



REPORT No.: SZ16030142W03

FCC RF TEST REPORT

APPLICANT : ZTE Corporation

PRODUCT NAME : LTE Mutil-Mode Digital Mobile Phone

MODEL NAME : Z861BL

TRADE NAME : ZTE

BRAND NAME : ZTE

FCC ID : SRQ-Z861BL

STANDARD(S) : 47 CFR Part 15 Subpart C

ISSUE DATE : 2016-05-19



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2016-05-19	First edition



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TEST REPORT DECLARATION

Applicant	ZTE Corporation
Applicant Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Manufacturer Address	ZTE Corporation
Manufacturer	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Product Name	LTE Mutil-Mode Digital Mobile Phone
Model Name	Z861BL
Brand Name	ZTE
HW Version	Z861BLHWV1.0
SW Version	Z861BLV0.0.0B02
Test Standards	47 CFR Part 15 Subpart C
Test Date	2016-04-06 to 2016-04-26
Test Result	PASS

Tested by : Yuan Ling
Yuan Ling

Reviewed by : Qiu Xiaojun
Qiu Xiaojun

Approved by : Peng Huarui
Peng Huarui



1. TECHNICAL INFORMATION

Note: Provide by applicant.

1.1 Applicant Information

Company:	ZTE Corporation
Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.2 Equipment under Test (EUT) Description

Brand Name:	ZTE
Trade Name:	ZTE
Model Name:	Z861BL
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:	PIFA Antenna
Antenna Gain:	0 dBi

NOTE:

1. The EUT is a LTE Mutil-Mode Digital Mobile Phone, 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 $F \text{ (MHz)} = 2412 + 5 \cdot (n-1)$ ($1 \leq n \leq 11$). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 6 (2437MHz) and 11 (2462MHz).
For 802.11n-40MHz, the frequencies allocated is $F \text{ (MHz)} = 2412 + 5 \cdot (n-1)$ ($3 \leq n \leq 9$). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 3 (2422MHz), 6 (2437MHz) and 9 (2452MHz).
2. The EUT powered by battery. During the test, the EUT powered by a new battery.
3. The EUT connected to the serial port of the computer with a serial communication cable, and then use the dedicated software to control the EUT into the test mode.
4. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.
5. 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	Z861BLHWV1.0	Z861BLV0.0.0B02

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	Result
1	15.203	Antenna Requirement	N.A	<u>PASS</u>
2	15.247(b)	Peak Output Power	Apr 13, 2016	<u>PASS</u>
3	15.247(a)	Bandwidth	Apr 13, 2016	<u>PASS</u>
4	15.247(d)	Conducted Spurious Emission and Band Edge	Apr 13, 2016	<u>PASS</u>
5	15.247(d)	Restricted Frequency Bands	Apr 27, 2016	<u>PASS</u>
6	15.207	Conducted Emission	Apr 27, 2016	<u>PASS</u>
7	15.209 ,15.247(d)	Radiated Emission	Apr 27, 2016	<u>PASS</u>
8	15.247(e)	Power spectral density (PSD)	Apr 13, 2016	<u>PASS</u>

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

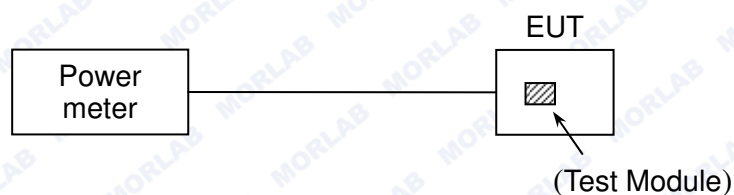
2.2.1 Requirement

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 exceed 1 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 50 Ohm; 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	20.21	0.105	30	1	PASS
6	2437	19.84	0.096			PASS
11	2462	20.22	0.105			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	18.49	0.071	30	1	PASS
6	2437	16.65	0.046			PASS
11	2462	17.51	0.056			PASS

2.2.3.2 802.11g Test mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	19.85	0.097	30	1	PASS
6	2437	20.03	0.101			PASS
11	2462	19.32	0.086			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	16.15	0.041	30	1	PASS
6	2437	14.52	0.028			PASS
11	2462	15.03	0.032			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	18.52	0.071	30	1	PASS
6	2437	18.65	0.073			PASS
11	2462	17.85	0.061			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	14.38	0.027	30	1	PASS
6	2437	11.98	0.016			PASS
11	2462	13.31	0.021			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	15.32	0.034	30	1	PASS
6	2437	15.53	0.036			PASS
9	2452	15.65	0.037			PASS

Channel	Frequency (MHz)	Measured Output Average Power		Limit		Verdict
		dBm	W	dBm	W	
3	2422	10.28	0.011	30	1	PASS
6	2437	10.31	0.011			PASS
9	2452	10.14	0.010			PASS



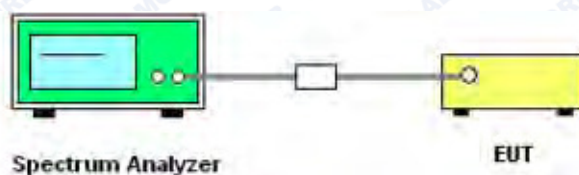
2.3 Bandwidth

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.



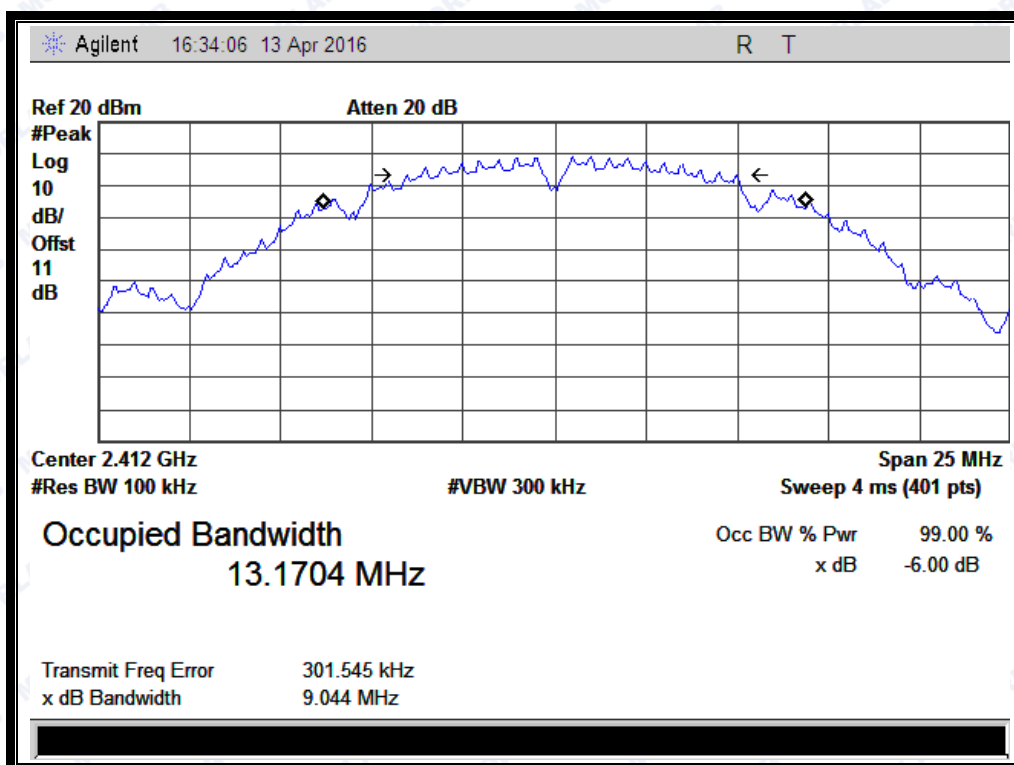
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2.3.3.1 802.11b Test mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	9.044	≥500	PASS
6	2437	8.585	≥500	PASS
11	2462	8.598	≥500	PASS

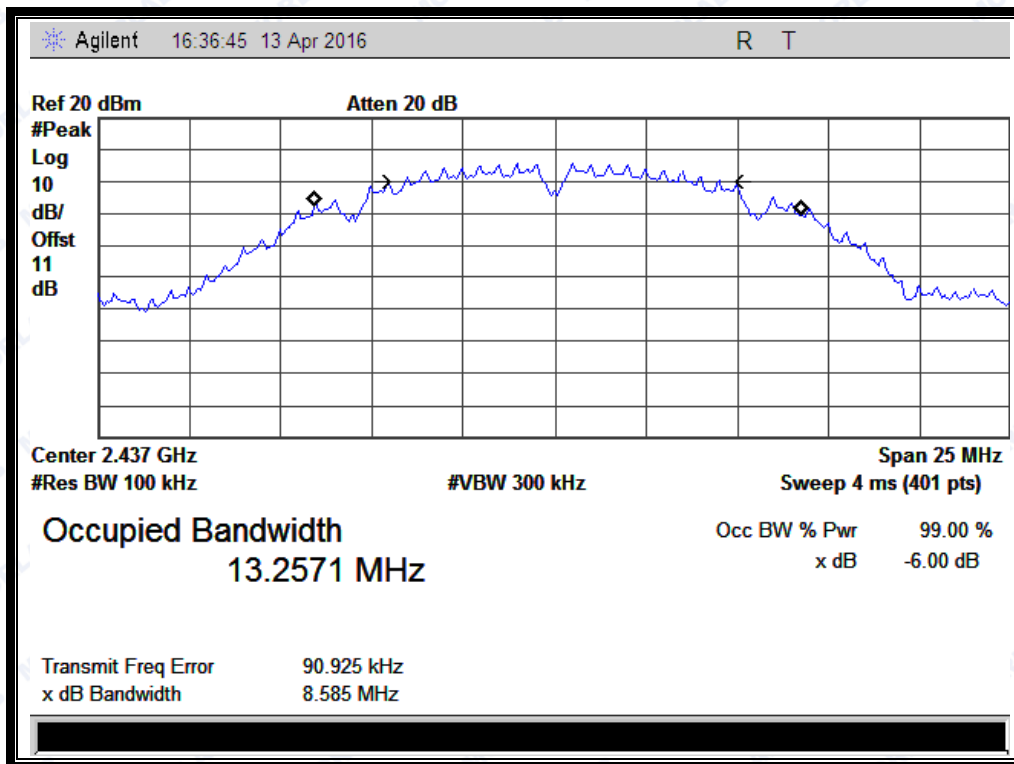
B. Test Plots



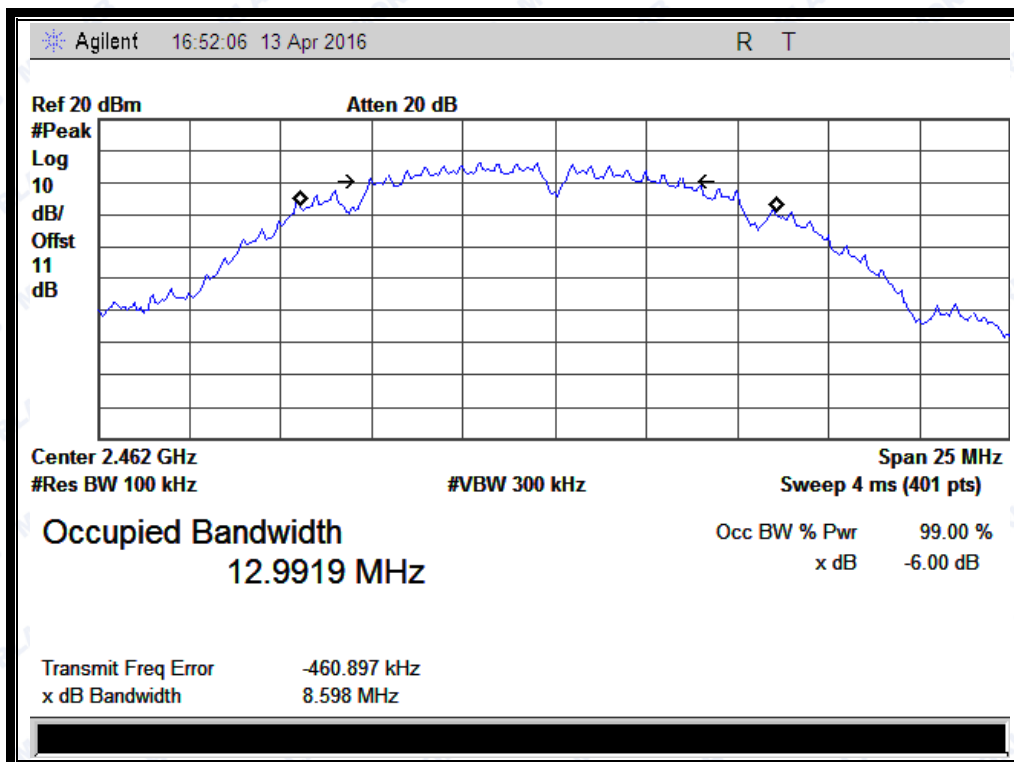
(Channel 1: 2412MHz @ 802.11b)



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(Channel 6: 2437 MHz @ 802.11b)



(Channel 11: 2462MHz @ 802.11b)



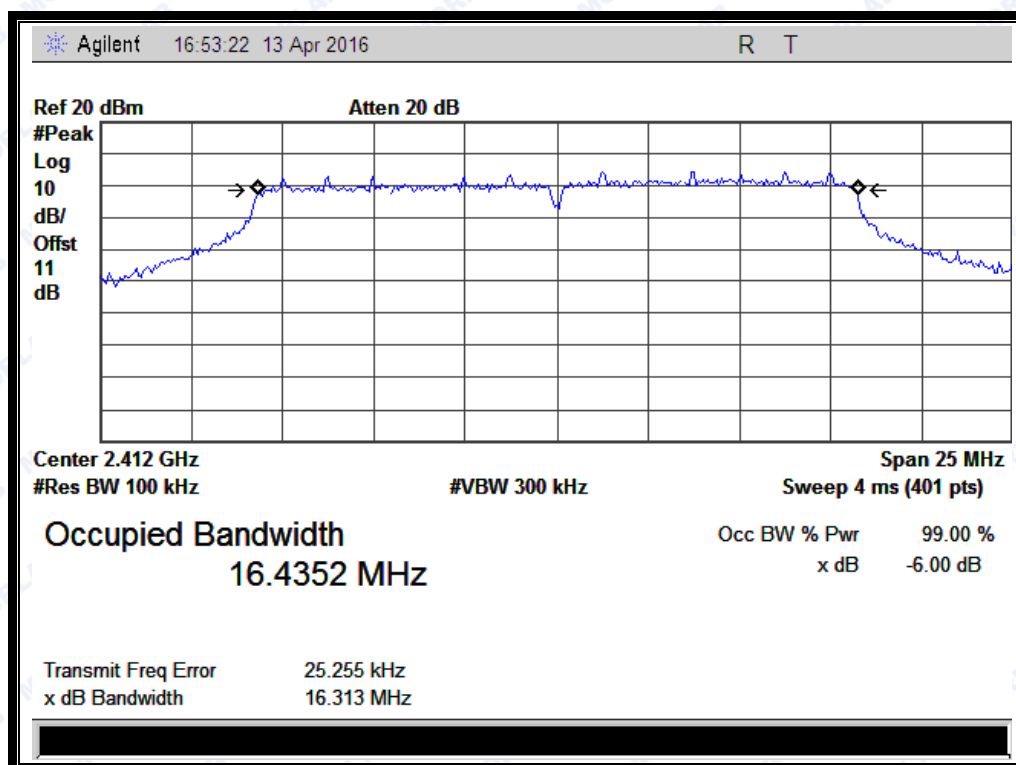
REPORT No.: SZ16030142W03

2.3.3.2 802.11g Test mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	16.313	≥ 500	PASS
6	2437	16.443	≥ 500	PASS
11	2462	14.516	≥ 500	PASS

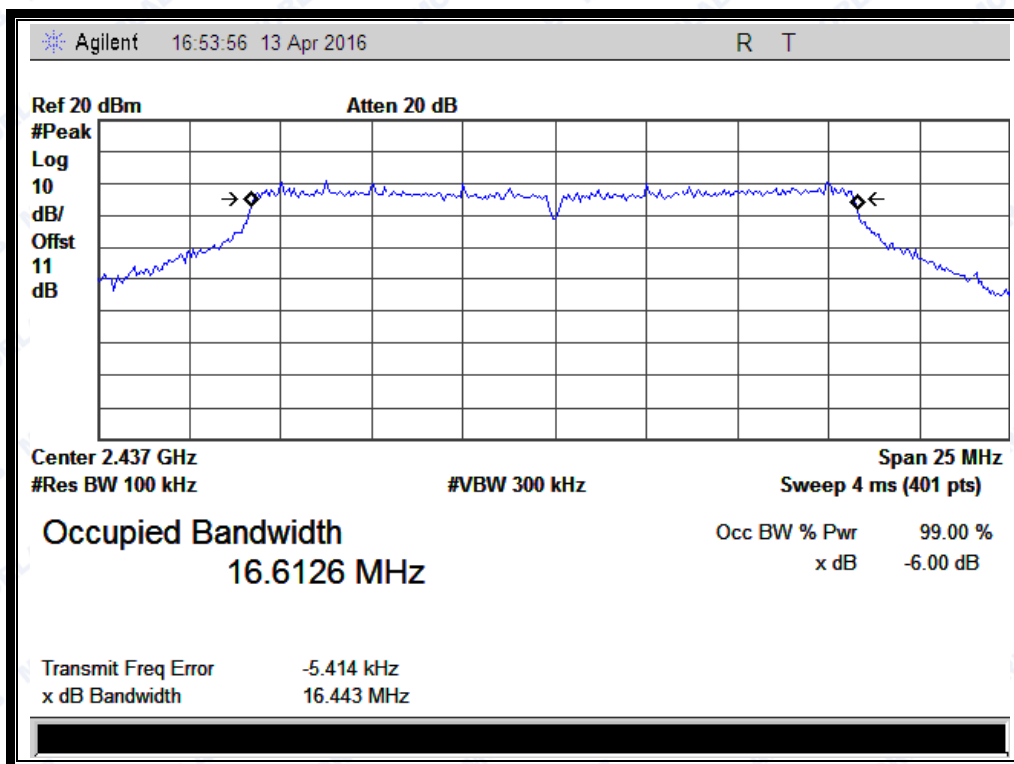
B. Test Plots:



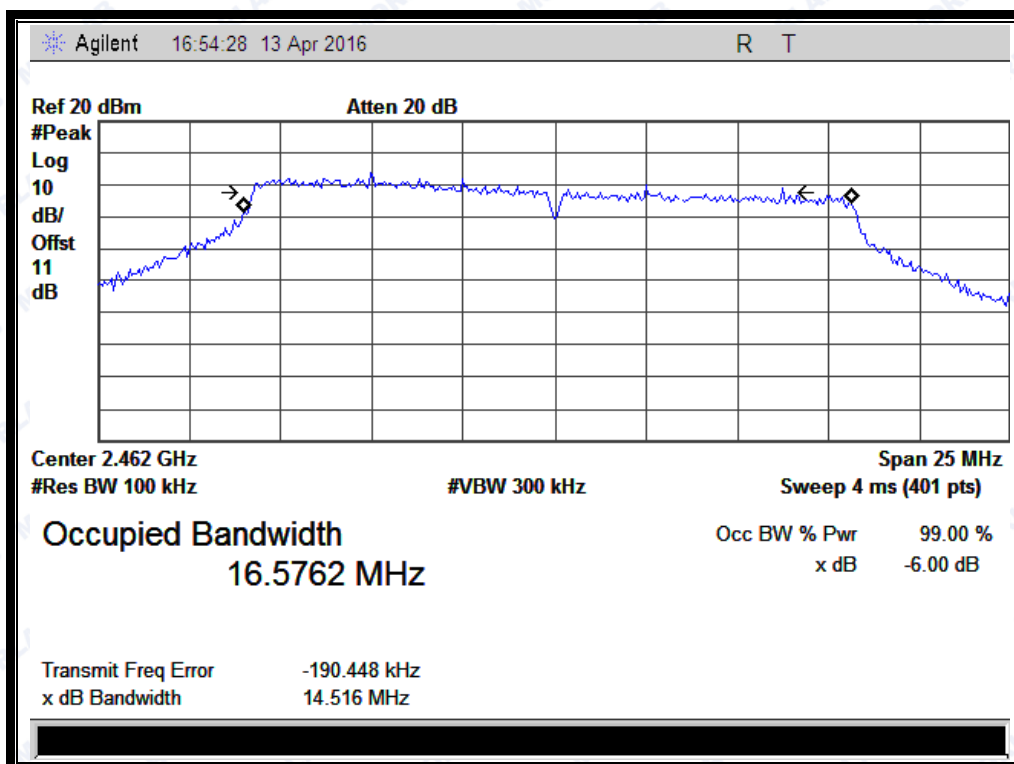
(Channel 1: 2412MHz @ 802.11g)



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(Channel 6: 2437MHz @ 802.11g)



(Channel 11: 2462MHz @ 802.11g)



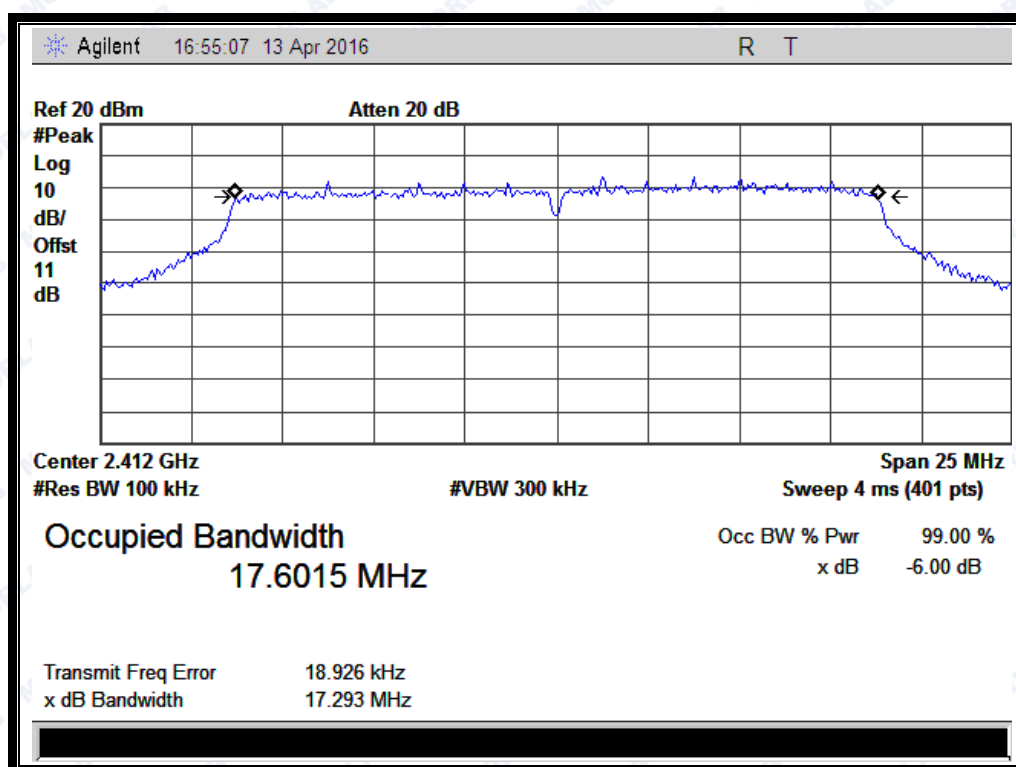
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2.3.3.3 802.11n-20 Test mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
1	2412	17.293	≥500	PASS
6	2437	17.675	≥500	PASS
11	2462	16.376	≥500	PASS

