RF TEST REPORT

Report No.: SET2015-18870

Product Name: Digital camera

FCC ID: 2AE44IRIS4G

Model No. : IRIS4G

Applicant: Sioeye, Inc.

Address: 1518 First Avenue S.Suite 200 Seattle Washington USA

Dates of Testing: 06/02/2015 — 06/19/2015

Issued by: CCIC-SET

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

Tel: 86 755 26627338 **Fax:** 86 755 26627238

This test report consists of 71 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CCIC-SET. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver. Any objections must be raised to CCIC-SET within 20 days since the date when the report is received. It will not be taken into consideration beyond this limit.

Test Report

Product Name .....:	Digital camera
Brand Name.....:	Sioeye
Trade Name .....:	Sioeye
Applicant .....:	Sioeye, Inc.
Applicant Address .....:	1518 First Avenue S.Suite 200 Seattle Washington USA
Manufacturer.....:	CK Telecom Limited
Manufacturer Address.....:	Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.
Test Standards .....:	47 CFR Part 15 Subpart C 2013：Radio Frequency Devices ANSI C63.10:2009：American National Standard for Testing Unlicensed Wireless Devices KDB558074 D01 DTS Meas Guidance v03r02
Test Result.....:	PASS
Tested by .....:	2015.12.18 Lu Lei，Test Engineer
Reviewed by.....:	2015.12.18 Zhu Qi, Senior Egineer
Approved by.....:	2015.12.18 Wu Li'an，Manager

TABLE OF CONTENTS

1. GENERAL INFORMATION 5

1.1 EUT Description 5

1.2 Test Standards and Results 6

1.3 Facilities and Accreditations 7

1.3.1 Facilities 7

1.3.2 Test Environment Conditions 7

2. 47 CFR PART 15C REQUIREMENTS 8

2.1 Antenna requirement 8

2.1.1 Applicable Standard 8

2.1.2 Antenna Information 8

2.1.3 Result: comply 8

2.2 Peak Output Power 9

2.2.1 Requirement 9

2.2.2 Test Description 9

2.2.3 Test Result 10

2.3 Bandwidth 12

2.3.1 Requirement 12

2.3.2 Test Description 12

2.3.3 Test Result 12

2.4 Conducted Spurious Emissions 21

2.4.1 Requirement 21

2.4.2 Test Description 21

2.4.3 Test Result 21

2.5 Power spectral density (PSD) 36

2.5.1 Requirement 36

2.5.2 Test Description 36

2.5.3 Test Result 37

2.6 Conducted Band Edge 45

2.6.1 Requirement 45

2.6.2 Test Description 45

2.6.3 Test Procedure 45
2.6.4 Test Result 46
2.7 Conducted Emission 51
2.7.1 Requirement 51
2.7.2 Test Description 51
2.7.3 Test Result 52
2.8 Radiated Band Edge and Spurious Emission 54
2.8.1 Requirement 54
2.8.2 Test Description 54
2.8.3 Test Result 57

Change History		
Issue	Date	Reason for change
1.0	2015.12.18	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type ..... :	Digital camera
Hardware Version..... :	HICAM-V2.0
Software Version ..... :	HICAM01A-S10A_Sioeye_L2EN_140_150618
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 ..... :	PIFI Antenna
Antenna Gain ..... :	-3dBi

Note 1: The EUT is LTE camera, it contains WIFI 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 (MHz) =2412+5*(n-1) (1<=n<=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 EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%."

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 Subpart C 2013	Radio Frequency Devices
2	ANSI C63.10 2009	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	15.203	Antenna Requirement	PASS
2	15.247(b)	Peak Output Power	PASS
3	15.247(a)	Bandwidth	PASS
4	15.247(d)	Conducted Spurious Emission	PASS
5	15.247(d)	Band Edge	PASS
6	15.207	Conducted Emission	PASS
7	15.209 ,15.247(c)	Radiated Emission	PASS
8	15.247(e)	Power spectral density (PSD)	PASS

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 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(Mbps)	Channel
Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	1	1/6/11
	11g/OFDM	6	1/6/11
	11n(20MHz)/OFDM	MCS0	1/6/11
	11n(40MHz)/OFDM	MCS0	3/6/9
Band Edge	11b/DSSS	1	1/11
	11g/OFDM	6	1/11
	11n(20MHz)/OFDM	MCS0	1/11
	11n(40MHz)/OFDM	MCS0	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, valid time is until October 28, 2017.

IC-Registration No.: 11185A-1

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on July. 15, 2013, valid time is until July. 15, 2016.

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 Antenna requirement

2.1.1 Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.1.2 Antenna Information

Antenna Category: External antenna
An External antenna was soldered to the antenna port of EUT via an adaptor cable, can't be removed.

Antenna General Information:

No.	EUT Model	Ant. Cat.	Ant. Type	Gain(dBi)
1	LTE Mobile Phone	External	PIFI	-3

2.1.3 Result: comply

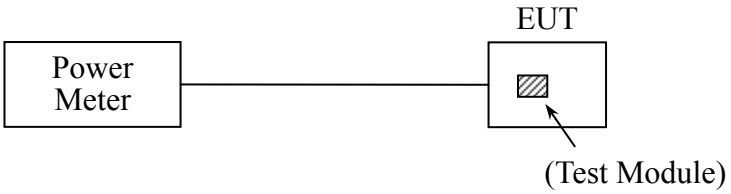
The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2 Peak Output Power

2.2.1 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 exceed1 Watt.

2.2.2 Test Description



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

A. Test Setup:

The EUT (Equipment under the test) which is powered by the Battery is coupled to the Power Meter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Power Meter.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Power Meter	Anritsu	ML2495A	1421017	2015.06.02	2016.06.01
Power Sensor	Anritsu	MA2411B	1417208	2015.06.02	2016.06.01

2.2.3 Test Result

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

2.2.3.1 802.11b Test mode

Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power(dBm)	Limits (dBm)	Result
1	2412	16.88	30	PASS
6	2437	17.20	30	PASS
11	2462	16.94	30	PASS

2.2.3.2 802.11g Test mode

Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Limits (dBm)	Result
1	2412	16.40	30	PASS
6	2437	16.63	30	PASS
11	2462	16.51	30	PASS

2.2.3.3 802.11n-20MHz Test mode

Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power(dBm)	Limits (dBm)	Result
1	2412	16.01	30	PASS
6	2437	16.21	30	PASS
11	2462	16.10	30	PASS

2.2.3.4 802.11n-40MHz Test mode

Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power(dBm)	Limits (dBm)	Result
3	2422	15.70	30	PASS
6	2437	15.77	30	PASS
9	2452	15.62	30	PASS

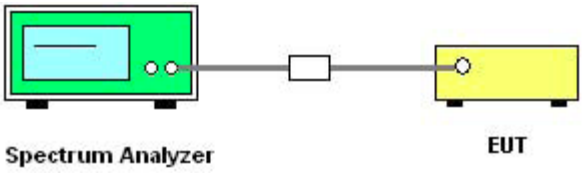
2.3 Bandwidth

2.3.1 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.

2.3.2 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. (VBW) = 300 kHz In order to make an accurate measurement, set the span greater than EBW.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal.Date	Cal.Due Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2014.07.07	2015.07.06

2.3.3 Test Result

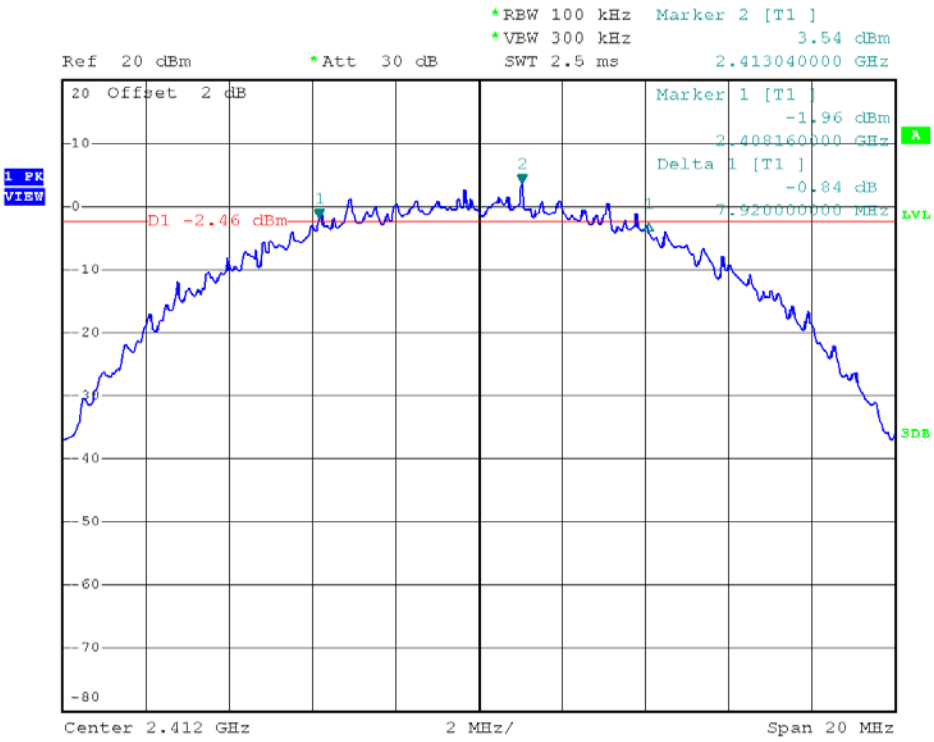
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

2.3.3.1 802.11b Test mode

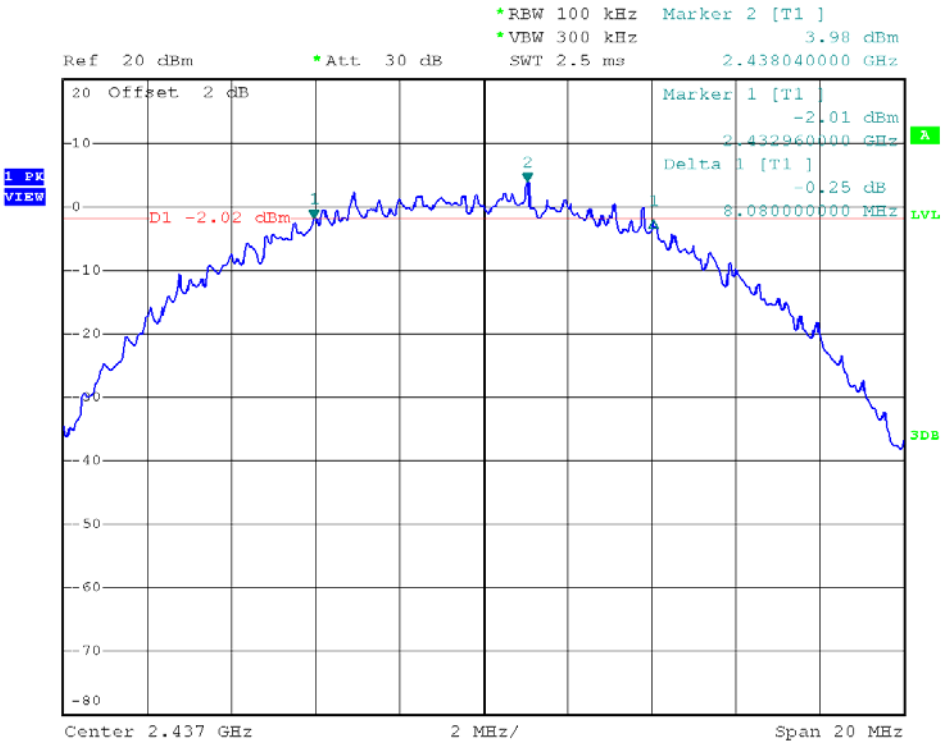
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits(kHz)	Result
1	2412	7.92	Plot 2.3 A	≥500	PASS
6	2437	8.08	Plot 2.3 B	≥500	PASS
11	2462	7.20	Plot 2.3 C	≥500	PASS

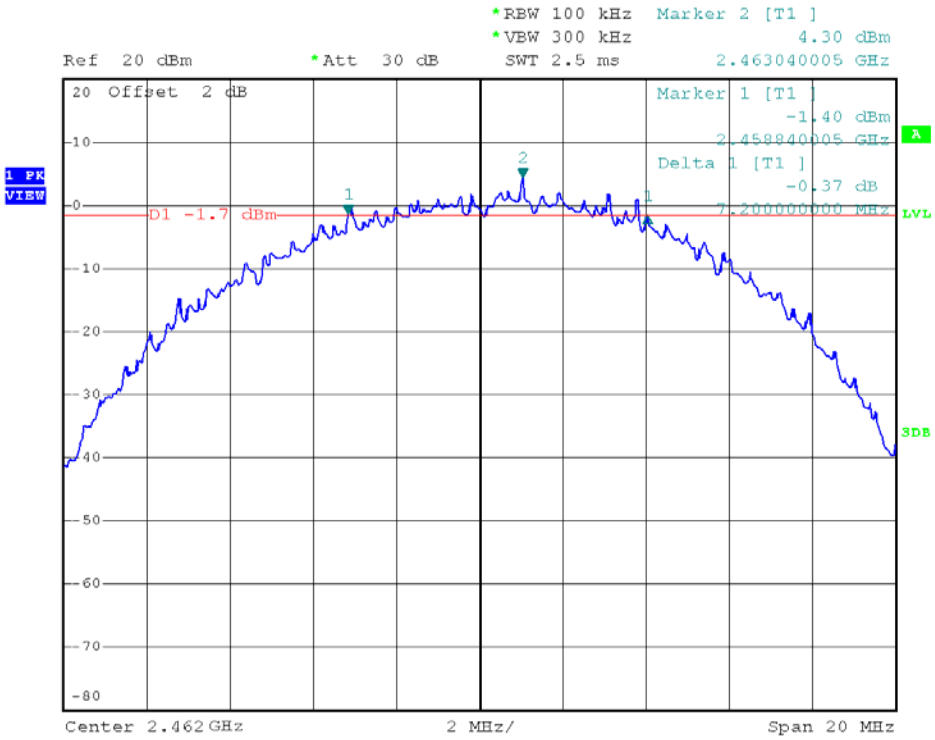
B. Test Plots:



(Plot 2.3 A: Channel 1: 2412MHz @ 802.11b)



(Plot 2.3 B: Channel 6: 2437 MHz @ 802.11b)



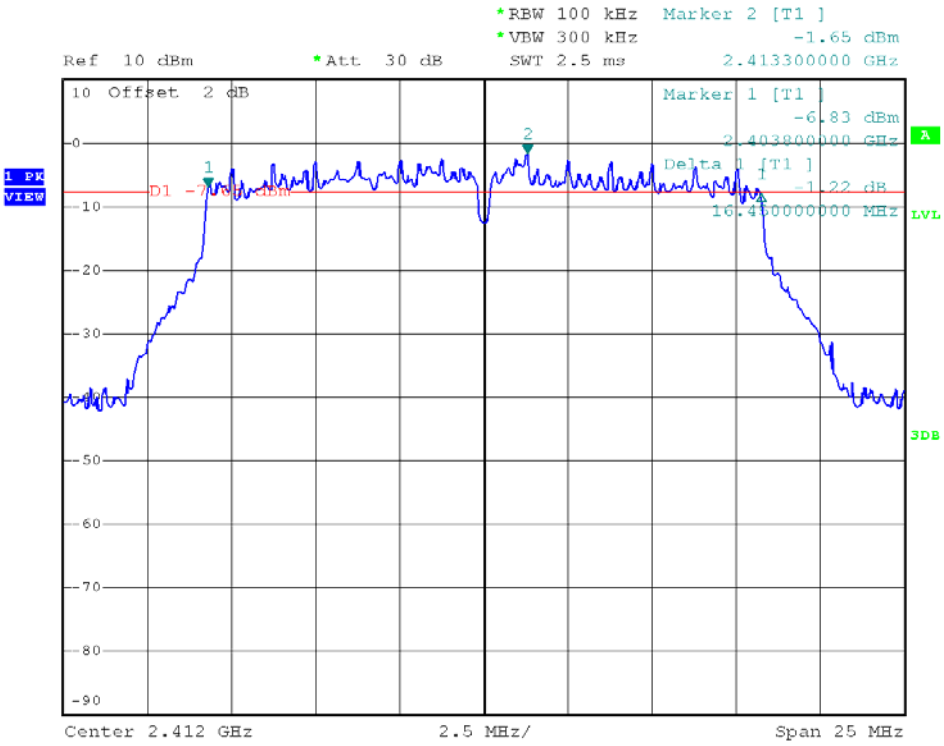
(Plot 2.3 C: Channel 11: 2462MHz @ 802.11b)

2.3.3.2 802.11g Test mode

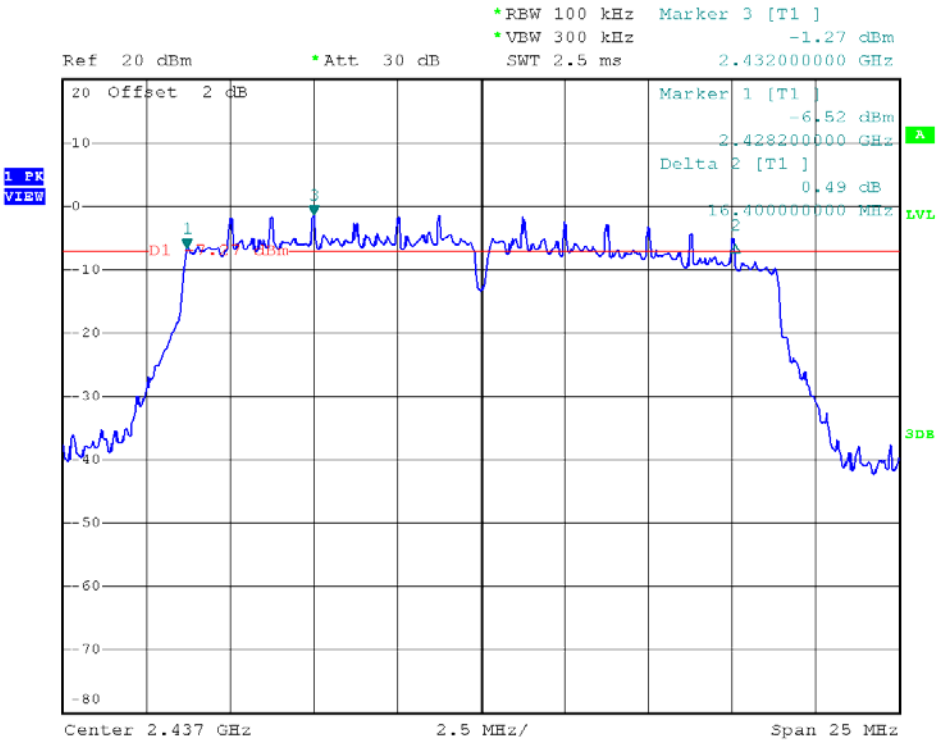
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
1	2412	16.45	Plot 2.3 D	≥500	PASS
6	2437	16.40	Plot 2.3 E	≥500	PASS
11	2462	15.70	Plot 2.3 F	≥500	PASS

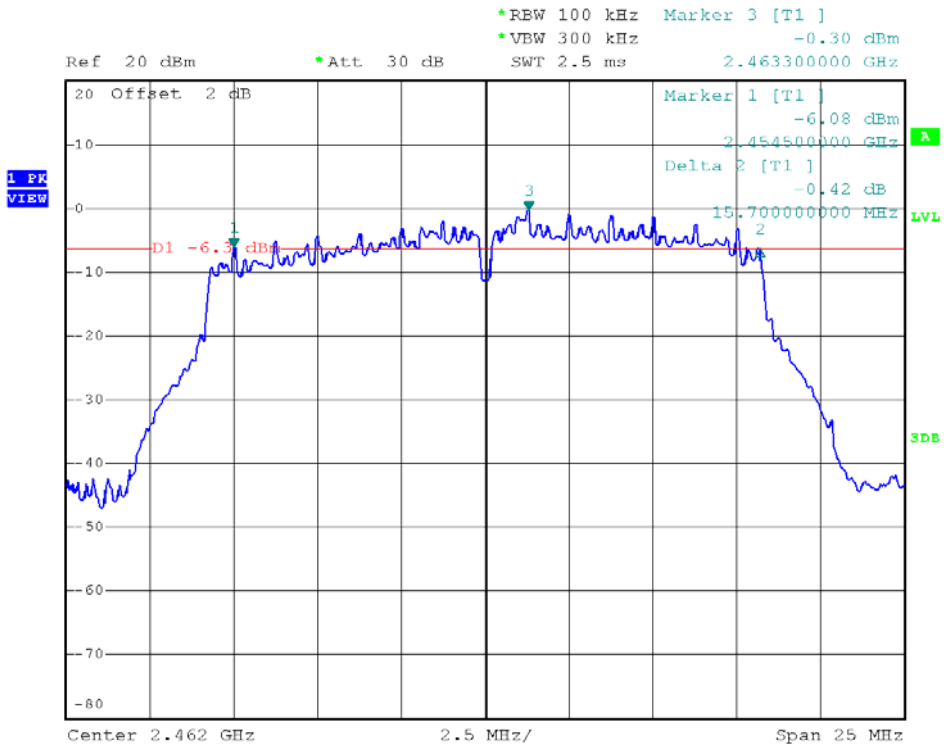
B. Test Plots:



(Plot 2.3 D: Channel 1: 2412MHz @ 802.11g)



(Plot 2.3 E: Channel 6: 2437MHz @ 802.11g)



