



REPORT No.: SZ22100161W14

TEST REPORT

APPLICANT : Shenzhen Tengfei Technology Management Ltd.

PRODUCT NAME : 5G Mobile Phone

MODEL NAME : NX729J

BRAND NAME : REDMAGIC

FCC ID : 2A9QD-NX729J

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2022-11-01

TEST DATE : 2022-11-07 to 2022-11-30

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Change History		
Version	Date	Reason for change
1.0	2022-12-16	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Shenzhen Tengfei Technology Management Ltd.
Applicant Address:	Room 3101, Building D1, Chuangzhi Yuncheng, Liuxian Avenue, Xili Street, Nanshan, Shenzhen, China
Manufacturer:	Shenzhen Tengfei Technology Management Ltd.
Manufacturer Address:	Room 3101, Building D1, Chuangzhi Yuncheng, Liuxian Avenue, Xili Street, Nanshan, Shenzhen, China

1.2. Equipment Under Test (EUT) Description

Product Name:	5G Mobile Phone	
Sample No.:	1#	
Hardware Version:	NX729J_V1AMB	
Software Version:	NX729J_UNCommon_V3.03	
Modulation Technology:	DSSS, OFDM	
Modulation Type:	Refer to section1.3	
Wireless Technology:	802.11b, 802.11g, 802.11n (HT20), 802.11n (HT40) 802.11ax (HEW20), 802.11ax (HEW40)	
Operating Frequency Range:	2412MHz–2462MHz	
Antenna Type:	PIFA Antenna	
Antenna Gain:	ANT0: 0.7dBi; ANT1:-0.5dBi	
Directional Gain:	3.71dBi _{Note 3}	
Accessory Information:	Battery	
	Brand Name:	ATL
	Model No.:	Li3928T89P8h603285
	Serial No.:	N/A
	Capacity:	2860mAh
	Rated Voltage:	7.78V
	Charge Limit:	8.9V
	Manufacturer:	Dongguan Amperex Technology Limited



Accessory Information:	AC Adapter	
	Brand Name:	N/A
	Model No.:	STC-A59152050AC-Z
	Serial No.:	N/A
	Rated Output:	5V=3A, 9V=3A, 15V=3A, 20V=3.25A, PPS: 5.0V-11.0V=5.0A, 5.0V-20.0V=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, 802.11ac 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 = $G_{ANT} + 10\log(N_{ANT})$ 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	Nov. 09, 2022	Zhong Yanshan	PASS	No deviation
3	15.247(b)	Maximum Peak and Average Conducted Output Power	Nov. 09, 2022	Zhong Yanshan	PASS	No deviation
4	15.247(a)	Bandwidth	Nov. 26, 2022	Zhong Yanshan	PASS	No deviation
5	15.247(d)	Conducted Spurious Emission and Band Edge	Nov. 26, 2022	Zhong Yanshan	PASS	No deviation
6	15.247(e)	Power Spectral Density (PSD)	Nov. 26, 2022	Zhong Yanshan	PASS	No deviation
7	15.207	Conducted Emission	Nov. 22, 2022	Fan Zehang	PASS	No deviation
8	15.247(d)	Restricted Frequency Bands	Nov. 26, 2022	Su Zhan	PASS	No deviation
9	15.209, 15.247(d)	Radiated Emission	Nov. 26, 2022	Su Zhan	PASS	No deviation

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



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 I-PEX connector. Please refer to the EUT photos.

2.2. Duty Cycle of Test Signal

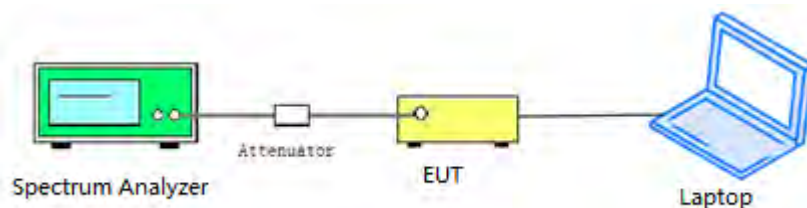
2.2.1. Requirement

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

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

2.2.2. Test Description

Test Setup:



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



2.2.3. Test Result

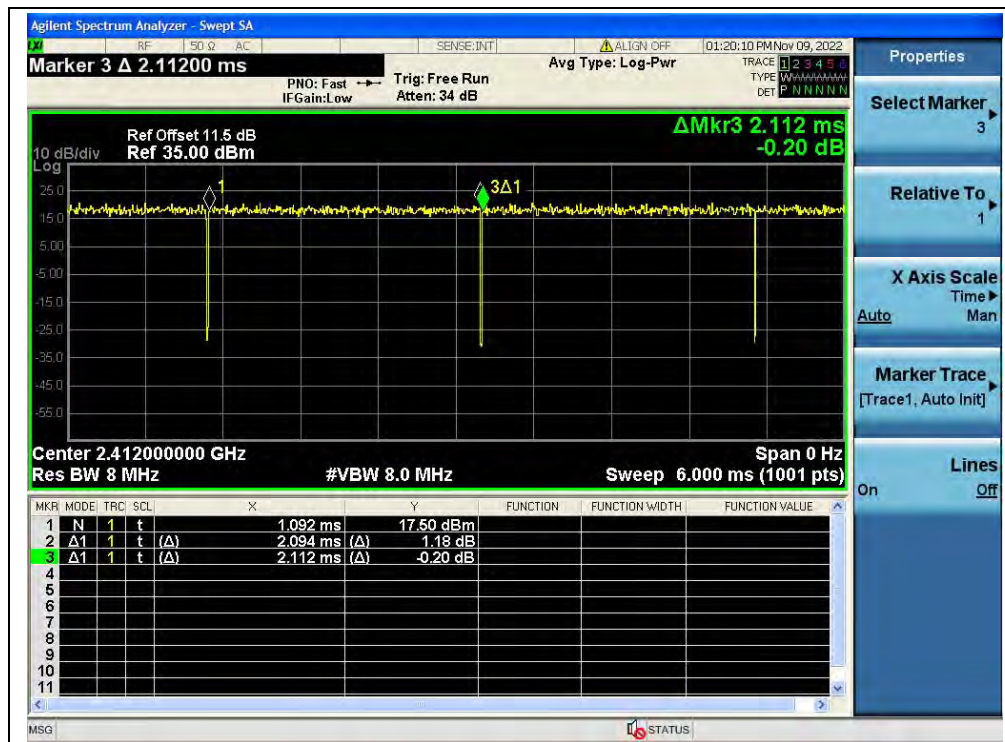
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor ($10 \cdot \lg[1/D]$)
802.11b	100.00	0.00
802.11g	99.15	0.04
802.11n (HT20)	99.61	0.02
802.11ax (HEW20)	99.62	0.02
802.11ax (HEW40)	99.62	0.02
802.11ax (HEW20) RU26	95.76	0.19

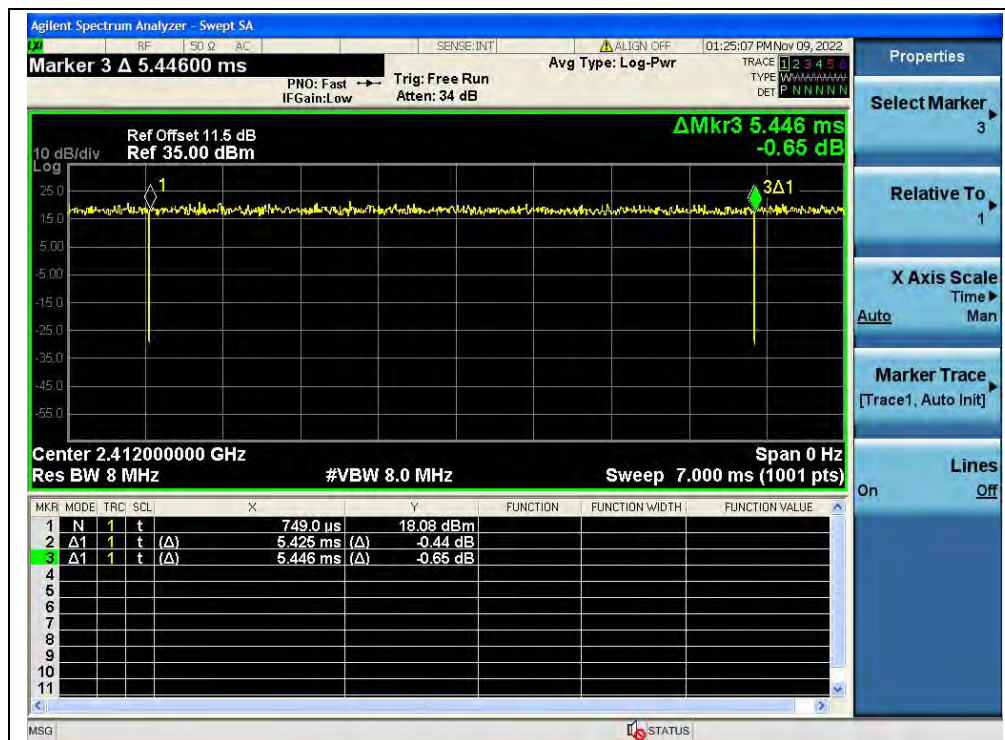
B. Test Plot:



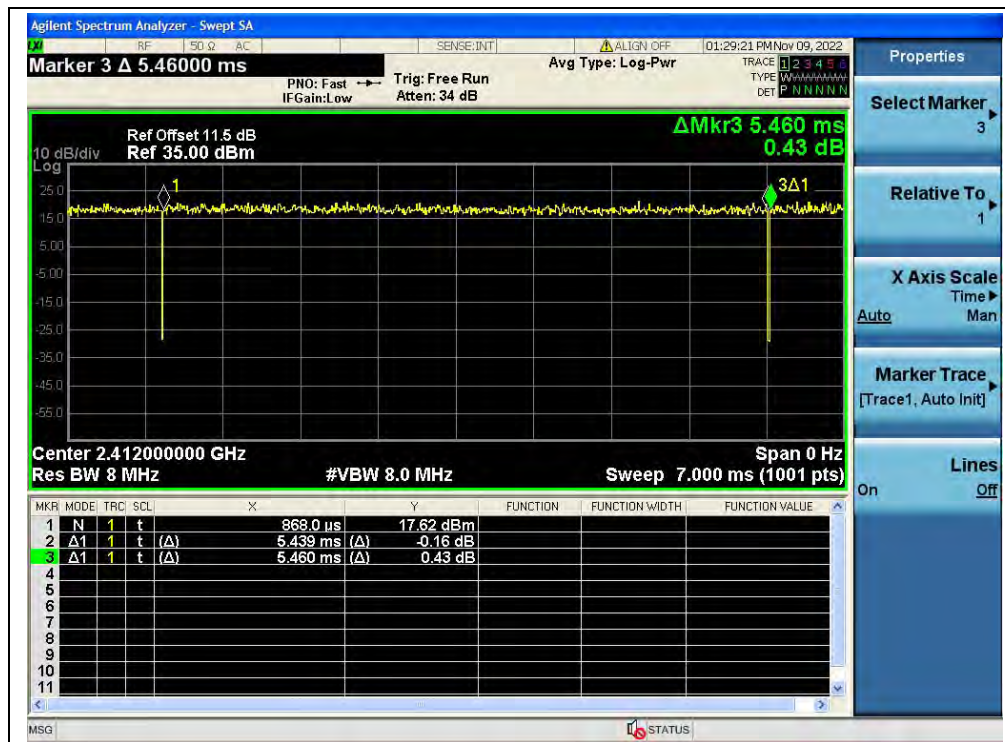
(Channel 1, 802.11b)



