

TEST REPORT

Applicant: CTOUCH Europe B.V.

Address of Applicant: Achtseweg Zuid 153R, 5651 GW Eindhoven, Nederlands

Manufacturer/Factory: CTOUCH Europe B.V.

Address of Manufacturer/Factory: Achtseweg Zuid 153R, 5651 GW Eindhoven, Nederlands

Equipment Under Test (EUT)

Product Name: WIFI6 MODULE

Model No.: 6252M-PUB

Trade Mark: CTOUCH

FCC ID: 2APQQ-6252M-PUB

Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407

Date of sample receipt: December 6, 2022

Date of Test: December 19~27, 2022

Date of report issue: December 27, 2022

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

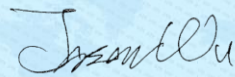
Laboratory Manager

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2 Version

Version No.	Date	Description
00	2022-12-27	Original

Prepared By:

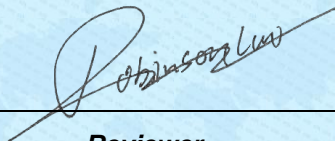


Date:

2022-12-27

Project Engineer

Check By:



Date:

2022-12-27

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	PASS
AC Power Line Conducted Emission	15.207	Not Applicable
-26dB Emission Bandwidth	15.407(a)(2)(5)	PASS
Average Transmit Power	15.407(a)(1)	PASS
Power Spectral Density	15.407(a)(1)	PASS
Undesirable Emission	15.407(b)(1), 15.205/15.209	PASS
Radiated Emission	15.205/15.209	PASS
Band Edge	15.407(b)(1)	PASS
Frequency Stability	15.407(g)	PASS

Remark: Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	1 x 10 ⁻⁷
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	3.1dB (9kHz-30MHz)
		3.8039dB (30MHz-200MHz)
		3.9679dB (200MHz-1GHz)
		4.29dB (1GHz-18GHz)
		3.30dB (18GHz-40GHz)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	WIFI6 MODULE			
Model No.:	6252M-PUB			
Serial No.:	6252M-PUB-1			
Hardware Version:	V1.0			
Software Version:	V1.0			
Test sample(s) ID:	GTSL202212000236-1			
Sample(s) Status:	Engineer sample			
Operation Frequency:	Band	Mode	Frequency Range (MHz)	Number of channels
	U-NII Band I	IEEE 802.11a	5180-5240	4
		IEEE 802.11n 20MHz	5180-5240	4
		IEEE 802.11n 40MHz	5190-5230	2
		IEEE 802.11ac 20MHz	5180-5240	4
		IEEE 802.11ac 40MHz	5190-5230	2
		IEEE 802.11ac 80MHz	5210	1
		IEEE 802.11ax 20MHz	5180-5240	4
		IEEE 802.11ax 40MHz	5190-5230	2
IEEE 802.11ax 80MHz	5210	1		
Modulation technology:	802.11a/n/ac/: OFDM; 802.11ax: OFDMA CDD: 802.11a/n/ac/ax (802.11ax mode only support Full RU)			
Antenna Type:	External Antenna			
Antenna gain:	ANT1:1.67dBi ANT2:1.67dBi (PSD directional gain=4.68dBi, Power directional gain=4.68dBi)			
Power supply:	DC 3.3V			

Channel list							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz
38	5190MHz	42	5210MHz	46	5230MHz		

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:

Test channel	Frequency (MHz)								
	802.11 a	802.11 n(HT20)	802.11 n(HT40)	802.11 ac(VHT20)	802.11 ac(VHT40)	802.11 ac(VHT80)	802.11 ax(HE20)	802.11 ax(HE 40)	802.11 ax(HE80)
Lowest	5180	5180	5190	5180	5190	5210	5180	5190	5210
Middle	5200	5200	/	5200	/	/	5200	/	/
Highest	5240	5240	5230	5240	5230	/	5240	5230	/

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	
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:	
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a-CDD	6Mbps
n(HT20)-CDD	MCS0
n(HT40)-CDD	MCS0
ac(VHT20)-CDD	MCS0
ac(VHT40)-CDD	MCS0
ac(VHT80)-CDD	MCS0
ax(HE20)-CDD	MCS0
ax(HE40)-CDD	MCS0
ax(HE80)-CDD	MCS0

5.3 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC—Registration No.: 381383 Designation Number: CN5029 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. ● IC —Registration No.: 9079A CAB identifier: CN0091 The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing ● NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).
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5.4 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd. Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, sBaoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960

5.5 Description of Support Units

Computer Mode Number: TPC-F123-MT / Displayer Mode Number: KG223Q Mouse Mode Number: KM10 / keyboard Mode Number: MK11

5.6 Deviation from Standards

None.

5.7 Additional Instructions

Test Software	MP_AX
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Output power setting table:

Test Mode	Set Tx Output Power
802.11a-CDD	16
n(HT20)-CDD	16
n(HT40)-CDD	16
ac(VHT20)-CDD	20
ac(VHT40)-CDD	18
ac(VHT80)-CDD	16
ax(HE20)-CDD	18
ax(HE40)-CDD	18
ax(HE80)-CDD	16

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 30, 2021	Nov. 29, 2022
20	Broadband Preampfier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 16, 2022	Oct. 15, 2023
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 16, 2022	Oct. 15, 2023
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 16, 2022	Oct. 15, 2023
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

