TEST REPORT

Product Name:	TV
FCC ID:	2A9L7TV75-US3B
Trademark:	GAZER
Model Number:	TV75-US3B, TV75-US3S, TV75-US3W, TV75-US3G
Prepared For:	Gazer Limited
Address:	17 HANOVER SQUARE, LONDON, UNITED KINGDOM, W1S 1BN
Manufacturer:	Gazer Limited
Address:	17 HANOVER SQUARE, LONDON, UNITED KINGDOM, W1S 1BN
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
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Sample Received Date:	Oct. 29, 2022
Sample tested Date:	Oct. 29, 2022 to Nov.11, 2022
Issue Date:	Nov.11, 2022
Report No.:	CTB221111033RFX
Test Standards	47 CFR Part 15 Subpart E
Test Results	PASS
Remark:	This is WIFI-5GHz band radio test report. Wireless conduction data reference FCC ID: 2A9L7TV65-US3B

Compiled by:	Reviewed by:	Approved by:
Chen Zheng	Arron Liu	Bin Mei / Director

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "*" indicates the testing items were fulfilled by subcontracted lab. "#" indicates the items are not in CNAS accreditation scope.

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(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB221111033RFX	Nov.11, 2022	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.407 (b)(6)	ANSI C63.10-2013	PASS
Radiated Spurious emissions	47 CFR Part 15 Subpart E Section 15.205/15.407(b)	KDB789033	PASS
Band edge	47 CFR Part 15 Subpart E Section 15.205/15.407(b)	KDB789033	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart E Section 15.407 (a)	KDB789033	PASS
Emission Bandwidth & Occupied Bandwidth	47 CFR Part 15 Subpart E Section 15.407 (a)(e)	KDB789033	PASS
Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)	KDB789033	PASS
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	KDB789033	PASS
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (b)	47 CFR Part 15 Subpart E	PASS
Antenna Requirement	47 CFR Part 15 Subpart E Section 15.203	/	PASS

Remark:
Test according to ANSI C63.10-2013.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	U=±54.3Hz
Adjacent channel power	U=±1.3dB
Conducted Adjacent channel power	U=±1.38dB
Conducted output power Above 1G	U=±1.0dB
Conducted output power below 1G	U=±0.9dB
Power Spectral Density , Conduction	U=±1.0dB
Conduction spurious emissions	U=±2.8dB
Out of band emission	U=±54Hz
3m camber Radiated spurious emission(9KHz-30MHz)	U=±4.8dB
3m camber Radiated spurious emission(30MHz-1GHz)	U=±4.3dB
3m chamber Radiated spurious emission(1GHz-18GHz)	U=±4.5dB
3m chamber Radiated spurious emission(18GHz-40GHz)	U=±3.4dB
humidity uncertainty	U=±5.3%
Temperature uncertainty	U=±0.59℃
Supply voltages	U=±3%
Time	U=±5%
Conducted emission(150K-30MHz)	3.2dB

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	TV75-US3B, TV75-US3S, TV75-US3W, TV75-US3G
Model Description:	All the model are the same circuit and RF module, only for model name. Test sample model: TV75-US3B
Wi-Fi Specification:	IEEE 802.11a/b/g/n/ac
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	IEEE 802.11a/n/ac(20M): 5180MHz ~5240 MHz / 4 channel IEEE 802.11n/ac(40M): 5190MHz ~5230 MHz / 2 channel IEEE 802.11ac(80M): 5210MHz / 1 channel IEEE 802.11a/n/ac(20M): 5260MHz ~5320 MHz / 4 channel IEEE802.11n/ac(40M): 5270MHz ~5310 MHz / 2 channel IEEE802.11ac(80M): 5290 MHz / 1 channel IEEE 802.11a/n/ac(20M): 5500MHz ~5700 MHz / 11 channel IEEE802.11n/ac(40M): 5510MHz ~5670 MHz / 5 channel IEEE802.11ac(80M): 5530MHz ~5610 MHz / 2 channel IEEE 802.11a/n/ac(20M): 5745MHz ~5825MHz / 5 channel IEEE 802.11n/ac(40M): 5755MHz ~5795MHz / 2 channel IEEE 802.11ac(80M): 5775MHz / 1 channel
Max. RF output power:	WiFi (5G): 17.838dBm
Type of Modulation:	WiFi (5G): DSSS, OFDM, CCK
Antenna installation:	WiFi (5G): PIFA antenna
Antenna Gain:	ANT1:5.2G:2.88dBi, ANT2: 2.88dBi ANT1:5.3G:3.13dBi, ANT2: 3.13dBi ANT1:5.6G:3.36dBi, ANT2: 3.36dBi ANT1:5.8G:3.14dBi, ANT2: 3.14dBi
Ratings:	AC 120V~240V 50/60Hz

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1	Router	Huawei	AX2 Pro	/	/
2	Laptop	DELL	Vostro 5490	N/A	N/A

Notes:

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.

4.4 Channel List

For 802.11a/n/ac(20M) Operation in the 5180MHz ~5240 MHz band			
Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz
For 802.11a/n/ac(20M) Operation in the 5260MHz ~5320 MHz band			
Channel	Frequency	Channel	Frequency
52	5260MHz	60	5300MHz
56	5280MHz	64	5320MHz
For 802.11a/n/ac(20M) Operation in the 5500MHz ~5700 MHz band			
Channel	Frequency	Channel	Frequency
100	5500MHz	124	5620 MHz
104	5520MHz	128	5640 MHz
108	5540MHz	132	5660 MHz
112	5560MHz	136	5680MHz
116	5580MHz	140	5700MHz
120	5600 MHz		
For 802.11a/n/ac(20M) Operation in the 5745MHz ~5825 MHz band			
Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	NA	NA

For 802.11n/ac(40M) Operation in the 5190MHz ~5230 MHz band			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz
For 802.11n/ac(40M) Operation in the 5270MHz ~5310 MHz band			
Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz
For 802.11n/ac(40M) Operation in the 5510MHz ~5670 MHz band			
Channel	Frequency	Channel	Frequency
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		
For 802.11n/ac(40M) Operation in the 5755MHz ~5795 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac(80M) Operation in the 5210 MHz band			
Channel	Frequency	Channel	Frequency
42	5210MHz	NA	NA
For 802.11ac(80M) Operation in the5290 MHz band			
Channel	Frequency	Channel	Frequency
58	5290MHz	NA	NA
For 802.11ac(80M) Operation in the 5530MHz ~5610 MHz band			
Channel	Frequency	Channel	Frequency
106	5530MHz	122	5610 MHz
For 802.11ac(80M) Operation in the 5775 MHz band			
Channel	Frequency	NA	NA
155	5775MHz	NA	NA

NOTE: Dutycycle>98%.

Test mode	rate
802.11a	54M
802.11n	500M
802.11/ac	500M

4.5 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5180MHz ~5240 MHz	Channel 36	Channel 40	Channel 48
		5180MHz	5200MHz	5240MHz
802.11n/ac(40M)		Channel 38	N/A	Channel 46
		5190MHz	N/A	5230MHz
802.11ac(80M)		N/A	Channel 42	N/A
		N/A	5210MHz	N/A
802.11a/n/ac(20M)	5260MHz ~5320 MHz	Channel 52	Channel 56	Channel 64
		5260MHz	5280MHz	5320MHz
802.11n/ac(40M)		Channel 54	N/A	Channel 62
		5270MHz	N/A	5310MHz
802.11ac(80M)		N/A	Channel 58	N/A
		N/A	5290MHz	N/A
802.11a/n/ac(20M)	5500MHz ~5700 MHz	Channel 100	Channel 116	Channel 140
		5500MHz	5580MHz	5700MHz
802.11n/ac(40M)		Channel 102	N/A	Channel 134
		5510MHz	N/A	5670MHz
802.11ac(80M)		N/A	Channel 106	N/A
		N/A	5530MHz	N/A
802.11a/n/ac(20M)	5745MHz ~5825MHz	Channel 149	Channel 157	Channel 165
		5745MHz	5785MHz	5825MHz
802.11n/ac(40M)		Channel 151	N/A	Channel 159
		5755MHz	N/A	5795MHz
802.11ac(80M)		N/A	Channel 155	N/A
		N/A	5775MHz	N/A

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(AC):NV	120V
Normal Temperature(℃):NT	23
Low Temperature(℃):LT	0
High Temperature(℃):HT	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

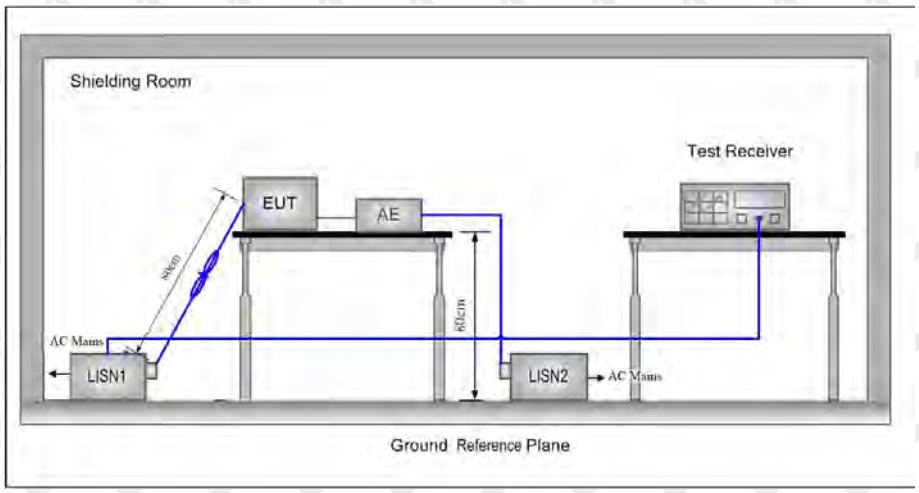
5.2 Test Instrument Used

Item	Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	2023.07.19
2	Power Sensor	Agilent	U2021XA	MY56120032	2023.07.19
3	Power Sensor	Agilent	U2021XA	MY56120034	2023.07.19
4	Communication test set	R&S	CMW500	108058	2023.07.19
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	2023.07.19
6	Signal Generator	Agilent	N5181A	MY50140365	2023.07.19
7	Vector signal generator	Agilent	N5182A	MY47420195	2023.07.19
8	Communication test set	Agilent	E5515C	MY50102567	2023.07.19
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	2023.07.19
10	5 GHz Filter	Shenxiang	MSF5150-5850 MS-1155	20181015001	2023.07.19
11	Filter	Xingbo	XBLBQ-DZA120	190821-1-1	2023.07.19
12	BT&WI-FI Automatic test software	Micowave	MTS8000	Ver. 2.0.0.0	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	2023.10.30
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	2023.07.19
15	234G Automatic test software	Micowave	MTS8200	Ver. 2.0.0.0	/
16	966 chamber	C.R.T.	966	/	2024.08.11
17	Receiver	R&S	ESPI	100362	2023.07.19
18	Amplifier	HP	8447E	2945A02747	2023.07.19
19	Amplifier	Agilent	8449B	3008A01838	2023.07.19
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	2023.07.22

21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	2023.07.22
22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	2023.07.23
24	loop antenna	ZHINAN	ZN30900A	GTS534	/
25	40G Horn antenna	A/H/System	SAS-574	588	2024.10.30
26	Amplifier	AEROFLEX	Aeroflex	097	2024.10.30

6. AC POWER LINE CONDUCTED EMISSION

6.1 Block Diagram Of Test Setup



6.2 Limit

Table 4 – AC power-line conducted emissions limits

Frequency (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56[Note 1]	56 to 46[Note 1]
0.5 – 5	56	46
5 – 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

* Decreasing linearly with the logarithm of the frequency

6.3 Test procedure

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

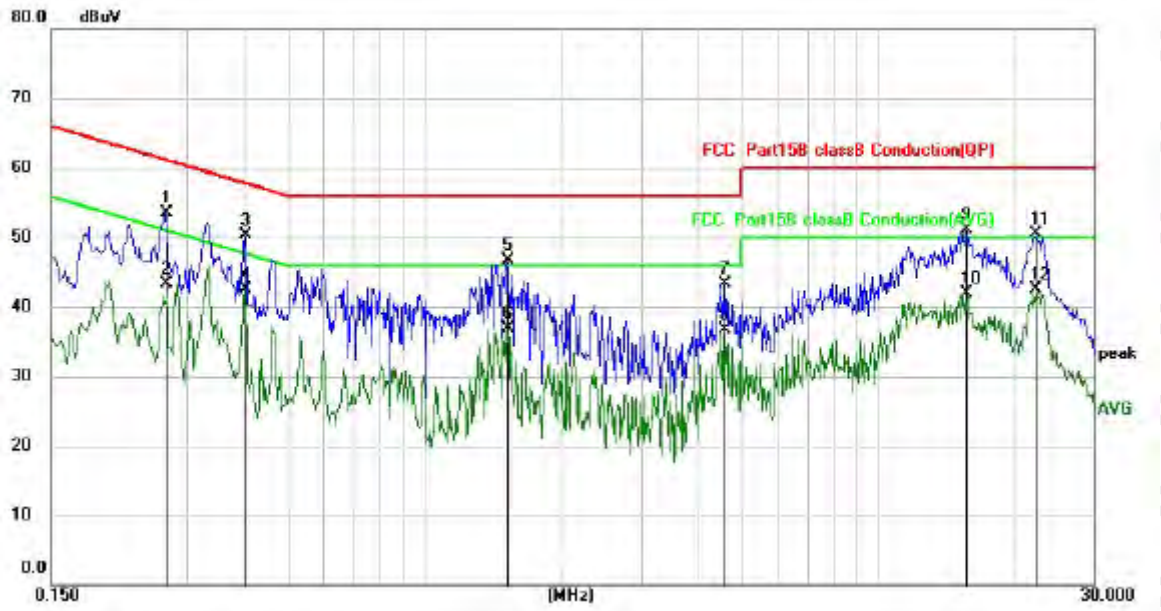
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane.

This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

5) 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 on conducted measurement.

6.4 Test Result

L: Worst case-802.11a20 (low channel)

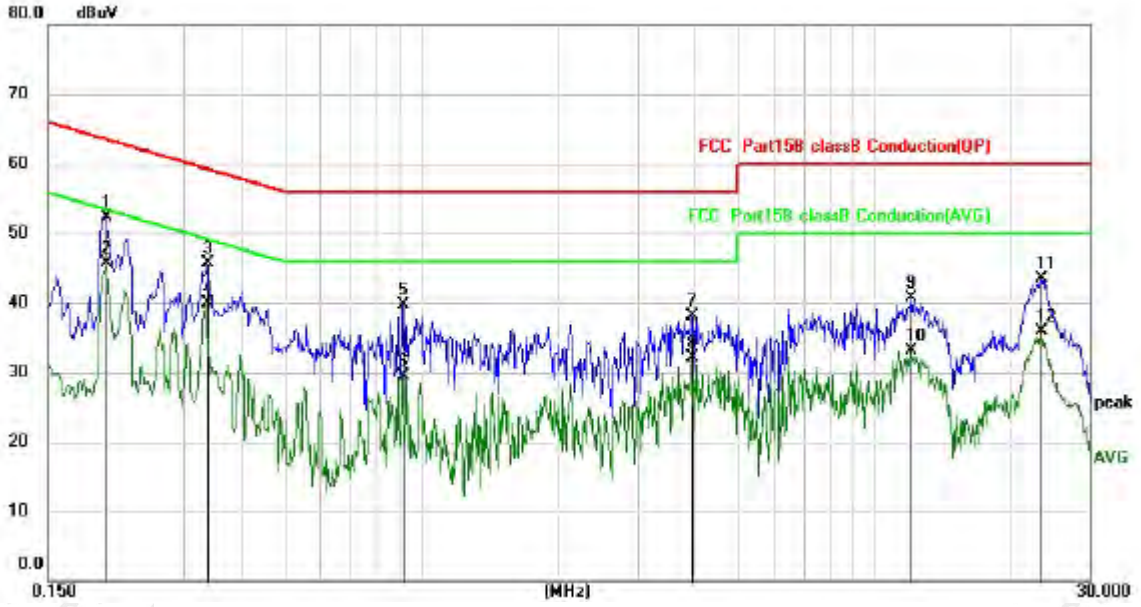


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2700	43.44	10.00	53.44	61.12	-7.68	QP
2		0.2700	33.22	10.00	43.22	51.12	-7.90	AVG
3		0.4020	40.30	9.98	50.28	57.81	-7.53	QP
4	*	0.4020	32.50	9.98	42.48	47.81	-5.33	AVG
5		1.5339	36.63	10.01	46.64	56.00	-9.36	QP
6		1.5339	26.85	10.01	36.86	46.00	-9.14	AVG
7		4.5857	33.19	10.15	43.34	56.00	-12.66	QP
8		4.5857	26.57	10.15	36.72	46.00	-9.28	AVG
9		15.6935	40.66	10.48	51.14	60.00	-8.86	QP
10		15.6935	31.33	10.48	41.81	50.00	-8.19	AVG
11		22.3536	39.86	10.59	50.45	60.00	-9.55	QP
12		22.3536	31.99	10.59	42.58	50.00	-7.42	AVG

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

N: Worst case-802.11a20 (low channel)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2020	42.28	10.00	52.28	63.53	-11.25	QP
2	*	0.2020	35.69	10.00	45.69	53.53	-7.84	AVG
3		0.3379	35.68	9.99	45.67	59.25	-13.58	QP
4		0.3379	29.85	9.99	39.84	49.25	-9.41	AVG
5		0.9140	29.74	9.98	39.72	56.00	-16.28	QP
6		0.9140	19.59	9.98	29.57	46.00	-16.43	AVG
7		3.9580	28.03	10.12	38.15	56.00	-17.85	QP
8		3.9580	22.04	10.12	32.16	46.00	-13.84	AVG
9		12.0975	30.21	10.40	40.61	60.00	-19.39	QP
10		12.0975	22.78	10.40	33.18	50.00	-16.82	AVG
11		23.4054	32.88	10.60	43.48	60.00	-16.52	QP
12		23.4054	25.39	10.60	35.99	50.00	-14.01	AVG

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

Remark:

1. Factor = Cable loss + LISN factor, Margin = Limit – Level
2. All modes were tested at AC 120V and 240V, only the worst result of AC 120V 60Hz was reported.
3. All the test modes completed for test. Only the worst result of was reported.

7. RADIATED SPURIOUS EMISSIONS

7.1 Block Diagram Of Test Setup

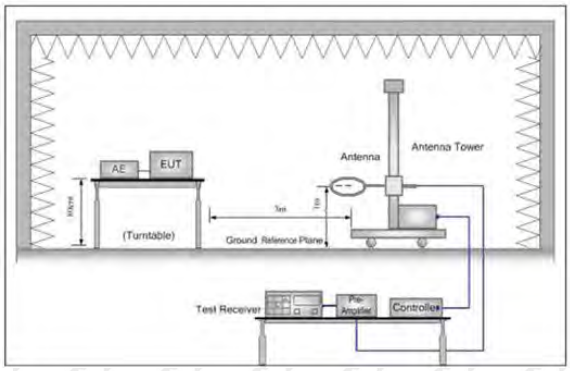


Figure 1. Below 30MHz

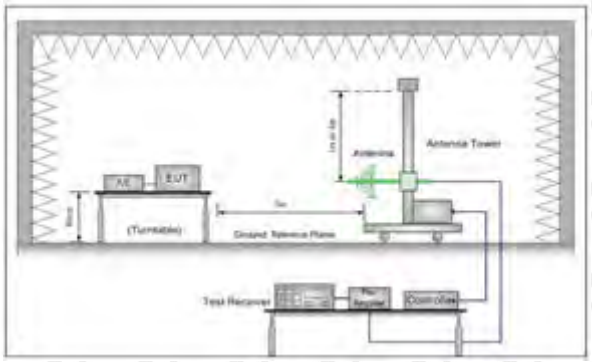


Figure 2. 30MHz to 1GHz

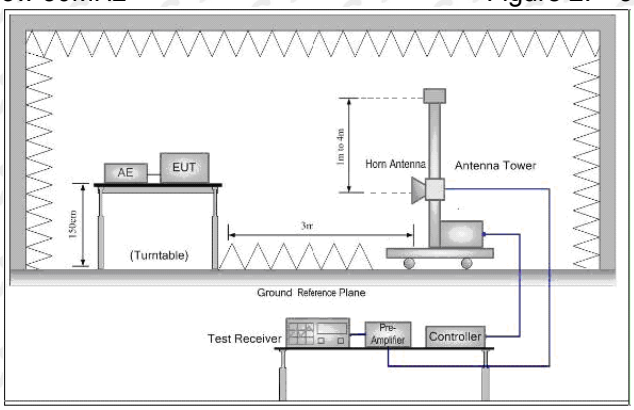


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

Frequency	Field strength (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	20log 2400/F (kHz) + 80	Quasi-peak	3
0.490MHz-1.705MHz	20log 24000/F (kHz) + 40	Quasi-peak	3
1.705MHz-30MHz	20log 30 + 40	Quasi-peak	3
30MHz-88MHz	40.0	Quasi-peak	3
88MHz-216MHz	43.5	Quasi-peak	3
216MHz-960MHz	46.0	Quasi-peak	3
960MHz-1GHz	54.0	Quasi-peak	3
Above 1GHz	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

If radiated measurements are performed, field strength is then converted to EIRP as follows:
(i) EIRP = ((E*d)^2) / 30
where:
• E is the field strength in V/m;
• d is the measurement distance in meters;
• EIRP is the equivalent isotropically radiated power in watts.
(ii) Working in dB units, the above equation is equivalent to:
EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
(iii) Or, if d is 3 meters:
EIRP[dBm] = E[dBμV/m] - 95.2

7.3 Test procedure

Below 1GHz test procedure as below:
a.The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f.If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Above 1GHz test procedure as below:
g.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h.Test the EUT in the lowest channel ,the middle channel ,the Highest channel
j.Repeat above procedures until all frequencies measured was complete.

Receiver set:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

7.4 Test Result

30MHz-1GHzTest Results:
Modulation : 802.11a (the worst data)
Test Channel : 5780MHz
Antenna polarity: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		38.0114	30.53	-5.75	24.78	40.00	-15.22	QP
2		53.9763	26.96	-5.85	21.11	40.00	-18.89	QP
3		109.7959	37.63	-8.00	29.63	43.50	-13.87	QP
4		239.5669	34.02	-5.80	28.22	46.00	-17.78	QP
5		590.9737	27.58	2.40	29.98	46.00	-16.02	QP
6	*	803.1933	27.06	6.04	33.10	46.00	-12.90	QP

Antenna polarity: V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		38.0114	30.53	-5.75	24.78	40.00	-15.22	QP
2		53.9763	26.96	-5.85	21.11	40.00	-18.89	QP
3		109.7959	37.63	-8.00	29.63	43.50	-13.87	QP
4		239.5669	34.02	-5.80	28.22	46.00	-17.78	QP
5		590.9737	27.58	2.40	29.98	46.00	-16.02	QP
6	*	803.1933	27.06	6.04	33.10	46.00	-12.90	QP

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

1. The margin of 9K-30MH measurement exceeds 20dB, so the test chart is not included. Test Mode: 802.11a20 (the worst)

Radiated Spurious Emission (Above 1GHz):

ANT 1+ANT2

Modulation : 802.11(a) (the worst data)

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5180MHz									
10360	40.34	16.39	56.73	74	-17.27	PK	1.49	23	H
10360	26.53	16.39	42.92	54	-11.08	AV	1.32	81	H
10360	40.53	16.39	56.92	74	-17.08	PK	1.55	315	V
10360	25.41	16.39	41.80	54	-12.20	AV	1.26	30	V
Channel:5240MHz									
10480	40.34	16.11	56.45	74	-17.55	PK	1.65	290	H
10480	27.77	16.11	43.88	54	-10.12	AV	1.89	133	H
10480	40.19	16.11	56.30	74	-17.70	PK	1.85	32	V
10480	26.83	16.11	42.94	54	-11.06	AV	1.59	212	V
Channel:5260MHz									
10520	41.76	16.39	58.15	74	-15.85	PK	1.12	165	H
10520	27.88	16.39	44.27	54	-9.73	AV	1.27	140	H
10520	39.40	16.39	55.79	74	-18.21	PK	1.40	218	V
10520	26.81	16.39	43.20	54	-10.80	AV	1.24	290	V
Channel:5320MHz									
10640	39.64	16.39	56.03	74	-17.97	PK	1.28	285	H
10640	25.16	16.39	41.55	54	-12.45	AV	1.22	320	H
10640	39.36	16.39	55.75	74	-18.25	PK	1.43	355	V
10640	26.84	16.39	43.23	54	-10.77	AV	1.15	89	V
Channel:5500MHz									
11000	41.16	16.39	57.55	74	-16.45	PK	1.42	184	H
11000	25.73	16.39	42.12	54	-11.88	AV	1.46	247	H
11000	40.60	16.39	56.99	74	-17.01	PK	1.17	88	V
11000	25.95	16.39	42.34	54	-11.66	AV	1.41	41	V

Channel:5700MHz									
11400	39.43	16.39	55.82	74	-18.18	PK	1.18	223	H
11400	26.77	16.39	43.16	54	-10.84	AV	1.22	357	H
11400	39.96	16.39	56.35	74	-17.65	PK	1.38	187	V
11400	25.81	16.39	42.20	54	-11.80	AV	1.14	229	V
Channel:5745MHz									
11490	40.45	17.46	57.91	74	-16.09	PK	1.30	348	H
11490	27.80	17.46	45.26	54	-8.74	AV	1.37	9	H
11490	39.80	17.46	57.26	74	-16.74	PK	1.20	69	V
11490	25.51	17.46	42.97	54	-11.03	AV	1.63	207	V
Channel:5825MHz									
11650	41.37	17.57	58.94	74	-15.06	PK	1.71	197	H
11650	26.33	17.57	43.90	54	-10.10	AV	1.22	5	H
11650	39.27	17.57	56.84	74	-17.16	PK	1.15	17	V
11650	25.91	17.57	43.48	54	-10.52	AV	1.55	30	V

Modulation : 802.11(n40) (the worst data)

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5190MHz									
10380	40.39	16.34	56.73	74	-17.27	PK	1.49	236	H
10380	26.74	16.34	43.08	54	-10.92	AV	1.36	188	H
10380	39.97	16.34	56.31	74	-17.69	PK	1.84	205	V
10380	25.45	16.34	41.79	54	-12.21	AV	1.30	96	V
Channel:5230MHz									
10460	41.73	16.15	57.88	74	-16.12	PK	1.41	91	H
10460	25.58	16.15	41.73	54	-12.27	AV	1.25	336	H
10460	41.93	16.15	58.08	74	-15.92	PK	1.40	218	V
10460	27.42	16.15	43.57	54	-10.43	AV	1.50	247	V
Channel:5270MHz									
10540	39.40	16.34	55.74	74	-18.26	PK	1.77	259	H
10540	27.98	16.34	44.32	54	-9.68	AV	1.21	59	H
10540	39.78	16.34	56.12	74	-17.88	PK	1.65	245	V
10540	27.04	16.34	43.38	54	-10.62	AV	1.55	343	V
Channel:5310MHz									
10620	39.50	16.34	55.84	74	-18.16	PK	1.26	30	H
10620	26.33	16.34	42.67	54	-11.33	AV	1.57	95	H
10620	41.34	16.34	57.68	74	-16.32	PK	1.28	47	V
10620	25.82	16.34	42.16	54	-11.84	AV	1.68	49	V
Channel:5510MHz									
11020	40.71	16.34	57.05	74	-16.95	PK	1.23	152	H
11020	25.66	16.34	42.00	54	-12.00	AV	1.11	33	H
11020	41.18	16.34	57.52	74	-16.48	PK	1.18	360	V
11020	25.32	16.34	41.66	54	-12.34	AV	1.24	294	V
Channel:5670MHz									
11340	41.41	16.34	57.75	74	-16.25	PK	1.08	197	H
11340	26.01	16.34	42.35	54	-11.65	AV	1.60	306	H
11340	40.26	16.34	56.60	74	-17.40	PK	1.53	166	V
11340	27.26	16.34	43.60	54	-10.40	AV	1.71	317	V

Channel:5755MHz									
11510	40.98	17.49	58.47	74	-15.53	PK	1.25	309	H
11510	25.09	17.49	42.58	54	-11.42	AV	1.79	280	H
11510	39.18	17.49	56.67	74	-17.33	PK	1.51	360	V
11510	25.01	17.49	42.50	54	-11.50	AV	1.14	111	V
Channel:5795MHz									
11590	40.06	17.52	57.58	74	-18.08	PK	1.78	53	H
11590	27.54	17.52	45.06	54	-16.42	AV	1.24	117	H
11590	39.50	17.52	57.02	74	-16.98	PK	1.15	206	V
11590	25.91	17.52	43.43	54	-10.57	AV	1.05	78	V

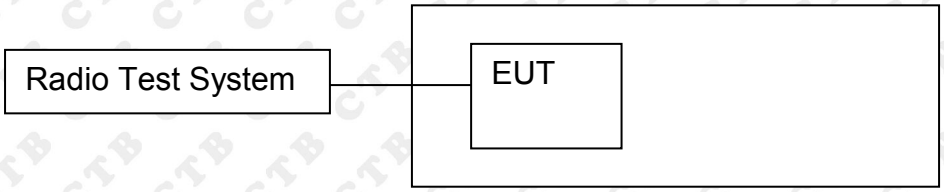
Modulation : 802.11(VH80) (the worst data)

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5210MHz									
10420	40.51	16.25	56.76	74	-17.24	PK	1.82	172	H
10420	27.60	16.25	43.85	54	-10.15	AV	1.59	328	H
10420	41.09	16.25	57.34	74	-16.66	PK	1.76	67	V
10420	25.04	16.25	41.29	54	-12.71	AV	1.34	92	V
Channel:5290MHz									
10580	40.64	16.25	56.89	74	-17.11	PK	1.45	351	H
10580	27.40	16.25	43.65	54	-10.35	AV	1.39	38	H
10580	40.02	16.25	56.27	74	-17.73	PK	1.67	149	V
10580	25.55	16.25	41.80	54	-12.20	AV	1.71	11	V
Channel:5530MHz									
11060	41.06	17.50	58.56	74	-15.44	PK	1.75	46	H
11060	27.19	17.50	44.69	54	-9.31	AV	1.30	45	H
11060	40.95	17.50	58.45	74	-15.55	PK	1.85	319	V
11060	26.60	17.50	44.10	54	-9.90	AV	1.31	195	V
Channel:5775MHz									
11550	40.82	17.50	58.32	74	-15.68	PK	1.55	71	H
11550	25.71	17.50	43.21	54	-10.79	AV	1.24	262	H
11550	41.57	17.50	59.07	74	-14.93	PK	1.43	271	V
11550	25.53	17.50	43.03	54	-10.97	AV	1.01	289	V

Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits
2.The EUT was tested in the low, high channel and the worst case position data was reported.
3.Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. BAND EDGE

8.1 Block Diagram Of Test Setup



8.2 Limit

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

8.3 Test procedure

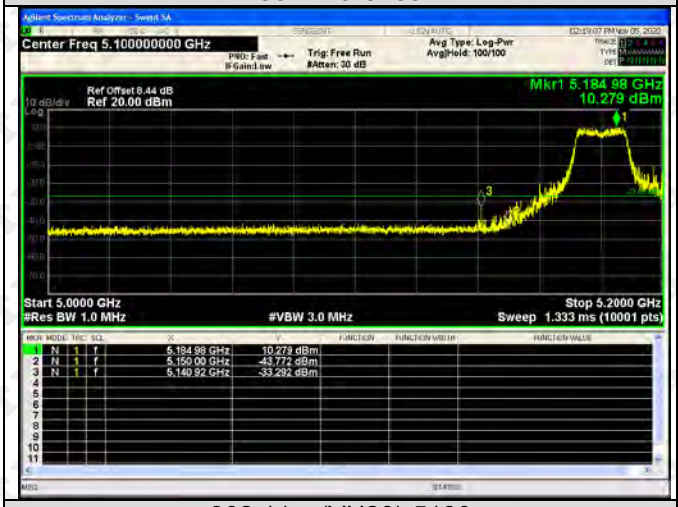
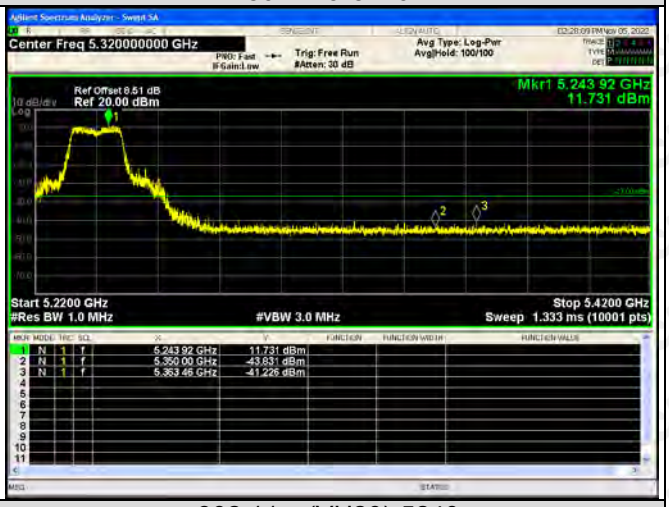
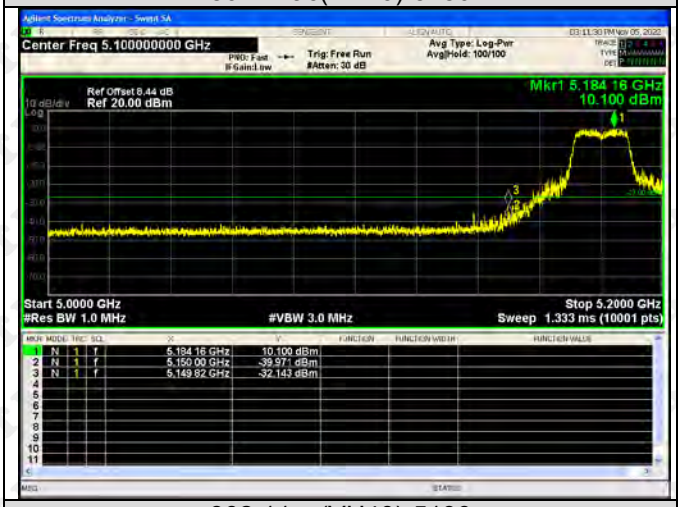
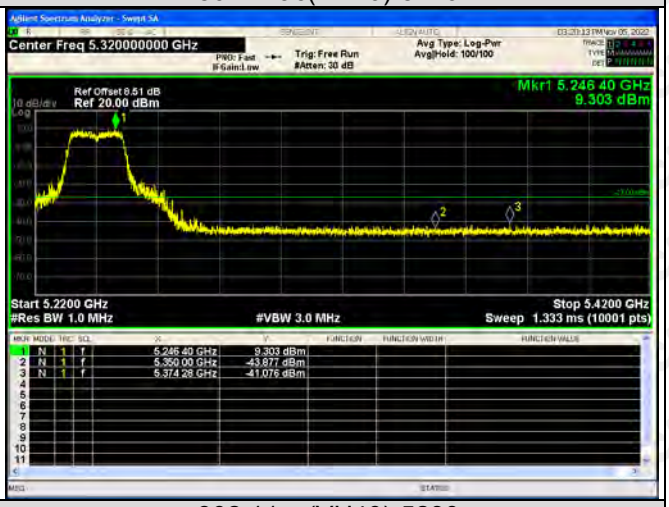
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

