TEST REPORT

APPLICANT	:	Nubia Technology Co., Ltd.
PRODUCT NAME	:	5G Mobile Phone
MODEL NAME	:	NX709S
BRAND NAME	:	REDMAGIC
FCC ID	:	2AHJO-NX709S
STANDARD(S)	:	47 CFR Part 15 Subpart C
RECEIPT DATE	:	2022-05-19
TEST DATE	:	2022-05-25 to 2022-06-09
ISSUE DATE	:	2022-07-06

Edited by: Peng Mi (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

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Change History		
Version	Date	Reason for change
1.0	2022-07-06	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Nubia Technology Co., Ltd.
Applicant Address:	Room 1801, Building 2, Chongwen Park, Nanshan Zhiyuan, No.3370, Liuxian Rd, Nanshan District, Shenzhen City, Guangdong Province, P. R. China
Manufacturer:	Nubia Technology Co., Ltd.
Manufacturer Address:	Room 1801, Building 2, Chongwen Park, Nanshan Zhiyuan, No.3370, Liuxian Rd, Nanshan District, Shenzhen City, Guangdong Province, P. R. China

1.2. Equipment Under Test (EUT) Description

Product Name:	5G Mobile Phone
Sample No.:	1#
Hardware Version:	NX709J_V1AMB
Software Version:	NX709S_UNCommon_V3.02
Modulation Technology:	DSSS, OFDM, OFDMA
Modulation Type:	Refer to section1.3
Wireless Technology:	802.11b, 802.11g, 802.11n (HT20), 802.11ax (HEW20), 802.11ax (HEW40)
Operating Frequency Range:	2412MHz-2462MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	ANT0: 0.70dBi; ANT1: -0.50dBi
Directional Gain:	3.71dBi$_{\text{Note 2}}$

Accessory Information:	Battery	
	Brand Name:	nubia
	Model No.:	Li3923T89P8h636590
	Serial No.:	N/A
	Capacity:	2380mAh
	Rated Voltage:	7.78V
	Charge Limit:	8.96V
	Manufacturer:	Dongguan Amperex Technology Limited
	AC Adapter	
	Brand Name:	nubia
	Model No.:	STC-A59152050AC-Z
	Serial No.:	N/A
	Rated Output:	5V⎓3A, 9V⎓3A, 15V⎓3A, 20V⎓3.25A PPS: 5V-11V⎓5A, 5V-20V⎓3.25A
	Rated Input:	100-240V~50/60Hz, 1.5A
	Manufacturer:	ShenZhen KunXing Technology Co., Ltd.
	USB Cable	
	Model No.:	N52111200016D

Note 1: The EUT supports a MIMO function. Physically, the EUT provides two completed transmitters and two receivers for 802.11n and 802.11ax modulation mode.

Modulation Mode:	**TX Function**
802.11b	1TX
802.11n	2TX
802.11ax	2TX

Note 2: According to KDB 662911 D01, the directional gain = G_{ANT} + 10log(N_{ANT}) dBi, where G_{ANT} is the maximum antenna gain in dBi, N_{ANT} is the number of outputs.

Note 3: For conducted test item Conducted Output Power and Power Spectral Density of each modulation mode, we recorded the test result of two antennas separately, for other conducted test items both of the two antennas were tested separately, we only recorded the worst test result (ANT0) in this report.

Note 4: All radiation test items for 802.11n and 802.11 ax modulation mode operate at MIMO mode during the test. Other modulation mode operate at SISO mode, both of the two antennas were tested separately, we only recorded the worst test result(ANT0) in this report.

Note 5: We use the dedicated software to control the EUT continuous transmission.

Note 6: 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

Mode	Bandwidth (MHz)	Modulation Technology	Modulation Type	Data Rate	RU Size
802.11b	20	DSSS	**DBPSK**	**1**/2/5.5/11Mbps	N/A
			DQPSK		
			CCK		
802.11g	20	OFDM	**BPSK**	**6**/9/12/18/24/36/48/54 Mbps	N/A
			QPSK		
			16QAM		
			64QAM		
802.11n	20 (HT20)	OFDM	**BPSK**	**MCS0**~MCS7	N/A
			QPSK		
			16QAM		
			64QAM		
802.11ax	20/40 (HEW20/40)	OFDMA	**BPSK**	**MSC0**~MCS11	26/52/106/ 242/484
			QPSK		
			16QAM		
			64QAM		
			256QAM		
			1024QAM		

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)/ ax(HEW20)	**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)**
802.11 ax(HEW40)	**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	No deviation
2	N/A	Duty Cycle of Test Signal	May 29, 2022	Meng Shurui	PASS	No deviation
3	15.247(b)	Maximum Conducted Output Power	Jun. 07, 2022	Meng Shurui	PASS	No deviation
4	15.247(a)	Bandwidth	Jun. 07, 2022	Meng Shurui	PASS	No deviation
5	15.247(d)	Conducted Spurious Emission and Band Edge	Jun. 07, 2022	Meng Shurui	PASS	No deviation
6	15.247(e)	Power Spectral Density (PSD)	Jun. 07, 2022	Meng Shurui	PASS	No deviation
7	15.207	Conducted Emission	May 30, 2022	Wu Zhaoling	PASS	No deviation
8	15.247(d)	Restricted Frequency Bands	Jun. 02, 2022	Gao Jianrou	PASS	No deviation
9	15.209, 15.247(d)	Radiated Emission	Jun. 04, 2022	Gao Jianrou	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in ANSIC63.10-2013, KDB558074 D01 v05r02 and KDB662911 D01 v02r01.

Note 2: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 11.5dB contains two parts that cable loss 1.5dB and Attenuator 10dB.

Note 3: 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 4: 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 PIFA antenna coupled with the metal shrapnel. Please refer to the EUT internal photos.

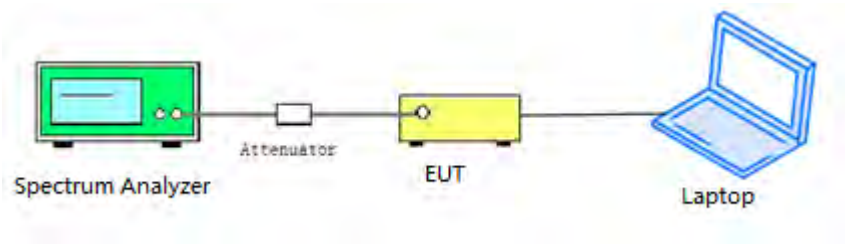
2.2. Duty Cycle of Test Signal

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 ±2%; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. Test Description

Test Setup:



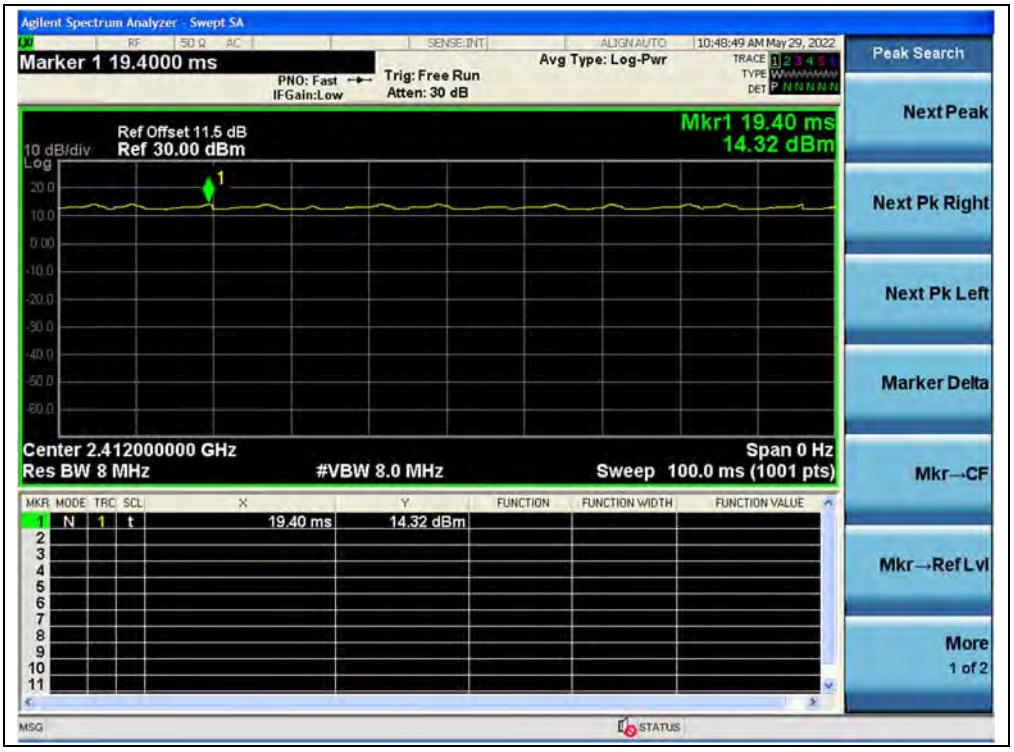
ANSI C63.10 2013 Clause 11.6 was used in order to prove compliance.

2.2.3. Test Result

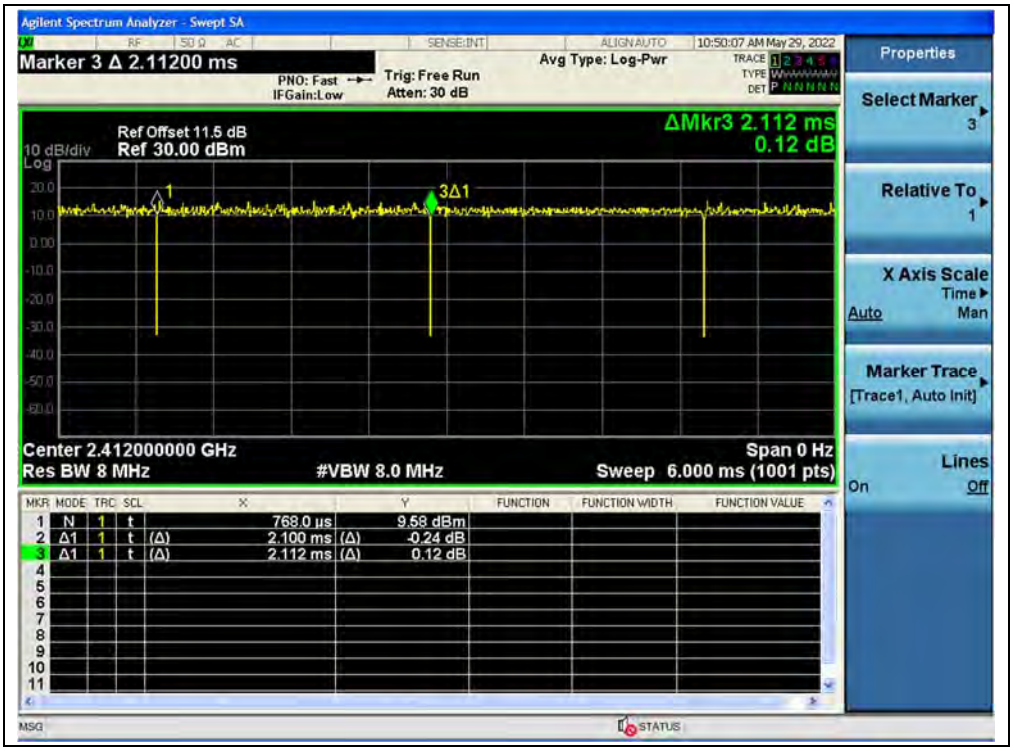
A.Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor (10*lg[1/D])
802.11b	100.00	0.00
802.11g	99.43	0.02
802.11n (HT20)	99.71	0.01
802.11ax (HEW20)	99.73	0.01
802.11ax (HEW40)	99.71	0.01
802.11ax (HEW20) RU26	99.53	0.02

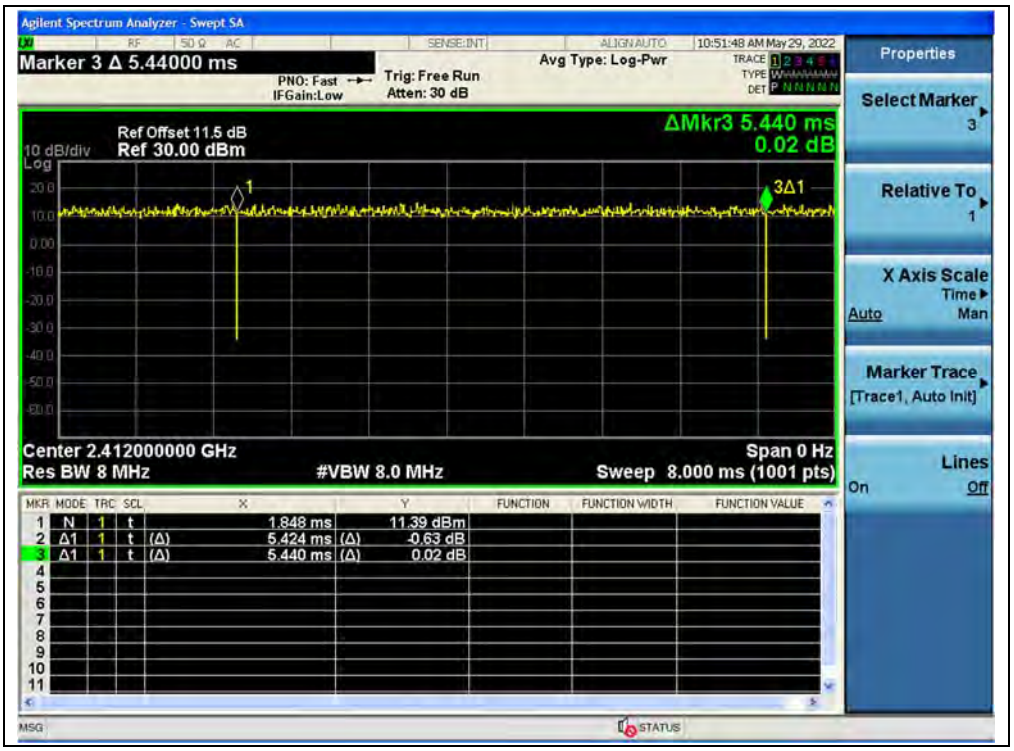
B.Test Plot:



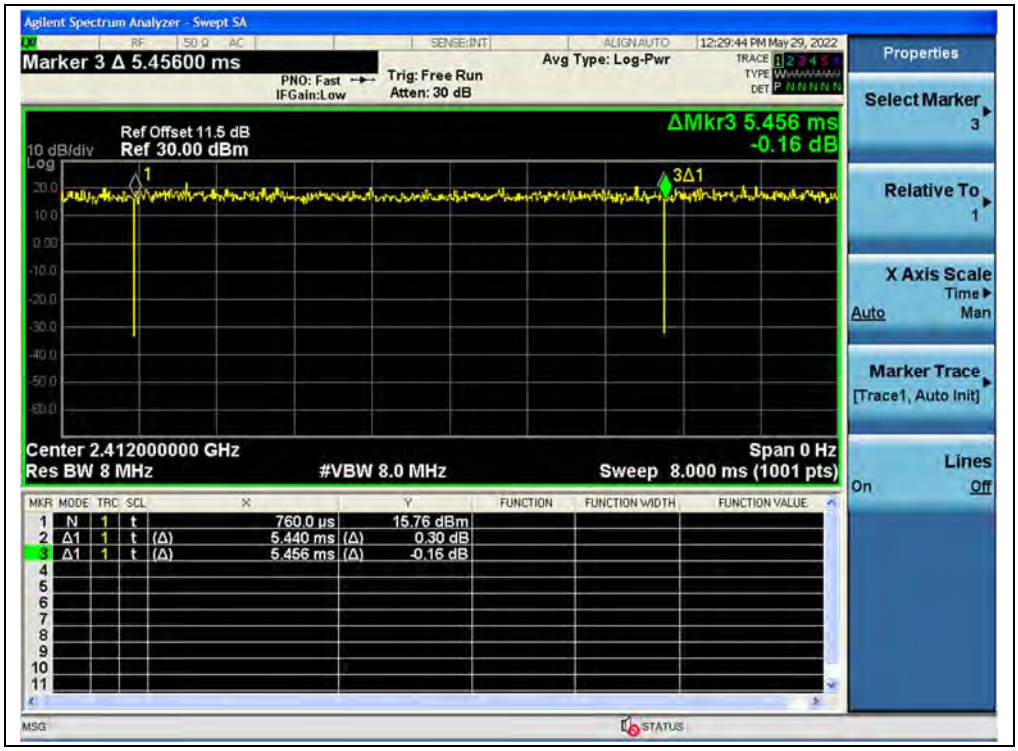
(Channel 1, 802.11b)



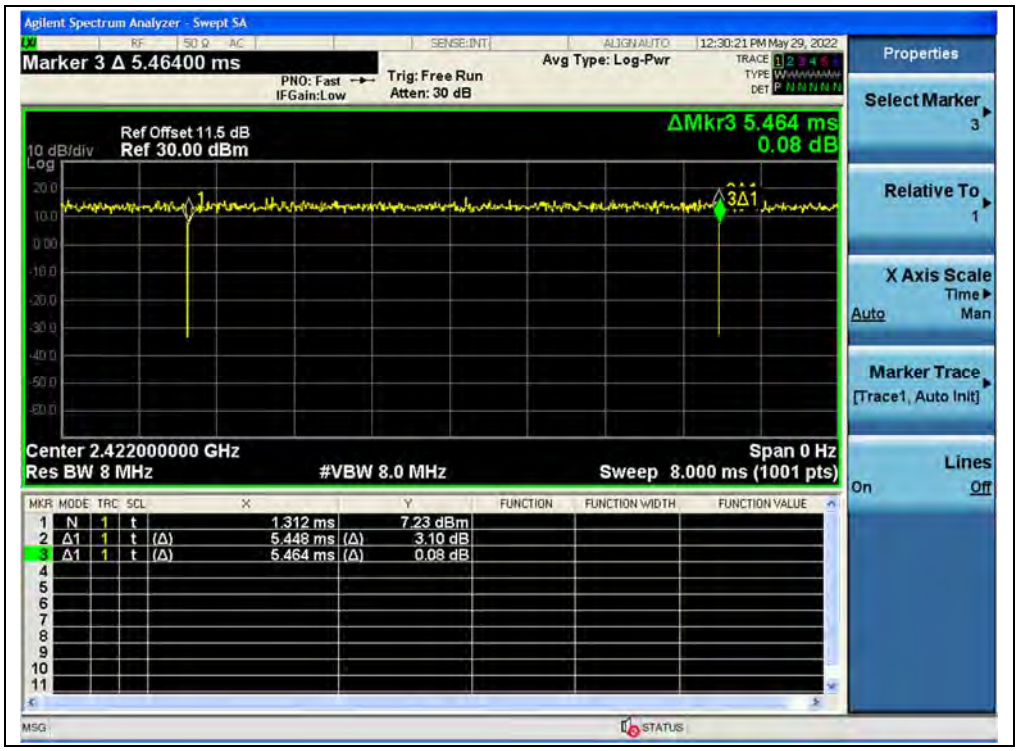
(Channel 1, 802.11g)



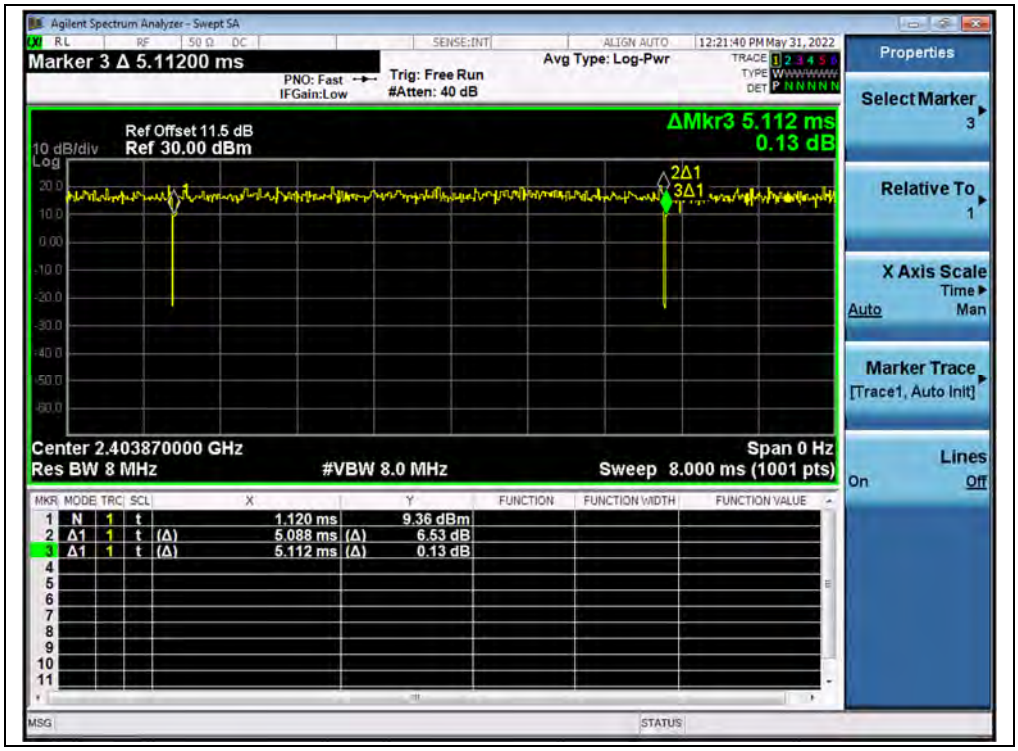
(Channel 1, 802.11n (HT20))



(Channel 1, 802.11ax (HEW20))



(Channel 3, 802.11ax (HEW40))



(Channel 1, 802.11ax (HEW20) RU26)

2.3. Maximum Conducted Output Power

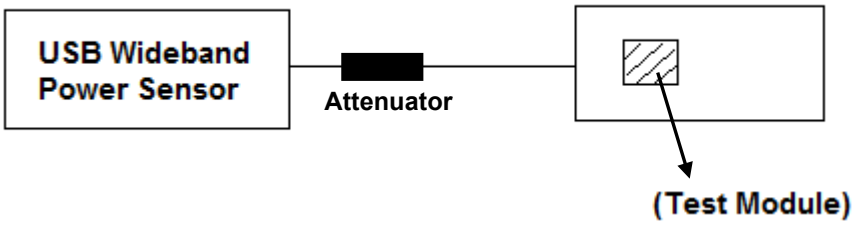
2.3.1. Requirement

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 conducted output power of the intentional radiator shall not exceed1 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 Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1				
		dBm	W	dBm	W	dBm	W	
1	2412	18.52	0.071	17.69	0.059	30	1	PASS
6	2437	18.20	0.066	18.37	0.069			PASS
11	2462	18.18	0.066	18.04	0.064			PASS

802.11g Mode

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1				
		dBm	W	dBm	W	dBm	W	
1	2412	21.27	0.134	20.75	0.119	30	1	PASS
6	2437	21.05	0.127	21.15	0.130			PASS
11	2462	21.39	0.138	20.82	0.121			PASS

802.11n (HT20) Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	20.28	19.61	22.97	0.198	30	1	PASS
6	2437	19.97	20.26	23.12	0.205			PASS
11	2462	20.15	19.72	22.94	0.197			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW20) Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	20.84	21.52	24.20	0.263	30	1	PASS
6	2437	20.87	21.35	24.13	0.259			PASS
11	2462	21.41	21.44	24.44	0.278			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW20) RU26 Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	21.17	20.39	23.80	0.240	30	1	PASS
6	2437	21.38	20.88	24.15	0.260			PASS
11	2462	22.61	20.91	24.86	0.306			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW40) Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
3	2422	18.25	19.23	21.79	0.151	30	1	PASS
6	2437	19.12	19.33	22.23	0.167			PASS
9	2452	18.90	19.38	22.15	0.164			PASS
Note: Directional gain = 2.6dBi +10log(2) = 5.61dBi＜6dBi, so the power limit is 1W(30dBm).								