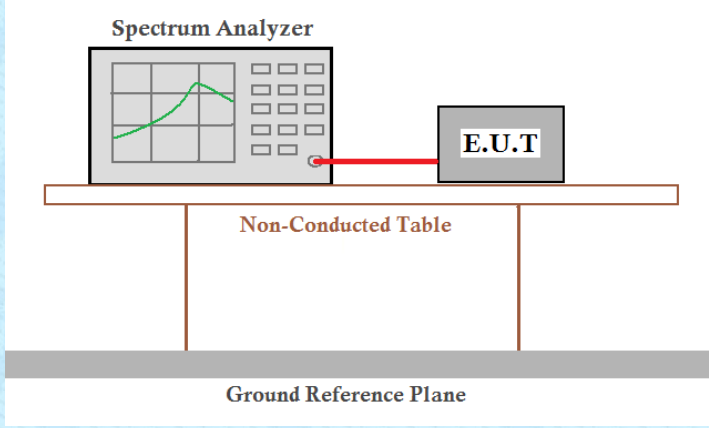
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
<i>15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
<i>The antennas are external antenna, the best case gain of the antennas are 1.67dBi, reference to the appendix II for details</i>	

7.2 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test procedure:	According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11a		802.11a	
		ANT1	ANT2	ANT1	ANT2
36	5180	16.333	16.344	18.23	18.41
40	5200	16.33	16.353	18.06	18.21
48	5240	16.35	16.33	18.37	17.92

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT20)		802.11n(HT20)	
		ANT1	ANT2	ANT1	ANT2
36	5180	17.558	17.506	19.28	19.03
40	5200	17.549	17.542	19.41	19.22
48	5240	17.551	17.537	19.21	19.15

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)		802.11n(HT40)	
		ANT1	ANT2	ANT1	ANT2
38	5190	36.279	36.198	42.48	42
46	5230	36.314	36.168	42.74	43.27

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ac(VHT20)		802.11ac(VHT20)	
		ANT1	ANT2	ANT1	ANT2
36	5180	17.55	17.556	19.11	19.37
40	5200	17.529	17.539	19.16	19.24
48	5240	17.53	17.509	19.29	19.21

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ac(VHT40)		802.11ac(VHT40)	
		ANT1	ANT2	ANT1	ANT2
38	5190	36.211	36.272	42.16	42.20
46	5230	36.397	36.197	41.69	43.17

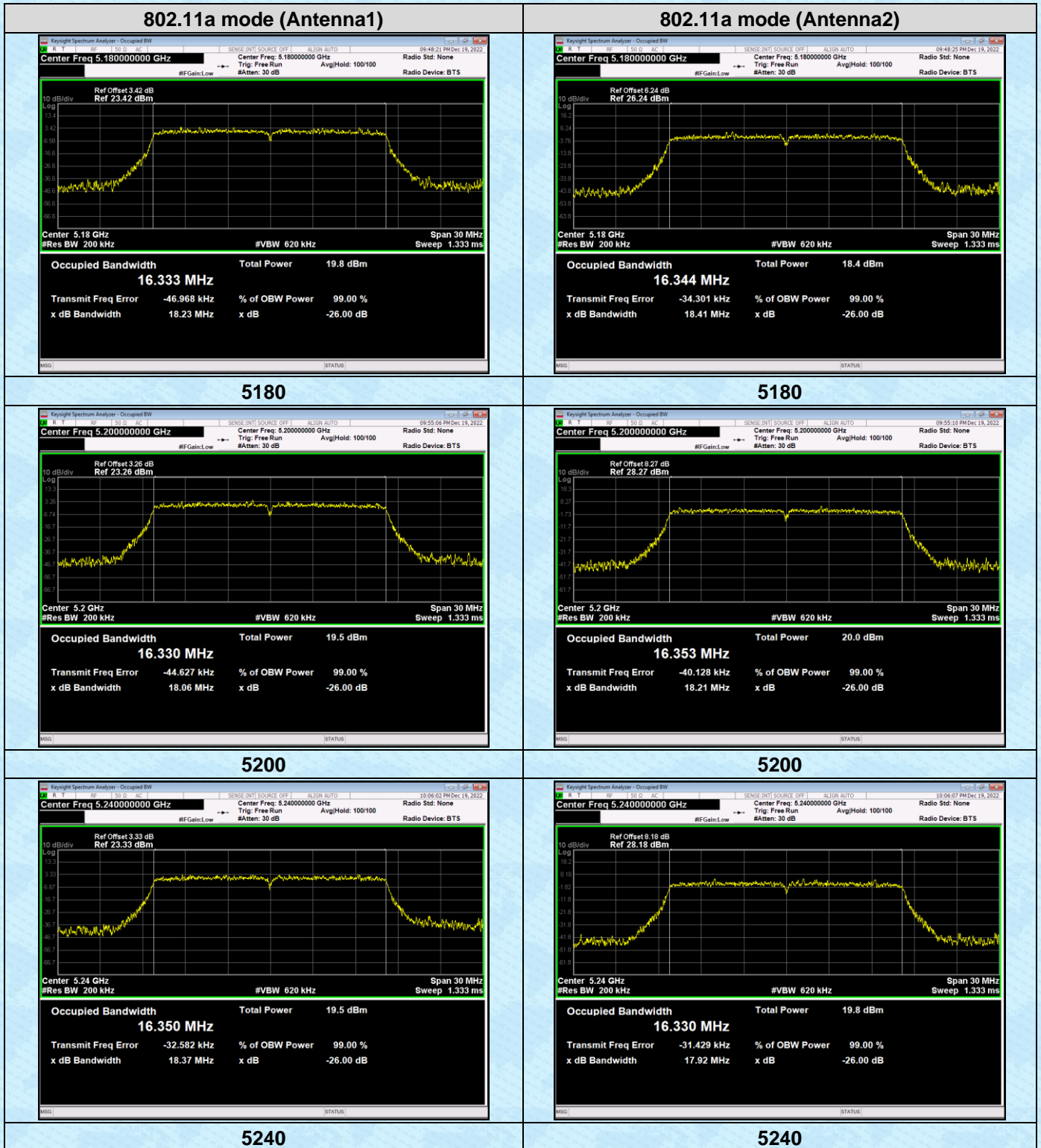
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ac(VHT80)		802.11ac(VHT80)	
		ANT1	ANT2	ANT1	ANT2
42	5210	76.238	75.809	83.53	84.51