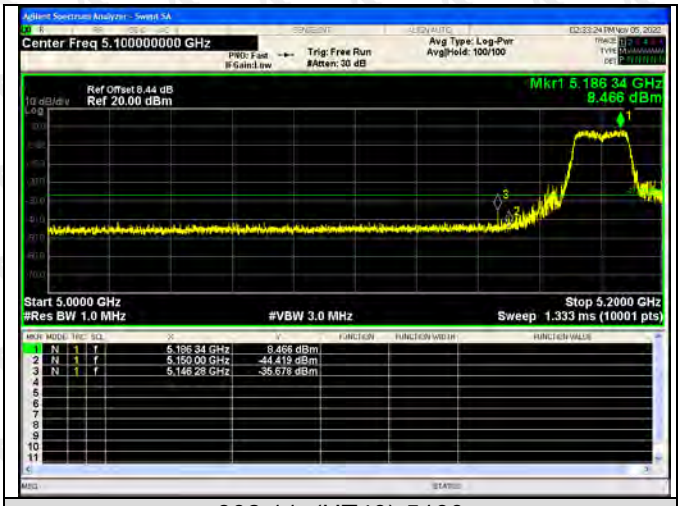
8.4 Test Result

Test Graph

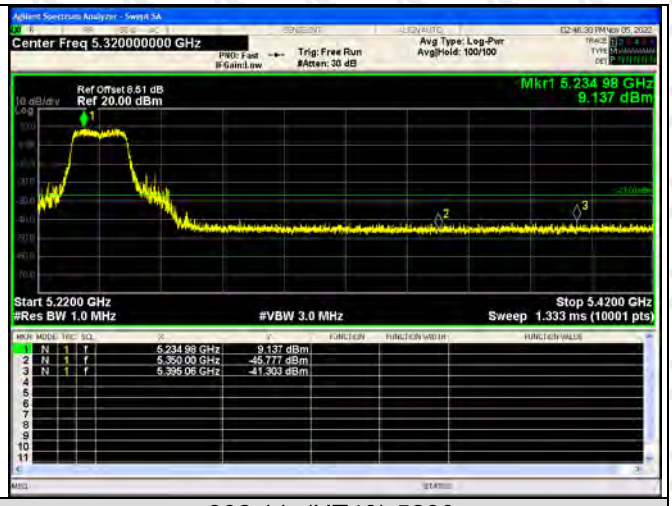
5180-5240MHz:

ANT 1

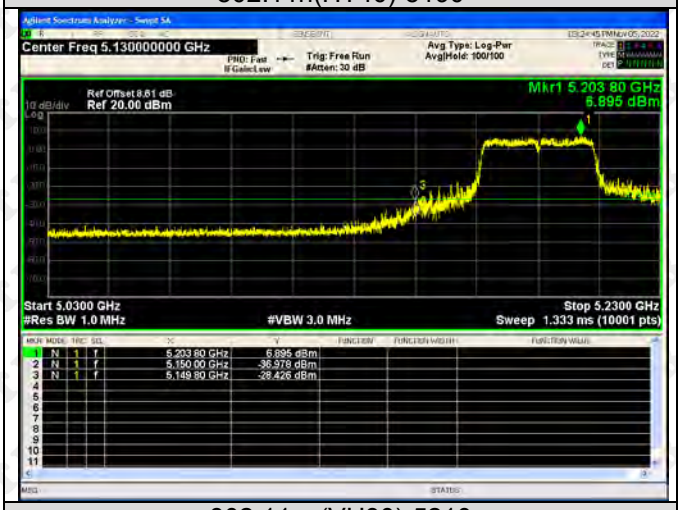
802.11a-5180	802.11a-5240
	
802.11ac(VH20)-5180	802.11ac(VH20)-5240
	
802.11ac(VH40)-5190	802.11ac(VH40)-5230
	
802.11n(HT20)-5180	802.11n(HT20)-5240



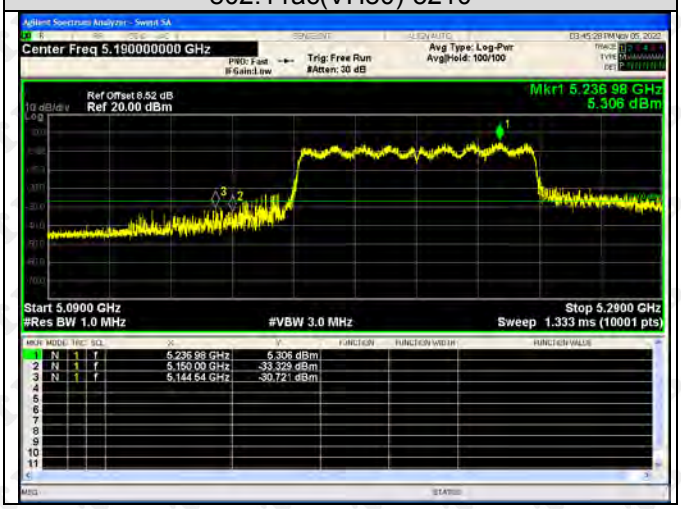
802.11n(HT40)-5190



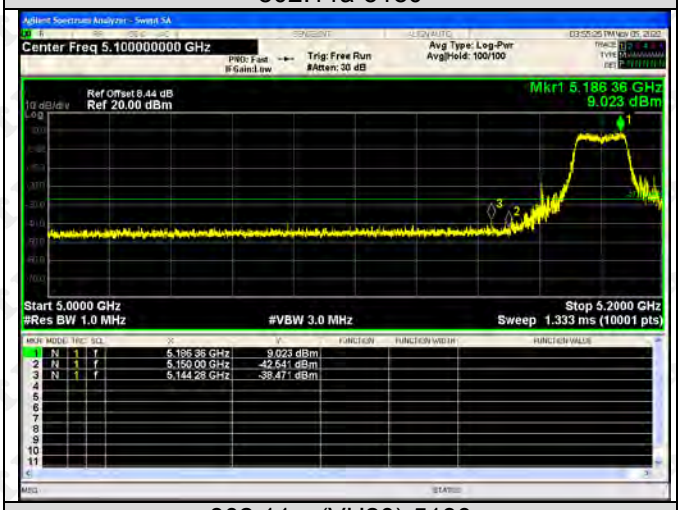
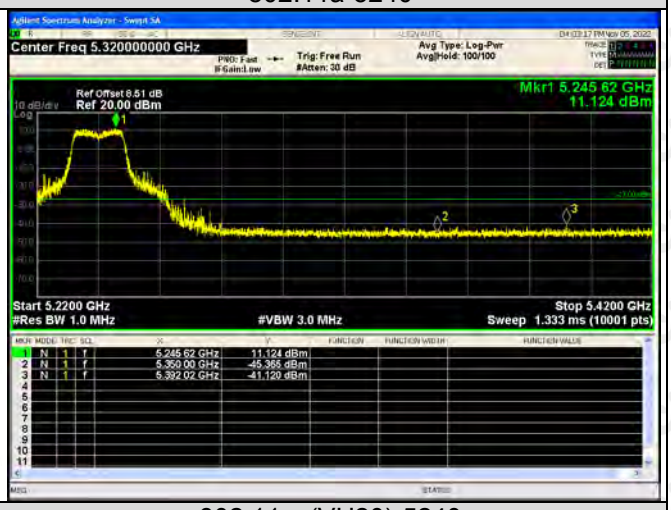
802.11n(HT40)-5230



802.11ac(VH80)-5210



ANT 2

802.11a-5180	802.11a-5240
	
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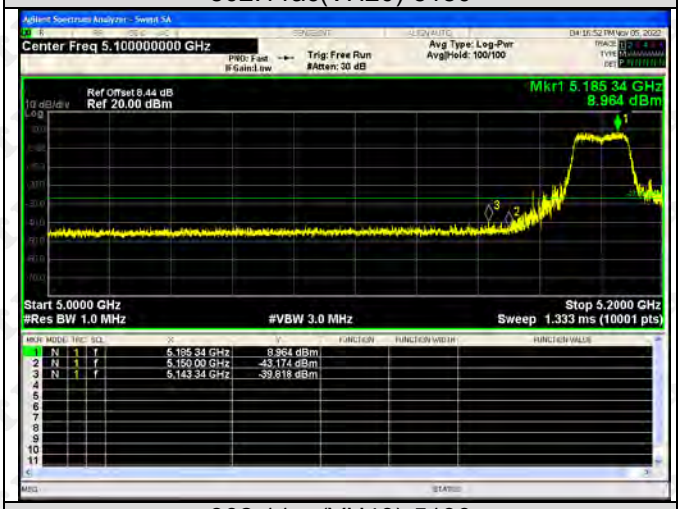	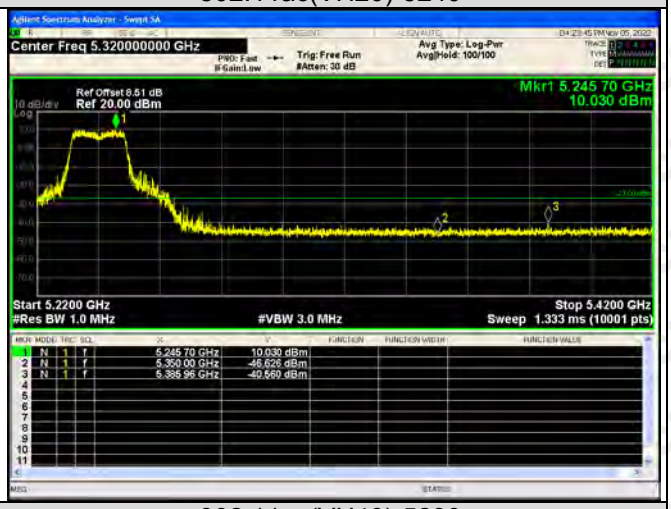
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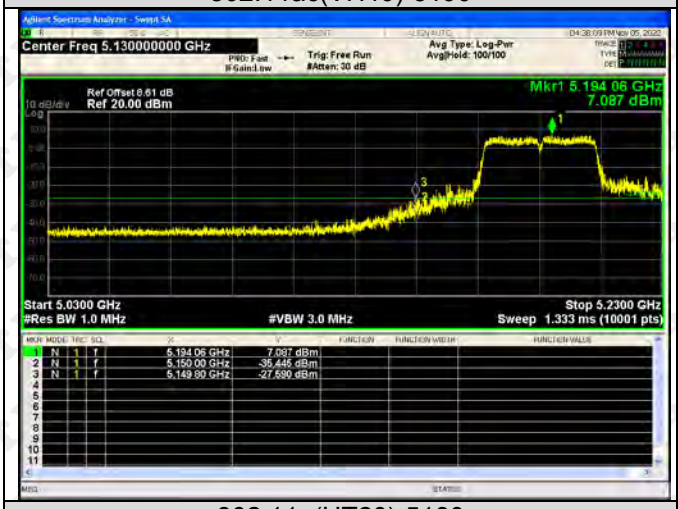
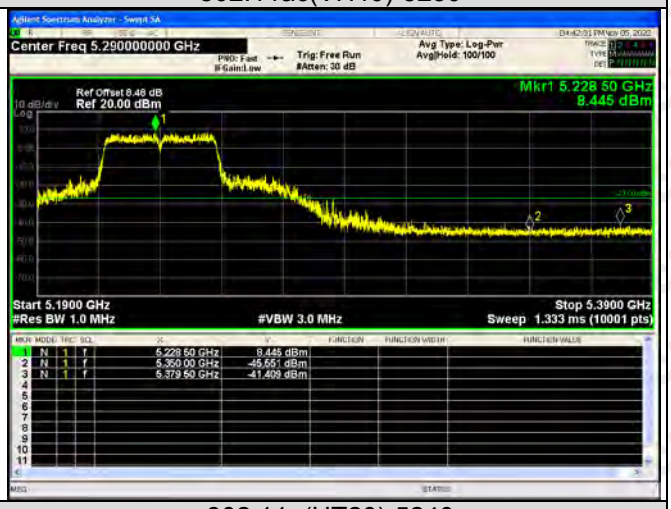
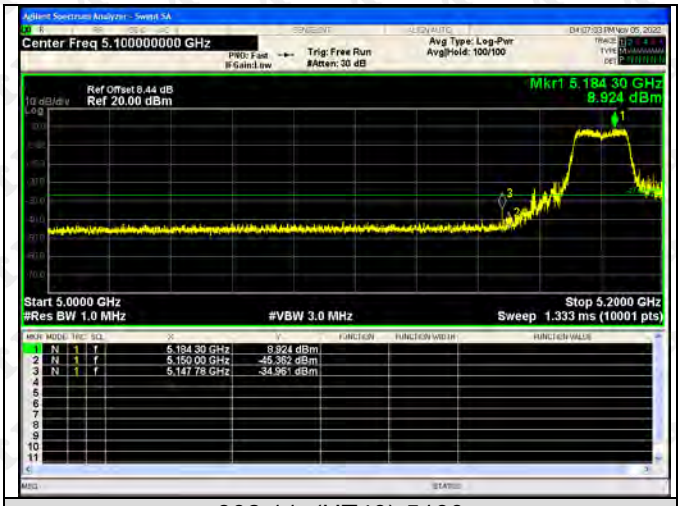
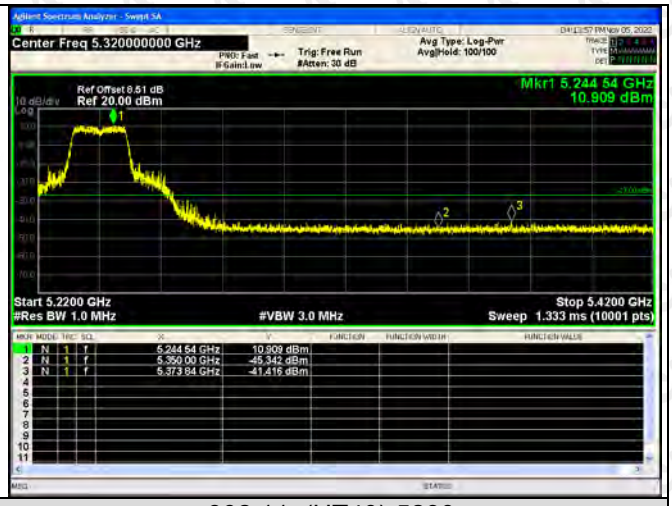
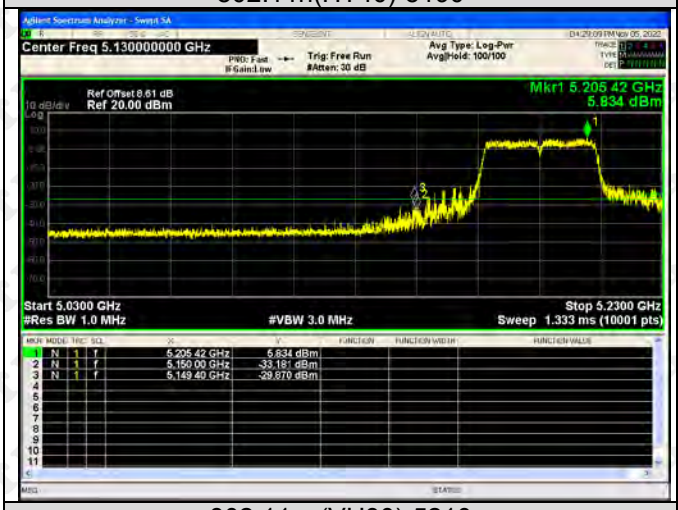
	
802.11n(HT20)-5180	802.11n(HT20)-5240



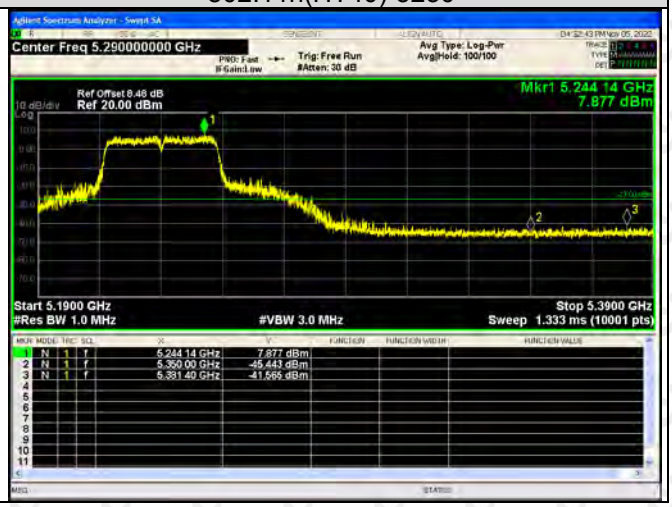
802.11n(HT40)-5190

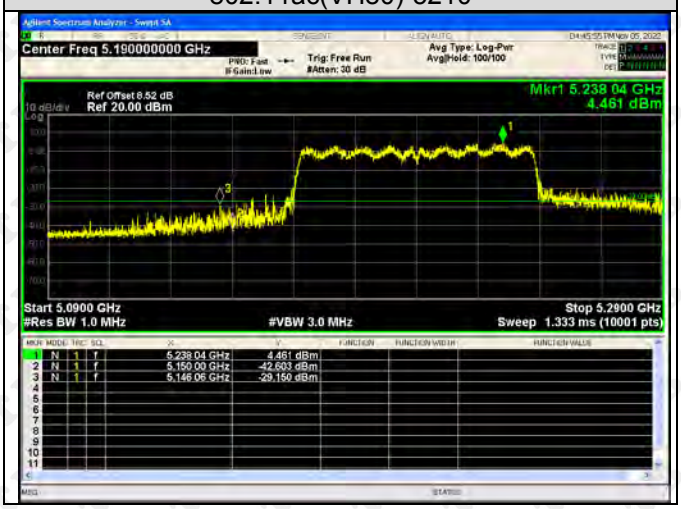


802.11n(HT40)-5230

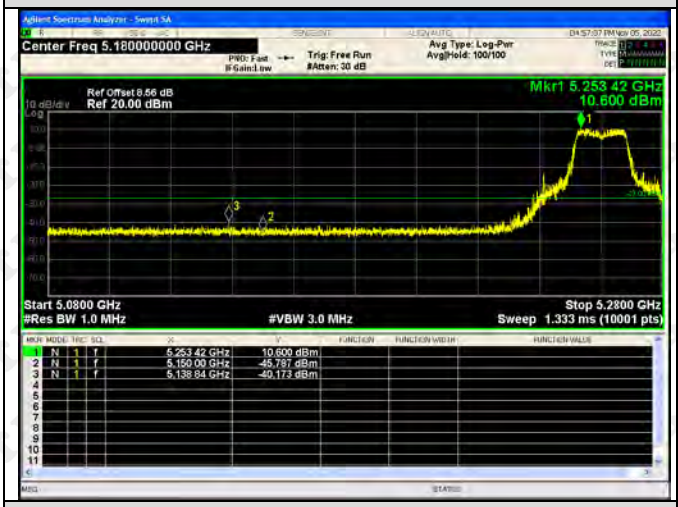


802.11ac(VH80)-5210





5260-5320MHz:
ANT1

802.11a-5260	802.11a-5320
	
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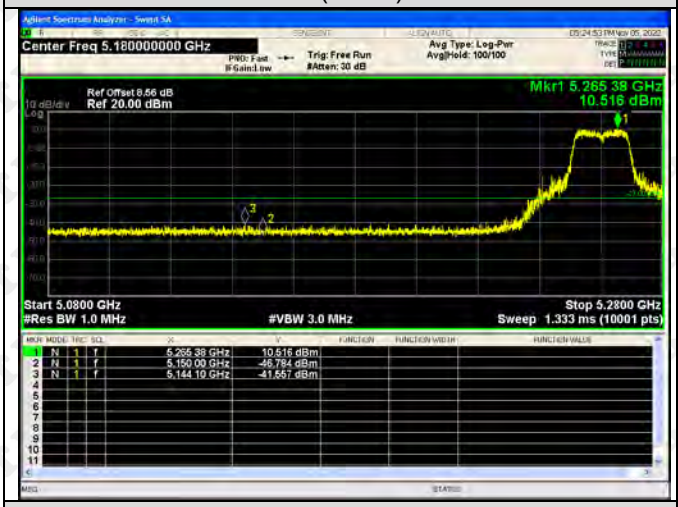
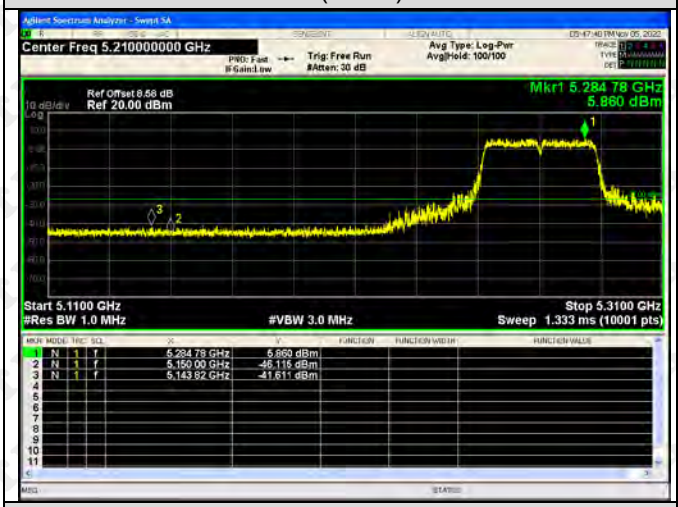
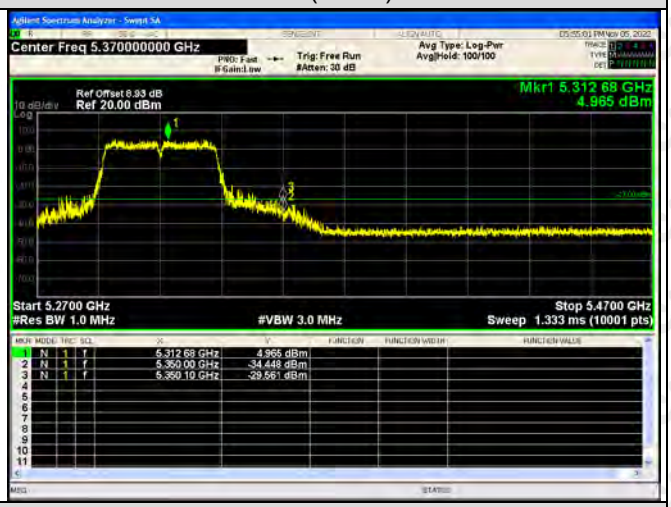
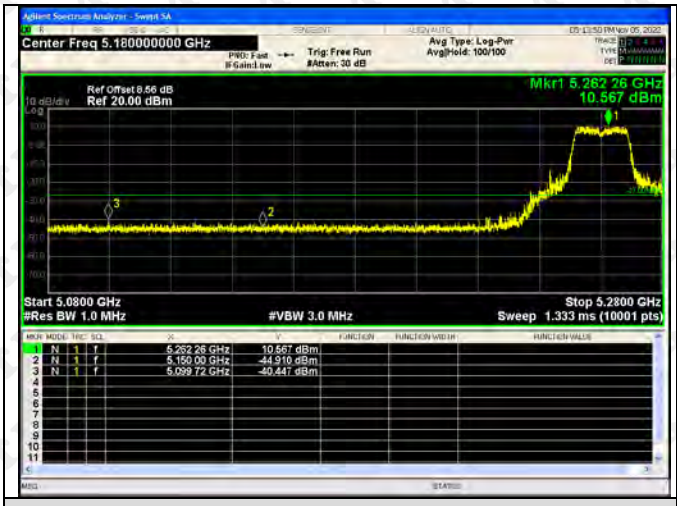
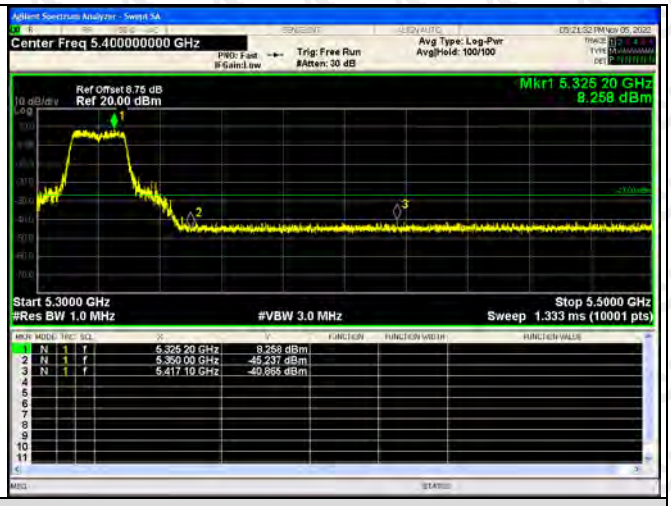
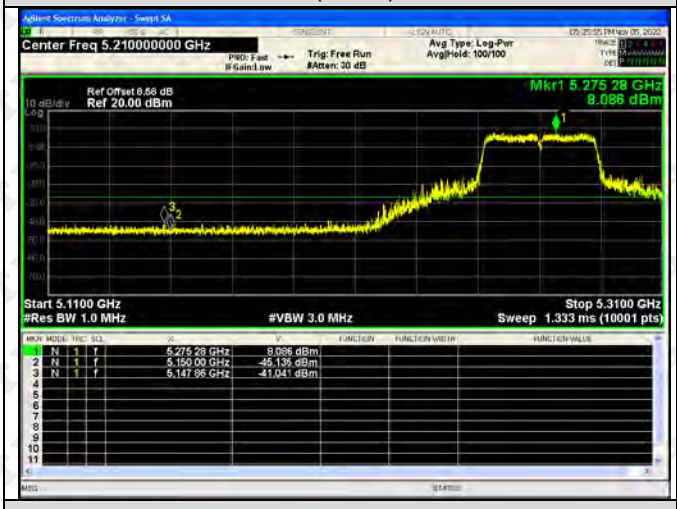
	
802.11ac(VH40)-5270	802.11ac(VH40)-5310
	
802.11n(HT20)-5260	802.11n(HT20)-5320



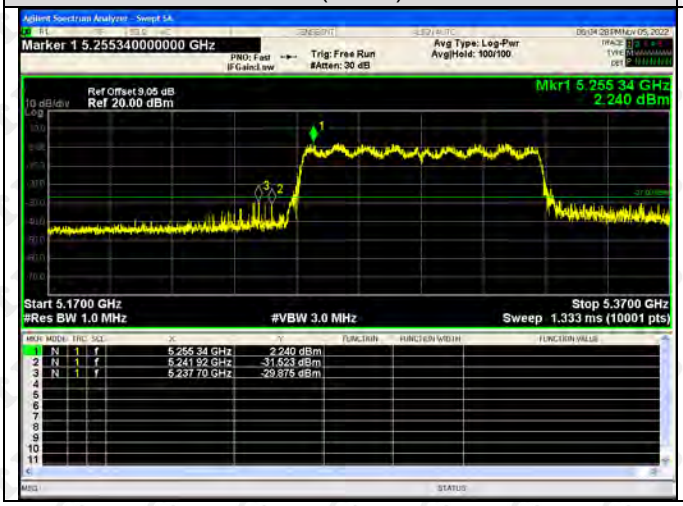
802.11n(HT40)-5270



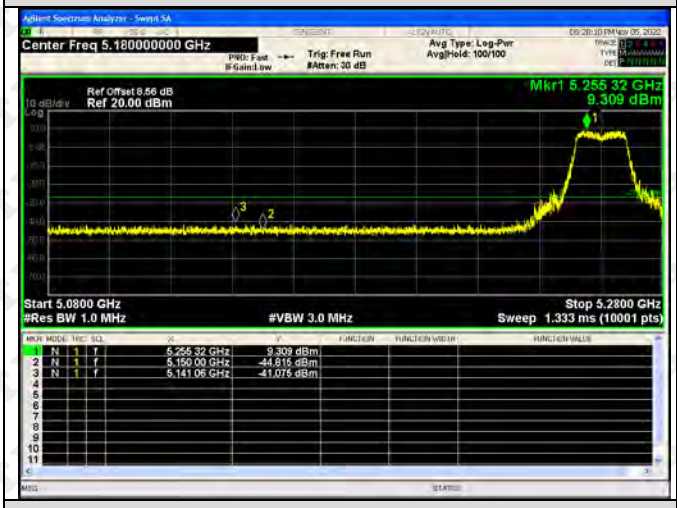
802.11n(HT40)-5310



802.11ac(VH80)-5290



ANT2

802.11a-5260	802.11a-5320
	
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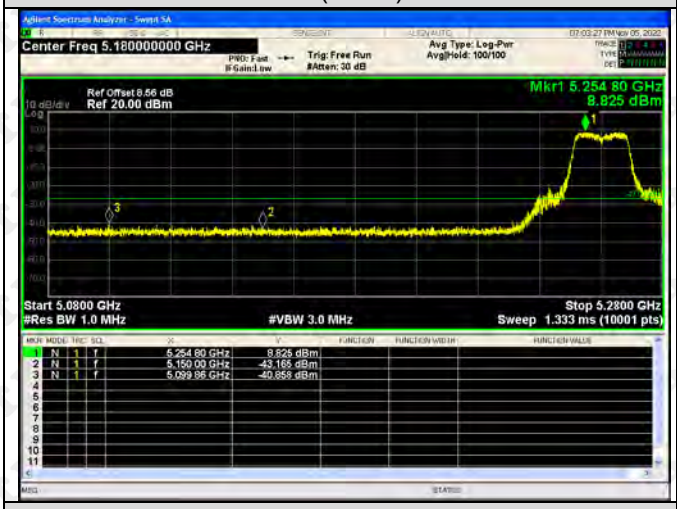	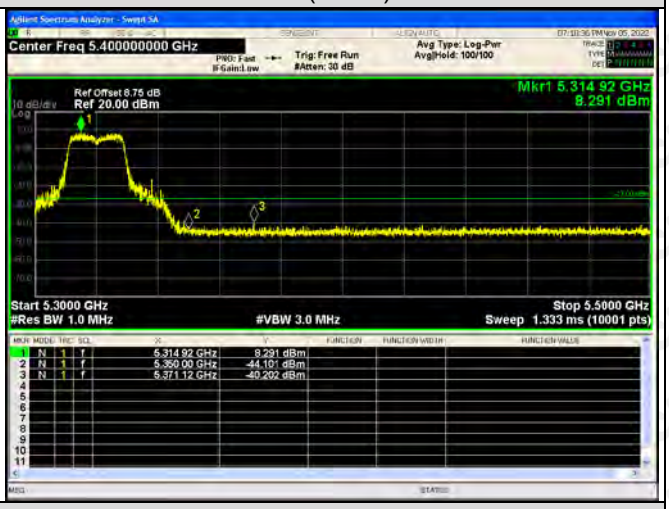
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	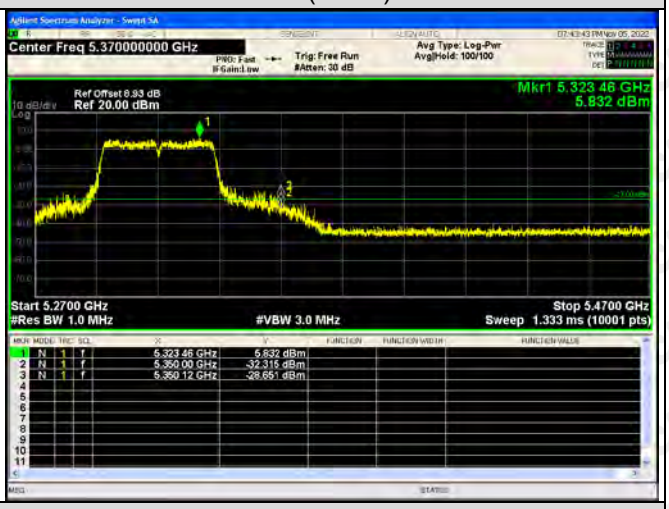
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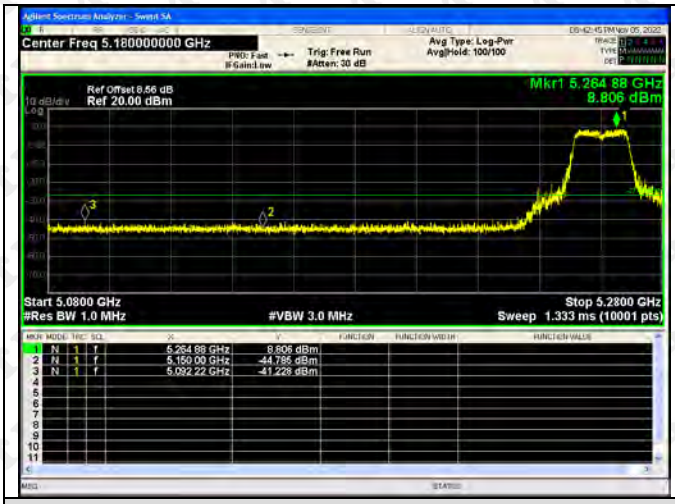

