TEST REPORT

Product Name:	Smart Board
FCC ID:	2BO5S55-SMARTBOARD
Trademark:	N/A
Model Number:	55” smart board, 43”smart board, 49’’smart board, 55”smart board, 65”smart board, 75”smart board, 86”smart board
Prepared For:	Dongguan Mai Chao Technology Co.,Ltd.
Address:	Room 101, Building 4, No. 1438, Chang'an Section, Tai'an Road, Chang'an Town, Dongguan City, Guangdong Province, China
Manufacturer:	Shenzhen Jiyuanxin Electronics Co.,Ltd.
Address:	The right side of the first floor of Building C, Chuangmei II Industrial Zone, Yingrenshi Community, Shiyan Street, Bao'an District, Shenzhen, China
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
Address:	1&2/F., Building A, No.26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	Apr. 10, 2025
Sample tested Date:	Apr. 10, 2025 to May. 13, 2025
Issue Date:	May. 13, 2025
Report No.:	CTB25041005001RF04
Test Standards	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Test Results	PASS
Remark:	This is WIFI-5GHz band radio test report.

Compiled by:	Reviewed by:	Approved by:
Zhou Kui	Arron Liu	Bin Mei
Zhou Kui	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.

TABLE OF CONTENT

Test Report Declaration Page
1. VERSION 4
2. TEST SUMMARY 5
3. MEASUREMENT UNCERTAINTY 6
4. PRODUCT INFORMATION AND TEST SETUP 7
4.1 Product Information 7
4.2 Test Setup Configuration 9
4.3 Support Equipment 9
4.5 Test Mode 12
4.6 Test Environment 14
5. TEST FACILITY AND TEST INSTRUMENT USED 15
5.1 Test Facility 15
5.2 Test Instrument Used 15
6. AC POWER LINE CONDUCTED EMISSION 18
6.1 Block Diagram Of Test Setup 18
6.2 Limit 18
6.3 Test procedure 18
6.4 Test Result 20
7. RADIATED SPURIOUS EMISSIONS 24
7.1 Block Diagram Of Test Setup 24
7.2 Limit 24
7.3 Test procedure 25
7.4 Test Result 26
8. BAND EDGE 38
8.1 Block Diagram Of Test Setup 38
8.2 Limit 38
8.3 Test procedure 38
8.4 Test Result 39
9. CONDUCTED OUTPUT POWER 55
9.1 Block Diagram Of Test Setup 55
9.2 Limit 55
9.3 Test procedure 56
9.4 Test Result 57
10. EMISSION BANDWIDTH& OCCUPIED BANDWIDTH 81
10.1 Block Diagram Of Test Setup 81
10.2 Limits 81
10.3 Test Procedure 81
10.4 Test Results 83
11. POWER SPECTRAL DENSITY 107
11.1 Block Diagram Of Test Setup 107
11.2 Limit 107
11.3 Test procedure 107
11.4 Test Result 109
12. FREQUENCY STABILITY 133
12.1 Block Diagram Of Test Setup 133
12.2 Limit 133
12.3 Test procedure 133
12.4 Test Result 134
13. OPERATION IN THE ABSENCE OF INFORMATION TO THE TRANSMIT 158
13.1 Requirement 158
13.2 Test Results 158

14. ANTENNA REQUIREMENT 159
15. EUT TEST SETUP PHOTOGRAPHS 160

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB25041005001RF04	May. 13, 2025	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):	55” smart board, 43”smart board, 49’’smart board, 55”smart board, 65”smart board, 75”smart board, 86”smart board
Model Description:	All the model are the same circuit and RF module, only the name and appearance are different. Test sample model: 55” smart board
Wi-Fi Specification:	IEEE 802.11a/n/ac
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	WiFi (5G) module1 IEEE 802.11a/n/ac(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5250MHz ~5350 MHz/ 4 channel IEEE 802.11n/ac(40M): 5250MHz ~5350 MHz/ 2 channel IEEE 802.11ac(80M): 5250MHz ~5350 MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5470MHz ~5725 MHz/ 11 channel IEEE 802.11n/ac(40M): 5470MHz ~5725 MHz/ 5 channel IEEE 802.11ac(80M): 5470MHz ~5725 MHz/ 3 channel IEEE 802.11a/n/ac(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac(80M): 5725MHz ~5850MHz/ 1 channel WiFi (5G) module2(OPS computer) IEEE 802.11a/n/ac(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5250MHz ~5350 MHz/ 4 channel IEEE 802.11n/ac(40M): 5250MHz ~5350 MHz/ 2 channel IEEE 802.11ac(80M): 5250MHz ~5350 MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5470MHz ~5725 MHz/ 11 channel IEEE 802.11n/ac(40M): 5470MHz ~5725 MHz/ 5 channel IEEE 802.11ac(80M): 5470MHz ~5725 MHz/ 3 channel IEEE 802.11a/n/ac(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac(80M): 5725MHz ~5850MHz/ 1 channel
Max. RF output power:	WiFi (5G) module1: 13.934dBm WiFi (5G) module2 (OPS computer): 13.946dBm
Type of Modulation:	WiFi (5G): OFDM
Antenna installation:	WiFi (5G): Dipole antenna
Antenna Gain:	WiFi (5G) module1:

WiFi (5.2G): ANT1: 2.56dBi, ANT2: 2.56dBi
WiFi (5.3G): ANT1: 3.2dBi, ANT2: 3.2dBi
WiFi (5.6G): ANT1: 2.87dBi, ANT2: 2.87dBi
WiFi (5.8G): ANT1: 3.43dBi, ANT2: 3.43dBi
WiFi (5G) module2 (OPS computer):
WiFi (5.2G): 1.11dBi
WiFi (5.3G): 2.68dBi
WiFi (5.6G): 5.40dBi
WiFi (5.8G): 4.26dBi

Ratings: AC 100-240V～ 1.5-2.5A 160W-360W

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

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

5G module1

For 802.11a/n/ac(20M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz
For 802.11a/n/ac(20M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
52	5260MHz	60	5300MHz
56	5280MHz	64	5320MHz
For 802.11a/n/ac(20M) Operation in the 5470MHz ~5725 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 5725MHz ~5850 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 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz
For 802.11n/ac(40M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz
For 802.11n/ac(40M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		
For 802.11n/ac(40M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac(80M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
42	5210MHz	NA	NA
For 802.11ac(80M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
58	5290MHz	NA	NA
For 802.11ac(80M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
106	5530MHz	138	5690MHz
122	5610 MHz		
For 802.11ac(80M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	NA	NA
155	5775MHz	NA	NA

5G module2 (OPS computer)

For 802.11a/n/ac(20M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz
For 802.11a/n/ac(20M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
52	5260MHz	60	5300MHz
56	5280MHz	64	5320MHz
For 802.11a/n/ac(20M) Operation in the 5470MHz ~5725 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 5725MHz ~5850 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 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz
For 802.11n/ac(40M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz
For 802.11n/ac(40M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		
For 802.11n/ac(40M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac(80M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
42	5210MHz	NA	NA
For 802.11ac(80M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
58	5290MHz	NA	NA
For 802.11ac(80M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
106	5530MHz	138	5690MHz
122	5610 MHz		
For 802.11ac(80M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	NA	NA
155	5775MHz	NA	NA

NOTE: Dutycycle>98%.

Test mode	Rate
802.11a	54M
802.11n	500M
802.11ac	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.

5G module1

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5150MHz ~5250 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)	5250MHz ~5350 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)	5470MHz ~5725 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)	5725MHz ~5850 MHz	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

5G module2

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5150MHz ~5250 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)	5250MHz ~5350 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)	5470MHz ~5725 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)	5725MHz ~5850 MHz	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.

FCC Test Firm Registration Number: CN1276

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2025/6/28
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2025/6/28
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2025/6/28
4	Communication test set	R&S	CMW500	108058	V3.5.80	2025/6/28
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/6/28
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2025/6/28
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2025/6/28
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2025/6/28
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	/	2025/6/30
10	5 GHz Filter	Shenxiang	MSF5150-5850MS-1155	20181015001	/	2025/6/30
11	Filter	Xingbo	XBLBQ-DZA120	190821-1-1	/	2025/6/30
12	BT&WI-FI Automatic test software	Micowave	MTS8310	Ver. 2.0.0.0	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2025/6/28
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2025/6/28
15	234G Automatic test software	Micowave	MTS8200	Ver. 2.0.0.0	/	/
16	966 chamber	C.R.T.	966	/	/	2027/6/21
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2025/6/28
18	Amplifier	HP	8447E	2945A02747	/	2025/6/28
19	Amplifier	Agilent	8449B	3008A01838	/	2025/6/28
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2025/6/28

21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2025/6/28
22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/28
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2025/6/28
26	Amplifier	AEROFLEX	Aeroflex	097	/	2025/6/28
27	Power Metter	KEYSIGHT	N1912AP	N/A	A.05.00	2025/6/28

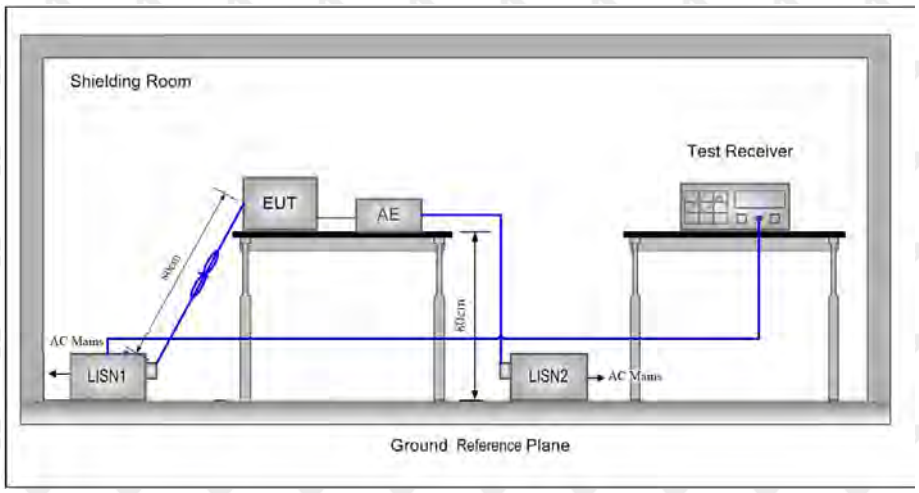
Continuous disturbance						
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated until
1	843 Shield Room	C/ R/ T	843	/	/	2027/6/21
2	AMN	ROHDE&SCHWARZ	ESH3-Z5	831551852	/	2025/6/30
3	Pulse limiter	ROHDE&SCHWARZ	ESH3Z2	357881052	/	2025/6/28
4	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100428	V4.42.SP3	2025/6/30
5	Coaxial cable	ZDECL	Z302S	18091904	/	2025/6/30
6	ISN	Schwarzbeck	NTFM8158	183	/	2025/6/30
7	Voltage sensor	Schwarzbeck	TK 9420	01189	/	2025/10/25
8	EZ-EMC	Frad	EMC-con3A1.1	/	/	/
9	Current Probe	FCC	F-52B	199453	/	2025/5/27
10	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2025/6/28
11	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2025/6/28

Radiated emission(No.1 Chamber)						
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated until
1	966 Chamber	C/ R/ T	966	/	/	2027/6/21
2	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120 D	01911	/	2025/7/06
3	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2025/6/29
4	Amplifier	Agilent	8449B	3008A01838	/	2025/6/30
5	Amplifier	HP	8447E	2945A02747	/	2025/6/28
6	loop antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/29
7	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESPI	100362	RF_ATTEN_7 (104489/003)	2025/6/28

8	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/6/28
9	Coaxial cable	ETS	RFC-SNS-100-NMS-80	/	/	2025/6/28
10	Coaxial cable	ETS	RFC-SN-100-NMS-20	/	/	2025/6/28
11	Coaxial cable	ETS	RFC-SNS-100-SMS-20	/	/	2025/6/28
12	Coaxial cable	ETS	RFC-NNS-100-NMS-300	/	/	2025/6/28
13	EMI test software	Frad	EZ-EMC	Ver/ FA-03A2 RE	/	/
14	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2025/6/28
15	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2025/6/28

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.

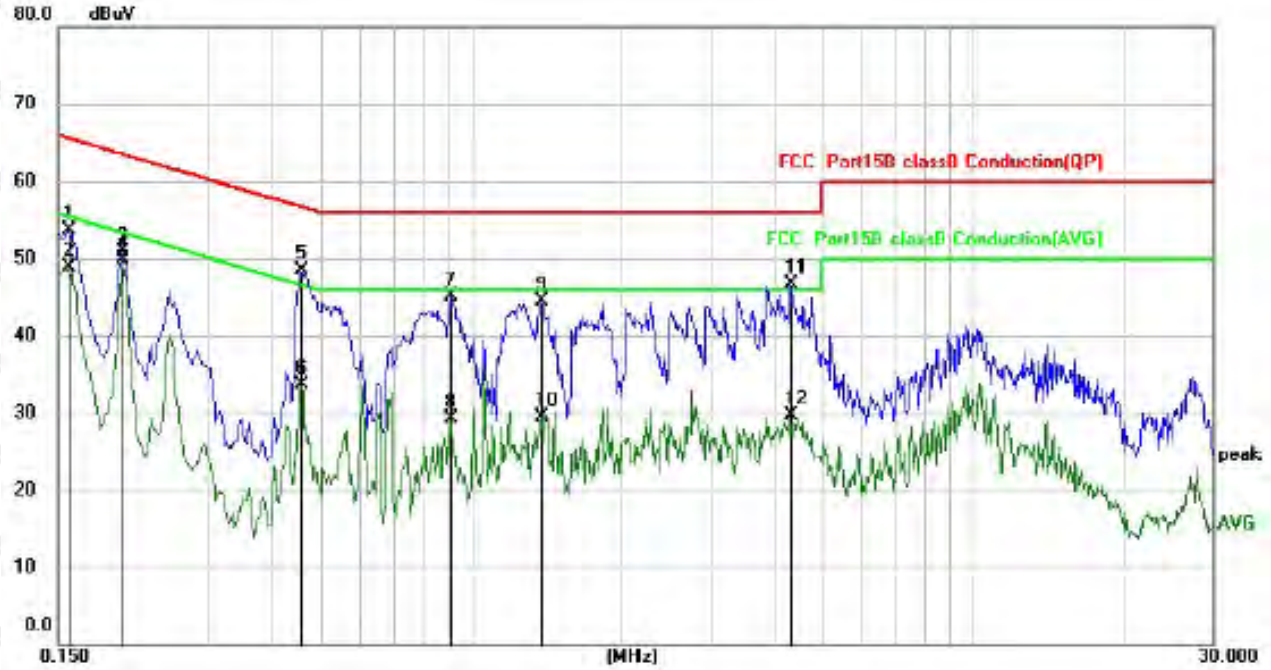
This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

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

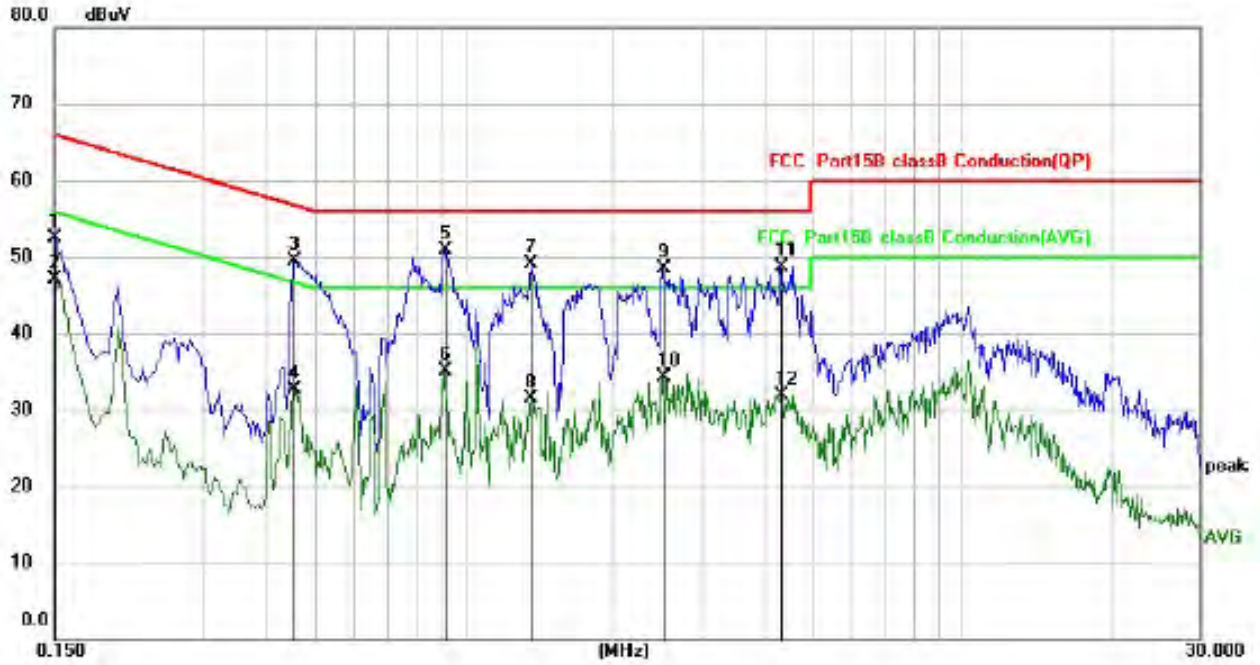
module1 Worst mode:

L:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1580	42.86	10.86	53.72	65.57	-11.85	QP
2		0.1580	37.95	10.86	48.81	55.57	-6.76	AVG
3		0.2020	40.26	10.71	50.97	63.53	-12.56	QP
4	*	0.2020	39.16	10.71	49.87	53.53	-3.66	AVG
5		0.4580	38.06	10.53	48.59	56.73	-8.14	QP
6		0.4580	23.17	10.53	33.70	46.73	-13.03	AVG
7		0.9100	34.21	10.88	45.09	56.00	-10.91	QP
8		0.9100	18.50	10.88	29.38	46.00	-16.62	AVG
9		1.3779	33.33	11.19	44.52	56.00	-11.48	QP
10		1.3779	18.24	11.19	29.43	46.00	-16.57	AVG
11		4.3178	34.55	12.09	46.64	56.00	-9.36	QP
12		4.3178	17.69	12.09	29.78	46.00	-16.22	AVG

N:

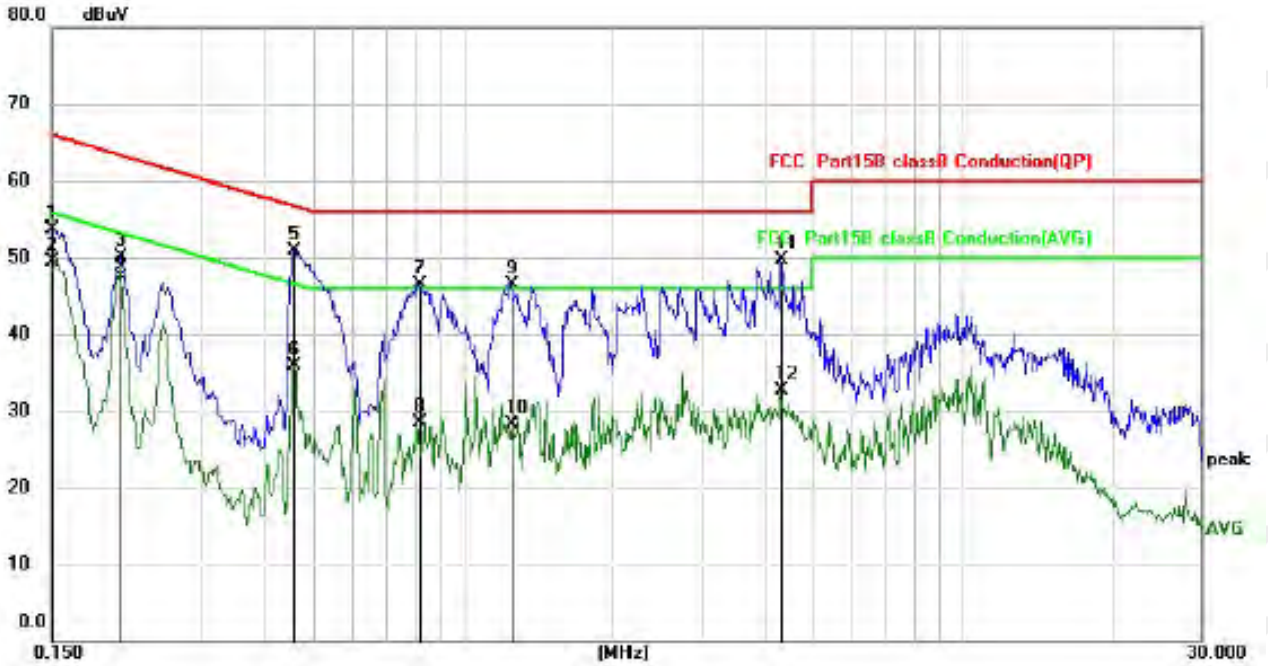


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	41.69	10.89	52.58	66.00	-13.42	QP
2		0.1500	36.18	10.89	47.07	56.00	-8.93	AVG
3		0.4540	38.97	10.53	49.50	56.80	-7.30	QP
4		0.4540	22.24	10.53	32.77	46.80	-14.03	AVG
5	*	0.9140	40.00	10.88	50.88	56.00	-5.12	QP
6		0.9140	24.13	10.88	35.01	46.00	-10.99	AVG
7		1.3660	37.98	11.18	49.16	56.00	-6.84	QP
8		1.3660	20.27	11.18	31.45	46.00	-14.55	AVG
9		2.5059	36.91	11.69	48.60	56.00	-7.40	QP
10		2.5059	22.59	11.69	34.28	46.00	-11.72	AVG
11		4.3258	36.67	12.09	48.76	56.00	-7.24	QP
12		4.3258	19.89	12.09	31.98	46.00	-14.02	AVG

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.

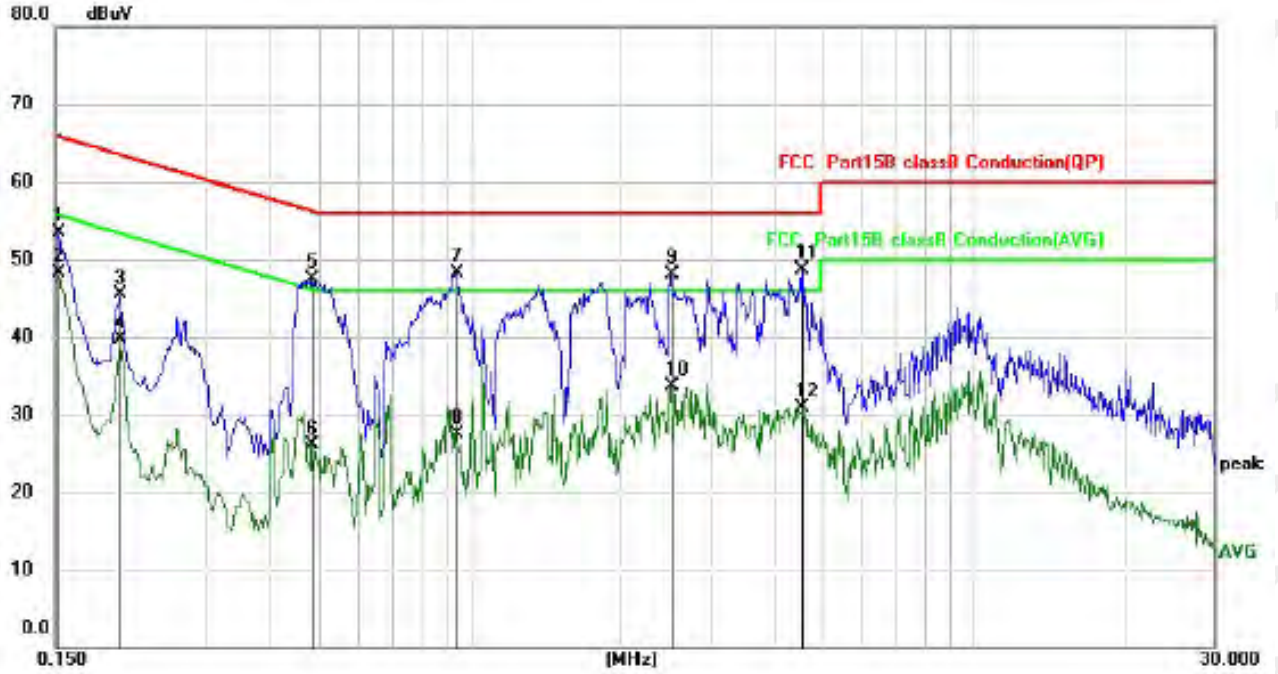
module2 (OPS computer) Worst mode:

L:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	42.91	10.89	53.80	66.00	-12.20	QP
2		0.1500	38.60	10.89	49.49	56.00	-6.51	AVG
3		0.2061	39.43	10.71	50.14	63.36	-13.22	QP
4	*	0.2061	36.81	10.71	47.52	53.36	-5.84	AVG
5		0.4586	40.31	10.53	50.84	56.72	-5.88	QP
6		0.4586	25.46	10.53	35.99	46.72	-10.73	AVG
7		0.8139	35.69	10.81	46.50	56.00	-9.50	QP
8		0.8139	17.79	10.81	28.60	46.00	-17.40	AVG
9		1.2459	35.44	11.10	46.54	56.00	-9.46	QP
10		1.2459	17.24	11.10	28.34	46.00	-17.66	AVG
11		4.3178	37.55	12.09	49.64	56.00	-6.36	QP
12		4.3178	20.69	12.09	32.78	46.00	-13.22	AVG

N:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1524	42.54	10.88	53.42	65.87	-12.45	QP
2		0.1524	37.36	10.88	48.24	55.87	-7.63	AVG
3		0.2020	34.80	10.71	45.51	63.53	-18.02	QP
4		0.2020	29.03	10.71	39.74	53.53	-13.79	AVG
5		0.4858	36.94	10.51	47.45	56.24	-8.79	QP
6		0.4858	15.66	10.51	26.17	46.24	-20.07	AVG
7		0.9418	37.45	10.91	48.36	56.00	-7.64	QP
8		0.9418	16.62	10.91	27.53	46.00	-18.47	AVG
9		2.5059	36.41	11.69	48.10	56.00	-7.90	QP
10		2.5059	22.09	11.69	33.78	46.00	-12.22	AVG
11	*	4.5500	36.59	12.14	48.73	56.00	-7.27	QP
12		4.5500	18.71	12.14	30.85	46.00	-15.15	AVG