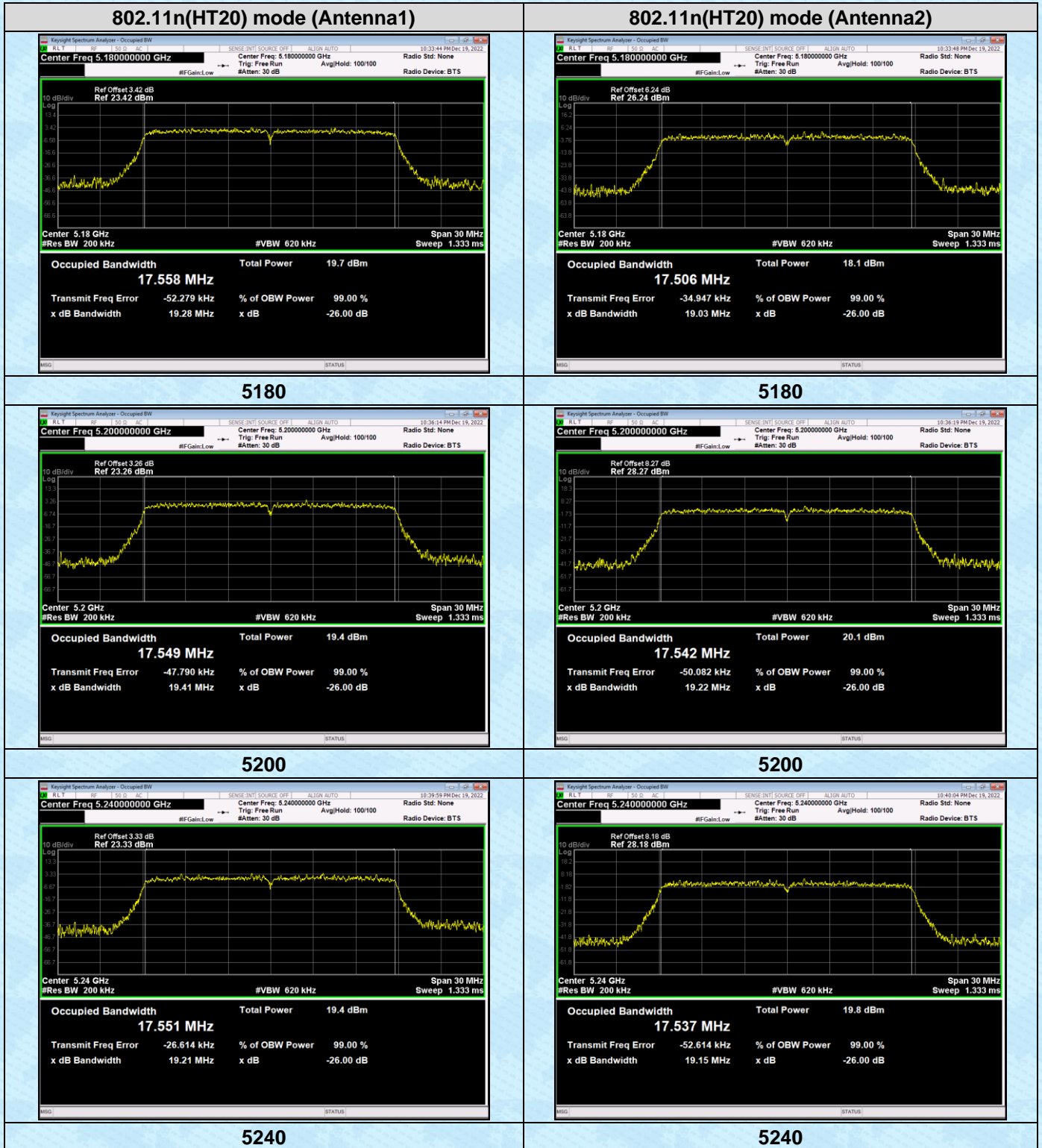
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ax(HE20)		802.11 ax(HE20)	
		ANT1	ANT2	ANT1	ANT2
36	5180	18.838	18.884	19.95	19.92
40	5200	18.875	18.862	20.08	20.04
48	5240	18.838	18.892	20.09	19.86