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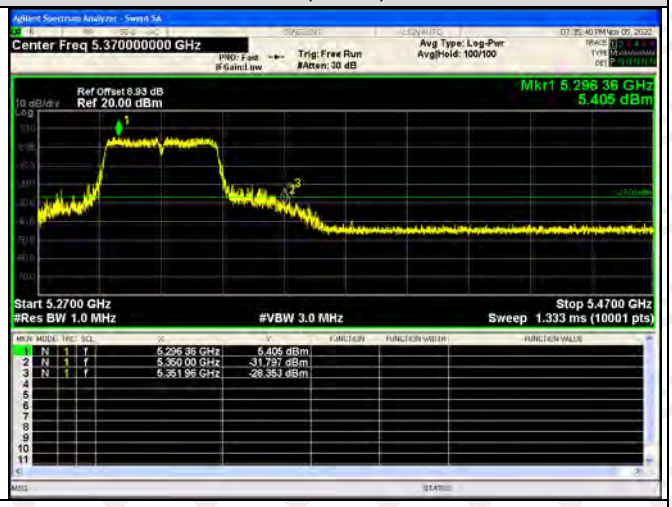
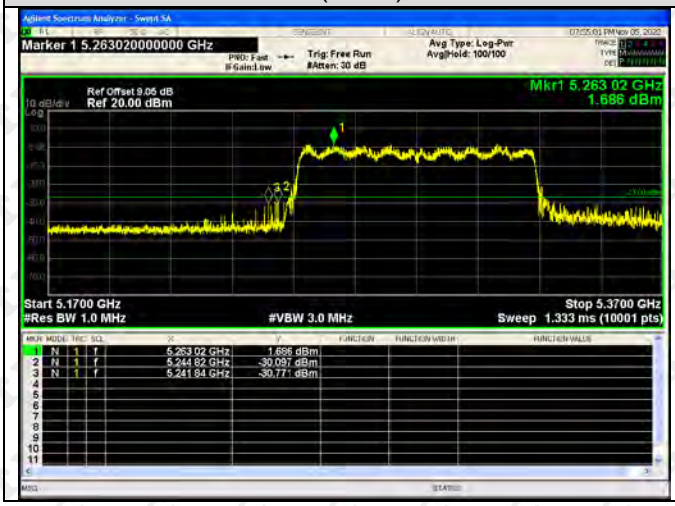
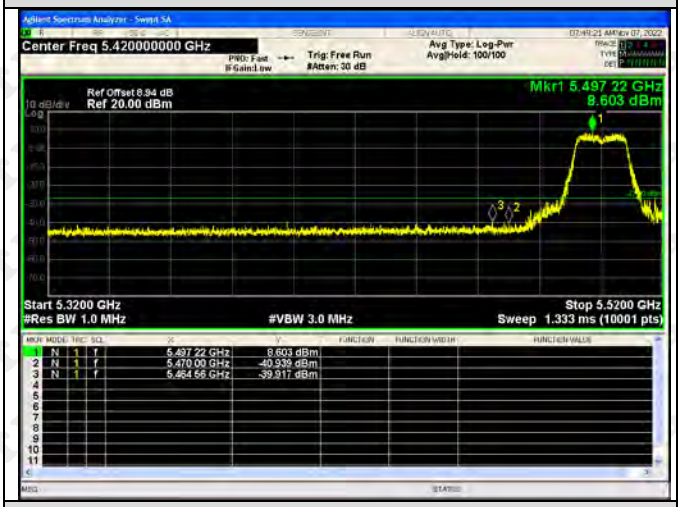
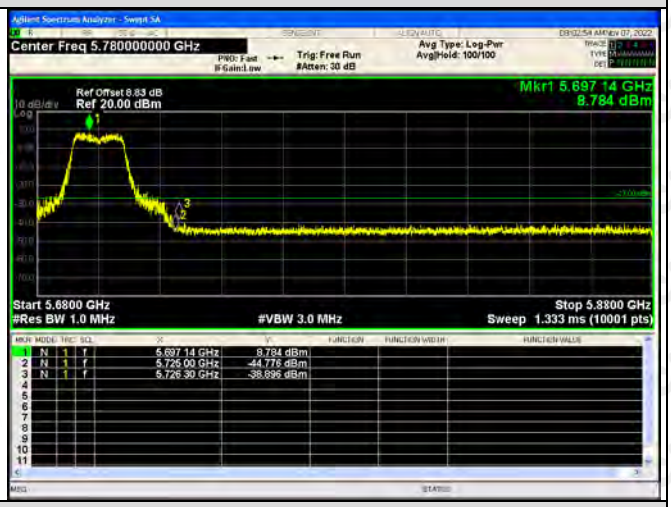
802.11n(HT40)-5310

802.11ac(VH80)-5290





5500-5700MHz:
ANT1

802.11a-5500	802.11a-5700
	
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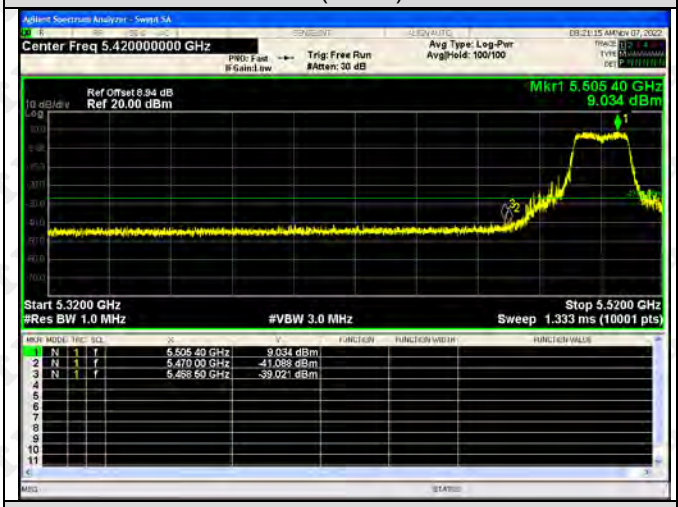	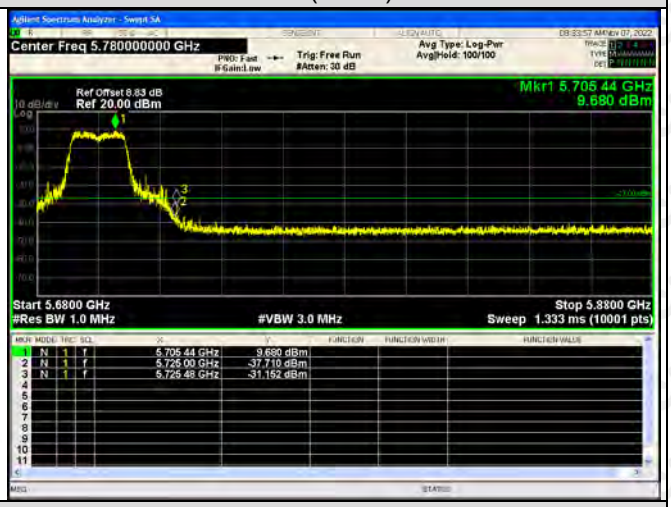
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	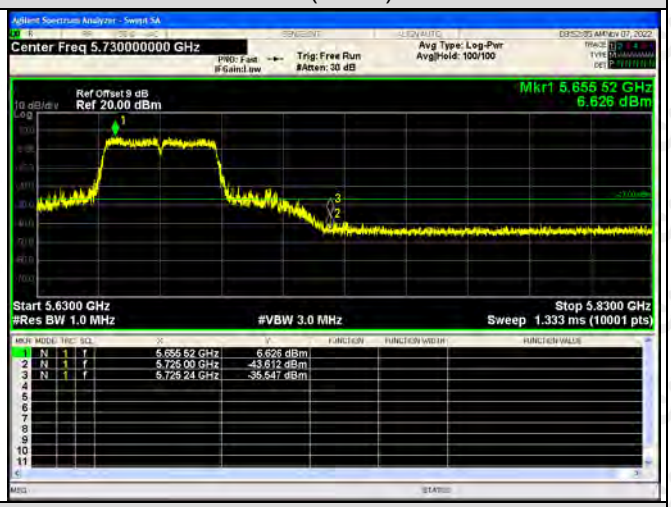
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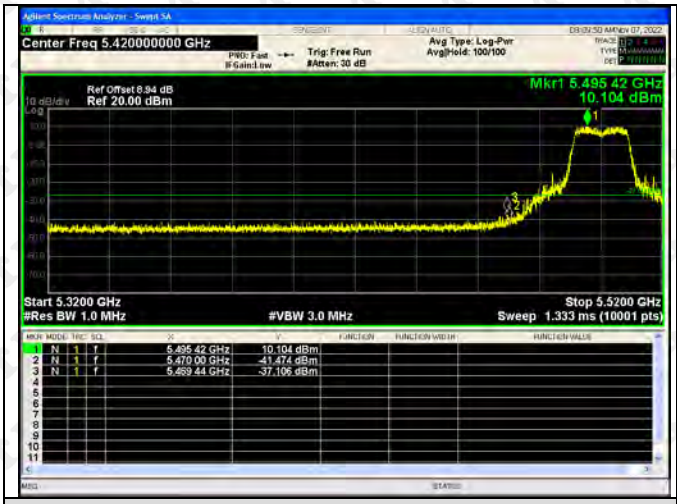
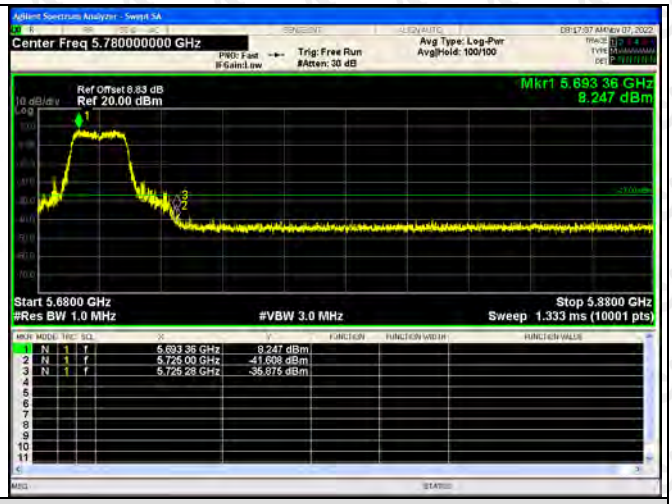
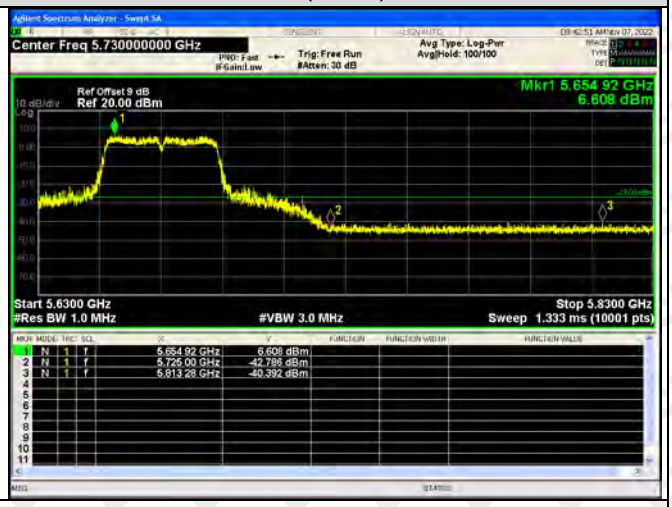


802.11n(HT40)-5510

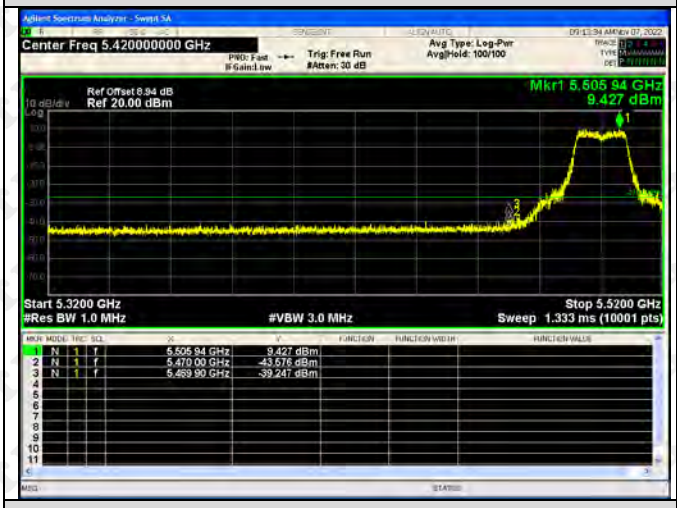
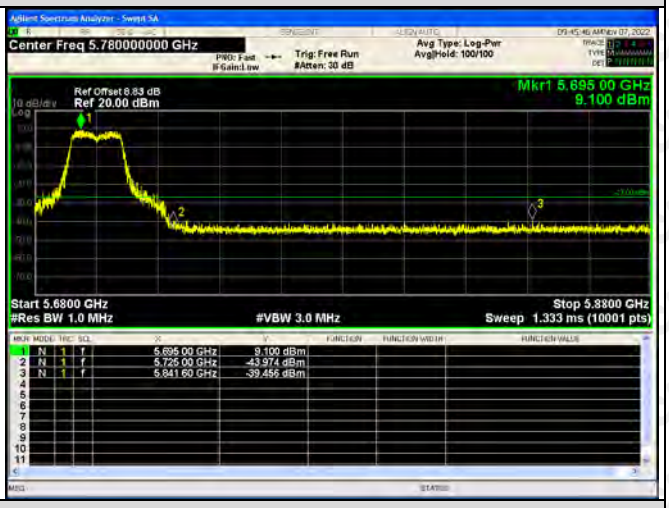


802.11n(HT40)-5670

802.11ac(VH80)-5530



ANT2

802.11a-5500	802.11a-5700
	
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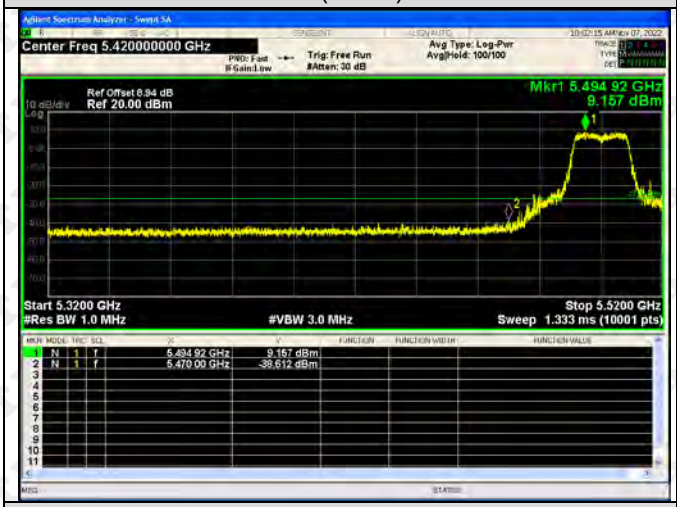	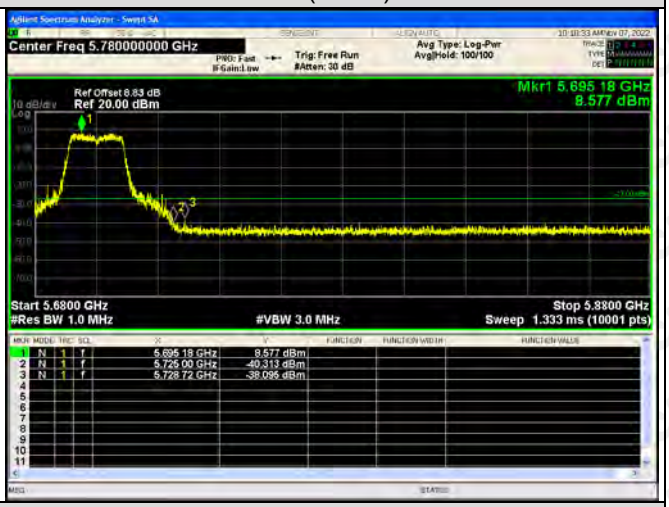
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	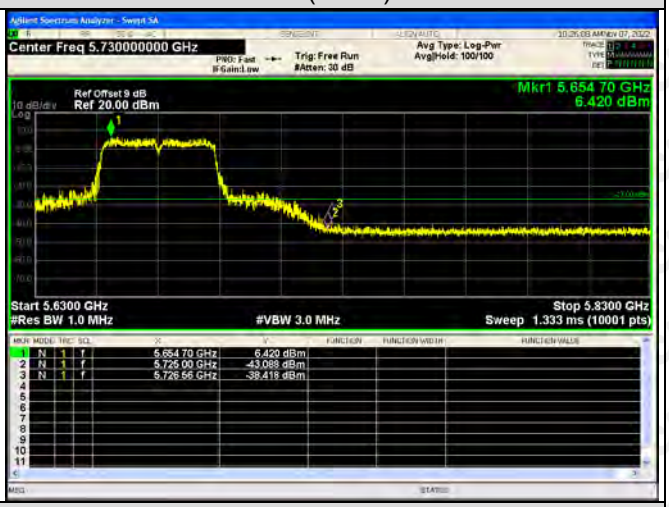
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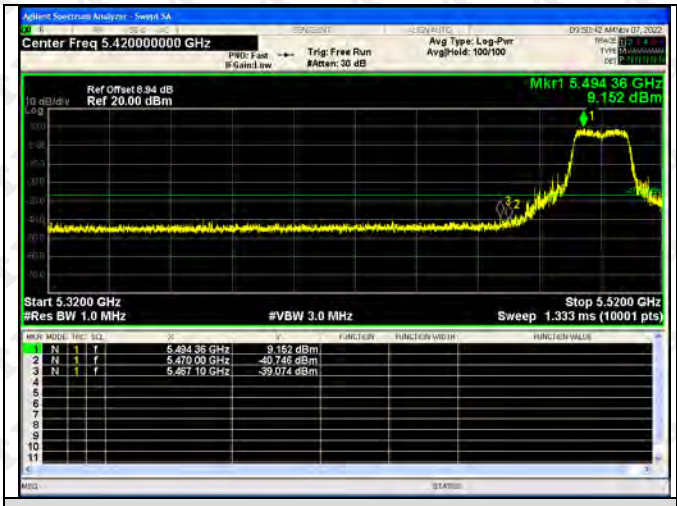

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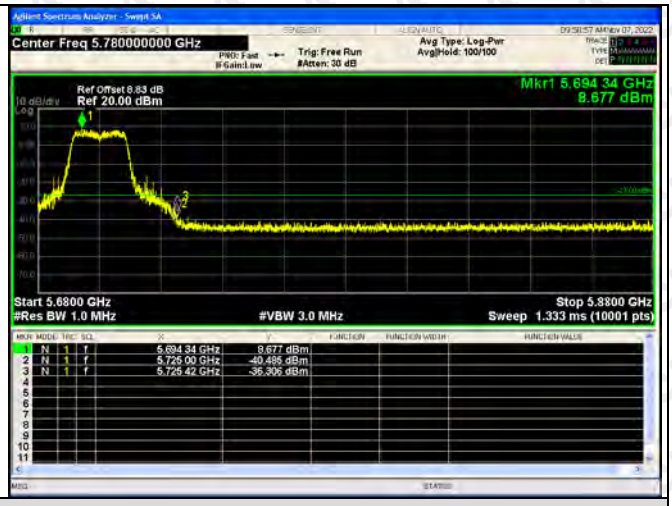
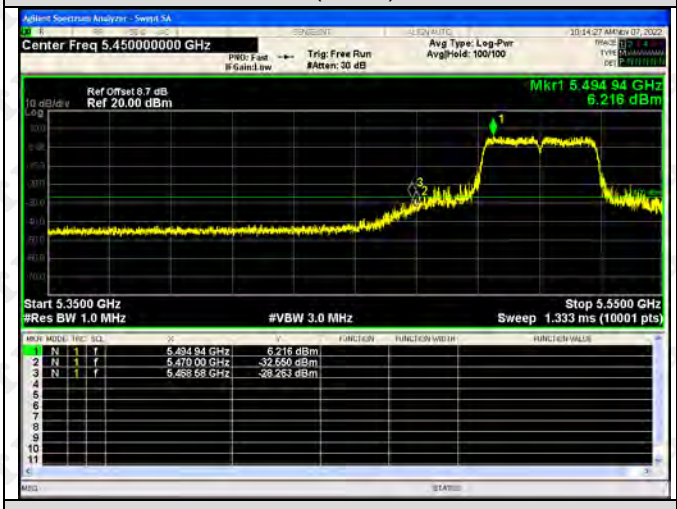
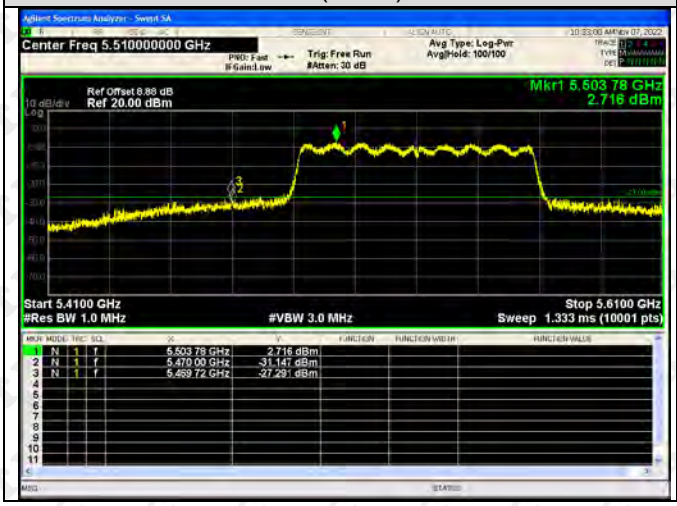


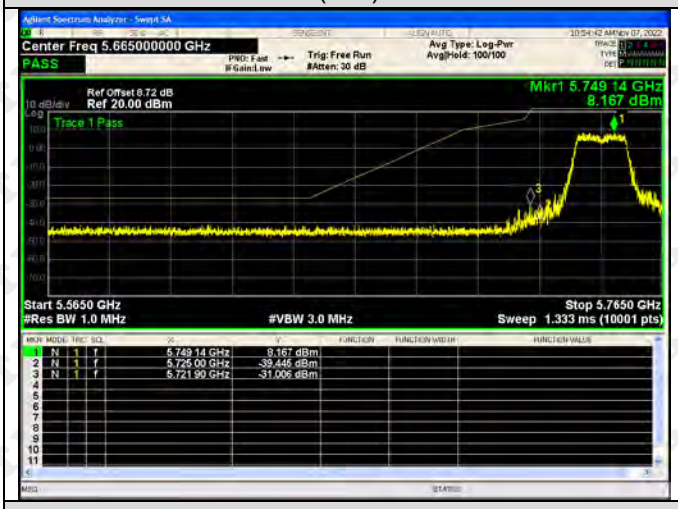
802.11n(HT40)-5670



802.11ac(VH80)-5530



5745-5825MHz
ANT1

802.11a-5745	802.11a-5825
	
802.11(n20)-5745	802.11(n20)-5825
	
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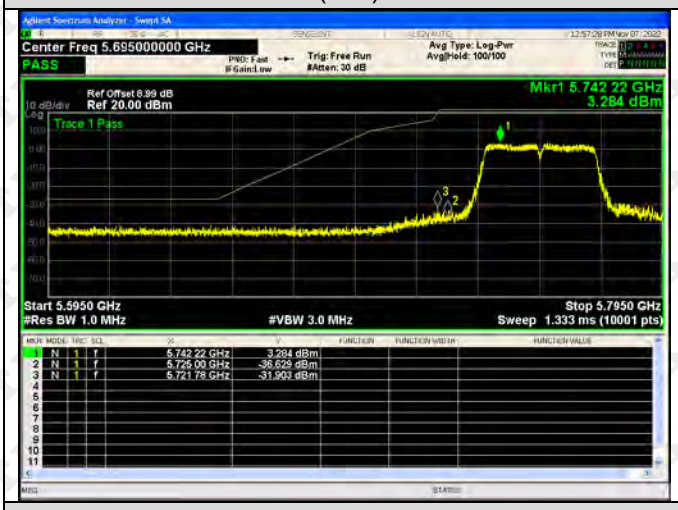	
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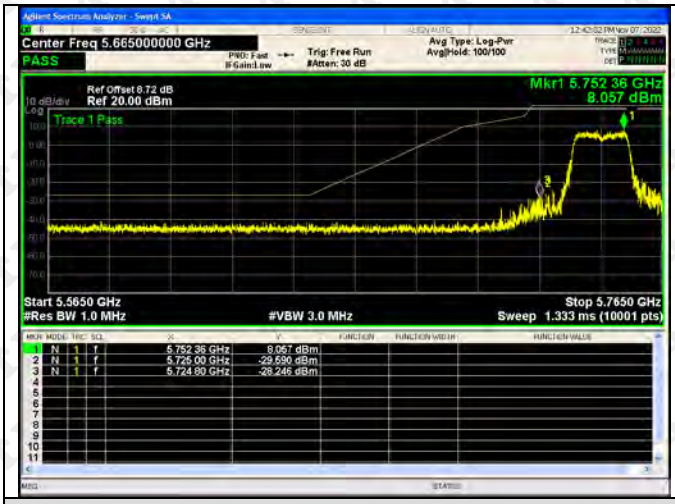
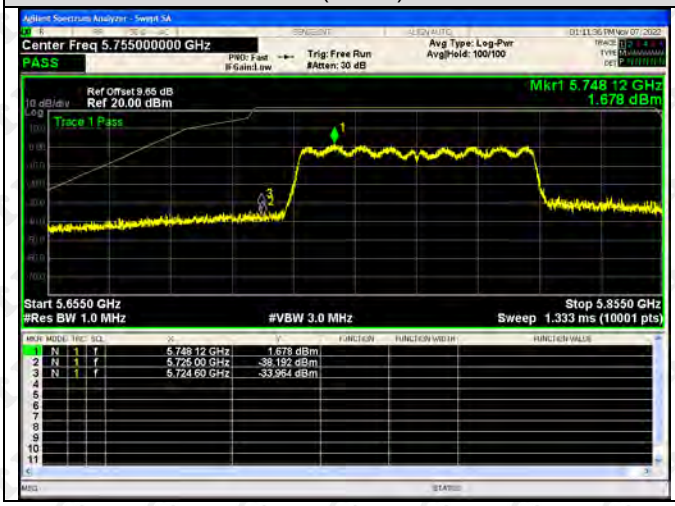


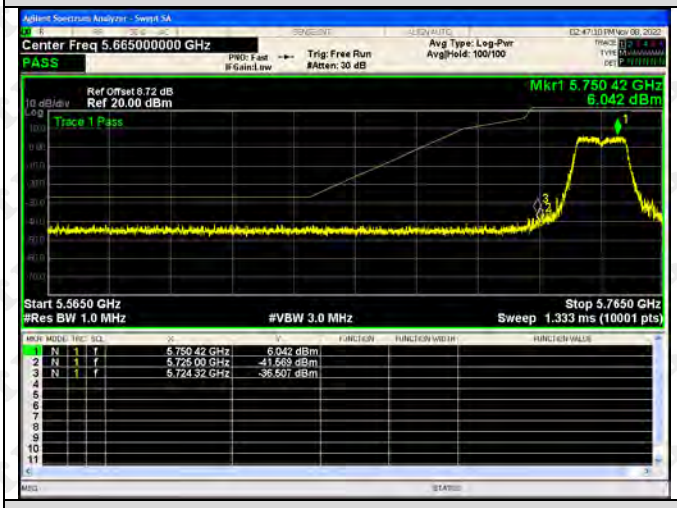
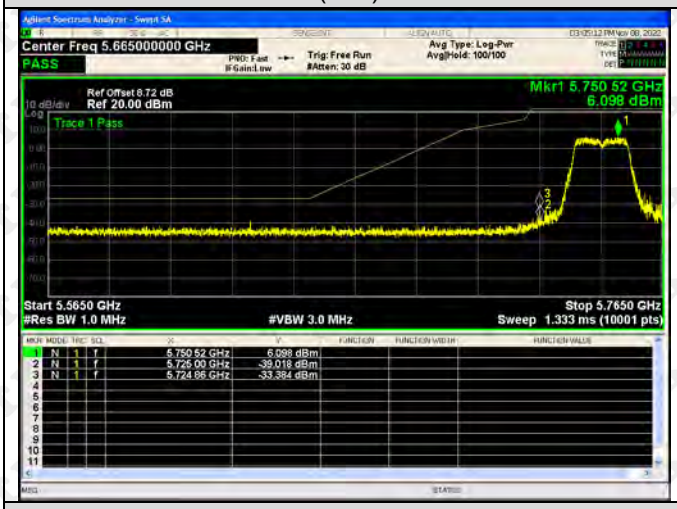
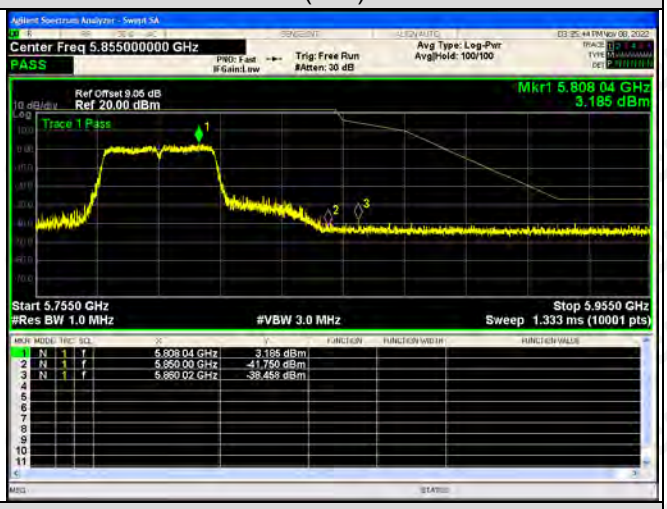
802.11ac(VH40)-5755

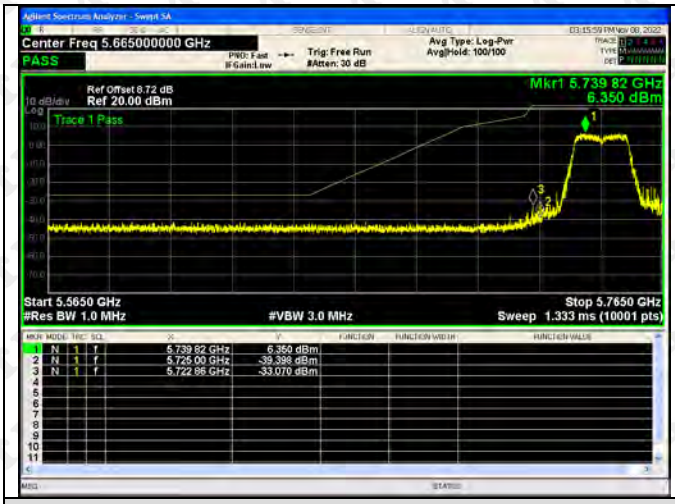
802.11ac(VH40)-5795

802.11ac(VH80)-5775



ANT2

802.11a-5745	802.11a-5825
	
802.11(n20)-5745	802.11(n20)-5825
	
802.11(n40)-5755	802.11(n40)-5795
	
802.11ac(VH20)-5745	802.11ac(VH20)-5825



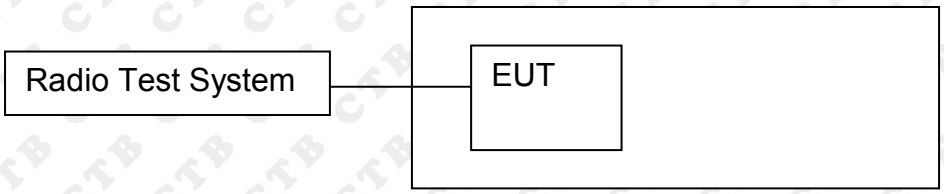
802.11ac(VH40)-5755

802.11ac(VH40)-5795

802.11ac(VH80)-5775

9. CONDUCTED PEAK OUTPUT POWER

9.1 Block Diagram Of Test Setup



9.2 Limit

(1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p.
at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition,the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.
(5) The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

(h) Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS).
(1) Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

9.3 Test procedure

According to KDB789033 D02v02r01 sectionE, the following is the measurement procedure.

