REPORT No.: SZ14100111W02

FCC RF TEST REPORT

APPLICANT	:	Group Sense Mobile-Tech Ltd.
PRODUCT NAME	:	Wireless POS Handheld Terminal
MODEL NAME	:	DT-08
TRADE NAME	:	Group Sense Mobile-Tech Ltd.
BRAND NAME	:	Xplore
FCC ID	:	VRI-B203
STANDARD(S)	:	47 CFR Part 15 Subpart E
ISSUE DATE	:	2015-3-16

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2015-2-11	First edition
2.0	2015-3-16	Updated sections 1.2, 2.3, 2.4, 2.5

TEST REPORT DECLARATION

Applicant	Group Sense Mobile-Tech Ltd.
Applicant Address	Room 13-24, 2/F, Sino Industrial Plaza, 9 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Manufacturer	Group Sense Mobile-Tech Ltd.
Manufacturer Address	Room 13-24, 2/F, Sino Industrial Plaza, 9 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Product Name	Wireless POS Handheld Terminal
Model Name	DT-08
Brand Name	Xplore
HW Version	QA1
SW Version	QA1
Test Standards	47 CFR Part 15 Subpart E
Test Date	2015-1-5 to 2015-3-13
Test Result	PASS

Tested by : Zou Jian
Zou Jian

Reviewed by : Qiu Xiaojun
Qiu Xiaojun

Approved by : Zeng Dexin
Zeng Dexin

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type.....:	Wireless POS Handheld Terminal
Serial No. .....:	(n.a, marked #1 by test site)
Hardware Version.....:	QA1
Software Version.....:	QA1
Applicant.....:	Group Sense Mobile-Tech Ltd. Room 13-24, 2/F, Sino Industrial Plaza, 9 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Manufacturer .....:	Group Sense Mobile-Tech Ltd. Room 13-24, 2/F, Sino Industrial Plaza, 9 Kai Cheung Road, Kowloon Bay, Kowloon, Hong Kong
Frequency Range.....:	802.11b/g/n: 2.400GHz - 2.4835GHz 802.11a/n: 5.150GHz- 5.250GHz 5.725GHz- 5.850GHz
Channel Number .....:	2.4GHz Band: 802.11b/g/n-20MHz: 11 802.11a/n -20MHz: 5.150GHz – 5.250GHz: 4 Channels 5.725GHz- 5.850GHz: 5 Channels
Modulation Type.....:	DSSS, OFDM
Antenna Type.....:	PIFA Antenna
Antenna Gain.....:	4.1dBi MAX

Note :

1. The U-NII band is applicable to this report, another bands of operation (2.4GHz) is documented in a separate report.
2. For 802.11a/n-20MHz (5.150GHz – 5.250GHz), the frequencies allocated is F (MHz) =5180+20*(n-1) (1<=n<=4). For 5.150GHz – 5.250GHz The channel of the EUT used and tested in this report are separately 36 (5180MHz), 44 (5220MHz) and 48 (5240MHz).
3. For 802.11a/n-20MHz (5.725GHz – 5.825GHz), the frequencies allocated is F (MHz) =5745+20*(n-1) (1<=n<=5). The channel of the EUT used and tested in this report are separately CH149(5745MHz), CH157(5785MHz) and CH165(5825GHz) are tested in this report.
4. During test, the duty cycle of the EUT was setting to 100%.
5. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.
6. The antenna connector of EUT is designed with permanent attachment and no consideration of replacement.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart E (UNII band) for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (5-1-14 Edition)	Radio Frequency Devices

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

No.	Section	Description	Result
1	15.203	Antenna Requirement	**PASS**
2	15.407(a) (e)	Emission Bandwidth	**PASS**
3	15.407(a)	Maximum conducted output Power	**PASS**
4	15.407(a)	Peak Power spectral density	**PASS**
5	15.407(b)	Restricted Frequency Bands	**PASS**
6	15.407(g)	Frequency Stability	**PASS**
7	15.207	Conducted Emission	**PASS**
8	15.407(b)	Radiated Emission	**PASS**
9	15.407(f)	RF exposure evaluation	**PASS**

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

These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 v01 (06/06/2014).

1.3 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 15E 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.

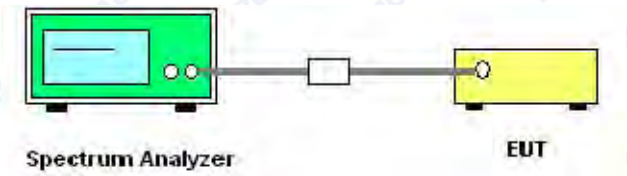
2.2 Emission Bandwidth

2.2.1 Requirement

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

2.2.2 Test Description

A. Test Set:



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

B. Test Procedure

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance

1) Set RBW = approximately 1% of the emission bandwidth.

2) Set the VBW > RBW.

3) Detector = Peak.

4) Trace mode = max hold.

5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

2.2.3 Test Result

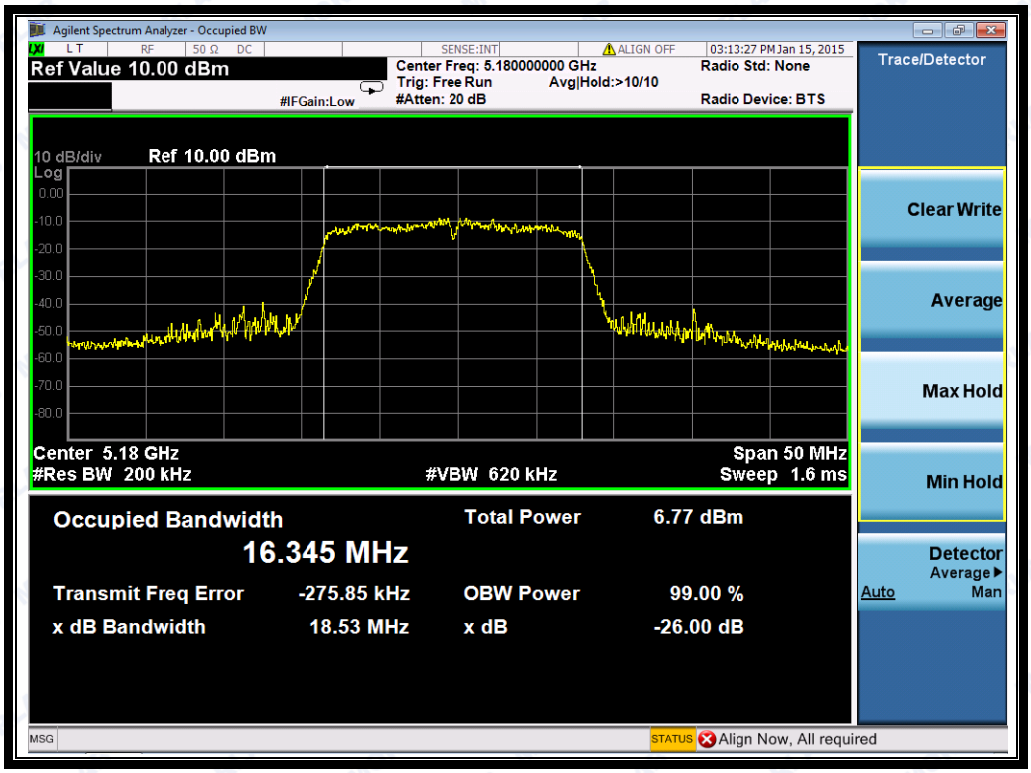
The lowest, middle and highest channels are selected to perform testing to record the 26 dB bandwidth of the Module.

2.2.3.1 802.11a Test mode

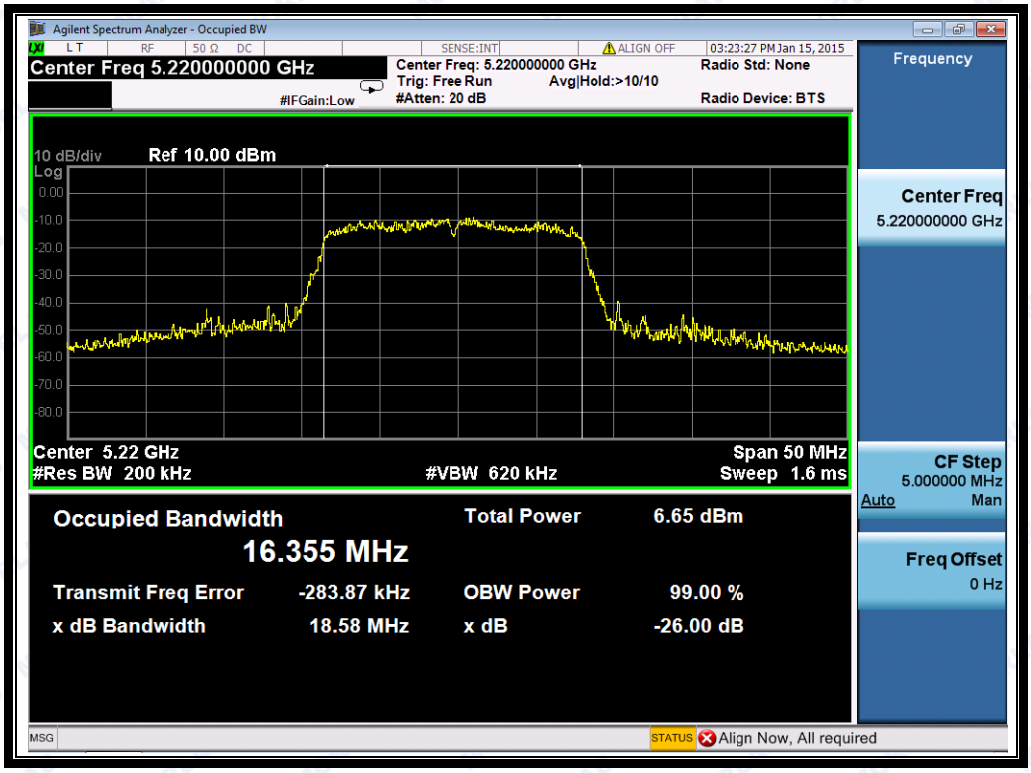
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	18.53
44	5220	18.58
48	5240	18.52

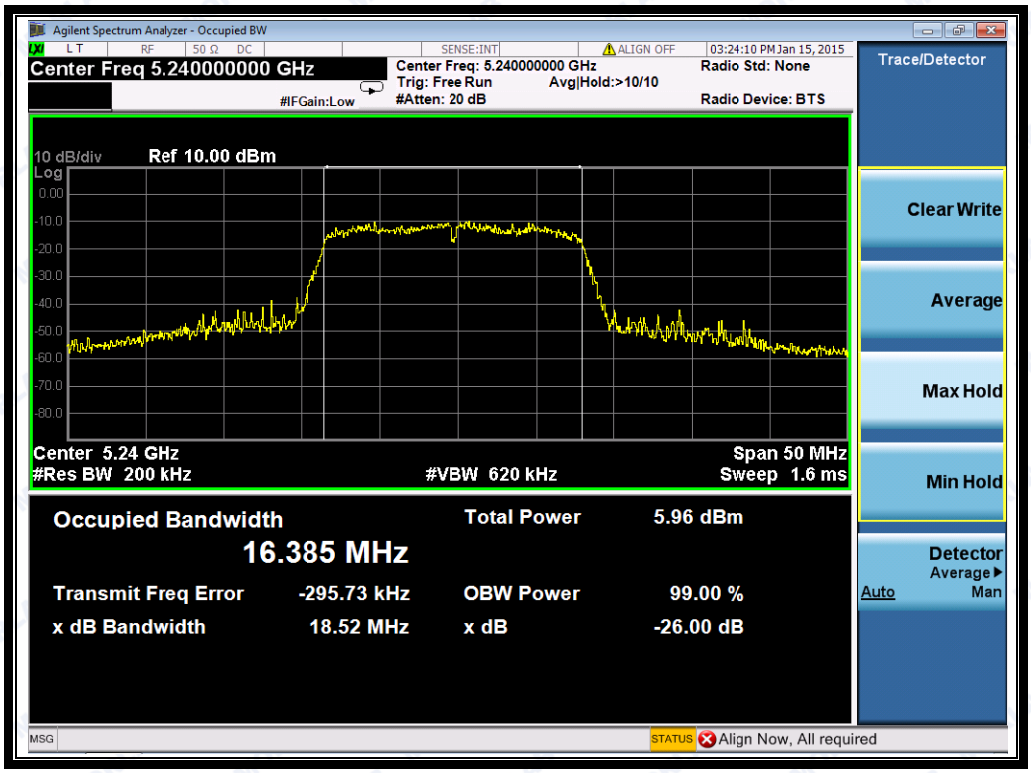
B. Test Plots



(Channel 36: 5180MHz @ 802.11a)



(Channel 44: 5220 MHz @ 802.11a)



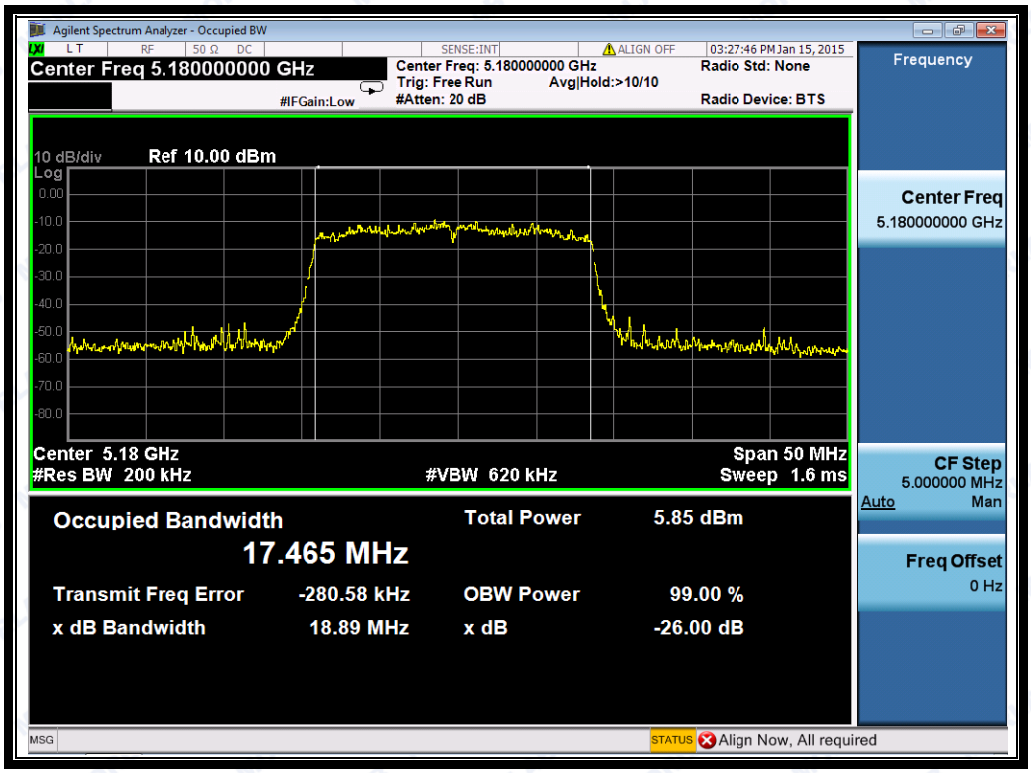
(Channel 48: 5240MHz @ 802.11a)

2.2.3.2 802.11n-20MHz Test mode

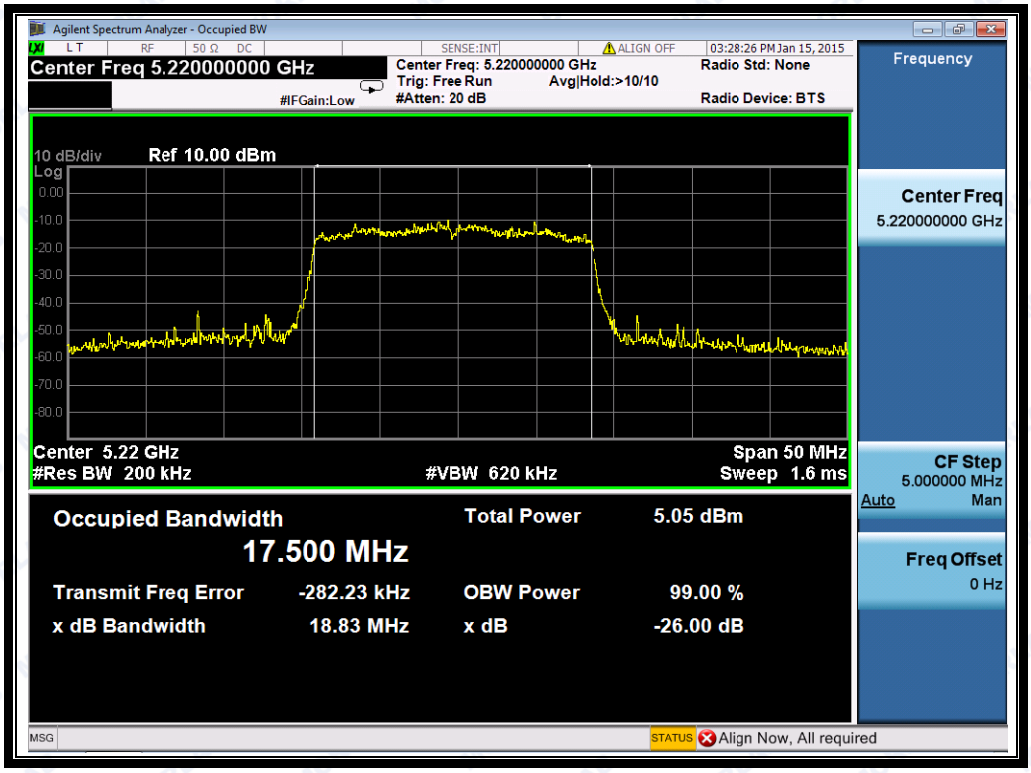
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	18.89
44	5220	18.83
48	5240	18.81

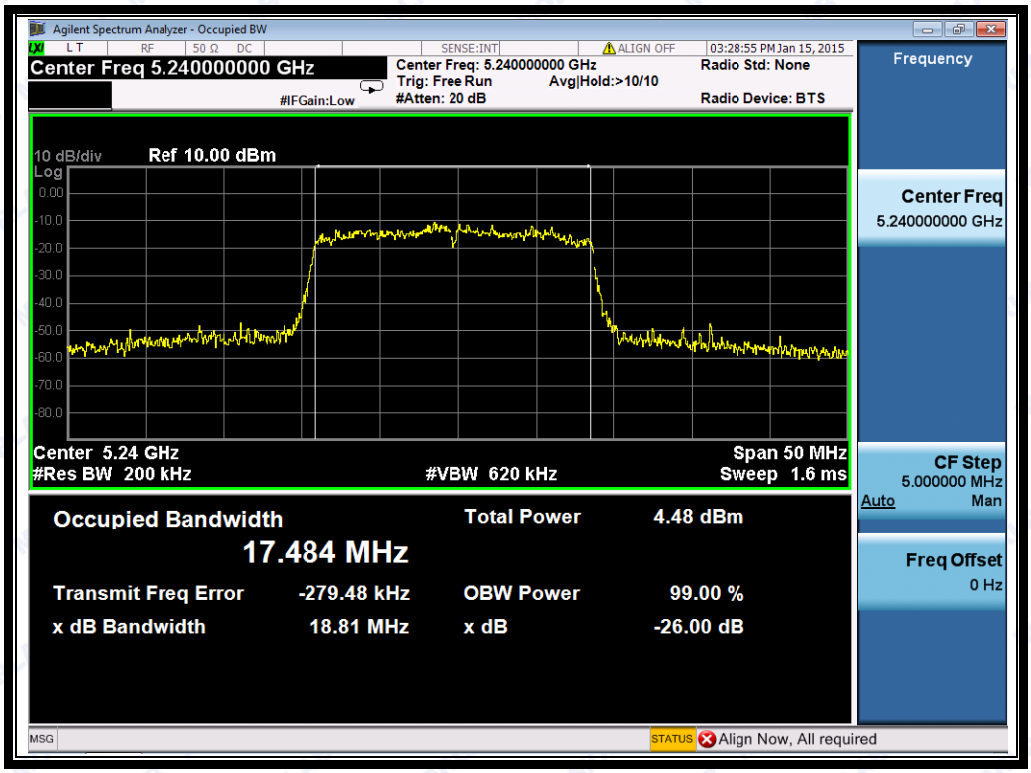
B. Test Plots



(Channel 36: 5180MHz @ 802.11n-20MHz)



(Channel 44: 5220 MHz @ 802.11n-20MHz)



(Channel 48: 5240MHz @ 802.11n-20MHz)

2.2.4 Test Result

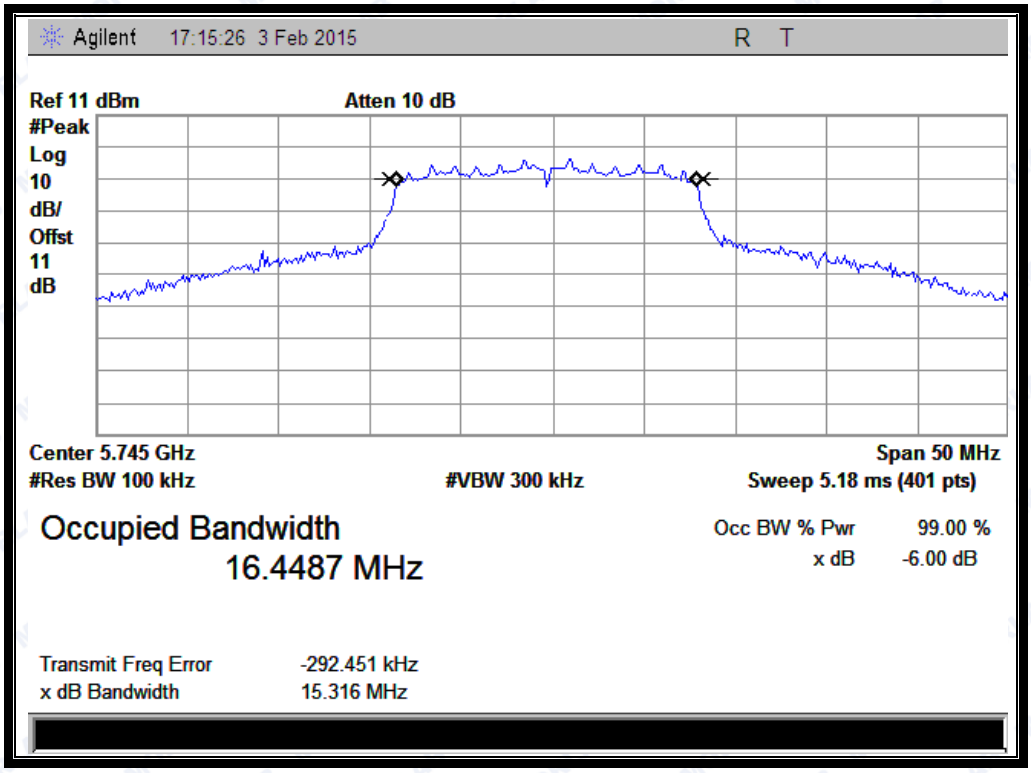
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