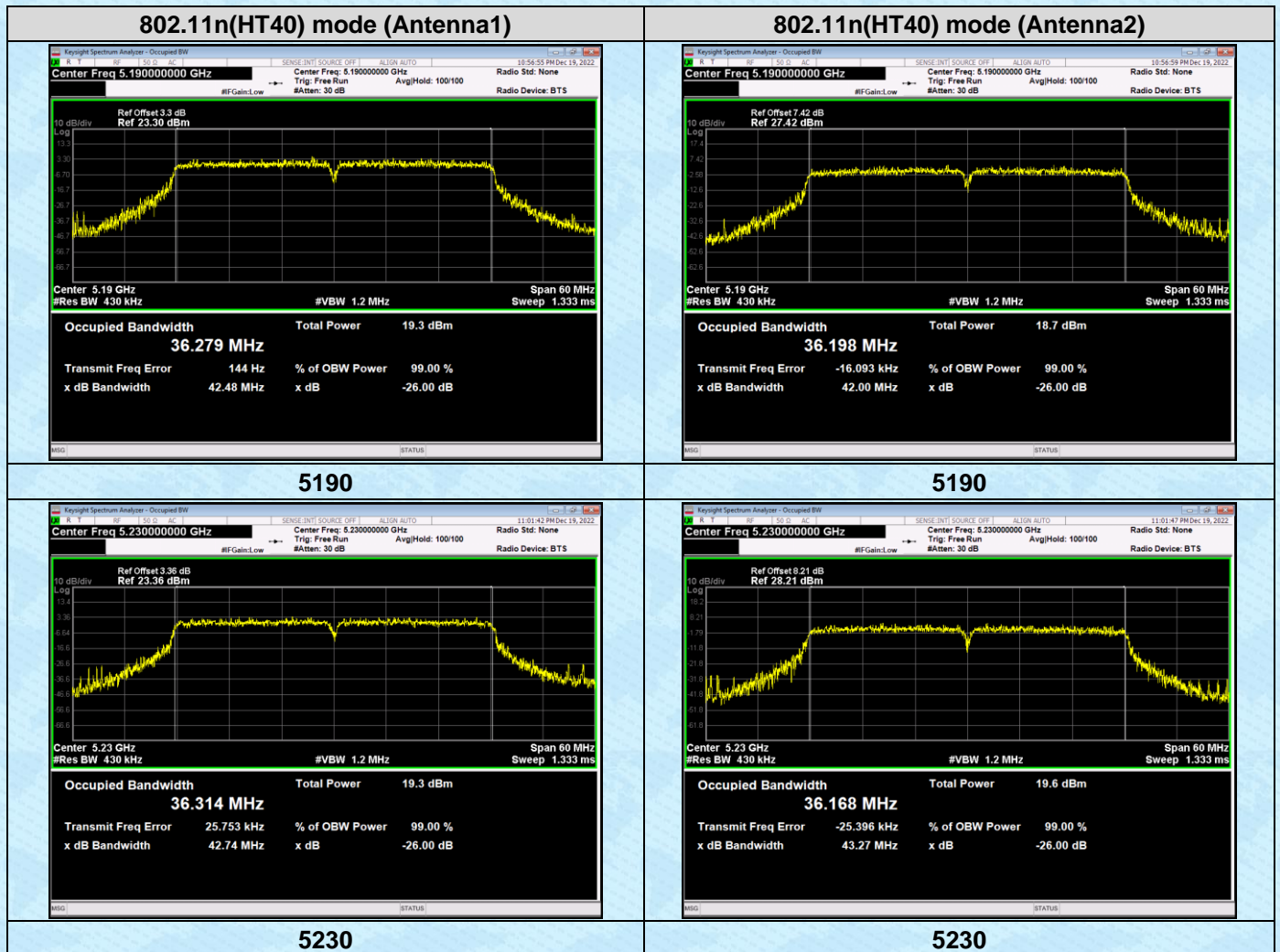
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ax(HE40)		802.11 ax(HE40)	
		ANT1	ANT2	ANT1	ANT2
38	5190	37.738	37.709	41.81	41.76
46	5230	37.724	37.761	42.42	41.96

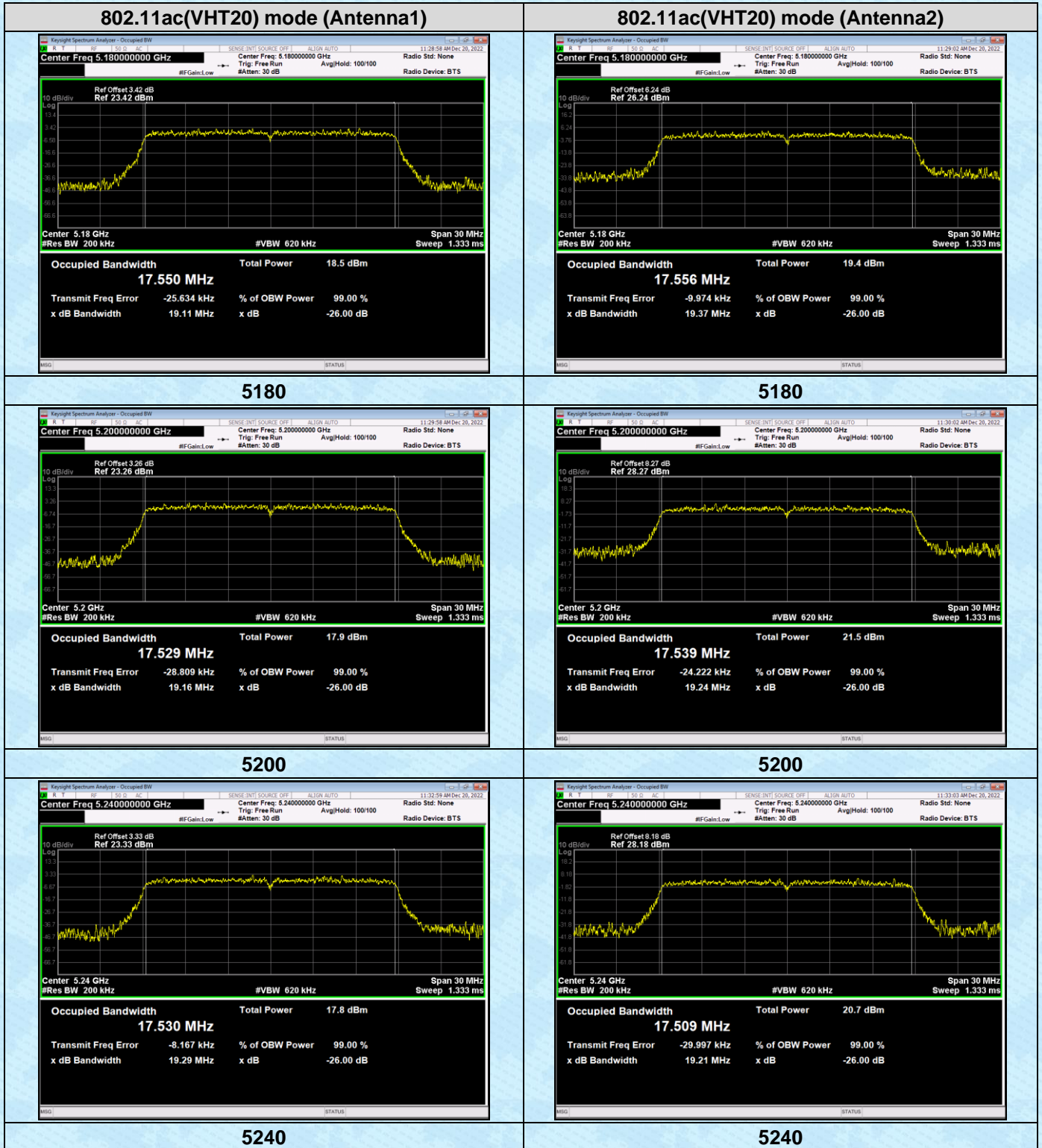
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ax(HE80)		802.11 ax(HE80)	
		ANT1	ANT2	ANT1	ANT2
42	5210	77.395	77.416	79.77	81.56