(i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”

(viii) Trace average at least 100 traces in power averaging (rms) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

9.4 Test Result

5180-5240MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5180	14.48	14.108	/	23.98
	5200	14.231	14.317	/	23.98
	5240	14.292	14.886	/	23.98
802.11ac20	5180	14.763	14.302	17.549	23.98
	5200	14.542	14.368	17.466	23.98
	5240	14.251	14.777	17.532	23.98
802.11ac40	5190	13.88	13.477	16.693	23.98
	5230	13.258	13.725	16.508	23.98
802.11ac80	5210	12.28	12.516	15.410	23.98
802.11n(HT20)	5180	14.082	14.068	17.085	23.98
	5200	14.639	14.274	17.471	23.98
	5240	14.533	14.602	17.578	23.98
802.11n(HT40)	5190	13.138	13.472	17.549	23.98
	5230	13.409	13.353	17.466	23.98

5260-5320MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5260	14.479	14.728	/	23.98
	5280	14.713	14.715	/	23.98
	5320	14.222	14.485	/	23.98
802.11ac20	5260	14.723	14.423	17.586	23.98
	5280	14.87	14.185	17.551	23.98
	5320	14.333	14.515	17.435	23.98
802.11ac40	5270	13.459	13.567	16.524	23.98
	5310	13.576	13.491	16.544	23.98
802.11ac80	5290	12.041	12.527	15.301	23.98
802.11n(HT20)	5260	14.538	14.446	17.503	23.98
	5280	14.781	14.873	17.838	23.98
	5320	14.481	14.462	17.482	23.98
802.11n(HT40)	5270	13.222	13.544	17.586	23.98
	5310	13.496	13.341	17.551	23.98

5500-5700MHz

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5500	14.465	14.444	/	23.98
	5580	14.13	14.208	/	23.98
	5700	14.235	14.018	/	23.98
802.11ac20	5500	14.12	14.483	17.316	23.98
	5580	14.533	14.02	17.294	23.98
	5700	13.969	13.744	16.868	23.98
802.11ac40	5510	13.742	13.6	16.682	23.98
	5670	13.68	13.119	16.419	23.98
802.11ac80	5530	11.574	12.217	14.918	23.98
802.11n(HT20)	5500	14.296	14.557	17.439	23.98
	5580	14.047	14.13	17.099	23.98
	5700	14.023	14.077	17.060	23.98
802.11n(HT40)	5510	13.202	13.095	17.316	23.98
	5670	13.278	13.775	17.294	23.98

5745-5825MHz

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5745	14.242	14.031	/	30
	5785	14.059	14.113	/	30
	5825	14.782	14.607	/	30
802.11ac20	5745	14.539	14.323	17.443	30
	5785	14.597	14.462	17.540	30
	5825	14.305	14.828	17.585	30
802.11ac40	5755	13.59	13.44	16.526	30
	5795	13.412	13.704	16.571	30
802.11ac80	5745	12.787	12.248	15.536	30
802.11n(HT20)	5785	14.072	14.424	17.262	30
	5825	13.603	14.086	16.862	30
	5755	14.737	14.816	17.787	30
802.11n(HT40)	5795	13.622	13.563	17.443	30
	5775	13.425	13.495	17.540	30

ANT1:
Duty cycle:

5180-5240MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11ac20	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11ac40	5190	100	100	100
	5230	100	100	100
802.11ac80	5210	100	100	100
802.11n(HT20)	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11n(HT40)	5190	100	100	100
	5230	100	100	100

5260-5320MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11ac20	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11ac40	5270	100	100	100
	5310	100	100	100
802.11ac80	5290	100	100	100
802.11n(HT20)	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11n(HT40)	5270	100	100	100
	5310	100	100	100

5500-5700MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11ac20	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11ac40	5510	100	100	100
	5670	100	100	100
802.11ac80	5530	100	100	100
802.11n(HT20)	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11n(HT40)	5510	100	100	100
	5670	100	100	100

5745-5825MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11ac20	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11ac40	5755	100	100	100
	5795	100	100	100
802.11ac80	5775	100	100	100
802.11n(HT20)	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11n(HT40)	5755	100	100	100
	5795	100	100	100

ANT2:

Duty cycle:

5180-5240MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11ac20	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11ac40	5190	100	100	100
	5230	100	100	100
802.11ac80	5210	100	100	100
802.11n(HT20)	5180	100	100	100
	5200	100	100	100
	5240	100	100	100
802.11n(HT40)	5190	100	100	100
	5230	100	100	100

5260-5320MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11ac20	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11ac40	5270	100	100	100
	5310	100	100	100
802.11ac80	5290	100	100	100
802.11n(HT20)	5260	100	100	100
	5280	100	100	100
	5320	100	100	100
802.11n(HT40)	5270	100	100	100
	5310	100	100	100

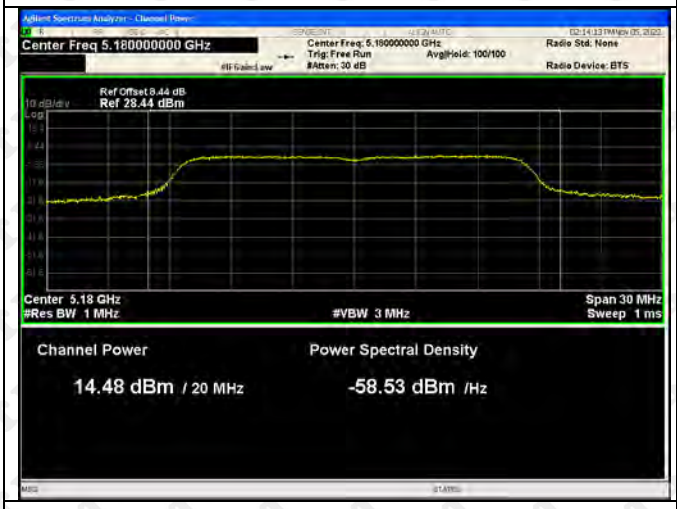
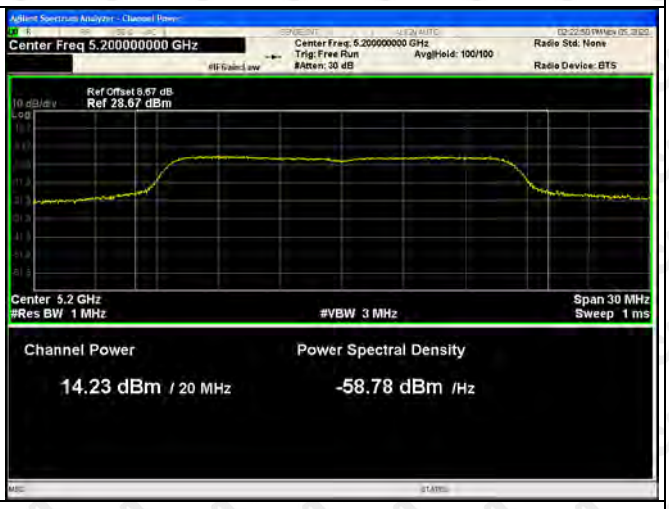
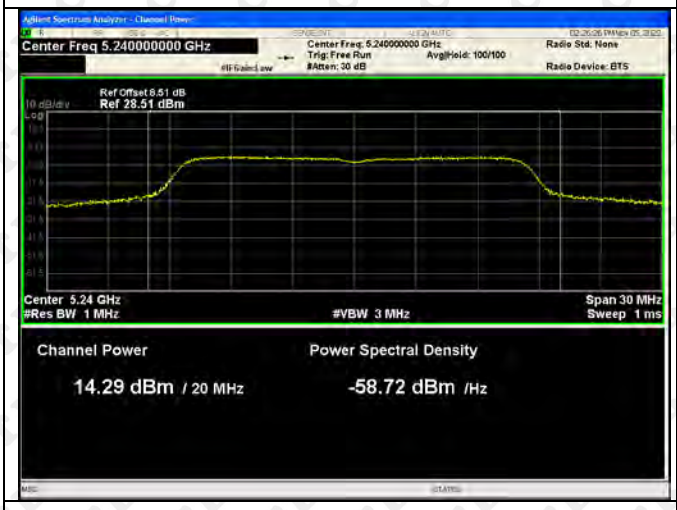
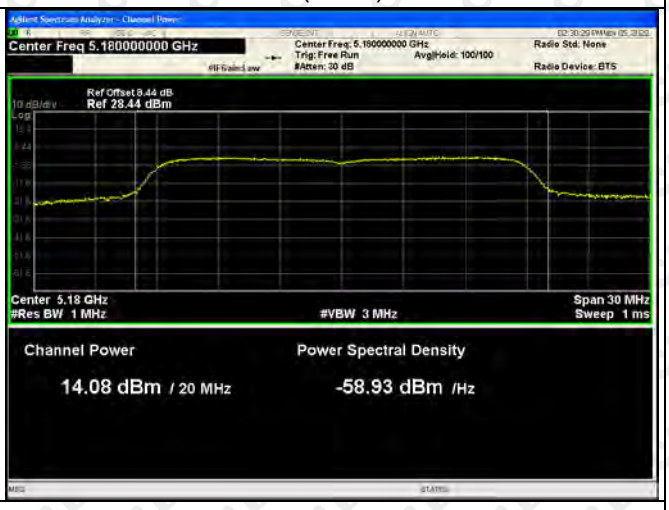
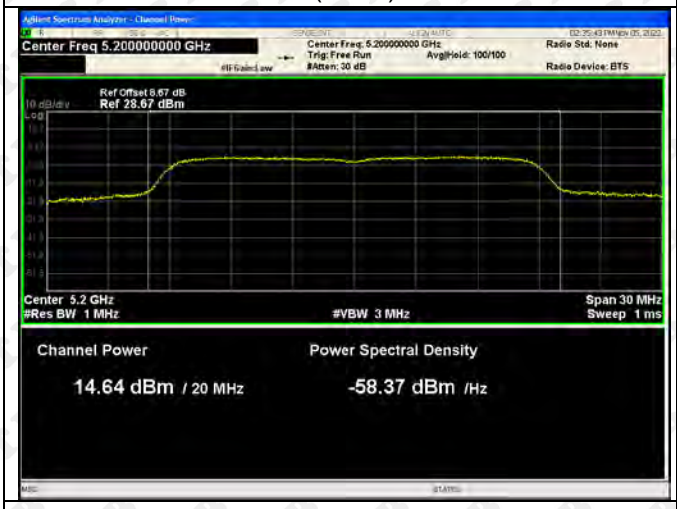
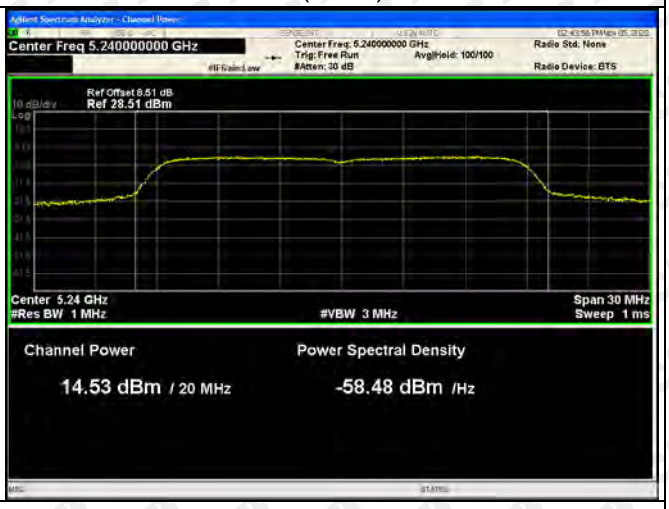
5500-5700MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11ac20	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11ac40	5510	100	100	100
	5670	100	100	100
802.11ac80	5530	100	100	100
802.11n(HT20)	5500	100	100	100
	5580	100	100	100
	5700	100	100	100
802.11n(HT40)	5510	100	100	100
	5670	100	100	100

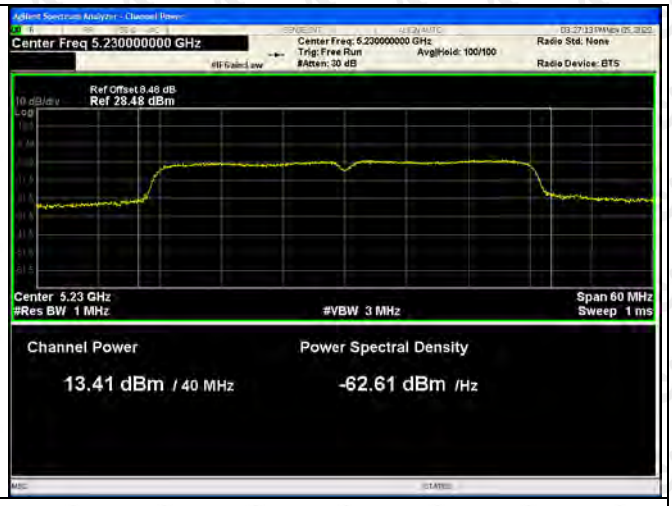
5745-5825MHz

Test mode1	Test Channel (MHz)	On time(ms)	Period (ms)	Duty Cycie(%)
802.11a	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11ac20	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11ac40	5755	100	100	100
	5795	100	100	100
802.11ac80	5775	100	100	100
802.11n(HT20)	5745	100	100	100
	5785	100	100	100
	5825	100	100	100
802.11n(HT40)	5755	100	100	100
	5795	100	100	100

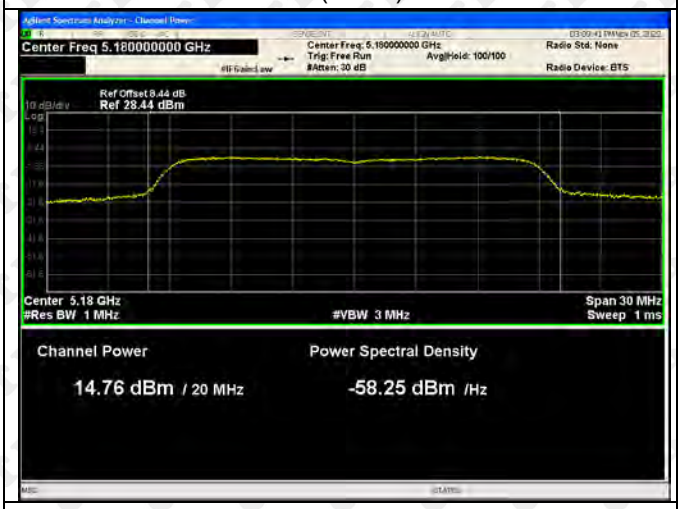
5180-5240MHz-Power
ANT1

802.11a-5180	802.11a-5200
	
802.11a-5240	802.11n(HT20)-5180
	
802.11n(HT20)-5200	802.11n(HT20)-5240
	
802.11n(HT40)-5190	802.11n(HT40)-5230

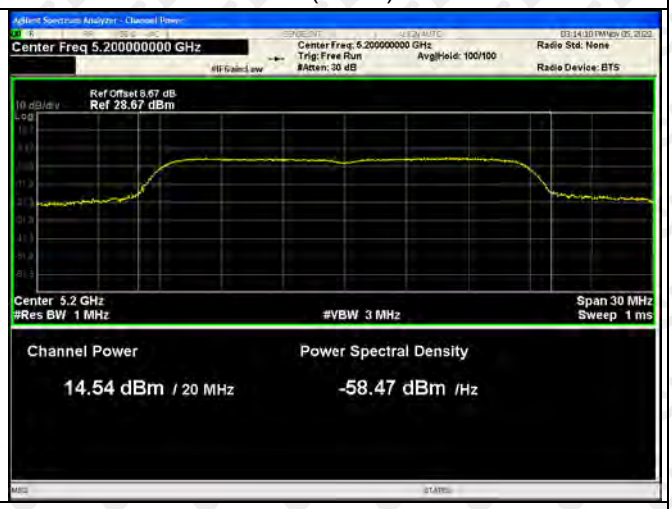
802.11ac(VH20)-5180



802.11ac(VH20)-5200

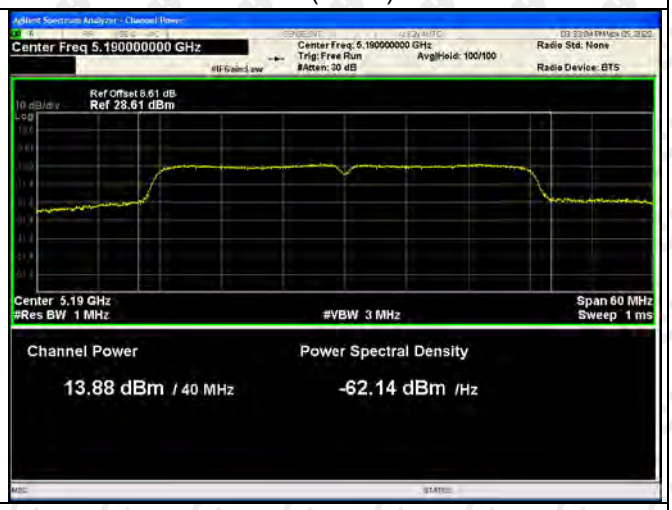


802.11ac(VH20)-5240

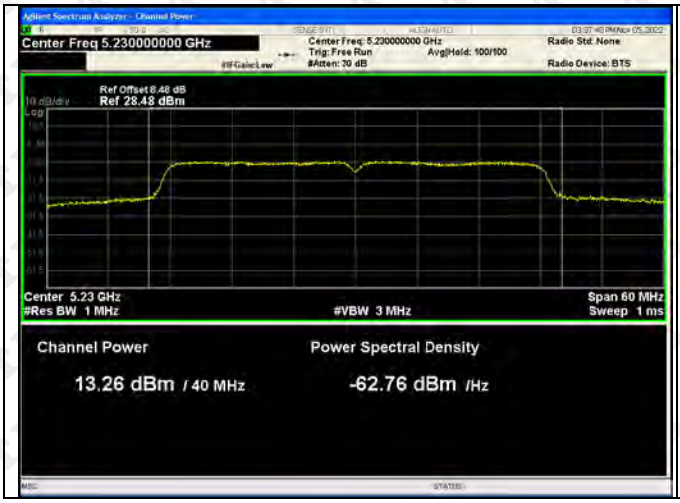


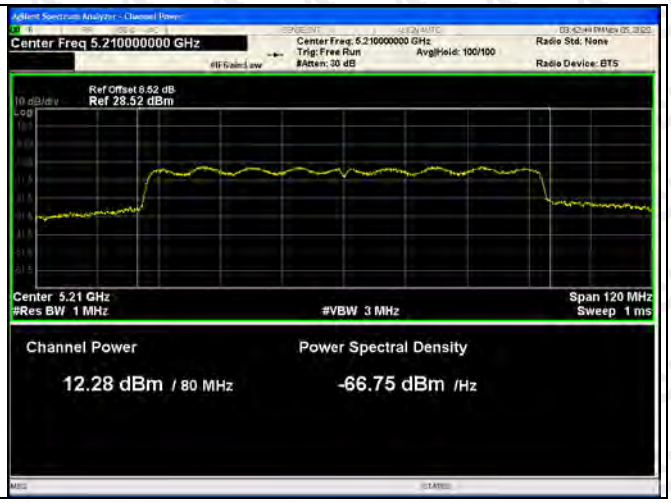
802.11ac(VH40)-5190

802.11ac(VH40)-5230



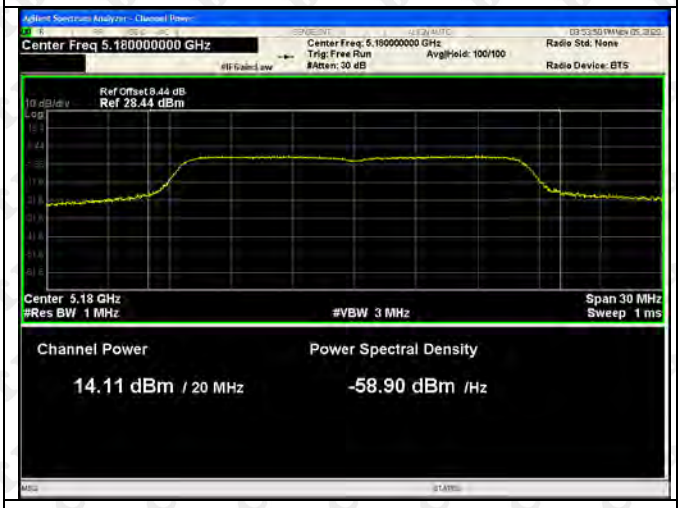
802.11ac(VH80)-5230


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.48 dB
10 dB/div
Ref 28.48 dBm
Center 5.23 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.26 dBm / 40 MHz
Power Spectral Density
-62.76 dBm /Hz

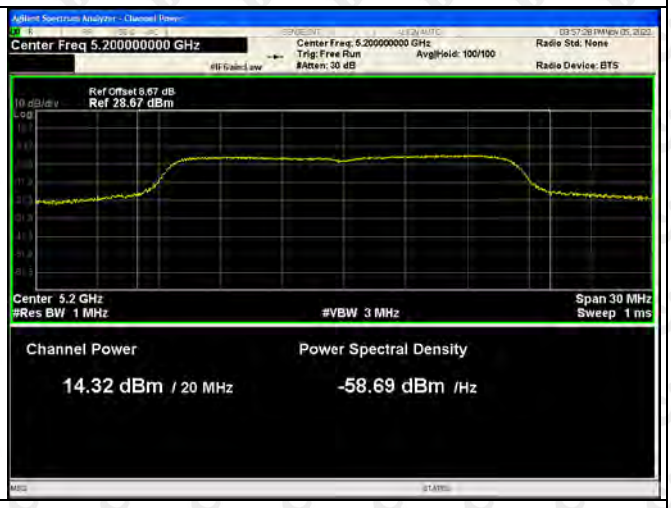

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.52 dB
10 dB/div
Ref 28.52 dBm
Center 5.21 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.28 dBm / 80 MHz
Power Spectral Density
-66.75 dBm /Hz

ANT2

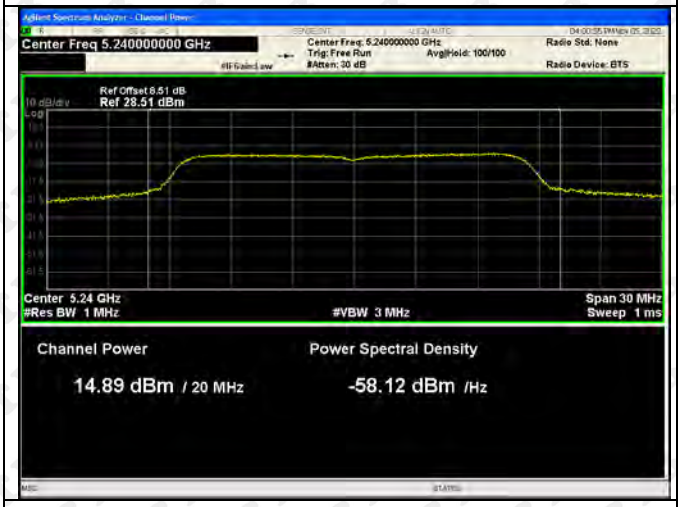
802.11a-5180



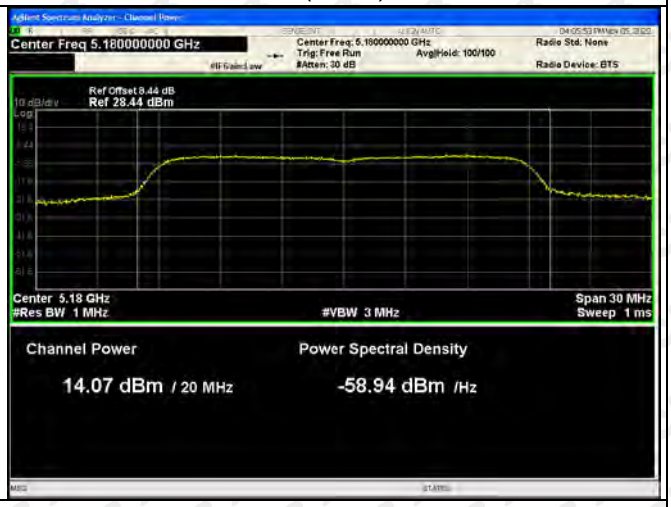
802.11a-5200



802.11a-5240

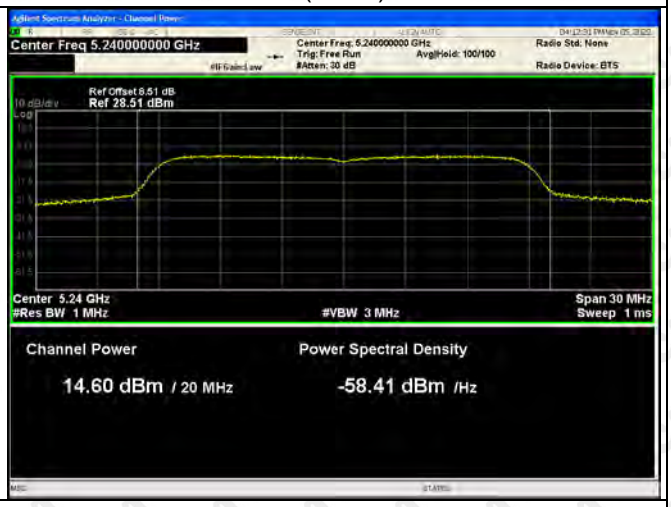


802.11n(HT20)-5180



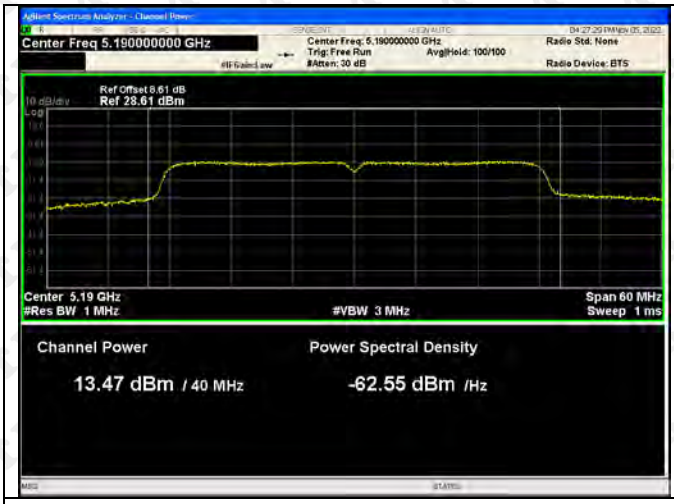
802.11n(HT20)-5200

802.11n(HT20)-5240

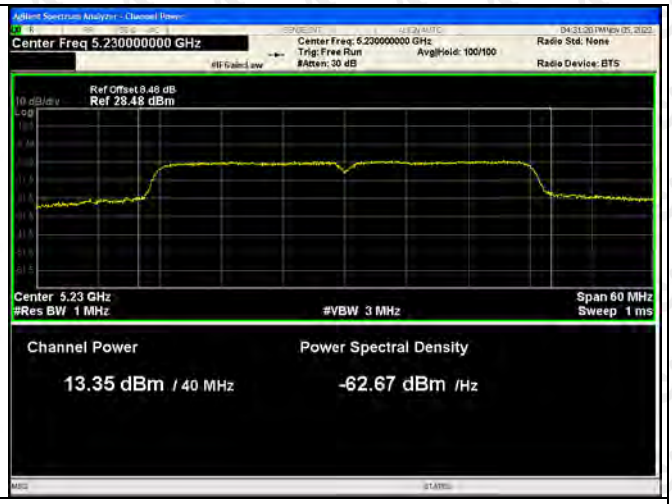


802.11n(HT40)-5190

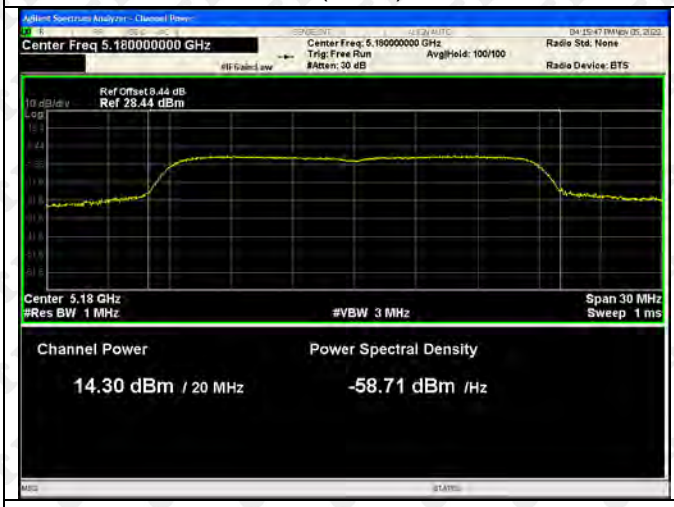
802.11n(HT40)-5230



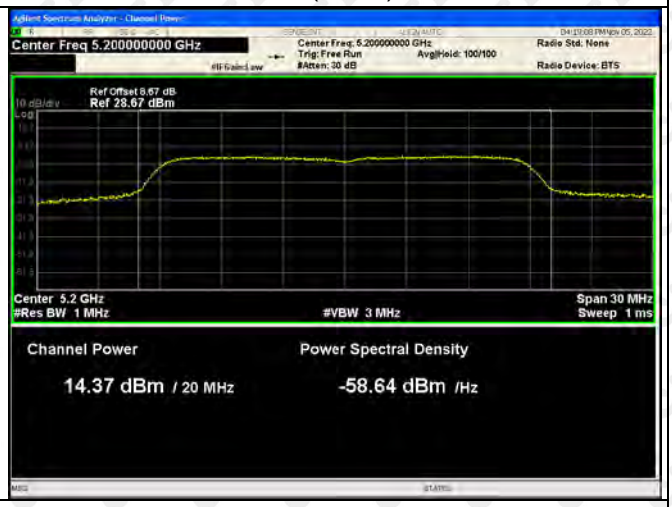
802.11ac(VH20)-5180



802.11ac(VH20)-5200

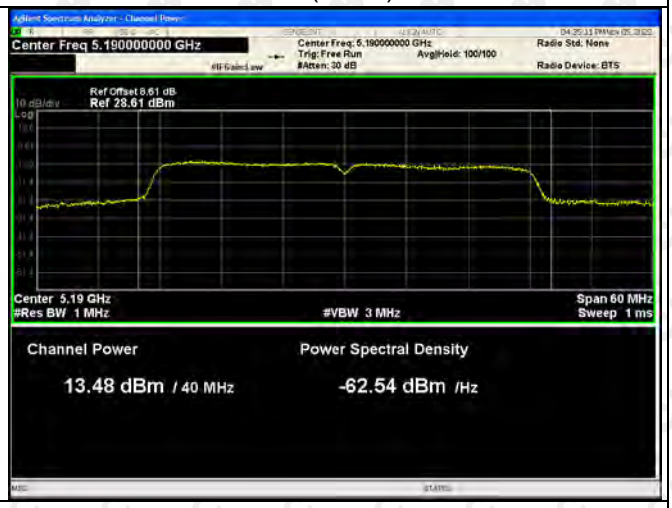


802.11ac(VH20)-5240



802.11ac(VH40)-5190

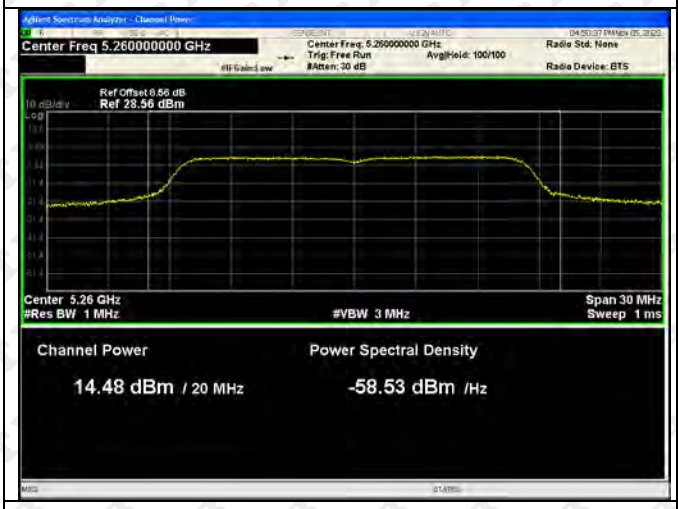
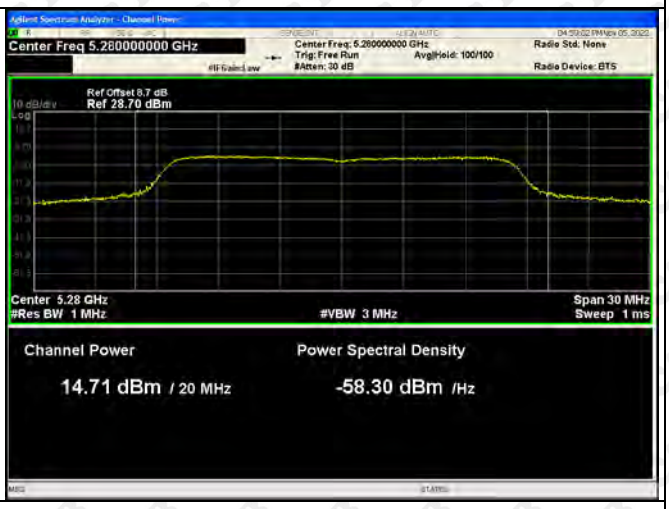
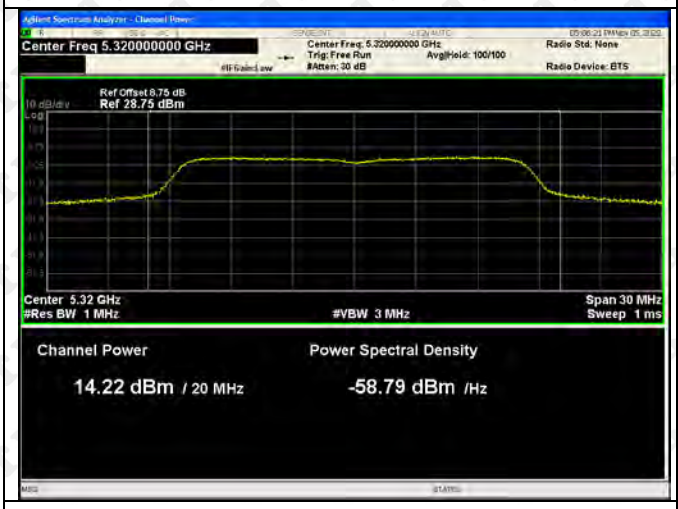
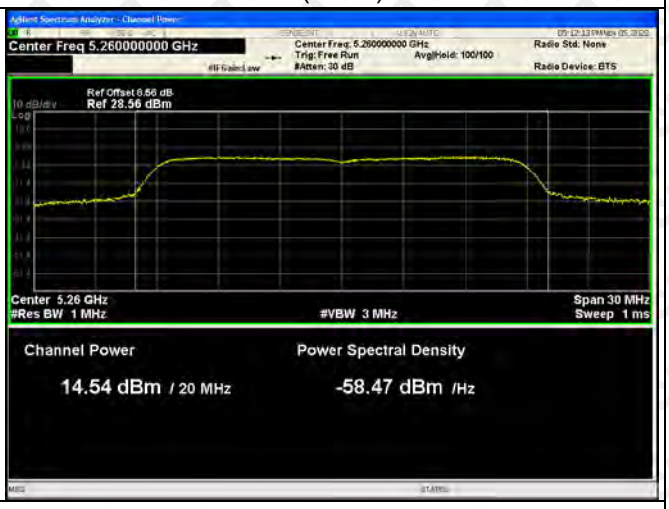
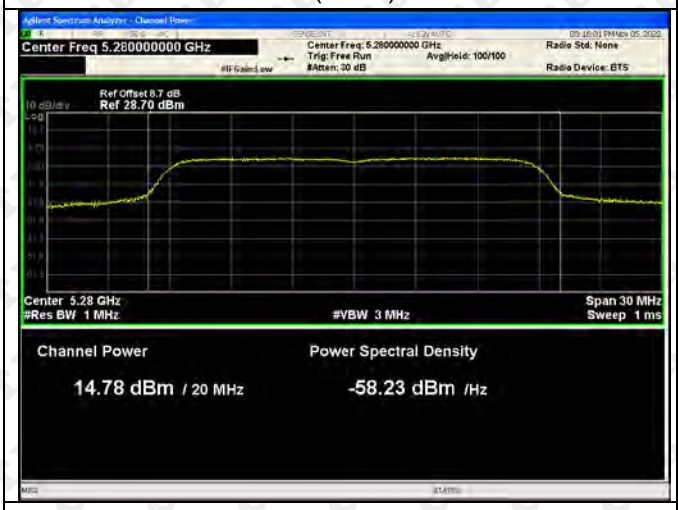
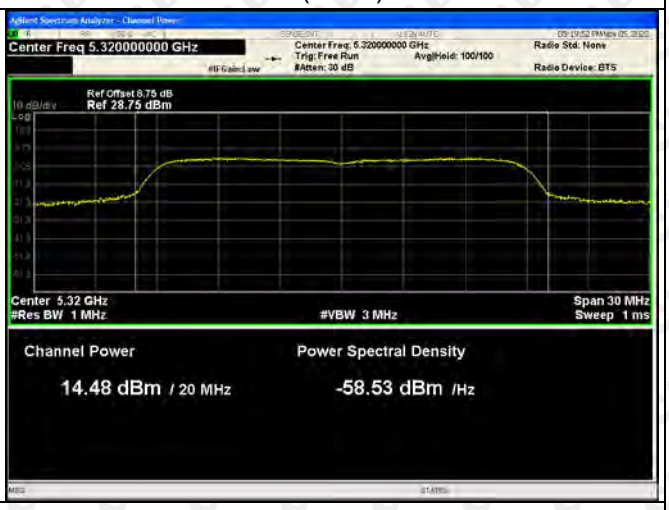
802.11ac(VH40)-5230

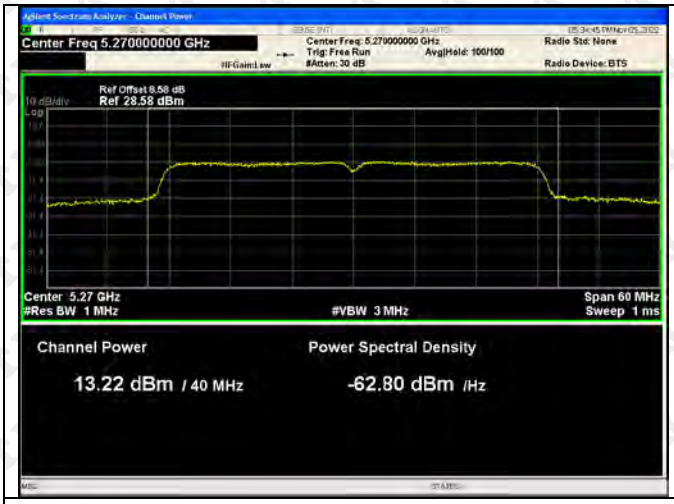


802.11ac(VH80)-5230

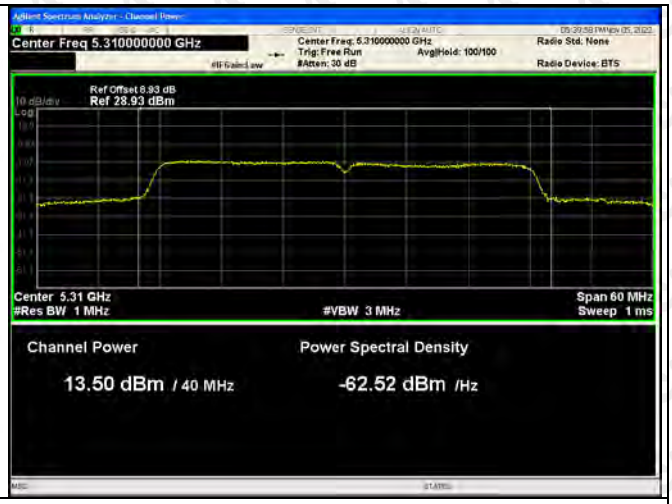

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.48 dB
10 dB/div
Ref 28.48 dBm
Center 5.23 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.72 dBm / 40 MHz
Power Spectral Density
-62.30 dBm /Hz
Agilent Spectrum Analyzer - Channel Power
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.52 dB
10 dB/div
Ref 28.52 dBm
Center 5.21 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.52 dBm / 80 MHz
Power Spectral Density
-66.51 dBm /Hz