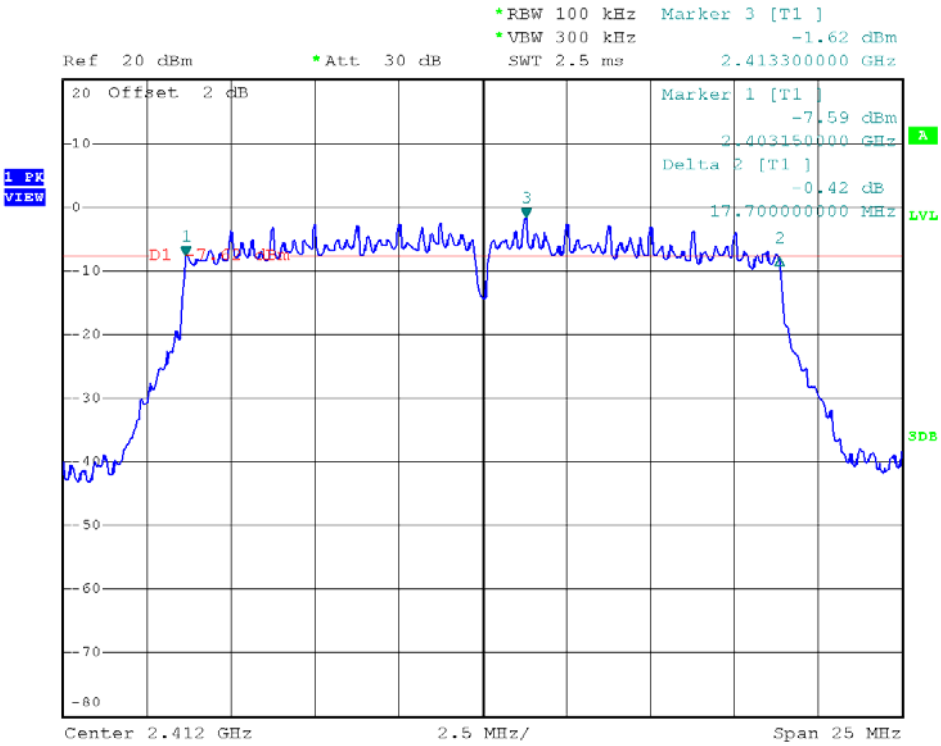
(Plot 2.3 F: Channel 11: 2462MHz @ 802.11g)

2.3.3.3 802.11n-20 Test mode

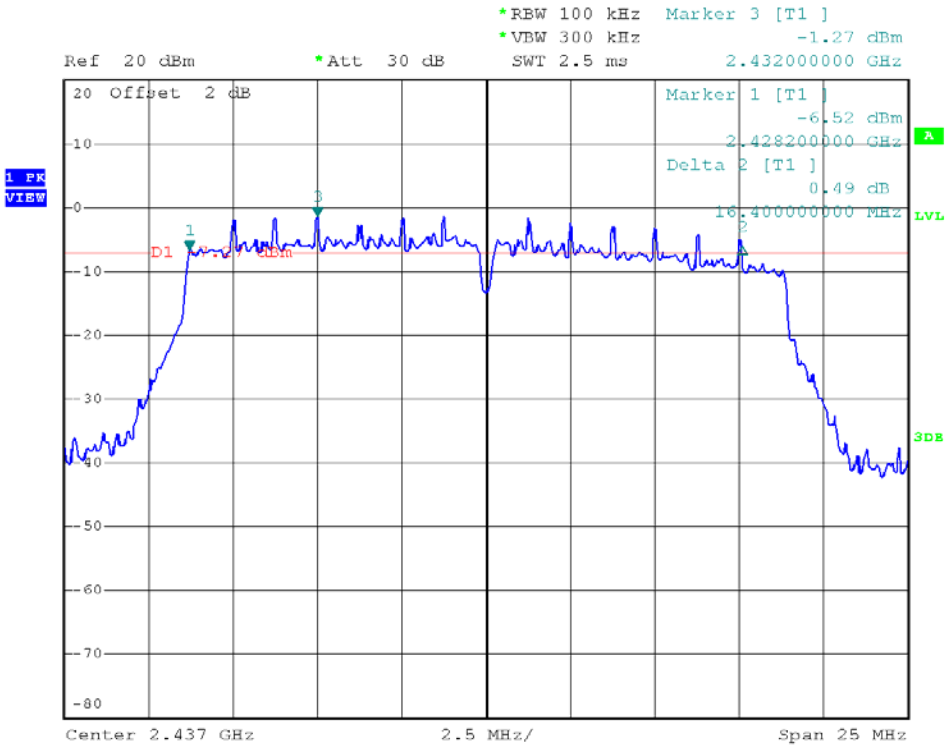
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
1	2412	17.70	Plot 2.3 G	≥500	PASS
6	2437	16.40	Plot 2.3 H	≥500	PASS
11	2462	16.00	Plot 2.3 I	≥500	PASS

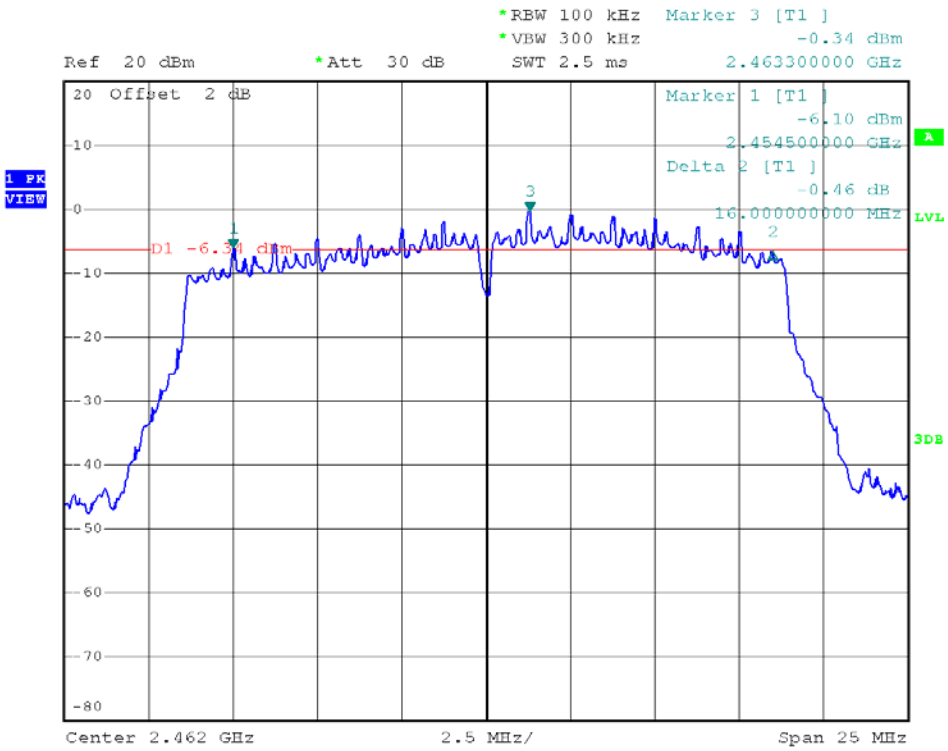
B. Test Plots:



(Plot 2.3 G: Channel 1: 2412MHz @ 802.11n-20)



(Plot 2.3 H: Channel 6: 2437MHz @ 802.11n-20)



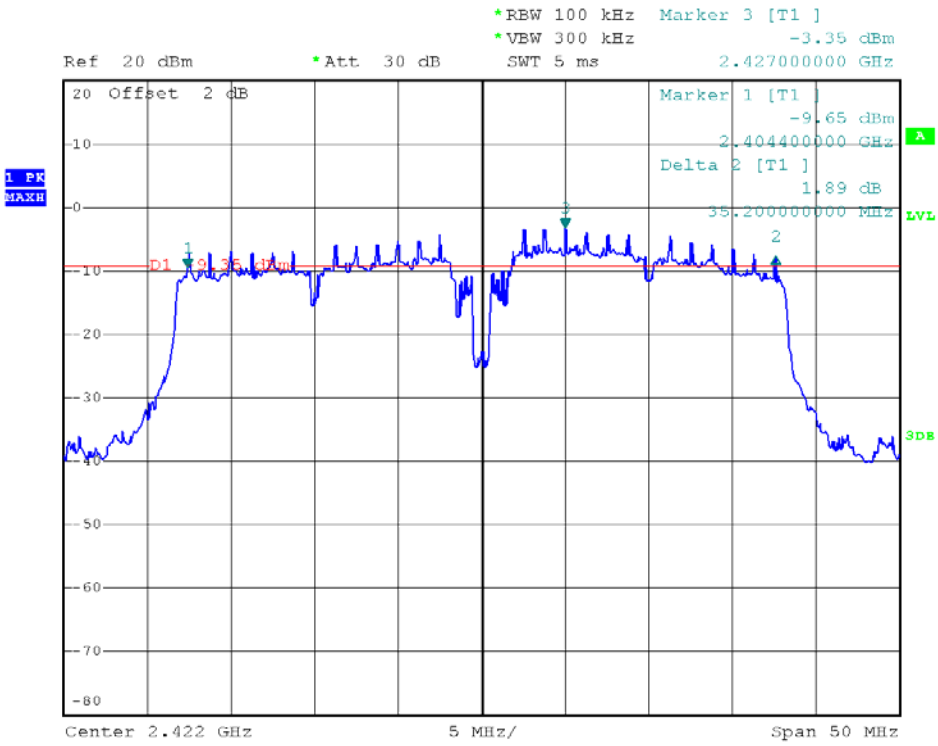
(Plot 2.3 I: Channel 11: 2462MHz @ 802.11n-20)

2.3.3.4 802.11n-40 Test mode

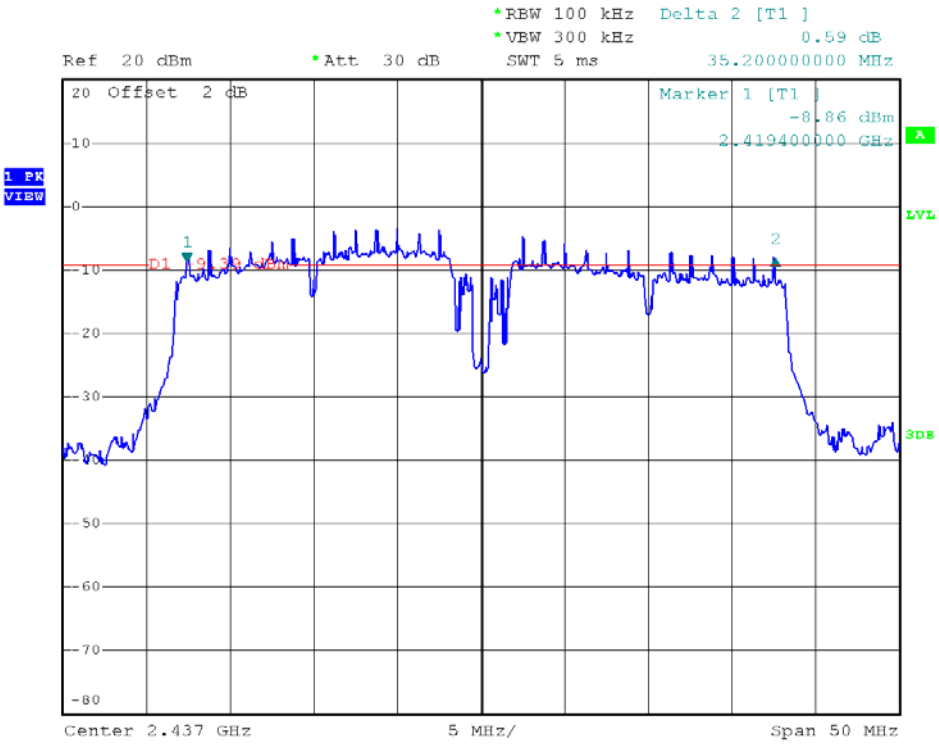
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Result
3	2422	35.20	Plot 2.3 J	≥500	PASS
6	2437	35.20	Plot 2.3 K	≥500	PASS
9	2452	35.50	Plot 2.3 L	≥500	PASS

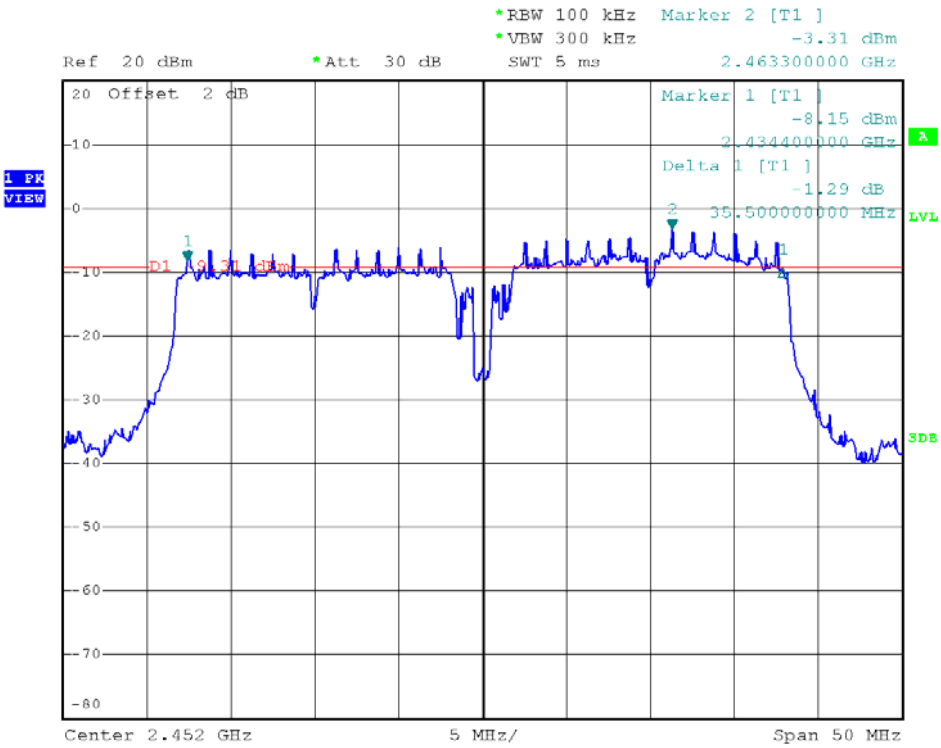
B. Test Plots:



(Plot 2.3 J: Channel 3: 2422MHz @ 802.11n-40)



(Plot 2.3 K: Channel 6: 2437MHz @ 802.11n-40)



(Plot 2.3 L: Channel 9: 2452MHz @ 802.11n-40)

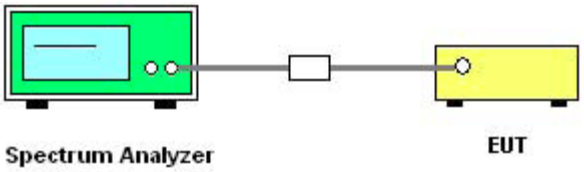
2.4 Conducted Spurious Emissions

2.4.1 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.

2.4.2 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. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2014.07.07	2015.07.06

2.4.3 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.

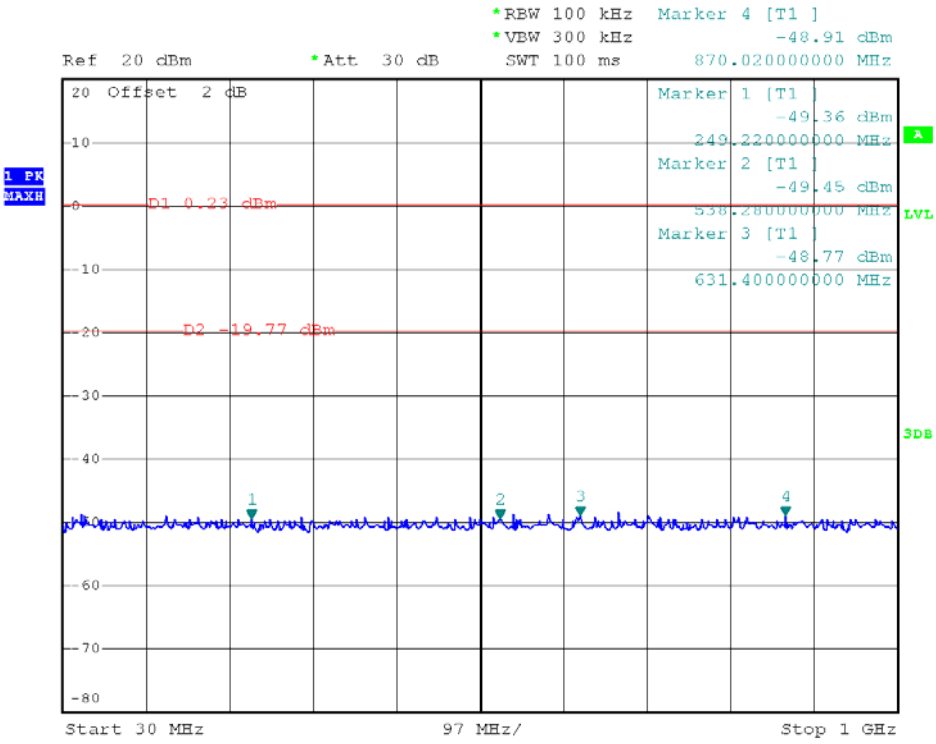
2.4.3.1 802.11b Test mode

A. Test Verdict:

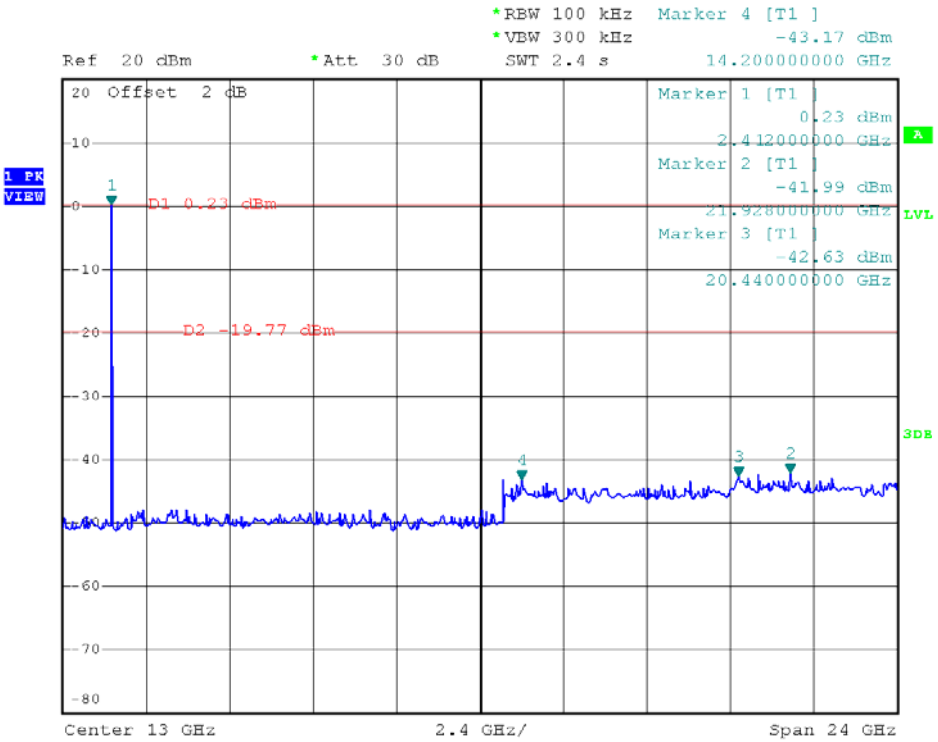
Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
1	2412	Plot 2.4 A.1 to A.2	-20	PASS
6	2437	Plot 2.4 B.1 to B.2	-20	PASS
11	2462	Plot 2.4 C.1 to C.2	-20	PASS

B. Test Plots:

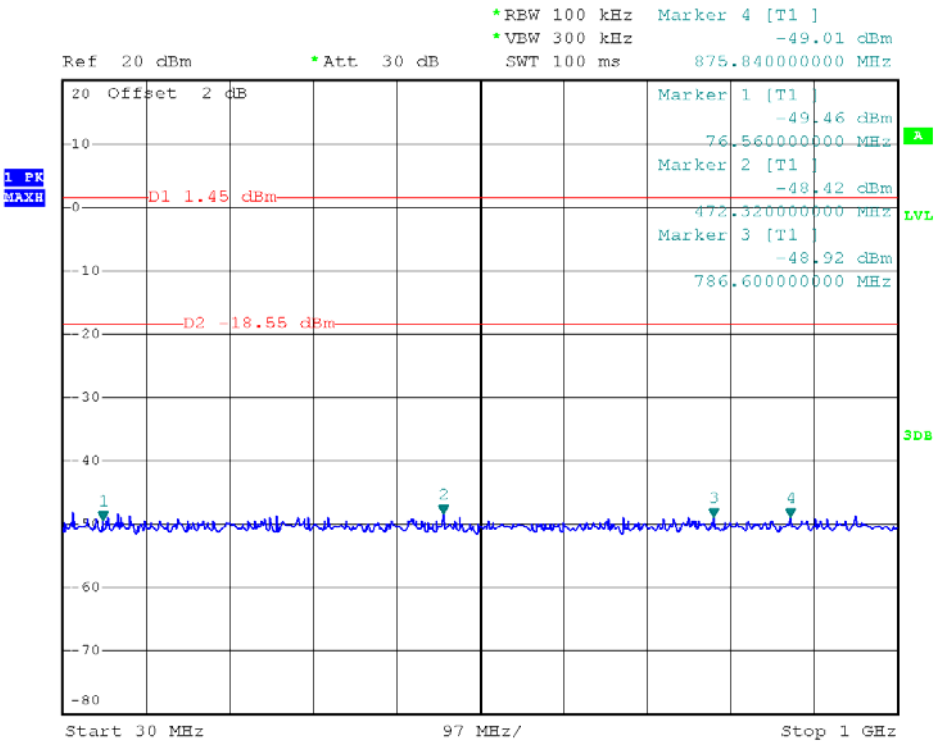
Note: the power of the Module transmitting frequency should be ignored.



