FCC TEST REPORT

Test report
On Behalf of
ViewSonic Corporation
For
VB-WIFI-005
Model No.: VS19147

FCC ID: GSS-VS19147

Prepared For :	**ViewSonic Corporation** **10 Pointe Dr. Suite 200.Brea, California 92821 United States**
Prepared By :	**Shenzhen HUAK Testing Technology Co., Ltd.** **1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China**
Date of Test:	**Feb. 22, 2022 ~ Mar. 24, 2022**
Date of Report:	**Mar. 24, 2022**
Report Number:	**HK2202220572-2E**

TEST RESULT CERTIFICATION

Applicant's name.....: ViewSonic Corporation

Address .....: 10 Pointe Dr. Suite 200.Brea, California 92821 United States

Manufacture's Name.....: ViewSonic Corporation

Address .....: 10 Pointe Dr. Suite 200.Brea, California 92821 United States

Product description

Trade Mark: ViewSonic

Product name.....: VB-WIFI-005

Model and/or type reference .: VS19147

Standards.....: FCC Rules and Regulations Part 15 Subpart E Section 15.407
ANSI C63.10: 2013

Date of Test.....:

Date (s) of performance of tests .....: Feb. 22, 2022 ~ Mar. 24, 2022

Date of Issue.....: Mar. 24, 2022

Test Result.....: **Pass**

Prepared by: Gary Qian

Project Engineer

Reviewed by: Zden Hu

Project Supervisor

Approved by: Jason Zhou

Technical Director

TABLE OF CONTENTS

1. TEST RESULT SUMMARY 5
1.1. TEST PROCEDURES AND RESULTS 5
1.2. INFORMATION OF THE TEST LABORATORY 5
1.3. MEASUREMENT UNCERTAINTY 6
2. EUT DESCRIPTION 7
2.1. GENERAL DESCRIPTION OF EUT 7
2.2. OPERATION FREQUENCY EACH OF CHANNEL 8
2.3. OPERATION OF EUT DURING TESTING 8
2.4. DESCRIPTION OF TEST SETUP 9
3. GENERA INFORMATION 10
3.1. TEST ENVIRONMENT AND MODE 10
3.2. DESCRIPTION OF SUPPORT UNITS 11
4. TEST RESULTS AND MEASUREMENT DATA 12
4.1. CONDUCTED EMISSION 12
4.2. MAXIMUM CONDUCTED OUTPUT POWER 16
4.3. 6DB EMISSION BANDWIDTH 19
4.4. 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH 20
4.5. POWER SPECTRAL DENSITY 37
4.6. BAND EDGE 59
4.7. SPURIOUS EMISSION 114
4.8. FREQUENCY STABILITY MEASUREMENT 139
4.9. ANTENNA REQUIREMENT 141
5. PHOTOGRAPHS OF TEST SETUP 142
6. PHOTOS OF THE EUT 144

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Mar. 24, 2022	Jason Zhou

1. TEST RESULT SUMMARY

1.1. TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(e)	N/A
26dB Emission Bandwidth& 99% Occupied Bandwidth	§15.407(a)	PASS
Power Spectral Density	§15.407(a)	PASS
Band edge	§15.407(b)/15.209/15.205	PASS
Radiated Emission	§15.407(b)/15.209/15.205	PASS
Frequency Stability	§15.407(g)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

1.2. INFORMATION OF THE TEST LABORATORY

Shenzhen HUAK Testing Technology Co., Ltd.
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：

A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

1.3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±0.37dB
2	RF power, conducted	±3.35dB
3	Spurious emissions, conducted	±2.20dB
4	All emissions, radiated(<1G)	±3.90dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

2. EUT DESCRIPTION

2.1. GENERAL DESCRIPTION OF EUT

Equipment:	VB-WIFI-005
Model Name:	VS19147
Serial Model:	N/A
Model Difference:	N/A
Trade Mark:	ViewSonic
FCC ID:	GSS-VS19147
Operation Frequency:	IEEE 802.11a/n/ac/ax(HT20) 5.180GHz-5.240GHz IEEE 802.11n/ac/ax(HT40) 5.190GHz-5.230GHz IEEE 802.11ac/ax(HT80) 5.210GHz
Modulation Technology:	IEEE 802.11a/n/ac/ax
Modulation Type:	OFDM, OFDMA
Antenna Type:	External Antenna
Antenna Gain:	Antenna 1:3.68dBi Antenna 2:3.68dBi MIMO: 6.69dBi
Power Source:	DC 5V, 900mA from USB
Power Supply:	DC 5V, 900mA from USB
Hardware Version	V1.01
Software Version:	V1.01
Note: The EUT incorporates a MIMO function. Physically, it provides two completed transmitters and receivers(2T2R), two transmit signals are completely correlated, then, Direction gain= GANT + Array Gain(Array Gain=10 log(2) dB for power spectral density; Array Gain=0 for power measurement)	

2.2. OPERATION FREQUENCY EACH OF CHANNEL

802.11a/802.11n(HT20) 802.11ac(HT20)/ 802.11ax(HT20)		802.11n(HT40)/ 802.11ac(HT40)/ 802.11ax(HT40)		802.11ac(HT80)/ 802.11ax(HT80)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3. OPERATION OF EUT DURING TESTING

For 802.11a/n (HT20)/ac(HT20)/ax(HT20)

Band I (5150 - 5250 MHz)		
Channel Number	Channel	Frequency (MHz)
36	Low	5180
40	Mid	5200
48	High	5240

For 802.11n (HT40)/ ac(HT40)/ax(HT40)

Band I (5150 - 5250 MHz)		
Channel Number	Channel	Frequency (MHz)
38	Low	5190
46	High	5230

For 802.11ac(HT80)/ax(HT80)

Band I (5150 - 5250 MHz)	
Channel Number	Frequency (MHz)
42	5210

2.4. DESCRIPTION OF TEST SETUP

Operation of EUT during testing:

Display information
Model: 280LM00004

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position

3. GENERA INFORMATION

3.1. TEST ENVIRONMENT AND MODE

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 100%)
The sample was placed 0.8m/1.5m for blow/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a	6 Mbps
802.11n(HT20)	MCS0
802.11n(HT40)	MCS0
802.11ac(HT20)/ac(HT40)/ac(HT80)	MCS0
802.11ax(HT20)/ax(HT40)/ax(HT80)	MCS0
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

3.2. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

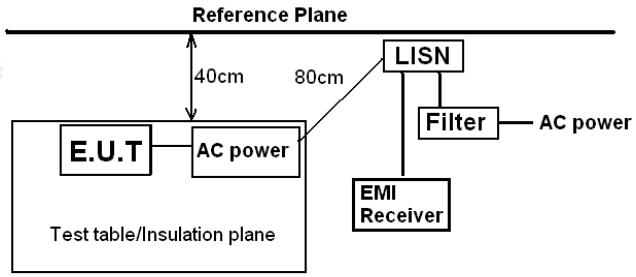
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

4. TEST RESULTS AND MEASUREMENT DATA

4.1. CONDUCTED EMISSION

4.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Frequency Range:	150 kHz to 30 MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limits:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50
Test Setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test Mode:	Tx Mode
Test Procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.
Test Result:	Pass