5260-5320MHz-Power
ANT1

802.11a-5260	802.11a-5280
	
802.11a-5320	802.11n(HT20)-5260
	
802.11n(HT20)-5280	802.11n(HT20)-5320
	
802.11n(HT40)-5270	802.11n(HT40)-5310

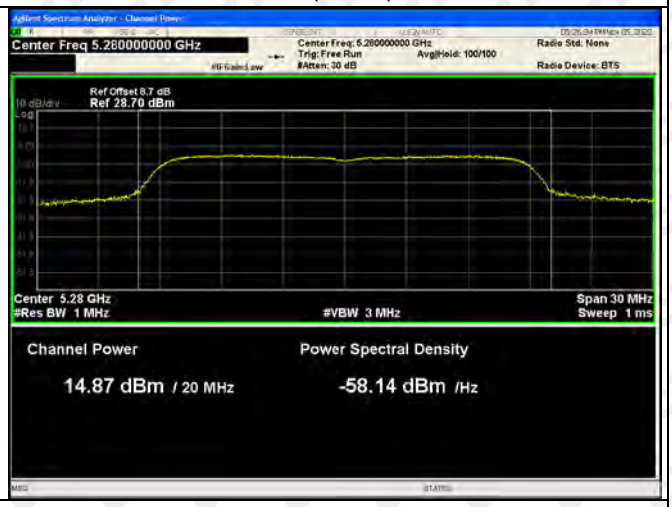


802.11ac(VH20)-5260

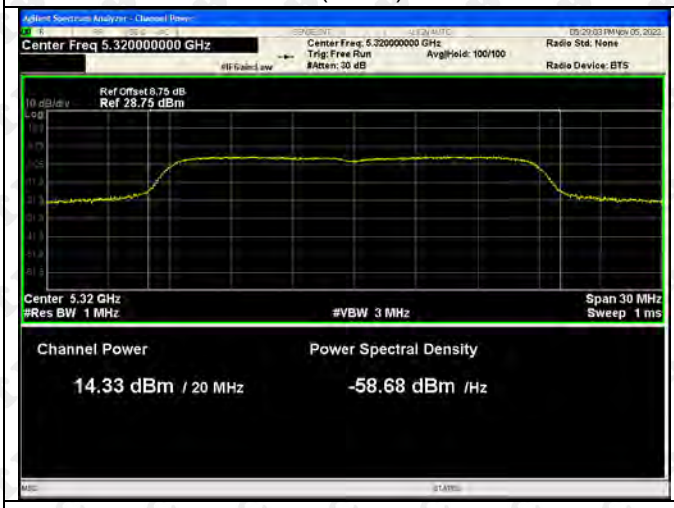


802.11ac(VH20)-5280

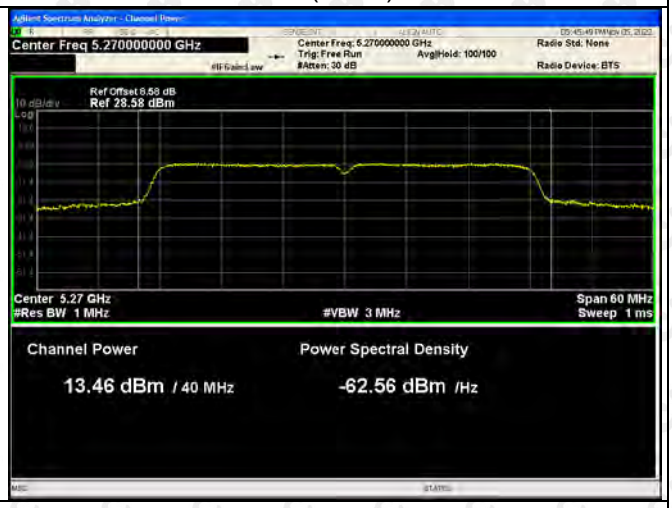
802.11ac(VH20)-5320



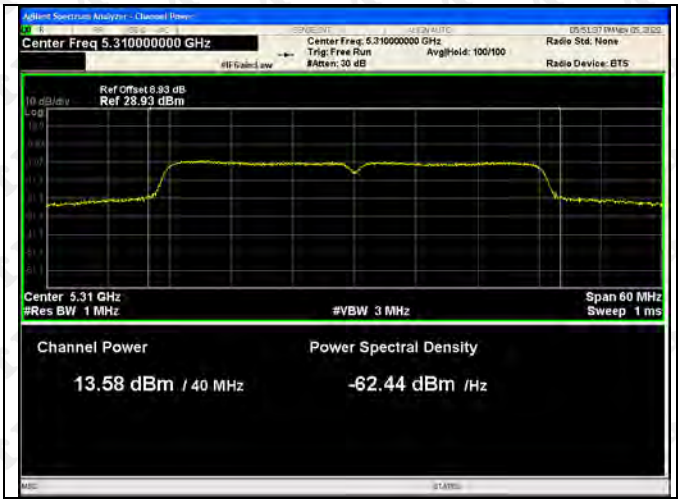
802.11ac(VH40)-5270

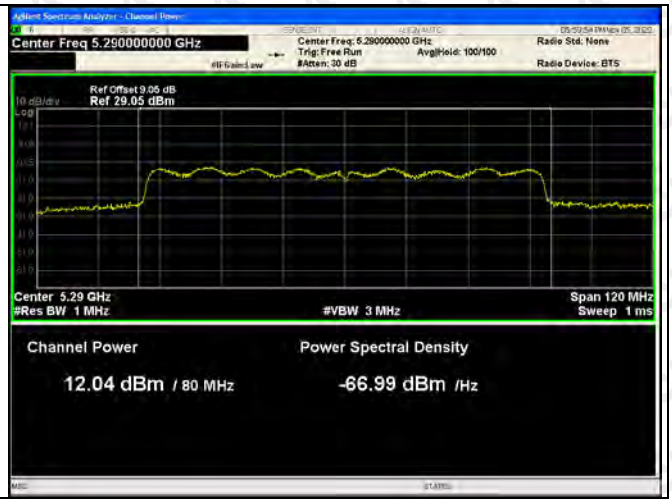


802.11ac(VH40)-5310



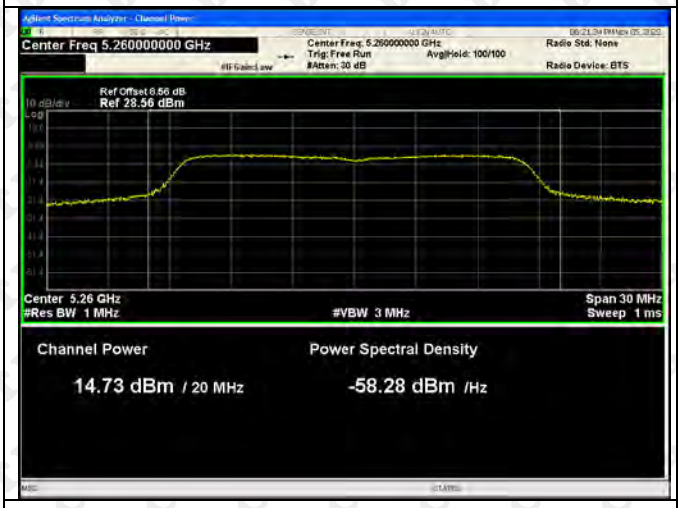
802.11ac(VH80)-5290


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.310000000 GHz
Center Freq: 5.310000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.93 dB
10 dB/div
Ref 28.93 dBm
Center 5.31 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.58 dBm / 40 MHz
Power Spectral Density
-62.44 dBm /Hz

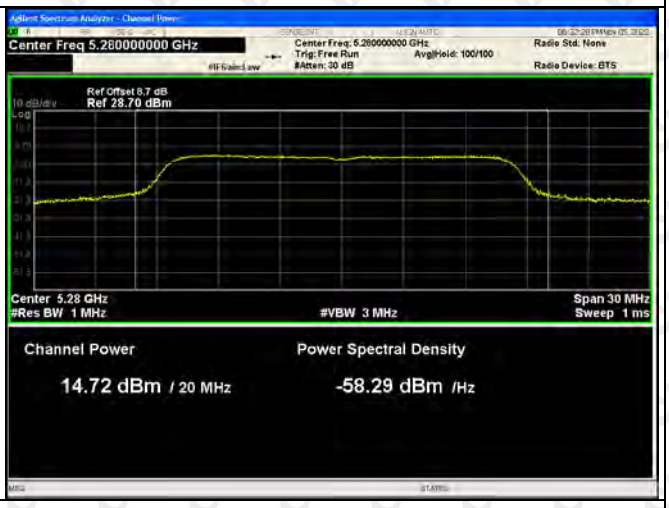

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.290000000 GHz
Center Freq: 5.290000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
10 dB/div
Ref 29.05 dBm
Center 5.29 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.04 dBm / 80 MHz
Power Spectral Density
-66.99 dBm /Hz

ANT2

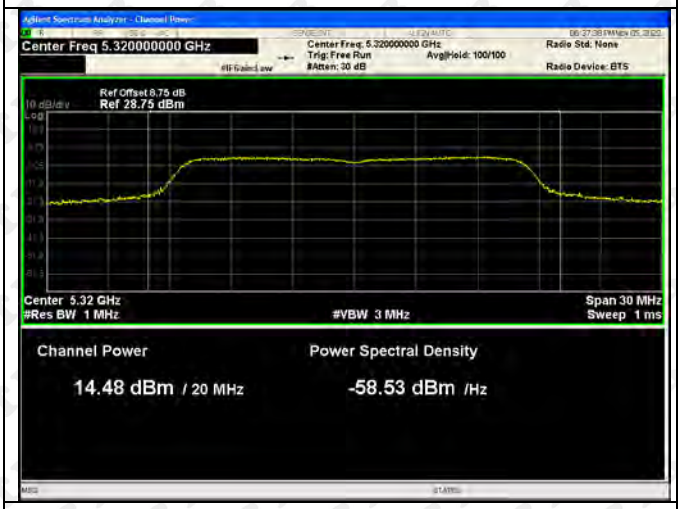
802.11a-5260



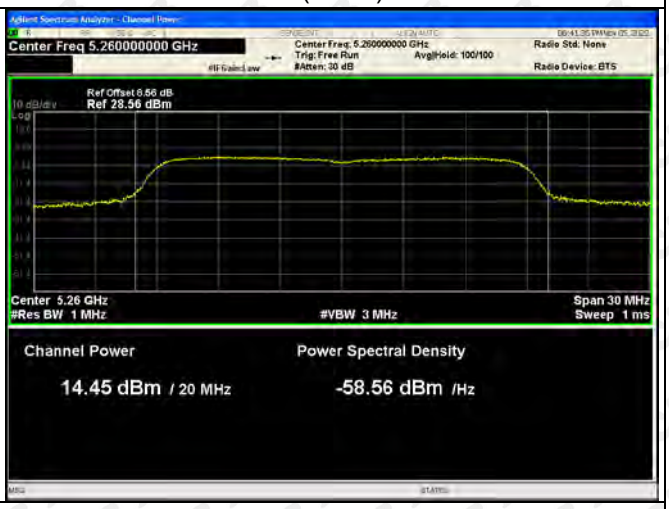
802.11a-5280



802.11a-5320

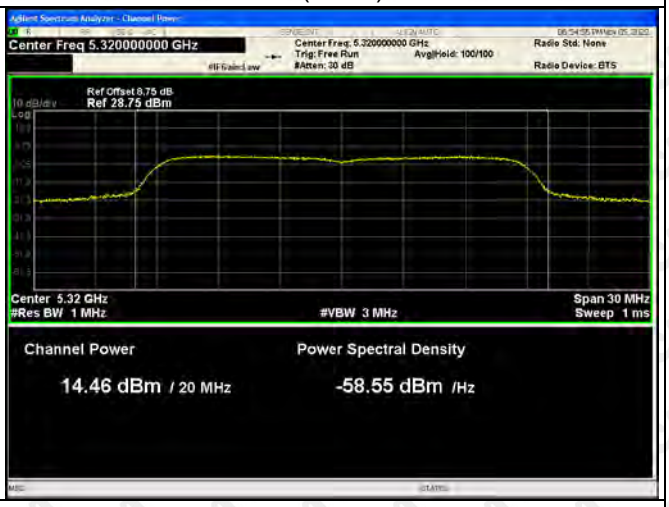


802.11n(HT20)-5260



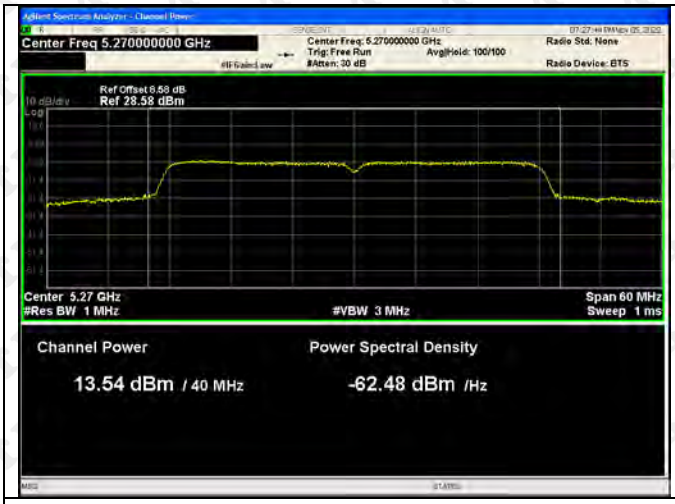
802.11n(HT20)-5280

802.11n(HT20)-5320

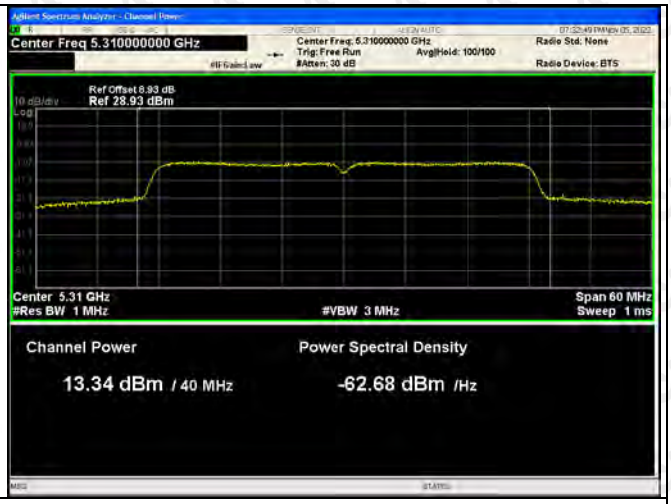


802.11n(HT40)-5270

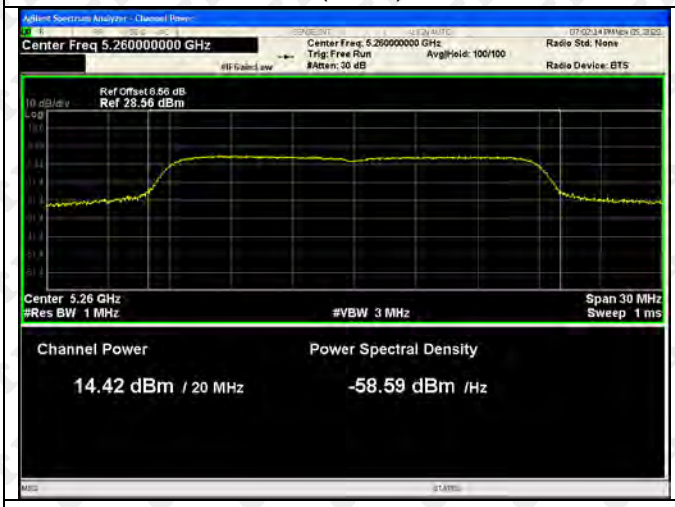
802.11n(HT40)-5310



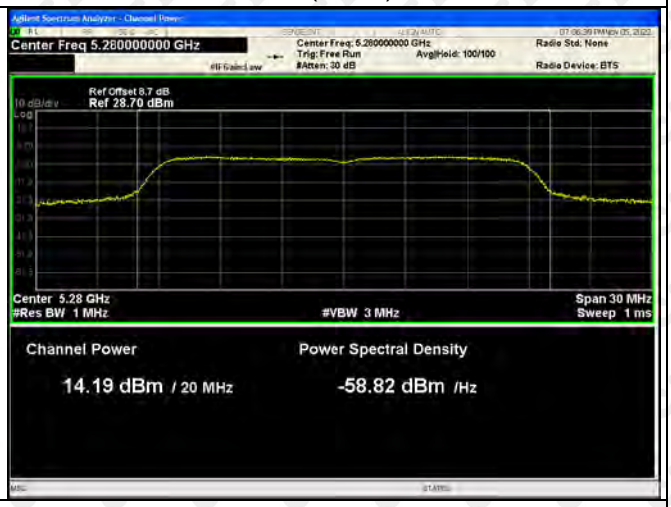
802.11ac(VH20)-5260



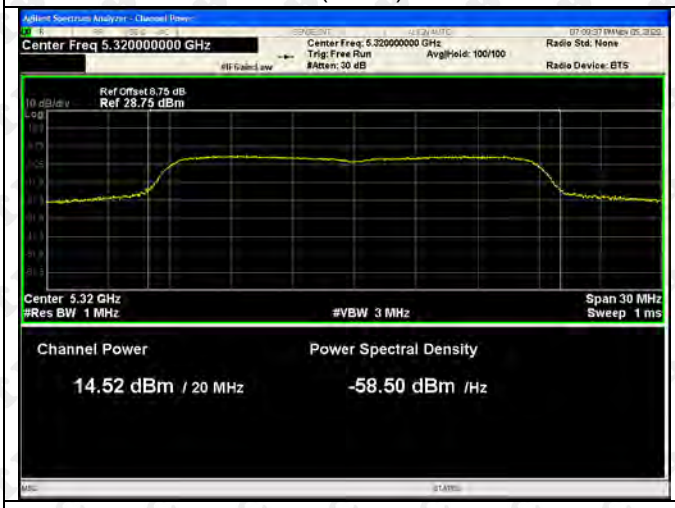
802.11ac(VH20)-5280



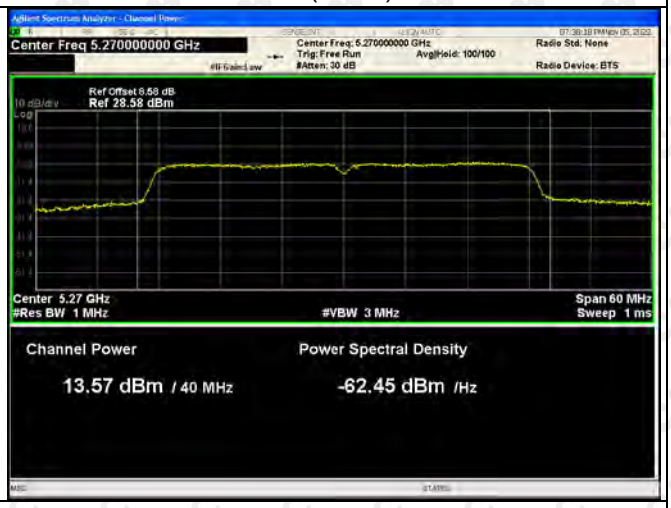
802.11ac(VH20)-5320



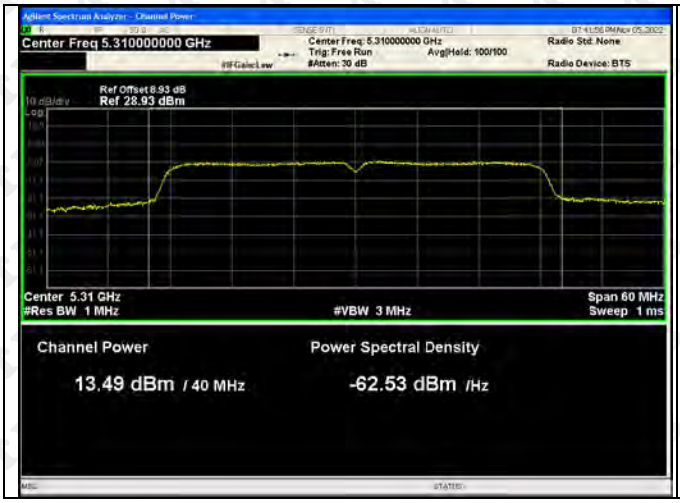
802.11ac(VH40)-5270

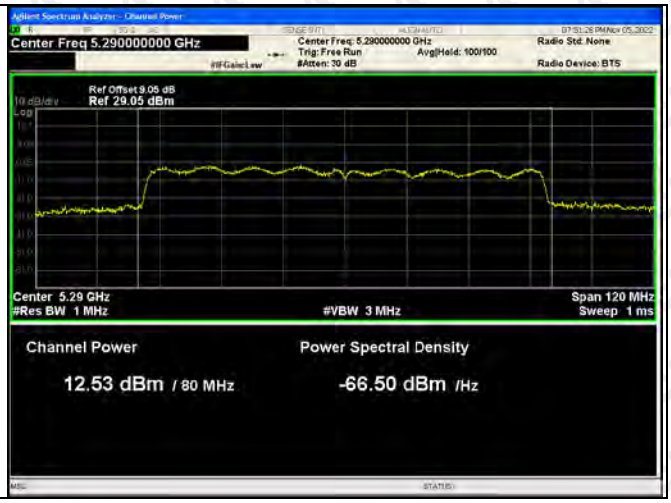


802.11ac(VH40)-5310

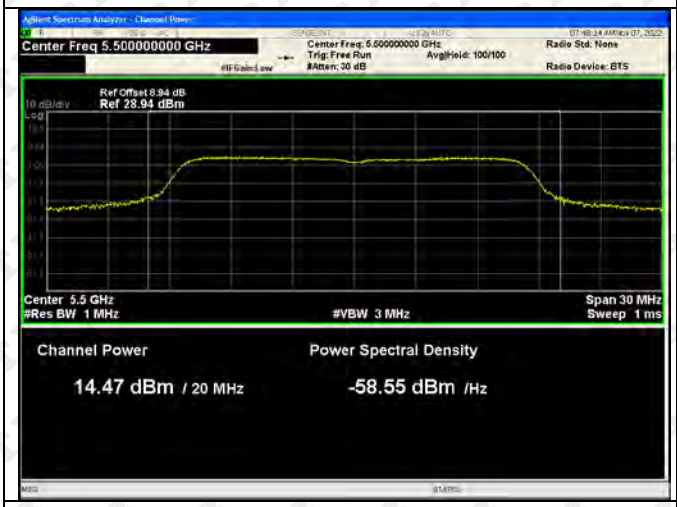
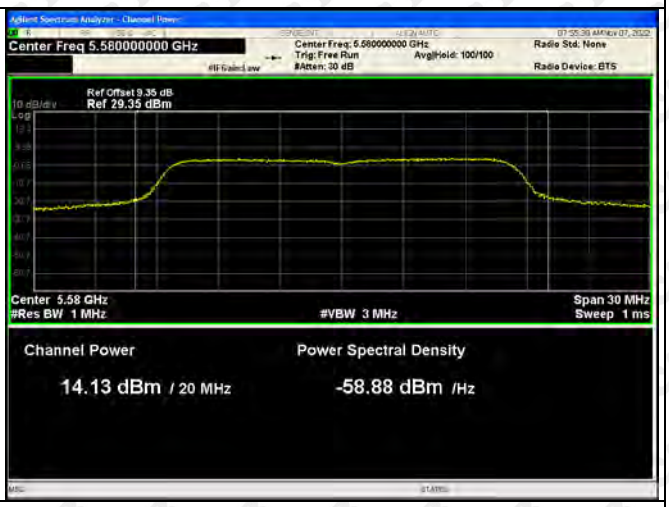
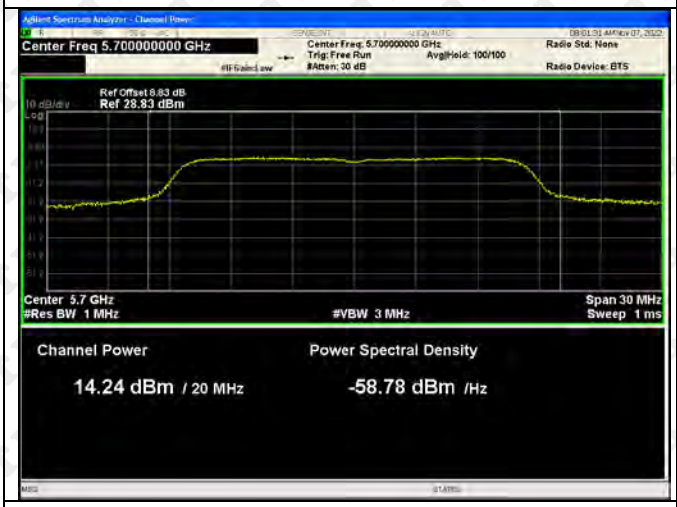
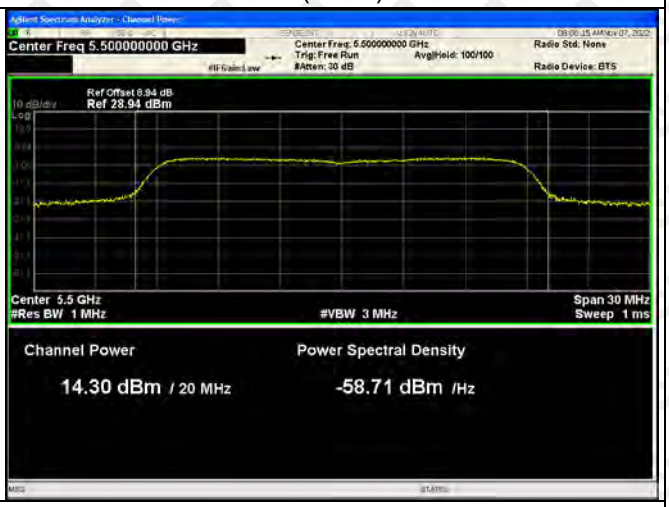
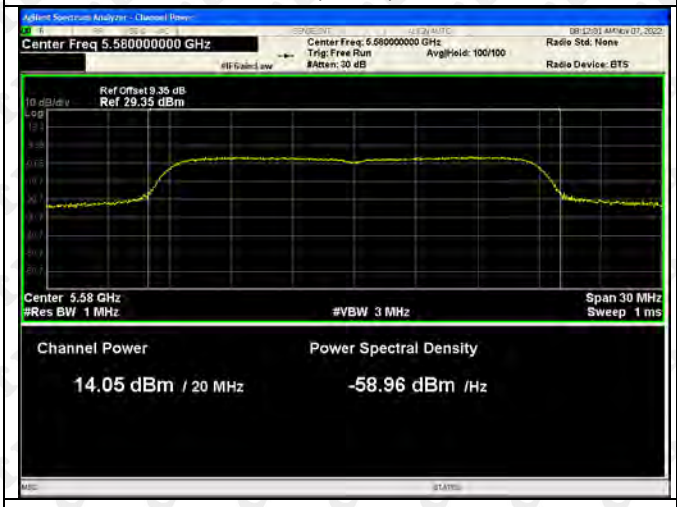
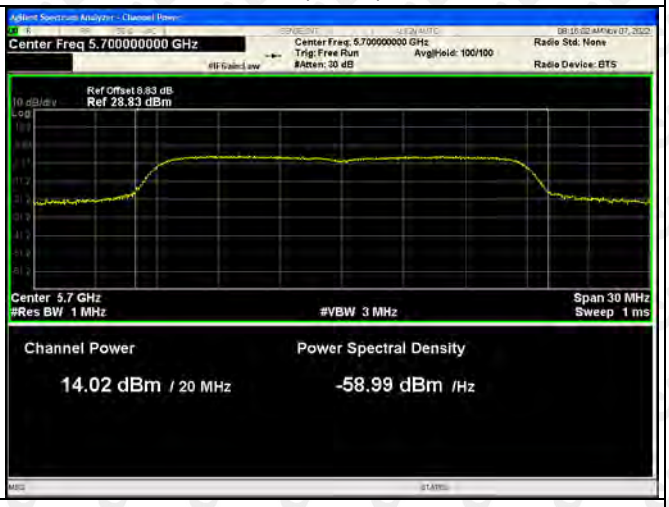


802.11ac(VH80)-5290

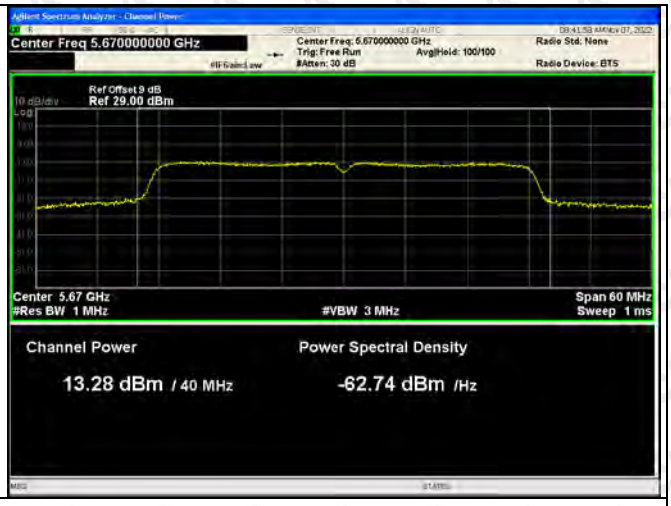

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.310000000 GHz
Center Freq: 5.310000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.93 dB
Ref 28.93 dBm
Center 5.31 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.49 dBm / 40 MHz
Power Spectral Density
-62.53 dBm /Hz


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.290000000 GHz
Center Freq: 5.290000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
Ref 29.05 dBm
Center 5.29 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.53 dBm / 80 MHz
Power Spectral Density
-66.50 dBm /Hz