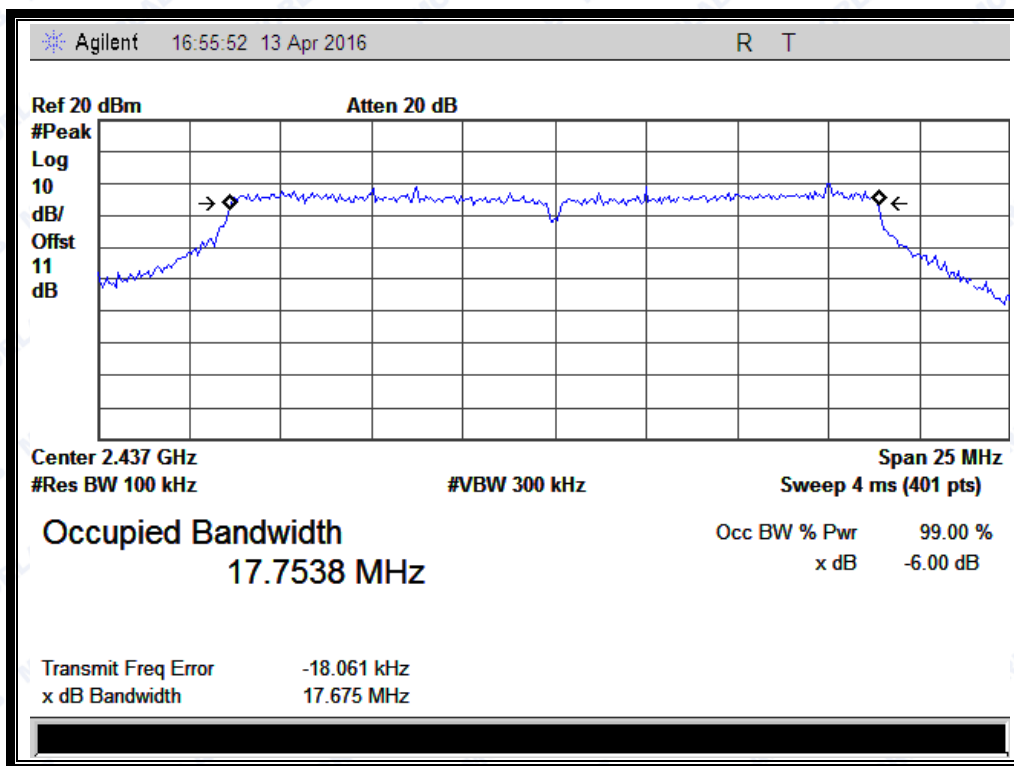
B. Test Plots:



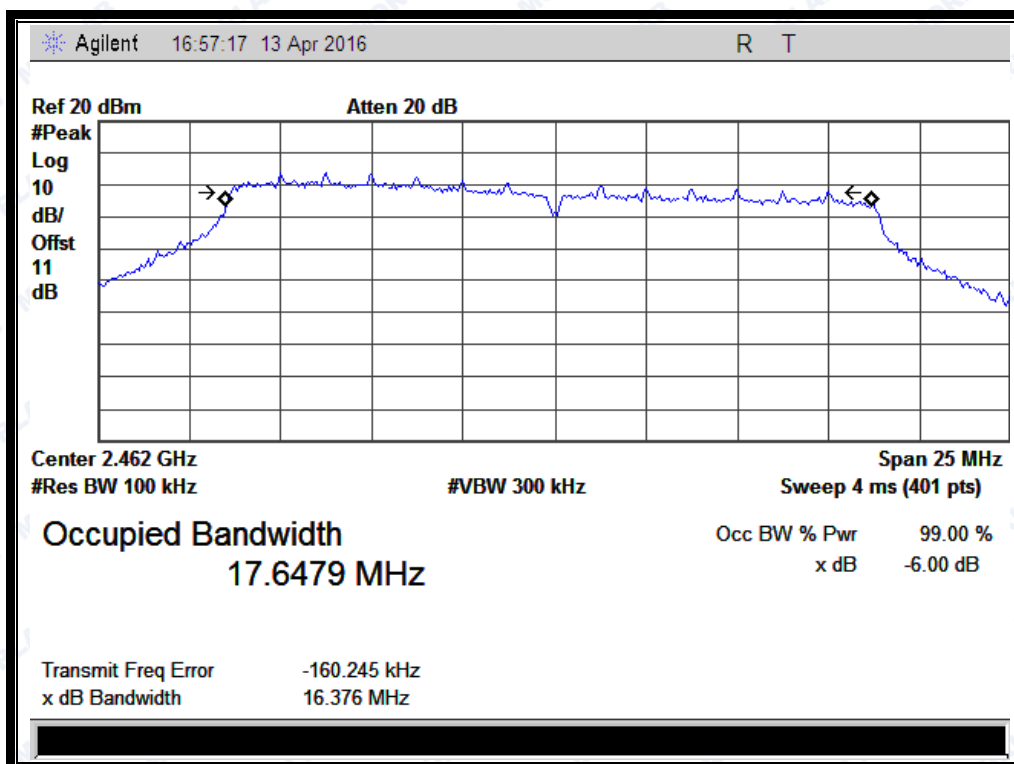
(Channel 1: 2412MHz @ 802.11n-20)



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



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



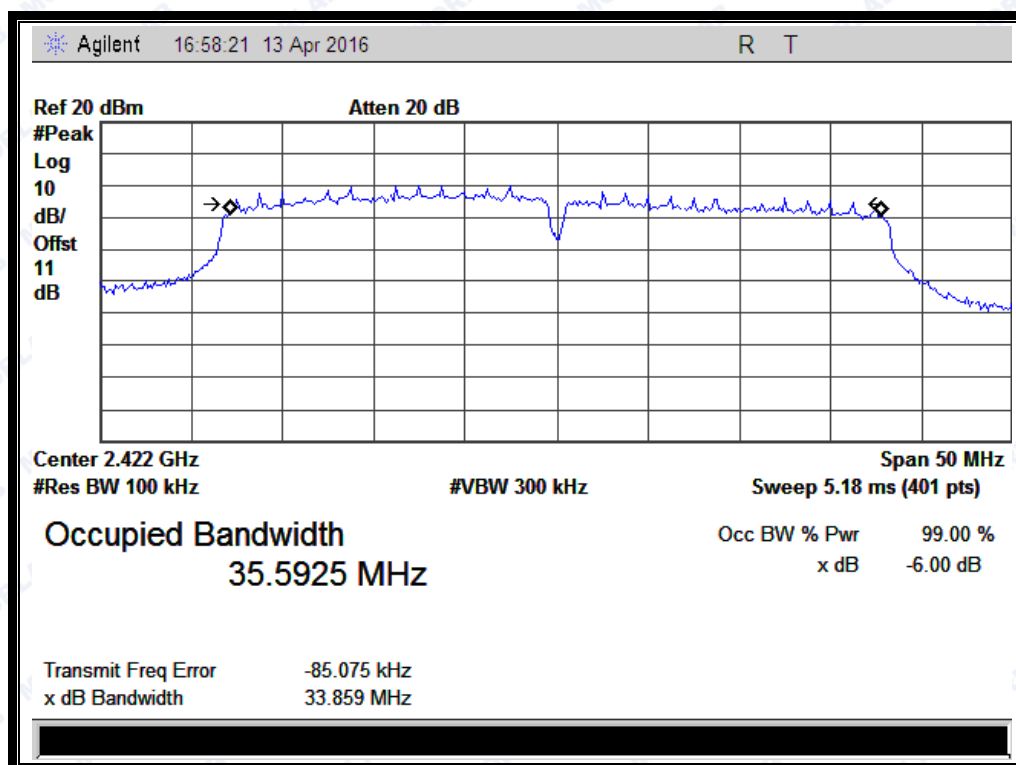
REPORT No.: SZ16030142W03

2.3.3.4 802.11n-40 Test mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (kHz)	Result
3	2422	33.859	≥ 500	PASS
6	2437	35.965	≥ 500	PASS
9	2452	31.274	≥ 500	PASS

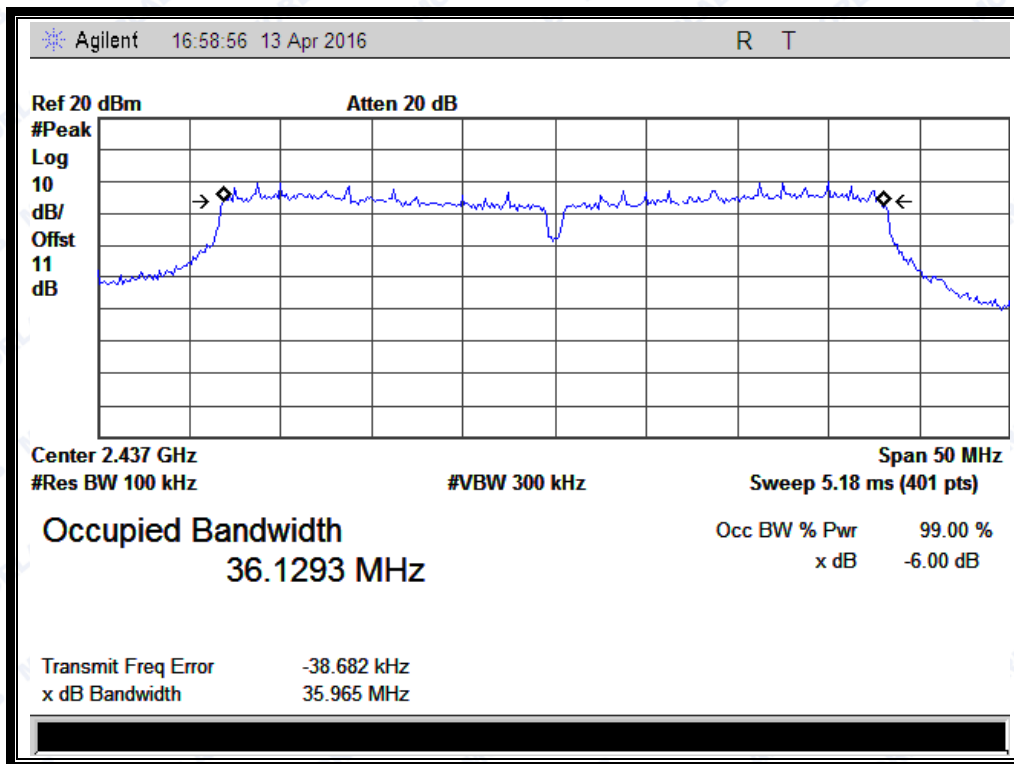
B. Test Plots:



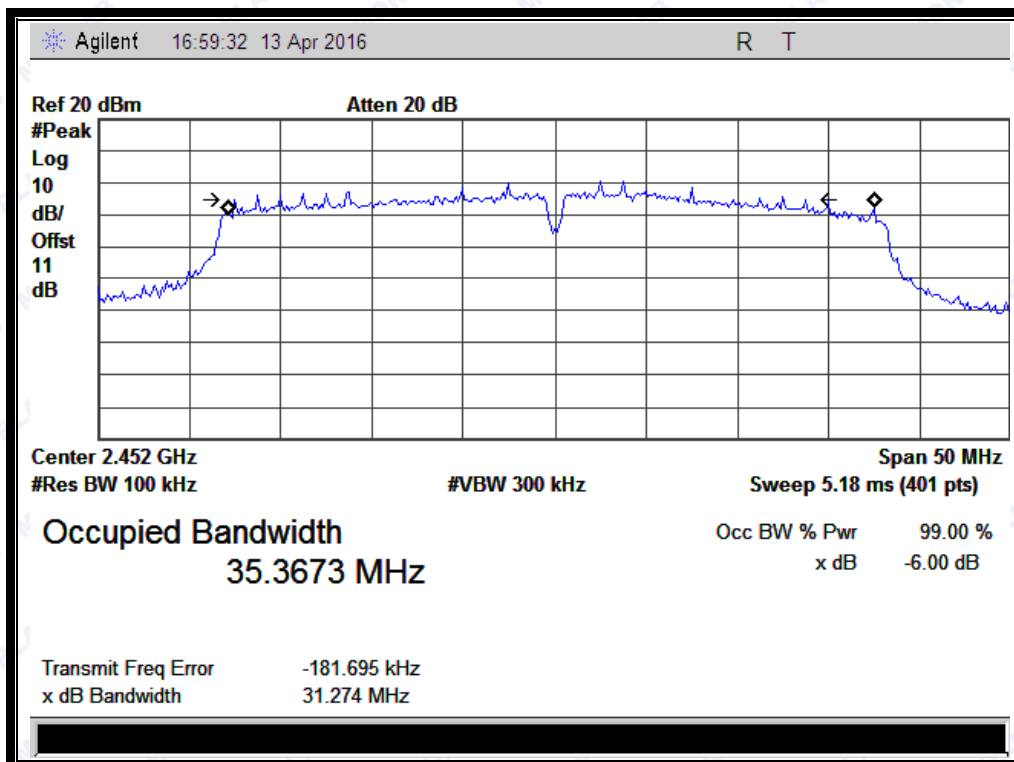
(Channel 3: 2422Mz @ 802.11n-40)



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



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

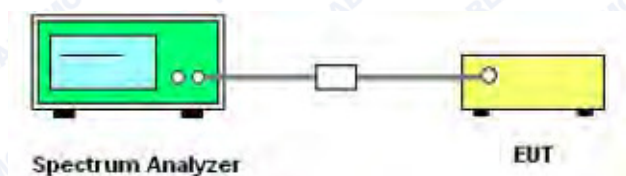
2.4 Conducted Spurious Emissions and Band Edge

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.



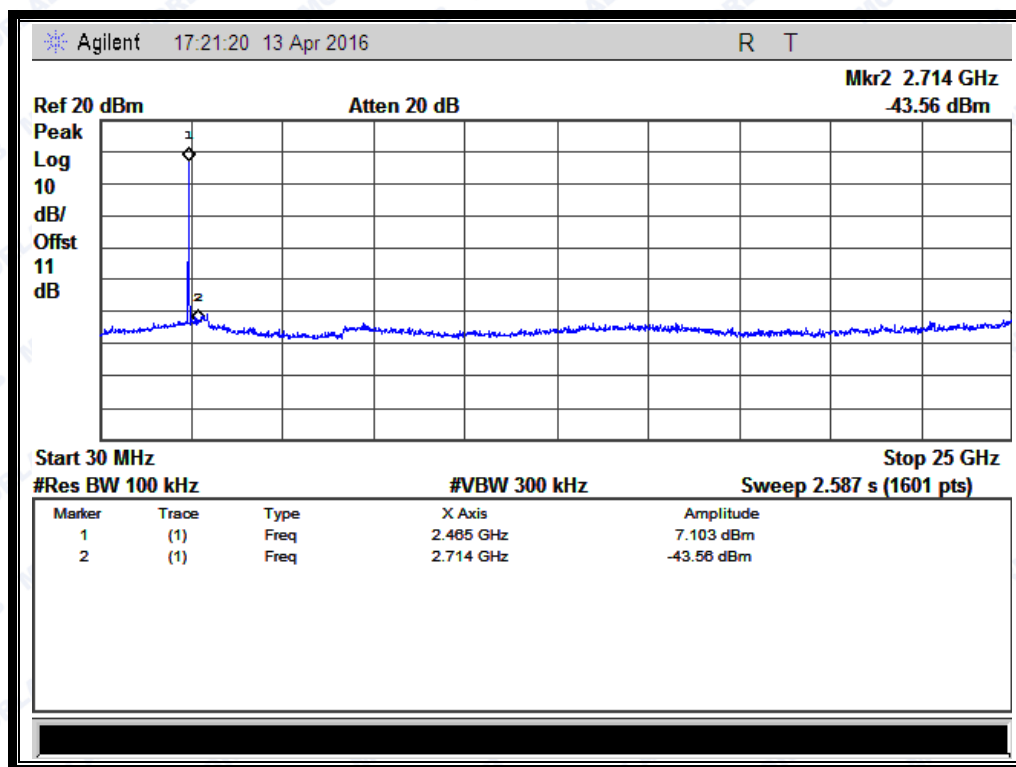
2.4.3.1 802.11b Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-43.56	7.10	-12.90	PASS
6	2437	-41.03	7.45	-12.55	PASS
11	2462	-42.30	-2.39	-22.39	PASS

B. Test Plots:

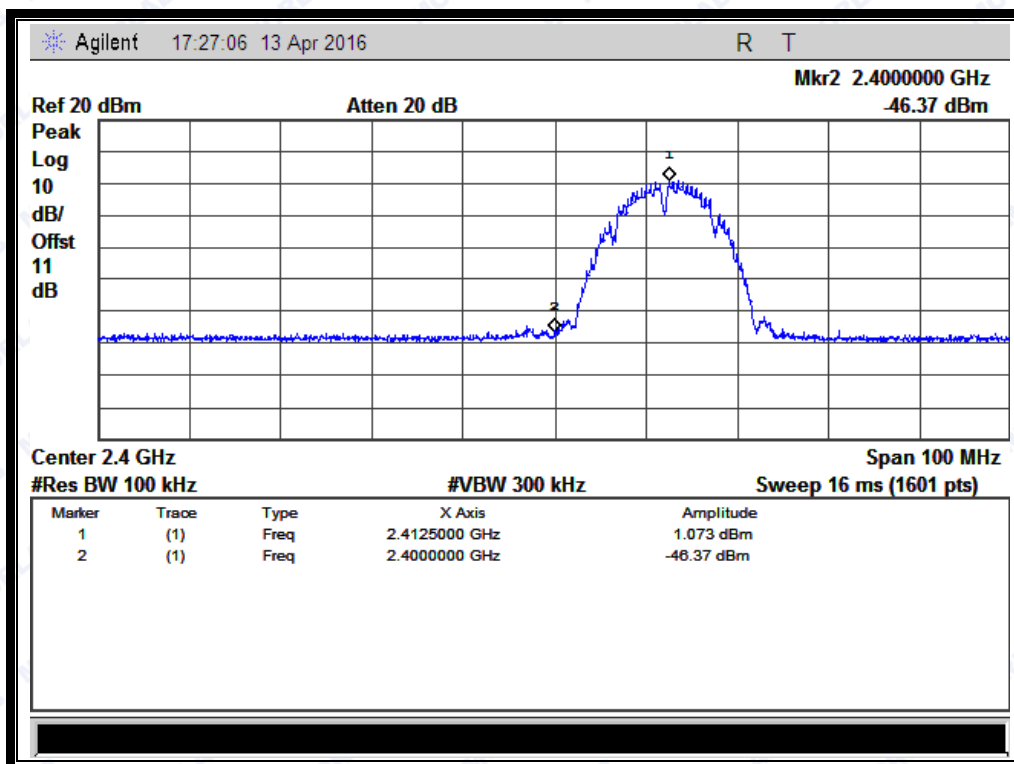
Note: the power of the Module transmitting frequency should be ignored.