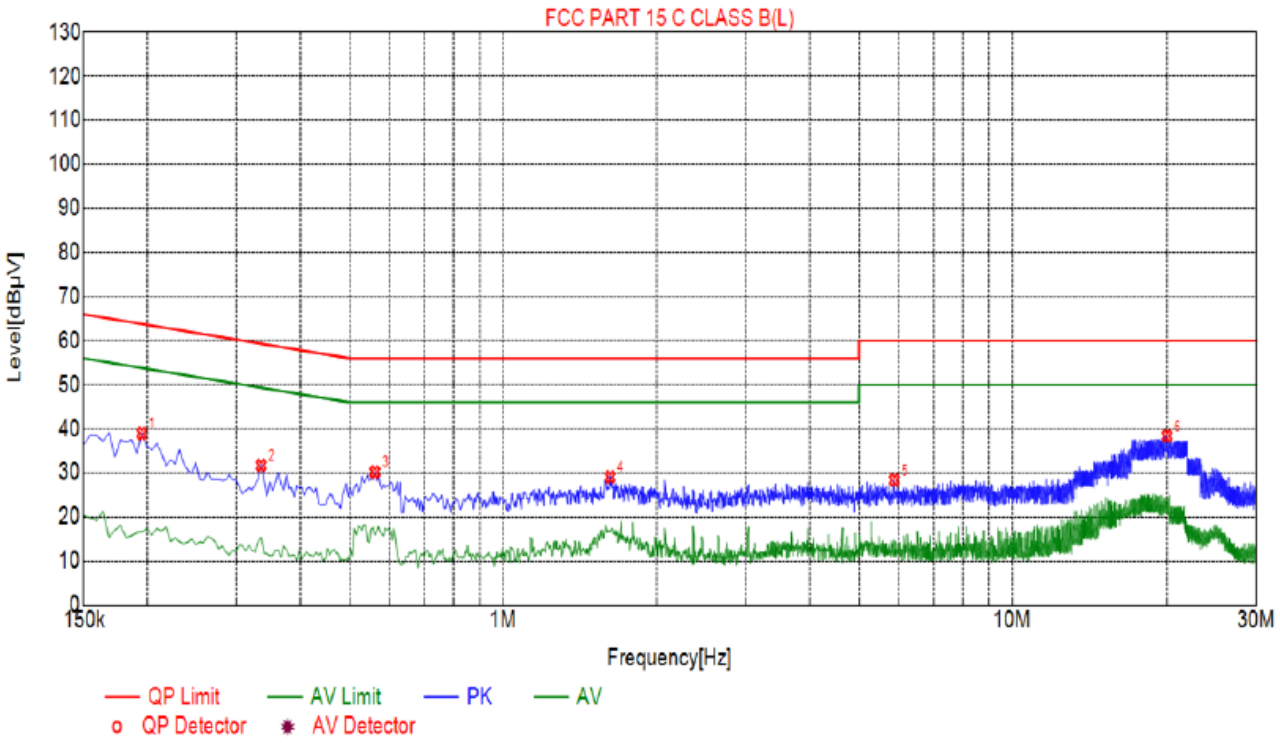
4.1.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Receiver	R&S	ESR-7	HKE-010	Dec. 09, 2021	Dec. 08, 2022
LISN	R&S	ENV216	HKE-002	Dec. 09, 2021	Dec. 08, 2022
Coax cable (9KHz-30MHz)	Times	381806-002	N/A	Dec. 09, 2021	Dec. 08, 2022
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

4.1.3. Test data

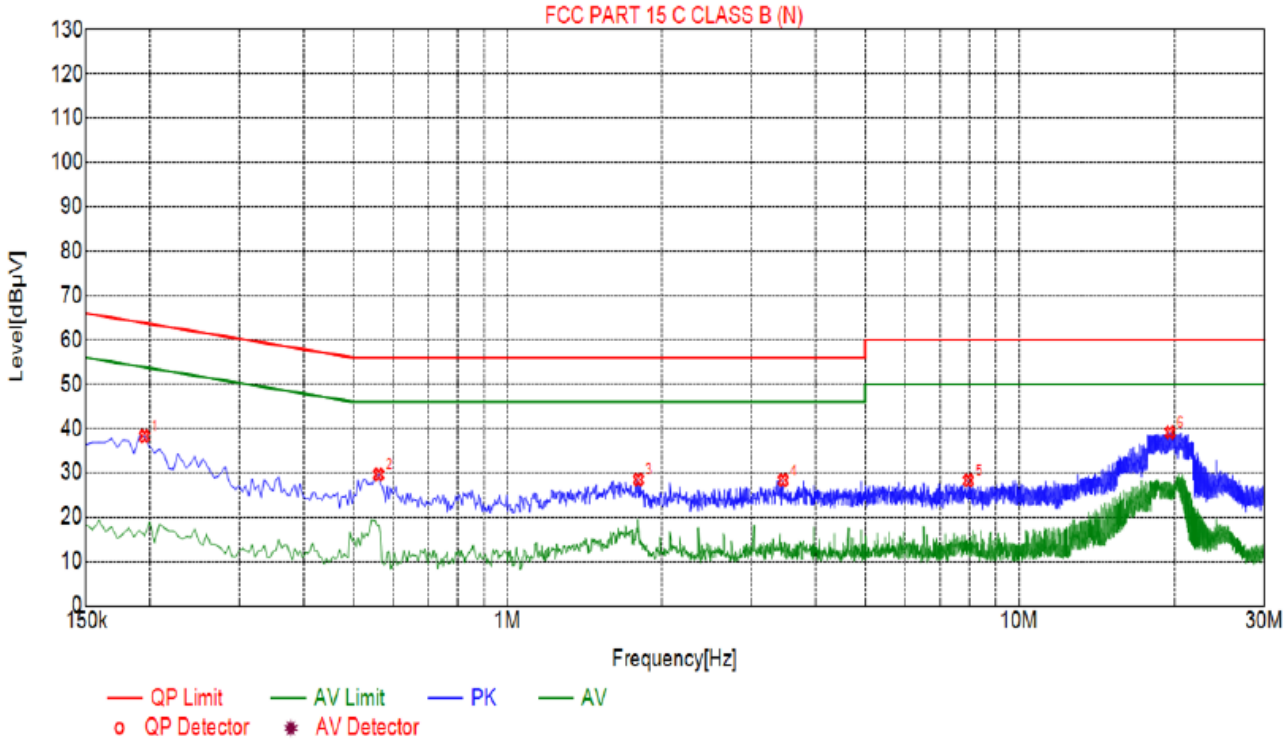
Test Specification: Line



Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1950	38.96	20.03	63.82	24.86	18.93	PK	L
2	0.3345	31.69	20.04	59.34	27.65	11.65	PK	L
3	0.5595	30.17	20.06	56.00	25.83	10.11	PK	L
4	1.6215	29.04	20.11	56.00	26.96	8.93	PK	L
5	5.8740	28.35	20.24	60.00	31.65	8.11	PK	L
6	20.0265	38.38	20.10	60.00	21.62	18.28	PK	L

Remark: Margin = Limit – Level
Correction factor = Cable lose + LISN insertion loss
Level=Test receiver reading + correction factor

Test Specification: Neutral



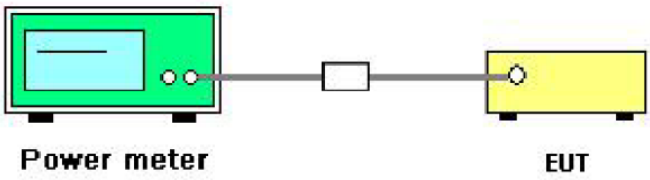
Suspected List

NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1950	38.25	20.03	63.82	25.57	18.22	PK	N
2	0.5595	29.56	20.06	56.00	26.44	9.50	PK	N
3	1.8015	28.44	20.14	56.00	27.56	8.30	PK	N
4	3.4575	28.30	20.25	56.00	27.70	8.05	PK	N
5	7.9620	28.25	20.15	60.00	31.75	8.10	PK	N
6	19.6080	39.12	20.09	60.00	20.88	19.03	PK	N

Remark: Margin = Limit – Level
Correction factor = Cable lose + LISN insertion loss
Level=Test receiver reading + correction factor

4.2. MAXIMUM CONDUCTED OUTPUT POWER

4.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407(a)</td></tr>
<tr><td>Test Method:</td><td>KDB789033 D02 General UNII Test Procedures New Rules v02.r01 Section E</td></tr>
<tr><td>Limit:</td><td><table><tr><td>Frequency Band (MHz)</td><td>Limit</td></tr><tr><td>5150-5250</td><td>1W</td></tr></table></td></tr>
<tr><td>Test Setup:</td><td> 
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Procedure:</td><td>1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
<tr><td>Remark:</td><td>Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0
Conducted output power= measurement power</td></tr>
</table>

4.2.2. Test Instruments

RF Test Room					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 09, 2021	Dec. 08, 2022
Power meter	Agilent	E4419B	HKE-085	Dec. 09, 2021	Dec. 08, 2022
Power Sensor	Agilent	E9300A	HKE-086	Dec. 09, 2021	Dec. 08, 2022
RF cable	Times	1-40G	HKE-034	Dec. 09, 2021	Dec. 08, 2022
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 09, 2021	Dec. 08, 2022

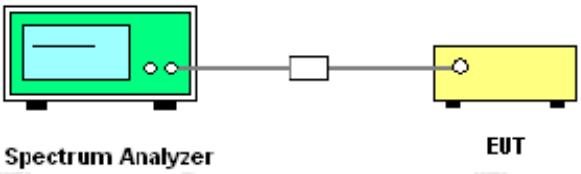
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