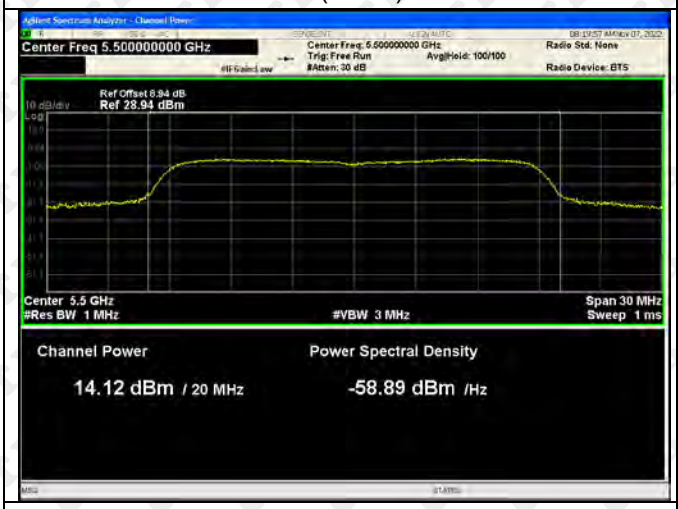
5500-5700MHz-Power
ANT1

802.11a-5500	802.11a-5580
	
802.11a-5700	802.11n(HT20)-5500
	
802.11n(HT20)-5580	802.11n(HT20)-5700
	
802.11n(HT40)-5510	802.11n(HT40)-5670

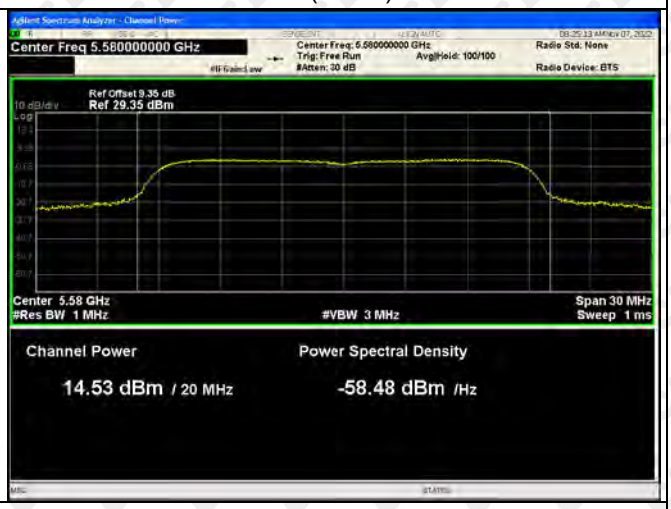
802.11ac(VH20)-5500



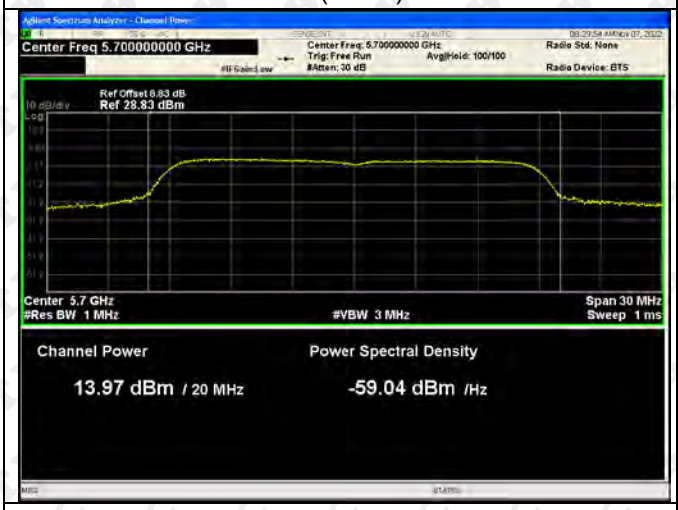
802.11ac(VH20)-5580



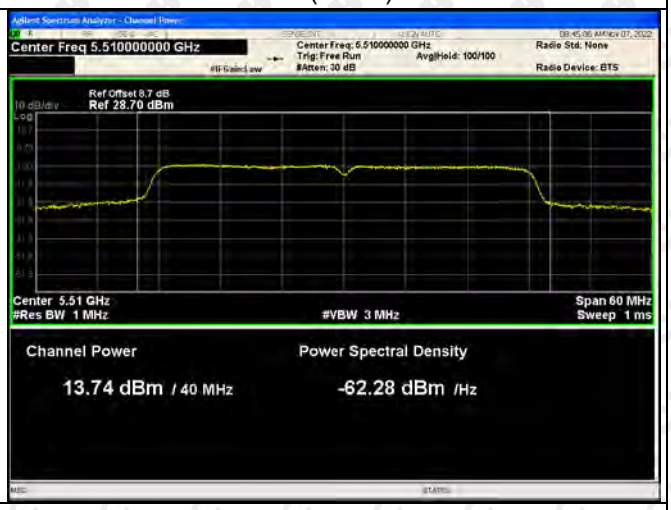
802.11ac(VH20)-5700



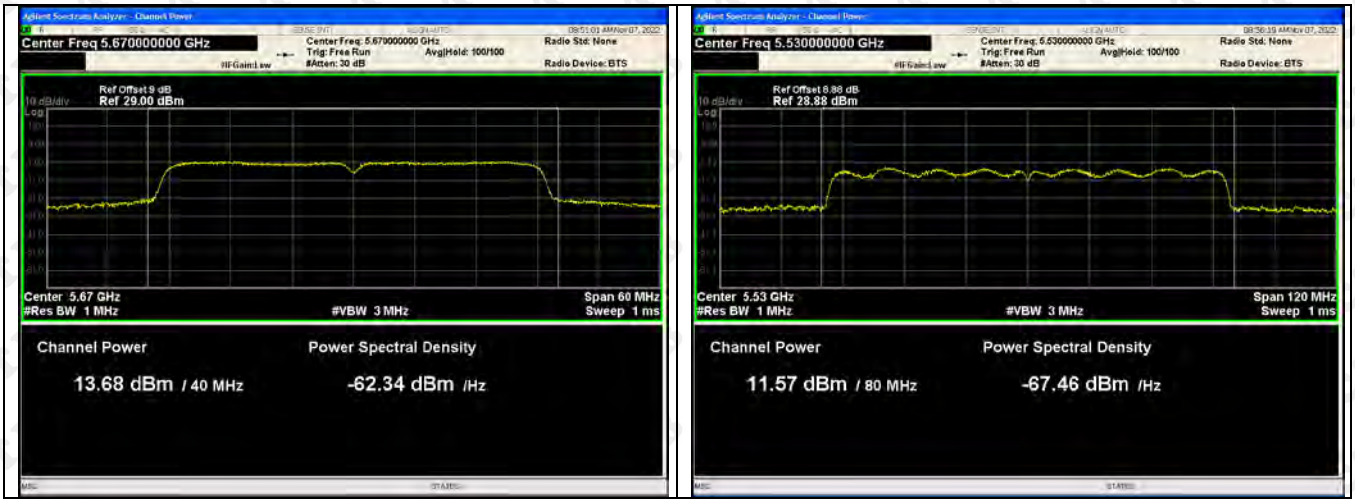
802.11ac(VH40)-5510



802.11ac(VH40)-5670



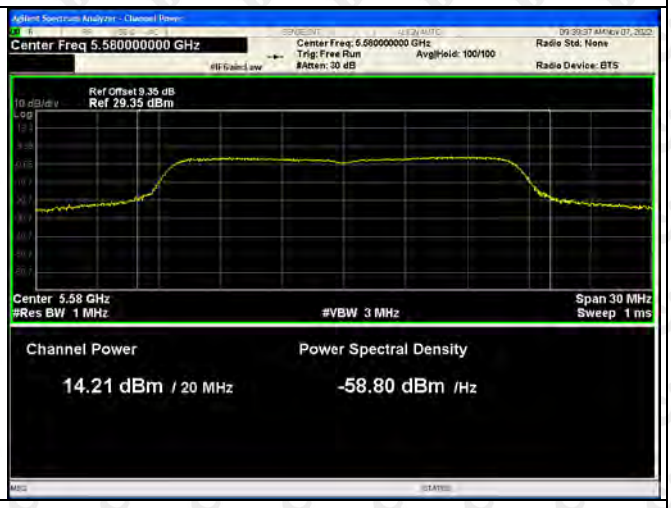
802.11ac(VH80)-5530


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.670000000 GHz
Center Freq: 5.670000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9 dB
10 dB/div
Ref 29.00 dBm
Center 5.67 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.68 dBm / 40 MHz
Power Spectral Density
-62.34 dBm /Hz
Agilent Spectrum Analyzer - Channel Power
Center Freq 5.530000000 GHz
Center Freq: 5.530000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.88 dB
10 dB/div
Ref 28.88 dBm
Center 5.53 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
11.57 dBm / 80 MHz
Power Spectral Density
-67.46 dBm /Hz

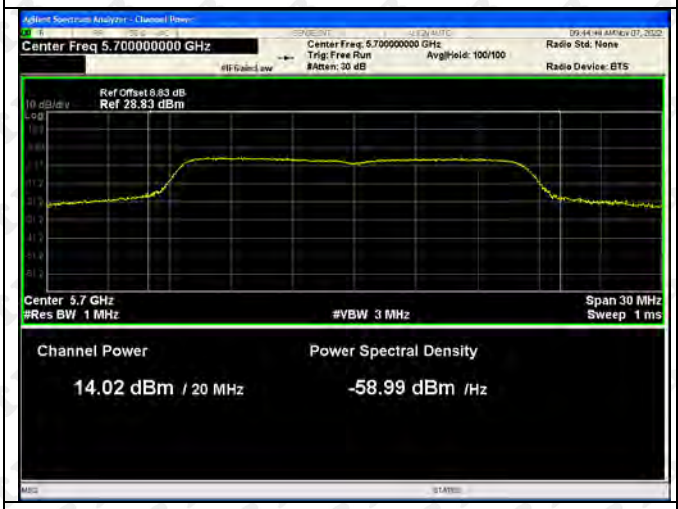
ANT2

802.11a-5500

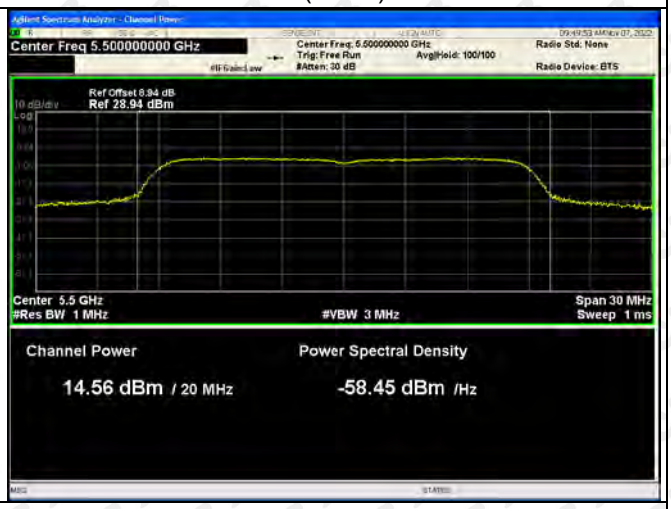
802.11a-5580



802.11a-5700

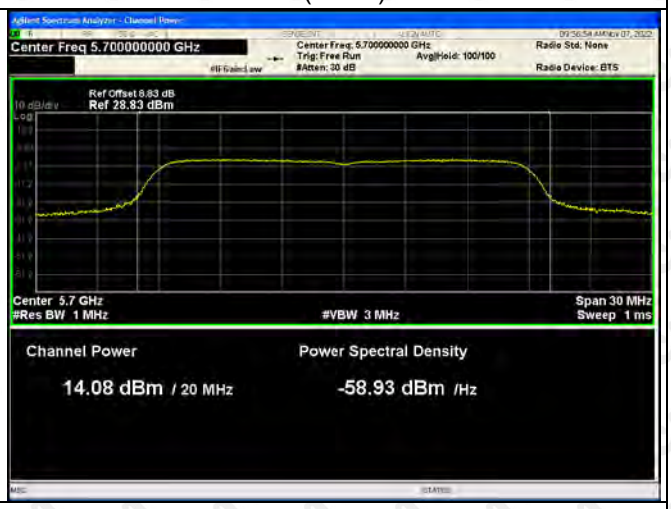


802.11n(HT20)-5500



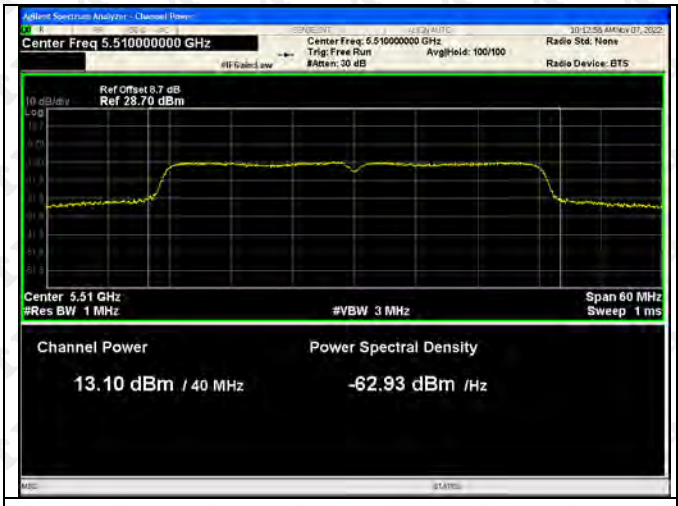
802.11n(HT20)-5580

802.11n(HT20)-5700

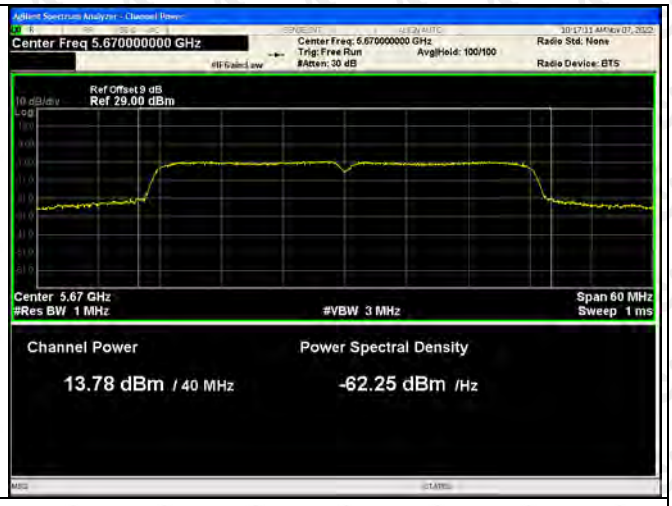


802.11n(HT40)-5510

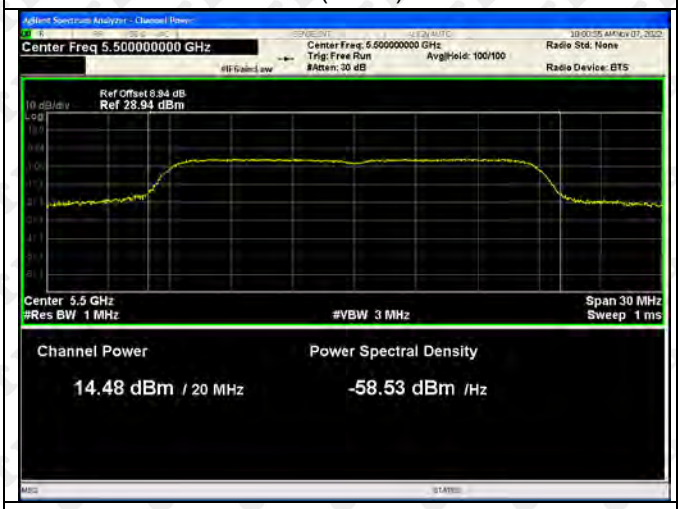
802.11n(HT40)-5670



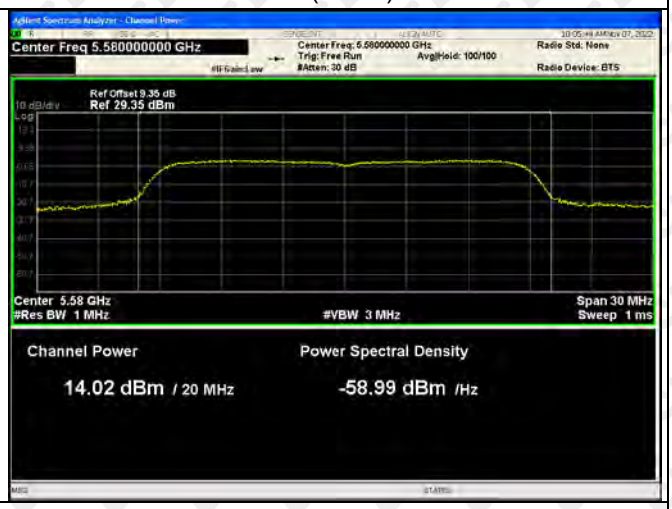
802.11ac(VH20)-5500



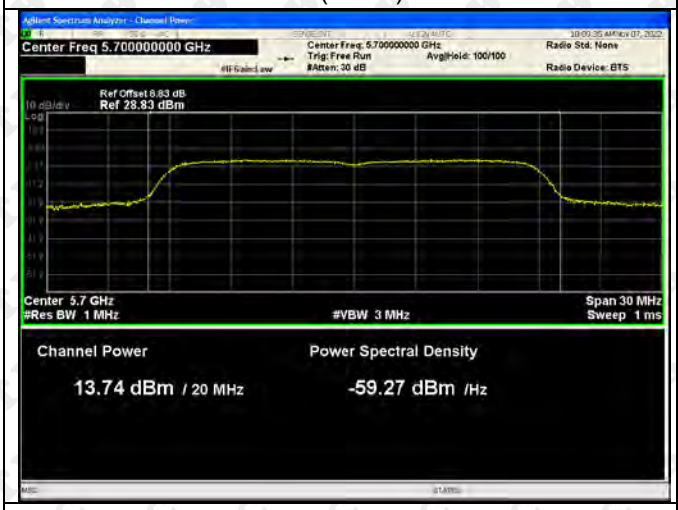
802.11ac(VH20)-5580



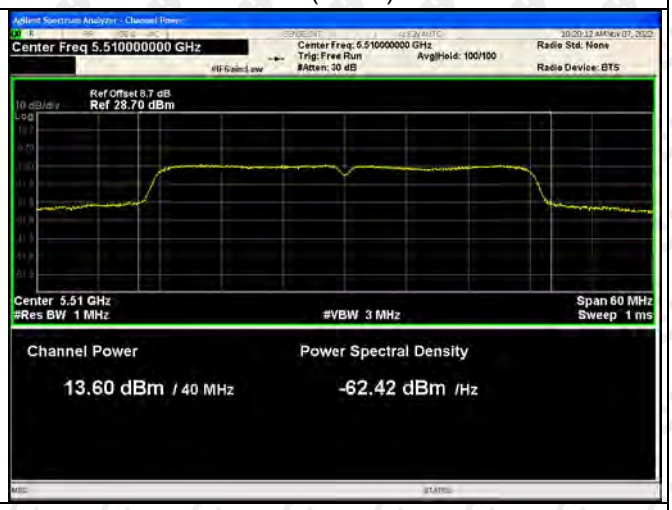
802.11ac(VH20)-5700



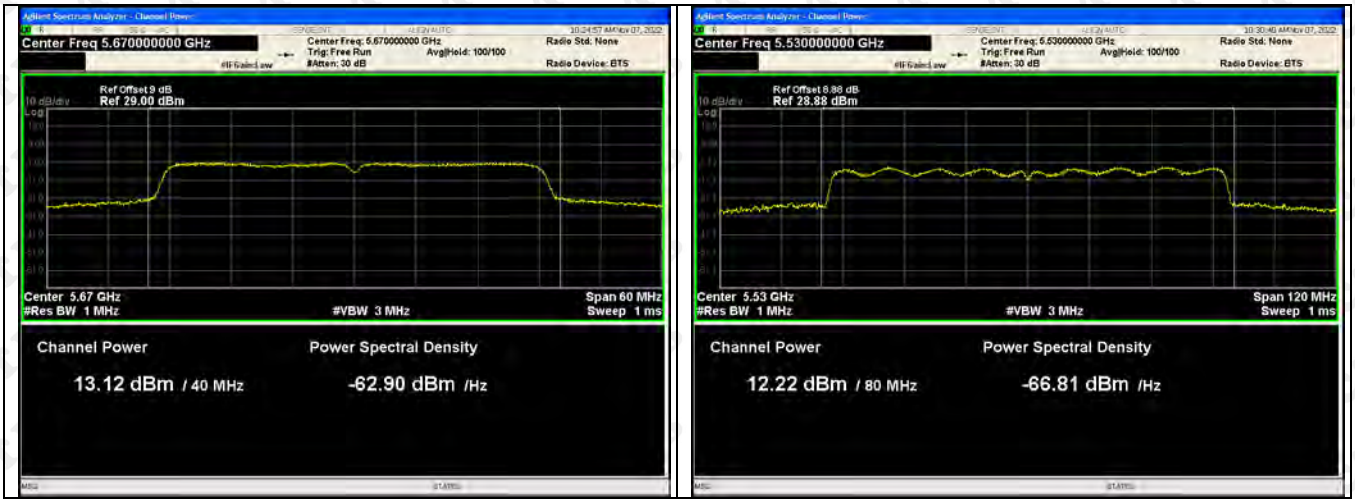
802.11ac(VH40)-5510



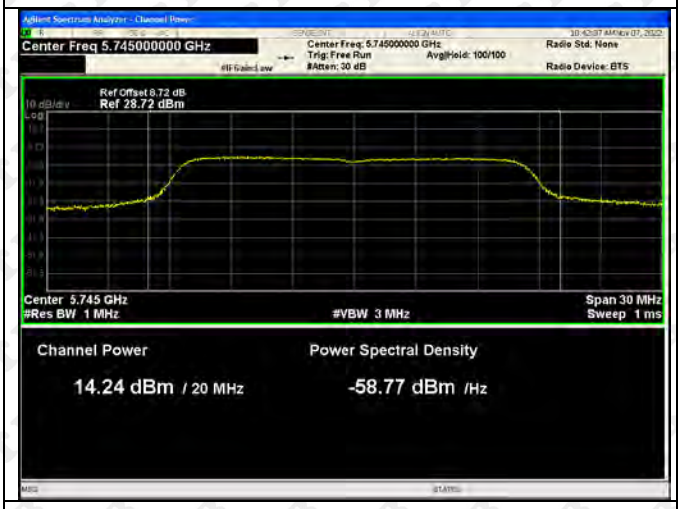
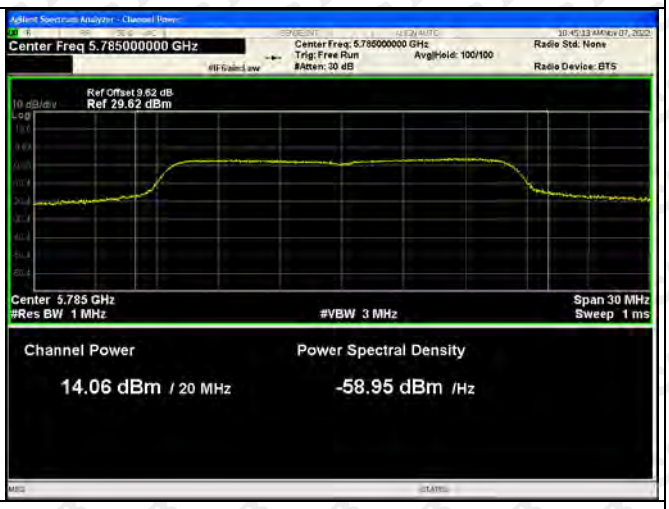
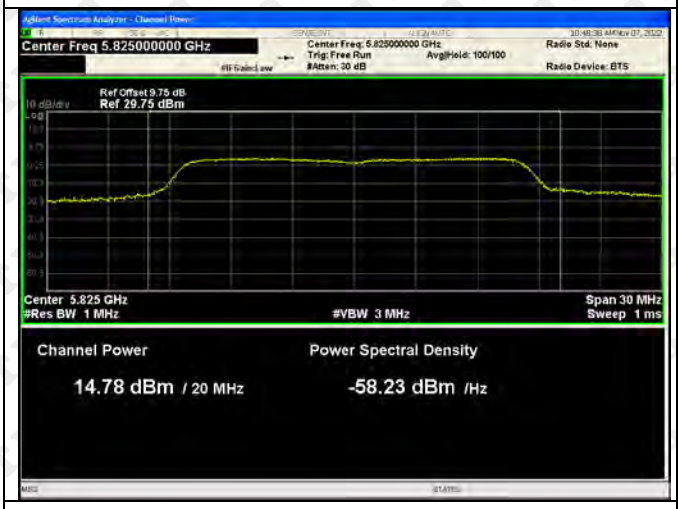
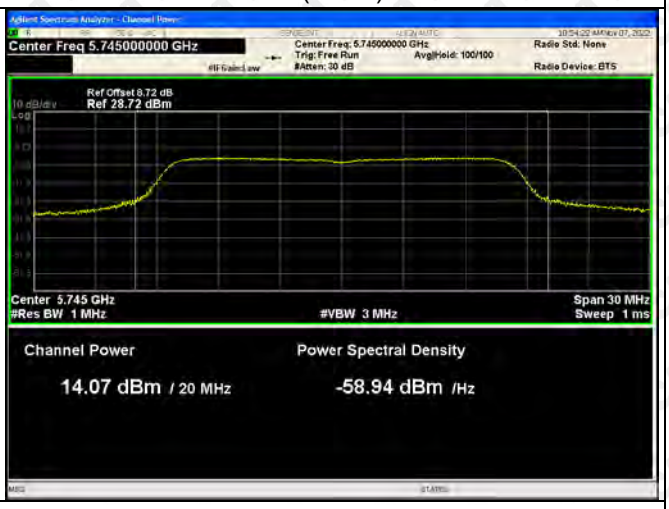
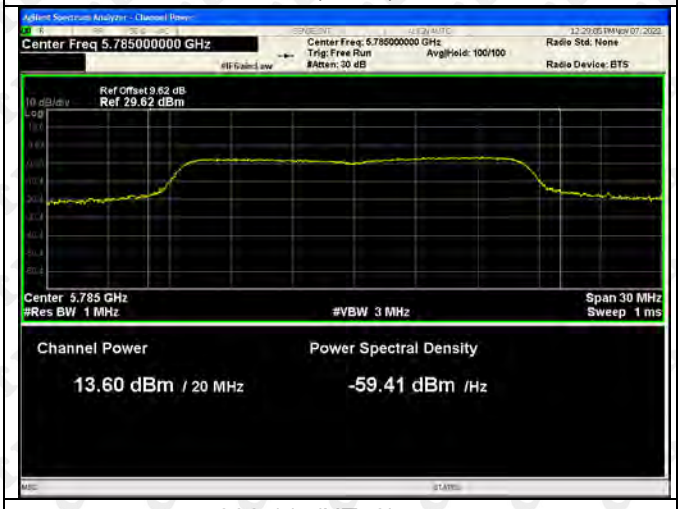
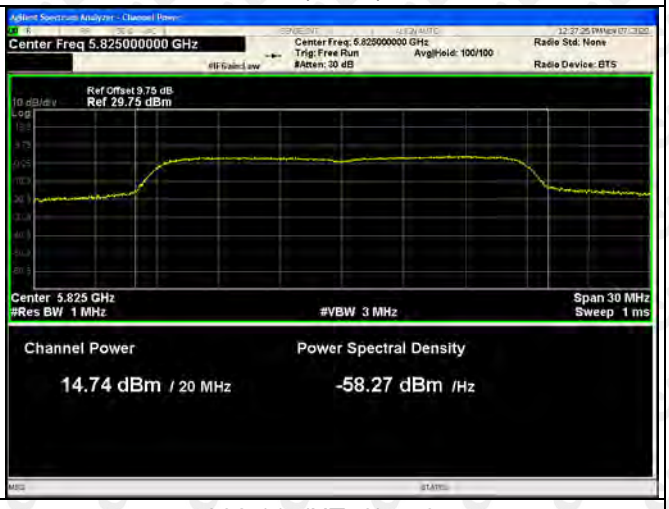
802.11ac(VH40)-5670

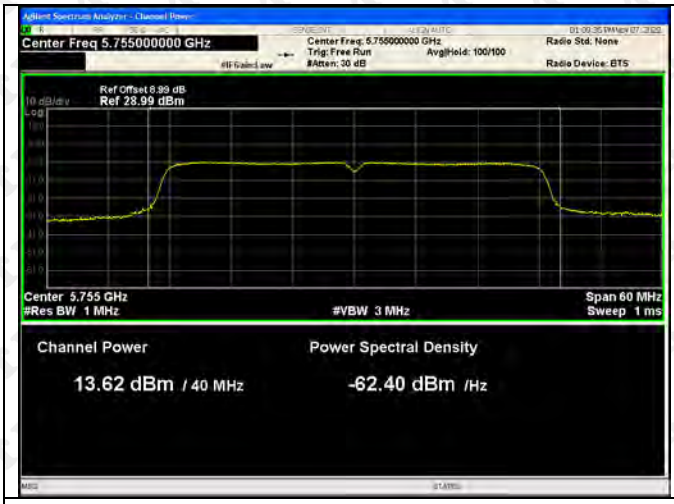


802.11ac(VH80)-5530

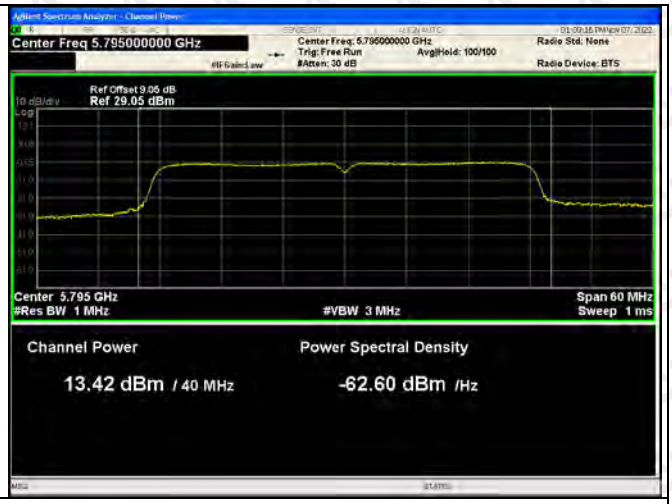

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.670000000 GHz
Center Freq: 5.670000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9 dB
10 dB/div
Ref 29.00 dBm
Center 5.67 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.12 dBm / 40 MHz
Power Spectral Density
-62.90 dBm /Hz
Agilent Spectrum Analyzer - Channel Power
Center Freq 5.530000000 GHz
Center Freq: 5.530000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.88 dB
10 dB/div
Ref 28.88 dBm
Center 5.53 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.22 dBm / 80 MHz
Power Spectral Density
-66.81 dBm /Hz

5745-5825MHz-Power
ANT1

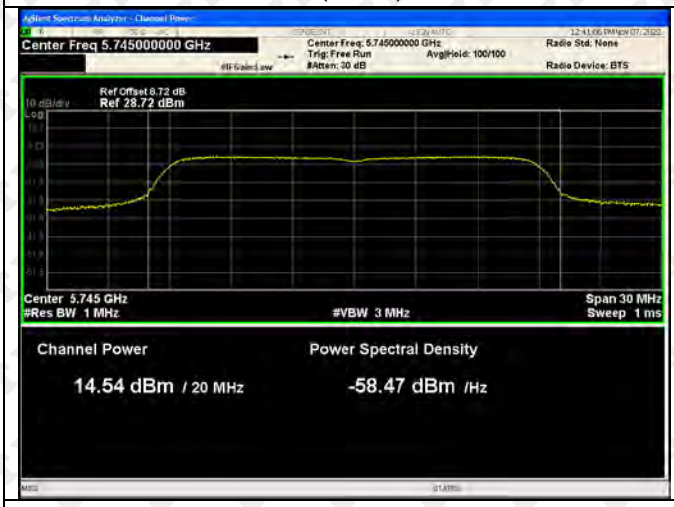
802.11a-5745	802.11a-5785
	
802.11a-5825	802.11n(HT20)-5745
	
802.11n(HT20)-5785	802.11n(HT20)-5825
	
802.11n(HT40)-5755	802.11n(HT40)-5795



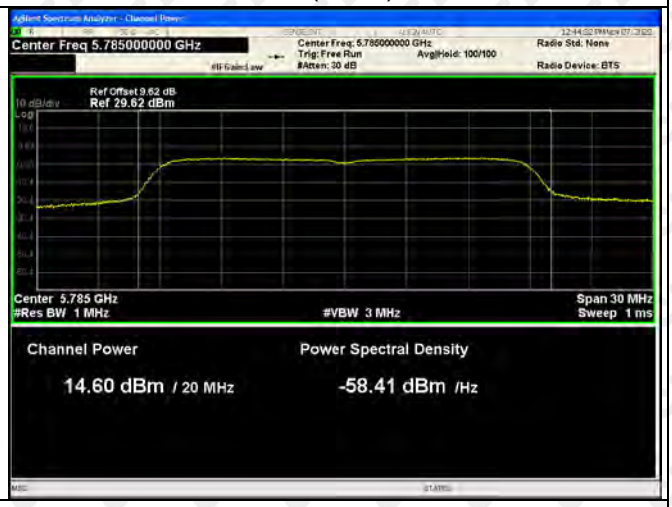
802.11ac(VH20)-5745



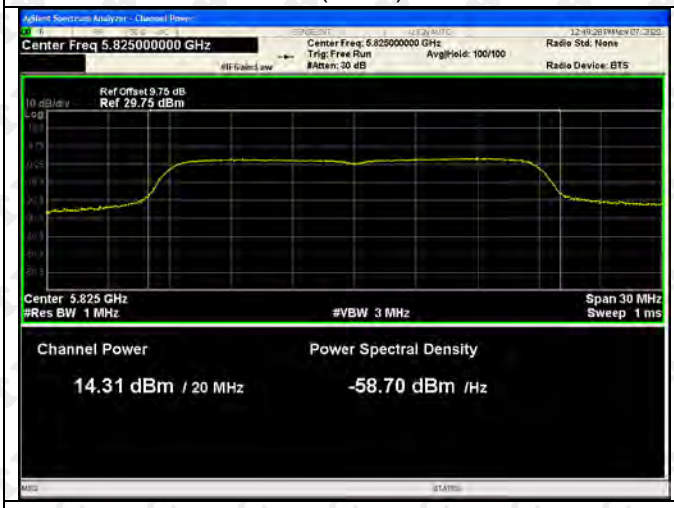
802.11ac(VH20)-5785



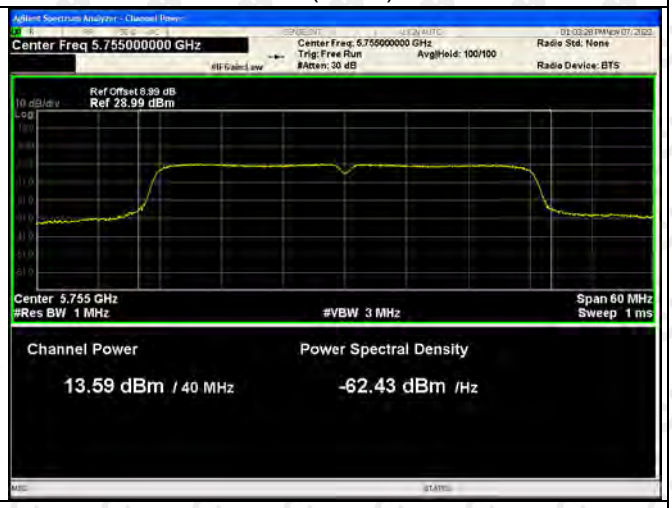
802.11ac(VH20)-5825



802.11ac(VH40)-5755



802.11ac(VH40)-5795

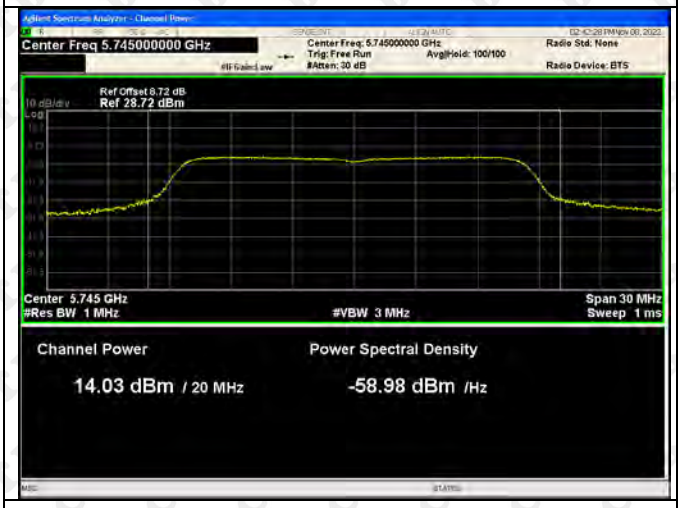


802.11ac(VH80)-5775

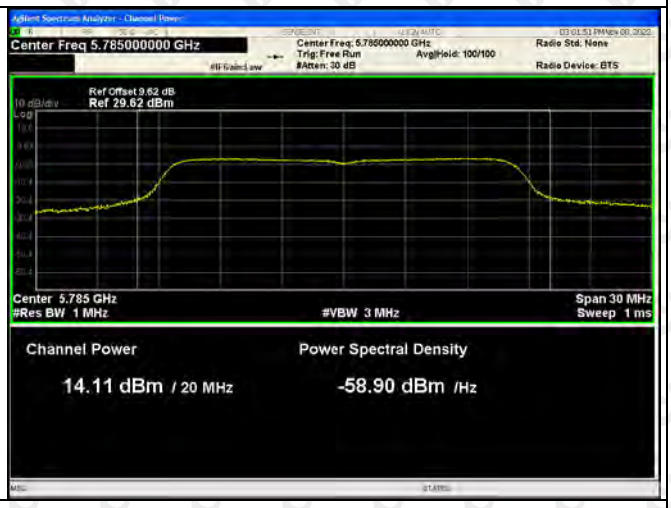

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.795000000 GHz
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
10 dB/div
Ref 29.05 dBm
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.41 dBm / 40 MHz
Power Spectral Density
-62.61 dBm /Hz
Agilent Spectrum Analyzer - Channel Power
Center Freq 5.775000000 GHz
Center Freq: 5.775000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.65 dB
10 dB/div
Ref 29.65 dBm
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.79 dBm / 80 MHz
Power Spectral Density
-66.24 dBm /Hz