2.2.4.1 802.11a Test mode

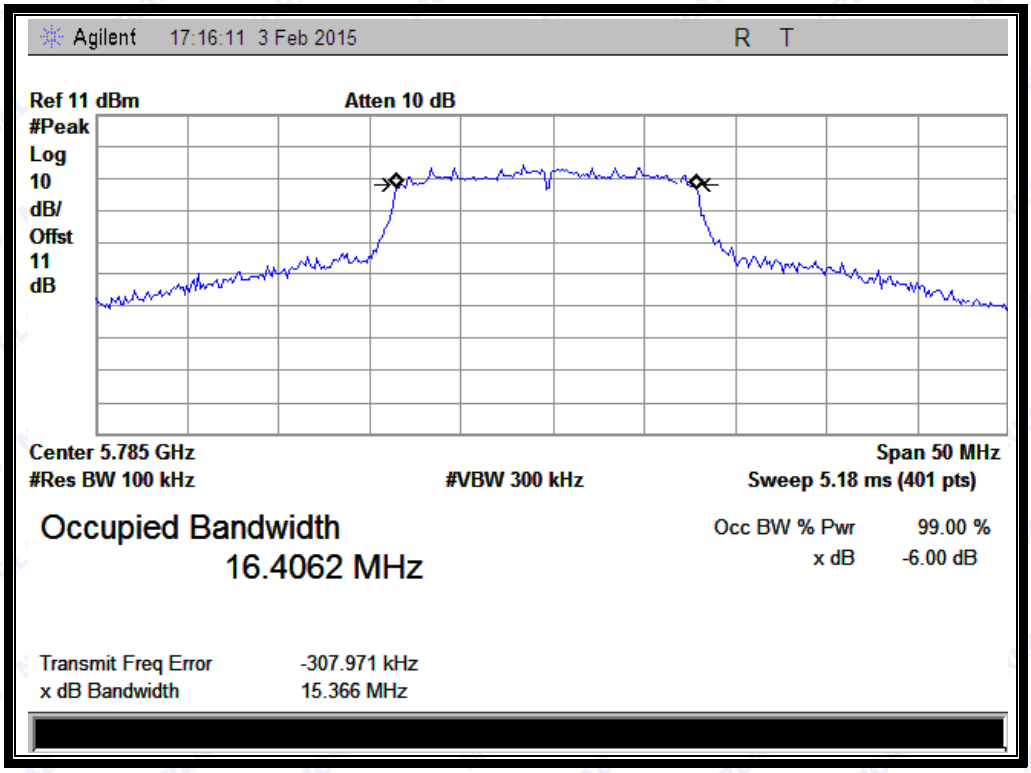
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
149	5745	15.316
157	5785	15.366
165	5825	15.224

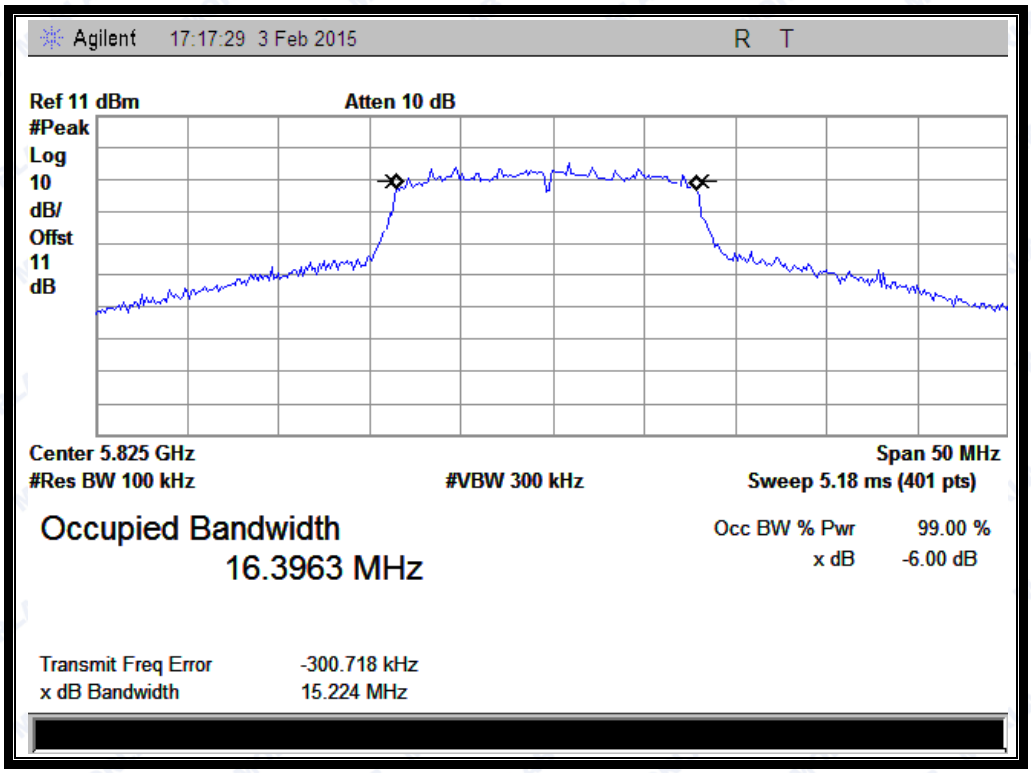
B. Test Plots



(Channel 149: 5745MHz @ 802.11a)



(Channel 157: 5785 MHz @ 802.11a)



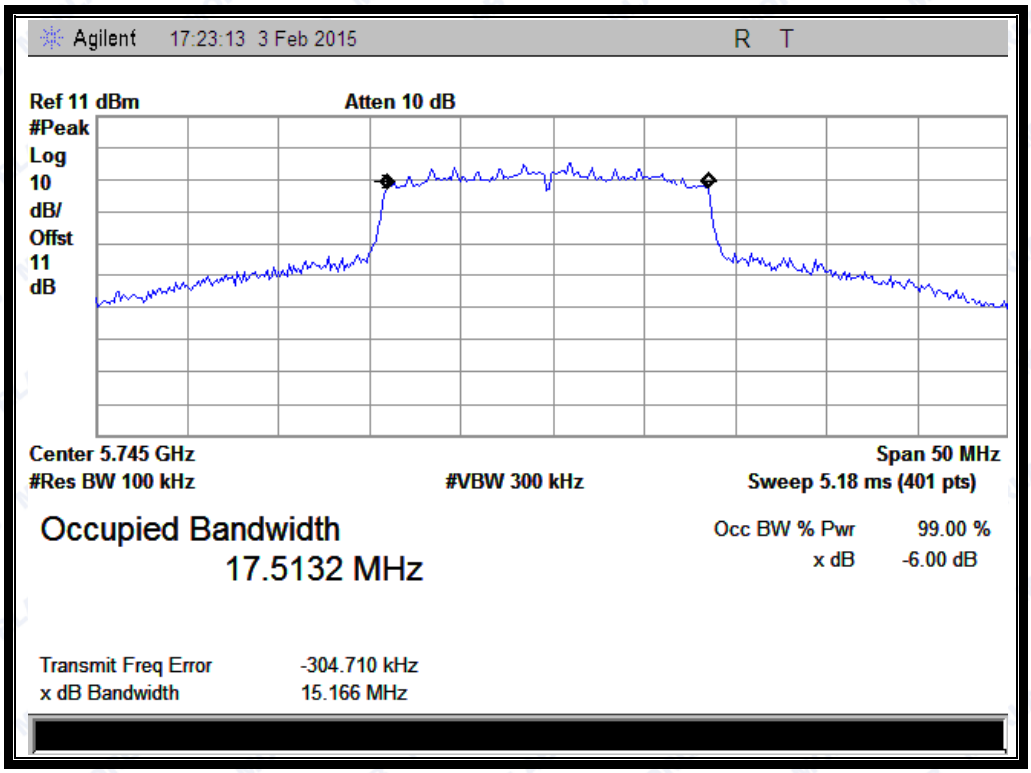
(Channel 165: 5825MHz @ 802.11a)

2.2.4.2 802.11n-20MHz Test mode

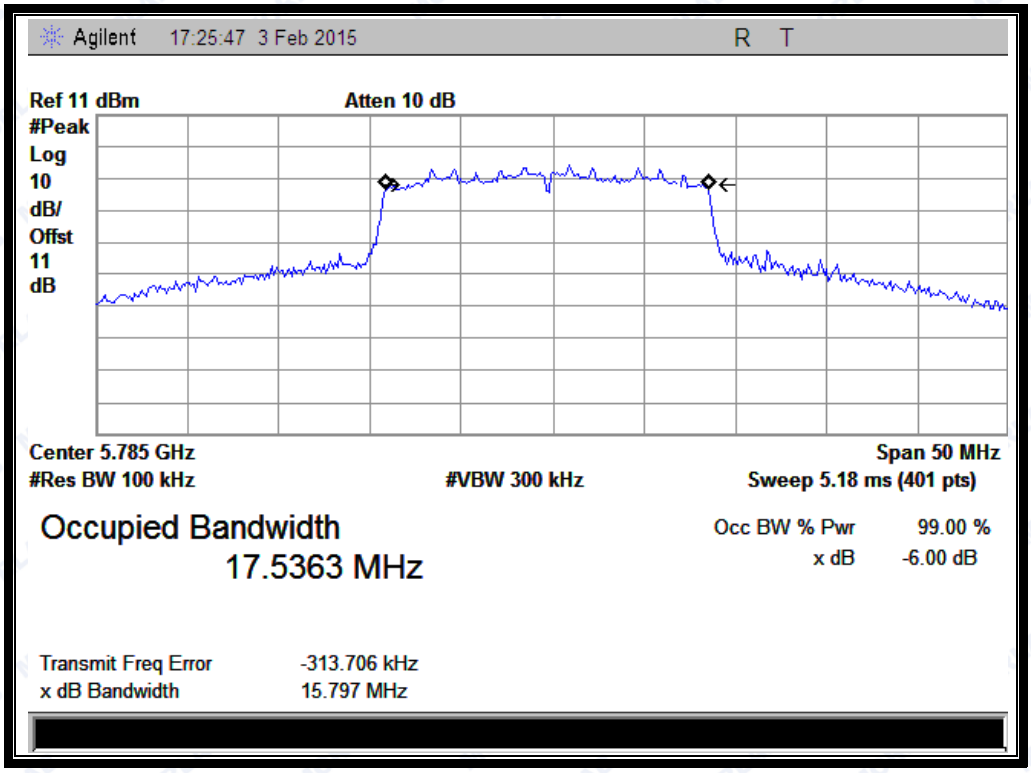
A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
149	5745	15.166
157	5785	15.797
165	5825	15.233

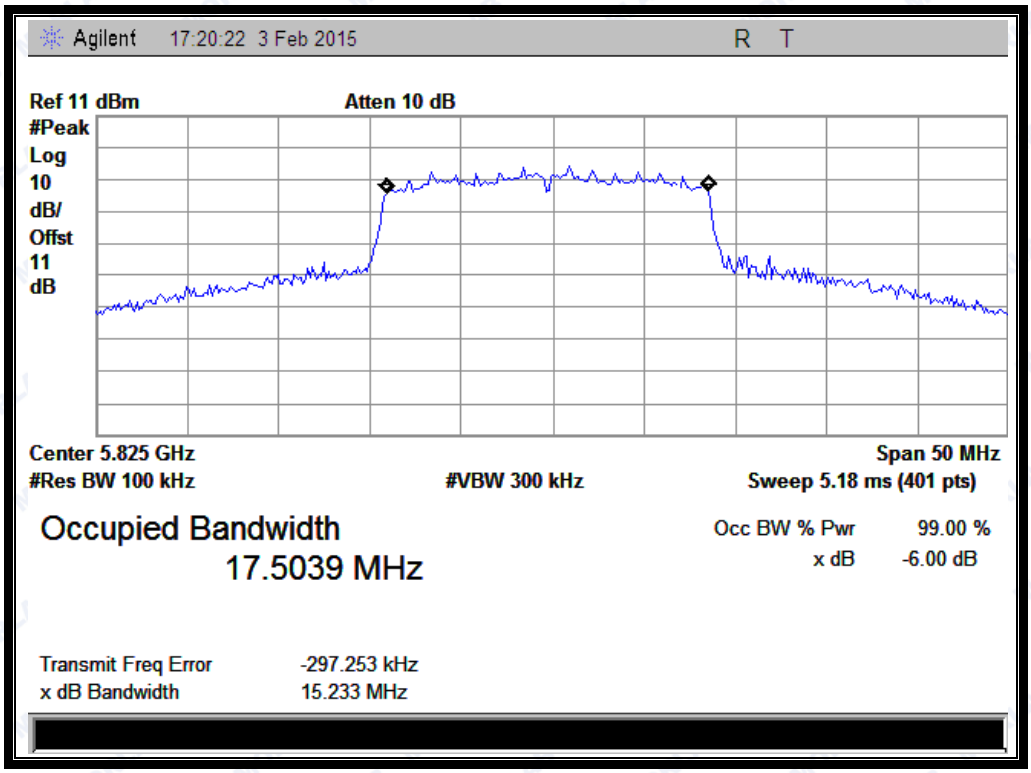
B. Test Plots



(Channel 149: 5745MHz @ 802.11n-20MHz)



(Channel 157: 5785 MHz @ 802.11n-20MHz)



(Channel 165: 5825MHz @ 802.11n-20MHz)

2.3 Maximum conducted output Power

2.3.1 Requirement

(1) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

(2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.3.2 Test Description

Section E) 3) of KDB 789033 defines a methodology using an RF average power meter.

A. Test Setup:

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

2.3.3 Test Result

2.3.3.1 802.11a Test mode

Channel	Frequency (MHz)	Measured Output Power(dBm)	Limit (dBm)	Verdict
36	5180	13.28	24	PASS
44	5220	14.32		
48	5240	14.88		
149	5745	12.19	30	
157	5782	12.53		
165	5825	12.68		

2.3.3.2 802.11n-20MHz Test mode

Channel	Frequency (MHz)	Measured Output Power(dBm)	Limit (dBm)	Verdict
36	5180	12.19	24	PASS
44	5220	13.03		
48	5240	13.82		
149	5745	11.92	30	
157	5782	11.82		
165	5825	12.06		

2.4 Peak Power spectral density

2.4.1 Requirement

(1) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

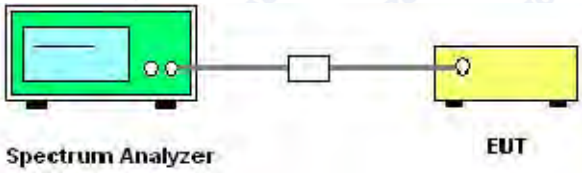
(2) For the 5.25–5.35 GHz and 5.47–5.725GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500KHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

2.4.2 Test Description

A. Test Set:



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

B. Test Procedure

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance

1) Set span to encompass the entire 26-dB emission bandwidth
2) Set RBW = 1 MHz. Set VBW ≥ 3 MHz.
3) Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto.
4) Detector = RMS (i.e., power averaging)
5) Trace average at least 100 traces in power averaging (i.e., RMS) mode
6) Record the max value

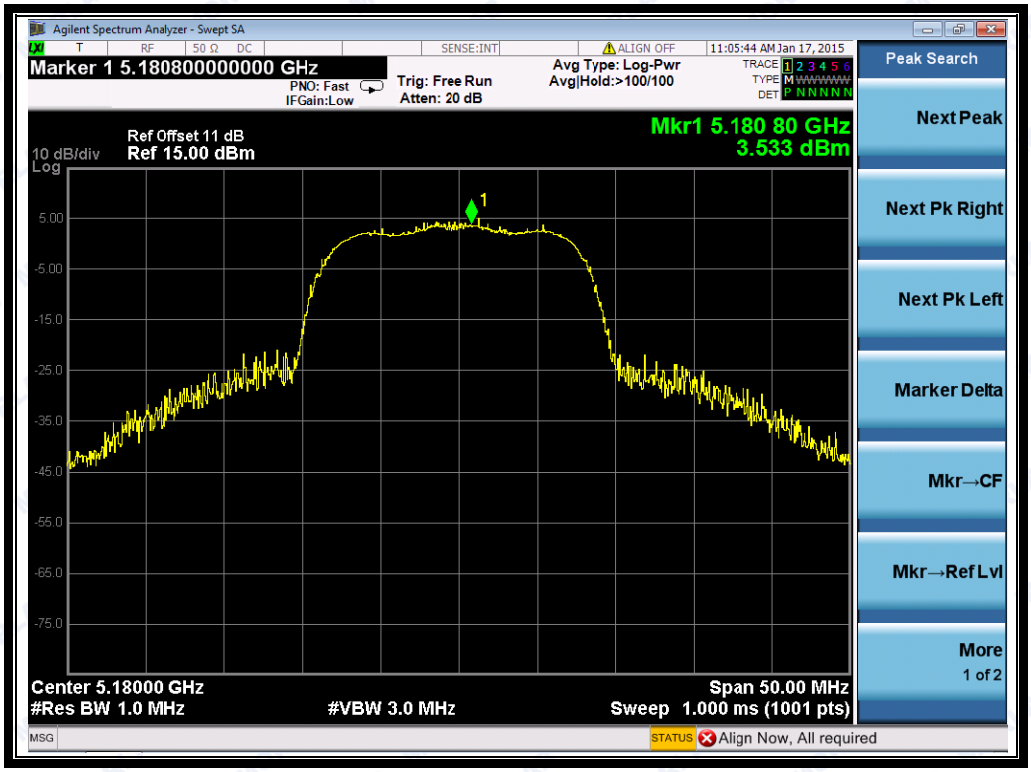
2.4.3 Test Result

2.4.3.1 802.11a Test mode

A. Test Verdict:

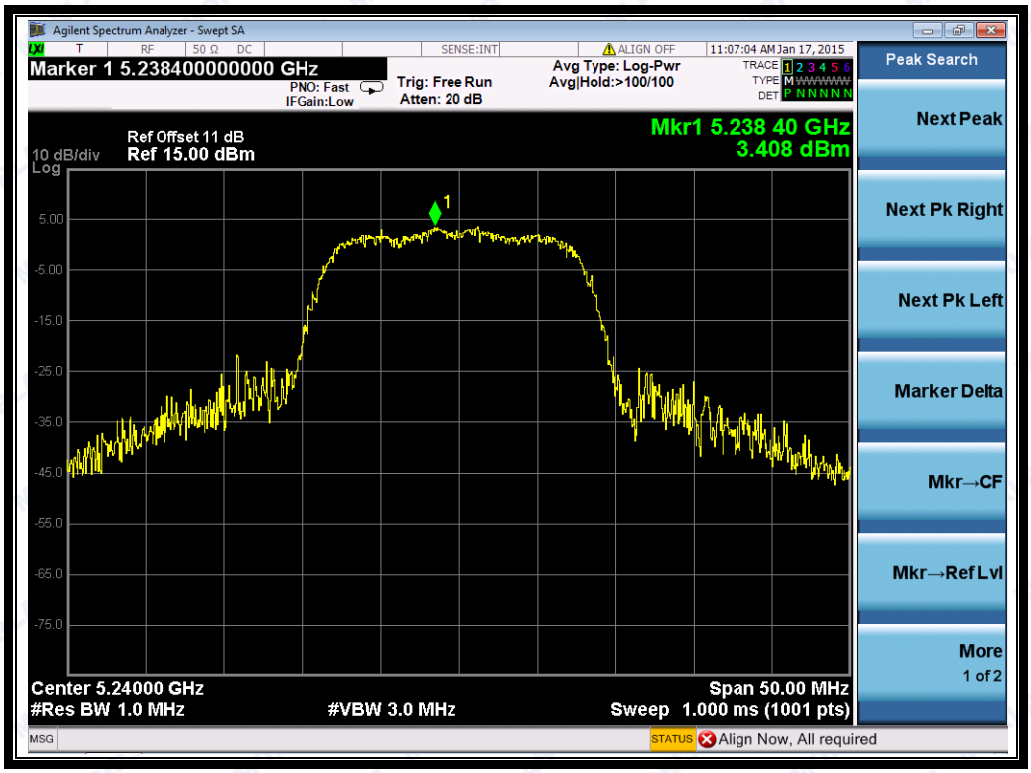
Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Verdict
36	5180	3.533	11	PASS
44	5220	3.256		
48	5240	3.408		
149	5745	1.488	30	
157	5782	0.758		
165	5825	-0.262		

B. Test Plots:

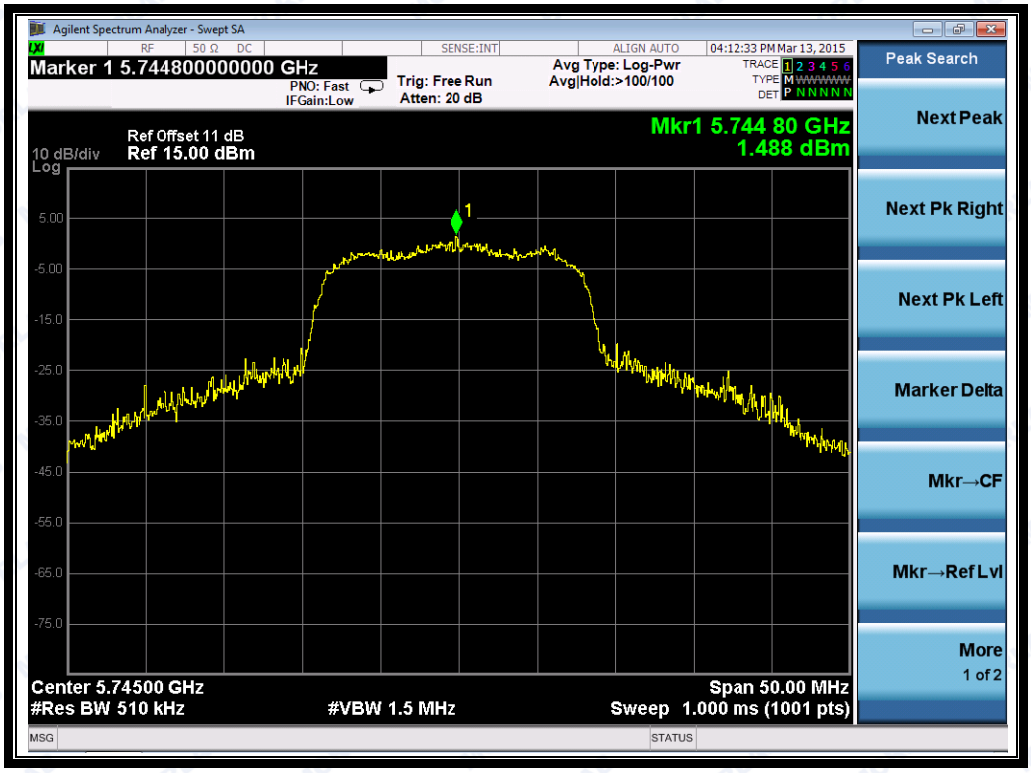


(Channel 36: 5180MHz @ 802.11a)