Maximum Average Conducted Output Power

802.11b Mode

Frequency (MHz)	Average Power							Limit		Verdict
	Measured		Duty Factor	Duty factor Calculated						
	ANT 0	ANT 1		ANT 0		ANT 1				
	dBm	dBm		dBm	W	dBm	W	dBm	W	
2412	15.92	15.23	0.00	15.92	0.039	15.23	0.033	30	1	PASS
2437	15.46	15.51		15.46	0.035	15.51	0.036			PASS
2462	15.50	15.14		15.50	0.035	15.14	0.033			PASS

802.11g Mode

Frequency (MHz)	Average Power							Limit		Verdict
	Measured		Duty Factor	Duty factor Calculated						
	ANT 0	ANT 1		ANT 0		ANT 1				
	dBm	dBm		dBm	W	dBm	W	dBm	W	
2412	14.70	14.34	0.02	14.72	0.030	14.36	0.027	30	1	PASS
2437	14.55	14.62		14.57	0.029	14.64	0.029			PASS
2462	14.59	14.32		14.61	0.029	14.34	0.027			PASS

802.11n (HT20) Mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT 0	ANT 1						
	dBm	dBm		dBm	W	dBm	W	
2412	13.51	12.91	0.01	16.23	0.042	30	1	PASS
2437	13.31	13.60		16.43	0.044			PASS
2462	13.33	13.02		16.23	0.042			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW20) Mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT 0	ANT 1						
	dBm	dBm		dBm	W	dBm	W	
2412	12.83	13.27	0.01	16.13	0.041	30	1	PASS
2437	13.12	13.92		16.53	0.045			PASS
2462	13.39	13.58		16.53	0.045			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW20) RU26 Mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT 0	ANT 1						
	dBm	dBm		dBm	W	dBm	W	
2412	9.31	10.67	0.02	13.01	0.020	30	1	PASS
2437	11.59	11.38		14.47	0.028			PASS
2462	11.45	11.49		14.47	0.028			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW40) Mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT 0	ANT 1						
	dBm	dBm		dBm	W	dBm	W	
2422	12.01	13.32	0.01	15.68	0.037	30	1	PASS
2437	13.15	13.24		16.23	0.042			PASS
2452	12.72	13.00		15.91	0.039			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power limit is 1W(30dBm).								

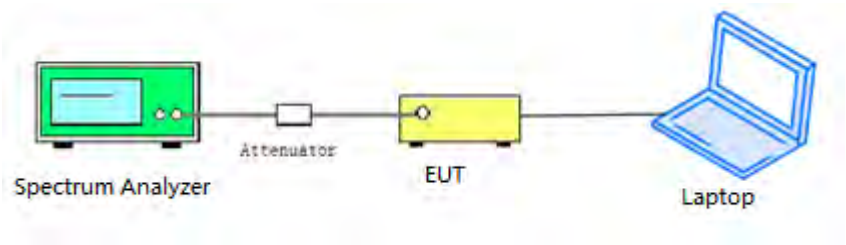
2.4. Bandwidth

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 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.

2.4.3. 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	9.038	≥500	PASS
6	2437	7.488	≥500	PASS
11	2462	7.905	≥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	16.31	≥500	PASS
6	2437	16.31	≥500	PASS
11	2462	16.30	≥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	17.52	≥500	PASS
6	2437	17.52	≥500	PASS
11	2462	16.80	≥500	PASS

B.Test Plot:

(Channel 1, 802.11n (HT20))

(Channel 6, 802.11n (HT20))

(Channel 11, 802.11n (HT20))

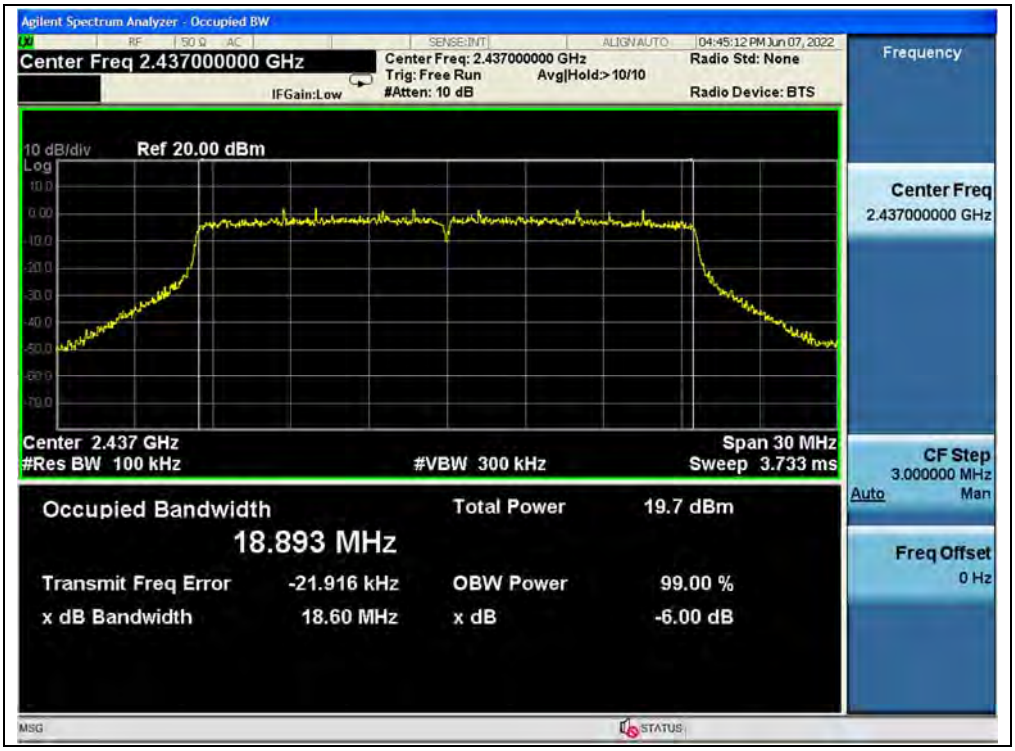
802.11ax (HEW20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	18.85	≥500	PASS
6	2437	18.60	≥500	PASS
11	2462	18.23	≥500	PASS

B.Test Plot:

(Channel 1, 802.11ax (HEW20))



(Channel 6, 802.11ax (HEW20))

(Channel 11, 802.11ax (HEW20))

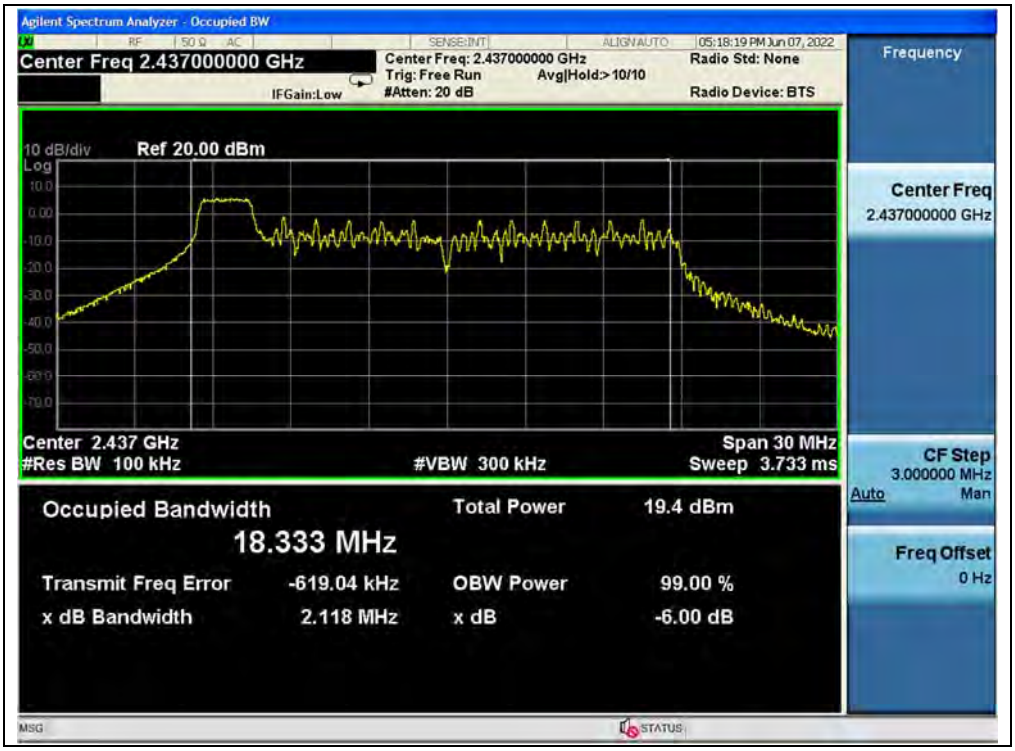
802.11ax (HEW20) RU26 Mode

A.Test Verdict:

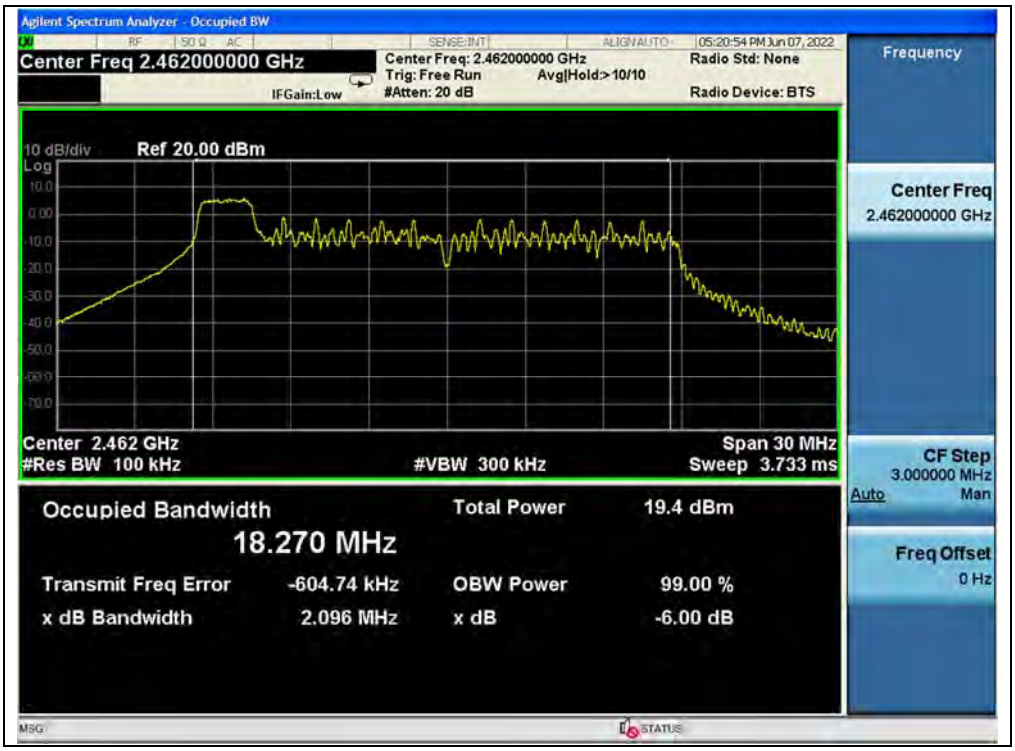
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	17.07	≥500	PASS
6	2437	2.12	≥500	PASS
11	2462	2.10	≥500	PASS

B.Test Plot:

(Channel 1, 802.11ax (HEW20) RU26)



(Channel 6, 802.11ax (HEW20) RU26)



(Channel 11, 802.11ax (HEW20) RU26)

802.11ax (HEW40) Mode

A.Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
3	2422	38.01	≥500	PASS
6	2437	37.88	≥500	PASS
9	2452	36.60	≥500	PASS

B.Test Plot:

(Channel 3, 802.11ax (HEW40))

(Channel 6, 802.11ax (HEW40))

(Channel 9, 802.11ax (HEW40))

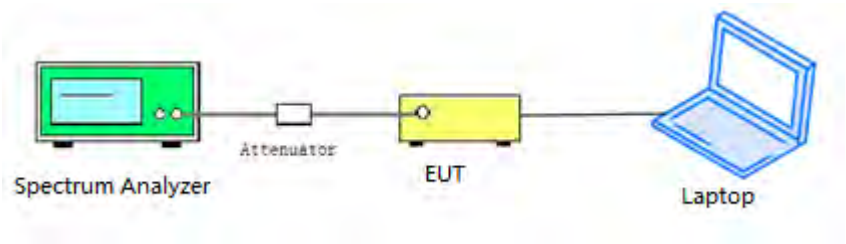
2.5. Conducted Spurious Emissions and Band Edge

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

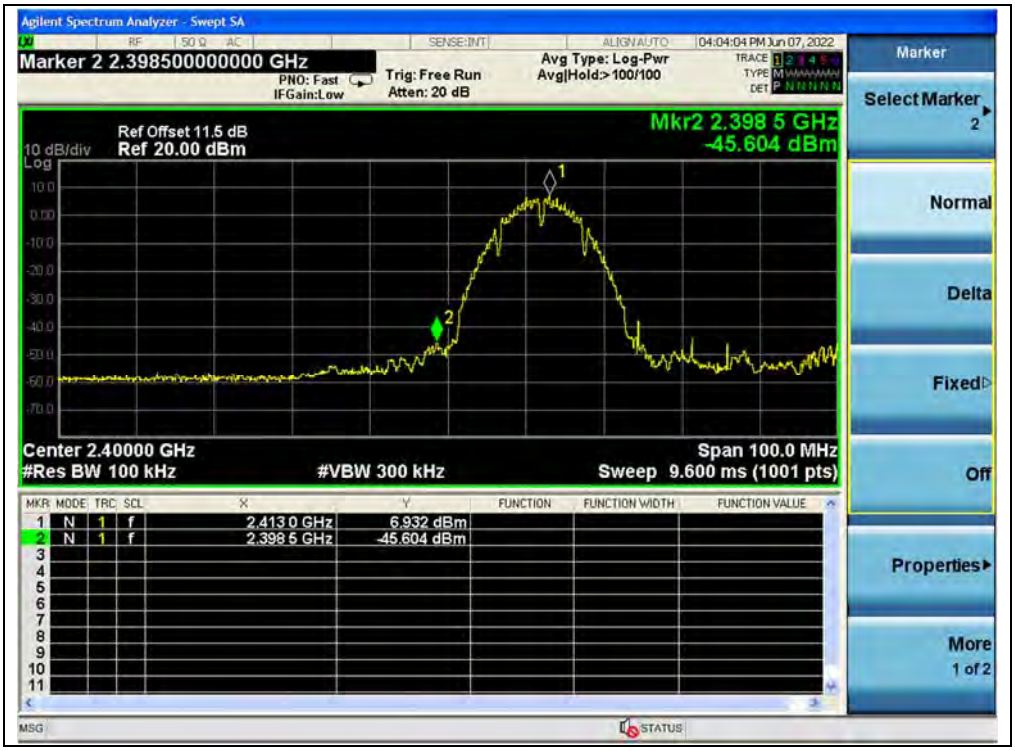
802.11b Mode

A.Test Verdict:

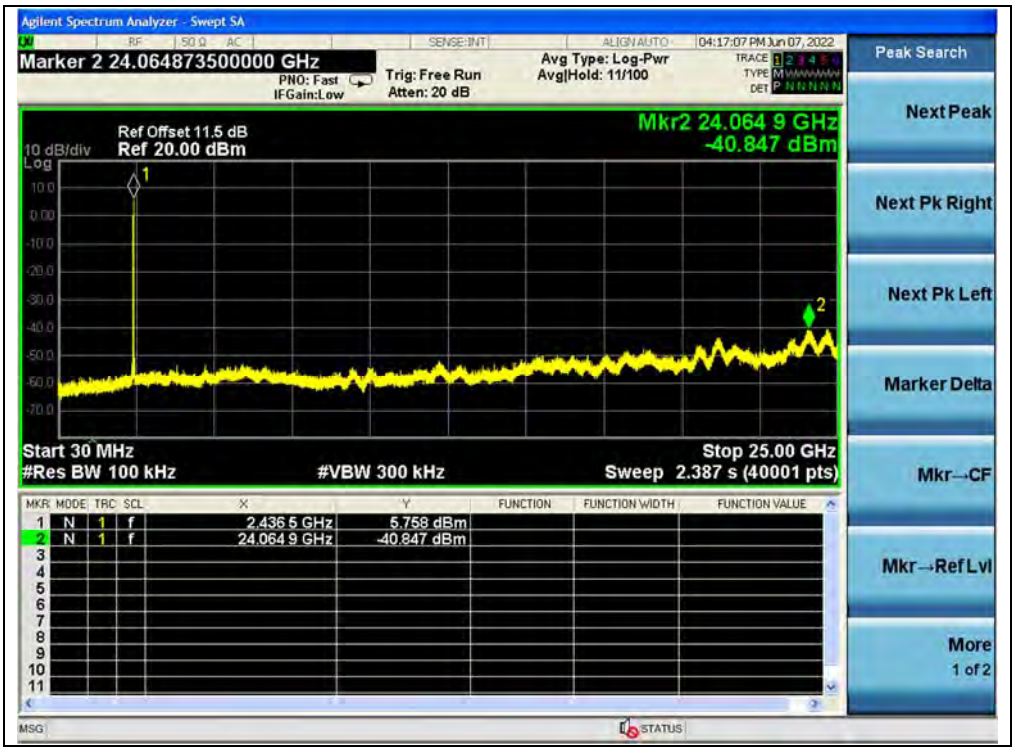
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-39.75	5.80	-14.20	PASS
6	2437	-40.85	5.76	-14.24	PASS
11	2462	-40.50	5.90	-14.10	PASS

B.Test Plot:

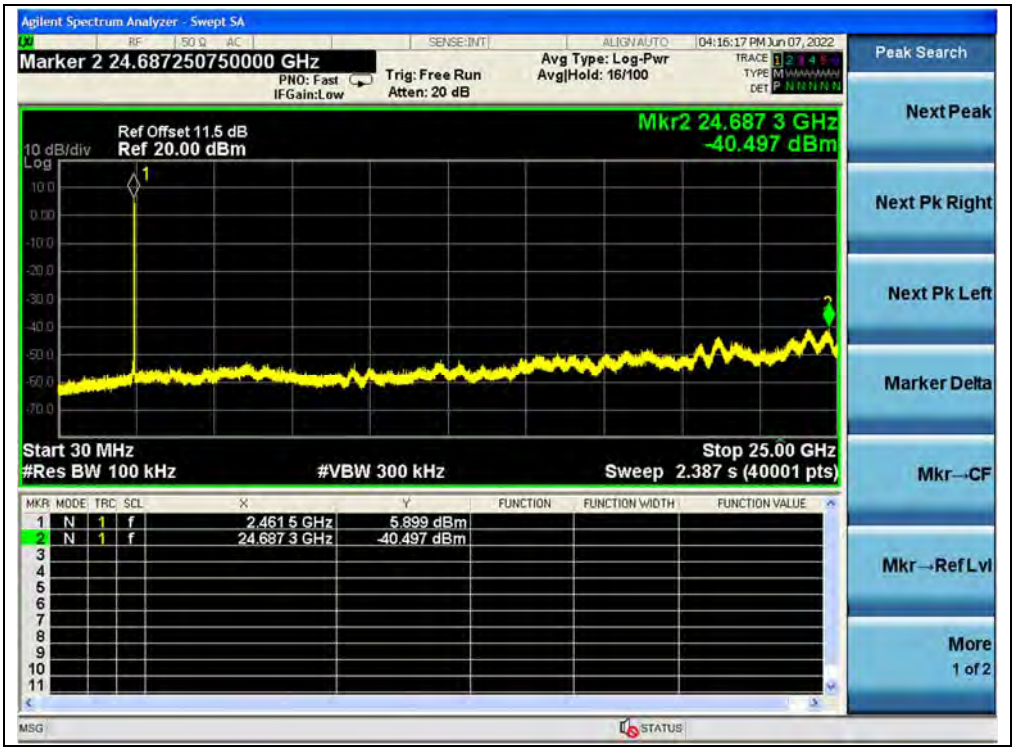
(30MHz to 25GHz, Channel 1, 802.11b)



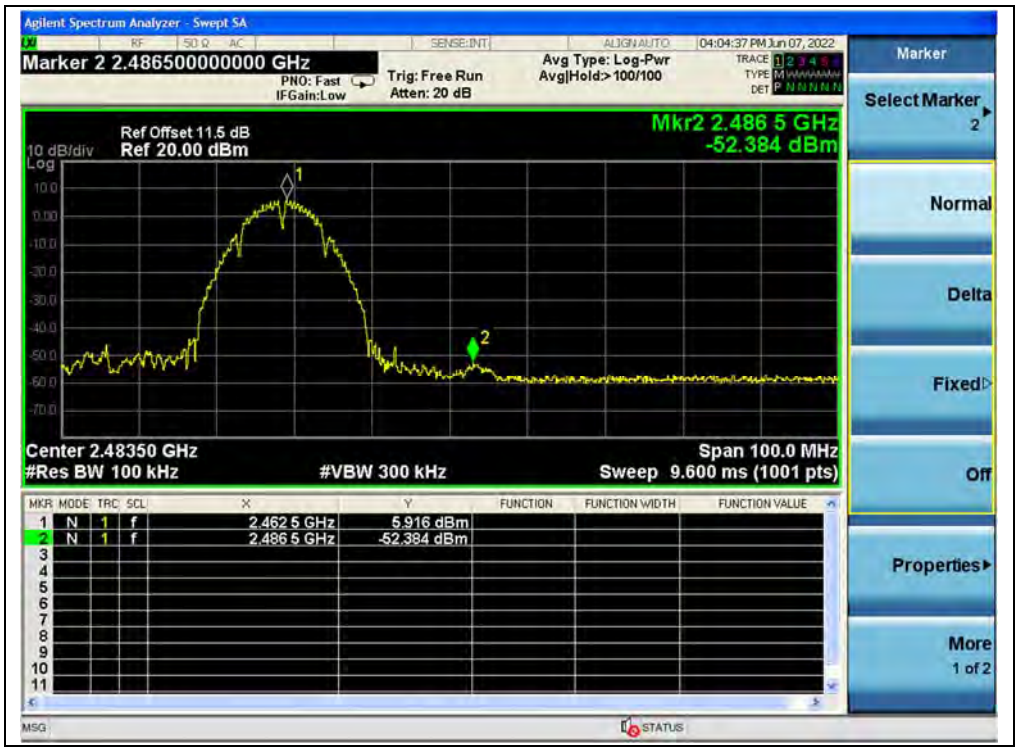
(Band Edge, Channel 1, 802.11b)



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



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



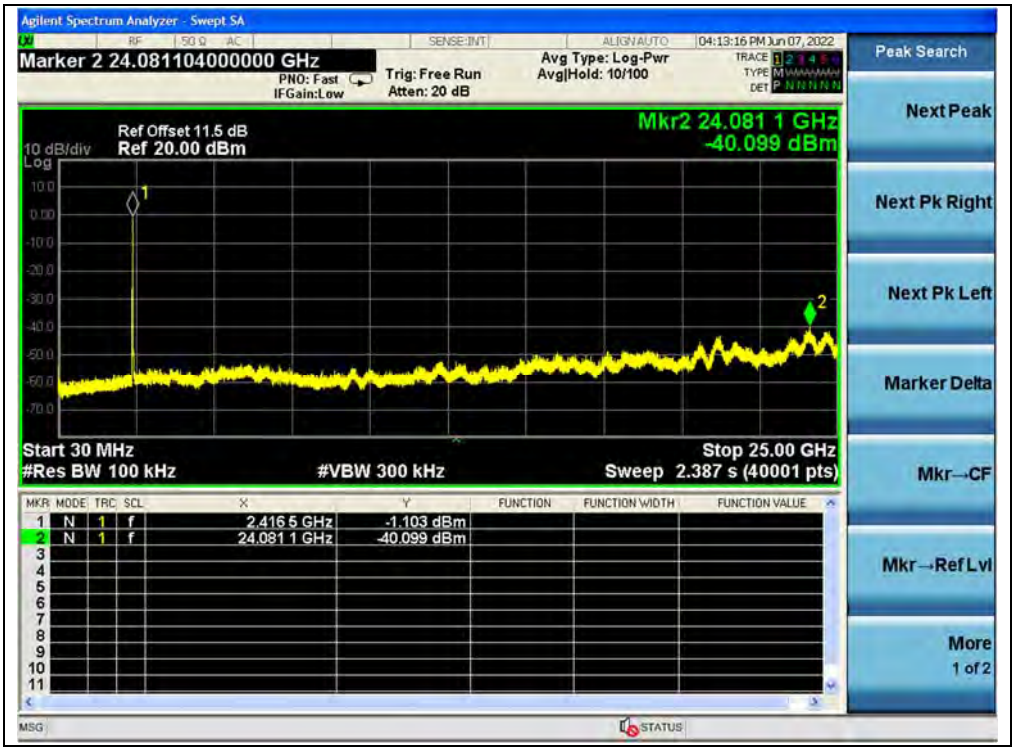
(Band Edge, Channel 11, 802.11b)

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	-40.10	-1.10	-21.10	PASS
6	2437	-39.77	1.30	-18.70	PASS
11	2462	-40.24	-0.96	-20.96	PASS

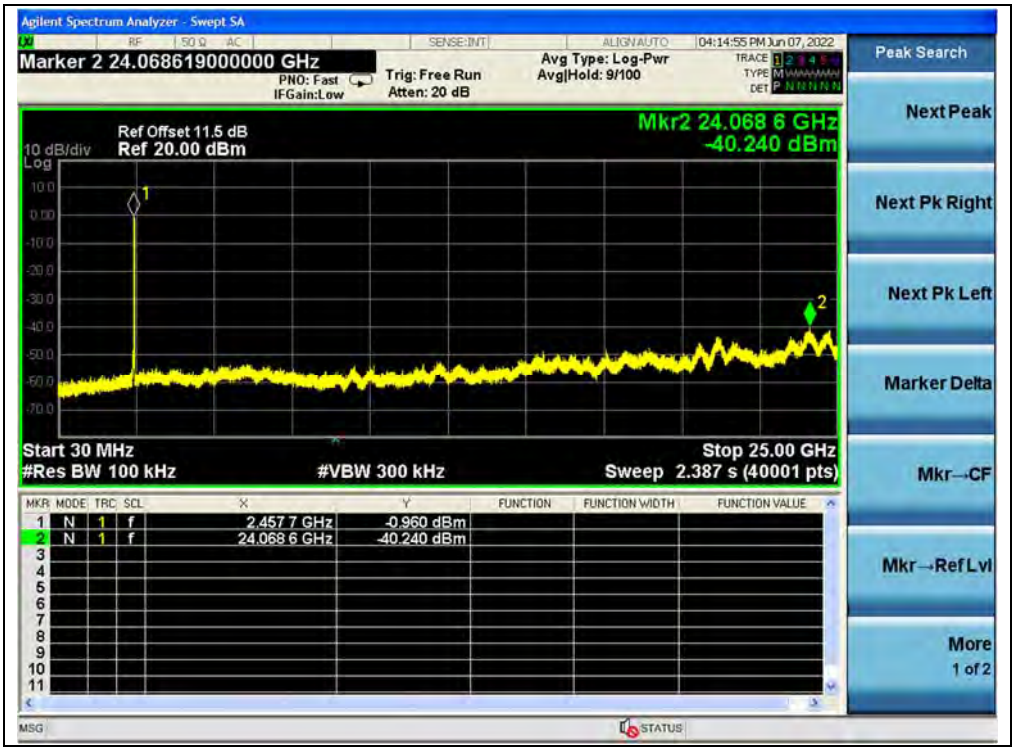
B.Test Plot:



(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)

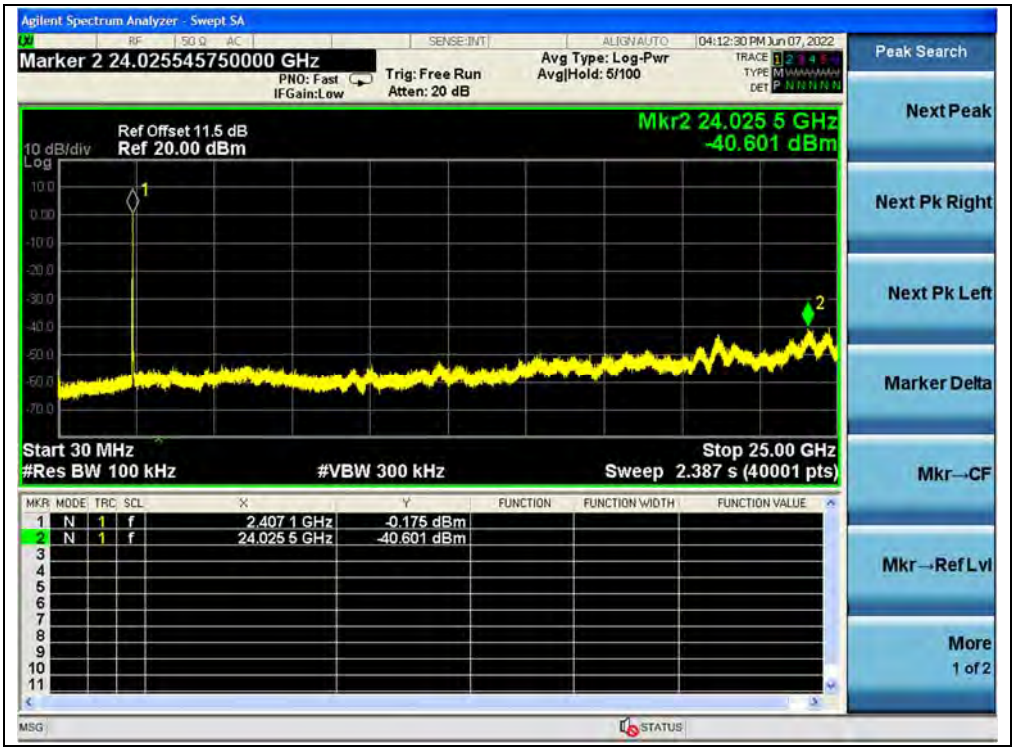
(Band Edge, Channel 11, 802.11g)

802.11n (HT20) Mode

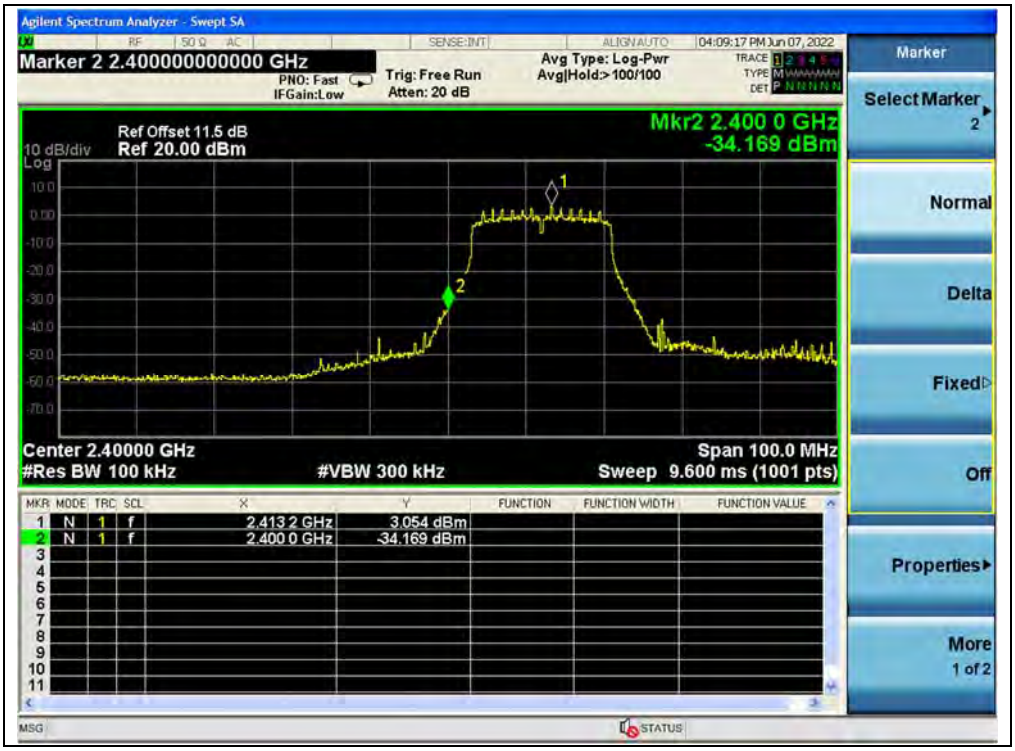
A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.60	-0.18	-20.18	PASS
6	2437	-40.85	-0.33	-20.33	PASS
11	2462	-40.50	-0.97	-20.97	PASS

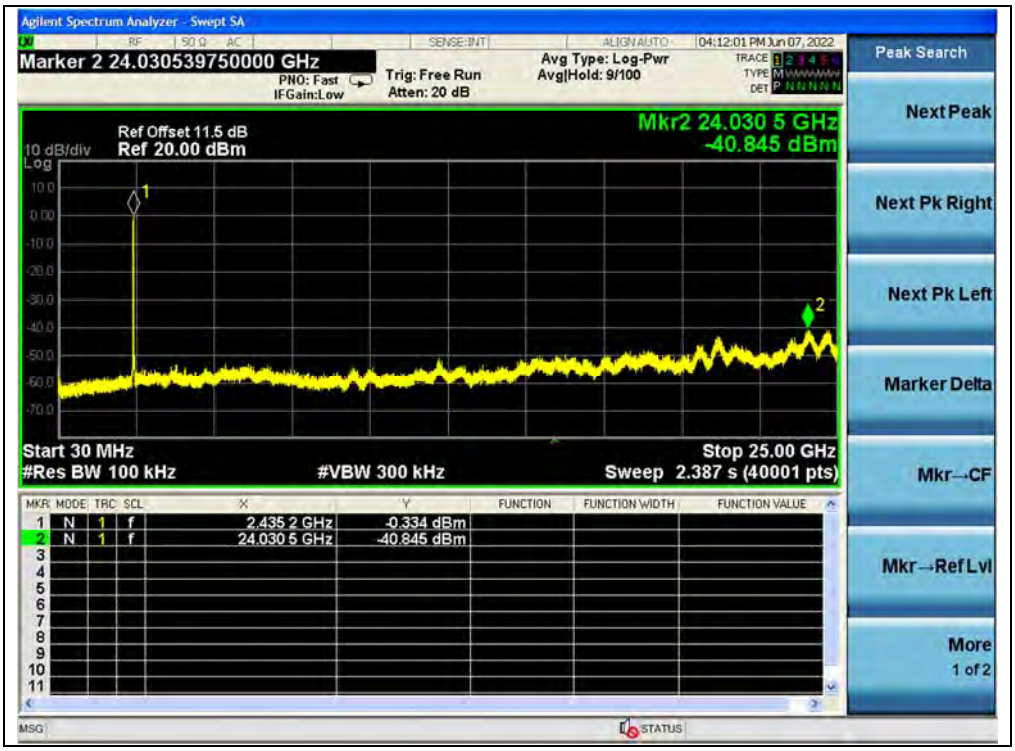
B.Test Plot:



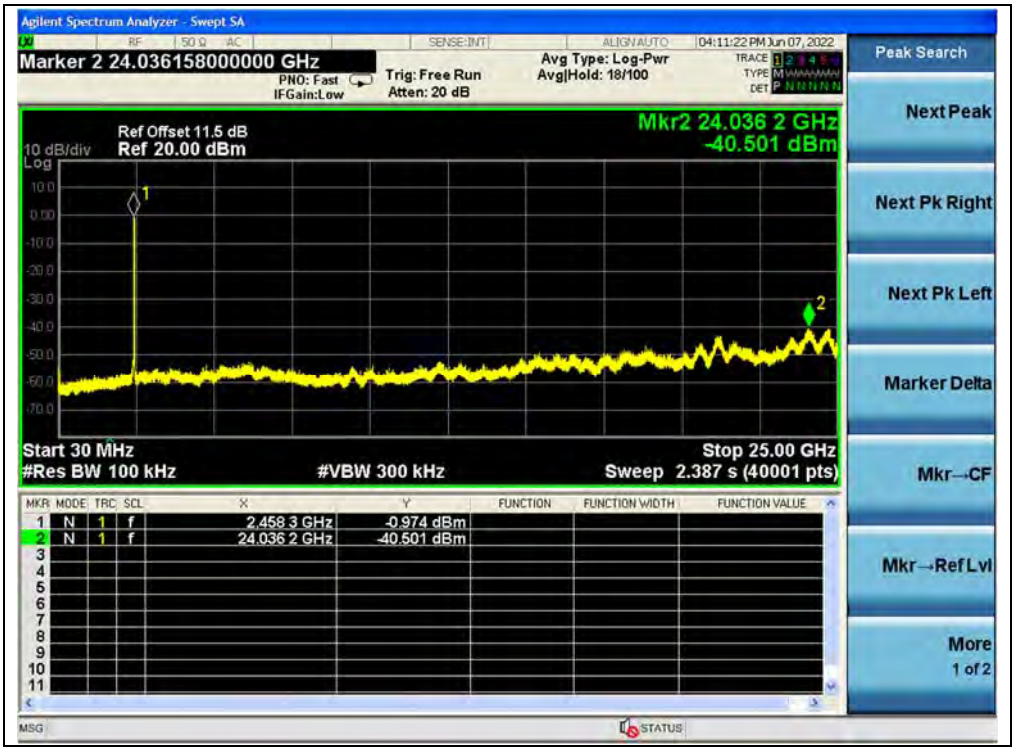
(30MHz to 25GHz, Channel 1, 802.11n (HT20))



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



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



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

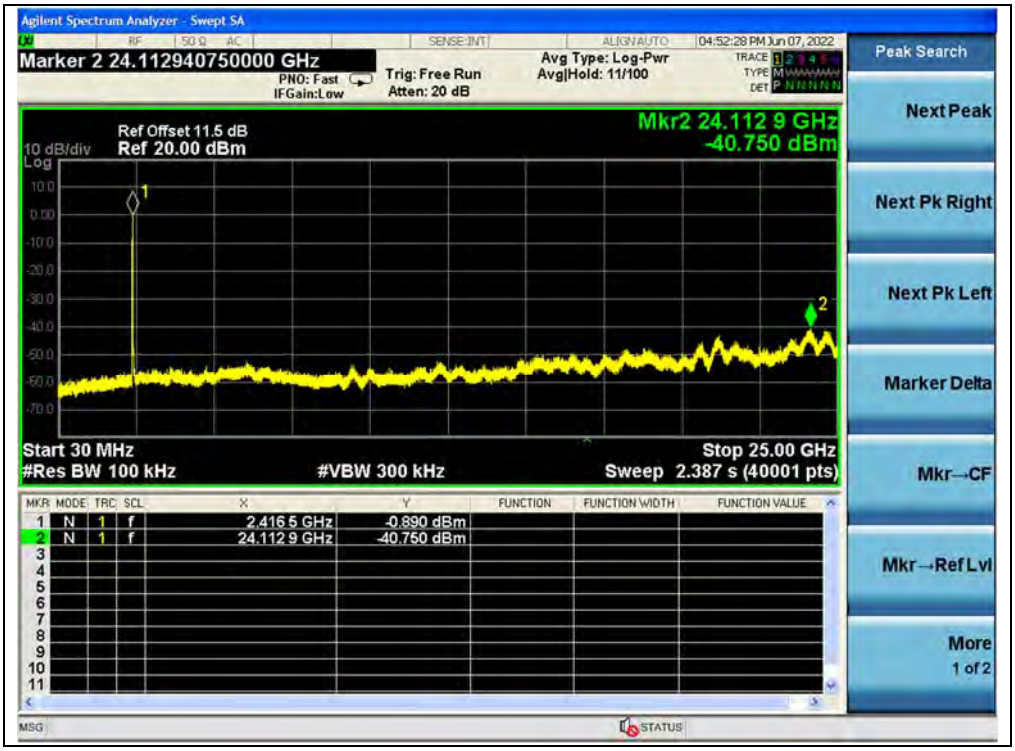
(Band Edge, Channel 11, 802.11n (HT20))

802.11ax (HEW20) Mode

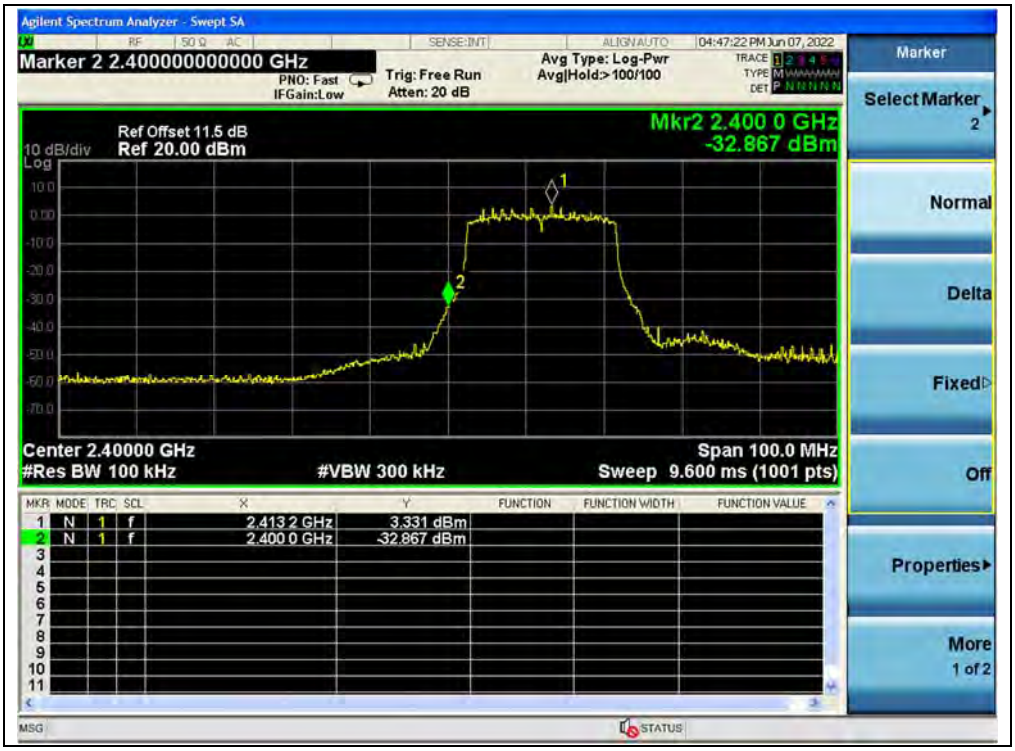
A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.75	-0.89	-20.89	PASS
6	2437	-40.17	-0.10	-20.10	PASS
11	2462	-40.28	-0.33	-20.33	PASS

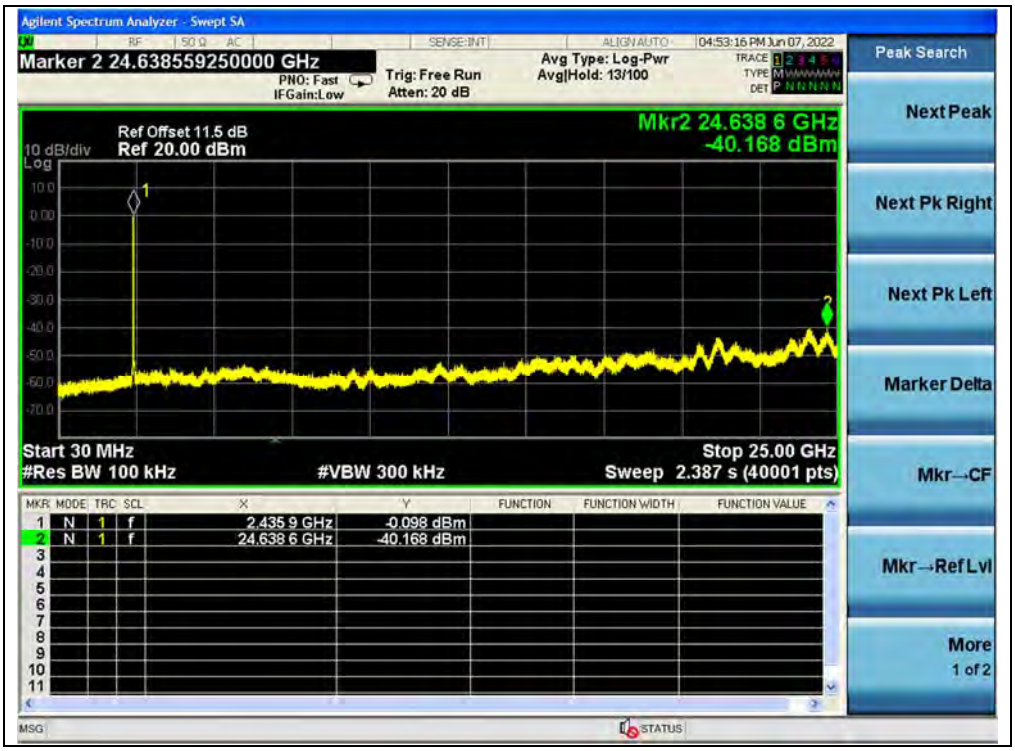
B.Test Plot:



(30MHz to 25GHz, Channel 1, 802.11ax (HEW20))



(Band Edge, Channel 1, 802.11ax (HEW20))



(30MHz to 25GHz, Channel 6, 802.11ax (HEW20))

(30MHz to 25GHz, Channel 11, 802.11ax (HEW20))

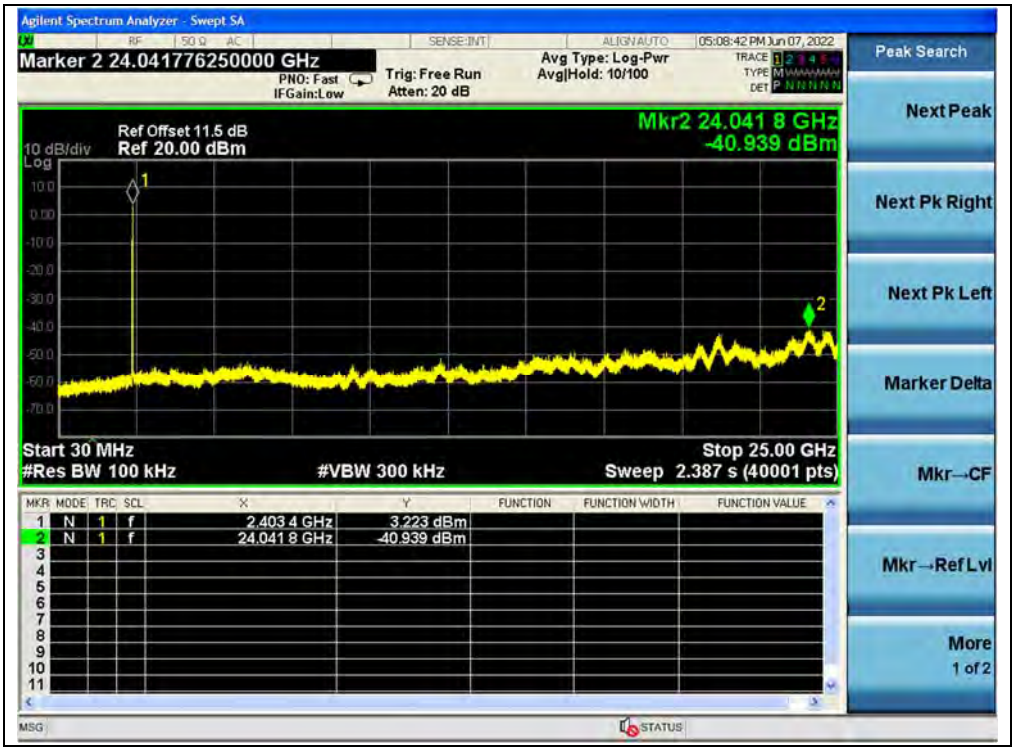
(Band Edge, Channel 11, 802.11ax (HEW20))

802.11ax (HEW20) RU26 Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.94	3.22	-16.78	PASS
6	2437	-40.35	5.18	-14.82	PASS
11	2462	-40.91	5.23	-14.77	PASS