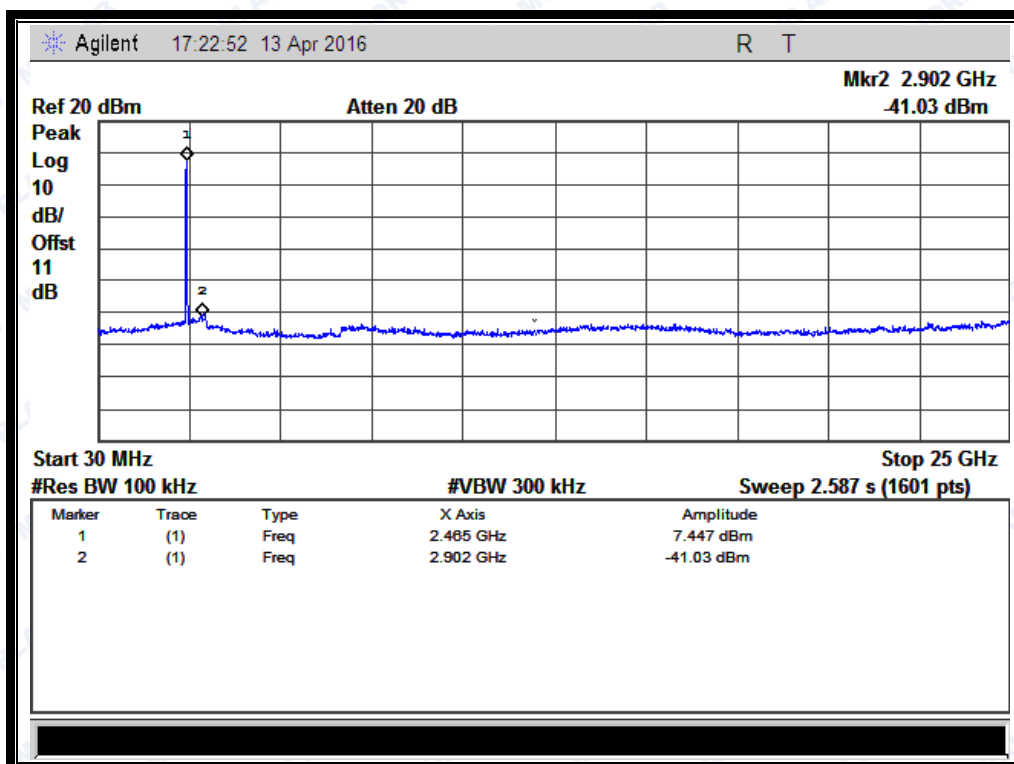
(Channel = 1, 30MHz to 25GHz)



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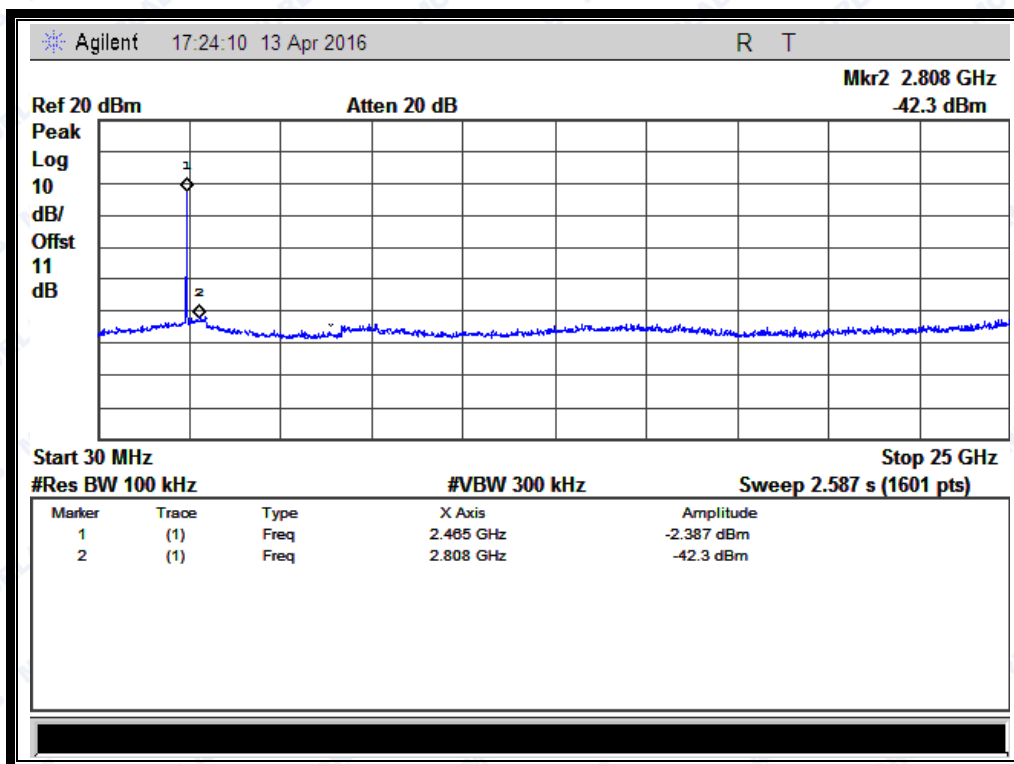
(Band Edge @ Channel = 1)



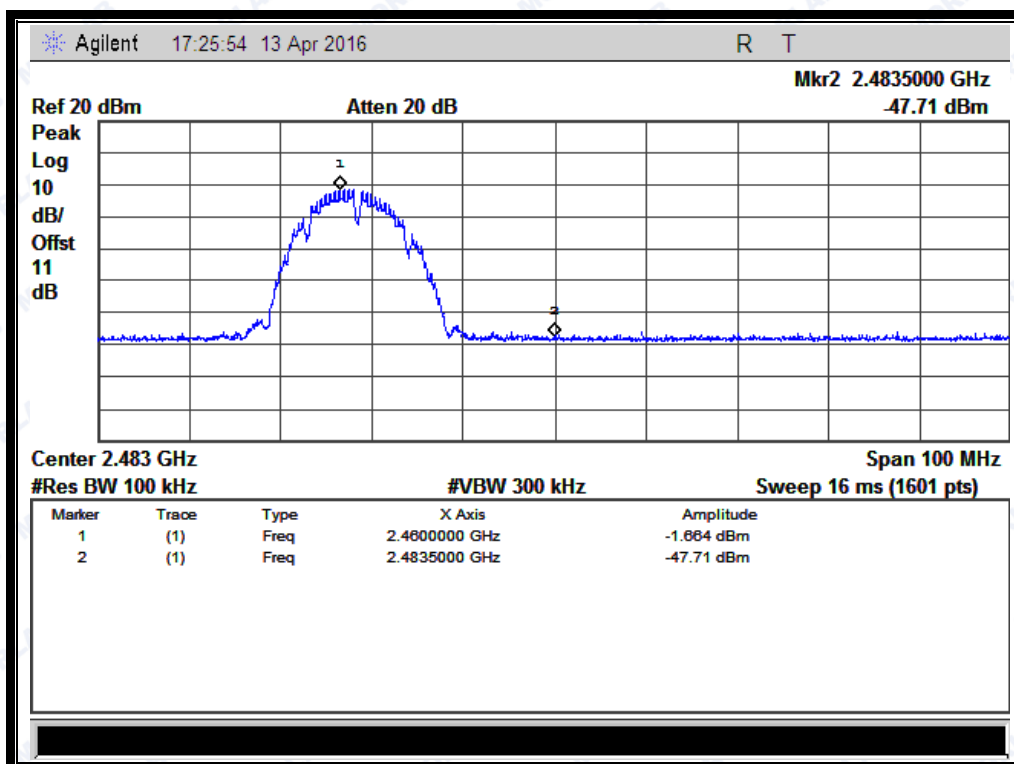
(Channel = 6, 30MHz to 25GHz)



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(Channel = 11, 30MHz to 25GHz)



(Band Edge @ Channel = 11)



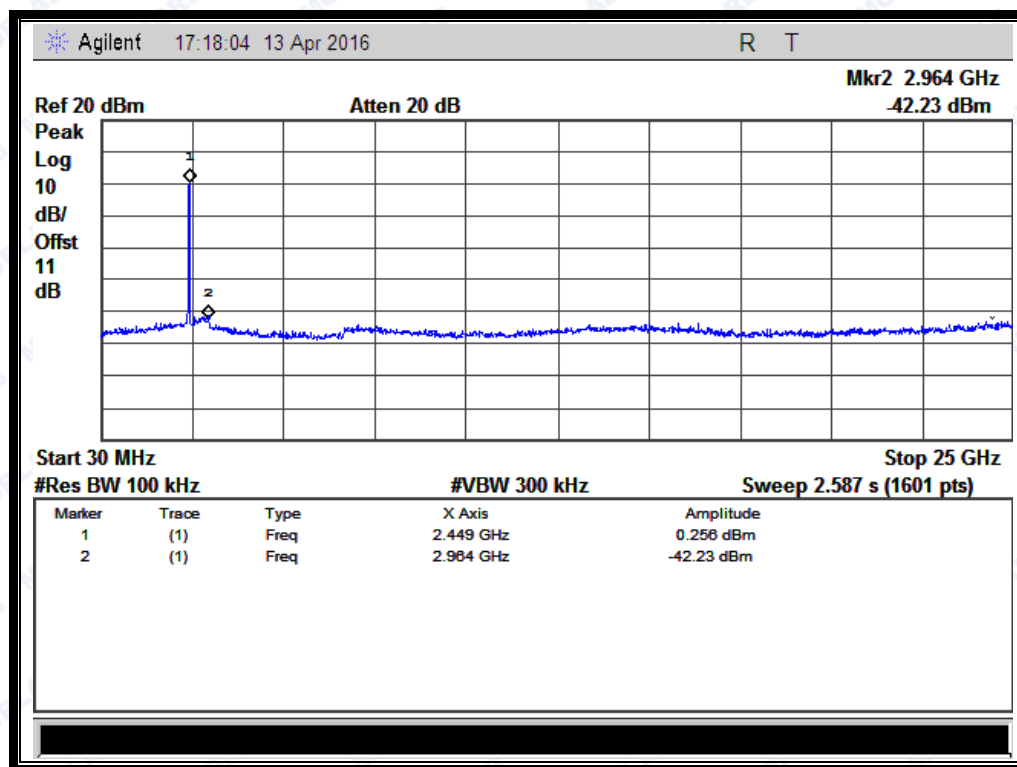
2.4.3.2 802.11g Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-42.23	0.26	-19.74	PASS
6	2437	-42.88	0.04	-19.96	PASS
11	2462	-41.39	2.36	-17.64	PASS

B. Test Plots:

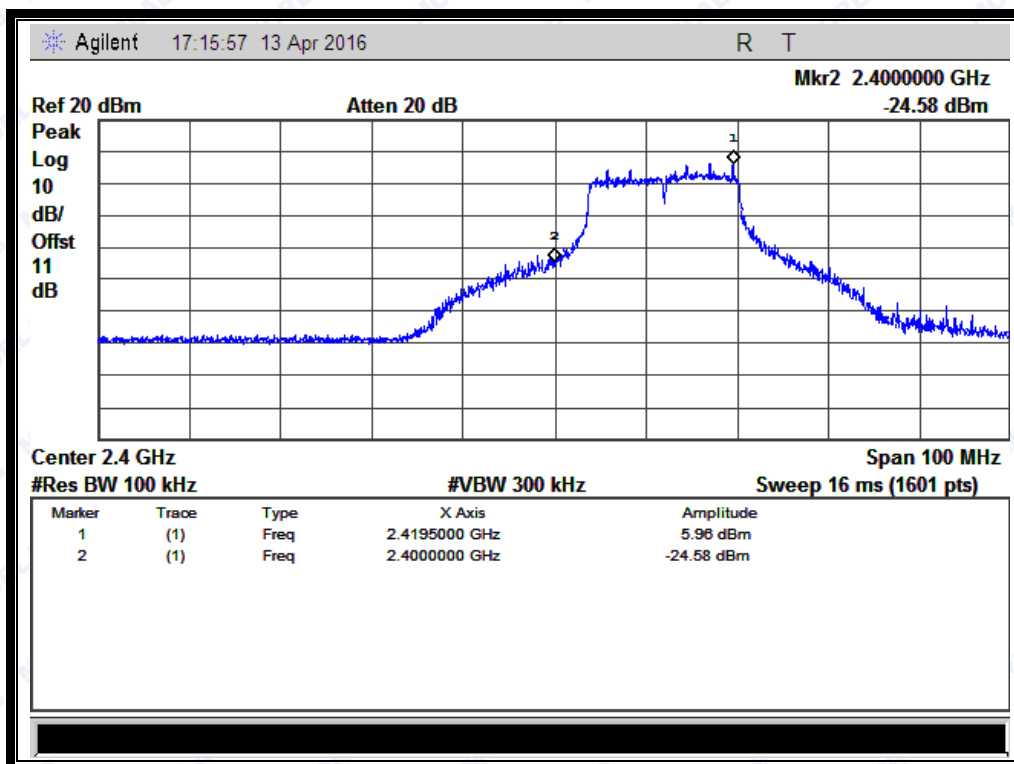
Note: the power of the Module transmitting frequency should be ignored.



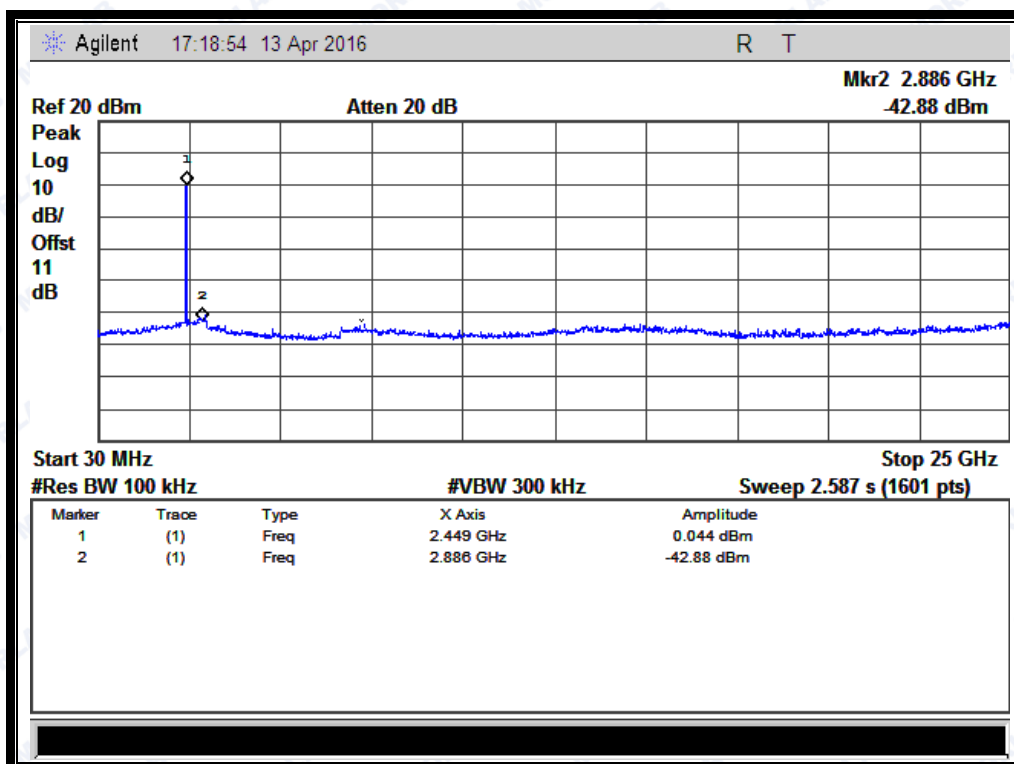
(Channel = 1, 30MHz to 25GHz)



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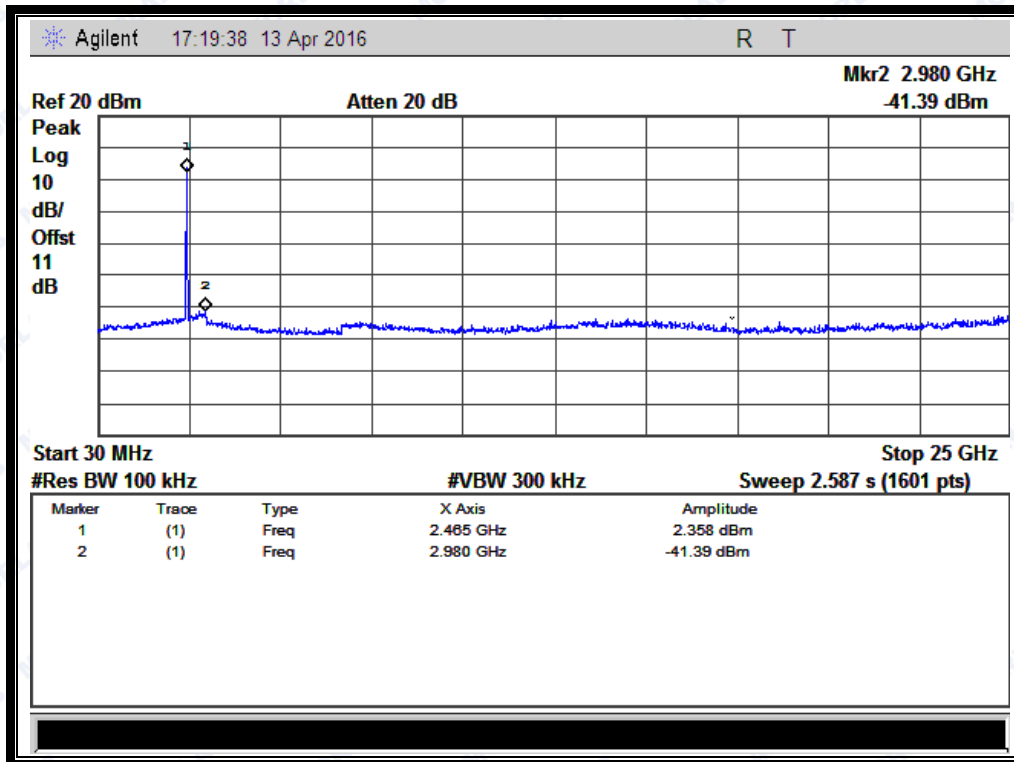
(Band Edge @ Channel = 1)



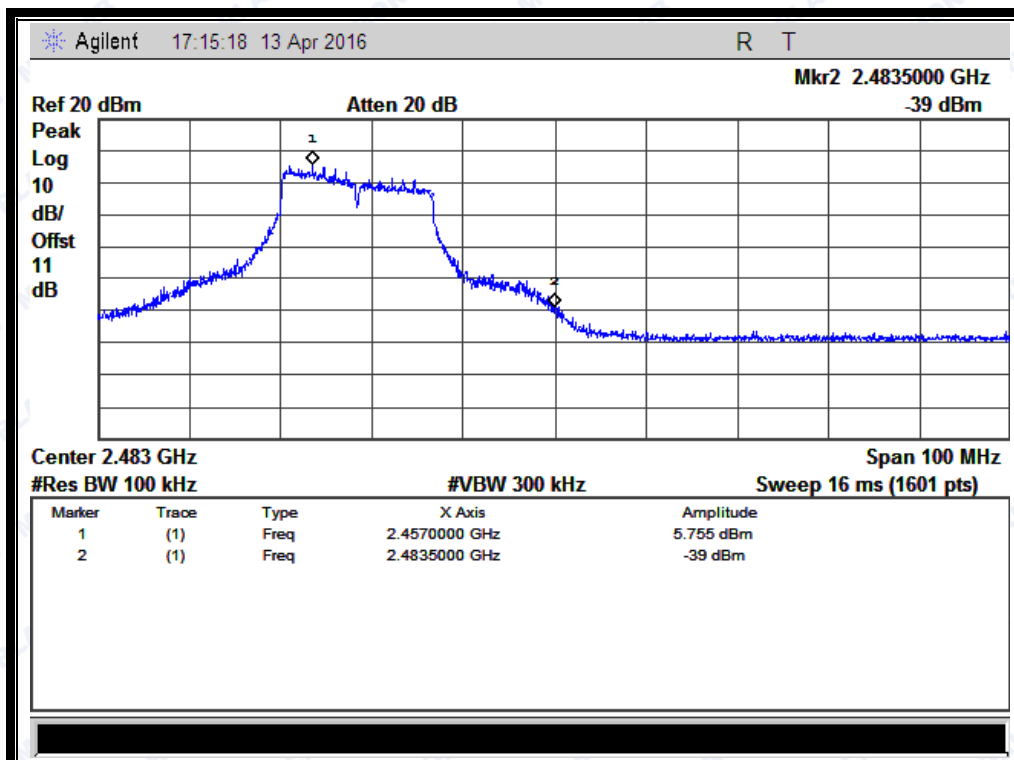
(Channel = 6, 30MHz to 25GHz)



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(Channel = 11, 30MHz to 25GHz)



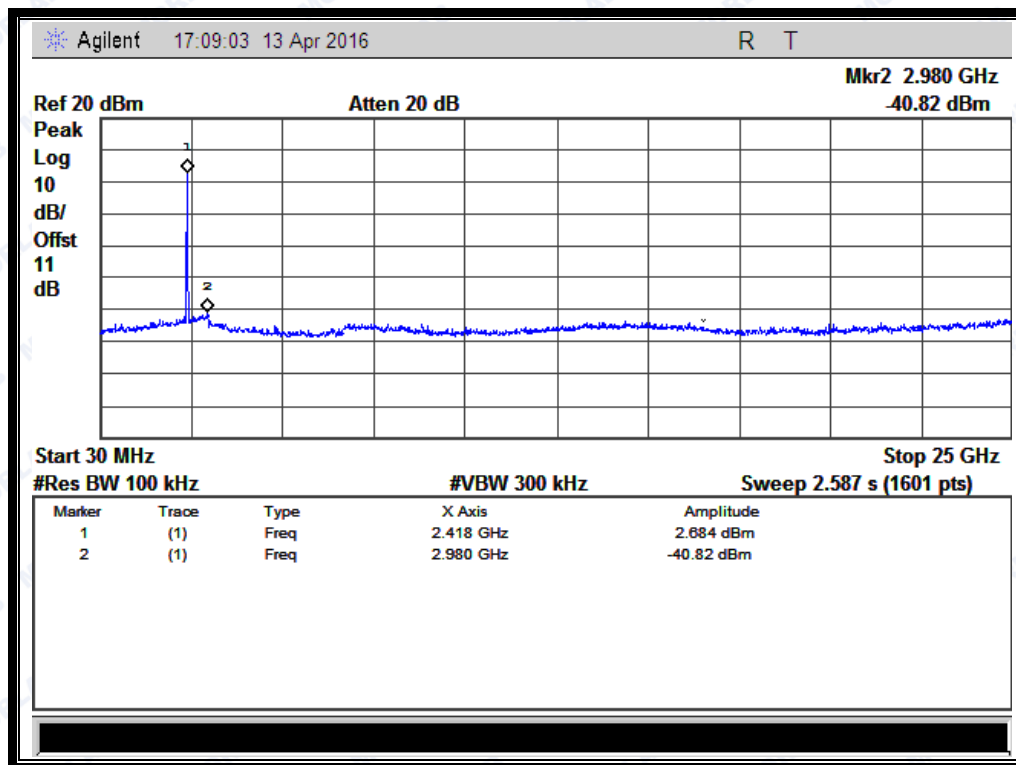
(Band Edge @ Channel = 11)

**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	-40.82	2.68	-17.32	PASS
6	2437	-42.37	-0.56	-20.56	PASS
11	2462	-42.03	-1.84	-21.84	PASS

B. Test Plots:

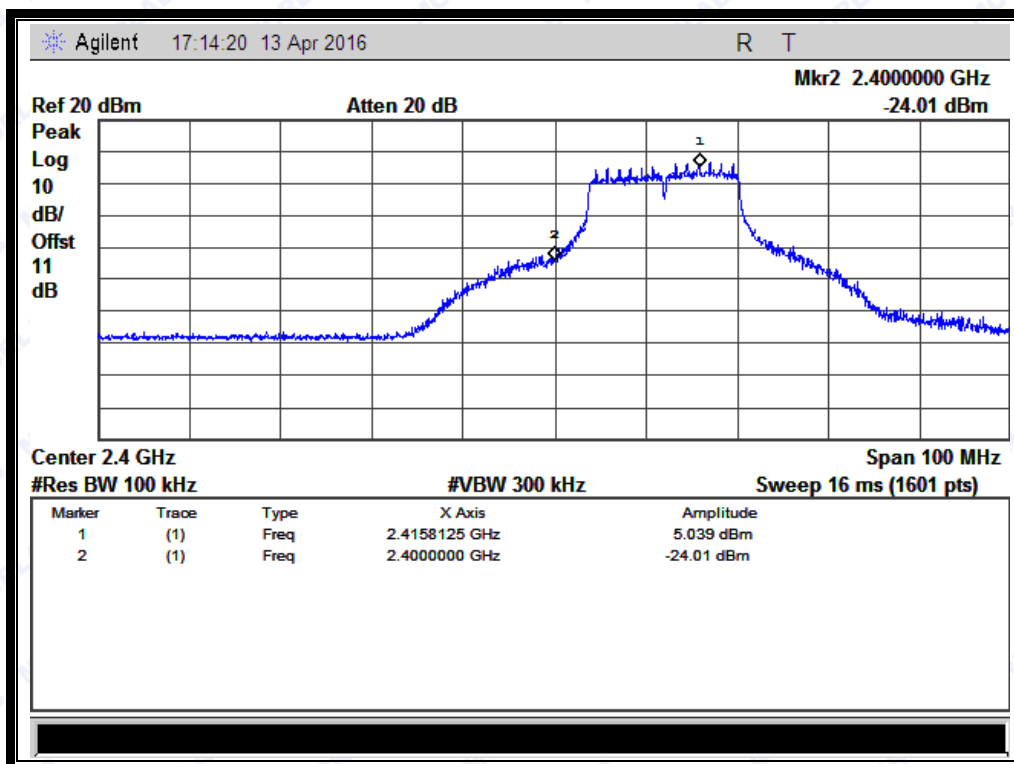
Note: the power of the Module transmitting frequency should be ignored.