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

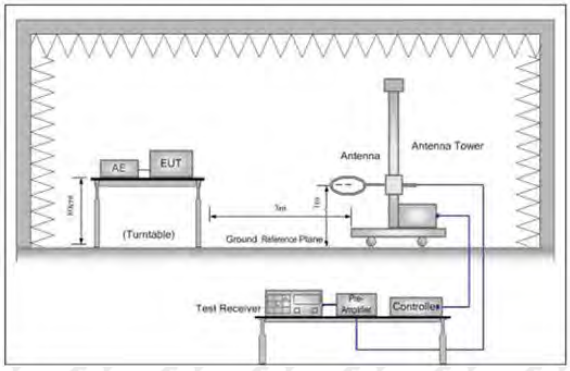


Figure 1. Below 30MHz

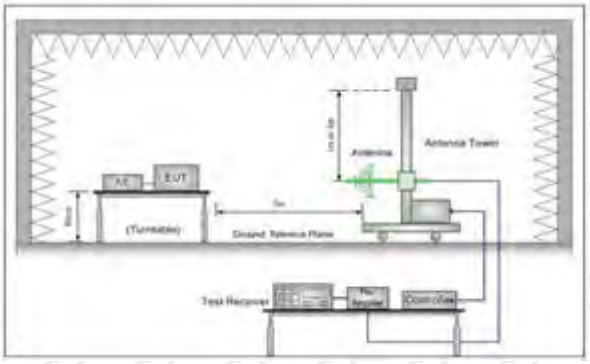


Figure 2. 30MHz to 1GHz

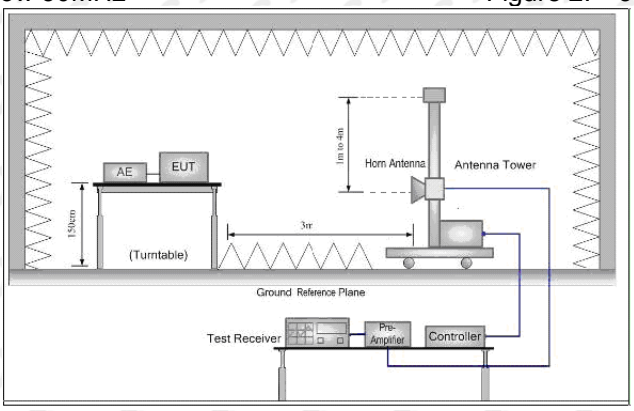


Figure 3. Above 1GHz

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

module1 Worst mode:
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		74.0052	35.60	-8.69	26.91	40.00	-13.09	QP
2		136.6992	39.63	-4.66	34.97	43.50	-8.53	QP
3	*	206.3975	40.12	-4.69	35.43	43.50	-8.07	QP
4		237.4758	41.56	-4.06	37.50	46.00	-8.50	QP
5		358.5568	39.43	-1.62	37.81	46.00	-8.19	QP
6		1000.000	30.24	8.96	39.20	54.00	-14.80	QP

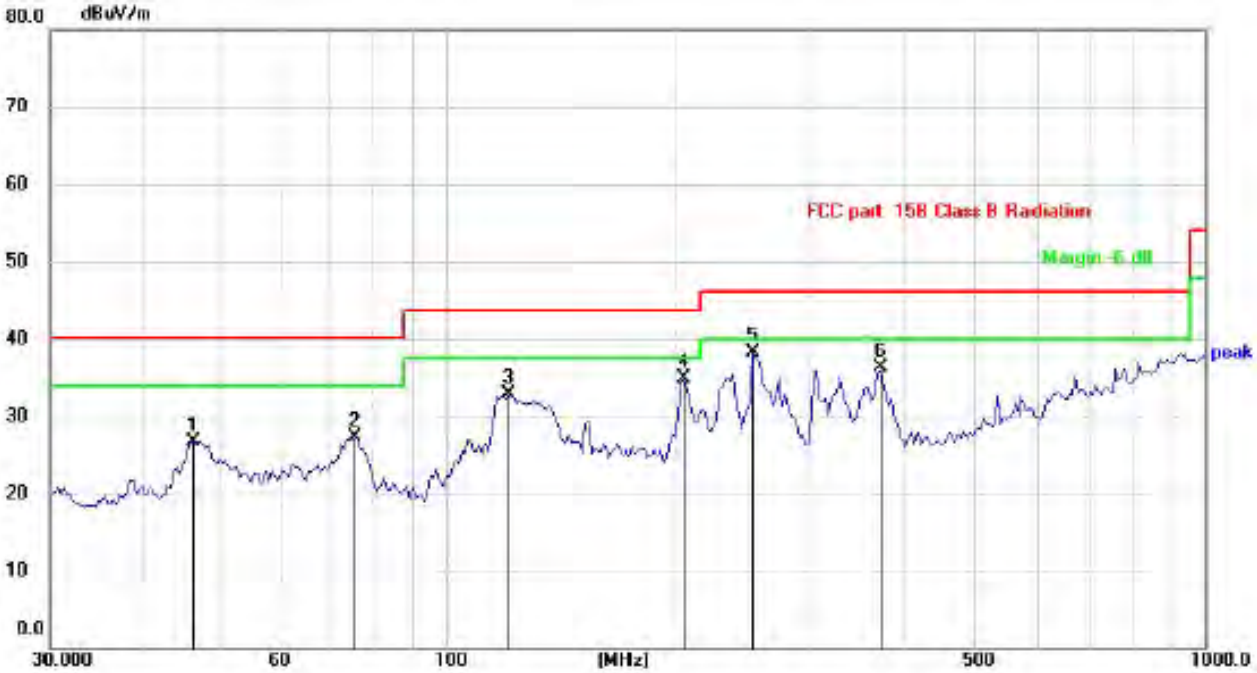
Antenna polarity: V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		46.0970	38.48	-6.73	31.75	40.00	-8.25	QP
2		70.8315	36.82	-8.69	28.13	40.00	-11.87	QP
3	*	133.1510	41.71	-5.04	36.67	43.50	-6.83	QP
4		358.5568	38.09	-1.62	36.47	46.00	-9.53	QP
5		565.6295	33.18	3.07	36.25	46.00	-9.75	QP
6		831.8573	26.98	7.67	34.65	46.00	-11.35	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)

module2 (OPS computer) Worst mode:
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		46.5030	33.49	-6.72	26.77	40.00	-13.23	QP
2		75.9772	36.07	-8.68	27.39	40.00	-12.61	QP
3		120.9108	38.35	-5.37	32.98	43.50	-10.52	QP
4		206.3975	39.64	-4.69	34.95	43.50	-8.55	QP
5	*	254.7282	42.10	-3.72	38.38	46.00	-7.62	QP
6		374.6225	37.61	-1.27	36.34	46.00	-9.66	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	*	46.5030	40.57	-6.72	33.85	40.00	-6.15	QP
2		128.5629	42.04	-5.38	36.66	43.50	-6.84	QP
3		204.5961	37.22	-4.73	32.49	43.50	-11.01	QP
4		306.2162	40.19	-2.76	37.43	46.00	-8.57	QP
5		358.5568	40.84	-1.62	39.22	46.00	-6.78	QP
6		565.6295	35.63	3.07	38.70	46.00	-7.30	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)

module1 Worst mode:
Radiated Spurious Emission (Above 1GHz):
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	40.95	16.39	57.34	74	-16.66	PK	1.36	210	H
10360	26.67	16.39	43.06	54	-10.94	AV	1.34	73	H
10360	39.74	16.39	56.13	74	-17.87	PK	1.45	117	V
10360	25.02	16.39	41.41	54	-12.59	AV	1.39	6	V
Channel:5240MHz									
10480	40.95	16.11	57.06	74	-16.94	PK	1.83	354	H
10480	27.60	16.11	43.71	54	-10.29	AV	1.25	261	H
10480	40.79	16.11	56.90	74	-17.10	PK	1.54	110	V
10480	25.82	16.11	41.93	54	-12.07	AV	1.54	277	V
Channel:5260MHz									
10520	41.26	16.39	57.65	74	-16.35	PK	1.32	294	H
10520	25.76	16.39	42.15	54	-11.85	AV	1.11	94	H
10520	40.94	16.39	57.33	74	-16.67	PK	1.06	308	V
10520	25.29	16.39	41.68	54	-12.32	AV	1.57	131	V
Channel:5320MHz									
10640	41.70	16.39	58.09	74	-15.91	PK	1.21	13	H
10640	26.67	16.39	43.06	54	-10.94	AV	1.21	356	H
10640	39.81	16.39	56.20	74	-17.80	PK	1.56	34	V
10640	25.73	16.39	42.12	54	-11.88	AV	1.40	266	V
Channel:5500MHz									
11000	41.41	16.39	57.80	74	-16.20	PK	1.51	211	H
11000	25.11	16.39	41.50	54	-12.50	AV	1.34	252	H
11000	41.46	16.39	57.85	74	-16.15	PK	1.52	207	V
11000	27.35	16.39	43.74	54	-10.26	AV	1.16	276	V
Channel:5700MHz									
11400	40.51	16.39	56.90	74	-17.10	PK	1.39	281	H
11400	27.89	16.39	44.28	54	-9.72	AV	1.05	162	H
11400	39.13	16.39	55.52	74	-18.48	PK	1.09	225	V

11400	25.47	16.39	41.86	54	-12.14	AV	1.36	73	V
Channel:5745MHz									
11490	40.12	17.46	57.58	74	-16.42	PK	1.07	203	H
11490	27.65	17.46	45.11	54	-8.89	AV	1.10	31	H
11490	41.42	17.46	58.88	74	-15.12	PK	1.80	128	V
11490	26.44	17.46	43.90	54	-10.10	AV	1.50	335	V
Channel:5825MHz									
11650	41.29	17.57	58.86	74	-15.14	PK	1.36	185	H
11650	26.52	17.57	44.09	54	-9.91	AV	1.18	29	H
11650	39.43	17.57	57.00	74	-17.00	PK	1.13	302	V
11650	26.02	17.57	43.59	54	-10.41	AV	1.09	337	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	41.50	16.34	57.84	74	-16.16	PK	1.08	359	H
10380	25.23	16.34	41.57	54	-12.43	AV	1.70	115	H
10380	41.17	16.34	57.51	74	-16.49	PK	1.82	14	V
10380	27.68	16.34	44.02	54	-9.98	AV	1.69	180	V
Channel:5230MHz									
10460	40.80	16.15	56.95	74	-17.05	PK	1.49	226	H
10460	26.99	16.15	43.14	54	-10.86	AV	1.02	103	H
10460	40.57	16.15	56.72	74	-17.28	PK	1.03	10	V
10460	26.14	16.15	42.29	54	-11.71	AV	1.81	265	V
Channel:5270MHz									
10540	41.65	16.34	57.99	74	-16.01	PK	1.43	128	H
10540	25.82	16.34	42.16	54	-11.84	AV	1.33	345	H
10540	41.90	16.34	58.24	74	-15.76	PK	1.01	327	V
10540	25.47	16.34	41.81	54	-12.19	AV	1.29	325	V
Channel:5310MHz									
10620	39.73	16.34	56.07	74	-17.93	PK	1.41	152	H
10620	26.26	16.34	42.60	54	-11.40	AV	1.55	31	H

10620	39.96	16.34	56.30	74	-17.70	PK	1.06	30	V
10620	25.01	16.34	41.35	54	-12.65	AV	1.55	196	V
Channel:5510MHz									
11020	39.93	16.34	56.27	74	-17.73	PK	1.26	290	H
11020	27.39	16.34	43.73	54	-10.27	AV	1.24	6	H
11020	40.65	16.34	56.99	74	-17.01	PK	1.43	284	V
11020	25.81	16.34	42.15	54	-11.85	AV	1.17	179	V
Channel:5670MHz									
11340	41.63	16.34	57.97	74	-16.03	PK	1.39	262	H
11340	27.88	16.34	44.22	54	-9.78	AV	1.61	141	H
11340	39.66	16.34	56.00	74	-18.00	PK	1.86	196	V
11340	25.14	16.34	41.48	54	-12.52	AV	1.39	314	V

Channel:5755MHz									
11510	41.35	17.49	58.84	74	-15.16	PK	1.69	10	H
11510	25.40	17.49	42.89	54	-11.11	AV	1.45	19	H
11510	39.70	17.49	57.19	74	-16.81	PK	1.50	97	V
11510	25.23	17.49	42.72	54	-11.28	AV	1.06	348	V
Channel:5795MHz									
11590	41.37	17.52	58.89	74	-17.50	PK	1.43	82	H
11590	25.70	17.52	43.22	54	-15.11	AV	1.84	273	H
11590	39.61	17.52	57.13	74	-16.87	PK	1.43	160	V
11590	25.54	17.52	43.06	54	-10.94	AV	1.29	111	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	40.25	16.25	56.50	74	-17.50	PK	1.32	337	H
10420	27.44	16.25	43.69	54	-10.31	AV	1.59	314	H
10420	41.24	16.25	57.49	74	-16.51	PK	1.49	196	V
10420	27.52	16.25	43.77	54	-10.23	AV	1.06	295	V
Channel:5290MHz									
10580	39.02	16.25	55.27	74	-18.73	PK	1.87	77	H

10580	25.84	16.25	42.09	54	-11.91	AV	1.67	93	H
10580	39.88	16.25	56.13	74	-17.87	PK	1.16	96	V
10580	27.88	16.25	44.13	54	-9.87	AV	1.41	206	V
Channel:5530MHz									
11060	40.34	17.50	57.84	74	-16.16	PK	1.15	290	H
11060	26.44	17.50	43.94	54	-10.06	AV	1.59	349	H
11060	40.54	17.50	58.04	74	-15.96	PK	1.29	74	V
11060	26.41	17.50	43.91	54	-10.09	AV	1.53	108	V
Channel:5775MHz									
11550	41.63	17.50	59.13	74	-14.87	PK	1.30	163	H
11550	25.76	17.50	43.26	54	-10.74	AV	1.14	36	H
11550	39.07	17.50	56.57	74	-17.43	PK	1.79	6	V
11550	26.00	17.50	43.50	54	-10.50	AV	1.86	288	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.

module2 (OPS computer) Worst mode:
Radiated Spurious Emission (Above 1GHz):
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	40.61	16.39	57.00	74	-17.00	PK	1.31	324	H
10360	25.82	16.39	42.21	54	-11.79	AV	1.49	338	H
10360	41.92	16.39	58.31	74	-15.69	PK	1.36	317	V
10360	25.48	16.39	41.87	54	-12.13	AV	1.29	360	V
Channel:5240MHz									
10480	40.61	16.11	56.72	74	-17.28	PK	1.44	300	H
10480	26.55	16.11	42.66	54	-11.34	AV	1.35	41	H
10480	41.11	16.11	57.22	74	-16.78	PK	1.22	207	V
10480	26.44	16.11	42.55	54	-11.45	AV	1.10	16	V
Channel:5260MHz									
10520	39.24	16.39	55.63	74	-18.37	PK	1.54	263	H
10520	27.95	16.39	44.34	54	-9.66	AV	1.29	248	H
10520	39.03	16.39	55.42	74	-18.58	PK	1.35	19	V
10520	27.15	16.39	43.54	54	-10.46	AV	1.38	323	V
Channel:5320MHz									
10640	39.46	16.39	55.85	74	-18.15	PK	1.00	26	H
10640	26.34	16.39	42.73	54	-11.27	AV	1.44	225	H
10640	40.27	16.39	56.66	74	-17.34	PK	1.52	200	V
10640	27.49	16.39	43.88	54	-10.12	AV	1.20	275	V
Channel:5500MHz									
11000	40.44	16.39	56.83	74	-17.17	PK	1.26	83	H
11000	25.67	16.39	42.06	54	-11.94	AV	1.58	152	H
11000	39.84	16.39	56.23	74	-17.77	PK	1.40	3	V
11000	25.57	16.39	41.96	54	-12.04	AV	1.39	181	V
Channel:5700MHz									
11400	41.69	16.39	58.08	74	-15.92	PK	1.46	159	H
11400	26.25	16.39	42.64	54	-11.36	AV	1.53	284	H
11400	41.24	16.39	57.63	74	-16.37	PK	1.17	178	V

11400	25.60	16.39	41.99	54	-12.01	AV	1.33	360	V
Channel:5745MHz									
11490	40.26	17.46	57.72	74	-16.28	PK	1.86	8	H
11490	25.88	17.46	43.34	54	-10.66	AV	1.30	226	H
11490	40.57	17.46	58.03	74	-15.97	PK	1.56	145	V
11490	25.74	17.46	43.20	54	-10.80	AV	1.04	196	V
Channel:5825MHz									
11650	39.23	17.57	56.80	74	-17.20	PK	1.62	157	H
11650	25.88	17.57	43.45	54	-10.55	AV	1.55	174	H
11650	40.02	17.57	57.59	74	-16.41	PK	1.28	143	V
11650	26.41	17.57	43.98	54	-10.02	AV	1.46	18	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	39.23	16.34	55.57	74	-18.43	PK	1.70	227	H
10380	25.62	16.34	41.96	54	-12.04	AV	1.06	226	H
10380	40.70	16.34	57.04	74	-16.96	PK	1.83	233	V
10380	27.31	16.34	43.65	54	-10.35	AV	1.40	301	V
Channel:5230MHz									
10460	39.38	16.15	55.53	74	-18.47	PK	1.03	143	H
10460	27.84	16.15	43.99	54	-10.01	AV	1.54	24	H
10460	41.30	16.15	57.45	74	-16.55	PK	1.58	273	V
10460	25.67	16.15	41.82	54	-12.18	AV	1.68	172	V

Channel:5270MHz									
10540	41.59	16.34	57.93	74	-16.07	PK	1.58	141	H
10540	25.97	16.34	42.31	54	-11.69	AV	1.52	162	H
10540	40.70	16.34	57.04	74	-16.96	PK	1.37	153	V
10540	27.47	16.34	43.81	54	-10.19	AV	1.69	150	V
Channel:5310MHz									
10620	40.19	16.34	56.53	74	-17.47	PK	1.83	22	H
10620	25.11	16.34	41.45	54	-12.55	AV	1.13	339	H

10620	40.17	16.34	56.51	74	-17.49	PK	1.48	135	V
10620	26.37	16.34	42.71	54	-11.29	AV	1.65	54	V
Channel:5510MHz									
11020	39.89	16.34	56.23	74	-17.77	PK	1.72	33	H
11020	25.61	16.34	41.95	54	-12.05	AV	1.42	3	H
11020	41.80	16.34	58.14	74	-15.86	PK	1.63	35	V
11020	26.61	16.34	42.95	54	-11.05	AV	1.52	43	V
Channel:5670MHz									
11340	39.50	16.34	55.84	74	-18.16	PK	1.08	56	H
11340	26.26	16.34	42.60	54	-11.40	AV	1.34	176	H
11340	40.92	16.34	57.26	74	-16.74	PK	1.01	229	V
11340	26.02	16.34	42.36	54	-11.64	AV	1.38	2	V

Channel:5755MHz									
11510	41.86	17.49	59.35	74	-14.65	PK	1.12	206	H
11510	27.08	17.49	44.57	54	-9.43	AV	1.33	265	H
11510	39.34	17.49	56.83	74	-17.17	PK	1.25	108	V
11510	25.85	17.49	43.34	54	-10.66	AV	1.31	173	V
Channel:5795MHz									
11590	40.16	17.52	57.68	74	-16.55	PK	1.21	310	H
11590	25.24	17.52	42.76	54	-16.32	AV	1.56	156	H
11590	40.13	17.52	57.65	74	-16.35	PK	1.46	130	V
11590	25.35	17.52	42.87	54	-11.13	AV	1.34	180	V

Modulation : 802.11(VH80) (the worst data)

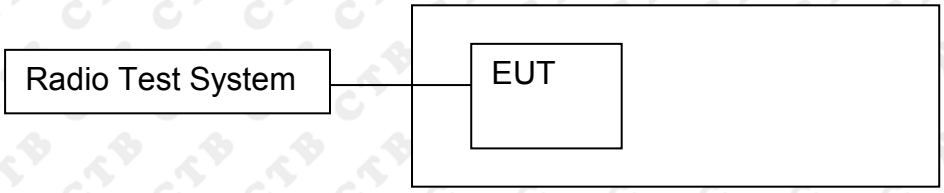
Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5210MHz									
10420	41.20	16.25	57.45	74	-16.55	PK	1.68	239	H
10420	26.60	16.25	42.85	54	-11.15	AV	1.16	204	H
10420	40.21	16.25	56.46	74	-17.54	PK	1.50	336	V
10420	27.93	16.25	44.18	54	-9.82	AV	1.17	334	V
Channel:5290MHz									
10580	41.17	16.25	57.42	74	-16.58	PK	1.01	87	H

10580	26.66	16.25	42.91	54	-11.09	AV	1.13	98	H
10580	40.92	16.25	57.17	74	-16.83	PK	1.88	300	V
10580	25.16	16.25	41.41	54	-12.59	AV	1.40	66	V
Channel:5530MHz									
11060	39.08	17.50	56.58	74	-17.42	PK	1.81	113	H
11060	25.82	17.50	43.32	54	-10.68	AV	1.37	127	H
11060	39.04	17.50	56.54	74	-17.46	PK	1.82	329	V
11060	27.15	17.50	44.65	54	-9.35	AV	1.34	246	V
Channel:5775MHz									
11550	40.82	17.50	58.32	74	-15.68	PK	1.62	14	H
11550	25.93	17.50	43.43	54	-10.57	AV	1.48	11	H
11550	41.51	17.50	59.01	74	-14.99	PK	1.60	139	V
11550	26.47	17.50	43.97	54	-10.03	AV	1.35	262	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.

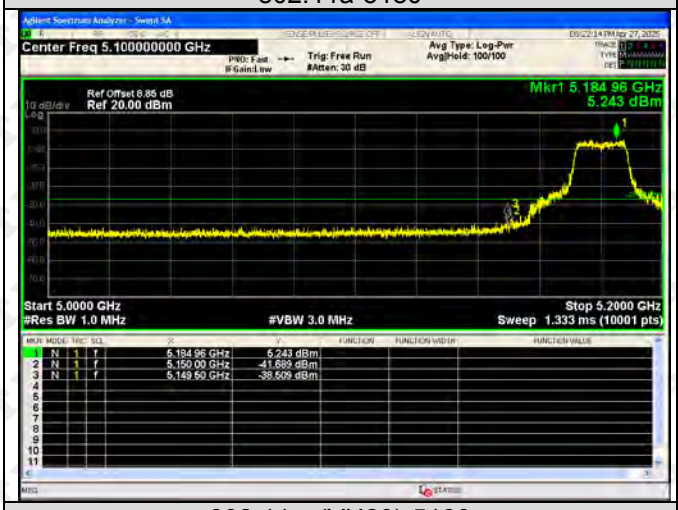
8.4 Test Result

Test Graph

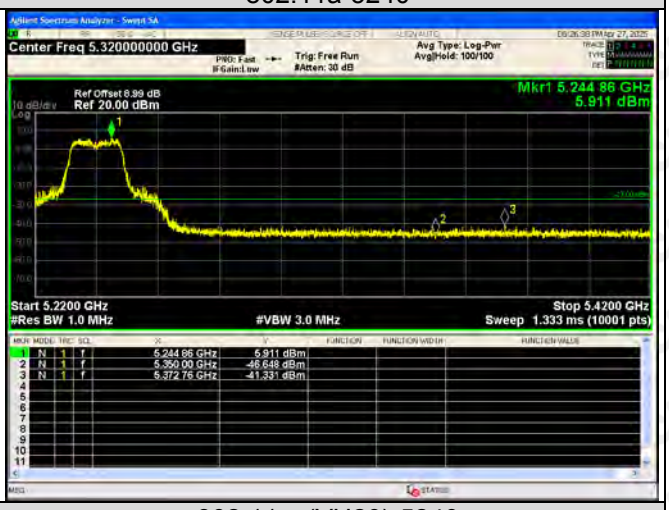
5150-5250MHz:

module1 Worst mode:

802.11a-5180



802.11a-5240

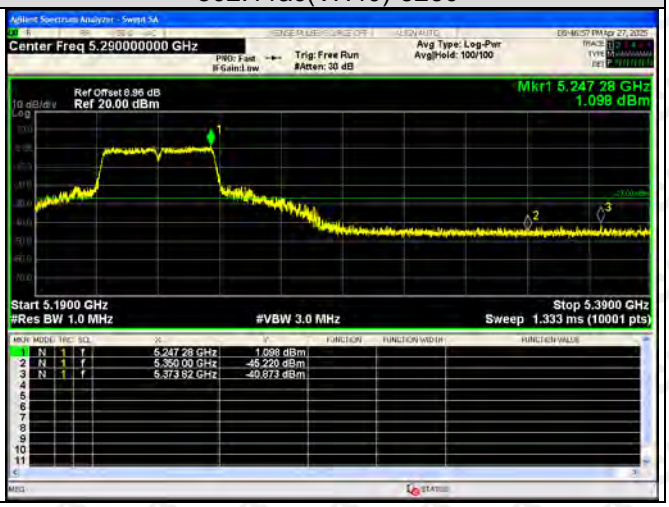


802.11ac(VH20)-5180

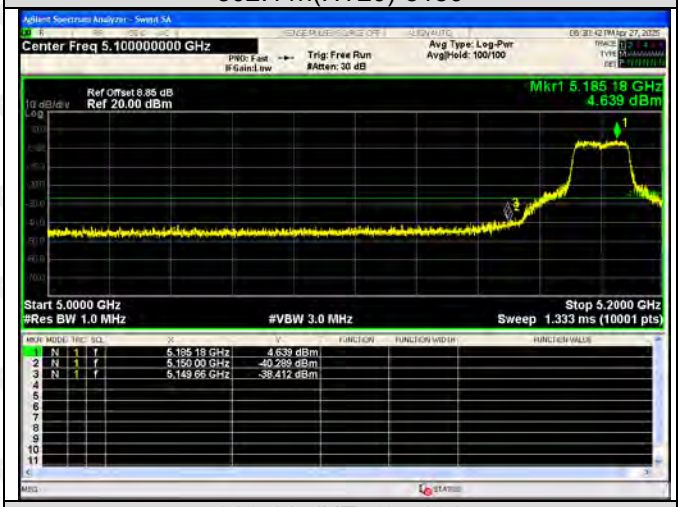
802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230