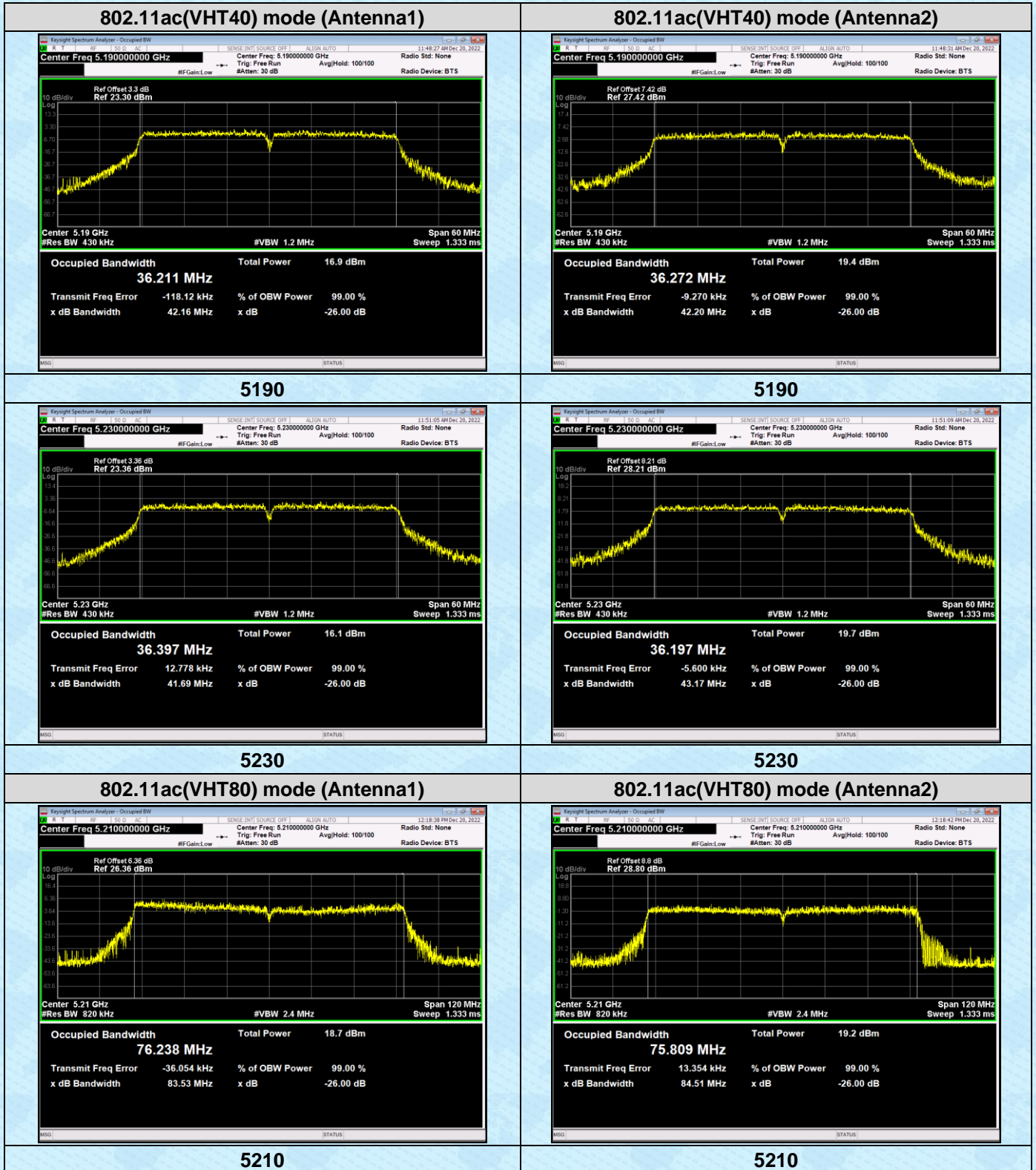
Test plots as followed:

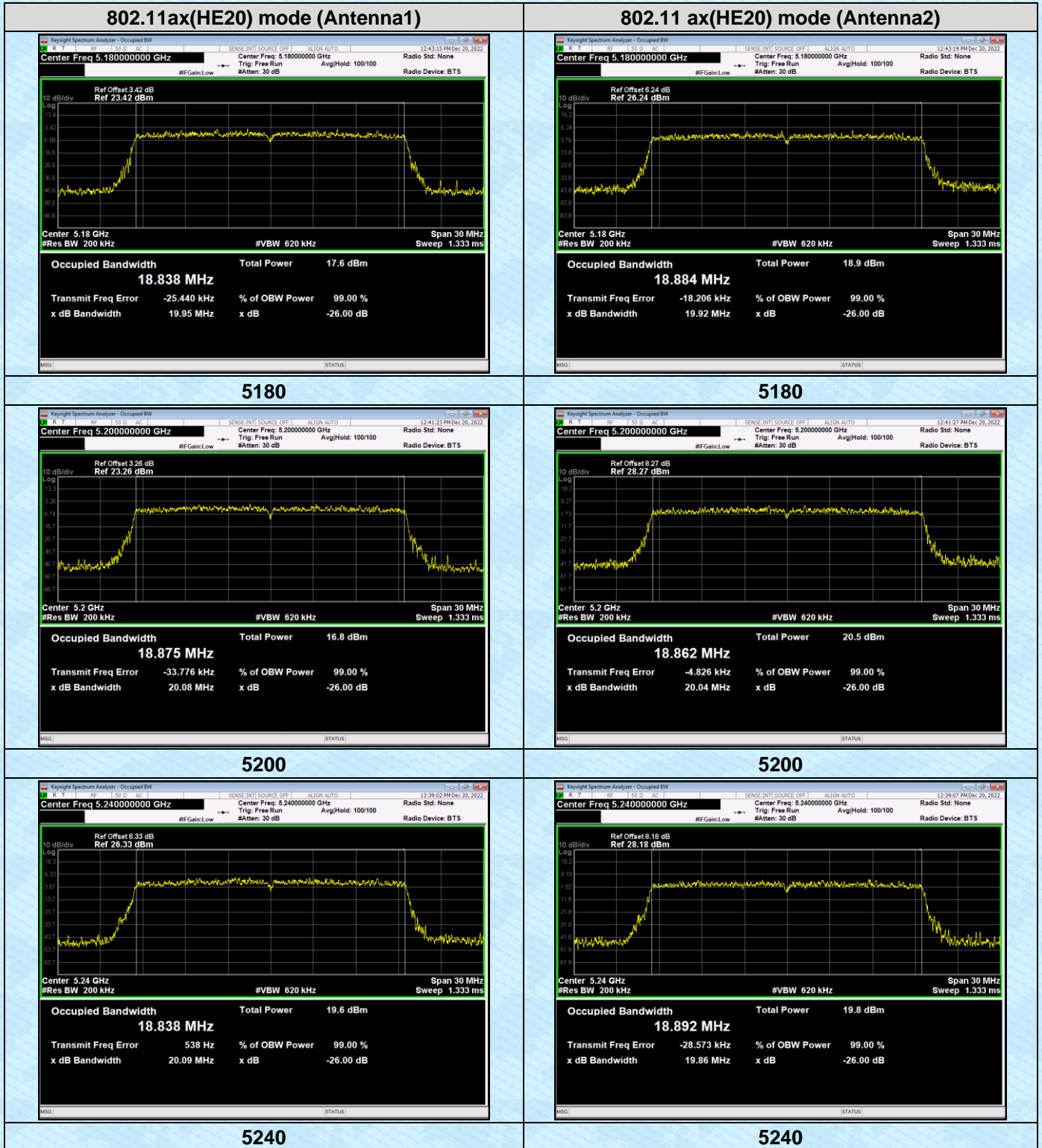


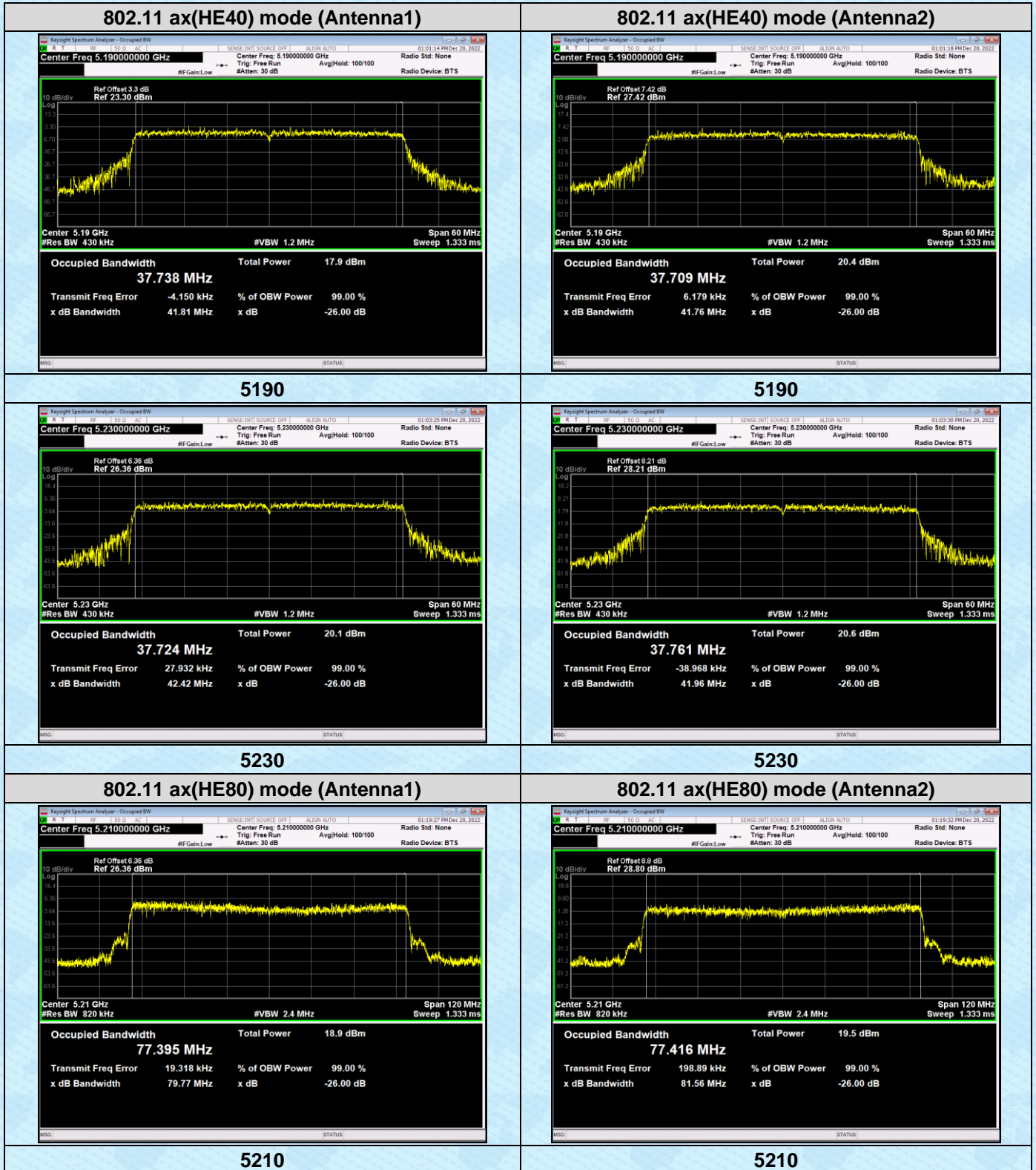




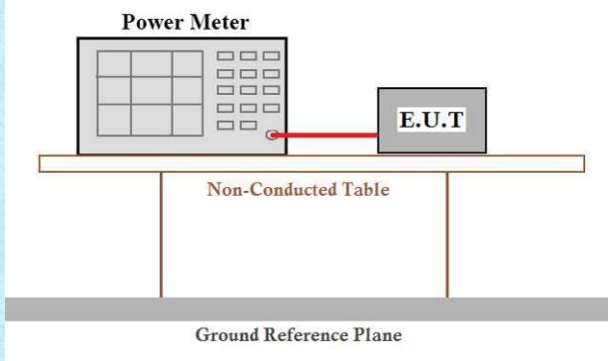








7.3 Average Transmit Power

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤1W(30dBm) for master device
		≤250mW(23.98dBm) for client device
	5250-5350	≤250mW(23.98dBm) for client device or 11dBm+10logB*
	5470-5725	≤250mW(23.98dBm) for client device or 11dBm+10logB*
Remark: *Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.		
Test setup:		
Test procedure:	<p>Measurement using an RF average power meter</p> <ul style="list-style-type: none"> (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied <ul style="list-style-type: none"> a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five. (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B). (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter. (iv) Adjust the measurement in dBm by adding $10 \log(1/x)$ where x is the duty cycle (e.g., $10\log(1/0.25)$ if the duty cycle is 25 percent). 	
Test Instruments:	Refer to section 6 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

Measurement Data

Modulation	Frequency (MHz)	Duty cycle		Duty Factor	
		Antenna1	Antenna2	Antenna1	Antenna2
802.11a	5180	35.25	35.25	4.53	4.53
	5200	35.63	35.63	4.48	4.48
	5240	35.62	35.62	4.48	4.48
802.11n(HT20)	5180	32.13	32.13	4.93	4.93
	5200	32.14	32.14	4.93	4.93
	5240	45.14	45.14	3.45	3.45