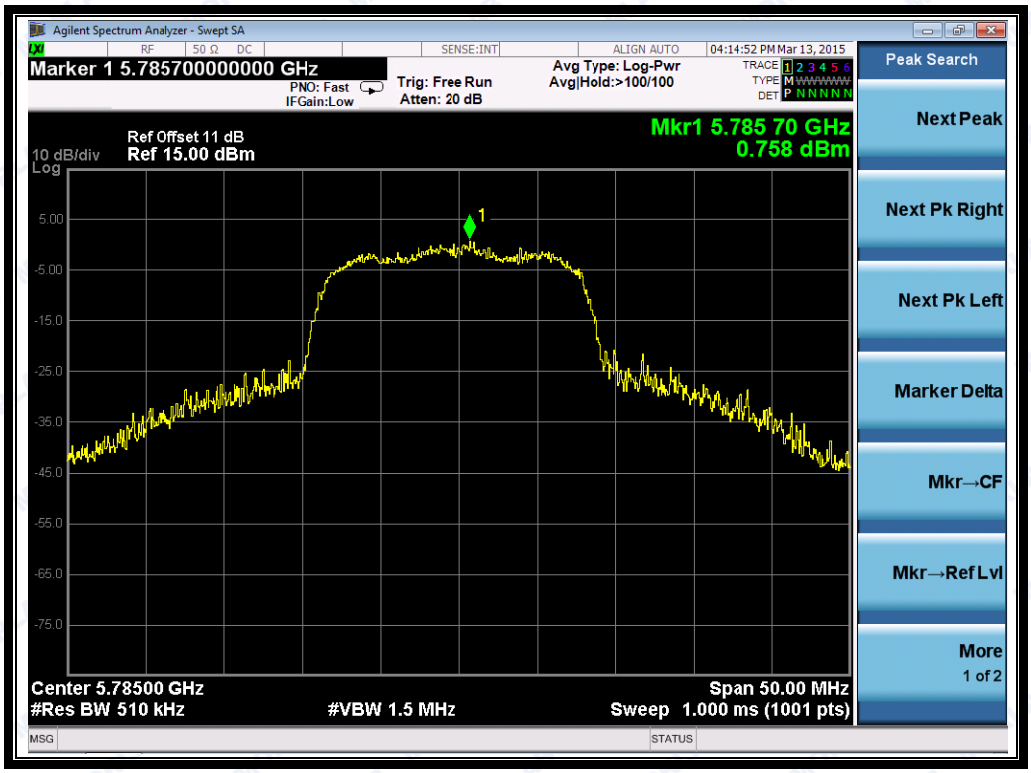
(Channel 44: 5220 MHz @ 802.11a)



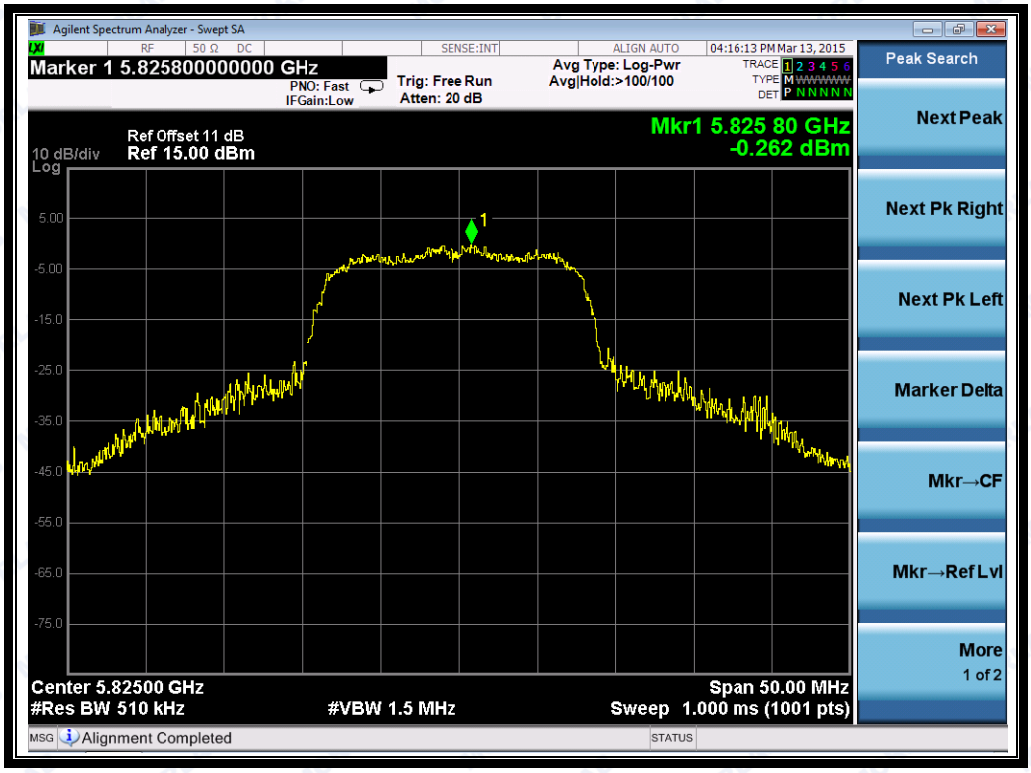
(Channel 48: 5240MHz @ 802.11a)



(Channel 149: 5745MHz @ 802.11a)



(Channel 157: 5785MHz @ 802.11a)



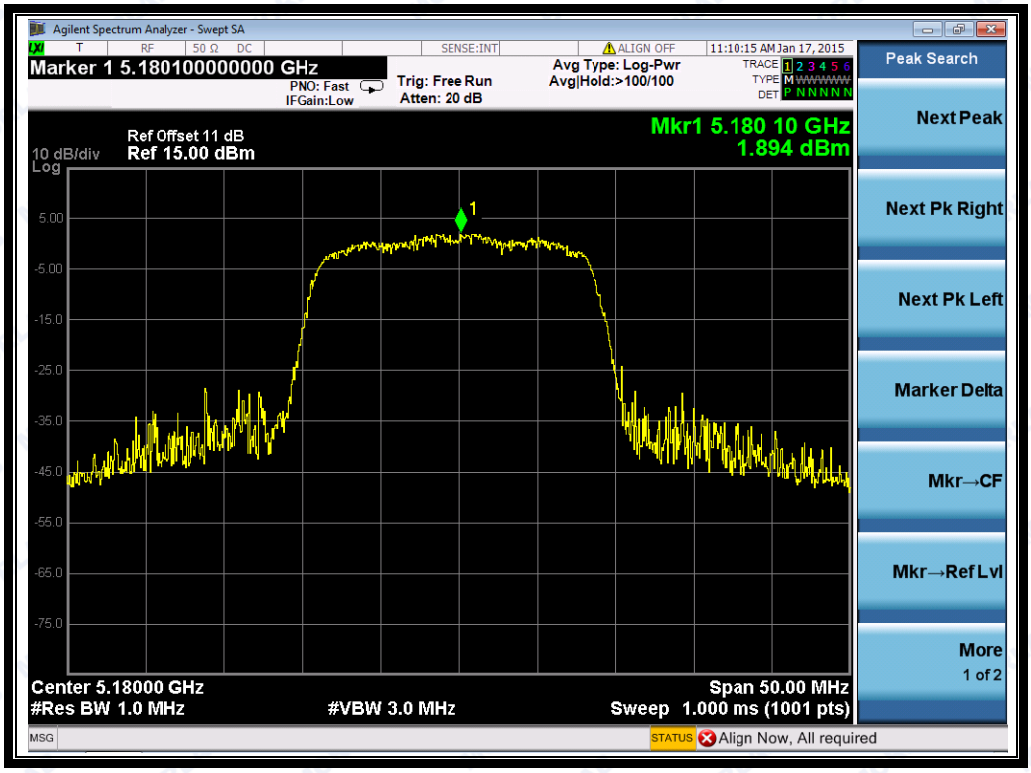
(Channel 165: 5825MHz @ 802.11a)

2.4.3.2 802.11n-20MHz Test mode

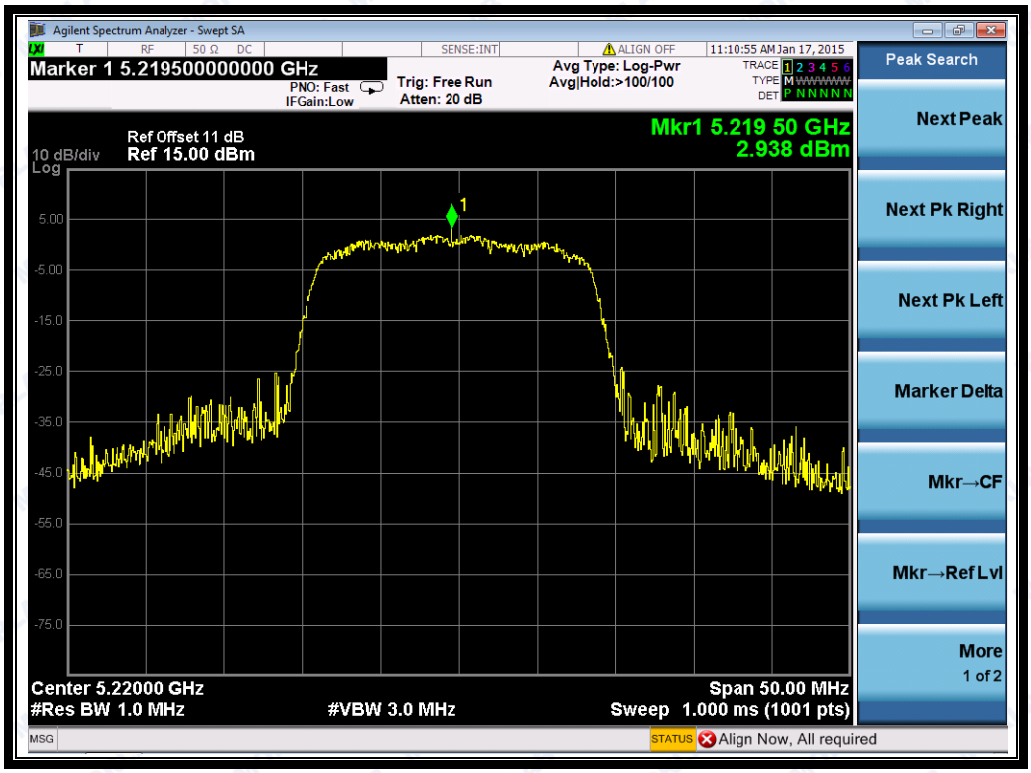
A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Verdict
36	5180	1.894	11	PASS
44	5220	2.938		
48	5240	1.857		
149	5745	-0.615	30	
157	5782	-0.470		
165	5825	-1.425		

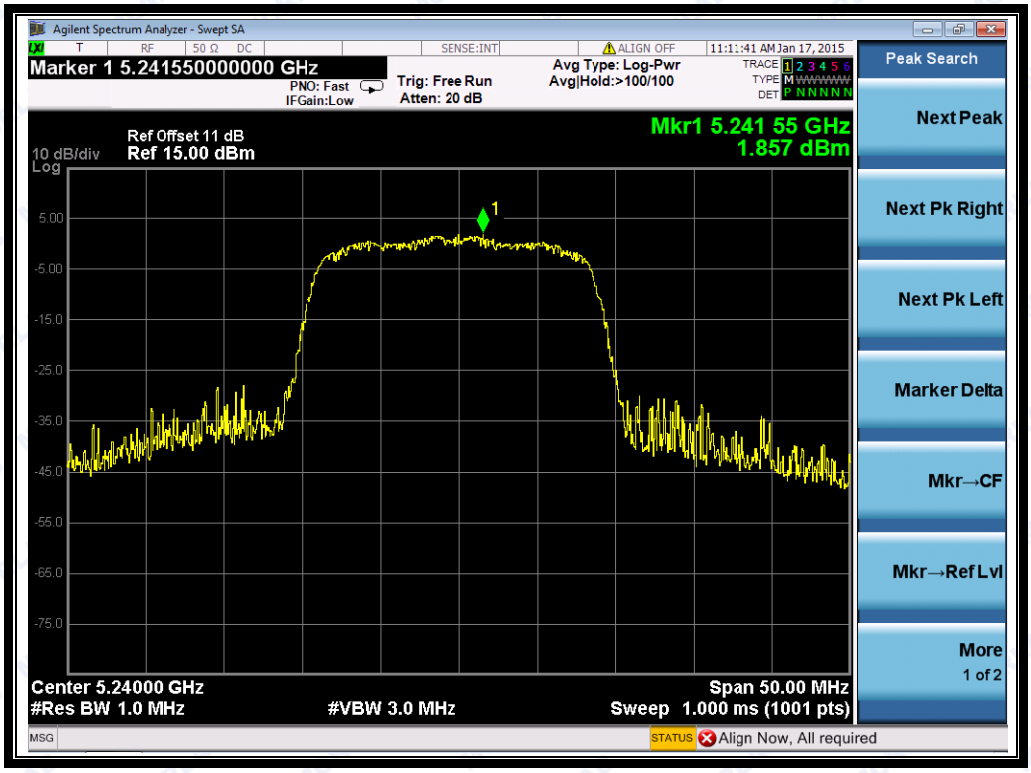
B. Test Plots:



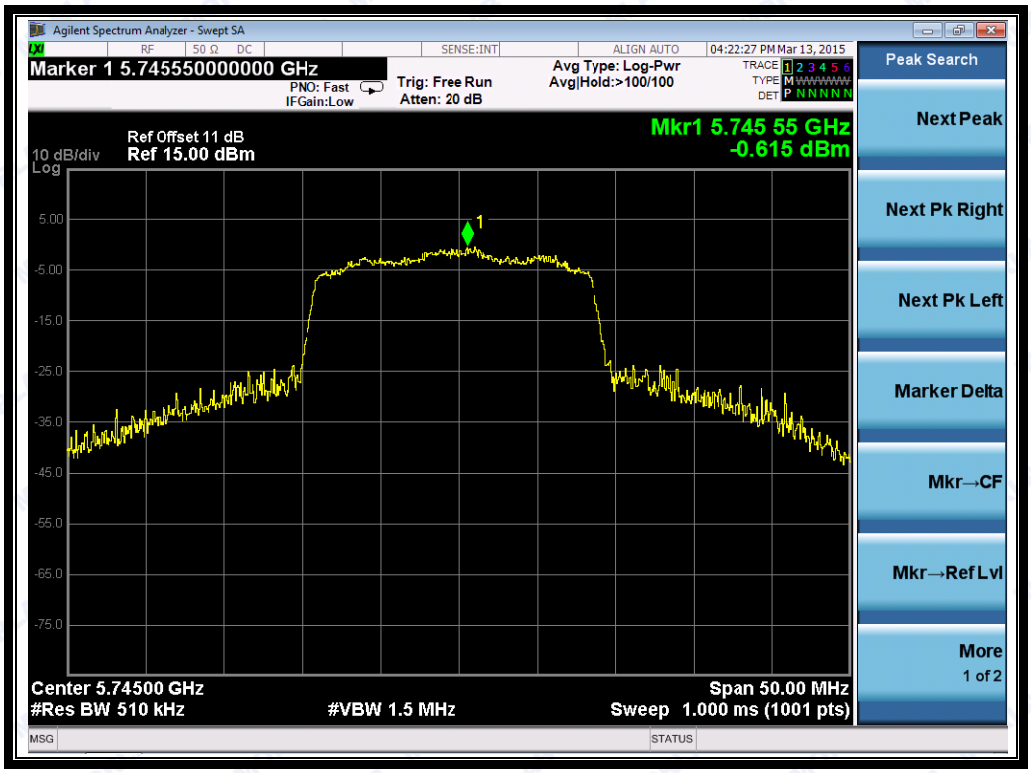
(Channel 36: 5180MHz @ 802.11n-20MHz)



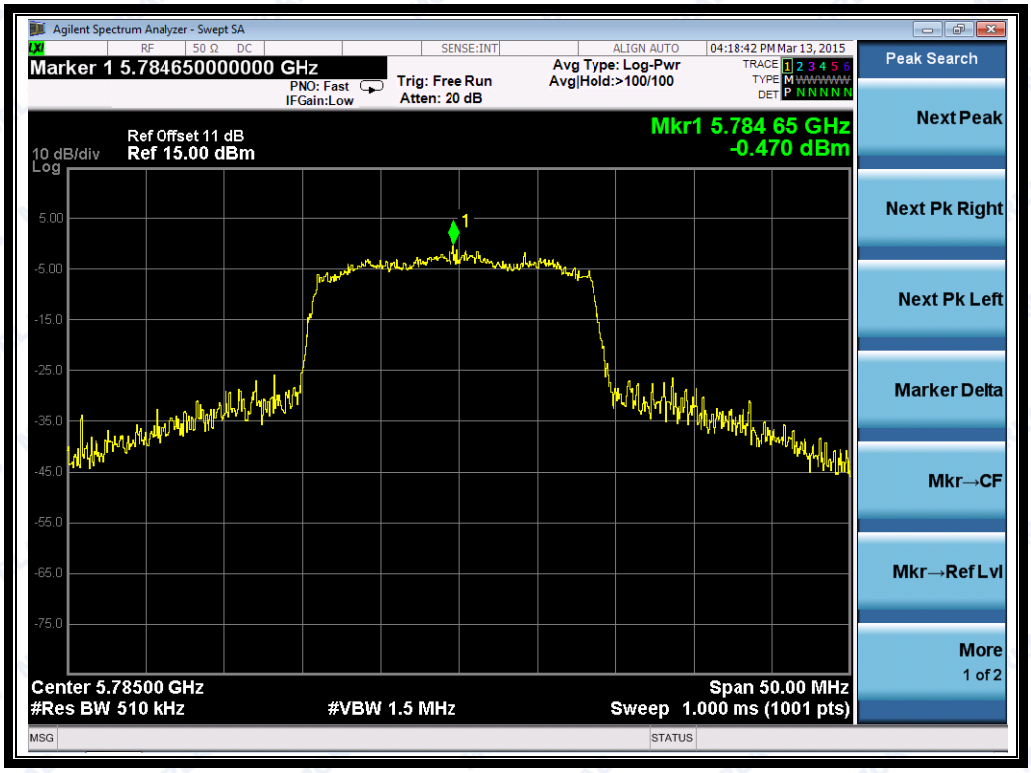
(Channel 44: 5220 MHz @ 802.11n-20MHz)



(Channel 48: 5240MHz @ 802.11n-20MHz)



(Channel 149: 5475MHz @ 802.11n-20MHz)



(Channel 157: 5785MHz @ 802.11n-20MHz)

(Channel 165: 5825MHz @ 802.11n-20MHz)

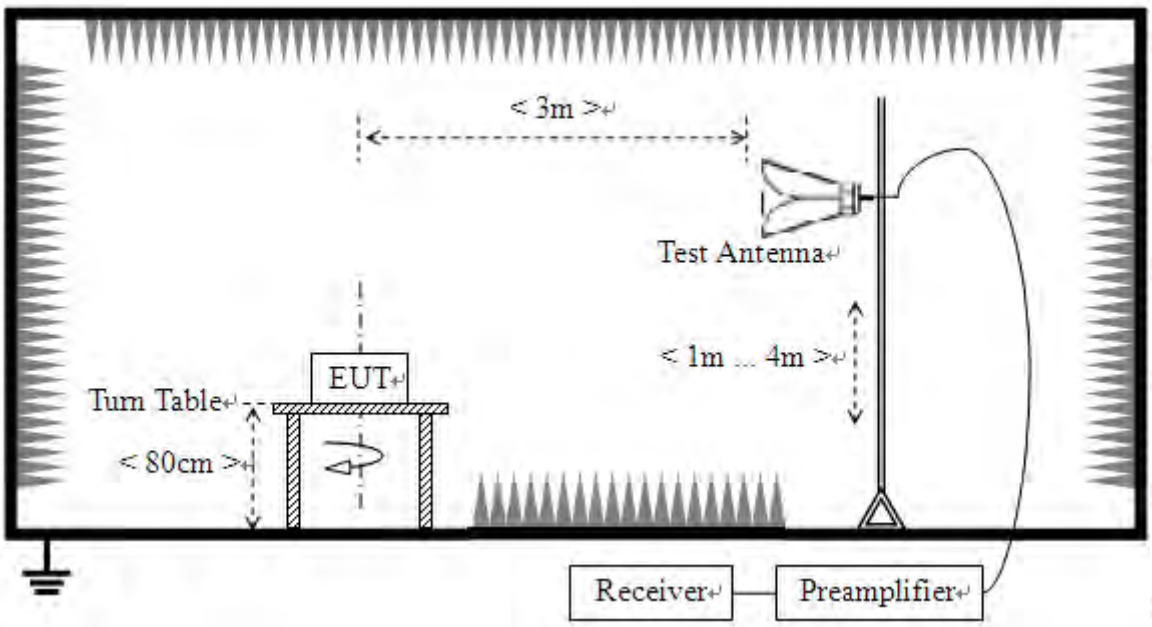
2.5 Restricted Frequency Bands

2.5.1 Requirement

According to FCC section 15.407(b)(7), 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).

2.5.2 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.

KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

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.

2.5.3 Test Result

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

The measurement results are obtained as below:

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

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

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

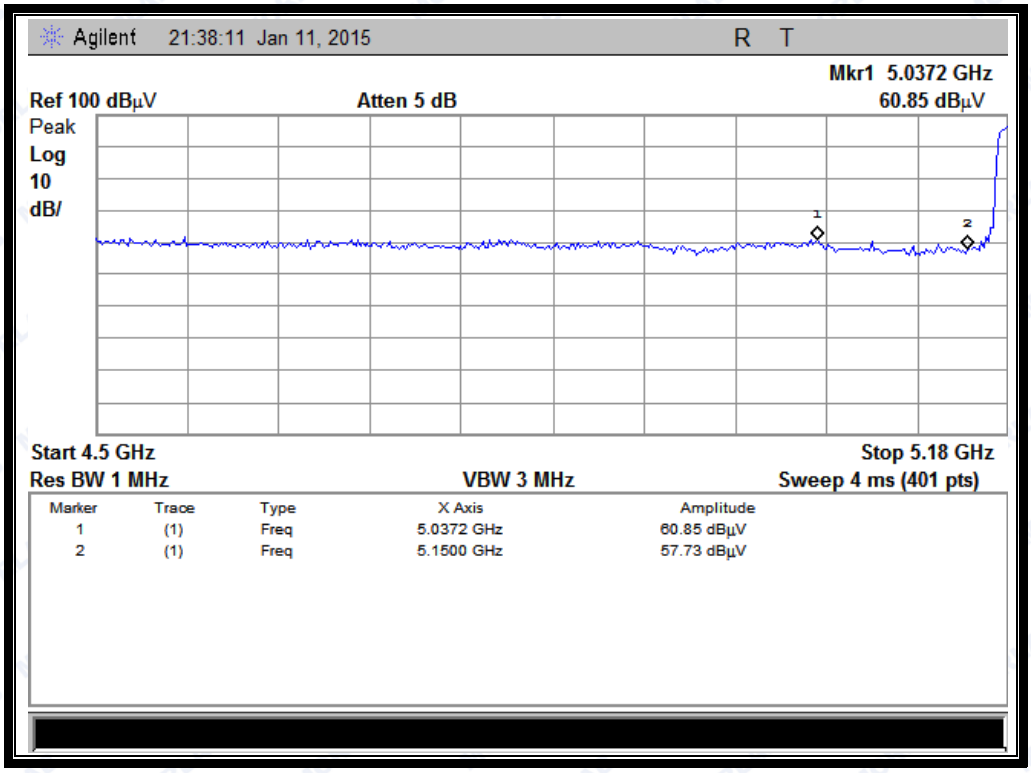
2.5.3.1 802.11a Test mode

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

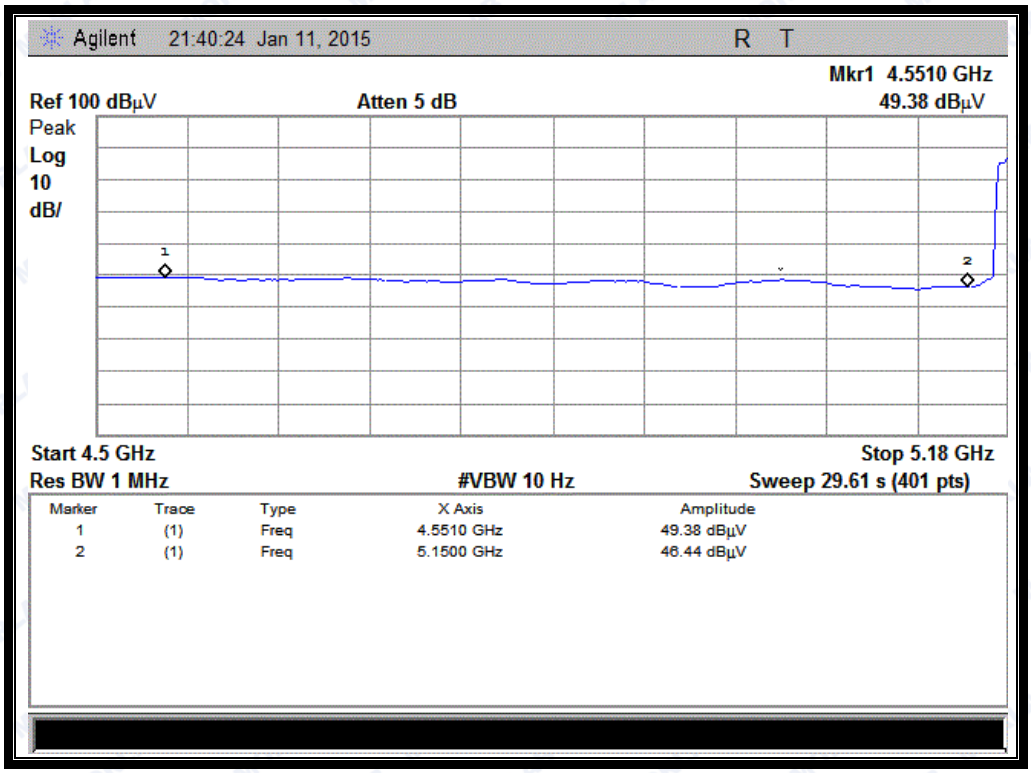
A. Test Verdict:

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						
36	5037.20	PK	60.85	-34.13	32.11	58.83	74	Pass
36	4551.00	AV	49.38	-34.13	32.11	47.36	54	Pass
48	5441.30	PK	58.02	-33.79	31.69	55.92	74	Pass
48	5450.65	AV	45.99	-33.79	31.69	43.89	54	Pass

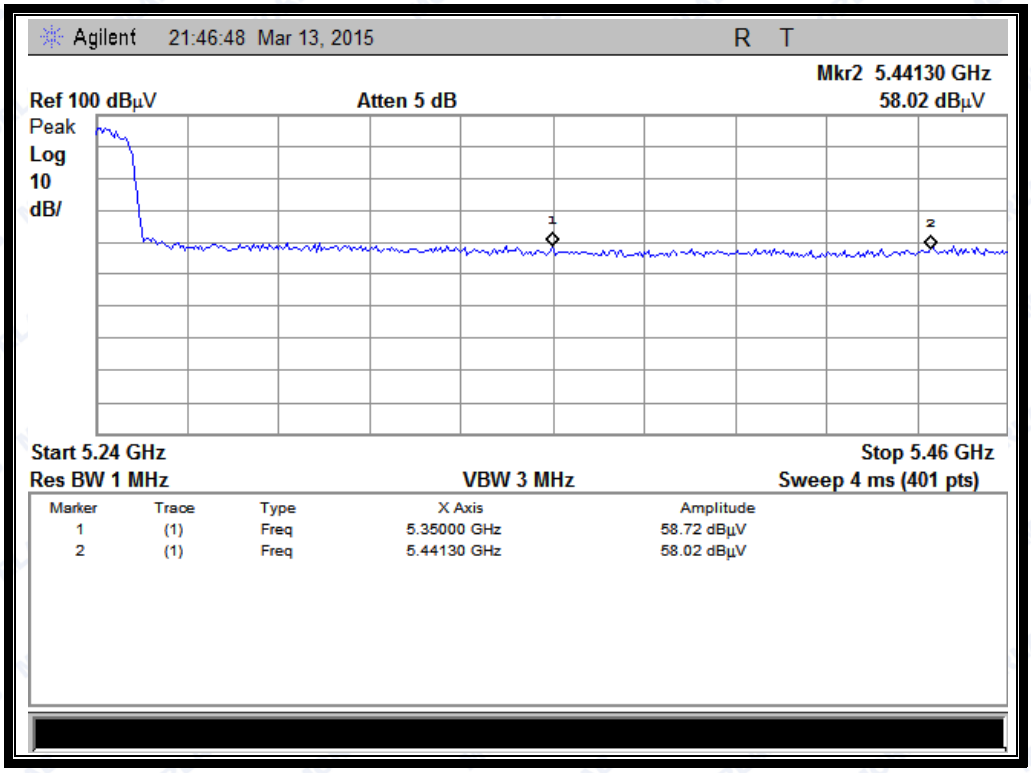
B. Test Plots:



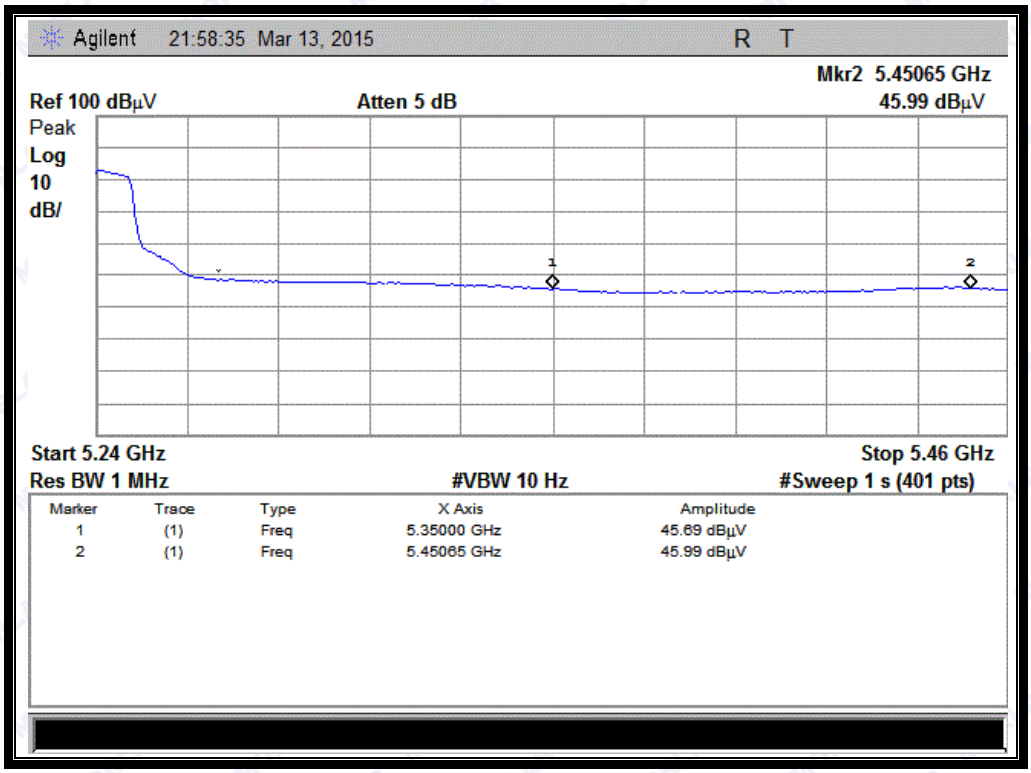
(Channel = 36 PEAK @ 802.11a)



(Channel = 36 AVG @ 802.11a)



(Channel = 48 PEAK @ 802.11a)



(Channel = 48 AVG @ 802.11a)

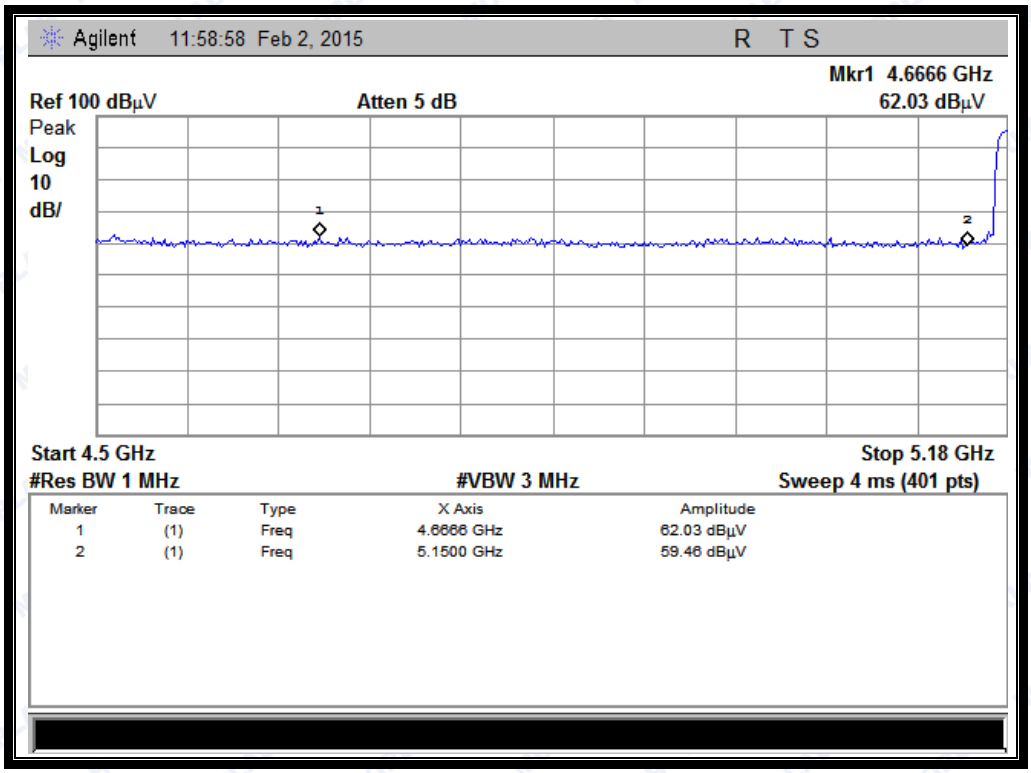
2.5.3.2 802.11n-20MHz Test mode

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

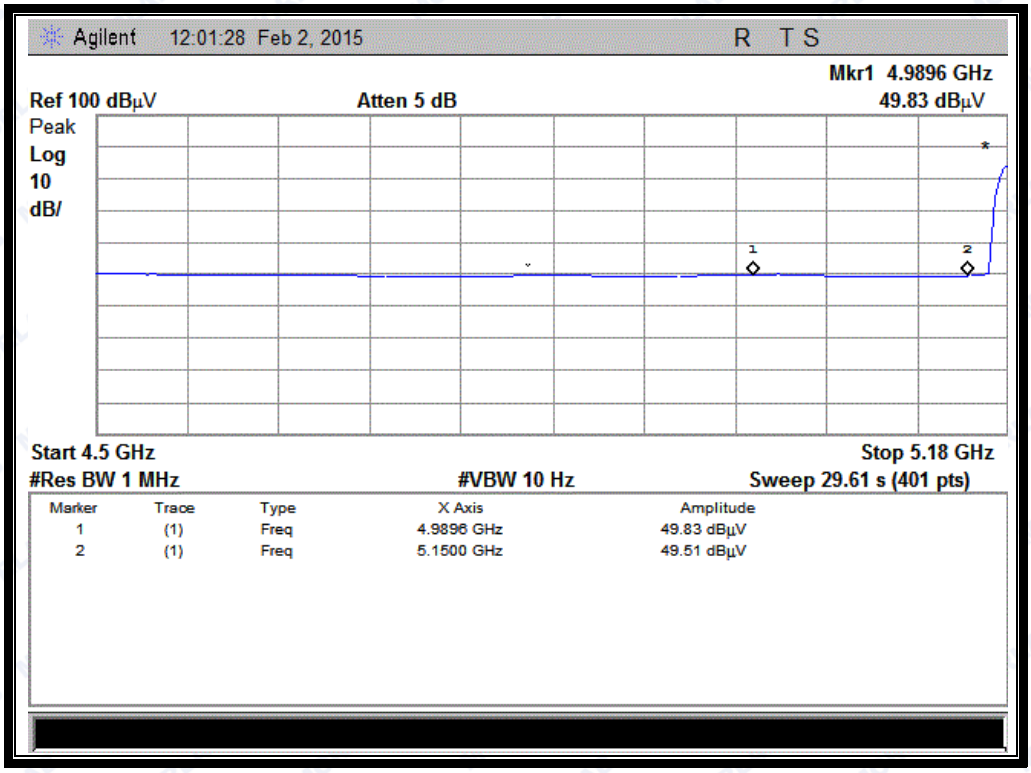
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
36	4666.60	PK	62.03	-34.13	32.11	60.01	74	Pass
36	4989.60	AV	49.83	-34.13	32.11	47.81	54	Pass
48	5439.10	PK	58.15	-33.79	31.69	56.05	74	Pass
48	5449.55	AV	46.16	-33.79	31.69	44.06	54	Pass

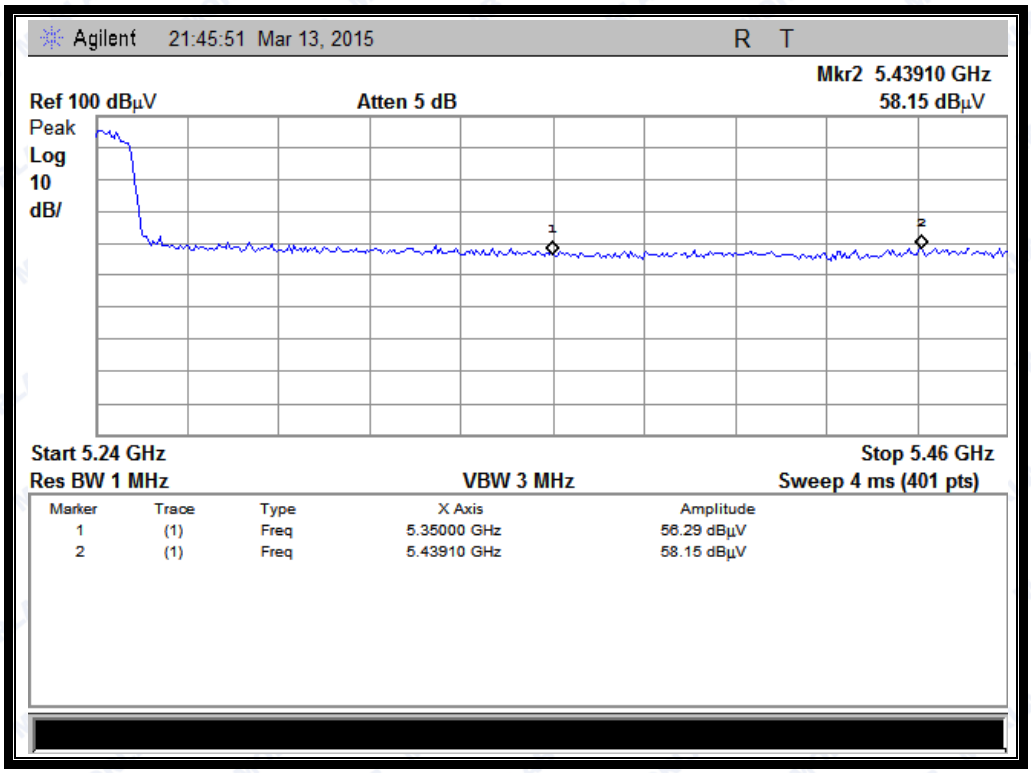
B. Test Plots:



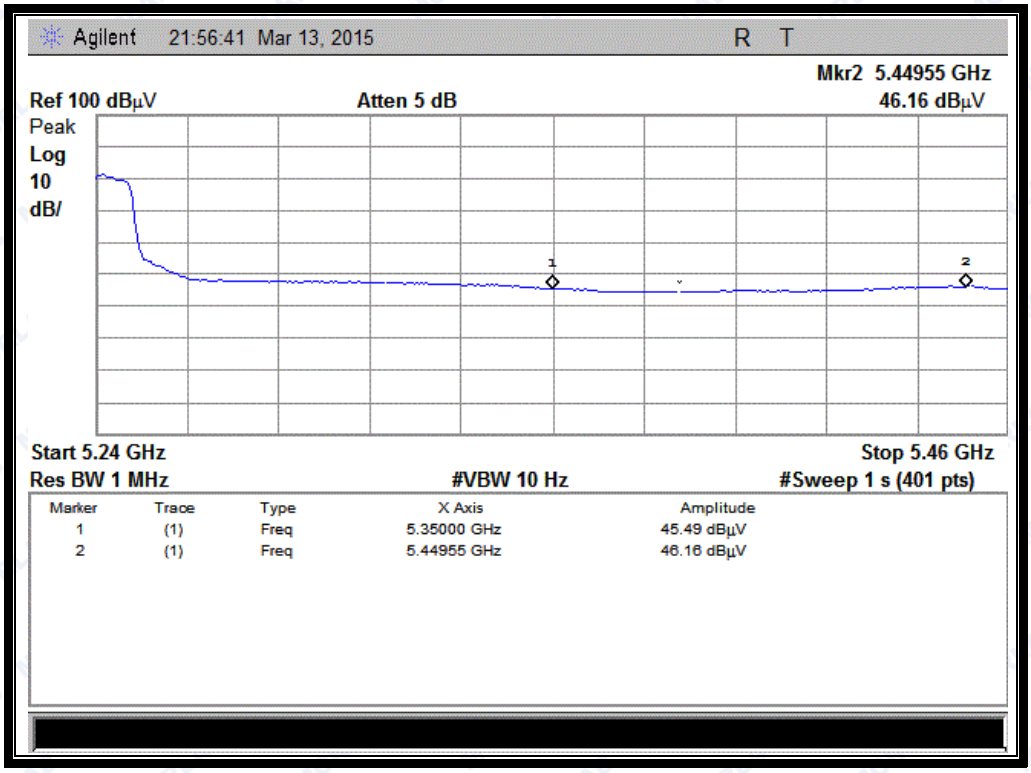
(Channel = 36 PEAK @ 802.11n-20MHz)



(Channel = 36 AVG @ 802.11n-20MHz)



(Channel = 48 PEAK @ 802.11n-20MHz)



(Channel = 48 AVG @ 802.11n-20MHz)

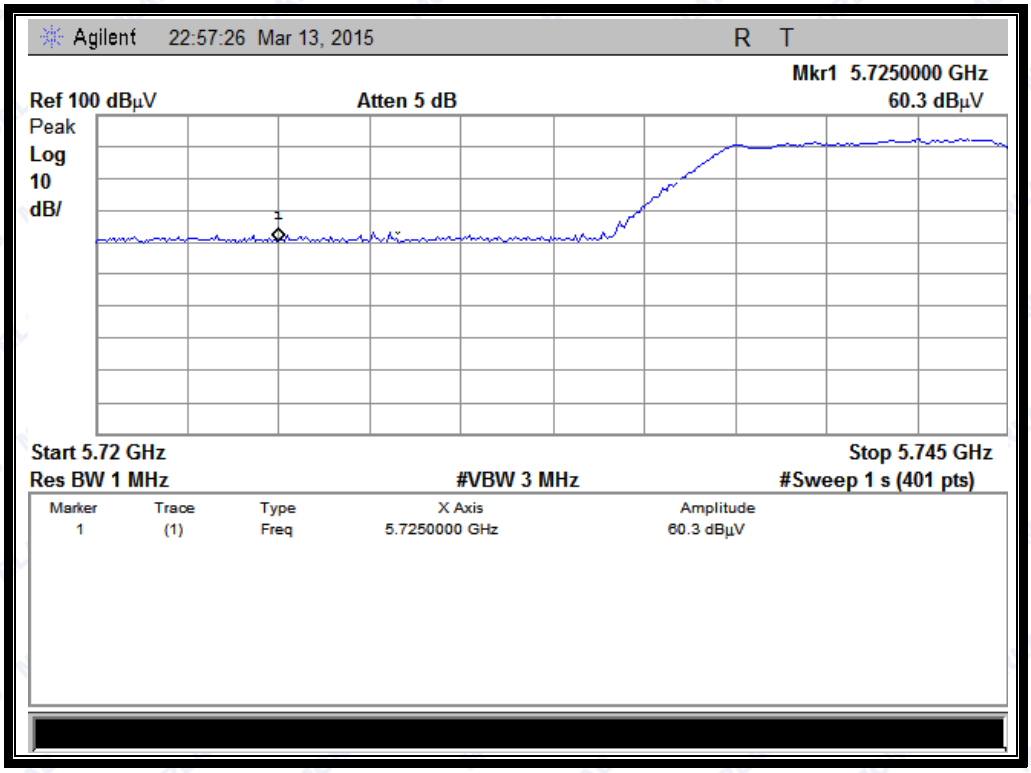
2.5.3.3 802.11a Test mode

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

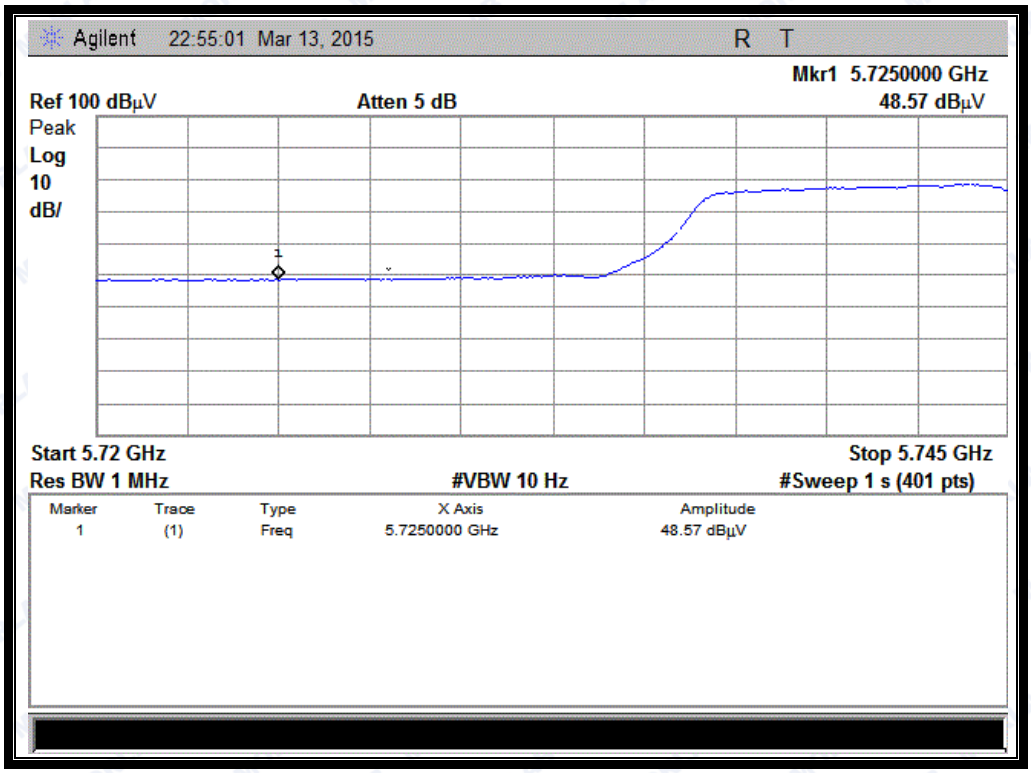
A. Test Verdict:

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						
149	5725.00	PK	60.30	-34.13	32.11	58.28	78.2	Pass
149	5725.00	AV	48.57	-34.13	32.11	46.55	58.2	Pass
165	5850.00	PK	60.00	-33.79	31.69	57.90	78.2	Pass
165	5850.00	AV	48.56	-33.79	31.69	46.46	58.2	Pass

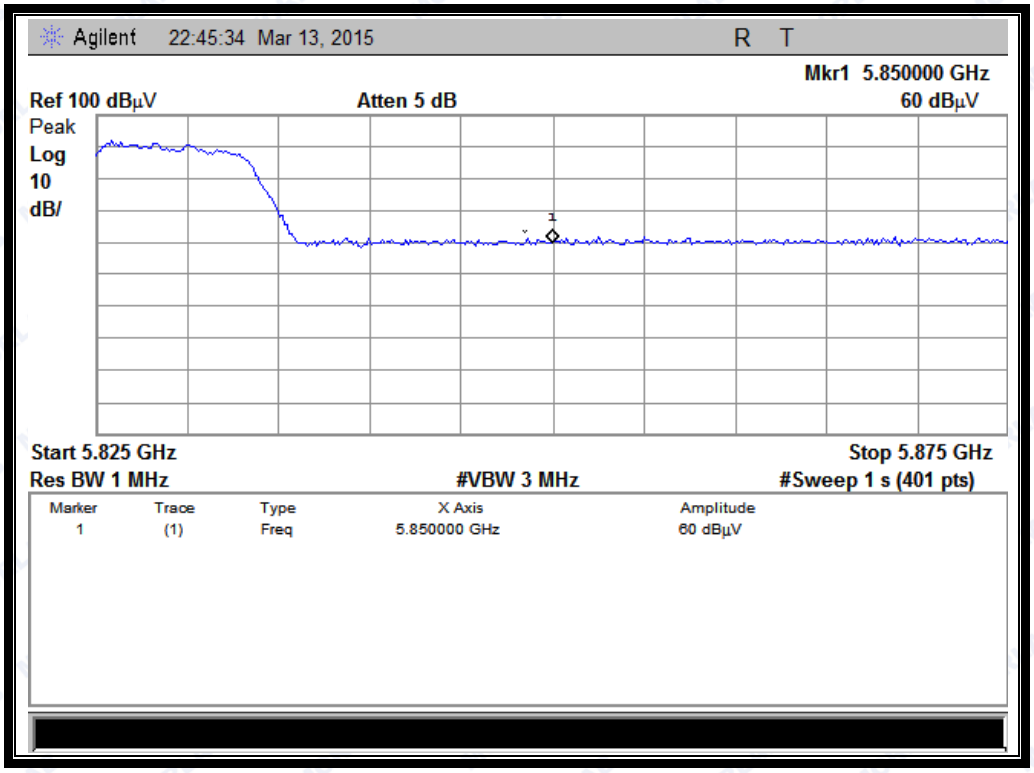
B. Test Plots:



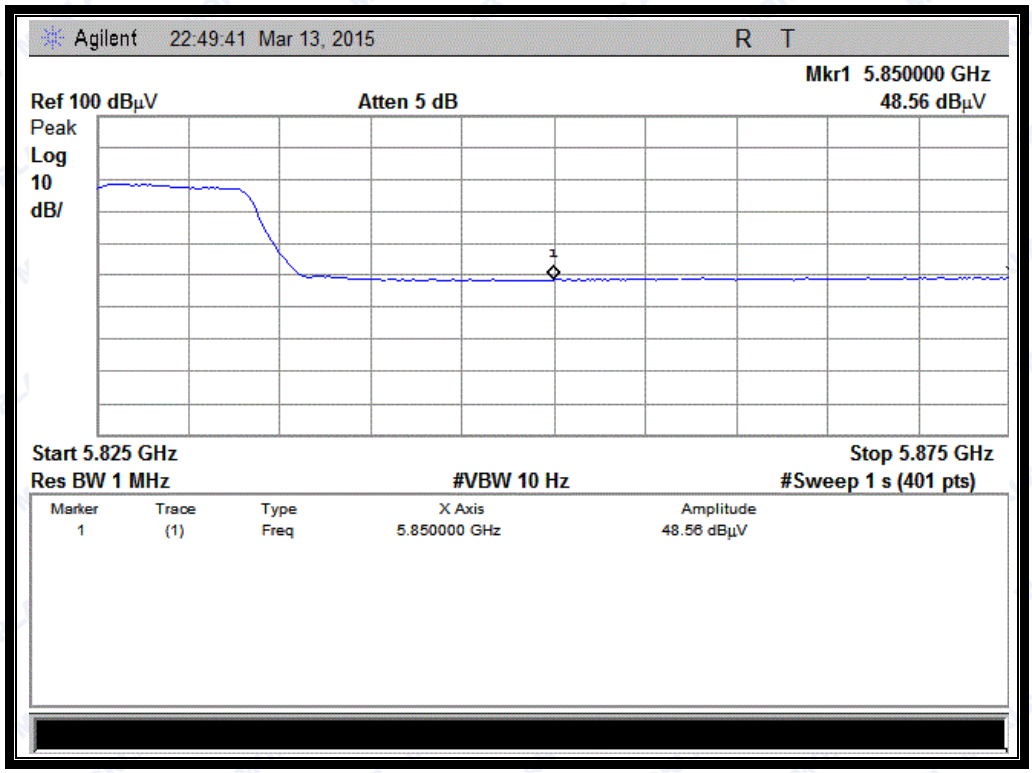
(Channel = 149 PEAK @ 802.11a)



(Channel = 149 AVG @ 802.11a)



(Channel = 165 PEAK @ 802.11a)



(Channel = 165 AVG @ 802.11a)

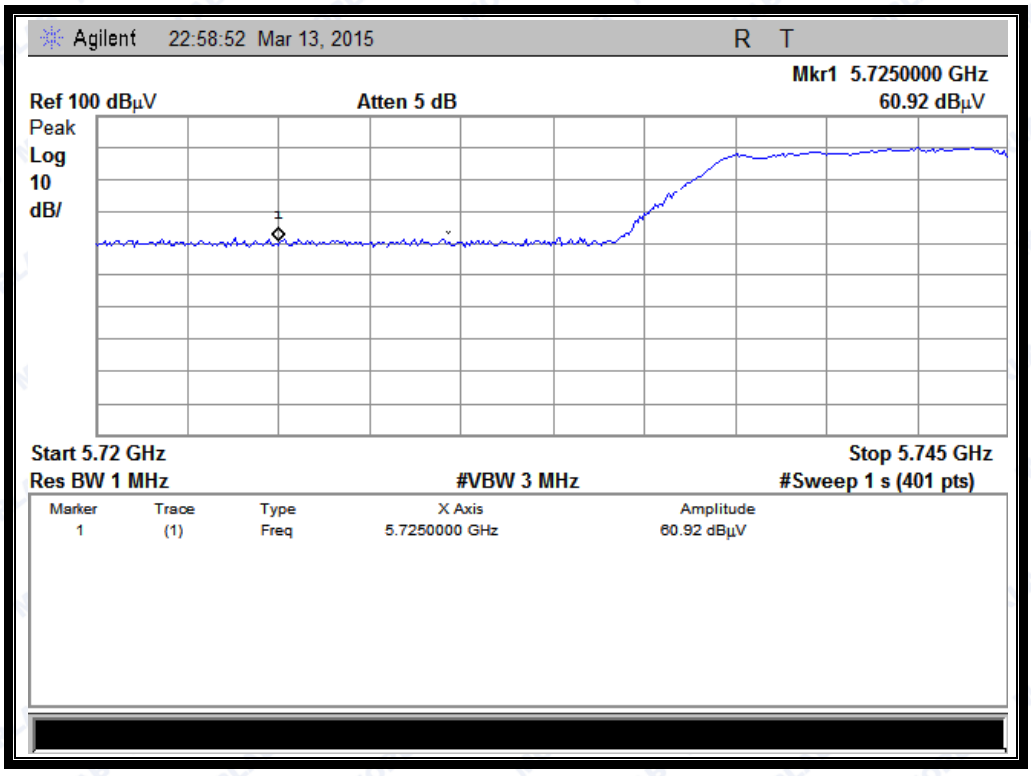
2.5.3.4 802.11n-20MHz Test mode

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

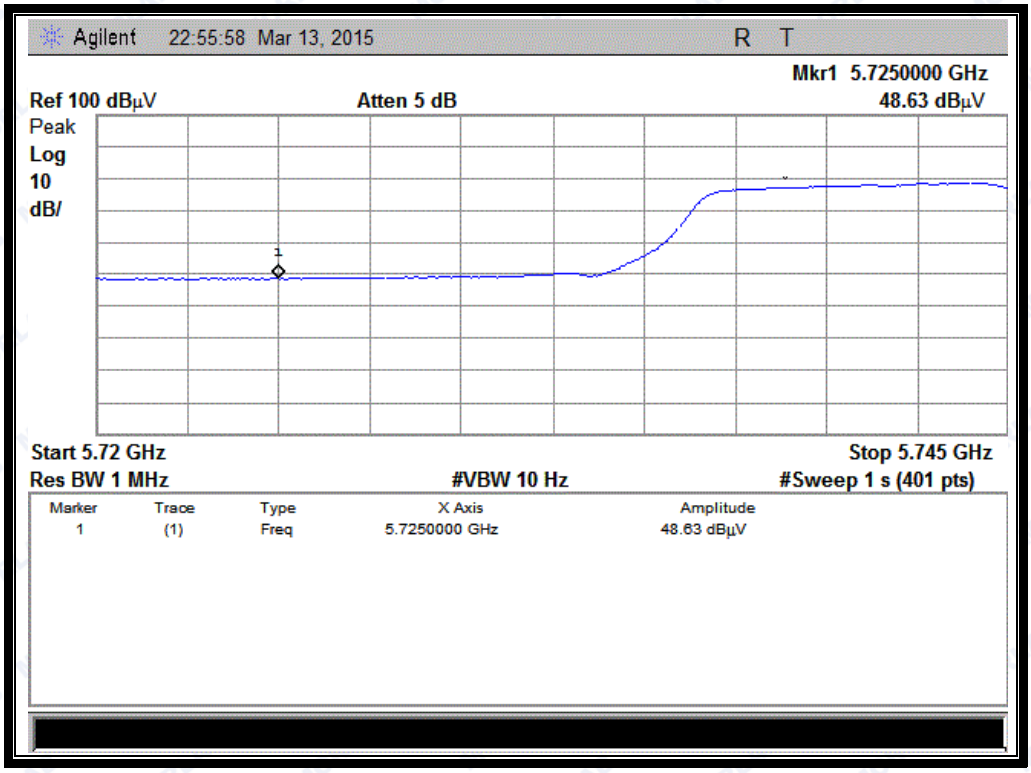
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
149	5725.00	PK	60.92	-34.13	32.11	58.9	78.2	Pass
149	5725.00	AV	48.63	-34.13	32.11	46.61	58.2	Pass
165	5850.00	PK	59.97	-33.79	31.69	57.87	78.2	Pass
165	5850.00	AV	48.48	-33.79	31.69	46.38	58.2	Pass

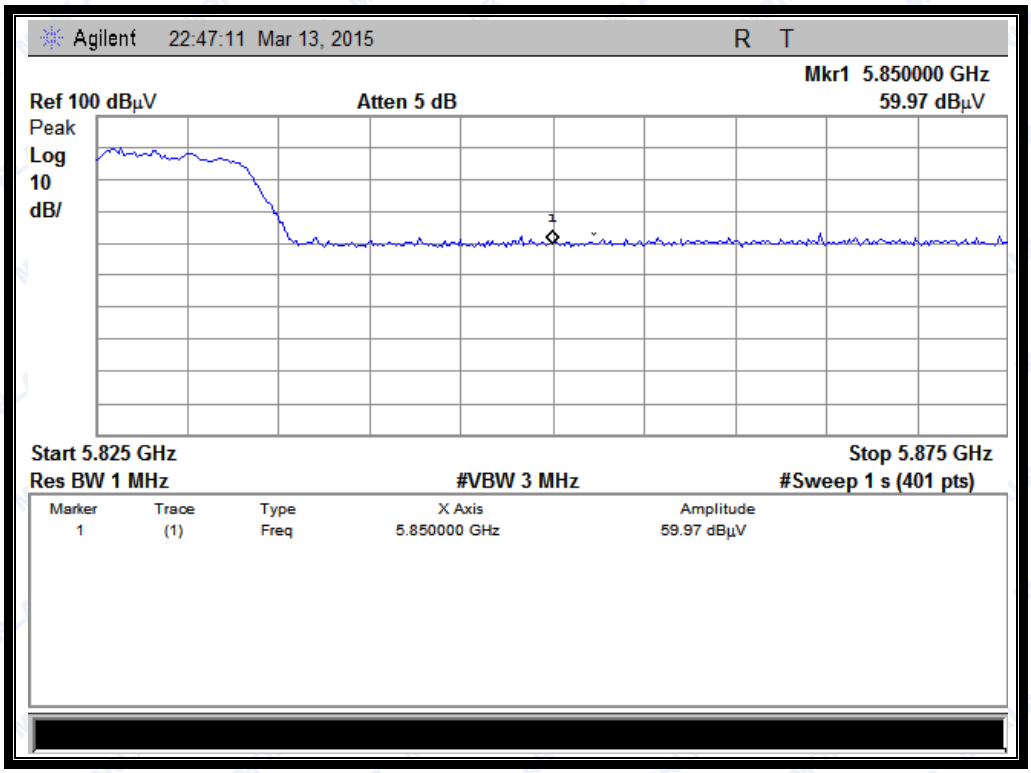
B. Test Plots:



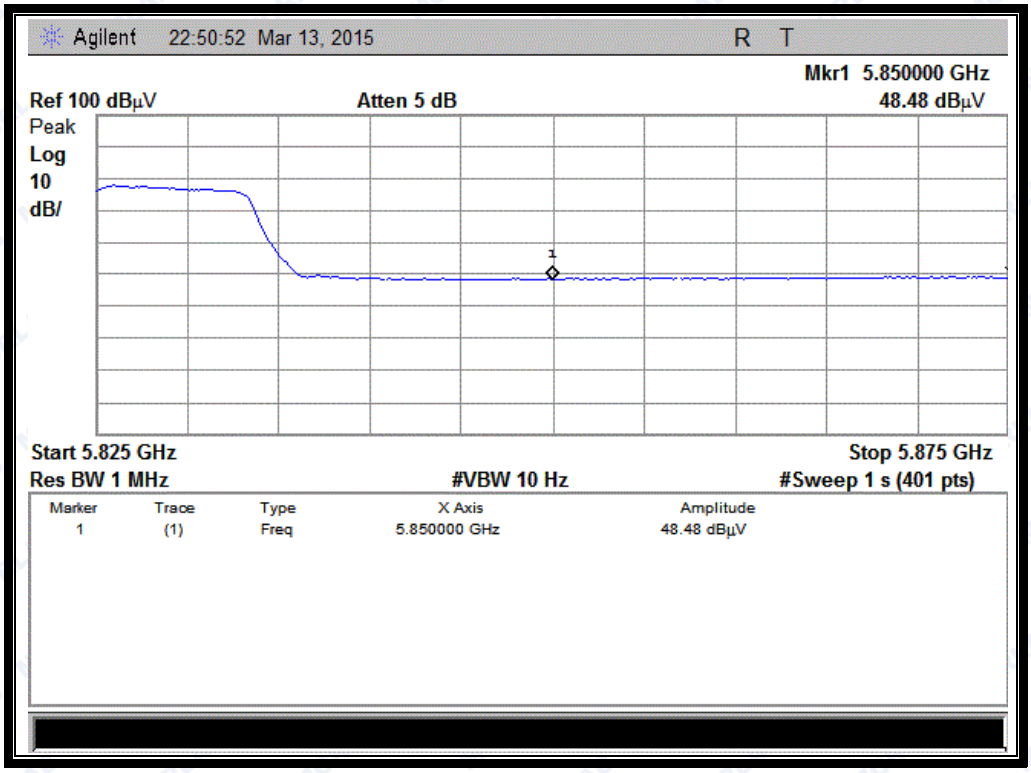
(Channel = 149 PEAK @ 802.11n-20MHz)



(Channel = 149 AVG @ 802.11n-20MHz)



(Channel = 165 PEAK @ 802.11n-20MHz)



(Channel = 165 AVG @ 802.11n-20MHz)

2.6 Frequency Stability

2.6.1 Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

2.6.2 Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10^{o} intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

2.6.3 Test Result

Frequency Stability Measurements for UNII Band 1 (Ch. 36)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.7	+20(Ref)	5,179,999,992	-8	-0.00000015
100%		-30	5,179,999,989	-11	-0.00000021
100%		-20	5,180,000,011	11	0.00000021
100%		-10	5,179,999,994	-6	-0.00000012
100%		0	5,179,999,986	-14	-0.00000027
100%		+10	5,179,999,989	-11	-0.00000021
100%		+20	5,179,999,996	-4	-0.00000008
100%		+30	5,180,000,002	2	0.00000004
100%		+40	5,180,000,007	7	0.00000014
100%		+50	5,179,999,993	-7	-0.00000014
114%	4.2	+20	5,180,000,007	7	0.00000014
BATT.END POINT	3.5	+20	5,179,999,995	-5	-0.00000010

Frequency Stability Measurements for UNII Band 3 (Ch. 149)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.7	+20(Ref)	5,745,000,007	7	0.00000012
100%		-30	5,744,999,987	-13	-0.00000023
100%		-20	5,745,000,002	2	0.00000003
100%		-10	5,744,999,988	-12	-0.00000021
100%		0	5,745,000,005	5	0.00000009
100%		+10	5,744,999,992	-8	-0.00000014
100%		+20	5,745,000,018	18	0.00000031
100%		+30	5,745,000,002	2	0.00000003
100%		+40	5,744,999,994	-6	-0.00000010
100%		+50	5,745,000,000	0	0.00000000
114%	4.2	+20	5,745,000,006	6	0.00000010
BATT.ENDPOINT	3.5	+20	5,744,999,989	-11	-0.00000019

Note: Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2.7 Conducted Emission

2.7.1 Requirement

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

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

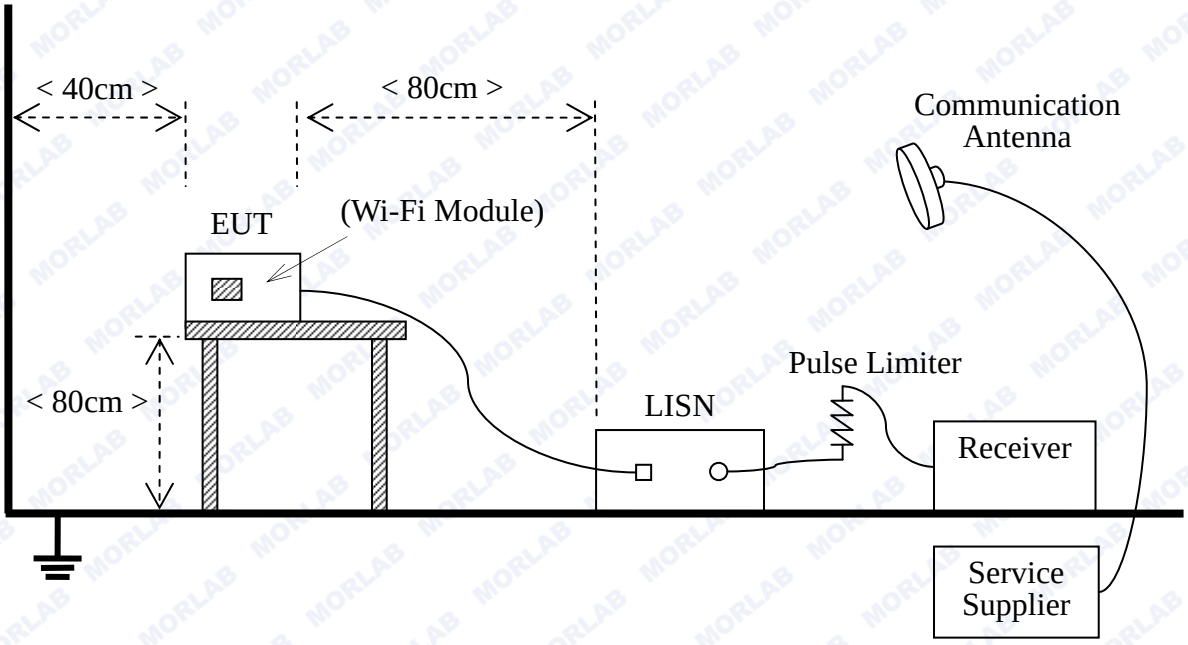
NOTE:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2 Test Description

A. Test Setup:



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

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

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

2.7.3 Test Result

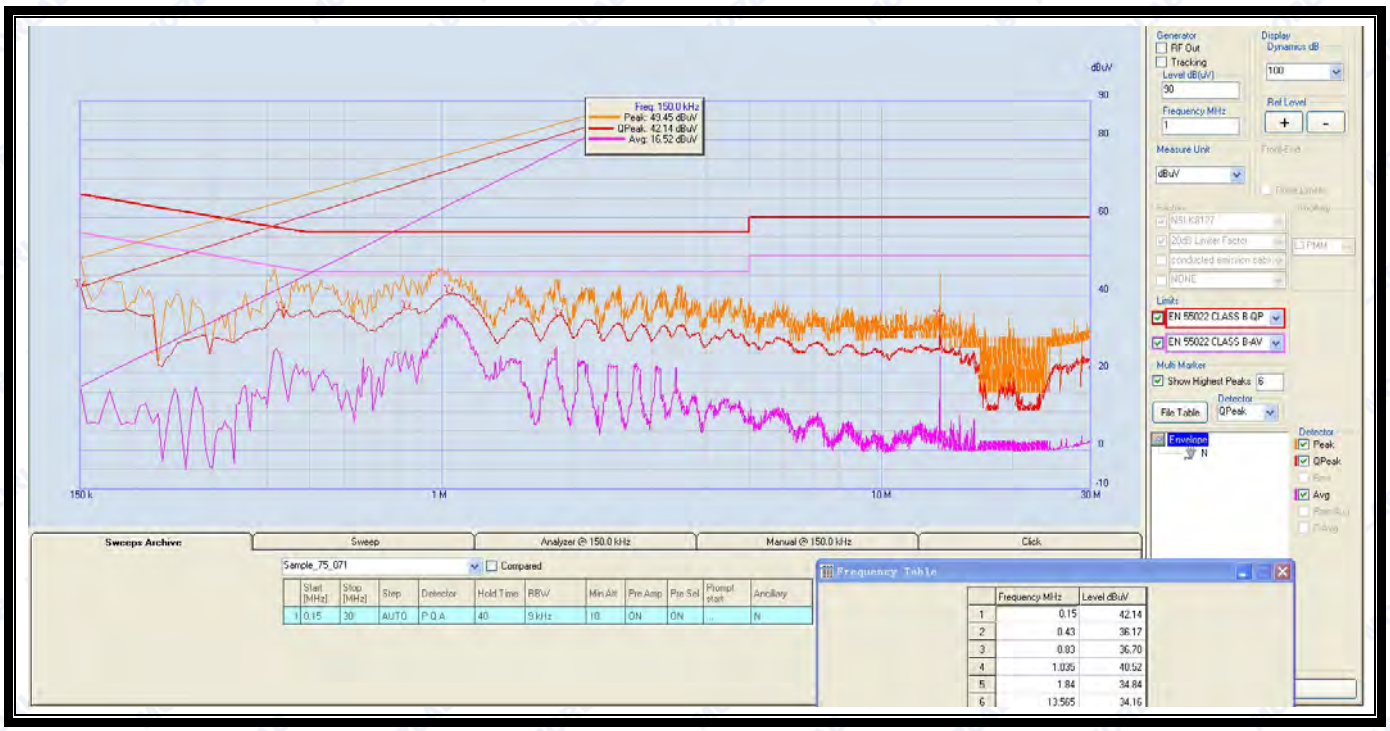
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT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

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

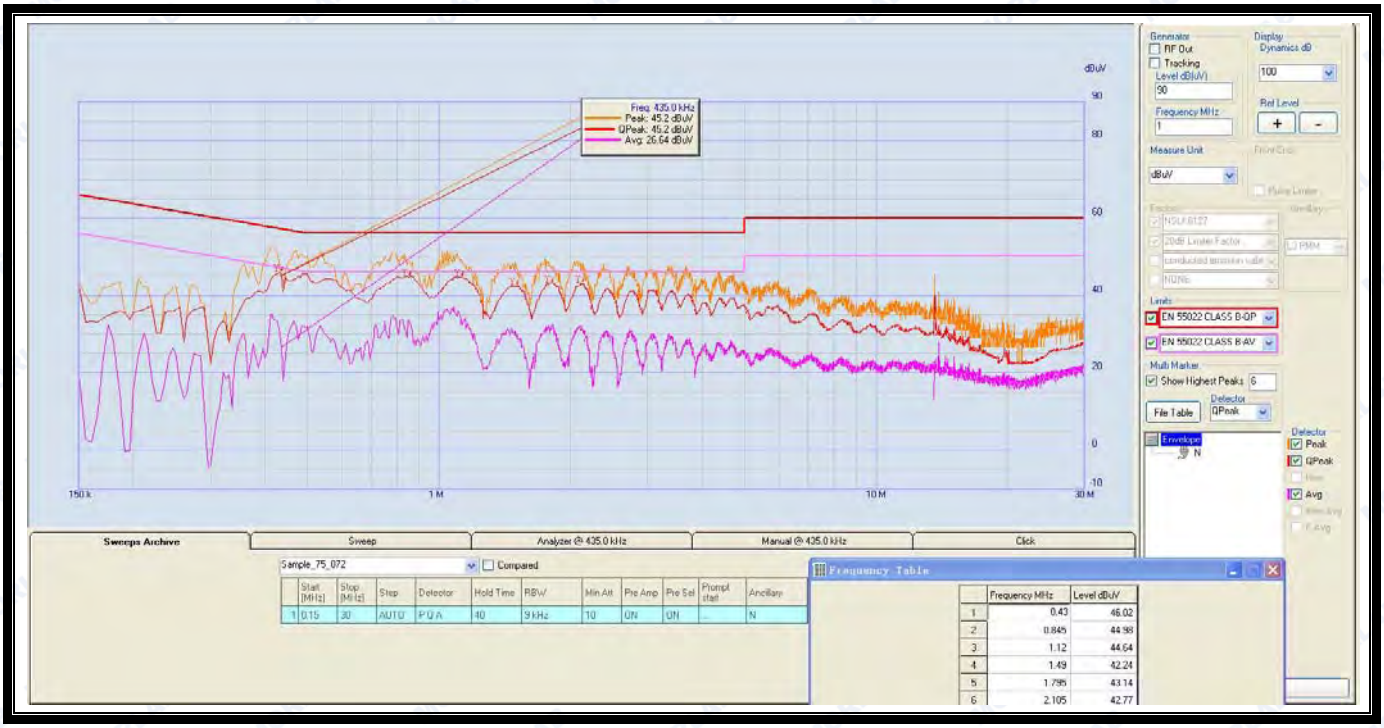
A. Test setup:

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

B. Test Plots:



(Plot A: L Phase)



(Plot B: N Phase)

2.8 Radiated Emission

2.8.1 Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

The following formula is used to convert the equipment isotropic radiated power(eirp) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P}/3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. 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:

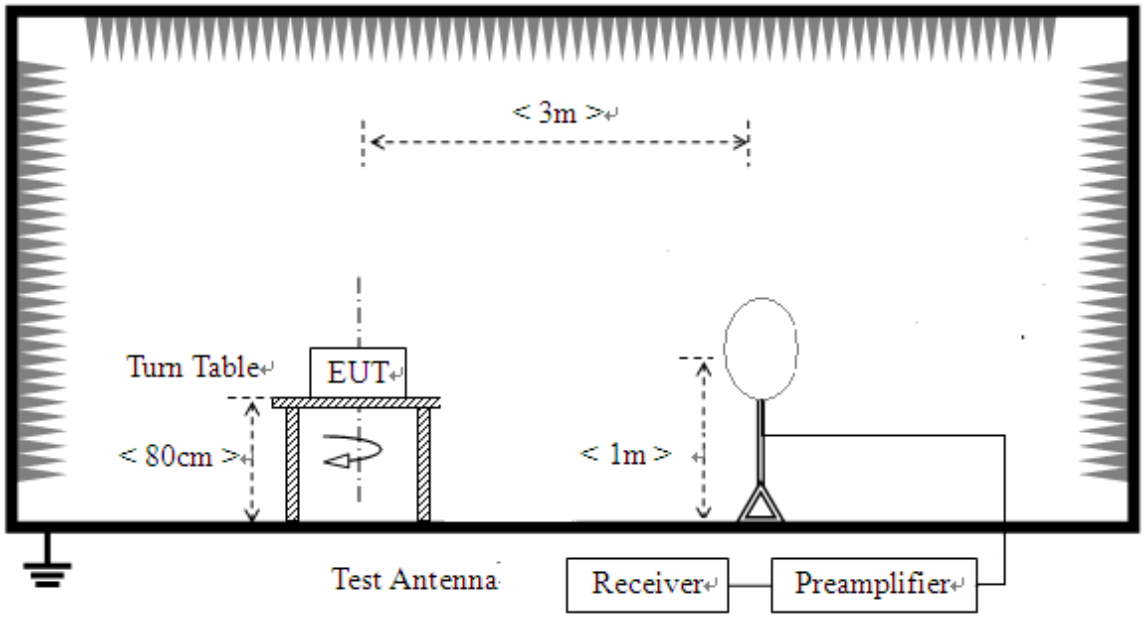
For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

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

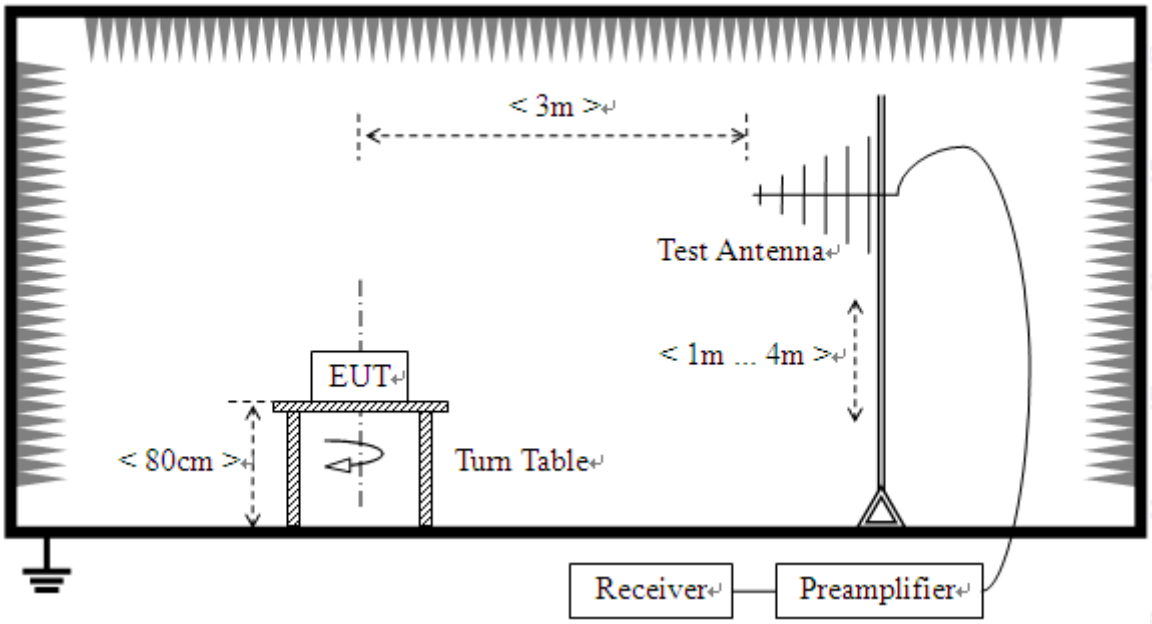
2.8.2 Test Description

A. Test Setup:

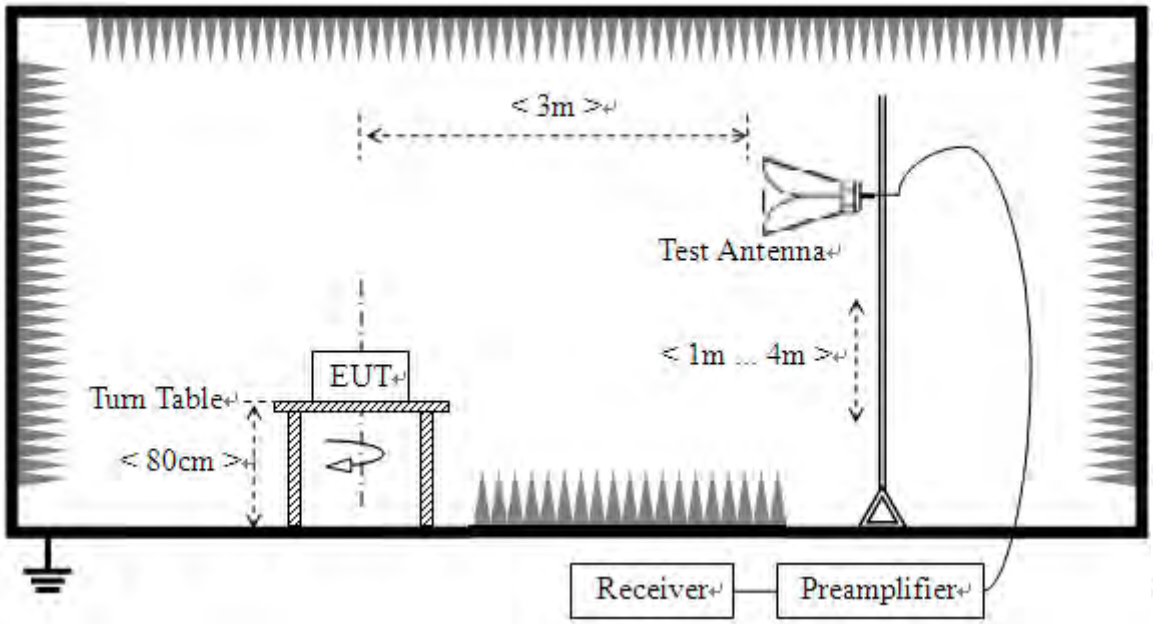
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



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

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

For the Test Antenna:

(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 2GHz) and Horn Test Antenna (above 2GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

2.8.3 Test Result

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

The measurement results are obtained as below:

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

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.

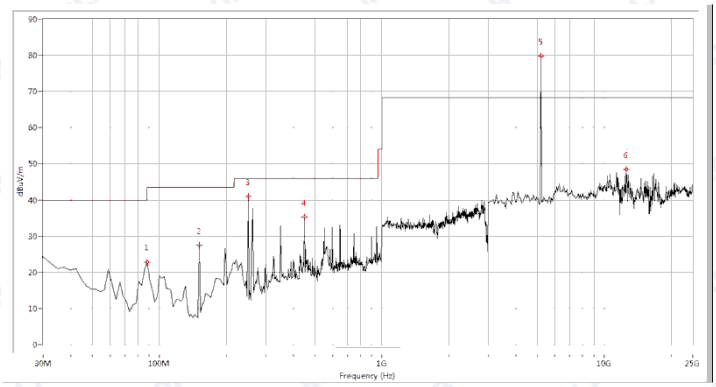
Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

The 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.

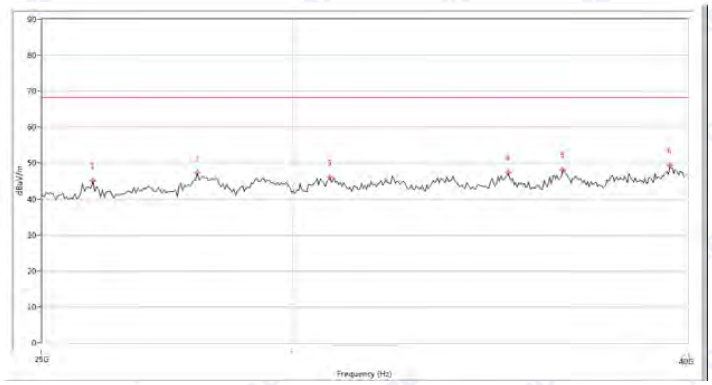
2.8.3.1 802.11a Test mode

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 36

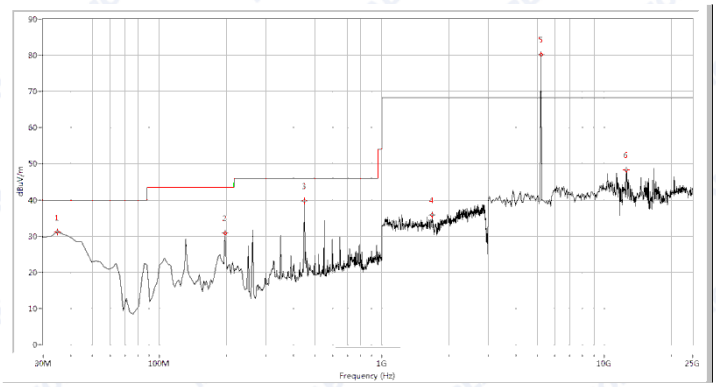


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
88.055	22.73	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
150.948	27.43	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.05	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	35.36	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5180.000	79.90	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
12600.998	48.47	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

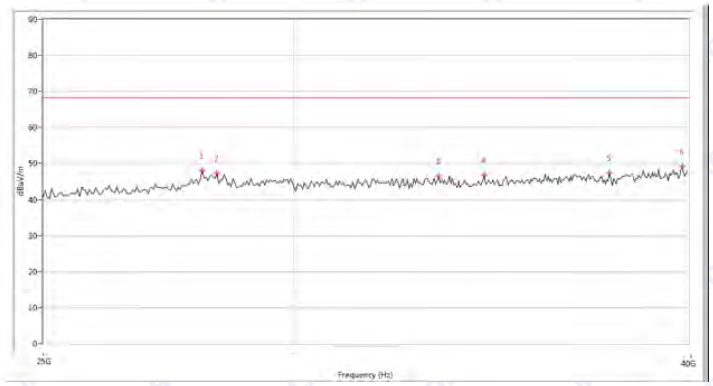


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
25937.516	45.08	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
27909.252	47.29	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30833.541	46.01	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
35049.975	47.35	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36520.120	48.10	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39477.631	49.31	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



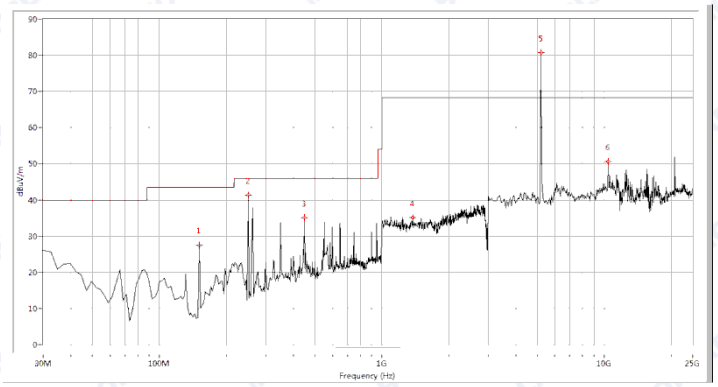
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	31.27	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
196.908	30.77	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
448.479	39.79	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
1678.304	35.88	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
5180.000	80.17	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
12600.998	48.31	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



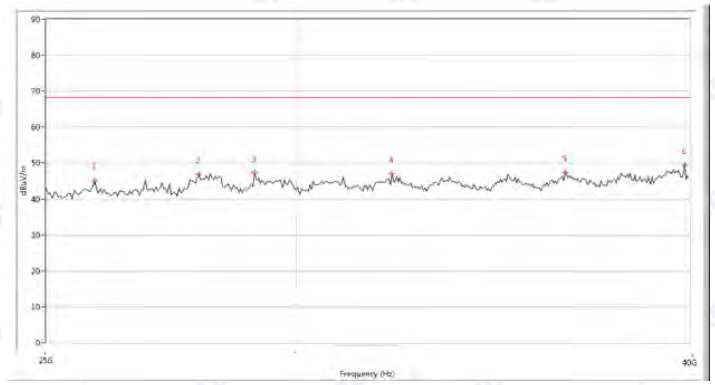
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28016.733	48.07	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
28367.658	47.27	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
33345.165	46.52	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
34466.384	46.88	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37754.561	47.38	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39801.297	49.15	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plot for Channel = 44

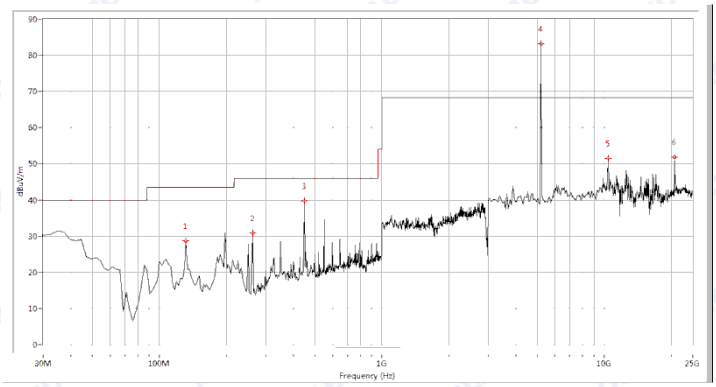


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	27.47	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.27	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	35.14	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
1374.065	35.11	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
5220.000	80.76	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
10406.484	50.68	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

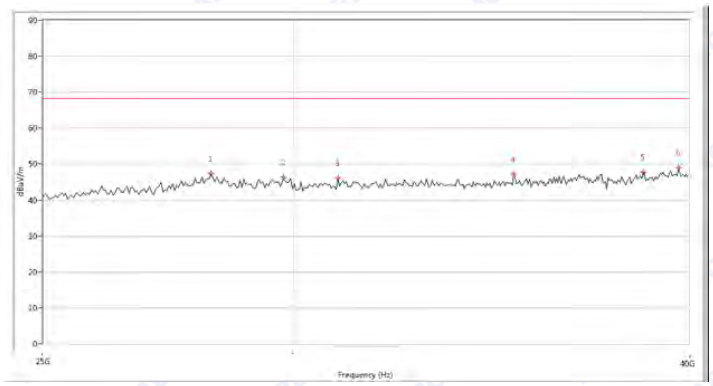


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
25819.776	45.15	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
27953.511	46.79	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29117.471	47.16	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32180.204	47.02	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36524.120	47.49	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39815.037	49.32	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



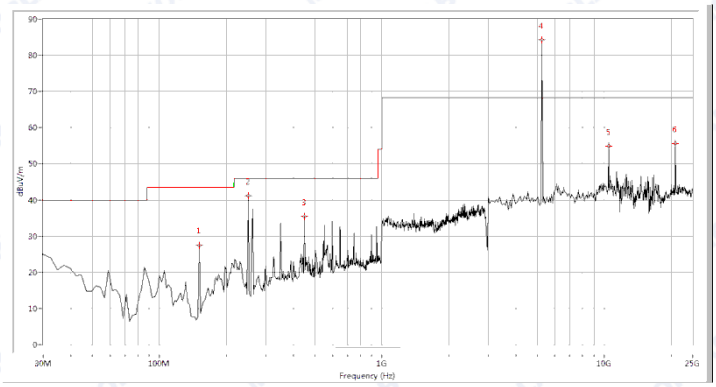
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
131.596	28.65	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
262.219	30.79	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	39.70	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5220.000	83.15	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
10406.484	51.55	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
20775.561	51.81	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



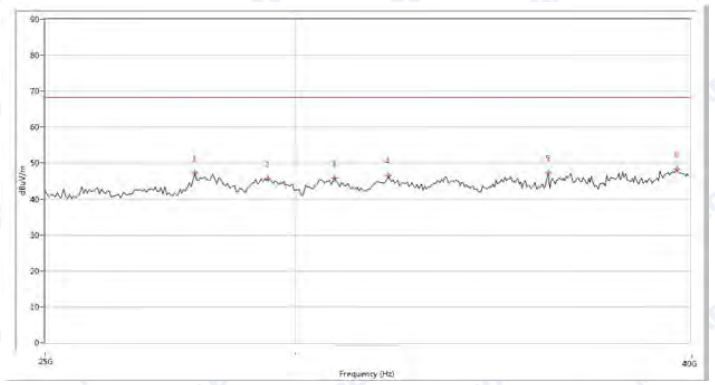
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28205.436	47.40	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29781.803	46.29	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
30938.504	46.21	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
366218.197	47.24	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
38669.077	47.71	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39730.075	48.93	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48

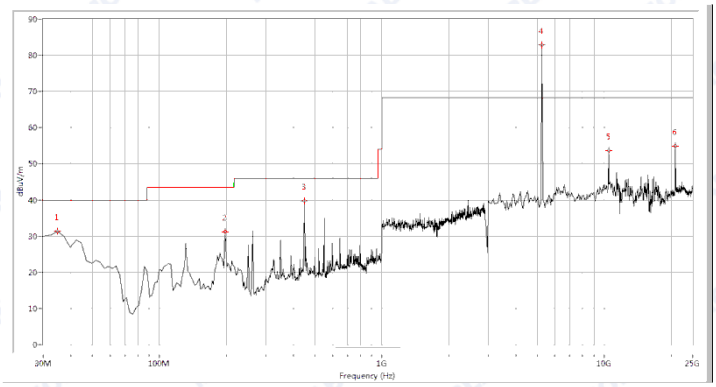


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	27.36	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.08	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	35.45	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5240.000	84.31	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
10461.347	54.81	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
20940.150	55.53	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

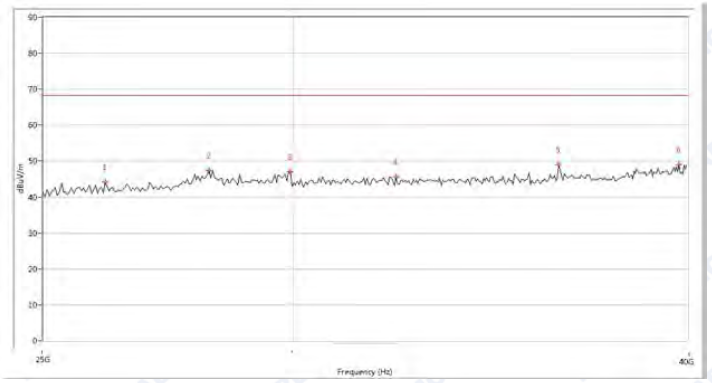


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
27808.030	47.26	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29416.397	45.69	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30872.282	45.77	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32109.723	46.52	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36071.232	47.23	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39620.594	48.28	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



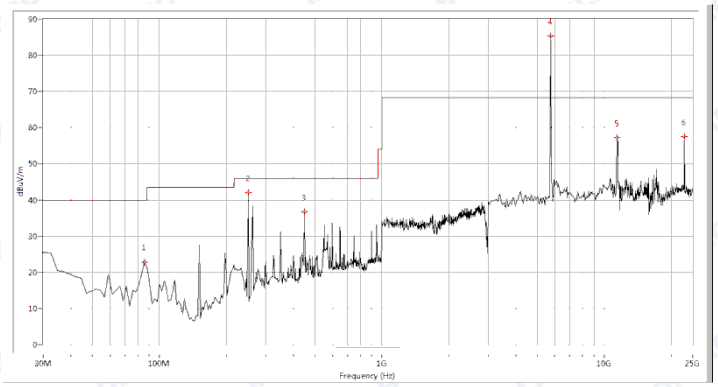
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	31.42	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
196.908	31.11	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
448.479	39.74	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5240.000	82.86	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
10461.347	53.68	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
20940.150	54.94	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



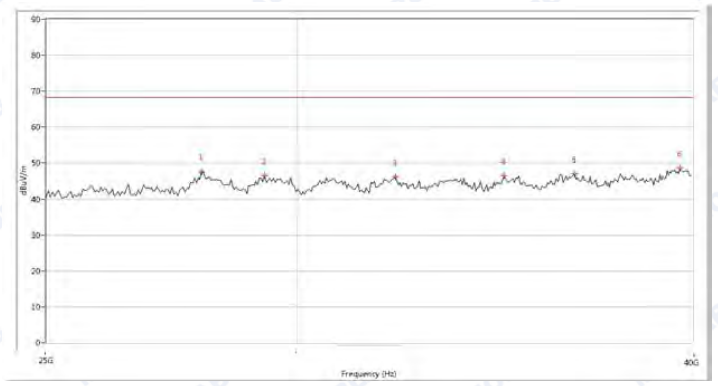
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
26158.960	44.18	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
28210.696	47.45	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29933.766	47.02	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
32339.167	45.64	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36405.898	49.01	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39753.815	49.07	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plots for Channel = 149

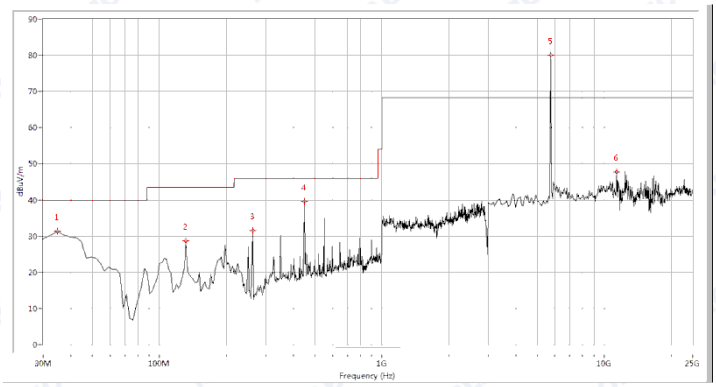


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
85.636	22.76	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
250.125	41.98	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	36.68	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5745.000	85.40	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
11448.878	57.15	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
22970.075	57.49	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

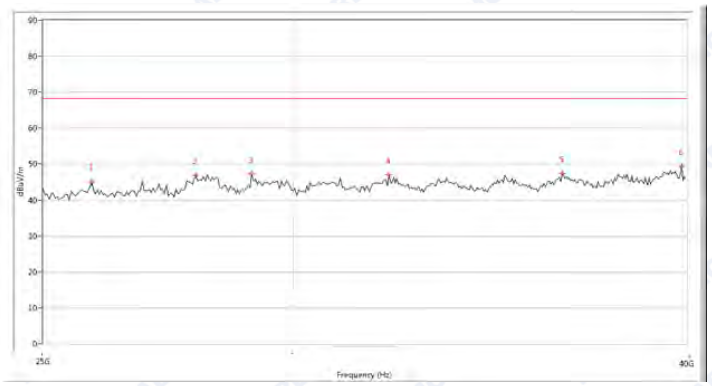


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
27909.252	47.53	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29304.175	46.52	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32281.945	46.14	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
34873.531	46.54	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36707.823	46.96	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39612.594	48.67	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



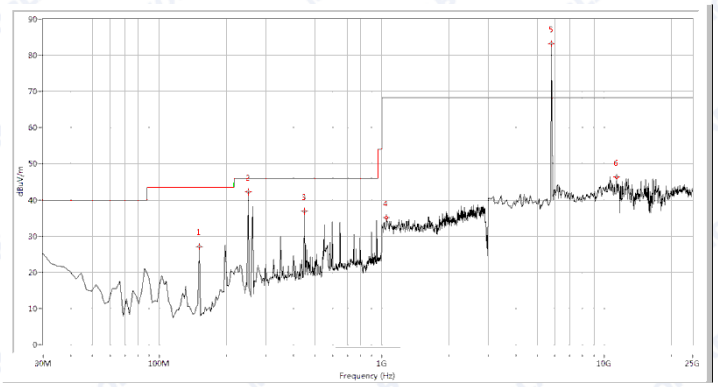
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	31.34	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
131.596	28.62	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
262.219	31.50	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	39.60	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5745.000	80.01	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
11394.015	47.74	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



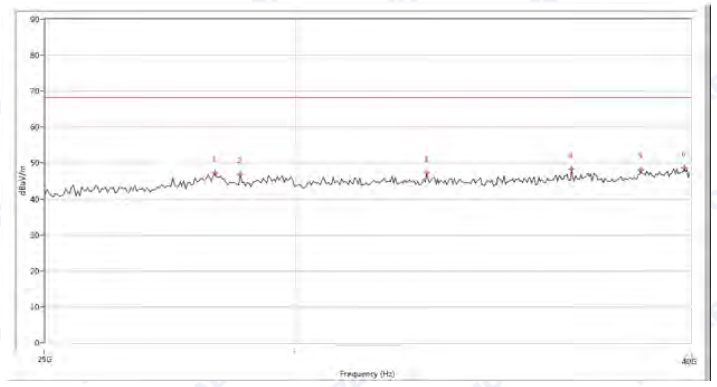
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
25819.776	45.15	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
27953.511	46.79	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29117.471	47.16	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
32180.204	47.02	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36524.120	47.49	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39815.037	49.32	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plot for Channel = 157

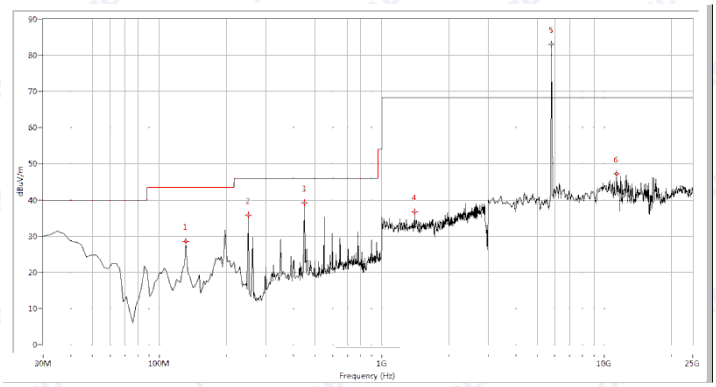


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	27.17	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	42.16	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	36.87	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
1049.875	35.02	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
5785.000	83.20	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
11394.015	46.40	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

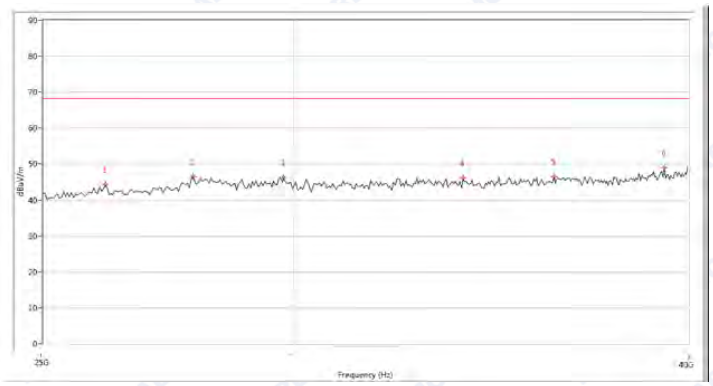


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28290.177	47.14	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
28817.546	46.80	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
33003.499	47.15	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36677.082	48.32	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
38578.855	48.08	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39813.297	48.71	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



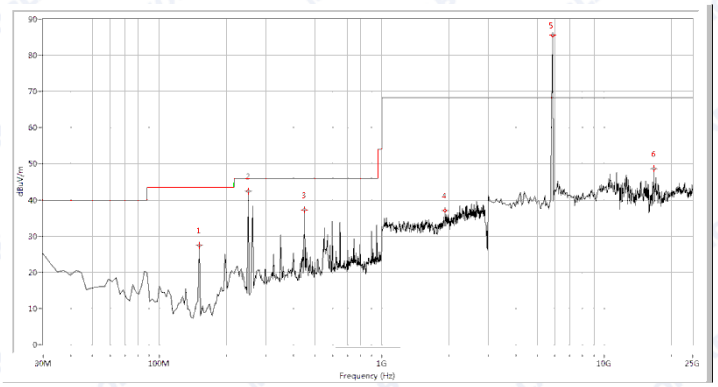
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
131.596	28.50	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
250.125	35.76	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	39.18	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
1403.990	36.70	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
5785.000	83.07	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
11394.015	47.19	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



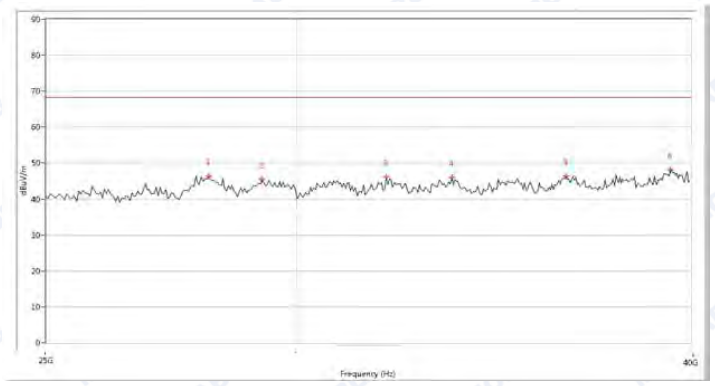
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
26150.960	44.36	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
27818.030	46.52	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29738.803	46.42	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
33947.015	46.08	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36253.935	46.56	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39289.928	49.03	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165

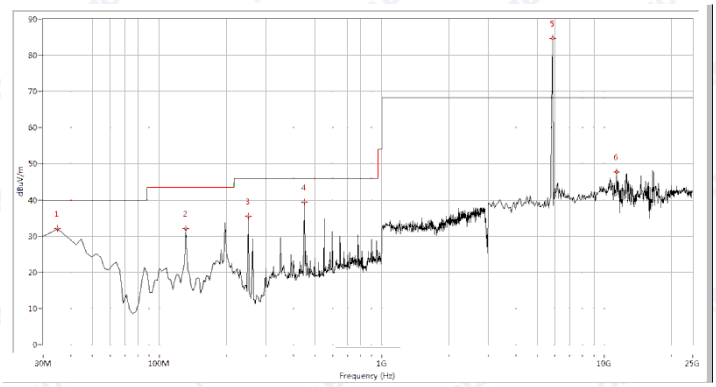


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	27.45	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	42.40	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	37.19	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
1927.681	37.07	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
5825.000	85.50	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
16715.711	48.68	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

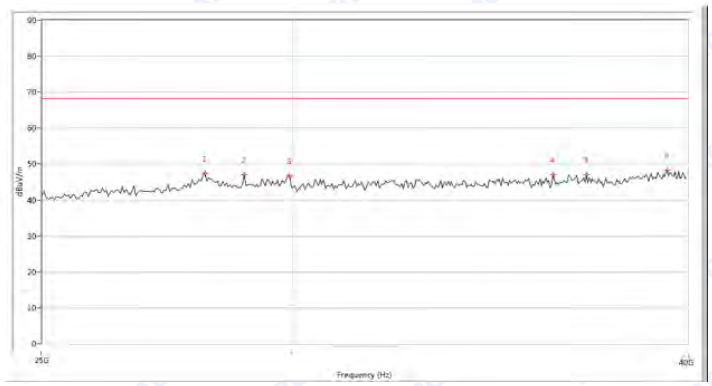


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28147.214	46.30	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29264.434	45.50	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32036.242	46.21	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
33630.349	45.90	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36527.120	46.29	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39440.150	48.06	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.07	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
131.596	32.04	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
250.125	35.55	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	39.46	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5825.000	84.57	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
11394.015	47.84	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



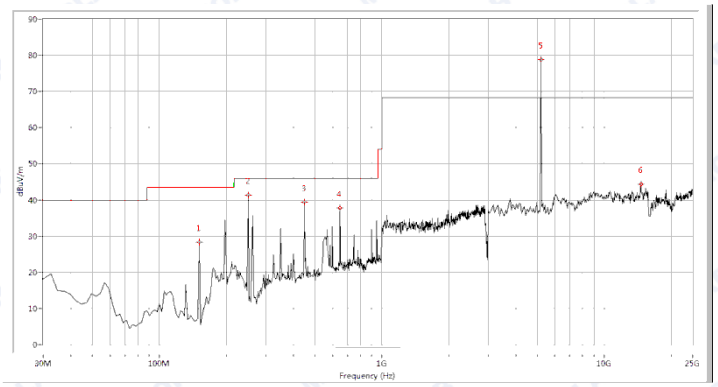
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28145.214	47.35	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
28963.509	47.13	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29938.766	46.78	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36251.935	46.98	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37154.711	46.97	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39406.150	48.38	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

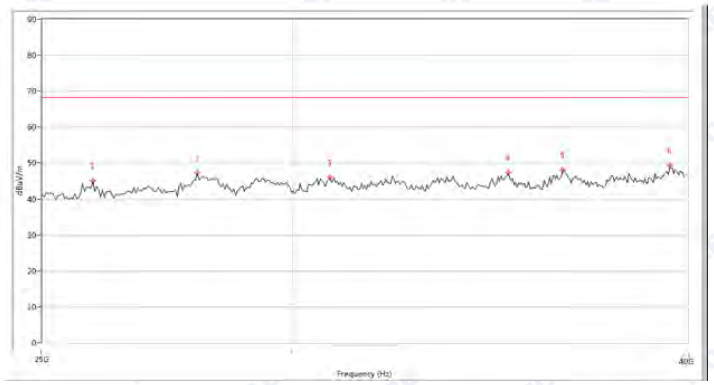
2.8.3.2 802.11n-20MHz Test mode

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 36

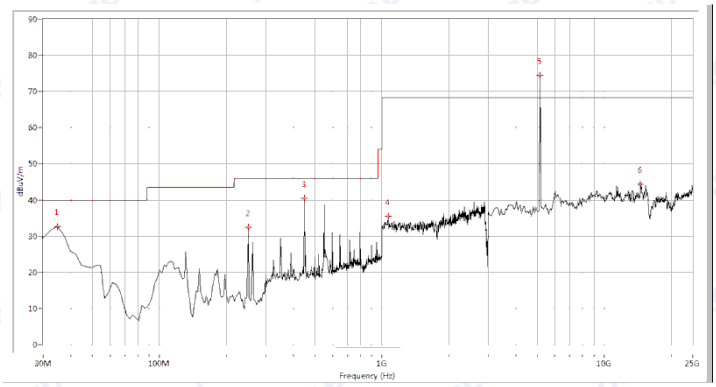


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	28.29	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.35	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	39.31	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.81	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5180.000	78.71	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14630.923	44.45	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

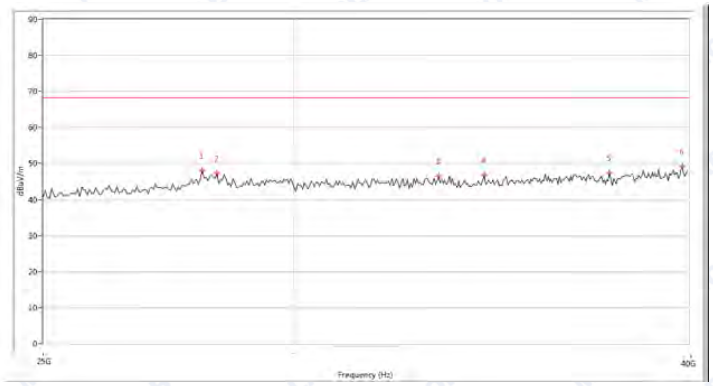


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
25937.516	45.08	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
27909.252	47.29	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30833.541	46.01	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
35049.975	47.35	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36520.120	48.10	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39477.631	49.31	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



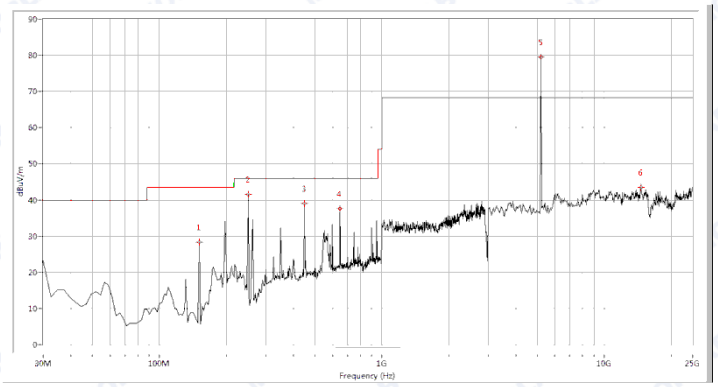
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.59	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
250.125	32.35	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	40.51	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
1069.825	35.41	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
5180.000	74.53	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
14576.060	44.33	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



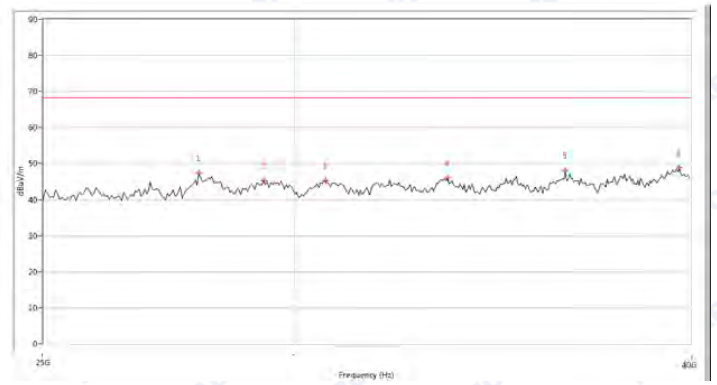
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28016.733	48.07	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
28367.658	47.27	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
33345.165	46.52	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
34466.384	46.88	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37754.561	47.38	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39801.297	49.15	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plot for Channel = 44

