REPORT No.: SZ16060049W04

FCC RF TEST REPORT

APPLICANT	:	Legacy Direct
PRODUCT NAME	:	Smart TV box
MODEL NAME	:	BTV3, BTV, BTVi, BeTV, iBTV, LDTV, WTV, BTVi3
TRADE NAME	:	Legacy Direct
BRAND NAME	:	BTV, BTVi, BeTV, iBTV, LDTV, WTV
FCC ID	:	2AIM5BTV3
STANDARD(S)	:	47 CFR Part 15 Subpart E
ISSUE DATE	:	2016-07-13

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Change History		
Issue	Date	Reason for change
1.0	2016-07-13	First edition

TEST REPORT DECLARATION

Applicant	Legacy Direct
Applicant Address	1221 E. Dyer Rd., Santa Ana CA 92705, USA
Manufacturer	Wiatec International Ltd.
Manufacturer Address	Unit 601-605, TaoJinDi Electronic Commercial Plaza B, TengLong Rd, LongHua, Shenzhen, China 518131
Product Name	Smart TV box
Model Name	BTV3, BTV, BTVi, BeTV, iBTV, LDTV, WTV, BTVi3
Brand Name	BTV, BTVi, BeTV, iBTV, LDTV, WTV
HW Version	WIL-BTV3
SW Version	Android 5.1.1
Test Standards	47 CFR Part 15 Subpart E
Test Date	2016-06-18 to 2016-07-01
Test Result	PASS

Tested by : Yuan Ling

Yuan Ling

Reviewed by : Qiu Xiaojun

Qiu Xiaojun

Approved by : Peng Huarui

Peng Huarui

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type.....:	Smart TV box
Serial No.....:	(n.a, marked #1 by test site)
Hardware Version.....:	WIL-BTV3
Software Version.....:	Android 5.1.1
Applicant.....:	Legacy Direct 1221 E. Dyer Rd., Santa Ana CA 92705, USA
Manufacturer .....:	Wiatec International Ltd. Unit 601-605, TaoJinDi Electronic Commercial Plaza B, TengLong Rd, LongHua, Shenzhen, China 518131
Frequency Range.....:	802.11b/g/n: 2.400GHz - 2.4835GHz 802.11a/n: 5.150GHz- 5.250GHz 5.725GHz- 5.850GHz
Channel Number .....:	Refer Ntote(2)
Modulation Type.....:	DSSS, OFDM
Antenna Type.....:	FPCB Antenna
Antenna Gain.....:	2dBi

Note:

1. The U-NII band is applicable to this report, another bands of operation (2.4GHz) is documented in a separate report.
2. The following tables are the channel number and frequency of the EUT, the black bold channels were selected for test.

20MHz Bandwidth:

Frequency Range	5150~5250MHz				5725~5850MHz				
Channel Number	**36**	40	**44**	**48**	**149**	153	**157**	161	**165**
Frequency (MHz)	**5180**	5200	**5220**	**5240**	**5745**	5765	**5785**	5805	**5825**

3. During test, the duty cycle of the EUT was setting to 100%.
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 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 C63.10 2013.

These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 v01r02 (08/04/2016) and KDB905462 D07 v01r01 (08/04/2016).

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.

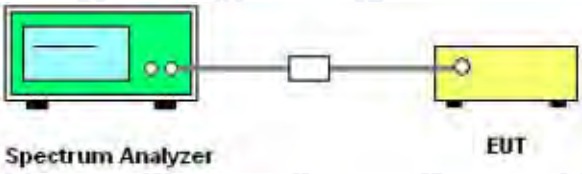
2.2 Emission Bandwidth

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

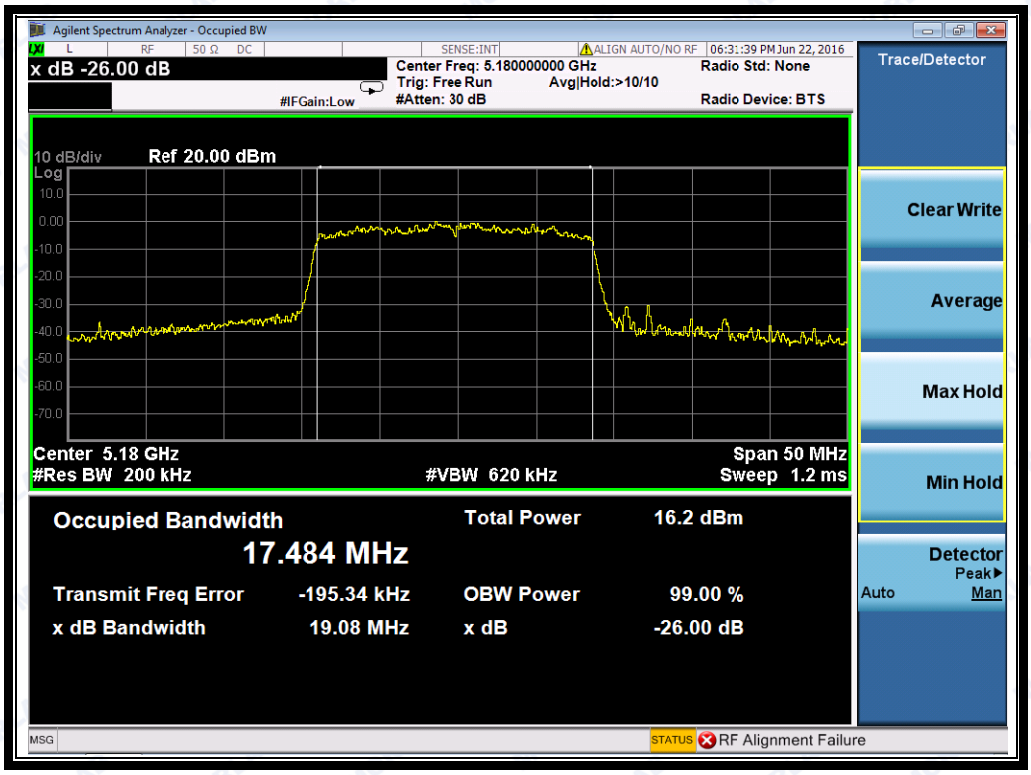
The lowest, middle and highest channels are selected to perform testing to record the 26 dB bandwidth of the Module.

2.2.3.1 802.11n-20MHz Test mode

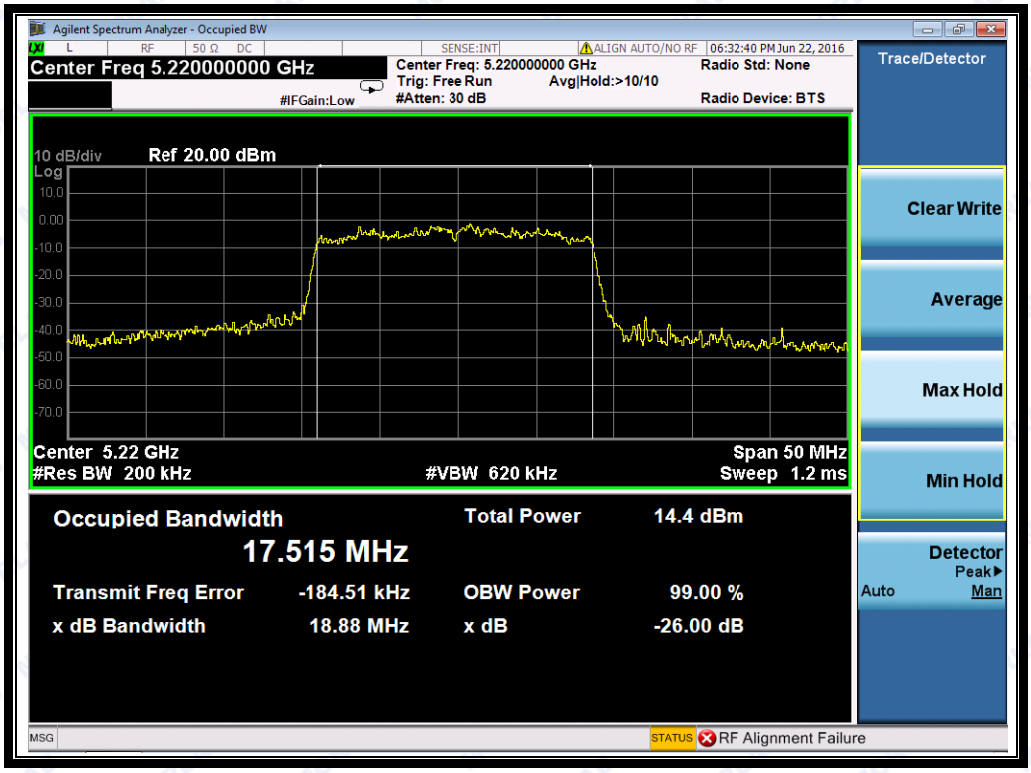
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	19.08
44	5220	18.88
48	5240	18.95
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
149	5745	13.84
157	5785	17.01
165	5825	14.10

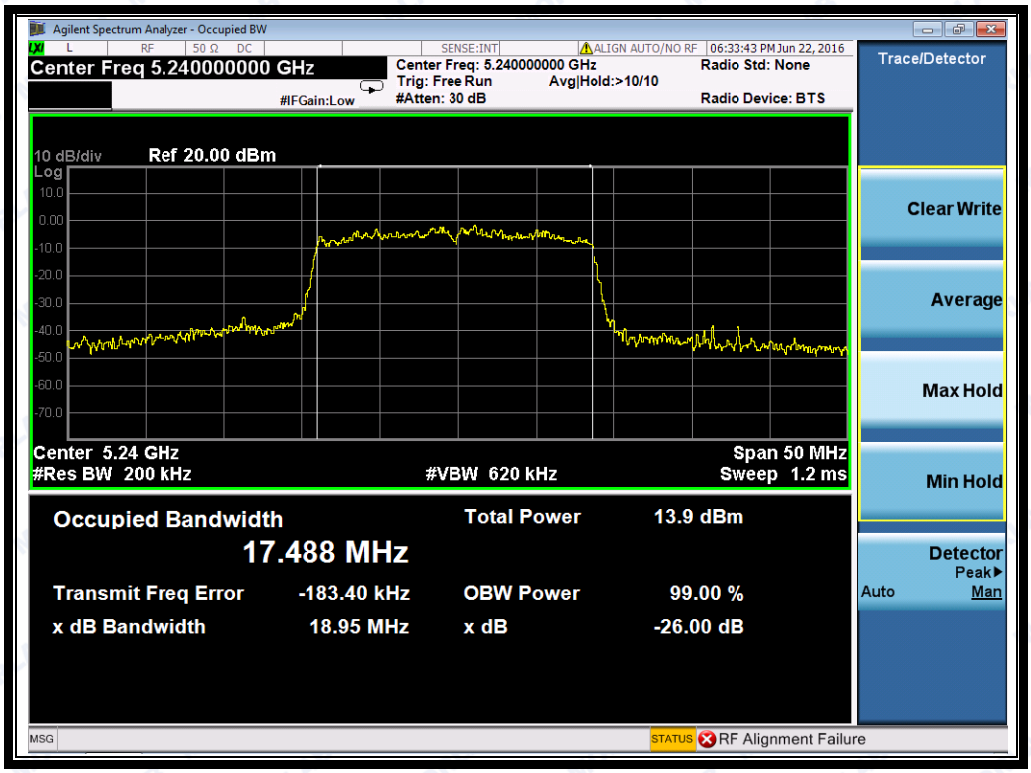
B. Test Plots



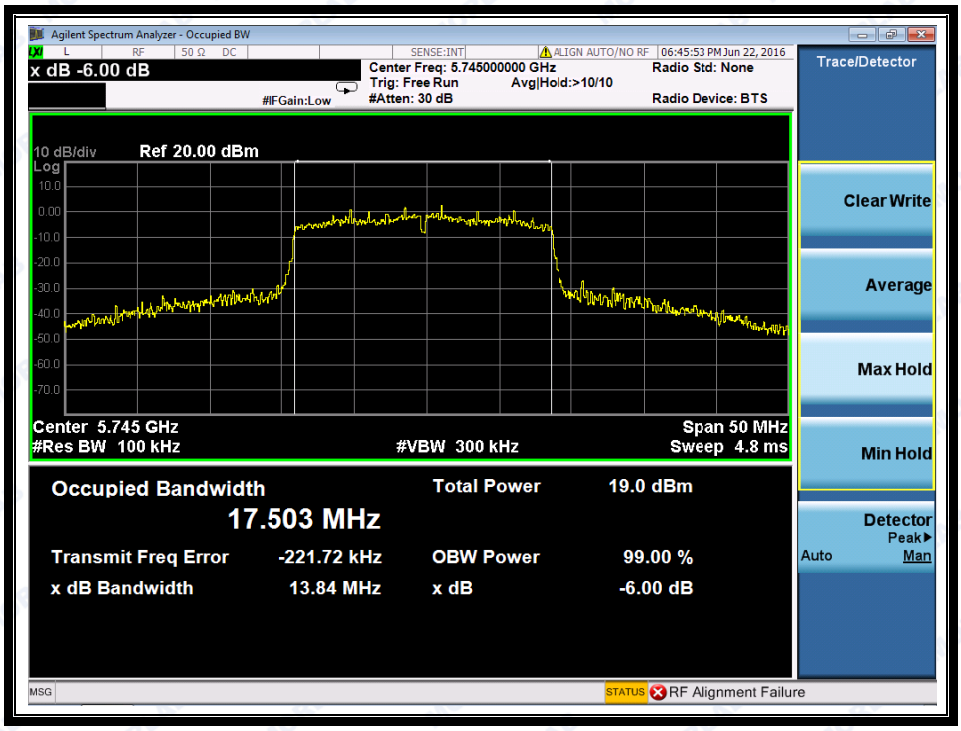
(Channel 36: 5180MHz @ 802.11n-20MHz)



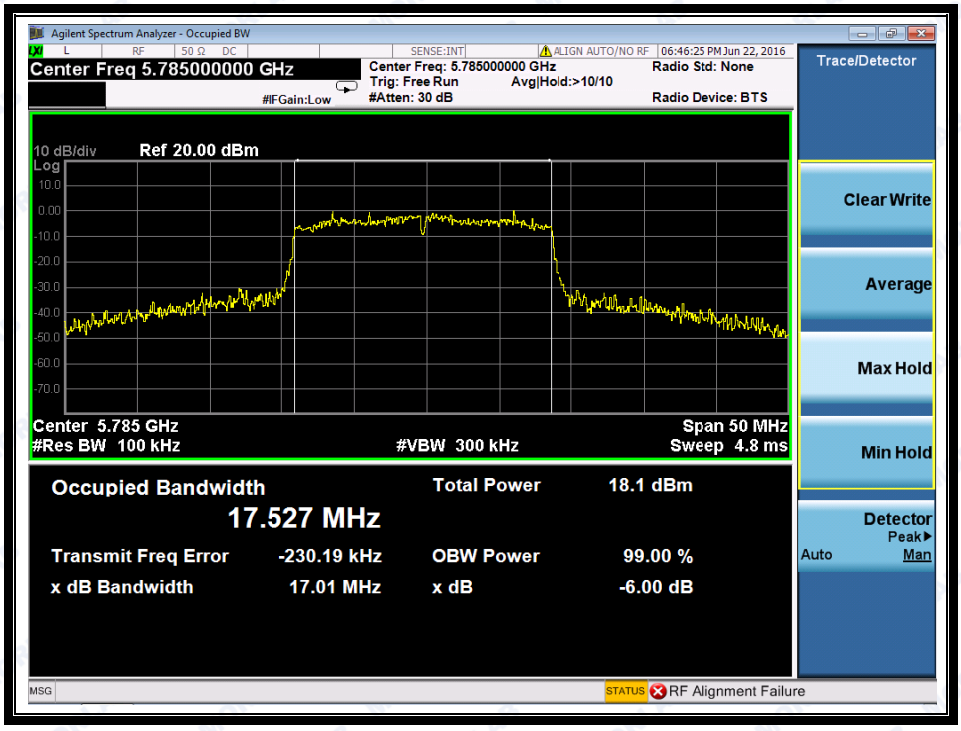
(Channel 44: 5220 MHz @ 802.11n-20MHz)