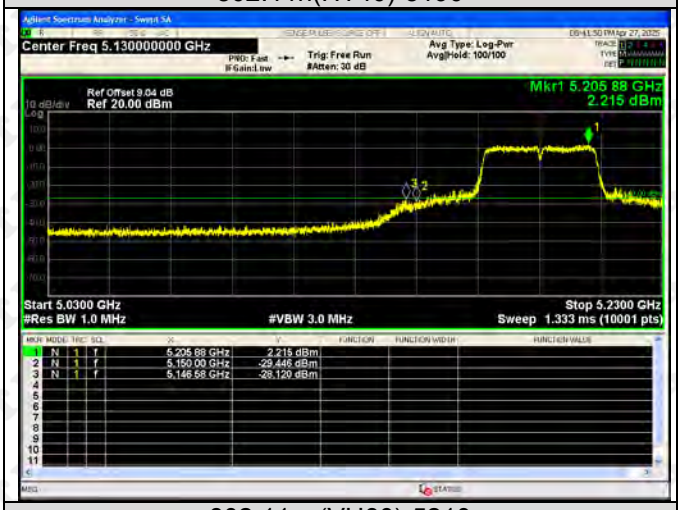


802.11n(HT20)-5180



802.11n(HT20)-5240

802.11n(HT40)-5190



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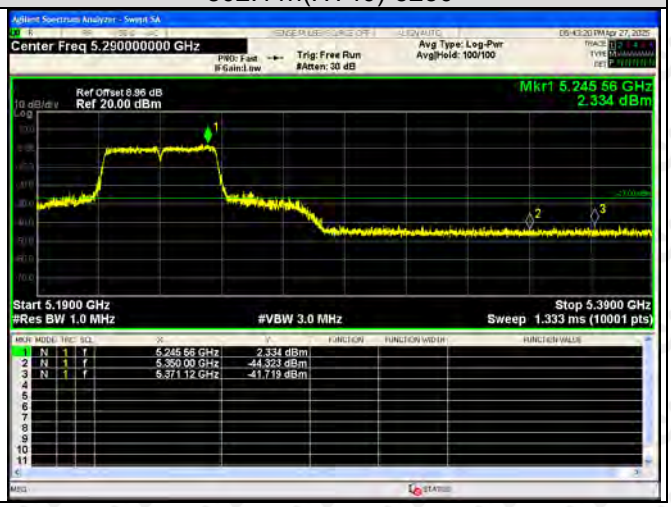
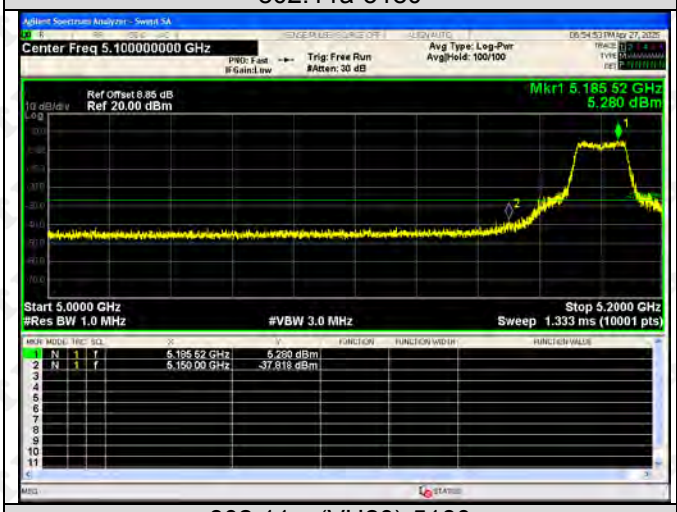


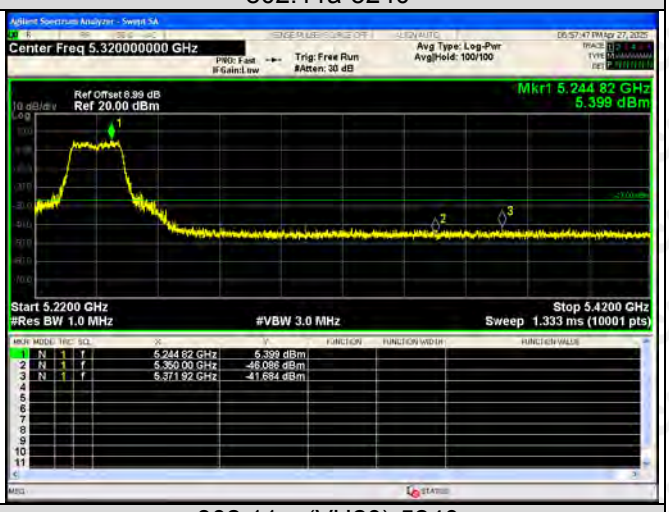
802.11ac(VH80)-5210

module2 (OPS computer) Worst mode:

802.11a-5180



802.11a-5240



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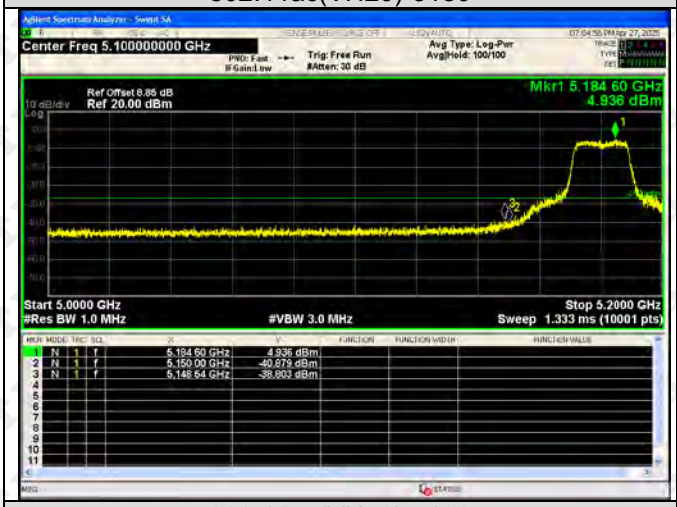

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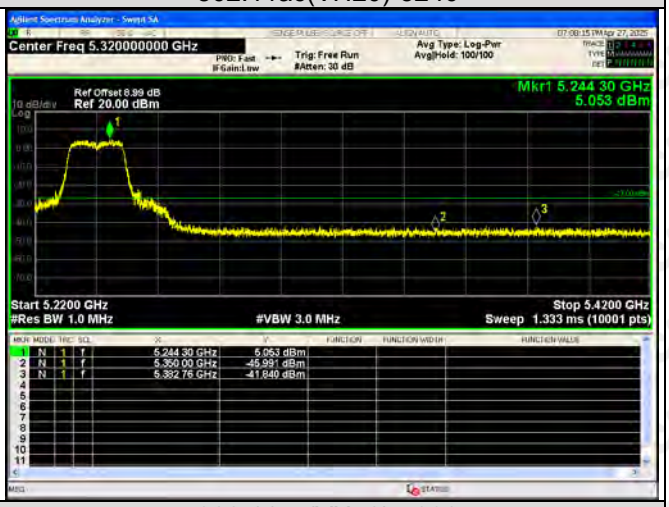

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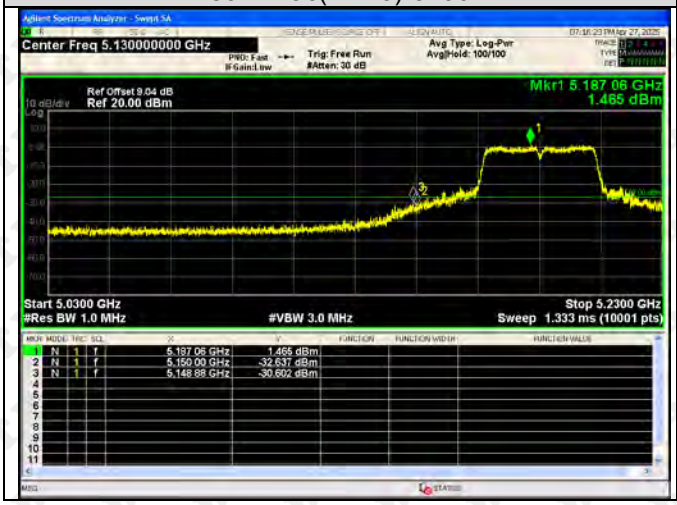
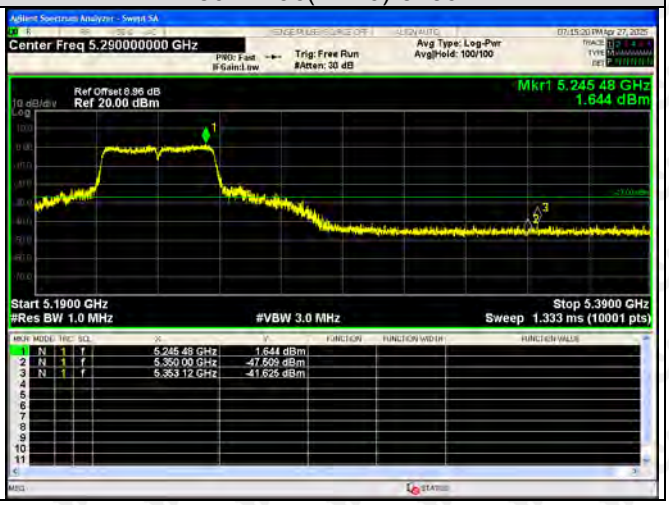
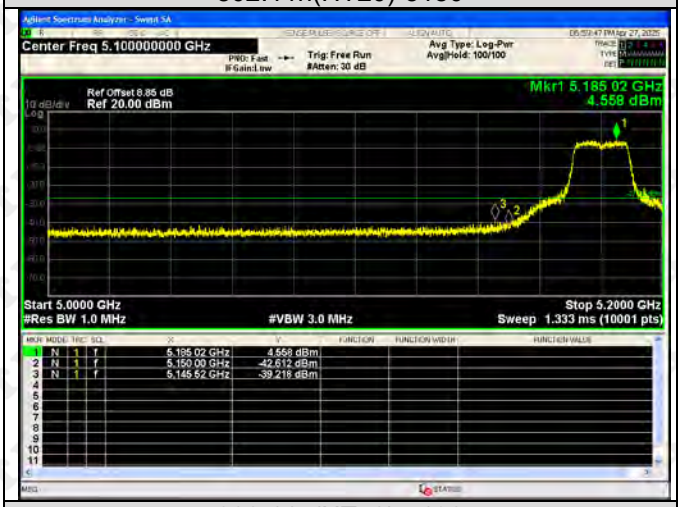


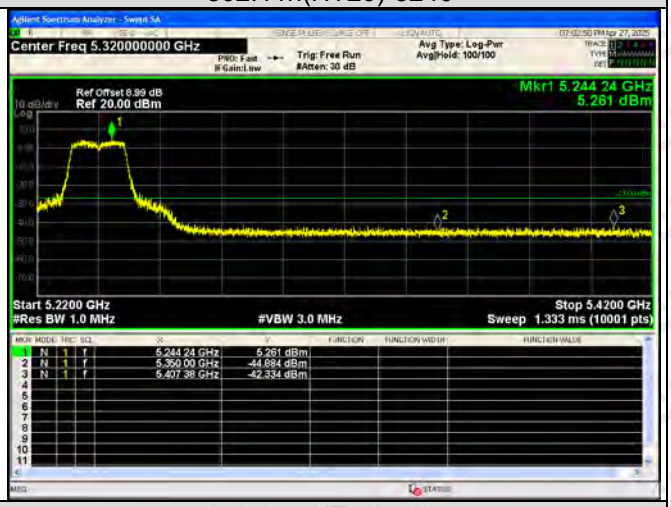
802.11ac(VH40)-5230



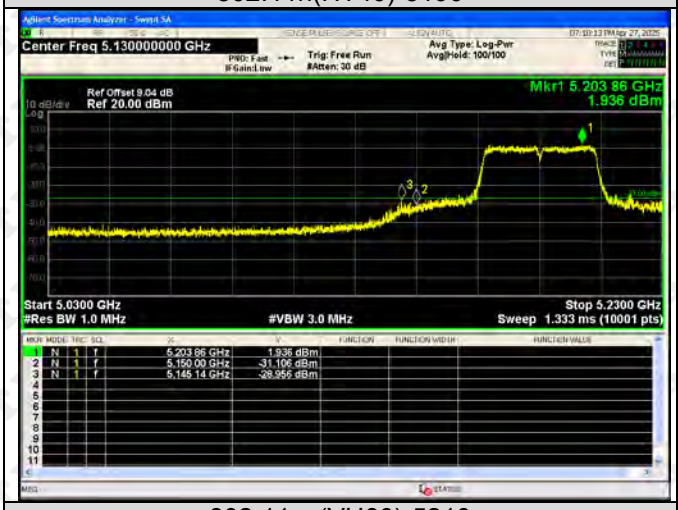
802.11n(HT20)-5180



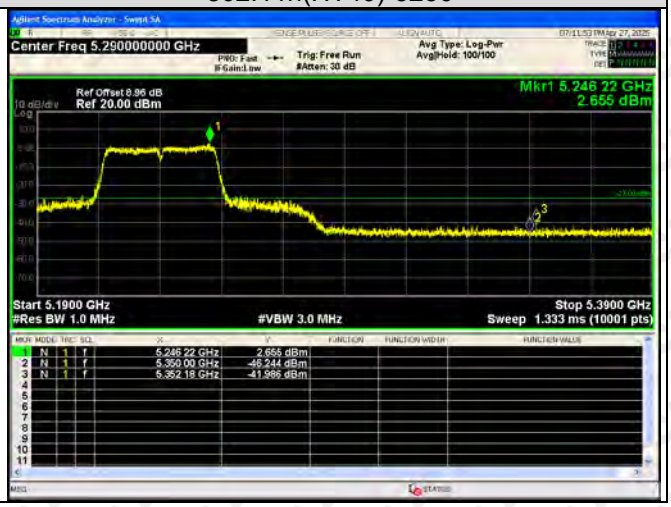
802.11n(HT20)-5240



802.11n(HT40)-5190



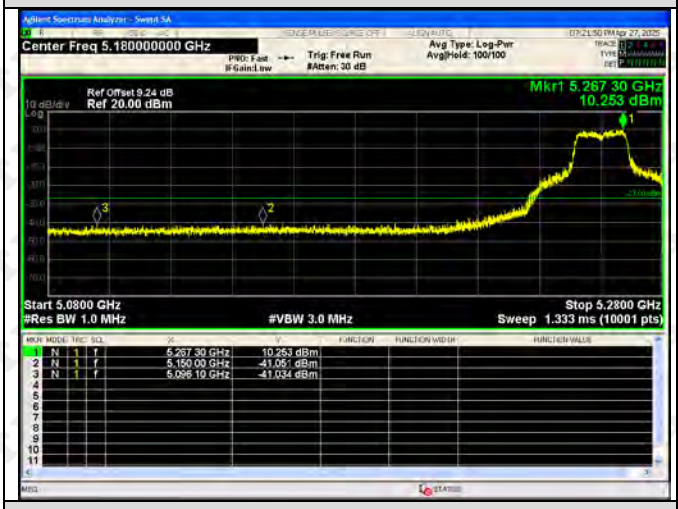
802.11n(HT40)-5230



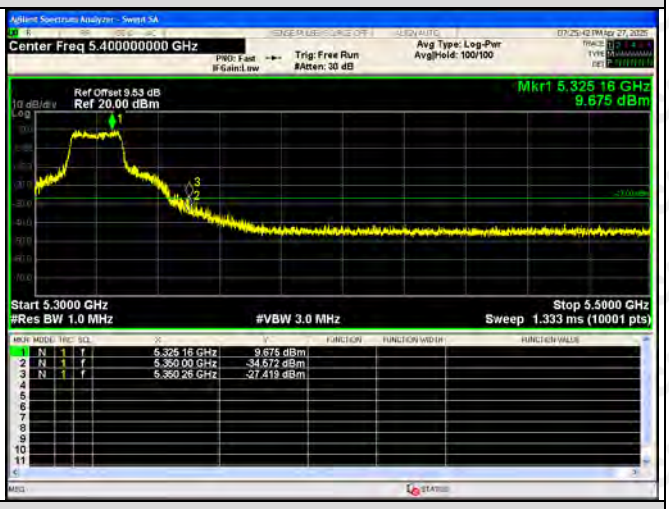
802.11ac(VH80)-5210

5250-5350MHz:
module1 Worst mode:

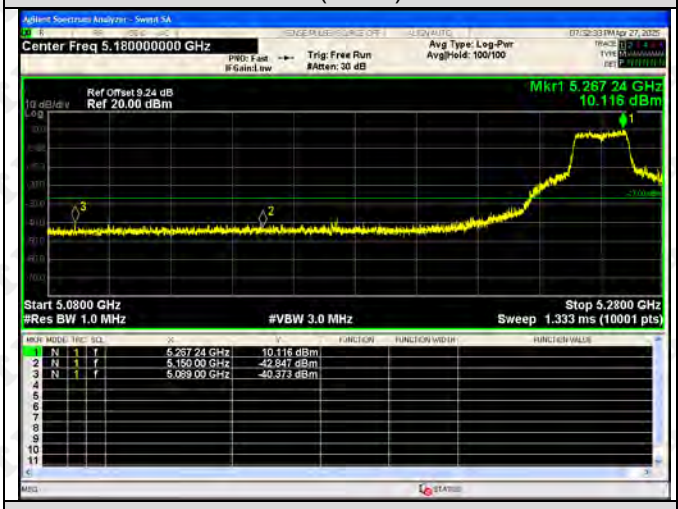
802.11a-5260



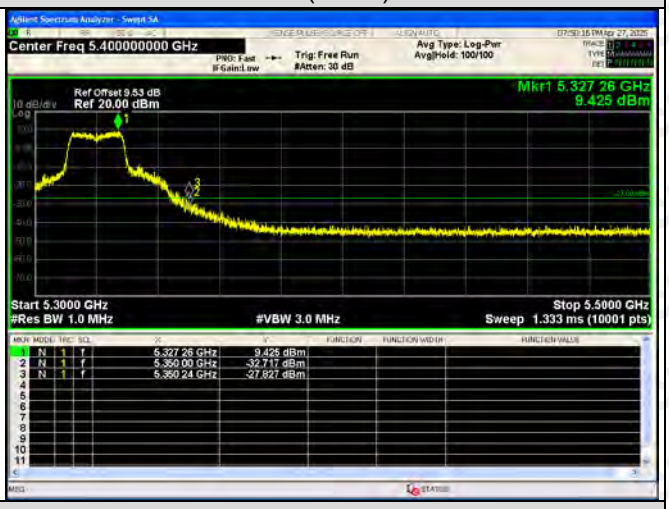
802.11a-5320



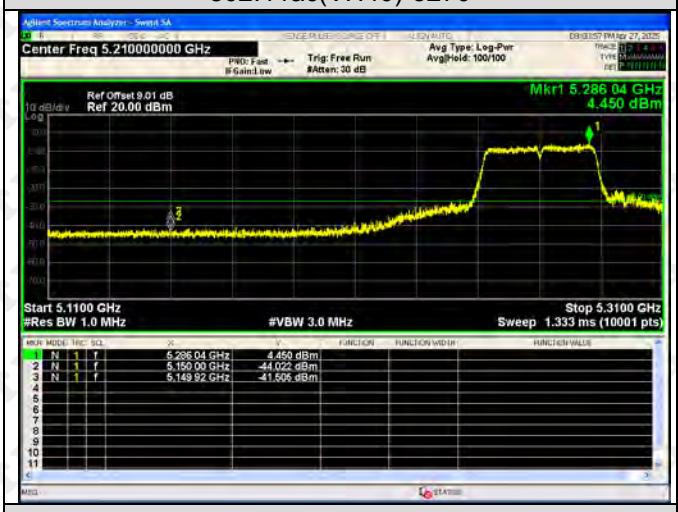
802.11ac(VH20)-5260



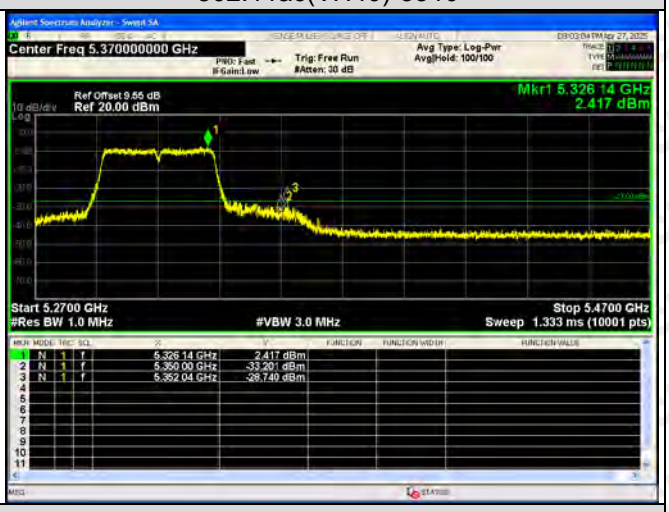
802.11ac(VH20)-5320



802.11ac(VH40)-5270

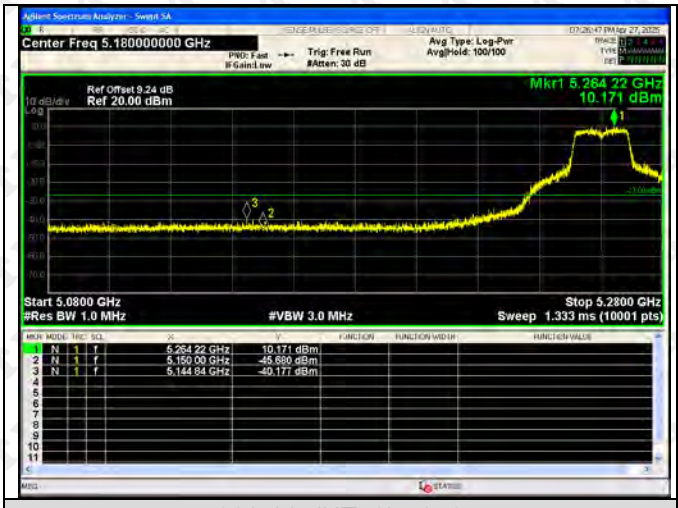


802.11ac(VH40)-5310



802.11n(HT20)-5260

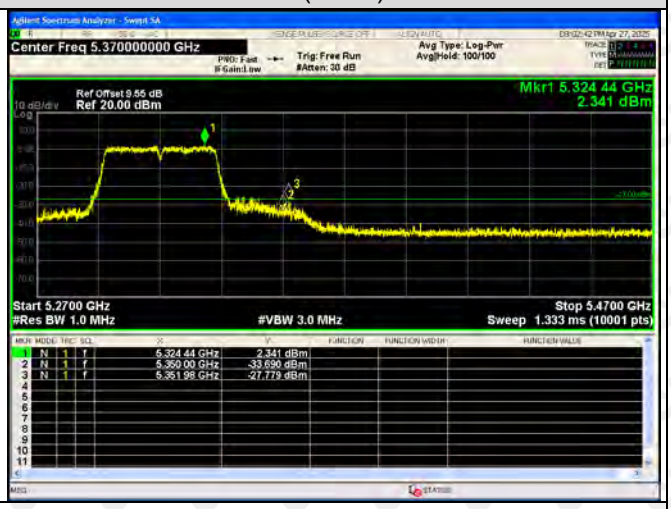
802.11n(HT20)-5320



802.11n(HT40)-5270

802.11n(HT40)-5310

802.11ac(VH80)-5290



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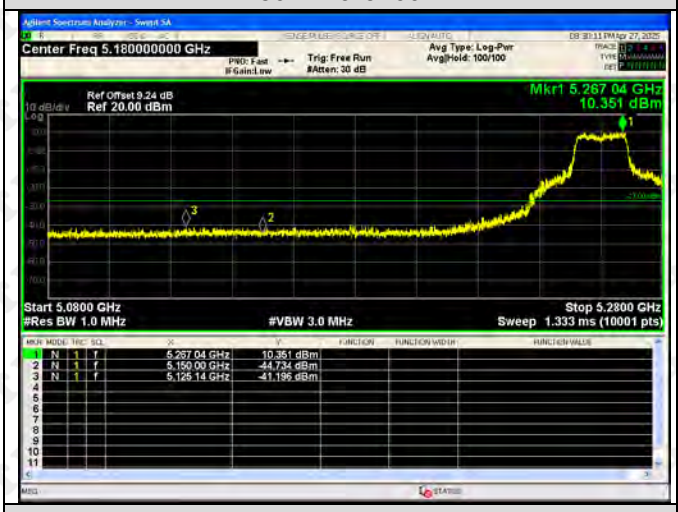
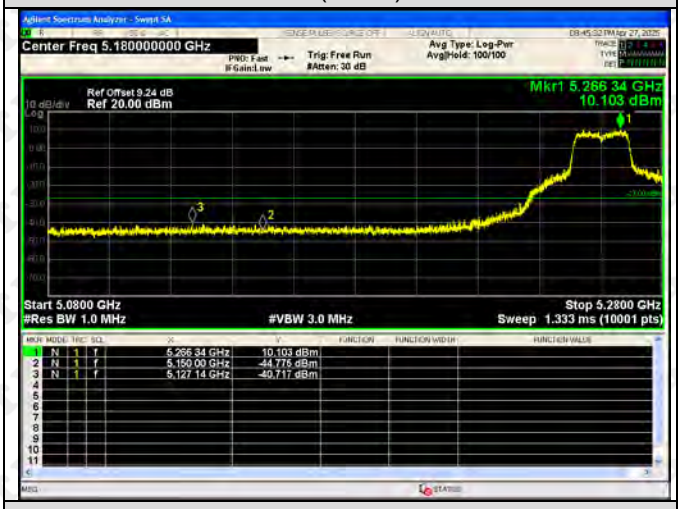
module2 (OPS computer) Worst mode:

802.11a-5260



802.11a-5320

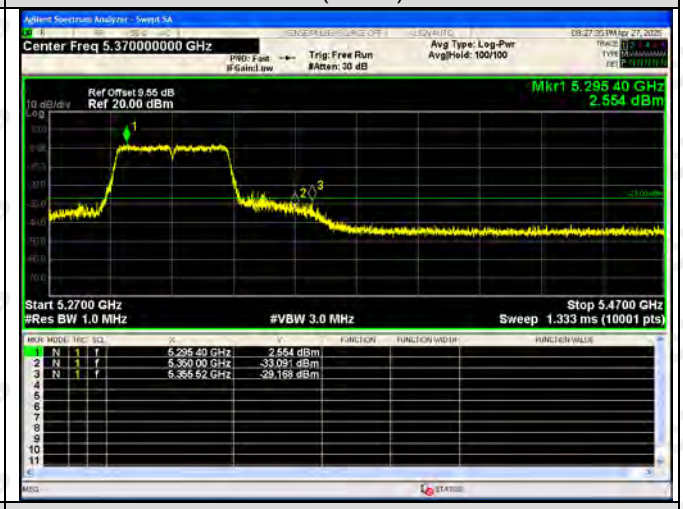
802.11ac(VH20)-5260



802.11ac(VH20)-5320

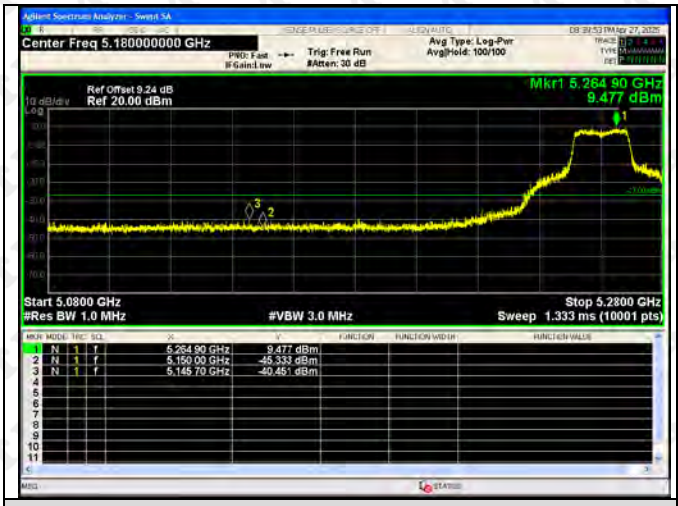
802.11ac(VH40)-5270

802.11ac(VH40)-5310



802.11n(HT20)-5260

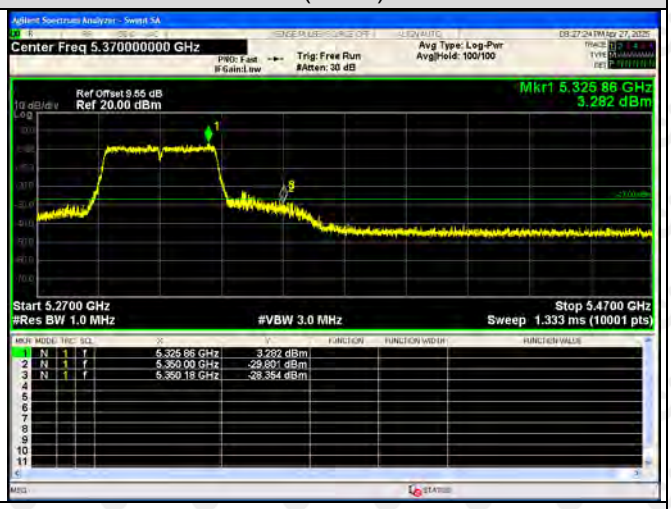
802.11n(HT20)-5320



802.11n(HT40)-5270

802.11n(HT40)-5310

802.11ac(VH80)-5290



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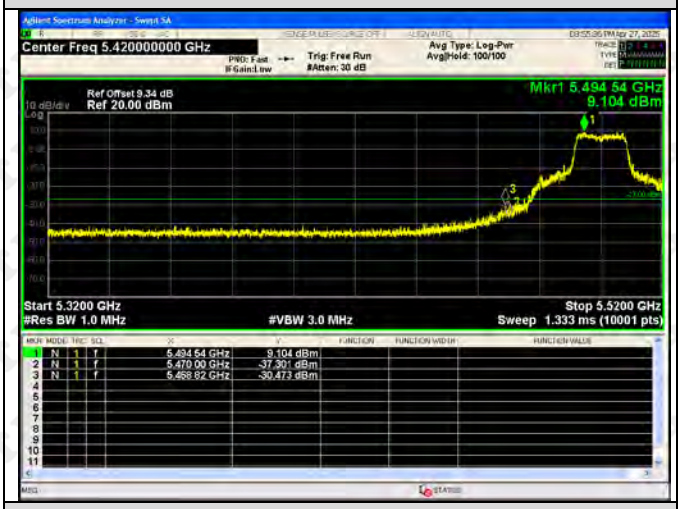
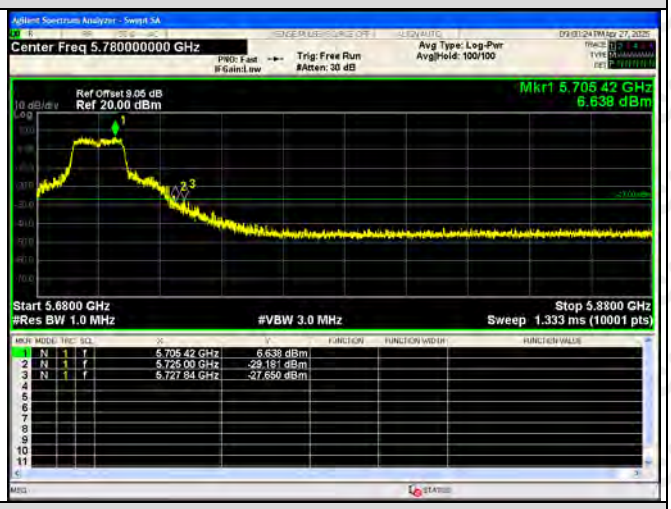
5470-5725MHz:
module1 Worst mode:

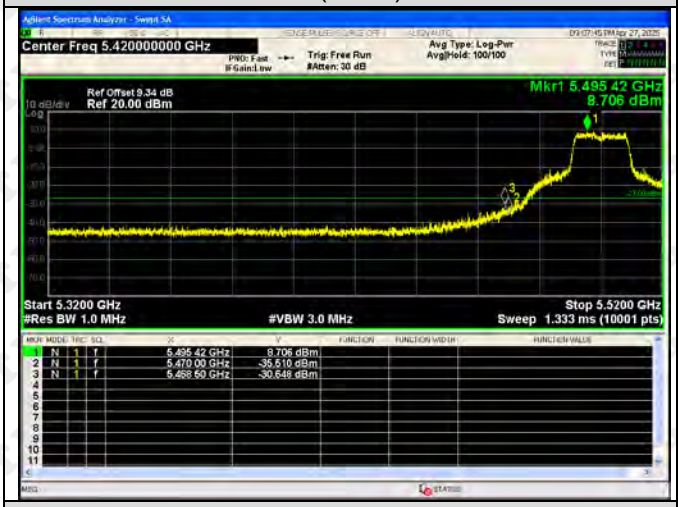
802.11a-5500



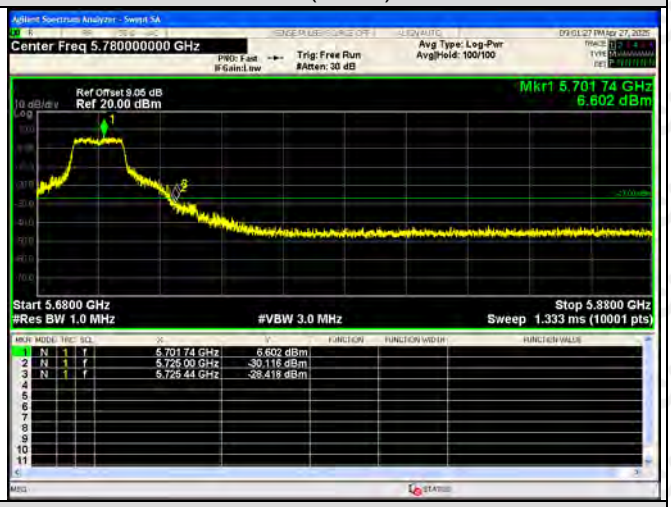
802.11a-5700



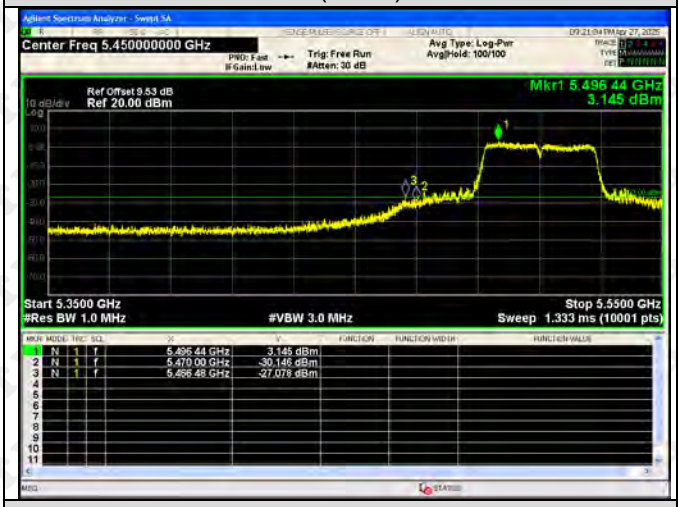
802.11ac(VH20)-5500



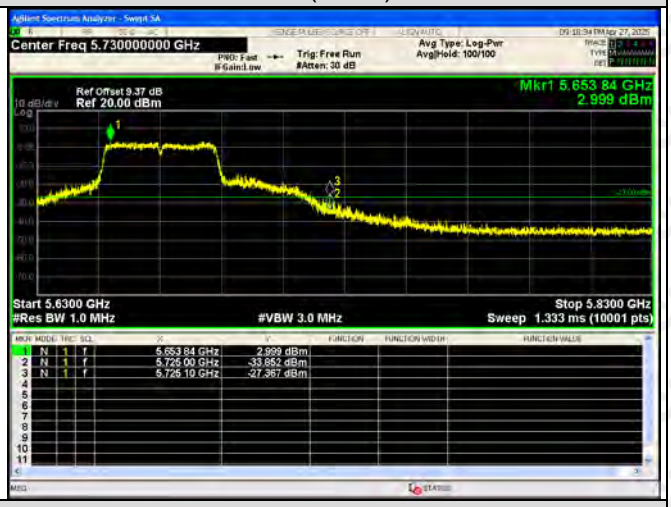
802.11ac(VH20)-5700



802.11ac(VH40)-5510



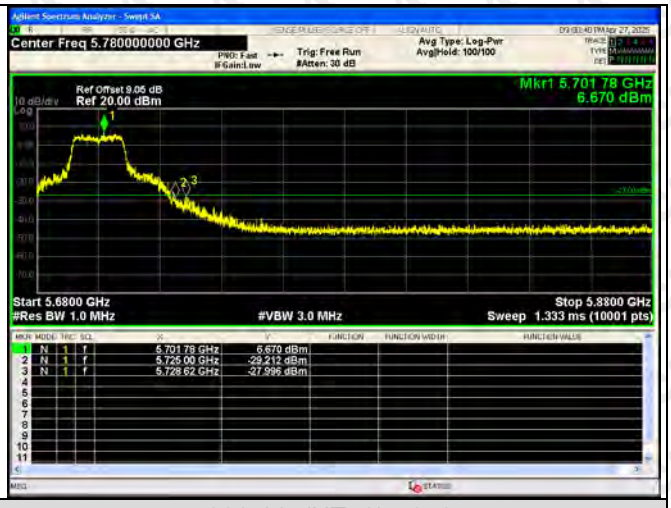
802.11ac(VH40)-5670



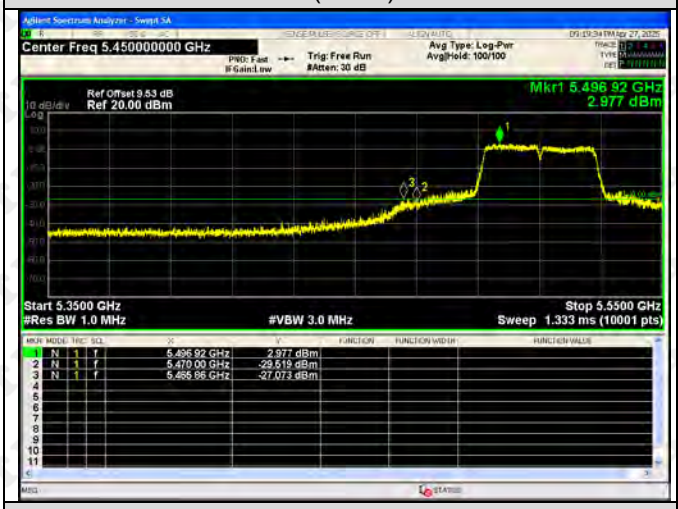
802.11n(HT20)-5500

802.11n(HT20)-5700

802.11n(HT40)-5510



802.11n(HT40)-5670



802.11ac(VH80)-5530

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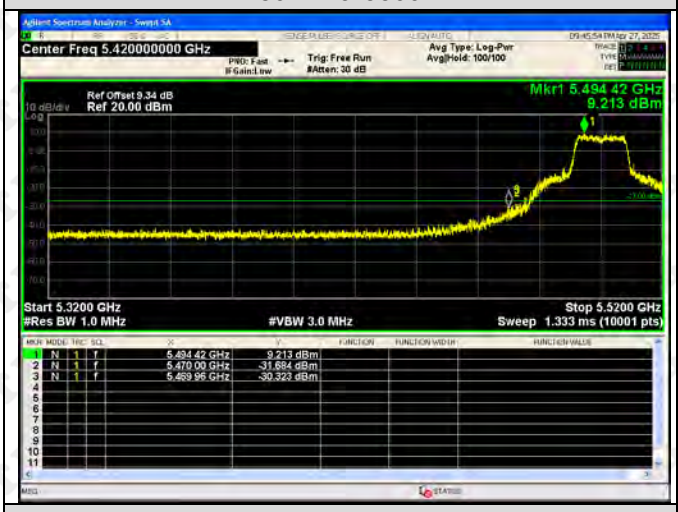
/

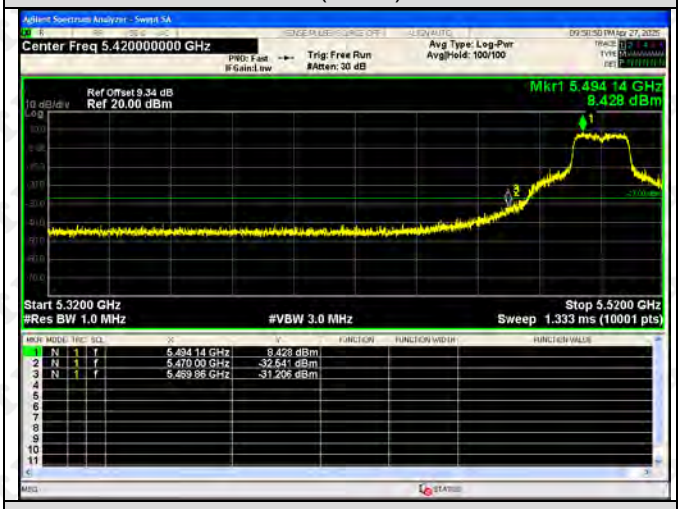
module2 (OPS computer) Worst mode:

802.11a-5500



802.11a-5700

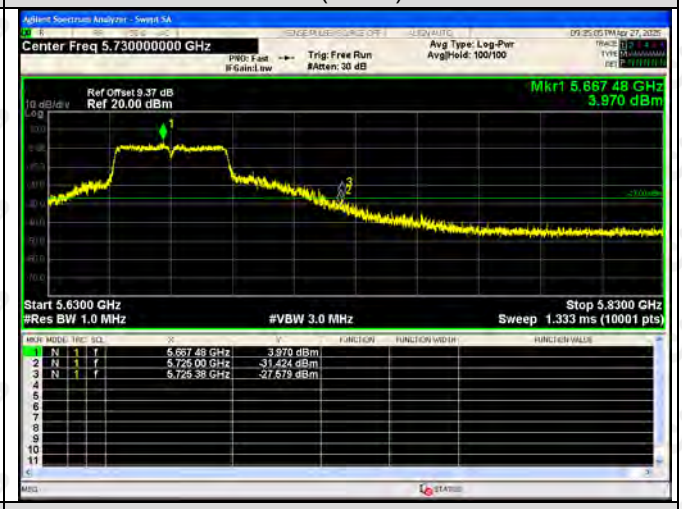
802.11ac(VH20)-5500



802.11ac(VH20)-5700

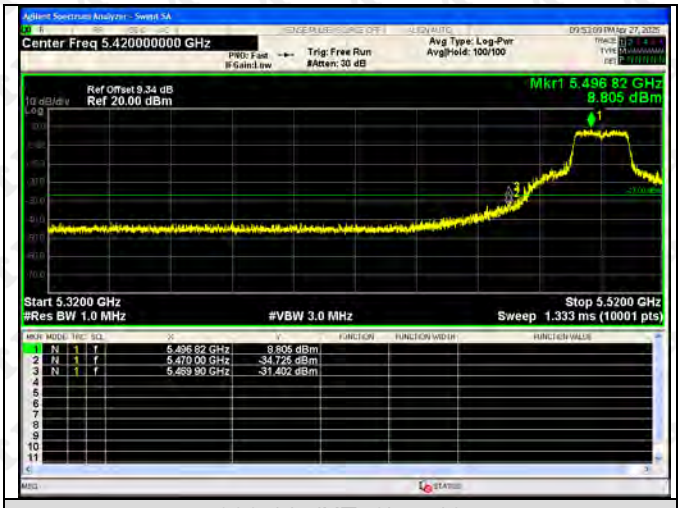
802.11ac(VH40)-5510

802.11ac(VH40)-5670



802.11n(HT20)-5500

802.11n(HT20)-5700



802.11n(HT40)-5510

802.11n(HT40)-5670

802.11ac(VH80)-5530

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/

5725-5850MHz
module1 Worst mode:

802.11a-5745

802.11a-5825

802.11ac(VH20)-5745

802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795

802.11(n20)-5745

802.11(n20)-5825

802.11(n40)-5755

802.11(n40)-5795

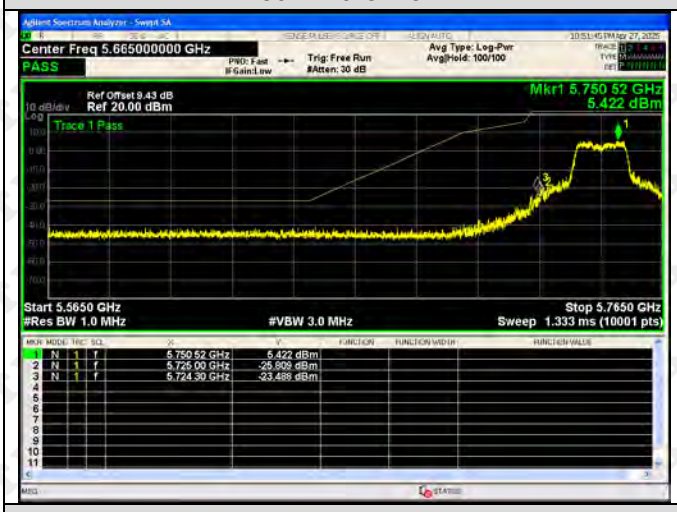
802.11ac(VH80)-5775

/

/

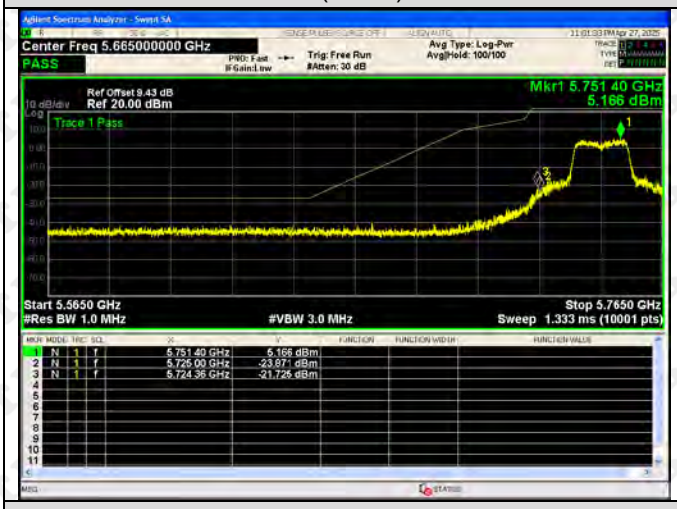
module2 (OPS computer) Worst mode:

802.11a-5745



802.11a-5825

802.11ac(VH20)-5745



802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795

802.11(n20)-5745

802.11(n20)-5825

802.11(n40)-5755

802.11(n40)-5795

802.11ac(VH80)-5775

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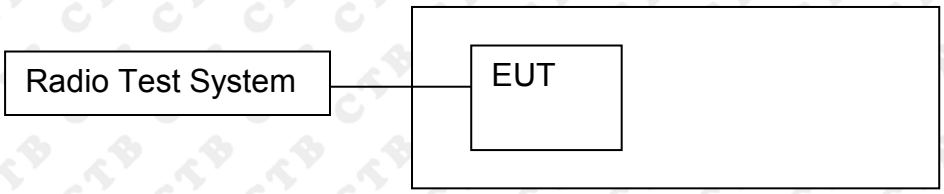
9. CONDUCTED OUTPUT POWER

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

module1 Worst mode:
5150-5250MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5180	13.204	13.258	/	30
	5200	13.622	13.278	/	30
	5240	13.593	13.191	/	30
802.11ac20	5180	13.451	12.914	16.201	30
	5200	13.817	13.013	16.444	30
	5240	13.612	12.94	16.299	30
802.11ac40	5190	13.511	13.314	16.424	30
	5230	13.428	13.085	16.270	30
802.11ac80	5210	11.41	13.026	15.303	30
802.11n(HT20)	5180	13.378	13.053	16.229	30
	5200	13.728	12.998	16.389	30
	5240	13.597	13.05	16.342	30
802.11n(HT40)	5190	13.794	13.295	16.562	30
	5230	13.934	13.183	16.585	30

module2 (OPS computer) Worst mode:
5150-5250MHz:

Test mode1	Test Channel (MHz)	Output Power dBm	Limit dBm
802.11a	5180	13.406	30
	5200	13.838	30
	5240	13.946	30
802.11ac20	5180	13.285	30
	5200	13.633	30
	5240	13.691	30
802.11ac40	5190	13.454	30
	5230	13.623	30
802.11ac80	5210	11.504	30
802.11n(HT20)	5180	13.24	30
	5200	13.68	30
	5240	13.766	30
802.11n(HT40)	5190	13.648	30
	5230	13.697	30

module1 Worst mode:
5250-5350MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5260	13.046	13.581	/	23.98
	5280	13.596	13.511	/	23.98
	5320	13.826	13.544	/	23.98
802.11ac20	5260	12.944	13.366	16.170	23.98
	5280	13.589	13.138	16.380	23.98
	5320	13.742	13.232	16.505	23.98
802.11ac40	5270	13.348	13.604	16.488	23.98
	5310	13.938	13.662	16.812	23.98
802.11ac80	5290	13.702	13.596	16.660	23.98
802.11n(HT20)	5260	12.957	13.364	16.176	23.98
	5280	13.573	13.239	16.420	23.98
	5320	13.768	13.298	16.550	23.98
802.11n(HT40)	5270	13.857	13.502	16.693	23.98
	5310	13.775	13.662	16.729	23.98

module2 (OPS computer) Worst mode:
5250-5350MHz:

Test mode1	Test Channel (MHz)	Output Power dBm	Limit dBm
802.11a	5260	13.068	23.98
	5280	13.512	23.98
	5320	13.798	23.98
802.11ac20	5260	12.893	23.98
	5280	13.493	23.98
	5320	13.73	23.98
802.11ac40	5270	13.243	23.98
	5310	13.913	23.98
802.11ac80	5290	13.438	23.98
802.11n(HT20)	5260	12.943	23.98
	5280	13.504	23.98
	5320	13.745	23.98
802.11n(HT40)	5270	18.366	23.98
	5310	13.913	23.98

module1 Worst mode:
5470-5725MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5500	12.433	13.118	/	23.98
	5580	11.576	12.82	/	23.98
	5700	12.106	12.803	/	23.98
802.11ac20	5500	12.125	13.396	15.817	23.98
	5580	11.479	12.681	15.132	23.98
	5700	12.047	13.249	15.700	23.98
802.11ac40	5510	11.627	13.186	15.486	23.98
	5670	11.792	12.975	15.434	23.98
802.11ac80	5530	11.329	12.171	14.781	23.98
802.11n(HT20)	5500	12.154	14.088	16.238	23.98
	5580	11.537	12.732	15.186	23.98
	5700	12.075	13.303	15.743	23.98
802.11n(HT40)	5510	11.868	13.234	15.615	23.98
	5670	11.818	12.958	15.436	23.98

module2 (OPS computer) Worst mode:
5470-5725MHz:

Test mode1	Test Channel (MHz)	Output Power dBm	Limit dBm
802.11a	5500	12.15	23.98
	5580	11.582	23.98
	5700	12.093	23.98
802.11ac20	5500	12.103	23.98
	5580	11.507	23.98
	5700	12.066	23.98
802.11ac40	5510	11.566	23.98
	5670	11.602	23.98
802.11ac80	5530	11.235	23.98
802.11n(HT20)	5500	12.108	23.98
	5580	11.51	23.98
	5700	12.104	23.98
802.11n(HT40)	5510	11.73	23.98
	5670	11.796	23.98

module1 Worst mode:
5725-5850MHz:

Test mode1	Test Channel (MHz)	Output Power dBm ANT1	Output Power dBm ANT2	Output Power dBm Total	Limit dBm
802.11a	5745	13.581	13.495	/	23.98
	5785	13.734	14.415	/	23.98
	5825	13.282	15.833	/	23.98
802.11ac20	5745	13.258	13.242	16.260	23.98
	5785	12.549	14.251	16.493	23.98
	5825	13.452	13.942	16.714	23.98
802.11ac40	5755	13.301	12.681	16.012	23.98
	5795	13.661	13.524	16.603	23.98
802.11ac80	5775	13.163	13.332	16.259	23.98
802.11n(HT20)	5745	13.318	13.287	16.313	23.98
	5785	12.538	14.273	16.502	23.98
	5825	13.465	13.893	16.695	23.98
802.11n(HT40)	5755	13.678	12.735	16.242	23.98
	5795	13.808	13.442	16.639	23.98

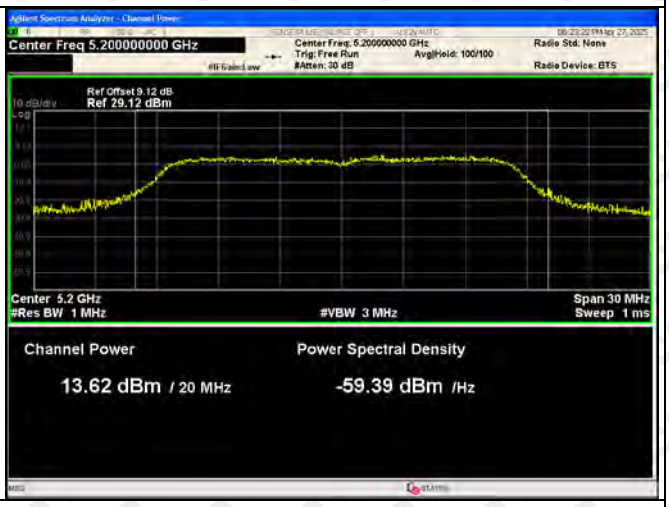
module2 (OPS computer) Worst mode:
5725-5850MHz:

Test mode1	Test Channel (MHz)	Output Power dBm	Limit dBm
802.11a	5745	13.591	23.98
	5785	13.343	23.98
	5825	13.696	23.98
802.11ac20	5745	13.459	23.98
	5785	13.247	23.98
	5825	13.639	23.98
802.11ac40	5755	12.849	23.98
	5795	13.262	23.98
802.11ac80	5775	13.083	23.98
802.11n(HT20)	5745	13.309	23.98
	5785	12.564	23.98
	5825	13.47	23.98
802.11n(HT40)	5755	13.418	23.98
	5795	14.066	23.98

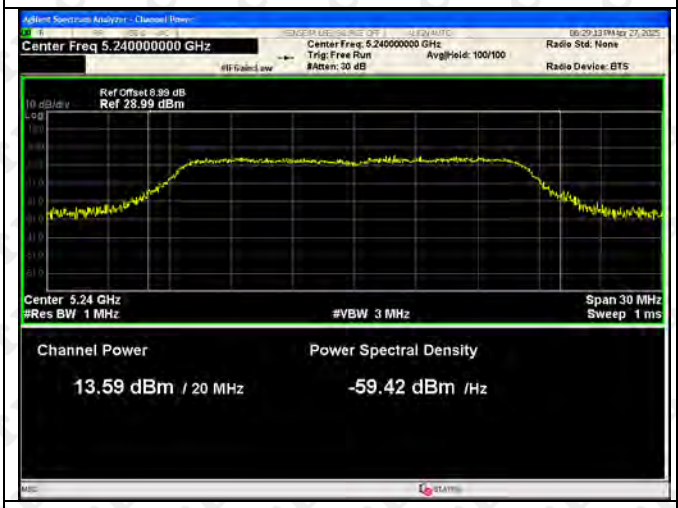
Test Graph:
5150-5250MHz-Power
module1 Worst mode:

802.11a-5180

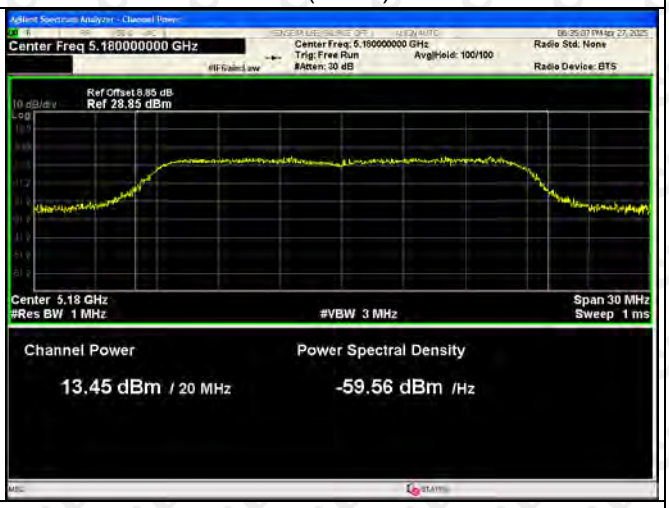
802.11a-5200



802.11a-5240

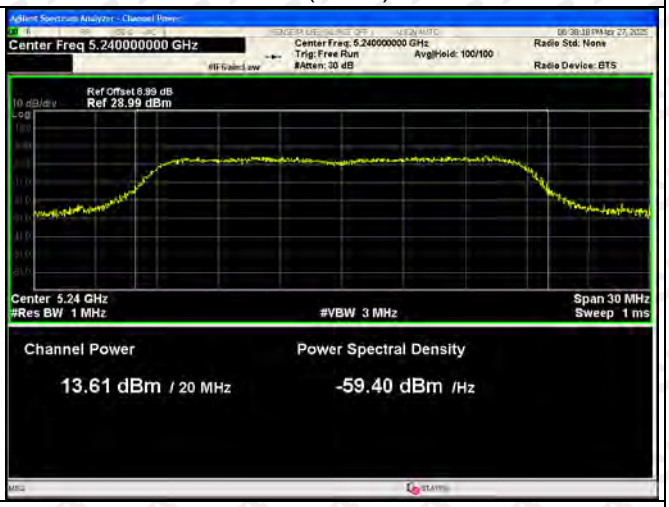


802.11ac(VH20)-5180



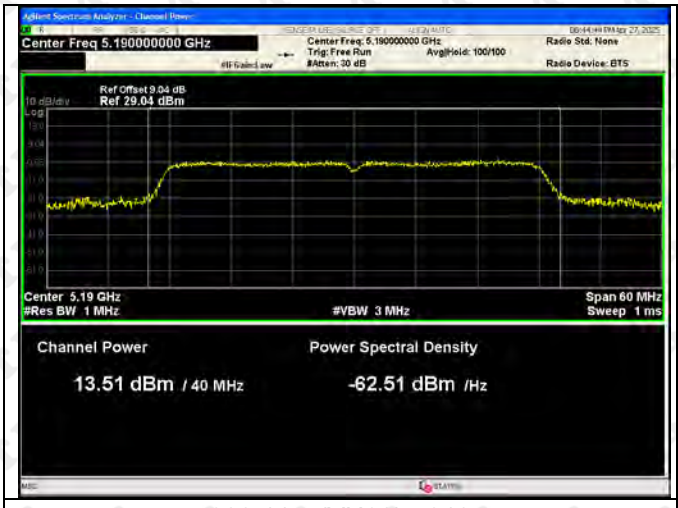
802.11ac(VH20)-5200

802.11ac(VH20)-5240

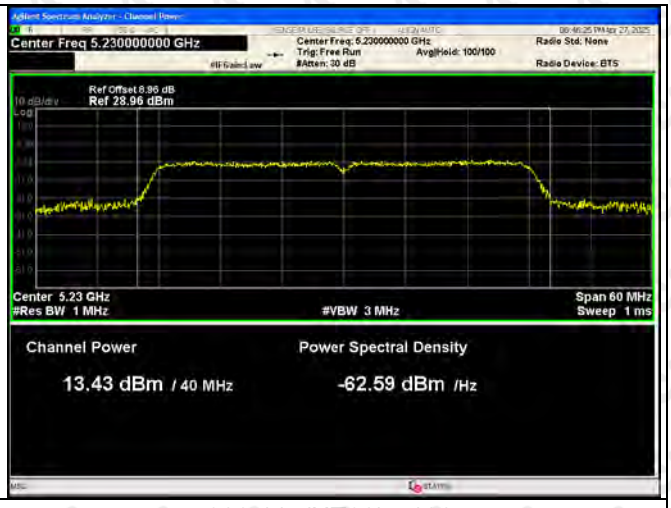


802.11ac(VH40)-5190

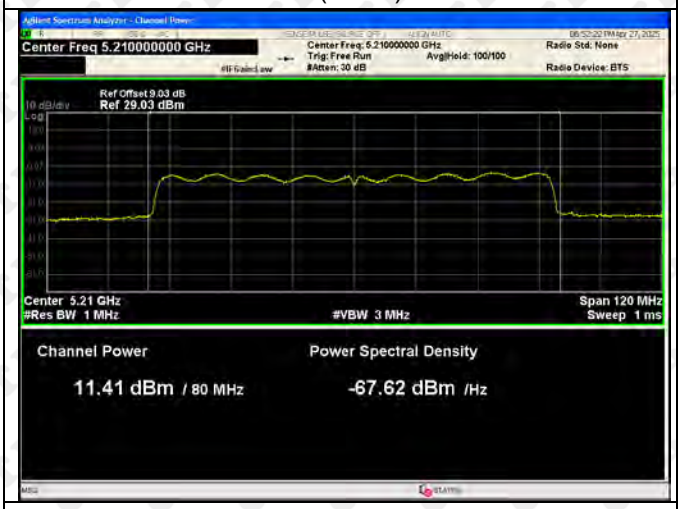
802.11ac(VH40)-5230



802.11ac(VH80)-5210



802.11n(HT20)-5180



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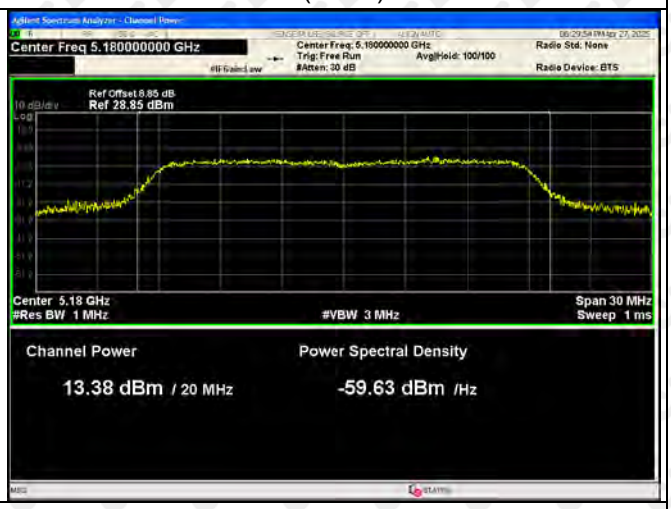

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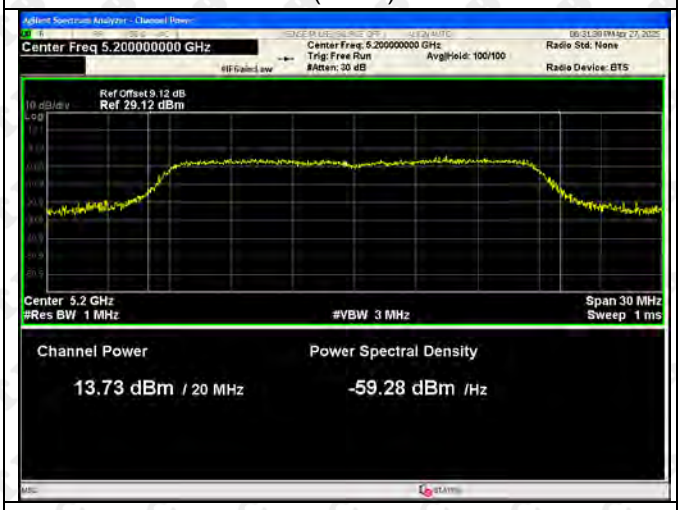

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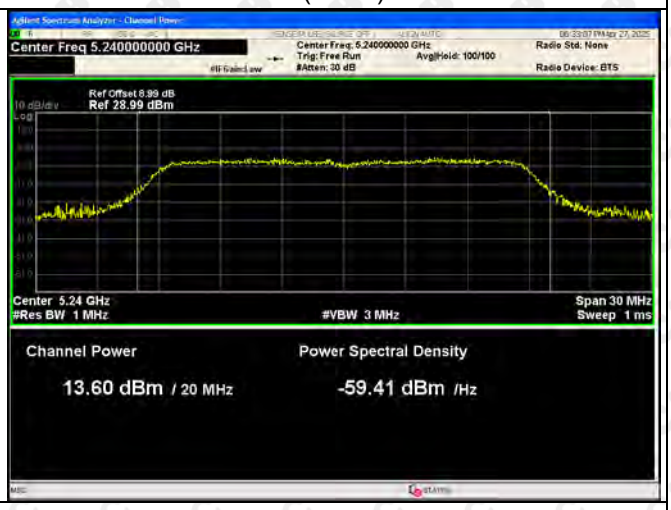
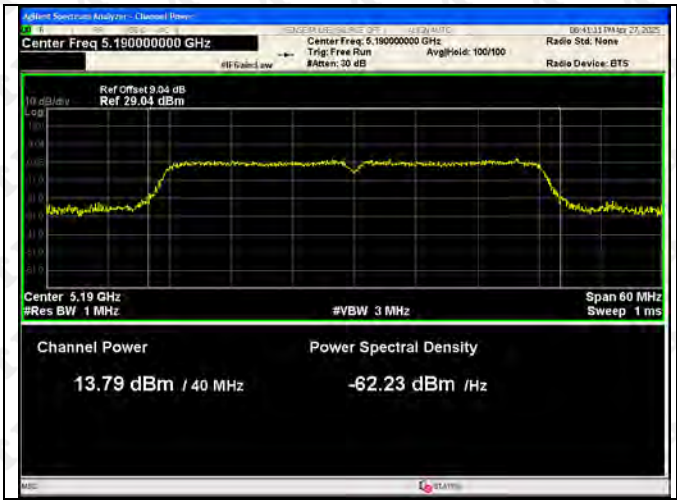
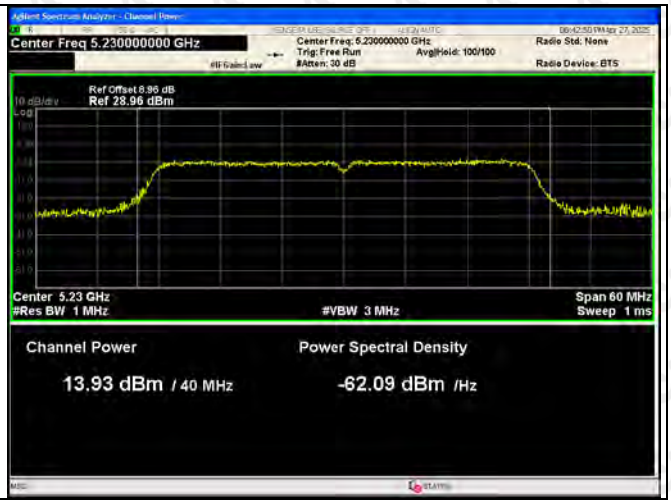


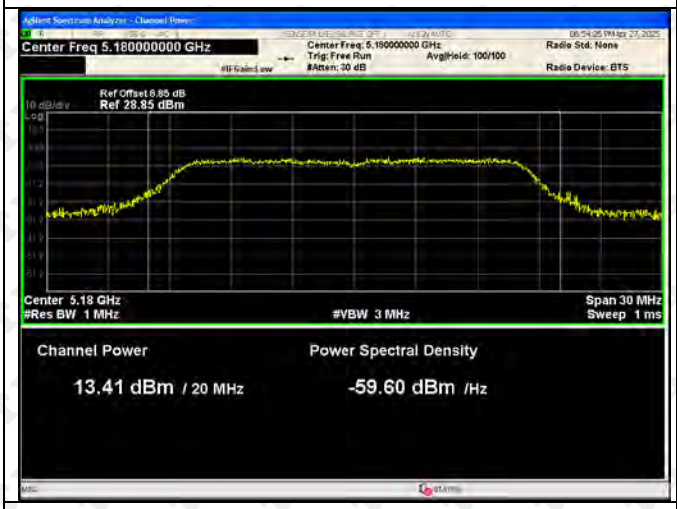
802.11n(HT40)-5230



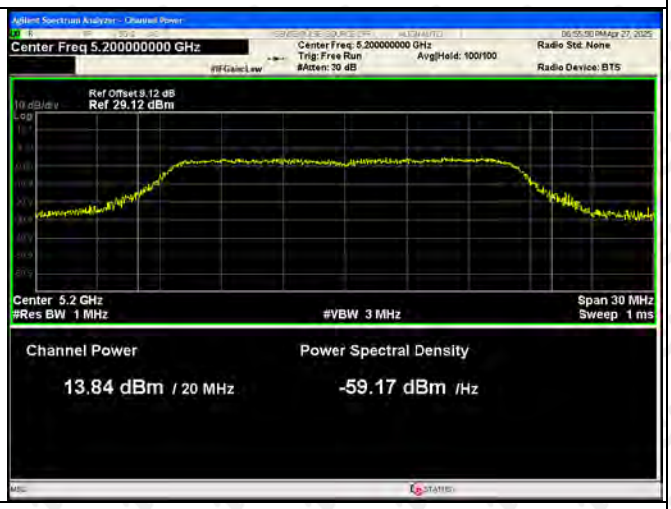


module2 (OPS computer) Worst mode:

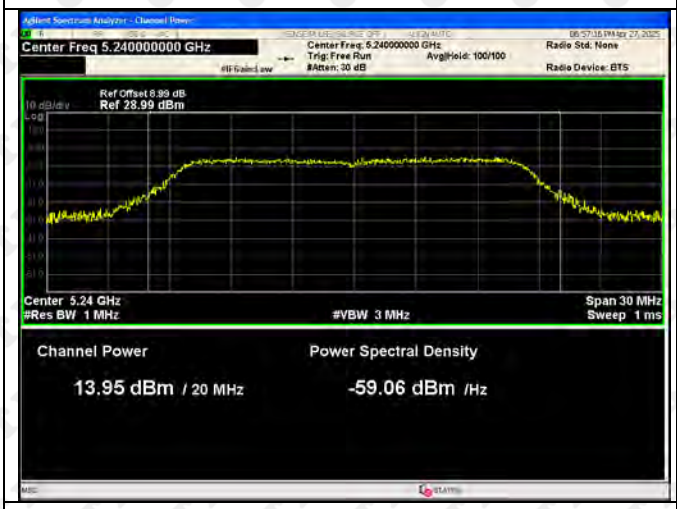
802.11a-5180



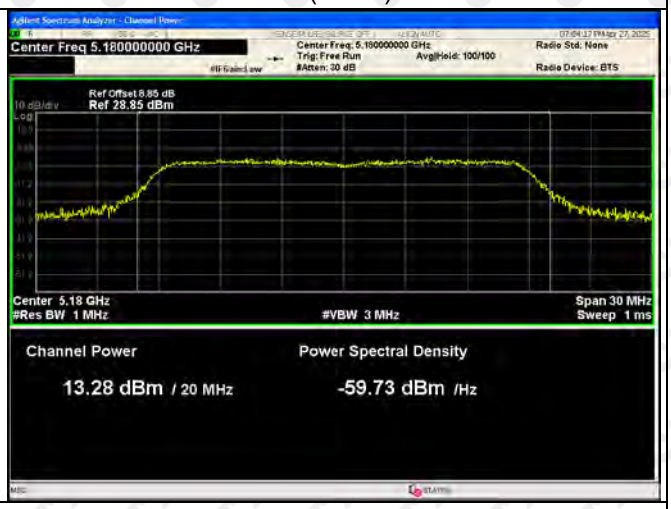
802.11a-5200



802.11a-5240

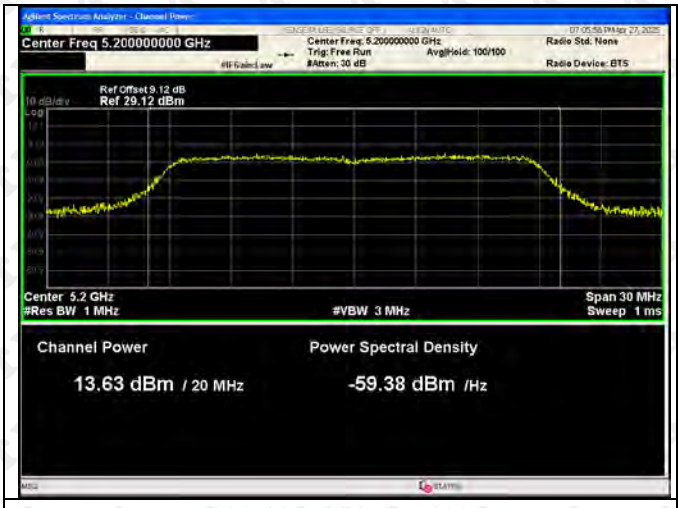


802.11ac(VH20)-5180



802.11ac(VH20)-5200

802.11ac(VH20)-5240



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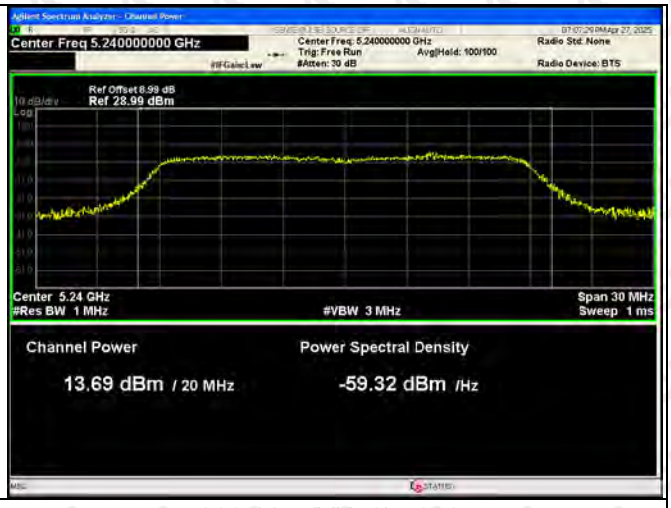
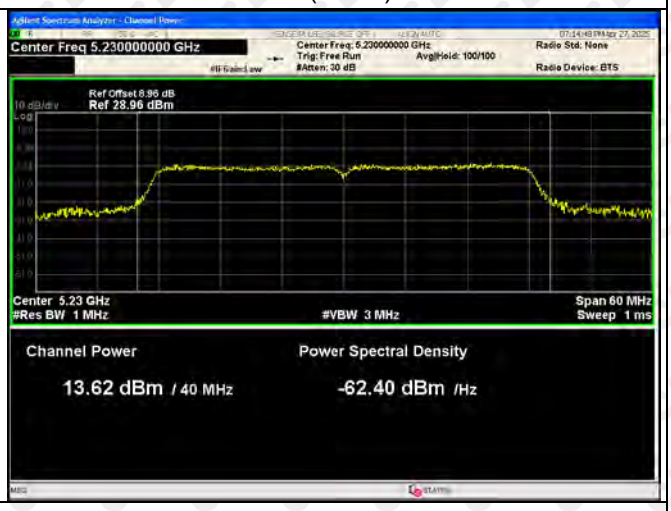