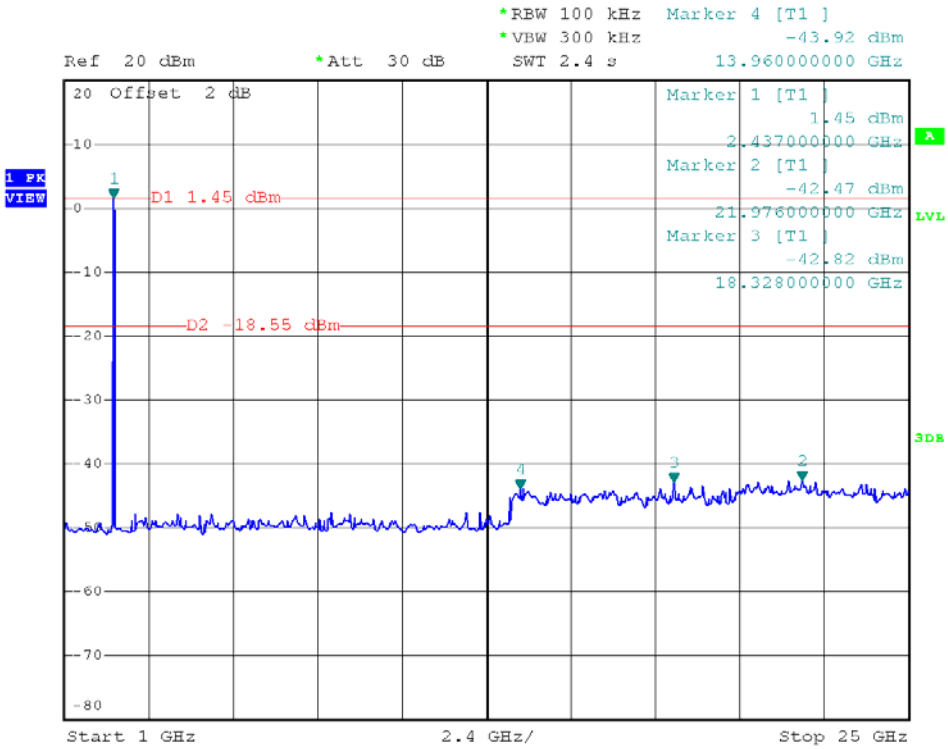
(Plot 2.4 A.1: Channel = 1, 30MHz to 1GHz@ 802.11b)



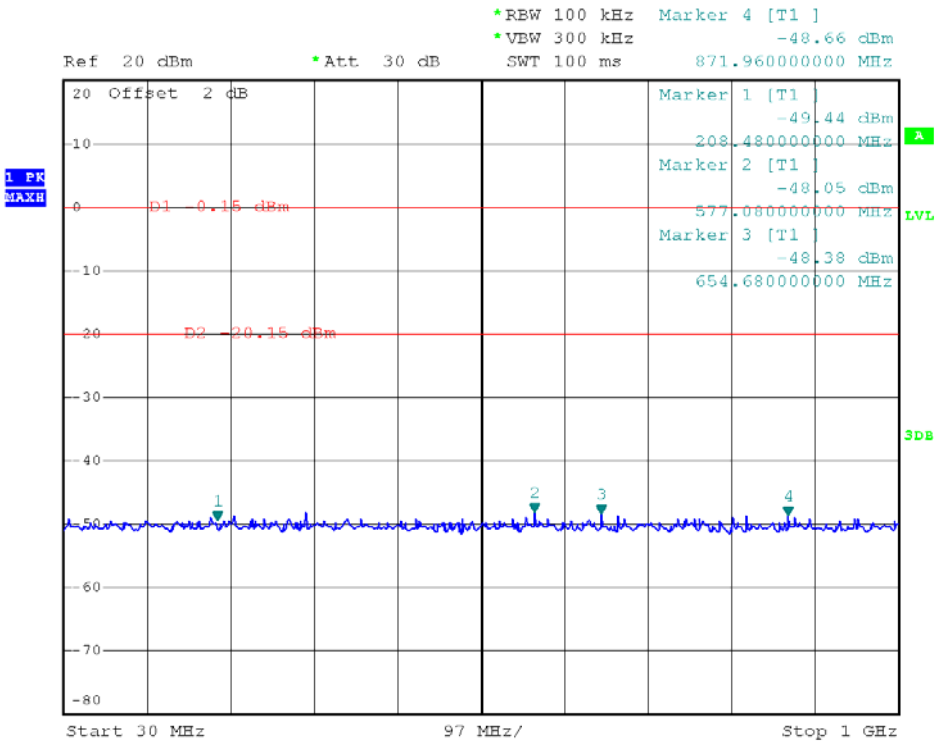
(Plot 2.4 A.2: Channel = 1, 1GHz to 25GHz@ 802.11b)



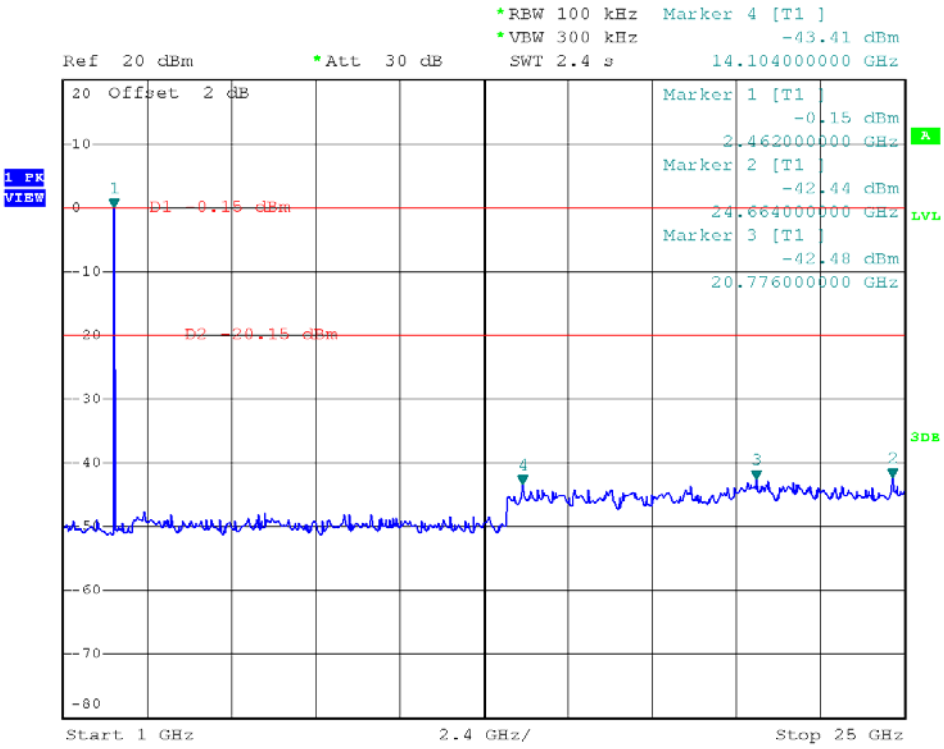
(Plot 2.4 B.1: Channel = 6, 30MHz to 1GHz@ 802.11b)



(Plot 2.4 B.2: Channel = 6, 1GHz to 25GHz@ 802.11b)



(Plot 2.4 C.1: Channel = 11, 30MHz to 1GHz@ 802.11b)



(Plot 2.4 C.2: Channel = 11, 1GHz to 25GHz@ 802.11b)

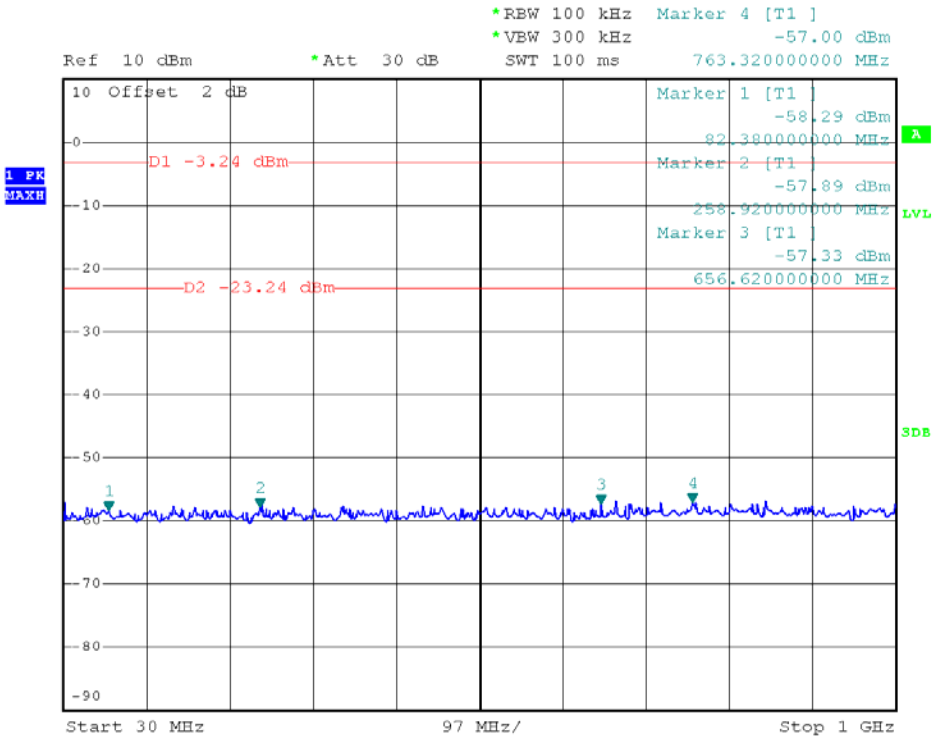
2.4.3.2 802.11g Test mode

A. Test Verdict:

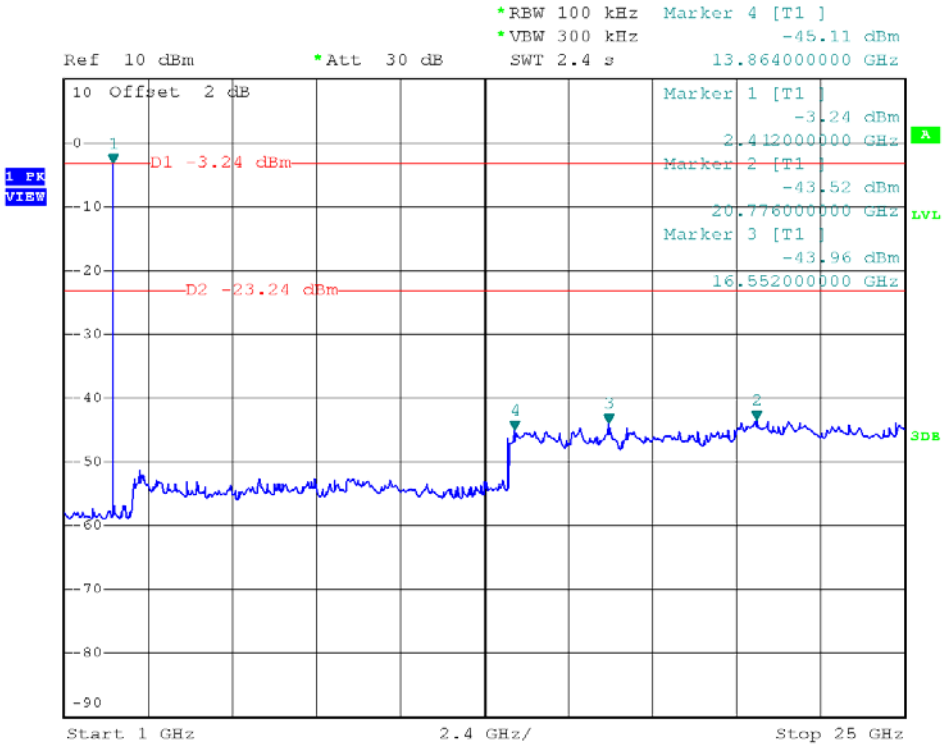
Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
1	2412	Plot 2.4 D.1 to D.2	-20	PASS
6	2437	Plot 2.4 E.1 to E.2	-20	PASS
11	2462	Plot 2.4 F.1 to F.2	-20	PASS

B. Test Plots:

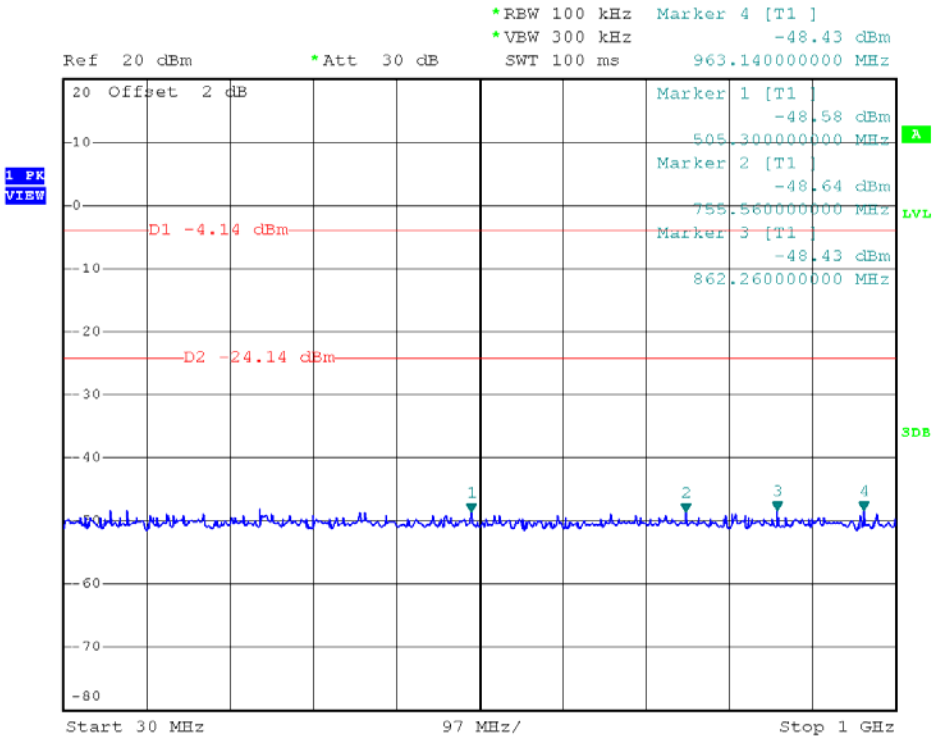
Note: the power of the Module transmitting frequency should be ignored.



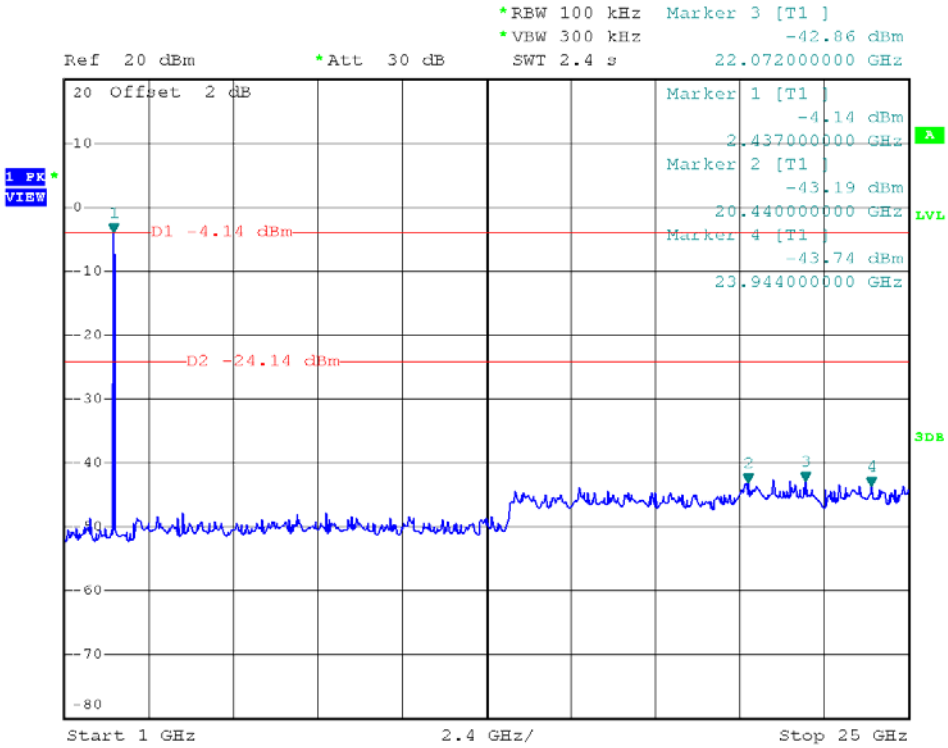
(Plot 2.4 D.1: Channel = 1, 30MHz to 1GHz@ 802.11g)



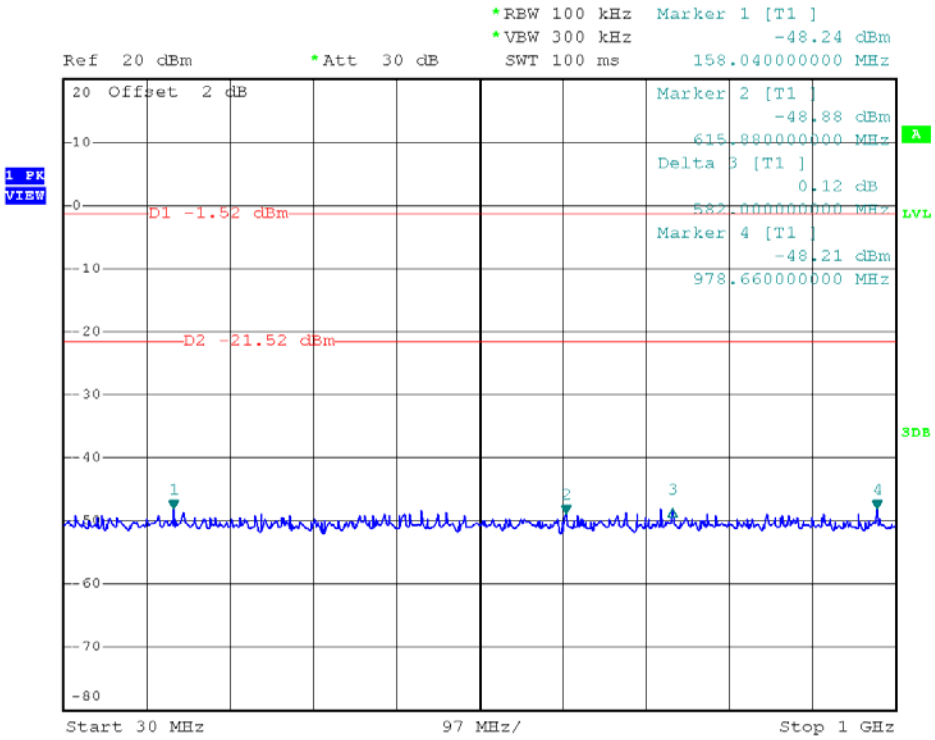
(Plot 2.4 D.2: Channel = 1, 1GHz to 25GHz@ 802.11g)



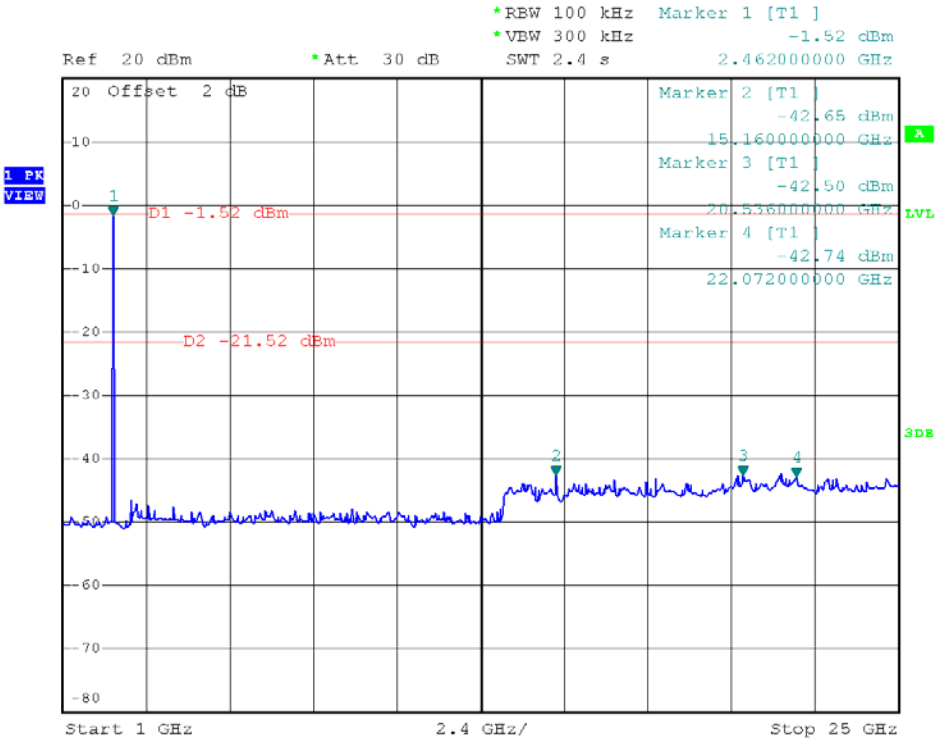
(Plot 2.4 E.1: Channel = 6, 30MHz to 1GHz@ 802.11g)



(Plot 2.4 E.2: Channel = 6, 1GHz to 25GHz@ 802.11g)



(Plot 2.4 F.1: Channel = 11, 30MHz to 1GHz@ 802.11g)



(Plot 2.4 F.2: Channel = 11, 1GHz to 25GHz@ 802.11g)