4.2.3. Test Data

Configuration Band I (5150 - 5250 MHz)						
Mode	Test channel	Maximum Conducted Output Power (dBm)			FCC Limit (dBm)	Result
		Antenna port 1	Antenna port 2	MIMO		
11a	CH36	14.55	14.23	/	30	PASS
11a	CH40	11.20	11.69	/	30	PASS
11a	CH48	13.10	15.42	/	30	PASS
11n(HT20)	CH36	13.53	14.33	16.96	30	PASS
11n(HT20)	CH40	10.33	9.65	13.01	30	PASS
11n(HT20)	CH48	9.52	10.75	13.19	30	PASS
11n(HT40)	CH38	12.65	15.11	17.06	30	PASS
11n(HT40)	CH46	10.51	13.46	15.24	30	PASS
11ac(HT20)	CH36	11.98	14.80	16.63	30	PASS
11ac(HT20)	CH40	10.70	12.97	14.99	30	PASS
11ac(HT20)	CH48	12.36	10.01	14.35	30	PASS
11ac(HT40)	CH38	13.84	13.70	16.78	30	PASS
11ac(HT40)	CH46	10.23	8.66	12.53	30	PASS
11ac(HT80)	CH42	11.98	11.84	14.92	30	PASS
11ax(HT20)	CH36	14.08	14.91	17.53	30	PASS
11ax(HT20)	CH40	13.22	10.11	14.95	30	PASS
11ax(HT20)	CH48	10.29	15.09	16.33	30	PASS
11ax(HT40)	CH38	12.89	13.16	16.04	30	PASS
11ax(HT40)	CH46	10.06	10.11	13.10	30	PASS
11ax(HT80)	CH42	10.35	12.46	14.54	30	PASS

4.3. 6DB EMISSION BANDWIDTH

4.3.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	>500kHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

4.3.2. Test Instruments

	RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 09, 2021	Dec. 08, 2022
RF cable	Times	1-40G	HKE-034	Dec. 09, 2021	Dec. 08, 2022
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 09, 2021	Dec. 08, 2022

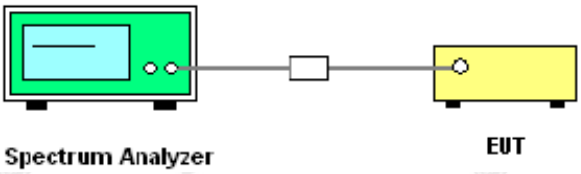
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

4.3.3. Test data

N/A

4.4. 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

4.4.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	No restriction limits
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth RBW = 1% EBW, VBW≥3RBW, In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

4.4.2. Test Instruments

RF Test Room					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 09, 2021	Dec. 08, 2022
RF cable	Times	1-40G	HKE-034	Dec. 09, 2021	Dec. 08, 2022
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 09, 2021	Dec. 08, 2022

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

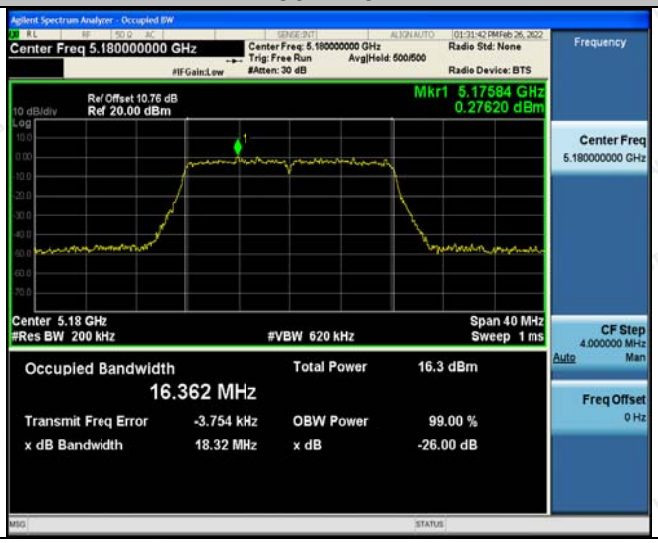
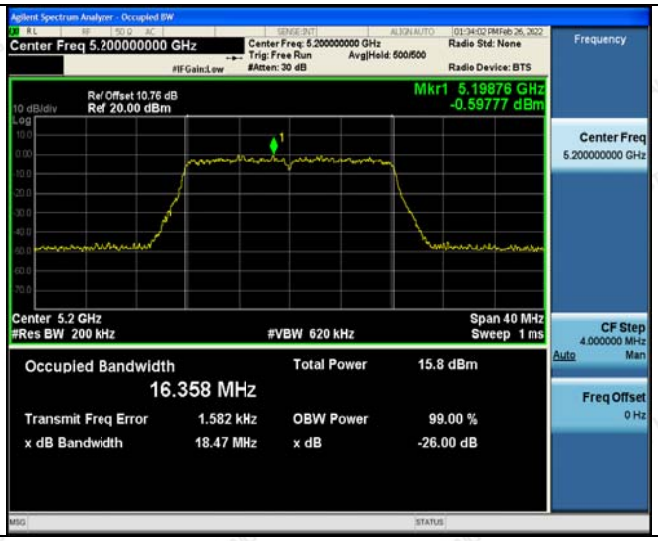
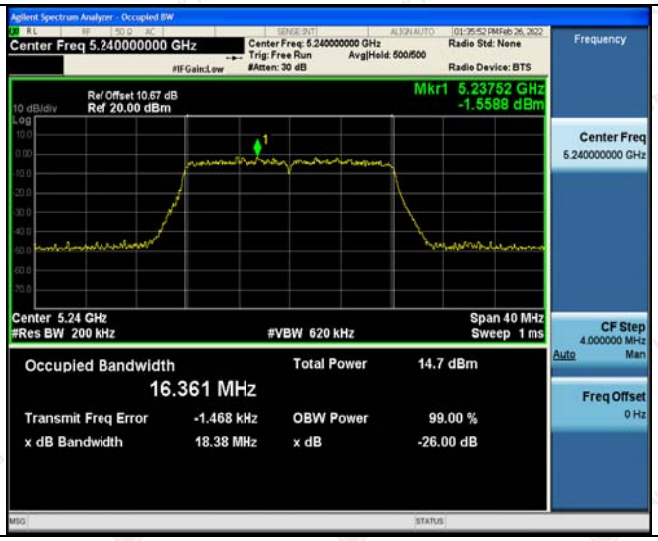
4.4.3. Test data

ANT 1

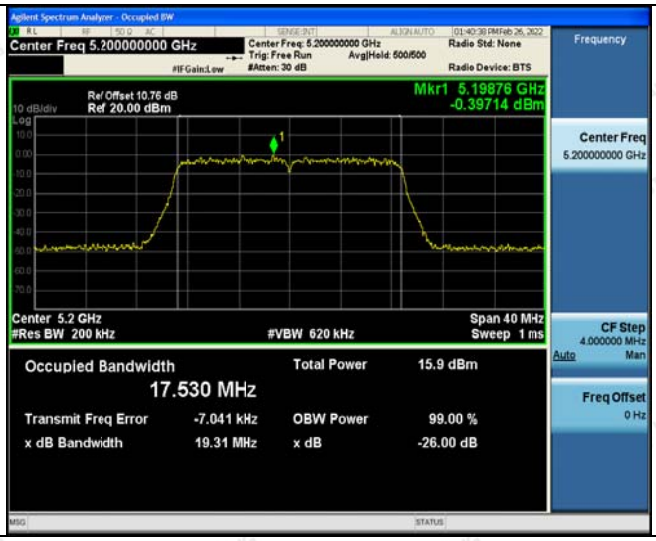
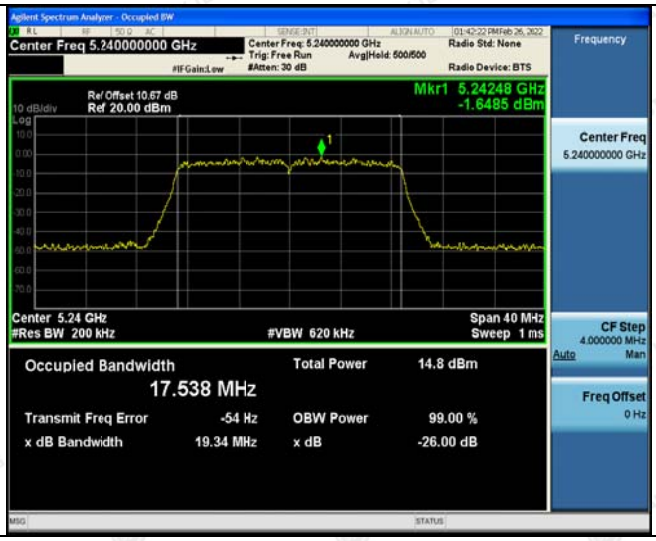
Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	Verdict
11a	CH36	5180	18.32	PASS
11a	CH40	5200	18.47	PASS
11a	CH48	5240	18.38	PASS
11n(HT20)	CH36	5180	19.27	PASS
11n(HT20)	CH40	5200	19.31	PASS
11n(HT20)	CH48	5240	19.34	PASS
11n(HT40)	CH38	5190	36.60	PASS
11n(HT40)	CH46	5230	38.97	PASS
11ac(HT20)	CH36	5180	19.31	PASS
11ac(HT20)	CH40	5200	19.35	PASS
11ac(HT20)	CH48	5240	19.22	PASS
11ac(HT40)	CH38	5190	38.78	PASS
11ac(HT40)	CH46	5230	38.78	PASS
11ac(HT80)	CH42	5210	84.46	PASS
11ax(HT20)	CH36	5180	20.44	PASS
11ax(HT20)	CH40	5200	20.19	PASS
11ax(HT20)	CH48	5240	20.07	PASS
11ax(HT40)	CH38	5190	39.75	PASS
11ax(HT40)	CH46	5230	39.54	PASS
11ax(HT80)	CH42	5210	80.64	PASS