802.11n(HT40)	5190	19.25	19.25	7.16	7.16
	5230	19.24	19.24	7.16	7.16
802.11ac(VHT20)	5180	32.1	32.1	4.94	4.94
	5200	31.71	31.71	4.99	4.99
	5240	31.44	31.44	5.03	5.03
802.11ac(VHT40)	5190	19.39	19.39	7.12	7.12
	5230	19.4	19.4	7.12	7.12
802.11ac(VHT80)	5210	10.66	10.66	9.72	9.72
802.11ax(HE20)	5180	28.44	28.44	5.46	5.46
	5200	28.07	28.07	5.52	5.52
	5240	27.95	27.95	5.54	5.54
802.11ax(HE40)	5190	17.49	17.49	7.57	7.57
	5230	17.76	17.76	7.51	7.51
802.11ax(HE80)	5210	10.37	10.37	9.84	9.84

802.11a mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	9.587	9.229	12.422	4.53	14.117	13.759	16.952	24	Pass
40	5200	11.043	10.874	13.97	4.48	15.523	15.354	18.45		
48	5240	10.558	10.741	13.661	4.48	15.038	15.221	18.141		

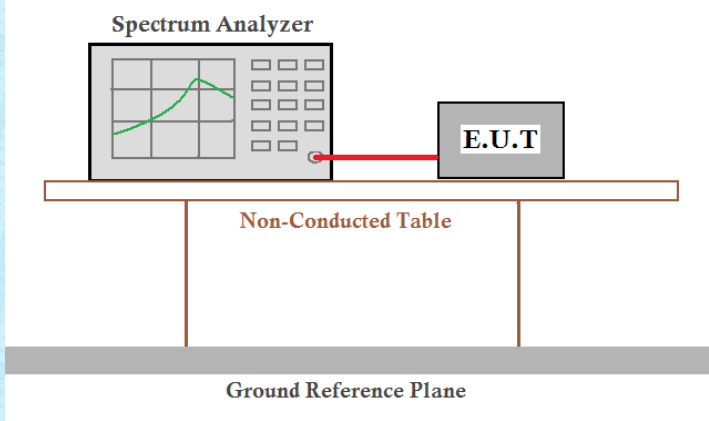
802.11n(HT20) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	9.664	8.246	12.023	4.93	14.594	13.176	16.953	24	Pass
40	5200	9.476	10.226	12.877	4.93	14.406	15.156	17.807		
48	5240	9.812	9.932	12.883	3.45	13.26	13.38	16.33		
802.11n(HT40) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	7.171	6.993	10.093	7.16	14.331	14.153	17.253	24	Pass
46	5230	7.569	8.771	11.222	7.16	14.729	15.931	18.382		
802.11ac(VHT20) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	9.264	9.358	12.322	4.94	14.204	14.298	17.262	24	Pass
40	5200	8.155	11.436	13.109	4.99	13.145	16.426	18.099		
48	5240	7.946	10.711	12.555	5.03	12.976	15.741	17.585		