ANT2

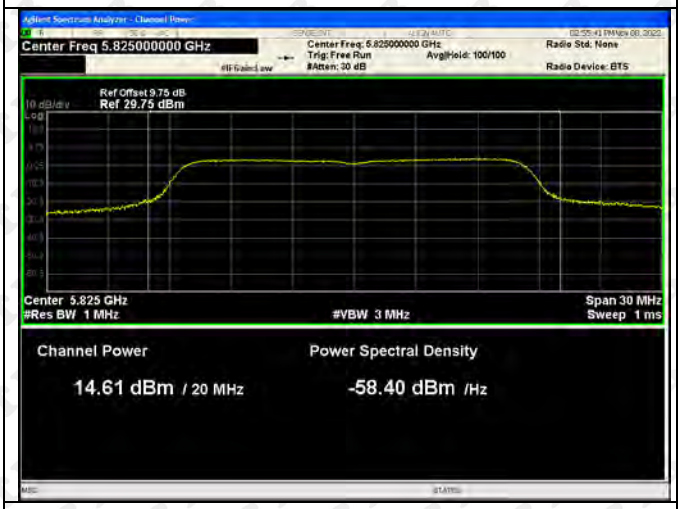
802.11a-5745



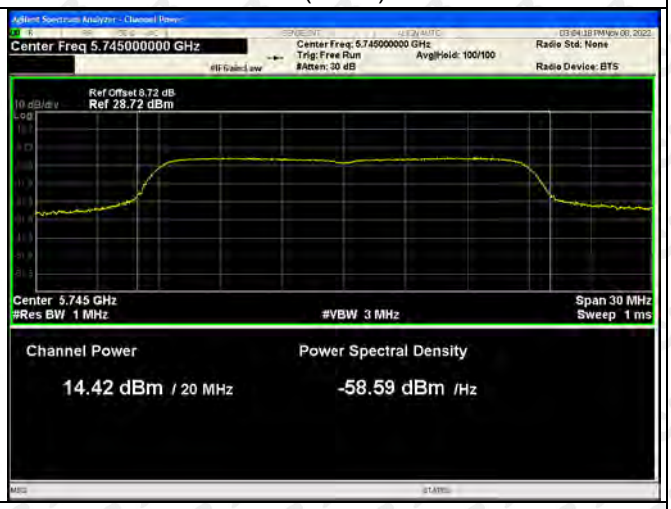
802.11a-5785



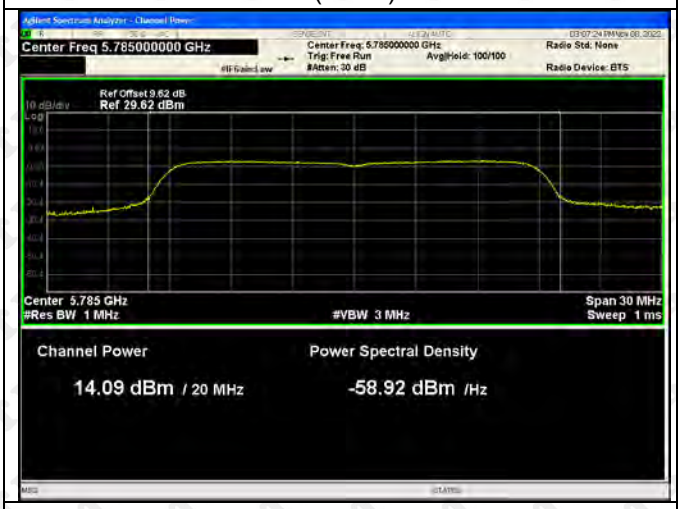
802.11a-5825



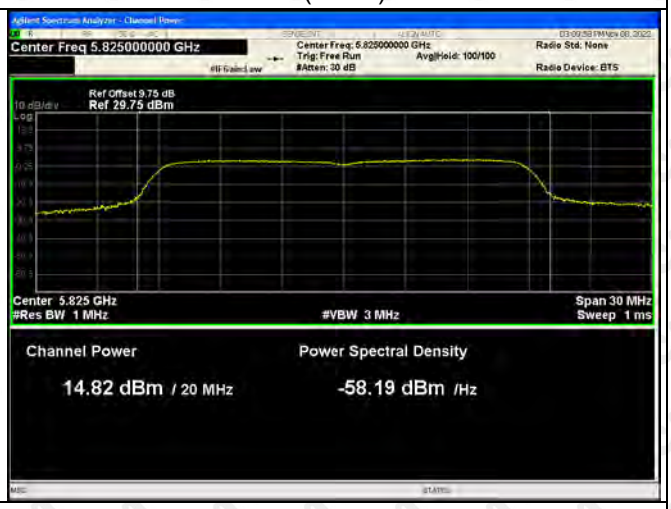
802.11n(HT20)-5745



802.11n(HT20)-5785

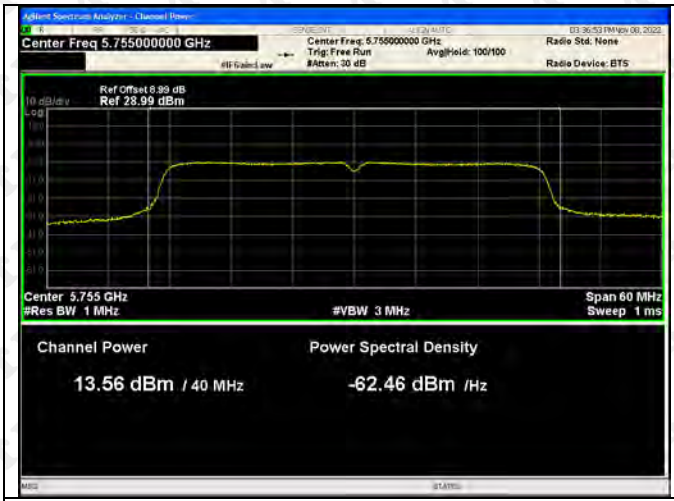


802.11n(HT20)-5825

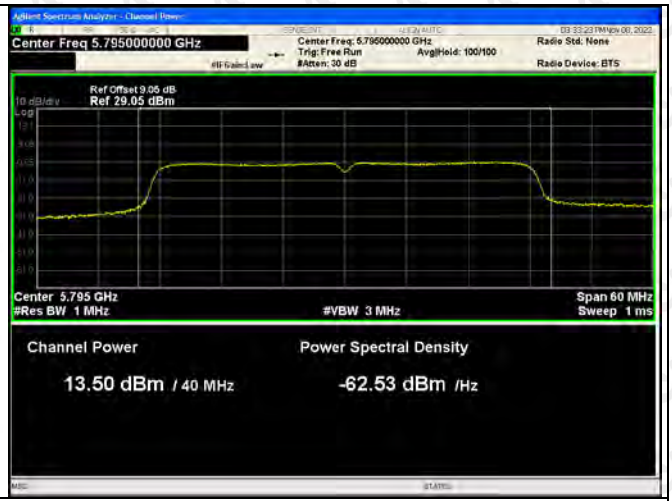


802.11n(HT40)-5755

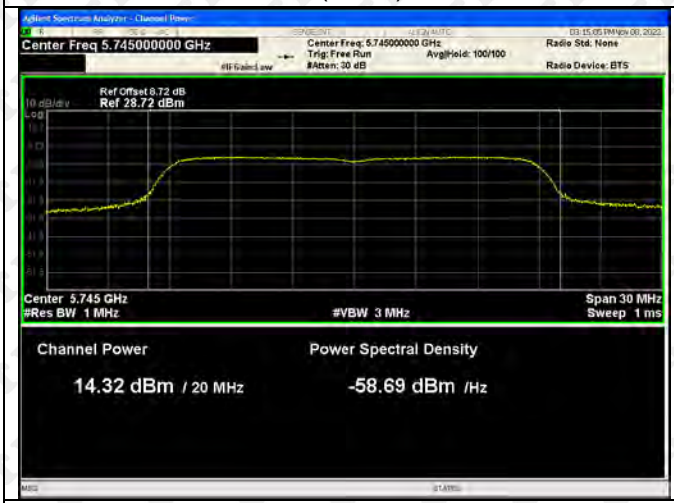
802.11n(HT40)-5795



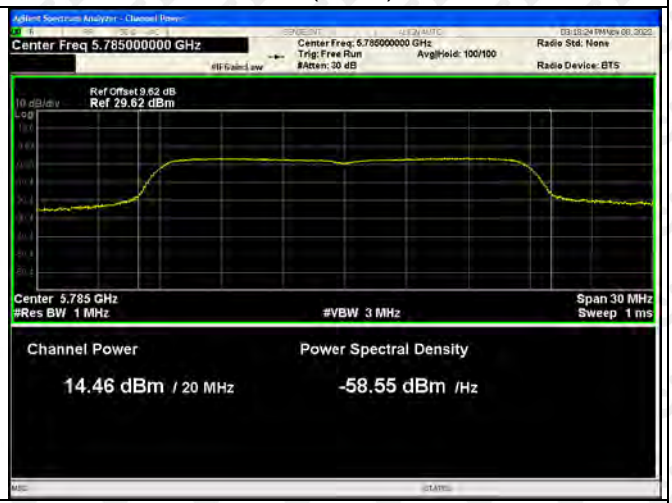
802.11ac(VH20)-5745



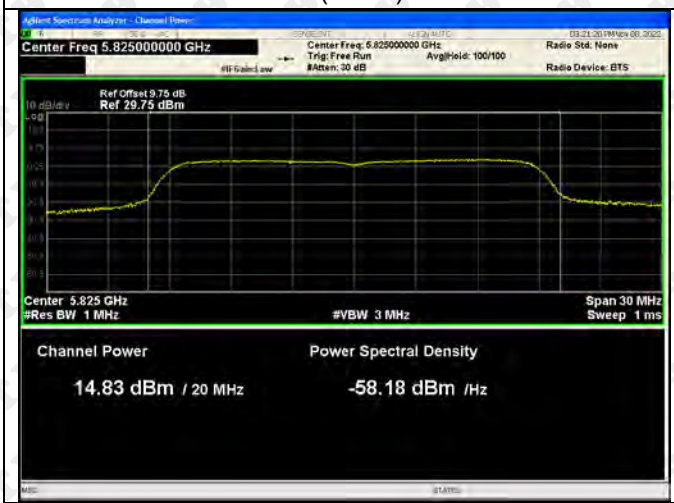
802.11ac(VH20)-5785



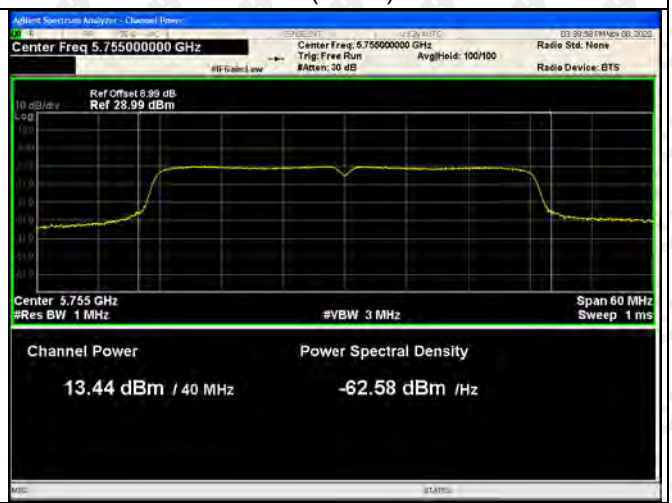
802.11ac(VH20)-5825



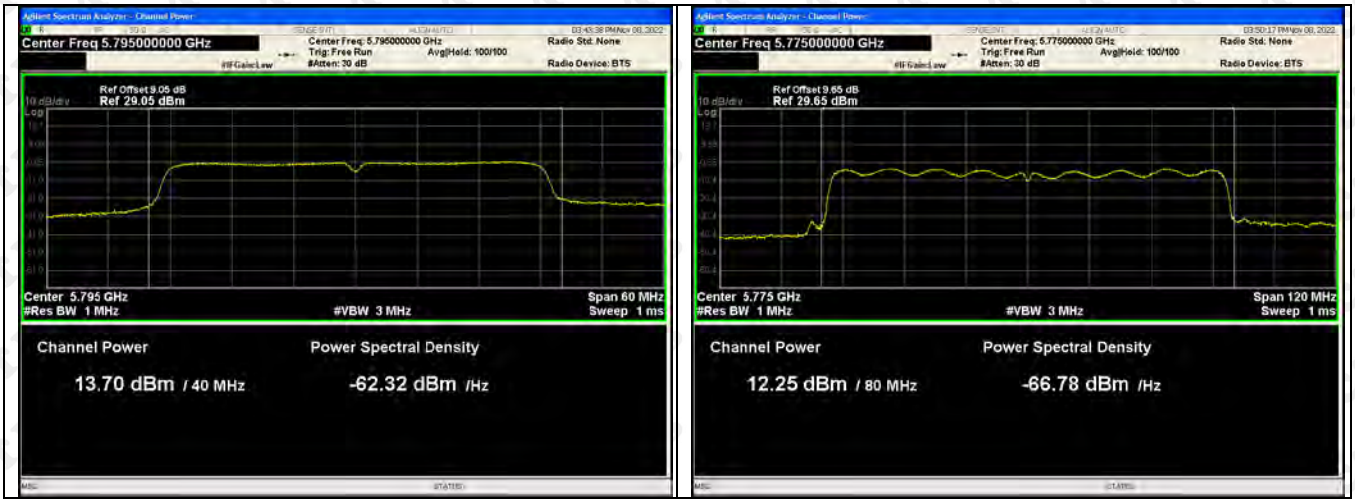
802.11ac(VH40)-5755



802.11ac(VH40)-5795

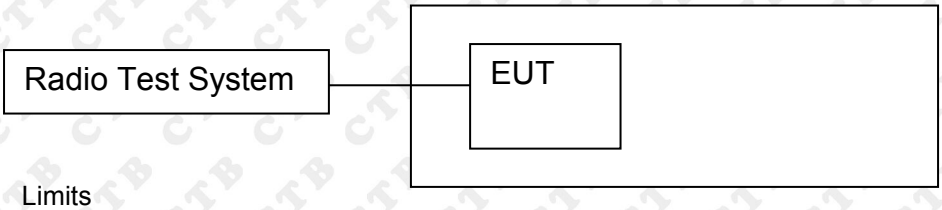


802.11ac(VH80)-5775


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.795000000 GHz
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
10 dB/div
Ref 29.05 dBm
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.70 dBm / 40 MHz
Power Spectral Density
-62.32 dBm /Hz
Agilent Spectrum Analyzer - Channel Power
Center Freq 5.775000000 GHz
Center Freq: 5.775000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.65 dB
10 dB/div
Ref 29.65 dBm
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
12.25 dBm / 80 MHz
Power Spectral Density
-66.78 dBm /Hz

10. EMISSION BANDWIDTH& OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limits

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

10.3 Test Procedure

According to KDB789033 D02v02r01 sectionE, the following is the measurement procedure.

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
2. Minimum Emission Bandwidth for the band 5.725−5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725−5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 * RBW.
c) Detector = Peak.
d) Trace mode = max hold.

e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

D. 99% Occupied Bandwidth

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. Measurement of the 99% occupied bandwidth is *required* only as a condition for using the optional band-edge measurement techniques described in II.G.3.d). Measurements of 99% occupied bandwidth may also optionally be used in lieu of the EBW to define the minimum frequency range over which the 789033 D02 General UNII Test Procedures New Rules v02r01 Page 4 spectrum is integrated when measuring maximum conducted output power as described in II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with Section 15.407(a).
The following procedure shall be used for measuring (99%) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.

2. Set span = 1.5 times to 5.0 times the OBW.

3. Set RBW = 1% to 5% of the OBW

4. Set VBW ≥ 3 * RBW

5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

6. Use the 99% power bandwidth function of the instrument (if available).

7. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

10.4 Test Results

Test mode	Test Channel (MHz)	26dB Bandwidth (MHz)&ANT1	26dB Bandwidth (MHz)&ANT2
802.11a	5180	24.963	22.787
	5200	26.051	23.811
	5240	22.906	23.56
802.11ac20	5180	25.543	22.662
	5200	28.486	24.522
	5240	27.03	27.978
802.11ac40	5190	58.265	50.441
	5230	56.279	57.978
802.11ac80	5210	99.808	99.722
802.11n(HT20)	5180	23.946	21.854
	5200	25.726	25.367
	5240	25.494	22.994
802.11n(HT40)	5190	51.844	50.661
	5230	52.875	52.962

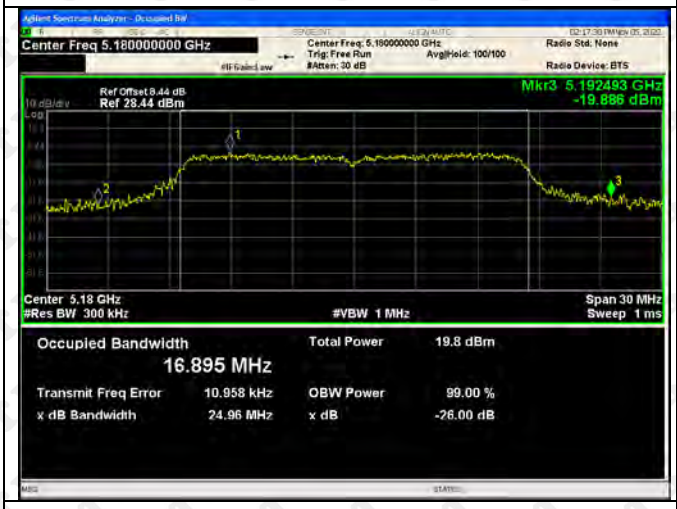
Test mode	Test Channel (MHz)	26dB Bandwidth (MHz)&ANT1	26dB Bandwidth (MHz)&ANT2
802.11a	5260	28.488	23.487
	5280	21.198	21.341
	5320	21.915	24.036
802.11ac20	5260	22.049	25.68
	5280	25.181	22.584
	5320	22.491	25
802.11ac40	5270	49.502	46.39
	5310	56.832	56.027
802.11ac80	5290	102.521	101.999
802.11n(HT20)	5260	22.758	22.039
	5280	21.581	25.45
	5320	24.279	21.507
802.11n(HT40)	5270	49.878	50.025
	5310	50.835	53.412

Test mode	Test Channel (MHz)	26dB Bandwidth (MHz)&ANT1	26dB Bandwidth (MHz)&ANT2
802.11a	5500	21.065	21.379
	5580	21.353	21.17
	5700	21.038	20.881
802.11ac20	5500	21.306	21.72
	5580	21.454	21.835
	5700	21.909	21.67
802.11ac40	5510	42.731	40.951
	5670	41.589	41.046
802.11ac80	5530	88.953	90.785
802.11n(HT20)	5500	21.698	21.557
	5580	21.995	21.409
	5700	21.815	21.256
802.11n(HT40)	5510	42.437	41.317
	5670	42.375	41.033

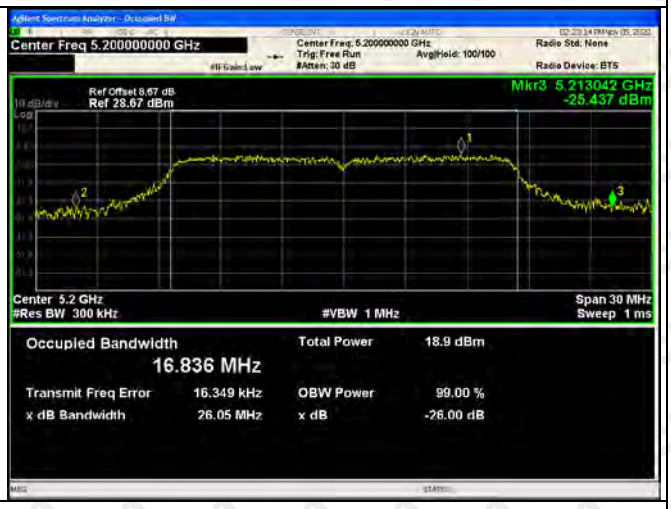
Test mode	Test Channel (MHz)	6dB Bandwidth (MHz)&ANT1	6dB Bandwidth (MHz)&ANT2
802.11a	5745	16.369	16.534
	5785	16.333	16.497
	5825	16.19	16.501
802.11ac20	5745	16.958	17.715
	5785	17.768	17.7
	5825	17.763	17.732
802.11ac40	5755	36.436	36.416
	5795	36.498	36.485
802.11ac80	5775	76.425	76.361
802.11n(HT20)	5745	16.349	17.767
	5785	16.402	17.772
	5825	16.426	17.758
802.11n(HT40)	5755	36.488	36.459
	5795	36.458	36.469

Test Graph
5180-5240MHz
ANT1

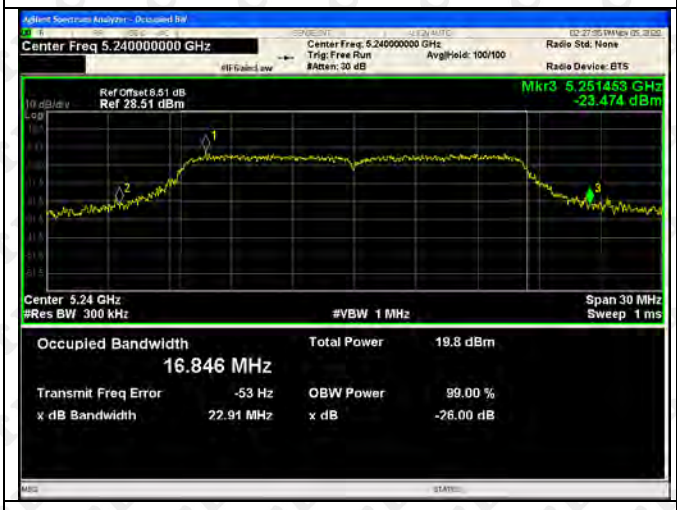
802.11a-5180



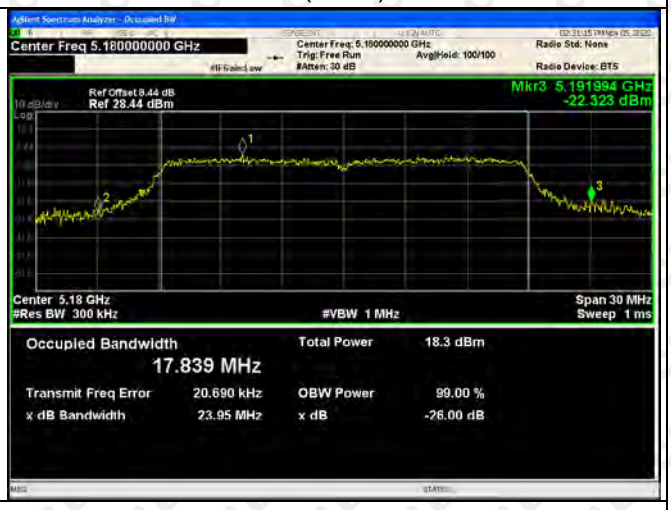
802.11a-5200



802.11a-5240



802.11n(HT20)-5180



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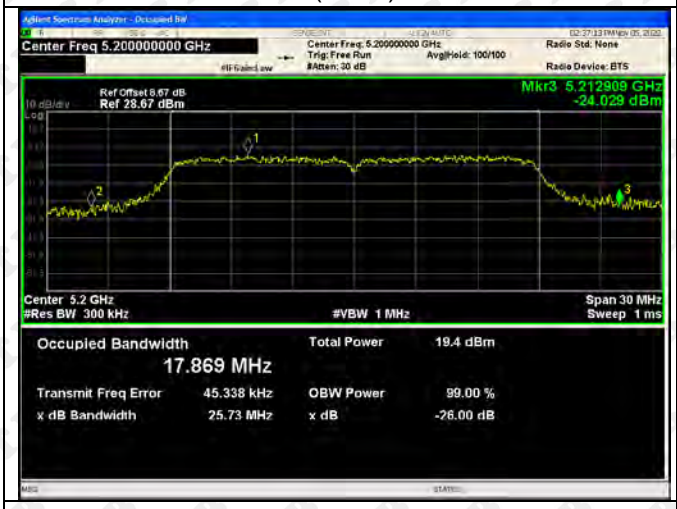

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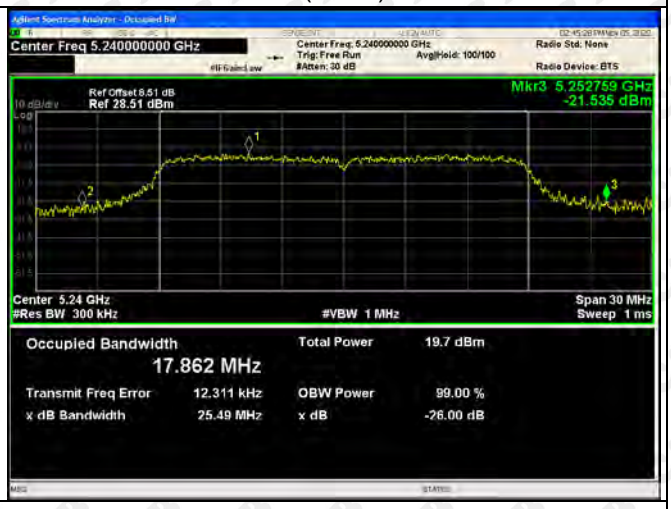
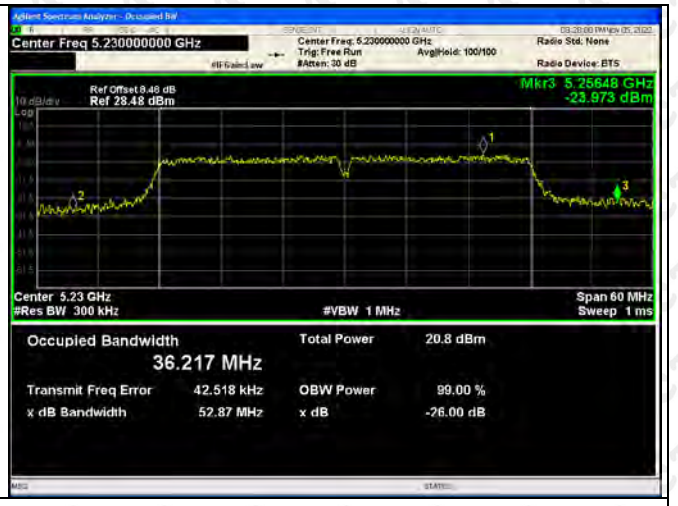


802.11n(HT40)-5190

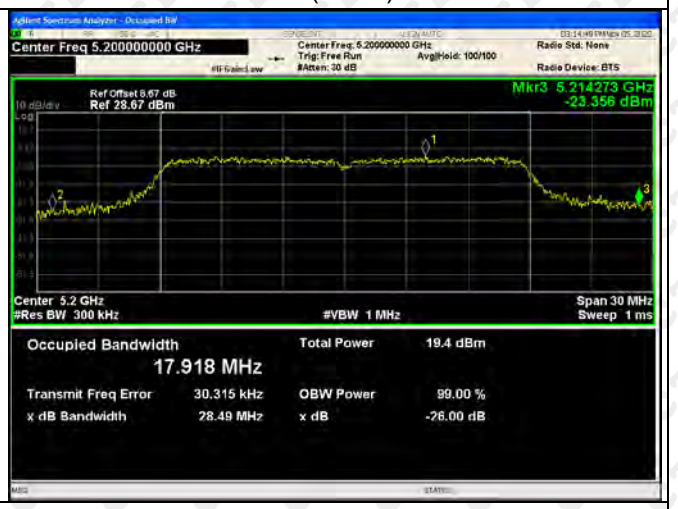
802.11n(HT40)-5230

802.11ac(VH20)-5180



802.11ac(VH20)-5200

802.11ac(VH20)-5240



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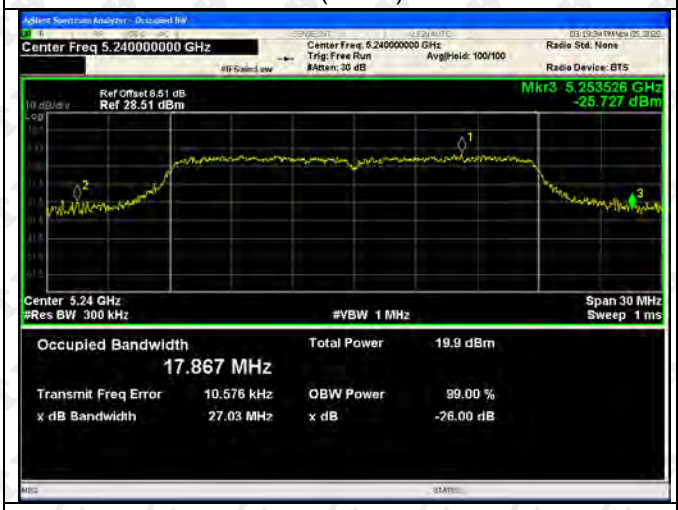

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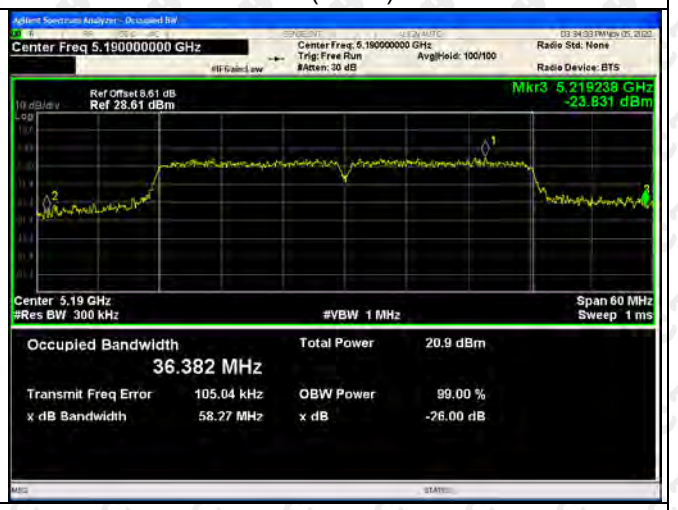
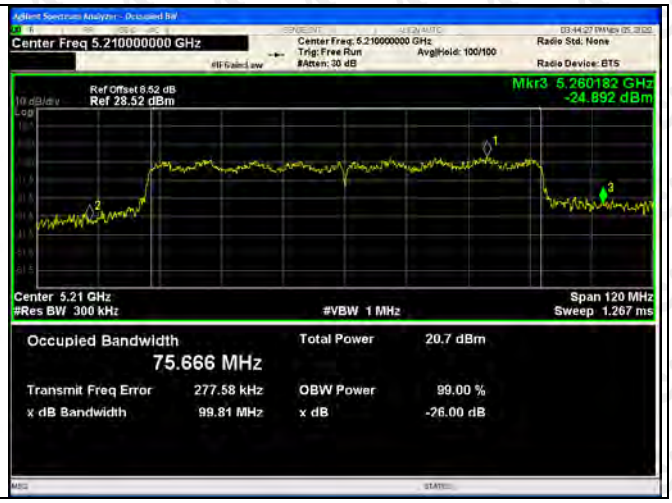


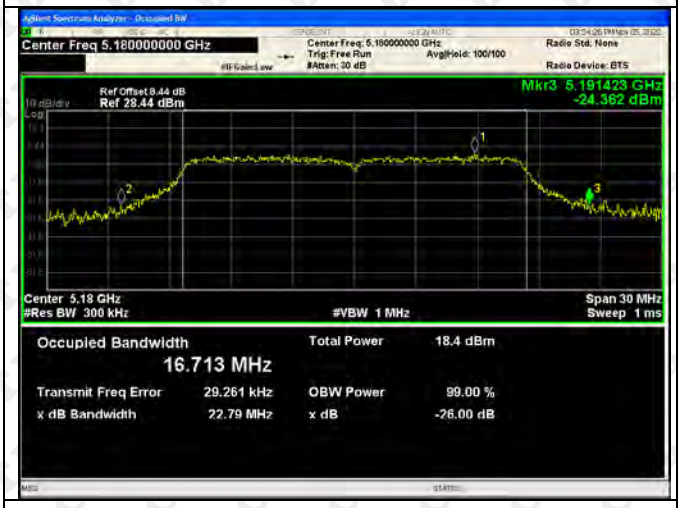
802.11ac(VH80)-5210


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.48 dB
10 dB/div
Ref 28.48 dBm
Mkr3 5.258228 GHz
-24.601 dBm
Center 5.23 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.285 MHz
Total Power 20.7 dBm
Transmit Freq Error 88.765 kHz
OBW Power 99.00 %
x dB Bandwidth 56.28 MHz
x dB -26.00 dB

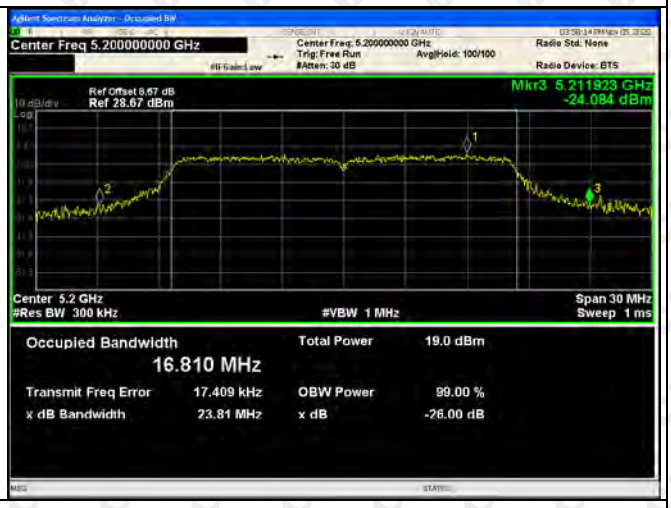

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.52 dB
10 dB/div
Ref 28.52 dBm
Mkr3 5.260182 GHz
-24.892 dBm
Center 5.21 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 120 MHz
Sweep 1.267 ms
Occupied Bandwidth
75.666 MHz
Total Power 20.7 dBm
Transmit Freq Error 277.58 kHz
OBW Power 99.00 %
x dB Bandwidth 99.81 MHz
x dB -26.00 dB

ANT2

802.11a-5180



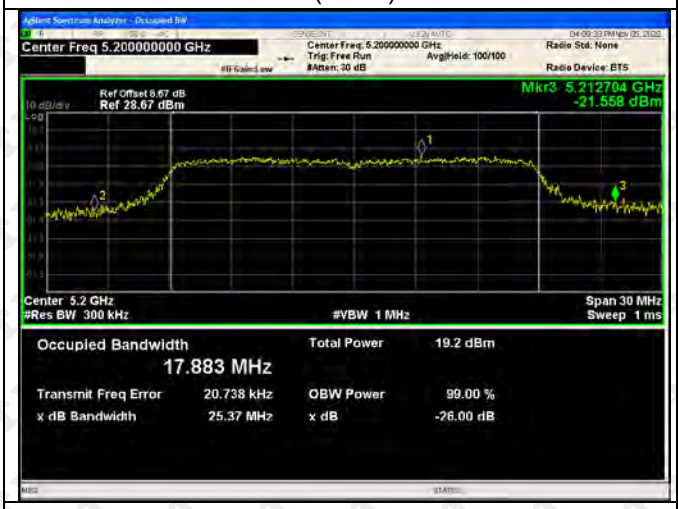
802.11a-5200



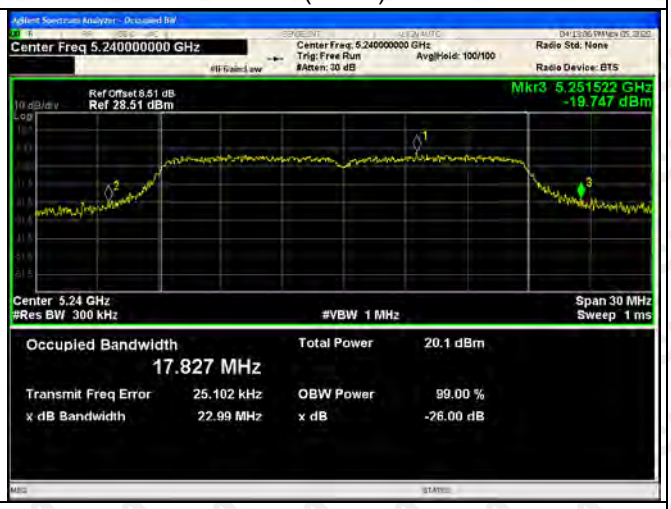
802.11a-5240

802.11n(HT20)-5180

802.11n(HT20)-5200

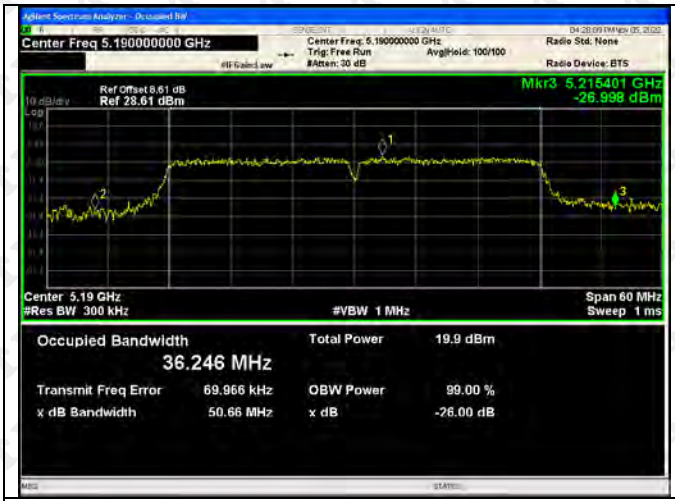


802.11n(HT20)-5240

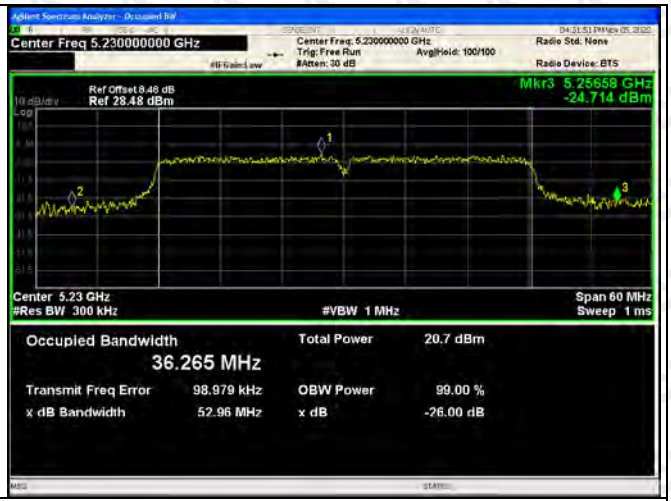


802.11n(HT40)-5190

802.11n(HT40)-5230



802.11ac(VH20)-5180



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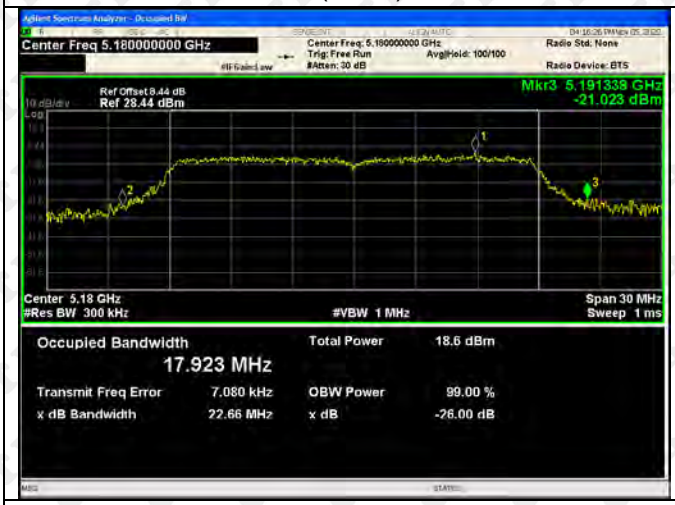
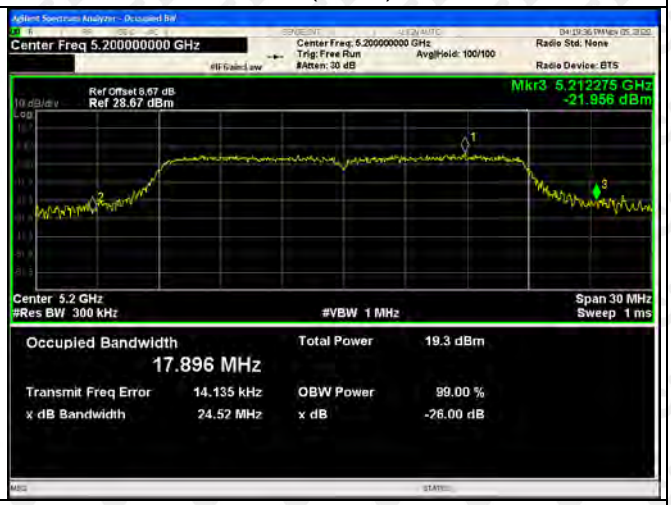
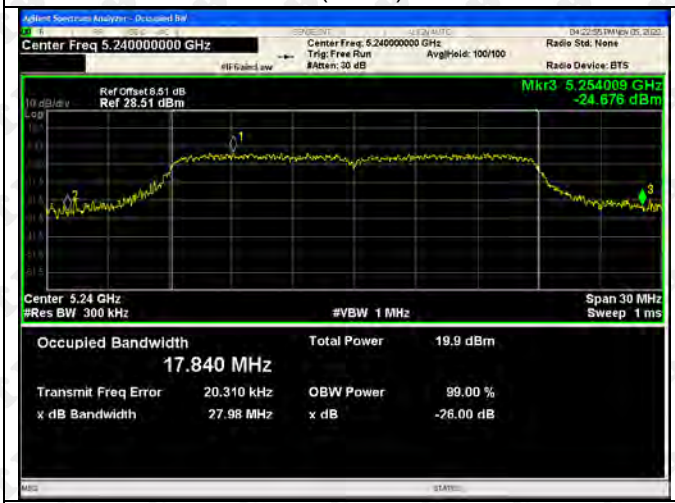


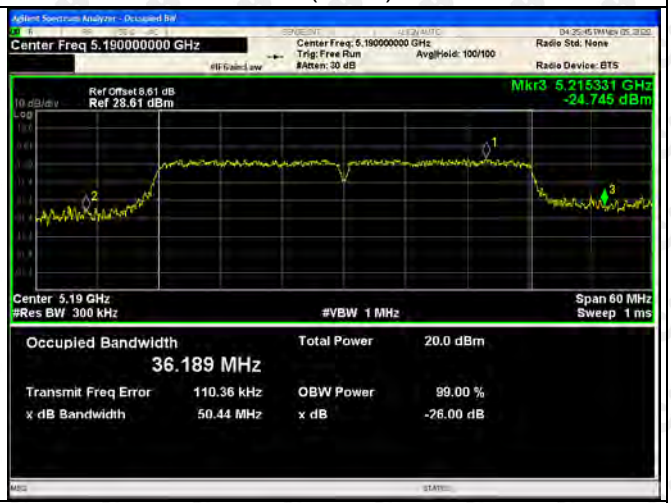
802.11ac(VH20)-5240



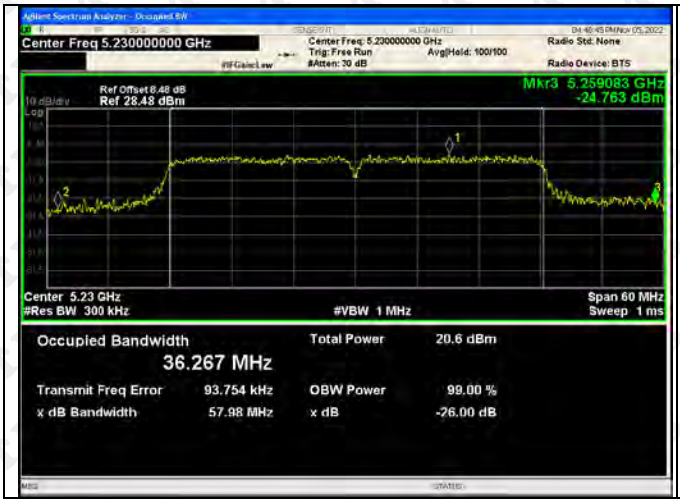
802.11ac(VH40)-5190

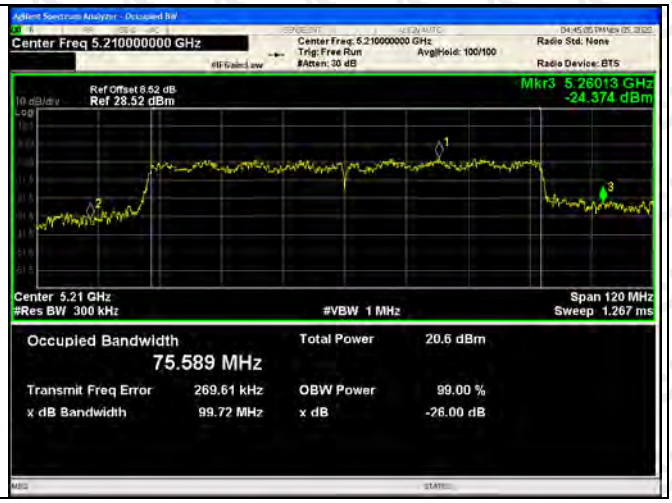


802.11ac(VH40)-5230



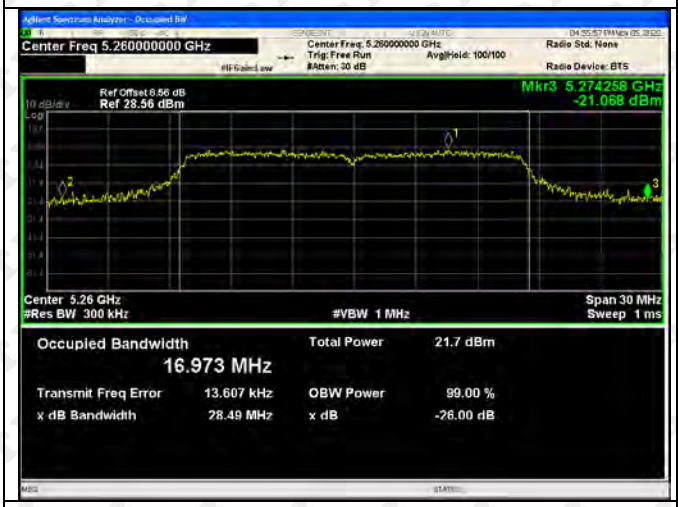
802.11ac(VH80)-5210


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.48 dB
10 dB/div
Ref 28.48 dBm
Mkr3 5.259083 GHz
-24.763 dBm
Center 5.23 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.267 MHz
Total Power 20.6 dBm
Transmit Freq Error 93.754 kHz
OBW Power 99.00 %
x dB Bandwidth 57.98 MHz
x dB -26.00 dB

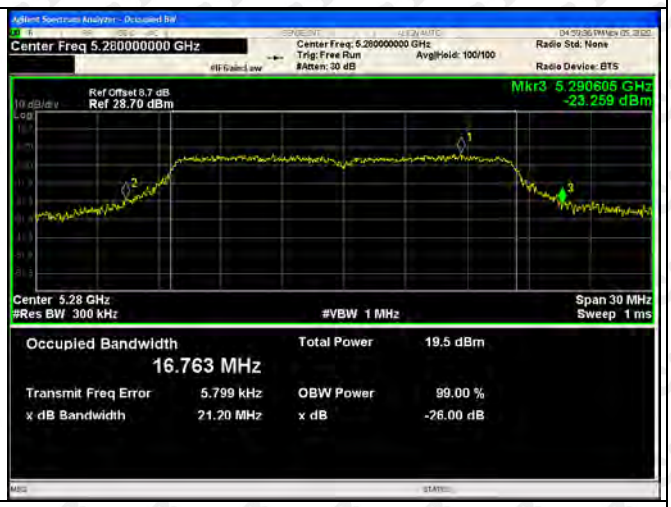

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.52 dB
10 dB/div
Ref 28.52 dBm
Mkr3 5.26013 GHz
-24.374 dBm
Center 5.21 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 120 MHz
Sweep 1.267 ms
Occupied Bandwidth
75.589 MHz
Total Power 20.6 dBm
Transmit Freq Error 269.61 kHz
OBW Power 99.00 %
x dB Bandwidth 99.72 MHz
x dB -26.00 dB

5260-5320MHz
ANT1

802.11a-5260

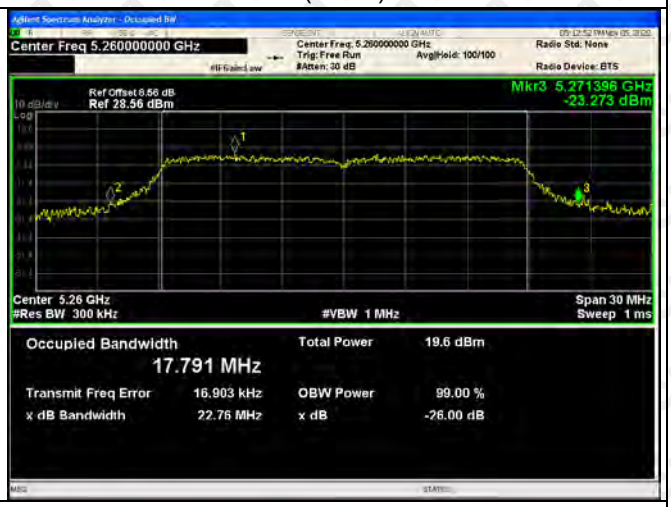


802.11a-5280



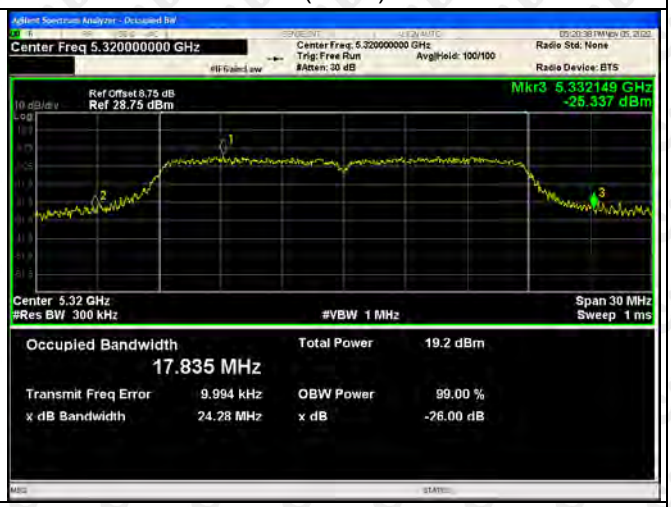
802.11a-5320

802.11n(HT20)-5260



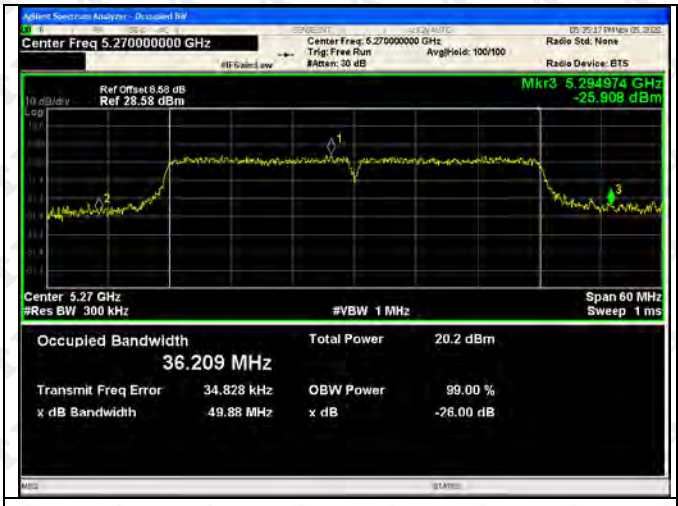
802.11n(HT20)-5280

802.11n(HT20)-5320

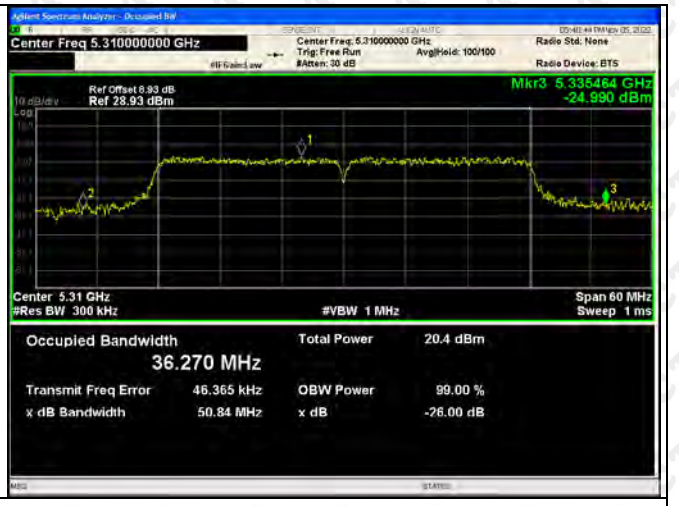


802.11n(HT40)-5270

802.11n(HT40)-5310

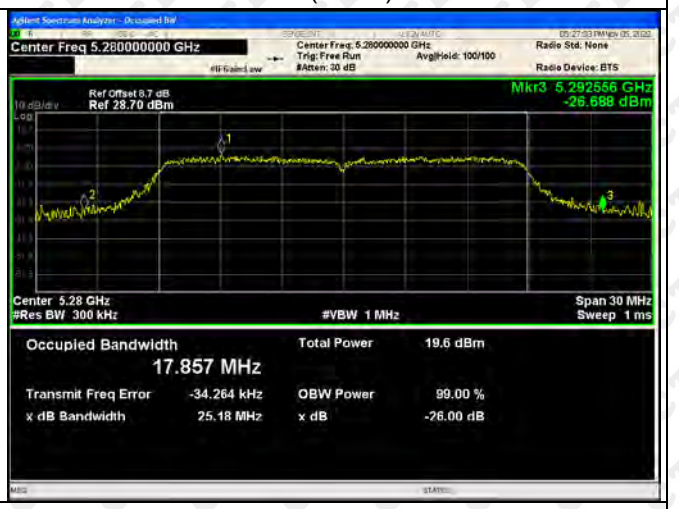


802.11ac(VH20)-5260

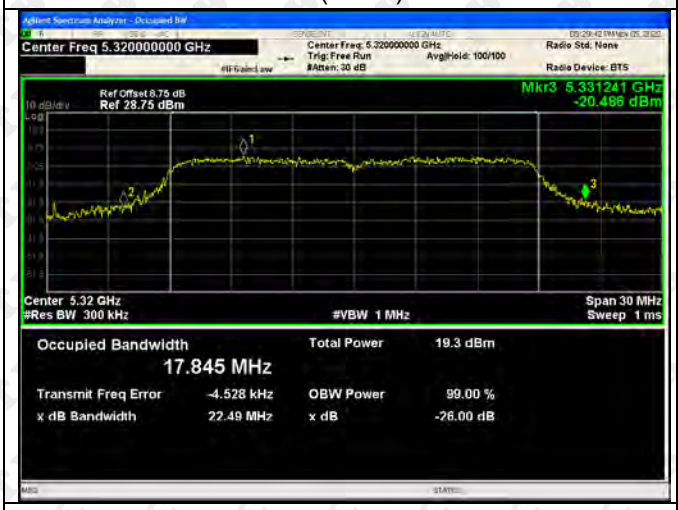


802.11ac(VH20)-5280

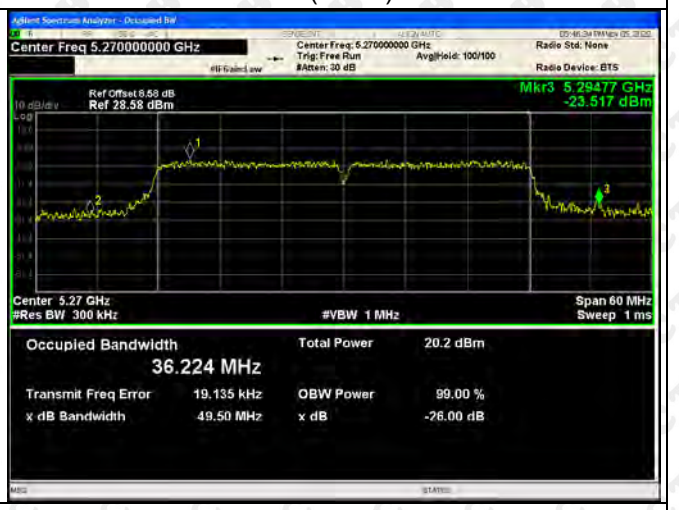
802.11ac(VH20)-5320



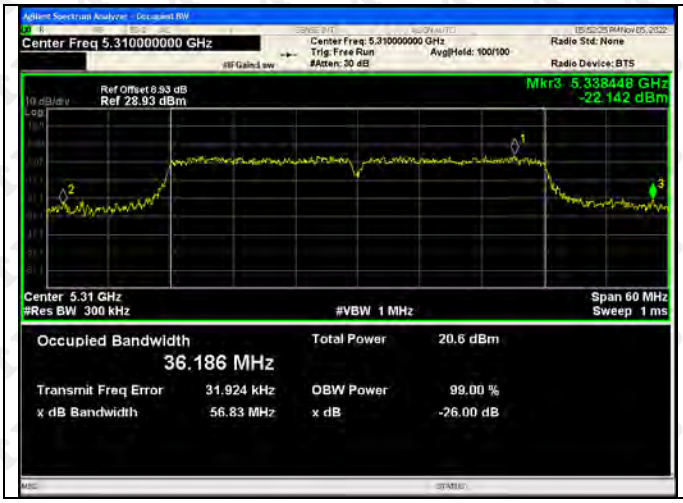
802.11ac(VH40)-5270



802.11ac(VH40)-5310



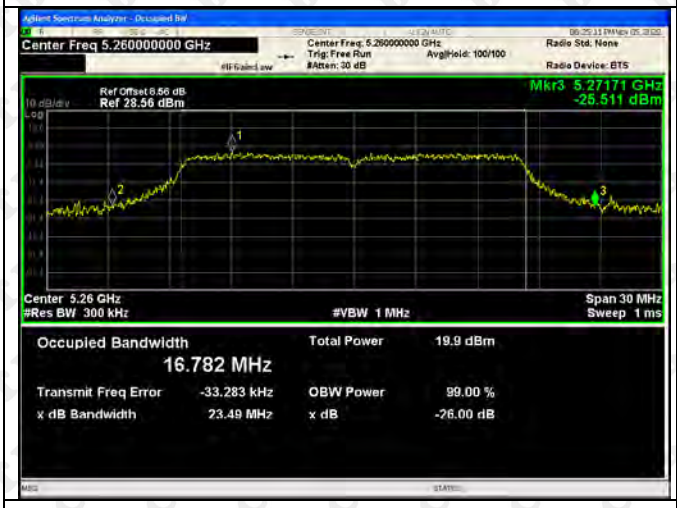
802.11ac(VH80)-5290


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.310000000 GHz
Center Freq: 5.310000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.93 dB
10 dB/div
Ref 28.93 dBm
Mkr3 5.338448 GHz
-22.142 dBm
Center 5.31 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.186 MHz
Total Power 20.6 dBm
Transmit Freq Error 31.924 kHz
OBW Power 99.00 %
x dB Bandwidth 56.83 MHz
x dB -26.00 dB


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.290000000 GHz
Center Freq: 5.290000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
10 dB/div
Ref 29.05 dBm
Mkr3 5.341356 GHz
-22.528 dBm
Center 5.29 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 120 MHz
Sweep 1.267 ms
Occupied Bandwidth
75.591 MHz
Total Power 21.1 dBm
Transmit Freq Error 95.254 kHz
OBW Power 99.00 %
x dB Bandwidth 102.5 MHz
x dB -26.00 dB

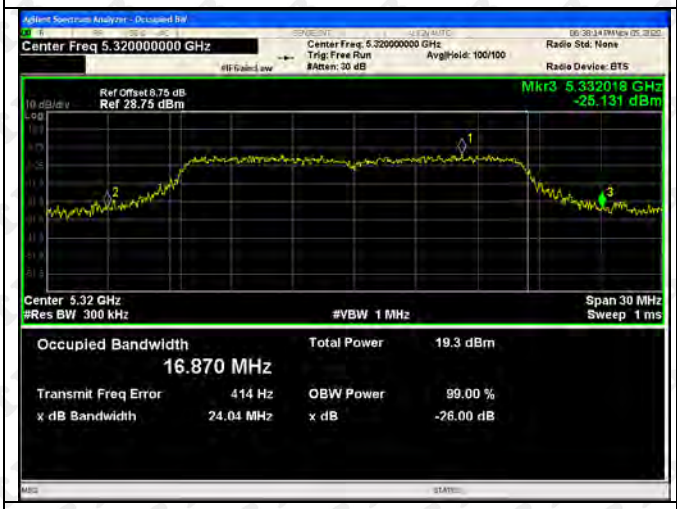
ANT2

802.11a-5260



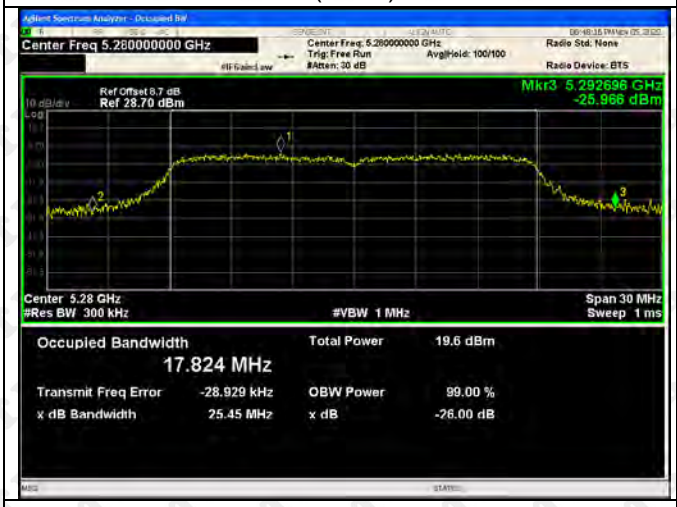
802.11a-5280

802.11a-5320



802.11n(HT20)-5260

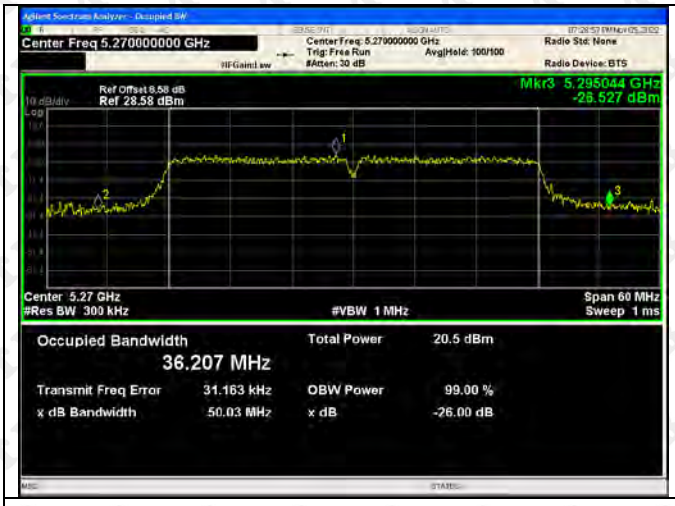
802.11n(HT20)-5280



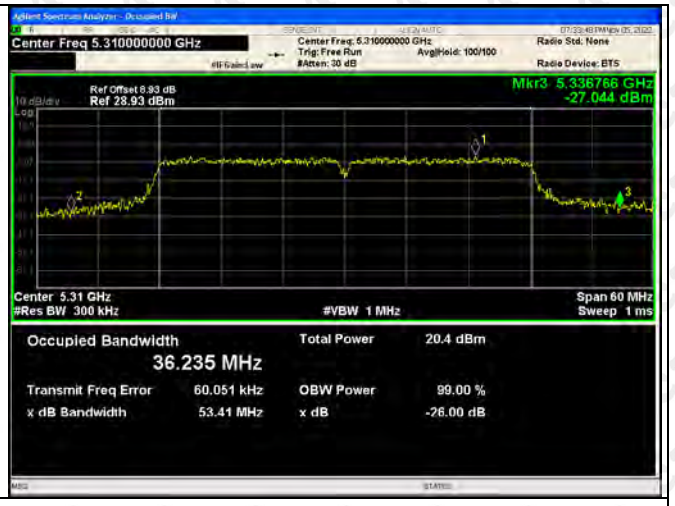
802.11n(HT20)-5320

802.11n(HT40)-5270

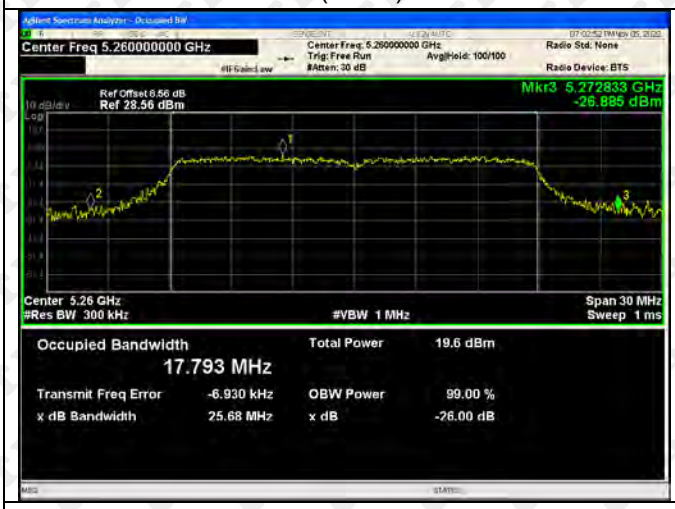
802.11n(HT40)-5310



802.11ac(VH20)-5260

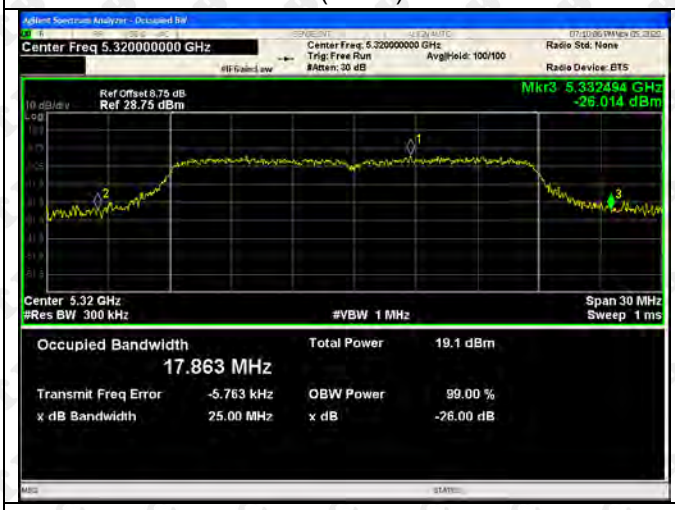


802.11ac(VH20)-5280

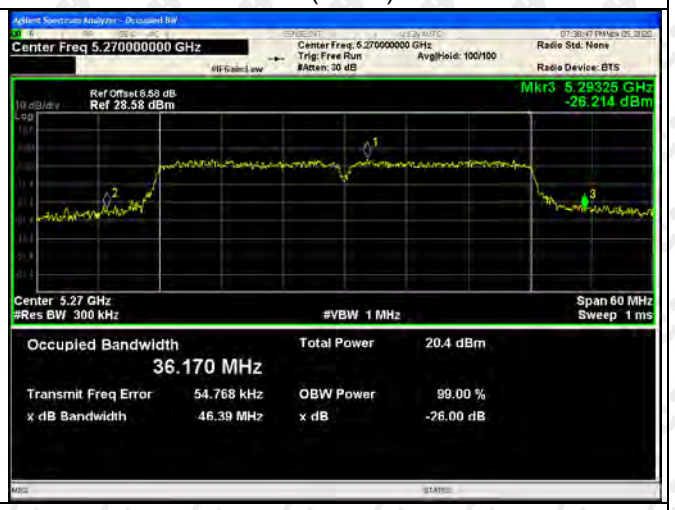


802.11ac(VH20)-5320

802.11ac(VH40)-5270

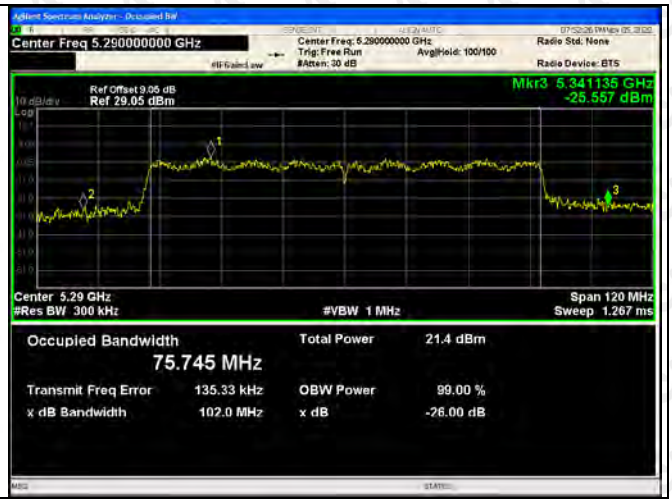


802.11ac(VH40)-5310



802.11ac(VH80)-5290


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.310000000 GHz
Center Freq: 5.310000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 8.93 dB
10 dB/div
Ref 28.93 dBm
Mkr3 5.338095 GHz
-25.520 dBm
Center 5.31 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.260 MHz
Total Power 20.2 dBm
Transmit Freq Error 81.705 kHz
OBW Power 99.00 %
x dB Bandwidth 56.03 MHz
x dB -26.00 dB


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.290000000 GHz
Center Freq: 5.290000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.05 dB
10 dB/div
Ref 29.05 dBm
Mkr3 5.341135 GHz
-25.557 dBm
Center 5.29 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 120 MHz
Sweep 1.267 ms
Occupied Bandwidth
75.745 MHz
Total Power 21.4 dBm
Transmit Freq Error 135.33 kHz
OBW Power 99.00 %
x dB Bandwidth 102.0 MHz
x dB -26.00 dB