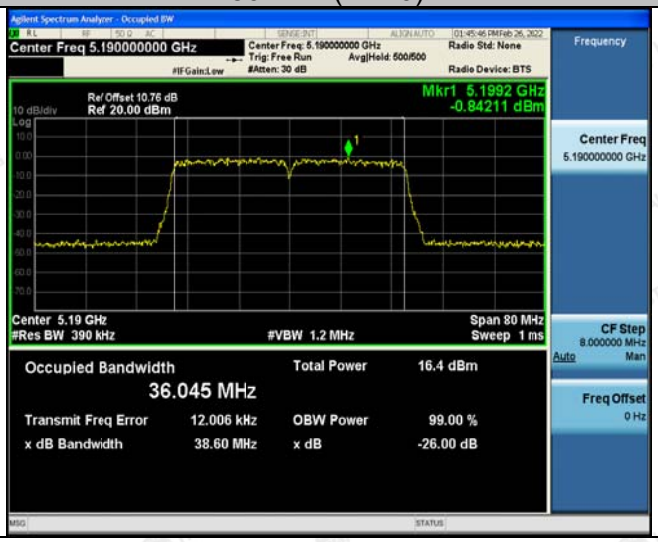
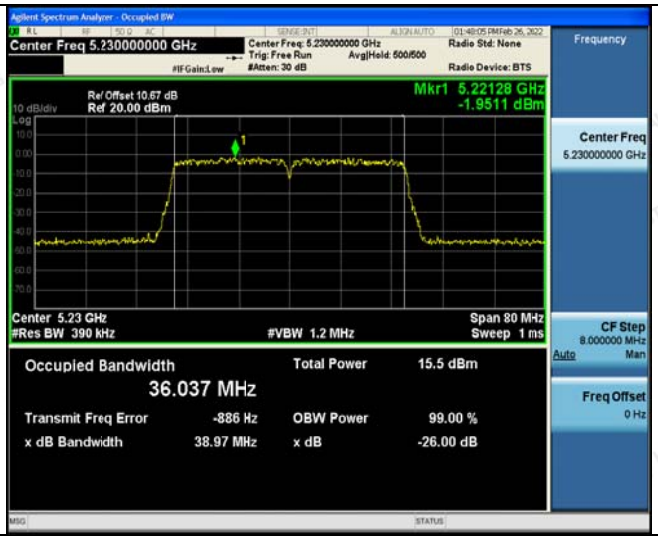
Test plots as follows:

Band I （5150 – 5250 MHz）

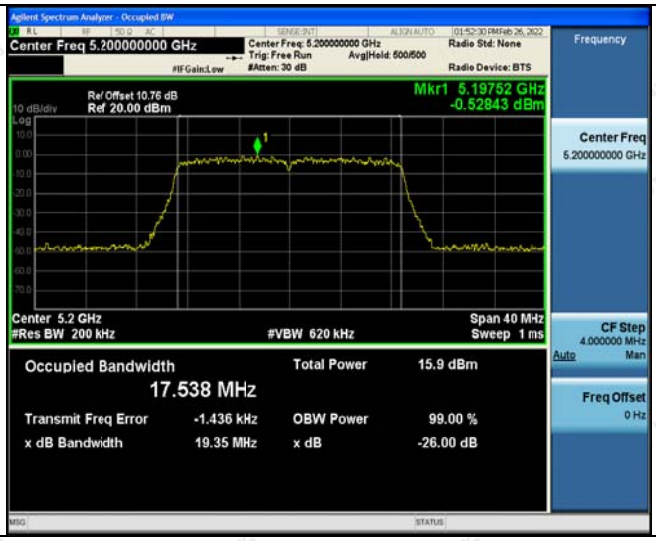
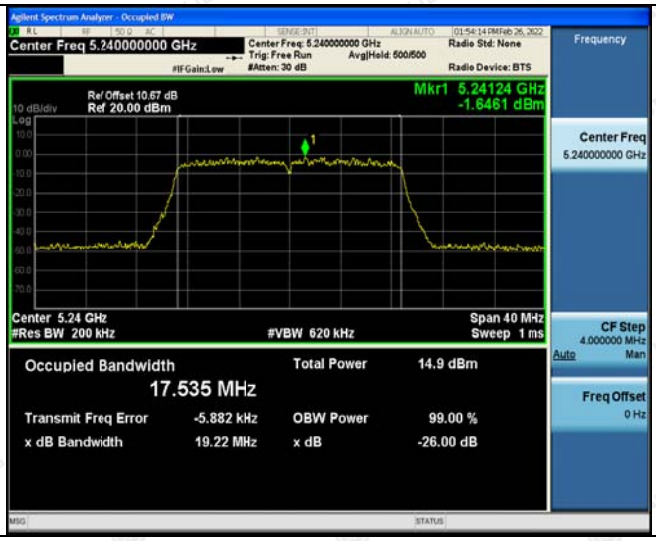
802.11a

Low

Mid

High

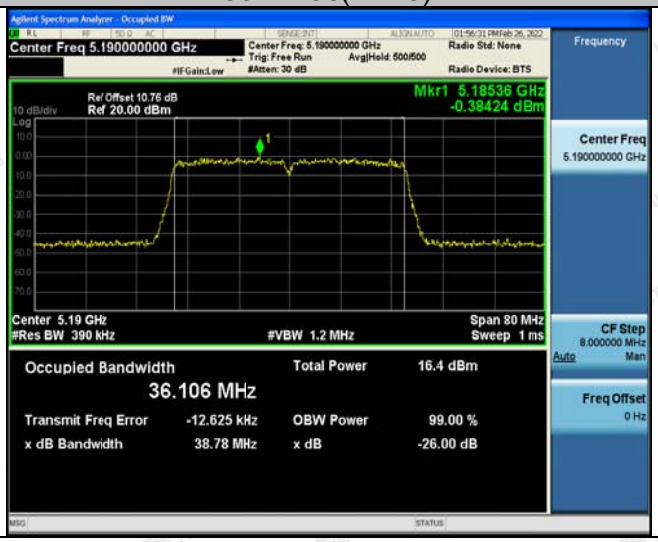
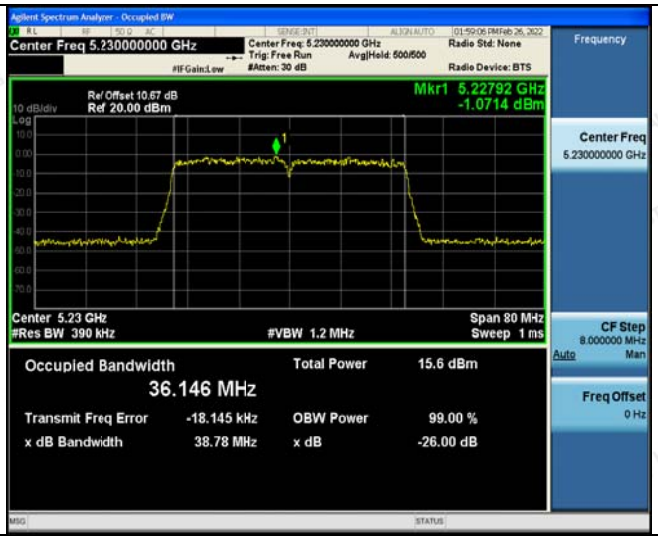
802.11n(HT20)

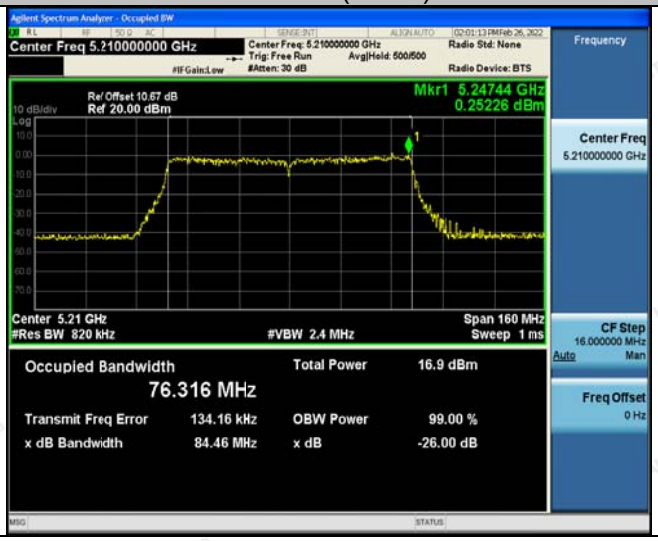
Low

Mid

High

802.11n(HT40)