802.11ac(VHT40) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	5.253	7.718	9.668	7.12	12.373	14.838	16.788	24	Pass
46	5230	4.746	8.154	9.786	7.12	11.866	15.274	16.906		
802.11ac(VHT80) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
42	5210	4.203	5.332	7.814	9.72	13.923	15.052	17.534	24	Pass
802.11ax(HE20) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	6.497	7.95	10.294	5.46	11.957	13.41	15.754	24	Pass
40	5200	5.823	9.464	11.025	5.52	11.343	14.984	16.545		
48	5240	8.997	9.149	12.084	5.54	14.537	14.689	17.624		

802.11ax(HE40) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	5.966	7.188	9.63	7.57	13.536	14.758	17.2	24	Pass
46	5230	7.771	7.928	10.861	7.51	15.281	15.438	18.371		
802.11ax(HE80) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
42	5210	4.521	5.429	8.009	9.84	14.361	15.269	17.849	24	Pass

Note: Output Power = Measured Power + Duty Factor
 Duty Factor = 10 log (1/Duty Cycle)

7.4 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm in 1MHz for master device
		≤11dBm in 1MHz for client device
	5250-5350	≤11dBm in 1MHz for client device
	5470-5725	≤11dBm in 1MHz for client device
Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.		
Test setup:		
Test procedure:	<ol style="list-style-type: none"> 1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: <ol style="list-style-type: none"> a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD. 	
Test Instruments:	Refer to section 6 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

Measurement Data Measurement Data

Modulation	Frequency (MHz)	Duty cycle		Duty Factor	
		Antenna1	Antenna2	Antenna1	Antenna2
802.11a	5180	35.25	35.25	4.53	4.53
	5200	35.63	35.63	4.48	4.48
	5240	35.62	35.62	4.48	4.48
802.11n(HT20)	5180	32.13	32.13	4.93	4.93
	5200	32.14	32.14	4.93	4.93
	5240	45.14	45.14	3.45	3.45
802.11n(HT40)	5190	19.25	19.25	7.16	7.16
	5230	19.24	19.24	7.16	7.16
802.11ac(VHT20)	5180	32.1	32.1	4.94	4.94
	5200	31.71	31.71	4.99	4.99
	5240	31.44	31.44	5.03	5.03
802.11ac(VHT40)	5190	19.39	19.39	7.12	7.12
	5230	19.4	19.4	7.12	7.12
802.11ac(VHT80)	5210	10.66	10.66	9.72	9.72
802.11ax(HE20)	5180	28.44	28.44	5.46	5.46
	5200	28.07	28.07	5.52	5.52
	5240	27.95	27.95	5.54	5.54
802.11ax(HE40)	5190	17.49	17.49	7.57	7.57
	5230	17.76	17.76	7.51	7.51
802.11ax(HE80)	5210	10.37	10.37	9.84	9.84

802.11a mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	0.503	-0.303	3.129	4.53	5.03	4.227	7.659	11	Pass
40	5200	1.539	0.589	4.1	4.48	6.02	5.069	8.58	11	Pass
48	5240	-0.207	0.41	3.123	4.48	4.27	4.89	7.603	11	Pass
802.11n(HT20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	4.189	1.085	5.919	4.93	9.12	6.015	10.849	11	Pass
40	5200	0.404	0.153	3.291	4.93	5.33	5.083	8.221	11	Pass
48	5240	3.611	4.171	6.91	3.45	7.06	7.621	10.36	11	Pass
802.11n(HT40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	-2.56	-4.022	-0.219	7.16	4.60	3.138	6.941	11	Pass
46	5230	-2.669	-2.399	0.478	7.16	4.49	4.761	7.638	11	Pass

802.11ac(VHT20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	1.912	3.215	5.622	4.94	6.85	8.155	10.562	11	Pass
40	5200	-1.201	2.392	3.967	4.99	3.79	7.382	8.957	11	Pass
48	5240	0.471	3.596	5.319	5.03	5.50	8.626	10.349	11	Pass
802.11ac(VHT40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	-2.074	-0.283	1.923	7.12	5.05	6.837	9.043	11	Pass
46	5230	-5.741	-1.956	-0.438	7.12	1.38	5.164	6.682	11	Pass
802.11ac(VHT80) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
42	5210	-7.231	-9.245	-5.112	9.72	2.49	0.475	4.608	11	Pass

802.11ax(HE20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	-2.909	-1.845	0.666	5.46	2.55	3.615	6.126	11	Pass
40	5200	-3.496	0.087	1.665	5.52	2.02	5.607	7.185	11	Pass
48	5240	0.051	-0.638	2.73	5.54	5.59	4.902	8.27	11	Pass
802.11 ax(HE40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
38	5190	-5.741	-4.193	-1.888	7.57	1.83	3.377	5.682	11	Pass
46	5230	-3.922	-3.969	-0.935	7.51	3.59	3.541	6.575	11	Pass
802.11 ax(HE80) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
42	5210	-9.361	-7.259	-5.174	9.84	0.48	2.581	4.666	11	Pass

Note: Output Power = Measured Power + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

Test plots as followed:

