REPORT No.: SZ16010165W03

FCC RF TEST REPORT

APPLICANT	:	Hangzhou Miniwing Technology Co.,Ltd
PRODUCT NAME	:	Smart Cycling Camera
MODEL NAME	:	R100
TRADE NAME	:	Camile
BRAND NAME	:	Camile
FCC ID	:	2AHGHR100
STANDARD(S)	:	47 CFR Part 15 Subpart C
ISSUE DATE	:	2016-03-09

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2016-03-09	First edition

TEST REPORT DECLARATION

Applicant	Hangzhou Miniwing Technology Co.,Ltd
Applicant Address	TopSo Technology Park, No.368 Jinpeng Street, Xihu District, Hangzhou. China
Manufacturer Address	Hangzhou Miniwing Technology Co.,Ltd
Manufacturer	TopSo Technology Park, No.368 Jinpeng Street,Xihu District, Hangzhou. China
Product Name	Smart Cycling Camera
Model Name	R100
Brand Name	Camile
HW Version	V005
SW Version	V0.9.3
Test Standards	47 CFR Part 15 Subpart C
Test Date	2016-02-14 to 2016-03-04
Test Result	PASS

Tested by : Zou Jian

Zou Jian

Reviewed by : Yuan Ling

Yuan Ling

Approved by : Peng Huarui

Peng Huarui

1. TECHNICAL INFORMATION

Note: Provide by applicant.

1.1 Applicant Information

Company:	Hangzhou Miniwing Technology Co.,Ltd.
Address	TopSo Technology Park, No.368 Jinpeng Street,Xihu District, Hangzhou. China

1.2 Equipment under Test (EUT) Description

Brand Name:	Camile
Trade Name:	Camile
Model Name:	R100
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, OFDM
Antenna Type:	FPCAntenna
Antenna Gain:	0.92dBi

NOTE:

The EUT is a Smart Cycling Camera, it contains WIFI Module operating at 2.4GHz ISM; it supports 802.11b, 802.11g, 802.11n and they are all tested in this report.

For 802.11b/g/n-20MHz (2.4GHz band), 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).

For 802.11n-40MHz, the frequencies allocated is F (MHz) =2412+5*(n-1) (3<=n<=9). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 3 (2422MHz), 6 (2437MHz) and 9 (2452MHz).

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

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

1.2.1 Identification of all used EUTs

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
A01	V005	V0.9.3

1.3 Test Standards and Results

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

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-13 Edition)	Radio Frequency Devices

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

No.	Section	Description	Test Date	Result
1	15.203	Antenna Requirement	N.A	**PASS**
2	15.247(b)	Peak Output Power	Feb 16, 2016	**PASS**
3	15.247(a)	Bandwidth	Feb 16, 2016	**PASS**
4	15.247(d)	Conducted Spurious Emission and Band Edge	Feb 22, 2016 &Feb 16,2016	**PASS**
5	15.247(d)	Restricted Frequency Bands	Mar 02, 2016	**PASS**
6	15.207	Conducted Emission	Mar 02, 2016	**PASS**
7	15.209 ,15.247(d)	Radiated Emission	Mar 02, 2016	**PASS**
8	15.247(e)	Power spectral density (PSD)	Feb 16, 2016	**PASS**

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013.

1.3.1 Test Environment Conditions

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

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

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.

2.1.2 Result: Compliant

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

2.2 Peak Output Power

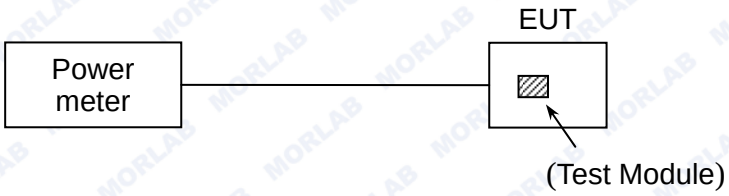
2.2.1 Requirement

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 Power Meter and calibration.

A. Test Setup:



The EUT (Equipment under the test) which 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:

Please reference ANNEX A(1.4).

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

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	15.72	0.03733	30	1	PASS
6	2437	16.33	0.04295			PASS
11	2462	17.03	0.05047			PASS

2.2.3.2 802.11g Test mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	16.98	0.04989	30	1	PASS
6	2437	17.75	0.05957			PASS
11	2462	18.14	0.06516			PASS

2.2.3.3 802.11n-20MHz Test mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	16.9	0.04898	30	1	PASS
6	2437	17.47	0.05585			PASS
11	2462	18.04	0.06368			PASS

2.2.3.4 802.11n-40MHz Test mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
3	2422	14.86	0.03062	30	1	PASS
6	2437	14.95	0.03126			PASS
9	2452	15.05	0.03199			PASS

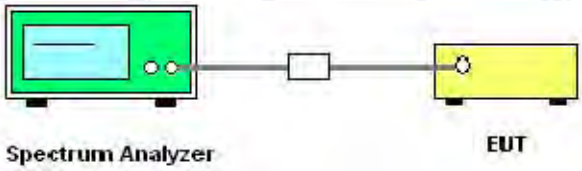
2.3 Bandwidth

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 is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss 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.

KDB 558074 Section 8.1 Option 1 was used in order to prove compliance.

B. Equipments List:

Please reference ANNEX A(1.4).

2.3.3 Test Result

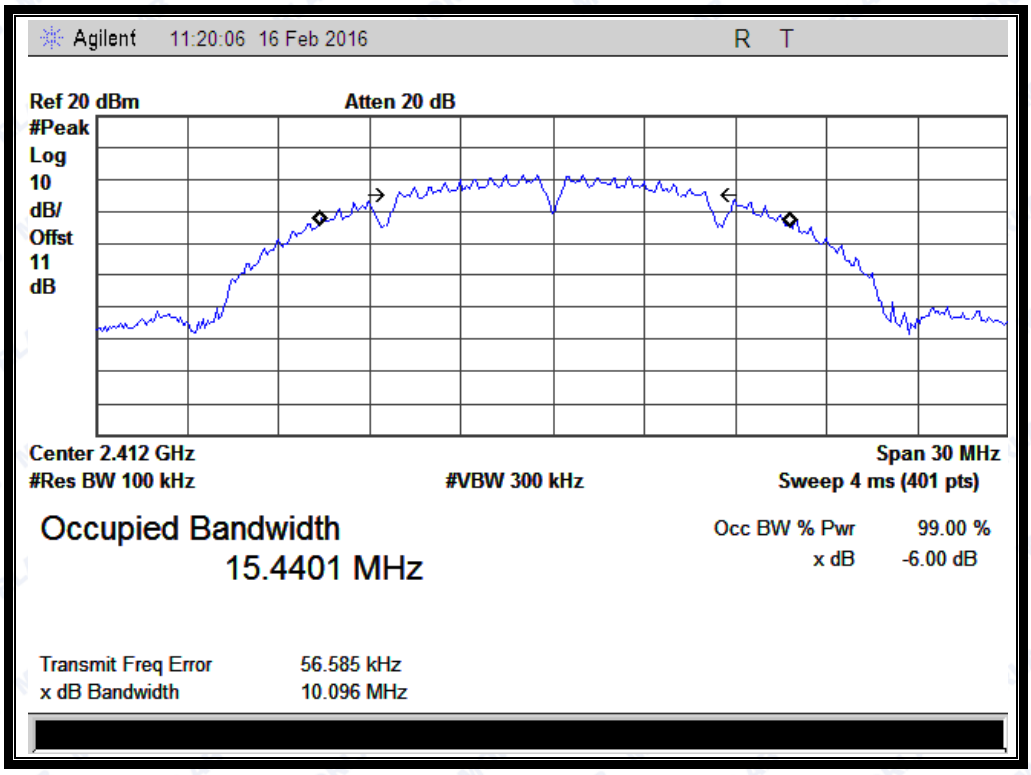
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

2.3.3.1 802.11b Test mode

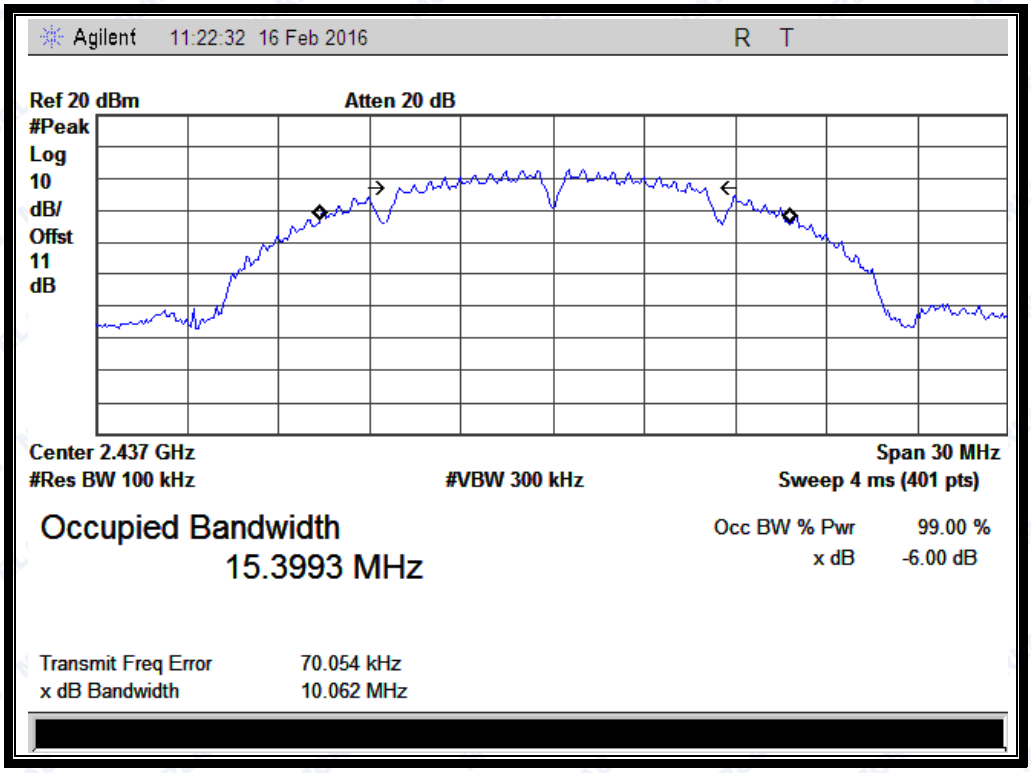
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	10.10	≥500	PASS
6	2437	10.06	≥500	PASS
11	2462	10.08	≥500	PASS

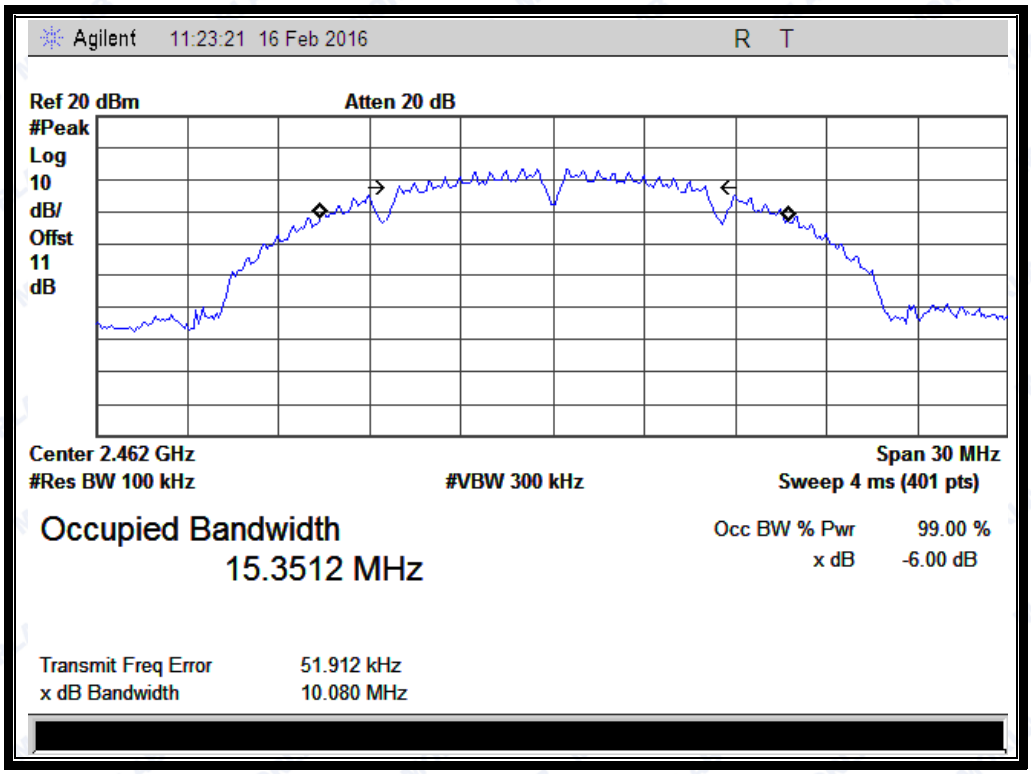
B. Test Plots



(Channel 1: 2412MHz @ 802.11b)



(Channel 6: 2437 MHz @ 802.11b)



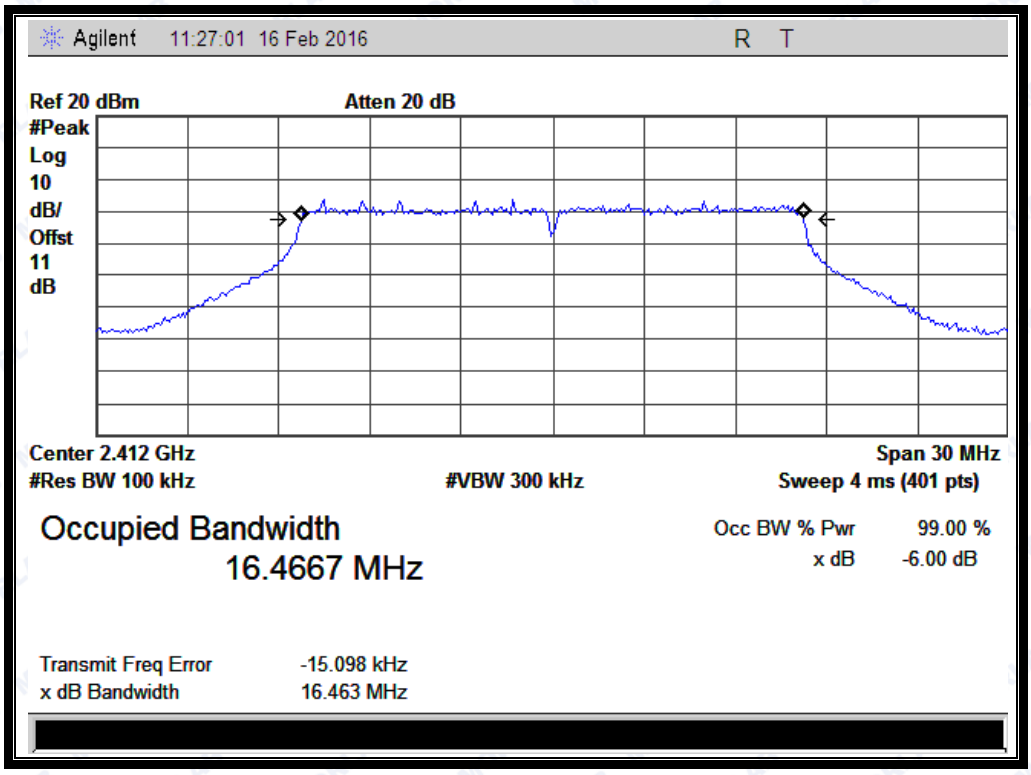
(Channel 11: 2462MHz @ 802.11b)

2.3.3.2 802.11g Test mode

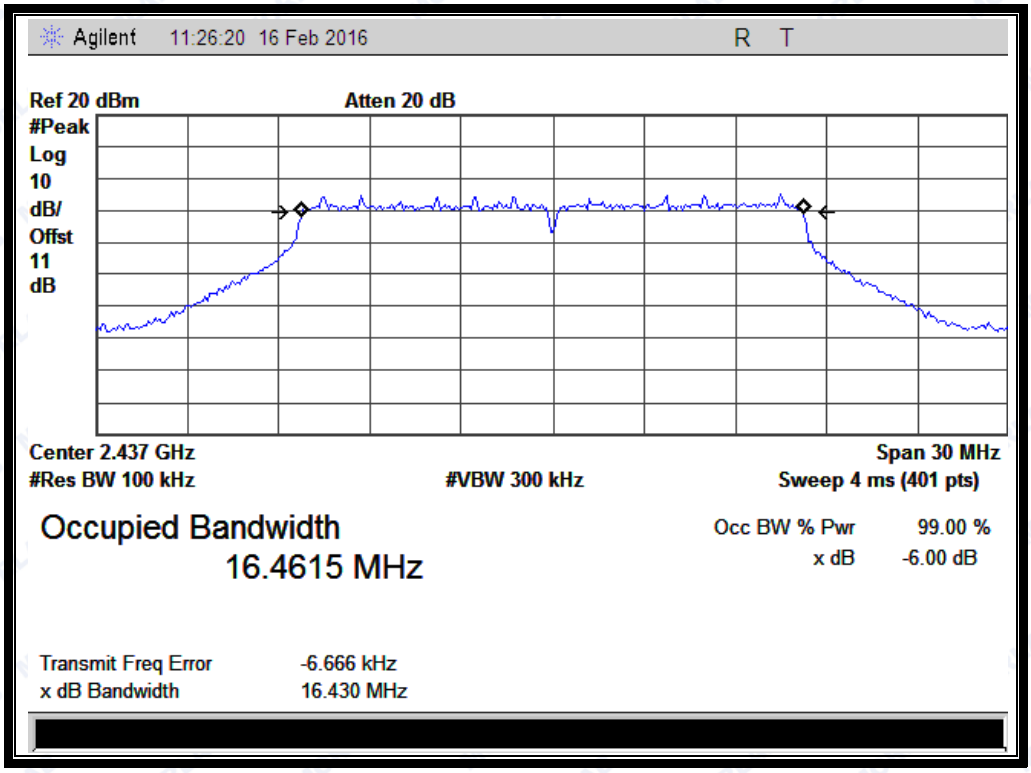
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	16.46	≥500	PASS
6	2437	16.43	≥500	PASS
11	2462	16.42	≥500	PASS

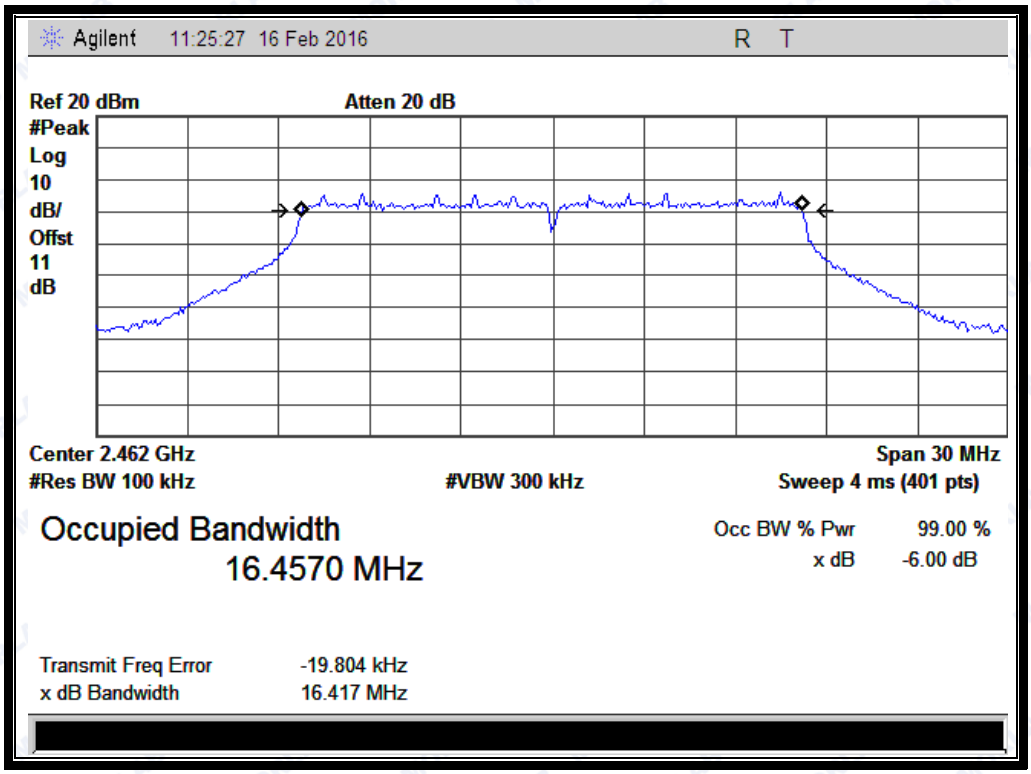
B. Test Plots:



(Channel 1: 2412MHz @ 802.11g)



(Channel 6: 2437MHz @ 802.11g)



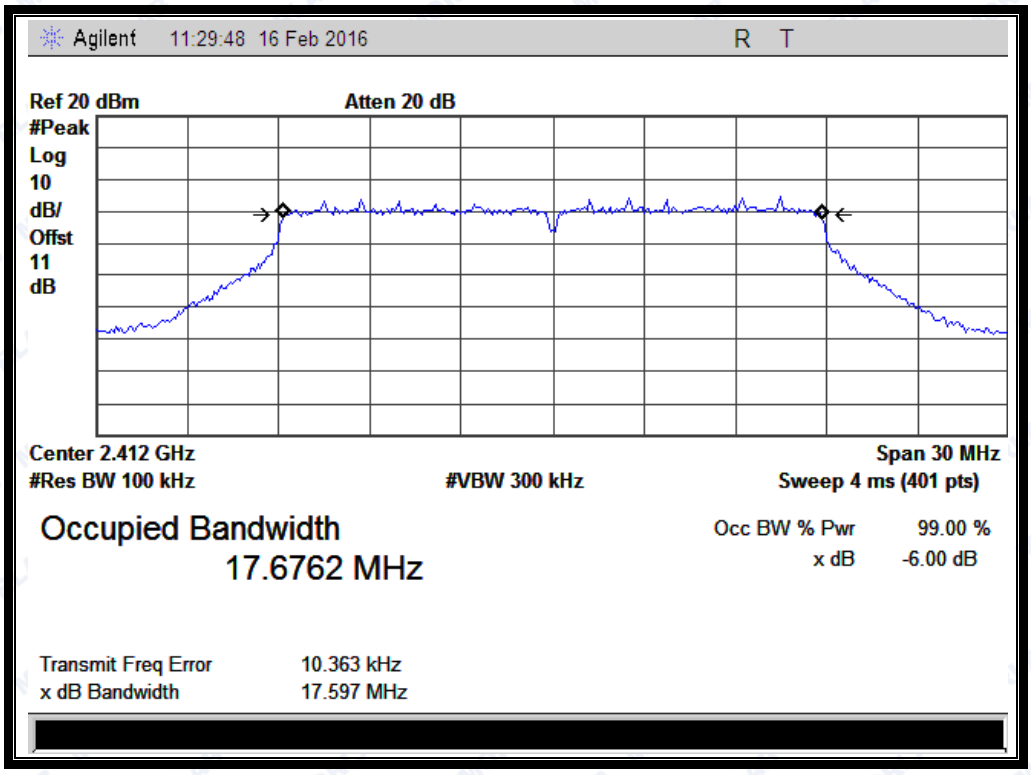
(Channel 11: 2462MHz @ 802.11g)

2.3.3.3 802.11n-20 Test mode

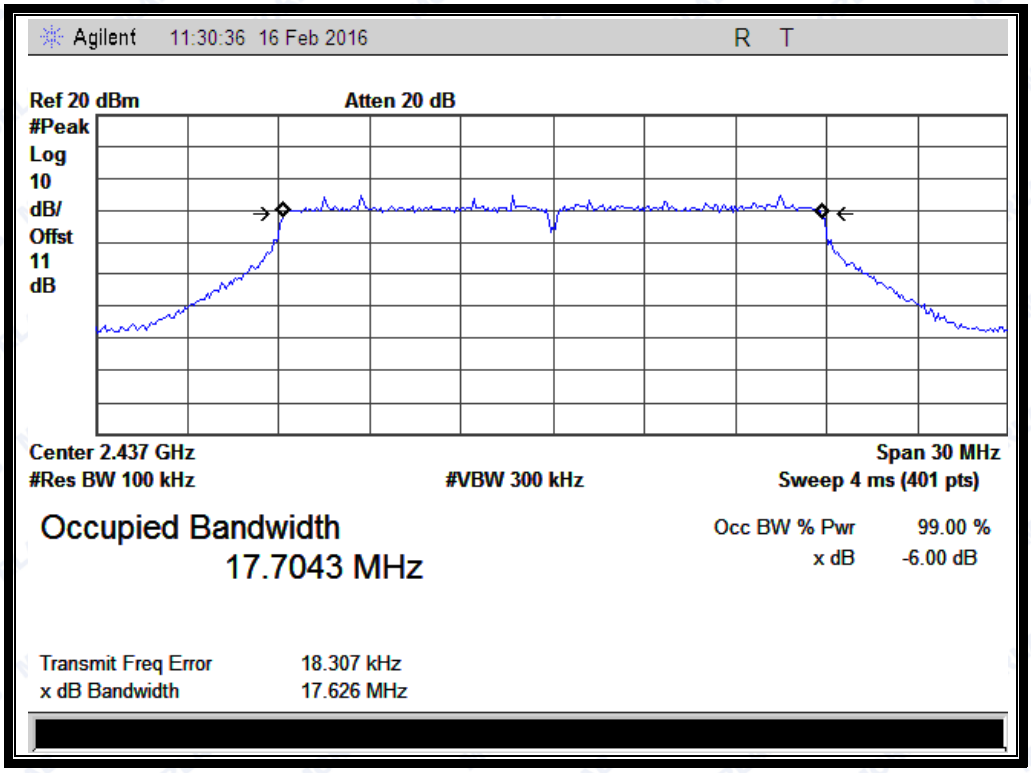
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	17.60	≥500	PASS
6	2437	17.63	≥500	PASS
11	2462	17.63	≥500	PASS

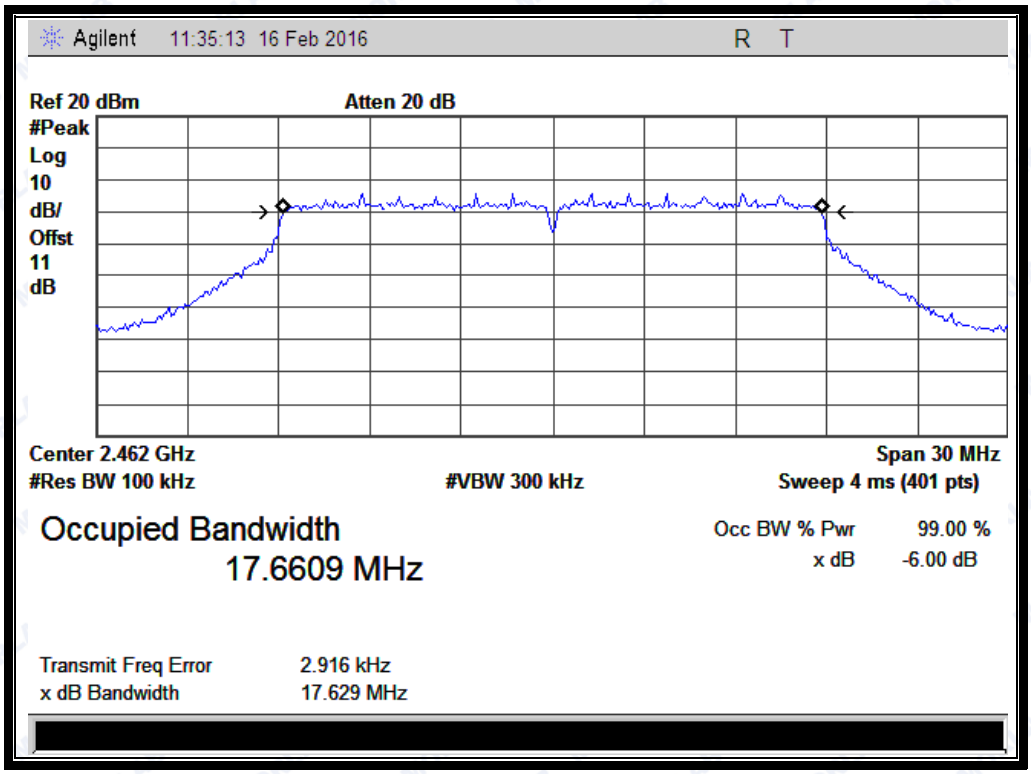
B. Test Plots:



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



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



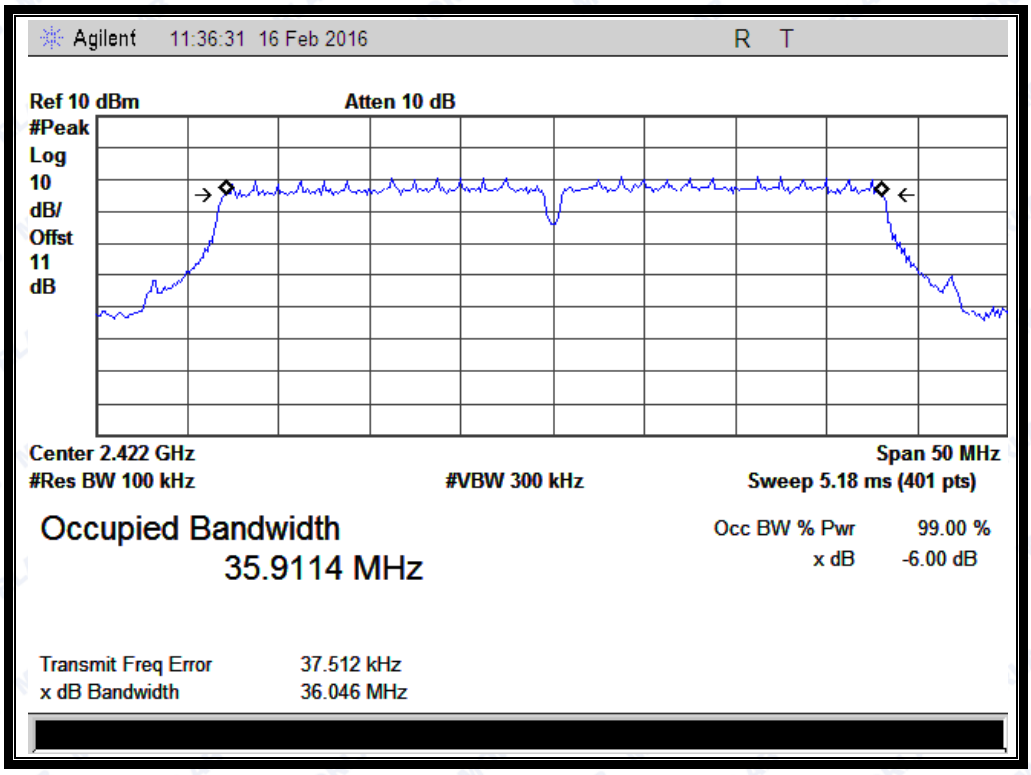
(Channel 11: 2462MHz @ 802.11n-20)

2.3.3.4 802.11n-40 Test mode

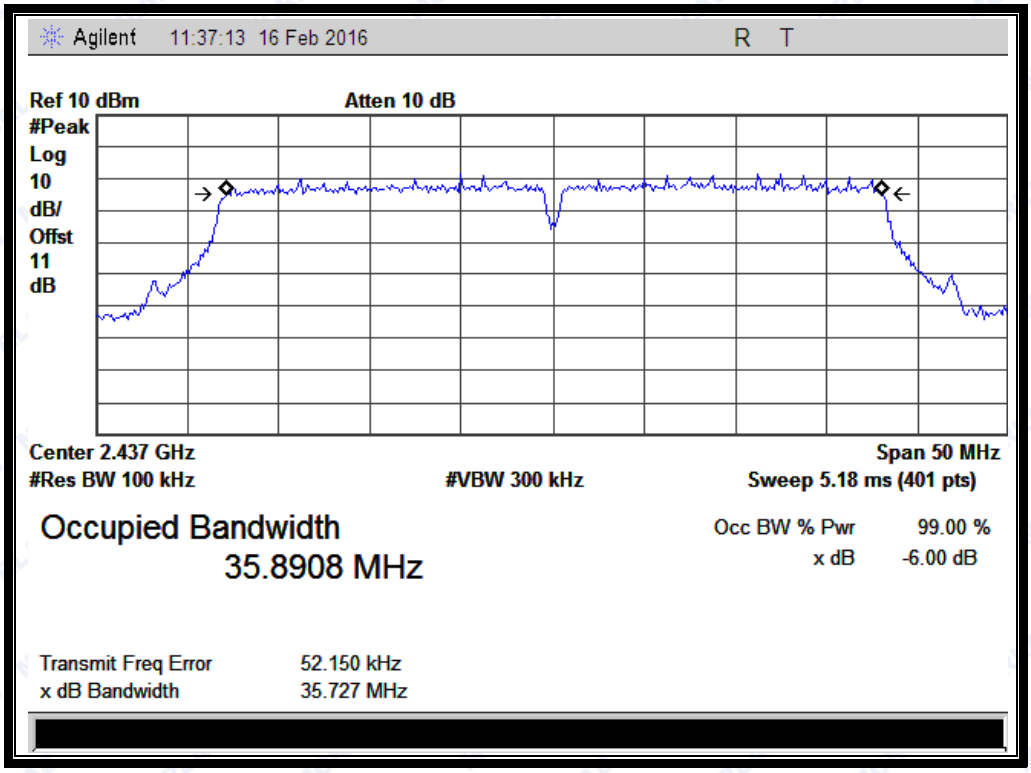
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
3	2422	36.05	≥500	PASS
6	2437	35.73	≥500	PASS
9	2452	36.07	≥500	PASS

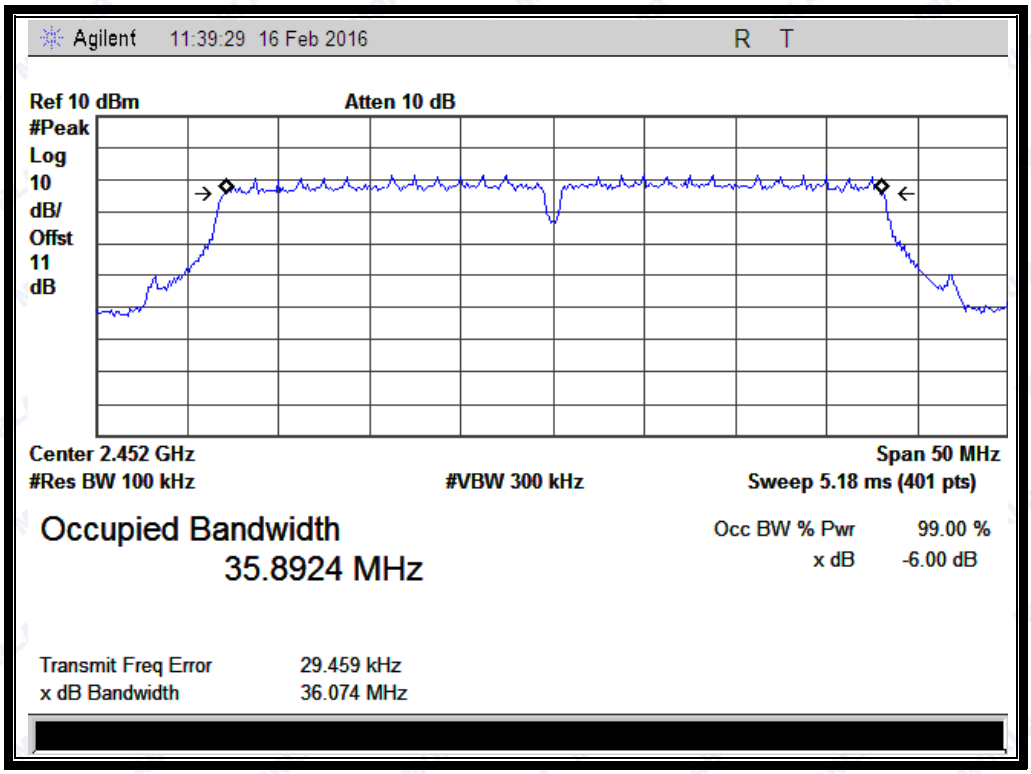
B. Test Plots:



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



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



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

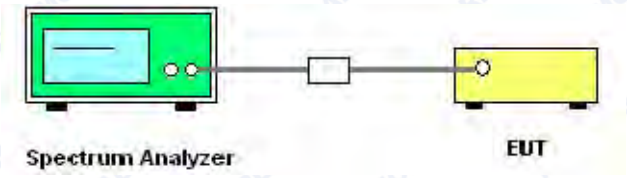
2.4 Conducted Spurious Emissions and Band Edge

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 is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss 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.

KDB 558074 Section 11.0 was used in order to prove compliance.

B. Equipments List:

Please reference ANNEX A(1.4).

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.

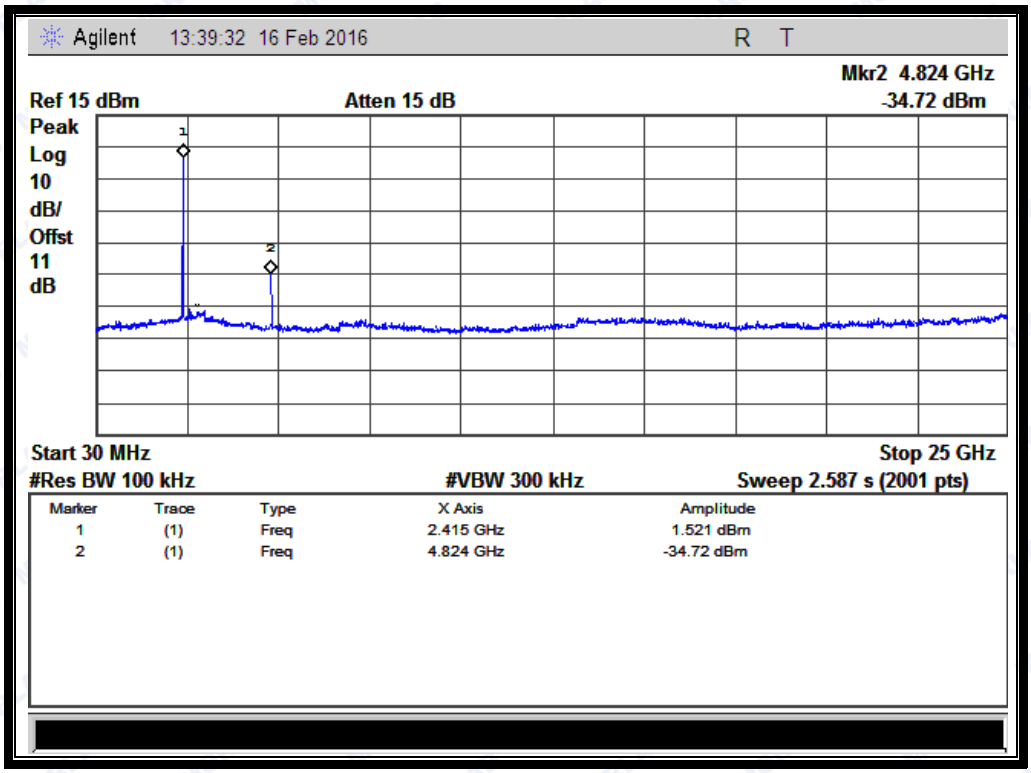
2.4.3.1 802.11b Test mode

A. Test Verdict:

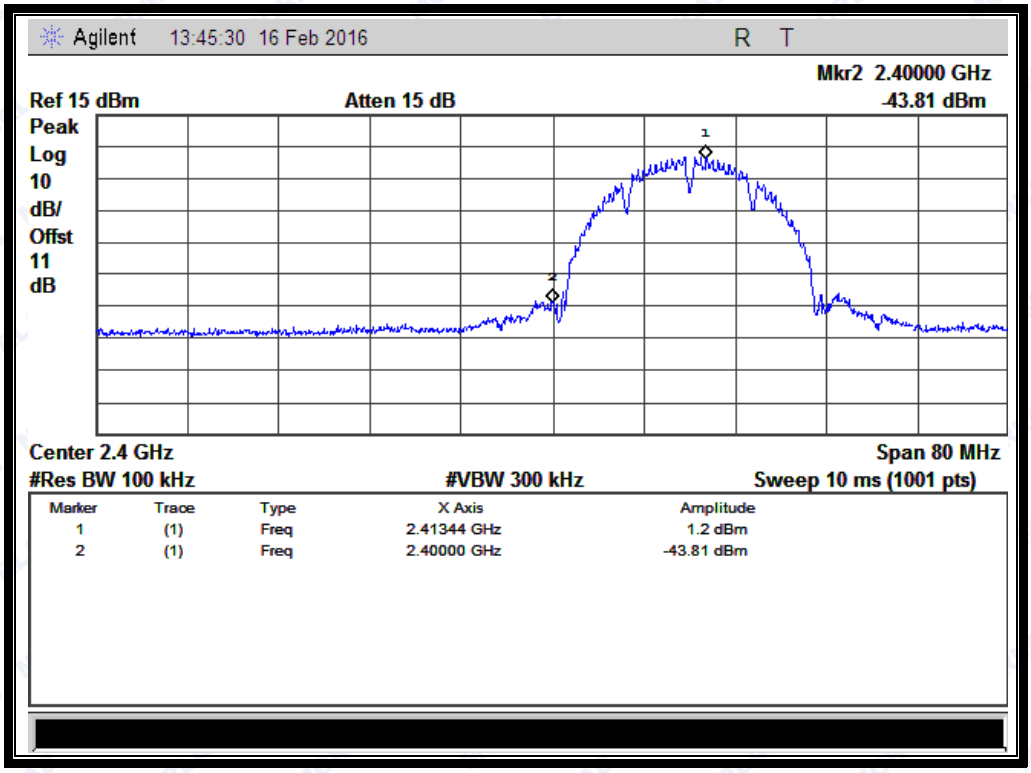
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-34.72	1.52	-18.48	PASS
6	2437	-35.51	1.81	-18.19	PASS
11	2462	-33.29	2.97	-17.03	PASS

B. Test Plots:

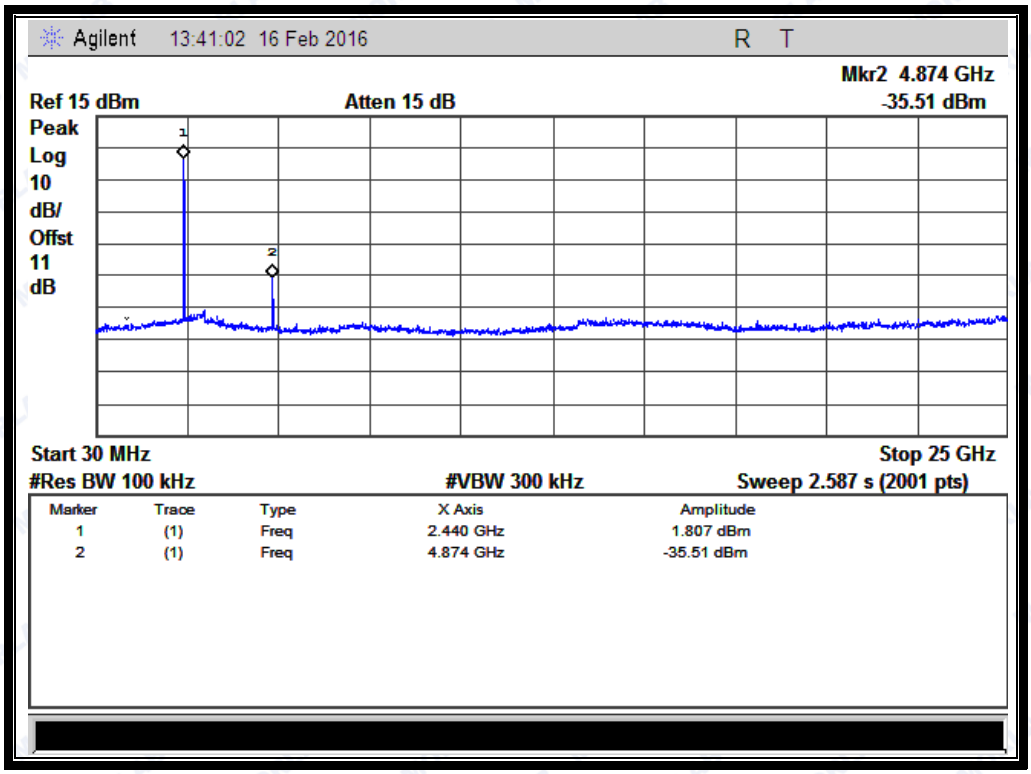
Note: the power of the Module transmitting frequency should be ignored.



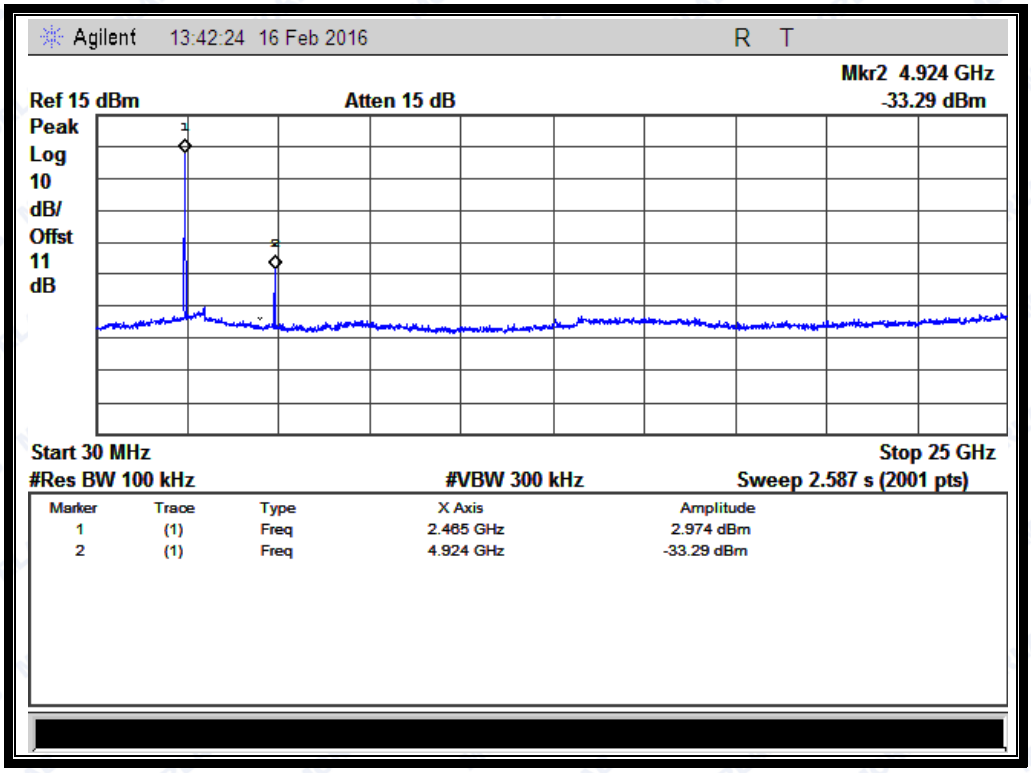
(Channel = 1, 30MHz to 25GHz)



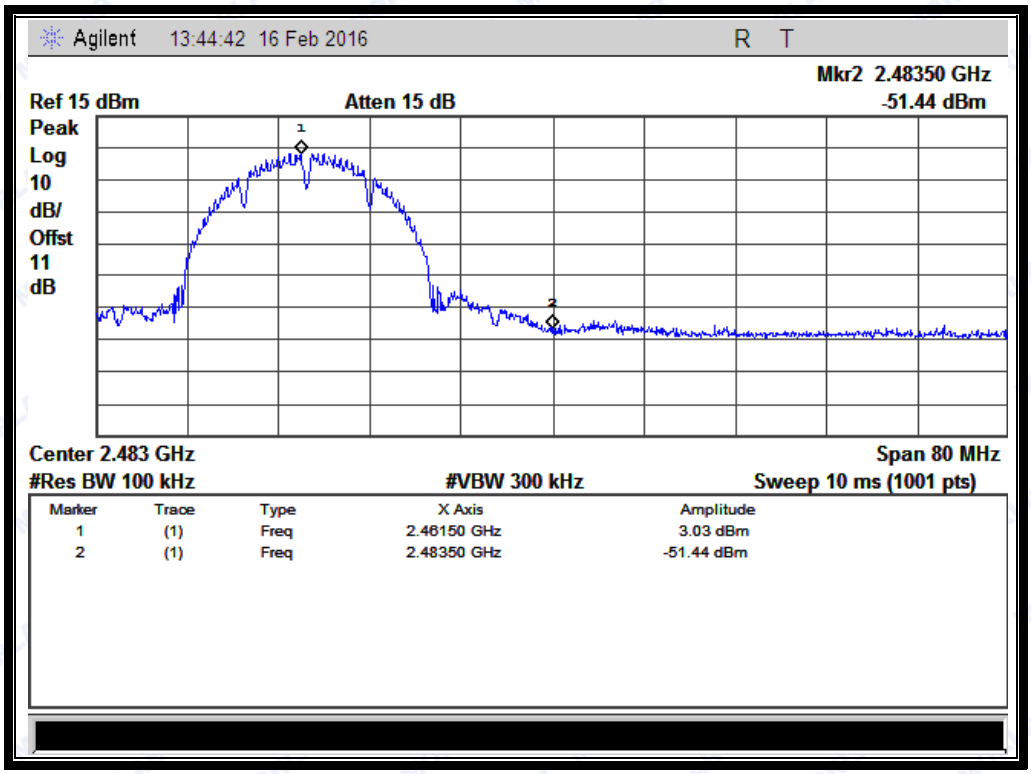
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

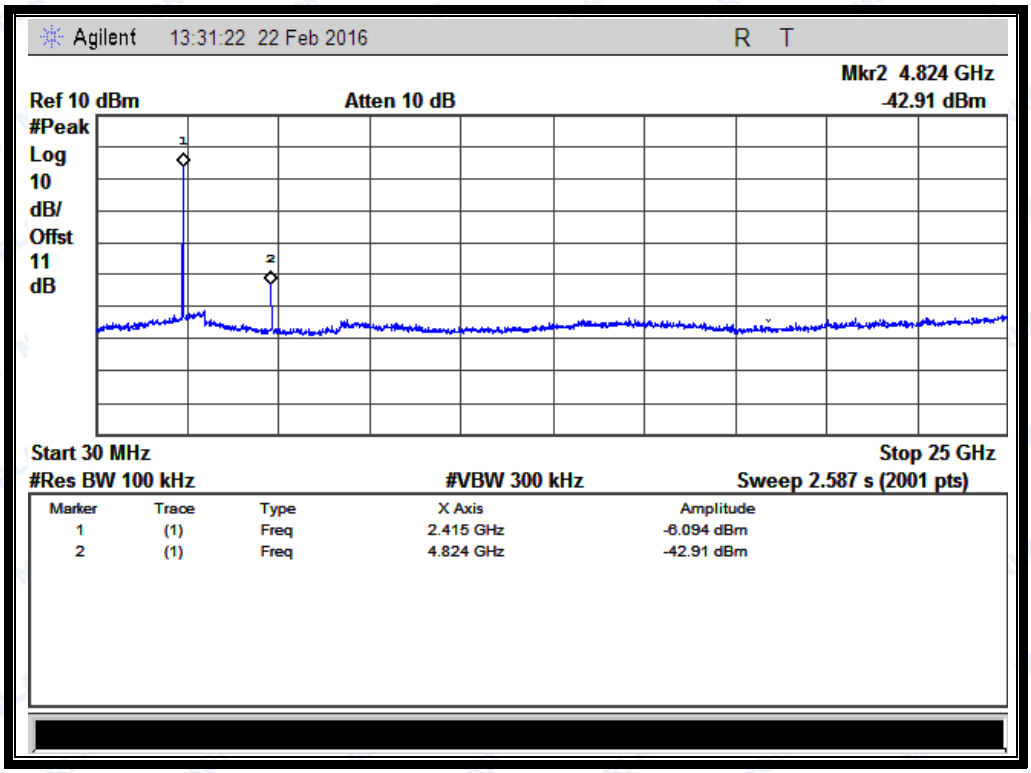
2.4.3.2 802.11g Test mode

A. Test Verdict:

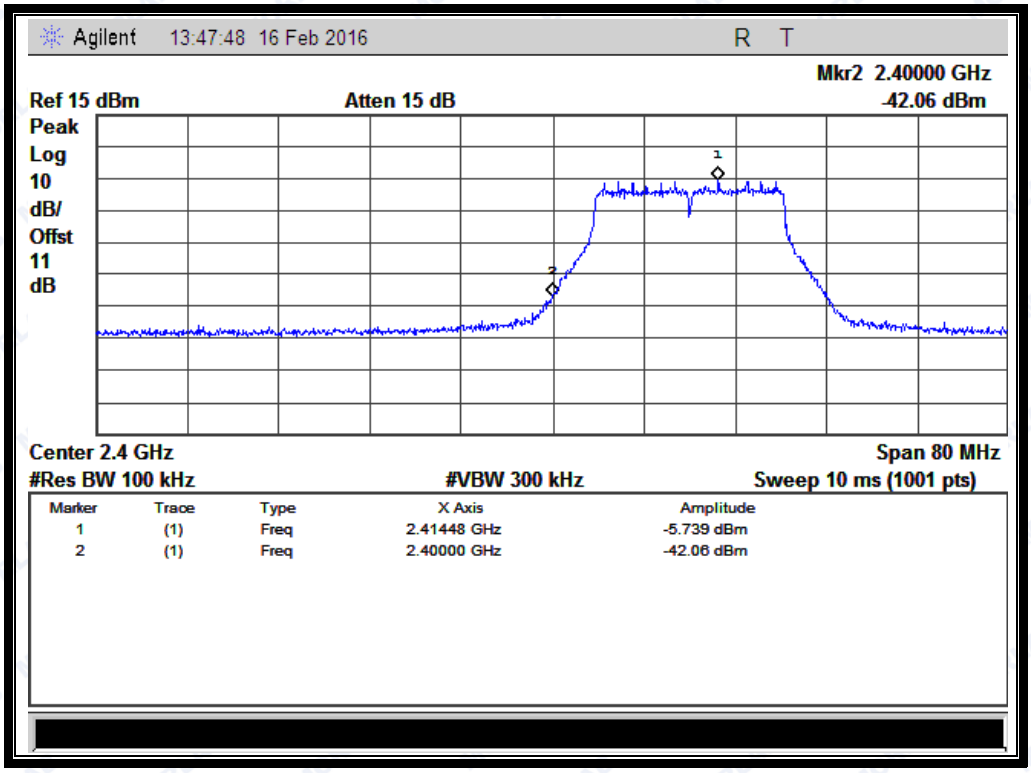
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-42.91	-6.09	-26.09	PASS
6	2437	-41.24	-5.40	-25.40	PASS
11	2462	-39.85	-4.86	-24.86	PASS

B. Test Plots:

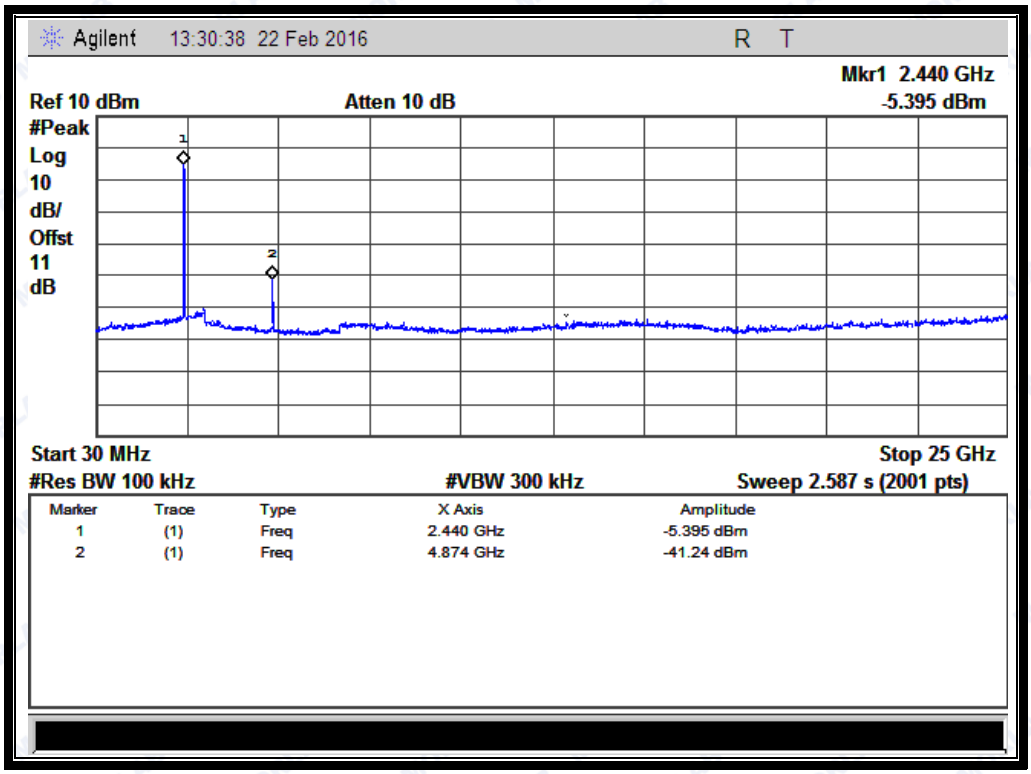
Note: the power of the Module transmitting frequency should be ignored.



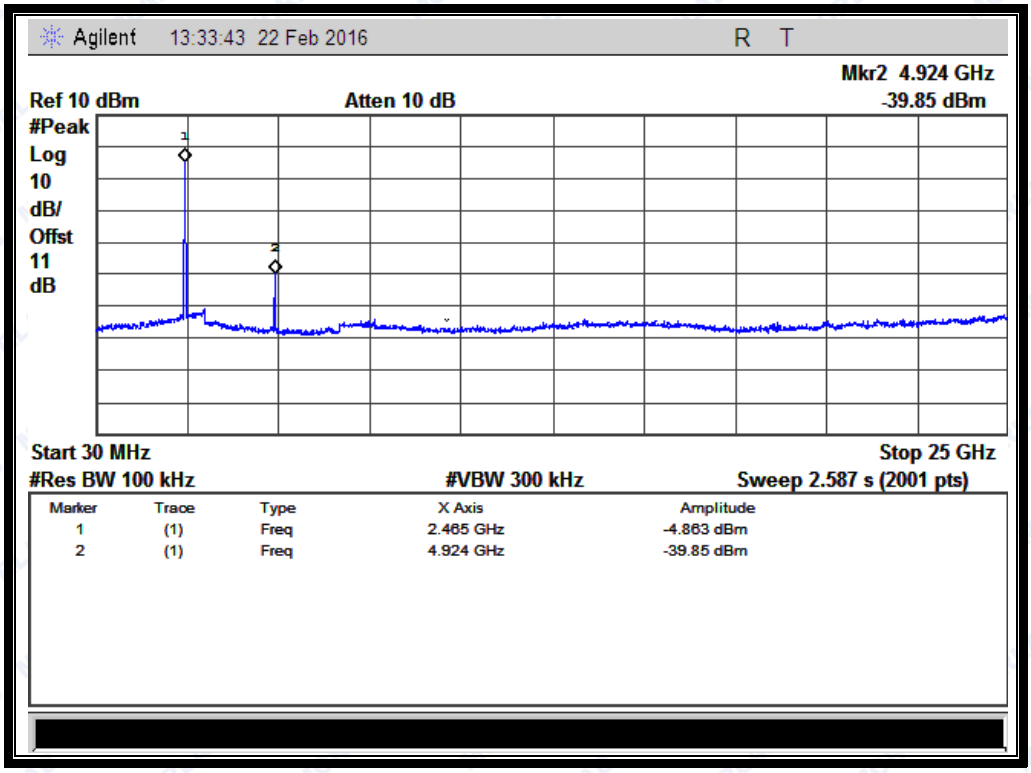
(Channel = 1, 30MHz to 25GHz)



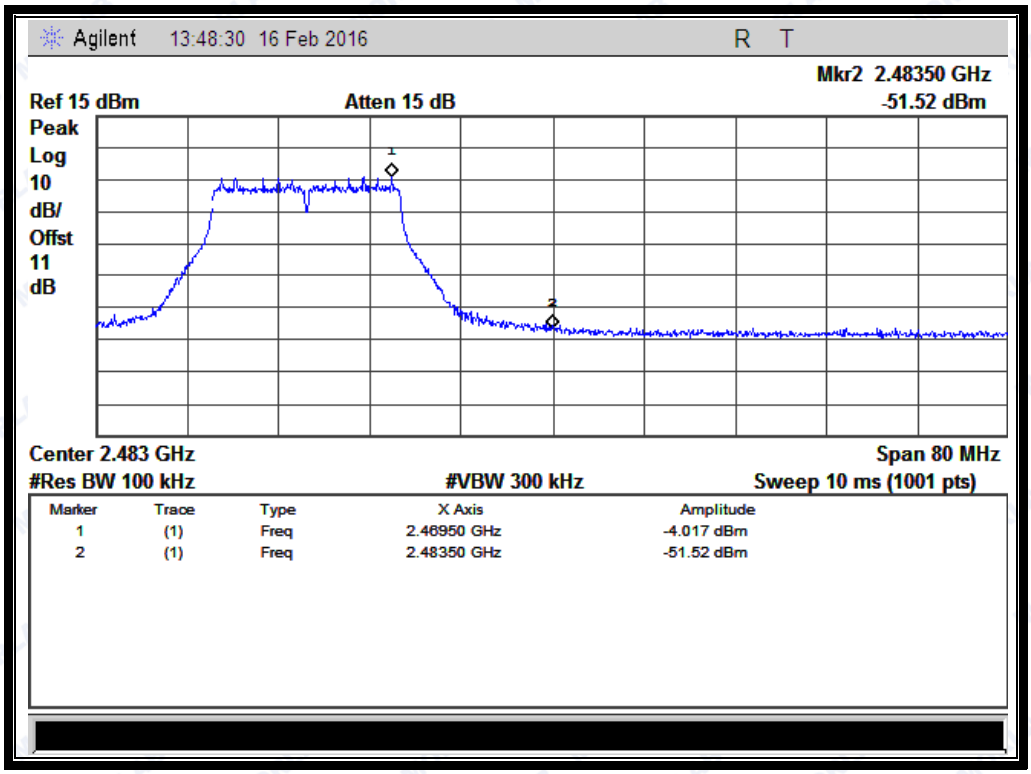
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

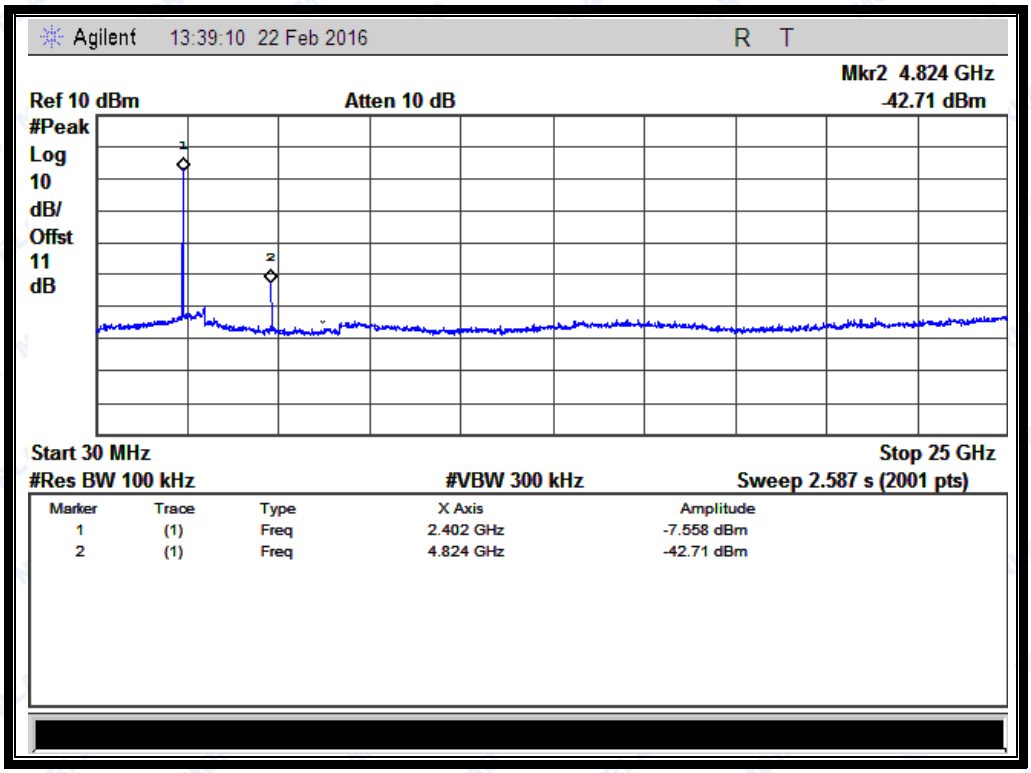
2.4.3.3 802.11n -20MHz Test mode

A. Test Verdict:

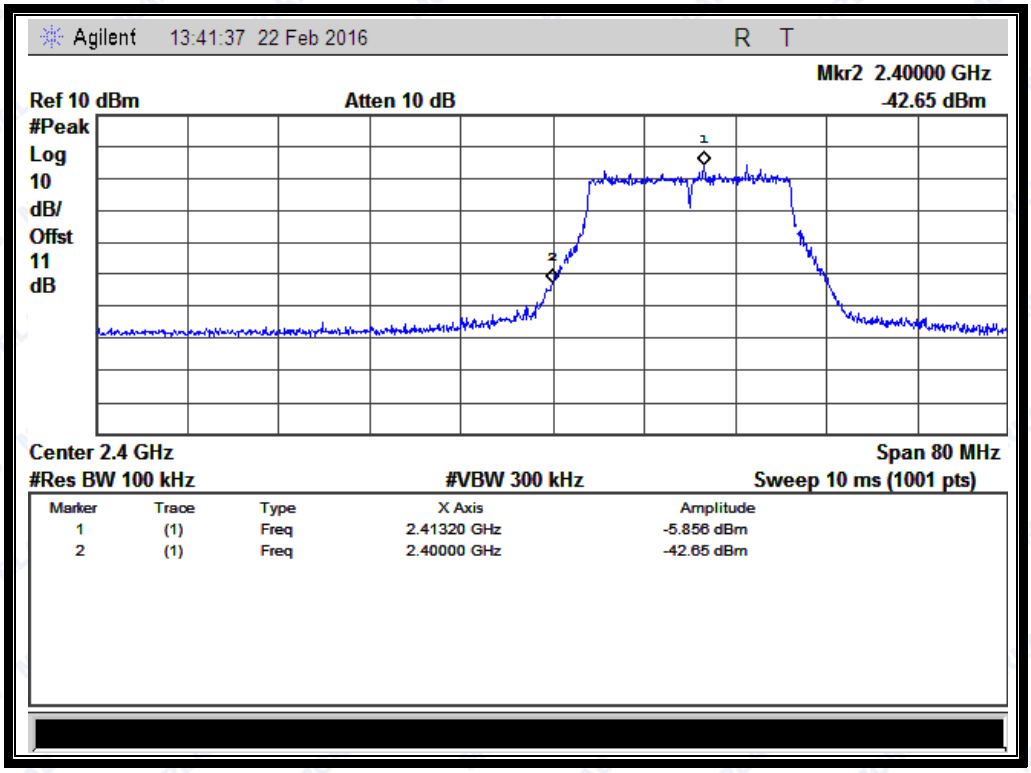
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-42.71	-7.56	-27.56	PASS
6	2437	-41.5	-7.73	-27.73	PASS
11	2462	-40.71	-7.09	-27.09	PASS

B. Test Plots:

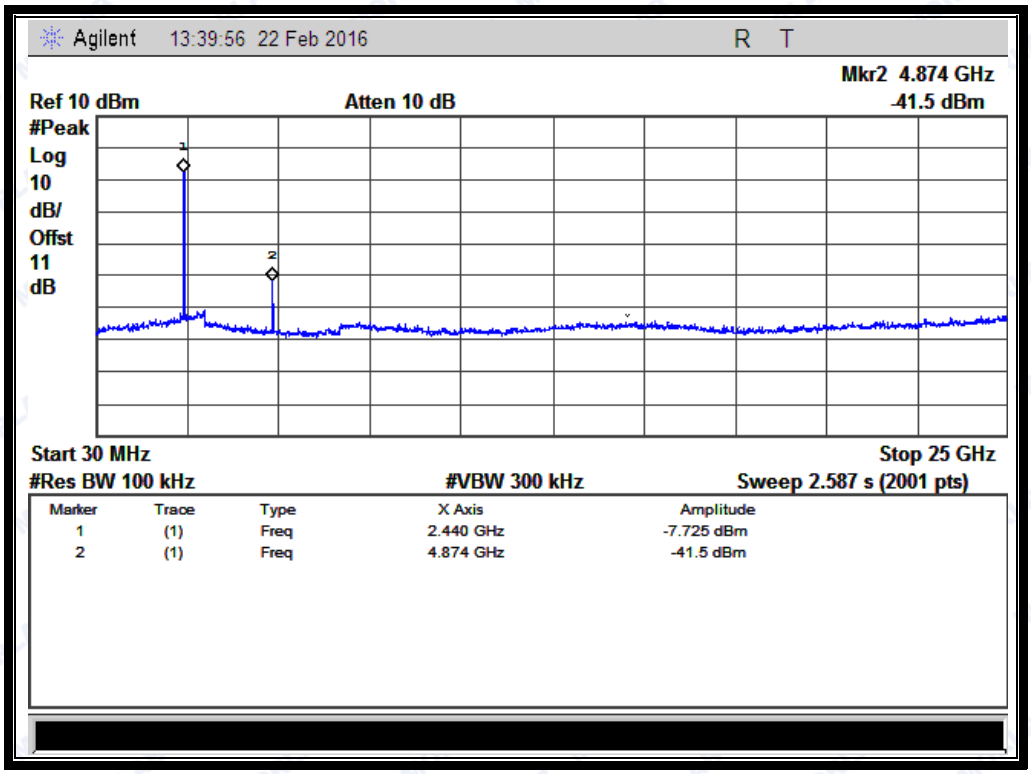
Note: the power of the Module transmitting frequency should be ignored.



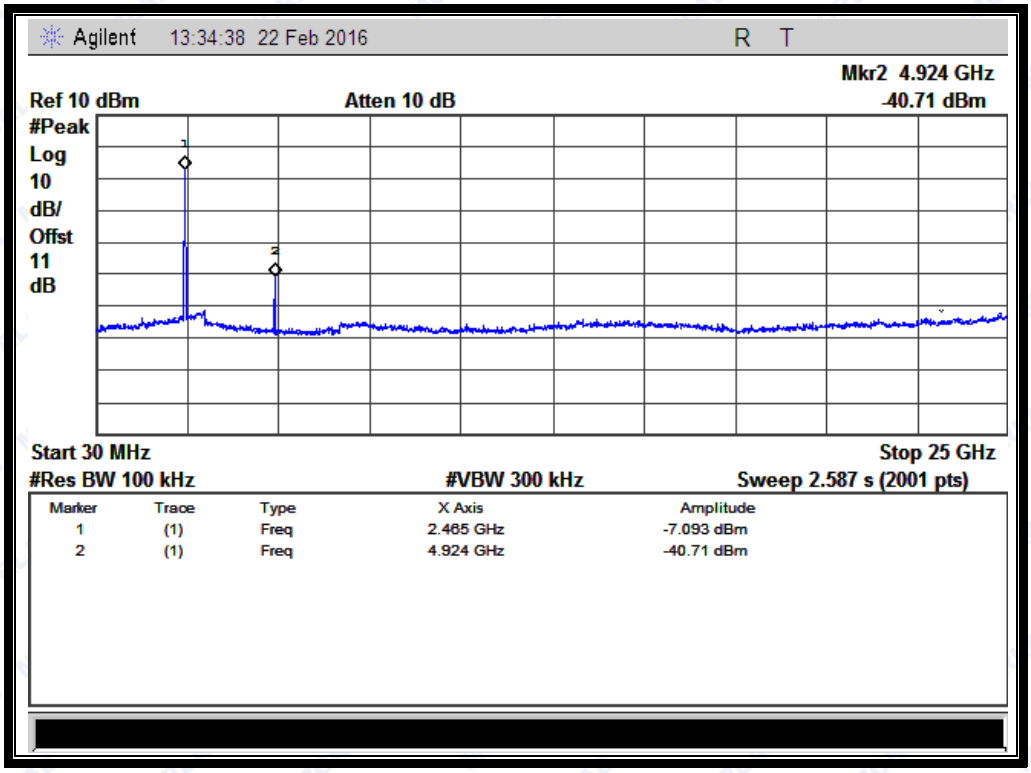
(Channel = 1, 30MHz to 25GHz)



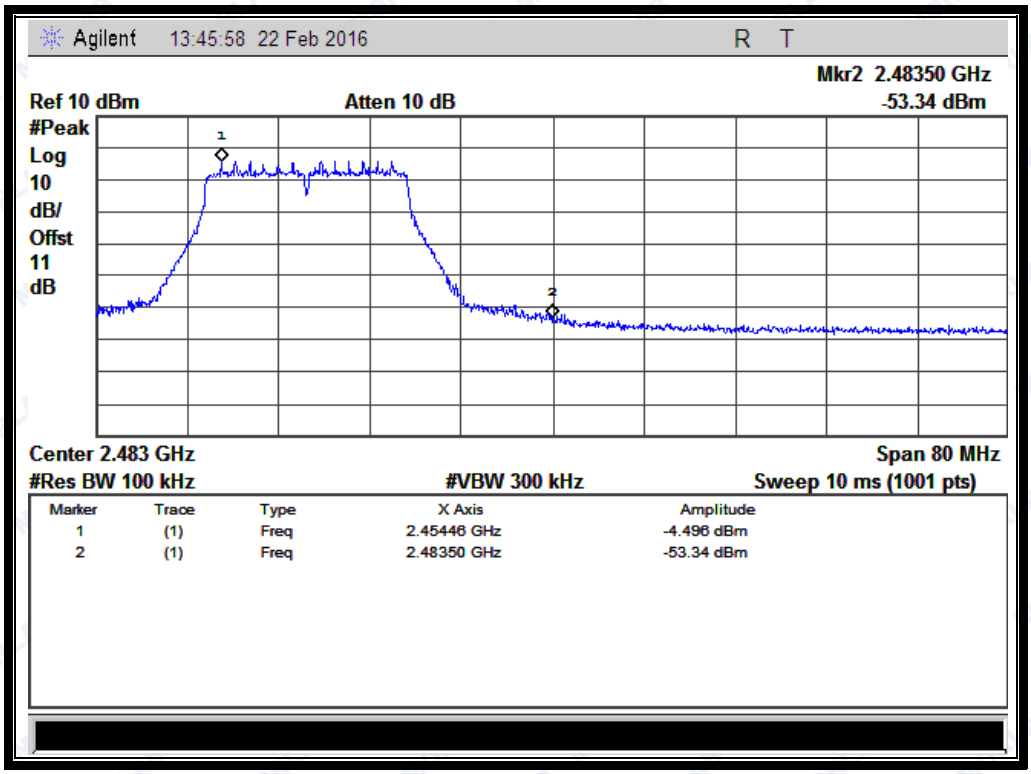
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