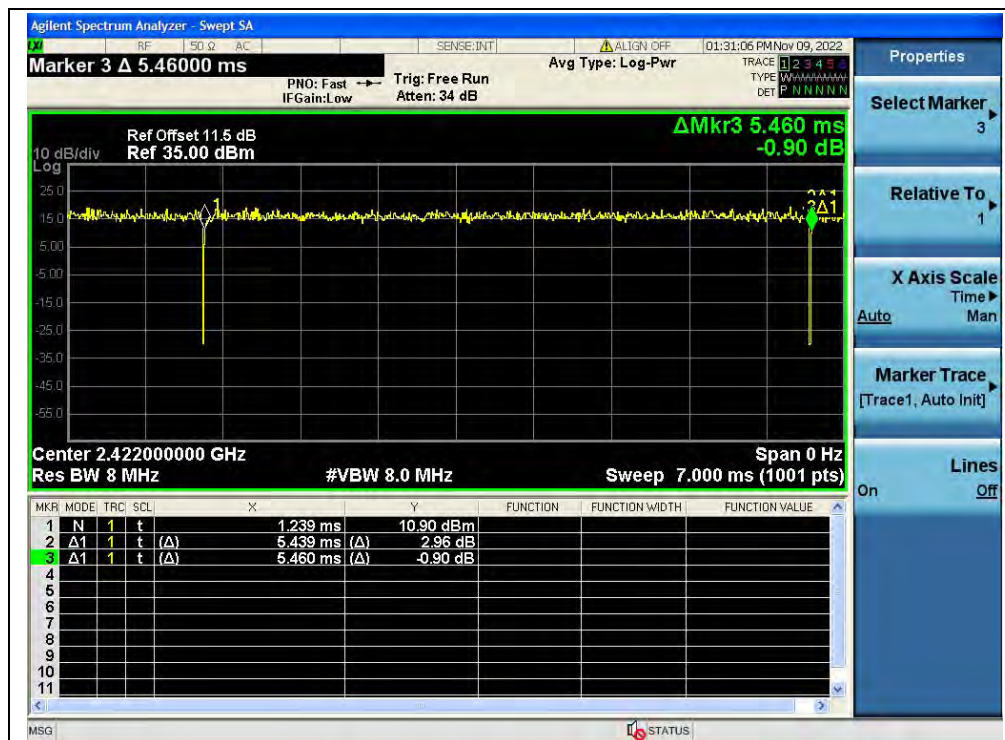
(Channel 1, 802.11g)



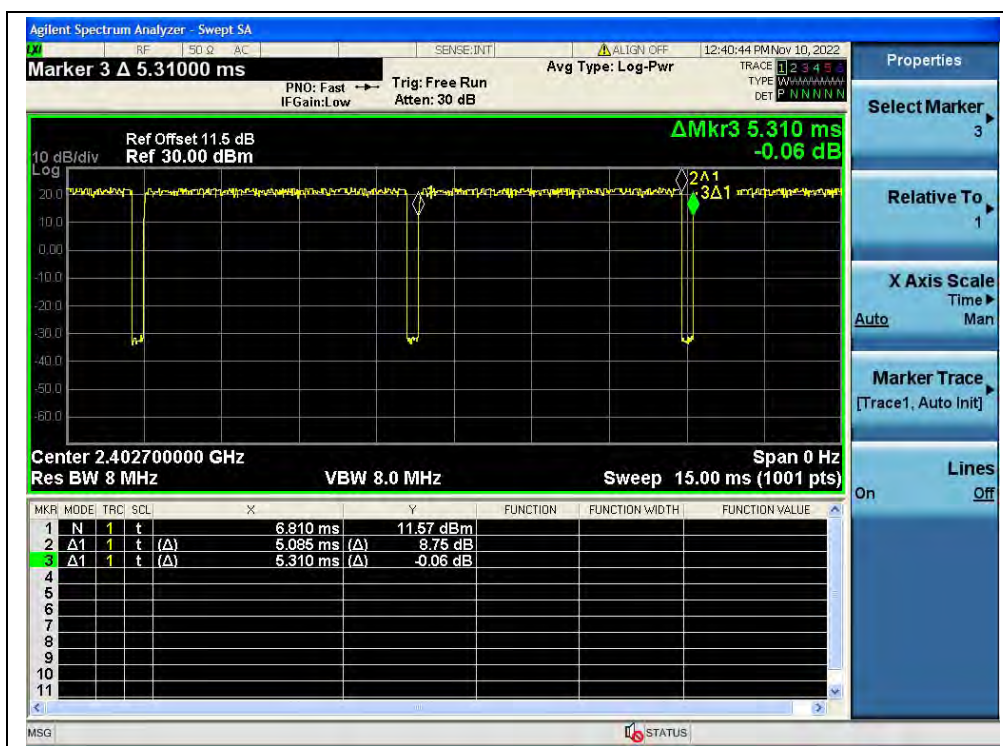
(Channel 1, 802.11n (HT20))



(Channel 1, 802.11ax (HEW20))



(Channel 3, 802.11ax (HEW40))



(Channel 1, 802.11ax (HEW20) RU26)

2.3. Maximum Conducted Output Power

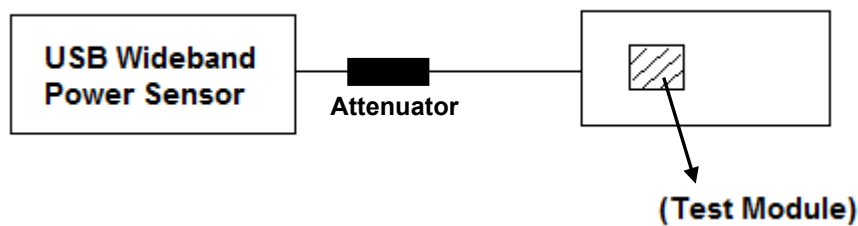
2.3.1. Requirement

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 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 Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1		dBm	W	
		dBm	W	dBm	W			
1	2412	14.39	0.027	13.45	0.022	30	1	PASS
6	2437	13.91	0.025	12.52	0.018			PASS
11	2462	14.28	0.027	13.46	0.022			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	14.23	0.026	13.49	0.022	30	1	PASS
6	2437	13.78	0.024	12.54	0.018			PASS
11	2462	14.03	0.025	13.75	0.024			PASS

802.11n (HT20) SISO Mode

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1		dBm	W	
		dBm	W	dBm	W			
1	2412	13.83	0.024	12.77	0.019	30	1	PASS
6	2437	12.76	0.019	12.41	0.017			PASS
11	2462	13.77	0.024	12.69	0.019			PASS

802.11n (HT20) MIMO Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	12.83	11.58	15.31	0.034	30	1	PASS
6	2437	11.76	11.51	14.62	0.029			PASS
11	2462	12.77	11.69	15.31	0.034			PASS

Note: Directional gain = $0.70\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the power limit is 1W(30dBm).

**802.11ax (HEW20) SISO Mode**

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1		dBm	W	
		dBm	W	dBm	W			
1	2412	14.16	0.026	13.18	0.021	30	1	PASS
6	2437	13.68	0.023	12.87	0.019			PASS
11	2462	13.54	0.023	12.65	0.018			PASS

802.11ax (HEW20) MIMO Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	13.16	12.20	15.68	0.037	30	1	PASS
6	2437	12.68	11.85	15.31	0.034			PASS
11	2462	12.54	11.59	15.05	0.032			PASS

Note: Directional gain = $0.70\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the power limit is 1W(30dBm).

802.11ax (HEW20) RU26 SISO Mode

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1		dBm	W	
		dBm	W	dBm	W			
1	2412	14.25	0.027	13.37	0.022	30	1	PASS
6	2437	13.42	0.022	12.71	0.019			PASS
11	2462	13.64	0.023	12.68	0.019			PASS

802.11ax (HEW20) RU26 MIMO Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
1	2412	13.25	12.40	15.91	0.039	30	1	PASS
6	2437	12.42	11.80	15.19	0.033			PASS
11	2462	12.56	11.85	15.19	0.033			PASS

Note: Directional gain = $0.70\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the power limit is 1W(30dBm).

**802.11ax (HEW40) SISO Mode**

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1		dBm	W	
		dBm	W	dBm	W			
3	2422	14.56	14.56	13.84	0.024	30	1	PASS
6	2437	14.16	14.16	13.43	0.022			PASS
9	2452	14.25	14.25	13.98	0.025			PASS

802.11ax (HEW40) MIMO Mode

Channel	Frequency (MHz)	Measured Peak Power (dBm)		Total Power (dBm)	Total Power (W)	Limit		Verdict
		ANT 0	ANT 1			dBm	W	
3	2422	13.55	12.85	16.23	0.042	30	1	PASS
6	2437	13.16	12.50	15.80	0.038			PASS
9	2452	13.25	12.98	16.13	0.041			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	11.70	11.01	0.00	11.70	0.015	11.01	0.013	30	1	PASS
2437	11.42	10.80		11.42	0.014	10.80	0.012			PASS
2462	11.55	10.72		11.55	0.014	10.72	0.012			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	9.64	8.80	0.04	9.68	0.009	8.84	0.008	30	1	PASS
2437	9.31	8.62		9.35	0.009	8.66	0.007			PASS
2462	9.40	8.64		9.44	0.009	8.68	0.007			PASS

802.11n (HT20) SISO 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	8.64	7.82	0.02	8.66	0.007	7.84	0.006	30	1	PASS
2437	8.32	7.61		8.34	0.007	7.63	0.006			PASS
2462	8.41	7.43		8.43	0.007	7.45	0.006			PASS

802.11n (HT20) MIMO 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	7.82	7.11	0.02	10.41	0.011	30	1	PASS
2437	7.48	6.94		10.41	0.011			PASS
2462	7.65	6.81		10.41	0.011			PASS

Note: Directional gain = $0.70\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the power limit is 1W(30dBm).

**802.11ax (HEW20) SISO 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	8.73	7.94	0.02	8.75	0.007	7.96	0.006	30	1	PASS
2437	8.46	7.74		8.48	0.007	7.76	0.006			PASS
2462	8.52	7.53		8.54	0.007	7.55	0.006			PASS

802.11ax (HEW20) MIMO 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	7.73	7.04	0.02	10.41	0.011	30	1	PASS
2437	7.46	6.78		10.00	0.010			PASS
2462	7.41	6.54		10.00	0.010			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi<6dBi, so the power limit is 1W(30dBm).								

802.11ax (HEW20) RU26 SISO 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	9.31	8.66	0.19	9.50	0.009	8.85	0.008	30	1	PASS
2437	9.49	9.09		9.68	0.009	9.28	0.008			PASS
2462	9.59	8.74		9.78	0.010	8.93	0.008			PASS

802.11ax (HEW20) RU26 MIMO 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	7.91	7.18	0.19	10.79	0.012	30	1	PASS
2437	7.63	7.03		10.41	0.011			PASS
2462	7.76	6.88		10.41	0.011			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi<6dBi, so the power limit is 1W(30dBm).								

**802.11ax (HEW40) SISO 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	
2422	9.32	8.64	0.02	9.34	0.009	8.66	0.007	30	1	PASS
2437	9.31	8.51		9.33	0.009	8.53	0.007			PASS
2452	9.21	8.49		9.23	0.008	8.51	0.007			PASS

802.11ax (HEW40) MIMO 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	8.48	7.90	0.02	11.14	0.013	30	1	PASS
2437	8.43	7.81		11.14	0.013			PASS
2452	8.36	7.82		11.14	0.013			PASS
Note: Directional gain = 0.70dBi +10log(2) = 3.71dBi<6dBi, so the power limit is 1W(30dBm).								

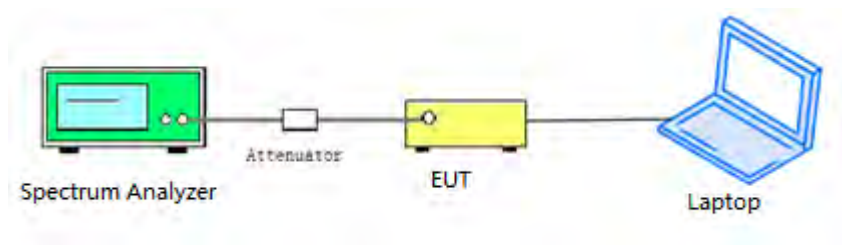
2.4. Bandwidth

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 50 Ohm; the path loss as the factor is calibrated to correct the reading.

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

2.4.3. Test Procedure

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



2.4.4. Test Result

802.11b Mode

A. Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	8.003	≥500	PASS
6	2437	8.056	≥500	PASS
11	2462	8.044	≥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	16.35	≥500	PASS
6	2437	16.37	≥500	PASS
11	2462	16.36	≥500	PASS

B.Test Plot:



(Channel 1, 802.11g)



(Channel 6, 802.11g)



(Channel 11, 802.11g)

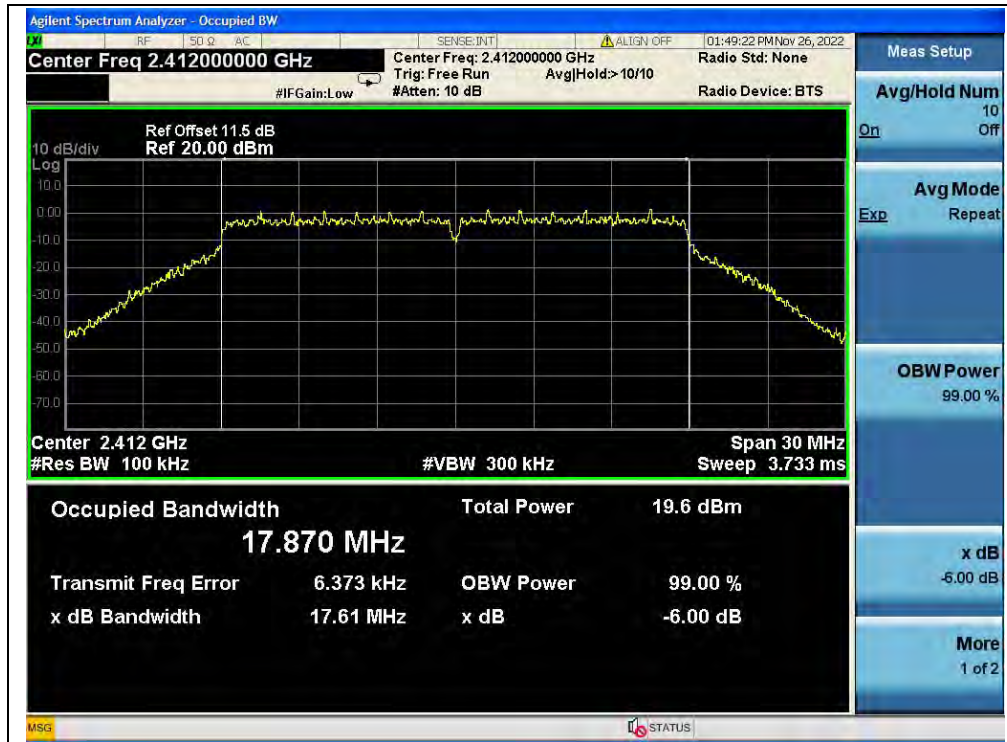


802.11n (HT20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	17.61	≥500	PASS
6	2437	17.65	≥500	PASS
11	2462	17.62	≥500	PASS

B.Test Plot:



(Channel 1, 802.11n (HT20))



(Channel 6, 802.11n (HT20))



(Channel 11, 802.11n (HT20))

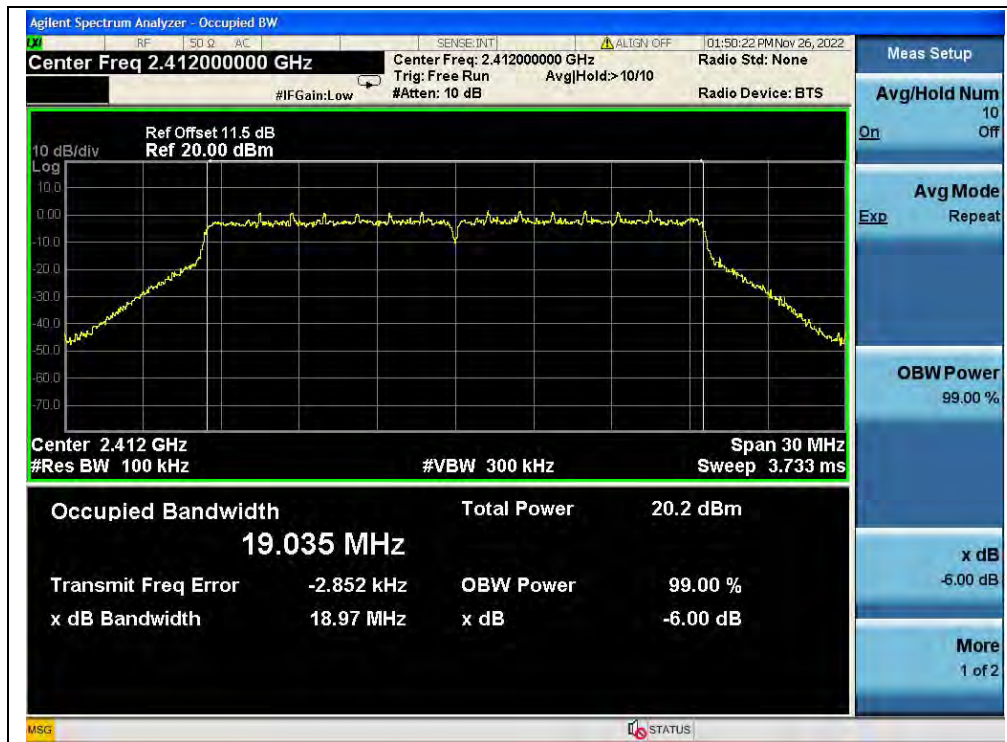


802.11ax (HEW20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	18.97	≥500	PASS
6	2437	19.05	≥500	PASS
11	2462	18.91	≥500	PASS

B.Test Plot:



(Channel 1, 802.11ax (HEW20))



(Channel 6, 802.11ax (HEW20))



(Channel 11, 802.11ax (HEW20))

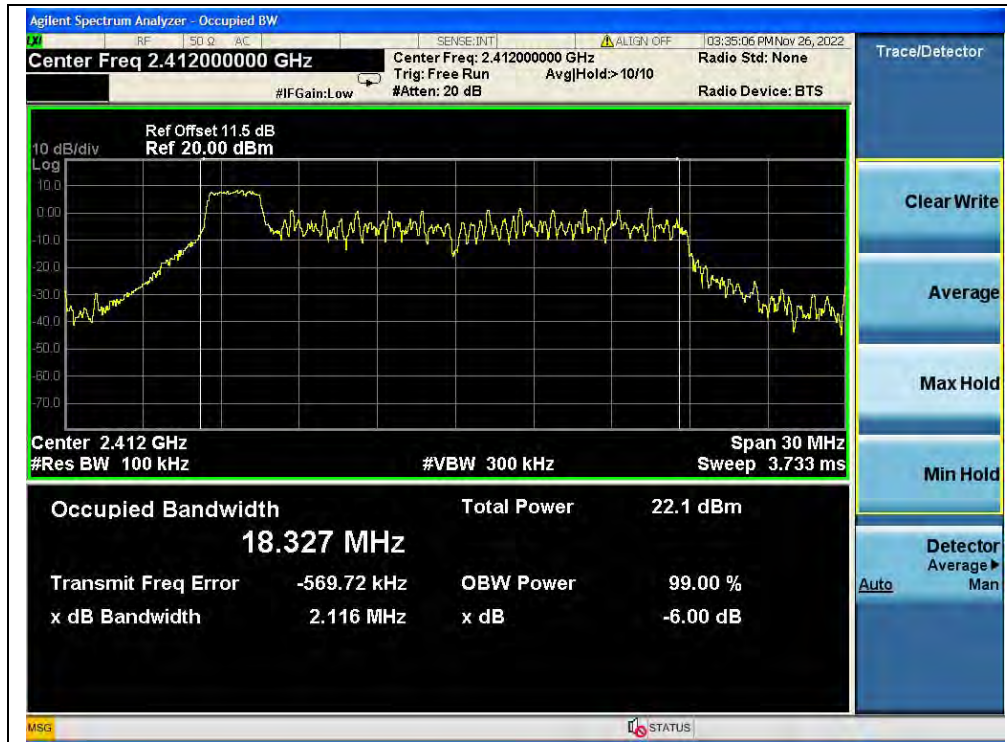


802.11ax (HEW20) RU26 Mode

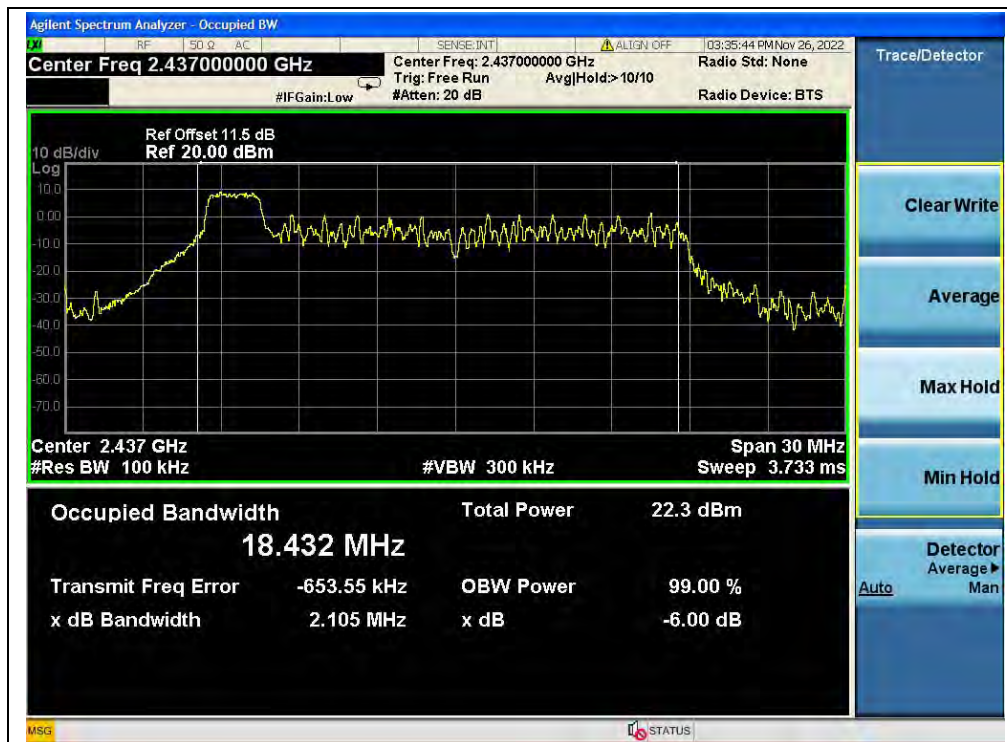
A.Test Verdict:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
1	2412	2.116	≥500	PASS
6	2437	2.105	≥500	PASS
11	2462	2.093	≥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	38.12	≥500	PASS
6	2437	38.34	≥500	PASS
9	2452	38.25	≥500	PASS

B.Test Plot:



(Channel 3, 802.11ax (HEW40))



(Channel 6, 802.11ax (HEW40))



(Channel 9, 802.11ax (HEW40))

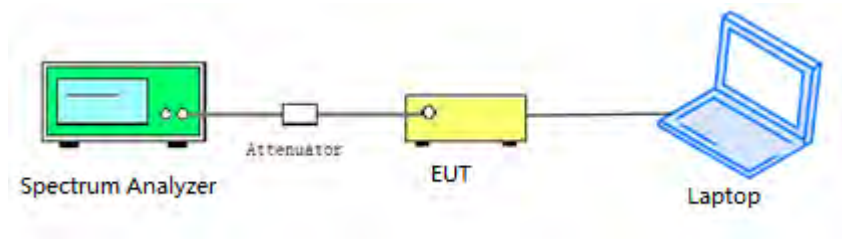
2.5. Conducted Spurious Emissions and Band Edge

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.



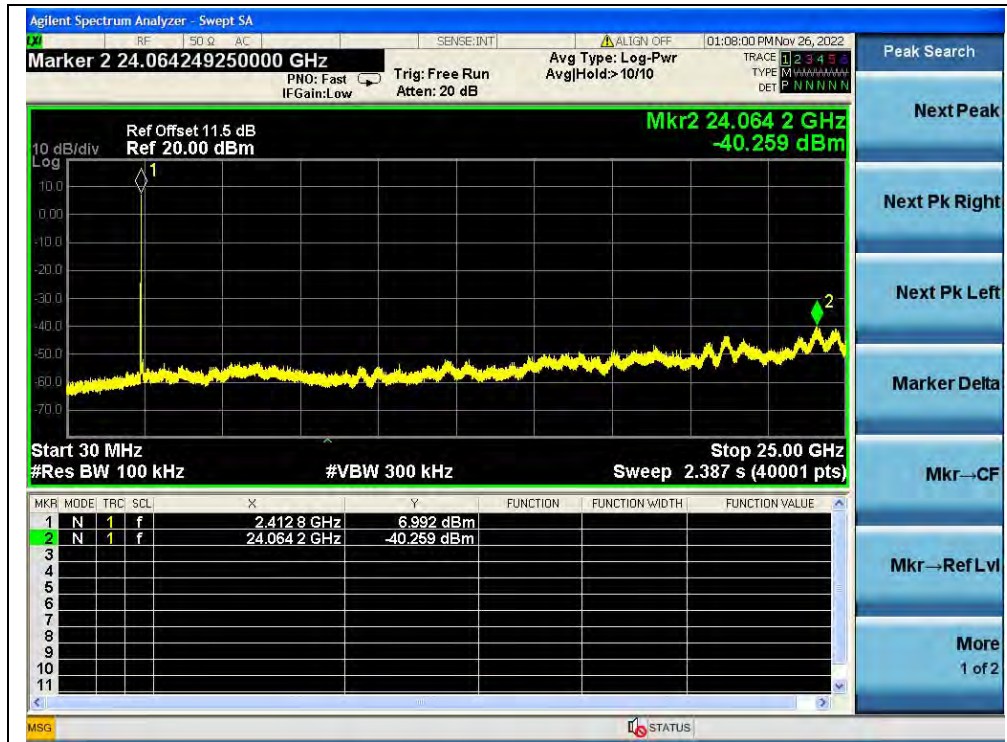
2.5.4. Test Result

802.11b Mode

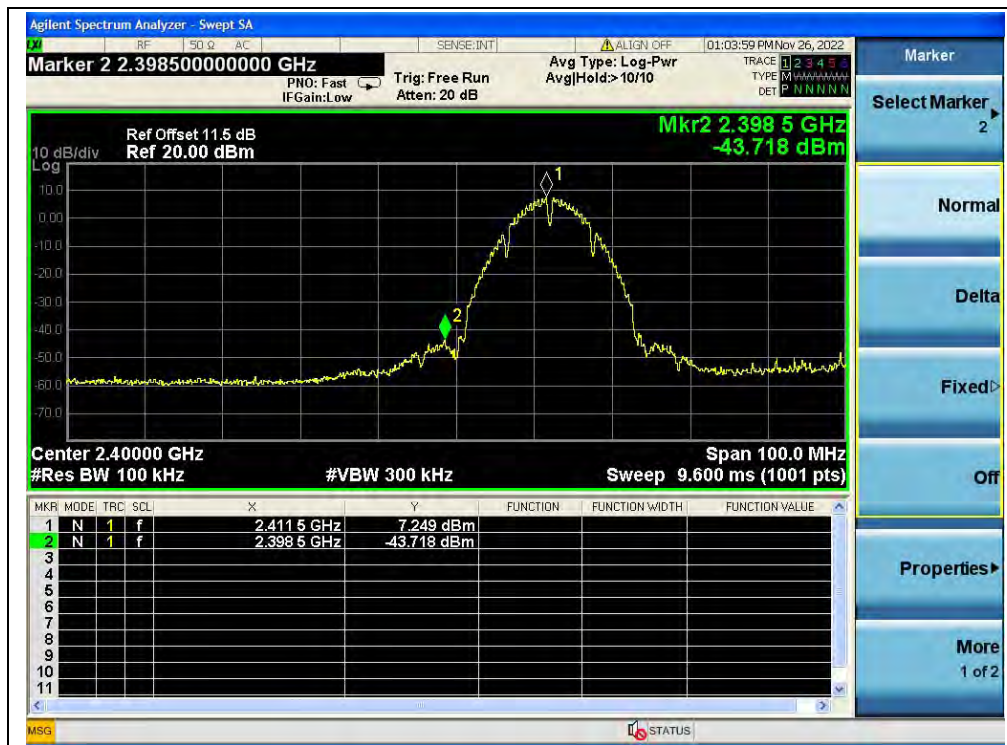
A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.26	6.99	-13.01	PASS
6	2437	-39.60	6.70	-13.30	PASS
11	2462	-40.58	6.76	-13.24	PASS

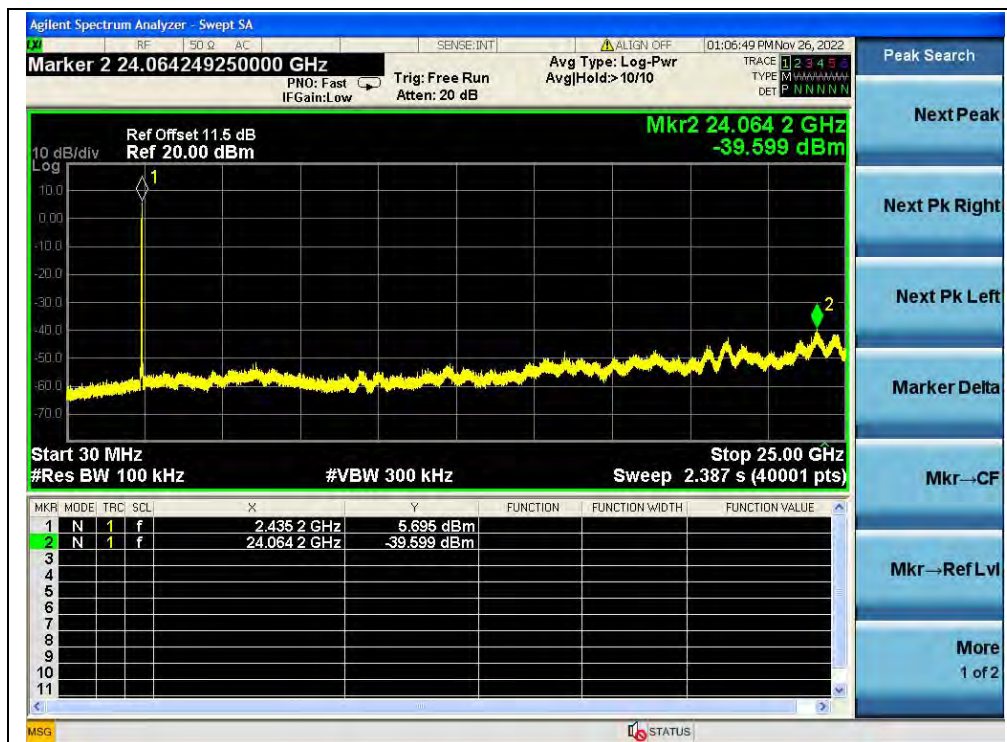
B. Test Plot:



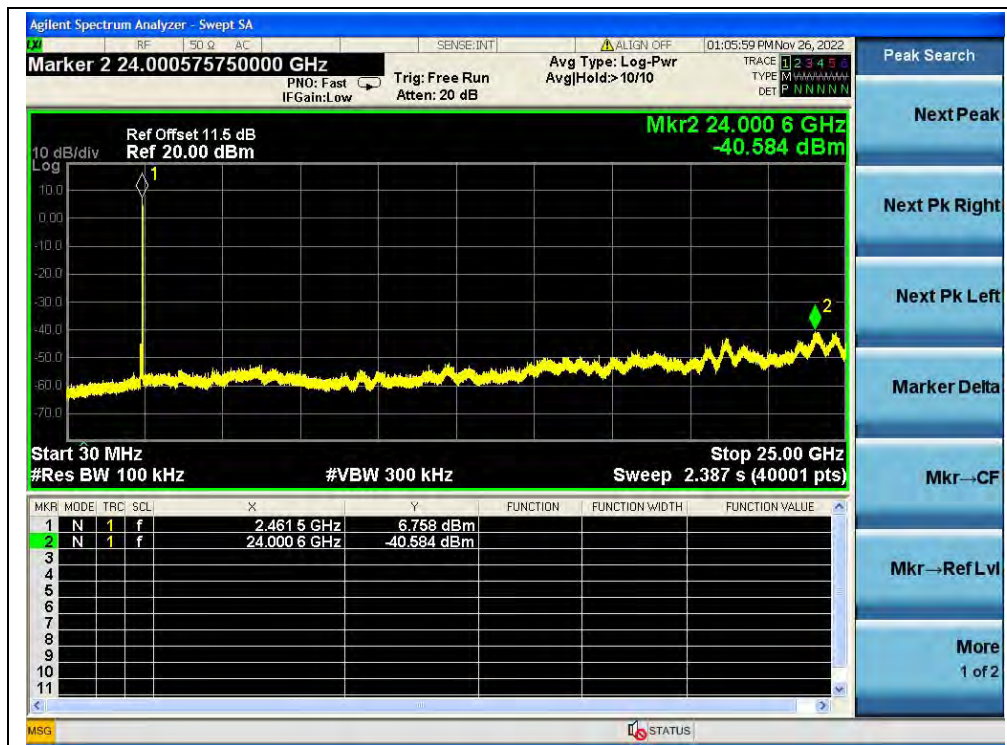
(30MHz to 25GHz, Channel 1, 802.11b)



(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)

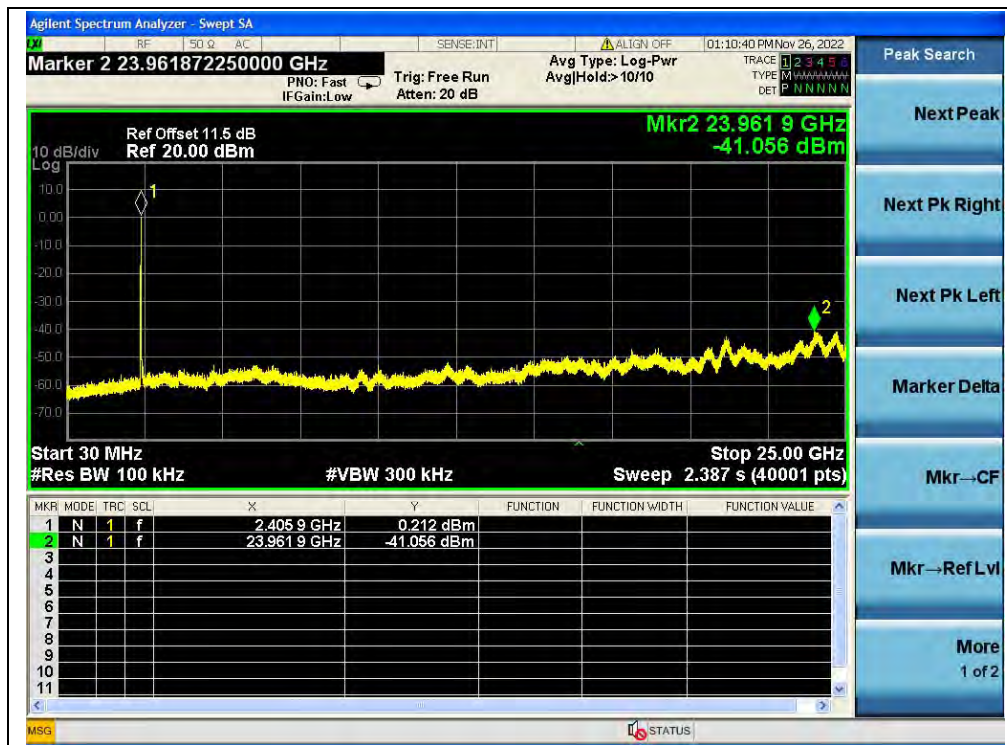


802.11g Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-41.06	0.21	-19.79	PASS
6	2437	-39.31	2.38	-17.62	PASS
11	2462	-40.23	2.46	-17.54	PASS

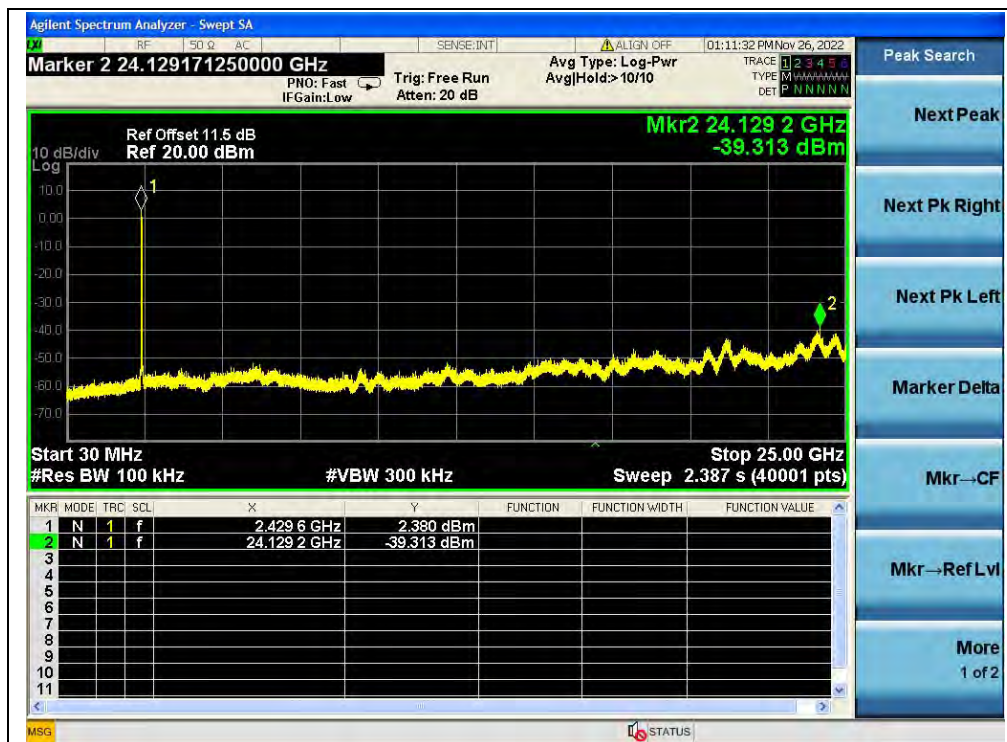
B.Test Plot:



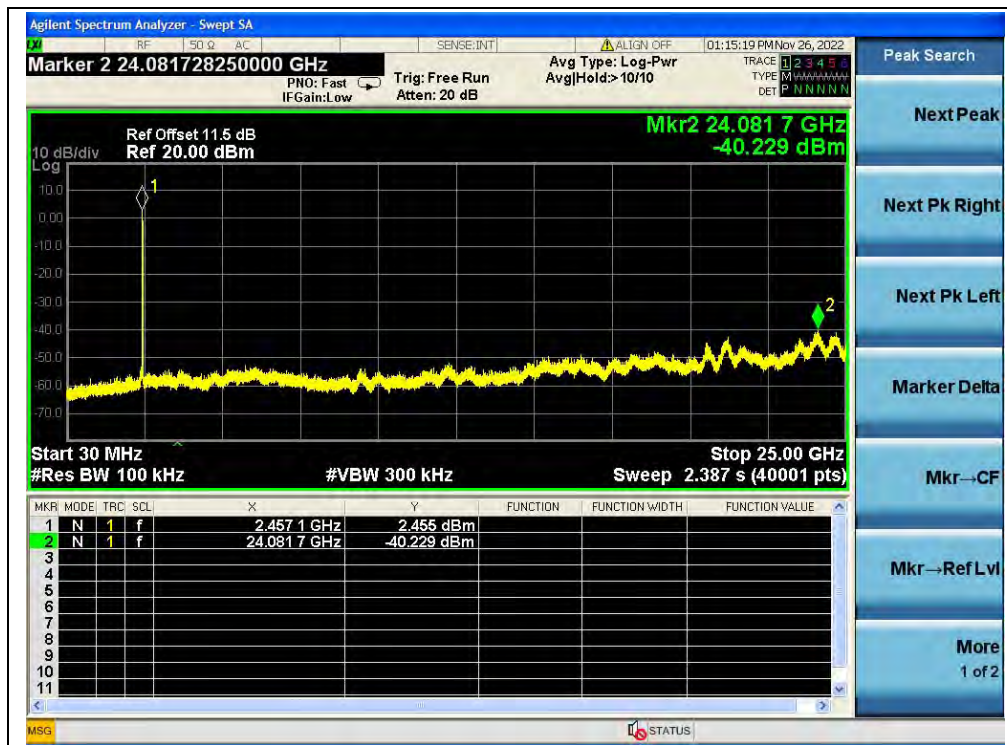
(30MHz to 25GHz, Channel 1, 802.11g)



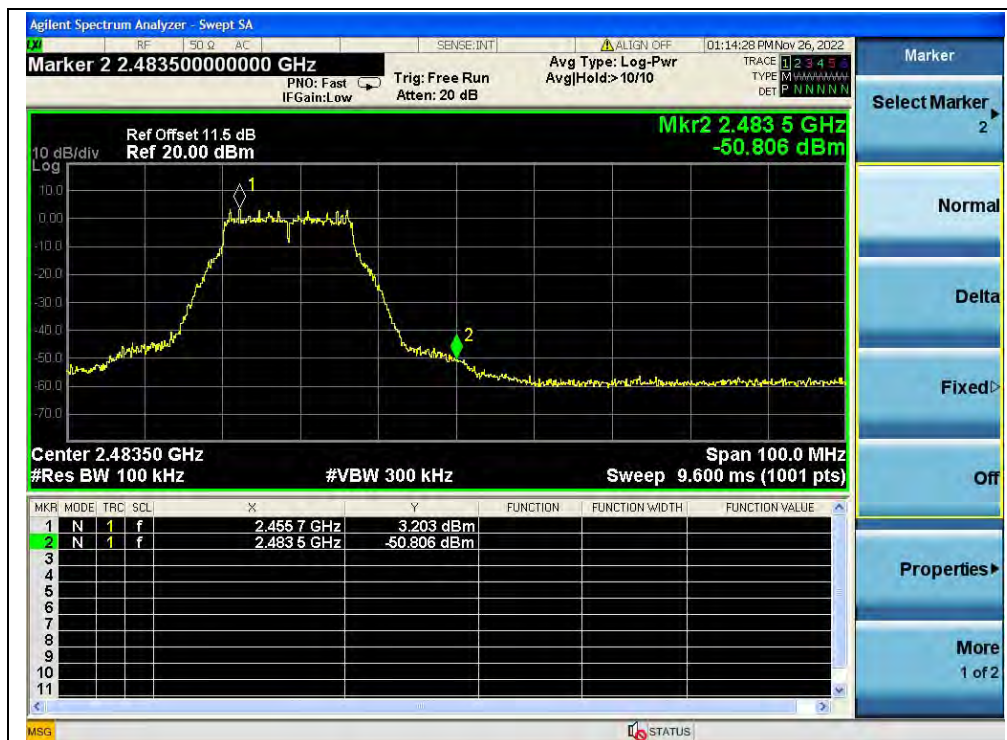
(Band Edge, Channel 1, 802.11g)



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



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



(Band Edge, Channel 11, 802.11g)