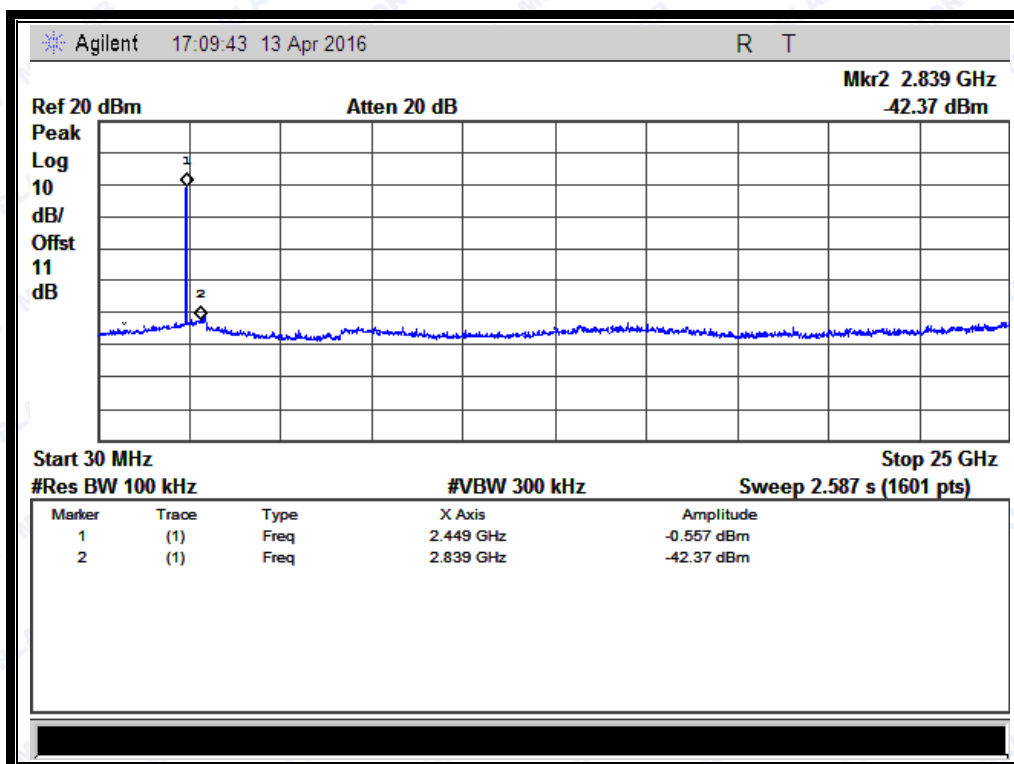
(Channel = 1, 30MHz to 25GHz)



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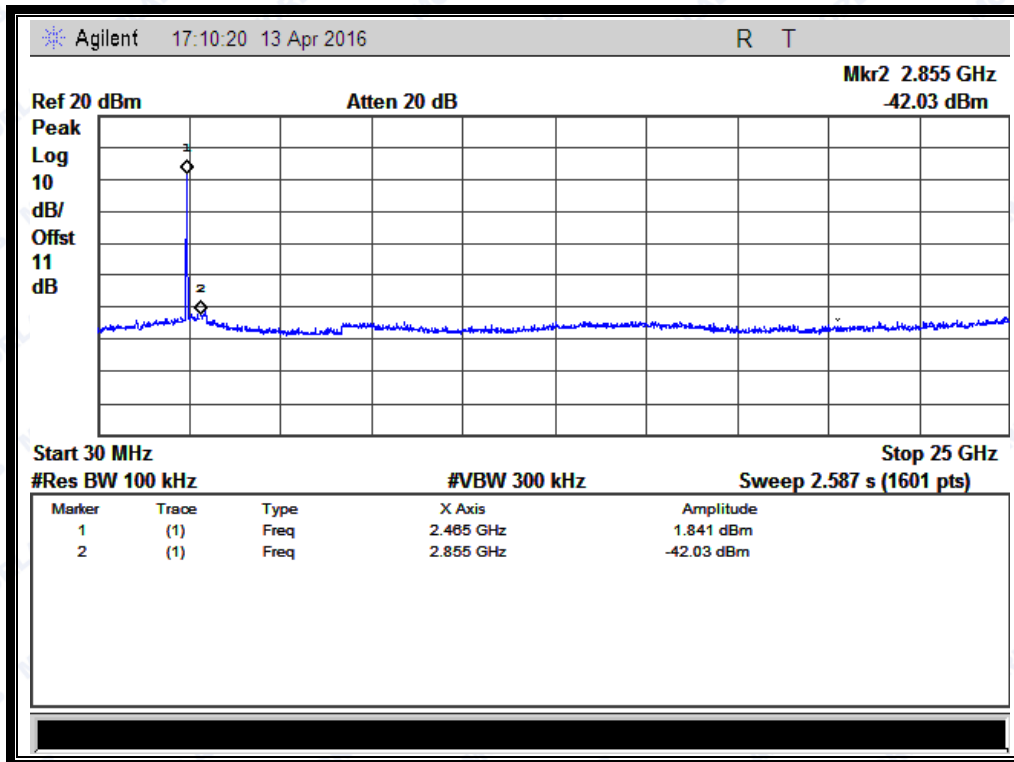
(Band Edge @ Channel = 1)



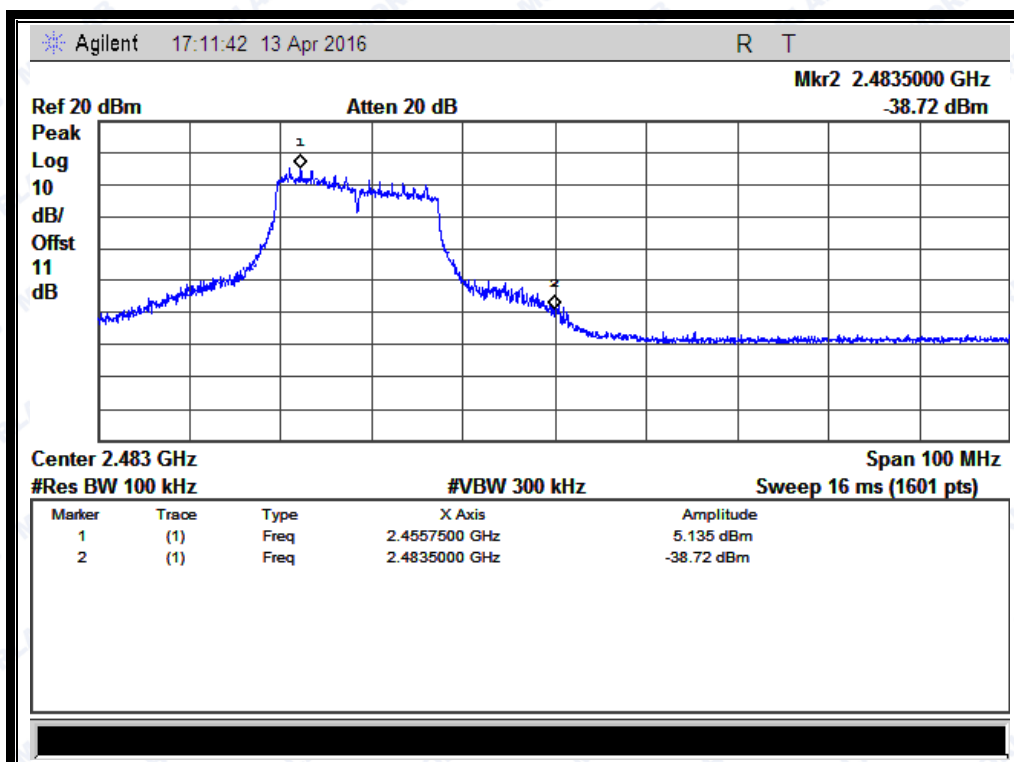
(Channel = 6, 30MHz to 25GHz)



REPORT No.: SZ16030142W03



(Channel = 11, 30MHz to 25GHz)



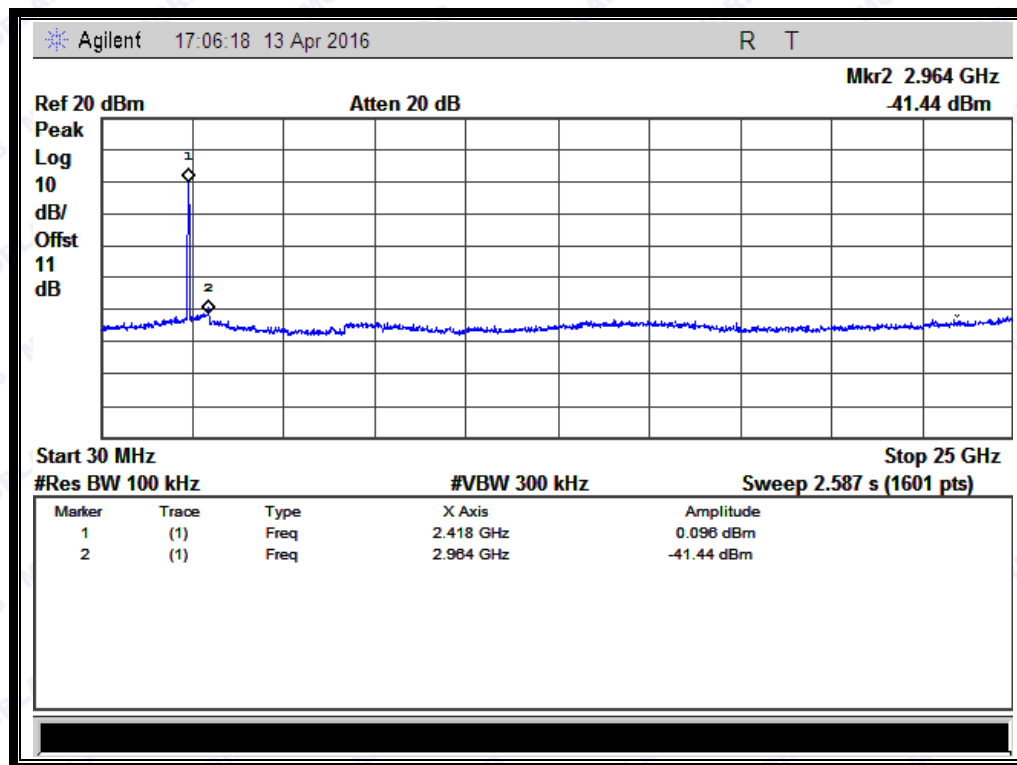
(Band Edge @ Channel = 11)

**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	-41.44	0.10	-19.90	PASS
6	2437	-42.06	-1.33	-21.33	PASS
9	2452	-43.04	-2.91	-22.91	PASS

B. Test Plots:

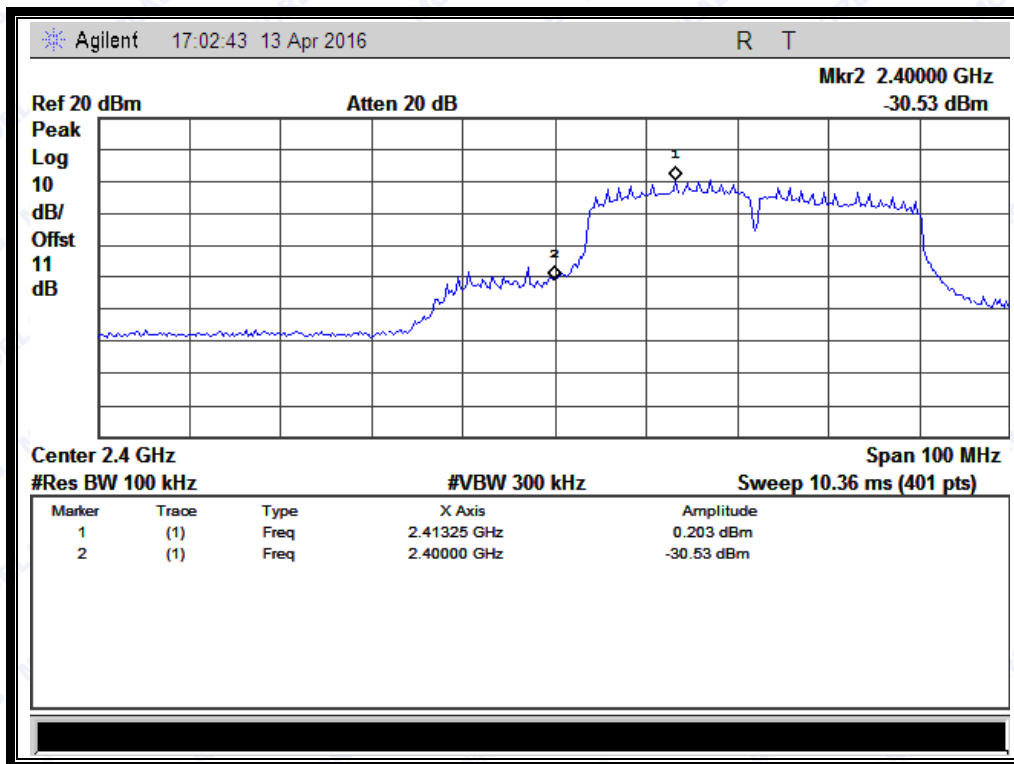
Note: the power of the Module transmitting frequency should be ignored.



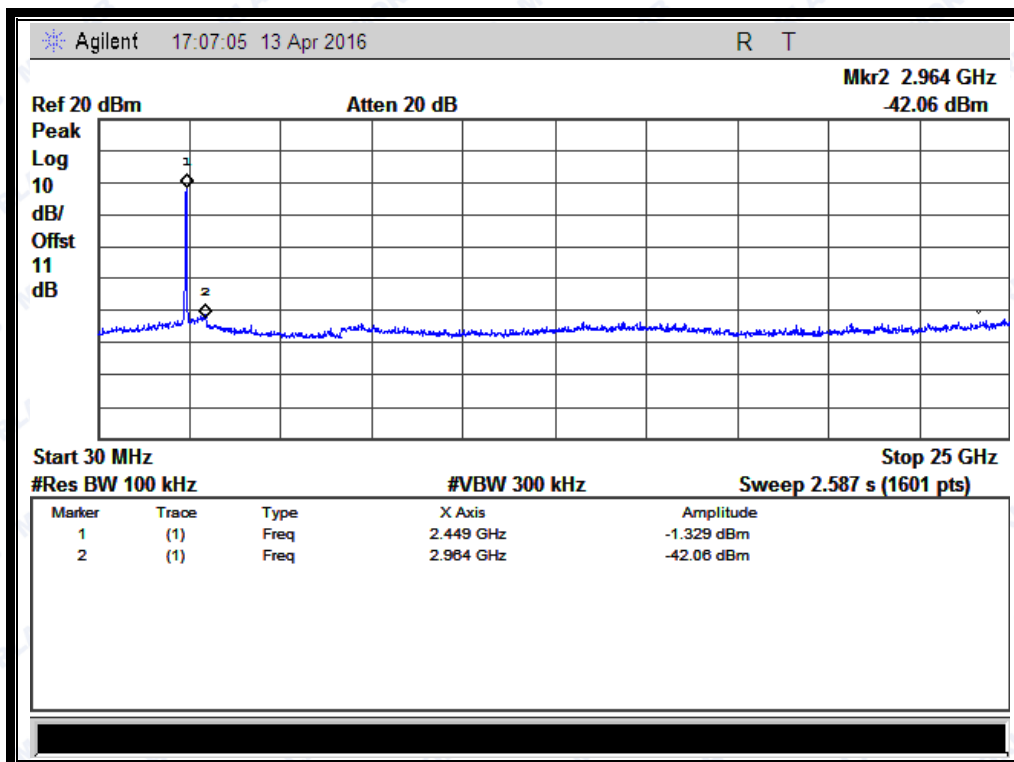
(Channel = 3, 30MHz to 25GHz)



REPORT No.: SZ16030142W03



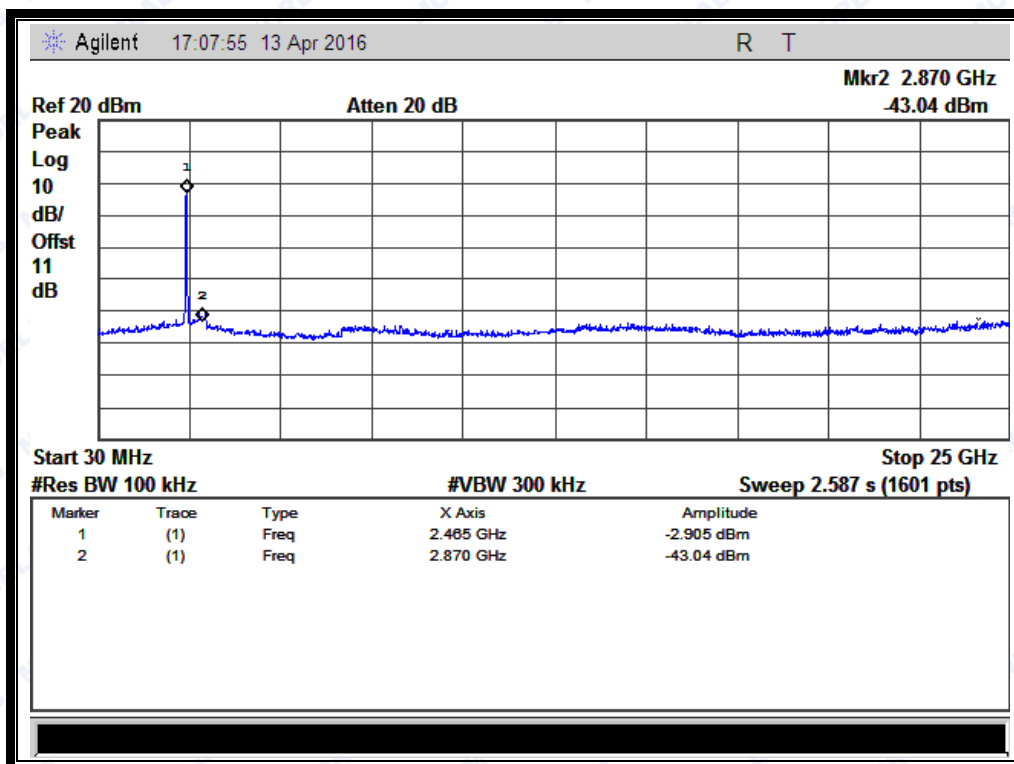
(Band Edge @ Channel = 3)



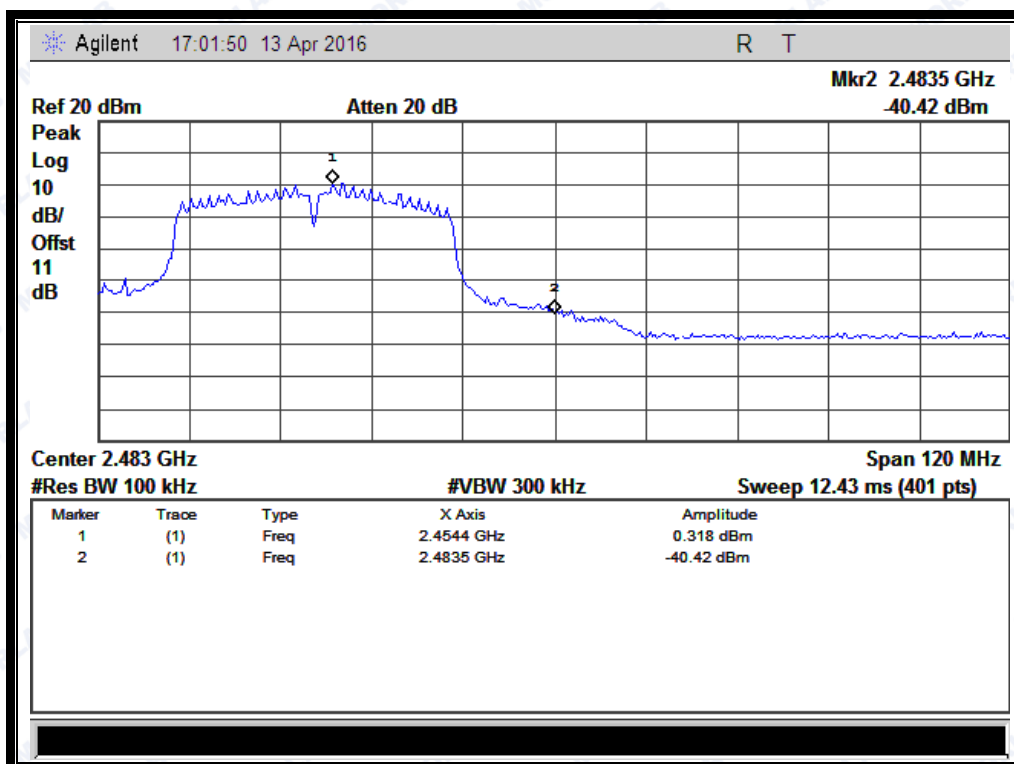
(Channel = 6, 30MHz to 25GHz)



REPORT No.: SZ16030142W03



(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.

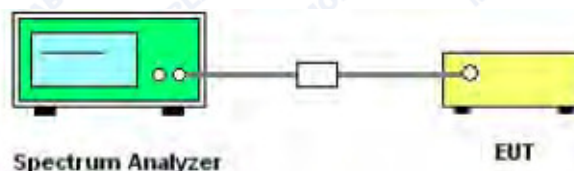
2.5.2 Test Description

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:

- Set analyzer center frequency to channel center frequency.
- Set the span to 30MHz
- Set the RBW to 3 kHz
- Set the VBW to 10KHz
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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).



REPORT No.: SZ16030142W03

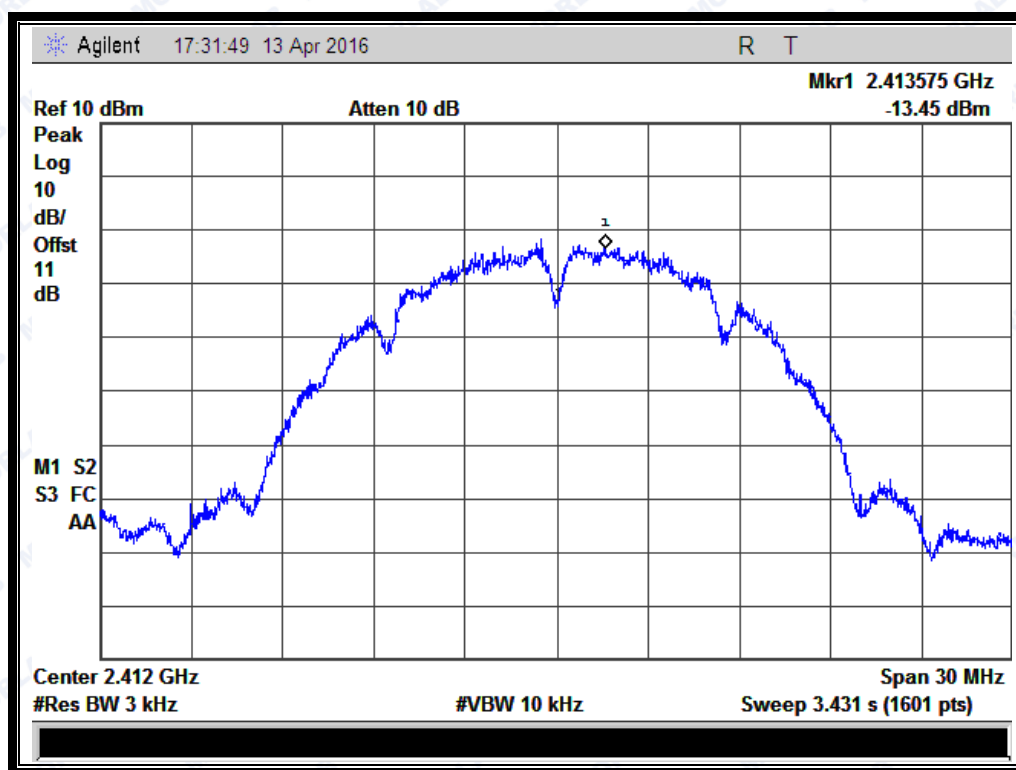
2.5.3 Test Result

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	-13.45	8	PASS
6	2437	-17.67	8	PASS
11	2462	-15.32	8	PASS
Measurement uncertainty: ± 1.3 dB				

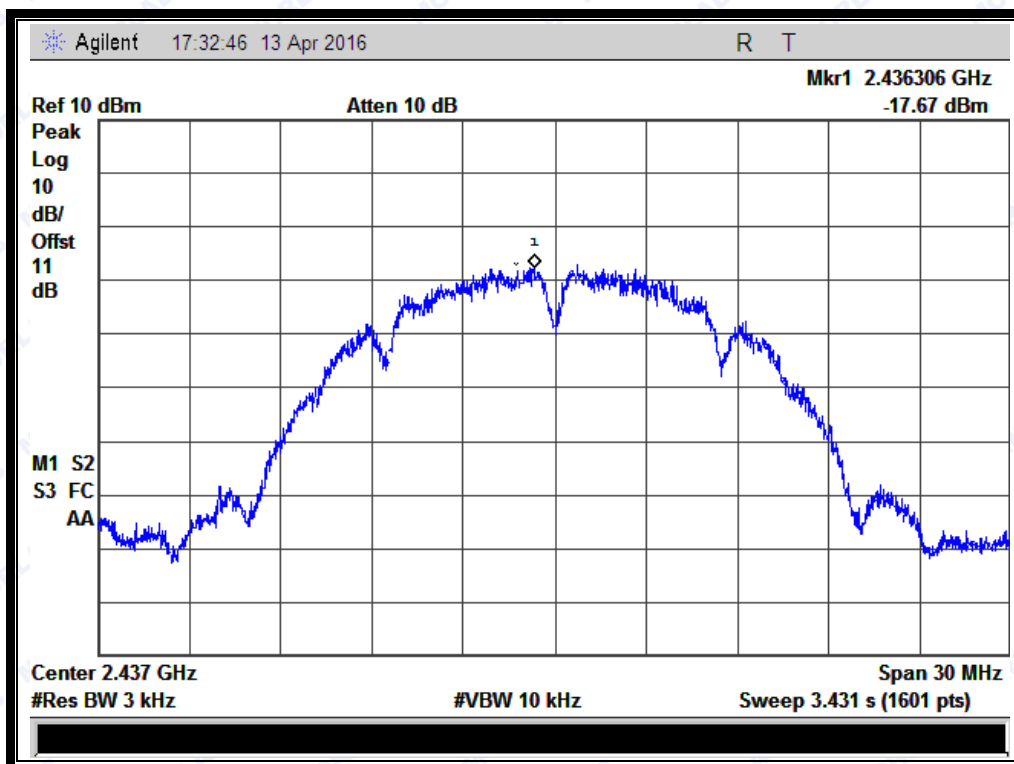
B. Test Plots:



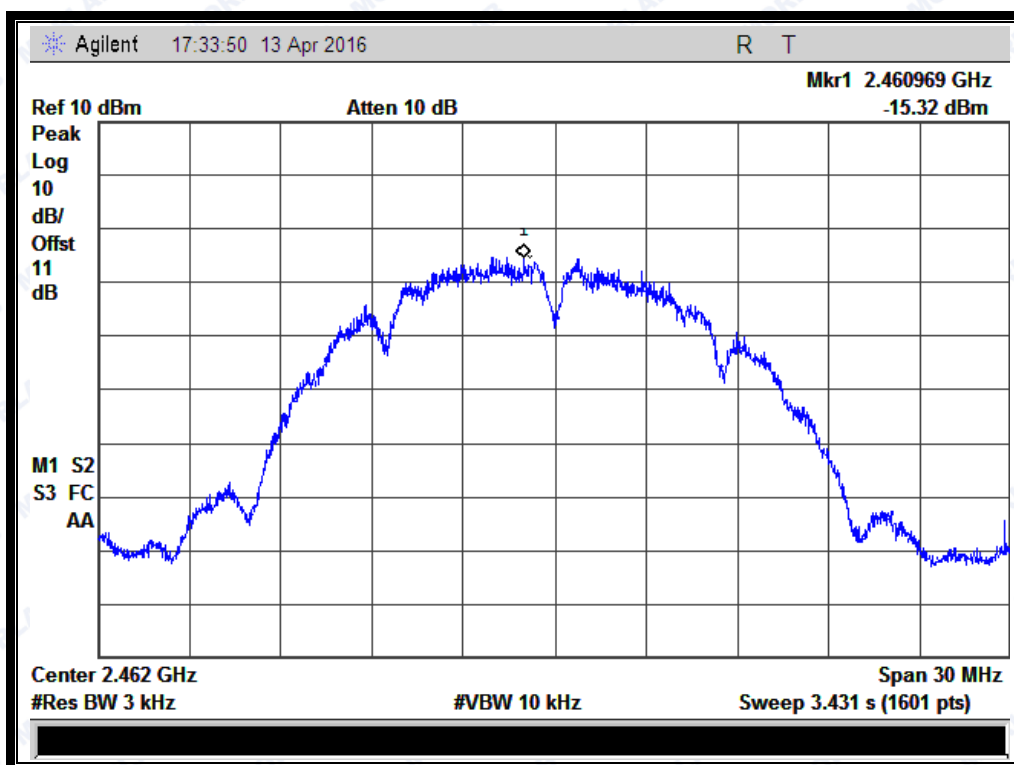
(Channel = 1 @ 802.11b)



REPORT No.: SZ16030142W03



(Channel = 6 @ 802.11b)



(Channel = 11 @ 802.11b)



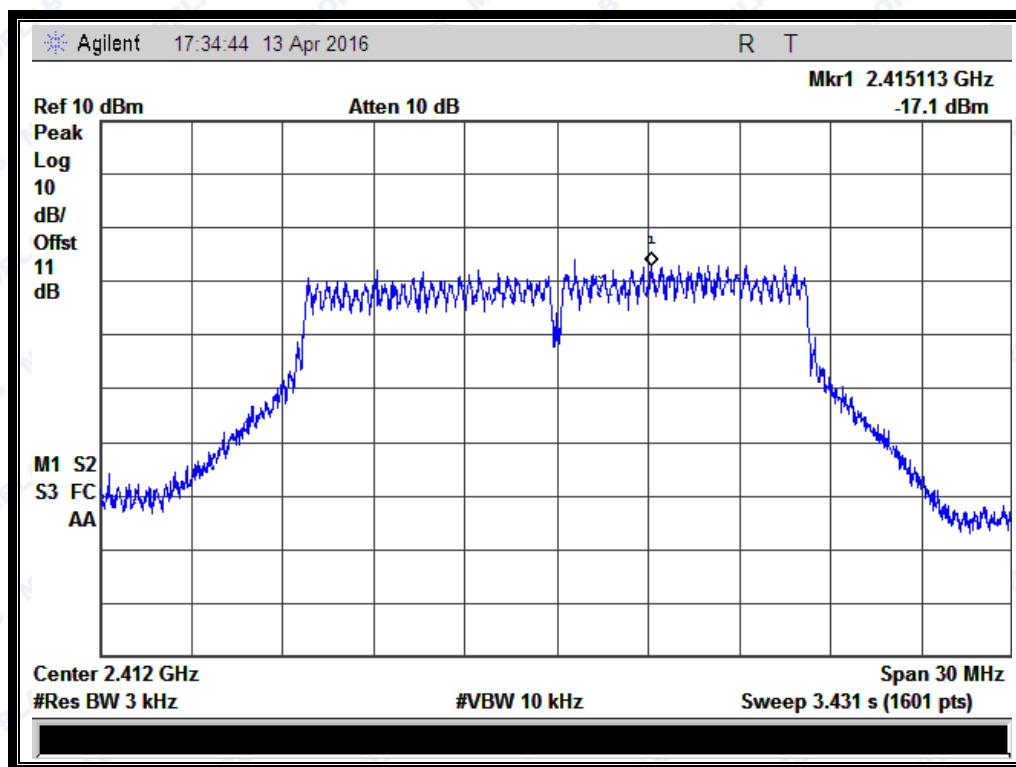
REPORT No.: SZ16030142W03

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	-17.10	8	PASS
6	2437	-19.91	8	PASS
11	2462	-18.54	8	PASS
Measurement uncertainty: ± 1.3 dB				

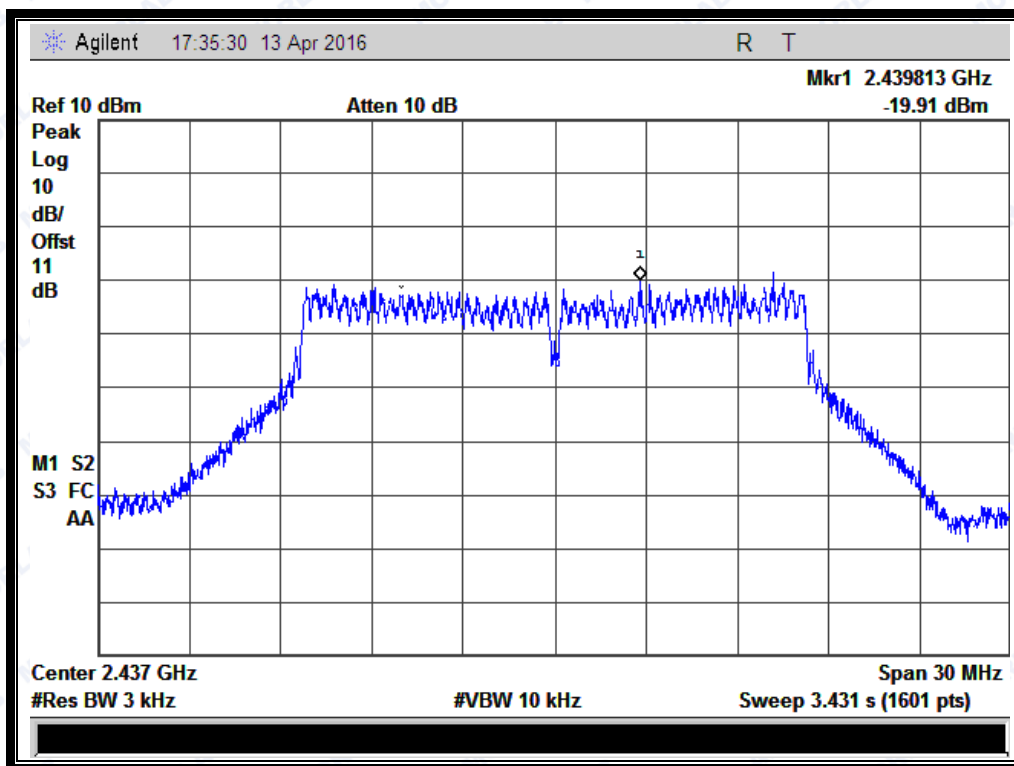
B. Test Plots:



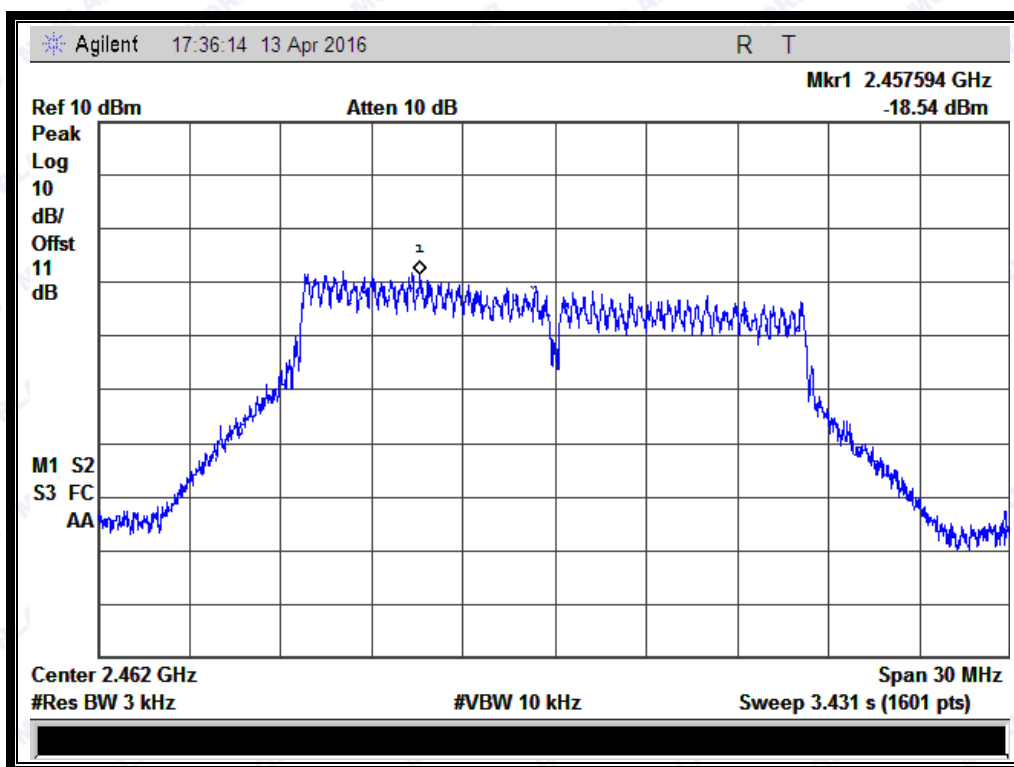
(Channel = 1 @ 802.11g)



REPORT No.: SZ16030142W03



(Channel = 6 @ 802.11g)



(Channel = 11 @ 802.11g)



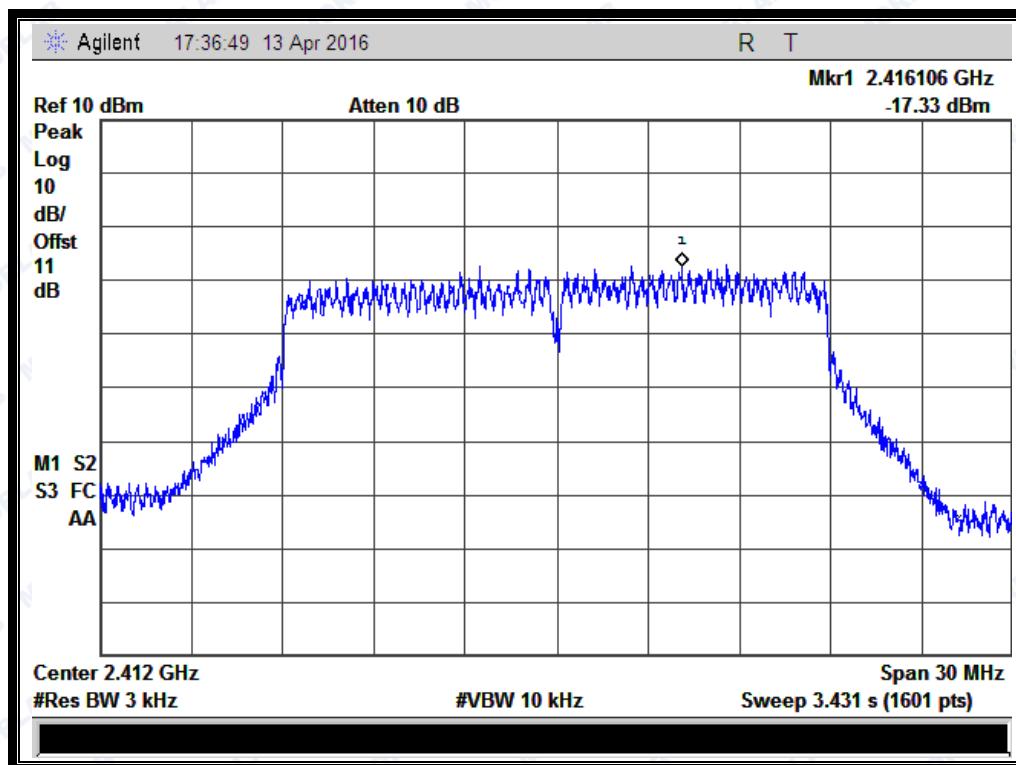
REPORT No.: SZ16030142W03

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	-17.33	8	PASS
6	2437	-18.72	8	PASS
11	2462	-18.78	8	PASS
Measurement uncertainty: ± 1.3 dB				

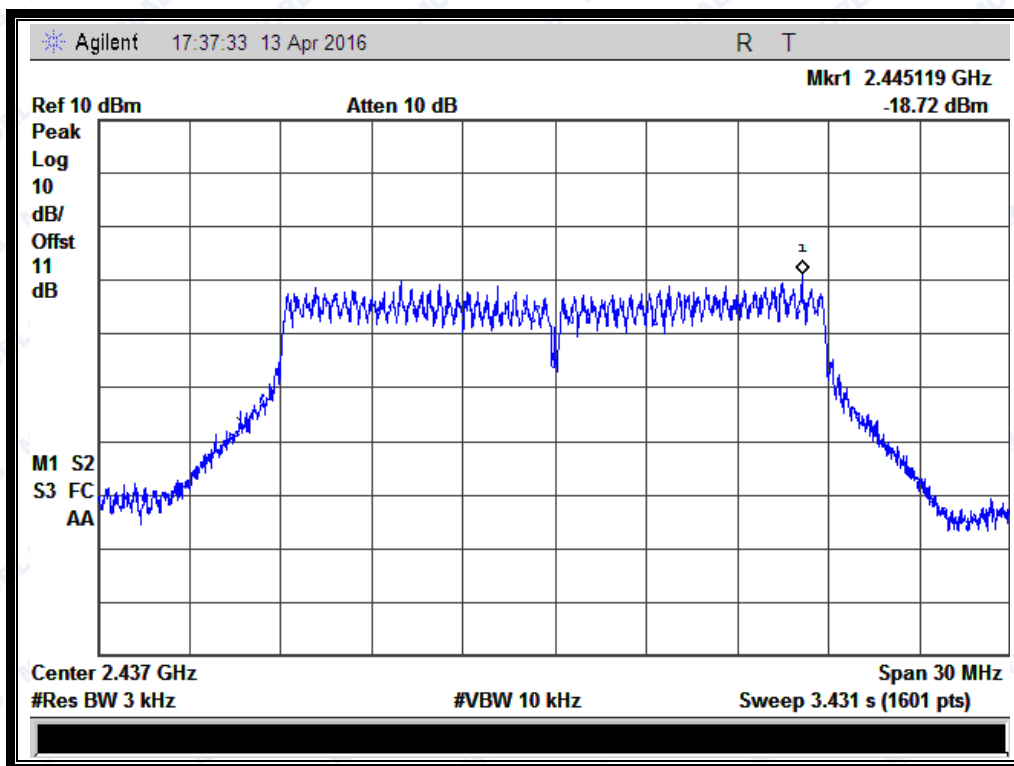
B. Test Plots:



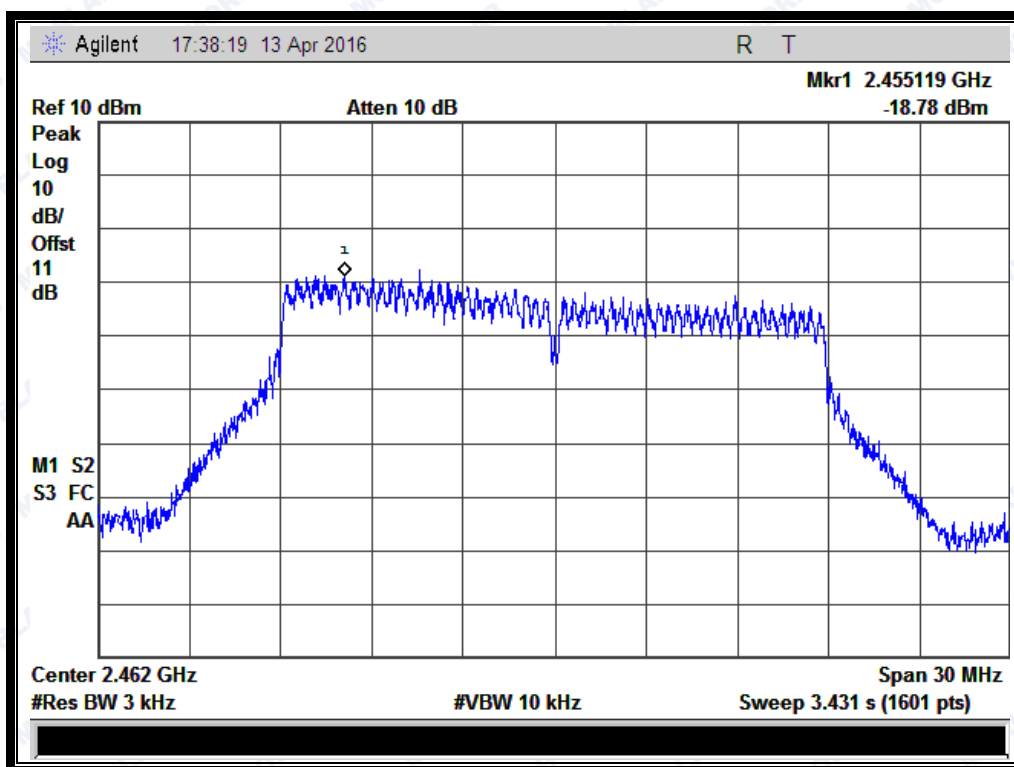
(Channel = 1 @ 802.11n-20MHz)



REPORT No.: SZ16030142W03



(Channel = 6 @ 802.11n-20MHz)



(Channel = 11 @ 802.11n-20MHz)



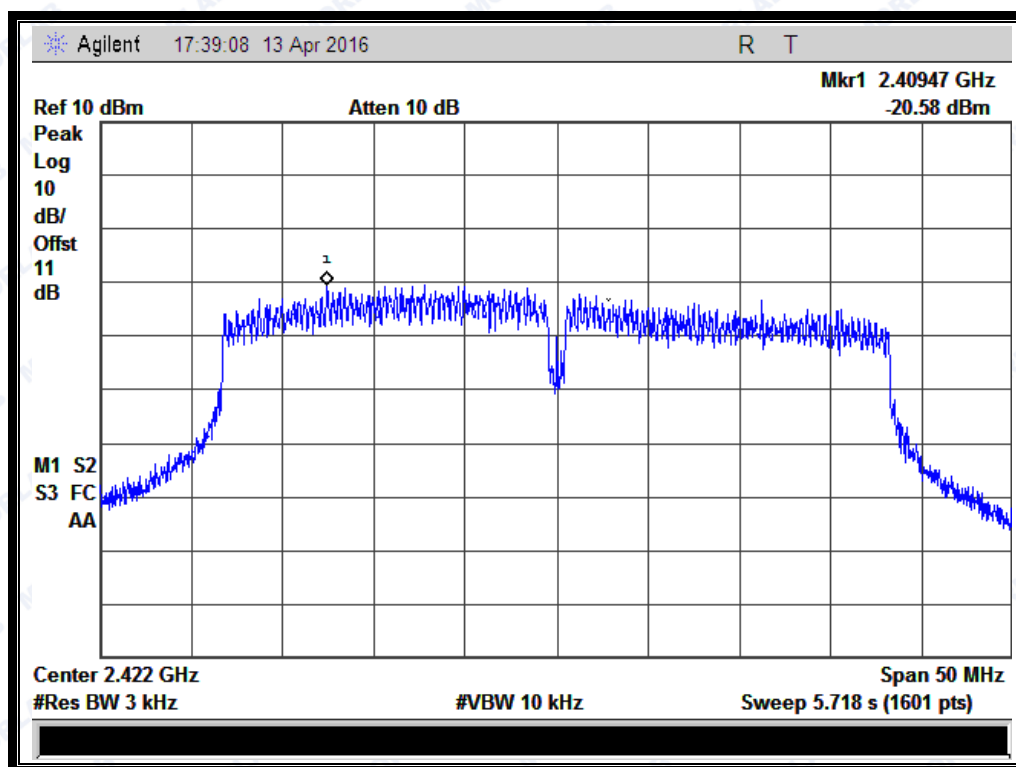
REPORT No.: SZ16030142W03

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	-20.58	8	PASS
6	2437	-22.33	8	PASS
9	2452	-20.35	8	PASS
Measurement uncertainty: ± 1.3 dB				

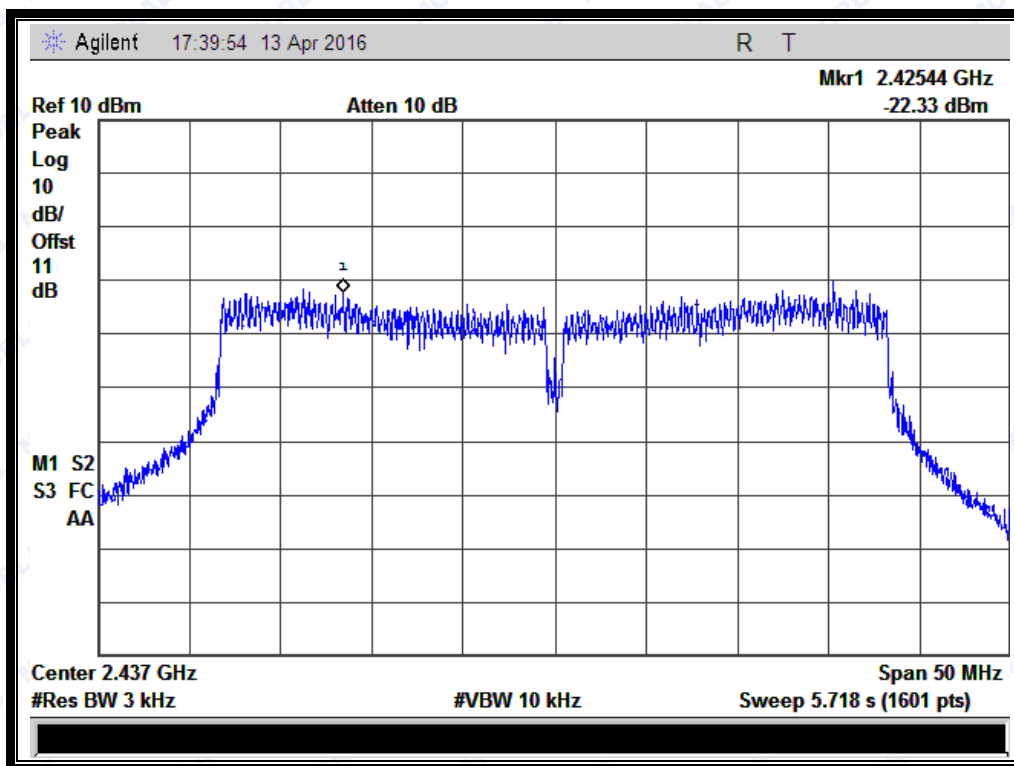
B. Test Plots:



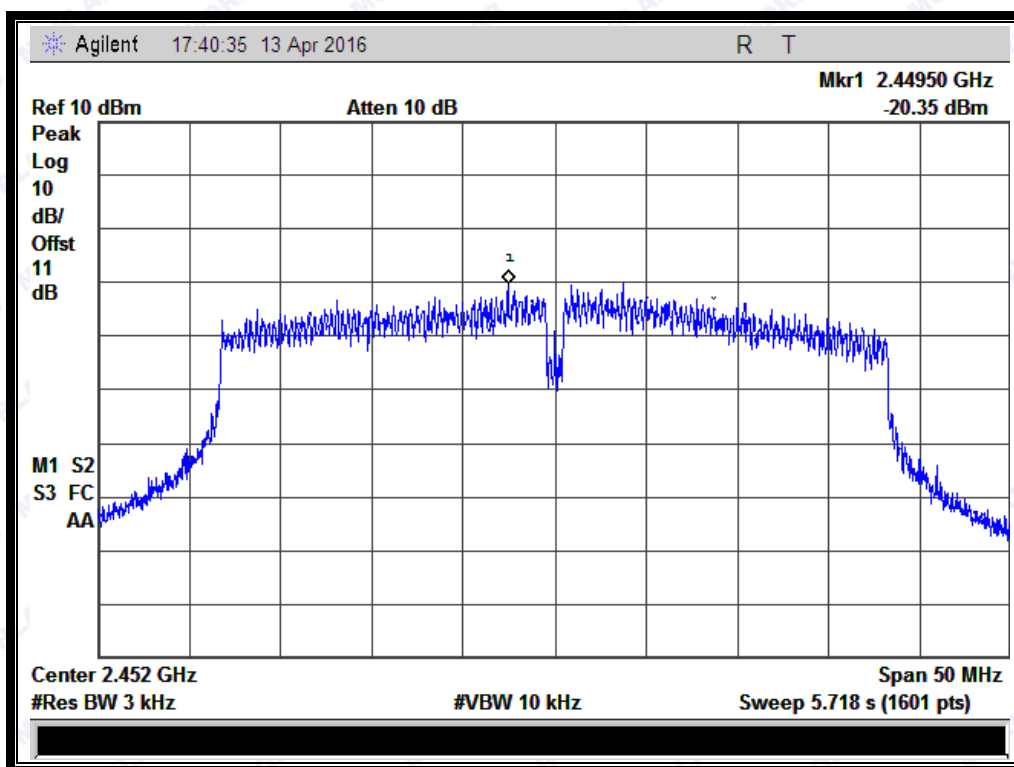
(Channel = 3 @ 802.11n-40MHz)



REPORT No.: SZ16030142W03



(Channel = 6 @ 802.11n-40MHz)



(Channel = 9 @ 802.11n-40MHz)

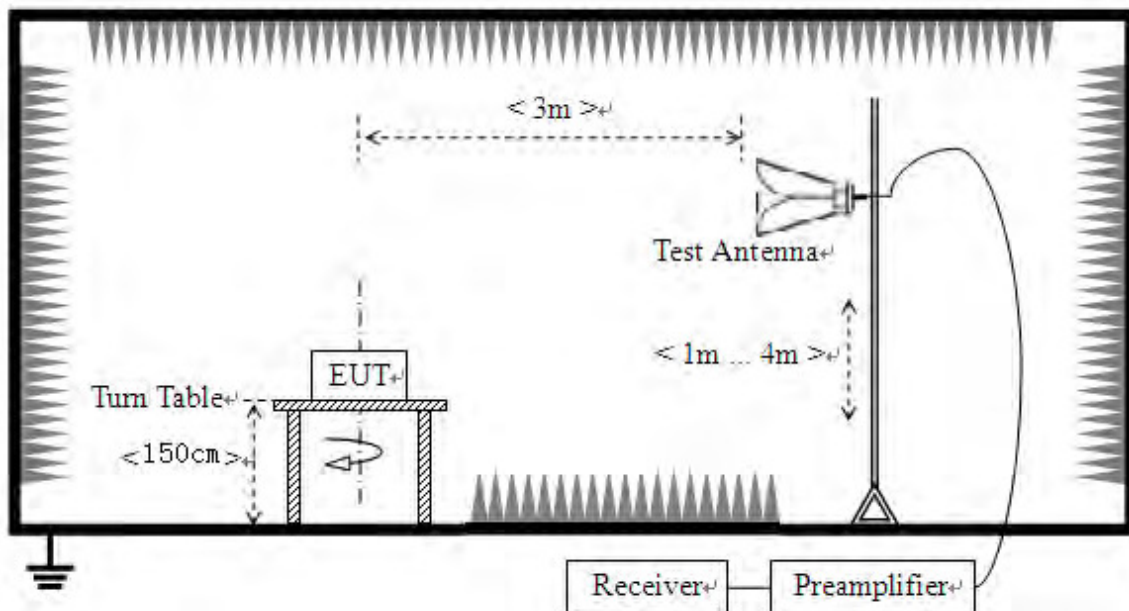
2.6 Restricted Frequency Bands

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(1.5).



2.6.3 Test Result

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

The measurement results are obtained as below:

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

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

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.

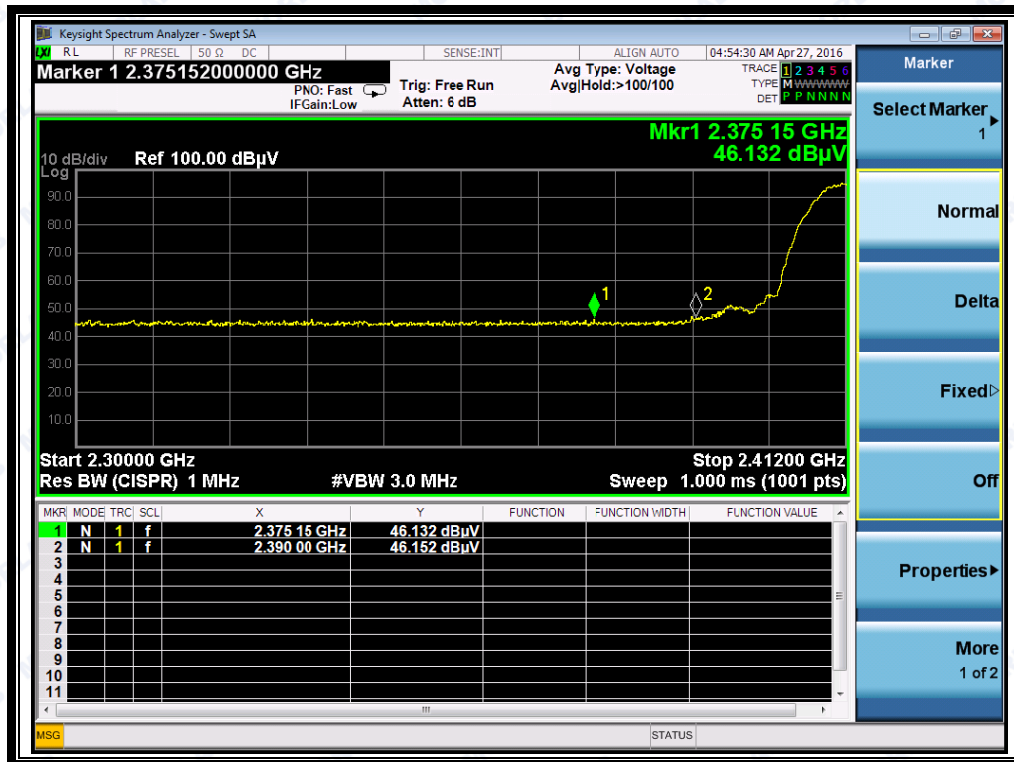
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
1	2375.15	PK	46.13	-33.63	32.56	45.06	74	Pass
1	2384.45	AV	33.05	-33.63	32.56	31.98	54	Pass
11	2484.49	PK	48.83	-33.18	32.5	48.15	74	Pass
11	2484.79	AV	39.42	-33.18	32.5	38.74	54	Pass

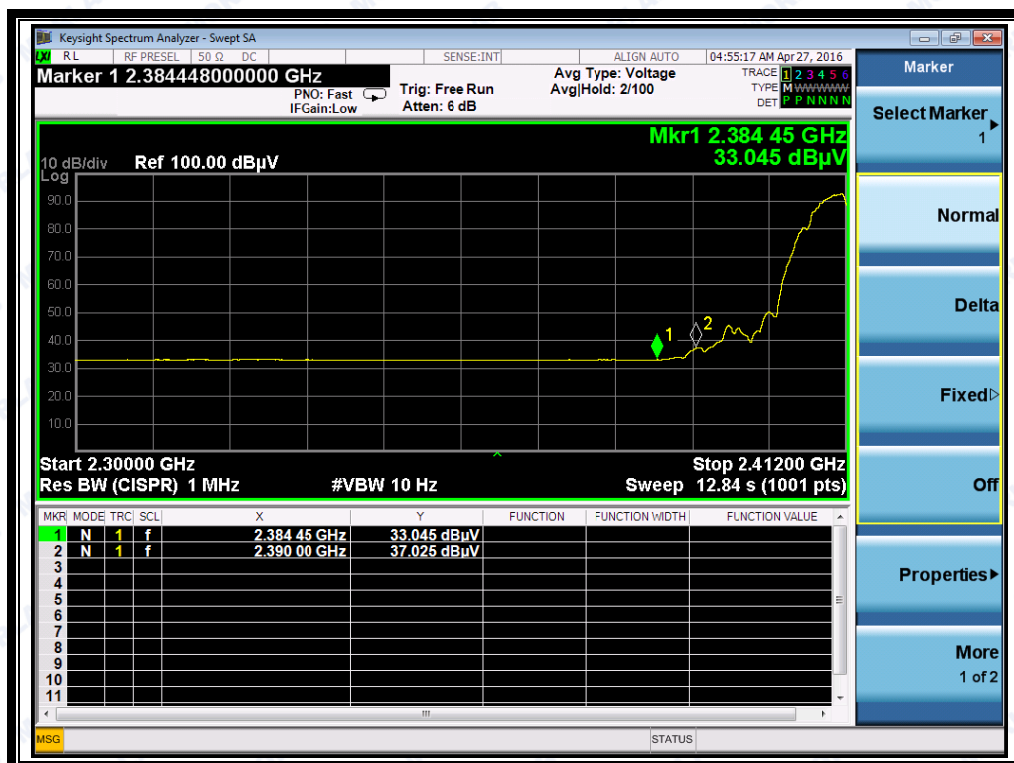
B. Test Plots:



REPORT No.: SZ16030142W03



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



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



REPORT No.: SZ16030142W03



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



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



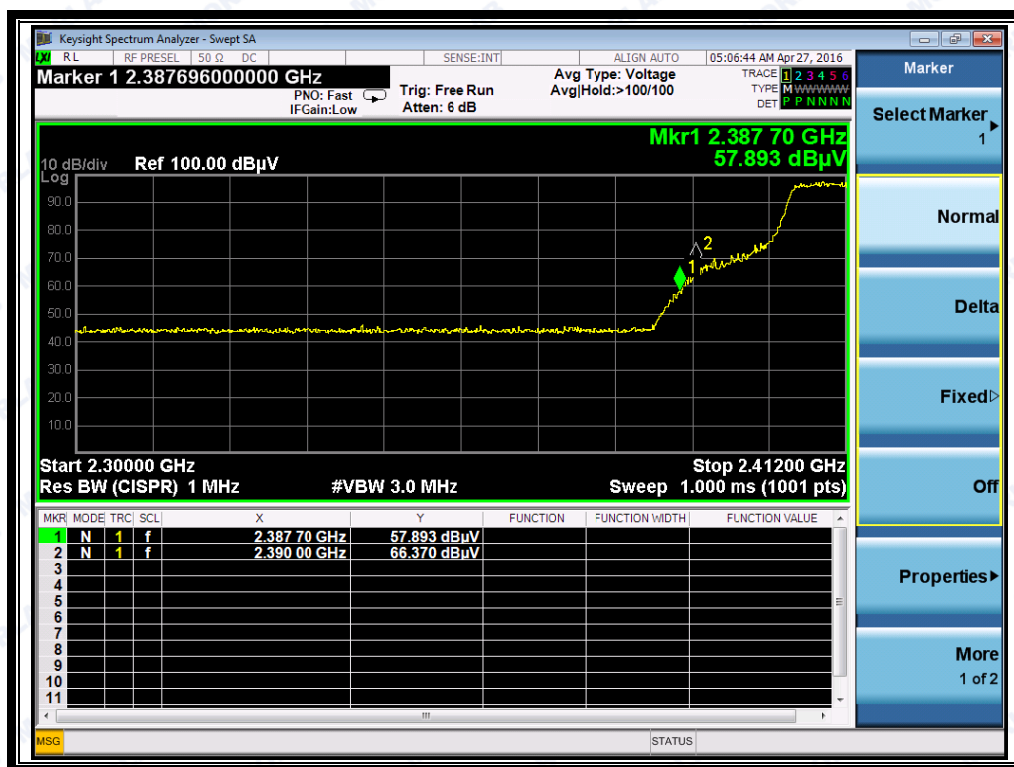
2.6.3.2 802.11g Test mode

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 (dBuV/m)	Limit (dBuV/m)	Verdict
		PK/ AV						
1	2387.70	PK	57.89	-33.63	32.56	56.82	74	Pass
1	2387.25	AV	41.48	-33.63	32.56	40.41	54	Pass
11	2484.83	PK	56.84	-33.18	32.5	56.16	74	Pass
11	2485.21	AV	42.11	-33.18	32.5	41.43	54	Pass

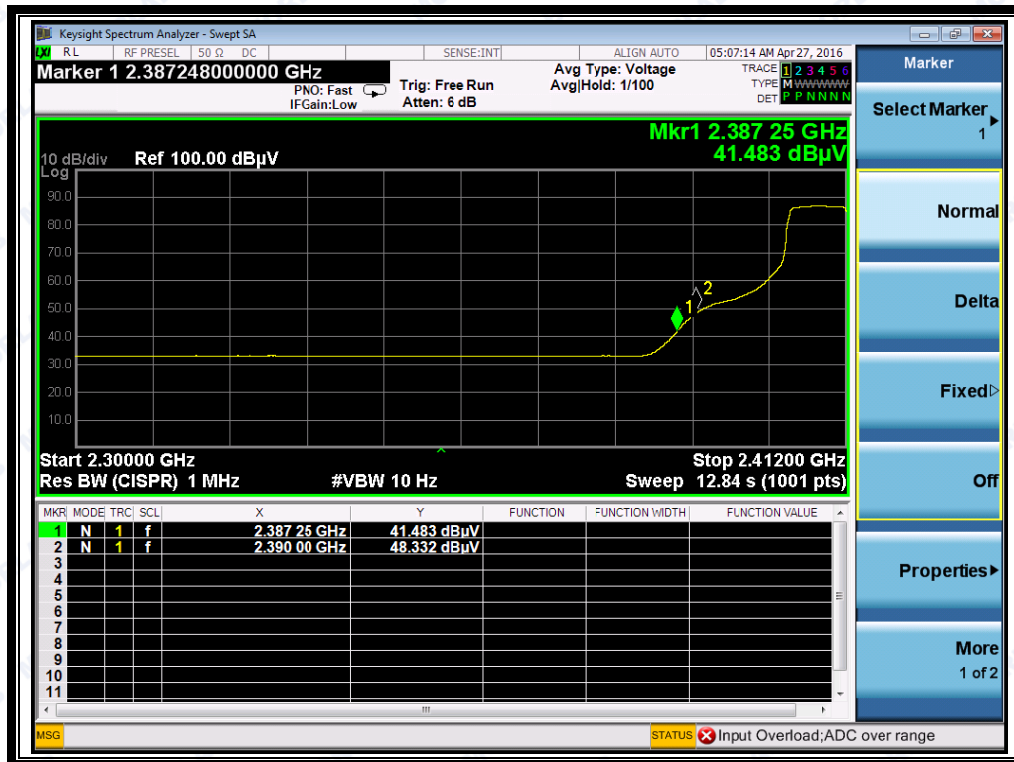
B. Test Plots:



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



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



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



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

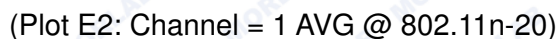
2.6.3.3 802.11n-20MHz Test mode

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

A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
1	2387.58	PK	59.01	-33.63	32.56	57.94	74	Pass
1	2387.02	AV	37.57	-33.63	32.56	36.50	54	Pass
11	2484.38	PK	61.71	-33.18	32.5	61.03	74	Pass
11	2484.53	AV	43.40	-33.18	32.5	42.72	54	Pass

B. Test Plots:





REPORT No.: SZ16030142W03



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



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



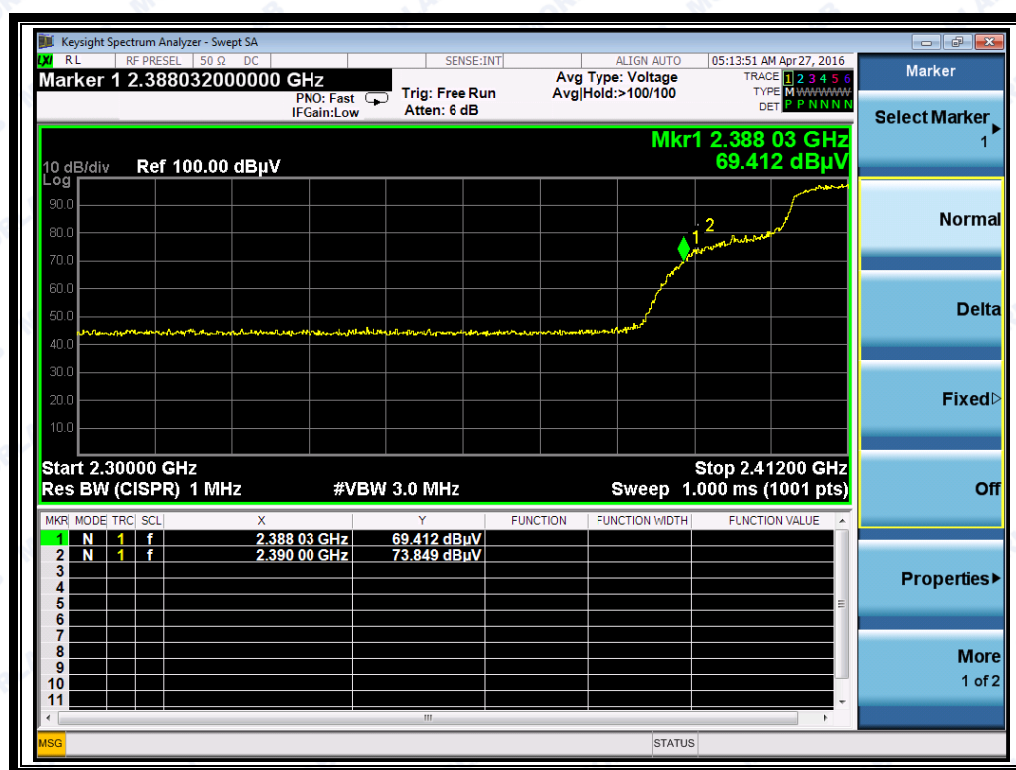
2.6.3.4 802.11n-40MHz Test mode

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

A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBuV/m)	Limit (dBuV/m)	Verdict
		PK/ AV						
3	2388.03	PK	69.41	-33.63	32.56	68.34	74	Pass
3	2386.57	AV	52.76	-33.63	32.56	51.69	54	Pass
9	2484.98	PK	64.95	-33.18	32.5	64.27	74	Pass
9	2484.72	AV	48.10	-33.18	32.5	47.42	54	Pass

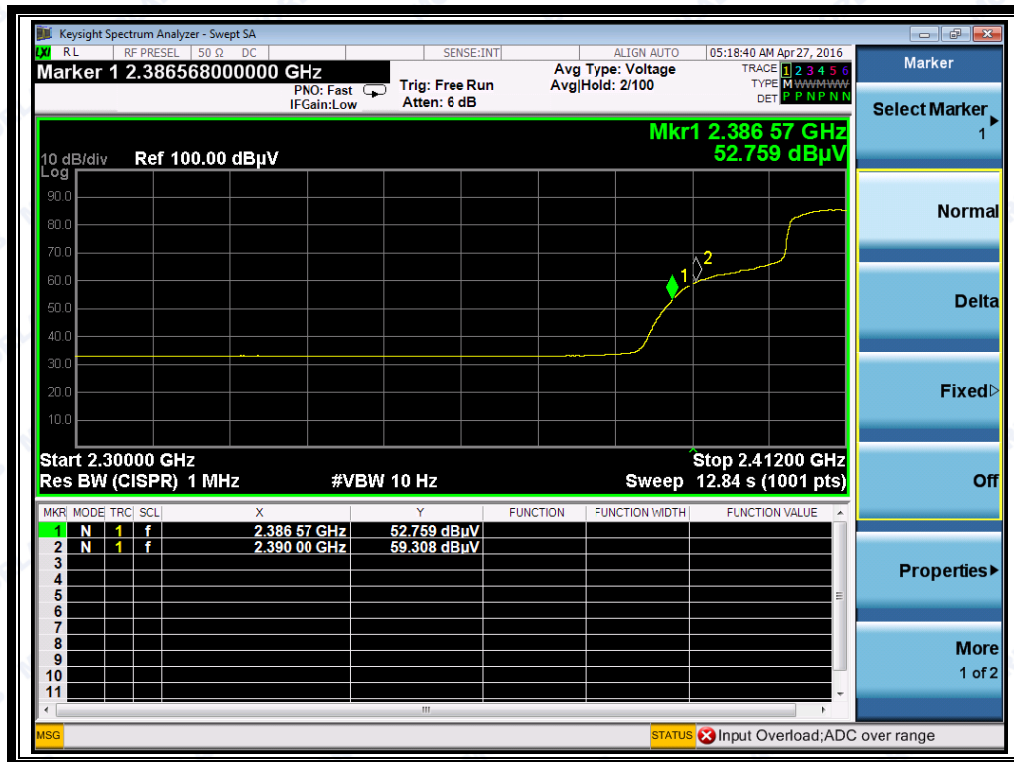
B. Test Plots:



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



REPORT No.: SZ16030142W03



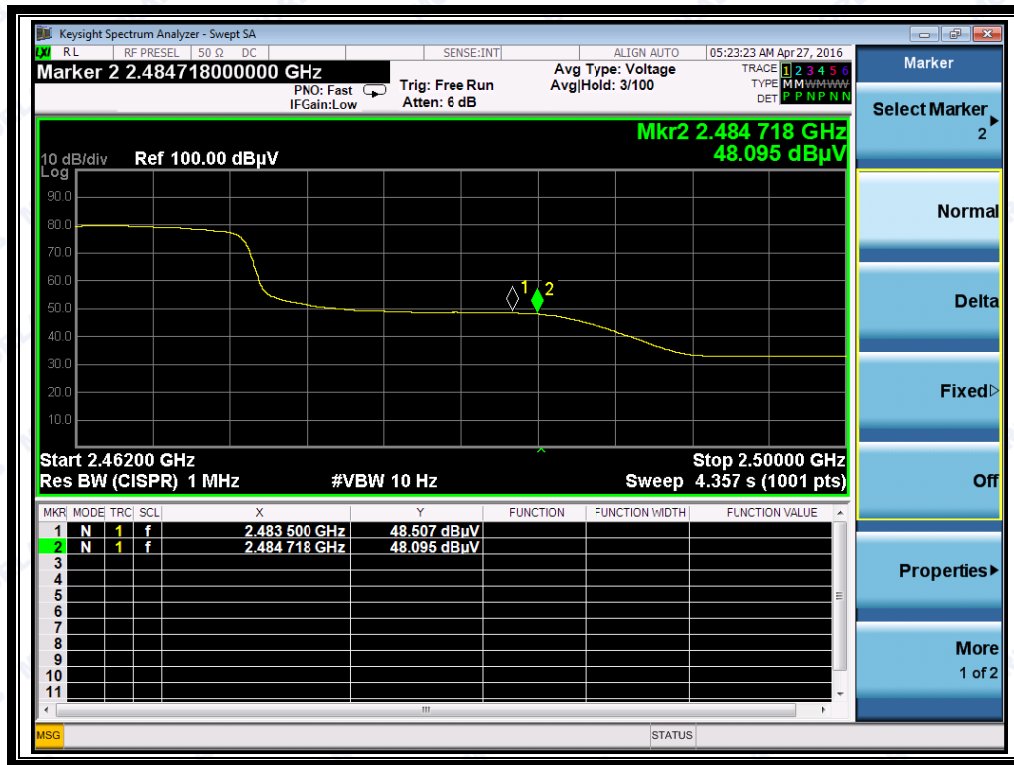
(Plot E2: Channel = 3 AVG @ 802.11n-40)



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



REPORT No.: SZ16030142W03



(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 50 μ H/50 Ω line impedance stabilization network (LISN).

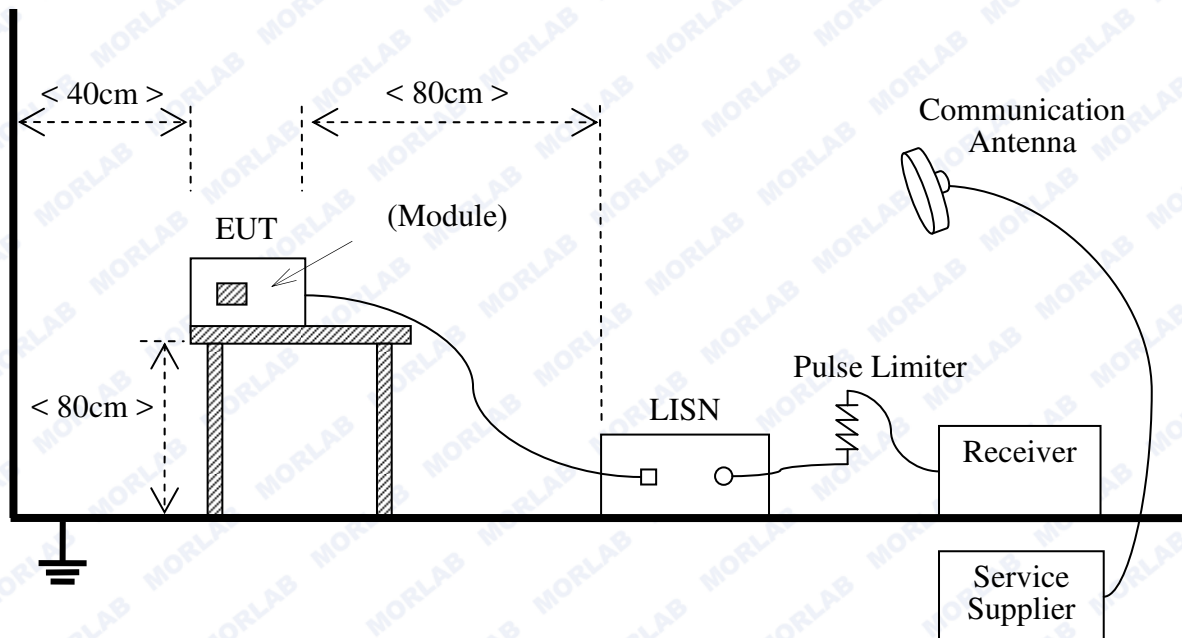
Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

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

2.7.2 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(1.5).

2.7.3 Test Result

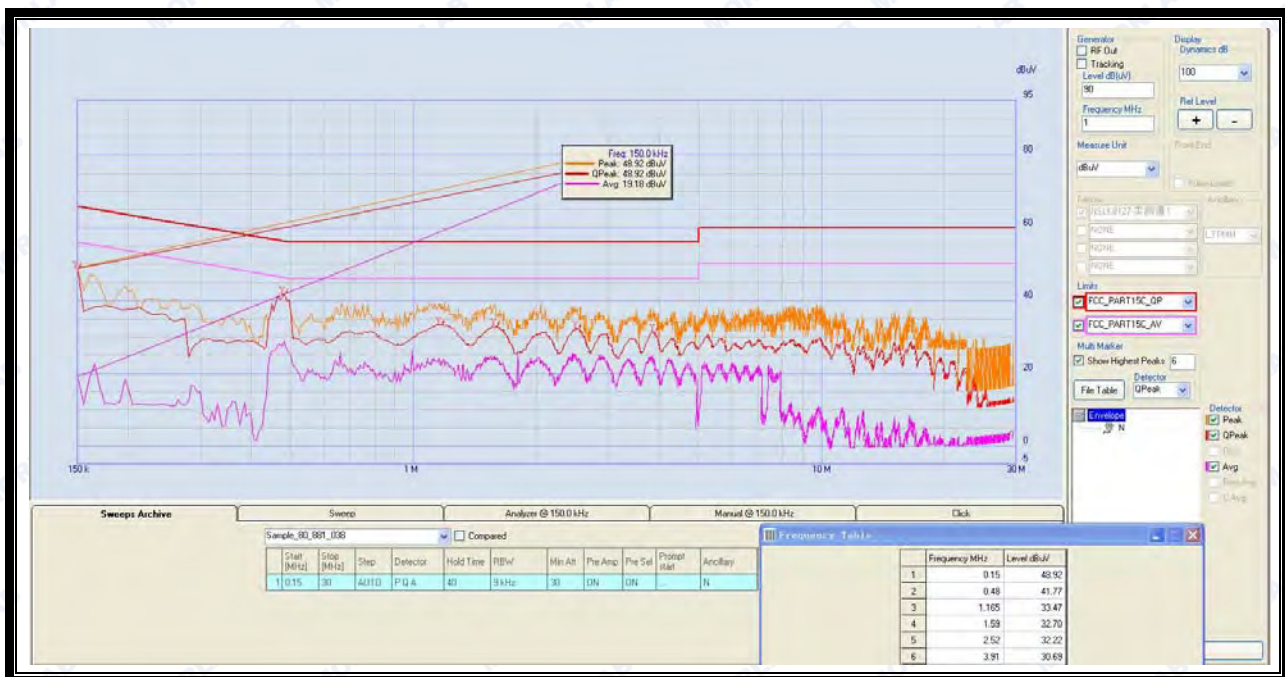
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT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

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.

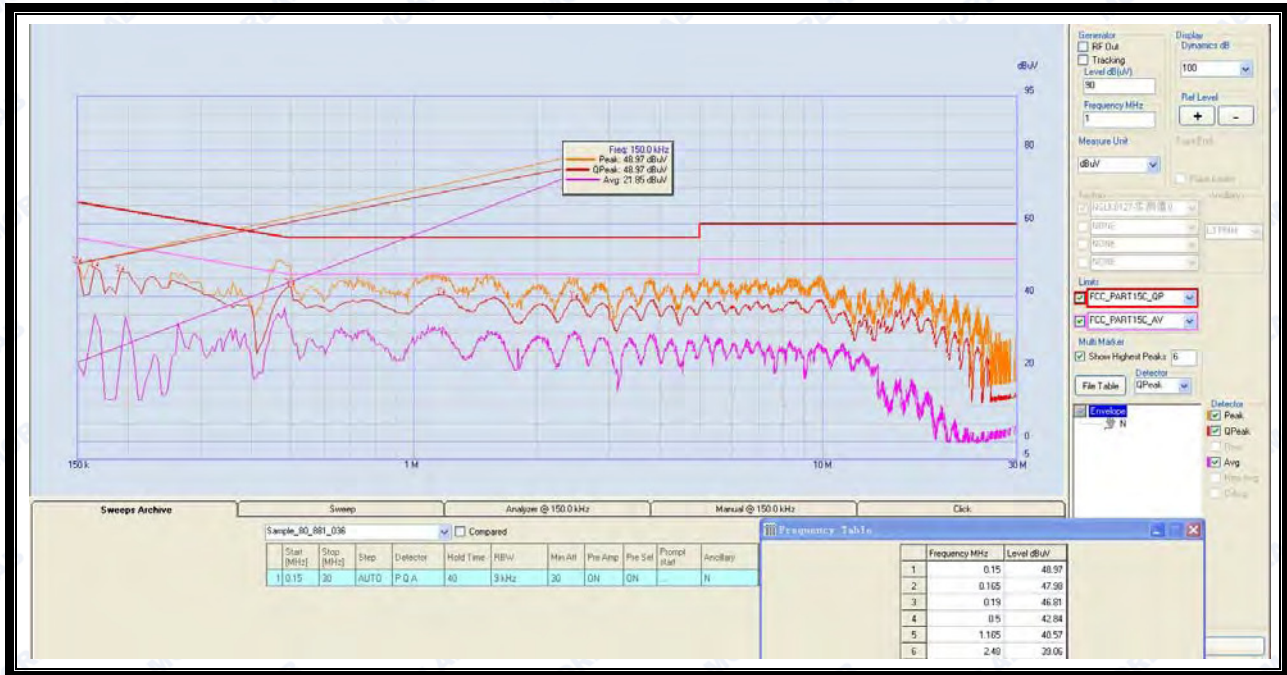
B. Test Plots:



(Plot A: L Phase)



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(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 ($\mu\text{V/m}$)	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.

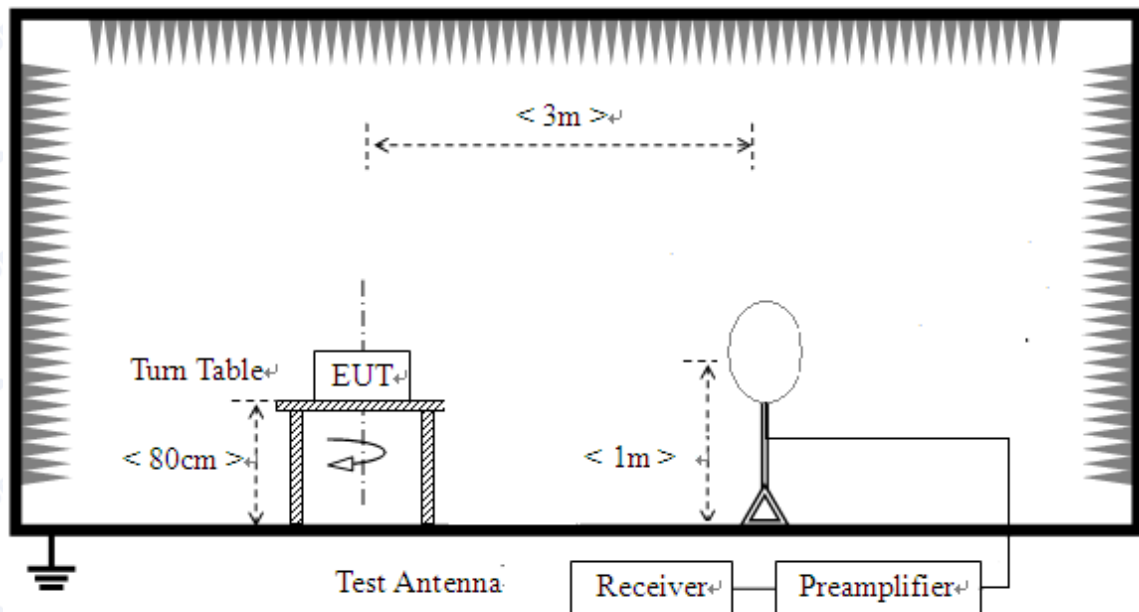
For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

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)

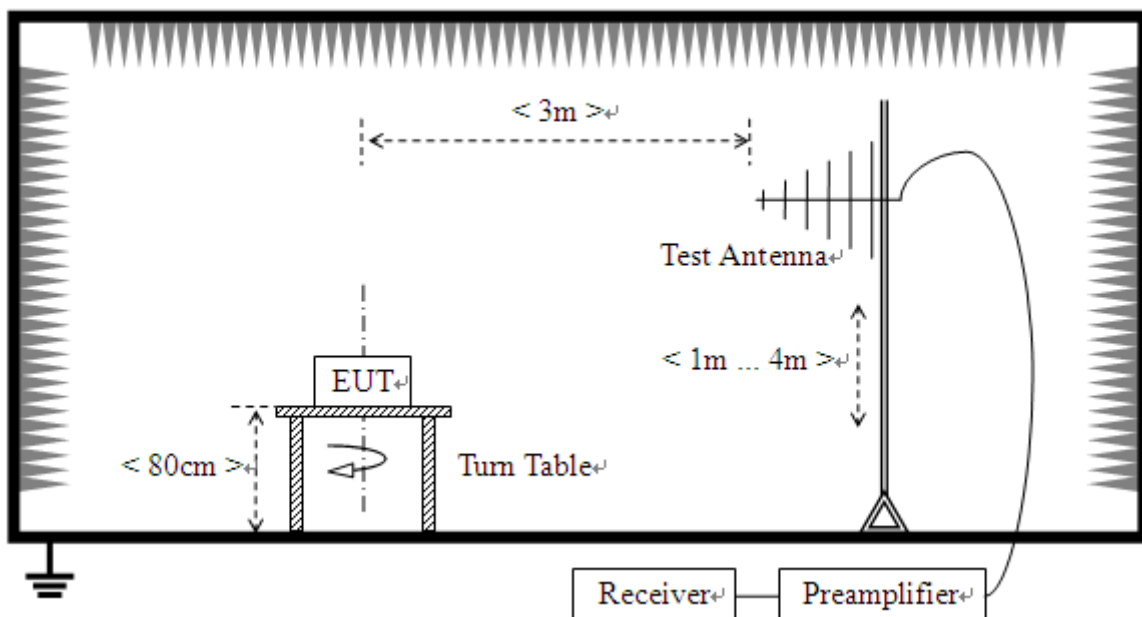
2.8.2 Test Description

A. Test Setup:

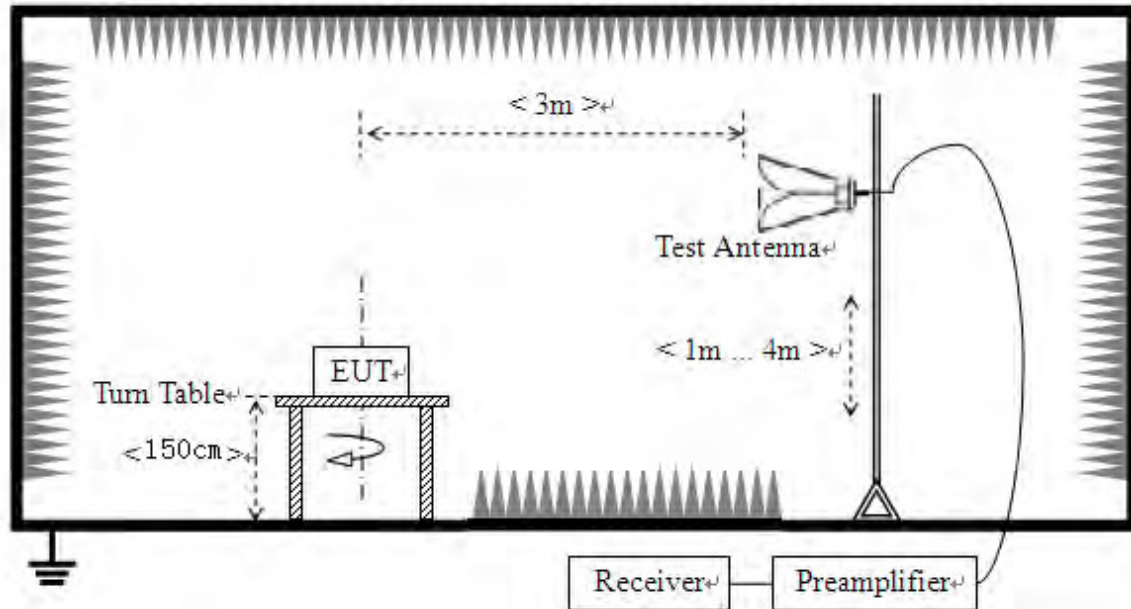
- 1) For radiated emissions from 9kHz to 30MHz