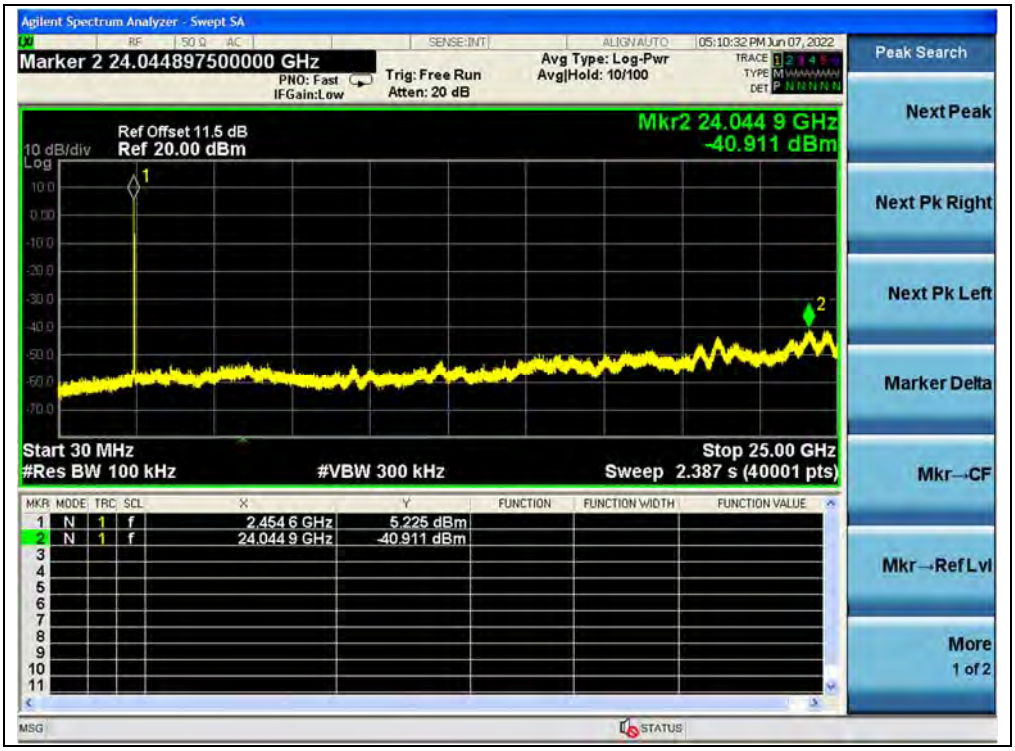
B.Test Plot:



(30MHz to 25GHz, Channel 1, 802.11ax (HEW20) RU26)

(Band Edge, Channel 1, 802.11ax (HEW20) RU26)

(30MHz to 25GHz, Channel 6, 802.11ax (HEW20) RU26)



(30MHz to 25GHz, Channel 11, 802.11ax (HEW20) RU26)

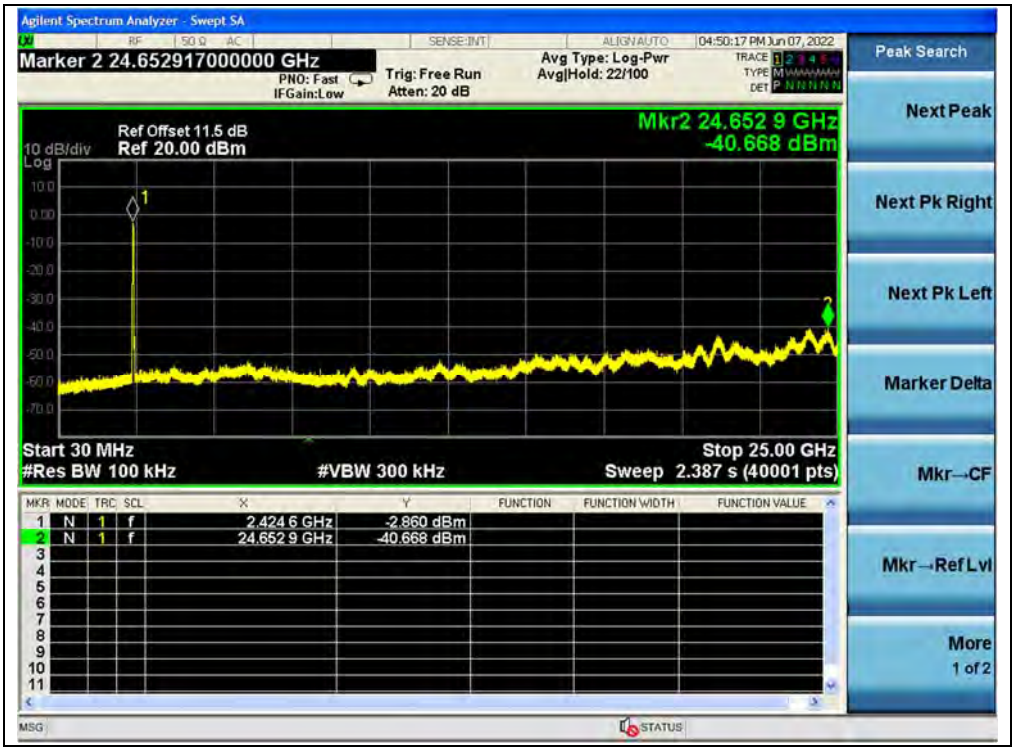
(Band Edge, Channel 11, 802.11ax (HEW20) RU26)

802.11ax (HEW40) Mode

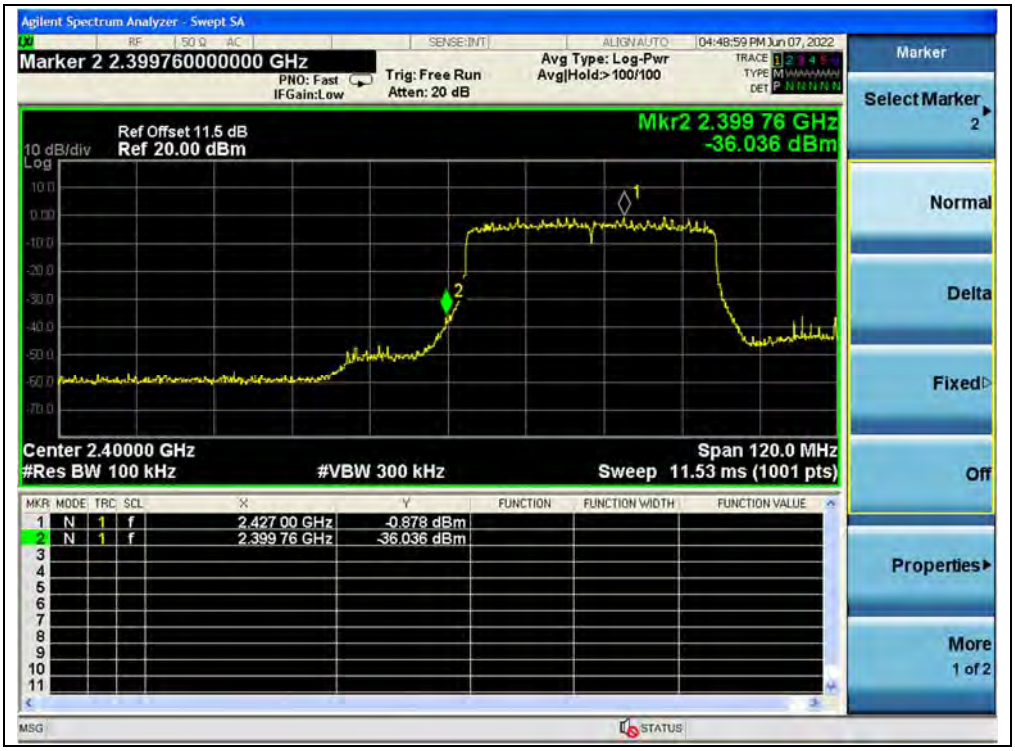
A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
3	2422	-40.67	-2.86	-22.86	PASS
6	2437	-39.38	-3.25	-23.25	PASS
9	2452	-40.48	-3.75	-23.75	PASS

B.Test Plot:

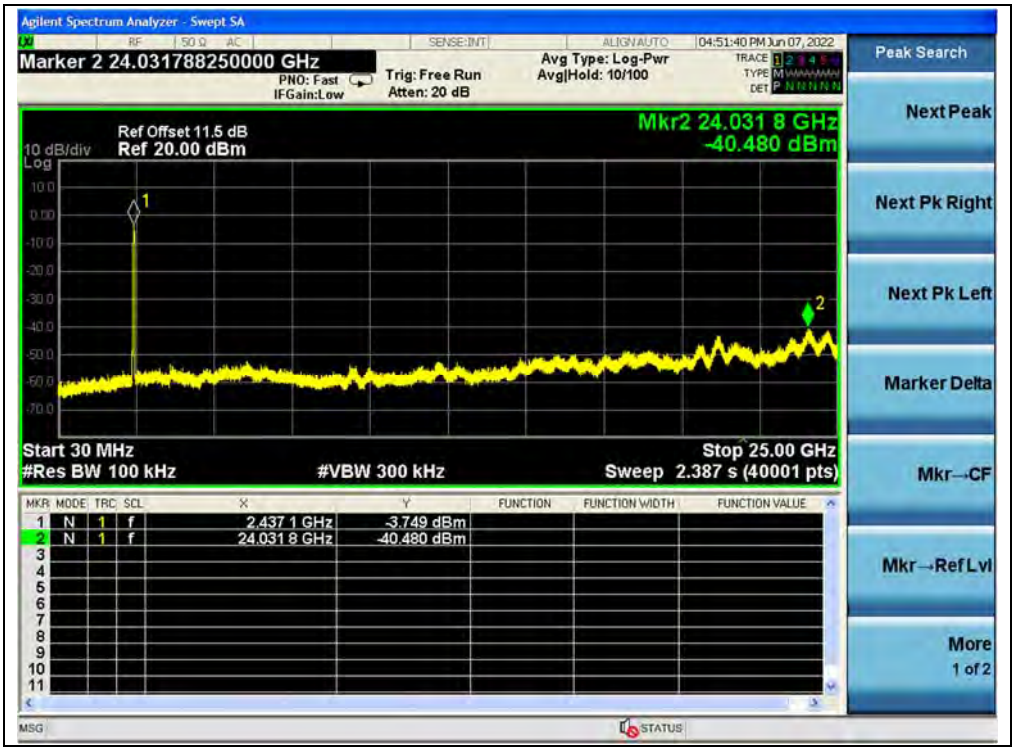


(30MHz to 25GHz, Channel 3, 802.11ax (HEW40))



(Band Edge, Channel 3, 802.11ax (HEW40))

(30MHz to 25GHz, Channel 6, 802.11ax (HEW40))



(30MHz to 25GHz, Channel 9, 802.11ax (HEW40))

(Band Edge, Channel 11, 802.11ax (HEW40))

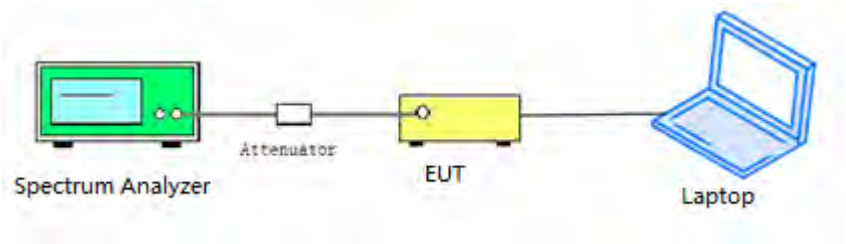
2.6. Power Spectral Density

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:

Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1		
1	2412	-6.97	-9.04	8	PASS
6	2437	-8.04	-8.70	8	PASS
11	2462	-8.21	-8.17	8	PASS

B.Test Plot:

(Channel 1, 802.11b, ANT 0)

(Channel 6, 802.11b, ANT 0)

(Channel 11, 802.11b, ANT 0)

(Channel 1, 802.11b, ANT 1)

(Channel 6, 802.11b, ANT 1)

(Channel 11, 802.11b, ANT 1)

802.11g Mode

A.Test Verdict:

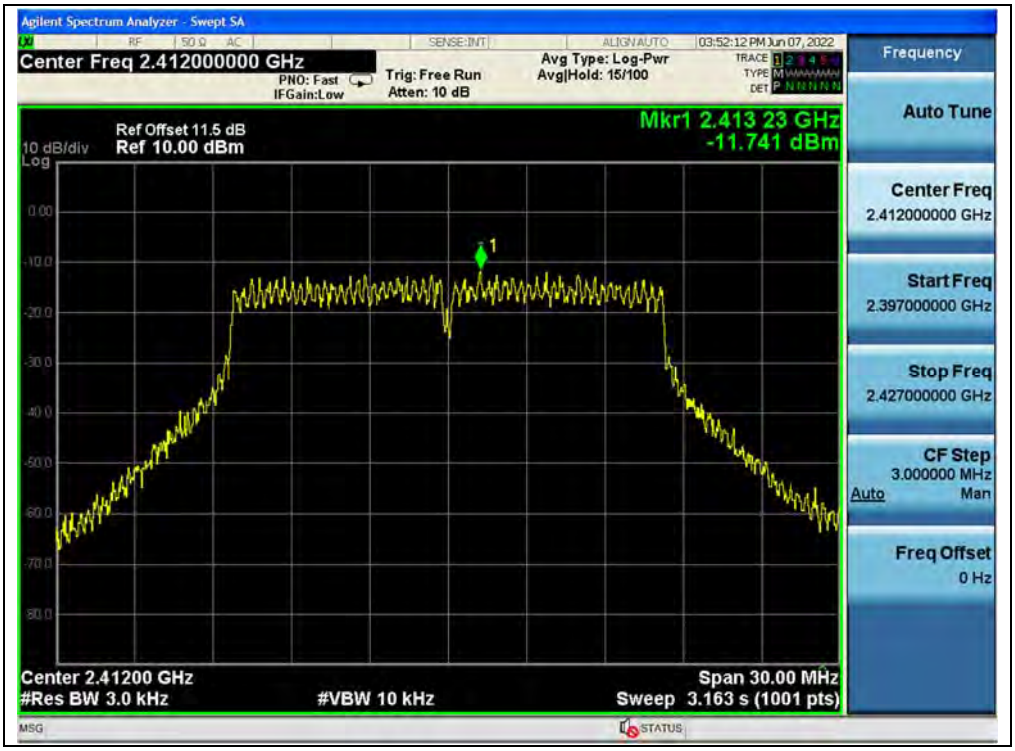
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1		
1	2412	-11.25	-11.74	8	PASS
6	2437	-12.29	-10.96	8	PASS
11	2462	-11.37	-11.85	8	PASS

B.Test Plot:

(Channel 1, 802.11g, ANT 0)

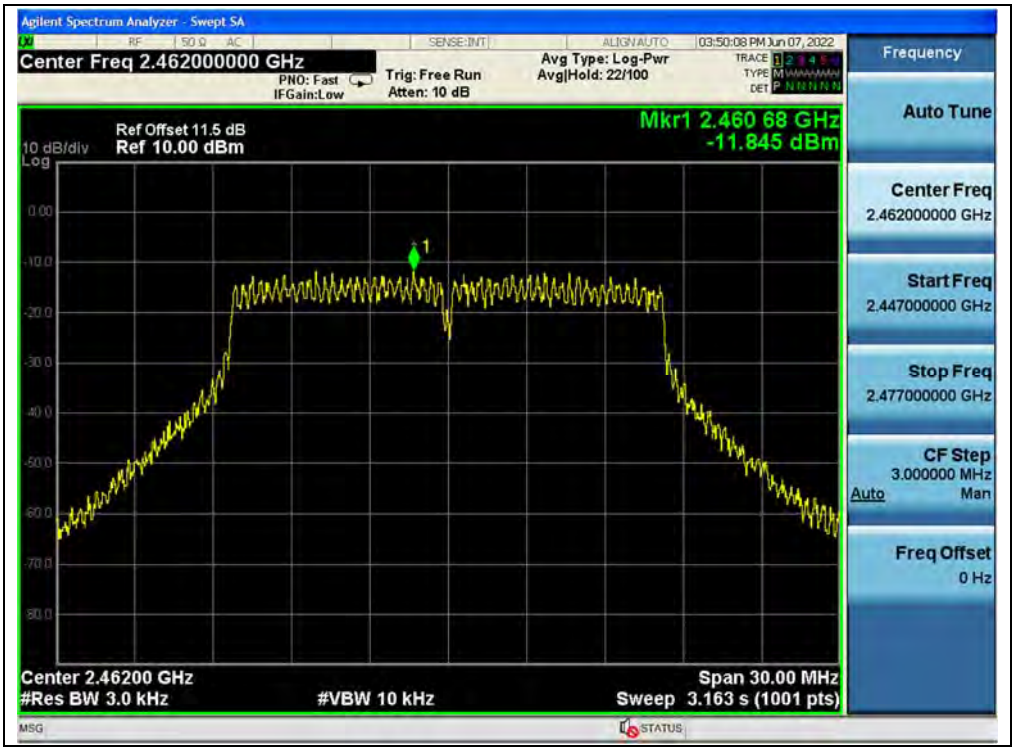
(Channel 6, 802.11g, ANT 0)

(Channel 11, 802.11g, ANT 0)



(Channel 1, 802.11g, ANT 1)

(Channel 6, 802.11g, ANT 1)



(Channel 11, 802.11g, ANT 1)

802.11n (HT20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1			
1	2412	-11.16	-11.94	-8.52	8	PASS
6	2437	-11.29	-10.91	-8.09	8	PASS
11	2462	-10.18	-12.26	-8.09	8	PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power density limit is 8 dBm/3kHz.						

B.Test Plot:

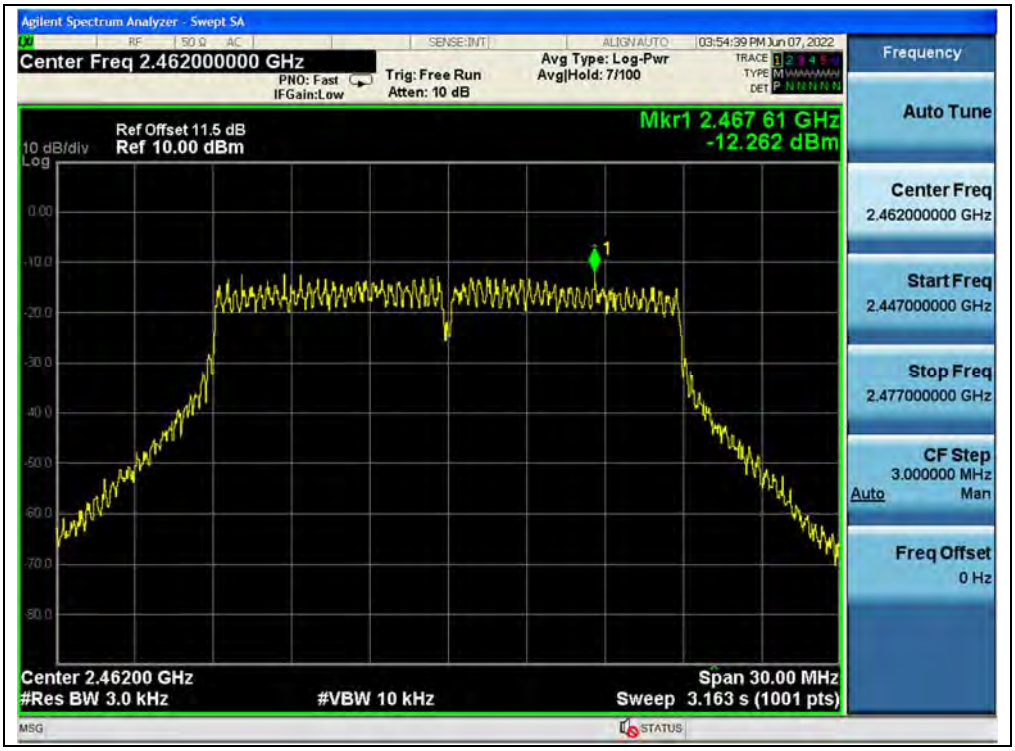
(Channel 1, 802.11n (HT20), ANT 0)

(Channel 6, 802.11n (HT20), ANT 0)

(Channel 11, 802.11n (HT20), ANT 0)

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

(Channel 6, 802.11n (HT20), ANT 1)



(Channel 11, 802.11n (HT20), ANT 1)

802.11ax (HEW20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1			
1	2412	-12.84	-12.98	-9.90	8	PASS
6	2437	-13.14	-12.38	-9.73	8	PASS
11	2462	-12.89	-13.50	-10.17	8	PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power density limit is 8 dBm/3kHz.						

B.Test Plot:

(Channel 1, 802.11ax (HEW20), ANT 0)

(Channel 6, 802.11ax (HEW20), ANT 0)

(Channel 11, 802.11ax (HEW20), ANT 0)

(Channel 1, 802.11ax (HEW20), ANT 1)

(Channel 6, 802.11ax (HEW20), ANT 1)

(Channel 11, 802.11ax (HEW20), ANT 1)

802.11ax (HEW20) RU26 Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1			
1	2412	-7.77	-7.30	-4.52	8	PASS
6	2437	-6.00	-5.09	-2.51	8	PASS
11	2462	-5.74	-6.82	-3.24	8	PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power density limit is 8 dBm/3kHz.						

B.Test Plot:

(Channel 1, 802.11ax (HEW20) RU26, ANT 0)

(Channel 6, 802.11ax (HEW20) RU26, ANT 0)

(Channel 11, 802.11ax (HEW20) RU26, ANT 0)

(Channel 1, 802.11ax (HEW20) RU26, ANT 1)

(Channel 6, 802.11ax (HEW20) RU26, ANT 1)

(Channel 11, 802.11ax (HEW20) RU26, ANT 1)

802.11ax (HEW40) Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
		ANT 0	ANT 1			
3	2422	-16.20	-14.37	-12.18	8	PASS
6	2437	-15.91	-14.65	-12.22	8	PASS
9	2452	-16.48	-15.66	-13.04	8	PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi＜6dBi, so the power density limit is 8 dBm/3kHz.						

B.Test Plot:

(Channel 3, 802.11ax (HEW40), ANT 0)

(Channel 6, 802.11ax (HEW40), ANT 0)

(Channel 9, 802.11ax (HEW40), ANT 0)

(Channel 3, 802.11ax (HEW40), ANT 1)

(Channel 6, 802.11ax (HEW40), ANT 1)

(Channel 9, 802.11ax (HEW40), ANT 1)

2.7. Conducted Emission

2.7.1. Requirement

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

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

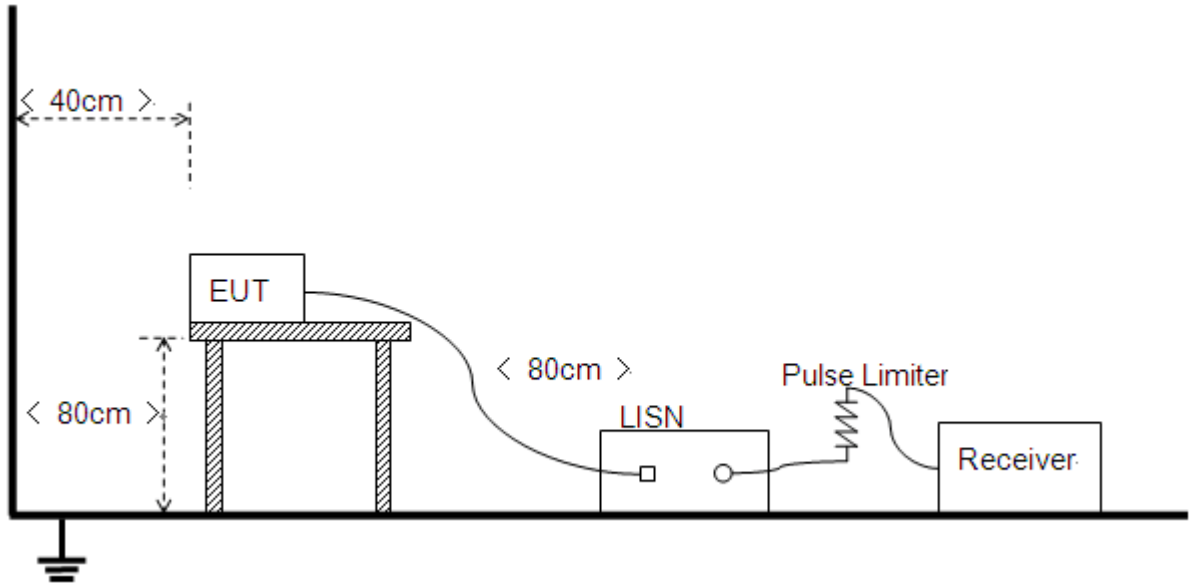
Note:

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

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

2.7.2. Test Description

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+ Earphone + BT TX

Test Voltage: AC 120V/60Hz

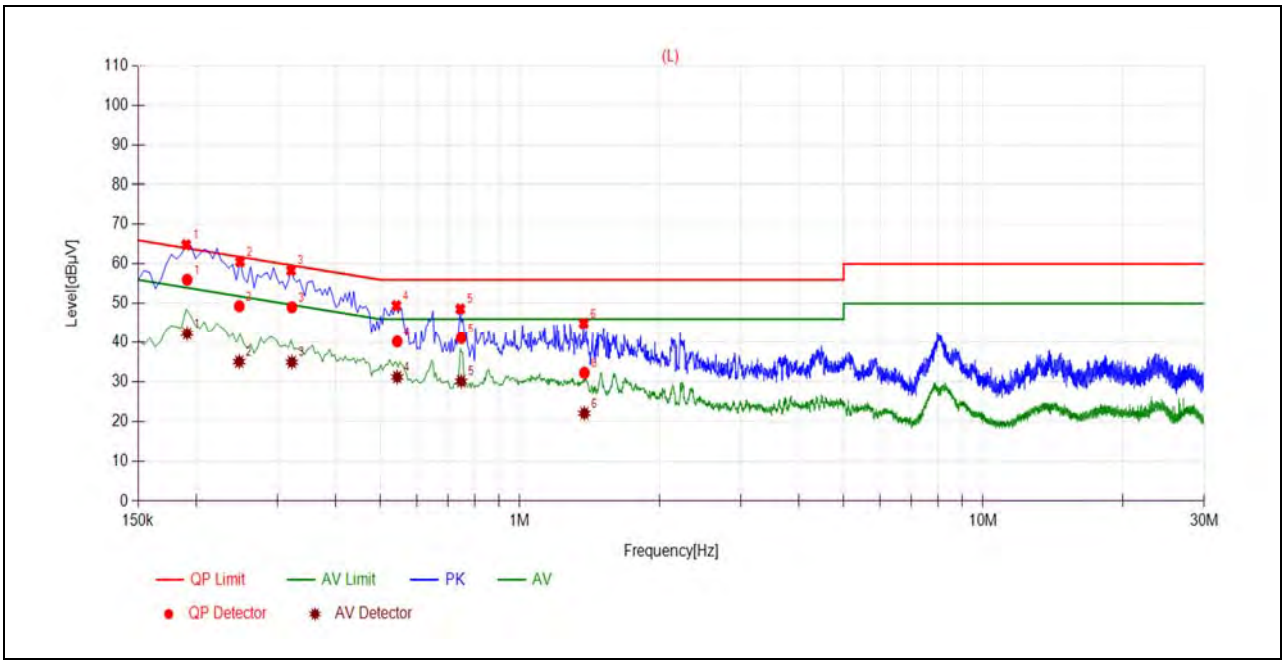
The measurement results are obtained as below:

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

U_R: Receiver Reading

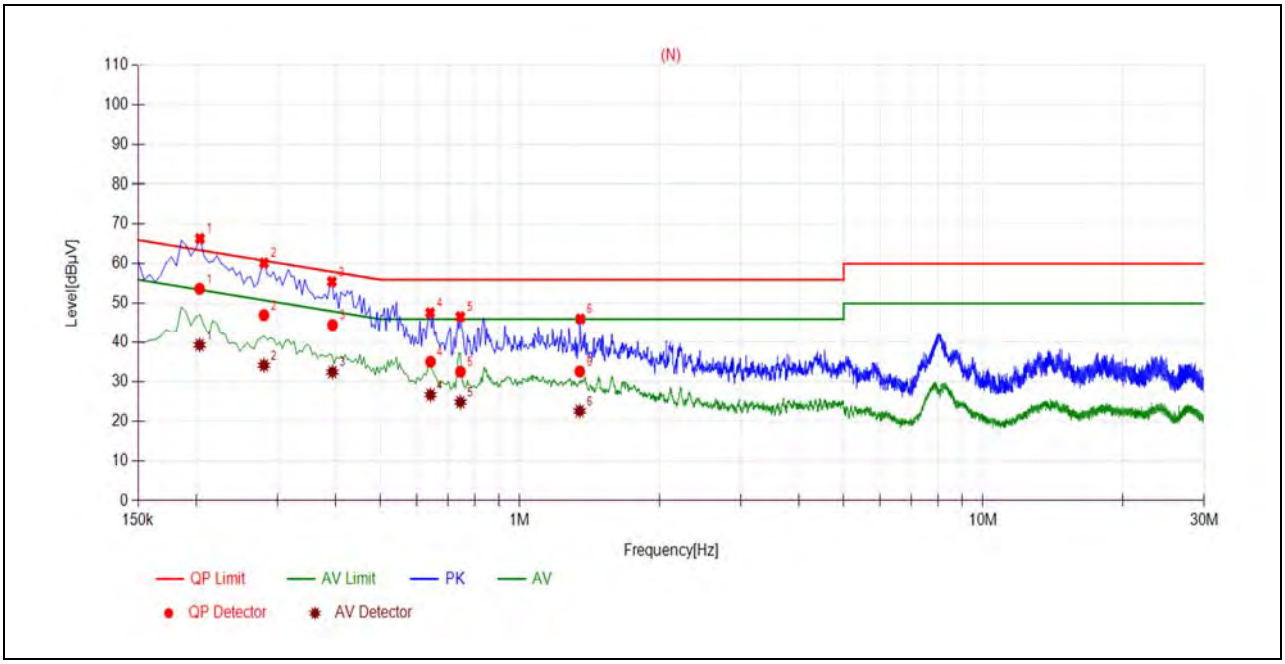
A_{Factor}: Voltage division factor of LISN

B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1914	56.01	42.27	63.98	53.98	Line	PASS
2	0.2480	49.30	35.06	61.82	51.82		PASS
3	0.3222	49.05	34.95	59.65	49.65		PASS
4	0.5437	40.19	31.16	56.00	46.00		PASS
5	0.7474	41.09	30.11	56.00	46.00		PASS
6	1.3784	32.24	22.03	56.00	46.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2036	53.70	39.30	63.46	53.46	Neutral	PASS
2	0.2804	47.02	34.14	60.81	50.81		PASS
3	0.3942	44.52	32.42	57.97	47.97		PASS
4	0.6417	35.01	26.65	56.00	46.00		PASS
5	0.7446	32.48	24.81	56.00	46.00		PASS
6	1.3472	32.56	22.56	56.00	46.00		PASS

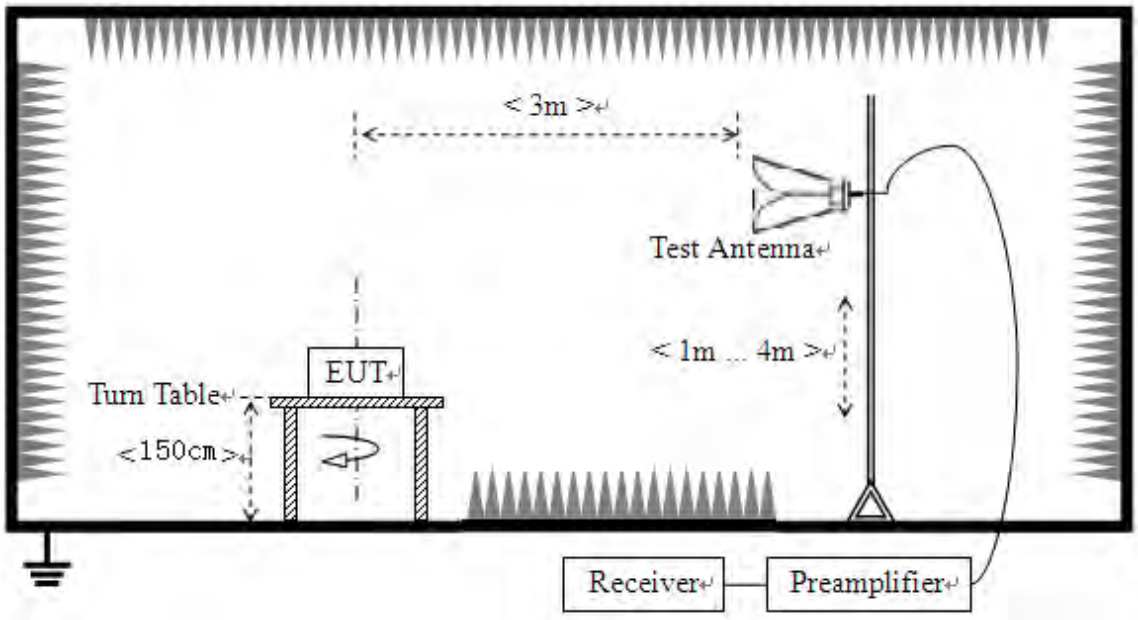
2.8. Restricted Frequency Bands

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

The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m

Note 1: 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.

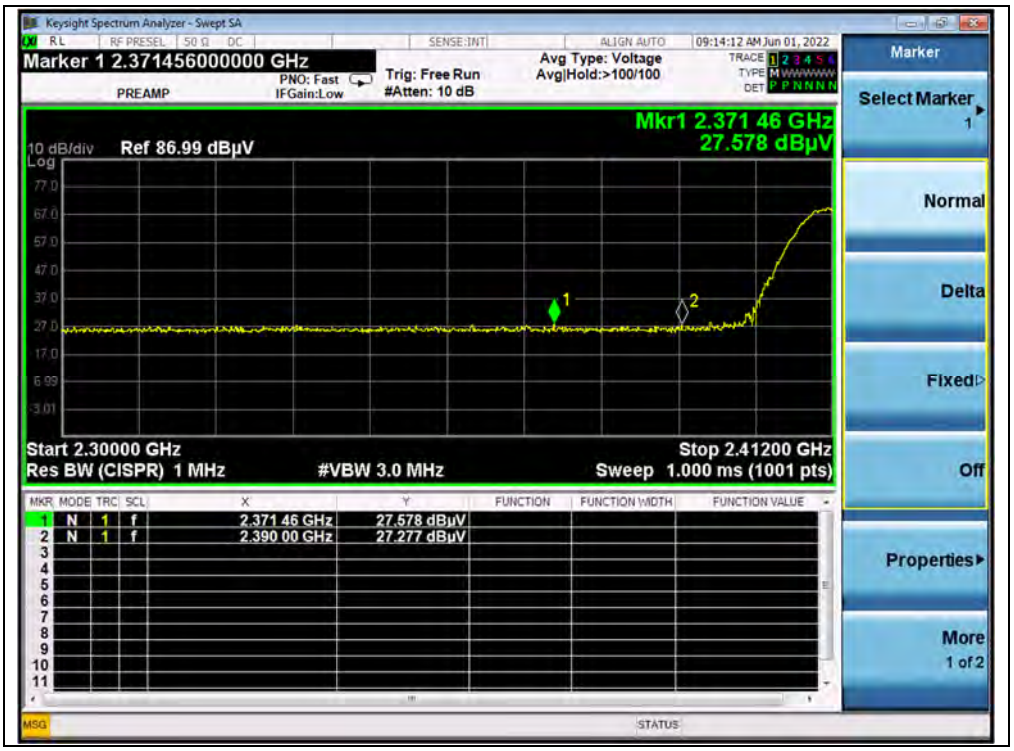
Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

802.11b Mode

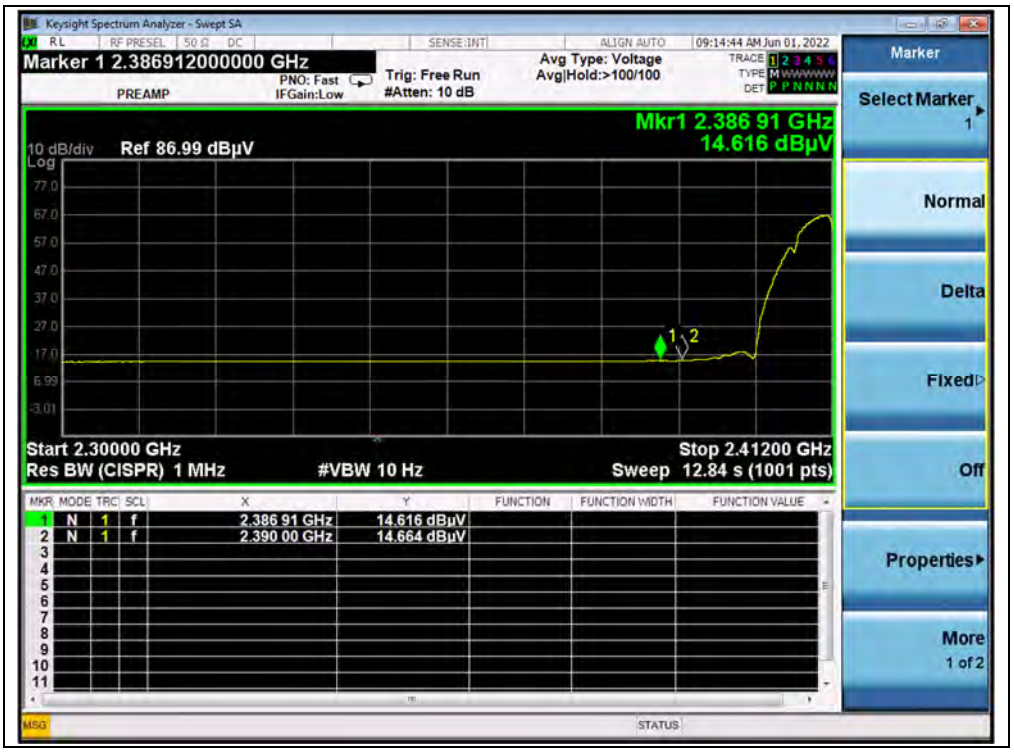
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2371.46	PK	27.58	6.74	27.20	61.52	74	PASS
1	2390.00	AV	14.66	6.74	27.20	48.60	54	PASS
11	2494.87	PK	26.35	6.74	27.20	60.29	74	PASS
11	2483.50	AV	14.29	6.74	27.20	48.23	54	PASS

B.Test Plot:



(PEAK, Channel 1, 802.11b)



(AVERAGE, Channel 1, 802.11b)

(PEAK, Channel 11, 802.11b)

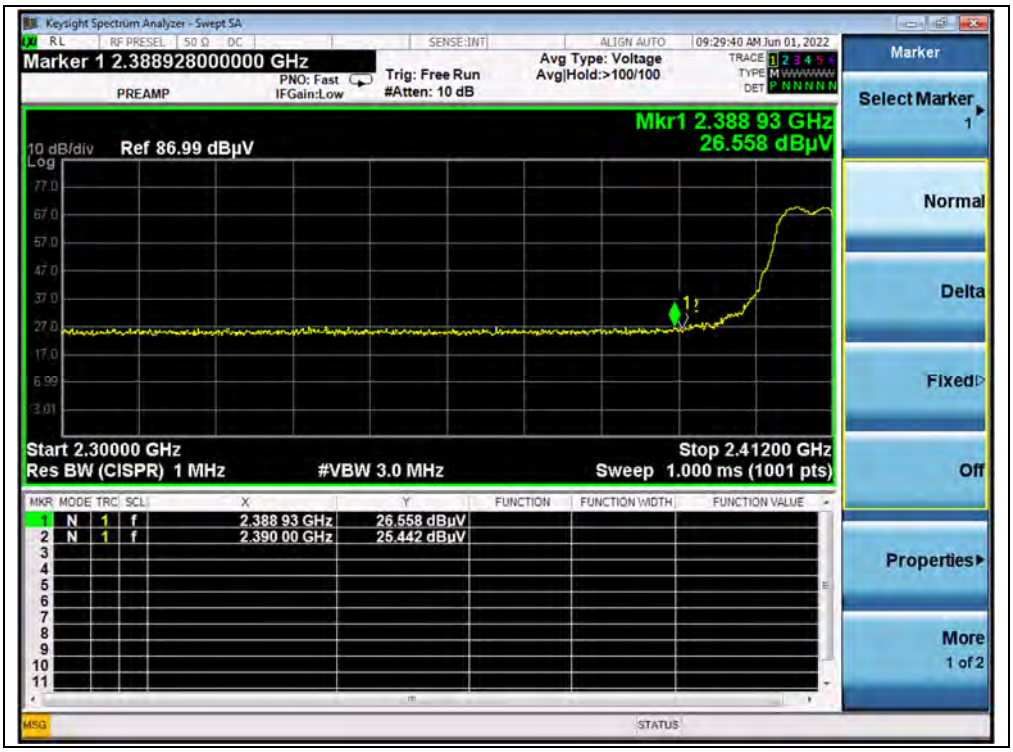
(AVERAGE, Channel 11, 802.11b)

802.11g Mode

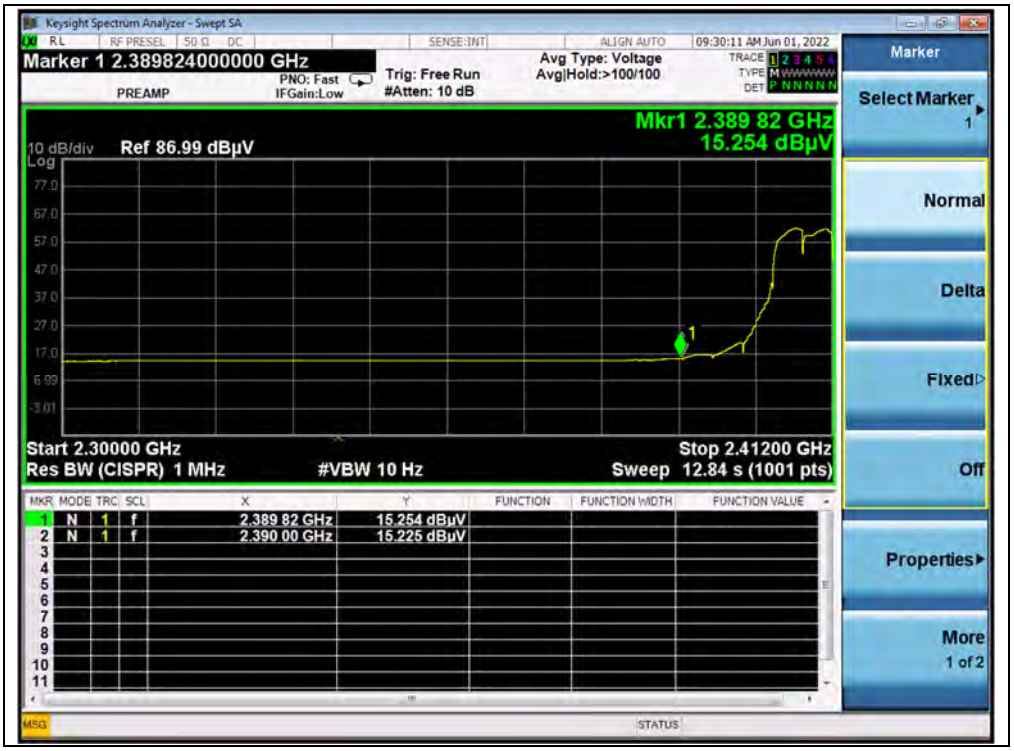
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2388.93	PK	26.56	6.74	27.20	60.50	74	PASS
1	2389.82	AV	15.25	6.74	27.20	49.19	54	PASS
11	2485.52	PK	27.55	6.74	27.20	61.49	74	PASS
11	2483.50	AV	15.25	6.74	27.20	49.19	54	PASS

B.Test Plot:

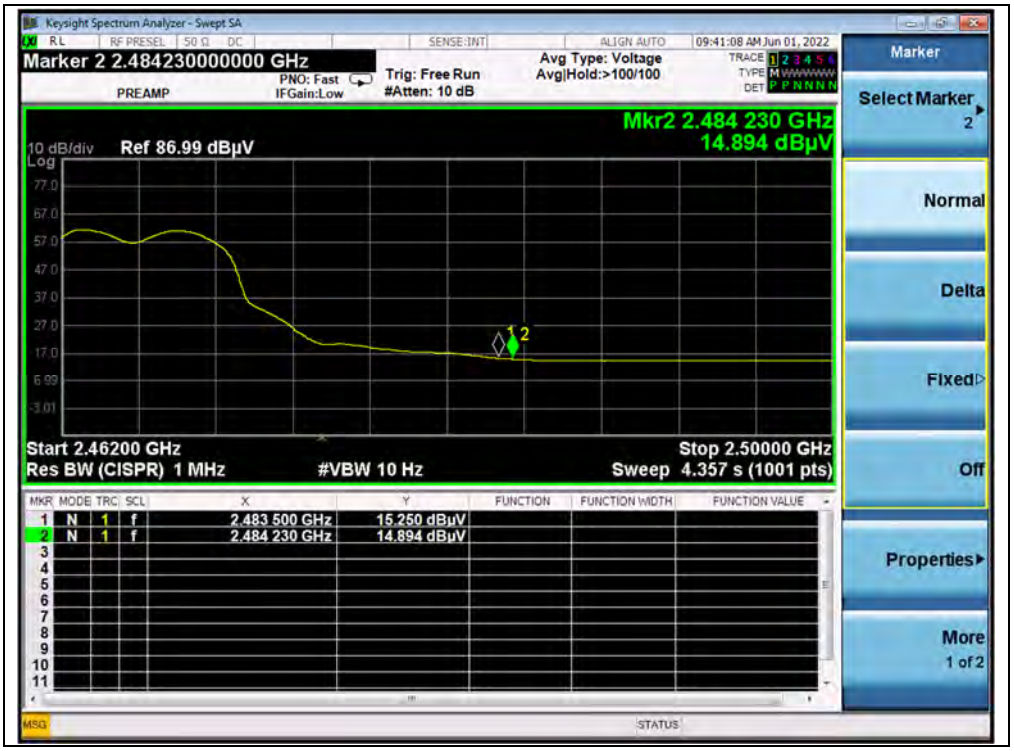


(PEAK, Channel 1, 802.11g)



(AVERAGE, Channel 1, 802.11g)

(PEAK, Channel 11, 802.11g)



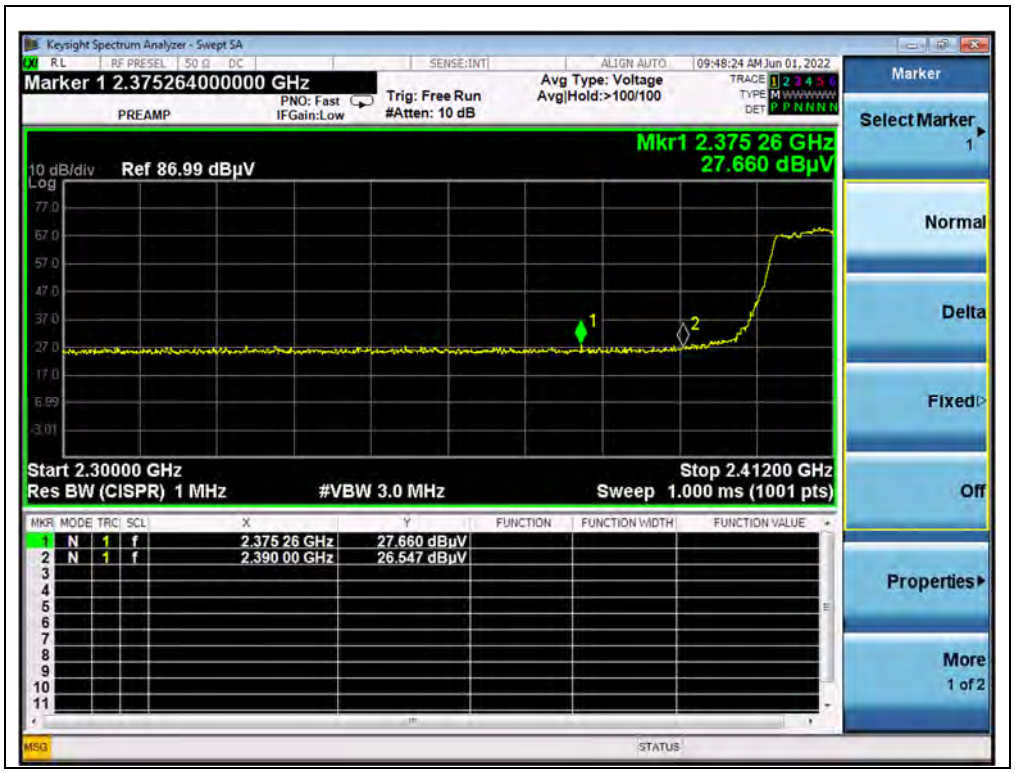
(AVERAGE, Channel 11, 802.11g)

802.11n (HT20) Mode

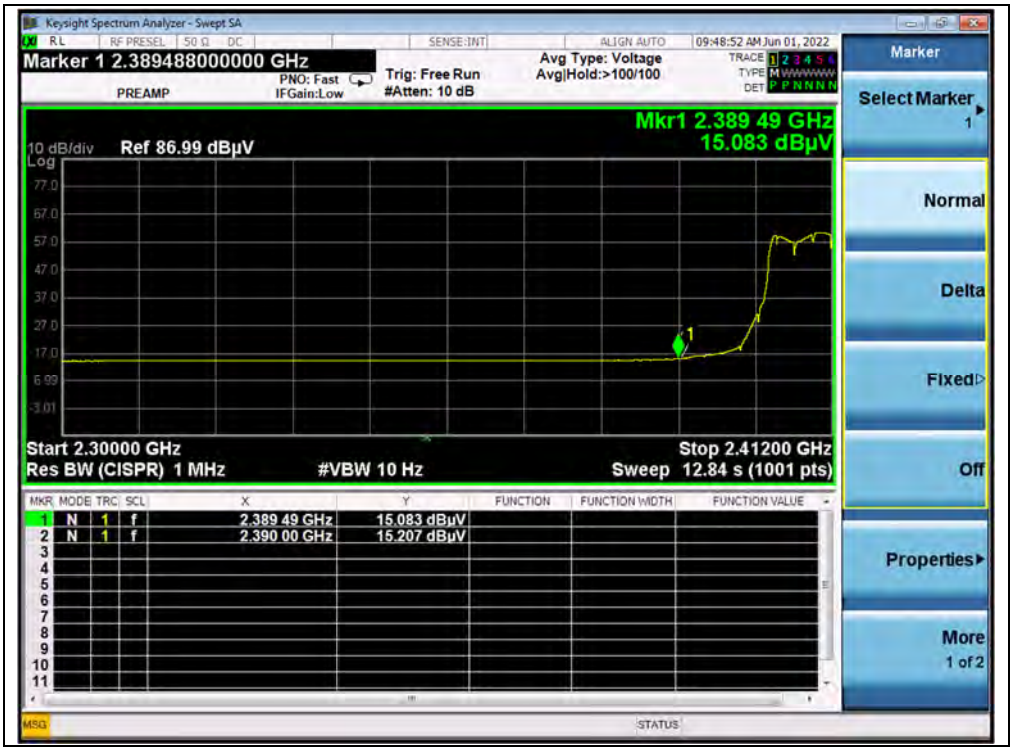
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2375.26	PK	27.66	6.74	27.20	61.60	74	PASS
1	2390.00	AV	15.21	6.74	27.20	49.15	54	PASS
11	2487.46	PK	26.54	6.74	27.20	60.48	74	PASS
11	2483.50	AV	15.25	6.74	27.20	49.19	54	PASS

B.Test Plot:

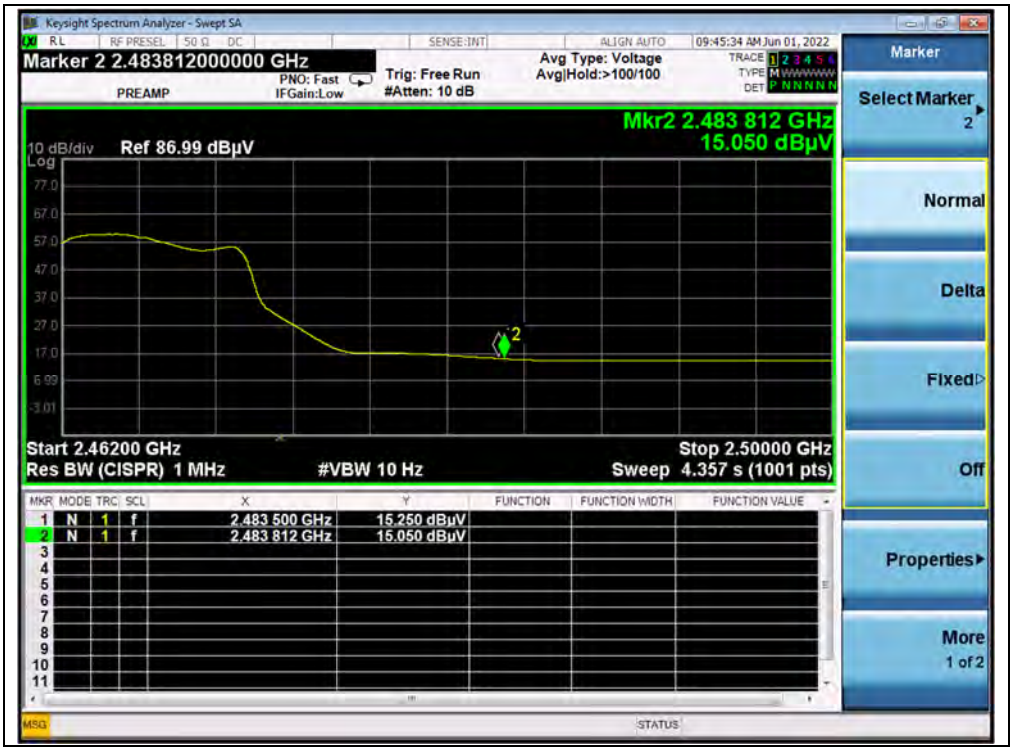


(PEAK, Channel 1, 802.11n (HT20))



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

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



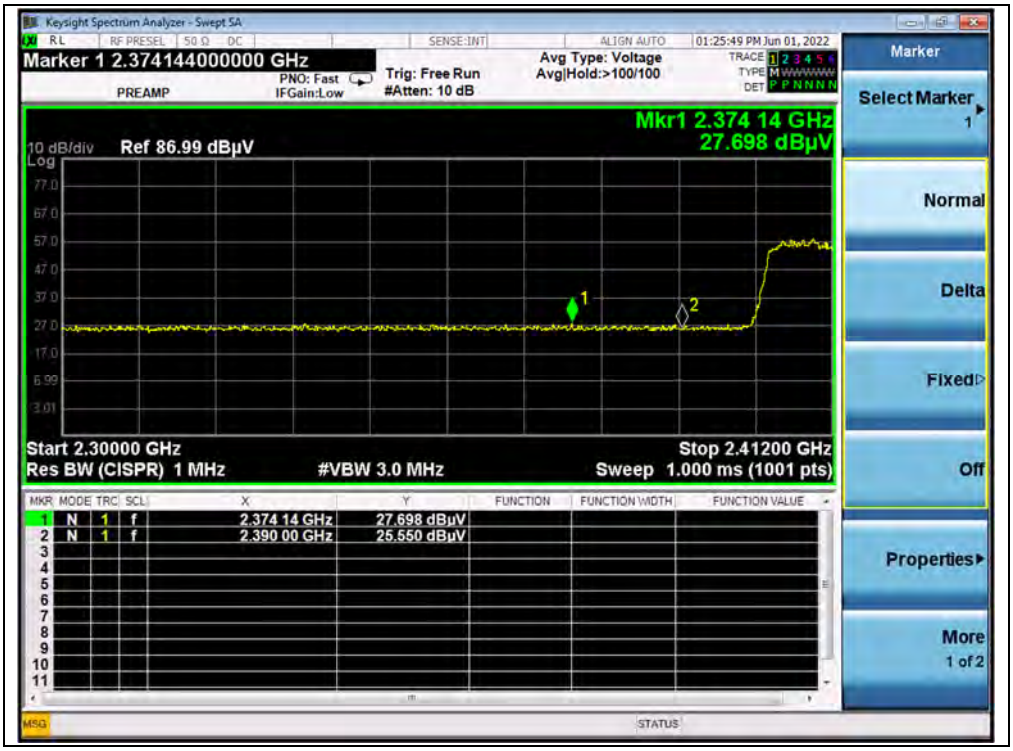
(AVERAGE, Channel 11, 802.11n (HT20))

802.11ax (HEW20) Mode

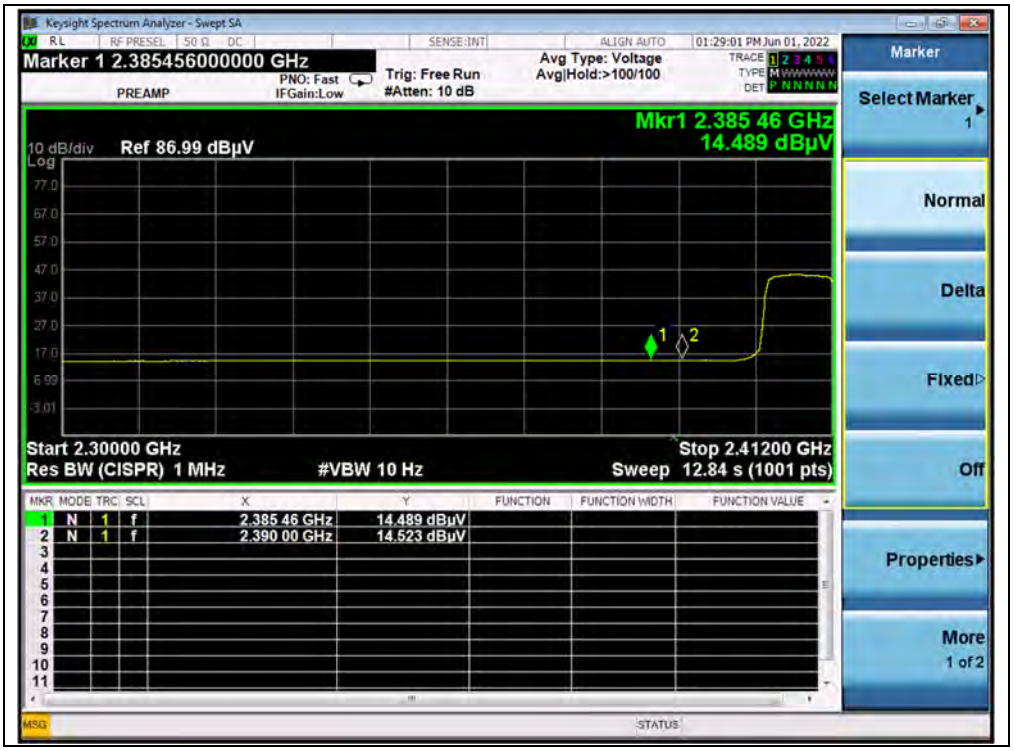
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2374.14	PK	27.70	6.74	27.20	61.64	74	PASS
1	2390.00	AV	14.52	6.74	27.20	48.46	54	PASS
11	2487.69	PK	26.54	6.74	27.20	60.48	74	PASS
11	2484.95	AV	14.24	6.74	27.20	48.18	54	PASS

B.Test Plot:



(PEAK, Channel 1, 802.11ax (HEW20))



(AVERAGE, Channel 1, 802.11ax (HEW20))

(PEAK, Channel 11, 802.11ax (HEW20))

(AVERAGE, Channel 11, 802.11ax (HEW20))

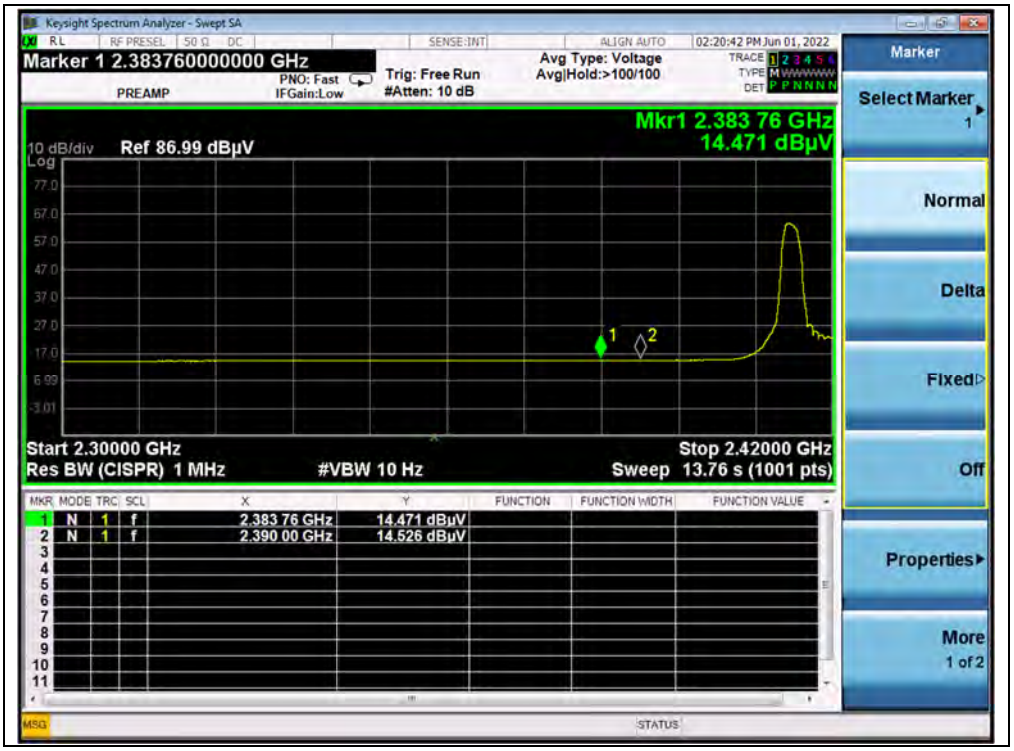
802.11ax (HEW20) RU26 Mode

A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
1	2335.04	PK	28.02	6.74	27.20	61.96	74	PASS
1	2390.00	AV	14.53	6.74	27.20	48.47	54	PASS
11	2484.57	PK	26.14	6.74	27.20	60.08	74	PASS
11	2485.56	AV	14.28	6.74	27.20	48.22	54	PASS

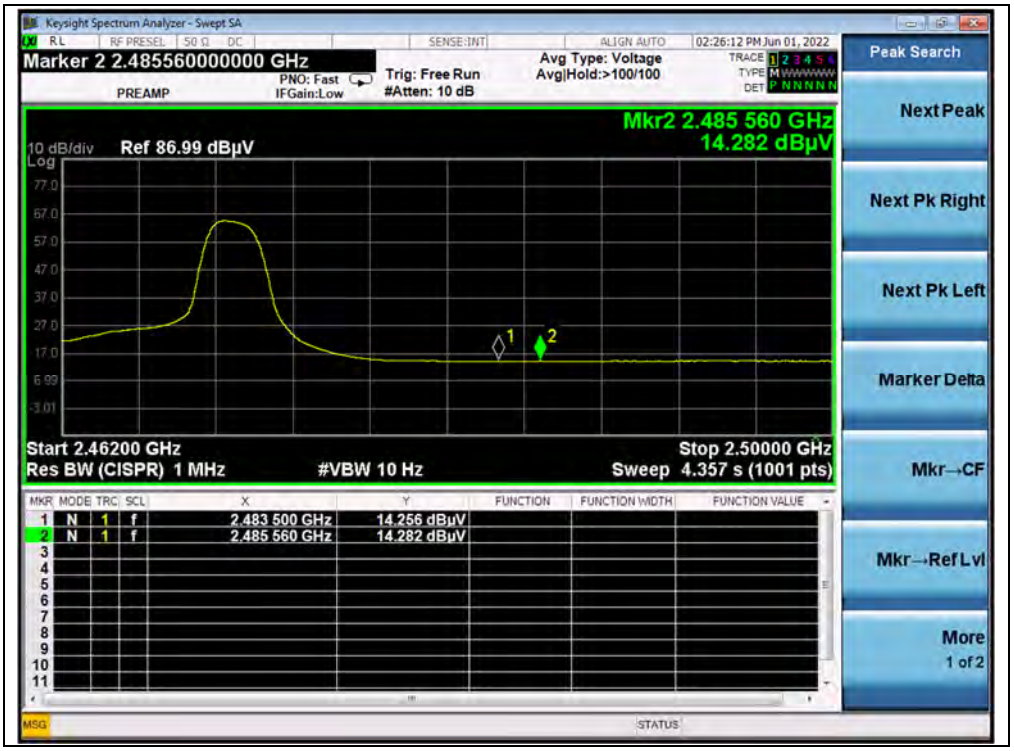
B.Test Plot:

(PEAK, Channel 1, 802.11ax (HEW20) RU26)



(AVERAGE, Channel 1, 802.11ax (HEW20) RU26)

(PEAK, Channel 11, 802.11ax (HEW20) RU26)



(AVERAGE, Channel 11, 802.11ax (HEW20) RU26)

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 (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

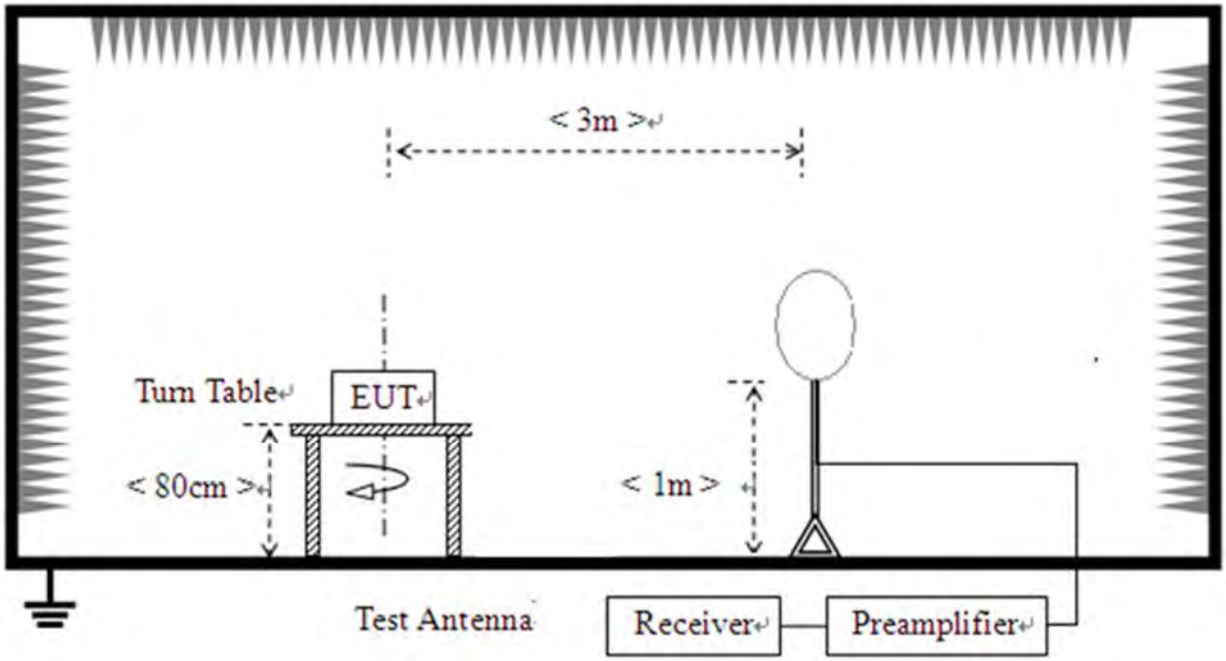
Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

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).

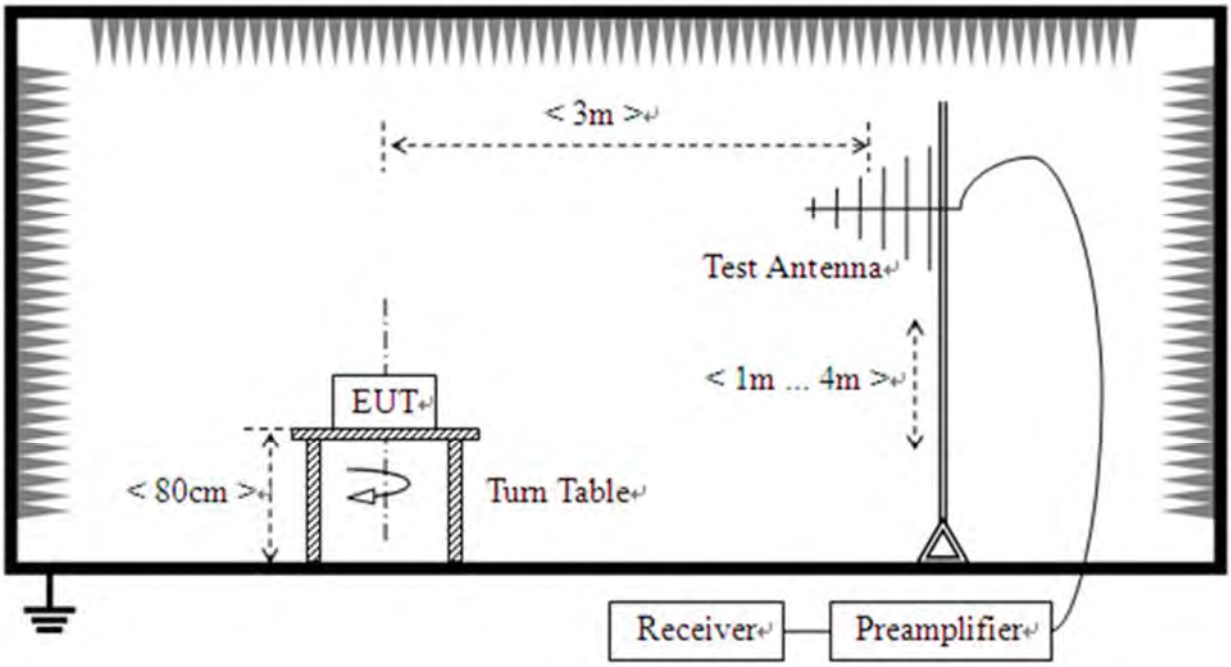
2.9.2. Test Description

Test Setup:

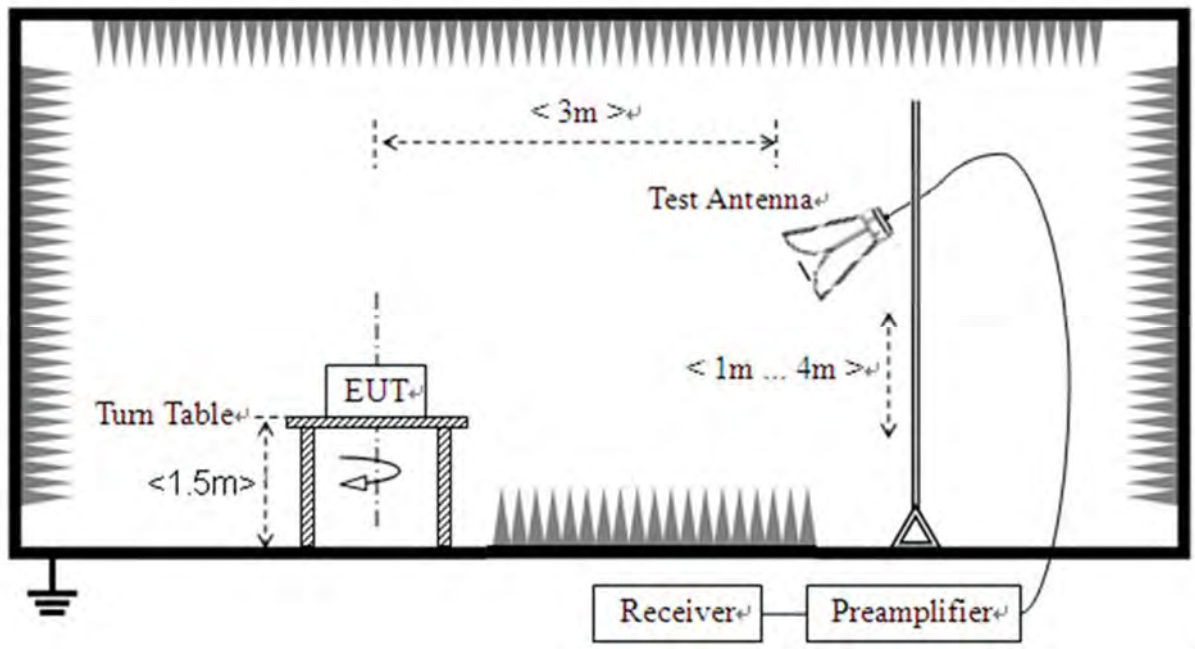
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



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 3meters. 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 [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

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

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.

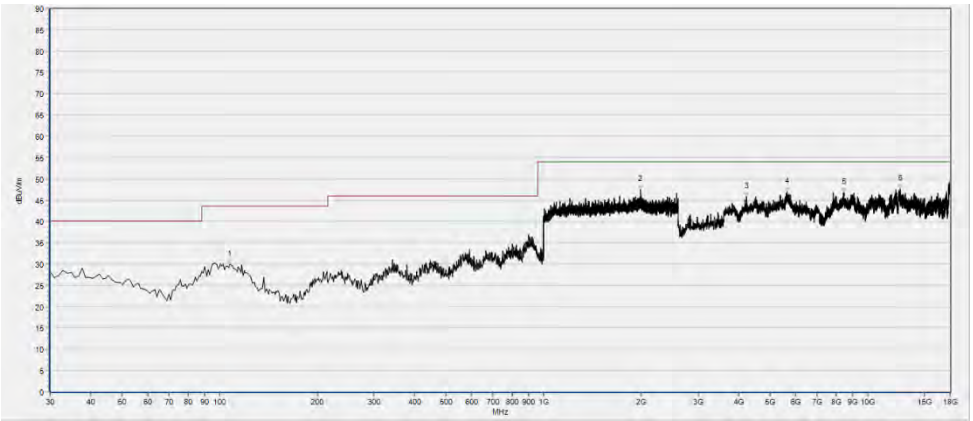
Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

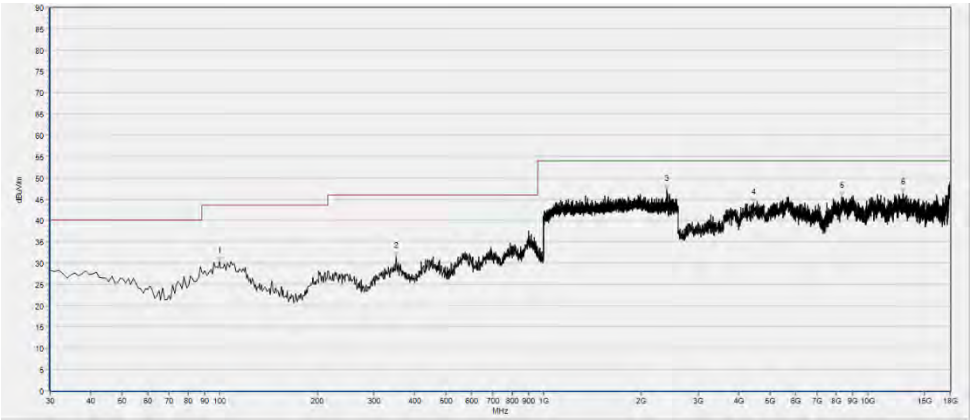
802.11b Mode

Plot for Channel 1



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
107.600	29.78	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1996.267	47.48	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4241.640	45.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5655.360	46.98	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8452.000	46.72	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12613.080	47.52	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

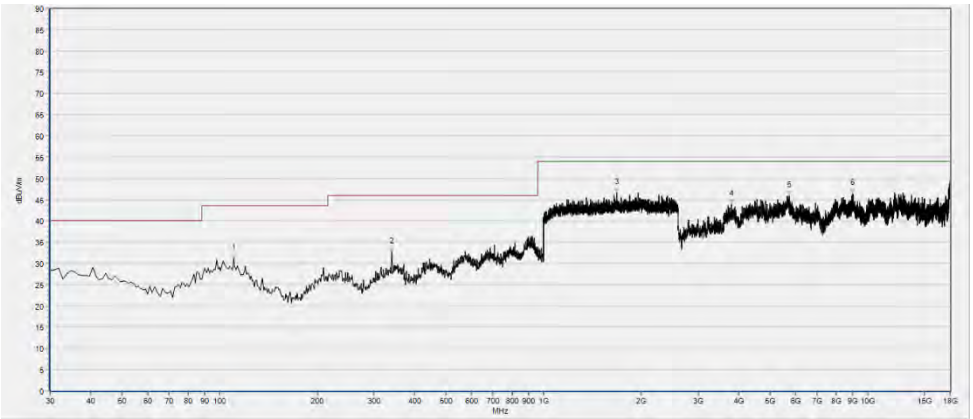
(Antenna Horizontal, 30MHz to 18GHz)



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
99.840	30.25	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
351.070	31.45	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2406.933	47.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4441.840	44.06	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8359.600	45.58	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12899.520	46.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 6



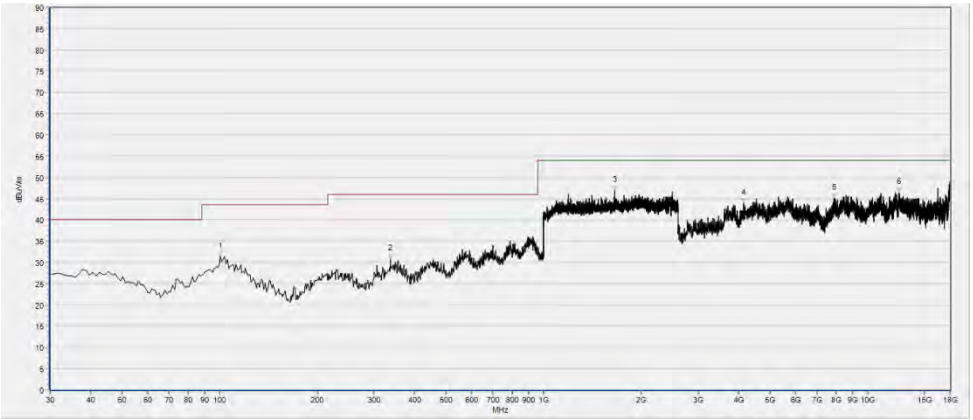
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
110.510	31.16	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
340.400	32.70	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1686.933	46.58	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3801.200	43.96	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5747.760	45.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8978.680	46.43	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
108.570	31.06	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
561.560	33.12	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1456.000	45.68	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4515.760	45.66	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8439.680	46.67	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10429.360	46.25	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

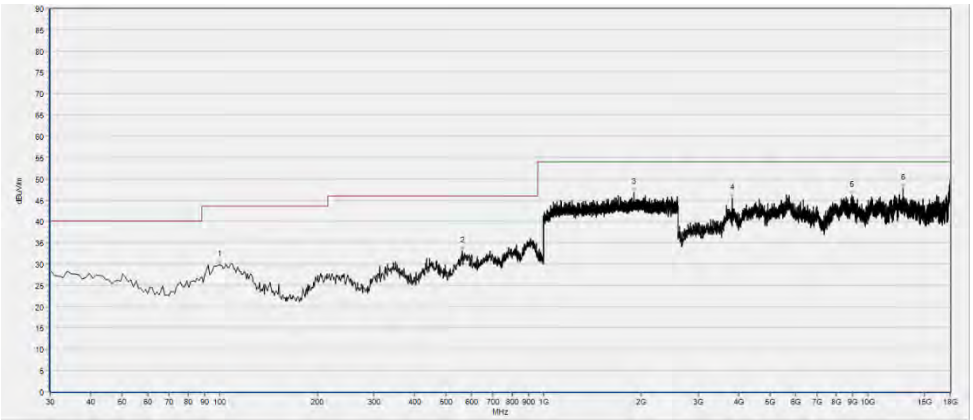
(Antenna Vertical, 30MHz to 18GHz)

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
100.810	31.39	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
336.520	30.76	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1659.200	46.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4149.240	43.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7888.360	45.00	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12520.680	46.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

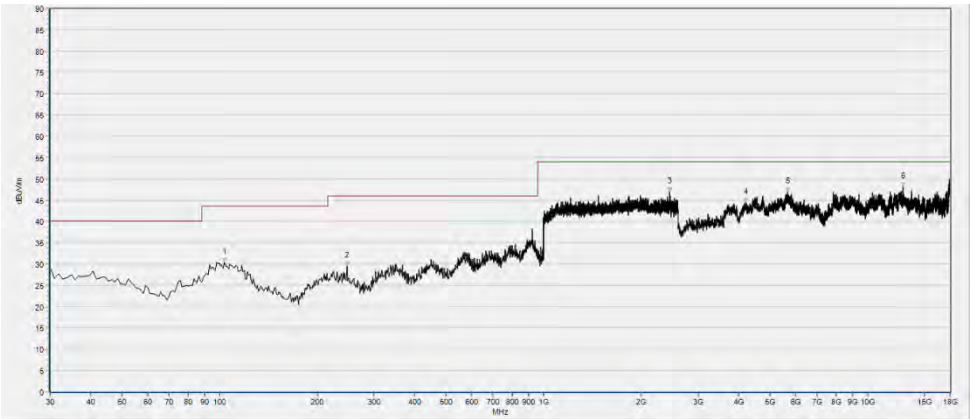


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.840	29.84	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
561.560	33.02	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1902.933	46.82	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3825.840	45.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8972.520	46.09	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12890.280	47.75	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

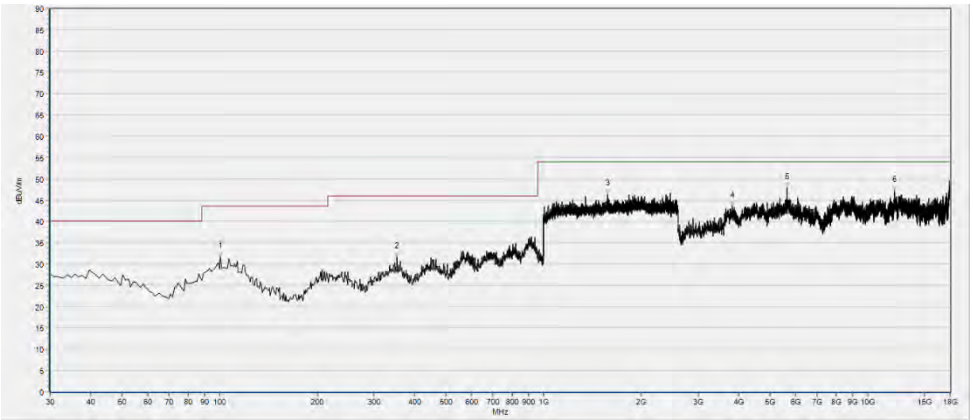
802.11g Mode

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
103.720	30.30	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
247.280	29.52	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2456.000	46.93	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4210.840	44.39	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5664.600	46.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12896.440	48.12	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

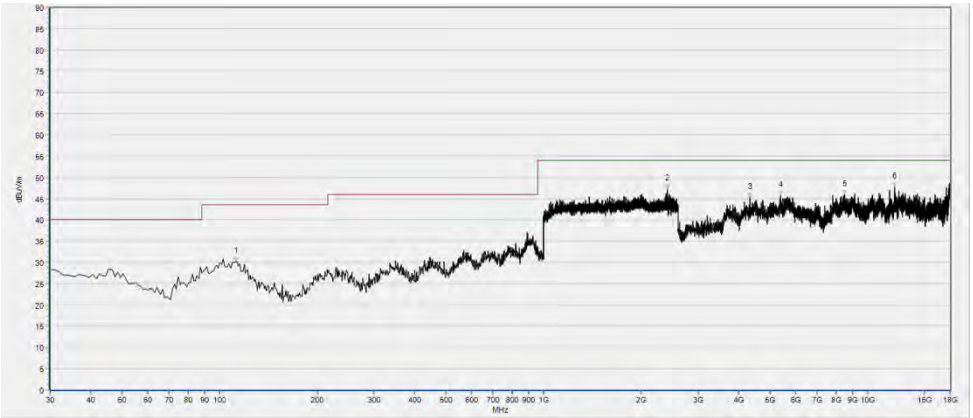
(Antenna Horizontal, 30MHz to 18GHz)



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
100.810	31.65	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
353.010	31.70	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1577.067	46.49	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3835.080	43.51	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5636.880	47.92	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12126.440	47.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

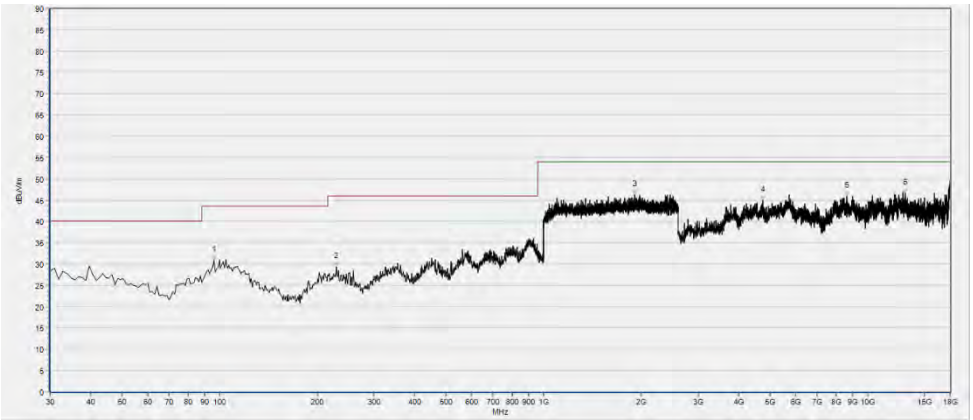
(Antenna Vertical, 30MHz to 18GHz)

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
112.450	30.11	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
2411.733	47.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4343.280	45.23	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5402.800	45.69	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8492.040	45.94	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12132.600	47.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

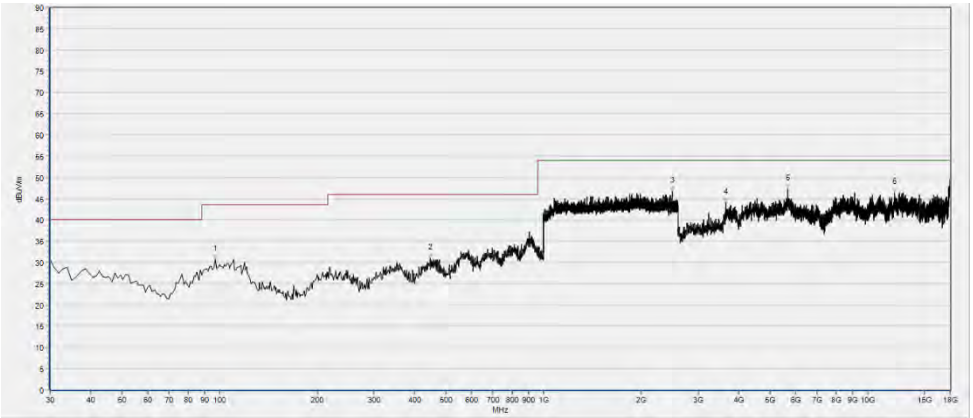
(Antenna Horizontal, 30MHz to 18GHz)



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
95.960	30.77	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
229.820	29.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1912.533	46.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4749.840	44.87	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8639.880	45.87	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13115.120	46.53	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
96.930	30.63	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
447.100	31.00	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2494.933	46.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3647.200	44.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5683.080	47.29	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12141.840	46.43	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

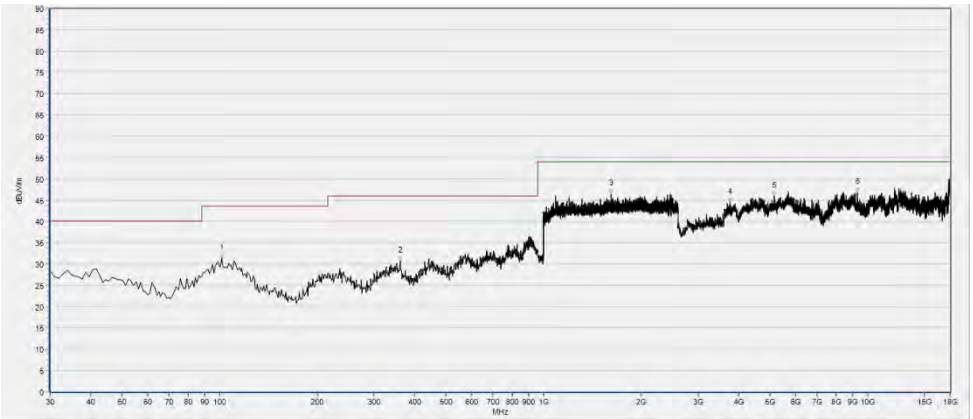
(Antenna Horizontal, 30MHz to 18GHz)

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
112.450	30.79	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1680.000	46.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3773.480	43.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
6520.840	44.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10349.280	46.64	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12637.720	46.53	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

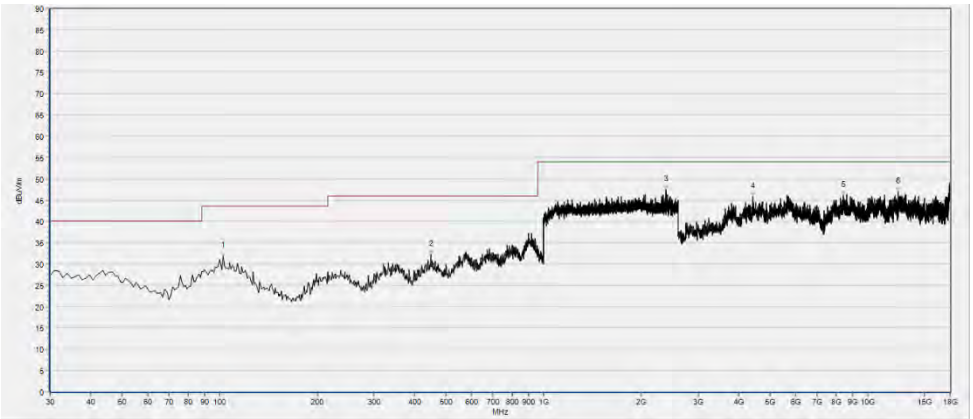
802.11n (HT20) Mode

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
101.780	31.31	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
361.740	30.67	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1620.800	46.35	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3773.480	44.45	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5156.400	45.99	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
9339.040	46.83	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

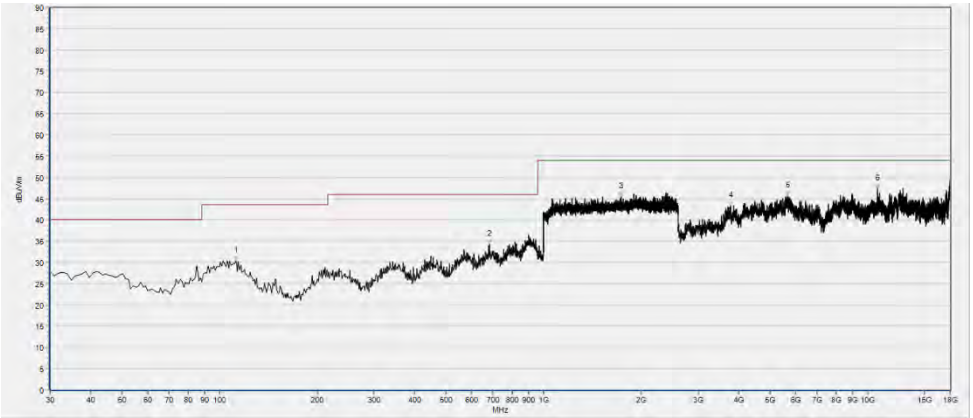
(Antenna Horizontal, 30MHz to 18GHz)



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
102.750	31.81	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
449.040	32.13	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2389.333	47.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4420.280	45.71	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8430.440	46.11	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12471.400	47.01	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 6



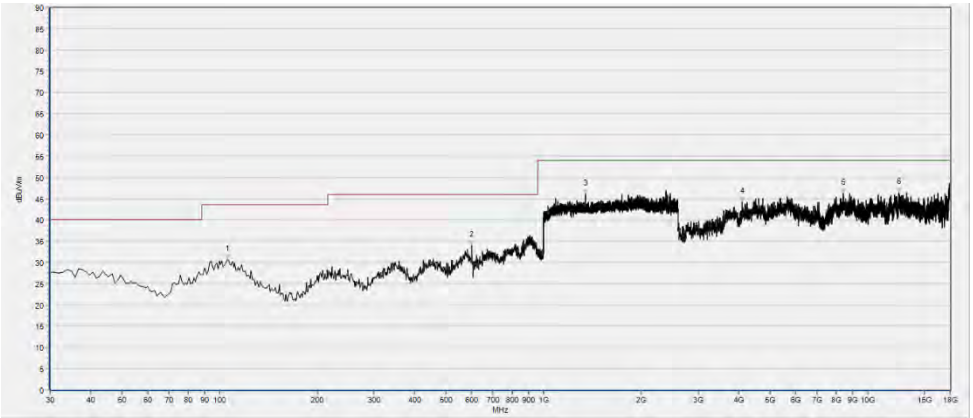
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
112.450	30.34	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
681.840	34.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1733.867	45.47	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3782.720	43.32	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5670.760	45.63	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10718.880	47.20	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
106.630	31.54	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
207.510	29.23	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2389.333	48.11	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5569.120	45.75	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11002.240	46.95	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12905.680	47.03	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

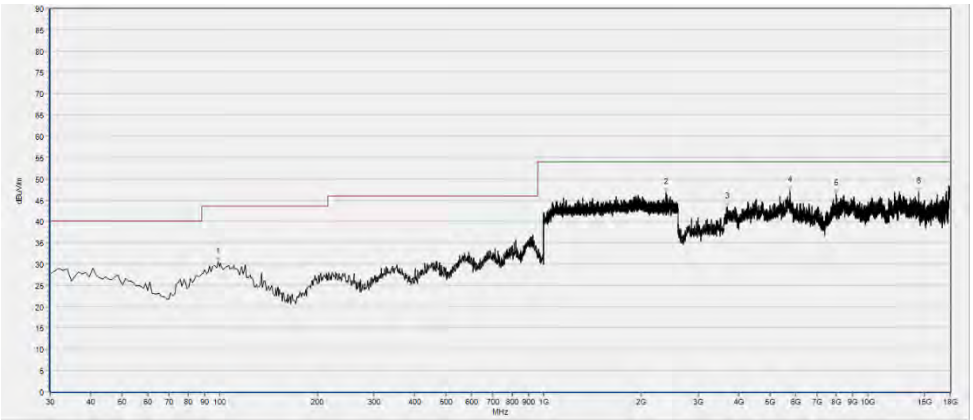
(Antenna Vertical, 30MHz to 18GHz)

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
105.660	30.65	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
601.330	33.95	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1350.400	46.16	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4109.200	44.17	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8418.120	46.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12511.440	46.39	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

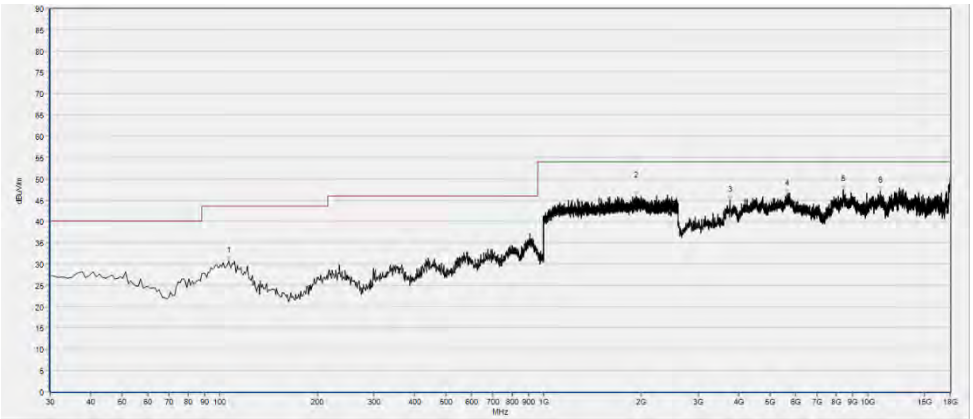


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
98.870	30.54	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2389.333	46.79	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3699.560	43.43	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5778.560	47.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7996.160	46.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
14427.200	46.93	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

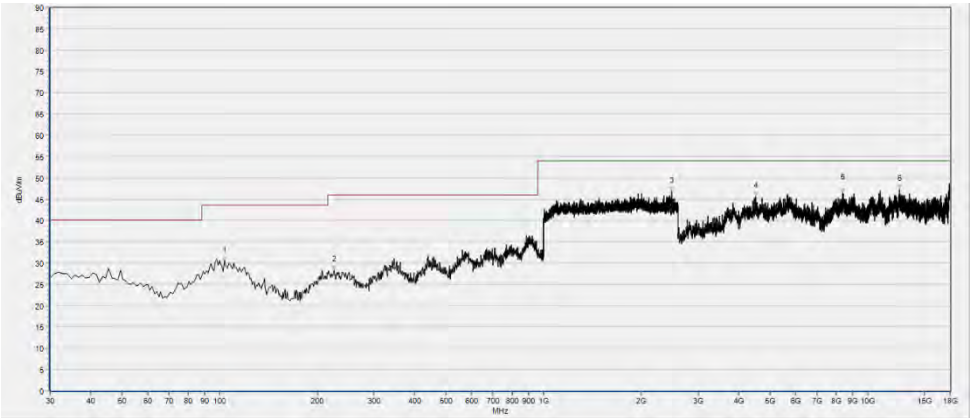
802.11ax (HEW20) Mode

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
106.630	30.71	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1931.200	45.88	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3761.160	44.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5661.520	46.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8415.040	47.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10962.200	47.13	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

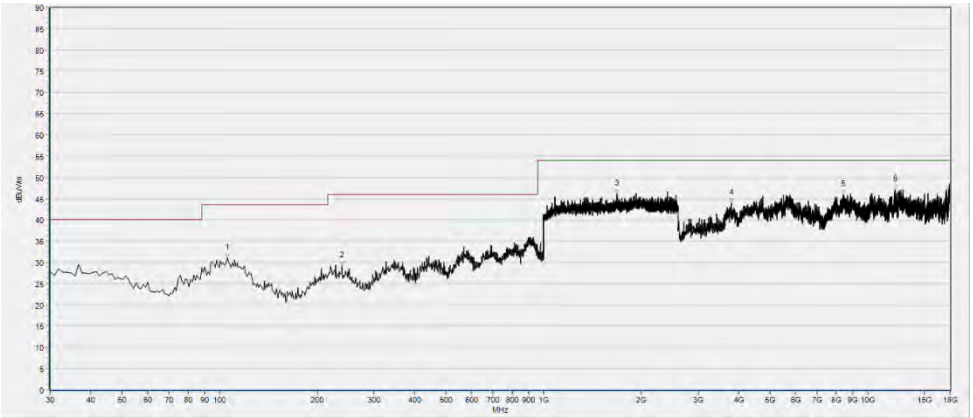
(Antenna Horizontal, 30MHz to 18GHz)



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
103.720	30.53	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
225.940	28.28	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2488.000	46.79	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4528.080	45.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8402.720	46.46	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12569.960	47.20	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 6



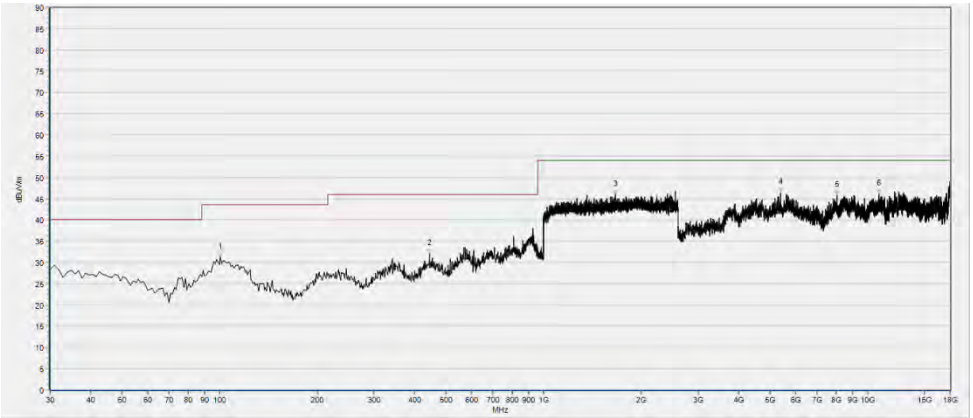
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.660	31.04	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
238.550	29.11	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1683.733	46.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3798.120	43.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8405.800	45.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12203.440	47.05	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
106.630	30.99	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
342.340	30.28	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1724.267	46.38	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4475.720	46.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7497.200	44.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10293.840	46.57	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

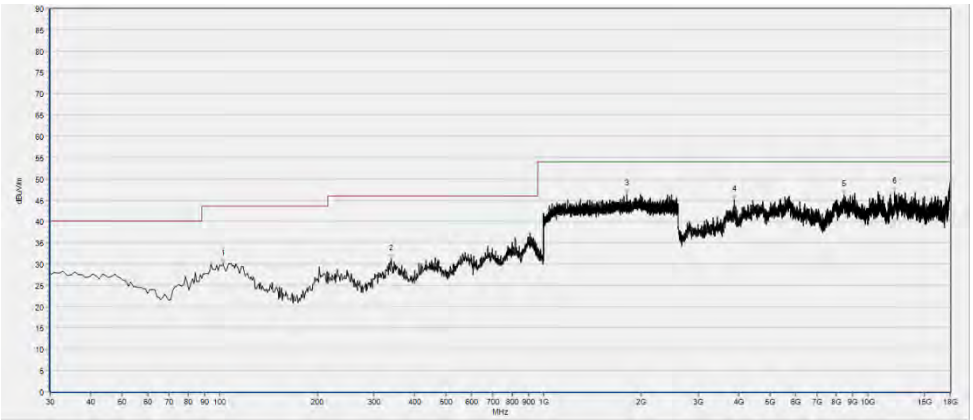
(Antenna Vertical, 30MHz to 18GHz)

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
100.810	31.20	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
444.190	31.93	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1669.867	45.85	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5399.720	46.45	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8057.760	45.81	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10869.800	46.15	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

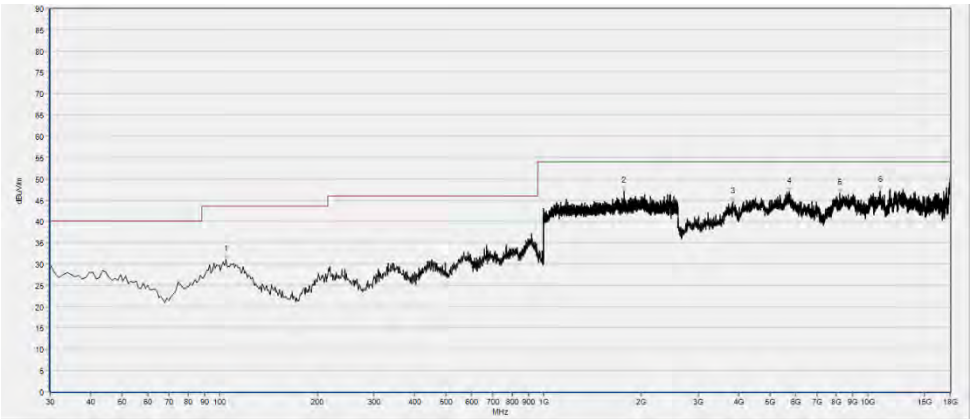


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.750	29.99	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
339.430	31.21	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1813.333	46.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3884.360	45.10	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8452.000	46.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12148.000	46.87	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

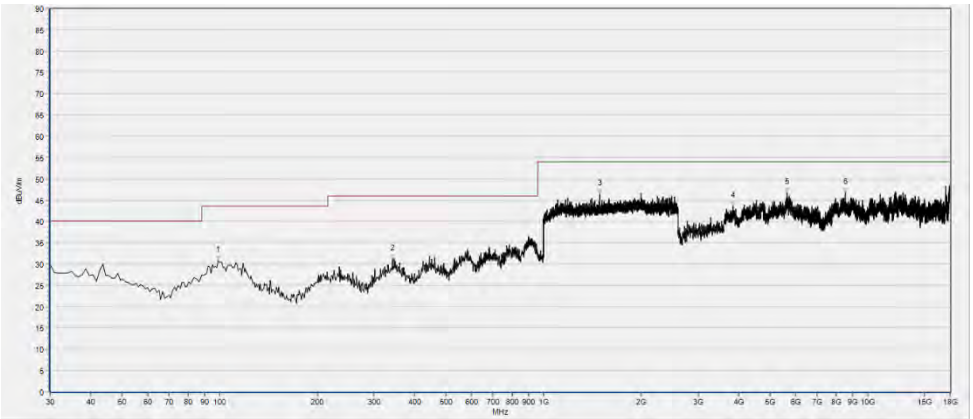
802.11ax (HEW20) RU26 Mode

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
104.690	30.96	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1776.533	47.07	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3838.160	44.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5729.280	46.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8199.440	46.54	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10956.040	47.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

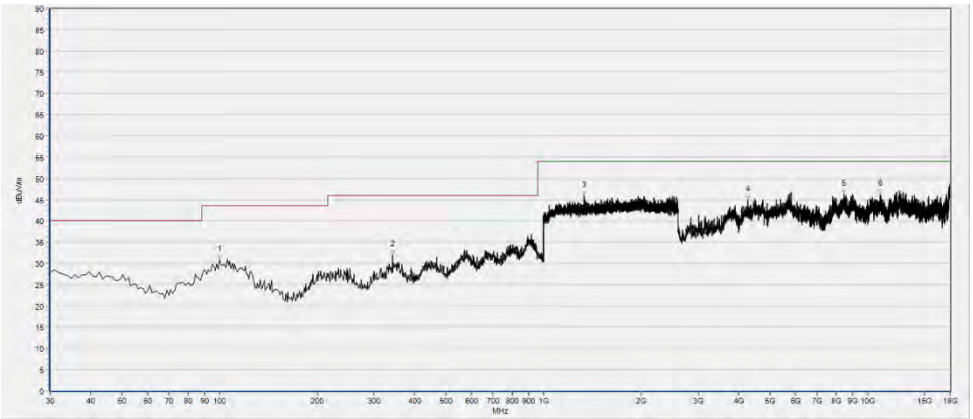
(Antenna Horizontal, 30MHz to 18GHz)



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
98.870	30.87	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
341.370	31.22	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1494.400	46.49	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3850.480	43.61	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5649.200	46.76	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8569.040	46.78	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

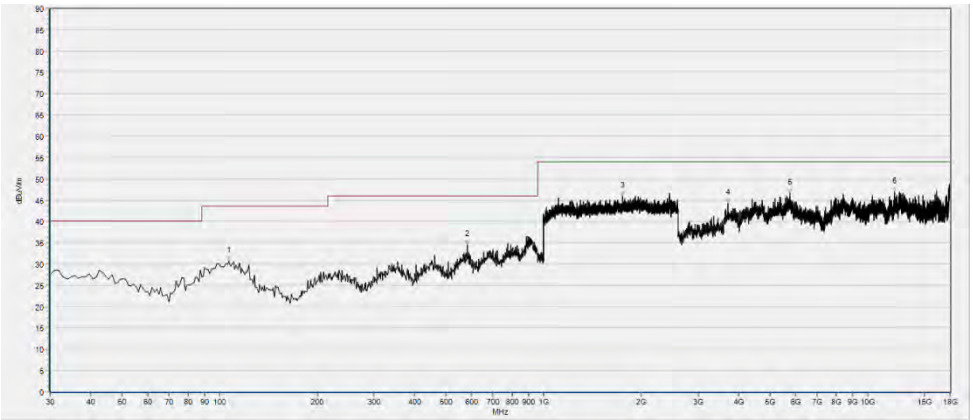
(Antenna Vertical, 30MHz to 18GHz)

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
99.840	30.89	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
341.370	32.09	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1336.000	45.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4266.280	44.85	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8458.160	46.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10974.520	46.27	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

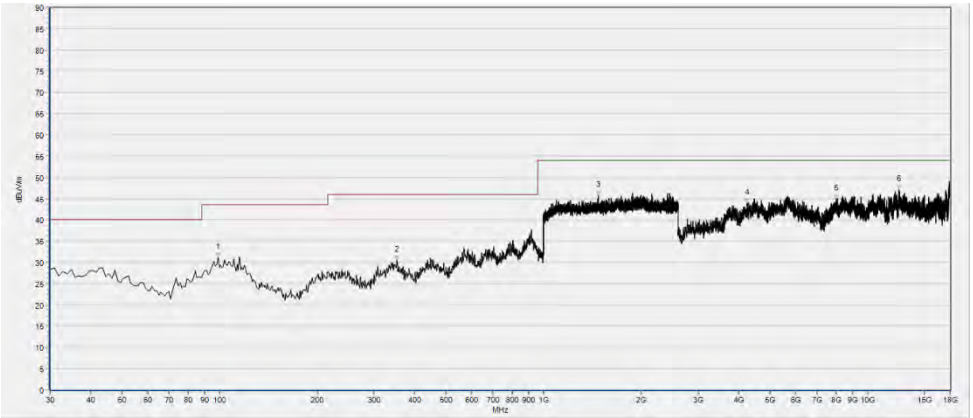
(Antenna Horizontal, 30MHz to 18GHz)



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
106.630	30.66	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
580.960	34.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1753.600	45.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3708.800	44.25	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5757.000	46.52	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12154.160	46.91	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

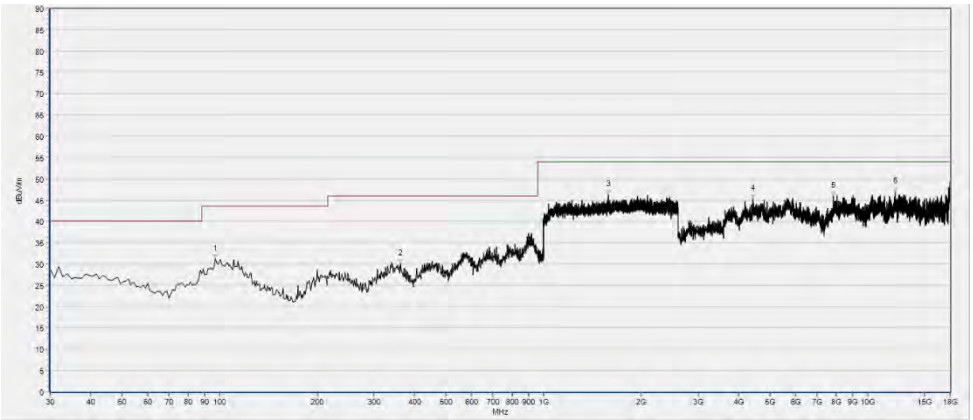
(Antenna Vertical, 30MHz to 18GHz)

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
98.870	31.12	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
353.010	30.53	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1477.867	45.82	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4260.120	43.96	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7993.080	44.98	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12511.440	47.05	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

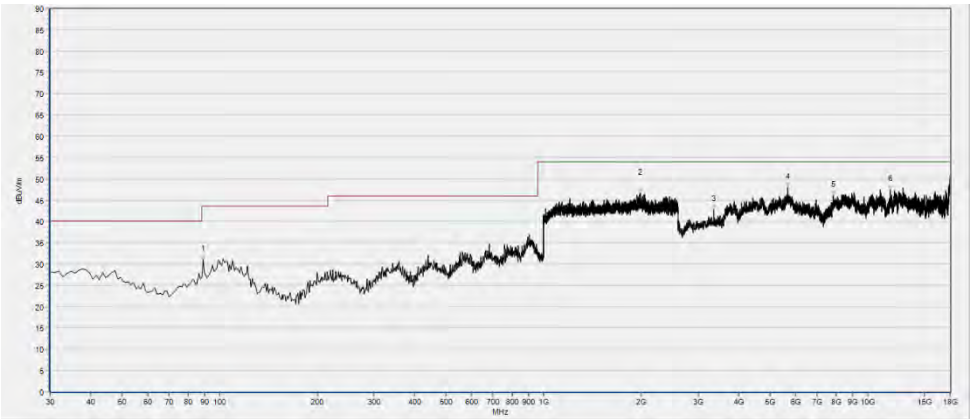


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
96.930	31.14	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
362.710	30.01	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1588.800	46.24	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4423.360	45.24	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7863.720	45.85	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12181.880	46.88	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

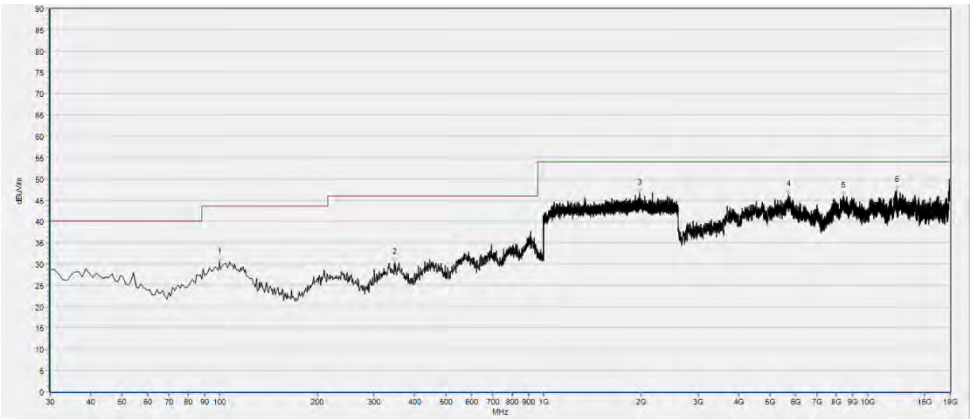
802.11ax (HEW40) Mode

Plot for Channel 3



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
89.170	30.93	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1994.133	46.65	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3357.680	42.69	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5673.840	47.90	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7854.480	46.14	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
11750.680	47.39	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

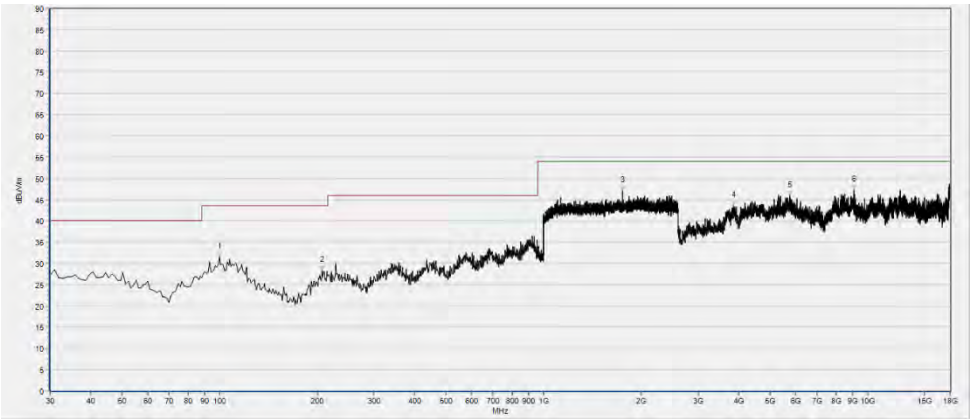
(Antenna Horizontal, 30MHz to 18GHz)



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
99.840	30.55	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
348.160	30.29	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1983.467	46.55	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5698.480	46.33	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8424.280	45.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12286.600	47.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

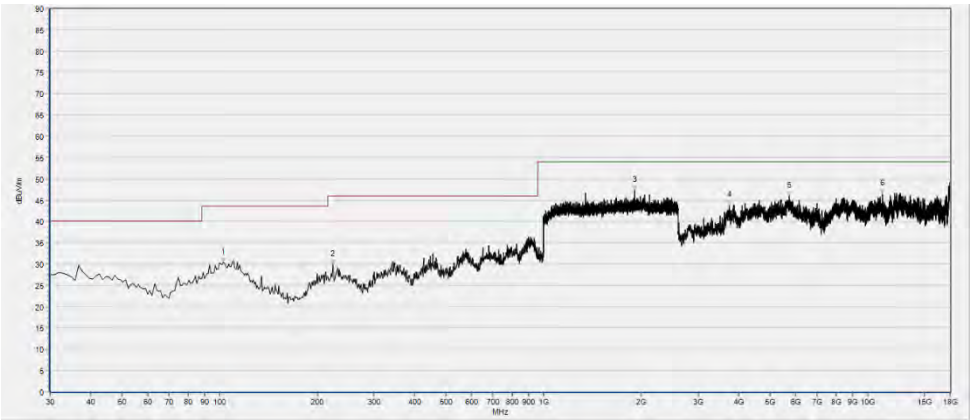
(Antenna Vertical, 30MHz to 18GHz)

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
99.840	31.45	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
207.510	28.32	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1757.333	47.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3868.960	43.54	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5750.840	45.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
9071.080	47.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

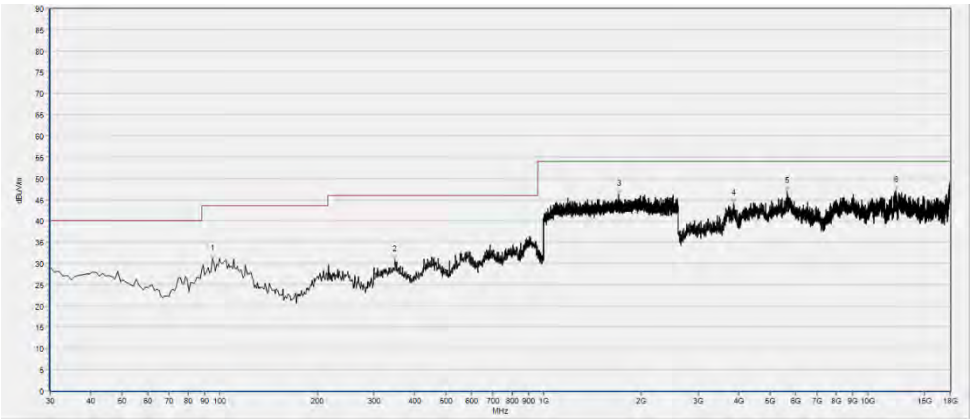
(Antenna Horizontal, 30MHz to 18GHz)



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
102.750	30.25	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
224.000	29.81	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1914.133	47.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3755.000	43.77	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5735.440	45.98	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11131.600	46.35	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

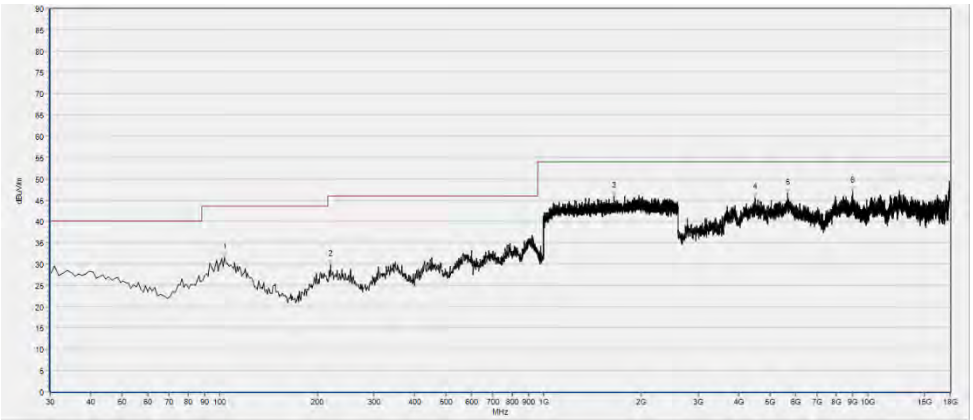
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 9



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
94.990	30.98	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
348.160	30.81	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1706.667	46.22	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3856.640	44.05	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5661.520	46.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12283.520	47.08	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
103.720	31.45	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
220.120	29.88	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1653.333	45.88	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4509.600	45.50	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5686.160	46.65	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
9018.720	47.10	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	±2.22dB
Power Spectral Density	±2.22dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77dB
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

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	2022.03.01	2023.02.28
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2021.10.21	2022.10.20
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	2022.03.03	2023.03.02
LISN	8127449	NSLK 8127	Schwarzbeck	2022.03.03	2023.03.02
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2021.07.21	2022.07.20
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A
NOTEBOOK	DF2DR A01 DPC	VOSTRO 5370	DELL	NA	NA
ADAPTER	OKXTTW	LA45NM140	DELL	NA	NA

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Townsend	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	2021.07.16	2022.07.15
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2022.05.25	2025.05.24
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2022.02.11	2025.02.10
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna – Horn	BBHA9170 #774	BBHA 9170	Schwarzbeck	2019.07.26	2022.07.25
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	S020180L3203	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	2021.07.16	2022.07.15
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

END OF REPORT