Low

High

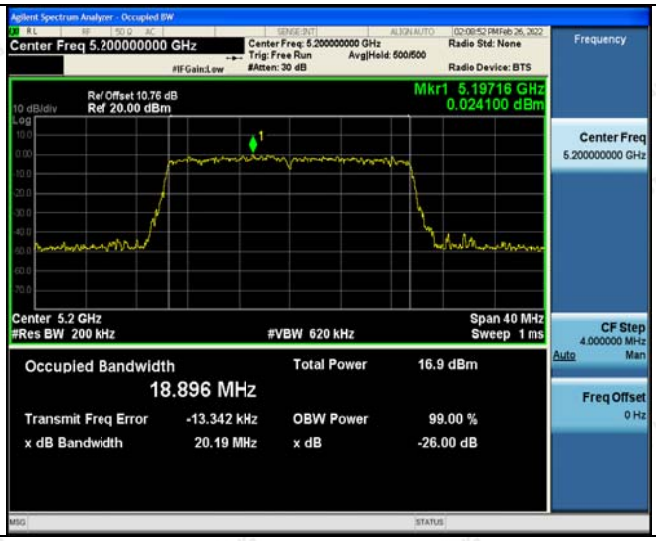
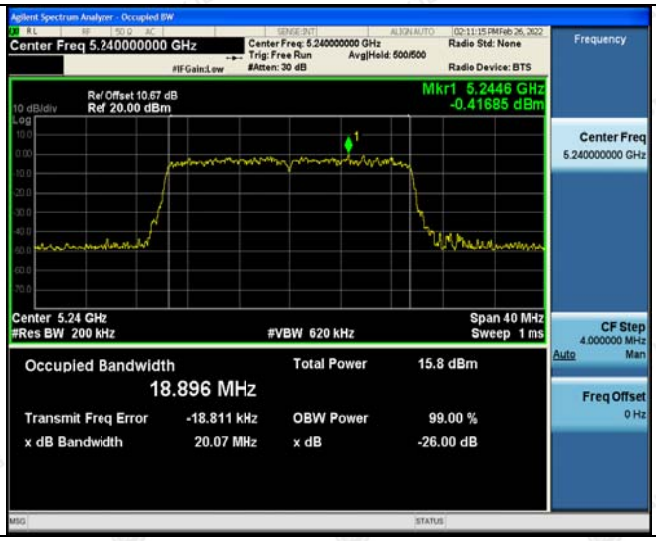
802.11ac(HT20)

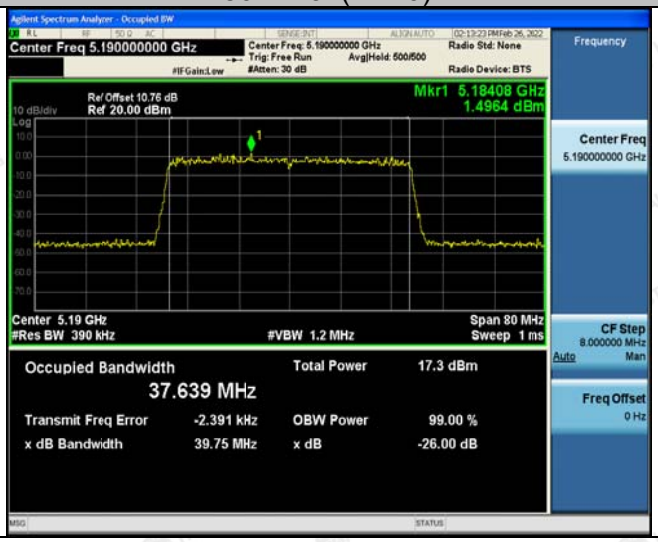
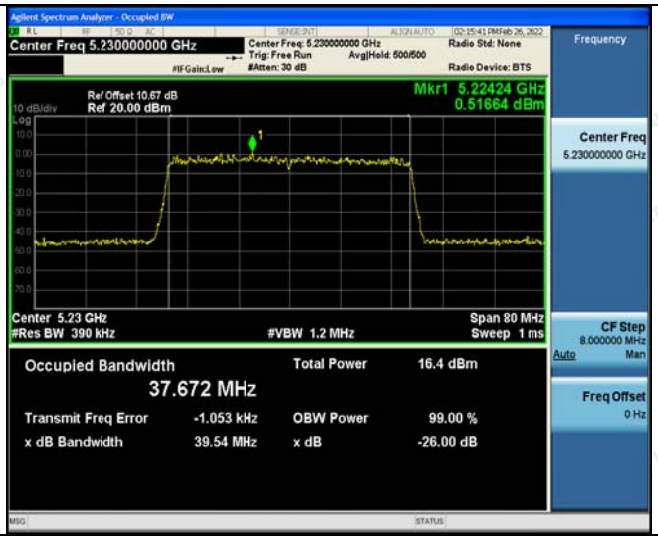
Low

Mid

High

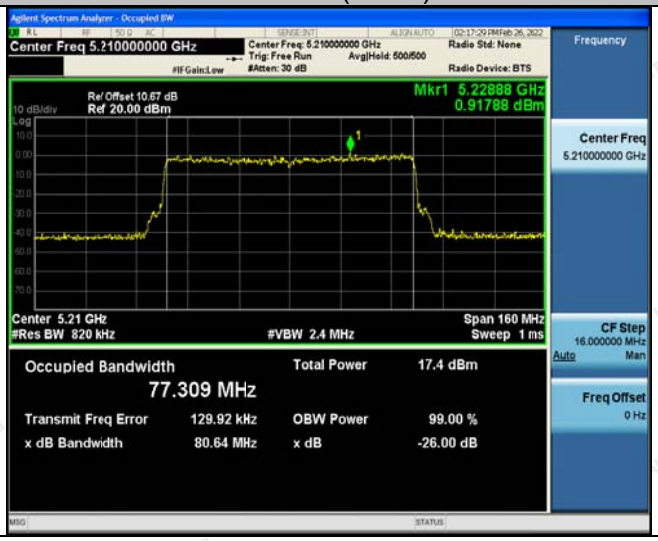
802.11ac(HT40)

Low

High

802.11ac(HT80)


802.11ax(HT20)

Low

Mid

High

802.11ax(HT40)

Low

High

802.11ax(HT80)


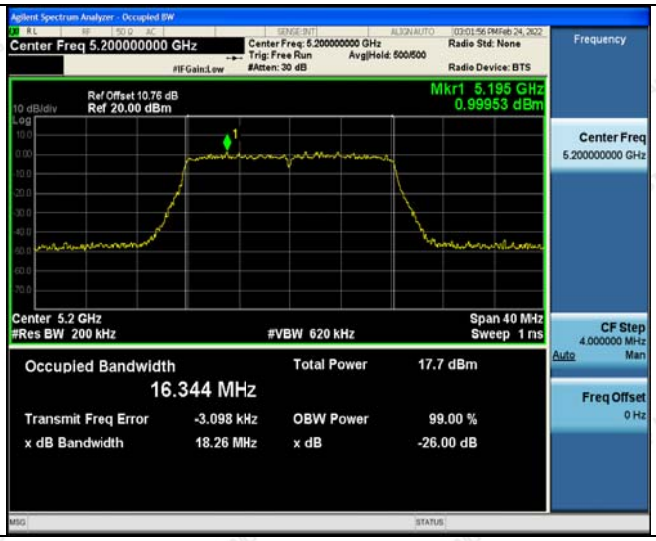
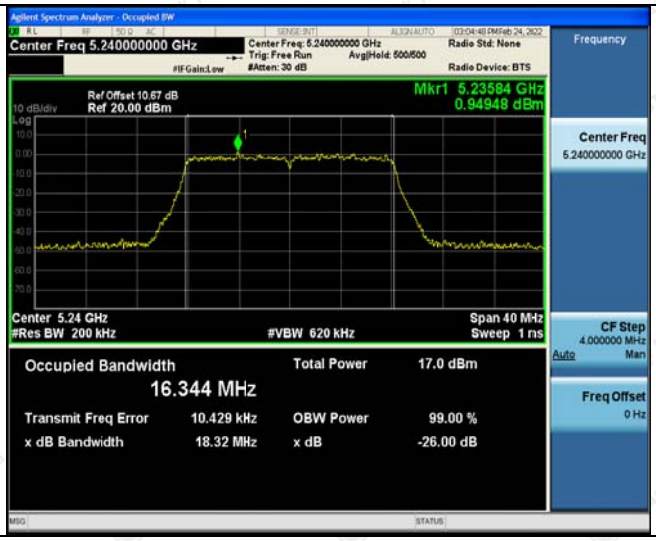
ANT 2

Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	Verdict
11a	CH36	5180	18.34	PASS
11a	CH40	5200	18.26	PASS
11a	CH48	5240	18.32	PASS
11n(HT20)	CH36	5180	19.22	PASS
11n(HT20)	CH40	5200	19.40	PASS
11n(HT20)	CH48	5240	19.38	PASS
11n(HT40)	CH38	5190	38.85	PASS
11n(HT40)	CH46	5230	38.91	PASS
11ac(HT20)	CH36	5180	19.33	PASS
11ac(HT20)	CH40	5200	19.30	PASS
11ac(HT20)	CH48	5240	19.34	PASS
11ac(HT40)	CH38	5190	38.69	PASS
11ac(HT40)	CH46	5230	38.84	PASS
11ac(HT80)	CH42	5210	86.35	PASS
11ax(HT20)	CH36	5180	20.39	PASS
11ax(HT20)	CH40	5200	20.36	PASS
11ax(HT20)	CH48	5240	20.53	PASS
11ax(HT40)	CH38	5190	39.52	PASS
11ax(HT40)	CH46	5230	39.70	PASS
11ax(HT80)	CH42	5210	80.69	PASS

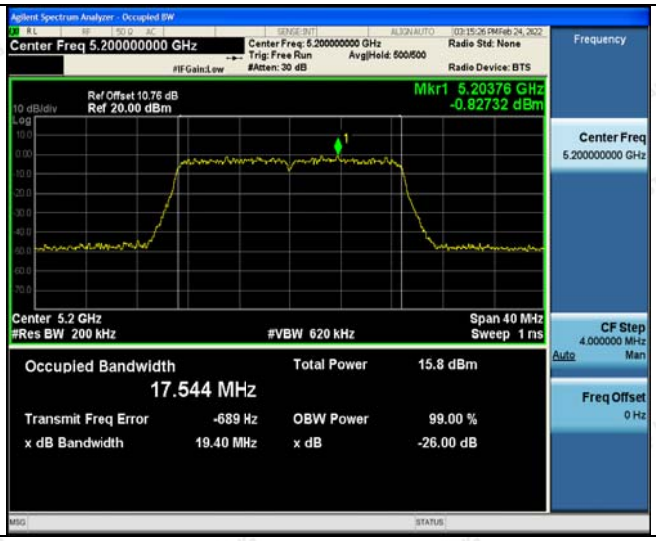
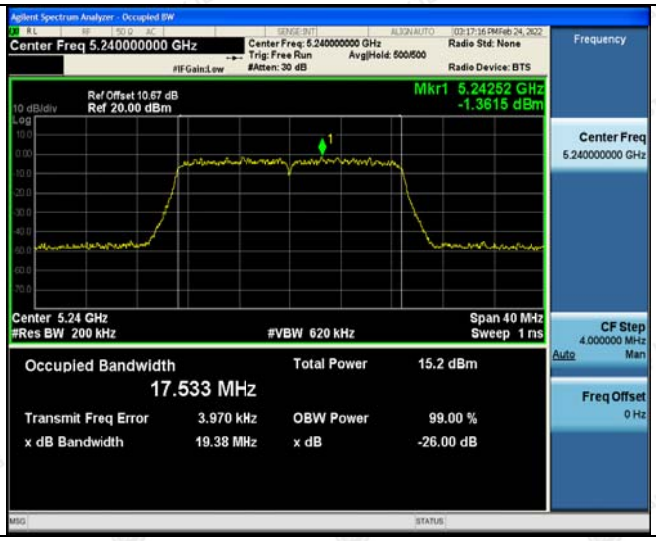
Test plots as follows:

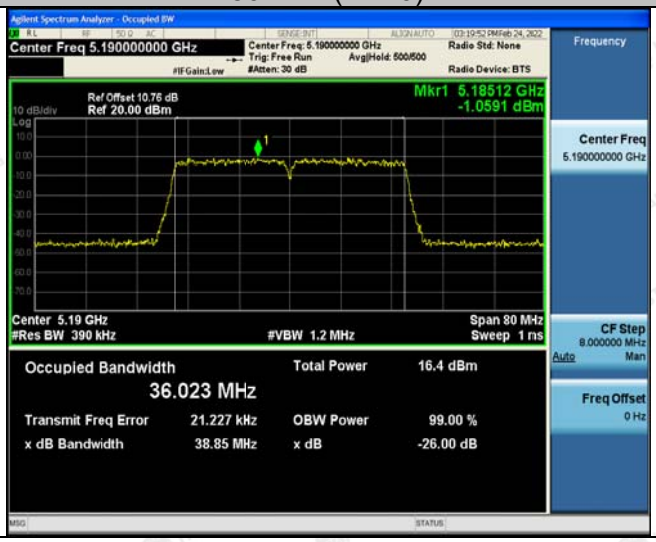
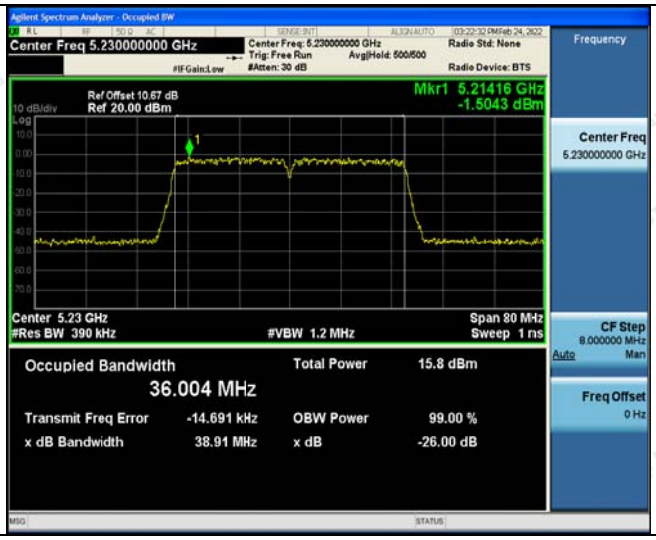
Band I （5150 – 5250 MHz）

802.11a

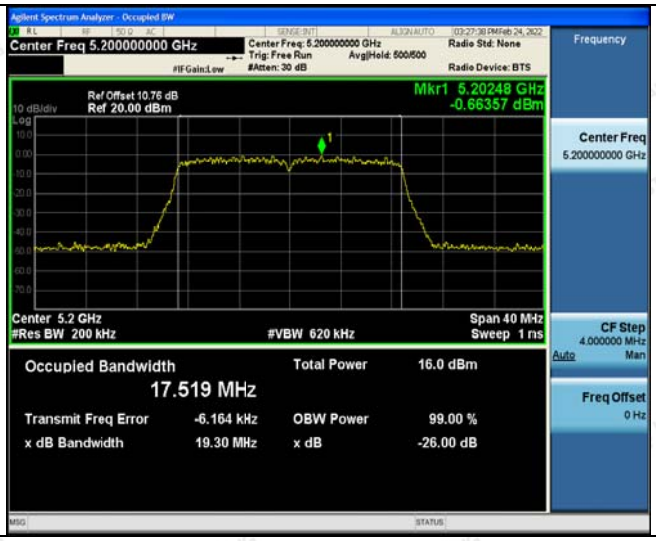
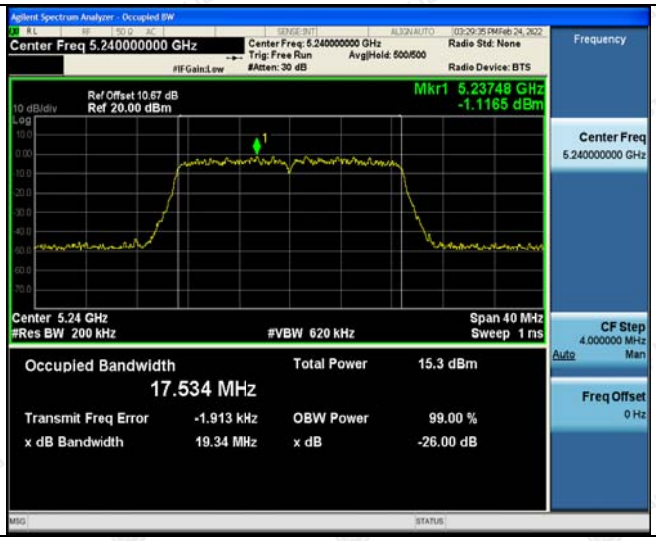
Low