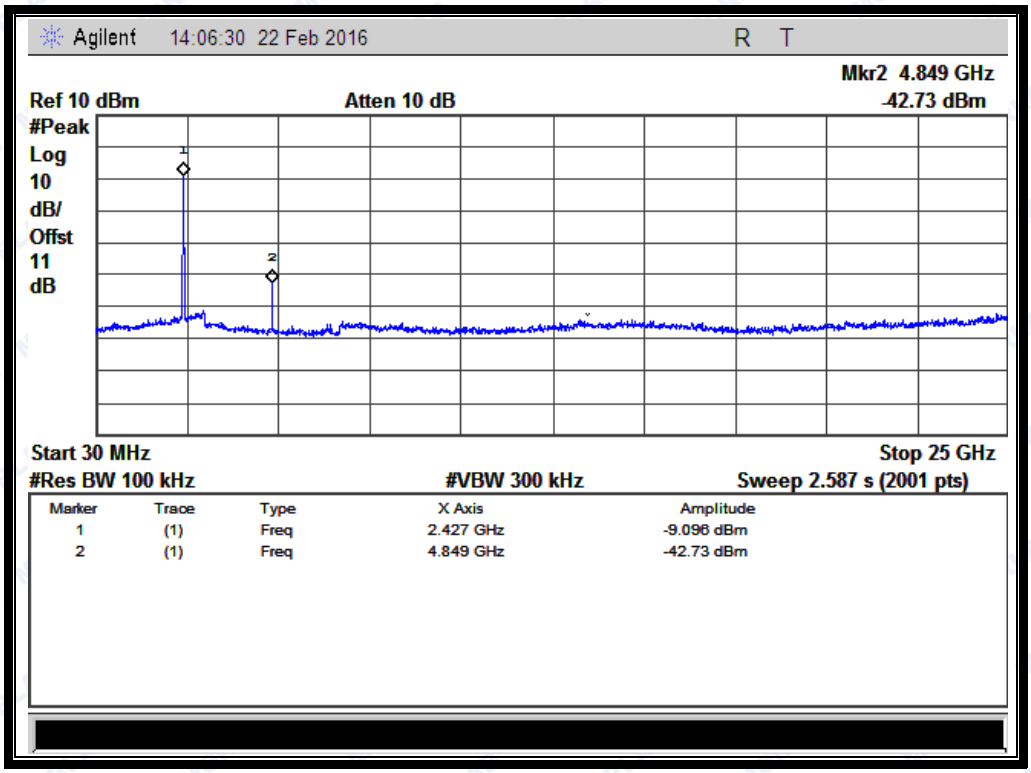
2.4.3.4 802.11n -40MHz Test mode

A. Test Verdict:

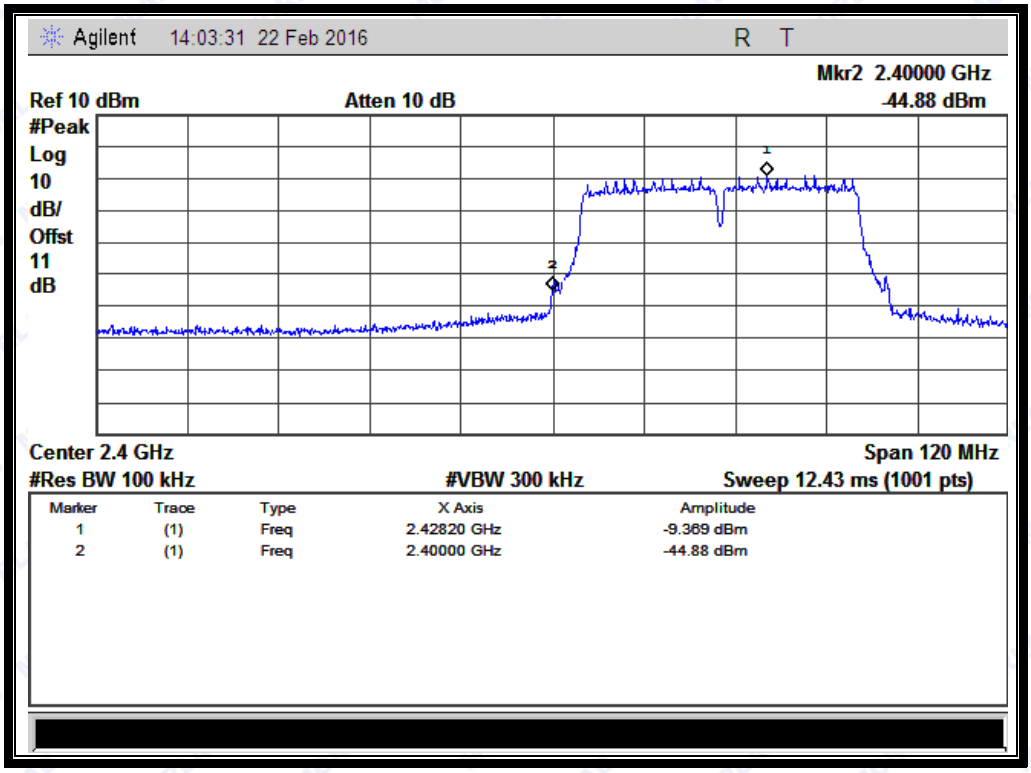
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
3	2422	-42.73	-9.10	-29.10	PASS
6	2437	-41.39	-8.89	-28.89	PASS
9	2452	-40.74	-8.58	-28.58	PASS

B. Test Plots:

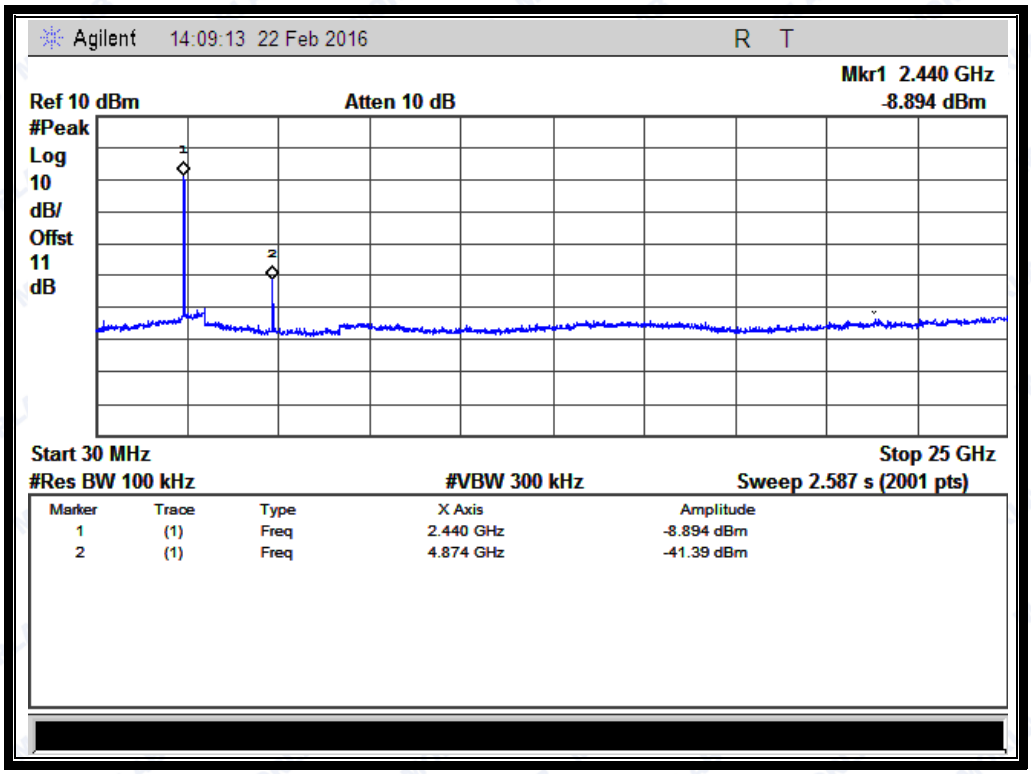
Note: the power of the Module transmitting frequency should be ignored.



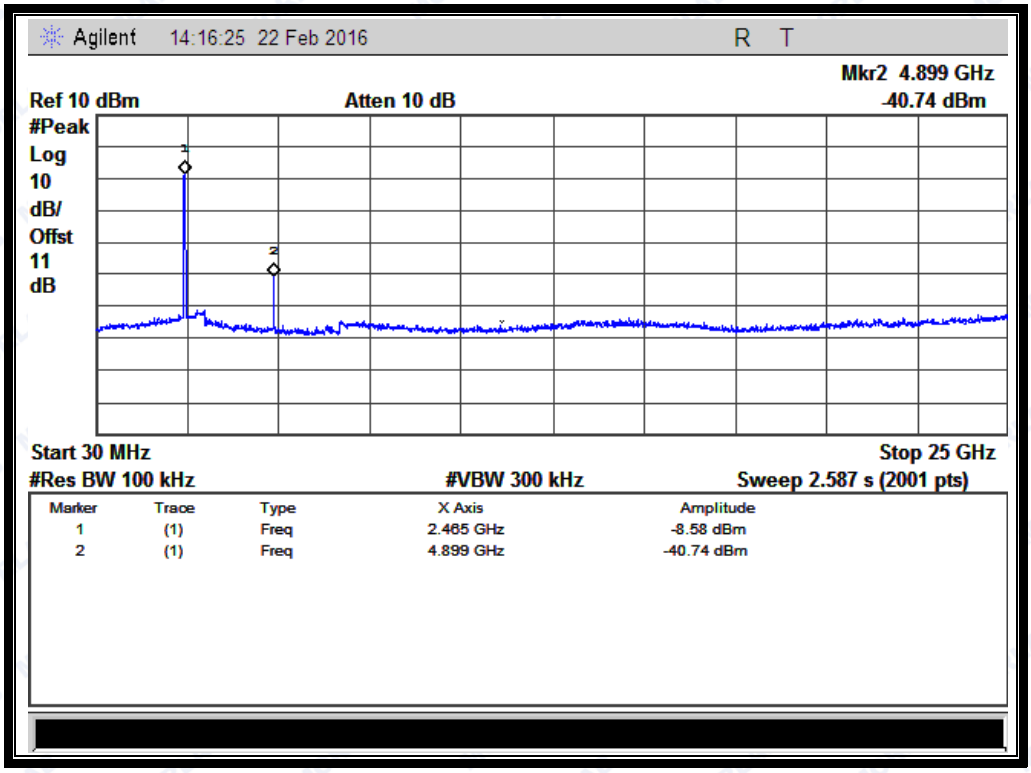
(Channel = 3, 30MHz to 25GHz)



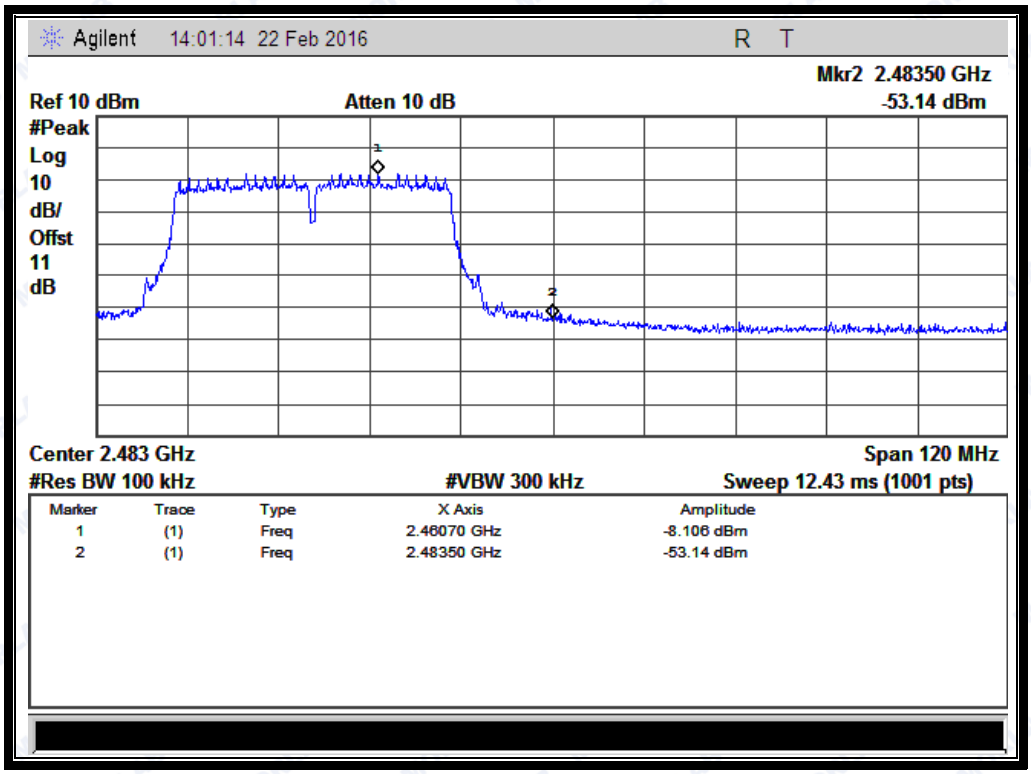
(Band Edge @ Channel = 3)



(Channel = 6, 30MHz to 25GHz)



(Channel = 9, 30MHz to 25GHz)



(Band Edge @ Channel = 9)

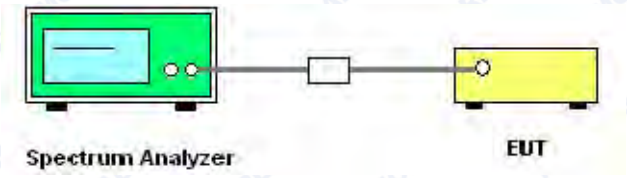
2.5 Power spectral density (PSD)

2.5.1 Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

2.5.2 Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

KDB 558074 Section 10.2 was used in order to prove compliance.

B. Equipments List:

Please reference ANNEX A(1.4).

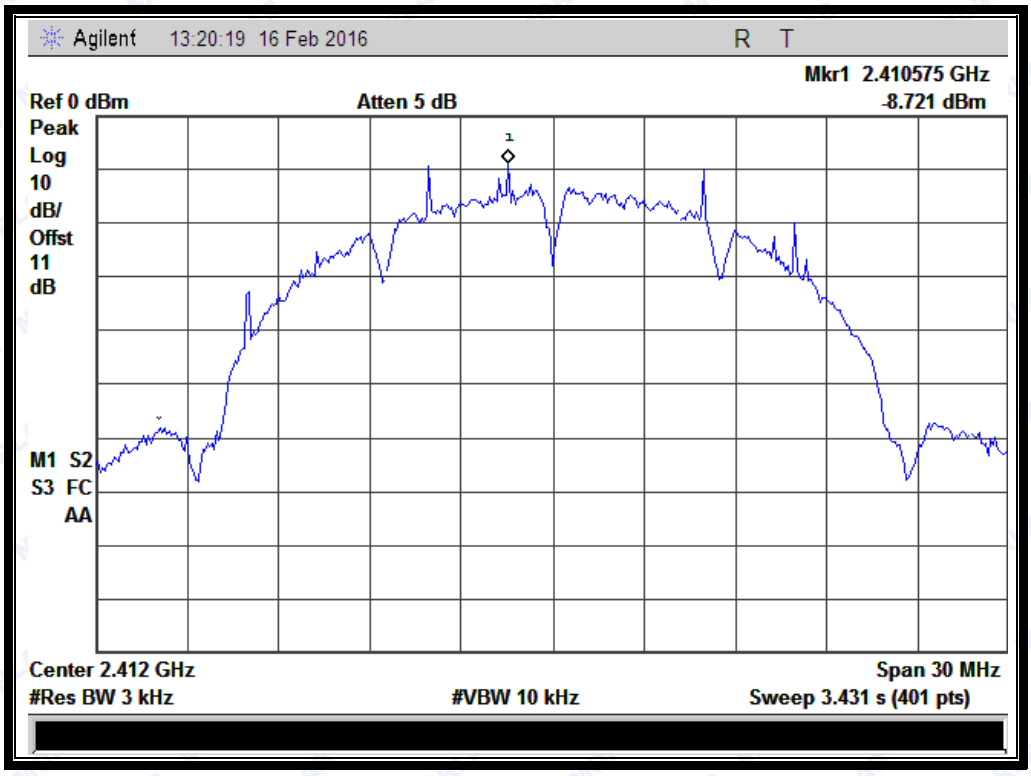
2.5.3 Test Result

2.5.3.1 802.11b Test mode

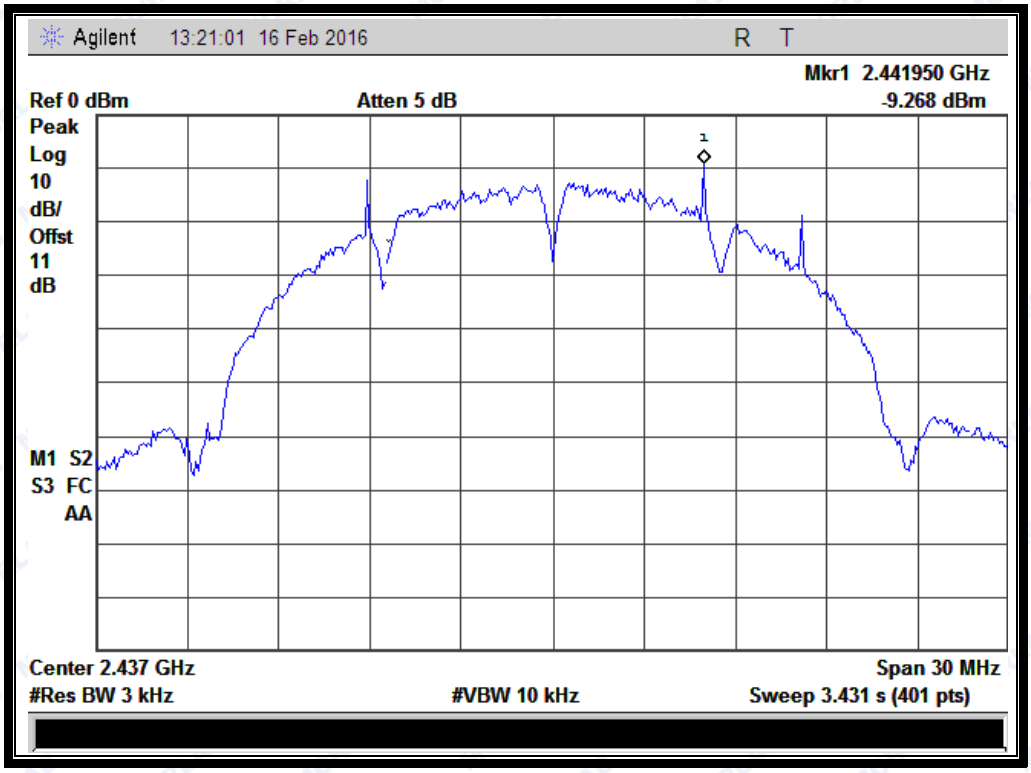
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-8.72	8	PASS
6	2437	-9.27	8	PASS
11	2462	-2.14	8	PASS
Measurement uncertainty: ±1.3dB				

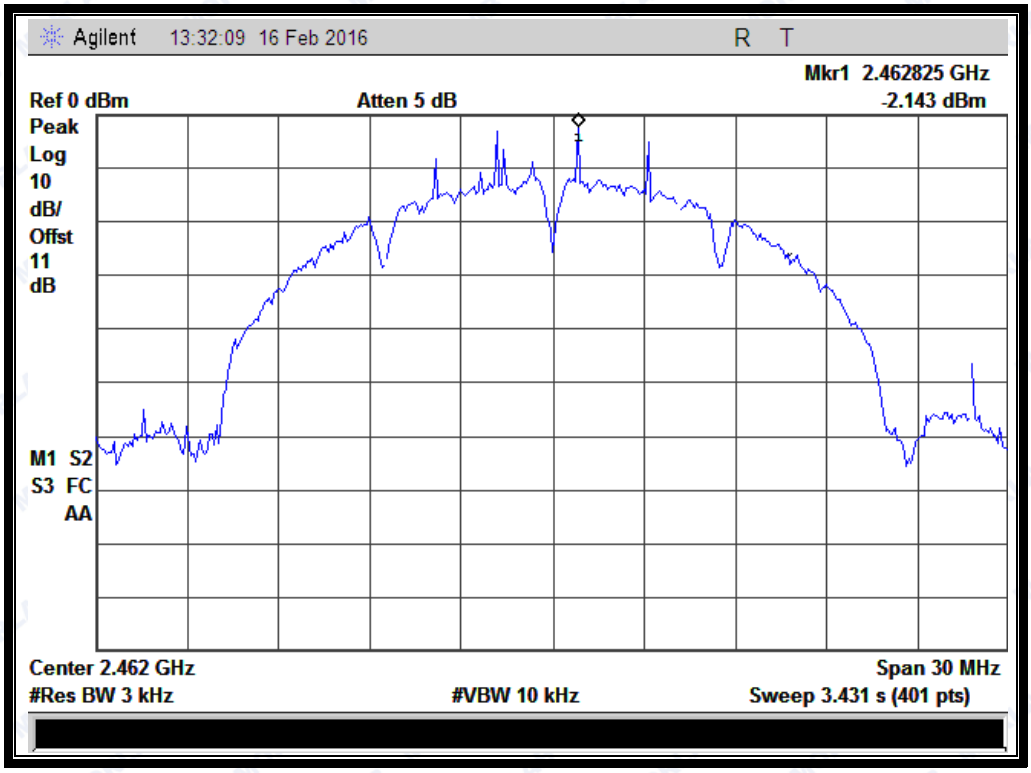
B. Test Plots:



(Channel = 1 @ 802.11b)



(Channel = 6 @ 802.11b)



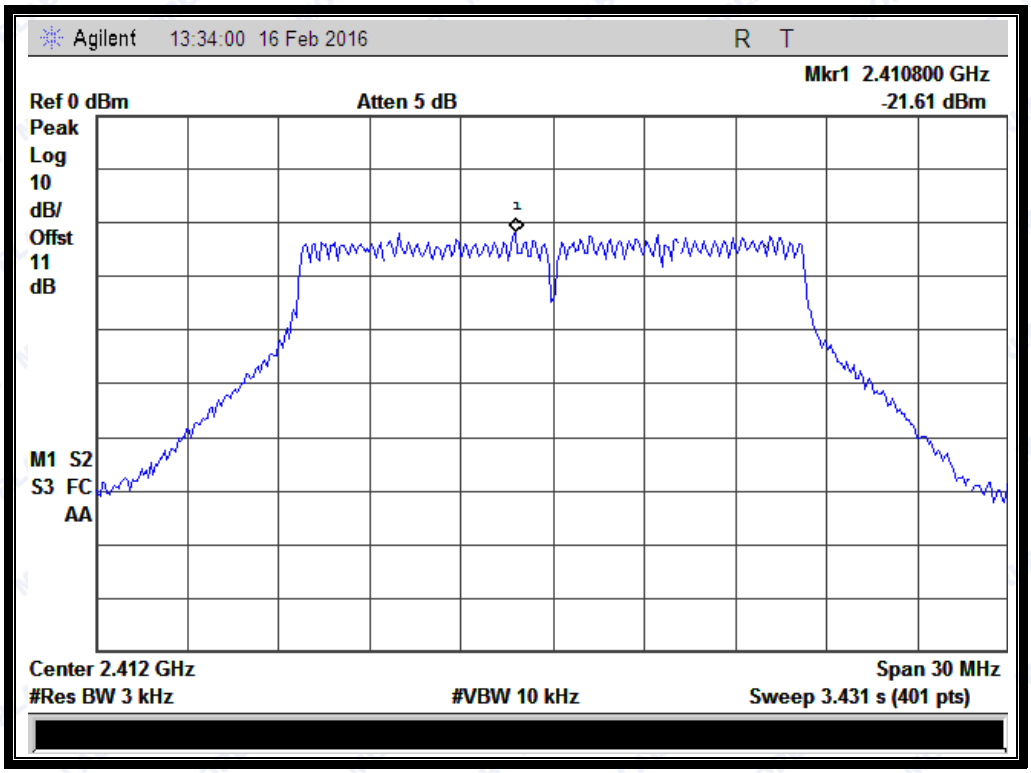
(Channel = 11 @ 802.11b)

2.5.3.2 802.11g Test mode

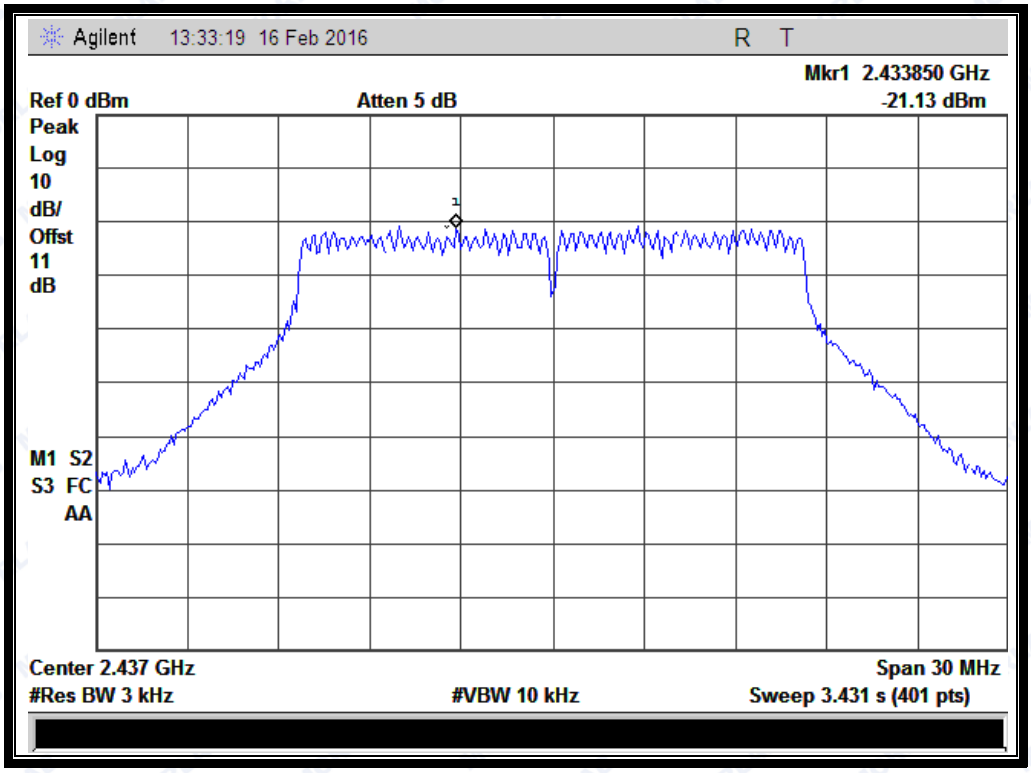
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-21.61	8	PASS
6	2437	-21.13	8	PASS
11	2462	-20.39	8	PASS
Measurement uncertainty: ±1.3dB				

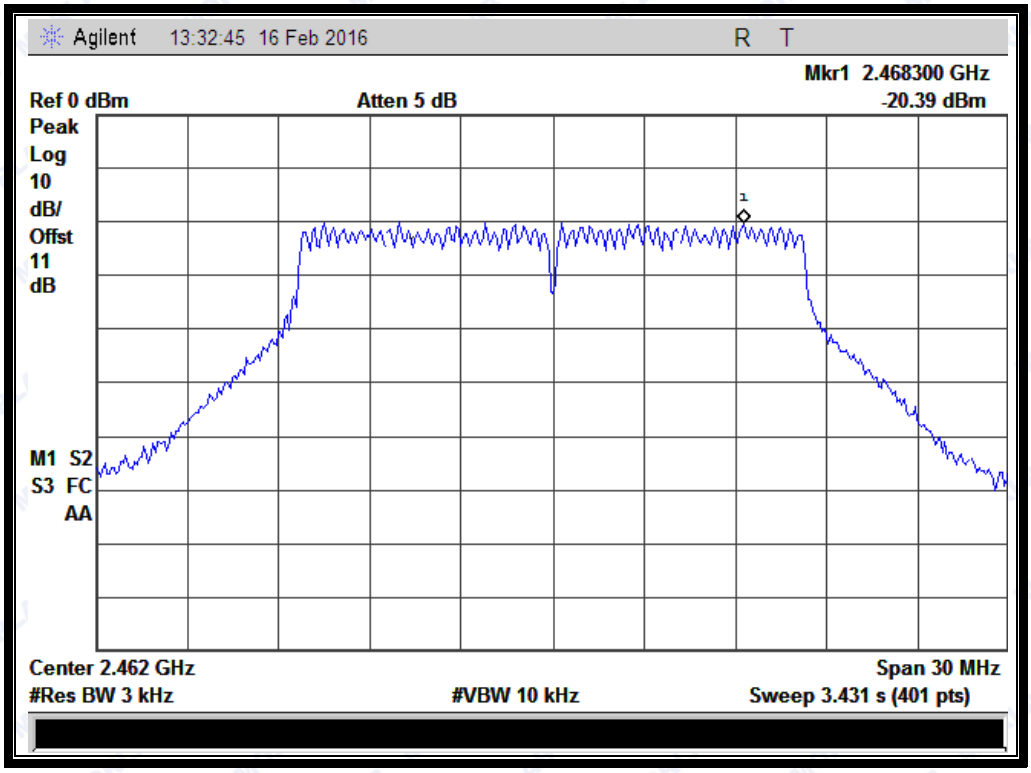
B. Test Plots:



(Channel = 1 @ 802.11g)



(Channel = 6 @ 802.11g)



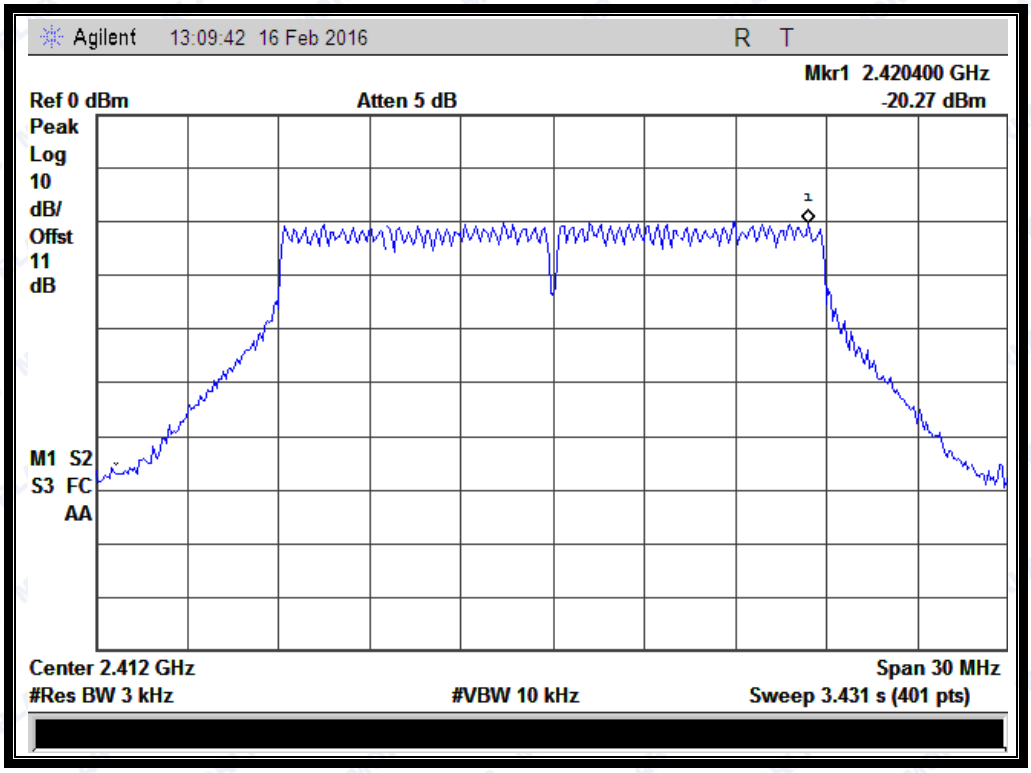
(Channel = 11 @ 802.11g)

2.5.3.3 802.11n-20MHz Test mode

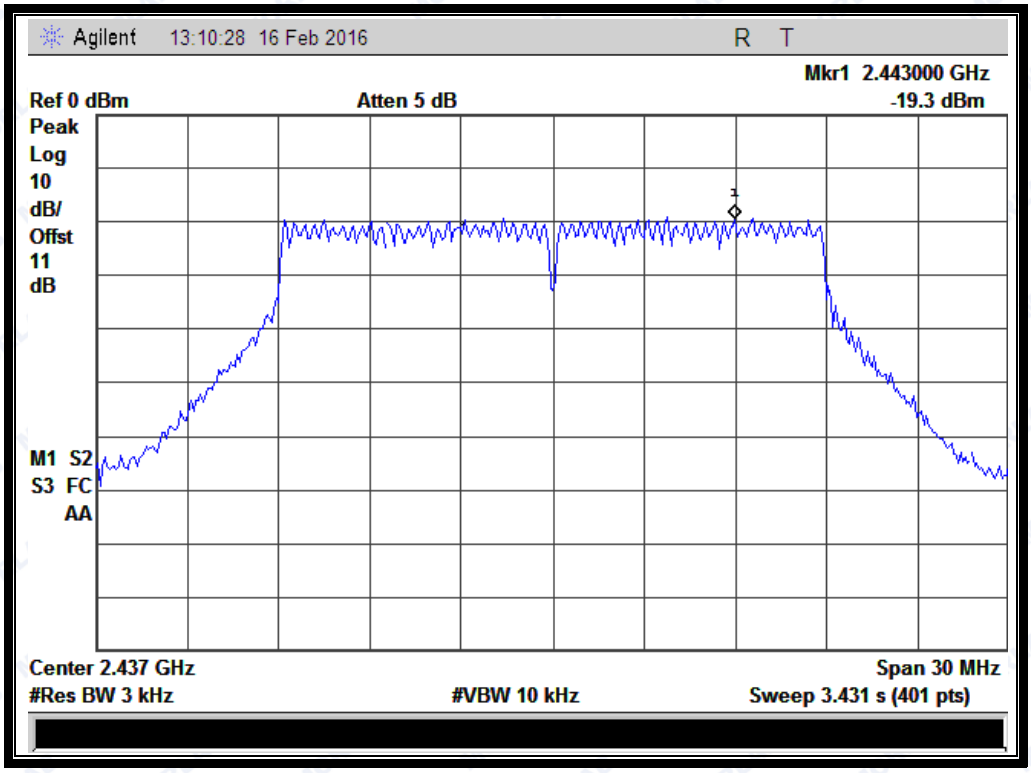
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-20.27	8	PASS
6	2437	-19.30	8	PASS
11	2462	-18.68	8	PASS
Measurement uncertainty: ±1.3dB				

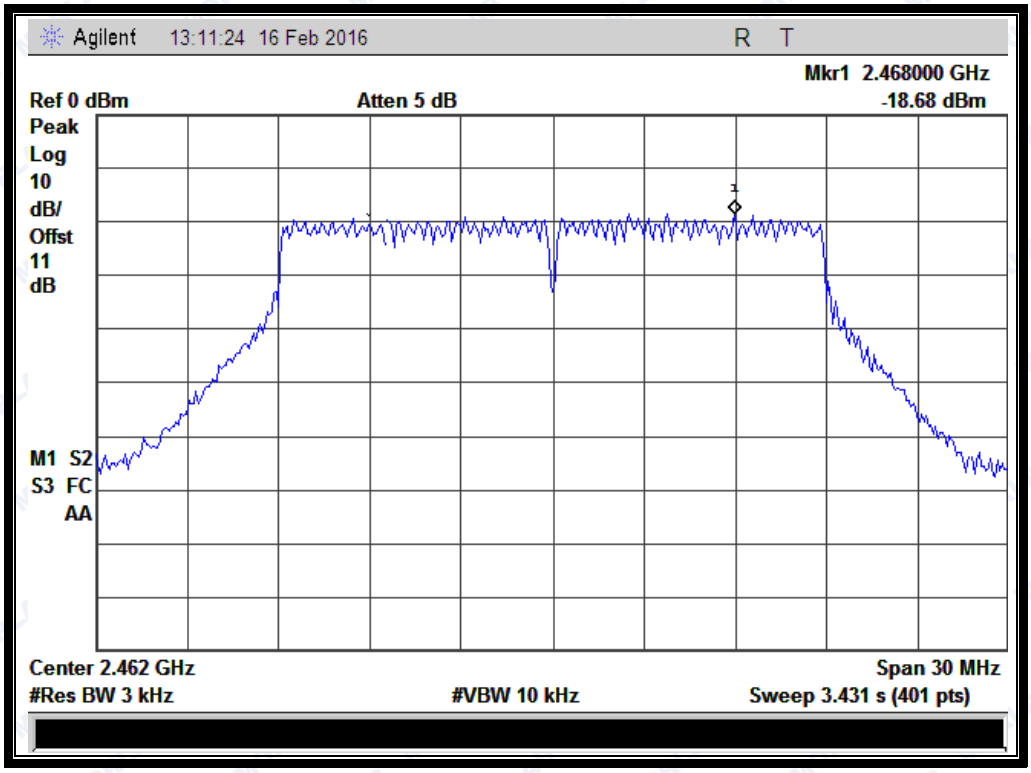
B. Test Plots:



(Channel = 1 @ 802.11n-20MHz)



(Channel = 6 @ 802.11n-20MHz)



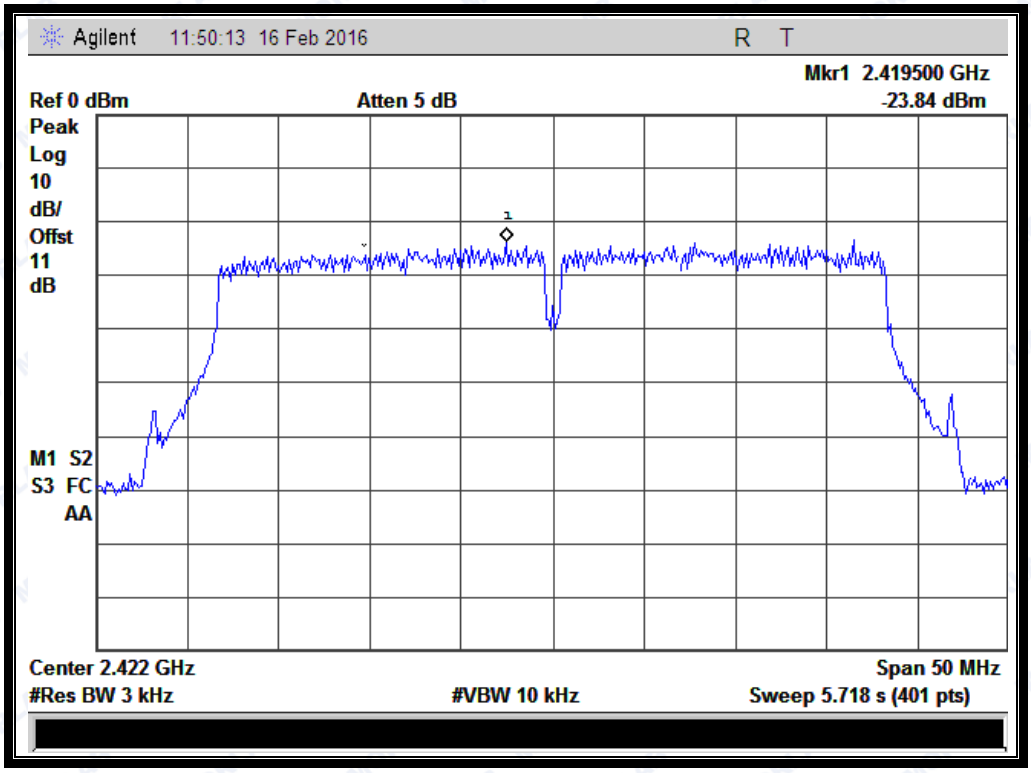
(Channel = 11 @ 802.11n-20MHz)

2.5.3.4 802.11n-40MHz Test mode

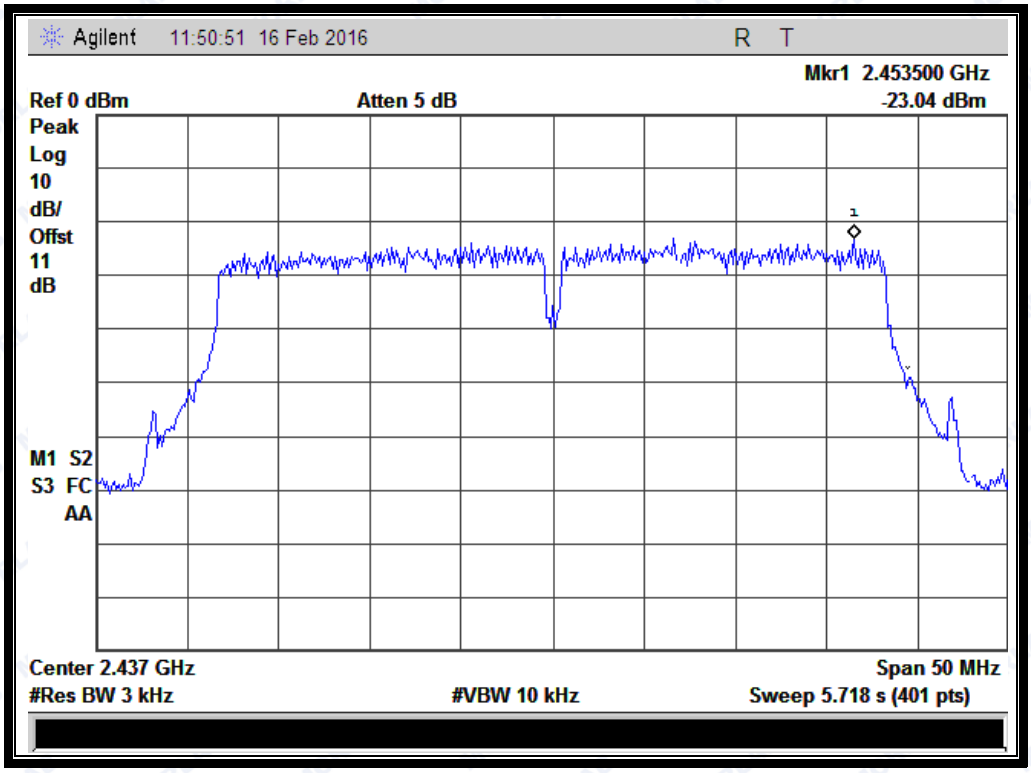
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
3	2422	-23.84	8	PASS
6	2437	-23.04	8	PASS
9	2452	-23.36	8	PASS
Measurement uncertainty: ±1.3dB				

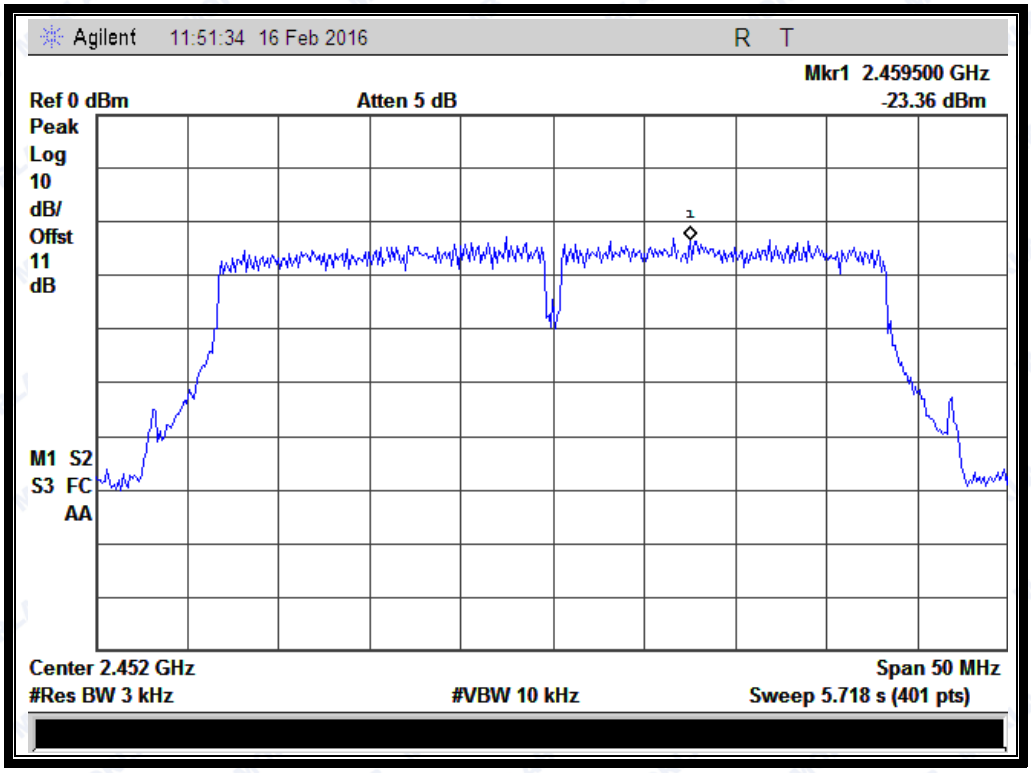
B. Test Plots:



(Channel = 3 @ 802.11n-40MHz)



(Channel = 6 @ 802.11n-40MHz)



(Channel = 9 @ 802.11n-40MHz)

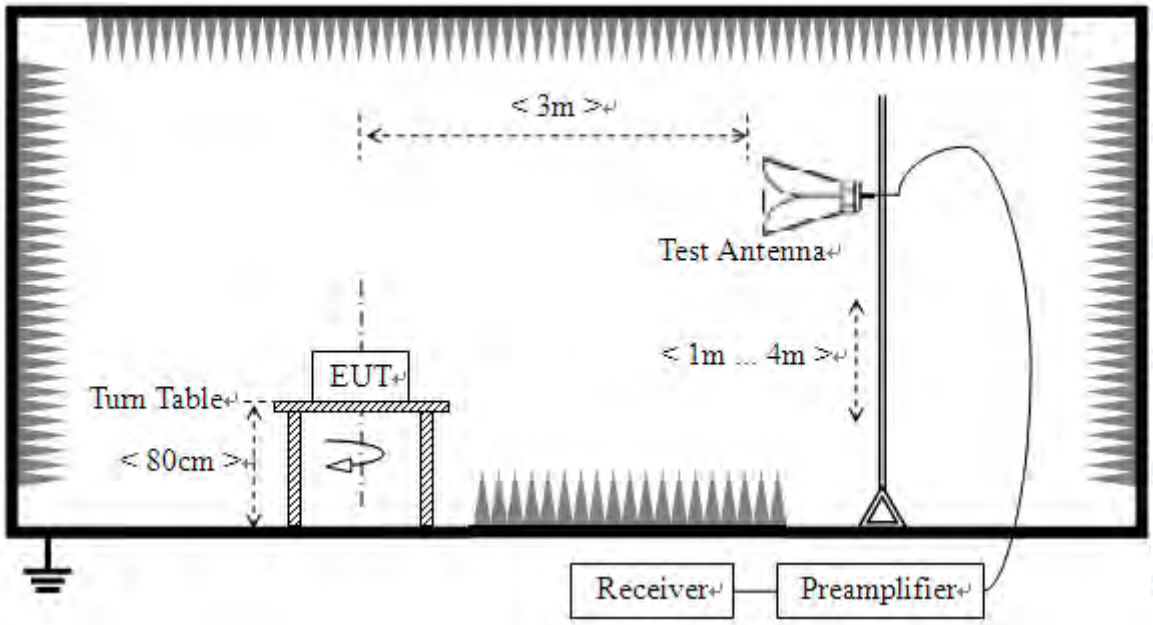
2.6 Restricted Frequency Bands

2.6.1 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, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

2.6.2 Test Description

A. Test Setup



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.

KDB 558074 Section 12.1 was used in order to prove compliance.

B. Equipments List:

Please reference ANNEX A(1.4).

2.6.3 Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:
$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m

Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

2.6.3.1 802.11b Test mode

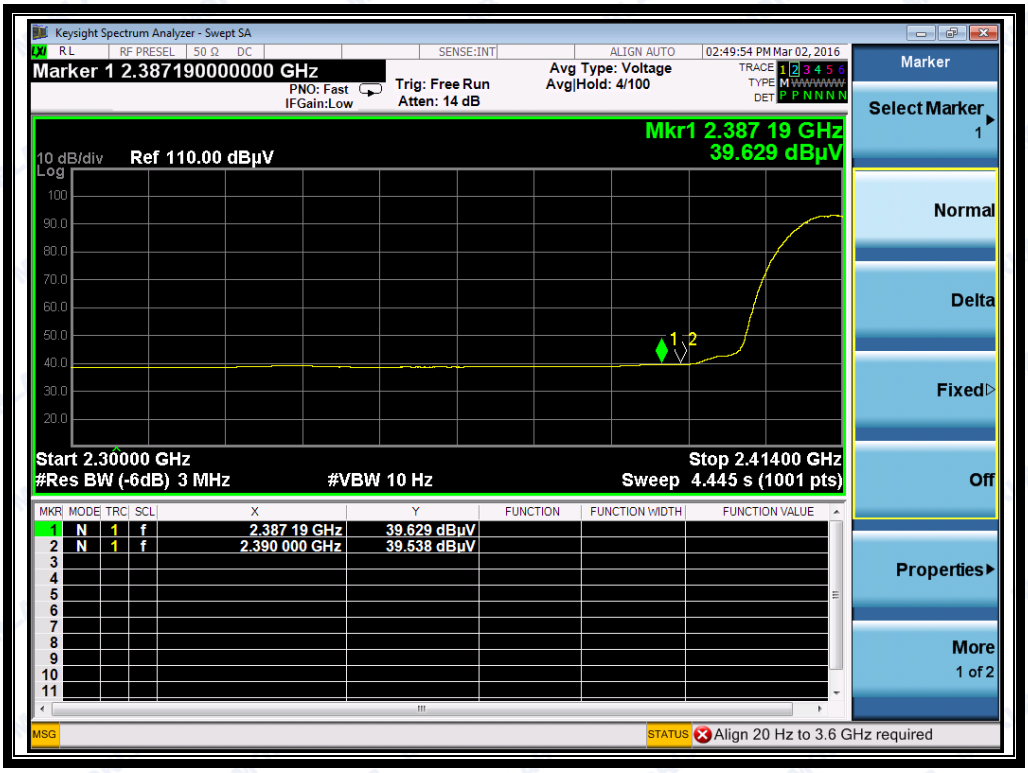
The lowest and highest channels are tested to verify the band edge emissions.