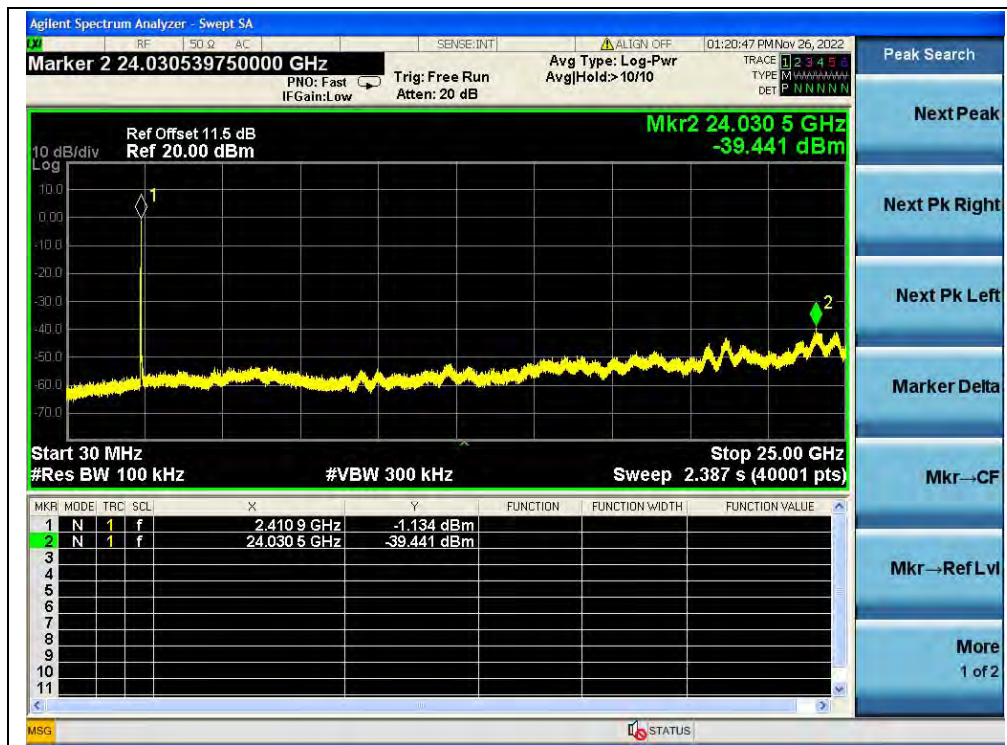


802.11n (HT20) Mode

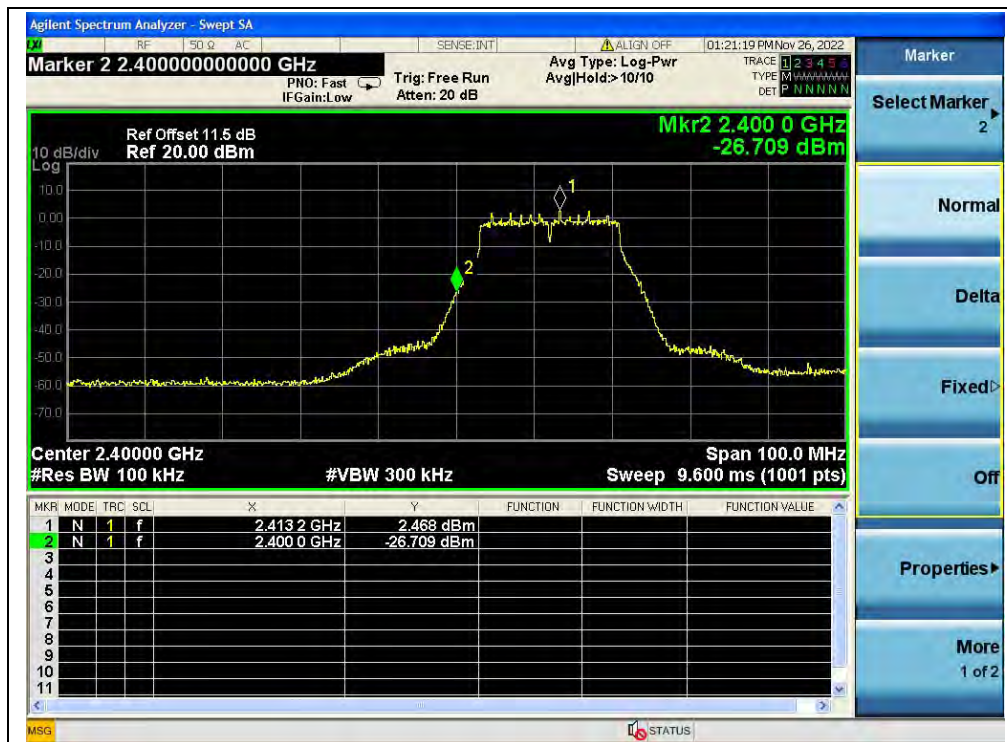
A. Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-39.44	-1.13	-21.13	PASS
6	2437	-41.10	1.88	-18.12	PASS
11	2462	-39.44	-0.21	-20.21	PASS

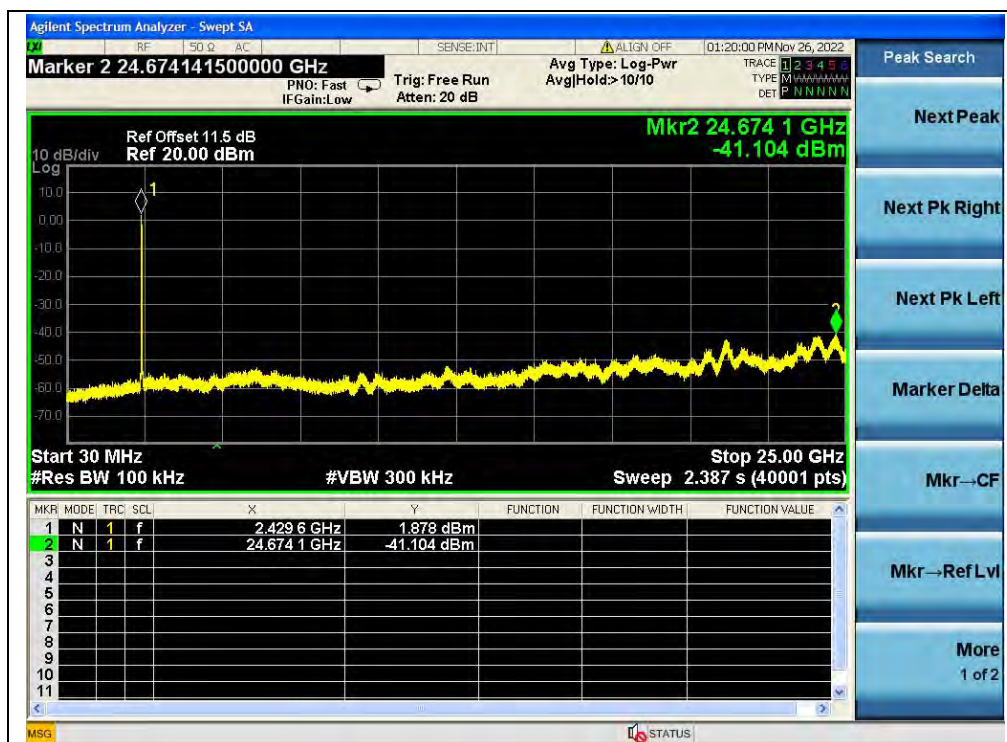
B. Test Plot:



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



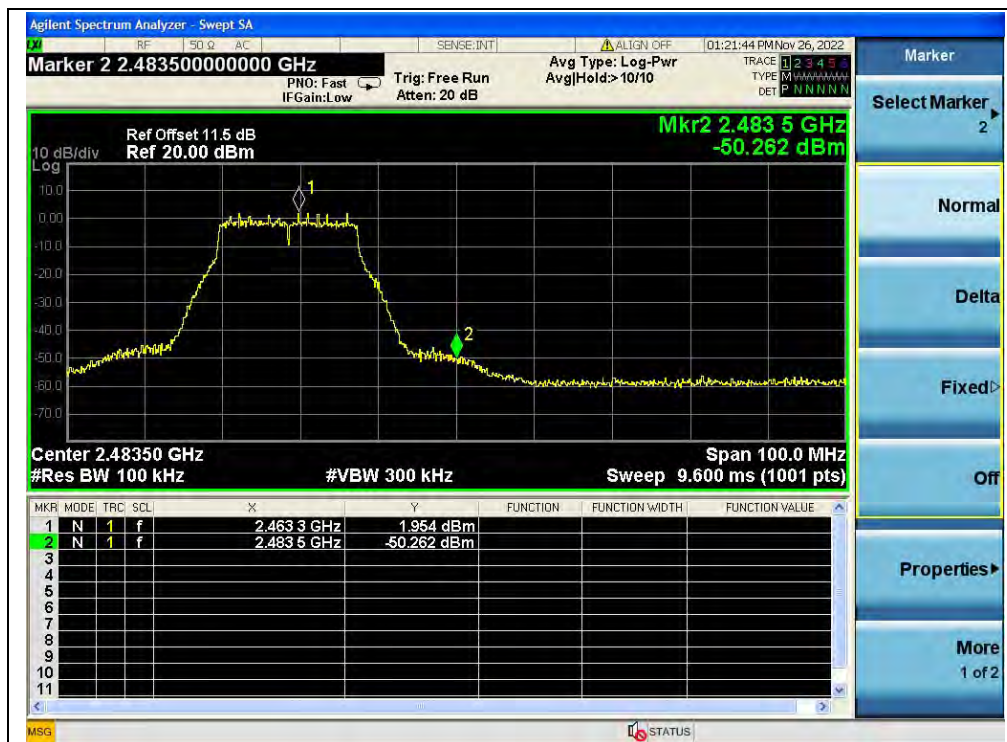
(Band Edge, Channel 1, 802.11n (HT20))



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



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



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

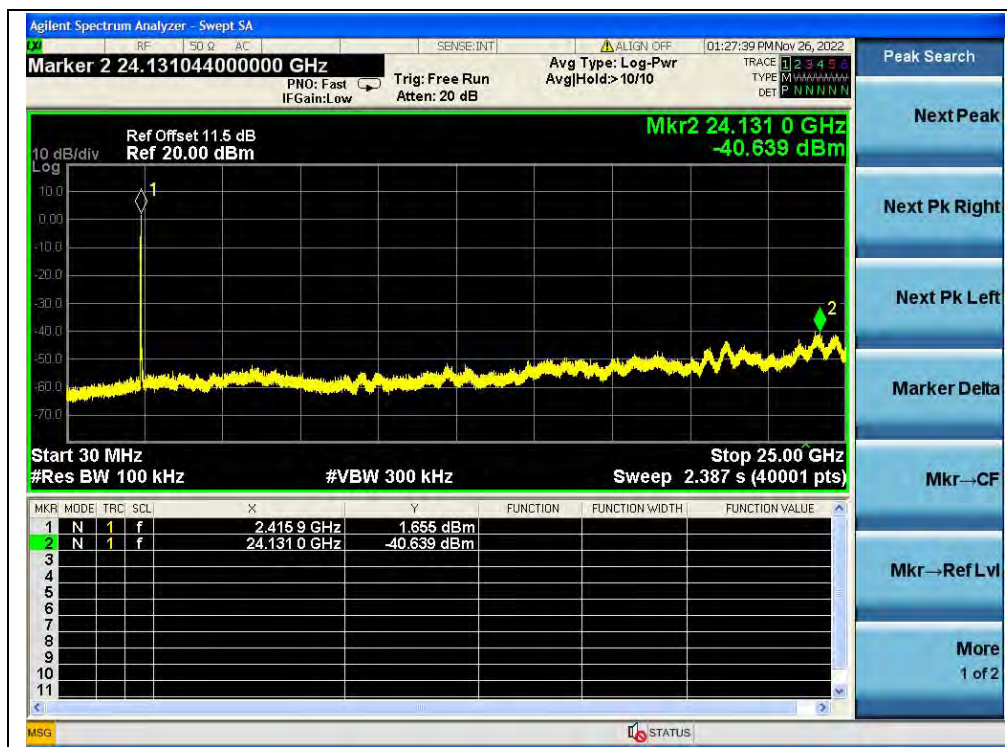


802.11ax (HEW20) Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.64	1.66	-18.34	PASS
6	2437	-39.87	-1.29	-21.29	PASS
11	2462	-39.67	-0.44	-20.44	PASS

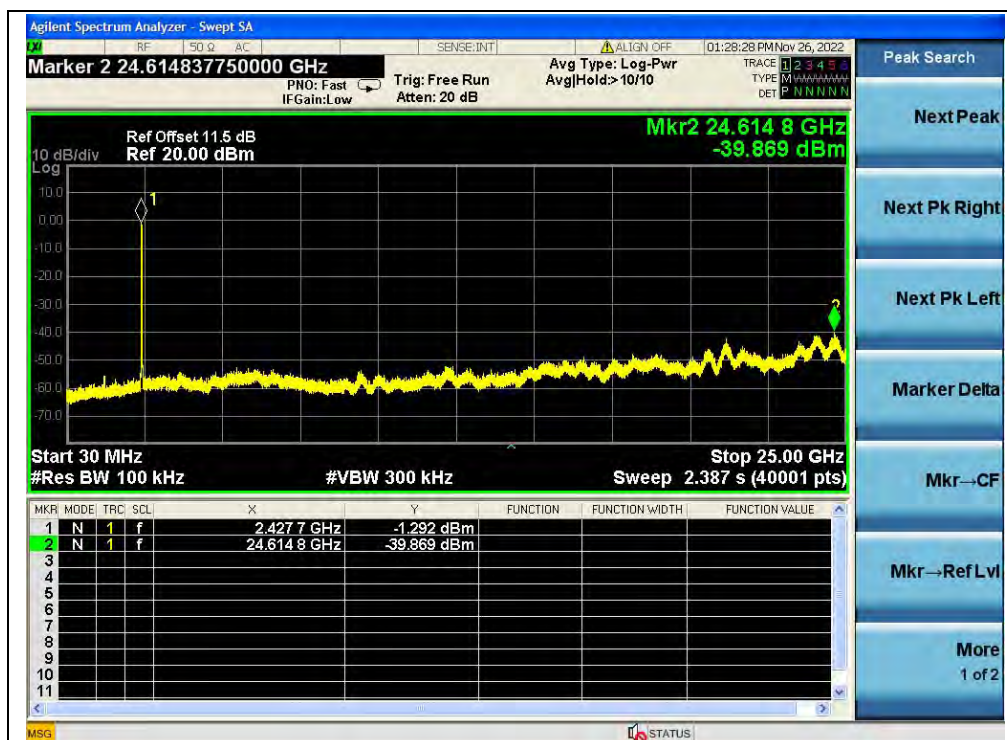
B.Test Plot:



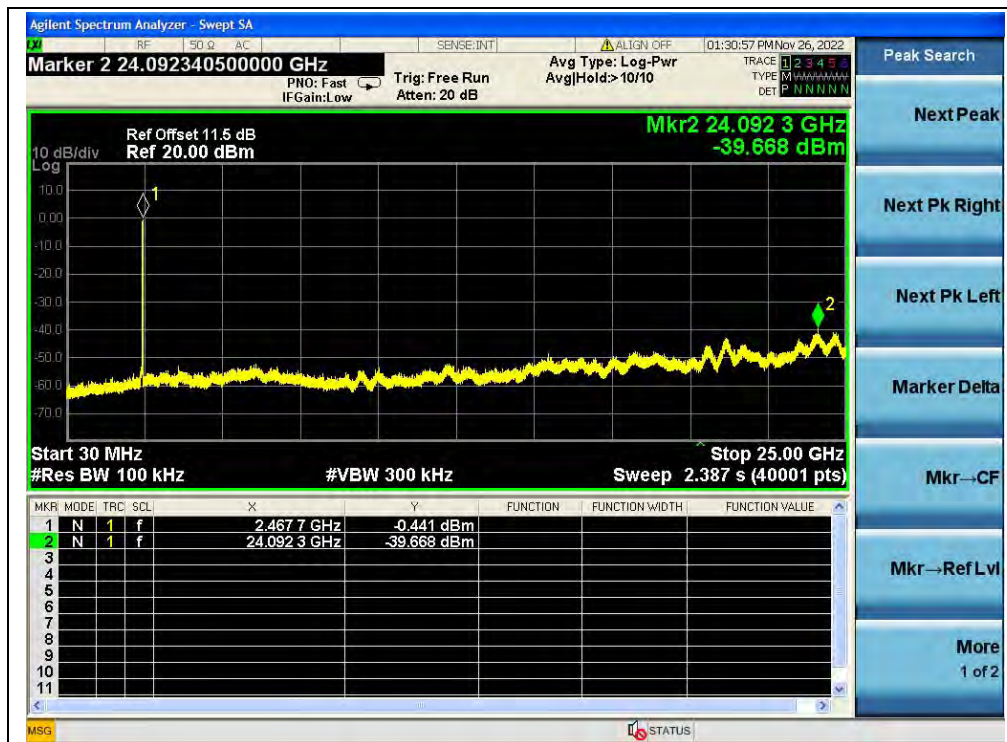
(30MHz to 25GHz, Channel 1, 802.11ax (HEW20))



(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))

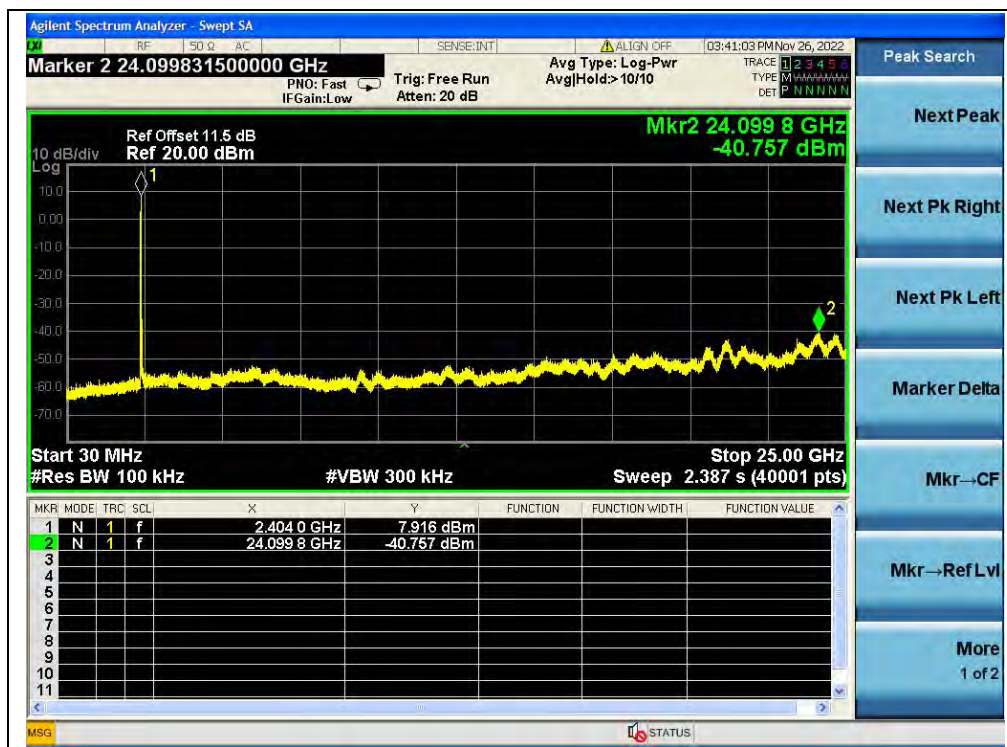


802.11ax (HEW20) RU26 Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
1	2412	-40.76	7.92	-12.08	PASS
6	2437	-40.64	8.54	-11.46	PASS
11	2462	-40.30	8.64	-11.36	PASS

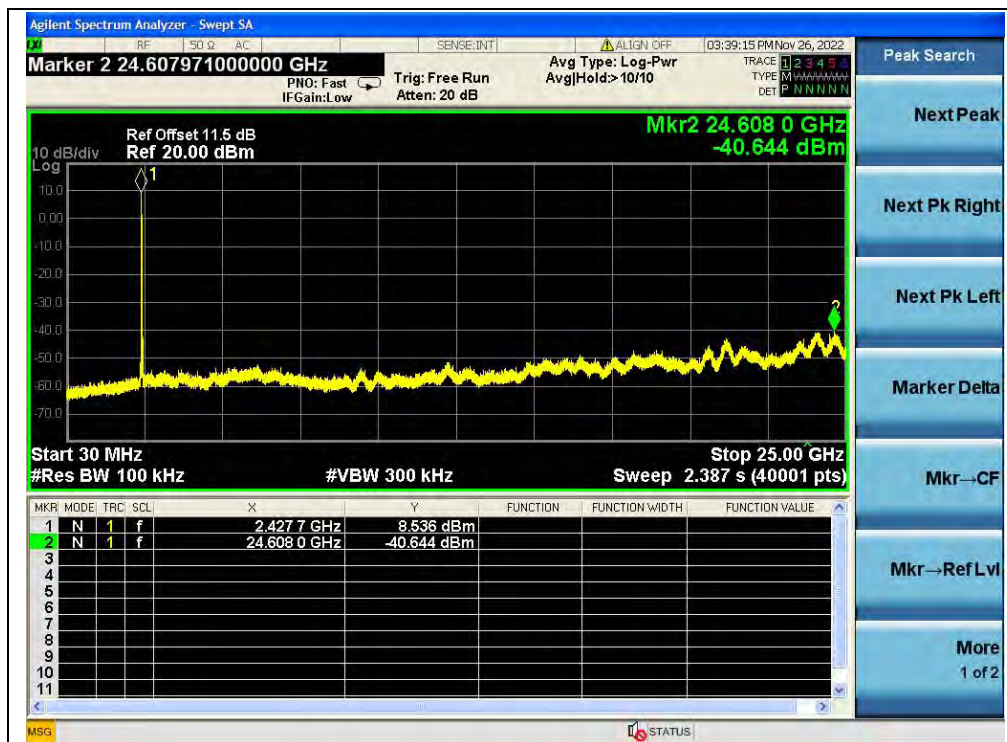
B.Test Plot:



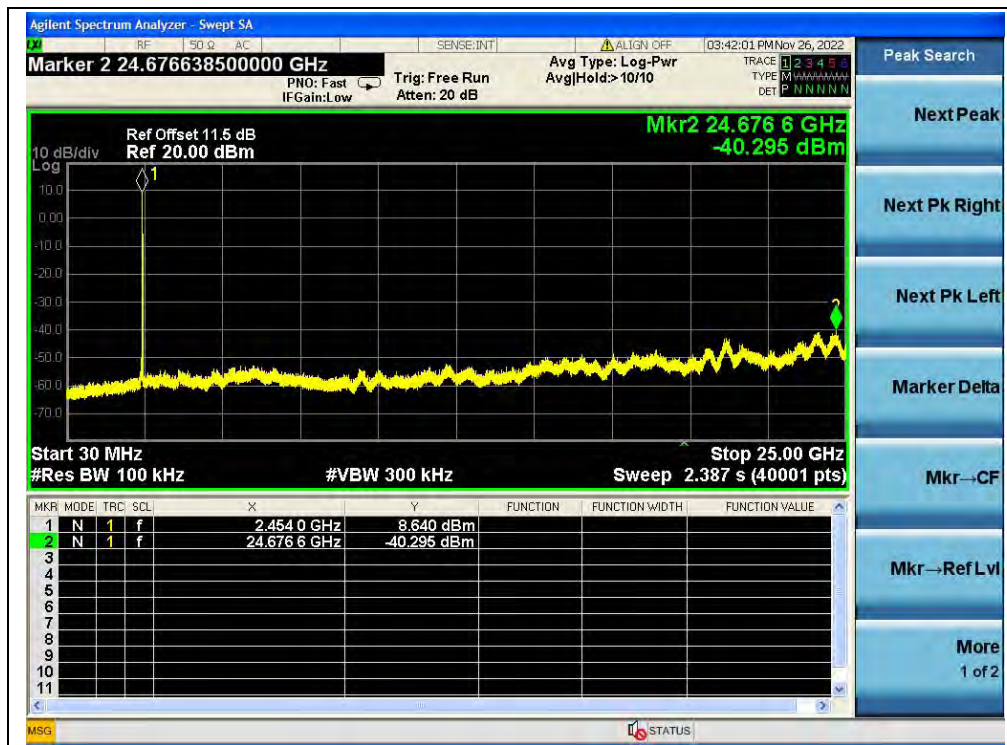
(30MHz to 25GHz, Channel 1, 802.11ax (HEW20) RU26)



