



REPORT No.: SZ24020115W07

TEST REPORT

APPLICANT : Fell Technology AS

PRODUCT NAME : Hub Move

MODEL NAME : W3706

BRAND NAME : Fell Technology AS

FCC ID : 2AFOZW3701

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2024-03-04

TEST DATE : 2025-03-16 to 2025-03-19

ISSUE DATE : 2025-05-12

Edited by:

Zeng Xiaoying
Zeng Xiaoying (Rapporteur)

Approved by:

Shen Junsheng
Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China

Tel: 86-755-36698555

Http://www.morlab.cn

Fax: 86-755-36698525

E-mail: service@morlab.cn





DIRECTORY

1. Technical Information	3
1.1. Applicant and Manufacturer Information	3
1.2. Equipment Under Test (EUT) Description	3
1.3. Modulation Type and Data Rate of EUT	4
1.4. The Channel Number and Frequency	5
1.5. Test Standards and Results	6
1.6. Environmental Conditions	7
2. 47 CFR Part 15C Requirements	8
2.1. Antenna Requirement	8
2.2. Duty Cycle of Test Signal	9
2.3. Maximum Peak and Average Conducted Output Power	13
2.4. Bandwidth	16
2.5. Conducted Spurious Emissions and Band Edge	25
2.6. Power Spectral Density	38
2.7. Conducted Emission	47
2.8. Restricted Frequency Bands	51
2.9. Radiated Emission	56
Annex A Test Uncertainty	60
Annex B Testing Laboratory Information	73

Change History		
Version	Date	Reason for change
1.0	2025-05-12	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Fell Technology AS
Applicant Address:	Bragernes Torg 2 3017 Drammen Norway
Manufacturer:	Fell Technology AS
Manufacturer Address:	Bragernes Torg 2 3017 Drammen Norway

1.2. Equipment Under Test (EUT) Description

Product Name:	Hub Move
Sample No.:	1#, 22#, 24#
Hardware Version:	E3
Software Version:	3.5.16
Modulation Technology:	DSSS, OFDM
Modulation Type:	Refer to section1.3
Operating Frequency Range:	802.11b/g/ n (HT20): 2412MHz–2462MHz 802.11n (HT40): 2422MHz–2452MHz
Antenna Type:	Fixed Internal Antenna
Antenna Gain:	0.50dBi

Note 1: This is a variant report of original report (Report No.: SZ22020094W02, FCC ID: 2AFOZW3701), based on the similarity between before, change the appearance and power supply method, and adjust the PCB layout accordingly. Enable GPS by software. Change the product name, model, hardware and software version information. There is no other change, in addition to the above, all other RF parameters and circuits remain the same as before. The changes only affect the results of radiated spurious emissions in this report.

Note 2: 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
OFDM (802.11n (HT40))	BPSK	13.5
	QPSK	27/40.5
	16QAM	54/81/108
	64QAM	121.5/135

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		
Test Mode	Channel	Frequency (MHz)	Channel	Frequency (MHz)
802.11n (HT40)	3	2422	8	2447
	4	2427	9	2452
	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 _{Note1}	No deviation
2	N/A	Duty Cycle of Test Signal	Mar. 08, 2022	Zou Yuantao	PASS _{Note1}	No deviation
3	15.247(b)	Maximum Peak and Average Conducted Output Power	Mar. 08, 2022	Zou Yuantao	PASS _{Note1}	No deviation
4	15.247(a)	Bandwidth	Mar. 24, 2022	Zou Yuantao	PASS _{Note1}	No deviation
5	15.247(d)	Conducted Spurious Emission and Band Edge	Mar. 08, 2022	Zou Yuantao	PASS _{Note1}	No deviation
6	15.247(e)	Power Spectral Density	Mar. 08, 2022	Zou Yuantao	PASS _{Note1}	No deviation
7	15.207	Conducted Emission	Mar. 19, 2025	Wang Deyong	PASS	No deviation
8	15.247(d)	Restricted Frequency Bands	Mar. 16, 2025	Li Hanbin	PASS	No deviation
9	15.209, 15.247(d)	Radiated Emission	Mar. 16, 2025	Li Hanbin	PASS	No deviation

Note 1: The test results of these test items in this report refer to the test report (Report No.: SZ22020094W02).

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



ANSIC63.10-2013 and 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 equipment. The Ref offset 1.0dB means the cable loss is 1.0dB.

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

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Duty Cycle of Test Signal

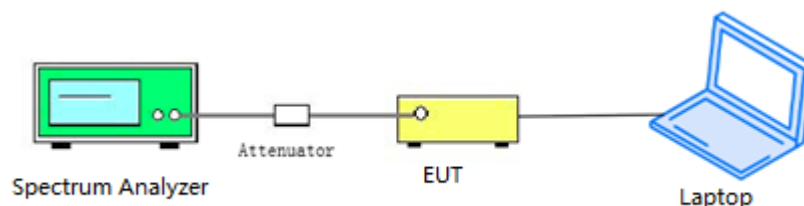
2.2.1. Requirement

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.

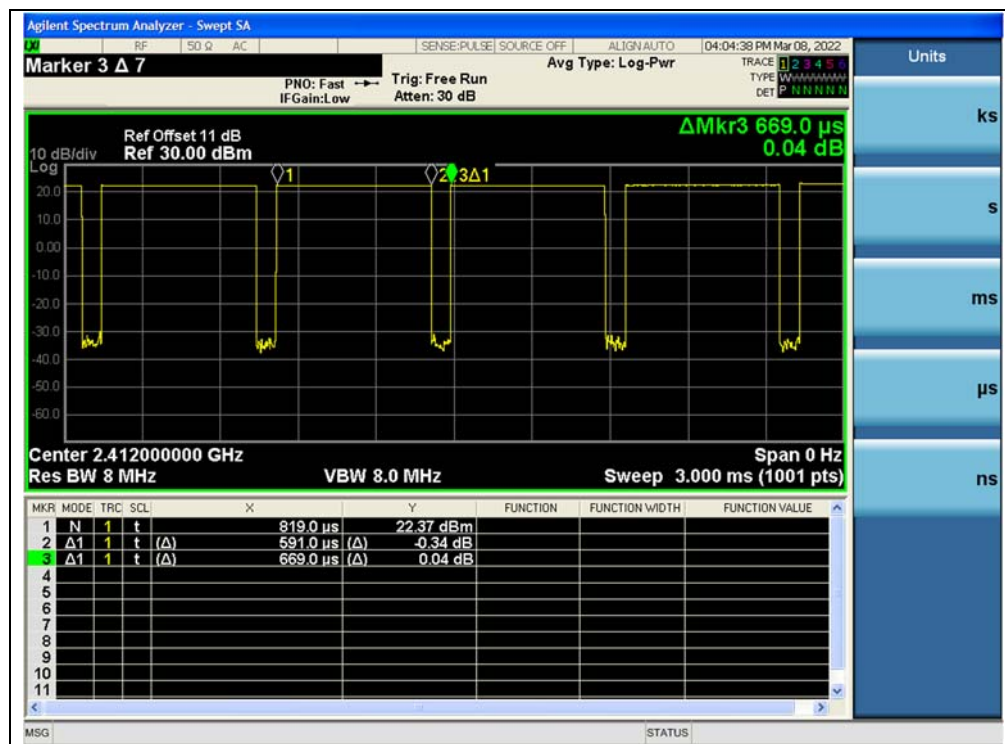


2.2.3. Test Result

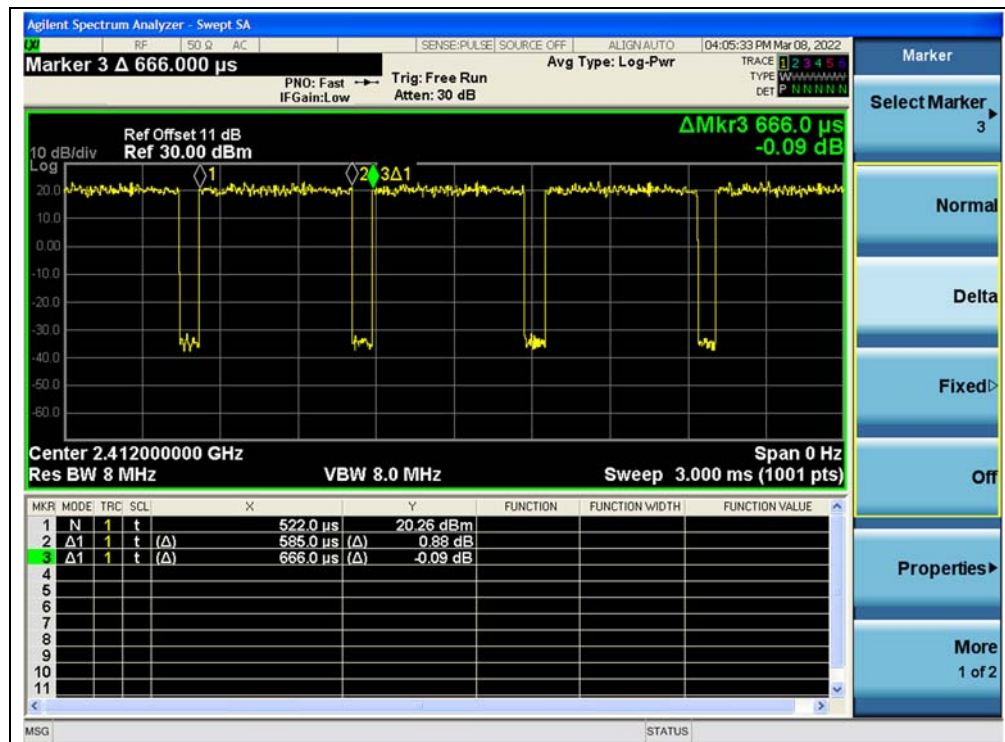
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor ($10 \cdot \lg[1/D]$)
802.11b	88.34	0.54
802.11g	87.84	0.56
802.11n (HT20)	87.38	0.59
802.11n (HT40)	88.18	0.55

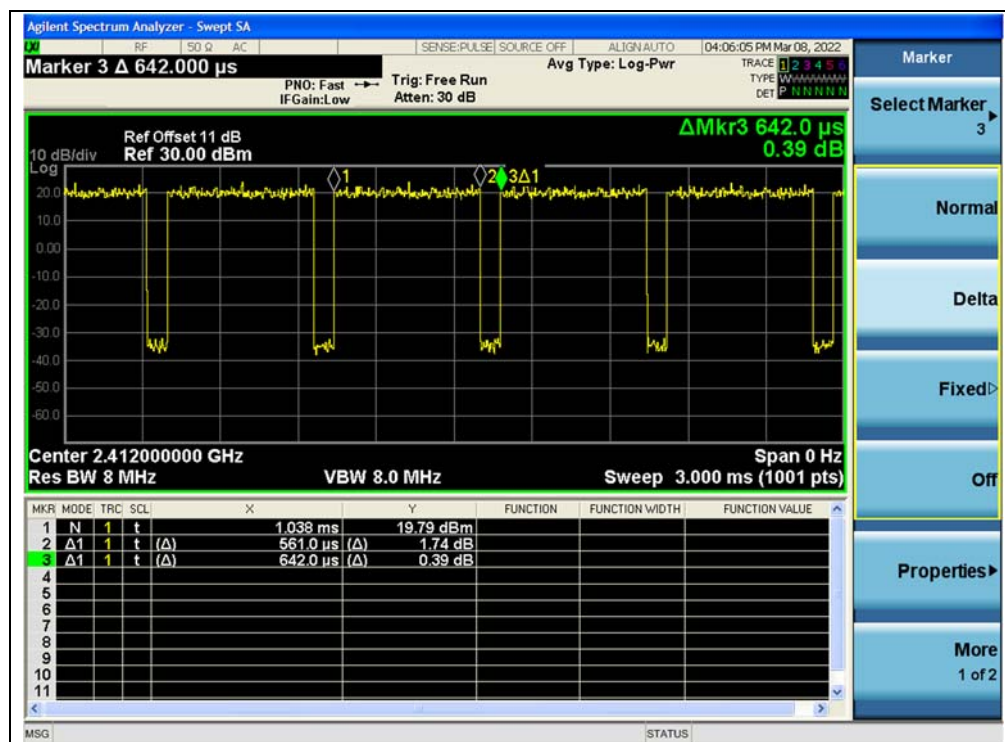
B. Test Plot:



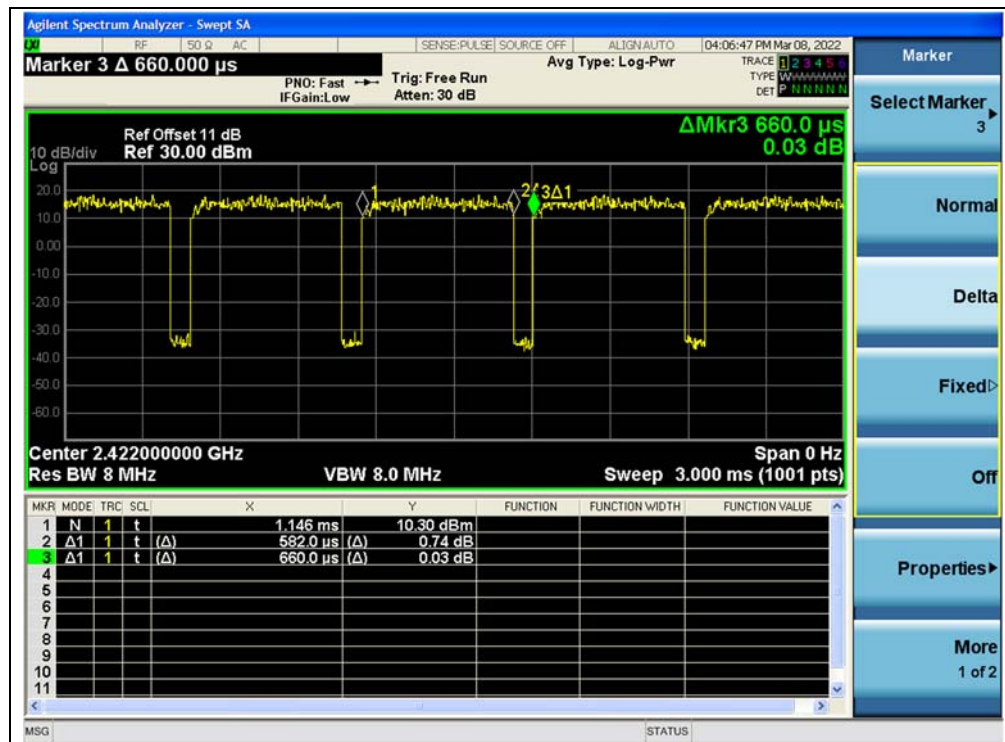
(Channel 1, 802.11b)



(Channel 1, 802.11g)



(Channel 1, 802.11n (HT20))



(Channel 3, 802.11n (HT40))

2.3. Maximum Peak and Average Conducted Output Power

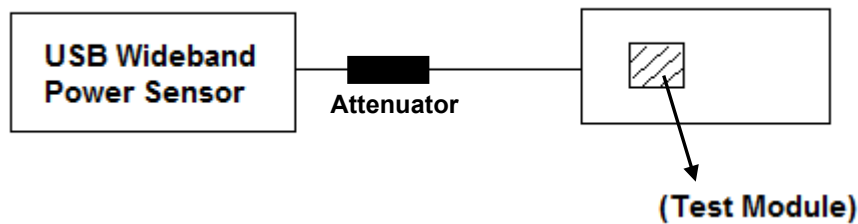
2.3.1. Requirement

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	21.48	0.141	30	1	PASS
6	2437	21.80	0.151			PASS
11	2462	21.96	0.157			PASS

802.11g Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	23.32	0.215	30	1	PASS
6	2437	23.69	0.234			PASS
11	2462	23.94	0.248			PASS

802.11n (HT20) Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
1	2412	23.31	0.214	30	1	PASS
6	2437	23.66	0.232			PASS
11	2462	23.88	0.244			PASS

802.11n (HT40) Mode

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
3	2422	22.60	0.182	30	1	PASS
6	2437	23.11	0.205			PASS
9	2452	23.37	0.217			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	18.47	0.54	19.01	0.080	30	1	PASS
6	2437	19.57		20.11	0.103			PASS
11	2462	19.99		20.53	0.113			PASS

802.11g Mode

Channel	Frequency (MHz)	Average Power				Limit		Verdict
		Measured	Duty Factor	Duty Factor Calculated				
		dBm		dBm	W	dBm	W	
1	2412	17.74	0.56	18.30	0.068	30	1	PASS
6	2437	18.15		18.71	0.074			PASS
11	2462	18.48		19.04	0.080			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	17.77	0.59	18.36	0.069	30	1	PASS
6	2437	18.19		18.78	0.076			PASS
11	2462	18.53		19.12	0.082			PASS

802.11n (HT40) Mode

Channel	Frequency (MHz)	Average Power				Limit		Verdict
		Measured	Duty Factor	Duty Factor Calculated				
		dBm		dBm	W	dBm	W	
3	2422	18.06	0.55	18.61	0.073	30	1	PASS
6	2437	18.28		18.83	0.076			PASS
9	2452	18.39		18.94	0.078			PASS

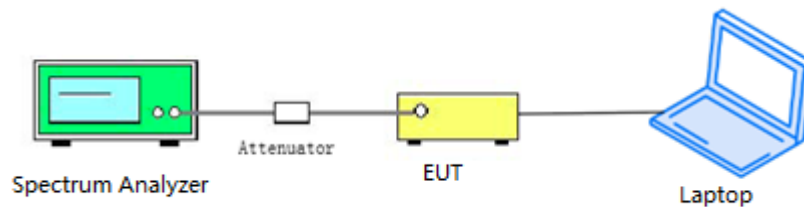
2.4. Bandwidth

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 50Ω; 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	10.07	≥500	PASS
6	2437	10.09	≥500	PASS
11	2462	10.04	≥500	PASS

B. Test Plot:



(Channel 1, 802.11b)



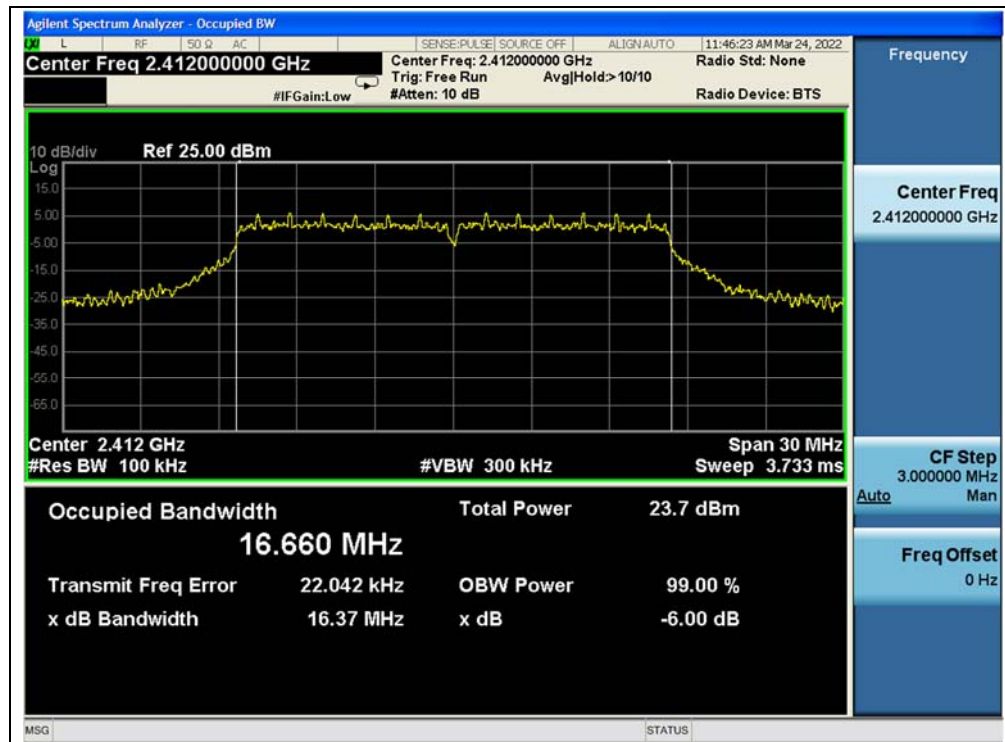
(Channel 6, 802.11b)



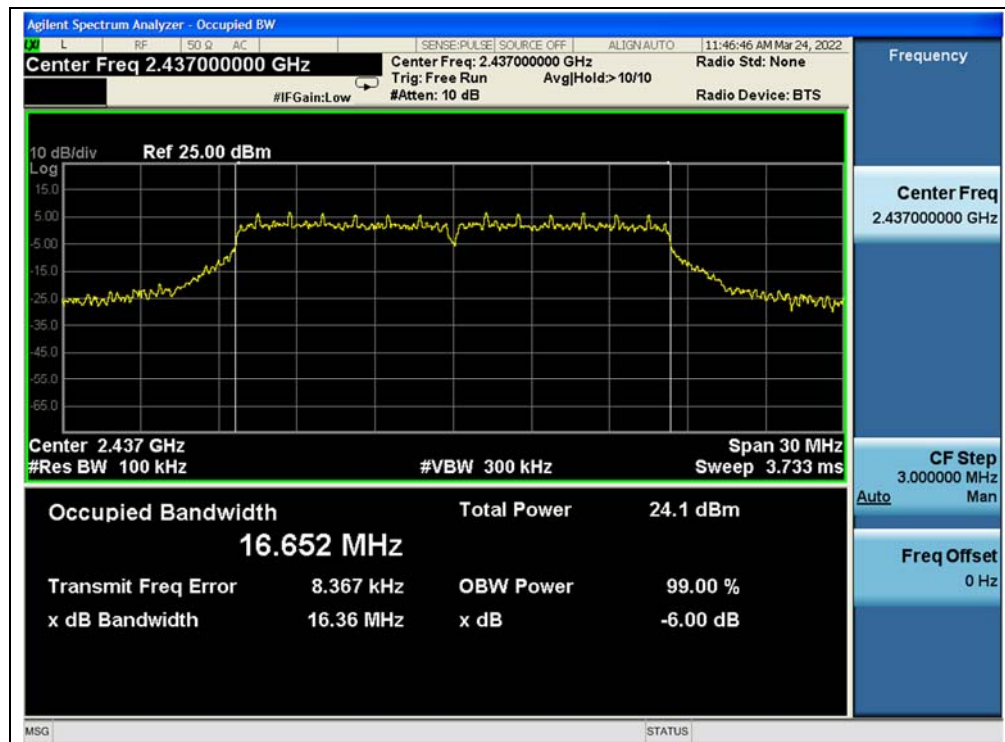
(Channel 11, 802.11b)

**802.11g Mode****A. Test Verdict:**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	16.37	≥500	PASS
6	2437	16.36	≥500	PASS
11	2462	16.36	≥500	PASS

B. Test Plot:

(Channel 1, 802.11g)



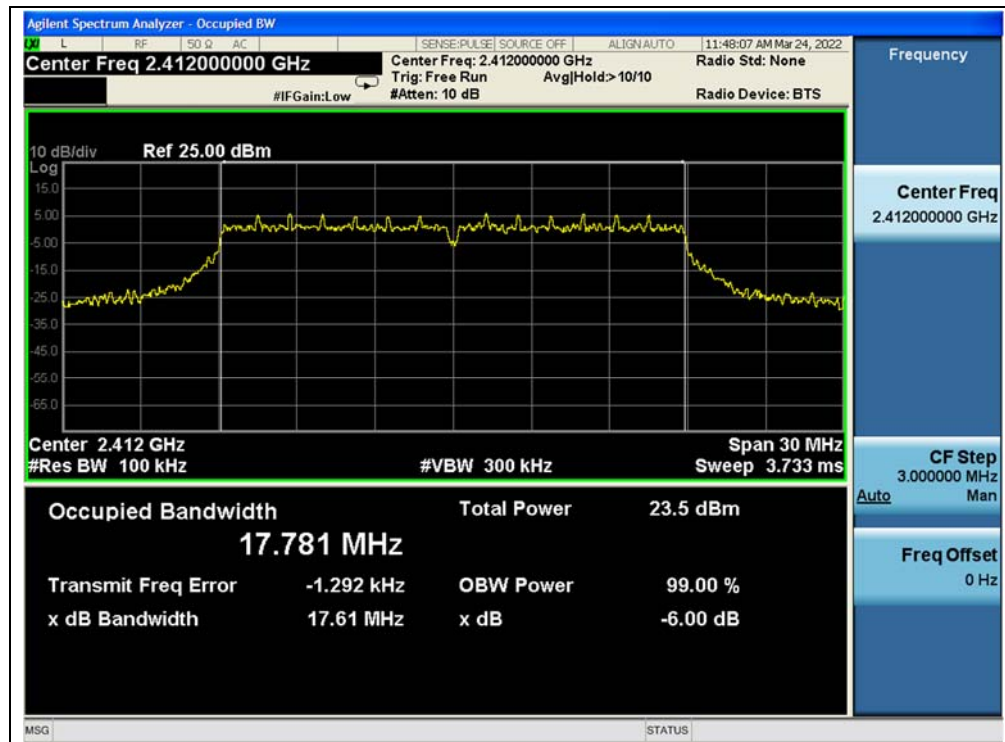
(Channel 6, 802.11g)



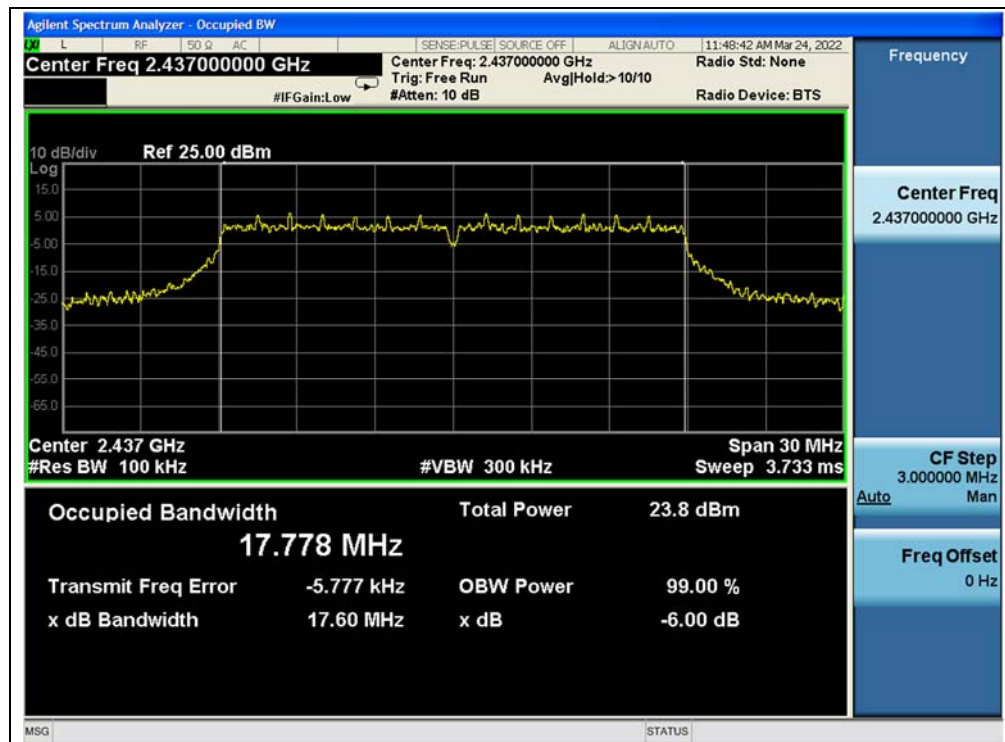
(Channel 11, 802.11g)

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

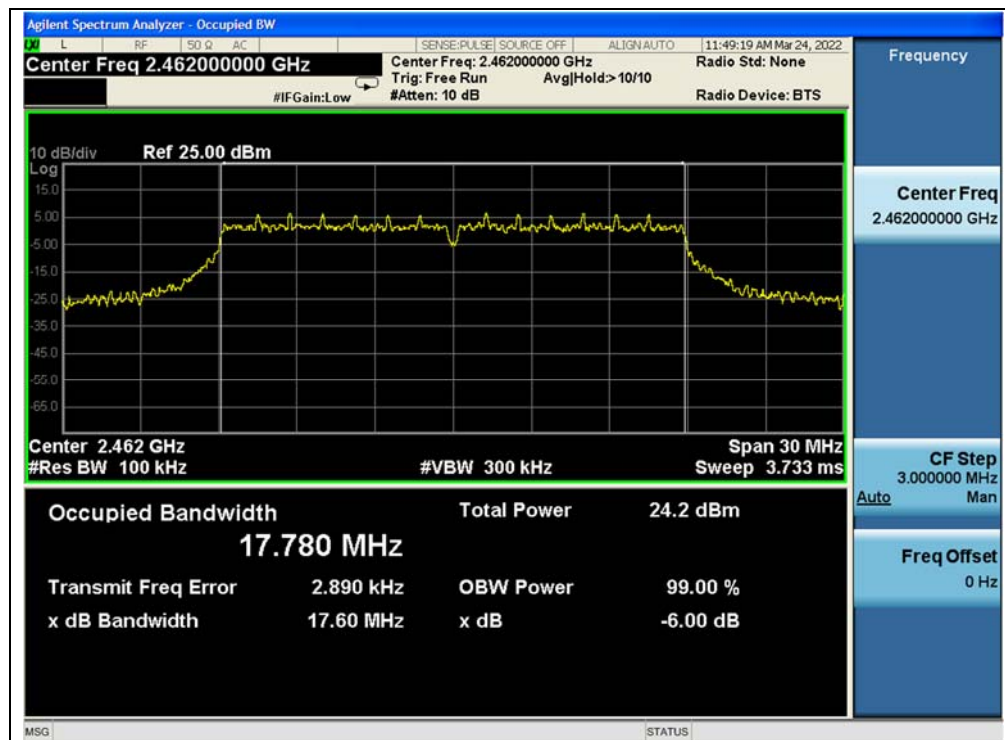
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	17.61	≥500	PASS
6	2437	17.60	≥500	PASS
11	2462	17.60	≥500	PASS

B. Test Plot:

(Channel 1, 802.11n (HT20))



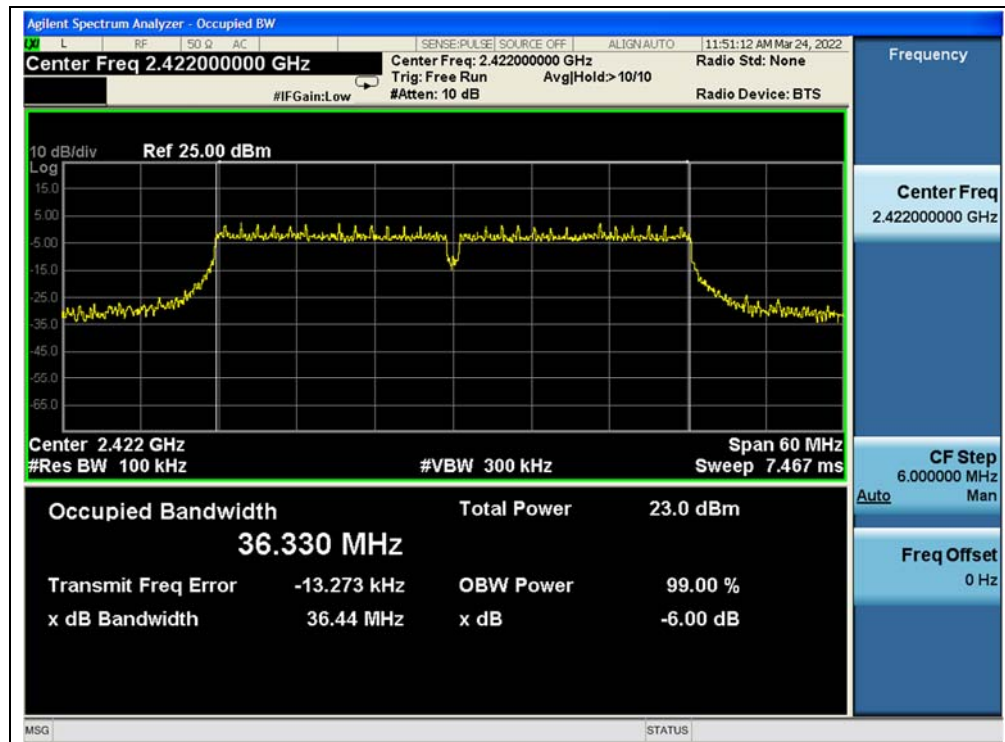
(Channel 6, 802.11n (HT20))



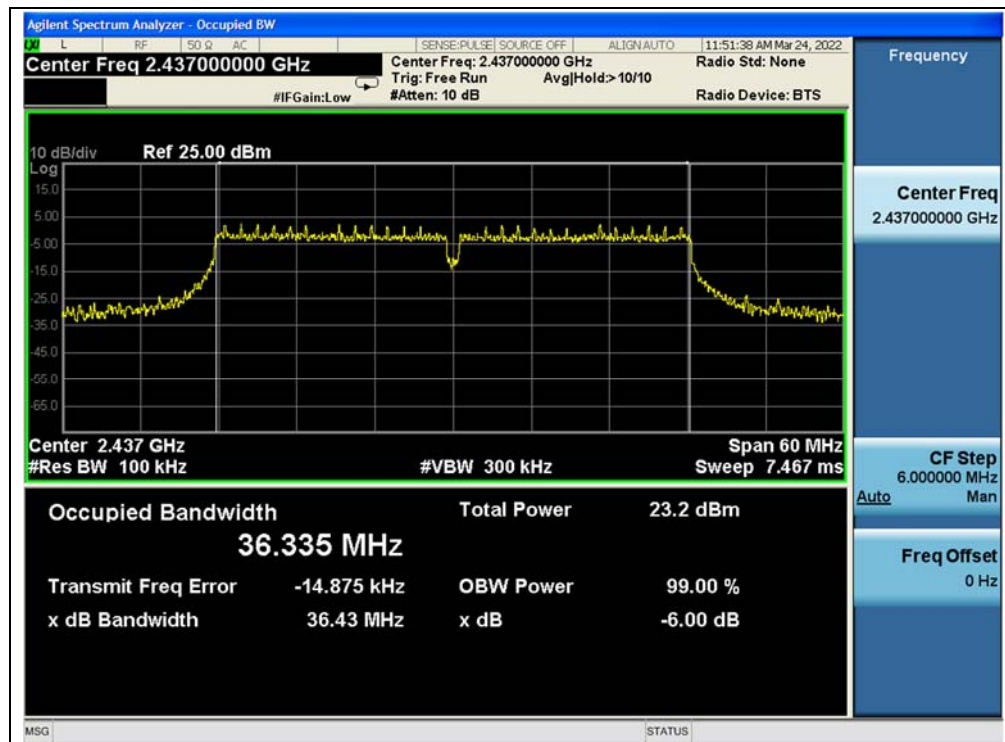
(Channel 11, 802.11n (HT20))

**802.11n (HT40) Mode****A. Test Verdict:**

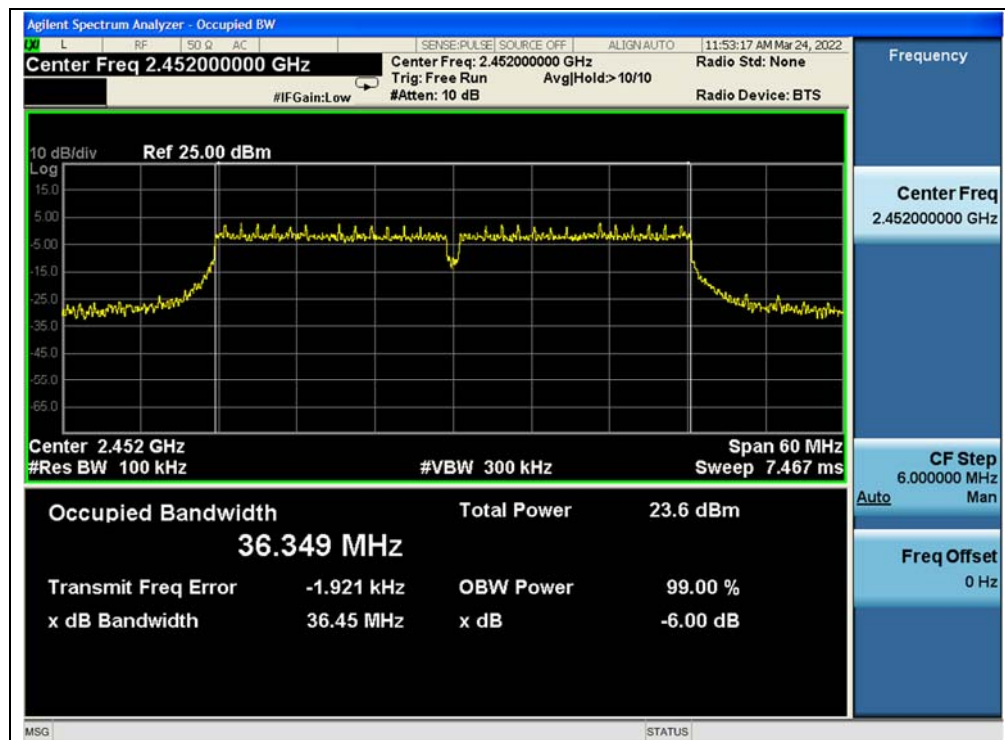
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
3	2422	36.44	≥500	PASS
6	2437	36.43	≥500	PASS
9	2452	36.45	≥500	PASS

B. Test Plot:

(Channel 3, 802.11n (HT40))



(Channel 6, 802.11n (HT40))



(Channel 9, 802.11n (HT40))

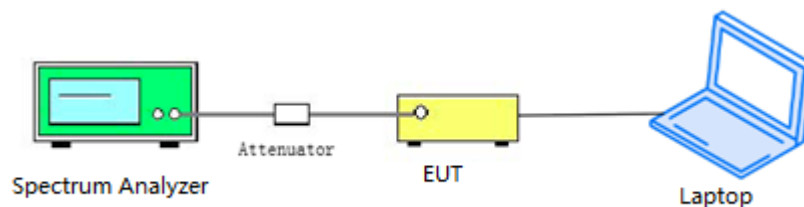
2.5. Conducted Spurious Emissions and Band Edge

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.



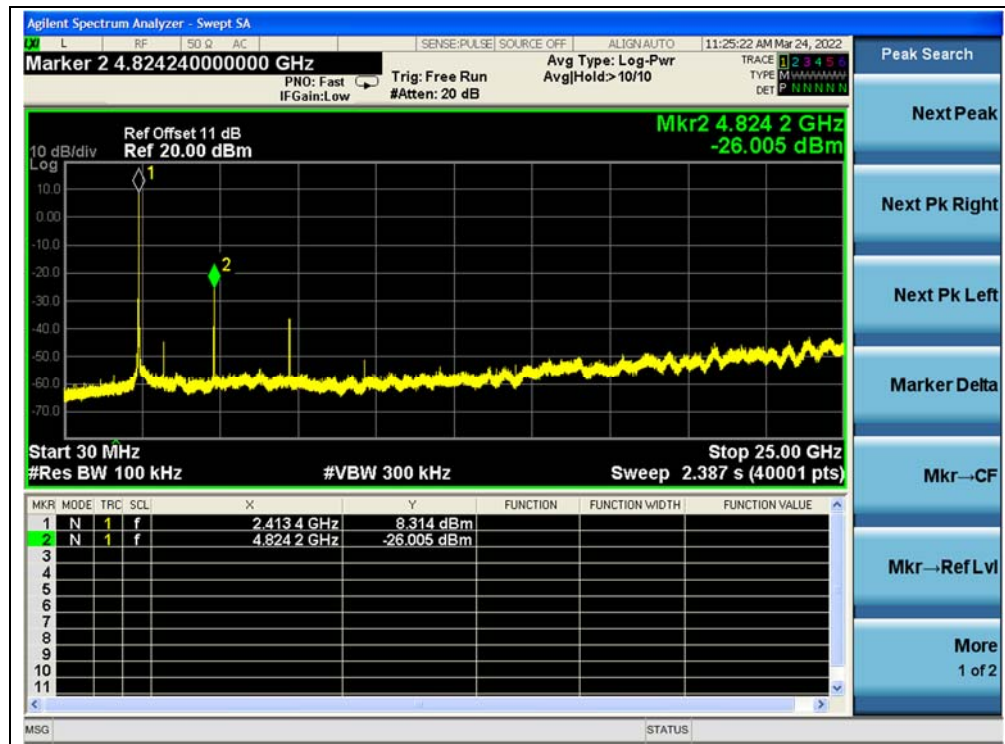
2.5.4. Test Result

802.11b Mode

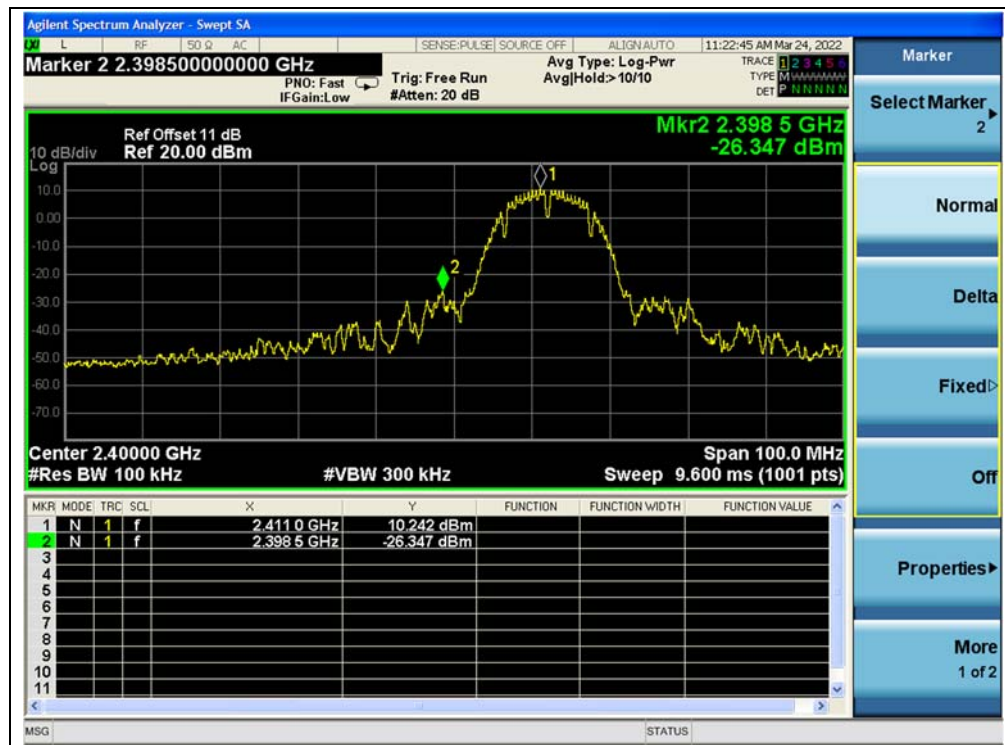
A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-26.01	8.31	-11.69	PASS
6	2437	-25.38	9.18	-10.82	PASS
11	2462	-25.60	10.77	-9.23	PASS

