REPORT No.：SZ17090118W01

TEST REPORT

APPLICANT	:	Shenzhen Cylan Technology Co.,Ltd
PRODUCT NAME	:	Clever Dog Smart Camera Plus
MODEL NAME	:	DOG-2W-V4
BRAND NAME	:	Clever Dog
FCC ID	:	2ADHE-DOG-2W-V4
STANDARD(S)	:	47 CFR Part 15 Subpart C
TEST DATE	:	2017-09-26 to 2017-11-01
ISSUE DATE	:	2017-12-05

Tested by: Su Hang

Su Hang (Test Engineer)

Approved by: Andy Yeh

Andy Yeh (Technical Director)

MORLAB

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DIRECTORY

Change History		
Issue	**Date**	**Reason for change**
1.0	2017-11-15	First edition
2.0	2017-12-05	Second edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Shenzhen Cylan Technology Co.,Ltd
Applicant Address:	Room 1506-1507, 15/F Office Building 4th of Chongwen Garden, Taoyuan St., Nanshan Dist., Shenzhen
Manufacturer:	Shenzhen Cylan Technology Co.,Ltd
Manufacturer Address:	Room 1506-1507, 15/F Office Building 4th of Chongwen Garden, Taoyuan St., Nanshan Dist., Shenzhen

1.2. Equipment Under Test (EUT) Description

Product Name:	Clever Dog Smart Camera Plus
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	T807-D0-A
Software Version:	2.0.0.9
Modulation Type:	DSSS, OFDM
Operating 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
Antenna Type:	FPC Antenna
Antenna Gain:	2dBi

Note 1: The EUT is 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).

Note 2: The EUT connected to the serial port of the computer with a serial communication cable, we use the dedicated software to control the EUT continuous transmission.

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

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 (10-1-15 Edition)	Radio Frequency Devices

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

No.	Section	Description	Test Date	Test Engineer	Result
1	15.203	Antenna Requirement	N/A	N/A	PASS
2	15.247(b)	Peak Output Power	Oct 30, 2017	Su Hang	PASS
3	15.247(a)	Bandwidth	Oct 30, 2017	Su Hang	PASS
4	15.247(d)	Conducted Spurious Emission and Band Edge	Nov 01, 2017	Su Hang	PASS
5	15.247(d)	Restricted Frequency Bands	Oct 30, 2017	Wu Zhongwen	PASS
6	15.207	Conducted Emission	Sep 26, 2017	Wu Zhongwen	PASS
7	15.209, 15.247(d)	Radiated Emission	Oct 30, 2017	Wu Zhongwen	PASS
8	15.247(e)	Power spectral density (PSD)	Oct 30, 2017	Su Hang	PASS

Note: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013 and KDB558074 D01 v04 (04/05/2017).

1.4. Environmental 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 USB Wideband Power Sensor and calibration.

A. Test Setup:

The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; 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(1.5).

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	15.00	0.03162	30	1	PASS
6	2437	12.90	0.01950			PASS
11	2462	12.55	0.01799			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	12.08	0.01614	30	1	PASS
6	2437	10.07	0.01016			PASS
11	2462	9.26	0.00843			PASS

2.2.3.2 802.11g Test mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	16.70	0.04677	30	1	PASS
6	2437	17.07	0.05093			PASS
11	2462	16.28	0.04246			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	9.74	0.00942	30	1	PASS
6	2437	9.63	0.00918			PASS
11	2462	9.51	0.00893			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	16.72	0.04699	30	1	PASS
6	2437	16.12	0.04093			PASS
11	2462	17.14	0.05176			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	9.77	0.00948	30	1	PASS
6	2437	9.80	0.00955			PASS
11	2462	10.14	0.01033			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	15.84	0.03837	30	1	PASS
6	2437	15.56	0.03597			PASS
9	2452	16.04	0.04018			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
3	2422	8.03	0.00635	30	1	PASS
6	2437	9.58	0.00908			PASS
9	2452	9.76	0.00946			PASS

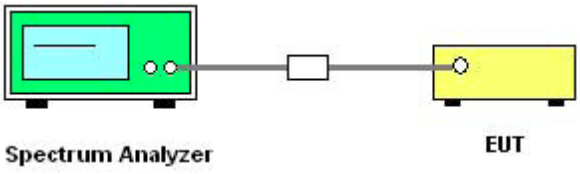
2.3. Bandwidth

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(1.5).

2.3.3. Test Result

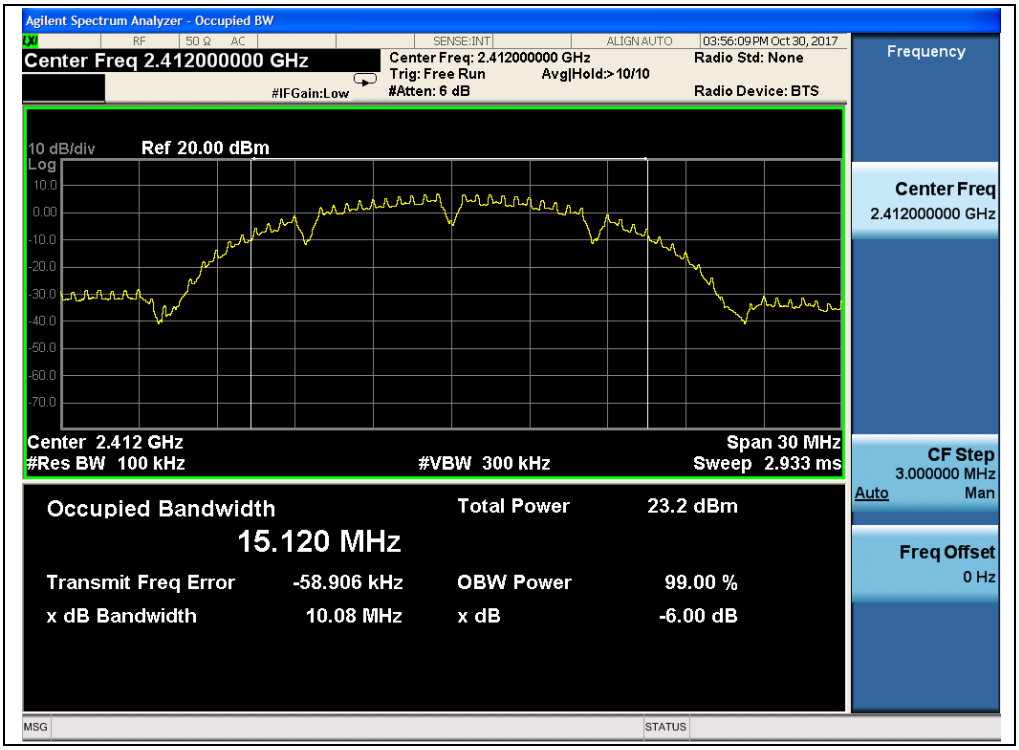
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

2.3.3.1 802.11b Test mode

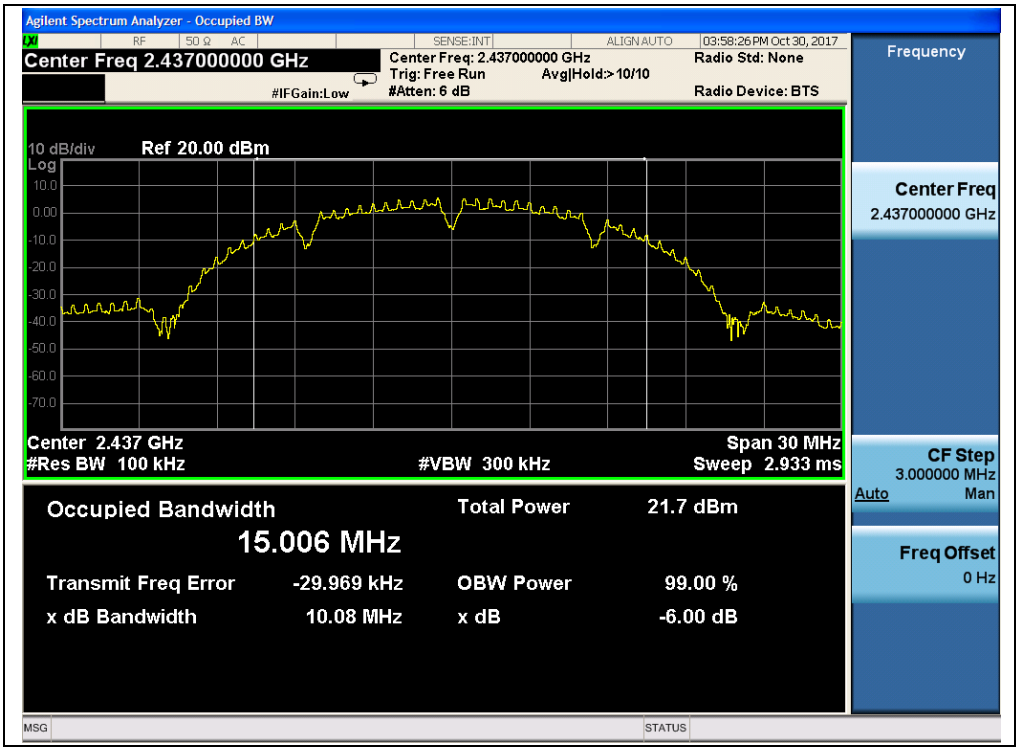
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	10.08	≥500	PASS
6	2437	10.08	≥500	PASS
11	2462	9.59	≥500	PASS

B. Test Plots



(Channel 1: 2412MHz @ 802.11b)



(Channel 6: 2437 MHz @ 802.11b)

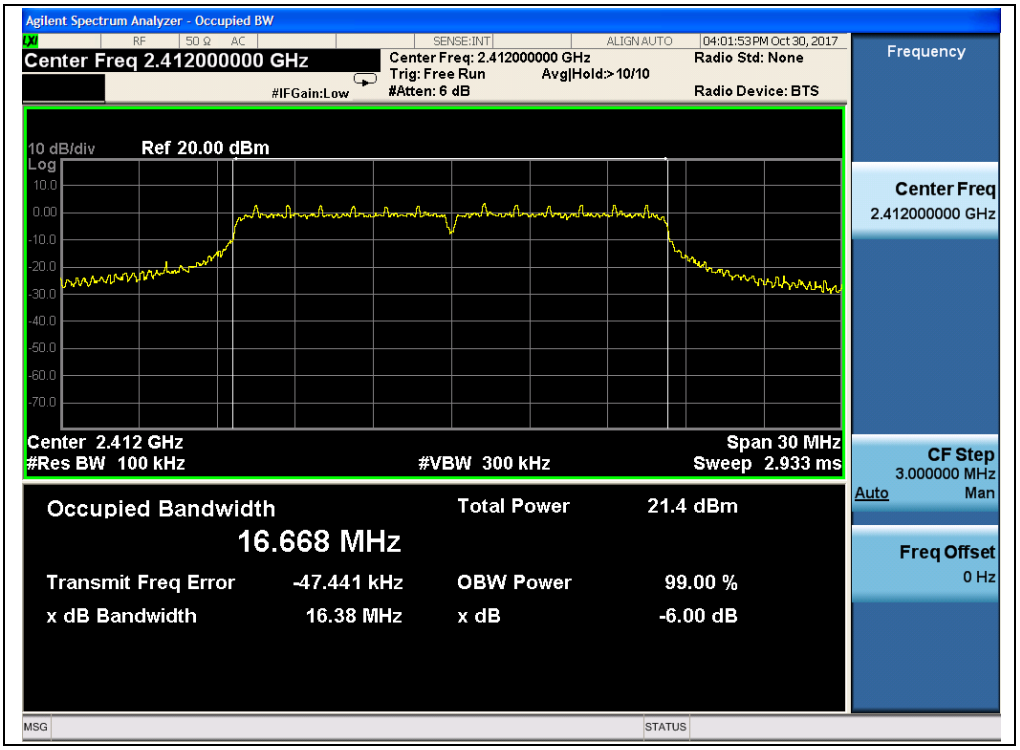
(Channel 11: 2462MHz @ 802.11b)

2.3.3.2 802.11g Test mode

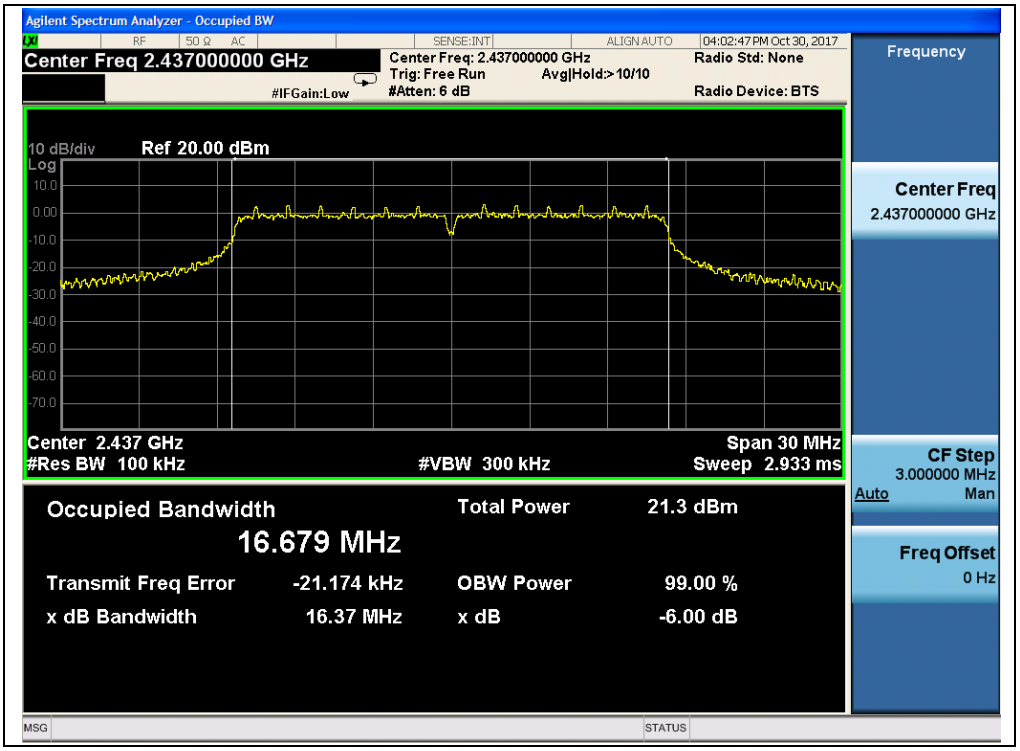
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	16.38	≥500	PASS
6	2437	16.37	≥500	PASS
11	2462	16.37	≥500	PASS

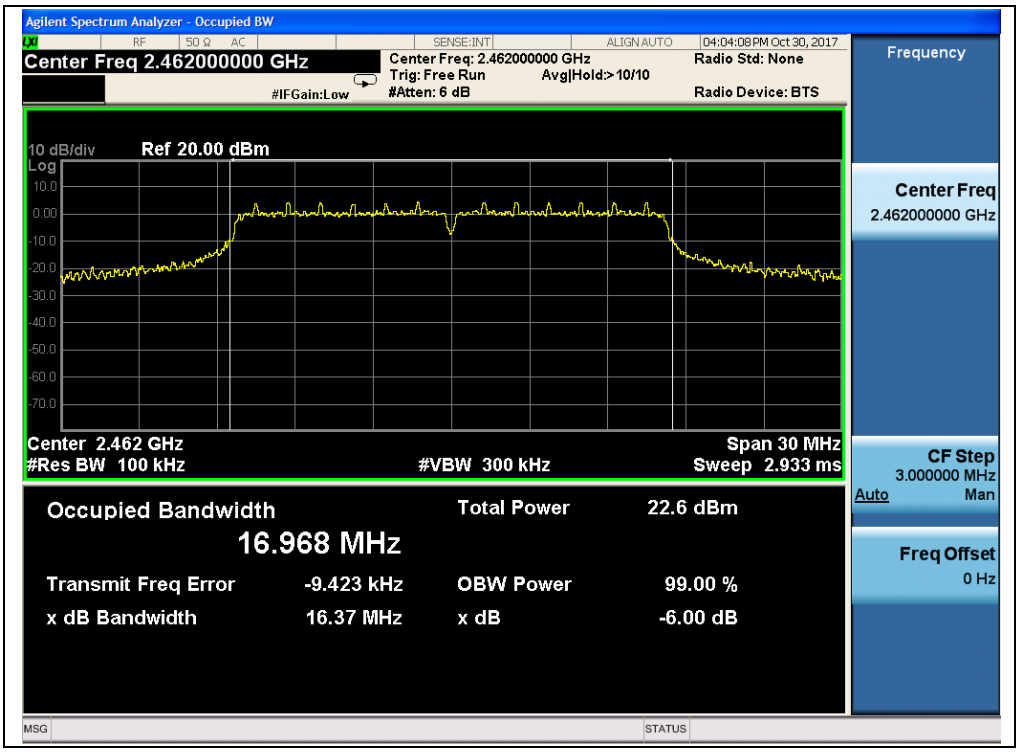
B. Test Plots:



(Channel 1: 2412MHz @ 802.11g)



(Channel 6: 2437MHz @ 802.11g)



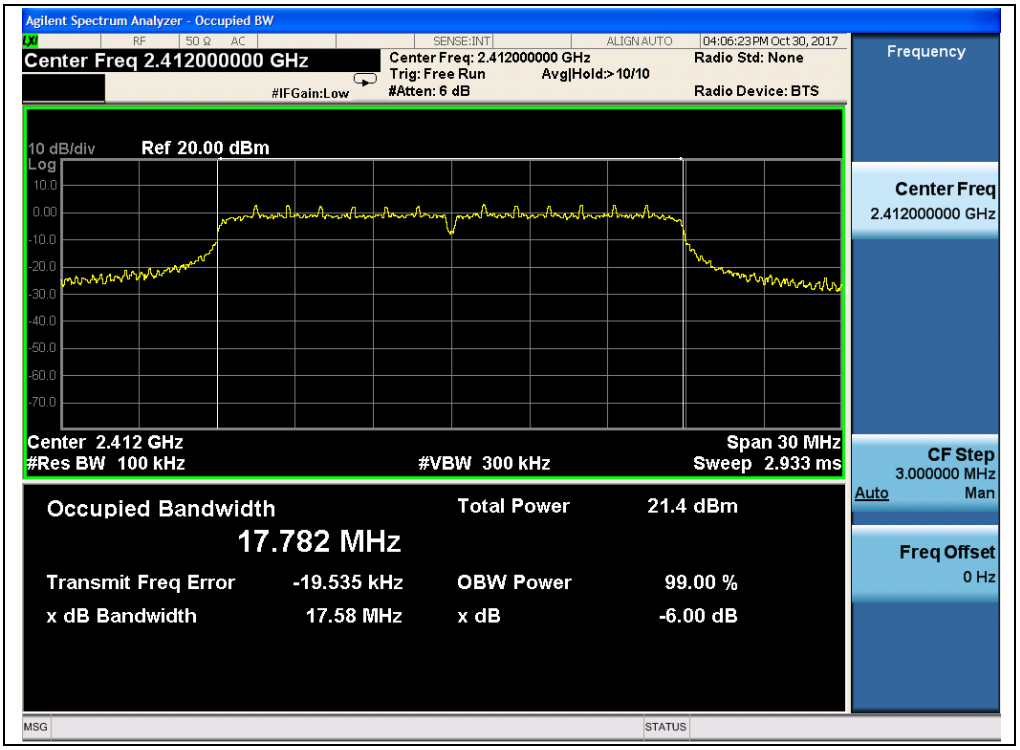
(Channel 11: 2462MHz @ 802.11g)

2.3.3.3 802.11n-20 Test mode

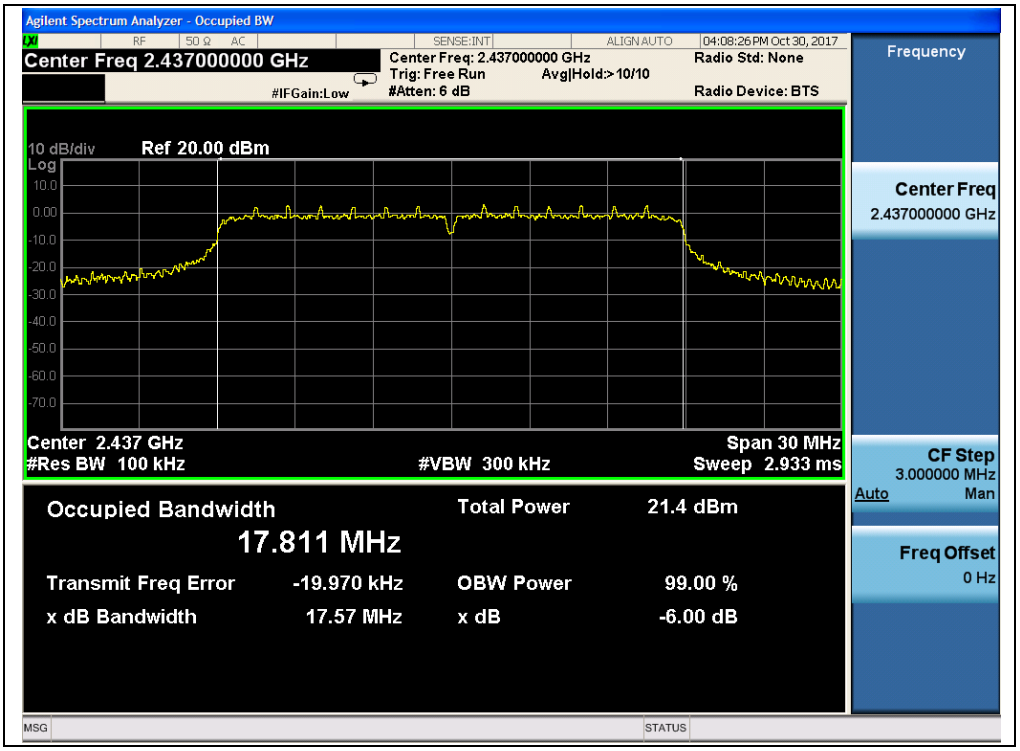
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	17.58	≥500	PASS
6	2437	17.57	≥500	PASS
11	2462	17.58	≥500	PASS

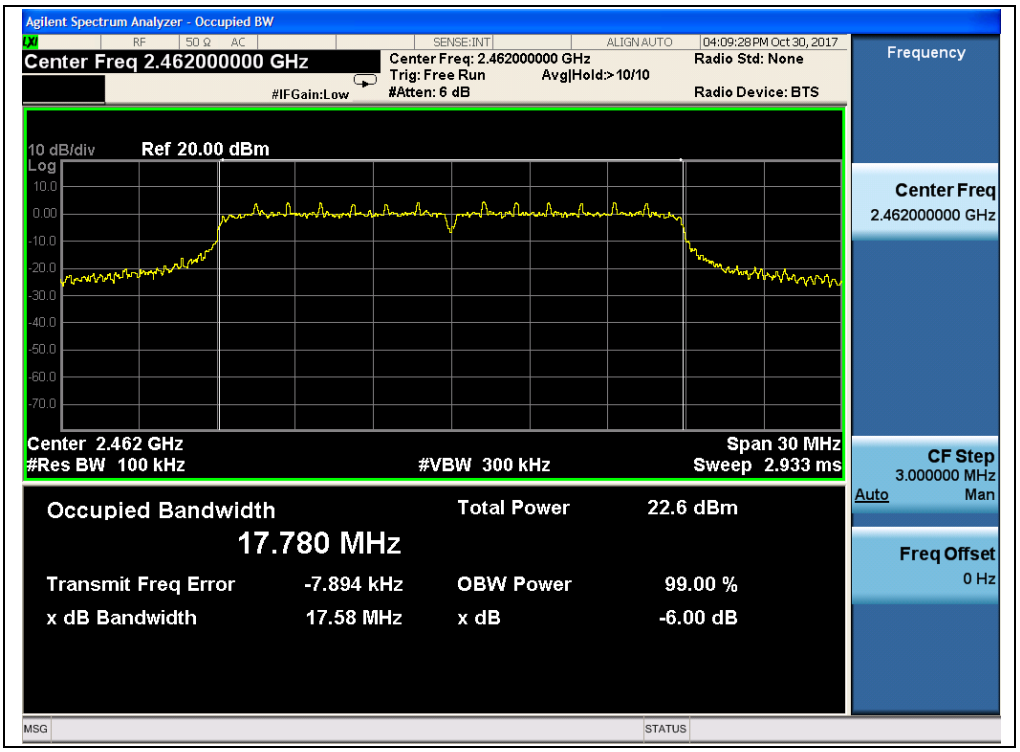
B. Test Plots:



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



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



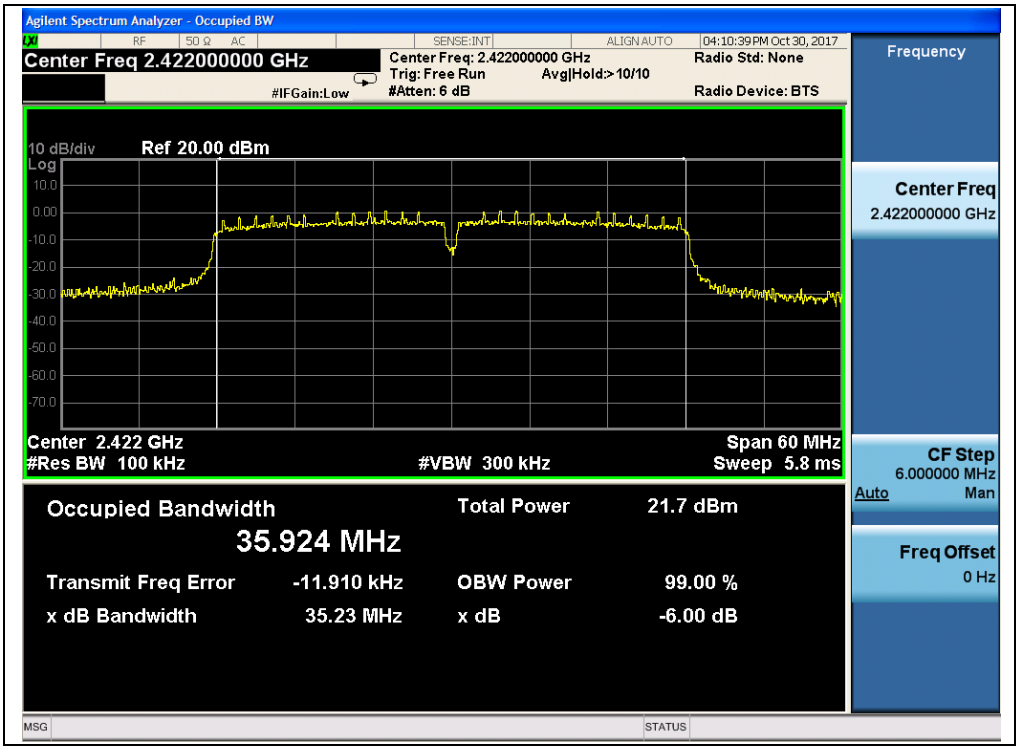
(Channel 11: 2462MHz @ 802.11n-20)

2.3.3.4 802.11n-40 Test mode

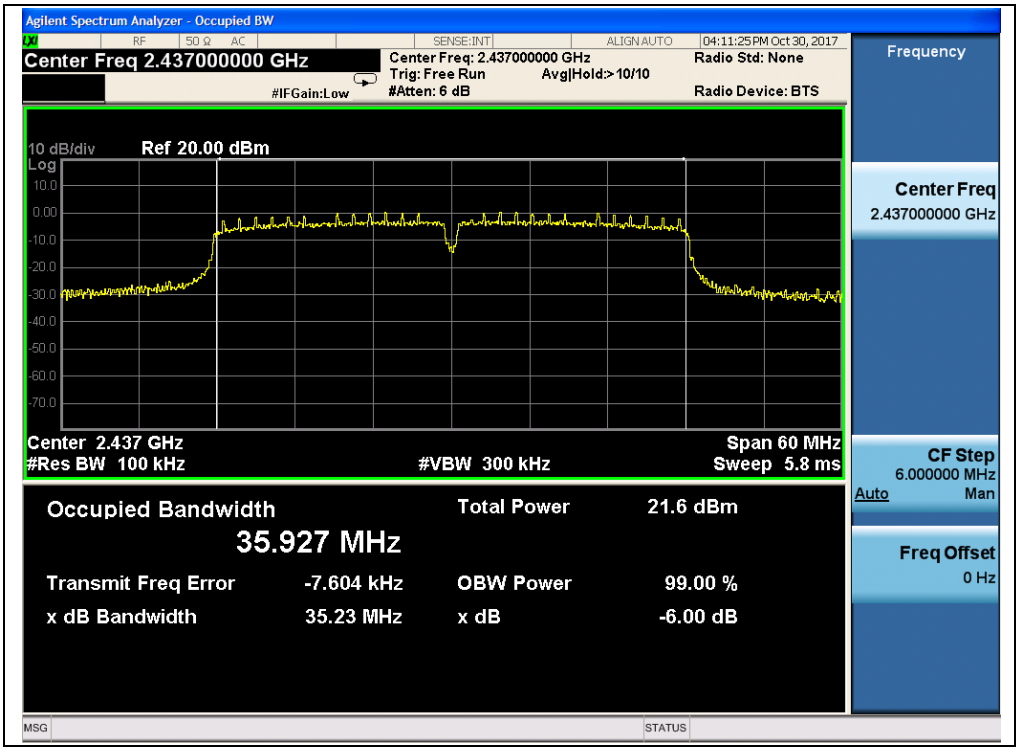
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
3	2422	35.23	≥500	PASS
6	2437	35.23	≥500	PASS
9	2452	35.20	≥500	PASS

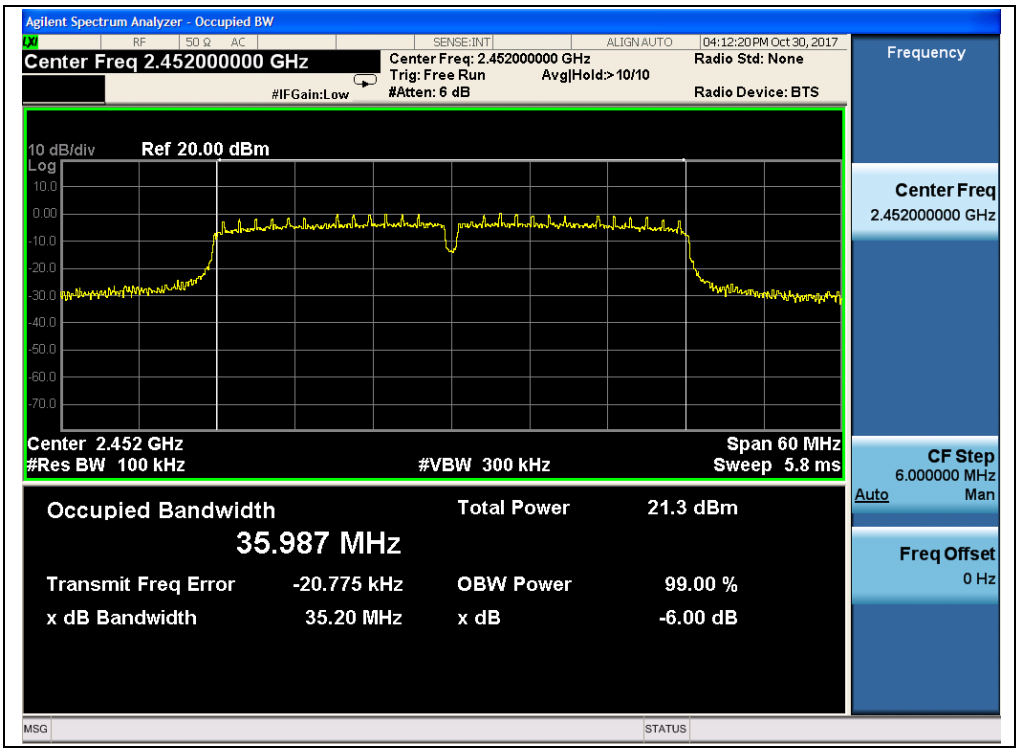
B. Test Plots:



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



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



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

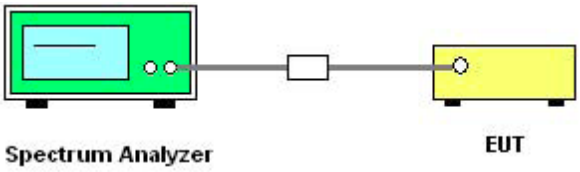
2.4. Conducted Spurious Emissions and Band Edge

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(1.5).

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.

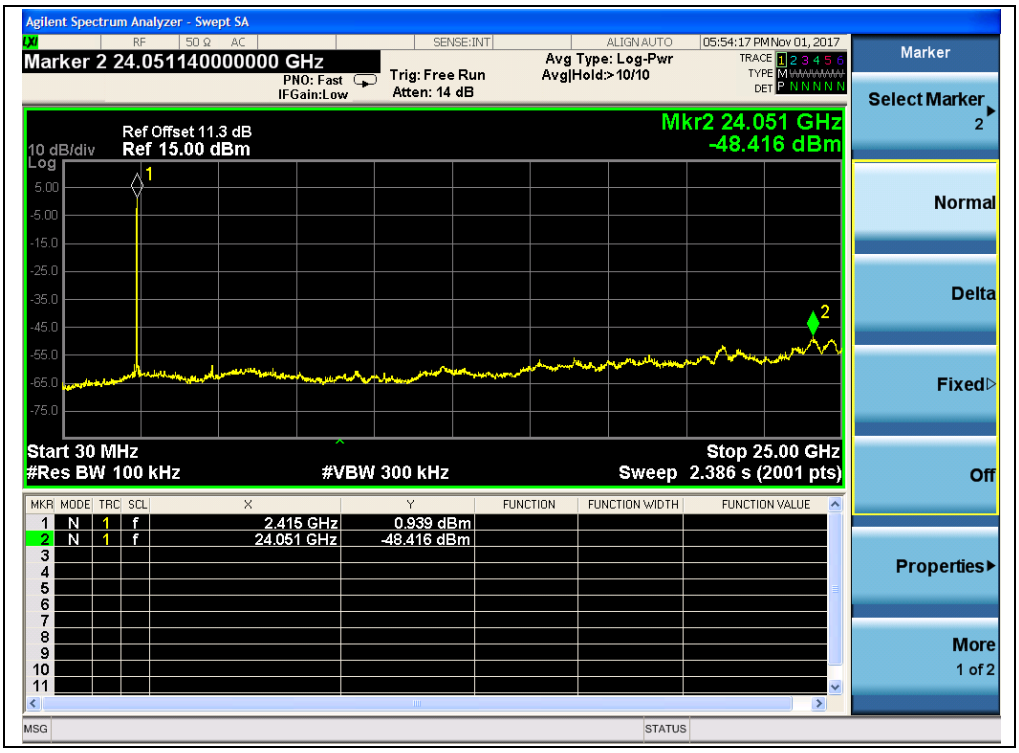
2.4.3.1 802.11b Test mode

A. Test Verdict:

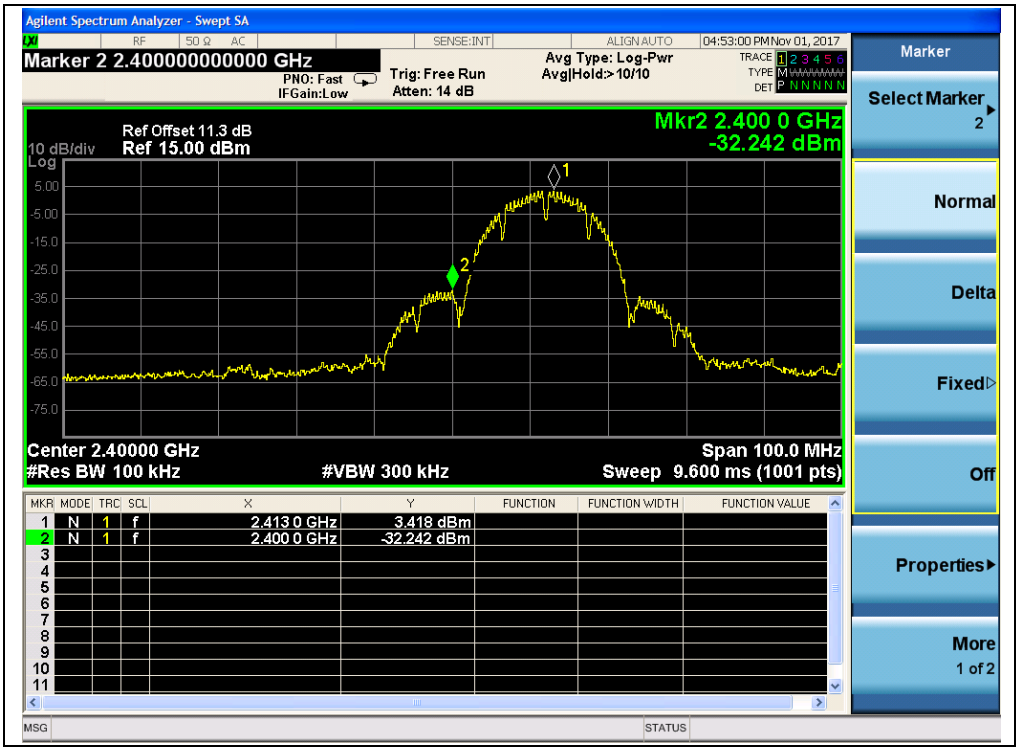
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-48.42	0.94	-19.06	PASS
6	2437	-48.78	-1.00	-21.00	PASS
11	2462	-48.61	-0.82	-20.82	PASS

B. Test Plots:

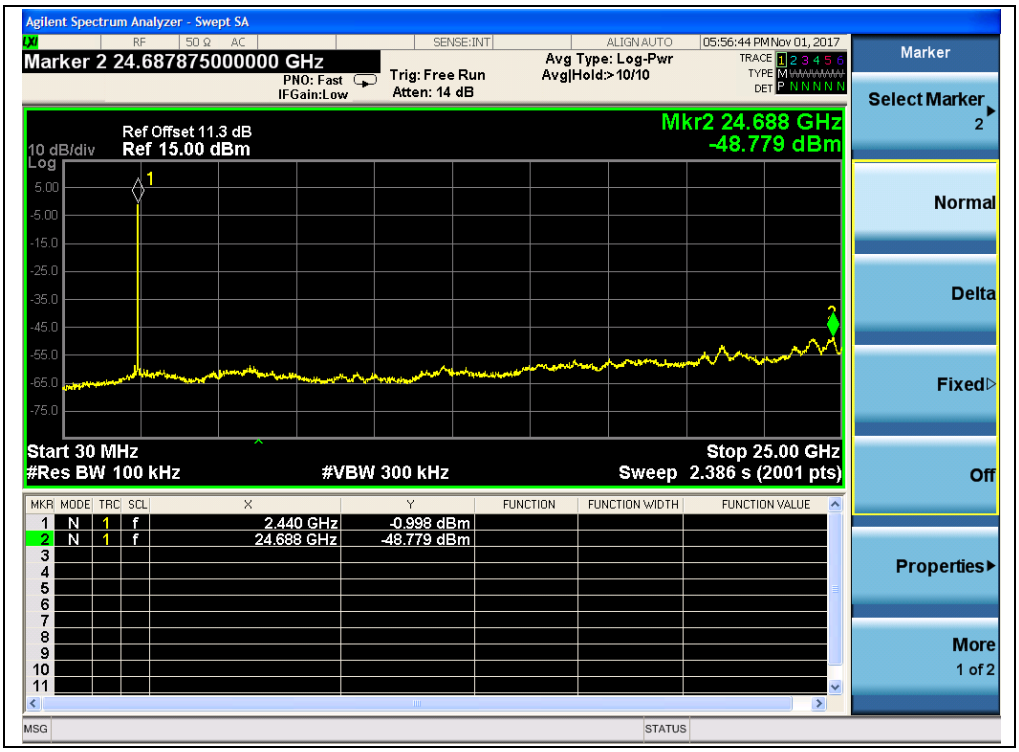
Note: the power of the Module transmitting frequency should be ignored.



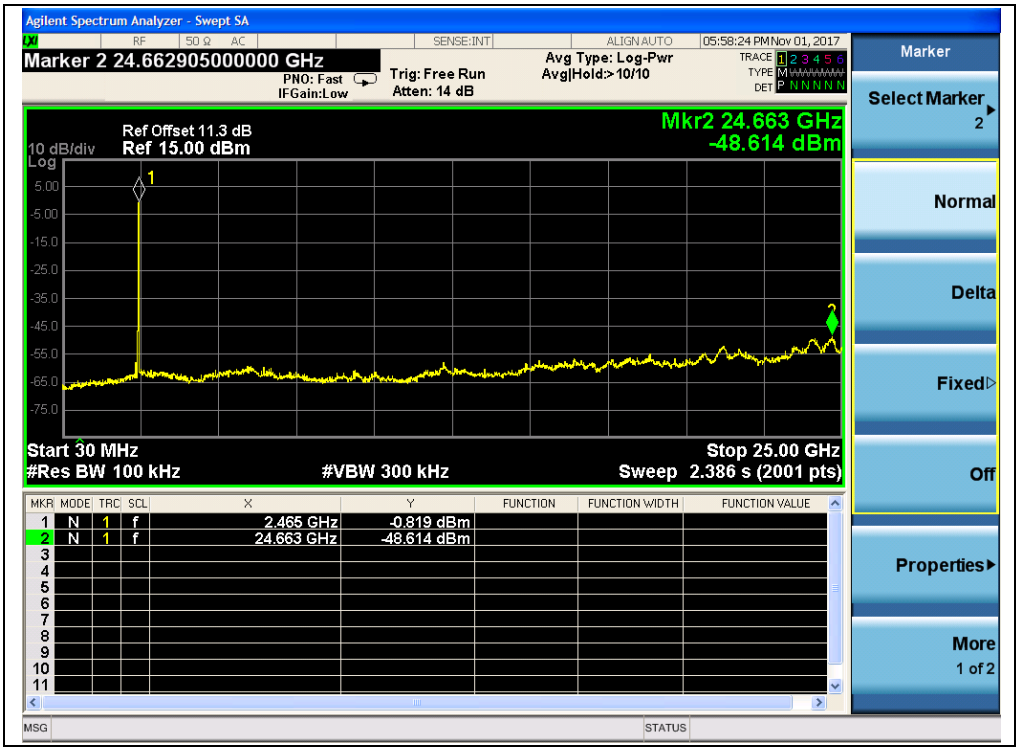
(Channel = 1, 30MHz to 25GHz)



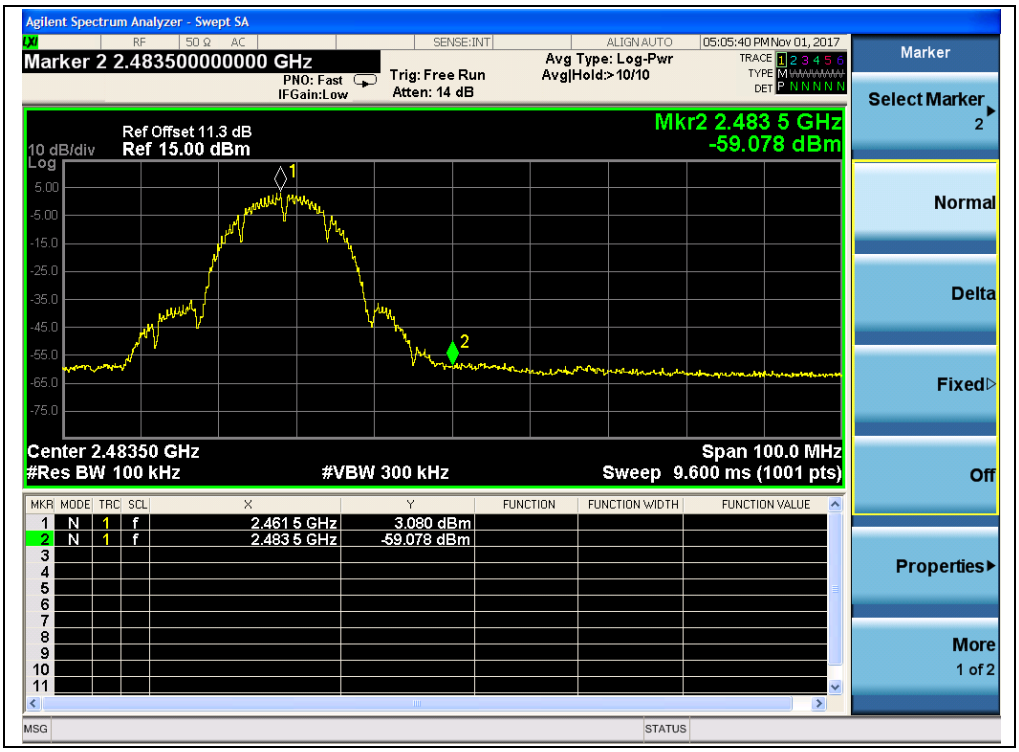
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

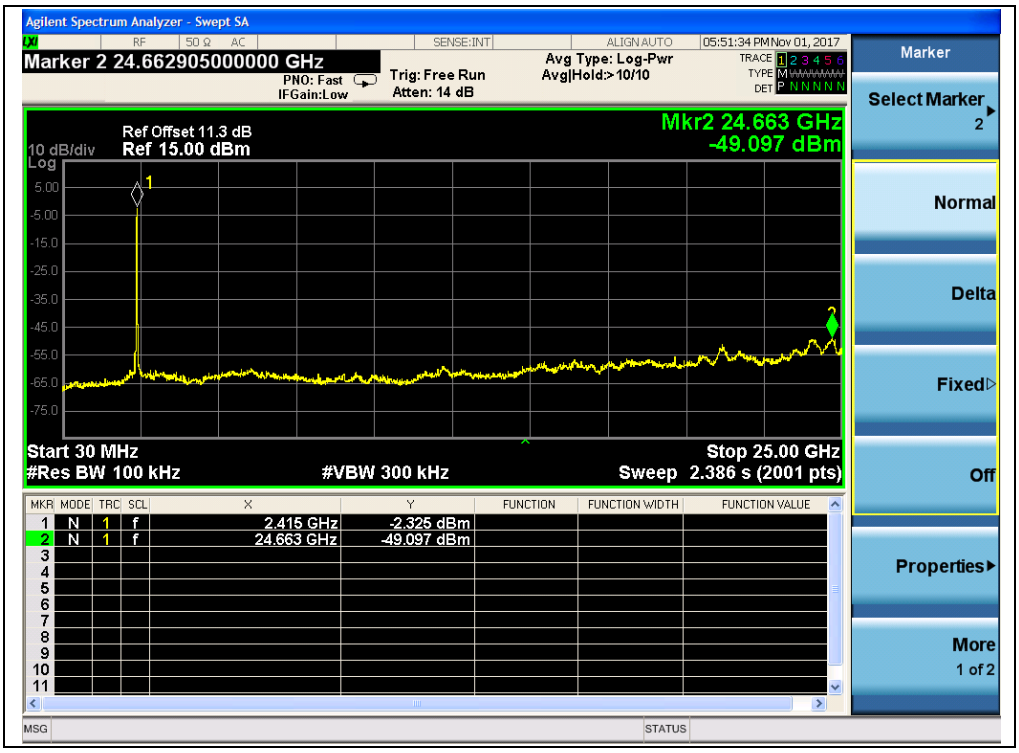
2.4.3.2 802.11g Test mode

A. Test Verdict:

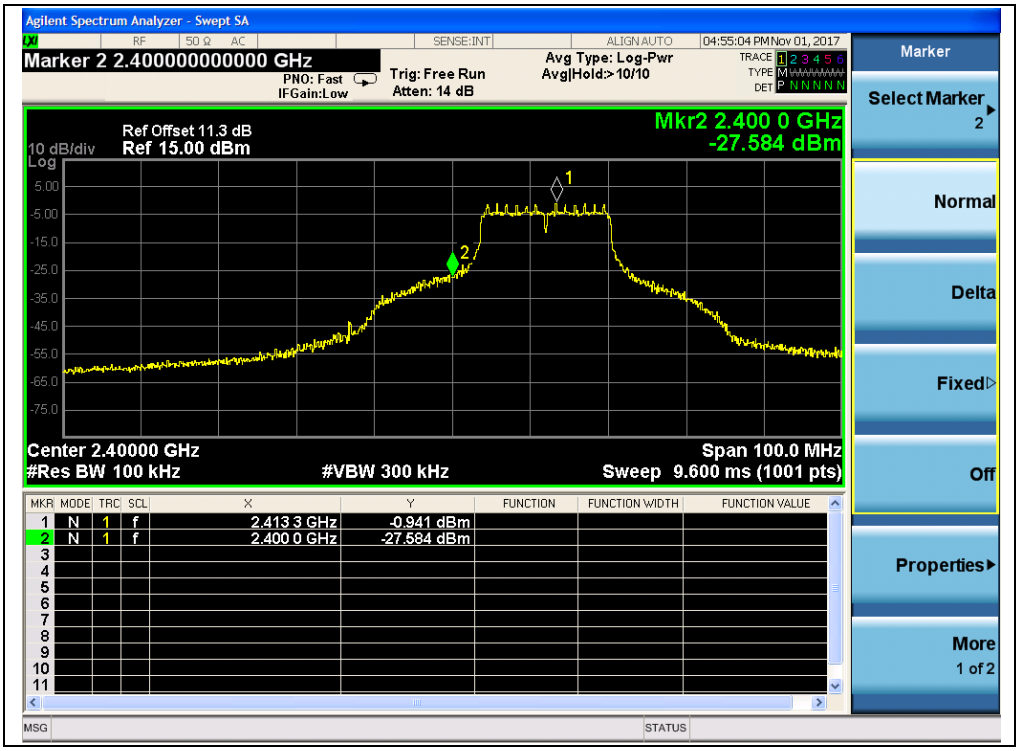
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-49.10	-2.33	-22.33	PASS
6	2437	-48.35	-4.26	-24.26	PASS
11	2462	-47.59	0.23	-19.77	PASS

B. Test Plots:

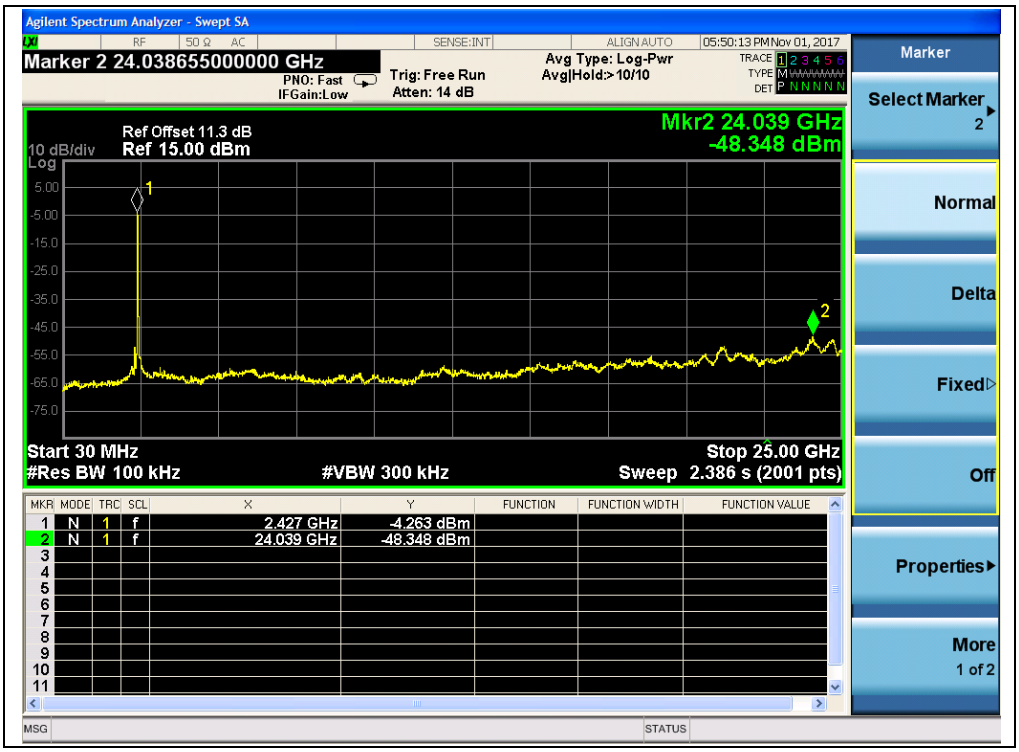
Note: the power of the Module transmitting frequency should be ignored.



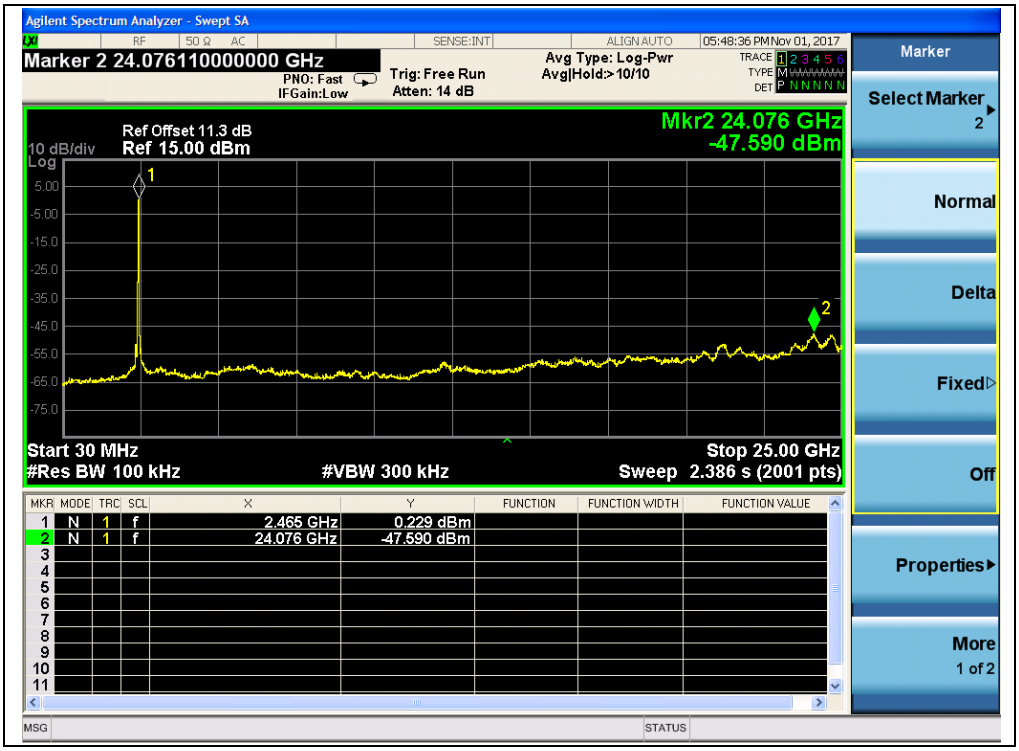
(Channel = 1, 30MHz to 25GHz)



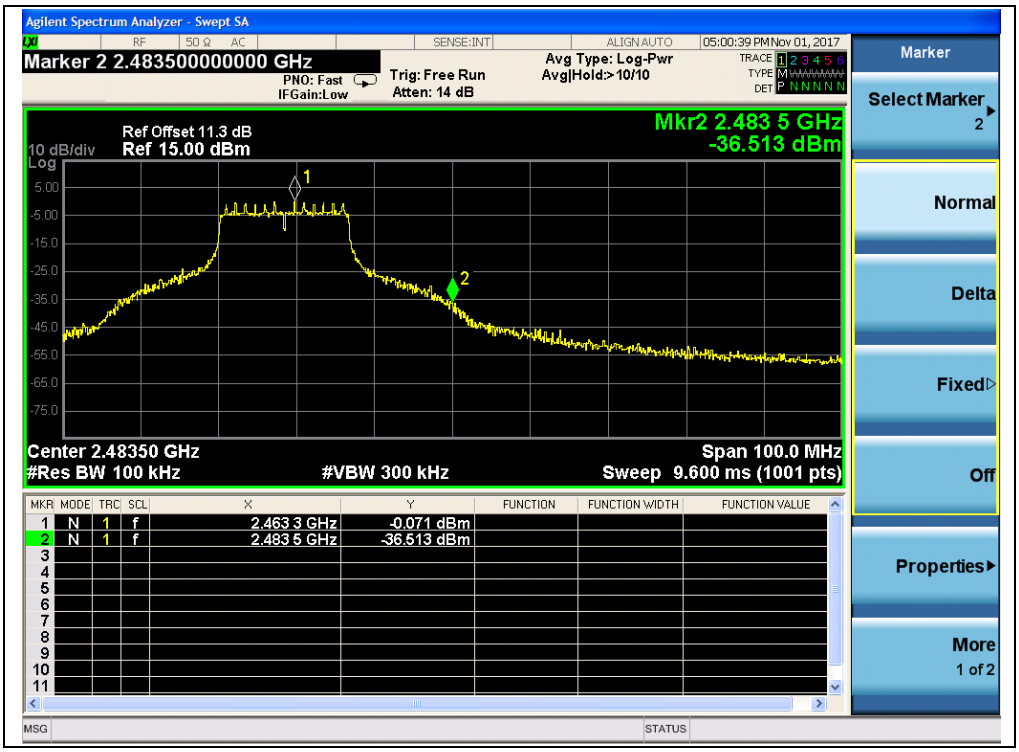
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

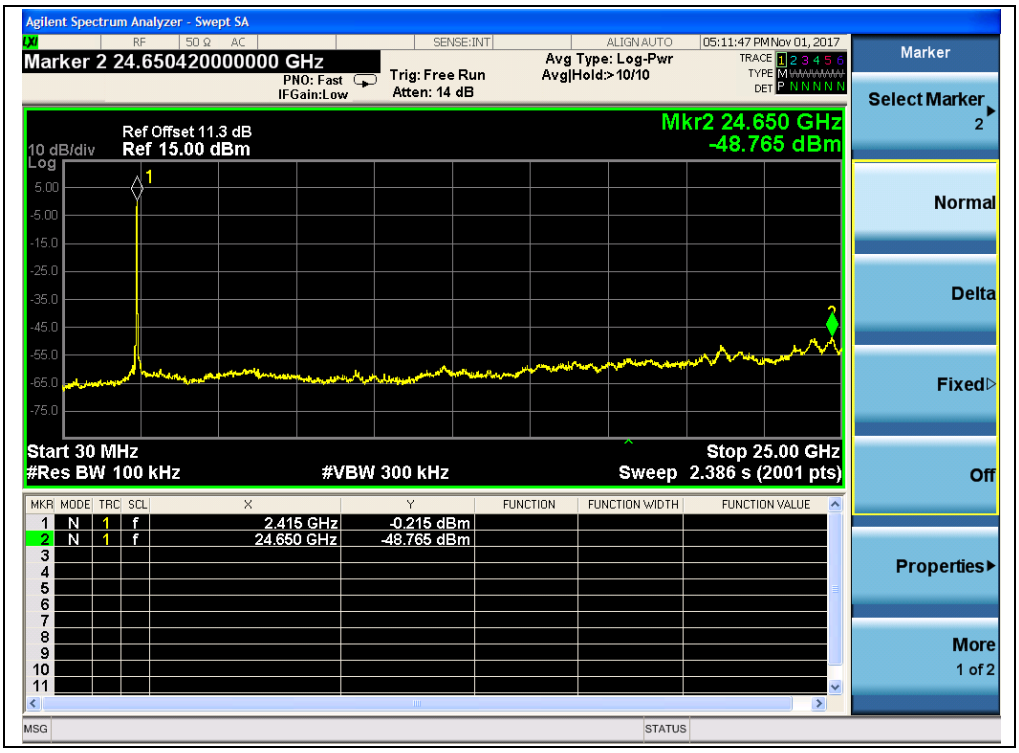
2.4.3.3 802.11n -20MHz Test mode

A. Test Verdict:

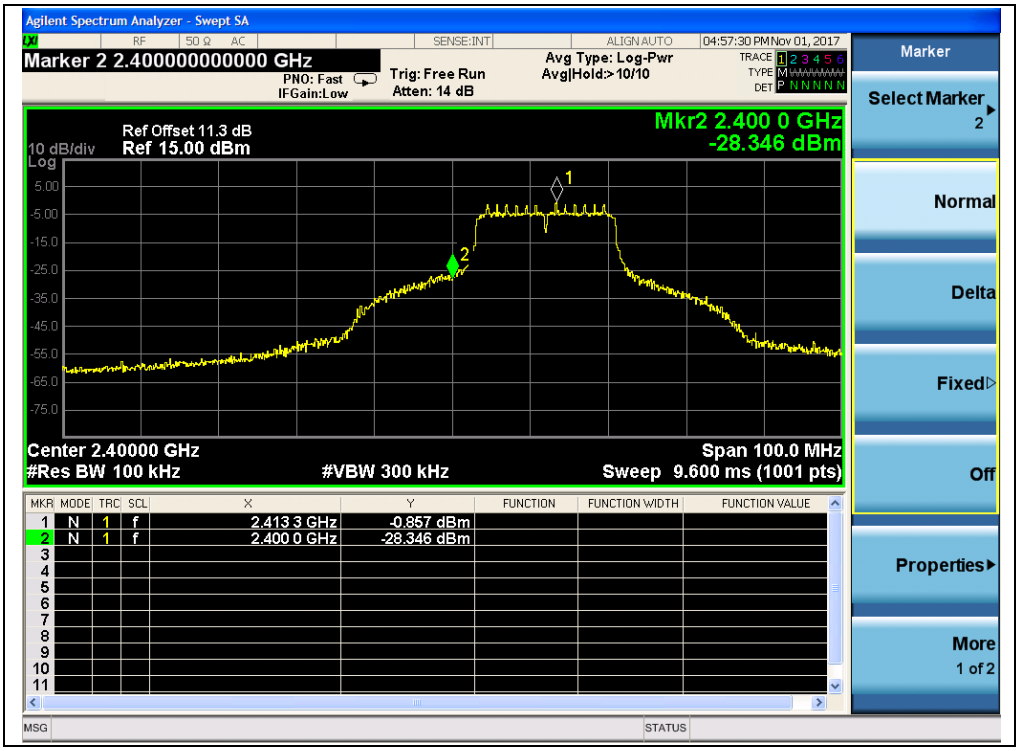
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-48.77	-0.22	-20.22	PASS
6	2437	-48.76	-1.14	-21.14	PASS
11	2462	-48.16	-0.94	-20.94	PASS

B. Test Plots:

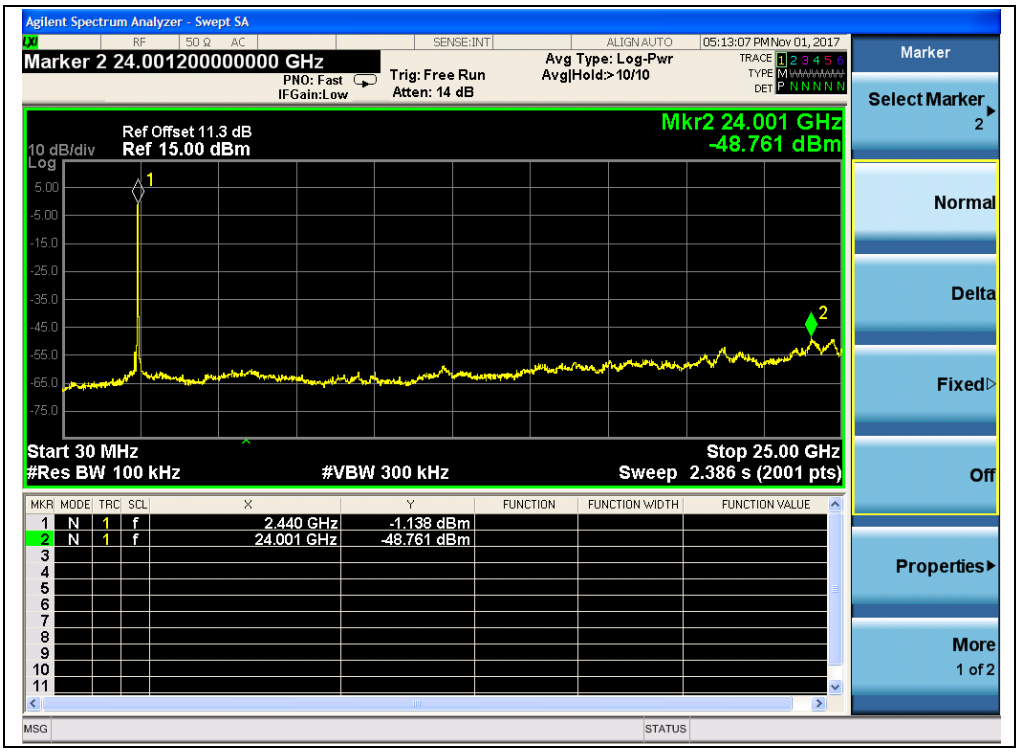
Note: the power of the Module transmitting frequency should be ignored.



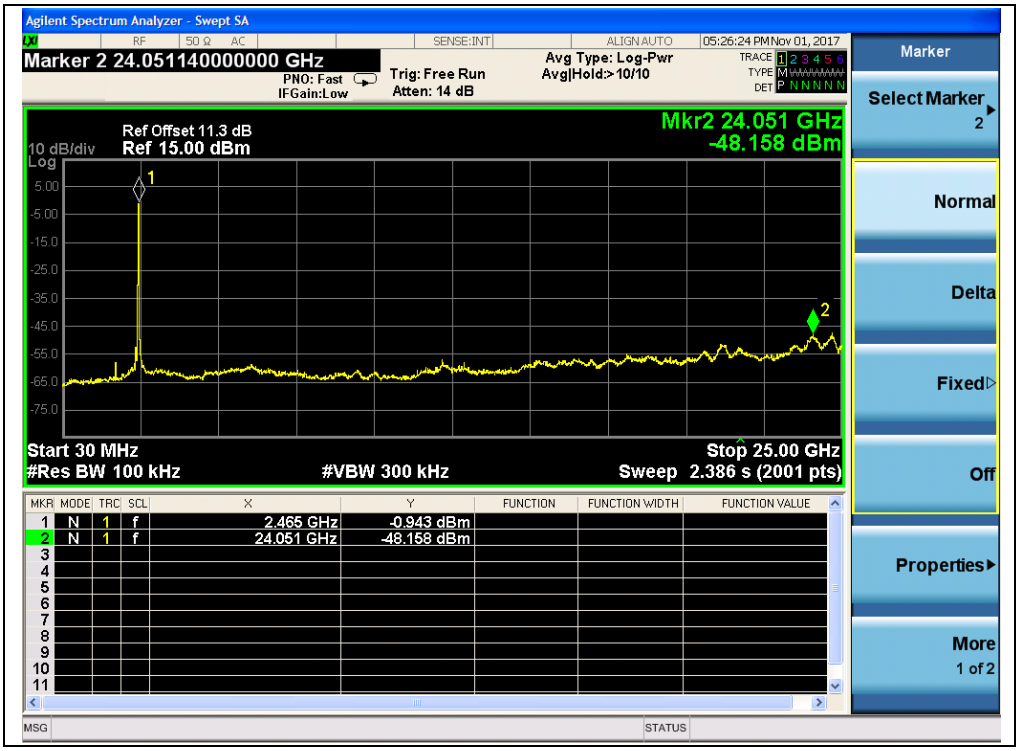
(Channel = 1, 30MHz to 25GHz)



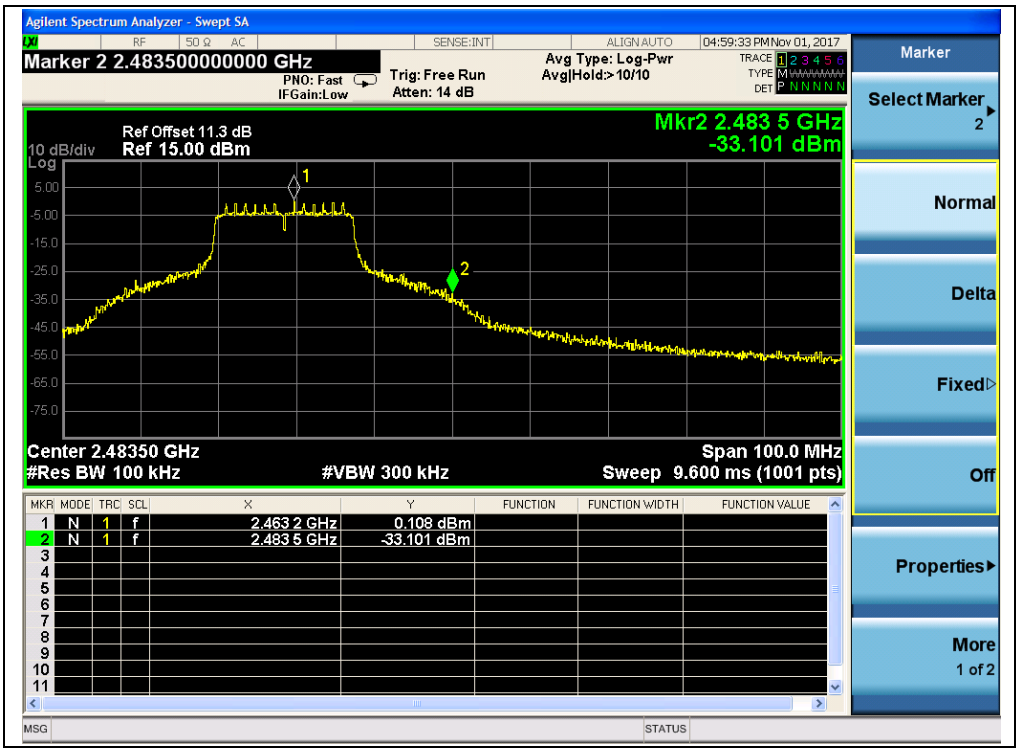
(Band Edge @ Channel = 1)



(Channel = 6, 30MHz to 25GHz)



(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)

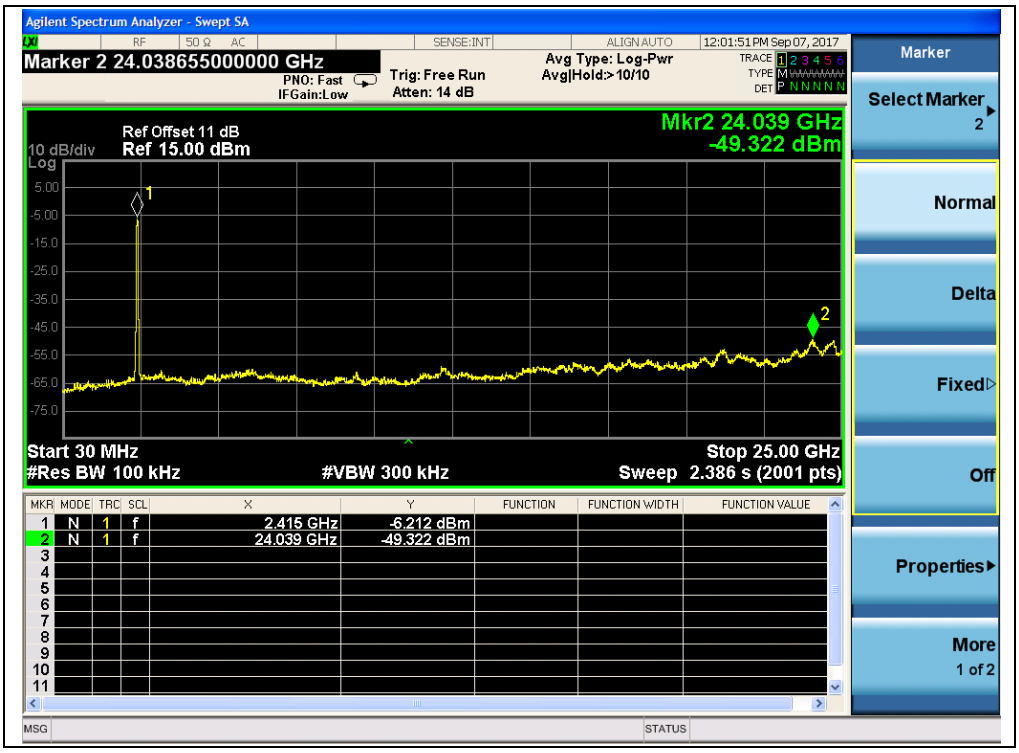
2.4.3.4 802.11n -40MHz Test mode

A. Test Verdict:

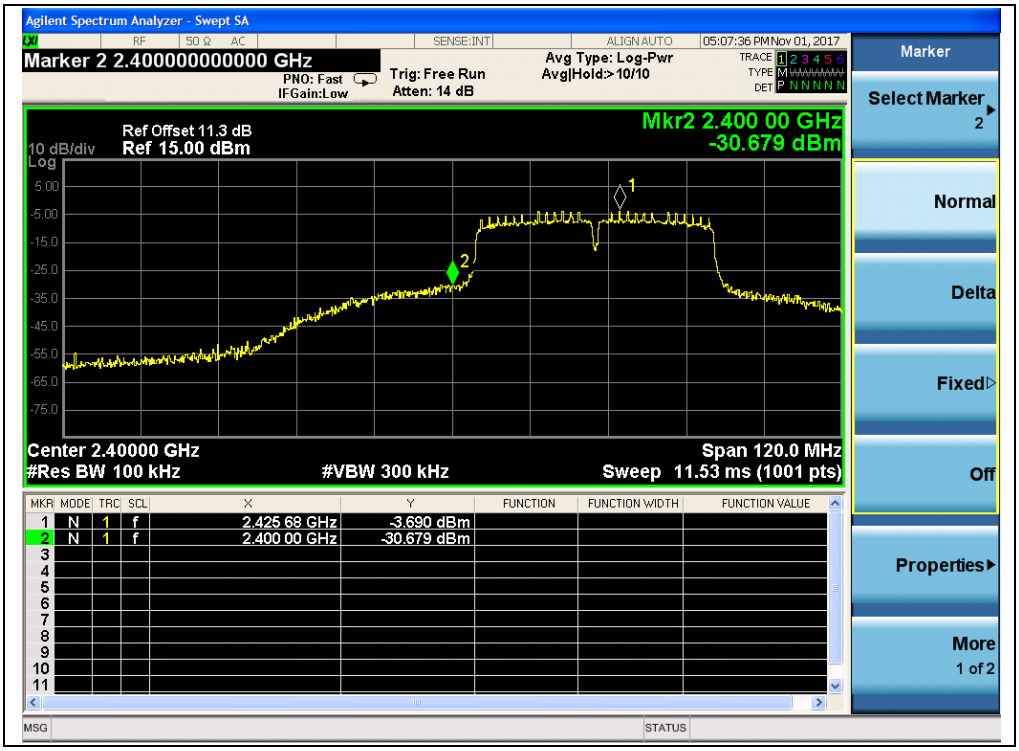
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
3	2422	-49.32	-6.21	-26.21	PASS
6	2437	-49.20	-7.53	-27.53	PASS
9	2452	-49.52	-5.87	-25.87	PASS

B. Test Plots:

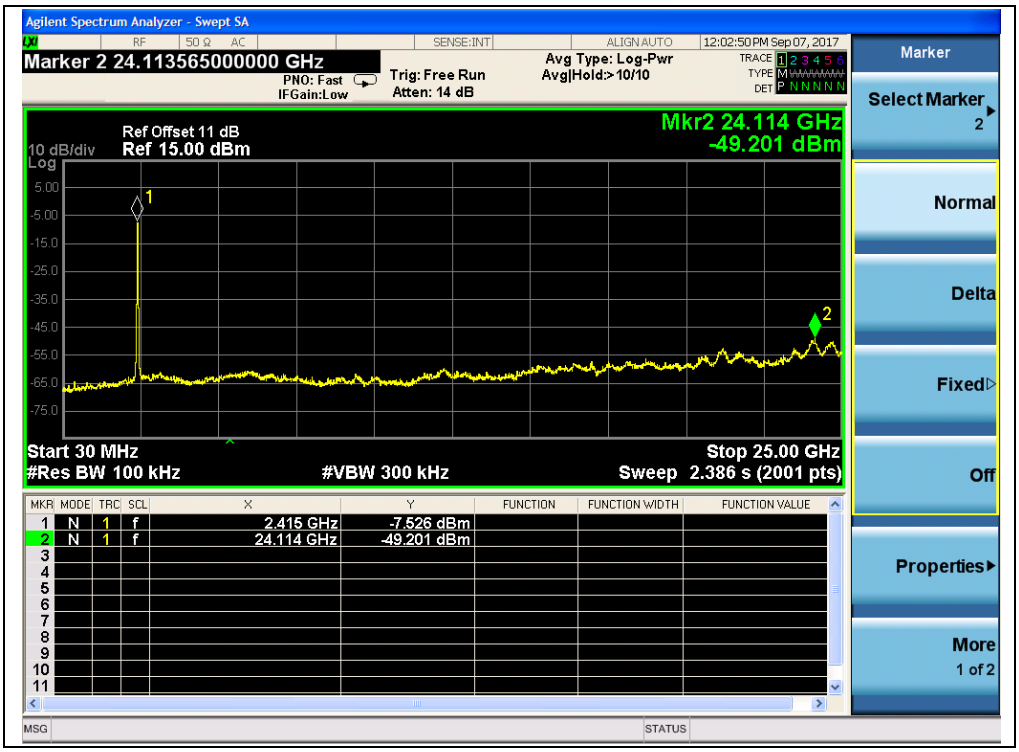
Note: the power of the Module transmitting frequency should be ignored.



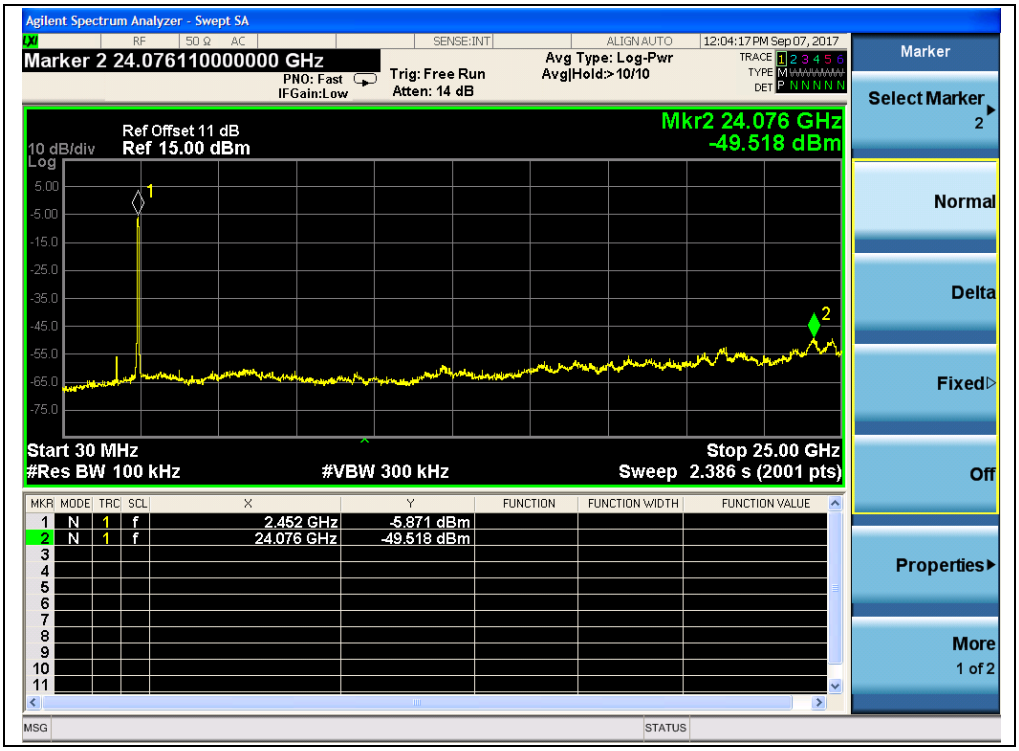
(Channel = 3, 30MHz to 25GHz)



(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 procedure

The measured power spectral density was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for PSD test:
a) Set analyzer center frequency to channel center frequency.
b) Set the span to 30MHz
c) Set the RBW to 3 kHz
d) Set the VBW to 10KHz
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.

B. 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.

C. Equipments List:

Please reference ANNEX A(1.5).

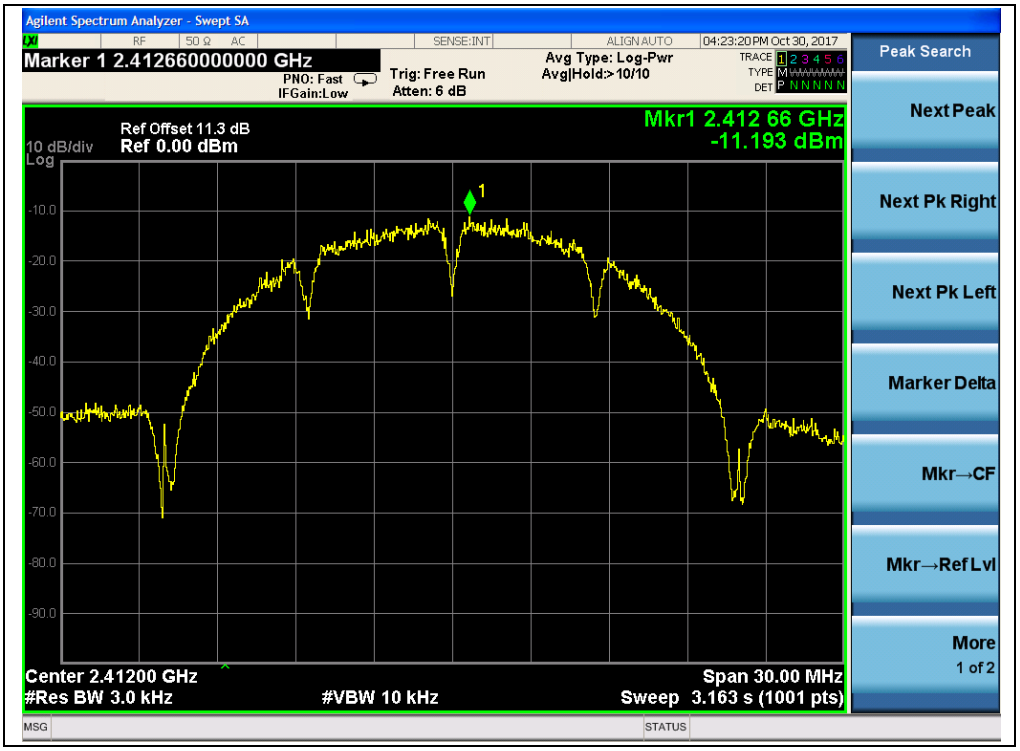
2.5.3. Test Result

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	-11.19	8	PASS
6	2437	-13.27	8	PASS
11	2462	-12.28	8	PASS
Measurement uncertainty: ±1.3dB				

B. Test Plots:



(Channel = 1 @ 802.11b)

(Channel = 6 @ 802.11b)

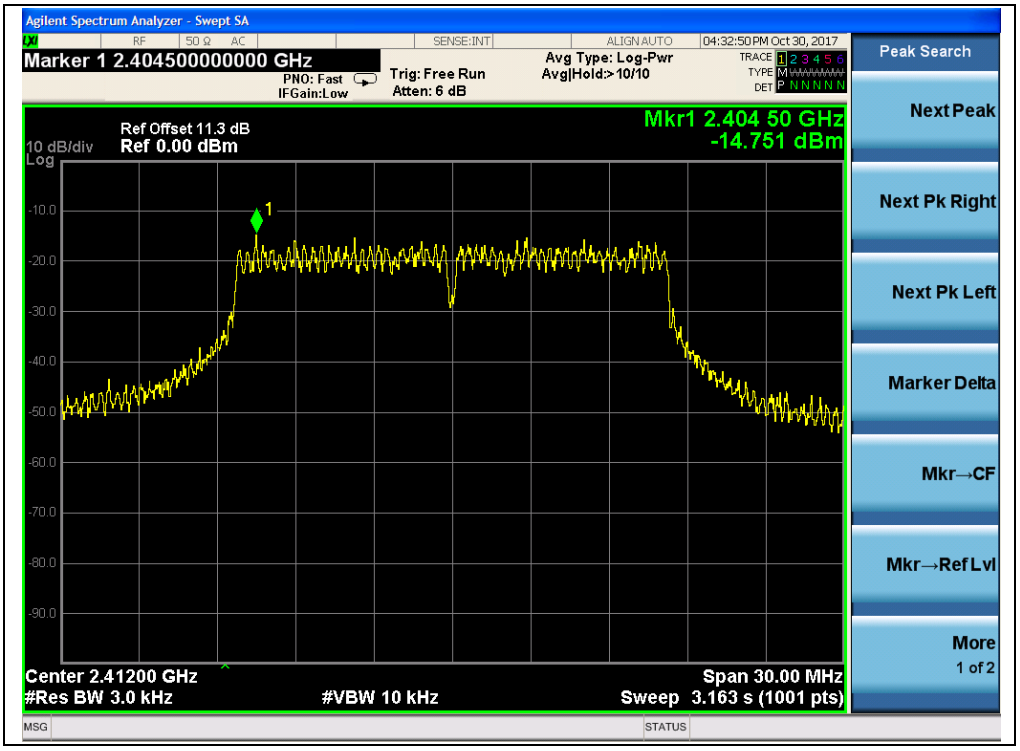
(Channel = 11 @ 802.11b)

2.5.3.2 802.11g Test mode

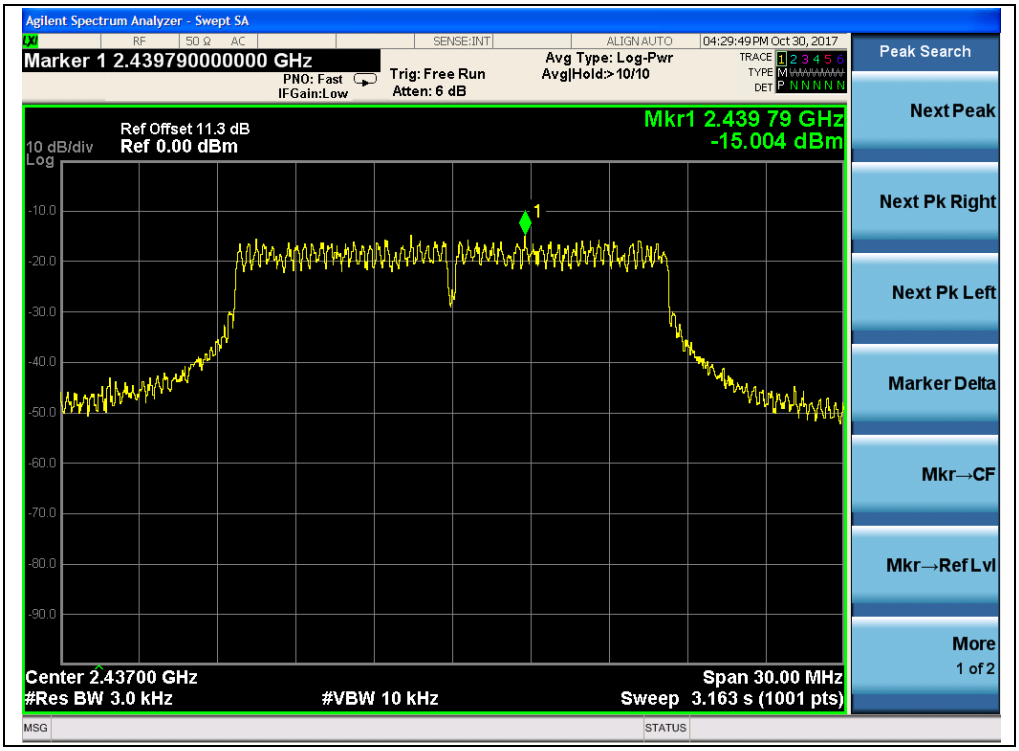
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-14.75	8	PASS
6	2437	-15.00	8	PASS
11	2462	-14.01	8	PASS
Measurement uncertainty: ±1.3dB				

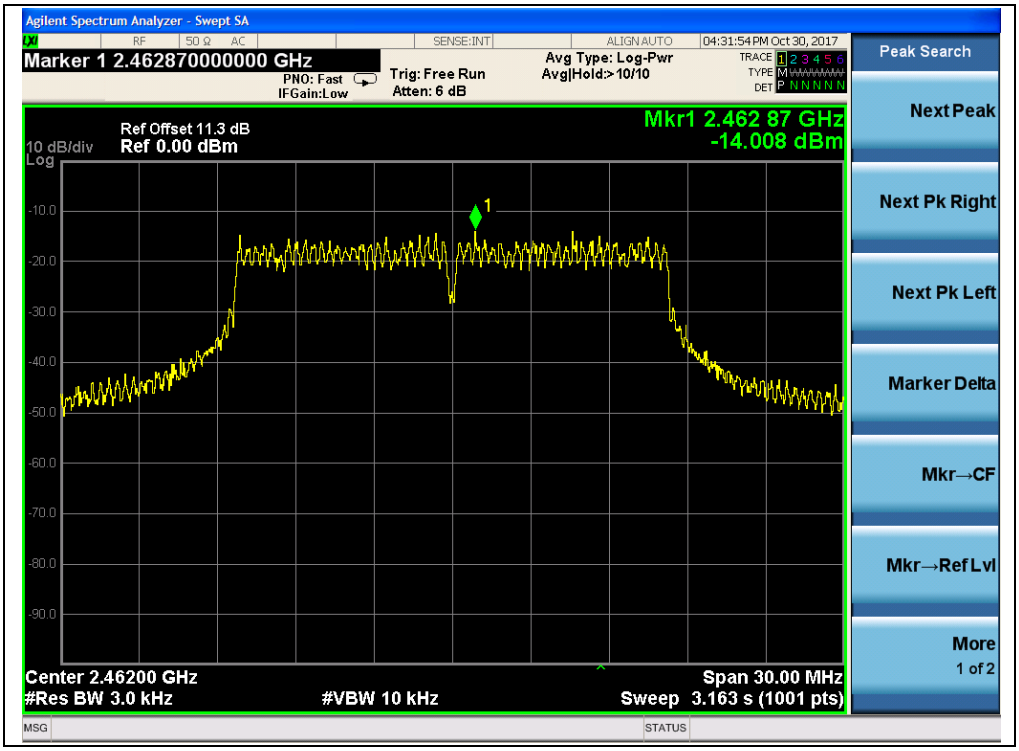
B. Test Plots:



(Channel = 1 @ 802.11g)



(Channel = 6 @ 802.11g)



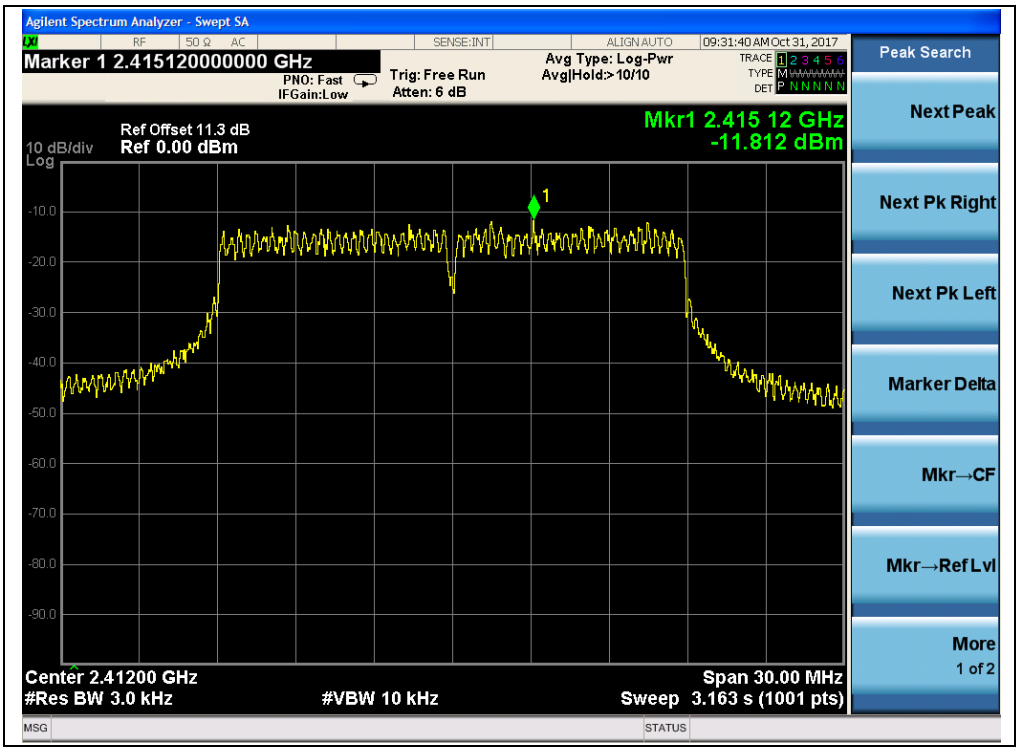
(Channel = 11 @ 802.11g)

2.5.3.3 802.11n-20MHz Test mode

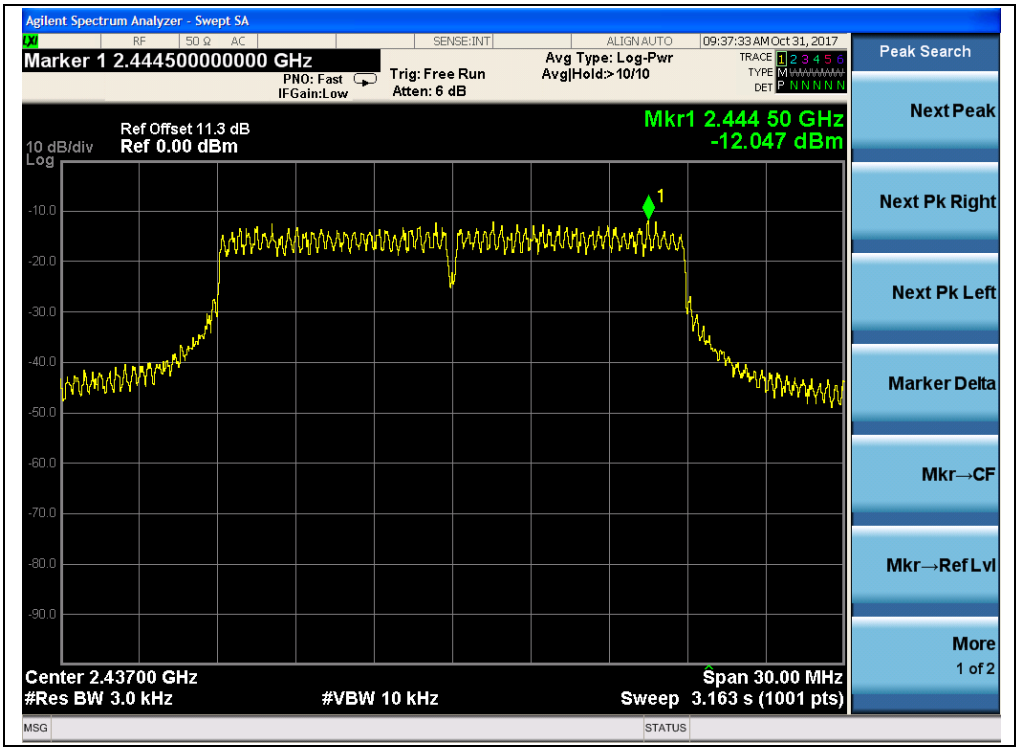
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-11.81	8	PASS
6	2437	-12.05	8	PASS
11	2462	-9.02	8	PASS
Measurement uncertainty: ±1.3dB				

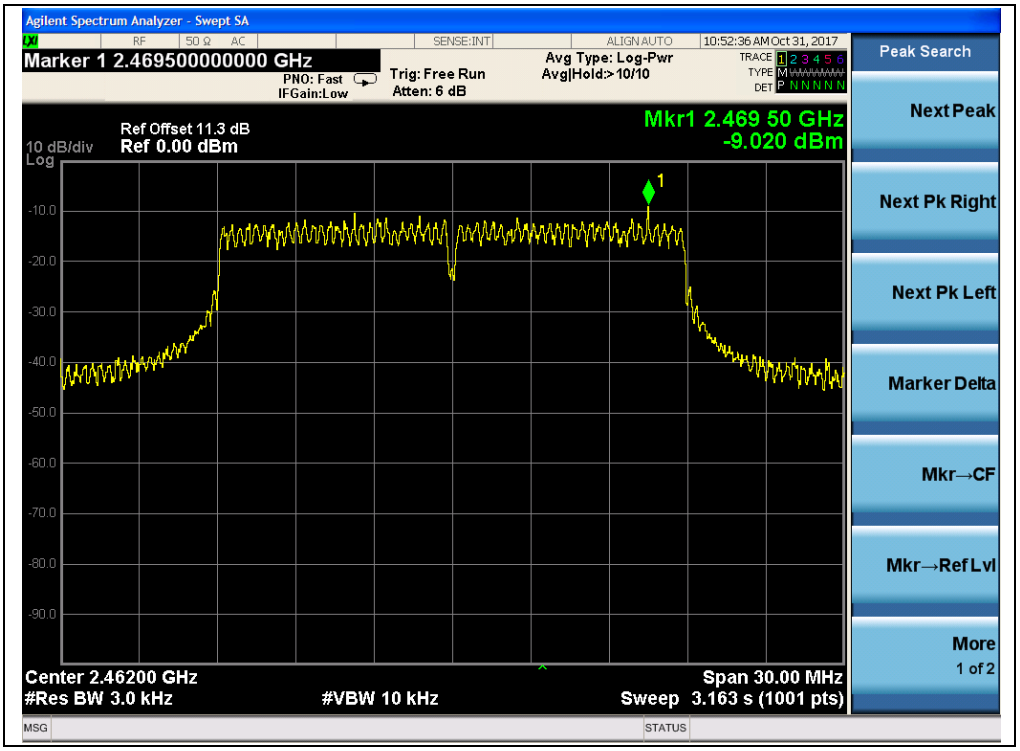
B. Test Plots:



(Channel = 1 @ 802.11n-20MHz)



(Channel = 6 @ 802.11n-20MHz)



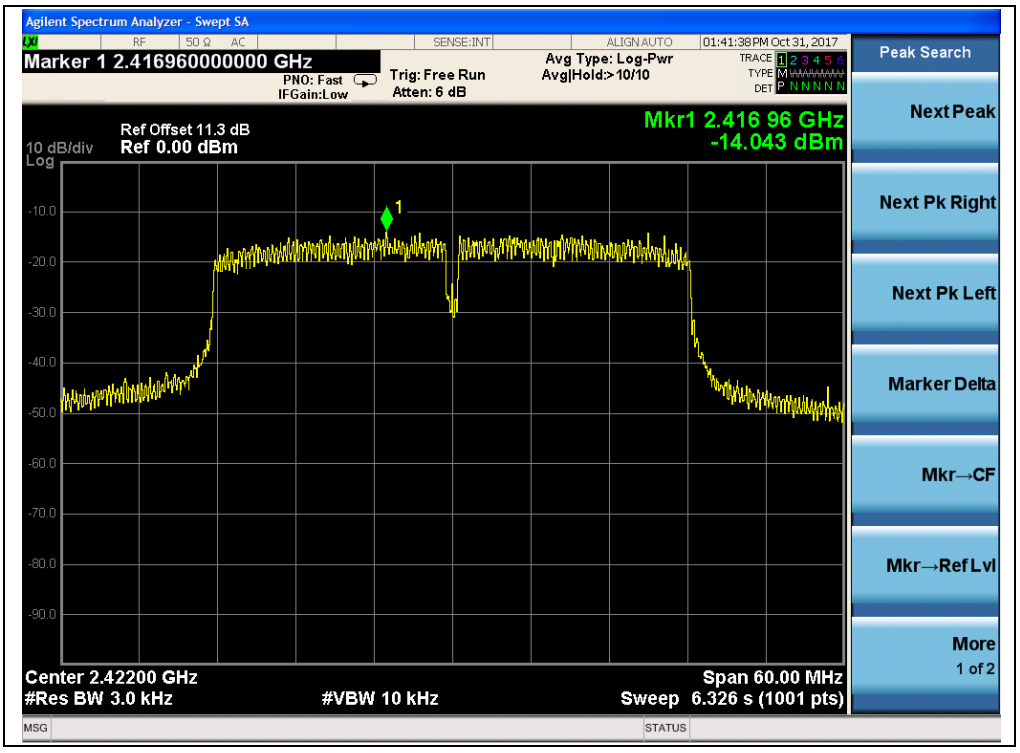
(Channel = 11 @ 802.11n-20MHz)

2.5.3.4 802.11n-40MHz Test mode

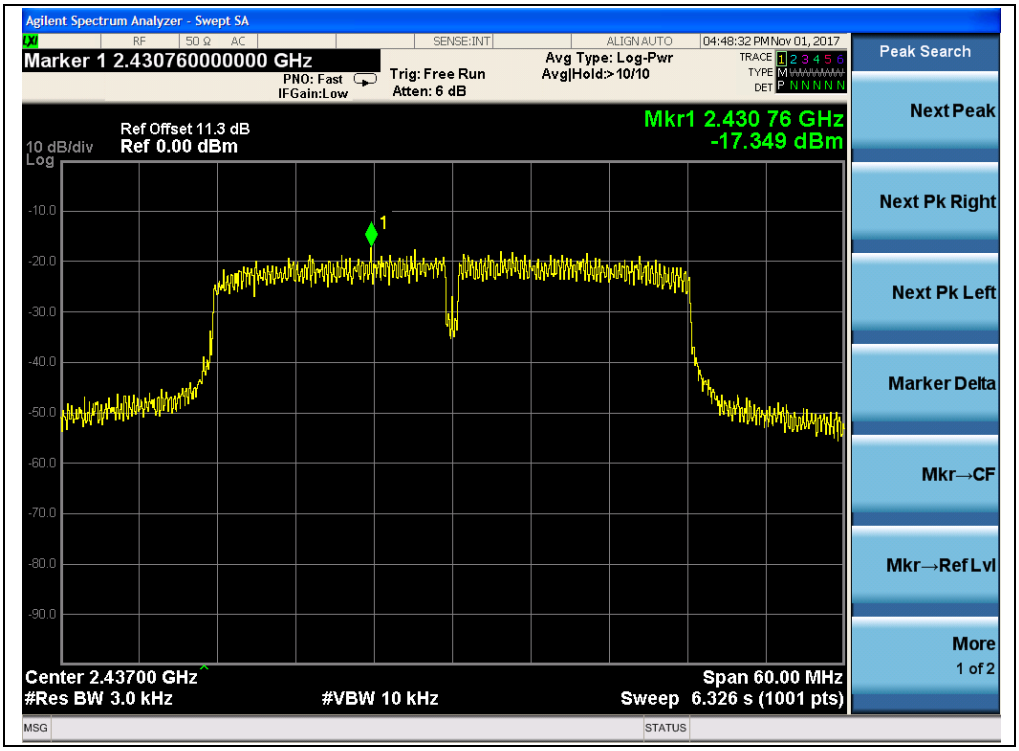
A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
3	2422	-14.04	8	PASS
6	2437	-17.35	8	PASS
9	2452	-17.39	8	PASS
Measurement uncertainty: ±1.3dB				

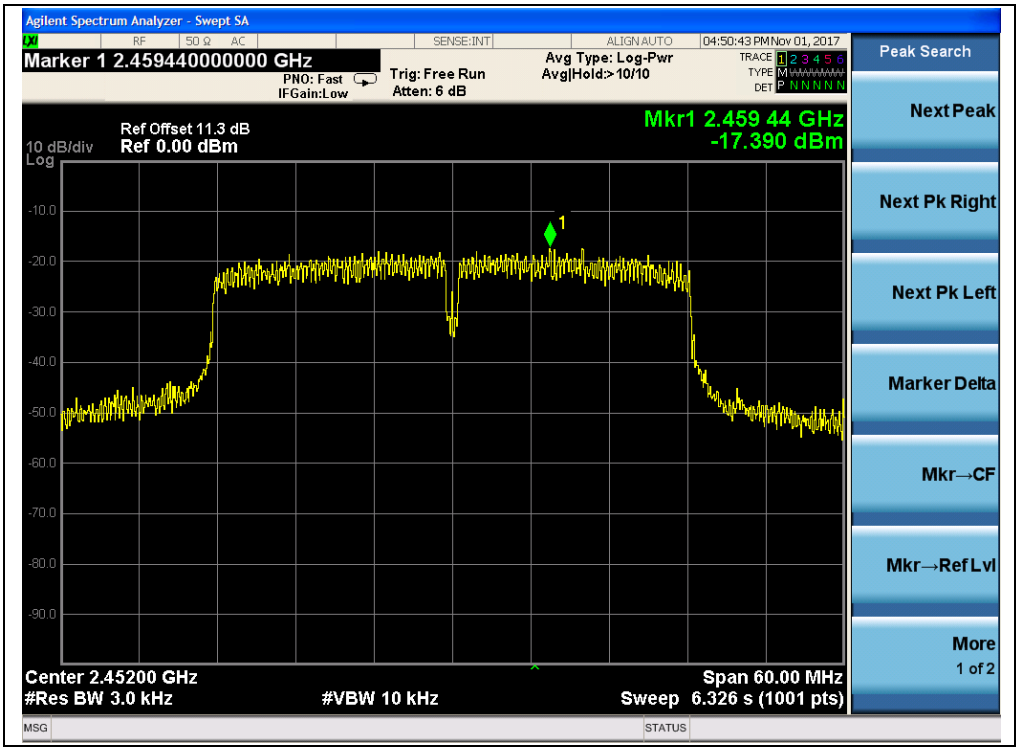
B. Test Plots:



(Channel = 3 @ 802.11n-40MHz)



(Channel = 6 @ 802.11n-40MHz)



(Channel = 9 @ 802.11n-40MHz)

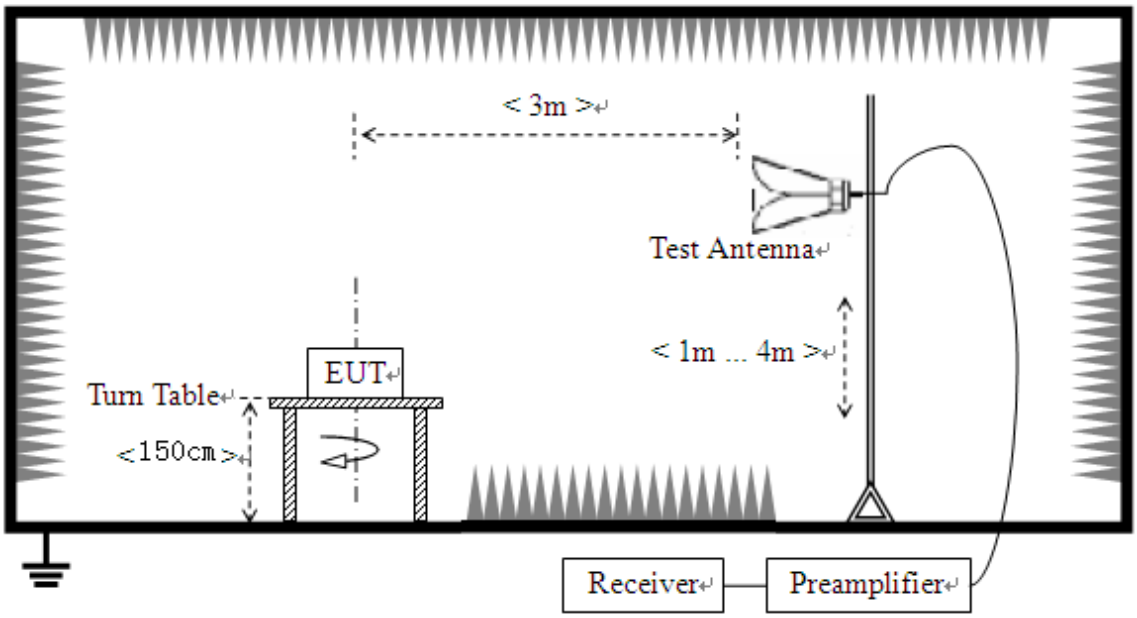
2.6. Restricted Frequency Bands

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 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:

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(1.5).

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 [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

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.

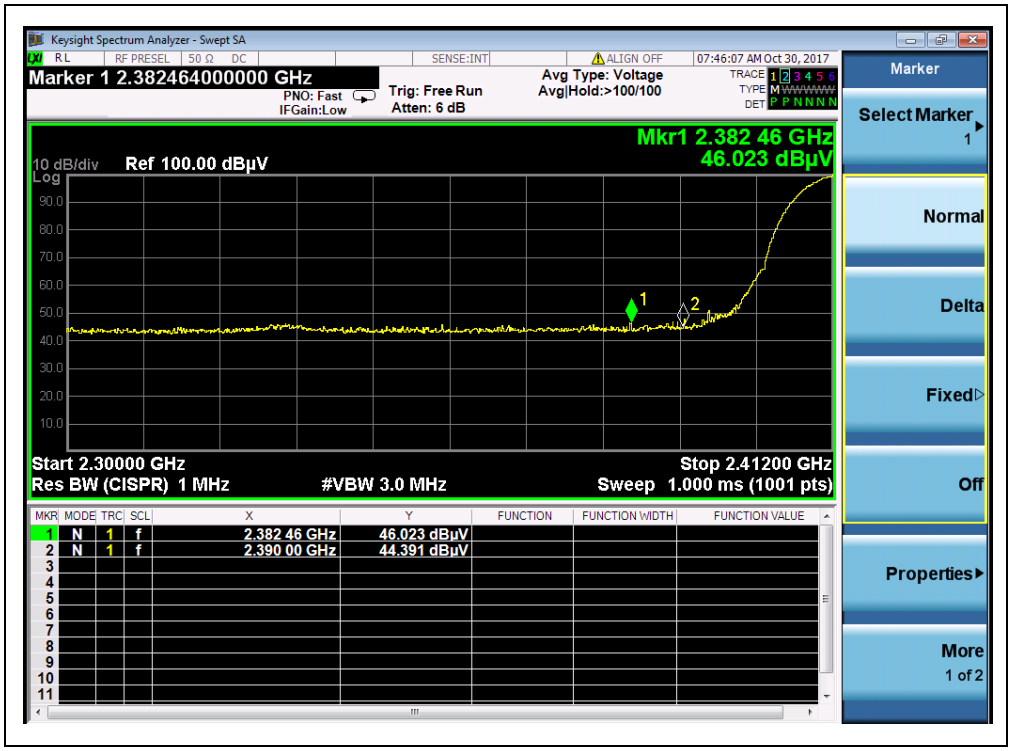
2.6.3.1 802.11b Test mode

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

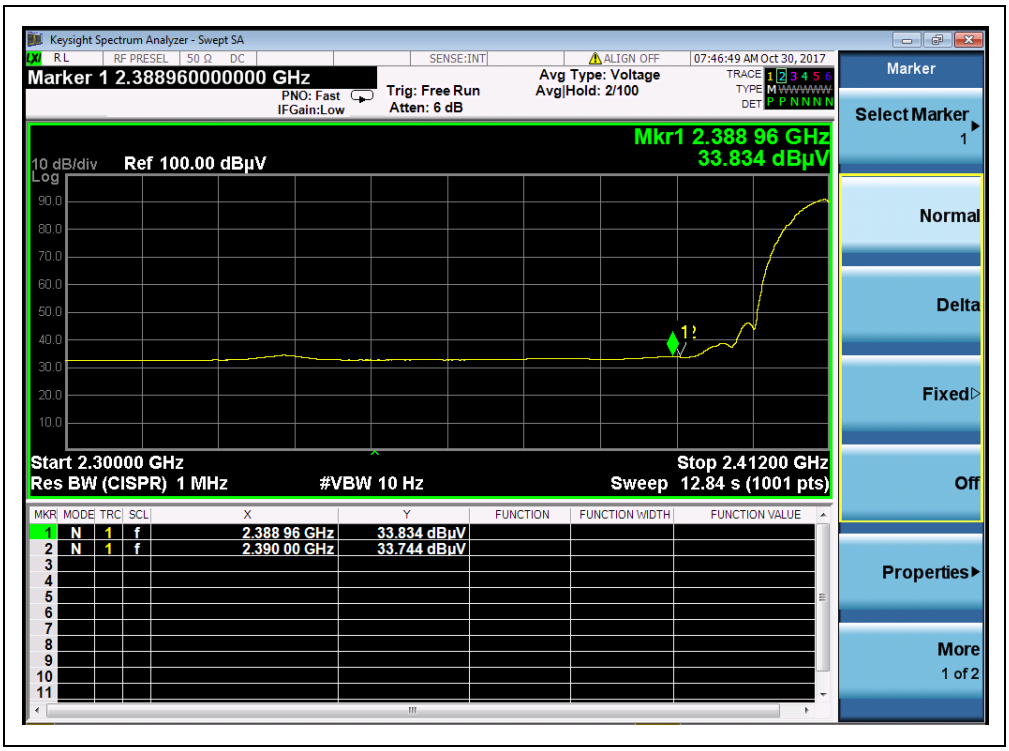
A. Test Verdict:

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	2382.46	PK	46.02	-33.63	32.56	44.95	74	Pass
1	2388.96	AV	33.83	-33.63	32.56	32.76	54	Pass
11	2484.38	PK	47.27	-33.18	32.5	46.59	74	Pass
11	2485.18	AV	33.21	-33.18	32.5	32.53	54	Pass

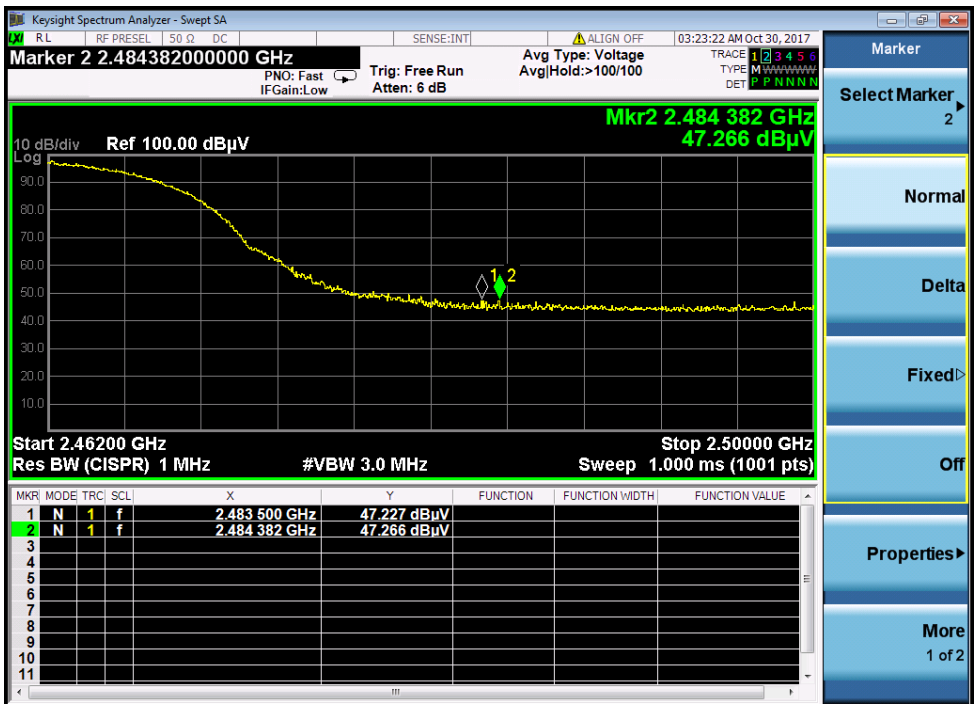
B. Test Plots:



(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)

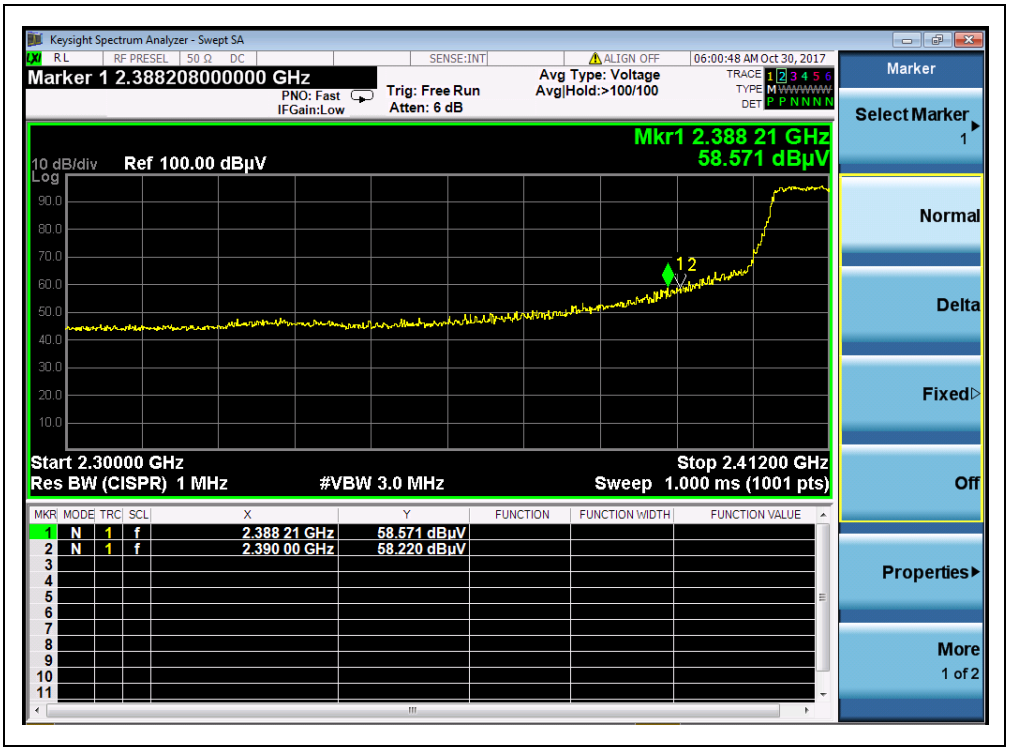
2.6.3.2 802.11g Test mode

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

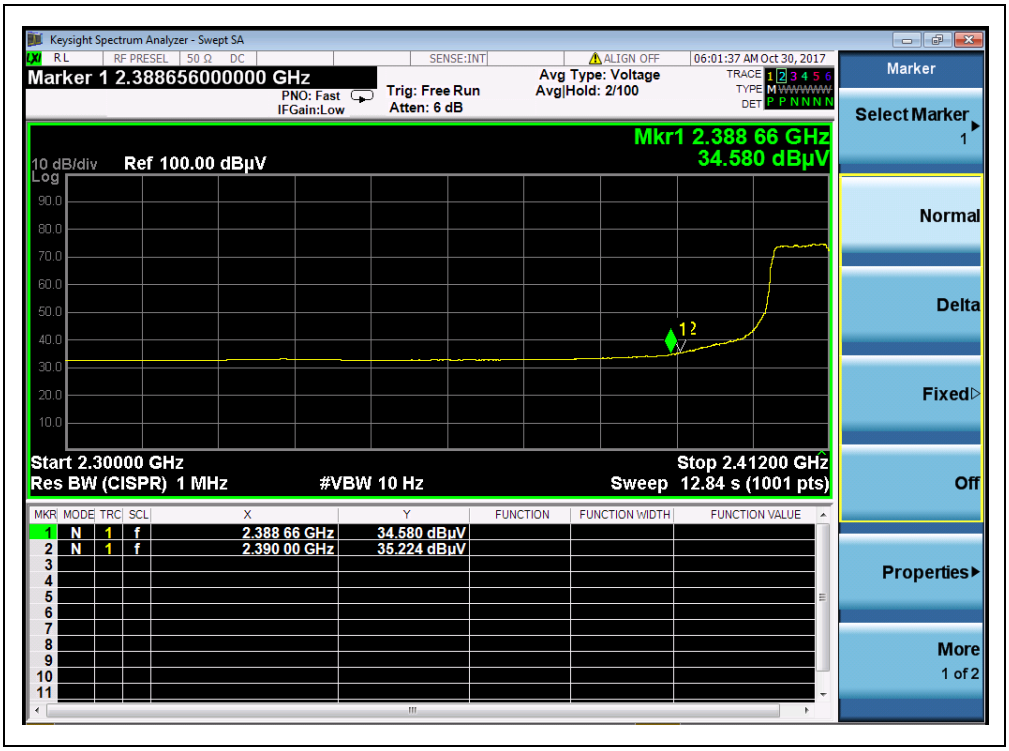
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2388.21	PK	58.57	-33.63	32.56	57.50	74	Pass
1	2388.66	AV	34.58	-33.63	32.56	33.51	54	Pass
11	2483.93	PK	63.63	-33.18	32.5	62.95	74	Pass
11	2484.04	AV	36.70	-33.18	32.5	36.02	54	Pass

B. Test Plots:

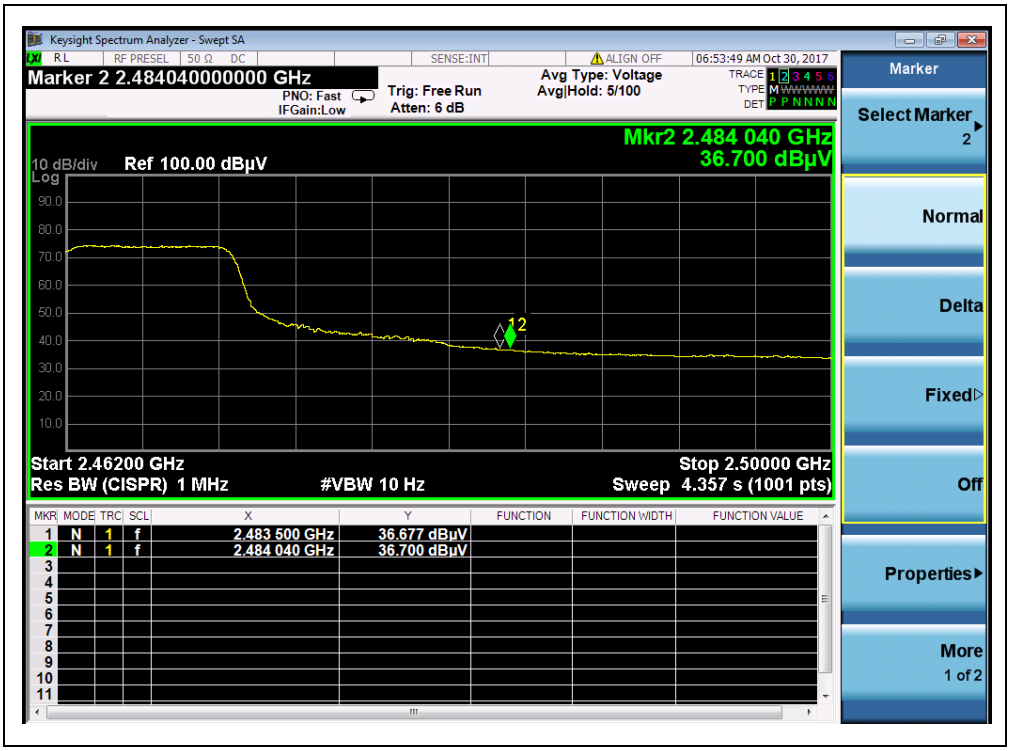


(Plot C1: Channel = 1 PEAK @ 802.11g)



(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

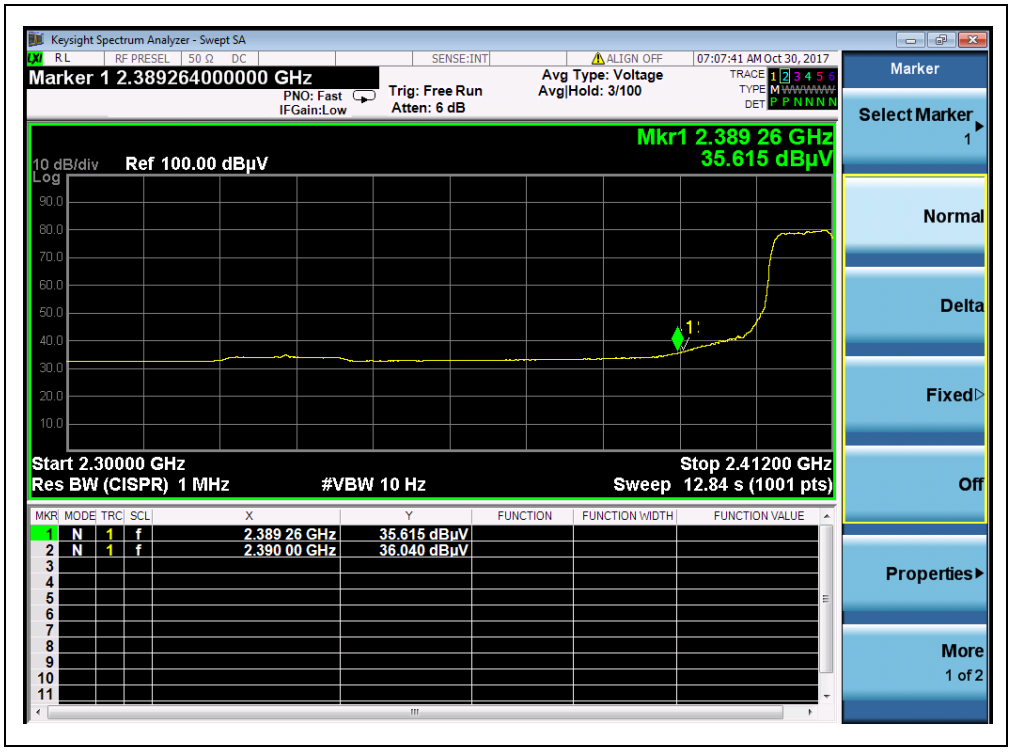
The lowest and highest channels are tested to verify the band edge emissions.

A. Test Verdict:

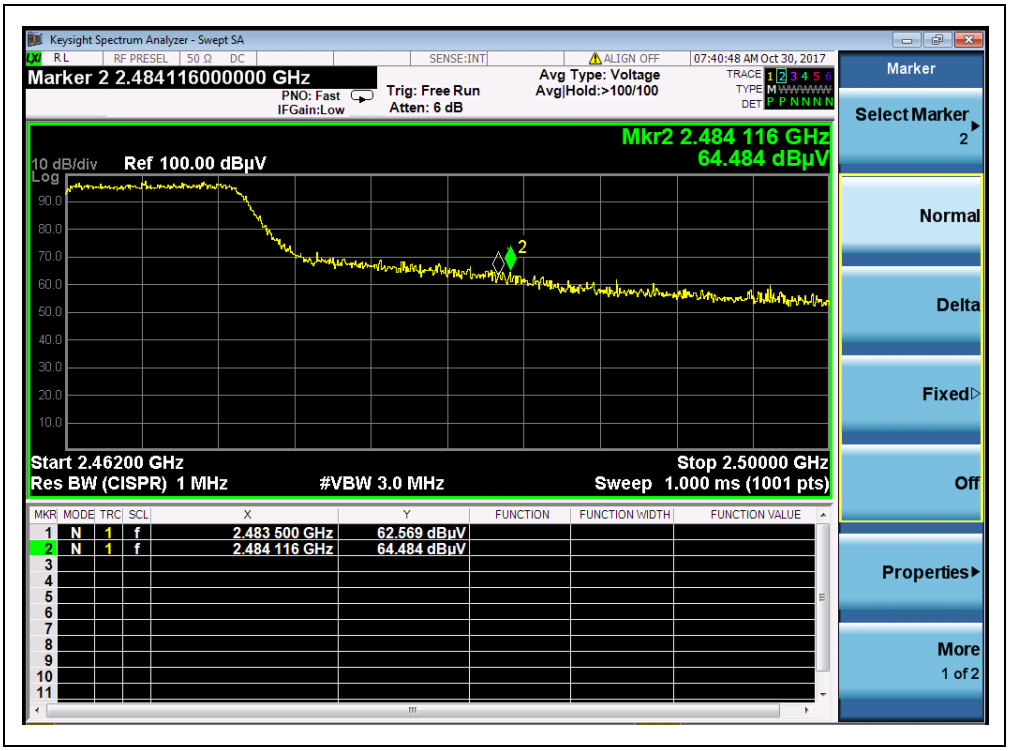
Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
1	2388.26	PK	57.96	-33.63	32.56	56.89	74	Pass
1	2389.26	AV	35.62	-33.63	32.56	34.55	54	Pass
11	2484.12	PK	64.48	-33.18	32.5	63.80	74	Pass
11	2483.93	AV	39.63	-33.18	32.5	38.95	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)

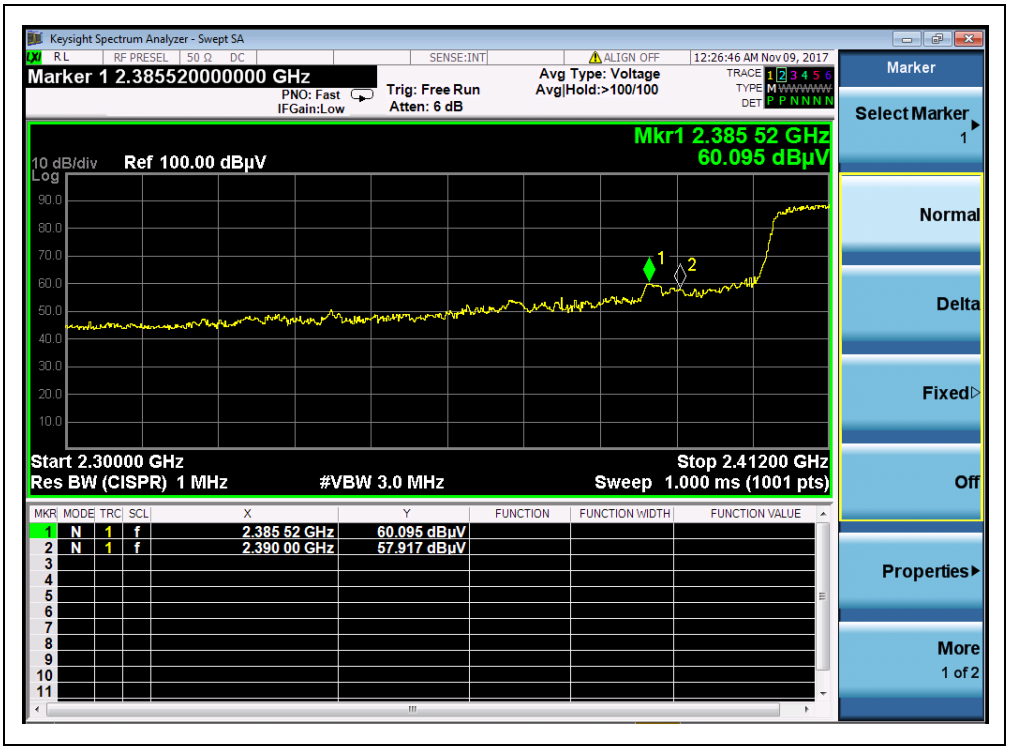
2.6.3.4 802.11n-40MHz Test mode

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

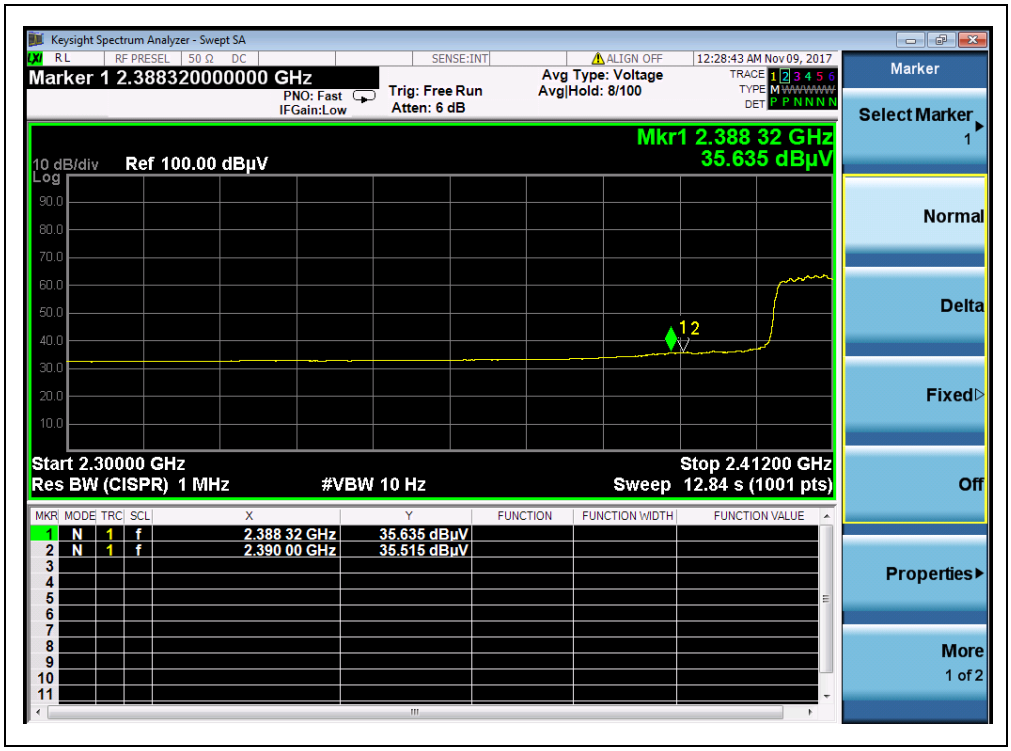
A. Test Verdict:

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	2385.52	PK	60.10	-33.63	32.56	59.03	74	Pass
3	2388.32	AV	35.64	-33.63	32.56	34.57	54	Pass
9	2488.07	PK	59.29	-33.18	32.5	58.61	74	Pass
9	2485.48	AV	35.43	-33.18	32.5	34.75	54	Pass

B. Test Plots:

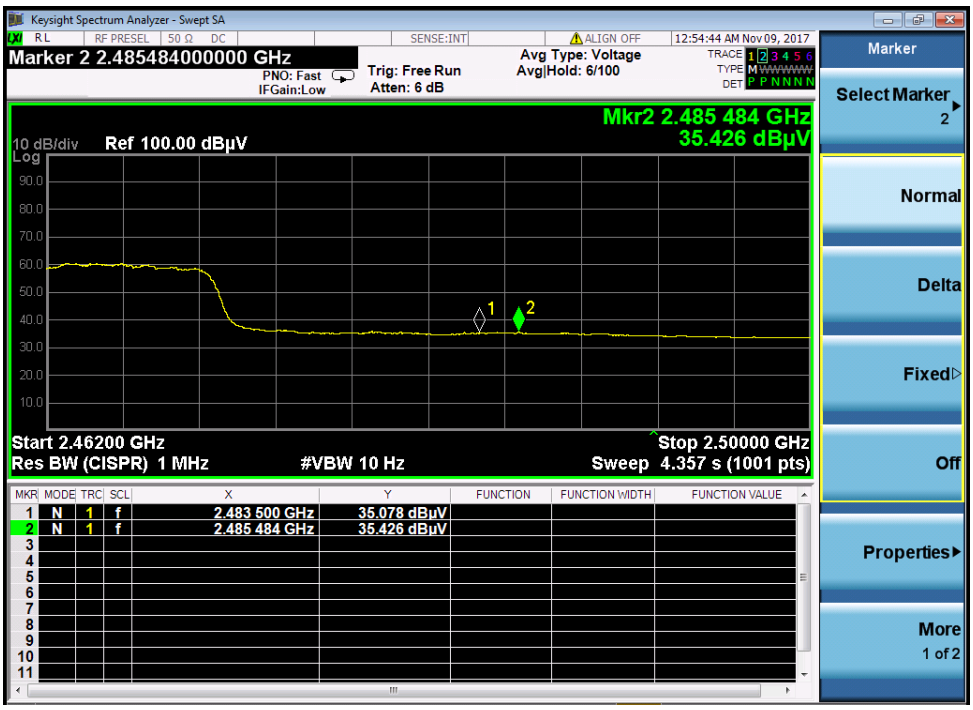


(Plot E1: Channel = 3 PEAK @ 802.11n-40)



(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

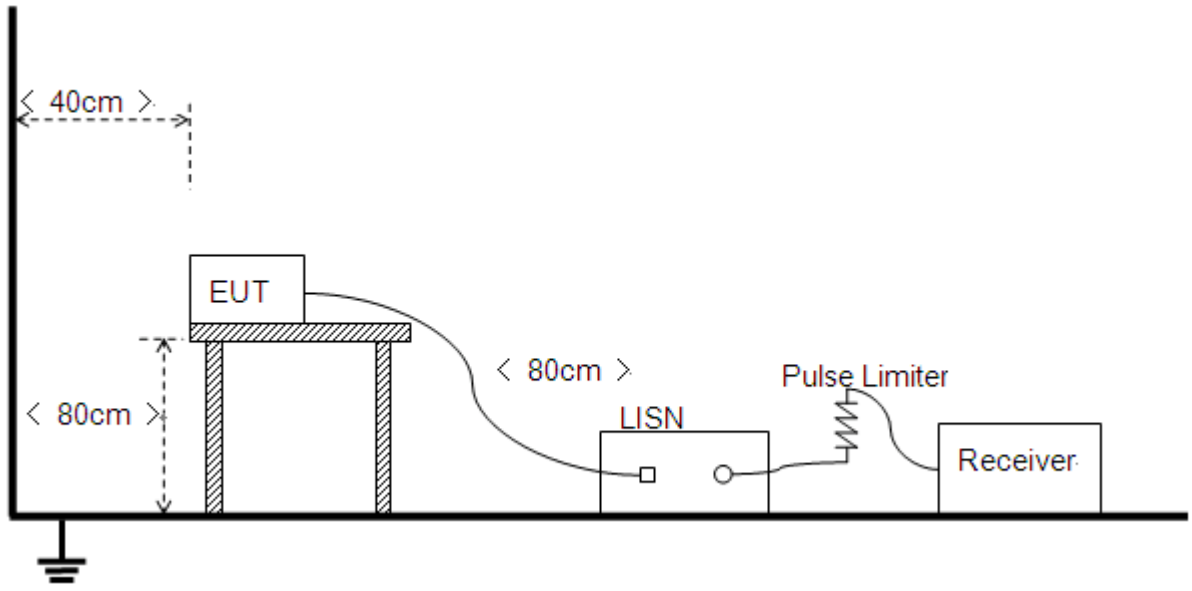
NOTE:

(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 C63.10 2013.

B. Equipments List:

Please reference ANNEX A(1.5).

2.7.3. Test Result

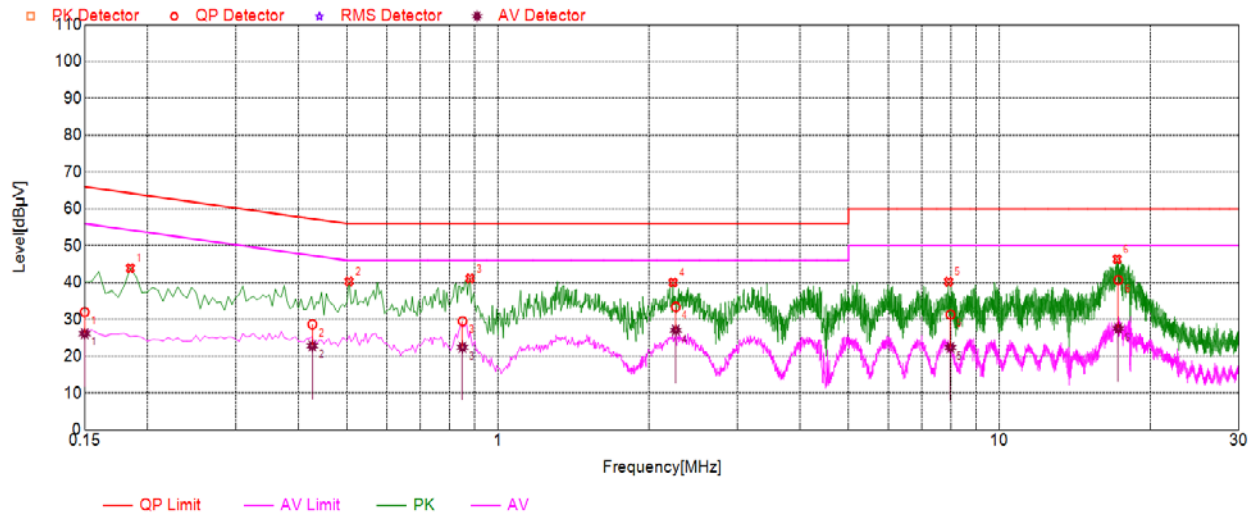
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT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

A. Test setup:

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

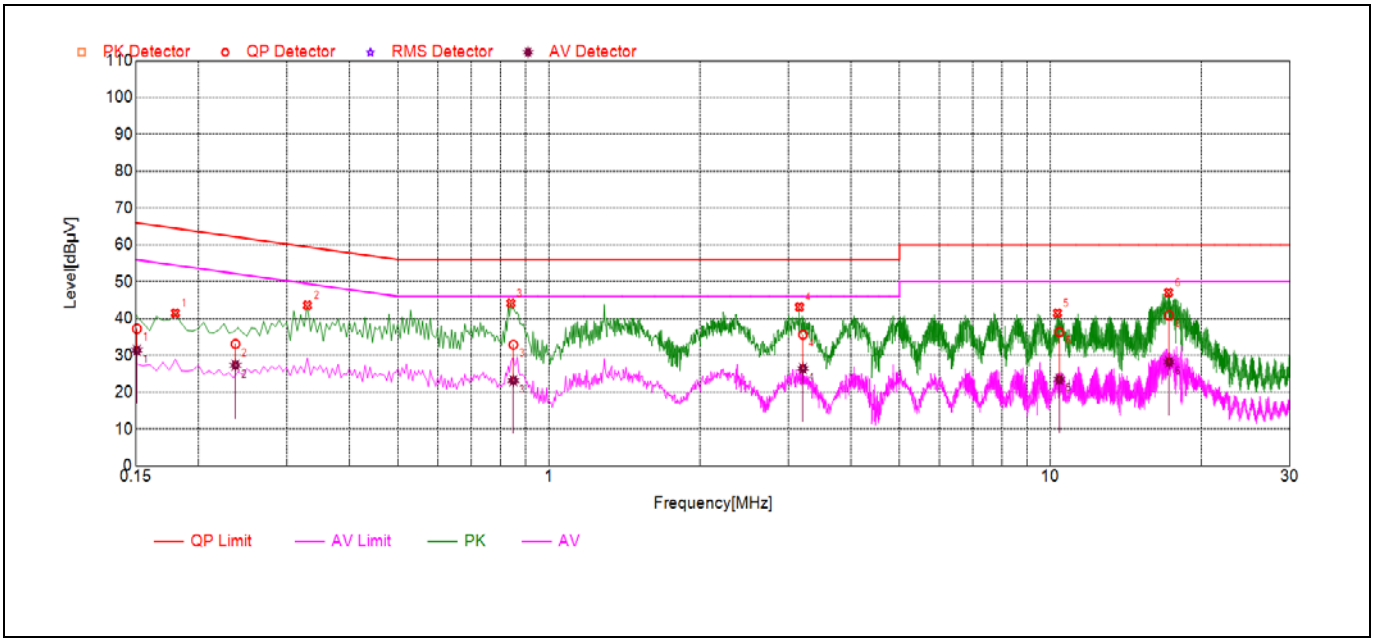
Note: The test voltage is AC 120V/60Hz.

B. Test Plots:



(Plot A: L Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	32.00	26.16	66.00	56.00	Line	PASS
2	0.4266	28.67	22.83	57.32	47.32		PASS
3	0.85	29.53	22.44	56.00	46.00		PASS
4	2.2634	33.39	27.06	56.00	46.00		PASS
5	7.989	31.30	22.37	60.00	50.00		PASS
6	17.2622	40.68	27.54	60.00	50.00		PASS



(Plot B: N Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1508	37.23	31.38	65.96	55.96	Line	PASS
2	0.2372	33.10	27.32	62.19	52.19		PASS
3	0.8496	32.89	23.17	56.00	46.00		PASS
4	3.211	35.65	26.47	56.00	46.00		PASS
5	10.4226	36.33	23.49	60.00	50.00		PASS
6	17.2502	40.87	28.20	60.00	50.00		PASS

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.

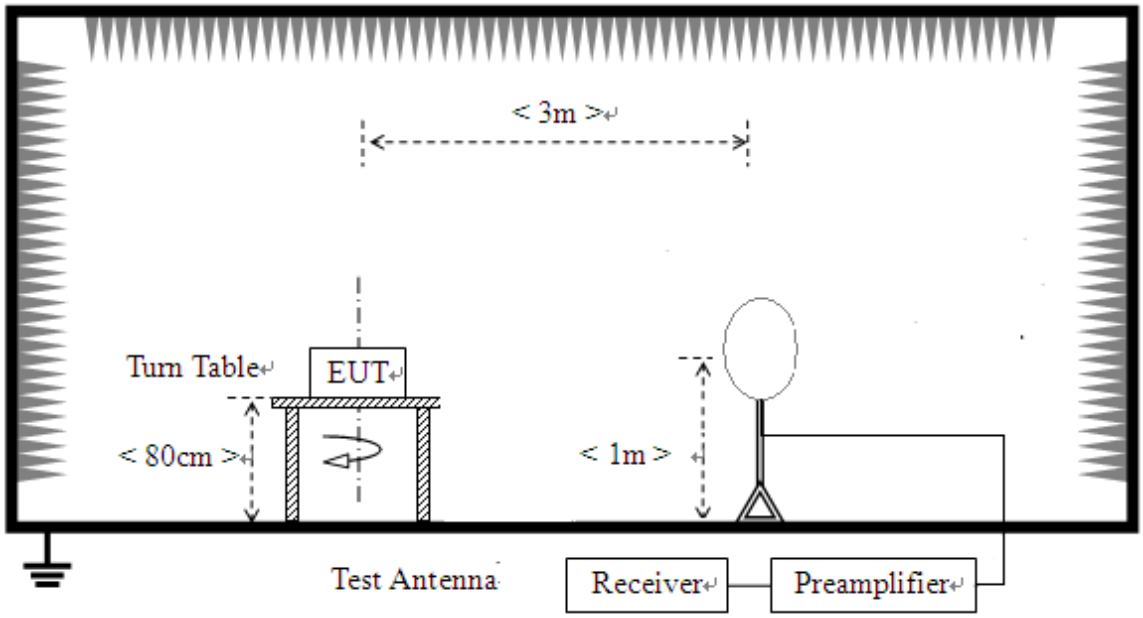
For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

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)

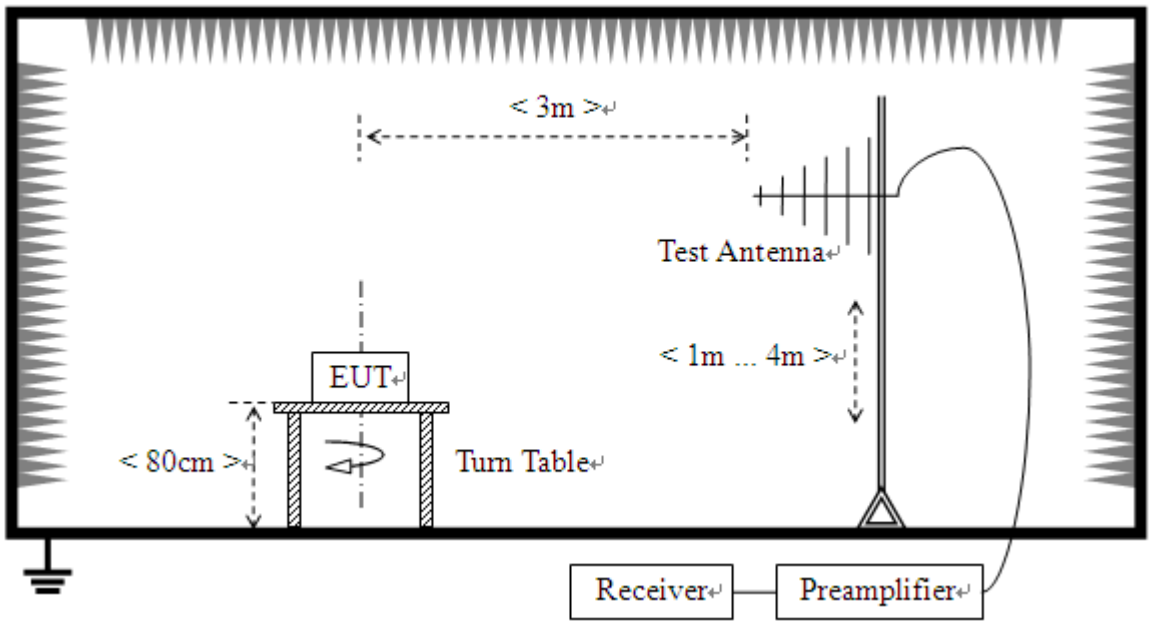
2.8.2. Test Description

A. Test Setup:

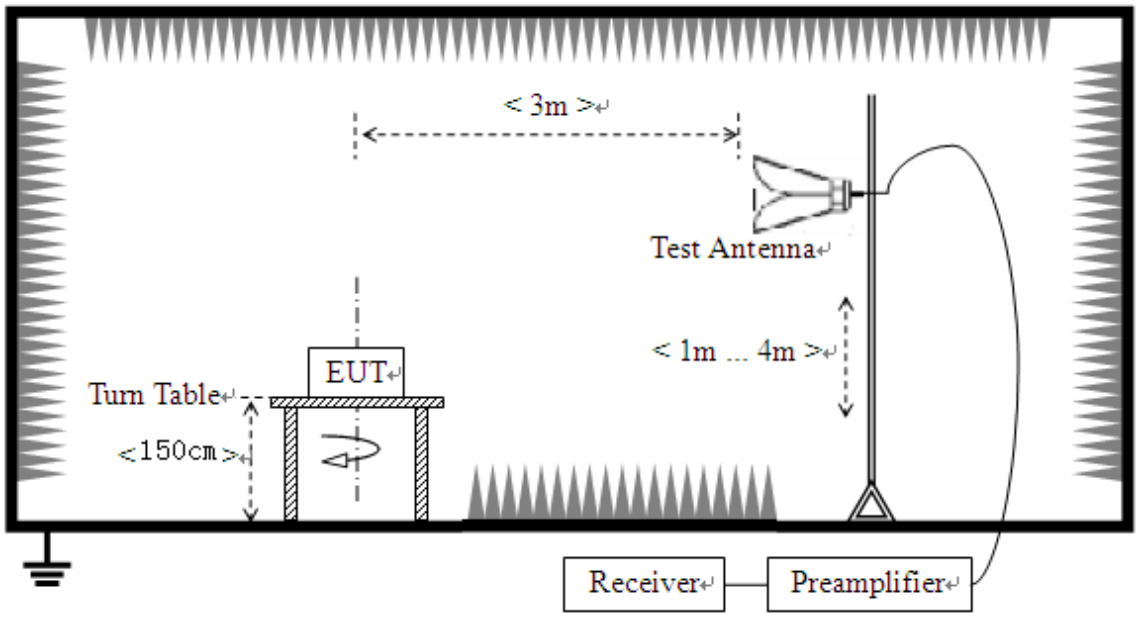
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



The RF absorbing material used on the reference ground plane and on the turntable have a maximum height (thickness) of 30 cm (12 in) and have a minimum-rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz. Test site have a minimum area of the ground plane covered with RF absorbing material as specified in Figure 6 of ANSI C63.4: 2014.

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. Place the test antenna at 3m away from area of the EUT, while keeping the test antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The test 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 test antenna elevation shall be that which maximizes the emissions. The test 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 emission levels at both horizontal and vertical polarizations should be tested.

A. Equipments List:

Please reference ANNEX A(1.5).

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

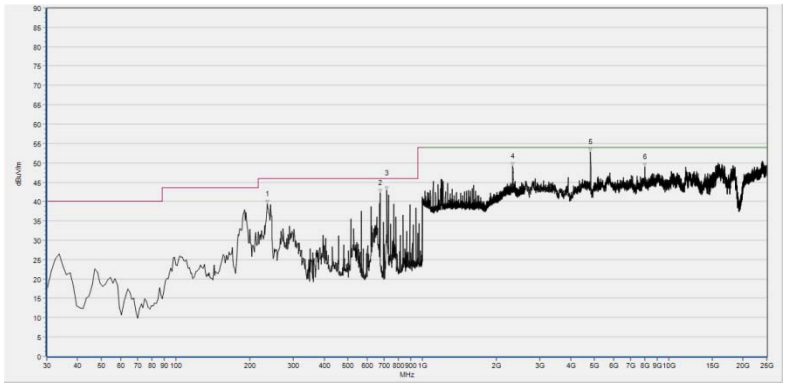
During the test, the total correction Factor A_T and A_{Factor} were built in test software.

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

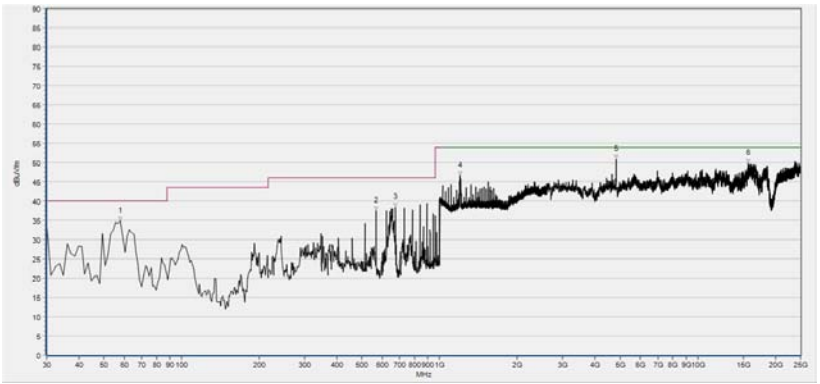
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
235.169	39.42	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	42.27	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
719.562	42.94	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2331.733	49.11	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
4823.800	52.06	N/A	40.02	74.0	N/A	54.0	Horizontal	PASS
7993.272	48.89	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

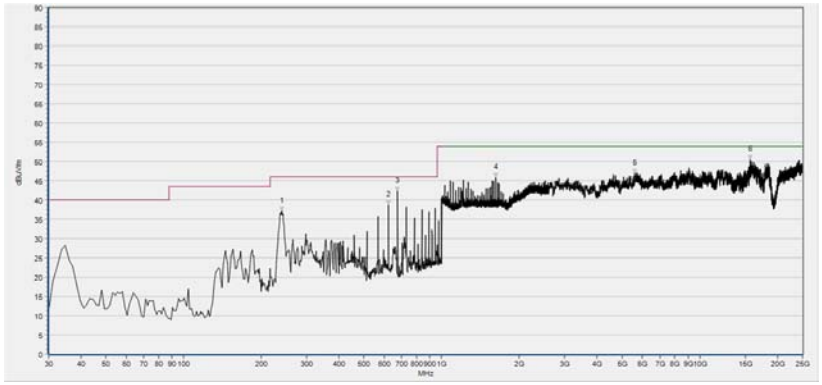
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
57.922	34.82	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
566.596	37.53	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	38.39	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1195.918	46.67	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
4824.113	50.82	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15655.465	49.83	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

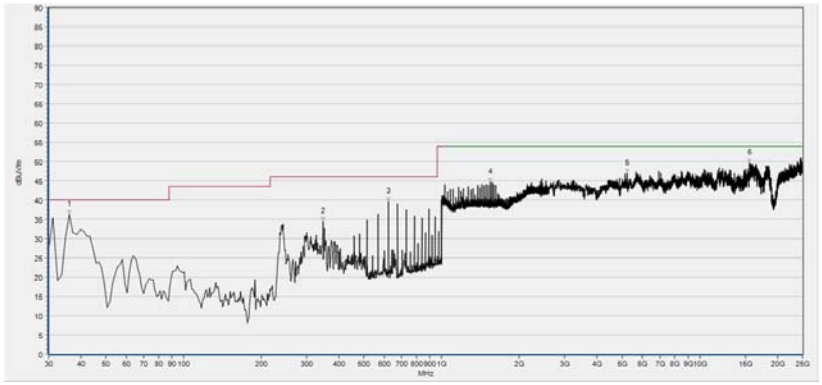
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
240.025	37.08	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
621.227	38.77	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	42.25	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1619.768	45.86	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
5606.219	47.01	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
15679.905	50.47	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

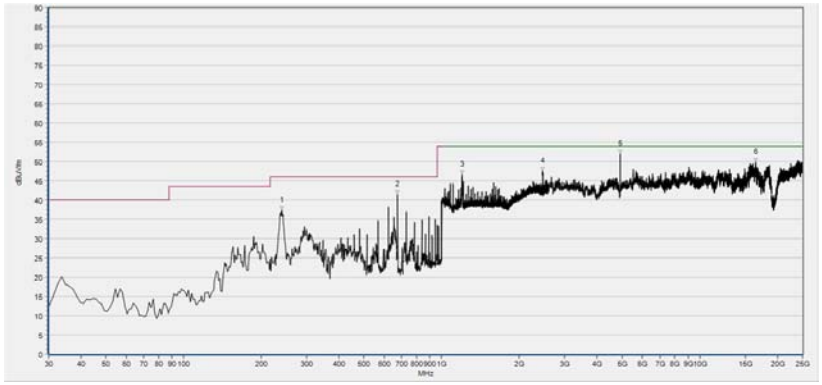
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
36.070	36.20	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
346.859	34.40	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
621.227	39.67	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1538.455	44.69	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
5223.313	46.97	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15586.216	49.68	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

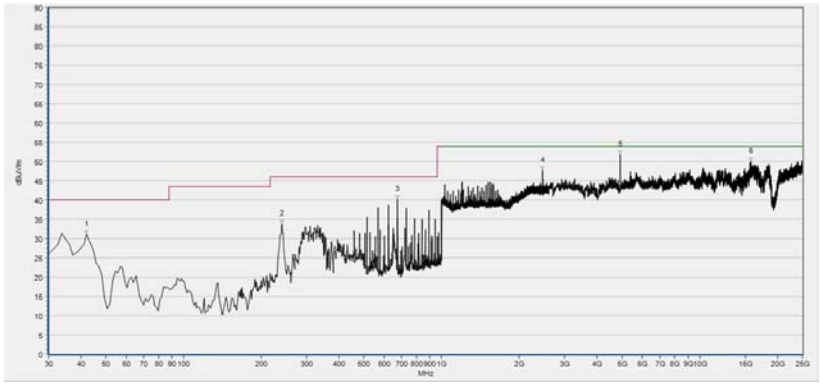
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
240.025	37.39	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.42	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1197.839	46.63	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
2462.985	47.45	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
4921.877	51.96	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
16429.424	49.82	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



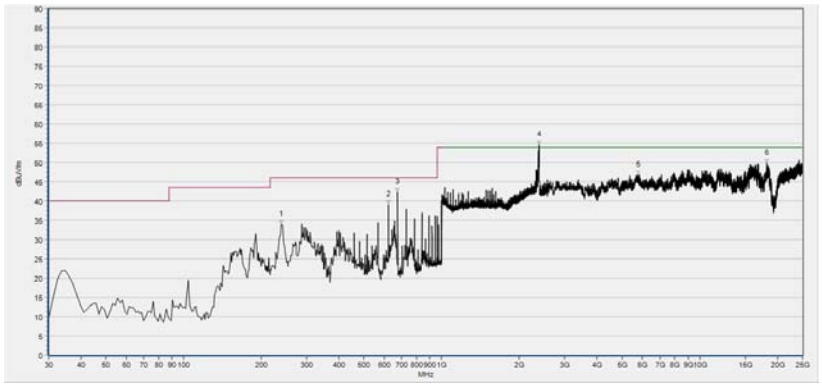
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
42.140	31.16	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
240.025	33.71	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	40.16	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2463.625	47.64	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
4921.877	51.76	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15773.595	49.97	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

B. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



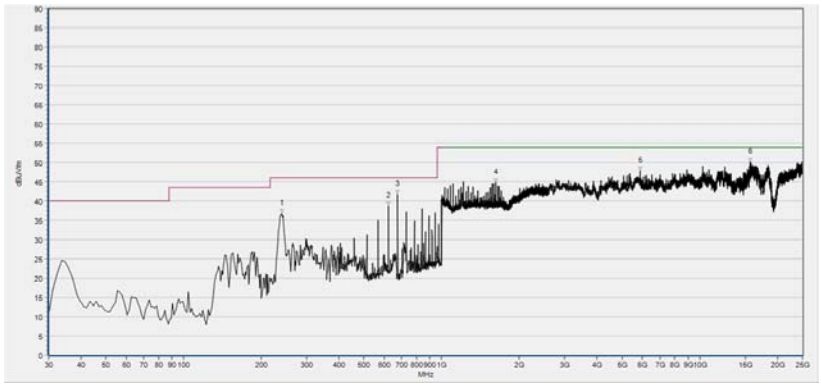
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	33.98	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
621.227	39.06	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	42.24	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2382.500	56.24	N/A	32.89	74.0	N/A	54.0	Horizontal	PASS
5761.011	46.86	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
18209.529	49.85	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
322.578	34.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	40.67	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1197.839	45.58	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
5671.395	46.82	53.43	38.61	74.0	N/A	54.0	Vertical	PASS
9154.210	48.38	46.66	36.13	74.0	N/A	54.0	Vertical	PASS
16209.456	50.21	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

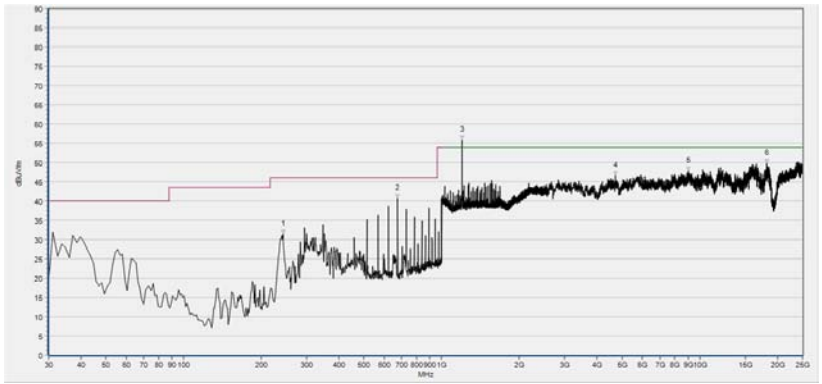
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
240.025	36.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
621.227	38.79	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.87	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1619.768	44.79	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
5875.068	47.85	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
15659.538	50.13	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

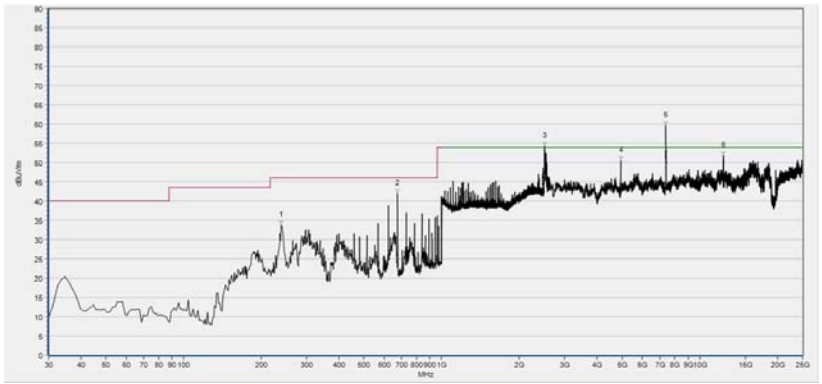
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
242.453	31.42	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	40.65	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1199.700	56.36	N/A	30.33	74.0	N/A	54.0	Vertical	PASS
4710.056	46.62	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
9015.712	47.94	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
18152.500	49.81	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	33.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.98	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2509.900	54.38	N/A	32.61	74.0	N/A	54.0	Horizontal	PASS
4934.097	50.61	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
7390.000	59.86	N/A	38.61	74.0	N/A	54.0	Horizontal	PASS
12311.147	51.70	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

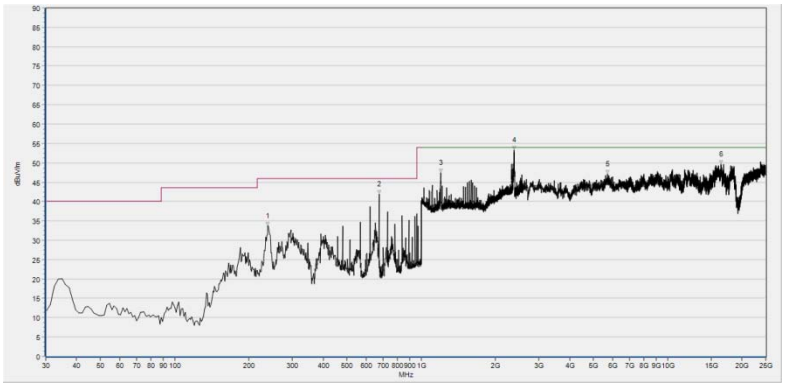
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
337.146	35.28	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	40.39	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1539.096	45.17	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
2508.443	48.48	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
5683.615	47.34	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15932.460	50.40	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

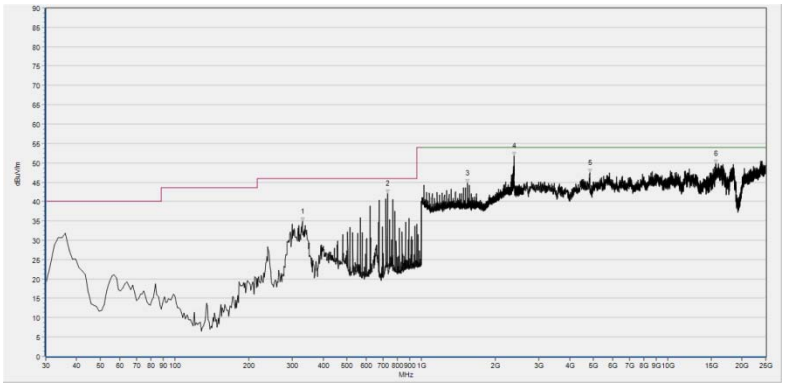
C. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	33.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.91	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1197.839	47.44	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
2384.500	53.24	N/A	32.40	74.0	N/A	54.0	Horizontal	PASS
5699.909	47.10	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
16425.350	49.63	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

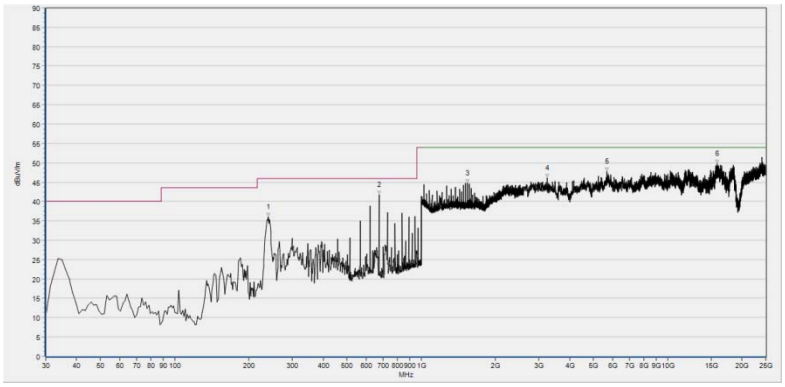
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
329.862	34.80	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
729.274	41.99	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1539.096	44.82	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
2382.313	53.76	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
4828.187	47.45	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15675.832	49.71	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

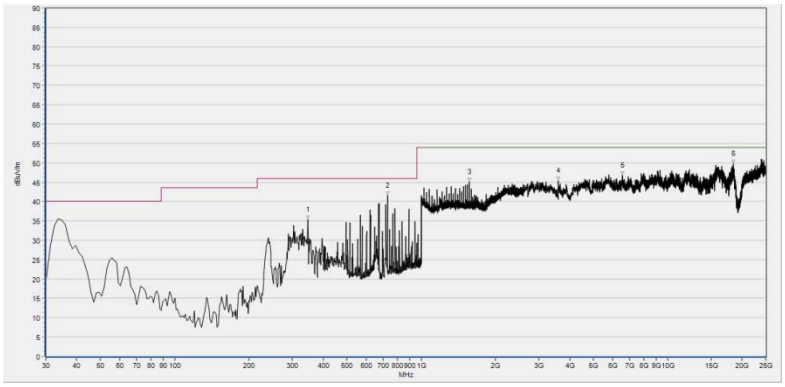
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
240.025	35.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.73	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1539.096	44.70	N/A	N/A	74.0	N/A	74.0	Horizontal	PASS
3243.608	46.15	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
5655.101	47.83	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
15908.020	49.79	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

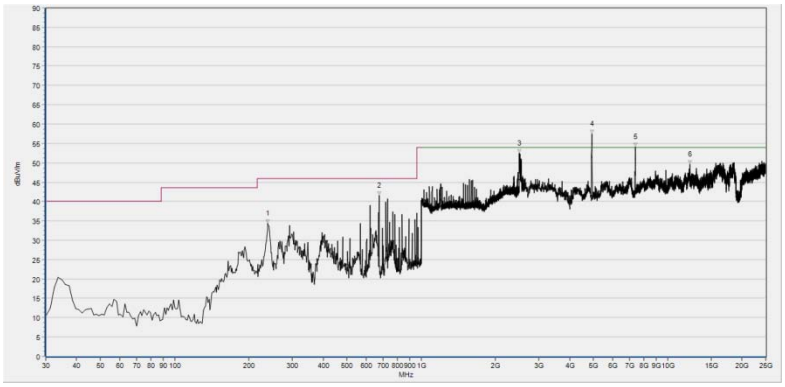
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
346.859	35.31	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
729.274	41.58	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1565.986	45.15	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
3598.000	45.48	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
6547.190	46.79	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
18478.378	49.85	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

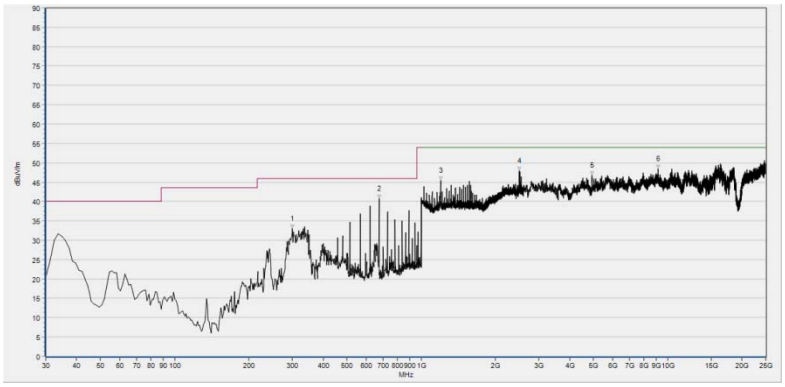
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 11



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	34.40	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.643	41.52	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2503.321	52.50	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
4925.300	57.66	N/A	41.93	74.0	N/A	54.0	Horizontal	PASS
7391.500	54.45	N/A	34.99	74.0	N/A	54.0	Horizontal	PASS
12303.001	49.56	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



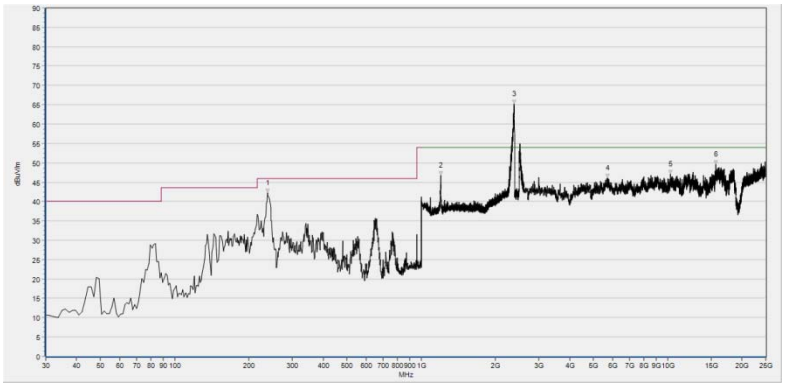
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
300.726	32.97	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
674.643	40.71	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1199.760	45.47	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
2502.041	47.93	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
4925.950	46.84	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
9137.916	48.39	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

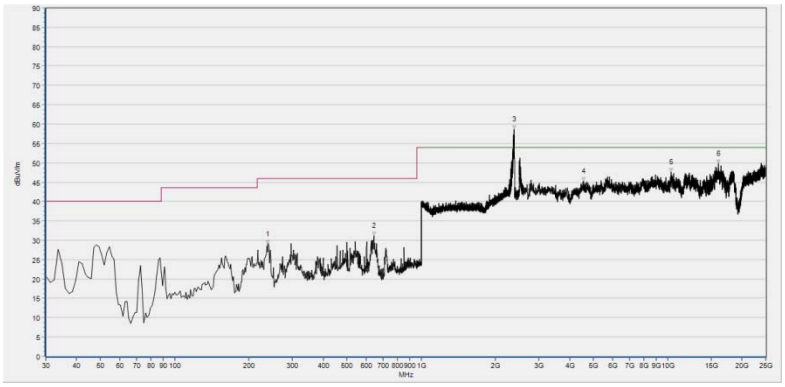
D. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 3



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
237.597	42.18	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1199.760	46.83	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
2382.800	65.20	N/A	49.91	74.0	N/A	54.0	Horizontal	PASS
5687.689	46.10	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
10282.560	47.13	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
15667.685	49.60	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

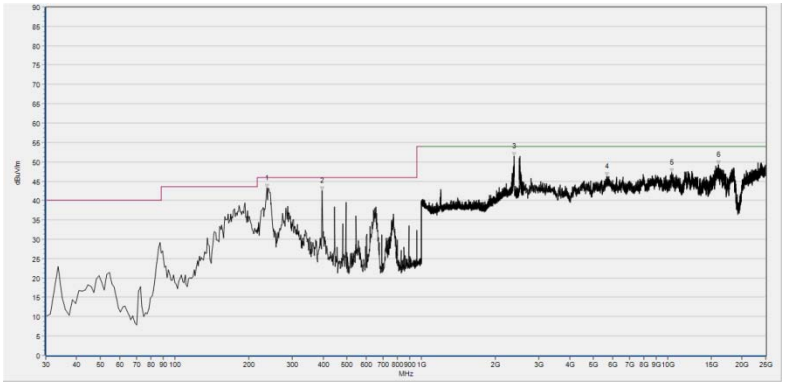
(Plot A.2: Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	29.04	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
641.865	31.16	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2385.500	58.31	N/A	32.47	74.0	N/A	54.0	Vertical	PASS
4555.265	45.32	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
10298.854	47.67	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
16095.399	49.80	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

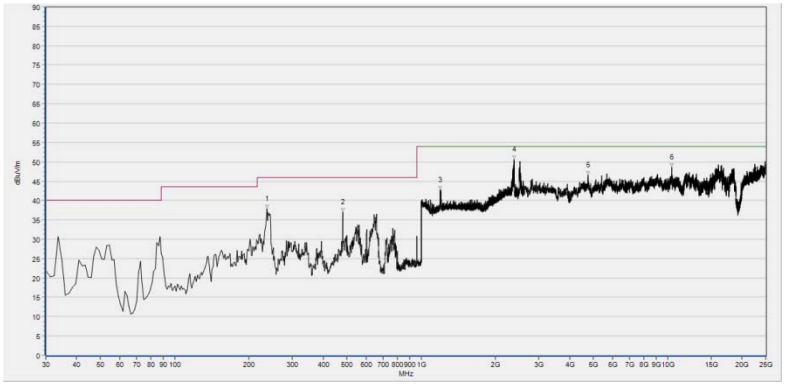
(Plot A.3: Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 6



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
236.383	43.18	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
395.419	42.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2380.392	51.52	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
5671.395	46.29	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
10388.471	47.32	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
16046.518	49.27	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

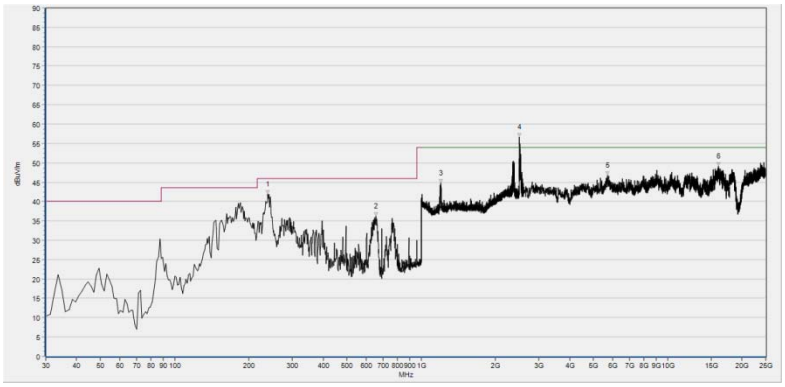
(Plot B.2: Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
236.383	37.92	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
480.401	37.00	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1195.918	42.68	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
2381.032	50.67	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
4738.571	46.60	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
10384.397	48.59	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

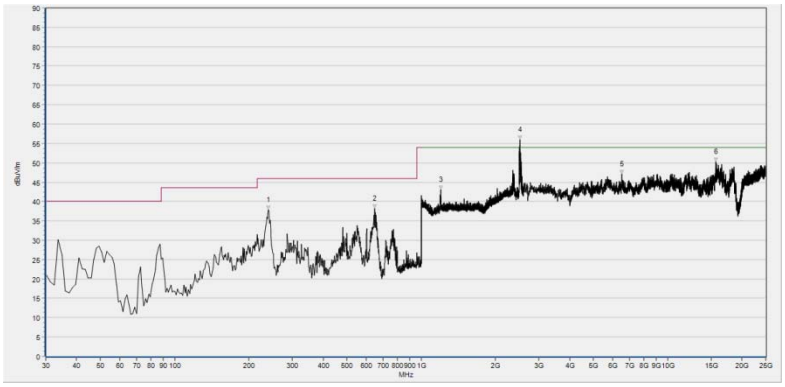
(Plot B.3: Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 9



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
238.811	41.92	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
655.219	36.16	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1201.040	44.81	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
2507.800	56.84	N/A	32.64	74.0	N/A	54.0	Horizontal	PASS
5695.836	46.71	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS
16038.371	49.10	N/A	N/A	74.0	N/A	54.0	Horizontal	PASS

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



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
240.025	37.82	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
647.935	38.16	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1197.839	43.04	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
2515.000	56.82	N/A	32.00	74.0	N/A	54.0	Vertical	PASS
6518.676	47.17	N/A	N/A	74.0	N/A	54.0	Vertical	PASS
15671.759	50.22	N/A	N/A	74.0	N/A	54.0	Vertical	PASS

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

Annex A Test Uncertainty

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

Test items	Uncertainty
Peak Output Power	±2.22dB
Power spectral density (PSD)	±2.22dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

Annex B Testing Laboratory Information

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

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

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.3, 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 C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192.

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Spectrum Analyzer	MY45101810	E4407B	Agilent	2017.05.24	2018.05.23
Power Splitter	NW521	1506A	Weinschel	2017.05.24	2018.05.23
Attenuator 1	(N/A.)	10dB	Resnet	2017.05.24	2018.05.23
Attenuator 2	(N/A.)	3dB	Resnet	2017.05.24	2018.05.23
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2016.12.07	2017.12.06
USB Wideband Power Sensor	MY54210011	U2021XA	Agilent	2017.05.24	2018.05.23
RF cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial cable	CB02	RF02	Morlab	N/A	N/A
SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Receiver	US44210471	E7405A	Agilent	2017.05.17	2018.05.16
LISN	812744	NSLK 8127	Schwarzbeck	2017.05.17	2018.05.16
Service Supplier	100448	CMU200	R&S	2017.05.17	2018.05.16
Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2017.05.17	2018.05.16
Coaxial cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

4.3Auxiliary Test Equipment

Equipment Name	Model No.	Brand Name	Manufacturer	Cal.Date	Cal.Due Date
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.4 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal.Due Date
System Simulator	GB45360846	8960-E5515C	Agilent	2017.05.17	2018.05.16
Receiver	MY54130016	N9038A	Agilent	2017.05.17	2018.05.16
Test Antenna - Bi-Log	N/A	VULB9163	Schwarzbeck	2016.12.09	2017.12.08
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2017.03.30	2018.03.29
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2017.03.30	2018.03.29
Test Antenna - Horn	1774	BBHA 9120D	Schwarzbeck	2017.09.13	2018.09.12
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable(N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
1-18GHz pre-Amplifier	MA02	TS-PR18	Rohde& Schwarz	2017.05.17	2018.05.16
18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde& Schwarz	2017.05.17	2018.05.16
Climate Chamber	2004012	HL4003T	Yinhe	2017.01.11	2018.01.10
Vibration Table	N/A	ACT2000-S015L	CMI-COM	2017.01.11	2018.01.10
Anechoic Chamber	N/A	9m*6m*6m	Changning	2017.01.11	2018.01.10

END OF REPORT