Mid

High

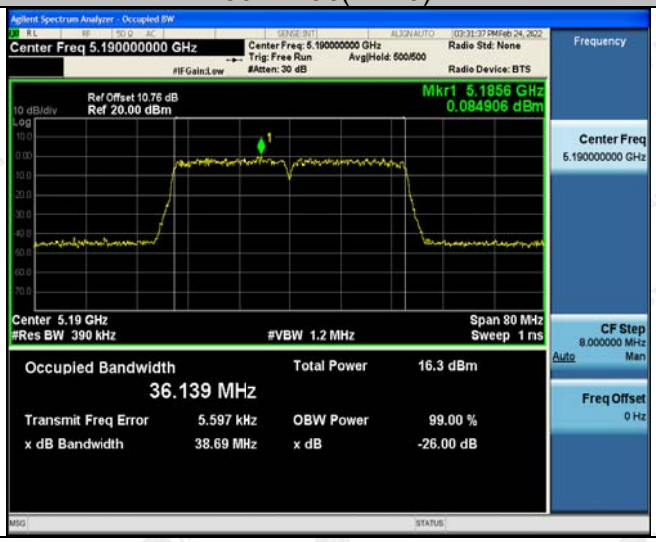
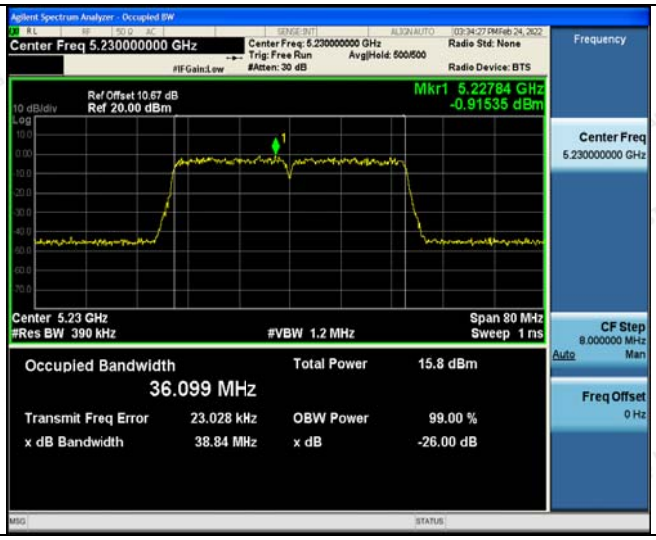
802.11n(HT20)

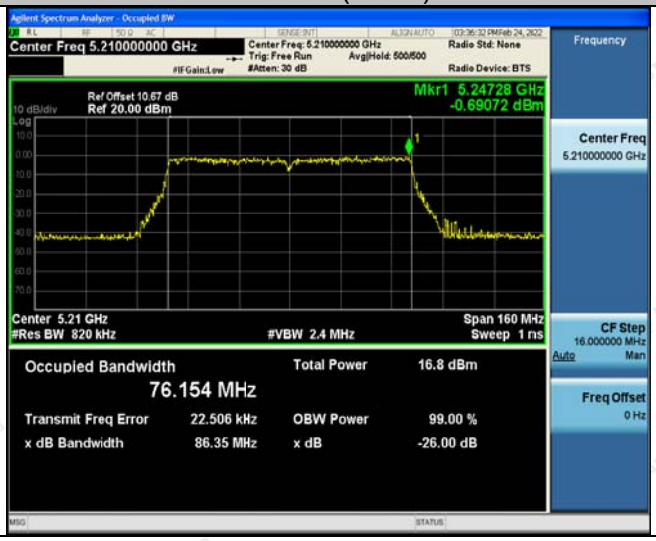
Low

Mid

High

802.11n(HT40)

Low

High

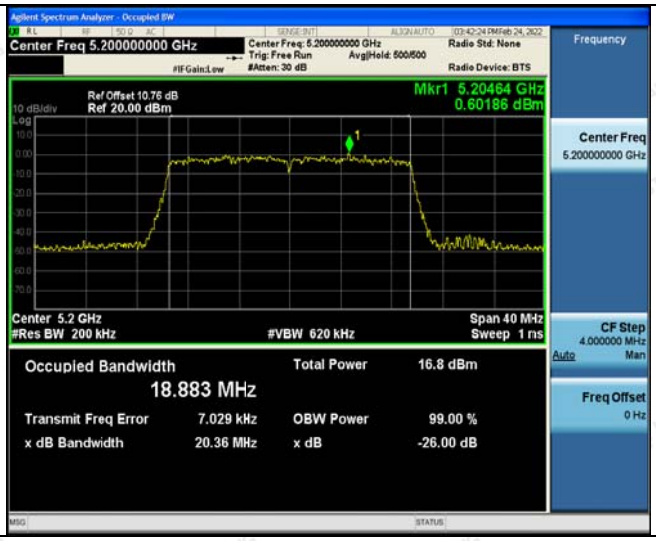
802.11ac(HT20)

Low

Mid

High

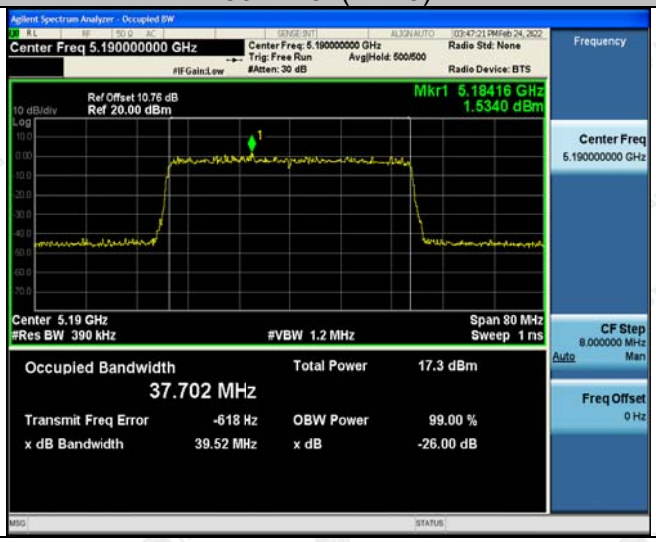
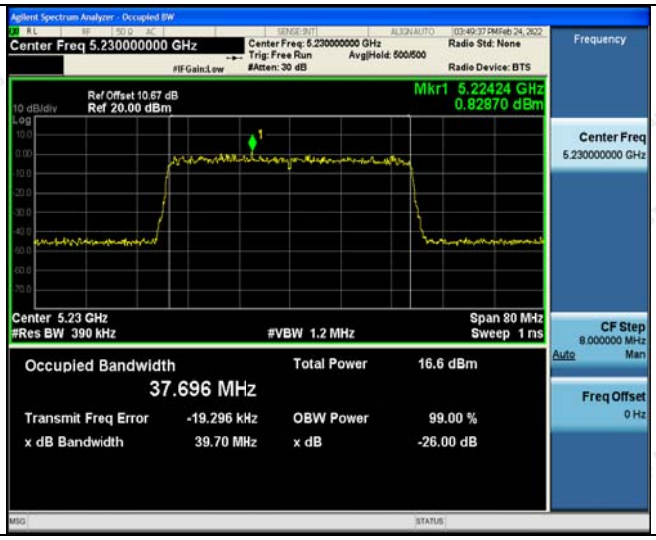
802.11ac(HT40)

Low

High

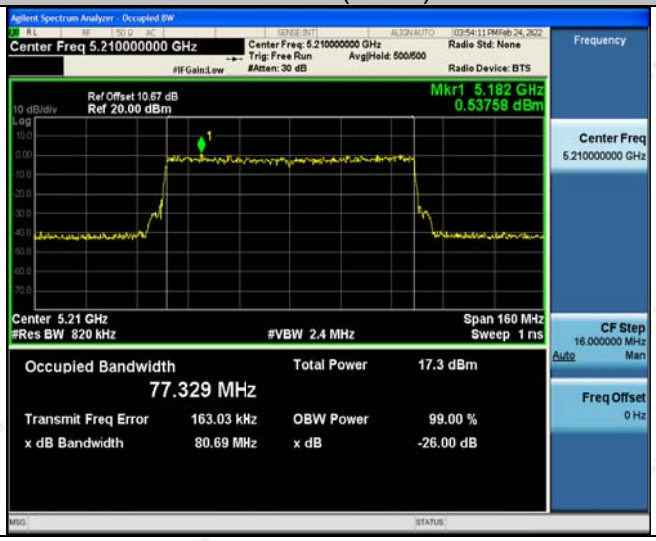
802.11ac(HT80)


802.11ax(HT20)

Low

Mid

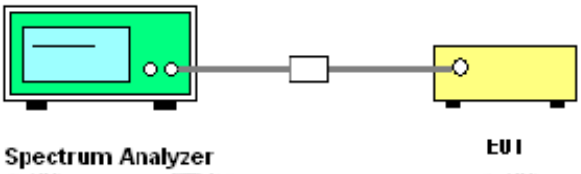
High

802.11ax(HT40)

Low

High

802.11ax(HT80)


4.5. POWER SPECTRAL DENSITY

4.5.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	17dBm/MHz for Band I 5150MHz-5250MHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 2. Set RBW =1 MHz, VBW ≥ 3*RBW, Sweep time = Auto, Detector = RMS. 3. Allow the sweeps to continue until the trace stabilizes. 4. Use the peak marker function to determine the maximum amplitude level. 5. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

4.5.2. Test Instruments

RF Test Room					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 09, 2021	Dec. 08, 2022
RF cable	Times	1-40G	HKE-034	Dec. 09, 2021	Dec. 08, 2022
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 09, 2021	Dec. 08, 2022

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

4.5.3. Test data

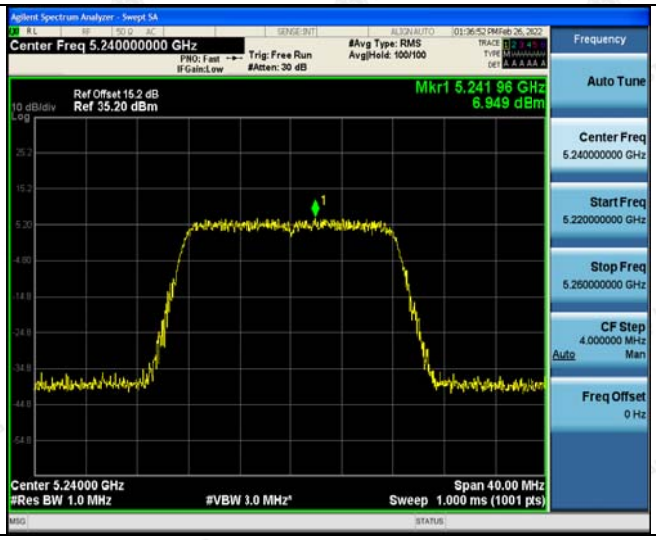
ANT 1

Configuration Band I (5150 - 5250 MHz)				
Mode	Test channel	Level [dBm/MHz]	Limit (dBm/MHz)	Result
11a	CH36	8.68	17	PASS
11a	CH40	8.17	17	PASS
11a	CH48	6.95	17	PASS
11n(HT20)	CH36	10.09	17	PASS
11n(HT20)	CH40	8.48	17	PASS
11n(HT20)	CH48	8.13	17	PASS
11n(HT40)	CH38	8.95	17	PASS
11n(HT40)	CH46	8.04	17	PASS
11ac(HT20)	CH36	10.32	17	PASS
11ac(HT20)	CH40	9.69	17	PASS
11ac(HT20)	CH48	8.49	17	PASS
11ac(HT40)	CH38	8.68	17	PASS
11ac(HT40)	CH46	8.27	17	PASS
11ac(HT80)	CH42	8.94	17	PASS
11ax(HT20)	CH36	10.99	17	PASS
11ax(HT20)	CH40	10.2	17	PASS
11ax(HT20)	CH48	9.84	17	PASS
11ax(HT40)	CH38	10.87	17	PASS
11ax(HT40)	CH46	8.14	17	PASS
11ax(HT80)	CH42	9.72	17	PASS

Test plots as follows:
Band I （5150 – 5250 MHz）

802.11a

Low

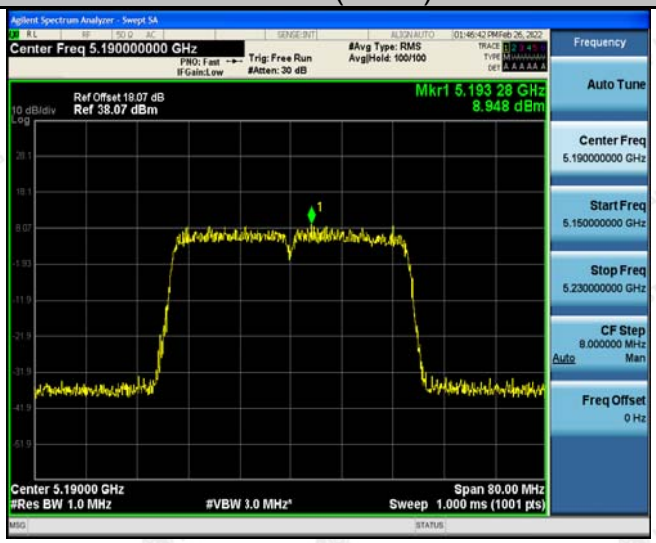
Mid

High

802.11n(HT20)

Low

Mid

High

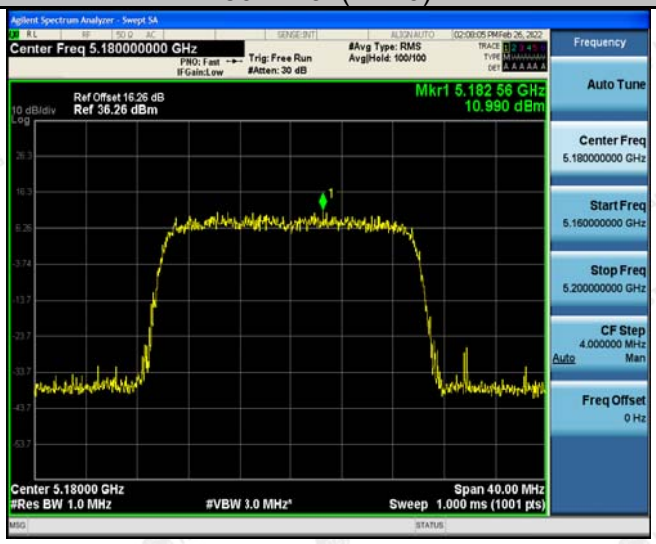
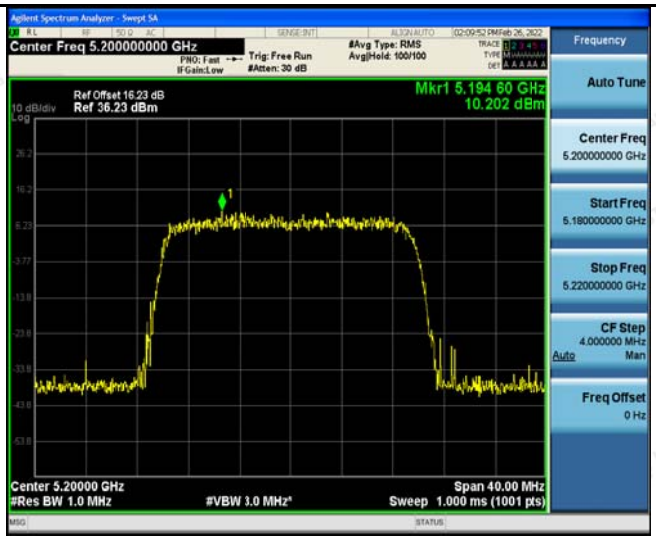
802.11n(HT40)
 Low
 High

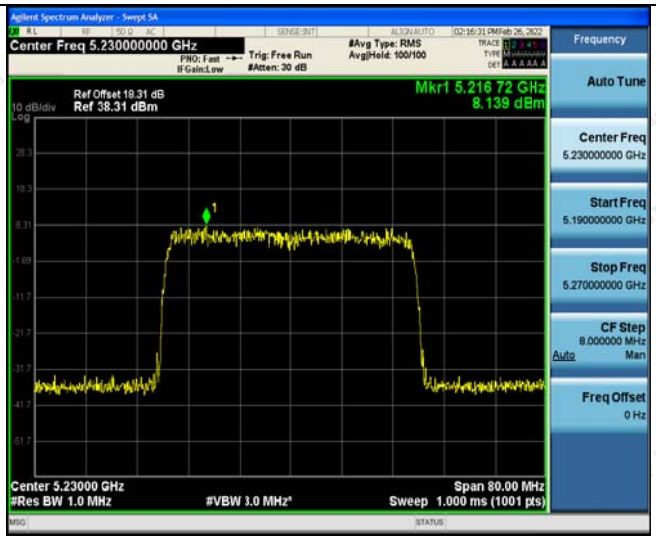
802.11ac(HT20)
 Low
 Mid
 High

802.11ac(HT40)
 Low
 High

802.11ac(HT80)

Low

802.11ax(HT20)
 Low
 Mid
 High

802.11ax(HT40)
 Low
 High

802.11ax(HT80)

Low