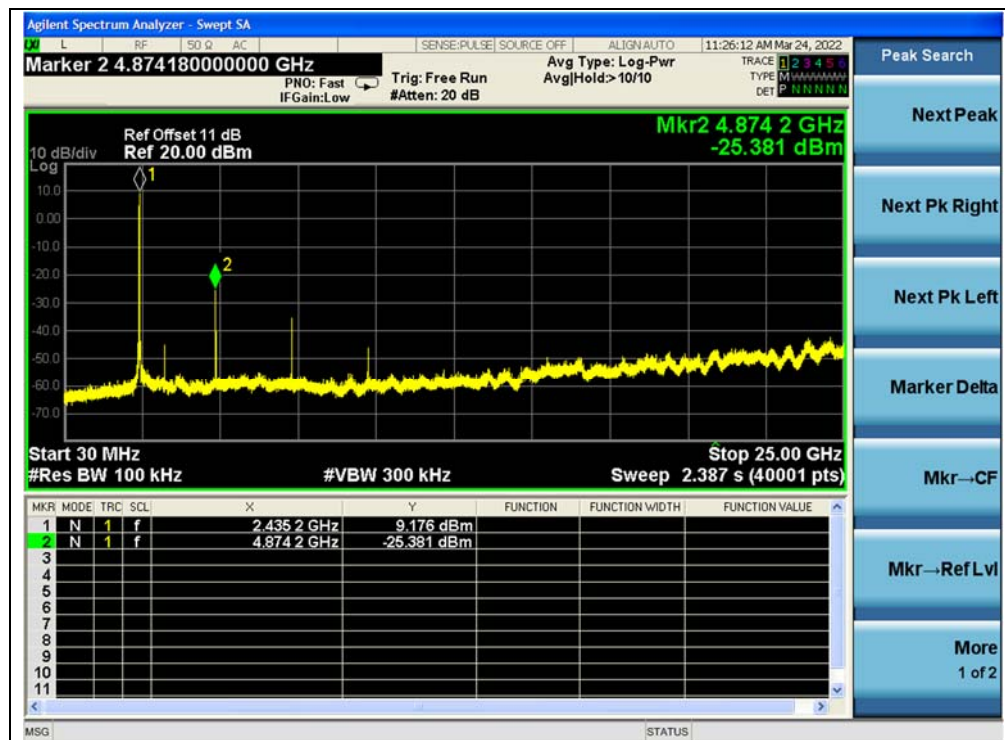
B. Test Plot:



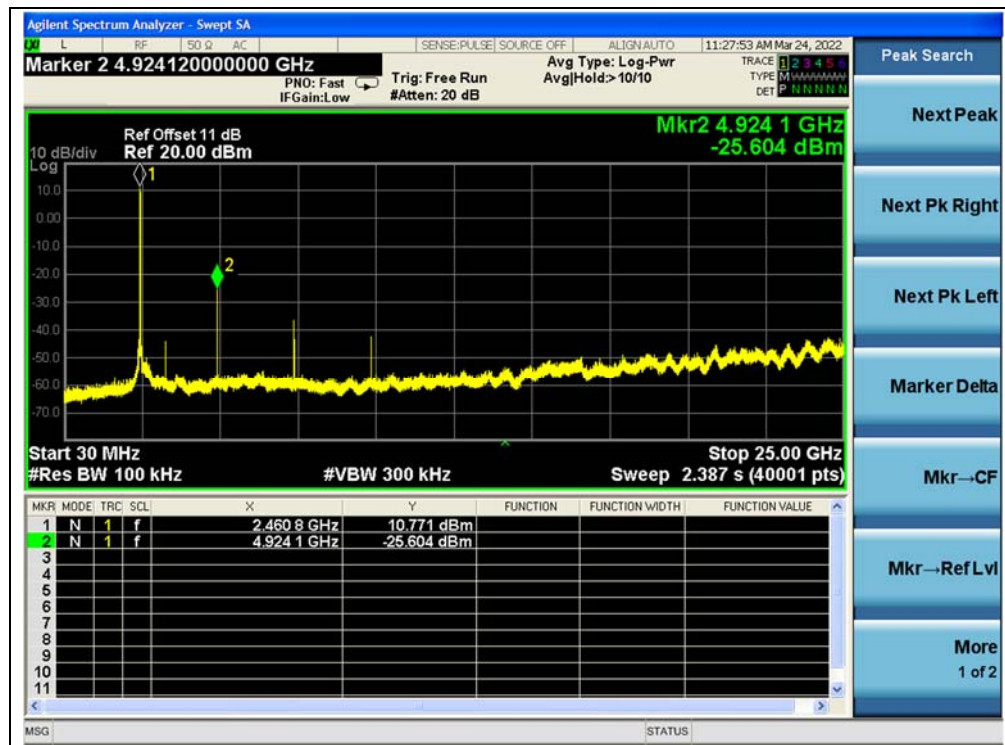
(30MHz to 25GHz, Channel 1, 802.11b)



(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)

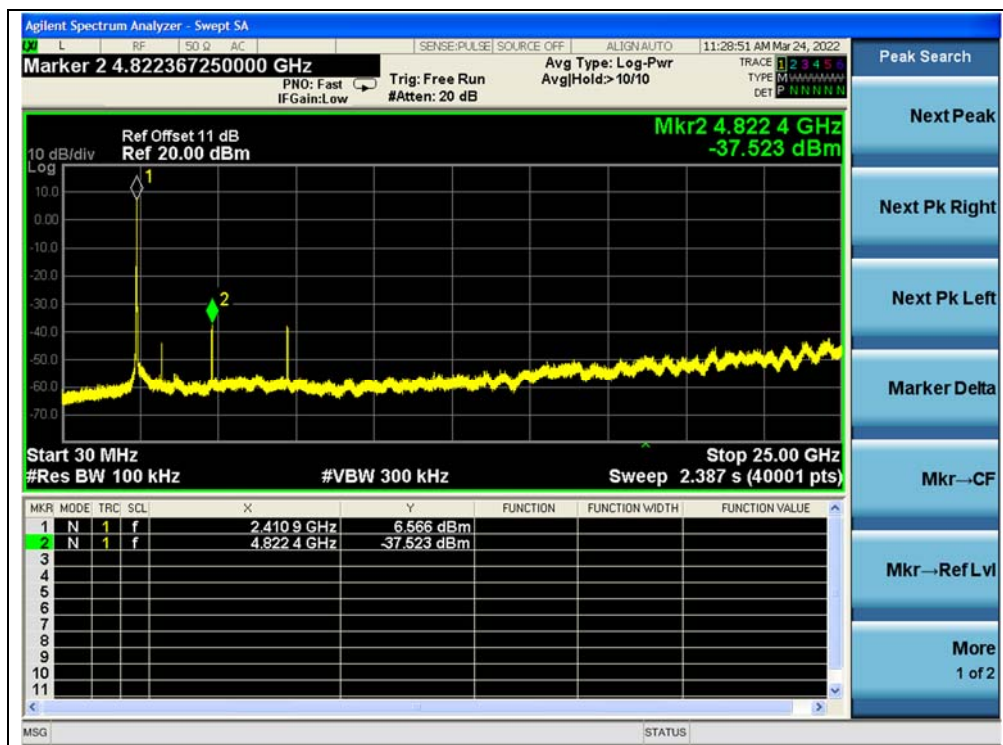


802.11g Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-37.52	6.57	-13.43	PASS
6	2437	-35.63	7.16	-12.84	PASS
11	2462	-36.18	7.38	-12.62	PASS

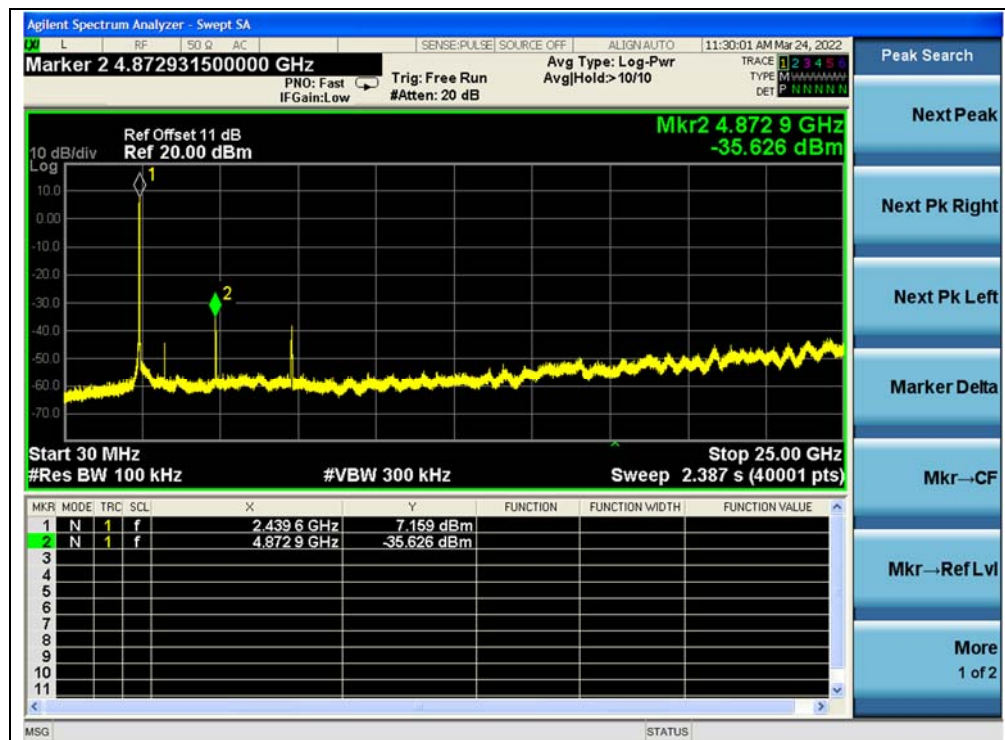
B. Test Plot:



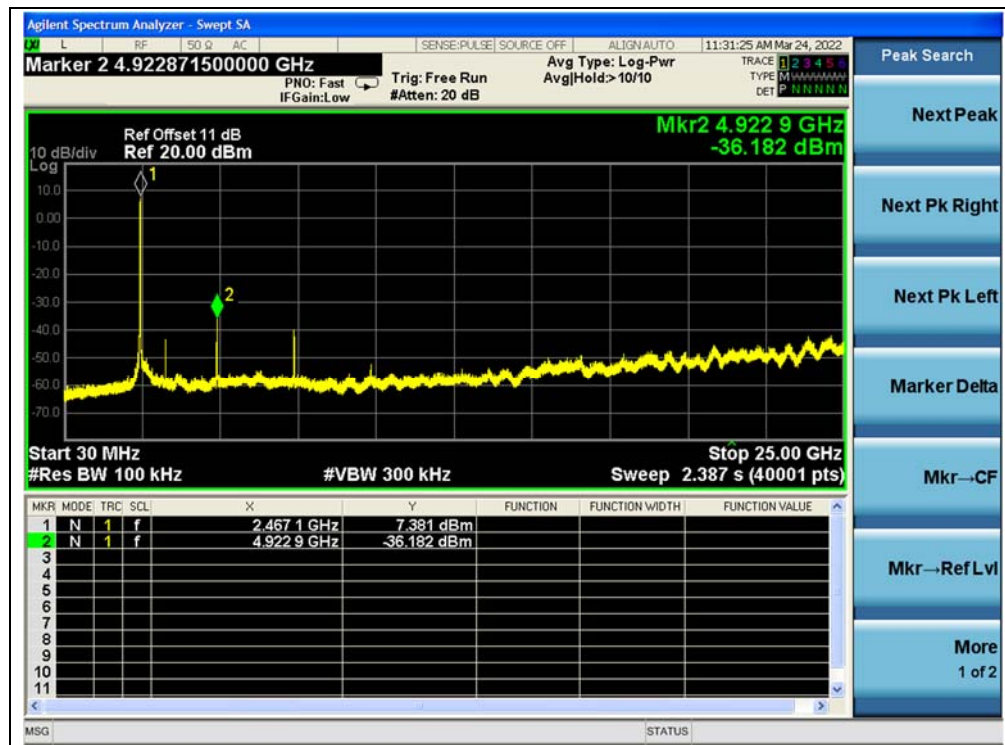
(30MHz to 25GHz, Channel 1, 802.11g)



(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)

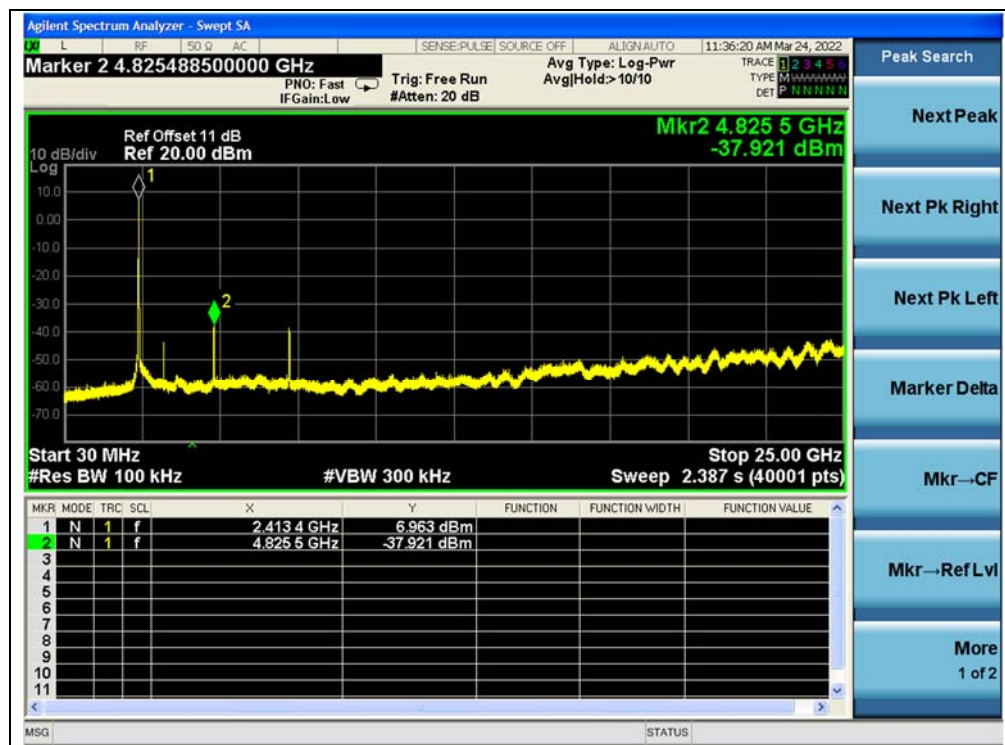


802.11n (HT20) Mode

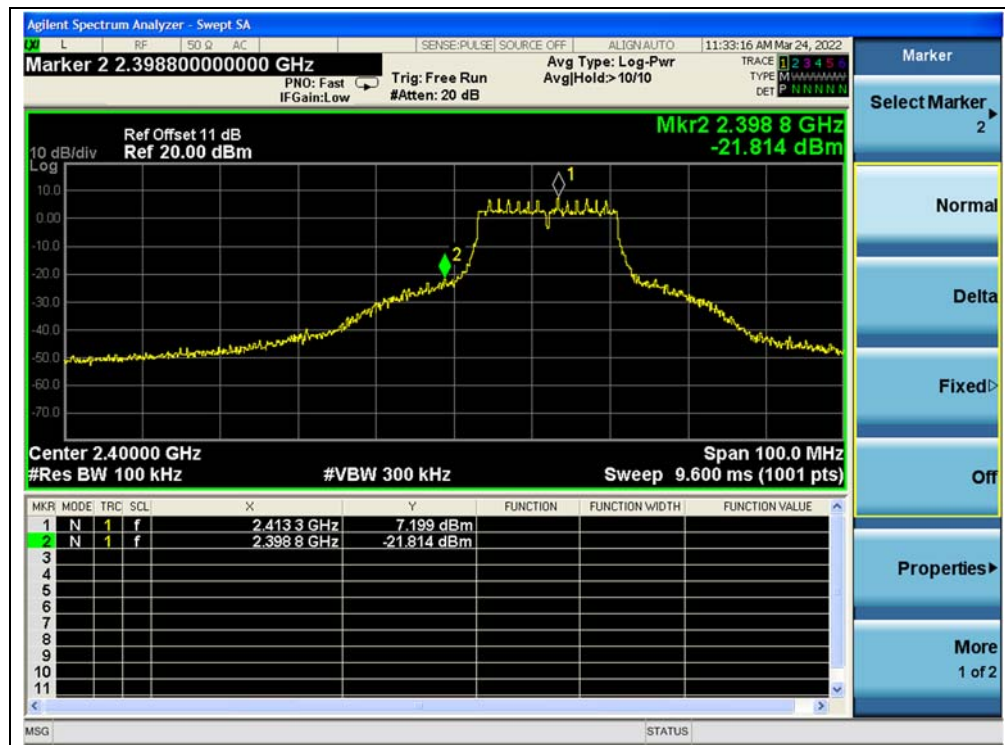
A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-37.92	6.96	-13.04	PASS
6	2437	-37.05	7.45	-12.55	PASS
11	2462	-38.11	7.00	-13.00	PASS

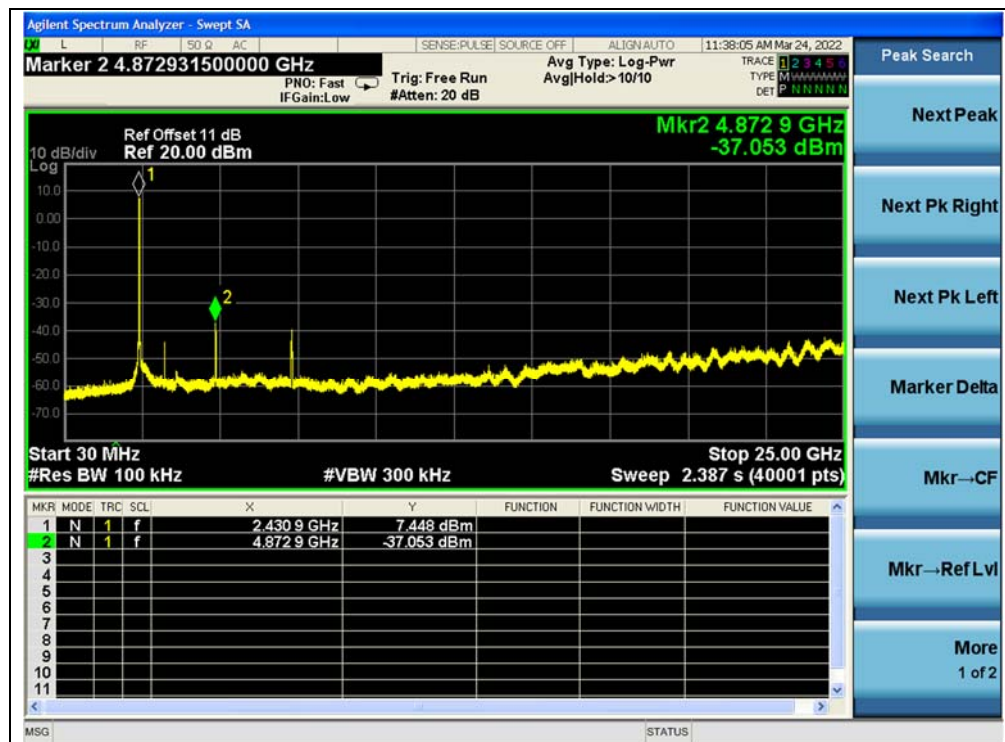
B. Test Plot:



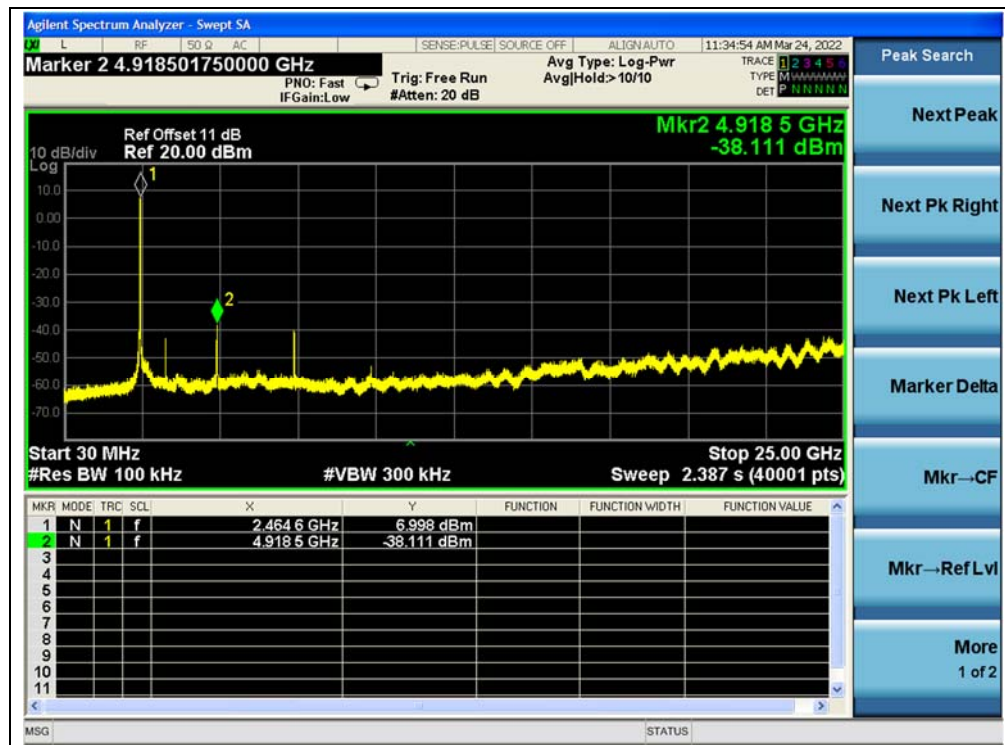
(30MHz to 25GHz, Channel 1, 802.11n (HT20))



(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))

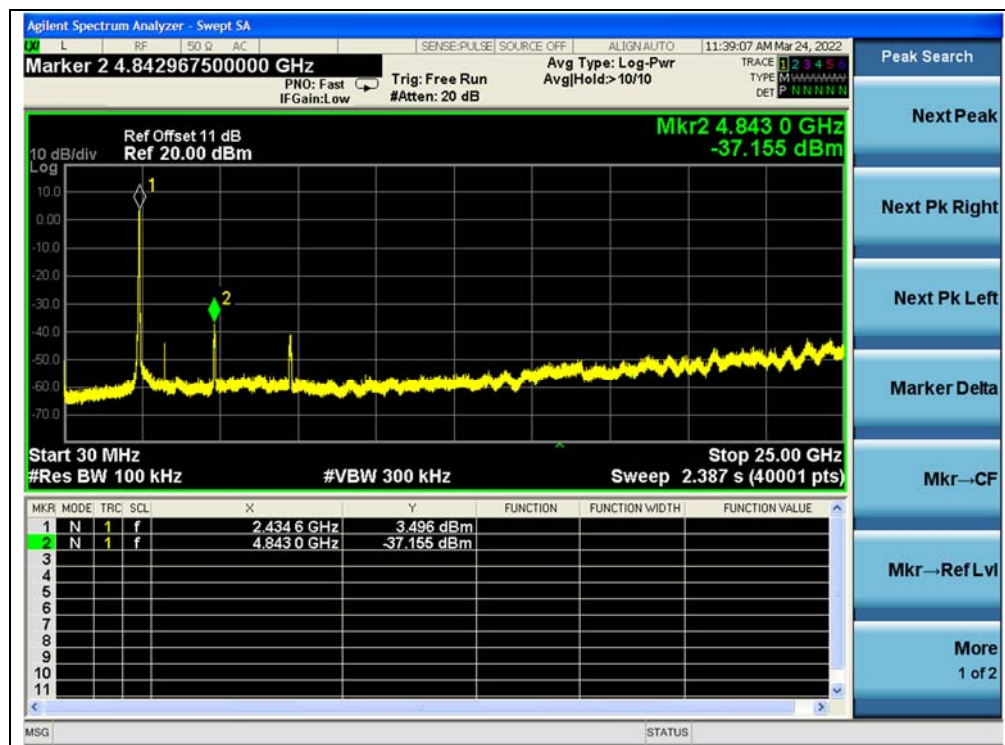


802.11n (HT40) Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
3	2422	-37.16	3.50	-16.50	PASS
6	2437	-38.77	3.24	-16.76	PASS
9	2452	-39.14	4.05	-15.95	PASS

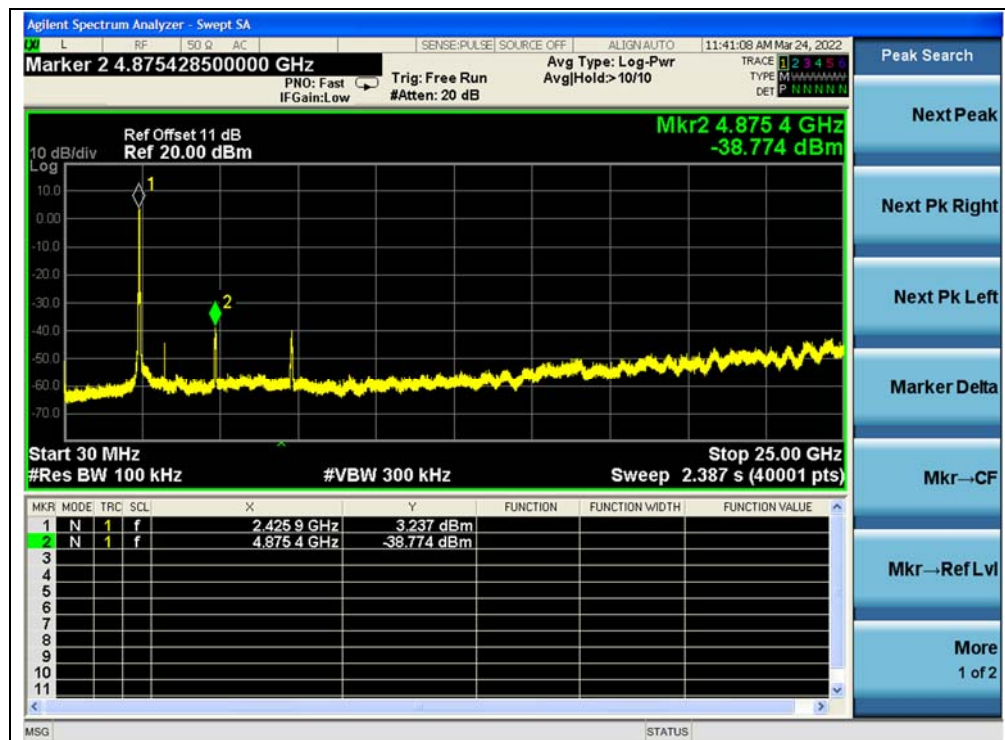
B. Test Plot:



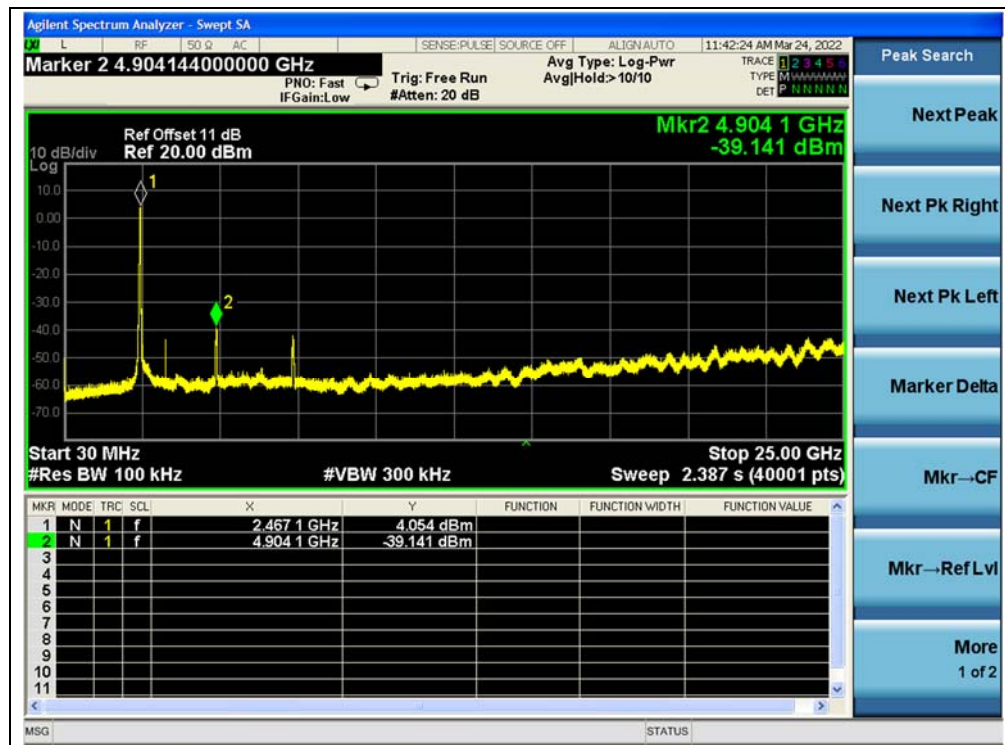
(30MHz to 25GHz, Channel 3, 802.11n (HT40))



(Band Edge, Channel 3, 802.11n (HT40))



(30MHz to 25GHz, Channel 6, 802.11n (HT40))



(30MHz to 25GHz, Channel 9, 802.11n (HT40))



(Band Edge, Channel 9, 802.11n (HT40))

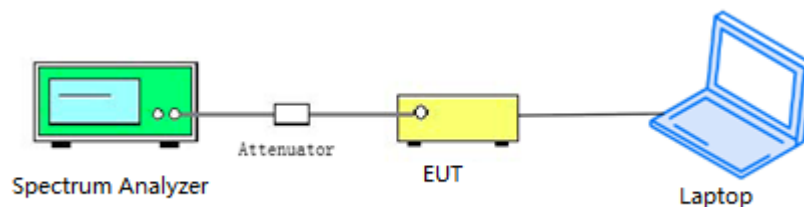
2.6. Power Spectral Density

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	-3.83	8	PASS
6	2437	-2.79	8	PASS
11	2462	-2.38	8	PASS

B. Test Plot:



(Channel 1, 802.11b)



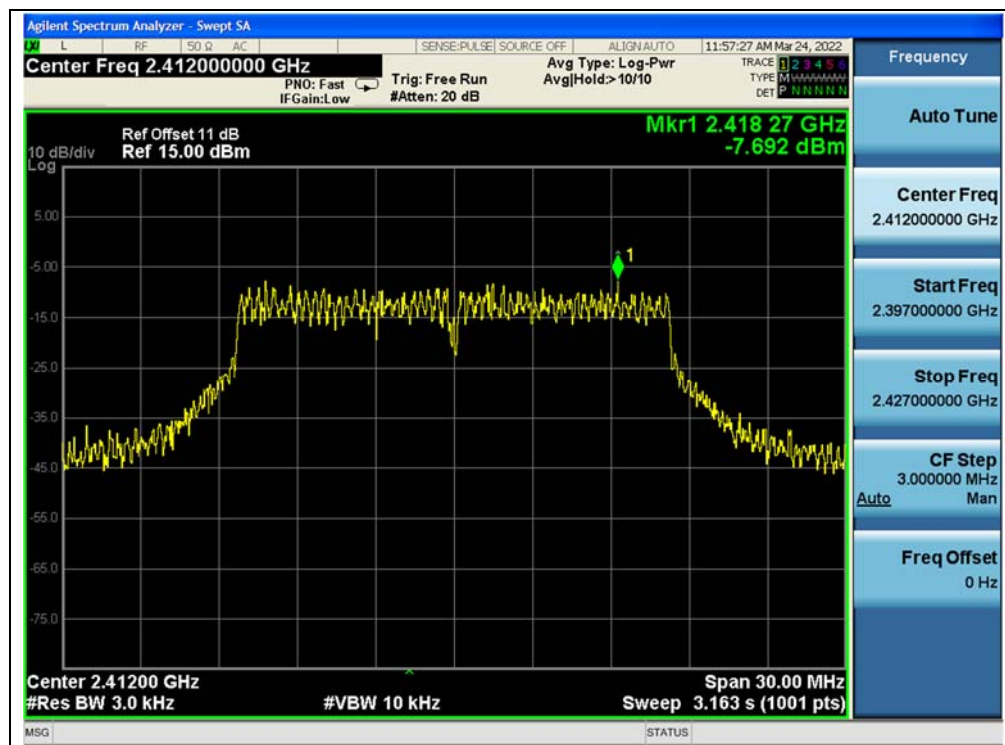
(Channel 6, 802.11b)



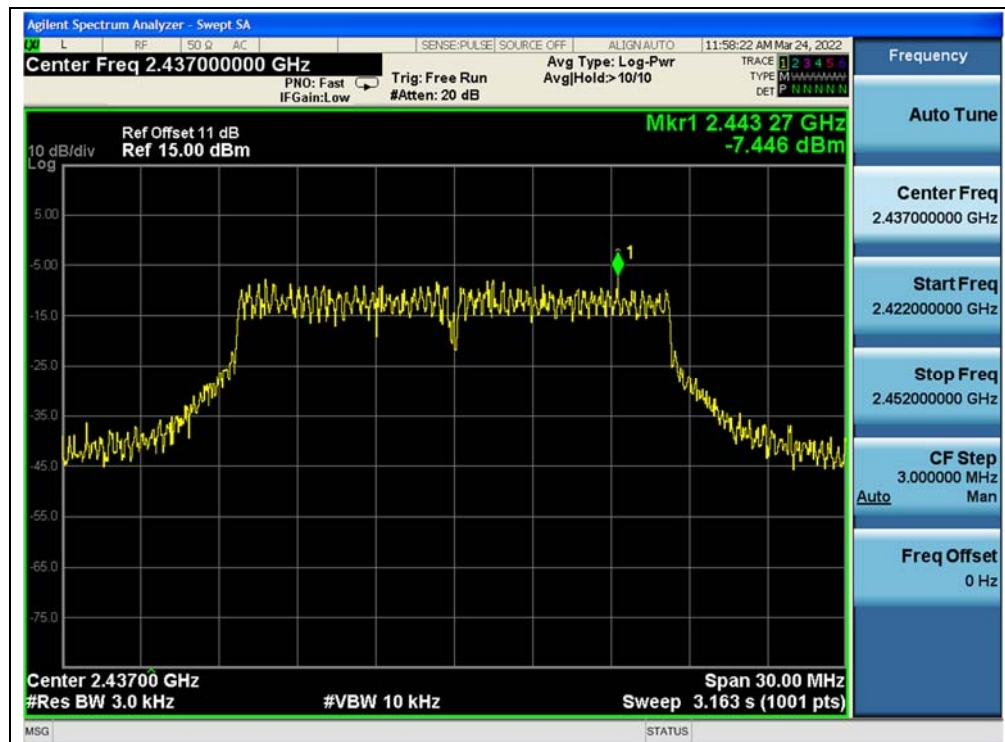
(Channel 11, 802.11b)

**802.11g Mode****A. Test Verdict:**

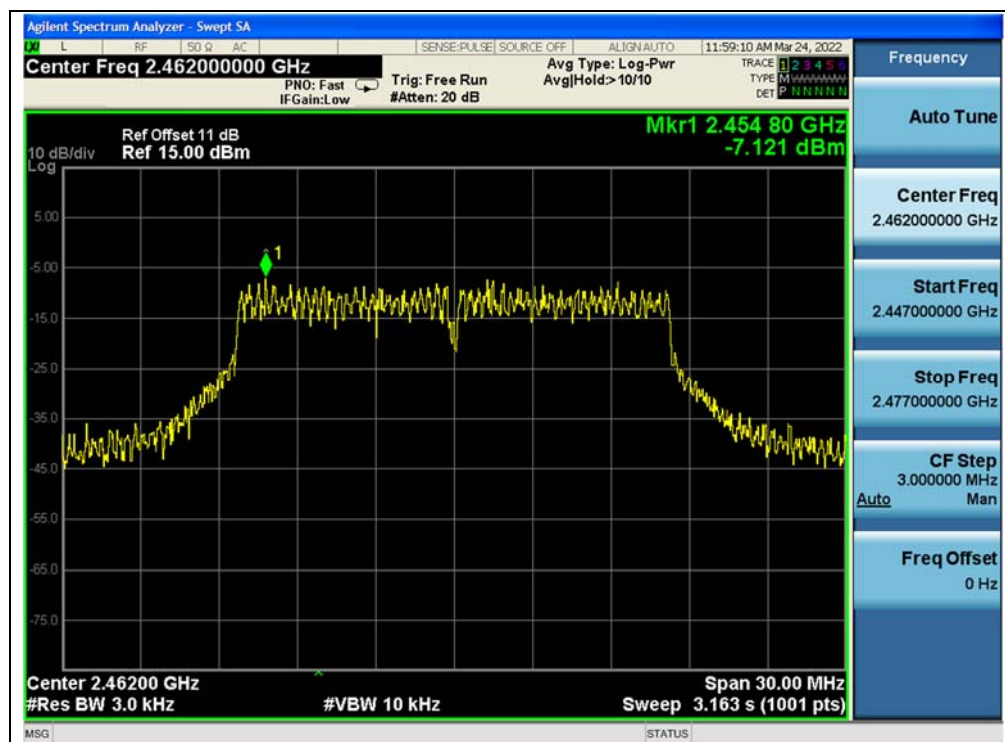
Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-7.69	8	PASS
6	2437	-7.45	8	PASS
11	2462	-7.12	8	PASS

B. Test Plot:

(Channel 1, 802.11g)



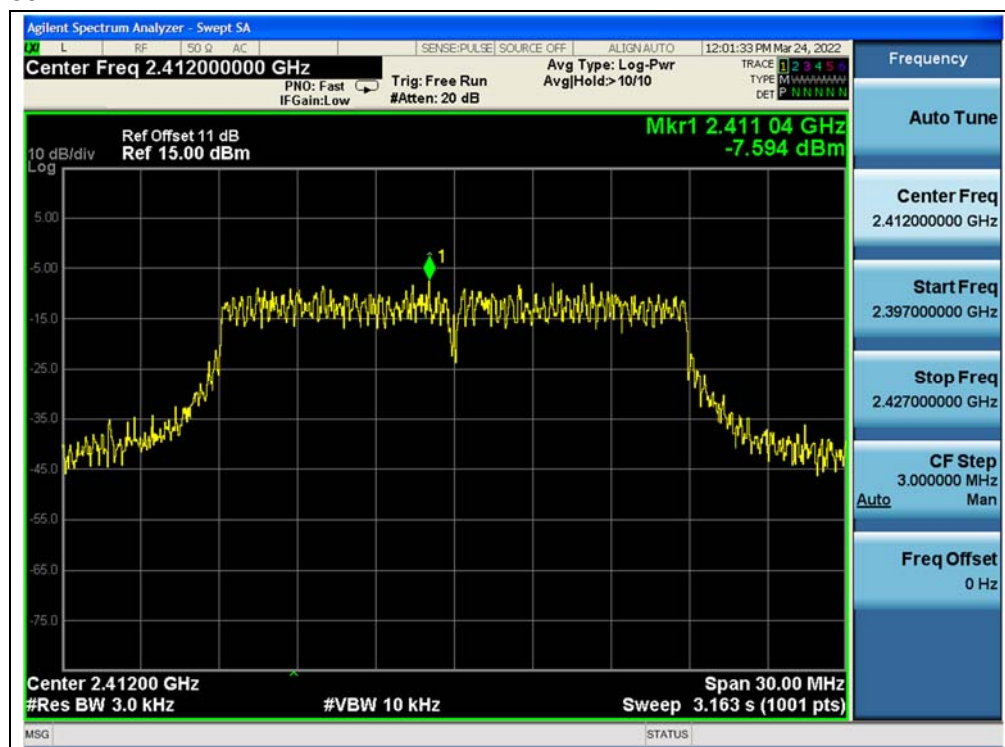
(Channel 6, 802.11g)



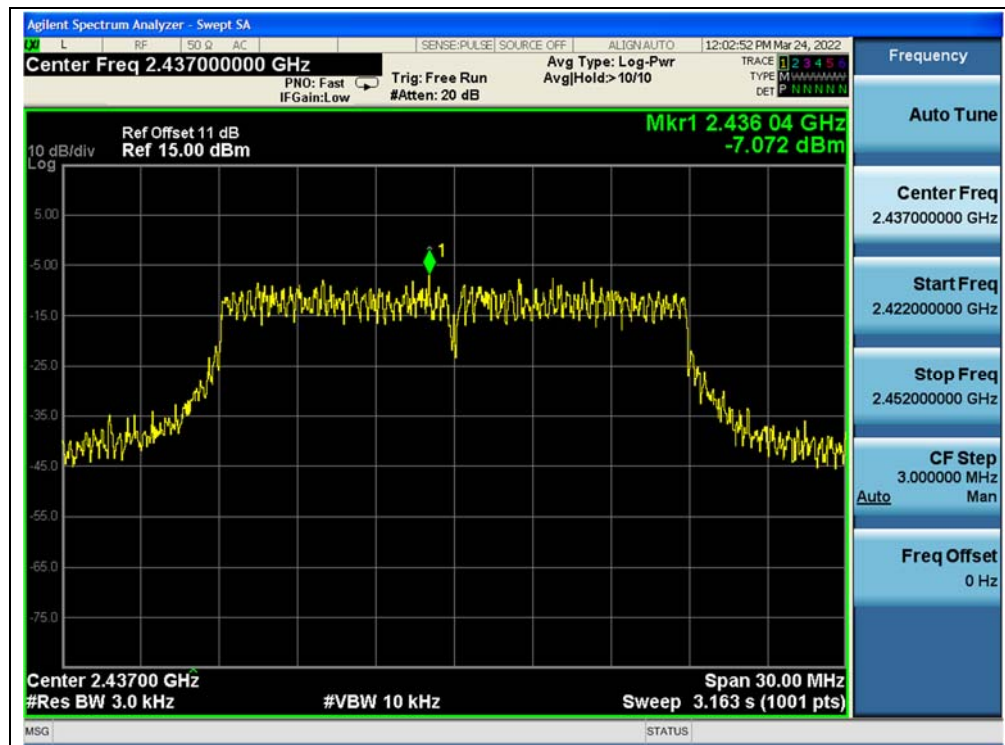
(Channel 11, 802.11g)

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

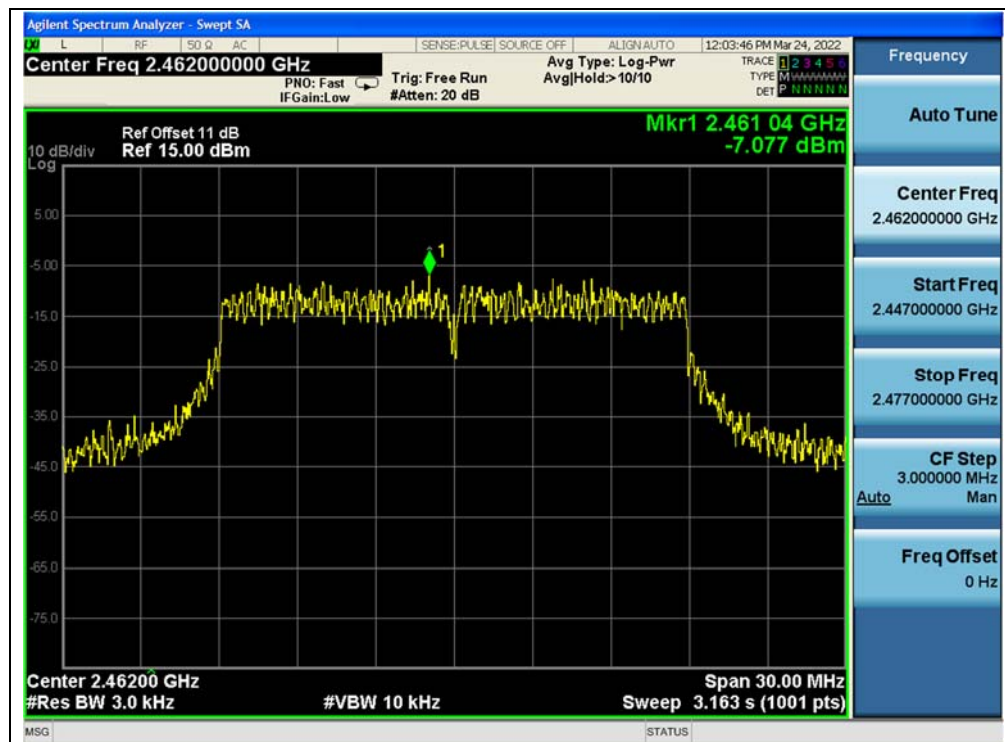
Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
1	2412	-7.59	8	PASS
6	2437	-7.07	8	PASS
11	2462	-7.08	8	PASS

B. Test Plot:

(Channel 1, 802.11n (HT20))



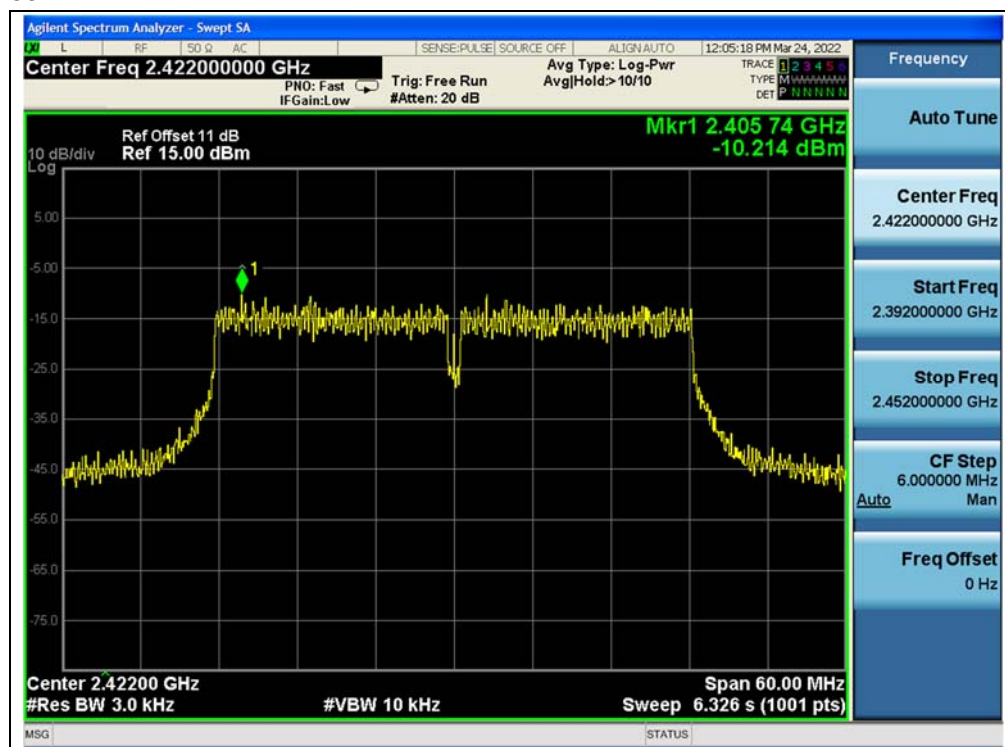
(Channel 6, 802.11n (HT20))



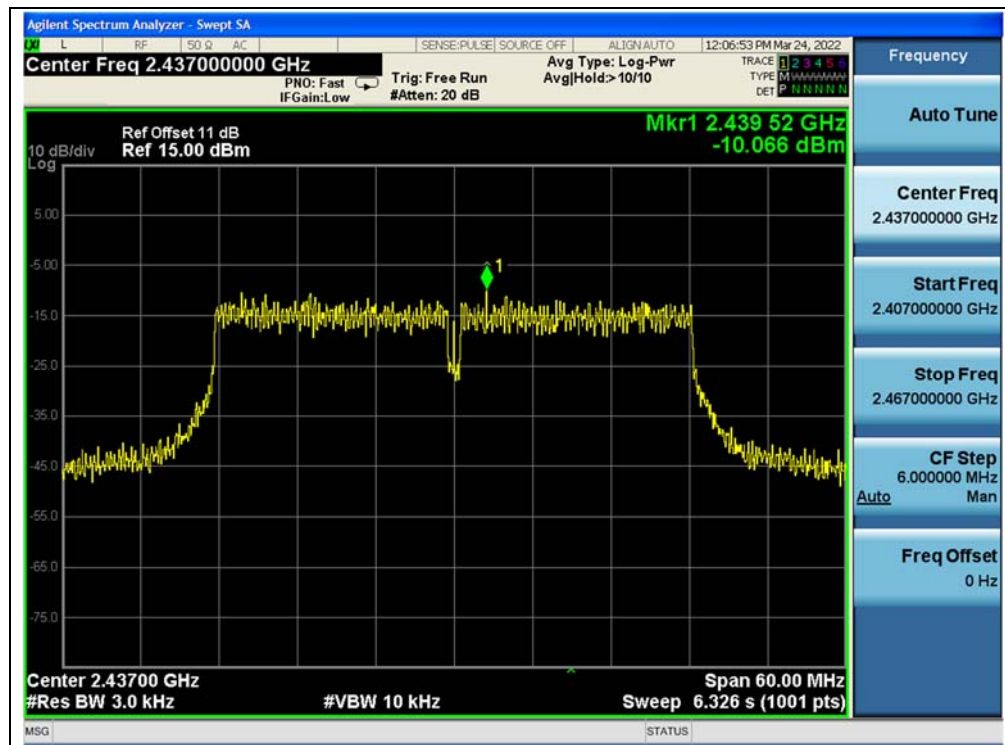
(Channel 11, 802.11n (HT20))

**802.11n (HT40) Mode****A. Test Verdict:**

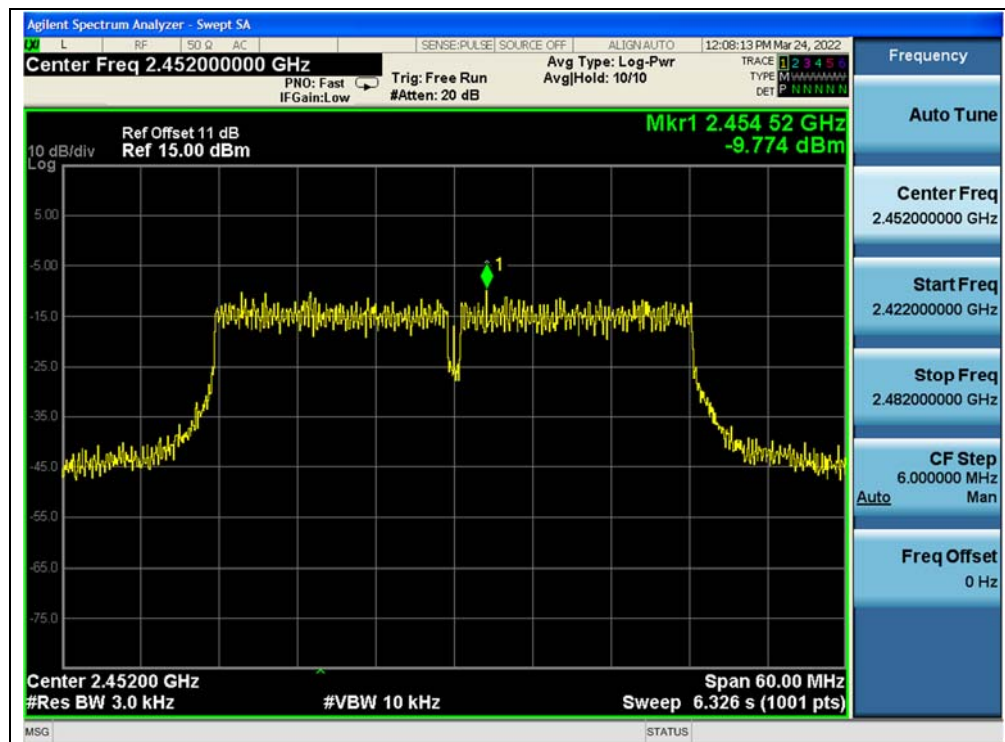
Spectral power density (dBm/3kHz)				
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
3	2422	-10.21	8	PASS
6	2437	-10.07	8	PASS
9	2452	-9.77	8	PASS

B. Test Plot:

(Channel 3, 802.11n (HT40))



(Channel 6, 802.11n (HT40))



(Channel 9, 802.11n (HT40))

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).

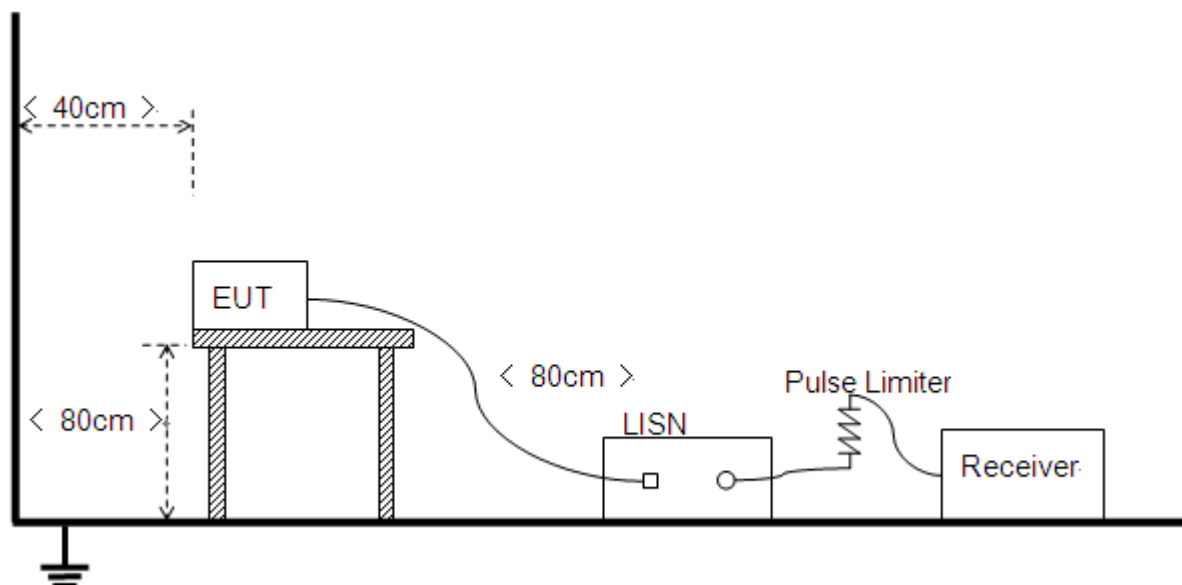
Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

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 + DC source + Antenna + Test board + PC + WIFI TX

Test Voltage: AC 120V/60Hz

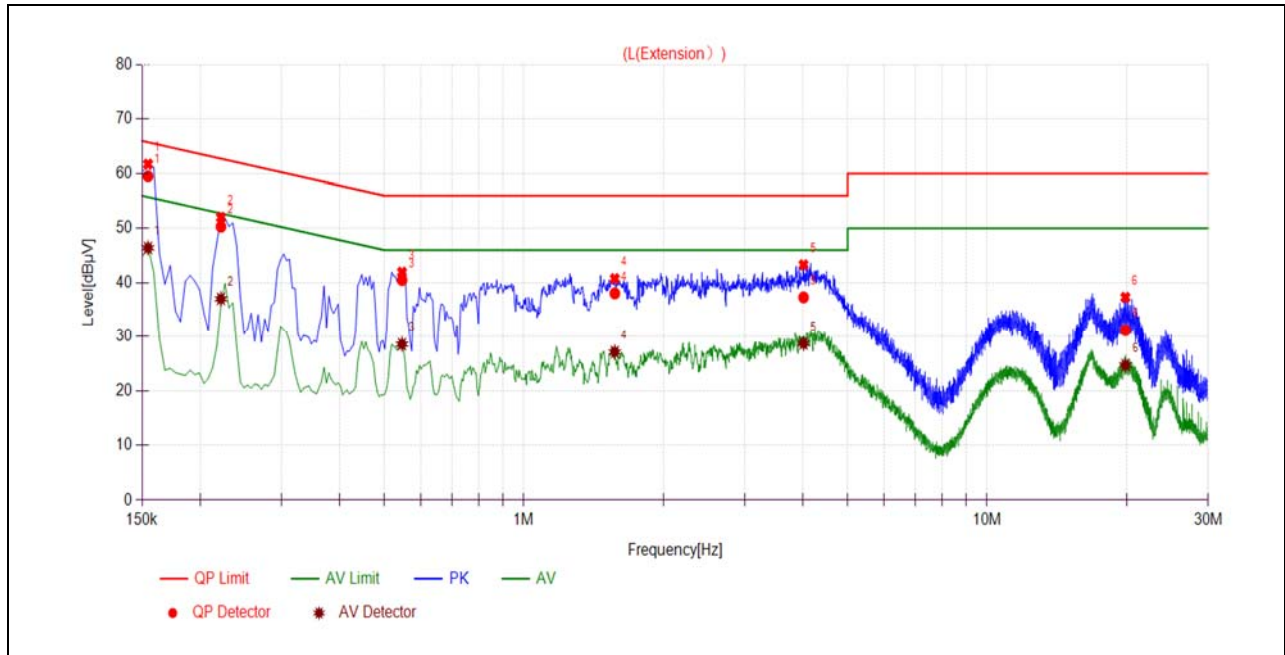
The measurement results are obtained as below:

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

U_R : Receiver Reading

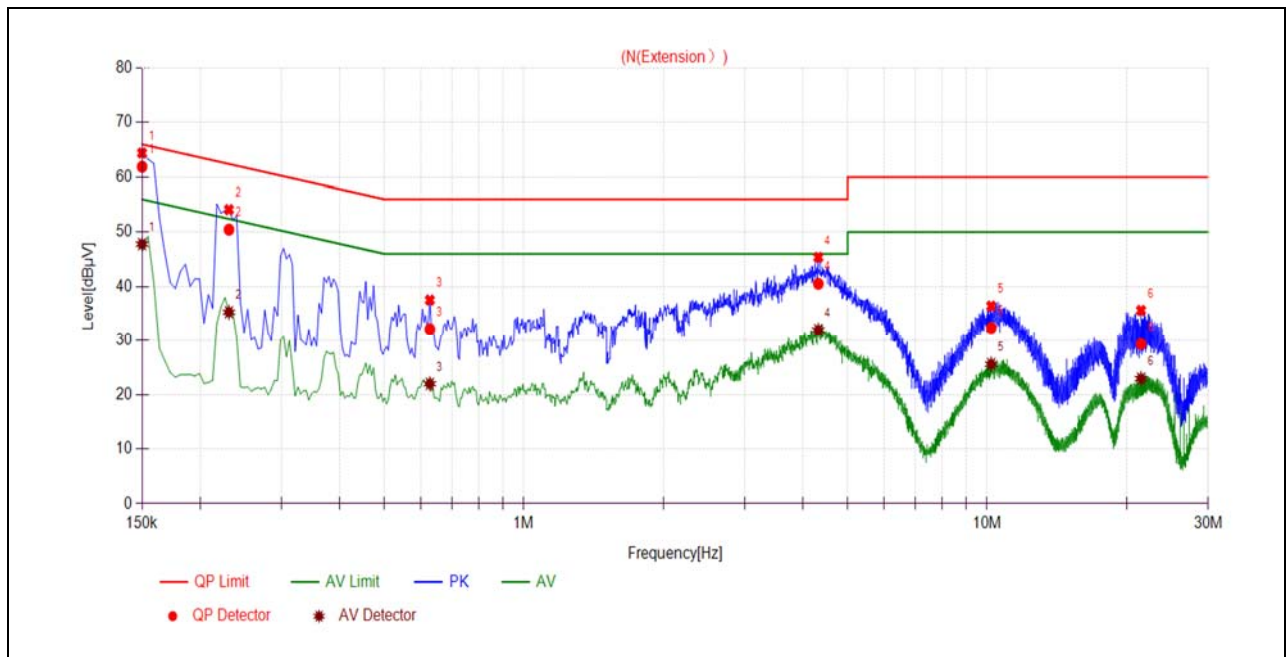
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1545	59.50	46.42	65.76	55.76	Line	PASS
2	0.2220	50.33	37.02	62.74	52.74		PASS
3	0.5460	40.50	28.55	56.00	46.00		PASS
4	1.5719	38.03	27.10	56.00	46.00		PASS
5	4.0158	37.30	28.67	56.00	46.00		PASS
6	19.8882	31.17	24.70	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	0.1500	61.90	47.80	66.00	56.00	Neutral	PASS
2	0.2310	50.46	35.29	62.41	52.41		PASS
3	0.6270	32.15	21.96	56.00	46.00		PASS
4	4.3211	40.53	31.98	56.00	46.00		PASS
5	10.2070	32.40	25.60	60.00	50.00		PASS
6	21.4890	29.31	22.92	60.00	50.00		PASS

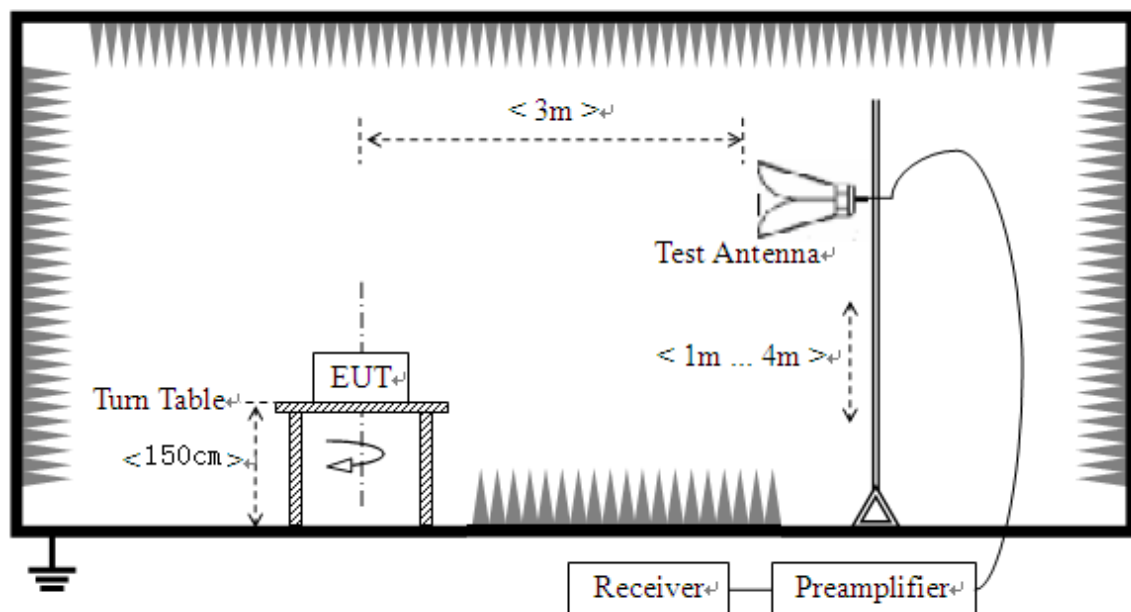
2.8. Restricted Frequency Bands

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

KDB 558074 Section 8.6 and 8.7 was used in order to prove compliance.

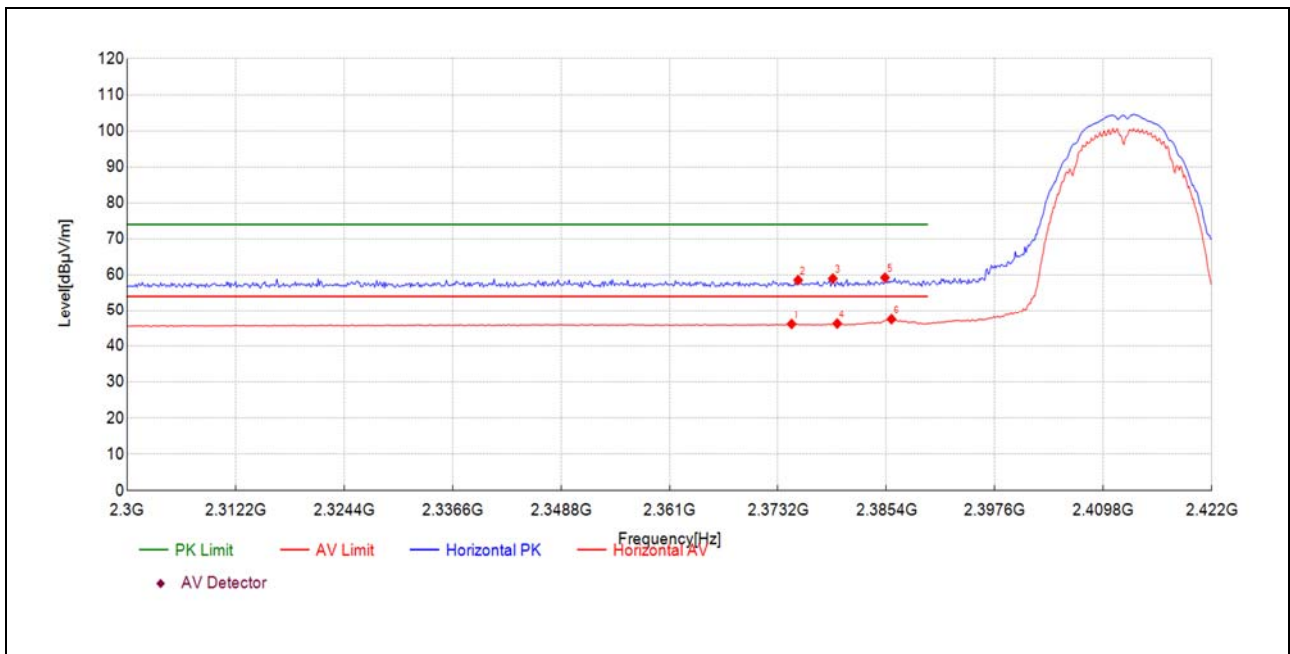
2.8.4. Test Result

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (Horizontal) was recorded in this test report.

Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

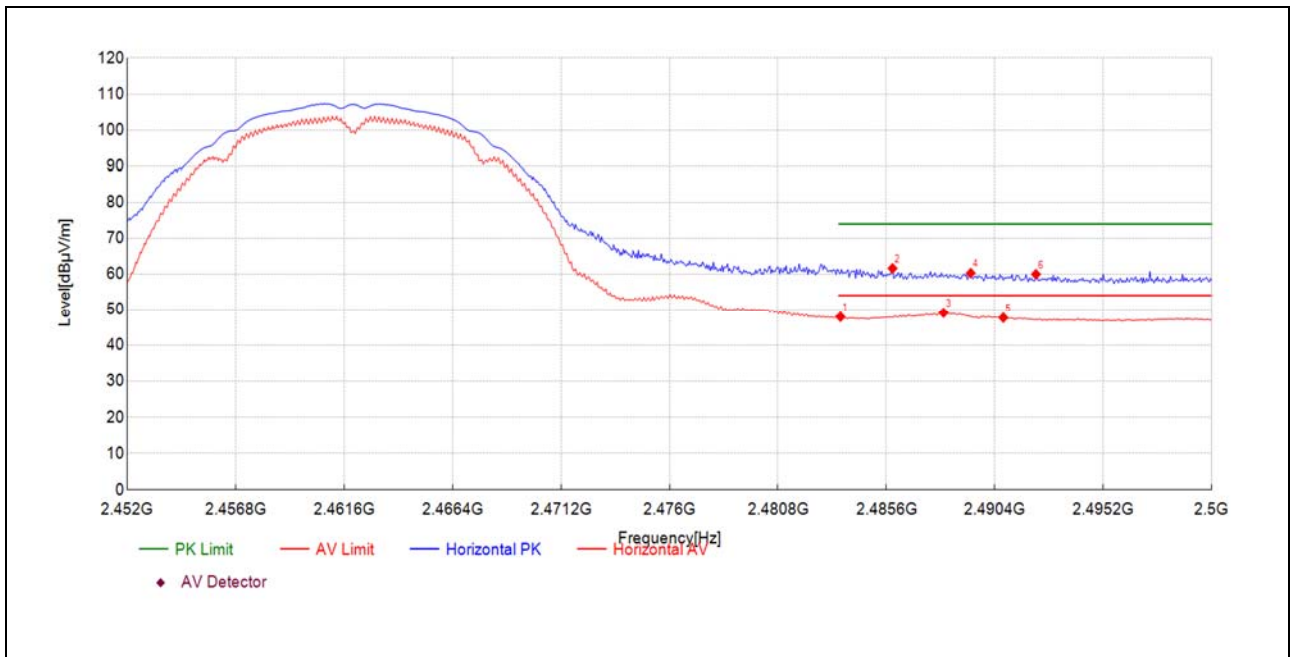
802.11b Mode

Plot for Channel 1



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2374.74	8.6	46.11	37.480	54.00	7.89	150	6	AV	PASS
2375.47	21.1	58.55	37.480	74.00	15.45	150	245	PK	PASS
2379.38	21.5	58.99	37.480	74.00	15.01	150	218	PK	PASS
2379.87	8.7	46.22	37.480	54.00	7.78	150	14	AV	PASS
2385.24	21.8	59.25	37.490	74.00	14.75	150	324	PK	PASS
2385.97	10.0	47.45	37.490	54.00	6.55	150	19	AV	PASS

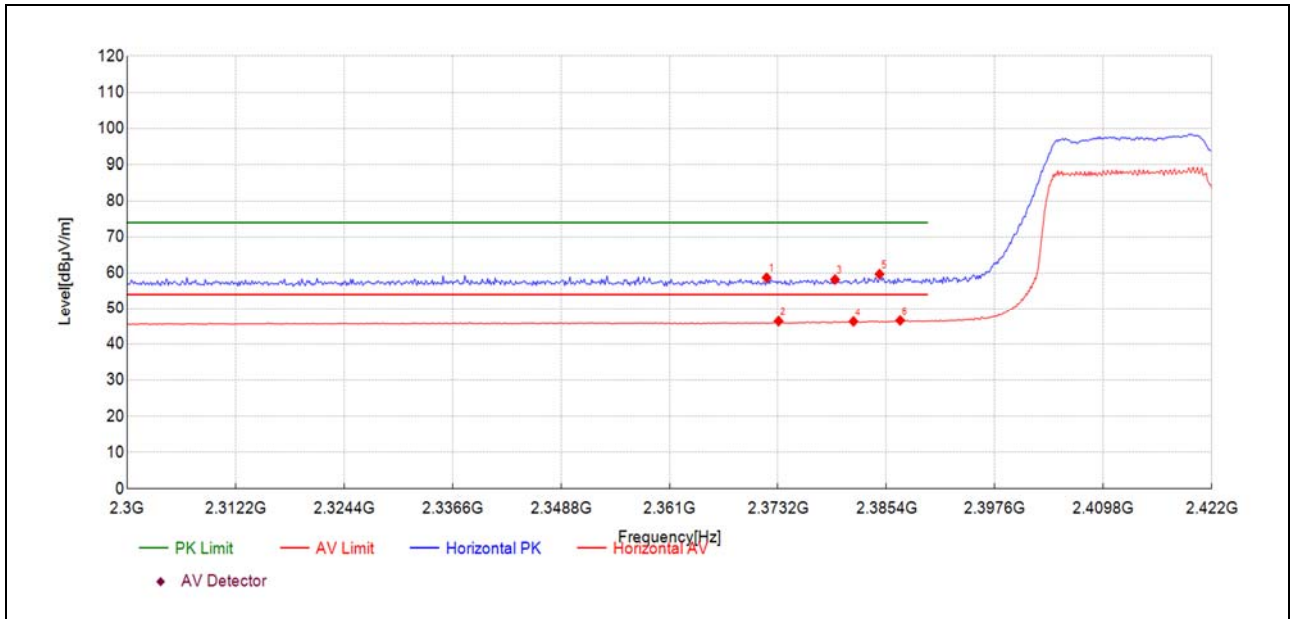
Plot for Channel 11



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.57	9.7	47.95	38.280	54.00	6.05	150	27	AV	PASS
2485.87	23.3	61.61	38.270	74.00	12.39	150	22	PK	PASS
2488.13	10.8	49.11	38.270	54.00	4.89	150	27	AV	PASS
2489.33	22.1	60.31	38.260	74.00	13.69	150	306	PK	PASS
2490.77	9.4	47.70	38.270	54.00	6.30	150	36	AV	PASS
2492.22	21.7	59.99	38.260	74.00	14.01	150	226	PK	PASS

**802.11n (HT40) Mode**

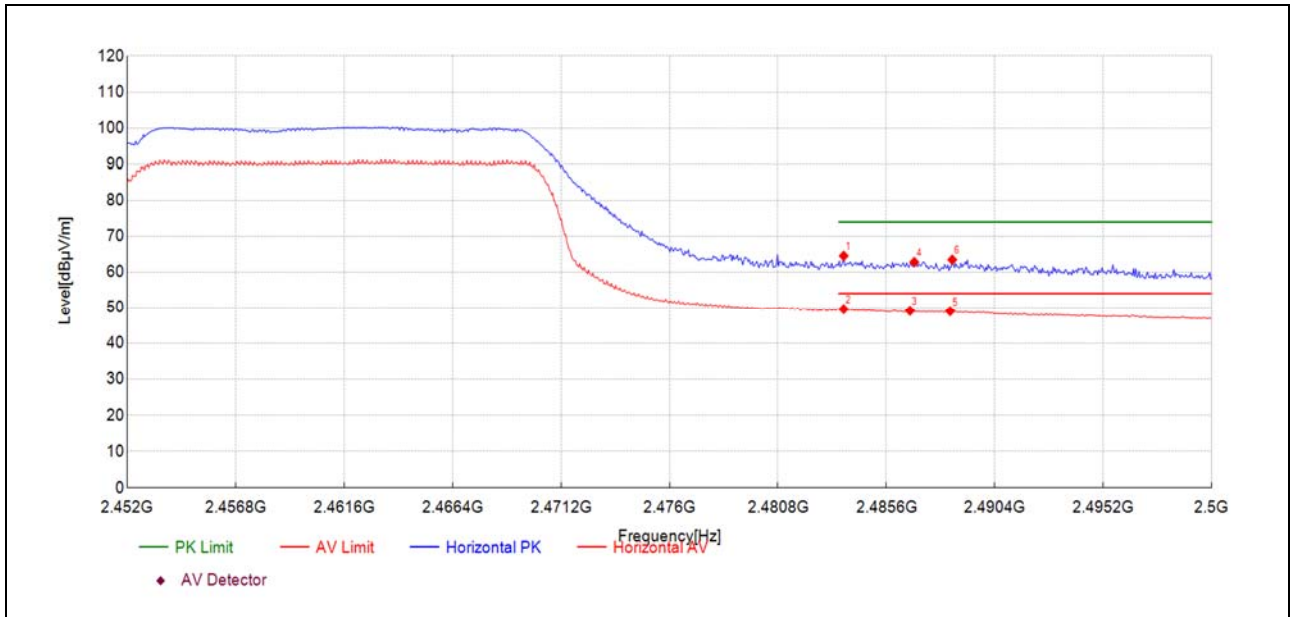
Plot for Channel 3



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2371.93	21.2	58.71	37.470	74.00	15.29	150	82	PK	PASS
2373.27	8.9	46.38	37.480	54.00	7.62	150	6	AV	PASS
2379.62	20.7	58.21	37.480	74.00	15.79	150	28	PK	PASS
2381.70	8.8	46.30	37.480	54.00	7.70	150	19	AV	PASS
2384.63	22.2	59.71	37.490	74.00	14.29	150	302	PK	PASS
2386.95	9.1	46.58	37.490	54.00	7.42	150	19	AV	PASS



Plot for Channel 9



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.71	26.3	64.56	38.280	74.00	9.44	150	316	PK	PASS
2483.71	11.3	49.60	38.280	54.00	4.40	150	22	AV	PASS
2486.64	10.9	49.12	38.270	54.00	4.88	150	321	AV	PASS
2486.83	24.5	62.80	38.270	74.00	11.20	150	18	PK	PASS
2488.42	10.7	49.01	38.270	54.00	4.99	150	27	AV	PASS
2488.52	25.2	63.48	38.270	74.00	10.52	150	36	PK	PASS

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

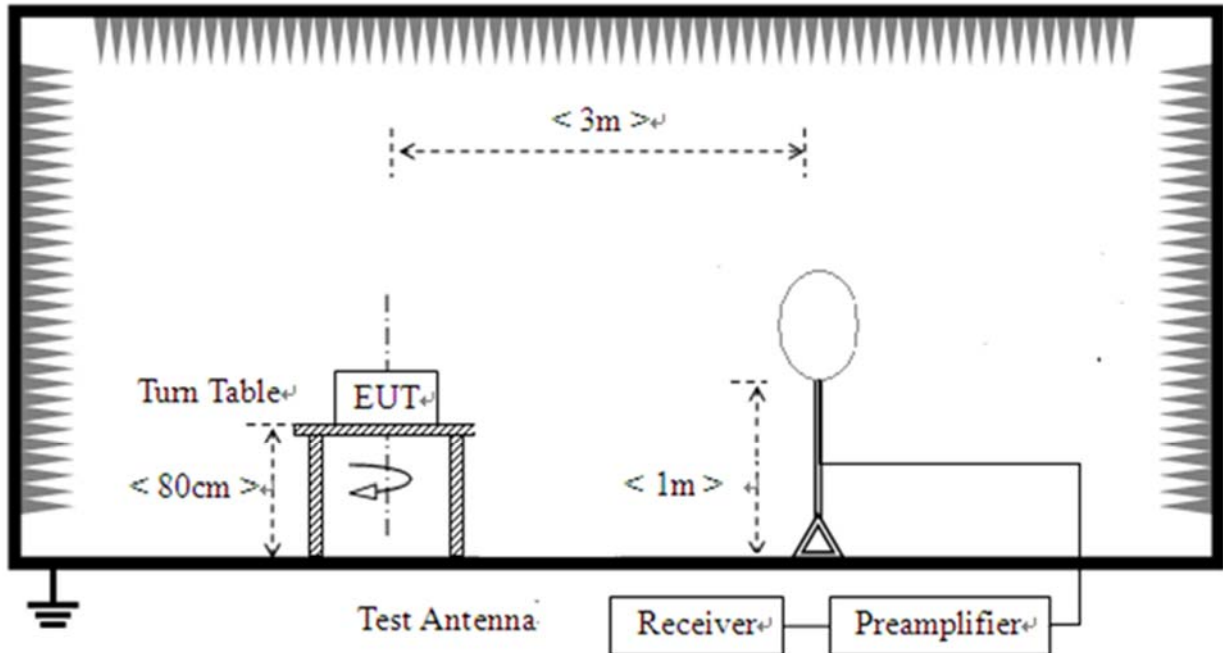
Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

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).

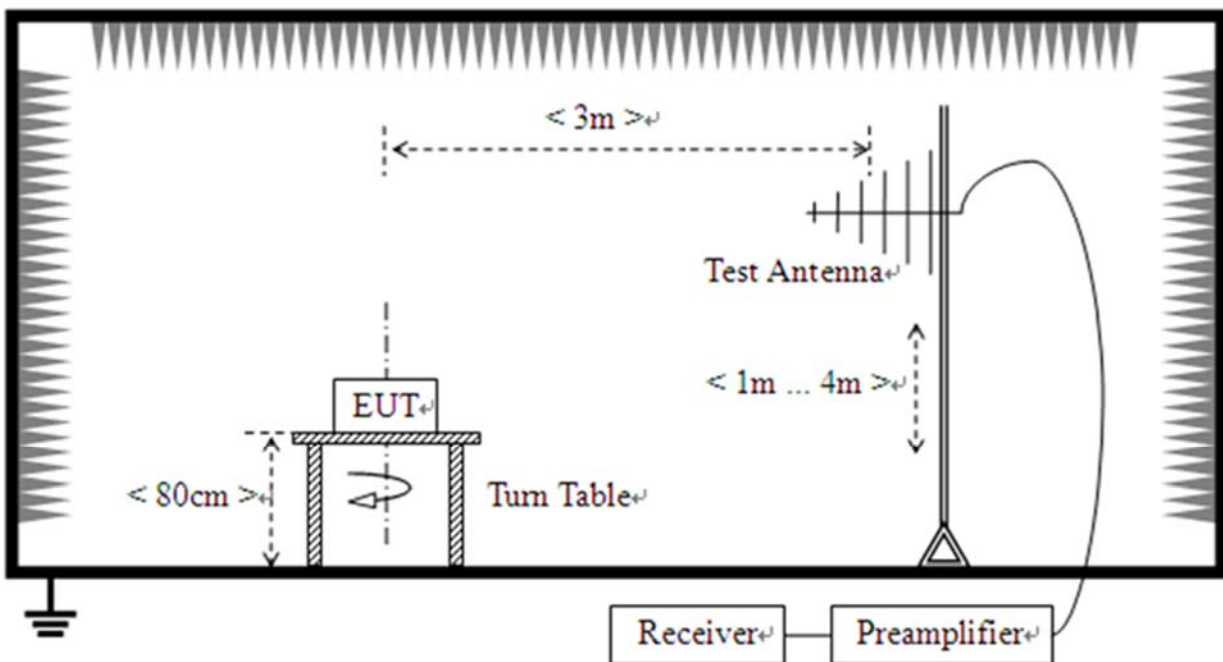
2.9.2. Test Description

Test Setup:

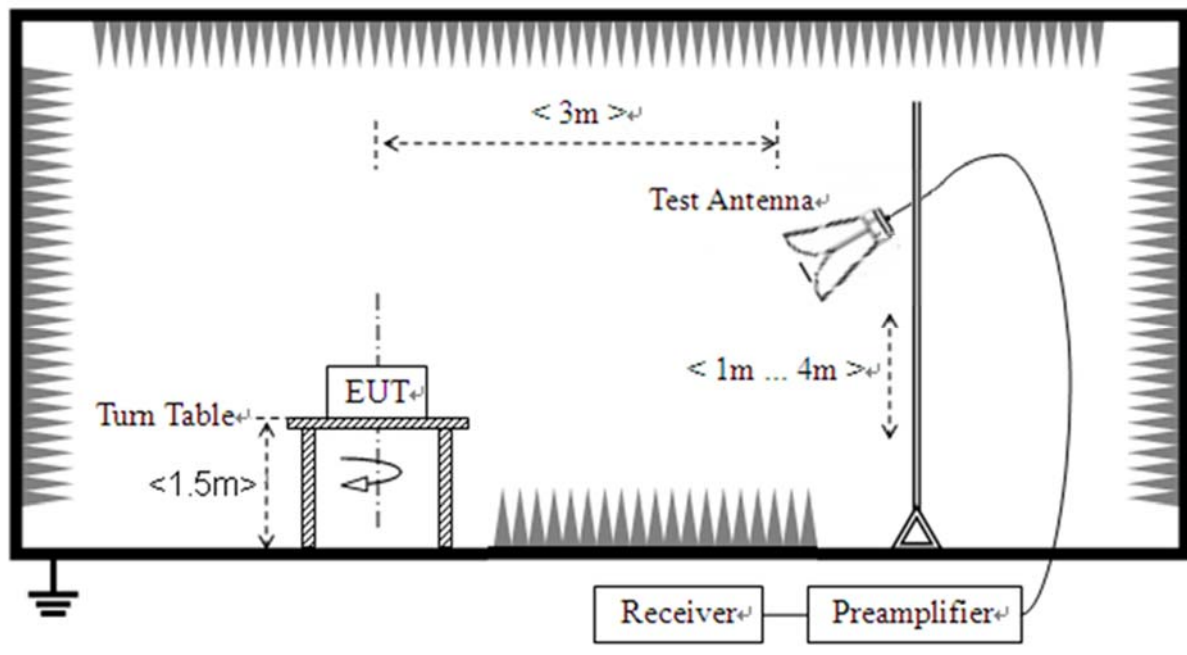
- 1) For radiated emissions from 9kHz to 30MHz



- 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 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. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.



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.

Note 1: 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.

Note 2: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded.

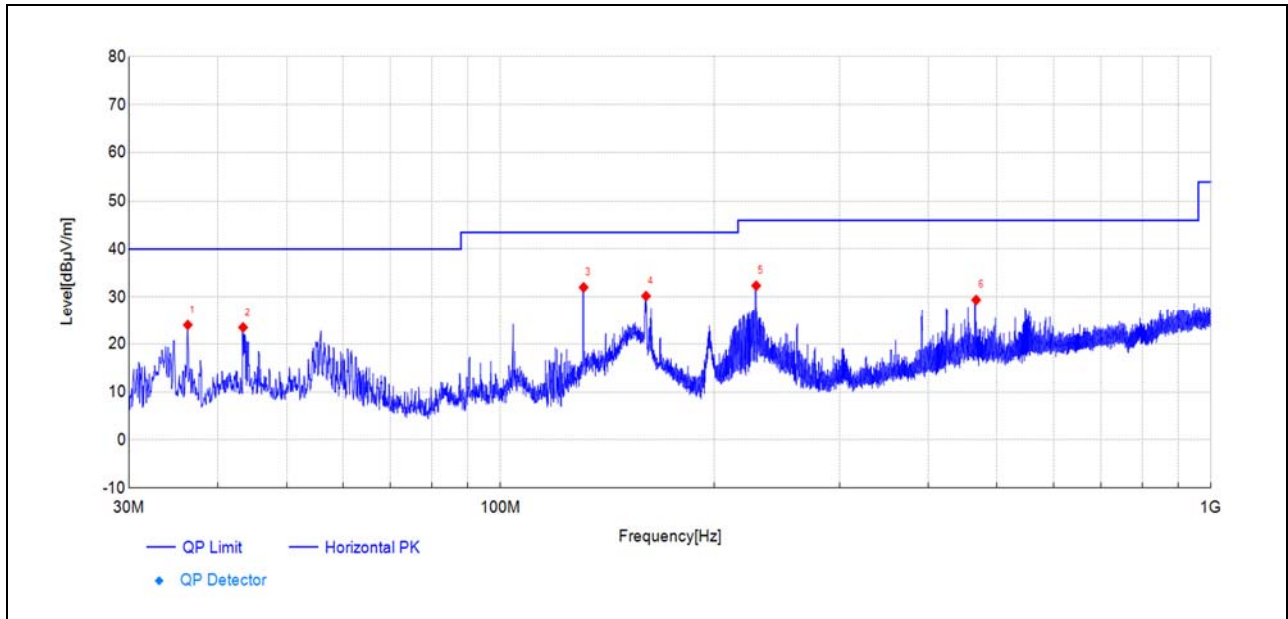
Note 3: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.



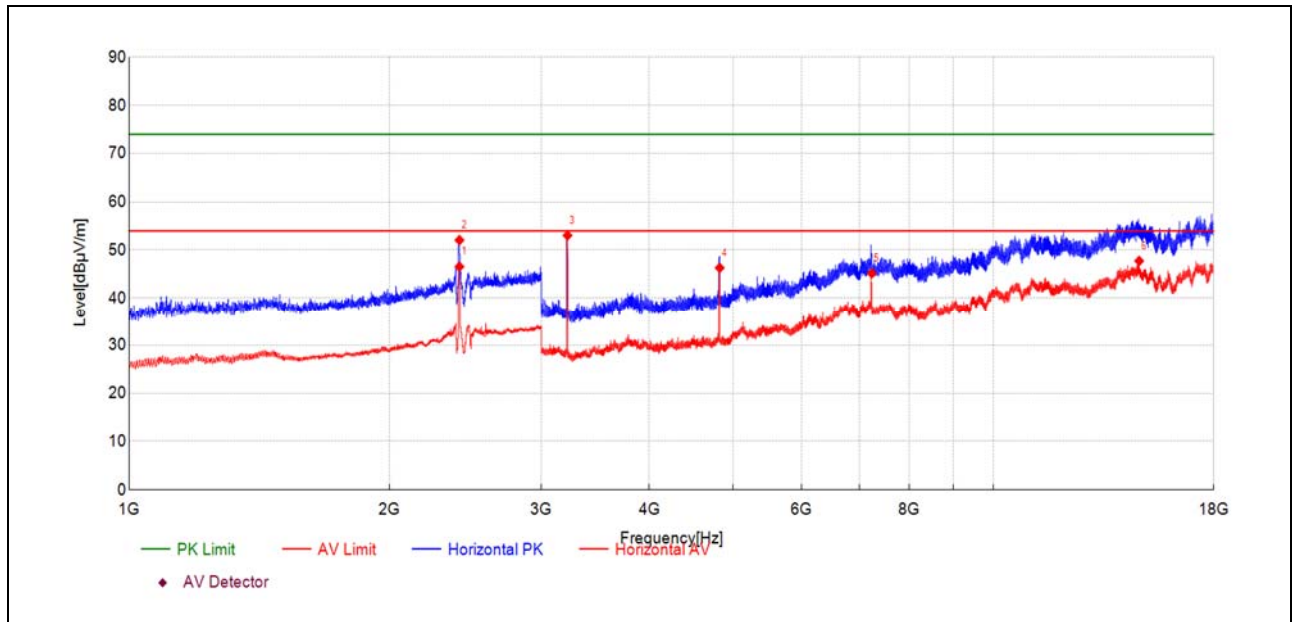
802.11b Mode

Plot for Channel 1



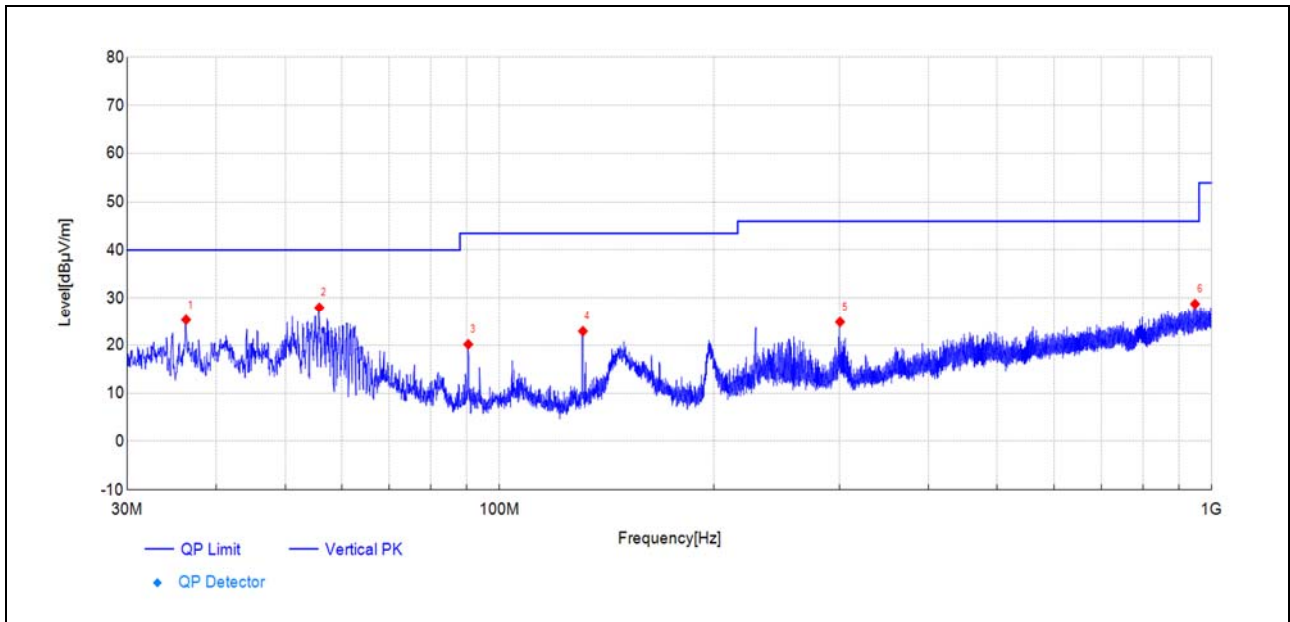
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	53.5	24.00	-29.500	40.00	16.00	150	154	PK	PASS
43.44	51.4	23.49	-27.940	40.00	16.51	150	358	PK	PASS
130.93	63.8	32.03	-31.790	43.50	11.47	150	79	PK	PASS
160.28	61.4	30.21	-31.160	43.50	13.29	150	14	PK	PASS
229.05	60.6	32.38	-28.180	46.00	13.62	150	9	PK	PASS
467.20	51.1	29.41	-21.680	46.00	16.59	150	89	PK	PASS



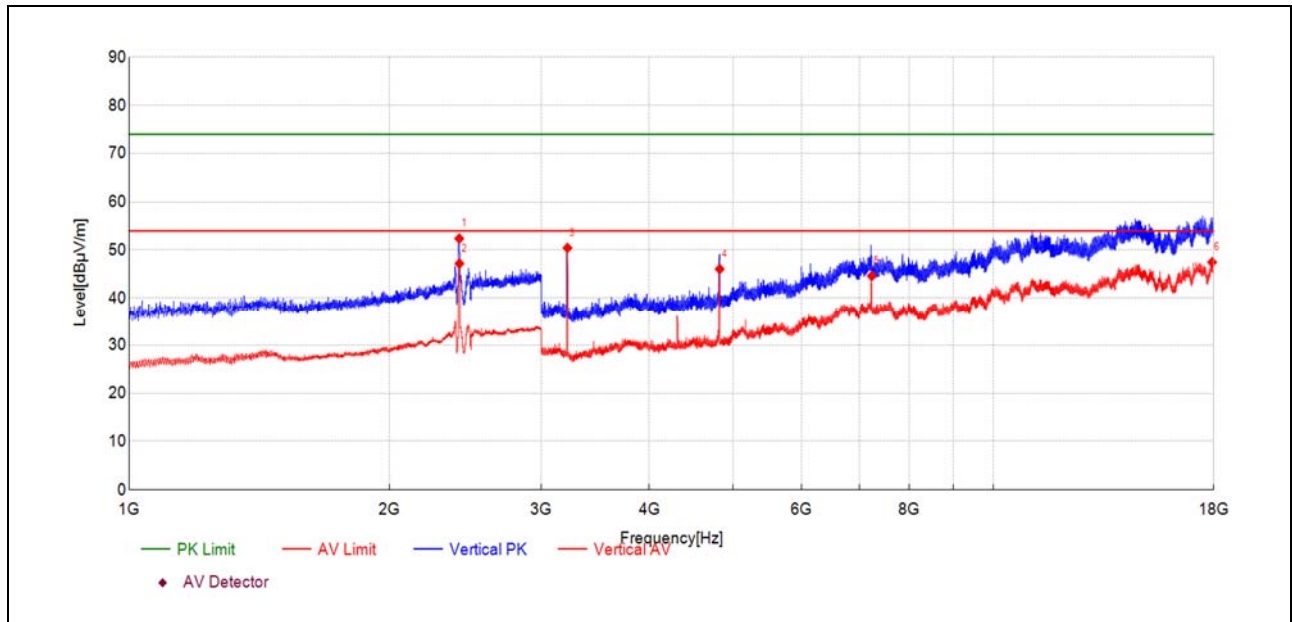
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2411.42	41.2	46.56	5.390	-	-	150	90	AV	NA
2411.87	46.7	52.08	5.400	-	-	150	90	PK	NA
3216.51	64.1	53.06	-11.010	54.00	0.94	150	74	AV	PASS
4824.56	51.3	46.31	-4.990	54.00	7.69	150	110	AV	PASS
7235.64	40.6	45.17	4.580	54.00	8.83	150	171	AV	PASS
14754.39	27.6	47.75	20.130	54.00	6.25	150	255	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

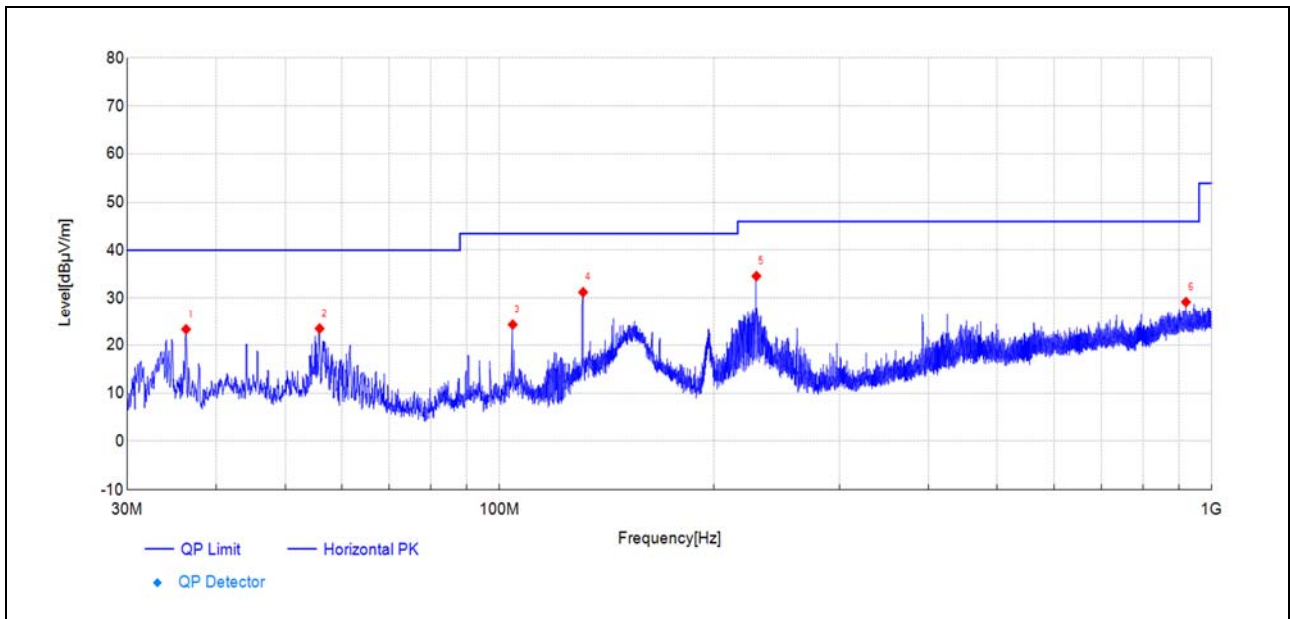
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	54.8	25.33	-29.500	40.00	14.67	150	266	PK	PASS
55.85	56.0	27.98	-28.010	40.00	12.02	150	146	PK	PASS
90.39	51.7	20.18	-31.490	43.50	23.32	150	136	PK	PASS
130.93	54.7	22.93	-31.790	43.50	20.57	150	120	PK	PASS
300.64	50.3	24.87	-25.400	46.00	21.13	150	70	PK	PASS
947.28	39.8	28.76	-11.030	46.00	17.24	150	161	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

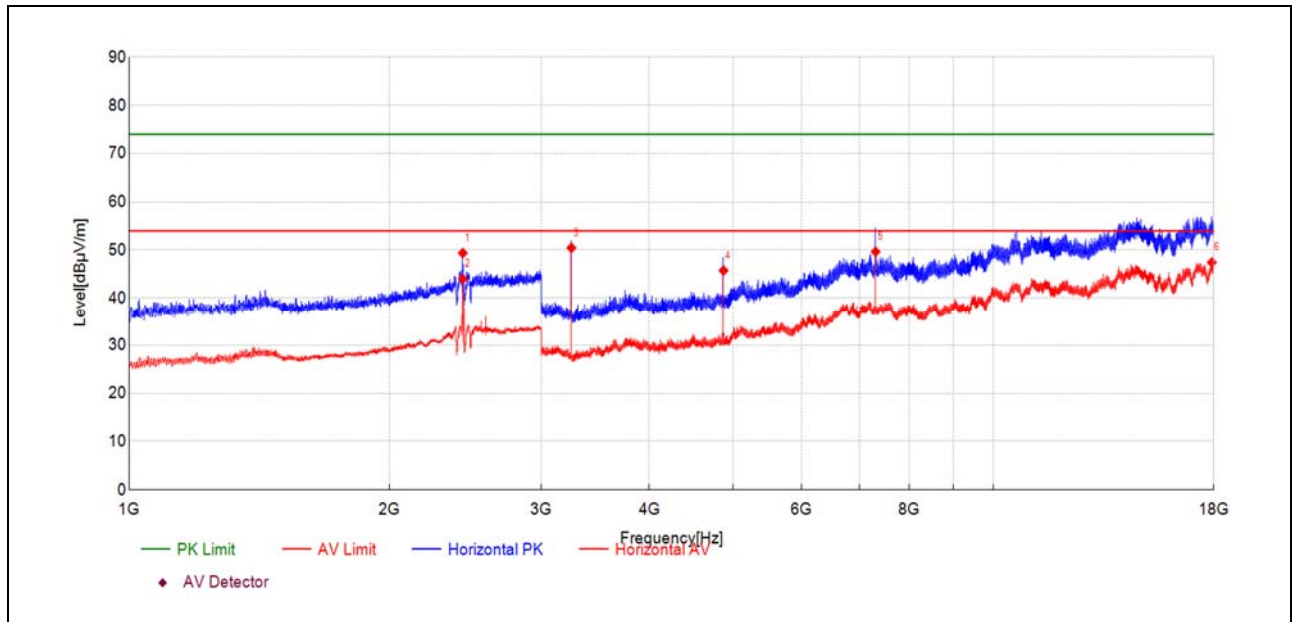
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2410.54	47.0	52.42	5.380	-	-	150	151	PK	NA
2411.42	41.8	47.20	5.390	-	-	150	157	AV	NA
3216.51	61.5	50.46	-11.010	54.00	3.54	150	207	AV	PASS
4824.56	51.1	46.06	-4.990	54.00	7.94	150	267	AV	PASS
7235.14	40.0	44.63	4.590	54.00	9.37	150	194	AV	PASS
17920.50	28.3	47.48	19.210	54.00	6.52	150	327	AV	PASS