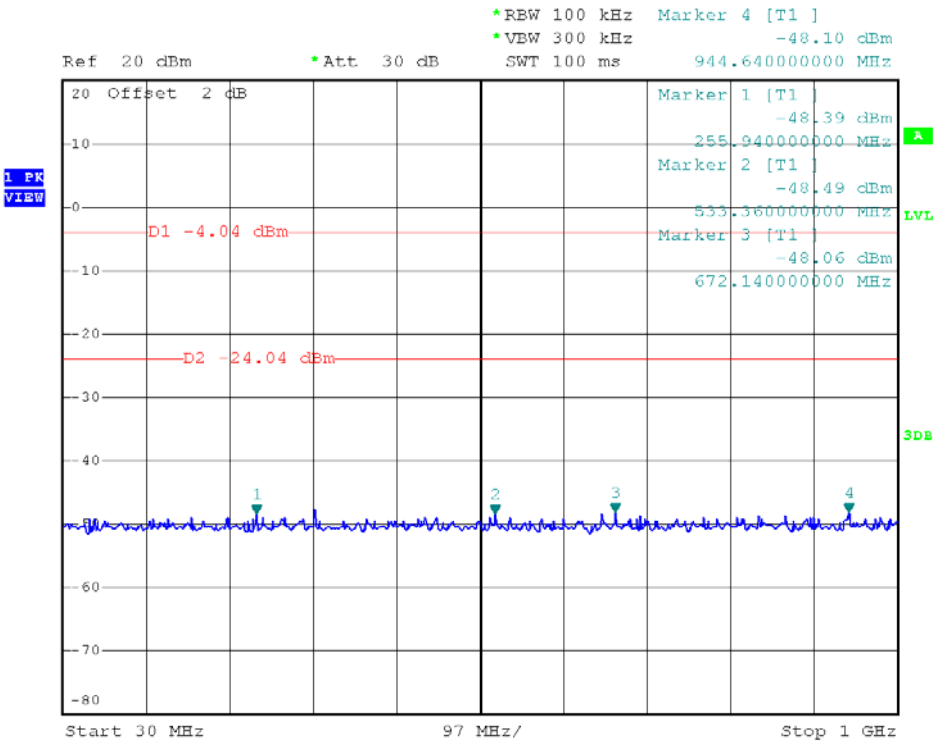
2.4.3.3 802.11n -20MHz Test mode

A. Test Verdict:

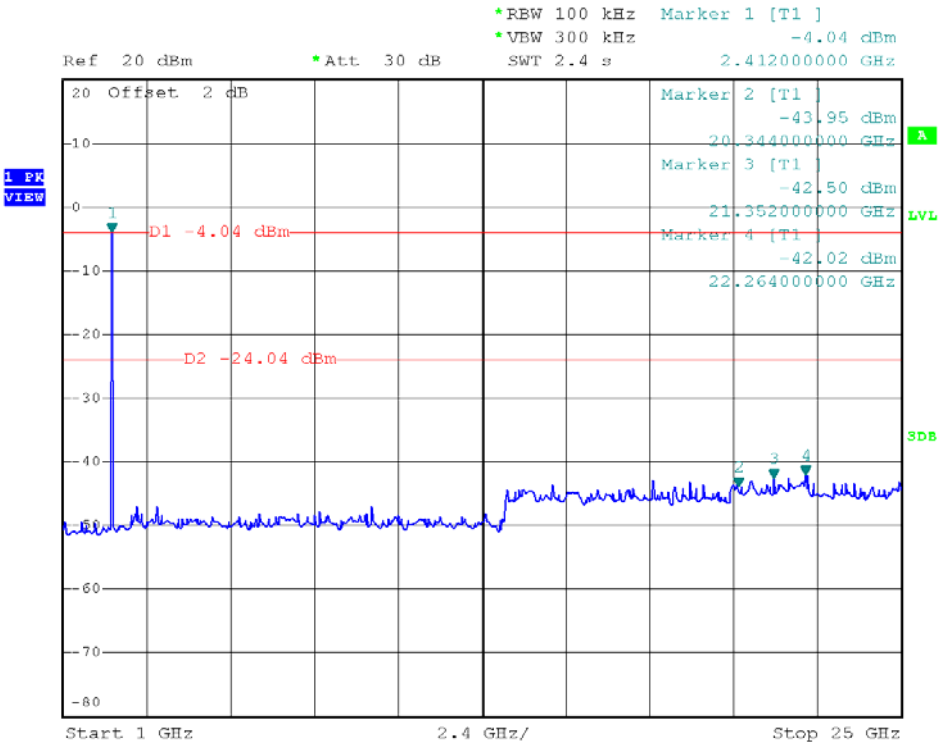
Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
1	2412	Plot 2.4 G.1 to G.2	-20	PASS
6	2437	Plot 2.4 H.1 to H.2	-20	PASS
11	2462	Plot 2.4 I.1 to I.2	-20	PASS

B. Test Plots:

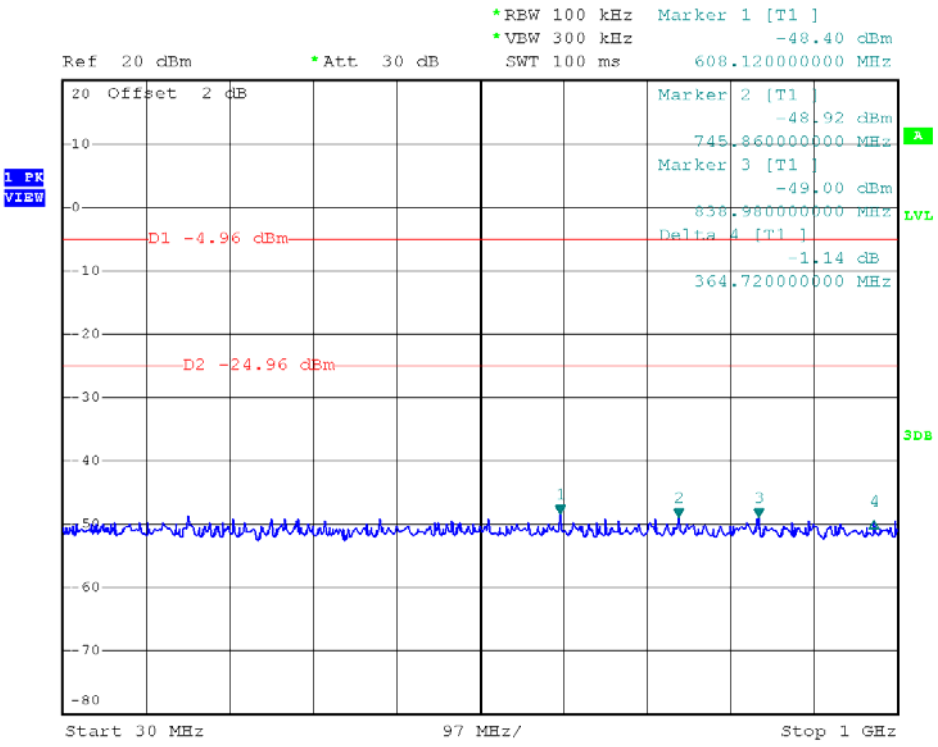
Note: the power of the Module transmitting frequency should be ignored.



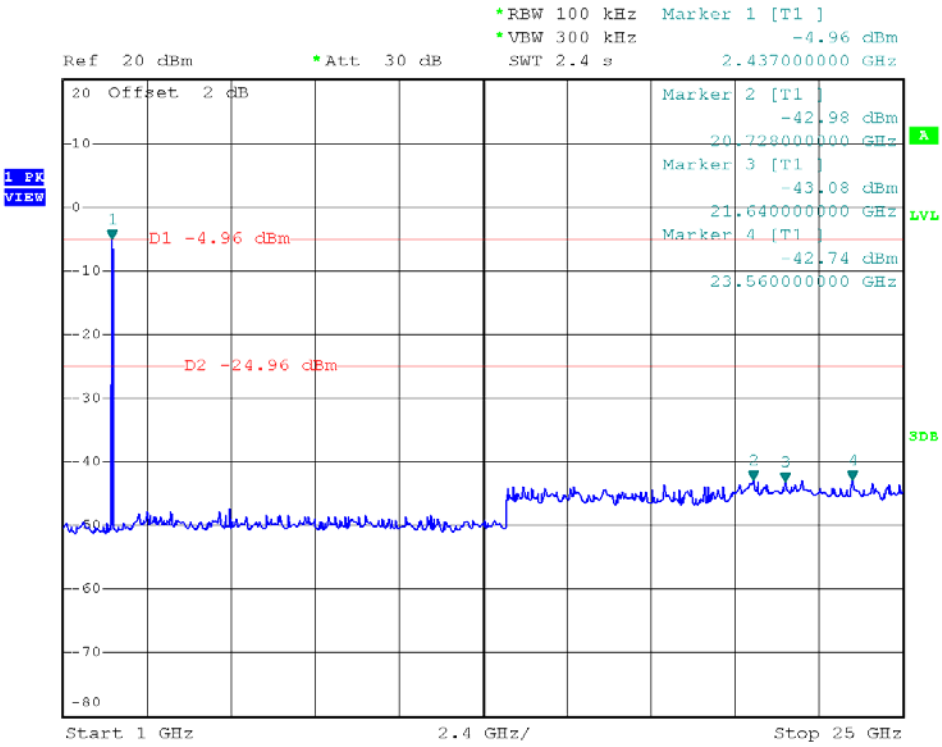
(Plot 2.4 G.1: Channel = 1, 30MHz to 1GHz@ 802.11n-20)



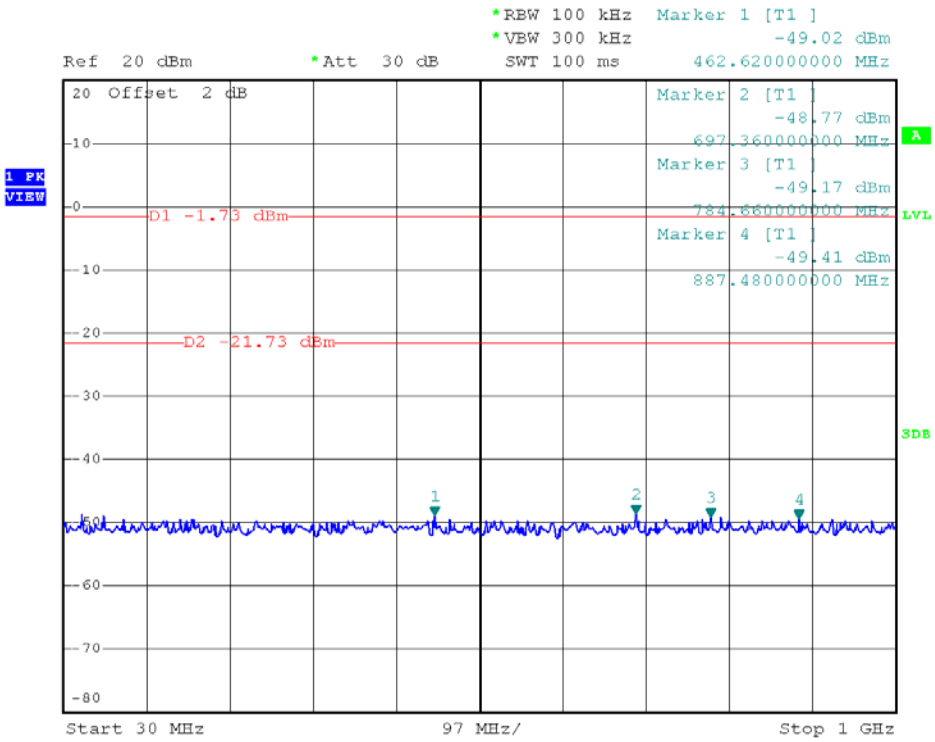
(Plot 2.4 G.2: Channel = 1, 1GHz to 25GHz@ 802.11n-20)



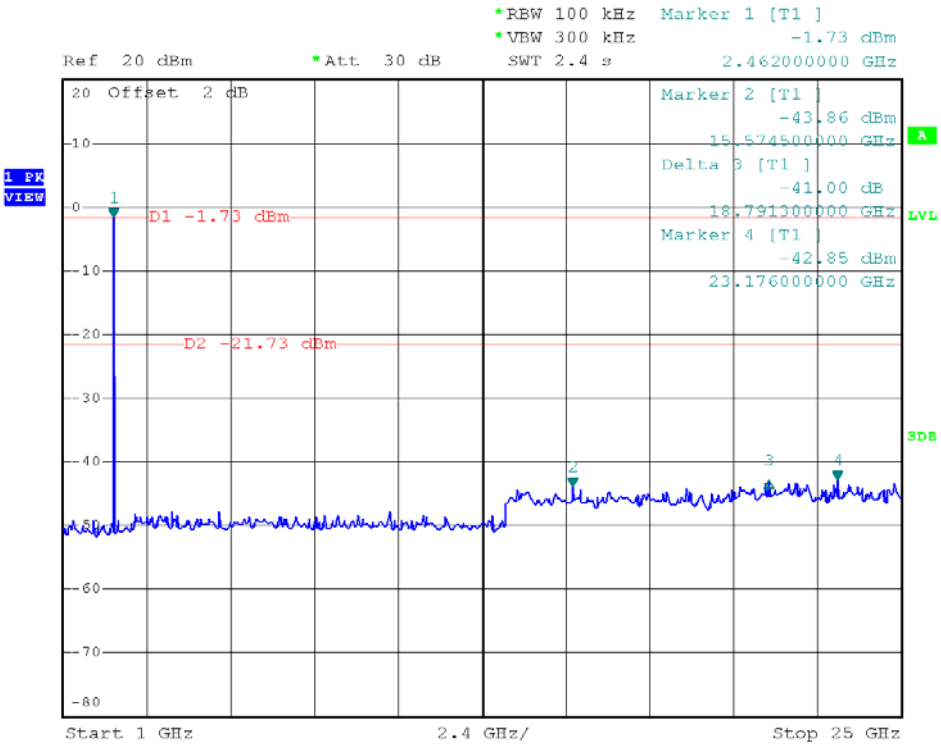
(Plot 2.4 H.1: Channel = 6, 30MHz to 1GHz@ 802.11n-20)



(Plot 2.4 H.2: Channel = 6, 1GHz to 25GHz@ 802.11n-20)



(Plot 2.4 I.1: Channel = 11, 30MHz to 1GHz@ 802.11n-20)



(Plot 2.4 I.2: Channel = 11, 1GHz to 25GHz@ 802.11n-20)

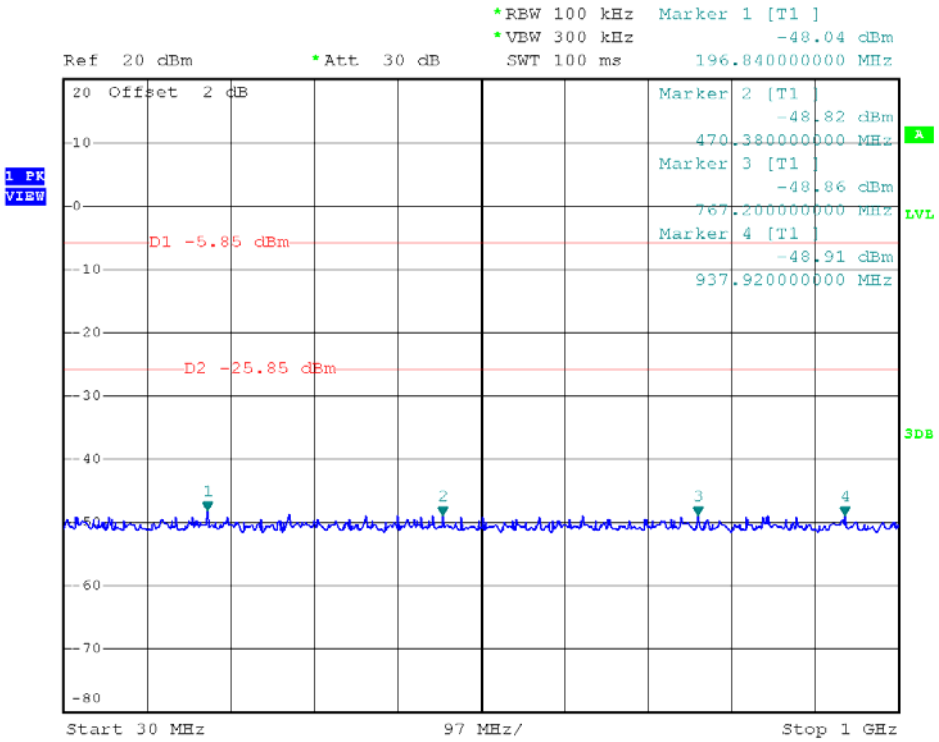
2.4.3.4 802.11n -40MHz Test mode

A. Test Verdict:

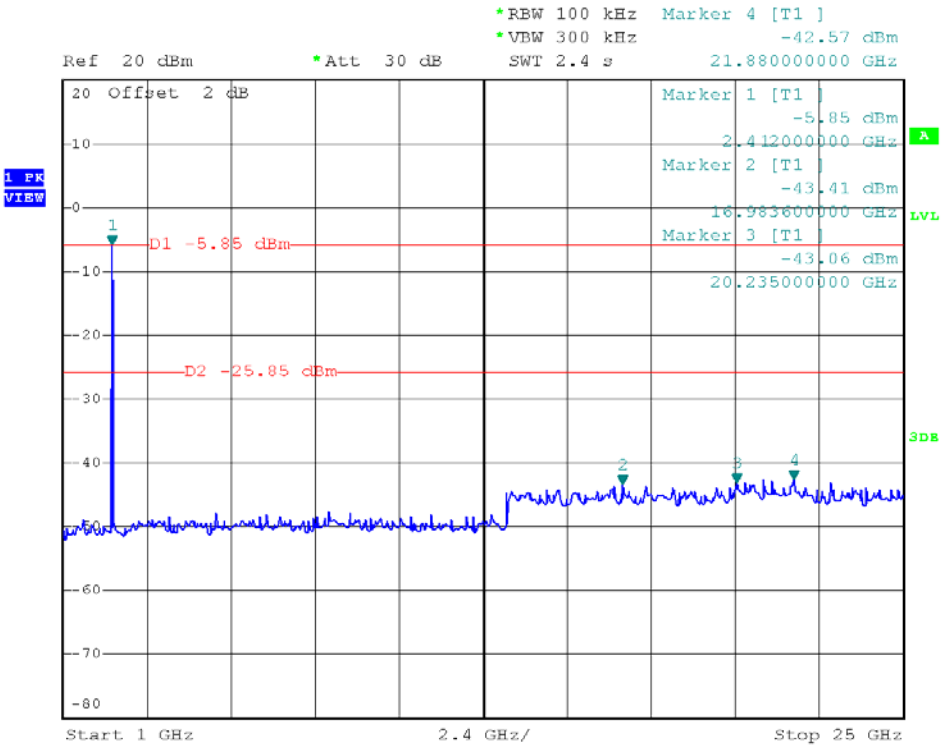
Channel	Frequency (MHz)	Refer to Plot	Limit (dBc)	Verdict
3	2422	Plot 2.4 J.1 to J.2	-20	PASS
6	2437	Plot 2.4 K1. to K.2	-20	PASS
9	2452	Plot 2.4 L.1 to L.2	-20	PASS

B. Test Plots:

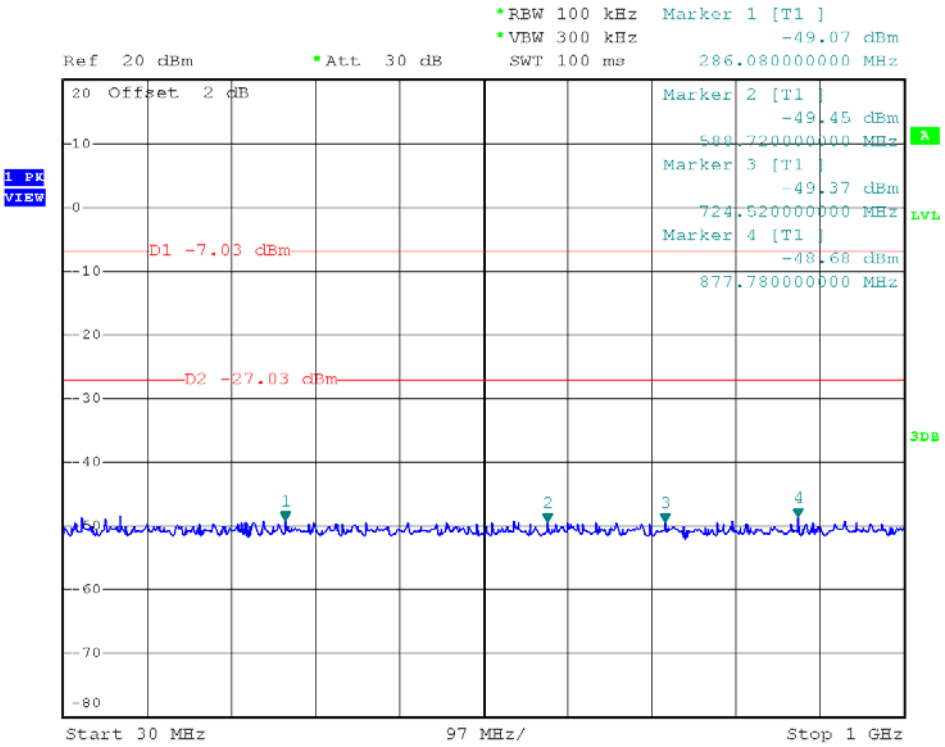
Note: the power of the Module transmitting frequency should be ignored.



