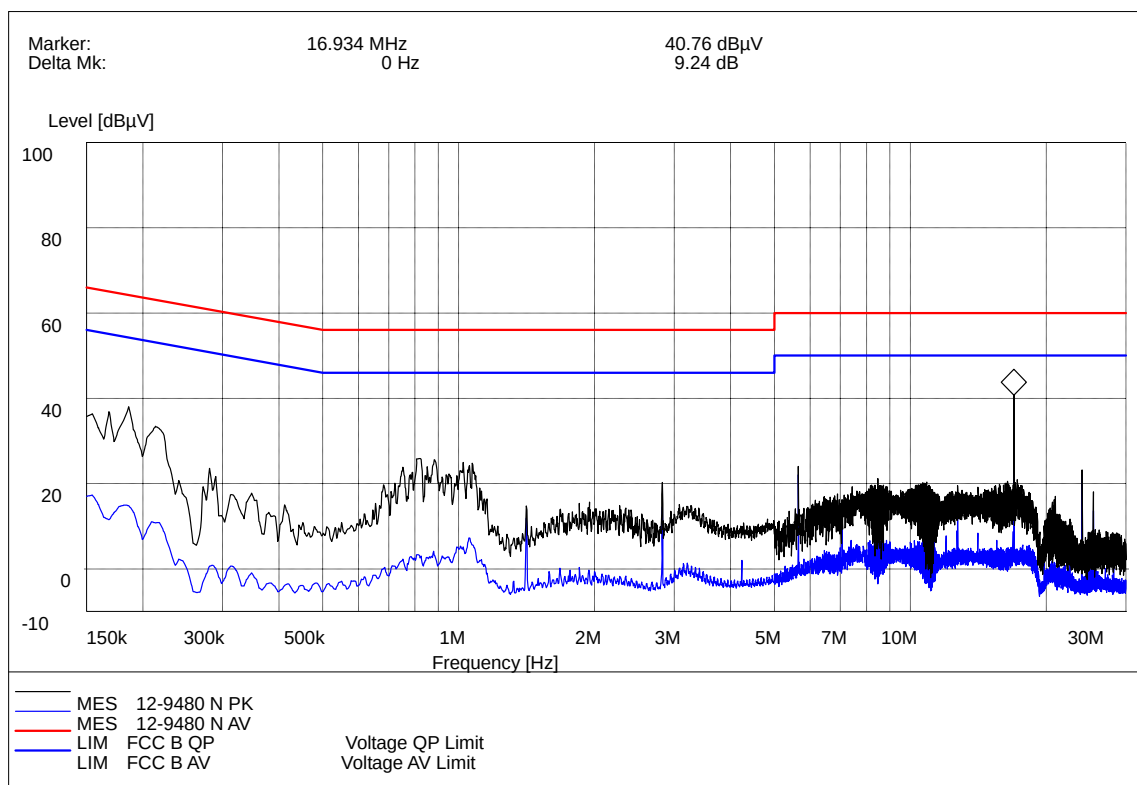
The EUT configuration of the emission tests is EUT + Charger+WLAN Open.

B. Test Plots:



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals							
L Test Data							
QP				AV			
Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Margin (dB)	Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Margin (dB)
0.1815	64.4	37.39	27.01	0.1815	54.4	17.50	36.90
5.6435	60	23.81	36.19	5.6435	50	22.81	21.19
16.934	60	45.30	14.70	16.934	50	44.22	5.78
L Test Curve							



(Plot B: N Phase)



Conducted Disturbance at Mains Terminals							
N Test Data							
QP				AV			
Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Margin (dB)	Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Margin (dB)
0.1870	64.20	40.10	24.10	0.1870	54.20	18.40	35.80
5.6435	60	23.80	36.20	5.6435	50	22.40	27.60
16.934	60	40.76	19.24	16.934	50	39.50	10.50
N Test Curve							

Test Result: PASS

2.7 Radiated Emission

2.7.1 Requirement

According to FCC section 15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 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 ($\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	$20\log(2400/F(\text{kHz}))+80$	300
0.490 - 1.705	$24000/F(\text{kHz})$	$20\log(24000/F(\text{kHz}))+40$	30
1.705 - 30.0	30	$20\log(30)+40$	30
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

Note:

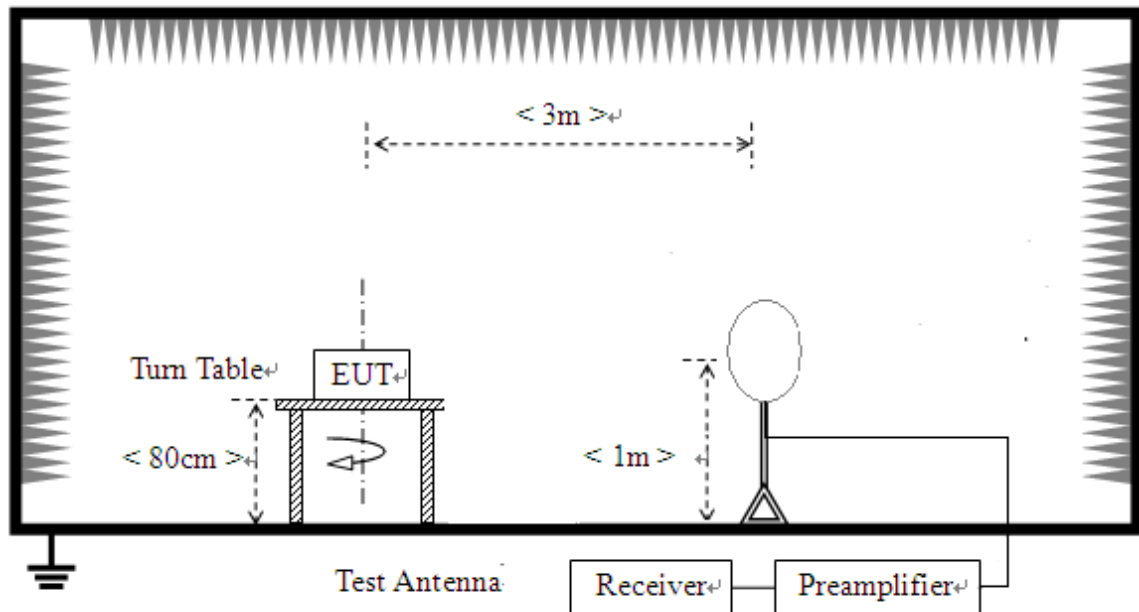
1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