Plot for Channel 6



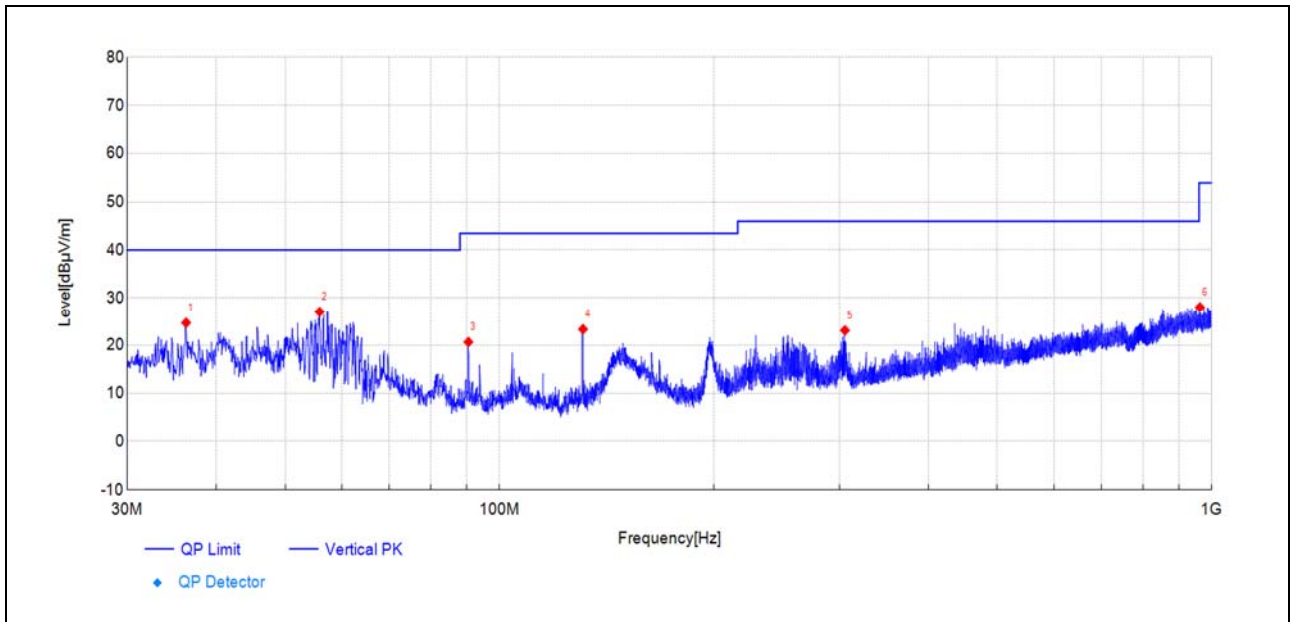
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	52.8	23.31	-29.500	40.00	16.69	150	49	PK	PASS
55.90	51.5	23.46	-28.020	40.00	16.54	150	261	PK	PASS
104.35	53.8	24.28	-29.490	43.50	19.22	150	4	PK	PASS
131.03	63.0	31.24	-31.800	43.50	12.26	150	120	PK	PASS
229.44	62.7	34.61	-28.080	46.00	11.39	150	336	PK	PASS
919.83	40.7	29.19	-11.500	46.00	16.81	150	115	PK	PASS



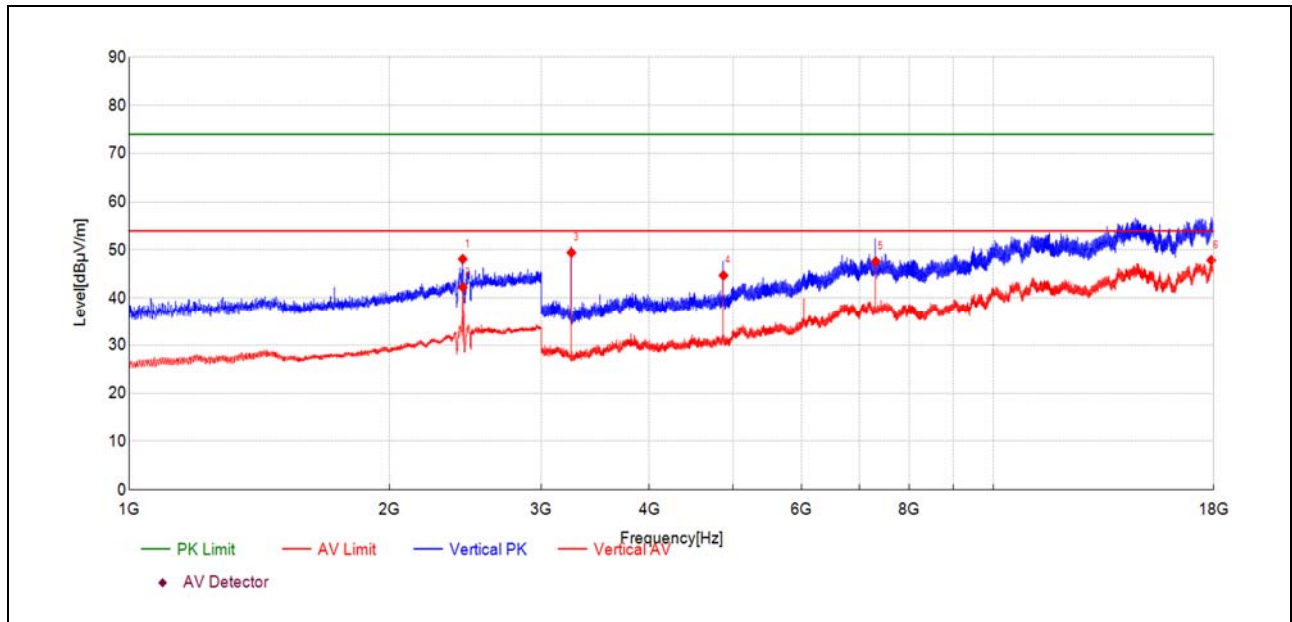
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2433.21	43.7	49.39	5.710	-	-	150	168	PK	NA
2433.65	38.3	44.00	5.720	-	-	150	168	AV	NA
3250.01	61.8	50.47	-11.320	54.00	3.53	150	155	AV	PASS
4874.56	50.7	45.76	-4.970	54.00	8.24	150	106	AV	PASS
7310.64	45.5	49.68	4.190	54.00	4.32	150	95	AV	PASS
17906.50	28.0	47.44	19.430	54.00	6.56	150	295	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

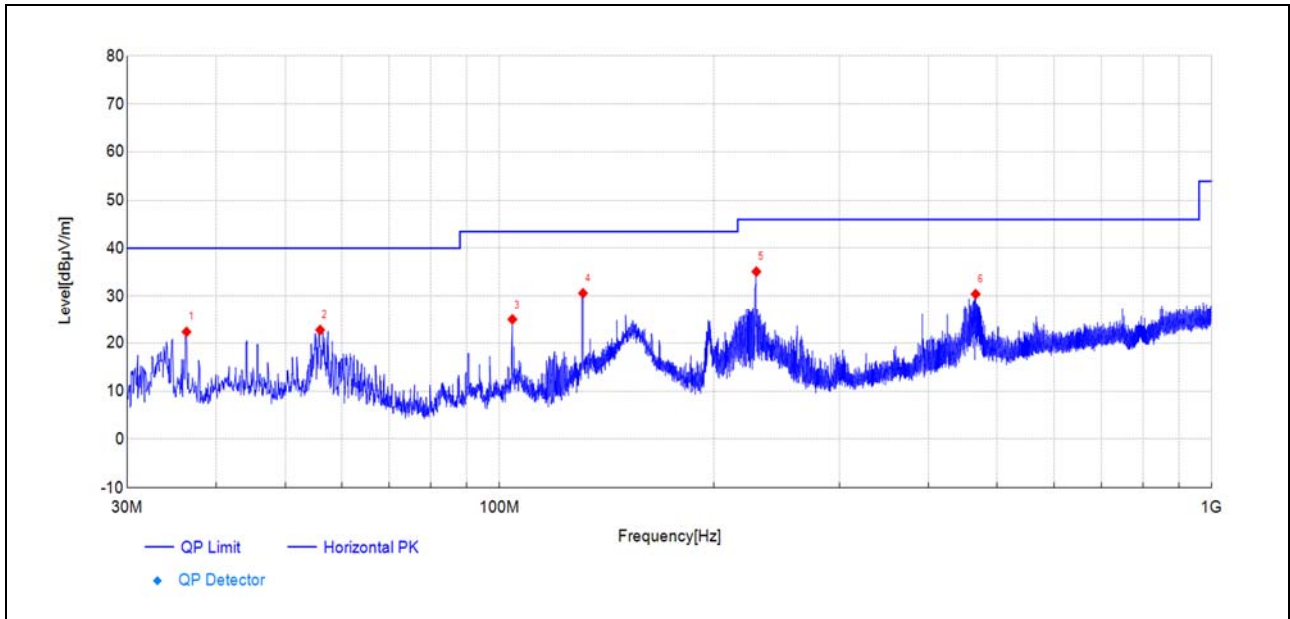
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	54.2	24.72	-29.500	40.00	15.28	150	326	PK	PASS
55.90	55.1	27.05	-28.020	40.00	12.95	150	121	PK	PASS
90.43	52.2	20.69	-31.480	43.50	22.81	150	161	PK	PASS
130.98	55.1	23.36	-31.780	43.50	20.14	150	141	PK	PASS
305.49	48.2	23.11	-25.120	46.00	22.89	150	206	PK	PASS
962.31	39.2	28.06	-11.170	54.00	25.94	150	55	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

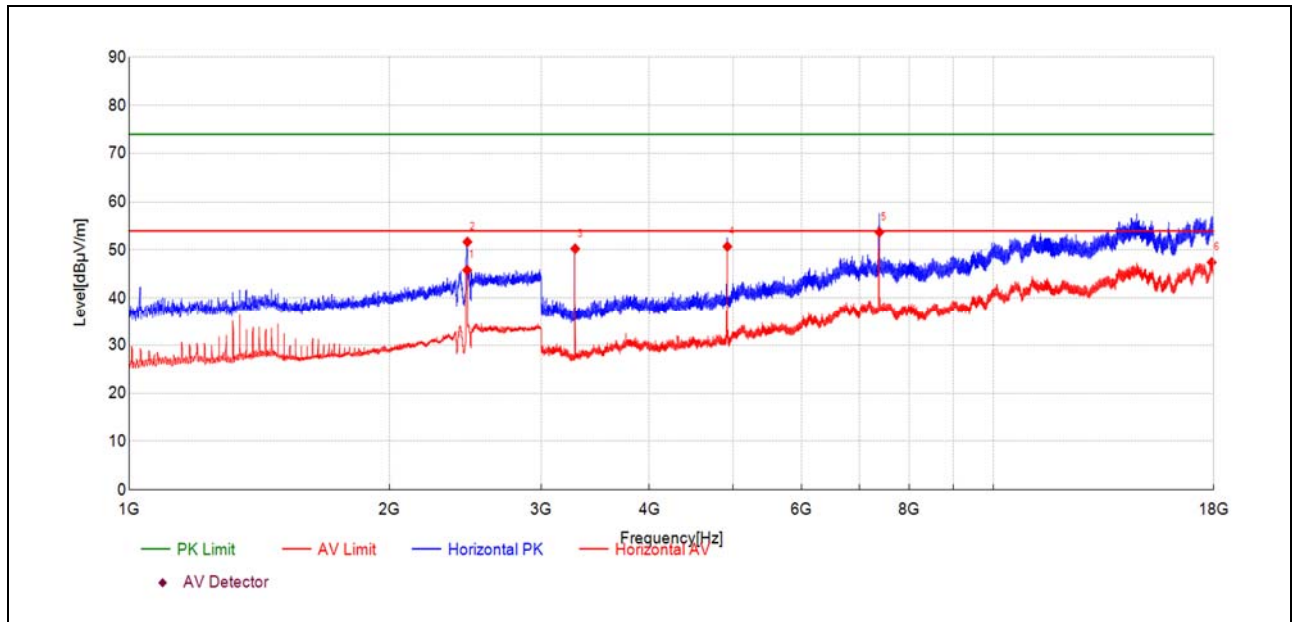
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2432.76	42.4	48.14	5.710	-	-	150	148	PK	NA
2433.65	36.6	42.28	5.720	-	-	150	143	AV	NA
3250.01	60.8	49.47	-11.320	54.00	4.53	150	279	AV	PASS
4874.56	49.7	44.73	-4.970	54.00	9.27	150	183	AV	PASS
7312.14	43.4	47.63	4.200	54.00	6.37	150	3	AV	PASS
17878.00	28.5	47.90	19.410	54.00	6.10	150	194	AV	PASS

Plot for Channel 11



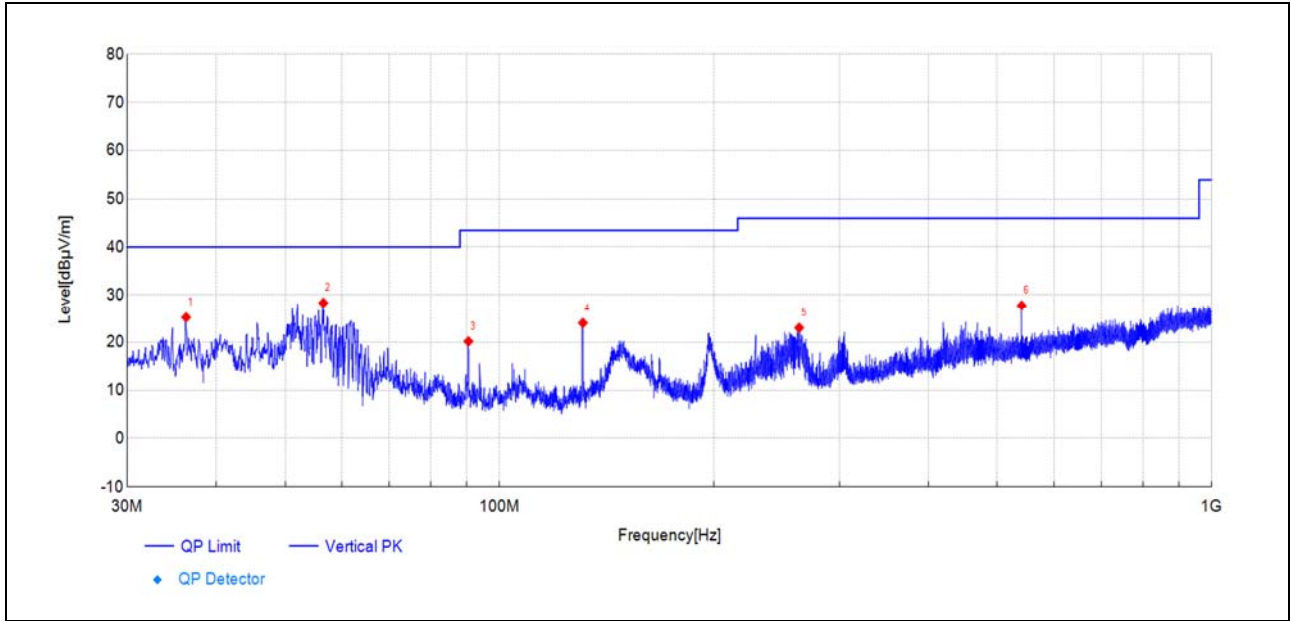
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.35	51.8	22.35	-29.480	40.00	17.65	150	145	PK	PASS
56.00	50.8	22.75	-28.050	40.00	17.25	150	201	PK	PASS
104.26	54.5	24.96	-29.540	43.50	18.54	150	250	PK	PASS
130.98	62.4	30.61	-31.780	43.50	12.89	150	94	PK	PASS
229.39	63.2	35.13	-28.090	46.00	10.87	150	45	PK	PASS
466.13	52.3	30.43	-21.870	46.00	15.57	150	54	PK	PASS



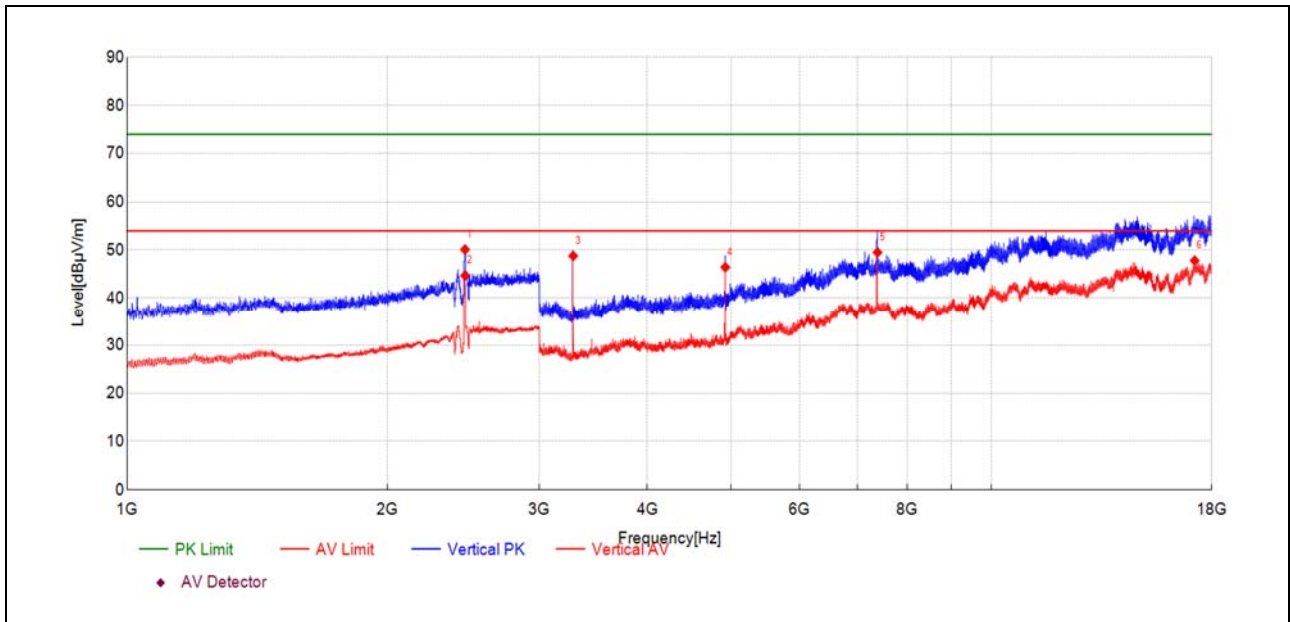
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2461.66	39.9	45.84	5.940	-	-	150	162	AV	NA
2463.44	45.8	51.71	5.940	-	-	150	162	PK	NA
3283.01	61.5	50.29	-11.170	54.00	3.71	150	356	AV	PASS
4924.56	55.7	50.75	-4.980	54.00	3.25	150	116	AV	PASS
7385.65	49.1	53.74	4.680	54.00	0.26	150	177	AV	PASS
17900.00	27.9	47.45	19.540	54.00	6.55	150	237	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	54.7	25.23	-29.500	40.00	14.77	150	351	PK	PASS
56.58	56.3	28.33	-27.990	40.00	11.67	150	194	PK	PASS
90.43	51.7	20.19	-31.480	43.50	23.31	150	29	PK	PASS
130.93	55.8	24.04	-31.790	43.50	19.46	150	149	PK	PASS
263.49	50.6	23.03	-27.610	46.00	22.97	150	204	PK	PASS
540.88	47.0	27.75	-19.270	46.00	18.25	150	74	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2460.77	44.2	50.12	5.950	-	-	150	224	PK	NA
2461.21	38.7	44.68	5.950	-	-	150	224	AV	NA
3283.01	60.0	48.80	-11.170	54.00	5.20	150	39	AV	PASS
4924.56	51.4	46.43	-4.980	54.00	7.57	150	184	AV	PASS
7387.15	44.9	49.53	4.680	54.00	4.47	150	160	AV	PASS
17197.47	27.9	47.82	19.910	54.00	6.18	150	87	AV	PASS

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 Equipment Utilized

4.1 Conducted Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2025.01.15	2026.01.14
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

4.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2025.01.06	2026.01.05
LISN	8127449	NSLK 8127	Schwarzbeck	2025.01.09	2026.01.18
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2024.05.30	2025.05.29
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	N/A	N/A

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Townsend	V2.5.77.0418
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	2.5.0.0

**4.4 Radiated Test Equipment**

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2024.05.30	2025.05.29
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2024.06.03	2025.06.02
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2024.06.22	2025.06.21
Preamplifier (10MHz-6GHz)	46732	S10M100L38 02	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (2GHz-18GHz)	61171/61172	S020180L32 03	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-K K-0.5	Qualwave	2024.07.03	2025.07.02
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-K KF-2	Qualwave	2024.07.03	2025.07.02
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-N N-5	Qualwave	2024.07.03	2025.07.02
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.05.10	2025.05.09

————— END OF REPORT —————