802.11ac(VH40)-5230

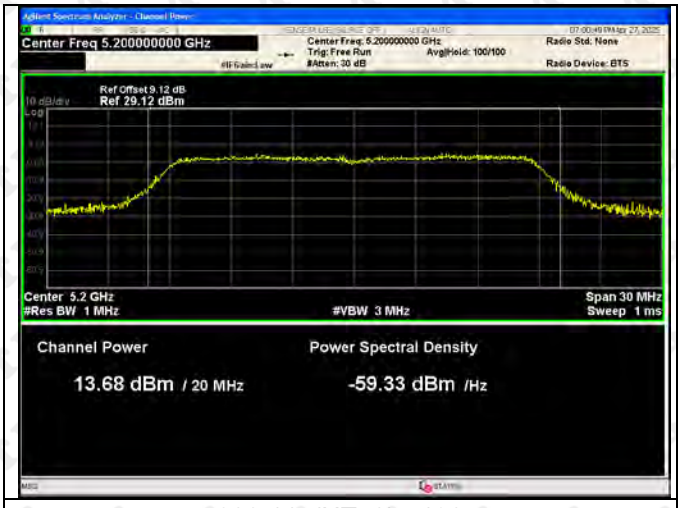
802.11ac(VH80)-5210

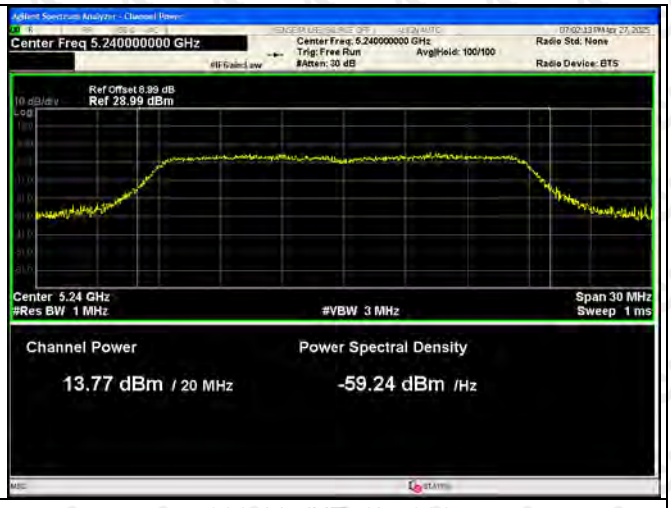


802.11n(HT20)-5180

802.11n(HT20)-5200

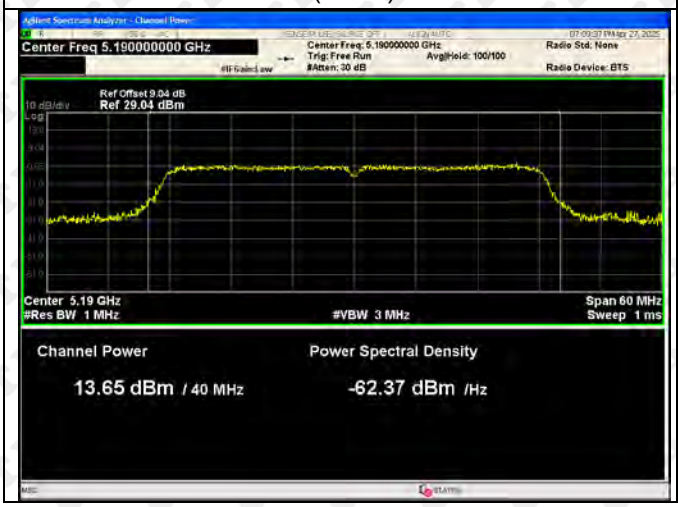
802.11n(HT20)-5240

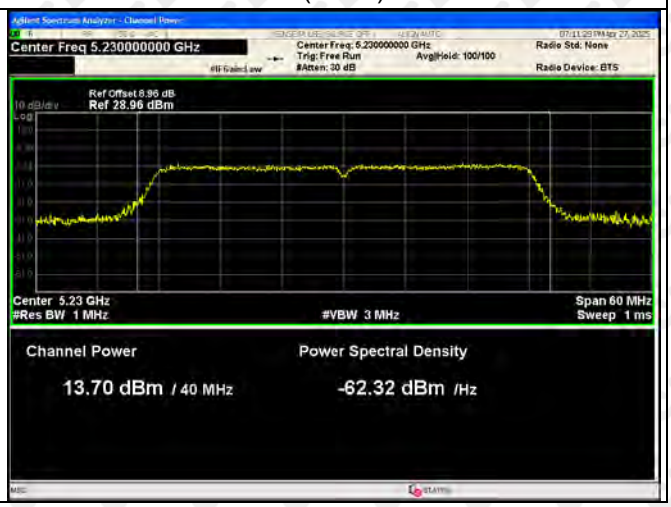




802.11n(HT40)-5190

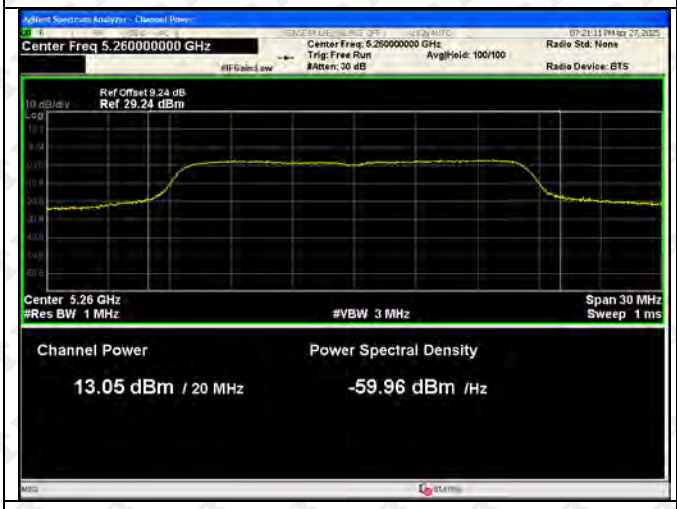
802.11n(HT40)-5230



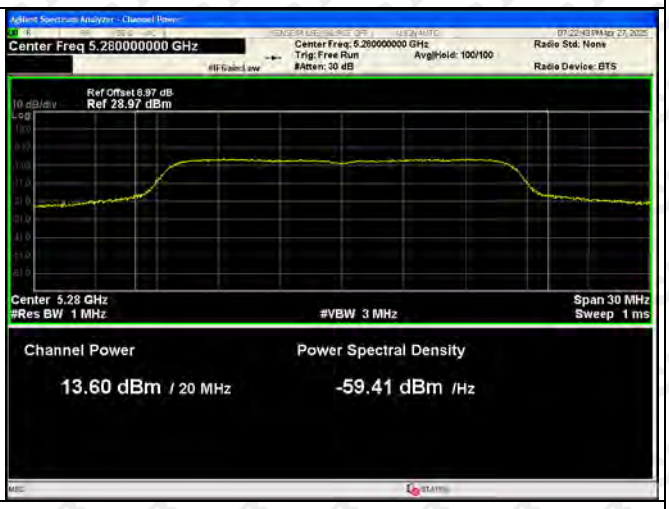


5250-5350MHz-Power module1 Worst mode:

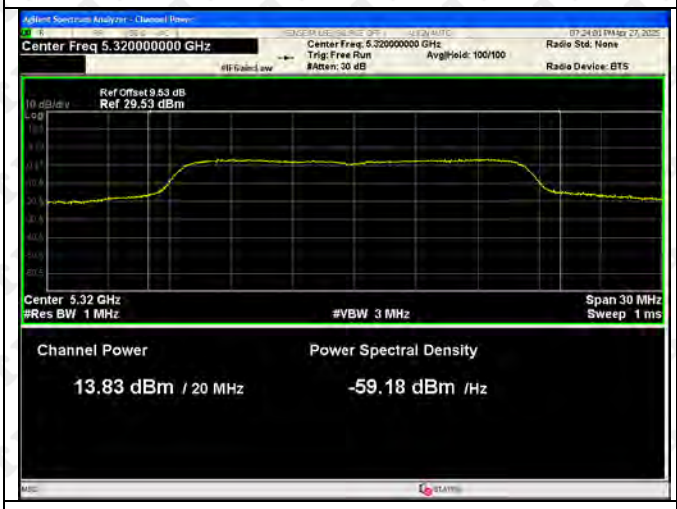
802.11a-5260



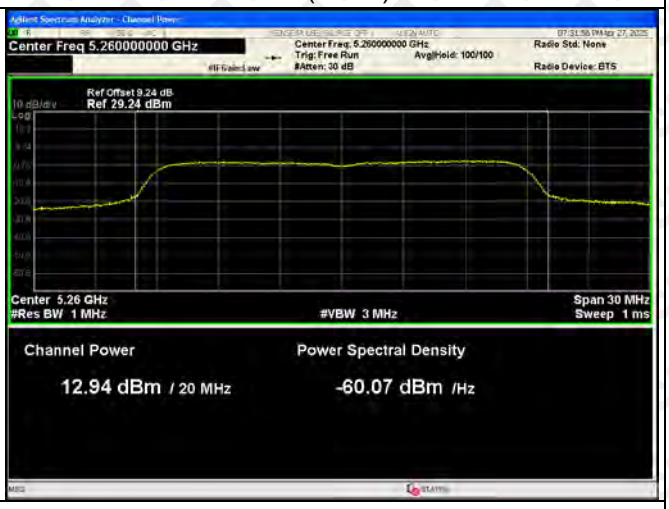
802.11a-5280



802.11a-5320



802.11ac(VH20)-5260



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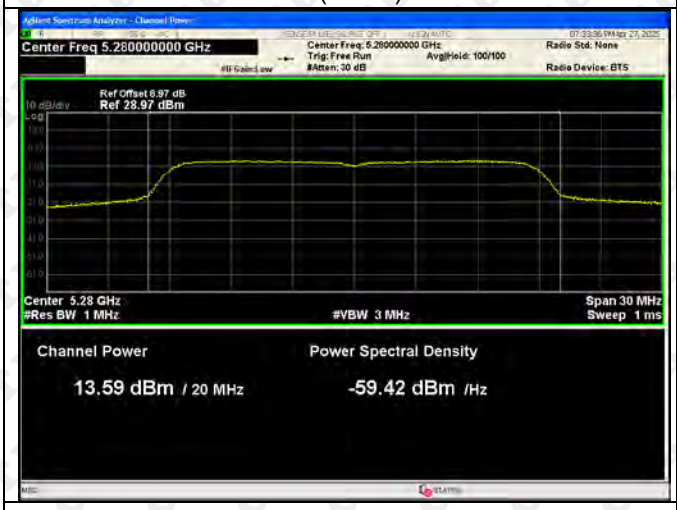

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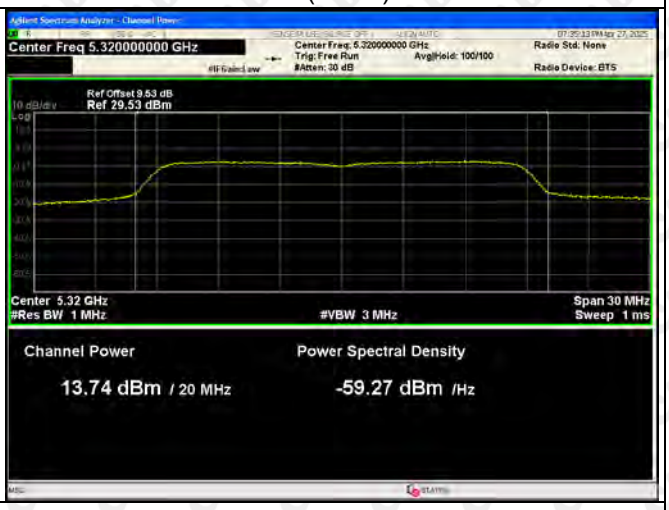
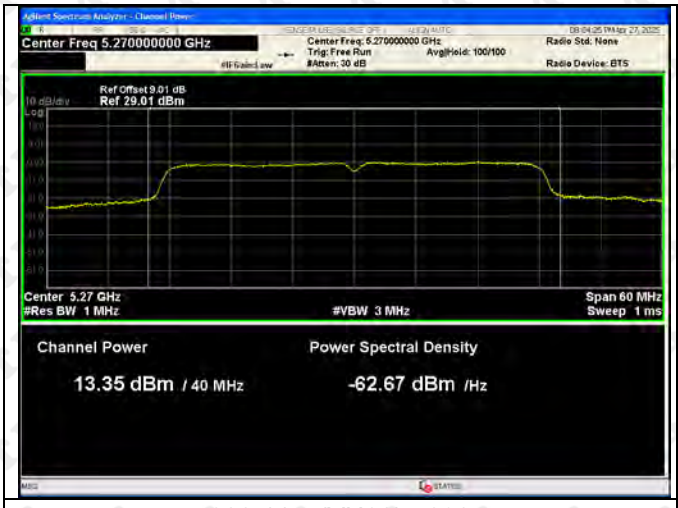
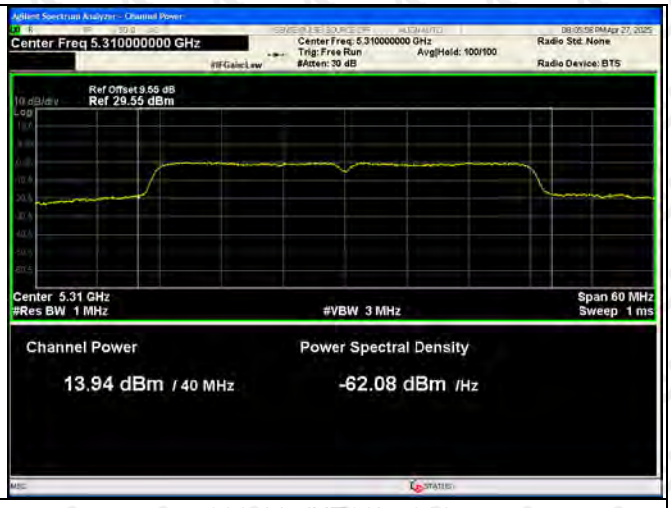


802.11ac(VH40)-5270

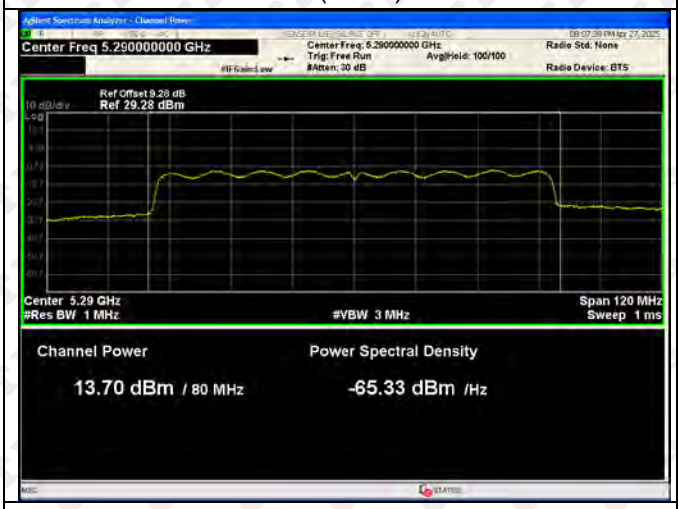
802.11ac(VH40)-5310



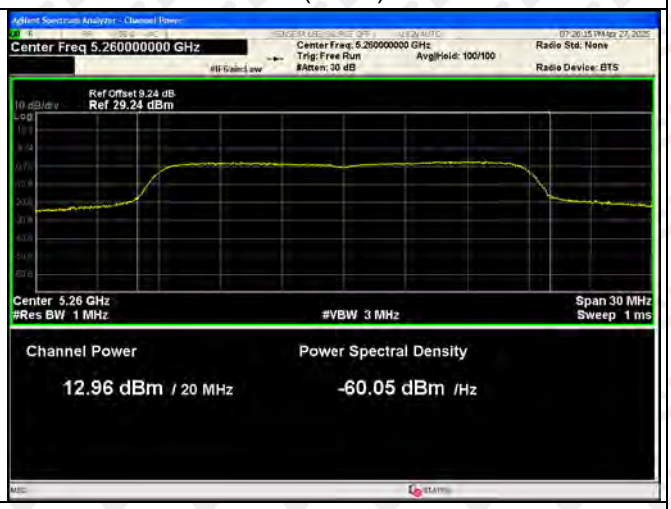
802.11ac(VH80)-5290



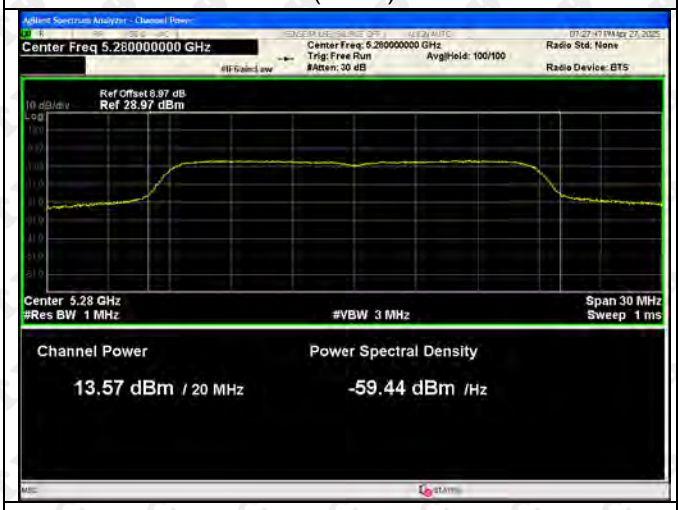
802.11n(HT20)-5260



802.11n(HT20)-5280



802.11n(HT20)-5320



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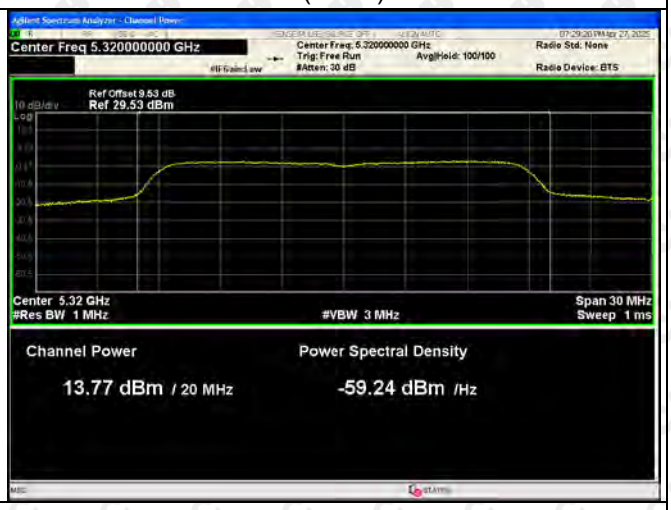

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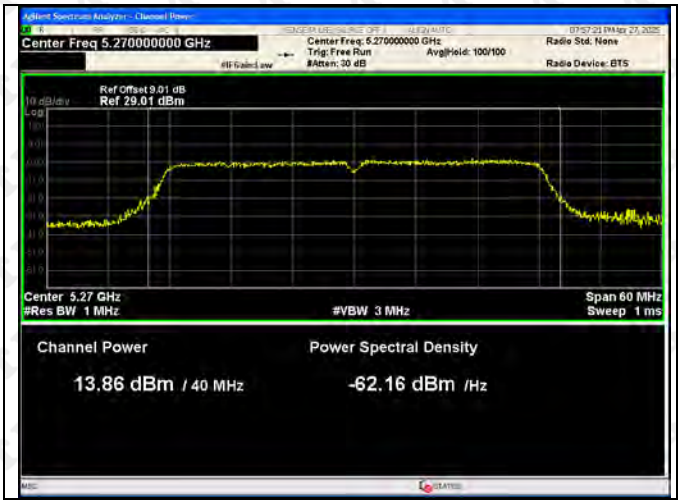
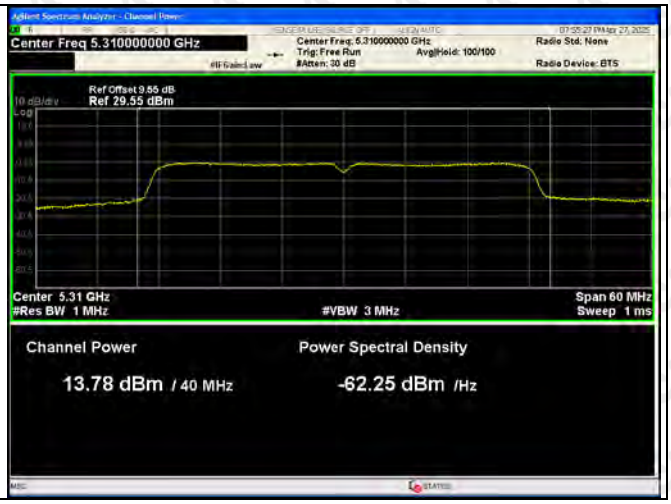
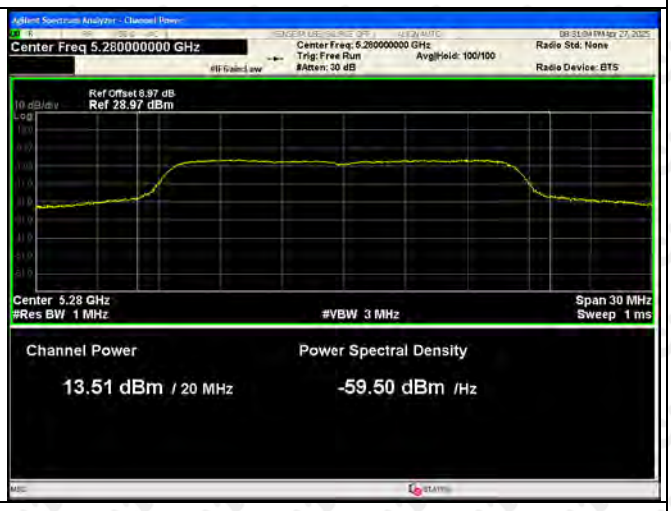




module2 (OPS computer) Worst mode:

802.11a-5260

802.11a-5280

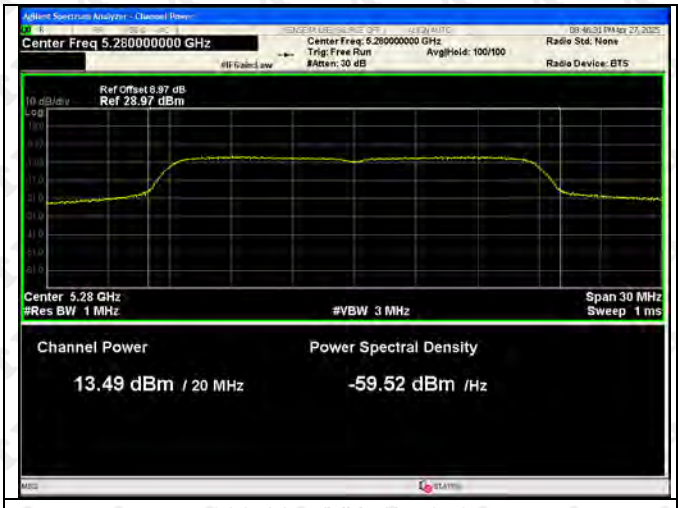


802.11a-5320

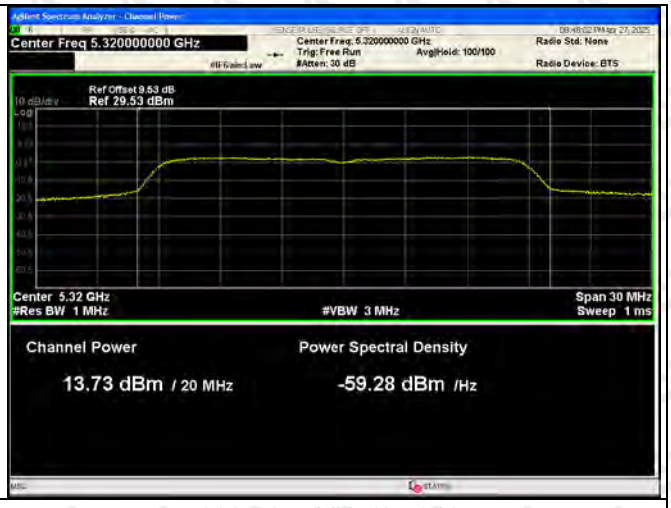
802.11ac(VH20)-5260

802.11ac(VH20)-5280

802.11ac(VH20)-5320

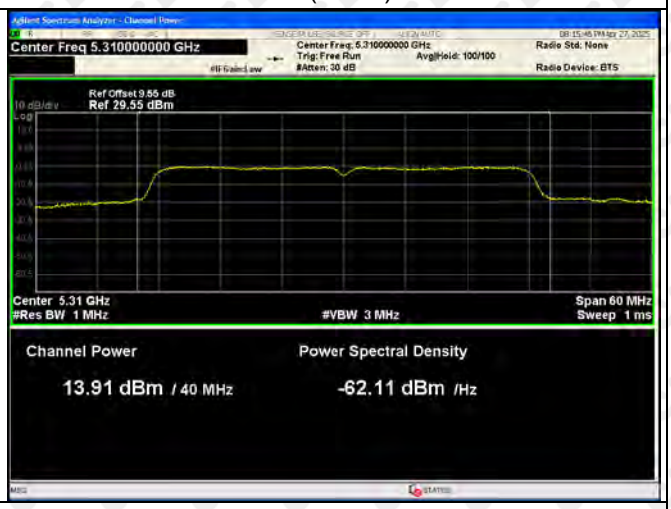


802.11ac(VH40)-5270



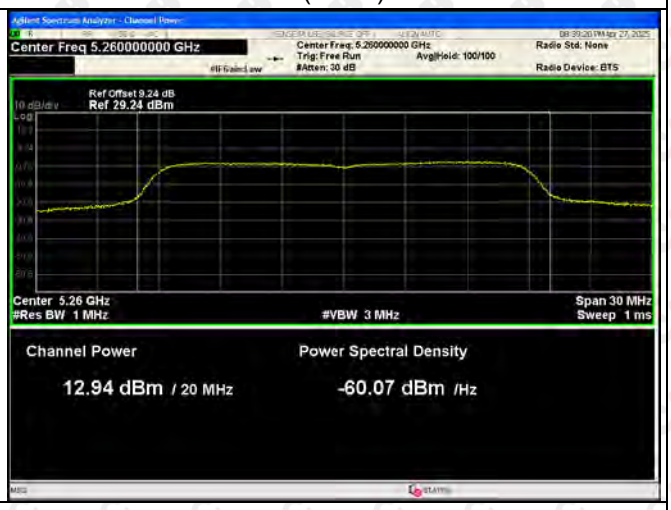
802.11ac(VH40)-5310

802.11ac(VH80)-5290



802.11n(HT20)-5260

802.11n(HT20)-5280



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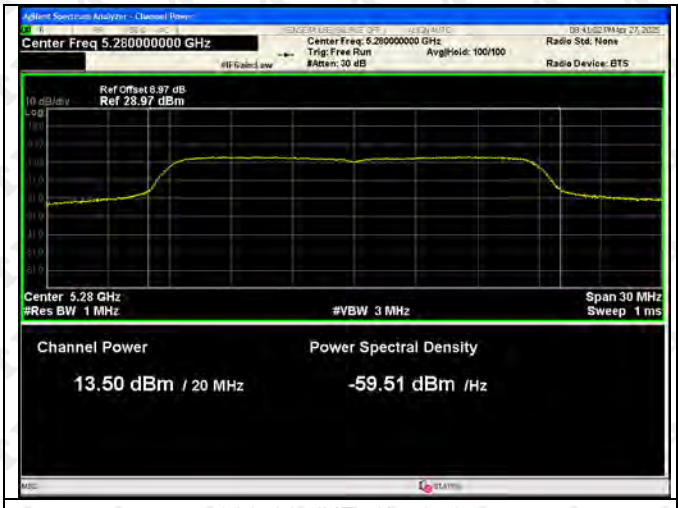

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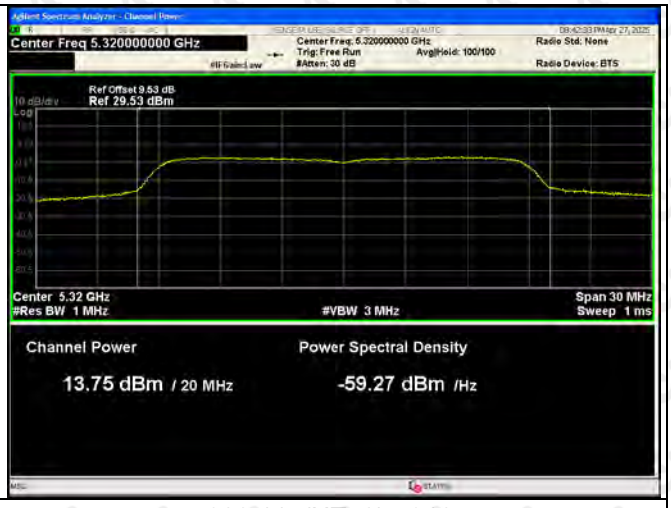

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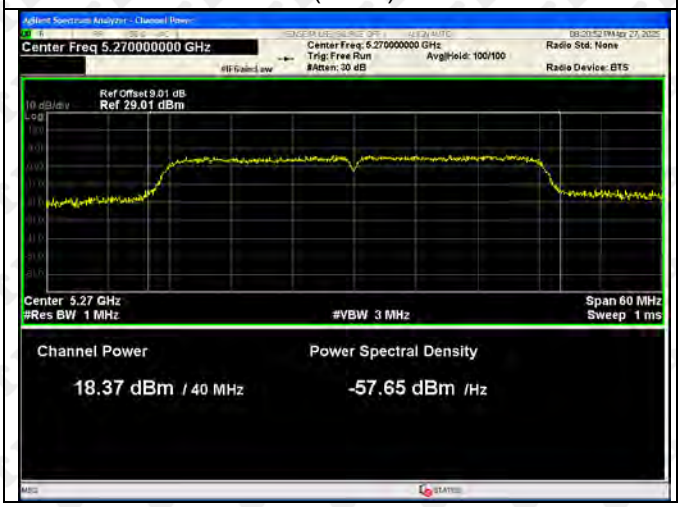
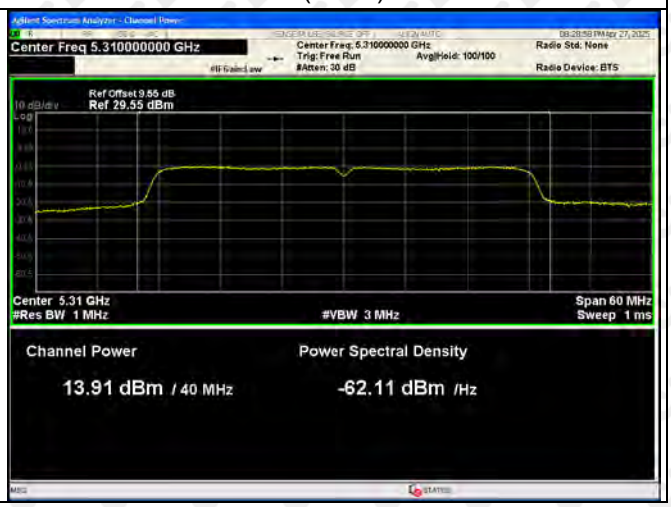
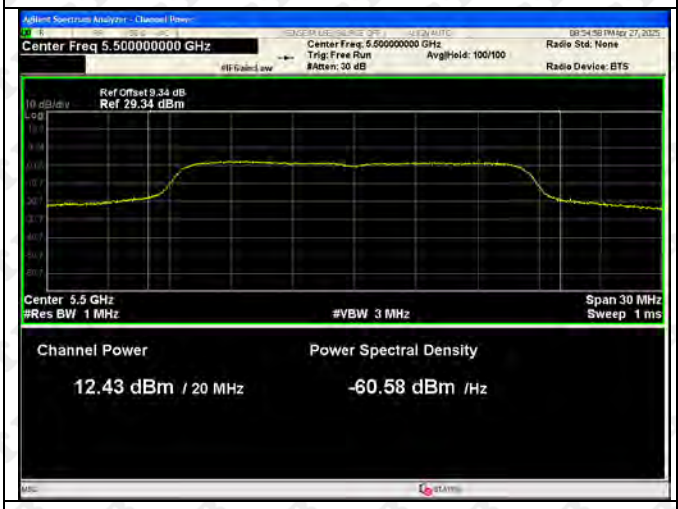


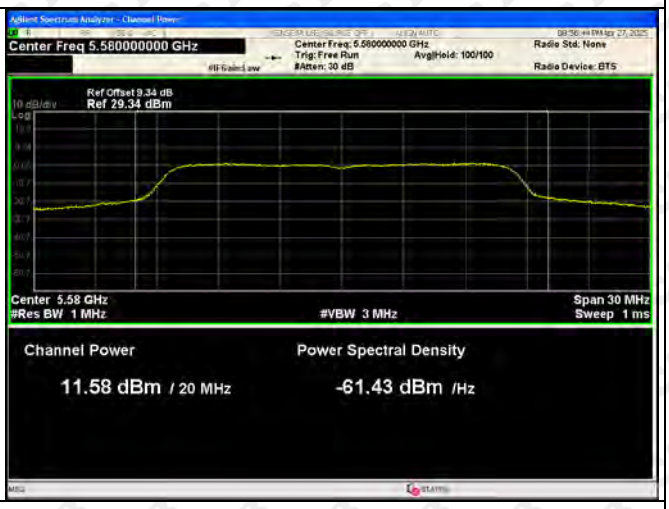


5470-5725MHz-Power module1 Worst mode:

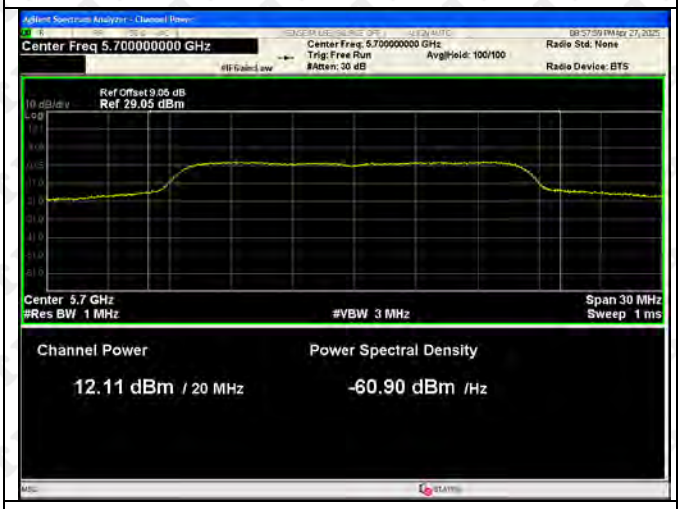
802.11a-5500



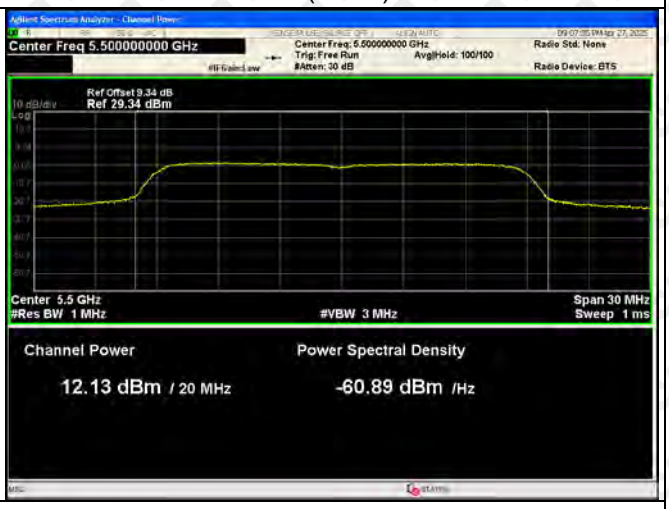
802.11a-5580



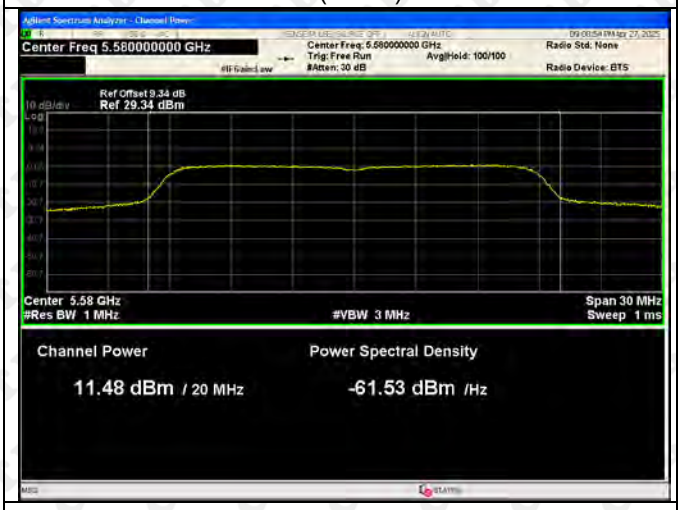
802.11a-5700



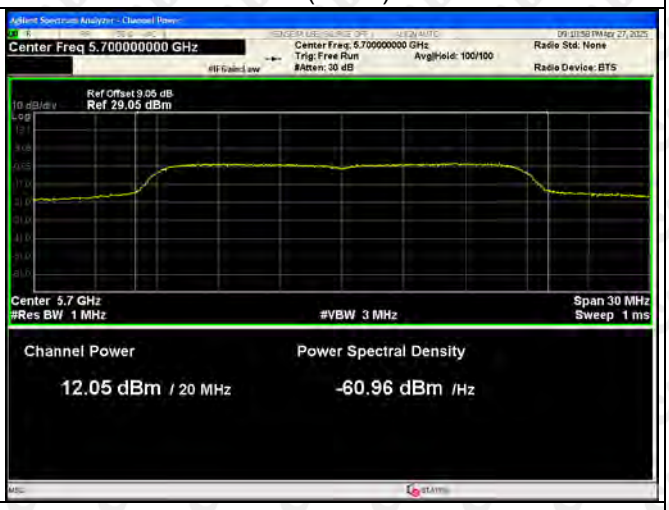
802.11ac(VH20)-5500



802.11ac(VH20)-5580

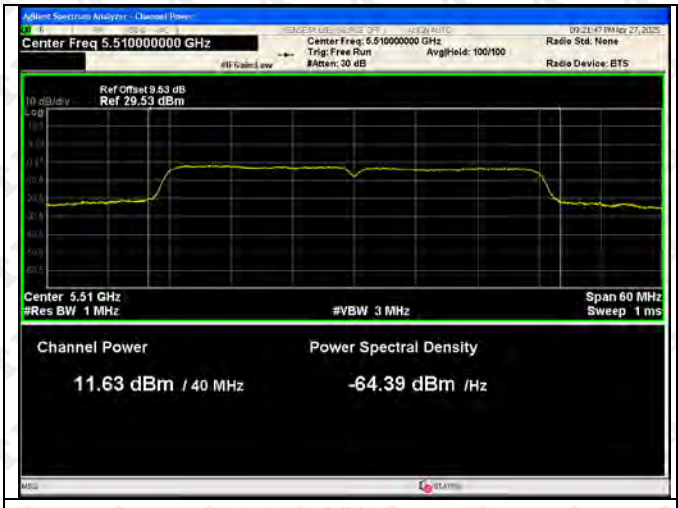


802.11ac(VH20)-5700

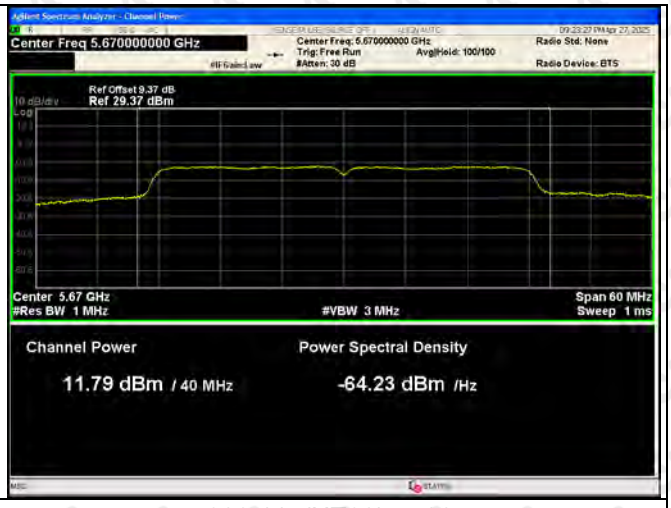


802.11ac(VH40)-5510

802.11ac(VH40)-5670



802.11ac(VH80)-5530



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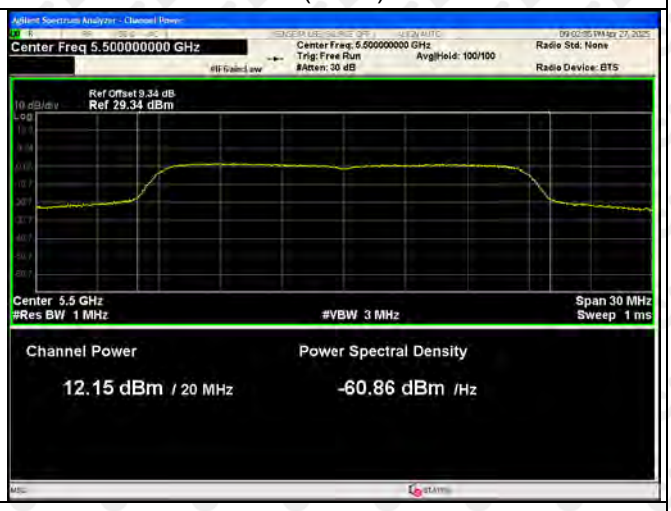
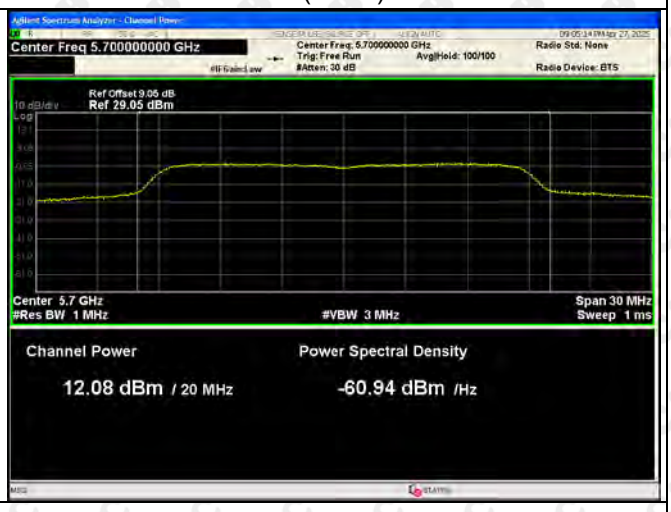
802.11n(HT20)-5580

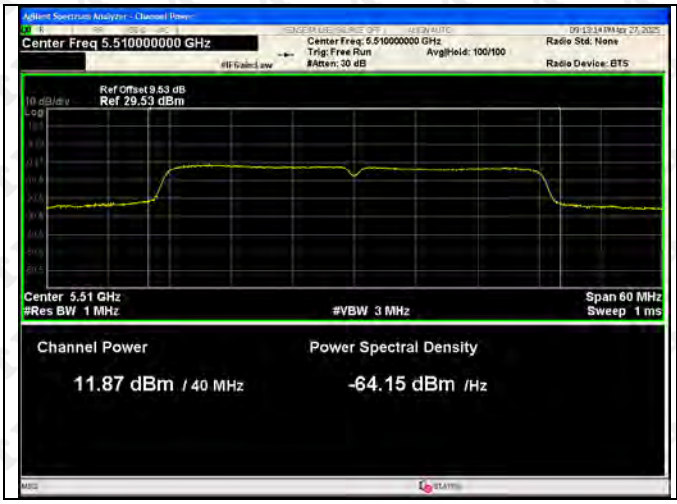


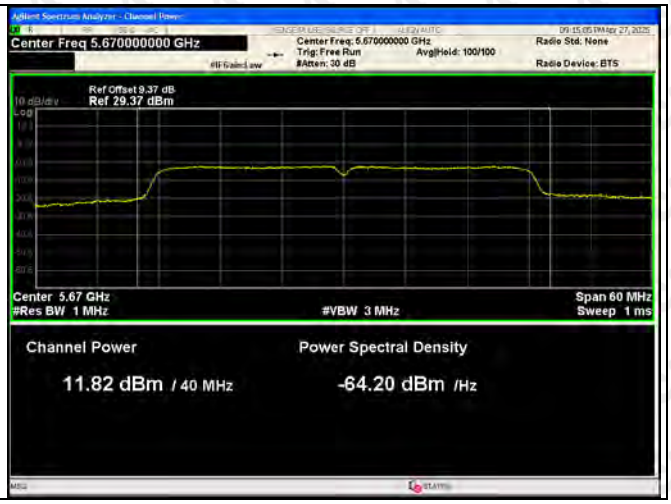
802.11n(HT20)-5700

802.11n(HT40)-5510



802.11n(HT40)-5670

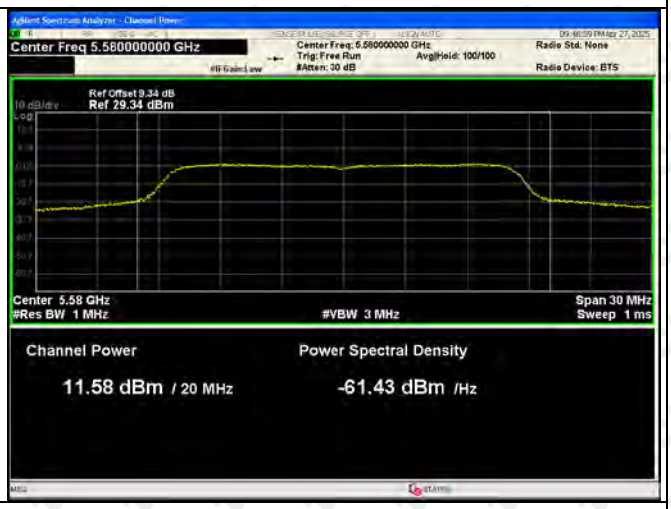




module2 (OPS computer) Worst mode:

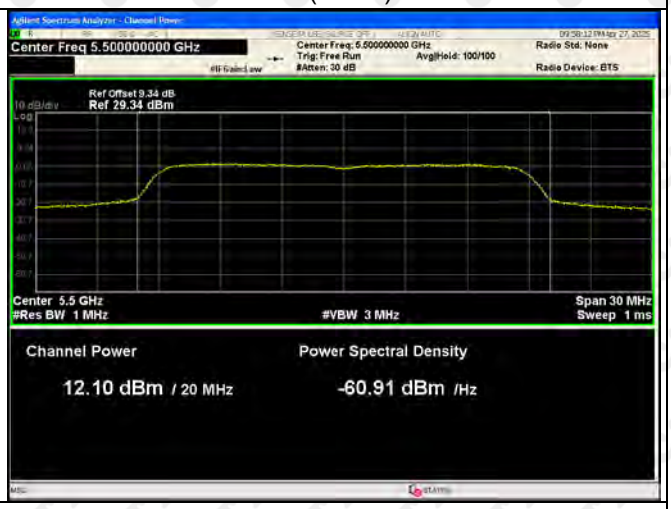
802.11a-5500

802.11a-5580



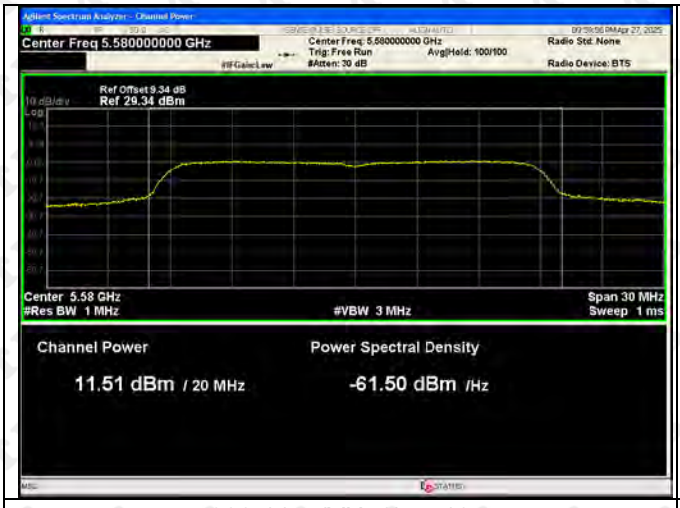
802.11a-5700

802.11ac(VH20)-5500



802.11ac(VH20)-5580

802.11ac(VH20)-5700



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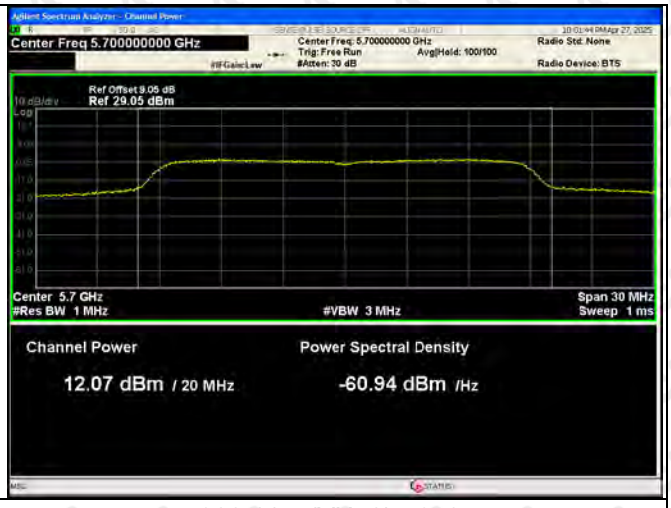

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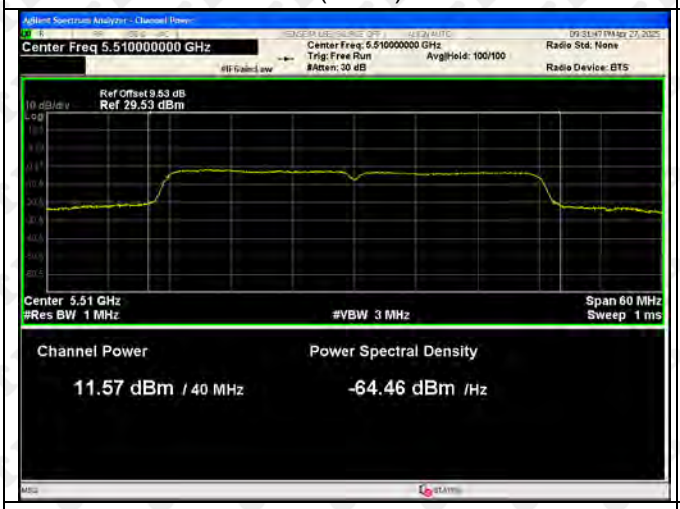

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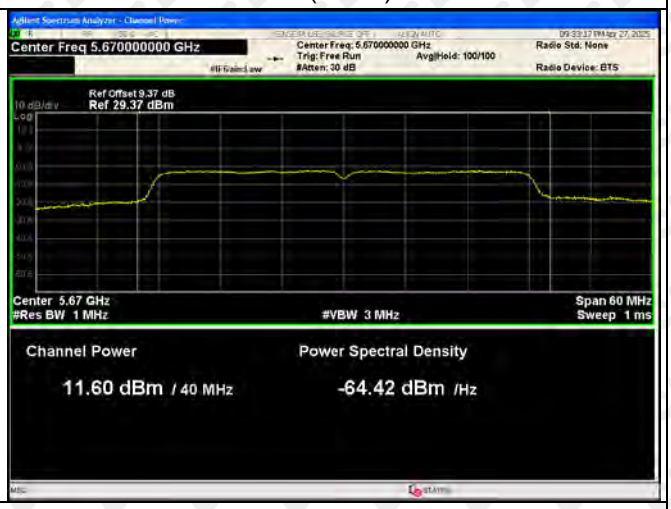

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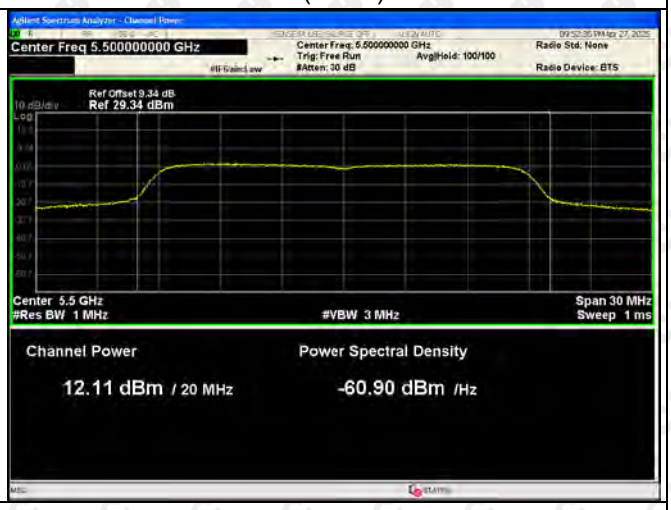
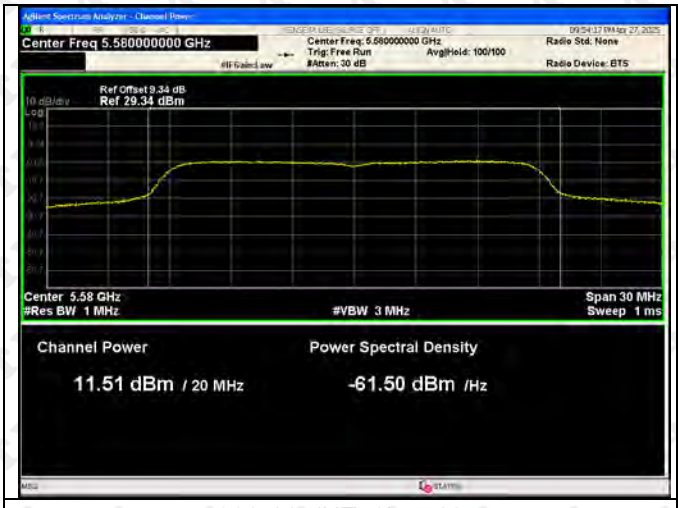
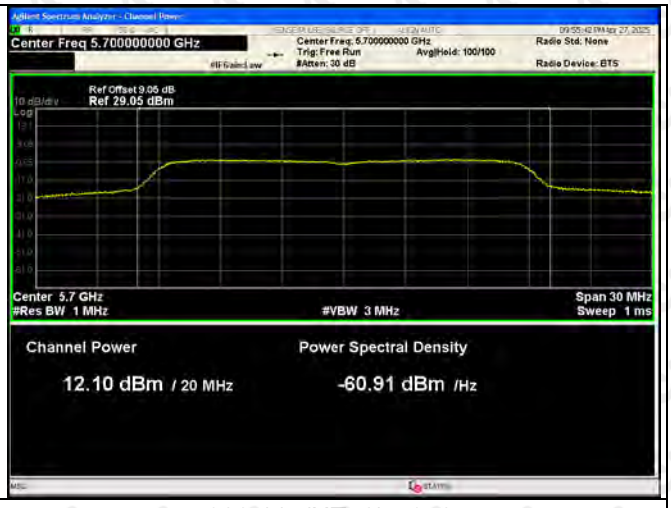
802.11n(HT20)-5580



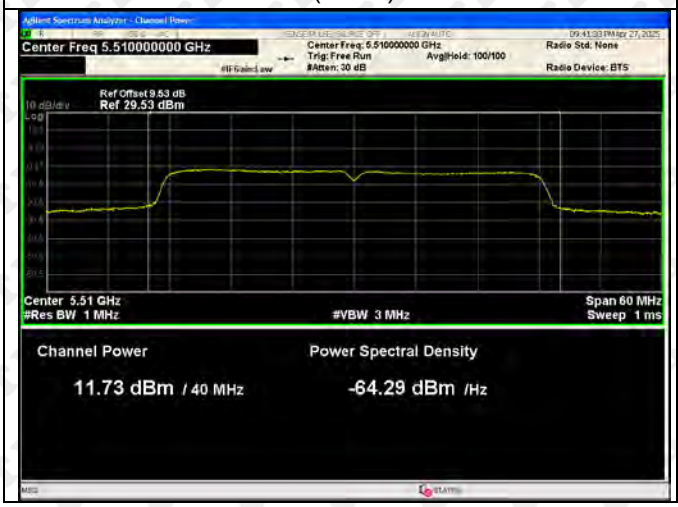
802.11n(HT20)-5700

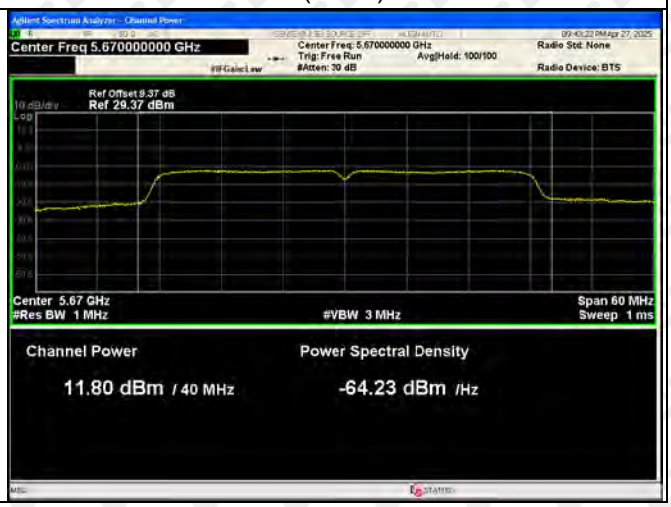




802.11n(HT40)-5510

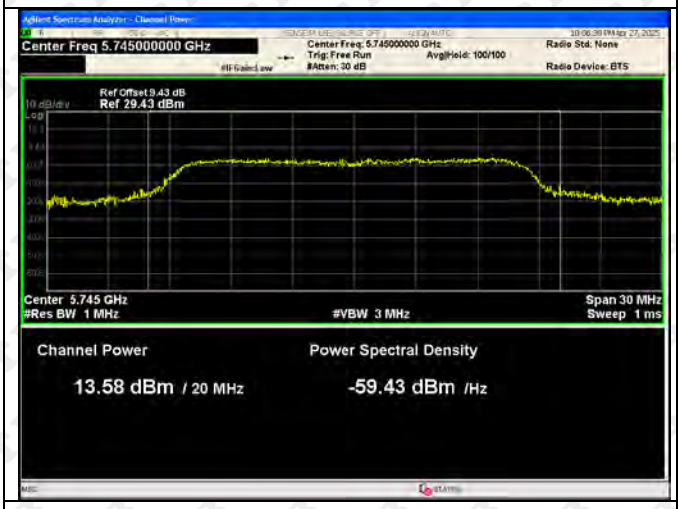
802.11n(HT40)-5670



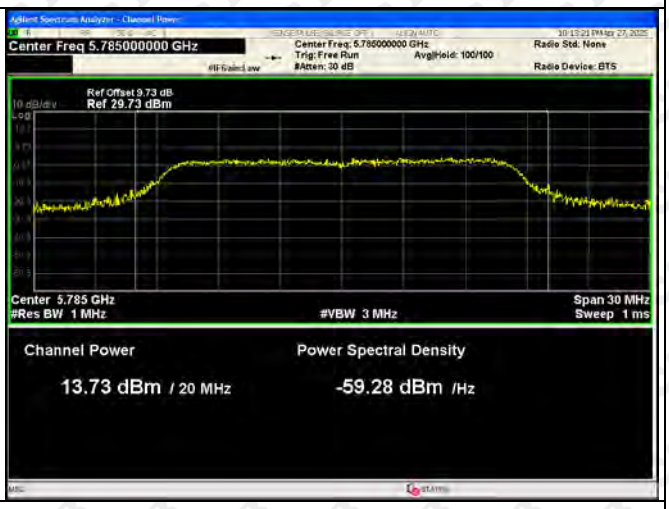


5725-5850MHz:-Power
module1 Worst mode:

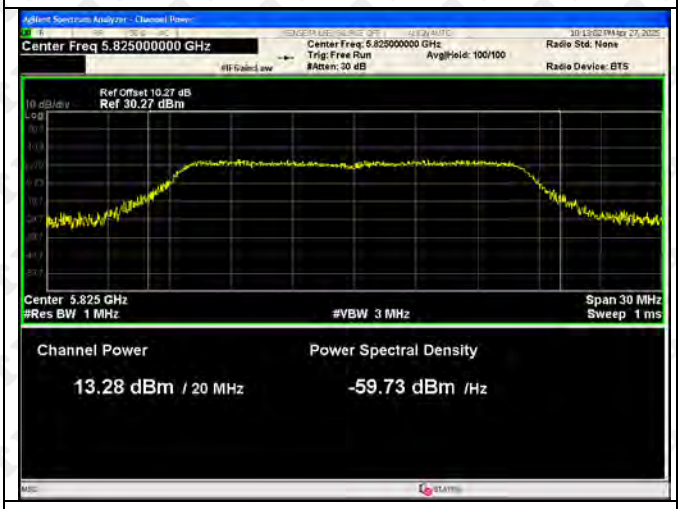
802.11a-5745



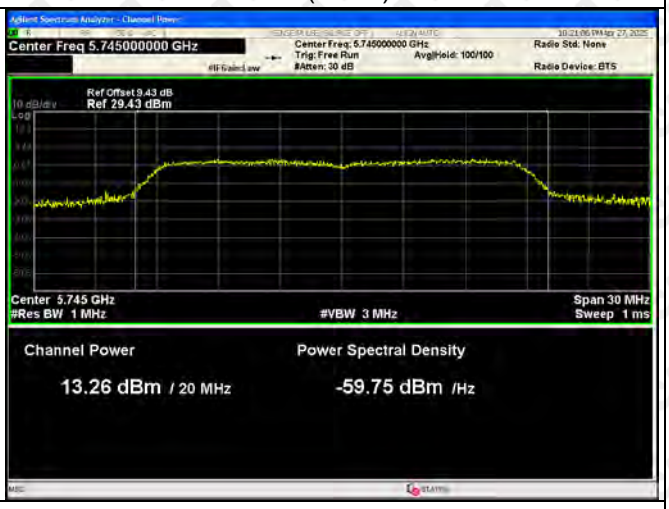
802.11a-5785



802.11a-5825

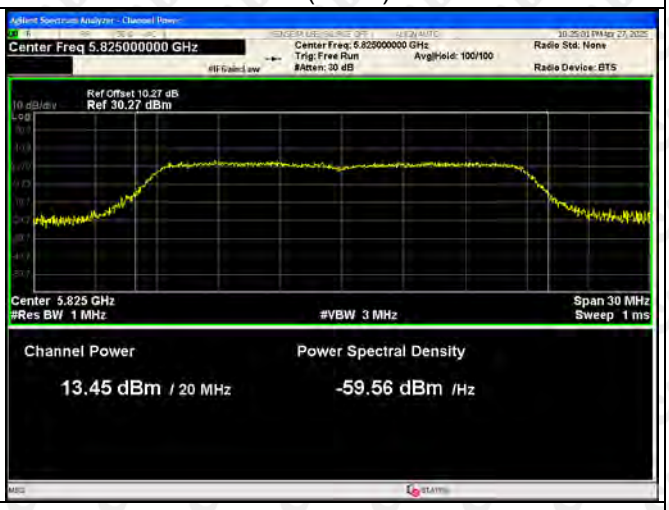


802.11ac(VH20)-5745



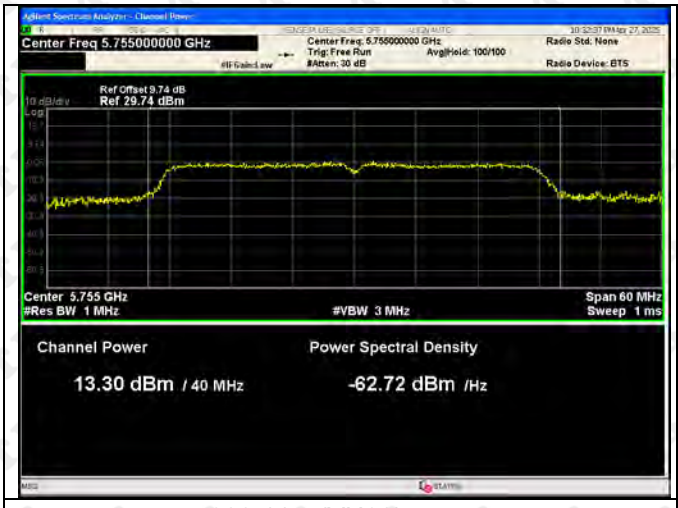
802.11ac(VH20)-5785

802.11ac(VH20)-5825

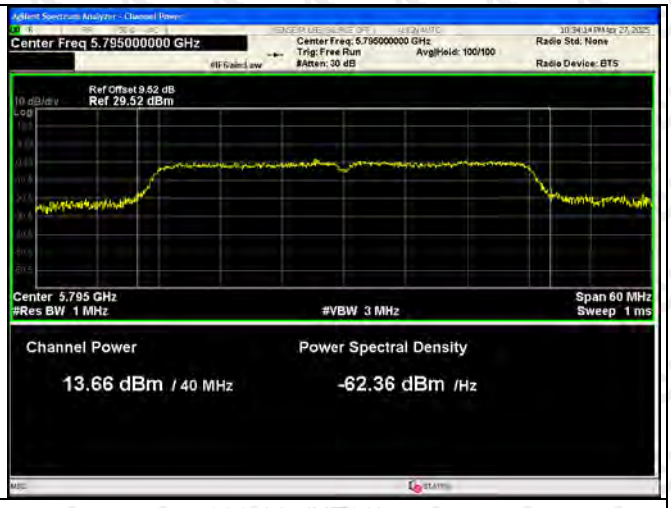


802.11ac(VH40)-5755

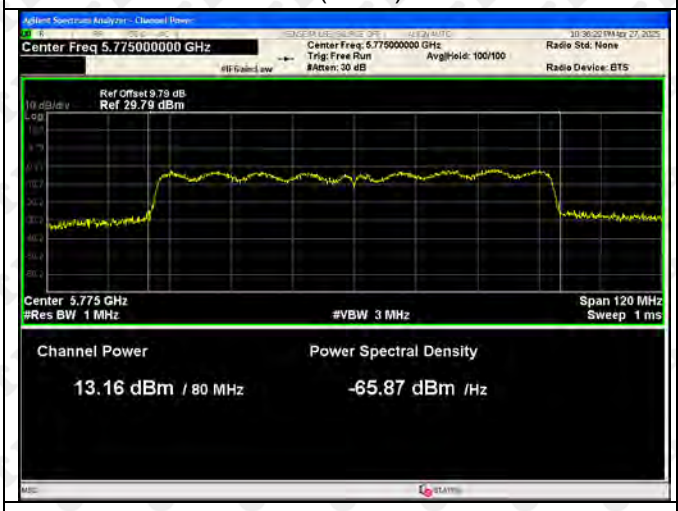
802.11ac(VH40)-5795



802.11ac(VH80)-5775



802.11n(HT20)-5745



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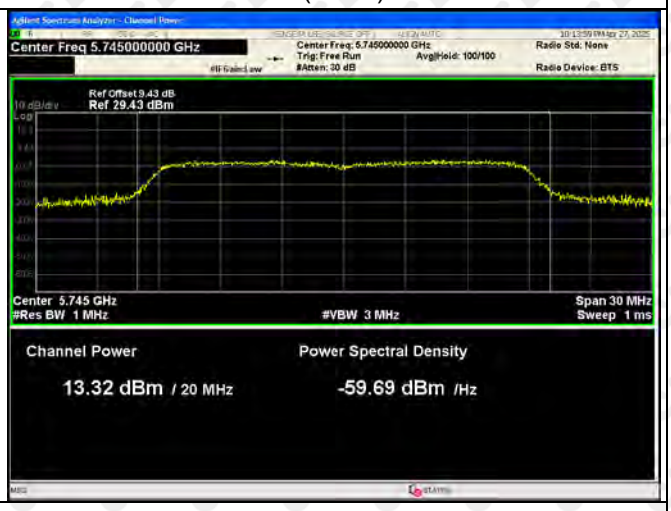
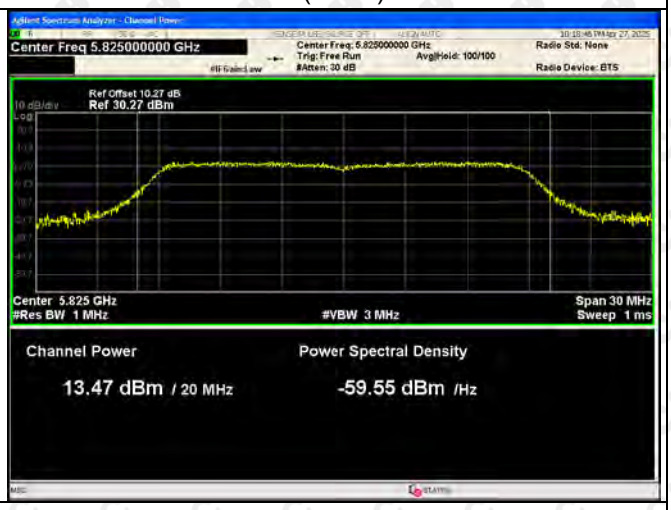


802.11n(HT20)-5825

802.11n(HT40)-5795



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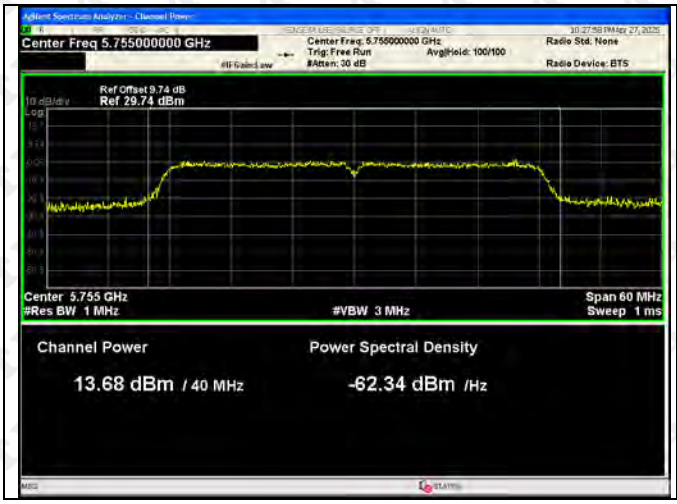
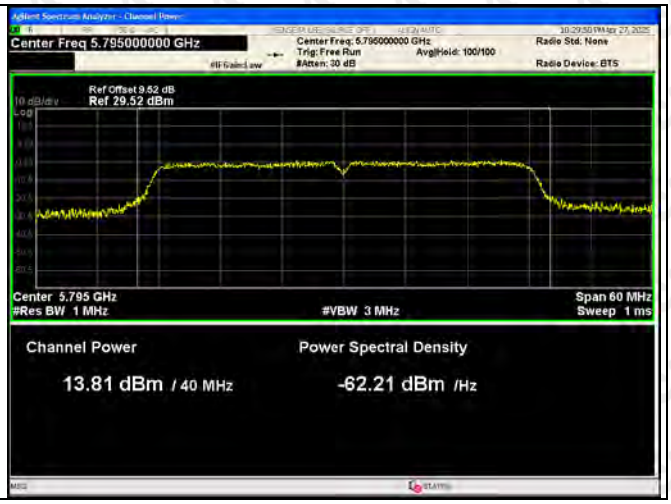
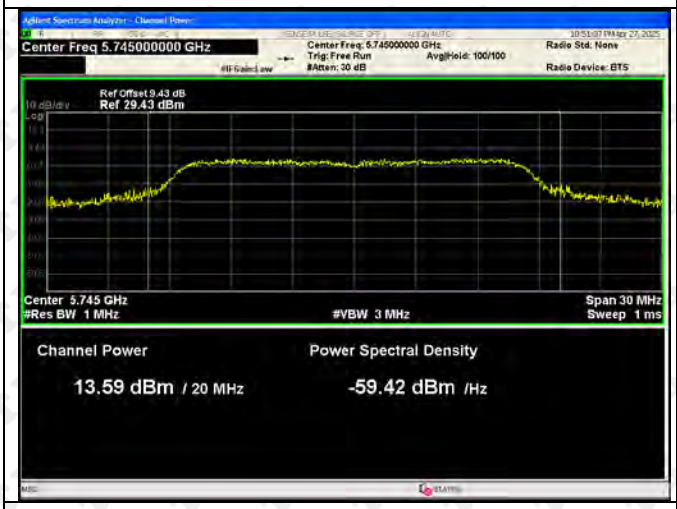


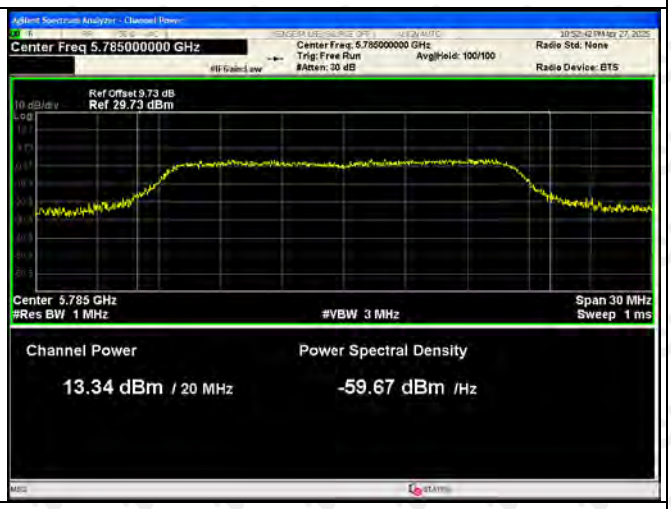


module2 (OPS computer) Worst mode:

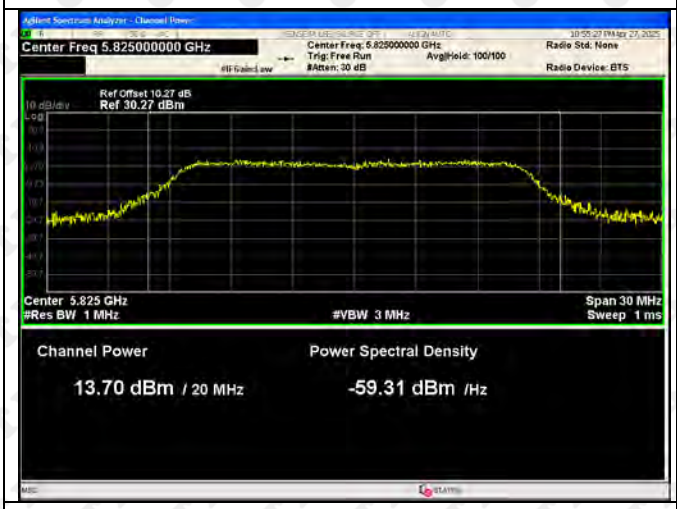
802.11a-5745



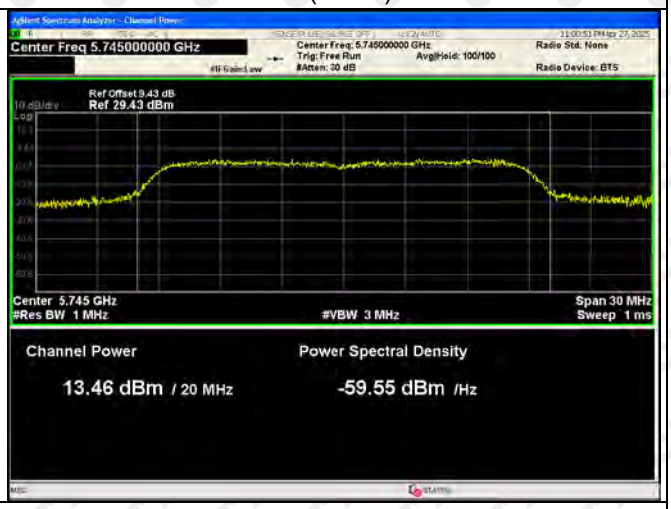
802.11a-5785



802.11a-5825

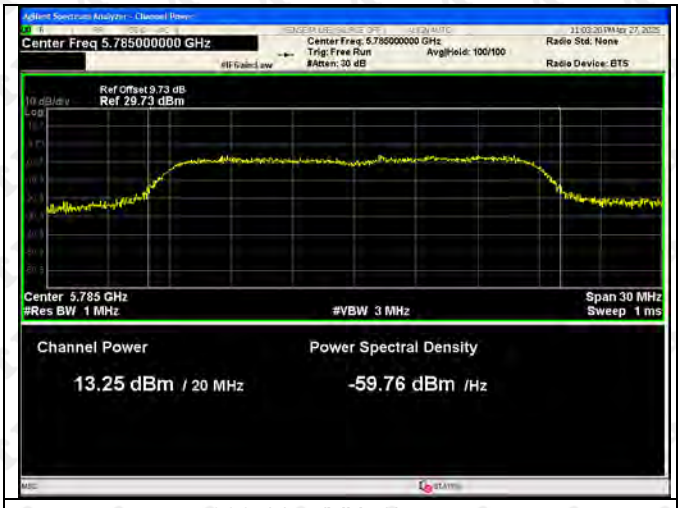


802.11ac(VH20)-5745

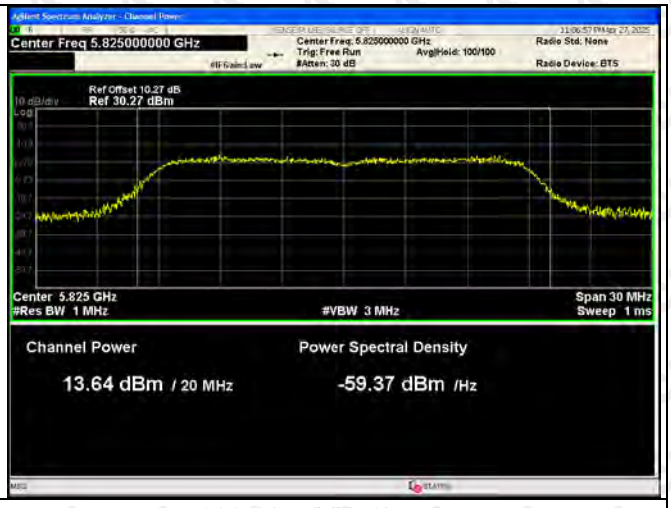


802.11ac(VH20)-5785

802.11ac(VH20)-5825

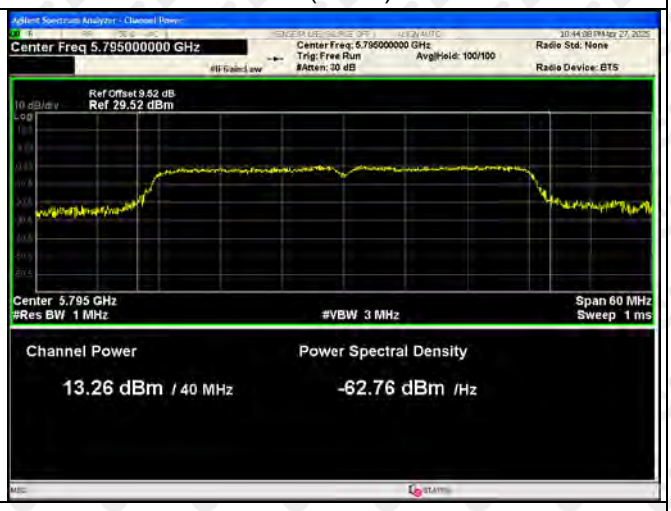


802.11ac(VH40)-5755



802.11ac(VH40)-5795

802.11ac(VH80)-5775



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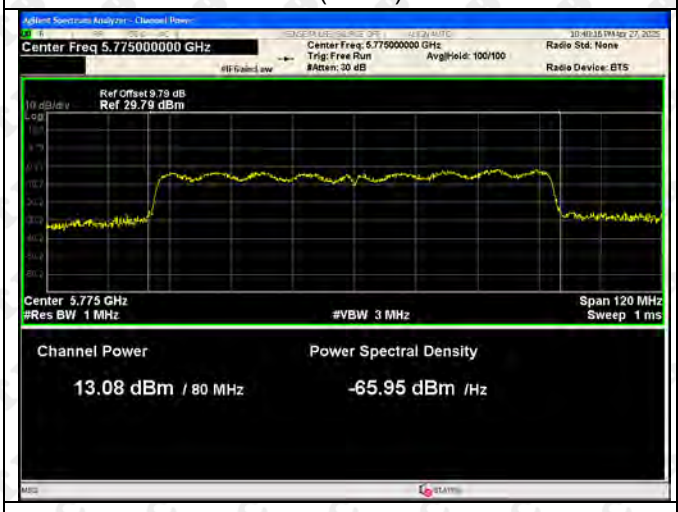

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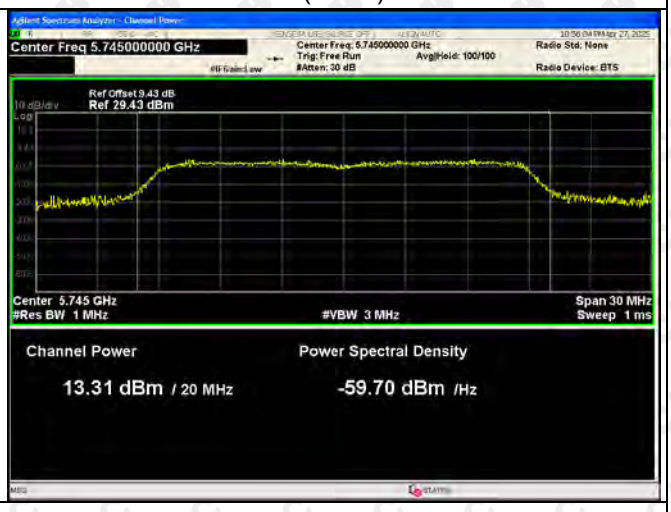

802.11n(HT20)-5825