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



3) For radiated emissions above 1GHz



The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10 (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:

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

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

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

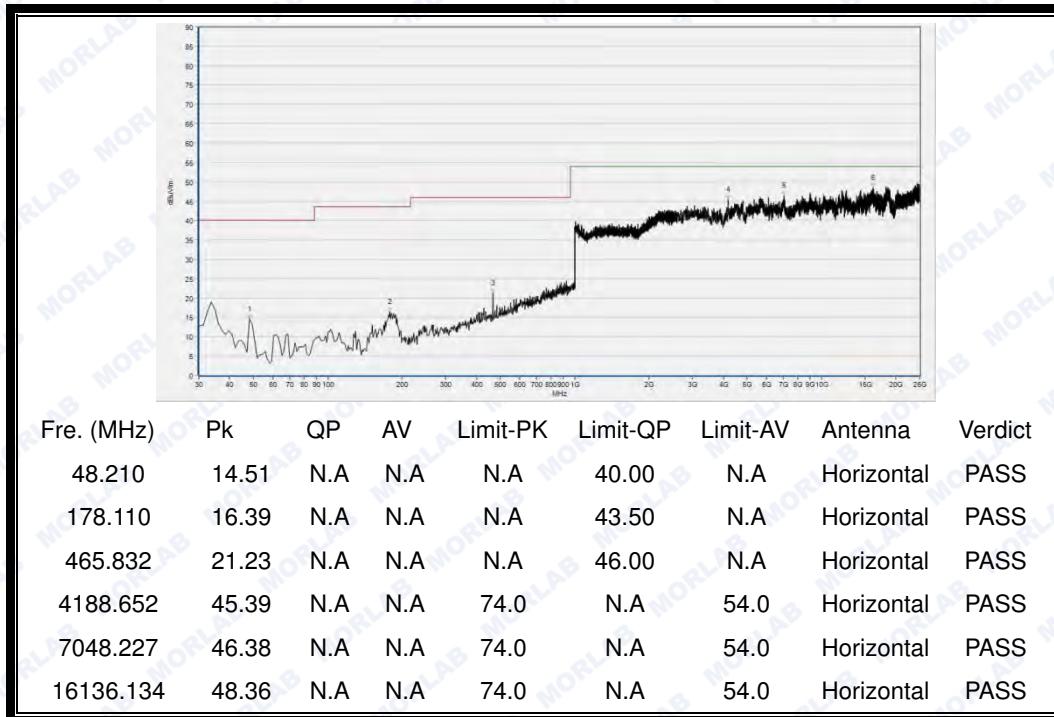
The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



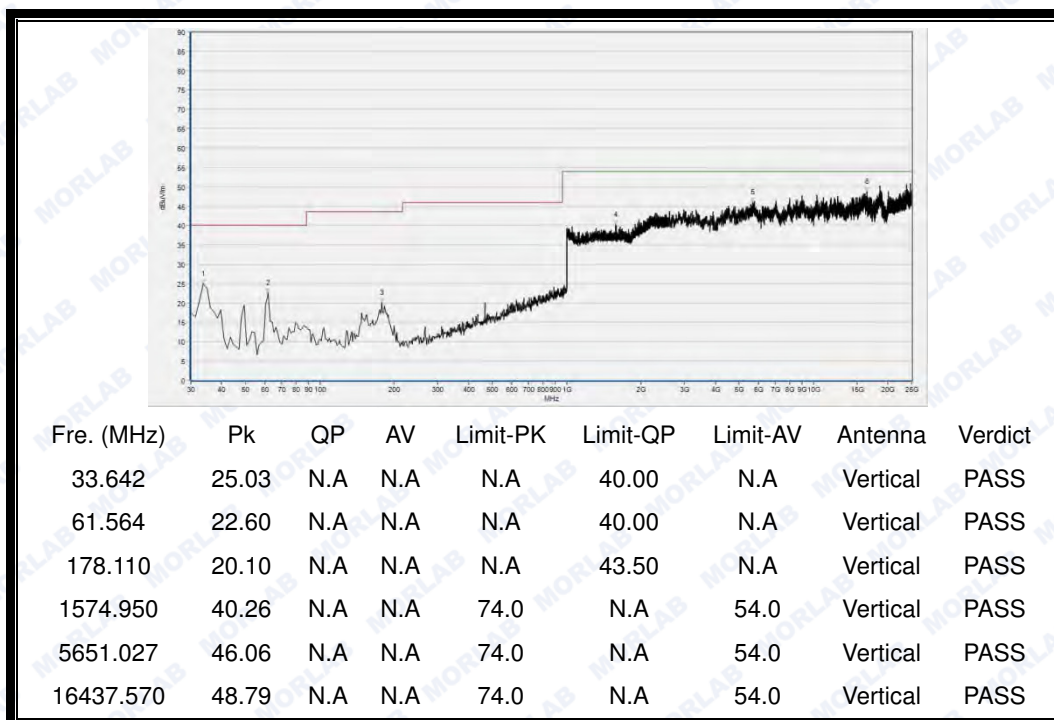
2.8.3.1 802.11b Test mode

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 1



(Antenna Horizontal, 30MHz to 25GHz)

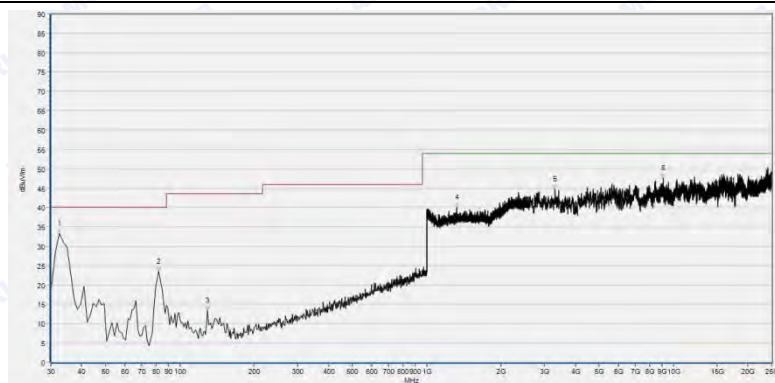


(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 6

Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.428	28.21	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
116.195	20.08	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
267.947	16.28	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2364.386	44.94	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4722.277	46.37	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
7036.007	48.13	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
32.428	33.41	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	23.40	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
129.549	13.40	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
1326.531	39.98	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
3312.857	44.72	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
9105.328	47.56	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)



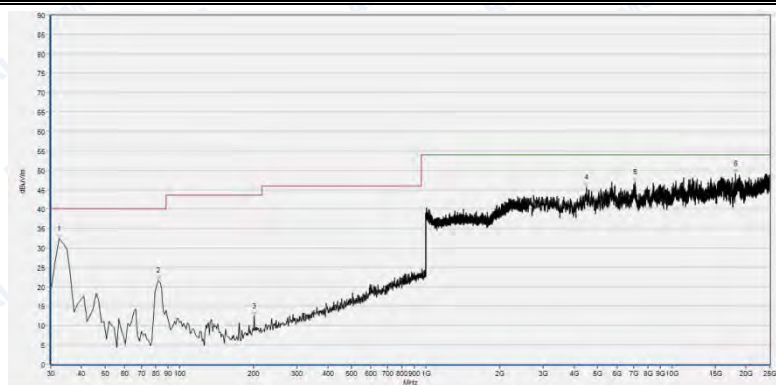
REPORT No.: SZ16030142W03

Plot for Channel = 11



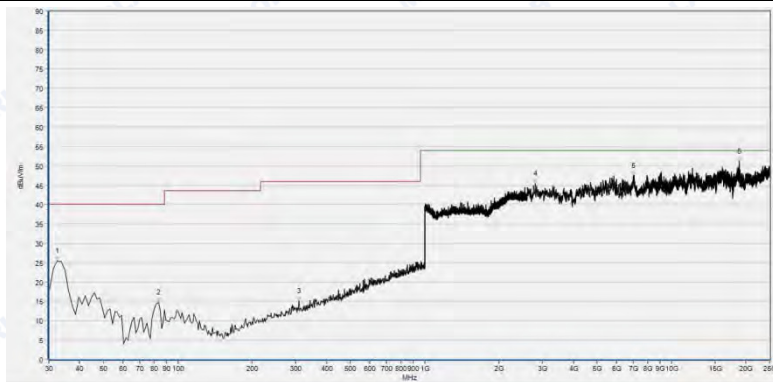
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.428	26.08	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
83.417	14.72	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
300.726	15.38	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1172.229	41.25	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
2215.206	44.46	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
6983.051	48.69	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



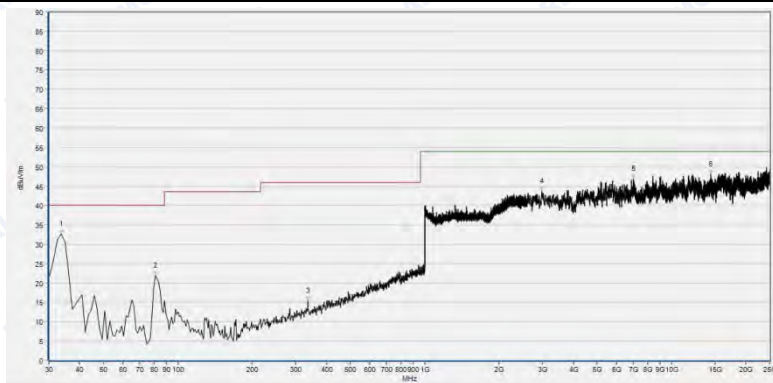
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.428	32.38	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	21.63	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
201.176	12.39	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
4502.310	45.55	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7097.109	46.94	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18185.088	49.10	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
32.428	25.41	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
83.417	14.76	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
309.224	15.00	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2803.673	45.42	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
7019.713	47.46	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
18857.210	51.09	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
33.642	32.66	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
80.989	22.03	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
335.932	15.37	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2982.906	43.78	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
6999.345	46.89	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
14445.645	48.10	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

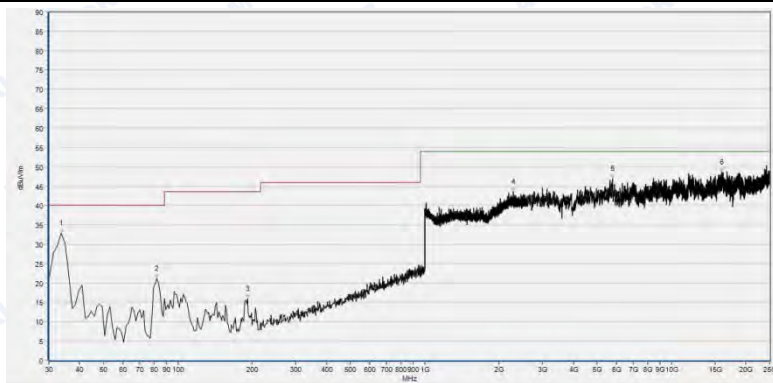


Plot for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
33.642	26.05	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
82.203	14.18	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
293.442	16.94	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1665.226	40.82	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5736.570	47.62	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
16001.709	50.20	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
33.642	32.78	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	21.03	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
191.464	15.85	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
2287.555	43.50	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5752.864	46.97	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
15932.460	48.64	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

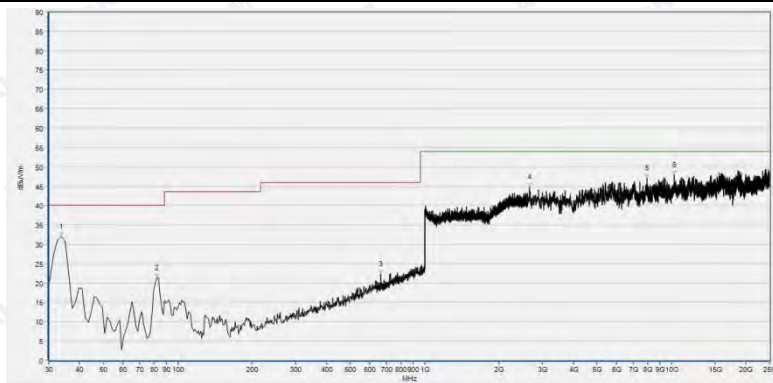


Plot for Channel = 11



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
33.642	26.19	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
102.841	16.86	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
300.726	17.66	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
3105.110	46.97	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5630.660	47.73	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
10706.201	49.34	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



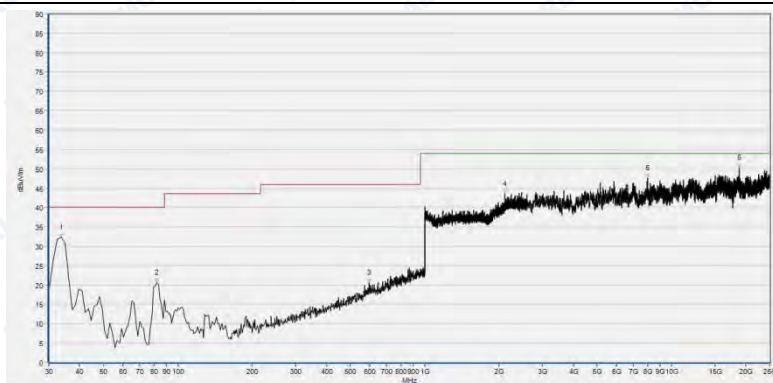
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
33.642	31.99	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	21.29	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
663.717	22.26	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2652.955	44.71	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7964.757	47.03	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
10278.487	47.88	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
33.642	27.11	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
100.413	16.22	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
297.084	16.51	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1937.975	41.82	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5724.350	47.29	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
15590.289	49.37	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
33.642	32.42	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	20.64	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
595.732	20.64	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2110.844	43.59	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
8009.565	47.51	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18755.374	50.28	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)



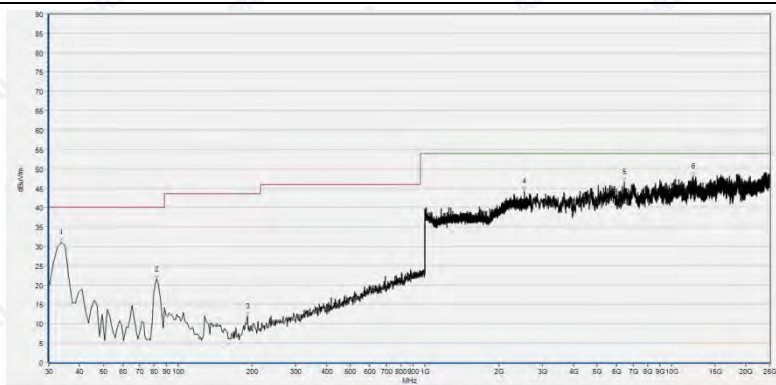
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Plot for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.856	26.59	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
100.413	16.29	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
294.656	18.62	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
1551.261	40.65	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
6200.946	47.56	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
12164.503	49.83	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
33.642	30.98	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	21.44	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
191.464	11.97	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
2536.615	44.30	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
6420.913	46.52	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
12233.752	48.10	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)



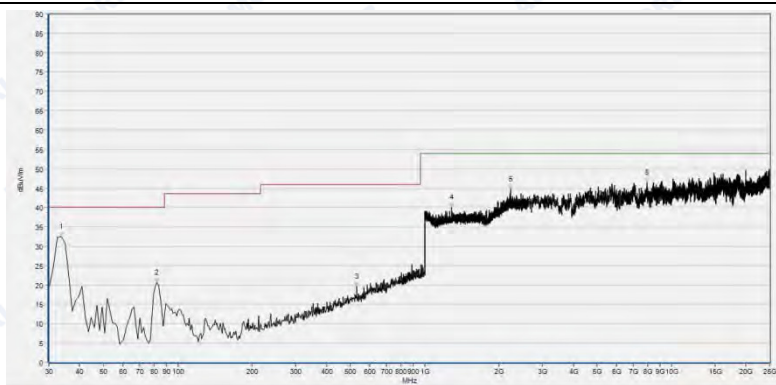
REPORT No.: SZ16030142W03

Plot for Channel = 11



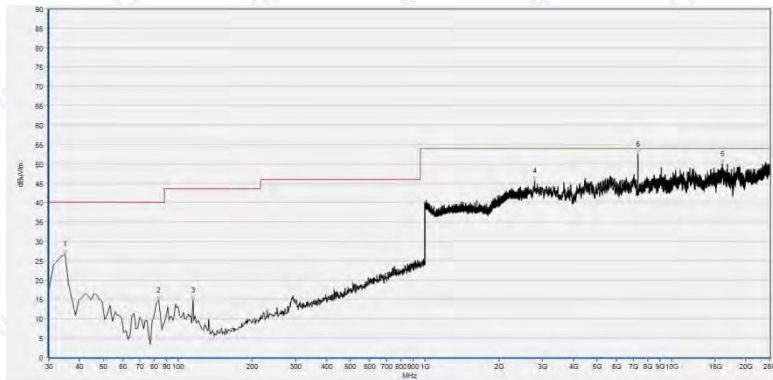
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
33.642	27.33	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
107.697	16.67	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
303.154	17.53	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2450.180	44.00	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5761.011	47.15	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
16018.003	49.80	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
33.642	32.59	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	20.58	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
530.175	19.59	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1285.554	40.01	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
2222.889	44.71	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
7964.757	46.51	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
34.856	26.63	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
83.417	14.79	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
114.981	14.68	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
2783.306	45.56	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
7296.708	52.39	59.61	N.A	74.0	N.A	54.0	Horizontal	PASS
16095.399	49.92	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
33.642	33.85	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	22.60	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
206.033	13.70	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
2202.401	43.01	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5618.440	46.36	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
8999.418	47.73	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

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

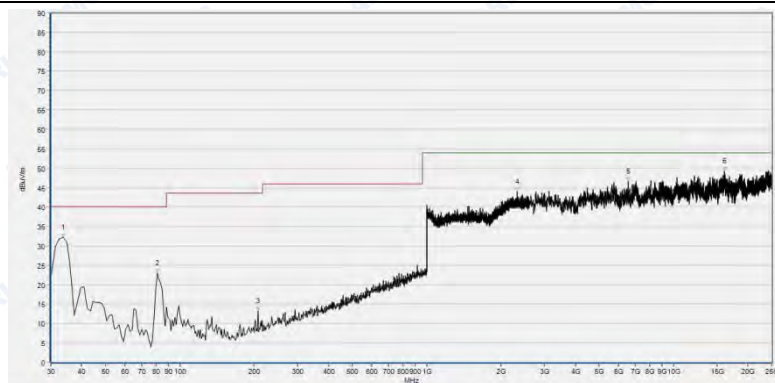


Plots for Channel = 6



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.428	26.50	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
42.140	18.40	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
82.203	14.86	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
1148.539	40.65	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
4490.089	46.86	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
16005.783	49.75	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
33.642	32.18	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
80.989	23.04	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
207.247	13.17	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
2331.092	43.96	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
6555.337	46.65	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
16103.546	49.28	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

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



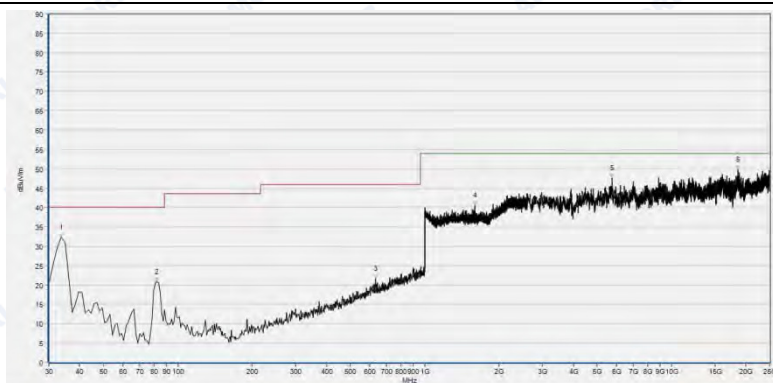
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Plots for Channel = 9



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.856	25.28	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
80.989	13.28	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
298.298	21.30	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2624.441	44.81	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
5724.350	47.62	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS
11280.560	48.06	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
33.642	32.29	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
82.203	20.78	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
632.153	21.70	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
1595.438	40.59	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
5748.791	47.60	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
18600.582	49.71	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 2013, ANSI C63.4 2014 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



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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	2016.03.02	2017.03.01
2	USB Wideband Power Sensor	MY54210011	U2021XA	Agilent	2016.03.02	2017.03.01
3	EXA Signal Analyzer	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 Note	CN01	RF03	HUBER-SUHNER	N/A	N/A

Note: The SMA antenna connector is soldered on the PCB board in order to perform conducted tests and this SMA antenna connector is listed in the equipment list.

1.5.2 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	2016.03.02	2017.03.01
5	Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2016.03.02	2017.03.01
6	Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2016.03.02	2017.03.01
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	2016.03.02	2017.03.01
10	18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde&Schwarz	2016.03.02	2017.03.01



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1.5.3 Climate Chamber

Climate Chamber						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Climate Chamber	2004012	HL4003T	Yinhe	2016.03.02	2017.03.01

1.5.4 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	2016.03.02	2017.03.01

1.5.5 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

1.5.6 Auxiliary Test Equipment

Auxiliary Test Equipment						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Computer	N.A	PU500C	Asus	N.A	N.A

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