A. Test Verdict:

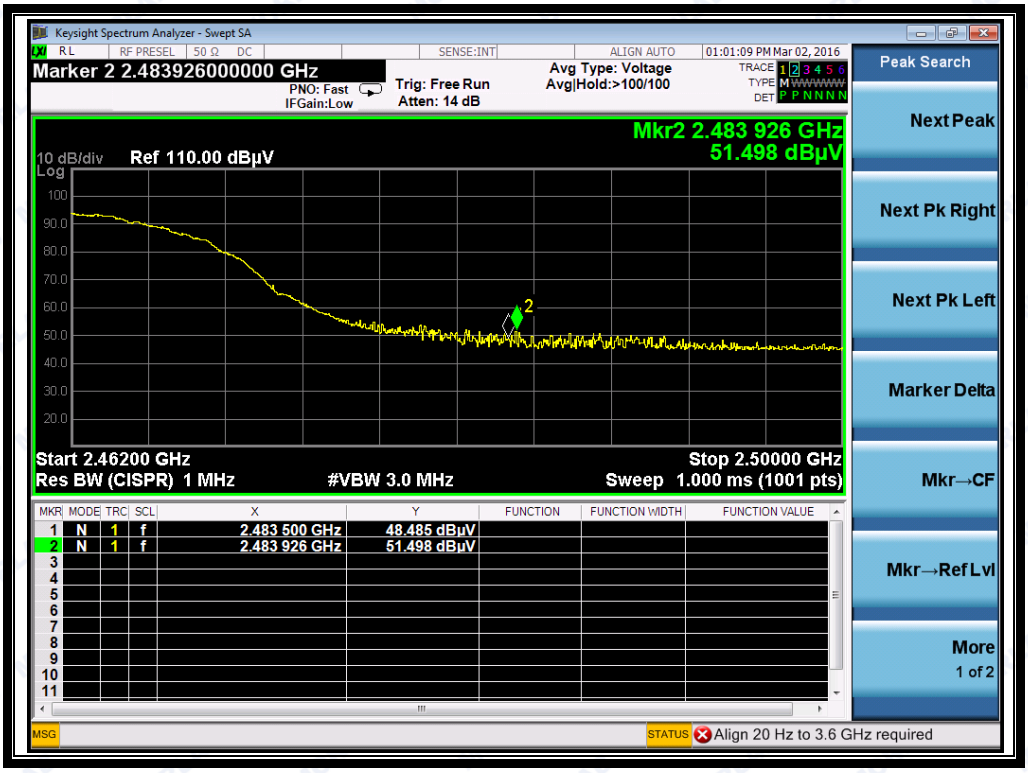
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
1	2385.25	PK	58.95	-33.63	32.56	57.88	74	Pass
1	2387.19	AV	39.63	-33.63	32.56	38.56	54	Pass
11	2483.93	PK	51.50	-33.18	32.5	50.82	74	Pass
11	2484.34	AV	34.33	-33.18	32.5	33.65	54	Pass

B. Test Plots:

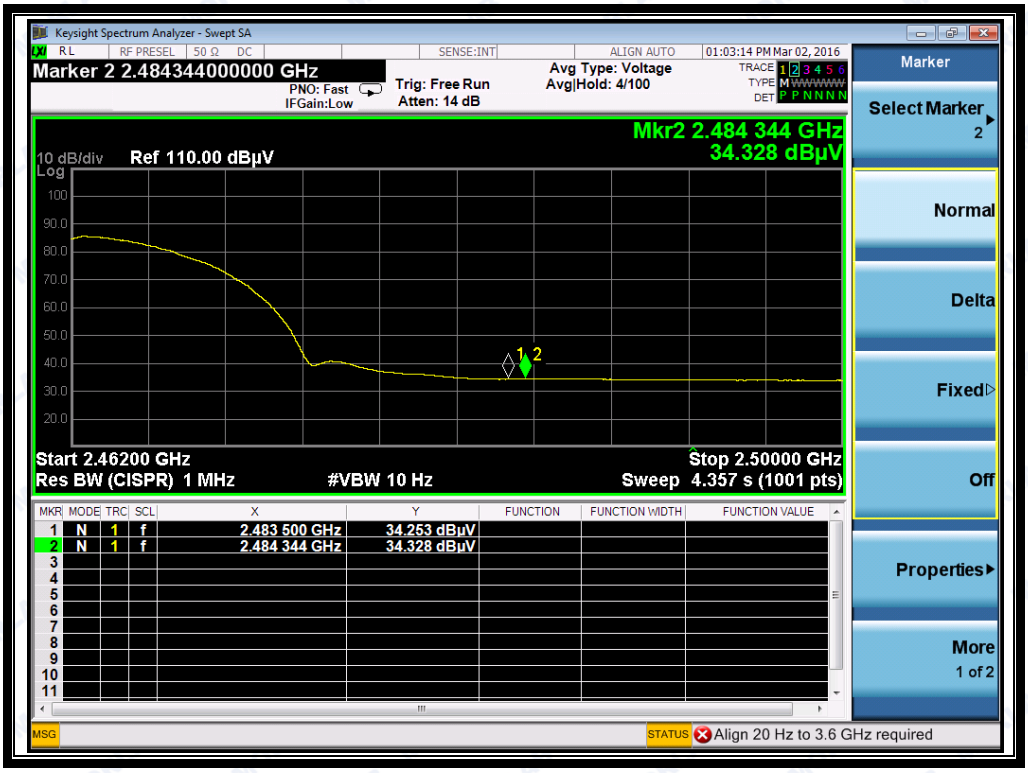
(Plot A1: Channel = 1 PEAK @ 802.11b)



(Plot A2: Channel = 1 AVG @ 802.11b)



(Plot B1: Channel = 11 PEAK @ 802.11b)



(Plot B2: Channel = 11 AVG @ 802.11b)

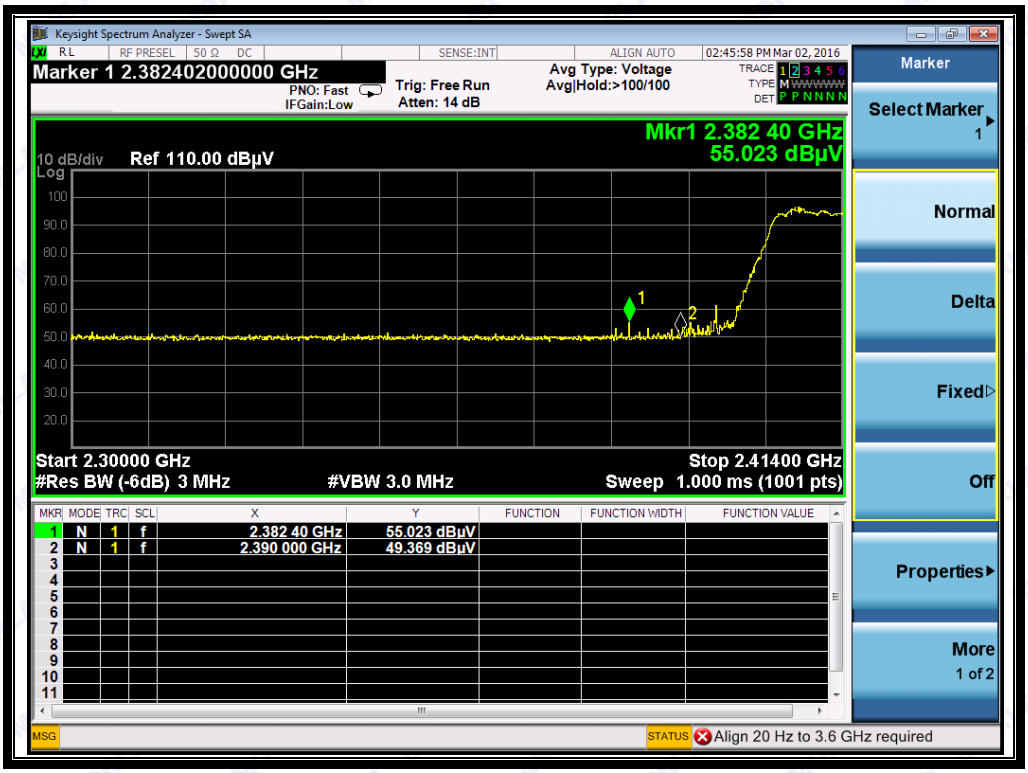
2.6.3.2 802.11g Test mode

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

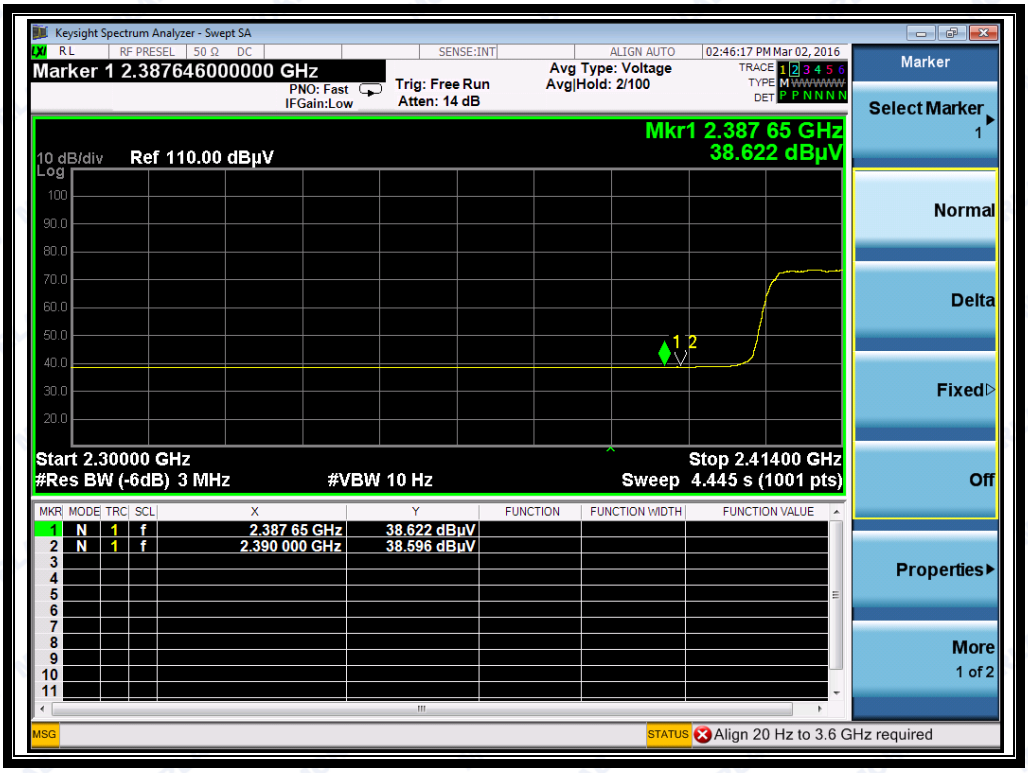
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
		PK/ AV						
1	2382.40	PK	55.02	-33.63	32.56	53.95	74	Pass
1	2387.65	AV	38.62	-33.63	32.56	37.55	54	Pass
11	2489.85	PK	56.53	-33.18	32.5	55.85	74	Pass
11	2484.38	AV	38.77	-33.18	32.5	38.09	54	Pass

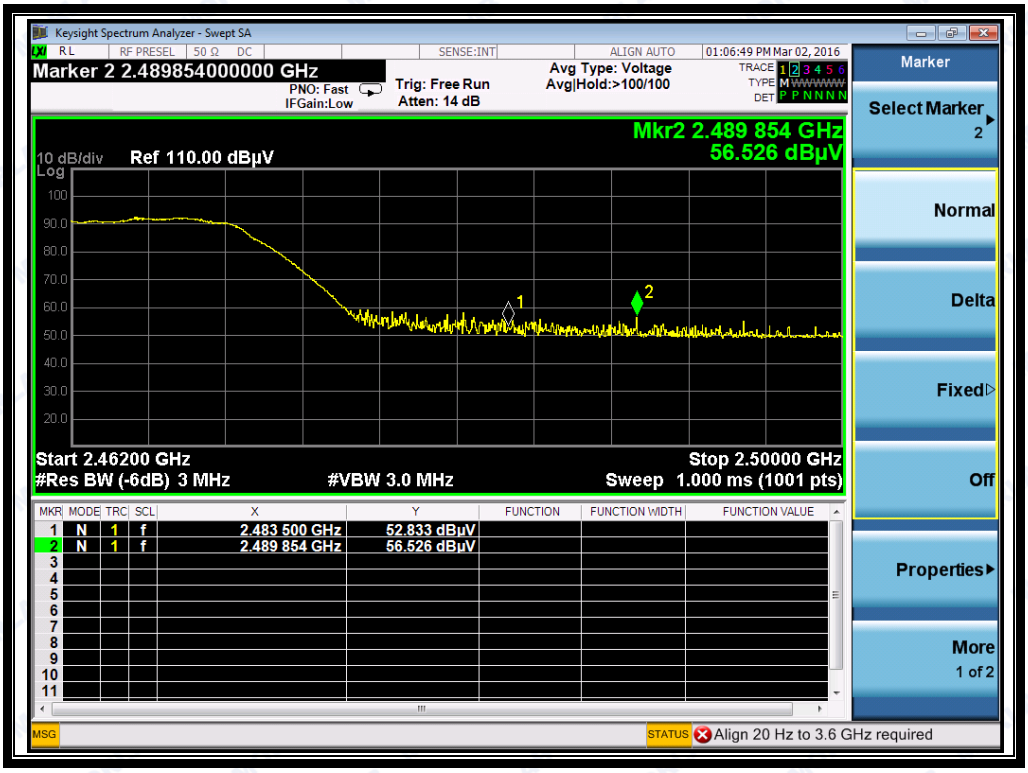
B. Test Plots:



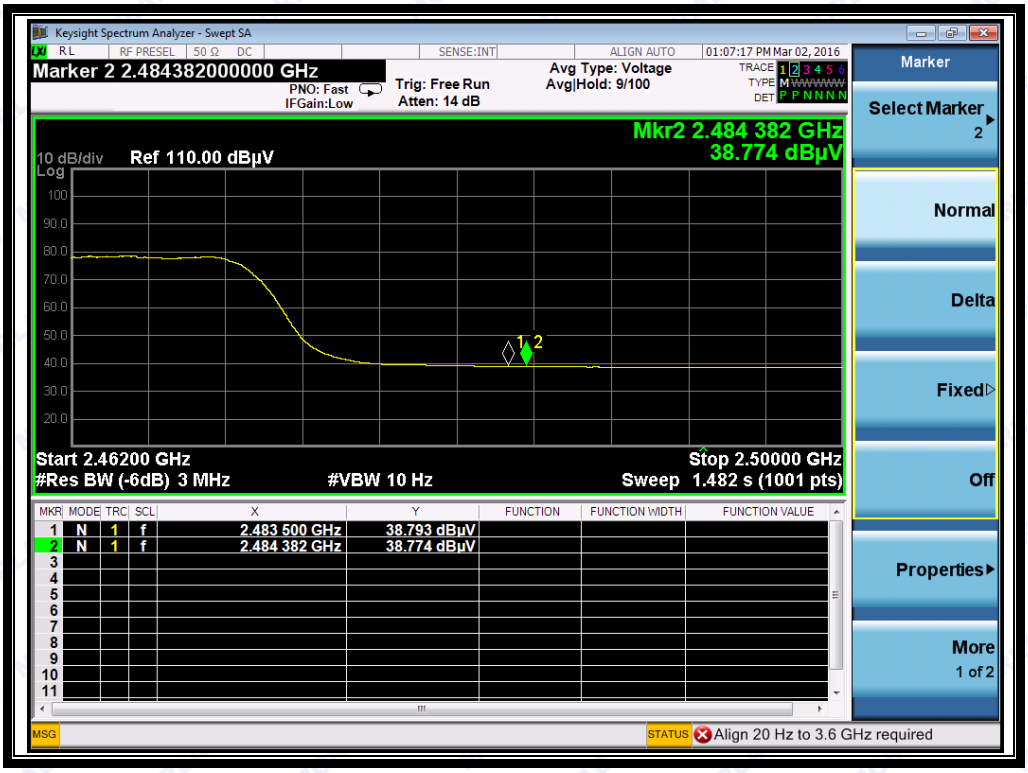
(Plot C1: Channel = 1 PEAK @ 802.11g)



(Plot C2: Channel = 1 AVG @ 802.11g)



(Plot D1: Channel = 11 PEAK @ 802.11g)



(Plot D2: Channel = 11 AVG @ 802.11g)

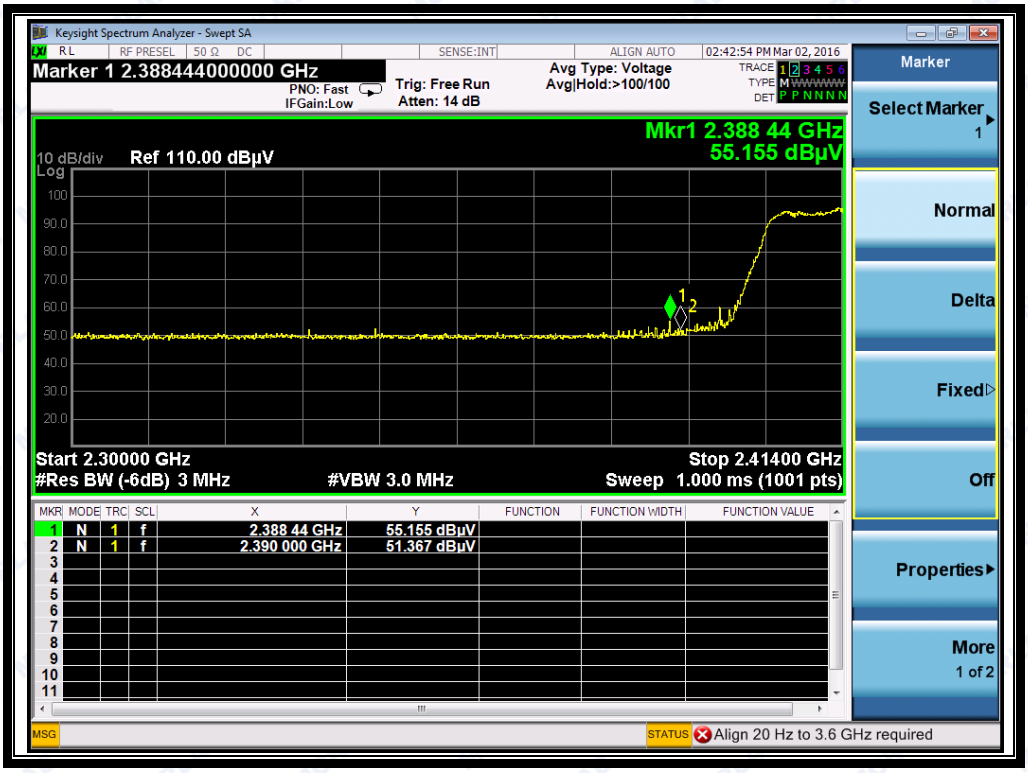
2.6.3.3 802.11n-20MHz Test mode

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

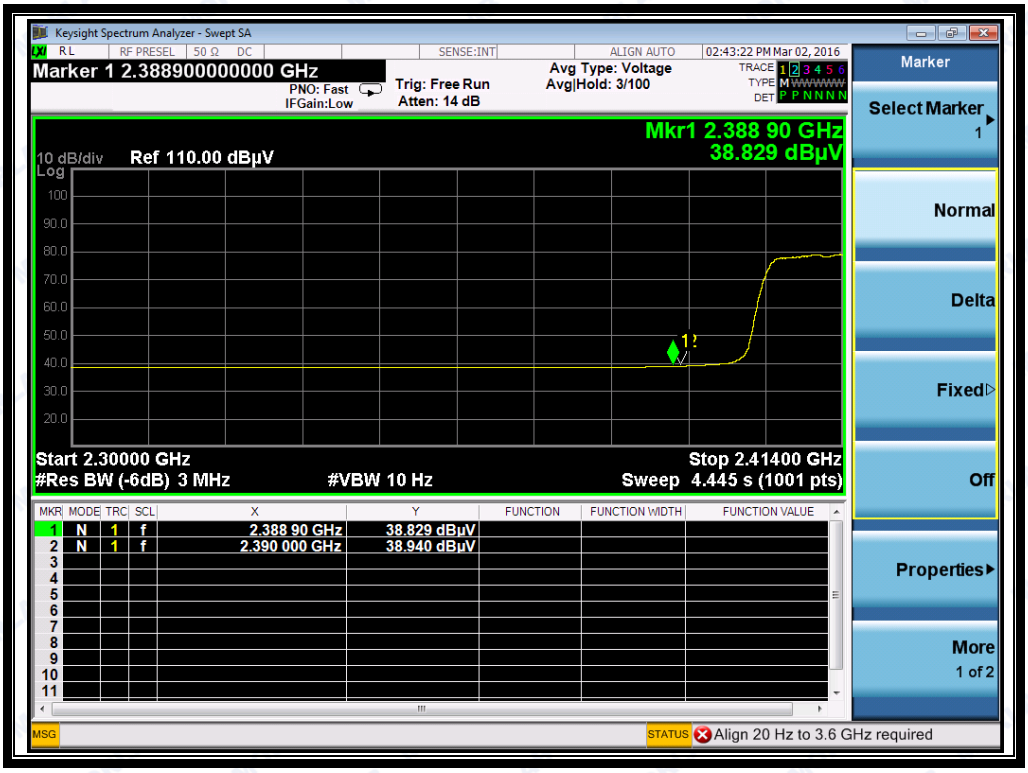
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
		PK/ AV						
1	2388.44	PK	55.16	-33.63	32.56	54.09	74	Pass
1	2388.90	AV	38.83	-33.63	32.56	37.76	54	Pass
11	2488.49	PK	57.09	-33.18	32.5	56.41	74	Pass
11	2484.46	AV	38.88	-33.18	32.5	38.20	54	Pass

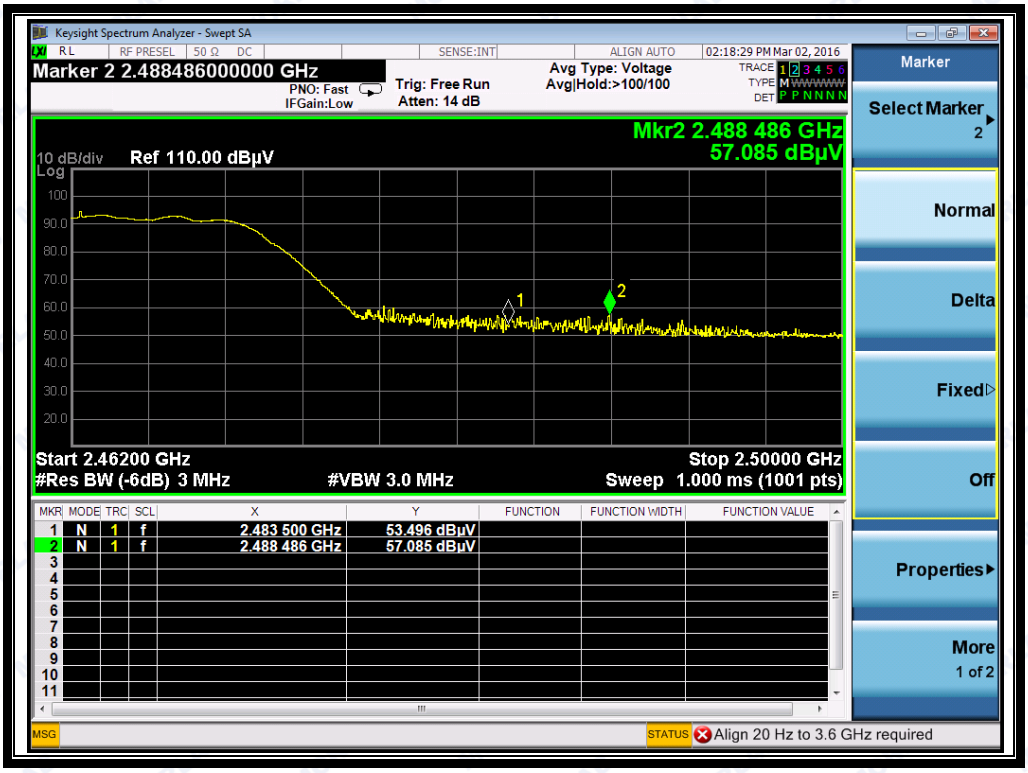
B. Test Plots:



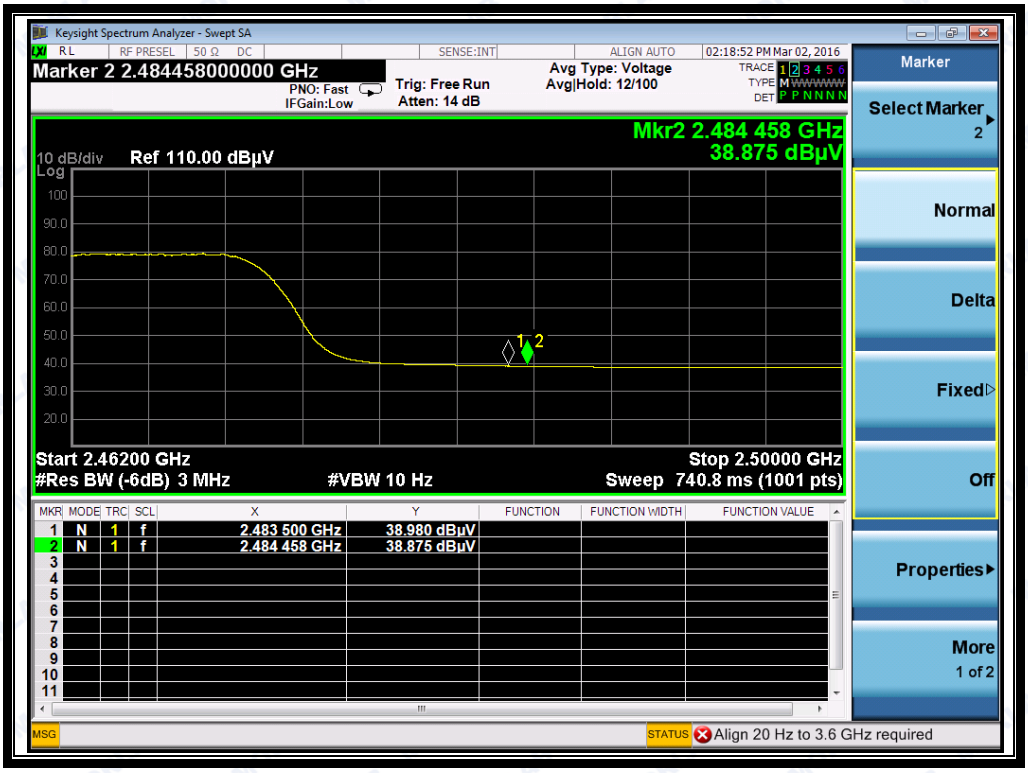
(Plot E1: Channel = 1 PEAK @ 802.11n-20)



(Plot E2: Channel = 1 AVG @ 802.11n-20)



(Plot F1: Channel = 11 PEAK @ 802.11n-20)



(Plot F2: Channel = 11 AVG @ 802.11n-20)

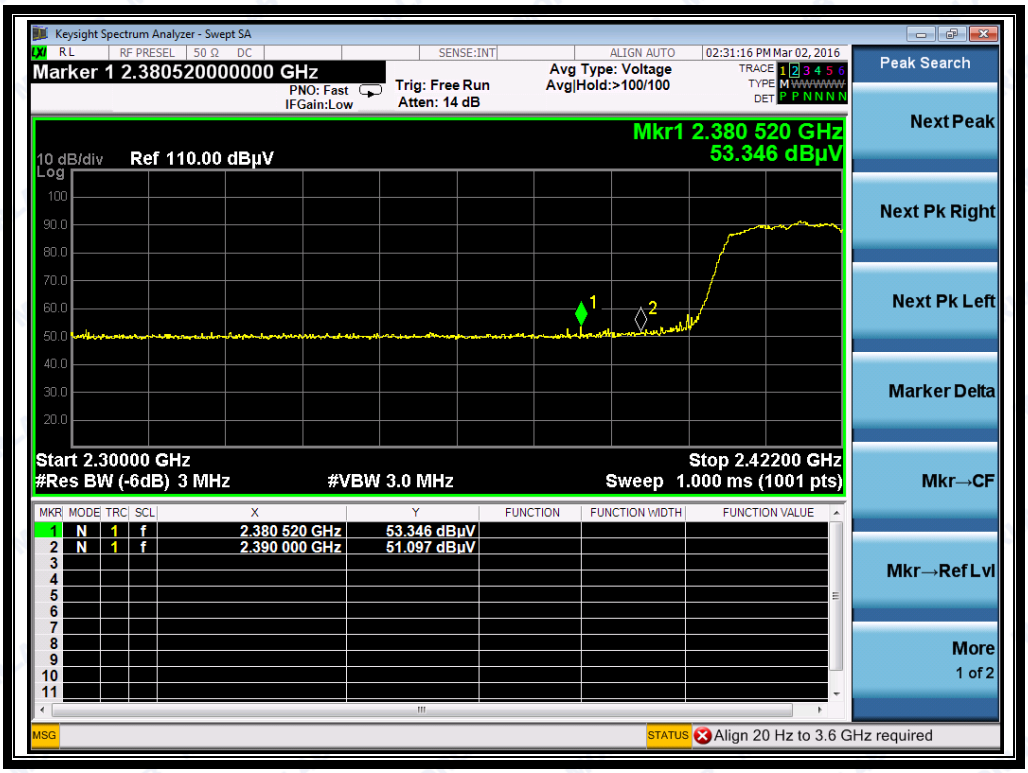
2.6.3.4 802.11n-40MHz Test mode

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

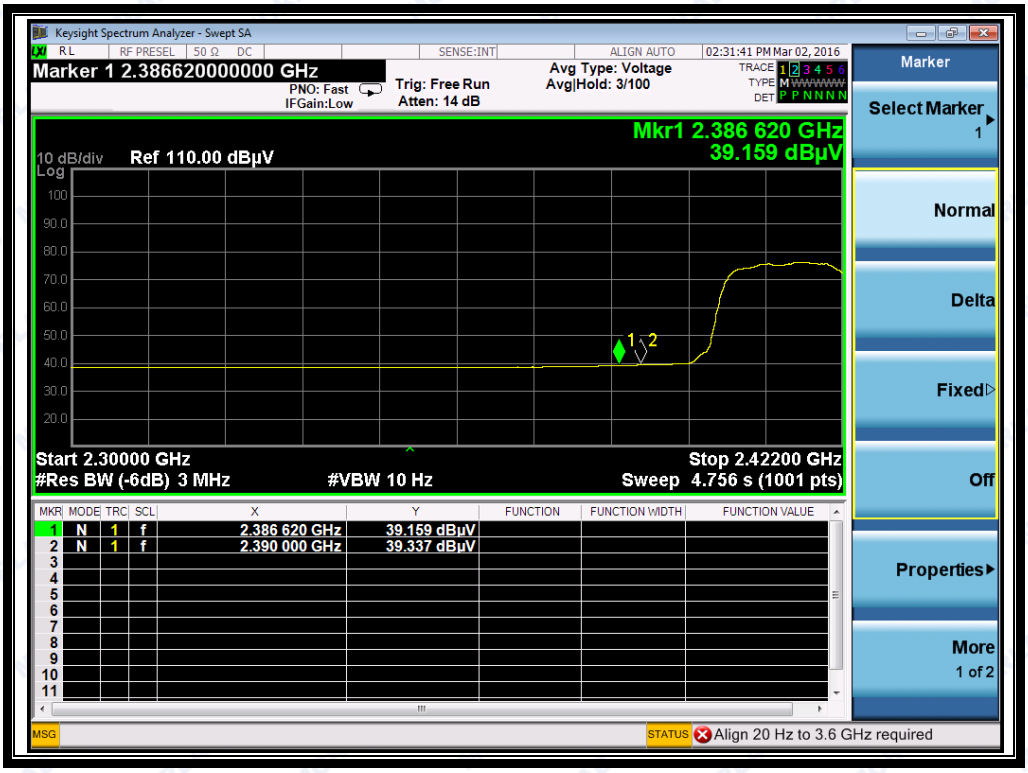
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
3	2380.52	PK	53.35	-33.63	32.56	52.28	74	Pass
3	2386.62	AV	39.16	-33.63	32.56	38.09	54	Pass
9	2484.79	PK	53.00	-33.18	32.5	52.32	74	Pass
9	2484.31	AV	39.06	-33.18	32.5	38.38	54	Pass

B. Test Plots:

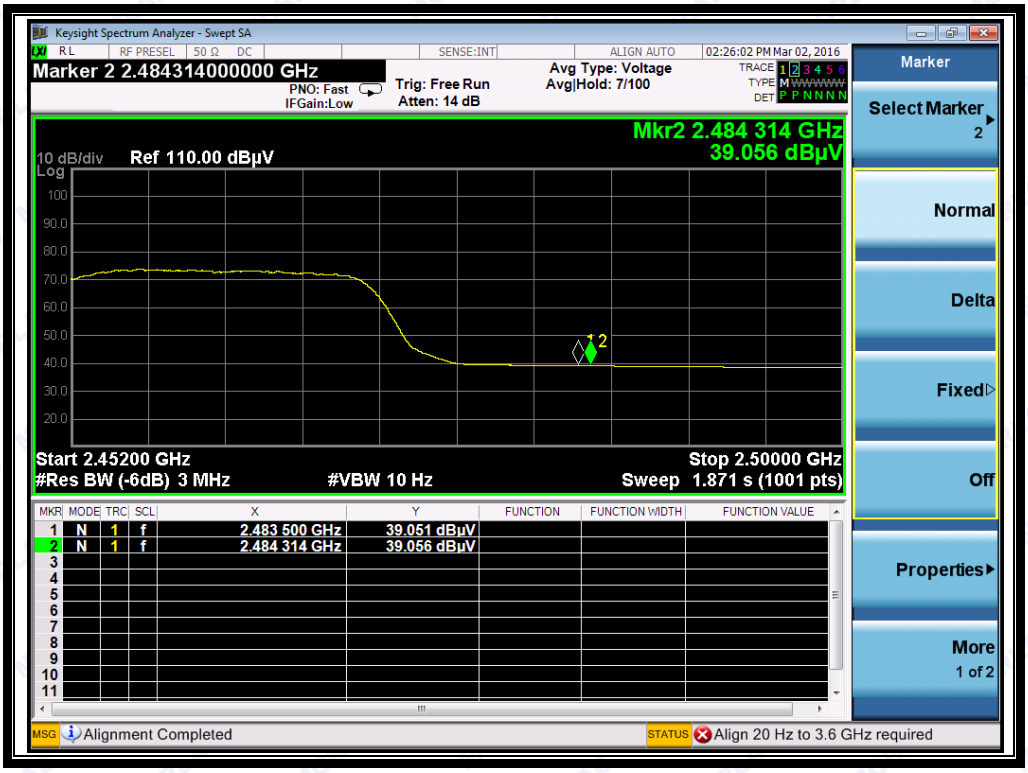


(Plot E1: Channel = 3 PEAK @ 802.11n-40)



(Plot E2: Channel = 3 AVG @ 802.11n-40)

(Plot F1: Channel = 9 PEAK @ 802.11n-40)



(Plot F2: Channel = 9 AVG @ 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

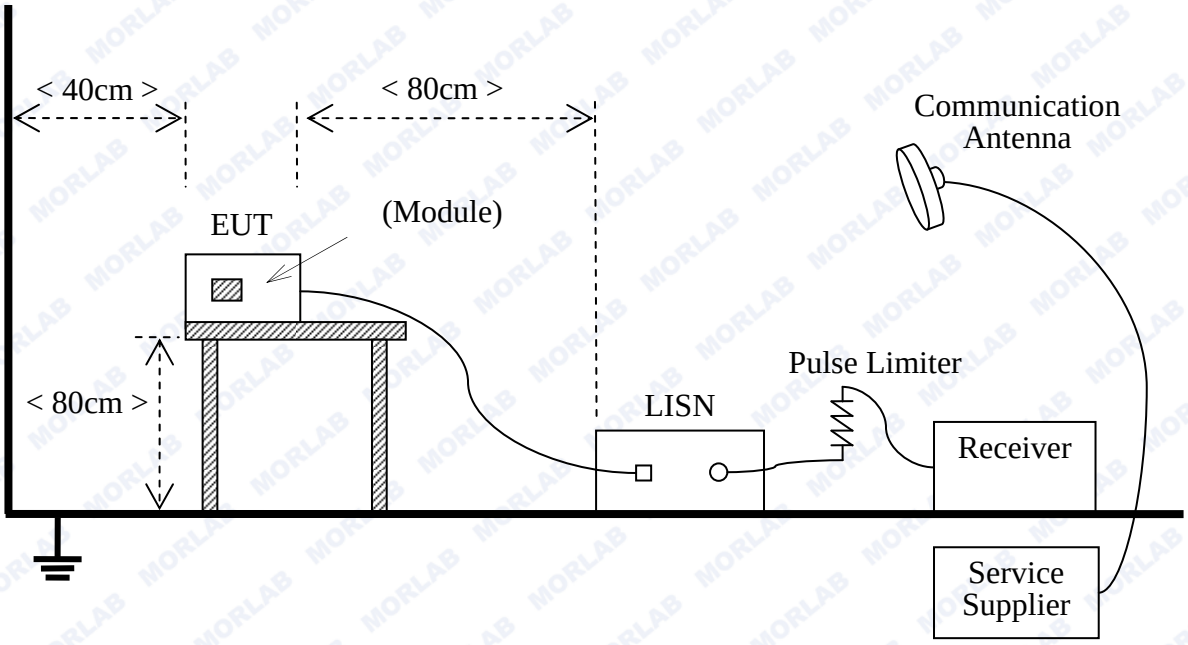
NOTE:

(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

B. Equipments List:

Please reference ANNEX A(1.4).

2.7.3 Test Result

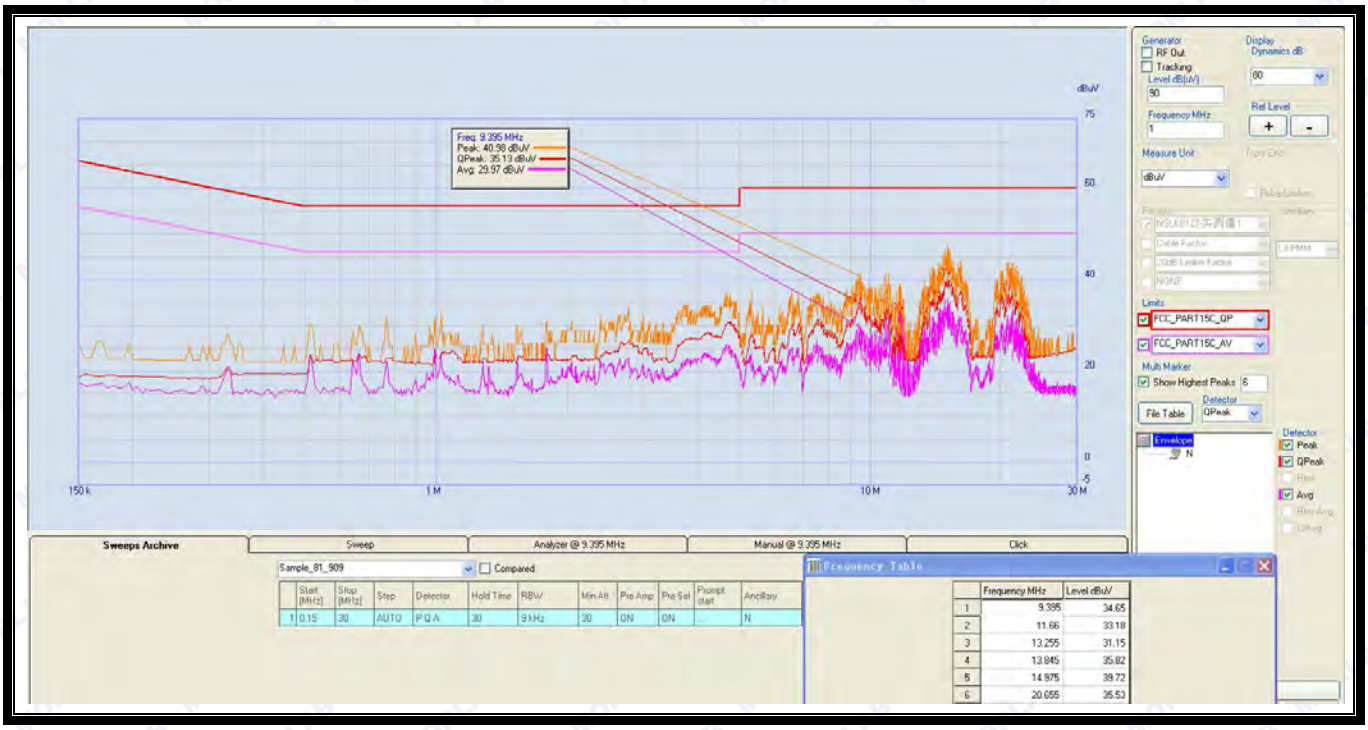
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT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

Note: All test modes are performed, only the worst case is recorded in this report.

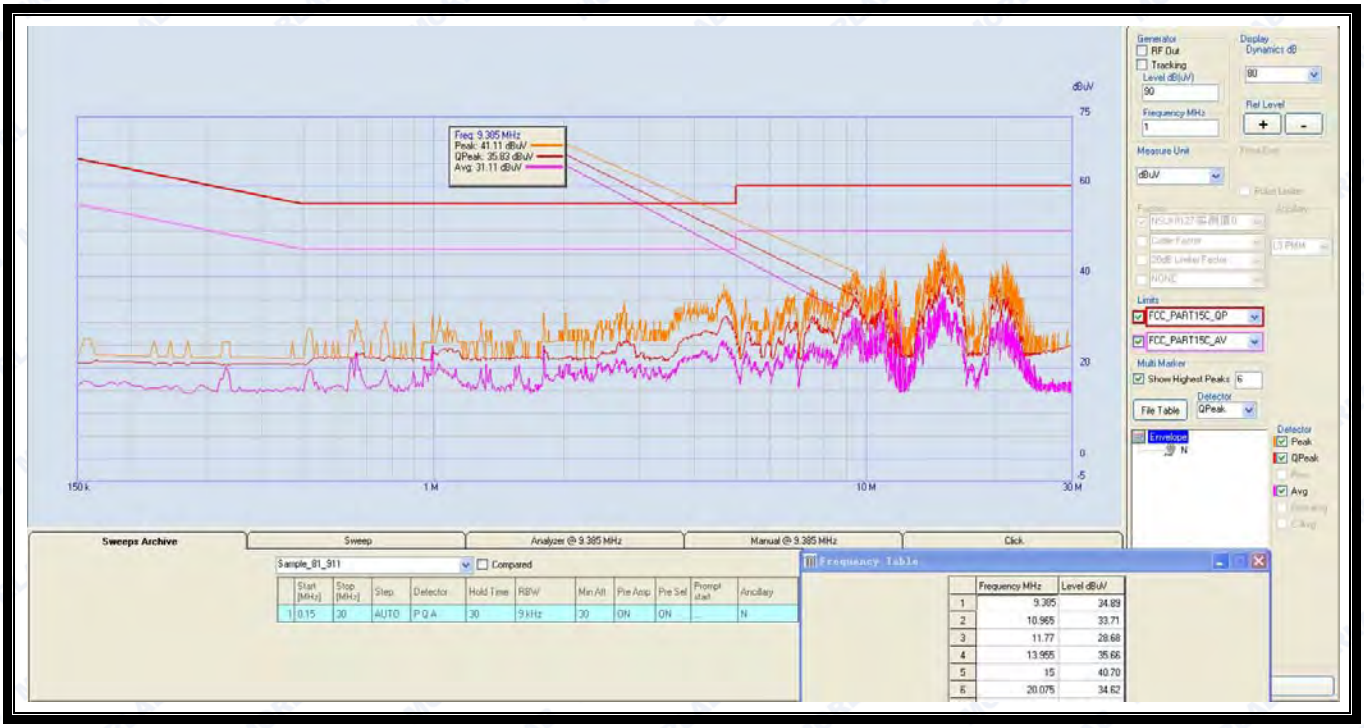
A. Test setup:

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

B. Test Plots:



(Plot A: L Phase)



(Plot B: N Phase)

2.8 Radiated Emission

2.8.1 Requirement

According to FCC section 15.247(d), 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)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

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.

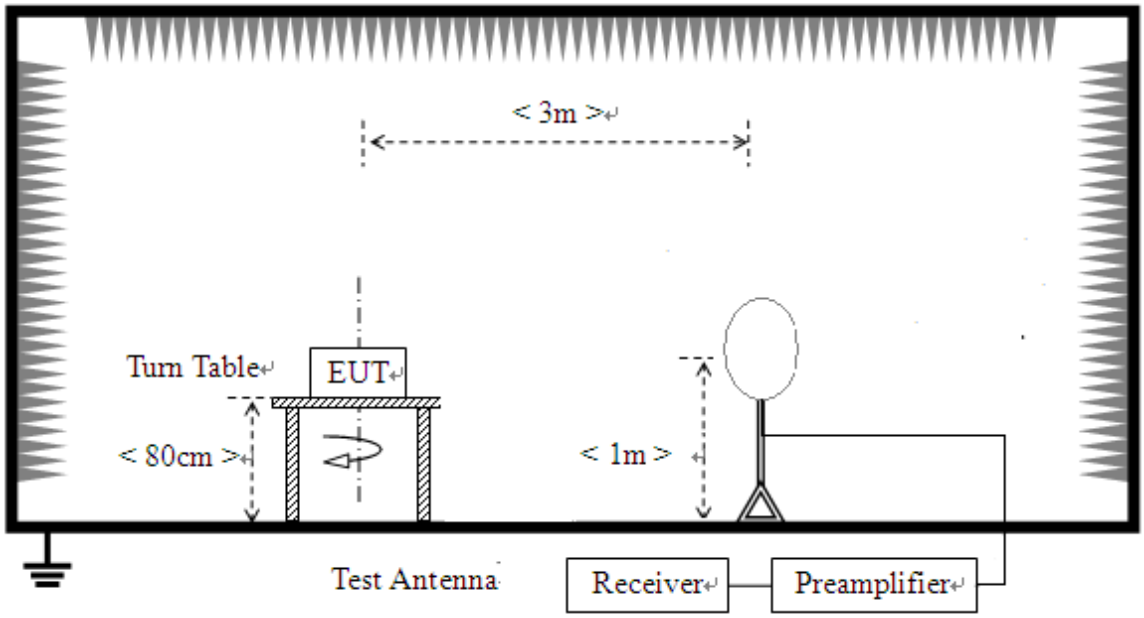
For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

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)

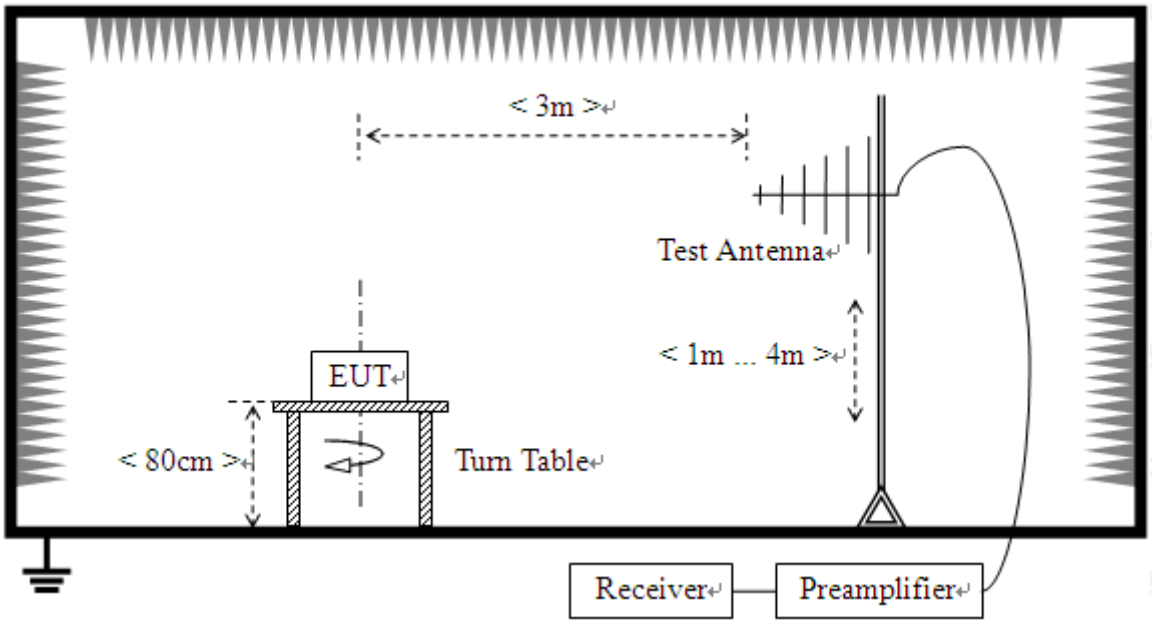
2.8.2 Test Description

A. Test Setup:

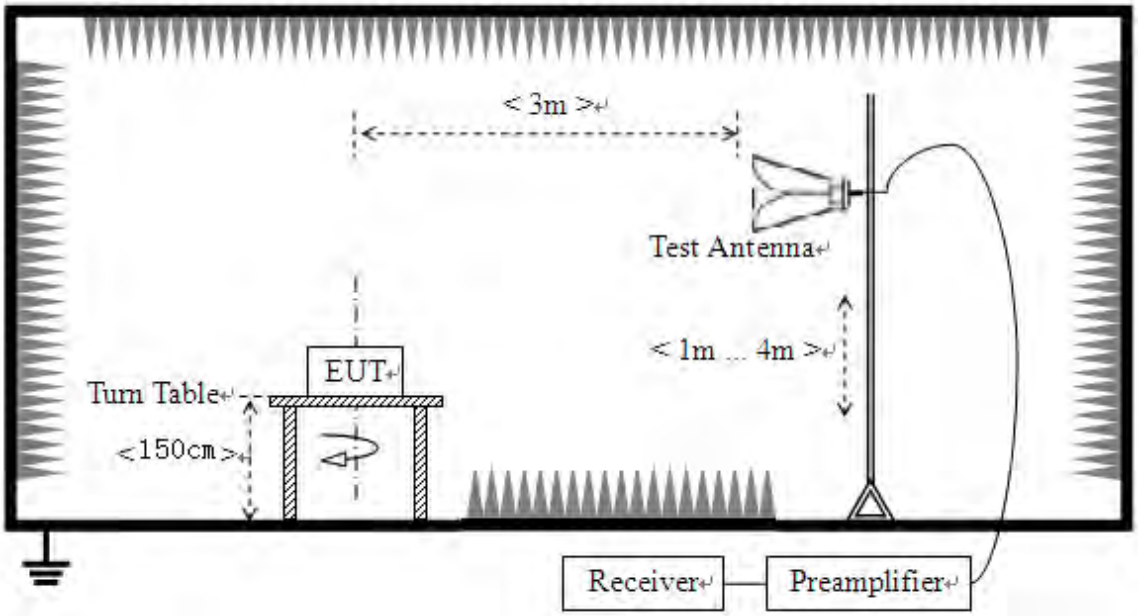
1) For radiated emissions from 9kHz to 30MHz



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 C63.10 (2013). For radiated emissions below or equal to 1GHz,The EUT was set-up on insulator 80cm above the Ground Plane, For radiated emissions above 1GHz, The EUT was set-up on insulator 150cm above the Ground Plane. The set-up and test methods were according to ANSI C63.10

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

The EUT 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:

(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:

Please reference ANNEX A(1.4).

2.8.3 Test Result

According to ANSI C63.10, 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:

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

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

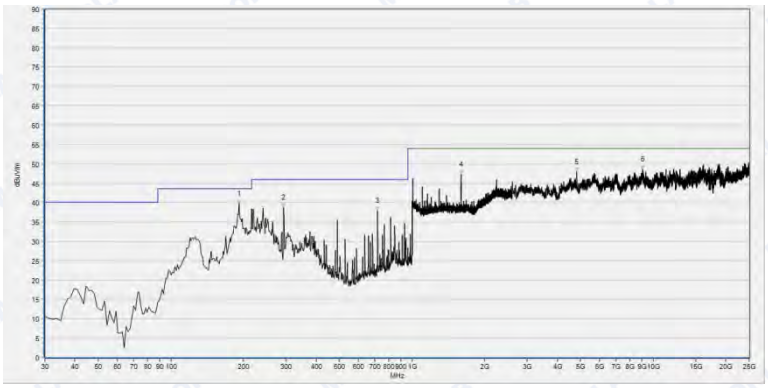
During the test, the total correction Factor A_T and A_{Factor} were built in test software.