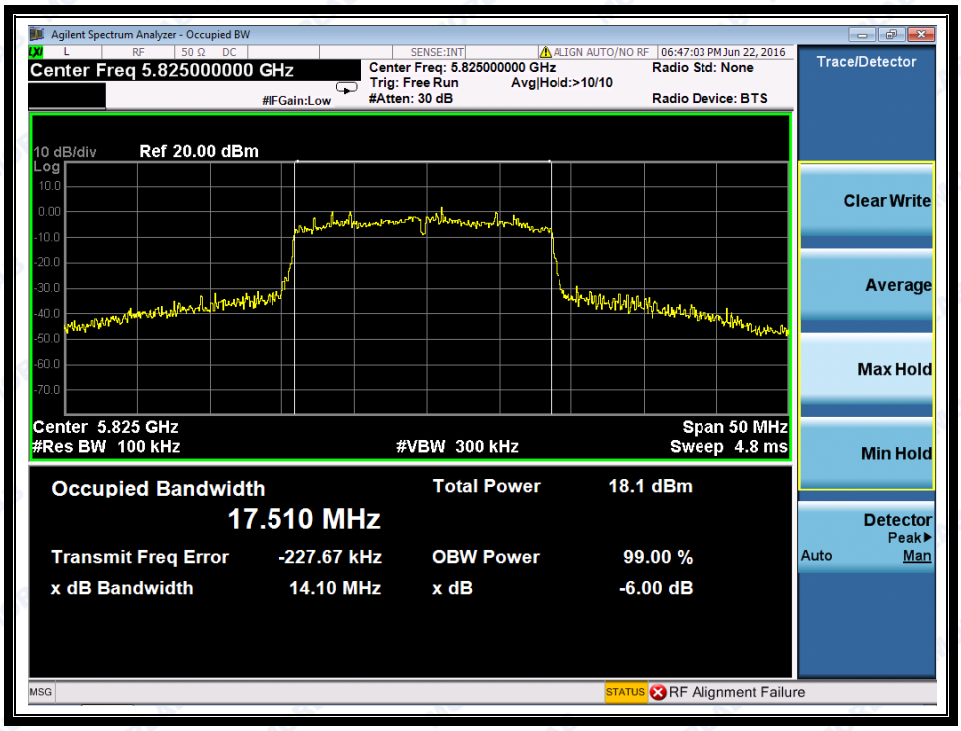
(Channel 48: 5240MHz @ 802.11n-20MHz)



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



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



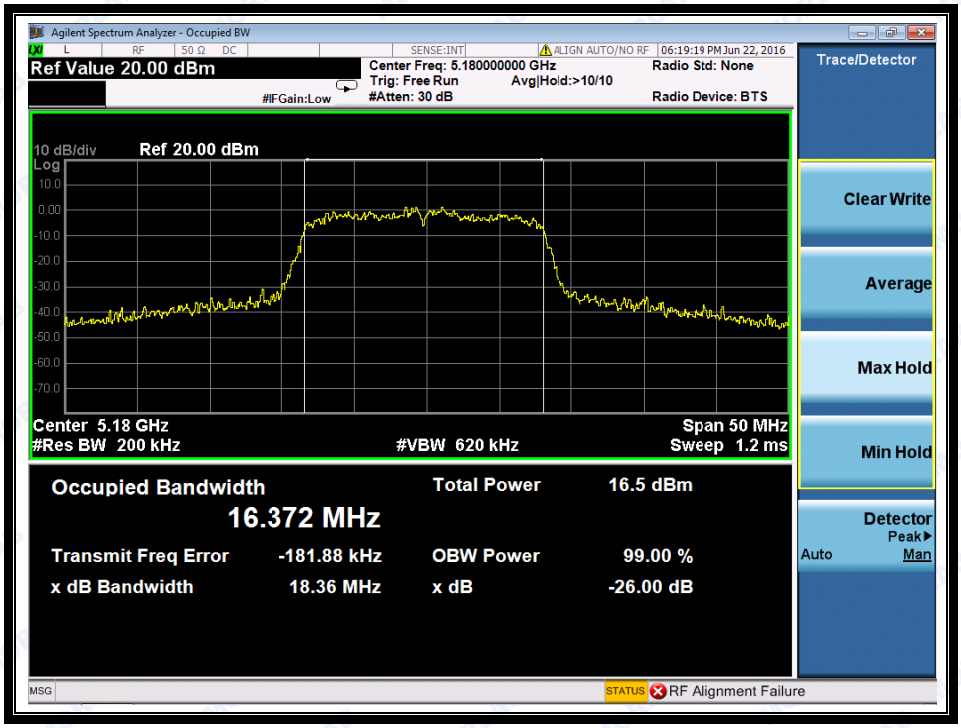
(Channel 165: 5825MHz @ 802.11n-20MHz)

2.2.3.2 802.11a Test mode

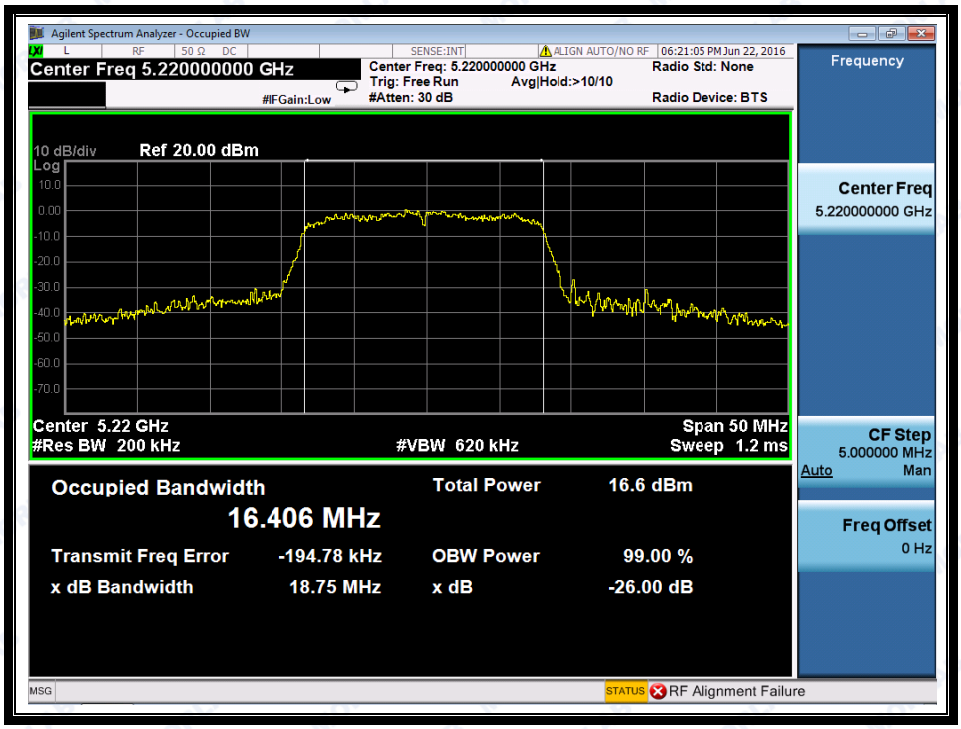
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	18.36
44	5220	18.75
48	5240	18.38
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
149	5745	15.11
157	5785	15.09
165	5825	13.62

B. Test Plots

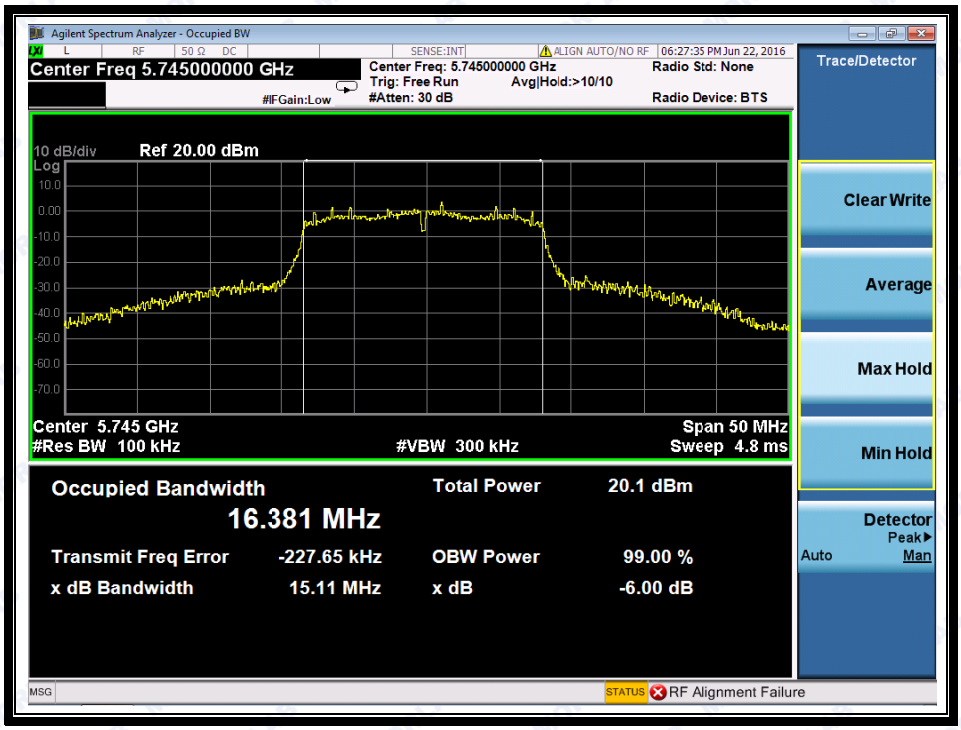


(Channel 36: 5180MHz @ 802.11a)

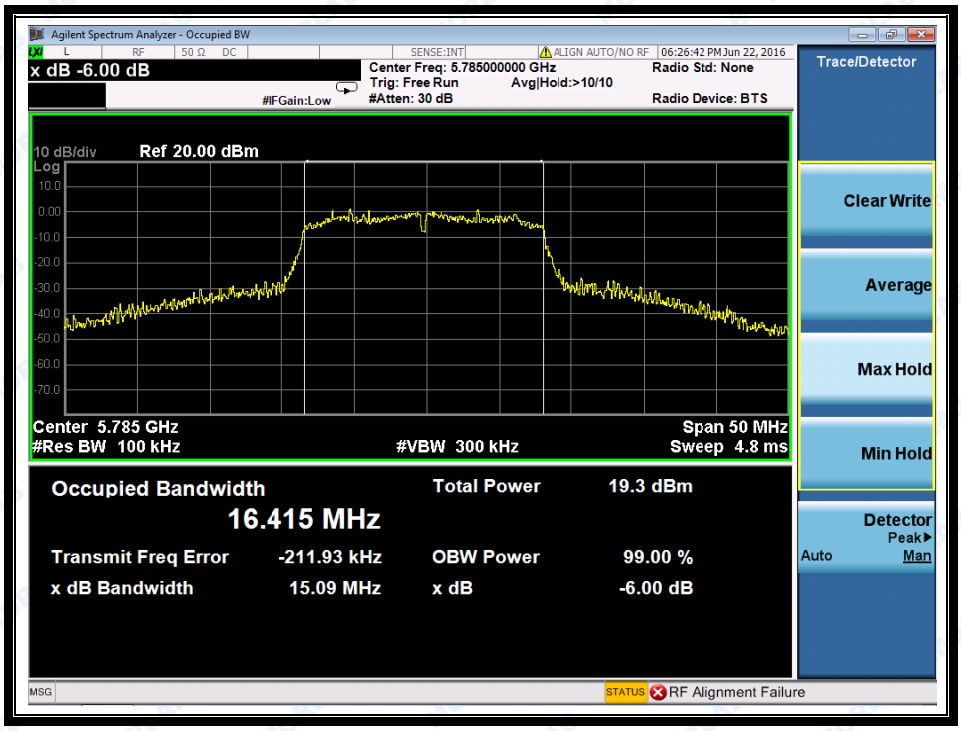


(Channel 44: 5220 MHz @802.11a)

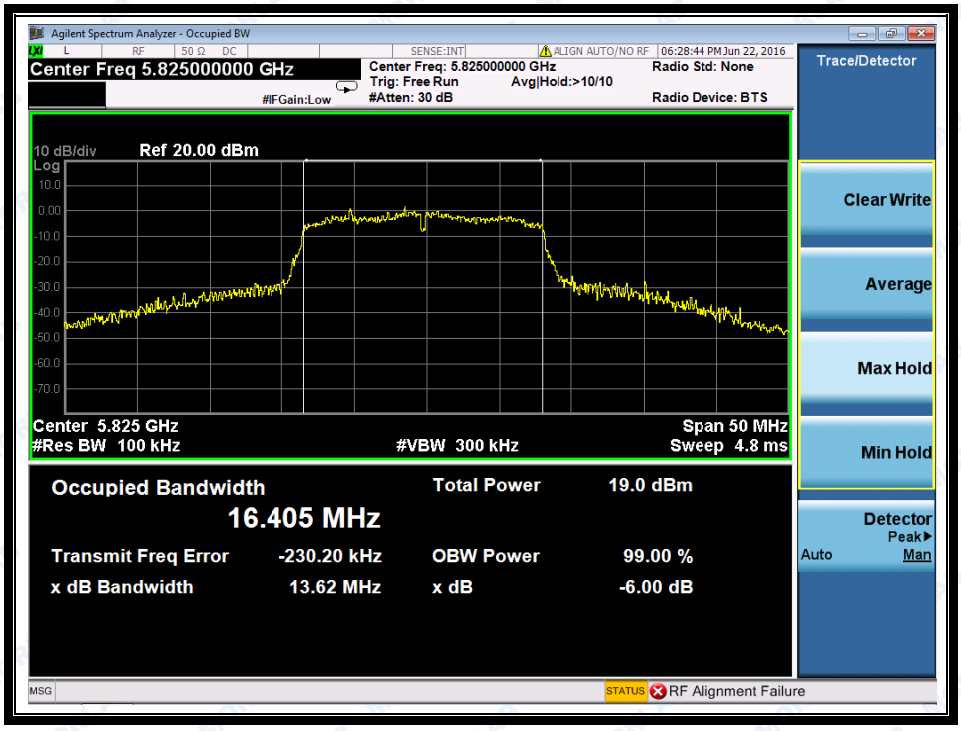
(Channel 48: 5240MHz @802.11a)



(Channel 149: 5745MHz @ 802.11a)



(Channel 157: 5785MHz @ 802.11a)



(Channel 165: 5825MHz @ 802.11a)

2.3 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

2.3.3.1 802.11n-20MHz Test mode

Channel	Frequency (MHz)	Measured Output Power(dBm)	Limit (dBm)	Verdict
36	5180	17.36	24	PASS
44	5220	17.12		
48	5240	16.51		
149	5745	18.65	30	
157	5785	17.85		
165	5825	18.42		

2.3.3.2 802.11a Test mode

Channel	Frequency (MHz)	Measured Output Power(dBm)	Limit (dBm)	Verdict
36	5180	18.28	24	PASS
44	5220	17.55		
48	5240	17.92		
149	5745	19.35	30	
157	5785	19.43		
165	5825	18.68		

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.

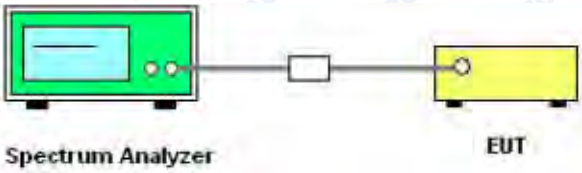
(2) For the 5.25–5.35 GHz and 5.47–5.725GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

(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

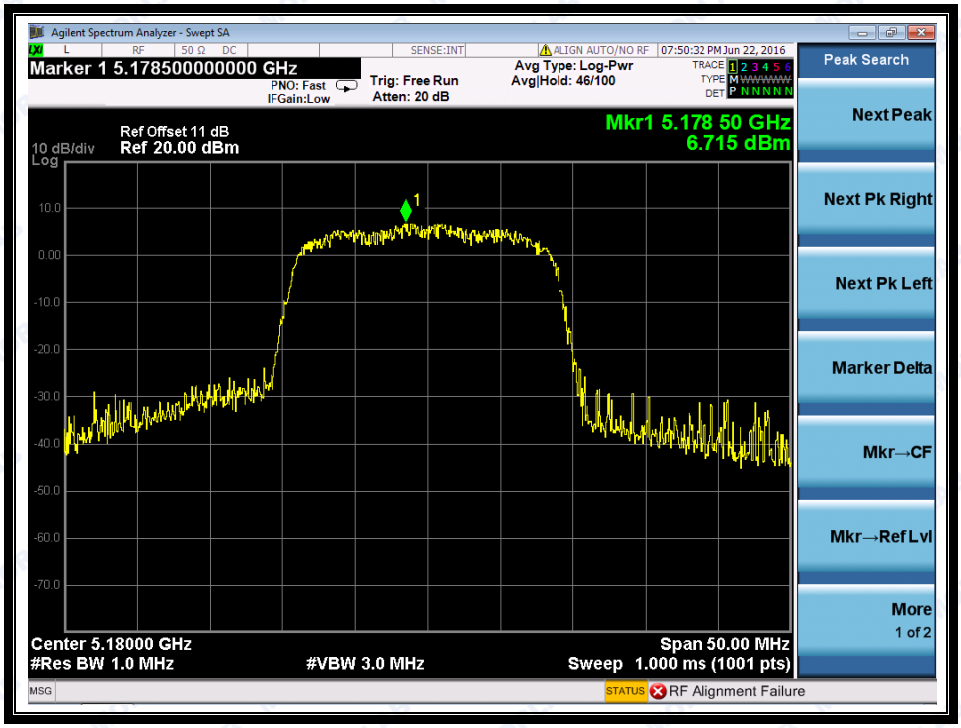
2.4.3 Test Result

2.4.3.1 802.11n-20MHz Test mode

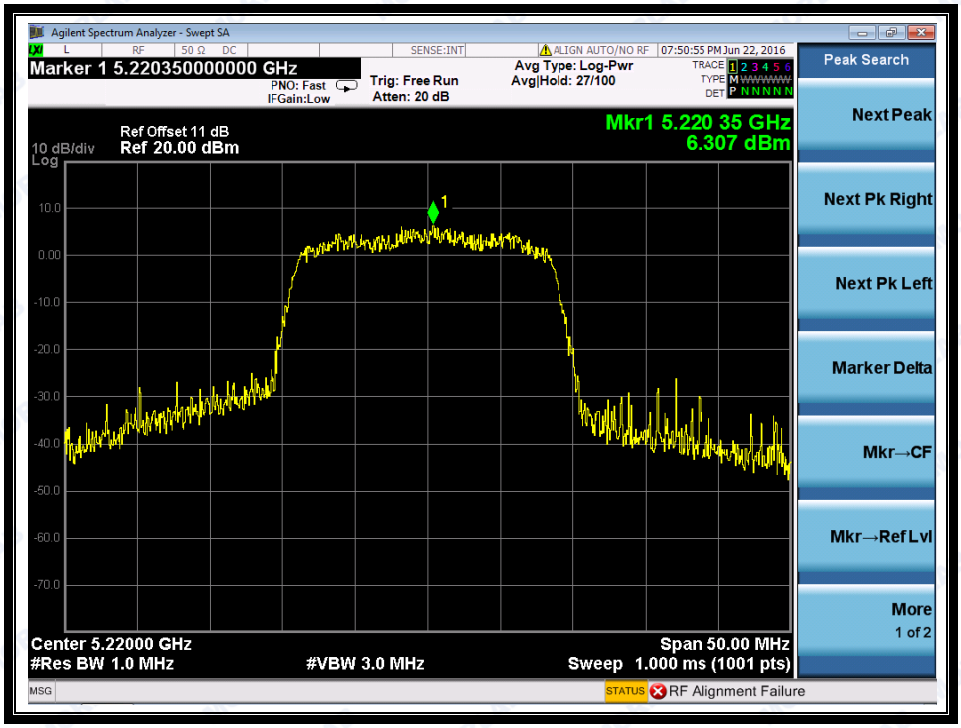
A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Verdict
36	5180	6.72	11	PASS
44	5220	6.31		
48	5240	4.93		
149	5745	6.14	30	
157	5785	5.36		
165	5825	4.86		

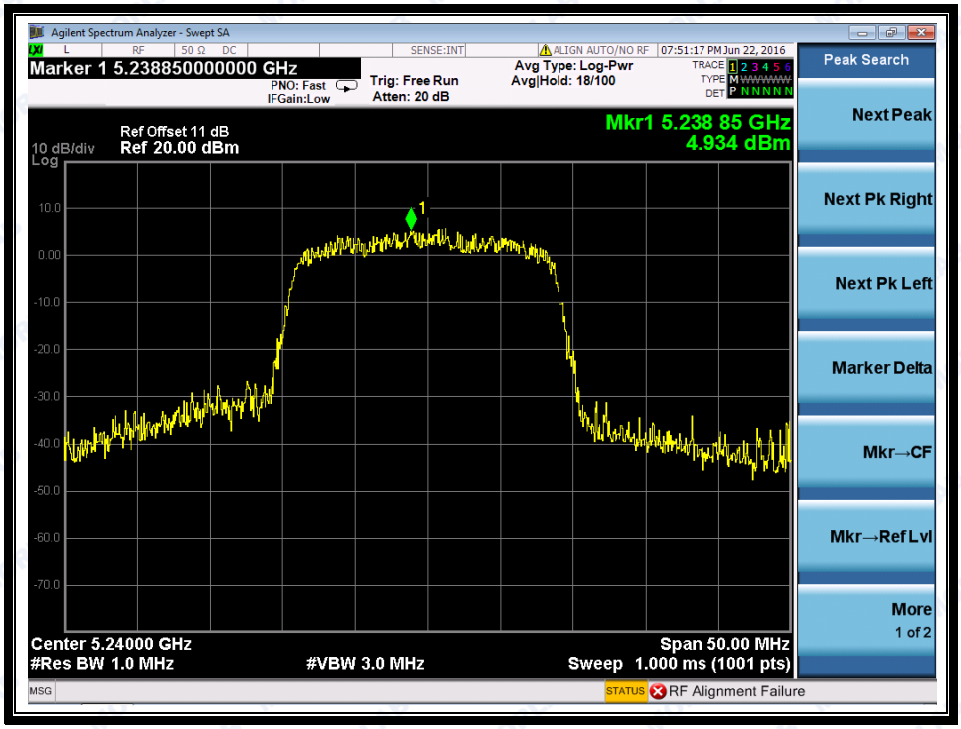
B. Test Plots



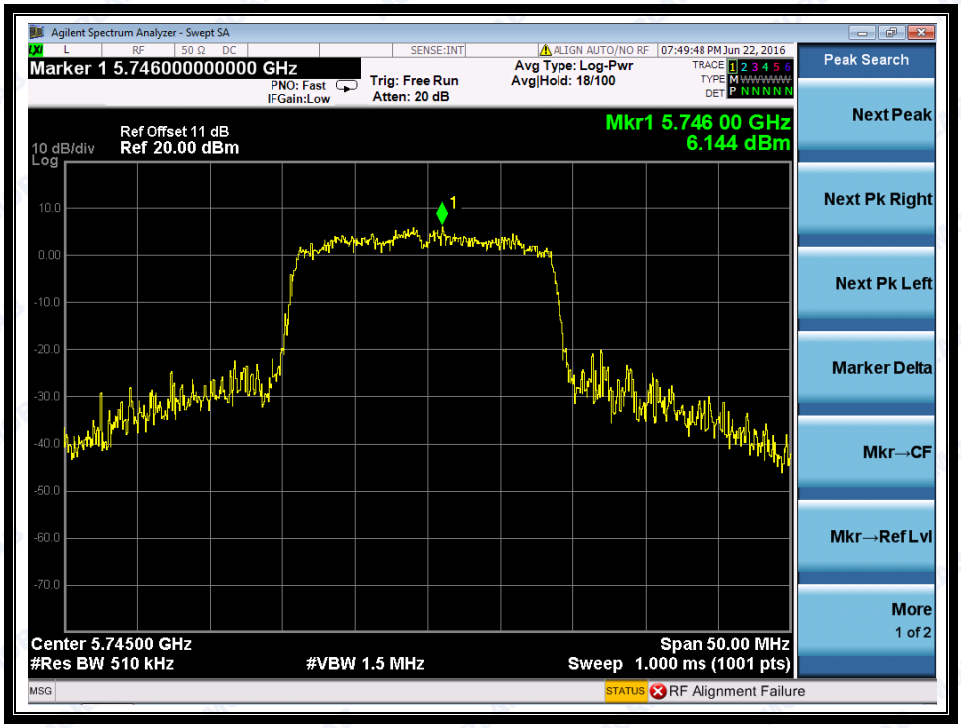
(Channel 36: 5180MHz @ 802.11n-20MHz)



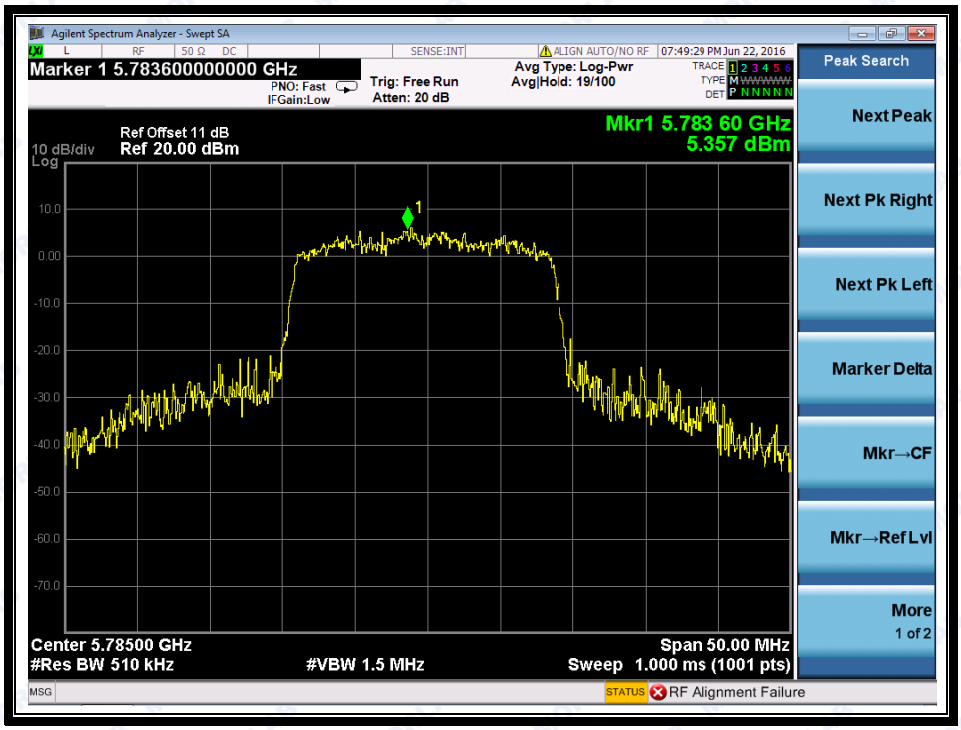
(Channel 44: 5220 MHz @ 802.11n-20MHz)



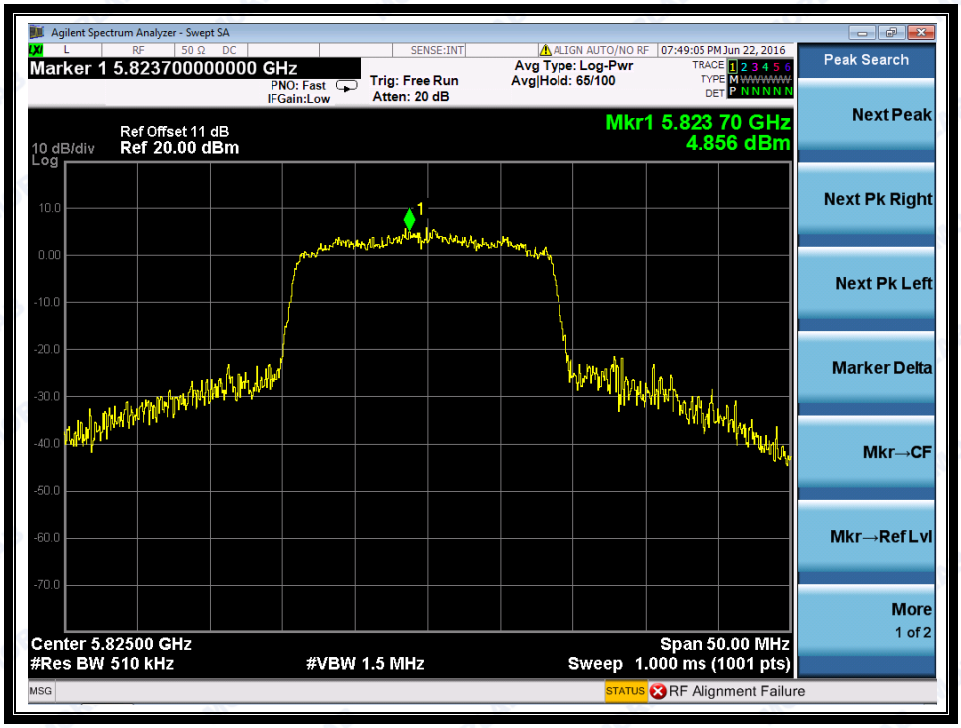
(Channel 48: 5240MHz @ 802.11n-20MHz)



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



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



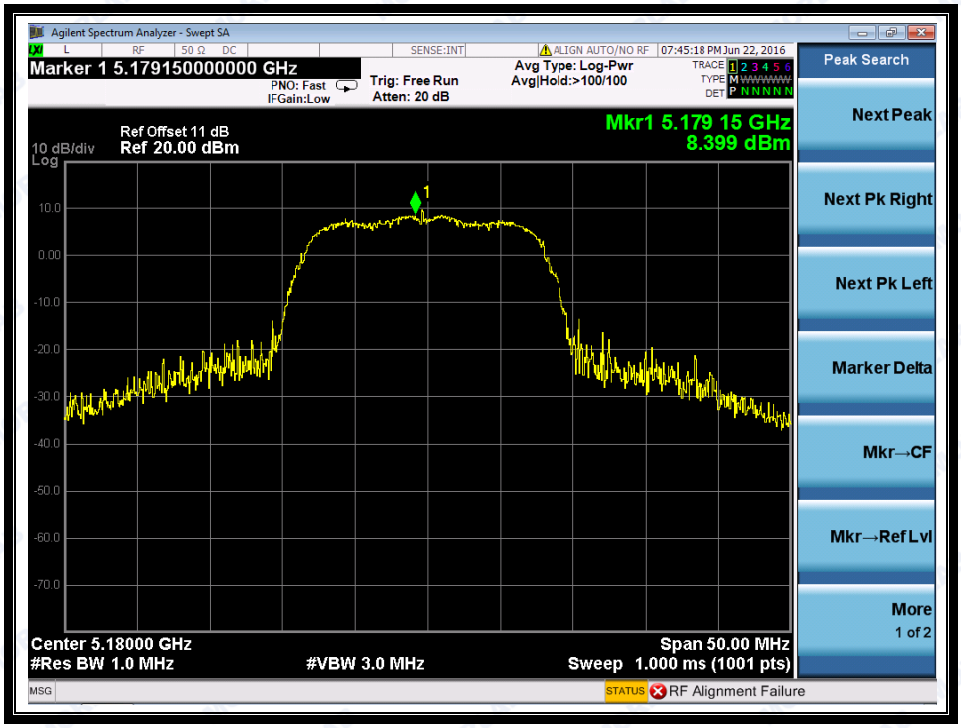
(Channel 165: 5825MHz @ 802.11n-20MHz)

2.4.3.2 802.11a Test mode

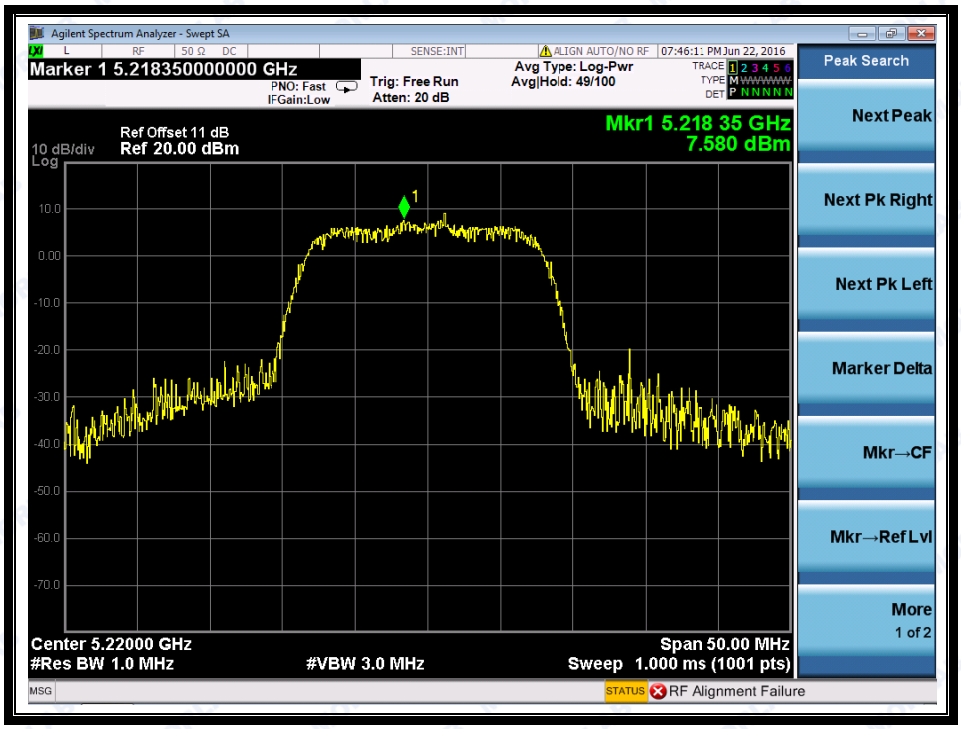
A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Verdict
36	5180	8.40	11	PASS
44	5220	7.58		
48	5240	6.81		
149	5745	8.60	30	
157	5785	7.82		
165	5825	7.61		

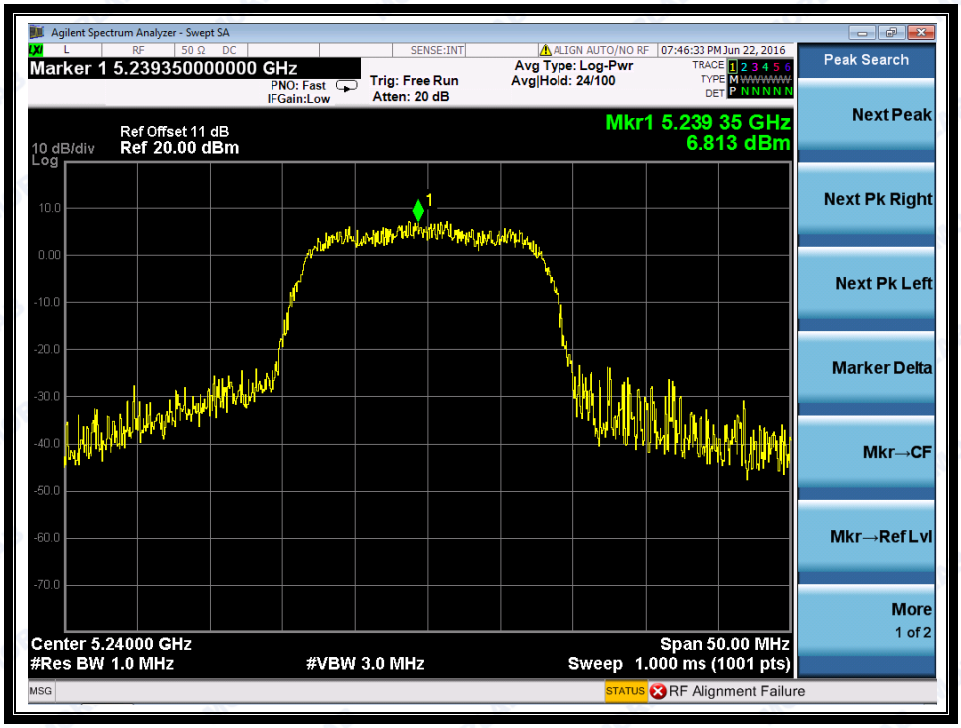
C. Test Plots



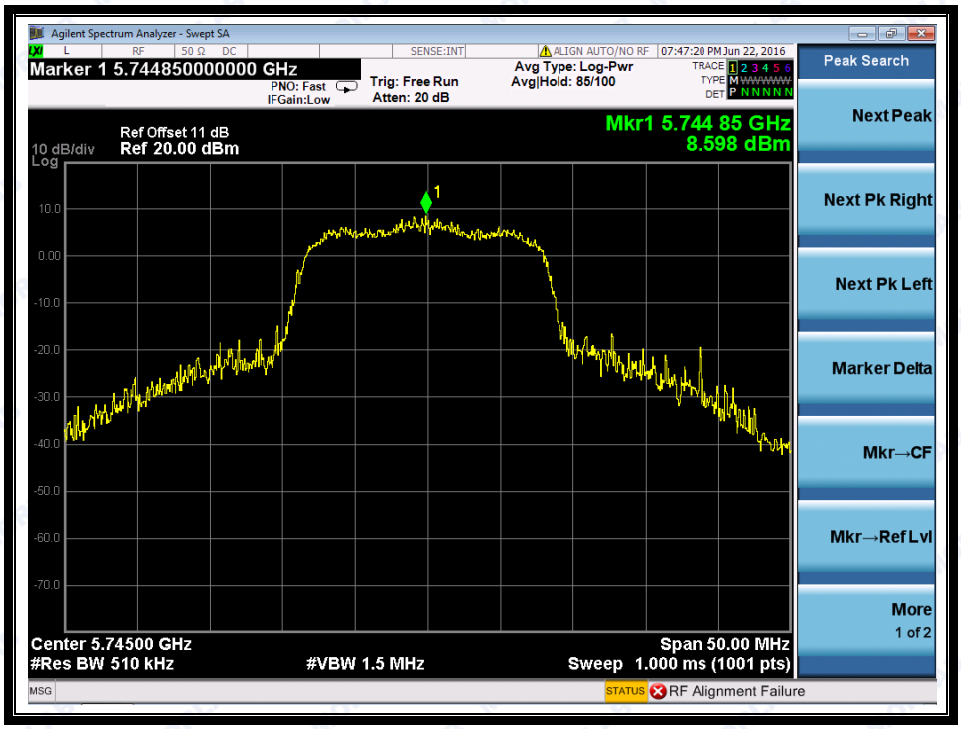
(Channel 36: 5180MHz @ 802.11a)



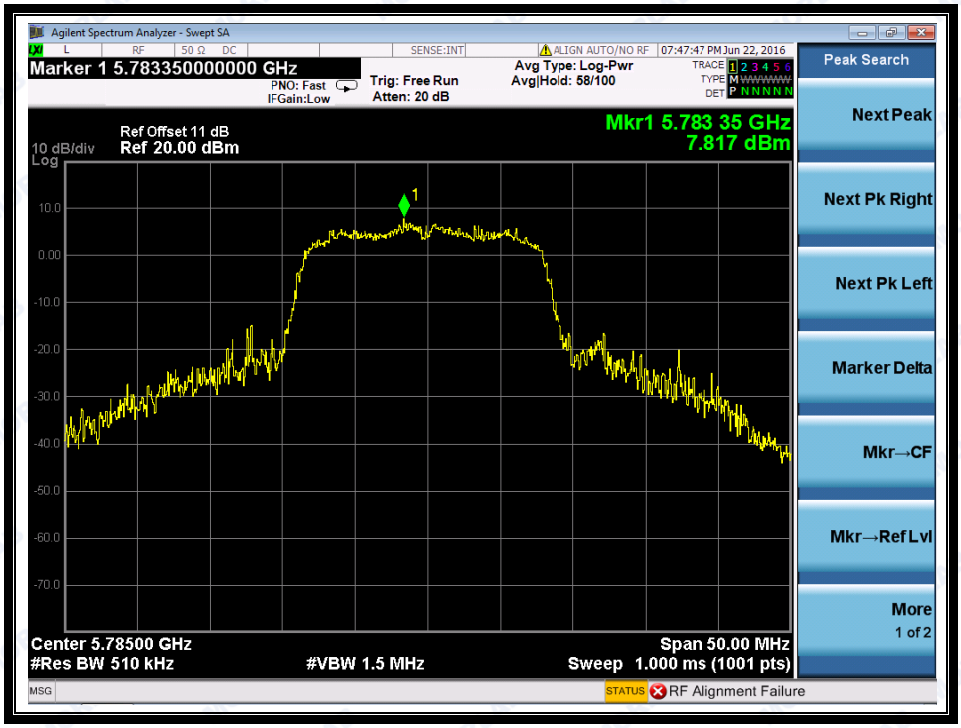
(Channel 44: 5220 MHz @802.11a)



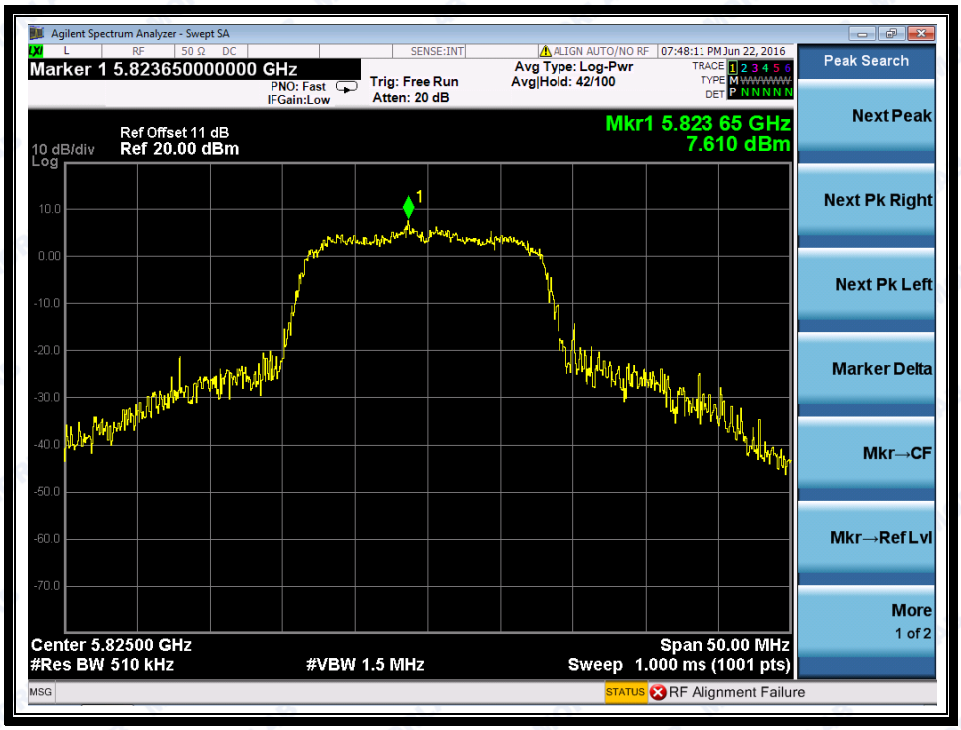
(Channel 48: 5240MHz @802.11a)



(Channel 149: 5745MHz @ 802.11a)



(Channel 157: 5785MHz @ 802.11a)



(Channel 165: 5825MHz @ 802.11a)

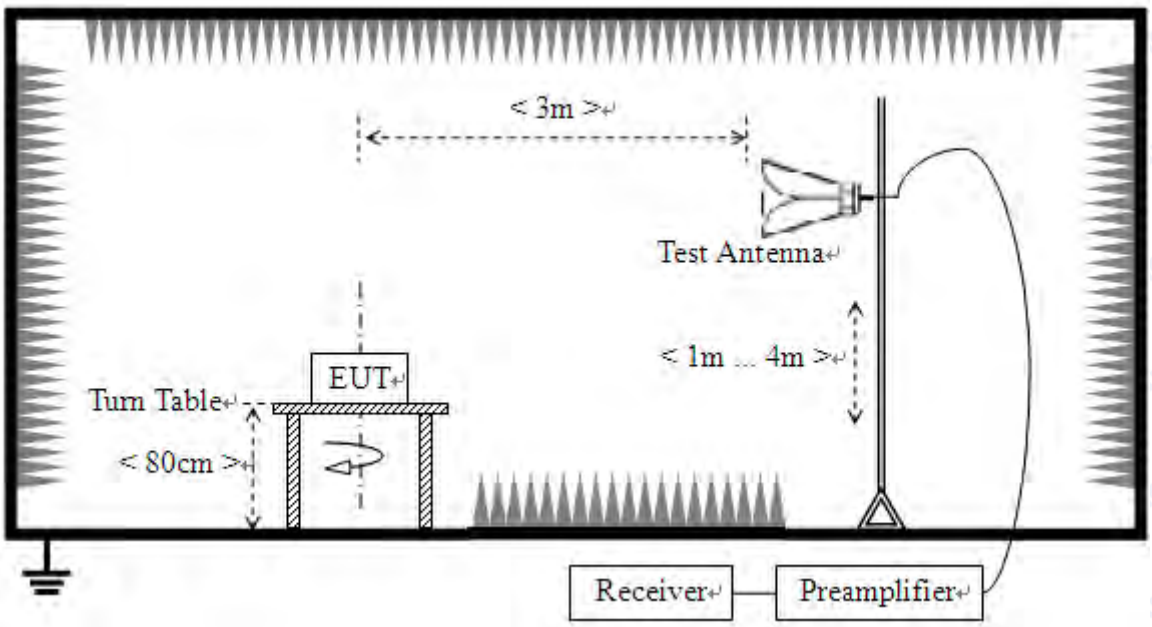
2.5 Restricted Frequency Bands

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.

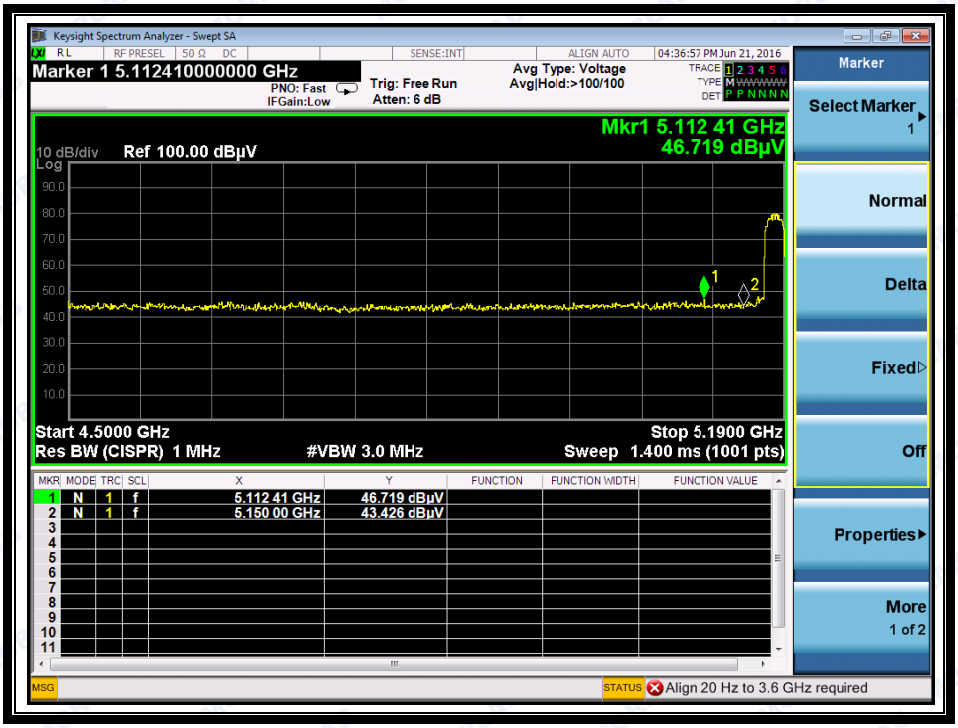
2.5.3.1 802.11n-20MHz Test mode

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

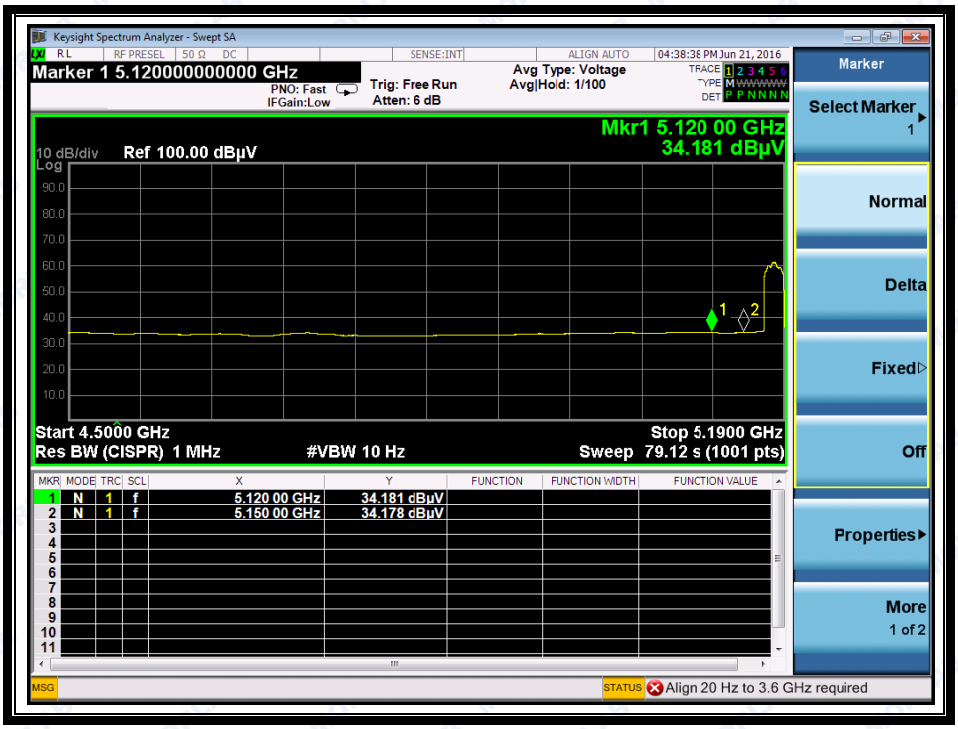
A. Test Verdict:

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	5112.41	PK	46.72	-50.65	32.11	28.18	74	Pass
36	5120.00	AV	34.18	-50.65	32.11	15.64	54	Pass
48	5367.04	PK	43.80	-50.65	32.11	25.26	74	Pass
48	5355.60	AV	32.72	-50.65	32.11	14.18	54	Pass

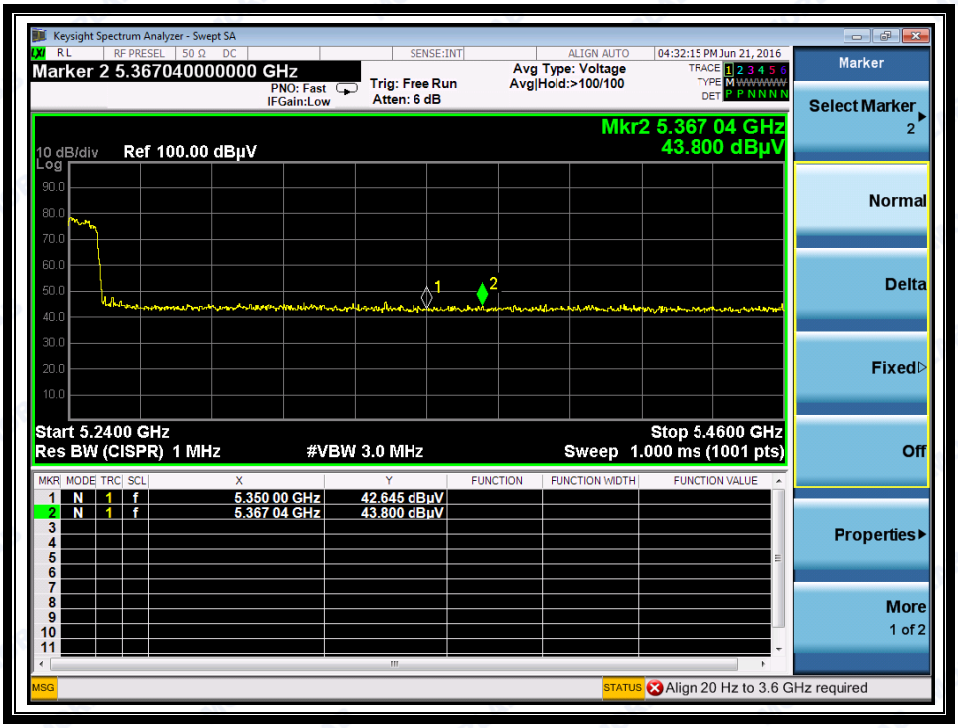
B. Test Plots:



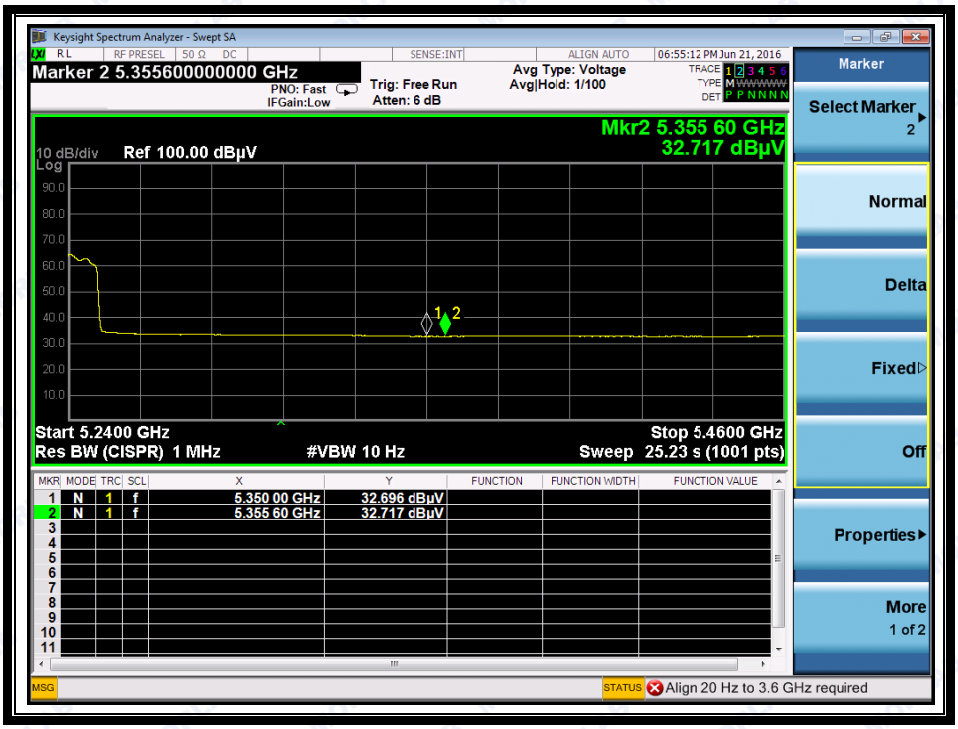
(Channel = 36 PEAK @ 802.11n 20MHz)



(Channel = 36 AVG @ 802.11n 20MHz)



(Channel = 48 PEAK @ 802.11n 20MHz)



(Channel = 48 AVG @ 802.11n 20MHz)

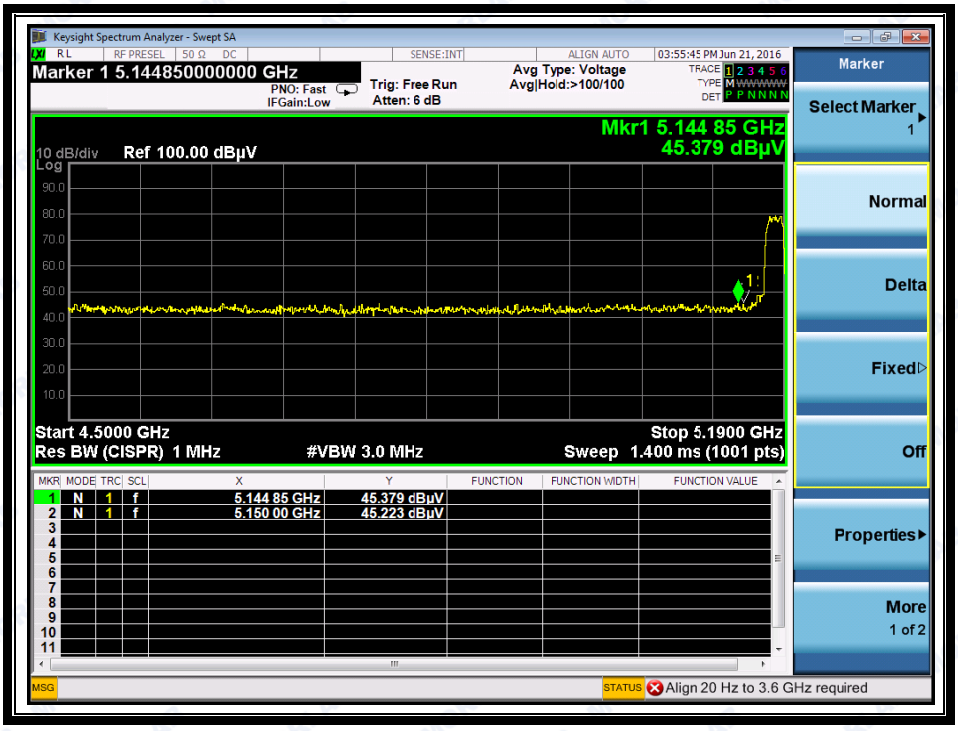
2.5.3.2 802.11a Test mode

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

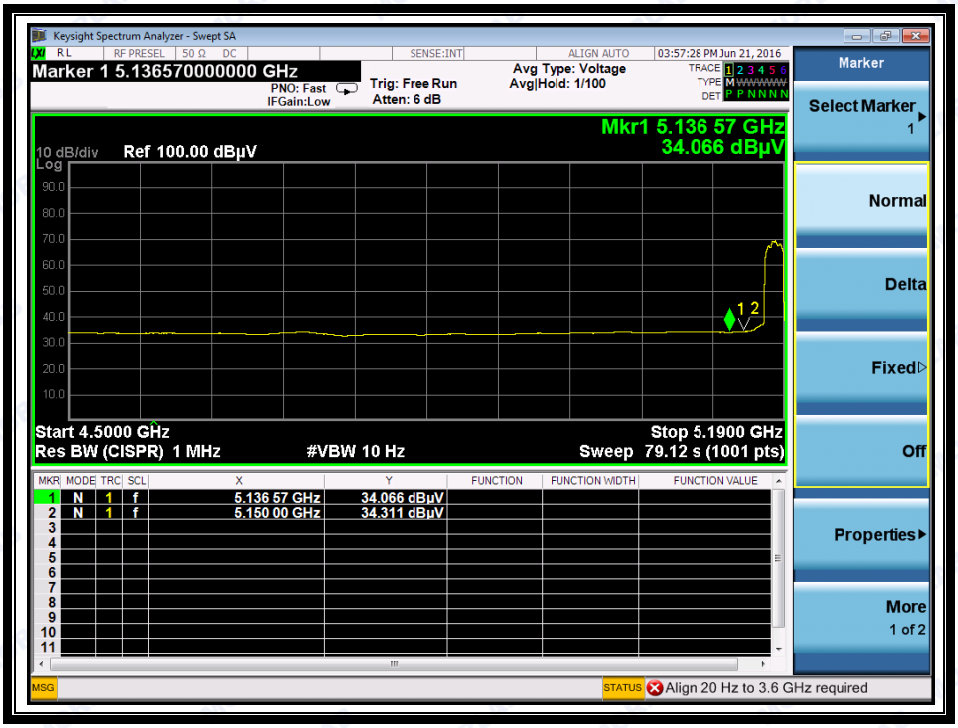
A. Test Verdict:

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	5144.85	PK	45.38	-50.65	32.11	26.84	74	Pass
36	5136.57	AV	34.07	-50.65	32.11	15.53	54	Pass
48	5368.56	PK	44.91	-50.65	32.11	26.37	74	Pass
48	5364.60	AV	32.59	-50.65	32.11	14.05	54	Pass

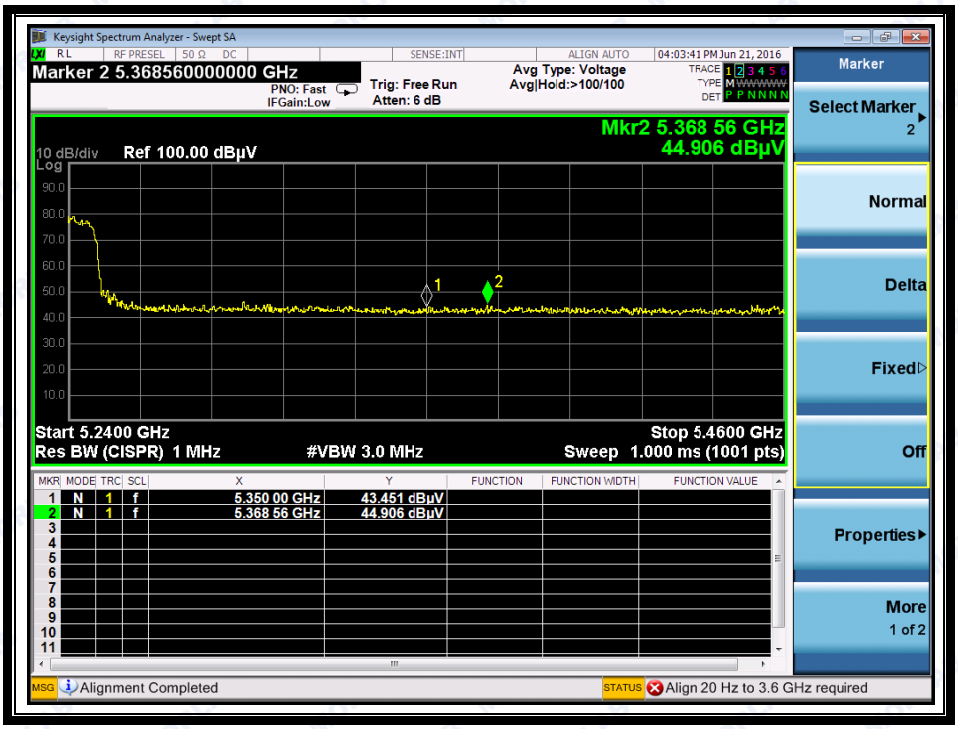
B. Test Plots:



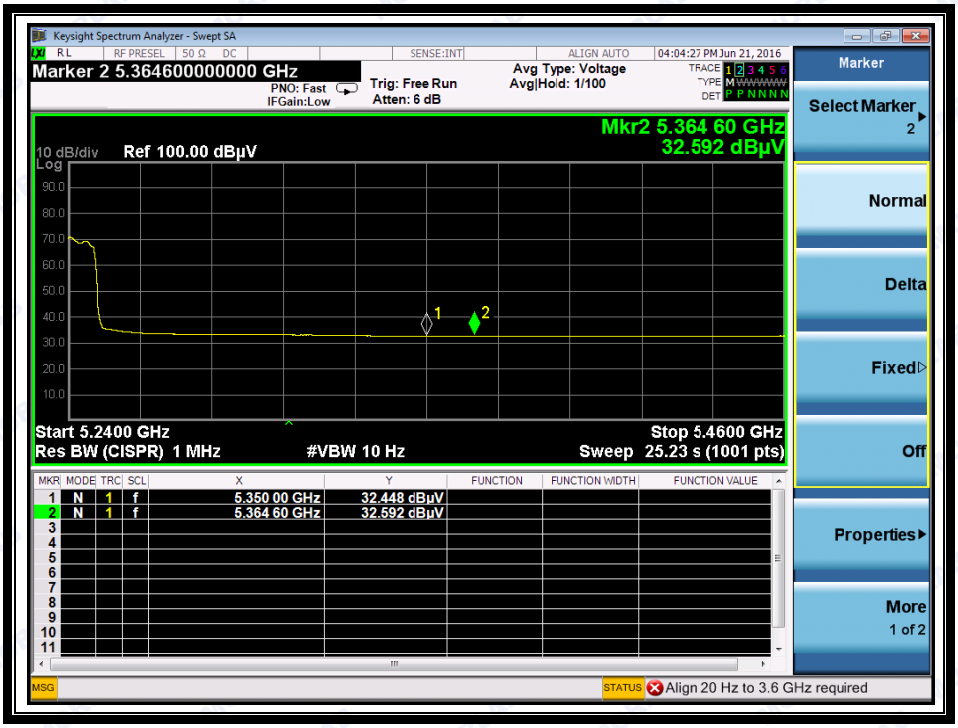
(Channel = 36 PEAK @ 802.11n 20MHz)



(Channel = 36 AVG @ 802.11n 20MHz)



(Channel = 48 PEAK @ 802.11n 20MHz)



(Channel = 48 AVG @ 802.11n 20MHz)

2.6 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%	5.0	+20(Ref)	5,179,999,995	-5	-0.00000010
100%		-30	5,180,000,001	1	0.00000002
100%		-20	5,180,000,004	4	0.00000008
100%		-10	5,179,999,999	-1	-0.00000002
100%		0	5,179,999,987	-13	-0.00000025
100%		+10	5,180,000,003	3	0.00000006
100%		+20	5,180,000,002	2	0.00000004
100%		+30	5,180,000,011	11	0.00000021
100%		+40	5,180,000,015	15	0.00000029
100%		+50	5,179,999,988	-12	-0.00000023
114%	4.75	+20	5,180,000,011	11	0.00000021
BATT.END POINT	5.25	+20	5,179,999,982	-18	-0.00000035

Frequency Stability Measurements for UNII Band 4 (Ch. 149)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	5.0	+20(Ref)	5,744,999,995	-5	-0.00000009
100%		-30	5,744,999,987	-13	-0.00000023
100%		-20	5,745,000,011	11	0.00000019
100%		-10	5,744,999,987	-13	-0.00000023
100%		0	5,745,000,001	1	0.00000002
100%		+10	5,745,000,016	16	0.00000028
100%		+20	5,745,000,017	17	0.00000030
100%		+30	5,745,000,001	1	0.00000002
100%		+40	5,744,999,996	-4	-0.00000007
100%		+50	5,745,000,012	12	0.00000021
114%	4.75	+20	5,745,000,010	10	0.00000017
BATT.ENDPOINT	5.25	+20	5,744,999,988	-12	-0.00000021

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

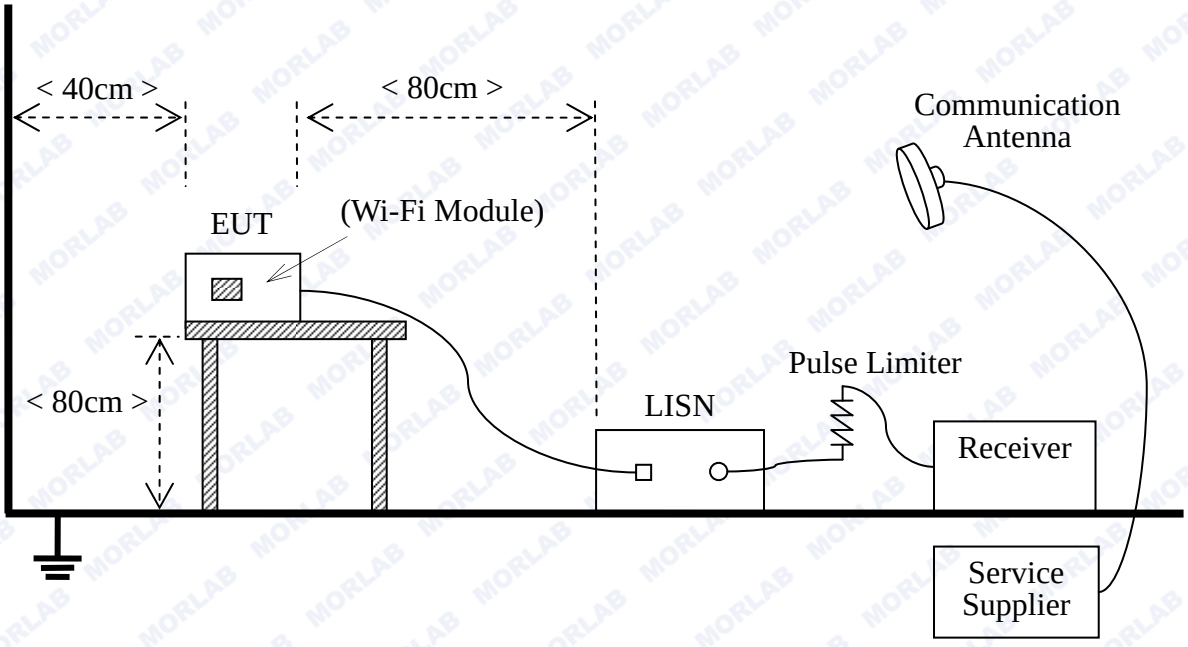
NOTE:

(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 C63.10 2013.

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

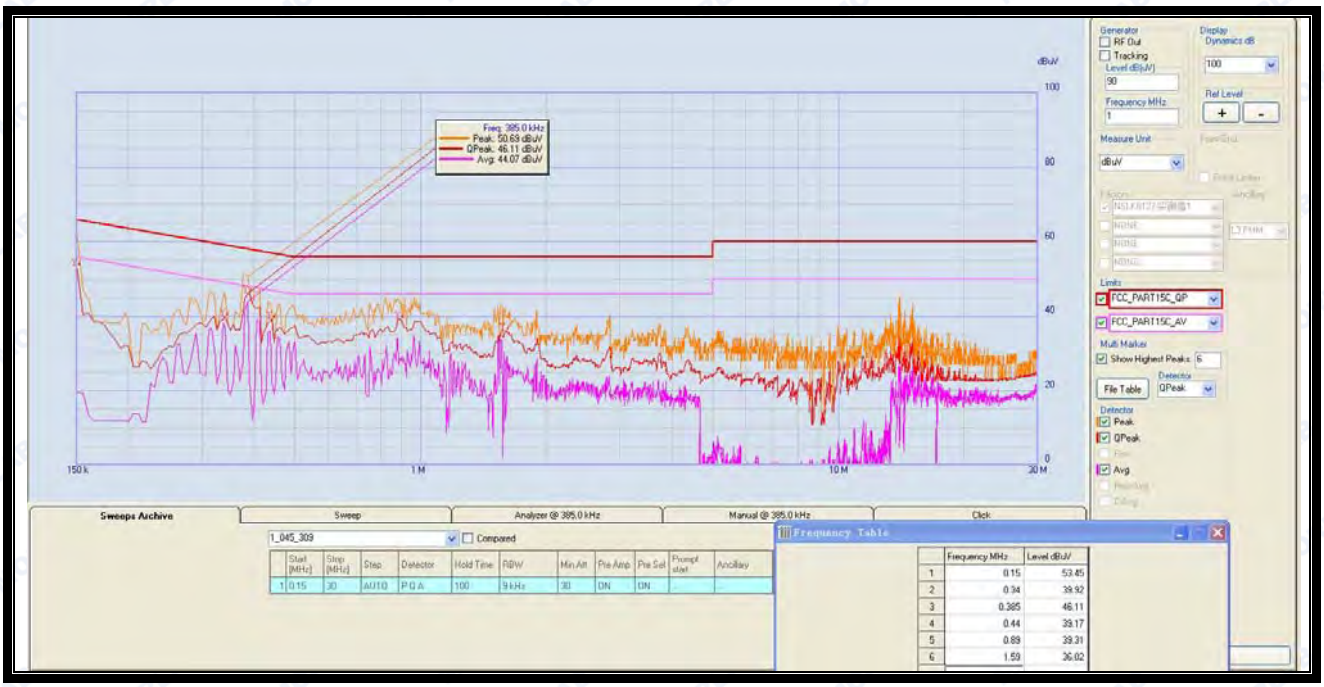
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT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

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

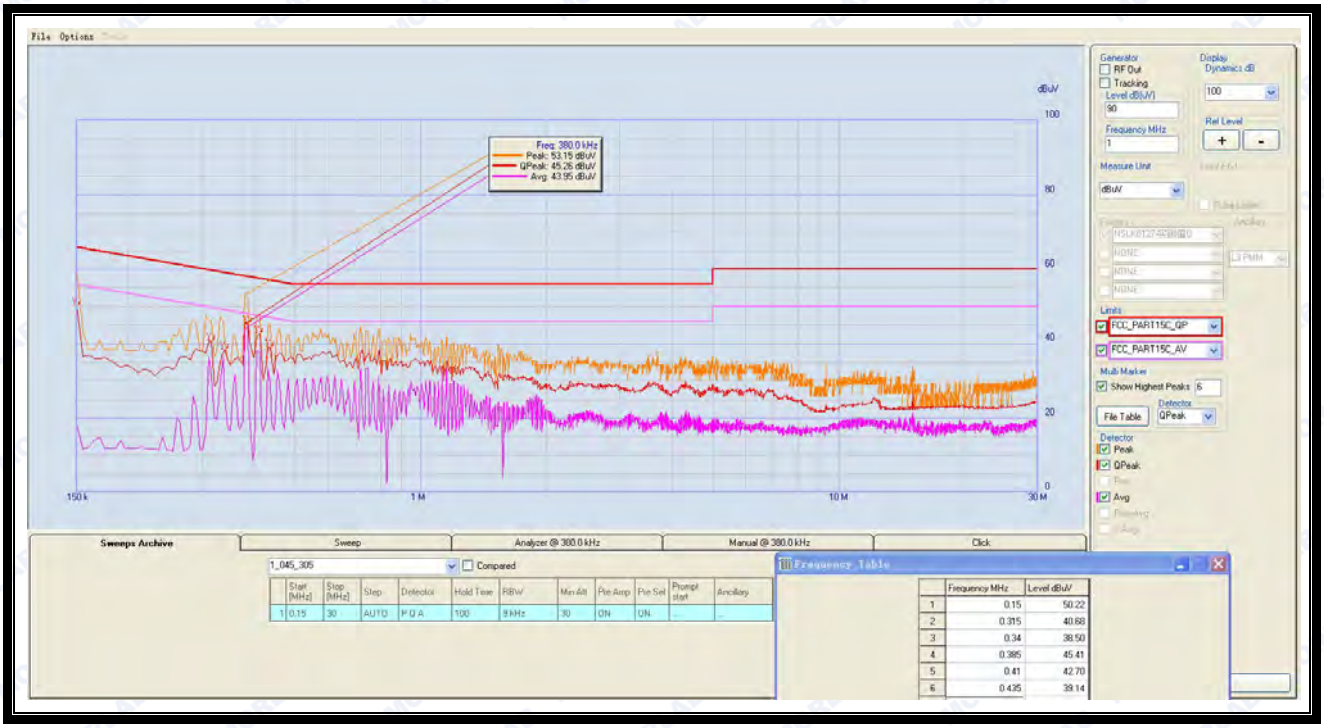
A. Test setup:

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:

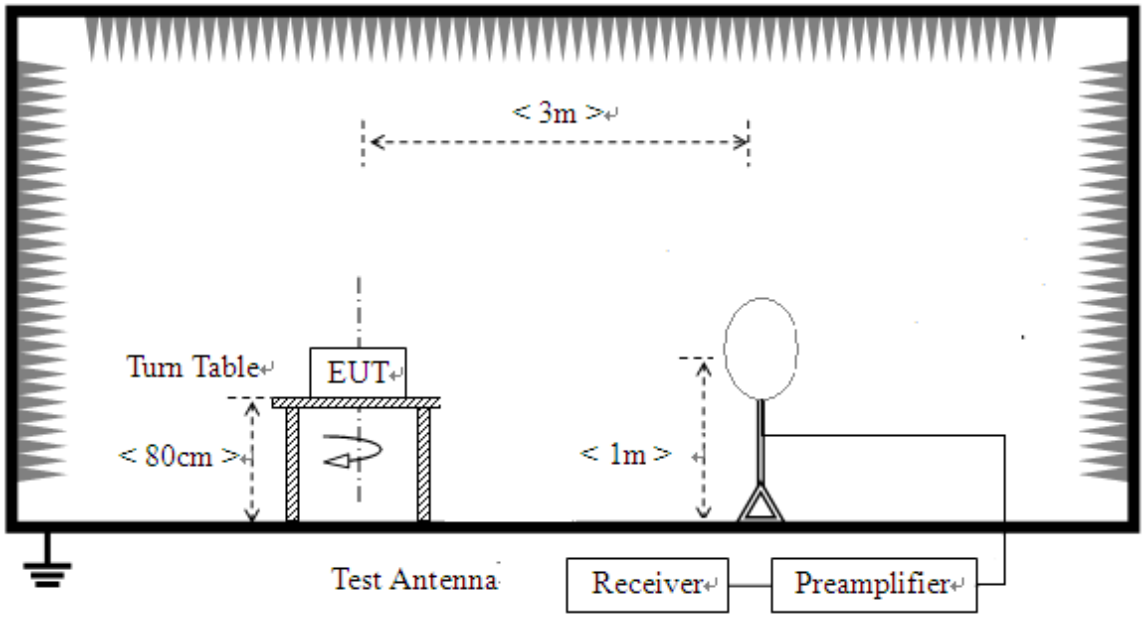
For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

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)

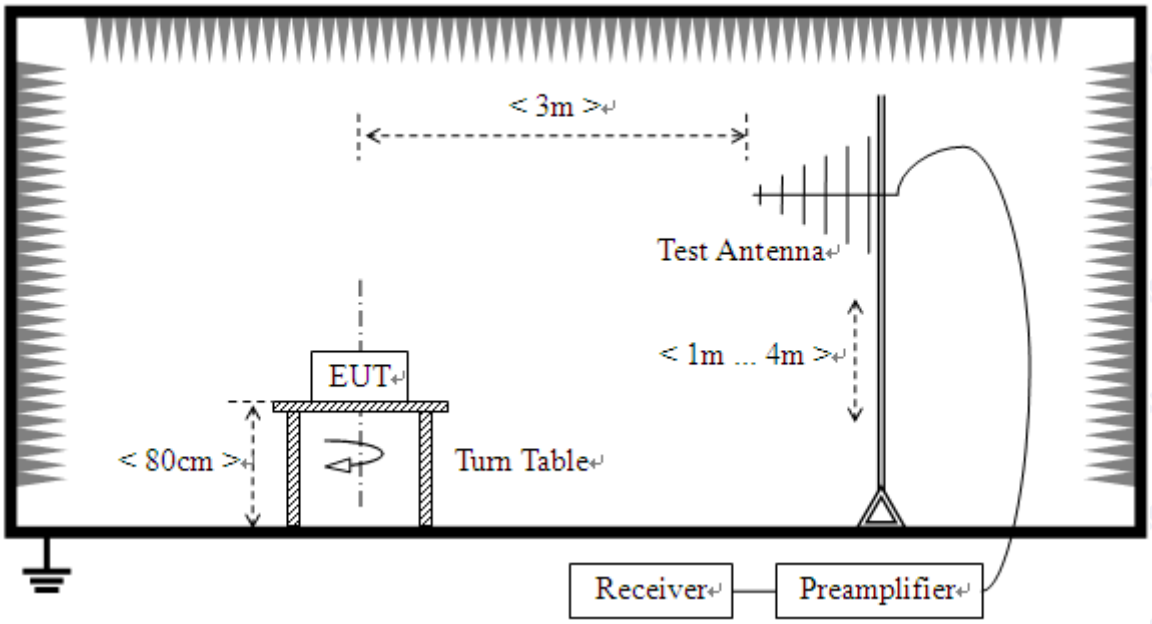
2.8.2 Test Description

A. Test Setup:

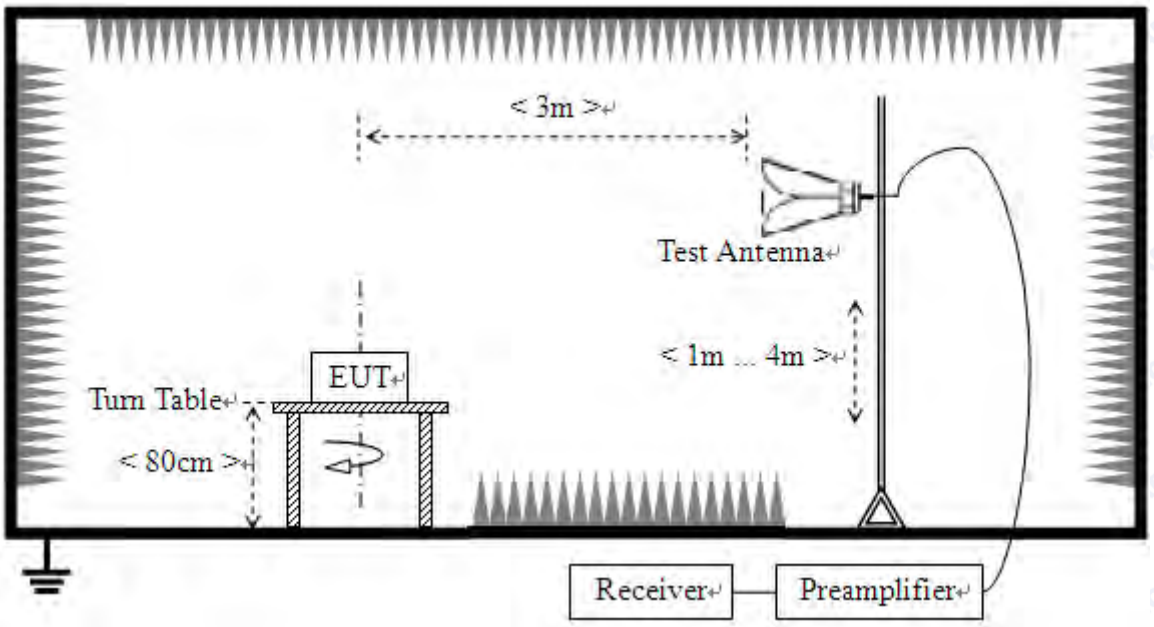
1) For radiated emissions from 9kHz to 30MHz



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 (2014). 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.

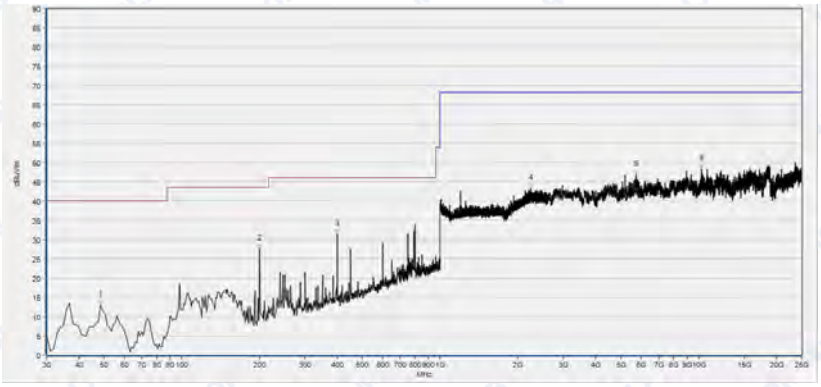
The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

For the frequency, which started from 25G to 40G, was pre-scanned and the result which was 10dB lower than the limit.

2.8.3.1 802.11n-20MHz Test mode

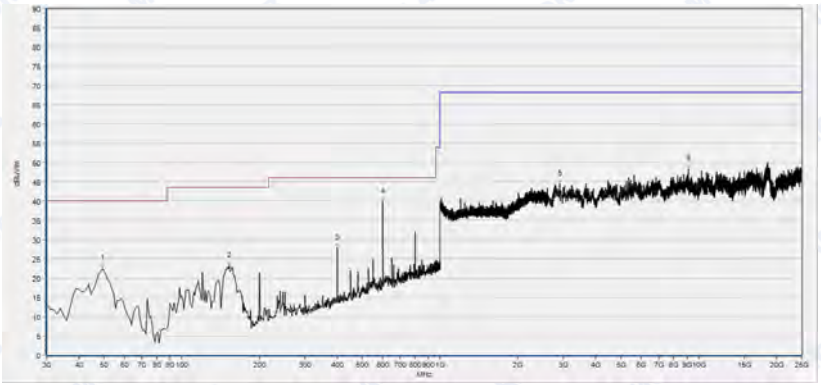
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 36



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
48.448	12.96	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
199.920	27.64	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	31.43	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2242.548	43.36	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
5723.185	46.90	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
10289.218	48.31	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

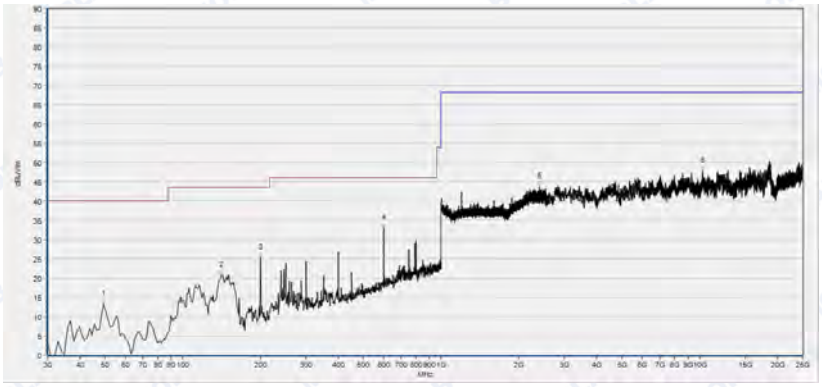
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	22.48	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
152.342	23.27	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	27.87	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	39.90	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2895.739	44.42	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
9110.742	48.34	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

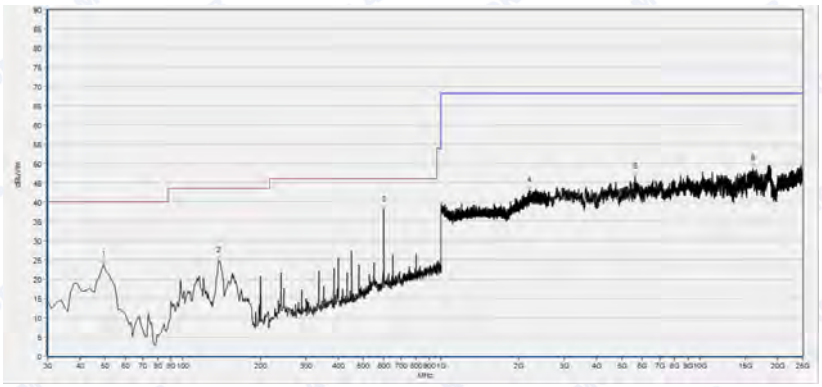
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 44



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	13.15	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
140.691	20.71	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	25.36	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
599.960	33.05	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2404.735	43.68	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
10275.775	47.94	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

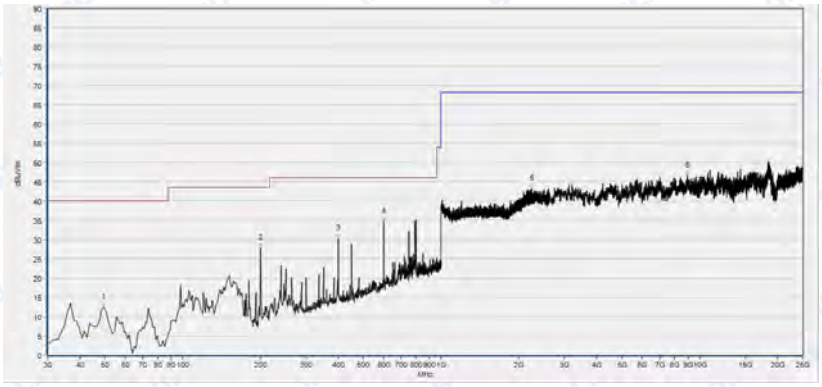
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	23.82	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
137.778	24.78	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
599.960	38.00	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2191.864	43.00	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
5642.529	46.67	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
16091.978	48.81	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

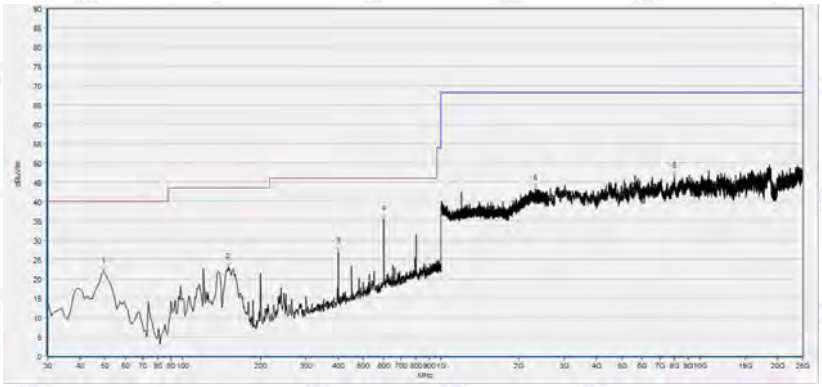
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	12.52	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
199.920	27.81	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	30.28	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	34.72	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2240.413	43.17	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
8967.353	46.59	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



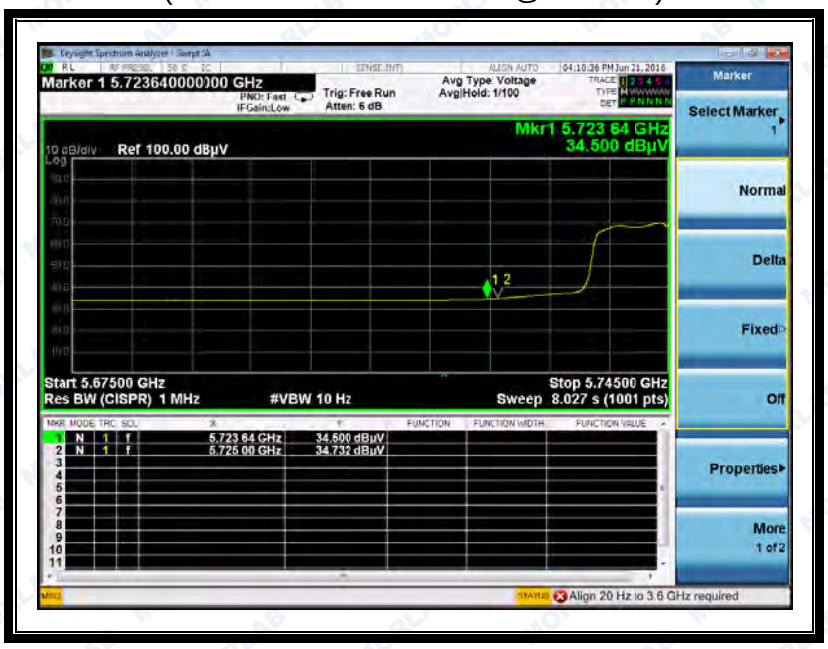
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	21.88	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
149.429	22.97	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	27.13	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	35.52	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2318.306	43.37	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
7977.075	46.60	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

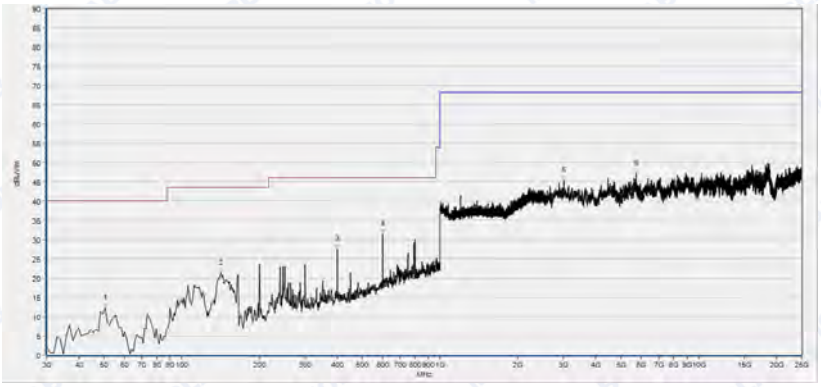
Plots for Channel = 149

Channel	Frequency (MHz)	Antenna Horiz./ Vert.	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
149	5722.10	Horizontal	45.10	-50.65	32.11	26.56	78.2	Pass
149	5723.64	Vertical	34.50	-50.65	32.11	15.96	78.2	Pass

(Channel = 149 Horizontal @ 802.11n)

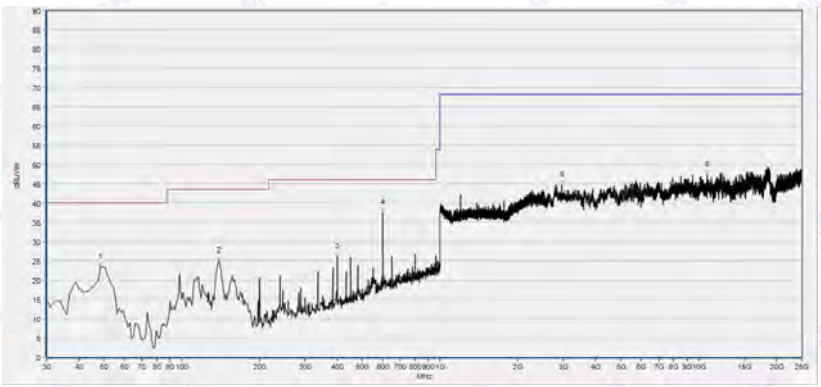


(Channel = 149 Vertical @ 802.11n)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
50.390	12.20	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
141.662	21.34	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	27.53	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	31.45	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
3012.242	45.43	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
5727.666	47.18	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

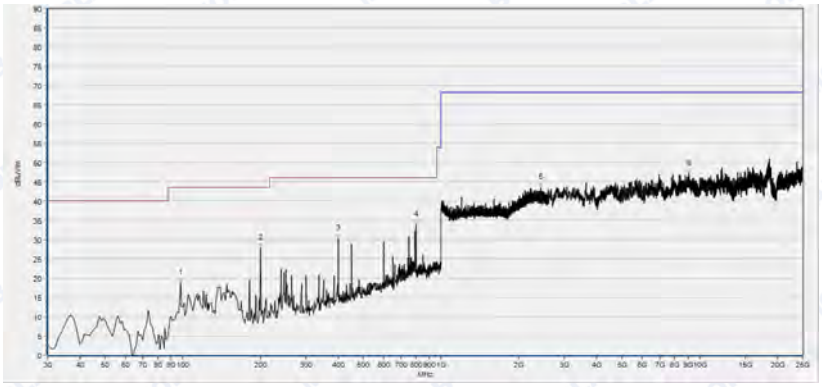
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
48.448	23.35	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
138.749	24.98	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	26.04	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	37.42	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2958.472	44.60	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
10817.964	47.32	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

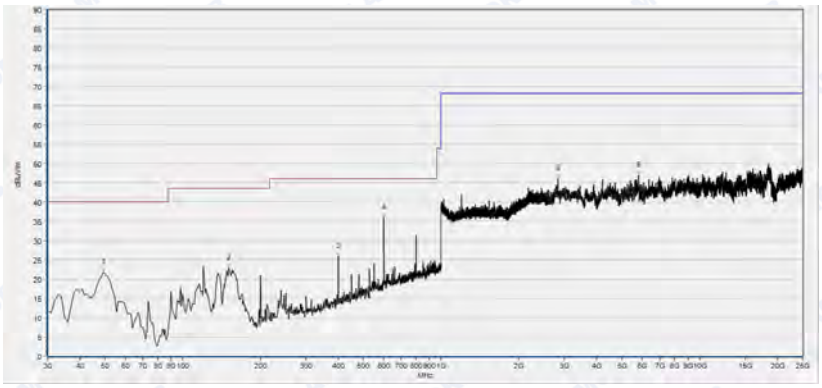
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
97.968	18.83	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	27.89	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	30.28	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
799.980	33.85	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2421.807	43.54	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
9106.261	47.11	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



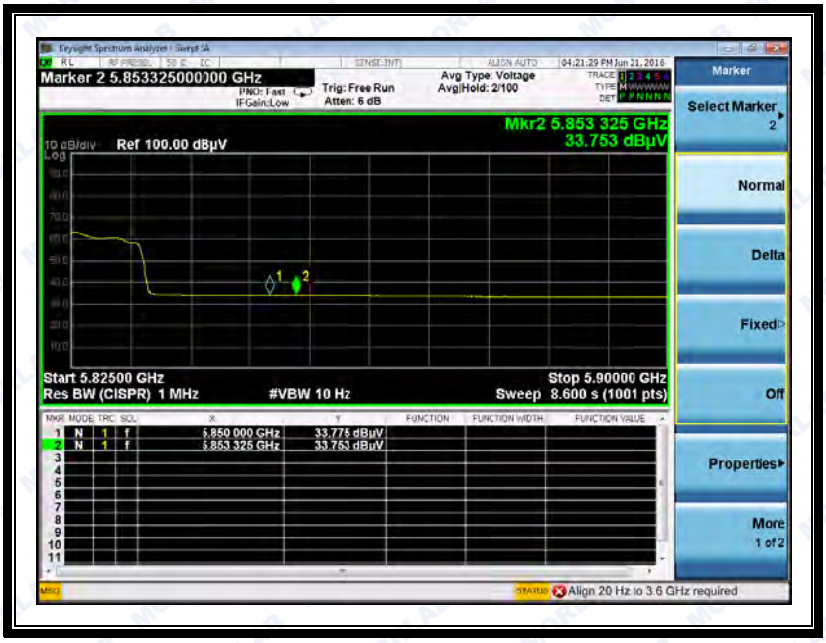
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	21.75	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
150.400	22.78	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	25.86	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	35.86	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2833.007	46.04	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
5794.879	46.95	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

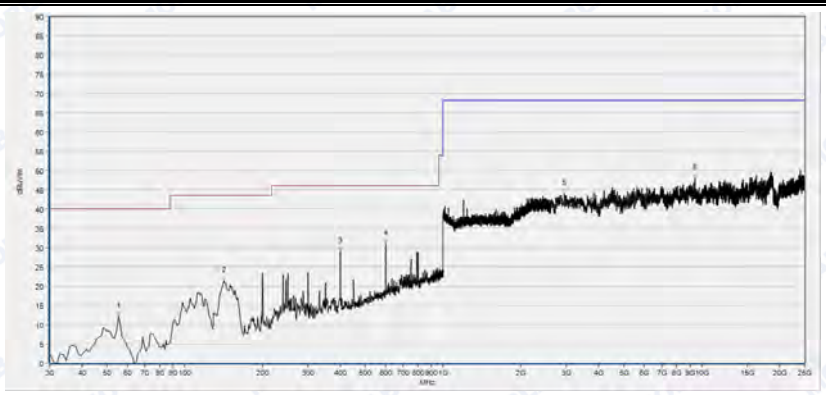
Plot for Channel = 165

Channel	Frequency (MHz)	Antenna Horiz./ Vert.	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
165	5867.88	Horizontal	45.55	-50.65	32.11	27.01	78.2	Pass
165	5853.33	Vertical	33.75	-50.65	32.11	15.21	78.2	Pass

(Channel = 165 Horizontal @ 802.11n)

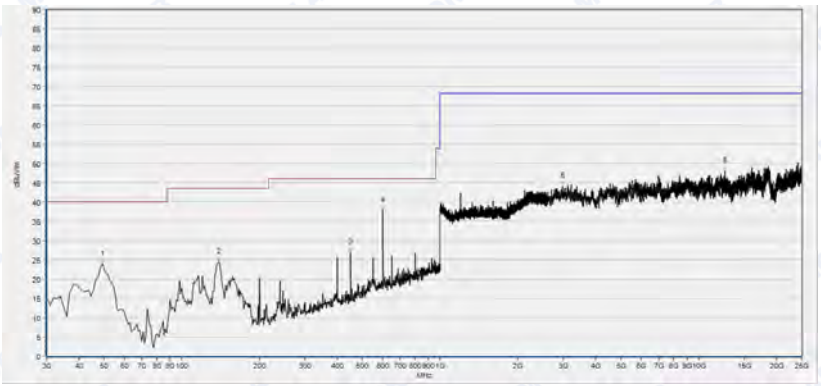


(Channel = 165 Vertical @ 802.11n)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
55.245	12.18	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
141.662	21.45	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	29.07	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	31.16	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2945.029	44.06	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
9428.886	47.99	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



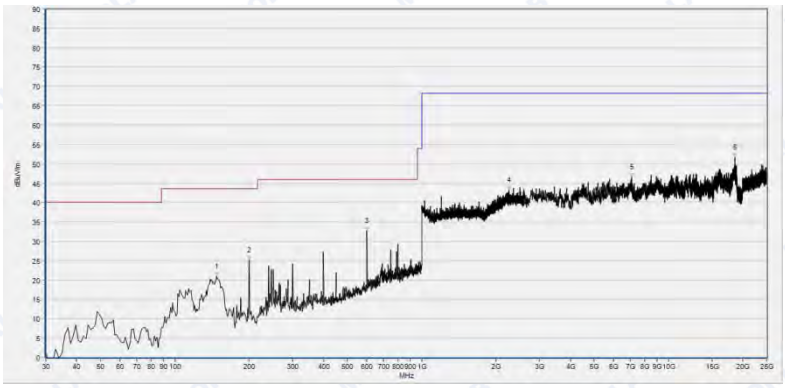
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	23.96	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
138.749	24.39	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
450.430	26.93	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	37.89	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2971.914	44.12	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
12619.284	48.10	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

2.8.3.2 802.11a-20MHz Test mode

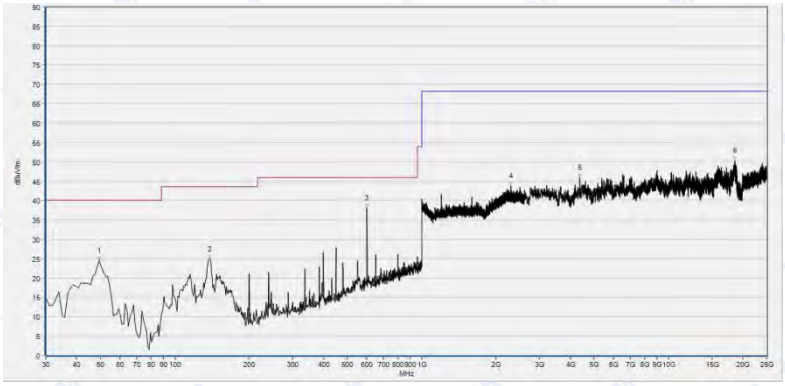
A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 36



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
147.487	20.88	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	25.08	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
599.960	32.64	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2258.019	43.28	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
7080.896	46.61	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
18574.395	51.69	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

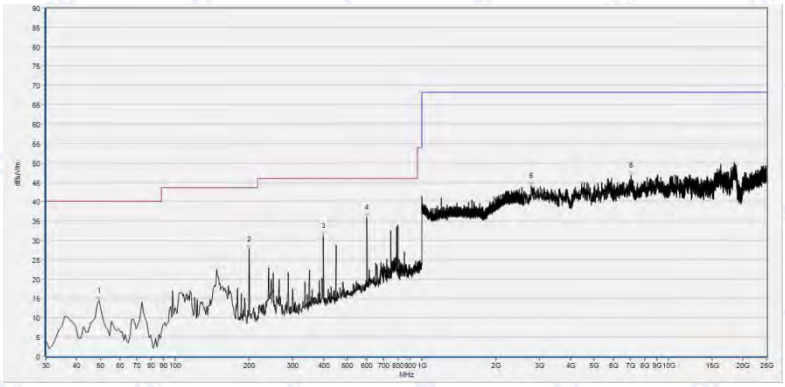
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	24.44	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
137.778	24.81	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
599.960	38.04	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2298.033	43.73	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
4360.992	45.86	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
18574.395	50.28	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

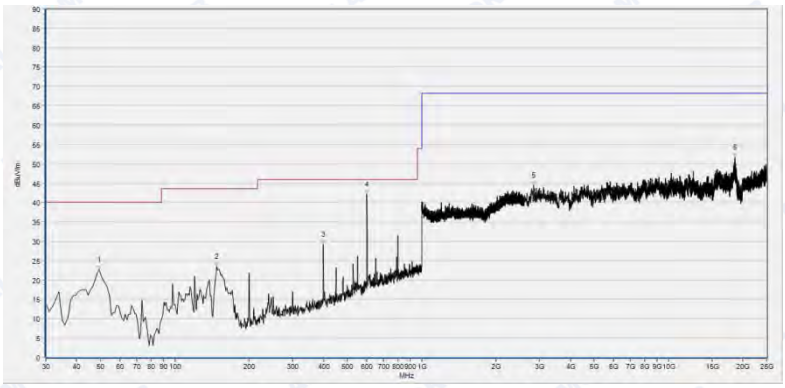
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 44



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	14.38	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
199.920	27.61	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	31.14	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	35.89	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2779.236	44.08	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
7067.453	46.72	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

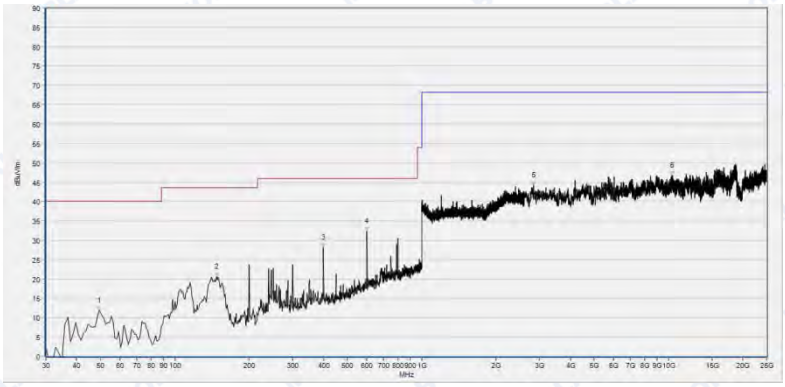
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	22.58	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
147.487	23.52	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	29.23	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	42.12	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2846.449	44.35	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
18583.357	51.64	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

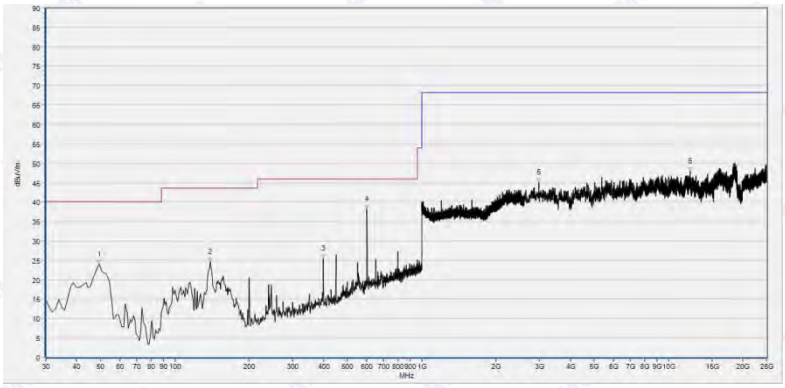
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	11.97	N.A	N.A	N.A	40.00	N.A	Horizontal	PASS
147.487	20.69	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	28.22	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	32.33	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2841.968	44.33	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
10293.699	46.69	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



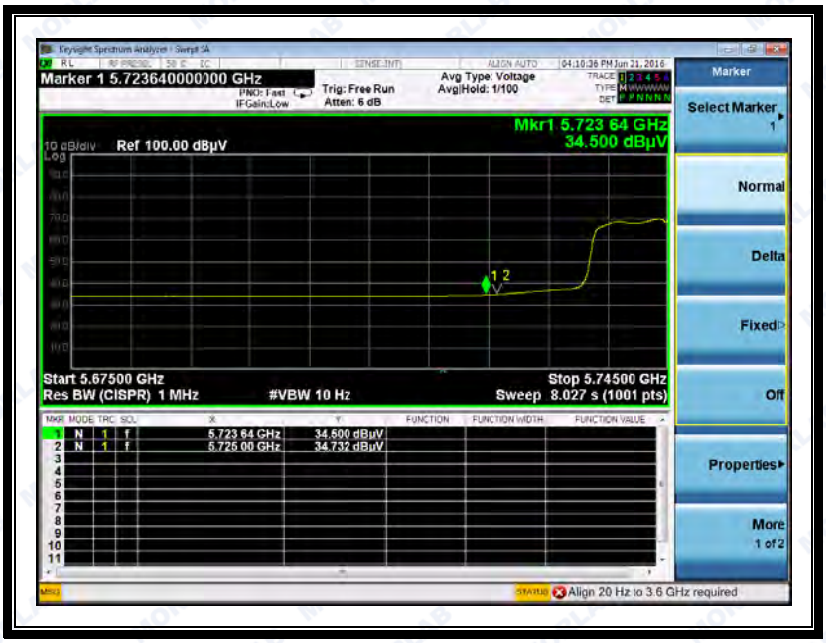
Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	23.99	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
138.749	24.58	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	25.41	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	38.20	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2980.876	45.09	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
12242.889	47.94	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

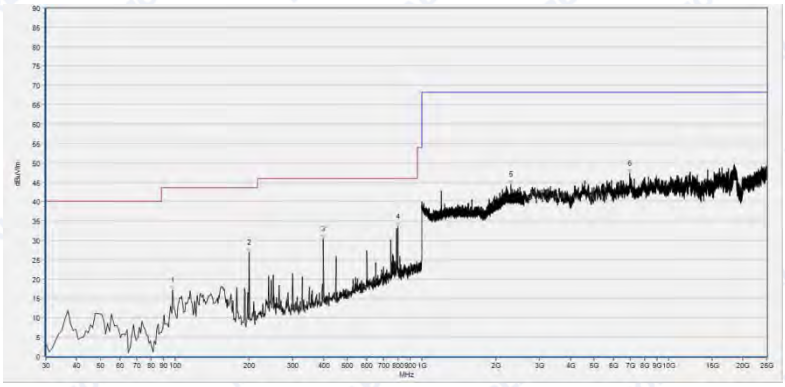
Plots for Channel = 149

Channel	Frequency (MHz)	Antenna Horiz./ Vert.	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
149	5722.10	Horizontal	45.10	-50.65	32.11	26.56	78.2	Pass
149	5723.64	Vertical	34.50	-50.65	32.11	15.96	78.2	Pass

(Channel = 149 Horizontal @ 802.11a)

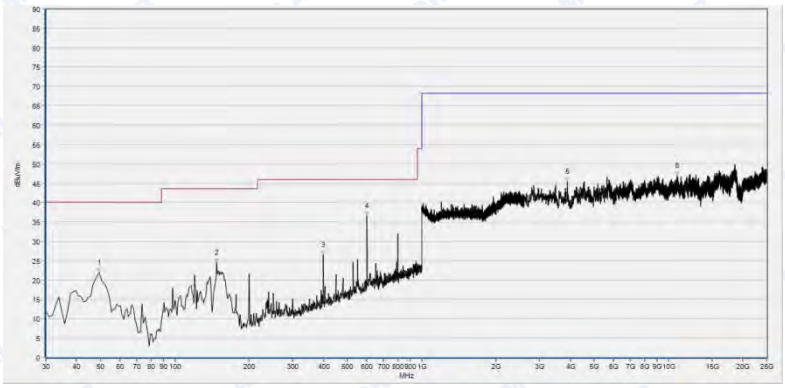


(Channel = 149 Vertical @ 802.11a)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
97.968	17.03	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	26.80	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	30.40	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
799.980	33.59	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2296.432	44.43	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
6959.912	47.34	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

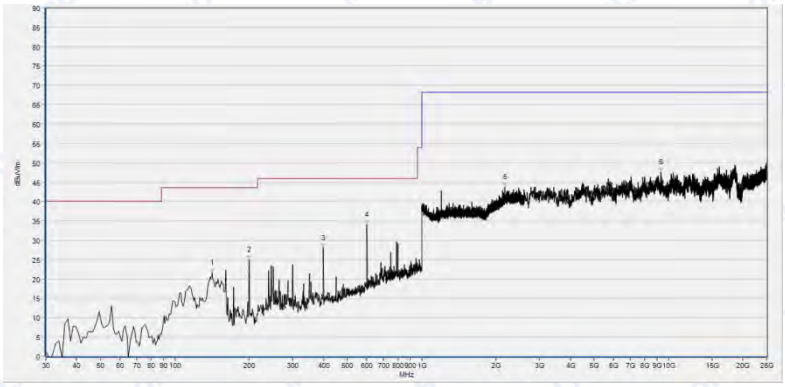
(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	21.96	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
147.487	24.53	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	26.49	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	36.55	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
3894.979	45.47	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
10844.849	46.91	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

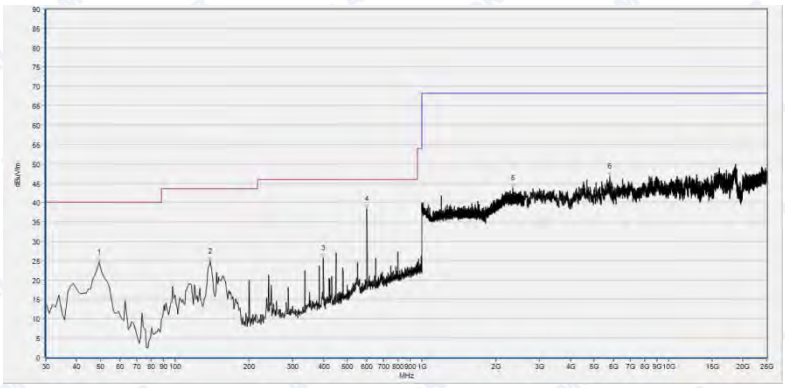
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
141.662	21.61	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	24.90	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	27.99	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	34.08	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2168.923	43.79	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
9325.825	47.67	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	24.60	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
138.749	24.76	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	25.71	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	38.41	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2342.314	43.72	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
5785.917	46.71	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

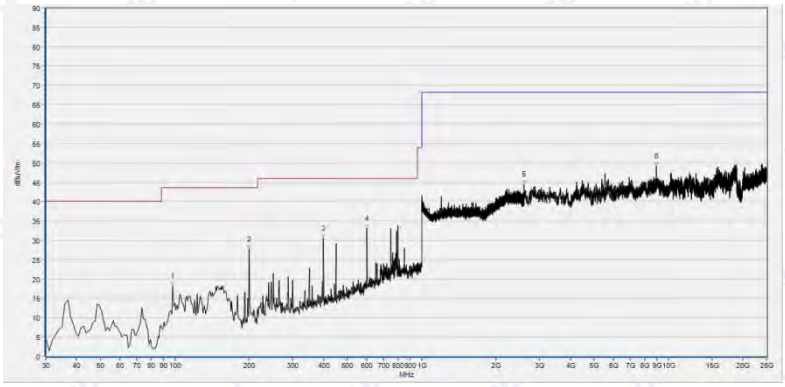
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165

Channel	Frequency (MHz)	Antenna Horiz./ Vert.	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
165	5850.00	Horizontal	54.17	-50.65	32.11	35.63	78.2	Pass
165	5850.00	Vertical	41.82	-50.65	32.11	23.28	78.2	Pass

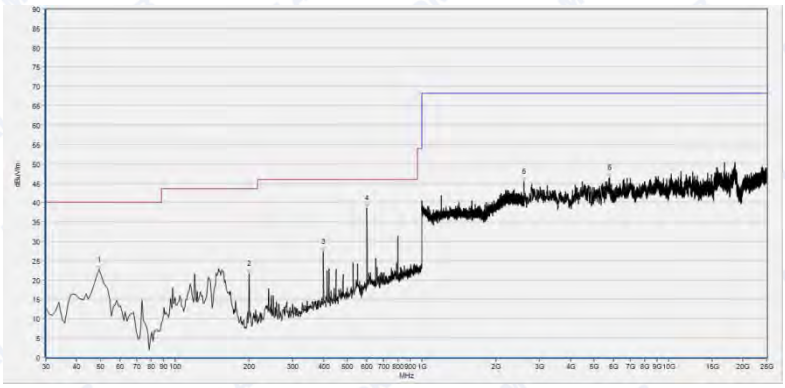
(Channel = 165 Horizontal @ 802.11a)

(Channel = 165 Vertical @ 802.11a)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
97.968	18.08	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
199.920	27.64	N.A	N.A	N.A	43.50	N.A	Horizontal	PASS
399.940	30.43	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
599.960	33.09	N.A	N.A	N.A	46.00	N.A	Horizontal	PASS
2600.000	44.35	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS
8940.468	49.13	N.A	N.A	68.23	N.A	N.A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



Fre.(MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
49.419	22.58	N.A	N.A	N.A	40.00	N.A	Vertical	PASS
199.920	21.70	N.A	N.A	N.A	43.50	N.A	Vertical	PASS
399.940	27.29	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
599.960	38.47	N.A	N.A	N.A	46.00	N.A	Vertical	PASS
2600.000	45.50	N.A	N.A	68.23	N.A	N.A	Vertical	PASS
5772.474	46.40	N.A	N.A	68.23	N.A	N.A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

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 2013, ANSI C63.4 2014 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	2016.03.02	2017.03.01
2	Router	FGL1858X9S5	AIR-CAP2702E-A-K9	Cisco	N/A	N/A
3	Power Splitter	NW521	1506A	Weinschel	2016.03.02	2017.03.01
4	Attenuator 1	(n.a.)	10dB	Resnet	2016.03.02	2017.03.01
5	Attenuator 2	(n.a.)	3dB	Resnet	2016.03.02	2017.03.01
6	USB Wideband Power Sensor	MY52280010	U2021XA	Agilent	2016.03.02	2017.03.01
7	EXA Signal Analzyer	MY51440152	N9010A	Agilent	2016.03.02	2017.03.01
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	2016.03.02	2017.03.01
2	LISN	812744	NSLK 8127	Schwarzbeck	2016.03.02	2017.03.01
3	Service Supplier	100448	CMU200	R&S	2016.03.02	2017.03.01
4	Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2016.03.02	2017.03.01
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	2016.03.02	2017.03.01
2	Receiver	US44210471	E7405A	Agilent	2016.03.02	2017.03.01
3	Test Antenna - Bi-Log	9163-274	9m*6m*6m	Albatross	2016.03.02	2017.03.01
4	Test Antenna - Horn	9120D-963	VULB 9163	Schwarzbeck	2016.03.02	2017.03.01
5	Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2016.03.02	2017.03.01
6	Test Antenna - Loop	1519-022	HL050S7	R&S	2016.03.02	2017.03.01
7	Reject Filter	(n.a.)	BRM50702	Micro-Tronics	2016.03.02	2017.03.01
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	2016.03.02	2017.03.01
2	Climate Chamber	2004012	HL4003T	Yinhe	2016.03.02	2017.03.01

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	2016.03.02	2017.03.01
2	Vibration Table	N/A	ACT2000-S015L	CMI-COM	2016.03.02	2017.03.01

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	2016.03.02	2017.03.01
2	Anechoic Chamber	N/A	9m*6m*6m	Albatross	2016.03.02	2017.03.01

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