



REPORT No.: SZ21040408W03

TEST REPORT

APPLICANT : Anker Innovations Limited

PRODUCT NAME : Nebula Capsule II

MODEL NAME : D2421

BRAND NAME : NEBULA

FCC ID : 2AOKB-D2421X

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2018-12-06

TEST DATE : 2018-12-11 to 2019-01-01

ISSUE DATE : 2022-07-04

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Change History		
Version	Date	Reason for change
1.0	2022-07-04	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Anker Innovations Limited
Applicant Address:	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong
Manufacturer:	Anker Innovations Limited
Manufacturer Address:	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong

1.2. Equipment Under Test (EUT) Description

Product Name:	Nebula Capsule II	
Sample No.:	30#	
Hardware Version:	A277C	
Software Version:	V0.0.06	
Modulation Technology:	DSSS, OFDM	
Modulation Mode:	802.11b, 802.11g, 802.11n (HT20)	
Operating Frequency Range:	802.11b/g/ n (HT20): 2412MHz–2462MHz	
Antenna Type:	FPC Antenna	
Antenna Gain:	2.84dBi	
Accessory Information:	Battery 1	
	Brand Name:	N/A
	Model No.:	INR21700M50T(21CR22/71)
	Serial No.:	N/A
	Capacity:	4850mAh
	Rated Voltage:	7.26V
	Charge Limit:	8.4V
	Manufacturer:	Anker Innovations Limited



Accessory Information:	Battery 2	
	Brand Name:	N/A
	Model No.:	LR2170SD-2S1P
	Serial No.:	N/A
	Capacity:	4850mAh
	Rated Voltage:	7.2V
	Charge Limit:	8.4V
	Manufacturer:	Anker Innovations Limited
Accessory Information:	AC Adapter	
	Brand Name:	N/A
	Model No.:	PN303UP
	Serial No.:	N/A
	Rated Output:	5V $\Rightarrow$ 3A, 9V $\Rightarrow$ 3A, 12V $\Rightarrow$ 2.5A, 15V $\Rightarrow$ 2A, 20V $\Rightarrow$ 1.5A
	Rated Input:	100-240V $\sim$ 50/60Hz, 0.7A
	Manufacturer:	Shenzhen Xinspower Technology Co.,Ltd

Note1: This is a variant report of original report (Report No.: SZ18110335W03, FCC ID: 2AOKB-D2421). Based on the similarity between before, made the following changes:

1. Changed the brand name and FCC ID.
2. Delete A2014 adapter.
3. Modify the company information of the main supplier battery manufacturer.
4. Add a new battery.
5. Replace the T835 Bluetooth module.
6. Modify the hardware version number.

Except for the above differences, the others are the same as before. No other changes. The changes do not affect the results in this report.

Note 2: According to the certificate holder, they declared that the model D2421 contains two main modules, module (DM8260) and module (CGBT030). And this report recorded the results of module (DM8260) for WLAN2.4G function.

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

1.3. Modulation Type and Data Rate of EUT

Modulation Technology	Modulation Type	Data Rate (Mbps) ^{Note1}
DSSS (802.11b)	DBPSK	1
	DQPSK	2
	CCK	5.5/ 11
OFDM (802.11g)	BPSK	6 / 9
	QPSK	12 / 18
	16QAM	24 / 36
	64QAM	48 / 54
OFDM (802.11n (HT20))	BPSK	6.5
	QPSK	13/19.5
	16QAM	26/39
	64QAM	52/58.5/65

Note1: The worst-case mode (bold face) in all data rates has been determined during the pre-scan, only the test data of the worst-case were recorded in this report.

1.4. The Channel Number and Frequency

Test Mode	Channel	Frequency (MHz)	Channel	Frequency (MHz)
802.11b/g/n (HT20)	1	2412	8	2447
	2	2417	9	2452
	3	2422	10	2457
	4	2427	11	2462
	5	2432		
	6	2437		
	7	2442		

Note 1: The black bold channels were selected for test.



1.5. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

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

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	No deviation
2	N/A	Duty Cycle Of Test Signal	Dec 11, 2018	Wang Meng	PASS	No deviation
3	15.247(b)	Maximum Peak and Average Conducted Output Power	Dec 11, 2018	Wang Meng	PASS	No deviation
4	15.247(a)	Bandwidth	Dec 11, 2018	Wang Meng	PASS	No deviation
5	15.247(d)	Conducted Spurious Emission and Band Edge	Dec 11, 2018	Wang Meng	PASS	No deviation
6	15.247(e)	Power Spectral Density	Dec 11, 2018	Wang Meng	PASS	No deviation
7	15.207	Conducted Emission	Jan 01, 2019	Ya Xinhou	PASS	No deviation
8	15.247(d)	Restricted Frequency Bands	Dec 22, 2018	Ya Xinhou	PASS	No deviation
9	15.209, 15.247(d)	Radiated Emission	Dec 24, 2018	Ya Xinhou	PASS	No deviation

Note1: The test results of these test items in this report refer to the test report (Report No.: SZ18110335W03).

Note 2: The tests were performed according to the method of measurements prescribed in

ANSIC63.10-2013, KDB558074 D01 v05r02.

Note 3: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 11dB contains two parts that cable loss 1dB and Attenuator 10dB.

Note 4: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 5: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.6. Environmental Conditions

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

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



2. 47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

2.1.2. Test Result: Compliant

Inside of the EUT has a FPC antenna coupled with the metal shrapnel. Please refer to the EUT internal photos.

2.2. Duty Cycle of Test Signal

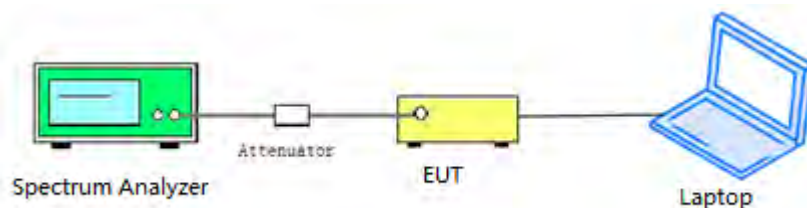
2.2.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e., no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this subclause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than $\pm 2\%$; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. Test Description

Test Setup:



ANSI C63.10 2013 Clause 11.6 was used in order to prove compliance.



2.2.3. Test Result

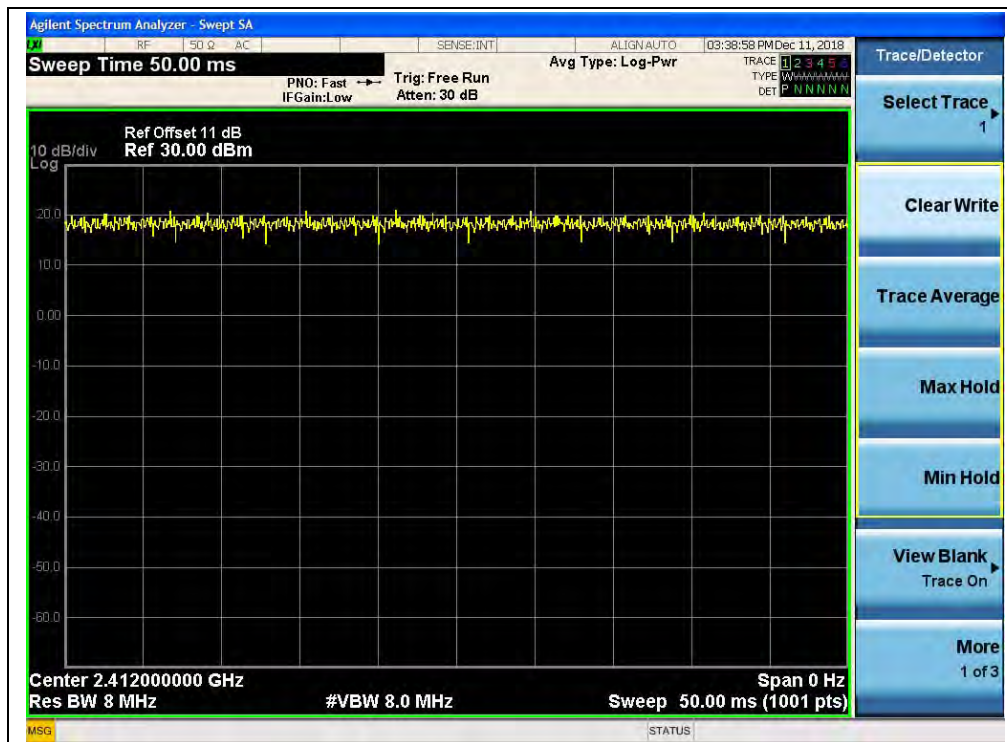
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor ($10 \cdot \lg[1/D]$)
802.11b	100.00	0.00
802.11g	100.00	0.00
802.11n (HT20)	100.00	0.00

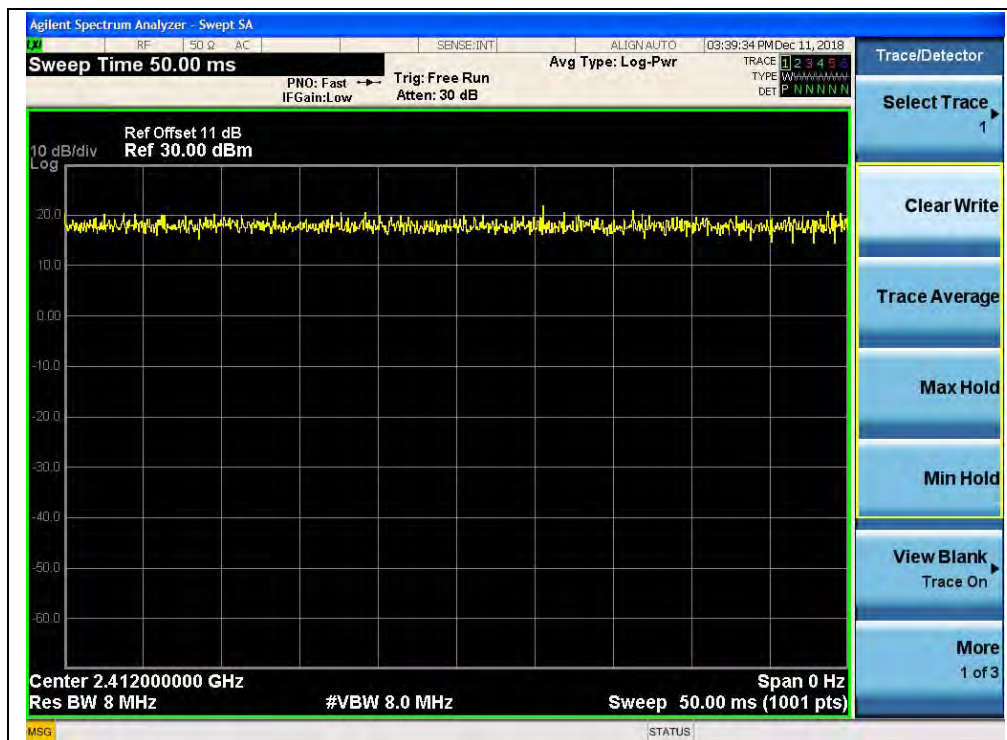
B. Test Plot:



(Channel 1, 802.11b)



(Channel 1, 802.11g)



(Channel 1, 802.11n (HT20))

2.3. Maximum Peak and Average Conducted Output Power

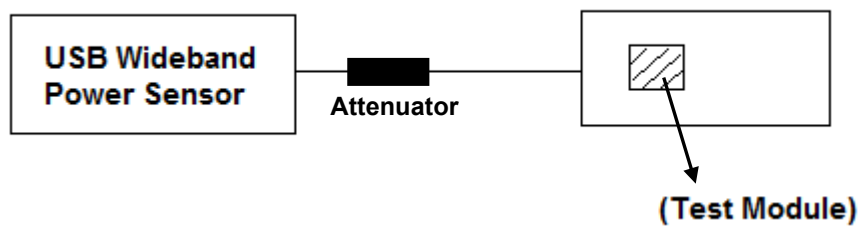
2.3.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

2.3.2. Test Description

The measured output power was calculated by the reading of the USB Wideband Power Sensor and calibration.