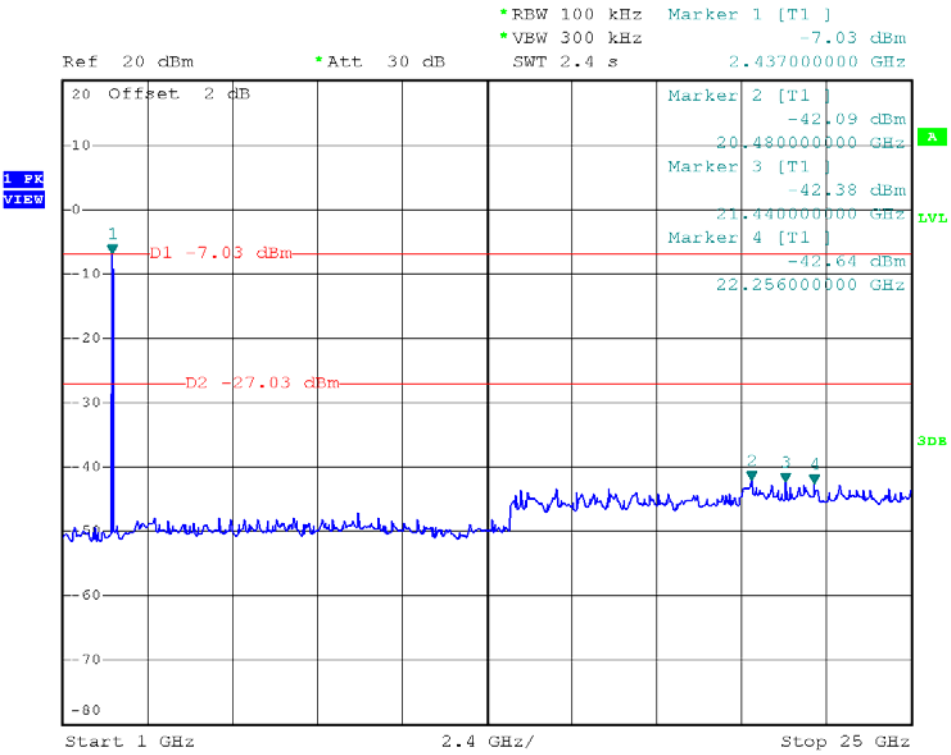
(Plot 2.4 J.1: Channel = 3, 30MHz to 1GHz@ 802.11n-40)



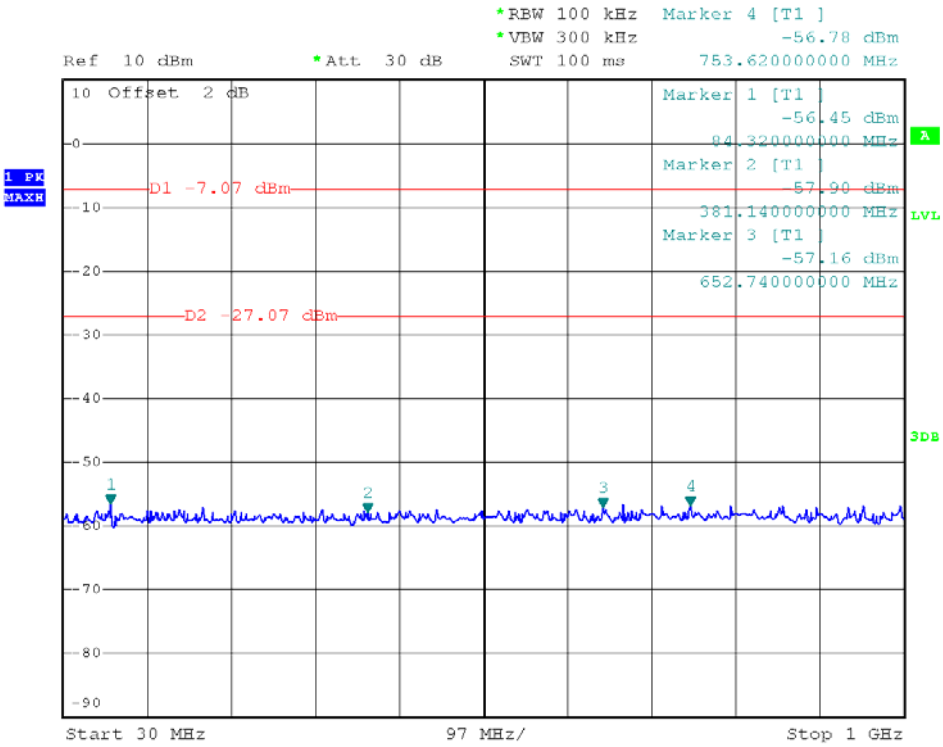
(Plot 2.4 J.2: Channel = 3, 1GHz to 25GHz@ 802.11n-40)



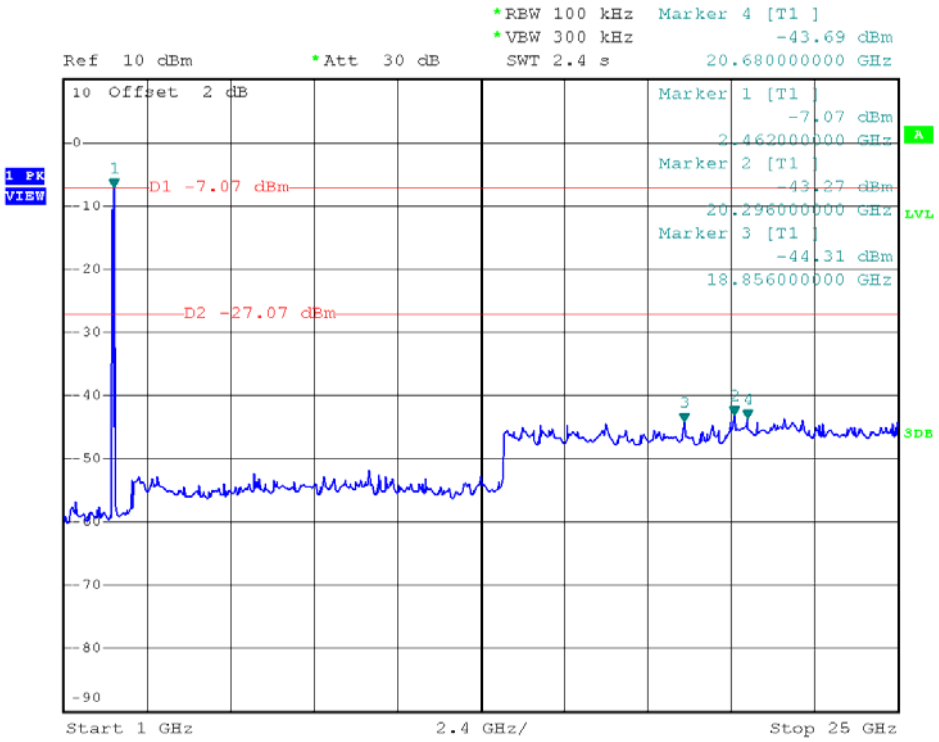
(Plot 2.4 K.1: Channel = 6, 30MHz to 1GHz@ 802.11n-40)



(Plot 2.4 K.2: Channel = 6, 1GHz to 25GHz@ 802.11n-40)



(Plot 2.4 L.1: Channel = 9, 30MHz to 1GHz@ 802.11n-40)



(Plot 2.4 L.2: Channel = 9, 1GHz to 25GHz@ 802.11n-40)

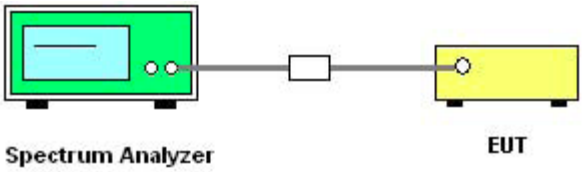
2.5 Power spectral density (PSD)

2.5.1 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.

2.5.2 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 ⩾ 3 kHz.
4. Set the VBW ⩾ 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	Cal. Due Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2014.07.07	2015.07.06

2.5.3 Test Result

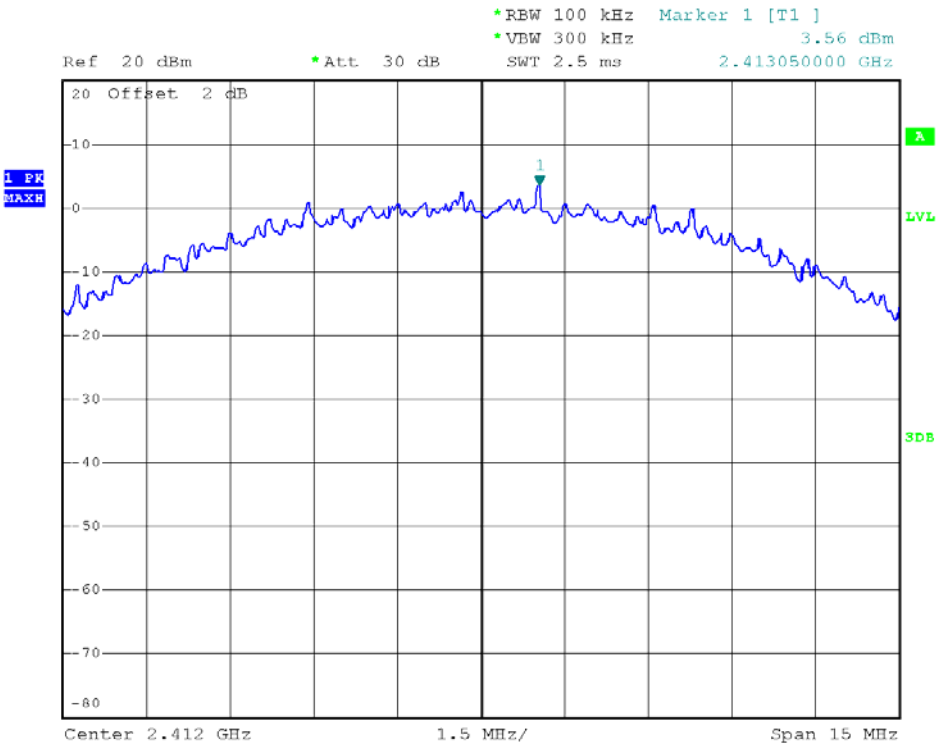
The lowest, middle and highest channels are tested to verify the band edge emissions.
Bandwidth correction: 10log(3kHz/100kHz)=-15.2dB

2.5.3.1 802.11b Test mode

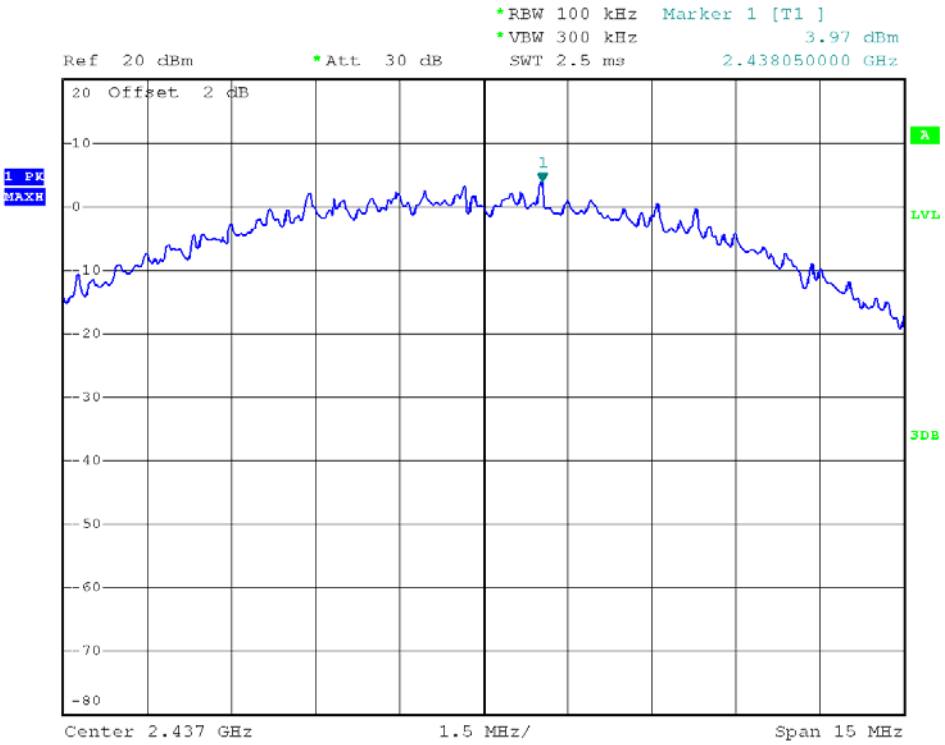
A. Test Verdict:

Spectral power density						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	3.56	-11.64	Plot 2.5 A	8	PASS
6	2437	3.97	-11.23	Plot 2.5 B	8	PASS
11	2462	4.31	-10.89	Plot 2.5 C	8	PASS
Measurement uncertainty: ±1.3dB						

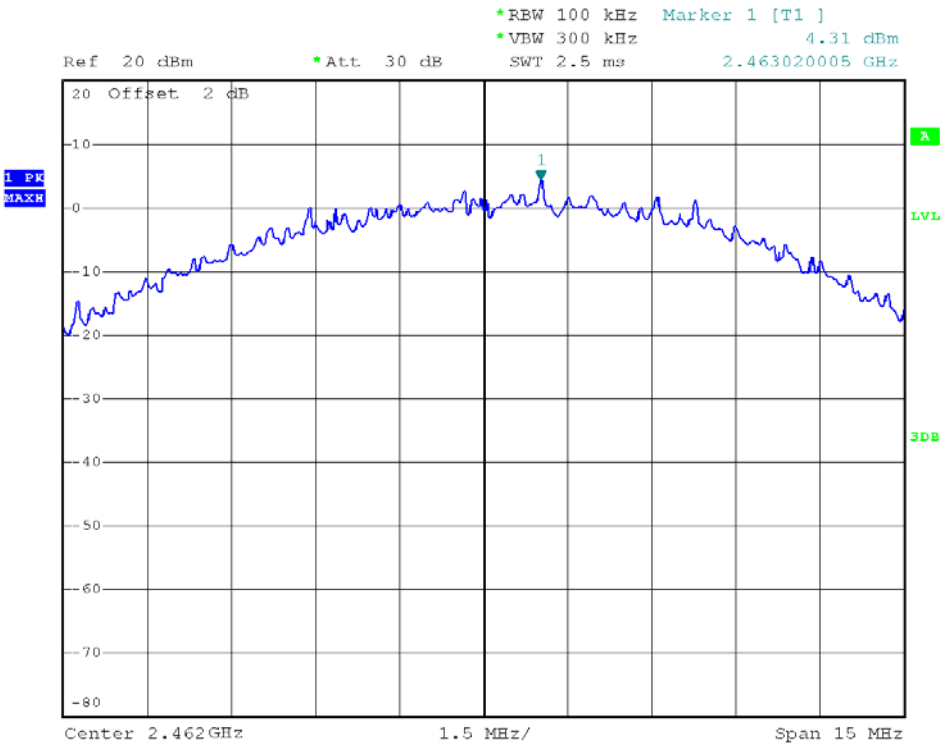
B. Test Plots:



(Plot 2.5 A: Channel = 1 @ 802.11b)



(Plot 2.5 B: Channel = 6 @ 802.11b)



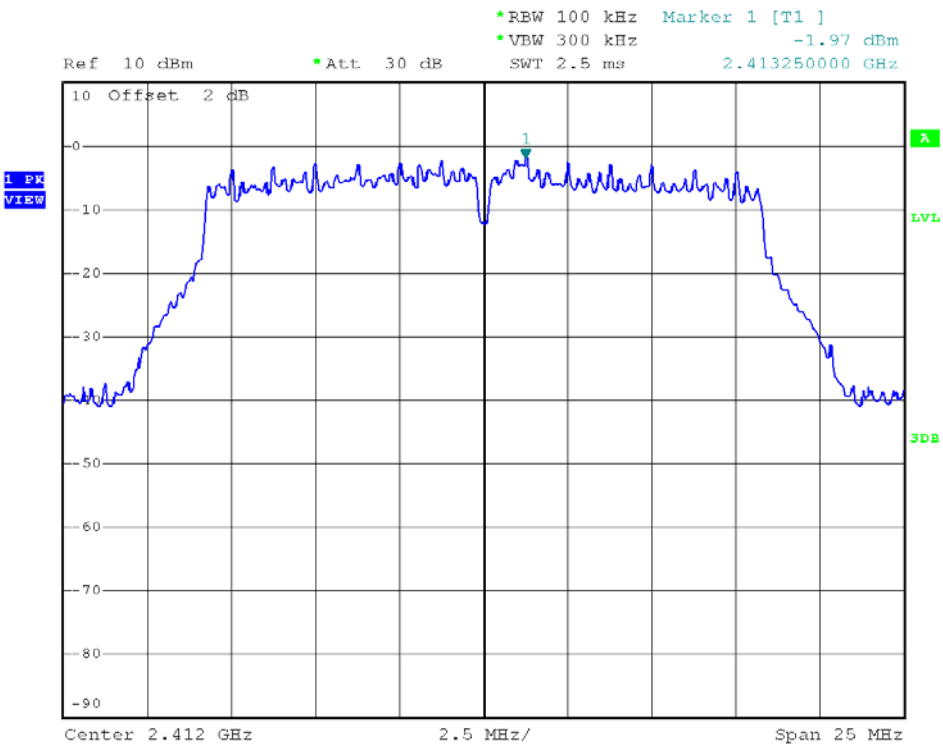
(Plot 2.5 C: Channel = 11 @ 802.11b)

2.5.3.2 802.11g Test mode

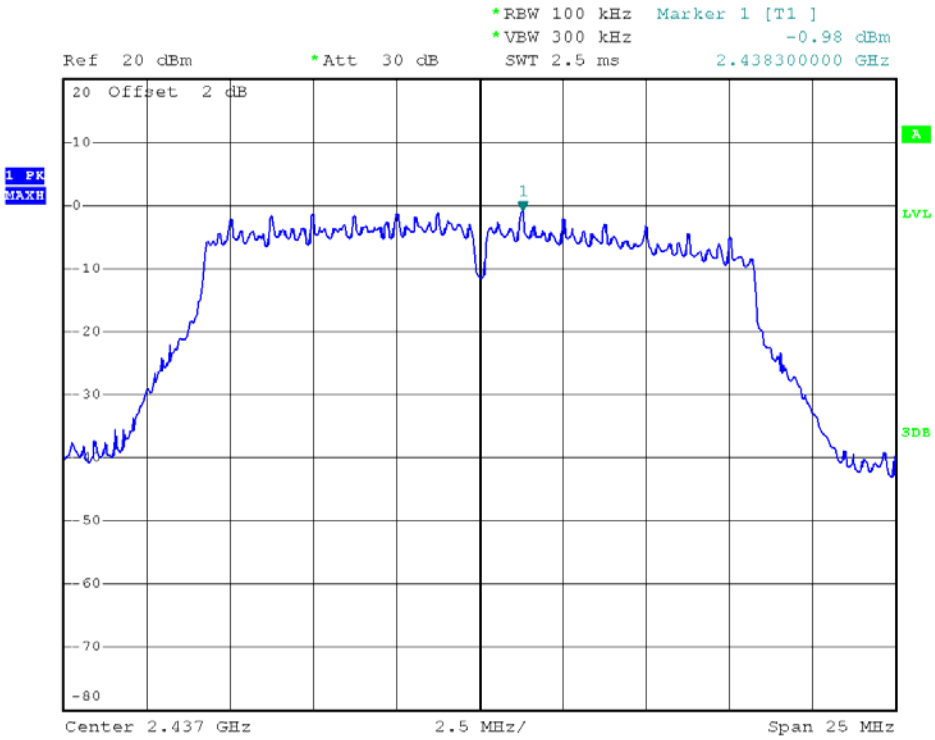
A. Test Verdict:

Spectral power density						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	-1.97	-17.17	Plot 2.5 D	8	PASS
6	2437	-0.98	-16.18	Plot 2.5 E	8	PASS
11	2462	-0.31	-15.51	Plot 2.5 F	8	PASS
Measurement uncertainty: ±1.3dB						

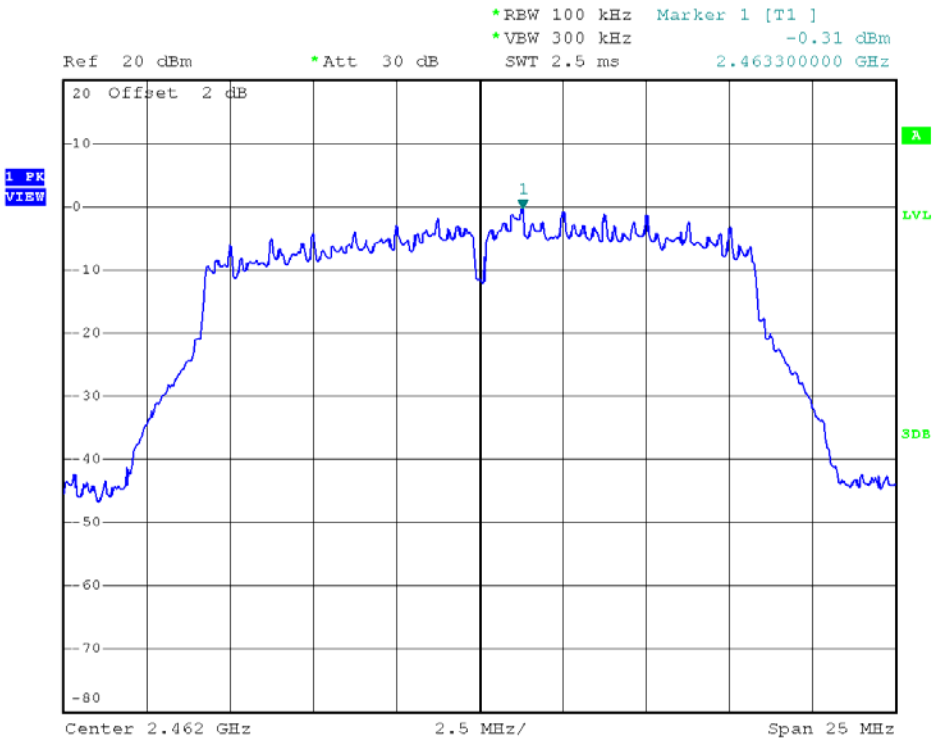
B. Test Plots:



(Plot 2.5 D: Channel = 1 @ 802.11g)



(Plot 2.5 E: Channel = 6 @ 802.11g)



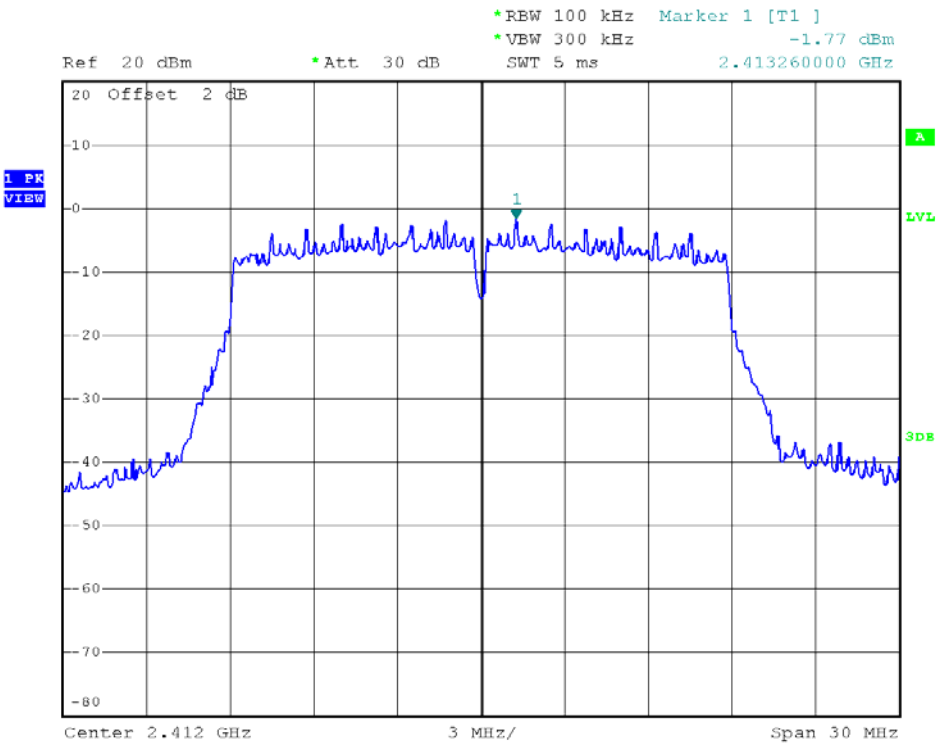
(Plot 2.5 F: Channel = 11 @ 802.11g)