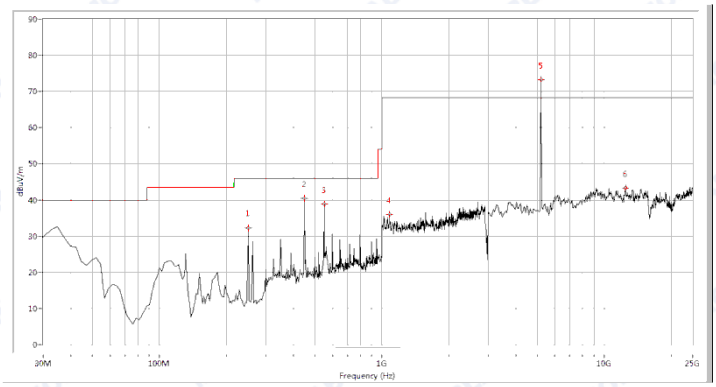


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	28.31	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.48	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	39.07	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.67	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5220.000	79.44	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14685.786	43.51	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

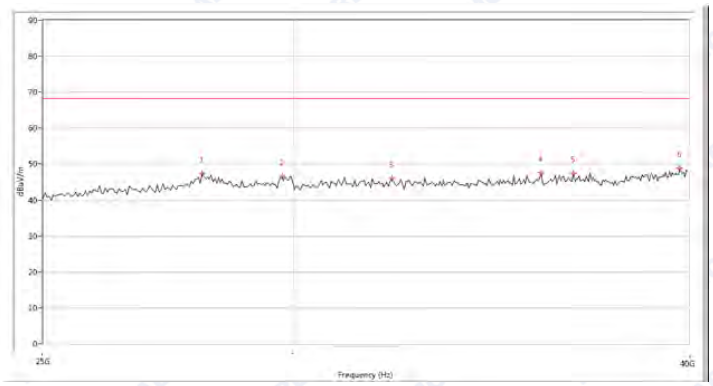


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
27991.252	47.36	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29337.915	45.21	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30683.579	45.33	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
33524.868	45.98	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36542.120	48.12	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39686.334	48.92	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



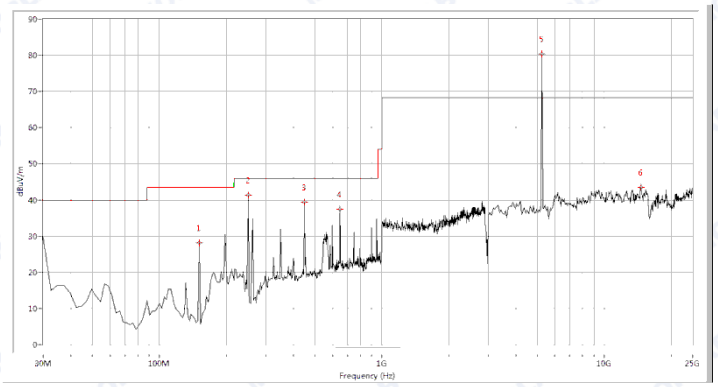
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
250.125	32.30	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	40.38	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
550.075	38.89	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
1084.788	35.99	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
5220.000	73.25	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
12491.272	43.38	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



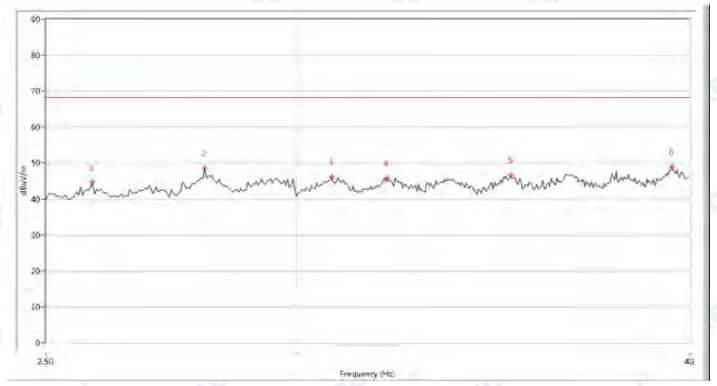
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28066.733	47.35	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29751.062	46.49	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
32216.945	46.02	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
35932.269	47.52	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36784.304	47.40	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39738.815	48.91	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48

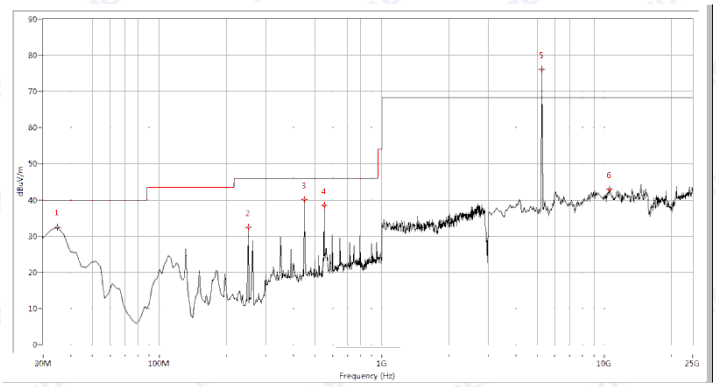


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	28.22	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.39	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	39.47	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.51	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5240.000	80.34	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14630.923	43.51	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

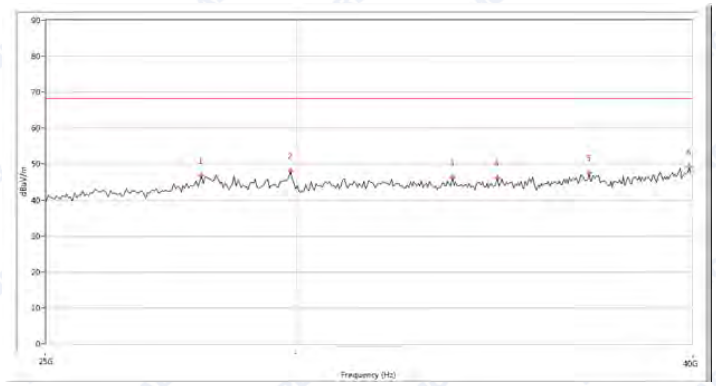


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
25867.035	44.74	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
28060.733	48.66	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30793.800	46.23	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32076.983	45.84	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
35091.975	46.62	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39457.631	48.97	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



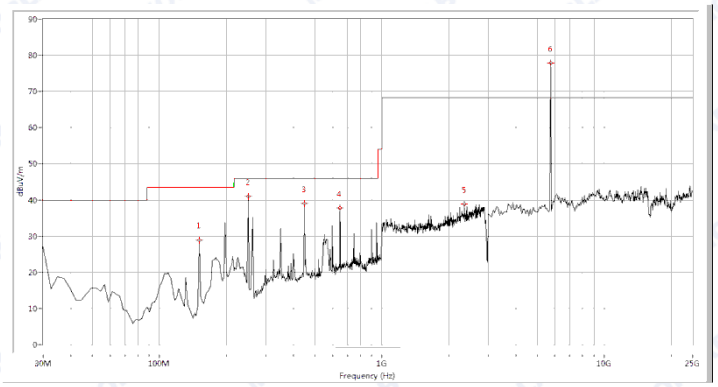
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.43	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
250.125	32.42	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	40.05	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
550.075	38.55	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5240.000	76.03	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
10571.072	42.90	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



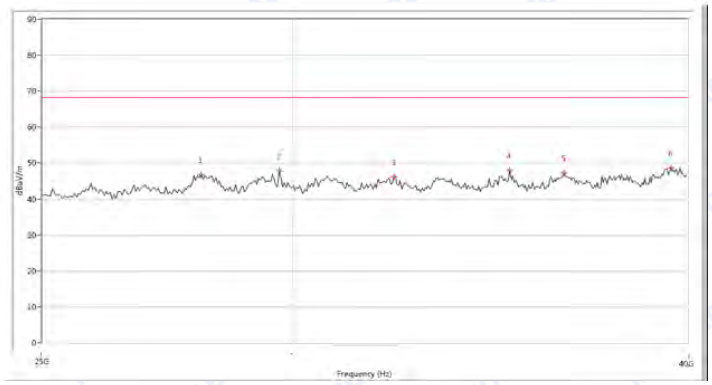
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
27996.252	46.83	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29876.284	48.11	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
33670.349	46.25	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
34726.569	46.14	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37113.970	47.60	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39912.519	49.14	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plots for Channel = 149

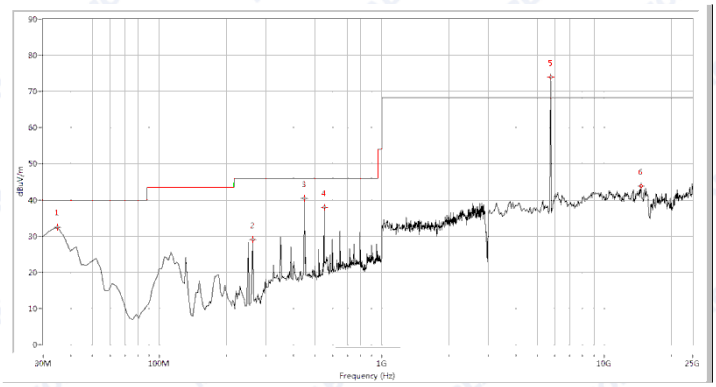


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	28.89	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.04	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	39.04	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.76	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2351.621	38.86	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
5745.000	77.87	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A

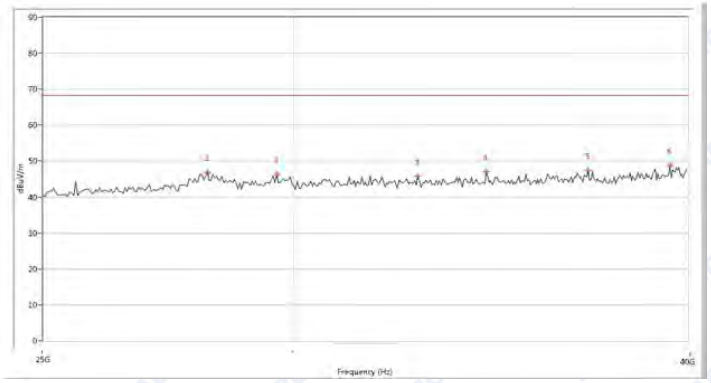


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28062.733	46.63	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29717.322	47.80	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32298.426	46.10	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
35134.716	47.87	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36553.860	47.32	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39518.372	48.66	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



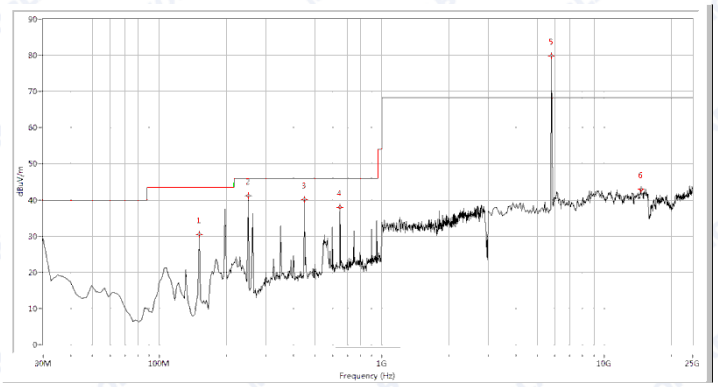
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.52	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
262.219	29.08	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	40.43	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
550.075	37.95	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5745.000	73.89	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
14685.786	43.83	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



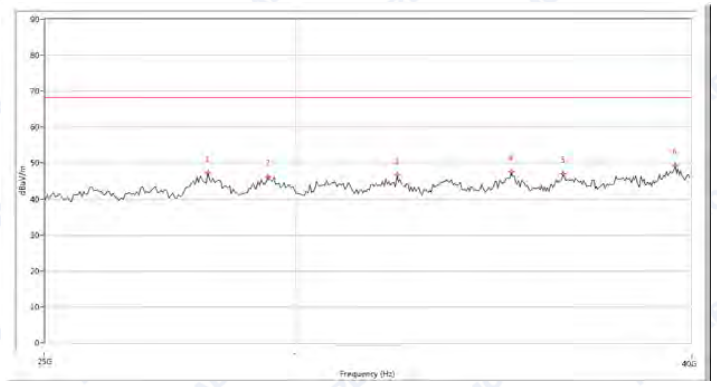
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28178.955	46.95	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29633.840	46.28	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
32857.536	45.84	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
34531.865	47.14	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37193.451	47.33	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39471.631	48.74	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

Plot for Channel = 157

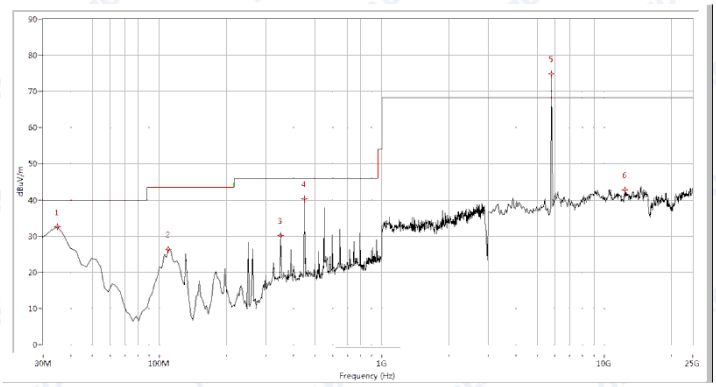


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	30.45	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	41.10	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	40.02	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.88	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5785.000	79.78	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14630.923	42.88	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

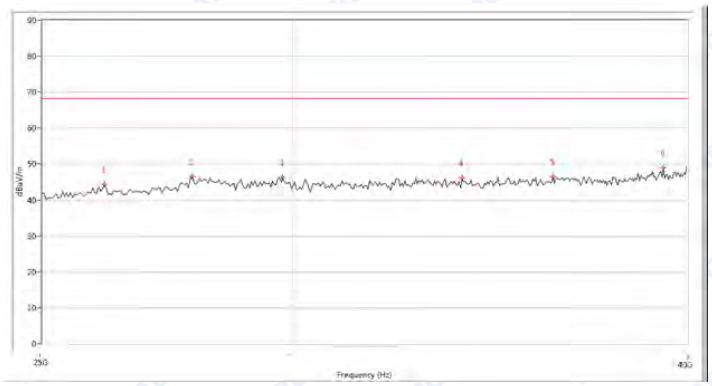


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28134.214	47.21	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
29411.397	46.24	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
32292.426	46.74	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
35097.975	47.66	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36442.638	47.14	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39557.112	49.32	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



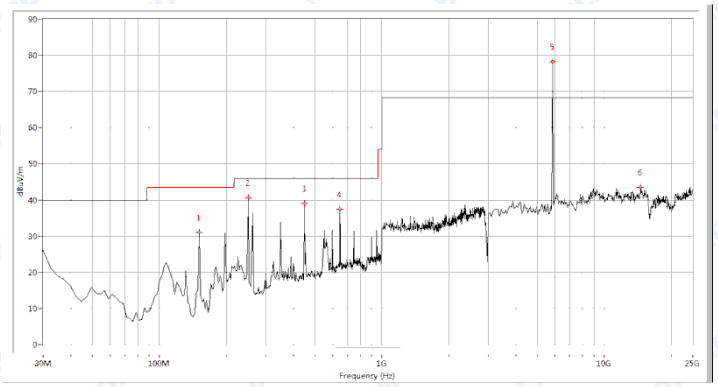
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.55	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
109.825	26.41	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
349.302	30.10	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
448.479	40.22	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5785.000	74.81	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
12436.409	42.85	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



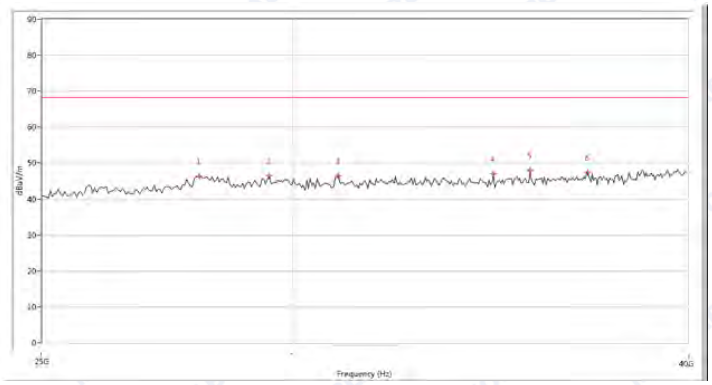
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28029.993	46.69	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
28444.140	46.99	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29937.766	46.54	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
33193.202	46.31	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
36424.638	47.54	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
39664.334	49.06	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165

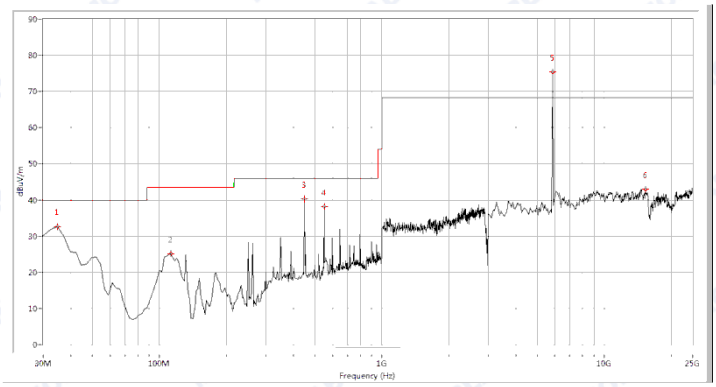


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	31.05	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
250.125	40.71	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
448.479	39.11	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
649.252	37.39	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
5825.000	78.20	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14576.060	43.48	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

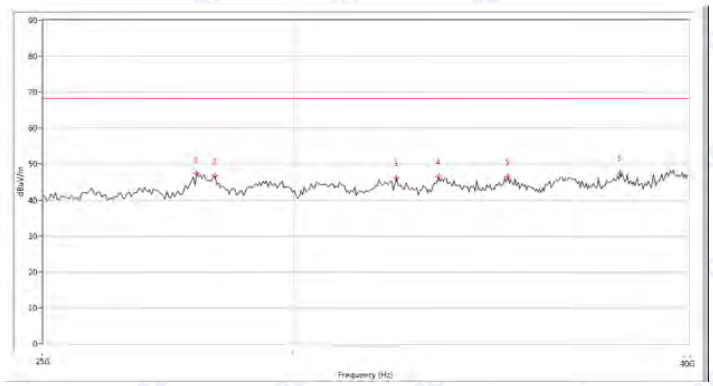


Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
26945.514	44.92	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
28174.955	47.35	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
30911.022	45.96	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
33387.905	46.44	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
36599.601	47.16	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS
39521.372	48.14	N.A	N.A	68.2	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 40GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.54	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
112.244	25.16	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
448.479	40.32	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
550.075	38.14	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
5825.000	75.37	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
15344.140	42.98	N.A	N.A	68.2	N.A	N.A	Vertical	PASS



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
28027.993	46.35	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
29488.878	46.48	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
31022.244	46.46	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
34727.569	47.03	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
35663.085	47.92	N.A	N.A	68.2	N.A	N.A	Vertical	PASS
37194.451	47.42	N.A	N.A	68.2	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 40GHz)

2.9 RF exposure evaluation

2.9.1 Requirement

According to § 1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy lever in excess of Commission's guideline.

2.9.2 Result

Please refer to SAR report.

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

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

1.4 Test Equipments Utilized

1.4.1 Conducted Test Equipments

Conducted Test Equipment						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal. Due**
1	Spectrum Analyzer	MY45101810	E4407B	Agilent	2014.02.26	2015.02.25
2	Spectrum Analyzer	MY45101810	E4407B	Agilent	2015.02.24	2016.02.23
3	Power Splitter	NW521	1506A	Weinschel	2014.02.26	2015.02.25
4	Attenuator 1	(n.a.)	10dB	Resnet	2014.02.26	2015.02.25
5	Attenuator 2	(n.a.)	3dB	Resnet	2014.02.26	2015.02.25
6	USB Wideband Power Sensor	MY52280010	U2021XA	Agilent	2014.02.26	2015.02.25
7	EXA Signal Analzyer	MY51440152	N9010A	Agilent	2014.02.26	2015.02.25
8	RF cable	CB01	RF01	Morlab	N/A	N/A
9	Coaxial cable	CB02	RF02	Morlab	N/A	N/A
9	SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

1.4.2 Conducted Emission Test Equipments

Conducted Emission Test Equipments						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal. Due**
1	Receiver	US44210471	E7405A	Agilent	2014.02.26	2015.02.25
2	LISN	812744	NSLK 8127	Schwarzbeck	2014.02.26	2015.02.25
3	Service Supplier	100448	CMU200	R&S	2014.02.26	2015.02.25
4	Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2014.02.26	2015.02.25
5	Coaxial cable(BNC)	CB01	EMC01	Morlab	N/A	N/A

1.4.3 Radiated Test Equipments

Radiated Test Equipments						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal. Date**	**Cal.Due Date**
1	System Simulator	100448	CMU200	R&S	2014.02.26	2015.02.25
2	Receiver	US44210471	E7405A	Agilent	2014.02.26	2015.02.25
3	Test Antenna - Bi-Log	9163-274	9m*6m*6m	Albatross	2014.02.26	2015.02.25
4	Test Antenna - Horn	9120D-963	VULB 9163	Schwarzbeck	2014.02.26	2015.02.25
5	Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2014.02.26	2015.02.25
6	Test Antenna - Loop	1519-022	HL050S7	R&S	2014.02.26	2015.02.25
7	Reject Filter	(n.a.)	BRM50702	Micro-Tronics	2014.02.26	2015.02.25
8	Coaxial cable (N male)	CB02	EMC02	Morlab	N/A	N/A
9	Coaxial cable (N male)	CB03	EMC03	Morlab	N/A	N/A

1.4.4 Climate Chamber

Climate Chamber						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Climate Chamber	2004012	HL4003T	Yinhe	2014.02.26	2015.02.25
2	Climate Chamber	2004012	HL4003T	Yinhe	2015.02.24	2016.02.23

1.4.5 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	2014.02.26	2015.02.25
2	Vibration Table	N/A	ACT2000-S015L	CMI-COM	2015.02.24	2016.02.23

1.4.6 Anechoic Chamber

Anechoic Chamber						
No.	**Equipment Name**	**Serial No.**	**Type**	**Manufacturer**	**Cal.Date**	**Cal.Due Date**
1	Anechoic Chamber	N/A	9m*6m*6m	Albatross	2014.02.26	2015.02.25
2	Anechoic Chamber	N/A	9m*6m*6m	Albatross	2015.02.24	2016.02.23

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