Test Setup:



The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.



2.3.3. Test Result

Maximum Peak Conducted Output Power

802.11b Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	16.40	0.044	30	1	PASS
6	2437	16.45	0.044			PASS
11	2462	16.63	0.046			PASS

802.11g Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	22.81	0.191	30	1	PASS
6	2437	22.95	0.197			PASS
11	2462	23.11	0.205			PASS

802.11n (HT20) Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	22.64	0.184	30	1	PASS
6	2437	22.88	0.194			PASS
11	2462	23.57	0.228			PASS

**Maximum Average Conducted Output Power****802.11b Mode**

Channel	Frequency (MHz)	Average Power				Limit		Verdict
		Measured	Duty Factor	Duty Factor Calculated				
		dBm		dBm	W	dBm	W	
1	2412	13.32	0.00	13.32	0.021	30	1	PASS
6	2437	13.40		13.40	0.022			PASS
11	2462	13.62		13.62	0.023			PASS

802.11g Mode

Channel	Frequency (MHz)	Average Power				Limit		Verdict
		Measured	Duty Factor	Duty Factor Calculated				
		dBm		dBm	W	dBm	W	
1	2412	12.54	0.00	12.54	0.018	30	1	PASS
6	2437	12.60		12.60	0.018			PASS
11	2462	12.88		12.88	0.019			PASS

802.11n (HT20) Mode

Channel	Frequency (MHz)	Average Power				Limit		Verdict
		Measured	Duty Factor	Duty Factor Calculated				
		dBm		dBm	W	dBm	W	
1	2412	12.20	0.00	12.20	0.017	30	1	PASS
6	2437	12.30		12.30	0.017			PASS
11	2462	12.37		12.37	0.017			PASS

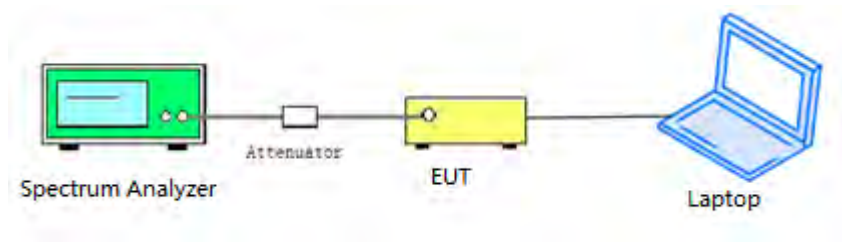
2.4. Bandwidth

2.4.1. Requirement

According to FCC section 15.247(a) (2), Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

2.4.2. Test Description

Test Setup:



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

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

2.4.3. Test Procedure

KDB 558074 Section 8.2 was used in order to prove compliance.



2.4.4. Test Result

802.11b Mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	9.007	≥500	PASS
6	2437	9.013	≥500	PASS
11	2462	8.548	≥500	PASS

B. Test Plot:



(Channel 1, 802.11b)



(Channel 6, 802.11b)



(Channel 11, 802.11b)



802.11g Mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	16.32	≥500	PASS
6	2437	16.32	≥500	PASS
11	2462	16.27	≥500	PASS

B. Test Plot:



(Channel 1, 802.11g)



(Channel 6, 802.11g)



(Channel 11, 802.11g)



802.11n (HT20) Mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	17.31	≥500	PASS
6	2437	17.30	≥500	PASS
11	2462	17.00	≥500	PASS

B. Test Plot:



(Channel 1, 802.11n (HT20))



(Channel 6, 802.11n (HT20))



(Channel 11, 802.11n (HT20))

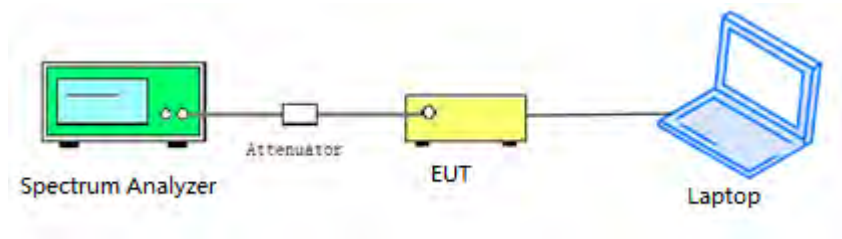
2.5. Conducted Spurious Emissions and Band Edge

2.5.1. Requirement

According to FCC section 15.247(c), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

2.5.2. Test Description

Test Setup:



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

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

2.5.3. Test Procedure

KDB 558074 Section 8.5 and 8.7 was used in order to prove compliance.



802.11b Mode

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-43.39	3.16	-16.84	PASS
6	2437	-43.24	4.12	-15.88	PASS
11	2462	-44.04	4.77	-15.23	PASS

Agilent Spectrum Analyzer - Swept SA

Marker 2 24.038655000000 GHz

PNO: Fast IF Gain: Low Trig: Free Run Atten: 20 dB

Avg Type: Log-Pwr Avg/Hold: >10/10

Ref Offset 11 dB Ref 20.00 dBm

Mkr2 24.039 GHz -43.393 dBm

Start 30 MHz Stop 25.00 GHz

#Res BW 100 kHz #VBW 300 kHz Sweep 2.386 s (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.415 GHz	3.156 dBm			
2	N	1	f	24.039 GHz	-43.393 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Peak Search

Next Peak

Next Pk Right

Next Pk Left

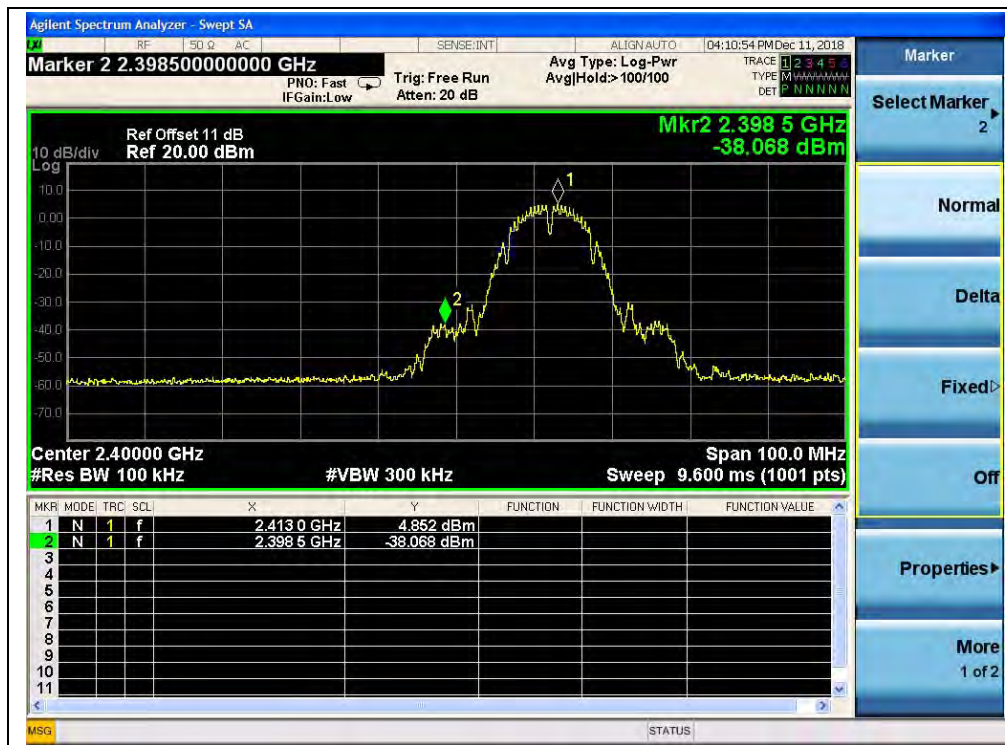
Marker Delta

Mkr→CF

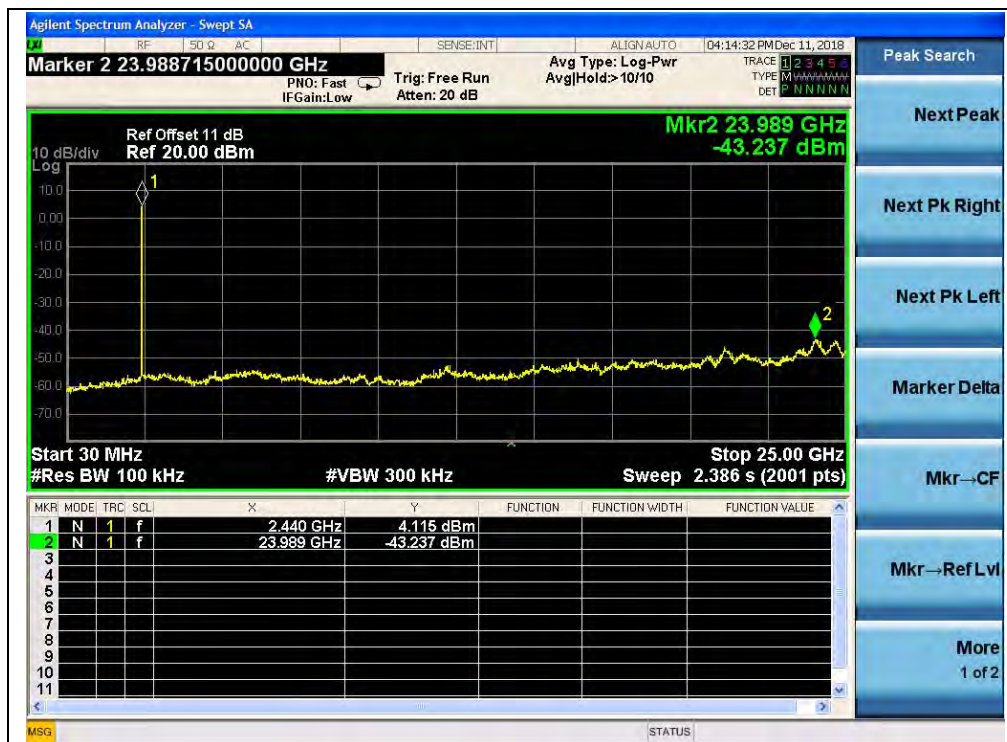
Mkr→Ref Lvl

More 1 of 2

(30MHz to 25GHz, Channel 1, 802.11b)



(Band Edge, Channel 1, 802.11b)



(30MHz to 25GHz, Channel 6, 802.11b)



(30MHz to 25GHz, Channel 11, 802.11b)



(Band Edge, Channel 11, 802.11b)



802.11g Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-44.31	-0.24	-20.24	PASS
6	2437	-42.61	-0.11	-20.11	PASS
11	2462	-42.78	0.70	-19.30	PASS

B. Test Plot:



(30MHz to 25GHz, Channel 1, 802.11g)



(Band Edge, Channel 1, 802.11g)



(30MHz to 25GHz, Channel 6, 802.11g)



(30MHz to 25GHz, Channel 11, 802.11g)



(Band Edge, Channel 11, 802.11g)



802.11n (HT20) Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-43.64	0.78	-19.22	PASS
6	2437	-43.07	1.06	-18.94	PASS
11	2462	-43.86	0.46	-19.54	PASS

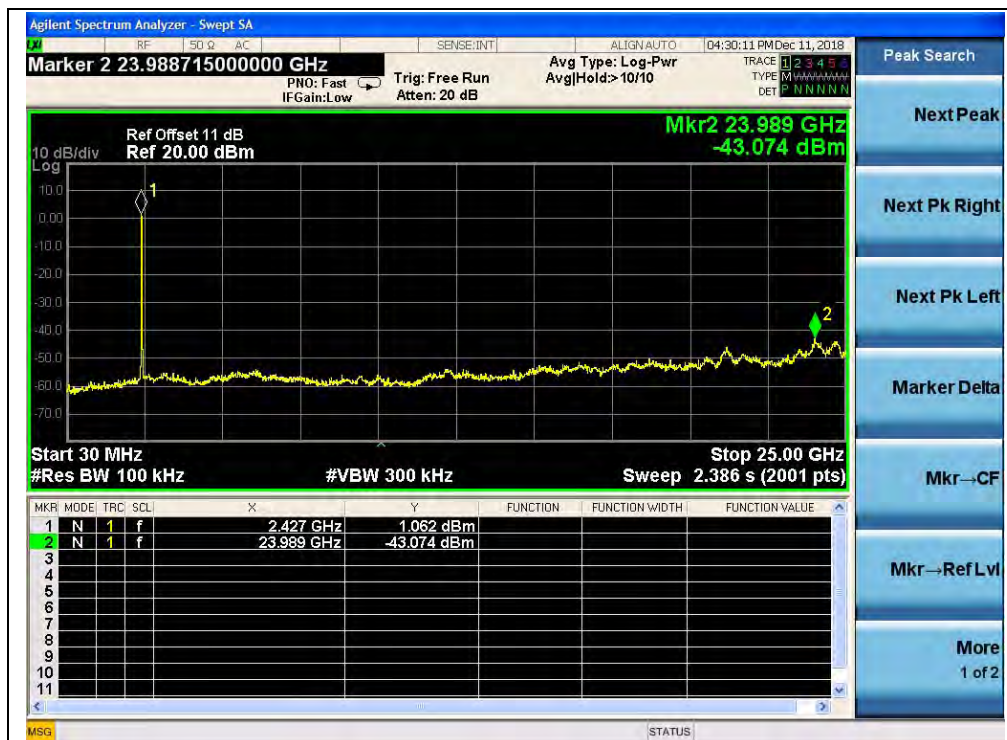
B. Test Plot:



(30MHz to 25GHz, Channel 1, 802.11n (HT20))



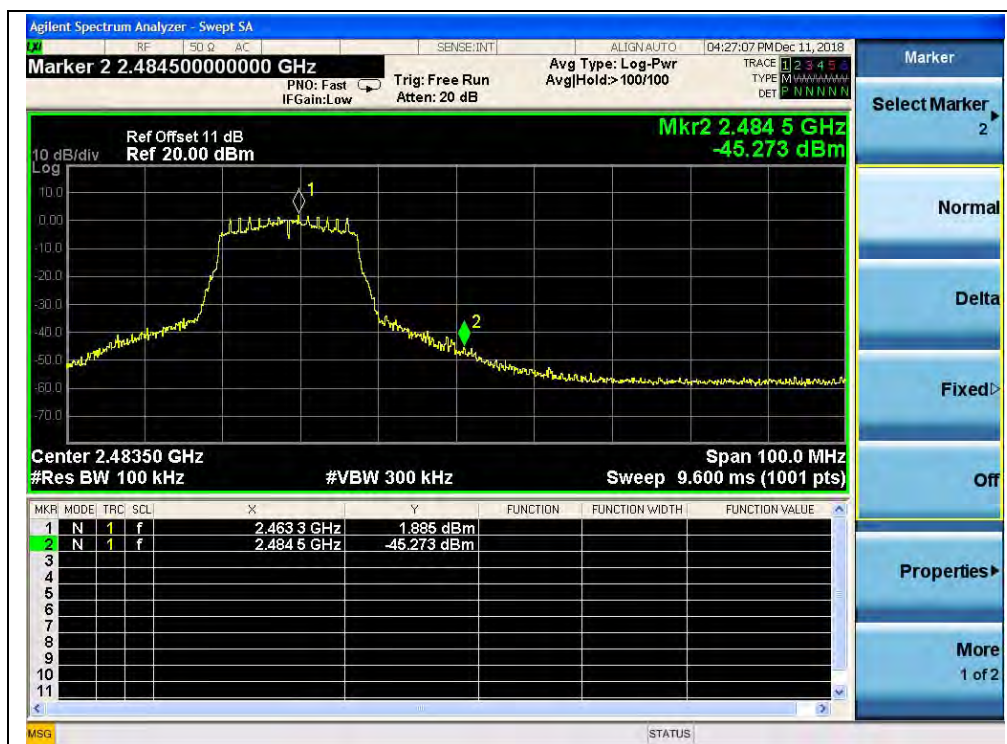
(Band Edge, Channel 1, 802.11n (HT20))



(30MHz to 25GHz, Channel 6, 802.11n (HT20))



(30MHz to 25GHz, Channel 11, 802.11n (HT20))



(Band Edge, Channel 11, 802.11n (HT20))

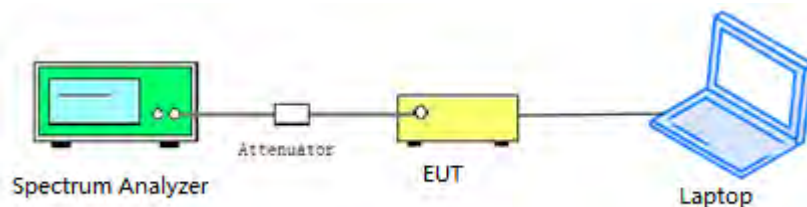
2.6. Power Spectral Density

2.6.1. Requirement

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

2.6.2. Test Description

Test Setup:



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

2.6.3. Test Procedure

KDB 558074 Section 8.4 was used in order to prove compliance.



2.6.4. Test Result

802.11b Mode

A. Test Verdict:

Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-8.30	8	PASS
6	2437	-8.82	8	PASS
11	2462	-8.64	8	PASS

B. Test Plot:



(Channel 1, 802.11b)



(Channel 6, 802.11b)

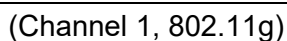


(Channel 11, 802.11b)



A. Test Verdict:

B. Test Plot:

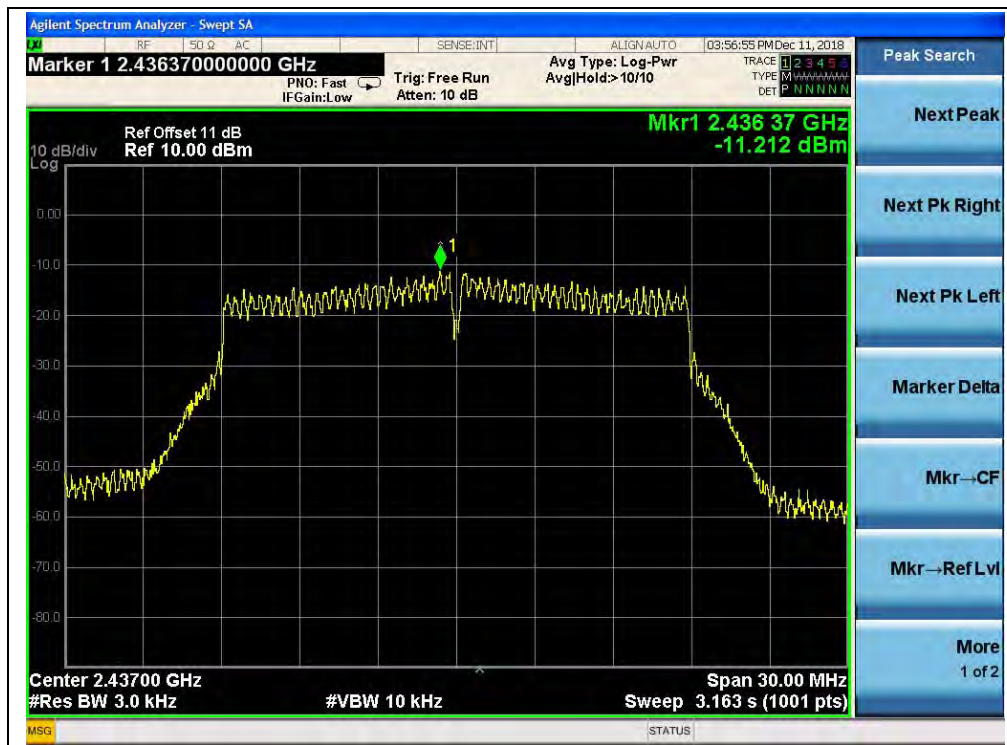




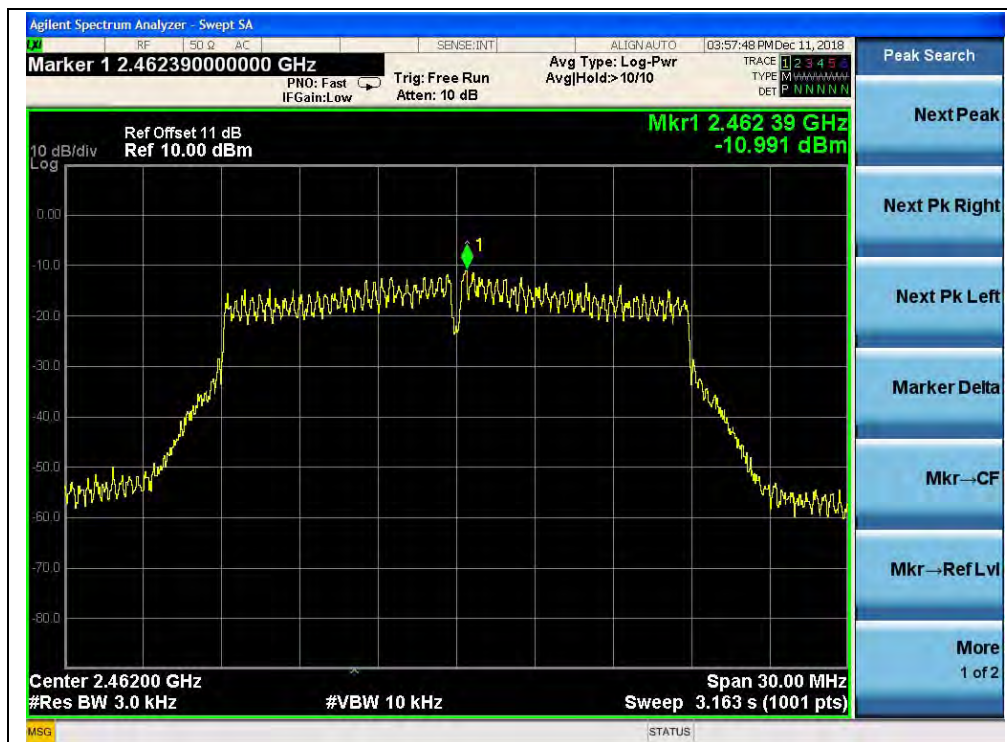
(Channel 6, 802.11g)



(Channel 11, 802.11g)



(Channel 6, 802.11n (HT20))



(Channel 11, 802.11n (HT20))

2.7. Conducted Emission

2.7.1. Requirement

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

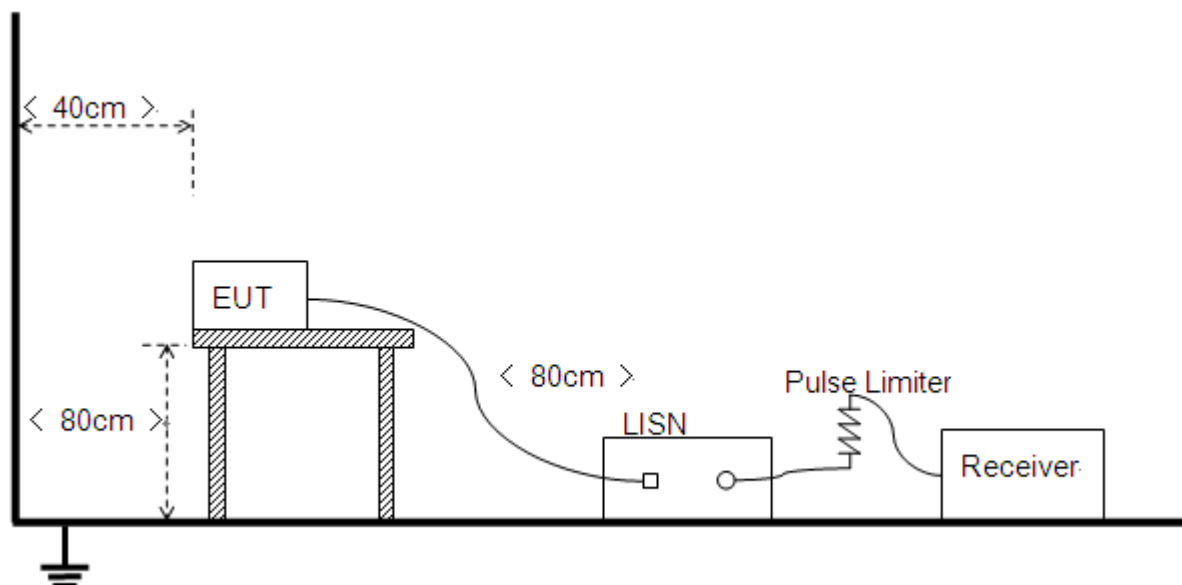
Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- (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

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.



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. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+ADAPTER+USB+WIFI TX

Test Voltage: AC 120V/60Hz

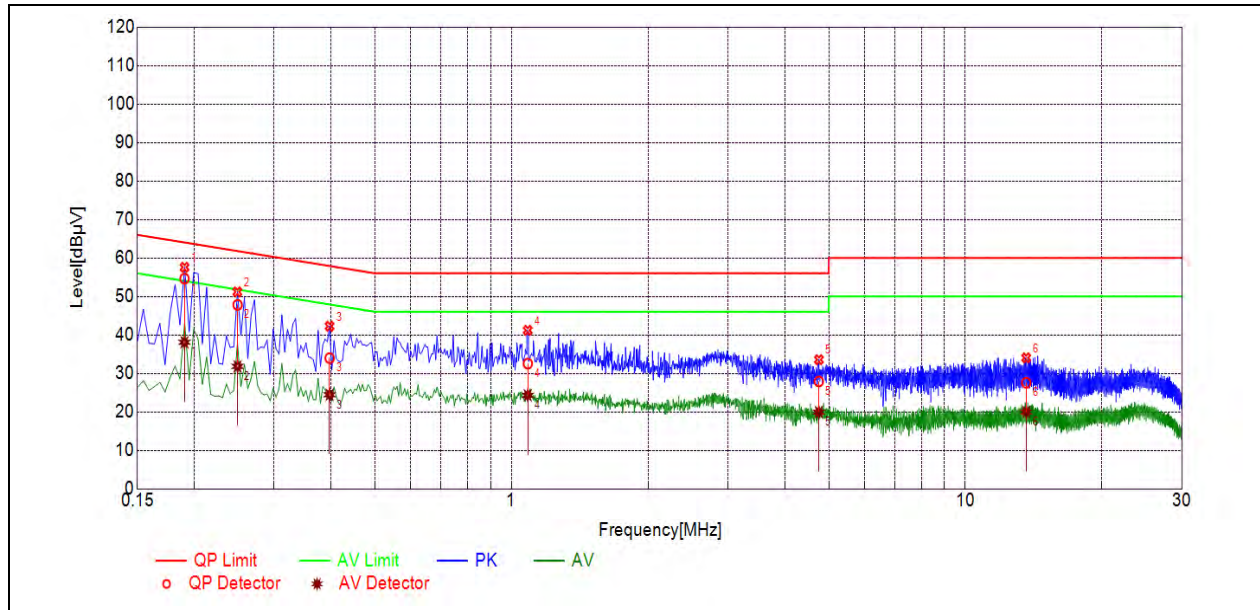
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

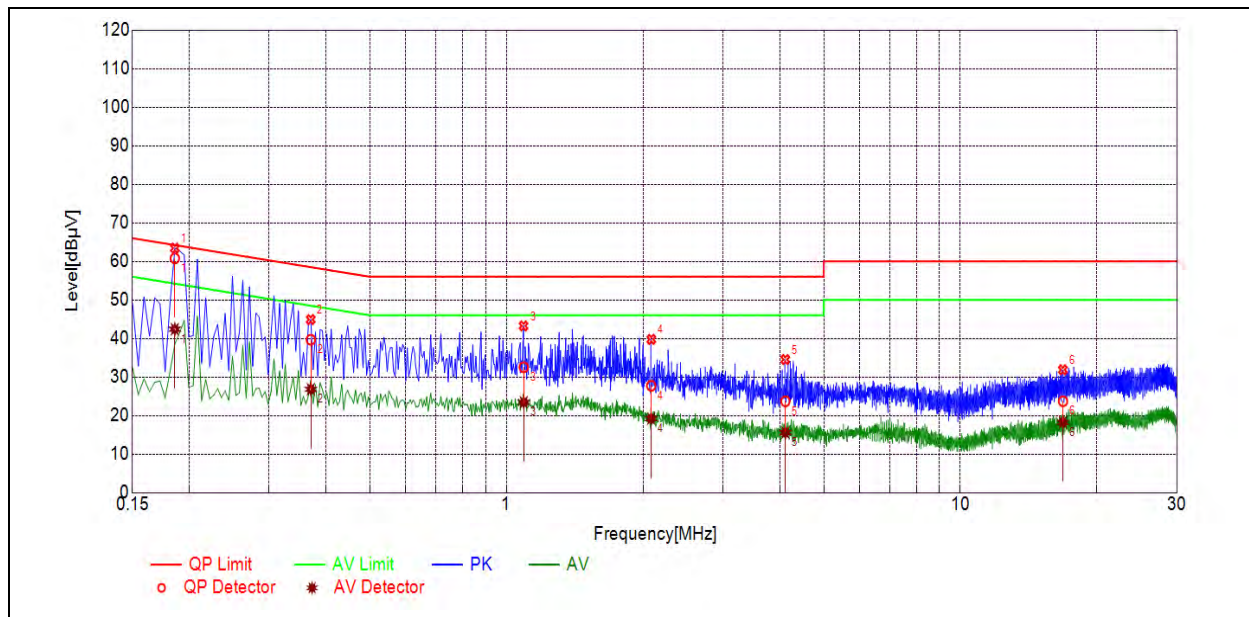
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1904	54.63	38.09	64.02	54.02	Line	PASS
2	0.2492	47.81	31.82	61.78	51.78		PASS
3	0.3975	33.96	24.45	57.91	47.91		PASS
4	1.0862	32.54	24.31	56.00	46.00		PASS
5	4.7547	27.90	19.94	56.00	46.00		PASS
6	13.6147	27.56	19.98	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1859	60.78	42.39	64.22	54.22	Neutral	PASS
2	0.3706	39.66	26.81	58.49	48.49		PASS
3	1.0915	32.53	23.44	56.00	46.00		PASS
4	2.0829	27.72	19.20	56.00	46.00		PASS
5	4.1158	23.68	15.58	56.00	46.00		PASS
6	16.8269	23.70	18.23	60.00	50.00		PASS

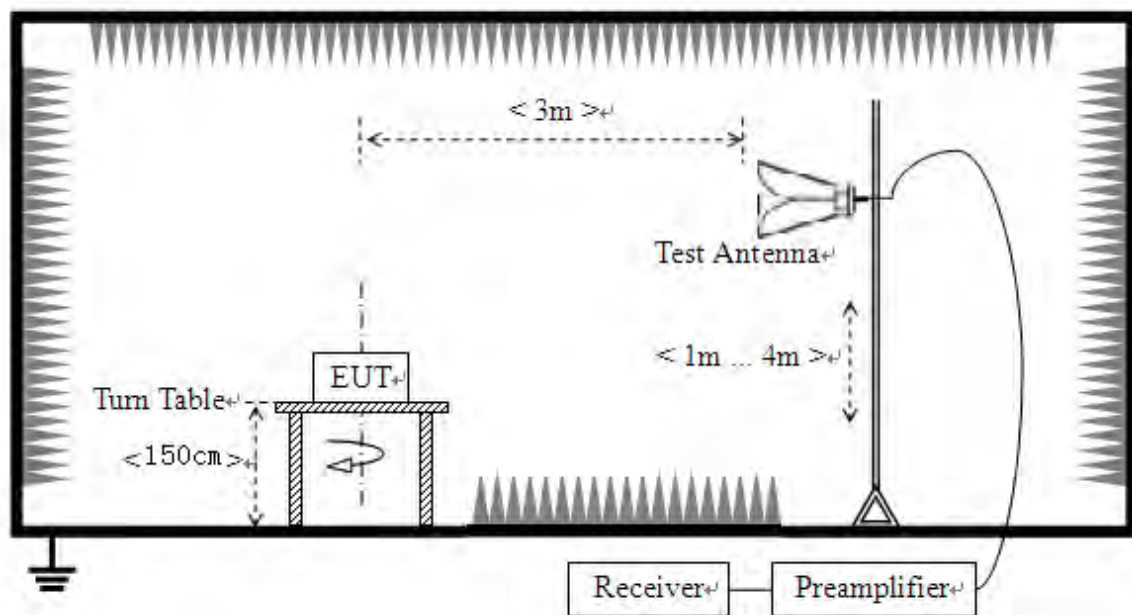
2.8. Restricted Frequency Bands

2.8.1. Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

2.8.2. Test Description

Test Setup



The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.



2.8.3. Test Procedure

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1\text{GHz}$, 100 kHz for $f < 1\text{GHz}$

VBW = 3 MHz

Sweep = auto

Detector function = peak/average

Trace = max hold

Allow the trace to stabilize

2.8.4. Test Result

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

The measurement results are obtained as below:

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

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

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

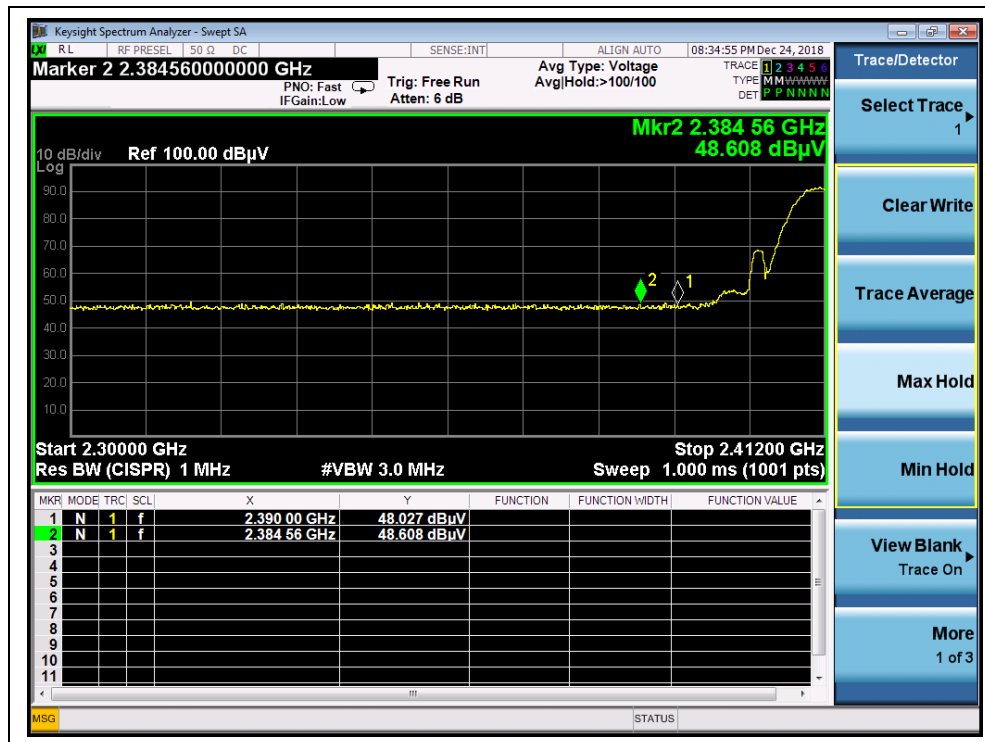
802.11b Mode

A. Test Verdict:

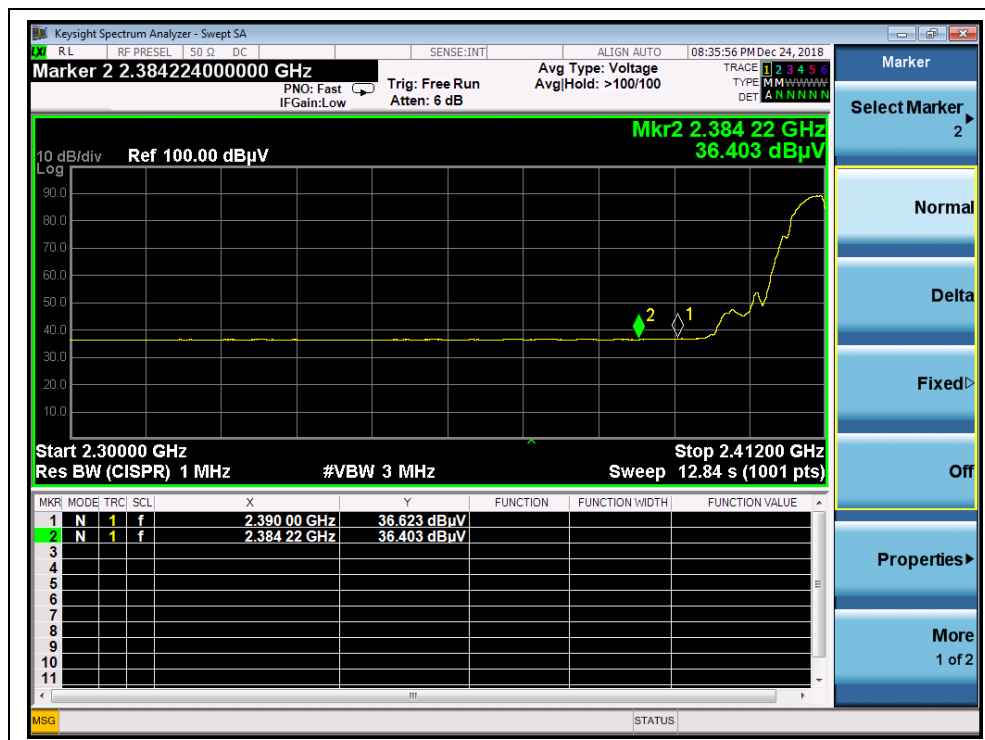
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
1	2384.56	PK	48.61	-29.67	32.56	51.50	74	PASS
1	2390.00	AV	36.62	-29.67	32.56	39.51	54	PASS
11	2485.22	PK	48.41	-29.67	32.56	51.30	74	PASS
11	2483.50	AV	36.90	-29.67	32.56	39.79	54	PASS



B. Test Plot:



(PEAK, Channel 1, 802.11b)



(AVERAGE, Channel 1, 802.11b)



(PEAK, Channel 11, 802.11b)



(AVERAGE, Channel 11, 802.11b)



802.11g Mode

A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
1	2388.97	PK	58.59	-29.67	32.56	61.48	74	PASS
1	2390.00	AV	39.97	-29.67	32.56	42.86	54	PASS
11	2483.50	PK	55.81	-29.67	32.56	58.70	74	PASS
11	2485.75	AV	37.97	-29.67	32.56	40.86	54	PASS

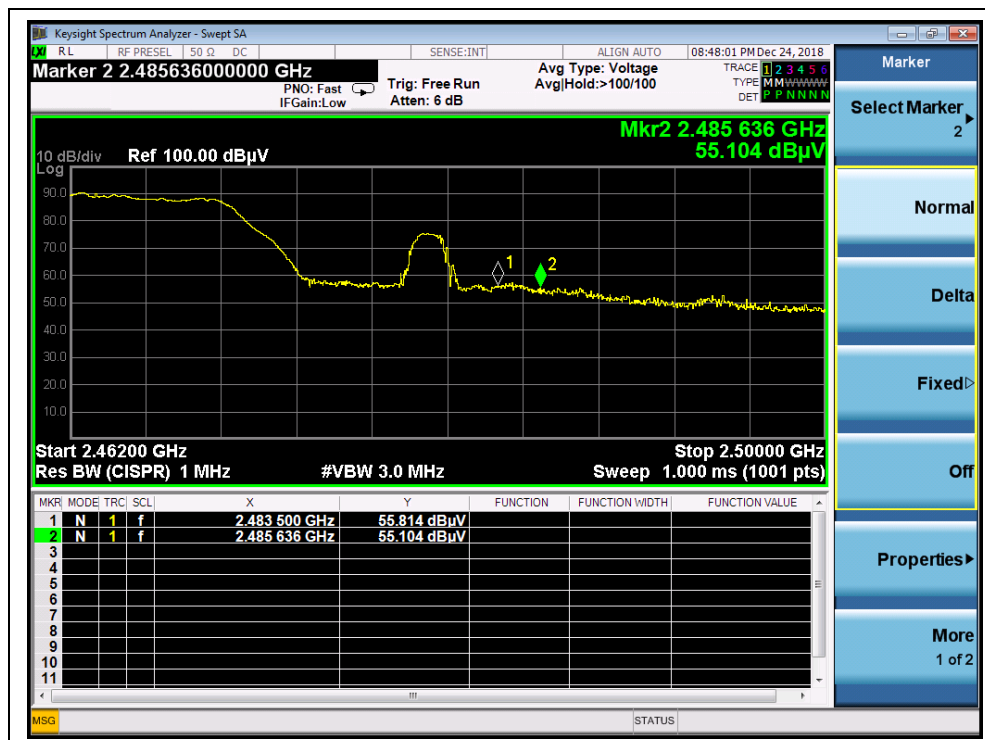
B. Test Plot:



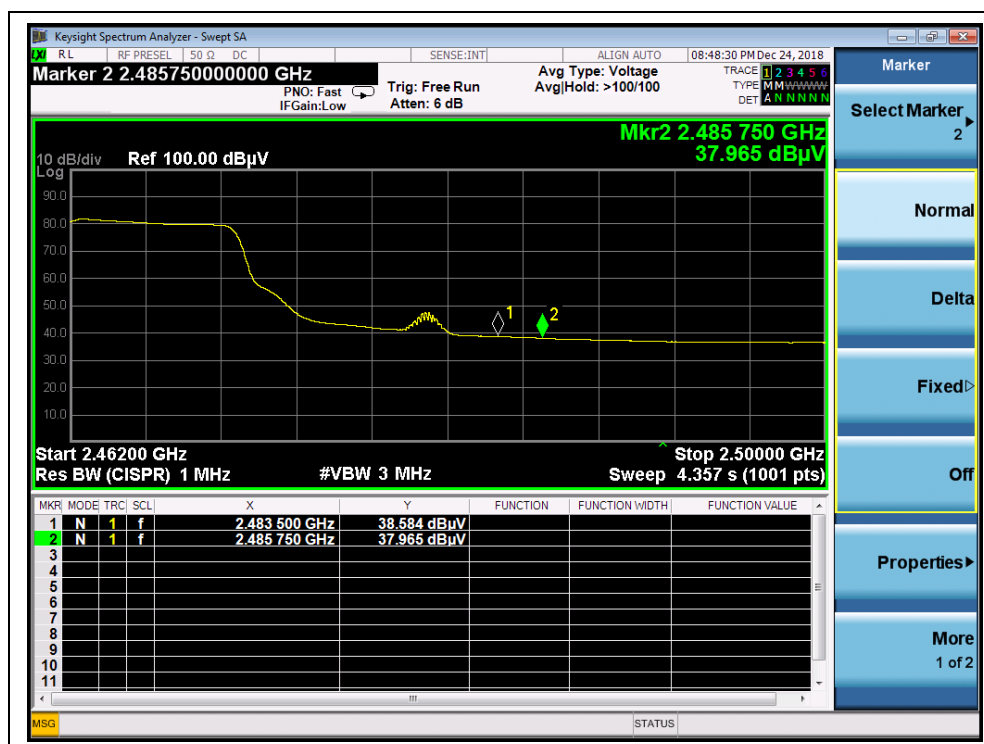
(PEAK, Channel 1, 802.11g)



(AVERAGE, Channel 1, 802.11g)



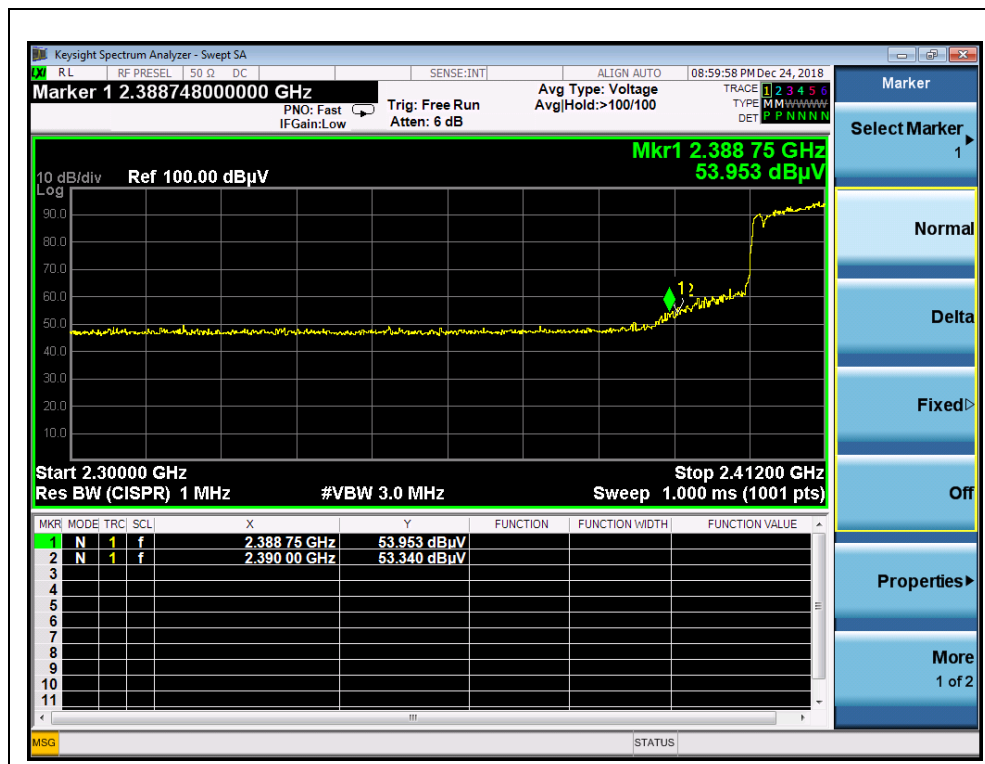
(PEAK, Channel 11, 802.11g)



(AVERAGE, Channel 11, 802.11g)

**802.11n (HT20) Mode****A. Test Verdict:**

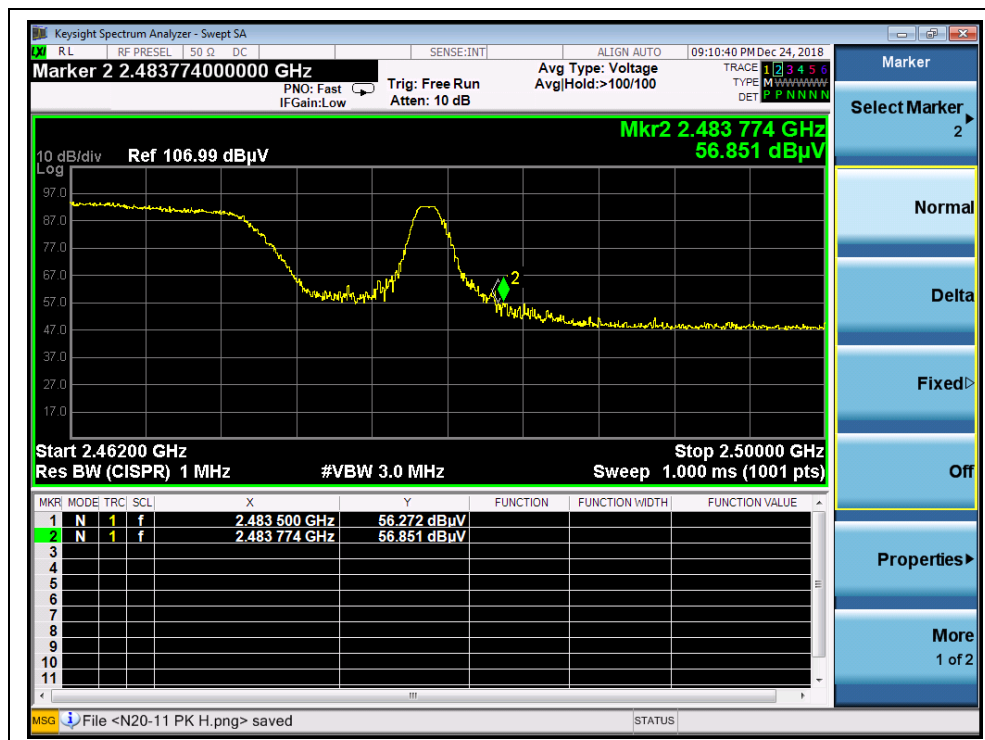
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
1	2388.75	PK	53.95	-29.67	32.56	56.84	74	PASS
1	2390.00	AV	40.15	-29.67	32.56	43.04	54	PASS
11	2483.77	PK	56.85	-29.67	32.56	59.74	74	PASS
11	2483.50	AV	38.76	-29.67	32.56	41.65	54	PASS

B. Test Plot:

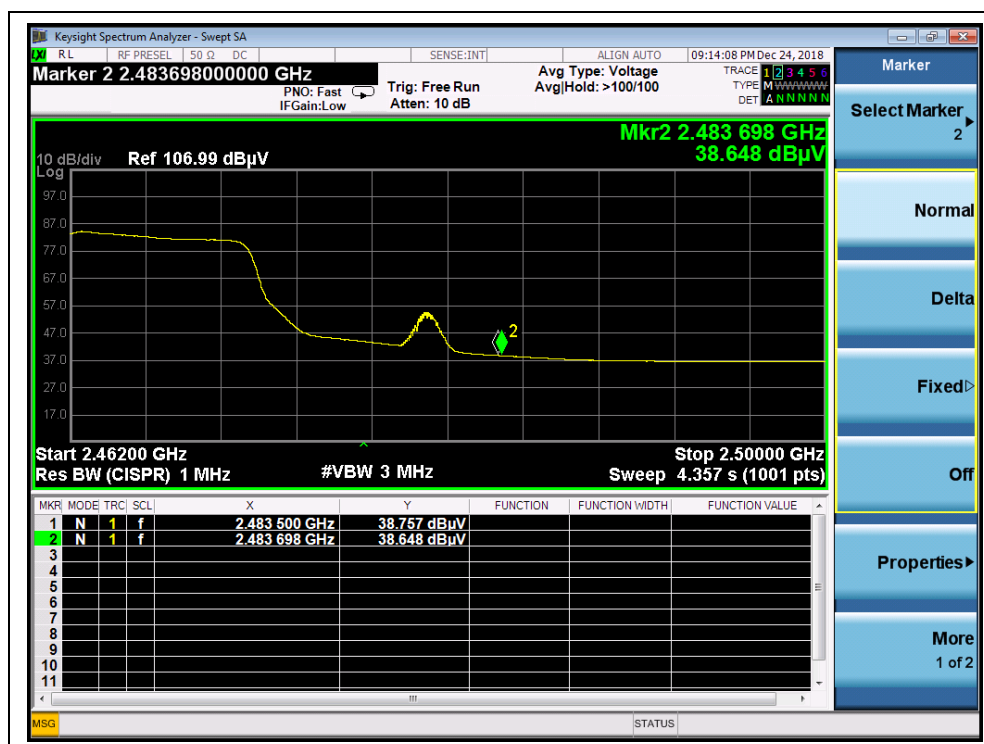
(PEAK, Channel 1, 802.11n (HT20))



(AVERAGE, Channel 1, 802.11n (HT20))



(PEAK, Channel 11, 802.11n (HT20))



(AVERAGE, Channel 11, 802.11n (HT20))

2.9. Radiated Emission

2.9.1. Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

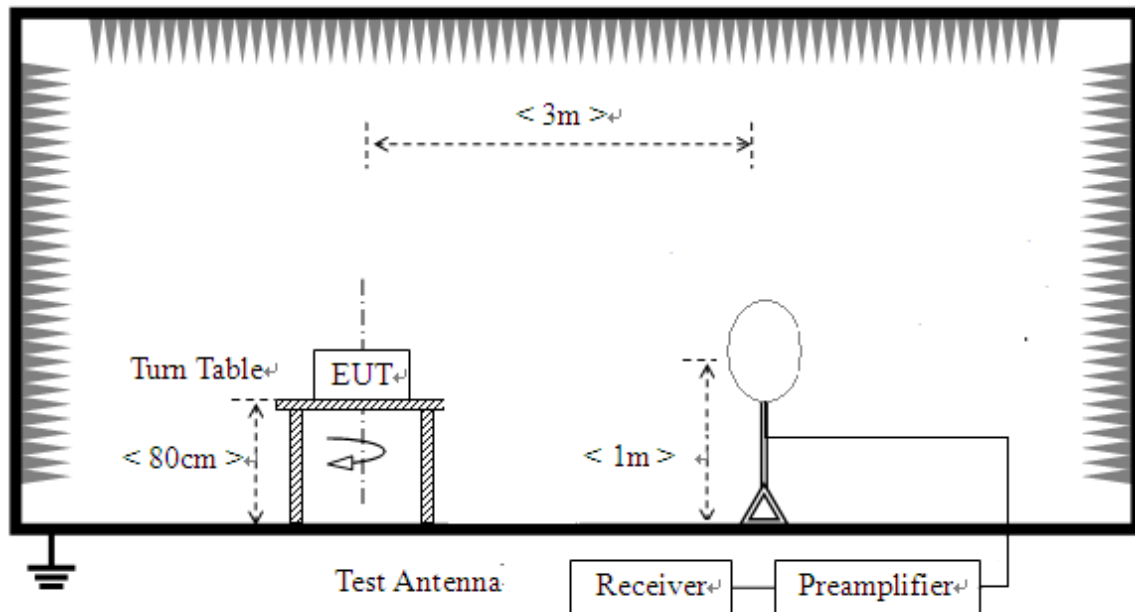
Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

Note2: For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK). In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

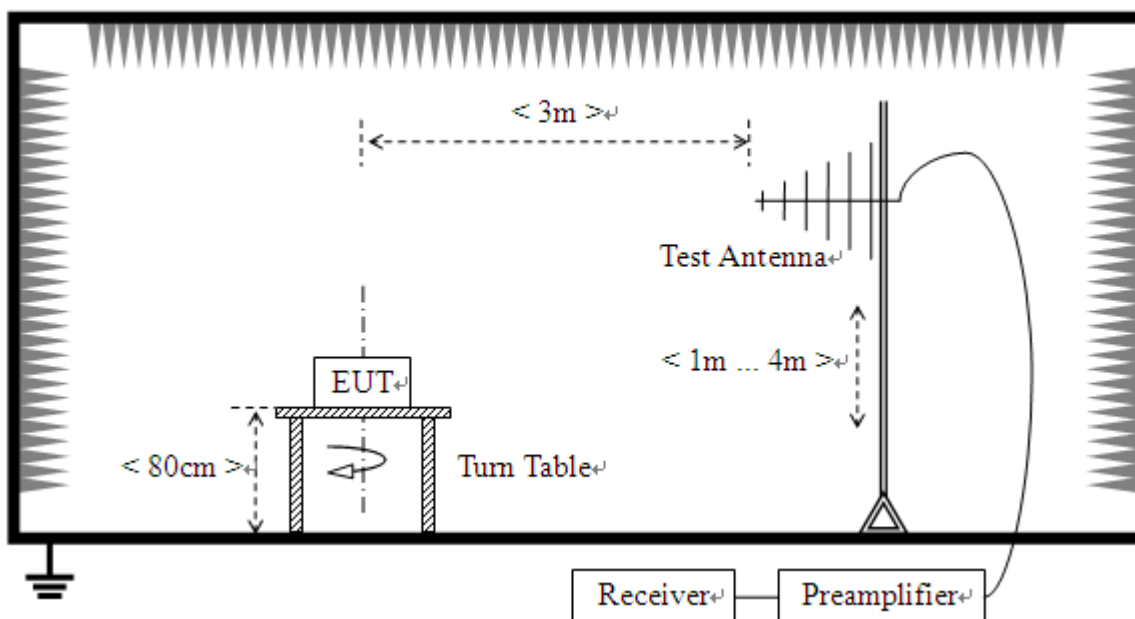
2.9.2. Test Description

Test Setup:

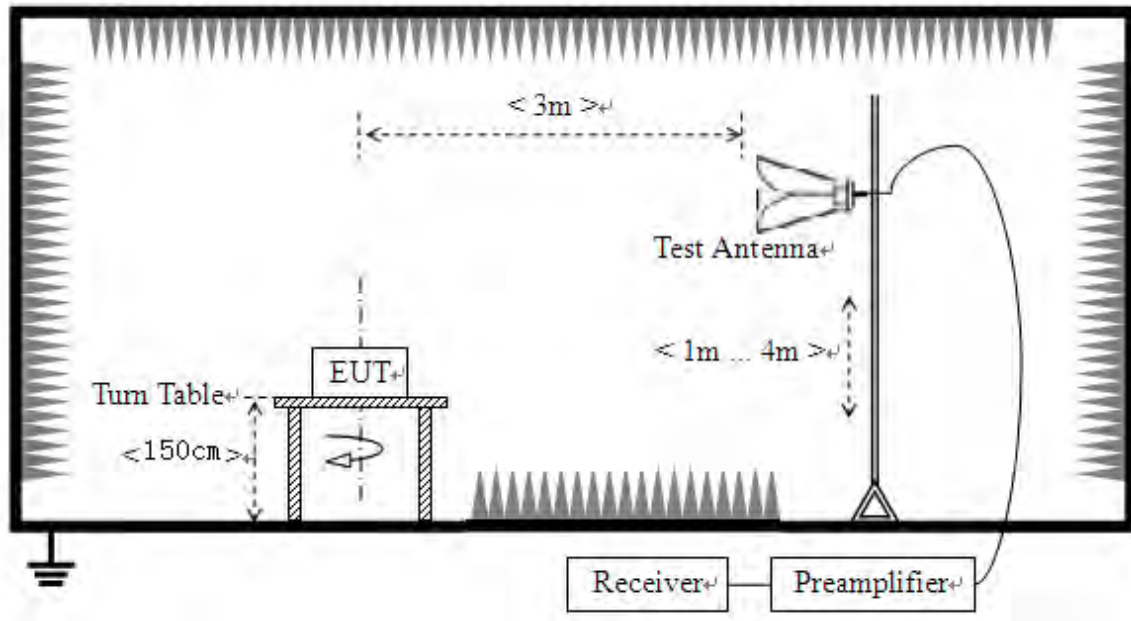
- 1) For radiated emissions from 9kHz to 30MHz



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



3) For radiated emissions above 1GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.



2.9.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

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

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

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

Note1: 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.

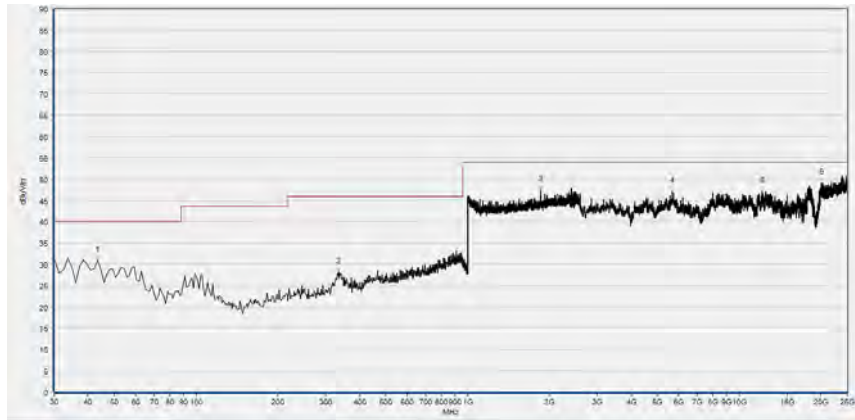
Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.



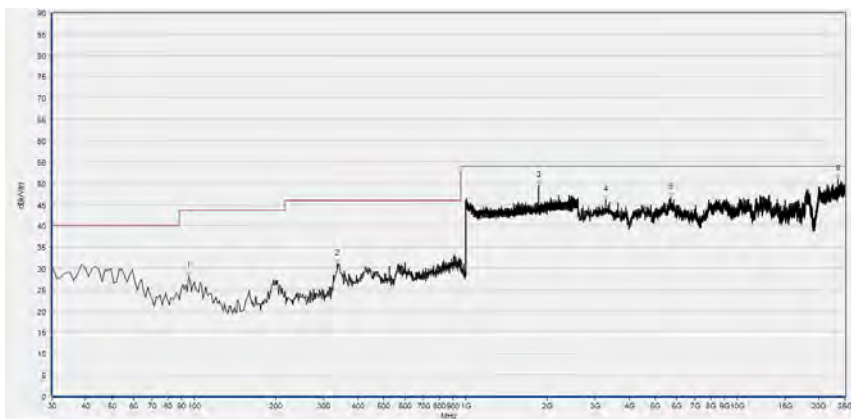
802.11b Mode

Plot for Channel 1



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
43.354	30.82	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
334.718	28.08	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1856.022	47.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5659.174	47.18	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12156.356	47.08	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
20071.104	49.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

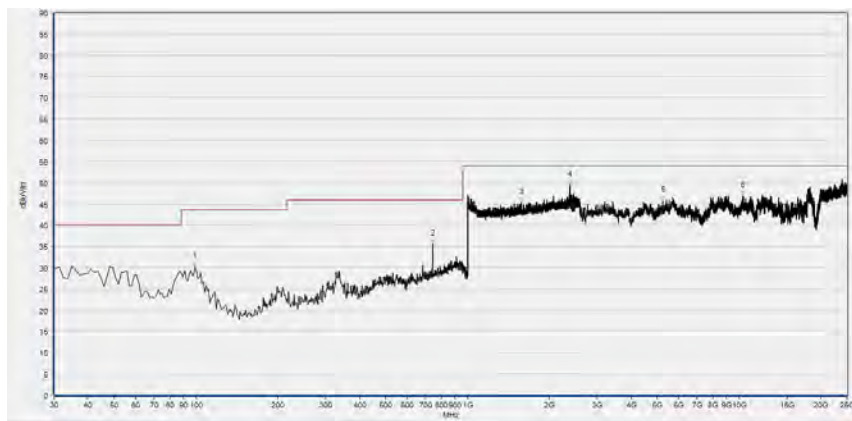
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
95.557	28.15	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
337.146	31.03	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1856.022	49.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3276.196	46.04	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5691.762	46.63	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
23525.405	51.03	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

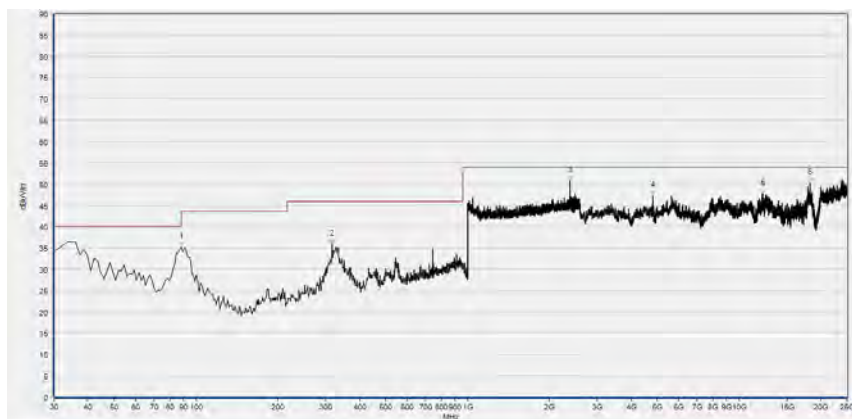
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 6



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.199	30.14	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
742.628	35.48	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1576.230	45.40	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2379.752	49.51	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5235.534	45.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10347.736	46.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

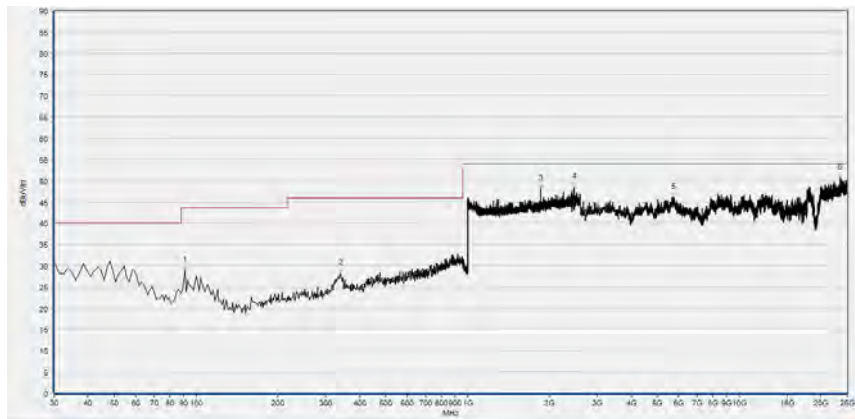
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
88.273	35.15	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
316.508	35.89	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2380.392	50.70	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4824.113	47.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12201.164	47.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
18209.529	50.23	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

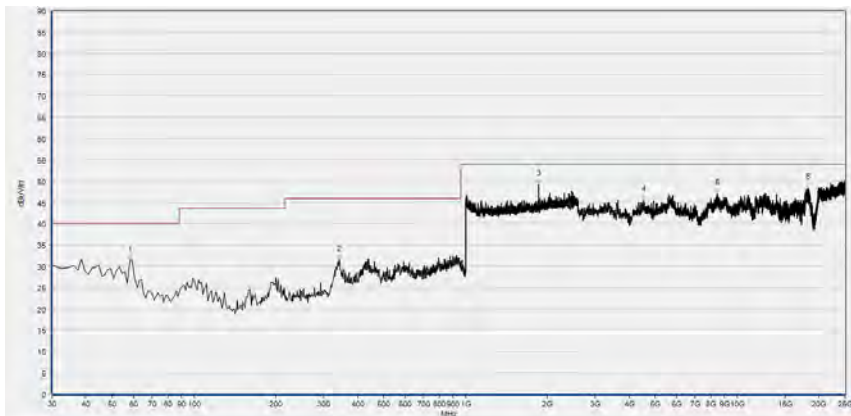
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 11



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
90.701	28.85	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
340.788	28.24	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1856.022	48.12	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2464.906	48.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5732.497	46.05	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
23492.817	50.65	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

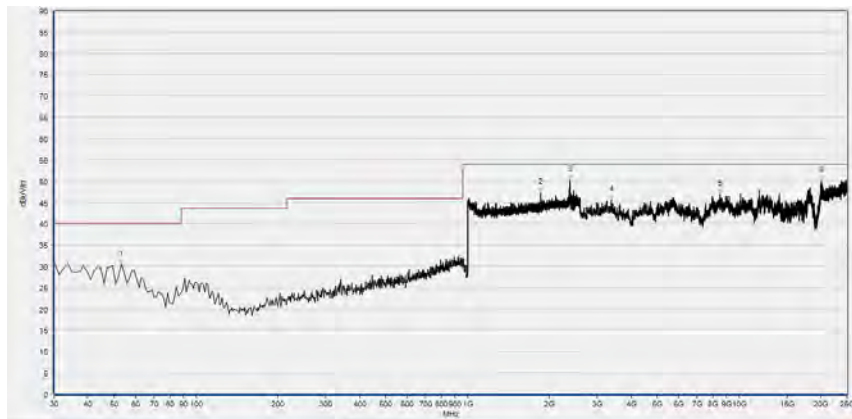


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
57.922	31.33	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
342.003	31.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1856.022	49.22	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4522.677	45.58	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8449.500	47.04	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
18225.823	48.51	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

**802.11g Mode**

Plot for Channel 1



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
53.066	30.45	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
1856.022	47.34	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2381.032	50.31	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3378.032	45.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8518.749	46.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
20124.059	50.08	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

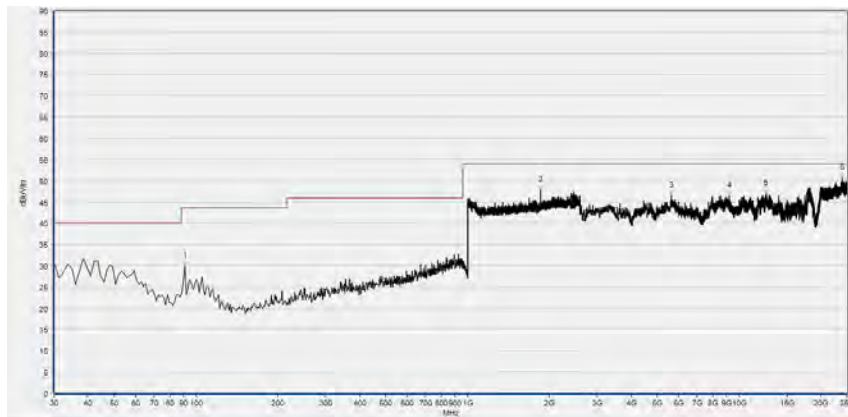


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
87.059	34.02	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
1856.022	49.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4510.456	44.74	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8636.879	46.72	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
17940.680	48.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
22462.229	49.98	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

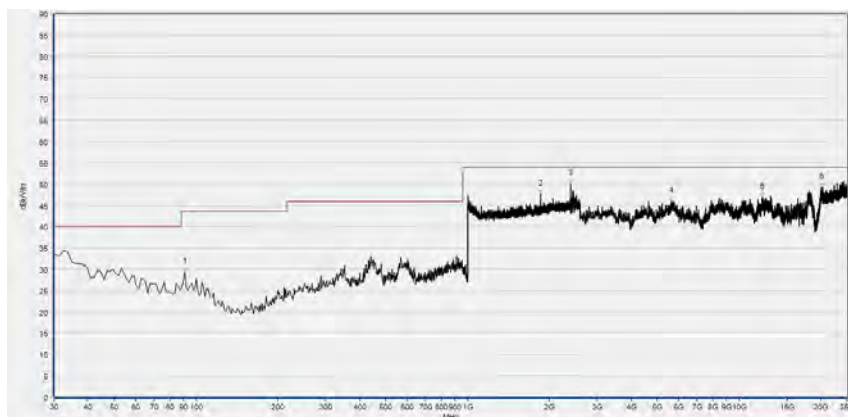


Plot for Channel 6



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
90.701	29.80	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1856.022	47.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5618.440	46.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
9178.651	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12498.527	46.89	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
23981.633	50.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

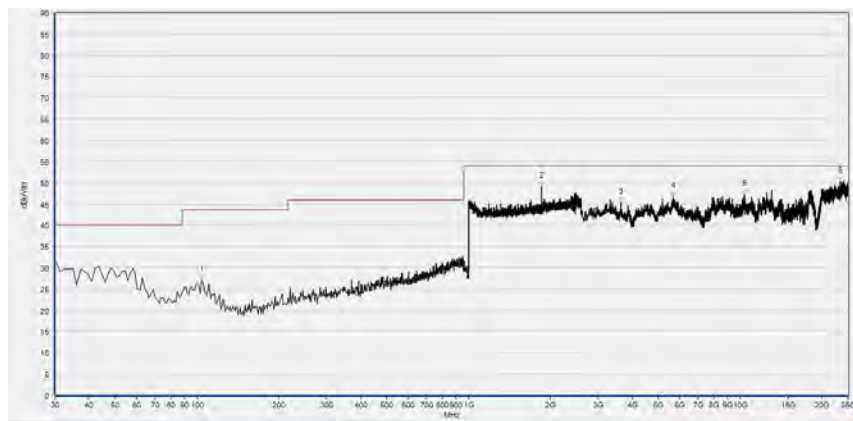
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
90.701	29.36	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1856.022	47.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2401.521	50.04	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5626.587	45.94	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12140.062	46.89	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
20132.206	49.26	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

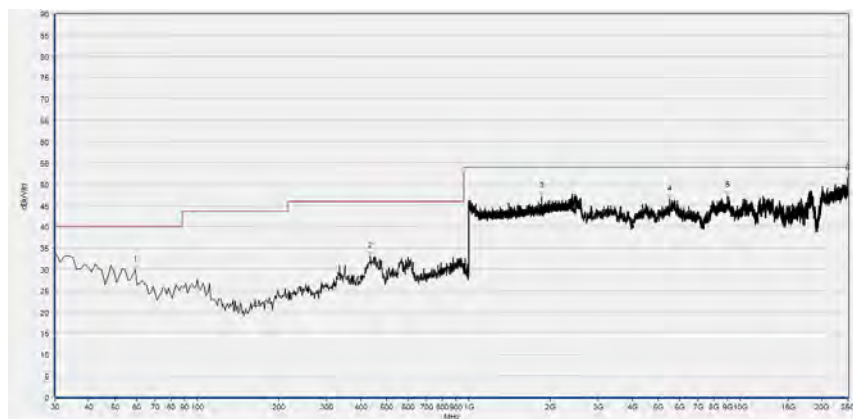
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 11



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.055	27.22	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1856.022	49.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3646.881	45.44	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5679.542	46.80	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10368.103	47.31	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
23423.568	50.33	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

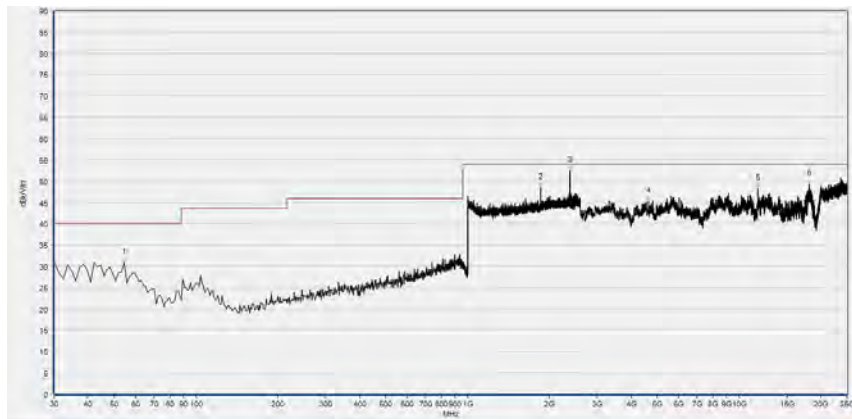


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
59.136	29.82	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
434.268	33.00	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1856.022	47.07	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5504.383	46.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8962.757	47.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
24885.943	51.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

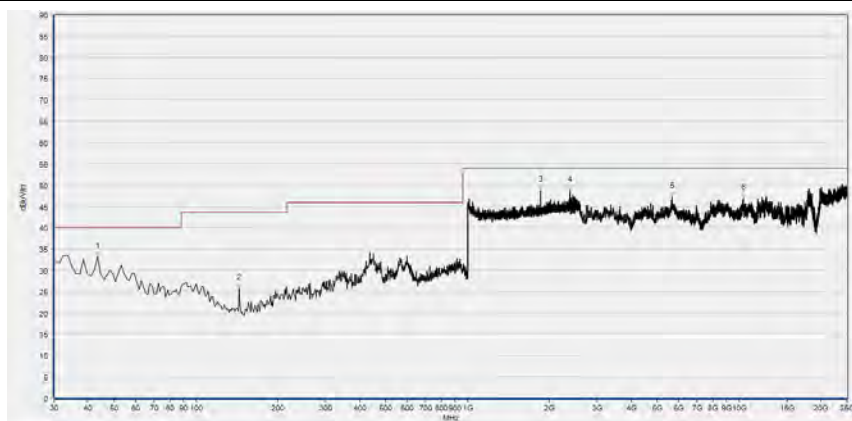
**802.11n (HT20) Mode**

Plot for Channel 1



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
54.280	30.76	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
1856.022	48.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2380.800	54.33	N/A	34.80	74.00	N/A	54.00	Horizontal	PASS
4632.660	45.32	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
11740.862	48.22	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
18172.868	49.21	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

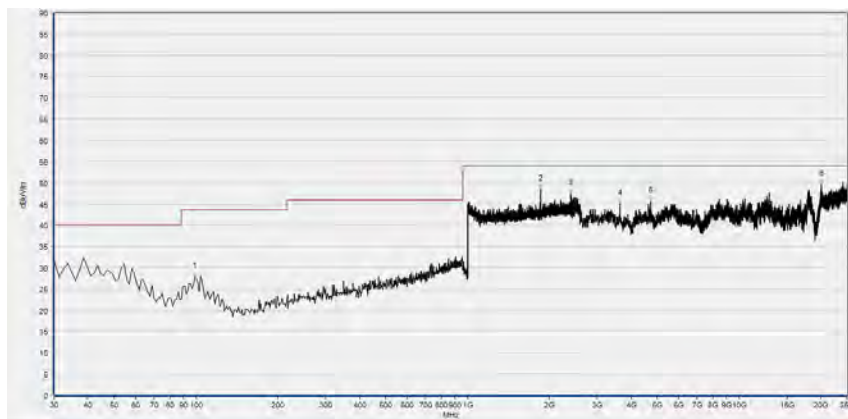


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
43.354	33.25	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
144.118	25.81	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1856.663	48.81	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2387.435	48.85	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5651.027	47.33	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10355.883	46.96	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

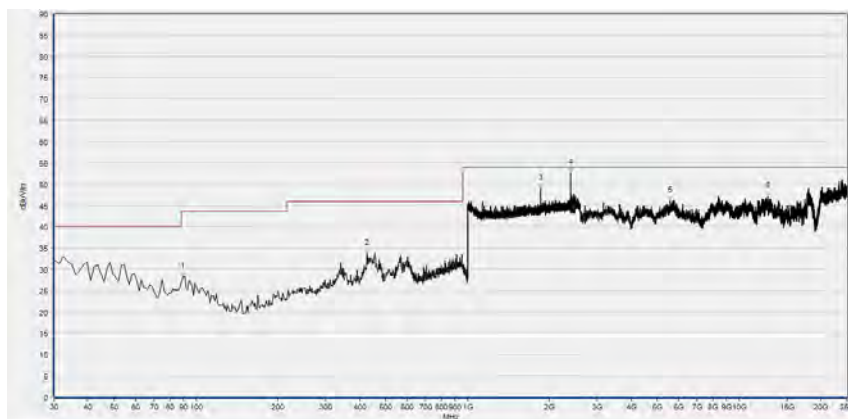


Plot for Channel 6



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.199	27.75	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1856.022	48.47	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2401.521	47.48	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3646.881	45.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4718.203	45.59	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
20107.765	49.55	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

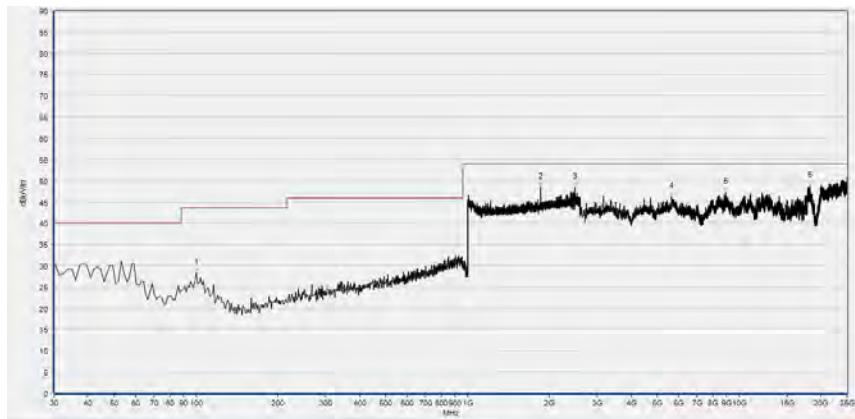
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
89.487	28.21	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
425.770	33.69	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1856.022	49.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2401.700	49.29	N/A	33.89	74.00	N/A	54.00	Vertical	PASS
5573.632	46.01	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12734.788	47.15	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

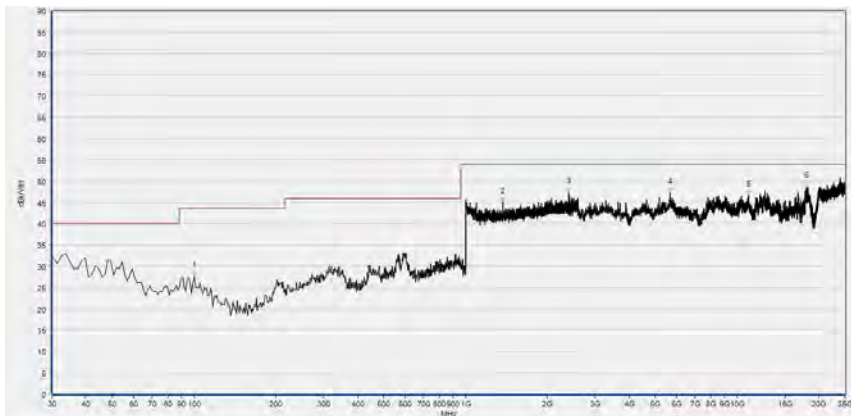
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 11



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.413	28.29	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1856.022	48.47	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2479.632	48.51	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5646.954	46.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8938.316	47.23	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
18225.823	48.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.413	27.64	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1374.550	45.15	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2402.161	47.35	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5663.248	47.22	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11056.519	46.70	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
18014.003	48.78	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Annex A Test Uncertainty

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

Test Items	Uncertainty
Peak Output Power	$\pm 2.22\text{dB}$
Power Spectral Density	$\pm 2.22\text{dB}$
Bandwidth	$\pm 5\%$
Conducted Spurious Emission	$\pm 2.77\text{dB}$
Restricted Frequency Bands	$\pm 5\%$
Radiated Emission	$\pm 2.95\text{dB}$
Conducted Emission	$\pm 2.44\text{dB}$

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



Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

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

2. Identification of the Responsible Testing Location

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

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Attenuator 1	(N/A.)	10dB	Resent	N/A	N/A
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2018.11.06	2019.11.05
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2018.04.17	2019.04.16
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2018.11.06	2019.11.05
LISN	812744	NSLK 8127	Schwarzbeck	2018.04.17	2019.04.16
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2018.11.06	2019.11.05
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Tonscend	V2.5.77.0418
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

**4.4 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2018.08.04	2019.08.03
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2018.05.18	2019.05.17
Test Antenna - Loop	1520-022	FMZB1520	Schwarzbeck	2018.03.03	2019.03.02
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2018.08.06	2019.08.05
Test Antenna – Horn	BBHA9170 #774	BBHA 9170	Schwarzbeck	2018.08.02	2019.08.01
Coaxial Cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L32 03	Tonscend	2018.05.08	2019.05.07
18-26.5GHz pre-Amplifier	46732	S10M100L38 02	Tonscend	2018.05.08	2019.05.07
26-40GHz pre-Amplifier	56774	S40M400L40 02	Tonscend	2018.05.08	2019.05.07
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	2018.12.01	2019.11.30
Anechoic Chamber	N/A	9m*6m*6m	CRT	2017.11.19	2020.11.18

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