2.5.3.3 802.11n-20 Test mode

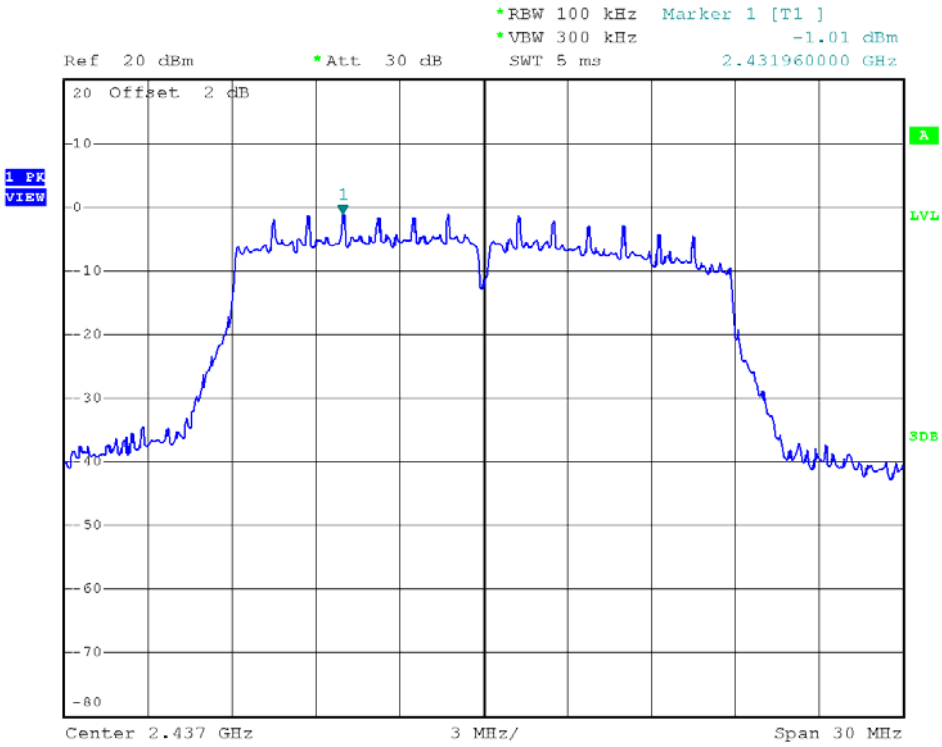
A. Test Verdict:

Spectral power density						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
1	2412	-1.77	-16.97	Plot2.5 G	8	PASS
6	2437	-1.01	-16.21	Plot2.5 H	8	PASS
11	2462	-0.57	-15.77	Plot2.5 I	8	PASS
Measurement uncertainty: ±1.3dB						

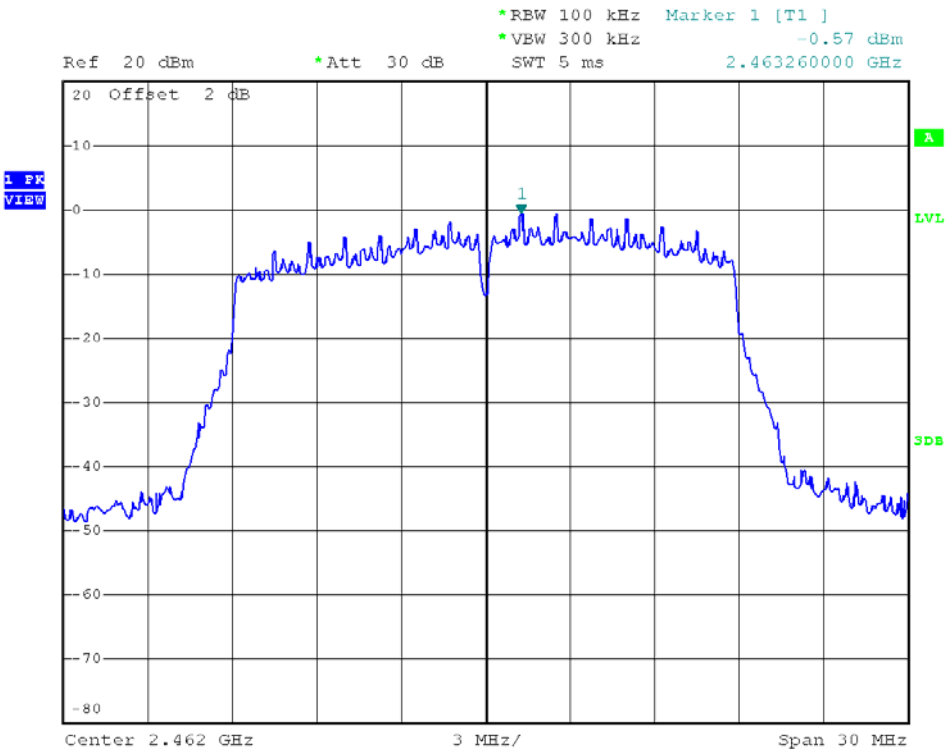
B. Test Plots:



(Plot 2.5 G: Channel = 1 @ 802.11n-20



(Plot 2.5 H: Channel = 6 @ 802.11n-20



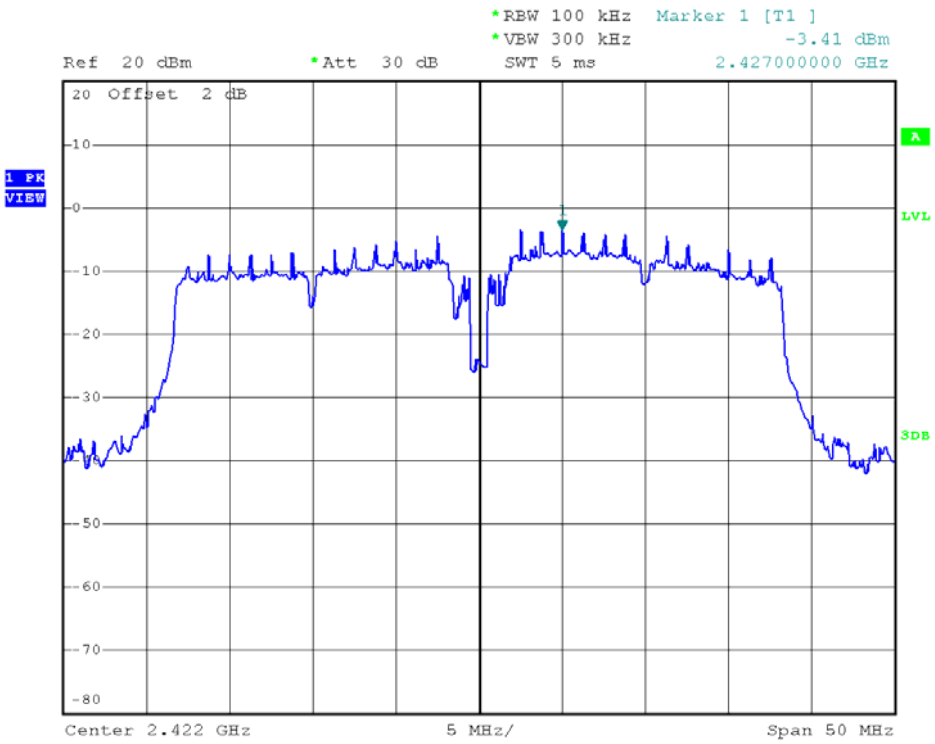
(Plot 2.5 I: Channel = 11 @ 802.11n-20

2.5.3.4 802.11n-40 Test mode

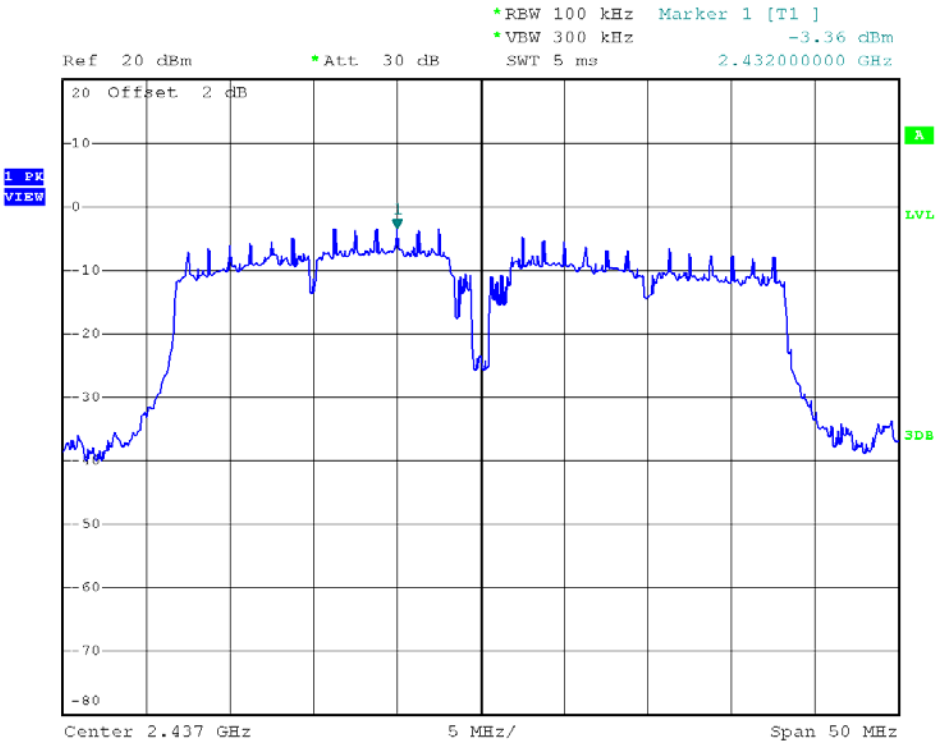
A. Test Verdict:

Spectral power density						
Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Refer to Plot	Limit (dBm/3kHz)	Verdict
3	2422	-3.41	-18.61	Plot 2.5 J	8	PASS
6	2437	-3.36	-18.56	Plot 2.5 K	8	PASS
9	2452	-3.31	-18.51	Plot 2.5 L	8	PASS
Measurement uncertainty: ±1.3dB						

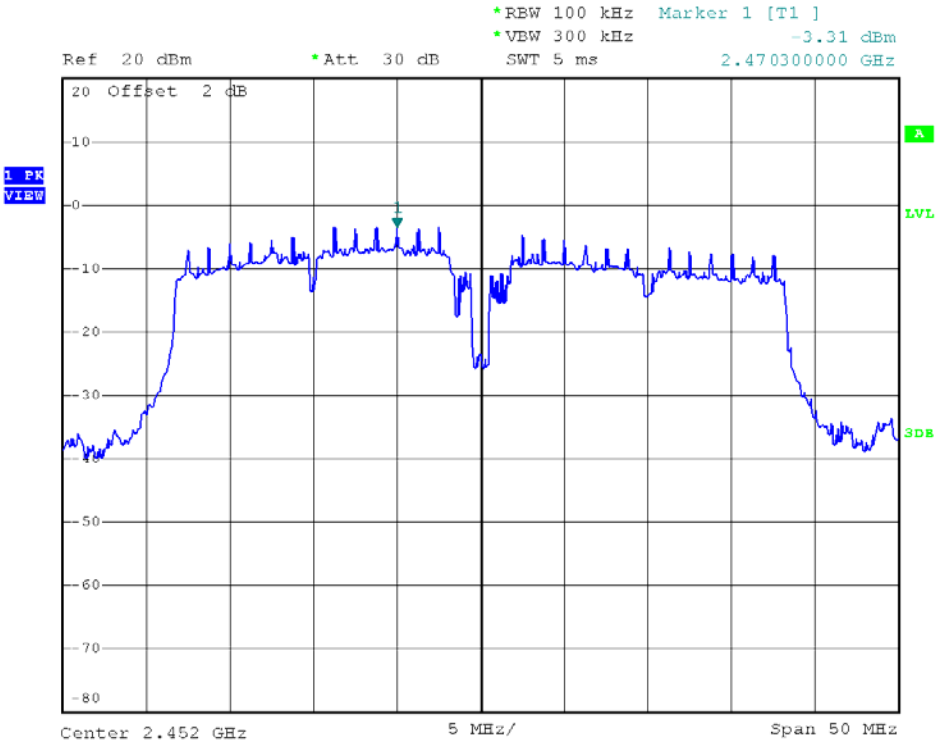
B. Test Plots:



(Plot 2.5 J: Channel = 3 @ 802.11n-40



(Plot 2.5 K: Channel = 6 @ 802.11n-40



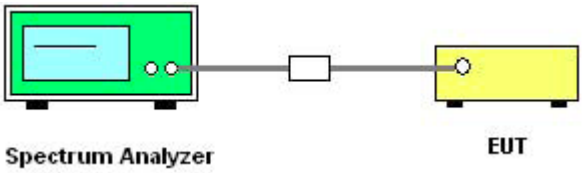
(Plot 2.5 L: Channel = 9 @ 802.11n-40

2.6 Conducted Band Edge

2.6.1 Requirement

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.

2.6.2 Test Description



Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2014.07.07	2015.07.06

2.6.3 Test Procedure

The following procedures may be used to determine the peak or average field strength or power of an unwanted emission that is within 2 MHz of the authorized band edge. If a peak detector is utilized, use the procedure described in 13.2.1. Use the procedure described in 13.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., duty cycle ≥ 98%). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).
When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

Set span to 2 MHz
RBW = 100 kHz.

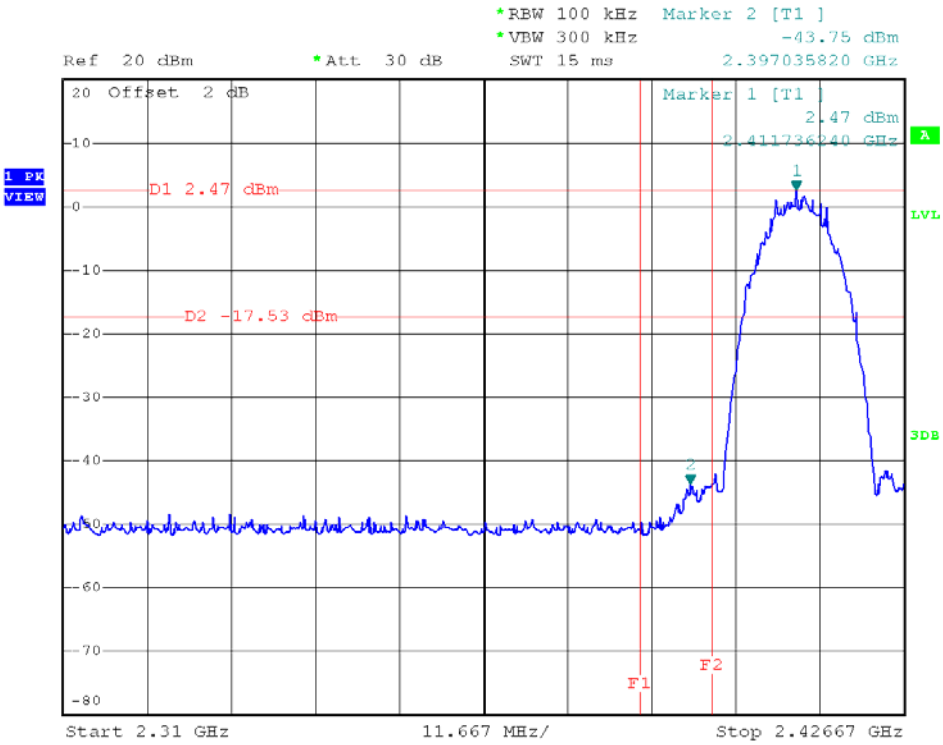
VBW ≥ 3 x RBW.
Detector = peak.
Sweep time = auto.
Trace mode = max hold.
Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)
Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

2.6.4 Test Result

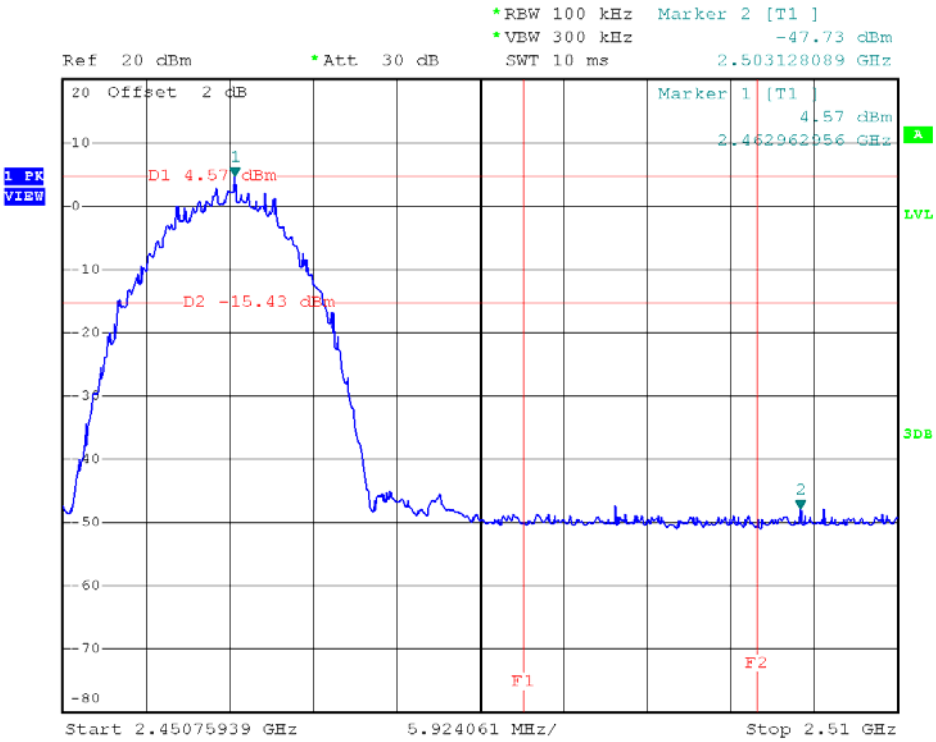
Band edge were measurement for 802.11b, 802.11g, 802.11n (HT20) and 802.11n (HT40) mode at difference date, recording worst case in test report.

The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

802.11b Band edge

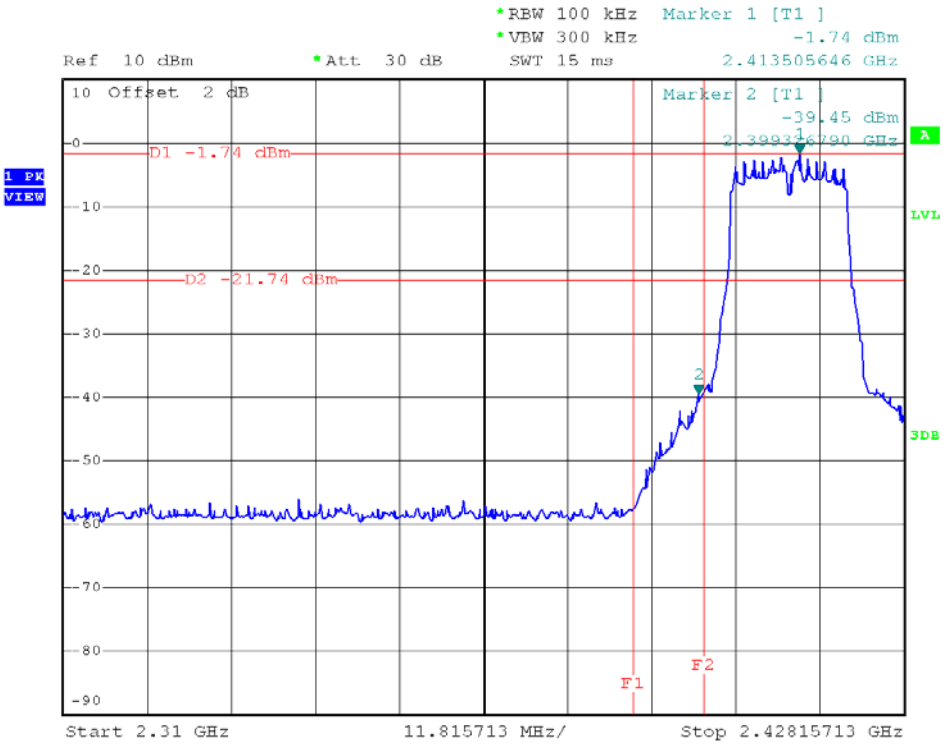


Channel = 1 @ 802.11b

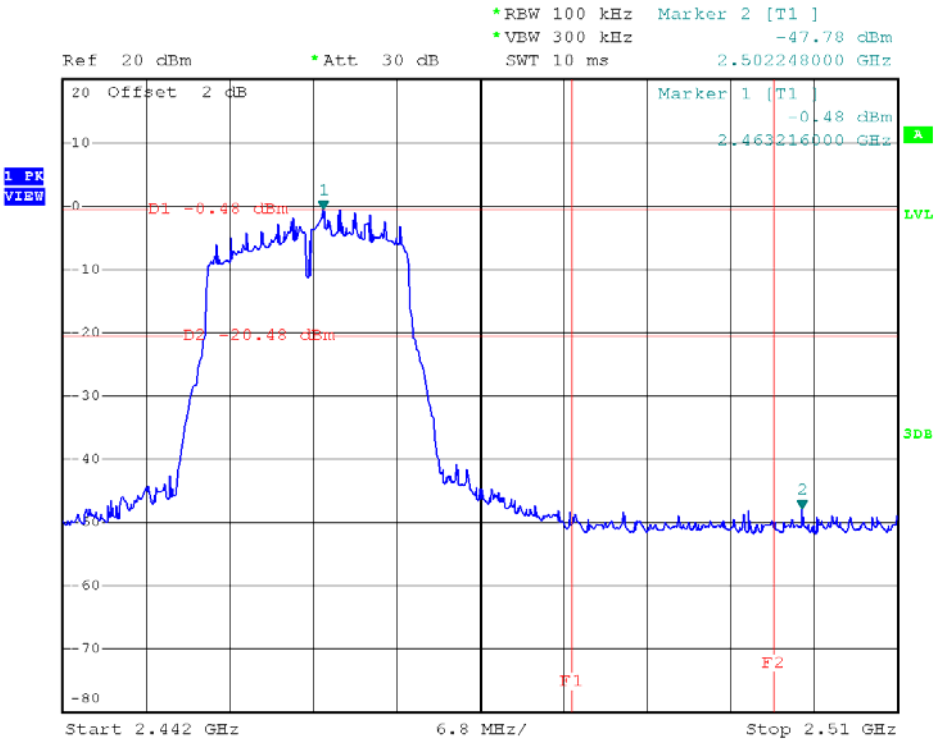


Channel = 11 @ 802.11b

802.11g Band edge

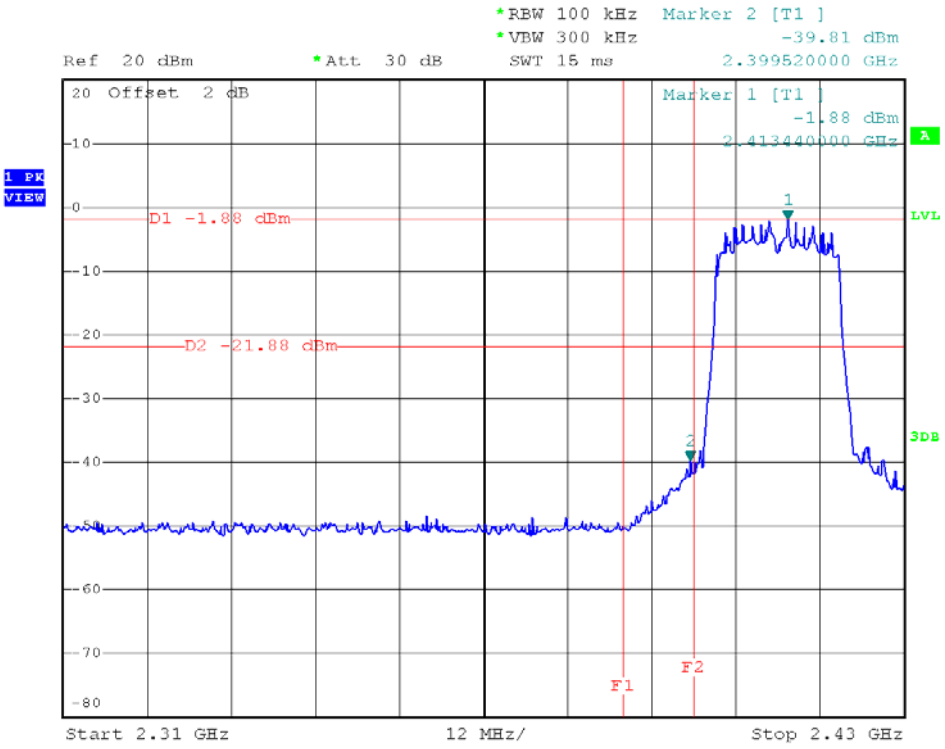


Channel = 1 @ 802.11g)

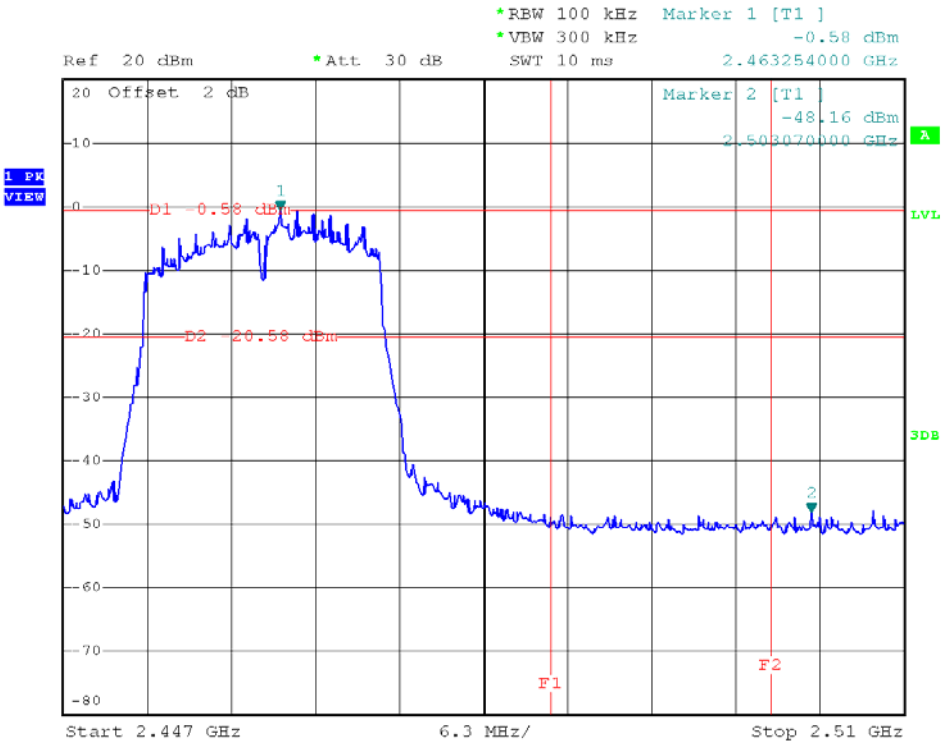


Channel = 11 @ 802.11g)

802.11n-20 Band edge

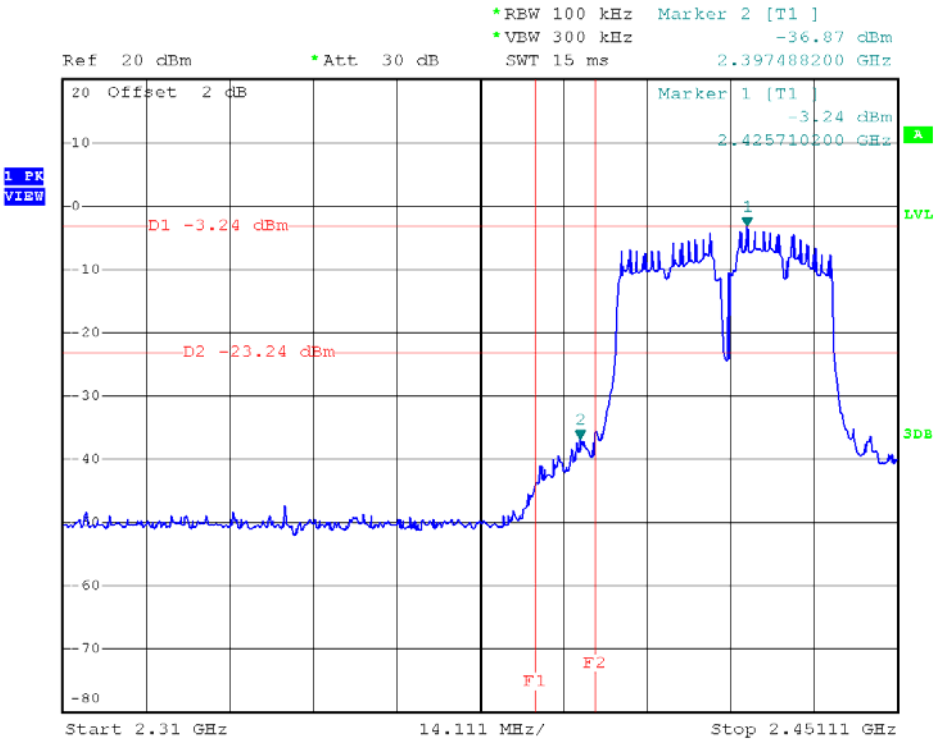


Channel = 1 @ 802.11n-20

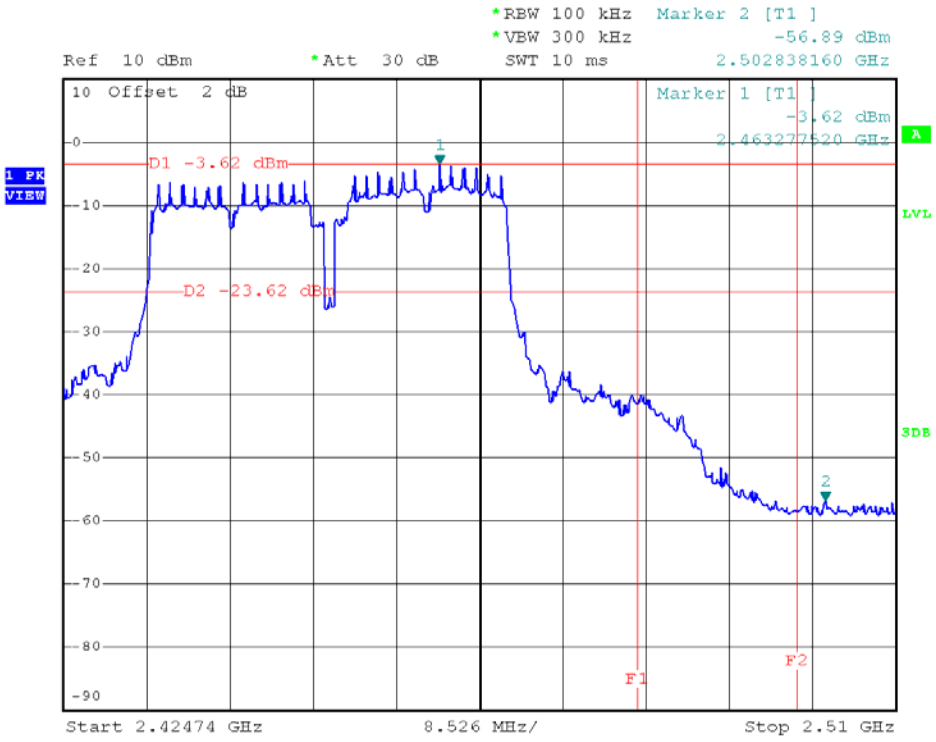


Channel = 11 @ 802.11n-20

802.11n-40 Band edge



Channel = 3 @ 802.11n-40



Channel = 9 @ 802.11n-40

2.7 Conducted Emission

2.7.1 Requirement

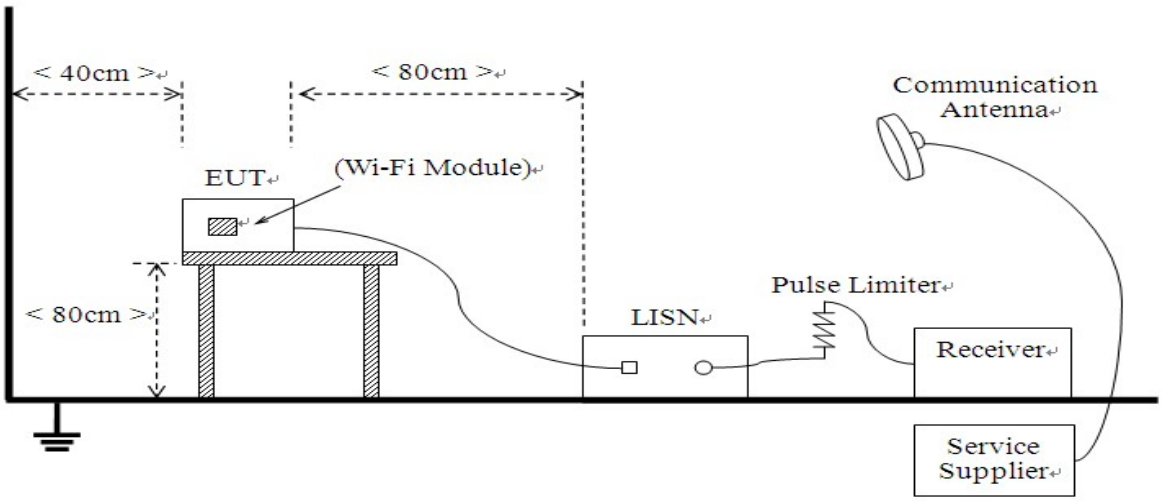
According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following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

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

NOTE:
(a) The lower limit shall apply at the band edges.
(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2 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

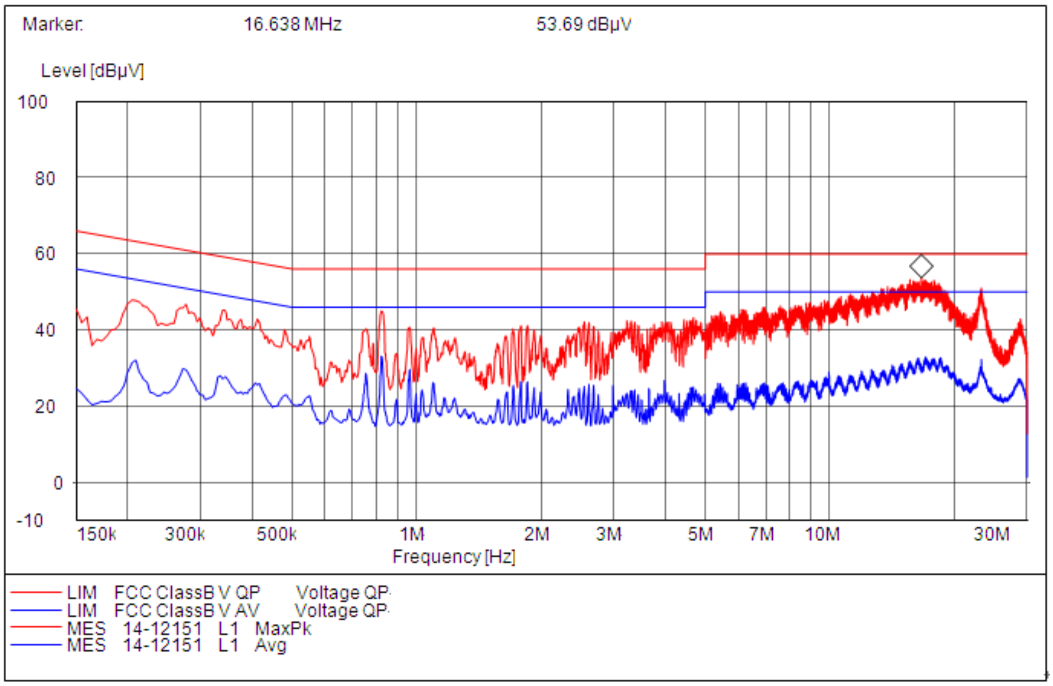
The EUT is powered by a PC. The factors of the site are calibrated to correct the reading. During the measurement, the EUT is activated and controlled by the Wi-Fi Service Supplier (SS) via a Common Antenna.

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Test Receiver	R&S	ESCS30	A0304260	2015.06.02	2016.06.02
LISN	R&S	ESH2-Z5	A0304221	2015.06.02	2016.06.02
Cable	MATCHING PAD	W7	/	2015.06.02	2016.06.02

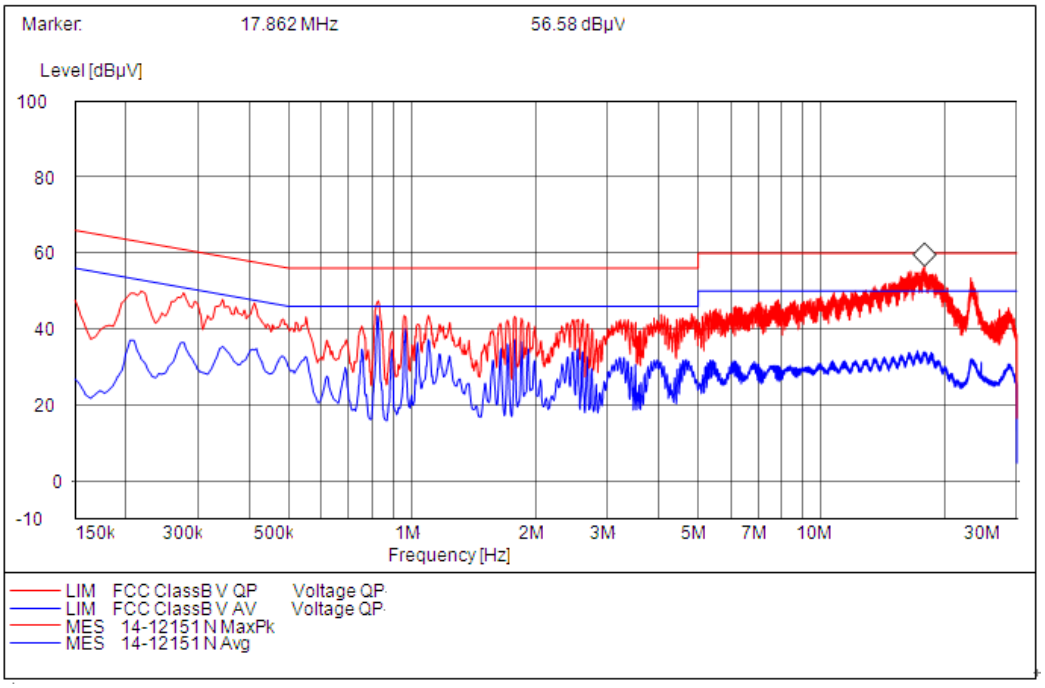
2.7.3 Test Result

The EUT configuration of the emission tests is EUT + PC.



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals							
QP				AV			
Frequency (MHz)	**Limits (dBµV)**	**Measurement Value (dBµV)**	**Margin (dB)**	**Frequency (MHz)**	**Limits (dBµV)**	**Measurement Value (dBµV)**	**Margin (dB)**
0.2760	60.90	44.75	16.15	0.2760	50.90	29.58	21.32
0.8205	56.00	42.94	13.06	0.8205	46.00	33.12	12.88
16.6380	60.00	49.98	10.02	16.6380	50.00	30.04	19.96



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals							
QP				AV			
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)
0.4110	57.60	44.90	12.70	0.4110	47.60	34.48	13.12
0.8250	56.00	45.63	10.37	0.8250	46.00	42.55	3.45
17.8620	60.00	54.09	5.91	17.8620	50.00	33.86	16.14

2.8 Radiated Band Edge and Spurious Emission

2.8.1 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 (μV/m)	Field Strength (dBμV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	20log(2400/F(KHz))+80	300
0.490 - 1.705	24000/F(kHz)	20log(24000/F(KHz))+40	30
1.705 - 30.0	30	20log(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:

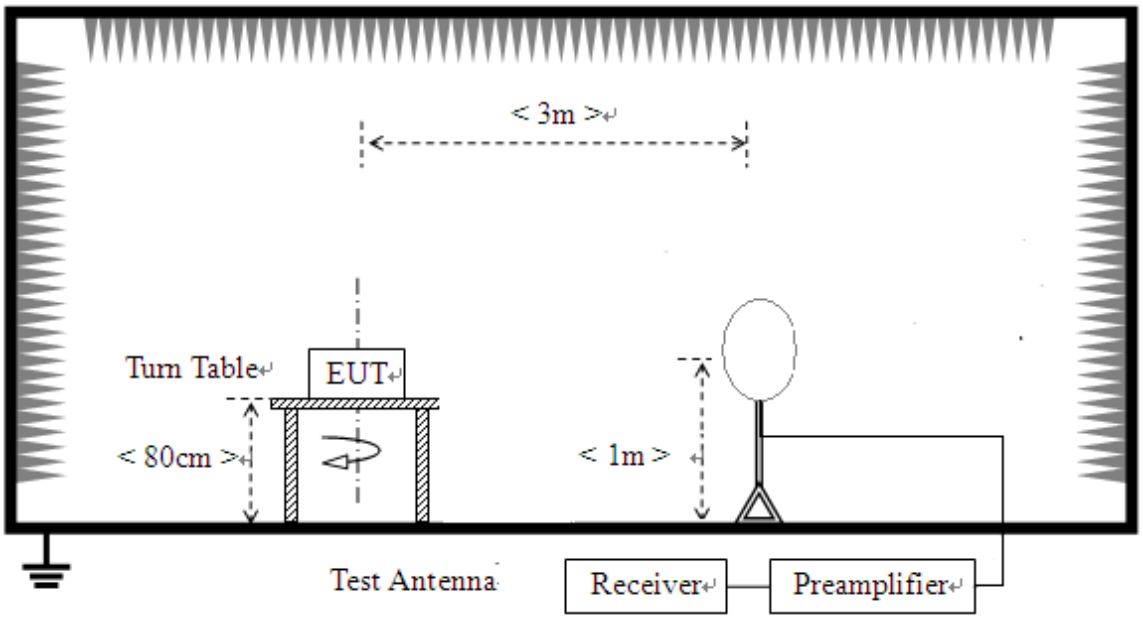
1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
2. For above 1000MHz, limit field strength 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)

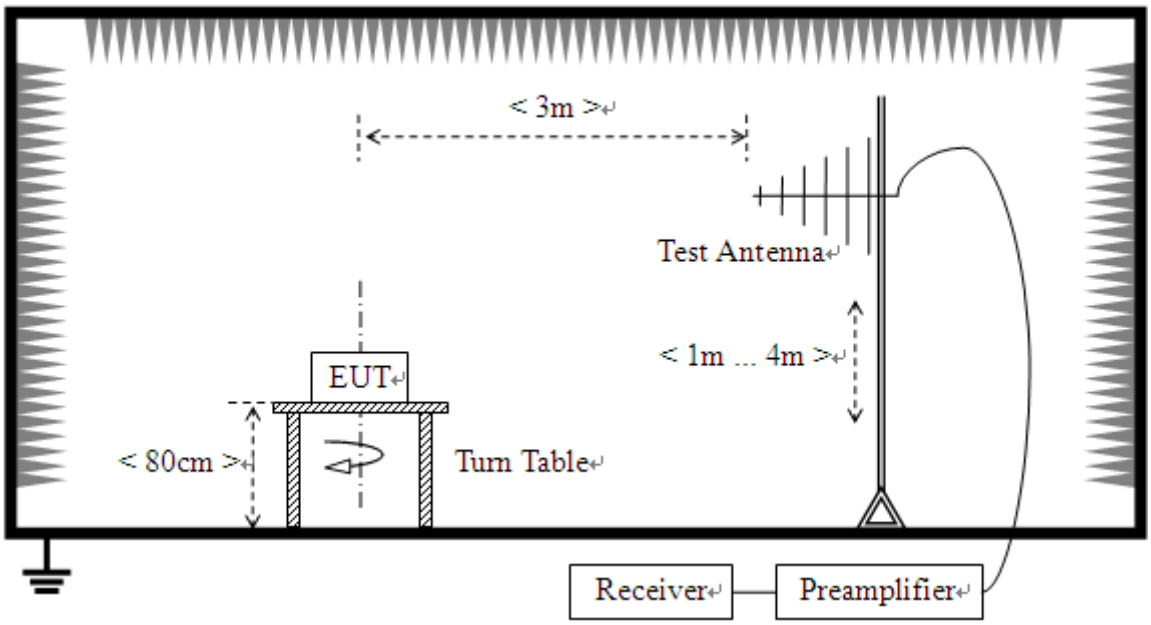
2.8.2 Test Description

A. Test Setup:

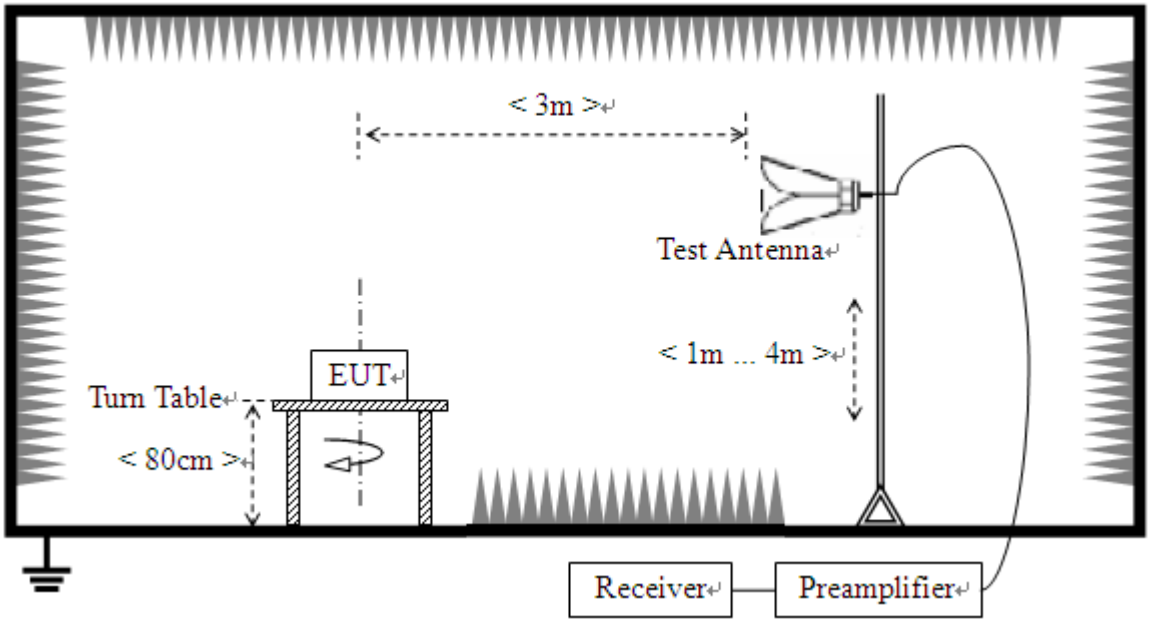
(1) For radiated emissions from 9kHz to 30MHz



(2) For radiated emissions from 30MHz to1GHz



(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 was powered by the PC. 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 digital modulation operation of the hybrid system, with the frequency hopping operation turned off, the EUT is activated and controlled by the PC, set to operate under WIFI test mode.

For the Test Antenna:

(a) 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.
(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) 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	Cal. Due Date
Receiver	R&S	ESIB26	A0304218	2015.06.02	2016.06.02
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	A0412372	2015.01.05	2016.01.04
Test Antenna - Bi-Log	Schwarz beck	VULB 9163	9163-274	2015.06.02	2016.06.02
Test Antenna - Horn	R&S	BBHA 9120D	9120C-963	2015.06.02	2016.06.02
Test Antenna - Horn	R&S	HF960	100150	2015.06.02	2016.06.02
Test Antenna – Horn (18-25GHz)	ETS	UG-596A/U	A0902607	2015.06.02	2016.06.02
Test Antenna -Loop	Schwarz beck	HFH2-Z2	100047	2015.06.02	2016.06.02
Amplifier 1G~18GHz	R&S	MITEQ AFS42-00101800	25-S-42	2015.06.02	2016.06.02
Amplifier 18G~40GHz	R&S	JS42-18002600-28-5A	12111.0980.00	2015.06.02	2016.06.02
amplifier 20M~3GHz	R&S	PAP-0203H	22018	2015.06.02	2016.06.02
Cable	SUNHNER	SUCOFLEX 100	/	2015.06.02	2016.06.02
Cable	SUNHNER	SUCOFLEX 104	/	2015.06.02	2016.06.02

2.8.3 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 [dBμV/m] $= U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

$L_{Cable\ loss}$: Cable loss

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

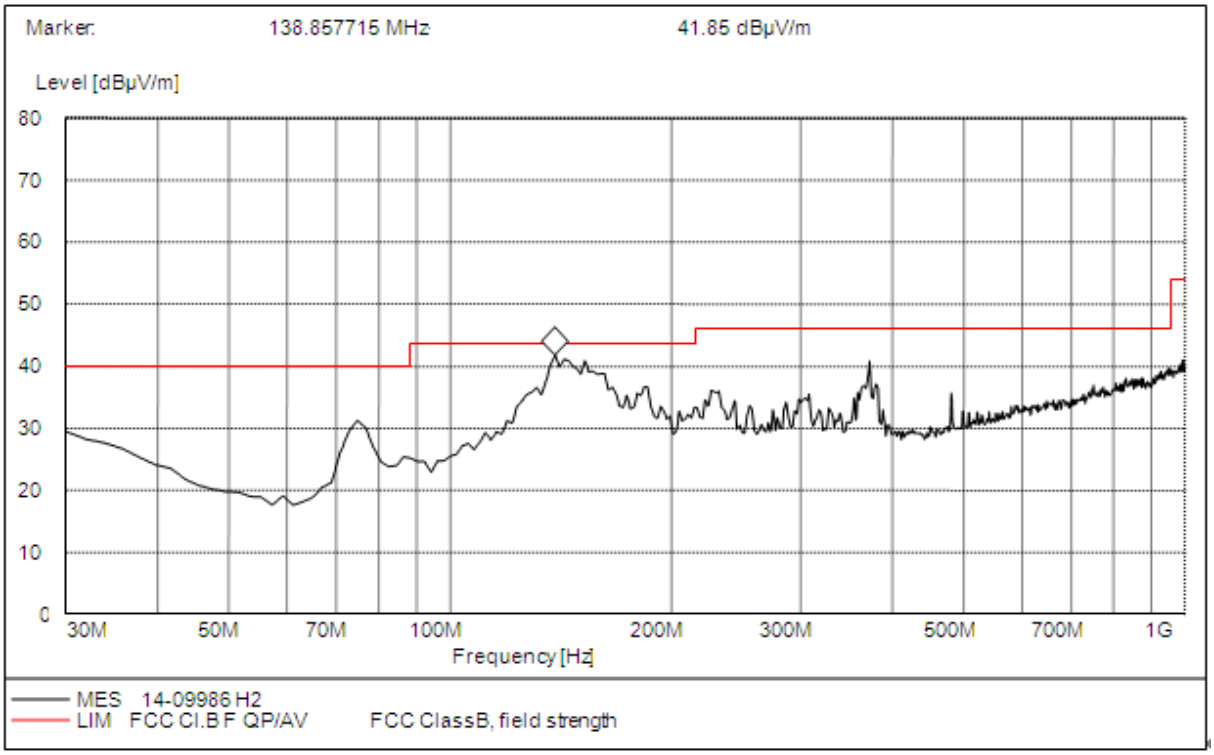
Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.
The minimum clock frequency was 24MHz,the radiated frequency range from 9KHz to 25GHz.
Note: 1.The radiated measurement are performed the each test mode (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.

Test plots for the whole measurement frequency range：

For 9KHz to 30MHz

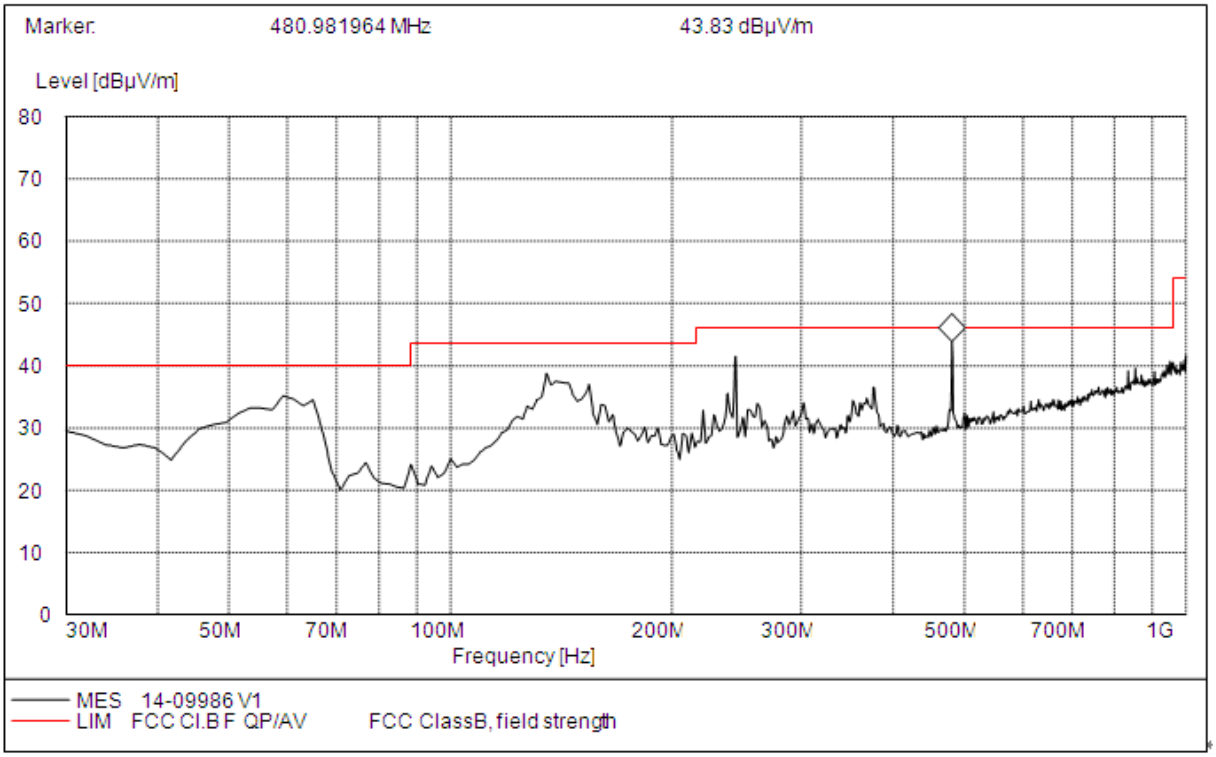
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Margin (dB)	Antenna	Verdict
74.710000	31.27	120.000	100.0	40.00	8.73	Horizontal	Pass
138.850000	40.15	120.000	100.0	43.50	3.35	Horizontal	Pass
152.460000	40.02	120.000	100.0	43.50	5.98	Horizontal	Pass
372.124000	40.56	120.000	100.0	46.00	5.54	Horizontal	Pass
580.120000	33.45	120.000	100.0	46.00	13.58	Horizontal	Pass

(Plot A: 30MHz to 1GHz, Antenna Vertical)



Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Verdict
59.150000	32.68	120.000	100.0	40.00	7.32	Vertical	Pass
138.260000	38.56	120.000	100.0	43.50	4.94	Vertical	Pass
239.450000	40.35	120.000	100.0	46.00	5.65	Vertical	Pass
480.240000	43.26	120.000	100.0	46.00	2.74	Vertical	Pass

(Plot B: 30MHz to 1GHz, Antenna Horizontal)

For 1GHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11b_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.40	PK	74.00	-17.60	1.01 H	228	24.20	32.20
2	2390.00	43.60	AV	54.00	-10.40	1.01 H	228	11.40	32.20
3	*2412.00	101.70	PK	/	/	1.03 H	112	69.50	32.20
4	*2412.00	97.70	AV	/	/	1.03 H	112	65.50	32.20
5	4824.00	51.40	PK	74.00	-22.60	1.00 H	254	46.10	5.30
6	4824.00	46.50	AV	54.00	-7.50	1.00 H	254	41.20	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11b_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.4	PK	74.00	-18.6	1.11 V	228	23.20	32.20
2	2390.00	44.3	AV	54.00	-9.7	1.11 V	228	12.10	32.20
3	*2412.00	114.7	PK	/	/	1.09 V	112	82.50	32.20
4	*2412.00	112.9	AV	/	/	1.03 V	112	80.70	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.21 V	254	49.10	5.30
6	4824.00	43.5	AV	54.00	-10.5	1.21 V	254	38.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11b_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	107.7	PK	/	/	1.01 H	210	75.50	32.20
2	*2437.00	106.4	AV	/	/	1.01 H	210	74.20	32.20
3	4874.00	54.2	PK	74.00	-19.8	1.03 H	272	48.90	5.30
4	4874.00	44.0	AV	54.00	-10.0	1.03 H	272	38.70	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11b_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.00	PK	/	/	1.09 V	112	76.80	32.20
2	*2437.00	105.30	AV	/	/	1.09 V	112	73.10	32.20
3	4874.00	56.80	PK	74.00	-17.20	1.21 V	254	51.50	5.30
4	4874.00	46.50	AV	54.00	-7.50	1.21 V	254	41.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11b_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	107.7	PK	/	/	1.05 V	215	75.40	32.30
2	*2462.00	105.5	AV	/	/	1.05 V	215	73.20	32.30
3	2483.50	56.8	PK	74.00	-17.2	1.05 V	211	24.40	32.40
4	2483.50	44.5	AV	54.00	-9.5	1.05 V	211	12.10	32.40
5	4924.00	52.1	PK	74.00	-21.9	1.45 V	320	46.60	5.50
6	4924.00	46.3	AV	54.00	-7.7	1.45 V	320	40.80	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11b_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	114.5	PK	/	/	1.05 V	174	82.20	32.30
2	*2462.00	113.8	AV	/	/	1.05 V	174	81.50	32.30
3	2483.50	57.5	PK	74.00	-16.5	1.05 V	177	25.10	32.40
4	2483.50	44.7	AV	54.00	-9.3	1.05 V	177	12.30	32.40
5	4924.00	54.9	PK	74.00	-19.1	1.45 V	201	49.40	5.50
6	4924.00	45.6	AV	54.00	-8.4	1.45 V	201	40.10	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11g_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.3	PK	74.0	-17.7	1.01 H	228	24.10	32.20
2	2390.00	43.4	AV	54.0	-10.6	1.01 H	228	11.20	32.20
3	*2412.00	102.1	PK	/	/	1.03 H	112	69.90	32.20
4	*2412.00	97.6	AV	/	/	1.03 H	112	65.40	32.20
5	4824.00	51.7	PK	74.00	-22.3	1.00 H	254	46.40	5.30
6	4824.00	48.5	AV	54.00	-5.5	1.00 H	254	43.20	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11g_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.1	PK	74.0	-17.9	1.11 V	228	23.90	32.20
2	2390.00	43.4	AV	54.0	-10.6	1.11 V	228	11.20	32.20
3	*2412.00	116.9	PK	/	/	1.09 V	112	84.70	32.20
4	*2412.00	113.6	AV	/	/	1.03 V	112	81.40	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.21 V	254	49.10	5.30
6	4824.00	44.7	AV	54.00	-9.3	1.21 V	254	39.40	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11g_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.0	PK	/	/	1.01 H	210	75.80	32.20
2	*2437.00	105.6	AV	/	/	1.01 H	210	73.40	32.20
3	4874.00	53.4	PK	74.00	-20.6	1.03 H	272	48.10	5.30
4	4874.00	44.0	AV	54.00	-10.0	1.03 H	272	38.70	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11g_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.3	PK	/	/	1.09 V	112	76.10	32.20
2	*2437.00	107.7	AV	/	/	1.09 V	112	75.50	32.20
3	4874.00	56.8	PK	74.00	-17.2	1.21 V	254	51.50	5.30
4	4874.00	44.5	AV	54.00	-9.5	1.21 V	254	39.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11g_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.7	PK	/	/	1.05 V	215	77.40	32.30
2	*2462.00	107.9	AV	/	/	1.05 V	215	75.60	32.30
3	2483.50	57.3	PK	74.0	-16.7	1.05 V	211	24.90	32.40
4	2483.50	44.2	AV	54.0	-9.8	1.05 V	211	11.80	32.40
5	4924.00	52.4	PK	74.0	-21.6	1.45 V	320	46.90	5.50
6	4924.00	44.2	AV	54.0	-9.8	1.45 V	320	38.70	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11g_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	120.6	PK	/	/	1.05 V	174	88.30	32.30
2	*2462.00	116.8	AV	/	/	1.05 V	174	84.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.05 V	177	23.10	32.40
4	2483.50	44.7	AV	54.0	-9.3	1.05 V	177	12.30	32.40
5	4924.00	53.9	PK	74.0	-20.1	1.45 V	201	48.40	5.50
6	4924.00	45.9	AV	54.0	-8.1	1.45 V	201	40.40	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n20_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.3	PK	74.0	-14.7	1.01 H	228	27.10	32.20
2	2390.00	42.7	AV	54.0	-11.3	1.01 H	228	10.50	32.20
3	*2412.00	104.4	PK	/	/	1.03 H	112	72.20	32.20
4	*2412.00	102.0	AV	/	/	1.03 H	112	69.80	32.20
5	4824.00	54.8	PK	74.00	-19.2	1.00 H	254	49.50	5.30
6	4824.00	46.6	AV	54.00	-7.4	1.00 H	254	41.30	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n20_2412MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.7	PK	74.0	-16.3	1.11 V	228	25.50	32.20
2	2390.00	43.7	AV	54.0	-10.3	1.11 V	228	11.50	32.20
3	*2412.00	117.1	PK	/	/	1.09 V	112	84.90	32.20
4	*2412.00	115	AV	/	/	1.03 V	112	82.80	32.20
5	4824.00	54.4	PK	74.00	-19.6	1.21 V	254	49.10	5.30
6	4824.00	44.9	AV	54.00	-9.1	1.21 V	254	39.60	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n20_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	114.3	PK	/	/	1.01 H	210	82.10	32.20
2	*2437.00	114.1	AV	/	/	1.01 H	210	81.90	32.20
3	4874.00	57.8	PK	74.00	-16.2	1.03 H	272	52.50	5.30
4	4874.00	45.2	AV	54.00	-8.8	1.03 H	272	39.90	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n20_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	114.0	PK	/	/	1.09 V	112	81.80	32.20
2	*2437.00	115.3	AV	/	/	1.09 V	112	83.10	32.20
3	4874.00	56.8	PK	74.00	-17.2	1.21 V	254	51.50	5.30
4	4874.00	45.5	AV	54.00	-8.5	1.21 V	254	40.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n20_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.2	PK	/	/	1.05 V	215	78.90	32.30
2	*2462.00	109.9	AV	/	/	1.05 V	215	77.60	32.30
3	2483.50	56.3	PK	74.0	-17.7	1.05 V	211	23.90	32.40
4	2483.50	44.1	AV	54.0	-9.9	1.05 V	211	11.70	32.40
5	4924.00	53.4	PK	74.0	-20.6	1.45 V	320	47.90	5.50
6	4924.00	46.3	AV	54.0	-7.7	1.45 V	320	40.80	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n20_2462MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.5	PK	/	/	1.05 V	174	78.20	32.30
2	*2462.00	107.8	AV	/	/	1.05 V	174	75.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.05 V	177	23.10	32.40
4	2483.50	44.7	AV	54.0	-9.3	1.05 V	177	12.30	32.40
5	4924.00	55.9	PK	74.0	-18.1	1.45 V	201	50.40	5.50
6	4924.00	46.4	AV	54.0	-7.6	1.45 V	201	40.90	5.50

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n40_2422MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.9	PK	74.0	-17.1	1.01 H	228	24.70	32.20
2	2390.00	43.6	AV	54.0	-10.4	1.01 H	228	11.40	32.20
3	*2422.00	101.8	PK	/	/	1.03 H	112	69.60	32.20
4	*2422.00	97.3	AV	/	/	1.03 H	112	65.10	32.20
5	4844.00	51.7	PK	74.00	-22.3	1.00 H	254	46.40	5.30
6	4844.00	46.6	AV	54.00	-7.4	1.00 H	254	41.30	5.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n40_2422MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.0	PK	74.0	-17.0	1.11 V	228	24.80	32.20
2	2390.00	44.4	AV	54.0	-9.6	1.11 V	228	12.20	32.20
3	*2422.00	116.6	PK	/	/	1.09 V	112	84.40	32.20
4	*2422.00	113.6	AV	/	/	1.03 V	112	81.40	32.20
5	4844.00	54.4	PK	74.00	-19.6	1.21 V	254	49.10	5.30
6	4844.00	44.6	AV	54.00	-9.4	1.21 V	254	39.30	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n40_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.3	PK	/	/	1.01 H	210	77.10	32.20
2	*2437.00	109.1	AV	/	/	1.01 H	210	76.90	32.20
3	4874.00	53.8	PK	74.00	-20.2	1.03 H	272	48.50	5.30
4	4874.00	44.2	AV	54.00	-9.8	1.03 H	272	38.90	5.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n40_2437MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.0	PK	/	/	1.09 V	112	76.80	32.20
2	*2437.00	106.3	AV	/	/	1.09 V	112	74.10	32.20
3	4874.00	56.4	PK	74.00	-17.6	1.21 V	254	51.10	5.30
4	4874.00	44.5	AV	54.00	-9.5	1.21 V	254	39.20	5.30

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M（802.11n40_2452MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	112.2	PK	/	/	1.05 V	215	79.90	32.30
2	*2452.00	111.1	AV	/	/	1.05 V	215	78.80	32.30
3	2483.50	57.3	PK	74.0	-16.7	1.05 V	211	24.90	32.40
4	2483.50	45.0	AV	54.0	-9.0	1.05 V	211	12.60	32.40
5	4904.00	52.7	PK	74.0	-21.3	1.45 V	320	47.20	5.50
6	4904.00	43.0	AV	54.0	-11.0	1.45 V	320	37.50	5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M（802.11n40_2452MHz）									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	110.4	PK	/	/	1.05 V	174	78.10	32.30
2	*2452.00	106.8	AV	/	/	1.05 V	174	74.50	32.30
3	2483.50	55.5	PK	74.0	-18.5	1.05 V	177	23.10	32.40
4	2483.50	45.7	AV	54.0	-8.3	1.05 V	177	13.30	32.40
5	4904.00	55.9	PK	74.0	-18.1	1.45 V	201	50.40	5.50
6	4904.00	46.7	AV	54.0	-7.3	1.45 V	201	41.20	5.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) － Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level － Limit value
5. " * ": Fundamental frequency.

** END OF REPORT **