(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)

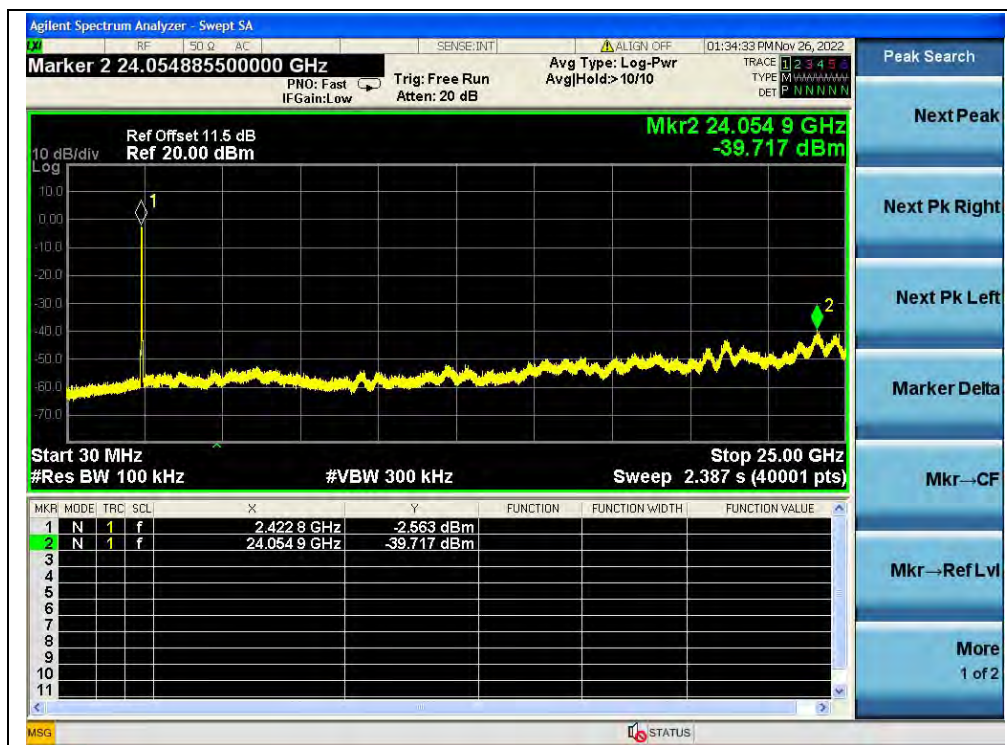


802.11ax (HEW40) Mode

A.Test Verdict:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated -20dBc Limit	
3	2422	-39.72	-2.56	-22.56	PASS
6	2437	-40.56	-3.09	-23.09	PASS
9	2452	-40.62	-3.13	-23.13	PASS

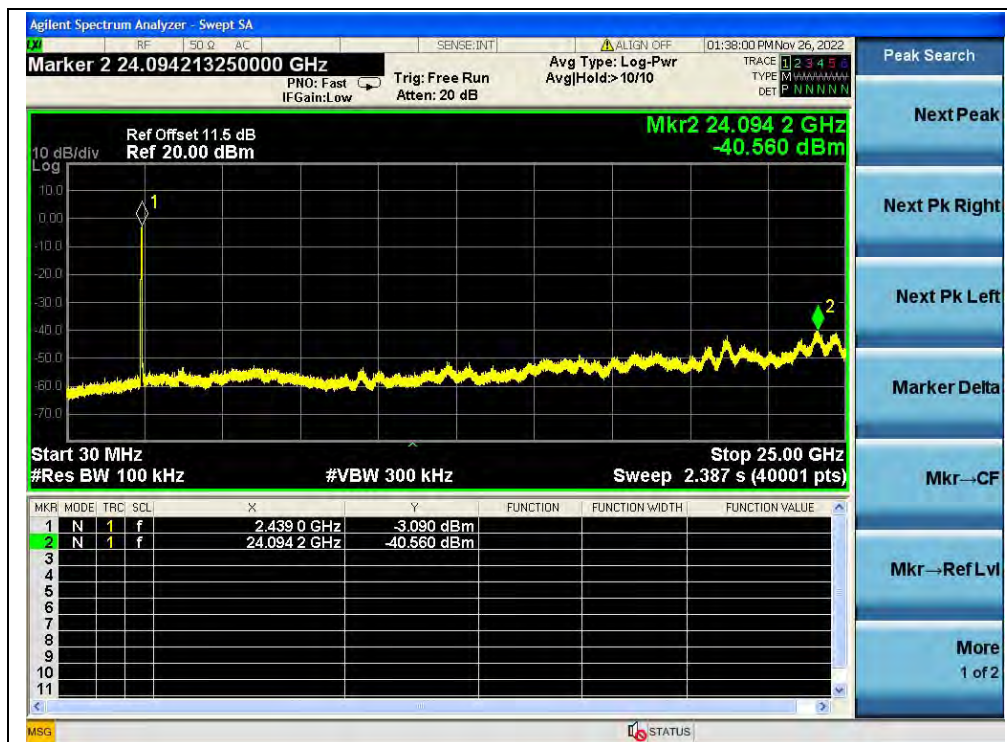
B.Test Plot:



(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))

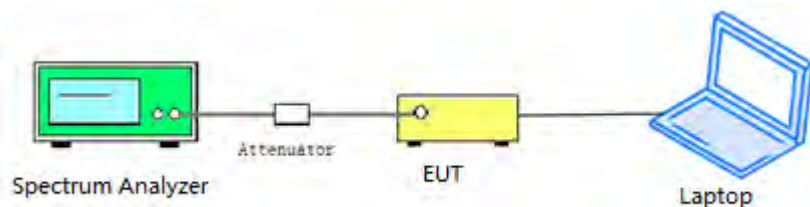
2.6. Power Spectral Density

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	-6.87	-8.52	8	PASS
6	2437	-8.74	-9.75	8	PASS
11	2462	-7.88	-8.31	8	PASS

B. Test Plot:



(Channel 1, 802.11b, ANT 0)



(Channel 6, 802.11b, ANT 0)



(Channel 11, 802.11b, ANT 0)



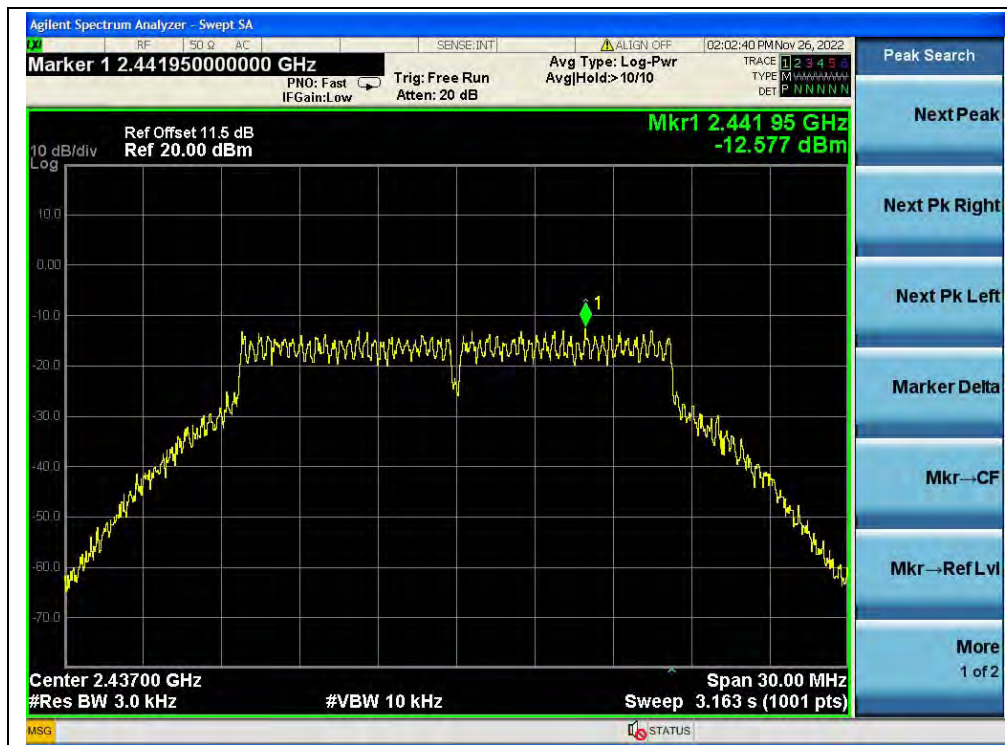
(Channel 1, 802.11b, ANT 1)



(Channel 6, 802.11b, ANT 1)



(Channel 11, 802.11b, ANT 1)



(Channel 6, 802.11g, ANT 0)



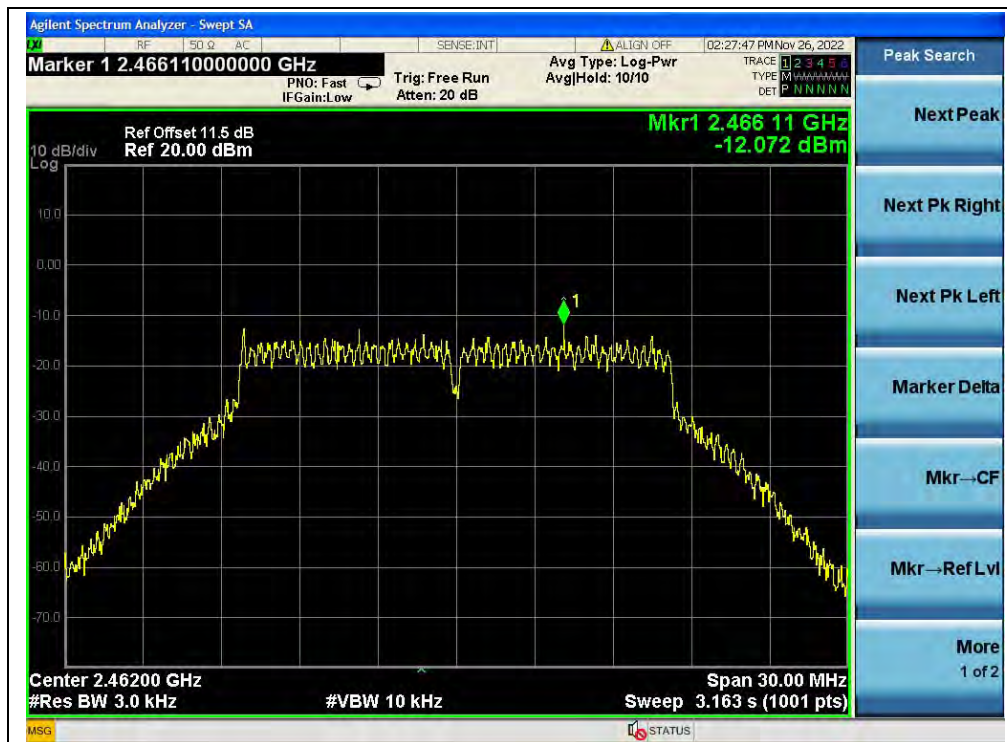
(Channel 11, 802.11g, ANT 0)



(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	-11.10	-12.44	-8.71	8	PASS
6	2437	-11.28	-13.11	-9.09	8	PASS
11	2462	-11.90	-12.97	-9.39	8	PASS

Note: Directional gain = $0.70\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, 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)