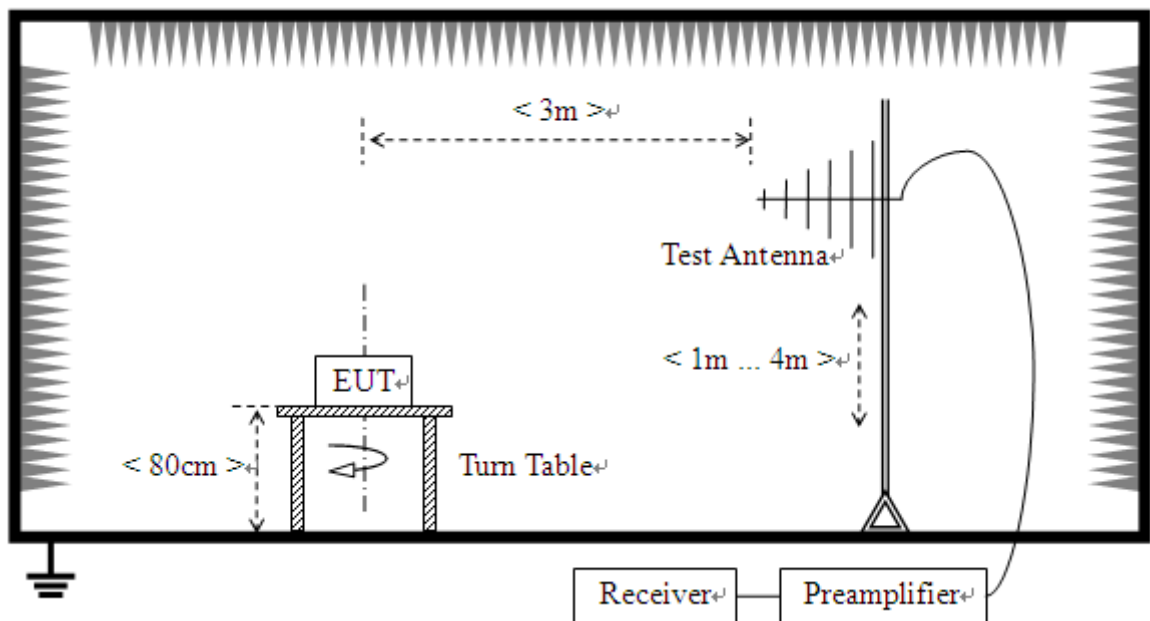
2.7.2 Test Description

A. Test Setup:

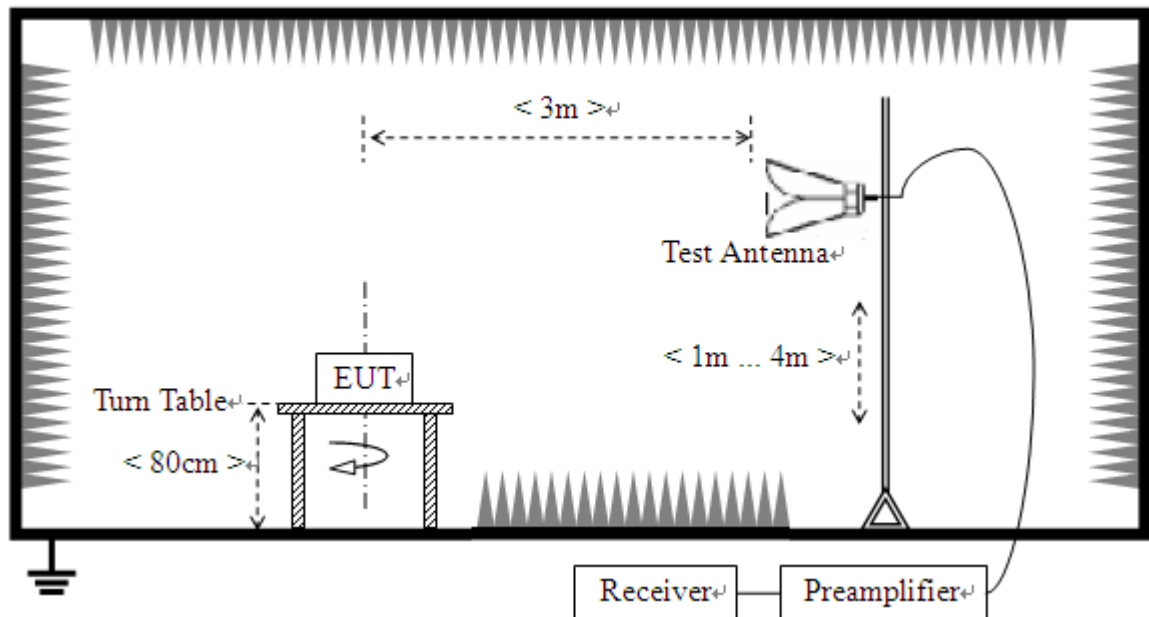
- (1) For radiated emissions from 9kHz to 30MHz



(2) For radiated emissions from 30MHz to 1GHz



(3) For radiated emissions above 1GHz



The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2009). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4.

The EUT of the EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the EUT is activated and controlled by the Wireless Router via a Common Antenna, and is set to operate under hopping-on test mode.

For the Test Antenna:

- In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 2GHz) and Horn Test Antenna (above 2GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
System Simulator	R&S	CMU200	100448	2012.06.10
Receiver	Agilent	E7405A	US44210471	2012.06.10



Description	Manufacturer	Model	Serial No.	Cal. Date
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	A0412372	2012.01.04
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2012.06.10
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	9120C-963	2012.06.10
Test Antenna - Horn	R&S	HL050S7	71688	2012.06.10
Test Antenna -Loop	Schwarzbeck	FMZB 1519	1519-022	2012.06.10
Ampilier 1G~18GHz	R&S	MITEQ AFS42-00101800	25-S-42	2012.06.10
amplifier 20M~3GHz	R&S	PAP-0203H	22018	2012.06.10

The Cal. Interval was one year.

2.7.3 Test Result

According to ANSI C63.4 selection 4.2.2, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V/m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

$L_{\text{Cable loss}}$: Cable loss

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

The minimum clock frequency was 24MHz, the radiated frequency range from 9KHz to 25GHz.

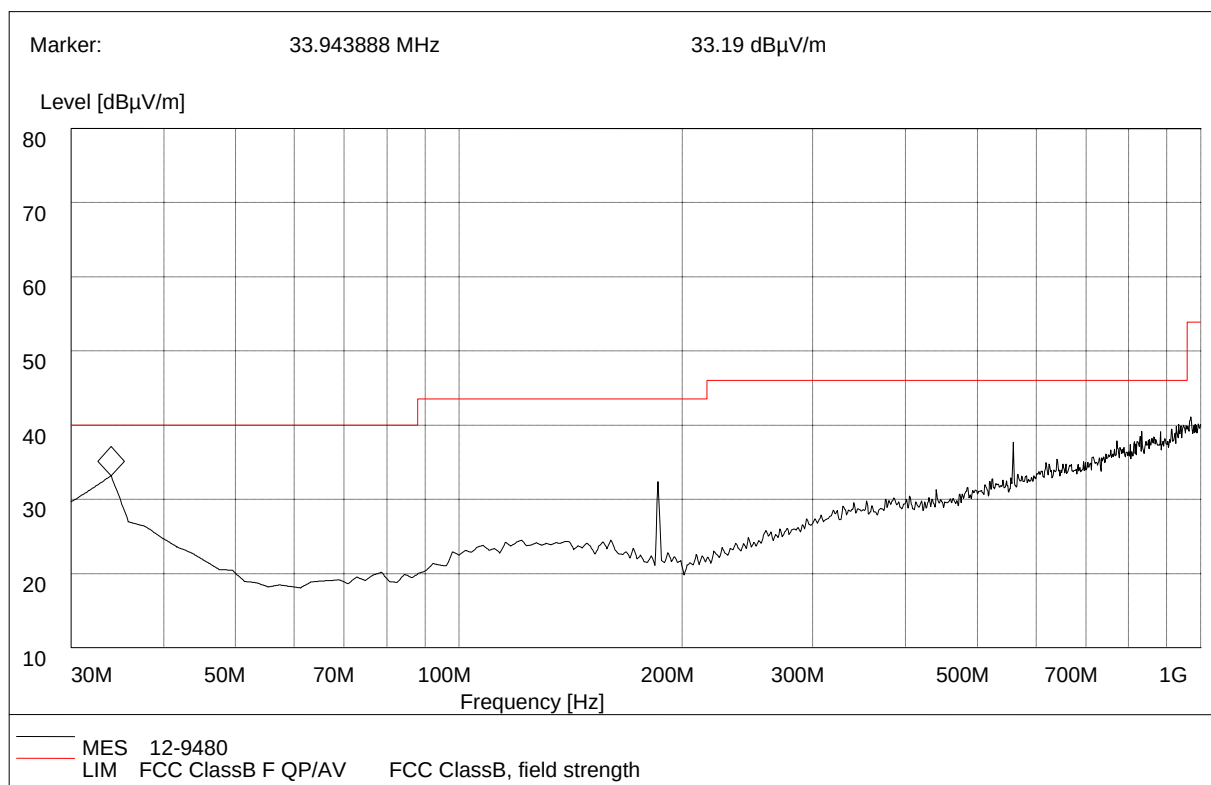
Note: 1. The radiated measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode, the middle channel) is the worst case for all the test mode and channel.

2. ULTRA-BROADBAND ANTENNA for the radiation emission test below 1G.

3. HORN ANTENNA for the radiation emission test above 1G.

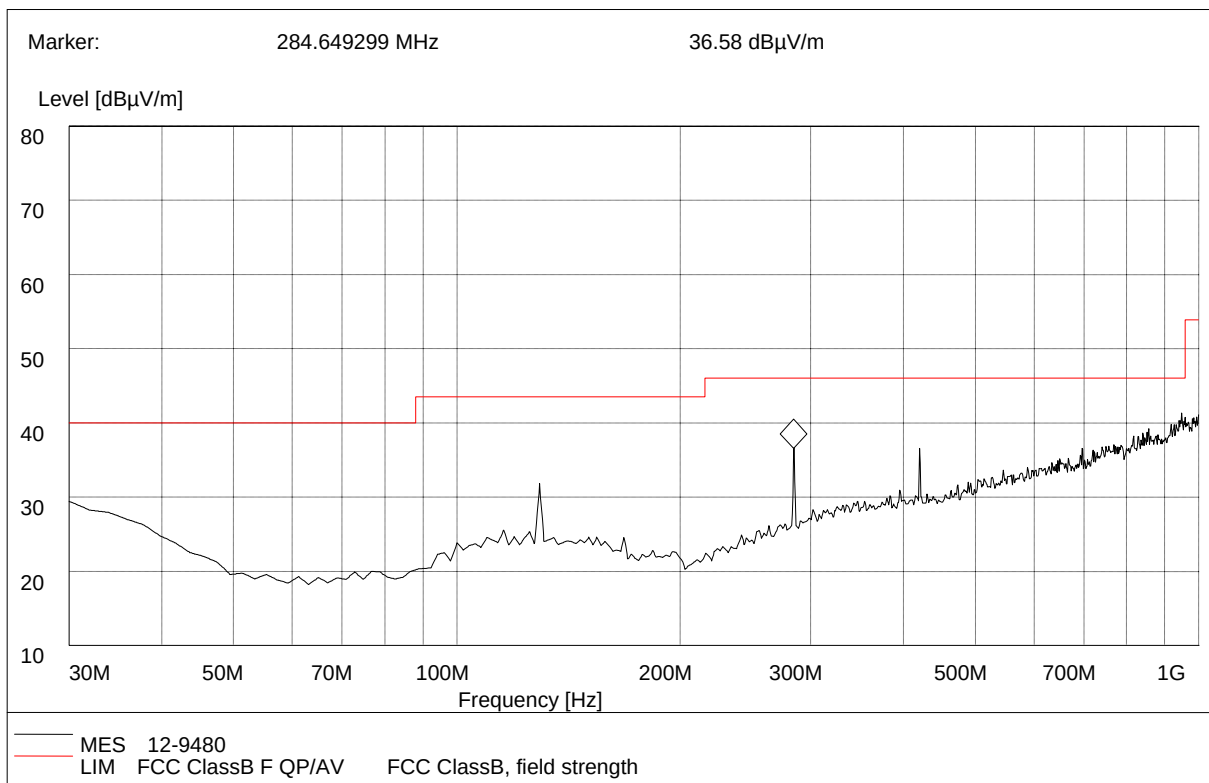
**For 9KHz to 30MHz**

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Verdict
0.63	50.00	71.21	21.21	QP	Pass
1.62	43.62	63.05	19.43	QP	Pass
12.00	49.55	69.54	19.99	QP	Pass
24.00	55.12	69.54	14.42	QP	Pass

For 30MHz to 1000 MHz

(Plot A: Test Antenna Vertical 30M - 1G)

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
33.943888	33.19	120.000	100.0	40.00	6.81	Vertical	Pass
184.64798	32.45	120.000	100.0	43.52	11.67	Vertical	Pass
561.773553	37.34	120.000	100.0	46.02	8.68	Vertical	Pass



(Plot B: Test Antenna Horizontal 30M - 1G)

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
140.658922	32.35	120.000	100.0	43.52	11.17	Horizontal	Pass
284.649299	36.58	120.000	100.0	46.02	9.44	Horizontal	Pass
421.356482	35.72	120.000	100.0	46.02	10.30	Horizontal	Pass

For 1GHz to 25GHz


ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	99.32 PK			1.00 H	360	102.72	28.3	4.90	-36.6
1	*2412.00	92.84 AV			1.00 H	360	96.24	28.3	4.90	-36.6
2	4824.00	50.11 PK	74.00	23.89	1.00 H	359	46.91	32.7	7.00	-36.5
2	4824.00	40.96 AV	54.00	13.04	1.00 H	359	37.76	32.7	7.00	-36.5
3	7236.00	52.94 PK	74.00	21.06	1.00 H	152	43.54	35.8	8.90	-35.3
3	7236.00	44.99 AV	54.00	9.01	1.00 H	152	35.59	35.8	8.90	-35.3
4	9648.00	52.62 PK	74.00	21.38	1.00 H	140	40.02	37.2	10.20	-34.8
4	9648.00	44.92 AV	54.00	9.08	1.00 H	140	32.32	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	101.55 PK			1.00 V	124	104.95	28.3	4.90	-36.6
1	*2412.00	92.45 AV			1.00 V	124	95.85	28.3	4.90	-36.6
2	4824.00	53.82 PK	74.00	20.18	1.00 V	339	50.62	32.7	7.00	-36.5
2	4824.00	44.07 AV	54.00	9.93	1.00 V	339	40.87	32.7	7.00	-36.5
3	7236.00	53.96 PK	74.00	20.04	1.00 V	340	44.56	35.8	8.90	-35.3
3	7236.00	42.89 AV	54.00	11.11	1.00 V	340	33.49	35.8	8.90	-35.3
4	9648.00	55.24 PK	74.00	18.76	1.00 V	20	42.64	37.2	10.20	-34.8
4	9648.00	45.24 AV	54.00	8.76	1.00 V	20	32.64	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2437MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	99.49 PK			1.00 H	153	102.69	28.3	5.10	-36.6
1	*2437.00	91.26 AV			1.00 H	153	94.46	28.3	5.10	-36.6
2	4874.00	47.43 PK	74.00	26.57	1.00 H	202	44.03	32.3	7.60	-36.5
2	4874.00	36.17 AV	54.00	17.83	1.00 H	202	32.77	32.3	7.60	-36.5
3	7311.00	52.68 PK	74.00	21.32	1.00 H	355	43.28	36.1	8.60	-35.3
3	7311.00	40.49 AV	54.00	13.51	1.00 H	355	31.09	36.1	8.60	-35.3
4	9748.00	54.96 PK	74.00	19.04	1.00 H	28	42.36	37.2	10.20	-34.8
4	9748.00	42.36 AV	54.00	11.64	1.00 H	28	29.76	37.2	10.20	-34.8


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2437MHz)

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	100.88	PK			1.00 V	121	104.08	28.3	5.10	-36.6
1	*2437.00	91.28	AV			1.00 V	121	94.48	28.3	5.10	-36.6
2	4874.00	48.54	PK	74.00	25.46	1.00 V	97	45.14	32.3	7.60	-36.5
2	4874.00	36.24	AV	54.00	17.76	1.00 V	97	32.84	32.3	7.60	-36.5
3	7311.00	60.84	PK	74.00	13.16	1.00 V	288	51.44	36.1	8.60	-35.3
3	7311.00	40.79	AV	54.00	13.21	1.00 V	288	31.39	36.1	8.60	-35.3
4	9748.00	51.18	PK	74.00	22.82	1.00 V	89	38.58	37.2	10.20	-34.8
4	9748.00	39.71	AV	54.00	14.29	1.00 V	89	27.11	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2462MHz)

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	95.10	PK			1.00 H	154	98.40	28.6	4.70	-36.6
1	*2462.00	87.88	AV			1.00 H	154	91.18	28.6	4.70	-36.6
2	4924.00	51.00	PK	74.00	23.00	1.00 H	100	47.20	33.0	7.00	-36.2
2	4924.00	35.20	AV	54.00	18.80	1.00 H	100	31.40	33.0	7.00	-36.2
3	7386.00	58.38	PK	74.00	15.62	1.00 H	190	48.98	36.2	8.50	-35.3
3	7386.00	44.67	AV	54.00	9.33	1.00 H	190	35.27	36.2	8.50	-35.3
4	9848.00	52.54	PK	74.00	21.46	1.00 H	113	39.94	37.2	10.20	-34.8
4	9848.00	39.66	AV	54.00	14.34	1.00 H	113	27.06	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2462MHz)

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	99.11	PK			1.00 V	247	102.41	28.6	4.70	-36.6
1	*2462.00	92.37	AV			1.00 V	247	95.67	28.6	4.70	-36.6
2	4924.00	56.69	PK	74.00	17.31	1.00 V	90	52.89	33.0	7.00	-36.2
2	4924.00	49.12	AV	54.00	4.88	1.00 V	90	45.32	33.0	7.00	-36.2
3	7386.00	66.19	PK	74.00	7.81	1.00 V	29	56.79	36.2	8.50	-35.3
3	7386.00	44.62	AV	54.00	9.38	1.00 V	29	35.22	36.2	8.50	-35.3
4	9848.00	58.20	PK	74.00	15.80	1.00 V	222	45.60	37.2	10.20	-34.8
4	9848.00	42.71	AV	54.00	11.29	1.00 V	222	30.11	37.2	10.20	-34.8

- REMARKS:**
1. Emission level (dBuV/m)=Raw Value(dBuV) +Antenna Factor (dB/m) + Cable Factor (dB) +Pre-amplifier Factor
 2. The other emission levels were very low against the limit.
 3. Margin value = Limit value- Emission level.
 4. The limit value is defined as per 15.247
 5. “* “: Fundamental frequency
 6. For Wireless 802.11b mode at 11Mbps.


ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	97.46 PK			1.00 H	123	100.76	28.3	5.00	-36.6
1	*2412.00	91.10 AV			1.00 H	123	94.40	28.3	5.00	-36.6
2	4824.00	50.42 PK	74.00	23.58	1.00 H	216	46.62	32.7	7.30	-36.2
2	4824.00	42.43 AV	54.00	11.57	1.00 H	216	38.63	32.7	7.30	-36.2
3	7236.00	57.25 PK	74.00	16.75	1.00 H	176	47.85	35.8	8.90	-35.3
3	7236.00	42.72 AV	54.00	11.28	1.00 H	176	33.32	35.8	8.90	-35.3
4	9648.00	52.4 PK	74.00	21.60	1.00 H	72	39.80	37.2	10.20	-34.8
4	9648.00	43.61 AV	54.00	10.39	1.00 H	72	31.01	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	102.44 PK			1.00 V	127	105.74	28.3	5.00	-36.6
1	*2412.00	92.32 AV			1.00 V	127	95.62	28.3	5.00	-36.6
2	4824.00	57.85 PK	74.00	16.15	1.00 V	95	54.05	32.7	7.30	-36.2
2	4824.00	45.87 AV	54.00	8.13	1.00 V	95	42.07	32.7	7.30	-36.2
3	7236.00	63.88 PK	74.00	10.12	1.00 V	0	54.48	35.8	8.90	-35.3
3	7236.00	49.52 AV	54.00	4.48	1.00 V	0	40.12	35.8	8.90	-35.3
4	9648.00	62.52 PK	74.00	11.48	1.00 V	264	49.92	37.2	10.20	-34.8
4	9648.00	53.71 AV	54.00	0.29	1.00 V	264	41.11	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2437MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	98.77 PK			1.00 H	100	102.07	28.3	5.10	-36.6
1	*2437.00	85.48 AV			1.00 H	100	88.78	28.3	5.10	-36.6
2	4874.00	65.80 PK	74.00	8.20	1.00 H	214	62.40	32.8	7.10	-36.5
2	4874.00	48.16 AV	54.00	5.84	1.00 H	214	44.76	32.8	7.10	-36.5
3	7311.00	60.55 PK	74.00	13.45	1.00 H	0	51.15	36.1	8.60	-35.3
3	7311.00	47.60 AV	54.00	6.40	1.00 H	0	38.20	36.1	8.60	-35.3
4	9748.00	52.11 PK	74.00	21.89	1.00 H	163	39.51	37.2	10.20	-34.8
4	9748.00	41.41 AV	54.00	12.59	1.00 H	163	28.81	37.2	10.20	-34.8


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2437MHz)

No.	Frequency (MHz)	Emssion Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	100.44	PK			1.00 V	122	103.74	28.3	5.10	-36.6
1	*2437.00	90.81	AV			1.00 V	122	94.11	28.3	5.10	-36.6
2	4874.00	60.66	PK	74.00	13.34	1.00 V	100	57.26	32.8	7.10	-36.5
2	4874.00	43.74	AV	54.00	10.26	1.00 V	100	40.34	32.8	7.10	-36.5
3	7311.00	55.35	PK	74.00	18.65	1.00 V	356	45.95	36.1	8.60	-35.3
3	7311.00	44.69	AV	54.00	9.31	1.00 V	356	35.29	36.1	8.60	-35.3
4	9748.00	51.58	PK	74.00	22.42	1.00 V	26	38.98	37.2	10.20	-34.8
4	9748.00	43.55	AV	54.00	10.45	1.00 V	26	30.95	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2462MHz)

No.	Frequency (MHz)	Emssion Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	93.99	PK			1.00 V	125	97.29	28.2	5.10	-36.6
1	*2462.00	86.62	AV			1.00 V	125	89.92	28.2	5.10	-36.6
2	4924.00	48.47	PK	74.00	25.53	1.00 V	96	44.67	33.0	7.00	-36.2
2	4924.00	36.87	AV	54.00	17.13	1.00 V	96	33.07	33.0	7.00	-36.2
3	7386.00	56.94	PK	74.00	17.06	1.00 V	35	47.54	36.2	8.50	-35.3
3	7386.00	44.92	AV	54.00	9.08	1.00 V	35	35.52	36.2	8.50	-35.3
4	9848.00	48.50	PK	74.00	25.50	1.00 V	37	35.90	37.3	10.10	-34.8
4	9848.00	42.00	AV	54.00	12.00	1.00 V	37	29.40	37.3	10.10	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2462MHz)

No.	Frequency (MHz)	Emssion Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	94.79	PK			1.00 H	156	93.09	28.2	5.10	-36.6
1	*2462.00	88.71	AV			1.00 H	156	87.01	28.2	5.10	-36.6
2	4924.00	52.74	PK	74.00	21.26	1.00 H	198	48.94	33.0	7.00	-36.2
2	4924.00	39.76	AV	54.00	14.24	1.00 H	198	35.96	33.0	7.00	-36.2
3	7386.00	57.72	PK	74.00	16.28	1.00 H	90	48.32	36.2	8.50	-35.3
3	7386.00	44.62	AV	54.00	9.38	1.00 H	90	35.22	36.2	8.50	-35.3
4	9848.00	55.45	PK	74.00	18.55	1.00 H	124	42.85	37.3	10.10	-34.8
4	9848.00	48.25	AV	54.00	5.75	1.00 H	124	35.65	37.3	10.10	-34.8

- REMARKS:**
1. Emission level (dBuV/m) =Raw Value (dBuV) +Antenna Factor (dB/m) + Cable Factor (dB) +Pre-amplifier Factor
 2. The other emission levels were very low against the limit.
 3. Margin value = Limit value- Emission level.
 4. The limit value is defined as per 15.247
 5. “ * “ : Fundamental frequency
 6. For Wireless 802.11g mode at 54Mbps.


ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-20--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	95.88 PK			1.00 H	100	99.18	28.3	5.00	-36.6
1	*2412.00	85.88 AV			1.00 H	100	89.18	28.3	5.00	-36.6
2	4824.00	57.69 PK	74.00	16.31	1.00 H	204	53.89	32.7	7.30	-36.2
2	4824.00	43.7 AV	54.00	10.30	1.00 H	204	39.90	32.7	7.30	-36.2
3	7236.00	59.29 PK	74.00	14.71	1.00 H	114	49.89	35.8	8.90	-35.3
3	7236.00	43.5 AV	54.00	10.50	1.00 H	114	34.10	35.8	8.90	-35.3
4	9648.00	51.81 PK	74.00	22.19	1.00 H	93	39.21	37.2	10.20	-34.8
4	9648.00	43.36 AV	54.00	10.64	1.00 H	93	30.76	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n-20--2412MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2412.00	96.84 PK			1.00 V	123	100.14	28.3	5.00	-36.6
1	*2412.00	88.73 AV			1.00 V	123	92.03	28.3	5.00	-36.6
2	4824.00	59.55 PK	74.00	14.45	1.00 V	100	55.75	32.7	7.30	-36.2
2	4824.00	45.38 AV	54.00	8.62	1.00 V	100	41.58	32.7	7.30	-36.2
3	7236.00	61.91 PK	74.00	12.09	1.00 V	236	52.51	35.8	8.90	-35.3
3	7236.00	47.24 AV	54.00	6.76	1.00 V	236	37.84	35.8	8.90	-35.3
4	9648.00	58.47 PK	74.00	15.53	1.00 V	1163	45.87	37.2	10.20	-34.8
4	9648.00	48.24 AV	54.00	5.76	1.00 V	116	35.64	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-20--2437MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	91.81 PK			1.00 H	120	95.01	28.3	5.10	-36.6
1	*2437.00	85.55 AV			1.00 H	120	88.75	28.3	5.10	-36.6
2	4874.00	51.93 PK	74.00	22.07	1.00 H	194	48.53	32.3	7.60	-36.5
2	4874.00	41.73 AV	54.00	12.27	1.00 H	194	38.33	32.3	7.60	-36.5
3	7311.00	54.44 PK	74.00	19.56	1.00 H	248	45.04	36.1	8.60	-35.3
3	7311.00	45.7 AV	54.00	8.30	1.00 H	248	36.30	36.1	8.60	-35.3
4	9748.00	51.38 PK	74.00	22.62	1.00 H	36	38.78	37.2	10.20	-34.8
4	9748.00	43.7 AV	54.00	10.30	1.00 H	36	31.10	37.2	10.20	-34.8


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n-20--2437MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	94.75 PK			1.00 V	122	97.95	28.3	5.10	-36.6
1	*2437.00	87.69 AV			1.00 V	122	90.89	28.3	5.10	-36.6
2	4874.00	53.95 PK	74.00	20.05	1.00 V	181	50.55	32.3	7.60	-36.5
2	4874.00	42.63 AV	54.00	11.37	1.00 V	181	39.23	32.3	7.60	-36.5
3	7311.00	60.88 PK	74.00	13.12	1.00 V	346	51.48	36.1	8.60	-35.3
3	7311.00	43.57 AV	54.00	10.43	1.00 V	346	34.17	36.1	8.60	-35.3
4	9748.00	54.58 PK	74.00	19.42	1.00 V	335	41.98	37.2	10.20	-34.8
4	9748.00	47.72 AV	54.00	6.28	1.00 V	335	35.12	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-20--2462MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	92.53 PK			1.00 H	122	95.83	28.2	5.10	-36.6
1	*2462.00	84.57 AV			1.00 H	122	87.87	28.2	5.10	-36.6
2	4924.00	52.02 PK	74.00	21.98	1.00 H	217	48.22	33.0	7.00	-36.2
2	4924.00	39.33 AV	54.00	14.67	1.00 H	217	35.53	33.0	7.00	-36.2
3	7386.00	56.99 PK	74.00	17.01	1.00 H	0	47.59	36.2	8.50	-35.3
3	7386.00	45.58 AV	54.00	8.42	1.00 H	0	36.18	36.2	8.50	-35.3
4	9848.00	52.81 PK	74.00	21.19	1.00 H	118	40.21	37.3	10.10	-34.8
4	9848.00	45.52 AV	54.00	8.48	1.00 H	118	32.92	37.3	10.10	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2462MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2462.00	94.75 PK			1.00 V	125	98.05	28.2	5.10	-36.6
1	*2462.00	85.59 AV			1.00 V	125	88.89	28.2	5.10	-36.6
2	4924.00	47.64 PK	74.00	26.36	1.00 V	100	43.84	33.0	7.00	-36.2
2	4924.00	35.37 AV	54.00	18.63	1.00 V	100	31.57	33.0	7.00	-36.2
3	7386.00	56.12 PK	74.00	17.88	1.00 V	0	46.72	36.2	8.50	-35.3
3	7386.00	43.93 AV	54.00	10.07	1.00 V	0	34.53	36.2	8.50	-35.3
4	9848.00	51.40 PK	74.00	22.60	1.00 V	187	38.80	37.3	10.10	-34.8
4	9848.00	40.62 AV	54.00	13.38	1.00 V	187	28.02	37.3	10.10	-34.8

REMARKS:

1. Emission level (dBuV/m)=Raw Value(dBuV) +Antenna Factor (dB/m) + Cable Factor (dB) +Pre-amplifier Factor
2. The other emission levels were very low against the limit.
3. Margin value = Limit value- Emission level.
4. The limit value is defined as per 15.247
5. “ * “ : Fundamental frequency
6. For Wireless 802.11n (20MHz) mode at 65Mbps.


ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-40--2422MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2422.00	95.78 PK			1.00 H	123	99.08	28.3	5.00	-36.6
1	*2422.00	85.60 AV			1.00 H	123	88.90	28.3	5.00	-36.6
2	4844.00	53.77 PK	74.00	20.23	1.00 H	91	49.97	32.7	7.30	-36.2
2	4844.00	38.66 AV	54.00	15.34	1.00 H	91	34.86	32.7	7.30	-36.2
3	7266.00	47.72 PK	74.00	26.28	1.00 H	266	38.32	35.8	8.90	-35.3
3	7266.00	39.06 AV	54.00	14.94	1.00 H	266	29.66	35.8	8.90	-35.3
4	9688.00	54.19 PK	74.00	19.81	1.00 H	337	41.59	37.2	10.20	-34.8
4	9688.00	44.52 AV	54.00	9.48	1.00 H	337	31.92	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n-40--2422MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2422.00	95.76 PK			1.00 V	127	99.06	28.3	5.00	-36.6
1	*2422.00	87.27 AV			1.00 V	127	90.57	28.3	5.00	-36.6
2	4844.00	52.62 PK	74.00	21.38	1.00 V	211	48.82	32.7	7.30	-36.2
2	4844.00	40.00 AV	54.00	14.00	1.00 V	211	36.20	32.7	7.30	-36.2
3	7266.00	62.29 PK	74.00	11.71	1.00 V	57	52.89	35.8	8.90	-35.3
3	7266.00	47.26 AV	54.00	6.74	1.00 V	57	37.86	35.8	8.90	-35.3
4	9688.00	52.29 PK	74.00	21.71	1.00 V	249	39.69	37.2	10.20	-34.8
4	9688.00	43.55 AV	54.00	10.45	1.00 V	249	30.95	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-40--2437MHz)

No.	Frequency (MHz)	Emssion Level	Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	94.38 PK			1.00 H	100	97.58	28.3	5.10	-36.6
1	*2437.00	87.19 AV			1.00 H	100	90.39	28.3	5.10	-36.6
2	4874.00	53.92 PK	74.00	20.08	1.00 H	198	50.52	32.3	7.60	-36.5
2	4874.00	41.63 AV	54.00	12.37	1.00 H	198	38.23	32.3	7.60	-36.5
3	7311.00	57.54 PK	74.00	16.46	1.00 H	203	48.14	36.1	8.60	-35.3
3	7311.00	42.57 AV	54.00	11.43	1.00 H	203	33.17	36.1	8.60	-35.3
4	9748.00	51.43 PK	74.00	22.57	1.00 H	56	38.83	37.2	10.20	-34.8
4	9748.00	43.15 AV	54.00	10.85	1.00 H	56	30.55	37.2	10.20	-34.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n-40--2437MHz)**

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2437.00	96.08	PK			1.00 V	122	99.28	28.3	5.10	-36.6
1	*2437.00	88.54	AV			1.00 V	122	91.74	28.3	5.10	-36.6
2	4874.00	51.93	PK	74.00	22.07	1.00 V	96	48.53	32.3	7.60	-36.5
2	4874.00	44.77	AV	54.00	9.23	1.00 V	96	41.37	32.3	7.60	-36.5
3	7311.00	56.9	PK	74.00	17.10	1.00 V	26	47.50	36.1	8.60	-35.3
3	7311.00	43.26	AV	54.00	10.74	1.00 V	26	33.86	36.1	8.60	-35.3
4	9748.00	49.85	PK	74.00	24.15	1.00 V	299	37.25	37.2	10.20	-34.8
4	9748.00	39.36	AV	54.00	14.64	1.00 V	299	26.76	37.2	10.20	-34.8

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n-40--2452MHz)

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2452.00	94.84	PK			1.00 H	153	98.04	28.2	5.20	-36.6
1	*2452.00	85.17	AV			1.00 H	153	88.37	28.2	5.20	-36.6
2	4904.00	51.71	PK	74.00	22.29	1.00 H	204	47.91	33.0	7.00	-36.2
2	4904.00	38.96	AV	54.00	15.04	1.00 H	204	35.16	33.0	7.00	-36.2
3	7356.00	58.51	PK	74.00	15.49	1.00 H	301	49.11	36.2	8.50	-35.3
3	7356.00	44.62	AV	54.00	9.38	1.00 H	301	35.22	36.2	8.50	-35.3
4	9808.00	51.86	PK	74.00	22.14	1.00 H	118	39.26	37.3	10.10	-34.8
4	9808.00	42.25	AV	54.00	11.75	1.00 H	118	29.65	37.3	10.10	-34.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n-40--2452MHz)

No.	Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Factor	Pre-amplifier
1	*2452.00	95.89	PK			1.00 V	125	99.09	28.2	5.20	-36.6
1	*2452.00	86.59	AV			1.00 V	125	89.79	28.2	5.20	-36.6
2	4904.00	56.27	PK	74.00	17.73	1.00 V	177	52.47	33.0	7.00	-36.2
2	4904.00	41.28	AV	54.00	12.72	1.00 V	177	37.48	33.0	7.00	-36.2
3	7356.00	61.86	PK	74.00	12.14	1.00 V	0	52.46	36.2	8.50	-35.3
3	7356.00	45.68	AV	54.00	8.32	1.00 V	0	36.28	36.2	8.50	-35.3
4	9808.00	54.28	PK	74.00	19.72	1.00 V	315	41.68	37.3	10.10	-34.8
4	9808.00	39.22	AV	54.00	14.78	1.00 V	315	26.62	37.3	10.10	-34.8

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Antenna Factor (dB/m) + Cable Factor (dB) + Pre-amplifier Factor
 2. The other emission levels were very low against the limit.
 3. The other emission levels were very low against the limit.
 4. Margin value = Limit value - Emission level.
 5. The limit value is defined as per 15.247
 6. “ * “ : Fundamental frequency
 7. For Wireless 802.11n (40MHz) mode at 135Mbps.

** END OF REPORT **