The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

2.8.3.1 802.11b Test mode

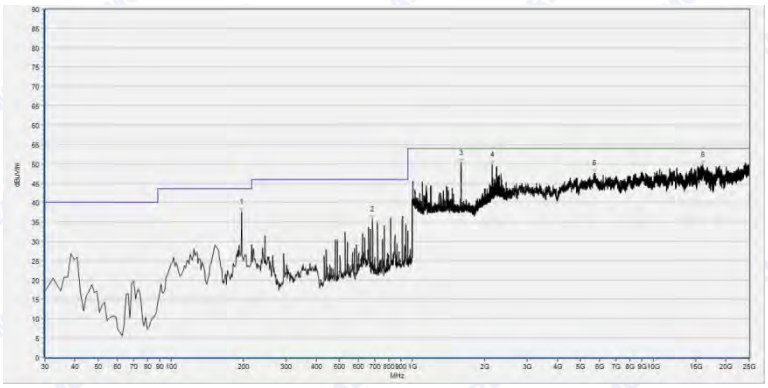
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
191.464	39.80	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	38.70	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	37.85	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1598.639	47.31	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4824.113	47.94	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
9011.638	48.58	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

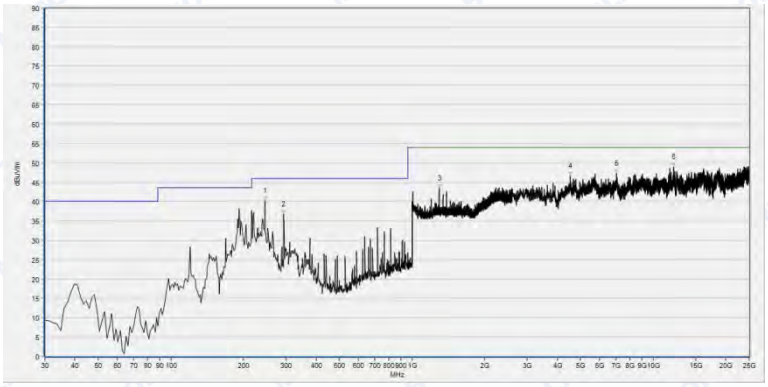
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	37.56	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
685.569	35.64	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1597.359	50.29	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
2149.260	49.74	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5683.615	47.66	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
16026.150	49.75	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

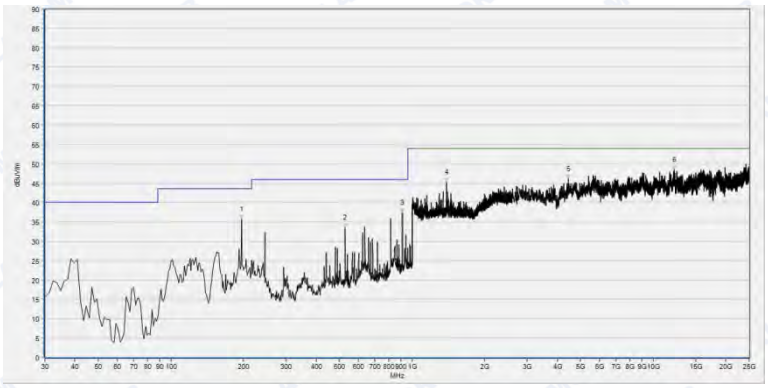
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
244.881	40.24	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
293.442	36.73	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1295.798	43.43	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4538.971	46.67	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
7056.374	47.20	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
12148.209	48.88	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

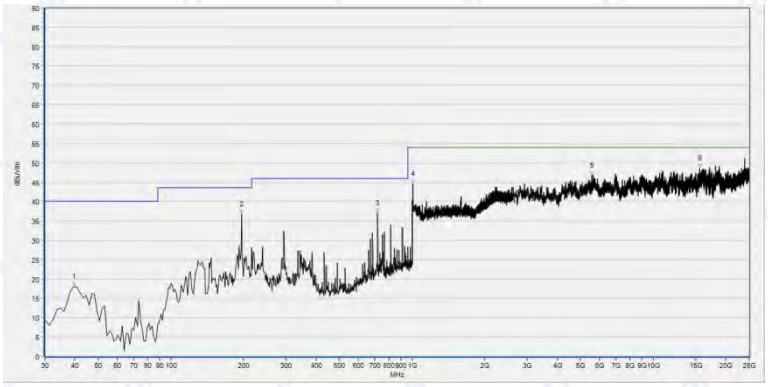
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	35.77	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
527.747	33.56	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
911.377	37.40	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1392.477	45.26	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
4437.134	46.08	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
12205.237	48.49	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

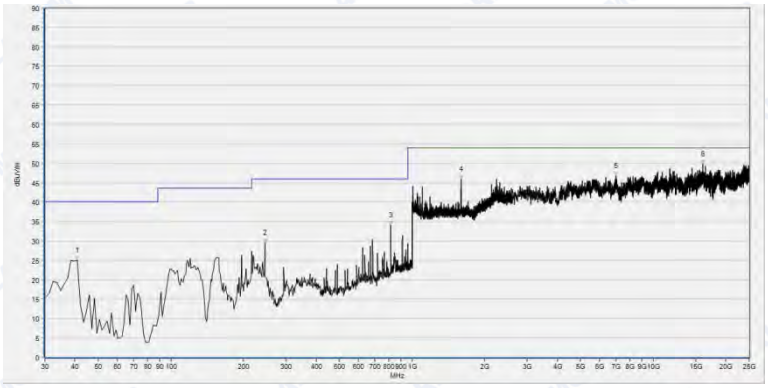
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
39.712	18.08	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
196.320	36.76	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
719.562	37.10	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1007.683	44.61	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5561.411	46.68	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
15631.024	48.63	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
40.926	25.03	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
244.881	29.57	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
815.469	33.97	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1599.280	45.86	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
6995.272	46.79	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
16050.591	49.77	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

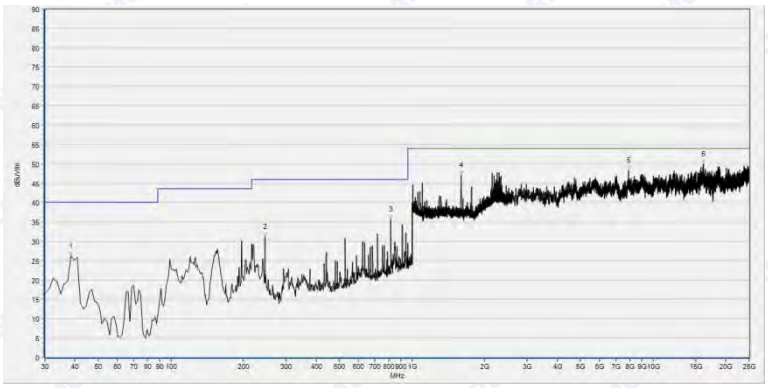
2.8.3.2 802.11g Test mode

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1

Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
191.464	39.58	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
244.881	42.53	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
815.469	33.47	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1295.798	44.09	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5589.925	46.91	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
11744.935	48.86	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

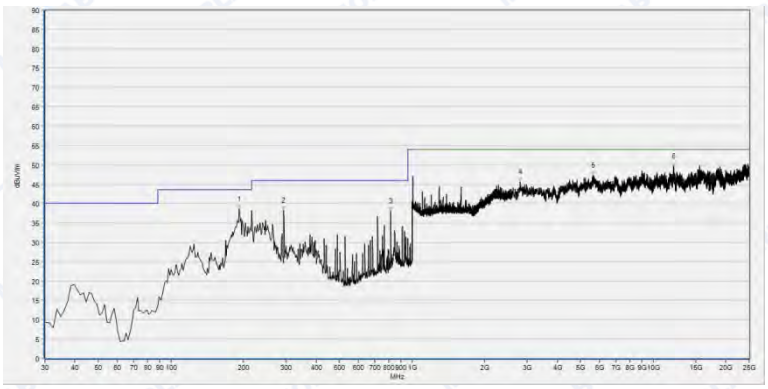
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
38.498	26.22	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
244.881	31.13	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
815.469	35.65	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1598.639	47.07	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7891.435	48.27	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
16189.089	49.88	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

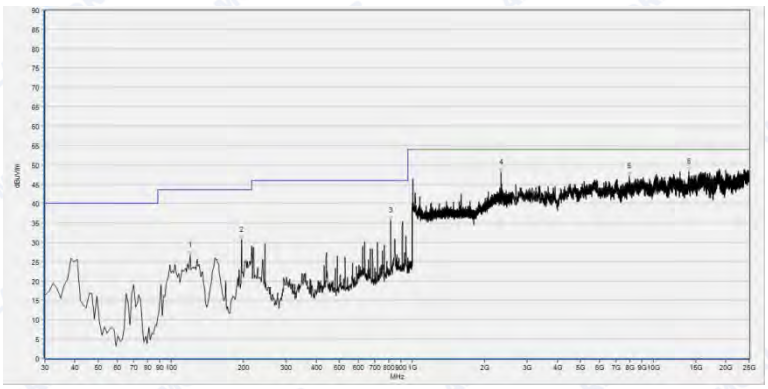
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
191.464	38.62	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	38.15	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
815.469	38.09	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2807.747	45.59	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5630.660	47.26	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
12140.062	49.65	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

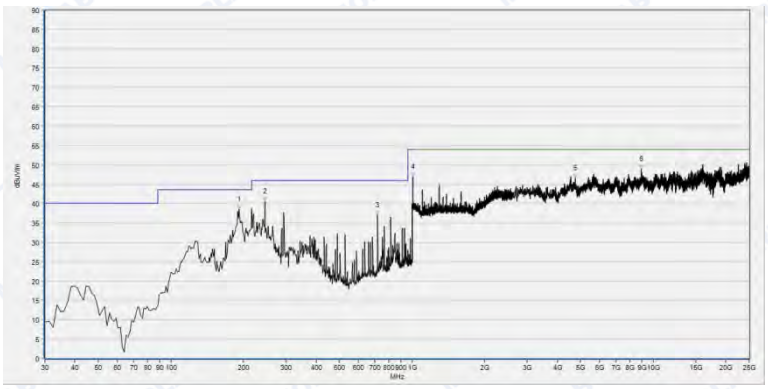
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
119.837	26.60	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
196.320	30.75	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
815.469	35.74	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2343.257	48.11	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7972.904	47.02	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
14079.033	48.33	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

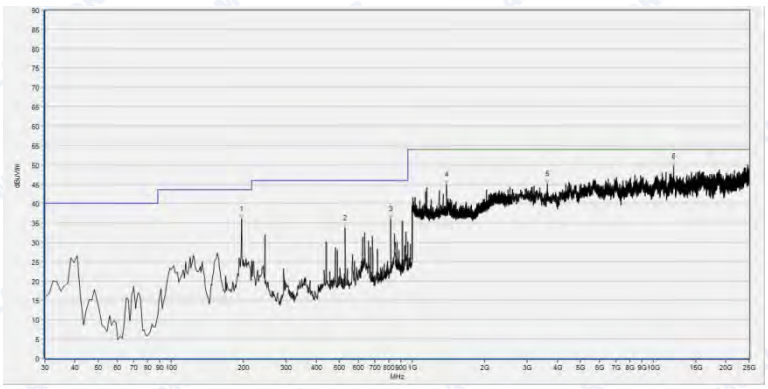
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
191.464	38.55	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
244.881	40.62	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	37.11	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1007.683	47.00	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4754.865	46.51	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
8942.390	48.86	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



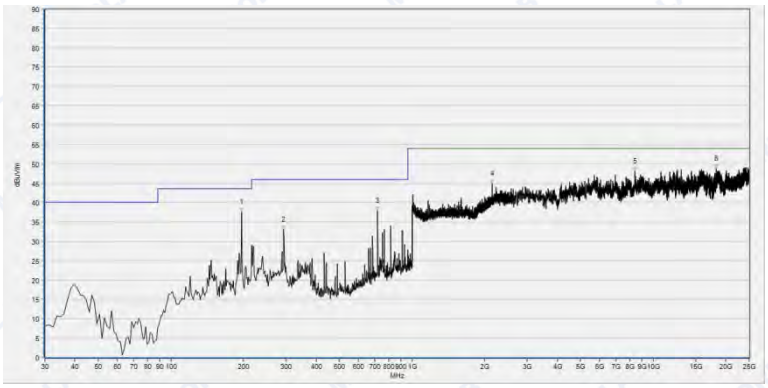
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	35.99	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
527.747	33.71	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
815.469	36.04	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1391.837	44.88	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
3646.881	45.10	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
12140.062	49.61	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

2.8.3.3 802.11n-20MHz Test mode

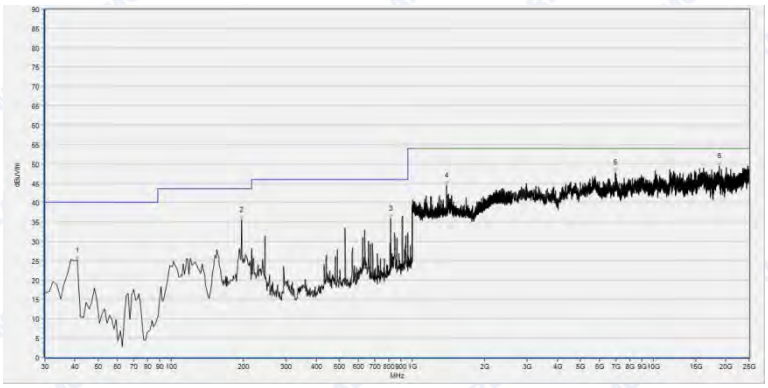
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	37.56	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	33.10	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	37.90	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2144.138	44.90	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
8420.986	48.02	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
18295.072	48.72	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

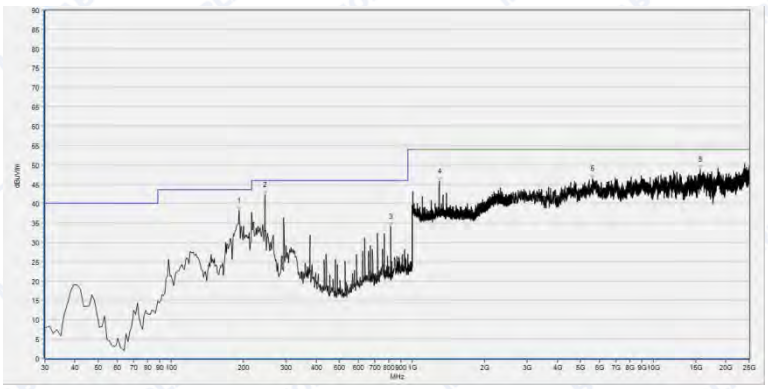
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
40.926	25.07	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
196.320	35.48	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
815.469	35.79	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1391.837	44.49	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
6946.390	47.75	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18808.329	49.48	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

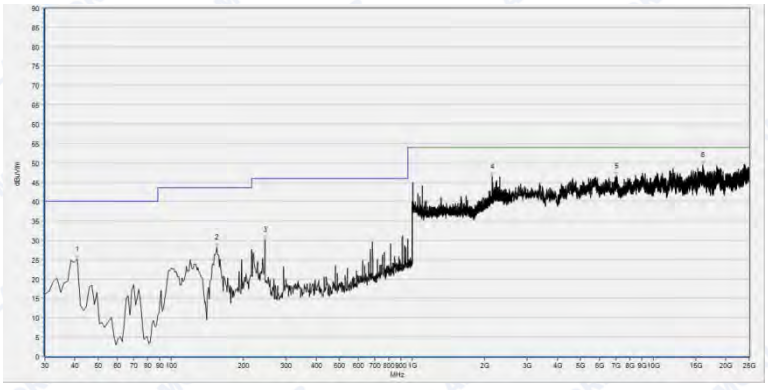
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
191.464	38.23	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
244.881	42.26	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
815.469	34.07	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1295.798	45.83	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5610.293	46.42	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
15659.538	48.76	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

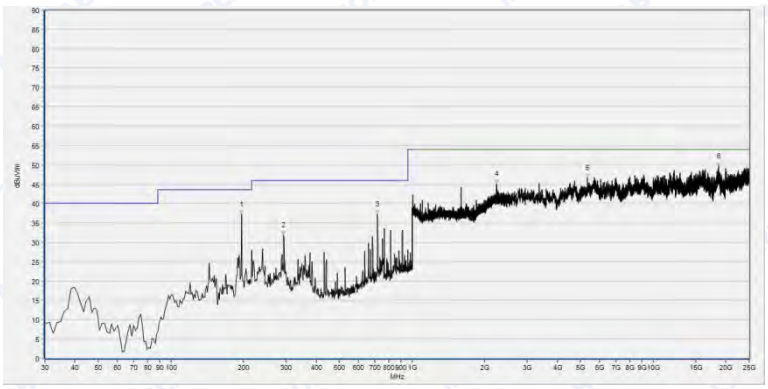
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
40.926	25.16	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
155.044	28.10	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
244.881	30.25	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2147.979	46.50	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7044.153	46.62	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
16083.179	49.41	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

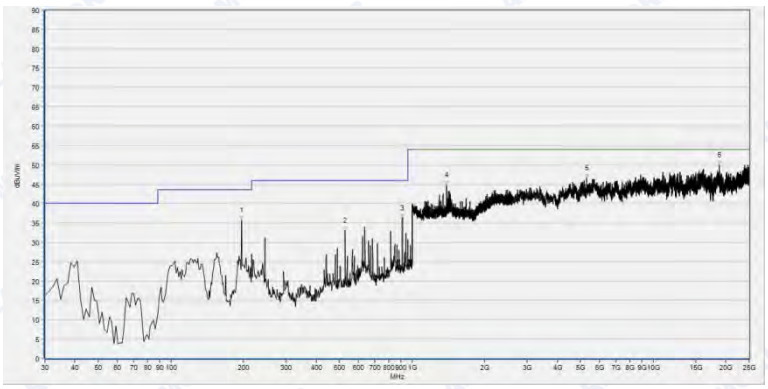
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	37.24	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	31.84	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	37.15	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2246.579	45.07	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5337.370	46.65	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
18669.831	49.58	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



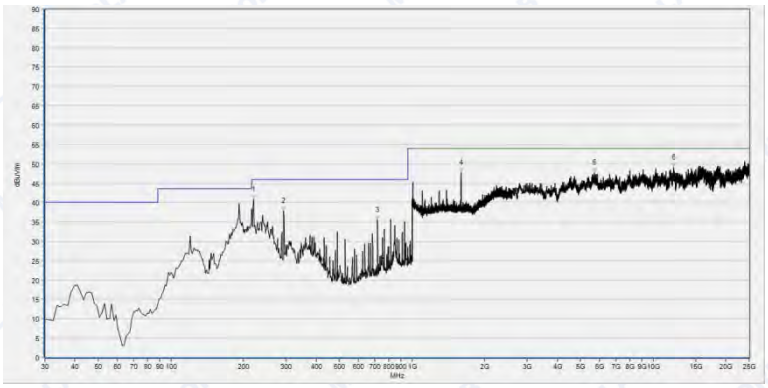
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	35.64	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
527.747	32.97	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
911.377	36.15	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1391.837	44.74	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5308.856	46.61	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18804.255	49.98	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

2.8.3.4 802.11n-40MHz Test mode

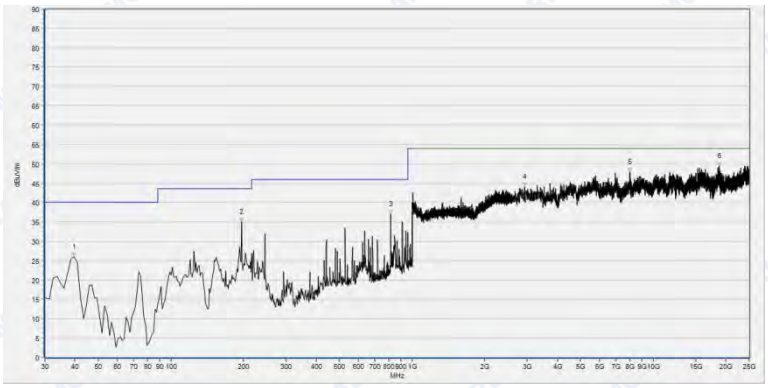
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 3



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
220.601	40.82	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
293.442	37.81	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	35.45	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1595.438	47.70	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5695.836	47.73	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
12176.723	49.15	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

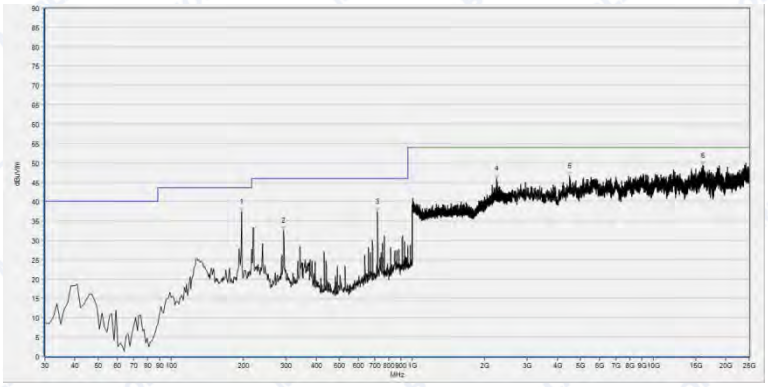
(Plot A.2: Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
39.712	25.91	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
196.320	35.08	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
815.469	37.05	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2925.877	44.07	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7993.272	47.92	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18816.476	49.52	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

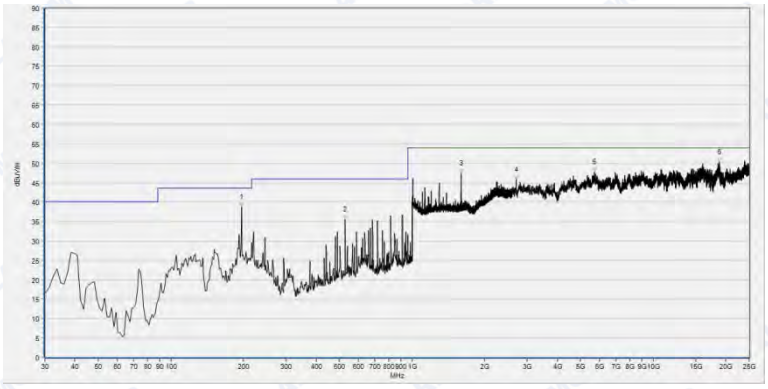
(Plot A.3: Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	37.31	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	32.50	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
719.562	37.29	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2242.737	45.98	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4506.383	46.63	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
16079.105	49.35	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

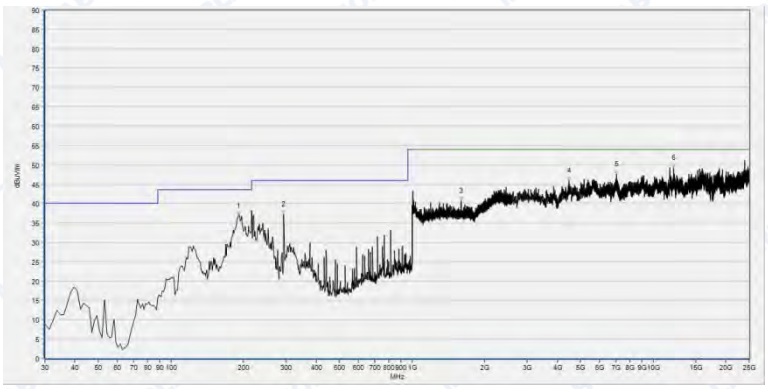
(Plot B.2: Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
196.320	38.70	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
527.747	35.60	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1597.999	47.43	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
2697.763	45.83	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5699.909	47.75	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18779.815	50.20	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

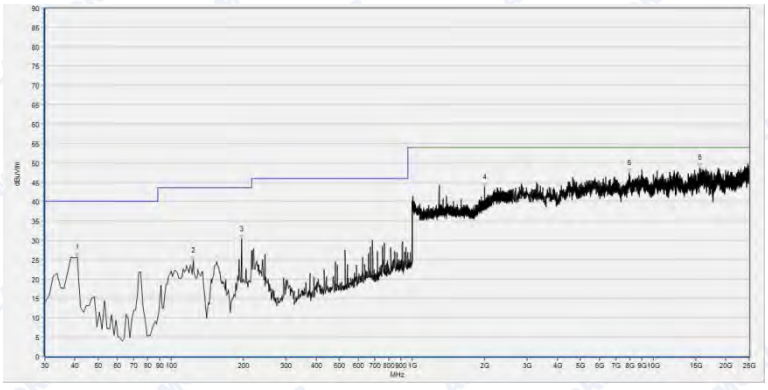
(Plot B.3: Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 9



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
190.250	36.80	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
293.442	37.22	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1596.719	40.72	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4465.648	45.99	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
7044.153	47.65	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
12140.062	49.25	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Plot C.2: Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
40.926	25.68	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
123.479	24.73	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
196.320	30.30	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
2000.080	43.74	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7944.390	47.37	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
15622.877	48.73	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Plot C.3: Antenna Vertical, 30MHz to 25GHz)

ANNEX A GENERAL INFORMATION

1.1 Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

1.3 Facilities and Accreditations

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10 2009, ANSI C63.4 2009 and CISPR Publication 22; the FCC registration number is 695796.

1.4 Maximum measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Measurements	**Frequency**	**Uncertainty**
Conducted emissions	9KHz~30MHz	2.44dB
Radiated emissions	30MHz~200MHz	2.93
	200MHz~1000MHz	2.95
	1GHz~18GHz	2.26
	18GHz~40GHz	1.94

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

1.5 Test Equipments Utilized

1.5.1 Conducted Test Equipments

Conducted Test Equipment						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal. Due**
1	Spectrum Analyzer	MY45101810	E4407B	Agilent	2015.03.28	2016.03.27
2	USB Wideband Power Sensor	MY54210011	U2021XA	Agilent	2015.03.28	2016.03.27
3	EXA Signal Analzyer	MY53470838	N9010A	Agilent	2015.08.26	2016.08.25
4	RF cable	CB01	RF01	Morlab	N/A	N/A
5	Attenuator	(n.a.)	10dB	Resnet	N/A	N/A
6	SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

1.5.2 Conducted Emission Test Equipments

Conducted Emission Test Equipments						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal. Due**
1	Receiver	595WX11007	PMM9010	Narda S.T.S/PMM	2015.05.07	2016.05.06
2	LISN	812744	NSLK 8127	Schwarzbeck	2015.06.18	2016.06.17
3	Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2015.05.07	2016.05.06
4	Coaxial cable(BNC)	CB01	EMC01	Morlab	N/A	N/A

1.5.3 Auxiliary Test Equipment

Auxiliary Test Equipment						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Computer	N.A	N.A	Asus	N.A	N.A

1.5.4 Radiated Test Equipments

Radiated Test Equipments						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal.Due Date**
1	System Simulator	GB45360846	8960-E5515C	Agilent	2015.05.07	2016.05.06
2	Receiver	MY54130016	N9038A	Agilent	2015.05.07	2016.05.06
3	Test Antenna - Bi-Log	N/A	VULB9163	Schwarzbeck	2015.05.14	2016.05.13
4	Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2015.03.31	2016.03.30
5	Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2015.02.26	2016.02.25
6	Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2015.02.26	2016.02.25
7	Coaxial cable(N male)	CB02	EMC02	Morlab	N/A	N/A
8	Coaxial cable(N male)	CB03	EMC03	Morlab	N/A	N/A
9	1-18GHz pre-Amplifier	MA02	TS-PR18	Rohde&Schwarz	2015.02.26	2016.02.25
10	18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde&Schwarz	2015.02.26	2016.02.25

1.5.5 Climate Chamber

Climate Chamber						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Climate Chamber	2004012	HL4003T	Yinhe	2015.02.26	2016.02.25

1.5.6 Vibration Table

Vibration Table						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Vibration Table	N/A	ACT2000-S015L	CMI-COM	2015.02.26	2016.02.25

1.5.7 Anechoic Chamber

Anechoic Chamber						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Anechoic Chamber	N/A	9m*6m*6m	Changning	2015.05.14	2016.05.13

***** END OF REPORT *****